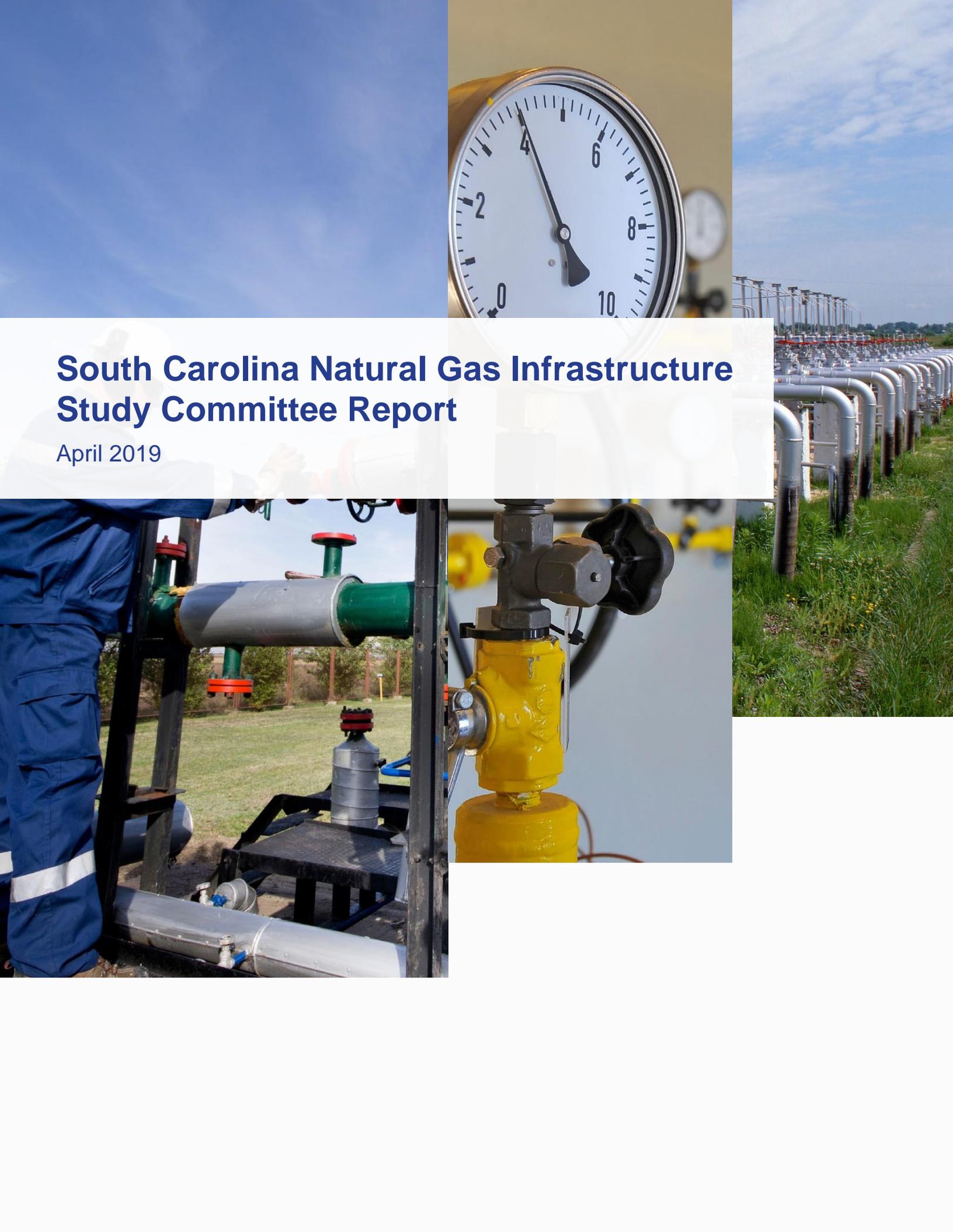


# South Carolina Natural Gas Infrastructure Study Committee Report

April 2019



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Study Committee Report**

April 2019

Submitted to  
South Carolina Office of Regulatory Staff

**Energy Office**

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# LIST OF ACRONYMS

CNG	Compressed Natural Gas
DECG	Dominion Energy Carolina Gas Transmission
DOT	United States Department of Transportation
DSM	Demand-side Management
dth	Dekatherm
EE	Energy Efficiency
EERS	Energy Efficiency Resource Standard
EM&V	Evaluation, Measurement, and Verification
EMD	South Carolina Emergency Management Division
EPAct	Energy Policy Act of 1992
FERC	Federal Energy Regulatory Commission
GIS	Geographic Information System
IOU	Investor-owned Utility
LDC	Local Distribution Company
LNG	Liquefied Natural Gas
MMcf	Million Cubic Feet
NPMS	National Pipeline Mapping System
OFO	Operational Flow Order
PHMSA	Pipeline and Hazardous Materials Safety Administration
PSC	Public Service Commission of South Carolina
SCE&G	South Carolina Electric & Gas Company
SLNG	Southern LNG, Inc.
SNG	Southern Natural Gas Company
Transco	Transcontinental Pipeline



In 2016, the South Carolina Office of Regulatory Staff - Energy Office (Energy Office) worked to develop policy recommendations associated with a comprehensive statewide Energy Plan. The Energy Plan and its eight top-tier recommendations were presented to the State Regulation of Public Utilities Review Committee (PURC) in April of 2017. The PURC unanimously voted for the Energy Office to continue its work on the Energy Plan.

The Energy Plan identified a need to ensure that natural gas is a viable energy option for residential, commercial, industrial, and power generation customers across South Carolina and enables South Carolina to continue to attract economic development. Accordingly, one of the top-tier recommendations that came from the Energy Plan was to assess the status of natural gas infrastructure in South Carolina. The South Carolina Natural Gas Infrastructure Study Committee was formed in June 2017 as a collaborative effort of stakeholders including natural gas utilities, the South Carolina Chamber of Commerce, the South Carolina Department of Commerce, the Energy Office, and other stakeholders representing industry, business, communities, and the environment.

Study Committee voting members:

- Tim Baldwin, York County Natural Gas
- Robbie Barnett, SC Chamber Foundation (Committee Chair)
- Kristen Beckham, Dominion Energy
- Mike Cool, Santee Cooper
- Bill Cummings, SC Energy Users/Kimberly-Clark Corporation
- James Graves, Home Builders Association of South Carolina
- Sara Hazzard, SC Manufacturers Alliance
- Josh Kay, Myrtle Beach Regional Economic Development Corporation
- Hank McCullough, Duke Energy/Piedmont Natural Gas
- Eddy Moore, Coastal Conservation League
- Shaun Randall, South Carolina Electric & Gas Company (SCE&G)
- Ronald Summers, Palmetto AgriBusiness Council
- Mark Svrcek, Central Electric Power Cooperative
- John Tynan, Conservation Voters of South Carolina

The Study Committee was tasked with the following deliverables:

1. Develop a comprehensive map of existing natural gas infrastructure in the state identifying location, capacity and usage on the system.
2. Identify available capacity and shortages in existing system.
3. Evaluate potential consumption reduction efforts/efficiency programs and determine adequacy and any mechanisms to expand.
4. Identify needs for additional infrastructure in areas where it would benefit the regions and state from an economic development perspective.
5. Understand the process and impediments for establishing new natural gas capacity (federal, state, environmental and individual). Provide strategies to minimize impediments.
6. Make recommendations to address/improve capacity and new infrastructure development where it is in the best interest of the people of South Carolina.

The initial organizational meeting took place on June 29, 2017, with the following four Subcommittees being chartered to facilitate committee work:

- Infrastructure Mapping – Chair Hank McCullough
- Utilization of Existing Capacity – Chair Bill Cummings
- Consumption Reduction Efforts – Chair Eddy Moore
- Growth Needs and Impediments to Growth – Co-Chairs Mike Cool and Josh Kay

This report contains a summary of the work completed by each of these Subcommittees.

# THE NATURAL GAS STUDY COMMITTEE CONSENSUS RECOMMENDATIONS

1. The Study Committee's online Natural Gas Providers Map accomplishes the goal of providing an accurate visual representation of natural gas infrastructure serving South Carolina. Its purpose is to identify areas where service may be readily available and areas devoid of natural gas infrastructure that may affect economic development and planning for future population growth. It should be maintained by the Energy Office and updated approximately every five years.
2. Natural gas service availability for specific purposes or customers is dependent on many factors, and the Natural Gas Providers Map is intended to provide a basic overall view of the infrastructure. Parties requesting service should first contact their local natural gas distribution company. Some large industrial users or natural gas power generators may need to contact intra- or interstate natural gas transmission companies for service.
3. Applying additional data overlays (such as labor availability) to the Natural Gas Providers Map may be helpful to specific users in prioritizing areas in South Carolina that would benefit from additional investments in natural gas infrastructure.
4. Having an anchor tenant(s) such as a power generating station on the front end of a new pipeline, or expansion, is one of the major steps in determining the need for natural gas infrastructure expansion. Entities should be identified that can contract for enough incremental firm pipeline capacity for at least 10-15 years and that might thereby support investments in new pipeline capacity or alternative methods of providing access to natural gas when there is a demonstrated need. Consideration should be given to the impact of any potential related rate increases on the South Carolina economy and the availability of any less costly alternatives to infrastructure expansion.
5. Strategies and opportunities should be evaluated for organizations/entities to enter into long-term capacity contracts with transmission carriers to meet the Federal Energy Regulatory Commission (FERC) needs-test requirement. For example, a new or existing credit-worthy entity could, without undertaking any construction, subscribe to capacity that could later be assigned to other entities as demand materializes. Because of the potential impact on taxpayers and ratepayers of this speculative approach without a guaranteed timeline or return on investment, transparency with affected taxpayers or ratepayers through various communication methods is recommended.
6. Relative to other states, South Carolina has implemented electricity and natural gas efficiency programs at a modest level. This effort should be expanded based on cost-effectiveness and coordinated through the electric and natural gas public utilities, the Office of Regulatory Staff, and the Public Service Commission of South Carolina (PSC).
7. Either the Energy Office or individual utilities in South Carolina should engage the technical expertise necessary to quantify the potential for cost-effective electric and natural gas demand management programs to reduce natural gas consumption and defer or avoid the need for specific new investments in natural gas infrastructure.

8. An effort should be initiated to determine the feasibility of tracking lost economic development projects due to lack of natural gas availability.
9. An evaluation should be conducted to investigate compressed natural gas (CNG) or liquified natural gas (LNG) alternatives for industrial uses in natural gas “deserts.”
10. An assessment should be initiated to determine the impact of Transcontinental Pipeline (Transco)’s and Dominion Energy Carolina Gas Transmission (DECG)’s recent pipeline expansions and Transco’s bidirectional flow capability on South Carolina’s natural gas capacity.
11. An evaluation should be undertaken to determine the nature and size of the secondary market for interstate natural gas transmission capacity deliverable to the state.

# INFRASTRUCTURE MAPPING SUBCOMMITTEE

## Background

A primary objective of the Natural Gas Infrastructure Mapping Subcommittee (Mapping Subcommittee) was to better understand where natural gas infrastructure was physically located within South Carolina in order to highlight potential opportunities for expansion of natural gas transmission and distribution systems that could promote economic development, especially in underserved areas. Having an accurate visual representation of natural gas infrastructure was also important to the work of other subcommittees in their assessment of natural gas utilization; capacity projections; opportunities for reduction in use, such as energy efficiency and demand response programs; and development of a strategy to encourage natural gas infrastructure investments through policy and/or legislation.

The Mapping Subcommittee was charged with creating a statewide Natural Gas Providers Map showing interstate and intrastate transmission natural gas pipelines as well as local distribution company (LDC) system footprints.

## National Pipeline Mapping System

First, the Mapping Subcommittee evaluated existing mapping resources. In 2015, the Pipeline and Hazardous Materials Safety Administration (PHMSA), a federal agency under the US Department of Transportation (DOT), created a geographic information system (GIS) map application. PHMSA requires all operators of interstate and intrastate transmission pipelines to provide maps of their systems, named the National Pipeline Mapping System (NPMS). The NPMS's main objective is to aid federal, state, and local emergency responders in the event of a natural gas pipeline incident. In addition, local natural gas distribution companies are required to provide NPMS map data for pipelines operating at transmission pressures. The NPMS offers a public map viewer which is a web-based mapping application designed to assist the general public with displaying and querying data related to gas transmission and hazardous liquid pipelines, liquefied natural gas plants, and breakout tanks. Since natural gas transmission pipelines are considered critical infrastructure, only government agencies who have national- or state-level security clearance are allowed full access to the data. The NPMS does not include low-pressure natural gas distribution pipelines that make up the vast majority of natural gas pipelines in service.

The NPMS map and other useful pipeline information can be found on the DOT's [website](#).

## SC Natural Gas Providers Map

Prior to the efforts by the South Carolina Natural Gas Infrastructure Study Committee, no statewide natural gas system map, either static or interactive, existed for South Carolina. There were a number of challenges associated with creating a comprehensive natural gas map including: the general availability of GIS maps from natural gas providers; varied security and confidentiality concerns; uniformity of map file formats and resolutions; the availability and willingness of a partner or agency to develop the map; anticipated map hit rates and associated hosting costs; and consensus among providers on a manageable updating schedule.

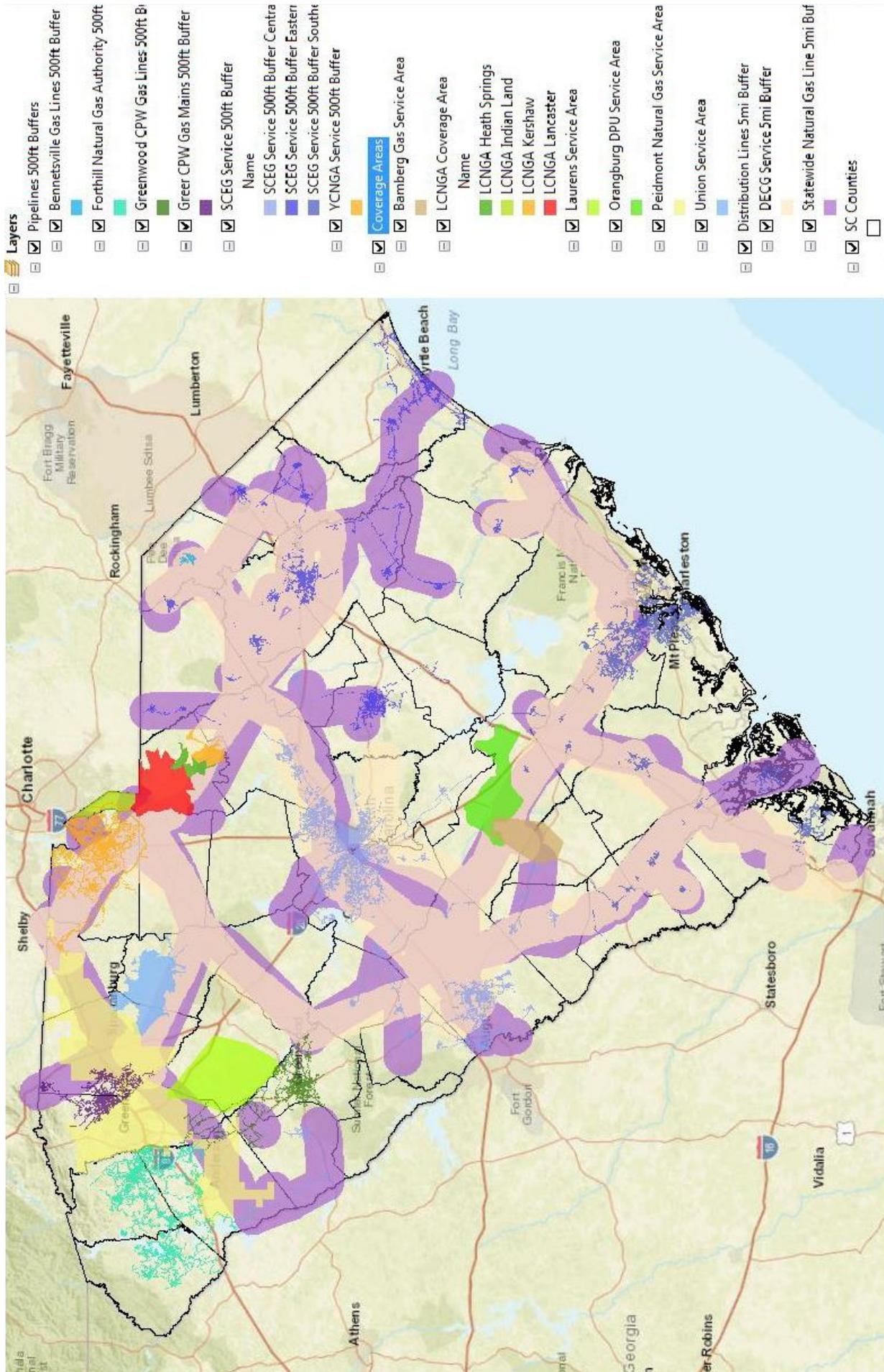
Given current GIS mapping capabilities, an application-based model was selected as the preferable format in providing consistent aggregation of map data while also allowing the map to be updated easily on a regular basis. The Mapping Subcommittee ultimately elected to model the Natural Gas Providers Map after a similar map developed under Emergency Support Function-12 by the South Carolina Emergency Management Division (EMD) called the Electric Providers Map. EMD and Energy Office staff were instrumental in making the Natural Gas Providers Map a reality.

## General Map Observations

In exploring the Natural Gas Providers Map application (see Figure 1), it is evident that the majority of transmission infrastructure, specifically intrastate pipelines operated by Williams-Transco and Dominion Energy, is located in the Upstate, Midlands, Pee Dee, and southern half of the coast. In addition, the Upstate, Midlands, greater Rock Hill area, Charleston and Myrtle Beach have well-developed local distribution networks. Even so, within these larger population centers, there may be service voids or areas with capacity issues.

Areas that are devoid of natural gas infrastructure are primarily in the eastern part of the state, in proximity to the Interstate 95 corridor, and in areas that are defined as rural and have significant agricultural assets.

Figure 1 - Natural Gas Providers Map



## Mapping Limitations

While this Natural Gas Providers Map is useful in indicating generalized area, the user should not assume that natural gas service can or cannot be provided. Many factors are used to determine service availability related to the physical location and capacities of transmission and distribution pipelines.

Similar to the NPMS public map viewer, the Natural Gas Providers Map does not show the size of pipelines, location of take points or valves, or the type of pipe material to address security concerns and limit false assumptions regarding availability.

For direct inquiries regarding natural gas availability in a desired area, direct contact with local natural gas distribution companies or inter/intrastate pipeline companies is required.

Finally, the South Carolina Natural Gas Providers Map should not be used by any excavator to locate natural gas pipeline infrastructure. Please contact [South Carolina 811](#) before you dig.

## Map Access and Updating

The Natural Gas Providers Map is available on [the Energy Office website](#). The Energy Office will be the lead organization responsible for updating the map approximately every five years.

## Other Useful Mapping Attributes and Functionality

In broadening the functionality of the Natural Gas Providers Map, the Mapping Subcommittee considered future GIS overlays based on cost and compatibility, including:

- Inventory of Class A Industrial Sites (South Carolina Department of Commerce)
- Major County Industrial Parks (South Carolina Department of Commerce)
- Electric Power Generation Sites (South Carolina Energy Office)
- Ports and Rail Terminals (South Carolina Ports Authority)
- Propane Distribution Terminals (South Carolina Propane Gas Association)
- Air Quality Layers (South Carolina Department of Health and Environmental Control)
- Population/Census Data (US Census Bureau)
- Freight and Traffic Density (South Carolina Department of Transportation)
- Alternative Fueling Stations (US Department of Energy)
- Landfills (South Carolina Department of Health and Environmental Control)

## Mapping Subcommittee Conclusions/Recommendations

- The Natural Gas Providers Map accomplishes the goal of providing an accurate visual representation of natural gas infrastructure serving South Carolina. Its purpose is to identify areas where service may be readily available and areas devoid of natural gas infrastructure that may affect economic development and planning for future population growth.
- Natural gas service availability for specific purposes or customers is dependent on many factors and the Natural Gas Providers Map is intended to provide a basic indication of such. Parties requesting service should first contact their local natural gas distribution company. Some large industrial users or natural gas power generators may need to contact inter- or intrastate natural gas transmission companies for service.

- Applying additional data overlays (such as labor availability) to the Natural Gas Provider Map may be helpful to specific users in prioritizing areas in South Carolina that would benefit from additional investments in natural gas infrastructure.

## Mapping Subcommittee Members

Hank McCullough, Piedmont Natural Gas – Chair

Tim Baldwin, York County Natural Gas

Bill Cummings, SC Energy Users/Kimberly-Clark Corporation

David Durgin, Orangeburg Department of Public Utilities

Nate Hendrix, Dominion Energy

Benji Pace, Orangeburg Department of Public Utilities

Shaun Randall, SCE&G

Jerry Smith, Greenwood Commission of Public Works

Brandon Wilkerson, South Carolina Department of Commerce

Special thanks to:

Charlie Kaufman – South Carolina Emergency Management Division

Melissa Potter – South Carolina Emergency Management Division



# UTILIZATION OF EXISTING CAPACITY SUBCOMMITTEE

## Background

The Utilization of Existing Capacity Subcommittee (Utilization Subcommittee) was tasked with identifying volumes of natural gas delivered into South Carolina, identifying major gas-consuming points within the state, and identifying which areas to prioritize for building new pipeline infrastructure.

Natural gas is not produced in South Carolina. All natural gas delivered to South Carolina is transported by three interstate pipelines: DECG, Transco, and Southern Natural Gas (SNG). The natural gas is then delivered to local distribution companies, municipalities, power generators, and industrial customers. In this regulated pipeline transport market, there are basically two types of charges: the natural gas commodity cost and the cost to move the gas from the well head to the customer. The industry terms associated with the cost of moving natural gas through a pipeline are “transportation” or “capacity” charges. “Capacity” refers to reserving space on the pipeline so that the customer can move purchased gas to the customer take point. There are generally two types of transportation contracts: firm and interruptible. A firm transportation contract assures a customer that the contracted space in the pipeline has been reserved. Interruptible transportation agreements allow the pipeline owner to use pipeline space for other customers, under certain circumstances, which may result in a customer’s natural gas service being interrupted. Consequently, firm transportation contracts are much more expensive than interruptible contracts.

Currently, there is very limited availability in South Carolina of firm transportation contracts directly, as Transco and SNG are fully subscribed and DECG only has excess capacity at the Bushy Park LNG and Salley LNG facilities. This situation may limit growth of existing customers or potential new customers who require firm pipeline capacity. For these customers, the only available options would be either to purchase interruptible capacity, leaving them vulnerable to curtailments, or to subcontract firm capacity from another firm capacity owner. These capacity subcontracts are filed with the PSC. Anecdotally, members of the Utilization Subcommittee believe that large natural gas-consuming facilities looking to expand or move into South Carolina generally want firm pipeline capacity to guarantee natural gas supply to protect their investment.

Because of FERC rules, interstate pipeline companies require credit-worthy entities to sign long-term (10 years or longer) contracts for firm capacity for often 80% or more of the planned incremental capacity, typically at least 10,000 dekatherms (dth)/day minimum, before the pipeline companies can build new pipes or expand existing pipes. Once long-term contracts are signed, it may take three to four years before the pipeline expansion is completed.

In 2017, Southern Company acquired 50% ownership of SNG, likely to acquire firm capacity for its natural gas-fired power generating plants in Georgia and Alabama. In time, Southern Company may compete with South Carolina natural gas customers to purchase firm capacity on SNG as existing firm contracts in South Carolina expire and come up for renewal. Southern Company could offer 30-year term lengths for natural gas capacity, forcing existing South Carolina contract holders to match those terms or lose their contracted capacity.

Large industrial customers are very concerned about this issue since the lack of firm pipeline capacity may cause production curtailments and hinder expansion opportunities at their South Carolina plants. A typical large industrial customer may have firm capacity under contract to serve its average daily natural gas usage, but not enough to meet its incremental usage in winter months (for building heat). Large industrial customers and interstate pipeline companies have been discussing the matter for over two years looking for solutions.

Industrial customers have been reluctant to sign up for incremental firm capacity beyond their current usage because of demand charges associated with the incremental capacity, which must be paid whether or not the industrial customer utilizes all of the firm capacity.

In addition, some LDCs have no more firm capacity on their systems, which hinders their ability to attract large natural gas users to invest in their service territories. Other LDCs have firm capacity available on their systems but, because of a different rate structure than interstate transmission pipeline companies, the charges for firm capacity from an LDC are often higher.

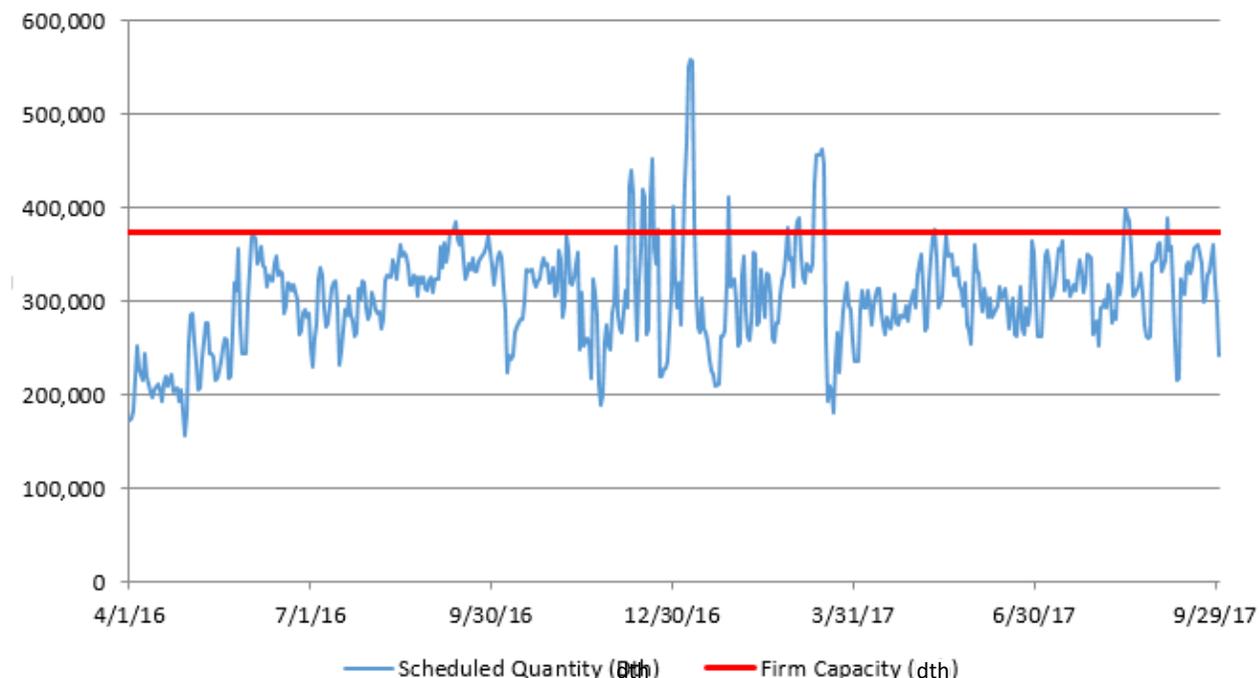
South Carolina electric utility companies, often the anchor for new long-term capacity contracts leading to pipeline expansions, have no known plans to build new natural gas-fired generation plants for the next five years.

## Analysis of Pipeline Company Data

### Southern Natural Gas (owned by Kinder Morgan and Southern Company)

Figure 2 – Scheduled Quantities into South Carolina on Kinder Morgan Pipelines<sup>1</sup>

#### Scheduled Quantities into South Carolina on Kinder Morgan Pipelines



As shown in Figure 2 above, SNG experiences full utilization on its interstate pipeline system during the winter months and during the summer as electric utility companies run natural gas-fired peaking generation units to meet increased demand due to air conditioning. While existing SNG customers are able to receive their firm capacity (with some exceptions due to SNG unforeseen equipment failures), there is no additional firm capacity available.

### Transco (owned by Williams)

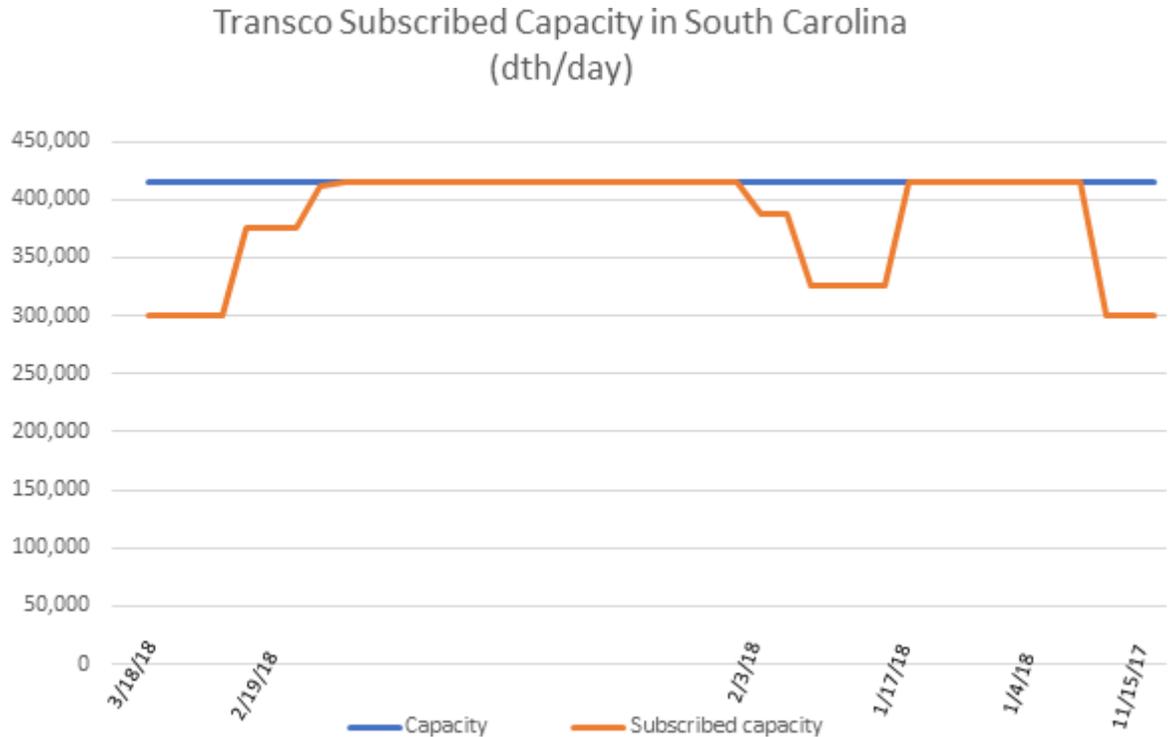
Williams operates a natural gas transmission pipeline known as the Transco pipeline, which transports natural gas from production areas to customers, such as utility companies and power plants, located throughout the eastern United States. Transco is currently fully subscribed in South Carolina. Recent expansion projects on Transco's system that increase capacity outside South Carolina and increase bidirectional flows are also fully subscribed. These projects, described below, will not provide capacity available for existing or potential new customers in South Carolina who did not sign up for that capacity prior to its construction.

The Atlantic Sunrise Project connects Marcellus gas with markets as far south as Alabama and allows for natural gas to move in either direction through the pipeline. The expansion adds 1.7 million dth/day of pipeline capacity to the Transco system, and the bidirectional flow allows for multiple deliveries within and across delivery zones.

<sup>1</sup> Devy Traylor, *Southern Natural Gas Pipeline*, October 2017.

The Southeastern Trail Expansion is a 296,375 dth/day expansion of the Transco pipeline system designed to provide additional pipeline capacity to serve markets in the Mid-Atlantic and Southeastern states by November 2020.

Figure 3 – Transco Subscribed Capacity in South Carolina<sup>2</sup>



### Dominion Carolina Gas Transmission (owned by Dominion Energy)

Figure 4 – DECG Capacity and Contracts<sup>3</sup>

Receipt Point <sup>4</sup>	Design Capacity (dth)	Contracted Quantity (dth)
SCE&G - Bushy Park LNG	64,500	10,025
SCE&G - Salley LNG	90,000	59,520
SLNG - Elba Island	197,600	197,600
SNG - Aiken	265,972	265,972
Transco - Grover	253,727	253,727
Transco - Moore	113,500	113,500

*\*As of 2/12/2018 (includes Charleston project capacity brought into service on March 1, 2018)*

DECG does not have any additional firm capacity available for contract. Although it expanded its capacity by approximately 9% with infrastructure construction completed by the fall of 2018, capacity was already fully subscribed prior to the start of construction.

<sup>2</sup> Bill Cummings, using data provided by Michael Ledford of Williams/Transco, October 16, 2017.

<sup>3</sup> Gary Alexander, Dominion Energy CGT, February 14, 2018.

<sup>4</sup> A receipt point is defined as “the point at which gas is delivered to or received from a pipeline, such as the interconnection between a producer’s wellhead facilities and the pipeline system.” “Glossary of Terms,” SCANA, <https://www.scanaenergymarketing.com/natural-gas-education/glossary-of-terms/glossary-of-terms---r>.

Elba Express Company, SNG Port Wentworth, and Southern LNG-Elba Island are all in DECG Zone 2.5 There is a limit of 62,000 dth that can move from Zone 2 into DECG Zone 1. That amount is fully subscribed. As a result, any available receipt capacity in Zone 2 can only be served in Zone 2; there is no capacity available to move that into Zone 1. As a data point, the only Zone 2 physical delivery point is Jasper County Power Plant.

All of the currently available receipt capacity is fully subscribed. Note: SCE&G Bushy Park LNG and SCE&G Salley LNG are the only options for SCE&G.

Approximately 60% of the natural gas consumed in South Carolina flows through the DECG pipeline system. However, 100% of the gas that serves the Midlands, the Pee Dee, Myrtle Beach, and Low Country regions flows through the DECG pipeline system. The DECG system is fully subscribed; therefore, any incremental need in the aforementioned areas would require incremental facilities.

Pipeline companies issue operational flow orders (OFO) when their pipeline systems are expected to carry natural gas quantities at or above their system capacity and when expected flow is not enough to meet their system minimum capacity. During OFOs, customers are required to consume no more than their firm capacity.

## Utilization Subcommittee Recommendation

- Having an anchor tenant(s) such as a power generating station on the front end of a new pipeline, or expansion, is one of the major steps in determining the need for natural gas infrastructure expansion. Entities should be identified that can contract for enough incremental firm pipeline capacity for at least 10-15 years and that might thereby support investments in new pipeline capacity or alternative methods of providing access to natural gas when there is a demonstrated need. Consideration should be given to the impact of any potential related rate increases on the South Carolina economy and the availability of any less costly alternatives to infrastructure expansion.

## Utilization Subcommittee Members

Bill Cummings, SC Energy Users/Kimberly-Clark Corporation – Chair

Tim Baldwin, York County Natural Gas

Hank McCullough, Piedmont Natural Gas

Eddy Moore, Coastal Conservation League

Shaun Randall, SCE&G

William Robinson, the SEFA Group

Also: Devy Traylor, Kinder Morgan and Gary Alexander, Dominion Energy

<sup>5</sup> See the Dominion Energy website for a map of the DECG system: <https://ebb.dominionenergy.com/InformationalPostings/PipelineInfo/SystemMap.aspx>.

# CONSUMPTION REDUCTION SUBCOMMITTEE

## Background

The Consumption Reduction Subcommittee was tasked with evaluating potential consumption reduction efforts/efficiency programs and determining the adequacy of existing efforts and any mechanisms to expand.

Lower natural gas prices have contributed to a historic shift of electric generation towards natural gas. For instance, between 2000 and 2016 in South Carolina, the share of total natural gas deliveries consumed in power plants rose from 5% to 49%, and the amount of natural gas delivered for consumption in power plants rose from 8,501 million cubic feet (MMcf) to 133,130 MMcf.<sup>6</sup> Electricity generation now accounts for about half of all natural gas consumption.<sup>7</sup>

During approximately this same period, states and utilities have both placed a much greater emphasis on energy efficiency (EE) programs. On the electric side, between 2000 and 2015, electric utility EE program spending grew from approximately \$1 billion to \$6 billion nationally. Electric utility EE programs often produce savings each year equivalent to more than 1% of total retail annual sales—leading programs exceed 2% in annual savings.<sup>8</sup>

Twenty-six states have established an Energy Efficiency Resource Standard (EERS), setting targets for electric utility energy savings.<sup>9</sup> The EE programs implemented to meet these targets cause a net reduction in electric system costs. While reductions in electric utility system cost are the primary reason behind EERS targets, these electric utility EE programs also reduce natural gas usage in power plants.

On the gas side, natural gas utility EE programs directly reduce gas usage and can be designed to target peak reduction. Natural gas utility EE programs grew from \$0.3 billion in 2003 to \$1.4 billion in 2015. Natural gas EE program savings often exceed 0.5% of sales per year. In states that have a history of implementing natural gas EE programs for many years, savings are estimated to reduce overall current residential and commercial sales by 2.6% to 6.4%.<sup>10</sup>

Similar principles apply to demand-side management more broadly; nationally, utilities are relying increasingly on demand response to manage peak usage in a cost-effective way.

South Carolina has implemented electric and natural gas efficiency programs at a modest level, compared to national and regional leaders.<sup>11</sup>

<sup>6</sup> "Natural Gas Consumption by End Use," US Energy Information Administration, [https://www.eia.gov/dnav/ng/ng\\_cons\\_sum\\_dcu\\_ssc\\_a.htm](https://www.eia.gov/dnav/ng/ng_cons_sum_dcu_ssc_a.htm).

<sup>7</sup> "SC Energy Data – Consumption," South Carolina Energy Office, <http://energy.sc.gov/node/3075>.

<sup>8</sup> "State Energy Efficiency Resource Standards," ACEEE, January 2017, <https://aceee.org/sites/default/files/state-eers-0117.pdf>. See Fig. 1 and Table 1.

<sup>9</sup> "Energy Efficiency Resources Standard (EERS)," ACEEE, <https://aceee.org/topics/energy-efficiency-resource-standard-eers>.

<sup>10</sup> Steven Nadel, *Natural Gas Energy Efficiency*, ACEEE, 2017, 7-10, <https://aceee.org/sites/default/files/publications/researchreports/u1708.pdf>.

<sup>11</sup> Weston Berg, Seth Nowak, Meegan Kelly, Shruti Vaidyanathan, Mary Shoemaker, Anna Chittum, Marianne DiMascio, and Heather DeLucia, 2017 *State Energy Efficiency Scorecard*, ACEEE, 21-22. SC has utility-funded EE programs, but ranks in the bottom 10 states for the scale of its efforts in 2017. The same chart indicates that SC is 8 states below NC in the ranking and 20 states below Arkansas. Consumption Reduction Subcommittee members received information from other full Committee members showing that at least one natural gas utility in South Carolina offers rebates to help customers buy efficient equipment.

## Discussion

Industrial growth and the recent increase in natural gas consumption for electric power production likely contribute to current natural gas capacity and supply issues. Electric utilities increasingly report that morning winter peaks during extreme cold events are important for integrated resource planning. Natural gas utilities also have traditionally peaked during cold winter days. These peak events for both electric and natural gas utilities place particular strain on the availability, deliverability, cost, and use of natural gas.

This Subcommittee suggests that demand-side management (DSM) efforts by both electric and natural gas utilities may reduce winter peaks and their associated capacity issues in a cost-effective manner. Utility ratepayer-funded EE and other DSM programs are usually implemented on the basis that they are the least-cost option for the electric or natural gas utility to meet customer demand. The natural gas capacity issues being considered in the Utilization Subcommittee provide a further reason to make sure that the full range of cost-effective efficiency efforts are being made for both electric and natural gas utilities.

Further, individual utility consideration of DSM cost-effectiveness usually does not take into account potential cost synergies between electric and natural gas systems. In the context of this Subcommittee, an appropriate entity (such as the Energy Office or possibly individual utilities) should engage the appropriate expertise to estimate the full range of cost-effective DSM for the electric system, the full range of cost-effective DSM for the natural gas system, and any additional synergy in cost-effectiveness due to interactions between the systems.

This Subcommittee considered several key principles of implementation:

### **Existing capacity shortage:**

Subcommittee members report that industrial customers cannot obtain further contracts for new firm pipeline capacity in South Carolina. Industrial customers usually obtain firm contracts for average peak capacity rather than total peak—meaning that they may get curtailed under interruptible rates during the highest winter peaks.



### **Non-duplication of regulatory and market-based efficiency:**

Significant efficiency is already occurring in the market due to federal appliance standards, and per-capita residential usage of natural gas is declining.<sup>12</sup> Given this awareness, this Subcommittee agrees that utility programs should not duplicate efficiencies occurring in the market. Utility ratepayer-funded EE programs should achieve incrementally additional energy and capacity savings, as determined through independent, expert evaluation, measurement, and verification (EM&V). The cost and intensity of EM&V services must be balanced against the size and impact of the program or programs being evaluated, as outlined in standard EM&V protocols such as the International Performance Measurement and Verification Protocol. EM&V should take into account any program savings that would have occurred without the program and savings caused by the program in addition to measures implemented through the program. Independent EM&V generally seeks to verify energy savings at a 90% statistical confidence level.<sup>13</sup>

### **Rate and bill impacts:**

Subcommittee members note that utility funding of EE and other DSM programs have bill and rate impacts. EE programs usually cause a modest initial overall rate increase associated with program cost recovery. This increase is partially offset in the short term by fuel cost reductions caused by the programs. Over time, as fuel cost reductions accumulate and capacity additions are deferred, average customer bills may be reduced compared to business-as-usual, and rate impacts may or may not also be negative.<sup>14</sup>

Short term rate impacts of EE programs may be mitigated or eliminated by combining them with demand response programs, if cost savings from peak management offset the short-term cost of EE program administration. Subcommittee members recommend careful evaluation of the rate and bill impacts of DSM programs, with particular attention given to program impacts on overall utility system costs and total resource costs.

<sup>12</sup> Steven Nadel, ACEEE, "Natural gas efficiency has shown impressive advances, and the future looks promising," July 19, 2017, <https://aceee.org/blog/2017/07/natural-gas-efficiency-has-shown>.

<sup>13</sup> Steven R. Schiller and Tom Eckman. 2017. *Evaluation Measurement and Verification (EM&V) Frameworks—Guidance for Energy Efficiency Portfolios Funded by Utility Customers*. Prepared by Lawrence Berkeley National Laboratory for the State and Local Energy Efficiency Action Network, 47, [https://www4.eere.energy.gov/seeaction/system/files/documents/EMV-Framework\\_Jan2018.pdf](https://www4.eere.energy.gov/seeaction/system/files/documents/EMV-Framework_Jan2018.pdf).

<sup>14</sup> Jim O'Reilly, Josh Craft, and Natalie Treat to New Hampshire EESE Board stakeholders, March 18, 2014, *Northeast Energy Efficiency Partnerships, Bill and Rate Impacts of an Energy Efficiency Resource Standard in New Hampshire*, 5, <https://www.puc.nh.gov/EESE%20Board/Meetings/2014/20140321Mtg/NEEP%20Bill%20Vs%20Rate%20Impacts%20Memo%20031414.pdf>.

### **Natural gas utility avoided costs:**

Subcommittee members find that natural gas utilities have traditionally been considered to have less ability to avoid or defer capital investment through EE programs than electric utilities. However, in jurisdictions that consider natural gas avoided costs in detail, several categories of value have been measured, which should be considered in South Carolina. For instance, CenterPoint Energy Natural Gas, which operates in Minnesota, Arkansas, Mississippi, Texas, Oklahoma, and Louisiana, finds that it can avoid the following costs:<sup>15</sup>

- A share of capacity contracts with pipelines;
- A share of high spot-market (“swing gas”) costs at peak times;
- Penalties for exceeding capacity, if long on nominations; and
- Costs of incremental upgrades to infrastructure, such as town-border stations in high-growth areas.<sup>16</sup>

CenterPoint is reportedly examining geographically-targeted efficiency programs in order to maximize its use of existing infrastructure, focusing on the winter peak-shaving benefits of duct sealing and reduced infiltration in residential structures.

Utility filings from the State of Washington provide another example of natural gas utility cost avoidance through EE programs. For instance, Puget Sound Energy calculates the following types of avoided costs for its DSM programs:

- Weighted market price of natural gas;
- Avoided pipeline demand charge (which includes estimated peak savings for weather sensitive end-uses and for non-weather sensitive loads);
- Avoided pipeline variable transportation charge; and
- Deferred distribution capacity cost.

### **Natural gas utility fixed cost recovery:**

Subcommittee members recognize that rates must reflect a reasonable opportunity for recovery of fixed costs for natural gas utilities and that effective EE programs reduce volumetric sales. Electric utilities in South Carolina have specific, annually-updated rate riders to consider recovery of program costs and fixed costs associated with DSM program activity. Where not already addressed, natural gas utilities should have access to similar cost recovery mechanisms, tailored for the specific circumstances of natural gas utilities.

## **Consumption Reduction Subcommittee Proposals/Recommendations**

- Both electric and natural gas utilities currently implement EE programs in South Carolina. Electric and natural gas utility EE programs should be implemented, to the degree that they are cost-effective for each type of utility, respectively (i.e., to the degree that EE programs are less costly than meeting service obligations by other methods).

<sup>15</sup> CenterPoint Energy Natural Gas, with over 400,000 customers in Arkansas, has saved 0.5% of retail sales each year, or above, for more than 5 years in a row, and currently spends a little less than \$7 million in program budgets to create net annualized savings with a multi-year useful life of around 3,000,000 therms. Energy Efficiency Program Portfolio Annual Report, 2016 Program Year, CenterPoint Energy Arkansas, 2017, <http://www.apscservices.info/EEInfo/EEReports/CenterPoint%202016.pdf>.

<sup>16</sup> Call notes, Eddy Moore and Todd Berreman of CenterPoint Energy, January 29, 2018.

- If and when energy savings targets or demand reduction targets are helpful in setting expectations, ensuring customer cost savings, and rewarding utility program performance, regulators may wish to establish such targets.
- As part of the examination of the need for expanded natural gas infrastructure, either the Energy Office or individual utilities in South Carolina should engage the technical expertise necessary to quantify the potential for cost-effective electric utility EE and demand management programs (and where appropriate, natural gas utility DSM programs) to reduce natural gas consumption and defer or avoid the need for specific new investments in natural gas infrastructure. EE and demand management programs that target the winter electric peak, such as demand response for electric hot water heaters, should be considered as part of this examination.
- Expertise should be engaged to evaluate the additive or interactive effects of electric and natural gas EE at the program level and at the level of interacting gas and electric systems. For instance, insulating a home with electric air conditioning and natural gas heating results in savings of both electricity and natural gas. This fact should be accounted for in calculating the cost-effectiveness of electric and natural gas EE programs.

## **Consumption Reduction Subcommittee Members**

Eddy Moore, Coastal Conservation League – Chair

Kristen M. Beckham, Dominion Energy

Bill Cummings, Kimberly- Clark Corporation

James (Bugsy) Graves, Home Builders Association of South Carolina

Shaun Randall, SCE&G

# GROWTH NEEDS & IMPEDIMENTS TO GROWTH SUBCOMMITTEE

## Background

The Growth Needs and Impediments to Growth Subcommittee (Growth Subcommittee) was specifically tasked with developing a report to:

1. Identify needs for additional infrastructure in areas where it would benefit the regions and state from an economic development perspective; and
2. Understand the process and issues related to establishing new natural gas capacity, including federal, state, environmental, and individual issues and to provide strategies for mitigation related to those issues.

The Growth Subcommittee was composed of a variety of utility, environmental, and economic development professionals that met and discussed the issues at length over an approximate six-month period.

The Growth Subcommittee sought to collect data and information that would identify where natural gas infrastructure exists and where it does not. The Subcommittee also sought to identify regions of the state where the lack of natural gas may be a limiting factor in economic development.

Additionally, the Growth Subcommittee familiarized itself with the state and federal processes necessary to expand interstate and intrastate natural gas infrastructure, costs associated with expansion, financing mechanisms, and other factors related to infrastructure growth. The Subcommittee developed a listing of these mechanisms but did not have the time or expertise to evaluate the feasibility of any specific action or the overall impact on improving natural gas infrastructure expansion.

Finally, the Growth Subcommittee overlaid maps of infrastructure on maps of labor data in order to determine if any relationship may exist between natural gas infrastructure and economic indicators.

The Growth Subcommittee recommends additional data be evaluated and a robust analysis be performed to evaluate the relationship between infrastructure and loss or perceived loss of economic development before specific policy recommendations or geographic recommendations are proposed.

## Growth Needs

Given current conditions and assuming all factors that affect demand remain constant, including natural gas costs and the regulatory environment, it is expected that demand for natural gas will increase over the next decade, driven by manufacturing growth and electric power generation. The US has more than enough supply to meet this growing demand. However, according to a study conducted by IHS Markit<sup>17</sup>, the US will need major investments in new infrastructure, particularly natural gas pipelines, to ensure existing and new manufacturers have a steady, reliable stream. The source of this study was conducted on a national scale and not in South Carolina specifically. Any demand for increased energy in South Carolina will depend on growth — population, new factories, commercial structures, neighborhoods or anything else that requires electricity.

<sup>17</sup> IHS Economics, *The Economic Benefits of Natural Gas Pipeline Development on the Manufacturing Sector*, May 2016, <http://www.nam.org/Data-and-Reports/Reports/Natural-Gas-Study/Energizing-Manufacturing-Full-Report/>.

The state's utilities will be expected to keep up with that demand. A recent study warned that the current movement toward building new natural gas pipeline infrastructure to supply electricity generation could lead to stranded assets within the decade due to less expensive options becoming available.<sup>18</sup>

Total natural gas demand is poised to increase by 40% over the next decade. Key drivers will be manufacturing and power generation. US supply is expected to increase by 48% over the next decade to meet new demand. Studies suggest that domestic natural gas has improved US manufacturing growth opportunities and employment.<sup>19</sup> Manufacturers use natural gas for fuel, such as drying, melting, machine drive and space heating as well as a feedstock in refining, chemicals, and primary metals sectors. Subcommittee members believe that South Carolina has manufacturing growth opportunities that are similar to those in much of the United States and may benefit from improvements to within state natural gas infrastructure.

The Growth Subcommittee identified two core items at the intersection of economic development and natural gas infrastructure: impediments in demand requirements and impediments in time requirements.

## Impediments in Demand Requirements

Transmission pipeline expansions, unlike distribution infrastructure expansions, often do not occur solely with long-term economic development in mind. In fact, as a matter of federal policy, transmission pipeline expansions cannot be speculative and, as a result, cannot be done solely for economic development purposes.<sup>20</sup> Federal rules require that a clear need for natural gas usage, demonstrated by customer contracts, be provided prior to transmission pipeline expansion approval. This requirement is intended to prevent proliferation of transmission pipelines that are underutilized and may not become economically viable. However, a split has developed within the FERC over whether the contract-based demonstration of need is sufficient to justify approvals that can result in the imposition of federal eminent domain and significant federally-approved utility rate increases.<sup>21</sup>

In any case, industrial and commercial usage rarely provides enough concentrated demand to economically justify a federal determination of need and/or a statement that infrastructure growth is in the public interest. At the state level, South Carolina does not currently require a project-specific determination of need in advance of FERC-approved pipeline expansion. If such costs are incurred, they currently would be reviewed at the state level only after federal eminent domain has been granted and pipeline construction is complete. Ratepayers ultimately bear the cost and must be considered as to whether a project is "economically justified." Residential and business

### US natural gas employment by the numbers:

- 1.9 million jobs economy-wide in 2015
- 348,000 jobs in new pipeline construction
- 119,754 jobs in transmission line O&M (operations & maintenance)
- 60,000 jobs in transmission line manufacturing

<sup>18</sup> Jeff McMahon, "The 'Rush To Gas' Will Strand Billions As Renewables Get Cheaper, Study Says," *Forbes*, May 21, 2018, <https://www.forbes.com/sites/jeffmcmahon/2018/05/21/the-rush-to-gas-will-cost-billions-in-stranded-assets-as-renewables-get-cheaper-institute-says/#e0e23e03a0d3>.

<sup>19</sup> HS Economics, *The Economic Benefits of Natural Gas Pipeline Development on the Manufacturing Sector*, May 2016, <http://www.nam.org/Data-and-Reports/Reports/Natural-Gas-Study/Energizing-Manufacturing-Full-Report/>.

<sup>20</sup> *Certification of New Interstate Natural Gas Pipeline Facilities*, 1999 US Federal Energy Regulatory Commission PL99-3-000, ¶ 61,227, <https://www.ferc.gov/legal/maj-ord-reg/PL99-3-000.pdf?csrt=15539980645626013328>.

<sup>21</sup> Gavin Bade, "FERC rejects Mountain Valley challenges, dividing again over climate, pipeline need," *Utility Dive*, June 18, 2018, <https://www.utilitydive.com/news/ferc-rejects-mountain-valley-challenges-dividing-again-over-climate-pipel/525907/>.

customers of all sizes typically will pay increased rates for an expansion within either state-regulated natural gas rates or electric utility fuel cost rates. Further, some customers may be subject to the condemnation of their property through federal or state eminent domain to accommodate expansion. These factors—rate increases, the total cost, and eminent domain—are all considered in whether an expansion is economically justified.

## Impediments in Time Requirements

Economic development projects are typically time-bound, meaning they must be completed in a reasonable amount of time for a project to be economical. As a result, because expansion of natural gas infrastructure is a multi-year process (see Appendix), lack of existing infrastructure may eliminate a site from selection. In addition, potential users are often driven by business models and financial constraints that limit their ability to enter into long-term contracts that may be necessary to justify a transmission pipeline expansion.

Given the federal rules regarding need, the Growth Subcommittee did not address or recommend ways to address need requirements. Rather, this Subcommittee cited this requirement as a key consideration for when geographic decisions regarding “anchor” users are being discussed. Therefore, this Subcommittee did not address potential changes to federal policies.

The Growth Subcommittee outlined solutions employed in South Carolina and elsewhere to address timeline issues for infrastructure expansion and economic development needs. These are outlined in the “existing efforts to address natural gas infrastructure limitations” section further in this report.

## Identified Areas of Need

The Subcommittee sought to identify areas with economic growth potential that either have natural gas infrastructure or lack natural gas infrastructure. This mapping is not intended to identify “need,” but rather uses limited labor datasets to inform future discussions and analysis regarding natural gas growth.

This Subcommittee mapped natural gas infrastructure in relation to both the available labor force and underemployed individuals. Underemployment is a condition in which people in a labor force are employed at less than full-time or regular jobs, or at jobs inadequate with respect to their training or economic needs.

Figure 5 illustrates SC underemployment by zip code as determined by the South Carolina Power Team’s labor study, Project Pioneer, completed in the spring of 2018. In this study, “underemployment” is intended to represent a workforce that may easily be employed if additional economic development projects occur. The map includes all natural gas infrastructures submitted to the Mapping Subcommittee. The map also indicates approximate locations of Transco, SNG, and the under-construction Atlantic Coast Pipeline. DECG is indicated in light purple at a five-mile buffer level. Other than the pipelines, all other natural gas infrastructure is indicated in light blue and is lower-level LDC (distribution level).

With the exception of Horry County, most areas of high underemployment occur in proximity to existing natural gas transmission infrastructure. However, the map does not reference capacity or expected population growth, only presence or absence of infrastructure and labor data.

Figure 5 – SC Natural Gas Infrastructure and Underemployment by Zip Code

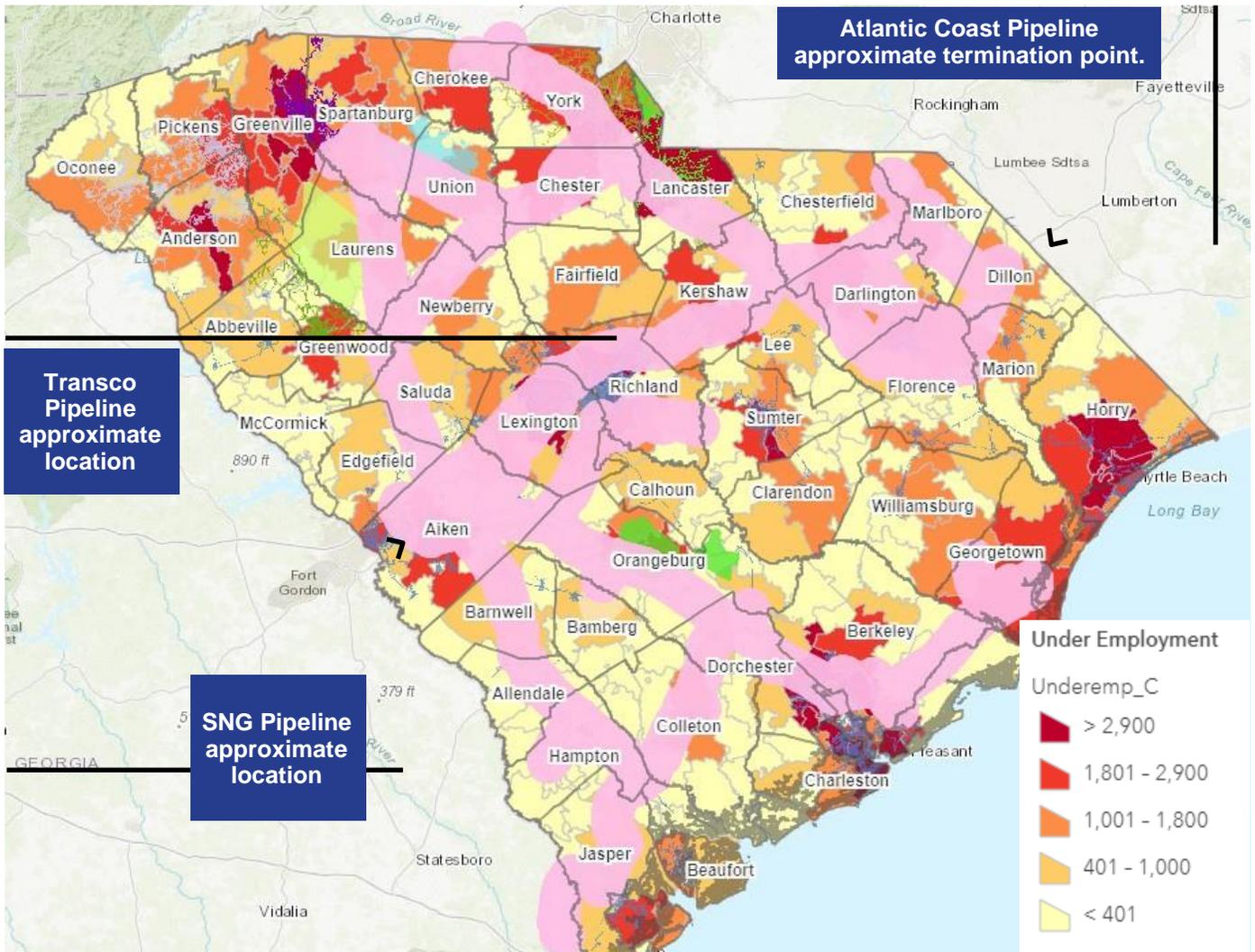
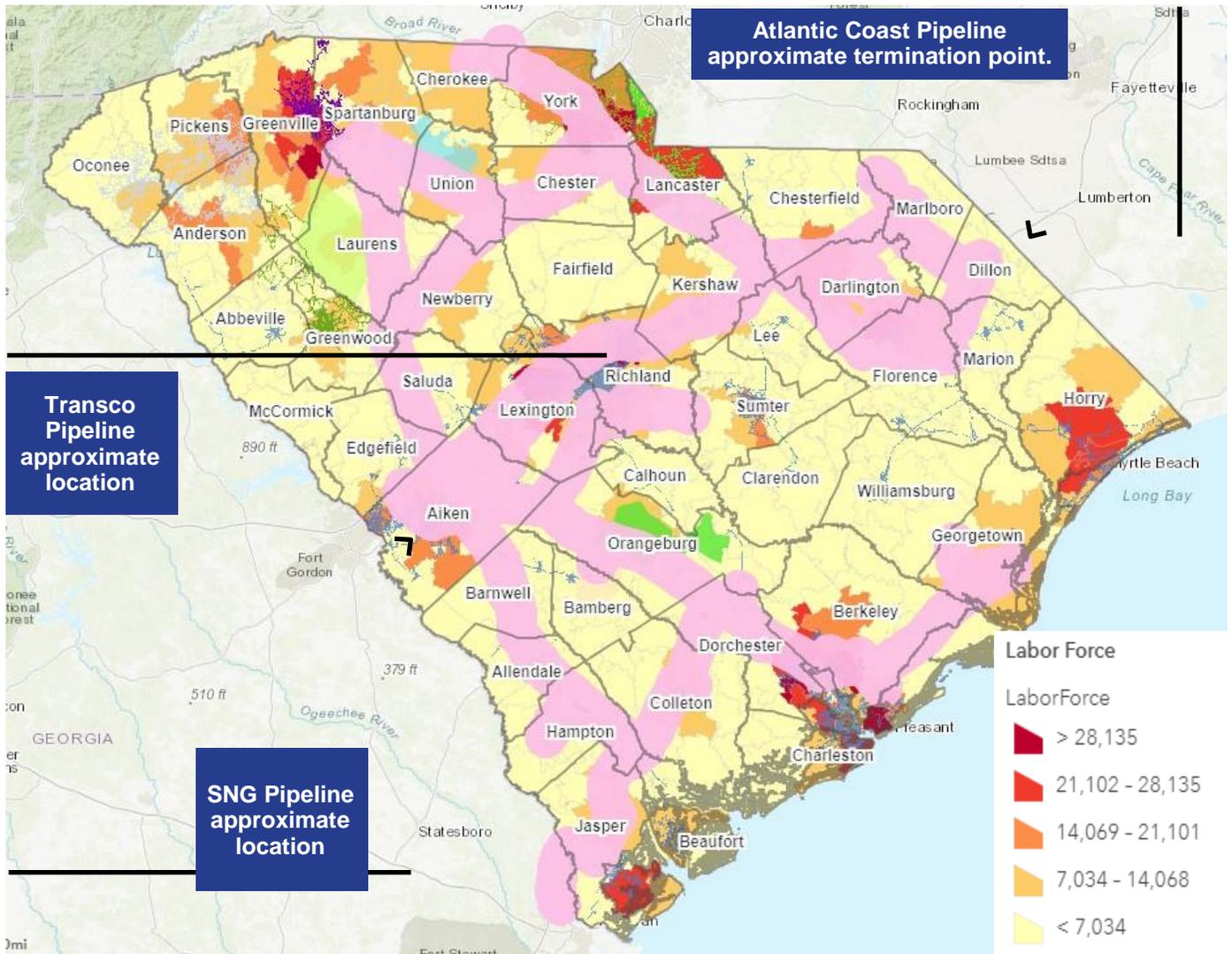


Figure 6 illustrates South Carolina labor force by zip code as determined by the SC Power Team’s labor study completed in the spring of 2018. The map also includes all natural gas infrastructures submitted to the Mapping Subcommittee. The map also indicates approximate locations of Transco, SNG, and the under-construction Atlantic Coast Pipeline. DECG is indicated in light purple at a five-mile buffer level. Other than the pipelines, all other natural gas infrastructure indicated in light blue are lower-level LDC (distribution level).

Figure 6 – SC Natural Gas Infrastructure and Labor Force by Zip Code



As with Figure 5, areas with larger labor forces tend to occur in more urban and suburban areas that have been experiencing steady growth. With the exception of Horry County, most areas of high labor force concentration tend to occur in proximity to both existing transmission and distribution natural gas infrastructure. However, the map does not reference capacity or expected population growth, only the presence or absence of infrastructure and labor data.

Both maps suggest that additional analysis is necessary to determine the role, if any, that natural gas infrastructure plays as a causal factor related to economic development. A wide array of demographic, education, cultural, regulatory, infrastructure, and other considerations factor into economic development citing decisions. As such, without a detailed analysis, it is difficult to tell if economic development could or would locate in a given area even if natural gas infrastructure were available.

In looking at the intersection of natural gas infrastructure with labor data and underemployment data, it is evident that labor is available, and a high percentage of individuals are underemployed in areas that may be lacking natural gas infrastructure. These areas are predominantly in the counties of Aiken, Beaufort,

Berkeley, Chesterfield, Clarendon, Colleton, Dorchester, Edgefield, Georgetown, Horry, Jasper, Lancaster, Lexington, Sumter, and the counties along the I-85 Corridor. These are the areas where expanded natural gas infrastructure and/or enhanced natural gas capacities through interconnectivity could provide future economic development impact if the upfront costs and ongoing rate impacts are justified, after consideration of any available alternatives. Certainly, it is evident that the northeastern region of the state is lacking in natural gas infrastructure. Diminishing capacity may be an additional impediment even in areas with sufficient natural gas infrastructure. Subsequently, lack of natural gas could be a contributing factor to some areas' lack of industrial growth.

## Impediments to Natural Gas Growth in South Carolina

The following issues have been identified as leading topics that impede the growth of natural gas in South Carolina:

### Capacity of current natural gas transmission lines

Two natural gas transmission companies – Transco and Dominion – have represented that they have 100% of their firm capacity already under contract and that no other enhancements can increase firm capacity except for pipeline expansion.<sup>22</sup> Questions of efficiency, interruptible service, acquiring unused firm capacity on a secondary market, and numerous other concepts were initially evaluated and warrant further investigation.

LDCs represented that they may have additional capacity, but often charge higher rates for gas service given the difference in business models. Finally, LDCs may or may not be able to meet volume and pressure needs of potential users.

In addition, natural gas providers have stated that as SC continues to grow in population, they expect to see a greater demand for natural gas. Given existing transmission capacity limitations, the options for satisfying this demand become increasingly limited. Natural gas companies may have to renegotiate contracts with existing customers, deny new requests for firm natural gas service, or offer only interruptible service. If firm capacity is needed, individuals may have to evaluate efficiency options or any unused firm capacity on the secondary market. If LDCs are used to meet increased capacity needs, the increasing demand on LDC systems may result in changes to billing/rate structures with existing customers given the large shift of usage types on the LDC system.

### Requirement by FERC to Show Demonstrated Need for Natural Gas

The FERC requirement to have contracted demand in place prior to approval for construction of new gas infrastructure limits the ability of communities, and the state as a whole, from recruiting large-scale industrial customers to locate in any area other than where existing natural gas infrastructure and sufficient capacity exist. In addition, the FERC requires proposed capacity of a transmission line to be contractually obligated prior to construction.

<sup>22</sup> Subsequent to the meetings held by the Natural Gas Subcommittee Committee, an Assessment of South Carolina Natural Gas Capacity was submitted to the Public Service Commission in Docket No. 2017-370-E. This report generally claims that within-state pipeline capacity, and not the physical capacity to bring natural gas from out of state on interstate pipelines, is the constraint on available firm capacity. See, attachment B to the testimony of Gregory Lander, at <https://dms.psc.sc.gov/Attachments/Matter/d3c5353c-7ab1-4712-a62d-754b205ef4fe>.

## **Timeline for Approval Process and Construction of Interstate Pipelines**

As stated in the federal processes outlined in the Appendix, the timeline for approval by FERC of interstate natural gas pipelines averages almost two years. Combine this approval process with the timeline to construct the actual infrastructure and the result is that natural gas customers are likely waiting four years for access to firm natural gas capacity from a transmission company.

Natural gas may be obtained much faster through interruptible service from transmission companies or through firm capacity from LDCs, but these may require less than ideal operations or higher costs, respectively. “Bridge” options have been proposed and used previously in SC and are outlined in sections below.

A three-to-four-year timeline may impact economic development recruitment efforts throughout the state. If natural gas is a critical requirement for a project, it may limit future economic development opportunities.

## **Permitting of Natural Gas Infrastructure**

Other than the timeline for approval/disapproval of new interstate natural gas infrastructure and contractual requirements by FERC on interstate pipeline operators, permitting at the state and local level is very limited and may or may not significantly impede natural gas growth.

## **Solutions to Overcome/Lessen the Impediments to Natural Gas Growth in South Carolina**

As stated in the opening of this report section, the recommendations outlined below have not been fully vetted for the possibility of actual implementation or on the full impact on the state of natural gas in the US or even in South Carolina, if adopted. Furthermore, many of these recommendations include the need for further study or evaluation.

## **Existing Efforts to Address Natural Gas Infrastructure Limitations**

The following lists include existing efforts in South Carolina or elsewhere for addressing natural gas infrastructure limitations for economic development.

### **Transmission Level (Pipeline)**

1. The identification of high natural gas consumption anchor tenants for any proposed pipeline expansions.
2. Working with new and existing power generation firms to provide for natural gas transmission pipelines to underserved areas of the state.
3. Investigating strategies and opportunities for organizations/entities to enter into long-term capacity contracts with transmission carriers in order to meet the FERC needs-test requirement. For example, a new or existing credit-worthy entity could, without undertaking any construction, subscribe to capacity that could later be assigned to other entities as demand materializes. However, this option requires that the contracting entity have a plan or ability to pay for the capacity and/or construction costs.

## **Distribution Level (LDC)**

1. Entity (local or regional governmental entity) constructing the infrastructure and/or contracting for firm “anchor” capacity in order to fund a project in advance of other demonstrated need under the frame of “area readiness.” Because of the potential impact on taxpayers and ratepayers of this speculative approach without a guaranteed timeline or return on investment, transparency with affected taxpayers or ratepayers through various communication methods is recommended coupled with a projected return on investment/ cost-benefit analysis with transparency regarding underlying assumptions. This approach will inform the public and provide an opportunity for public feedback.
2. Short-term options
  - a. Some local-level incentives and use of LDC capacity for short-term needs have been utilized as a bridge while transmission infrastructure is built. However, the details are varied and, therefore, are not outlined in this report.
  - b. The benefit of working with an LDC is that it might reduce the capacity timeframe from 4 years for natural gas to 6-8 months for in-service status. This arrangement could serve as a temporary solution until a large pipeline is in place.
  - c. An incremental rate incentive allows an economic development prospect to pay the current LDC rate while the incentive provider (local, county, or state government) would absorb the incremental rate increases between the transmission rates and LDC rates for new service. This could be timebound or expire. This has been used in South Carolina in recent years.

The following information and data needs are meant to address data and information limitations the Growth Subcommittee found while creating this report.

## **Growth Needs & Impediments Subcommittee Recommendations**

- An effort should be initiated to determine the feasibility of tracking lost economic development projects due to lack of natural gas availability.
- An evaluation should be conducted to investigate compressed natural gas (CNG) or liquified natural gas (LNG) alternatives for industrial uses in natural gas “deserts.”
- Natural gas utilities are encouraged to communicate and/or coordinate on long- term natural gas needs and base load generation needs.

## **Growth Subcommittee Members**

Mike Cool, Santee Cooper – Co-Chair

Josh Kay, Myrtle Beach Regional Economic Development Corporation – Co-Chair

Gary Alexander, Dominion Energy

Travis Avant, Palmetto AgriBusiness Council

Kristen Beckham, Dominion Energy

Jamie Frost, South Carolina Power Team

Cedrick Green, SCE&G

Rebecca Haynes, Conservation Voters of South Carolina

Sara Hazzard, SC Manufacturers Alliance

Jeff McKay, Northeastern Strategic Alliance

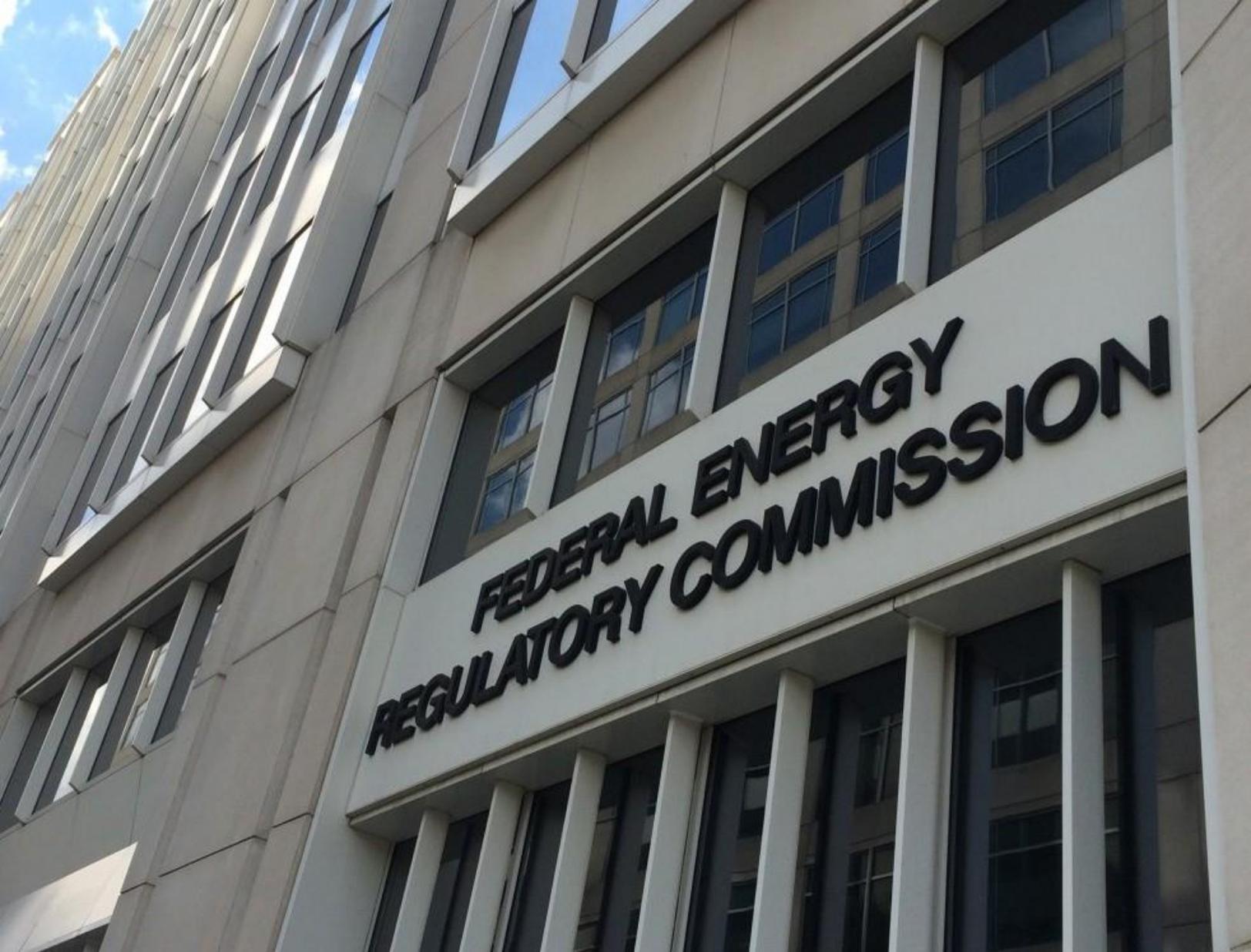
Shaun Randall, SCE&G

John Tynan, Conservation Voters of South Carolina

Brandon Wilkerson, South Carolina Department of Commerce

# **APPENDIX**

Processes Related to  
Establishing New Natural  
Gas Capacity in South  
Carolina



## Federal Processes

The United States' supply of natural gas is growing due to technological improvements such as horizontal drilling and hydraulic fracturing, which have increased producers' ability to extract natural gas from shale formations. Shale gas is projected to become the dominant source of the US natural gas supply by 2040. The growth in US shale gas production requires the expansion of natural gas pipeline infrastructure at the local level (to extract and gather the gas) and at the national level to transport natural gas from producing regions to consuming markets, typically in other states. Over 300,000 miles of interstate transmission pipeline already transport natural gas across the United States. However, if the growth in US shale gas continues as projected, the requirement for new pipelines could be substantial. For example, an analysis by the INGAA Foundation, a pipeline industry research organization, estimates that the total cost of new gas gathering and transmission pipelines (including storage) could average over \$8 billion per year and total over \$200 billion through 2035.<sup>23</sup>

Interstate natural gas pipelines are generally large systems that cross multiple states and are regulated by FERC. These pipelines provide the transportation of natural gas from production zones to take-away

<sup>23</sup> Paul Parfomak, *Interstate Natural Gas Pipelines: Process and Timing of FERC Permit Application Review*, Congressional Research Service, 2015.

and market-demand centers. Since South Carolina has no in-state natural gas production or processing facilities, the interstate pipelines are essential to provide the transportation required to move gas from various supply regions to the state's investor-owned utilities (IOUs) and other natural gas utilities.

FERC regulates many aspects of interstate gas transmission pipeline operations including approval, permitting and siting for new pipeline facilities (largely an assessment of the public need for a project versus its landowner and environmental impacts), as well as transmission rates that pipelines are permitted to charge for interstate shipments.

The Natural Gas Act of 1938 empowers FERC with plenary authority to conduct the review of a proposed interstate natural gas pipeline, coordinate environmental and land-use permitting with other federal and state agencies, and determine whether a proposed pipeline meets the "public convenience and necessity" standard. As part of approving a pipeline application, FERC can specify the conditions under which the pipeline can be constructed, including the route used.

Once an interstate natural gas pipeline is built, FERC has the authority to ensure that pipeline rates are "just and reasonable." These rates include operating and maintenance expenses and an allowed return on investment set as a percentage of the capital invested in facilities used to serve customers. Pipelines must go through a lengthy, public process whenever they request rate increases, regardless of the supply/demand balance in the underlying commodity. FERC sets rates on a pipeline-by-pipeline basis and approves for each pipeline what amounts to a maximum allowable rate, or a "rate cap." However, pipeline customers can and often do demand discounts from these maximum rates, with the net outcome being that many pipeline customers pay less than the maximum rate a pipeline has been given permission to charge by FERC.<sup>24</sup>

There are no statutory time limits within which FERC must complete its certificate review process. However, the Energy Policy Act of 1992 (EPAct) authorizes FERC to establish a schedule for all related federal authorizations and provides for judicial petition if an agency fails to comply with that schedule. Congress included these provisions in EPAct to address concerns that some interstate gas pipeline and other energy infrastructure approvals were being unduly delayed by a lack of coordination or insufficient action among agencies involved in the certification process. FERC has promulgated regulations requiring certificate-related final decisions from other agencies no later than 90 days after the Commission issues its final environmental document.<sup>25</sup>

The following flowcharts outline the typical process for new natural gas transmission/interstate pipeline construction including the planning process, application process, and construction process.<sup>26</sup>

<sup>24</sup> "How are Pipelines Regulated?" Interstate Natural Gas Association of America, <http://www.ingaa.org/Topics/Pipelines101/143.aspx>.

<sup>25</sup> Paul Parfomak, *Interstate Natural Gas Pipelines: Process and Timing of FERC Permit Application Review*, Congressional Research Service, 2015.

<sup>26</sup> "Natural Gas Pipeline & Storage Permitting Processes" US Federal Energy Regulatory Commission, <https://www.ferc.gov/resources/processes/gas-pipe-stor-perm.asp>.

Figure 7 – Overall Application Process for Natural Gas Certificates

## PROCESSES FOR NATURAL GAS CERTIFICATES

### Application Process

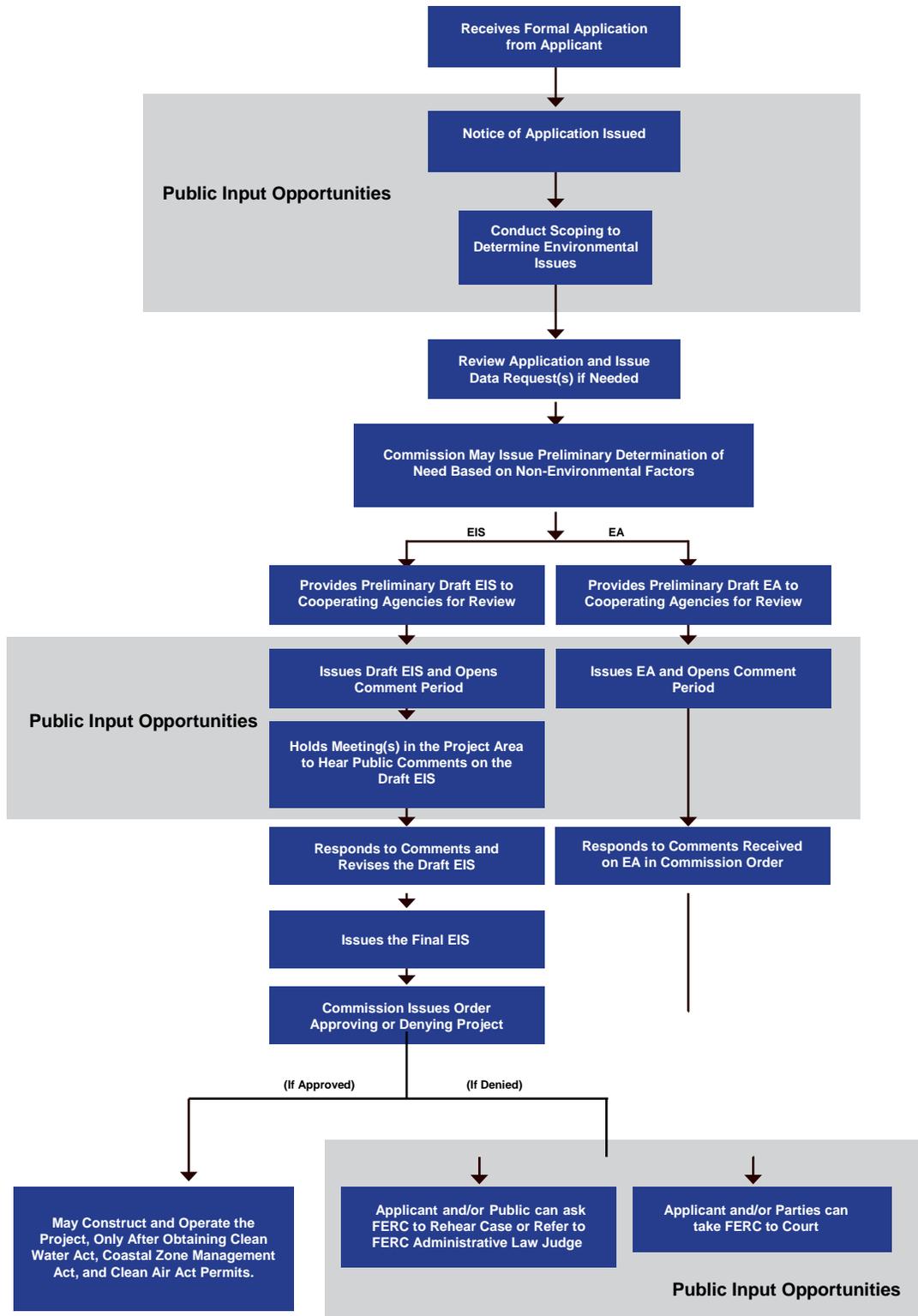


Figure 8 – Applicant’s Planning Process for Natural Gas Certificates

## PROCESSES FOR NATURAL GAS CERTIFICATES

### Applicant’s Planning Process

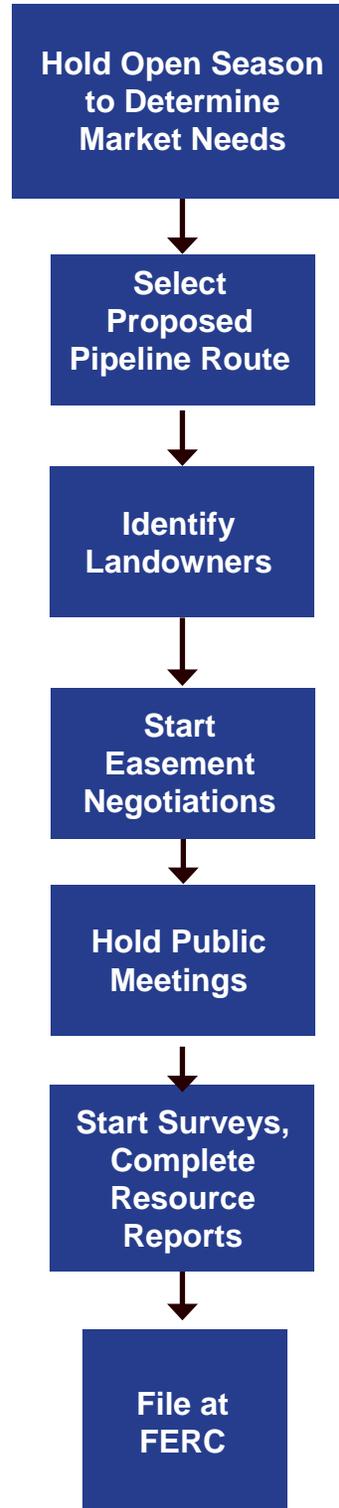
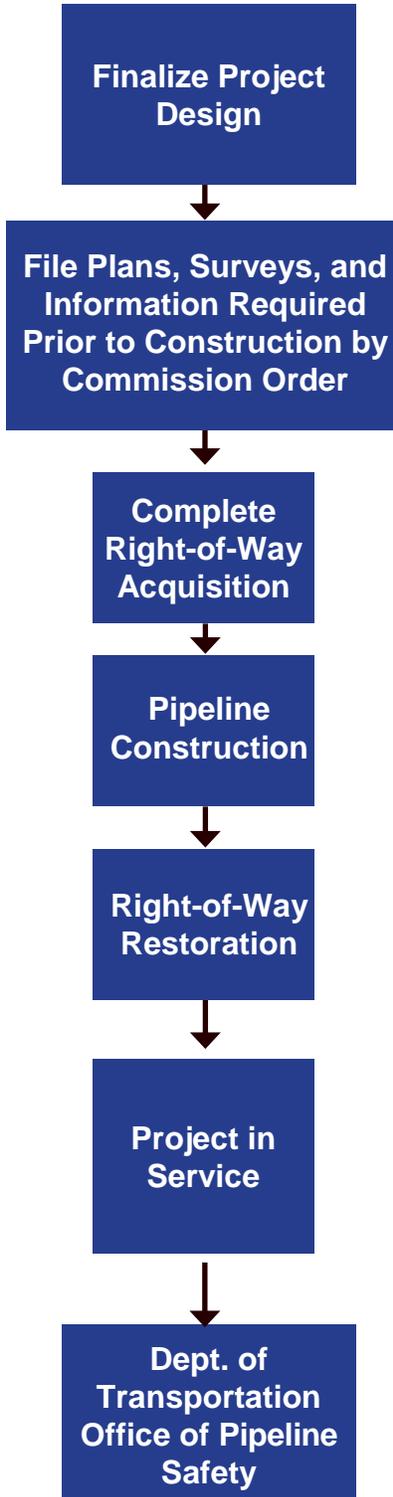


Figure 9 – Construction Process for Natural Gas Certificates

## PROCESSES FOR NATURAL GAS CERTIFICATES

### Construction Planning Process



An application for FERC natural gas certificates must include the following elements:

- Description of the project,
- Route maps,
- Construction plans,
- Project schedules,
- Information on permits required from other agencies,
- Environmental reports and mitigation strategies, and
- Route alternatives.

As depicted in the flowcharts above, once FERC receives the application there is an in-depth analysis and public input period(s). FERC analyzes the application and considers the following points of interest in determining approval/disapproval of the application:

- The project impact in pipeline competition,
- The possibility of overdeveloping pipeline capacity,
- Subsidization by existing customers,
- Potential environmental impacts,
- Avoiding unnecessary use of eminent domain, and
- Safety (FERC generally defers to the USDOT).

It must also be noted that the FERC approval is highly contingent upon demonstrated market need as evidenced by long-term (10+ years) contracted customer commitments.

While there is no specific timeframe required for the FERC review and decision-making process, a Government Accountability Office study found that the average processing time from pre-filing to certification was 558 days.<sup>27</sup> Further information about the federal processes required to build interstate natural gas transmission pipelines can be found in a 2013 report from the Interstate Natural Gas Association of America Foundation.<sup>28</sup>

## State Processes

South Carolina's natural gas system is the infrastructure that provides for the safe and reliable delivery of natural gas to the state's residential, commercial, industrial, electric generation, and other various gas end-users. South Carolina's natural gas infrastructure consists of three interstate pipelines, two IOUs, and 14 other natural gas utilities.

Interstate pipelines, IOUs, and municipal gas utilities are all responsible for the safe and reliable delivery of natural gas to support the needs of end-users. IOUs are subject to the oversight and rate regulation of the PSC, whereas the municipal gas utilities are not.<sup>29</sup> All intrastate entities are subject to PSC safety regulations.

<sup>27</sup> Beverly Woods, "Permitting Process for an Interstate Natural Gas Pipeline Project," Northern Middlesex Council of Governments, <https://www.mountgrace.org/sites/default/files/Permitting-an-Interstate-Pipeline.pdf>.

<sup>28</sup> Building Interstate Natural Gas Transmission Pipelines: A Primer, Interstate Natural Gas Association of America, 2013, <http://www.ingaa.org/File.aspx?id=19618>.

<sup>29</sup> "SC Natural Gas Infrastructure Report," South Carolina Energy Office, 2016 (draft), <http://www.energy.sc.gov/files/view/SC%20Natural%20Gas%20Infrastructure%20DRAFT%20203-14-16.pdf>.

Currently, the PSC is prohibited from determining the location of pipelines for the natural gas operators under its jurisdiction. However, natural gas operators must apply for environmental permits from the US Environmental Protection Agency, the South Carolina Department of Health and Environmental Control, and any other agencies with environmental oversight such as the US Army Corps of Engineers.

## **Local Processes**

Local control over natural gas utilities is limited in South Carolina. The 14 municipalities that provide natural gas distribution are governed by local boards or authorities and are generally elected by the customers of that utility. Natural gas growth by those municipal utility organizations is limited by their assigned territory and/or local governance. Non-utility-providing local governmental agencies have planning and zoning authority within their respective jurisdictions; however, utilities are not generally regulated outside of distribution line placement within rights-of-way and meter placements within neighborhoods or at specific locations.

