Enbridge Operations In Northern Michigan
Line 5
Enbridge: A Vital Link to Energy Supply

- Enbridge Energy has been delivering energy reliably since 1949 on what was originally referred to as the Lakehead System.

About 15% of total U.S. petroleum imports arrives via Enbridge’s Lakehead System.

- Enbridge meets more than 50% of crude oil needs of all Great Lakes refineries.
**Liquids Pipelines in Michigan**

**Line 6B:**
*Griffith, IN to Marysville, MI*
- 235 miles in MI
- 30-36-inch pipe
- Capacity 500,000 bpd
- Medium & heavy crude

**Line 79:**
*Stockbridge to Romulus, MI*
- 64 miles in MI
- 16-20-inch pipe
- Capacity 80,000 bpd
- Light & heavy crude

**Line 17:**
*Stockbridge, MI to Toledo, OH*
- 77 miles in MI
- 16-inch pipe
- Capacity 100,000 bpd
- Heavy crude

**Line 5:**
*Superior, WI to Sarnia, ON, Canada*
- 554 miles in MI
Superior, WI to Sarnia, ON, Canada

- 645 miles (554 miles in MI)
- Capacity 540,000 bpd
- 30-inch pipe (2, 20-inch heavy-walled and seamless pipelines under Straits)
- Well functioning coating
- Light crude (also NGL & others)
Safety is the Cornerstone of our Business

• Number 1 priority is to operate safely and reliably – No incident is ever considered acceptable.

• Since 2012, invested $4.4 billion in new technologies and training to further enhance pipelines and facilities.

• During the past 10 years, delivered nearly 13 billion barrels of crude oil and liquids.

Goal to build and maintain pipelines with ZERO releases.
Safely Transported

- Engineering design
- Integrity management & pipeline operations
- Control Center Operations: computerized pressure monitoring and control
- Routine aerial patrols
- Internal pipeline inspections
- On-going emergency response training & live drills
- Straits-specific response plans
Safety in the Straits of Mackinac

• Design

• Inspections

• Automatic shut-off valves

• Remotely operated Isolation Valves

• New leak detection equipment

• Electric back-up generator

• Valve yard containment system
Integrity and Operational Reliability

- Comprehensive maintenance and integrity program, including visual inspections.
Continuous Safety Improvements

Improvements since 2010:

• Pipeline and Facility Integrity
• Leak Detection
• Pipeline and Control Center Operations
• Public Awareness
• Emergency Response
• Safety Culture
Sophisticated electronic vehicles move inside the pipe along with the oil to obtain detailed measurements of the pipe condition including:

- internal corrosion
- external corrosion
- dents, buckles, gouges
External Inspections

- Frequent Underwater Autonomous Vehicle and Remote Operated Vehicle inspections.
- Routine aerial and right-of-way patrols are conducted for buried pipelines.
- Visually patrolled at least 26 times a year.
In 2013, Enbridge paid nearly $21 million in state property, sales, use and income taxes.

Employ approximately 250 employees & contractors in 24 locations – average annual salary: $82,000
Emergency Responder Education

• **FREE** Pipeline Emergency online training

• Basics of gas and liquids pipeline operations

• Pipeline Emergency response tactics

• Providing responders with resources they need

www.mypipelinetraining.com
Community Investment

Grants approximately $750-$1,500 but may vary from year to year based on annual program budget.

Contributed approximately $70,000 in 2013 to Michigan applicants including:

• City of St. Ignace Police Department
• Mackinaw City Police Department
• Delta County Sheriff Department
• Mackinac Island Fire Department
• Cheboygan County Sheriffs Department
• Michigan State Police Department
Thank You

www.enbridge.com