Meeting New England's Gas Needs: LNG is Still There – and Still Relevant

USEA – 7th Annual Energy Supply Form
Washington, D.C.
October 2, 2014

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The Case for LNG in New England

- New England is challenged by peak gas supply, not baseload gas supply
- Use of LNG as a peak fuel for power generation is hindered not so much by global gas markets but by the design of the domestic market
- Even with current pipeline expansion plans, LNG has an important role to meet peak demand for approximately 30 days/year
- ISO-NE winter procurement program acknowledges LNG's role as flexible fuel to ensure grid reliability
- Global LNG fundamentals point to more supply and more attractive economics to meet New England winter gas demand

Overview – The Headlines

Northeast Energy Crisis

Unprecedented gas capacity constraints on existing pipelines
(Source: ISO-NE, EIA.gov)

Highest and most volatile gas commodity costs in the nation
(Source: ISO-NE, EIA.gov)

BloombergBusinessweek
Global Economics
Energy
Northeast's Record Natural Gas Prices Due to Pipeline Dearth

BOSTON BUSINESS JOURNAL
Mass. faces gas shortage despite national surge

CONCORD MONITOR
New England seeks to expand natural gas delivery network

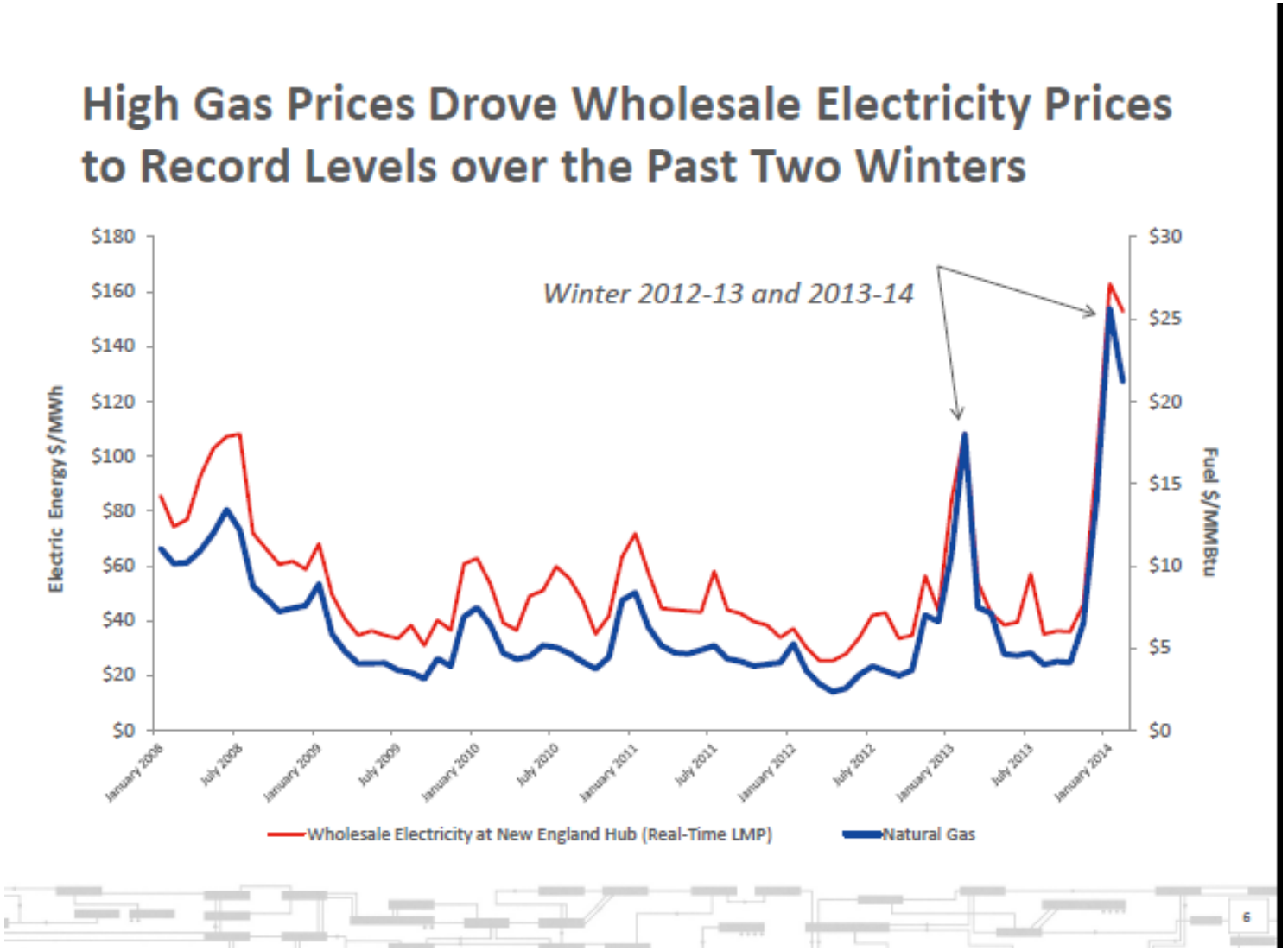
Portland Press Herald
MONDAY, MARCH 31, 2014
Study: Adding natural gas capacity could cut Maine electric bills by $120 million annually
Some environmental groups, however, have questioned whether the region is best served by becoming more dependent on the fuel.

THE RECORDER
Gas line limits boost New England electricity prices
Associated Press

lowellsun.com Massachusetts
ISO: Gas-pipeline shortage boosts electricity prices

wcvb.com
Insufficient pipelines boosting natural gas price
ISO-New England says price up to $56.06 per megawatt hour

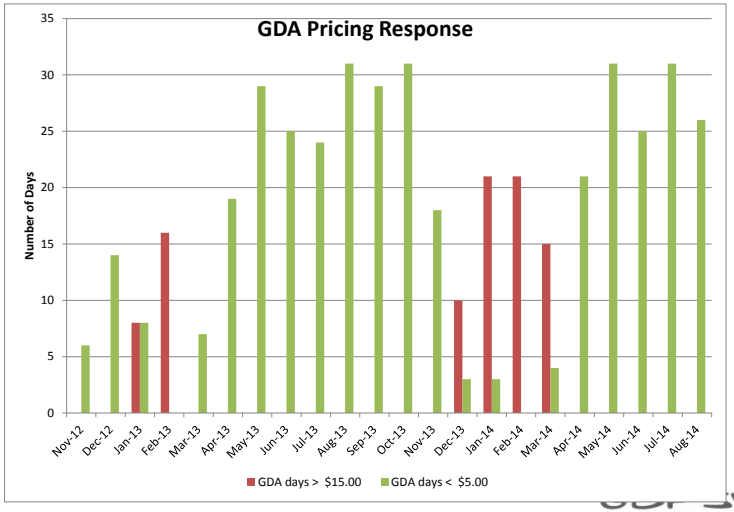
Overview – The story as portrayed ISO-NE



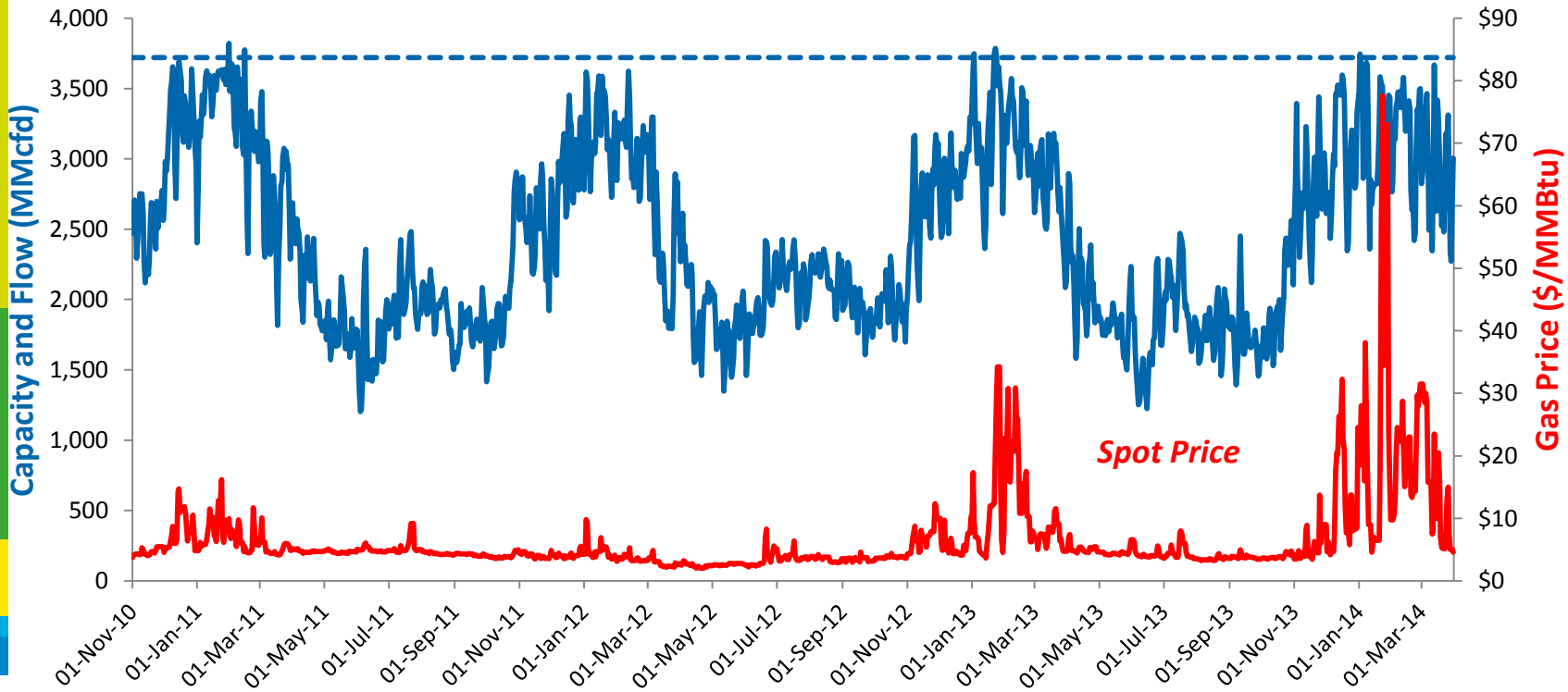
Ironically, New England's Challenge is due to Low Priced Gas

- For most of the year, low priced gas has driven power prices lower, effectively "draining the pond" for non-gas fired generators
- Baseload LNG has left the market
- Competition for gas between power generation and heating demand during short periods in winter is growing as the generation mix becomes more gas weighted
  - Heating load maintains distinct advantage in this competition with firm capacity and full cost recovery
- Gas price behavior illustrates the challenge: additional supply is necessary only for several days per year but is plentiful and cheap most of the time

Proposals to build additional pipeline infrastructure can't be supported by the market given the short duration of the problem



New England gas demand over the last 4 winters has been within existing capacity…



Source: ICF International*

- **During this winter's extended cold spells, gas demand increased such that *total pipeline utilization was above 90% on 42 days, and above 95% on 10 days*.***
- **As pipelines reached their limits, the price of remaining spot supplies increased.***
- **Given the marginal need for gas, a relatively small amount of gas can have a disproportionate effect on relieving the stress on the system**

* Defined as period when NE pipeline flow is greater than or equal to 90% of pipeline capacity; Source: ICF Study for GDFSuez

ISO-NE Challenge: Firming Up Flexible Fuel Supply

- "Wholesale prices are driven by natural gas generation, but the wholesale electricity markets do not provide adequate incentives for generators to provide electrical energy when called upon by the ISO during stressed system conditions, and in particular for gas generators that have not made adequate and reliable arrangements for fuel supply."

- "The market-based solution to this problem is to strengthen the economic incentives in the wholesale markets to cause generators to make adequate and reliable fuel arrangements, so that they are ready to respond to the ISO when needed."

ISO-NE CEO Gordon van Welie
testimony before Congress March 2013

GDF-Suez has made several offers to provide such short notice services from its LNG facilities over the past 3 years and continues to do so but potential generation buyers lack appropriate cost recovery mechanisms to justify purchase of such services

ISO New England Winter Reliability & New Infrastructure Proposals

- Winter 2014 / 2015 Reliability Program
- Incentives for Generators to Commission or Re-Commission Dual Fuel Capability (Gas/Oil)
- Compensate Generators for Costs of Unused Oil and Firm LNG Commitments. LNG Compensation based on Fuel Oil Price Volatility not gas, is likely inadequate.
- Compensation for Certain Demand Response

The Response – New England Proposed Pipeline Projects

Developer/Asset	Project	Capacity (MMcf/day)	Contracted	COD	Assessment
Spectra	AIM	342	**342**	Q3/Q4 2016	Connecticut LDCs, some into Boston
Spectra	Atlantic Bridge	175-300	**0**	Q3/Q4 2017 est.	Selling potential to “reverse flow” send NGas north to Maine
Spectra/NU JV	Access Northeast	Up to 1,000	**0**	2018 est.	Newly announced JV with NU; targets gens and reaches 60% of NGas fleet; could take place of NESCOE plan
TGP/KM	CT Expansion	72	**72**	Q4 2016	CT LDCs; product of CT aggressive move to convert home heating oil to gas
TGP/KM	Northeast Energy Direct	800-2,200	**0**	2018/19	Only 500 MMcf/day of interest so far, all LDC; very strong NIMBY/Enviro opposition along greenfield route
Iroquois	Dominion New Market Expansion	82	82	Q4 2016	Adding compression; ability to serve
PNGTS	C2C	120-150	0	Uncertain	Held up by TCPL rate case in CAN; up and around into ME

New England Governors Regional Energy Infrastructure Initiative

- Sought subsidized incremental gas and electric infrastructure investment through ISO New England tariff
  - Natural gas pipeline into New England (0.6-1.0+ Bcf)
  - Electric transmission from Canada into New England (1200-3600MW)
- Overbuild pipeline beyond reliability need to remove NE gas basis
- Out-of-market initiative threatened both gas and electric market investments
  - Hydro, nuclear, coal, oil, renewable and dual fueled generation investments
  - Existing firm pipeline investments and LNG facility value
- Strong electric and LNG industry and other opposition
- Regional effort currently paused after failed MA legislation to authorize long term Canadian imports and associated transmission investment

Performance Incentives in ISO New England

ISO-NE capacity market reform improves product comparability and performance incentives – beginning 2018

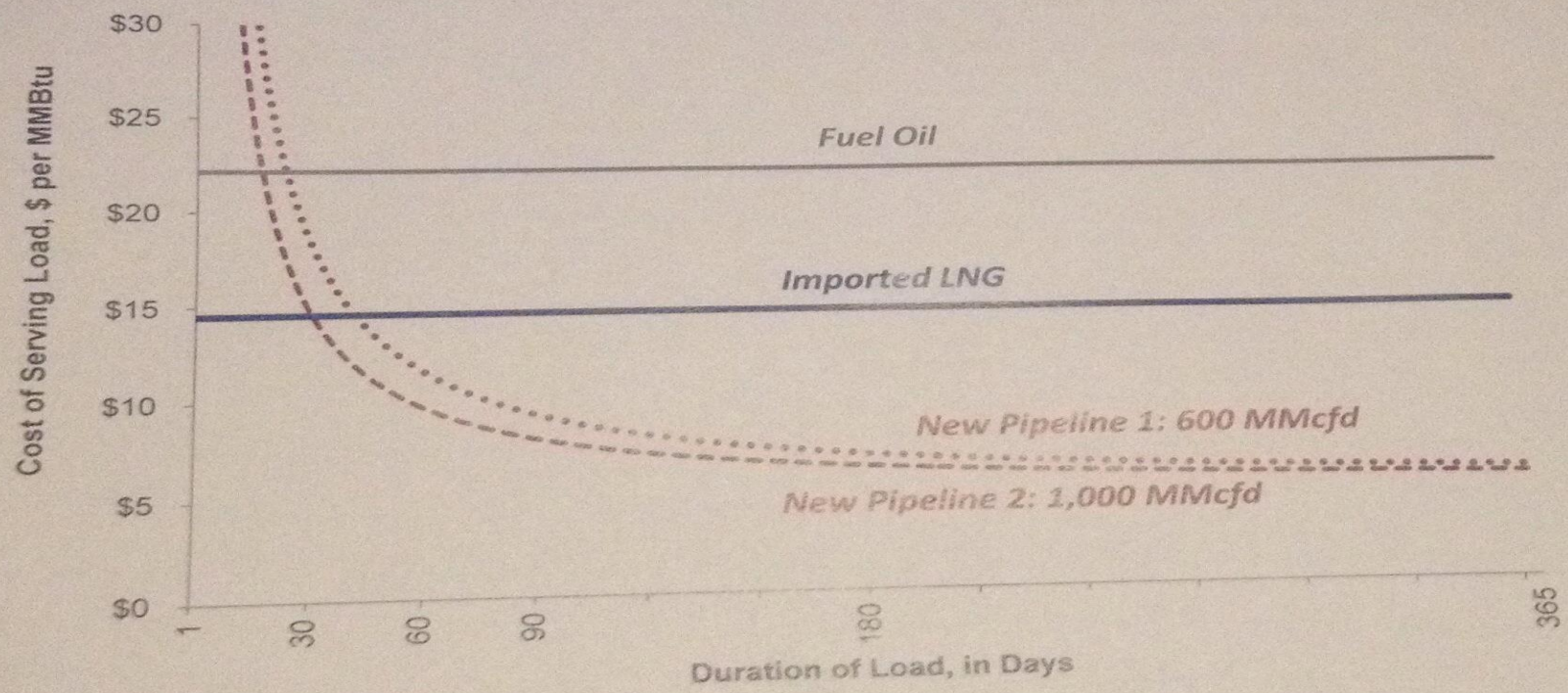
- All sellers required to provide *prorata* share of system energy and operating reserve needs
- Increased signals to perform:
  - Upside for over-performance funded by penalty for under-performance
- Incentives or penalties covering any scarcity event
- Implementation Feb 2015 auction for June 2018 delivery
- Program will create incentives for market-based solution.

Stakeholder Analysis

Many uncertainties exist due to complexity of the issues and economic outcome to various stakeholders

- Consumers and ratepayers: winter problem: demand lights stay on and keep warm, BUT complain of high utility bills; ALSO source of NIMBY on certain projects
- New England Governors: Different motivations
  - some want to crush natural gas basis – as gas price goes, so goes power price;
  - others have global warming goals that would require massive amount of Canadian hydro MW to meet
- New England ISO: Also of mixed mind
  - electric reliability should be primary concern: baseload retirements
  - CEO advocating for new pipe – “can manage this one OOM intervention”
- Electric Generators: want gas available but do not want to pay for firm tariff because of lack of recovery mechanism; Performance Incentive should help
- Pipeline developers: subsidized pipe = big pay day
- EDCs – big winners either way; looking to be contracting entity for pipe
- LNG suppliers (GDF SUEZ, Canaport): advocating Peak vs Pipe; especially winter
- Environmentalists: all renewable all the time

Cost Duration Curves: Cost per Day to Serve Incremental Fuel Demand, Dollars per MMBtu



Source: ICF International

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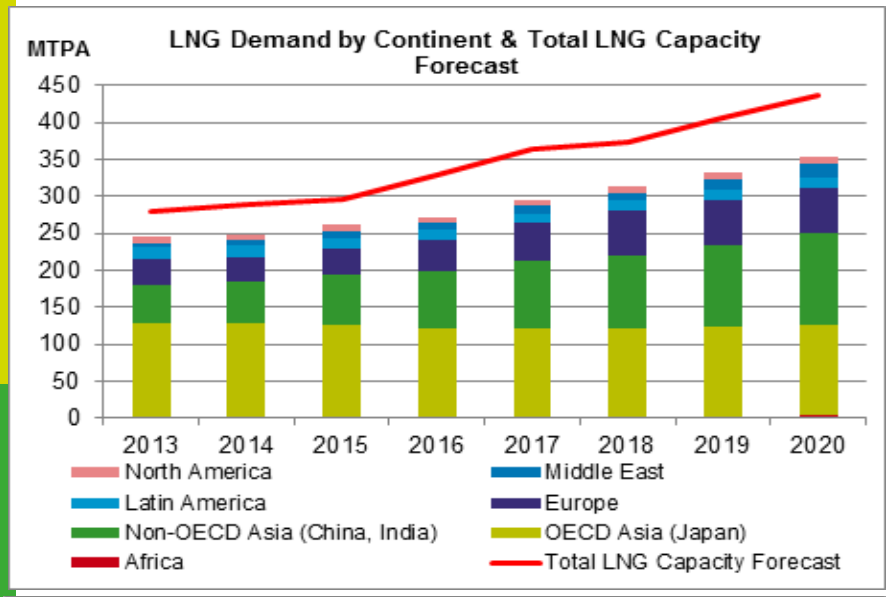
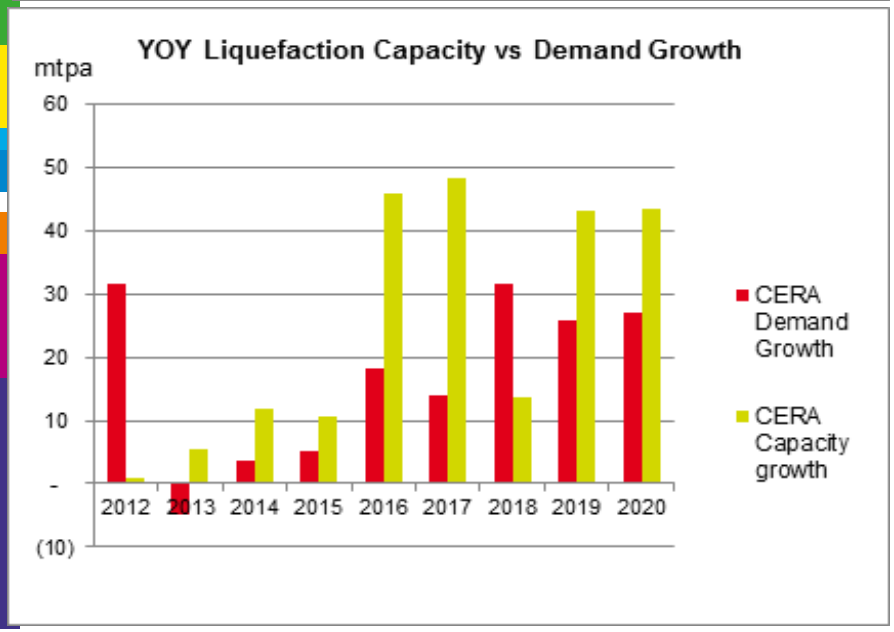
The Global LNG Market: the Pendulum Swings?





- From 2015 to 2020, global demand growth of 5.0% /yr (+91 MTpa; 13 Bcf/d) versus capacity growth of 6.7%/yr (+141 MTpa; 20 Bcf/d);
- Supply now under construction (+117 MTpa; 16.7 Bcf/d):
  - Australia/Pacific: 77 MTpa
  - USA: 18 Mtpa (Sabine Pass T1-4)
  - Russia: 17 MTpa
  - Other: 5 MTpa
- Growing flexible market makes up approximately 33% of total LNG trade
  - Quadruple the level of 10 years ago
  - Allows for rapid mitigation of market disruptions (weather, disaster, political etc.)
  - US LNG will further contribute to flexible volumes
- Overall fundamentals of global LNG point to more favorable conditions for LNG buyers

➔ Greater quantities of flexible LNG relative to global demand can effectively mitigate high and volatile New England winter prices

Source: CERA, July 2014

Concluding Thoughts

- Though its utilization has declined over the past few years, the Everett Marine Terminal continues to play a vital role in the region's energy mix and grid reliability, and has the capacity to play an even larger role
- Before financially significant, long term investments are made in the region, we believe it more prudent to utilize existing investments to solve the short duration gas supply issues, thus preserving the flexibility to adapt to changing market needs
- While there has been a significant change in the inter-continental gas price spreads over the past few years, New England is potentially likely to be the beneficiary of the market response to these changes
- GDF-Suez recognizes and respects the many competing interests in securing New England's energy future and stands ready to work with market participants to best meet the region's energy needs