North Carolina
Utilities Commission

National Regulatory Conference
May 20, 2015

The Role of Natural Gas in Electric Generation

Chairman Edward S. Finley, Jr.
North Carolina Utilities Commission

A Regulator's Perspective

North Carolina fully regulates vertically integrated electric IOUs.

IOUs own and operate most lines.

NCUC responsible for service reliability and costs.

NC fuel mix has changed dramatically since 2007.

Oil and Nat'l Gas	DEP	DEC	DNCP
2007	5%	1%	8%
2013	26%	10%	16%

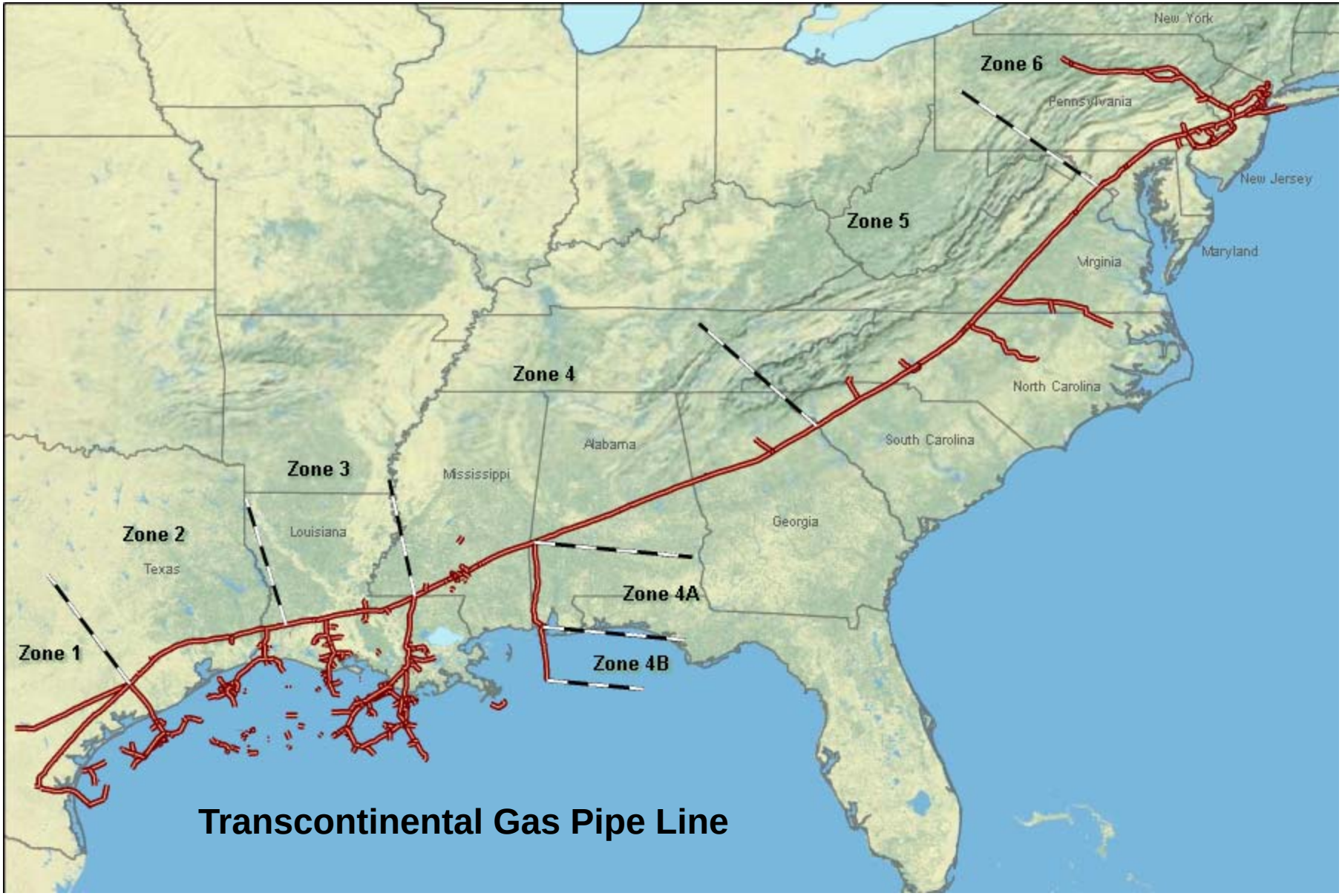
A Regulator's Perspective

Atlantic Coast Pipeline

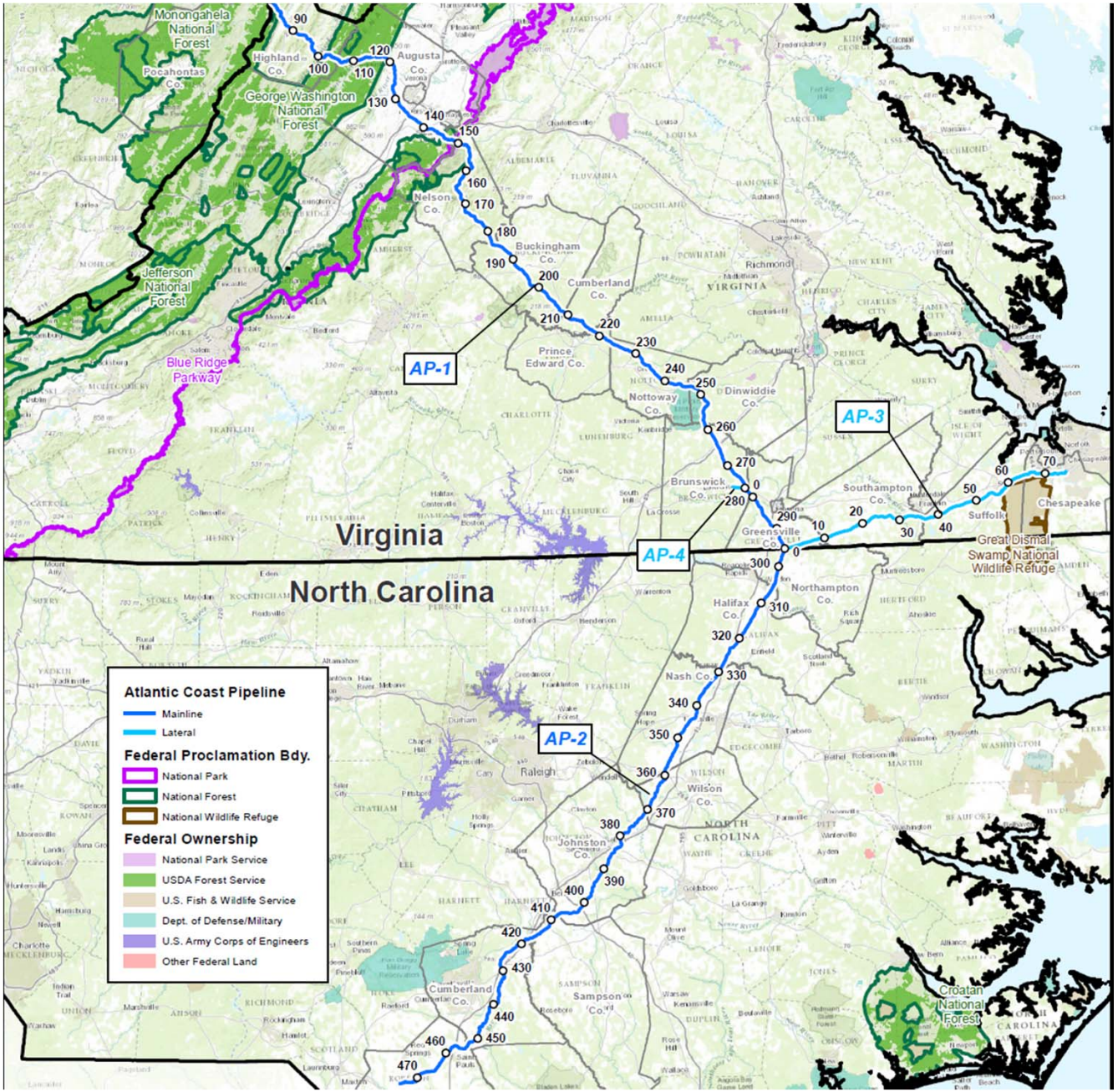
Joint venture comprised of subsidiaries of Dominion Resources, Duke Energy, Piedmont Natural Gas, and AGL Resources.

Proposed 550 mile pipeline stretching from West Virginia to just outside Lumberton.

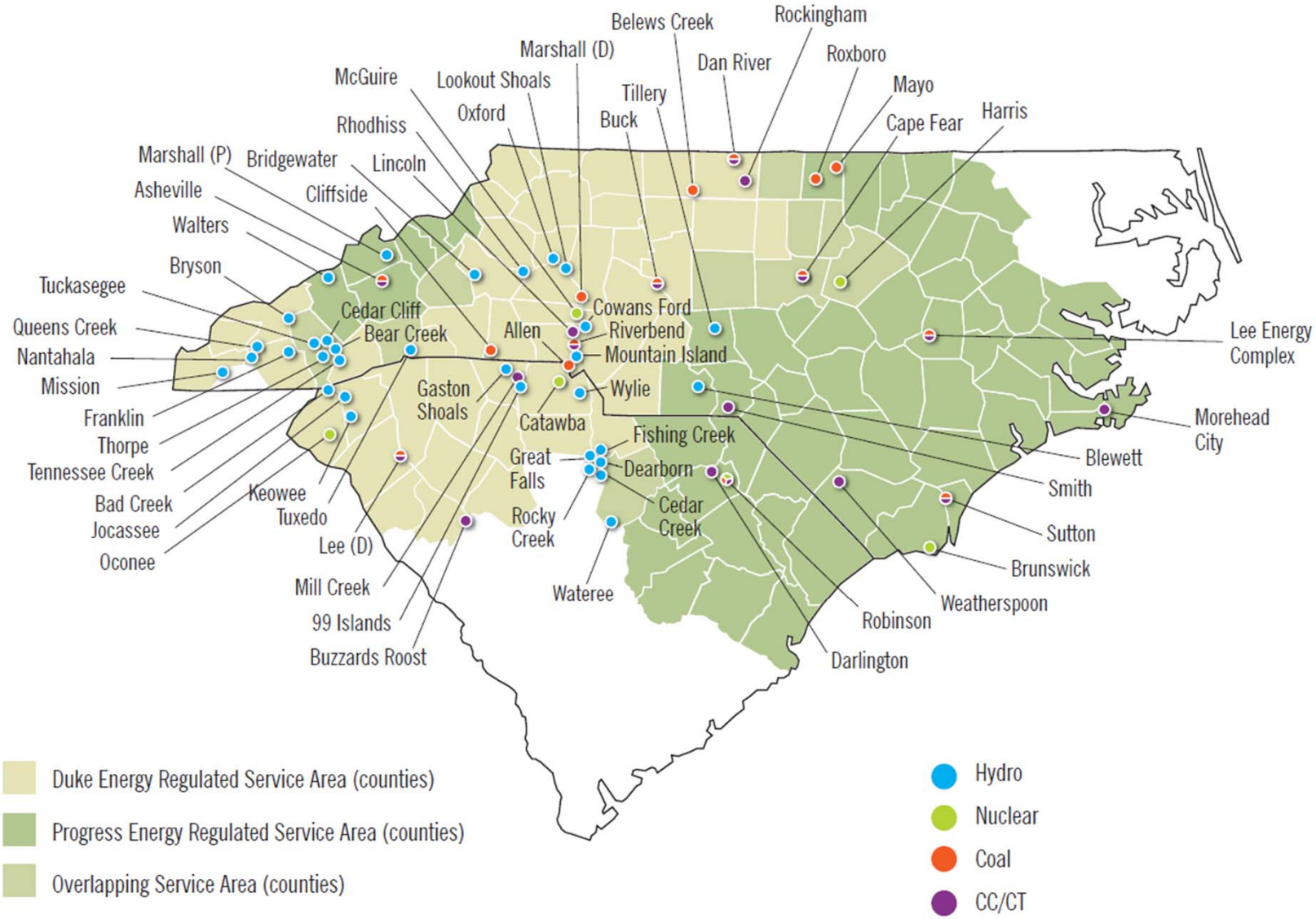
Will deliver up to 1.5 billion cubic feet per day (bcf/d) of natural gas from supply areas in West Virginia to demand areas in WV, VA, and NC.


Zone 6
Zone 5
Zone 4
Zone 3
Zone 2
Zone 1
Zone 4A
Zone 4B
New York
Pennsylvania
New Jersey
Maryland
Virginia
North Carolina
South Carolina
Georgia
Alabama
Mississippi
Louisiana
Texas
Transcontinental Gas Pipe Line

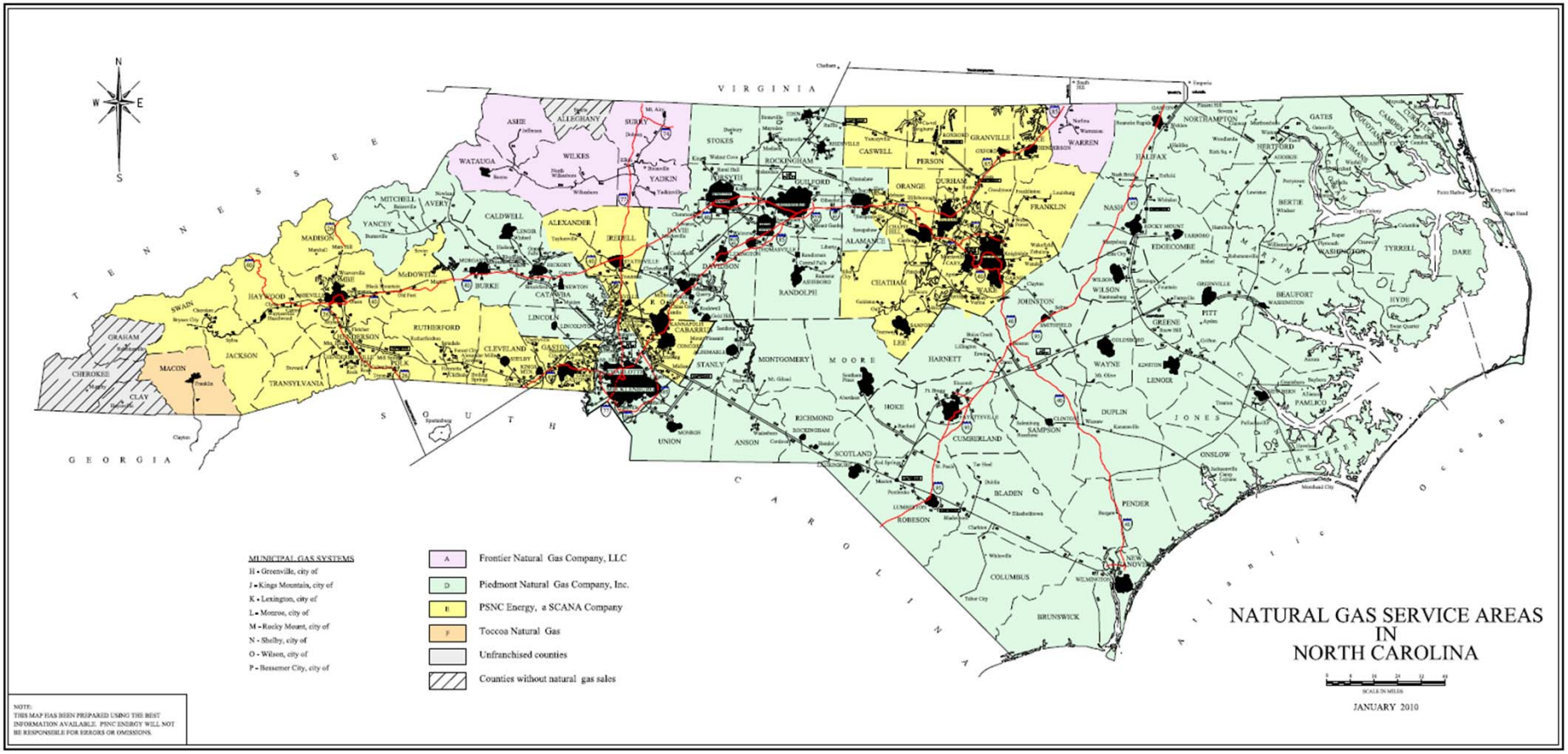
Source:



Source: https://www.dom.com/corporate/what-we-do/atlantic-coast-pipeline/maps.



Source: Duke Energy


NATURAL GAS SERVICE AREAS
IN
NORTH CAROLINA
JANUARY 2010
MUNICIPAL GAS SYSTEMS
H - Greenville, city of
J - Kings Mountain, city of
K - Lexington, city of
L - Monroe, city of
M - Rocky Mount, city of
N - Shelby, city of
O - Wilson, city of
P - Bessemer City, city of
A Frontier Natural Gas Company, LLC
D Piedmont Natural Gas Company, Inc.
E PSNC Energy, a SCANA Company
F Toccoa Natural Gas
Unfranchised counties
Counties without natural gas sales
NOTE:
THIS MAP HAS BEEN PREPARED USING THE BEST INFORMATION AVAILABLE. PSNC ENERGY WILL NOT BE RESPONSIBLE FOR ERRORS OR OMISSIONS.
VIRGINIA
TENNESSEE
GEORGIA
SOUTH CAROLINA
ATLANTIC OCEAN

Source:

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EISPC - Eastern Interconnection States' Planning Council

Federal stimulus funding

EIPC – system planners

EISPC – states

SSC – stakeholder group

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EIPC: Eastern Interconnect Planning Collaborative

1st Study: Looked at the future and addressed what the transmission grid might look like under different policy scenarios.

Three scenarios selected for analysis.

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3 scenarios selected:

(1) Nationally implemented federal carbon constraint with increased energy efficiency / demand response.

(2) National RPS – implemented regionally.

(3) Business as usual.

Lots of sensitivities.

Much modeling – pipes and bubbles.

Figure ES-1. Scenario 1: Combined Policies – New/Upgraded Transmission

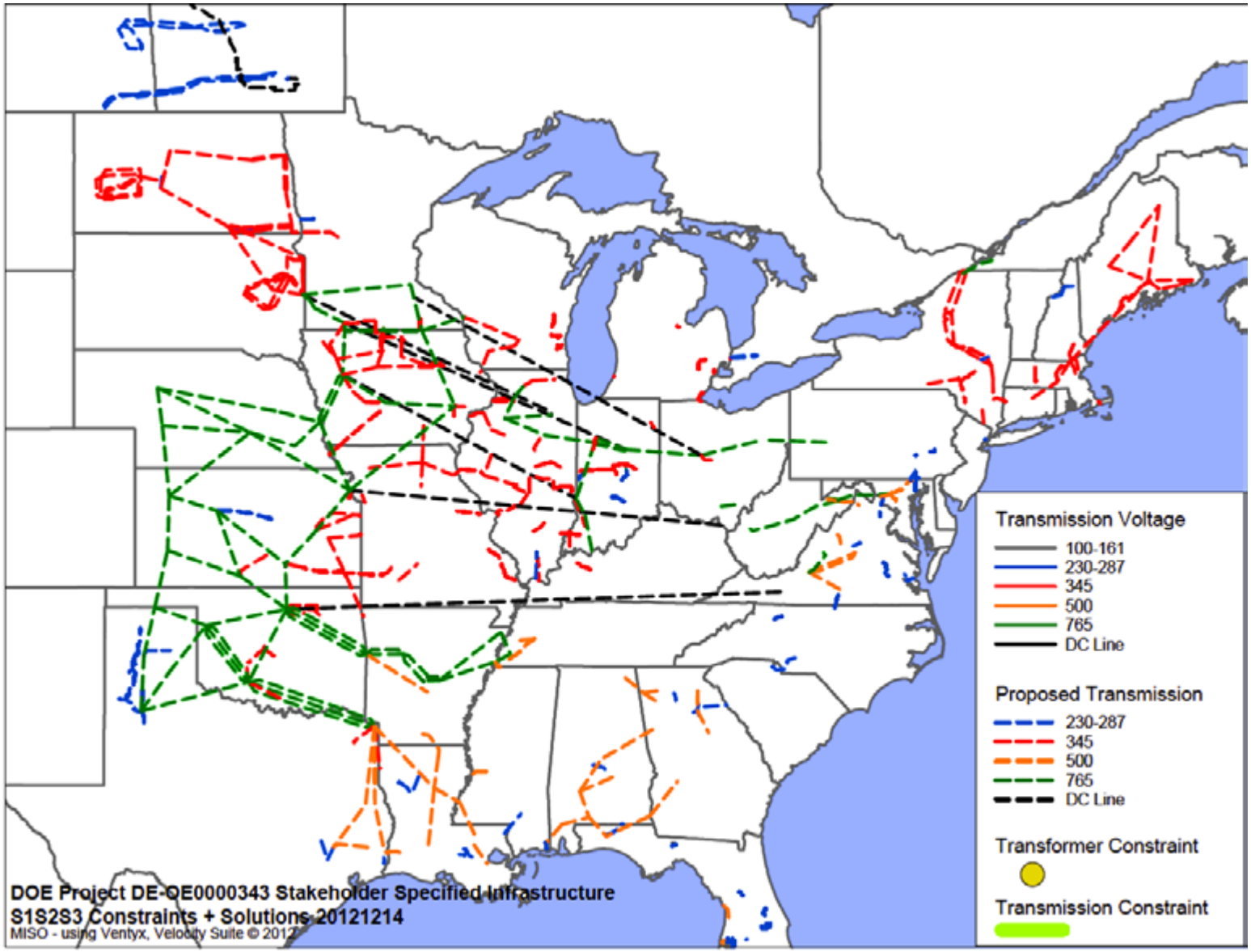


Figure ES-2. Scenario 2: NRPS/IR – New/Upgraded Transmission

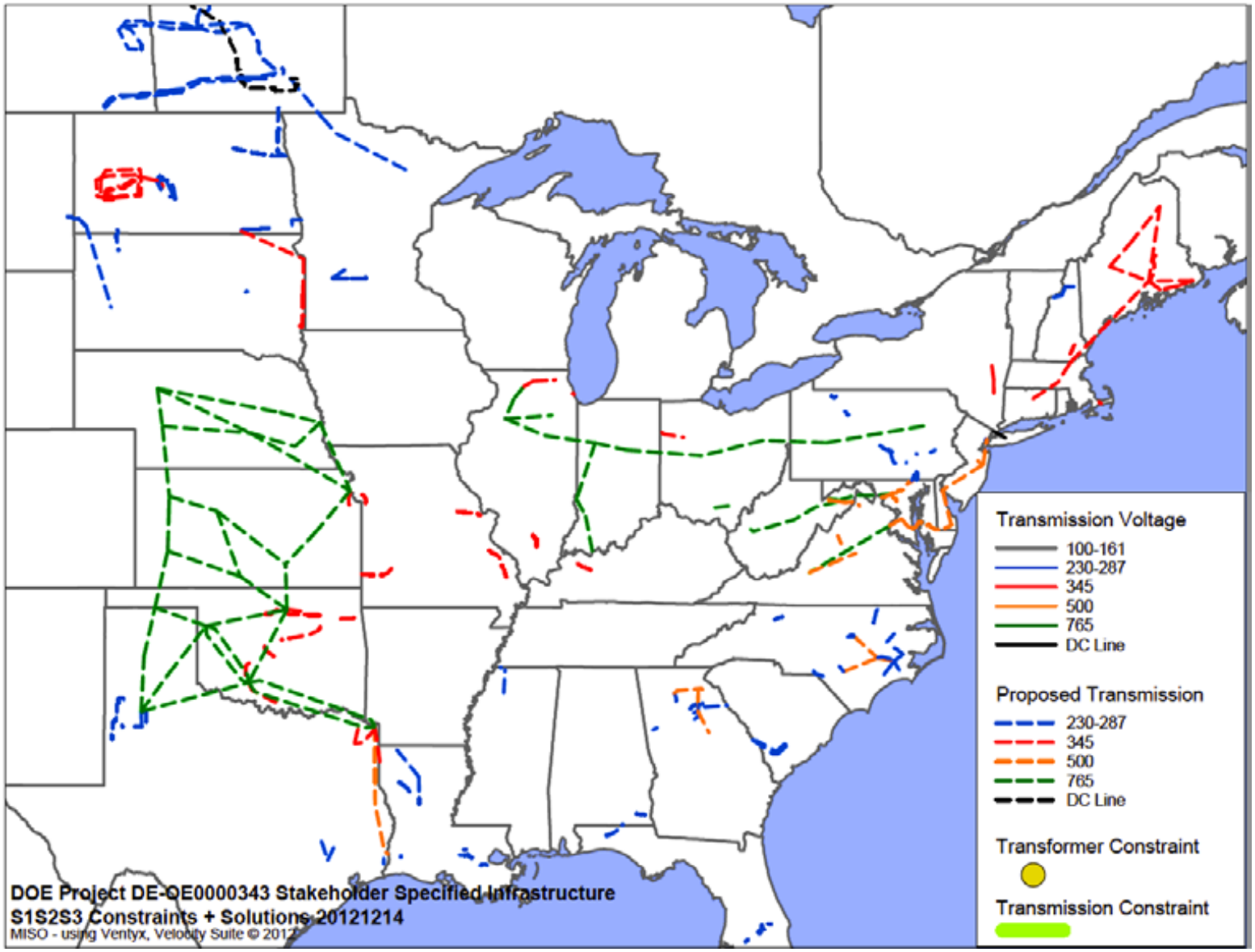
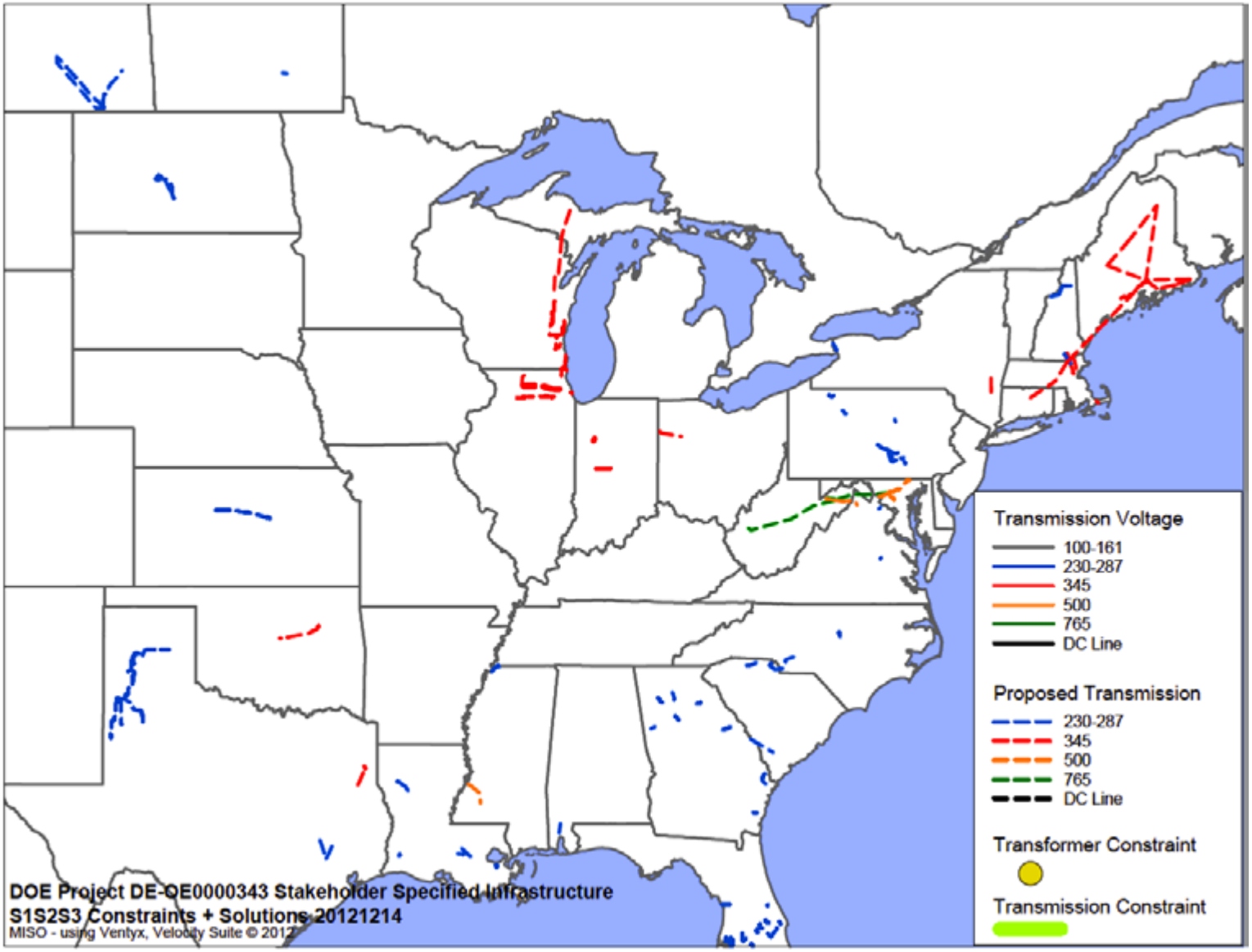


Figure ES-3. Scenario 3: Business as Usual – New/Upgraded Transmission



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Current Gas-Electric Interface Study – 2013-15

Rapid changes in the natural gas market over past five years:

Shale gas provides new production areas outside the Gulf of Mexico and Canada and changes the direction of the flow of natural gas, and

Increased reliance on natural gas as fuel of choice in electric generation.

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Gas-Electric System Interface Study - 4 Targets

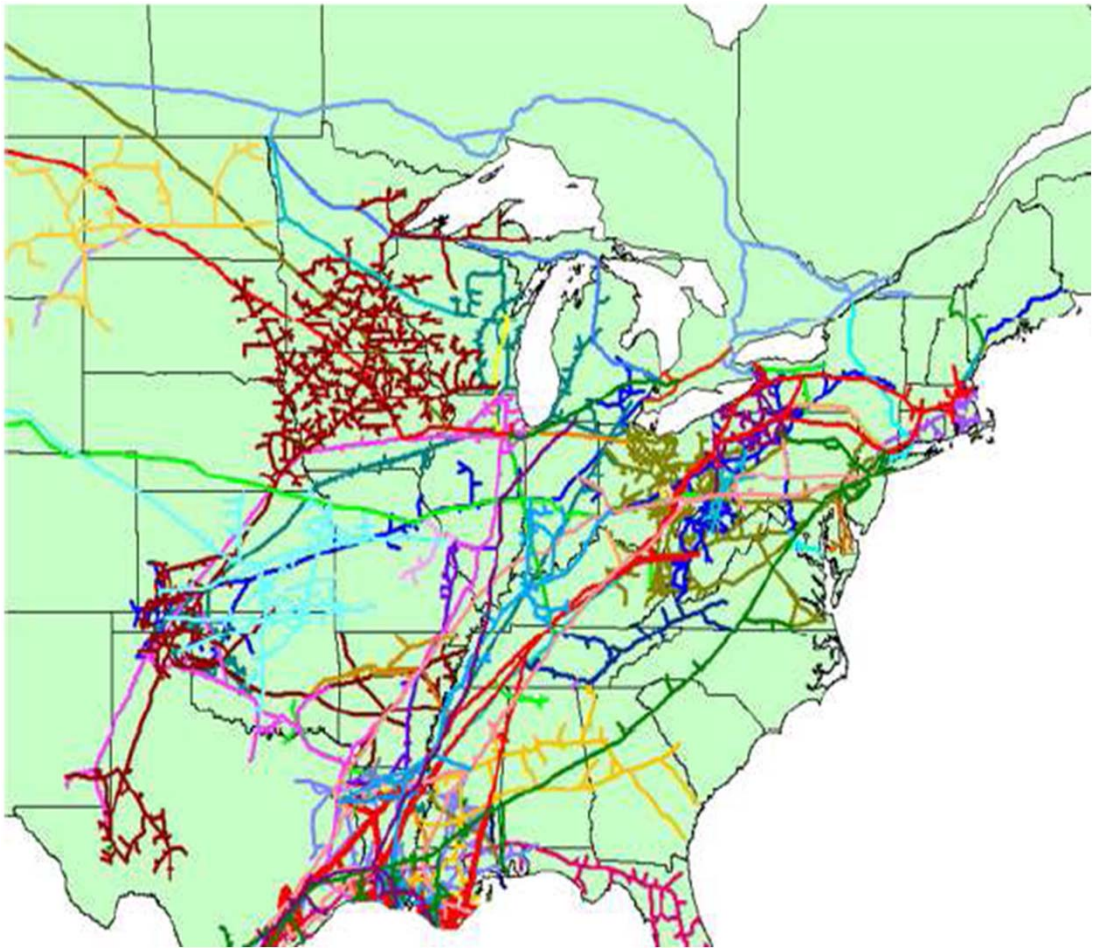
<u>Target 1</u> - Develop an inventory of the electric and natural gas systems. (Pipelines, LDC's & Generation)

<u>Target 2</u> - Determine the adequacy of the regional gas systems to satisfy generation needs over five- and 10-year horizon.

<u>Target 3</u> - Identify contingencies on the gas and electric systems that could negatively affect the other.

<u>Target 4</u> - Examine the pros and cons of dual fuel capability for generation versus expanding gas system infrastructure.

Interstate Pipelines Operating in the Study Region



Source: PJM

***Target One Observations*:**
Generator Contracting Trends

- Most generators across the Study Region do not hold primary firm transportation contracts, except on laterals

- Don’t actively participate in the secondary market for released capacity
- Often obtain these services through third party suppliers or gas marketers

Source: PJM

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Highlights from Target 2 Study: Adequacy of Regional Gas System

ISO-NE - Constrained in Winter 2018 and 2030 under nearly all of the market conditions.

MISO - Gas infrastructure is adequate in 2018 and 2023 under the market conditions and resource mixes in nearly all scenarios and sensitivities tested.

NYISO - Gas infrastructure is constrained in winter 2018 and 2023 under nearly all market conditions and resource mixes in the scenarios and sensitivities tested.

PJM- Depending on location, the gas infrastructure is either adequate or moderately constrained, in winter 2018 and 2023.

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Potential Mitigation Measures:

For high frequency, long duration constraints resulting in the non-scheduling or interruption of gas-fired generation in one or more PPAs, the most economic mitigation measure may be the installation of additional pipeline capacity.

For low frequency, short duration constraints resulting in the non-scheduling or interruption of gas-fired generation in one or more PPAs, the most economic mitigation measure may be the use of liquid fuel.

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Incremental pipeline capacity can be realized a variety of ways. From high cost to low cost:

- a pipeline company may develop a new pipeline from a liquid sourcing point to the market center to support incremental gas-fired generation;

- a pipeline may install additional loopline and/or compression along the constrained segment, subject to maximum allowable operating pressure (MAOP) limitations;

- a rival pipeline company may install a lateral from an underutilized pipeline to the generator, including the installation of new metering and instrumentation.

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Target 4

Examine the pros and cons of dual fuel capability for generation versus expanding gas system infrastructure.

With few exceptions, dual-fuel capability appears to be much less costly with respect to reducing the direct cost as a strategy to achieve fuel assurance.

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Future Discussion Points

- New models for more flexible gas transportation services *aka "we can't keep doing it the old way…"*
- Clarity on tariffs and rules governing LDC service to generators *aka "better understanding what you are regulating in this area"*
- Continued ability to burn oil during winter peak periods

- "Siting of new pipelines and LDC upgrades
- Impact of Clean Power Plan *aka "Is more gas with backup generation the answer?"*

Source: PJM

Contact

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