New England Gas Electric Focus Group

Gas-Electric Study: Phase II Update

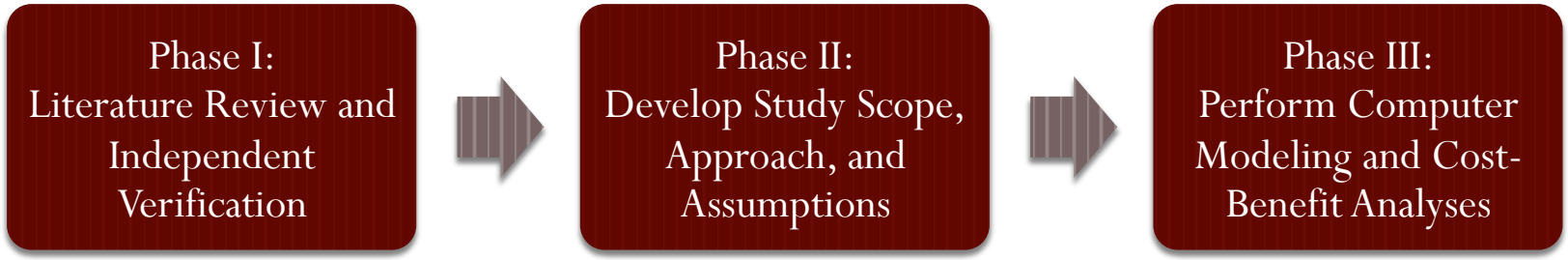
New England States Committee on Electricity

February 26, 2013

Overview

- Phase II Approach and Methodology
- Current Status
- Selected details
- Study Limitations
- Next Steps, Timing & Questions

Context

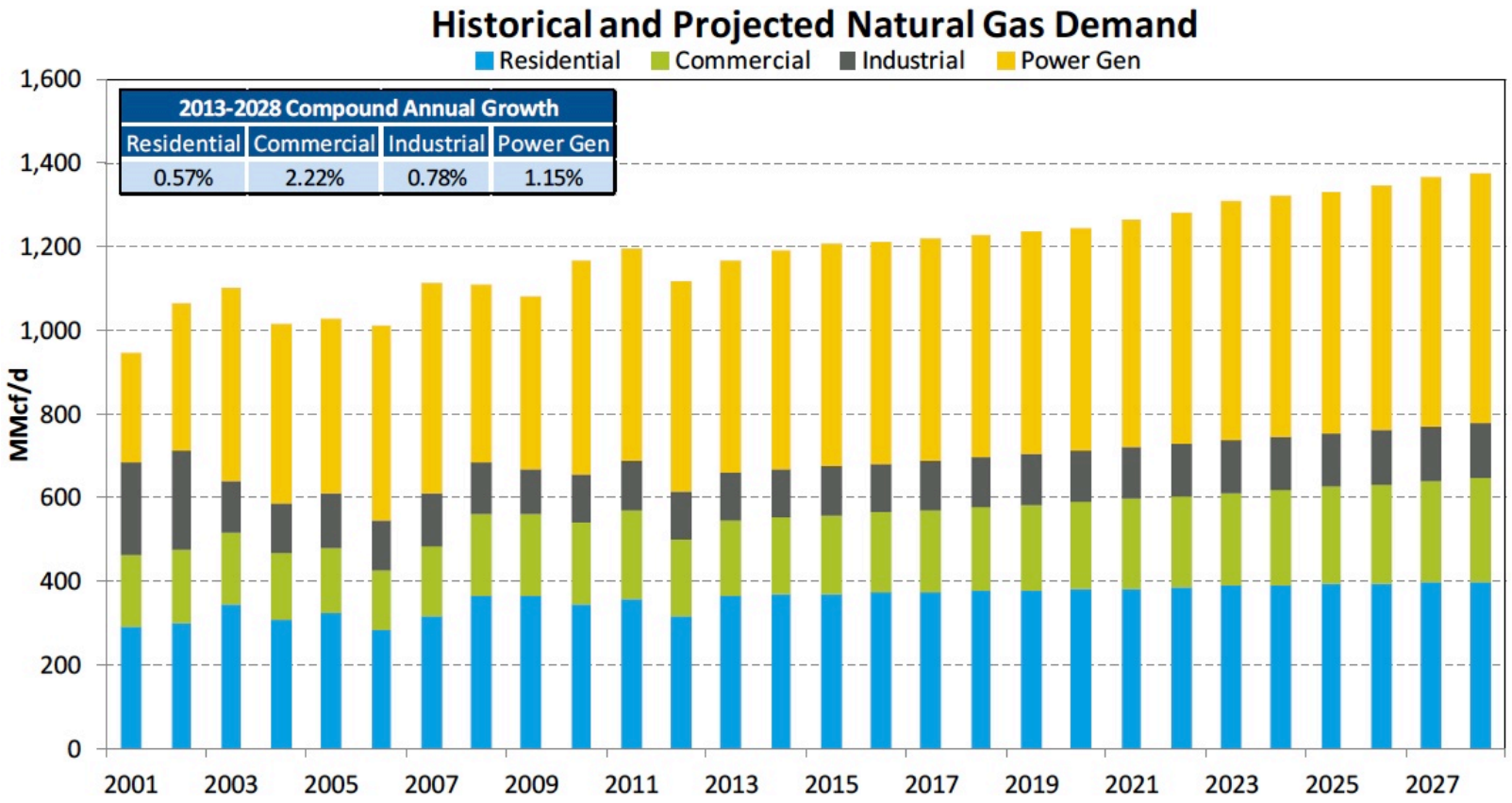


- Phase I: Black & Veatch concluded that the New England natural gas infrastructure will be increasingly under pressure from demand growth from the power sector
- In Phase II, Black & Veatch will:
  - Analyze historical gas demand in New England by sector
  - Project growth requirements by sector for the next 15 years
  - Summarize announced pipeline expansion projects and generic infrastructure options and provide high level cost estimates for infrastructure options
  - Identify demand and power side response
  - Identify scenarios and sensitivities for further analysis

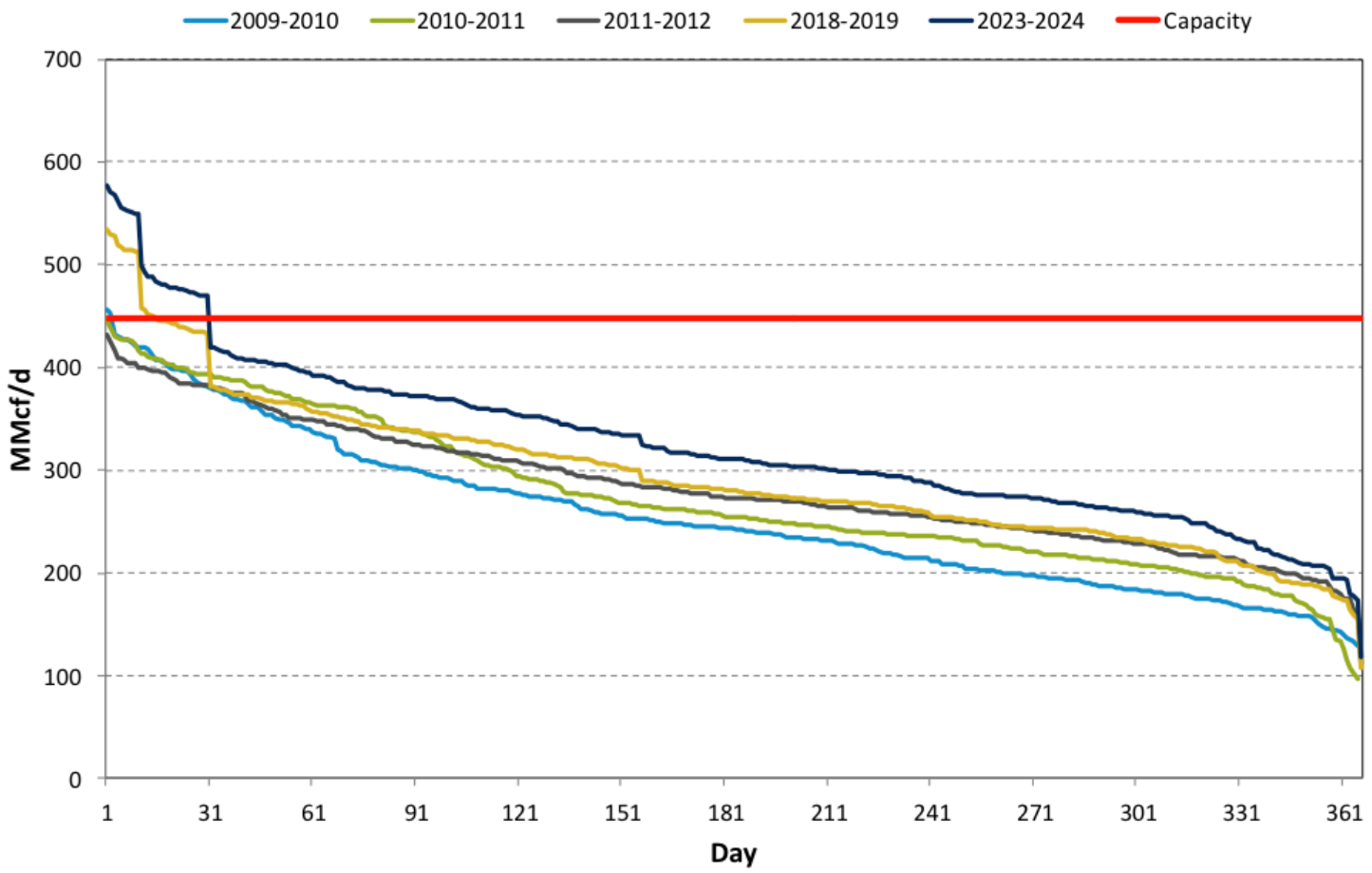
Phase II Progress

- Black & Veatch analyzed historical natural gas demand by sector in New England by State
- Residential, commercial and industrial gas demand are projected as determined by
  - Weather
  - Economic Growth
  - Population Growth
  - Efficiency Gains/Usage per Customer
  - Policy Initiatives
- Demand growth from the power generation sector is projected using a combination of production simulation model ProMod IV and fundamental natural gas model GPCM
  - Consistent fuel price from GPCM inputs into ProMod
  - Customized assumptions on technology costs, environmental policies, renewable resources, transmission, which were supported by industrial knowledge and project experience
- **Black & Veatch disaggregated gas demand into local demand centers to account for different infrastructure access**
- **Monthly and daily variation of gas demand is constructed to provide a comprehensive profile of demand requirements**

Forecast Demand



Analyze Congestion



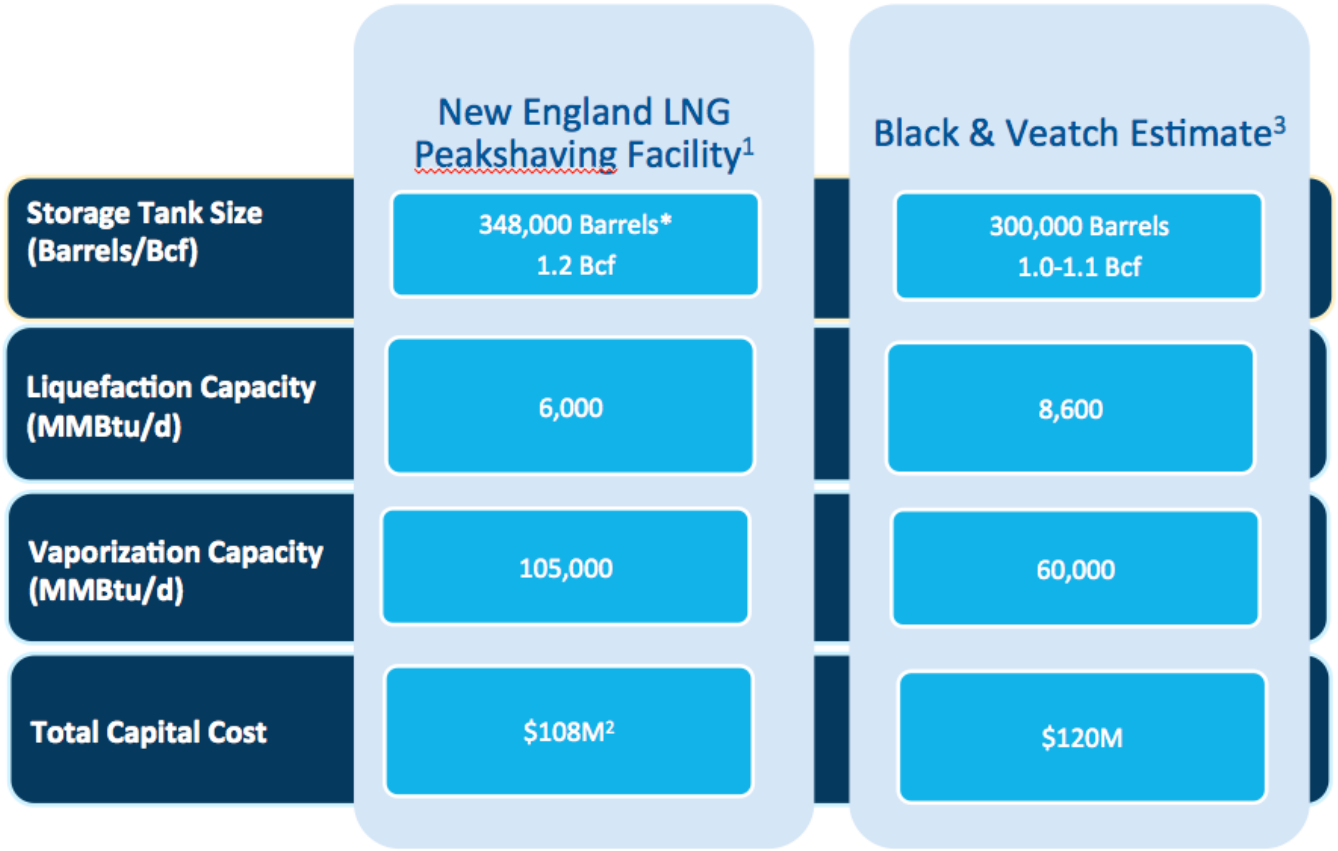
Estimate Costs

Pipeline Cost Estimates

Construction Type	Project	Mileage	Estimated Cost
Looped	Tennessee Gas Pipeline Northeast Expansion 200 Line Looping	145	$508 to $653
	Tennessee Gas Pipeline Connecticut Expansion[1]	13.3	$47 to $60
Lift and Replace	Algonquin Incremental Market Expansion	156	$861 to $1,017
Greenfield	Constitution Pipeline	121	$729 to $971
	Tennessee Gas Pipeline Northeast Expansion Bullet Line	150	$900 to $1,200

[1]Pipeline construction cost only. Excludes estimated cost of Thompsonville Lateral.

Estimate Costs (cont.)



[1] Yankee Gas, Waterbury Connecticut Facility
[2] Based on reported cost estimates in 2005
[3] Based on B&V EPC experience in North America

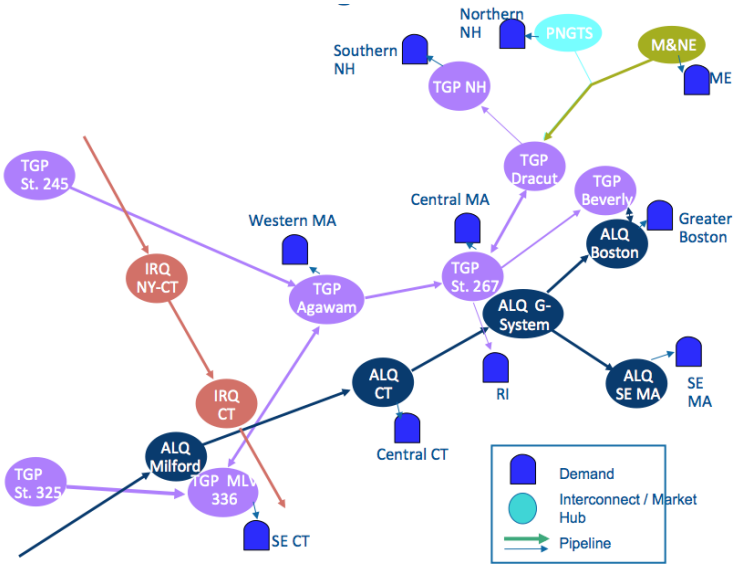
Phase II – Current Status

With Six States' Input, NESCOE is:

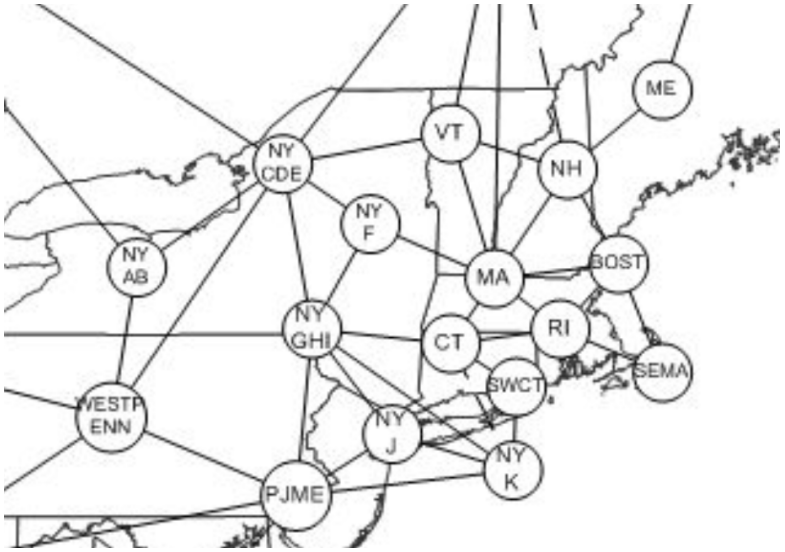
- Confirming Reasonableness of Historical & Projected Gas Demand by State
  - New England LDCs replied to request for company-specific projected demand with New England aggregate demand forecast used by ICF
  - States considering influence of policies, such as Connecticut's Comprehensive Energy Strategy
- Reviewing Compliance Assumptions used to Determine Plant Retirements & Additions
- Confirming Reasonableness of Plant Retirements & Additions in Model
- Confirming Reasonableness of NE Demand Regions with Region Load Duration Curves
- Reviewing Infrastructure Construction Cost Estimates Slides

Phase III - Estimate Benefits

Gas Market - GPCM



Electric Market – PROMOD



Study Limitations

- The study is designed to provided policymakers with economic analysis
  - It is not a plan
  - It will not simulate gas pressures or power flows – not a hydraulic model
- The study relies on simple representations of the natural gas pipeline network & of the electric transmission system
  - Computer models use city gates (gas) & load zones (electric) to develop prices
    - Forecasts of gas market prices are on a monthly basis.
    - Forecasts of electricity prices are on an hourly basis.
- Input assumptions & cost estimates are not facts
  - Fuel prices, whether & when generators may retire or expand, implications of environmental requirements & the extent to which states achieve policy objectives are subjective
  - Assumptions in this study are based on NESCOE's best judgment & Black & Veatch's industry knowledge & project experience

Next Steps

- Early March
  - States finalize input assumptions
  - BV concludes analysis of demand & gas pipeline network flow duration & develops potential scenarios & sensitivities for future testing
- Late March
  - States determine scenarios & sensitivities for further study
- Early April
  - Phase II Report issued
  - States decide whether to proceed with Phase III
- April to Summer (dependent on states' decision on Phase II)
  - BV performs computer modeling in Phase III
  - Phase III Final Report issued

Questions?

For additional information:

www.nescoe.com/Gas_Supply_Study.html

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