

# Pivotal LNG



# **Pivotal LNG – Natural Gas Fuel for Heavy Duty Trucks**

**David Jaskolski**  
**Senior Account Manager**  
**April 2013**

# Forward Looking Statements

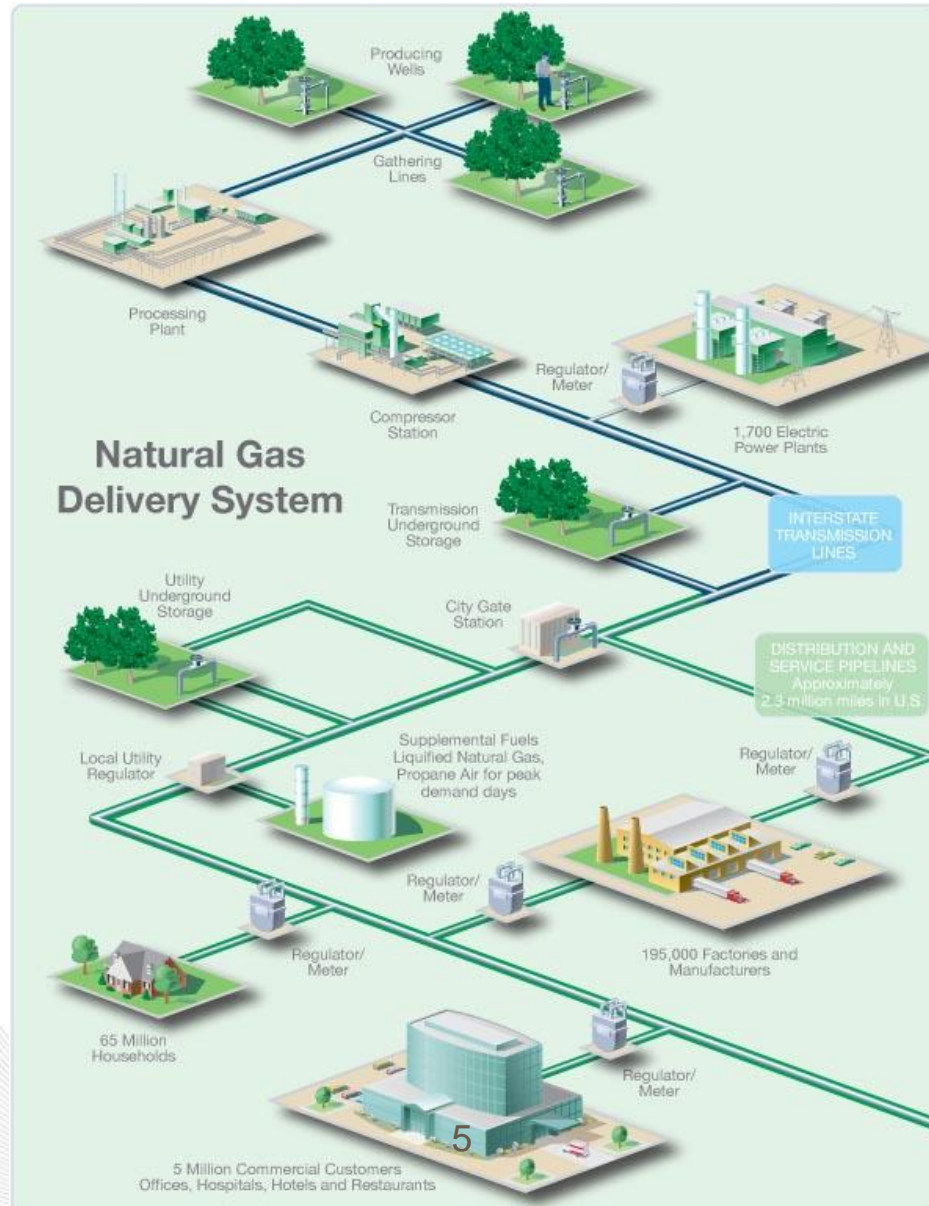
**Forward-Looking Statements** Certain expectations and projections regarding our future performance referenced in this presentation, in other reports or statements we file with the SEC or otherwise release to the public, and on our website, are forward-looking statements. Senior officers and other employees may also make verbal statements to analysts, investors, regulators, the media and others that are forward-looking. Forward-looking statements involve matters that are not historical facts, such as statements regarding our future operations, prospects, strategies, financial condition, economic performance (including growth and earnings), industry conditions and demand for our products and services. Because these statements involve anticipated events or conditions, forward-looking statements often include words such as "anticipate," "assume," "believe," "can," "could," "estimate," "expect," "forecast," "future," "goal," "indicate," "intend," "may," "outlook," "plan," "potential," "predict," "project," "seek," "should," "target," "would," or similar expressions. Forward-looking statements contained in this presentation include, without limitation, statements regarding future earnings per share, segment EBIT and related guidance, capital expenditures, impact of bonus depreciation, pension and OPEB expenses, growth of our retail services business, dividend growth, contracted capacity rates, expected increase in natural gas power generation, expected storage rollout schedule and value and our opportunities and priorities for 2013. Our expectations are not guarantees and are based on currently available competitive, financial and economic data along with our operating plans. While we believe our expectations are reasonable in view of the currently available information, our expectations are subject to future events, risks and uncertainties, and there are several factors - many beyond our control - that could cause results to differ significantly from our expectations. Such events, risks and uncertainties include, but are not limited to, changes in price, supply and demand for natural gas and related products; the impact of changes in state and federal legislation and regulation, including changes related to climate change; actions taken by government agencies on rates and other matters, including regulatory approval of new partnerships; concentration of credit risk; utility and energy industry consolidation; the impact on cost and timeliness of construction projects by government and other approvals; development project delays; adequacy of supply of diversified vendors; unexpected change in project costs, including the cost of funds to finance these projects; the impact of acquisitions and divestitures, including the Nicor merger; limits on natural gas pipeline capacity; direct or indirect effects on our business, financial condition or liquidity resulting from a change in our credit ratings or the credit ratings of our counterparties or competitors; interest rate fluctuations; financial market conditions, including disruptions in the capital markets and lending environment and the current economic uncertainty; general economic conditions; uncertainties about environmental issues and the related impact of such issues; the impact of changes in weather, including climate change, on the temperature-sensitive portions of our business; the impact of natural disasters such as hurricanes on the supply and price of natural gas; the outcome of litigation; acts of war or terrorism; and other factors which are provided in detail in our filings with the Securities and Exchange Commission. Forward-looking statements are only as of the date they are made, and we do not undertake to update these statements to reflect subsequent changes.



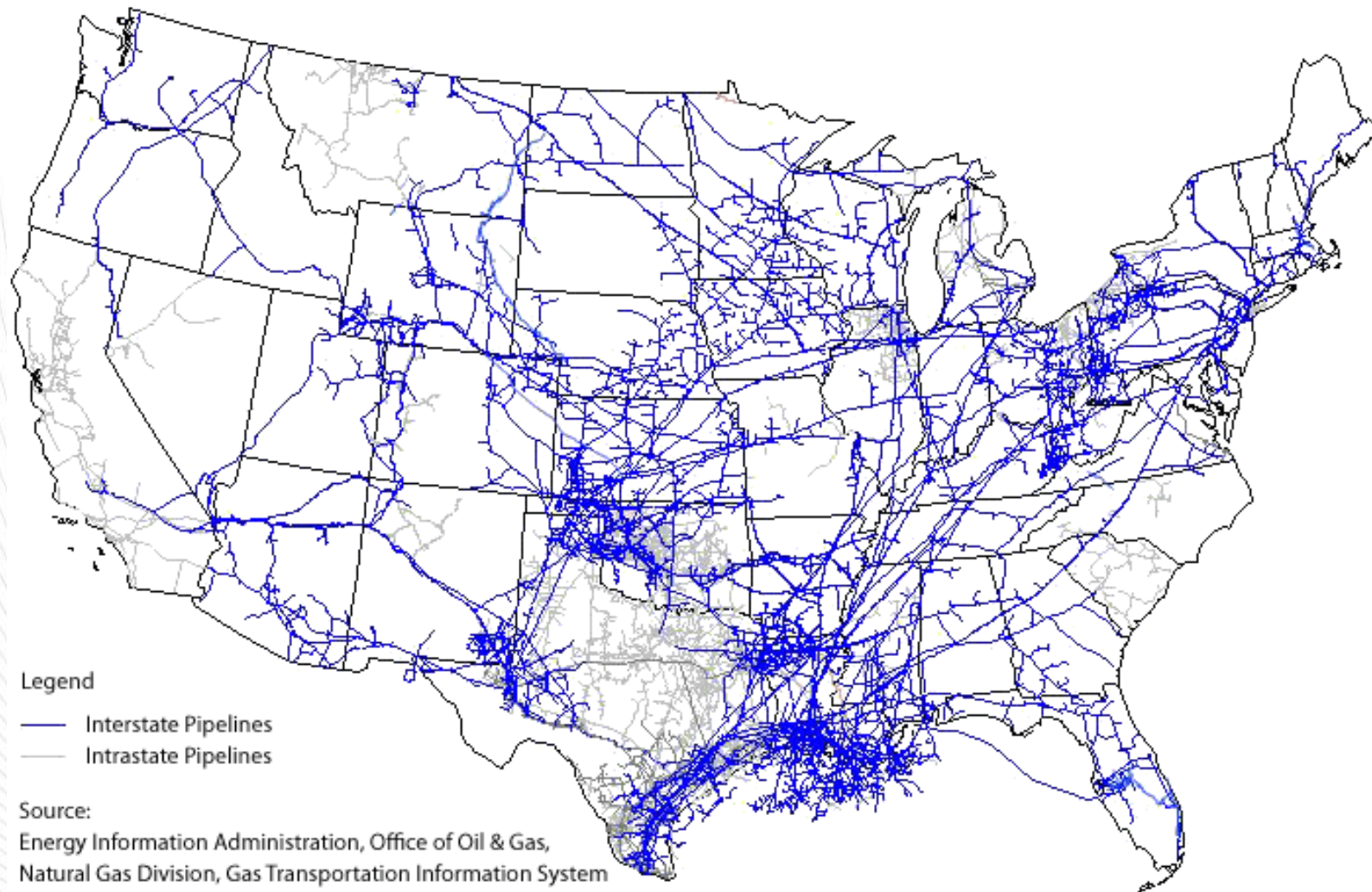
# Pivotal LNG is an AGL Resources company

- Pivotal LNG is a wholly owned subsidiary of AGL Resources. We own and operate liquefaction facilities and sell LNG as a substitute fuel for transportation and other mechanical uses
- AGL Resources has safely served customers with safe, efficient, reliable natural gas for more than 150 years. Today, we continue to build upon our reputation as a leader in the natural gas industry. Based in Atlanta GA, we serve 4.5 million customers in 7 states.
- AGL Resources business segments consist of natural gas distribution operations, retail operations, wholesale services, midstream operations and cargo shipping. We are traded publicly on the New York Stock Exchange (NYSE - GAS)

# Natural Gas Delivery System

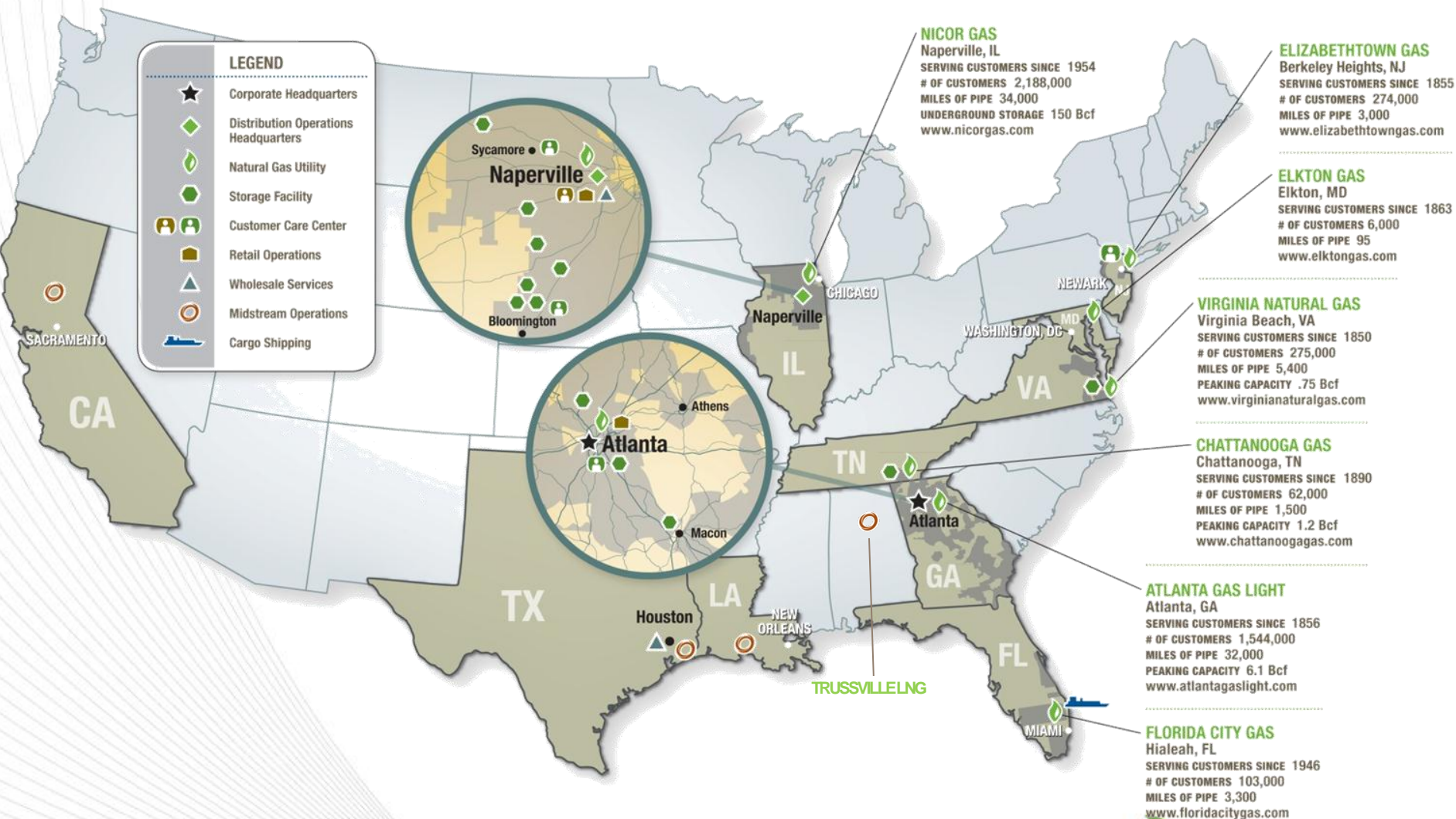


# U.S. Natural Gas Pipeline Network

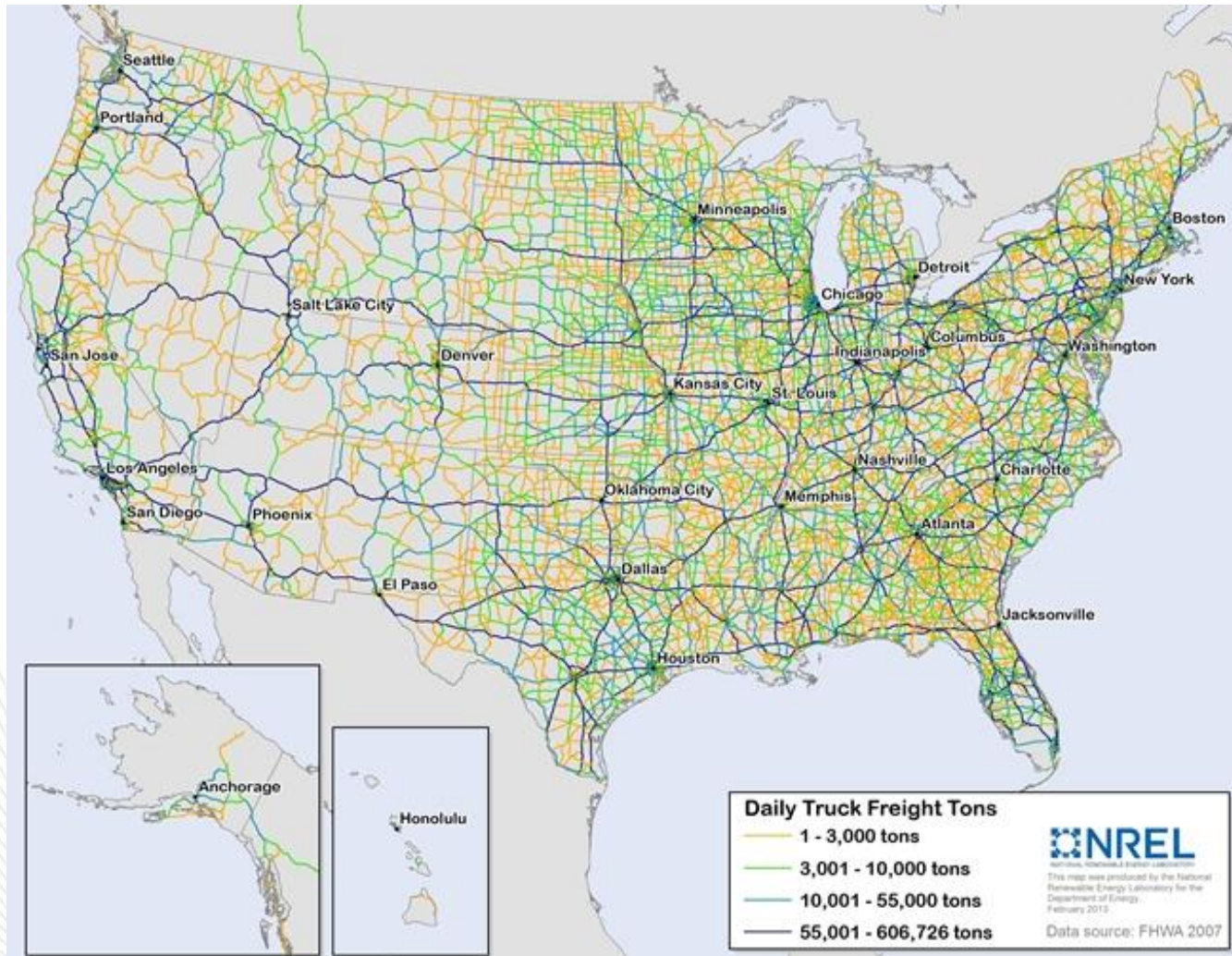




# AGL Resources' Footprint

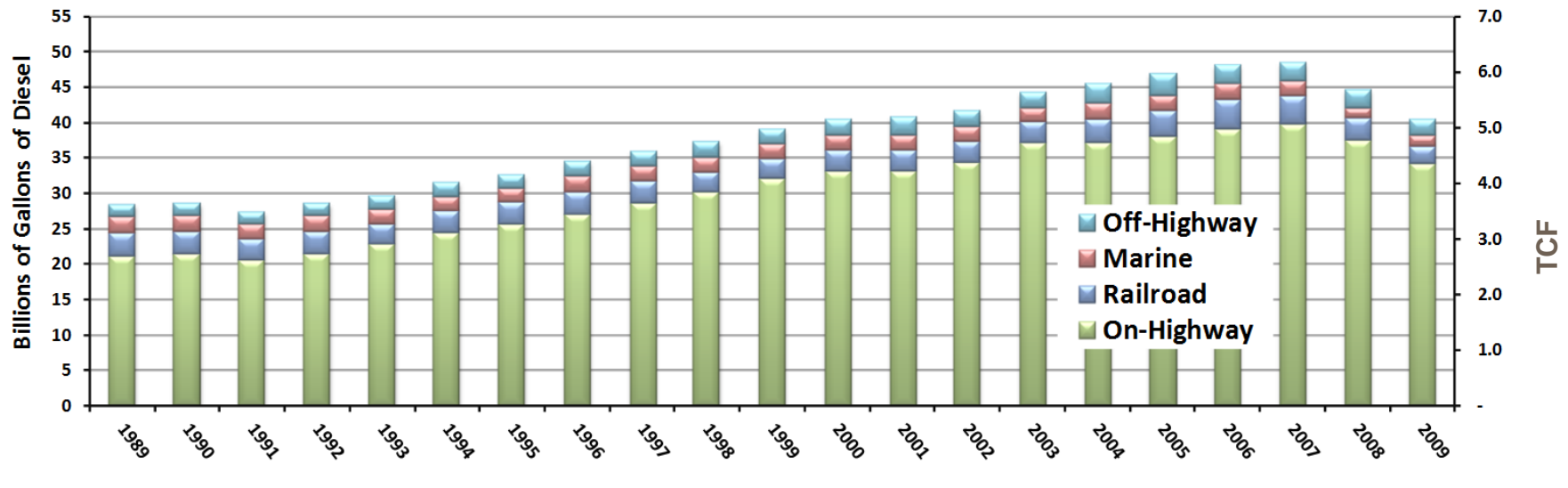


# Daily Truck Freight Tons

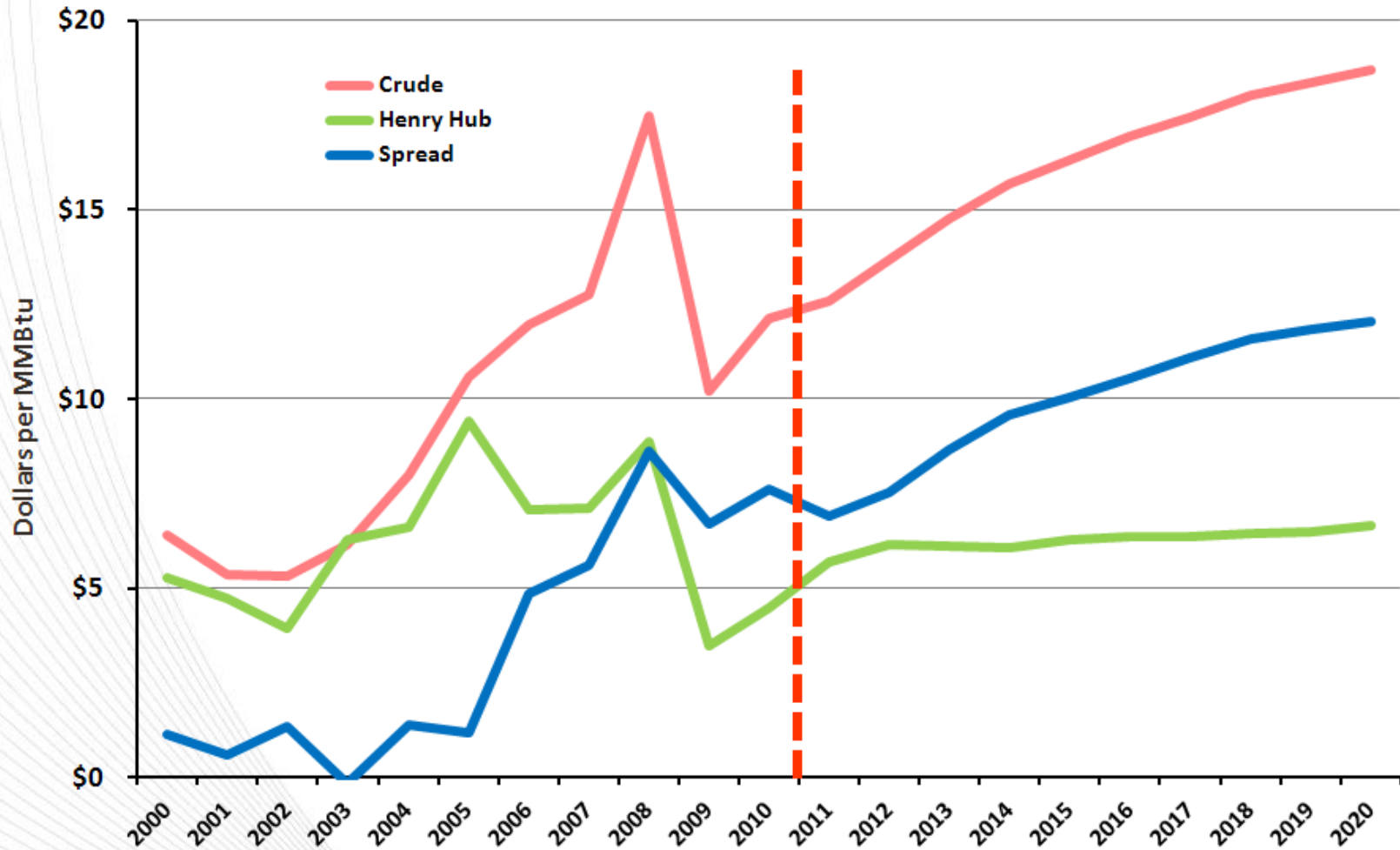




# Energy Demand in the Transportation Market

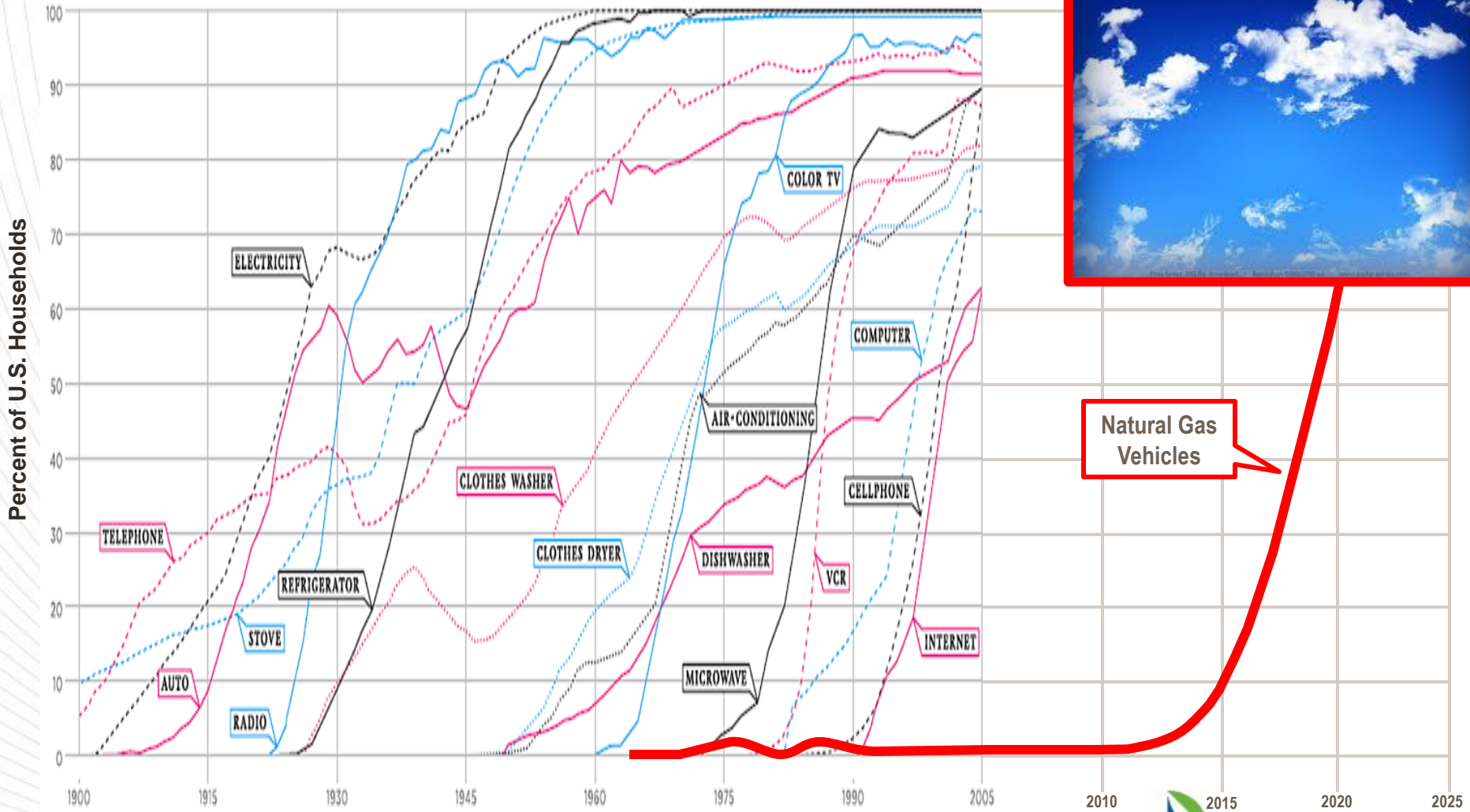


# What is driving natural gas into the transportation market?



Source: EIA 2011 AEO

# The Sky is the Limit



Natural Gas Vehicles

• Source: Felton, Nicholas. "Consumption Spreads Faster Today." New York Times. February 2008.



# What are the natural gas options for a fleet?

**Compressed Natural Gas (CNG & LCNG)** – A good choice for light and medium duty vehicles where

- Fuel consumption is low (less than 65 gallons a day)
- Space for numerous tanks is available on the vehicle
- Vehicle weight is not important
- Wheelbase does not have to be kept to a minimum
- The time to refuel is not a concern, such as vehicles that can refuel overnight
- Vehicles that may sit idle for long periods

Buses and refuse trucks often fuel with CNG

# What are the natural gas options for a fleet ?

**Liquefied Natural Gas (LNG)** – A good choice when:

- Fuel consumption is high (65 gallons or more a day)
- Maximum available range is needed
- Vehicle weight needs to be at a minimum
- The wheelbase needs to be kept as short as possible
- The time to refuel is an important consideration
- The fleet may have both LNG and CNG vehicles at one location (L-CNG)

Class 8 tractor trailers are usually good candidates for LNG

## What is LNG?

LNG is the same natural gas you use at home cooled in an industrial process to -260 degrees at which point the natural gas turns from a gas vapor to a liquid

One of the primary advantages to LNG as a fuel is its high energy to volume ratio. 1 cubic foot of LNG is equal to 600 cubic feet of natural gas.

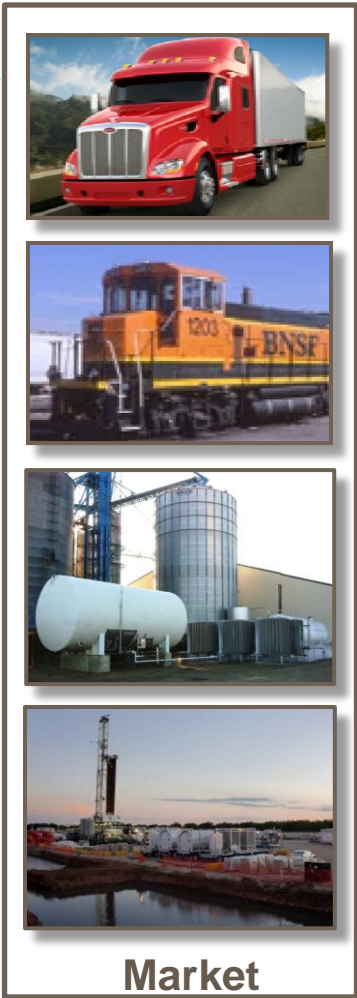
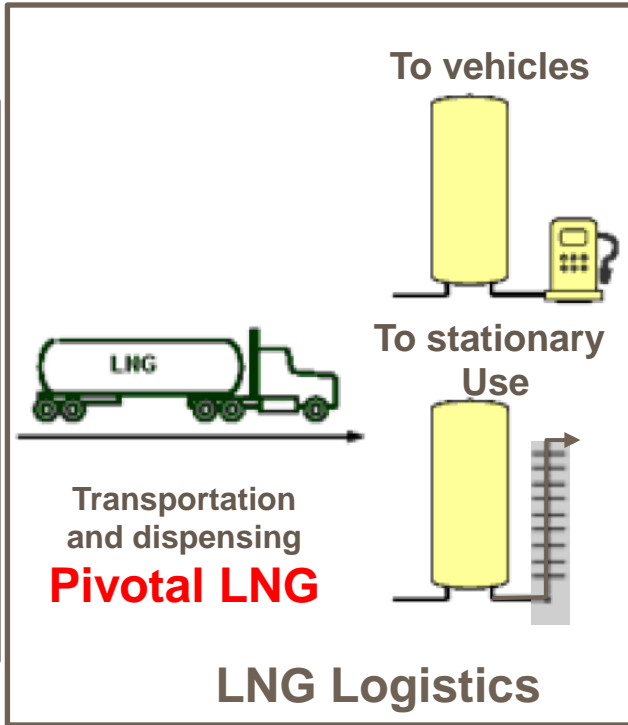
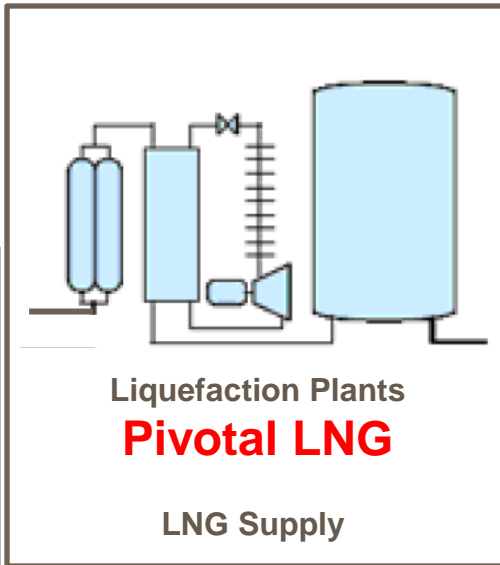
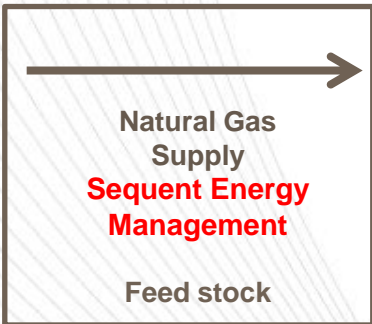
1.7 gallons of LNG has the same energy value as 1 gallon of diesel fuel and is considered a diesel gallon equivalent (DGE)

LNG is sold in diesel gallon equivalents (DGE) for the transportation markets.



# AGL in the LNG Value Chain

## AGL Companies Serving the Market



# AGLR LNG Experience

Own and operate 5 LNG facilities

First facility placed in service over 40 years ago

AGLR is currently the largest producer of LNG in the country with the ability to convert 45 MMcf/d to 540,000 gallons of LNG per day

The most ideal location for the production of incremental LNG supplies to serve the substitute fuel market is at an existing LNG facility

Over the past 40 years AGLR has safely loaded over 7,000 tanker loads of LNG

AGLR has developed siting, permitting, design, engineering, construction and operations expertise

Expertise is directly applicable to expanding Trussville or siting new facilities



Trussville



Chattanooga



Cherokee



Riverdale



Macon

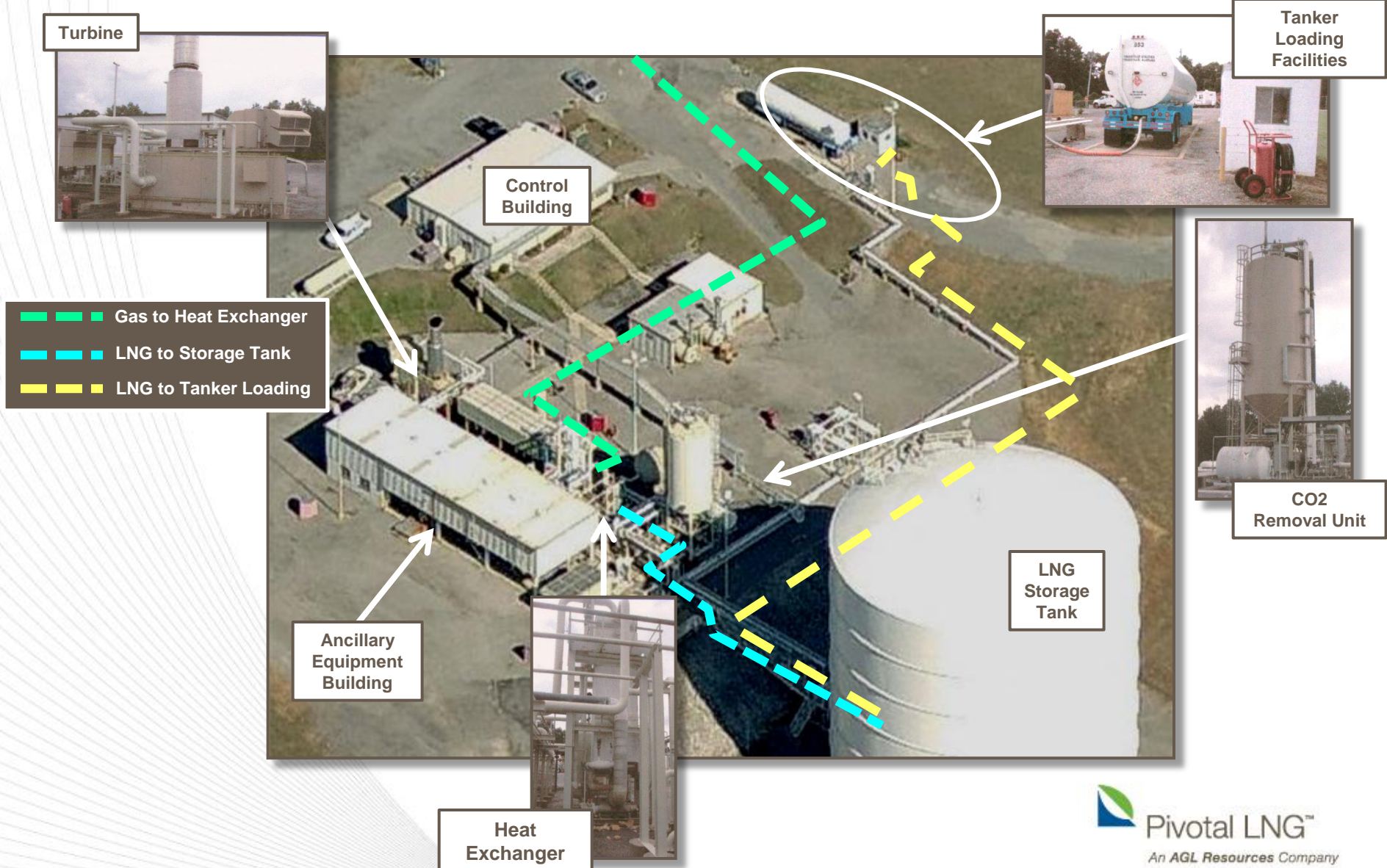


# Pivotal LNG – Trussville, Alabama

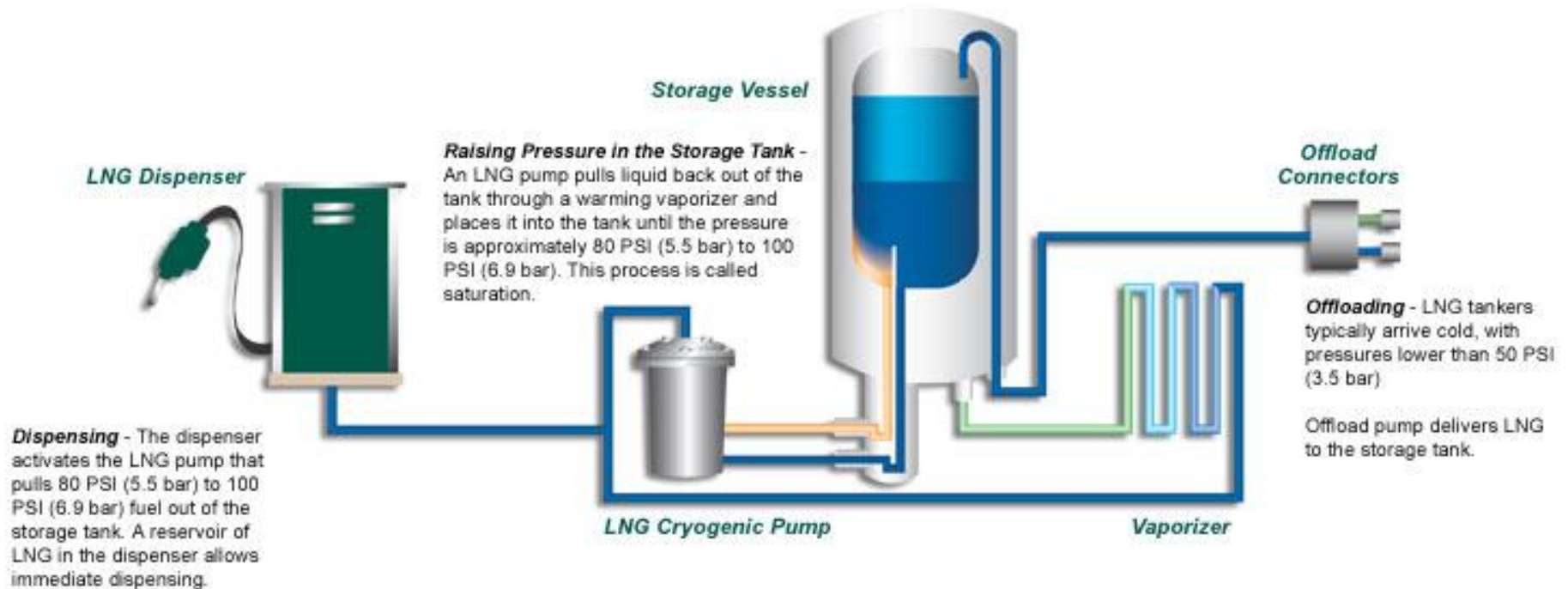




# Key Elements of the Trussville LNG Facility



# How is LNG Dispensed?



© Copyright 2009 | **Chart Inc.**

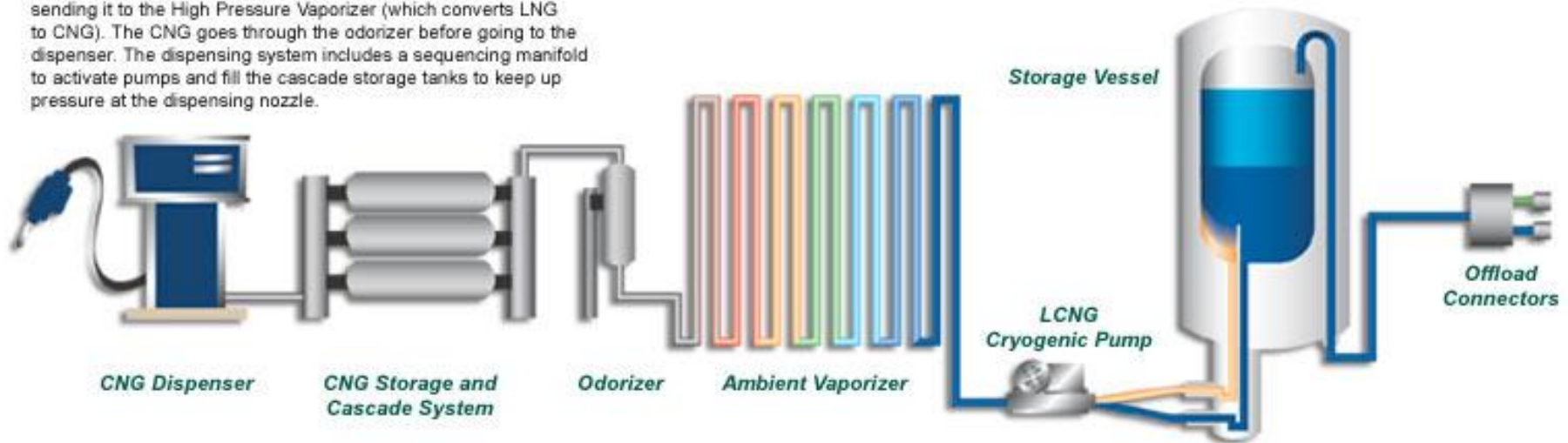
# LNG and CNG

- LNG can be used as a supply for a compressed natural gas (CNG) station when proximity to a large natural gas pipeline or ample electrical supply for compression is not available
- This is known as L-CNG



# LCNG Stations

**Dispensing** - The dispenser pulls initially from CNG stored in the cascade storage tanks, then activates the LCNG pumps. Those pumps raise the LNG pressure to 4,500 PSI (310.3 bar) before sending it to the High Pressure Vaporizer (which converts LNG to CNG). The CNG goes through the odorizer before going to the dispenser. The dispensing system includes a sequencing manifold to activate pumps and fill the cascade storage tanks to keep up pressure at the dispensing nozzle.



© Copyright 2009 | **Chart Inc.**

# Who are the likely early adopters for LNG?

Generally wherever you have a concentration of day cab class 8 tractors. Regular route applications such as distribution centers that already fuel on site and return to base nightly.

- Hub and Spoke
- Node to Node
- Regular route
- Centrally Fueled

Natural gas trucks favor hot seat multiple shift operations to quickly realize the value of the fuel savings offsetting the increased price of the tractor

# How does a fleet start the analysis?

## LNG Fuel Cost Savings Model Input Data

This worksheet will allow us to start collecting data specific to your operation at a specific location. If you don't know the answer for a value, just leave it blank for now.

*Items in brown are related to diesel tractors*

*Items in blue are related to LNG tractors*

Cells in yellow are for you to input information specific to your fleet at a particular location

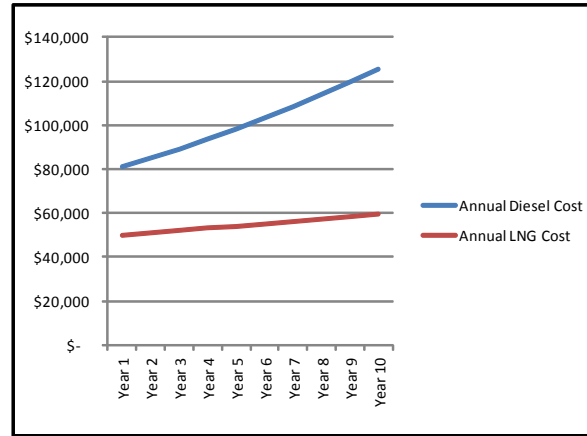
Variable	Typical Fleet	Your Fleet	Description of the data value
Location Name	Plant #1		Your plant or terminal name
Average Annual Tractor Mileage	100,000		How many miles per year do you average per tractor at this location?
Number of Tractors	10		How many tractors in total operate from this location?
Weeks of operation per year	52		How many weeks per year do the tractors usually operate? For instance do you have an annual plant maintenance shut down?
Days of operation per week	5		How many days per week do the trucks operate? 5,6,7?
Shifts per Day	1		On the average, how many shifts per day do the tractors operate? 1,2,3?
Acquisition Cost - Diesel Tractor	\$ 100,000		Estimated cost of a new 2013 model year diesel tractor including FET and local taxes if applicable
Current Diesel Cost (\$ per gallon)	\$ 4.00		Your current cost per gallon for diesel fuel including federal and state taxes, include station maintenance costs if centrally fueled
Estimated Annual Diesel Cost Increase %	10%		Your estimate as a percent as to how much diesel fuel will increase in cost annually over the next ten years
Average Fuel Mileage (MPG) Diesel	6.5		Your fleets average MPG at that location
Current Diesel Exhaust Fluid Cost (\$ per gallon)	\$ 3.00		Your current cost of DEF (Diesel Exhaust Fluid - Applies to all EPA 2010 diesel engines except Navistar)
Estimated Diesel Exhaust Fluid Consumption %	2%		How much DEF are your trucks using as a percentage of diesel fuel consumed? For example 2 gallons of DEF per 100 gallons of diesel?
Estimated Annual Diesel Exhaust Fluid Cost Increase %	2%		Your estimate as a percent as to how much diesel exhaust fluid will increase in cost annually of the next ten years
Acquisition Cost - LNG Tractor	\$ 150,000		Estimated cost of a new 2013 model year LNG tractor including FET and local taxes if applicable
Single Fuel or Dual Fuel	Single		Will the engines be single fuel (spark ignited) or dual fuel (compression ignition)
Current LNG Cost (\$ per DGE)	\$ 2.50		Cost per DGE (diesel gallon equivalent) of LNG fuel
Estimated Annual LNG Cost Increase %	2%		Your estimate as a percent as to how much LNG fuel will increase in cost annually over the next ten years
Average Fuel Mileage (MPG) LNG	6.2		Your estimate for fuel mileage with LNG fueled tractors



# Crunch the numbers

Cells in yellow are for your input, other values are calculated

Input Variables	
Acquisition Cost - Diesel Tractor	\$ 100,000
Current Diesel Cost (\$ per gallon)	\$ 4.00
Estimated Annual Diesel Cost Increase %	5%
Average Fuel Mileage (MPG) Diesel	6.0
Current Diesel Exhaust Fluid Cost (\$ per gallon)	\$ 2.75
Estimated Diesel Exhaust Fluid Consumption %	2%
Estimated Annual Diesel Exhaust Fluid Cost Increase %	2%
Acquisition Cost - LNG Tractor	\$ 200,000
<b>LNG Tractor Premium (calculated or insert a value)</b>	\$ 100,000
Current LNG Cost (\$ per DGE)	\$ 2.50
Estimated Annual LNG Cost Increase %	2%
Average Fuel Mileage (MPG) LNG	6.0
Annual Average Tractor Mileage	120,000
Number of Tractors	10
Weeks of operation per year	50
Days of operation per week	5



Annual Costs and Savings Per Truck	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Annual Diesel Cost		\$ 80,000	\$ 84,000	\$ 88,200	\$ 92,610	\$ 97,241	\$ 102,103	\$ 107,208	\$ 112,568	\$ 118,196	\$ 124,106
Annual Diesel Exhaust Fluid Cost		\$ 1,100	\$ 1,122	\$ 1,144	\$ 1,167	\$ 1,191	\$ 1,214	\$ 1,239	\$ 1,264	\$ 1,289	\$ 1,315
Total Cost for Diesel plus Diesel Exhaust Fluid		\$ 81,100	\$ 85,122	\$ 89,344	\$ 93,777	\$ 98,431	\$ 103,317	\$ 108,446	\$ 113,832	\$ 119,485	\$ 125,421
Annual LNG Cost		\$ 50,000	\$ 51,000	\$ 52,020	\$ 53,060	\$ 54,122	\$ 55,204	\$ 56,308	\$ 57,434	\$ 58,583	\$ 59,755
<b>Annual Fuel Savings</b>		\$ 31,100	\$ 34,122	\$ 37,324	\$ 40,717	\$ 44,310	\$ 48,113	\$ 52,138	\$ 56,397	\$ 60,902	\$ 65,666
Accumulated Fuel Savings		\$ 31,100	\$ 65,222	\$ 102,546	\$ 143,263	\$ 187,573	\$ 235,686	\$ 287,824	\$ 344,222	\$ 405,124	\$ 470,790
<b>Net Accumulated Fuel Savings (- Tractor Premium)</b>	\$ (100,000)	\$ (68,900)	\$ (34,778)	\$ 2,546	\$ 43,263	\$ 87,573	\$ 135,686	\$ 187,824	\$ 244,222	\$ 305,124	\$ 370,790
<b>Break Even - Years</b>											2.9

IRR (5 year)	24%
IRR (10 year)	37%

Consumption Calculations	Annual		Monthly		Weekly		Daily	
	Per Truck	For Fleet	Per Truck	For Fleet	Per Truck	For Fleet	Per Truck	For Fleet
Diesel Consumption in Gallons	20,000	200,000	1,667	16,667	400	4,000	80	800
Diesel Exhaust Fluid Consumption in Gallons	400	4,000	33	333	8	80	2	16
LNG Consumption in DGE	20,000	200,000	1,667	16,667	400	4,000	80	800
LNG Consumption in LNG Gallons	34,400	344,000	2,867	28,667	688	6,880	138	1,376



# Questions to be answered

How will LNG be taxed in the long run?

By the LNG gallon? (current)

By the diesel gallon equivalent (DGE)?

By weight or Btu content?

Will federal incentives be carried past 2013?

Will states have some uniformity in LNG fuel tax?

How will the FET penalty on new trucks (12%) be addressed?

How will shippers view diesel fuel surcharges from established carriers as new carriers with natural gas fueled trucks compete for the shipper's business?

Will carriers strive to keep a single fuel option such as diesel or adopt a portfolio of fuel options each tailored to the application?

---

# Some closing comments on LNG



# LNG Facts

- LNG is the same natural gas that 65 million Americans use in their homes, but in a liquid form
- LNG is very cold. Natural gas turns into a liquid at -260 degrees
- LNG is ***not*** under high pressure (atmospheric to 200 PSI maximum for LNG vs. 3,600 PSI for CNG)

## LNG Facts

- LNG is a very pure form of methane (natural gas). Typical pipeline natural gas has impurities such as ethane, nitrogen, propane, carbon dioxide butane and pentane.
- The liquefaction process causes most of the impurities to drop out resulting in 95% methane and only 5% impurities

## LNG Facts

- LNG is not explosive or flammable. For LNG to be flammable, it must return to a vapor first. Natural gas vapor will only ignite in a ratio of 5% to 15% natural gas to air and only if there is a ignition source present.
- For natural gas vapor in a 5% to 15% concentration in air to be explosive, along with an ignition source, it must be in a confined area. Natural gas vapor is not explosive in the open air.



# LNG Facts

- LNG is not corrosive
- LNG will not mix with water (it floats)
- If LNG is spilled, it quickly vaporizes and rises into the air
- There is no residue after a LNG spill on water or soil
- LNG is odorless and non-toxic

## L-CNG

- LNG can be used as a supply for a compressed natural gas station (LCNG) when proximity to a large natural gas pipeline or ample electrical supply for compression is not available, as well as for fleets that use both LNG and CNG in their fleet

# Pivotal LNG Natural Gas Fuel

David Jaskolski  
Senior Account Manager  
404-783-3550

[david.jaskolski@aglresources.com](mailto:david.jaskolski@aglresources.com)