

# About Enbridge Pipeline Operations

Kent Nikel, Senior Manager  
Regional Services



# Who is this guy...

- 21+ years of experience with Enbridge
- 8+ years field operations
- Avid cyclist
- Ride to Conquer Cancer x 5!
- Relaxing in the great Ontario environment



# Life takes energy

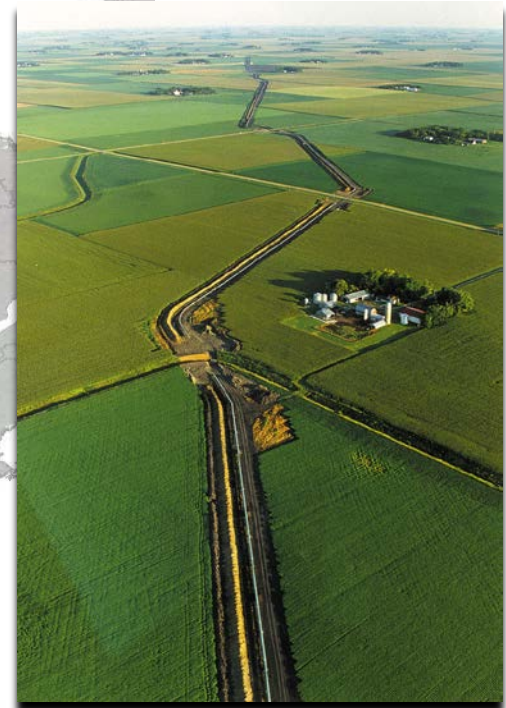
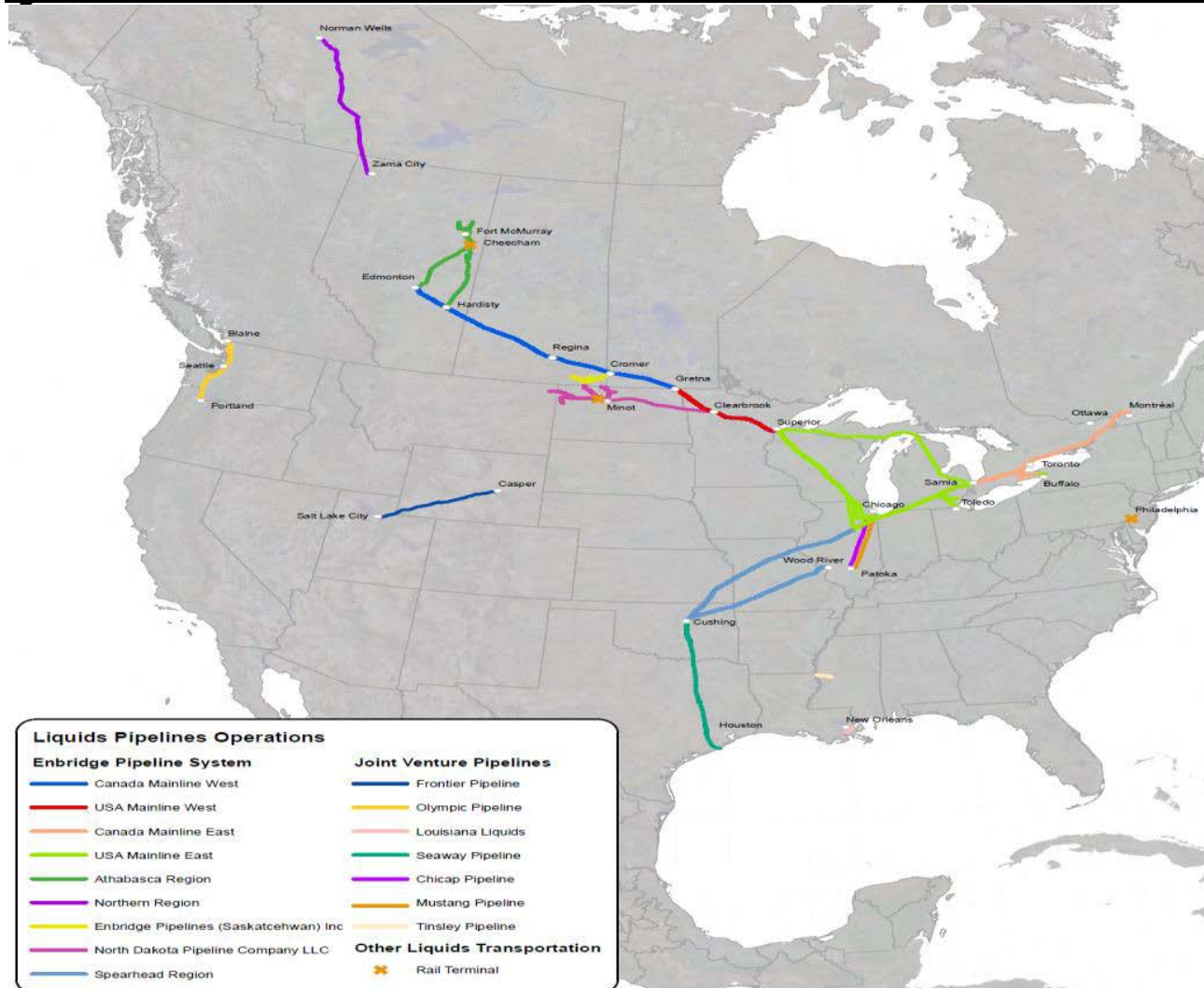
Providing the energy people need

- We're North America's leading energy infrastructure company with a team of more than 11,000 people living, working and contributing in communities across the continent.
- Millions of people count on us to safely and reliably deliver the energy we all need to live, work and play, every day.
- We energize our nations and help power the economy.
- Deliver an average of 2.4 Million bbl/day to customers
- Export 65% of Western Canadian Oil



# The Enbridge Pipeline Network

Our infrastructure makes the difference



Approximately 24,738 kilometers (15,372 miles) of crude pipeline.



# We Deliver Energy: Gas Distribution

With a 160-year history, we are the longest-serving and largest natural gas distributor in Canada.

Heating 2 million homes and powering industry in Ontario, Quebec and New Brunswick, as well as New York State.



# We Generate Energy: Green and Renewables

## Moving forward

- We own and operate renewable energy projects.
  - 4 solar farms
  - 12 wind farms
  - 1 geothermal facility
- Combined emissions-free generating capacity of nearly 1,700 megawatts.
- Enough to power more than 550,000 homes.



# Pipelines

## Kinds of pipelines...

- Gathering lines
- Transmission lines
- Distribution lines
- Service lines

## Products transported...

- Natural gas
- Refined products
- Crude oil
- Chemicals

## Materials for pipelines...

- Steel
- HDPE
- Plastic

# Pipeline Terminology

- Pipeline - A continuous steel pipe used for the conveyance of gas or petroleum products.





# Pipeline Terminology

- Terminal – A facility along the pipeline that has breakout tanks for temporary storage of product.



# Pipeline Terminology

- Station – A facility along the pipeline that has pumps that are used to push the product through the pipeline





# Pipeline Terminology

- Valve site – A location along the pipeline where the flow can be stopped by using a remotely controlled or manually controlled valve.



# Pipeline Terminology

- Meter station – A facility where product is measured and delivered to the customer. Also referred to as Custody Transfer meters.





# Pipeline Terminology

- Take Off – A facility where flow is diverted from one pipeline to another



# Basic Enbridge Facts

## About our system

- Enbridge is a common carrier
- Enbridge receives revenue from the tariff charged to transport each m3
- Over 70 active shippers
- 120 different commodities
- 37 receipt or delivery transfer locations

# Basic Enbridge Facts

## About our system

- 7500 km (4660 miles) of Right of Way
- Approximately 100,000 One-Calls per year – Public, Right of Way (ROW), Emergency Locates
- 190+ pump stations / 600+ pumping units / 20 Terminals
- Mainline Line Fill – 5.8 million m<sup>3</sup> (48.6 million bbl.)
- Power consumption 391 GW/hr per month or 4700 GW Per year which is enough to power half of the city Toronto for a year (1.1 Million Homes)
- Power cost is about \$39 million/month
- 373 tanks in mainline and feeder systems with capacities ranging from 160 to 88,000 m<sup>3</sup> (1,000 - 550,000 bbl.)
- 6.0 million m<sup>3</sup> (37.9 million bbl.) total capacity in tankage

# Metering and custody transfer

- All products on the Enbridge system are measured for volume on receipt and delivery with the use of meters.
- This is also known as **custody transfer**.
- We know exactly how much and what quality of product a shipper has delivered to the Enbridge system and what they receive back from us.
- Approximately 115 Million m<sup>3</sup> of products measured in/out per year (\$48 Billion) within the Enbridge System



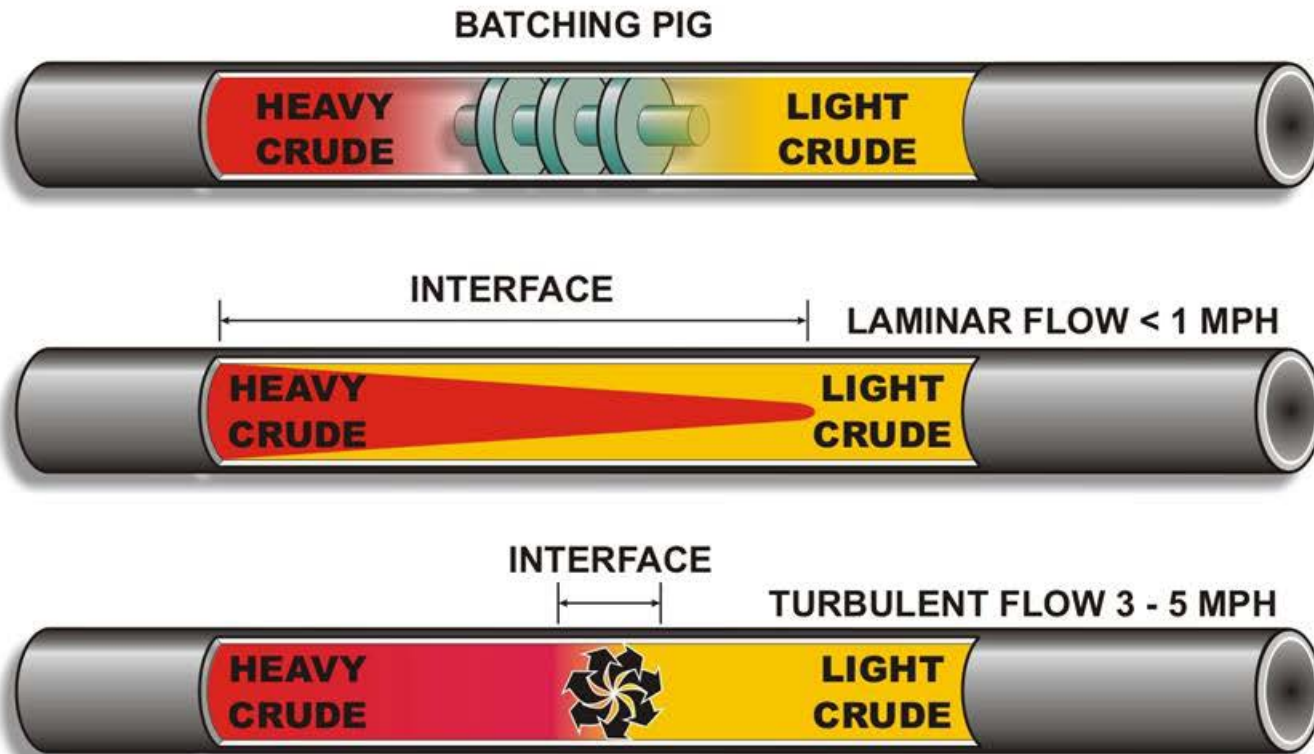
# Batching products

## Batching

- A batch is a volume of commodity that is transported as a unit in a pipeline system
- Estimated transit time is 21-45 days for delivery at 3-5 Miles per hour.
- Maintaining the size and quality of a batch is key in the Enbridge operation. Customers expect equivalent volumes and crude types on delivery.



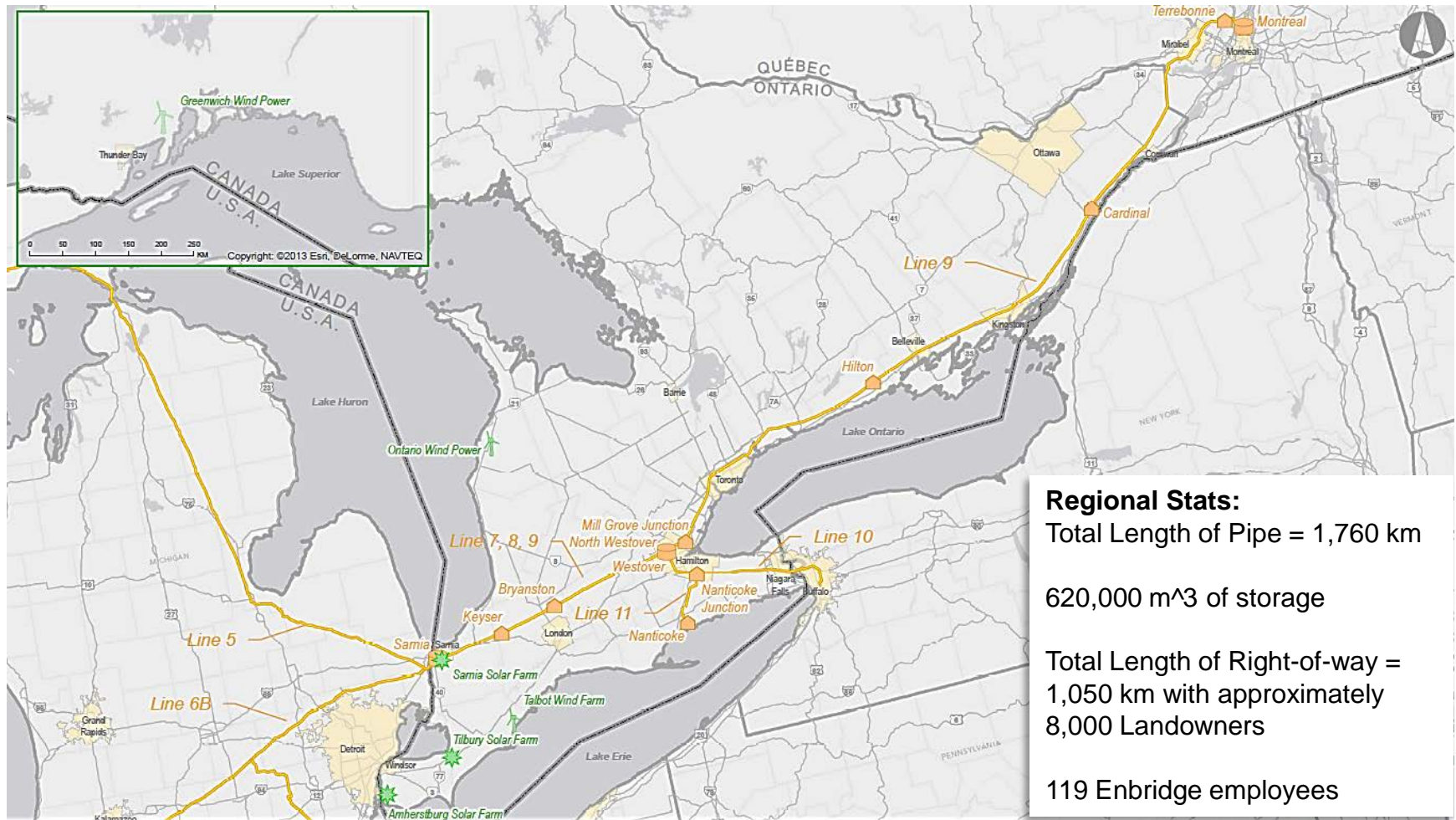
# Batch Movement



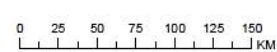
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# Enbridge in Ontario

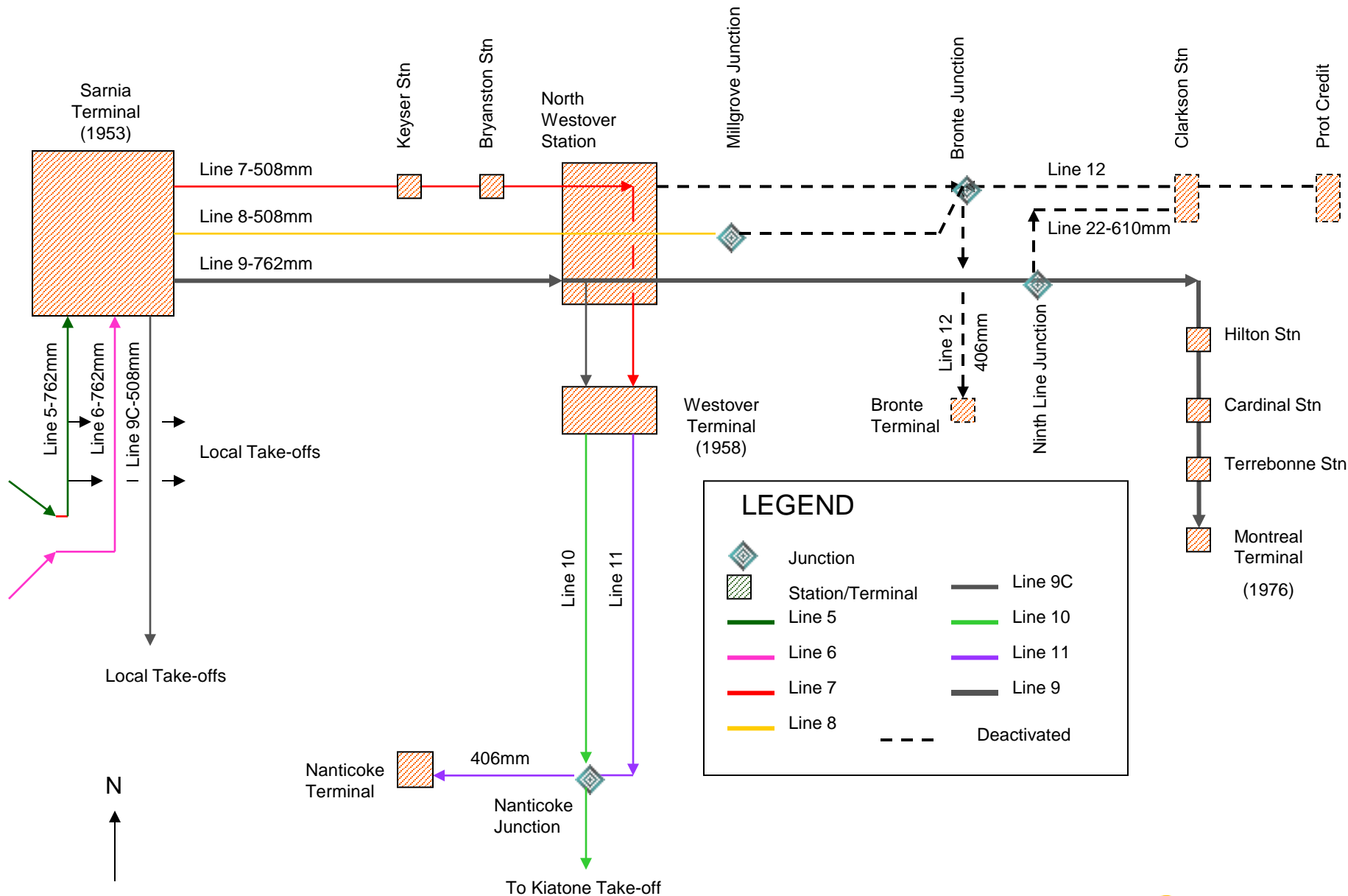
Delivering Energy and Economic Benefits



Ontario Assets



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NAD 1983 UTM Zone 14N



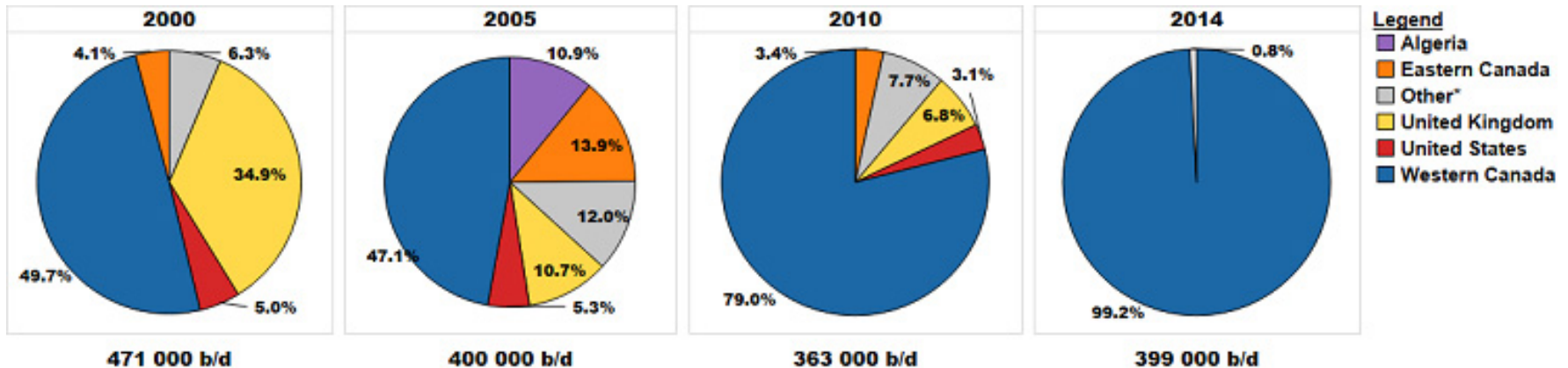


## Ontario Deliveries in 2014

- IOL Sarnia – 5,960,000 m<sup>3</sup>
- Nova Sarnia – 1,600,000 m<sup>3</sup>
- Shell Sarnia – 3,950,000 m<sup>3</sup>
- Suncor Sarnia – 3,760,000 m<sup>3</sup>
- Plains Sarnia – 5,000,000 m<sup>3</sup>

IOL NK – 5,420,000 m<sup>3</sup>

Total volume – 25,720,000 m<sup>3</sup>



# Ontario Benefits

## Delivering Energy and Economic Benefits



Many Enbridge projects and operations – including Line 10 – contribute significantly to Ontario's economy, services and overall energy security. Some numbers from 2014:

### Capital spending

\$1.2  
billion

### Operating expenditures

\$362.3  
million

### Salary paid

\$201.3  
million

### Employees

2,674

The taxes we pay in Ontario support schools, infrastructure development and other provincial/local government initiatives. Some more numbers:

### Property tax

\$53.3  
million

### Corporate income tax

\$5.8  
million

### Payroll, fuel and excise taxes

\$1.7  
million



# Comments, Questions and Discussion

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