



**Public Service Commission of Wisconsin**

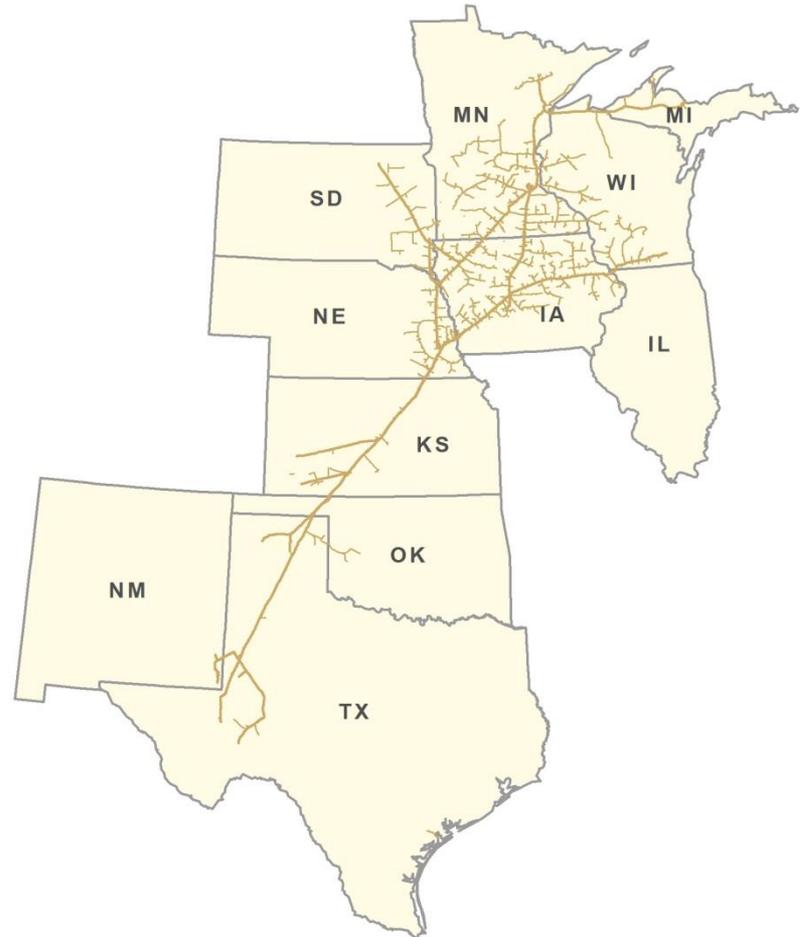
**Natural Gas Conference**

**November 20, 2014**

# Northern's System

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- Northern has a vast network of pipeline facilities
  - 14,700 miles of pipeline
  - 47 compressor stations – 620,630 horsepower
  - Over 2,150 receipt and delivery points
- Northern has five storage facilities with 59 Bcf firm capacity and 1.1 Bcf/day of peak deliverability
  - Three underground storage facilities
    - Redfield, Iowa
    - Cunningham, Kansas
    - Lyons, Kansas
  - Two liquefied natural gas facilities with 4.0 Bcf capacity
    - Wrenshall, Minnesota
    - Garner, Iowa
- Northern's system has two distinct rate areas
  - Market Area with a peak-day capacity of more than 5.5 Bcf
  - Field Area with a peak-day capacity of more than 2.3 Bcf



# Northern Facilities and Service in Wisconsin



Total of 1,337 miles of pipeline

Two compressor stations:

- Belleville – Four units with total of 4,640 horsepower
- Spring Green – One unit with total of 1,100 horsepower

Service to 29 utilities and end-users

Firm entitlement of approx. 433,500 Dth/day

Gas demand in Wisconsin on Northern totaled 99.9 Bcf from November 1, 2013 through October 31, 2014 which represented 11% of Northern's Market Area Total

# Winter 2013/2014: Be careful what you ask for!

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*Polar vortex rolling over the Great Lakes – January 6, 2014*

# Winter 2013/2014 Recap

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- Heating season was 24% colder than normal
  - 8 degrees Fahrenheit colder than 2012/2013
  - 19 degrees Fahrenheit colder than 2011/2012
- Market Area loads average 3.6 Bcf/day
  - 0.5 Bcf/day higher than '12/'13
  - 0.9 Bcf/day higher than '11/'12
- New peak day delivery of 5.14 Bcf on January 6, 2014
  - Supplied by:
    - 2.4 Bcf from north receipts (NBPL, GLTC)
    - 1.9 Bcf from Demarc area (Field receipts, TBPL, etc.)
    - 0.84 Bcf from storage
- While the natural gas pipeline industry faced significant challenges resulting from the extreme, prolonged cold in the upper Midwest, Northern's service was highly reliable
  - Primary firm service was not impacted
  - Alternate firm and interruptible service was available most days
  - Northern was able to respond to external, regional supply interruptions without impact to primary firm customers
    - TCPL/Viking
    - NGPL

# Winter 2013/2014 Recap (cont.)

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- Pricing
  - In addition to record throughput this winter, we operated in an environment of record high natural gas prices
  - Supply prices at NBPL/Ventura and Demarc peaked at \$53.31/Dth and \$34.95/Dth, respectively. These prices compare to average prices in November and December 2013 of \$4.15/Dth at the same points.
  - Supply prices this summer averaged \$4.20
- Supply Diversity
  - This winter also reminded our customers of the value they receive from our Field Area
  - As customers chose to access available and low cost Field Area supply, deliveries to Demarc during January and February 2014 nearly doubled with increases of approximately 540,000 Dth/day more than the same period in 2013 and 575,000 Dth/day more than in 2012.
  - The total value of alternate and interruptible volumes scheduled through Beatrice based on the Demarc to Ventura daily price spreads equates to \$99 million

# Allocations of Alternate Firm and IT

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- Northern's highest priority is to provide reliable primary firm transportation service for its shippers
- Allocations are based on the priority of transportation contracts, NOT based on the type of market being served
  - Market Area Allocation Priorities
    - Primary firm receipt to primary firm delivery – highest priority
    - Primary > alternate and alternate > primary – second priority
    - Alternate > alternate – third priority
    - Interruptible – last priority
- Northern does not allocate primary firm receipt to primary firm delivery nominations except in a force majeure or curtailment event
- Capacity allocations can occur at a specific point or at a group level in order to allocate the “**smallest impacted area**”

# Allocations of Alternate Firm and IT (cont.)

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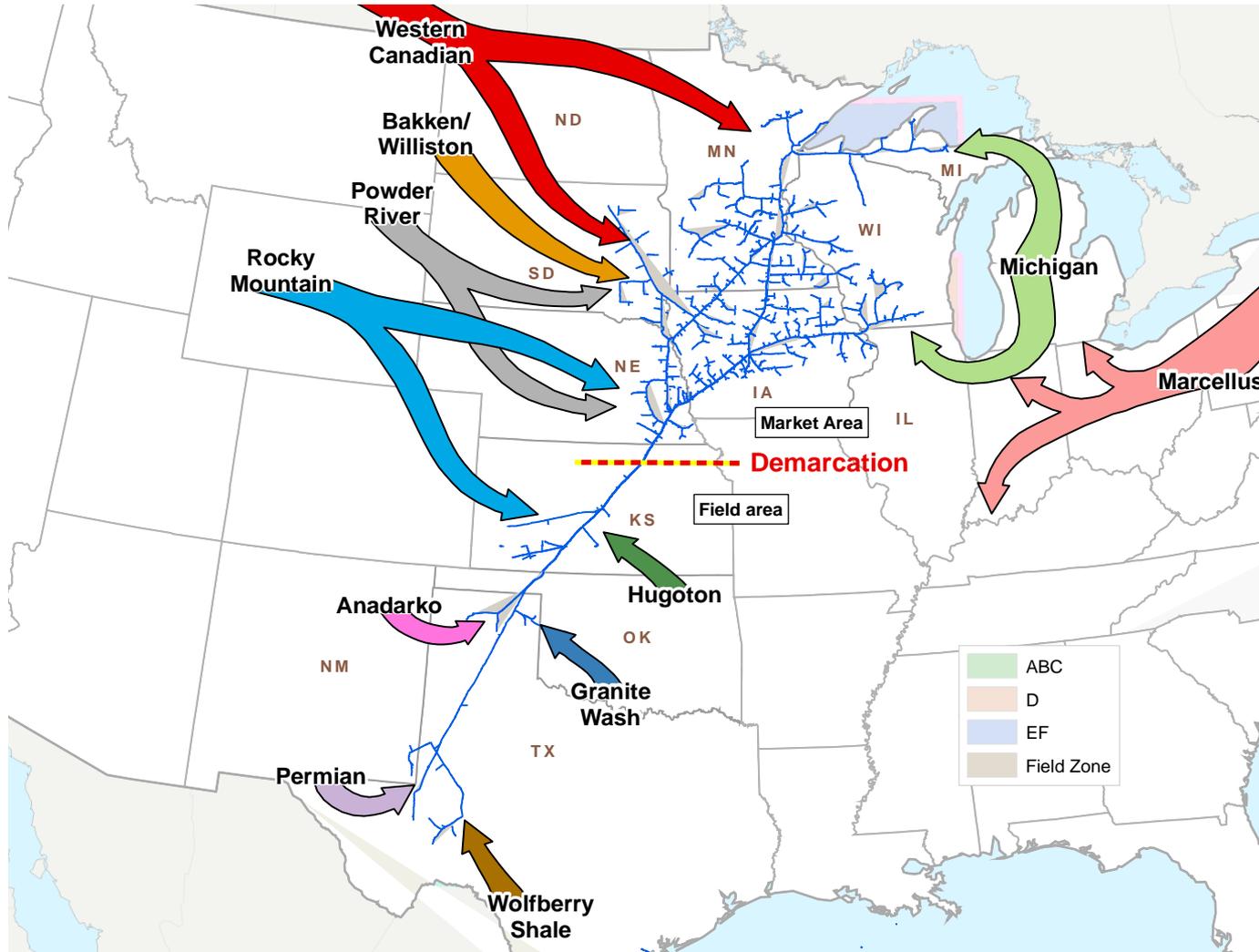
- Causes
  - Nominations exceed capacity. High utilization of alternate firm or interruptible points due to supply or market pricing dynamics
  - Planned service outages
  - Force majeure event
- Communication Tools
  - Non-critical notices are posted notifying shippers of potential allocation(s)
    - Whenever possible, Northern will provide information of changing operational conditions on the pipeline, such as at certain receipt point locations in the Market Area
  - Operationally Available Capacity web page shows capacity available at receipt and delivery points, as well as for allocation groups, after each cycle

# System Overrun Limitation (SOL) and Critical Days

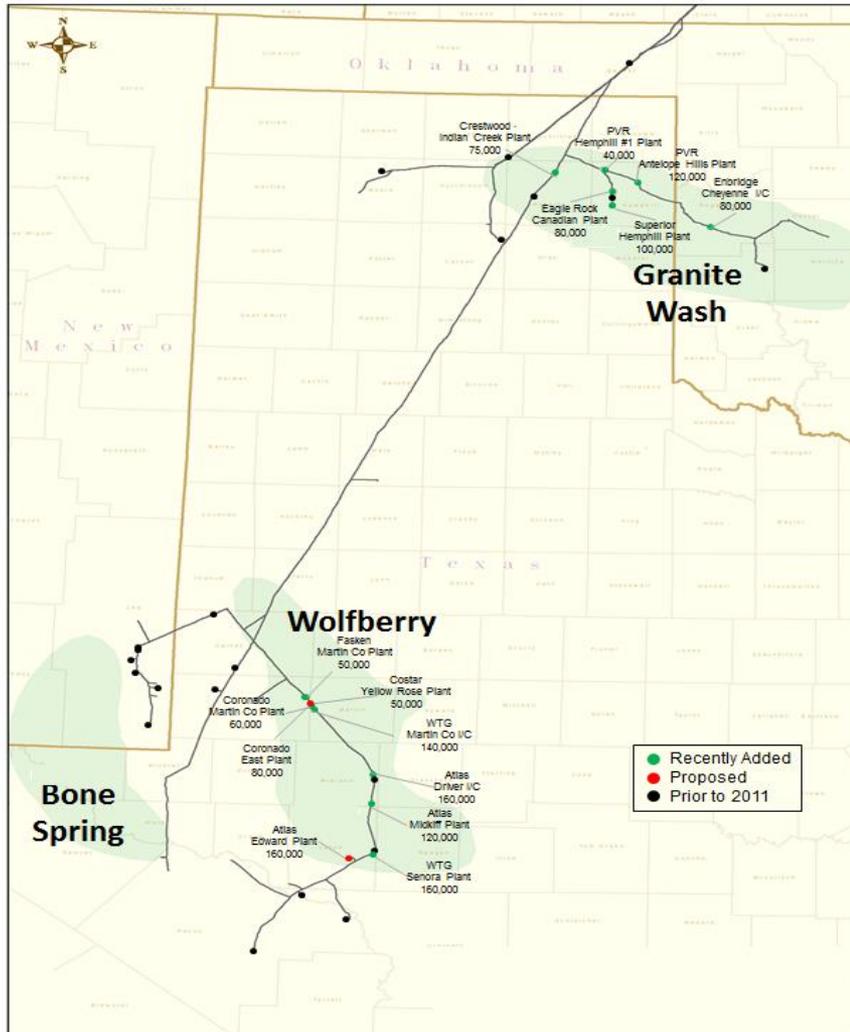
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- SOLs and Critical Days are used to maintain system integrity by ensuring that supplies into the pipeline are equal to deliveries taken off the pipeline; to ensure the system is adequately supplied
- SOLs and Critical Days function similarly; the only difference is the penalty level for non-compliance
  - Critical day penalties are more expensive in order to ensure pricing scenarios do not incent shippers to short the pipeline
- SOLs and Critical Days do not limit capacity in any way; do not impact the ability to flow alternate firm or interruptible service
- SOL and Critical Day Factors
  - **Maintain system integrity and protect firm shippers**
  - Load forecast
  - Shipper recent behaviors – long/short
  - Storage deliverability
  - LNG deliverability and inventory (SOL)
  - Line pack levels
  - Regional system conditions
  - Inability of upstream pipelines to perform

# Northern Supply Options



# Supply Additions to Northern's Field Area



- Shale development is supportive of gas demand due to low supply prices
- Northern continues to expand access to additional unconventional supply from the Granite Wash tight sands and Wolfberry shale plays
- Incremental supplies of 1,475,000 Dth/day are being attached from Granite Wash tight sands and Wolfberry shale plays

# Electric Generation on Northern

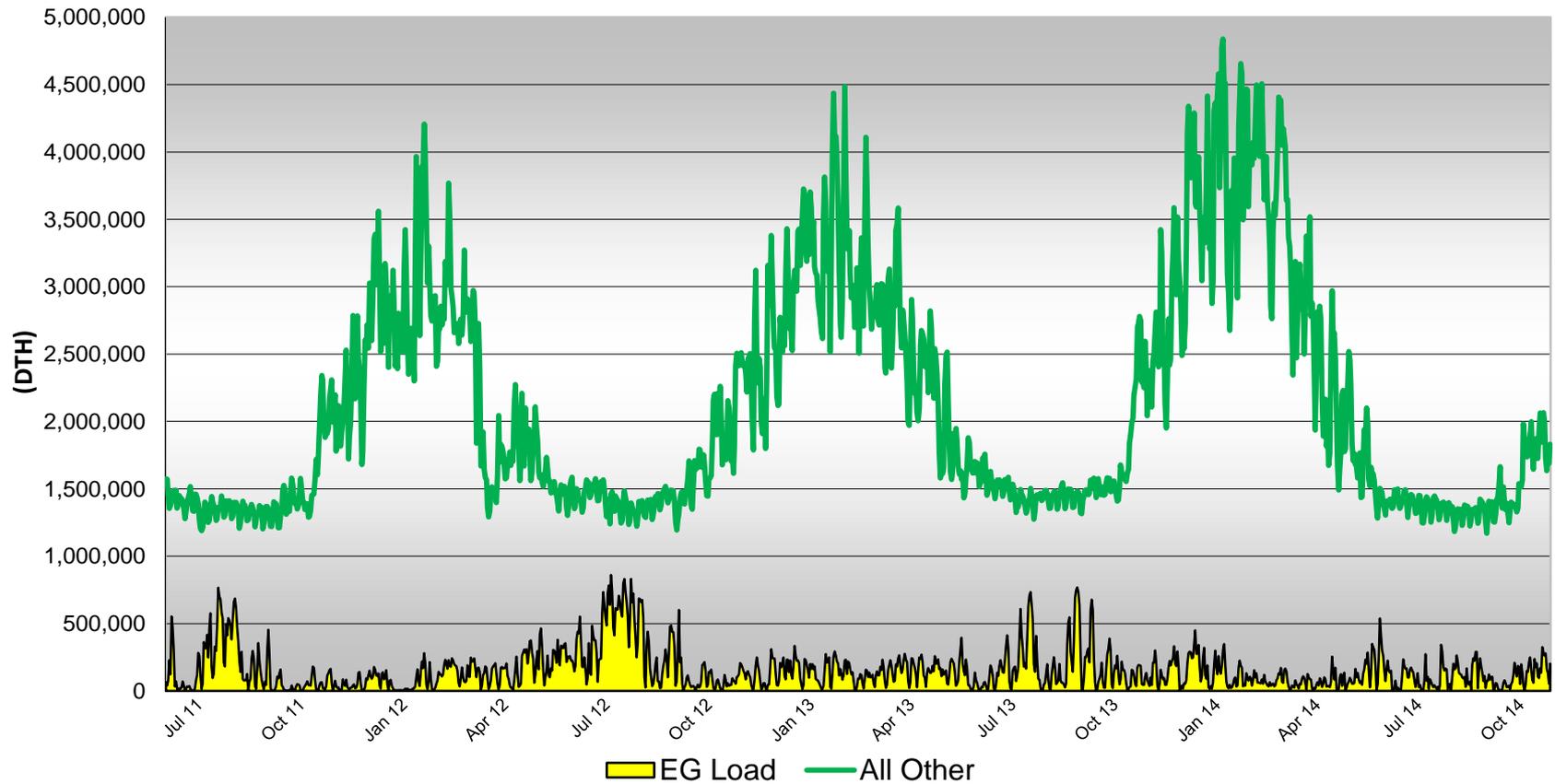
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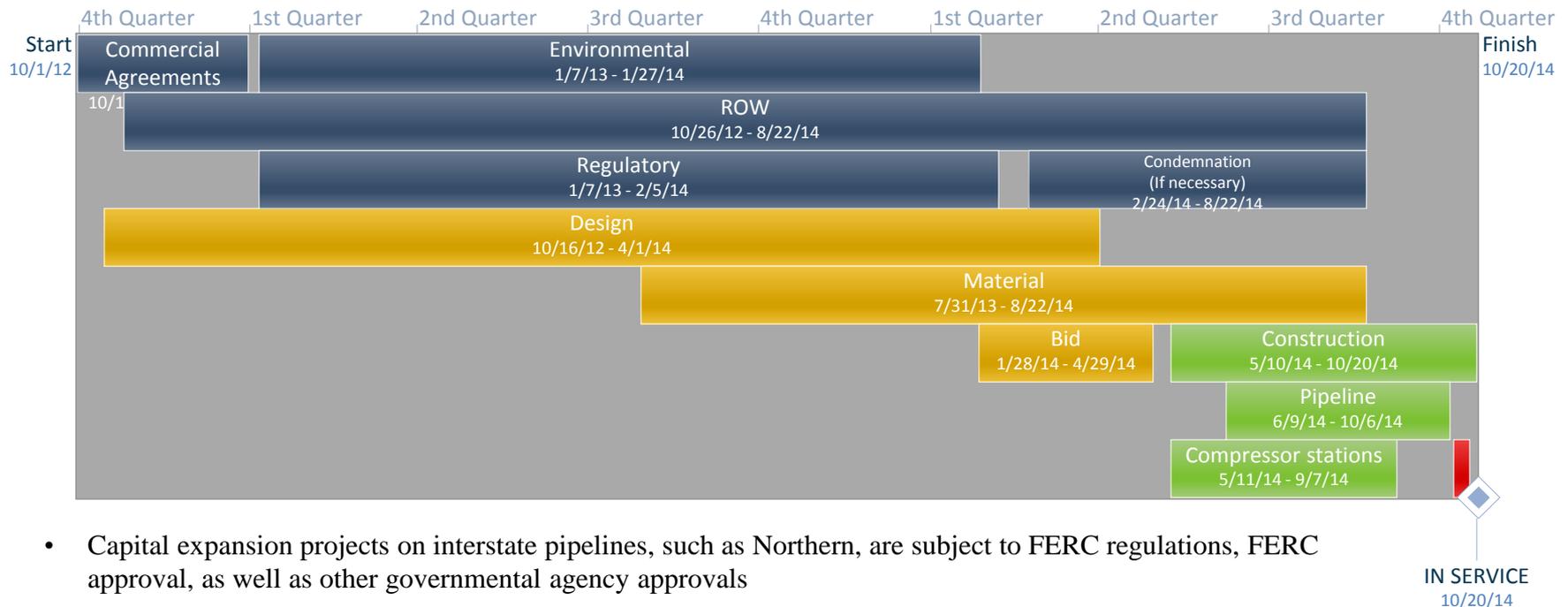
- Thirty-eight electric generation plants are monitored and viewed in the Northern SCADA system
  - 29 locations in Northern’s Market Area
  - 9 locations in Northern’s Field Area
- Northern serves electric generation facilities directly and through utility distribution systems
- Direct connected plants – 38 with generating capacity of 11,626 MW
  - Combined cycle plants – 17 with capacity of 6,588 MW
  - Peaking plants – 21 with capacity of 5,038 MW
- The maximum power plant delivery of 1.043 Bcf/day occurred on July 5, 2012. The previous record of 1.039 Bcf/day occurred on August 11, 2010
  - In 2012, Northern experienced three days above 1.0 Bcf/day and ten days above 0.900 Bcf/day
- Over the past three years, direct-connected plants comprised approximately 12% of Northern’s throughput
  - Winter peak generation load was 14% of Northern’s system load
  - Summer peak generation load was 30% of Northern’s system load
- Power plant scheduled volume requests are reviewed each scheduling cycle
- Northern’s gas control department communicates directly with the power plants
- Northern is well situated to serve these loads
  - Availability of diverse supplies
  - The grid nature of Northern’s system is comprised of multiple mainlines and redundant paths to serve the market
  - Availability of peaking facilities and balancing services

# Electric Generation Load

Market Area Power Load  
June 2011 - October 2014



# Project Development Timeline Example



- Capital expansion projects on interstate pipelines, such as Northern, are subject to FERC regulations, FERC approval, as well as other governmental agency approvals
  - Governmental approvals depend on the capital cost of a project and the type of facilities being constructed and the timing ranges from no approval requirements for an Automatic Blanket project (up to \$11.2m) to more than two years for a Section 7 application (over \$31.9m)
- The time to develop and complete a project varies greatly depending on the project
  - Northern can build an interconnect usually in less than six months (landowner issues would be the key variable)
  - In contrast, expanding a significant portion of mainline capacity can require more than two years to develop
    - As an example, Northern expanded its system by approximately 88,000 Dth/day recently and the \$80m project took two years to complete