



**Liberty Utilities<sup>SM</sup>**

Docket No. DG 15-XXX  
Attachment WJC-1  
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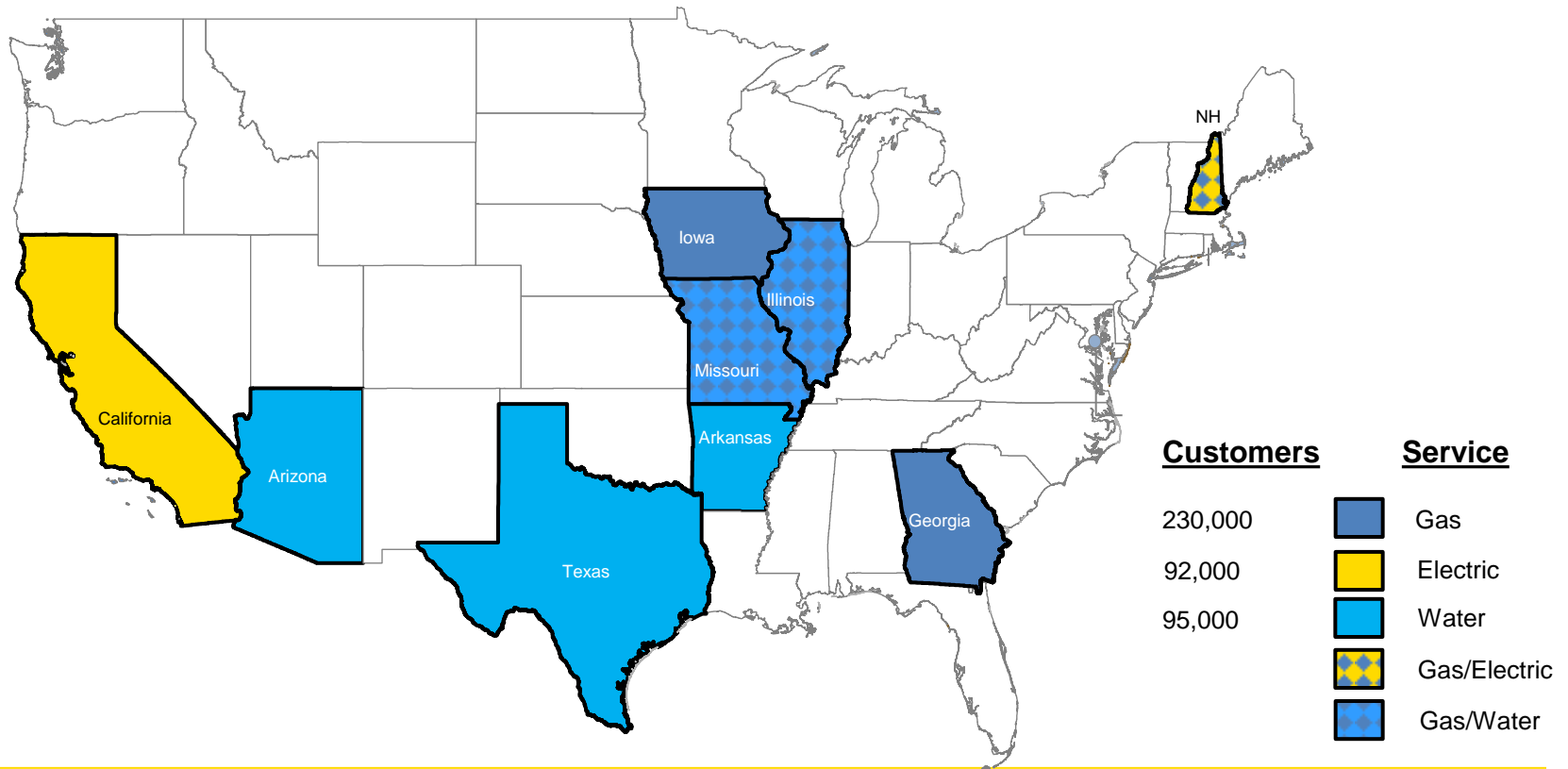
# **Pricing, Growth, Opportunity... The LDC Perspective**

**New Hampshire Business & Industry Association  
Annual Energy Seminar  
December 11, 2013**

**F. Chico DaFonte  
Sr. Director, Energy Procurement  
Liberty Utilities**

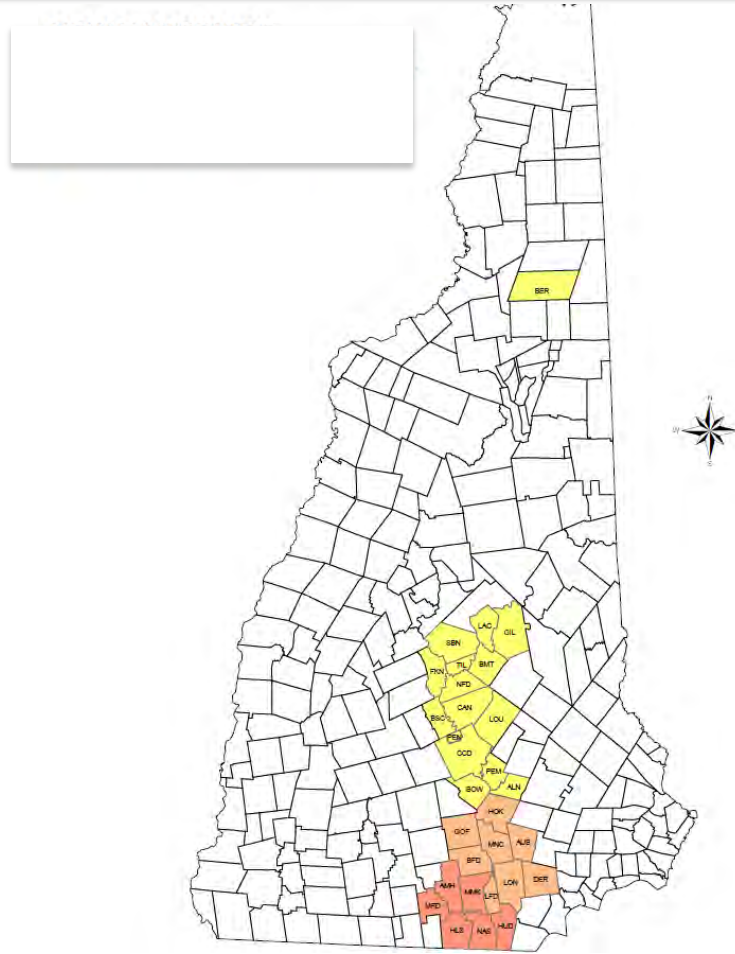
# About Liberty Utilities

- 29 gas, electric and water utilities across the U.S.
- Serving over 410,000 customers



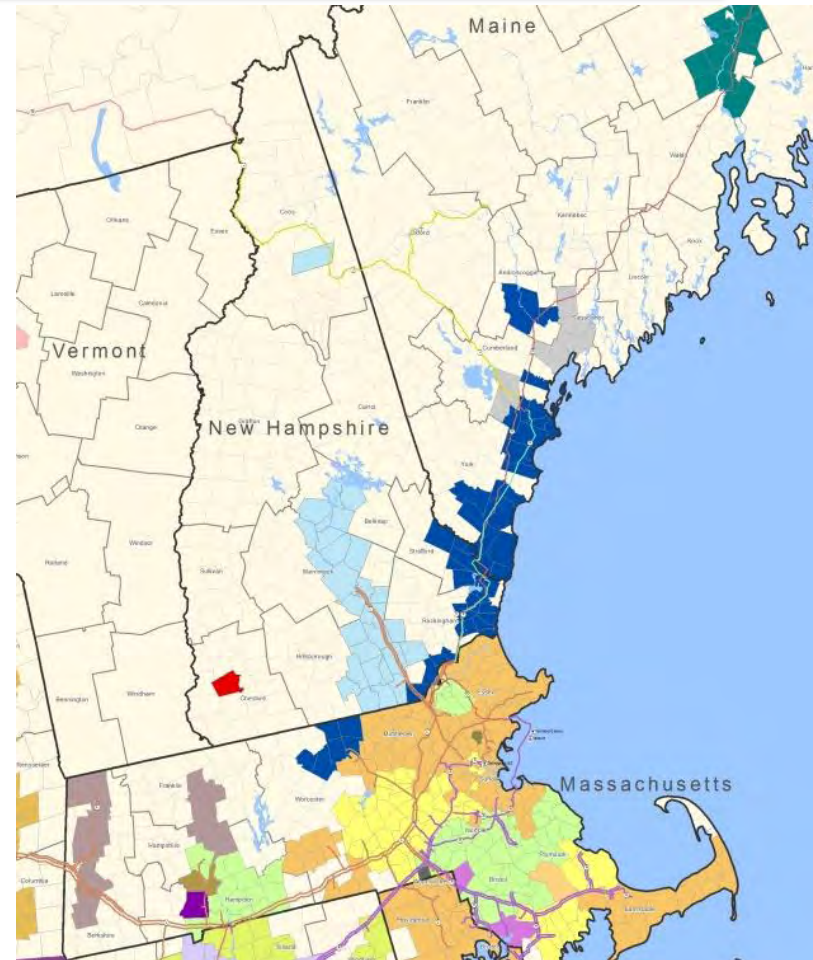
# EnergyNorth Natural Gas, Inc.

- Largest Liberty Utility
- Almost 90,000 Natural Gas Customers
- Footprint in southern to central NH
- Isolated system in Berlin
- Largest concentration of customers in Nashua and Manchester



# Pipeline Resources

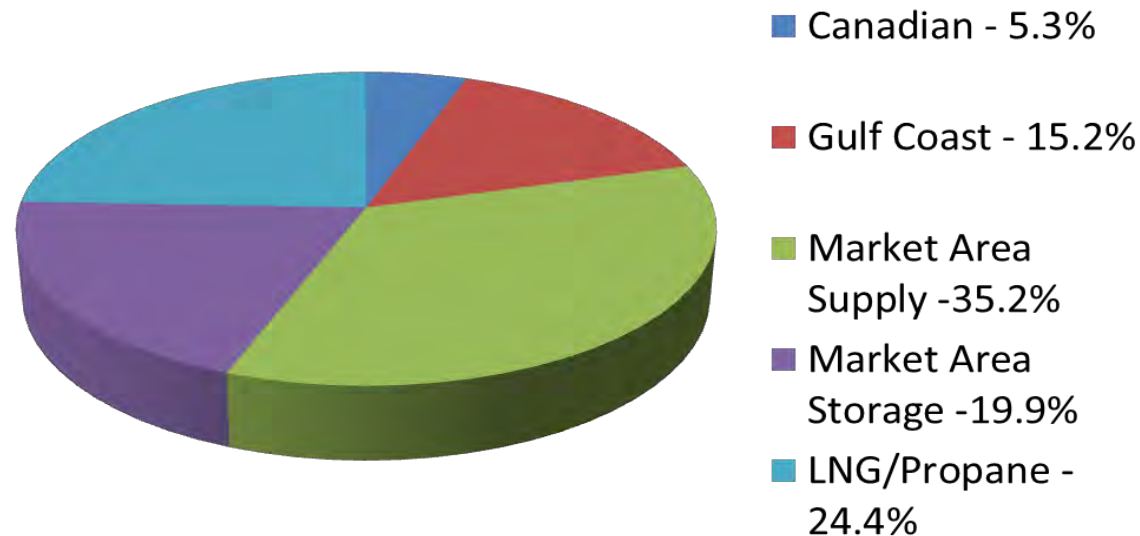
- Capacity on 7 interstate pipelines and 4 underground storage facilities
- 7 direct interconnects with Tennessee Gas Pipeline
- Single interconnect with PNGTS in Berlin
- Supplement pipeline gas with on-system LNG (3) and propane (3)



# Portfolio Diversity

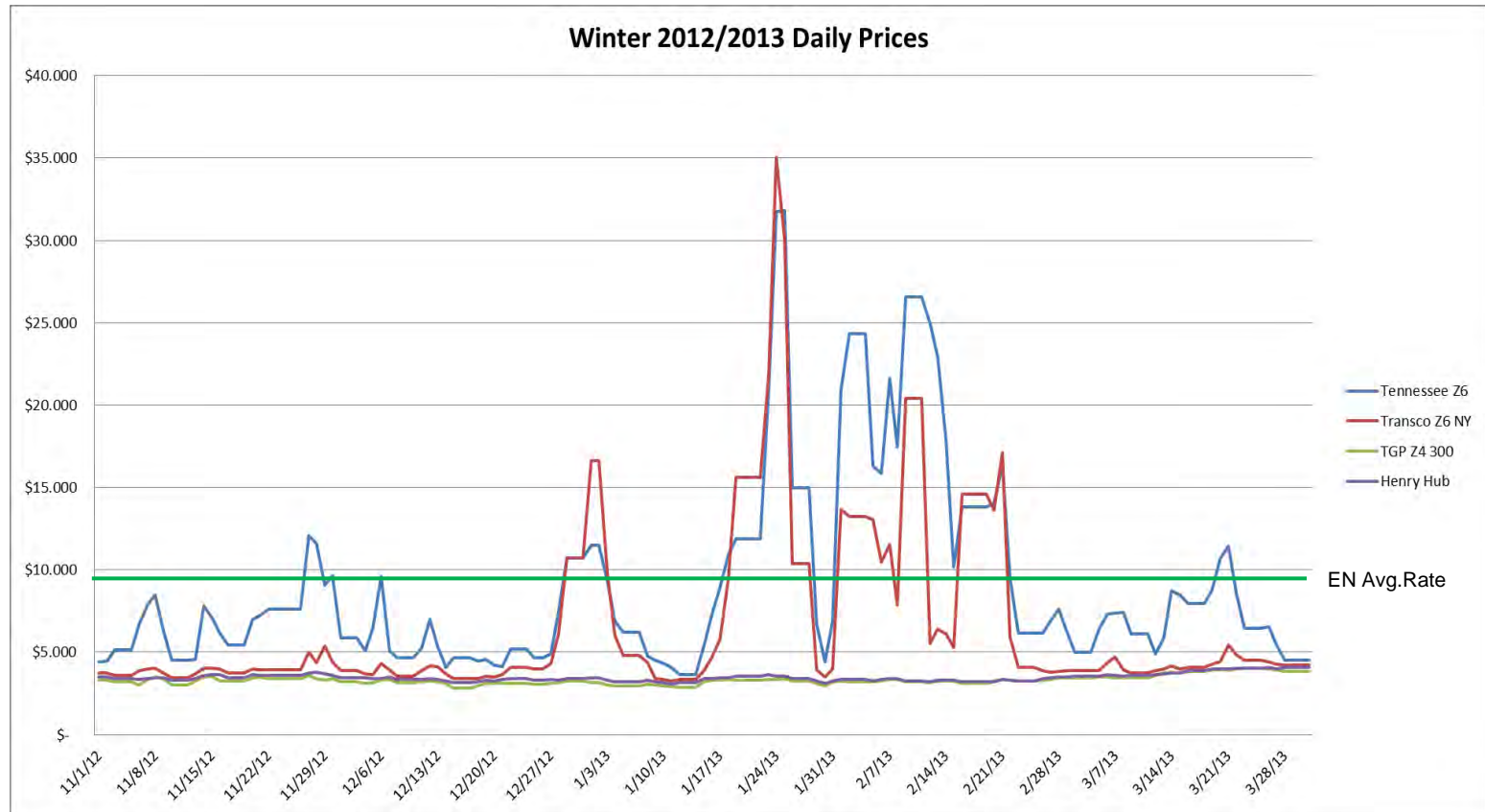
- Combination of pipeline, underground storage and on-system peaking resources
- Gulf, Marcellus, Canadian and Market Area purchase points

**EnergyNorth Design Day Resources  
2013-14**



# Pricing Diversity

Diversity of supply helps to minimize price spikes but...



...new pipeline infrastructure is long-term solution

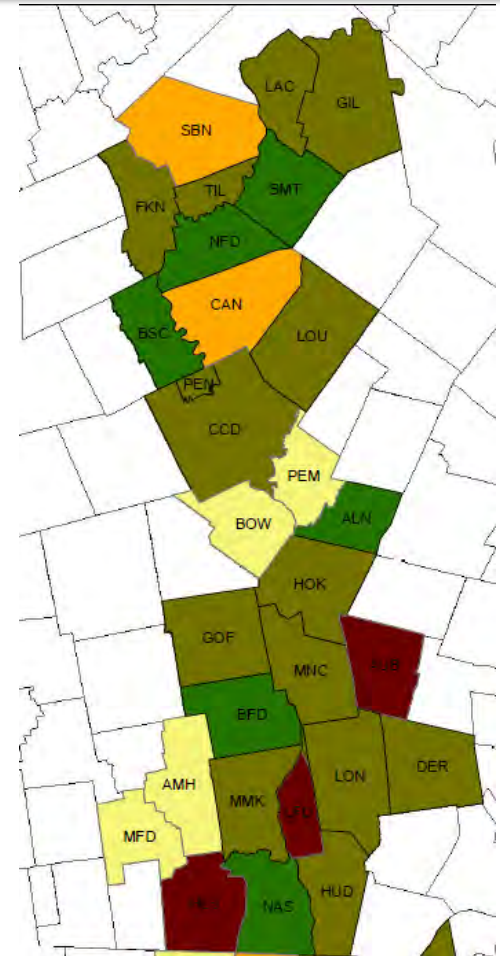
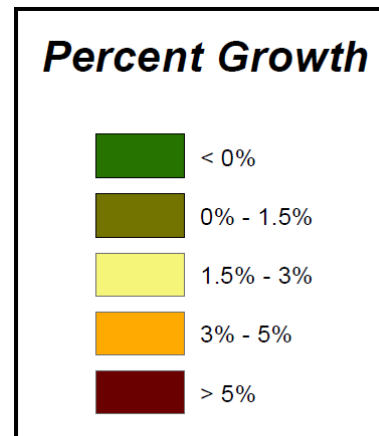
# Current Growth...Future Opportunity

## Opportunities

- 15,000 potential customers within 100 feet of gas main
- Over 80,000 potential customers more than 100 feet

## Challenges

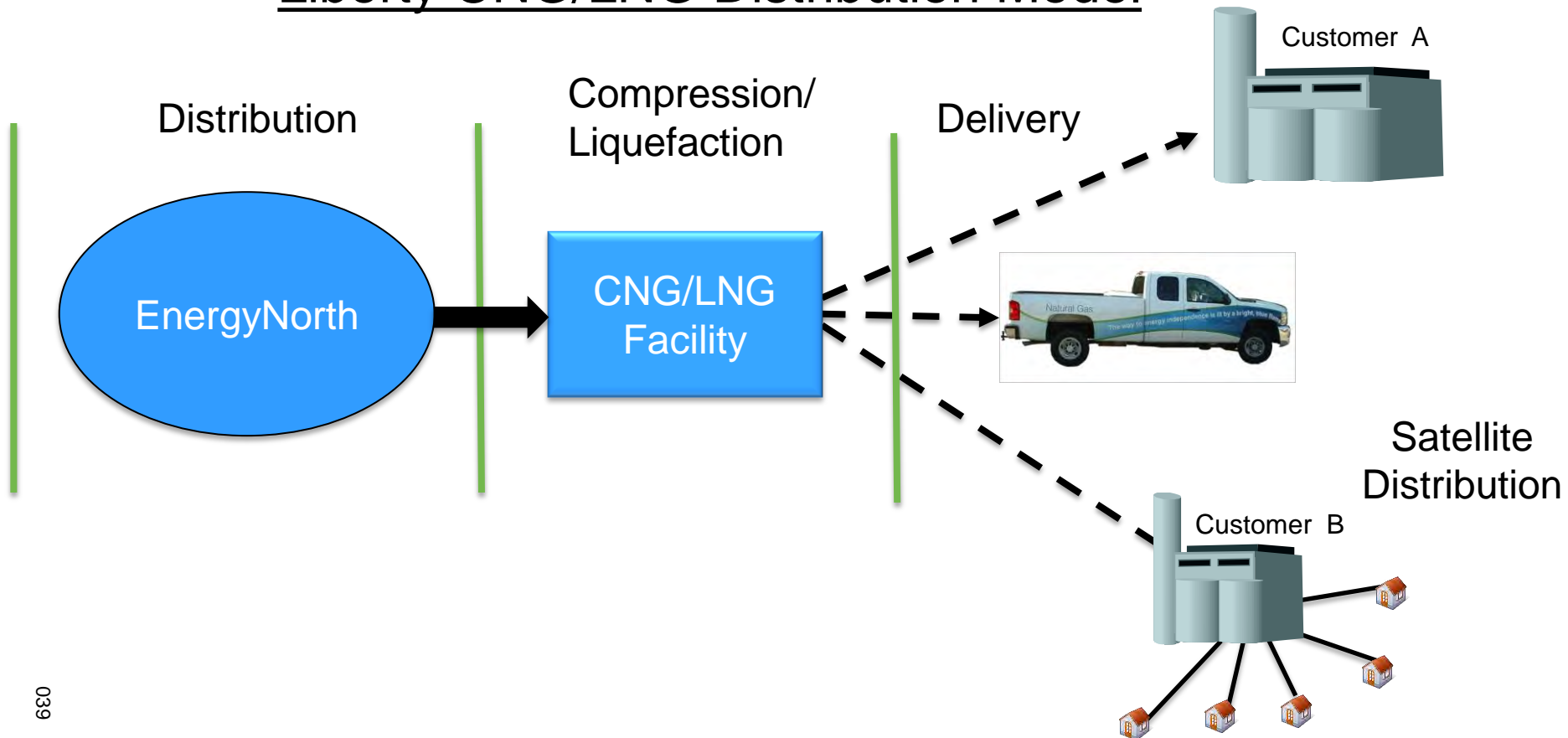
- Geology – *The Granite State*
- Geography - *Load Pockets*
- Costs – *Traditional Pipeline*





# Overcoming The Challenge

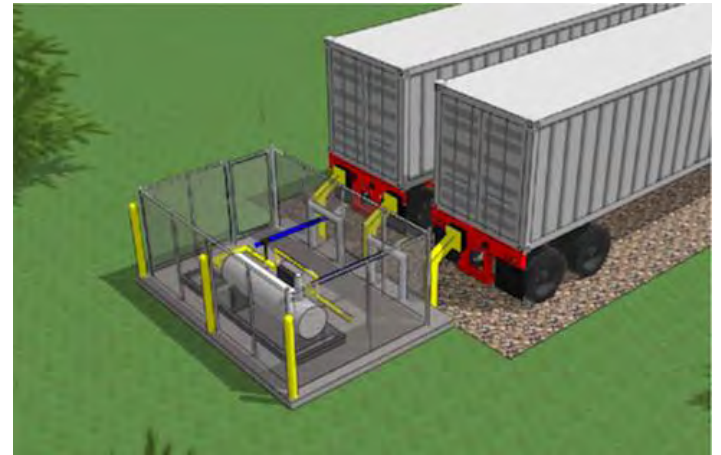
## Liberty CNG/LNG Distribution Model





# New England Leading The Way

- New England states are seeing increased delivery by truck of CNG and LNG to industrial facilities, paper mills, etc.
- Companies include:
  - NG Advantage
  - OsComp Systems
  - Irving Oil
  - AVSG
- Liberty working closely with several companies to develop and deliver natural gas services to those areas lacking natural gas pipeline infrastructure.

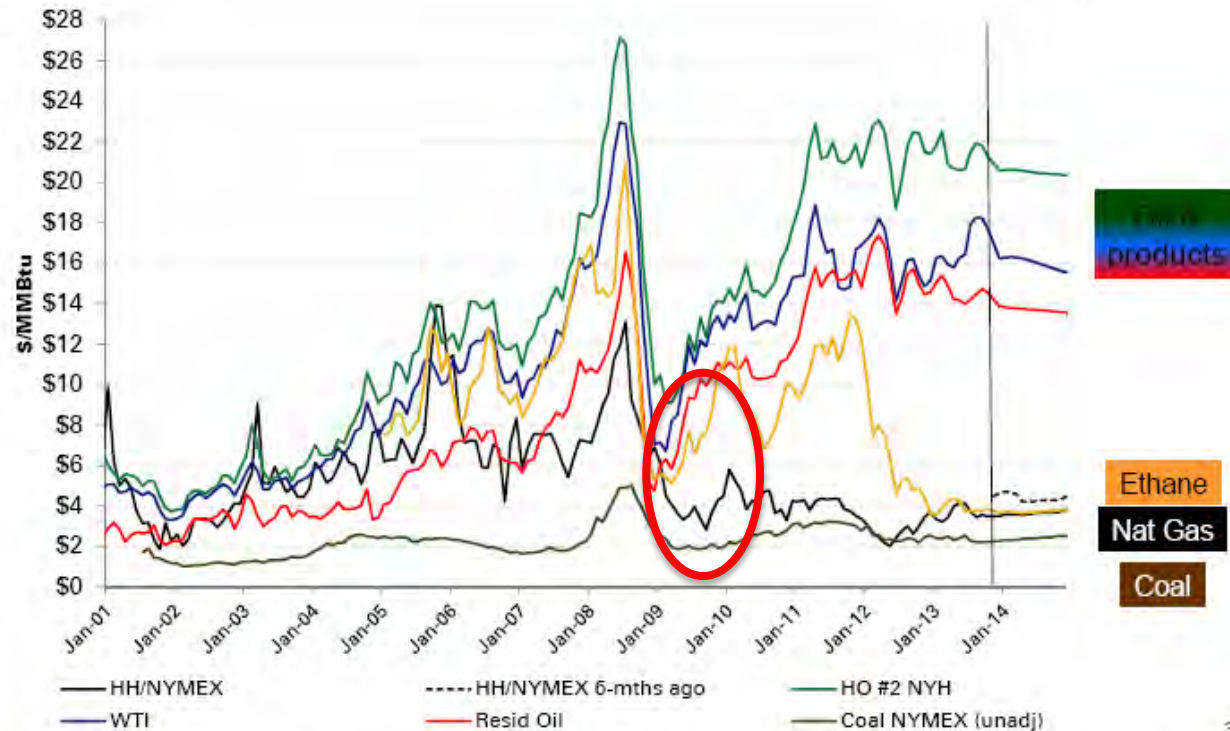


*Illustration: NG Advantage*

# Why Natural Gas Products?

- Natural gas decoupled from oil products in 2009
- Coincident with growth in Marcellus shale production
- Low natural gas prices are here to stay
  - Natural gas futures currently trading below \$5.00 until 2020

## North American Energy Prices



Source: Various, Nov 1, 2013



# The Economics Are Compelling

## CNG - Fueling

Input	Cost per DGE
Natural Gas	\$.56
Transport Costs & Fees	\$.19
Distribution Charges	\$.09
Maintenance per DGE	\$.26
Federal and State Taxes	\$.25
Fuel Card Fees per DGE	\$.05
Electricity Costs per DGE	\$.15
<b>CNG at the Pump</b>	<b>\$1.55</b>
Avg. Diesel Price	\$3.82

## LNG - Thermal

Input	Cost per MMBtu
Natural Gas	\$3.78
Transport Costs & Fees	\$1.50
Distribution Charges	\$.68
Delivered Cost to LNG Facility	\$6.58
Liquefaction Cost (w/Fuel at 15%)	\$3.25
Trucking (Mileage Based)	\$1.00
Vaporization cost	\$.50
<b>Total Delivered Cost</b>	<b>\$10.71</b>
Oil Equivalent per Dth	\$21.88
Propane Equivalent per Dth	\$17.57

042



# Questions?

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## Thank You!





**REQUEST FOR INDICATIVE BIDS  
TO PROVIDE COMPRESSED NATURAL GAS (CNG)  
AND/OR LIQUEFIED NATURAL GAS (LNG)  
“CNG/LNG” TO DARTMOUTH COLLEGE**

**Competitive Energy Services, LLC**

*File No. 3672.00  
January 16, 2014*

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Attachment A	LNG/CNG/Pipeline Conceptual Layout
Attachment B	LNG/CNG/Pipeline Conceptual Equipment Layout
Attachment C	Conceptual LNG/CNG/Pipeline Schematic
Attachment D	Simplified LNG/CNG/Pipeline Schematic

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## EXECUTIVE SUMMARY

Liberty Utilities (Liberty) is pleased to provide a response to this request for indicative bids for supply of natural gas to Dartmouth College.

A key component of Liberty's comprehensive growth strategy is focused on the development of satellite natural gas distribution systems to serve areas of New Hampshire that are currently stranded from existing gas pipelines and where extension of the pipeline infrastructure is uneconomical for both Liberty and the customer. Our satellite LDC strategy for the Hanover/Lebanon region is to serve not only Dartmouth College, but also the residential and commercial loads of downtown Hanover, Centerra Business Park, and, in the fullness of time, the Dartmouth Hitchcock Medical Center. A longer term portion of our strategy is to continually expand the system after the initial build-out is complete in an effort to bring low cost natural gas to more customers in the Hanover region beyond the downtown center. Our fuel supply plan for satellite LDCs is to use a combination of LNG and CNG with each supplied to a central operations facility that will have the LNG storage and vaporization equipment and the CNG decompression equipment. The central operations center is intended to be located in low density industrial zones to minimize the impact of trucking and noise. A critical element of our expansion plan is to allow new natural gas customers to become full utility customers of Liberty Utilities and benefit from our obligation to serve, fuel procurement services, 24-hour customer care center, energy efficiency programs, and other services that are traditionally provided by a regulated utility.

Liberty's mission is to provide a reliable and cost-efficient supply of natural gas and other energy services to meet the current and future needs of our customers. We maintain gas rates and charges at as low a level as possible consistent with safety and supply reliability. Further, we recognize and embrace our responsibility to serve our customers promptly and courteously. Liberty recognizes its special, regulated role as the provider of energy services vital to the well-being of residential consumers and to the economic success of commercial and industrial customers.

Liberty seeks to fulfill our civic and charitable responsibilities, to enhance the vitality of our service area, to maintain our role as a leading corporate citizen in the community, with an outstanding reputation for integrity and public spiritedness. Finally, in all our efforts, we will conduct ourselves and our business in accordance with the highest ethical principles.

Liberty currently serves approximately 90,000 natural gas customers in New Hampshire. Our pipeline resources include:

- Capacity on seven (7) interstate pipelines and four (4) underground storage facilities
- Seven (7) direct interconnects with Tennessee Gas Pipeline's New Hampshire transmission system.
- A single interconnect with PNGTS in Berlin, NH.
- Three (3) LNG peak shaving facilities and three (3) propane/air peak shaving facilities.



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With respect to Section 4 Products and Services Requested of the Request for Indicative Bids (RIB), we offer the following responses.

#### **A. FUEL SUPPLY**

With respect to facility location, Liberty is planning to design, procure and construct an LNG/CNG station at a centralized off campus location which will allow Liberty to serve Dartmouth College, residential, and business customers in the Hanover/Lebanon area. This facility will also have the capacity to be expanded to accommodate a CNG vehicle refueling station that could be utilized by the Dartmouth fleet along with local business and private vehicles.

Please see the attached drawings which provide conceptual overviews of the satellite natural gas distribution system. It is anticipated that LNG will be the primary source of natural gas supplemented by CNG dependent on pricing and system demand dynamics.

The following bullet points outline Liberty's approach to fuel supply:

- **LNG:** Liberty is planning to install, own and operate an LNG vaporization facility to be sited at an off campus location. Liberty will procure and arrange delivery from regional LNG providers utilizing industry leading hedging strategies.
- **CNG:** Liberty is planning to install, own and operate a CNG decompression station within the same satellite facility. Dependent on market and weather conditions as well as distribution system demands, Liberty will utilize the delivery of CNG as a supplement to the primary LNG fuel source.
- **Distribution Piping:** Liberty will install, own, and operate approximately 4 miles of HDPE piping that will supply the natural gas to Dartmouth College as well as Liberty's other local customers. Liberty will be responsible for the installation of all underground supply service piping along with the installation of the gas meter.
- **Liberty will generate monthly bills reflecting actual usage by the customers subject to any applicable New Hampshire Public Utilities tariff.**
- **Expedited LNG Service:** In an effort to expedite the fuel switch to natural gas, Liberty suggests that consideration be given to serving a portion of Dartmouth College's fuel requirements with natural gas supplied from a portable LNG vaporization system. This option could be implemented while construction of the permanent LNG/CNG facility and associated piping infrastructure is underway. A similar system is currently being utilized successfully at the University of Massachusetts -Amherst. LNG storage can be accomplished by the use of LNG trailers and a direct-fired portable water bath vaporizer. This option could be implemented within a 3 month

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time frame with respect to securitization of the LNG commodity, equipment and required permits.

## **B. SERVICE PERIOD**

We understand that the RIB is stipulating 5 and 10 year contract terms. Liberty will offer standard terms and conditions for firm service that it provides all its regulated customers.

## **C. COST/BID STRUCTURE**

A unique advantage of being served by a regulated natural gas utility is a mandated focus of providing a reliable and cost effective supply of fuel. Since Liberty will manage all elements contained in the cost/bid structure presented, Liberty is offering an indicative price range of [REDACTED] per MMBTU.

## **D. FUEL AVAILABILITY**

Liberty would be constructing a regulated satellite natural gas distribution system. As a regulated gas utility Liberty would be subject to existing NHPUC storage requirements. As such, no interruption of service is anticipated.

## **E. CNG/LNG TRAILERS**

As part of Liberty's fuel procurement process the delivery of LNG and CNG from all available sources to the facility will be coordinated by Liberty.

## **F. LEAD TIME**

Liberty would welcome a discussion with Dartmouth College so that a timeline for the conversion can be built into Liberty's proposed expansion strategy for the Hanover/Lebanon region. Nonetheless, a fall of 2016 in-service date for expedited LNG service or CNG service is achievable while the broader distribution system is built-out.

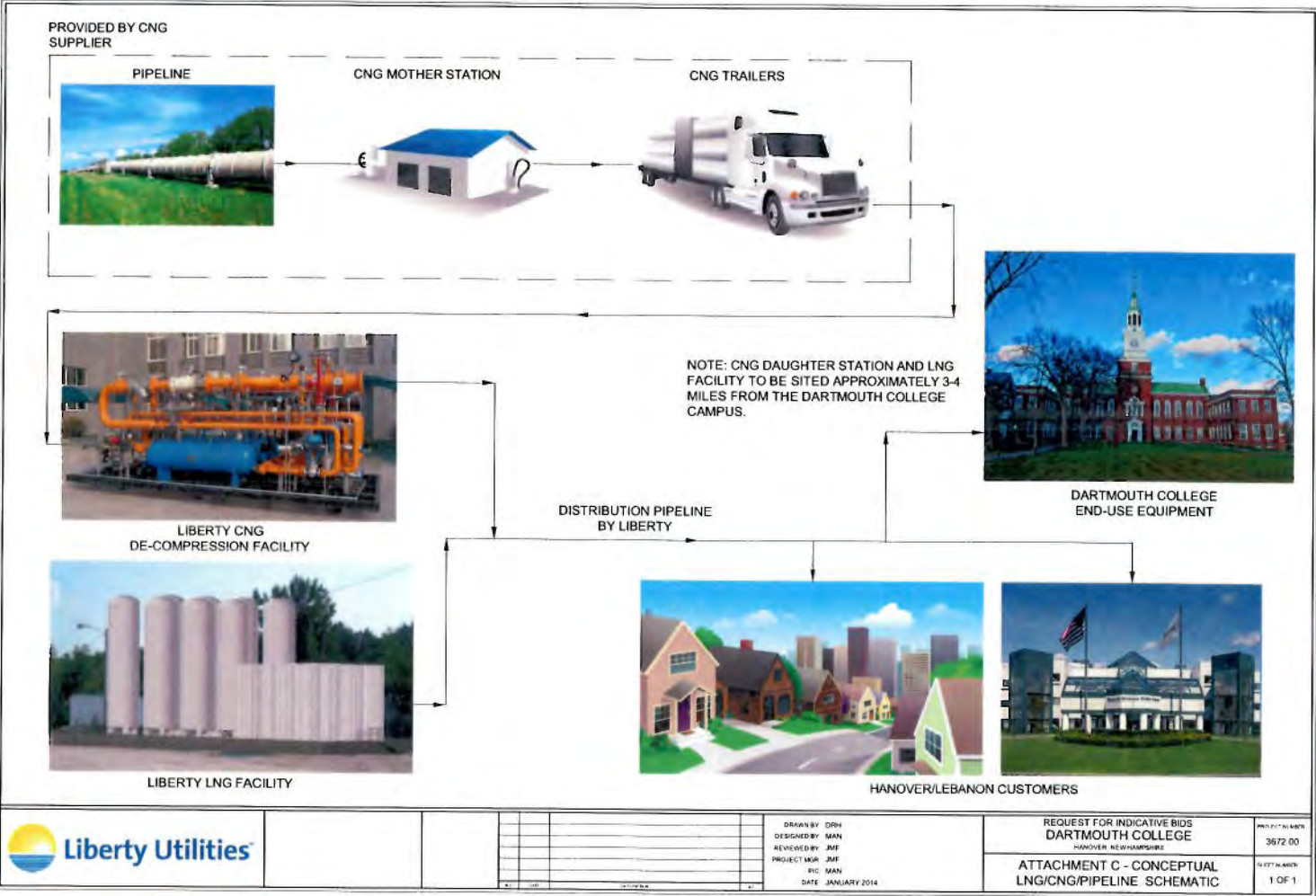
## **G. UNLOADING SITE**

Please refer to Section A above.

## **H. CONTRACT TERMS**

Please refer to Section B above.

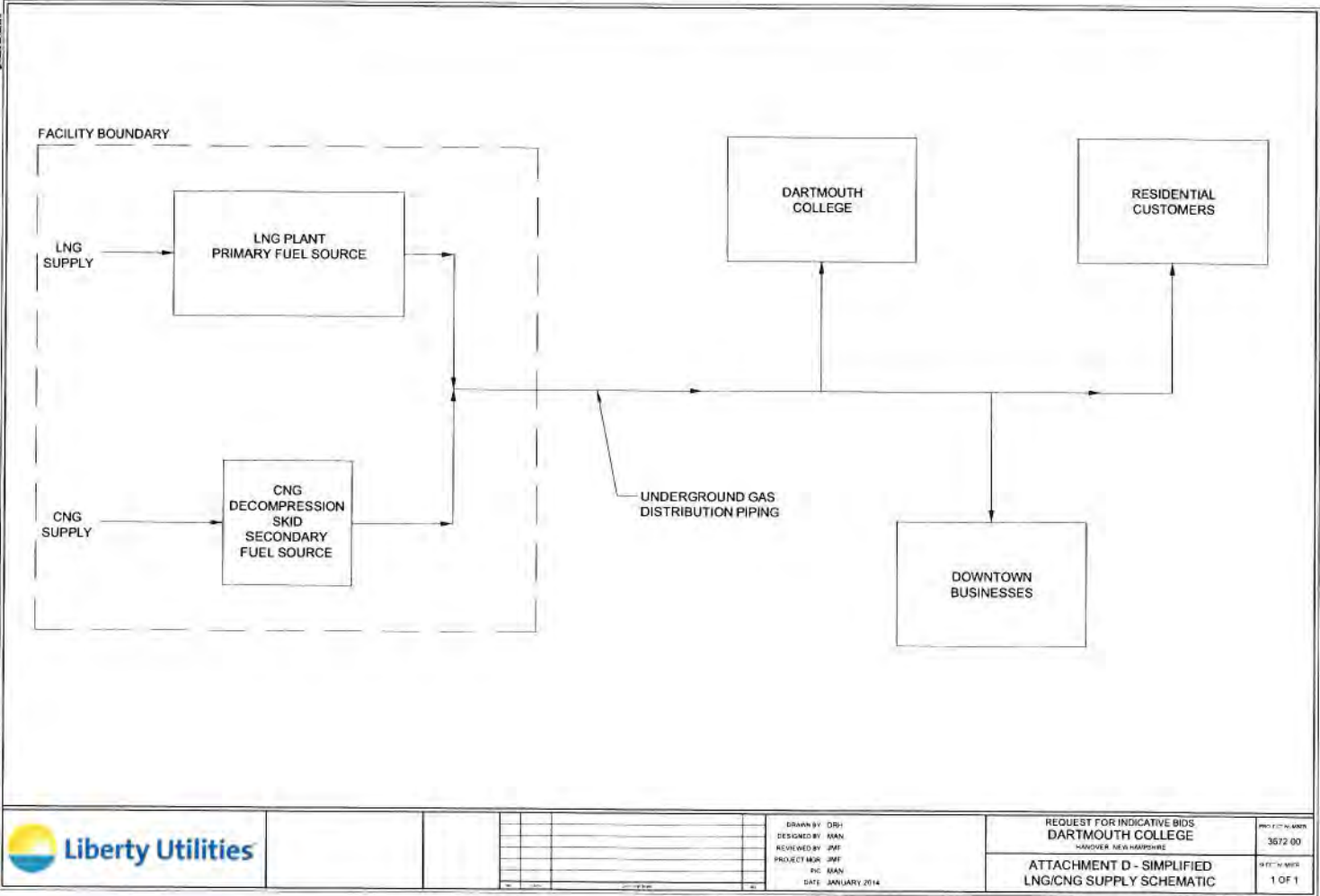
**ATTACHMENT C**  
**CONCEPTUAL LNG/CNG/PIPELINE SCHEMATIC**



**ATTACHMENT D**

**SIMPLIFIED LNG/CNG/PIPELINE SCHEMATIC**

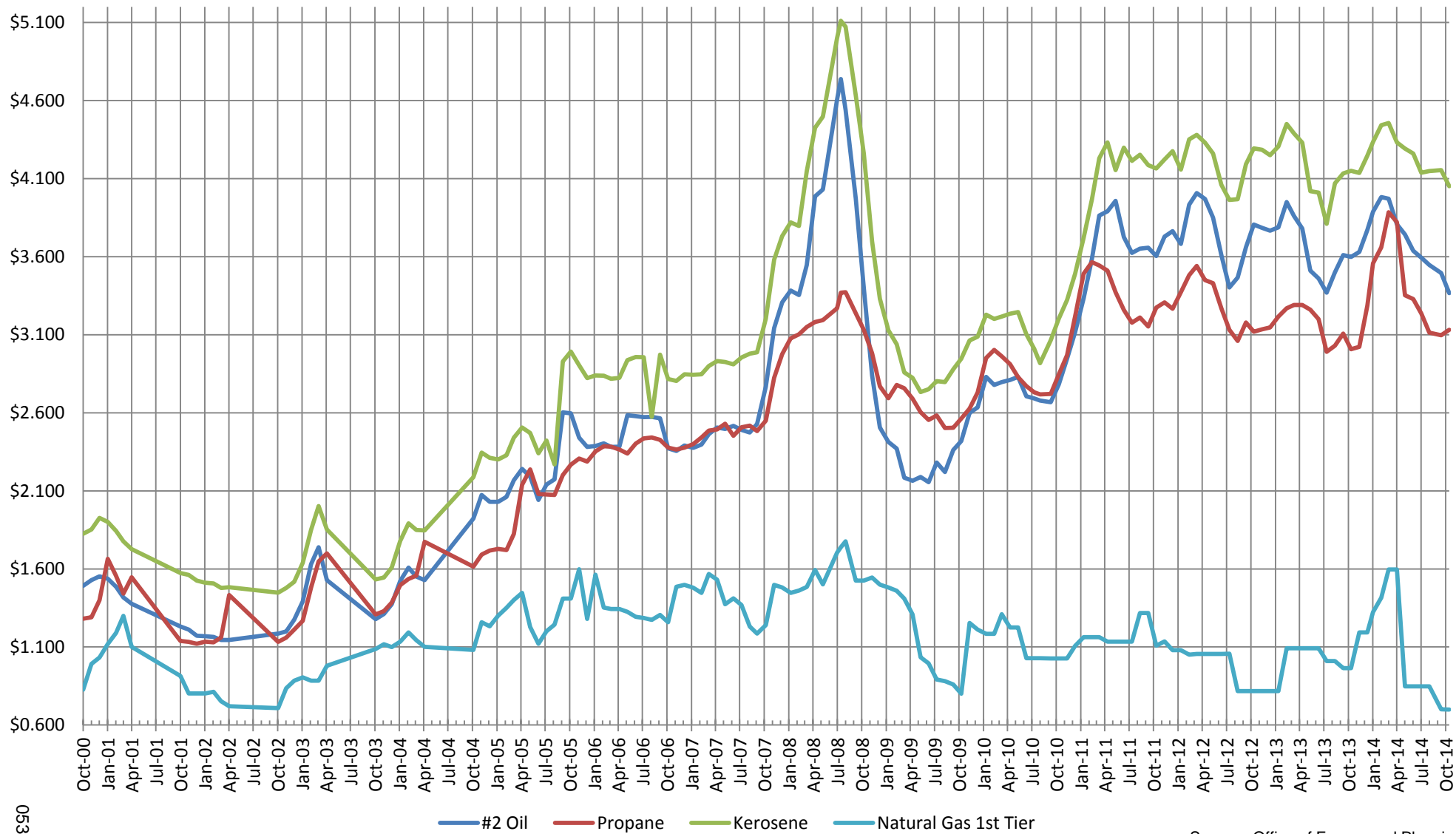




## New Hampshire 14 Year Heating Fuel Price Trend; October 2000 - September 2014

### Actual Prices per Gallon or Therm

Prices surveyed on Mondays October - April; starting in 2005, prices also surveyed on first Mondays in remaining months



Source: Office of Energy and Planning



# Industrial Plant LNG Fuel Conversion

## Case Study

**Company:** Kleen Laundry and Dry Cleaning Services, Inc.

**Business:** Commercial Laundry

**Location:** Lebanon, NH

**2011 Fuel Consumption:** 830,000 gallons of Propane

**Conversion Date:** February 2012



### Background

Kleen, Inc. is a commercial laundry processing the linens for 26 hospitals, nursing homes and clinics in New Hampshire, Vermont and Maine. Since 1996, Kleen, Inc. had burned propane as its primary fuel for their boilers and dryers. The unpredictability of propane prices and the high cost of propane led Kleen, Inc. to investigate other fuel options. Kleen, Inc. looked very closely at a biomass system in 2009 before deciding that the biomass system did not meet all of their goals. Kleen, Inc. continued to investigate other options and started to look at liquefied natural gas (LNG) in December of 2010. After fully vetting LNG and visiting multiple LNG installations, Kleen, Inc. decided that a conversion to LNG met all of their goals.

### Process

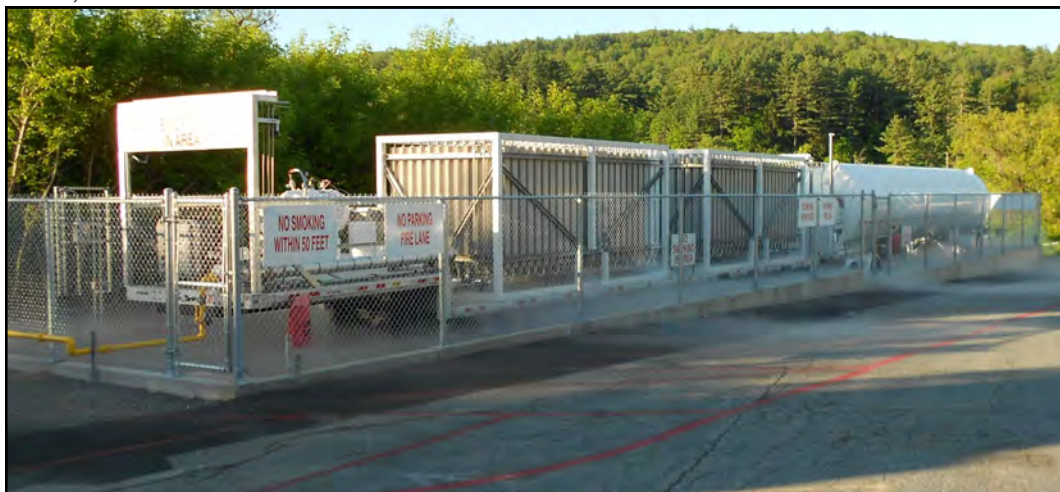
After receiving proposals from multiple LNG suppliers, Kleen, Inc. awarded their installation and fuel supply business to Prometheus Energy of Houston, TX. Prometheus Energy provided the design and engineering for the project, and worked with the city of Lebanon, NH, in the permitting and approval process. Prometheus Energy structured a turnkey solution, coordinating the complete installation from delivery of equipment, to site work, and commissioning. Prometheus Energy worked closely with Kleen, Inc. on the conversion of the fuel consuming equipment, providing technical expertise and advice throughout the entire conversion process. The fuel system includes the LNG storage tank, gas vaporization equipment and gas distribution system.

### Results

The savings resulting from the fuel conversion have been impressive. Below are the fuel costs for the months of April and May 2011 vs. the fuel costs for April and May 2012.

April/May 2011	April/May 2012	Difference	% Difference
\$155,120	\$103,126	\$51,994	33.5%

*Kleen, Inc.'s LNG Installation*



*In addition to the cost savings, Kleen, Inc. is also experiencing a 10% lower level of CO<sub>2</sub> greenhouse gas emissions.*

*"Prometheus Energy's expertise and experienced team enabled the success of this project"*  
—Greg Gosselin,  
President of Kleen, Inc.

## **Liberty Utilities New Hampshire Award Summary**

**01/08/2015**

- The 2012 AGA Safety Achievement Award for achieving the lowest reportable motor vehicle accident rate among combination companies.
- LU NH was awarded by EPA the EnergyStar Sustained Excellence Award in 2013 & 2014.
- LU NH was awarded by EPA the EnergyStar Partner of the Year Award for implementation of the EnergyStar Homes program in 2013 & 2014.
- LU NH was awarded by EPA the EnergyStar Partner of the Year Award for implementation of the Home Performance with Energy Star program in 2013.
- LU NH was awarded by EPA the EnergyStar Housing Leadership Award in 2013.

Same information in table format

<b>Recognition</b>	<b>Year</b>	<b>Organization</b>	<b>Comment</b>
Energy Star Partner of the Year for implementation of the EnergyStar Homes program	2013 & 2014	EPA	<ul style="list-style-type: none"> <li>• For achieving highest number of ENERGY STAR Certified new construction homes that exceeded the local and state code requirements.</li> </ul>
EnergyStar Sustained Excellence Award	2013 & 2014	EPA	<ul style="list-style-type: none"> <li>• Recognizing our exemplary marketing of the ENERGY STAR program.</li> <li>• We had to submit a list of our branding activities on the ENERGY STAR program.</li> </ul>
EnergyStar Partner of the Year Award for implementation of the Home Performance with Energy Star program	2013	EPA	<ul style="list-style-type: none"> <li>• For achieving highest number of ENERGY STAR Certified retrofit projects that exceeded the local and state code requirements.</li> </ul>
EnergyStar Housing Leadership Award	2013	EPA	<ul style="list-style-type: none"> <li>• For demonstrating superior dedication and results in all aspects of the ENERGY STAR program.</li> </ul>
AGA Safety Achievement Award	2012	American Gas Association	<ul style="list-style-type: none"> <li>• Lowest reportable motor vehicle accident rate among combination companies.</li> </ul>

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