
WESPAC MIDSTREAM
Environmental Symposium
City of Jacksonville
August 15, 2014

Today we will be discussing the following topics.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Jacksonville
Where Florida Begins.

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The majority ownership of WesPac Midstream, LLC is held by two large Capital investment firms along with a lesser portion owned by a large diversified construction corporation.

OAKTREE

HIGHSTAR CAPITAL

PSC Primoris Services Corporation

Newark Container Terminal

Jaxport Container Terminal

American Ref-Fuel Plant

Kern River Pipeline

Boron LNG Plant

Sunrise Power Plant

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Most recently WesPac affiliate Primoris has worked on small scale LNG projects.

Boron California LNG Plant

Projects in Development

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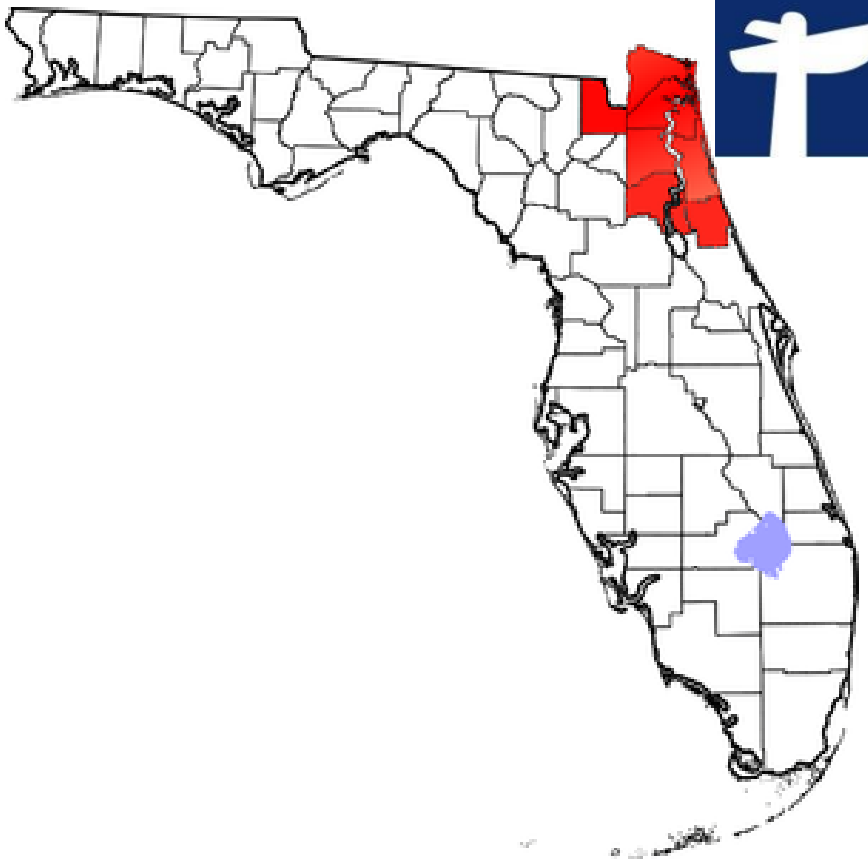
WesPac is focused on purpose built facilities for specific regional requirements.



TOTE Maritime

WesPac is focused on providing turn key services using its affiliate companies.

OnQuest

ARB
A subsidiary of
Primoris Services Corporation

JIC
JAMES
INDUSTRIAL CONSTRUCTORS
A Division of Primoris Energy Services

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WesPac has an unbiased approach to technological equipment providers.

CHART®

Innovation. Experience. Performance.™

COSMODYNE

A Cryogenic Industries Company

Linde

GE

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The birth of an industry, containerized shipping.

Malcom Purcell McLean

A brief background of the container shipping industry.

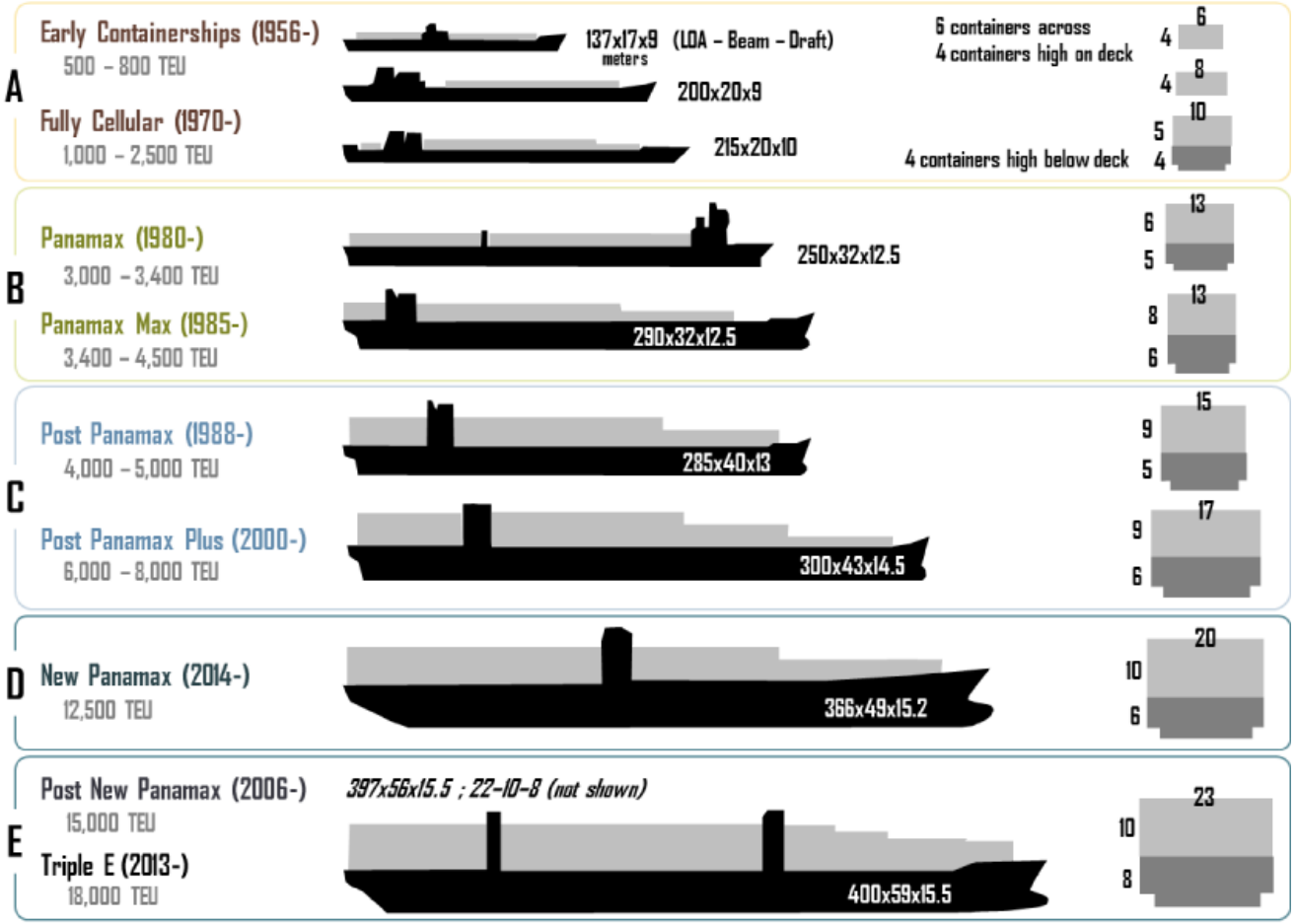
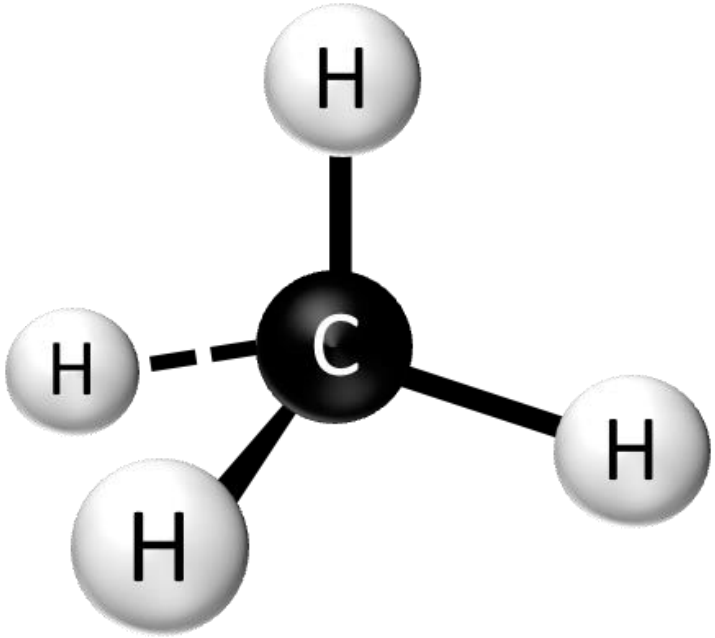


image: http://people.hofstra.edu/geotrans/eng/ch3en/conc3en/containerships.html

Liquefied Natural Gas (LNG) Facts



Comparison Between LNG and Other Fuels

	LNG	PROPANE	DIESEL
Btu Per Gallon	86,000	91,000	139,000
Gallons Per MMBtu	11.63	10.99	7.19
Relative Energy Density	1.00	1.06	1.62
Ignition Termerature (F)	1,004	842	437
Boiling Point	-260	-44	+370
Leaks and Spills	Vaporizes To Atmosphere		

Boiling point simple definition: The point at which a liquid turns into gas

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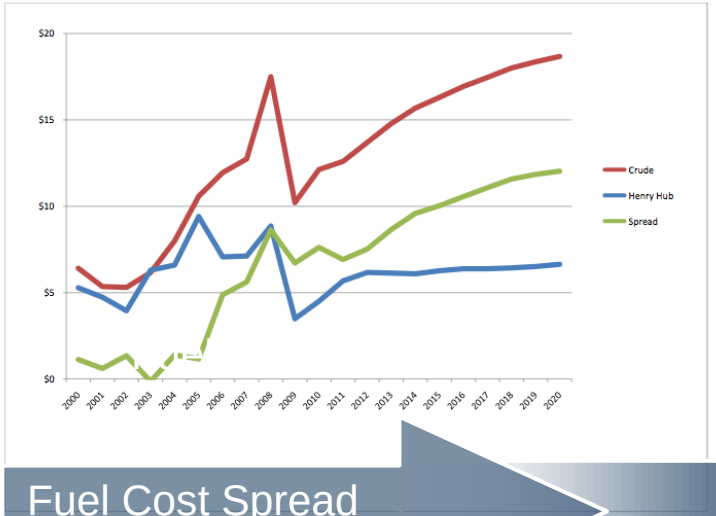
The adoption of LNG by Marine Markets is Driven by Two Main Factors

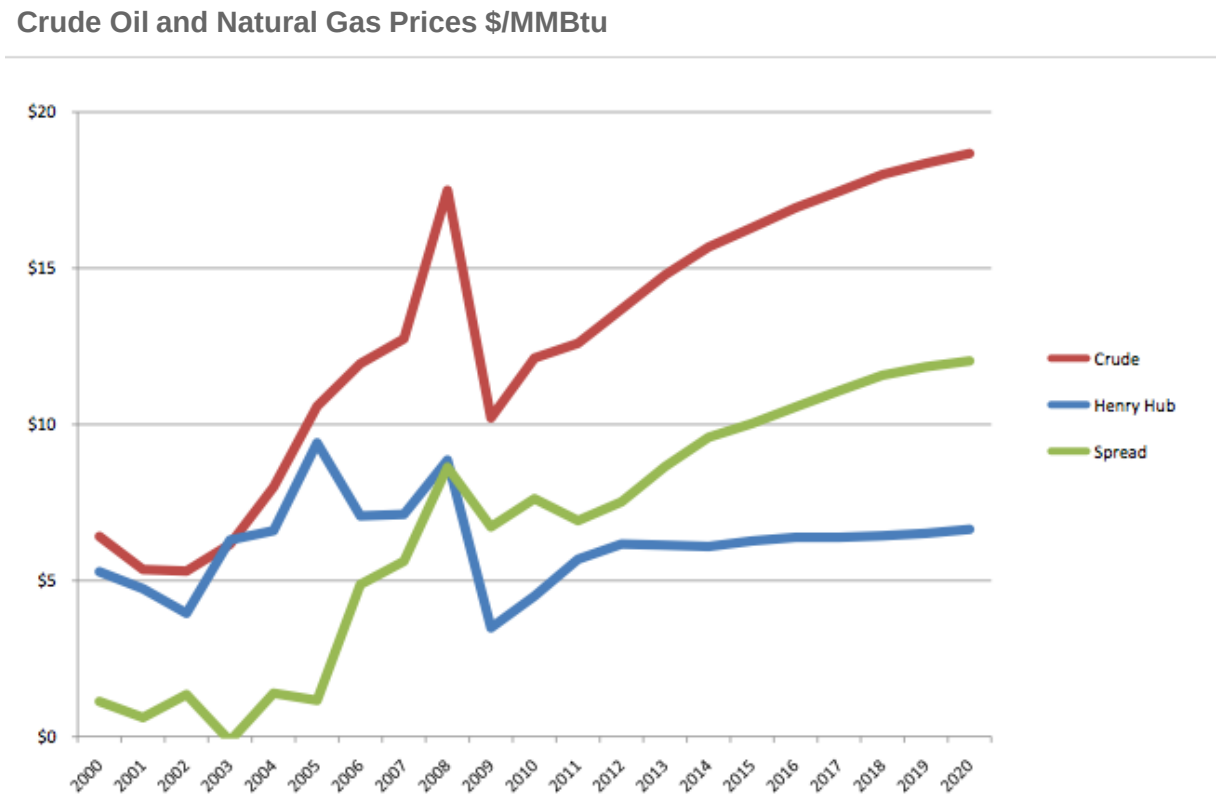


Fuel Cost Spread

Emissions Regulation

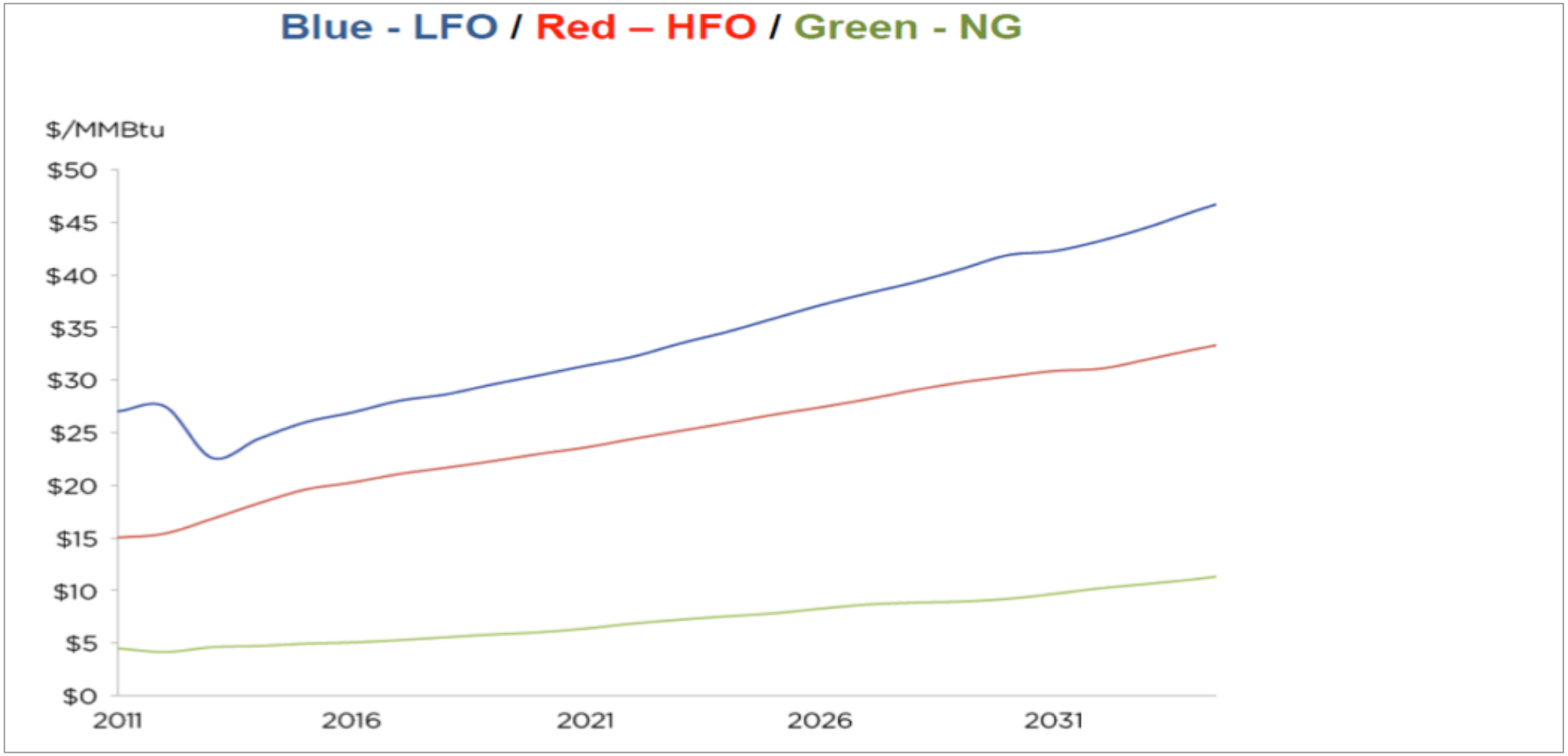
Widespread Shift to LNG as Marine Fuel

An economic driver for conversion to LNG would be the growing cost spread between the two fuels and their predecessors crude oil and NG.



Source: Energy Information Administration â€“ AEO 2010

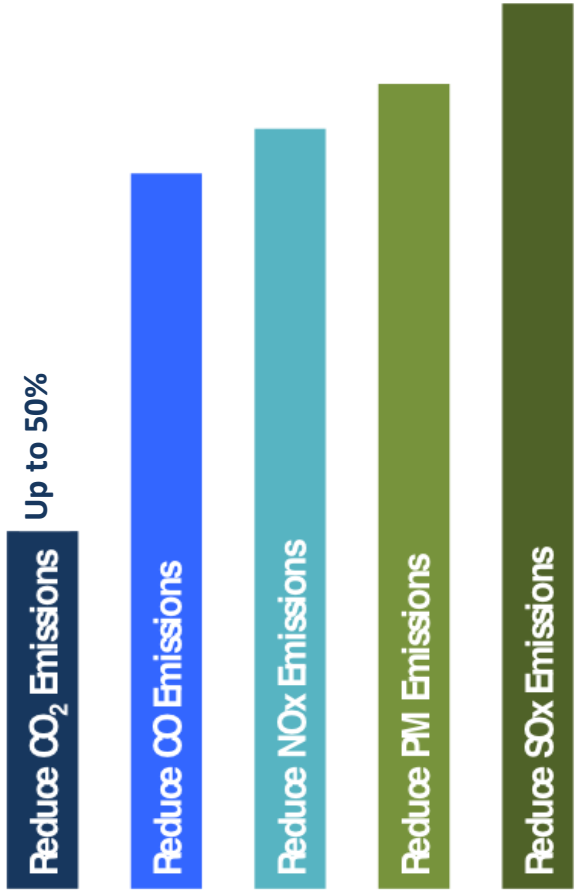
Fuel Cost Spread



Regulatory Drivers

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

IMO INTERNATIONAL MARITIME ORGANIZATION



Natural Gas Emission
- Reductions Versus Diesel -

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Emission regulations -

ECA requirements - US

- **Sulphur** (all ships)
  - Today
  - 2012 (august) : max 1.0% sulphur fuel
  - 2015: max 0.1% sulphur fuel
- **NOx** (newbuilds)
  - 2011: 20% NOx reduction from marine engines
  - 2016: 80% NOx reduction

Ship-owners really only have three choices

- **Switch to Low sulphur fuel**
- **Install exhaust gas cleaning system**
- **Switch to LNG**

California regulation already limits the use of marine bunker to either Marine Gas Oil (max 1.5%) and Marine Diesel Oil (max 0.5%) within 24 nm of land. From January 2012 this will be reduced to 0.1%.

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Environmentally a winner

MANAGING RISK DNV

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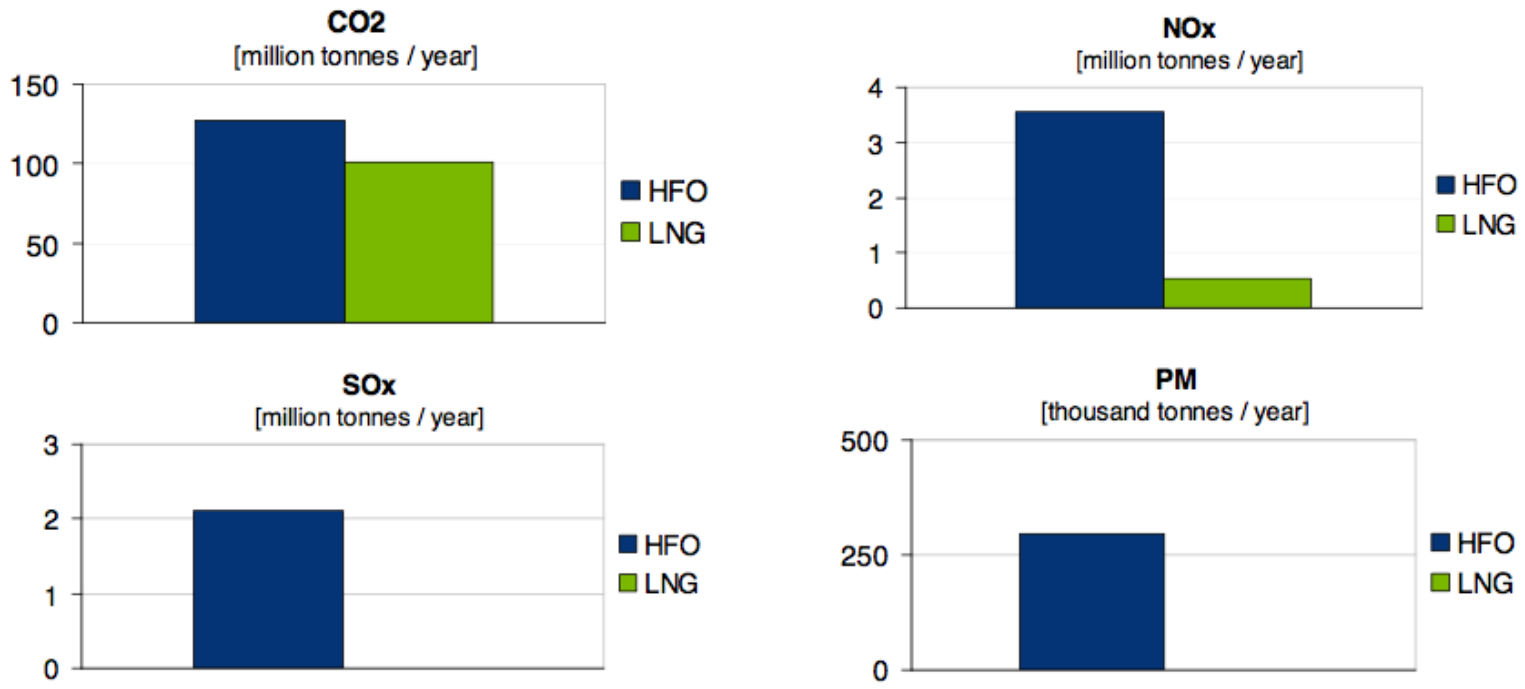
Yearly emissions from shipping in US waters



Achieving a 10% LNG share of total fuel burned in US waters would reduce NOx emissions by the equivalent of 15 million cars

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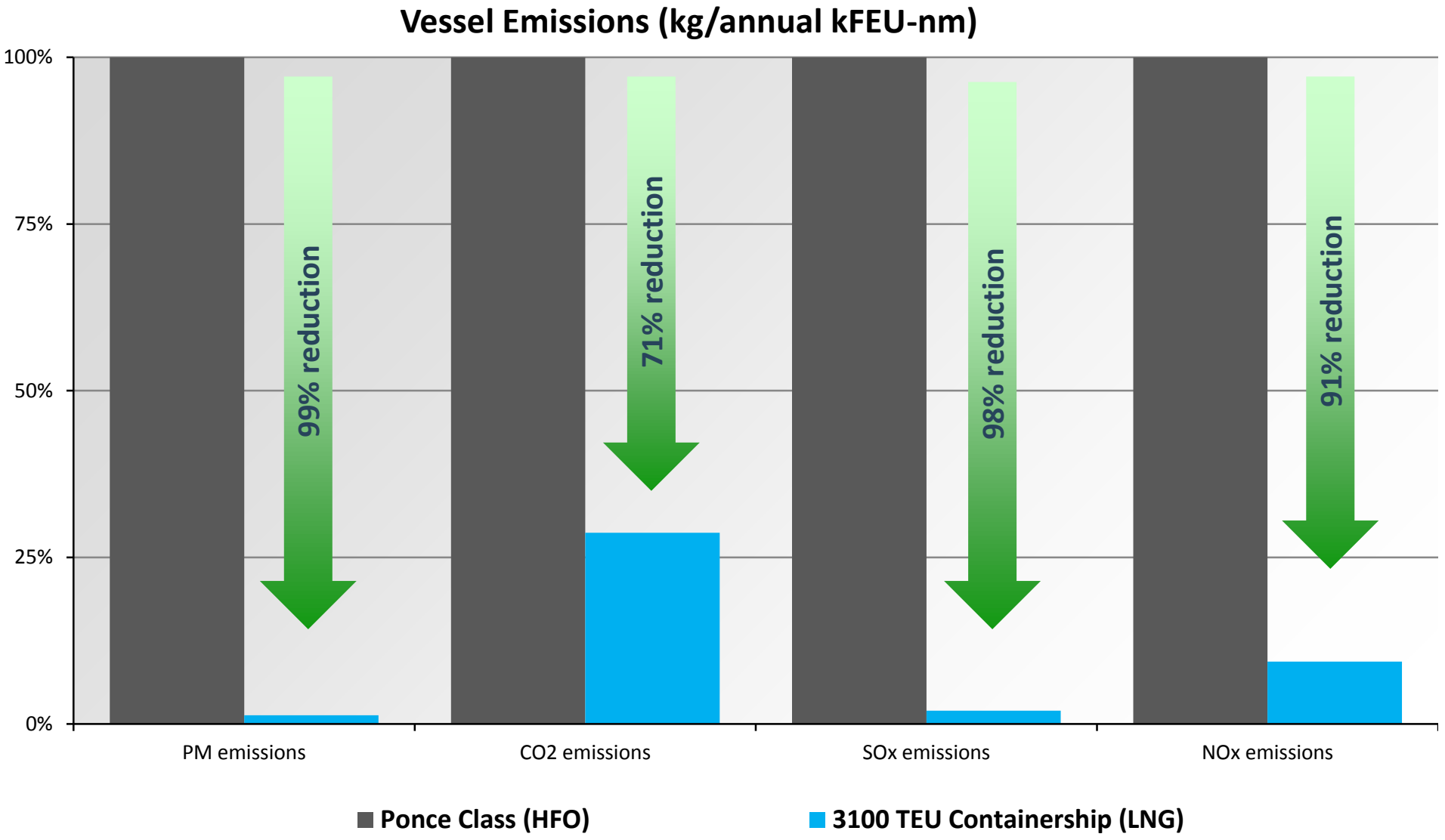
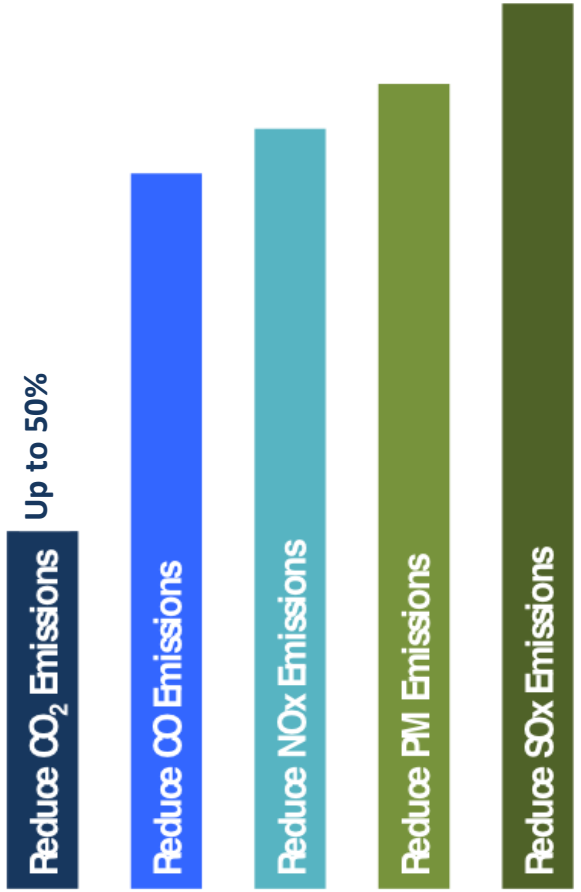
Emissions Comparison



Health, Safety & Environmental Advantages

- Safety
  - Vapors rise and dissipate into the air
  - Stored at atmospheric pressure
  - Lower flammability limit of 5% is 10 times higher than fuel oil
  - 1,000 °F auto ignition temperature is highest among all hydrocarbon fuels
- Environmental
  - Significant emission reductions from combustion versus fuel oil or diesel
  - LNG plant emissions are very minimal
  - Vaporizes when spilled without contaminating soil or water



Natural Gas Emission
- Reductions Versus Diesel -

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Marine Driven by both Cost Advantage and ECA

Stricter emission requirements are being enforced for global shipping, and even stricter in designated Emission Control Areas (ECA).

Natural Gas Supply Chain For LNG Production

Production and Processing

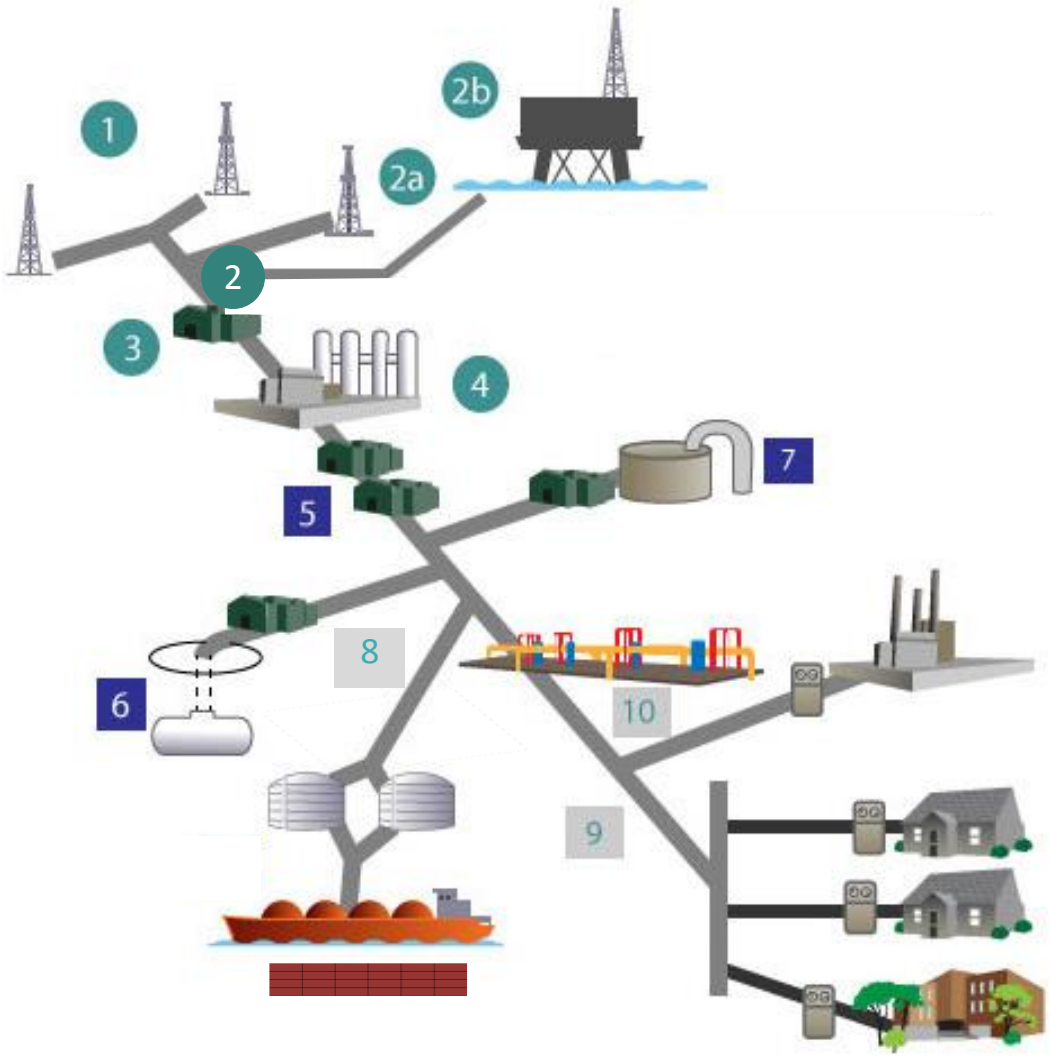
1. Producing Wells
2. Gas gathering
3. Boosting
4. Gas Processing

Transmission and Storage

5. Transmission Compressor Stations
6. Underground Storage
7. LNG Storage

Distribution and Consumption

8. Liquefaction, Storage and LNG fueling
9. Distribution and Mains
10. Regulators and Metered Service



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The Natural Gas Liquefaction Process is similar to air conditioning, WesPac's process will use inert nitrogen gas as the refrigerant.

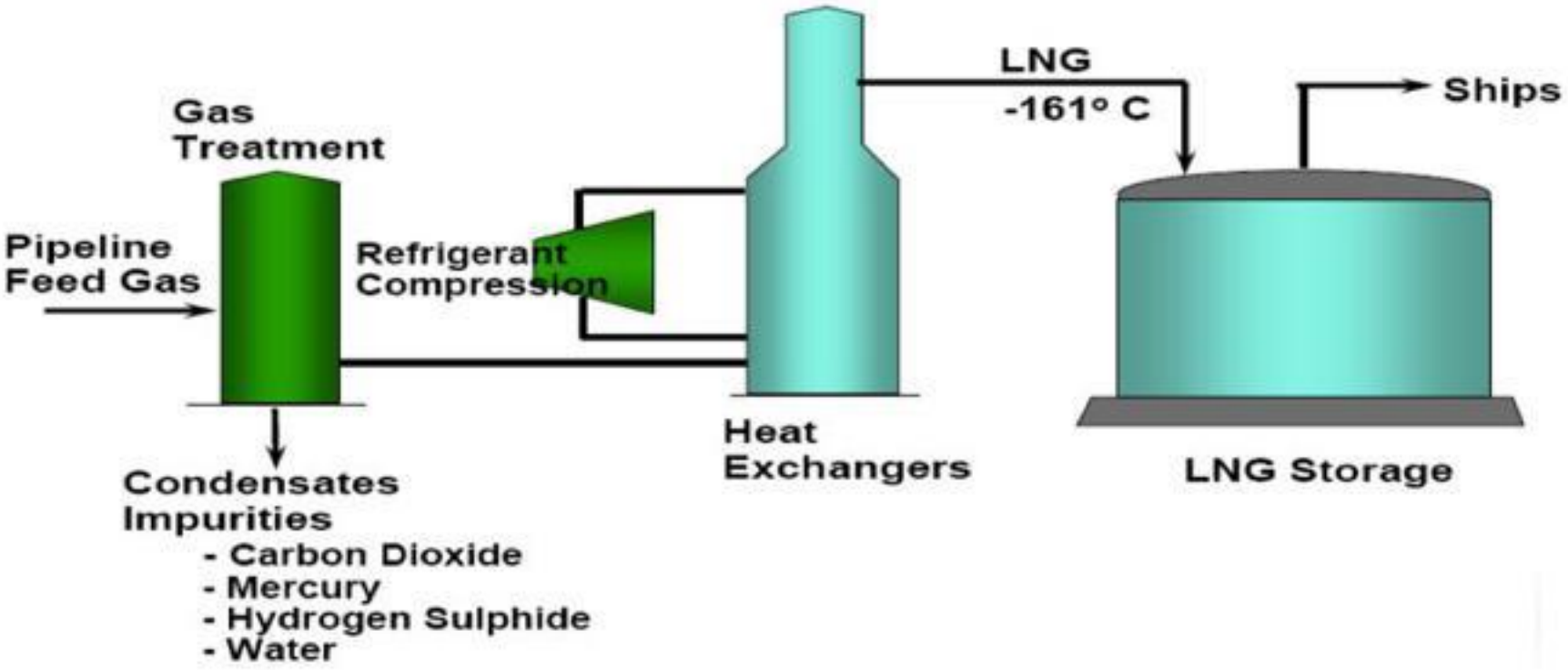

image: SeekingAlpha.com

Tank Storage and Loading

- LNG is stored as a cryogenic fluid at atmospheric pressure
- Tank construction relatively expensive
  - Stainless steel or high nickel content steel
  - Can be up to 40% of overall facility costs
- NFPA and Maritime rules must be followed
- Significant property boundary offsets

- Storage volume dependent on off-take schedule and transport vessel size

- Large storage tanks need a demand of at least 4,000 Mcf/d or 50,000 gallons per day

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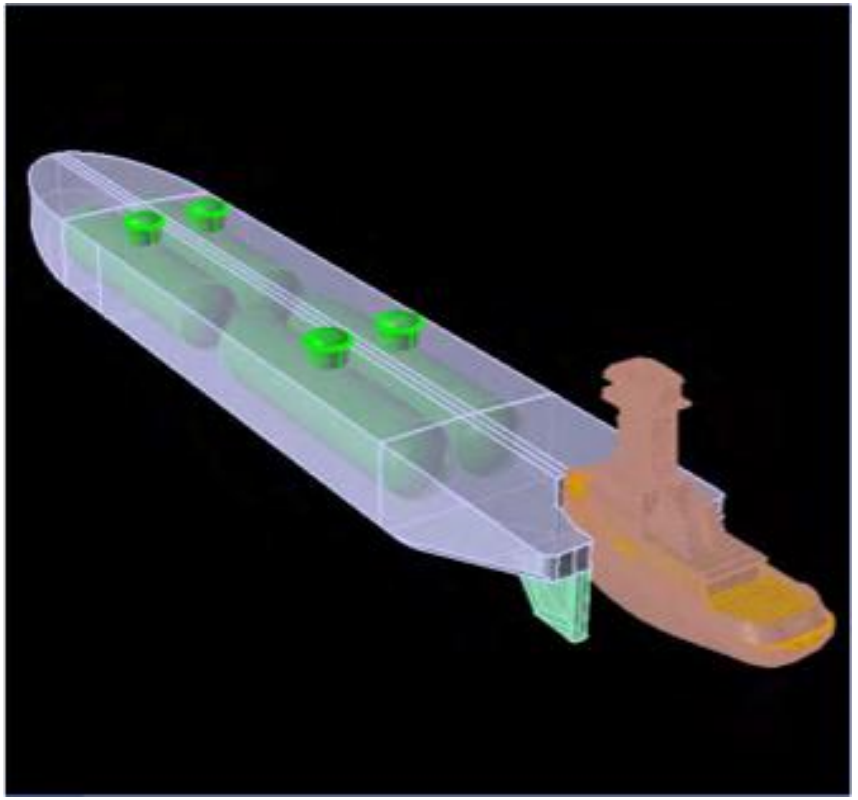
LNG Bunkering Vessel Design

Various designs will be used, below is one example:

Bunkering Barge

Vessel Tank Configuration



WesPac LNG Marine Facility
- simplified example -

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First of its kind in the United States!

THANK YOU

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