

**Why was the potential need for additional natural gas for the electric sector analyzed?**

- New England's natural gas infrastructure has become increasingly stressed as regional demand for natural gas has grown, leading to infrastructure inadequacy and spiking prices during winter months. Additionally, recent nuclear and coal-fired electric generator retirements will be replaced by gas-fired generation, further increasing natural gas demand.

**Why was the study conducted only considering the need and policies for Massachusetts when the Commonwealth is part of a regional electricity grid?**

- The study did not include participation by the other states in the region and was undertaken to address Massachusetts' needs. The study did include in its analysis the existing renewable energy and energy efficiency policies in place for the other states in the region but could not assess the potential for changes to those policies without the other states participation.

**Based on the study, how much new natural gas capacity is needed and by when?**

- This winter's natural gas price spikes are an indication of an existing need for additional natural gas pipeline capacity, however expanding natural gas delivery capacity will take several years. The study assumes 2020 as the earliest date new incremental pipeline capacity can be on line. The study shows incremental capacity need of 0.6 Billion cubic feet/day (Bcf/d) to 0.8 Bcf/d in 2020 and by 2030, the low end capacity need is unchanged at 0.6 Bcf/d while the high end increases to 0.9 Bcf/d. The Commonwealth's average daily natural gas consumption for January 2014 was 1.8 Bcf. However, the demand on January 3<sup>rd</sup>, 2014 for natural gas heating only was 2.2 bcf

**Will energy efficiency and renewables help to reduce the need for natural gas infrastructure and how?**

- Yes. The inclusion of incremental energy efficiency and renewable energy (over and above levels supported by existing policies) in the analysis reduces combined electric and thermal demand for natural gas by 18% in 2030. However, additional alternative resources could be called upon at a higher cost than that of additional pipeline.

**Was the inclusion of energy efficiency and renewable energy projects maximized to the greatest extent possible?**

- Energy efficiency and renewables were included to the extent determined technically and economically feasible. Technical feasibility was determined based on available studies and analysis conducted to date. An alternative resource was then determined to be economically feasible if its net avoided cost (that is, it costs less its benefits such as avoided energy, avoided transmission and distribution, etc) did not exceed the costs of building additional pipeline capacity.

**How do recently proposed pipeline projects address or not address the need for additional gas for electricity generation?**

- The study included in its baseline only the Algonquin Incremental Market (AIM) pipeline project, which has received all required approvals. No other proposed pipelines were included in the baseline. Additional proposed pipelines could address the need for additional gas generation demand. However, if all additional capacity is contracted for thermal (heating) needs by the gas distribution companies (LDCs), electricity generators will only benefit from pipeline capacity not used or otherwise released by LDCs.

**Some stakeholder comments identified what they describe as major errors with the draft modeling results. Was that the case? Were those errors corrected?**

- Stakeholders have provided helpful feedback throughout the project, including pointing out both small calculation errors and ways in which key assumptions determine results. Subsequent to the stakeholder meeting on December 18<sup>th</sup>, all back-up spreadsheets to the study were posted to provide for complete transparency. Corrections and updates to the draft modeling results were made as a result of stakeholder review of the spreadsheets. The corrections changed the set of resources that are less expensive than the economic threshold and thereby the determination of which alternative measures are included in the low demand case, but did not have substantive impact on final gas capacity shortages. Model updates did, however, have an impact on 2030 GWSA compliance in the low demand case.

**Why were these 8 scenarios selected?**

- The 8 scenarios analyzed in the report represent a reasonable range of outcomes:
  - A base case assuming implementation of all existing policies for alternative resources e.g. time-varying rates, energy efficiency, renewable energy
  - A low energy demand case assuming policies are implemented (or barriers eliminated) to enable implementation of all technically and economically feasible alternative resources in addition to the alternative resources supported by existing policies
  - Addition of electric transmission lines to import clean Canadian electricity under both the base case and low energy demand case
  - Sensitivity evaluation of scenarios to low and high gas prices

**Will the Commonwealth meet its GWSA mandates for 2020 and 2050 with additional incremental gas?**

- The study considered whether or not the Commonwealth would meet its GWSA mandate for the gas and electric sectors only for 2020 as well as a target for 2030 extrapolated from the mandates for 2020 and 2050. Compliance for 2050 was not evaluated. Under the modeled scenarios, the gas and electric sectors did not meet their 2020 targets. Under two of the low energy demand scenarios, emissions were reduced by more than 15% below the 2030 GWSA target.

**Why was a scenario that did not include any additional pipeline not analyzed?**

- The study did not assume pipeline was needed or not needed. The study was conducted to determine how to meet projected future energy needs for Massachusetts, taking into account reliability, costs and environmental considerations.

**Why did the study not address gas leaks, as noted in the RFP for the study?**

- An ICF International study of Massachusetts gas leaks commissioned by the Massachusetts Department of Public Utilities required by Chapter 149 of the Acts of 2014 was not released in time for use in this study.

**Why did the study not address the potential environmental impacts of natural gas extraction or siting a pipeline?**

- Natural gas extraction is occurring outside of Massachusetts and the Commonwealth cannot regulate these activities. The United States Environmental Protection Agency (EPA) regulates this area and any natural gas extraction activities will require compliance with EPA rules and regulations.
- Although the environmental impacts of siting a pipeline was not within the scope of this study, the Commonwealth has noted that any proposed pipeline would require a full environmental review

and consideration of environmental requirements as all as a full examination of the proposed routing and seeking ways to avoid or minimize impacts to important natural resources.

**Did the study consider the impact of pipeline investments on Massachusetts' long-term reliance on natural gas?**

- The Patrick Administration, through the Global Warming Solutions Act and the Green Communities Act, put in place policies and programs to reduce Massachusetts' reliance on natural gas. Continuing the implementation of these laws and compliance with the GWSA will most effectively address our reliance on fossil fuels. The focus of this study was to evaluate and determine existing natural gas demand.

**How does the drop in oil prices and related drop in LNG prices affect the results of this study?**

- If oil prices go below and stay below natural gas for an extended number of years (5-10 years), then it could slow down the transition to natural gas use in homes and businesses resulting in relatively higher oil use for heating and electric generation and increasing greenhouse gas emissions. Low oil prices could also create an entry barrier for alternative resources competing with both natural gas and lower oil prices.

**How does this study impact potential new pipeline projects such as the proposed project by Kinder Morgan?**

- This study did not evaluate or consider any of the proposed pipeline projects that have not been approved.