2019 **Liquids Pipelines Customer Handbook**



1

Forward-looking Information

This booklet includes references to forward-looking information. Although Enbridge believes these forward-looking statements are reasonable, based on the information available on the date such statements are made, they are not guarantees of future performance or outcomes.

Table of Contents



- 10 System Optimization
- 11 Mainline Tolls

2 Oil Sands Infrastructure

12 Existing

Market Access

- 15 U.S. Gulf Coast Access
- 16 Eastern Access
- 17 Southern Access Extension
- B Express/Platte
- 20 Bakken Instructure
- 2 Non-Regulated Contract Terminals
- 25 Diluent Access
- 26 Pipeline System Configuration
- 27 Oil Sands Regional System Configuration

28 Maps

- Commodity Movement Map
- Athabasca Major Pipelines
- Major Canadian and U.S. Crude Oil Pipelines and Refineries
- Major Canadian and U.S. Refined Products Pipelines

At Enbridge, we exist to help fuel the quality of life for millions of people across North America. Whether it's oil, natural gas or renewable power, our North American energy network connects millions of people with the energy that fuels everything they do, every day.

We Transport Energy

Enbridge transports about 25 percent of the crude oil produced in North America. We operate the world's longest, most sophisticated crude oil and liquids transportation system, moving about 2.9 million barrels of crude oil and liquids every day via 17.000 miles (27,400 kilometres) of active pipe. Enbridge is also a North American leader in the transportation and storage of natural gas. We move about 20 percent of the natural gas consumed daily in the U.S., and our gas transmission and midstream pipeline assets cover about 26.000 miles (41.850 km) in 31U.S. states, five Canadian provinces and offshore in the Gulf of Mexico. We also have 3.1 billion cubic feet per day (Bcf/d) of natural gas processing capacity and 438 billion cubic feet (Bcf) of gas storage.

We Generate Energy

Since 2002, we've committed more than \$7.8 billion in capital to renewable energy and power transmission projects—including onshore and offshore wind, solar and geothermal energy—currently in operation or under construction. Together, those renewable energy projects (either operating or under construction) have the capacity to generate 3,639 megawatts (MW) gross, or 1,748 MW net, of zero-emission energy.

We Distribute Energy

We are Canada's largest natural gas distribution provider, with about 3.7 million retail customers in Ontario, Quebec, New Brunswick and New York State.

The Energy You Count On, the Reliability You Expect



Guy Jarvis President, Liquids Pipelines, Enbridge Inc.

Enbridge's world-class pipeline network is North America's premier crude oil system. It connects producers to key markets and refiners to critical feedstock through a safe and reliably operated pipeline network at competitive rates.

The Mainline System—the markets it serves, the flexibility it offers and our ability to optimize throughput—is unique and unparalleled with competitive advantages. We're focused on ensuring our customers have attractive market access options that bring value to their business every day. This means working closely with our customers on integrity and maintenance work to move the most product through our lines.

It also means listening to our customers as we develop a new tolling arrangement for the Mainline. We know that in addition to toll predictability and flexibility to serve refining markets, our customers want to align capacity with their refinery, production or downstream pipeline contracts on a longterm basis with priority access. We're working hard to make this happen with the goal of entering into a new agreement to provide our customers with clarity well in advance of the expiry of the current Competitive Toll Settlement in July 2021.

This year, we have a number of market access options coming into service,

including Southern Access Expansion, our recent purchase of a stake in the Gray Oak pipeline connecting Permian production to the U.S. Gulf Coast, and of course our largest project, the Line 3 Replacement, which has a target in service date in the second half of 2020.

Our expansion strategy includes increases to Flanagan South and Seaway pipelines which bring Canadian barrels into the Houston refining center. There are also options to increase capacity on Southern Access Extension as well as expansions to the Express pipeline.

We're focused on developing our presence in the U.S. Gulf Coast with a potential offshore loading facility called Texas COLT. With our partners, this project provides efficient, safe and reliable export capacity connected directly to the Permian basin as well as other growing basins.

Just as our customer service is a critical pillar to our competitive position, so too is our commitment to safety and operational reliability. We're leaders in driving research and innovation that continue to enhance the safety and operability of our system.

In Liquids Pipelines, we're focused on strengthening the business and being more competitive. That focus extends to our customers and our desire to deliver solutions that fulfill their business needs and make both our businesses more profitable.

Sincerely,

Meeting the Needs of Our Customers

Providing safe and reliable solutions for our customers is our foundation.

For nearly 70 years, Enbridge has grown from a single pipeline to the largest, longest and most complex petroleum pipeline system in the world; delivering almost 3 million barrels per day (bpd) to markets in Canada and the United States. Our relationship with our customers remains one of our top priorities and we continue to deliver solutions that meet customers' needs and drive growth in our Liquids Pipelines business. Our assets and expertise are well positioned to provide value to customers by delivering the infrastructure projects closest to production, increasing available Mainline capacity and improving on market access to meet the growing needs of the industry.

We are listening to the needs of our customers and looking ahead to anticipate market demands with the objective of providing transportation solutions that are cost effective, efficient and timely. With six separate lines connecting Western Canada to the United States and further to Eastern Canada, we offer our customers, safety, economy, flexibility, reliability and innovation in delivering their products to market.

Our focus is to continue optimizing our expansive network of assets to provide customers with additional capacity and superior service. As we progress on our Line 3 Replacement Program and Southern Access Expansion, we are committed to stakeholder engagement and timely project completion. Even beyond these capacity expansions, we continue to believe that the low cost, staged options to expand our Mainline capacity through highly executable solutions with reduced regulatory requirements will provide opportunity for us to bring significant value to our customers. Enbridge remains committed to finding creative solutions for providing highly competitive transportation options to premium markets in North America, while also focusing on creating competitive alternatives for our customers to access international markets.

In all the years of change and growth, one certainty has remained; delivering safe and reliable solutions for our customers is our foundation. Enbridge is committed to providing increased optionality for our customers while continuing to deliver the exceptional service our customers have come to expect from us.



North American Supply Projection

OPEC and Russian adherence to supply restrictions brought the global oil market back into balance and resulted in higher Brent prices that touched \$80 per barrel in the second half of 2018. Prices fell with signs of slowing global economic growth weighing on demand. Heading into 2019, Brent is near \$60 per barrel.

WTI discounts to Brent have been volatile. Surging Permian and other North American oil production has outstripped pipeline capacity causing considerable price dislocations for virtually all inland crude oil grades. Despite persistent and severe price discounts, North American producers have continued to add rigs, cut costs, and achieve efficiencies allowing growth to continue. The Permian basin alone added over 800.000 bpd of supply over 2018 with a potential to repeat in 2019. Pipeline capacity additions. Enbridge's interest in the Grav Oak pipeline being one, are poised to come on stream which will narrow price differentials and add support to further investment in production.

Western Canadian Sedimentary Basin (WCSB) producers have been particularly hard hit by infrastructure constraints. Physical supply from the WCSB increased and exceeded pipeline capacity resulting in large storage builds. Rail loadings were slow to react to clear surplus volumes. While rail volumes have increased, significant price discounting continued into the fourth quarter last year. This led the government of Alberta to adopt two policies; 1) to purchase 120,000 bpd rail capacity, and 2) interim production curtailment initially at 325,000 barrels per day, in an effort to bring price discounts and inventories back to historical levels. Despite the challenges faced by WCSB producers from a lack of new pipeline capacity, production is expected to continue growing.

The 2018 Canadian Association of Petroleum Producers (CAPP) forecast (Figure 1) illustrates that WCSB supply will continue to add over 1 million bpd of supply by 2035 necessitating additional pipeline capacity. The International Energy Agency (IEA) in its latest World Energy Outlook also suggests Canadian oil sands production will grow over time. It forecasts that growth of over 1 million bpd of raw oil sands production will be required to meet global demand by 2040.

Notably, key producers are reducing costs and emissions by improving operations and developing new technology. Advancements like solvent-assisted steam-assisted gravity drainage (SA-SAGD) will both lower breakeven production costs and emissions per barrel. Future WCSB production will continue to grow efficiently and sustainably. The need for crude oil transportation infrastructure remains strong. Access to low cost transportation to premium markets is fundamental in supporting the Western Canadian petroleum industry. The U.S. Geological Survey has estimated that the Bakken and Three Forks deposits in eastern Montana and North Dakota hold at least 7.4 billion barrels of technically recoverable oil, although many industry experts believe this is a conservative figure. Production in the Bakken region grew from about 200,000 bpd in early 2007 to more than 1.1 million bpd by the end of 2015. While the depressed price environment since 2015 caused a significant reduction in activity for a period, innovations by operators resulted in productivity gains which sustained oil production above 1 million bpd, which was above the expectations of the North Dakota Department of Mineral Resources. By the fourth quarter of 2018, crude production in North Dakota recovered to roughly 1.37 million bpd. Crude prices have strengthened, and the current view is that these higher and more stable prices will provide the economic incentive for increased activity and continued production growth in the Bakken/ Three Forks region.



WCSB Oil Supply (kbpd)

> Figure 1

The Enbridge Mainline

Mainline System Capacity



The current average annual capacity on the Mainline System is approximately 2.85 million bpd out of Western Canada. A series of pipelines run between Edmonton, Alberta and Superior, Wisconsin and four pipelines extend the system beyond Superior, providing access to markets in Minnesota, Illinois, Indiana, Ohio, Michigan and Ontario. Enbridge also has market access pipelines connected to the Mainline that serve markets in Eastern Canada, Cushing, Patoka and the U.S. Gulf Coast (USGC). Despite the increasing challenges in permitting major infrastructure projects, between 2013 and 2017 Enbridge successfully placed into service more than 1.1 million bpd of additional capacity upstream of Superior and more than 1.65 million bpd of additional capacity downstream of Superior. These projects have enabled production growth from the WCSB and Bakken regions to move to prime markets and have provided Enbridge with the flexibility to optimize the operations of the Mainline System to become even more safe and reliable.

Focusing on system optimization and operating efficiency has contributed to record ex-Gretna deliveries of 2.785 million bpd in November 2018.

Mainline Expansions for the Light Oil Market Access (LOMA) Program

The LOMA Program has expanded access to markets for growing volumes of North Dakota and Western Canadian light oil production. It has further expanded capacity on the U.S. Mainline System, enhanced Canadian Mainline terminal capability, upsized the Eastern Access Program and provided additional access to U.S. Midwestern refineries. LOMA has provided additional capacity for light oil to move on the Enbridge system to attractive refining markets in Ontario, Quebec and the U.S. Midwest. Enbridge successfully completed expansions of Line 61 and Line 6B in 2016. We expect the remaining LOMA Program Mainline projects to be placed into service in conjunction with the Line 3 Replacement Program:

- Southern Access Expansion to 1.2 million bpd; and
- Associated tankage and terminalling upgrades.

Mainline Tankage and Terminalling

In 2017 and 2018, Enbridge continued making upgrades to a number of terminals across the network, with the goal of maximizing throughput and increasing the level of service provided to our customers. This year, Enbridge will continue to support customer-initiated projects, as well as explore further opportunities to optimize the terminalling assets.

Line 3 Replacement Program

After receiving shipper support in 2014 to replace Line 3 from Hardisty to Superior, Enbridge continues to develop the approximately \$8.2 billion program to maintain and enhance our Canadian and U.S. Mainline Systems. This is the largest project in Enbridge's history and will involve replacing all remaining segments of Line 3 between Hardisty and Superior with 1,677 kilometres (1,042 miles) of new pipe, using the latest available high strength steel and coating technology. The Line 3 Replacement Program (L3RP) will also substantially reduce long-term adverse impacts to landowners and the environment caused by conducting numerous preventative maintenance digs to maintain the line. The L3RP will support the safety and operational reliability of the overall system, enhance flexibility and allow Enbridge to restore 370,000 bpd of capacity and optimize throughput on the Mainline System's overall Western Canada export capacity. When completed, the L3RP will provide landowners and shippers with a new pipeline that restores the historical operating capabilities of Line 3 to move approximately 760,000 bpd in mixed-product service.



In November 2016, Enbridge received approval from the Canadian Federal Government for the L3RP. We have strong support for the project from the communities along the route. Enbridge has undertaken the largest engagement program in our history, including engaging with 150 Indigenous communities from as far away as 300 kilometres from the right of way.

In 2018, Enbridge completed over 700 kilometres of pipeline construction in Canada and combined with the 400 kilometres completed in 2017 is now over 80 percent constructed, with the remainder of construction to be completed by July 1, 2019. All throughout the construction period in Canada, Enbridge has delivered on our commitments and maintained relationships with all of our stakeholders including landowners, Indigenous communities, the National Energy Board and all levels of Government, which has been crucial to the progress we have achieved to date. We also completed construction of the final segment in the U.S. from the border in Minnesota to the Superior, Wisconsin terminal in 2017-2018, which was then placed into service in May 2018.

In 2018, Enbridge achieved a major milestone for the L3RP by receiving approval from the Minnesota Public Utilities Commission for the Certificate of Need for the project and approval of Enbridge's preferred route with minor modifications and certain conditions. Enbridge remains actively involved in the ongoing permitting processes and all remaining requirements are progressing well and on track for Enbridge to maintain a targeted completion date for construction of the L3RP in the second half of 2020.

Upstream of Superior System Enhancements

Beyond Enbridge's secured slate of projects, the Mainline System is well positioned to offer scalable, low cost and highly executable expansion projects to meet the transportation needs of industry, particularly in this time of uncertainty and wide price differentials for Canadian crude. Given the multi-pipeline configuration of the Mainline System, several low-cost system optimization and expansion options are available such as reduced Bakken deliveries into Cromer, early line-fill on the L3RP and minimizing delivery windows across our system. Enbridge is also exploring system optimization via new crude slates and drag reducing agent injections, as well as work on Line 4 to bring it back to its nameplate capacity. These system enhancements could potentially provide incremental capacity of up to 100,000 bpd ex-WCSB in 2019. Further Mainline optimizations could add an additional 350,000 bpd.

Downstream of Superior System Enhancements

To fully utilize the potential of the entire suite of secured and future Mainline expansions, additional capacity from Superior to Flanagan will be required. Enbridge is currently exploring multiple options that could bring on the required capacity, ranging from building new infrastructure to utilizing existing pipeline infrastructure in that corridor.

Enbridge plans to further develop both upstream and downstream options and to engage with shippers in commercial discussions at a suitable time.

Enbridge continues to review its system configuration to maximize value to customers.

With the significant increase in Western Canadian takeaway demand, Enbridge has placed a key focus on increasing pipeline capacity. With this focus, significant progress has been made to optimize system performance and capacity out of Western Canada, increasing capacity by 450,000 bpd since 2015. This optimization process examines a number of factors including:

- Overall system capacity;
- Power and integrity costs;
- Expected throughput/capacity by commodity/crude slate;
- Current pressure restrictions;
- · Product quality;
- Maintenance aligned with customer maintenance;
- System reliability;
- Linefill requirements; and
- · Facility interconnection capability.

Improvements made on these factors have increased the system operating efficiency and overall throughput offered to industry. The Enbridge Mainline offers a one of a kind system related to shipper optionality and flexibility across North America, which allows quick response to supply/demand disruptions via its multiple pipelines, terminal facilities and access to several markets. Enbridge will continue to optimize the above factors to maximize throughput offered to the market.

Maintaining toll certainty and competitiveness for our customers is a significant focus for Enbridge.

Currently the Canadian portion of the Mainline System is tolled as per the Competitive Tolling Settlement (CTS), a 10-year tolling agreement with shippers that expires July 1, 2021. The CTS provides for a U.S. dollar denominated International Joint Tariff (IJT) for crude oil shipments originating in Canada on the Enbridge Pipelines Inc. (EPI) System and delivered in the U.S. off the Lakehead System. Local rates for service on the U.S. portion of the Mainline System are not affected by the CTS and continue to be established by Lakehead's existing tolling agreements. Replacing the expired CTS will be a new tolling arrangement that will have a U.S. dollar denominated IJT while providing priority access in Canada. Contracts offered will be up to 20 years containing flexible commercial terms for all our shippers while providing long-term toll certainty and predictability. The new commercial framework will provide a minimum of 10 percent spot capacity. The next steps are to finalize the commercial framework, hold the Open Season, and submit the regulatory application with an effective date of July 1, 2021.

The regional oil sands system provides connectivity from several oil sands customers to the Edmonton and Hardisty areas with a total annual average capacity of approximately 2.5 million bpd.

The **Athabasca Terminal**, located north of Fort McMurray, provides operational receipt tankage for multiple products. The terminal is the initiation point for injections onto both the Athabasca Pipeline and the Wood Buffalo Pipeline. Athabasca Terminal has a total tank storage capacity of approximately 3.4 million barrels.

The **Cheecham Terminal**, located south of Fort McMurray, acts as a major hub, providing operational tankage to facilitate receipt of product from oil sands customers. Additionally, Cheecham Terminal provides connectivity for injections onto the Waupisoo Pipeline, Athabasca Pipeline, and the Wood Buffalo Extension Pipeline. The Norlite Diluent Pipeline is connected to Cheecham Terminal for the receipt of condensates. With the acquisition of two additional tanks in January of this year, the total tank storage capacity of Cheecham terminal has reached approximately 3.3 million barrels. The **Athabasca Pipeline** runs from Athabasca Terminal to the Hardisty area. The 30" pipeline has an average annual capacity of 570,000 bpd.

The **Athabasca Pipeline Twin** runs from Kirby Lake Terminal to the Hardisty area. The 36" pipeline has an average annual capacity of 800,000 bpd.

The **Wood Buffalo Pipeline Extension** runs from Cheecham and Kirby Lake where it connects to the Athabasca Pipeline Twin and deliveries to the Hardisty area. The 36" pipeline has an average annual capacity of 800,000 bpd. The **Waupisoo Pipeline** runs from Cheecham Terminal to the Edmonton area. The 30" pipeline has an annual average capacity of 550,000 bpd.

The **Woodland Pipeline**, a joint venture partnership with Imperial Oil and ExxonMobil, provides transport services from the Kearl oil sands project to the Edmonton area. The 36" pipeline has an average annual capacity of 379,000 bpd, and is expandable to 800,000 bpd.

The **Wood Buffalo Pipeline** runs from Athabasca Terminal to Cheecham Terminal. The 30" pipeline has an average annual capacity of 550,000 bpd. The **Norealis Pipeline** provides terminalling and transportation services from the Husky Sunrise oil sands project to Cheecham Terminal. The 24" pipeline has an average annual capacity of 90,000 bpd, and is expandable to 270,000 bpd.

The Norlite Diluent Pipeline, a

Joint Venture Partnership with Keyera Energy, has the capability to bring diluent from the Edmonton/ Fort Saskatchewan area to the oil sands region. The 24" pipeline has an annual average capacity of 218,000 bpd, and is expandable to 465,000 bpd.

Market Access





U.S. Gulf Coast Access

Together, the Flanagan South Pipeline and the Seaway Pipeline System allow crude oil transported on the Enbridge Mainline System to access key U.S. Gulf Coast refining centers in Houston and Port Arthur, Texas. The Flanagan South Pipeline, a 954-kilometre (593-mile), 36" interstate crude oil pipeline that originates at the Enbridge Flanagan Terminal in Illinois and terminates in Cushing, Oklahoma, came into service in Q4 2014 and has an average annual capacity of 585,000 bpd.

The Seaway Pipeline System has an annual average capacity of 950,000 bpd and consists of two 846-kilometre (526-mile), 30" pipelines between Cushing, Oklahoma and the Freeport, Texas area that deliver into Jones Creek Terminal. The pipelines can deliver into Freeport and Texas City docks or the ECHO Terminal as well as continuing on to Beaumont/Port Arthur where the Seaway System connects to three terminals: Sunoco Nederland, Enterprise Beaumont Marine West and Phillips 66 Beaumont.

Enbridge continues to evaluate growth opportunities to expand capacity into the U.S. Gulf Coast. Expansions of the Flanagan South Pipeline and Seaway Pipeline can create up to 250,000 bpd of incremental access into the U.S. Gulf Coast market. Enbridge recently acquired an interest in Gray Oak pipeline, a 1,368-kilometre (850-mile) pipeline with an average annual capacity of 900,000 bpd stretching from the Permian basin to the U. S. Gulf Coast. It will connect production in the Permian and Eagle Ford to market centers in Corpus Christi, Sweeny and Freeport, Texas. Gray Oak is expected to be in service by the end of 2019.

To enhance the services of our pipeline systems, Enbridge is pursuing the Texas COLT offshore loading project, which will provide direct loading of Very Large Crude Carriers (VLCC) from Freeport, Texas; a more efficient means of exporting large quantities of crude oil to international markets versus the current practice of reverse lightering. This project consists of a terminal near Freeport, a 42" offshore pipeline, platform and two single point mooring systems with superior connectivity to all key North American supply basins. This project is expected to be in service by 2022.





Eastern Access

Line 9, an 832-kilometre (517 mile), 30" pipeline, transports crude oil from Sarnia, Ontario to Montreal, Quebec with an average annual capacity of 300,000 bpd. Enbridge continues to work with stakeholders to ensure safe and reliable delivery of crude oil to refineries in Eastern Canada.



Southern Access Extension

The Southern Access Extension Pipeline (SAX), a 270-kilometre (168-mile), 24" pipeline, transports crude oil from the Enbridge Flanagan Terminal near Pontiac, Illinois, to Patoka, Illinois. Since its in-service date in January 2016, the pipeline has provided customers with timely, economical and reliable transportation service to the strategic Patoka hub. SAX has an average annual capacity of 300,000 bpd and has expansion capability of 100,000 bpd for incremental access to the Patoka market.

 Southern Access Extension Pipeline
Crude Oil Storage
Enbridge Pump Station
City/Town

Express Pipeline enables Enbridge to serve customers in the U.S. rocky mountain states (PADD IV) and further downstream via the Platte Pipeline.

The Express Pipeline has an average annual capacity of 280,000 bpd of crude oil from Hardisty, Alberta to Casper, Wyoming, Along this route, deliveries can be made in Montana and Wyoming and on to connecting facilities servicing Colorado and Utah. Express Pipeline also interconnects with Platte Pipeline, which transports both WCSB and domestic production into PADD II. The ratio of WCSB and light domestic production will influence Platte Pipeline System capacity; however average annual capacity is approximately 164,000 bpd between Casper and Guernsey, Wyoming and 145,000 bpd between Guernsey, Wyoming and Wood River, Illinois.

The Platte to Spearhead Connection went in to service in April 2018; allowing Express-Platte barrels to access Cushing from Platte's Salisbury Terminal via the Spearhead Pipeline.

The Express Pipeline is expandable up to an incremental 60,000 bpd of capacity with drag reducing agent and pump station optimizations. Work is ongoing to establish a schedule and refined scope for the project.



Enbridge's extensive infrastructure in the Bakken region make it ideally situated to accommodate both current and planned growth.

The North Dakota System, including the Bakken Expansion Pipeline, gathers crude oil from points in North Dakota for delivery to the Enbridge Mainline, which in turn provides access to multiple refineries in the U.S. Midwest, Gulf Coast and Eastern Canada. The current annual average system capacity out of the North Dakota Bakken is approximately 360,000 bpd.

In February 2017, Enbridge and Marathon finalized an agreement to acquire a 49 percent equity interest in the holding company that owns 75 percent of the Bakken Pipeline System. The Bakken Pipeline System consists of both the Dakota Access Pipeline, which delivers Bakken production to the Patoka, Illinois hub and the Energy Transfer Crude Oil Pipeline, which provides access to the USGC market. Enbridge is evaluating synergies between its existing network and the Bakken Pipeline System to provide increased optionality and enhanced market access for producers and shippers in the Bakken region.





Non-Regulated Contract Terminals

Enbridge has established a significant presence in contract storage in recent years, largely driven by increasing production of Western Canadian crude oil and the need for additional transportation infrastructure to access new markets in the U.S.

Currently, Enbridge is operating, or has under construction, contract storage at the following locations:

Location	Storage capacity in operation or under construction (million barrels)
Hardisty, AB	10.5
Cushing, OK	16
Other	8.8
Total	35.3

Hardisty

Hardisty, Alberta is the most important crude oil storage hub in Canada. Enbridge operates approximately 3 million barrels of salt cavern storage at Hardisty Caverns, and 7.5 million barrels of above ground storage at Hardisty Contract Terminal, with both facilities well connected, providing customers with the much needed optionality they require. Both facilities are currently completely subscribed. Enbridge is continuing to evaluate additional service options and growth opportunities to maximize the value of these facilities for both Enbridge and its customers.

Cushing

Cushing, Oklahoma is one of the most important crude oil storage hubs in the world and the location of the settlement of the New York Mercantile Exchange West Texas Intermediate (NYMEX WTI) contract. With approximately 16 million barrels of working storage capacity, Enbridge has one of the largest and most well-connected terminals in the Cushing area. The facility is currently fully subscribed. Enbridge continues to develop customer-initiated projects, as well as explore growth opportunities, to optimize and increase the infrastructure of the Cushing facility.

Other

The oil sands have various operational contract tanks throughout the system totaling more than 7 million barrels. Additionally, Enbridge has contract storage locations throughout the North Dakota Classic system, 480,000 barrels of leased storage at Platte Pipeline's Casper, Wyoming facility, and 400,000 barrels of storage at Patoka, Illinois with a large footprint for future development.





The Southern Lights Pipeline transports diluent supply from various sources through the U.S. Midwest to Western Canada's heavy oil production regions.

Southern Lights

Originating from Manhattan, Illinois, Southern Lights sources its diluent from the U.S. Gulf Coast, mid-continent and Midwest refineries via interconnections to existing crude and refined products pipelines and delivers it to Western Canada's crude oil hubs. Southern Lights receives product from four connecting carriers at the Manhattan Terminal in Illinois—BP, Chicap, Enterprise and Explorer pipelines. At the terminus of the system in Edmonton, Alberta, Southern Lights has direct delivery connections to the CRW pool, Keyera, Gibson, Pembina, Plains and Access pipelines. Currently, there is also a direct delivery connection to the Enbridge Mainline at Hardisty, Alberta, and to Plains at Kerrobert, Saskatchewan. The annual average capacity of Southern Lights is 180,000 bpd, of which 162,000 bpd is secured by long-term contracts. As referenced in the oil sands infrastructure section, the Norlite Project is a key component of Enbridge's overall diluent strategy, extending diluent delivery into the oil sands region.

Pipeline System Configuration



l ine 1

37,600 m3/d (237 kbpd) 18"/20"-1,767 km (1,098 mi) - NGL

- Refined Products
- Light

Line 2A

70.300 m3/d (442 kbpd) 24" – 966 km (600 mi) - Condensates - Light

Line 2B

70,300 m3/d (442 kbpd) 24"/26"-808 km (502 mi) - Light

Line 3

62.000 m³/d (390 kbpd) 34"-1,767 km (1,098 mi) - Light

Line 4

126,500 m3/d (796 kbpd) 36"/48"-1.770 km (1.100 mi) - Heavy

- Medium (Ex-Clearbrook)

- Light (Ex-Clearbrook)

Line 5

85,900 m3/d (540 kbpd) 30" - 1,038 km (645 mi) -NGL - Light

ENBRIDGE fe Takes Energ

Line 6

106,000 m³/d (667 kbpd) 34" - 748 km (465 mi) - Light

- Medium

- Heavy

Line 7 28,600 m3/d (180 kbpd) 20" - 193 km (120 mi) - Light - Medium - Heavy

Line 78A

- Heavy

90,600 m3/d (570 kbpd) 36" – 425 km (264 mi) - Light - Medium

Line 78B 79.500 m³/d (500 kbpd) 30"/36" - 175 km (109 mi) - Light

- Medium - Heavy
- Line 65 29,500 m³/d (186 kbpd) 20" – 504 km (313 mi) - Light
- Medium

Line 10

11,800 m3/d (74 kbpd) 12"/20" – 143 km (89 mi) - Light - Medium

- Heavv Line 11

18,600 m3/d (117 kbpd) 16"/20" – 76 km (47 mi) - Light - Medium - Heavy

Line 62

37,400 m3/d (235 kbpd) 22" – 121 km (75 mi) - Heavy

Line 14/64

54,600 m³/d (343 kbpd) 24" – 784 km (487 mi) - Light - Medium

Line 61

151,700 m³/d (954 kbpd) 42" – 744 km (462 mi) - Light - Medium - Heavy

Line 67

127,200 m3/d (800 kbpd) 36" - 1,790 km (1,112 mi) - Heavy

Not part of the Enbridge Mainline System

Line 9 47,700 m3/d (300 kbpd) 30"-832 km (517 mi) - Liaht

- Medium - Heavy

....

.... Line 17

16.000 m³/d (100 kbpd) 16" – 142 km (88 mi) - Light - Medium

-Heavy

. Line 55 30.700 m³/d (193 kbpd)

22"/24" - 938 km (583 mi) - Light - Medium - Heavy

- Line 59 93,000 m3/d (585 kbpd)
- 36"-954 km (593 mi) - Liaht
- Medium

....

- Heavy

. Line 79

12.700 m³/d (80 kbpd) 20"/16" – 98 km (61 mi) - Light

- Medium
- Heavy

. Line 63

47.700 m3/d (300 kbpd) 24" – 270 km (168 mi) - Light - Medium - Heavy

NOTE: Capacities provided are annual capacities and do not include current restrictions.

26

Oil Sands Regional System Configuration

Q1, 2019



Line 18 — Waupisoo Pipeline 550 kbpd 30" – 380 km (236 mi)

Line 75 — Wood Buffalo Pipeline 550 kbpd 30" – 96 km (59 mi)

Line 19 — Athabasca Pipeline 570 kbpd 30" – 542 km (337 mi) Line 45 — Athabasca Twin Pipeline 800 kbpd 36"-347 km (215 mi)

Line 45 — Wood Buffalo Extension 800 kbpd 36" – 107 km (66 mi)

Line 74 — Norlite Diluent Pipeline 218 kbpd (Expandable to 465 kbpd) 24" — 447 km (278 mi) Line 49 — Woodland Pipeline 379 kbpd (Expandable to 800 kbpd) 36" – 138 km (86 mi)

Line 70 — Woodland Extension 379 kbpd (Expandable to 800 kbpd) 36" – 387 km (240 mi)

Line 50 — Norealis Pipeline 90 kbpd (Expandable to 270 kbpd) 24" – 113 km (70 mi)



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141

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