United States Fuel Resiliency

Volume I

U.S. Fuels Supply Infrastructure

Infrastructure Characterization

FINAL REPORT

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INTEK Inc.

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Disclaimer

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List of Units

Bbl	Barrel (1 barrel = 42 gallons)
MBbl	Thousand barrels
MMBbl	Million barrels
Bbl/d	Barrels per day
MBbl/d	Thousand barrels per day
MMBbl/d	Million barrels per day
Mcf	Thousand cubic feet
MMcf	Million cubic feet
Bcf	Billion cubic feet
Tcf	Trillion cubic feet
Mcf/d	Thousand cubic feet per day
MMcf/d	Million cubic feet per day
Bcf/d	Billion cubic feet per day
Gyr	Gallons per year
MGyr	Thousand gallons per year
MMGyr	Million gallons per year
BGyr	Billion gallons per year
Btu	British Thermal Unit (~1055 joules)

List of Abbreviations

AFDC	Alternative Fuels Data Center
ATB	Articulated Tug Barge
BOEM	Bureau of Offshore Energy Management
CNG	Compressed Natural Gas
DOE	U.S. Department of Energy
E&P	Exploration and Production
EERE	U.S. Department of Energy Office of Energy Efficiency and Renewable Energy
EIA	U.S. Department of Energy Energy Information Administration
EPA	U.S. Environmental Protection Agency
EPCA	Energy Policy and Conservation Act

EPSA	U.S. Department of Energy Office of Energy Policy and Systems Analysis
FERC	U.S. Federal Energy Regulatory Commission
LDC	Local Distribution Company
LNG	Liquefied Natural Gas
LOOP	Louisiana Offshore Oil Port
NEHHOR	Northeast Home Heating Oil Reserve
NGL	Natural Gas Liquids
NREL	U.S. Department of Energy National Renewable Energy Laboratory
OCS	Outer Continental Shelf
PADD	Petroleum Administration for Defense Districts
QER	Quadrennial Energy Review
R&M	Refining and Marketing
RFS	Renewable Fuel Standard
SPR	Strategic Petroleum Reserve
TS&D	Transportation, Storage, and Distribution
ULCC	Ultra Large Crude Carriers
USACE	U.S. Army Corps of Engineers
VLCC	Very Large Crude Carriers
WTI	West Texas Intermediate

I. Executive Summary

The nation's oil and natural gas and refined products Transportation, Storage and Distribution (TS&D) infrastructure is transitioning to respond to increasing domestic supplies of liquid fuels and natural gas, reduced seaborne crude oil imports, and changes in consumer demand for fuels.

Since 2008, new domestic and Canadian sources of supply, totaling more than 2.7 million barrels per day, have significantly reduced the volumes of seaborne oil imports of light and heavy crude oil to the Gulf Coast region (PADD III) and East Coast (PADD I) refineries. Increasing production of domestic ethanol and biofuels and reduced liquid fuels demand are also contributing to reducing oil imports. Together, these new sources of North American liquid fuels are reducing the nation's dependence on imports from other regions of the world, including the Middle East, Africa, and Central and South America.

Concurrently, the rapid development of U.S. shale gas resources has increased domestic natural gas supply significantly, requiring development of new underground storage and construction of new gas processing new pipeline transportation capacity, and offering the opportunity for the United States to become a net exporter of natural gas via pipeline of liquefied natural gas exports.

A. Liquid Fuels Infrastructure

Crude Quality

New domestic oil production from the Eagle Ford (TX) and Bakken (ND) shale oil plays is primarily light sweet crude, as compared to heavier crudes produced from conventional domestic reservoirs, Canadian syncrudes, and crude oil imported from other countries.

Refining

Most US refineries, particularly in the Gulf Coast and East Coast have been engineered, upgraded, and expanded to process an increasingly heavy crude oil feedstock. Light oils can be blended with heavy crudes to achieve a medium API gravity crude oil that can be also processed in these refineries. However, refining light sweet crudes without blending will require major industry investments in taller distillation columns and environmental controls and lengthy permitting processes, which some companies (such as Valero) are beginning to make.

Thus, while heavy Canadian syncrudes have been welcomed by U.S. refineries, it is becoming increasingly challenging for U.S. refineries to absorb and blend all of the increasing volumes of domestic light oil production. This has resulted in calls to lift restrictions on exporting domestic crude oil and the increasing appearance of "splitter" facilities that minimally refine oil to enable its legal export.

Further, refining light oil will yield more motor gasoline and less distillate (diesel) than medium and heavy refinery feedstocks, potentially reducing diesel supply and affecting markets and prices.

Oil Pipelines and Transport

For several decades, Gulf Coast and Midwest refineries have been dependent on seaborne imports received via the Gulf of Mexico, for much of their crude oil supply. Consequently, the nation's refining infrastructure has become highly concentrated in the Gulf Coast region. With increased domestic production and reduced imports, pipelines flow directions are being reversed and pipeline capacity is being added to move more Canadian crude to the Midwest and Gulf Coast refiners and domestic light crude to the East Coast.

These changes have caused temporary dislocations and bottlenecks in the U.S. crude oil transport, storage, and distribution system with varying degrees of operational and wellhead oil price impacts.

In response, producers have adopted alternative means to transport their crude oil to desired refining markets. Expanded transport of crude oil by rail and barge to refining centers in the Midwest, East Coast, West Coast and Gulf Coast allows pipeline chokepoints to be bypassed until new pipeline capacity can be constructed. These measures, in turn, have affected freight rail markets and operations and raised safety and environmental concerns.

It has been argued that the proposed Keystone XL pipeline will provide direct access for heavy Canadian syncrude to U.S. Gulf Coast refineries, and thereby improve the efficiency of the existing domestic oil pipeline system to serve domestic producers and refinery markets.

Storage

Crude oil storage capacity at refineries, terminals, and market hubs remains sufficient. However, decreasing import volumes through the Gulf of Mexico has reduced throughput and stored volumes at the Louisiana Offshore Oil Port. And recent high volumes of crude stocks at Cushing, OK and Patoka, Il resulting from pipeline and market bottlenecks have been largely relieved by new the new Flanagan South pipeline capacity which facilitates the movement of Canadian heavy crude to the Gulf Coast.

Further, the nation's reduced oil import dependence has also reduced the volumes of crude oil that must be held in the Strategic Petroleum Reserves to meet treaty obligations to store 90 days of imports. Changes in crude oil pipeline flow patterns have reduced the deliverability options for SPR crude to some markets, but haves not reduced the SPR's capability to respond to supply interruptions. The concentration of these reserves stored as crude oil in the Gulf Coast region has given rise to proposals for diversification of the composition and geographic location of these reserves.

Refined products are delivered from the nation's refining centers to regional distribution terminals primarily by underground pipelines and waterborne vessels that serve coastal ports and terminals along the nation's inland waterways. Many of these terminals serve as hubs and interconnects for multiple product pipelines and markets, making the critically important infrastructure. Increasing volumes of domestically produce alternative fuels, including ethanol and biodiesel, are also transported to these facilities, generally by rail tank car or tanker truck, for blending or distribution.

From these product terminals, refined products are generally distributed to fueling stations by tanker truck. However, some strategically important high volume fuel users, such as airports and air bases, are served by dedicated pipelines.

B. Natural Gas Transportation, Storage and Distribution Infrastructure

The application of new directional drilling and advanced fracturing technologies has made production of the nation's substantial shale gas resources technically and economically viable. This technology shift has changed the natural gas supply outlook of the United States from that of a net gas importer to a self-sufficient market with significant gas export potential. New shale gas production is occurring in numerous basins across the country, with the greatest volumes being produced from the Marcellus and Utica shale formations in the Appalachian and Mid-Atlantic states in PADDs I and II. High volumes of associated gas are also being produced in conjunction with increased domestic oil production. In many regions, however, new natural gas gathering infrastructure must be constructed to deliver gas from new production areas to processing, transmission and storage facilities. The lack of infrastructure in many areas has caused gas development to slow or production to be shut in pending infrastructure development. This infrastructure gap has affected lease prices.

Gas Processing

Increased shale gas production has given rise to construction of new gas processing plants and capacity in the new producing areas. Natural gas plants strip out liquids and impurities from the gas stream and send "dry" gas into the pipeline transmission system for consumption by end-users or injection into underground storage. They also produce high volumes of natural gas liquids (NGLs), including propane, which are used as refinery fuels and feed stocks, heating fuels, and other purposes. The high volumes of natural gas liquids (NGLs) associated with shale gas production are stimulating market shifts and associated requirements for storage, transport, and processing infrastructure.

Natural Gas Storage

Produced natural gas that exceeds baseline and seasonal market demand is stored in pressurized underground reservoirs and caverns until needed. With domestic gas production exceeding current demand, more gas is going into storage, and storage capacity is being increased or expanded to meet projected storage requirements. Injection and extraction points and compression systems are critical infrastructure for gas storage facilities.

Gas Transmission Pipelines

America's system of interstate and intrastate natural gas transmission pipelines is the backbone of the natural gas industry, connecting gas production, gas treatment and processing, and gas storage systems with industrial users and local distribution companies (LDC's). These interconnected pipeline systems are largely underground. However, they include more than 315,000 miles of pipeline, 1,400 compression stations, and numerous metering and pipeline interconnect points, as well as thousands of city gate interconnections, all supported by a network of communications and automated controls.

Liquefied Natural Gas

Liquefied natural gas (LNG) allows gas to be stored where underground storage is not available or where rapid deliverability may be needed, such as at peak-shaving power plants. Liquefaction also allows high volumes of gas to be transported by special LNG tanker ships. With nine LNG import facilities and only three export facilities, the United States has been a net importer of LNG. This picture is also changing rapidly. The growing natural gas supply has not just stimulated increased gas use by domestic industrial, commercial, and residential consumers. New projections of long-term excess gas supply have stimulated numerous proposals to export LNG. While only one new LNG export facility is currently under construction, four more projects have been approved by FERC, and more than 25 others have been formally proposed or are being planned or considered. The combined capacity of these planned and proposed plants, approximately 35 Bcf/d, exceeds projected market demand. However, the final size and geographical distribution of a U.S. LNG export industry will ultimately be determined by a combination of market factors, capital markets, and policy and regulatory determinations.

Interdependencies

Increasingly, the evolution of state-of-the-art sensors and detection systems, communications systems, and automated controls is allowing greater automation of transportation, processing, storage, and distribution networks and systems. These advances continue to reduce costs, improve efficiency, increase safety, and reduce environmental impacts in this critical sector of the nation's economic and industrial base. However, dependence on external communications systems and electrical power supply also contribute to the vulnerability of critical fuels TS&D infrastructure.

The nation's fuels production, transportation, supply, and distribution system is increasingly interdependent and interconnected. The natural gas system receives and processes associated gas from oil production. Oil refiners receive, use, and process NGLs from the gas industry. Increasingly, natural gas is used for cleaner, more efficient electrical power generation. And virtually all of the nation's fuels production, processing, transportation, storage, and distribution system components rely on national, regional and local electric power grids and infrastructure for communications, controls, and operating power.

All of these factors must be considered in assessing the vulnerability of these critical systems to natural and human threats and in assessing and determining effective approaches to improve the resiliency of these critical systems.

II. Introduction

A. The Nation's Changing Fuels Supply and Infrastructure

The nation's oil and natural gas and refined products infrastructure is transitioning to respond to increasing domestic supplies of crude oil and natural gas, reduced seaborne crude oil imports, and changes in consumer demand for fuels. The Department of Energy's Annual Energy Outlook 2014 projects that, as a result of increased domestic crude oil production, domestic crude will supply approximately two-thirds of the nation's oil requirements, and one third will come from imports for the foreseeable future.

Since 2008, production of light, sweet crude oil from the Bakken shale play in North Dakota, and from the Eagle Ford play in South Texas, and other areas has increased U.S. annual domestic crude oil production by 890 million barrels or 2.44 million barrels per day.[1] Concurrently, volumes of heavy synthetic crude oil imported from Canada have also increased, rising from 2.845 million barrels per day in 2008 to nearly 3.125 million barrels per day.

These new sources of supply, totaling more than 2.7 million barrels per day, have significantly reduced the volumes of seaborne oil imports of light and heavy crude oil to refineries in the Gulf Coast region (PADD III). PADD I East Coast refineries are also receiving increased volumes of domestic Bakken crude oil via rail and barge, further reducing seaborne imports. Increasing production of domestic ethanol and biofuels and reduced liquid fuels demand are also contributing to reducing oil imports. Together, this rapidly expanding North American production is reducing the nation's reliance on crude oil imports from countries in the Middle East, Africa, and Central and South America regions and strengthening North American energy security.

These shifts in the sources and origins of petroleum supply resulted in major bottlenecks and chokepoints at major hubs in the existing crude oil storage and transportation system, accompanied by corresponding wellhead oil price impacts. The U.S. fuels infrastructure is changing rapidly to respond to changing storage, transportation, and processing requirements. Pipelines flows are being reversed, pipeline capacity is being expanded, and new storage capacity is being added. Expanded transport of crude oil by rail and barge to refining centers in the Midwest, East Coast, West Coast and Gulf Coast allows pipeline chokepoints to be bypassed until new pipeline capacity can be constructed.

Concurrently, the rapid development of U.S. shale gas resources has increased domestic natural gas supply significantly, requiring development of new underground storage, construction of new gas processing capacity, and new pipeline transportation capacity. The growing natural gas supply has stimulated fuel switching by domestic consumers and created opportunities for export of liquefied natural gas (LNG) to foreign markets. Numerous proposals to construct LNG export infrastructure have been approved or proposed. Further, the high volumes of natural gas liquids (NGLs) associated with shale gas production are stimulating market shifts and associated requirements for storage, transport, and processing infrastructure.

B. Purpose of Study

Established in 2013, Office of Energy Policy and Systems Analysis (EPSA) is the primary energy policy advisor to the Secretary and Deputy Secretary on domestic energy policy development and implementation as well as the Department of Energy (DOE) policy analysis and activities. The fundamental role of EPSA is to deliver unbiased energy analysis to DOE leadership on existing and prospective energy-related policies, focusing in part on integrative analysis of energy systems. In addition, EPSA serves as the Secretariat of the Quadrennial Energy Review (QER) across the U.S. Government, with primary responsibility for supporting the White House interagency process and providing to it data collection, analysis, stakeholder engagement, and data synthesis.

To support this effort, INTEK Inc. was contracted to conduct a detailed technical and analytical assessment of the nation's oil and gas infrastructure, focusing on assessing and making recommendations to EPSA regarding the resiliency and vulnerability of the U.S. fuel supply system. In the context of the EPSA vision for infrastructure, resiliency is a sub characteristic of the trait of robustness. A robust energy system will continue to perform its functions under diverse policies and market conditions, and has its operations only marginally affected by external or internal events. Resiliency is the ability to withstand small to moderate disturbances without loss of service, to maintain minimum service during severe disturbances, and to quickly return to normal service after a disturbance.

The purpose of Part I of this study is to characterize U.S. fuels infrastructure to provide the data foundation for a subsequent assessment of its vulnerability to interruption by natural and human forces.

C. Approach

This study describes each element of the nation's fuels infrastructure; details the number and quantity of each type of facility; provides details on the production, storage or transport capacities of quantities of these facilities at the national and regional level; describes the locations of the various facilities and discusses trends in demand, supply, and other major factors driving changes in infrastructure at the national and regional level. Supporting details are provided in appendices.

To analyze U.S. regional fuels resiliency, especially with respect to infrastructure, it is important to define regions, fuels, infrastructure, vulnerability and resiliency.

Regions Evaluated

There are multiple definitions of U.S. regions relevant to energy supply and demand. The regions frequently used for liquid fuels are the Petroleum Administration for Defense Districts (PADDs), created during World War II for the allocation of petroleum products. The regional breakdown used in this study is consistent with the PADD regions, although the exact breakdown may be more or less detailed depending on the energy system and infrastructure. A sub-regional breakdown with more detail is provided in PADDs II and III (Figure 1 and Table 1).

Figure 1: PADDs and Further Subdivisions for Fuels Infrastructure Inventory and Analysis

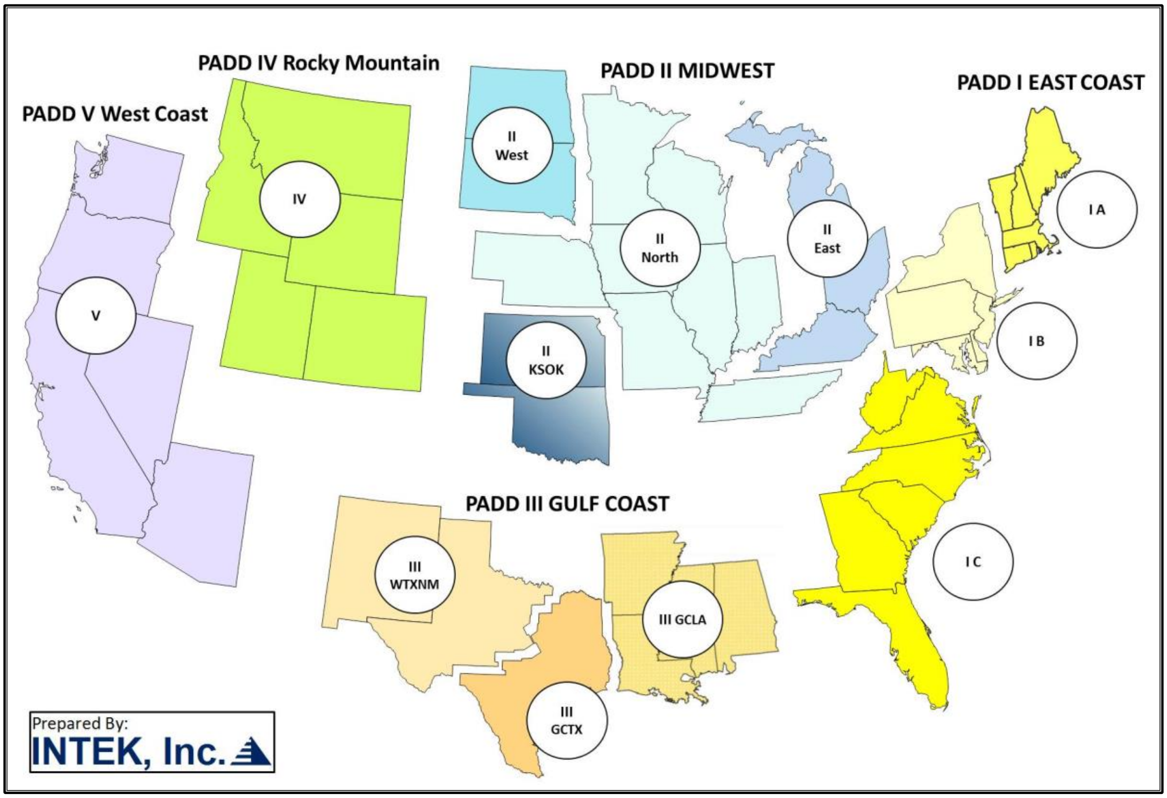


Table 1: Description of PADDs and Sub-PADDS

PADD	Sub PADDs	States / Regions
PADD I (East Coast)	Sub-district A (New England)	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.
	Sub-district B (Central Atlantic):	Delaware, District of Columbia, Maryland, New Jersey, New York, and Pennsylvania.
	Sub-district C (Lower Atlantic)	Florida, Georgia, North Carolina, South Carolina, Virginia, and West Virginia.
PADD II (Midwest)	Sub-district EAST	Michigan, Ohio and Kentucky
	Sub-district NORTH	Illinois, Indiana, Iowa, Minnesota, Missouri, Nebraska, Tennessee, and Wisconsin
	Sub-district KS/OK	Kansas and Oklahoma
	Sub-district WEST	North Dakota and South Dakota
PADD III (Gulf Coast)	GCLA	Alabama, Arkansas, Louisiana, Mississippi (Includes LA, MS, And AL Federal offshore)
	GCTX	East Texas (RRC districts 1-6, including Texas Federal Offshore
	WTX/NM	West Texas (RRC Districts (7b-10) and New Mexico.
PADD IV (Rocky Mountain)		Colorado, Idaho, Montana, Utah, and Wyoming.
PADD V (West Coast)		Alaska, Arizona, California, Hawaii, Nevada, Oregon, and Washington.

Fuels and Infrastructure Considered

Fuels considered in this analysis include natural gas, crude oil and condensates, refined petroleum products, and alternative fuels. The infrastructure considered is primarily the nation's Transportation, Storage, and Distribution infrastructure including crude, gas and fuel delivery systems, as well as processing and storage. Production and end-use infrastructure will be more fully analyzed in a future phase.

- Fuel delivery systems considered include pipelines for natural gas, crude oil, refined petroleum products, NGLs, and condensates; compressor/pumping stations; storage and distribution hubs; rail; barges; and ports; and
- Fuel processing and storage infrastructure considered includes: natural gas storage, treatment and processing; LNG terminals (liquefaction and regasification); crude oil storage, including the Strategic Petroleum Reserve (SPR); refineries; refined product storage, including the Northeast Home Heating Oil Reserve (NEHHOR); and petroleum and alternative fuel retail stations.

This infrastructure is summarized in Table 2 below and discussed in greater detail in the following chapters of this report.

Table 2: Summary of U.S. Oil and Gas E&P and Fuels Transport, Supply and Distribution Infrastructure

Section	Infrastructure Type	Summary
III	**Exploration and Production Infrastructure**	
	Oil Wells	>560,000 producing wells
	Natural Gas Wells	482,822 producing wells
	Offshore Platforms	> 3,500 Gulf of Mexico platforms (85% in shallow waters)
IV	**Crude Oil and Refined Products Infrastructure**	
	Oil Refineries	143 total refineries 139 operating, 4 idle
	Crude Oil Pipelines	51,349 miles of crude distribution 597 MMBbl transferred between PADDs
	Oil Product Pipelines	6 major systems with capacity of 4.29 MMBbl/d
	Oil Rail Terminals	113 terminals Upload capacity: 2MMBbl/d
	Oil Ports	334 Crude & petroleum product ports
	Waterborne Transport	4500 inland tank barges 275 coastal tank barges and Articulated Tank Barges 192 lock systems
	Storage Terminals - Crude Storage Terminals - Products	1,414 crude and product terminals
	Petroleum Reserves	SPR: 691 MMBbl NEHHOR: 1 MMBbl
V	**Natural Gas Transport, Storage, and Distribution Infrastructure**	
	Natural Gas Plants	516 processing plants Total capacity: 64,659 MMcf/d
	Natural Gas Pipelines	~210 Pipeline systems 315,000 miles of transmission pipeline
	Underground Storage	414 Storage Facilities / 9.0 Tcf capacity
	LNG Facilities and Import/Export Terminals	110 LNG Facilities - mostly storage for peak shaving and back-up. 11 Import terminals (17.6 Bcf/d capacity) (3 with I/E capability 3 Export terminals (7.3 Bcf/d capacity)
	Propane Storage and Delivery	13,500 bulk/storage distribution sites
	Propane Stocks	141 Terminals ~37 MMBbl
VI	**Alternative Fuels**	
	Alternative fuels production facilities	269 existing or proposed ethanol plants; Capacity: 15,600 MMGyr 134 biodiesel plants; Capacity: >954 MMGyr
	Alternative fuel transportation	89 CSX east coast rail ethanol terminals 27 CSX rail Uploading Facilities
VII	**Fueling Stations**	
	Conventional fueling stations	110,830 gas stations
	Unconventional fueling stations	17,840 stations Include E85 electric, CNG, hydrogen, LPG, LNG, and biodiesel

III. U.S. Exploration and Production Infrastructure

A. U.S. E&P Infrastructure

The U.S. fuels supply infrastructure is broadly distributed across the nation, including crude oil and natural gas exploration and production operations in more than 30 of the 50 states. The United States has more than 560,000 producing oil wells, and over 482,822 producing natural gas wells (Figure 2).

Since 2005, the nation has seen significant expansion of crude oil and natural gas exploration and production in the Midwest from the Bakken and Eagle Ford tight oil plays and in the east from the Marcellus and Utica shale gas plays. Other smaller tight oil and shale gas plays also contribute to the resurgence of domestic oil and gas production.

The onshore infrastructure supporting this production growth is typical of the oil and gas exploration and production industry, including vertical and directional subsurface wells, gathering lines, storage tanks, and transportation by truck, pipeline, or rail to processing and refining centers.

B. Gulf of Mexico E&P Infrastructure

The offshore Gulf of Mexico exploration and production (E&P) and associated infrastructure profile bears special attention when considering the U.S. fuels supply infrastructure and its vulnerability to natural and physical threats.

The Gulf of Mexico E&P area extends eastward from Brownsville, Texas to the border of Alabama and Florida. It extends southward through the western and central Gulf of Mexico some 300 miles. The eastern Gulf of Mexico remains under an exploration and production moratorium. For the purpose of this analysis, the Lake Charles outer continental shelf (OCS) producing district is considered part of the Gulf Coast Texas (GCTX) sub-PADD of PADD III. The other producing districts are considered to be part of the Gulf Coast Louisiana (GCLA) Sub-PADD.

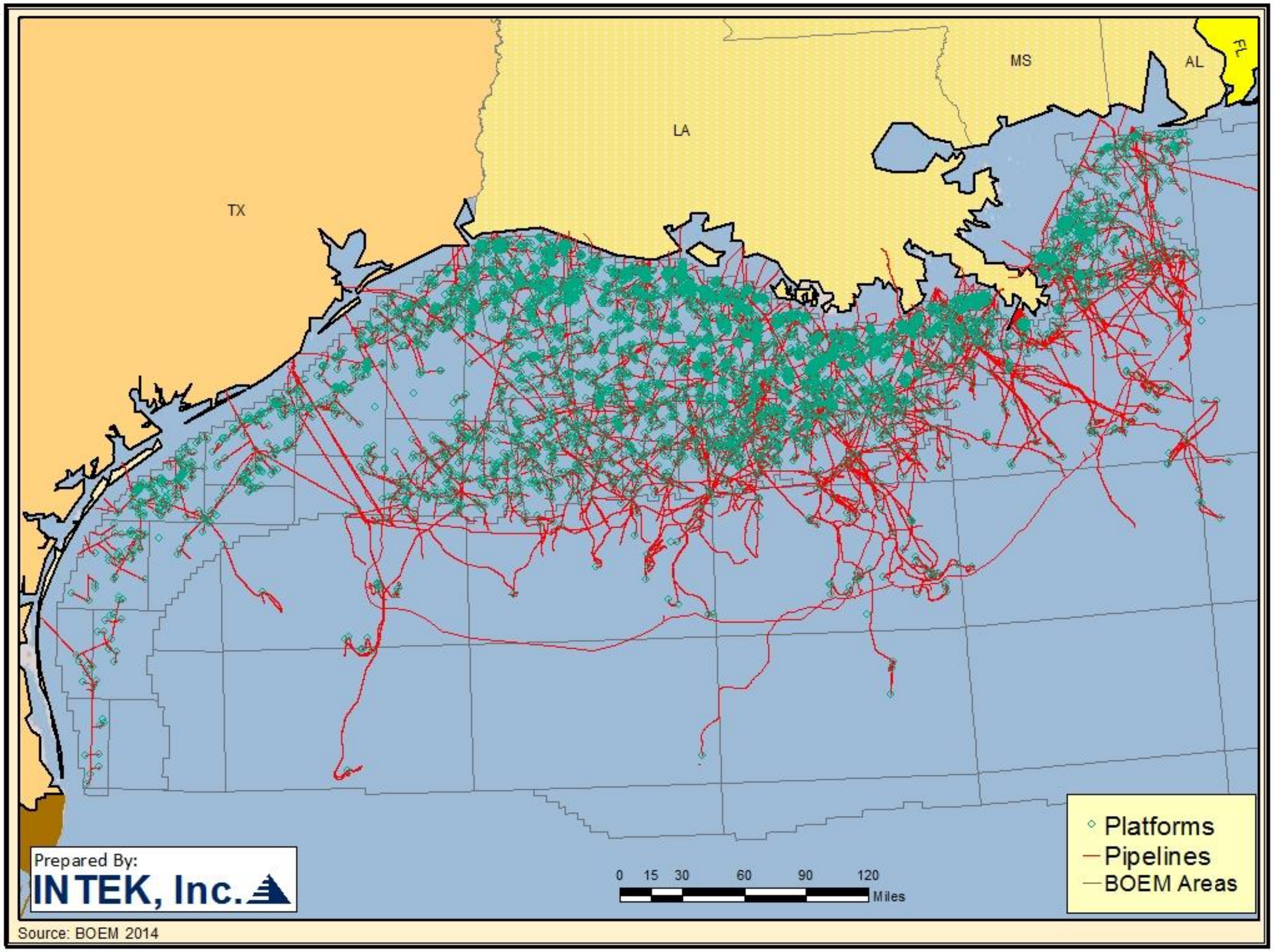
There are over 3,500 drilling and production platforms just in the Gulf of Mexico, of which about 85% are in shallow waters.[2] Hundreds of miles of subsea gathering lines and pipelines connect these wells to oil and gas collection points, and onshore storage terminals (Figure 3). This area is also traversed by shipping channels that serve major ports and refining regions along the Gulf Coast.

All of this offshore E&P infrastructure feeds into the Gulf Coast onshore oil and gas supply infrastructure and is exposed to both natural threats and physical threats and hazards.

The nation's E&P system is supported and augmented by a complex and interdependent Transportation, Storage, and Distribution infrastructure. The E&P elements of the fuel supply infrastructure, as well as the end-use sectors, will be analyzed in greater detail in a subsequent phase of the Department of Energy's Quadrennial Energy Review (QER). It is the TS&D infrastructure that is the subject of this report.

Figure 2: Producing U.S. Oil and Natural Gas Wells (EIA 2014)

Figure 3: Gulf of Mexico Pipeline Infrastructure



IV. Crude Oil and Refined Products Infrastructure

A. Crude Oil Refining

Based on its 2012 gross output of more than $810 billion (14% of U.S. manufacturing output), the refining industry is among America's largest manufacturing sectors.[3] This industry transforms crude oil into fuels, chemical feedstocks, and other key products. Many of these products are day-to-day necessities to the U.S. consumers. The American refineries are a strategic asset for the U.S. Maintaining a viable domestic refinery industry is critical for national economic security.

The industry manufactures nearly 90 percent of the gasoline and ultra-low sulfur diesel (ULSD) consumed in the United States, providing almost 254 million vehicles with high-quality fuel. In addition, these refineries produce approximately 75% of the nation's home heating oil (including ULSD). The U.S. Energy Information Administration (EIA) projects that the United States will continue to rely heavily on oil-derived fuels to meet transportation, industrial, and residential needs for the foreseeable future.

Regional Distribution of Refining Capacity

In the 19th century, U.S. refineries processed crude oil primarily to recover the kerosene. There was no market for the more volatile fractions, including gasoline, which were considered waste. The invention of the automobile shifted the demand to gasoline and diesel, which remain the primary refined petroleum products today. Today, national and state legislation requires refineries to meet stringent air and water cleanliness standards. In fact, U.S. refiners perceive obtaining a permit to build a modern refinery to be so difficult and costly that no new U.S. refineries have been built (though many have been expanded) since 1976. (Two small refineries (20 MBbl/d) are now in construction in the Bakken area.)

More than half the refineries that existed in 1981 are now closed due to low utilization rates and merger and acquisitions activity. As a result of these closures, from 1981 to 1995 total U.S. gross refinery capacity fell, even though the nation's operating refining capacity remained fairly constant at around 15,000 MBbl/d. Increases in facility size and improvements in efficiencies have offset much of the lost physical capacity of the industry.

In 1981, the United States operated 324 refineries with a combined capacity of 18,600 MBbl/d. In 2013, the United States had 139 operating refineries, with a total capacity of 17,815 MBbl/d (Table 3).[4] Excluding PADD 1C, U.S. refineries are running at utilizations between 80 and 95 percent at the average sub-PADD level. Refineries are located in all PADDs.

- The most highly concentrated refining region is PADD III along the Texas and Louisiana Gulf Coast. This area has 47 refineries with a combined operable refining capacity of 8,477 MBbl/d which accounts for over 47.5% of U.S. refining capacity. PADD III is also the home for four of the world's top ten largest refineries, each having operating capacity of over 500 MBbl/d. As the historic locus for most U.S. seaborne crude oil imports, PADD III refineries are primarily designed to process heavier imported crude oils.

- PADD II has an operable capacity of 3,769 MBbl/d and processes mostly heavy Canadian crude.

- PADD V has an operable capacity of 3,029 MBbl/d and processes approximately 50% foreign crude, most of which comes from the Middle East and from Central and South America.
- PADD I has approximately 1,300 MBbl of daily operable refining capacity with nearly all of it located in the Mid-Atlantic states. PADD I operable capacity has declined by more than 400 MBbl/d since 2009, due largely to capital costs associated with compliance with more stringent environmental regulation. (See discussion in next section). This region is dependent upon crude from the Gulf Coast, the Bakken, and Eagle Ford.
- The capacity of the Rocky Mountain Region (PADD IV) was 629 MBbl/d in 2013. PADD IV processes both Canadian and domestic crude.

Table 3: Regional Distribution of U.S. Refineries

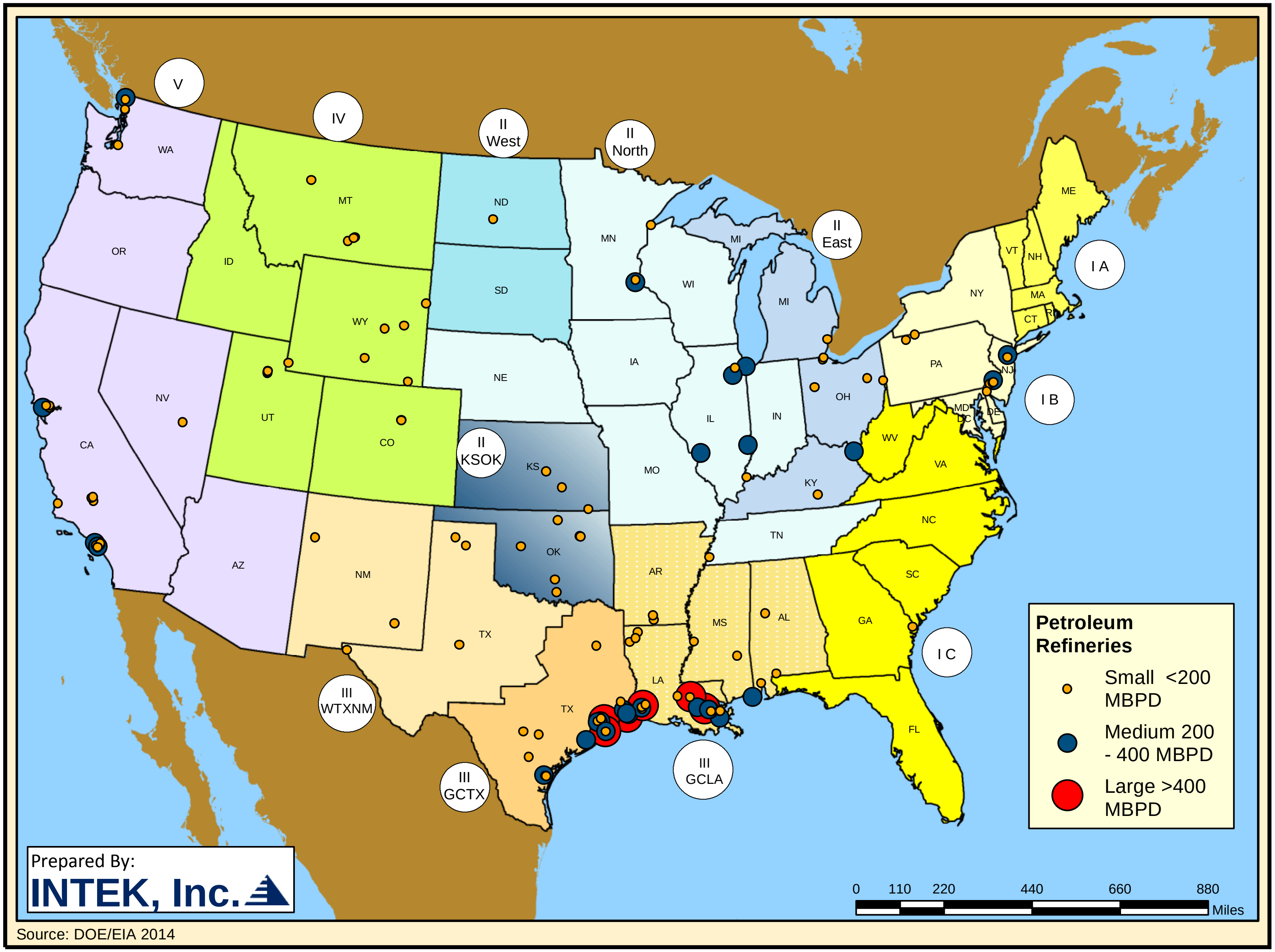
PADD	Sub PADD	No. of Refineries	Operable Capacity (MBbl/d)	Average Utilization (%)
I	A	0	0	-
	B	8	1,245	82.1
	C	2	48	36.3
II	EAST	7	896	93.0
	NORTH	10	1,945	88.8
	WEST	1	68	98.9
	KS/OK	9	860	90.5
III	GCLA	26	3,848	85.3
	GCTX	21	4,637	88.1
	WTX/NM	6	618	95.5
IV	ROCKIES	17	629	92.2
V	WEST COAST	32	3,029	78.2
Total		**139**	**17,824**	**86.1**

Source: 2013 EIA Refining Capacity Survey

Figure 4 shows the U.S. refineries in the Lower-48 states. The nation's major refining centers are located along the Gulf Coast, in Philadelphia PA and Northern New Jersey, in the Midwest, and along the West Coast.

In 2013, U.S. refineries supplied 92% of domestic liquid fuels demand, including gasoline, jet fuel, diesel, and others. The remaining 8% came from either imported products or renewable sources, such as ethanol and biodiesel.

Figure 4: Locations of U.S. Refineries



The Changing Refining Picture

Since 2009, in response to new crude oil supply provided by increased domestic and Canadian production, the U.S. refining industry has undergone significant and substantial changes. Heavy Canadian crude has displaced other foreign oil imports in PADDs II and IV. Refineries in those regions have been reconfigured to accept the heavier feedstock. In the following sections, the major refining changes in the East Coast and the Gulf Coast will be discussed.

Changes in East Coast (PADD I) Refining

Since 2009, refining capacity in PADD I has steadily decreased. East Coast refineries faced low margins, high crude acquisition costs, high capital costs to upgrade facilities to comply with more stringent environmental standards, and stiff competition from European gasoline imports. As a result, many have been idled or closed.

In 2011, three East Coast refineries were closed:

- ConocoPhillips Trainer refinery (185 MBbl/d) in Pennsylvania
- Sunoco Marcus Hook refinery (178 MBbl/d) in Delaware
- Western Yorktown refinery (66 MBbl/d) in Virginia (converted to product terminal in 2012)

In 2012:

- The Perth Amboy Chevron-USA refinery in New Jersey (80 MBbl/d) was shut down and sold to Buckeye. Buckeye is currently converting it into a marine terminal. The closure of these East Coast refineries reduced the volume of locally produced products and increased regional demand for imported ULSD, heating oil, gasoline, and other products.
- The Trainer refinery was purchased by Monroe Energy LLC (Delta Airlines) and reopened in September, 2012.

In 2013:

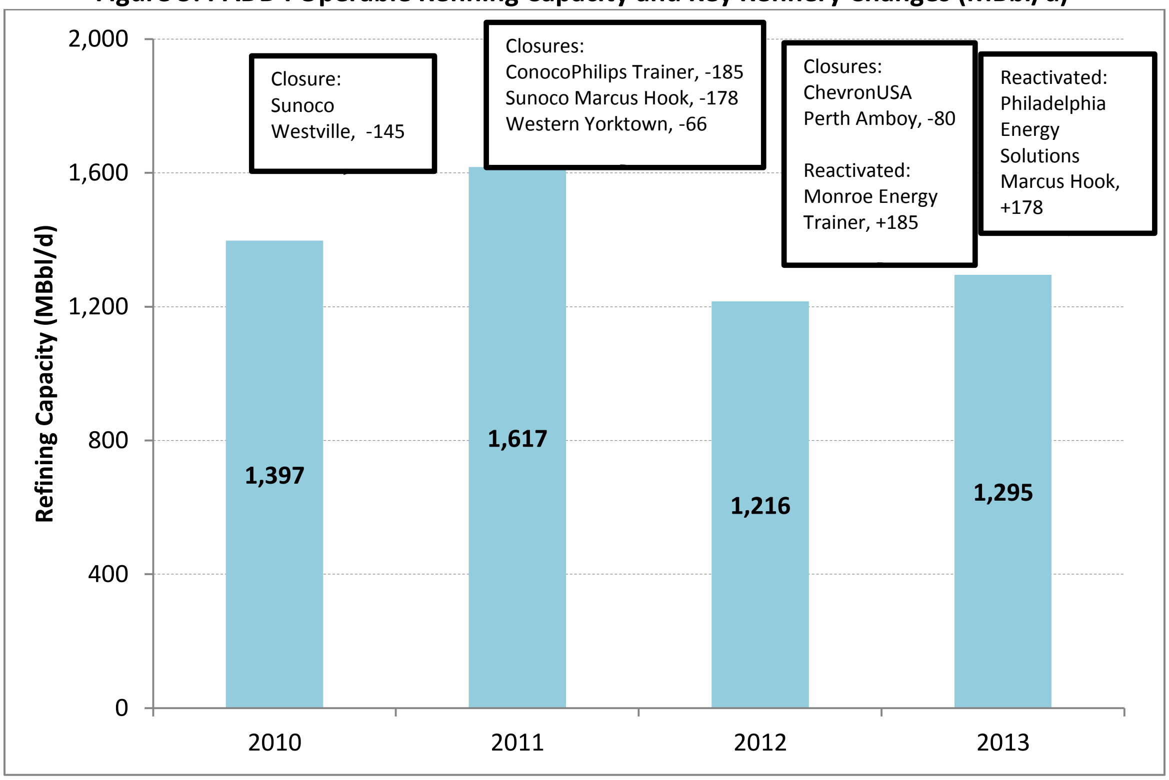
- In response to increased Bakken crude supplies to the east coast via rail, the Marcus Hook refinery (178 MBbl/d) was purchased and reopened by Philadelphia Energy Solutions, a joint venture between the Carlyle Group and Sunoco. PES is also building a rail terminal, with 140 MBbl/d offloading capacity, to accept light sweet crude from the Bakken.

As a result of these developments, the downward trend in East Coast refining capacity was reversed. By the end of 2013, PADD I refining had increased to 1,295 MBbl/d. Figure 5 shows the changes in annual operable refining capacity between 2009 and 2013. The operable capacity (which excludes idled capacity) of refinery closures are often not noted or represented in the EIA data. Refineries may be idle for years before and have stopped being included in overall operable capacity. PADD I operable capacity reflects the scale of the closure or reactivation of East Coast refineries.

While East Coast refineries have been closing, the sources and volumes of imported crude have changed. Foreign receipts in 2013 declined by 414 MBbl/d from the 2009 levels of 950 MBbl/d. The refineries began processing domestic crude in small volumes for the first time since the 1990s. The volume of Canadian crude processed fluctuated between 156 MBbl/d in 2009 and 115 MBbl/d in 2012. In total, the volume of processed crude dropped from 1,106 MBbl/d in 2009 (72% utilization) to 683 MBbl/d in 2012 (65% utilization).

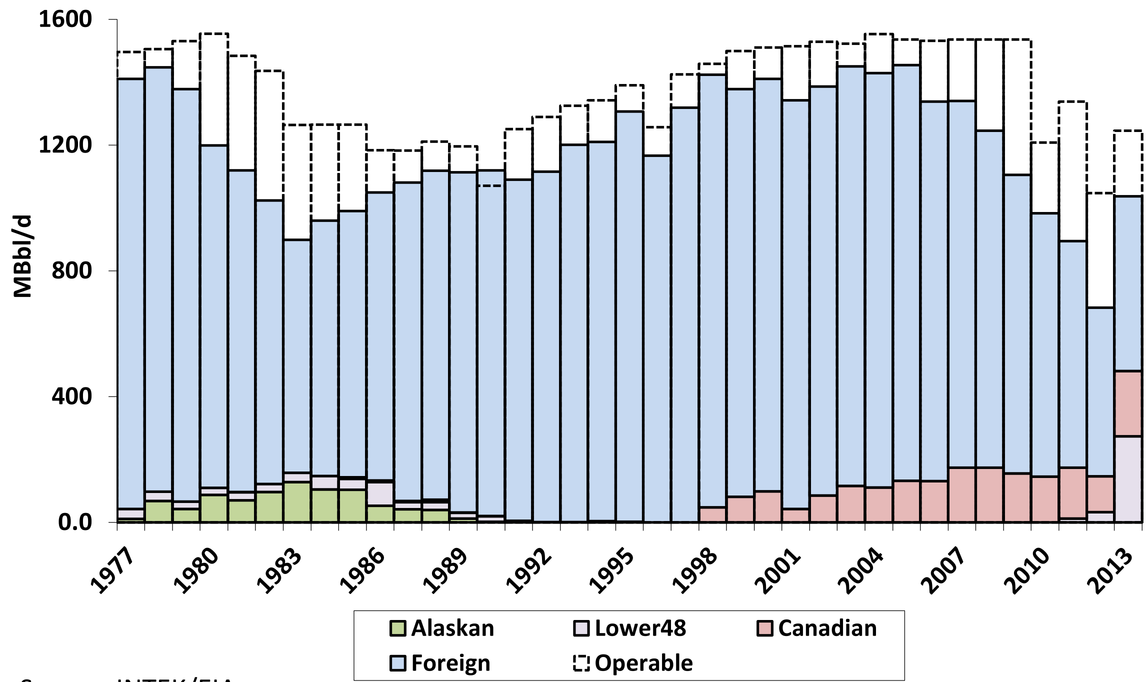
These trends, shown in Figure 6, have increased the reliance of PADD I on products from other PADDs, primarily PADD III via the Colonial and Plantation pipelines and foreign imports.

Figure 5: PADD I Operable Refining Capacity and Key Refinery Changes (MBbl/d)[5]



Source: EIA Historical Data

Figure 6: Delaware, New Jersey, and Pennsylvania Refineries - Domestic and Foreign Receipts



Source: INTEK/EIA

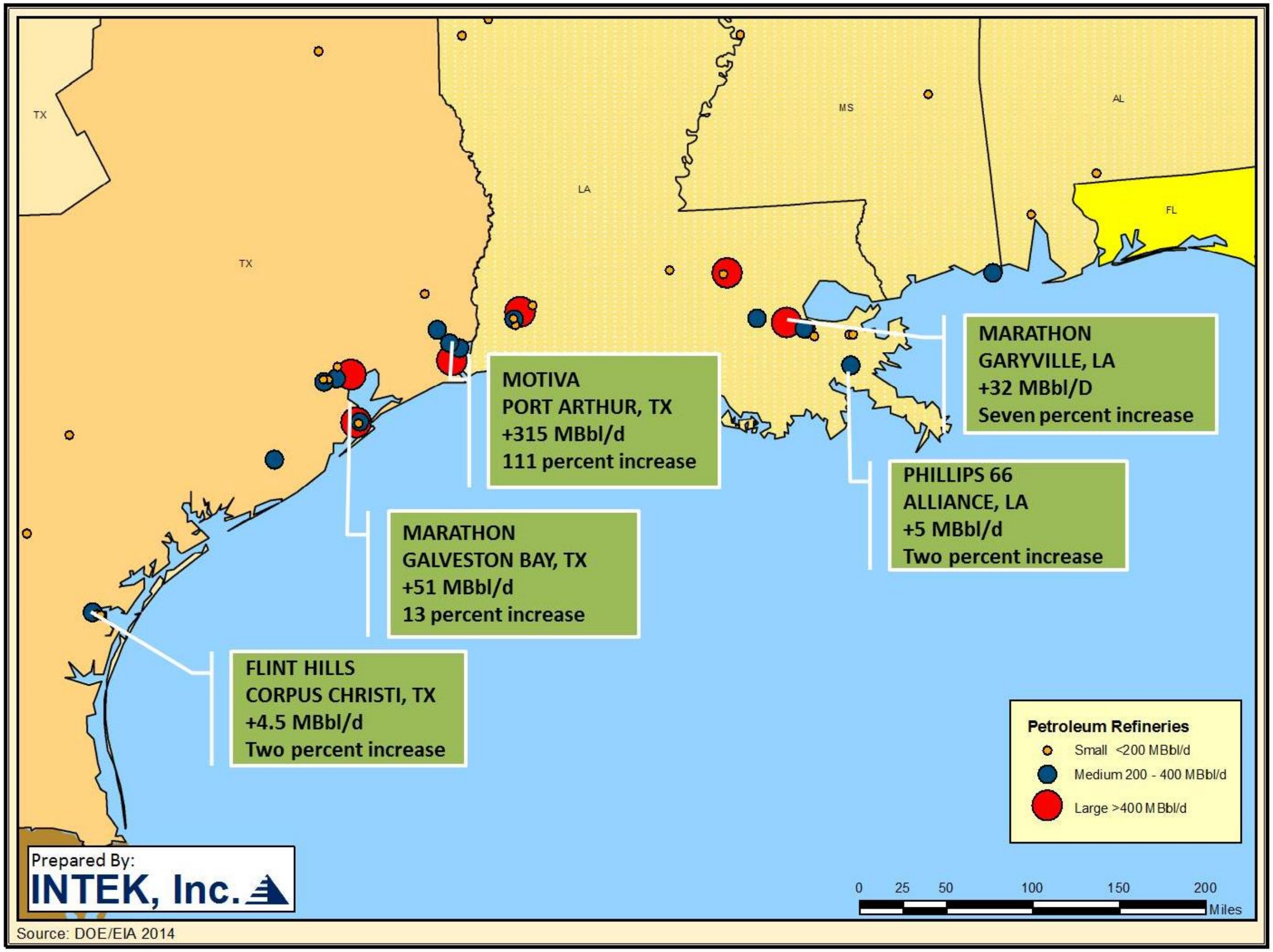
Changes in Gulf Coast Refining

The Gulf Coast area is one of the most important regions for energy resources and infrastructure in the United States. Even as the number of operating refineries in the U.S. has decreased, a continuing pattern of capacity expansions in existing refineries, particularly in PADD III, has enabled the industry to continue to meet the nation's refining needs.

In 2013, refining capacity in the Gulf Coast area increased by 393 MBbl/d or five percent. The suite of 2013 refinery capacity changes in the Gulf (Figure 7) included:

- **Motiva, Port Arthur, TX (315 MBbl/d, 111 percent increase):** The largest capacity expansion took place at the Motiva Port Arthur, TX refinery in 2013, after having completed a five-year construction project that more than doubled the facility's daily processing capacity to 600 MBbl of crude. Originally, the capacity was increased in 2012, but a system failure from a fire led to the new capacity being idled until 2013. The refinery is a joint venture owned half each by Shell and Saudi-Aramco. This expansion also increased Saudi Arabian imports for the region in 2013. The end result is that Motiva-Port Arthur became the largest refinery in North America.

Figure 7: Changes to Gulf of Mexico Refining Capacity (2013)



- **Marathon, Galveston Bay (51 MBbl/d, thirteen percent increase):** The refinery began operation in 1934 as a Pan American Oil refinery. Later it was owned by BP and known as the BP Texas City refinery. Marathon purchased the refinery in 2013. The refinery has a history of accidents, including an explosion in 2005 that killed 15 people and injured more than a hundred others. In 2013, the refinery had a fire and was shut down due to a gasoline leak. Neither incident resulted in enough damage to prevent the facility from increasing its capacity in 2013 by 51 MBbl/d.
- **Marathon, Garyville LA, (32 MBbl/d, seven percent increase):** Completed in 1976, (the last built U.S. refinery) Garyville receives crude oil delivered via the Mississippi River and the Louisiana Offshore Oil Port (LOOP) and from Gulf of Mexico production. In 2009 the crude oil refining capacity was expanded by 108 MBbl/d, making it the third largest refinery in the U.S. In addition to its recent capacity increase of 32 MBbl/d, there are plans for a new expansion to be completed by 2018. The Residual Oil Upgrade Expansion, or ROUX, would enable the company to convert a byproduct of the refining process – heavy residual oil – into approximately 1.2 million gallons per day of ultra-low sulfur diesel (ULSD).
- **Phillips 66, Alliance, LA (5 MBbl/d, two percent increase):** Alliance began operations in 1971. It is one of the last refineries built in the United States. On May 1, 2012 ConocoPhillips split into two separate publicly-traded companies: an upstream company that retains the name ConocoPhillips and concentrates on E&P, and a downstream company, Phillips 66, that owns the refining and marketing (R&M), chemicals, and midstream business segments. Alliance is located on the Mississippi River in Belle Chasse, LA., south of New Orleans. The refinery processes light, low-sulfur crude oils received from domestic Gulf of Mexico producers via pipeline and from West Africa producers by pipeline via LOOP. This single-train refinery has a simple design and distributes products to customers in the Southeastern and Eastern states via major common-carrier pipeline systems and by barge.
- **Flint Hills, Corpus Christi, TX (4.5 MBbl/d, two percent increase):** The current plan for this refinery is optimization so that the Eagle Ford crude can supply a higher component of its input. While a major optimization effort has been planned, no new capacity additions have been started. The optimization will include: 1) modifying existing equipment configurations, 2) upgrading control technologies, 3) changing operating practices, and 4) eliminating some existing equipment.

Future Changes in the PADD III Gulf of Mexico Region

Refinery upgrades that increase refining capacity (called optimizing) are a continuous process that allows refiners to capitalize on current infrastructure, and upgrade aging machinery. One such upgrade will be conducted by Valero, which is adjusting its refineries in Houston and Corpus Christi to refine an additional 160 MBbl/d of oil from the Eagle Ford by 2015. Valero will also expand refining capacity in the Texas Panhandle by 25 MBbl/d in 2015. Smaller refiners also are trying to boost their output. For example, the Calumet refinery in San Antonio, TX is expanding its jet fuel production capacity to 2.9 MBbl/d by 2015.

New Splitters and Toppers

Several plants capable of processing the ultralight oil extracted from the Eagle Ford shale formation in South Texas are slated for construction. These very simple plants are called "splitters" or "toppers." They take the very light oil one refining step closer to becoming gasoline and diesel. Then the half-processed fuel can be shipped to Latin America, Europe and Asia, where local refiners finish the job. According to the Wall Street Journal, "*Eighteen splitter projects planned in the U.S. Gulf Coast, the Midwest and the Rocky Mountain region will help increase refining capacity by as much as 600,000 barrels a day.*"[6] (The equivalent of three large refineries). Splitter projects on the Gulf Coast include:

- Kinder Morgan Energy Partners, Houston Ship Channel, TX, 100 MBbl/d
- Magellan Midstream Partners, Corpus Christi, TX, 100 MBbl/d
- CCI Corpus Christi, TX 100 MBbl/d

Refinery Investment Plans

According to published reports, the U.S. refining industry has spent more than $85 billion in capital expenditures since 2005. U.S. refiners have invested over $128 billion for environmental upgrades for producing cleaner fuels since 1990. U.S. refineries will continue to undergo upgrades, modifications and expansions. Since the late 1970s, no new refineries have been built in the United States. Most refinery upgrades have focused on improving capability to refine heavy and sour imported crude oils. Because refining the light sweet crude requires much taller distillation columns, Bakken and Eagle Ford crudes cannot be processed in heavy oil refineries, unless blended with the heavier crudes. Several refineries are making substantial investments to respond to the increased supply of heavy Canadian crude and light tight oil from the Bakken and the Eagle Ford.

- BP is reconfiguring its Whiting, IN refinery.[7] The reconfiguration, which includes a coker, crude unit, and hydrotreater, will allow the refinery to process heavy sour crude as more than 80% of feedstock. Before the reconfiguration, BP Whiting was only able to process 20% heavy sour oil.
- A similar reconfiguration is occurring at the Lima, OH refinery owned by Husky Energy Co. Husky has approved a $300 million upgrade project to increase the heavy oil processing capacity by 40 MBbl/d. The current capacity of the refinery is 155 MBbl/d. The project is expected to be completed in 2017.
- Valero is responding to increasing Eagle Ford production with reconfiguration projects at its Houston and Corpus Christi refineries.[8] The $730 million dollar projects, which are expected to be completed by the end of 2015, will expand light sweet crude processing capabilities by 90 MBbl/d and 70 MBbl/d respectively. The overall capacity of the refineries will not increase.
- Two new small greenfield refineries (operating capacity of ~20 MBbl/d each) are planned in North Dakota, and two existing refineries are adding capacity to process stranded Bakken light sweet crude oil.

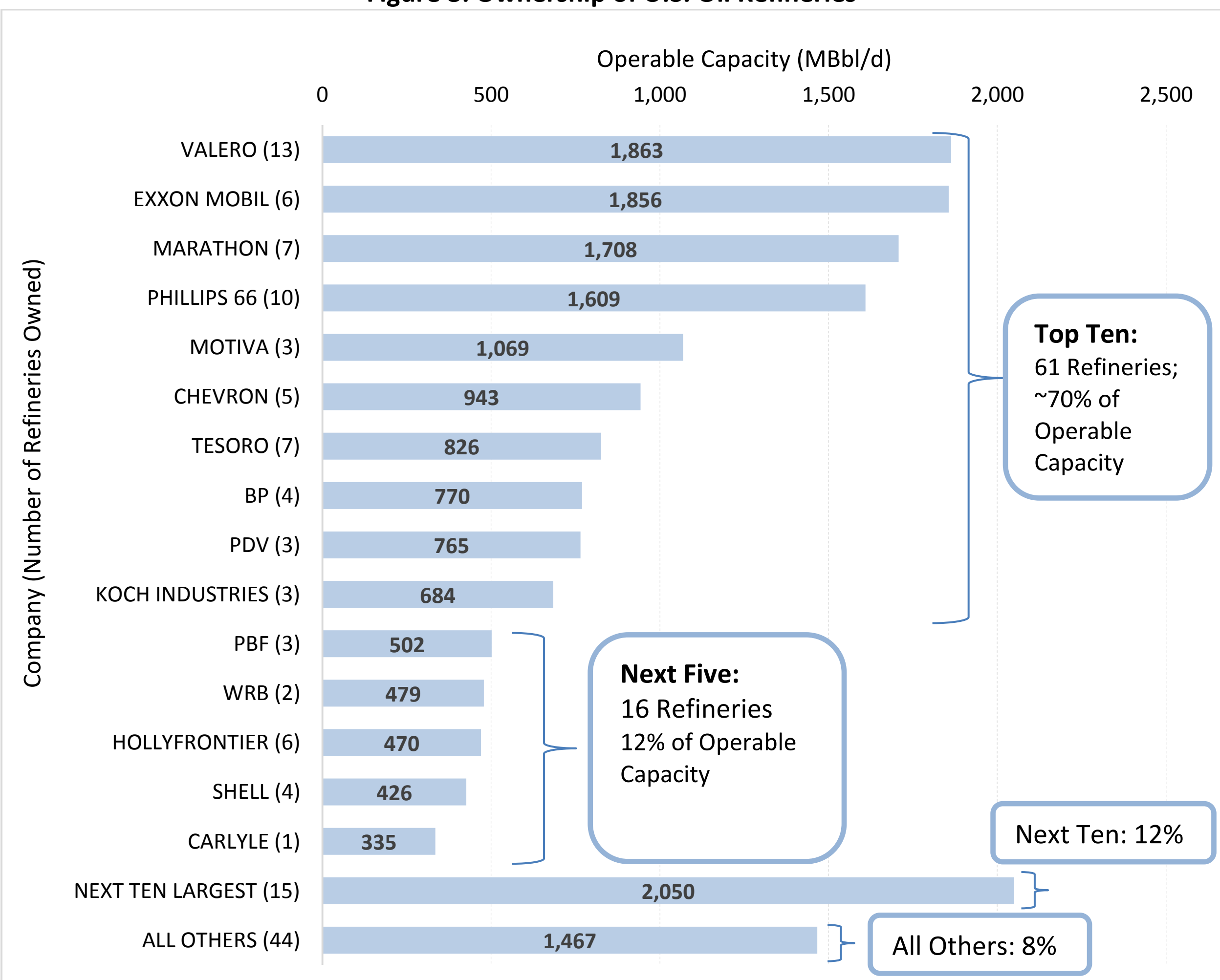
In total, about 317 MBbl/d of capacity may be added (Table 4). Details are provided in Appendix A.2.

Table 4: Summary of Planned Refinery Expansions

PADD	Sub PADD	Added Capacity (Bbl/d)
II	EAST	53,000
II	KS/OK	60,000
II	WEST	50,000
III	GCTX	90,000
III	WTXNM	25,000
IV	ROCKIES	39,000
Total		**317,000**

Source: Worldwide Construction Update, Oil and Gas Journal, May 5, 2014

Figure 8: Ownership of U.S. Oil Refineries



Source: 2013 EIA Refinery Capacity Survey

Refinery Ownership

Fifty-seven companies own and operate 139 U.S. refineries.[9] Figure 8 (above) shows the number and capacity of the refineries owned by the top 25 companies and their share of the total U.S. capacity.

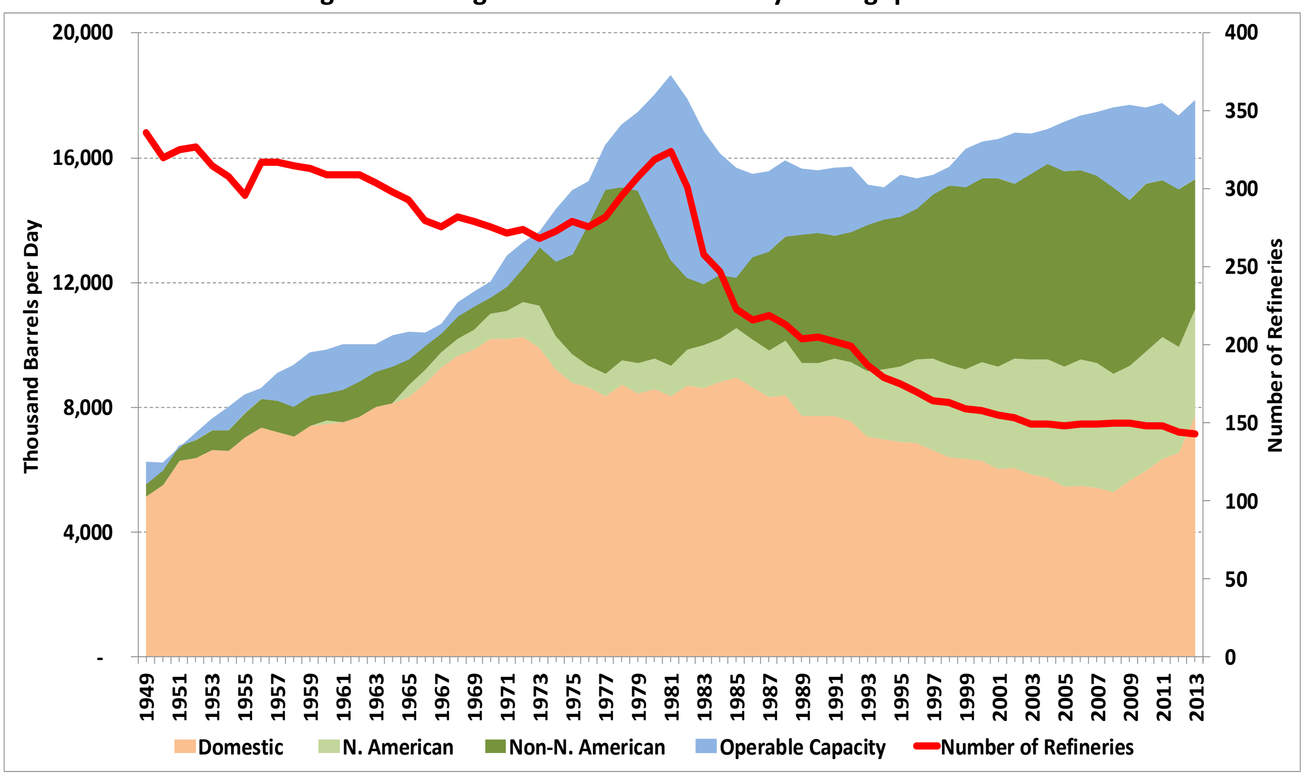
- The 10 largest companies own 61 refineries (68% of U.S. refineries). These refineries have 12,070 MBbl/d of capacity, representing approximately 70% of total U.S. refining capacity).
- The next five largest companies own 16 refineries (~12% of capacity).
- Combined, these top 15 companies own and operate 14,305 MBbl/d of capacity accounting for more than 80 percent of U.S. refining.

Refinery Capacity and Throughput

U.S. domestic crude production fell from a peak of approximately 10 MMBbl/d in 1973 to almost five million barrels by 2008. By 2008, U.S. refiners were importing more than 60% of the crude that they processed (Figure 9). During the same period, the number of U.S. refineries declined, falling from 324 in 1981 to about 139 in 2013.

With the emergence of the shale oil production boom, starting in 2009, domestic crude production increased sharply. This resulted in reduced foreign crude imports. 2013 refinery throughput was 15,315 MBbl/d of crude, of which 7,605 MBbl/d came from domestic sources and 7,710 MBbl/d were imports.

Figure 9: Foreign and Domestic Refinery Throughputs



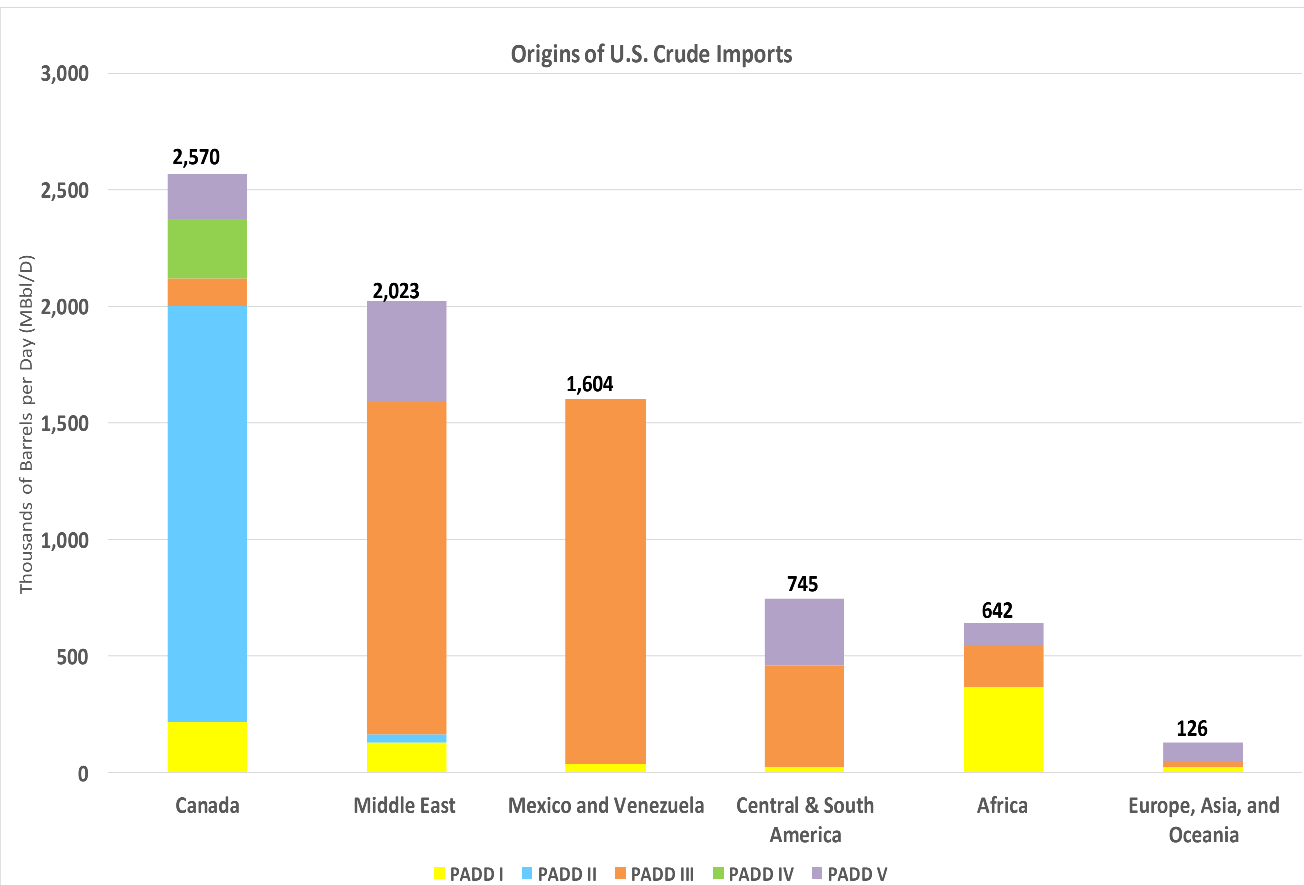
Source: EIA

On average, the U.S. processed 50% foreign and 50% domestic crude in 2013. The foreign crude was imported from over 40 countries in six regions:

- **Africa:** Algeria, Angola, Cameroon, Chad, Congo, Egypt, Equatorial Guinea, Gabon, Ghana, Ivory Coast, Libya, Mauritania, Nigeria.
- **Canada**: Canada.
- **Central and South America:** Argentina, Belize, Bolivia, Brazil, Colombia, Ecuador, Guatemala, Peru, and Trinidad and Tobago.
- **Europe, Asia, and Oceania:** Australia, Brunei, China, Indonesia, Italy, The Netherlands, Norway, Russia, Thailand, United Kingdom, and Vietnam.
- **Mexico and Venezuela:** Mexico and Venezuela.
- **Middle East:** Azerbaijan, Iraq, Kuwait, Oman, and Saudi Arabia.

In 2013, import sources, ordered by volume, were Canada (2,570 MBbl/d), the Middle East (2,023 MBbl/d), Mexico and Venezuela (1,604 MBbl/d), Central and South America (745 MBbl/d), Africa (642 MBbl/d), and Europe, Asia, and Oceania (126 MBbl/d) (Figure 10).

Figure 10: Refinery Receipts by Region (2013)



Source: 2013 EIA

- While Canadian imports have spread to all PADDs, the overwhelming majority are received in PADD II. Only a small portion, 118 MBbl/d, reached the Gulf Coast refineries in 2013 via pipeline and tanker. However, with the current and planned infrastructure changes, discussed in later sections of this report, that situation is sure to change in upcoming years.
- Most of the Middle East imports are received in PADDs I, and III. The majority of these imports are going to the Saudi-owned Motiva Refineries.
- Heavy crude imports from Mexico and Venezuela are mostly received in the PADD III refineries. Much of the heavy crude is going to Citgo refineries.
- Crude from Central and South America, primarily received in PADD III, are also received by refineries in PADDs I and V.
- African imports are received in PADD I, III, and V with the majority consumed in PADD I refineries.

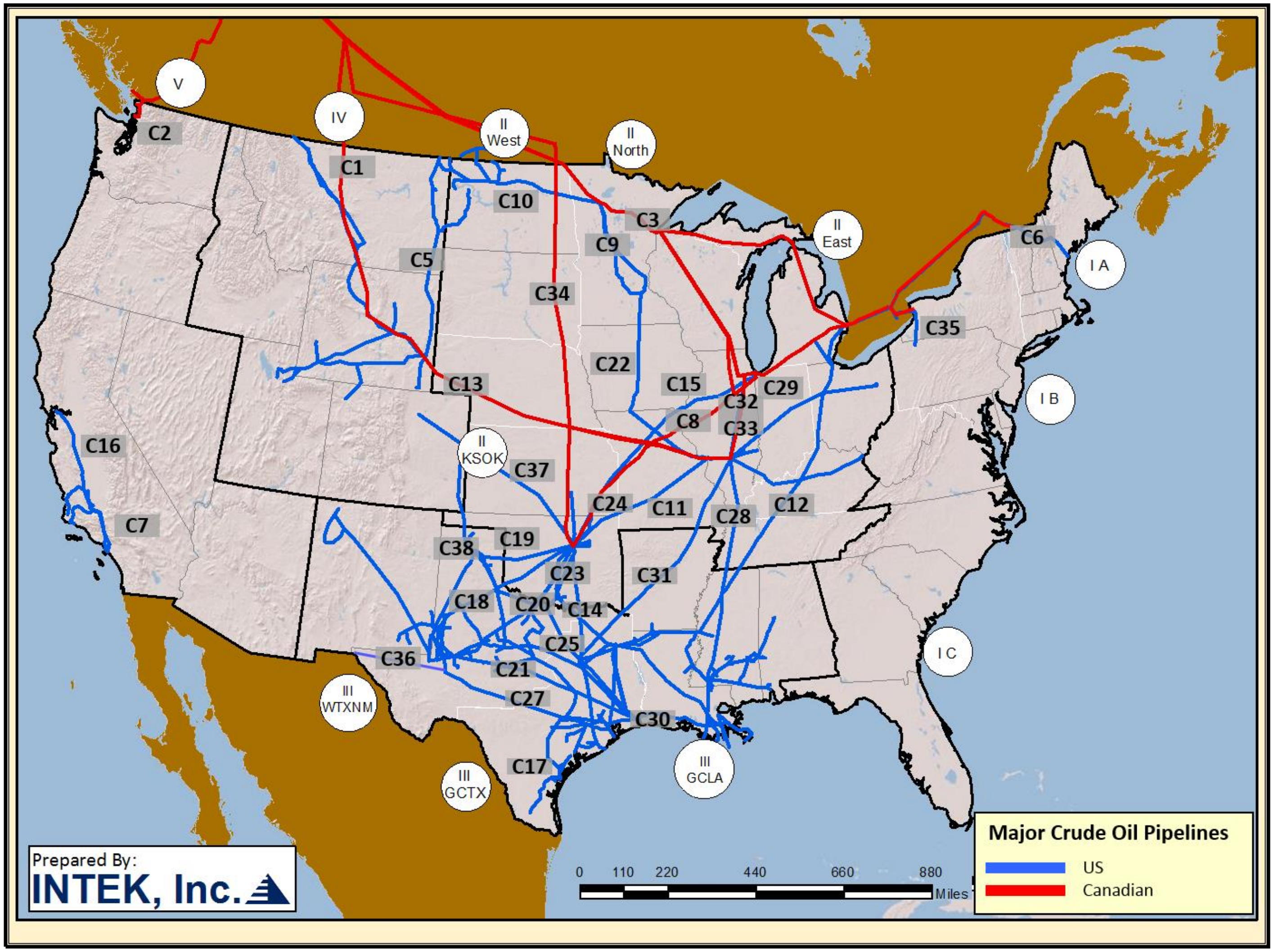
B. Crude Oil Pipelines

Pipelines are the most common mode of transport for shipping crude oil in the United States. There are 51,349 miles of crude distribution pipelines (Figure 11).

The top 10 pipeline companies operate nearly 27,500 miles of pipeline, just over 50 percent of the total. In 2013, 597 million barrels of crude oil were transported between PADDs via pipeline.[10] The highest concentration of pipelines is in the Gulf Coast region which is home to approximately 50 percent of the nation's refining capacity.

The major U.S. crude pipeline systems illustrated in Figure 11 are described in Table 5.

Figure 11: Major U.S. Crude Oil Pipeline Systems



Source: EIA

Table 5: Major U.S. Crude Oil Pipelines

Map Key	Crude Oil Pipeline	Origin		Destination		Max Flow Capacity (MBbl/d)
		City	St	City	St	
C6	Portland	Portland	ME	Montreal	CAN	109
C7	Pacific	Bakersfield	CA	Los Angeles	CA	130, 105
C8	Spearhead South	Flanagan	IL	Cushing	OK	193.3
C9	Minnesota	Clearbrook	MN	Minneapolis	MN	465
C10	North Dakota System	Minot	ND	Clearbrook	MN	210
C11	Ozark	Cushing	OK	Wood River	IL	215
C12	Mid-Valley	Longview	TX	Lima	OH	240
C13	Platte	Caspar	WY	Wood River	IL	145
C14	Seaway	Cushing	OK	Houston	TX	850
C15	Flanagan	Flanagan	IL	Cushing	OK	600
C16	Junction to Rodeo Refinery	Los Angeles	CA	San Francisco	CA	84
C17	Koch Pipeline	Pettus	TX	Corpus Christi	TX	250
C18	Centurion	Midland	TX	Cushing	OK	350
C19	Borger	Odessa	TX	Borger	TX	118
C20	Plains	Midland	TX	Cushing	OK	27
C21	Amdel	Midland	TX	Houston	TX	310
C22	Wood River	Hartford	IL	St. Paul	MN	90
C23	Basin	New Mexico	NM	Cushing	OK	350
C24	Coffeyville-Cherokee	Platte	MO	Wichita	KS	145
C25	West Texas Gulf	Port Arthur	TX	Midland	TX	300
C26	Trans Alaska Pipeline System	Prudhoe Bay	AK	Valdez	AK	2,000
C27	Longhorn	San Juan	NM	Houston	TX	225
C28	Capline	Saint James	LA	Patoka	IL	1,175
C29	Spearhead North	Flanagan	IL	Griffith	IN	135
C30	Ho-Ho	Houston	TX	Saint James	LA	300
C31	Pegasus	Patoka	IL	Nederland	TX	96
C32	Chicap	Patoka	IL	Chicago	IL	360

Map Key	Crude Oil Pipeline	Origin		Destination		Max Flow Capacity (MBbl/d)
		City	St	City	St	
C33	Mustang	Chicago	IL	Patoka	IL	100
C35	Kiantone	Buffalo	NY	Warren	PA	74
C36	Western Refining	McCamey	TX	El Paso	TX	100
C37	White Cliffs	Platteville	CO	Cushing	OK	150
C38	Sunoco - Central West	Corsicana	TX	Wichita Falls	TX	180

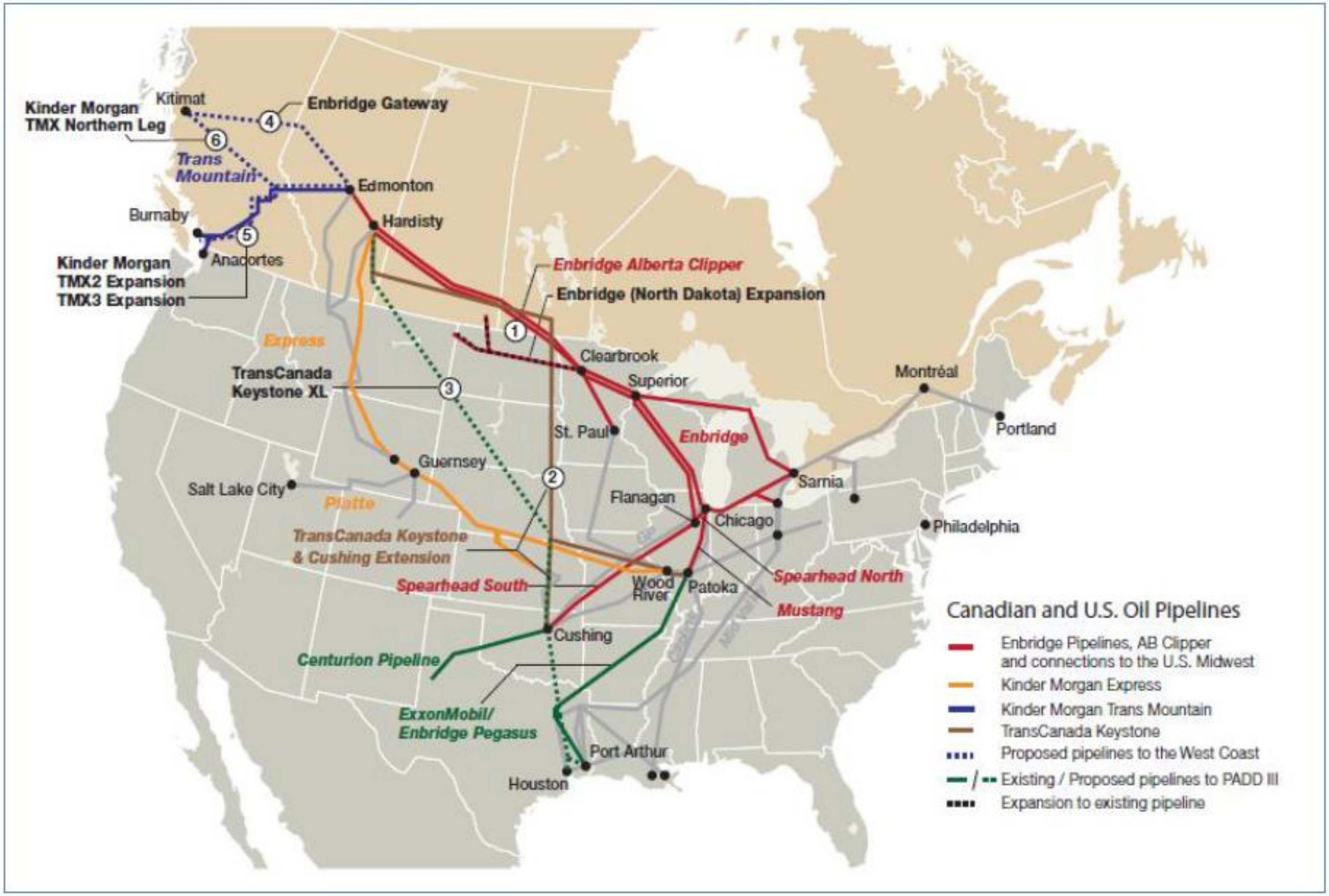
Canadian Crude Oil Pipelines

Four major Canadian pipelines connect the hubs in Alberta, Canada with markets in the northern United States (Figure 12). These are the Enbridge Mainline, the Kinder Morgan Trans Mountain pipeline, the Kinder Morgan Express pipeline, and the TransCanada Keystone Pipeline (which is distinct from the proposed TransCanada Keystone XL Pipeline) (Table 6). Two additional pipelines, Spearhead and Mustang, bring Canadian crude deeper into PADD II. These pipelines have a combined capacity of nearly 4.0 MMBbl/d with plans to expand to over 5.4 MMBbl/d by 2017.

Table 6: Major Canadian Crude Pipelines

Map Key	Crude Oil Pipeline	Origin		Destination		Max Flow Capacity (MBbl/d)
		City		City	State	
C1	Express	Hardisty	CAN	Caspar	WY	280
C2	Transmountain - Puget Sound System	Edmonton	CAN	Puget Sound	WA	300
C3	Lakehead	Edmonton	CAN	Detroit	MI	2,500
C5	Butte-Bridger-Plains	Regina	CAN	Guernsey	WY	118
C34	Keystone	Hardisty	CAN	Wood River, Patoka, Cushing	IL, Il, OK	591

Figure 12: Major Canadian Crude Oil Pipeline Systems



Source: Canadian Association of Petroleum Producers (CAPP) - CIM Magazine April 2013

Reorientation of U.S. Crude Pipelines

For several decades, the United States has imported large volumes of crude oil to replace declining domestic crude oil production and meet the nation's demand for refined products. The most significant volumes of foreign oil imports were received in the Gulf of Mexico (PADD III) and sent north by pipeline to meet refinery demand in the Mid-Continent region. These major northward pipelines included Capline, Seaway, and Mid-Valley. Imported oil was also received at East Coast and West Coast ports and refineries.

2010 was a turning point in U.S. crude pipeline infrastructure. Domestic crude oil production increased in the Bakken, ND and Eagle Ford, TX areas, and supplies of heavy synthetic crude oil increased from Canada. Canadian-sourced heavy synthetic crude oil initially feeds U.S. northern refineries. Any excess crude from the north that is not taken by these northern refineries flows onward into the Mid-Continent to the major storage and distribution hubs at Cushing, OK and Patoka, IL.

Until the Seaway Pipeline reversal in 2012, the Exxon Pegasus, with a maximum capacity of 96 MBbl/d, was the only pipeline able to bring Canadian crude to U.S. Gulf Coast refineries.[11] With no additional outbound capacity for excess crudes to flow into the Gulf Coast area, the excess crude was diverted into the available storage capacity at the Cushing and Patoka terminals.

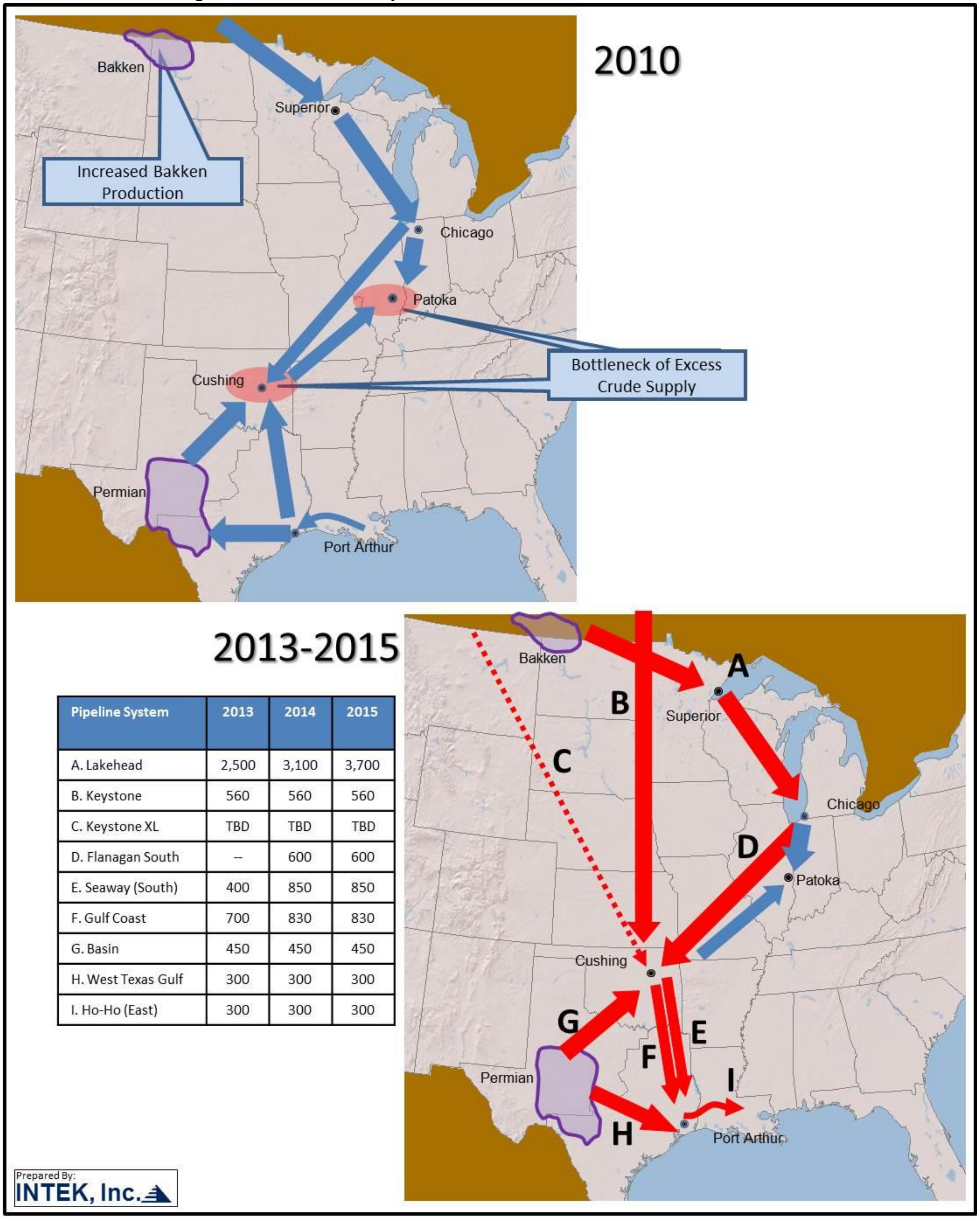
The options for northern bound imports and domestic crudes for penetration into the Northern Illinois markets were also constrained by this new domestic and Canadian supply. As a result, the market price of excess supplies accumulating at Cushing and Patoka, mostly Western Canadian Syncrude (WCS) and Alberta Light crudes, became discounted to WTI, LLS, Maya, and Brent. The heavy WCS became almost 33 percent cheaper than the imported Maya crude and Alberta light was in 2013 approximately fifteen percent cheaper than the Louisiana Light Sweet (LLS) crude.[12]

With the continued expansion of domestic resources and Canadian imports, new outlets for crude flows were needed. Companies began searching for alternative ways to transport their crude from the Mid-Continent to the Gulf Coast refineries, including pipeline expansions and reversals, and shipment by rail in lieu of pipeline (to be discussed later).

The pipeline reversals and expansion efforts, started in 2012 and expected to continue through 2015, are shown in Figure 13 and described below. A timeline of the planned reversals and expansions, between 2012 and 2015, is provided in Figure 14. In the Figure, changes are color coded according to the pipeline system affected.

- **Seaway Reversal:** Enbridge and Enterprise, the co-owners of the joint venture pipeline, reversed the northbound pipeline in 2012 to bring crude from Cushing, OK to the Gulf Coast at Freeport, Texas. Initial capacity was 150 MBbl/d. With additional pumping capacities added in January 2013, they then brought the pipeline to full capacity to 400 MBbl/d in 2013 (Figure 14). It is currently undergoing a capacity expansion to 850 MBbl/d.

Figure 13: Historical Pipeline Flows between PADD II and PADD III



Pipeline System	2013	2014	2015
A. Lakehead	2,500	3,100	3,700
B. Keystone	560	560	560
C. Keystone XL	TBD	TBD	TBD
D. Flanagan South	--	600	600
E. Seaway (South)	400	850	850
F. Gulf Coast	700	830	830
G. Basin	450	450	450
H. West Texas Gulf	300	300	300
I. Ho-Ho (East)	300	300	300

Source: U.S. Strategic Petroleum Reserve, 2014

- **Ho-Ho Reversal:** Shell reversed the Houma-to-Houston (Ho-Ho) pipeline system in order to bring crude from Houston, TX to Houma, LA. The system consists of two segments: the first between Houston and Port Neches (capacity 250 MBbl/d) and the second between Port Neches and Houma (360 MBbl/d capacity). In December 2013, Shell announced that they had completed the second segment and a 500 MBbl/d line from Houma to the LOOP hub in Clovelly, LA. They are planning an additional 300 MBbl/d segment to ferry crude from Houma to St. James. The company intends to add pumping stations and increase daily capacity for the two segments (Houston to Port Neches and Port Neches to Houma) by 50 MBbl and 15 MBbl respectively. These expansions are expected to be completed in 2014.[13]
- **Gulf Coast Market Link:** Owned by TransCanada, Market Link brings crude oil from Cushing, OK to Houston, TX. The capacity of the pipeline is 700 MBbl/d and could be expanded to 830 MBbl/d. Market Link began delivering crude in January 2014 and is projected to have an average delivery rate of 525 MBbl/d in 2014. Market Link is the southern leg of TransCanada's proposed Keystone XL pipeline project.
- **Longhorn Reversal:** In early 2013, Magellan reversed its Longhorn pipeline system between Houston and El Paso, TX. The reversed pipeline brings crude from Crane, TX to the Houston refineries. The initial capacity of the pipeline was to be 135 MBbl/d. Due to high demand, the full capacity of the pipeline of 225 MBbl/d was reached before May 2013. Magellan has announced another potential expansion, 50 MBbl/d that would be completed mid-2014.
- **Seaway Extension to ECHO Terminal:** Enterprise Products Partners LP completed a new oil pipeline connecting the recently reversed Seaway Pipeline and the Houston refineries in the second half of 2013. Specifically, the new connection line originated at the Jones Creek, TX, terminal at the end of the Seaway line and extended to Enterprise's ECHO terminal on the Houston Ship Channel.
- **Flanagan South:** Enbridge is currently constructing the Flanagan South Pipeline Project, a 600-mile, 36-inch diameter interstate crude oil pipeline with a capacity of 600 MBbl/d. It originates in Flanagan, IL and terminates at the Cushing hub in Oklahoma. The pipeline was designed to parallel Enbridge's existing Spearhead crude oil pipeline right-of-way. The pipeline was expected to enter service in 2014.[14]
- **Enbridge Southern Access:** Enbridge is constructing the Southern Access Extension pipeline. The 165-mile, 24-inch diameter pipeline will transport 300 MBbl/d of crude oil from Pontiac, IL, at Enbridge's Flanagan Terminal where it will receive crude oil from Enbridge's Lakehead System, to Patoka, IL. The anticipated in-service date for the pipeline is in the second quarter of 2015.
- **BridgeTex Pipeline:** The BridgeTex pipeline is a new crude oil pipeline that will be operational in 2014, connecting Colorado City to Houston via the Magellan East Houston Terminal with a capacity of 300 MBbl/d. During the second quarter of 2014, BridgeTex Pipeline Company, LLC started filling terminals at Colorado City, Texas as a pre-requisite for the line becoming operational in the third quarter of 2014The 450 miles of newly constructed pipeline transfers crude into Magellan's Houston distribution system, which includes the bi-directional West

Columbia Pipeline and connecting to the Ho-Ho line and the Magellan distribution interconnects. The interconnects allow connectivity to all the Houston Refiners. The company is owned by Magellan Midstream Partners and Occidental Petroleum Corporation.

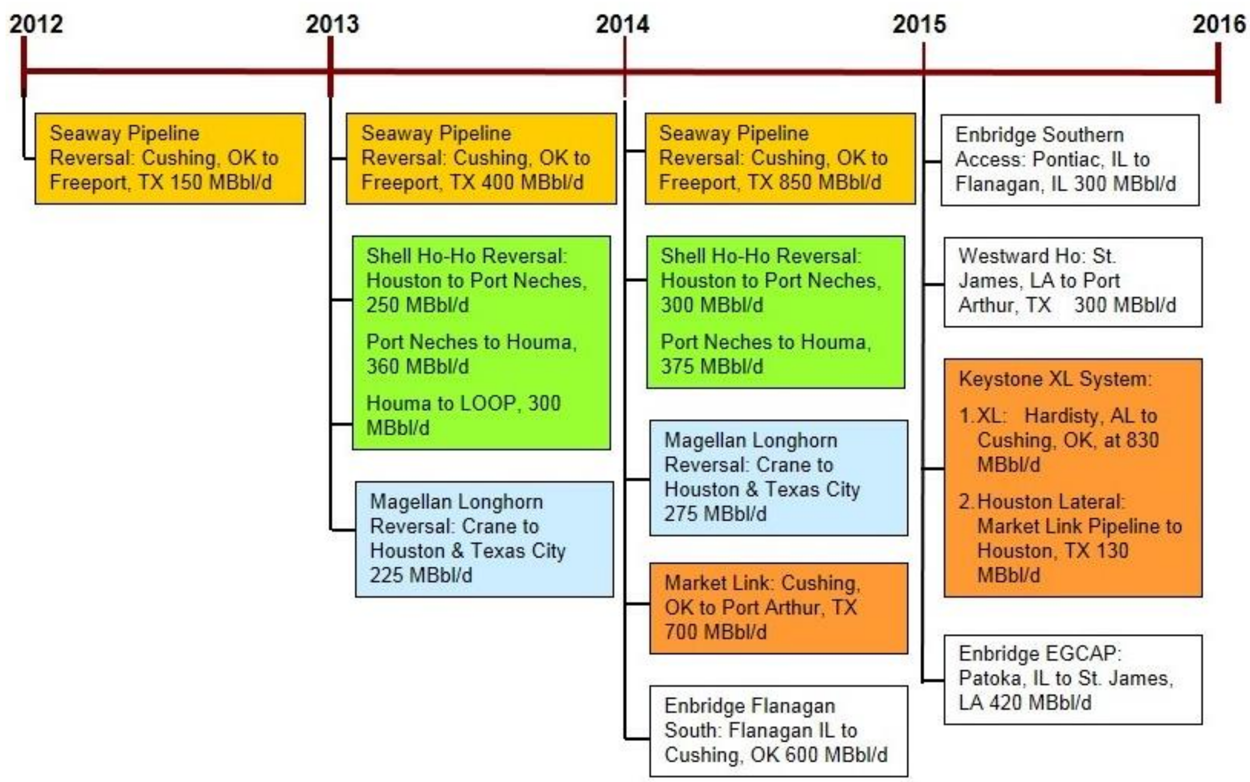
- **Canadian Pipelines:** The Canadian pipelines bringing crude to the U.S., including Trans Mountain, Line 69, Line 61, Line 9, and Line 9b, are all increasing capacity to accommodate growth in the Canadian Oil Sands production and to facilitate delivery of the Western Canadian Syncrude to markets in the United States.

Other proposed pipelines, still being planned, would bring additional crude to major refining centers in the Gulf Coast region. Descriptions of these projects are provided below.

- **Westward Ho:** Shell is building a 226 mile pipeline, the Westward Ho, between St. James, LA and Port Arthur, TX to add westward capacity following the reversal of the Ho-Ho pipeline. Westward Ho would have an initial capacity of 300 MBbl/d and be expandable to 900 MBbl/d. The pipeline is expected to start carrying offshore Gulf of Mexico production starting in 2015.[15]
- **ECHO to Port Arthur:** Enterprise is anticipating extending the Seaway Lateral, currently transporting crude from Jones Creek to the ECHO terminal, to the Beaumont/Port Arthur area via a 30-inch pipeline. This project, with a capacity of 750 MBbl/d, is expected to be completed in 2014.[16]
- **Keystone XL:** The proposed Keystone XL pipeline would bring crude oil from Hardisty, Alberta (Western Canada) to the Gulf Coast. Since its inception, TransCanada has divided the system into three separate project segments. The expected in-service data of each segment is early 2015.
  - The first segment would bring crude from Hardisty, Canada to Cushing, OK. The capacity of this pipeline is 830 MBbl/d.
  - The second segment is the Keystone Market Link between Cushing, OK and Port Arthur, TX. Capacity of this segment is 700 MBbl/d. This segment has been completed and started service in 2014.
  - The third segment is the Houston Lateral which will bring 130 MBbl/d of crude from Liberty, TX to the Houston area.
- **Eastern Gulf Crude Access Pipeline:** The Eastern Gulf Crude Access Project (EGCAP) will be capable of transporting up to 420 MBbl/d of Bakken crude oil from the Patoka Hub in Illinois directly to refinery markets along the Mississippi River and the Louisiana Gulf Coast, including the crude oil terminal hub in St. James, LA. The project, jointly owned by Enbridge and Energy Transfer Partners, includes converting approximately 574 miles of various segments of Trunk Line Gas Company’s existing 30-inch natural gas pipeline between Illinois and Louisiana from natural gas service to crude oil transportation service.
- Additionally, EGCAP intends to construct approximately 40 miles of new 30-inch pipeline in Illinois, from the Patoka Hub to a point in Wayne County, IL, at the northern end of the trunk

line 30-inch pipeline that is to be converted to crude oil service. In Louisiana, EGCAP will construct approximately 160 miles of 30-inch diameter pipeline to the crude oil terminal hub in St. James, LA.[17] This project, which would transport Bakken crude to the Gulf Coast in mid-2015, may be threatened by the glut of light sweet crude in the Gulf.

Figure 14: Timeline of Crude Oil Pipeline Projects



Gulf of Mexico Crude Oil and Natural Gas Pipelines

Several major pipelines, with a combined capacity of 4.35 MMBbl/d, supply crude oil from the U.S. Gulf of Mexico to PADD III (Figure 15):

Mardi Gras System

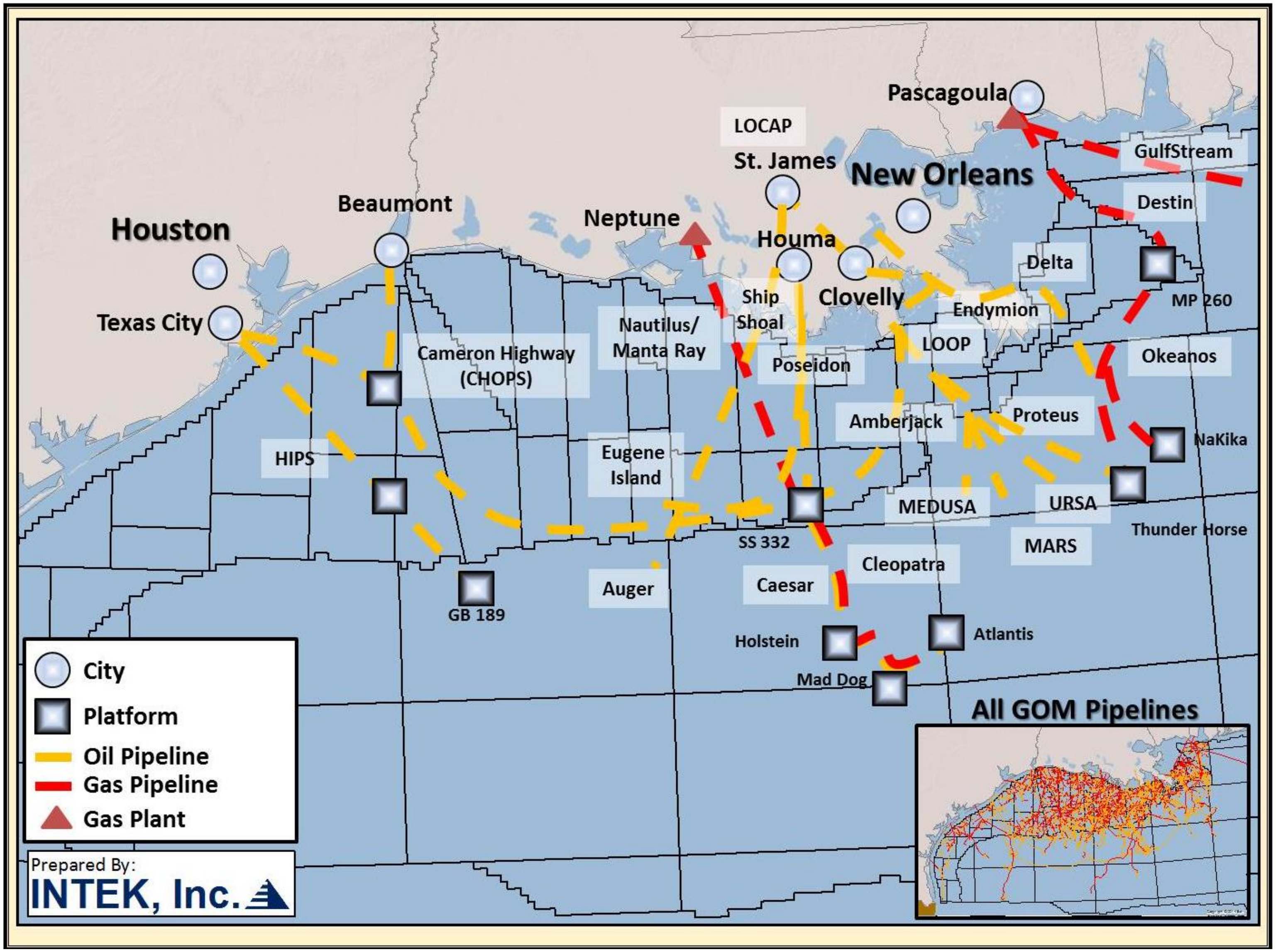
The Mardi Gras system lies in the Mississippi Canyon and Green Canyon areas of the Gulf of Mexico (GOM). In the southern Green Canyon area, pipelines transport gas and oil from the Mad Dog, Holstein and Atlantis fields. Operated by BP, the system consists of 450 miles of pipelines from five pipelines systems in water depths of 4,300 to 7,200 ft. According to BP, Mardi Gras is the largest capacity deepwater pipeline system in the Gulf of Mexico, with the capability of transporting over 1 MMBbl/d of oil and 1.5 Bcf/d of natural gas. The components of the Mardi Gras system include:

- **Caesar Oil Pipeline System**: The Caesar Oil Pipeline System in the southern Green Canyon Area includes a trunkline from the Holstein spar to a shallow-water platform at Ship Shoal Block 332 in 430 ft. of water. A lateral pipeline from the Mad Dog spar ties into the Caesar pipeline and another lateral pipeline from the Atlantis semi-submersible facility ties into the Mad Dog lateral. The capacity of the pipeline is 450 MBbl/d.
- **Cleopatra Gas Gathering System**: The Cleopatra Gas Gathering System, also in the southern Green Canyon Area, is similar in configuration to the Caesar Oil line, consisting of a trunkline from the Holstein spar to the Ship Shoal facility, with laterals from Mad Dog and Atlantis tying in. The capacity of the pipeline is 500 MMcf/d.
- **Proteus Oil Pipeline System:** In the Mississippi Canyon Area, the Proteus Oil Pipeline System begins with a catenary riser at Thunder Horse and transitions to a larger diameter trunkline to a new-build shallow-water platform at South Pass Block 89E in 400 ft. of water. The capacity of the pipeline is 580 MBbl/d.
- **Endymion Oil Pipeline System:** The Endymion system connects the Mississippi Canyon area to the LOOP Clovelly terminal. The capacity of the pipeline is 750 MBbl/d.
- **Okeanos Gas Gathering System:** Also in Mississippi Canyon, the Okeanos Gas Gathering System consists of a lateral from Thunder Horse plus the main trunkline, which starts at NaKika and terminates at the Destin shallow-water platform on Main Pass Block 260. The capacity of the pipeline is 1.0 Bcf/d.

Mars Pipeline

The Mars Pipeline originates in the Walker Ridge, Green Canyon, and Mississippi Canyon areas in the Gulf of Mexico and delivers crude to Chevron’s Fourchon Terminal and the LOOP Clovelly Terminal. The capacity of the pipeline is 600 MBbl/d.

Figure 15: Select Platforms and Pipelines in the Gulf of Mexico



Source: Various Company Websites

The Cameron Highway (CHOPS)

The Cameron Offshore Petroleum Highway (CHOPS) is a deepwater crude oil transport system with a capacity of 600 MBbl/d. It stands as the longest offshore oil pipeline in the U.S., measuring in excess of 374 miles. CHOPS was first to bring multiple production streams from the Louisiana Gulf to the main hubs of Texas City and Port Arthur, Texas, U.S. Starting at block 332 hub it receives oil from the Holstein, Mad Dog, Atlantis, Constitution and Ticonderoga fields. The network consists of a gathering platform on Ship Shoal 332. Valero Energy and Enterprise Products Partners (Enterprise) indirectly owned 50% of the pipeline. In November 2010, Genesis Energy bought Valero Energy's 50% interest in the pipeline.

- **Origins:** The system originates at the Ship Shoal 332 A/B Hub as a 30" diameter pipeline, extends across the GB 72 platform and then splits into two 24" diameter pipelines at the High Island A5-C platform. One 24" leg terminates in Texas City, TX, while the second terminates in Port Arthur, TX.

- **Destinations:** CHOPS connects directly to three (3) Texas City area refineries, but also provides access to the Beaumont, Baytown, Cushing, Patoka and Houston markets though the multiple terminal connections.

High Island Offshore System (HIPS)

HIPS is a natural gas pipeline system that gathers gas in the offshore Gulf of Mexico and brings it into ANR Pipeline's eastern leg and the Enbridge Offshore Pipeline system. The offshore portion of HIPS receives crude from multiple platforms in the High Island, East Breaks, Galveston, Garden Banks, and West Cameron areas.

The Louisiana Offshore Oil Port (LOOP)

LOOP is the single largest point of entry for waterborne crude oil coming into the U.S. Organized in 1972 as a Delaware corporation, LOOP LLC and converted to a limited liability company in 1996. Marathon Pipe Line LLC, Valero Terminaling and Distribution Company, and Shell Oil Company are the owners. LOOP is the only port in the U.S. capable of offloading deep draft tankers known as Ultra Large Crude Carriers (ULCC) and Very Large Crude Carriers (VLCC). Along with offloading crude from ULCCs and VLCCs, LOOP also offloads smaller tankers. The system receives and stores crude oil from three sources:

- Tankers carrying foreign and domestic crude oil

- Domestic crude oil produced in the Gulf of Mexico or barged from Corpus Christi and

- The Houston to Houma (Ho-Ho) Pipeline.

The port consists of three single-point mooring buoys used for the offloading of crude tankers and a marine terminal consisting of a two-level pumping platform and a three-level control platform. The onshore Clovelly oil storage facility, located twenty-five miles inland, is connected to the port complex by a 48-inch diameter pipeline.

The Clovelly facility provides interim storage for crude oil before it is delivered via connecting pipelines to refineries on the Gulf Coast and in the Midwest. The oil is stored in eight underground caverns leached out of a naturally occurring salt dome, which are capable of storing approximately 60 million barrels of crude oil. Since 1996, one cavern at Clovelly has been dedicated to the Mars stream coming in from the deepwater GOM, which uses the same distribution system as foreign crude oil shippers. In addition, LOOP has an above-ground tank farm consisting of fifteen 600 MBbl barrel tanks.

Three pipelines connect the onshore storage facility to refineries in Louisiana and along the Gulf Coast. LOOP also operates the 53-mile, 48-inch LOCAP pipeline that connects LOOP to Capline (40-inch) at St. James, Louisiana.

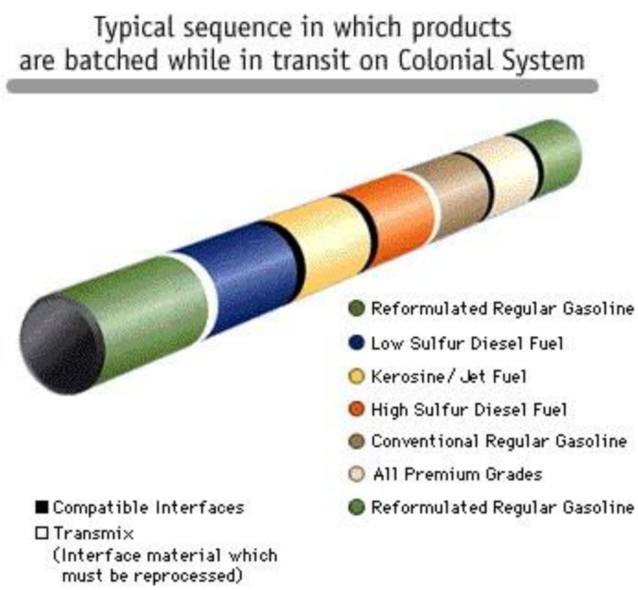
Light oil produced from the Eagle Ford play in Texas is being shipped by rail or pipeline to the Port of Corpus Christi. Two of Corpus Christi's three refineries can only process heavy crude oil. Excess Eagle Ford light oil is currently loaded on barges for transport to LOOP from which is transferred by pipeline to other coastal refineries and pipeline systems.[18]

C. Petroleum Product Pipelines

Pipelines are the most common mode of long distance transportation for shipping refined products in the United States. Nearly 4.56 million barrels of petroleum products were transported per day via inter-PADD pipelines in 2013.[19]

Products are shipped through pipelines in abutting batches that range in volume from 75,000 barrels to 3.2 million barrels. These batches are separated by a slug of "intermix." The products are typically sequenced as shown in Figure 16. While transported, the flow conditions inside the pipeline reduce the mixing of the products. In the case of compatible products, such as regular and premium unleaded gasoline, the mixed products are not separated from the products. However, when the products are incompatible, such as high sulfur diesel and conventional regular gasoline, the intermix is separated from the products, stored, and processed into a useful product. Additionally, dyes may be used to mark the edges of the batches.[20]

Figure 16: Typical Product Batching Sequence



Source: Colonial Pipeline Company

The vast majority of pipeline product movements were from PADD III to PADD I and PADD II.[21] Seventy-five percent of all product pipeline movements originated in PADD III. Of this 75%, approximately two-thirds went to PADD I and one-third went to PADD II. Table 7 presents a breakdown of the 2013 pipeline movements.

As reported by EIA, the shell storage capacity of the product pipelines is 94.7 million barrels. The products currently in the pipelines are required for operations and are not available in the case of an emergency.

Table 7: Product Pipeline Movements Between PADDs (MBbl/d)

		To					
		PADD I	PADD II	PADD III	PADD IV	PADD V	TOTAL
From	PADD I		296	-	-	-	**296**
	PADD II	48		336	100	-	**484**
	PADD III	2,610	674		-	139	**3,423**
	PADD IV	-	157	156		41	**354**
	PADD V	-	-	-	-		**0**
	TOTAL	**2,658**	**1,127**	**492**	**100**	**180**	**4,556**

Major Product Pipeline Systems

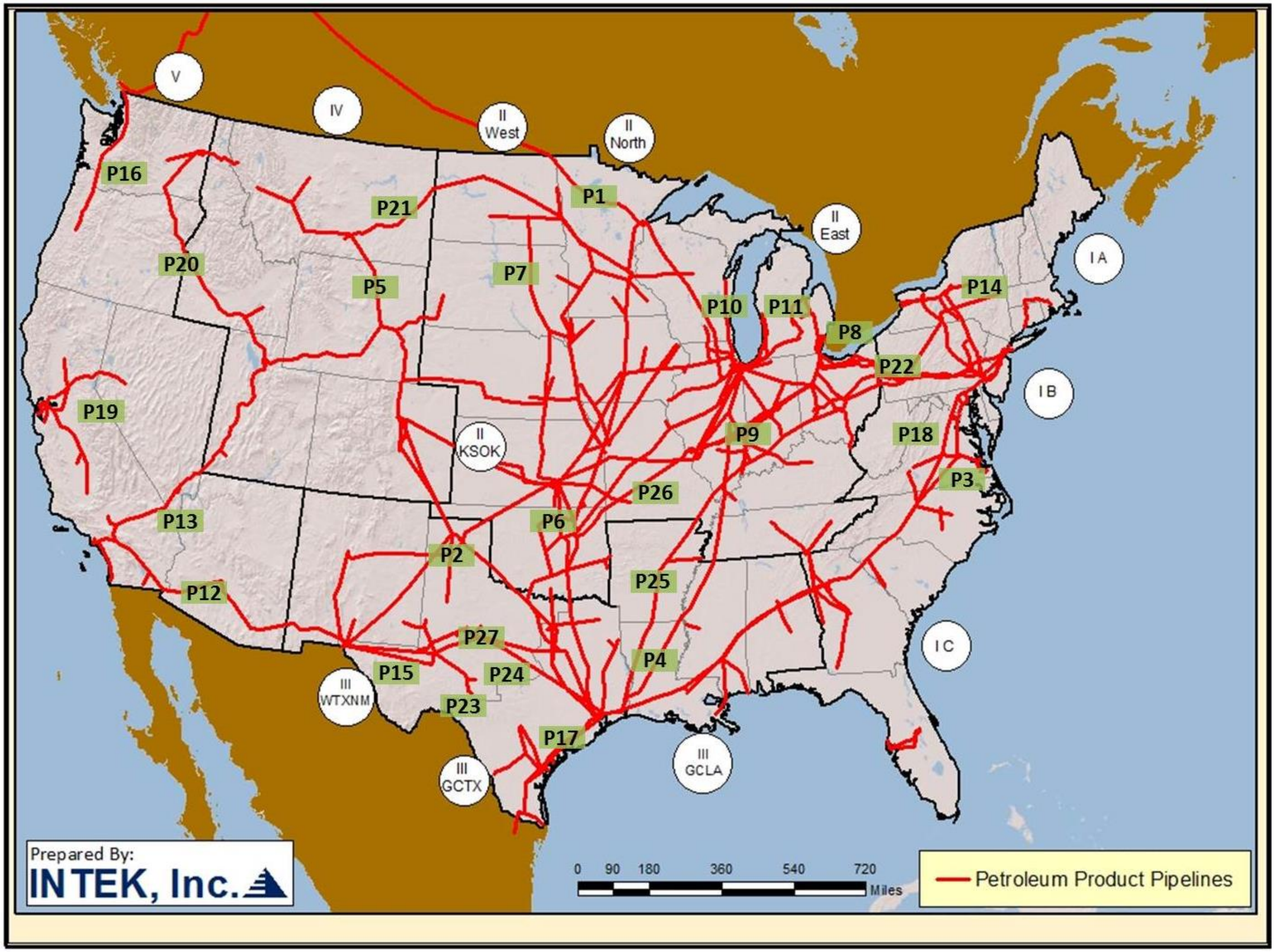
Four major product pipeline systems originate in the Gulf Coast region and provide products to the East Coast and Midwest regions. These four systems transport the majority of all U.S. refined products that area transported via pipelines. One major pipeline system moves products on the West Coast. These systems are shown in Figure 17 and described in Table 8, below.

Table 8: Major U.S. Refined Product Pipelines (2013)

Map Key	Product Pipeline	Origin		Destination		Max Flow Capacity (MBbl/d)
		City	State	City/Region	St	
P1	Southern Lights	Manhattan	IL	Edmonton	CAN	92
P2	NuStar Central West	Amarillo	TX	Various	TXN MCO	551
P3	Plantation	Baton Rouge	LA	Washington	DC	600
P4	Centennial	Beaumont	TX	Bourbon	IL	210
P5	Seminole	Billings	MT	Casper	WY	100
P6	Magellan	Midland	TX	Midwest/Mid-Continent (TX, KS, OK, AR, Co, MO, IL, IA, WI, MN, SD, ND)		NA
P7	NuStar East	Arkansas City and Others	KS	Jamestown and Others	ND	48.4
P8	NORCO (Buckeye)	Chicago	IL	Green Bay	WI	166
P9	Marathon System	PADD II East		PADD II East		787

Map Key	Product Pipeline	Origin		Destination		Max Flow Capacity (MBbl/d)
		City	State	City/Region	St	
P10	West Shore	Hammond	IL	Green Bay	WI	414
P11	Wolverine	Chicago Area	IL	Bay City	MI	350
P12	SFPP West	Colton	CA	Phoenix	AZ	128
P13	CALNEV	Colton	CA	Las Vegas	NV	156
P14	Buckeye	Linden (Colonial Pipeline)	NJ	East Coast	NY PA	345
P15	Magellan	El Paso	TX	Midland	TX	NA
P16	Olympic	Blaine	WA	Portland	OR	315
P17	Central NuStar	Houston	TX	Port Isabel	TX	45
P18	Colonial	Houston	TX	Linden	NJ	100
P19	Sacramento (SFPP North)	San Francisco	CA	Fresno & Others	CA	155
P20	Tesoro Northwest Products	Salt Lake City	UT	Spokane	WA	84
P21	CENEX	Laurel	MT	Fargo	ND	40
P22	Harbor Line Newark Line Sunoco System	Linden	NJ	East Coast Midwest	NY MI OH PA NJ	180
P23	TEPPCO	Midland	TX	Rock Springs	TX	NA
P24	Magellan	Houston	TX	Midland Odessa	TX	24
P25	TEPPCO	Port Arthur	TX	Albany	NY	330
P26	Explorer	Port Arthur	TX	Hammond	IN	660
P27	Magellan S.	Odessa	TX	El Paso	TX	64

Figure 17: Major U.S. Product Pipeline Systems



Source: EIA

Colonial Pipeline System

The Colonial Pipeline connects the refineries in the Gulf Coast with product markets in the Southeast and along the East Coast. The pipeline originates in the Gulf Coast and is connected to refineries in Houston, Beaumont, Port Arthur, Lake Charles, Krotz Spring, and Baton Rouge; it terminates at the Colonial Terminal at Linden, NJ where it transfers products into the Buckeye Pipeline System.

The Colonial Pipeline (Figure 18) serves major markets across the Southeast and along the East Coast. These include major product terminals at Memphis and Nashville, TN; Atlanta, GA; Greensboro, NC; Norfolk and Fairfax, VA; Baltimore, MD; and Paulsboro and Linden in NJ. In addition, the Colonial Pipeline is directly connected to the Nashville, TN; Hartsfield, GA; Charlotte-Douglas, NC; Raleigh-Durham, NC; Dulles, VA; and BWI, MD airports.

For much of its length, the pipeline consists of four lines. Two lines (1 and 2) originate in the Gulf Coast and end at the major storage terminal in Greensboro, NC. The other two (lines 3 and 4) extend from Greensboro north to Linden, NJ via Washington, D.C., and Philadelphia, PA. They become a source for the Intra Harbor Transfer (IHT) system operated by Colonial. The capacity and products carried by each line are:

- Line 1: 1.3 MMBbl/d of gasoline
- Line 2: 1.1 MMBbl/d of distillate and jet fuel
- Line 3: 0.7 MMBbl/d of gasoline and middle distillates
- Line 4: 0.44 MMBbl/d of gasoline and middle distillates

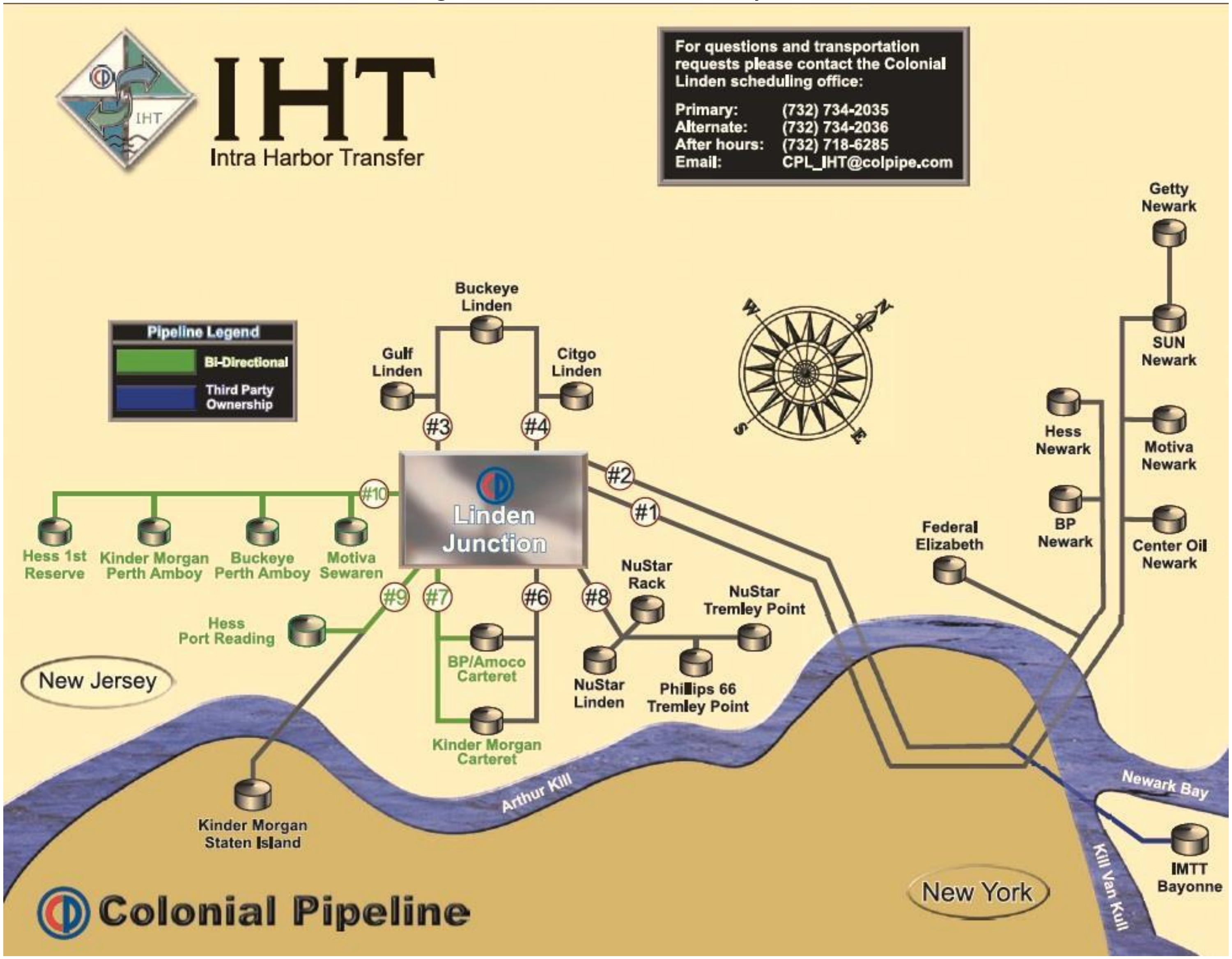
Intra Harbor Transfer (IHT): At Linden, NJ, Colonial operates the Intra-Harbor Transfer system. The IHT is a major product distribution point providing more than 30% of the products required in New York City and the entire Northeast region. Colonial Lines 3 and 4 terminate at the Colonial Linden Junction. Nine outgoing pipelines, three of which are bi-directional, are connected to terminals along the Arthur Kill waterway, in New Jersey, and in New York (Figure 19):

- Line 1: Connected to the Center Oil, Motiva, SUN, and Getty terminals in Newark, NJ;
- Line 2: Connected to the Federal terminal in Elizabeth, NJ as well as the Hess and BP terminals in Newark, NJ. In addition, line 2 is connected to the IMTT terminal in Bayonne, NJ;
- Line 3: Connected to the Gulf and Buckeye terminals in Linden, NJ. This is one of the routes by which products are received by the Buckeye pipeline system;
- Line 4: Connected to the Citgo and Buckeye terminals in Linden, NJ. This is the second pipeline connecting the Colonial and Buckeye pipeline systems;
- Line 6: Connected to the BP/Amoco and Kinder Morgan terminals in Carteret, NJ;
- Line 7: A bi-directional pipeline connected to the BP/Amoco and Kinder Morgan terminals in Carteret, NJ;

Figure 18: Colonial Pipeline System

Source: Colonial Pipeline System Map

Figure 19: Intra Harbor Transfer System



Source: Colonial Pipeline

- Line 8: Connected to the NuStar Rack and NuStar terminal in Linden, NJ as well as the Phillips 66 and NuStar terminals in Tremley Point, NJ;
- Line 9: Provides bi-directional connection to the Hess terminal in Port Reading, NJ and uni-directional connection to the Kinder Morgan terminal in Staten Island, NY; and
- Line 10: Provides bi-directional connection to the Motiva Sewaren, Buckeye Perth Amboy, Kinder Morgan Perth Amboy, and Hess 1st Reserve in NJ.

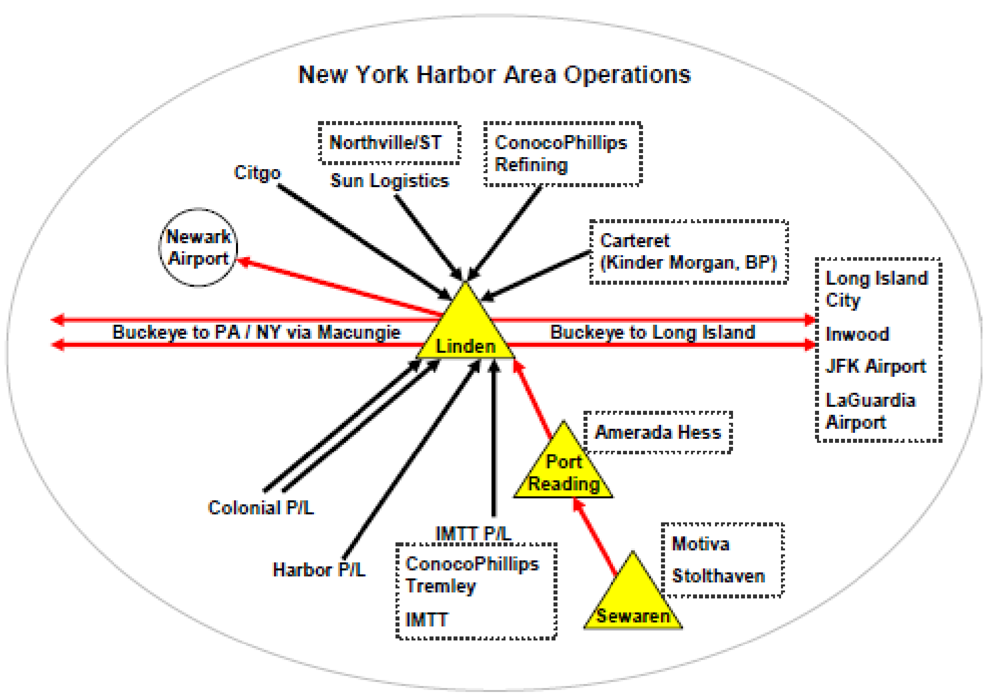
In total, 23 terminals and facilities are connected to the Colonial Linden Junction via the IHT.

Buckeye System

Buckeye is the major product pipeline serving New York City and upstate New York (Figure 20). Buckeye's Linden, NJ Terminal is configured to receive products from the Phillips 66 Linden refinery, Colonial lines 3 and 4 of the IHT, Harbor pipeline, and marine terminals along the Arthur Kill. The Buckeye system has two major segments, both of which originate in Linden, NJ.

- The first segment provides products to Long Island and Inwood, NY and provides jet fuel directly to the Newark-NJ, JFK, and LaGuardia Airports.
- The second segment travels west to Macungie, PA before turning north to supply markets in upstate New York. These markets include major cities such as Binghamton, Syracuse, Utica, Rochester, and Buffalo.

Figure 20: Buckeye New York Harbor Area Operations



Plantation Pipeline System (Kinder Morgan)

The Plantation Pipeline, operated and partially owned by Kinder Morgan, originates in Baton Rouge, LA and Pascagoula, MS. It runs largely parallel to the Colonial Pipeline and terminates in Newington, VA[22]. Plantation serves major markets in the Southeast. These include Birmingham and Montgomery in AL; Knoxville, TN; Roanoke and Richmond in VA; and Washington D.C. It is also provides surface and aviation fuels to the Atlanta, Charlotte, Dulles, and Washington National Airports.

The system consists of two lines with a combined capacity of 600 MBbl/d. The first line terminates in Greensboro, NC; the other extends to Newington, VA. The system transports gasoline and distillates in separate lines.

Explorer Pipeline System

The Explorer pipeline transports refined products to more than 70 major cities in 16 midcontinent states. It originates in the Gulf Coast (PADD III) at Port Arthur, TX and terminates in Ardmore, OK and the Chicago suburb of Hammond, IN. The Explorer pipeline consists of two lines and has a combined capacity of 660 MBbl/d. Explorer's 1,830-mile system begins with a 28-inch line in Port Arthur to Tulsa, OK, and then changes to 24 inches into Hammond, IN. Its capacity is augmented with a 10-inch line between Houston and Arlington, TX. Thirty-seven pump stations are located along the pipeline.

Major tankage terminals and markets are located in Port Arthur, Houston, Greenville, Arlington, and Grapevine, TX; Glenpool, OK; Wood River, IL; and Hammond, IN. The pipeline transports gasoline, fuel oil, jet fuel, and other products including refinery feedstock and diluent. [23]

TEPPCO and Centennial Pipelines

The TEPPCO Pipeline is a 3,420 mile pipeline system consisting of 3,102 miles of interstate pipeline and 318 miles of intrastate Texas pipelines. Refined products and certain NGLs are transported from the upper Texas Gulf Coast to Seymour, IN and other points in the Midwest and Northeast. These markets include Chicago, IL; Selkirk, IN; and near Philadelphia, PA. East of Todhunter, OH the pipeline is primarily dedicated to NGL transportation. The TEPPCO pipeline system has a total of 18.2 MMBbl of storage at terminals in Little Rock, AR; Shreveport, LA; Greensburg, PA; and, other markets.

In 2014, parts of the TEPPCO system were repurposed to accommodate the southbound delivery of ethane to the Gulf Coast as part of the ATEX pipeline.

The Centennial pipeline travels 795 miles from Texas to Central Illinois. A major connected terminal is located in Creal Springs, IL which contains 2.3 MMBbl of storage capacity.

Kinder Morgan – CALNEV Pipeline

CALNEV is a critical route as it provides the primary means of transporting products (gasoline, diesel, and jet fuel) to the California high desert and to Nevada, including high population markets in the Las Vegas area.[24]

The CALNEV pipeline system transports refined products within PADD V, originating from Colton, CA and extending to terminals in Barstow, CA, and Las Vegas, NV. It is also supplies aviation and other fuels to the strategically important Nellis Air Force Base and Edwards Air Force Base and to the McCarran International Airport.

The system consists of two pipelines. The first has an 8-inch diameter; the second has a 14-inch diameter. The current capacity of the system is 156 MBbl/d.

In 2012, plans were made to expand the capacity of the pipeline system to 200 MBbl/d through the expansion of existing lines and the construction of a new 16-inch pipeline between Colton, CA and Las Vegas, NV.

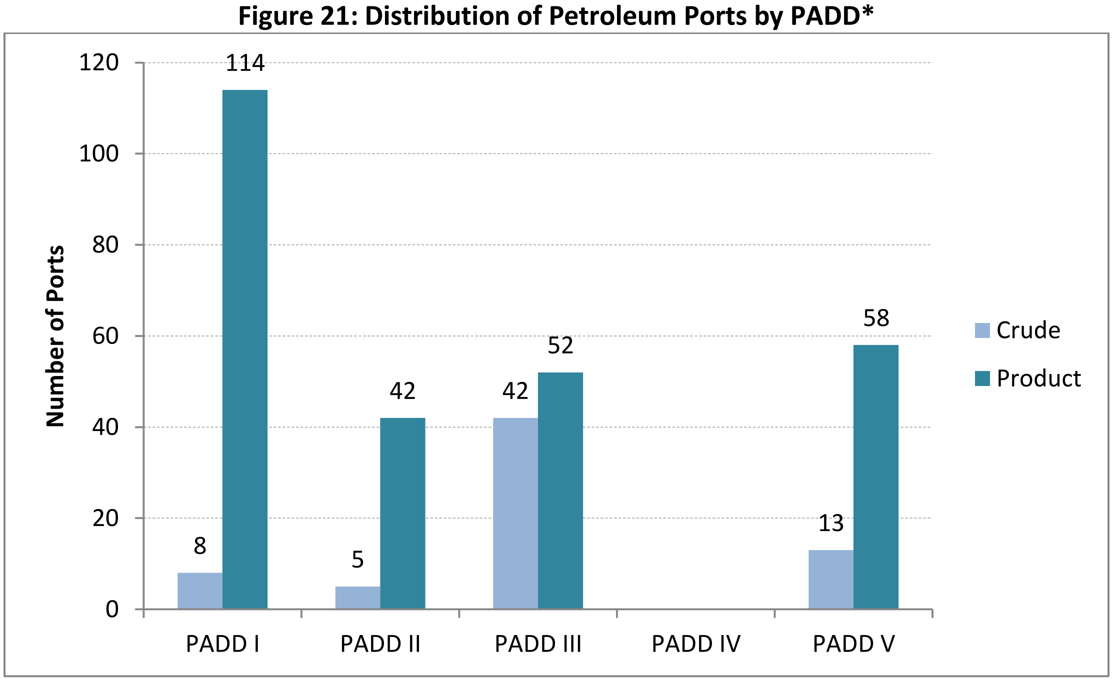
D. Petroleum Ports

Despite declining seaborne crude oil imports, U.S. ports continue to be very important import facilities for crude oil and petroleum products. The U.S. Army Corps of Engineers (USACE) database identifies 334 major coastal and inland crude and product ports in the United States (Figure 22).[25] There are 68 crude oil ports and 266 product ports across the United States. Many of these ports transit both crude oil and refined products.

Crude oil and product ports are found in all PADDs, with the exception of PADD IV (Rockies). For safety and logistical reasons, oil and refined product ports and terminals are usually located away from ports and facilities handling other non-petroleum cargoes. The majority are coastal ports (232) that facilitate imports of crude oil and products or refined product exports. Of the coastal ports, 57 are crude ports and 175 are products ports. Of the 102 inland ports, 11 are crude oil ports and 91 are product ports. These inland ports are accessible via the navigable U.S. waterways.

The regional distribution of these ports is shown in Figure 21. Of the 68 crude ports, 42 are located in PADD III, of which 30 are located in the Gulf Coast Louisiana region and 12 are located in the Gulf Coast Texas region. Conversely, 114 of the 266 product ports are located on the East Coast in PADD I to serve these major consumer markets.

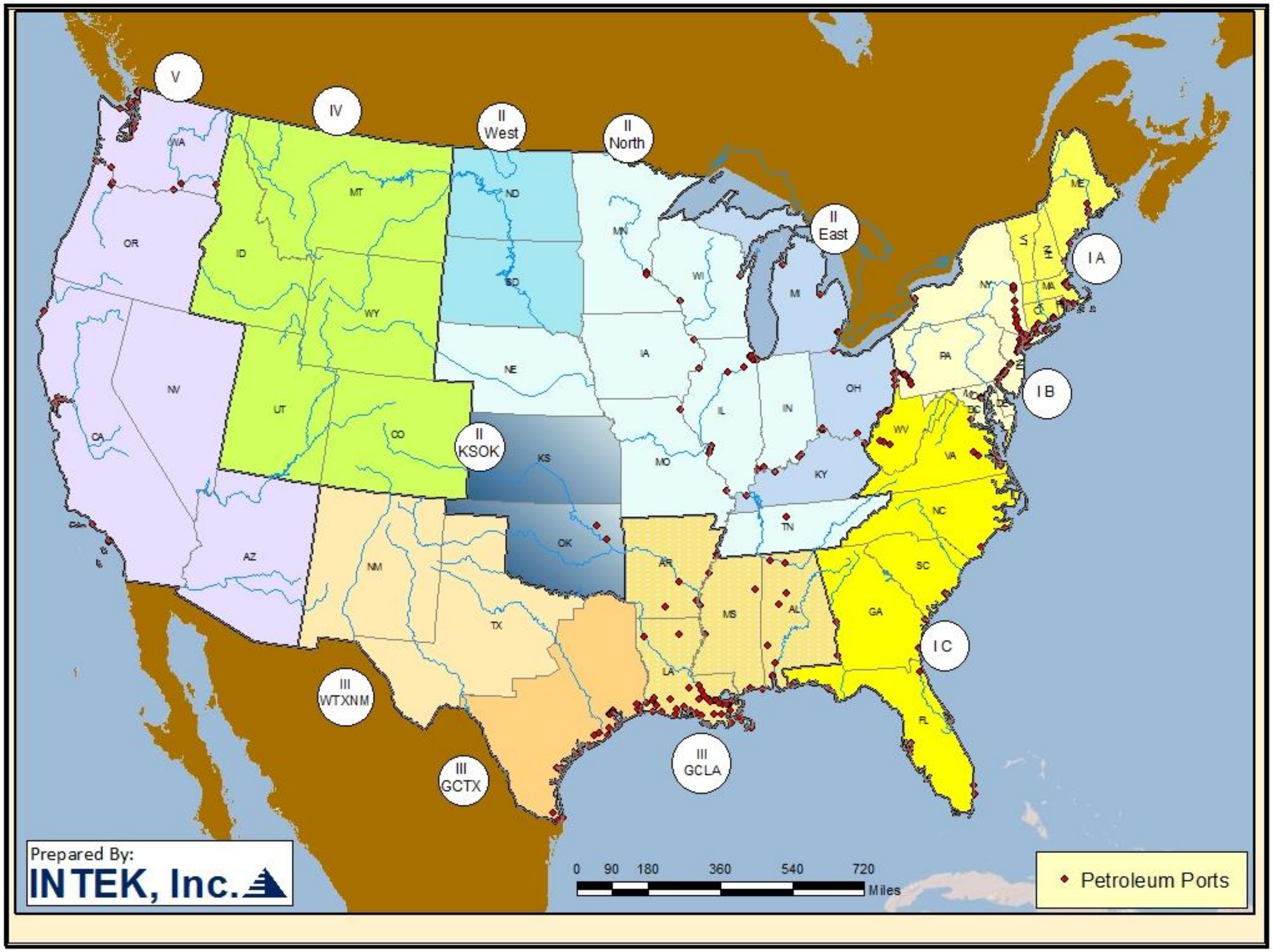
Figure 21: Distribution of Petroleum Ports by PADD*



*These do not include private company ports associated with refineries

Source: USACE

Figure 22: Location of Major Petroleum Ports



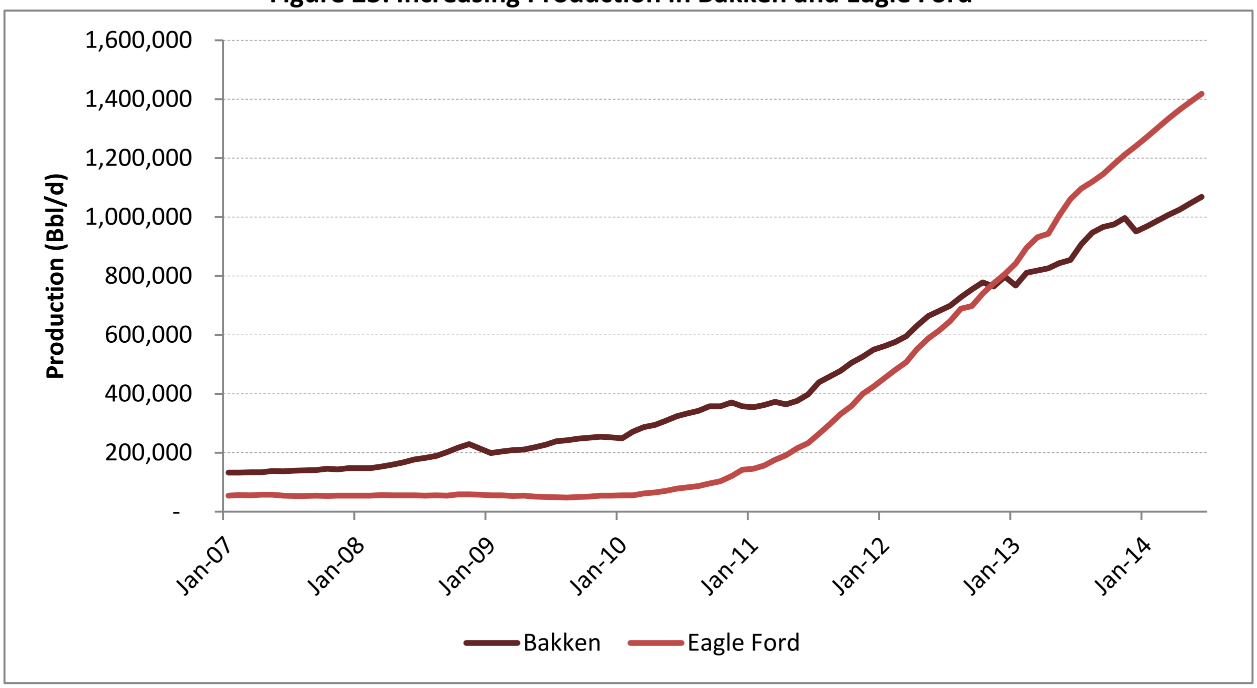
Source: USACE

E. Crude Transportation by Rail and Barge

Developments Necessitating Change

Production in the Eagle Ford (TX) and Bakken (ND) regions has increased dramatically in recent years. Bakken production has jumped from 130 MBbl/d in 2007 to over 1,000 MBbl/d at the beginning of 2014, an increase of nearly 900%. Eagle Ford has shown even more remarkable growth in the same period, hovering around 50 MBbl/d until 2010 and now producing 1,400 MBbl/d, nearly a 30-fold increase.[26] Texas and North Dakota are currently the top oil-producing states in the United States. (Figure 23)

Figure 23: Increasing Production in Bakken and Eagle Ford*



Source: EIA Drilling Productivity Report

* Includes condensate production

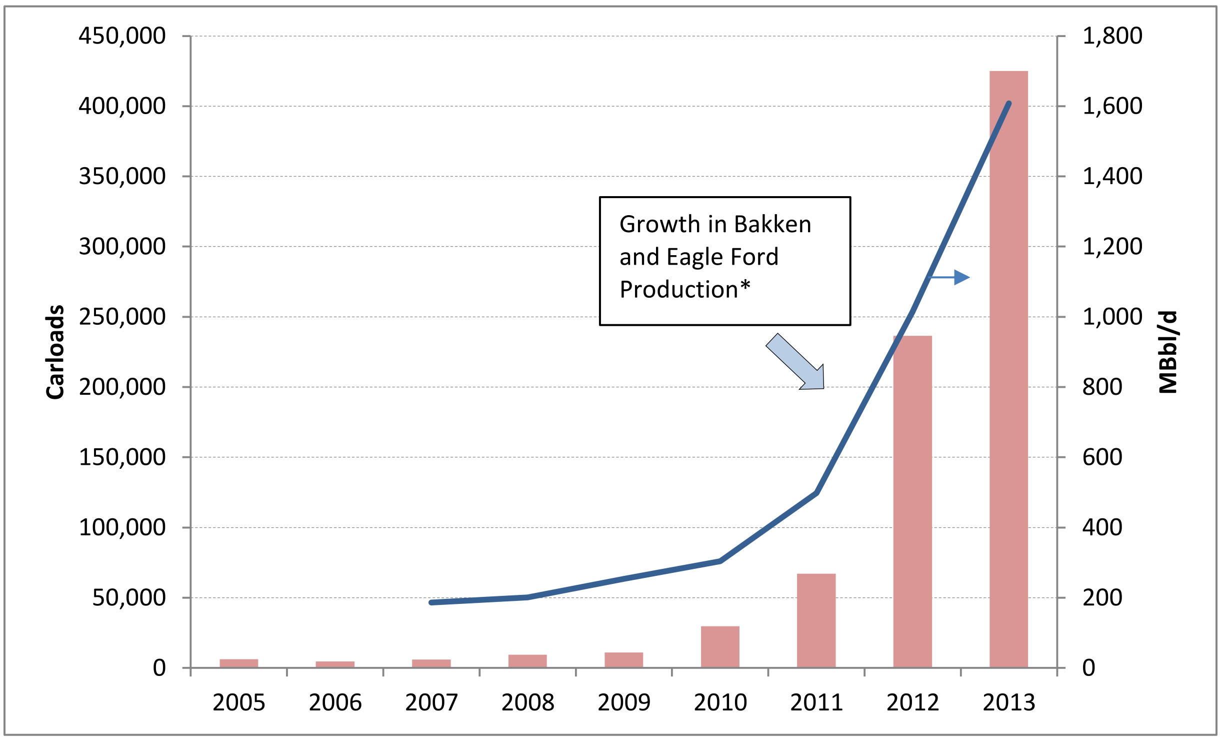
New producing regions have relatively underdeveloped infrastructure or lack the pipeline capacity necessary to keep pace with current extraction rates. This rapid growth has required the industry to reconsider how to efficiently move oil from the fields to refineries. New pipeline construction requires large investment, a lengthy regulatory process, and intensive construction.

Thus, at least for the time being, companies are turning to more flexible and easily-accessible modes of transportation such as rail, barges, and tankers to bring produced oil and condensate to market. As a result, these shipping methods, once a prominent feature of the oil industry, are currently experiencing a renaissance.

Crude by Rail

Historically, railroads were once the backbone of the U.S. oil industry. As the industrial giants of the 19th century, rail companies were quick to lay tracks into the oil-producing regions of the day and carry crude to the coasts in tank cars encasing large wooden barrels.[27] In the twentieth century, pipelines emerged as the dominant means of oil transport and rail was all but abandoned. With the new oil boom, many producers have taken advantage of the existing railway network to bypass the pipeline and hub congestion that has been caused by increased oil production coming out of Bakken. This congestion forced many producers to make a judgment call whether to face the highly-undesirable prospect of discounting their crude or turn to rail to as a secondary, albeit slightly more costly, option instead of pipeline transfer. Where rail shipments of oil were almost non-existent a decade ago, they now make up a substantial percentage (11%) of total crude domestic shipments (by volume). Rail now transports as much as 75% of the crude coming out of Bakken (Figure 24).[28]

Figure 24: Carloads of Crude Oil on Class I Railroads*

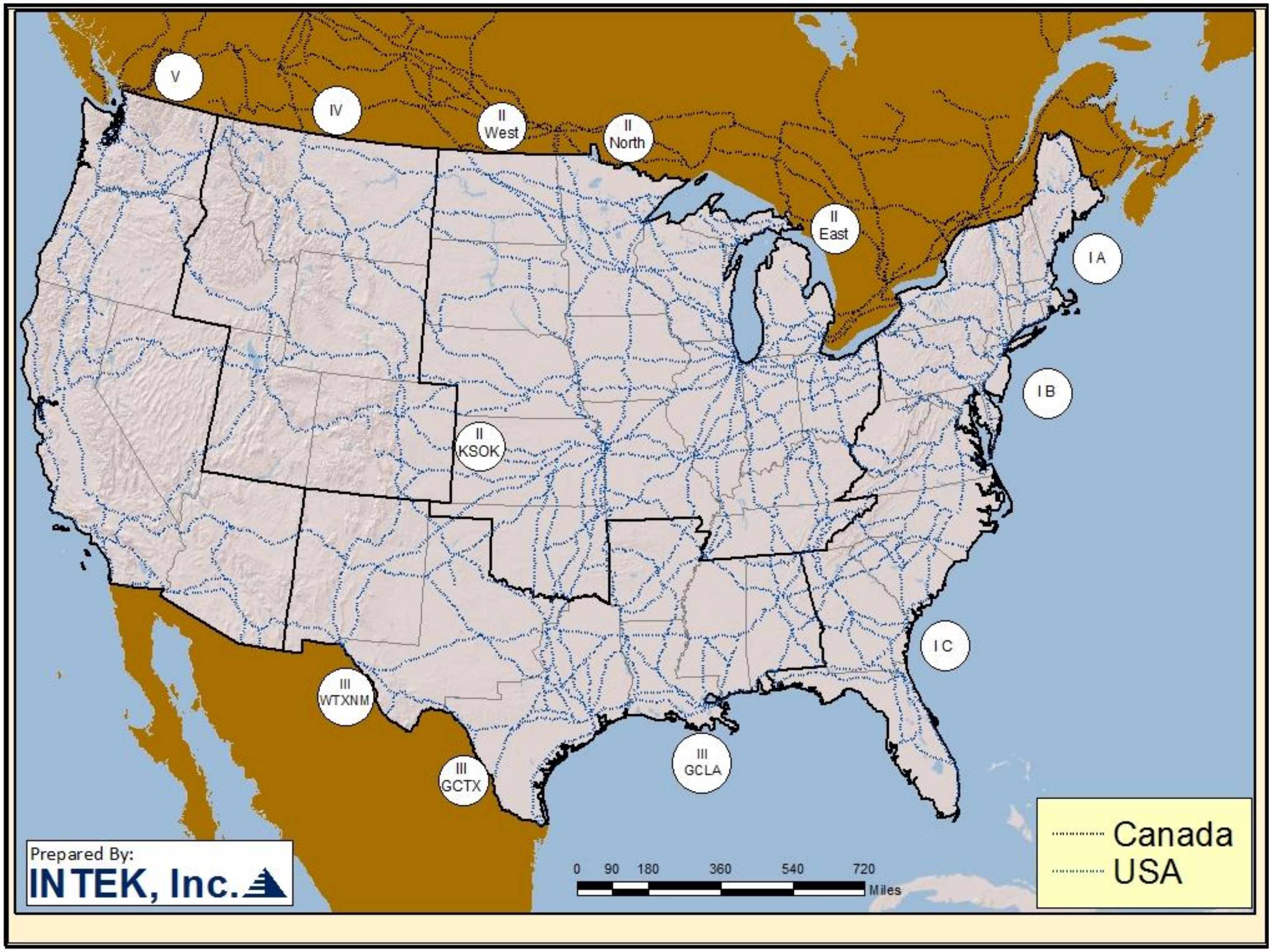


Source: Association of American Railroads - *Based on January production data and carloads terminated

Infrastructure and Renewal

More than 560 freight railroads operate in the United States. However, just seven "Class I" railroads account for 69 percent of freight rail mileage.[29] Together with non-Class I (short line and regional) railroads, the U.S. railroad system operates 140,000 miles of tracks (Figure 25). Much of this capacity is available to transport crude oil into refining markets. From 1980 through 2012, $525 billion was invested on renewal, maintenance, and expansion of infrastructure and equipment on these rail lines.

Figure 25: Class I Freight Railroads of the United States



Source: American Rail Association. “Freight Railroads in United States” June 2013.

A rail tank car holds about 30,000 gallons (714 barrels) of crude oil. In the first three quarters of 2013, 299,652 carloads of crude oil were shipped on U.S. railways. This translates to approximately 784 MBbl/d barrels per day moving by rail, or about 11 percent of U.S. domestic crude oil production. This upward trend in the use of rail to transport crude may continue, even with the competition of pipeline expansions. By 2015 there will be 113 rail terminals handling crude with an upload capacity of over 2 MMBbl/d (Appendix B.3).

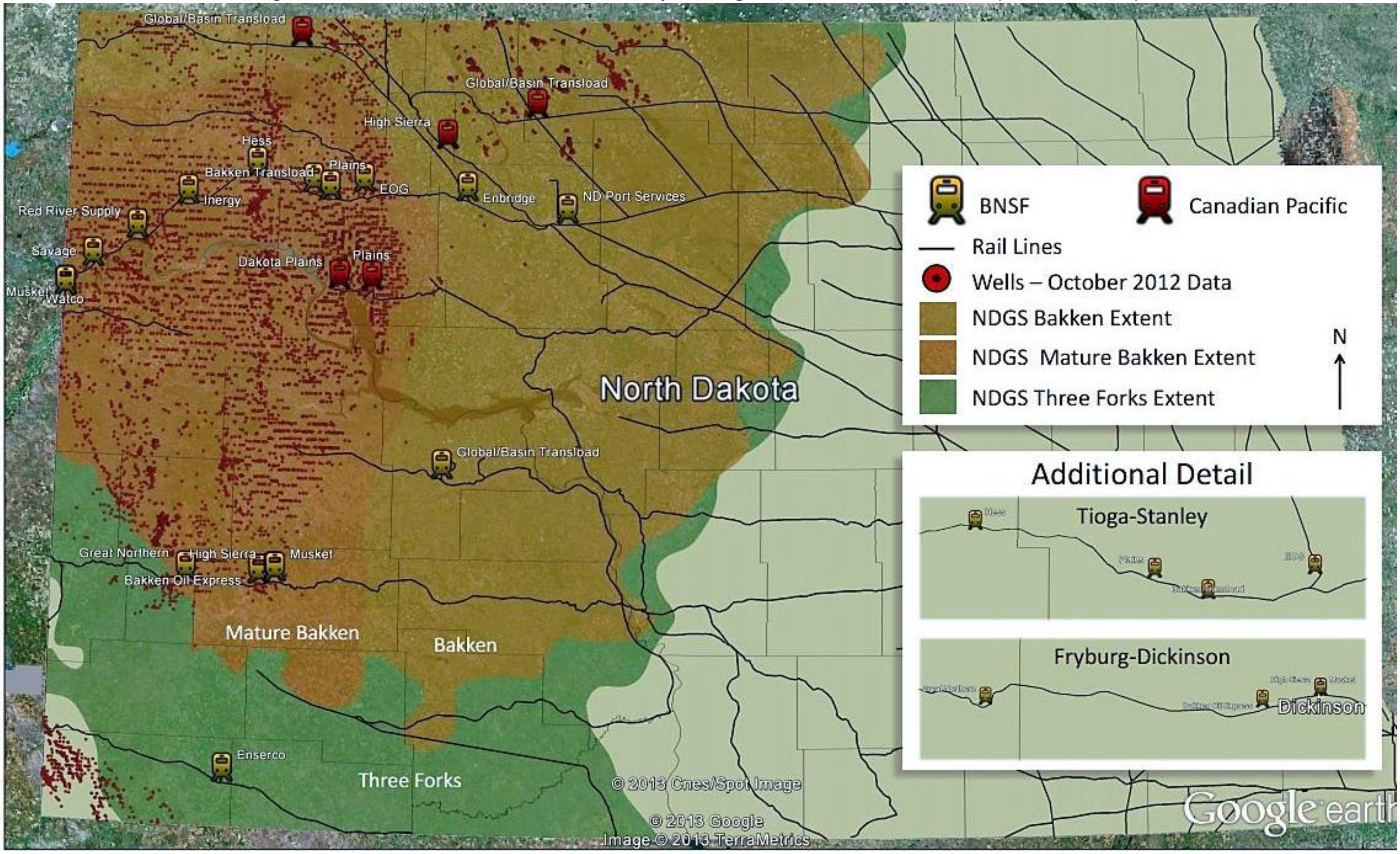
The incentive to move crude by rail originated in North Dakota at the beginning of the Bakken oil boom when the region was short on pipeline capacity and experiencing rapid production growth. As oil production from the Bakken (PADD II WEST) play quickly increased, and pipeline bottlenecks and chokepoints developed, it became apparent to producers that rail loading and shipping facilities for crude oil transport would be faster and cheaper to construct and expand, and could serve a broader range of markets, than oil pipelines. Upstream producer EOG spearheaded the Stanley rail project to move its oil directly to the terminal at St. James, LA. This allowed EOG to avoid steep pricing discounts and gain greater control over the transportation of its oil production.

As uploading facilities in North Dakota continued to expand, oil-to-rail uploading capacity in the North Dakota region reached to 1,130 MBbl/d in 2013, and is expected to reach 1,590 MBbl/d by 2015. Figure 26 shows the location of new oil to rail uploading terminals that have been constructed to transport oil from the Bakken producing area.

In Texas, multiple rail loading locations in the Eagle Ford oil producing areas now provide upload capacity of 140 MBbl/d.

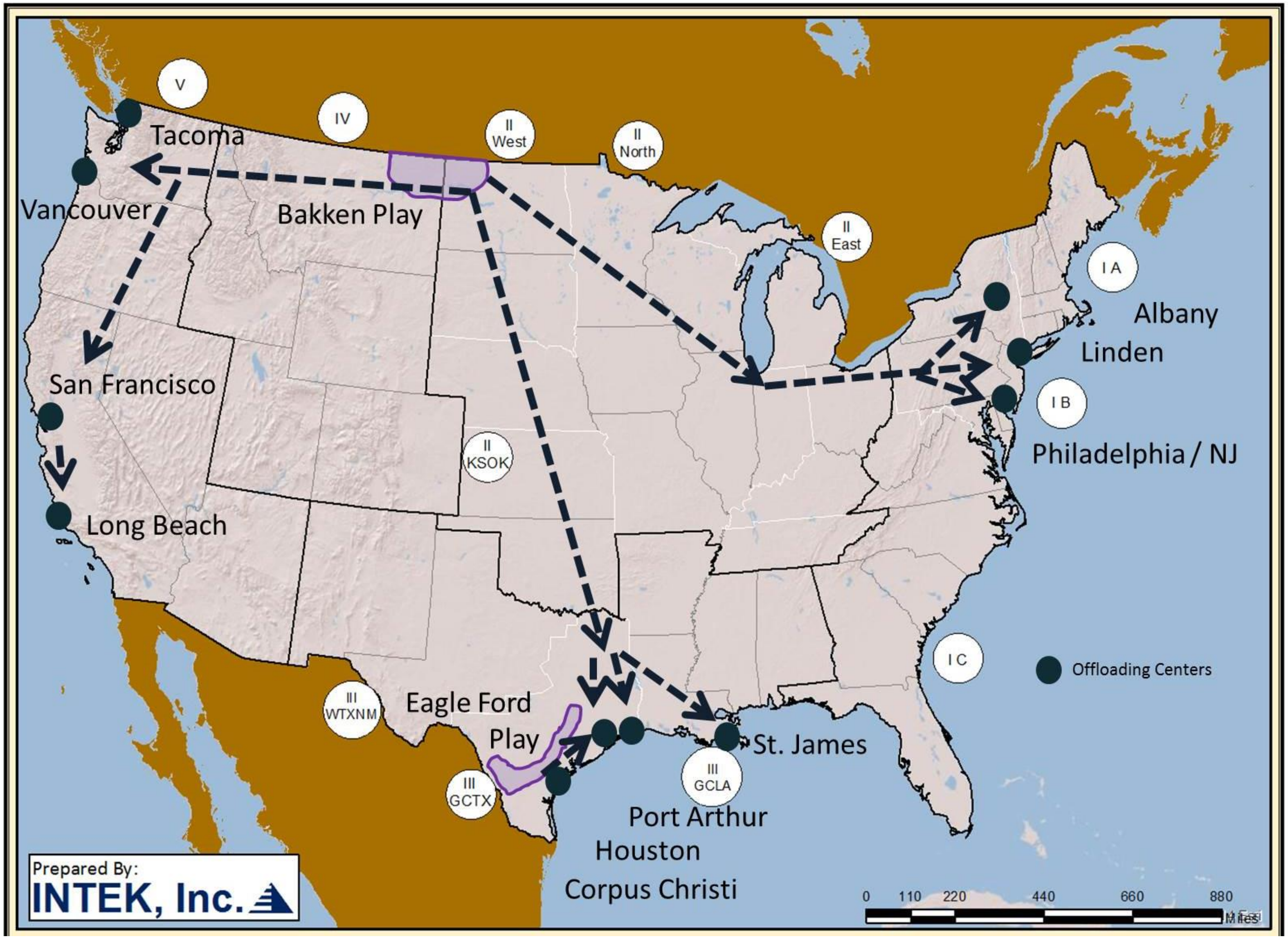
Today, rail offers multiple routes and destinations for shipment of crude oil from producing areas in the north and west to refiners on the coasts (Figure 27). This increasingly popular mode of transport for Bakken crude is evidenced by sharply increasing refinery receipts of Bakken crude by rail along the coasts. Gulf Coast (PADD III) refineries in particular, have experienced a nine-fold increase in receipts by rail from ten years ago, while the East (PADD I) and West (PADD V) coasts have more than tripled the amount of crude-by-rail they receive. In 2012, PADD I refineries received nearly six MMBbl, PADD III received over 12 MMBbl, and PADD V received over 10 MMBbl by rail.[30]

Figure 26: New Oil to Rail Terminal and Uploading Facilities in Bakken Area (PADD II West)



Source: North Dakota Pipeline Authority

Figure 27: Major Crude by Rail Routes from PADD II West to East Coast, Gulf Coast, and West Coast



Source: SPR

Rail-to-Barge

Not all refineries are connected to the rail network. However, many refineries located on the coasts were designed to receive waterborne shipments, making rail-barge combinations a very effective option while refineries await the construction of rail terminals (as Tesoro did for its Anacortes, WA refinery) or pipelines. Increasingly, rail is being used in conjunction with barges to deliver crude to refineries, particularly to move Bakken crude oil to the coastal refineries.

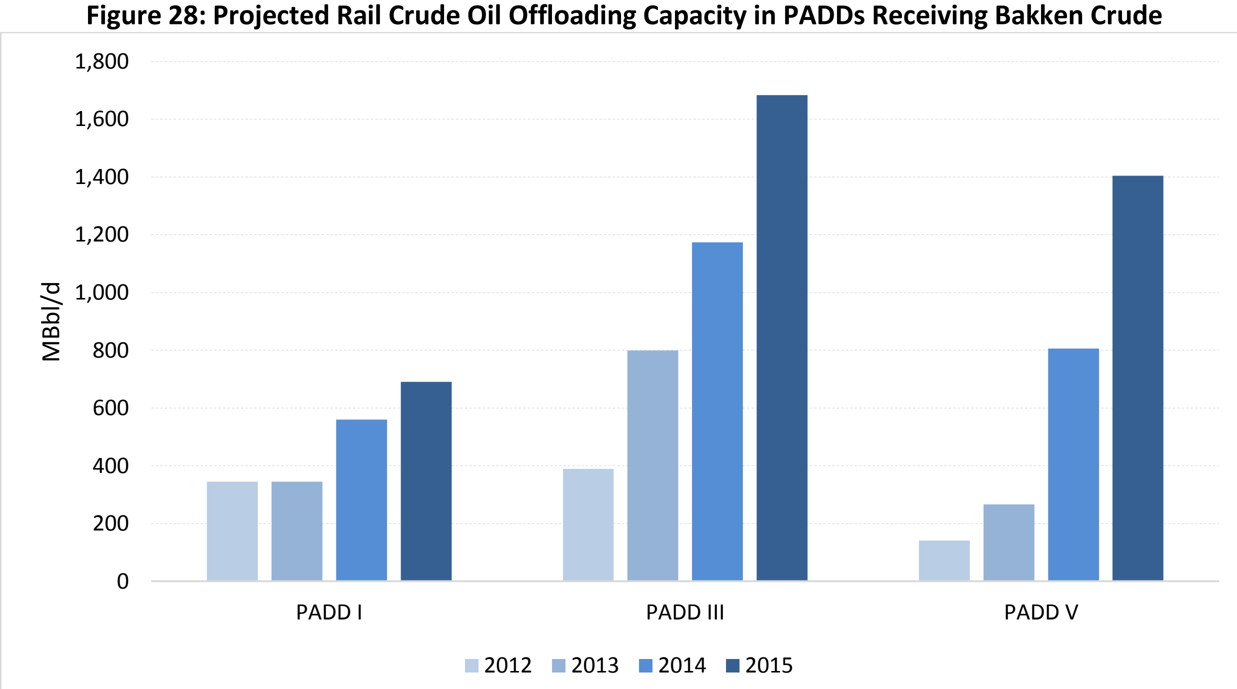
The East Coast (PADD I) receives crude by rail at the Port of Albany, NY for trans-loading to barges and shipment to New Jersey refineries. The Philadelphia and Delaware area also now receives Bakken oil. These rail-to-barge deliveries are expected to continue since East Coast pipeline capacity expansion will be minimal in the coming years.

Gulf Coast refiners (PADD III) receive Bakken crude via trans-loading mostly from the Saint James Terminal. As southern Mississippi River refiners incorporate the light crude from Bakken, their imports of similar quality crude oil are decreasing.

West Coast refiners are also receiving a new share of Bakken production. Though crude oil is not yet received by rail in California, the refineries in the Puget Sound area in Washington now also receive crude by rail.

Rail offloading capacity in all areas is expected to at least double by 2015 (Figure 28).

Figure 28: Projected Rail Crude Oil Offloading Capacity in PADDs Receiving Bakken Crude



Source: INTEK

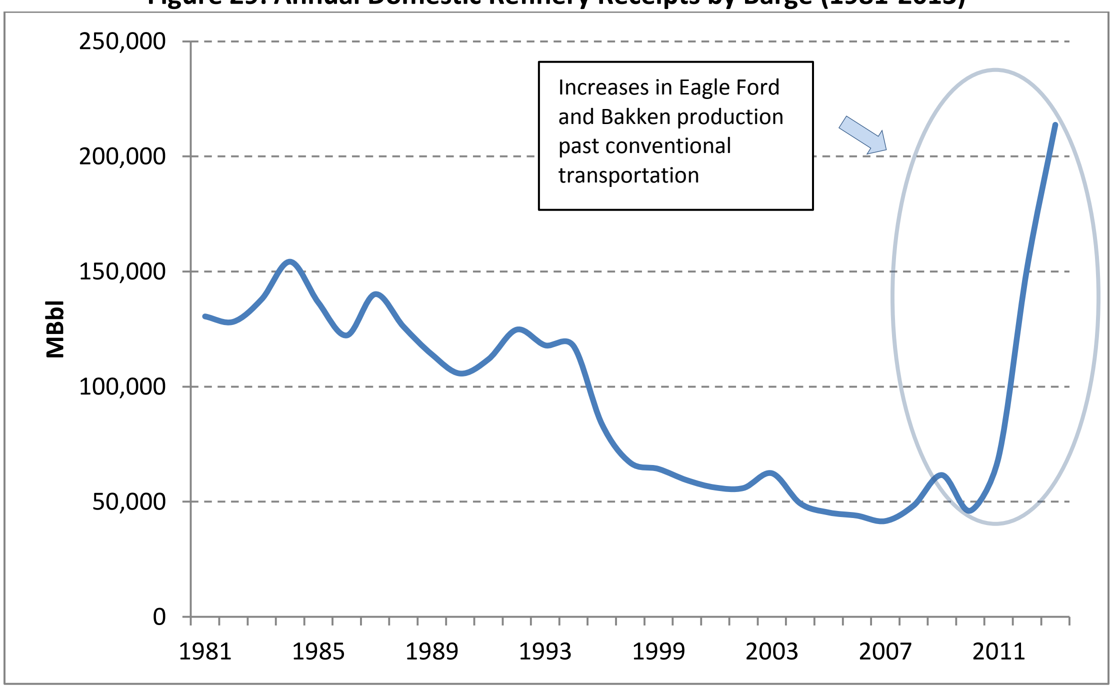
Crude by Barge / Waterborne

Inland barges were used to transport oil on Pennsylvania's Allegheny River as early as 1861.[31] In the following decades, pipelines and rail tank cars overtook barges as the preferred method of moving oil, yet barge shipments continued to play a significant role until the early 1990's, due to greater seaborne imports.

During the same period, coastal shipping between U.S. ports has also declined due to lower demand, a decline in Alaskan crude shipments to the west coast refineries, and greater reliance on international imports and pipelines.[32]

This declining trend is rapidly reversing, however (Figure 29). Domestic shipment of crude oil by barge has increased significantly, from under 50 million barrels in 2010 to over 200 million in 2013.[33] This renaissance may be explained by several factors. The first and most important factor is the boom in production of shale oil from the Bakken and Eagle Ford plays as extraction has surpassed pipeline capacity and necessitated other modes of transport to avoid severe discounting.

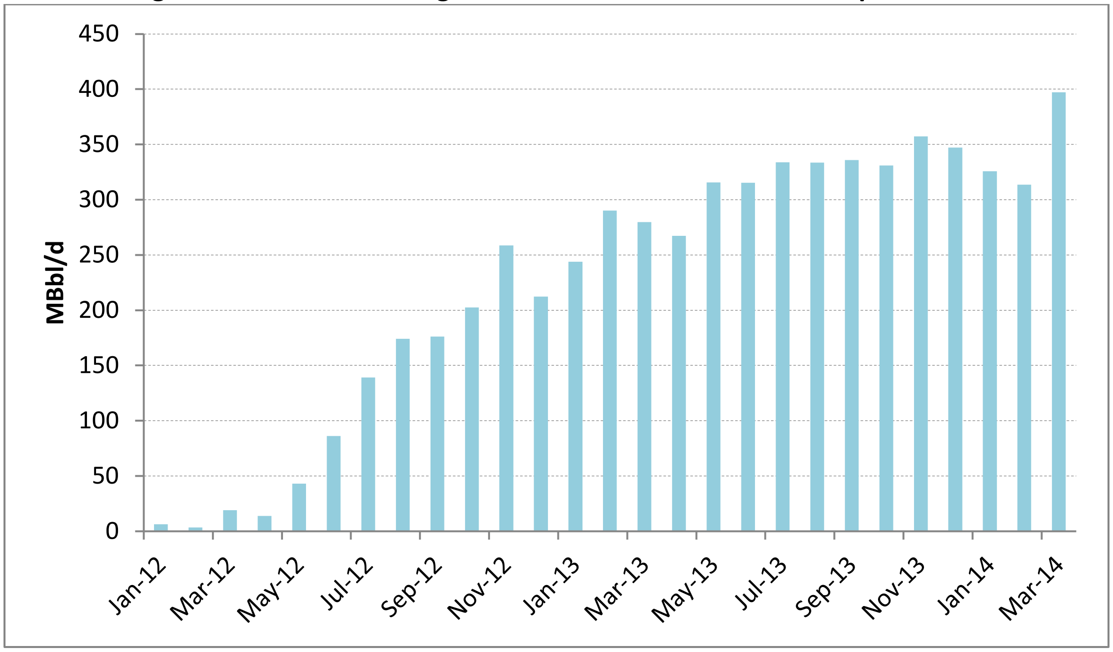
Figure 29: Annual Domestic Refinery Receipts by Barge (1981-2013)



Source: EIA

Even in Eagle Ford (TX), an area easily connected to the pipeline network and refineries, production has so outstripped pipeline capacities that crude oil is now barged from Corpus Christi to LOOP to be offloaded into the underwater pipeline system for transit back to shore.[34] The Port of Corpus Christi has expanded its docks, signaling that outbound crude may not be just a temporary solution (Figure 30).[35]

Figure 30: Increases in Eagle Ford Outbound Crude from Corpus Christi



Source: Port of Corpus Christi

A second reason for increased seaborne transport of crude oil by barge may be a result of the Oil Pollution Act of 1990 (passed by Congress after the Valdez, AK oil spill), which required all single-hulled vessels transporting crude oil in U.S. waters to be phased out by 2015. With the older ships made obsolete through regulation, newer barge and tank vessels have been constructed which require less maintenance, have greater capacity, and require less loading and offloading time. Articulated tug/barge units (ATBs) have recently been developed and have proved to be faster and capable of carrying more product than traditional coastal barges. Their appearance happily coincided with a demand for alternative transportation out of the developing shale oil areas.[36]

Much of the growth in barge shipments has occurred on the Mississippi River. Canadian crude is shipped by pipeline to Illinois and transferred to vessels for river transport to the Gulf Coast refineries.

Two other prominent routes are also being used, particularly for crude coming out of the Bakken region (Figure 31). The first takes oil west by rail to either Anacortes, WA or to the Columbia River which demarcates the border between Washington and Oregon. From these destinations the crude is moved to barges which take it down the coast to the California refineries. These Bakken receipts have started to offset the decline in tanker shipments from Alaska to West Coast.

The second route takes the oil east to Albany, NY by rail where it is similarly transferred to barges and taken down Hudson River and along the coast to refineries in New Jersey, Pennsylvania, and Delaware. As barge becomes a more viable alternative to transport crude, more and more refining firms are building rail-to-barge terminals along the Mississippi River and the coasts.

Figure 31 - Coastal and Inland Waterborne Transport Routes

Source: INTEK/RBN Energy

Inland Waterways and Lock Systems

Crude oil and petroleum products are currently transported along large portions of the 12,000 miles that make up the country's inland waterway system. This system includes 192 locks, the majority of which are located on the Mississippi River and its tributaries, including the Ohio River. Oil and petroleum products also traverse the Hudson, Columbia, and Illinois rivers, all of which also maintain lock systems. Many of the locks and their chambers were built in the 1930's and have not been updated since the 1950's.

As of 2011, there were around 4,500 tank barges operating on the navigable inland waterways.[37] There are also approximately 275 coastal tank barges, including the newer ATBs. All tank barges and ATBs must now be double-hulled. Coastal tank barges can carry anywhere from 50-185,000 barrels while the larger ATBs can carry over 320,000 barrels.[38]

The Future of Barges as Infrastructure

Barge and coastal shipping has experienced a boom in recent years due to bottlenecks in pipeline capacity brought on by increased production in the Bakken and Eagle Ford regions. With barge and tanker utilization nearly at maximums, construction of new vessels will be required to continue the growth or shippers will have to drop other commodities in favor of petroleum.

Coastal barges and tankers are also undergoing a change in their shipping patterns. Coastal tankers have been chartered by companies to move crude from the Gulf Coast to the East Coast.

Completion of the Panama Canal expansion in 2015, will allow for the shipment of oil from the Gulf to the West Coast.

F. Storage Systems

Crude Oil Terminals and Hubs

Crude oil terminals and hubs serve as collection, storage, and distribution points. Terminals may receive crude oil by truck, tanker ship, or by pipeline from producers. Terminals generally store received crude in above ground tanks. Terminals then distribute the stored crude to a dedicated refinery or send it by pipeline to other downstream terminals or refiners. Some terminals serve as market hubs, acting as both the physical and market connection between two or more crude oil pipelines.

A terminal's shell storage capacity can be defined as the total physical volume of tank capacity at a given terminal site. Working storage capacity is the maximum operable capacity of the storage tanks. Tanks are not filled to the top. Further, the volume of the tank below the offtake valve is also not counted. So, "working storage" capacity is usually approximately 90 percent of "shell storage" capacity. Utilization is measured as the filled percentage of a tank's working capacity.

The United States has two major independent crude oil terminals, the Cushing, Oklahoma hub area in PADD II and the Louisiana Offshore Oil Port (LOOP) in PADD III (GCLA). Other crude oil terminals and storage facilities are associated with ports or refineries.

Cushing, Oklahoma

Cushing, OK is the market hub for West Texas Intermediate (WTI) crude. Historically, the terminals at Cushing have received crude oil from producers in West Texas, the Permian Basin, the Mid-Continent, and PADD IV producers in the Rockies (Figure 32). Cushing also receives light oil and heavy synthetic crude from producers in the Bakken and Canada.

Figure 32: Crude Oil Storage Facilities in Cushing, Oklahoma

Cushing is directly connected to eleven refineries in Oklahoma, Kansas, and the northern Texas Panhandle. The operable capacity for these refineries is 1,150 MBbl/d.[39]

The Cushing Terminal is comprised of a network of nearly two-dozen pipelines and 10 storage terminals, several with major pipeline manifolds. At the core of the system are the Enterprise and Enbridge storage facilities and their associated pipeline manifolds which are the physical interconnections and metering points linking these vital systems.

Based on data provided by pipeline and storage terminal operators, NYMEX estimated that flows of crude oil to Cushing ranged from 1.125 to 1.275 MMBbl/d in the years leading up to 2013.[40] These flows were carried by the inbound pipelines listed in Table 9.

Table 9: Cushing Inbound Pipelines (2013)

Incoming	Capacity (MBbl/d)	Owner	Estimated flows (MBbl/d)
Keystone	590	TransCanada	200 to 225
Basin	450	Plains	400 to 440
Occidental	120	Occidental	100 to 120
Spearhead	240	Enbridge	120 to 140
White Cliffs	70	Sem Group	65 to 70
Plains Oklahoma	100	Plains	90 to 100
Cherokee	50	Plains	40 to 50
Ark City	30	Sem Group	25 to 30
MV Magellan	30	Sem Group	25 to 30
Midcontinent	50	Sunoco	45 to 50
2013 Subtotal	**1,730**		**1,100 to 1,255**
Rail Receipts	15 - 20		
2013 Total Inbound	**~1,747**		

Source: CME Group, 2014

Enbridge is planning to construct the Flanagan South Pipeline from Flanagan, IL to Cushing, OK. When that pipeline is completed, it will add 600 MBbl/d of additional inbound capacity to the market hub.

Cushing also receives Bakken crude via rail. In 2013, Cushing terminals received between 15 and 20 MBbl/d of crude oil by rail (out of 90 MBbl/d of capacity). The rail capacity is set to expand to approximately 130 MBbl/d in 2014 when the Sovereign Development rail terminal in Ardmore, OK is set to begin operations (Table 10).

Table 10: Planned Inbound Capacity Expansion at Cushing

Incoming	Capacity (MBbl/d)	Owner	Estimated flows (MBbl/d)
Flanagan South	600	Enbridge	
Rail	115	Sovereign Development	
Total Planned	**715**		

Outbound crude oil pipelines (Table 11), are connected to local refineries and other crude hubs in Illinois and the Texas Gulf Coast.

Table 11: Cushing Outbound Pipelines (2013)

Outbound	Capacity (MBbl/d)	Owner	Destination
Seaway	400	Enterprise	Jones Creek, TX
BP	200	BP	Chicago, IL
Centurion	60	Occidental	Multiple
Ozark	225	Enbridge	Wood River, IL
Osage	135	Magellan / NCRA	El Dorado, KS
Plains	125	Plains All America	Coffeyville, KS
ConocoPhillips	102	ConocoPhillips	Ponca City, OK
ConocoPhillips	53	ConocoPhillips	Borger, TX
Red River	30	Plains All America	Multiple
Sun	55	Sunoco	Tulsa, OK
West Tulsa	50	Enbridge	Tulsa, OK
Eagle	20	Blue Knight	Ardmore, OK
Total	**1,455**		

Source: CME Group, 2014

In 2013, there was 1.455 MMBbl/d of outbound capacity. That number is expected to increase in the near future. Two projects were completed in 2014: the Seaway Expansion (450 MBbl/d to Jones Creek, TX) and the TransCanada Gulf Coast Market Link Project (700 MBbl/d to Nederland, TX). An additional project, the TransCanada Gulf Coast Keystone Expansion/Spur (130 MBbl/d to Houston, TX), is expected to be completed in 2015. At that time, the outbound crude oil capacity will reach 2.735 MMBbl/d and exceed the inbound crude capacity of 2.33 MMBbl/d. Historically, the inbound pipeline and rail capacity has exceeded the outbound pipeline capacity.

The shell storage capacity at Cushing was 80 MMBbl in September 2013, of which 77.3 MMBbl was operable. Working crude oil storage capacity at the Cushing storage and trading hub was 65.74 MMBbl on September 30, 2013, an increase of 3.84 MMBbl (6%) from the previous year. However, utilization of working storage capacity on September 30, 2013 was 49%, a significant decrease from the 63% utilization that was observed in September 2012.[41] The recent drawdown of stocks at Cushing resulted from several factors:

- The startup of TransCanada's Cushing Market Link pipeline, which is now moving crude oil from Cushing to the U.S. Gulf Coast.
- Sustained high crude oil runs at refineries in Midwest and Gulf Coast districts, which are partially supplied from Cushing.
- Seaway Pipeline reversal, now flowing south instead of north, has created increased capacity to move crude from Cushing to the Gulf Coast (PADD III) refineries.
- Expanded pipeline infrastructure and railroad shipments that have made it possible for crude oil to bypass Cushing storage and move directly to refining centers on the East Coast, Gulf Coast, and West Coasts.

Previous high inventory levels at Cushing were symptomatic of transportation constraints and resulted in WTI trading at a discount relative to comparable grades of crude oil beginning in early 2011. Growing volumes of U.S. crude oil production, along with a higher level of imports from Canada, helped contribute to the record levels of inventories at Cushing. However, increased shipments to the Gulf Coast of Bakken and Eagle Ford tight oil by rail and new pipeline capacity from Seaway, are now alleviating some of the storage demand at Cushing.

Louisiana Offshore Oil Port (LOOP)

The Louisiana Offshore Oil Port, situated in the Gulf of Mexico, plays a very important role in meeting the nation's energy needs. LOOP is the single largest point of entry for waterborne crude oil coming into the U.S. It is the only port in the U.S. capable of offloading deep draft tankers known as Ultra Large Crude Carriers (ULCC) and Very Large Crude Carriers (VLCC). Along with offloading crude from ULCCs and VLCCs, LOOP also offloads smaller tankers. LOOP has offloaded over 11 billion barrels of foreign and domestically produced crude oil since its inception. Imports have declined in recent years, but LOOP still plays a key role.

LOOP receives and temporarily stores crude oil supplies from three sources:

- Tankers carrying foreign and domestic crude oil;
- Domestic crude oil produced in the Gulf of Mexico; and
- The Houston to Houma (Ho-Ho) Pipeline, which moves domestic crude produced in the U.S. and the Gulf of Mexico.

The port consists of three single-point mooring buoys used for the offloading of crude tankers and a marine terminal consisting of a two-level pumping platform and a three-level control platform. The Clovelly onshore oil storage facility, located twenty-five miles inland, is connected to the LOOP port complex by a 48-inch diameter pipeline. The Clovelly facility provides interim storage for crude oil before it is delivered via connecting pipelines to refineries on the Gulf Coast and in the Midwest.

The oil is stored in eight underground caverns leached out of a naturally occurring salt dome, which are capable of storing approximately 60 million barrels of crude oil. Since 1996, one cavern has been dedicated to the Mars stream coming in from the deepwater GOM, which uses the same distribution system as foreign sources. In addition, LOOP has an above-ground tank farm consisting of fifteen 600 MBbl barrel tanks. Three pipelines connect the onshore storage facility to refineries in Louisiana and along the Gulf Coast. LOOP also operates the 53-mile, 48-inch LOCAP pipeline that connects LOOP to Capline at St. James, LA. Capline is a 40-inch pipeline that transports crude oil to several Midwest refineries (Figures 33 - 35).[42]

Figure 33: LOOP Sources and Distribution Systems to U.S. Refineries

Source: LOOP LLC

As show in Figure 35, LOOP's connectivity to Capline and other pipelines allows it to ship crude oil not only to a range of Gulf Coast refiners, but also to refineries and markets along the Mississippi river in PADD III and to refineries in the Midwest and Appalachian areas in PADD II.

LOOP's Regional Connectivity

According to LOOP LLC, LOOP offers the management of connecting carrier facilities through full-time operatorship. The LOCAP pipeline, operated by LOOP, connects the LOOP Clovelly storage facility to St. James, LA, 54 miles to the North. The St. James terminal facility has eight breakout tanks with over 2.6

MMBbl of storage capacity situated on 140 acres of land. The 48-inch diameter LOCAP pipeline has a throughput capacity of 1.7 MMBbl/d and can expand to 2.4 MMBbl/d.

Crude oil arriving at the St. James terminal can be dispatched to any one of four local refineries serving Louisiana and Texas:

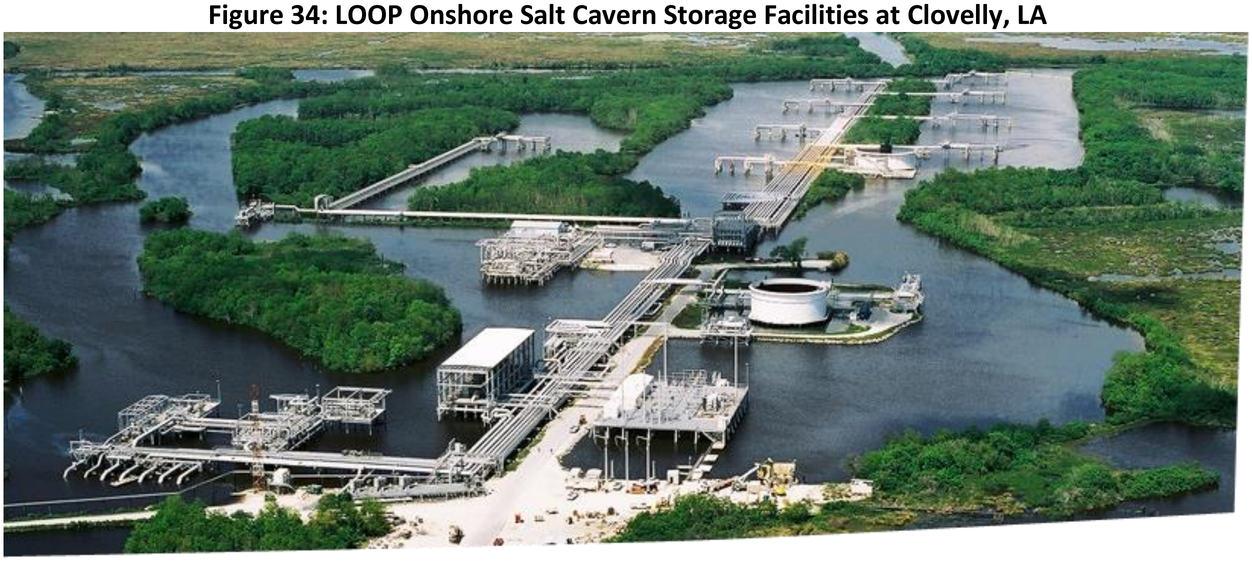
- The Motiva refinery in Convent, LA;
- The refinery in Garyville, LA;
- The ExxonMobil refinery in Baton Rouge, LA; and
- The Placid refinery in Port Allen, LA

In addition, crude oil arriving at the St. James terminal can also be dispatched to other pipeline systems, transmitting more than 50 percent of the nation's refining capacity to refineries throughout the Midwest and as far north as Canada including:

- Capline, to Patoka, Illinois;
- The ExxonMobil Pipeline Northline;
- The Red Stick Pipeline to Bayou Choctaw (Strategic Petroleum Reserve site);
- The Shell Sugarland terminal;
- The NuStar St. James terminal; and
- The Plains St. James terminal.

LOOP also created specific storage facilities for the exclusive warehousing of Mars and Thunder Horse crude oil. Within hours of a request, LOOP can send these supplies to the customer's choice of destinations.[43]

Figure 34: LOOP Onshore Salt Cavern Storage Facilities at Clovelly, LA



Source: LOOP LLC

Figure 35: LOOP Crude Oil Storage Tanks at Clovelly, LA

Source: LOOP LLC

Other Crude Oil Storage Facilities

Other than Cushing, OK and LOOP, most industry crude oil storage and terminal facilities are associated with refineries or refining centers. As of September 2013, U.S. refineries maintained a total crude oil Shell Storage Capacity of 177.7 million barrels, of which 7.4 million barrels of capacity was idle. Refineries had a total Working Crude Oil Storage Capacity of 145.4 million barrels. These facilities contained total stocks of 90.8 million barrels, resulting in a utilization rate of 62% of working storage capacity (Table 12).

The nation's other crude oil terminals (excluding the Strategic Petroleum Reserve (SPR), Cushing, and LOOP) have combined additional shell storage capacity of approximately 283 million barrels, and crude oil storage working capacity of approximately 234 million barrels of crude oil.

Table 12: Crude Oil Shell Storage and Working Storage Capacity at U.S. Refineries (September 2013)

PADD	Shell Storage Capacity (In Operation) (MBbl)	Working Storage Capacity (MBbl)
I	17,334	15,154
II	21,870	17,952
III	86,629	72,858
IV	4,655	4,109
V	39,839	35,324
Total	**170,327**	**145,397**
Oil in Storage		**90,778**

Product Terminals

Product Terminals receive, store, and distribute refined products (such as motor gasoline, distillate, kerosene, jet fuel, residual fuel oil, and asphalt and road oils) as well as ethanol, biodiesel, and other blending stocks. In the United States, 1,414 terminals have a combined storage capacity of nearly 1,110.8 MMBbl and a total working storage capacity of 961.4 MMBbl (Table 13 and Figure 36).[44]

Table 13: Petroleum Product Terminals and Storage Capacity at U.S. Refineries (September 2013)

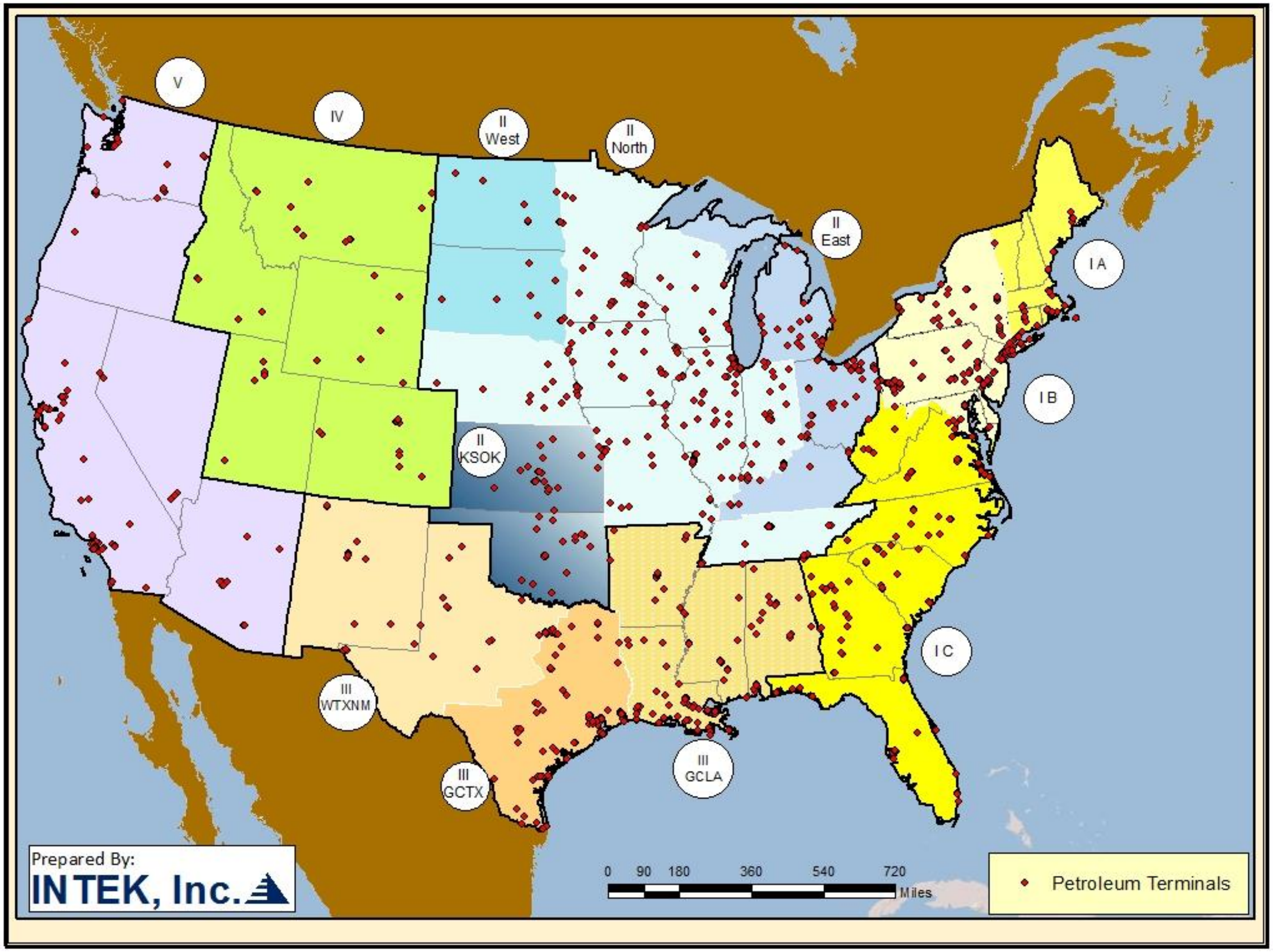
PADD	No. of Terminals	Total Shell Capacity (MBbl)	Total Working Capacity (MBbl)
I	444	278,360	245,034
II	447	216,736	184,682
III	277	527,821	454,206
IV	48	10,607	9,499
V	198	77,240	67,949
Total	**1,414**	**1,110,764**	**961,370**

Crude oil and refined product storage terminals are dispersed throughout the country. Terminal volumes and the slate of products stored vary by terminal and region.

Figure 37 shows that natural gas liquids (NGLs), liquefied petroleum gases (LPG), motor gasoline, and distillate fuel oil account for 80% of the petroleum products in storage.

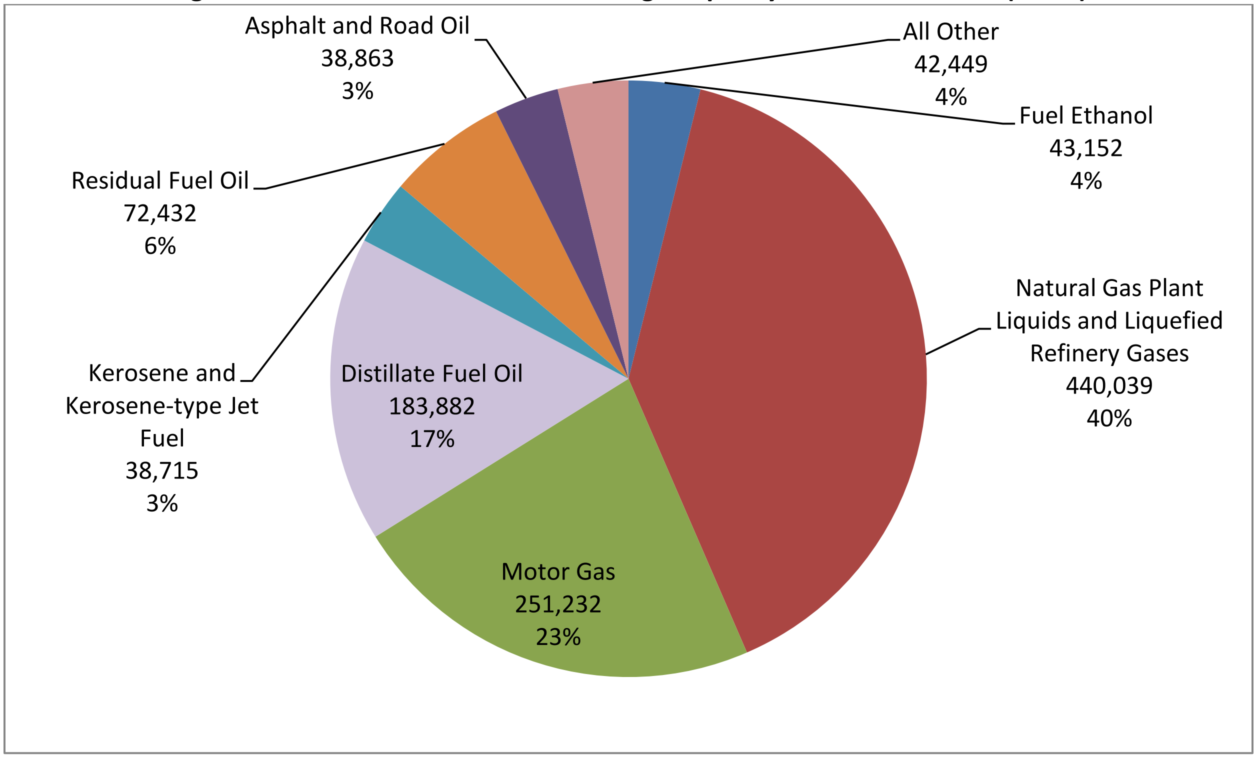
- The volume of motor gasoline stored in in each PADD varies relative to population, consumer demand, seasonal variation and other factors.
- NGLs and LPG are primarily stored in PADD III due to the large number of refineries and processing plants located there.
- Distillate fuel is primarily located in PADD I and PADD II. Residual fuel oil is concentrated in PADDs I and III.

Figure 36: U.S. Crude Oil and Product Storage Terminals



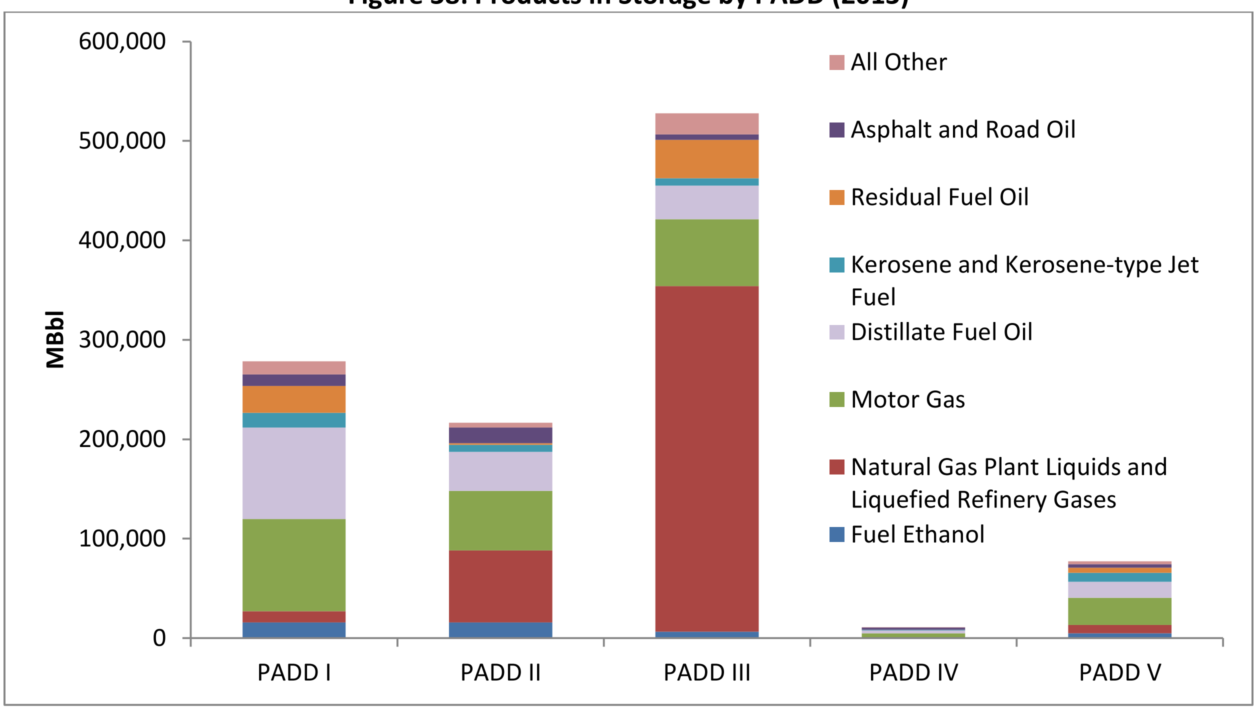
Source: EIA

Figure 37: Breakdown of Product Storage Capacity at Bulk Terminals (MBbl)



Source: Working and Net Shell Storage Capacity Report, EIA

Figure 38: Products in Storage by PADD (2013)



Source: Working and Net Shell Storage Capacity Report, EIA

Emergency Reserves

Strategic Petroleum Reserves

The Energy Policy and Conservation Act (EPCA)[45] provided for the creation of a Strategic Petroleum Reserve (SPR) for the storage of up to 1 billion barrels of petroleum products, to reduce the impact of disruptions in supplies of petroleum products, to carry out obligations of the United States under the international energy program, and for other purposes. The U.S. created the SPR as a stockpile of petroleum necessary to carry out its treaty obligations to maintain 90 days of net imports.

The idea for a national emergency stockpile of crude oil goes back to at least World War II when it was proposed by the Secretary of the Interior Harold Ickes. The idea gained momentum following such key events as the Suez Crisis. The Oil Embargo of 1973-74 cemented the decision to finally implement the plan. President Ford formally established the SPR with the passage of EPCA on Dec. 22, 1975. The Act made it official policy to establish and maintain a reserve. Over the next few years, salt caverns along the Gulf Coast were chosen and first filled on July 21, 1977 with 412,000 barrels of Saudi Arabian light crude.

Purchases totaling 591.7 million barrels were completed by the end of 1994. However, beginning in FY 1995 until January 2009, direct purchase of crude oil was suspended in order to devote budget resources to refurbishing the SPR equipment and extending the life of the complex through at least the first quarter of the 21st century.

Fill was resumed in 1999 using a joint initiative between the Departments of Energy and the Interior to supply royalty oil from Federal offshore tracts to the SPR. This arrangement is known as the Royalty-in-Kind (RIK) program and continued in phases from 1999 through 2009, when the Department of the Interior (DOI) discontinued its RIK program.

The first direct purchase of crude oil since 1994 was conducted in January 2009 using revenues available from the 2005 Hurricane Katrina emergency sale. DOE purchased 10.7 million barrels at a cost of $553 million.[46] In 2010, the SPR reached its full capacity of 727 million barrels for the first time ever. The SPR now consists of 62 large storage caverns in underground salt dome formations located at four sites in Texas and Louisiana along the Gulf Coast (Tables 14 and 15). Approximately 99% of the stored oil is available for sale and delivery. The current SPR crude storage inventory is 691 million barrels, following a test sale and drawdown that was conducted in the spring of 2014.

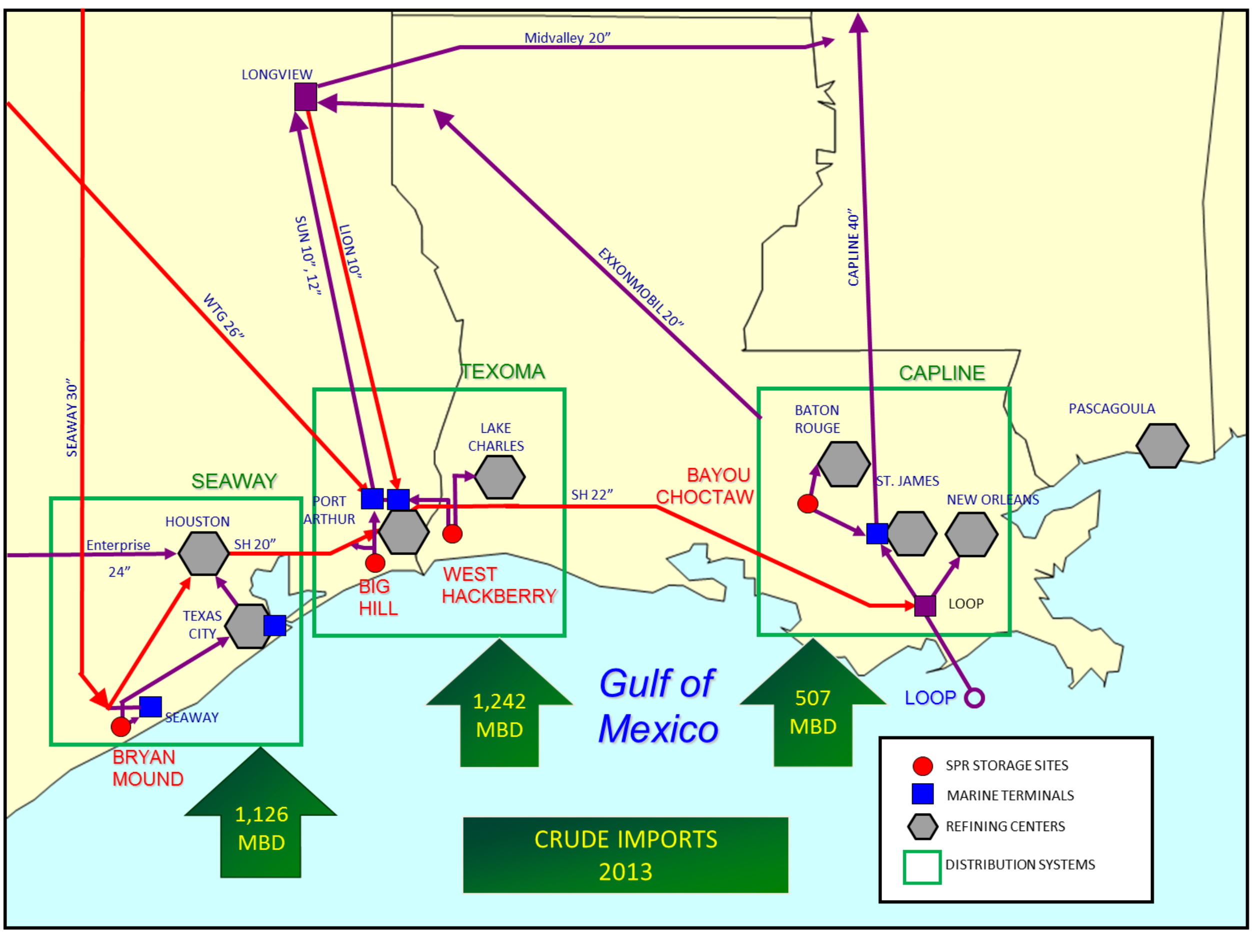
As of May 2014, the SPR holds the equivalent of 94 days of import protection (based on 2012 net petroleum imports). The SPR storage sites are connected to refineries through a network of local pipelines, interstate pipelines, and marine terminals (Figure 39). In total, the four SPR sites are connected to 24 refineries in the Gulf Coast that collectively comprise 34% of U.S. refining capacity. These refineries imported 2.4 million barrels per day of crude oil in 2013. The SPR sites are connected to five marine terminals with a combined waterborne distribution capability of 2.5 million barrels per day. The SPR's four storage facilities: Bryan Mound, Big Hill, West Hackberry, and Bayou Choctaw, are served by three major systems for crude oil distribution: Seaway, Texoma, and Capline (Table 15).

Table 14: SPR Facilities, Capacities, Inventory and Drawdown Rates

Storage Facility & Location	Type	Product	Capacity (MMBbl)	Q1 2014 Inventory (Sweet)	Q1 2014 Inventory (Sour)	Q1 2014 Inventory Total* (MMBbl)	Drawdown Rate (MMBbl/d)
Bryan Mound, Freeport, TX	Salt Cavern	Crude	254	64.4	176.3	**240.7**	**1.325**
Big Hill, Winnie, TX	Salt Cavern	Crude	171	67.8	95	**163.8**	**1.1**
W. Hackberry, Hackberry, LA	Salt Cavern	Crude	227	107.8	105	**212**	**1.3**
Bayou Choctaw, Plaquemine, LA	Salt Cavern	Crude	76	21.8	51.8	**73.6**	**0.5**
Total		**Crude**	**727**	**262**	**429**	**691**	**4.25**

Source: Strategic Petroleum Reserves, 2014

Figure 39: Strategic Petroleum Reserve (SPR) Sites and Regional Pipeline Connectivity



Source: Strategic Petroleum Reserves

Table 15: Capacity of SPR Distribution Systems

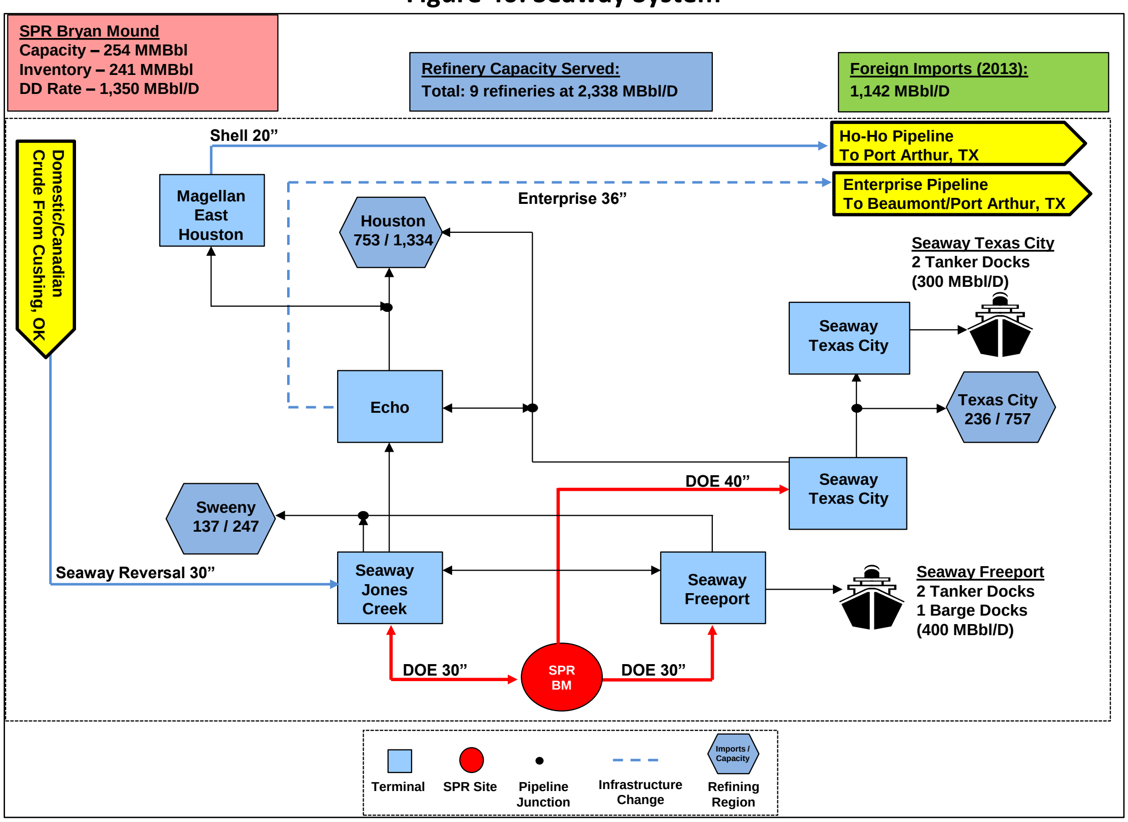
System	SPR Sites Served	Refinery Distribution Capability (MBbl/d)	Marine Distribution Capability (MBbl/d)	Inland Distribution Capability (MBbl/d)	Total Distribution Capability (MBbl/d)	% of SPR Drawdown Rate
Seaway	Bryan Mound	1,146	700	0	**1,846**	**135**
Texoma	Big Hill and W. Hackberry	1,542	1,375	60	**3,017**	**112**
Capline	Bayou Choctaw	507	400	36	**943**	**183**
Total		**3,195**	**2,475**	**96**	**5,764**	**131**

Source: Strategic Petroleum Reserves

Seaway System

The Seaway pipeline (Figure 40) provides the Bryan Mound SPR facility with crude oil distribution capability totaling 1.13 million barrels per day to nine Houston and Texas City refineries. It also provides marine distribution capability totaling 700 MBbl/d via two marine terminals. With the recent reversal of Seaway, it no longer provides distribution capabilities to inland refiners.

Figure 40: Seaway System

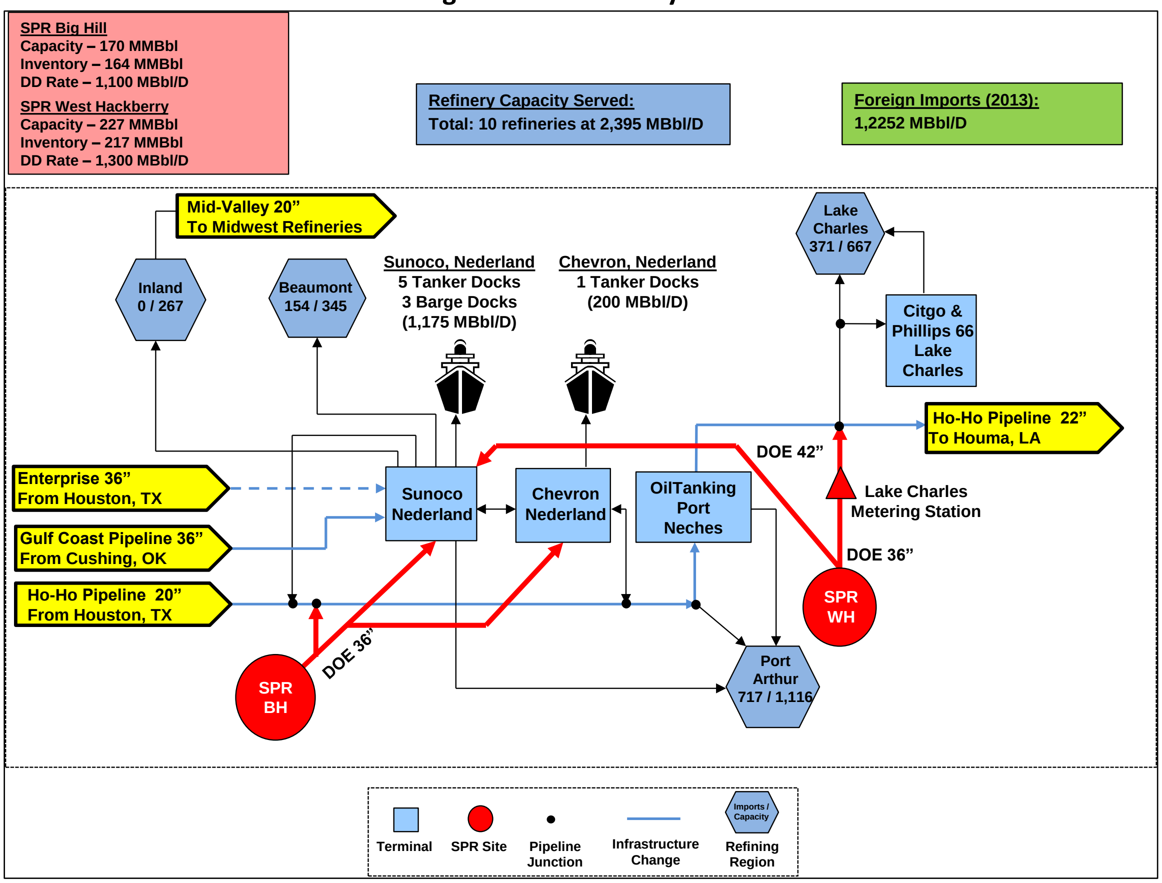


Source: Strategic Petroleum Reserves

Texoma System

The Texoma System (Figure 41) serves SPR's Big Hill and West Hackberry sites, providing a total distribution capacity of nearly 2.7 million barrels per day. It connects to 10 Beaumont (TX), Port Arthur (TX) and Lake Charles (LA) refineries that collectively imported over 1.2 million barrels per day in 2013. Texoma also connects to refineries in the Houma, LA area (via the Shell Pipeline) that imported 300 MBbl/d in 2013. Refinery distribution is expected to increase with the completion of the Motiva Refinery expansion of 315 MBbl/d. Two terminals connected to Texoma provide marine distribution capabilities of 1.375 million barrels per day. Texoma also provides distribution capabilities to inland refineries of 60,000 barrels per day via the MidValley pipeline to the Midwest (PADD II) region.

Figure 41: Texoma System

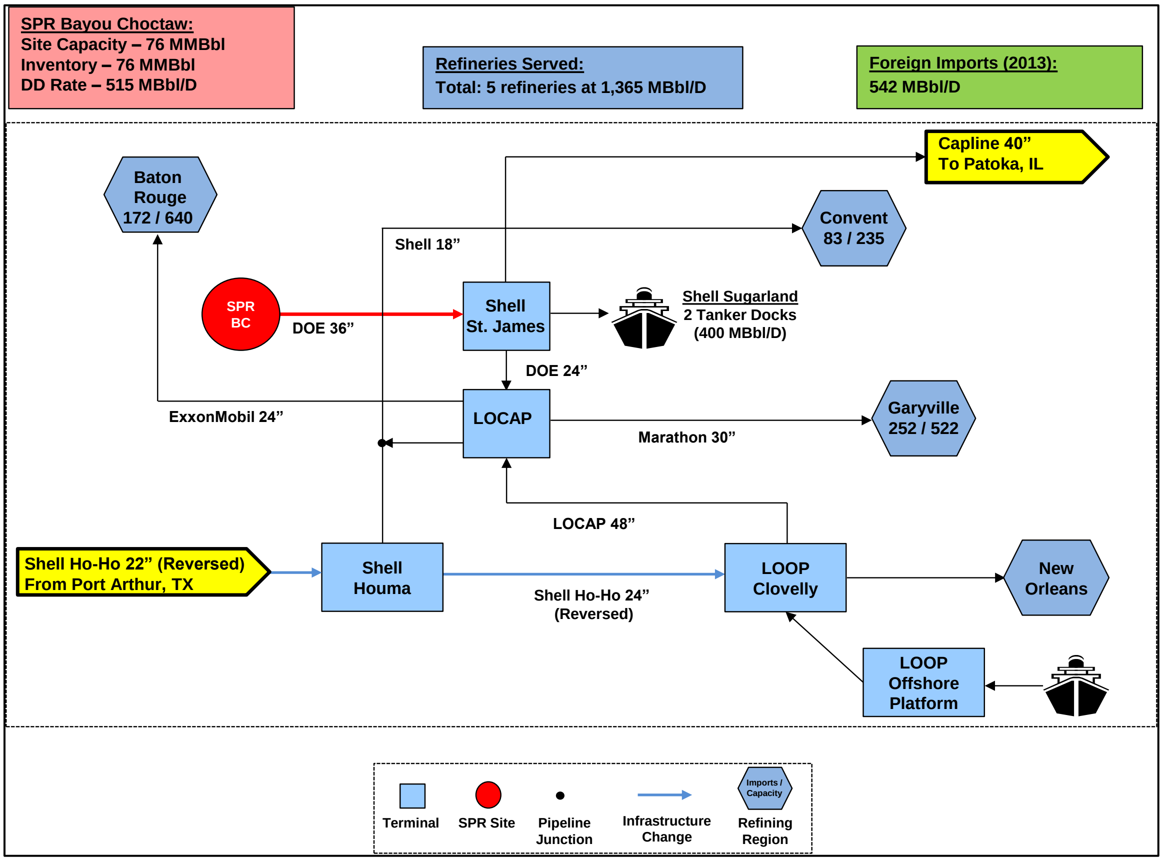


Source: Strategic Petroleum Reserves

Capline System

The Capline System (Figure 42) serves the SPR Bayou Choctaw Site which has a drawdown rate of 515 MBbl/d. Via Capline, Bayou Choctaw is connected to five Lower Mississippi River refineries that collectively imported 507 thousand barrels per day in 2013, a major share of Gulf Coast imports. A marine terminal also provides 400 MBbl/d of distribution capacity. Capline also provides distribution capabilities to inland refineries totaling 36 MBbl/d via the Capline pipeline to the Midwest (PADD II) region.

Figure 42: Capline System



Source: Strategic Petroleum Reserves

Northeast Home Heating Oil Reserve (NEHHOR)

The Northeast Home Heating Oil Reserve (NEHHOR) is located at two sites in Massachusetts and Connecticut in PADD-IC. The facilities are industry-owned sites with storage capacity leased to the U.S. Government (Table 16). NEHHOR was established in 2000 as a two million barrel supply of emergency fuel oil for homes and businesses in the northeastern United States, a region heavily dependent upon the use of heating oil. During 2011, the U.S. Department of Energy (DOE) converted the inventory of the heating oil reserve from #2 high sulfur heating oil to cleaner burning ULSD. DOE also reduced the size of the Reserve to one million barrels.

Table 16: NEHHOR Site Capacity and Drawdown (Source DOE 2014)

Storage Facility & Location	Type	Product	Capacity (MBbl)	Current Inventory (MBbl)	Max Drawdown Rate (MBbl/d)
Global, Revere, MA	Steel Tanks	ULSD	500	500	200
Hess, Groton, CT	Steel Tanks	ULSD	500	500	160
Total		**ULSD**	**1,000**	**1,000**	**360**

V. Natural Gas Storage, Transport and Distribution

The application of new directional drilling and advanced fracturing technologies has made production of the nation's substantial shale gas resources technically and economically viable. This technology shift has changed the natural gas supply outlook of the United States from that of a net gas importer to a self-sufficient market with significant gas export potential.

New shale gas production is occurring in numerous basins across the country, with the greatest volumes being produced from the Marcellus and Utica shale formations in the Appalachian and Mid-Atlantic states in PADDs I and II. High volumes of associated gas are also being produced in conjunction with increased domestic oil production.

The nation's natural gas transportation, storage, and distribution infrastructure is expanding to keep pace with the increased gas resource development. Gas processing capacity associated with shale gas development has grown rapidly. In many regions, however, new natural gas gathering infrastructure must be constructed to deliver gas from new production areas to processing, transmission and storage facilities. The lack of sufficient infrastructure in many areas has caused gas development to slow or production to be shut in, pending infrastructure development. This gap has affected development rates, lease prices, and wellhead gas prices. These topics are discussed in greater detail below.

A. Regional Natural Gas Treatment and Processing Facilities

Figure 43: Natural Gas Processing Plant

Major transportation pipelines impose restrictions on the make-up of the natural gas that is allowed into the pipeline. A natural gas processing plant cleans raw natural gas by separating impurities and various non-methane hydrocarbons and fluids to produce 'pipeline quality' dry natural gas. These plants also recover natural gas liquids (NGLs) such as condensate, natural gasoline and liquefied petroleum gas (LPG), and other marketable byproducts, such as sulfur. Processing natural gas to pipeline quality levels can be complex, but usually involves four main processes to remove impurities: oil and condensate removal; water removal; separation of NGLs; and sulfur and carbon dioxide removal. An example is shown in Figure 43.

As of 2012, the United States had 516 natural gas processing plants located in 22 states (Figure 44) with a combined plant capacity of 64,659 MMcf/d and average utilization of 68.6% (Table 17). Gas plants vary in size ranging from less than 125 MMcf/d to over 1.2 Bcf/d. The largest gas processing plants are found in Louisiana (PADD III GCLA); near Chicago, IL (PADD II); and in northwestern Colorado and southwestern Wyoming in PADD IV.[47] Concentrations of smaller gas processing plants are found throughout the oil and gas producing regions of the nation, but particularly in PADDS II, III, and IV.

Figure 44: Location and Capacity of Natural Gas Processing Plants (2012)

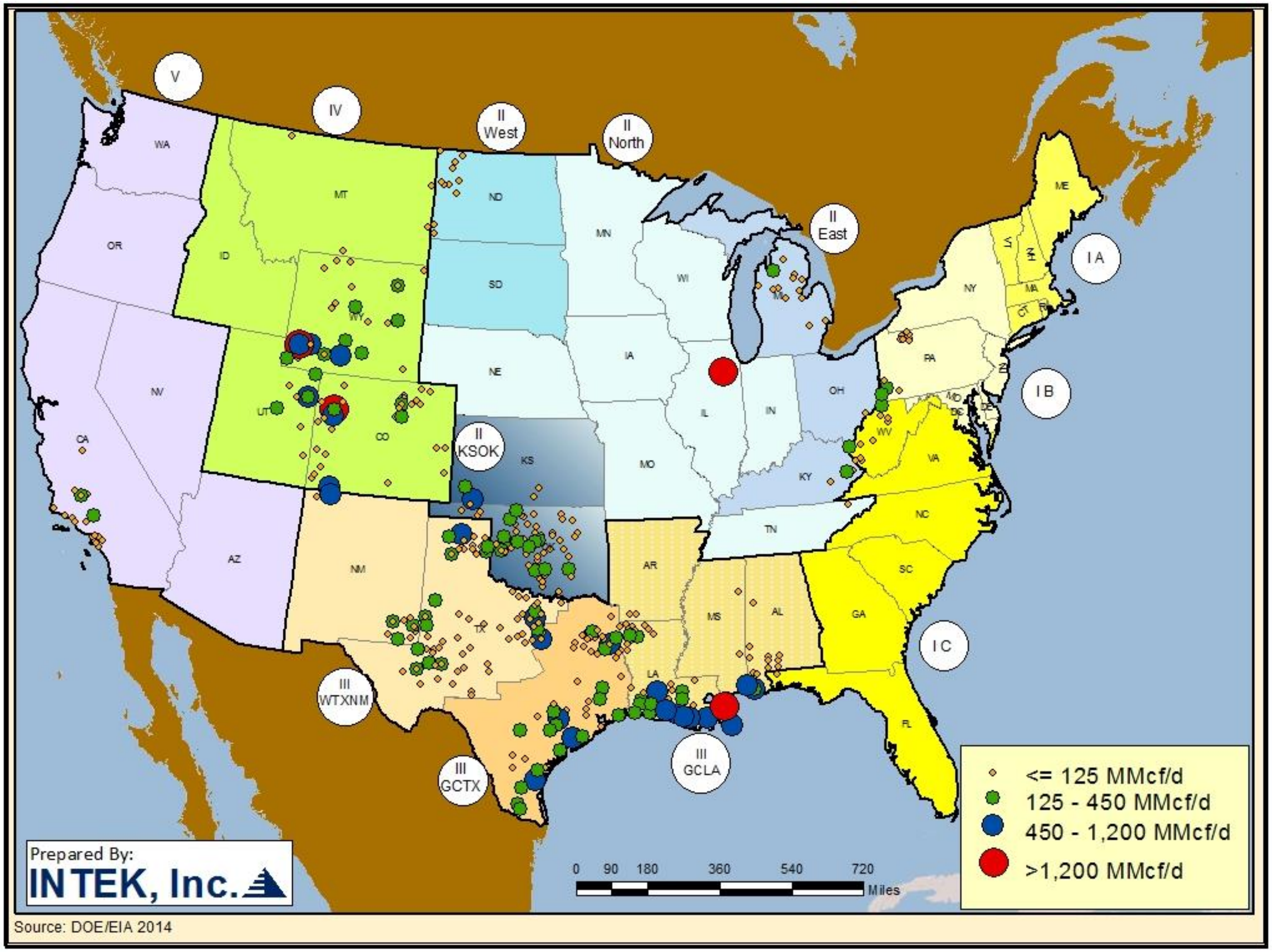


Table 17: Natural Gas Processing Capacity by Sub-PADD (2012)

PADD	Sub PADD	Number of Plants	Plant Processing Capacity (MMcf/d)	Plant Flow (MMcf/d)	Utilization (Percent)
I	A	-	-	-	-
	B	10	369	222	60.1%
	C	12	935	660	70.6%
II	East	18	733	249	34.0%
	KS/OK	74	6,739	4,980	73.9%
	North	2	2,125	1,613	75.9%
	West	13	507	342	67.5%
III	GCLA	75	15,119	8,469	56.0%
	GCTX	58	8,918	6,790	76.1%
	WTX/NM	129	12,552	9,693	77.2%
IV	ROCKIES	101	15,736	10,769	68.4%
V	WEST COAST	24	927	581	62.7%
Total		**516**	**64,659**	**44,369**	**68.6%**

Source: EIA, Natural Gas Annual Respondent Query System (EIA-757 Data through 2012)

Recent and Future Growth in Gas Processing Plant Capacity

Both "associated gas," which is produced along with crude oil and "wet gas" which is produced from shale gas operations, need to be processed and treated before they can be sold and injected into the natural gas pipeline system. Volumetric growth in gas processing capacity is directly correlated with the growth in oil and gas production and occurs in the same geographic areas as the oil or gas production activity. The rapid growth in U.S. gas processing facilities and capacity is attributed primarily to the rapidly increasing oil and natural gas production from shale formations. By 2016, Natural Gas Plant processing capacity is expected to have grown by nearly 19,927 MMcf/d cubic feet/day just to meet the growing processing needs associated with the growth in domestic shale gas and tight oil production.[48,49] Between 2010 and 2016 more than 127 new gas processing plants or plant expansions associated with shale gas development will have been completed (Figures 45 and 46).

- The growth in gas processing demand began in 2010 in PADD II West to treat gas associated with Bakken shale oil production.
- By 2012, new processing capacity was being added in PADD III (GCTX and WTX/NM), throughout PADD II to accommodate Utica shale gas production, and in PADDs IB and IC to process the burgeoning Marcellus shale gas production. As of the end of 2012, shale gas related natural gas processing capacity had risen from 125 MMcf/d in 2010 to 4,273 MMcf/d.

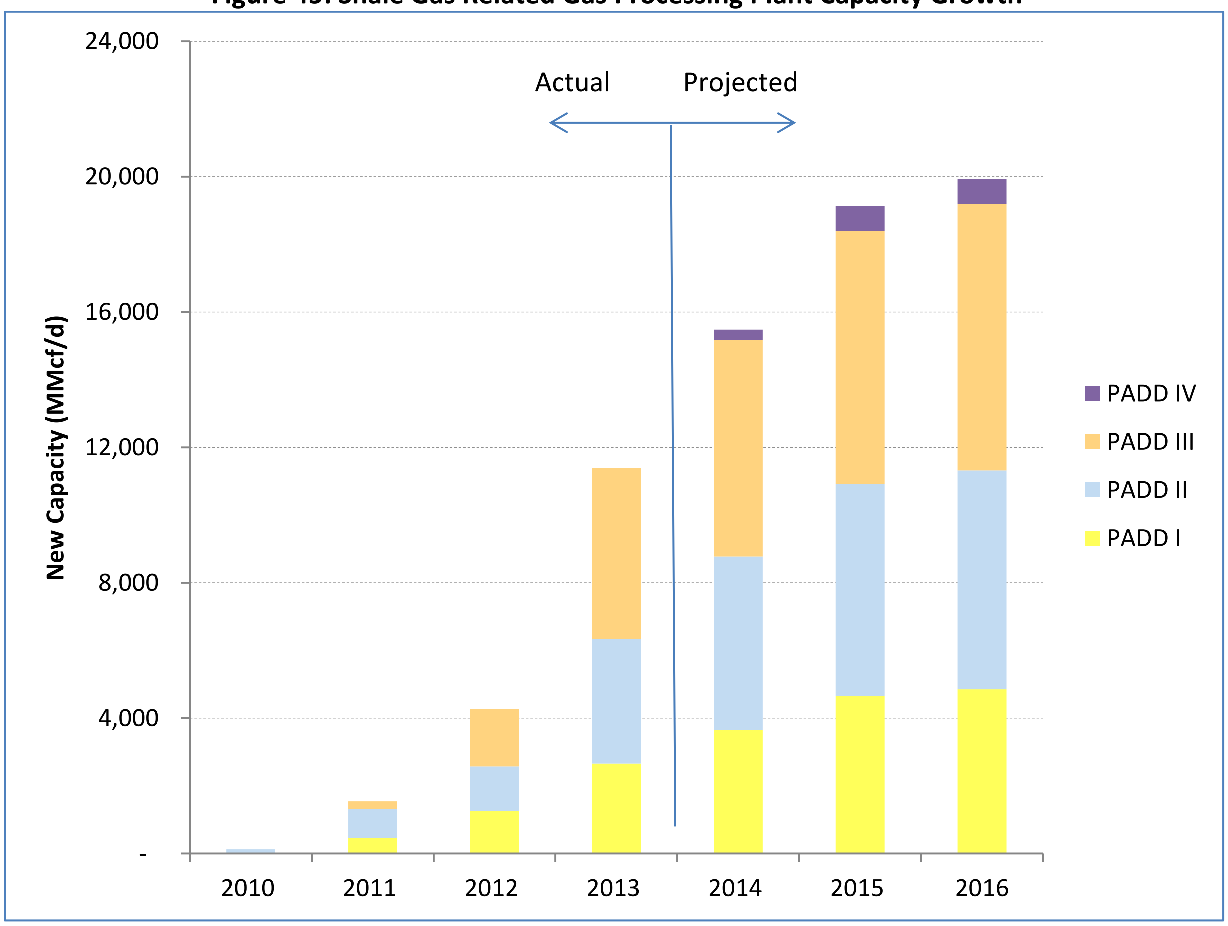
- Shale gas related processing capacity nearly tripled in 2013, primarily in PADD III (GCTX and WTX/NM), PADD II East, and PADD IC, reaching 11,382 MMcf/d.

Shale gas related gas processing capacity growth is expected to continue, increasing by another 8,545 MMcf/d to reach 19,127 MMcf/d by the end of 2016. Most of this future growth is expected in PADD III (GCTX) and in PADD I-B due to Marcellus gas production.

Natural Gas Liquids

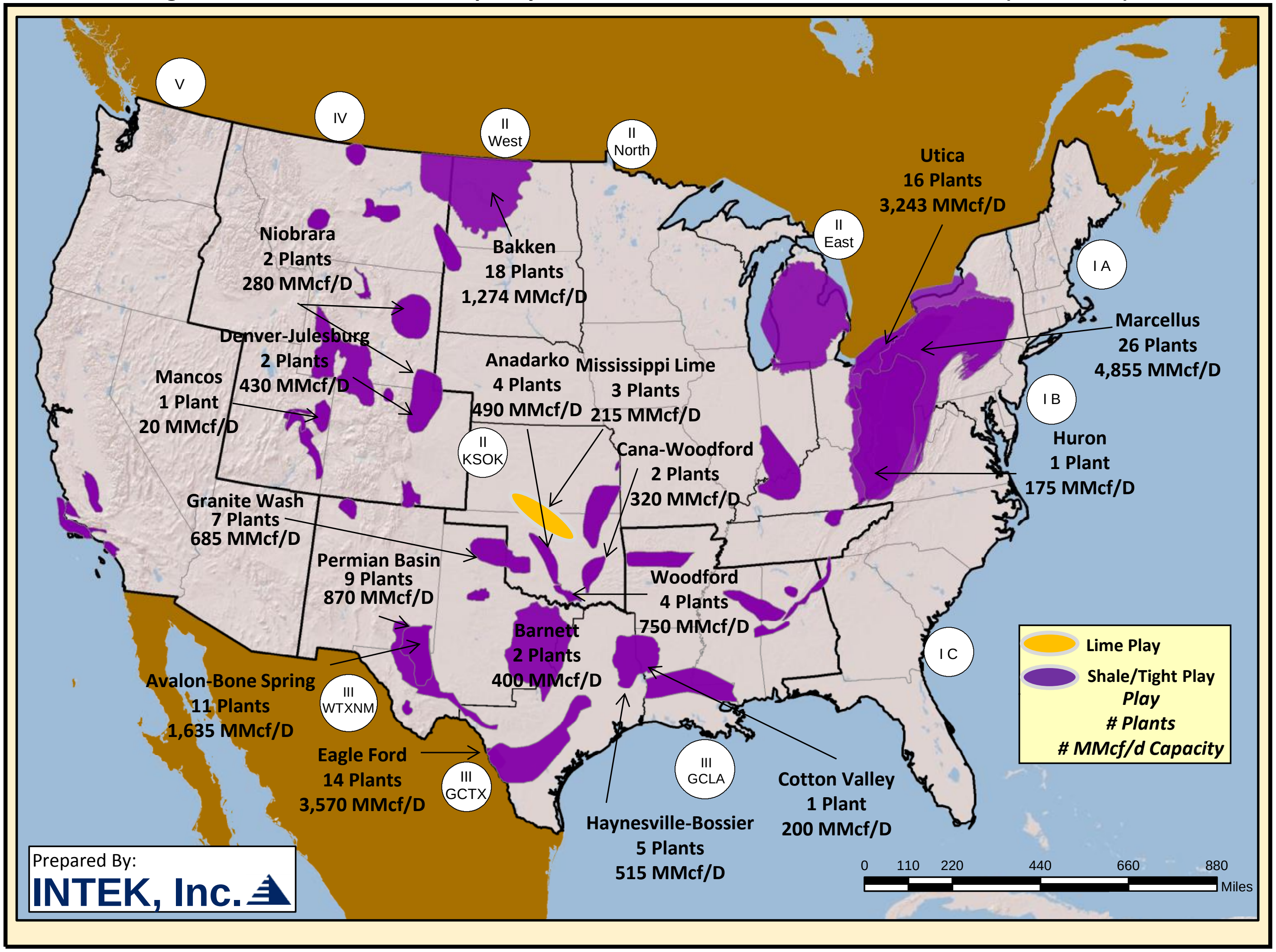
Associated hydrocarbons, known as "natural gas liquids" (NGLs) can be very valuable by-products of natural gas processing. NGLs include: ethane, propane, butane, iso-butane, and natural gasoline. These NGLs are sold separately and have a variety of different uses, including enhancing oil recovery in oil wells, raw material feedstocks for oil refineries or petrochemical plants, and as sources of energy. The high fractions of NGLs contained in the wet gas produced from many shale gas formations has added significant market value to the hydrocarbons produced and improved revenues and return on investment from these projects.

Figure 45: Shale Gas Related Gas Processing Plant Capacity Growth



Source: Oil & Gas Journal, June 2, 2014`; Gas Processing, May/June 2014

Figure 46: Natural Gas Plant Capacity Growth from Shale Gas Production Growth (2010-2016)



Source: EIA, Oil and Gas Journal 2014, Gas Processing 2014

NGL Storage Capacity

Table 18: NGL Storage at Natural Gas Processing Plants (2012)

PADD	Sub PADD	Dry Gas Storage (MMcf)	NGL Storage (MBbl)
I	A	-	-
	B	-	17
	C	-	29
II	EAST	-	66
	KS/OK	29	141
	NORTH	-	203
	WEST	-	2,033
III	GCLA	-	255
	GCTX	1	577
	WTX/NM	3	1,409
IV	ROCKIES	149	682
V	WEST COAST	-	57
Total		**181**	**5,468**

NGL storage capacity has increased along with gas processing capacity. Table 18 shows dry gas and NGL storage capacity by PADD and Sub-PADD at the end of 2012. Depending on the shale play and production area, varying amounts of NGL are being produced. For instance, in the Eagle Ford area, the NGL yield may range from as little as 5 percent to as much as 23 percent. [50] NGL storage capacity will continue to grow through 2015 along with the growth in shale gas related Gas Processing Plant capacity.

B. Natural Gas Pipeline Infrastructure

With 315,000 miles of transmission pipeline and a combined state-by-state outflow transmission capacity of approximately 443 Bcf/d, the U.S. natural gas pipeline network is complex, integrated, and capable of transporting gas to most regions of the country.[51] These transmission pipelines support many more miles of regional distribution pipelines that deliver gas directly to end-users. Overall, there are approximately 210 of these pipeline systems (Figure 47).[52] Table 19 provides more extensive details on these pipelines.

Pipeline Systems

Natural gas pipelines are configured around trunk/transmission lines which transfer large volumes of gas from the production and underground storage areas to the local distribution systems that serve major markets. There are 26 major market hubs/distribution points in the country.[53]

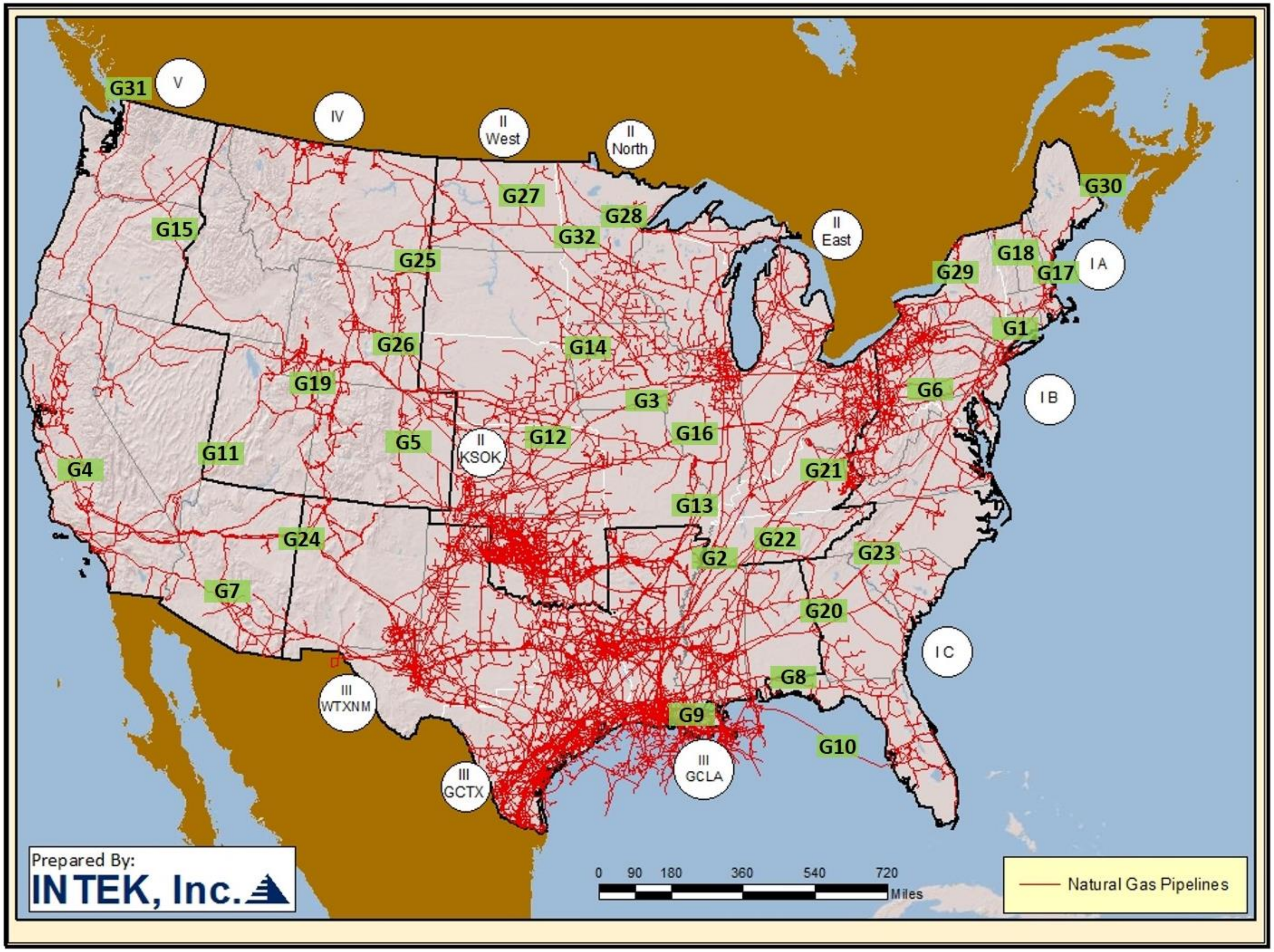
A major characteristic of the natural gas market in the U.S. is fluctuation in demand between low periods in the warm summer months, and high periods in the cold winter months. The pipeline system is designed to transfer natural gas to storage during the warm off-peak months and move the gas to market during the cold peak months.[54]

Compressor stations along natural gas transmission lines keep the gas flowing at required pipeline pressure. There are over 1,400 of these compressor stations on interstate pipelines, most of which are controlled remotely by the pipeline operators.[55] Along with pipeline interconnects, these compression stations form an integral part of pipeline infrastructure (Figure 48). The figure shows the locations of compressor stations along the nation's interstate gas transmission pipelines. Stations on intrastate lines are not shown.

Pipelines may be further designated as either interstate or intrastate. Interstate pipelines consist of the major trunk lines that move gas between states while intrastate pipelines connect regional markets to the larger lines and make up about 29% of total mileage. There were roughly 215,000 miles of interstate transmission lines and 90,000 intrastate transmission lines as of 2008.[56]

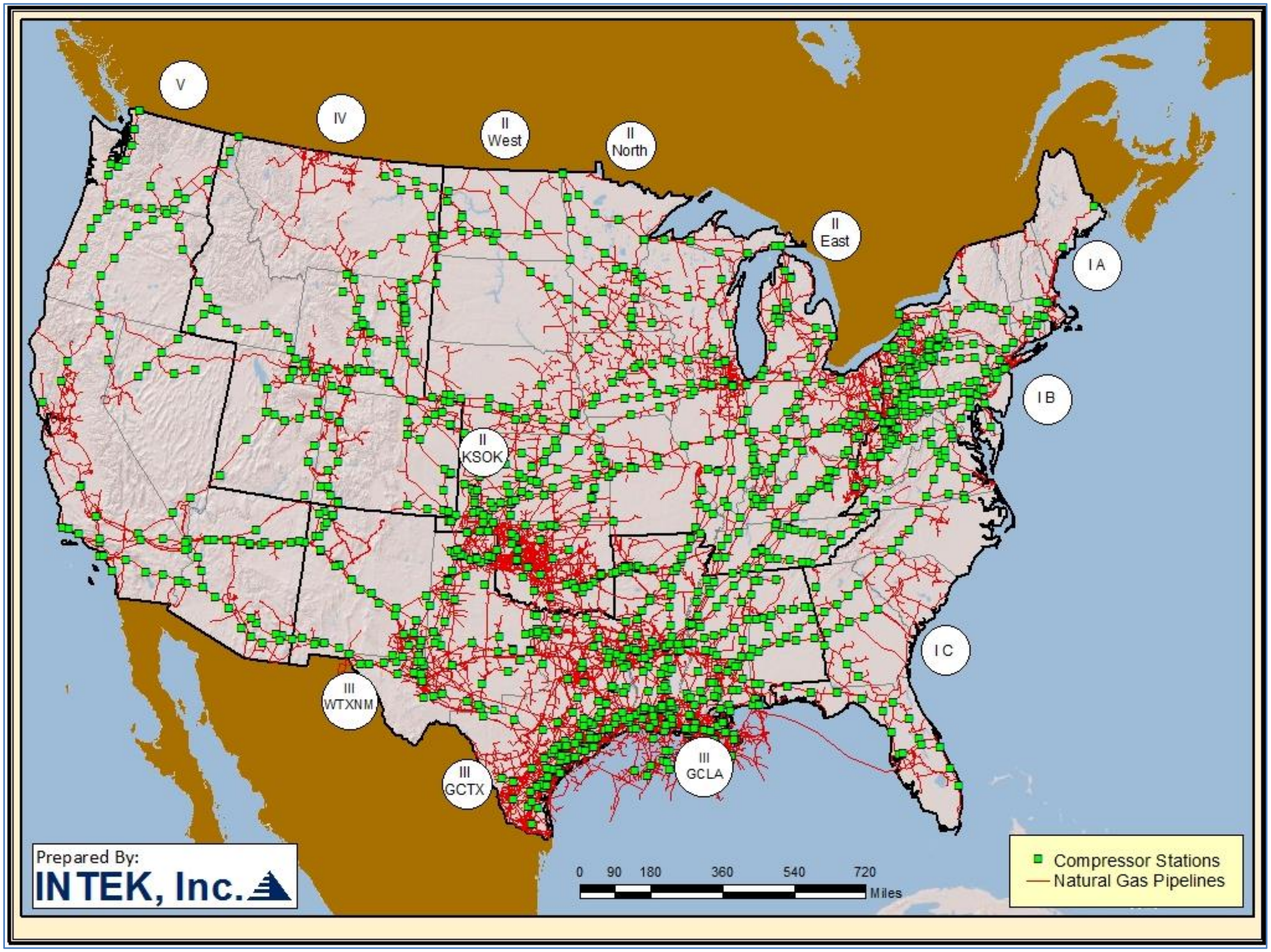
The United States imports only a very small percentage of its natural gas supply, mostly from Canada. The nation receives 94% of its natural gas imports via pipeline of which over 99% come from Canada. , it is important to note that pipelines are also used to import and export natural gas from Canada and Mexico along 40 entry and exit points. Many of these pipelines are able to reverse flow direction when needed.[57] Six entry points receive 88% of all natural gas imports. The remainder comes via Liquefied Natural Gas (LNG) tankers or other methods.

Figure 47: Major Natural Gas Transmission Pipelines



Source: EIA

Figure 48: Natural Gas Pipeline Compressor Stations



Source: EIA

Table 19: Major Natural Gas Pipeline Systems

Map Key	Natural Gas Pipeline	Origin/Source	Markets Served	Total System Capacity (Bcf/d)
G1	Algonquin Gas Transmission Company	Supplied by Texas Eastern system in New Jersey	Northeast markets (CT, RI, MA); Connects to Maritimes & Northeast	2.6
G2	ANR Pipeline Company (East Leg)	Gulf of Mexico	Michigan and Ohio markets	2.0
G3	ANR Pipeline Company (West Leg)	Anadarko Basin	Chicago area and Wisconsin markets	
G4	California Gas Transmission Co	Supplied by El Paso and Transwestern systems at Topock, AZ and by the Northwest Pipeline at Malin, OR	Major California markets	3.1
G5	Colorado Interstate Gas	Rocky Mountain and Anadarko Basin gasfields	Eastern Colorado (Colorado Springs, Denver) and Wyoming markets	4.6
G6	Columbia Gas Transmission Corporation	Appalachian gasfields, Columbia Gulf Pipeline	Ohio, West Virginia, and Major Mid-Atlantic markets (New Jersey, Maryland, Pennsylvania, Virginia, Washington D.C.)	9.4
G7	El Paso Pipeline System	San Juan, Permian, and Anadarko Basins	West Texas, New Mexico and Arizona (Phoenix and Tucson); Connects to Mojave Pipeline in California to supply the Bakersfield area	6.2
G8	Florida Gas Transmission Company	South Texas	Alabama (Mobile) and Florida (Jacksonville, Orlando, Tampa, Miami)	3.1
G9	Gulf South Pipeline Company	Haynesville and Barnett shale plays, Gulf of Mexico, Lake Charles LNG terminal	Louisiana, Mississippi, Alabama, and Florida Panhandle	6.9
G10	Gulfstream Natural Gas Pipeline Company	East Louisiana and Mississippi	Central Florida (Tampa and Orlando)	1.1

Map Key	Natural Gas Pipeline	Origin/Source	Markets Served	Total System Capacity (Bcf/d)
G11	Kern River Gas	Wyoming and Utah gas fields	Salt Lake City, Las Vegas, Bakersfield, CA	2.2
G12	Natural Gas Pipeline of America (Amarillo Line)	Permian Basin	Chicago, IL	3.4
G13	Natural Gas Pipeline of America (Gulf Coast Line)	Gulf Coast Texas	Chicago area and Northern Indiana	
G14	Northern Natural Gas Company	Permian and Anadarko Basins	Upper-Midwest (IA, KS, NE, SD, WI, IL, Upper Peninsula MI)	5.5
G15	Northwest Pipeline Corporation (bi-directional)	San Juan Basin	Seattle, WA, West Coast WA markets	3.9
G16	Panhandle Eastern Pipeline Company	Anadarko Basin	Midwest markets (IN, IL, OH)	2.8
G17	PNGTS/Maritimes & Northeast Joint Pipeline	Westbrook, ME	Boston area	0.2
G18	Portland Natural Gas Transmission (PNGTS)	Pittsburg, NH	Maine	
G19	Questar Pipeline System	Rocky Mountain Gas Fields	Markets and Gas Hubs in Northeast UT, Northwest CO, and Southern Wyoming	2.5
G20	Southern Natural Gas Company	Louisiana, Eastern Texas, and Gulf of Mexico	Southeast markets (Birmingham, AL; Atlanta, GA; Jacksonville, FL; Savannah, GA)	3.4
G21	Tennessee Gas Pipeline Company	Gulf Coast Texas, Gulf of Mexico	Northeast markets (New York City and Boston)	6.7
G22	Texas Eastern Transmission	South Texas and Gulf of Mexico	Midwest and Appalachian markets; New York area; Supplies the Algonquin Pipeline	8.5

Map Key	Natural Gas Pipeline	Origin/Source	Markets Served	Total System Capacity (Bcf/d)
G23	Transco	Gulf of Mexico and South Texas	Southeast, Mid-Atlantic, and Northeastern markets; terminates in New York City	10.2
G24	Transwestern Pipeline Company	Permian and San Juan Basins	Arizona and New Mexico markets; Supplies California Gas Transmission and Southern California Gas	2.4
G25	WBI Energy System	Gas Fields in MT & WY	Markets in ND, SD, WY, and UT	0.5
G26	Wyoming Interstate	North and Western Wyoming	Connects to Cheyenne Hub in northern Colorado	3.34

Pipelines Supplied by Canadian Imports

Map Key	Natural Gas Pipeline	Origin/Source	Destination/Markets Served	Total System Capacity (Bcf/d)
G27	Alliance Pipeline Co	Saskatchewan, Canada	Chicago, IL	1.5
G28	Great Lakes Gas Transmission	Noyes, MN (Canadian Import/Export Point)	Minnesota, Wisconsin, Michigan, and Eastern Canada	2.2
G29	Iroquois Gas Transmission Company	Waddington, NY (Canadian Import/Export Point)	New York, NY	1.0
G30	Maritimes & Northeast	Nova Scotia, Canada and Sable Island LNG terminal	Coastal Maine and Boston	0.8
G31	Northwest Pipeline Corporation (bi-directional)	Sumas, WA (Canadian Import/Export Point)	West coast Washington and Oregon (Seattle, Olympia, Tacoma, Portland, Salem, Eugene)	3.9
G32	Viking Gas Transmission	Noyes, MN (Canadian Import/Export Point)	North Dakota, Minnesota, and Central Wisconsin	0.5

Regional Pipeline Capacity and Flows

Natural gas pipeline systems are largely clustered in PADD's II and III which account for over 70% of total pipeline mileage and nearly 60% of total outflow capacity. Table 20 presents a detailed breakdown.

Overall, most natural gas flows originate from PADD III, which also has over 50% of the nation's gas processing capacity. Of the 30 largest pipelines, 16 originate in the Gulf and four more indirectly rely on supplies from the Gulf Coast region.[58]

PADD II's pipeline mileage and capacity is largely a reflection of the region's centralized geographic location, its abundance of underground storage reservoirs, and its relatively cooler climate, and large population which results in higher gas demand during both the peak winter heating and summer cooling seasons.

Table 20: Pipeline Capacity and Mileage by PADD

PADD	Sub PADD	Total Inflow Capacity (MMcf/d)	Total Outflow Capacity (MMcf/d)	Total Mileage
I	A	8,547	4,600	2,527
	B	44,222	34,443	17,247
	C	38,494	29,856	22,764
II	EAST	36,057	27,204	26,568
	KS/OK	16,678	23,820	27,548
	NORTH	88,505	72,842	48,604
	WEST	7,867	7,105	3,777
III	GCLA	109,515	87,514	55,523
	GCTX	13,816	33,354	54,933
	WTX/NM	6,834	9,467	6,534
IV	ROCKIES	30,108	40,786	23,582
V	WEST COAST	33,533	19,627	24,450
CANADA		4,571	18,229	-
GULF OF MEXICO		-	32,609	-
MEXICO		4,188	1,479	-
Totals		**442,935**	**442,935**	**314,057**

Source: NCSL, EIA[59]

Major Operators and Pipeline Systems

The top 30 companies control 72% of the interstate natural gas pipeline capacity.[60] The top 10 companies controlled 50% of interstate mileage and 40% of total capacity in 2012 (Table 21).[61]

Table 21: Top 10 Ranked U.S. Interstate Natural Gas Pipeline Companies

Transmission Mileage			By Volume Moved for Fee, MMcf		
Rank	**Company**	**Mileage**	**Rank**	**Company**	**Volume**
1	Northern Natural Gas Co.	14,949	**1**	Transcontinental Gas Pipe Line Corp.	3,274,209
2	Tennessee Gas Pipeline Co.	13,780	**2**	Tennessee Gas Pipeline Co.	2,626,030
3	El Paso Natural Gas Co.	10,234	**3**	ANR Pipeline Co.	1,838,505
4	Columbia Gas Transmission LLC	9,708	**4**	Texas Eastern Transmission LP	1,747,856
5	Texas Eastern Transmission LP	9,563	**5**	Natural Gas Pipeline Co. of America	1,511,844
6	Transcontinental Gas Pipe Line Corp.	9,378	**6**	Columbia Gas Transmission LLC	1,305,728
7	Natural Gas Pipeline Co. of America	8,911	**7**	El Paso Natural Gas Co.	1,159,154
8	ANR Pipeline Co.	8,899	**8**	CenterPoint Energy Gas Transmission Co.	1,143,552
9	Southern Natural Gas Co.	7,079	**9**	Gulf South Pipeline Co. LP	1,115,618
10	Gulf South Pipeline Co. LP	6,484	**10**	Wyoming Interstate Co. Ltd	1,055,454
	Total	**98,985**		**Total**	**16,777,950**
	Part of all companies	49.92%		Part of all companies	39.14%
	Top 10 totals-2011	100,673		Top 10 totals-2011	16,559,736

Source: Oil & Gas Journal, 2013

Some U.S. gas pipeline systems are owner operate, others are managed by operating companies under contract to the owners. For Example, Kinder Morgan operates the Tennessee Gas Pipeline system, the El Paso system, and the Natural Gas Pipeline of America. The systems discussed below are grouped by owner or operator.

Kinder Morgan Operated Systems:

Tennessee Gas Pipeline: Kinder Morgan Energy Partners' Tennessee Gas Pipeline transports gas from the GOM to the Northeast as far as New Hampshire through nearly 14,000 miles of pipeline. The pipeline serves as the primary supplier to the Algonquin Pipeline, and together both pipelines serve as the major supplier to the Northeast markets including Boston and New York.[62]

El Paso Natural Gas: Kinder Morgan's El Paso Natural Gas Company operates over 10,000 miles of trunk pipelines throughout the Permian Basin and serves the Southern California markets through their 500-mile Mojave Pipeline.[63]

Natural Gas Pipeline Company of America: NGPCA also transports gas to the Midwest region. The system originates in Texas, contains close to 9,000 miles of trunk lines, and terminates in Chicago, serving as a major supplier to the metropolitan area.

Williams Companies Operated Systems:

Transco

The Transco pipeline, operated by Williams Companies, delivers natural gas from Gulf Coast Texas and Louisiana to markets in the Southeast, Mid-Atlantic, and Northeast over 10,000 miles of pipeline systems. Williams is currently developing a project that would modify the Transco pipeline to move gas from north to south in response to increased production from shale plays in the Northeast.[64]

Owner Operated Systems

ANR Pipeline Company: ANR's pipelines transport gas from the Texas/Oklahoma panhandle region and the Gulf region to Midwest markets. They own approximately 9,000 miles of interstate trunk pipelines and are currently owned by TransCanada.

Columbia Gas Transmission: Columbia Gas Transmission operates a network of pipelines almost 10,000 miles long serving markets in the Midwest, Mid-Atlantic, and Northeast. This system is fed by Columbia Pipeline Group's Gulf Transmission line which brings gas up from the Gulf Coast and into the Kentucky region.[65]

Gulf South: Gulf South operates a network of pipelines in the South and along the Gulf Coast, gathering gas from the Haynesville and Barnett shale basins as well as from the Lake Charles, LA LNG import terminal. The system further connects to other pipelines to deliver natural gas northward.[66]

Northern Natural Gas: The Northern Natural Gas pipeline system consists of nearly 15,000 miles of pipeline and stretches from the Permian Basin to the Upper Midwest. The pipelines serve markets in Nebraska, South Dakota, Iowa, Minnesota, Wisconsin, and Michigan, and connect to most other pipelines in the region.[67]

Texas Eastern Transmission: Owned by Spectra, Texas Eastern Transmission delivers gas from Gulf Coast Texas and Louisiana to Midwest and Northeast markets. It also connects and supplies the East Tennessee Natural Gas and Algonquin pipelines.

Shifts in Use and Infrastructure Expansion

Natural gas trunk lines flow natural gas along 11 major corridors.[68] In addition to four such corridors importing gas from Canada, seven additional gas corridors serve the lower-48 states (Figure 49 and

Table 22). However, the flow volumes and directions of these corridors are changing rapidly as the Marcellus shale gas production in PADD I grows and the Haynesville shale gas production in PADD III declines.[69] As of early 2014, the flow of natural gas movements are beginning to reverse direction as more gas is being sent south and west and less is being pipelined north.[70] This trend may be amplified by the approval and construction of LNG export terminals in the Gulf.

As Marcellus gas production increases and begins to reverse direction and move south, the northeast is struggling to meet gas demand. The region relies on imported gas coming from Canada, through the LNG import terminal in Everett, MA and from southern supplies through the Algonquin and Tennessee pipelines.[71] Meanwhile, the Tennessee pipeline has expanded its capacity to deliver more Marcellus gas to the New York market and helped to relieve backup from the shale play as production increases.[72]

The expansion in PADD I stands in stark contrast to pipeline construction in the rest of the country. Natural gas pipeline expansion projects in 2012 were low compared to a decade of constant expansion. Now nearly half of the expansion is occurring in the northeast region. Most of this growth looks to move Marcellus gas to markets in PADD IA and IB.[73]

Table 22: Major U.S. Natural Gas Pipeline Corridors

Map Key	Gas Region of Origin	Destination
1	PADD III - Gulf of Mexico	Southeastern States
2	PADD III - Gulf of Mexico	Northeast States
3	PADD III - Gulf of Mexico	Midwest States
4	PADD III - Permian Basin	Midwest States
5	PADD III - Permian Basin	Western States
11	PADD IV - Rockies	Midwest States
10	PADD IV - Rockies	Western States
6	Western Canada	Western States
7	Western Canada	Midwest States
8	Western Canada	Northeast States
9	Eastern Canada	Northeast States

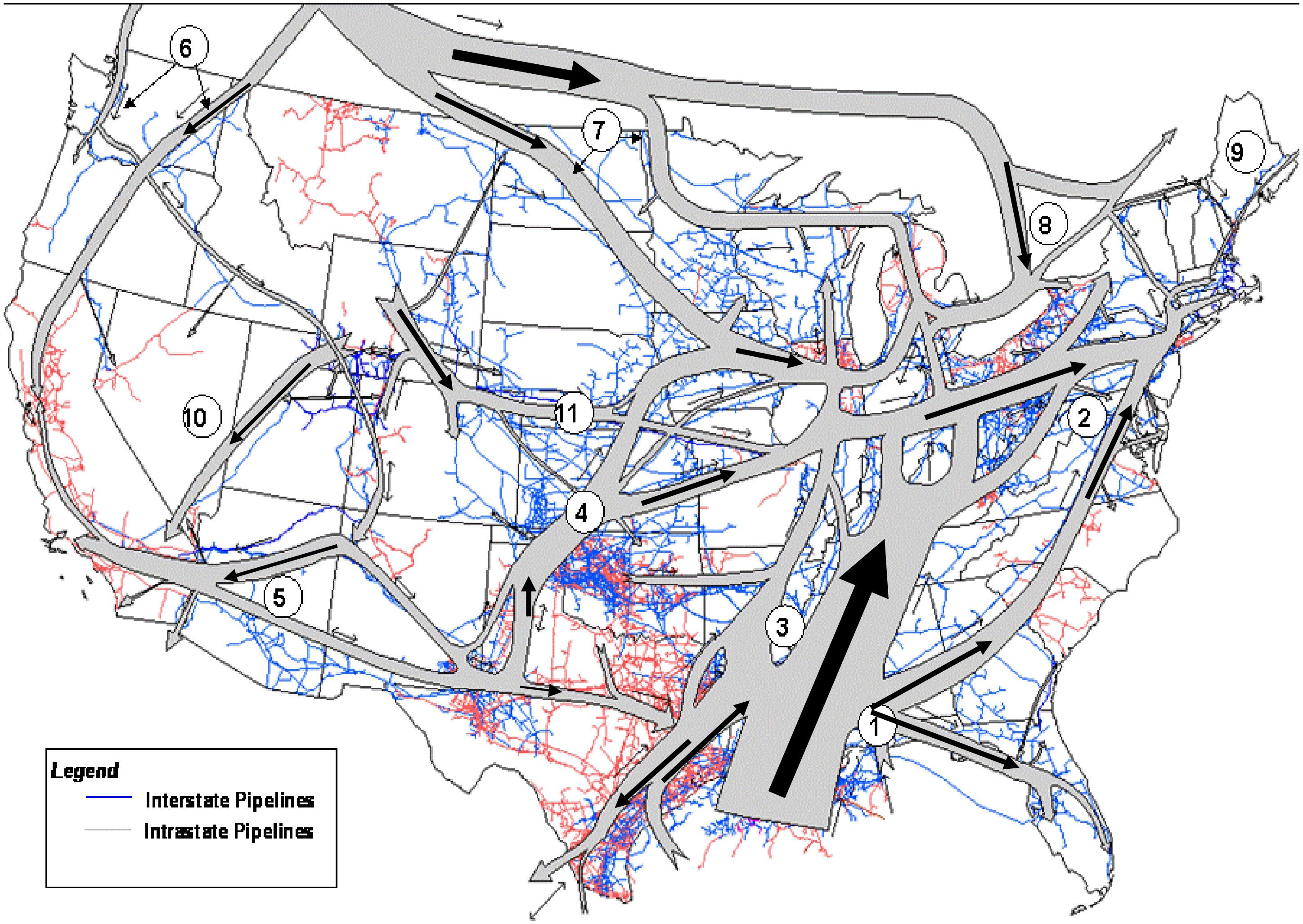
There is also considerable expansion occurring elsewhere in the natural gas pipeline system, albeit mostly poised to take advantage of developments in Marcellus. *Oil & Gas Journal* notes that pipeline construction has been declining in recent years but a number of projects look to start operations in the next five years. These projects include:

- Enterprise's expansion of its previously repurposed ATEX Express pipeline
- Williams and Kinder Morgan's plans to move Marcellus and Utica shale gas to the Gulf

- Sunoco's plan to transfer Marcellus gas to the Atlantic coast for export[74]

In total, expansion plans include 1,323 miles of natural gas pipeline expected to be constructed in 2014. It is expected that more pipelines construction and capacity expansion will occur to improve deliverability of increasing Marcellus and Utica shale gas production.[75]

Figure 49: Major U.S. Natural Gas Corridors



Source: Energy Information Administration, Office of Oil and Gas, Natural Gas Division, GasTran Gas Transportation Information System

The EIA has determined that the informational map displays here do not raise security concerns, based on the application of the Federal Geographic Data Committee's *Guidelines for Providing Appropriate Access to Geospatial Data in Response to Security Concerns*.

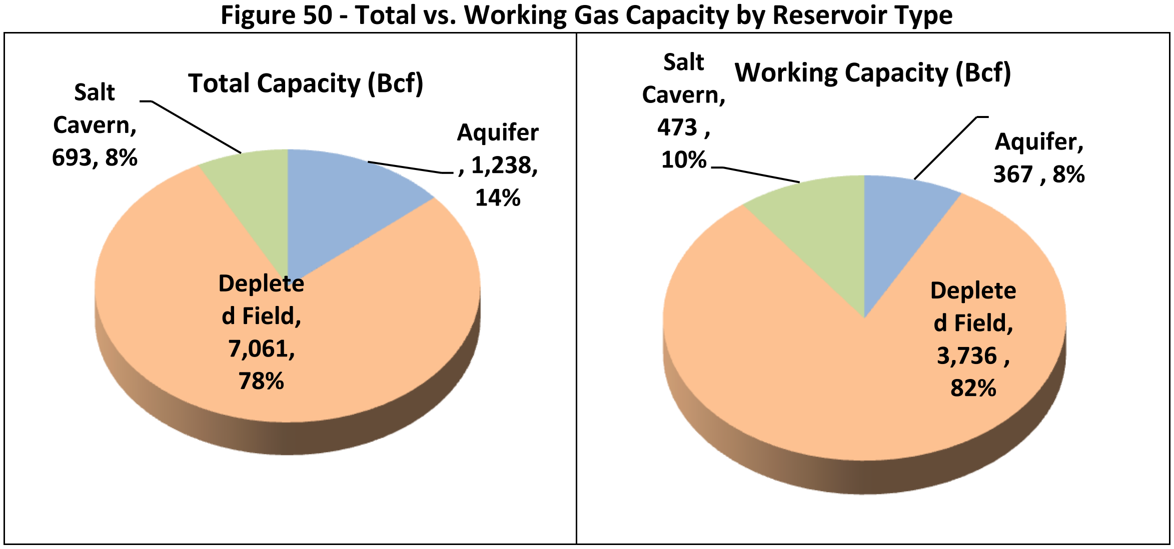
C. Underground Gas Storage

Underground storage is the primary means for storing natural gas. It is not only a crucial part of gas infrastructure, but also a serves as a key economic tool in meeting the seasonal variation in natural gas demand. Underground natural gas storage systems were established as a cost effective way to meet high demand during winter without increasing pipeline capacity. The underground gas storage system is increasingly important during the summer months to serve the needs of natural gas fired power plants to meet electricity demands. U.S. underground gas storage facilities in 414 locations currently provide a total field storage capacity of nearly 9 Tcf.

Underground gas storage facilities are of three types: aquifers, depleted oil and gas fields, and salt caverns. Of the three types, depleted fields are most numerous, comprising four out of five (331) facilities and contributing over 7 Tcf in capacity. Aquifers contribute 1.2 Tcf and salt caverns almost 0.7 Tcf.[76]

Two factors determine the volume of gas that can be delivered from a storage reservoir and at what rate. A reservoir's "working gas" capacity denotes how much of the stored gas is actually retrievable. Underground storage reservoirs are pressurized. Some of the stored gas, known as "cushion gas" is required to maintain a pressure threshold which will allow for extraction. So, while a reservoir might contain gas, it becomes unrecoverable without enough pressure. The maximum daily delivery rate indicates how quickly the gas can be extracted from the reservoir. This rate varies depending on the reservoir type (Figure 50).

Figure 50 - Total vs. Working Gas Capacity by Reservoir Type



Source: EIA

The 414 reservoirs have a working gas capacity of 4.6 Tcf, with 3.7 Tcf from depleted fields, 0.37 Tcf from aquifers, and 0.47 Tcf from salt caverns (Figure 52). Most working gas capacity is found in PADD II with 1.76 Tcf, followed by PADD III at 1.2 Tcf, and PADD I with 0.84 Tcf.

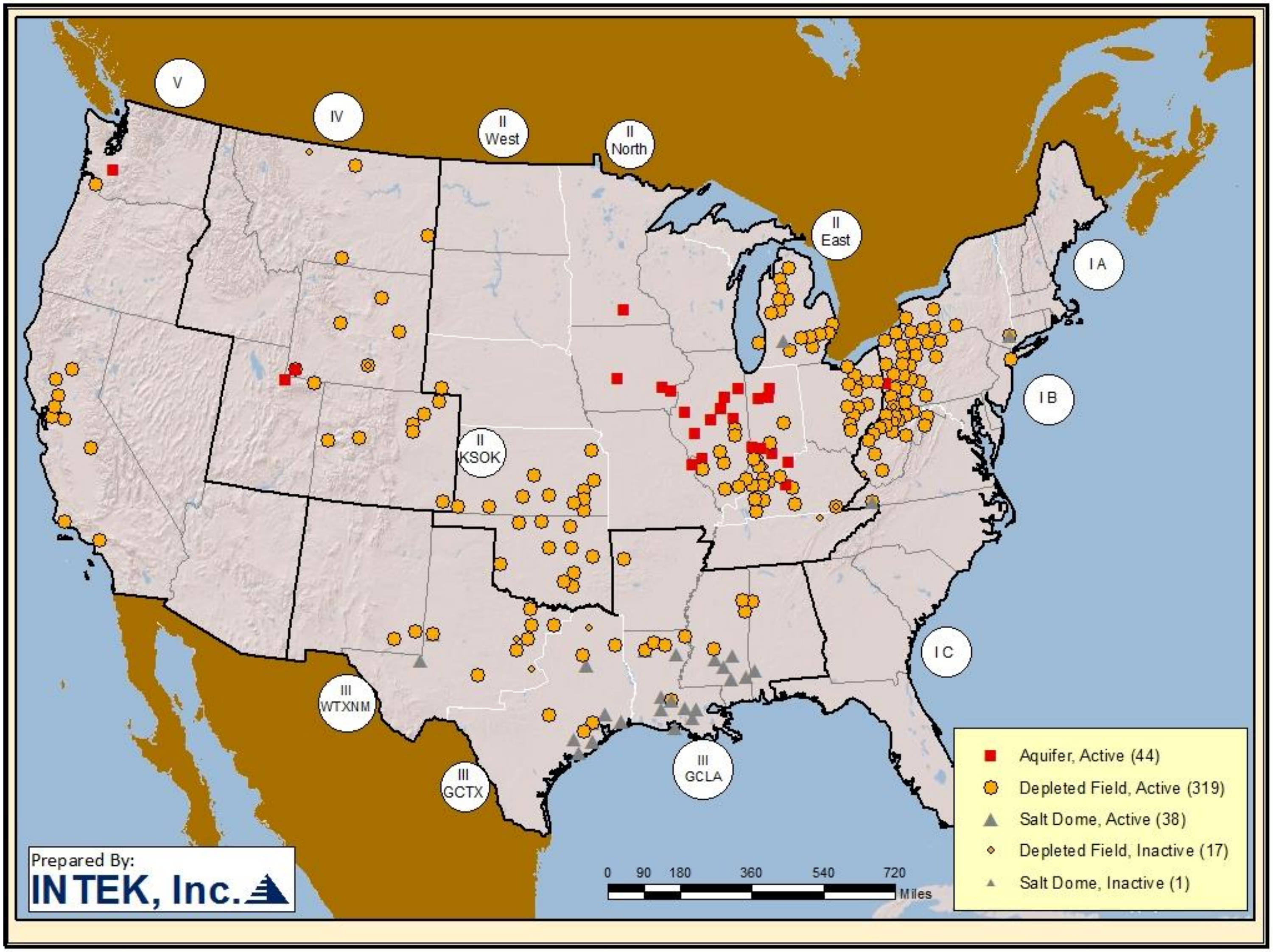
Underground natural gas storage reservoirs are predominantly located in areas that have markets consuming large quantities of natural gas nearby (Midwest, Northeast) and along major pipeline routes (Gulf Coast, Ohio Valley area) (Figure 51).

Each type of storage has advantages and disadvantages. Depleted field gas storage reservoirs are spread throughout the United States. However, aquifers and salt caverns are regionally concentrated in PADD II NORTH and PADD III respectively.

The geology of these regions has allowed gas storage to expand into aquifers, caverns, and on rare occasions, mine caverns. While depleted fields are ideal and easily converted for storage, the other reservoir types face challenges. Aquifers require larger amounts of cushion gas and therefore have less retrievable inventory at any given time, while salt caverns require greater initial investment to establish a storage space. However, the use of salt caverns has grown in the past decades as initial investments are recovered through savings on later extraction costs.[77]

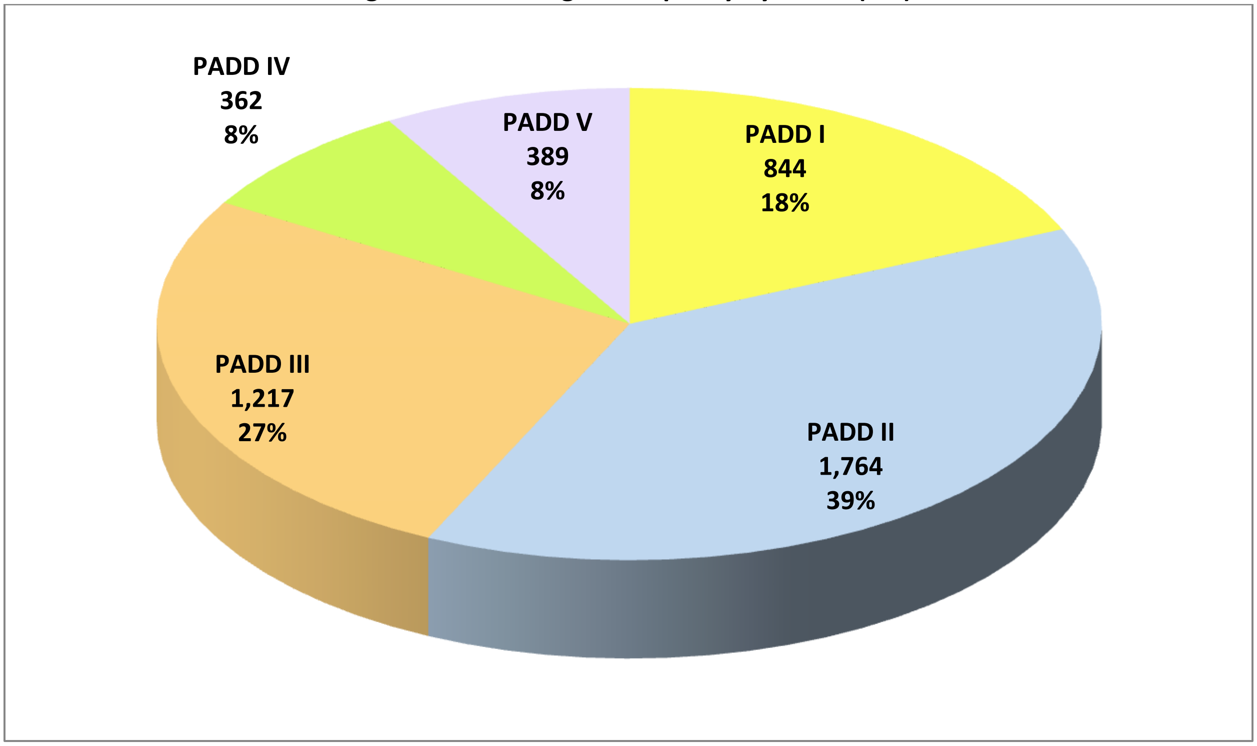
Figure 52 shows the working gas storage capacity by PADD and Table 23 shows a breakdown by storage type.

Figure 51: Locations of Underground Natural Gas Storage Reservoirs



Source: EIA, Natural Gas Annual Respondent Query System

Figure 52: Working Gas Capacity by PADD (Bcf)



Source: EIA

Table 23: Working Gas Capacity by Reservoir by PADD (Bcf)

PADD	Aquifer	Depleted Field	Salt Dome	Grand Total
I	0.94	838.61	4.00	843.55
II	339.78	1,422.15	2.53	1,764.47
III	0	750.51	466.73	1,217.25
IV	1.78	359.90	0	361.69
V	24.60	364.81	0	389.41
Total	**367.11**	**3,735.98**	**473.27**	**4,576.36**

D. Liquefied Natural Gas Terminals and Facilities

Natural gas, in its gaseous state, can only be transported in large volumes by pipeline. While small volumes can be compressed and transported in cylinders, this is not economically viable for larger volumes. Cryogenic liquefaction of natural gas into a liquid form allows large volumes to be stored and transported over long distances that cannot be technically or economically served by pipelines.

Due to declining gas production and increasing gas demand, the United States has historically been a net importer of LNG. Recently, however, the commercialization of U.S. tight gas and shale gas resources has created an excess supply of gas that offers the opportunity to become a net LNG exporter.

Figure 53: Liquefied Natural Gas Tanker, Terminal, and Storage Facilities

LNG Receiving Terminal. Source: GE Energy

U.S. LNG Facilities

There are more than 110 LNG facilities operating in the U.S. performing a variety of services.

- **LNG Storage:** Most of the nation's LNG facilities store liquefied natural gas for periods of peak demand or pipeline gas supply interruption. These facilities are distributed across the nation and are generally found near electric power stations.
- **Transport / Industrial Use:** There are also a more limited number of facilities that produce and store LNG for vehicle fuel or for industrial use.

- **Import Terminals:** Some LNG facilities (Figure 53 above) receive and provide natural gas supply to the interstate pipeline system, local distribution companies, or dedicated power plants. Recipients of LNG shipments require specialized terminals that can receive seaborne shipments from LNG tankers, store the received LNG, re-gasify the LNG from liquid to gaseous form, and pipe the reconstituted gas to the gas distribution system or to a dedicated end-user, such as a power plant or petrochemical plant. (Some LNG terminals have the authority and facilities to be both recipients and shippers of LNG).
- **Export Terminals:** Only a few LNG facilities export natural gas from the U.S. These facilities require specialized terminals that can receive gas from the pipeline system in its gaseous form, liquefy the gas by cryogenically reducing its temperature, store the produced LNG, and load the LNG onto specialized LNG tanker ships for transport to intended recipients.

The continental United States currently has eleven LNG import / export terminals with capacity to process 17 Bcf/d. Four facilities are in located in PADD I and seven are located in PADD III (Table 24). Two additional facilities are located in Kenai, Alaska and Penuelas, Puerto Rico (Figure 54). The Kenai facility is a liquefaction facility that exports gas from Alaska. The Penuelas facility is a regasification plant that imports LNG to fuel a major power plant that serves Puerto Rico.

Figure 54: Operating LNG Import and Export Terminals in the United States

Source: Federal Energy Regulatory Commission

Table 24: U.S. LNG Import and Export Terminals

PADD	Terminal Location	Type	Import (I) Capacity (Bcf/d)	Export (E) Capacity (Bcf/d)	Owner
IA	Everett, MA	I	1.035		GDF SUEZ - DOMAC
	Offshore Boston, MA	I	0.8		Excelerate Energy – Northeast Gateway
	Offshore Boston, MA	I	0.4		GDF SUEZ – Neptune LNG
IB	Cove Point, MD	I	1.8		Dominion - Cove Point LNG
IC	Elba Island, GA	I	1.6		El Paso - Southern LNG
III GCLA	Pascagoula, MS	I	1.5		El Paso/ Crest/ Sonangol - Gulf LNG Energy LLC
	Lake Charles, LA	I	2.1		Southern Union - Trunkline LNG
	Sabine, LA	I/E	4.0	4.0	Cheniere/Sabine Pass LNG
	Hackberry, LA	I/E	1.8	1.8	Sempra - Cameron LNG
III GCTX	Freeport, TX	I/E	1.5	1.5	Cheniere/Freeport LNG Dev
	Sabine Pass, TX	I	2.0		ExxonMobil – Golden Pass (Phase I & II)
Total			**17.335**	**7.3**	

The increase in U.S. natural gas production and supply due to shale gas development has stimulated numerous plans and proposals for new LNG facilities to facilitate transport of gas among domestic markets and to export gas to markets in Europe and Asia.

Approved New LNG Terminal Projects

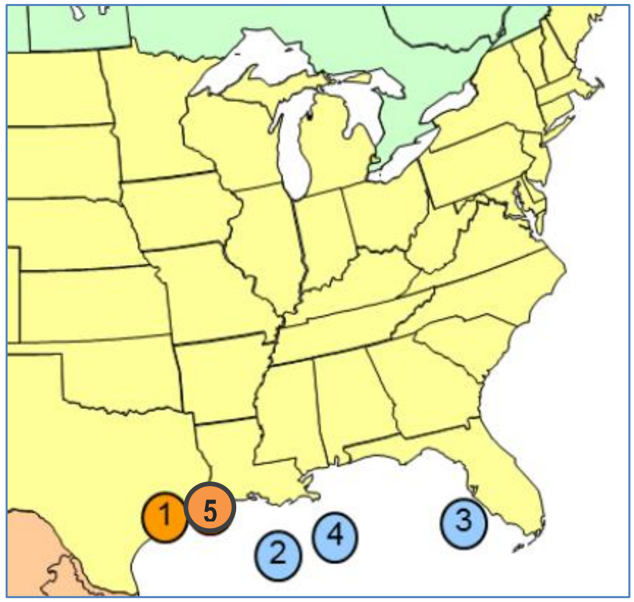
Five new LNG projects have been approved by the Federal Energy Regulatory Commission (FERC) or the U.S. Coast Guard (MARAD), including expansion of one existing LNG import terminal, three new import terminals, and one new LNG export terminal.[78]

These new facilities will add 6.1 Bcf/d of LNG import capacity and 2.76 Bcf/d of LNG export capacity. The locations of these projects are shown in Figure 55. The projects are described below.

Four approved import facilities are not yet under construction:

1. Cheniere Energy's Freeport LNG Dev. - 2.5 Bcf/d expansion in Freeport, TX (PADD III (GCTX) which is under the jurisdiction of the Federal Energy Regulatory Commission (FERC).
2. Main Pass McMoran's 1.0 Bcf/d expansion in the Gulf of Mexico, under the jurisdiction of the U.S. Coast Guard (MARAD).
3. Hoegh LNG's Port Dolphin Energy project 1.2 Bcf/d offshore Florida LNG Project (PADD IC), under the jurisdiction of the U.S. Coast Guard (MARAD).
4. TORP Technology's Bienville 1.4 Bcf/d LNG import facility in the Gulf of Mexico, also under the jurisdiction of USCG/MARAD.

Figure 55: Locations of FERC Approved LNG Import/Export Terminal Projects



One approved export project is under construction:

5. Cheniere Energy's Sabine LNG Project, in Sabine, LA (PADD III GCLA) facility has been approved and is under construction. The facility will add 2.76 Bcf/d of export capacity in PADD III (GCLA).

Proposed / Potential Terminal Projects

An additional 29 new facilities or facility expansions have been formally proposed to the FERC or the U.S. Coast Guard, or have been announced as potential projects by their respective sponsors. These proposed and potential facilities, if all were approved and constructed, could process an additional 38.3 Bcf/d of LNG gas.

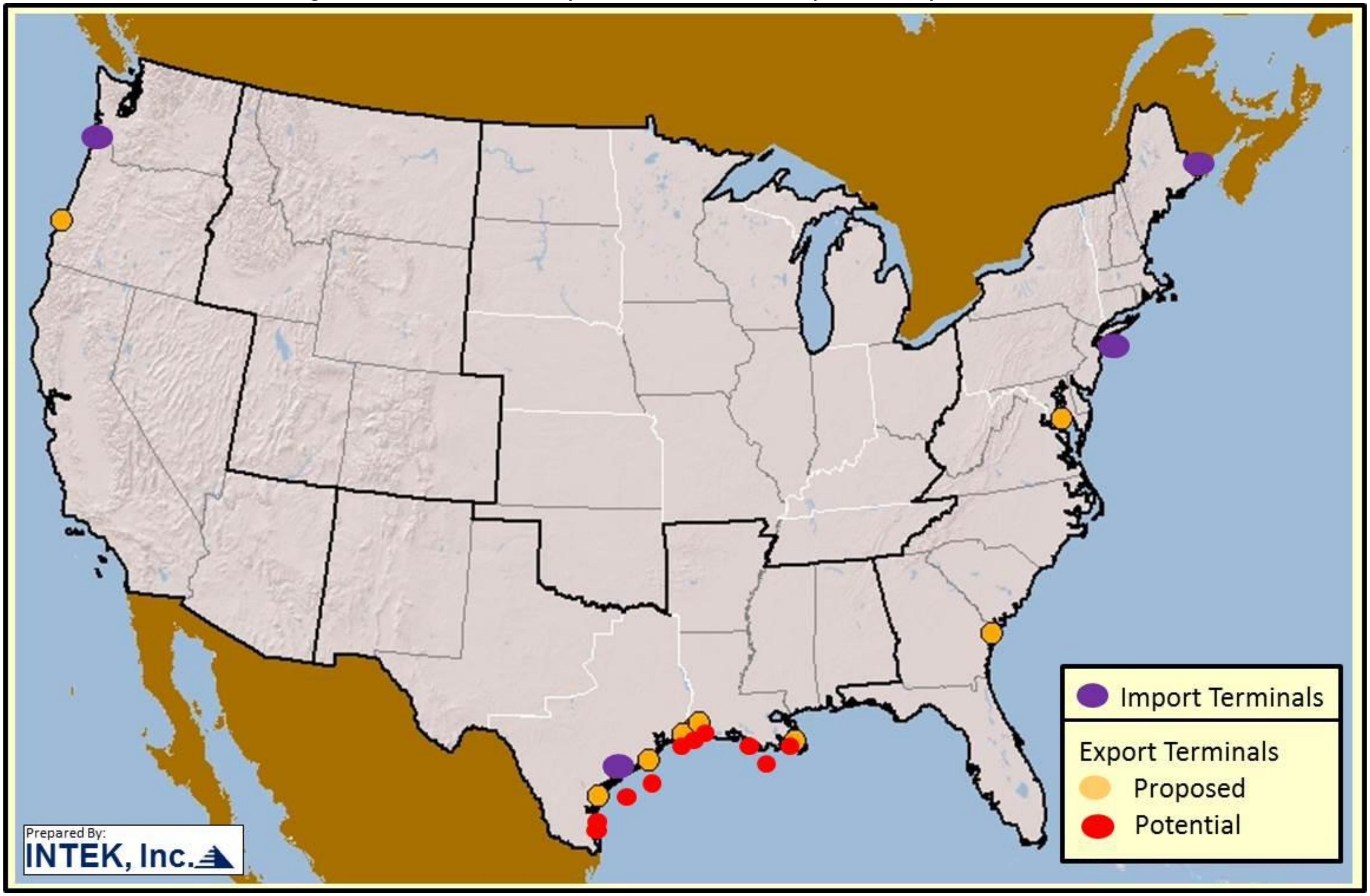
- Twenty-five of the proposed/potential projects are liquefaction facilities for LNG export. These terminals could export 35.52 Bcf/d of LNG if constructed (Table 25).
- The four proposed or potential import terminals would add 1.8 Bcf/d of LNG import capacity.[79]

The locations of the proposed and potential projects are shown in Figure 56. Details for all existing, approved, and proposed or potential LNG terminal projects are provided in Appendices D.6-D.8.

Table 25: FERC/MARAD Approved and Proposed LNG Import and Export Projects

Location		FERC/MARAD Approved Projects			Proposed/Potential Projects		
PADD	Sub PADD	Projects	Import Capacity (Bcf/d)	Export Capacity (Bcf/d)	Projects	Import Capacity (Bcf/d)	Export Capacity (Bcf/d)
I	A				2	0.9	
	B				1		0.82
	C	1	1.2		1		0.35
III	GCLA	3	2.4	2.76	12		15.92
	GCTX	1	2.5		10	0.4	16.28
V	WEST COAST				3	0.5	2.15
Total		**5**	**6.1**	**2.76**	**29**	**1.8**	**35.52**

Figure 56 - Locations of Proposed/Potential LNG Import and Export Terminals



Source: FERC

E. Propane Gas

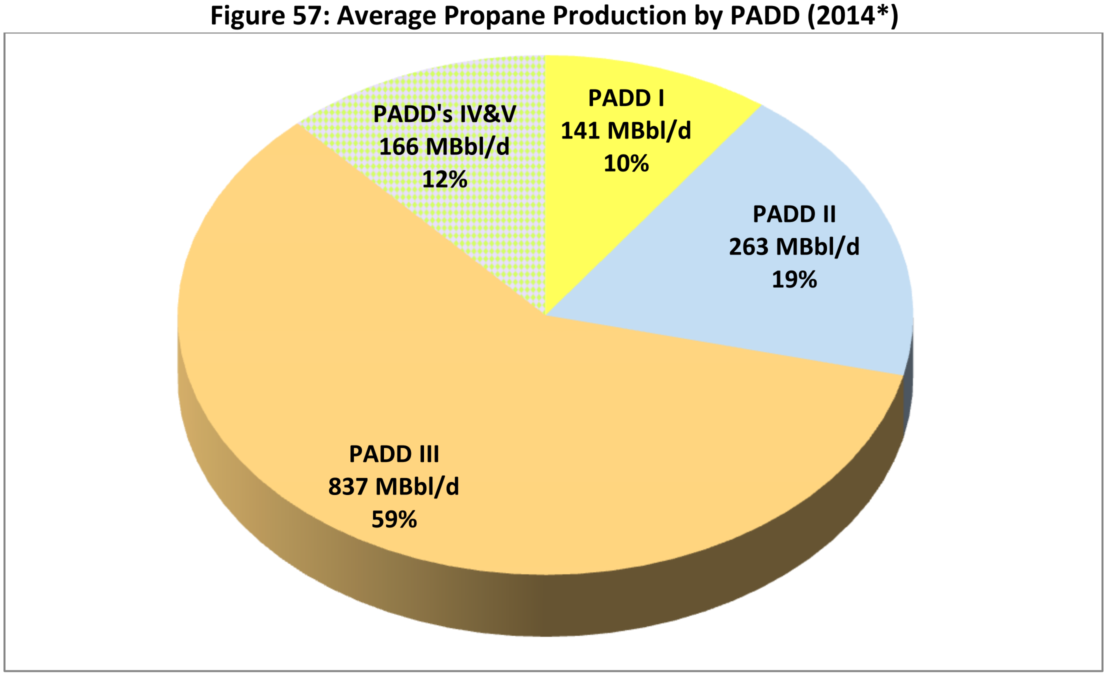
Propane is a by-product of both oil refining and natural gas processing. Propane is primarily used as residential heating fuel (40%) in markets not served by natural gas pipelines and as a feedstock in the petrochemical industry (49%).[80] It is also widely used for recreational cooking and heating purposes. While domestic propane demand is not as strong as it was a decade ago, demand is growing overseas where conventional gas supplies are limited or market prices are high relative to propane prices.[81]

Production and Delivery

The propane industry's infrastructure reflects its status as a by-product and its two primary uses, residential heating and petrochemical feedstock. Whereas most propane was once produced as a byproduct of petroleum refining, recent increases in natural gas production have resulted in the majority of propane being produced in gas processing plants. The majority of propane production still occurs in the Gulf Coast (PADD III) (Figure 57). Propane is either stored underground or shipped directly to petrochemical plants via pipeline where it is converted to propylene.

All propane is stored and transported in its liquid form because of its much smaller volume. For heating fuel uses, propane is transferred through a network of pipelines and trucks to distribution centers for delivery to consumers. According to the National Propane Gas Association, 75% of all propane is shipped by some combination of pipeline and truck. The remainder is transported by barge, rail, pipeline, or a combination thereof.[82] More than 6,000 highway transport trucks carry propane volumes of 7,000-12,000 gallons each. Another 36,500 smaller "bobtail" trucks can carry 1,000-5,000 gallons each.

Figure 57: Average Propane Production by PADD (2014*)

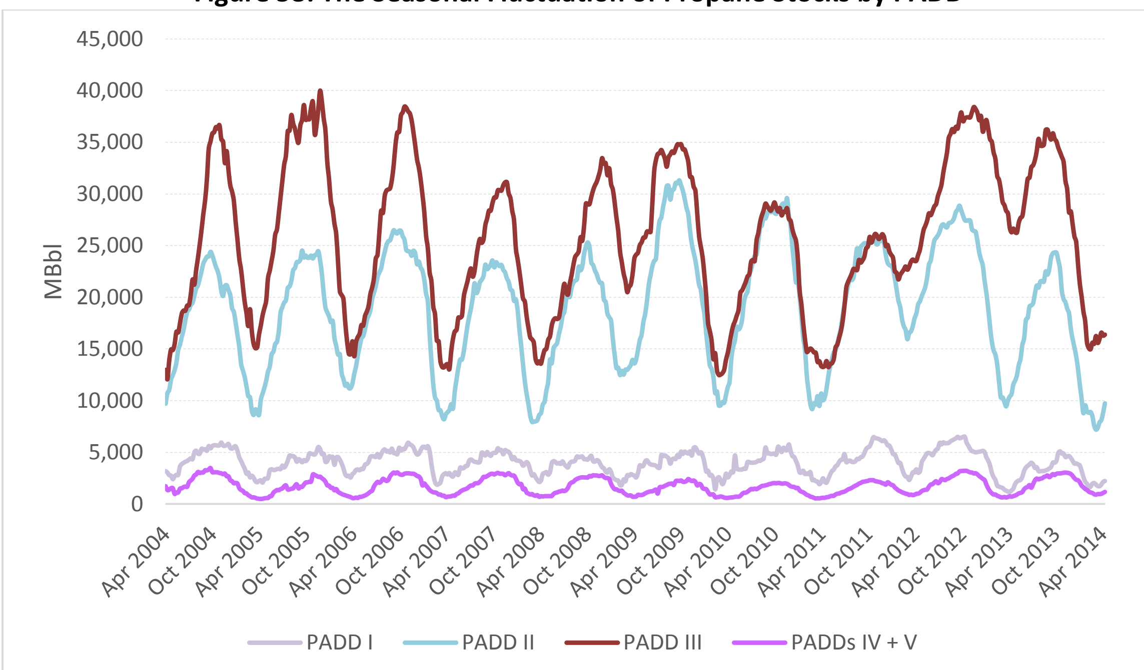


*Through 4/18/2014
Source: EIA, Weekly Refiner and Blender Net Production 2014

As with other NGLs, the demand for propane fluctuates seasonally (Figure 58). In the fall, propane is shipped to the Midwest to help farmers dry their crops and in the winter, stocks are released to meet heating demands in northern regions. Imports of propane to the Gulf of Mexico and production from the refineries and processing plants are shipped north through natural gas pipelines to meet demand.

Nearly half the propane produced gets converted to propylene at a petrochemical plant, yet its primary use is as a fuel for residential and commercial space heating, followed by other residential and commercial uses like water heating and cooking. Therefore the volumes of propane stocks kept in storage reservoirs and terminals oscillate between peaks in late summer and troughs in late winter, being released to consumers when demand is highest. Likewise, petrochemical companies help to mitigate this fluctuation by buying propane during the summer at lower prices and switching to other gases like ethane and butane when prices rise.[83]

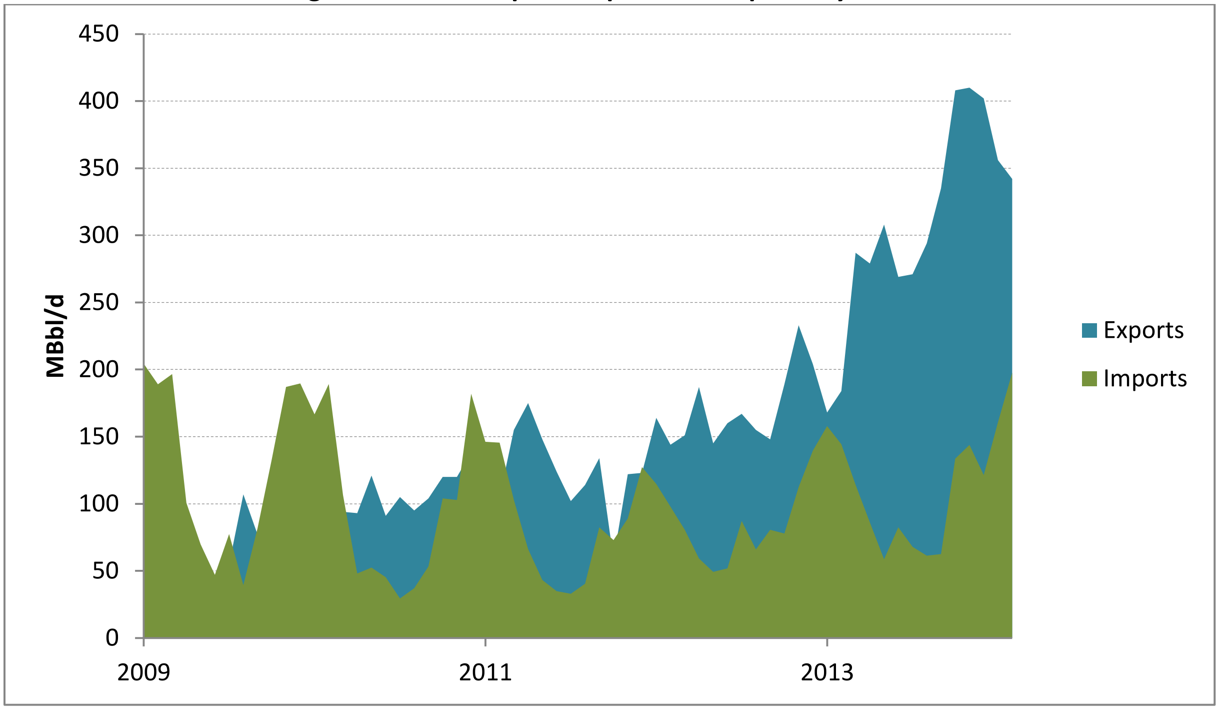
Figure 58: The Seasonal Fluctuation of Propane Stocks by PADD



Source: EIA

Recently the U.S. shifted from being a net propane importer to a net exporter (Figure 59). Increasing natural gas production has in turn increased propane production, giving U.S. producers a competitive edge to take advantage of favorable prices abroad. As a result, some pipeline operators have begun to reverse the flow of propane south towards the Gulf for export to Central and South America and for use in petrochemicals. This change has created market disruptions. During the harsh winter of 2013-14, many northern and northeastern states encountered a shortage of propane supplies, forcing FERC to order the TEPPCO pipeline to send propane north while New England began importing propane from overseas.[84]

Figure 59: U.S. Propane Exports vs. Imports by Month



Source: EIA, U.S. Monthy Exports of Propane, 2014

Propane Storage and Stocks

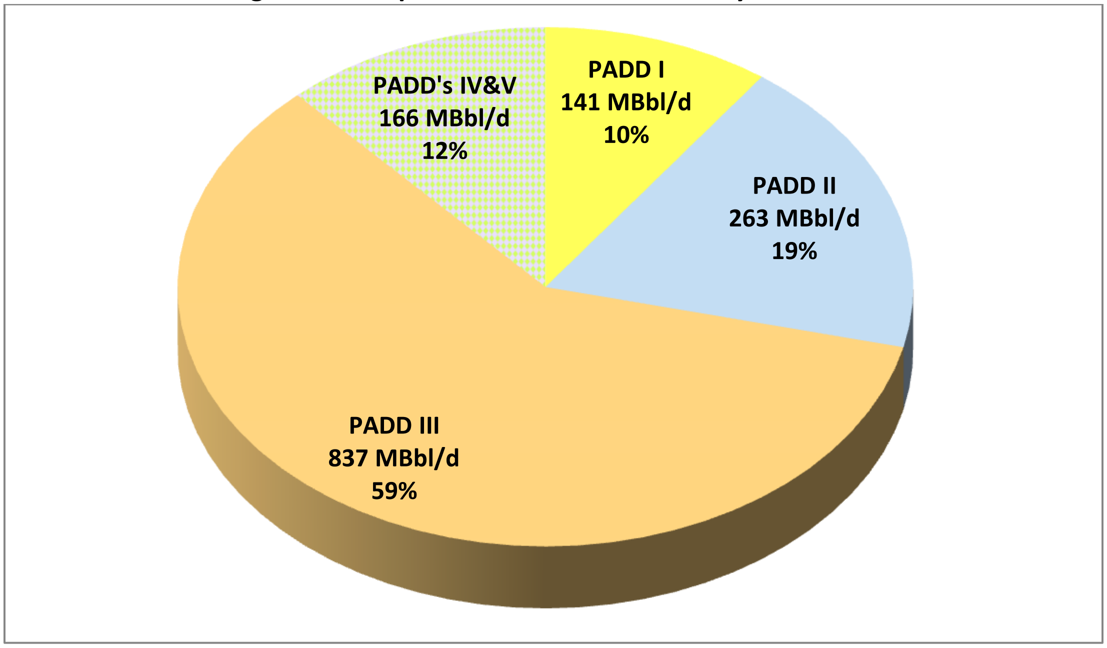
The Energy Information Administration identifies three storage categories for propane:

- Primary: storage associated with a refinery, plant, or pipeline hub. The primary storage sites are often underground depleted mines and salt caverns. Several primary sites are concentrated near Conway, Kansas (PADD II KS/OK) and Mt. Belvieu, Texas (PADD III GCTX). These sites are connected to the 70,000 miles of pipeline that transport propane throughout the United States.
- Secondary: tanks at retailers, and
- Tertiary: smaller tanks at residences.[85]

As mentioned above, propane stocks are clustered largely in PADD II OK/KS and PADD III GCTX at storage sites near Conway, KS and Mont Belvieu, TX. These two sites are home to 14 facilities. Collectively, they store about 75% of the nation's total propane stock.[86] Enterprise's Mt. Belvieu storage facility alone accounts for nearly a third of all stocks.

There are a total of 142 propane terminals located across the nation, including one in the U.S. Virgin Islands. More than two-thirds of propane stocks are located in PADD III, slightly disproportionately larger than the region's share of production (~61%)[87] as the Gulf Coast has many petrochemical plants and serves as an export center for the gas (Figure 60). PADD II contains the most facilities yet has only surpassed PADD III in stocks on rare brief occasions and has remained far below PADD III levels in recent years.

Figure 60: Propane Stock Concentration by Sub-PADD



Source: EIA

Altogether, the level of propane stocks has remained fairly consistent and predictable over the past decade and is mostly driven by weather (i.e. warmer winters seeing less fluctuation) and a reversal from the country being a net importer to a net exporter. Moreover, there is an emerging regional competition for propane between the Gulf Coast region and Northeast communities. Presently, this demand is balanced by propane's seasonal-specific uses as Gulf Coast (PADD III) petrochemical feedstock in the spring and summer, for Midwest (PADD II) crop drying in late summer and fall, and for Midwest (PADD II) and Northeast (PADD I) home heating during the winter.

PADD I faces a unique challenge as its low stocks are disproportionately dwarfed by seasonal demand. This mismatch is particularly true in New England (PADD IA) which maintains stocks at just two locations (Providence, RI and Newington, NH). These locations make up about 0.2% of total stocks (70 MBbl) yet the region accounts for between 2.4% and 6.7% (15.2 MBbl/d and 73.3 MBbl/d) of consumption.[88] The winter of 2013-2014 exposed this vulnerability as the region faced severe shortages due to a combination of increased exports and a moratorium on rail deliveries through Quebec following the Lac-Megantic train derailment and explosion.[89]

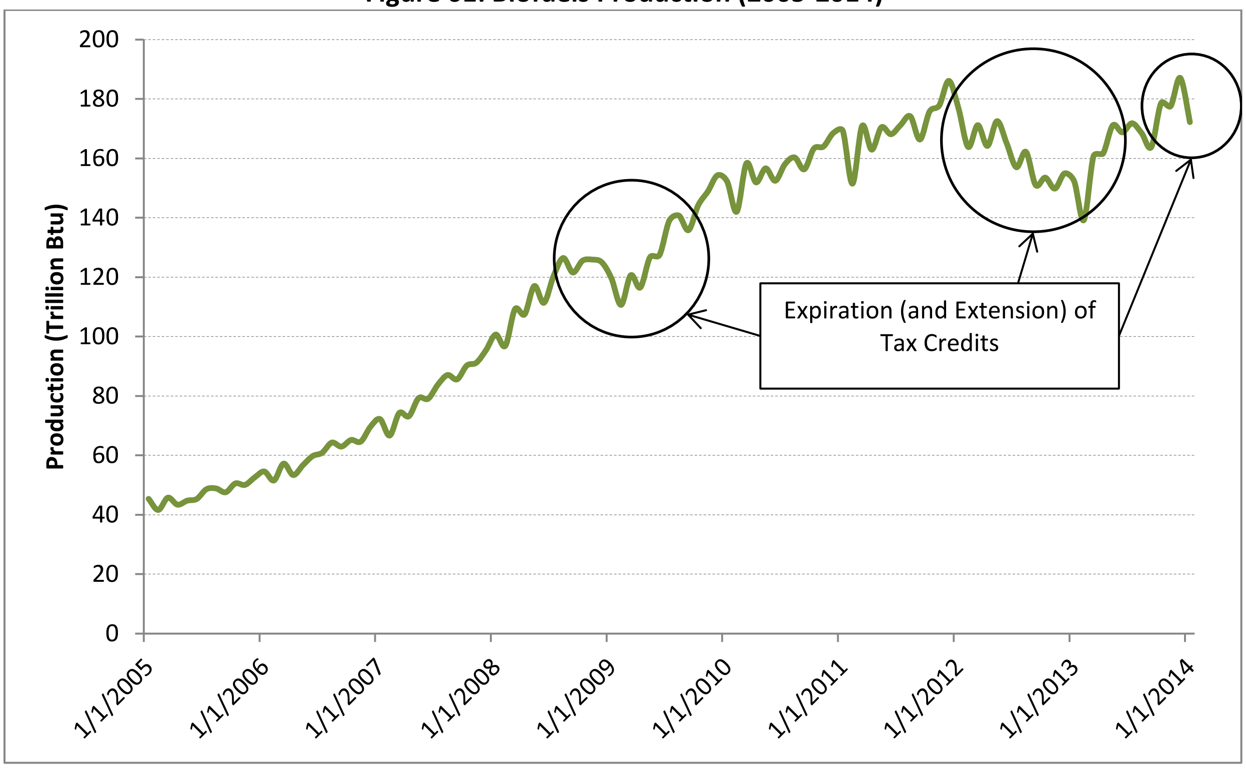
Because of its use as a space heating fuel, propane also competes in a highly competitive market with other sources like electricity, natural gas, and heating oil. One of propane's advantages – its ability to reach rural customers not connected to a gas distribution system often sees it competing directly with heating oil and has led to some regional differences. In 2011 more than ten percent of homes relied on either fuel for space heating with heating oil dominating the New England and Mid-Atlantic market while propane was strongly preferred in the Midwest, South, and West. Analysts are monitoring propane prices relative to heating oil and choices in new home construction to forecast propane's future as a residential heating source.[90]

VI. Alternative Fuels

A. Ethanol and Biodiesel

Ethanol and biodiesel are two alternative fuels that have shown rapid production growth in recent years. Much of this growth has been stimulated by government incentives, renewable fuel standard mandates, and favorable market conditions (Figure 61). The Renewable Fuel Standard (RFS), established in 2005 by the Energy Policy Act, requires ethanol to be blended with unleaded gasoline to serve as an oxygenate. This mandate was expanded to include diesel in 2007.[91]

Figure 61: Biofuels Production (2005-2014)



Source: EIA, Renewable Energy Production and Consumption by Source

The Environmental Protection Agency (EPA) is required to set standards for the use of these alternatives every year. The EPA will likely revise down its standards for 2014 as demand for gasoline looks stagnant. Most fuels are blended to achieve an E10 ratio (10% ethanol, 90% conventional gasoline). Ethanol is also used to make E85 (85% ethanol) blends for use in alternative and flex-fuel vehicles.

The most common method of producing ethanol is by fermentation of agricultural feedstocks, such as corn or sugarcane, which have high sugar or starch content. Recently, a new process has been developed that allows for the condensing of cellulosic materials, including forest waste, to produce ethanol. For a range of technical, logistical, and economic reasons, production levels of cellulosic ethanol have not yet achieved projected levels.[92]

Biodiesel, which can be made from a variety of plant oils, has fewer impediments to its use. Conventional diesel vehicles can consume a variety of biodiesel blends with no modification. Ethanol and biodiesel production has increased steadily since 2005. However, they have experienced periods of decline when tax incentives expired (Figure 63). Dips in biofuel production reflect the Biodiesel Tax Credit expiring on Dec. 31, 2009, Dec. 31, 2011, and Dec. 31, 2013. It was retroactively extended the first two times. A bill calling for a further extension was introduced into the Senate in February 2014 and has been referred to committee.[93]

Ethanol Facilities

As of January 2014, U.S. ethanol is produced at 226 plants, 10 of which produce cellulosic ethanol.[94] The remaining 216 are fermentation plants with far greater capacities. Fermentation ethanol plants are predominately concentrated in the Midwest region (Figure 62) because of its proximity to corn production. Another 10 plants are under construction and 31 have been proposed. Altogether it is expected that 269 plants will in service within a few years, with a total capacity of around 15.6 BGyr. Plants outside the Midwest typically receive corn by rail and are located near large markets for ethanol.

Ten cellulosic plants account for less than three percent of the total existing capacity of 13.9 BGyr. Since production occurs near the feedstock production the farm belt area in PADD II is the primary location for ethanol. The area includes 107 facilities with half of having large capacities over 100 MMGyr.

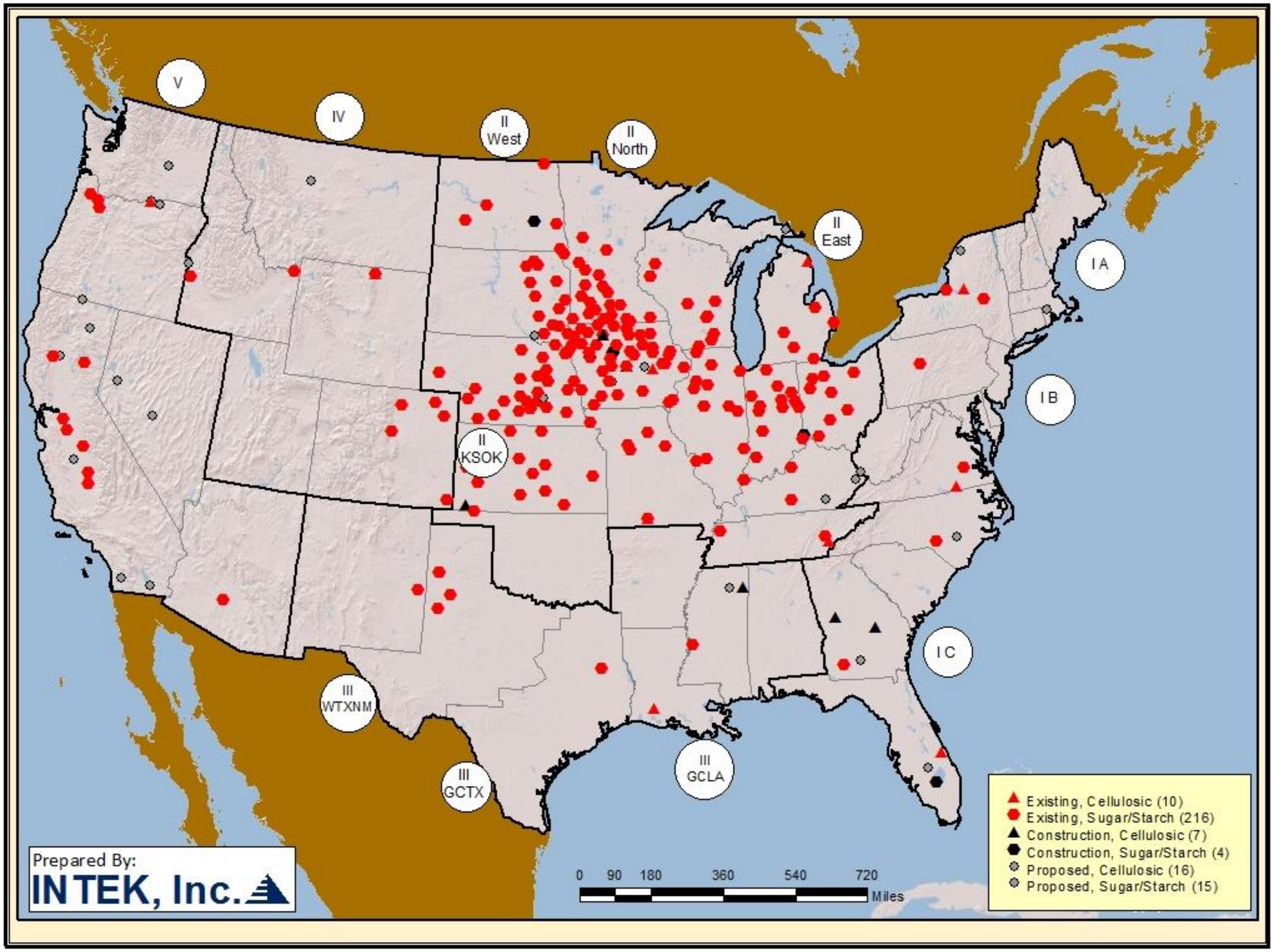
- **Fermentation ethanol** is produced from crops and requires microbial (yeast) fermentation of sugars, distillation, dehydration (requirements vary, see Ethanol fuel mixtures, below), and denaturing.
- **Cellulosic ethanol** is produced from wood, grasses, or the inedible parts of plants.

The Renewable Fuels Association lists six ethanol plants that have combined planned expansion totaling 165 MGyr (Table 26).[95]

Table 26: Planned Ethanol Plant Expansions

PADD/ Sub-PADD	Plant	City	State	Expansion Capacity (MGyr)
II KS/OK	Abengoa Bioenergy Corp	Hugoton	KS	25
II KS/OK	E Caruso (Goodland Energy Center)	Goodland	KS	20
II NORTH	DuPont	Nevad	IA	30
II NORTH	POET-DSM Advanced Biofuels	Emmetsburg	IA	20
II WEST	Dakota Spirit AgEnergy LLC	Spiritwood	ND	65
IV	Dubay Biofuels Greenwood	Greenwood	WY	5

Figure 62: Location of Ethanol Production Facilities



Source: Ethanol Producer Magazine, 2014

Biodiesel Facilities

Biodiesel emerged as an alternative fuel in the past decade due to government initiatives promoting its research and use. Biodiesel production was also helped by European laws that created large export incentives for U.S. firms. Since the termination of these irregular incentives, biodiesel exports have fallen. Domestic production and demand has steadily increased, but has experienced several interruptions in production recently due to uncertainty over expiring tax incentives.[96] While Congress retroactively extended tax credits to biodiesel producers that expired in 2008 and 2011, they have yet to take the same action on the 2013 expiration.

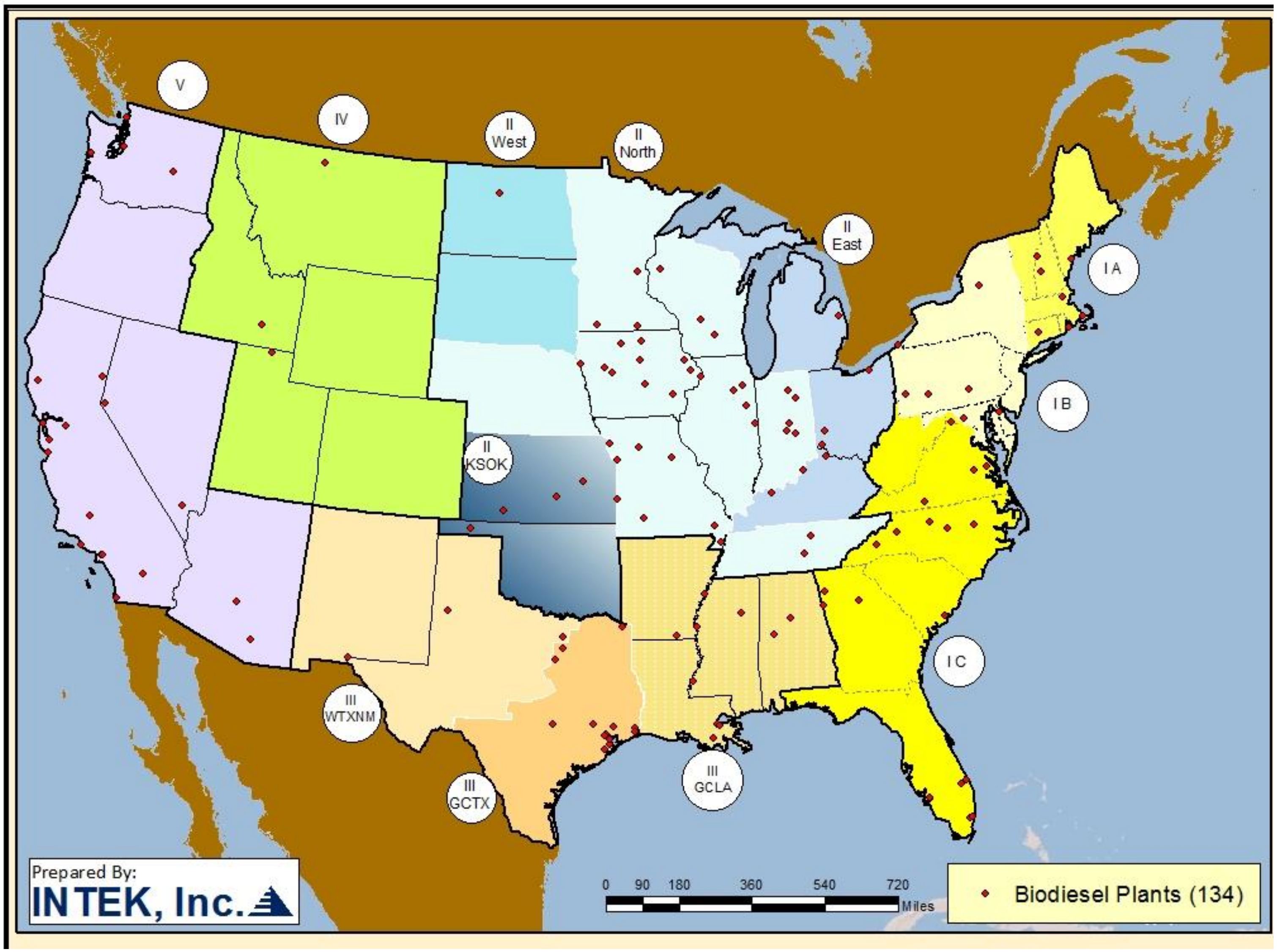
The National Biodiesel Board lists 134 total biodiesel plants, however only 73 report any production Figure 63). The total capacity of these plants is 954 million gallons per year. Production is largely concentrated in PADD's II and V which have 52 percent of the plants and 76% of the capacity between them (Figure 65).[97] PADD IV produces very little biodiesel as the three plants only produce about two million gallons (~0.2%) of fuel per year. The plants also vary considerably in capacity ranging from half a million gallons per year to 100 million gallons. Most are at the lower end of the capacity range. Table 27 shows the biodiesel plant and capacity breakdown by PADD.

Table 27: Biodiesel Plants and Reported Capacity

PADD	Sub PADD	Plants	Capacity (Million Gallons per year)
I	A	5	10
	B	6	74
	C	13	54
II	EAST	5	117
	KS/OK	2	32
	NORTH	18	304
	WEST	1	85
III	GCLA	3	75
	GCTX	2	13
	WTX/NM	2	3
IV	ROCKIES	2	2
V	WEST COAST	14	186
Total		**73**	**955**

Source: National Biodiesel Board

Figure 63: Location of Biodiesel Production Facilities



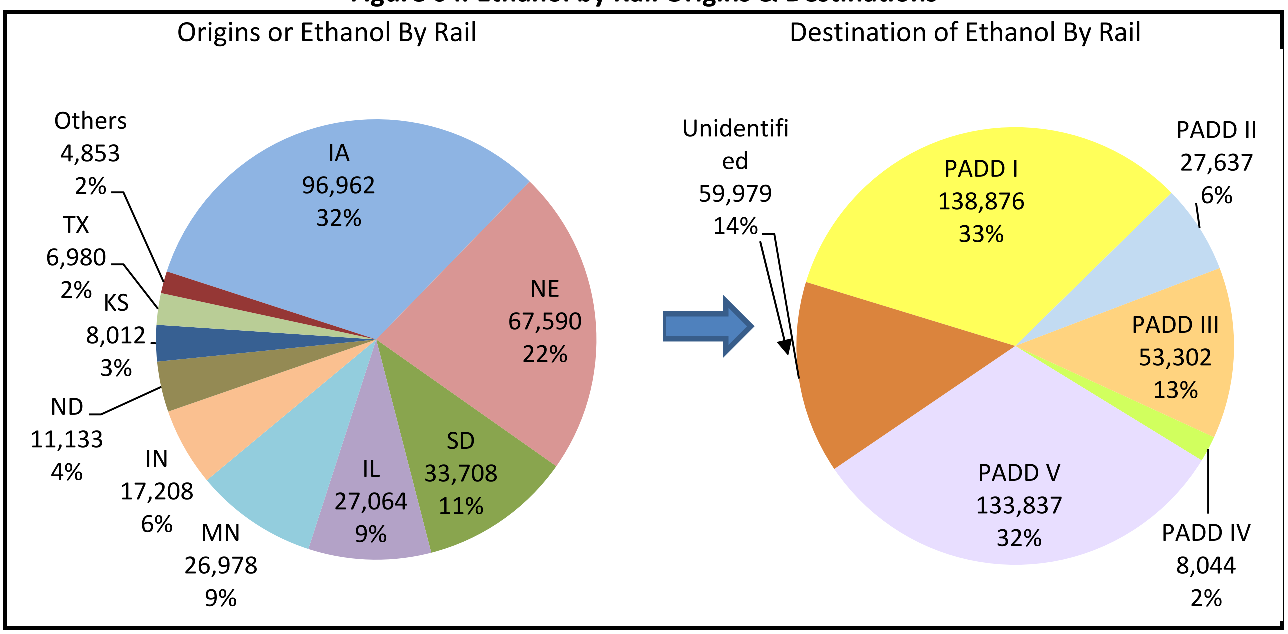
Source: National Biodiesel Board

B. Ethanol and Biodiesel by Rail

The three primary ways to transport ethanol and biodiesel are truck, rail and barge. Ethanol production is concentrated in the Midwest region where much of the nation's corn crop is grown. The major markets for ethanol are on the East Coast, West Coast, and Gulf Coast Texas. Thus, large amounts of ethanol are transported from production to consumption areas via rail. CSX alone has 27 uploading facilities capable of delivering ethanol to 89 east coast terminals.[98]

Rail is used for distribution above 300 miles, the Class I rail is the main transportation routes, like ethanol. Railroads account for approximately 70 percent of ethanol transport. In 2011, U.S. railroads delivered nearly 341,000 carloads of ethanol, up from 69,000 carloads in 2005.[99] Midwestern states — led by Iowa, Nebraska, South Dakota, and Illinois account for most rail ethanol originations. Texas, New Jersey, and California are the top recipients of ethanol delivered by rail (Figure 64).

Figure 64*: Ethanol by Rail Origins & Destinations*



Source: Association of American Railroads. "Railroads and Ethanol" April 2013

Ships are used to transport large amounts of biodiesel between continents, and pipelines are being explored as a more efficient means of transporting fuel across land to major markets. Until pipeline transportation is an option, the biodiesel industry will continue to rely on the rail and barge system to transport its product long distances.

Non-Rail Transportation

According to the U.S. Department of Agriculture, 20% of ethanol transportation by truck. The remaining 10% is transported by barge or pipeline. A tanker truck can carry 8,000 to 10,000 gallons of ethanol. Delivering ethanol by pipeline is difficult since it has an affinity for water and the solvent properties of ethanol require use of a dedicated pipeline. While Kinder Morgan has experimented with delivering batches of ethanol via its Central Florida Pipeline, Magellan Midstream Partners abandoned its project for a dedicated ethanol pipeline linking the Midwest and northeast, in 2011.[100]

Biodiesel trucks hold 6,600 to 7,200 gallons, a railcar holds 23,000 to 26,000 gallons and barges hold 400,000 gallons.[101] As each railcar on average holds four truckloads, each barge represents a volume of 15 railcars or 60 trucks making rail more affordable for long distances and truck for short. Unlike ethanol, biodiesel facilities are smaller and use roughly 8 trains/carloads, verses unit trains of 100 carloads. Exporting facilities will often be on water, like the Mississippi river, and upload directly to a barge.

Vulnerability

There is uncertainty whether the U.S. will remain a large net exporter of ethanol over the next several years. Ethanol from other countries could central role in meeting global and regional demand for ethanol.[102] However, the United States limits ethanol imports through a substantial tariff. Domestic ethanol production, much of which is concentrated inland corn-producing regions, also faces rising costs to transport ethanol to ports for export. [103] However, export demand for U.S. exports may remain strong as Brazil has begun to export less ethanol and consume more.[104] Further complicating this issue is the uncertainty surrounding the RFS. If mandates are lowered, ethanol producers will be incentivized to replace that lost domestic market demand with increased exports to foreign markets. Yet if the dependency for blending stock grows, imports could be needed, increasing the vulnerabilities of gasoline supplies to ethanol import disruption.

VII. Fueling Stations

Fueling stations provide the end-market for petroleum products and they are the most numerous and most localized part of the nation's fuel supply infrastructure.

A. Conventional Fueling Stations (Motor Gasoline and Diesel)

Conventional gas station infrastructure is relatively unchanged in recent years. The number of gas stations in operation at any given time and location varies with demand for gasoline and local price competition. This demand is tightly linked to the economy as a whole.

According to the most recent U.S. Census Bureau data, there were 110,830 gas stations in the country, in 2011. Table 28 shows their geographic distribution by sub-PADD.

Table 28: Summary of Gasoline Fueling Stations by PADD (2011)

PADD	Sub PADD	Gasoline Stations	Vehicles Served (Millions)	Vehicles Served / Station
I	A	5,259	11.2	2,130
	B	12,753	32.7	2,564
	C	22,332	42.0	1,881
II	EAST	9,794	20.8	2,124
	KS/OK	2,959	5.7	1,926
	NORTH	19,699	41.1	2,086
	WEST	1,031	1.7	1,648
III	GCLA	8,873	12.9	1,453
	GCTX	8,324	19.7	2,366
	WTX/NM	2,855	1.7	595
IV	ROCKIES	3,932	9.9	2,518
V	WEST COAST	13,019	44.9	3,449
Total		**110,830**	**244.3**	**2,204**

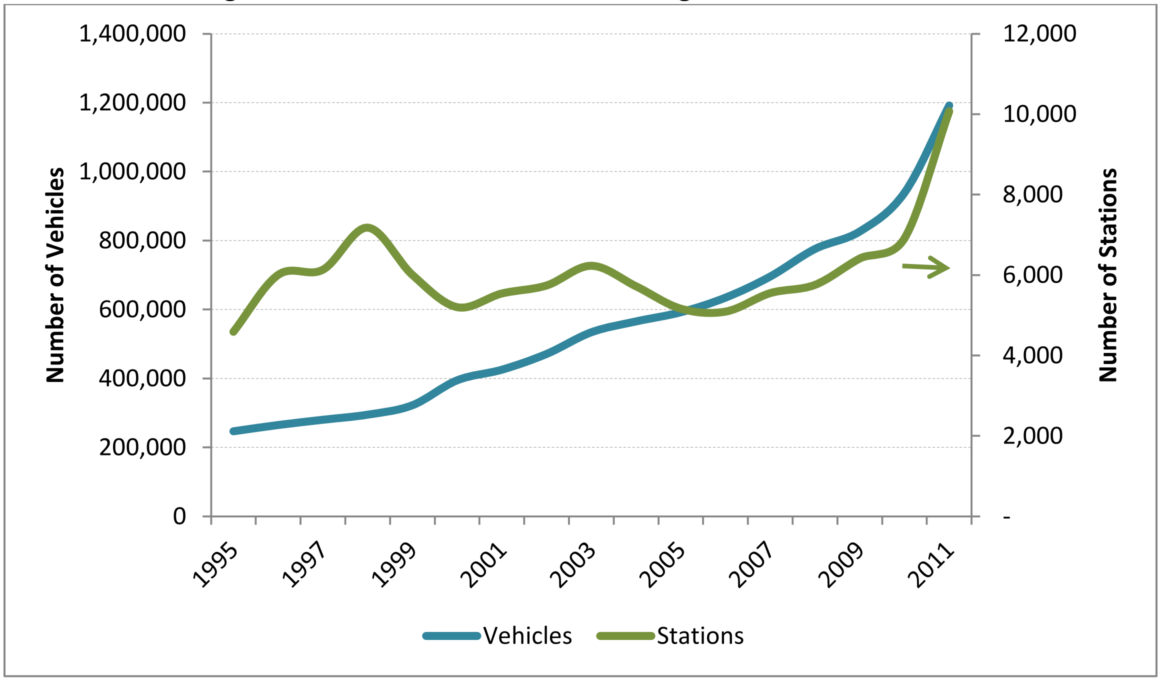
Source: U.S. Census Bureau

The ratio of vehicles per gas station varies by sub-PADD ranging from around 1 station per 600 vehicles to 1 station per 3,450 vehicles. PADD III has the least vehicles per station, followed by PADD II and PADD I. Because, the western states (PADDs IV and V) have lower population densities per square mile, and fueling station serves a greater number of vehicles as compared to other sub-PADDS.

B. Unconventional Fueling Stations

Unlike conventional fueling stations, the number of alternative stations has seen strong growth in recent years (Figure 65). As more and more alternative vehicles enter the market, fueling stations are needed to service them. Also unlike conventional fuels, which have a highly-developed, highly-complex retail infrastructure in place, alternative fuels require the establishment of a robust infrastructure to support a diverse and growing vehicle fleet.[105] The alternative fuels showing the most growth are compressed natural gas (CNG) and ethanol E85. The use of propane in vehicles has declined in the last decade.[106]

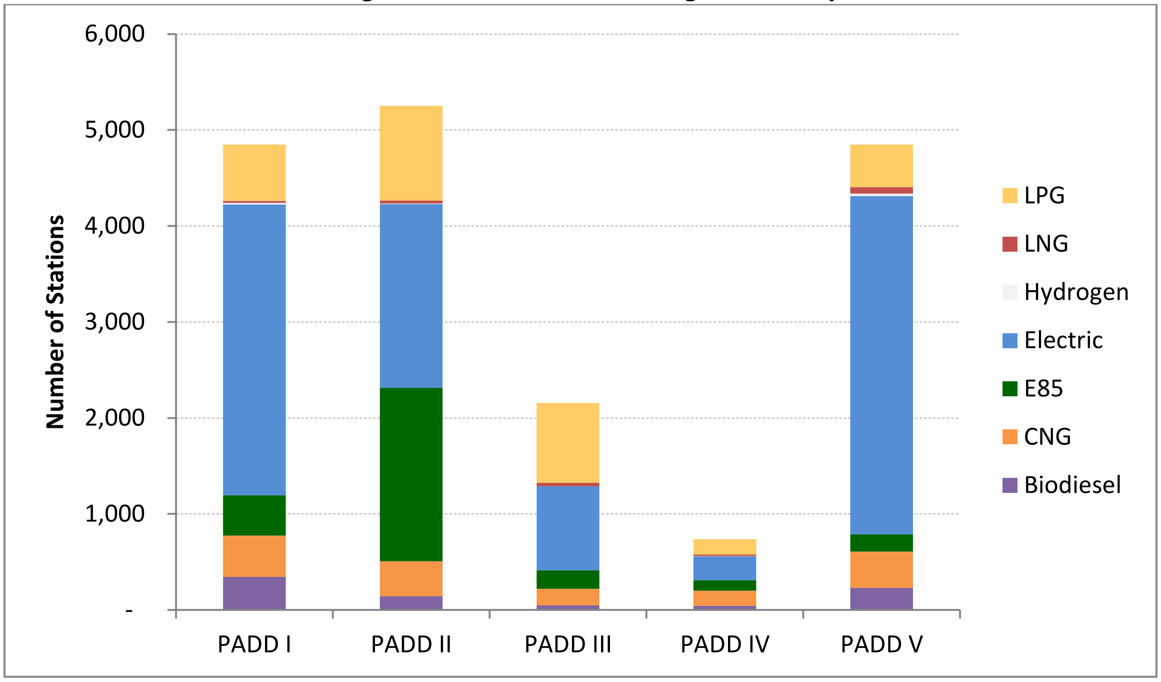
Figure 65: Growth of Alternative Fueling Stations and Vehicles



Source: Alternative Fuels Data Center and EIA's Alternative Fuel Data[107]

As of 2014, there were 17,840 alternative fueling stations in the U.S. Over half of these (9,583) serve electric vehicles.[108] Propane (LPG) is a distant second with around 3,000 stations. Figure 68 shows the breakdown of these stations by PADD.

Figure 66: Alternative Fueling Stations by PADD



Source: U.S. DOE Office of Energy Efficiency and Renewable Energy, U.S. DOE Alternative Fuels Data Center

Fueling Station Infrastructure

Due to their diversity, alternative fuels also exhibit a heterogeneous infrastructure with different challenges facing each fuel (Table 29).

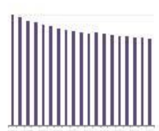
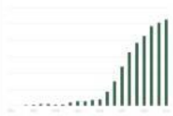
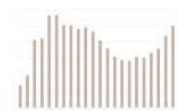
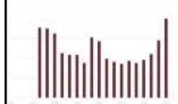
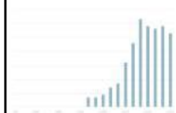
Electric

Technically, electric vehicles and plug-in hybrid vehicles require no additional infrastructure for at-home refueling as they can be charged by plugging into any residential electrical system, known as AC Level 1 charging.[109] This method of charging only adds about 2-5 miles of range per hour charged and is typically seen as a last resort. AC Level 2 charging requires additional equipment yet is designed primarily for residential applications such as charging cars overnight. Public and commercial charging uses what's known as DC fast charging or DC level 2 which can add up to 80 miles range in 20 minutes. Finally, wireless charging stations are emerging which charge at around AC Level 2.[110] NREL has projected that the capital costs of electric stations are likely to be higher than both conventional stations and most other alternative fuels.[111]

Propane

While propane as an alternative fuel is in decline, it faces relatively few challenges to its infrastructure. First, propane already has an existing well-established infrastructure with easily accessible distribution

Table 29: Summary of Alternative Fueling Stations

	Gasoline	Electric	E85 Ethanol	Biodiesel	CNG	Propane	LNG	Hydrogen
								
Map								
No. of Stations	110,830	9,583	2,711	815	1,500	3,010	166	55
Fleet Size	244,419,938	57,462	618,506	N/A	115,863	143,037	3,354	421
Growth* In Fueling Stations								

*Charts are not scaled equally but just show trends in recent years

Source: AFDC, http://www.afdc.energy.gov/

and storage terminals. Second, propane's refueling mechanism is similar to conventional fuels and refueling tanks can be placed at existing conventional stations or at propane retailers.[112] The real challenge for propane appears to be cost. Use as an alternative fuel only accounts for around 2% of propane's overall usage and therefore its pricing is largely dictated by demand in other industries.[113]

Ethanol

E85 ethanol, an alternative fuel used in flex-fuel vehicles, also builds off an existing infrastructure. There are relatively few E85 fueling stations in the U.S. with most concentrated in ethanol-producing states (PADD II). E85 does not necessarily require its own station; it could be offered as an alternative at existing conventional stations. However, conversion of conventional stations to offer E85 would require substantial investments by station owners for separate pumps, construction of dedicated ethanol or e-85 tanks, and modification of pump controls and systems.[114] The growth of E85 stations has lagged since 2011, particularly in the Northeast.[115]

Biodiesel

Like E85, biodiesel fueling stations are largely just conventional stations that have begun offering biodiesel alongside gasoline. Therefore, biodiesel infrastructure simply involves basic modifications to conventional storage and pumps to comport with regulations.[116]

CNG

CNG is one of the alternative fuels that requires an altogether separate installation for its fueling stations and must be individually tailored for two-types of systems – fast-fill and time-fill. Fast-fill stations cater to customers in the same way a conventional station does – a vehicle pulls up randomly, refuels, and departs. Time-fill serves vehicles that return to a centralized location overnight. Both stations receive natural gas from a utility line and require a compressor on-site, yet fast-fill stations have a tank in which the compressed gas is stored while time-fill stations deliver the compressed gas directly into the vehicles. Because time-fill stations are constructed based on the needs of the fleet serviced, costs vary from station to station.[117]

LNG

LNG, like CNG, is natural gas and as a liquid fuel their stations are similar to conventional stations. However, LNG fueling requires extra safety precautions such as gloves and face-shields to refuel, which can be intimidating to customers, and may limit its suitability for self-service operations. These stations also vary in size and cost depending on their use and the vehicles served.[118]

Hydrogen

Hydrogen is the least developed of all alternative fuels discussed here and the industry is still in its infancy. Many of the hydrogen stations have been constructed for demonstration rather than to actually cater to consumers. Hydrogen also faces a number of regulatory hurdles for the construction of any station and the DOE is actively looking into how to safely and economically develop hydrogen infrastructure.[119]

Alternative Fuel Infrastructure by PADD

Because alternative fuels are also heavily dictated by state-led initiatives and localized considerations, there is skewed distribution at the PADD level by type of fuel. For instance, PADD II sees a large amount of ethanol fueling stations due to its large volume of ethanol plants, PADD V has a heavy electric and hydrogen focus centered on California, and PADD III, as a region that dominates propane production, also consumes large amounts of it.

Overall, alternative fueling infrastructure is in a period of development and growth. The supply of fuels is highly varied by region and caters to a niche market of consumers.

VIII. Interdependencies of Oil and Gas Infrastructure

A. Crude Oil and Natural Gas System Intersects

The nation's oil, natural gas, and alternative fuels industries, and their respective production, transport, storage, and distribution systems are largely independent and autonomous of one another (Figure 67). However, they share common modes and methods of transportation, storage, and distribution of feedstocks and products. Consequently, these systems also share some common dependencies and vulnerabilities.

There are several points where these systems and infrastructure intersect and interconnect.

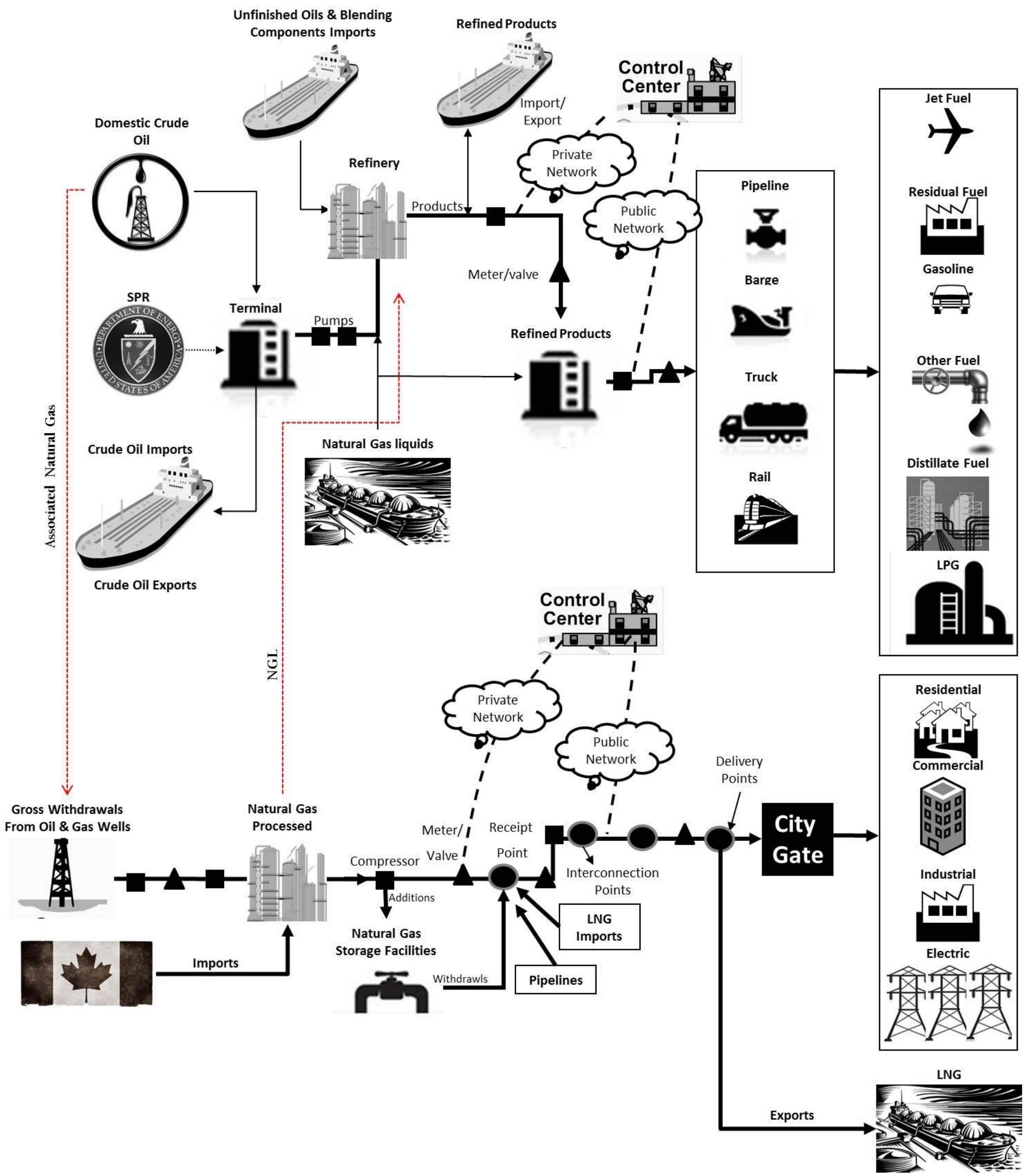
- Natural gas that is produced in conjunction with crude oil production is referred to as "associated gas." This gas may be captured and, where infrastructure is present, be transported via gathering lines to a gas processing plant, thereby entering the natural gas system. (Where gas gathering systems are not economically available, this gas is used in petroleum production operations or flared.)
- Similarly, the NGLs that are produced in significant volumes as a by-product of the natural gas processing plant, may be supplied to oil refineries as a valuable refinery feedstock for use in fuels or petrochemicals.
- Alternative liquid fuels, including ethanol and biodiesel, also intersect the with conventional refined products distribution system. Typically, ethanol is received by truck and stored at regional motor fuels distribution terminals. It is usually dispensed into a tanker truck at the truck loading rack of the terminal, where it is then blended with unleaded gasoline to create a 10 percent (E-10) mixture.

Mutual Dependencies

The oil, natural gas, and alternative fuels transportation, storage, and distribution infrastructures also share common dependencies on the nation's electric power generation, transmission, and distribution system (Figure 68).

- Oil and natural gas and alternative fuels production systems are largely self-sufficient, using on-site fuels to generate limited site power requirements.
- Pumps and compressor stations along natural gas gathering and transmission pipelines use offtake gas from the lines to generate power for pumps, compressors and instrumentation, so are largely autonomous from the purchased power grid.
- However, oil and refined product pipelines, pumps, and compressor stations generally rely on purchased power from the electric grid as the prime mover for their operations.

Figure 67: Connections between Oil and Gas Infrastructures



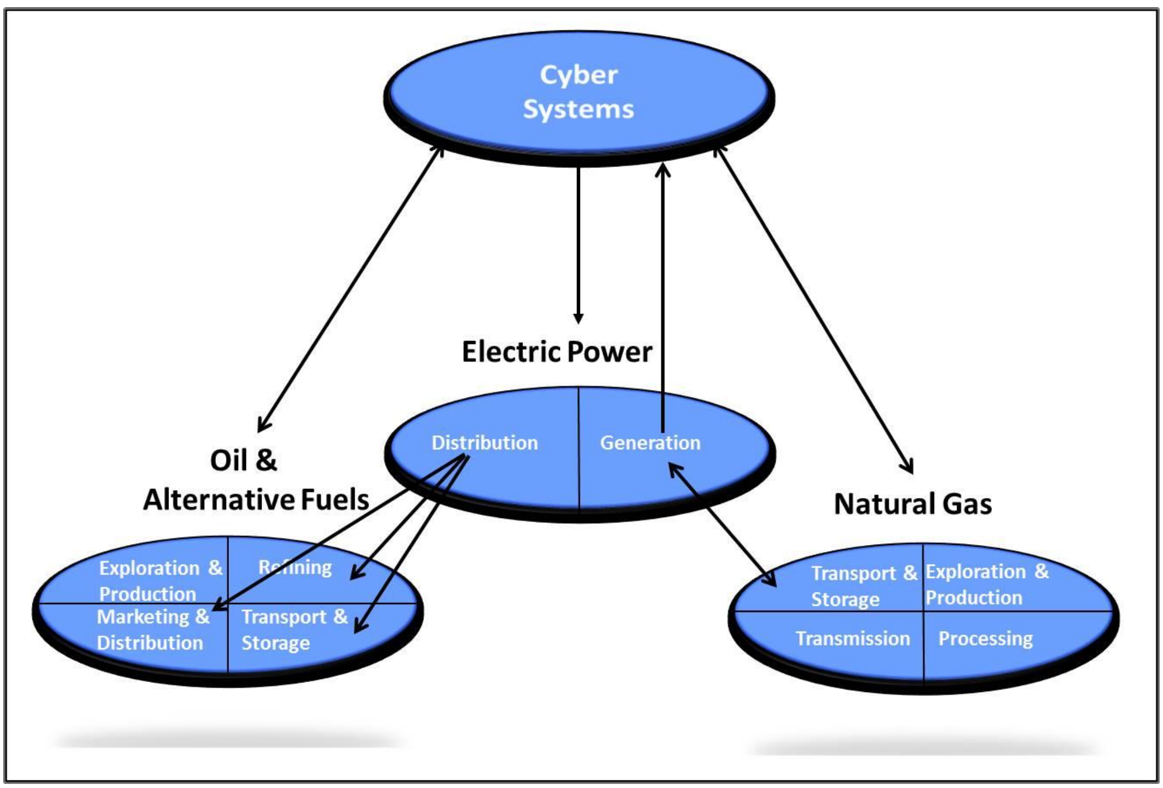
- Crude oil refineries and natural gas processing plants also generally rely on purchased power from the grid to power electric pumps used in their operations, as do crude oil storage, and refined product storage terminals.
- Compression facilities for underground storage are generally fueled by offtake gas, but may also require electric power.

- The nation's retail distribution outlets for motor fuels, propane, and alternative fuels also rely on electric power for pumps and other fueling and service station operations.
- This dependence on electric power is increasing, particularly as many systems in the oil, gas, and alternative fuels infrastructures are increasingly monitored and controlled remotely through cyber-networks that are also powered by electricity that is typically supplied from the grid.

The electric power sector is also increasingly reliant on the oil and natural gas sectors. In recent decades, then costly natural gas was generally reserved to fuel peak-load power generation, leaving base-load generation to coal-fired, hydro-electric, and nuclear power generation. However, the increased availability of low-cost domestic natural gas resulting from the shale gas revolution has made natural gas increasingly attractive and increasingly used as a base-load fuel, making the electric power and natural gas infrastructures increasingly interdependent.

The commonalities and interdependencies among the nation's oil and refined products, natural gas, and alternative fuels transport, storage, and distributions systems also suggest that they share some common vulnerabilities to interruptions by natural, physical and other causes. The vulnerabilities of these systems will be explored in Part II of this study, excluding the cyber vulnerabilities that will be explored independently.

Figure 68: Interdependencies Among Systems



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Appendices

Appendix A.1 – 2013 U.S. Refineries

PADD	Sub PADD	State	Company Name	Location	Operating Capacity (MBbl/d)	Idle Capacity (MBbl/d)	Operable Capacity (MBbl/d)
I	B	DE	DELAWARE CITY REFINING CO LLC	DELAWARE CITY, DE	182.20	0.00	182.20
		NJ	NUSTAR ASPHALT REFINING LLC	PAULSBORO, NJ	70.00	0.00	70.00
		NJ	PAULSBORO REFINING CO LLC	PAULSBORO, NJ	160.00	0.00	160.00
		NJ	PHILLIPS 66 CO	LINDEN, NJ	238.00	0.00	238.00
		PA	AMERICAN REFINING GROUP INC	BRADFORD, PA	10.00	0.00	10.00
		PA	MONROE ENERGY LLC	TRAINER, PA	185.00	0.00	185.00
		PA	PHILADELPHIA ENERGY SOLUTIONS	PHILADELPHIA, PA	335.00	0.00	335.00
		PA	UNITED REFINING CO	WARREN, PA	65.00	0.00	65.00
		PADD IB Subtotal			**1,245.20**	**0.00**	**1,245.20**
	C	GA	NUSTAR ASPHALT REFINING LLC	SAVANNAH, GA	0.00	28.00	28.00
		WV	ERGON-WEST VIRGINIA INC	NEWELL, WV	20.00	0.00	20.00
		PADD IC Subtotal			**20.00**	**28.00**	**48.00**
	PADD I Subtotal				**1265.20**	**28.00**	**1,293.20**
II	East	KY	CONTINENTAL REFINING CO LLC	SOMERSET, KY	5.50	0.00	5.50
		KY	MARATHON PETROLEUM CO LP	CATLETTSBURG, KY	240.00	0.00	240.00
		MI	MARATHON PETROLEUM CO LP	DETROIT, MI	120.00	0.00	120.00
		OH	BP-HUSKY REFINING LLC	TOLEDO, OH	135.00	0.00	135.00
		OH	LIMA REFINING CO	LIMA, OH	155.00	0.00	155.00
		OH	MARATHON PETROLEUM CO LP	CANTON, OH	80.00	0.00	80.00
		OH	TOLEDO REFINING CO LLC	TOLEDO, OH	160.00	0.00	160.00
		PADD II East Subtotal			**895.50**	**-**	**895.50**
	KS/OK	KS	COFFEYVILLE RESRCS REFG & MKTG	COFFEYVILLE, KS	115.70	0.00	115.70

Appendix A.1 – 2013 U.S. Refineries

PADD	Sub PADD	State	Company Name	Location	Operating Capacity (MBbl/d)	Idle Capacity (MBbl/d)	Operable Capacity (MBbl/d)
II	KS/OK	KS	FRONTIER EL DORADO REFG LLC	EL DORADO, KS	138.00	0.00	138.00
		KS	NATIONAL COOP REFINERY ASSOC	MCPHERSON, KS	86.00	0.00	86.00
		OK	HOLLY REFG & MKTG CO - TULSA L	TULSA WEST, OK	85.00	0.00	85.00
		OK	HOLLY REFG & MKTG CO - TULSA L	TULSA EAST, OK	70.30	0.00	70.30
		OK	PHILLIPS 66	PONCA CITY, OK	198.40	0.00	198.40
		OK	VALERO REFINING CO OKLAHOMA	ARDMORE, OK	85.00	0.00	85.00
		OK	VENTURA REFINING & TRANS LLC	THOMAS, OK	0.00	12.00	12.00
		OK	WYNNEWOOD REFINING CO	WYNNEWOOD, OK	70.00	0.00	70.00
		PADD II KS/OK Subtotal			**848.40**	**12.00**	**860.40**
	North	IL	EXXONMOBIL REFINING & SPLY CO	JOLIET, IL	238.60	0.00	238.60
		IL	MARATHON PETROLEUM CO LP	ROBINSON, IL	206.00	0.00	206.00
		IL	PDV MIDWEST REFINING LLC	LEMONT, IL	174.50	0.00	174.50
		IL	WRB REFINING LLC	WOOD RIVER, IL	311.00	22.00	333.00
		IN	BP PRODUCTS NORTH AMERICA	WHITING, IN	165.00	234.00	399.00
		IN	COUNTRYMARK COOP LLP	MOUNT VERNON, IN	27.10	0.00	27.10
		MN	FLINT HILLS RESOURCES LP	SAINT PAUL, MN	267.00	0.00	267.00
		MN	NORTHERN TIER ENERGY	SAINT PAUL, MN	81.50	0.00	81.50
		TN	PREMCOR REFINING GROUP INC	MEMPHIS, TN	180.00	0.00	180.00
		WI	CALUMET LUBRICANTS	SUPERIOR, WI	38.00	0.00	38.00
		PADD II North Subtotal			**1,688.70**	**256.00**	**1,944.70**
	WEST	ND	TESORO CORP	MANDAN, ND	68.00	0.00	68.00
		PADD II West Subtotal			**68.00**	**-**	**68.00**
	PADD II Subtotal				**3,617.60**	**151.00**	**3,768.60**

Appendix A.1 – 2013 U.S. Refineries

PADD	Sub PADD	State	Company Name	Location	Operating Capacity (MBbl/d)	Idle Capacity (MBbl/d)	Operable Capacity (MBbl/d)
III	GCLA	AL	GOODWAY REFINING LLC	ATMORE, AL	4.10	0.00	4.10
		AL	HUNT REFINING CO	TUSCALOOSA, AL	36.00	0.00	36.00
		AL	SHELL CHEMICAL LP	SARALAND, AL	80.00	0.00	80.00
		AR	LION OIL CO	EL DORADO, AR	83.00	0.00	83.00
		AR	MARTIN MIDSTREAM PARTNERS LP	SMACKOVER, AR	7.50	0.00	7.50
		LA	ALON REFINING KROTZ SPGS INC	KROTZ SPRINGS, LA	80.00	0.00	80.00
		LA	CALCASIEU REFINING CO	LAKE CHARLES, LA	78.00	0.00	78.00
		LA	CALUMET LUBRICANTS CO LP	SHREVEPORT, LA	57.00	0.00	57.00
		LA	CALUMET LUBRICANTS CO LP	COTTON VALLEY, LA	13.02	0.00	13.02
		LA	CALUMET LUBRICANTS CO LP	PRINCETON, LA	8.30	0.00	8.30
		LA	CHALMETTE REFINING LLC	CHALMETTE, LA	192.50	0.00	192.50
		LA	CITGO PETROLEUM CORP	LAKE CHARLES, LA	427.80	0.00	427.80
		LA	EXXONMOBIL REFINING & SPLY CO	BATON ROUGE, LA	502.50	0.00	502.50
		LA	MARATHON PETROLEUM CO LP	GARYVILLE, LA	522.00	0.00	522.00
		LA	MOTIVA ENTERPRISES LLC	NORCO, LA	233.50	0.00	233.50
		LA	MOTIVA ENTERPRISES LLC	CONVENT, LA	235.00	0.00	235.00
		LA	PELICAN REFINING CO LLC	LAKE CHARLES, LA	0.00	0.00	0.00
		LA	PHILLIPS 66	BELLE CHASSE, LA	252.00	0.00	252.00
		LA	PHILLIPS 66 CO	WESTLAKE, LA	239.40	0.00	239.40
		LA	PLACID REFINING CO LLC	PORT ALLEN, LA	57.00	0.00	57.00
		LA	SHELL OIL PRODUCTS US	SAINT ROSE, LA	45.00	0.00	45.00
		LA	VALERO ENERGY CORP	MERAUX, LA	114.58	10.42	125.00
		LA	VALERO REFG NEW ORLEANS LLC	NORCO, LA	205.00	0.00	205.00

Appendix A.1 – 2013 U.S. Refineries

PADD	Sub PADD	State	Company Name	Location	Operating Capacity (MBbl/d)	Idle Capacity (MBbl/d)	Operable Capacity (MBbl/d)
III	GCLA	MS	CHEVRON USA INC	PASCAGOULA, MS	303.33	26.67	330.00
		MS	ERGON REFINING INC	VICKSBURG, MS	23.00	0.00	23.00
		MS	HUNT SOUTHLAND REFINING CO	SANDERSVILLE, MS	11.00	0.00	11.00
		PADD III GCLA Subtotal			**3,847.62**	**0.00**	**3,847.62**
	GCTX	TX	BTB REFINING LLC	CORPUS CHRISTI, TX	0.00	0.00	0.00
		TX	CALUMET SAN ANTONIO REFG LLC	SAN ANTONIO, TX	13.11	1.19	14.30
		TX	CITGO REFINING & CHEMICAL INC	CORPUS CHRISTI, TX	163.00	0.00	163.00
		TX	DEER PARK REFINING LTD PTNRSHP	DEER PARK, TX	327.00	0.00	327.00
		TX	DELEK REFINING LTD	TYLER, TX	60.00	0.00	60.00
		TX	EXXONMOBIL REFINING & SPLY CO	BEAUMONT, TX	344.50	0.00	344.50
		TX	EXXONMOBIL REFINING & SPLY CO	BAYTOWN, TX	560.50	0.00	560.50
		TX	FLINT HILLS RESOURCES LP	CORPUS CHRISTI, TX	289.10	0.00	289.10
		TX	HOUSTON REFINING LP	HOUSTON, TX	258.62	0.00	258.62
		TX	LAZARUS ENERGY LLC	NIXON, TX	11.47	0.00	11.47
		TX	MARATHON PETROLEUM CO LP	EAST TEXAS CITY, TX	80.00	0.00	80.00
		TX	MARATHON PETROLEUM CO LP	WEST TEXAS CITY, TX	460.20	0.00	460.20
		TX	MOTIVA ENTERPRISES	PORT ARTHUR, TX	285.00	315.60	600.25
		TX	PASADENA REFINING SYSTEMS INC	PASADENA, TX	100.00	0.00	100.00
		TX	PHILLIPS 66	SWEENY, TX	247.00	0.00	247.00

Appendix A.1 – 2013 U.S. Refineries

PADD	Sub PADD	State	Company Name	Location	Operating Capacity (MBbl/d)	Idle Capacity (MBbl/d)	Operable Capacity (MBbl/d)
III	GCTX	TX	TOTAL PETROCHEMICALS & REFININ	PORT ARTHUR, TX	58.50	167.00	225.50
		TX	VALERO ENERGY CORP	THREE RIVERS, TX	93.00	0.00	93.00
		TX	VALERO ENERGY CORP	PORT ARTHUR, TX	290.00	0.00	290.00
		TX	VALERO REFINING CO TEXAS LP	HOUSTON, TX	88.00	0.00	88.00
		TX	VALERO REFINING CO TEXAS LP	CORPUS CHRISTI, TX	200.00	0.00	200.00
		TX	VALERO REFINING CO TEXAS LP	TEXAS CITY, TX	225.00	0.00	225.00
		PADD III GCTX Subtotal			**4,263.68**	**373.75**	**4,637.43**
	WTX/NM	NM	NAVAJO REFINING CO	ARTESIA, NM	105.00	0.00	105.00
		NM	WESTERN REFINING SOUTHWEST INC	GALLUP, NM	21.60	0.00	21.60
		TX	ALON USA LP	BIG SPRING, TX	67.00	0.00	67.00
		TX	VALERO ENERGY CO	SUNRAY, TX	156.00	0.00	156.00
		TX	WESTERN REFINING CO	EL PASO, TX	122.00	0.00	122.00
		TX	WRB REFINING LLC	BORGER, TX	146.00	0.00	146.00
		PADD III WTX/NM Subtotal			**617.60**	**-**	**617.60**
	PADD III Subtotal				**9,007.55**	**86.67**	**9,094.22**
IV	IV	CO	SUNCOR ENERGY USA INC	COMMERCE CITY EAST, CO	36.00	0.00	36.00
		CO	SUNCOR ENERGY USA INC	COMMERCE CITY WEST, CO	67.00	0.00	67.00
		MT	CALUMET MONTANA REFINING LLC	GREAT FALLS, MT	10.00	0.00	10.00
		MT	CHS INC	LAUREL, MT	59.60	0.00	59.60
		MT	EXXONMOBIL REFINING & SPLY CO	BILLINGS, MT	60.00	0.00	60.00
		MT	PHILLIPS 66	BILLINGS, MT	59.00	0.00	59.00
		UT	BIG WEST OIL LLC	NORTH SALT LAKE, UT	29.40	0.00	29.40
		UT	CHEVRON USA INC	SALT LAKE CITY, UT	45.00	0.00	45.00

Appendix A.1 – 2013 U.S. Refineries

PADD	Sub PADD	State	Company Name	Location	Operating Capacity (MBbl/d)	Idle Capacity (MBbl/d)	Operable Capacity (MBbl/d)
IV	IV	UT	HOLLYFRONTIER REFINING MKTG	WOODS CROSS, UT	25.05	0.00	25.05
		UT	SILVER EAGLE REFINING INC	WOODS CROSS, UT	15.00	0.00	15.00
		UT	TESORO CORP	SALT LAKE CITY, UT	57.50	0.00	57.50
		WY	ANTELOPE REFINING LLC	DOUGLAS, WY	3.80	0.00	3.80
		WY	FRONTIER REFINING LLC	CHEYENNE, WY	47.00	0.00	47.00
		WY	LITTLE AMERICA REFINING CO	EVANSVILLE, WY	24.50	0.00	24.50
		WY	SILVER EAGLE REFINING INC	EVANSTON, WY	3.00	0.00	3.00
		WY	SINCLAIR WYOMING REFINING CO	SINCLAIR, WY	74.00	0.00	74.00
		WY	WYOMING REFINING CO	NEW CASTLE, WY	14.00	0.00	14.00
	PADD IV Subtotal				**629.85**	**0.00**	**629.85**
V	V	AK	BP EXPLORATION ALASKA INC	PRUDHOE BAY, AK	10.50	0.00	10.50
		AK	CONOCOPHILLIPS CO	PRUDHOE BAY, AK	15.00	0.00	15.00
		AK	FLINT HILLS RESOURCES LP	NORTH POLE, AK	79.51	48.48	127.99
		AK	PETROLEUM STAR INC	NORTH POLE, AK	19.70	0.00	19.70
		AK	PETROLEUM STAR INC	VALDEZ, AK	55.00	0.00	55.00
		AK	TESORO CORP	KENAI, AK	65.00	0.00	65.00
		CA	CHEVRON USA INC	RICHMOND, CA	0.00	245.27	245.27
		CA	CHEVRON USA INC	EL SEGUNDO, CA	269.00	0.00	269.00
		CA	EXXONMOBIL REFINING & SPLY CO	TORRANCE, CA	149.50	0.00	149.50
		CA	GREKA ENERGY CORP	SANTA MARIA, CA	9.50	0.00	9.50
		CA	KERN OIL & REFINING	BAKERSFIELD, CA	26.00	0.00	26.00
		CA	LUNDAY THAGARD CO	SOUTH GATE, CA	8.50	0.00	8.50
		CA	PARAMOUNT PETROLEUM CORP	PARAMOUNT, CA	0.00	84.50	84.50

Appendix A.1 – 2013 U.S. Refineries

PADD	Sub PADD	State	Company Name	Location	Operating Capacity (MBbl/d)	Idle Capacity (MBbl/d)	Operable Capacity (MBbl/d)
V	V	CA	PHILLIPS 66	WILMINGTON, CA	139.00	0.00	139.00
		CA	PHILLIPS 66 CO	RODEO, CA	120.20	0.00	120.20
		CA	SAN JOAQUIN REFINING CO INC	BAKERSFIELD, CA	15.00	0.00	15.00
		CA	SHELL OIL PRODUCTS US	MARTINEZ, CA	156.40	0.00	156.40
		CA	TESORO CORP	WILMINGTON, CA	103.80	0.00	103.80
		CA	TESORO CORP	MARTINEZ, CA	166.00	0.00	166.00
		CA	TESORO REFINING & MARKETING	LOS ANGELES, CA	246.00	0.00	246.00
		CA	VALERO REFINING CO CALIFORNIA	WILMINGTON (ASPH), CA	6.30	0.00	6.30
		CA	VALERO REFINING CO CALIFORNIA	BENICIA, CA	132.00	0.00	132.00
		CA	VALERO REFINING CO CALIFORNIA	WILMINGTON (REFY), CA	78.00	0.00	78.00
		HI	CHEVRON USA INC	HONOLULU, HI	54.00	0.00	54.00
		HI	HAWAII INDEPENDENT ENERGY	EWA BEACH, HI	93.50	0.00	93.50
		NV	FORELAND REFINING CORP	ELY, NV	2.00	0.00	2.00
		OR	PARAMOUNT PETROLEUM CORP	PORTLAND, OR	0.00	0.00	0.00
		WA	BP PRODUCTS NORTH AMERICA	FERNDALE, WA	225.00	0.00	225.00
		WA	PHILLIPS 66 CO	FERNDALE, WA	101.00	0.00	101.00
		WA	SHELL OIL PRODUCTS US	ANACORTES, WA	145.00	0.00	145.00
		WA	TESORO CORP	ANACORTES, WA	120.00	0.00	120.00
		WA	US OIL & REFINING CO	TACOMA, WA	40.70	0.00	40.70
	PADD V Subtotal				**2,651.11**	**378.25**	**3,029.36**
Total U.S.					**16,775.66**	**1,048.00**	**17,823.66**

Appendix A.2 – New Refineries and Refinery Expansions
Source: November 2013 Oil & Gas Journal Worldwide Construction Update

PADD	Sub PADD	State	Company & Location	Project	Added Capacity (Bbl/d)	Status	Expected Completion	Notes
II	East	OH	Husky Energy Co, Lima	Refinery	40000	engineering	2015-2016	expansion
		MI	Marathon Petroleum Co LLC, Detroit	Refinery	13000	under construction		expansion. $1.6 billion
		PADD II East Subtotal			**53000**			
	KS/OK	KS	CHS Inc, McPherson	Refinery	15000	Planning	2016	Expansion.
		OK	Sinclair Oil Corp, Tulsa	Refinery	45000	engineering		expansion. Final capacity 115000 b/d
		OK	Sinclair Oil Corp, Tulsa	delayed coker	30000	engineering		New
		PADD II KS/OK Subtotal			**90000**			
	North	TN	Valero Energy Corp, Memphis	hydrogen	30 mmscf/d	engineering		new
		IL	WRB Refining LLC, Roxania	coker		under construction		expansion. Wood River refinery. JV ConocoPhillips, EnCana
		PADD II North Subtotal			**30**			
	West	ND	Dakota Prairie Refining LLC, Stark Co.	Refinery	20000	Planning	2014	New
		ND	Tesoro Corp, Mandan	Refinery	10000	Planning		expansion
		ND	The Three Affiliated Tribes, Makoti	Refinery	20000	under construction		new. $400 million
		PADD II West Subtotal			**50000**			
	PADD II Subtotal				**193000**			

Appendix A.2 – New Refineries and Refinery Expansions Source: November 2013 Oil & Gas Journal Worldwide Construction Update

PADD	Sub PADD	State	Company & Location	Project	Added Capacity (Bbl/d)	Status	Expected Completion	Notes
III	GCLA	LA	Placid Refining Co, LLC, Port Allen	crude distillation	25000	engineering		expansion. $39.5 million. Project delayed
		LA	Placid Refining Co, LLC, Port Allen	catalytic reforming (semiregenerative)	5500	engineering		expansion. $13.2 million. Project delayed
		LA	Placid Refining Co, LLC, Port Allen	hydrocracker	7000	engineering		expansion. $20.7 million. Project delayed
		LA	Placid Refining Co, LLC, Port Allen	FCC	6000	engineering		expansion. $32 million. Project delayed
		PADD III GCLA Subtotal			**43500**			
	GCTX	TX	Flint Hills Resources LP, Corpus Christi	delayed coker	2000	engineering		expansion
		TX	Valero Energy Corp, Port Arthur	Refinery	90000	under construction		expansion. $2.4 billion. Final capacity 415000
		TX	Valero Energy Corp, Port Arthur	coker	45000	under construction		new
		PADD III GCTX Subtotal			**137000**			
	WTX/NM	TX	Valero Energy Corp, Sunray	hydrogen	30 mmscf/d	engineering		new
		TX	Valero Energy Corp, Sunray	Refinery	25000	Planning	2014	expansion
		PADD III WTX/NM Subtotal			**25000**			
		PADD III Subtotal			**205500**			
IV	IV	MT	Calumet Specialty Products Partners, LP, Great Falls	Refinery	10000	Planning	2015	Expansion.$275 million

Appendix A.2 – New Refineries and Refinery Expansions Source: November 2013 Oil & Gas Journal Worldwide Construction Update

PADD	Sub PADD	State	Company & Location	Project	Added Capacity (Bbl/d)	Status	Expected Completion	Notes
IV	**IV**	UT	HollyFrontier Corp, Woods Cross	Refinery	29000	Planning	2015-2016	expansion. Two phases
	PADD IV Subtotal				**39000**			
V	**V**	CA	ConocoPhillips, Rodeo	hydrocracker	20000	under construction		expansion
	PADD V Subtotal				**20000**			
U.S. Total					**457500**			

Note: Total includes refining capacity expansion, delayed coker expansion, and all other types of projects.

Appendix B.1 – Major Crude Pipeline Systems

PIPELINE	2013 Company	FROM		TO		Current Maximum Capacity (MBbl/d)	Length (Miles)	Diameter (Inches)
		Terminal	PADD	Terminal	PADD			
Kiantone (Line 10)	Enbridge	Westover, Ontario	CAN	Kiantone, PA	PADD1	74.2	91	12"/20"
Lakehead 2 (Line 5)	Enbridge	Montreal, CAN	CAN	Marysville, MI	P2EAST	491.2	645	30"
Lakehead 1 (Line 6B)	Enbridge	Montreal, CAN	CAN	Stockbridge, MI	P2EAST	242.8	293	30"
Lakehead 1 (Line 6B) Expansion	Enbridge	Montreal, CAN	CAN	Stockbridge, MI	P2EAST	257.2	293	30"
Lakehead 1 (Lines 2A, 3, & 4)	Enbridge	Edmonton, Canada	CAN	Superior, MI	P2NORTH	1627.9	2A - 596 3 & 4 - 1,098	2A - 24" 3 - 34" 4 - 36"/48"
Alberta Clipper (Line 67)	Enbridge	Hardisty, Canada	CAN	Superior, MI	P2NORTH	450	999	36"
Alberta Clipper (Line 67) 2014	Enbridge	Hardisty, Canada	CAN	Superior, MI	P2NORTH	120 (2014)	999	36"
Alberta Clipper (Line 67) 2016	Enbridge	Hardisty, Canada	CAN	Superior, MI	P2NORTH	230 (2016)	999	36"
Keystone	TransCanada	Hardisty, Canada	CAN	Patoka, IL	P2NORTH	591	1853	36"
Keystone Extension	TransCanada	Steele City, NE	CAN	Cushing, OK	P2KSOK	156	298	36"
Poplar & Butte	True/PAA/Bridger	Western Canada	CAN	Guernsey, WY	PADD4	118	549	10"/12"
Express (Express-Platte System)	Spectra Energy Partners, LP	Hardisty, Alberta	CAN	Casper, WY	PADD4	280	785	24"

Appendix B.1 – Major Crude Pipeline Systems

PIPELINE	2013 Company	FROM		TO		Current Maximum Capacity (MBbl/d)	Length (Miles)	Diameter (Inches)
		Terminal	PADD	Terminal	PADD			
Western Corridor (Glacier pipeline, Beartooth pipeline, and Big Horn pipeline)	JV: PAA with Phillips66	Western Canada	CAN	Guernsey, WY	PADD4	130	Glacier - 565 Beartooth - 76 Big Horn - 371	Glacier - 12"/8" Beartooth - 12" Big Horn - 12"
Transmountain	Kindermorgan	Western Canada	CAN	Anacortes, WA	PADD5	300	715	24"/36"/30"
Transmountain Expansion	Kindermorgan	Western Canada	CAN	Anacortes, WA	PADD5	0	729	36"
Canada Subtotal						**5068**		
Ozark	Enbridge	Cushing, OK	P2KSOK	Wood River, IL	P2NORTH	215	433	22"
Gulf Coast Keystone South	TransCanada	Cushing, OK	P2KSOK	Nederland, TX	P3GCTX	700	485	36"
GC keystone Expansion/Spur	TransCanada	Cushing, OK	P2KSOK	Houston, TX	P3GCTX	130 (2015)	48	36"
Seaway	JV: Enterprise & Enbridge	Cushing, OK	P2KSOK	Jones Creek, TX	P3GCTX	850	500	30"
Seaway Expansion	JV: Enterprise & Enbridge	Cushing, OK	P2KSOK	Jones Creek, TX	P3GCTX	450 (2014)	500	30"
PADD II KS/OK Subtotal						**2345**		
Lima - Canton Line (12"-16")	Marathon	Patoka, IL	P2NORTH	Canton, Ohio	P2EAST	290	302	20"/22"
Owensboro - Catlettsburg 24" Crude	Marathon	Patoka, IL	P2NORTH	Catlettsburg, KY	P2EAST	256	406	24"/20"
Flanagan South	Enbridge	Patoka, IL	P2NORTH	Cushing, OK	P2KSOK	600	600	36"
Spearhead	Enbridge	Flanagan, IL	P2NORTH	Cushing, OK	P2KSOK	193.3	650	22"/24"
Viridian	BP	Cushing, OK	P2NORTH	Chicago, IL	P2KSOK	100	600	20"/22"
Pegasus (Line B)	ExxonMobil	Patoka, IL	P2NORTH	Nederland,	P3GCTX	120	850	20"

Appendix B.1 – Major Crude Pipeline Systems

PIPELINE	2013 Company	FROM		TO		Current Maximum Capacity (MBbl/d)	Length (Miles)	Diameter (Inches)
		Terminal	PADD	Terminal	PADD			
				TX				
Southern Access Extension (Line 61)	Enbridge	Flanagan, IL	P2NORTH	Patoka, IL	P2NORTH	300	165	24"
Energy East	TransCanada	Patoka, IL	P2NORTH	Saint James, LA	P3GCLA	420 (2015)	734	30"
PADD II North Subtotal						**2279.3**		
Capline	PAA	St. James, LA	P3GCLA	Patoka, IL	P2NORTH	1200	631	40"
Cameron Highway	JV: Enterprise & Genesis	GCOS	P3GCLA	GCTX	P3GCTX	600	380	24"/30"
ExxonMobil North Line	ExxonMobil	GCLA	P3GCLA	GCTX	P3GCTX	160	198	22"
PADD III GCLA Subtotal						**1960**		
Mid Valley	JV: Sunoco & BP	Longview, TX	P3GCTX	Samaria, MI	P2EAST	240	976	20"/22"
Houston to Houma (Ho-Ho)	Shell	Houston, TX	P3GCTX	Houma, LA	P3GCLA	300	350	20"/22"
Permian Express Extension	Sunoco	Nederland, TX	P3GCTX	Houma, LA	P3GCLA	200 (2015)		
Amdel	Sunoco	GCTX	P3GCTX	WTX/NM	P3WTXNM	27	503	10"
PADD III GCTX Subtotal						**767**		
Basin	PAA	Jal, NM	P3WTXNM	Cushing, OK	P2KSOK	450	520	
Borger/Centurion North	Occidental Petroleum	WTX/NM	P3WTXNM	P2KS/OK	P2KSOK	350	2700	
BridgeTex	JV: Magellan &	Colorado City, TX	P3WTXNM	Houston, TX	P3GCTX	300 (mid 2014)	400	20"
Cactus	PAA	McCamey, TX	P3WTXNM	Gardendale, TX	P3GCTX	200 (mid 2015)	310	20"
Longhorn	Magellan	Crane, TX	P3WTXNM	Houston, TX	P3GCTX	225	466	18"/20"
Longhorn Expansion	Magellan	Crane, TX	P3WTXNM	Houston, TX	P3GCTX	50 (2015)	541	18"/20"

Appendix B.1 – Major Crude Pipeline Systems

PIPELINE	2013 Company	FROM		TO		Current Maximum Capacity (MBbl/d)	Length (Miles)	Diameter (Inches)
		Terminal	PADD	Terminal	PADD			
Permian Express	Sunoco	Wichita Falls, TX	P3WTXNM	Nederland, TX	P3GCTX	90		
Permian Express Phase I Expansion	Sunoco	Wichita Falls, TX	P3WTXNM	Nederland, TX	P3GCTX	60 (2014)		
Permian Express Phase II	Sunoco	Wichita Falls, TX	P3WTXNM	Nederland, TX	P3GCTX	200 (2015)		
Texas (Plains Line)	Sunoco	Colorado City, TX	P3WTXNM	Goodrich, TX	P3GCTX	390		
West Texas Gulf (WTG)	Sunoco	Nederland, TX	P3WTXNM	Longview, TX	P3GCTX	300	579	26"/20"
West Texas Gulf (WTG) Expansion	Sunoco	Nederland, TX	P3WTXNM	Longview, TX	P3GCTX	200		
PADD III WTX/NM Subtotal						**2815**		
White Cliffs	PAA	Platteville, CO	PADD4	Cushing, OK	P2KSOK	70	527	12"
White Cliffs Expansion	PAA	Platteville, CO	PADD4	Cushing, OK	P2KSOK	80 (2014)	527	12" loop
Platte (Express-Platte System)	Spectra Energy Partners, LP	Casper, WY	PADD4	Wood River, IL	P2NORTH	145	932	20"
Southern Access (Line 61)	Enbridge	Superior, WI	PADD4	Flanagan, IL	P2NORTH	400	454	42"
Southern Access (Line 61) Expansion 1 of 2	Enbridge	Superior, WI	PADD4	Flanagan, IL	P2NORTH	160	454	42"
Southern Access (Line 61) Expansion 2 of 2	Enbridge	Superior, WI	PADD4	Flanagan, IL	P2NORTH	640	454	42" new
PADD IV Subtotal						**1495**		

Appendix B.2 – Major Petroleum Product Pipeline Systems

Pipeline Name	Capacity (Bbl/Day)	Origin	Destination
Colonial	2.5 million	Houston, TX	New York Harbor, NY
Plantation	600,000	Baton Rouge, LA	Newington, VA
Buckeye		Linden, NJ	New York, NY; Albany, NY; Macungie, PA
TEPPCO	373,000 (Includes Centennial)	Texas Gulf Coast	Chicago, IL
Explorer	660,000	Texas Gulf Coast	Ardmore, OK; Hammond, IN
CALNEV	156,000	Los Angeles, CA	Las Vegas, NV Barstow, CA

Appendix B.3 – Rail Terminals Loading and Offloading Crude

Rail Terminal	Location		Delivery Region	Capacity Type	Capacity (MBbl/d)						Note
	City, State	Sub-PADD			2010	2011	2012	2013	2014	2015	
PADD I Facility Totals				Upload	0	0	0	0	0	0	
				Offload	0	0	345	345	560	690	
Buckeye Partners' Transload Facility	Perth Amboy, NJ	PADD I	NY Harbor	Upload							Planned facility for crude delivery
				Offload						130	
Phillip66	Bayway, NJ	PADD I	NY Harbor	Upload							
				Offload					75	75	
Eagle Point Refinery Terminal (Sunoco)	Westville, NJ	PADD I	Philadelphia /DE	Upload							Transload to 40,000 starting 2012 to Canada via barge
				Offload			40	40	40	40	
Eddystone Terminal (Enbridge)	Philadelphia, PA	PADD I	Philadelphia /DE	Upload							JV with Canopy.2012 starts 80,000 in 2014 starts 80,000 barge capacity for total 160,000 Transloaded to CAN
				Offload							
PBF Energy Refinery	Delaware City, DE	PADD I	Philadelphia /DE	Upload							70 Bakken, 40 Canadian sent to Delaware City and Paulsboro refiners
				Offload			70	70	70	70	
Philadelphia Refinery (Carlyle Group)	Philadelphia, PA	PADD I	Philadelphia /DE	Upload							To receive Bakken Crude
				Offload					140	140	

Appendix B.3 – Rail Terminals Loading and Offloading Crude

Rail Terminal	Location		Delivery Region	Capacity Type	Capacity (MBbl/d)						Note
	City, State	Sub-PADD			2010	2011	2012	2013	2014	2015	
Buckeye Partners' Transload Facility	Albany, NY	PADD I	Other	Upload							Transload to 160,000 starting 2013 to Canada via barge
				Offload							
Genesis Energy Terminal	Walnut Hill, FL	PADD I	Other	Upload							To Shell Refinery at Saraland, Ala. Via Genesis Energy Pipeline system
				Offload			75	75	75	75	
Global's Albany Transload Facility	Albany, NY	PADD I	Other	Upload							From Global Load Facility. Currently using 100.
				Offload			160	160	160	160	
Plains All American Terminals	Yorktown, VA	PADD I	Other	Upload							CSX Rail Comp.130,000 Ethanol Delivery (2013) with crude capacity but its only a terminal now.
				Offload							
PADD II NORTH Facility Totals				Upload	115	285	660	1,130	1,420	1,590	
				Offload	0	0	75	151	151	191	
Bakken Oil Express	Dickerson, ND	PADD II NORTH		Upload		100	100	200	200	200	
				Offload							
Basin Transload	Cape Girardeau, MO	PADD II NORTH		Upload							
				Offload						40	
Basin Transload	Zap, ND	PADD II NORTH		Upload		20	40	40	40	40	
				Offload							
Dakota Plains	New Town, ND	PADD II		Upload	20	40	30	30	80	80	

Appendix B.3 – Rail Terminals Loading and Offloading Crude

Rail Terminal	Location		Delivery Region	Capacity Type	Capacity (MBbl/d)						Note
	City, State	Sub-PADD			2010	2011	2012	2013	2014	2015	
		NORTH		Offload							
Enbridge	Berthold, ND	PADD II NORTH		Upload			10	80	160	160	
				Offload							
EOG Resource	Stanley, ND	PADD II NORTH		Upload	65	65	65	65	65	65	
				Offload							
Global	Columbus, ND	PADD II NORTH		Upload				100	100	270	To Albany Transload
				Offload							
Global	Beulah, ND	PADD II NORTH		Upload				60	60	60	To Albany Transload
				Offload							
Great Northern Midstream	Fryburg, ND	PADD II NORTH		Upload				60	60	60	
				Offload							
Hess	Tioga, ND	PADD II NORTH		Upload			60	60	60	60	
				Offload							
Marquis Energy Transload	Hayti, MT	PADD II NORTH		Upload							
				Offload			75	151	151	151	
Mountrail Rail	Palermo, ND	PADD II NORTH		Upload					160	160	Planned
				Offload							
Musket	Dore, ND	PADD II NORTH		Upload		10	60	60	60	60	
				Offload							
Plains All American Load Terminals	Rose, ND	PADD II NORTH		Upload		20	20	65	65	65	To Saint James, LA.
				Offload							
Plains All	New Town, ND	PADD II		Upload			35	70	70	70	To Saint James,

Appendix B.3 – Rail Terminals Loading and Offloading Crude

Rail Terminal	Location		Delivery Region	Capacity Type	Capacity (MBbl/d)						Note
	City, State	Sub-PADD			2010	2011	2012	2013	2014	2015	
American Load Terminals (Formerly US Development Group)		NORTH		Offload							LA.
Inergy / Rangeland (Colt)	Epping, ND	PADD II NORTH		Upload			120	120	120	120	
				Offload							
Savage Services	Trenton, ND	PADD II NORTH		Upload			90	90	90	90	
				Offload							
Unidentified Small Facilities	ND	PADD II NORTH		Upload	30	30	30	30	30	30	
				Offload							
PADD II East Facility Totals				Upload	0	0	0	0	0	0	
				Offload	9	74	98	98	98	178	
Buckeye Partners's	Woodhaven, MI	PADD II East		Upload							
				Offload	9	9	9	9	9	9	
Crosstex Energy Riverside Terminal	Frazeysburg, OH	PADD II East		Upload							
				Offload			24	24	24	24	
Cogent	Lockport, IL	PADD II East		Upload							
				Offload						40	
Omega Partners Transload	Hartford, IL	PADD II East		Upload							
				Offload						40	
Seacor Holdings Transload	Sauget, IL	PADD II East		Upload							
				Offload		65	65	65	65	65	
PADD II KSOK Facility Totals				Upload	0	0	0	0	0	0	
				Offload	0	40	60	88	128	128	

Appendix B.3 – Rail Terminals Loading and Offloading Crude

Rail Terminal	Location		Delivery Region	Capacity Type	Capacity (MBbl/d)						Note
	City, State	Sub-PADD			2010	2011	2012	2013	2014	2015	
Chesapeake	Thomas, OK	PADD II KSOK		Upload							
				Offload		10	10	10	10	10	
Logimarq Transload	Sayer, OK	PADD II KSOK		Upload							
				Offload		30	30	30	30	30	
OKDOT	Sayer, OK	PADD II KSOK		Upload							
				Offload				28	28	28	
Savage Services Transload to Holly Refinery	El Dorado, KS	PADD II KSOK		Upload							
				Offload			20	20	20	20	
Sovereign Development	Ardmore, OK	PADD II KSOK		Upload							
				Offload					40	40	
PADD III GCLA Facility Totals				Upload	0	0	0	0	0	0	
				Offload	25	25	259	604	694	1,204	
Alon USA Refinery	Krotz Spring, LA	PADD III GCLA		Upload							CN rail hub
				Offload				9	9	9	
Arc Terminal	Mobile, AL	PADD III GCLA		Upload							CN rail hub
				Offload				75	75	75	
Arc Terminal	Saraland, AL	PADD III GCLA		Upload							
				Offload				75	75	75	
Bulk Resources	Port New Orleans, LA	PADD III GCLA		Upload							Crude and NGL
				Offload				70	70	70	
Canal Refining	Lacassine, LA	PADD III GCLA		Upload							
				Offload	5	5	5	5	5	5	
Citgo	Lake Charles, LA	PADD III GCLA		Upload							
				Offload	20	20	20	20	20	20	

Appendix B.3 – Rail Terminals Loading and Offloading Crude

Rail Terminal	Location		Delivery Region	Capacity Type	Capacity (MBbl/d)						Note
	City, State	Sub-PADD			2010	2011	2012	2013	2014	2015	
Crosstex Energy Riverside Terminal	Geismar, LA	PADD III GCLA		Upload							Crude and NGL
				Offload			5	15	15	15	
Delek Refinery	El Dorado, AR	PADD III GCLA		Upload							
				Offload				50	50	50	
EOG @ Saint James Rail Terminal	Saint James, LA	PADD III GCLA		Upload							
				Offload			100	100	100	280	
Genesis Energy Terminal	Baton Rouge, LA	PADD III GCLA		Upload							One unite train
				Offload					60	60	
Genesis Energy Terminal	Natchez, MS	PADD III GCLA		Upload							
				Offload				20	30	30	
Genesis Energy Terminal	Raceland, LA	PADD III GCLA		Upload							Planned
				Offload						120	
Indigo Resources Terminal	Osceola, AR	PADD III GCLA		Upload							Planned
				Offload						140	
JW Stone Oil Distributor	Port Manchac, LA	PADD III GCLA		Upload							
				Offload				15	15	15	
LBC Tank Terminal / Transload	Baton Rouge, LA	PADD III GCLA		Upload							Unspecified volume
				Offload							
PAA @ Saint James Rail Terminal	Saint James, LA	PADD III GCLA		Upload							From PAA Load Terminal. Valero transload some into Capline for Memphis delivery.
				Offload			130	130	130	130	

Appendix B.3 – Rail Terminals Loading and Offloading Crude

Rail Terminal	Location		Delivery Region	Capacity Type	Capacity (MBbl/d)						Note
	City, State	Sub-PADD			2010	2011	2012	2013	2014	2015	
Petroplex International LLC	Saint James, LA	PADD III GCLA		Upload							
				Offload						70	
Valero St. Charles Refinery	Norco, LA	PADD III GCLA		Upload							
				Offload				20	30	30	
Wolverine / Pauline Terminal	Saint James, LA	PADD III GCLA		Upload							
				Offload					10	10	
PADD III GCTX Facility Totals				Upload	0	0	155	270	330	330	
				Offload	0	0	130	195	410	410	
Cetane Energy	Carlsbad, NM	PADD III GCTX		Upload			70	70	70	70	
				Offload							
East Kelly Rail Port	Port San Antonio, TX	PADD III GCTX		Upload				30	30	30	
				Offload							
EOG Resources	Harwood, TX	PADD III GCTX		Upload			45	45	45	45	
				Offload							
Frontier Logistics	Elmendorf, TX	PADD III GCTX		Upload				25	25	25	
				Offload							
GT Logistics Omniport Terminal	Port Arthur, TX	PADD III GCTX		Upload							
				Offload			100	100	100	100	
Howard Energy	Live Oak, TX	PADD III GCTX		Upload				60	60	60	
				Offload							
Jefferson Refinery	Beaumont, TX	PADD III GCTX		Upload							to 240 in 2016
				Offload				65	70	70	
Mercuria/KM	Nederland, TX	PADD III		Upload							Includes 100

Appendix B.3 – Rail Terminals Loading and Offloading Crude

Rail Terminal	Location: City, State	Location: Sub-PADD	Delivery Region	Capacity Type	Capacity (MBbl/d) 2010	2011	2012	2013	2014	2015	Note
Nederland Terminal		GCTX		Offload					210	210	MBPD Barge offloading.
Navajo Nation	Thoreau, TX	PADD III GCTX		Upload					60	60	
				Offload							
Plains All American Load Terminals	Gardendale, TX	PADD III GCTX		Upload			40	40	40	40	Eagle Ford crude to Saint James
				Offload							
Trafigura Terminal / Transload	Corpus Christi, TX	PADD III GCTX		Upload							
				Offload			30	30	30	30	
PADD III WTX/NM Facility Totals				Upload	71	71	76	279	487	487	
				Offload	0	0	0	0	70	70	
Atlas Oil Company	Odessa, TX	PADD III WTX/NM		Upload	1	1	1	1	4	4	
				Offload							
EOG Resources	Barnhart, TX	PADD III WTX/NM		Upload	45	45	45	45	45	45	
				Offload							
EOG Resources	San Angelo, TX	PADD III WTX/NM		Upload			5	5	5	5	
				Offload							
Genesis Energy Terminal	Wink, TX	PADD III WTX/NM		Upload				75	75	75	
				Offload							
Holly Frontier Refinery	Artesia, NM	PADD III WTX/NM		Upload							Planned
				Offload					70	70	
Iowa Pacific Holdings LLC	Lovington, NM	PADD III WTX/NM		Upload				60	60	60	
				Offload							
Martin Midstream	Pecos, TX	PADD III WTX/NM		Upload					205	205	
				Offload							

Appendix B.3 – Rail Terminals Loading and Offloading Crude

Rail Terminal	Location		Delivery Region	Capacity Type	Capacity (MBbl/d)						Note
	City, State	Sub-PADD			2010	2011	2012	2013	2014	2015	
Mercuria Energy Trading	Brownfield, TX	PADD III WTX/NM		Upload				8	8	8	
				Offload							
Murex	Hondo, TX	PADD III WTX/NM		Upload	25	25	25	25	25	25	
				Offload							
Rangeland Energy	Lovington, NM	PADD III WTX/NM		Upload				60	60	60	
				Offload							
PADD IV Facility Totals				Upload	0	0	76	398	643	803	
				Offload	0	0	0	0	0	0	
Crescent Point	North east, UT	PADD IV		Upload				10	10	10	
				Offload							
Eighty-Eight Oil Load Terminal	Guernsey, WY	PADD IV		Upload				80	80	80	Bakken Crude
				Offload							
Enserco Midstream	Douglas, WY	PADD IV		Upload				60	120	120	
				Offload							
Granite Peak Development	Casper, WY	PADD IV		Upload					160	160	
				Offload							
Hudson Rail Terminal	Hudson, CO	PADD IV		Upload			6	6	6	6	
				Offload							
Meritage Midstream	Black Thunder, WY	PADD IV		Upload				10	10	10	
				Offload							
Musket	Windsor, CO	PADD IV		Upload			15	30	30	30	
				Offload							
Northstar Transloading	Fairview, MT	PADD IV		Upload					20	180	Planned
				Offload							

Appendix B.3 – Rail Terminals Loading and Offloading Crude

Rail Terminal	Location		Delivery Region	Capacity Type	Capacity (MBbl/d)						Note
	City, State	Sub-PADD			2010	2011	2012	2013	2014	2015	
Plains All American	Carr, CO	PADD IV		Upload			15	15	20	20	
				Offload							
Plains All American	Tampa, CO	PADD IV		Upload				68	68	68	
				Offload							
Savage / Union Pacific	Salt Lake City, UT	PADD IV		Upload				9	9	9	
				Offload							
Tiger Transfer	Upton, WY	PADD IV		Upload			40	40	40	40	
				Offload							
Watco	Cheyenne, WY	PADD IV		Upload				70	70	70	
				Offload							
PADD V Facility Totals				Upload			0	0	0	0	
				Offload			141	266	806	1,404	
Alon USA & PAA	Bakersfield, CA	PADD V	California	Upload							Planned
				Offload				70	70	70	
Alon USA Terminal / Transload	Long Beach, CA	PADD V	California	Upload							
				Offload				10	10	10	
Kindermorgan Terminal	Richmond, CA	PADD V	California	Upload							
				Offload						60	
Plains All American Terminal	Bakersfield, CA	PADD V	California	Upload							
				Offload					70	140	
NuStar Terminal	San Francisco, CA	PADD V	California	Upload							Transload Barge
				Offload			20	20	20	20	
WestPac Energy	Pittsburgh, CA	PADD V	California	Upload							Planned

Appendix B.3 – Rail Terminals Loading and Offloading Crude

Rail Terminal	Location		Delivery Region	Capacity Type	Capacity (MBbl/d)						Note
	City, State	Sub-PADD			2010	2011	2012	2013	2014	2015	
Pittsburgh LLC				Offload						65	
Kern Oil	Bakersfield, CA	PADD V	California	Upload							
				Offload			40	40	40	40	
Tesoro Refinery	Martinez, CA	PADD V	California	Upload							Planned
				Offload					40	40	
Valero Benecia Refinery	Benecia, CA	PADD V	California	Upload							Planned
				Offload						70	
Valero Wilmington Refinery	Wilmington, CA	PADD V	California	Upload							Planned
				Offload						60	
Alon USA Terminal / Transload	Willbridge, OR	PADD V	Oregon	Upload							Transload to pipeline
				Offload			10	10	10	10	
Global Partners	Clatskanie, OR	PADD V	Oregon	Upload							for transload
				Offload			28	28	28	75	
Imperium Terminal	Hoquiam, WA	PADD V	Washington	Upload							Planned
				Offload						70	
NuStar Terminal	Port Vancouver, WA	PADD V	Washington	Upload							Transload Barge
				Offload			3	3	3	3	
Target Sound Terminal (Transload to Phillip66)	Tacoma, WA	PADD V	Washington	Upload							Planned
				Offload						30	
Tesoro / Savage Terminal	Vancouver, WA	PADD V	Washington	Upload							for transload
				Offload					360	360	
US Development Group Terminal	Hoquiam, WA	PADD V	Washington	Upload							Planned
				Offload						50	

Appendix B.3 – Rail Terminals Loading and Offloading Crude

Rail Terminal	Location		Delivery Region	Capacity Type	Capacity (MBbl/d)						Note
	City, State	Sub-PADD			2010	2011	2012	2013	2014	2015	
Westway Gray Harbor Terminal	Hoquiam, WA	PADD V	Washington	Upload							for transload
				Offload						26	
BP Cherry Point Refinery	Ferndale, WA	PADD V	Washington	Upload							Planned
				Offload					70	70	
Shell Puget Sound Refinery	Anacortes, WA	PADD V	Washington	Upload							Planned
				Offload						50	
Tesoro Refining offload	Anacortes, WA	PADD V	Washington	Upload							Bakken crude
				Offload			40	50	50	50	
US Oil Refinery	Tacoma, WA	PADD V	Washington	Upload							
				Offload				35	35	35	
US Total				Upload	186	356	967	2,077	2,880	3,210	
				Offload	25	65	1,010	1,649	2,819	4,097	

Appendix B.4 – Regional Rail Offloading Capacity Growth

PADD	Area	Location	2013 Offloads (MBbl/d)	2015 Offloads (MBbl/d)
PADD I	Port Albany	Global Terminal	160	160
		Buckeye Terminal		
	NY Harbor	Buckeye Terminal	--	130
		Phillips 66	--	75
	PA/DE	Eagle Point Ref.	40	40
		PBF Energy Ref.	70	70
		Philadelphia Ref.	--	140
	Other Terminals		75	75
	Totals		**345**	**690**
PADD III	GCTX	GT Omni Port	100	100
		Jefferson Ref.	50	50
		Trafigura Terminal	30	30
		Other Terminals	15	230
	GCLA	St. James Terminal	230	490
		Delek Ref.	50	50
		Valero, St. Charles	20	20
		Other Terminals	304	644
	Totals		**799**	**1,614**
PADD V	WA	Tesoro Ref.	50	50
		US Oil Ref.	35	35
		BP Cherry Point Ref.	--	70
		Shell Puget Sound Ref.	--	50
		Savage Terminal	--	360
		Other Terminals	3	179
	OR	Alon Terminal	10	10
		Global Terminal	28	75
	CA	Kern Oil Ref.	40	40

Appendix B.4 – Regional Rail Offloading Capacity Growth

PADD	Area	Location	2013 Offloads (MBbl/d)	2015 Offloads (MBbl/d)
PADD V	**CA**	Tesoro Ref.	--	40
		Valero, Benicia Ref.	--	70
		Valero, Wilmington Ref.	--	60
		Other Terminals	100	365
	Total		**266**	**1,404**
U.S. Total			**1,410**	**3,708**

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
I	A	0UG7	BDR	Bridgeport United Recycling, Seaview Marine Terminal Dock	Bridgeport	CT	Fairfield	Bridgeport, CT	Receipt of petroleum products.
		0YHZ	BGR	Webber Energy Fuels Bangor Wharf	Bangor	ME	Penobscot		Receipt of petroleum products by barge.
		0XVM	BTC	Citgo Petroleum, Braintree Term. Wharf	Braintree	MA	Norfolk	Boston, MA	Receipt and shipment of petroleum products.
		0XNS	BUP	Webber Dock, River Road, Bucksport Wharf	Bucksport	ME	Lincoln	Bucksport, ME	Receipt and shipment of petroleum products by barge.
		0Y3Q	CZS	Afmc, Chelsea Terminal Wharf	Chelsea	MA	Suffolk	Boston, MA	Receipt and shipment of petroleum products; bunkering tankers berthed at wharf; and loading barges for bunkering vessels at berth in harbor.
		0Y47	EBN	Tosco Refinery Corp	East Boston	MA	Suffolk	Boston, MA	Receipt and shipment of petroleum products by barge; bunkering small vessels; and loading bunkering barges at berth in harbor.
		0Q8A	EHV	New Haven Terminal, Pier And Wharf	East Haven	CT	New Haven	New Haven, CT	
		0XN6	EPR	Exxon Mobil Refining & Supply Co., East Providence Terminal Wharf	East Providence	RI	Providence	Providence , RI	Receipt of petroleum products.

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
I	A	0Z9Q	EVT	Exxon Co Usa Everett Term Wharf Berths 1, 3,& 4	Everett	MA	Suffolk	Boston, MA	Receipt and shipment of petroleum products; receipt of asphalt.
		0Q8H	HVN	Magellan Terminals Holdings, New Haven Terminal, East Street Whar	New Haven	CT	New Haven	New Haven, CT	
		0RTX	NBD	Global Companies, New Bedford Terminal Main Dock.	New Bedford	MA	Bristol	New Bedford, MA	Receipt of petroleum products; and occasional fueling of vessels and barges.
		0YB6	NLO	Ddlc Energy, New London Wharf	New London	CT	New London	New London, CT	Receipt of petroleum products by barge.
		0Y9F	NWZ	Sprague Energy Corp River Road Terminal Wharf	Newington	NH	Rockingha m	Piscataqua River, ME and NH	Receipt and shipment of petroleum products, asphalt, tallow, calcium chloride, and caustic soda, all by barge; and receipt of salt, gypsum, cement, and other dry-bulk commodities.
		0XL8	PVD	Motiva Enterprises, Providence Terminal Pier	Providence	RI	Providence	Providence , RI	Receipt of petroleum products; fueling vessels.
		0UFX	REZ	Global Petroleum #1, Revere	Revere	MA	Suffolk	Boston, MA	Receipt and shipment of petroleum products by barge.
		0XZ1	SBC	Coastal Oil New England So Boston Barge Dock	South Boston	MA	Suffolk	Boston, MA	Receipt and shipment of petroleum products by barge; and loading barges for bunkering vessels at berth in harbor.

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
I	A	0XQN	SOX	Exxonmobil Corp South Portland Terminal Wharf	South Portland	ME	Lincoln	Fore River, ME	Receipt of petroleum products by barge; and occasionally bunkering of barges.
		0RU0	SRP	Sprague Energy Corp., Searsport Dry-Bulk Pier.	Searsport	ME	Waldo	Searsport, ME	Receipt of petroleum products by barge. (See Remarks.)
		0XM6	TIV	Inland Fuel Terminals, Tiverton Terminal Pier	Tiverton	RI	Newport	Fall River, MA	Receipt of petroleum products and methanol.
		0YCA	ZGO	Amerada Hess Corp., Groton Terminal Wharf	Groton	CT	New London	New London, CT	Receipt and shipment of petroleum products.
	B	0Y27	ACG	Amos Post Catskill Terminal Dock	Catskill	NY	Greene		Receipt of petroleum products by barge; occasional mooring of small vessels.
		0Y1E	ALB	Mobil Oil Corp Wharves	Albany	NY	Albany	Albany, NY	Receipt of petroleum products by tanker and barge.
		0XZE	ASA	Castle Astoria Terminals Oil Pier And Wharf	Astoria	NY	Queens	New York, NY and NJ	Receipt and shipment of asphalt and petroleum products by vessel and barge.
		0Q3X	BAL	Petroleum Fuel & Terminal Co Baltimore Docks	Baltimore	MD	Baltimore City	Baltimore, MD	
		0Q62	BAY	International Matex Tank Terminals-Con. Hook	Bayonne	NJ	Hudson	New York, NY and NJ	
		0YE6	BOG	Amerada Hess Corp., Bogota Term Wharf	Bogota	NJ	Bergen	New York, NY and NJ	Receipt of petroleum products by barge.

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
I	B	0XN2	BOY	Bayside Fuel Oil Depot Corp Smith Street Term Wharf	Brooklyn	NY	Kings	New York, NY and NJ	Receipt of petroleum products by barge.
		0Q7M	BRX	Stuyvesant Fuel Terminal East River Docks	Bronx	NY	Bronx	New York, NY and NJ	
		0XVD	CDE	Citgo Petroleum Corp Petty's Island Terminal Dock	Petty's Island	NJ	Camden	Camden-Gloucester, NJ	Citgo Petroleum Corp.: Receipt and shipment of petroleum products. Koch Oil Inc.: Receipt of asphalt.
		0XRU	CHT	Petron Oil Corporation Wharf	Chester	PA	Delaware	Chester, PA	Receipt of petroleum products by barge.
		0Y02	CPN	Skaggs - Walsh Flushing Bay Pier	College Point	NY	Queens	New York, NY and NJ	Receipt of petroleum products by barge.
		0R78	CPP	Petroleum Products Corp., Coraopolis Terminal Docks	Coraopolis	PA	Allegheny	Pittsburgh, PA	
		0RVM	CSF	Gatx Terminals Corp., Carteret Terminal, Dock No. 1 North Berth.	Carteret	NJ	Middlesex	New York, NY and NJ	Receipt and shipment of petroleum products by barge.
		0RQM	DCI	Star Enterprise, Delaware City Pier No. 1.	Delaware City	DE	New Castle	New Castle, DE	Receipt of crude oil; and bunkering tankers berthed at wharf.
		0XXB	EGW	Amerada Hess Corp., Edgewater Terminal	Edgewater	NY	Westchester	New York, NY and NJ	Occasional receipt and shipment of petroleum products by barge.
		0Y1J	EGY	Intercoastal Petroleum Traders Dock	East Greenbush	NY	Rensselaer	Albany, NY	Not used.
		0YCW	ETX	Sun Pipe Line Co., Fort Mifflin Terminal Wharf	Philadelphia	PA	Delaware	Philadelphia, PA	Receipt of crude oil and petroleum products by tanker and barge.

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
I	B	0XYC	EWR	Motiva Enterprises Llc, Newark Terminal Wharf	Newark	NJ	Essex	New York, NY and NJ	Receipt and occasional shipment of petroleum products by barge; and fueling vessels.
		0XMQ	FR2	Bay Terminals Of The Rockaways Wharf	Arverne	NY	Queens	New York, NY and NJ	Receipt of petroleum products by barge.
		0Y0H	FSG	Lefferts Oil Term	Flushing	NY	Queens	New York, NY and NJ	Receipt of petroleum products by barge.
		0XLN	GLC	Sem Materials, L.P.	Gloucester City	NJ	Camden	Camden-Gloucester, NJ	Receipt and shipment of petroleum products; fueling tugboats.
		0Y3C	GNK	Commander Oil Corp North Wharf	Great Neck	NY	Nassau	New York, NY and NJ	Receipt of petroleum products by barge.
		0Y2X	GTZ	North Albany Terminal Llc	Glenmont	NY	Albany	Albany, NY	Receipt of petroleum products by tanker.
		0RSZ	ILG	Delaware Terminal Co., Port Of Wilmington Marine Terminal Tanker Berth.	Wilmington	DE	New Castle	Wilmington, DE	Receipt of petroleum products.
		0XMT	INO	Amoco Oil Co Inwood Terminal Pier	Inwood	NY	Nassau	New York, NY and NJ	Receipt of petroleum products by barge.
		0Q64	KEA	Amerada Hess Corp First Reserve Terminal	Keasbey	NJ	Middlesex	New York, NY and NJ	
		0Y1L	KGT	Heratagenergy Dock	Kingston	NY	Ulster		Receipt of petroleum products by barge.
		0Q6G	LDJ	Citgo Petroleum Corp Linden Terminal	Linden	NJ	Union	New York, NY and NJ	
		0XMX	LWE	Carbo Industries Wharf	Lawrence	NY	Nassau	New York, NY and NJ	Receipt of petroleum products by barge.

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
I	B	0RQL	MAH	Sun Refining And Marketing Co., Marcus Hook Wharf Berth No. 3C.	Marcus Hook	PA	Delaware	Marcus Hook, PA	Receipt and shipment of petroleum products, petrochemicals, and liquefied petroleum gas; receipt of crude oil; and bunkering tankers berthed at wharf.
		0WHP	MKJ	Gordon Terminal Service Co., Mckees Rocks Dock	Mckees Rocks	PA	Allegheny	Pittsburgh, PA	Receipt and shipment of petroleum products and chemicals.
		0Y0D	MZG	Agway Petroleum Milton Terminal	Milton	NY	Ulster		Receipt of petroleum products by barge.
		0WHN	NVI	Gulf Oil, Neville Island Terminal Dock	Neville Island	PA	Allegheny	Pittsburgh, PA	Receipt and shipment of petroleum products.
		0RYB	NVR	Tosco Corp., Riverhead Terminal Barge Pier.	Northville	NY	Suffolk	Northville, Long Island, NY	Receipt and shipment of petroleum products by barge.
		0XZ5	NWI	Coastal Oil Dock	New Windsor	NY	Orange		Receipt of petroleum products by barge.
		0XVQ	OYB	Commander Oil Corp., Petroleum Dock	Oyster Bay	NY	Nassau		Receipt of petroleum products by barge.
		0Q6U	PAU	Tosco Paulsboro Terminal	Paulsboro	NJ	Gloucester	Paulsboro, NJ	
		0Q67	PAY	Kinder Morgan Inc - Perth Amboy Terminal	Perth Amboy	NJ	Middlesex	New York, NY and NJ	
		0Y42	PEX	Getty Terminal Corp Pelham Manor Dock	Pelham Manor	NY	Westchester	New York, NY and NJ	Receipt of petroleum products by barge and small-tanker vessels.
		0Q8F	PHL	Amerada Hess Corp., Schuylkill Terminal	Philadelphia	PA	Philadelphia	Philadelphia, PA	

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
I	B	0Y5R	PNJ	Port Newark, Berth No. 21	Newark	NJ	Essex	New York, NY and NJ	Receipt of petroleum products by tanker; and shipment by barge.
		0Y0X	POU	Love/Effron Dock	Poughkeepsie	NY	Dutchess		Receipt of petroleum products by barge.
		0Y1Z	POW	Mobil Oil Corp., Glenwood Landing Terminal Wharf	Glenwood Landing	NY	Nassau	Hempstead , NY	Receipt of petroleum products by barge.
		0Q61	PPS	Amerada Hess Corp Pennsauken Docks 1 - 6	Pennsauken	NJ	Camden	Camden-Gloucester, NJ	
		0XYR	PTJ	Tosco Pipeline Co., Port Jefferson Terminal Petroleum Dock	Port Jefferson	NY	Suffolk	Port Jefferson, NY	Receipt and shipment of petroleum products by barge and vessel.
		0S5S	REN	Coastal Eagle Point Oil Co., Berth No. 1a.	Red Bank	NJ	Gloucester	Paulsboro, NJ	Receipt and shipment of petroleum products by barge; receipt of crude oil.
		0Y22	RER	Transmontaigne, Inc.	Rensselaer	NY	Rensselaer	Albany, NY	Receipt of petroleum products by tanker and barge.
		0Q7Y	RHD	Tosco, Inc., Riverhead Terminal Pier	Riverhead	NY	Suffolk	Northville, Long Island, NY	
		0Q66	SWN	Motiva Enterprises Sewaren Terminal Wharf	Sewaren	NJ	Middlesex	New York, NY and NJ	
		0M6A	TRF	Shipside Fueling	Thorofare	NJ	Gloucester	Paulsboro, NJ	
		0Y2S	TRY	King Service South Troy Plant Dock	Troy	NY	Rensselaer		Receipt of petroleum products by barge.
		0XUA	TTN	Mobil Oil Corp Trenton Terminal Wharf	Trenton	NJ	Mercer	Trenton, NJ	Receipt of petroleum products by barge.

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
I	B	0YA3	TTW	Meenan Oil Co., Tullytown Wharf	Tullytown	PA	Bucks	Penn Manor, PA	Receipt of petroleum products.
		0XW7	TWZ	Castle North Terminal	North Tarrytown	NY	Westchester	Tarrytown, NY	Receipt of petroleum products by barge.
		0XLV	UJV	Jamaica Bay Oil Term / Lefferts Oil Term Pier	Jamaica	NY	Kings	New York, NY and NJ	Receipt of petroleum products by barge.
		0QBK	USB	Liquid Transfer Terminal	Baltimore	MD	Baltimore City	Baltimore, MD	
		0XYX	UXZ	Westmore Fuel Co Port Chester Wharf	Port Chester	NY	Westchester	New York, NY and NJ	Occasional receipt of petroleum products by barge.
		0Q65	UYU	Mobil Oil Corp Port Mobil Wharves	Staten Island	NY	Richmond	New York, NY and NJ	
		0Z1G	UZF	Noco Energy Corp Tonawanda Terminal Wharf	Tonawanda	NY	Erie	Buffalo, NY	Receipt of petroleum products by barge and tanker.
		0RNR	WBZ	Amerada Hess Corp., Second Reserve Terminal North Dock.	Woodbridge	NJ	Middlesex	New York, NY and NJ	Receipt and shipment of petroleum products by barge.
		0W8L	WEZ	Marathon Petroleum Company	Floreffe	PA	Allegheny	Pittsburgh, PA	Receipt of asphalt; and occasional fueling of company-owned vessels.
		0Y0B	WFS	Point Street Terminal Dock	New Hamburg	NY	Dutchess		Occasional receipt of petroleum products by barge.
		0Y79	XFV	Petroleum Fuel And Terminal Co., Green Island	Green Island	NY	Albany		Receipt of petroleum products by barge.
		0Y3Y	XHO	Getty Petroleum Marketing Inc Long Island City Wharf	Long Island City	NY	Queens	New York, NY and NJ	Occasional receipt of petroleum products by barge.

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
I	B	0Q7H	XJX	Sprague Oceanside Terminal	Oceanside	NY	Nassau	Oceanside, LI, NY	
		0QAS	YMV	West Vernon Terminal Corp	Mount Vernon	NY	Westchester	New York, NY and NJ	
		0Y1N	ZGF	Meenan Peekskill Dock	Peekskill	NY	Westchester		Receipt of petroleum products by barge.
		0WFV	ZID	Marathon Ashland Petroleum, Midland Terminal Dock	Midland	PA	Beaver	Pittsburgh, PA	Receipt and shipment of petroleum products.
		0W8B	ZOI	Bts/Guttman Oil Co., Speers Borough Oil Dock	Speers Borough	PA	Washington	Pittsburgh, PA	Receipt of petroleum products.
	C	0Q5P	BFO	Radio Island Terminal, Beaufort Terminal	Beaufort	NC	Carteret	Morehead City, NC	
		0WGF	BLE	Baker Oil Co., Hugheston Dock	Hugheston	WV	Kanawha	Huntington - Tristate	Receipt of petroleum products.
		0XBS	BMU	Stratus Petroleum Corp., Blakely Wharf	Blakely	GA	Early	Chattahoochee River, GA	Receipt of petroleum products.
		0XD0	CHS	Kinder Morgan, Charleston Terminal	Charleston	SC	Charleston	Charleston, SC	Receipt and shipment of asphalt and petroleum products; receipt of caustic soda; bunkering vessels; and loading barges for bunkering vessels at berth.
		0WN9	CRW	Marathon Petroleum, Charleston Terminal Dock	Charleston	WV	Kanawha	Huntington - Tristate	Receipt of petroleum products including aviation fuel.

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
I	C	0YHU	CSG	St Services, Columbus Terminal Dock	Columbus	GA	Muscogee	Chattahoochee River, GA	Receipt of petroleum products.
		0GA5	DFS	Atlantic Richfield Co Cockpit Pt Va	Dumfries	VA	Prince William		
		0UB5	FOO	Wheeling-Pittsburgh Steel Corp., Follansbee Plant Light Oil Dock.	Follansbee	WV	Brooke		Shipment of light oil; and mooring barges.
		0XH1	HPW	Regional Enterprises, Hopewell Wharf	Hopewell	VA	Newport News City	Hopewell, VA	Receipt of asphalt, petroleum products, and sodium hydroxide by barge.
		0XRJ	ILM	Amerada Hess Corp Wilmington Terminal Wharf	Wilmington	NC	New Hanover	Wilmington, NC	Receipt and shipment of petroleum products.
		0Q5Y	JAX	Commodore's Point Terminal Wharf	Jacksonville	FL	Duval	Jacksonville, FL	
		0ZG1	KVA	Marathon Petroleum, Kenova Terminal Dock	Kenova	WV	Wayne	Huntington - Tristate	Shipment of petroleum products.
		0XUN	MIA	Coastal Fuels Marketing Fisher Island Terminal Dock And Slip	Miami Beach	FL	Miami-Dade	MIAMI HARBOR, FL	Receipt and shipment of petroleum products; fueling vessels; and mooring company-owned floating equipment; occasional landing for passenger-and-vehicular ferry.

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
I	C	0XCD	NNS	Papco, Newport News Creek Terminal Wharf	Newport News	VA	Chesapeake City	Newport News, VA	Receipt of petroleum products by barge; bunkering vessels; and mooring company-owned barges.
		0XCU	NTS	Amerada Hess Corp North Charleston Term Wharf	North Charleston	SC	Charleston	Charleston, SC	Receipt and shipment of petroleum products.
		0WA8	NVG	Ergon West Virginia, Congo Plant Dock	Newell	WV	Hancock		Receipt / shipment of petroleum products; and receipt of crude oil.
		0GQQ	ORF	Hampton Roads - Anchorage	Norfolk	VA	Norfolk City	Elizabeth River, VA	
		0QBE	PCV	Canaveral Port Authority Tanker Berths Nos 1 And 2	Cape Canaveral	FL	Brevard	Port Canaveral, FL	
		0XPV	PEF	Port Everglades Berths 11, 12, 12a, 13 And 13a	Hollywood	FL	Broward	Port Everglades, FL	Receipt and shipment of petroleum products, including liquefied petroleum gas; bunkering vessels.
		0Q4C	PFN	Gulf Terminal Corp.	Panama City	FL	Bay	Panama City, FL	
		0Q5G	PIE	Progress Energy Florida, Paul L. Bartow Plant Terminal Wharves	St. Petersburg	FL	Pinellas	Weedon Island, FL	

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
I	C	0YZB	PMT	Manatee County Port Authority, Berth No. 9	Palmetto	FL	Manatee	Port Manatee, FL	Receipt and shipment of conventional-and-containerized general cargo, petroleum products, receipt of lumber, steel, automobiles, other products, cruise ships; and bunkering vessels.
		0XE7	PNS	Transmontaigne Product Services	Pensacola	FL	Escambia	Pensacola, FL	Receipt of petroleum products by barge.
		0XGU	RIC	Kinder Morgan Deepwater Terminal Dock	Richmond	VA	Richmond City	Richmond, VA	Receipt and shipment of petroleum products by barge.
		0WFD	RTT	The Ohio Gathering Corp. Wharf	Newport	WV	Pleasants		Shipment of crude oil.
		0WBY	SA3	Go Mart, Amandaville River Terminal, St. Albans Dock	St. Albans	WV	Kanawha	Huntington - Tristate	Receipt of petroleum products.
		0Q4F	SAV	Nustar Energy	Savannah	GA	Chatham	Savannah, GA	
		0XF0	SSI	Georgia Ports Authority Brunswick Lanier Term Petroleum Barge Dk	Brunswick	GA	Glynn	East River and Oglethorpe Bay, GA	Receipt and shipment of petroleum products; bunkering vessels.
		0QDT	TPA	Martin Gas Sales, Tampa Term. Berths 24 & 24b	Tampa	FL	Hillsborough	Tampa, FL	

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
I	C	0Q39	UFG	Apex Oil Co., Chesapeake Terminal, Wharves	Chesapeake	VA	Chesapeake City	Elizabeth River (Southern Branch) VA	
		0WAB	WET	Petroleum Fuel And Terminal Co., Pittsburgh/Weirton Division Wharf	Weirton	WV	Brooke		Receipt and shipment of petroleum products.
		0Q54	YKW	Western Refining, Yorktown Refinery Wharves	Yorktown	VA	York		
		0WFF	YNM	St. Marys Refining Co. Dock	St. Marys	WV	Pleasants		Receipt and shipment of gasoline and diesel fuel.
II	East	0V31	BCY	Amoco Oil Co., Bay City Terminal Wharf	Bangor Township	MI	Bay	Lake Huron	Occasional receipt of petroleum products.
		0W9Q	BEP	Kraton Polymers, Belpre Plant Wharf	Belpre	OH	Washington		Receipt of styrene, feedstock oil, and butadiene.
		0WRW	CGK	Marathon Petroleum Llc Crude Oil Dock	Catlettsburg	KY	Boyd	Huntington - Tristate	Receipt of crude oil, petroleum products, and methanol; shipment of lubricating oil.
		0R36	CVG	Ashland Petroleum Co	Cincinnati	OH	Hamilton	Cincinnati, OH	
		0W1P	CVK	Marathon Oil Corporation	Covington	KY	Kenton		Receipt of asphalt and petroleum products.
		0V0E	DEO	Marathon Petroleum Co Fordson Isl Term (Pet Prod)	Dearborn	MI	Wayne	Rouge River, MI	Shipment of petroleum products by barge.

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
II	East	0V0A	DET	Shell Oil Co., Rouge River Wharf	Detroit	MI	Wayne	Rouge River, MI	Occasional receipt and shipment of petroleum products.
		0WA5	ELO	Marathon Petroleum Corp., Wellsville Wharf	Wellsville	OH	Columbiana		Receipt and shipment of asphalt; receipt of fuel oil.
		0W1W	LLW	B P Oil Co	Bromley	KY	Kenton	Cincinnati, OH	Receipt and shipment of petroleum products.
		0RBE	LUI	Ashland Petroleum Co.	Louisville	KY	Jefferson	Louisville, KY	
		0WNG	OWB	Transmontaigne Terminaling Inc	Owensboro	KY	Daviess		Receipt of petroleum products.
		0QCF	PAH	Transmontaigne Terminaling Inc	Paducah	KY	Mccracken		
		0WRD	PMH	B P Oil Co Sciotoville	Sciotoville	OH	Scioto	Huntington - Tristate	Receipt of petroleum products.
		0V03	RRJ	Michigan Marine Terminal Wharf	River Rouge	MI	Wayne	Rouge River, MI	Receipt and shipment of asphalt, coal tar, and petroleum products.
		0Z7M	TOL	Arc Terminals Holdings Llc Toledo Wharf	Toledo	OH	Lucas	Toledo, OH	Receipt and shipment of petroleum products.
		0VF5	TVC	Marathon Petroleum	Greilickville	MI	Leelanau	Traverse City, MI	Receipt of petroleum products.
		0WR8	XIM	S&S Terminal, Rayland Dock	Rayland	OH	Jefferson		Receipt of liquid asphalt.
	KS/OK	0QVE	MKO	Frontier Terminal Docks	Muskogee	OK	Muskogee		
		0W58	XEL	Frontier Terminal & Trading Co Wharf	Catoosa	OK	Rogers	Tulsa, Port of Catoosa, OK	Receipt and shipment of petroleum products, specifically fuel oil and asphalt; fueling vessels.

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
II	North	0WG9	AGG	Marathon/Ashland Petroleum, St. Paul Refinery Dock	St. Paul Park	MN	Washington	St. Paul, MN	Receipt and shipment of asphalt and petroleum products.
		084W	BNA	Marathon Oil	Nashville	TN	Davidson	Nashville, TN	
		0REJ	BTD	Phillips Pipe Line Co., Bettendorf Term Barge Dock	Bettendorf	IA	Scott		
		0WV5	CGI	Transmontaigne, Missouri Terminal Wharf	Cape Girardeau	MO	Cape Girardeau		Receipt of petroleum products.
		0V9C	CHH	Canal Terminal Co., Channahon Asphalt Terminal Dock	Channahon	IL	Will		Receipt of asphalt, miscellaneous chemicals, and petroleum products.
		0V1N	CHI	Stolthaven Chicago Terminal, Docks A & B Wharves	Chicago	IL	Cook	Chicago, IL	Receipt and shipment of bulk liquids including petroleum products, chemicals, petrochemicals
		0W9Y	CKQ	Ashland Petroleum Co	Clarksville	IN	Clark	Louisville, KY	Receipt of petroleum products, alcohol, and caustic soda.
		0WTS	CNZ	Ayers Oil Co. Dock	Canton	MO	Lewis		Receipt of petroleum products.
		0WDH	DBQ	Koch Materials Co., Dubuque Terminal, Dock	Dubuque	IA	Dubuque	Dubuque Commercial Harbor, IA	Receipt of asphalt.

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
II	North	0VBV	ECH	Amoco Oil Co Indiana Harbor Dock	East Chicago	IN	Lake	Indiana Harbor, IN	Receipt and shipment of petroleum products; shipment and occasional receipt of asphalt; bunkering vessels; and fueling tugs.
		0W8A	EVV	Ashland Petroleum Co	Evansville	IN	Vanderburgh		Receipt of petroleum products; and supplying midstream- fueling equipment.
		0V4X	FTW	Chicago Metro Water Reclamation Dist/Forest View	Forest View	IL	Cook	Chicago, IL	Not used.
		0UQF	GRB	Noble Petro	Green Bay	WI	Brown	Lake Michigan	Receipt of liquid-calcium chloride; and occasional receipt of petroleum products.
		0W2K	GZI	Petroleum Fuel And Terminal Co., Granite City Dock	Granite City	IL	Madison	St. Louis, MO and IL	Receipt and shipment of asphalt.
		0R2Z	HFI	Conoco Phillips, Wood River Refinery Docks No. 1-4	Hartford	IL	Madison	St. Louis, MO and IL	
		0V4G	ITG	Trumbull Asphalt, Summit Plant Wharf	Summit	IL	Cook	Chicago, IL	Receipt of asphalt and solvents by barge.
		0R7E	IVV	Flint Hills Resources, Dock Nos. 1-6	Inver Grove Heights	MN	Dakota		
		0R6Z	LSE	Midwest Industrial Fuels, Dock Nos. 1 And 2	La Crosse	WI	La Crosse		
		0RJ3	MEM	Premcor A Valero Co., Memphis Refinery Dock	Memphis	TN	Shelby	Memphis, TN	

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
II	North	0W11	MXH	Countrymark Co-Op	Mount Vernon	IN	Posey	Mount Vernon, IN	Receipt and shipment of petroleum products; and receipt of crude oil.
		0UE3	RMM	Flint Hills Resources, Docks Nos. 1 And 2.	Inver Grove Hgts	MN	Dakota		Shipment of petroleum products.
		0V50	SKT	Olympic Oil Wharf	Stickney	IL	Cook	Chicago, IL	Receipt of petroleum products and ethylene glycol by barge.
		0WUP	STL	The Valvoline Co., St. Louis Wharf	St. Louis	MO	St. Louis City	St. Louis, MO and IL	Receipt of lubricating oil.
		0V6D	UBC	Martin Oil Marketing, Chicago Wharf	Alsip	IL	Cook	Chicago, IL	Receipt and occasional shipment of petroleum products by barge.
		0VKR	UTQ	Utica Terminal Dock	Utica	IL	La Salle		Receipt of asphalt and petroleum products.
		0R6M	WRV	Economy Boat Store Wharf, Mers Docks	Wood River	IL	Madison	St. Louis, MO and IL	
		0V4E	XBB	Shell Oil Co. And Argo Terminal Co. Wharf	Argo	IL	Cook	Chicago, IL	Receipt and occasional shipment of petroleum products, petrochemicals, and solvents.
		0Z6D	XDN	Mobil Oil Corp., Cicero Avenue Dock	Cicero	IL	Cook	Chicago, IL	Receipt and occasional shipment of petroleum products by barge.
III	GCLA	0XCN	AEK	Taylor Propane Gas, Aberdeen, Ms	Aberdeen	MS	Monroe		Shipment of crude oil by barge.
		0WWZ	ASC	Transmontaigne Product Services, Arkansas City Wharf	Arkansas City	AR	Chicot	Yellow Bend Port, AR	Receipt of petroleum products and chemicals.
		0EVL	AVI	Jefferson Island La	Delcambre	LA	Iberia		

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
III	GCLA	0WLG	AWM	Premcor A Valero Co., West Memphis Terminal Dock	West Memphis	AR	Crittenden	Memphis, TN	Receipt and shipment of petroleum products.
		0XPQ	BHM	Lynn Port, Llc	Port Birmingham	AL	Jefferson		Receipt of petroleum products.
		0Q2B	BUS	Chevron Pipe Line Co., Empire Wharves	Buras	LA	Plaquemines	Plaquemines, LA, Port of	Barge loading pipeline.
		0RLZ	CEN	Motiva Enterprises, Convent Refinery, Docks	Convent	LA	St. James	South Louisiana, LA, Port of	
		0X3D	CGW	Nustar Energy, Chickasaw Creek Terminal	Chickasaw	AL	Mobile	Mobile, AL	Receipt of crude oil; and shipment of petroleum products.
		0SFA	CLQ	Exxonmobil Corp., No. 6 Dock.	Chalmette	LA	St. Bernard	New Orleans, LA	Receipt and shipment of petroleum products by barge.
		0W46	DCU	Amoco Chemicals Corp., Decatur Plant	Decatur	AL	Morgan		Receipt of mixed xylenes and occasionally fuel oil; shipment of aromatics.
		0726	DZN	Black Bayou Cameron Shell Oil	Vinton	LA	Calcasieu	Lake Charles Deep Water Channel, LA	
		0WY0	ELD	Cross Oil Refining & Marketing Co Ouachita Terminal Dock	Luann	AR	Calhoun		Receipt and shipment of crude oil and lubricating oil.

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
III	GCLA	0X07	EOM	Chevron Phillips Chemical Co., St. James Plant Wharf	Lauderdale	LA	St. John The Baptist	South Louisiana, LA, Port of	Receipt of benzene, ethylbenzene, and crude ethylbenzine; shipment of styrene monomer, ethylbenzine, and toluene all by barge; mooring barges for fleeting.
		0TMT	EPE	Shell Pipe Line Co., Empire Tanker Wharf.	Empire	LA	Plaquemines	Plaquemines, LA, Port of	Receipt of crude oil by vessel.
		0YTB	GIJ	British Petroleum Company Grand Isle	Grand Isle	LA	Jefferson		Occasional shipment of fuel and water for offshore industry; and ferry personnel to and from offshore oil platforms.
		0Q1A	GLH	Transmontaigne Product Services, Greenville Docks	Greenville	MS	Washington	Greenville, MS	
		0WUK	GPT	Gst Gulfport Wharf	Gulfport	MS	Harrison	Biloxi, MS	Receipt of petroleum products by barge.
		0WXL	GRY	Petroleum Fuel & Terminal Co., Mt. Airy Terminal Wharf	Garyville	LA	St. John The Baptist	South Louisiana, LA, Port of	Receipt and shipment of petroleum products by barge and vessel; receipt of ballast water by vessel.
		0WYR	GSM	Shell Chemical, L.P., Geismar Plant Wharf	Geismar	LA	Calcasieu	Baton Rouge, LA	Occasional receipt and shipment of petrochemicals.
		0Q1K	GTL	John W Stone Oil Distributor Llc Gretna Docks	Gretna	LA	Jefferson	New Orleans, LA	

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
III	GCLA	0U24	GYV	Marathon Ashland Petroleum, Louisiana Refinery Dock No. 1.	Garyville	LA	St. John The Baptist	South Louisiana, LA, Port of	Receipt and shipment of crude oil, asphalt, kerosene, petroleum product, ballast water, and slop; bunkering company-owned vessels.
		0Q11	HAH	Motiva Enterprises, Norco Refining Docks	Kenner	LA	St. Charles	South Louisiana, LA, Port of	
		0WP8	HEE	Texas Eastern Products Pipeline Co., Helena Pier	Helena	AR	Phillips	Helena, AR	Shipment and occasional receipt of petroleum products.
		0Q1F	HMJ	Delta Kinder Morgan Terminal Services, Llc, Wharves 1-4	Harvey	LA	Jefferson	New Orleans, LA	
		07TY	HUM	Torch Operating Co	Houma	LA	Terrebonne	Terrebonne, LA, Port of	
		0ZTC	KPL	Exxon Mobil Corp., Pecan Island Field Office Dock	Kaplan	LA	Vermilion		Shipment of crude oil by barge.
		0DV9	KZS	Valero Petroleum	Krotz Springs	LA	St. Landry		
		071Y	LCH	Willow Lake	Lake Charles	LA	Cameron		
		0EN7	LMO	Plumb Isle Pt & Deer Isle Bayou	Morgan City	LA	St. Mary	Morgan City, LA	
		04Y9	LPT	Chevron Tank N E Larose	Lockport	LA	Lafourche		
		0Q13	LYG	Gnots-Reserve, St. Rose East & West Bank Fleet Moorings	Luling	LA	St. Charles	South Louisiana, LA, Port of	
		0Q1E	MAR	Magellan Midstream Partners L.P.	Marrero	LA	Jefferson	New Orleans, LA	

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
III	GCLA	0X2E	MLU	Sunshine Oil & Storage Dock	Rilla	LA	Ouachita		Receipt and shipment of petroleum products.
		0U2U	MNU	Crosstex Energy Services, Upper Mermentau River Wharf.	Mermentau	LA	Jefferson Davis		Receipt of petroleum products and butane by barge.
		0QCW	MOB	Mobile-Chickasaw Port Facility	Chickasaw	AL	Mobile	Mobile, AL	
		0YC6	MSY	Us Filter Recovery Services Michoud Canal Wharf	New Orleans	LA	Orleans		Receipt of waste oil and contaminated water by self- unloading vessels; shipment of recycled petroleum products by barge.
		0TT0	MYG	Phillips 66 Co., Alliance Refinery Tanker Dock No. 2.	Alliance	LA	Plaquemines	Plaquemines, LA, Port of	Receipt of intermediate-feed crude oil; and shipment of petroleum products.
		0X3A	MZI	Alliance Resources Co Robinson Loading Facility Dk	Carlton	AL	Clarke		Shipment of crude oil.
		0TME	NCM	Orion Refining Corp., Norco Refinery Wharf, Berth No. 5.	Norco	LA	St. Charles	South Louisiana, LA, Port of	Receipt of crude oil; and shipment of petroleum products and liquid hazardous gases by barge.
		0Q10	NEW	Valero Refining, Norco Refinery	Destrahan	LA	St. Charles	South Louisiana, LA, Port of	
		0XP4	NHA	Hunt Refining Co Naheola Dock	Naheola	AL	Choctaw		Receipt of crude oil.
		0N7E	OGK	Kings Bayou	Grand Chenier	LA	Cameron		

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
III	GCLA	0VUD	PBF	Petroleum Fuel And Terminal Co Pine Bluff Terminal Dock	Pine Bluff	AR	Jefferson		Receipt of diesel fuel and caustic soda.
		0S1F	PGL	Chevron Products Co., Pascagoula Refinery Wharf No. 1, Berth No. 1.	Pascagoula	MS	Jackson	Pascagoula, MS	Receipt and shipment of petroleum products, liquefied petroleum gas, caustic soda, sulfuric acid, and petro- chemicals by barge.
		0TYY	PHC	Bass Enterprises Production Co., Cox Bay Field Loading Dock.	Pointe A La Hache	LA	Plaquemines	Plaquemines, LA, Port of	Shipment of crude oil by barge.
		0WN1	PHV	Amoco Pipeline Co., Port Hudson Wharf	Port Hudson	LA	West Baton Rouge	Baton Rouge, LA	Shipment of crude oil by barge.
		0B70	PIW	Chevron Pipeline Co.	Venice	LA	Plaquemines	Plaquemines, LA, Port of	
		0Q9L	PLL	Greater Baton Rouge Port Commission	Port Allen	LA	West Baton Rouge	Baton Rouge, LA	
		0NUP	PLQ	Petroquest Energy Well Site, Berry Lake	Plaquemine	LA	Iberville		
		0A1J	RNK	Cabot Corporation, Franklin, La	Franklin	LA	St. Mary		
		0Z2K	SFQ	Shell Chemical Co., Mobile Site Wharf	Saraland	AL	Mobile	Mobile, AL	Receipt of crude oil; and shipment of petroleum products by barge.
		0WYU	SGL	Entergy Gulf States Utilities Co., Willow Glen Power Plant Wharf	St. Gabriel	LA	Iberville	Baton Rouge, LA	Receipt of diesel fuel for plant consumption.

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
III	GCLA	0W82	SHF	Murphy Oil U.S.A., Sheffield Term Dock	Sheffield	AL	Colbert		Receipt of petroleum products.
		0TE2	SHV	Caddo/Bossier Port Commission Petroleum Dock.	Shreveport	LA	Caddo	J. Bennett Johnston Waterway	Receipt of petroleum products.
		0Q2N	SLP	Conoco Pecan Grove Terminal Wharves	Sulphur	LA	Calcasieu	Lake Charles, LA	
		0TMH	SNJ	Koch Pipeline Operating, St. James Terminal No. 5 Dock.	St. James	LA	St. Charles	South Louisiana,	Receipt of crude oil by vessel.
		0Q1D	SRE	International Matex, St. Rose Terminals	St Rose	LA	St. Charles	South Louisiana	
		0XS7	TCL	Warrior Asphalt Refining Corp Tuscaloosa Dock	Tuscaloosa	AL	Tuscaloosa		Receipt of asphalt and occasional crude oil.
		0TZ7	TFT	Union Carbide Corp., Taft Plant, Docks Nos. 2 And 3.	Taft	LA	St. John The Baptist	South Louisiana, LA, Port of	Receipt and shipment of petrochemicals, including naptha by vessel and barge.
		09DG	UAB	Forked Island Terminal	Abbeville	LA	Vermilion		
		0QC6	VKS	Ergon Refining, Dock Nos. 1 & 2	Vicksburg	MS	Warren	Vicksburg, MS	
		0VT3	WKS	Degussa Engineered Carbons L.P. Ivanhoe Canal Wharf	Ivanhoe	LA	St. Mary		Receipt of crude-oil feedstock for plant consumption.
		0S8N	WQL	Conoco, Westlake Products Terminal Dock No. 3.	Westlake	LA	Calcasieu	Lake Charles, LA	Receipt of crude oil, fuel oil, and lube oil; shipment of petrochemicals and petroleum products.

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
III	GCLA	0X53	WWO	Vopak Terminal Westwego Inc Westwego Wharf	Westwego	LA	Jefferson	New Orleans, LA	Receipt of petroleum products; and other bulk-liquid commodities by barge.
		0WR2	YCN	Baileys Seafood Monkey Island Wharf	Cameron	LA	Cameron	Lake Charles, LA	Not used.
	GCTX	0QN8	AZC	Lyondell Chemical Company, Chocolate Bayou Plant Dock	Alvin	TX	Brazoria		
		07QL	BBC	Port Of Bay City, Terminal Wharves	Bay City	TX	Matagorda		
		0QFX	BPT	Martin Gas Sales, Stanolined Cut Terminal Wharves	Beaumont	TX	Jefferson	Beaumont, TX	
		0VLG	BRO	Brownsville Navigation District, Oil Dock No. 3	Brownsville	TX	Cameron	Brownsville, TX	Receipt and shipment of petroleum products.
		0QN9	BZT	Phillips 66 Co., San Bernard Terminal Docks	Brazoria	TX	Brazoria		
		0QYZ	CRP	Valero Refining Co., Tule Lake Docks	Corpus Christi	TX	Nueces	Corpus Christi, TX	
		0QA9	CVU	Lyondell Petrochemical Co	Channelview	TX	Harris	Houston, TX	
		0SRR	DEX	Intercontinental Terminals Co., Deer Park Wharf, Houston Barge-Dock No. 4.	Deer Park	TX	Harris	Houston, TX	Receipt and shipment of miscellaneous bulk liquids by barge, including liquefied petroleum gas and petrochemicals; receipt of sulfuric acid and bunker fuel.
		0PSW	FPO	Buccaneer Barge Dock	Freeport	TX	Brazoria		

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
III	GCTX	0SJB	GLS	Port Of Galveston, Navy Wharf.	Galveston	TX	Galveston	Galveston, TX	Mooring vessels.
		0QAN	GPK	Basis Petroleum Barge Dock No 1 & 2 Wharf	Galena Park	TX	Harris	Houston, TX	
		0QAG	HOU	Oil Tanking Houston	Houston	TX	Harris	Houston, TX	
		0SNY	HPY	Exxon Co., Baytown Refinery, Pier No. 2.	Baytown	TX	Harris	Houston, TX	Receipt and shipment of petroleum products, chemicals, and petrochemicals; receipt of crude oil and ballast water.
		0W0U	HRL	Wilbur Ellis Co., Rio Hondo Terminal Dock	Rio Hondo	TX	Calhoun		Receipt of dry- and liquid-bulk fertilizer; shipment of crude-oil condensate.
		0SU8	LDC	Phillips 66 Co., San Bernard Terminal Dock No. 2.	Sweeny	TX	Victoria		Receipt and shipment of petroleum products.
		0QV5	NDX	Sun Marine Terminals	Nederland	TX	Jefferson	Beaumont, TX	
		0VTH	NSS	Plains Marketing, Sabine Pass Wharf	Sabine Pass	TX	Jefferson		Receipt and shipment of crude oil.
		0QFV	ORG	Te Products Pipeline Co. Beaumont Maine Terminal Docks	Orange	TX	Orange	Beaumont, TX	
		0SME	PAS	Crown Central Petroleum Corp., Pasadena Refinery, Ship-Dock Wharf.	Pasadena	TX	Harris	Houston, TX	Receipt and shipment of petroleum products and petrochemi- cals; receipt of crude oil; and occasional handling of ship's stores.

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
III	GCTX	0SSV	PCR	Tesoro Marine Services, Port O'connor Offshore Supply Facility, West Slip.	Port O'connor	TX	Calhoun		Receipt of diesel fuel; handling materials-supplies-and- equipment for offshore oil-well operations; and mooring and fueling offshore supply vessels.
		0UTW	PIS	U. S. Coast Guard, South Padre Island Station Piers	South Padre Island	TX	Cameron	Brownsville , TX	Mooring U.S. Coast Guard vessels: USCGC AMBERJACK Draft 5.6 feet
		0Q9N	POA	Gulf Copper & Manufacturing Corp. Wharves	Port Arthur	TX	Jefferson	Port Arthur, TX	
		0QAU	PON	Huntsman Petro Chemical Corp. Wharves	Port Neches	TX	Jefferson	Beaumont, TX	
		07BG	PSX	Matagorda Houston Natural Gas	Palacios	TX	Matagorda		
		0QNL	TXT	Sterling Chemicals Docks 1 - 5	Texas City	TX	Galveston	Texas City, TX	
		0QCN	UQF	Intercontinental Terminals Co.	La Porte	TX	Harris	Houston, TX	
		0SJ2	VDO	Te Products Pipeline Co., Beaumont Marine Terminal Ship Dock.	Vidor	TX	Orange	Beaumont, TX	Receipt and occasional shipment of petroleum products.
		076Z	XLR	Plains All American Pipeline Corp Port Comfort	Seadrift	TX	Calhoun		

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
III	**GCTX**	0PDH	YAS	Superior Crude Gathering, Inc.	Port Aransas	TX	San Patricio	Corpus Christi, TX (Alternate Code)	
V	**V**	0TQL	ADQ	U.S. Coast Guard, Integrated Support Command, Kodiak Fuel Pier.	Kodiak	AK	Kodiak Island	Kodiak, AK	Receipt of petroleum products; and mooring miscellaneous vessels; fueling U.S. Coast Guard vessels.
		0UE1	AGN	City Of Angoon, Cargo Dock	Angoon	AK	Skagway-Hoonah-Angoon		Receipt of petroleum products.
		0RDC	ANC	Port Of Anchorage, P.O.L. Terminal, Docks No. 1 & 2	Anchorage	AK	Anchorage	Anchorage, AK	
		0UAA	AST	Port Of Astoria Terminal, Pier No 2	Astoria	OR	Clatsop	Astoria, OR	McCall Oil & Chemical Co.: Receipt and shipment of conventional general cargo; receipt of petroleum products
		0Y92	BET	City Of Bethel, Petroleum Dock	Bethel	AK	Bethel	Bethel, AK	Receipt and shipment of petroleum products; fueling vessels.
		0V6B	BNC	Valero Refining Co - Benica Terminal	Benicia	CA	Solano		Receipt and shipment of petroleum products; receipt of crude oil.

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
V	V	02JT	BWS	Bp Products North America Inc., Cherry Point Terminal	Ferndale	WA	Whatcom	Puget Sound Area, WA, Other Ports	Receipt and shipment of petroleum products; receipt of crude oil; and bunkering vessels.
		0QHF	BYW	Anacortes Anchorage	Blakely Island	WA	Skagit	Anacortes, WA	
		0UBE	CDV	City Of Cordova	Cordova	AK	Valdez-Cordova	Cordova, AK	Receipt and shipment of containerized general cargo; receipt of petroleum products; and handling supplies for fishing vessels.
		0YQD	CGA	City Of Craig, J. T. Brown Industrial Wharf	Craig	AK	Prince Of Wales-Outer Ketchikan	Craig, AK	Receipt of petroleum products and seafood; icing fishing vessels; and fueling vessels.
		0RAF	CLM	Nippon Paper, Port Angeles Mill	Port Angeles	WA	Clallam	Port Angeles, WA	
		0V0M	CRM	Conoco Phillips - Rodeo Oil Refinery	Oleum	CA	Contra Costa		Receipt and shipment of crude oil and petroleum products; occasional bunkering of vessels.
		0UVT	DLG	Delta Western, Dillingham Terminal Wharf	Dillingham	AK	Dillingham	Dillingham, AK	Receipt and shipment of petroleum products; fueling vessels.
		0UCP	DRF	Cook Inlet Pipe Line Co., Christie Lee Platform Wharf	Drift River	AK	Kenai Peninsula	Drift River Platforms, AK	Shipment of crude oil.

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
V	V	0UL3	DUT	North Pacific Fuel, Dutch Harbor Restoff Wharf	Dutch Harbor	AK	Aleutians West	Dutch Harbor, Unalaska	Receipt of petroleum products; fueling vessels.
		0UHV	EKA	Chevron Products Co Eureka Terminal Wharf	Eureka	CA	Humboldt	Humboldt, CA	Receipt of petroleum products by barge.
		0USS	FDT	Conoco Phillips, Ferndale Refinery Wharf	Ferndale	WA	Whatcom	Puget Sound Area, WA, Other Ports	Receipt and shipment of petroleum products; receipt of crude oil; and bunkering vessels.
		0TQ7	GST	National Park Service, Bartlett Cove, Glacier Bay National Park And Preserve, Fuel Dock.	Gustavus	AK	Skagway-Hoonah-Angoon		Receipt of petroleum products; and fueling vessels.
		0UAE	HNH	Hoonah Trading Co. Dock	Hoonah	AK	Skagway-Hoonah-Angoon	Hoonah, AK	Receipt of petroleum products; fueling vessels; and mooring small vessels.
		0R1S	HNL	State Of Hawaii, Kewalo Basin Wharves	Honolulu	HI	Honolulu	Kewalo Basin, Honolulu, Oahu, HI	
		0U98	HNS	City Of Haines, Port Chilkoot Wharf	Haines	AK	Haines	Haines, AK	Receipt of petroleum products; and mooring cruise vessels.
		0U6D	JNU	Taku Oil Sales, Juneau Terminal Wharf	Juneau	AK	Juneau	Juneau, AK	Receipt of petroleum products; and fueling vessels and small craft.

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
V	V	0UK6	KAE	City Of Kake, Public Cargo Wharf	Kake	AK	Wrangell-Petersburg	Kake, AK	Receipt and shipment of conventional-and-containerized general cargo; receipt of petroleum products.
		0U79	KPI	Tesoro Petroleum Corp., Barbers Point Mooring	Kapolei	HI	Honolulu	Barbers Point, Oahu, HI	Receipt and shipment of crude oil and petroleum products; bunkering vessels.
		0RAM	KQA	Offshore Systems, Unalaska Docks	Akutan	AK	Aleutians East	Iliuliuk Harbor, AK	
		0YPS	KTB	Northland Services Inc., Thorne Bay Transfer Bridge	Thorne Bay	AK	Prince Of Wales-Outer Ketchikan		Receipt and shipment of conventional-and-containerized general cargo; receipt of petroleum products.
		0UEU	KTN	Petro Alaska, Ketchikan Marine Fuel Wharf And Float	Ketchikan	AK	Ketchikan Gateway	Ketchikan, AK	Receipt of petroleum products; and fueling vessels.
		0U63	KUA	State Of Hawaii, Kaunakakai Pier	Kaunakakai	HI	Maui	Kaunakakai, Molokai, HI	Receipt and shipment of conventional-and-containerized general cargo and automobiles; receipt of petroleum products
		0RAG	KVC	Peter Pan Seafoods, King Cove Wharves	King Cove	AK	Aleutians East	King Cove, AK	

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
V	V	0V6Y	LGB	Chemoil Term Corp Berth F-211a	Long Beach	CA	Los Angeles	Long Beach, CA	Loading barges for bunkering vessels at berth or at anchor.
		0QD7	LOG	Port Of Longview Berth # 1	Longview	WA	Cowlitz	Longview, WA	
		02JP	LPS	Cherry Point	Lopez Island	WA	San Juan	Puget Sound Area, WA, Other Ports	
		0RDP	MRZ	Tesoro Refining At Avon	Martinez	CA	Contra Costa		
		0Z23	MTM	City Of Metlakatla, Fuel Transfer Dock	Metlakatla	AK	Prince Of Wales-Outer Ketchikan	Metlakatla, AK	Receipt of petroleum products by barge.
		0USX	NIK	Kenai Pipe Line Co., Nikisha Terminal Wharf	Nikiski	AK	Kenai Peninsula	Nikishka, AK	Receipt of crude oil; and shipment of petroleum products.
		0UKG	NNK	Delta Western, Naknek Terminal Wharf	Naknek	AK	Bristol Bay		Receipt and shipment of petroleum products; fueling vessels.
		0UUC	NTD	Oxnard Harbor District Wharf No 1 Berths 1, 2 & 3	Port Hueneme	CA	Ventura	Port Hueneme, CA	Receipt and shipment of general cargo; receipt of tropical fruit, wood pulp, and petroleum products, and fuel oil for plant consumption; bunkering vessels.

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
V	V	0VAU	OAK	Port Of Oakland Bay Bridge Terminal Berths 8, 9 And 10	Oakland	CA	Alameda	Oakland, CA	Berth 8: Mooring company-owned vessels; Berth 9: Mooring miscellaneous vessels; and Berth 10: Dredging material- holding ponds.
		0YNH	OGG	State Of Hawaii, Kahululi Pier 3	Kahului	HI	Maui	Kahului, Maui, HI	Receipt and shipment of conventional-and-containerized general cargo and automobiles; receipt of petroleum products, sand, lumber, and steel products; mooring towboats.
		0UW0	OLH	City Of Old Harbor, City Dock	Old Harbor	AK	Kodiak Island	Old Harbor, AK	Receipt of conventional general cargo and petroleum products.
		0ZLG	OME	City Of Nome, Causeway Wharves	Nome	AK	Nome	Nome, AK	Receipt and shipment of conventional-and-containerized general cargo and petroleum products; shipment of sand and gravel; mooring cruise vessels.
		0U5U	OTS	Texaco Refining & Marketing, Anacortes Refinery Wharf	Anacortes	WA	Skagit	Anacortes, WA	Receipt of crude oil; and shipment of petroleum products; bunkering vessels.

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
V	V	0UVJ	OTZ	Crowley Marine Services, Kotzebue Wharf	Kotzebue	AK	Northwest Arctic		Receipt and shipment of conventional-and-containerized general cargo by lighter; and receipt and shipment of petroleum products.
		0UCW	PAL	State Of Hawaii, Port Allen Pier	Port Allen	HI	Kauai	Port Allen Harbor, Kauai, HI	Receipt of petroleum products, liquid fertilizer, and fuel oil for plant consumption; mooring vessels.
		0UHG	PDX	Port Of Portland Swan Isl Ship Rpr Yd Ber 301-314	Portland	OR	Multnomah	Portland, OR	Mooring floating drydock; and vessels for conversion, outfitting, and repair.
		0ZGX	PEC	Pelican Seafoods, Fuel Wharf	Pelican	AK	Skagway-Hoonah-Angoon	Pelican, AK	Receipt of petroleum products; and fueling vessels.
		0RA6	PSC	Tidewater Term Co., Pasco Term., Petro Dock	Pasco	WA	Franklin		
		0UJL	PSG	Harbor Enterprises, D.B.A. Petro Marine Services Petersburg Wharf	Petersburg	AK	Wrangell-Petersburg	Petersburg, AK	Receipt of petroleum products; fueling vessels; and mooring U.S. Coast Guard and U.S. Forest Service vessels. USCGC ANACAPA Draft 6.5 Feet USCGC ELDERBERRY Draft 4.75 Feet

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
V	V	05FH	RCH	Independent Renderers Whaling Station-Roh	Richmond	CA	Contra Costa	Richmond, CA	
		0RH4	RD4	Nustar Energy, Crockett Terminal	Rodeo	CA	Contra Costa		
		0R6D	SDP	Trident Seafoods Corp., Sand Point Fuel And Seafood Docks	Sand Point	AK	Aleutians East	Humboldt, AK	
		0UMS	SEA	B P Oil Co., Seattle Terminal, Pier No. 11	Seattle	WA	King	Seattle, WA	Receipt and shipment of petroleum products; bunkering vessels; and loading harbor-bunkering barges for vessels at berth.
		0T99	SEL	Shore Terminals, Selby Marine Terminal, Tanker Wharf.	Selby	CA	Contra Costa		Receipt and shipment of petroleum products.
		0U9U	SGY	Skagway Terminal Co., Ore Wharf	Skagway	AK	Skagway-Hoonah-Angoon	Skagway, AK	Receipt and shipment of petroleum products; mooring cruise vessels.
		0U5C	SIT	Petro Marine Services, Sitka South Plant Wharf And Float	Sitka	AK	Sitka	Sitka, AK	Receipt of petroleum products; and fueling vessels.
		001G	SOV	Port Graham Sealand Services	Seldovia	AK	Kenai Peninsula	Port Graham, AK	
		0RGY	SPQ	Ship Services, Berth 241, 240x, 240y, & 240z	San Pedro	CA	Los Angeles	Los Angeles, CA	

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
V	V	0TSE	SWD	City Of Seward, North Dock.	Seward	AK	Kenai Peninsula	Seward, AK	Receipt of petroleum products; fueling vessels; and handling materials, supplies, equipment.
		0RDE	TEK	Alyeska Pipeline Marine Terminal Docks	Tatitlek	AK	Valdez-Cordova	Valdez, AK	
		0R9W	TIW	U.S. Oil & Refining Co., Tacoma Terminal Docks	Tacoma	WA	Pierce	Tacoma, WA	
		0UZT	TIY	Port Of Los Angeles Berths 259 & 260	Terminal Island	CA	Los Angeles	Los Angeles, CA	Receipt of seafood; and occasional receipt of petroleum products; mooring oceanographic-research vessels, company-owned tank barge; fueling tugs
		0RAA	TWD	Port Townsend Paper Corp	Port Townsend	WA	Jefferson	Port Townsend, WA	
		0UPN	UAA	Westward Seafoods, Unalaska Dock	Unalaska	AK	Aleutians East	Iliuliuk Harbor, AK	Receipt of seafood and petroleum products; handling supplies and equipment for fishing vessels; and fueling fishing vessels.
		0ZBK	UMA	Tidewater Terminal Co., Umatilla Dock	Umatilla	OR	Umatilla		Receipt and shipment of petroleum products and liquid fertilizer; fueling vessels.

Appendix B.5 – Coastal & Inland Ports Transporting Crude and Petroleum Products

Source: U.S. Army Corps of Engineers Port Facilities Spreadsheet

PADD	Sub PADD	Nav Unit Id	Unlocode	Nav Unit Name	City Or Town	State	County	Port	Purpose
V	V	0UV4	VAN	Port Of Vancouver, Terminal 2 Berth 5, Oil Dock	Vancouver	WA	Clark	Vancouver, WA	Receipt and shipment of petroleum products and liquid chemicals
		0TL3	VDZ	Alyeska Pipeline Marine Terminal, Berth No. 4.	Valdez	AK	Valdez-Cordova	Valdez, AK	Shipment of crude oil.
		0RA1	WMA	Tidewater Terminal Co., Wilma Dock	Uniontown	WA	Whitman		
		0UKT	WRG	Delta Western, Wrangell Dock	Wrangell	AK	Wrangell-Petersburg	Wrangell, AK	Receipt of petroleum products; and fueling vessels.
		0URN	WTN	Gatx Terminals Corp Berths 171, 172 & 173	Wilmington	CA	Los Angeles	Los Angeles, CA	Receipt of crude oil; occasional bunkering of tankers berthed at wharf; and loading barges for bunkering vessels at berth in harbor.
		0UNC	WUF	Chevron U.S.A., Point Wells Terminal Wharf	Woodway	WA	Snohomish	Seattle, WA	Receipt and shipment of petroleum products; loading harbor- bunkering barges; and handling supplies.
		0ZH0	YAK	Delta Western, Yakutat Wharf	Yakutat	AK	Yakutat	Yakutat, AK	Receipt of petroleum products; and fueling vessels.
		00Q0		Berth H 1	Honolulu	HI	Honolulu	Pearl Harbor, Oahu, HI	

Appendix B.6 – U.S. Locks
Source: U.S. Army Corps of Engineers Lock Performance Monitoring System

River Name	Lock No	Lock Name
ALLEGHENY RIVER	43	C.W. BILL YOUNG LOCK AND DAM
ALLEGHENY RIVER	42	LOCK AND DAM 2
ALLEGHENY RIVER	44	LOCK AND DAM 4
ALLEGHENY RIVER	45	LOCK AND DAM 5
ALLEGHENY RIVER	46	LOCK AND DAM 6
ALLEGHENY RIVER	47	LOCK AND DAM 7
ALLEGHENY RIVER	48	LOCK AND DAM 8
ALLEGHENY RIVER	49	LOCK AND DAM 9
ATLANTIC INTRACOASTAL WATERWAY	11	GREAT BRIDGE GUARD LOCK
ALABAMA-COOSA RIVERS	11	CLAIBORNE LOCK AND DAM
ALABAMA-COOSA RIVERS	12	MILLERS FERRY LOCK AND DAM
ALABAMA-COOSA RIVERS	13	ROBERT F. HENRY LOCK AND DAM
APLCHCLA/CHATTAHO/FLINT RIVERS	22	GEORGE W ANDREWS LOCK AND DAM
APLCHCLA/CHATTAHO/FLINT RIVERS	21	JIM WOODRUFF LOCK AND DAM
APLCHCLA/CHATTAHO/FLINT RIVERS	23	WALTER F GEORGE LOCK AND DAM
ATCHAFALAYA RIVER	11	BERWICK LOCK
BLACK ROCK CH/TONAWANDA HARBOR	1	BLACK ROCK LOCK
BAYOU TECHE	31	KEYSTONE LOCK
BLACKWARRIOR/TOMBIGBEE RIVERS	3	ARMSTD I. SELDEN LOCK AND DAM
BLACKWARRIOR/TOMBIGBEE RIVERS	1	COFFEEVILLE LOCK
BLACKWARRIOR/TOMBIGBEE RIVERS	2	DEMOPOLIS LOCK AND DAM
BLACKWARRIOR/TOMBIGBEE RIVERS	5	HOLT LOCK AND DAM
BLACKWARRIOR/TOMBIGBEE RIVERS	6	JOHN HOLLIS BANKHEAD LK AND DM
BLACKWARRIOR/TOMBIGBEE RIVERS	4	WILLIAM BACON OLIVER LK AND DM
CALCASIEU RIVER	23	CALCASIEU SALT WATER BARRIER
CHICAGO RIVER	1	CHICAGO LOCK
CLINCH RIVER	11	MELTON HILL LOCK
CANAVERAL HARBOR	21	CANAVERAL LOCK
COLUMBIA RIVER	1	BONNEVILLE LOCK AND DAM
COLUMBIA RIVER	3	JOHN DAY LOCK AND DAM
COLUMBIA RIVER	24	MCNARY LOCK AND DAM
COLUMBIA RIVER	2	THE DALLES DAM
CUMBERLAND RIVER	21	BARKLEY LOCK
CUMBERLAND RIVER	22	CHEATHAM LOCK
CUMBERLAND RIVER	23	CORDELL HULL LOCK
CUMBERLAND RIVER	24	OLD HICKORY LOCK
DISMAL SWAMP CANAL ROUTE	1	DEEP CREEK LOCK
DISMAL SWAMP CANAL ROUTE	2	SOUTH MILLS LOCK
FRESHWATER BAYOU	41	FRESHWATER BAYOU LOCK
CAPE FEAR RIVER	1	LOCK AND DAM 1
CAPE FEAR RIVER	2	LOCK AND DAM 2
CAPE FEAR RIVER	3	WILLIAM O HUSKE LOCK AND DAM
GREEN & BARREN RIVERS	21	LOCK AND DAM 1
GREEN & BARREN RIVERS	22	LOCK AND DAM 2
GREEN & BARREN RIVERS	23	LOCK AND DAM 3

Appendix B.6 – U.S. Locks
Source: U.S. Army Corps of Engineers Lock Performance Monitoring System

River Name	Lock No	Lock Name
GULF INTRACOASTAL WATERWAY	4	ALGIERS LOCK
GULF INTRACOASTAL WATERWAY	6	BAYOU BOEUF LOCK
GULF INTRACOASTAL WATERWAY	2	BAYOU SORREL LOCK
GULF INTRACOASTAL WATERWAY	13	BRAZOS EAST GATE
GULF INTRACOASTAL WATERWAY	14	BRAZOS WEST GATE
GULF INTRACOASTAL WATERWAY	8	CALCASIEU LOCK
GULF INTRACOASTAL WATERWAY	22	CATFISH POINT CONTROL STRUCT
GULF INTRACOASTAL WATERWAY	11	COLORADO RIVER EAST LOCK
GULF INTRACOASTAL WATERWAY	12	COLORADO RIVER WEST LOCK
GULF INTRACOASTAL WATERWAY	5	HARVEY LOCK
GULF INTRACOASTAL WATERWAY	3	INNER HRBR NAVIGATION CANL LK
GULF INTRACOASTAL WATERWAY	77	LELAND BOWMAN LOCK
GULF INTRACOASTAL WATERWAY	1	PORT ALLEN LOCK
GULF INTRACOASTAL WATERWAY	21	SCHOONER BAYOU CONTROL STRUCT
HUDSON RIVER	1	TROY LOCK AND DAM
ILLINOIS WATERWAY	3	BRANDON ROAD LOCK AND DAM
ILLINOIS WATERWAY	4	DRESDEN ISLAND LOCK AND DAM
ILLINOIS WATERWAY	8	LAGRANGE LOCK AND DAM
ILLINOIS WATERWAY	2	LOCKPORT LOCK
ILLINOIS WATERWAY	5	MARSEILLES LOCK AND DAM
ILLINOIS WATERWAY	7	PEORIA LOCK AND DAM
ILLINOIS WATERWAY	6	STARVED ROCK LOCK AND DAM
ILLINOIS WATERWAY	1	THOMAS J. O'BRIEN LOCK
THE INLAND ROUTE	61	ALANSON LOCK
KANAWHA RIVER	3	LONDON LOCKS AND DAM MAIN 1
KANAWHA RIVER	2	MARMET LOCKS AND DAM MAIN 1
KANAWHA RIVER	1	WINFIELD LOCKS AND DAM MAIN 1
KASKASKIA RIVER	1	KASKASKIA RIVER NAVAGATION LK
MISSISSIPPI RIVER	27	CHAIN OF ROCKS LOCK AND DAM 27
MISSISSIPPI RIVER	19	LOCK 19
MISSISSIPPI RIVER	1	LOCK AND DAM 1
MISSISSIPPI RIVER	10	LOCK AND DAM 10
MISSISSIPPI RIVER	11	LOCK AND DAM 11
MISSISSIPPI RIVER	12	LOCK AND DAM 12
MISSISSIPPI RIVER	13	LOCK AND DAM 13
MISSISSIPPI RIVER	14	LOCK AND DAM 14
MISSISSIPPI RIVER	15	LOCK AND DAM 15
MISSISSIPPI RIVER	16	LOCK AND DAM 16
MISSISSIPPI RIVER	17	LOCK AND DAM 17
MISSISSIPPI RIVER	18	LOCK AND DAM 18
MISSISSIPPI RIVER	2	LOCK AND DAM 2
MISSISSIPPI RIVER	20	LOCK AND DAM 20
MISSISSIPPI RIVER	21	LOCK AND DAM 21
MISSISSIPPI RIVER	22	LOCK AND DAM 22
MISSISSIPPI RIVER	24	LOCK AND DAM 24
MISSISSIPPI RIVER	25	LOCK AND DAM 25

Appendix B.6 – U.S. Locks
Source: U.S. Army Corps of Engineers Lock Performance Monitoring System

River Name	Lock No	Lock Name
MISSISSIPPI RIVER	3	LOCK AND DAM 3
MISSISSIPPI RIVER	4	LOCK AND DAM 4
MISSISSIPPI RIVER	5	LOCK AND DAM 5
MISSISSIPPI RIVER	55	LOCK AND DAM 5A
MISSISSIPPI RIVER	6	LOCK AND DAM 6
MISSISSIPPI RIVER	7	LOCK AND DAM 7
MISSISSIPPI RIVER	8	LOCK AND DAM 8
MISSISSIPPI RIVER	9	LOCK AND DAM 9
MISSISSIPPI RIVER	26	MEL PRICE LOCK AND DAM
MISSISSIPPI RIVER	52	ST ANTHONY FALLS - LOWER LOCK
MISSISSIPPI RIVER	51	ST ANTHONY FALLS - UPPER LOCK
MC-KERR ARKANSAS RIV NAV SYS	9	ARTHUR V ORMOND L AND D
MC-KERR ARKANSAS RIV NAV SYS	24	CHOUTEAU LOCK AND DAM
MC-KERR ARKANSAS RIV NAV SYS	5	COL CHARLES D MAYNARD
MC-KERR ARKANSAS RIV NAV SYS	10	DARDANELLE LK AND DAM
MC-KERR ARKANSAS RIV NAV SYS	6	DAVID D TERRY LOCK AND DAM
MC-KERR ARKANSAS RIV NAV SYS	4	EMMETT SANDERS LOCK AND DAM
MC-KERR ARKANSAS RIV NAV SYS	13	JAMES W. TRIMBLE LOCK AND DAM
MC-KERR ARKANSAS RIV NAV SYS	3	JOE HARDIN LOCK AND DAM
MC-KERR ARKANSAS RIV NAV SYS	99	MONTGOMERY POINT LOCK AND DAM
MC-KERR ARKANSAS RIV NAV SYS	7	MURRAY LOCK AND DAM
MC-KERR ARKANSAS RIV NAV SYS	25	NEWT GRAHAM LOCK AND DAM
MC-KERR ARKANSAS RIV NAV SYS	1	NORRELL LOCK AND DAM
MC-KERR ARKANSAS RIV NAV SYS	11	OZARK LOCK AND DAM
MC-KERR ARKANSAS RIV NAV SYS	22	RBRT S KERR LK AND DAM AND RES
MC-KERR ARKANSAS RIV NAV SYS	8	TOAD SUCK FERRY LOCK AND DAM
MC-KERR ARKANSAS RIV NAV SYS	21	W D MAYO LOCK AND DAM
MC-KERR ARKANSAS RIV NAV SYS	23	WEBBERS FALLS LOCK AND DAM
MC-KERR ARKANSAS RIV NAV SYS	2	WILBUR D MILLS LOCK AND DAM
MONONGAHELA RIVER	26	GRAYS LANDING LOCK AND DAM
MONONGAHELA RIVER	30	HILDEBRAND LOCK AND DAM
MONONGAHELA RIVER	22	LOCK AND DAM 2
MONONGAHELA RIVER	23	LOCK AND DAM 3
MONONGAHELA RIVER	24	LOCK AND DAM 4
MONONGAHELA RIVER	25	MAXWELL LOCK AND DAM
MONONGAHELA RIVER	29	MORGANTOWN LOCK AND DAM
MONONGAHELA RIVER	31	OPEKISKA LOCK AND DAM
MONONGAHELA RIVER	28	POINT MARION LOCK AND DAM
OUACHITA and BLACK RIVERS	2	COLUMBIA LOCK AND DAM
OUACHITA and BLACK RIVERS	3	FELSENTHAL LOCK AND DAM
OUACHITA and BLACK RIVERS	1	JONESVILLE LOCK AND DAM
OUACHITA and BLACK RIVERS	4	THATCHER LOCK AND DAM
OLD RIVER	51	OLD RIVER LOCK
OHIO RIVER	21	BELLEVILLE LOCKS AND DAM
OHIO RIVER	75	CANNELTON LOCK AND DAM
OHIO RIVER	25	CAPT ANT MELDAHL LOCKS AND DAM

Appendix B.6 – U.S. Locks
Source: U.S. Army Corps of Engineers Lock Performance Monitoring System

River Name	Lock No	Lock Name
OHIO RIVER	2	DASHIELDS LOCK AND DAM
OHIO RIVER	1	EMSWORTH LOCK AND DAM
OHIO RIVER	24	GREENUP LOCKS AND DAM
OHIO RIVER	71	HANNIBAL LOCKS AND DAM
OHIO RIVER	77	JOHN T. MYERS LOCK & DAM
OHIO RIVER	52	LOCK AND DAM 52
OHIO RIVER	53	LOCK AND DAM 53
OHIO RIVER	41	MARKLAND LOCKS AND DAM
OHIO RIVER	42	MCALPINE LOCKS AND DAM
OHIO RIVER	3	MONTGOMERY LOCK AND DAM
OHIO RIVER	4	NEW CUMBERLAND LOCK AND DAM
OHIO RIVER	76	NEWBURGH LOCK AND DAM
OHIO RIVER	79	OLMSTED LOCKS AND DAM
OHIO RIVER	5	PIKE ISLAND LOCK AND DAM
OHIO RIVER	22	RACINE LOCKS AND DAM
OHIO RIVER	26	ROBERT C. BYRD LOCKS AND DAM
OHIO RIVER	78	SMITHLAND LOCK AND DAM
OHIO RIVER	72	WILLOW ISLAND LOCKS AND DAM
OKEECHOBEE WATERWAY	2	MOORE HAVEN LOCK
OKEECHOBEE WATERWAY	3	ORTONA LOCK AND DAM
OKEECHOBEE WATERWAY	5	PORT MAYACA LOCK
OKEECHOBEE WATERWAY	1	ST LUCIE LOCK AND DAM
OKEECHOBEE WATERWAY	4	W P FRKLIN LCK AND CTRL STRCT
RED RIVER	45	JOE D. WAGGONNER JR LOCK
RED RIVER	42	JOHN H. OVERTON
RED RIVER	41	LINDY CLAIBORNE BOGGS LOCK
RED RIVER	43	LOCK AND DAM 3
RED RIVER	44	RUSSELL B. LONG
ST. MARYS RIVER	1	ST. MARYS LOCK
SNAKE RIVER	1	ICE HARBOR LOCK AND DAM
SNAKE RIVER	3	LITTLE GOOSE LOCK AND DAM
SNAKE RIVER	4	LOWER GRANITE LOCK AND DAM
SNAKE RIVER	2	LOWER MONUMENTAL LOCK AND DAM
TENNESSEE RIVER	7	CHICKAMAUGA LOCK
TENNESSEE RIVER	9	FORT LOUDOUN LOCK
TENNESSEE RIVER	4	GEN JOS WHEELER LOCK
TENNESSEE RIVER	5	GUNTERSVILLE LOCK
TENNESSEE RIVER	1	KENTUCKY LOCK
TENNESSEE RIVER	6	NICKAJAC LOCK
TENNESSEE RIVER	2	PICKWICK LANDING LOCK
TENNESSEE RIVER	8	WATTS BAR LOCK
TENNESSEE RIVER	3	WILSON LOCK
TENNESSEE TOMBIGBEE WATERWAY	44	ABERDEEN LOCK AND DAM
TENNESSEE TOMBIGBEE WATERWAY	45	AMORY LOCK
TENNESSEE TOMBIGBEE WATERWAY	47	FULTON LOCK
TENNESSEE TOMBIGBEE WATERWAY	49	G.V. SONNY MONTGOMERY LOCK

Appendix B.6 – U.S. Locks
Source: U.S. Army Corps of Engineers Lock Performance Monitoring System

River Name	Lock No	Lock Name
TENNESSEE TOMBIGBEE WATERWAY	46	GLOVER WILKINS LOCK
TENNESSEE TOMBIGBEE WATERWAY	41	HOWELL HEFLIN LOCK AND DAM
TENNESSEE TOMBIGBEE WATERWAY	50	JAMIE WHITTEN LOCK AND DAM
TENNESSEE TOMBIGBEE WATERWAY	43	JOHN C. STENNIS LOCK AND DAM
TENNESSEE TOMBIGBEE WATERWAY	48	JOHN RANKIN LOCK
TENNESSEE TOMBIGBEE WATERWAY	42	TOM BEVILL LOCK AND DAM
WILLAMETTE RIVER	15	WILLAMETTE FALLS GUARD LOCK
WILLAMETTE RIVER	11	WILLAMETTE FALLS LOCKS 1 - 4
LAKE WASHINGTON SHIP CANAL	1	HIRAM M CHITTENDEN LOCKS

Appendix B.7 – Energy Information Administration 2013 Working and Net Available Shell Storage Capacity (September 2014)

Independent Statistics & Analysis
U.S. Energy Information Administration

Working and Net Available Shel Storage Capacity

September 2014

With Data as of September 30, 2013-Revised

Independent Statistics & Analysis
www.eia.gov

U.S. Department of Energy
Washington, DC 20585

Appendix B.7 – Energy Information Administration 2013 Working and Net Available Shell Storage Capacity (September 2014)

This report was prepared by the U.S. Energy Information Administration (EIA), the statistical and analytical agency within the U.S. Department of Energy. By law, EIA's data, analyses, and forecasts are independent of approval by any other officer or employee of the United States Government. The views in this report therefore should not be construed as representing those of the Department of Energy or other Federal agencies.

U.S. Energy Information Administration | Working and Net Available Shell Storage Capacity as of September 30, 2013 - Revised

Appendix B.7 – Energy Information Administration 2013 Working and Net Available Shell Storage Capacity (September 2014)

Working and Net Available Shell Storage Capacity

Working and Net Available Shell Storage Capacity is the U.S. Energy Information Administration's (EIA) report containing storage capacity data for crude oil, petroleum products, and selected biofuels. The report includes tables detailing working and net available shell storage capacity by type of facility, product, and Petroleum Administration for Defense District (PAD District). Net available shell storage capacity is broken down further to show the percent for exclusive use by facility operators and the percent leased to others. Crude oil storage capacity data are also provided for Cushing, Oklahoma, an important crude oil market center. Data are released twice each year near the end of May (data for March 31) and near the end of November (data for September 30).

In addition to storage capacity, the report includes stocks of crude oil, petroleum products, and selected biofuels. Storage capacity utilization rates are calculated as stocks divided by storage capacity. Storage capacity utilization rates are reported for refineries, bulk terminals and fuel ethanol plants, product pipelines, and crude oil tank farms.

Product pipeline storage capacities are limited to capacity of working and breakout tanks and underground caverns used for pipeline operations. Product pipeline storage capacity excludes capacity of actual pipelines. Stocks reported by pipeline operators include barrels held in pipelines (pipeline fill) as well as barrels held in tanks and underground caverns used for pipeline operations. March and September reports from pipeline operators include stocks held in tanks and underground caverns without pipeline fill. Stocks held in tanks and underground caverns are used to calculate utilization rates for pipeline storage capacity.

The situation of storage capacity at crude oil tank farms and tank farm stocks of crude oil is similar to product pipeline storage capacity and stocks. Crude oil tank farm storage capacity includes capacity of tanks and underground caverns but excludes pipeline fill capacity. Stocks reported monthly are a combination of barrels held in tank farms and pipeline fill. March and September reports include stocks held in tank farms without pipeline fill. Stocks held in tank farms are used for calculating the tank farm storage capacity utilization rate.

Appendix B.7 – Energy Information Administration 2013 Working and Net Available Shell Storage Capacity (September 2014)

Table 1. Working Storage Capacity by PAD District as of September 30, 2013
(Thousand Barrels)

Commodity	PAD Districts 1	2	3	4	5	U.S. Total	Ending Stocks	Utilization Rate[1]
Refineries								
Crude Oil	15,154	17,952	72,858	4,109	35,324	145,397	90,764	62%
Fuel Ethanol	151	142	257	114	79	743	482	65%
Natural Gas Plant Liquids and Liquefied Refinery Gases[2]	1,149	10,996	24,832	581	2,219	39,777	19,539	49%
Propane/Propylene (dedicated)[3]	405	3,636	3,886	54	199	8,180	4,104	NA
Motor Gasoline (incl. Motor Gasoline Blending Components)	9,028	26,658	53,042	6,813	27,264	122,805	68,645	56%
Distillate Fuel Oil	5,674	14,323	28,164	3,481	10,529	62,171	31,567	51%
Kerosene and Kerosene-type Jet Fuel	1,811	3,704	9,954	598	6,864	22,931	12,311	54%
Residual Fuel Oil	1,489	2,549	9,145	507	6,621	20,311	9,574	47%
Asphalt and Road Oil	2,323	8,123	4,975	2,099	2,101	19,621	9,411	48%
All Other[4]	14,016	29,587	89,669	7,001	38,444	178,717	92,157	52%
Total[5]	50,795	114,034	292,896	25,303	129,445	612,473	334,450	55%
Bulk Terminals (Including Fuel Ethanol Plants)[6]								
Fuel Ethanol	13,421	13,535	5,556	417	4,228	37,157	15,503	42%
Natural Gas Plant Liquids and Liquefied Refinery Gases[2]	10,551	59,399	297,345	19	7,991	375,305	140,050	37%
Propane/Propylene (dedicated)[3]	7,688	24,318	82,429	6	2,852	117,293	52,620	NA
Motor Gasoline (incl. Motor Gasoline Blending Components)	79,506	50,301	56,369	3,906	22,569	212,651	101,067	48%
Distillate Fuel Oil	81,724	35,097	29,090	2,477	14,378	162,766	67,054	41%
Kerosene and Kerosene-type Jet Fuel	13,126	6,097	6,140	553	8,131	34,047	17,796	52%
Residual Fuel Oil	24,279	1,581	36,926	-	4,126	66,912	26,011	39%
Asphalt and Road Oil	10,835	14,171	4,933	2,046	3,137	35,122	10,965	31%
All Other[7]	10,868	4,103	17,804	81	3,447	36,303	9,321	26%
Total	244,310	184,284	454,163	9,499	68,007	960,263	387,767	40%
Product Pipelines								
Fuel Ethanol	-	-	-	-	-	-	-	-
Natural Gas Plant Liquids and Liquefied Refinery Gases[2]	459	3,535	2,772	-	-	6,766	2,066	31%
Propane/Propylene (dedicated)[3]	-	1,826	745	-	-	2,571	224	NA
Motor Gasoline (incl. Motor Gasoline Blending Components)	11,679	9,490	13,514	327	1,031	36,041	16,127	45%
Distillate Fuel Oil	7,709	5,722	12,187	331	495	26,444	10,509	40%
Kerosene and Kerosene-type Jet Fuel	3,379	2,352	4,419	-	336	10,486	5,467	52%
All Other[8]	-	20	60	19	2	101	81	80%
Total	23,226	21,119	32,952	677	1,864	79,838	34,250	43%
Crude Tank Farms								
Crude Oil (Excluding SPR)	2,799	112,535	201,703	11,924	28,050	357,011	169,197	47%
Cushing, Oklahoma	–	66,996	–	–	–	66,996	31,952	48%
Strategic Petroleum Reserve	-	-	727,000	-	-	727,000	695,033	96%

[1] Utilization rate for refineries, bulk terminals and fuel ethanol plants equals stocks divided by storage capacity.
Utilization rates for product pipelines and crude tank farms equals stocks divided by storage capacity of tanks and underground caverns. It does not include pipeline fill.
[2] Includes storage capacity for ethane, ethylene, propane, propylene, normal butane, butylene, isobutane, isobutylene, and pentanes plus stored separately or in mixes.
[3] Dedicated Propane/Propylene storage capacity includes storage capacity for propane and propylene stored separately. It excludes capacity for storing propane and propylene as a component of mixed natural gas plant liquids and liquefied refinery gases. Ending stocks are provided for comparison, but storage capacity utilization is not calculated because ending stocks include propane and propylene stored in mixes as well as in dedicated storage.
[4] All Other storage capacity at refineries includes oxygenates and renewable fuels (except fuel ethanol), other hydrocarbons, unfinished oils, aviation gasoline, aviation gasoline blending components, special naphthas, lubricants, petrochemical feedstocks, wax, and miscellaneous products.
[5] Excludes petroleum coke.
[6] Includes ending stocks of fuel ethanol at ethanol plants. Excludes ending stocks of pentanes plus, MTBE, ETBE, other oxygenates, finished motor gasoline and motor gasoline blending components at fuel ethanol plants.
[7] All Other storage capacity at terminals includes oxygenates and renewable fuels (except fuel ethanol), unfinished oils, aviation gasoline, aviation gasoline blending components, special naphthas, lubricants, wax, and miscellaneous products.
[8] All Other storage capacity at pipelines includes oxygenates and renewable fuels (except fuel ethanol), aviation gasoline, residual fuel oil and miscellaneous products.

Source: Energy Information Administration, Form EIA-810 "Monthly Refinery Report", Form EIA-812 "Monthly Product Pipeline Report", Form EIA-813 "Monthly Crude Oil Report", Form EIA-815 "Monthly Bulk Terminal and Blender Report", Form EIA-819 "Monthly Oxygenate Report"

Appendix B.7 – Energy Information Administration 2013 Working and Net Available Shell Storage Capacity (September 2014)

Table 2. Net Available Shell Storage Capacity by PAD District as of September 30, 2013
(Thousand Barrels)

Commodity	PAD Districts 1		2		3		4		5		U.S. Total	
	In Operation	Idle[1]	In Operation	Idle[1]	In Operation	Idle[1]	In Operation	Idle[1]	In Operation	Idle[1]	In Operation	Idle[1]
Refineries												
Crude Oil	17,334	831	21,870	1,721	86,629	3,468	4,655	174	39,839	1,230	170,327	7,424
Fuel Ethanol	174	-	175	1	289	-	134	-	92	-	864	1
Natural Gas Plant Liquids and Liquefied Refinery Gases[2]	1,267	23	11,599	382	28,775	78	641	19	2,412	23	44,694	525
Propane/Propylene (dedicated)[3]	451	1	4,007	3	3,967	4	58	3	228	-	8,711	11
Motor Gasoline (Incl. Motor Gasoline Blending Components)	10,348	1,491	30,706	1,380	63,154	2,750	7,887	115	31,460	112	143,555	5,848
Distillate Fuel Oil	6,500	571	16,012	815	31,706	841	3,841	115	11,774	106	69,833	2,448
Kerosene and Kerosene-type Jet Fuel	2,046	82	4,121	167	11,452	473	658	-	7,773	270	26,050	992
Residual Fuel Oil	1,692	165	3,007	143	10,560	717	548	7	7,394	316	23,201	1,348
Asphalt and Road Oil	2,554	-	9,127	512	5,748	300	2,304	88	2,226	314	21,959	1,214
All Other[4]	16,093	410	33,570	647	105,147	4,682	7,781	167	43,806	1,091	206,397	6,997
Total[5]	58,008	3,573	130,187	5,768	343,460	13,309	28,449	685	146,776	3,462	706,880	26,797
Bulk Terminals (Including Fuel Ethanol Plants)												
Fuel Ethanol	15,468	37	15,617	124	6,267	4	475	-	4,805	8	42,632	173
Natural Gas Plant Liquids and Liquefied Refinery Gases[2]	11,388	49	68,870	3,602	341,562	5,991	25	-	8,556	-	430,401	9,642
Propane/Propylene (dedicated)[3]	8,296	49	27,684	2,443	94,903	-	9	-	3,040	-	133,932	2,492
Motor Gasoline (Incl. Motor Gasoline Blending Components)	90,374	2,170	58,805	964	65,649	1,737	4,422	-	25,952	354	245,202	5,225
Distillate Fuel Oil	89,211	2,443	39,137	236	32,957	812	2,723	11	16,059	85	180,087	3,587
Kerosene and Kerosene-type Jet Fuel	14,636	94	6,782	141	6,797	326	635	-	8,963	80	37,813	641
Residual Fuel Oil	25,861	1,136	1,714	4	38,478	140	-	-	4,705	412	70,758	1,692
Asphalt and Road Oil	11,556	215	15,195	585	5,503	23	2,225	-	3,433	4	37,912	827
All Other[6]	11,984	694	4,607	41	19,714	610	91	-	3,885	10	40,281	1,355
Total	270,478	6,838	210,727	5,697	516,927	9,643	10,596	11	76,358	953	1,085,086	23,142
Product Pipelines												
Fuel Ethanol	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas Plant Liquids and Liquefied Refinery Gases[2]	465	-	3,812	-	2,950	-	-	-	-	-	7,227	-
Propane/Propylene (dedicated)[3]	-	-	1,901	-	776	-	-	-	-	-	2,677	-
Motor Gasoline (Incl. Motor Gasoline Blending Components)	14,128	1,791	10,786	979	18,030	1,190	362	-	1,160	-	44,466	3,960
Distillate Fuel Oil	8,655	898	6,480	420	14,223	575	386	-	565	-	30,309	1,893
Kerosene and Kerosene-type Jet Fuel	4,109	145	2,695	107	5,396	339	-	-	384	-	12,584	591
All Other[7]	-	-	24	-	66	-	20	2	4	-	114	2
Total	27,357	2,834	23,797	1,506	40,665	2,104	768	2	2,113	-	94,700	6,446
Crude Tank Farms												
Crude Oil (Excluding SPR)	3,276	-	133,798	4,310	233,943	3,243	14,500	124	34,250	271	419,767	7,948
Cushing, Oklahoma	–	–	77,275	2,691	–	–	–	–	–	–	77,275	2,691
Strategic Petroleum Reserve	-	-	-	-	727,000	-	-	-	-	-	727,000	-

[1] Idle tanks and caverns are those that were not capable of being used to hold stocks on the report date, but could be placed in operation within 90 days of the report date after maintenance or repair.
[2] Includes storage capacity for ethane, ethylene, propane, propylene, normal butane, butylene, isobutane, isobutylene, and pentanes plus stored separately or in mixes.
[3] Dedicated Propane/Propylene storage capacity includes storage capacity for propane and propylene stored separately. It excludes the propane component of mixed natural gas plant liquids and liquefied refinery gases storage.
[4] All Other storage capacity at refineries includes oxygenates and renewable fuels (except fuel ethanol), other hydrocarbons, unfinished oils, aviation gasoline, aviation gasoline blending components, special naphthas, lubricants, petrochemical feedstocks, wax, and miscellaneous products.
[5] Excludes petroleum coke.
[6] All Other storage capacity at terminals includes oxygenates and renewable fuels (except fuel ethanol), unfinished oils, aviation gasoline, aviation gasoline blending components, special naphthas, lubricants, wax, and miscellaneous products.
[7] All Other storage capacity at pipelines includes oxygenates and renewable fuels (except fuel ethanol), aviation gasoline, residual fuel oil and miscellaneous products.

Source: Energy Information Administration, Form EIA-810 "Monthly Refinery Report", Form EIA-812 "Monthly Product Pipeline Report", Form EIA-813 "Monthly Crude Oil Report", Form EIA-815 "Monthly Bulk Terminal and Blender Report", Form EIA-819 "Monthly Oxygenate Report"

EIA/Working and Net Available Shell Storage Capacity as of September 30, 2013 - Revised

Appendix B.7 – Energy Information Administration 2013 Working and Net Available Shell Storage Capacity (September 2014)

Table 3. Net Available Shell Storage Capacity of Terminals and Tank Farms as of September 30, 2013[1]
(Thousand Barrels, Except Where Noted)

Commodity	PAD Districts 1	2	3	4	5	U.S. Total
Crude Oil (Excluding SPR)						
Capacity in Operation	3,276	133,798	233,943	14,500	34,250	419,767
Percent Exclusive Use[2]	70%	38%	69%	73%	70%	59%
Percent Leased to Others	30%	62%	31%	27%	30%	41%
Cushing, Oklahoma						
Capacity in Operation	--	77,275	--	--	--	77,275
Percent Exclusive Use[2]	--	15%	--	--	--	15%
Percent Leased to Others	--	85%	--	--	--	85%
Fuel Ethanol						
Capacity in Operation	15,229	6,169	5,839	345	4,609	32,191
Percent Exclusive Use[2]	64%	56%	47%	93%	64%	60%
Percent Leased to Others	36%	44%	53%	7%	36%	40%
Natural Gas Plant Liquids and Liquefied Refinery Gases[3]						
Capacity in Operation	11,388	68,870	341,562	25	8,556	430,401
Percent Exclusive Use[2]	71%	22%	12%	100%	60%	16%
Percent Leased to Others	29%	78%	88%	0%	40%	84%
Propane/Propylene (dedicated)[4]						
Capacity in Operation	8,296	27,684	94,903	9	3,040	133,932
Percent Exclusive Use[2]	71%	20%	8%	100%	55%	16%
Percent Leased to Others	29%	80%	92%	0%	45%	84%
Motor Gasoline (incl. Motor Gasoline Blending Components)						
Capacity in Operation	90,374	58,805	65,649	4,422	25,952	245,202
Percent Exclusive Use[2]	65%	75%	30%	90%	49%	56%
Percent Leased to Others	35%	25%	70%	10%	51%	44%
Distillate Fuel Oil						
Capacity in Operation	89,211	39,137	32,957	2,723	16,059	180,087
Percent Exclusive Use[2]	63%	64%	39%	89%	46%	58%
Percent Leased to Others	37%	36%	61%	11%	54%	42%
Kerosene and Kerosene-type Jet Fuel						
Capacity in Operation	14,636	6,782	6,797	635	8,963	37,813
Percent Exclusive Use[2]	59%	71%	32%	34%	45%	52%
Percent Leased to Others	41%	29%	68%	66%	55%	48%
Residual Fuel Oil						
Capacity in Operation	25,861	1,714	38,478	-	4,705	70,758
Percent Exclusive Use[2]	38%	48%	5%	-	28%	19%
Percent Leased to Others	62%	52%	95%	-	72%	81%
Asphalt and Road Oil						
Capacity in Operation	11,556	15,195	5,503	2,225	3,433	37,912
Percent Exclusive Use[2]	45%	77%	55%	63%	76%	63%
Percent Leased to Others	55%	23%	45%	37%	24%	37%
All Other[5]						
Capacity in Operation	11,984	4,607	19,714	91	3,885	40,281
Percent Exclusive Use[2]	28%	66%	10%	98%	66%	27%
Percent Leased to Others	72%	34%	90%	2%	34%	73%
Total						
Capacity in Operation	273,515	335,077	750,442	24,966	110,412	1,494,412
Percent Exclusive Use[2]	59%	47%	33%	76%	57%	43%
Percent Leased to Others	41%	53%	67%	24%	43%	57%

[1] Includes storage capacity of terminals and tank farms. Excludes storage capacity of refineries, fuel ethanol plants, and pipelines.
[2] Percent exclusive use is that portion of capacity in operation that is for the exclusive use of the operating company.
[3] Includes storage capacity for ethane, ethylene, propane, propylene, normal butane, butylene, isobutane, isobutylene, and pentanes plus stored separately or in mixes.
[4] Dedicated Propane/Propylene storage capacity includes storage capacity for propane and propylene stored separately. It excludes the propane component of mixed natural gas plant liquids and liquefied refinery gases storage.
[5] All Other storage capacity at terminals includes oxygenates and renewable fuels (except fuel ethanol), unfinished oils, aviation gasoline, aviation gasoline blending components, special naphthas, lubricants, wax, and miscellaneous products.

Source: Energy Information Administration, Form EIA-813 "Monthly Crude Oil Report", Form EIA-815 "Monthly Bulk Terminal and Blender Report"

EIA/Working and Net Available Shell Storage Capacity as of September 30, 2013 - Revised

Appendix C.1 – 2013 U.S. Natural Gas Plants

PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
I	B	PA	Whitetail Plant	Whitesville Gas Processing	Elkhorn Gas Processing	5	4.5	1170	0	1400
		PA	Kane Plant	Elkhorn Holdings	Elkhorn Gas Processing LLC	10	9	1185	0	2900
		PA	Roystone Plant	Elkhorn Holdings	Elkhorn Gas Processing LLC	9	7.5	1200	0	2900
		PA	Lewis Run Plant	LRGPP, LP	Elkhorn Gas Processing	6	5	1300	0	2140
		PA	Lafayette	MSL Oil & Gas	MSL Oil & Gas	2	1.3	1360	0	700
		PA	Grunder Plant	KCS Energy, Inc	KCS Energy, Inc.	2	0.75	1360	0	1428
		PA	Keystone Plant	Elkhorn Holdings	Elkhorn Gas Processing LLC	10	7.5	1250	0	1950
		PA	Robin Hill Plant	Laurel Mountain Midstream, LLC	Laurel Mountain Midstream, LLC	18	5	1328	0	1215
		PA	Stewart Plant	Laurel Mountain Midstream, LLC	Laurel Mountain Midstream, LLC	18	5	1320	0	1821
		PA	Houston Plant	MarkWest Liberty Midstream & Resources	MarkWest Liberty Midstream & Resources	289.25	176.26	1256.26	0	77.02
		PADD IB Subtotal				**369**	**222**	**1,273**		**16,531**
	C	FL	St. Regis Treatment Facility and Jay Gas Plant	Quantum Resources A1, LP	Quantum Resources Management, LLC	90	59	350	0	11428
		WV	West Union Gas Plant	Dominion Transmission, Inc.	Dominion Transmission, Inc.	15	10	1220	0	1885

Appendix C.1 – 2013 U.S. Natural Gas Plants

PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
I	C	WV	Cobb	Markwest Energy Appalacia, LLC	Markwest Energy Appalacia, LLC	65	35	1240.005	0	0
		WV	Copley Gas Plant	Dominion Transmission, Inc.	Dominion Transmission, Inc.	35	28	1180	0	2514
		WV	Lightburn Extraction Plant	Dominion Transmission, Inc.	Dominion Transmission, Inc.	44	35	1178	0	5028
		WV	Holden	Chesapeake Appalachia LLC	Greystar Corporation	11	5.5	1269	0	2853
		WV	Smokehouse	Chesapeake Operating Inc.	Chesapeake Operating Inc.	15	5.4	1220	0	1429
		WV	MarkWest Majorsville Cryo Plant	MarkWest Energy	MarkWest	270	185	1250	0	0
		WV	Kermit	MarkWest Hydrocarbons	Greystar Corporation	40	23.5	1276	0	714
		WV	Hurricane Gas Processing Plant	East Resources	Elkhorn Gas Processing	10	6	1260	0	2900
		WV	Kenova	Markwest Energy Appalachia, LLC	Markwest Energy Appalachia, LLC	160	108	1238.07	0	0
		WV	Hastings Extraction Plant	Dominion Transmission, Inc.	Dominion Transmission, Inc.	180	160	1241	0	0
		PADD IC Subtotal				935	660	1,160	-	28,751
	PADD I Subtotal					1,304	882	1,211	-	45,282
II	East	KY	Oneida Processing Facility	Vinland Energy LLC	Vinland Energy LLC	12	8	1200		1812.79

Appendix C.1 – 2013 U.S. Natural Gas Plants

PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
II	East	KY	Langley Processing Plant	MarkWest Energy Appalachia, LLC	MarkWest Energy Appalachia, LLC	170	143	1294.028	0	4897
		KY	Boldman	MarkWest Energy Appalachia, LLC	MarkWest Energy Appalachia, LLC	70	37	1259.158	0	0
		MI	Fraser 8	BreitBurn Operating, L.P.	BreitBurn Operating, L.P.	1.6	1.6	1130	0	1332
		MI	Monitor 11	BreitBurn Operating, L.P.	BreitBurn Operating, L.P.	0.09	0.09	1130	0	1332
		MI	Beaver Creek	BreitBurn Operating, L.P.	BreitBurn Operating, L.P.	1.7	1.7	1530	0	714
		MI	Reno Gas Plant	Whiting Oil and Gas Corporation	Whiting Oil and Gas Corporation	7.5	0.39	1300	0	1429
		MI	Rosebush Plant	Summit Petroleum Corp	Summit Petroleum Corp	1.6	0.81	1410	0	760
		MI	Kalkaska Gas Processing	Merit Energy Company	Merit Energy Company	425	42.75	1152	0	42000
		MI	Hartland 36 Processing Plant	Merit Energy Company	Merit Energy Company	8	0.79	1313	0	714
		MI	Lenox 36	Merit Energy Company	Merit Energy Company	0.1	0.03	1333	0	286
		MI	Aztec Manistee	Aztec Producing Company, Inc.	Aztec Producing Company, Inc.	5	0.26	1339	0	1429
		MI	West Branch Gas Plant	Whiting Oil and Gas Corporation	Whiting Oil and Gas Corporation	9.5	4.6	1302	0	4714
		MI	Sherman 35	BreitBurn Operating, L.P.	BreitBurn Operating, L.P.	1.8	1.8	1220	0	714
		MI	Goose Lake Gas Plant	Dart Oil & Gas Corp	Dart Oil & Gas Corp	2	0.43	1127	0	607

Appendix C.1 – 2013 U.S. Natural Gas Plants

PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
II	East	MI	Marion Gas Plant	Dart Oil & Gas	Dart Oil & Gas	5	0.73	1150	0	607
		MI	Mentor Plant	Merit Energy Company	Merit Energy Company	9.75	3.655	1164	0	1428
		OH	Churchtown Compressor	Cobra Pipeline Company	Cobra Pipeline Company	2	1.4	1225	0	1100
		PADD II East Subtotal				**733**	**249**	**1,254**	**-**	**65,876**
	KS/OK	KS	Jayhawk Gas Plant	Linn Energy	Linn Operating	450	178	1009	0	0
		KS	Satanta Gas Plant	Pioneer Natural Resources	Pioneer Natural Resources	220	115	1040	0	2140
		KS	Spivey	Atlas KS Energy LLC	Pioneer Exploration, LLC	22	15	1197	0	7620
		KS	Kingman Gas Plant	Lumen Midstream Partnership LLC	Lumen Midstream Partnership LLC	26	19.09	1130	0	380
		KS	Scott City Plant	Oneok Field Services	Oneok Field Services	200	42	920	0	1400
		KS	Cheney Plant	Oneok Field Services	Oneok Field Services	100	48	1120	0	0
		KS	National Helium	National Helium	DCP Midstream	800	580	1080	0	4000
		OK	Eagle Chief Plant	Eagle Chief Midstream, LLC	Eagle Chief Midstream, LLC	28	22	1163	0	1480
		OK	Camrick Gas Plant	Camrick Gas Processing	Camrick Gas Processing	10	5		0	500
		OK	Beaver Gas Processing	PVR Partners	PVR Midstream	100	100	1178	0	2200
		OK	Mocane Station	Regency Field Services LLC	Energy Transfer Company	55	35	1182	0	714
		OK	Elk City Gas Plant	Enbridge G & P		130	120	1175	0	1070
		OK	Sweetwater Plant	Enbridge G & P		180	175	1175	0	2140

Appendix C.1 – 2013 U.S. Natural Gas Plants

PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
II	KS/OK	OK	Matli Plant	Hiland Partners	Hiland Partners LP	25	12	1140	0	227
		OK	Cyril	DCP Midstream	DCP Midstream	15	13	1080	25	600
		OK	Binger	Mustang Ventures CO	Mustang Gas Products, LLC	15	8	1000	0	0
		OK	Binger	Slawson Exploration	Binger Operations LLC	16	15		0	190
		OK	Cana Plant	Devon Gas Services	DevonGas Services	200	182.05	1110	0	6095
		OK	Calumet	Enogex Products	Enogex Products	250	132.99	1150	0	5952
		OK	Fox Plant	DCP Midstream	DCP Midstream	23	20	1250	0	1450
		OK	Tupelo Gas Processing Plant	Cardinal Arkoma Midstream LLC	Cardinal Arkoma Midstream LLC	120	110	1200	0	4700
		OK	Coalgate Plant	CenterPoint Energy Field Services, LLC	CenterPoint Energy Field Services, LLC	15	13	1134	0	715
		OK	Milfay Plant	Scissortail Energy LLC	Scissortail Energy LLC	15	8.4	1169.2	0	950
		OK	Leedey Compressor Station and Refrigeration Plant	CenterPoint Energy Gas Transmission Company, LLC		7.5	4	1216.39	0	619.05
		OK	Clinton	Enogex Products LLC	Enogex Products LLC	120	110.52	1240	0	0
		OK	South Canadian	Enogex Products LLC	Enogex Products LLC	200	176.09	1180	0	0
		OK	Thomas	Enogex Products LLC	Enogex Products LLC	150	126.79	1150	0	0

Appendix C.1 – 2013 U.S. Natural Gas Plants

PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
II	KS/OK	OK	Arapahoe Plant (I and II)	MarkWest Oklahoma Gas Company, LLC	MarkWest Oklahoma Gas Company, LLC	225	225	1205	0	0
		OK	Custer Plant	Oneok Field Services	Oneok Field Services	80	74	1150	0	550
		OK	Foss Compressor Station	Seminole Gas Company, LLC	Seminole Gas Company, LLC	5.6	4.5	1100	0	428
		OK	Nine Mile Gas Plant	Enbridge G & P	Enbridge G & P	140	120	1200	0	1214
		OK	Leedey Plant	Oneok Field Services	Oneok Field Services	50	16	1180	0	2850
		OK	Rodman	Mustang Ventures CO	Mustang Gas Products, LLC	70	63	1190	0	177
		OK	Elmore City	Cimarex Energy Co.	Carrera Gas Companies LLC	26	16.5	1249.4	0	106
		OK	Maysville Plant	Oneok Field Services	Oneok Field Services	135	110	1295	0	3230
		OK	Chitwood	DCP Midstream	DCP Midstream	85	80	1225	0	4000
		OK	Mustang	DCP Midstream	DCP Midstream	34	32	1160	0	1667
		OK	Cox City	Enogex Products LLC	Enogex Products LLC	180	121.2	1140	0	3333
		OK	Amber Gas Plant	Lumen Midstream Partnership LLC	Lumen Midstream Partnership LLC	21	11.75	1130	0	380
		OK	Minco Plant	Superior Pipeline Company LLC	Superior Pipeline Company LLC	12	6	1110	1	0
		OK	Nash	SemGas, LP	SemGas, LP	20	15	1147	0	200

Appendix C.1 – 2013 U.S. Natural Gas Plants

PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
II	KS/OK	OK	Northridge Gas Plant	Devon Gas Services LP	Devon Gas Services LP	200	147.86	1140	0	5714
		OK	Wetumka	Enogex Products LLC	Enogex Products LLC	60	34.54	1150	0	2857
		OK	Kingfisher	DCP Midstream	DCP Midstream	180	135	1200	0	3600
		OK	Okarche Plant	DCP Midstream	DCP Midstream	165	150	1165	0	3095
		OK	Dover-Hennessey Gas Plant	Mustang Gas Products, LLC	Mustang Gas Products, LLC	40	25	1000	0	600
		OK	Harrah Plant	Scissortail Energy LLC	Scissortail Energy LLC	40	15	1210	0	29525
		OK	Crescent	PVR Cherokee Gas Processing LLC		25	20	1198	0	0
		OK	Cashion Plant	Superior Pipeline Company LLC	Superior Pipeline Company LLC	51	18	1340	1	250
		OK	Chaney Dell Plant	Atlas Pipeline Mid-Continent LLC	Atlas Pipeline Mid-Continent LLC	30	28	1150	0.2	1532
		OK	Madill Gas Plant	Madill Gas Processing Co, LLC	Carrera Operating Co, LLC	50	22.93	1200	0	3800
		OK	Paden Plant	Scissortail Energy LLC	Scissortail Energy LLC	100	74.1	1235	0	1550
		OK	Southern Dome Plant	Scissortail Energy LLC	Scissortail Energy LLC	18	9.86	1170.5	0	3500
		OK	Osage Gas Plant	Lumen Midstream Partnership LLC	Lumen Midstream Partnership LLC	12	6.49	1330	0	1285
		OK	Osage Hills Gas Plant	Osage Hills Pipeline Company	Carrera Operating Co, LLC	5	4	1200	0	500

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PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
II	KS/OK	OK	Burbank Plant	Scissortail Energy LLC	Scissortail Energy LLC	10	6	1175	0	1700
		OK	Perkins Plant	Superior Pipeline Company LLC	Superior Pipeline Company LLC	10	4	1330	1	250
		OK	Mehan Gas Plant	Tag Petroleum Inc	Tag Petroleum Inc	3	1.5	1250	0	714
		OK	Tecumseh Gas Plant	Enerfin Resources Company	Enerfin Resources I LP	16	11.49	1350	0	1430
		OK	Atlas Pipeline Mid-Continent LLC. Velma Gas Plant	Atlas Pipeline Partners	Atlas Pipeline Mid-Continent LLC	100	100	1228	0	3729
		OK	Stephens Plant	Oneok Field Services	Oneok Field Services	30	26	1167	0	175
		OK	Sholem Alechem	DCP Midstream	DCP Midstream	60	55	1235	0	0
		OK	Timberland Gathering & Proc.			60	15	1030	0	1137
		OK	Dry Trail	Whiting Oil & Gas Corporation	Whiting Oil & Gas Corporation	100	91	179.8	0	714
		OK	Glenpool (Creek) Plant	Copano/Scissortail Energy LLC	Copano/Scissortail Energy LLC	25	6.7	1146.1	0	1500
		OK	Canute	Enogex Products LLC	Enogex Products LLC	60	51.17	1180	0	0
		OK	Roger Mills	Enogex Products LLC	Enogex Products LLC	100	88	1180	0	0
		OK	Panther Creek Plant	Oneok Field Services	Oneok Field Services	78	72	1130	0	750
		OK	Waynoka Plant	Atlas Pipeline Mid-Continent LLC	Atlas Pipeline Mid-Continent LLC	200	199	1136	0.5	0
		OK	Hopeton	SemGas, LP	SemGas, LP	35	35	1134	0	350

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PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
II	KS/OK	OK	Chester Plant	Atlas Pipeline Mid-Continent LLC	Atlas Pipeline Mid-Continent LLC	30	29	1120	0.2	0
		OK	Cimarron	DCP Midstream	DCP Midstream	65	60	1100	0	1906
		OK	Mooreland	DCP Midstream	DCP Midstream	130	100	1180	0	4117
		OK	Woodward Gas Plant	Oneok Partners	Oneok Partners	75	57	1161	0	1500
		PADD II KS/OK Subtotal				**6,739**	**4,980**	**1,152**	**29**	**141,057**
	North	IL	Aux Sable Liquid Products, Inc.	Enbridge, Inc.	Aux Sable Liquid Products, Inc.	2100	1594	1090	0	200000
		TN	Rogersville Cryogenic Plant	Seminole Gas Company, LLC	Seminole Gas Company, LLC	25	19	1200	0	2857
		PADD II North Subtotal				2,125	1,613	1,145	-	202,857
	West	ND	Norse	Hiland Partners	Hiland Partners	25	16	1450	0	290000
		ND	Watford City	Hiland Partners	Hiland Partners	85	30	1450	0	1620000
		ND	Little Knife Plant	Petro-Hunt LLC	Petro-Hunt LLC	22	15	1400	0	10000
		ND	Badlands	Hiland Partners, LP	Hiland Partners, LP	40	21	306	0	6690
		ND	Lignite Gas Plant	Oneok Rockies Midstream	Oneok Rockies Midstream	12	5.5	1380	0	10000
		ND	Ambrose Gas Plant	Sterling Energy Investments LLC	Sterling Energy Investments LLC	0.7	0.41	1482	0	428.57
		ND	Garden Creek	Oneok Rockies Midstream	Oneok Partners	100	95	1465	0	6033
		ND	Little Missouri	Saddle Butte Pipeline, LLC	Saddle Butte Pipeline, LLC	30	11.54	1400	0	7238
		ND	Red Wing Creek Gas Plant	True Oil LLC	True Oil LLC	5	0.27	1192	0	4386

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PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
II	West	ND	Robinson Lake Gas Plant	Whiting Oil and Gas Corporation	Whiting Oil and Gas Corporation	60	48	1550	0	20885
		ND	Marmarth Plant	Oneok Rockies Midstream	Oneok Rockies Midstream	8.5	7.2		0	2857
		ND	Tioga Gas Plant	Hess Corporation	Hess Corporation	110	85	1300	0	50000
		ND	Nesson Plant	Nesson Gathering System LLC	Nesson Gathering System LLC	9	7.52	1476	0	3986
		PADD II West Subtotal				507	342	1,321	0	2,032,504
	PADD II Subtotal					10,104	7,184	1,189	29	2,442,293
III	GCLA	AL	Womack Hill Gas Plant	Pruet Production Co	Pruet Production Co	2	0.66	1381	0	3899
		AL	Castleberry Plant		Gas Processors, Inc	9.5	8.5	1427	0	2850
		AL	North Beach Plant	Plains Gas Solutions LLC	Plains Gas Solutions LLC	6.5	4.5	1350	0	1000
		AL	Atmore Plant	American Midstream (Mississippi), LLC	American Midstream	3	1.15	1218.2	0	428.6
		AL	Big Escambia Creek	Escambia Operating Company, LLC	Eagle Rock Energy G & P, LLC	50	48	900	0	34000
		AL	Dogwood Oaks Plant	Plains Gas Solutions	CDM MAX, LLC	4	4	1000	0	1000
		AL	Lufkin Plant	Hilcorp Energy Company	Hilcorp Energy Company	5	1	1400	0	1000

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PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
III	GCLA	AL	Chunchula Gas Plant	Chevron Corporation	Chevron Corporation	40	15.6	1079	0	15833
		AL	Mobile Bay Processing	DCP Midstream	DCP Midstream	300	185	1141	0	0
		AL	Hatters Pond Gas Plant	Four Star Oil and Gas Company	Chevron Corporation	60	20.58	1299.56	0	16317
		AL	Yellowhammer Gas Plant	W&T Offshore Inc.	W&T Offshore Inc.	200	65	1095	0	7142
		AL	Williams Mobile Bay Processing Plant	Williams Field Services		690	322	1099	0	0
		AL	Wildfork Plant	American Midstream (Mississippi), LLC	American Midstream	0.5	0.22	1397.9	0	2150.8
		AL	Monroeville Plant	Palmer Petroleum Inc	Palmer Petroleum Inc	2	0.225	1200	0	2142
		AL	Gordo BWB Compressor & Processing Plant	Samson Resources	Samson Resources	5	4	1120	0	714
		AL	Chatom Plant		Quantum Resources Management, LLC	25	13.8	116.5	0	7650
		AR	Dorcheat Plant 1	Bonanza Creek Energy, Inc.	Bonanza Creek Energy Resources LLC	12	12	1152	0	2286
		AR	McKamie Gas Plant	Bonanza Creek Energy, Inc.	Bonanza Creek Energy Resources LLC	12	11	1152	0	4133

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PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
III	GCLA	LA	Acadia Gas Plant	Targa Midstream Services, LLC	Targa Midstream Services, LLC	80	19.8	1073	0	0
		LA	Eunice Plant		Crosstex Processing Services, LLC	500	340	1036	0	66577
		LA	Blue Water Gas Plant	Crosstex Energy	Crosstex Processing Services, LLC	350	160	1020	0	750
		LA	Indian Village Plant	JP Oil Company, LLC	JP Oil Company, LLC	4.5	1.8	1120	0	714
		LA	Castor Creek Plant	Unit Petroleum	Unit Petroleum	1.5	0.7	1000		700
		LA	Neale	Texas Petroleum Investment Company	Texas Petroleum Investment Company	6	4	1100	0	1140
		LA	Ada Plant	DCP Midstream	DCP Midstream	45	45	1080	0	714
		LA	Elm Grove Plant	CenterPoint Energy Field Services, LLC	CenterPoint Energy Field Services, LLC	2	1.5	1047	0	310
		LA	Sligo Processing Facility	CenterPoint Energy Field Services, LLC	CenterPoint Energy Field Services, LLC	230	230	1059	0	8000
		LA	Rocky Mount	Devon Energy	Devon Energy	2	1	1126	0	429
		LA	Elm Grove Plant	Regency Field Services LLC	Energy Transfer Company	200	155	1030	0	2700
		LA	Rocky Mount Gas Plant	Samson Resources	Samson Contour Energy	1	0.5	1050	0	357

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PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
III	GCLA	LA	Samson Benton Plant	Samson Resources	Samson Contour Energy	4	1	1108	0	1000
		LA	Vivian Gas Processing Plant	Caruthers Producing Co Inc	Caruthers Producing Co Inc	2	0.25	1025	0	285
		LA	Caspiana Plant	CenterPoint Energy Field Services, LLC	CenterPoint Energy Field Services, LLC	15	15	1051	0	715
		LA	Plain Dealing JT Plant	Cypress Oil and Gas	Petro-Chem Operating Co Inc	0.5	0.25	1100	0	285
		LA	Grayson Gas Plant	Grayson LLC	Petro-Chem Operating Co Inc	2.5	1.7	1125	0	700
		LA	Lake Charles Gas Plant	Copano Processing Louisiana, LLC	Copano Processing Louisiana, LLC	200	114	1022	0	112
		LA	Gillis Gas Plant	Targa Midstream Services, LLC	Targa Midstream Services, LLC	180	156.06	1113	0	11280
		LA	Grand Cheniere	Plains Gas Solutions, LLC	Plains Gas Solutions, LLC	450	200	1050	0	300
		LA	Cameron Meadows Gas Plant	PSI Midstream	PSI Midstream	275	271	1056.4	0	0
		LA	Barracuda Gas Plant	Targa Resources	Targa Resources	200	126	1058	0	98
		LA	Lowry Gas Plant	Targa Resources	Targa Resources	240	180	1055	0	0
		LA	Stingray Gas Plant	Targa Resources	Targa Resources	300	135	1067.4	0	714
		LA	Sabine Pass Plant		Sabine Pass Plant Facility Joint Venture	300	57	1077	0	750

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PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
III	GCLA	LA	Antioch Gas Processing Facility	LNGP LLC	Tellus Operating Group LLC	3	2.3	1255	0	1428.6
		LA	Lisbon Plant	Regency Field Services LLC	Energy Transfer Company	38	26	1125	0	900
		LA	State Line Gas Processing Plant	Enterprise Gathering, LLC	Enterprise Hydrocarbons, LP	30	22	1050	0	700
		LA	Gravel Point	J-W Gathering Company	J-W Gathering Company	45	25	1040	0	2428.57
		LA	Desoto Gas Plant	Vernon E Faulconer Inc	Vernon E Faulconer Inc	1.22	1.22	1014	0	714
		LA	North Terrebonne Plant	Enterprise Gas Processing, LLC	Enterprise Gas Processing, LLC	1100	650	1100	0	2000
		LA	Plaquemine Plant		Crosstex LIG Liquids, LLC	225	151	1023	0	11904
		LA	Townsend Gas Plant	Samson Resources	Samson Contour Energy	1	0.5	1170	0	357
		LA	Larose Processing Plant	Discovery Producer Services	Williams Energy LLC	600	500	1070	0	100
		LA	Dubach Gas Plant	Regency Field Services LLC	Energy Transfer Company	107	82	1133	0	2400
		LA	Venice Gas Plant	Targa Resources	Targa Resources	750	500	1115	0	0
		LA	Chipola Field Gas Plant	Bridwell Oil Management, LLC	Bridwell Oil Management, LLC	1	0.12	1200	0	700
		LA	Yscloskey Gas Plant	Targa Resources	Targa Resources	1850	1000	1032		
		LA	College Point Gas Plant	Vernon E Faulconer Inc	Vernon E Faulconer Inc	0.17	0.17		0	238

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PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
III	GCLA	LA	Lake LaRose Gas Plant	Whiskey Bay Gas Co LTD	Energy Transfer Co	5	1	1118	0	150
		LA	Patterson II Plant	Plains Gas Solutions, LLC	Plains Gas Solutions, LLC	180	110	1055	0	150
		LA	Toca Gas Plant	Enterprise Gas Processing, LLC	Enterprise Gas Processing, LLC	1100	431	1083	0	0
		LA	Elba Mini Plant	JP Oil Company, LLC	JP Oil Company, LLC	2.7	1.33	1160	0	952
		LA	Krotz Springs Gas Plant	JP Oil Company, LLC	JP Oil Company, LLC	4.5	2.16	1150	0	1143
		LA	Burns Point Plant	Enterprise Gas Processing, LLC	Enterprise Gas Processing, LLC	160	125	1070	0	500
		LA	Pelican Plant		Crosstex Pelican, LLC	600	228	1099	0	0
		LA	Neptune Gas Plant	Enterprise Gas Processing, LLC	Enterprise Gas Processing, LLC	650	431	1083	0	0
		LA	Gibson Plant		Crosstex LIG, Liquids, LLC	110	110	1063	0	0
		LA	PSI Kaplan Plant	PSI Midstream Partners, LP	PSI Midstream Partners, LP	125	63	1061	0	0
		LA	Sea Robin Gas Processing Plant	Enterprise Gas Processing, LLC	Enterprise Gas Processing, LLC	660	301	1080	0	1000
		LA	Minden Beacon	DCP Assets Holding	DCP Midstream	115	65	1185	0	0
		LA	Dubberly Plant	Regency Field Services LLC	Energy Transfer Company	200	135	1040	0	2700
		LA	Cotton Valley Gas Plant	XTO Energy Inc	XTO Energy Inc	90	65	1190	0	18000

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PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
III	GCLA	LA	Baton Rouge Gas Plant	ExxonMobil Corporation	ExxonMobil Corporation	225	140	1070	0	1200
		MS	Pascagoula Gas Processing Plant	BP America Production Company	BP America Production Company	1100	350	1165	0	1000
		MS	Corinne Dehy Refrigeration Station	Samson Resources	Samson Resources	3	1.5	1140	0	428
		MS	Bazor Ridge	American Midstream (Mississippi), LLC	American Midstream	20	14.79	1277	0	2857.1
		PADD III GCLA Subtotal				15,119	8,469	1,103	-	255,126
	GCTX	TX	Bleiblerville Facility	Eagle Rock DeSoto Pipeline, L.P.	Eagle Rock DeSoto Pipeline, L.P.	0.25	0.25	1142	0	714
		TX	San Martin Plant	Enterprise Hydrocarbons, LP	Enterprise Products Operating, LLC	200	145	1251	0	0
		TX	Old Ocean	Arrowhead Pipeline L.P.	Harvest Pipeline Company	180	135	1120	0	6000
		TX	Luling Gas Plant	Davis Gas Processing, Inc	Davis Gas Processing, Inc	12	1.22	1222.588	0	350
		TX	Formosa Hydrocarbons Company	Formosa Hydrocarbons Company	Formosa Hydrocarbons Co Inc	146.86	115.76	1120	0	0
		TX	East Texas(Avinger)	Enbridge G & P (East Texas) L.P.	Enbridge G & P (East Texas) L.P.	85	83	1081.85	0	1000

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PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
III	GCTX	TX	Neches Field Plant	Quantum Resources Management, LLC	Quantum Resources Management, LLC	1	0.85	1389.3	0	600
III	GCTX	TX	Armstrong	Enterprise Hydrocarbons, LP	Enterprise Products Operating, LLC	250	229	1201	0	16142
III	GCTX	TX	Chisholm Plant	Energy Transfer	Energy Transfer	120	120	1275	0	1000
III	GCTX	TX	New Hope	Enbridge G & P (East Texas) L.P.	Enbridge G & P (East Texas) L.P.	10	7.5	977.45	0	5430
III	GCTX	TX	Texas City Processing Plant	Kinder Morgan Tejas Pipeline LLC	Kinder Morgan Tejas Pipeline LLC	40	40	1085	0	600
III	GCTX	TX	Longview Gas Plant	Costar Midstream LLC	Gas Solutions II Ltd	50	20	1270	0	7850
III	GCTX	TX	Longview	Enbridge G & P (East Texas) L.P.	Enbridge G & P (East Texas) L.P.	120	106	1050	0	400
III	GCTX	TX	Little Buffalo Basin		Citation Oil & Gas	1.3	0.544	1410	0	381
III	GCTX	TX	Mount Pearl Gas Plant		Citation Oil & Gas	10	2.6	1226.7	0	1429
III	GCTX	TX	Pineview Gas Plant		Citation Oil & Gas	2	1		0	5000
III	GCTX	TX	Crossroads	PVR East Texas Gas Processing LLC		80	50	1120	0	0
III	GCTX	TX	Trinidad	Enbridge G & P (East Texas) L.P.	Enbridge G & P (East Texas) L.P.	65	51.8	1041.6	0	714
III	GCTX	TX	Fairway Gas Plant	ExxonMobil Corporation	Hunt Oil Company	88	48	1123	0	1083

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PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
III	GCTX	TX	Eustace Gas Plant	Tristream East Texas LLC	Tristream East Texas LLC	58	31	822	0	312
		TX	Gilmore Gas Plant	Enterprise Hydrocarbons, LP	Enterprise Products Operating, LLC	265	225	1140	0	900
		TX	Brookeland Gas Plant	Eagle Rock Operating, L.P.	Eagle Rock Operating, L.P.	100	64	1160	0	710
		TX	CIPCO Supersystem	DCP Southeast Texas Plants	DCP Midstream	400	320	1143	0.5	62115
		TX	Thompsonville Gas Plant	Enterprise Hydrocarbons, LP	Enterprise Products Operating, LLC	330	305	1140	0	0
		TX	La Gloria	DCP Midstream	DCP Midstream	265	160	1130	0	34120
		TX	West Johnson County Plant	Devon Energy Corp	Devon Gas Services LP	100	79.342	1068	0	4296
		TX	Godley Plant	Energy Transfer	Energy Transfer	590	400	1188	0	3000
		TX	King Ranch Gas Plant	ExxonMobil Production Company	ExxonMobil Production Company	800	550	1052.11	0	160000
		TX	Wilcox Gas Plant	DCP Midstream	DCP Midstream	240	188	1102	0	9857
		TX	Yoakum Gas Processing Plant	Enterprise Hydrocarbons, LP	Enterprise Products Operating, LLC	300	300	1250	0	0
		TX	Three Rivers	DCP Midstream	DCP Midstream	95	85	1155	0	1380
		TX	OSR-Halliday Unit Gathering System	Woodbine Production Corp	Woodbine Production Corp	1.8	1.8	1200	0	1800

Appendix C.1 – 2013 U.S. Natural Gas Plants

PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
III	GCTX	TX	Markham Gas Processing Plant	Williams Field Services-Gulf Coast Company LP	Williams Field Services-Gulf Coast Company LP	500	326	1124	0	0
		TX	McMullen		Houston Pipeline	4.5	3.2	1387	0	760
		TX	Conroe Plant	Southcross Energy GP LLC	Southcross Gathering Ltd.	36	22	1080	0	230
		TX	Gulf Plains Gas Plant	DCP Midstream	DCP Midstream	170	143	1200	0	3475
		TX	Shoup Gas Plant	Enterprise Hydrocarbons, LP	Enterprise Products Operating, LLC	285	255	1120	0	1700
		TX	East Texas	DCP East Texas Gathering	DCP Midstream	1000	710	1127.5	0	185000
		TX	McCormick Gas Processing Plant	Enterprise Gathering, LLC	Enterprise Gathering, LLC	22	8	1068.45	0	523
		TX	Carthage Gas Plant	MarkWest Energy Partners LLC	MarkWest Energy Partners, LLC	280	260	1145	0	0
		TX	Indian Springs Gas Plant	Teco Gas Processing LLC	Enterprise Products Operating LLC	146	125	1160	0	1068
		TX	Reklaw (Limerock Facility)	Eagle Rock DeSoto Pipeline, L.P.	Eagle Rock DeSoto Pipeline, L.P.	1.5	1.5	981.2	0	250
		TX	Henderson	Enbridge G & P (East Texas) L.P.	Enbridge G & P (East Texas) L.P.	280	130	1084.02	0	600
		TX	Duncan Gas Processing Plant	Enterprise Gathering, LLC	Enterprise Gathering, LLC	40	30	1097.6	0	714

Appendix C.1 – 2013 U.S. Natural Gas Plants

PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
III	GCTX	TX	Gregory	Southcross Energy GP LLC	Southcross Gathering Ltd.	100	85	1106	0	6428
		TX	Joaquin Plant	CenterPoint Energy Field Services, LLC	CenterPoint Energy Field Services, LLC	30	8	1045	0	1190
		TX	Stockman Plant	CenterPoint Energy Field Services, LLC	CenterPoint Energy Field Services, LLC	15	2	1057	0	715
		TX	Chapel Hill Gas Plant	Costar Midstream LLC	Gas Solutions II Ltd	25	19	1070	0	4850
		TX	Tyler Gas Plant	J-W Gathering Company	J-W Gathering Company	1.5	0.9	1102	0	1000
		TX	Shamburger Lake Plant	Valence Operating Company	Valence Operating Company	2	0.08	1250	0	355
		TX	Delmita Gas Plant	Enterprise Hydrocarbons, LP	Enterprise Products Operating, LLC	130	117	1135	0	700
		TX	Rosewood Dew Point Facility	EROC Gathering Company, LP	EROC Gathering Company, LP	13	5.5	701.63	0	452.38
		TX	Shilling Gas Plant	Enterprise Hydrocarbons, LP	Enterprise Products Operating, LLC	110	110	1200	0	0
		TX	Hawkins Gas Plant	ExxonMobil Corporation	ExxonMobil Corporation	180	160	445	0	0
		TX	Van Plant	UNOCAL-CNAEP	UNOCAL-CNAEP	5	1	1370	0	0
		TX	Houston Central Plant		Copano	623.89	623.89	1150	0	21097
		TX	Austin Giddings	DCP Midstream	DCP Midstream	95	90.1	1218	0	7238

Appendix C.1 – 2013 U.S. Natural Gas Plants

PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
III	GCTX	TX	Hainesville Gas Plant	Hainesville Gas Gathering Corp.	Energy Production Corporation	16	2	1200	0	2227
		PADD III GCTX Subtotal				**10,574**	**8,243**	**1,137**	**1**	**657,304**
	WTX/NM	TX	North Fayette Treating Plant	Chaparral Resources LLC	Chaparral Energy, LLC	10	1.2	1110	0	0
		TX	LaGrange Plant	Energy Transfer	Energy Transfer	205	150	1275	0	1700
		TX	Waskom Gas Processing	Prism Gas Systems I, LP	Prism Gas Systems I, LP	320	250	1090	0	38500
		NM	Artesia	DCP Midstream	DCP Midstream	90	90	1170	0	2573
		NM	Carlsbad Plant	DCP Midstream	DCP Midstream	22	17	1178	0	100
		NM	Pecos Diamond	DCP Midstream	DCP Midstream	40	20	1081	0	0
		NM	Carlsbad Chaparral Gas Plant	Enterprise Field Services, LLC	Enterprise Field Services, LLC	40	23	1150	0	0
		NM	South Carlsbad Dew Point Plant	Enterprise Field Services, LLC	Enterprise Products Operating, LLC	200	50	1060	0	1200
		NM	Indian Basin Gas Plant	OXY USA WTP LP	Oxy Permian Primary	300	35	1140	0	5000
		NM	Buckeye CO2 Plant	Chevron	Chevron	55	39	250	0	700
		NM	East Vacuum Liquid Recovery Plant	ConocoPhillips	ConocoPhillips	25	21.4	1025.6	0	1100
		NM	Denton Gas Plant	Davis Gas Processing, Inc.	Davis Gas Processing, Inc.	20	2.93	1424.4	0	750
		NM	Antelope Ridge	DCP Midstream	DCP Midstream	30	22	1187	0	405
		NM	Eunice	DCP Midstream	DCP Midstream	105	95	1250	0	4000

Appendix C.1 – 2013 U.S. Natural Gas Plants

PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
III	WTX/NM	NM	Hobbs Cryogenics Plant	DCP Midstream	DCP Midstream	42	36	1125	0	80
		NM	Linam Ranch	DCP Midstream	DCP Midstream	225	164	1241	0	1400
		NM	Jal #3	Energy Transfer Equity, LP	Southern Union Gas Services, LTD	90	75	1244	0	2500
		NM	Monument Plant	Targa Midstream Services, LLC	Targa Midstream Services, LLC	85	51	1222	0	1000
		NM	Saunders Plant	Targa Midstream Services, LLC	Targa Midstream Services, LLC	70	44	1223	0	2286
		NM	Eunice Plant	Versado Gas Processors, LLC	Targa Midstream Services, LLC	115	80	1235	0	500
		NM	San Juan Basin Gas Plant	ConocoPhillips	ConocoPhillips	550	415	1160	0	0
		NM	Chaco Gas Plant	Enterprise Field Services, LLC	Enterprise Products Operating, LLC	600	485	1150	0	400000
		NM	San Juan Gas Plant	Western Gas Holding Company, LLC	Anadarko Petroleum Corporation, Corp	60	32	1080	0	3500
		NM	Kutz Gas Plant	Williams	Williams Midstream Services, LLC	230	135	1117	0	1430
		NM	EMPIRE ABO GAS PLANT	AKA - FRONTIER FIELD SERVICES	FRONTIER FIELD SERVICES	50	48	1300	0	700
		NM	MALAMAR GAS PLANT	AKA - FRONTIER FIELD SERVICES	FRONTIER FIELD SERVICES	60	58	1250	0	2000
		TX	Tract 75 Gas Plant	Kinder Morgan	Kinder Morgan	110	67	314	0	700

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PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
III	WTX/NM	TX	Jameson Plant	WTG Jameson, LP	WTG Gas Processing, LP	35	29.37	1381.3	0	11000
		TX	Concho Gas Plant	Davis Gas Processing, Inc.	Davis Gas Processing, Inc.	10	1.71	1157.4	0	1500
		TX	Agaritta	Stephens & Johnson Operating Co	Stephens & Johnson Operating Co	5	0.25	1200	0	1714
		TX	Ozona	Chevron	Chevron	32	17.9	1235	0	648
		TX	Southwest Ozona	DCP Midstream	DCP Midstream	100	85	1160	0	1429
		TX	Tippett	Energy Transfer Equity, LP	Southern Union Gas Services, LTD	60	56	1140	0	0
		TX	Irion County Plant	Davis Gas Processing, Inc.	Davis Gas Processing, Inc.	16	8.3	1300.3	0	1500
		TX	Mertzon Plant	Targa Resources	Targa Resources	52	44.9	1239	0	7658
		TX	Sutton Sonora Plant	DCP Midstream	DCP Midstream	62	62	1175	0	4523
		TX	Sonora Plant	Enterprise Hydrocarbons, LP	Enterprise Products Operating, LLC	120	95	1141	0	750
		TX	Benedum		Atlas Pipeline Co	45	45	1320	0	3571
		TX	Apache Corporation Crane Gas Plant	Apache Corporation	Apache Corporation	25	24	1270	0	0
		TX	Benedum II Plant	Benedum Gas Partners, LP	WTG Benedum Joint Venture	140	115.78	1228.2	0	0
		TX	Neleh Gas System	Davis Gas Processing, Inc.	Davis Gas Processing, Inc.	5	1.69	1330.1	0	750

Appendix C.1 – 2013 U.S. Natural Gas Plants

PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
III	WTX/NM	TX	Ranger		Ranger Gas Gath LLC	8.5	4.8	1350	0	714
		TX	Panhandle Superplant	DCP Midstream	DCP Midstream	475	343	1200.33	0	20307
		TX	Dollarhide Gas Plant	Chevron Production Co.	Chevron Production Co.	56	56	250	0	7000
		TX	Fullerton	DCP Midstream	DCP Midstream	75	72	1380	0	2014
		TX	MidMar	MidMar Gas LLC	Feagan Gathering Company	75	70	1350	0	1000
		TX	Longhorn Gas Plant	Enerfin Resources Company	Enerfin Resources II-92 LP	1.5	0.45	1298.2	0	998
		TX	Hanover Reinecke	Exterran	Exterran	50	45	275	0	0
		TX	Cargray Plant	Eagle Rock Energy Services, L.P.	Eagle Rock Energy Services, L.P.	25	17.51	1410	0	25747
		TX	Grey Badger	Midstream Energy Services, LLC	Midstream Energy Services, LLC	25	15	1300	0	2800
		TX	Bridwell River Ranch Gas Plant	Bridwell Oil Company	Bridwell Oil Company	2	0.3	1200	0	700
		TX	Oxy Block31 Plant	Occidental Petroleum	Occidental Petroleum	100	58	548	0	0
		TX	Sand Hills Complex	Targa Midstream Services, LLC	Targa Midstream Services, LLC	150	140	1200	0	490
		TX	CGU Cordona Lake Plant	XTO Energy Inc	XTO Energy Inc	10	2.8	753.8	0	443
		TX	Shackelford Plant	DGP Taurus GP Holding, LLC	DGP Taurus Field Services, LP	15	5.13	1249.5	0	750
		TX	Headlee	Chevron	Four Star Oil & Gas	100	45	1330	0	1820

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PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
III	WTX/NM	TX	Goldsmith	DCP Midstream	DCP Midstream	65	60	1325	0	9000
		TX	Huckabay	Enbridge G & P (North Texas) L.P.	Enbridge G & P (North Texas) L.P.	20	19	1220	0	1833
		TX	Hamlin	PVR Hamlin LLC	PVR Midstream	8	6.8	1360	0	0
		TX	Seminole Gas Plant	Oxy USA Inc - Permian	Hess Corporation	280	256.76	155.9	0	9600
		TX	Cedar Hill Gas Plant	Davis Gas Processing, Inc.	Davis Gas Processing, Inc.	8	1.32	1308.67	0	750
		TX	Lefors Plant	Eagle Rock Energy Services, L.P.	Eagle Rock Energy Services, L.P.	7.5	5.7	1290	0	3316
		TX	Gray County Plant	Eagle Rock Field Services, L.P.	Eagle Rock Field Services, L.P.	20	14.36	1425	0	0
		TX	McLean Plant	McLean Gas Processing Company, LLC	Carrera Operating Company, LLC	25	12	1200	0	300
		TX	Sherman	SemGas, LP	SemGas, LP	20	17	1240	0	750
		TX	Hemphill (aka Hemploma) Gas Plant	BP America Production Company	BP America Production Company	50	41.09	1260	0	0
		TX	Phoenix Arrington Ranch Plant	Eagle Rock Energy Services, L.P.	Eagle Rock Energy Services, L.P.	80	62	1180	0	575
		TX	Canadian Plant	Eagle Rock Field Services, L.P.	Eagle Rock Field Services, L.P.	25	24.1	1240	0	700
		TX	Woodall Plant	Eagle Rock Field Services, L.P.	Eagle Rock Field Services, L.P.	60	40	1200	0	3500
		TX	Enbridge Hobart Ranch Gas Plant	Enbridge Pipelines (Texas Gathering) L.P.	Enbridge Pipelines (Texas Gathering) L.P.	125	91	1140	0	0

Appendix C.1 – 2013 U.S. Natural Gas Plants

PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
III	WTX/NM	TX	Hobart Cryo Plant	Enbridge Pipelines (Texas Gathering) L.P.	Enbridge Pipelines (Texas Gathering) L.P.	30	30	1176	0	1000
		TX	Antelope Hills Plant	PVR Partners	PVR Midstream	130	130	1165	0	1200
		TX	Horn Compressor Station	Seminole Gas Company, LLC	Seminole Gas Company, LLC	0.5	0.5	1100	0	285
		TX	Hemphill Plant (A, B, C, and D)	Superior Pipeline Texas LLC	Superior Pipeline Texas LLC	115	90	1190	2	1700
		TX	Slaughter Gasoline Plant	Oxy	Oxy Permian	35	30	1400	0	562500
		TX	Slaughter Gasoline Plant (Mallet)	Oxy	Oxy Permian	335	335	1250	0	2200
		TX	Cowtown/Corvette Plant	Cowtown Gas Processing Partners LP	Cowtown Gas Processing Partners LP	300	132	1230	0	7857
		TX	Tolar	DCP Tolar Gas Service	DCP Midstream	80	40	940	0	2571
		TX	Pantex Plant	Phillips 66	WRB Borger Refinery	0.1	0.1	1500	0	0
		TX	Worsham-Steed Cryogenic Gas Plant	NorTex Midstream Partners, LLC	Worsham-Steed Gas Storage, LLC	60	53	1027	0	0
		TX	Markley Plant		W. W. Sub, Inc	4	0.03	1140	0	500
		TX	East Vealmoor Plant	West Texas Gas Gas Processing, LP	West Texas Gas Gas Processing, LP	46	45.79	1407.3	0	750
		TX	Sale Ranch Gas Plant	West Texas Gas Gas Processing, LP	West Texas Gas Gas Processing, LP	35	30.4	1358.4	0	750

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PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
III	WTX/NM	TX	Midkiff		Atlas Pipeline Co	210	210	1340	0	5142
		TX	Pegasus Plant	DCP Midstream	DCP Midstream	100	81.9	1287	0	42.6
		TX	Roberts Ranch	DCP Midstream	DCP Midstream	70	70	1100	0	362
		TX	Spraberry	DCP Midstream	DCP Midstream	60	60	1300	0	9500
		TX	Saint Jo Processing Plant	Copano Field Services/North Texas, LLC	Copano Field Services/North Texas, LLC	104	64	1141	0	571
		TX	Kripple Kreek Gas Plant	Pecan Pipeline Company	Pecan Pipeline Company	120	91.4	1189	0	8571
		TX	Sunray Gas Plant	BP America Production Company	BP America Production Company	189	118	1180	0	0
		TX	Spearman Plant	PVR Gas Processing LLC	PVR Gas Processing LLC	100	100	1158	0	1300
		TX	Gordon	Enbridge G & P (North Texas) L.P.	Enbridge G & P (North Texas) L.P.	40	25	1250	0	3600
		TX	Lone Camp	Enbridge G & P (North Texas) L.P.	Enbridge G & P (North Texas) L.P.	40	30	1250	0	714
		TX	Azle Plant		Crosstex CCNG Processing, Ltd	50	34	1154	0	1093
		TX	Goforth Plant		Crosstex CCNG Processing, Ltd	30	24	1213	0	75
		TX	Silver Creek Plant		Crosstex CCNG Processing, Ltd	200	165	1158	0.5	1023
		TX	Springtown Processing plant	Enbridge G & P	Enbridge G & P	65	55	1250	0	0
		TX	Weatherford	Enbridge G & P (North Texas) L.P.		70	65		0	430

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PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
III	WTX/NM	TX	Coyanosa	Energy Transfer Equity, LP	Southern Union Gas Services, LTD	130	95	1160	0	0
		TX	Gomez Plant	Hoover Energy Partners LLC	Hoover Energy Partners LLC	100	70	900	0	210
		TX	Mitchell Puckett	Hoover Energy Partners LLC	Hoover Energy Partners LLC	80	14	740	0	500
		TX	Yates Gas Plant	Kinder Morgan	Kinder Morgan	70	50	312	0	1048
		TX	Waha Plant	Regency Field Services LLC	Energy Transfer Company	120	87	1072	0	250
		TX	Fain Gas Plant	Pioneer Natural Resources	Pioneer Natural Resources	140	65	1360	0	3048
		TX	Johnson State	Chesapeake Energy	Chesapeake Midstream	0.5	0.18	1230	0	816
		TX	Indian Creek Plant	Crestwood Panhandle Pipeline LLC	Crestwood Panhandle Pipeline LLC	36	16	1200	0	1109
		TX	Red Deer Plant	Eagle Rock Field Services, L.P.	Eagle Rock Field Services, L.P.	25	22	1250	0	215
		TX	Roberts County Plant	Eagle Rock Field Services, L.P.	Eagle Rock Field Services, L.P.	25	11	1150	0	1428
		TX	Osborne Plant	Enbridge Pipelines (Texas Gathering) L.P.	Enbridge Pipelines (Texas Gathering) L.P.	25	16	1236	0	476
		TX	Snyder Gasoline Plant	ExxonMobil Corporation	Kinder Morgan CO2	90	51.72	1150	0	1000
		TX	Shackelford	Targa Midstream Services, LLC	Targa Midstream Services, LLC	15	9	1308	0	4528
		TX	Conger Plant	Targa Resources	Targa Resources	25	18	1318	0	714

Appendix C.1 – 2013 U.S. Natural Gas Plants

PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
III	WTX/NM	TX	Sterling Plant	Targa Resources	Targa Resources	62	58	1250	0	1610
		TX	KELTON GAS PLANT	KELTON GAS SERVICES - LLC	AKA - FRONTIER FIELD SERVICES	90	32	1200	0	1200
		TX	Allison Gas Plant	Enbridge Pipelines (Texas Gathering) L.P.	Enbridge Pipelines (Texas Gathering) L.P.	150	149	1169	0	0
		TX	Hidetown Plant	Enbridge Pipelines (Texas Gathering) L.P.	Enbridge Pipelines (Texas Gathering) L.P.	132	132	1121	0	833
		TX	Zybach	Enbridge Pipelines (Texas Gathering) L.P.	Enbridge Pipelines (Texas Gathering) L.P.	164	164	1169	0	952
		TX	Electra Gas Plant	Halcon Operating Co., Inc.	Halcon Operating Co., Inc.	1	1	1800	0	1142
		TX	Halley	Energy Transfer Equity, LP	Southern Union Gas Services, LTD	110	43.02	1228	0	0
		TX	Keystone	Energy Transfer Equity, LP	Southern Union Gas Services, LTD	135	104.9	1234	0	0
		TX	Bridgeport Plant	Devon Energy Corp	Devon Gas Services LP	650	623	1167	0	48415
		TX	Sweetwater Creek Plant	J-W Pipeline Company	J-W Pipeline Company	40	18	1140	0	2860
		TX	Chico Plant	Targa Midstream Services, LLC	Targa Midstream Services, LLC	265	240	1188	0	17383
		TX	Denver Unit CO2 Recovery Plant	Occidental Permian Ltd	Occidental Permian Ltd	290	279	300	0	90000
		TX	WPMT NGL	Occidental Permian Ltd	Occidental Permian Ltd	35	18	1100	0	0

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PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
III	WTX/NM	TX	Wasson ODC Unit CO2 Removal Plant	Occidental Permian Ltd	Occidental Permian Ltd	100	96.84	170	0	4095
		TX	Willard CO2 Recovery Plant	Oxy USA WTP	Oxy USA WTP	90	80	160	0	1310
		TX	Indian Mound	Advance NGL, Inc.	Advance NGL, Inc.	0.21	0.2		0	1429
		TX	Ozona Gas Processing Plant Partnership	DCP Midstream	DCP Midstream	120	85	1160	0	15833
		PADD III WTX/NM Subtotal				10,896	8,240	1,135	3	1,328,866
	PADD III Subtotal					36,589	24,952	1,127	3	2,241,296
IV	IV	CO	Mercy Gas Plant	Forest Oil Corporation 100%	Forest Oil Permian	3.5	2.2	1233	0	1000
		CO	Wattenberg Gas Plant	Anadarko Petroleum Corp	Anadarko Petroleum Corp	195	180	1230	0	9500
		CO	Ladder Creek	DCP Midstream	DCP Midstream	55	15	750	0	600
		CO	Mull Unit Sorrento Field	Mull Drilling Company, Inc	Mull Drilling Company, Inc	4	0.6	1150	0	714
		CO	Johnson Dew Point Facility	Williams Midstream	Williams Midstream	10	0.5	1100	0	857
		CO	Piceance Creek Plant	Davis Gas Processing, Inc.	Davis Gas Processing, Inc.	100	0.069	1065.3	0	0
		CO	Hay Canyon Treating Facility	Encana Oil and Gas (USA) Inc.	Encana Oil and Gas (USA) Inc.	25	3	1085	0	1428
		CO	Grand Valley Gas Plant	Williams Production RMT / Williams Midstream	Williams Midstream	120	70	1072	0	2140

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PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
IV	IV	CO	Parachute Creek Gas Plant	Williams Production RMT / Williams Midstream	Williams Midstream	1200	780	1072	0	16000
		CO	Baxter Compressor Station	XCEL ENERGY	XCEL ENERGY	15	3	915	0	476
		CO	La Veta Gas Plant	Appletree Holdings, LLC	Manzano, LLC	30	17	332	20	1000
		CO	Ignacio Gas Plant	Williams	Williams Midstream Services, LLC	585	456	1110	0	38850
		CO	Yenter Gas Plant	Sterling Energy Investments LLC	Sterling Energy Investments LLC	5	3.5	1400	0	800
		CO	Plateau Creek Plant	Encana Oil and Gas (USA) Inc.	Encana Oil and Gas (USA) Inc.	1	1	1080	5	300
		CO	Premier Debeque Plant	ETC Canyon Pipelines LLC	Energy Transfer	8	5	1064	0	286
		CO	Buck Peak	Abraxas	Custom Energy	0.5	0.175		0	4500
		CO	Cutthroat B	QEP Energy Co	QEP Energy Co	2	0.4	1351	0	1428
		CO	Koskie Dew Point Facility	Williams Midstream	Williams Midstream	10	0.5	1200	0	857
		CO	Wiggins Gas Processing Plant		Western Operating Company	3	0.05	1400	0	672
		CO	Gilcrest Gas Processing Plant	Southern Ute Indian Tribe		20	16	1270	0	3200

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PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
IV	IV	CO	Clyde Gasoline Plant	Prowers Gas Gathering Co, LLC	Prowers Gas Gathering Co, LLC	2.5	0.8	1200	0	700
		CO	Dragon Trail	Encana Oil & Gas (USA) Inc.	Encana Oil & Gas (USA) Inc.	60	25	1100	0	6400
		CO	Rifle Gas Plant	XCEL ENERGY	XCEL ENERGY	50	25	1070	0	2857
		CO	Wilson Creek Gas Processing Plant	Chevron USA, Inc.	Chevron USA, Inc.	1.1	0.156	1461.2	0	2928
		CO	Meeker Gas Plant	Enterprise Gas Processing, LLC	Enterprise Gas Processing, LLC	1800	1505	1100	0	0
		CO	Foundation Creek	ETC Canyon Pipelines LLC	Energy Transfer	22	10	1080	0	1428
		CO	North Douglas	ETC Canyon Pipelines LLC	Energy Transfer	22.5	10	1080	0	2857
		CO	Piceance Creek	Sourcegas Services, LLC	Rocky Mountain Natural Gas, LLC	5	2	1170		715
		CO	Sagebrush Gas Plant	Williams	Williams	30	10	1110	0	1711
		CO	Willow Creek	Williams	Williams Midstream Services, LLC	450	405	1070	0	0
		CO	Bear River	Moffat Pipeline Company	Moffat Pipeline Company	0.5	0.1	1170	0	200
		CO	Andy`s Mesa Plant	Patara Oil & Gas, LLC	Patara Oil & Gas, LLC	30	7.8	1012	35	1300
		CO	Hamilton Creek Plant	Patara Oil & Gas, LLC	Patara Oil & Gas, LLC	30	8	963	45	1900
		CO	Eaton	DCP Midstream	DCP Midstream	12	10	1175	0	1425

Appendix C.1 – 2013 U.S. Natural Gas Plants

PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
IV	IV	CO	Greeley	DCP Midstream	DCP Midstream	27	24	1175	0	17150
		CO	Lucerne	DCP Midstream	DCP Midstream	40	38	1175	0	2850
		CO	Mewbourne	DCP Midstream	DCP Midstream	143	143	1175	0	120000
		CO	Platteville	DCP Midstream	DCP Midstream	70	60	1270	0	3600
		CO	Roggen	DCP Midstream	DCP Midstream	62	62	1175	0	5950
		CO	Spindle	DCP Midstream	DCP Midstream	40	34	1270	0	5000
		CO	Lilli Plant	Noble Energy	Noble Energy	7	5	1310	44	2500
		CO	Platte Valley Gas Plant	Western Gas Partners, LP	Western Gas Partners, LP	105	103	1251	0	15000
		CO	Terrace Gas Plant	Whiting Oil and Gas Corporation	Whiting Oil and Gas Corporation	3	0.547	1460	0	714
		MT	Dry Creek Plant	Saga Petroleum LLC	Saga Petroleum LLC	4	1.6	1210	0	4
		MT	Baker Plant	Oneok Rockies Midstream	Oneok Rockies Midstream	6.5	4.5	1460	0	8272
		MT	Cut Bank NGL Plant	Omimex Canada Ltd	Northwestern Energy	25	7	1090	0	4500
		MT	McKenzie Plant (aka Grasslands Plant)	Oneok Rockies Midstream	Oneok Rockies Midstream	95	80	1375	0	28454
		MT	Bakken Plant	Hiland Partners, LP	Hiland Partners, LP	30	22	1450	0	8476
		UT	Price Chiller Skids	Questar Field Services	Questar Pipeline Company	45	40.7	1077	0	714
		UT	Price Raptor Plant	Questar Field Services	Questar Pipeline Company	130	130	1077	0	2857

Appendix C.1 – 2013 U.S. Natural Gas Plants

PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
IV	IV	UT	Price Dew Point Plant	Questar Pipeline Company	Questar Pipeline Company	120	28.5	1053	0	1428
		UT	Kastler Dew Point Plant	Questar Pipeline Company	Questar Pipeline Company	300	24.3	1055	0	2143
		UT	Brundage Gas Plant	Berry Petroleum Company	Berry Petroleum Company	30	24	1150	0	2500
		UT	Altamont Gas Plant	El Paso Midstream Investment Company, LLC	El Paso Midstream Investment Company, LLC	60	40	1200	0	22476
		UT	Pleasant Valley Compressor Station	Newfield Exploration Co	Newfield Production Co	20	18	1220	0	428.57
		UT	Monument Butte Plant	Newfield Rocky Mountain Inc	Newfield Rocky Mountain Inc	22	18	1195	0	1430
		UT	Grand Gas Gathering Plant	Cisco Dome, LLC		0.8	0.25	1098	0	360
		UT	Harley Dome	ETC Canyon Pipelines LLC	Energy Transfer	30	20	1067	0	714
		UT	Skull Creek Dew Point	Questar Pipeline Company	Questar Pipeline Company	45	34.6	1118	0	1428
		UT	Lisbon Gas Plant	Patara Oil & Gas, LLC	Patara Oil & Gas, LLC	60	20	990	0	20000
		UT	Ironhorse Gas Plant	QEP Field Services Company	QEP Field Services Company	150	146	1140	0	0
		UT	Red Wash Gas Plant	QEP Field Services Company	QEP Field Services Company	160	82	1110	0	3173

Appendix C.1 – 2013 U.S. Natural Gas Plants

PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
IV	IV	UT	Stagecoach Gas Plant	QEP Field Services Company	QEP Field Services Company	200	115	1100	0	4571
		UT	Chipeta Plant	Western Gas Partners, LP	Western Gas Partners, LP	750	600	1106	0	34285
		WY	Bison Treating Facility	Western Gas Partners, LP	Western Gas Partners, LP	270	270	935	0	0
		WY	Highlight Complex	Western Gas Partners, LP	Western Gas Partners, LP	45	32.5	1275	0	13725
		WY	Rawlins	Colorado Interstate Gas Company, LLC	Colorado Interstate Gas Company, LLC	220	97.6	1066	0	23879
		WY	Echo Springs Gas Plant	Williams	Williams Midstream Services, LLC	745	600	1150	0	0
		WY	Fort Union Medicine Bow Treating Facility	Crestone Energy Ventures LLC	Western Gas Partners, LP	340	300	960	0	0
		WY	Douglas	KM Upstream LLC		140	75.85	1160	0	15650
		WY	Sage Creek Gas Plant	Merit Energy Company	Merit Energy Company	30	7	1500	0	4000
		WY	Lost Cabin Gas Plant	ConocoPhillips (Burlington Resources)	ConocoPhillips	355	295	980	0	0
		WY	Beaver Creek Plant	Devon Gas Services LP	Devon Gas Services LP	55	26.6	1100	0	4948
		WY	Phosphoria Gasoline Plant	Devon Gas Services LP	Devon Gas Services LP	4	2	1244	0	0

Appendix C.1 – 2013 U.S. Natural Gas Plants

PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
IV	IV	WY	Pavillion Gas Plant	Encana Oil & Gas (USA) Inc.	Encana Oil & Gas (USA) Inc.	80	14.5	1078.36	0	2850
		WY	Silo Gas Plant	Kaiser Francis Oil Company	Kaiser Francis Oil Company	3.5	0.68	1370	0	1428
		WY	Pioneer Cryogenic Plant	Enterprise Gas Processing, LLC	Enterprise Gas Processing, LLC	750	590	1090	0	0
		WY	Pioneer Silica Gel Plant	Enterprise Gas Processing, LLC	Enterprise Gas Processing, LLC	600	8	1090	0	5000
		WY	Opal Gas Plant	WIlliams	Williams Midstream Services, LLC	1480	1472	1300	0	37000
		WY	Shute Creek Treating Facility	ExxonMobil Production Company	ExxonMobil Production Company	690	145	240	0	0
		WY	Casper Plant	KM Upstream LLC		65	40.9	1130	0	8970
		WY	Austin Creek Gas Plant	Legacy Reserves Operating, LP	Legacy Reserves Operating, LP	3	3	1175	0	800
		WY	Elk Basin Gasoline Plant	Encore Energy Partners Operating LLC	Encore Energy Partners Operating LLC	13	12.5	255	0	10666
		WY	Silvertip Processing Plant	Fidelity Exploration and Production Co	Fidelity Exploration and Production Co	10	4.6	1315	0	2143
		WY	Garland Gas Plant	Marathon Oil Company	Marathon Oil Company	4	1	1130	0	572
		WY	Oregon Basin Gas Plant	Marathon Oil Company	Marathon Oil Company	6	5	929	0	952

Appendix C.1 – 2013 U.S. Natural Gas Plants

PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
IV	IV	WY	YU Bench	Saga Petroleum, LLC	Saga Petroleum LLC	5	1.3	1270	0	715
		WY	Sugarloaf Plant	Windsor Energy Group	Windsor Energy Group	0.86	0.74	1120	0	1142.85
		WY	Granger Gas Plant	Anadarko Petroleum Corp	Anadarko Petroleum Corp	500	200	1100	0	25000
		WY	Table Rock Gas Plant	Chevron USA, Inc.	Chevron USA, Inc.	47	12	866.8	0	1000
		WY	Bairoil CO2 Plant	Merit Energy Company	Merit Energy Company	143	142	80	0	5700
		WY	Blacks Fork Gas Plant (I and II)	QEP Field Services	QEP Field Services	705	402	1086	0	22285
		WY	Vermillion Gas Plant	QEP Field Services	QEP Field Services	50	49	1118	0	685
		WY	Patrick Draw Gas Plant	Western Gas Partners, LP	Western Gas Partners, LP	130	85	1100	0	24500
		WY	Carter Creek Gas Plant	Chevron	Chevron	150	68	1018	0	0
		WY	Anschutz Ranch East	Merit Energy Company	Merit Energy Company	55	11	1026	0	10000
		WY	Painter	Merit Energy Company	Merit Energy Company	270	235	727	0	13000
		WY	Emigrant Trail Gas Plant	QEP Field Services	QEP Field Services	55	50	1148	0	2800
		WY	Worland Plant	Devon Energy Corp	Devon Energy Corp	20	7	1340	0	5000

Appendix C.1 – 2013 U.S. Natural Gas Plants

PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
IV	IV	WY	Worland Plant	Washakie Midstream Services LLC	Washakie Midstream Services LLC	6	1.2	1248	0	4057
		WY	Newcastle Complex	Western Gas Partners, LP	Western Gas Partners, LP	3	2.5	1550	0	4005
	PADD IV Subtotal					**15,736**	**10,769**	**1,115**	**149**	**682,479**
V	V	CA	Riverdale Gas Plant	Crimson Resource Management	Crimson Resource Management	32	20	1400	0	238
		CA	South Coles Levee Gas Plant	Central Resources Inc	Central Resources Inc	35	3.599	1108	0	1895
		CA	Kernirdge Gas Plant	Aera Energy LLC		80	30.66	1127	0	14900
		CA	Mckittrick 172	Chevron USA, Inc.	Chevron USA, Inc.	80	58.87	1179	0	8995
		CA	Greeley Gas Plant	Crimson Resource Management Corp	Crimson Resource Management Corp	70	45	1200	0	238
		CA	Inergy Services North Coles Levee	Inergy Propane, LLC	Inergy Services	24	4.6	1271	0	373
		CA	35R Natural Gas Processing Plant	Occidental of Elk Hills, Inc	Occidental of Elk Hills, Inc	90	35.9	1090	0	0
		CA	Low Temperature Separation Plant No. 1	Occidental of Elk Hills, Inc	Occidental of Elk Hills, Inc	150	136.4	1180	0	0
		CA	Low Temperature Separation Plant No. 2	Occidental of Elk Hills, Inc	Occidental of Elk Hills, Inc	150	137.5	1110	0	0
		CA	Taft #1C Gas Plant	Occidental of Elk Hills, Inc	Occidental of Elk Hills, Inc	16	16	1152.48	0	0

Appendix C.1 – 2013 U.S. Natural Gas Plants

PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
V	V	CA	Belridge Gas Plant	Seneca Resources Corporation	Seneca Resources Corporation	14	9	1148	0	8346
		CA	Inglewood Gas Plant	Plains Exploration & Production, Inc	Plains Exploration & Production, Inc	15	10	1250	0	1750
		CA	Montebello Gas Plant	Plains Exploration & Production, Inc	Plains Exploration & Production, Inc	1.5	0.65	1100	0	0
		CA	Murphy Gas Plant	Plains Exploration & Production, Inc.	Plains Exploration & Production, Inc.	1.5	1	1250	0	20
		CA	Signal Hill West Unit Gas Plant	Signal Hill Petroleum, Inc	Signal Hill Petroleum, Inc	1	1	1400	0	952
		CA	Stearns Gas Plant	Linn Energy	Linn Western Operating Inc	4.5	2.2	1100	0	1714
		CA	OXY Huntington Beach Gas Plant	OXY USA Inc	Oxy USA LA Basin	3	3	1000	0	0
		CA	Las Flores Canyon, POPCO	ExxonMobil Production Company	ExxonMobil Production Company	67	32	1066	0	0
		CA	Las Flores Canyon, SGTP	ExxonMobil Production Company	ExxonMobil Production Company	12	10	1066	0	8300
		CA	Lompoc Oil & Gas Plant	Plains Exploration & Production, Inc	Plains Exploration & Production, Inc	15	2.71	1175.8	0	2140
		CA	Carpinteria Gas Plant	Venoco, Inc	Venoco, Inc	30	1	1000	0	33.6
		CA	Ellwood Onshore Facility	Venoco, Inc	Venoco, Inc	13	2.5	1100	0	2000
		CA	Ventura Gas Plant 7	Aera Energy LLC		12	10	1195	0	1400

Appendix C.1 – 2013 U.S. Natural Gas Plants

PADD	Sub PADD	State	Plant Name	Owner Company	Operator Company	Plant Capacity MMcf/d	Plant Flow MMcf/d	Average Annual BTU Content Btu/Cf	Dry Gas Storage Capacity MMcf	NG Liquid Storage Capacity Bbl
V	**V**	CA	Santa Clara Valley Gas Plant	Vintage Production California, LLC	Vintage Production California, LLC	10	7.3	1300	0	3310
	PADD V Subtotal					**927**	**581**	**1,165**	**-**	**56,605**
U.S. Total						**64,659**	**44,369**	**1,143**	**181**	**5,467,955**

Appendix C.2 – List of New NGL Plants Due to Shale Gas Growth
Sources: Oil and Gas Journal, June 2, 2014, Gas Processing May/June 2014

PADD	Sub PADD	Region	State	Name, Location	Owner, Operator	Capacity MMcf/d	Start Up	Basin, Play	Notes
I	B	OH, PA, WV	PA	Houston, PA	MarkWest Liberty Midstream	200	2011	Marcellus Shale	increased capacity to 355 MMcf/d
		OH, PA, WV	PA	Bluestone, Butler Co., PA	Keystone Midstream	50	2012	Marcellus Shale	
		OH, PA, WV	PA	Northwestern PA	Three Rivers Midstream (Williams/Shell)	200	2015	Marcellus Shale	$150 million
		OH, PA, WV	PA	Houston IV, Washington Co.	MarkWest Liberty Midstream	200	2015	Marcellus Shale	Phase 4; first quarter 2015; will bring capacity to 555 MMcf/d
		OH, PA, WV	PA	Beaver Co.	Three Rivers Midstream	200	2015	Marcellus Shale	JV between Williams and Shell; second quarter 2015
		PADD IB Subtotal				**850**			
	C	OH, PA, WV	WV	Beeler 1, Cameron, WV	Caiman Eastern Midstream	120	2011	Marcellus Shale	Plants part of CEM purchase by Williams Partners
		OH, PA, WV	WV	Beeler 2, Cameron, WV	Caiman Eastern Midstream	210	2012	Marcellus Shale	
		OH, PA, WV	WV	Beeler 3, Cameron, WV	Caiman Eastern Midstream	210	2012	Marcellus Shale	Brings total capacity to 640 MMcf/d
		OH, PA, WV	WV	Natrium 1, Marshall Co., WV	Dominion Transmission	200	2013	Marcellus Shale	Phase 1: project includes fractionation capabilities
		OH, PA, WV	WV	Natrium 2, Marshall Co., WV	Dominion Transmission	200	2014	Marcellus Shale	phase 2
		OH, PA, WV	WV	Schultz, WV	Dominion Transmission	10	2011	Marcellus Shale	Owned, operated by Exterran under 12 year contract
		OH, PA, WV	WV	Majorsville, WV	MarkWest Liberty Midstream	135	2011	Marcellus Shale	increased capacity to 27o MMcf/d
		OH, PA, WV	WV	Majorsville, WV	MarkWest Liberty Midstream	400	2013	Marcellus Shale	2 trains * 200 MMcf/d brings capacity to 670 MMcf/d

Appendix C.2 – List of New NGL Plants Due to Shale Gas Growth
Sources: Oil and Gas Journal, June 2, 2014, Gas Processing May/June 2014

PADD	Sub PADD	Region	State	Name, Location	Owner, Operator	Capacity MMcf/d	Start Up	Basin, Play	Notes
I	C	OH, PA, WV	WV	Mobley 1, Logansport, WV	MarkWest Liberty Midstream	120	2012	Marcellus Shale	
		OH, PA, WV	WV	Mobley 2, Logansport, WV	MarkWest Liberty Midstream	200	2013	Marcellus Shale	second quarter 2013 completion
		OH, PA, WV	WV	Mobley 3, Logansport, WV	MarkWest Liberty Midstream	200	2013	Marcellus Shale	late 2013 completion; will bring total capacity to 520 MMcf/d
		OH, PA, WV	WV	Sherwood 1, WV	MarkWest Liberty Midstream	200	2012	Marcellus Shale	
		OH, PA, WV	WV	Sherwood 2, WV	MarkWest Liberty Midstream	200	2013	Marcellus Shale	phase 2: brings total capacity to 400 MMcf/d; second quarter 2013
		OH, PA, WV	WV	Majorsville IV, WV	MarkWest Liberty Midstream	200	2014	Marcellus Shale	second quarter 2014; will bring capacity to 870 MMcf/d
		OH, PA, WV	WV	Majorsville,VI WV	MarkWest Liberty Midstream	200	2016	Marcellus Shale	Will bring capacity to 1,070 MMcf/d
		OH, PA, WV	WV	Mobley IV, Logansport WV	MarkWest Liberty Midstream	200	2014	Marcellus Shale	Phase 4; fourth quarter 2014; will bring total to 720 MMcf/d
		OH, PA, WV	WV	Mobley V, Logansport WV	MarkWest Liberty Midstream	200	2015	Marcellus Shale	Second quarter 2015; will bring total to 920 MMcf/d
		OH, PA, WV	WV	Sherwood III	MarkWest Liberty Midstream	200	2013	Marcellus Shale	Brings total capacity to 600 MMcf/d
		OH, PA, WV	WV	Sherwood IV	MarkWest Liberty Midstream	200	2014	Marcellus Shale	Third quarter 2014
		OH, PA, WV	WV	Sherwood V	MarkWest Liberty Midstream	200	2014	Marcellus Shale	Fourth quarter 2014
		OH, PA, WV	WV	Sherwood VI	MarkWest Liberty Midstream	200	2015	Marcellus Shale	Second quarter 2015; will bring total to 1.2 Bcf/d
		PADD IC Subtotal				**4,005**			

Appendix C.2 – List of New NGL Plants Due to Shale Gas Growth
Sources: Oil and Gas Journal, June 2, 2014, Gas Processing May/June 2014

PADD	Sub PADD	Region	State	Name, Location	Owner, Operator	Capacity MMcf/d	Start Up	Basin, Play	Notes
I	**PADD I Subtotal**					**4,855**			
II	EAST	OH, PA, WV	OH	Kensington, Columbiana Co., OH	Access Midstream, M3 Midstream, EV Energy	600	2013	Utica Shale	part of Access Midstream's acquisition of Chesapeake midstream assets
		OH, PA, WV	OH	Carlisle, OH	Dominion Transmission	8	2011	Utica Shale	Owned, operated by Exterran under 12 year contract
		OH, PA, WV	KY	Langley, KY	MarkWest Energy	175	2012	Huron, Berea Shale	75 MMcf/d refrigeration plant
		OH, PA, WV	OH	Harrison 1, Harrison Co., OH	MarkWest Utica	40	2012	Utica Shale	
		OH, PA, WV	OH	Harrison 2, Harrison Co., OH	MarkWest Utica	185	2013	Utica Shale	second quarter 2013 completion Cadiz 1
		OH, PA, WV	OH	Harrison 3, Harrison Co., OH	MarkWest Utica	200	2013	Utica Shale	third quarter 2013; Cadiz 2
		OH, PA, WV	OH	Noble Co., OH	MarkWest Utica	10	2012	Utica Shale	
		OH, PA, WV	OH	Noble Co., OH	MarkWest Utica	200	2013	Utica Shale	phase 2: Seneca 1; third quarter 2013 completion
		OH, PA, WV	OH	Noble Co., OH	MarkWest Utica	200	2013	Utica Shale	phase 3: Seneca 2; fourth quarter 2013 completion
		OH, PA, WV	OH	New Middletown, Mahoning Co., OH	Pennant Midstream	200	2013	Utica Shale	
		OH, PA, WV	OH	Leesville I, Carroll Co.	Access Midstream, M3 Midstream, EV Energy	200	2014	Utica Shale	Second quarter 2014; related to Utica East Ohio JV
		OH, PA, WV	OH	Leesville II	Access Midstream, M3 Midstream, EV Energy	200		Utica Shale	
		OH, PA, WV	OH	Cadiz II, Harrison Co.	MarkWest Utica	200	2014	Utica Shale	Third quarter 2014
		OH, PA, WV	OH	Seneca III, Noble Co.	MarkWest Utica	200	2014	Utica Shale	Second quarter 2014; will bring capacity to 600 MMcf/d

Appendix C.2 – List of New NGL Plants Due to Shale Gas Growth
Sources: Oil and Gas Journal, June 2, 2014, Gas Processing May/June 2014

PADD	Sub PADD	Region	State	Name, Location	Owner, Operator	Capacity MMcf/d	Start Up	Basin, Play	Notes
II	EAST	OH, PA, WV	OH	Seneca IV, Noble Co.	MarkWest Utica	200	2015	Utica Shale	First quarter 2015; brings capacity to 800 MMcf/d
		OH, PA, WV	OH	Uhrichsville, Tuscarawas Co.	Kinder Morgan, MarkWest Utica EMG	400	2015	Utica Shale	200 MMcf/d in service fourth quarter 2014; additional 200 MMcf/d in service 2015
		OH, PA, WV	OH	Berne, Monroe Co.	Blue Racer Midstream	200	2014	Utica Shale	Third quarter 2014; site could potentially hold three 200 MMcf/d units
		PADD II East Subtotal				**3,418**			
	KS/OK	Oklahoma, Texas Panhandle	OK	Tupelo, Coal Co., OK	Cardinal Midstream	120	2012	Woodford - Caney Shale	
		Oklahoma, Texas Panhandle	OK	Cana, Canadian Co., OK	EnLink Midstream	200	2011	Woodford Shale	
		Oklahoma, Texas Panhandle	OK	Canadian Valley, CAna, Canadian Co., OK	Oneok Partners	200	2014	Cana-Woodford Shale	$190 million
		Oklahoma, Texas Panhandle	OK	Arapaho, Custer Co., OK	MarkWest Energy	75	2011	Anadarko Basin	increased total capacity to 235 MMcf/d
		Oklahoma, Texas Panhandle	OK	Woods Co., OK	SemGroupExterran Holdings	125	2013	Mississippi Play	second quarter 2013 completion
		Oklahoma, Texas Panhandle	OK	Kay Co., OK	Unit Corp.	30	2012	Mississippi Play	
		Oklahoma, Texas Panhandle	OK	Carmen, Alfalfa Co., OK	Cabano Energy	60	2013	Mississippi Play	Mid 2013.

Appendix C.2 – List of New NGL Plants Due to Shale Gas Growth
Sources: Oil and Gas Journal, June 2, 2014, Gas Processing May/June 2014

PADD	Sub PADD	Region	State	Name, Location	Owner, Operator	Capacity MMcf/d	Start Up	Basin, Play	Notes
II	KS/OK	Oklahoma, Texas Panhandle	OK	Cana, Canadian Co., OK	EnLink Midstream	150	2013	Woodford Shale	2013 expansion brought capacity to 350 MMcf/d at Cana
		Oklahoma, Texas Panhandle	OK	Hopeton, Woods Co.	SemGroup	15	2011	Anadarko Basin	refrigeration plant
		Oklahoma, Texas Panhandle	OK	South Canadian, Canadian Co.	Enogex	200	2011	Woodford Shale	Enogex, now part of Enable Midstream
		Oklahoma, Texas Panhandle	OK	McClure, Custer Co.	Enable Midstream	200	2013	Anadarko Basin	
		Oklahoma, Texas Panhandle	OK	Buffalo Creek, Beckham Co.	MarkWest Energy	200	2014	Anadarko Basin	First quarter 2014
		Oklahoma, Texas Panhandle	OK	Bradley, Grady Co.	Enable Midstream	200	2015	Woodford Shale	First quarter 2015
		PADD II KS/OK Subtotal				**1,775**			
	WEST	North Dakota	ND	Tioga, Williams Co., ND	Hess Corp	140	2014	Bakken Shale	will bring total capacity to 250 MMcf/d; capable of ethane recovery
		North Dakota	ND	Garden Creek 1, McKenzie Co., ND	Oneok Partners	100	2011	Bakken Shale	$350 - 415 million
		North Dakota	ND	Garden Creek 2, McKenzie Co., ND	Oneok Partners	100	2014	Bakken Shale	$160 million
		North Dakota	ND	Garden Creek 3, McKenzie Co., ND	Oneok Partners	100	2015	Bakken Shale	
		North Dakota	ND	Grasslands, McKenzie Co., ND	Oneok Partners	100	2010	Bakken Shale	
		North Dakota	ND	Stateline 1, Williams Co., ND	Oneok Partners	100	2012	Bakken Shale	$300 - 355 million

Appendix C.2 – List of New NGL Plants Due to Shale Gas Growth
Sources: Oil and Gas Journal, June 2, 2014, Gas Processing May/June 2014

PADD	Sub PADD	Region	State	Name, Location	Owner, Operator	Capacity MMcf/d	Start Up	Basin, Play	Notes
II	WEST	North Dakota	ND	Stateline 2, Williams Co., ND	Oneok Partners	100	2013	Bakken Shale	$160 million
		North Dakota	ND	Ross, Mountrail Co., ND	Plains All American	75	2013	Bakken Shale	
		North Dakota	ND	Befield, Stark Co., ND	Whiting Petrolreum Corp.	30	2011	Bakken Shale	Also known as Pronghorn
		North Dakota	ND	Thomas Russell, South Heart, ND	New Frontier Midstream	40	2013	Bakken Shale	
		North Dakota	ND	Caliber Midstreams, McKenzie Co.	Caliber Midstreams	10	2013	Bakken Shale	
		North Dakota	ND	Norse, Divide Co.	Hiland Partners	25	2010	Bakken Shale	
		North Dakota	ND	Watford City, McKenzie Co.	Hiland Partners	50	2011	Bakken Shale	
		North Dakota	ND	Lonesome Creek, McKenzie Co.	Oneok Partners	200	2015	Bakken Shale	$390 million
		North Dakota	ND	Badlands, McKenzie Co.	Targa Resources	45	2011	Bakken Shale	
		North Dakota	ND	Red Wing Creek, McKenzie Co.	True Oil	6	2013	Bakken Shale	
		North Dakota	ND	DeWitt, Divide Co.	USG Midstream Bakken	3	2013	Bakken Shale	
		North Dakota	ND	Robinson Lake, Mountrail Co.	Whiting Oil & Gas	50	2015	Bakken Shale	
		PADD II West Subtotal				**1,274**			
	PADD II Subtotal					**6,467**			
III	GCLA	Louisiana	LA	Cotton Valley, Dubberly	Regency Energy Partners	200	2015	Cotton Valley	Mid 2015
		Louisiana	LA	Lincoln Parish	PennTex Midstream	200	2015	Haynesville Shale	First quarter 2015

Appendix C.2 – List of New NGL Plants Due to Shale Gas Growth
Sources: Oil and Gas Journal, June 2, 2014, Gas Processing May/June 2014

PADD	Sub PADD	Region	State	Name, Location	Owner, Operator	Capacity MMcf/d	Start Up	Basin, Play	Notes
III	**GCLA**	**PADD II GCLA Subtotal**				400			
	GCTX	North, East Texas	TX	Carthage East, Panola Co., TX	MarkWest Energy	120	2013	Haynesville-Bossier Shale	recently completed
		North, East Texas	TX	Waskom, Harrison Co., TX	CenterPoint Energy Field Services	35	2012	Haynesville-Bossier Shale	CenterPoint acquired Martin Midstream's 50% interest, capacity now 320 MMcf/d
		South Texas	TX	Flag City, Edna, TX	Boardwalk Field Services	150	2013	Eagle Ford Shale	
		South Texas	TX	Houston Central, Colorado Co., TX	Copano Energy	400	2013	Eagle Ford Shale	completed in first quarer 2013, brings capacity to 1.1 bcf/d
		South Texas	TX	Eagle, Jackson Co., TX	DCP Midstream	200	2013	Eagle Ford Shale	commissioned in first quarter 2013
		South Texas	TX	Chisholm, Fayette Co., TX	Energy Transfer Partners	120	2012	Eagle Ford Shale	$70 - 80 million
		South Texas	TX	Jackson Co., TX	Energy Transfer Partners	400	2013	Eagle Ford Shale	Phase 1, $450 million
		South Texas	TX	Jackson Co., TX	Energy Transfer Partners	200	2013	Eagle Ford Shale	Phase 2, $400-435 million, in service first quarter 2014
		South Texas	TX	Jackson Co., TX	Energy Transfer Partners	200	2013	Eagle Ford Shale	Phase 3, $400 - 435 million, in service first quarter 2014
		South Texas	TX	Karnes Co., TX	Energy Transfer Partners	200	2013	Eagle Ford Shale	now in service
		South Texas	TX	Silver Oak, Bee Co., TX	TEAK Midstream	200	2012	Eagle Ford Shale	pending acquisition of TEAK Midstream by Atlas Pipeline Partners

Appendix C.2 – List of New NGL Plants Due to Shale Gas Growth
Sources: Oil and Gas Journal, June 2, 2014, Gas Processing May/June 2014

PADD	Sub PADD	Region	State	Name, Location	Owner, Operator	Capacity MMcf/d	Start Up	Basin, Play	Notes
III	GCTX	South Texas	TX	Brasada, La Salle Co., TX	Anadarko	200	2013	Eagle Ford Shale	First quarter 2014 completion date, brings total to 455 mmcf/d
		South Texas	TX	Goliad, South Texas	DCP Midstream	200	2014	Eagle Ford Shale	first quarter 2014 completion date.
		South Texas	TX	Revelle, Webb Co., TX	Howard Energy Partners	200	2014	Eagle Ford Shale	first quarter 2014 completion date, $100 million
		North, East Texas	TX	Fairway, San Augustine Co.	Azure Midstream	10	2014	Haynesville-Bossier Shale	recently completed
		North, East Texas	TX	Beckville, Panola Co.	Enbridge Energy Partners	150	2015	Haynesville-Bossier Shale	Will serve Cotton Valley play; first quarter 2015
		North, East Texas	TX	Godley, Johnson Co.	Energy Transfer Partners	200	2013	Barnett Shale	Brought total capacity up to 700 MMcf/d
		PADD III GCTX Subtotal				**3,185**			
	WTX/NM	North, East Texas	TX	Longhorn, Wise Co., TX	Targa Resources	200	2014	Barnett Shale	$150 Million; Expected in service by third quarter 2013
		West Texas, Permian Basin	TX	Deadwood, Glasscock Co., TX	Crosstex, Apache	70	2012	Permian Basin	$85 million; 20 MMcf/d refrigeration, 50 MMcf/d cryogenic
		West Texas, Permian Basin	TX	Rawhide, Glasscock Co., TX	DCP Midstream	75	2013	Permian Basin	In service mid 2013
		West Texas, Permian Basin	TX	Ramsey 1, Reeves Co., TX	Nuevo Midstream	10	2012	Avalon-Bone Springs Shale	Phase 1
		West Texas, Permian Basin	TX	Ramsey 2, Reeves Co., TX	Nuevo Midstream	100	2013	Avalon-Bone Springs Shale	Phase 2, came online in early 2013

Appendix C.2 – List of New NGL Plants Due to Shale Gas Growth
Sources: Oil and Gas Journal, June 2, 2014, Gas Processing May/June 2014

PADD	Sub PADD	Region	State	Name, Location	Owner, Operator	Capacity MMcf/d	Start Up	Basin, Play	Notes
III	WTX/NM	West Texas, Permian Basin	TX	Ramsey 3, Reeves Co., TX	Nuevo Midstream	200	2014	Avalon-Bone Springs Shale	Will bring total capacity to 210 MMcf/d
		West Texas, Permian Basin	TX	Ward Co., TX	Regency, Anadarko, Chesapeake	125	2012	Avalon-Bone Springs Shale	$100 million, 25 MMcf/d refrigeration, 100 MMcf/d cryogenic
		West Texas, Permian Basin	TX	Red Bluff 1, Orla, TX	Southern Union	200	2013	Avalon-Bone Springs Shale	online mid-2013, pending acquisition by Regency
		Permian Basin	TX	Midway, West Texas	DCP Midstream	75	2014	Permian Basin	first half 2014 in service
		South Texas	TX	Yoakum, Lavaca Co., TX	Enterprise Products Partners	600	2012	Eagle Ford Shale	capable of NGL recovery of 75,000 Bcf/d
		South Texas	TX	Yoakum, Lavaca Co., TX	Enterprise Products Partners	300	2013	Eagle Ford Shale	now in service, brings total to 900 MMcf/d
		Oklahoma, Texas Panhandle	TX	Phoenix-Arrington, Hemphill Co., TX	Eagle Rock Energy	80	2011	Granite Wash Play	
		Oklahoma, Texas Panhandle	TX	Wheeler Co., TX	Eagle Rock Energy	60	2013	Granite Wash Play	second quarter 2013 completion
		Oklahoma, Texas Panhandle	TX	Woodall, Hemphill Co., TX	Eagle Rock Energy	60	2012	Granite Wash Play	$72 million
		Oklahoma, Texas Panhandle	TX	Ajax, Wheeler, Wheeler Co., TX	Enbridge Energy Partners	150	2013	Granite Wash Play	mid 2013, $230 million
		Oklahoma, Texas Panhandle	TX	Allison, Hemphill Co., TX	Enbridge Energy Partners	150	2011	Granite Wash Play	
		Oklahoma, Texas Panhandle	TX	Hemphill Co., TX	Unit Corp.	45	2012	Granite Wash Play	increased total capacity to 160 mmcf/d

Appendix C.2 – List of New NGL Plants Due to Shale Gas Growth
Sources: Oil and Gas Journal, June 2, 2014, Gas Processing May/June 2014

PADD	Sub PADD	Region	State	Name, Location	Owner, Operator	Capacity MMcf/d	Start Up	Basin, Play	Notes
III	WTX/NM	West Texas, Permian Basin	TX	Ramsey IV	Nuevo Midstream	200	2015	Avalon-Bone Springs Shale	Third quarter 2015; will bring total to 510 MMcf/d
		West Texas, Permian Basin	TX	Ramsey V	Nuevo Midstream	400	2016	Avalon-Bone Springs Shale	Mid 2016; will bring total to 910 MMcf/d
		West Texas, Permian Basin	TX	Winkler, Loving Cos.	Outrigger Energy	60	2014	Permian Basin	Fourth quarter 2014
		West Texas, Permian Basin	TX	Edward, West Texas	Atlas Pipeline Partners	200	2014	Permian Basin	second half 2014, initial capacity will be 100 MMcf/d
		West Texas, Permian Basin	NM	Red Hills, Lea Co.	Agave Energy	60	2012	Avalon-Bone Springs Shale	
		West Texas, Permian Basin	TX	Bearkat, Glasscock Co.	EnLink Midstream	60	2014	Permian Basin	Summer 2014; developed by Crosstex before EnLink merger
		West Texas, Permian Basin	NM	Willow Lake, Eddy Co.	Crestwood Midstream	20	2014	Avalon-Bone Springs Shale	Third quarter 2014
		West Texas, Permian Basin	NM	Delaware Ranch, Eddy Co.	Crestwood Midstream	120	2015	Avalon-Bone Springs Shale	Construction will begin after Willow Lake
		West Texas, Permian Basin	TX	Driver, Midland Co.	Atlas Pipeline Partners	200	2013	Permian Basin	Increased West Texas system capacity to 455 MMcf/d
		West Texas, Permian Basin	TX	Reeves Co.	PennTex Midstream	60	2014	Permian Basin	July 2014 completion
		West Texas, Permian Basin	NM	Zia II, Lea Co.	DCP Midstream	200	2015	Avalon-Bone Springs Shale	First half 2015

Appendix C.2 – List of New NGL Plants Due to Shale Gas Growth
Sources: Oil and Gas Journal, June 2, 2014, Gas Processing May/June 2014

PADD	Sub PADD	Region	State	Name, Location	Owner, Operator	Capacity MMcf/d	Start Up	Basin, Play	Notes
III	**WTX/NM**	West Texas, Permian Basin	TX	James Lake, Ector Co.	Canyon Midstream	70	2014	Permian Basin	Late 2014
		Oklahoma, Texas Panhandle	TX	Antelope Hills, Hemphill Co	Penn Virginia Resources Corp.	140	2012	Granite Wash Play	phase I increased to 80 MMcf/d; phase 2 increased to 140 MMcf/d
		PADD III WTX/NM Subtotal				**4,290**			
	PADD III Subtotal					**7,875**			
IV	**IV**	Colorado Wyoming	CO	O'Connor, Weld Co.	DCP Midstream	160	2014	Niobrara shale	Operated at 110 MMcf/d in 2013; expanded to 160 MMcf/d in first quarter 2014
		Colorado Wyoming	WY	Bucking Horse	Crestwood Midstream	120	2014	Niobrara shale	Fourth quarter 2014
		Colorado Wyoming	CO	Plant 10	DCP Midstream	200	2015	Denver-Julesburg Basin	Will be located near Lucerne II plant
		Colorado Wyoming	CO	Lucerne II, Greely, Weld Co.	DCP Midstream	230	2015	Denver-Julesburg Basin	Second quarter 2015
		Colorado Wyoming	CO	DeBeque	Summit Midstream	20	2014	Mancos Shale	First quarter 2014; formerly Beartracker Energy, acquired by Summit Midstream Partners
	PADD IV Subtotal					**730**			
U.S. Total						**19,927**			

Appendix C.3 – Underground Gas Storage Sites: Aquifers

PADD	Sub PADD	State	Company Name	Field Name	Reservoir Name	Working Gas Capacity (Mcf)	Total Field Capacity (Mcf)	Maximum Daily Delivery (Mcf)
I	B	PA	COLUMBIA GAS OF PA INC	BLACKHAWK	BLACKHAWK	942,256	942,256	10,000
		PADD IB Subtotal				**942,256**	**942,256**	**10,000**
	PADD I Subtotal					**942,256**	**942,256**	**10,000**
II	East	KY	ALCAN ALUMINUM CORPORATION	EAST SLAUGHTERS	PENNSYLVANIA	629,000	767,000	3,000
		KY	LOUISVILLE GAS AND ELECTRIC COMPANY	DOE RUN	DOE RUN	3,990,000	5,800,000	55,000
		KY	CITY OF ELIZABETHTOWN NATURAL GAS	CECILIA STORAGE	LEGO LAUREL	2,010,000	3,000,000	10,000
		PADD II East Subtotal				**6,629,000**	**9,567,000**	**68,000**
	KS/OK	OK	CHAPARRAL ENERGY LLC	ENFISCO	PENNSYLVANIA	30,668	170,000	500
		PADD II KS/OK Subtotal				**30,668**	**170,000**	**500**
	North	IA	NATURAL GAS PIPELINE CO OF AMERICA	CAIRO	GALESVILLE MT SIMON	28,415,000	94,059,427	378,000
		IA	NATURAL GAS PIPELINE CO OF AMERICA	KEOTA	ST PETER	2,814,000	6,000,000	65,000
		IA	NORTHERN NATURAL GAS COMPANY	REDFIELD	ST PETER ELGIN MT SIMON	42,399,000	133,750,000	600,000
		IA	NATURAL GAS PIPELINE CO OF AMERICA	COLUMBUS CITY	GALESVILLE MT SIMON	16,685,000	54,400,193	175,000
		IL	NATURAL GAS PIPELINE CO OF AMERICA	HERSCHER NORTHWEST	MT SIMON	2,207,013	17,500,000	65,000
		IL	NORTHERN ILLINOIS GAS COMPANY	ANCONA	MT SIMON	60,900,000	172,826,000	850,000
		IL	MISSISSIPPI RIVER TRANSMISSION	ST. JACOB	ST PETER	2,038,874	4,798,874	26,000
		IL	PEOPLES GAS LIGHT AND COKE COMPANY	MANLOVE FIELD (0		38,755,881	173,404,101	800,000
		IL	NORTHERN ILLINOIS GAS COMPANY	LAKE BLOOMINGTON	MT SIMON	8,400,000	49,538,000	150,000

Appendix C.3 – Underground Gas Storage Sites: Aquifers

PADD	Sub PADD	State	Company Name	Field Name	Reservoir Name	Working Gas Capacity (Mcf)	Total Field Capacity (Mcf)	Maximum Daily Delivery (Mcf)
II	North	IL	AMERENCIPS ILLINOIS COMPANY	HILLSBORO	ST PETER	7,600,000	25,331,033	125,000
		IL	AMERENCIPS ILLINOIS COMPANY	SHANGHAI	GALESVILLE	2,100,000	12,096,636	80,000
		IL	AMERENCIPS ILLINOIS	SCIOTA	MT SIMON	500,000	5,056,217	8,000
		IL	SOUTHWEST GAS STORAGE COMPANY	WAVERLY	ST PETER	4,479,919	51,100,000	70,000
		IL	NORTHERN ILLINOIS GAS COMPANY	PONTIAC	MT SIMON	3,720,000	42,864,000	100,000
		IL	NORTHERN ILLINOIS GAS COMPANY	HUDSON	MT SIMON	10,250,000	46,854,000	175,000
		IL	NORTHERN ILLINOIS GAS COMPANY	PECATONICA	EAU CLAIRE	1,720,000	3,286,000	75,000
		IL	AMERENCIPS ILLINOIS COMPANY	GLASFORD	NIAGARAN	4,013,699	12,134,923	120,000
		IL	NORTHERN ILLINOIS GAS COMPANY	PONTIAC	GALESVILLE	8,500,000	18,737,000	200,000
		IL	NORTHERN ILLINOIS GAS COMPANY	TROY GROVE	MT SIMON	48,000,000	79,976,000	1,100,000
		IL	AMERENCIPS ILLINOIS COMPANY	LINCOLN	NIAGARAN	4,158,784	12,174,029	70,000
		IL	NORTHERN ILLINOIS GAS COMPANY	LEXINGTON	MT SIMON	8,250,000	52,185,000	150,000
		IN	INDIANA GAS COMPANY DBA VECTREN	SELLERSBURG	KNOX	143,517	1,444,517	7,000
		IN	INDIANA GAS COMPANY DBA VECTREN	WOLCOTT	TRENTON	1,180,846	7,030,000	49,000
		IN	CITIZENS ENERGY GROUP	HOWESVILLE	DEVONIAN	1,050,000	4,250,000	40,000
		IN	CITIZENS ENERGY GROUP	WORTHINGTON	DEVONIAN	3,516,000	13,200,000	67,500
		IN	CITIZENS ENERGY GROUP	SIMPSON CHAPEL	DEVONIAN	400,000	2,200,000	8,500

Appendix C.3 – Underground Gas Storage Sites: Aquifers

PADD	Sub PADD	State	Company Name	Field Name	Reservoir Name	Working Gas Capacity (Mcf)	Total Field Capacity (Mcf)	Maximum Daily Delivery (Mcf)
II	North	IN	CITIZENS ENERGY GROUP	DIXON	DEVONIAN	869,000	2,780,000	38,500
		IN	CITIZENS ENERGY GROUP	MINERAL CITY	DEVONIAN	400,000	2,083,000	12,000
		IN	CITIZENS ENERGY GROUP	SWITZ CITY	DEVONIAN	857,000	5,635,000	38,500
		IN	TEXAS GAS TRANSMISSION CORP	LEESVILLE	GENEVA	1,793,076	3,800,000	40,801
		IN	NORTHERN INDIANA PUBLIC SVC C	GRASS CREEK	MT SIMON	1,989,138	17,880,050	42,500
		IN	NORTHERN INDIANA PUBLIC SVC C	ROYAL CENTER	TRENTON	5,034,716	15,655,241	100,000
		IN	TEXAS GAS TRANSMISSION CORP.	WILFRED	GENEVA	1,981,883	4,787,966	40,000
		MN	CENTERPOINT ENERGY	WATERVILLE	MT SIMON A	2,000,000	7,000,000	50,000
		MO	LACLEDE GAS COMPANY	FLORISSANT	ST PETER SANDST	6,000,000	13,845,000	380,000
		PADD II North Subtotal				**333,122,346**	**1,169,662,207**	**6,296,301**
	PADD II Subtotal					**339,782,014**	**1,179,399,207**	**6,364,801**
IV	IV	UT	QUESTAR PIPELINE COMPANY	COALVILLE	LONGWALL	692,000	2,983,827	65,000
		UT	QUESTAR PIPELINE COMPANY	CHALK CREEK	KELVIN	256,000	1,280,709	35,000
		WY	QUESTAR PIPELINE CO	LEROY	THAYNES	836,000	6,705,113	75,000
	PADD IV Subtotal					**1,784,000**	**10,969,649**	**175,000**
V	V	WA	PUGET SOUND ENERGY	JACKSON PRAIRIE	ZONES 2 9	24,600,000	46,900,000	1,150,000
	PADD V Subtotal					**24,600,000**	**46,900,000**	**1,150,000**
Total U.S.						**367,108,270**	**1,238,211,112**	**7,699,801**

Appendix C.4 – Underground Gas Storage Sites: Depleted Reservoirs

PADD	Sub PADD	State	Company Name	Field Name	Reservoir Name	Working Gas Capacity (Mcf)	Total Field Capacity (Mcf)	Maximum Daily Delivery (Mcf)
I	B	MD	TEXAS EASTERN TRANSMISSION LP	ACCIDENT	ORISKANY	18,300,000	64,000,000	400,000
		NY	NATIONAL FUEL GAS SUPPLY CORPORATION	NASHVILLE STORAGE	MEDINA	3,930,000	8,980,000	110,000
		NY	NATIONAL FUEL GAS SUPPLY CORPORATION	DERBY STORAGE	MEDINA	250,000	470,000	5,000
		NY	NATIONAL FUEL GAS SUPPLY CORPORATION	HOLLAND STORAGE	MEDINA	1,100,000	2,670,000	35,000
		NY	NATIONAL FUEL GAS SUPPLY CORPORATION	ZOAR STORAGE	ONONDAGA	600,000	2,250,000	51,000
		NY	NATIONAL FUEL GAS SUPPLY CORPORATION	LIMESTONE STORAGE	ORISKANY	2,000,000	9,000,000	37,000
		NY	NATIONAL FUEL GAS SUPPLY CORPORATION	SHERIDAN STORAGE	MEDINA	1,100,000	4,410,000	25,000
		NY	NATIONAL FUEL GAS SUPPLY CORPORATION	PERRYSBURG STORAGE	MEDINA	1,850,000	5,050,000	60,000
		NY	NATIONAL FUEL GAS SUPPLY CORPORATION	BEECH HILL STORAGE	ORISKANY	9,900,000	23,000,000	66,000
		NY	NATIONAL FUEL GAS SUPPLY CORPORATION	BENNINGTON STORAGE	MEDINA	1,800,000	5,130,000	75,300
		NY	NATIONAL FUEL GAS SUPPLY CORPORATION	LAWTONS STORAGE	MEDINA	970,000	2,850,000	33,000
		NY	NATIONAL FUEL GAS SUPPLY CORPORATION	EAST INDEPEND-ENCE STORAGE	ORISKANY	2,200,000	6,400,000	38,000
		NY	NATIONAL FUEL GAS SUPPLY CORPORATION	COLDEN STORAGE	MEDINA	7,550,000	18,720,000	120,000
		NY	STEUBEN GAS STORAGE COMPANY	ADRIAN	ADRIAN	6,200,000	9,000,000	59,486
		NY	WYCKOFF GAS STORAGE	ONONDAGA		6,117,000	6,966,000	400,000
		NY	ARLINGTON GAS STORAGE COMPANY LLC	THOMAS CORNERS	THOMAS CORNER	7,000,000	10,000,000	140,000
		NY	ARLINGTON GAS STORAGE COMPANY LLC	SENECA LAKE STORAGE	SENECA LAKE STOR	1,450,000	2,340,000	145,000

Appendix C.4 – Underground Gas Storage Sites: Depleted Reservoirs

PADD	Sub PADD	State	Company Name	Field Name	Reservoir Name	Working Gas Capacity (Mcf)	Total Field Capacity (Mcf)	Maximum Daily Delivery (Mcf)
I	B	NY	CENTRAL NEW YORK OIL AND GAS COMPANY	STAGECOACH FIELD	WIDELL BARNHART OW	24,787,815	30,537,815	500,000
		NY	COLUMBIA GAS TRANSMISSION LLC	NORTH GREENWOOD	ORISKANY	1,100,000	3,200,000	5,400
		NY	COLUMBIA GAS TRANSMISSION LLC	GREENWOOD	ORISKANY	130,000	3,325,000	-
		NY	COLUMBIA GAS TRANSMISSION LLC	DUNDEE	ORISKANY	3,870,000	11,360,000	62,400
		NY	DOMINION TRANSMISSION INC	WOODHULL	ORISKANY	20,597,000	35,904,000	357,000
		NY	DOMINION TRANSMISSION INC	QUINLAN	ONODOGA REEF	4,000,000	7,900,000	300,000
		NY	NATIONAL FUEL GAS SUPPLY CORPORATION	COLLINS STORAGE	MEDINA	2,850,000	6,680,000	50,000
		NY	HONEOYE STORAGE CORPORATION	HONEOYE	HONEOYE	6,573,780	11,250,000	70,000
		NY	NATIONAL FUEL GAS SUPPLY CORPORATION	TUSCARORA STORAGE	ORISKANY	3,800,000	6,386,000	58,000
		NY	NATIONAL FUEL GAS SUPPLY CORPORATION	WEST INDEPENDENCE STORAGE	ORISKANY	7,300,000	11,800,000	53,000
		PA	NATIONAL FUEL GAS SUPPLY CORPORATION	EAST BRANCH STORAGE	COOPER	4,500,000	13,810,000	55,000
		PA	EQUITRANS L P	SWARTS COMPLEX	FIFTY FOOT SAND	1,581,357	2,600,000	41,000
		PA	NATIONAL FUEL GAS SUPPLY CORPORATION	BELMOUTH STORAGE	COOPER	800,000	1,400,000	10,000
		PA	NATIONAL FUEL GAS SUPPLY CORPORATION	BOONE MOUNTAIN STORAGE	5TH VENANGO	930,000	2,059,000	15,000
		PA	NATIONAL FUEL GAS SUPPLY CORPORATION	CORRY STORAGE	MEDINA	200,000	1,250,000	25,000
		PA	NATIONAL FUEL GAS SUPPLY CORPORATION	QUEEN STORAGE	QUEEN	300,000	945,000	5,000
		PA	NATIONAL FUEL GAS SUPPLY CORPORATION	ST MARYS STORAGE	5TH VENANGO	220,000	531,000	4,000

Appendix C.4 – Underground Gas Storage Sites: Depleted Reservoirs

PADD	Sub PADD	State	Company Name	Field Name	Reservoir Name	Working Gas Capacity (Mcf)	Total Field Capacity (Mcf)	Maximum Daily Delivery (Mcf)
I	B	PA	NATIONAL FUEL GAS SUPPLY CORPORATION	GALBRAITH STORAGE	1ST SHEFFIELD	1,900,000	2,948,000	37,000
		PA	NATIONAL FUEL GAS SUPPLY CORPORATION	MARKLE STORAGE	5TH VENANGO	155,000	335,000	11,000
		PA	NATIONAL FUEL GAS SUPPLY CORPORATION	WELLENDORF STORAGE	5TH VENANGO	450,000	1,128,000	6,000
		PA	NATIONAL FUEL GAS SUPPLY CORPORATION	SWEDE HILL STORAGE	TIONA	300,000	1,100,000	8,000
		PA	NATIONAL FUEL GAS SUPPLY CORPORATION	KEELOR STORAGE	COOPER	2,400,000	3,950,000	82,000
		PA	NATIONAL FUEL GAS SUPPLY CORPORATION	ELLISBURG STORAGE	ORISKANY	12,216,000	21,654,000	229,900
		PA	NATIONAL FUEL GAS SUPPLY CORPORATION	WHARTON STORAGE	ORISKANY	16,000,000	31,400,000	300,000
		PA	NATIONAL FUEL GAS SUPPLY CORPORATION	HENDERSON STORAGE	1 3 VENANGO	2,500,000	5,308,000	33,000
		PA	NATIONAL FUEL GAS SUPPLY CORPORATION	SUMMIT STORAGE	ORISKANY	1,600,000	4,200,000	60,000
		PA	PEOPLES NATURAL GAS COMPANY	WEBSTER	MURRYSVILLE	551,000	1,171,568	15,000
		PA	PEOPLES NATURAL GAS COMPANY	GAMBLE HAYDEN	BAYARD	1,122,000	2,848,860	20,000
		PA	PEOPLES NATURAL GAS COMPANY	MURRYSVILLE (DICE)	HUNDRED FOOT	1,530,000	3,245,640	40,000
		PA	PEOPLES NATURAL GAS COMPANY	TRUITTSBURG	BAYARD	2,142,000	3,690,870	45,000
		PA	PEOPLES NATURAL GAS COMPANY	RAGER MOUNTAIN	ORISKANY	11,300,000	20,493,217	180,000
		PA	STECHMAN RIDGE LP	STECHMAN RIDGE	ORISKANY	12,000,000	17,700,000	300,000
		PA	TENNESSEE GAS PIPELINE COMPANY	HEBRON	ORISKANY	17,300,000	29,300,000	485,000
		PA	PEOPLES TWP LLC	SMITH-PARKE	SMITHPARKE	-	126,895	-
		PA	PEOPLES TWP LLC	HUGHES	HUGHES	24,000	70,087	4,875
		PA	PEOPLES TWP LLC	KINTER	KINTER	400,000	1,547,359	9,000

Appendix C.4 – Underground Gas Storage Sites: Depleted Reservoirs

PADD	Sub PADD	State	Company Name	Field Name	Reservoir Name	Working Gas Capacity (Mcf)	Total Field Capacity (Mcf)	Maximum Daily Delivery (Mcf)
I	B	PA	PEOPLES TWP LLC	VARDY	VARDY	73,000	119,902	11,250
		PA	PEOPLES TWP LLC	PORTMAN	PORTMAN	94,000	175,427	11,250
		PA	COLUMBIA GAS TRANSMISSION LLC	ARTEMAS A	ORISKANY	8,720,000	14,457,000	250,000
		PA	COLUMBIA GAS TRANSMISSION LLC	ARTEMAS B	ORISKANY	1,305,000	2,147,000	42,500
		PA	COLUMBIA GAS TRANSMISSION LLC	HOLBROOK	GANTZ 50FT SANDSTONE	1,500,000	1,540,000	-
		PA	COLUMBIA GAS TRANSMISSION LLC	HEARD	BIG INJUN 50 FT	8,500,000	8,900,000	-
		PA	COLUMBIA GAS TRANSMISSION LLC	DONEGAL	GORDON ST	4,930,000	9,900,000	219,700
		PA	DOMINION TRANSMISSION INC	TIOGA	ORISKANY	24,000,000	36,000,000	504,000
		PA	DOMINION TRANSMISSION INC	HARRISON	ORISKANY	20,717,600	34,100,000	455,000
		PA	DOMINION TRANSMISSION INC	OAKFORD	MURRYSVILLE	81,400,000	132,400,000	1,405,000
		PA	DOMINION TRANSMISSION INC	LEIDY TAMARACK	ORISKANY SANDSTONE	61,201,000	113,223,000	1,224,000
		PA	DOMINION TRANSMISSION INC	SHARON	ORISKANY	2,405,000	4,605,000	25,000
		PA	DOMINION TRANSMISSION INC	SABINSVILLE	ORISKANY	17,697,000	35,618,000	518,000
		PA	DOMINION TRANSMISSION INC	SOUTH BEND	ONE HUNDRED FOOT	5,810,000	17,340,000	200,000
		PA	DOMINION TRANSMISSION INC	GREENLICK	ORISKANY	28,830,000	55,860,000	1,062,000
		PA	DOMINION TRANSMISSION INC	NORTH SUMMIT	CHERT	11,500,000	23,000,000	3,000,000
		PA	DOMINION TRANSMISSION INC	ELLISBURG	ORISKANY	43,314,000	76,776,000	815,880
		PA	UGI STORAGE COMPANY	MEEKER	ORISKANY	3,700,000	5,200,000	60,000
		PA	EQUITRANS L P	BUNOLA	GANTZ SAND	4,450,870	7,300,000	180,000

Appendix C.4 – Underground Gas Storage Sites: Depleted Reservoirs

PADD	Sub PADD	State	Company Name	Field Name	Reservoir Name	Working Gas Capacity (Mcf)	Total Field Capacity (Mcf)	Maximum Daily Delivery (Mcf)
		PA	EQUITRANS L P	TEPE	FIFTH SAND	757,767	1,275,000	43,000
		PA	EQUITRANS L P	FINLEYVILLE	FIFTH SAND	520,253	800,000	38,000
		PA	EQUITRANS L P	PRATT	FIFTH SAND	4,989,255	9,300,000	65,000
		PA	EQUITRANS L P	HUNTERS CAVE	BIG INJUN SAND	3,750,208	6,700,000	36,000
		PA	NATIONAL FUEL GAS SUPPLY CORPORATION	OWLS NEST STORAGE	TIONA	650,000	2,760,000	6,000
		PADD IB Subtotal				**580,561,905**	**1,083,887,640**	**15,447,941**
		VA	SALTVILLE GAS STORAGE COMPANY LLC	EARLY GROVE		1,400,000	3,300,000	20,000
		WV	COLUMBIA GAS TRANSMISSION LLC	MAJORSVILLE SH	SALT SANDS	3,300,000	3,483,000	-
		WV	HAMPSHIRE GAS CO	AUGUSTA	ORISKANY SAND	2,166,000	6,558,000	63,521
		WV	EQUITRANS L P	HAYES	KEENER SAND	154,690	193,000	6,000
		WV	EQUITRANS L P	LOGANSPORT	KEENER SAND	2,500,371	3,700,000	49,000
		WV	EQUITRANS L P	RHODES	GANTZ SAND	5,534,013	9,700,000	86,000
		WV	EQUITRANS L P	MAPLE LAKE	FIFTY FOOT	1,247,927	2,400,000	14
I	C	WV	EQUITRANS L P	SKIN CREEK	GORDON SAND	1,323,250	2,165,000	37,000
		WV	EQUITRANS L P	COMET	FIFTY FOOT SAND	3,657,597	5,300,000	68,000
		WV	EQUITRANS L P	SHIRLEY	KEENER SAND	2,256,322	3,800,000	29,000
		WV	CRANBERRY PIPELINE CORPORATION	HEIZER A-1	BIG LIME	2,730,000	3,150,000	46,000
		WV	CRANBERRY PIPELINE CORPORATION	RALEIGH CITY	MAXTON	660,000	1,550,000	17,000
		WV	COLUMBIA GAS TRANSMISSION LLC	COCO C	ORISKANY	8,510,000	17,270,000	138,700
		WV	COLUMBIA GAS TRANSMISSION LLC	VICTORY B	MAXTON BIG INJUN	10,994,424	25,100,000	166,800
		WV	COLUMBIA GAS TRANSMISSION LLC	COCO B	ORISKANY	3,200,000	9,700,000	154,000
		WV	COLUMBIA GAS TRANSMISSION LLC	MAJORSVILLE DP	BIG INJUN NINEVAH	23,000,000	24,523,000	-
		WV	COLUMBIA GAS TRANSMISSION LLC	HUNT	ORISKANY	1,100,000	6,139,900	12,400

Appendix C.4 – Underground Gas Storage Sites: Depleted Reservoirs

PADD	Sub PADD	State	Company Name	Field Name	Reservoir Name	Working Gas Capacity (Mcf)	Total Field Capacity (Mcf)	Maximum Daily Delivery (Mcf)
I	C	WV	COLUMBIA GAS TRANSMISSION LLC	RIPLEY	ORISKANY	10,503,000	25,050,000	83,200
		WV	COLUMBIA GAS TRANSMISSION LLC	GLADY	CHERT ORISKANY	12,707,000	31,200,000	323,300
		WV	HAMPSHIRE GAS CO	LITTLE CAPON	ORISKANY SAND	2,370,000	7,176,000	73,466
		WV	COLUMBIA GAS TRANSMISSION LLC	TERRA ALTA SOUTH	CHERT ORISKANY	3,700,000	16,600,000	66,700
		WV	COLUMBIA GAS TRANSMISSION LLC	LANHAM	BIG LIME	1,500,000	4,800,000	47,600
		WV	COLUMBIA GAS TRANSMISSION LLC	TERRA ALTA	CHERT ORISKANY	11,500,000	41,663,000	210,300
		WV	COLUMBIA GAS TRANSMISSION LLC	COCO A	ORISKANY	22,321,296	39,140,000	413,200
		WV	COLUMBIA GAS TRANSMISSION LLC	ROCKPORT	ORISKANY	3,761,000	8,160,000	114,300
		WV	COLUMBIA GAS TRANSMISSION LLC	VICTORY A	MAXTON	2,309,000	7,150,000	67,700
		WV	HARDY STORAGE COMPANY LLC	HARDY	ORISKANY	12,300,000	29,600,000	170,900
		WV	DOMINION TRANSMISSION INC	RACHET-NEWBERNE	GRANTZ SANDSTON	4,446,000	7,911,000	50,000
		WV	DOMINION TRANSMISSION INC	BRIDGEPORT	FIFTH FOOT SAND	4,182,000	8,221,000	81,600
		WV	DOMINION TRANSMISSION INC	KENNEDY LOST CREEK	GANTZ	87,539,000	165,521,000	1,100,000
		WV	EQUITRANS L P	MOBLEY	BIG INJUN SAND	5,170,350	7,400,000	125,000
		PADD IC Subtotal				**258,043,240**	**527,623,900**	**3,820,701**
	PADD I Subtotal					**838,605,145**	**1,611,511,540**	**19,268,642**
II	East	KY	DELTA NATURAL GAS COMPANY INC	KETTLE ISLAND	PIONEER 1 2 4	-	1,406,000	2,000
		KY	DELTA NATURAL GAS COMPANY INC	CANADA MOUNTAIN	119G 34211 34	2,600,000	4,800,000	30,500
		KY	ATMOS ENERGY CORPORATION	EAST DIAMOND	MISSISSIPPIAN	2,160,000	3,800,000	40,000

Appendix C.4 – Underground Gas Storage Sites: Depleted Reservoirs

PADD	Sub PADD	State	Company Name	Field Name	Reservoir Name	Working Gas Capacity (Mcf)	Total Field Capacity (Mcf)	Maximum Daily Delivery (Mcf)
II	East	KY	ATMOS ENERGY CORPORATION	KIRKWOOD	MISSISSIPPIAN	250,000	650,000	12,000
		KY	ATMOS ENERGY CORPORATION	CROFTON EAST	MISSISSIPPIAN	50,000	105,000	1,000
		KY	ATMOS ENERGY CORP	HICKORY	MISSISSIPPIAN	451,600	1,301,600	24,000
		KY	ATMOS ENERGY CORP	BON HARBOR	MISSISSIPPIAN	778,600	2,078,600	24,000
		KY	ATMOS ENERGY CORPORATION	GRANDVIEW	MISSISSIPPIAN	305,400	655,400	4,500
		KY	ATMOS ENERGY CORPORATION	HAWESVILLE N W	MISSISSIPPIAN	51,397	102,795	2,160
		KY	ATMOS ENERGY CORPORATION	ST CHARLES	MISSISSIPPIAN	2,685,195	6,107,478	44,600
		KY	ATMOS ENERGY CORPORATION	BARNSLEY	BETHEL	1,278,900	2,878,900	30,000
		KY	TEXAS GAS TRANSMISSION CORPORATION	DIXIE	ABERDEEN	3,005,075	7,687,000	101,493
		KY	TEXAS GAS TRANSMISSION CORPORATION	HANSON	TAR SPRINGS	5,587,322	12,087,322	156,000
		KY	TEXAS GAS TRANSMISSION CORPORATION	GRAHAM LAKE	TAR SPRINGS	1,300,000	3,800,000	23,000
		KY	TEXAS GAS TRANSMISSION CORPORATION	WEST GREENVILLE	BETHEL	4,184,441	8,300,000	93,842
		KY	TEXAS GAS TRANSMISSION CORPORATION	MIDLAND	BETHEL	65,182,677	136,323,530	1,030,000
		KY	LOUISVILLE GAS AND ELECTRIC COMPANY	MAGNOLIA DEEP	MAGNOLIA DEEP	2,030,000	4,400,000	42,000
		KY	LOUISVILLE GAS AND ELECTRIC COMPANY	MAGNOLIA UPPER	MAGNOLIA UPPER	3,540,000	6,000,000	74,000

Appendix C.4 – Underground Gas Storage Sites: Depleted Reservoirs

PADD	Sub PADD	State	Company Name	Field Name	Reservoir Name	Working Gas Capacity (Mcf)	Total Field Capacity (Mcf)	Maximum Daily Delivery (Mcf)
II	East	KY	LOUISVILLE GAS AND ELECTRIC COMPANY	CENTER	CENTER	2,380,000	5,100,000	40,000
		KY	LOUISVILLE GAS AND ELECTRIC COMPANY	MULDRAUGH	MULDRAUGH	3,150,000	4,600,000	220,000
		MI	CONSUMERS ENERGY COMPANY	LYON 29	NIAGARAN REEF	1,208,598	2,142,068	200,000
		MI	MICHIGAN CONSOLIDATED GAS COMPANY	WASHINGTON 10COMPLEX	NIAGARAN	89,317,411	105,490,195	1,520,000
		MI	MICHIGAN CONSOLIDATED GAS C	TAGGART	MICHIGAN STRAY B	39,781,203	73,035,391	700,000
		MI	MICHIGAN CONSOLIDATED GAS COMPANY	COLUMBUS	NIAGARANGUELPH	16,171,059	20,875,186	450,000
		MI	MICHIGAN GAS UTILITIES CORPORATION	PARTELLO	NIGERAN REEF	3,094,000	7,272,000	40,000
		MI	ANR PIPELINE COMPANY	WINFIELD	MICHIGAN STRAY SANDSTONE	6,800,000	15,929,068	100,000
		MI	ANR PIPELINE COMPANY	LOREED	REED CITY DOLOMITE	22,000,000	45,710,000	860,000
		MI	ANR PIPELINE COMPANY	SOUTH CHESTER 15	SALINA A1 NIAGAR	13,400,000	19,455,000	212,000
		MI	ANR PIPELINE COMPANY	GOODWELL	MICHIGAN STRAY SANDSTONE	19,300,000	31,696,237	400,000
		MI	ANR PIPELINE COMPANY	REED CITY	MICHIGAN STRAY SANDSTONE	13,200,000	28,911,921	312,000
		MI	ANR PIPELINE COMPANY	CENTRAL CHARLTON	SALINA A1 NIAGA	12,900,000	19,000,000	220,000
		MI	ANR PIPELINE COMPANY	LINCOLN-FREEMAN	MICHIGAN STRAY S	17,000,000	35,722,869	400,000
		MI	ANR PIPELINE COMPANY	MUTTONVILLE	SALINA A1 NIAGARAN RE	8,200,000	13,413,697	400,000
		MI	ANR PIPELINE COMPANY	AUSTIN	MICHIGAN STRAY SANDSTONE	7,000,000	23,083,675	864,000
		MI	ANR PIPELINE COMPANY	COLD SPRINGS 1	COLD SPRINGS 1	15,330,000	19,830,000	200,000
		MI	ANR PIPELINE COMPANY	EATON RAPIDS	EATON RAPIDS	12,984,000	16,234,000	160,000

Appendix C.4 – Underground Gas Storage Sites: Depleted Reservoirs

PADD	Sub PADD	State	Company Name	Field Name	Reservoir Name	Working Gas Capacity (Mcf)	Total Field Capacity (Mcf)	Maximum Daily Delivery (Mcf)
II	East	MI	SEMCO ENERGY GAS COMPANY	LEE 2	HARRIS 12	660,782	923,905	18,000
		MI	SEMCO ENERGY GAS COMPANY	COLLINS FIELD	COLLINS FIELD	1,457,399	2,349,330	21,000
		MI	SEMCO ENERGY GAS COMPANY	LEE 11	WATSON ODELL	621,501	965,425	16,000
		MI	SOUTHWEST GAS STORAGE COMPANY	HOWELL	GUELPH	17,685,776	31,100,000	410,000
		MI	MICHIGAN CONSOLIDATED GAS COMPANY	BELLE RIVER	NIAGARANGUELPH	59,176,111	79,035,971	2,175,000
		MI	MICHIGAN CONSOLIDATED GAS COMPANY	WEST COLUMBUS	NIAGARANGUELPH	22,376,927	26,752,859	1,300,000
		MI	CONSUMERS ENERGY COMPANY	CRANBERRY LAKE	MICHIGAN STRAY	10,022,520	27,709,320	100,000
		MI	ANR PIPELINE COMPANY	COLD SPRINGS 12	COLD SPRINGS 12	25,257,000	28,884,000	300,000
		MI	ANR PIPELINE COMPANY	EXCELSIOR 6	EXCELSIOR 6	10,810,000	12,310,000	200,000
		MI	ANR PIPELINE COMPANY	RAPID RIVER 35	RAPID RIVER 35	15,051,000	17,327,000	250,000
		MI	ANR PIPELINE COMPANY	COLD SPRINGS 31	COLD SPRINGS 31	4,555,000	5,302,000	200,000
		MI	LEE 8 STORAGE PARTNERSHIP	LEE 8	NIAGARAN	3,078,287	3,680,287	50,000
		MI	ANR PIPELINE CO	BLUE LAKE 18A	BLUE LAKE 18A	47,086,000	54,119,000	700,000
		MI	BLUEWATER GAS STORAGE LLC	BLUEWATER GAS STORAGE	COLUMBUS III	23,300,000	30,030,000	700,000
		MI	BLUEWATER GAS STORAGE LLC	BLUEWATER GAS STORAGE LLC	KIMBALL 27	2,700,000	3,470,000	100,000
		MI	CONSUMERS ENERGY COMPANY	OVERISEL	A2 CARBONATE	22,599,800	52,077,800	250,000
		MI	CONSUMERS ENERGY COMPANY	HESSEN	NIAGARAN REEF	12,282,500	16,681,600	300,000
		MI	CONSUMERS ENERGY COMPANY	IRA	NIAGARAN REEF	1,965,200	6,141,250	400,000

Appendix C.4 – Underground Gas Storage Sites: Depleted Reservoirs

PADD	Sub PADD	State	Company Name	Field Name	Reservoir Name	Working Gas Capacity (Mcf)	Total Field Capacity (Mcf)	Maximum Daily Delivery (Mcf)
II	East	MI	CONSUMERS ENERGY COMPANY	NORTHVILLE	NIAGARAN REEF	1,179,120	2,533,143	250,000
		MI	CONSUMERS ENERGY COMPANY	FOUR CORNERS	NIAGARAN REEF	2,348,414	3,714,228	50,000
		MI	CONSUMERS ENERGY COMPANY	SWAN CREEK	NIAGARAN REEF	412,692	638,690	13,000
		MI	CONSUMERS ENERGY COMPANY	RAY	NIAGARAN REEF	42,350,060	64,228,632	1,555,000
		MI	CONSUMERS ENERGY COMPANY	LENOX	SALINA NIAGARAN	884,340	3,168,885	230,000
		MI	CONSUMERS ENERGY COMPANY	SALEM	A2 CARBONATE	9,826,000	29,969,300	120,000
		MI	CONSUMERS ENERGY COMPANY	PUTTYGUT	NIAGARAN REEF	9,334,700	14,345,960	350,000
		MI	CONSUMERS ENERGY COMPANY	RIVERSIDE	MICHIGAN STRAY	1,473,900	8,843,400	20,000
		MI	CONSUMERS ENERGY COMPANY	WINTERFIELD	MICHIGAN STRAY	24,859,780	71,041,980	2,400,000
		OH	NGO TRANSMISSION	PERRY STORAGE	CLINTON SANDS	1,081,000	2,800,000	18,000
		OH	NGO TRANSMISSION INC	MUSKIE STORAGE	CLINTON SANDS	350,000	924,000	4,000
		OH	NGO TRANSMISSION INC	ZANE STORAGE	CLINTON SANDS	1,155,000	2,147,000	12,000
		OH	NGO DEVELOPMENT CORPORATION	LOVE STORAGE	ROSE RUN FORMATION	126,000	150,000	3,000
		OH	NGO DEVELOPMENT CORPORATION	ERIC STORAGE	CLINTON SANDS	350,000	3,150,000	150
		OH	LAKE SHORE GAS STORAGE INC	COLUMBIANA	ORISKANY	2,319,922	892,124	3,000
		OH	COLUMBIA GAS TRANSMISSION LLC	HOLMES	CLINTON	10,800,000	21,700,000	67,600
		OH	COLUMBIA GAS TRANSMISSION LLC	LAUREL	CLINTON	8,300,000	23,300,000	168,600
		OH	COLUMBIA GAS TRANSMISSION LLC	WELLINGTON	CLINTON	8,835,000	23,099,850	153,900

Appendix C.4 – Underground Gas Storage Sites: Depleted Reservoirs

PADD	Sub PADD	State	Company Name	Field Name	Reservoir Name	Working Gas Capacity (Mcf)	Total Field Capacity (Mcf)	Maximum Daily Delivery (Mcf)
II	East	OH	COLUMBIA GAS TRANSMISSION LLC	PAVONIA	CLINTON	24,301,000	49,500,000	284,700
		OH	COLUMBIA GAS TRANSMISSION LLC	GUERNSEY	ORISKANY	2,645,000	7,300,000	35,000
		OH	COLUMBIA GAS TRANSMISSION LLC	MCARTHUR	CLINTON	5,277,913	10,900,000	75,900
		OH	COLUMBIA GAS TRANSMISSION LLC	MEDINA	CLINTON	4,370,000	10,400,000	70,500
		OH	NORTHWOOD ENERGY CORP	ZANE	CLINTON	85,000	145,000	-
		OH	COLUMBIA GAS TRANSMISSION LLC	LUCAS	CLINTON	25,106,512	60,400,000	408,900
		OH	COLUMBIA GAS TRANSMISSION LLC	CRAWFORD	CLINTON	31,103,000	79,103,000	294,800
		OH	COLUMBIA GAS TRANSMISSION LLC	LORAIN	CLINTON	3,330,000	10,700,000	62,200
		OH	COLUMBIA GAS TRANSMISSION LLC	BRINKER	2ND BEREA	3,070,000	7,650,000	42,300
		OH	COLUMBIA GAS TRANSMISSION LLC	WAYNE	CLINTON	8,200,000	17,400,000	108,800
		OH	COLUMBIA GAS TRANSMISSION LLC	BENTON	CLINTON	7,723,000	25,100,000	145,100
		OH	COLUMBIA GAS TRANSMISSION LLC	WEAVER	CLINTON	19,021,540	50,500,000	177,300
		OH	DOMINION EAST OHIO	STARK-SUMMIT	CLINTON	59,400,000	153,914,770	2,134,000
		OH	DOMINION EAST OHIO	CHIPPEWA	CLINTON	2,800,000	12,386,246	546,000
		OH	DOMINION EAST OHIO	GABOR WERTZ	CLINTON	600,000	4,382,300	108,000
		PADD II East Subtotal				**1,002,361,574**	**1,865,273,187**	**26,434,845**
	KS/OK	KS	HAWKER BEECHCRAFT	STANLAKER	NORTH DERBY GAS	55,000	1,055,000	457
		KS	ATMOS ENERGY CO	LIBERTY NORTH	SQUIRREL	2,850,000	4,850,000	25,000
		KS	NORTHERN NATURAL GAS COMPANY	LYONS	ARBUCKLE	8,000,000	24,000,000	130,000

Appendix C.4 – Underground Gas Storage Sites: Depleted Reservoirs

PADD	Sub PADD	State	Company Name	Field Name	Reservoir Name	Working Gas Capacity (Mcf)	Total Field Capacity (Mcf)	Maximum Daily Delivery (Mcf)
II	KS/OK	KS	COLORADO INTERSTATE GAS CO	BOEHM	MORROW G AND KEYES	5,229,000	12,729,000	124,321
		KS	SOUTHERN STAR CENTRAL GAS PIPELINE	PIQUA	COLONY	300,000	3,200,000	16,000
		KS	SOUTHERN STAR CENTRAL GAS IPELINE	NORTH WELDA	COLONY	4,400,000	13,300,000	107,000
		KS	SOUTHERN STAR CENTRAL GAS PIPELINE	MCLOUTH	MCLOUTH	2,200,000	14,100,000	224,000
		KS	SOUTHERN STAR CENTRAL GAS PIPELINE	ELK CITY	BURGESS	11,800,000	33,300,000	269,000
		KS	SOUTHERN STAR CENTRAL GAS PIPELINE	SOUTH WELDA	COLONY	6,700,000	18,300,000	156,000
		KS	SOUTHERN STAR CENTRAL GAS PIPELINE	ALDEN	MISENER	4,200,000	14,700,000	134,000
		KS	SOUTHERN STAR CENTRAL GAS PIPELINE	COLONY	COLONY SQUIRREL	4,600,000	12,700,000	149,000
		KS	MID CONTINENT CENTER	KONOLD	LANGDON SAND	630,000	995,000	10,000
		KS	MID CONTINENT CENTER	BREHM	SIMPSON	1,989,000	3,884,670	35,000
		KS	CHEROKEE WELLS LLC	BUFFALO	BUFFALO	180,000	360,000	3,000
		KS	CHEROKEE WELLS LLC	FREDONIA	CHERRYVALE	160,000	360,000	3,000
		KS	SOUTHWEST GAS STORAGE COMPANY	BORCHERS NORTH	MORROW	28,372,187	63,453,413	350,000
		KS	ATMOS ENERGY CO	LIBERTY SOUTH	SQUIRREL	387,000	687,000	500
		KS	NORTHERN NATURAL GAS COMPANY	CUNNINGHAM	VIOLA SIMPSON	40,916,000	62,000,000	720,000
		OK	NATURAL GAS PIPELINE CO OF AMERICA	SAYRE	PANHANDLE DOLOMATE	56,827,000	85,000,000	667,000
		OK	ONEOK GAS STORAGE	EDMOND	RED FORK	17,383,736	46,750,000	700,000
		OK	CENTERPOINT ENERGY GAS TRANSMISSION	ADA	UPPER CROMWELL	13,000,000	21,414,000	295,000
		OK	CENTERPOINT ENERGY GAS TRANSMISSION	CHILES DOME	WAPANUCKA	13,500,000	24,500,000	309,000

Appendix C.4 – Underground Gas Storage Sites: Depleted Reservoirs

PADD	Sub PADD	State	Company Name	Field Name	Reservoir Name	Working Gas Capacity (Mcf)	Total Field Capacity (Mcf)	Maximum Daily Delivery (Mcf)
II	KS/OK	OK	ENOGEX INC	STUART STORAGE FAC	HARTSHORNE SAND	6,000,000	12,000,000	200,000
		OK	ENOGEX INC	WETUMKA	CHANNEL BOCH SANDSTONE	18,000,000	26,000,000	440,000
		OK	SOUTHWEST GAS STORAGE COMPANY	NORTH HOPETON	HUNTON	3,500,000	18,100,000	50,000
		OK	ONEOK GAS STORAGE LLC	OSAGE	BURGESS	1,573,703	2,804,000	50,000
		OK	ONEOK GAS STORAGE LLC	DEPEW	DUTCHER	19,152,824	56,300,000	800,000
		OK	SOUTHERN STAR CENTRAL GAS PIPELINE	WEBB	CHAT	12,500,000	42,400,000	203,000
		OK	ONEOK GAS STORAGE LLC	HASKELL	BOOCH	3,890,354	13,500,000	43,000
		OK	SALT PLAINS STORAGE LLC	SALT PLAINS STORAGE	TONKAWA	15,500,000	21,900,000	200,000
		PADD II KS/OK Subtotal				**303,361,574**	**654,642,083**	**6,413,278**
	North	IL	EGYPTIAN GAS STORAGE CO.	MILLS	TAR SPRINGS	925,000	1,075,000	5,000
		IL	AMERENCIPS ILLINOIS COMPANY	CENTRALIA	PETRO	143,000	621,371	14,000
		IL	AMERENCIPS ILLINOIS COMPANY	TILDEN	CYPRESS	870,000	2,697,615	50,000
		IL	AMERENCIPS ILLINOIS COMPANY	HOOKDALE	BENOIST	715,000	1,005,328	30,000
		IL	AMERENCIPS ILLINOIS COMPANY	EDEN	CYPRESS	390,000	1,403,351	8,000
		IL	AMERENCIPS ILLINOIS COMPANY	FREEBURG	CYPRESS	1,900,000	6,935,776	35,000
		IL	AMERENCIPS ILLINOIS COMPANY	JOHNSTON CITY	TAR SPRINGS	745,927	1,744,648	10,000
		IL	AMERENCIPS ILLINOIS COMPANY	ASHMORE	PENNSYLVANIAN	1,128,835	3,686,523	20,000

Appendix C.4 – Underground Gas Storage Sites: Depleted Reservoirs

PADD	Sub PADD	State	Company Name	Field Name	Reservoir Name	Working Gas Capacity (Mcf)	Total Field Capacity (Mcf)	Maximum Daily Delivery (Mcf)
II	North	IL	NATURAL GAS PIPELINE CO OF AMERICA	LOUDON	DEVONIAN	40,000,000	80,000,000	510,000
		IL	NATURAL GAS PIPELINE CO OF AMERICA	COOKS MILLS	CYPRESS ROSICLARE	4,600,000	6,400,000	150,000
		IL	NATURAL GAS PIPELINE CO OF AMERICA	HERSCHER	GAILSVILLE MT SIMON	35,950,000	114,500,000	1,280,000
		IN	INDIANA GAS COMPANY DBA VECTREN	UNIONVILLE	DEVONIAN	3,537,155	9,223,693	80,000
		IN	HUNTINGBURG CITY OF MUNICIPAL UTILIT	SOUTH HUNTINGBURG	JACKSON	264,000		3,000
		IN	SIGCORP ENERGY SERVICES	WHITE RIVER	CYPRESS SAND	732,000	800,000	10,000
		IN	TEXAS GAS TRANSMISSION CO	ALFORD	CYPRESS	918,753	2,518,753	40,801
		IN	INDIANA GAS COMPANY DBA VECTREN	HINDUSTAN	DEVONIAN	799,891	2,206,290	7,500
		IN	TEXAS GAS TRANSMISSION CORPORATION	OAKTOWN	STAUNTON	301,852	1,051,852	9,180
		IN	SOUTHERN INDIANA GAS ELECTRIC	MONROE CITY	SANDSTONE	4,434,117	7,601,558	28,000
		IN	SOUTHERN INDIANA GAS ELECTRIC	OLIVER	PENNSYLVANIA SAND	1,400,000	3,204,603	45,500
		IN	SOUTHERN INDIANA GAS ELECTRIC	MIDWAY	TAR SPRINGS SAND	1,200,000	3,100,357	35,500
		IN	SOUTHERN INDIANA GAS ELECTRIC	LOOGOOTEE	BETHEL SAND	221,000	296,006	-
		NE	KINDER MORGAN INTERSTATE GAS TRNAMIS	HUNTSMAN	THIRD DAKOTA J SAND	14,819,082	34,850,000	210,000
		TN	CAMBRIDGE RESOURCESINC	LICK BRANCH OIL RECOVERY PROJECT		-	-	-
		PADD II North Subtotal				**115,995,612**	**284,922,724**	**2,581,481**
	PADD II Subtotal					**1,422,152,990**	**2,804,837,994**	**35,429,604**

Appendix C.4 – Underground Gas Storage Sites: Depleted Reservoirs

PADD	Sub PADD	State	Company Name	Field Name	Reservoir Name	Working Gas Capacity (Mcf)	Total Field Capacity (Mcf)	Maximum Daily Delivery (Mcf)
III	GCLA	AL	FREEBIRD GAS STORAGE LLC	FREEBIRD STORAGE	EAST DETROIT	11,200,000	13,500,000	350,000
		AR	SOURCEGAS DISTRIBUTION LLC ARKANSAS	LONE ELM	HENSON SAND	9,500,000	14,500,000	70,500
		AR	SOURCEGAS DISTRIBUTION LLC ARKANSAS	WHITE OAK	WOOLSEY SAND	2,678,159	7,352,779	141,925
		LA	MISSISSIPPI RIVER TRANSMISSION CORP	WEST UNIONVILLE	VAUGHN	11,465,506	25,000,000	190,000
		LA	TRANSCONTINENTAL GAS PIPELINE CO	HESTER	DISCORBIS D2	12,000,000	23,526,307	102,000
		LA	TRUNKLINE GAS COMPANY	EPPS	MONROE GAS ROCK	13,000,000	43,000,000	150,000
		LA	GULF SOUTH PIPELINE	BISTINEAU GAS STORAGE	PETTIT	85,746,000	141,000,000	1,200,000
		LA	CENTERPOINT ENERGY GAS TRANSMISSION	RUSTON	JAMES	4,000,000	7,000,000	70,000
		LA	BEAR CREEK STORAGE COMPANY	BEAR CREEK	PETTIT	58,000,000	107,900,000	900,000
		LA	MISSISSIPPI RIVER TRANSMISSION CORP	EAST UNIONVILLE	VAUGHN	27,568,160	55,200,000	390,000
		MS	MONROE GAS STORAGE CO LLC	FOUR MILE CREEK	CARTER AB SANDSTONE	9,918,947	19,562,000	269,360
		MS	ATMOS ENERGY CORPORATION	GOODWIN STORAGE	EVANS SANDSTONE	1,214,059	2,800,000	18,000
		MS	ATMOS ENERGY CORPORATION	AMORY STORAGE FIELD	CARTER	1,000,000	1,856,976	30,000
		MS	SOUTHERN NATURAL GAS COMPANY	MULDON	CHESTER GAS POOL	31,000,000	92,820,000	750,000
		MS	TRANSCONTINENTAL GAS PIPELINE CO	EMINENCE	EMINENCE SALT DOME	15,000,000	22,717,138	1,500,000
		MS	GULF SOUTH PIPELINE	JACKSON GAS STOR	SELMA CHALK	5,126,000	7,950,000	250,000

Appendix C.4 – Underground Gas Storage Sites: Depleted Reservoirs

PADD	Sub PADD	State	Company Name	Field Name	Reservoir Name	Working Gas Capacity (Mcf)	Total Field Capacity (Mcf)	Maximum Daily Delivery (Mcf)
III	GCLA	MS	CALEDONIA ENERGY PARTNERS LLC	CARTER	SANDSTONE	19,900,000	24,800,000	550,000
		PADD III GCLA Subtotal				**318,316,831**	**610,485,200**	**6,931,785**
	GCTX	TX	HOUSTON PIPE LINE COMPANY	BAMMEL	COCKFIELD 6200	64,173,408	129,293,958	1,300,000
		TX	NATURAL GAS PIPELINE CO OF AMERICA	NORTH LANSING	RODESSA YOUNG	96,000,000	156,000,000	1,240,000
		TX	ATMOS PIPELINE TEXAS	TRI-CITIES	BACON LIME AND RODESSA	27,691,968	36,056,554	228,803
		TX	KINDERMORGAN TEJAS PIPELINE LLC	WEST CLEAR LAKE		83,200,000	122,000,000	600,000
		TX	ENBRIDGE GP	PICKTON	BACONLIME	16,037,815	20,000,000	18,000
		TX	LOWER COLORADO RIVER AUTHORITY	HILBIG GAS STORAGE	HILBIG UNIT	4,000,000	6,000,000	110,000
		PADD III GCTX Subtotal				**291,103,191**	**469,350,512**	**3,496,803**
	WTX/NM	TX	ATMOS PIPELINE TEXAS	NEW YORK STORAGE	CHAPPEL LIME	5,619,490	7,691,267	73,407
		TX	ATMOS PIPELINE TEXAS	LAKE DALLAS	STRAWN SAND	2,944,016	4,251,915	69,987
		TX	FORT CONCHO GAS STORAGE INC	PECON STATION (CANYON LIME)		1,460,000	2,210,000	60,000
		TX	DEVON GAS SERVICES LP	LONE CAMP(600)		713,106	1,066,178	27,351
		TX	ENERGY TRANSFER FUEL LP	SOUTH BRYSON	SOUTH BRYSON	5,968,000	9,407,000	175,000
		TX	ATMOS PIPELINE TEXAS	LEERAY	STRAWN SAND	-	1,439,371	20,000
		TX	KATY STORAGE TRANSPORTATION LP	KATY HUB & STORA	FULSHEAR HILLEB	23,500,000	31,300,000	700,000
		TX	DEL PETROLEUM CORP	POTTSVILLE SOUTH	MARBLE FALLS LIM	-	915,513	20,886
		TX	ONEOK TEXAS GAS STORAGE LP	LOOP	YATES	-	-	-
		TX	ONEOK TEXAS GAS STORAGE LP	FELMAC	YATES	1,882,827	3,978,276	80,000
		TX	WORSHAM STEED GAS STORAGE LLC	WORSHAM STEED	WORSHAM STEED	23,000,000	35,300,000	425,000

Appendix C.4 – Underground Gas Storage Sites: Depleted Reservoirs

PADD	Sub PADD	State	Company Name	Field Name	Reservoir Name	Working Gas Capacity (Mcf)	Total Field Capacity (Mcf)	Maximum Daily Delivery (Mcf)
III	**WTX/NM**	TX	HILL LAKE GASS STORAGE LLC	HILL LAKE	LAKE SAND	9,300,000	13,500,000	450,000
		TX	ATMOS PIPELINE TEXAS	LA-PAN	CHAPPEL LIME	3,406,505	4,470,727	978,483
		NM	EL PASO NATURAL GAS COMPANY	WASHINGTON RANCH	MORROW	47,600,000	68,600,000	250,000
		NM	GRAMA RIDGE STORAGE TRANS	GRAMA RIDGE	MORROW	15,700,000	20,500,000	200,000
		PADD III WTX/NM Subtotal				**141,093,944**	**204,630,247**	**3,530,114**
	PADD III Subtotal					**750,513,966**	**1,284,465,959**	**13,958,702**
IV	**IV**	CO	COLORADO INTERSTATE GAS CO	LATIGO	DAKOTA J	9,100,000	22,278,343	139,240
		CO	COLORADO INTERSTATE GAS COMPANY	TOTEM STORAGE	J SAND	7,000,000	10,700,000	200,000
		CO	EAST CHEYENNE GAS STORAGE LLC	EAST CHEYENNE	WEST PEETZ	11,500,000	17,200,000	212,963
		CO	COLORADO INTERSTATE GAS COMPANY	YOUNG	DAKOTA D SAND	5,790,049	9,945,689	250,000
		CO	PUBLIC SERVICE COMPANY OF COLORADO	ASBURY	DAKOTA	3,056,731	4,593,268	9,091
		CO	COLORADO INTERSTATE GAS COMPANY	FLANK	MORROW AND CHEROKEE	7,182,777	19,891,378	164,104
		CO	SOURCEGAS ENERGY SERVICES LLC	WOLF CREEK	COZETTE	2,168,721	8,385,200	25,000
		CO	PUBLIC SERVICE COMPANY OF COLORADO	ROUNDUP	JSAND	6,029,784	16,080,524	21,960
		CO	PUBLIC SERVICE COMPANY OF COLORADO	FRUITA	BUCKHORN	257,614	320,340	-
		CO	COLORADO INTERSTATE GAS COMPANY	FORT MORGAN	DAKOTA D	8,496,000	14,858,000	450,000
		MT	WILLISTON BASIN INTERSTATE PIPELINE	BAKER	JUDITH RIVER	164,427,000	287,200,000	149,815
		MT	NORTHWESTERN CORP DBA NW ENERGY	SHELBY	SUNBURST	23,801	76,000	-

Appendix C.4 – Underground Gas Storage Sites: Depleted Reservoirs

PADD	Sub PADD	State	Company Name	Field Name	Reservoir Name	Working Gas Capacity (Mcf)	Total Field Capacity (Mcf)	Maximum Daily Delivery (Mcf)
IV	IV	MT	NORTHWESTERN CORP DBA NW ENERGY	DRY CREEK	FRONTIER GREYBULL	19,800,000	37,825,000	40,000
		MT	NORTHWESTERN CORP DBA NW ENERGY	COBB	MOULTON	11,750,000	42,100,000	150,000
		MT	NORTHWESTERN CORP DBA NW ENERGY	BOX ELDER	EAGLE	1,500,000	9,100,000	5,000
		UT	QUESTAR PIPELINE CO	CLAY BASIN	DAKOTA	53,950,000	120,200,000	765,000
		WY	CLEAR CREEK STORAGE CO LLC	CLEAR CREEK	NUGGET	4,000,000	8,000,000	50,000
		WY	WILLISTON BASIN INTERSTATE PIPELINE	BILLY CREEK	FRONTIER	542,200	2,943,500	5,000
		WY	RYCKMAN CREEK RESOURCES LLC	RYCKMAN CREEK	NUGGET SAND	10,000,000	20,000,000	240,000
		WY	SOURCEGAS DISTRIBUTION LLC	BUNKER HILL	SHANNON	847,200	2,257,200	2,200
		WY	WILLISTON BASIN INTERSTATE PIPELINE	ELK BASIN	CLOVERLY	28,379,400	63,205,100	134,985
		WY	SOURCEGAS DISTRIBUTION LLC	OIL SPRINGS	SUNDANCE	3,565,400	20,351,500	28,000
		WY	SOURCEGAS DISTRIBUTION LLC	EAST MAHONEY	DAKOTA SUNDANCE	-		-
		WY	SOURCEGAS DISTRIBUTION LLC	KIRK RANCH (BOBB	CLOVERLY	535,200	1,474,900	2,750
	PADD IV Subtotal					**359,901,877**	**738,985,942**	**3,045,108**
V	V	CA	LODI GAS STORAGE LLC	LODI	MIDLAND	8,500,000	10,500,000	250,000
		CA	GILL RANCH STORAGE LLC	GILL RANCH	STARKEY	20,000,000	23,500,000	650,000
		CA	LODI GAS STORAGE LLC	KIRBY HILLS	DOMENGINE	5,000,000	7,000,000	50,000
		CA	LODI GAS STORAGE LLC	KIRBY HILLS WAGENET		10,000,000	12,000,000	200,000
		CA	PACIFIC GAS AND ELECTRIC COMPANY	MCDONALD ISLAND	MCDONALD	82,000,000	136,568,000	1,680,000
		CA	PACIFIC GAS AND ELECTRIC COMPANY	PLEASANT CREEK	PETERS	2,250,000	7,328,500	70,000

Appendix C.4 – Underground Gas Storage Sites: Depleted Reservoirs

PADD	Sub PADD	State	Company Name	Field Name	Reservoir Name	Working Gas Capacity (Mcf)	Total Field Capacity (Mcf)	Maximum Daily Delivery (Mcf)
V	V	CA	PACIFIC GAS AND ELECTRIC COMPANY	LOS MEDANOS	DOMENGINE	17,946,000	29,139,000	400,000
		CA	LODI GAS STORAGE LLC	LODI	DOMENGINE	8,500,000	10,500,000	250,000
		CA	CENTRAL VALLEY GAS STORAGE LLC	PRINCETON GAS FIELD		11,000,000	12,400,000	300,000
		CA	WILD GOOSE STORAGE INC	WILD GOOSE	L4	50,000,000	79,000,000	950,000
		CA	SOUTHERN CALIFORNIA GAS COMPANY	HONOR RANCHO	WAYSIDE 13	24,200,000	44,000,000	1,000,000
		CA	SOUTHERN CALIFORNIA GAS COMPANY	PLAYA DEL REY	PUENTE	2,400,000	6,861,545	480,000
		CA	SOUTHERN CALIFORNIA GAS COMPANY	ALISO CANYON	SESNONFREW	86,000,000	167,525,000	1,860,000
		CA	SOUTHERN CALIFORNIA GAS COMPANY	LA GOLETA	VAQUEROS	21,500,000	46,089,073	420,000
		OR	NW NATURAL	MIST	SCHLICKER	1,075,000	1,647,000	35,000
		OR	NW NATURAL	MIST	MEYER	1,075,000	1,647,000	35,000
		OR	NW NATURAL	MIST	BUSCH	310,000	812,000	30,000
		OR	NW NATURAL	MIST	BRUER	4,075,000	6,500,000	105,000
		OR	NW NATURAL	MIST	ALS POOL	2,415,000	5,283,000	107,000
		OR	NW NATURAL	MIST	REICHHOLD	2,985,000	6,561,000	108,000
		OR	NW NATURAL	MIST	FLORA	3,575,000	6,300,000	110,000
	PADD V Subtotal					**364,806,000**	**621,161,118**	**9,090,000**
Total U.S.						**3,735,979,978**	**7,060,962,553**	**80,792,056**

Appendix C.5 – Underground Gas Storage Sites: Salt Caverns

PADD	Sub PADD	State	Company Name	Field Name	Reservoir Name	Working Gas Capacity (Mcf)	Total Field Capacity (Mcf)	Maximum Daily Delivery (Mcf)
I	C	VA	SALTVILLE GAS STORAGE COMPANY LLC	SALTVILLE STORAGE		4,000,000	6,200,000	325,000
		PADD IC Subtotal				**4,000,000**	**6,200,000**	**325,000**
	PADD I Subtotal					**4,000,000**	**6,200,000**	**325,000**
II	East	MI	SEMCO ENERGY GAS COMPANY	LACEY STORAGE	LACEY SALT CAVERN	175,640	250,834	25,000
		MI	SEMCO ENERGY GAS COMPANY	MARYSVILLE STORAGE	MORTON 16	1,982,988	3,582,906	60,000
		PADD II East Subtotal				**2,158,628**	**3,833,740**	**85,000**
	KS/OK	KS	MID CONTINENT CENTER	YAGGY	SALT CAVERN	375,252	930,573	1,000
		PADD II KS/OK Subtotal				**375,252**	**930,573**	**1,000**
	PADD II Subtotal					**2,533,880**	**4,764,313**	**86,000**
III	GCLA	AL	BAY GAS STORAGE COMPANY LTD	MCINTOSH SALT DOME		16,150,000	21,900,000	1,800,000
		LA	TEXAS EASTERN TRANSMISSION LP	EGAN STORAGE DOME	NA	28,980,000	37,770,000	2,300,000
		LA	BOARDWALK LOUISIANA MIDSTREAM LLC	BOARDWALK STORAGE COMPANY	BAYOU CHOC	7,600,000	11,700,000	450,000
		LA	PONTCHARTRAIN NATURAL GAS SYSTEM	GRAND BAYOU	NAPOLEONVILLE	1,677,502	2,828,672	240,000
		LA	TRANSCONTINENTAL GAS PIPELINE CO	WASHINGTON	COCKFIELD D SAND	75,000,000	120,000,098	882,355
		LA	GULF SOUTH PIPELINE COMPANY	MAGNOLIA GAS STORAGE	SALT DOME	-	8,000,000	-
		LA	ARCADIA GAS STORAGE LLC	ARCADIA	ARCADIA SALT DOME	7,850,000	10,070,000	650,000

Appendix C.5 – Underground Gas Storage Sites: Salt Caverns

PADD	Sub PADD	State	Company Name	Field Name	Reservoir Name	Working Gas Capacity (Mcf)	Total Field Capacity (Mcf)	Maximum Daily Delivery (Mcf)
III	GCLA	LA	JEFFERSON ISLAND STORAGE AND HUB LLC	JEFFERSON ISLAND	AMERICAN ELECTRIC	6,965,600	9,418,500	720,000
		LA	BOBCAT GAS STORAGE	PORT BARRE SALT DOME		13,940,000	18,870,000	600,000
		LA	BRIDGELINE HOLDINGS LP	SORRENTO	UNDERGROUND STORAGE DOME12	4,074,000	8,927,000	240,000
		LA	BRIDGELINE HOLDINGS LP	NAPOLEONVILLE	NS1	6,615,000	10,199,000	400,000
		LA	PINE PRAIRIE ENERGY CENTER LLC	PINE PRAIRIE SALT DOME		48,000,000	59,236,323	3,200,000
		MS	HATTIESBURG GAS STORAGE	HATTIESBURG	PETAL SALT DOME	2,059,000	3,156,000	200,389
		MS	MISSISSIPPI HUB LLC	BOND SALT DOME		14,884,849	20,876,159	900,000
		MS	PETAL GAS STORAGE LLC	PETAL	PETAL	16,099,000	25,428,000	1,386,309
		MS	SG RESOURCES MISSISSIPPI LLC	SOUTHERN PINES ENERGY CENTER		40,000,000	51,200,000	2,400,000
		MS	LEAF RIVER ENERGY CENTER LLC	NEW HOME DOME		12,400,200	16,250,000	2,500,000
		PADD III GCLA Subtotal				**302,295,151**	**435,829,752**	**18,869,053**
	GCTX	TX	TEXAS EASTERN TRANSMISSION LP	MOSS BLUFF STORAGE DOME	N A	22,690,000	29,660,000	1,000,000
		TX	CHEVRON PHILLIPS CHEMICAL CO LP	CLEMENS NE(FR	CLEMENS NE CAVERN 20	1,068,106	1,685,858	75,000
		TX	PB ENERGY STORAGE SERVICES INC	SPINDLETOP	SPINDLETOP	7,200,000	10,900,000	480,000
		TX	TRES PALACIOS GAS STORAGE LLC	MARKHAM		36,600,000	53,500,000	1,500,000
		TX	UNDERGROUND SERVICES MARKHAM LP	MARKHAM	LOUANN SALT	21,900,000	33,800,000	1,100,000

Appendix C.5 – Underground Gas Storage Sites: Salt Caverns

PADD	Sub PADD	State	Company Name	Field Name	Reservoir Name	Working Gas Capacity (Mcf)	Total Field Capacity (Mcf)	Maximum Daily Delivery (Mcf)
III	GCTX	TX	UNDERGROUND STORAGE LLC	PIERCE	JUNCTION	2,230,000	3,330,000	250,000
		TX	ENERGY TRANSFER FUEL LP	BETHEL	LOU ANN SALT 1 2A 3	4,949,100	8,023,400	400,000
		TX	ENTERPRISE TEXAS PIPELINE	BOLING	ENTERPRISE TEXAS PIPELINE	12,990,000	20,000,000	1,400,000
		TX	CENTANA INTERSTATE PIPELINE LLC	SPINDLETOP	LOUANN SALT DOME	8,300,000	12,100,000	500,000
		TX	KINDERMORGAN TEXAS PIPELINE LP	DAYTON NORTH	LOUANN SALT	11,000,000	16,665,000	850,000
		TX	KINDER MORGAN TEJAS PIPELINE LP	STRATTON RIDGE	STRATTON RIDGE	1,410,000	2,290,000	100,000
		TX	DOW PL CO	STRATTON RIDGE	DW69	869,454	2,167,000	30,000
		TX	GOLDEN TRIANGLE STORAGE INC	SPINDLETOP		13,399,289	19,629,508	600,000
		TX	ATMOS PIPELINE TEXAS	BETHEL	LOUANNE SALT	6,232,073	9,215,873	338,516
		TX	FREEPORT LNG DEVELOPMENT LP	STRATTON RIDGE SALT DOME		4,500,000	8,500,000	500,000
		PADD III GCTX Subtotal						
	WTX/NM	TX	CAGO INC	AMBASSADOR(MISSISSIPPI)	CHAPPEL LIME	651,000	2,600,000	1,000
		TX	ONEOK TEXAS GAS STORAGE LP	SALADO	SALADO SALT	2,065,675	3,645,470	200,000
		TX	CHEVRON KEYSTONE GAS STORAGE LLC	KEYSTONE	NA	6,384,500	8,597,598	400,000
		PADD III WTX/NM				**9,101,175**	**14,843,068**	**601,000**
	PADD III Subtotal					**466,734,348**	**682,139,459**	**28,593,569**
U.S. Total						**473,268,228**	**693,101,772**	**29,004,569**

Appendix C.6 – Current LNG Terminals

PADD	Sub PADD	Terminal	Company	Location	Description	Capacity (Bcf/d)	Status	Type
I	A	Everett LNG Expansion	Distrigas of Massachusetts, LLC	Everett, MA	Everett is an existing LNG import terminal located in Everett, Massachusetts. The terminal received its first shipment of LNG in November 1971. The 35-acre site includes a marine terminal for cargo unloading, two double-walled above-ground LNG storage tanks, and associated equipment. On January 10, 2001, the Commission issued a certificate authorizing the construction of four new submerged vaporization units to increase the capacity of the vaporization equipment. Order Issuing Certificate	1.035	Existing	Import
		Neptune LNG Deepwater Port	Suez LNG	Boston, MA	http://www.lngworldnews.com/usa-neptune-suspends-lng-deepwater-port-operations/	0.4	Suspended	
		Northeast Gateway Deepwater Port	Excelerate Energy	Boston, MA	Unprofitable since 2011, http://www.eia.gov/dnav/ng/ng_move_poe1_dcu_RNGM-Z00_a.htm	0.8	Suspended	
		PADD IA Subtotal				**2.235**		
	B	Cove Point LNG Expansion	Dominion CP LNG	Cove Point, MD	Cove Point is an existing LNG import terminal located in Calvert County, Maryland, which was constructed in the mid 1970s. Deliveries were suspended in 1980 due to the high price of LNG imports. The Commission approved the resumption of LNG imports in October 2001, and Cove Point received its first commercial delivery in 23 years in August 2003. On April 29, 2005, the Commission issued a notice of application for authorization to expand the existing Cove Point LNG terminal by: (1) adding two new storage tanks to increase send-out capability and storage; and (2) constructing five new pipelines totaling about 161 miles in length, to be located in Calvert, Prince Georges, and Charles Counties, Maryland, and Juniata, Mifflin, Huntingdon, Centre, Clinton, Green and Potter Counties, Pennsylvania, to deliver additional capacity to pipeline connections in Virginia and Pennsylvania.	1.8	Existing	Import
		PADD IB Subtotal				**1.8**		

Appendix C.6 – Current LNG Terminals

PADD	Sub PADD	Terminal	Company	Location	Description	Capacity (Bcf/d)	Status	Type
I	C	Elba Island LNG Expansion	El Paso Energy	Elba Island, GA	Elba Island is an existing LNG import terminal located on Elba Island, in Chatham County, Georgia, five miles downstream from Savannah, Georgia. The initial authorization for the Elba Island facility was issued in 1972. LNG shipments ceased during the first half of 1980. On March 16, 2000, the project received Commission authorization to re-commission and renovate the LNG facilities. On April 10, 2003, the Commission issued an order authorizing the expansion of the facility, which included adding a second and third docking berth, a fourth cryogenic storage tank, and associated facilities. The expansion enabled an increase of working gas capacity and an increase of the firm sendout rate.	1.6	Existing	Import
		PADD IC Subtotal				**1.6**		
	PADD I Subtotal					**5.635**		
III	GCLA	Sabine Pass LNG	Cheniere Sabine Pass Pipeline Company	Sabine, LA	Sabine Pass is an existing LNG import terminal located in Cameron Parish, Louisiana, which received its first commercial delivery in April 2008. It is authorized to re-export delivered LNG.	4	Existing	Import/ Export
		Sempra-Cameron LNG	Cameron LNG LLC	Hackberry , LA	Cameron LNG issued a letter to go Commence Service on July 29, 2009. It is authorized to re-export delivered LNG.	1.8	Existing	Import/ Export

Appendix C.6 – Current LNG Terminals

PADD	Sub PADD	Terminal	Company	Location	Description	Capacity (Bcf/d)	Status	Type
III	GCLA	Lake Charles	Trunkline LNG Company, LLC	Lake Charles, LA	Lake Charles is an existing LNG terminal located in Lake Charles, Calcasieu Parrish, Louisiana. The LNG facilities were originally authorized in 1977. Deliveries began in 1982, but were suspended in 1983 due to the high cost of LNG. Deliveries were resumed in 1989 and have increased in recent years. On December 18, 2002, the Commission authorized expansion facilities that included a fourth storage tank, additional pumps and vaporizers to increase sendout capacity, a second marine unloading dock, and various supporting facilities. On September 17, 2004, the Commission authorized additional unloading facilities, vaporizers, and pumps to provide additional firm vaporization service and increase sendout capacity.	2.1	Existing	Import
		Gulf LNG	Gulf LNG Energy, LLC	Pascagoula, MS	Gulf LNG issued a letter to Commence Service on September 22, 2011.	1.5	Existing	Import
		PADD III GCLA Subtotal				**9.4**		
	GCTX	Exxon-Golden Pass LNG	Golden Pass LNG	Sabine Pass, TX	Golden Pass LNG is an existing LNG import terminal located near Sabine Pass, Texas, which commenced service in March 2011.	2	Existing	Import
		Freeport LNG	Cheniere/ Freeport LNG Development, LP	Freeport, TX	Freeport is an existing LNG import terminal located in Quintana Island, Texas, which received its first commercial delivery in April 2008. It is authorized to re-export delivered LNG. Expansion to 2.5 BCF/d has been approved.	1.5	Existing	Import/ Export
		PADD III GCTX Subtotal				**3.5**		
	PADD III Subtotal					**12.9**		

Appendix C.6 – Current LNG Terminals

PADD	Sub PADD	Terminal	Company	Location	Description	Capacity (Bcf/d)	Status	Type
V	V	Kenai LNG Export Terminal	Phillips Alaska Natural Gas Corp./Marathon Oil Co.	Kenai, AK	Kenai is an existing LNG export terminal that was constructed in the Cook Inlet Basin area, Alaska, for the liquefaction and storage of LNG and the loading of such onto ships for export and delivery to Japan. The order authorizing exportation of LNG was issued on April 19, 1967. The original export authorization has been amended and extended numerous times by the Department of Energy. The current amendment continues through March 31, 2011.		Existing	Export
	PADD V Subtotal					**N/A**		
VI	VI	Guayanilla Bay LNG	EcoElectrica, LP	Penuelas, PR	Peñuelas is an existing LNG import facility located at Guayanilla Bay, Peñuelas, about nine miles west of Ponce, Puerto Rico. The gas is used to power a 461 megawatt cogeneration plant which sells electricity to the Puerto Rico Electric Power Authority and uses steam to power a desalination facility on the site. It cannot serve or affect deliveries to the Lower 48 states. The order granting authority to construct and operate the LNG facility was issued on May 15, 1996. Approval to begin importing LNG was issued on June 20, 2000. The LNG facilities consist of: (1) a marine terminal with an 1800-foot pier for unloading LNG tankers; (2) two 1,000,000-barrel LNG storage tanks; (3) a vaporization system; (4) various control systems; and (5) piping and other ancillary equipment.		Existing	Import
	PADD VI Subtotal					**N/A**		
U.S. Total						**18.535**		

Appendix C.7 – Proposed LNG Terminals

PADD	Sub PADD	Terminal	Company	Location	Description	Capacity (Bcf/d)	Status	Type
I	A	Downeast LNG	Kestrel Energy	Robbinston, ME	Proposed to FERC.	0.5	Proposed	Import
		Port Ambrose	Liberty Natural	Offshore, New York	Port Ambrose Site identified by project sponsors	0.4	Potential	Import
	B	Cove Point LNG Expansion	Dominion CP LNG	Cove Point, MD	Existing import terminal expanding to also export	0.82	Proposed	Export
	C	Elba Island	Southern LNG Company	Elba Island, GA	Existing import terminal expanding to also export	0.35	Proposed	Export
	PADD I Subtotal					**2.07**		
III	GCLA	Lake Charles	Southern Union/Trunkl-ine LNG Company, LLC	Lake Charles, LA	Existing import terminal expanding to also export	2.2	Proposed	Export
		Cameron LNG	Sempra	Hackberry, LA		1.7	Proposed	Export
		Sabine Pass	Sabine Pass Liquefaction	Sabine Pass, LA		1.4	Proposed	Export
		Lake Charles	Magnolia LNG	Lake Charles, LA		1.07	Proposed	Export
		Plaquemines Parish	CE FLNG	Plaquemines Parish, LA		1.07	Proposed	Export
		Corpus Christi LNG	Cheniere	Corpus Christi, TX	Proposed to FERC.	0.4	Proposed	Import
		Golden Pass LNG	Exxon Mobile/Golden Pass LNG	Sabine Pass, TX	Existing import terminal expanding to also export	2.1	Proposed	Export
	GCTX	**PADD III GCLA Subtotal**				**9.94**		
		Corpus Christi LNG	Cheniere	Corpus Christi, TX	Proposed to FERC.	2.1	Proposed	Export
III	GCTX	Freeport LNG	Freeport LNG Development/Freepo rt LNG Expansion/FLNG Liquefaction	Freeport, TX	Existing import terminal; expanding to also export	1.8	Proposed	Export
		Lavaca Bay	Excelerate Energy	Lavaca Bay, TX	Proposed to FERC.	1.38	Proposed	Export
		PADD III GCTX Subtotal				**5.28**		
	PADD III Subtotal					**15.22**		

Appendix C.7 – Proposed LNG Terminals

PADD	Sub PADD	Terminal	Company	Location	Description	Capacity (Bcf/d)	Status	Type
V	V	Oregon LNG	Oregon LNG	Astoria, OR	Proposed to FERC.	0.5	Proposed	Import
		Coos Bay Oregon	Jordan Cove Energy Project	Coos Bay, OR	Proposed to FERC.	0.9	Proposed	Export
		Oregon LNG		Astoria, OR	Proposed to FERC.	1.25	Proposed	Export
	PADD V Subtotal					**2.65**		
U.S. Total						**19.94**		

Appendix C.8 – Approved LNG Terminals

PADD	Sub PADD	Terminal	Company	Location	Description	Capacity (Bcf/d)	Status	Type
Gulf of Mexico	**Gulf of Mexico**	Main Pass McMoRan Exp.	Main Pass McMoRan Exp.	Gulf of Mexico	Approved - not under construction as of 3/26/14.	1	Approved	
Gulf of Mexico	**Gulf of Mexico**	Bienville LNG	TORP Technology	Gulf of Mexico	Approved - not under construction as of 3/26/14.	1.4	Approved	
I	**C**	Hoegh LNG	Port Dolphin Energy	Offcoast Florida	Approved - not under construction as of 3/26/2014.	1.2	Approved	
III	**GCLA**	Sabine Pass LNG	Cheniere Sabine Pass Pipeline Company	Sabine, LA	Existing import terminal expanding to also export; Under construction.	2.76	Approved	
Total U.S.						**6.36**		

Appendix D.1 – Ethanol Plants
Source: Ethanol Producer Magazine, Jan. 15, 2014

PADD	Sub PADD	State	Plant	Feedstock	Platform	Capacity (MMG/yr)
I	A	RI	Atlantic Ethanol Inc.	Woody Biomass	Cellulosic	10.00
		PADD IA Subtotal				**10.00**
	B	NY	Mascoma Corp. Demo Plant	Mixed hardwood	Cellulosic	0.20
		NY	Sunoco Fulton Ethanol Plant	Corn	Sugar/Starch	85.00
		NY	Western New York Energy LLC	Corn	Sugar/Starch	50.00
		NY	Woodland Biofuels Inc. - Newton Falls	Wood Waste	Cellulosic	20.00
		PA	Pennsylvania Grain Processing LLC	Corn	Sugar/Starch	110.00
		PADD IB Subtotal				**265.20**
	C	FL	Highlands EnviroFuels LLC	Sweet Sorghum, Sugarcane	Sugar/Starch	30.00
		FL	Indian River Bioenergy Center	Vegetative waste, ag waste, MSW	Cellulosic	8.00
		FL	Southeast Renewable Fuels LLC	Sweet Sorghum	Sugar/Starch	20.00
		GA	American Process Inc./Thomaston Demonstration Plant	Multiple Feedstocks (Sugarcane bagasse, woody biomass	Cellulosic	0.30
		GA	Freedom Pines Biorefinery	Woody Biomass	Cellulosic	2.00
		GA	Southwest Georgia Ethanol LLC	Corn	Sugar/Starch	100.00
		GA	World Ethanol Institute LLC	Paulownia	Cellulosic	20.00
		NC	Chemtex International Inc.-Project Alpha	Energy grasses	Cellulosic	20.00
		NC	Clean Burn Fuels LLC	Corn	Sugar/Starch	60.00
		VA	Appomattox Bio Energy LLC	Corn, Sorghum, grains, sugar	Sugar/Starch	65.00
		VA	Fiberight Demonstration Plant	MSW	Cellulosic	0.50
		WV	Mingo County, West Virginia Patriot Facility	Energy beets, cellulosic	Sugar/Starch	6.00

Appendix D.1 – Ethanol Plants
Source: Ethanol Producer Magazine, Jan. 15, 2014

PADD	Sub PADD	State	Plant	Feedstock	Platform	Capacity (MMG/yr)
I	**C**	**PADD IC Subtotal**				**331.80**
	PADD I Subtotal					**607.00**
II	**East**	KY	Agresti LLC	MSW	Cellulosic	20.00
		KY	Commonwealth Agri-Energy LLC	Corn	Sugar/Starch	35.00
		KY	Knox County, Kentucky Patriot Facility	Energy beets, waste sugar, cellulosic	Sugar/Starch	4.00
		KY	Parallel Products of Kentucky	Beverage waste	Sugar/Starch	6.00
		KY	Pike County Patriot Facility	Energy beets, waste sugar, cellulosic	Sugar/Starch	2.00
		MI	American Process Inc./Alpena Biorefinery	Cellulosic: Wood Sugars	Cellulosic	0.80
		MI	Carbon Green BioEnergy LLC	Corn	Sugar/Starch	50.00
		MI	Green Plains Renewable Energy-Riga	Corn	Sugar/Starch	60.00
		MI	Marysville Ethanol LLC	Corn	Sugar/Starch	50.00
		MI	Mascoma Corp./Frontier Renewable Resources LLC	Hardwood	Cellulosic	20.00
		MI	Poet Biorefining-Caro	Corn	Sugar/Starch	53.00
		MI	The Andersons Albion Ethanol LLC	Corn	Sugar/Starch	55.00
		OH	Guardian Lima LLC	Corn	Sugar/Starch	54.00
		OH	Harrison Ethanol LLC	Corn	Sugar/Starch	23.00
		OH	Poet Biorefining-Fostoria	Corn	Sugar/Starch	73.00
		OH	Poet Biorefining-Leipsic	Corn	Sugar/Starch	73.00
		OH	Poet Biorefining-Marion	Corn	Sugar/Starch	73.00
		OH	The Andersons Marathon Ethanol LLC	Corn	Sugar/Starch	110.00
		OH	Three Rivers Energy LLC	Corn	Sugar/Starch	50.00
		OH	Valero Renewable Fuels LLC-Bloomingburg	Corn	Sugar/Starch	120.00

Appendix D.1 – Ethanol Plants
Source: Ethanol Producer Magazine, Jan. 15, 2014

PADD	Sub PADD	State	Plant	Feedstock	Platform	Capacity (MMG/yr)
II	East	OH	Veolia ES Technical Solutions LLC (ethanol plant)	Used Industrial Ethanol	Sugar/Starch	6.00
		PADD II East Subtotal				**937.80**
	KS/OK	KS	Abengoa Bioenergy Biomass of Kansas LLC	Crop Residue	Cellulosic	25.00
		KS	Abengoa Bioenergy Corp. - Colwich	Corn, Sorghum	Sugar/Starch	25.00
		KS	Arkalon Energy LLC	Corn, Sorghum	Sugar/Starch	110.00
		KS	Bonanza BioEnergy LLC	Corn, Sorghum	Sugar/Starch	55.00
		KS	East Kansas Agri-Energy LLC	Corn	Sugar/Starch	43.00
		KS	ESE Alcohol Inc.	Seed Corn	Sugar/Starch	1.50
		KS	Kansas Ethanol LLC	Corn, Sorghum	Sugar/Starch	55.00
		KS	MGP Ingredients, Inc.	Corn	Sugar/Starch	6.00
		KS	Nesika Energy LLC	Corn	Sugar/Starch	10.00
		KS	Prairie Horizon Agri-Energy LLC	Corn, Sorghum	Sugar/Starch	40.00
		KS	Pratt Energy LLC	Corn, Sorghum	Sugar/Starch	55.00
		KS	Reeve Agri Energy	Corn, Sorghum	Sugar/Starch	12.00
		KS	Western Plains Energy LLC	Corn, Sorghum	Sugar/Starch	50.00
		KS	White Energy Russell LLC	Sorghum, Wheat	Sugar/Starch	55.00
		PADD II KS/OK Subtotal				**542.50**
	North	IA	Absolute Energy LLC	Corn	Sugar/Starch	115.00
		IA	Archer Daniels Midland Co.-Cedar Rapids dry mill	Corn	Sugar/Starch	0.00
		IA	Archer Daniels Midland Co.-Cedar Rapids wet mill	Corn	Sugar/Starch	0.00
		IA	Archer Daniels Midland Co.-Clinton	Corn	Sugar/Starch	0.00
		IA	Big River Resources West Burlington LLC	Corn	Sugar/Starch	110.00
		IA	Big River United Energy LLC	Corn	Sugar/Starch	120.00

Appendix D.1 – Ethanol Plants
Source: Ethanol Producer Magazine, Jan. 15, 2014

PADD	Sub PADD	State	Plant	Feedstock	Platform	Capacity (MMG/yr)
II	North	IA	Cargill Inc.-Eddyville	Corn	Sugar/Starch	35.00
		IA	Cargill Inc.-Fort Dodge	Corn	Sugar/Starch	115.00
		IA	Corn LP	Corn	Sugar/Starch	62.00
		IA	Dexter Renewable Energy Campuses LLC	Corn	Sugar/Starch	60.00
		IA	Dupont Cellulosic Ethanol LLC - Nevada	Crop Residue	Cellulosic	30.00
		IA	Fiberight of Blairstown LLC	MSW	Cellulosic	6.00
		IA	Flint Hills Resources Arthur LLC	Corn	Sugar/Starch	110.00
		IA	Flint Hills Resources Fairbank LLC	Corn	Sugar/Starch	105.00
		IA	Flint Hills Resources Iowa Falls LLC	Corn	Sugar/Starch	90.00
		IA	Flint Hills Resources Menlo LLC	Corn	Sugar/Starch	115.00
		IA	Flint Hills Resources Shell Rock LLC	Corn	Sugar/Starch	115.00
		IA	Golden Grain Energy, LLC	Corn	Sugar/Starch	120.00
		IA	Grain Processing Corp.-Muscatine wet mill	Corn	Sugar/Starch	87.00
		IA	Green Plains Renewable Energy-Lakota	Corn	Sugar/Starch	100.00
		IA	Green Plains Renewable Energy-Shenandoah	Corn	Sugar/Starch	65.00
		IA	Green Plains Renewable Energy-Superior	Corn	Sugar/Starch	60.00
		IA	Homeland Energy Solutions, LLC	Corn	Sugar/Starch	140.00
		IA	Lincolnway Energy LLC	Corn	Sugar/Starch	62.00
		IA	Little Sioux Corn Processors LP	Corn	Sugar/Starch	92.00
		IA	Louis Dreyfus Commodities	Corn	Sugar/Starch	100.00
		IA	Penford Products Corp.	Corn	Sugar/Starch	45.00
		IA	Permeate Refining Inc.	Corn, Sorghum, grains, sugar	Sugar/Starch	3.00

Appendix D.1 – Ethanol Plants
Source: Ethanol Producer Magazine, Jan. 15, 2014

PADD	Sub PADD	State	Plant	Feedstock	Platform	Capacity (MMG/yr)
II	North	IA	Pine Lake Corn Processors LP	Corn	Sugar/Starch	30.00
		IA	Plymouth Energy, LLC	Corn	Sugar/Starch	50.00
		IA	Poet Biorefining-Ashton	Corn	Sugar/Starch	57.00
		IA	Poet Biorefining-Coon Rapids	Corn	Sugar/Starch	53.00
		IA	Poet Biorefining-Corning	Corn	Sugar/Starch	73.00
		IA	Poet Biorefining-Emmetsburg	Corn	Sugar/Starch	57.00
		IA	Poet Biorefining-Gowrie	Corn	Sugar/Starch	73.00
		IA	Poet Biorefining-Hanlontown	Corn	Sugar/Starch	57.00
		IA	Poet Biorefining-Jewell	Corn	Sugar/Starch	73.00
		IA	Poet-DSM Advanced Biofuels LLC-Project Liberty	Corn Cobs and Stover	Cellulosic	25.00
		IA	Quad County Cellulosic Ethanol Plant	Corn	Cellulosic	2.00
		IA	Quad County Corn Processors	Corn	Sugar/Starch	30.00
		IA	Siouxland Energy & Livestock Co-op	Corn	Sugar/Starch	60.00
		IA	Southwest Iowa Renewable Energy LLC	Corn	Sugar/Starch	125.00
		IA	Tama Renewable Energy Campuses LLC	Corn, cellulose	Sugar/Starch	100.00
		IA	The Andersons Denison Ethanol LLC	Corn	Sugar/Starch	55.00
		IA	Valero Renewable Fuels LLC-Albert City	Corn	Sugar/Starch	120.00
		IA	Valero Renewable Fuels LLC-Charles City	Corn	Sugar/Starch	120.00
		IA	Valero Renewable Fuels LLC-Fort Dodge	Corn	Sugar/Starch	120.00
		IA	Valero Renewable Fuels LLC-Hartley	Corn	Sugar/Starch	120.00
		IL	Abengoa Bioenergy of Illinois	Corn	Sugar/Starch	88.00
		IL	Adkins Energy LLC	Corn	Sugar/Starch	48.00

Appendix D.1 – Ethanol Plants
Source: Ethanol Producer Magazine, Jan. 15, 2014

PADD	Sub PADD	State	Plant	Feedstock	Platform	Capacity (MMG/yr)
II	North	IL	Archer Daniels Midland Co.-Peoria	Corn	Sugar/Starch	0.00
		IL	Aventine Renewable Energy-Pekin	Corn	Sugar/Starch	160.00
		IL	Aventine/Riverland Biofuels	Corn	Sugar/Starch	38.00
		IL	Big River Resources Galva, LLC	Corn	Sugar/Starch	120.00
		IL	Center Ethanol Co. LLC	Corn	Sugar/Starch	54.00
		IL	Illinois Corn Processing LLC	Corn	Sugar/Starch	90.00
		IL	Illinois River Energy LLC	Corn	Sugar/Starch	110.00
		IL	Lincolnland Agri-Energy LLC	Corn	Sugar/Starch	50.00
		IL	Marquis Energy LLC	Corn	Sugar/Starch	140.00
		IL	One Earth Energy LLC	Corn	Sugar/Starch	125.00
		IL	Patriot Renewable Fuels, LLC	Corn	Sugar/Starch	110.00
		IN	Abengoa Bioenergy of Indiana	Corn	Sugar/Starch	88.00
		IN	Archer Daniels Midland Co.-Decatur	Corn	Sugar/Starch	0.00
		IN	Aventine Renewable Energy-Mt. Vernon LLC	Corn	Sugar/Starch	110.00
		IN	Cardinal Ethanol, LLC	Corn	Sugar/Starch	100.00
		IN	Central Indiana Ethanol LLC	Corn	Sugar/Starch	50.00
		IN	Grain Processing Corp.-Washington wet mill	Corn	Sugar/Starch	36.00
		IN	Green Plains Renewable Energy	Corn	Sugar/Starch	120.00
		IN	Iroquois Bio-Energy Company LLC	Corn	Sugar/Starch	40.00
		IN	MGPI of Indiana	Corn	Sugar/Starch	35.00
		IN	New Energy Corp.	Corn	Sugar/Starch	102.00
		IN	Poet Biorefining-Alexandria	Corn	Sugar/Starch	75.00
		IN	Poet Biorefining-Cloverdale	Corn	Sugar/Starch	99.00
		IN	Poet Biorefining-North Manchester	Corn	Sugar/Starch	73.00
		IN	Poet Biorefining-Portland	Corn	Sugar/Starch	73.00

Appendix D.1 – Ethanol Plants
Source: Ethanol Producer Magazine, Jan. 15, 2014

PADD	Sub PADD	State	Plant	Feedstock	Platform	Capacity (MMG/yr)
II	North	IN	The Andersons Clymers Ethanol LLC	Corn	Sugar/Starch	110.00
		IN	Valero Renewable Fuels LLC-Linden	Corn	Sugar/Starch	120.00
		MN	Al-Corn Clean Fuel	Corn	Sugar/Starch	50.00
		MN	Archer Daniels Midland Co.-Marshall	Corn	Sugar/Starch	0.00
		MN	Bushmills Ethanol Inc.	Corn	Sugar/Starch	65.00
		MN	Central MN Ethanol Co-Op	Corn	Sugar/Starch	54.00
		MN	Chippewa Valley Ethanol Co. LLLP	Corn	Sugar/Starch	49.00
		MN	Corn Plus	Corn	Sugar/Starch	49.00
		MN	DENCO II LLC	Corn	Sugar/Starch	24.00
		MN	Gevo Agri-Energy	Corn	Sugar/Starch	18.00
		MN	Granite Falls Energy LLC	Corn	Sugar/Starch	62.00
		MN	Green Plains Renewable Energy-Fairmont	Corn	Sugar/Starch	115.00
		MN	Green Plains Renewable Energy-Fergus Falls	Corn	Sugar/Starch	60.00
		MN	Guardian Energy, LLC	Corn	Sugar/Starch	100.00
		MN	Heartland Corn Products	Corn	Sugar/Starch	104.00
		MN	Heron Lake BioEnergy LLC	Corn	Sugar/Starch	60.00
		MN	Highwater Ethanol, LLC	Corn	Sugar/Starch	59.50
		MN	Poet Biorefining-Bingham Lake	Corn	Sugar/Starch	35.00
		MN	Poet Biorefining-Glenville East	Corn	Sugar/Starch	44.00
		MN	Poet Biorefining-Lake Crystal	Corn	Sugar/Starch	57.00
		MN	Poet Biorefining-Preston	Corn	Sugar/Starch	46.00
		MN	Purified Renewable Energy LLC	Corn	Sugar/Starch	20.00
		MN	Valero Renewable Fuels LLC-Welcome	Corn	Sugar/Starch	120.00
		MO	Golden Triangle Energy LLC	Corn	Sugar/Starch	20.00

Appendix D.1 – Ethanol Plants
Source: Ethanol Producer Magazine, Jan. 15, 2014

PADD	Sub PADD	State	Plant	Feedstock	Platform	Capacity (MMG/yr)
II	North	MO	ICM Inc. Pilot Integrated Cellulosic Biorefinery	Corn Fiber, Energy Sorghum, Switchgrass	Cellulosic	0.32
		MO	LifeLine Foods, LLC	Corn	Sugar/Starch	50.00
		MO	Mid-Missouri Energy LLC	Corn	Sugar/Starch	40.00
		MO	Poet Biorefining-Laddonia	Corn	Sugar/Starch	56.00
		MO	Poet Biorefining-Macon	Corn	Sugar/Starch	45.00
		MO	Show Me Ethanol, LLC	Corn, Sorghum	Sugar/Starch	55.00
		NE	Abengoa Bioenergy Corp. - York	Corn	Sugar/Starch	55.00
		NE	Abengoa Bioenergy of Nebraska	Corn	Sugar/Starch	88.00
		NE	Ag Processing Inc. - Hastings	Corn	Sugar/Starch	50.00
		NE	AltEn LLC	Corn, Sorghum	Sugar/Starch	25.00
		NE	Archer Daniels Midland Co.-Columbus dry mill	Corn	Sugar/Starch	0.00
		NE	Archer Daniels Midland Co.-Columbus wet mill	Corn	Sugar/Starch	0.00
		NE	Aventine Renewable Energy-Aurora West LLC	Corn	Sugar/Starch	110.00
		NE	Aventine-Nebraska Energy LLC	Corn	Sugar/Starch	45.00
		NE	Bridgeport Ethanol LLC	Corn	Sugar/Starch	50.00
		NE	Cargill Inc.-Blair	Corn	Sugar/Starch	195.00
		NE	Chief Ethanol Fuels Inc.	Corn	Sugar/Starch	70.00
		NE	Cornhusker Energy Lexington LLC	Corn	Sugar/Starch	40.00
		NE	E Energy Adams LLC	Corn	Sugar/Starch	60.00
		NE	Elkhorn Valley Ethanol LLC	Corn	Sugar/Starch	50.00
		NE	Flint Hills Resources Fairmont LLC	Corn	Sugar/Starch	110.00
		NE	Green Plains Renewable Energy-Atkinson	Corn	Sugar/Starch	50.00
		NE	Green Plains Renewable Energy-Central City	Corn	Sugar/Starch	100.00

Appendix D.1 – Ethanol Plants
Source: Ethanol Producer Magazine, Jan. 15, 2014

PADD	Sub PADD	State	Plant	Feedstock	Platform	Capacity (MMG/yr)
II	North	NE	Green Plains Renewable Energy-Ord	Corn	Sugar/Starch	55.00
		NE	Green Plains Renewable Energy-Wood River	Corn	Sugar/Starch	115.00
		NE	Husker Ag LLC	Corn	Sugar/Starch	75.00
		NE	KAAPA Ethanol, LLC	Corn	Sugar/Starch	60.00
		NE	Mid-America AgriProducts/Wheatland LLC	Corn	Sugar/Starch	40.00
		NE	Midwest Renewable Energy LLC	Corn	Sugar/Starch	26.00
		NE	Nebraska Corn Processing, LLC	Corn	Sugar/Starch	44.00
		NE	Northern Development LLC	Corn	Sugar/Starch	104.00
		NE	Siouxland Ethanol LLC	Corn	Sugar/Starch	50.00
		NE	Trenton Agri Products LLC	Corn, Sorghum	Sugar/Starch	40.00
		NE	Valero Renewable Fuels LLC-Albion	Corn	Sugar/Starch	120.00
		TN	Dupont Cellulosic Ethanol LLC-Vonore	Switchgrass, Corn Stover	Cellulosic	0.25
		TN	Green Plains Renewable Energy-Obion	Corn	Sugar/Starch	120.00
		TN	Tate & Lyle	Corn	Sugar/Starch	110.00
		WI	Ace Ethanol LLC	Corn	Sugar/Starch	48.00
		WI	Badger State Ethanol LLC	Corn	Sugar/Starch	55.00
		WI	Big River Resources Boyceville, LLC	Corn	Sugar/Starch	60.00
		WI	Didion Ethanol LLC	Corn	Sugar/Starch	50.00
		WI	Fox River Valley Ethanol	Corn	Sugar/Starch	55.00
		WI	Marquis Energy Wisconsin LLC	Corn	Sugar/Starch	75.00
		WI	United Ethanol LLC	Corn	Sugar/Starch	48.00
		WI	United Wisconsin Grain Producers	Corn	Sugar/Starch	58.00
		WI	Valero Renewable Fuels LLC-Jefferson	Corn	Sugar/Starch	120.00

Appendix D.1 – Ethanol Plants
Source: Ethanol Producer Magazine, Jan. 15, 2014

PADD	Sub PADD	State	Plant	Feedstock	Platform	Capacity (MMG/yr)
II	North	WI	Western Wisconsin Energy LLC	Corn	Sugar/Starch	45.00
		PADD II North Subtotal				**9,955.07**
	West	ND	Archer Daniels Midland Co.-Walhalla	Corn	Sugar/Starch	0.00
		ND	Blue Flint Ethanol LLC	Corn	Sugar/Starch	65.00
		ND	Dakota Spirit AgEnergy LLC	Corn	Sugar/Starch	65.00
		ND	Hankinson Renewable Energy LLC	Corn	Sugar/Starch	145.00
		ND	Red Trail Energy, LLC	Corn	Sugar/Starch	50.00
		ND	Tharaldson Ethanol LLC	Corn	Sugar/Starch	153.00
		SD	Advanced BioEnergy South Dakota-Aberdeen I	Corn	Sugar/Starch	9.30
		SD	Advanced BioEnergy South Dakota-Aberdeen II	Corn	Sugar/Starch	46.00
		SD	Advanced BioEnergy South Dakota-Huron	Corn	Sugar/Starch	30.00
		SD	Dakota Ethanol LLC	Corn	Sugar/Starch	50.00
		SD	Glacial Lakes Energy LLC - Mina	Corn	Sugar/Starch	100.00
		SD	Glacial Lakes Energy LLC - Watertown	Corn	Sugar/Starch	100.00
		SD	NuGen Energy LLC	Corn	Sugar/Starch	100.00
		SD	Poet Biorefining-Big Stone	Corn	Sugar/Starch	81.00
		SD	Poet Biorefining-Chancellor	Corn	Sugar/Starch	102.00
		SD	Poet Biorefining-Groton	Corn	Sugar/Starch	53.00
		SD	Poet Biorefining-Hudson	Corn	Sugar/Starch	57.00
		SD	Poet Biorefining-Mitchell	Corn	Sugar/Starch	73.00
		SD	Poet Research Center	Corn	Sugar/Starch	11.00
		SD	Red River Energy, LLC	Corn	Sugar/Starch	25.00
		SD	Redfield Energy, LLC	Corn	Sugar/Starch	50.00
		SD	Valero Renewable Fuels LLC-Aurora	Corn	Sugar/Starch	120.00

Appendix D.1 – Ethanol Plants
Source: Ethanol Producer Magazine, Jan. 15, 2014

PADD	Sub PADD	State	Plant	Feedstock	Platform	Capacity (MMG/yr)
II	West	SD	Wagner Native Ethanol LLC	Corn	Sugar/Starch	50.00
		PADD II West Subtotal				**1,535.30**
	PADD II Subtotal					**12.970.67**
III	GCLA	LA	BP Biofuels Demonstration Plant, Jennings Facility	Energy Grasses	Cellulosic	1.40
		MS	BlueFire Renewables Fulton LLC	Wood Waste	Cellulosic	9.00
		MS	Bunge-Ergon Vicksburg LLC	Corn	Sugar/Starch	54.00
		MS	Enerkem Mississippi Biofuels LLC	RDF, Wood Residue	Cellulosic	10.00
		PADD III GCLA Subtotal				**74.40**
	GCTX	TX	Agrigold Renewable Coop.	Corn	Sugar/Starch	2.00
		PADD III GCTX Subtotal				**2.00**
	WTX/NM	TX	Diamond Ethanol LLC	Corn, Sorghum	Sugar/Starch	40.00
		TX	Hereford Renewable Energy LLC	Corn	Sugar/Starch	110.00
		TX	White Energy Hereford LLC	Corn, Sorghum	Sugar/Starch	120.00
		TX	White Energy Plainview LLC	Corn, Sorghum	Sugar/Starch	120.00
		NM	Abengoa Bioenergy Corp. – Portales	Corn, Sorghum	Sugar/Starch	30.00
		PADD III WTX/NM				**420.00**
	PADD III Subtotal					**496.40**
IV	IV	CO	Front Range Energy LLC	Corn	Sugar/Starch	48.00
		CO	Merrick/Coors	Beverage waste	Sugar/Starch	3.00
		CO	Northeast Kansas Bioenergy	Corn, Sorghum	Sugar/Starch	3.00
		CO	Sterling Ethanol LLC	Corn	Sugar/Starch	52.00
		CO	Yuma Ethanol LLC	Corn	Sugar/Starch	50.00
		ID	Idaho Ethanol Processing LLC	Corn	Sugar/Starch	5.00
		ID	Pacific Ethanol Magic Valley LLC	Corn	Sugar/Starch	60.00
		MT	Montana Advanced Biofuels LLC	Wheat, Barley	Sugar/Starch	115.00

Appendix D.1 – Ethanol Plants
Source: Ethanol Producer Magazine, Jan. 15, 2014

PADD	Sub PADD	State	Plant	Feedstock	Platform	Capacity (MMG/yr)
IV	IV	WY	Renova Energy Wyoming Ethanol	Corn	Sugar/Starch	10.00
		WY	Western Biomass Energy, LLC	Cellulosic	Cellulosic	0.50
	PADD IV Subtotal					**346.50**
V	V	AZ	Pinal Energy LLC	Corn	Sugar/Starch	50.00
		CA	Aemetis Advanced Fuels Keyes Inc.	Corn, Sorghum	Sugar/Starch	60.00
		CA	AltraBiofuels Phoenix Bio Industries LLC	Corn	Sugar/Starch	32.00
		CA	Calgren Renewable Fuels LLC	Corn, Sorghum	Sugar/Starch	58.00
		CA	California Ethanol & Power LLC	Sugarcane	Sugar/Starch	66.00
		CA	Canergy LLC - Brawley Plant	Energy Cane	Cellulosic	25.00
		CA	Greenbelt Resources- Paso Pilot Plant	Beer waste, wine waste, soda water, wheat screenin	Sugar/Starch	0.06
		CA	Mendota Bioenergy, LLC - Pilot	Energy Beets	Cellulosic	1.00
		CA	Pacific Ethanol Madera LLC	Corn	Sugar/Starch	40.00
		CA	Pacific Ethanol Stockton LLC	Corn, Sorghum	Sugar/Starch	60.00
		CA	Parallel Products of California	Beverage waste	Sugar/Starch	4.00
		CA	The Green Fuel Association-Bieber	Molasses	Sugar/Starch	1.50
		CA	The Green Fuel Association-Bieber II	Switchgrass	Cellulosic	40.00
		CA	The Green Fuel Association-Corning	Molasses	Sugar/Starch	1.50
		CA	The Green Fuel Association-Corning II	Switchgrass	Cellulosic	40.00
		CA	The Green Fuel Association-Dorris	Molasses	Sugar/Starch	1.50
		CA	The Green Fuel Association-Dorris II	swtichgrass	Cellulosic	40.00
		NV	Fulcrum BioEnergy Inc./Sierra Biofuels Plant	Waste Stream	Cellulosic	10.00
		NV	Sunset Ethanol Inc	Switchgrass, Forage Sorghum	Cellulosic	5.00

Appendix D.1 – Ethanol Plants
Source: Ethanol Producer Magazine, Jan. 15, 2014

PADD	Sub PADD	State	Plant	Feedstock	Platform	Capacity (MMG/yr)
V	V	OR	Columbia Pacific Bio-Refinery	Corn	Sugar/Starch	120.00
		OR	Inland Pacific Energy Center LLC	Corn	Sugar/Starch	138.00
		OR	Pacific Ethanol Columbia LLC	Corn	Sugar/Starch	40.00
		OR	Snake River Bioproducts LLC	Corn	Sugar/Starch	138.00
		OR	Summit Natural Energy Inc.	Waste Sugar, Starches	Sugar/Starch	1.00
		OR	ZeaChem Boardman Biorefinery LLC	Poplar, Wheat Straw	Cellulosic	25.00
		OR	ZeaChem Inc.-demo	Poplar, Straw, Stover	Cellulosic	0.25
		WA	Advanced Biofuels Corp. - Moses Lake	Waste Stream	Cellulosic	6.00
	PADD V Subtotal					**1,003.81**
Total U.S.						**15,424.38**

Appendix D.2 – Biodiesel Plants
Source: National Biodiesel Board Member Plant List

PADD	Sub PADD	Company	City	State	Plant Capacity Gal/Yr
I	A	BioDiesel One Ltd	Southington	CT	3,000,000
		Baker Commodities Billerica	Billerica	MA	
		Cape Cod BioFuels	Sandwich	MA	500,000
		Maine Standard Biofuel	Portland	ME	500,000
		Outpost Biodiesel, LLC	Grafton	NH	
		White Mountain Biodiesel, LLC	North Haverhill	NH	5,500,000
		Newport Biodiesel, LLC	Newport	RI	500,000
		PADD IA Subtotal			**10,000,000**
	B	CGF Clayton LLC	Clayton	DE	11,000,000
		Chesapeake Green Fuels, LLC Adamstown	Adamstown	MD	1,000,000
		TMT Biofuels, LLC	Port Leyden	NY	250,000
		Keystone BioFuels, Inc.	Camp Hill	PA	
		Lake Erie Biofuels dba HERO BX	Erie	PA	45,000,000
		United Oil Company	Pittsburgh	PA	15,000,000
		US Alternative Fuels Corp.	Johnstown	PA	2,100,000
		PADD IB Subtotal			**74,350,000**
	C	Genuine Bio-Fuel	Indiantown	FL	
		GGS FTMyers FL	North Fort Myers	FL	
		GGS Miami LLC	Doral	FL	
		Green Biofuels Corporation	Miami	FL	
		Viesel Fuel, LLC	Stuart	FL	
		Down to Earth Energy, Inc.	Monroe	GA	2,000,000
		Peach State Labs	Rome	GA	
		Seminole Biodiesel	Bainbridge	GA	1,500,000
		Soymet Energy LLC	Tallapoosa	GA	
		World Energy	Rome	GA	12,500,000
		Blue Ridge Biofuels	Asheville	NC	1,000,000
		Foothills Bio-Energies, LLC	Lenoir	NC	5,000,000
		Patriot Biodiesel, LLC	Greensboro	NC	6,900,000
		Piedmont Biofuels	Pittsboro	NC	
		Triangle Biofuels Industries, Inc.	Wilson	NC	3,000,000

Appendix D.2 – Biodiesel Plants
Source: National Biodiesel Board Member Plant List

PADD	Sub PADD	Company	City	State	Plant Capacity Gal/Yr
I	C	South East Oklahoma Biodiesel	North Charleston	SC	5,000,000
		Southeast BioDiesel, LLC	North Charleston	SC	5,000,000
		RECO Biodiesel, LLC	Richmond	VA	2,000,000
		Red Birch Energy, Inc.	Bassett	VA	2,500,000
		Shenandoah Agricultural Products	Clearbrook	VA	300,000
		Virginia Biodiesel Refinery	West Point	VA	7,000,000
		PADD IC Subtotal			**53,700,000**
	PADD I Subtotal				**138,050,000**
II	East	Griffin Industries	Butler	KY	1,750,000
		Kelley Green Biofuel	Goshen	KY	
		Owensboro Grain	Owensboro	KY	50,000,000
		Thumb BioEnergy, LLC	Sandusky	MI	416,000
		Center Alternative Energy Company	Cleveland	OH	
		Cincinnati Renewable Fuels, LLC	Cincinnati	OH	60,000,000
		Jatrodiesel Inc.	Miamisburg	OH	5,000,000
		PADD II East Subtotal			**117,166,000**
	KS/OK	Emergent Green Energy	Minneola	KS	2,000,000
		Green Energy Products, LLC	Sedgwick	KS	
		REG Emporia, LLC	Emporia	KS	
		High Plains Bioenergy	Guymon	OK	30,000,000
		PADD II KS/OK Subtotal			**32,000,000**
	North	AGP Algona	Algona	IA	
		AGP Sergeant Bluff	Sergeant Bluff	IA	
		Cargill	Iowa Falls	IA	
		Clinton County Bio Energy, LLC	Clinton	IA	10,000,000
		Energy Tec, LLC	Maquoketa	IA	30,000
		Iowa Renewable Energy, LLC	Washington	IA	
		REG Mason City, LLC	Mason City	IA	
		REG Newton, LLC	Newton	IA	
		REG Ralston, LLC	Ralston	IA	
		Western Dubuque Biodiesel	Farley	IA	36,000,000

Appendix D.2 – Biodiesel Plants
Source: National Biodiesel Board Member Plant List

PADD	Sub PADD	Company	City	State	Plant Capacity Gal/Yr
II	North	Western Iowa Energy, LLC	Wall Lake	IA	30,000,000
		Incobrasa Industries, Ltd.	Gilman	IL	
		REG Danville, LLC	Danville	IL	
		REG Seneca, LLC	Seneca	IL	
		Stepan Company	Millsdale	IL	
		Advanced Biodiesel Inc	Noblesville	IN	2,000,000
		Alternative Fuel Solutions, LLC	Huntington	IN	800,000
		Countrymark Cooperative	Indianapolis	IN	
		Integrity Biofuels	Morristown	IN	5,000,000
		Louis Dreyfus Agricultural Industries, LLC	Claypool	IN	
		Ever Cat Fuels, LLC	Isanti	MN	3,000,000
		Minnesota Soybean Processors	Brewster	MN	30,000,000
		REG Albert Lea, LLC	Albert Lea	MN	
		AGP St. Joseph	St. Joseph	MO	
		American Energy Producers, Inc.	Tina	MO	60,000,000
		Blue Sun Biodiesel, LLC	St. Joseph	MO	30,000,000
		Deerfield Energy	Deerfield	MO	30,000,000
		Global Fuels, LLC	Dexter	MO	3,000,000
		Mid-America Biofuels, LLC	Mexico	MO	50,000,000
		Natural Biodiesel Plant, LLC	Hayti	MO	5,000,000
		Paseo Cargill Energy, LLC	Kansas City	MO	
		Wil Fischer Distributing Co. Inc.	Springfield	MO	
		GGS Cookeville TN	Cookeville	TN	1,800,000
		Sullens Biodiesel, LLC	Morrison	TN	2,000,000
		Sanimax Energy Inc.	Deforest	WI	
		Sun Power Biodiesel, LLC	Cumberland	WI	
		Walsh Bio Fuels, LLC	Mauston	WI	5,000,000
		PADD II North Subtotal			**303,630,000**
	West	ADM	Velva	ND	85,000,000
		PADD II West Subtotal			**85,000,000**
	PADD II Subtotal				**537,796,000**

Appendix D.2 – Biodiesel Plants
Source: National Biodiesel Board Member Plant List

PADD	Sub PADD	Company	City	State	Plant Capacity Gal/Yr
III	GCLA	Allied Renewable Energy, LLC	Birmingham	AL	15,000,000
		Veros Energy, LLC	Moundville	AL	
		Delek Renewables, LLC AR	Crossett	AR	
		Delta American Fuel, LLC	Helena	AR	40,000,000
		Diamond Green Diesel, LLC	Norco	LA	
		Louisiana ECO Green, LLC	Bourg	LA	
		REG New Orleans, LLC	St. Rose	LA	
		Elevance Natchez, Inc.	Natchez	MS	
		Scott Petroleum Corporation	Greenville	MS	20,000,000
		PADD III GCLA Subtotal			**75,000,000**
	GCTX	Agribiofuels, LLC	Dayton	TX	12,000,000
		Calumet Penreco, LLC	Dickinson	TX	
		Channel Biorefinery & Terminals, LLC	Houston	TX	
		Delek Renewables, LLC TX	Cleburne	TX	
		Dependable Fuels, LLC	Magnolia	TX	
		Eberle Biodiesel	Liverpool	TX	500,000
		GGS Austin TX	Cedar Creek	TX	
		Green Earth Fuels of Houston, LLC	Galena Park	TX	
		RBF Port Neches, LLC	Port Neches	TX	
		REG Houston, LLC	Seabrook	TX	
		REG New Boston	New Boston	TX	
		Sabine Biofuels ll, LLC	Port Arthur	TX	
		Texas Biotech, Inc	Arlington	TX	
		The Sun Products Corp	Pasadena	TX	
		PADD III GCTX Subtotal			**12,500,000**
	WTX/NM	Rio Valley Biofuels, LLC	Anthony	NM	
		Biodiesel of Texas, Inc.	Denton	TX	2,000,000
		Texas Green Manufacturing, LLC	Littlefield	TX	1,250,000
		PADD III WTX/NM Subtotal			**3,250,000**
	PADD III Subtotal				**90,750,000**

Appendix D.2 – Biodiesel Plants
Source: National Biodiesel Board Member Plant List

PADD	Sub PADD	Company	City	State	Plant Capacity Gal/Yr
IV	IV	Pleasant Valley Biofuels, LLC	American Falls	ID	1,500,000
		Earl Fisher Bio Fuels	Chester	MT	250,000
		Washakie Renewable Energy	Plymouth	UT	
	PADD IV Subtotal				**1,750,000**
V	V	Green Waste Solutions of Alaska	Anchorage	AK	
		Grecycle Arizona, LLC	Tucson	AZ	2,076,000
		REV Biodiesel	Gilbert	AZ	10,000,000
		Baker Commodities Los Angeles	Vernon	CA	
		Bay Biodiesel, LLC (San Jose)	San Jose	CA	3,000,000
		Biodiesel Industries of Ventura, LLC	Port Hueneme	CA	10,000,000
		Community Fuels	Stockton	CA	10,000,000
		Crimson Renewable Energy, LP	Bakersfield	CA	
		GeoGreen Biofuels, Inc.	Vernon	CA	
		Imperial Western Products	Coachella	CA	10,500,000
		New Leaf Biofuel, LLC	San Diego	CA	6,000,000
		Noil Energy Group	Commerce	CA	
		North Star Biofuels, LLC	Watsonville	CA	
		Simple Fuels Biodiesel, Inc.	Chilcoot	CA	1,000,000
		Yokayo Biofuels, Inc.	Ukiah	CA	500,000
		Bently Biofuels Company, LLC	Minden	NV	1,000,000
		Biodiesel of Las Vegas	Las Vegas	NV	15,000,000
		General Biodiesel Seattle LLC	Seattle	WA	
		Gen-X Energy Group, Inc.	Moses Lake	WA	15,000,000
		Imperium Grays Harbor	Hoquiam	WA	100,000,000
		Whole Energy Fuels Anacortes	Anacortes	WA	2,000,000
	PADD V Subtotal				**186,076,000**
U.S. Total					**954,422,000**

Appendix D.3 – CSX Ethanol Loading and Offloading Terminals
Source: CSX

Facility	City	State	Unit Train	In Operation	Tank Space
TRANSFLO	Birmingham	AL	No	Yes	No
Pegasus International	Birmingham	AL	Yes	Yes	No
TRANSFLO	Montgomery	AL	No	Yes	No
Rail Solutions	Cocoa Beach	FL	Yes	Yes	No
KAG	Eagle Lake	FL	Yes	Yes	No
TRANSFLO	Ft Lauderdale	FL	No	Yes	No
Rail Solutions	Ft. Lauderdale	FL	Yes	Yes	No
Colonial Oil	Jacksonville	FL	No	Yes	Yes
TRANSFLO	Jacksonville	FL	No	Yes	No
Westway Terminals	Jacksonville	FL	No	Yes	Yes
BP Terminal	Jacksonville	FL	No	Yes	Yes
ProTec Fuel	Miami	FL	No	Yes	No
PFM	Orlando	FL	No	Yes	No
Empire Transload Terminal	Panama City	FL	No	Yes	No
Motiva Enterprises	Port Everglades	FL	Yes	Q2 2013	Yes
TRANSFLO	Sanford	FL	No	Yes	No
TRANSFLO/Central FL Pipeline	Tampa	FL	Yes	Yes	Yes
TRANSFLO	Atlanta	GA	No	Yes	No
TRANSFLO	Augusta	GA	No	Yes	No
Rail Solutions	Bainbridge	GA	No	Yes	No
Eco Energy	Cartersville	GA	Yes	Q4 2013	Yes
Trimac	Fairburn (Atlanta)	GA	No	Yes	Yes
KAG	Lawrenceville	GA	Yes	Yes	No
Colonial Oil	Savannah	GA	No	Yes	Yes
Epic	Savannah	GA	No	Q3 2013	Yes
Fuel South	Waycross	GA	No	Yes	No
Gateway Terminal	East St. Louis	IL	Yes	Yes	No
MARTTS	Louisville	KY	No	Yes	No
Atlantic Ethanol	Baltimore	MD	No	Yes	Yes
TRANSFLO	Baltimore	MD	No	Yes	No
Baltimore Transload Terminal	Baltimore	MD	Yes	Yes	Yes
Apex Oil	Baltimore	MD	No	Yes	Yes
Marathon	Detroit	MI	No	Yes	Yes
TRANSFLO	Detroit-Central	MI	No	Yes	No

Appendix D.3 – CSX Ethanol Loading and Offloading Terminals
Source: CSX

Facility	City	State	Unit Train	In Operation	Tank Space
TRANSFLO	Grand Rapids	MI	No	Yes	No
Webb Chemical	Muskegan Heights	MI	No	Yes	No
TRANSFLO	Charlotte	NC	Yes	Yes	No
Eco Energy	Denton	NC	Yes	Yes	Yes
TRANSFLO	Raleigh	NC	No	Yes	No
Bailey Feed Mill	Selma	NC	Yes	Yes	No
Kinder Morgan	Wilmington	NC	No	Yes	Yes
Apex Oil	Wilmington	NC	No	Yes	Yes
TRANSFLO	Wilmington	NC	No	Yes	No
IMTT	Bayonne	NJ	No	Yes	Yes
Dana Transport	Bridgeport	NJ	Yes	Yes	No
Kinder Morgan	Carteret	NJ	No	Yes	Yes
TRANSFLO	Elizabeth	NJ	No	Yes	No
Linden Transload Terminal	Linden	NJ	Yes	Yes	Yes
Kinder Morgan	Perth Amboy	NJ	No	Yes	Yes
Motiva Enterprises	Sewaren	NJ	Yes	Yes	Yes
Buckeye Terminal	Albany	NY	Yes	Yes	Yes
Sunoco	N Tonawanda	NY	No	Yes	Yes
Apex Oil	Rensselaer	NY	No	Yes	Yes
Marathon	Canton	OH	No	Yes	Yes
Kinder Morgan	Cincinnati	OH	No	Yes	Yes
Sunoco	Cleveland	OH	No	Yes	Yes
TRANSFLO	Cleveland-Central	OH	No	Yes	No
Sunoco	Columbus	OH	No	Yes	Yes
TRANSFLO	Columbus	OH	No	Yes	No
Marathon	Lima	OH	No	Yes	Yes
KAG	Avondale	PA	Yes	Yes	No
PPC	Neville Island (Pittsburgh)	PA	No	Yes	Yes
Safe Handling	Mt Pleasant (Pittsburgh)	PA	No	Yes	No
Kinder Morgan	Philadelphia	PA	No	Yes	Yes
TRANSFLO	Philadelphia	PA	No	Yes	No
FC Haab	Philadelphia	PA	No	Yes	Yes
Sunoco	Pittsburgh	PA	No	Yes	Yes
United Refining	Warren	PA	No	Yes	Yes

Appendix D.3 – CSX Ethanol Loading and Offloading Terminals
Source: CSX

Facility	City	State	Unit Train	In Operation	Tank Space
Motiva Enterprises	Providence	RI	Yes	Yes	Yes
Kinder Morgan	Belton	SC	Yes	Yes	Yes
TRANSFLO	Charleston	SC	No	Yes	No
Kinder Morgan	Charleston	SC	No	Yes	Yes
Brabham Oil	Denmark	SC	No	Yes	No
TRANSFLO	Greenville	SC	No	Yes	No
TRANSFLO	Chattanooga	TN	No	Yes	No
TRANSFLO	Knoxville	TN	No	Yes	No
Cone Solvents	Nashville	TN	No	Yes	Yes
TriStar Energy	Nashville	TN	No	Yes	No
TRANSFLO	Nashville	TN	No	Yes	No
Cone Solvents	Old Hickory	TN	No	Yes	No
Plains Marketing	Amoco (Norfolk)	VA	No	Yes	Yes
Apex Oil	Chesapeake	VA	No	Yes	Yes
Eco Energy	Dumfries	VA	Yes	Q4 2013	Yes
TRANSFLO	Fredericksburg	VA	No	Yes	No
Rail Solutions	Glasgow	VA	No	Yes	No
Transmontainge	Norfolk	VA	Yes	Yes	Yes
TRANSFLO	Portsmouth	VA	No	Yes	No
TRANSFLO	Richmond	VA	No	Yes	No
Englewood Enterprise	Richmond	VA	No	Yes	No

Appendix E.1 – 2011 Conventional U.S. Fueling Stations
Source: U.S. Census Bureau

PADD	SubPADD	State	Total
I	A	Connecticut	1,039
		Maine	812
		Massachusetts	2,025
		New Hampshire	605
		Rhode Island	321
		Vermont	457
		PADD IA Subtotal	**5,259**
	B	Delaware	264
		District of Columbia	75
		Maryland	1,540
		New Jersey	2,328
		New York	4,658
		Pennsylvania	3,888
		PADD IB Subtotal	**12,753**
	C	Florida	5,839
		Georgia	5,070
		North Carolina	4,539
		South Carolina	2,490
		Virginia	3,361
		West Virginia	1,033
		PADD IC Subtotal	**22,332**
	PADD I Subtotal		**40,344**
II	EAST	Kentucky	2,154
		Michigan	3,756
		Ohio	3,884
		PADD II East Subtotal	**9,794**
	KS/OK	Kansas	1,162
		Oklahoma	1,797
		PADD II KS/OK Subtotal	**2,959**

Appendix E.1 – 2011 Conventional U.S. Fueling Stations
Source: U.S. Census Bureau

PADD	SubPADD	State	Total
II	North	Illinois	3,695
		Indiana	2,600
		Iowa	1,791
		Minnesota	2,147
		Missouri	2,773
		Nebraska	979
		Tennessee	3,281
		Wisconsin	2,433
		PADD II North Subtotal	**19,699**
	West	North Dakota	420
		South Dakota	611
		PADD II West Subtotal	**1,031**
	PADD II Subtotal		**33,483**
III	GCLA	Alabama	3,082
		Arkansas	1,494
		Louisiana	2,347
		Mississippi	1,950
		PADD III GCLA Subtotal	**8,873**
	GCTX	Texas	8,324
		PADD III GCTX Subtotal	**8,324**
	WTX/NM	New Mexico	883
		Texas	1,972
		PADD III WTX/NM Subtotal	**2,855**
	PADD III Subtotal		**20,052**
IV	IV	Colorado	1,609
		Idaho	662
		Montana	504
		Utah	815
		Wyoming	342
	PADD IV Subtotal		**3,932**

Appendix E.1 – 2011 Conventional U.S. Fueling Stations
Source: U.S. Census Bureau

PADD	SubPADD	State	Total
V	V	Alaska	212
		Arizona	1,672
		California	7,248
		Hawaii	283
		Nevada	734
		Oregon	956
		Washington	1,914
	PADD V Subtotal		**13,019**
Total U.S.			**110,830**

Appendix E.2 – Unconventional U.S. Fueling Stations
Source: U.S. Census Bureau

PADD	Sub PADD	State	Biodiesel	CNG	E85	Electric	Hydrogen	LNG	LPG	Total
I	A	CT	2	18	1	159	1	1	15	197
		MA	12	25	8	234	1		18	298
		ME	3	1	1	21			10	36
		NH	4	4		35			11	54
		RI	6	6		61			6	79
		VT	2	3	1	30			2	38
		PADD IA Subtotal	**29**	**57**	**11**	**540**	**2**	**1**	**62**	**702**
	B	DC	7	3	4	60				74
		DE	1	1	2	13	1		6	24
		MD	9	10	26	252		1	20	318
		NJ	5	33	5	128			10	181
		NY	38	120	83	437	9		66	753
		PA	7	61	37	188	2	3	75	373
		PADD IB Subtotal	**67**	**228**	**157**	**1,078**	**12**	**4**	**177**	**1,723**
	C	FL	17	36	58	537		2	69	719
		GA	25	33	63	229		8	59	417
		NC	134	41	22	271			101	569
		SC	60	10	82	143	2	2	45	344
		VA	12	21	21	208	1	1	60	324
		WV	2	4	4	25			13	48
		PADD IC Subtotal	**250**	**145**	**250**	**1,413**	**3**	**13**	**347**	**2,421**
	PADD I Subtotal		**346**	**430**	**418**	**3,031**	**17**	**18**	**586**	**4,846**
II	EAST	KY	4	5	62	38			47	156
		MI	19	21	186	294	4		73	597
		OH	18	40	113	152	2	6	65	396
		PADD II East Subtotal	**41**	**66**	**361**	**484**	**6**	**6**	**185**	**1,149**
	KS/OK	KS	6	9	27	72		2	38	154
		OK	5	96	28	25		1	153	308
		PADD II KS/OK Subtotal	**11**	**105**	**55**	**97**		**3**	**191**	**462**

Appendix E.2 – Unconventional U.S. Fueling Stations
Source: U.S. Census Bureau

PADD	Sub PADD	State	Biodiesel	CNG	E85	Electric	Hydrogen	LNG	LPG	Total
II	North	IA	3	6	189	55		2	18	273
		IL	11	51	225	327	1	4	104	723
		IN	7	29	177	120		5	176	514
		MN	11	14	289	175			30	519
		MO	4	15	107	95	1	1	65	288
		NE	4	9	78	19		2	22	134
		TN	44	16	59	372		4	103	598
		WI	4	52	122	149		3	55	385
		PADD II North Subtotal	**88**	**192**	**1,246**	**1,312**	**2**	**21**	**573**	**3,434**
	West	ND	3	1	58	5			19	86
		SD	2		88	11			19	120
		PADD II West Subtotal	**5**	**1**	**146**	**16**			**38**	**206**
	PADD II Subtotal		**145**	**364**	**1,808**	**1,909**	**8**	**30**	**987**	**5,251**
III	GCLA	AL	10	24	36	59		5	116	250
		AR	5	11	39	30		3	38	126
		LA	2	24	5	45		2	34	112
		MS	4	7	2	34		1	117	165
		PADD III GCLA Subtotal	**21**	**66**	**82**	**168**		**11**	**305**	**653**
	GCTX	TX	12	72	78	585	1	14	318	1,080
		PADD III GCTX Subtotal	**12**	**72**	**78**	**585**	**1**	**14**	**318**	**1,080**
	WTX/NM	NM	8	11	14	22		2	46	103
		TX	7	24	21	98		7	162	319
		PADD III WTX/NM Subtotal	**15**	**35**	**35**	**120**		**9**	**208**	**422**
	PADD III Subtotal		**48**	**173**	**195**	**873**	**1**	**34**	**831**	**2,155**
IV	IV	CO	17	38	86	168	1	2	47	359
		ID	5	12	9	15		7	25	73
		MT	6	2	3	4			44	59
		UT	3	92	5	56		8	27	191
		WY	13	12	9	4		2	17	57

Appendix E.2 – Unconventional U.S. Fueling Stations
Source: U.S. Census Bureau

PADD	Sub PADD	State	Biodiesel	CNG	E85	Electric	Hydrogen	LNG	LPG	Total
IV	**PADD IV Subtotal**		**44**	**156**	**112**	**247**	**1**	**19**	**160**	**739**
V	**V**	AK		1					7	8
		AZ	79	35	30	300	1	8	67	520
		CA	81	294	93	2,042	23	48	232	2,813
		HI	9	1	3	168	3		3	187
		NV	5	8	20	84	1	3	38	159
		OR	24	13	8	409		5	31	490
		WA	34	25	24	520		1	68	672
	PADD V Subtotal		**232**	**377**	**178**	**3,523**	**28**	**65**	**446**	**4,849**
Total U.S			**815**	**1,500**	**2,711**	**9,583**	**55**	**166**	**3,010**	**17,840**