# **Liquefied Natural Gas Limited**



### **Greg Vesey – Managing Director and Chief Executive Officer**

**LNG Exports - Perspectives** 





North American Gas Forum - 3 October 2016

**ASX: LNG and OTC ADR: LNGLY** 

### Forward looking statement / all jurisdictions



The information in this presentation is not an offer or recommendation to purchase or subscribe for securities in any one or more entities in the LNGL Group or to retain or sell any securities currently being held. This presentation does not take into account, nor is it intended to take into account, the potential and/or current individual investment objectives and/or the financial situation of investors.

This presentation was prepared with due care and attention and the information contained herein is, to the best of LNGL Group's knowledge, as of the date of the presentation.

This presentation contains forward-looking statements that are subject to risk factors associated with the gas and energy industry. The expectations reflected in these statements are currently considered reasonably based, but they may be affected by a range of variables that could cause actual results or trends to differ materially, including but not limited to: price and currency fluctuations, the ability to obtain reliable gas supply, gas reserve estimates, the ability to locate markets for LNG, fluctuations in gas and LNG prices, project site latent conditions, approvals and cost estimates, development progress, operating results, legislative, fiscal and regulatory developments, economic and financial markets conditions, including availability of financing.

No representation or warranty (express or implied) is or will be made by any person (including LNGL Group and its officers, directors, employees, advisers and agents) in relation to the accuracy or completeness of all or part of this document, or any constituent or associated presentation, information or material (collectively, the Information), or the accuracy, likelihood of achievement or reasonableness of any projections, prospects or returns contained in, or implied by, the Information or any part of it. The Information includes information derived from third party sources that has not necessarily been independently verified.

Subject to any continuing obligations under applicable law or any relevant stock exchange listing rules, LNGL Group disclaims any obligation or undertaking to disseminate any updates or revisions to any forward looking statements in this presentation to reflect any change in expectations in relation to any forward looking statements or any change in events, conditions or circumstances on which any such statements were based.

To the maximum extent permitted by law, each entity in the LNGL Group, along with each entity's respective officers, employees and advisers, excludes all liability (including in negligence) for any loss or damage which may be suffered by any person as a consequence of any information in this presentation or any error or omission there from.

All references to dollars, cents or \$ in this document is a reference to US Dollars, unless otherwise stated.

## **Current LNGL developments**





## **Today's topics**



- Stability of North American natural gas supply and price outlook
- Economic trends for LNG liquefaction facilities
- West Coast versus East Coast projects
- Next demand-wave buyer timing

### North American shale gas plays

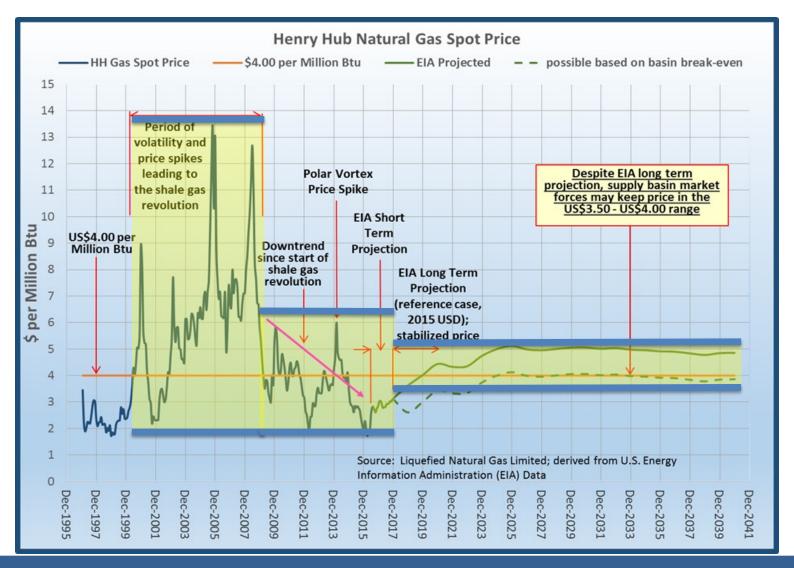




Source: U.S. Energy Information Administration based on data from various published studies. Canada and Mexico plays from ARI. Updated: May 9, 2011

## Henry Hub price history and outlook

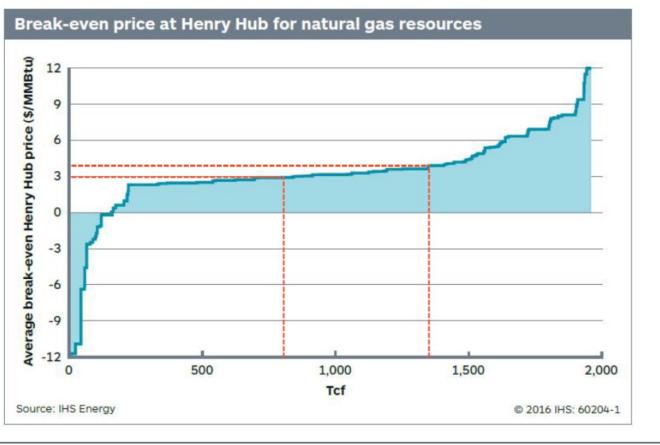




## Shale gas resource break-even Henry Hub prices







© 2015 IHS Source: IHS Markit Energy, "Global Gas & Power Outlooks", May 2016. Used by permission of IHS Markit Energy.

## Design factors of successful future LNG projects

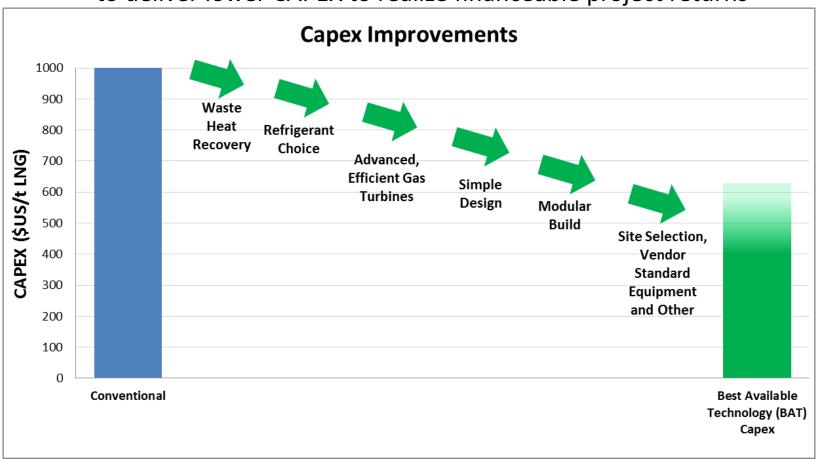


- Mid-scale
- Use of combined cycle power
- Optimization of refrigerants
- Advanced, efficient gas turbine refrigerant drivers
- Simple design & modular build
- Superior site selection & land use
- Standardization

## **CAPEX** savings of future **LNG** projects



LNG customers are looking for lower liquefaction costs, requiring developers to deliver lower CAPEX to realize financeable project returns

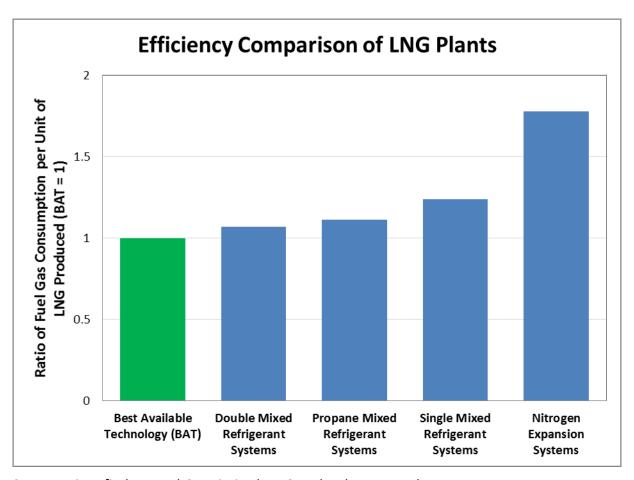


Source: Liquefied Natural Gas Limited, LNG Technology Pty Ltd.

## **OPEX trends required of future LNG projects**



#### Lowering LNG liquefaction prices requires optimizing operating costs



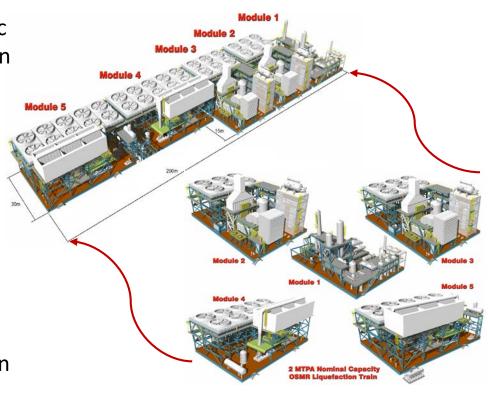
Source: Liquefied Natural Gas Limited, LNG Technology Pty Ltd.

## **OSMR®** liquefaction process technology



#### Key Strategic Advantages and Differentiating Elements of OSMR® Technology

- Mid-scale compact modular design
- Ammonia's superior thermodynamic qualities in closed-loop configuration
- Mixed refrigerant pre-cooled by the Ammonia (NH<sub>3</sub>)
- Dual drive "2-in-1" configuration
- Driver selection & use of combined cycle power
- Gas turbine inlet air cooling
- Low pressure boil-off gas (BOG) reliquefaction
- Highly efficient fuel gas consumption
- Site selection & fit-for-purpose philosophy



### CAPEX is complete, contracted, or confirmed



#### **Magnolia LNG Project**

- EPC + Other Costs per tonne range of US\$549 to US\$628 based on final FID design capacity
- Executed Lump Sum, Turnkey EPC Contract<sup>1</sup> (\$499-544/mtpa)
  - 4 x 2 trains, 2 tanks, all amenities
  - Gas turbines, compressors, cold boxes, bulk materials
  - Mob / de-mob costs
  - Capital spares / contractor insurance
  - EPC profit, risk funds, escalation, contingency
- Other Costs contracted or verifiable (\$50-84/mtpa)
  - Owner's engineer
  - Remaining regulatory, permitting, and environmental costs
  - Commissioning gas and cost
  - O&M mobilization
  - Other minor non-EPC contracts
  - Internal capitalized costs from financial close
- Financing costs will be at market rates as at Financial Close







<sup>1</sup> Price validity through 31 December 2016

### **OSMR®** OPEX attributes



Selecting the Best Available Technology (BAT) for LNG liquefaction has positive impacts on many areas of operations as well as the surrounding community

#### Less natural gas consumed as fuel (reduced feed gas retainage)

 Annual US\$28 million saving for an 8 mpta plant (based on 2% retainage reduction from traditional designs, US\$3.00/mm Btu)

#### Lower Greenhouse Gas (GHG) emissions

 Annual reduction of 500,000 metric tons GHG for an 8 mtpa plant (based on 2% retainage reduction from traditional designs)

#### Lower overall emissions

 Reduced fuel consumption inherently reduces all emissions; very low NOx gas turbines further limit profile

#### Minimal flaring

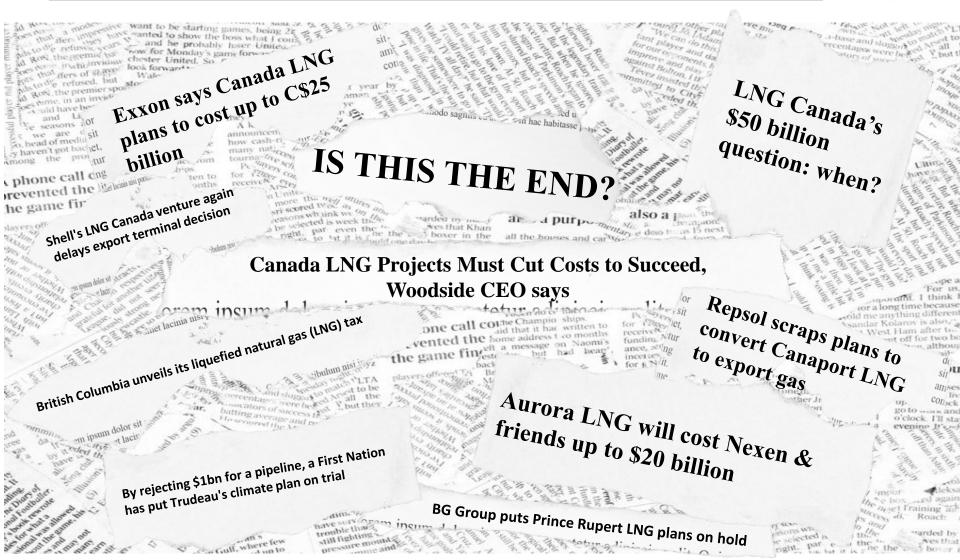
 Innovative plant design and procedures minimize flaring during start-up, cool-down, and other transient conditions

#### High reliability / availability, dual-drive "2-in-1" configuration

Independent, parallel refrigerant circuits mitigate impact of planned / unplanned outages

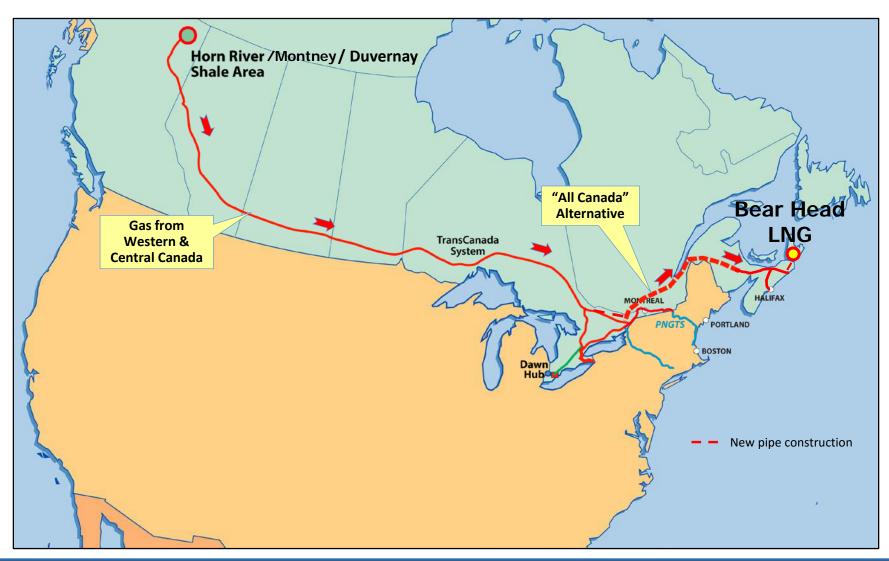
# Western Canadian project delays / cancelations





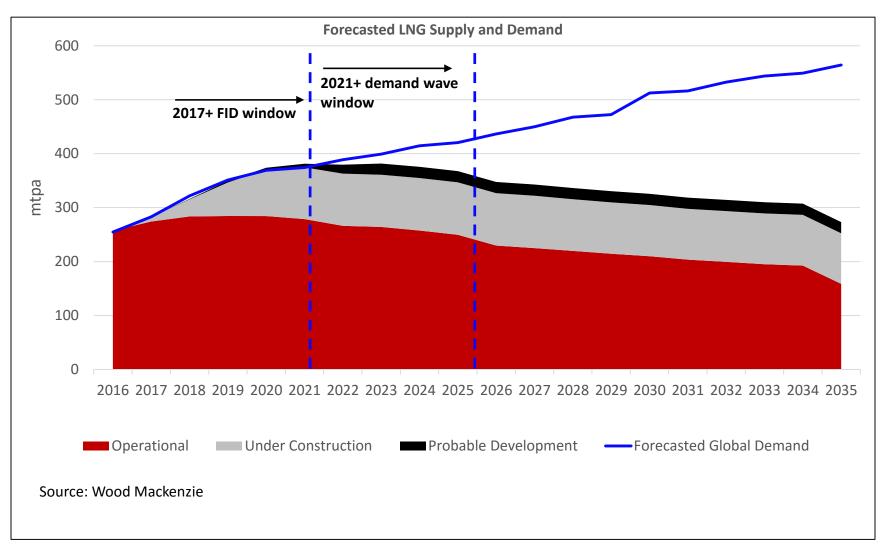
## East Coast LNG - "Plan B" for Western shale gas





## Forecasted supply deficit





## Regulatory certainty? FERC approval status check



Pro	jects in construction	State	FERC Order	PISD	Pre File	FERC App	SER	DEIS	FEIS	Order	NFTA	
1	Sabine Pass (1-4 & 5-6)	LA	'12 & '15	'16 & '19								
2	Freeport LNG	TX	Jul 2014	'17/'20								
3	Cameron LNG	LA	Jun 2014	'18/'19								
4	Cove Point	MD	Sep 2014	2017								
5	Corpus Christi (1-3)	TX	Dec 2014	2017								
FER	C Order issued	State	FERC Order	PISD	Pre File	FERC App	SER	DEIS	FEIS	Order	NFTA	
1	Magnolia LNG	LA	Apr 2016	2019/22	Mar '13	Apr '14	Apr '15	Jul 15	Nov '15	Apr '16		
2	Trunkline LNG	LA	Dec 2015	TBD	Apr '12	Mar '14	Jan '15	Apr '15	Aug '15	Dec '15	DELAYED BY SHELL	
3	Southern LNG	GA	Jun 2016	TBD	Dec '12	Mar '14	Oct '15	n/a	n/a	Jun '16		
Oth	er projects	State	FERC Order	PISD	Pre File	FERC App	SER	DEIS	FEIS	Order	NFTA	
1	Jordan Cove LNG	OR	TBD	TBD		FER	RC application denied, rehearing requested					
2	Golden Pass LNG	TX	Pending	TBD	May '13	Jul '14	Jan '16 Mar '16 Precedent is ~ 4 quarters to NFTA					
4	Delfin LNG	LA	Pending	TBD	n/a	May '15	n/a	n/a Jul '16				
3	Gulf LNG	MS	Pending	TBD	Dec '12	Jun '15	Precedent indicates ~ 9 to 12 quarters to issuance of NFTA for greenfield projects					
5	Venture Global	LA	Pending	TBD	Jul '15	Sep '15						
6	Texas LNG	TX	Pending	TBD	Dec '15	Mar '16						
7	Rio Grande LNG	LA	Pending	TBD	Mar '15	May '16						
8	Annova LNG	LA	Pending	TBD	Mar '15	Jul '16						
9	Corpus Christi (4 & 5)	TX	Pending	TBD	Jun '15	_	redent indicates ~ 14 to 17 quarters to issuance of NFTA					
10	Driftwood LNG	LA	Pending	TBD	Jul '16	] Prec						
						1		for greenfie	ald projects			

#### **Conclusion – What to consider**



#### **Leading Success Factors**

- Regulatory certainty matters
- Cost matters
- Reliability matters
- Efficiency matters
- Flexibility matters
- Environmental considerations matter
- Economics matters
- Time to market matters

#### **Questions to Consider**

Can your potential supplier demonstrate:

- A competitive cost via an executed EPC contract - not just a "Class 5" estimate?
- An O&M strategy and execution plan with 3<sup>rd</sup> party verified costs?
- Secure access to gas supply complete with pipeline development costs (if any) in the economics?
- Fully costed ancillary activities (e.g.):
  - Power supply, including cost of construction of power plant (if required), in the economics
  - Full civil works required to protect site from natural disasters (if required) in the economics
  - Reliability risk from overly complex designs
- Debt and equity commitment plans that confirm creditors receive required rates of return and overall project financeability?

#### **Contacts**



Mr Greg Vesey
Managing Director &
Chief Executive Officer

Mr Michael Mott Chief Financial Officer

Mr John Baguley
Chief Technology Officer

Mr Anthony (AG) Gelotti Chief Development Officer

Mr Andrew Gould Joint Company Secretary

#### **Liquefied Natural Gas Limited**

Level 1, 10 Ord Street, West Perth WA 6005, Australia

**Telephone:** (08) 9366 3700; Facsimile: (08) 9366 3799

1001 McKinney, Suite 600

Houston, Texas 77002, USA

**Telephone:** +1 713 815 6900; Facsimile: +1 713 815 6905

Email: LNG@LNGLimited.com.au Web site: www.LNGLimited.com.au

#### Forward looking statement / Non-GAAP financial measures



The following presentation, together with all information and data contained in verbal and other written statements or presentations made by or on behalf of Liquefied National Gas Limited ("LNGL") (ASX: LNG) (OTC ADR: LNGLY), whether related to LNGL or any of its assets, affiliates or subsidiaries, including, without limitation, Magnolia LNG, LLC ("Magnolia LNG"), LNG Technology Pty Ltd ("LNG Technology"), Gladstone LNG Pty Ltd ("Gladstone LNG"), Bear Head LNG Corporation ("Bear head LNG") (LNGL, Magnolia LNG, LNG Technology, Gladstone LNG, Bear Head LNG and any other assets, affiliates or subsidiaries, whether named or unnamed, are referred to herein as the" LNGL Group"), contains forward-looking statements concerning LNGL Group's strategy, operations, financial performance, plans, projections and expectations, all of which are subject to uncertain conditions and circumstances in the various countries, sectors and markets in which LNGL Group operates or is planning to operate.

The Private Securities Litigation Reform Act of 1995 ("PSLRA") provides safe harbor protections for forward-looking statements in order to encourage companies to provide prospective information about their business. LNGL Group intends to rely on the benefits of the safe harbor provisions of the PSLRA and includes this cautionary statement for purposes of disclosure and disclaimer. Forward-looking statements are based on assumptions involving judgments and predictions concerning the future and are not statements of historical facts. Without limitation, the words "anticipate," "assumptions," "believe," "could," "enable," "estimate," "estimated," "expect," "expected," "forecast," "formulated," "intends," "may," "on track," "opportunity," "pending," "plan," "potential," "progress," "project," "ready," "replicate," "should," "targeting," "tracking," and similar expressions identify forward-looking statements. Forward-looking statements are not guarantees of outcome, results, performance or any projections, and involve significant risks, uncertainties and assumptions, the results of which often differ materially from those expressed in the forward-looking statements. Factors influencing these results are beyond LNGL Group's ability to control or predict.

LNGL Group's ability to fulfill its objectives, goals, strategies, synergies and revenue, income or cash flow are subject to significant national, international, regional and local economic, competitive and regulatory conditions and developments, as well as technological competitive developments; energy, credit and capital markets conditions; inflation and interest rates; political and economic instability of oil producing and consuming nations; business and regulatory or legal challenges, decisions and outcomes; timing and success of business development efforts and opportunities; as well as weather conditions and other uncertainties. No person or company should put undue reliance on forward-looking statements. Nothing in this presentation or any forward-looking statement should be used as a substitute for any party's own due diligence investigation, nor relied upon by any party in deciding to invest in LNGL Group or any of its projects, or to retain or sell any securities in any one or more of the entities in the LNGL Group. No person acting directly or indirectly for LNGL Group is authorized to make any representation or warranty, express or implied, concerning the accuracy or completeness of the information in this presentation and any forward-looking statements.

LNGL Group undertakes no obligation to update any forward-looking statements, and does no assume or accept any responsibility or liability for any inaccuracies in this presentation or forward-looking statements. Neither this presentation nor any forward-looking statement made by or on behalf of LNGL Group shall constitute an offer to sell or the solicitation of an offer to sell any securities in any jurisdiction in which such offer, solicitation or sale would be unlawful prior to registration or qualification under application securities laws of such jurisdiction. No offer of securities in LNGL Group shall be made except by means of a prospectus satisfying the standards of the Securities Act of 1933, as amended or other applicable law.

LNGL Group may use or express non-generally accepted accounting principles ("non-GAAP") financial measures in this presentation and forward-looking statements. LNGL Group undertakes no obligation to reconcile non-GAAP financial measure to comparable GAAP measures. Non-GAAP measures should not be considered an alternative to or substitute for GAAP financial measures.

NOTHING IN THIS PRESENTATION OR FORWARD-LOOKING STATEMENTS SHALL SERVE AS A SUBSTITUTE FOR ANY REGISTRATION STATEMENT, PROXY STATEMENT OR PROSPECTUS, IF ANY, FILED BY LNGL GROUP WITH APPLICABLE SECURITIES EXCHANGES. INVESTORS AND INTERESTED PARTIES ARE URGED TO CAREFULLY REVIEW ANY REGISTRATION STATEMENTS, PROXY STATEMENTS AND PROSPECTUS, IF ANY, FILED WITH APPLICABLE SECURITIES EXCHANGES.