

# CNG OPTIMUM

LEADING MARINE CNG TRANSPORT SOLUTION



2018 ANNUAL GENERAL MEETING PRESENTATION



# DISCLAIMER



## AUSTRALIA AND ALL JURISDICTIONS

The information in this presentation is not an offer or recommendation to purchase or subscribe for securities in Global Energy Ventures Ltd (GEV) (ASX:GEV) 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 the GEV's knowledge, current at 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 CNG, fluctuations in gas and CNG 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.

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

## UNITED STATES (ONLY)

Any offering or solicitation will be made only to qualified prospective investors pursuant to a prospectus or offering memorandum, each of which should be read in their entirety. To the extent applicable, any placement of securities will only be available to parties who are "accredited investors" (as defined in Rule 501 promulgated pursuant to the Securities Act of 1933, as amended) and who are interested in investing in the securities on their own behalf.

# CORPORATE OVERVIEW

## CAPITAL STRUCTURE

## ASX: GEV

Ordinary Shares on Issue	326.4m
Market Capitalisation at \$0.195/share (undiluted)	\$63.6m
Cash Balance as at 30 Sep 2018	\$3.52m
Performance Shares – SeaNG Transaction <sup>3</sup>	15.85m (4%)
Options on Issue <sup>1</sup>	43.4m (11%)
Performance Rights <sup>2</sup>	14m (3%)
Fully Diluted Shares	399.6m (100%)

## SHAREHOLDER SUMMARY

Maurice Brand	6.5%
Board and Management Holding	>20%
Top 20 shareholders <sup>4</sup>	44.8%
Top 50 shareholders <sup>4</sup>	67.4%
Institutional Holders	~25%

1. 6.77m 10c options, expiry 30/5/20; 2m 14c, expiry 18/6/20; 3m 21c, expiry 19/6/20; 31.63m 40c options, expiry 31/5/20;
2. Performance Rights issued to Maurice Brand, Garry Triglavcanin, Paul Garner and consultants
3. Refer to the 30 June 2018 Annual Report for full details of the Milestone Conditions
4. Including shares held by the Board and Management

## SHARE PRICE HISTORY

## ASX: GEV



**CNG 200 OPTIMUM SHIP**  
**DESIGN ONE | BUILD MANY | OPERATE GLOBALLY**





# GLOBAL GAS MARKET OUTLOOK

## GEV POSITIONED TO CAPITALISE ON GROWTH

### GAS TO OVERTAKE COAL AS WORLD'S SECOND LARGEST ENERGY SOURCE BY 2030

World Energy Outlook Report, November 2018, International Energy Agency

**+25 to 50%**

Growth in Energy  
Demand By 2040

**+45%**

Global Gas  
Demand By 2040

**25%**

Global Energy  
Produced by Gas

**60%**

Of Global Gas Imports  
into Asia by 2040

### ONLY NATURAL GAS WILL OUTRUN THE SOLAR REVOLUTION

- Energy demand to grow by more than a quarter between 2017 and 2040 assuming more efficient use of energy – but could rise by twice that much without such improvements
- China, already the world's biggest oil and coal importer, will soon become the largest importer of gas and net imports will approach the level of the European Union by 2040
- Emerging economies in Asia will account for half of total global gas demand growth and their share of LNG imports to double to 60% by 2040
- Coal and renewables will swap their positions in the power generation mix. The share of coal is forecast to fall from about 40 percent today to a quarter in 2040.



# SUPPORTING GAS AS THE TRANSITION FUEL TO RENEWABLES

## ENVIRONMENTAL BENEFITS OF CNG

Natural gas is considered a vital component to a sustainable energy future, being the transition fuel that will give way to renewables. Natural gas power generation is acting to support and complement the current shortfalls in the renewable energy space.

To serve as a transition, natural gas must first completely replace coal and heavy fuel oil in power plants. This switch in power generation has the greatest short term impact - significantly reducing all polluting emissions and improving air quality.

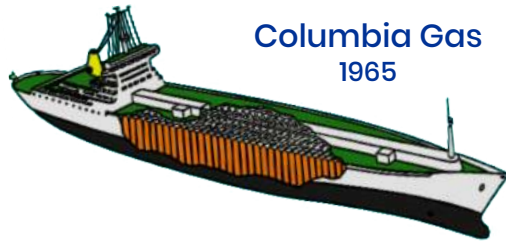
How Natural Gas compares to Coal when used for power generation:

- 50% less Carbon Dioxide
- 80% less Nitrogen Oxides
- 99.9% less Sulphur Dioxide
- 90% less Particulates

CNG Optimum ships are equipped with dual fuel engines which run on natural gas from their own cargo. As a result these ships will be among the cleanest running in the world. Reducing emissions from the shipping industry is a key focus for the International Maritime Organization, who as of January 1, 2020 will be enforcing strict regulations on marine fuels.

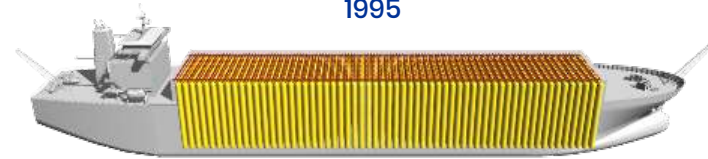
# EVOLUTION OF THE CNG SHIP

## EARLY DESIGNS: 1960 – 90's



Columbia Gas  
1965

Steel and design factors of the 60's  
Too many connections  
**Very limited economic range**



Bottle-Ship  
1995

Increased gas volume to steel ratio  
High-strength steel  
Too many connections  
**Limited economic range**

### Early CNG ship designs were constrained by:

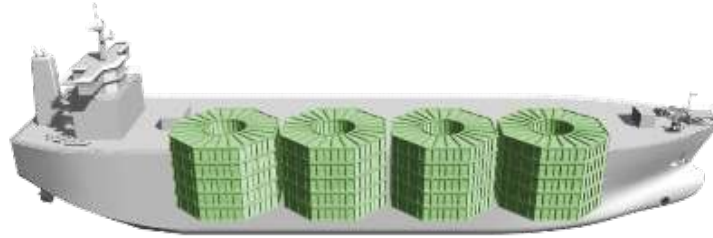
- Stacking long horizontal pipes was not permitted because they would rub together as the ship flexed at sea
- Vertical pressure bottles became the 'standard' for CNG ships
- Vertical bottles had to be supported in a framework and required space between each bottle for inspection

### The excessive number and spacing of vertical pressure vessels resulted in:

- An inefficient use of the cargo space
- A highly expensive connection system

# EVOLUTION OF THE CNG SHIP

## COSELLE DESIGN: 1998



Reduced connections using large coils of small diameter pipe  
**Modest economic range**

**The Coselle design achieved American Bureau of Shipping “Full Design” Approval. The design:**

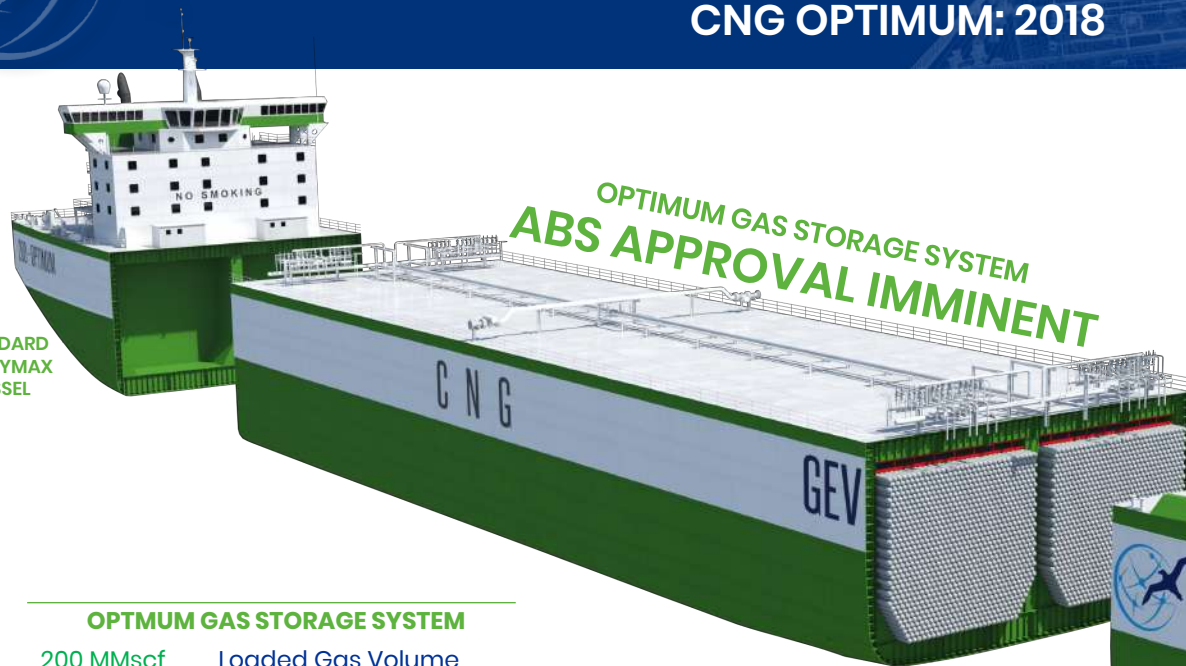
- Showed the merits of long coiled lengths of pipe to minimize the number of connections
- Showed the merits of integrating the containment system into the ship design
- Showed that the CNG storage in the ship was still not optimum because of the wasted space due to geometry
- Overly complex in construction because a specialised facility was needed to fabricate the Coselle's

**Therefore, the “light bulb” moment:**

- Use **horizontally stacked** straight pipe to optimize the usage of the ship's cargo hold
- **Invent a system to overcome the horizontally stacked straight pipes rubbing together**

# THE EVOLUTION OF CNG SHIP DESIGN

## CNG OPTIMUM: 2018



STANDARD  
HANDYMAX  
VESSEL

### OPTIMUM GAS STORAGE SYSTEM

200 MMscf	Loaded Gas Volume
3,600 psi	Operating Pressure
X80 Steel	Pipe Grade
20"	Pipe Diameter
108m	Individual Pipe Length
140km	Total Length of Pipes

### HANDYMAX CNG SHIP

184.7m	Length
16.8m	Depth
31.3m	Breadth
9.2m	Full Load Draft
45,600 t	Displacement
14 knots	Average Speed



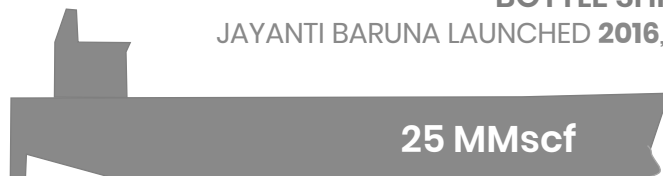
STANDARD  
HANDYMAX  
VESSEL



# A STEP CHANGE IN MARINE CNG ECONOMICS

## BOTTLE SHIP

JAYANTI BARUNA LAUNCHED **2016**, FOR USE IN INDONESIA

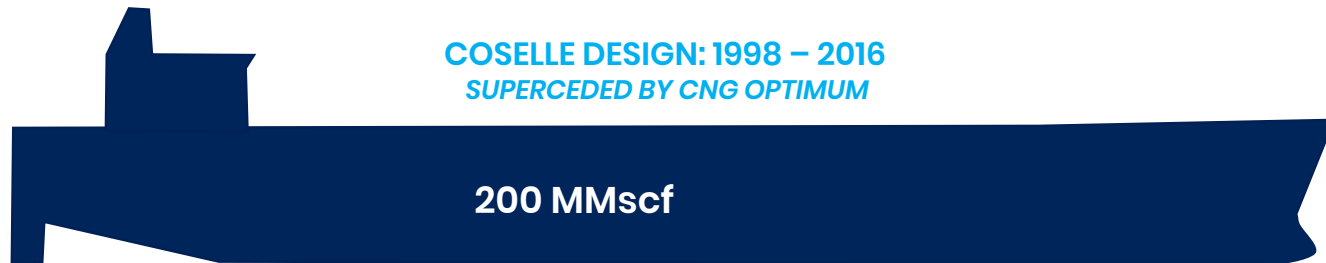
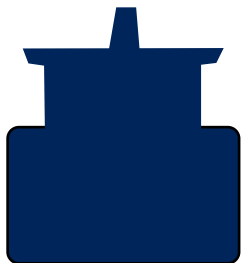


25 MMscf

110m

## COSELLE DESIGN: 1998 – 2016

*SUPERCEDED BY CNG OPTIMUM*

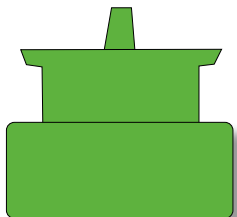


200 MMscf

221m

## CNG OPTIMUM DESIGN: 2018

8 X CAPACITY OF INDONESIAN BOTTLE SHIP



200 MMscf

184m



# ADVANTAGES OF CNG OPTIMUM

## KEY PARAMETERS

- Ideal for regional distances (< 2,500km)
- Flexibility to deliver gas from volumes of 50 to 400 MMscf/d
- Compression requires significantly less capex than liquefaction
- Requires small to medium gas reserves (< 1.0 TCF)
- Rapid CNG project development, less than 3 years

## SCALABLE DEVELOPMENT

- CNG Optimum is a 'fit for purpose solution' with ships & fleets sized to fit the initial market
- Minimal fixed infrastructure (~ 80% of project capex is in the Optimum ships) – no large capex investment in liquefaction and/or regasification facilities
- Scale to current demand, incrementally add ships as the market demand grows
- At the end of field or project life, CNG Ships can be easily re-deployed

## CNG IN USE WORLDWIDE

- Millions of CNG vehicles have been in service for over 40 years
- Gas handling at 3,600psi (250 bar) is common place in Oil & Gas Industry
- Similar pressure to a scuba diving tank
- This enormous experience and safety record applies to ambient temperature CNG



# ABS FULL CLASS APPROVALS NEARING COMPLETION



- American Bureau of Shipping (ABS) safety and designing **testing near completion** with only two minor sub-tests remaining
- The **Long-term Fatigue Test** has now been **successfully completed**. This means that the CNG Optimum cargo system approval will be for **35 years of operation**, based on one cycle (round trip) every week and on ABS's factor of safety requirement of 10. This test required cycling a representative pressure vessel for ten times the design life of the cargo system from minimum pressure to the operating pressure. This is an extremely rigorous test that CNG Optimum has passed and is greater than the required design fatigue life of the ship itself (typically 25 years).
- Only two tests remain
  - **Notched Burst Test after Fatigue**: This test requires fatiguing a specimen through 3 times the design life (6,000 cycles) and then bursting the pipe with machined notches embedded. This is proof of the pipes' ductility and its ability to maintain its burst capacity even with initial defects. The **6,000 cycles have been completed** and the pipe is being reassembled into the safety chamber for the burst test and to be completed imminently;
  - **Cooled Burst Test after Fatigue**: This test requires fatiguing the specimen through 3 times the design life and then bursting the pipe after it has been cooled to simulate the temperatures that would result from the Joule-Thompson cooling effect of gas escaping through a crack. This test will immediately follow the Notched Burst Test.

➔ **FINAL ABS FULL CLASS APPROVAL IN DECEMBER QUARTER**

# CNG OPTIMUM SHIPYARD PROGRESS

- Shipyard proposals are currently being received for GEV evaluation
- Clarksons (GEV's appointed ship broker) to review structured financing options appropriate for each shipyard
- GEV to select and appoint Project Shipping Manager



**→ GEV TO AWARD CNG OPTIMUM SHIPPING CONTRACT IN 2019**



# GEV BUSINESS MODEL

## A PIPELINE TO PIPELINE SOLUTION

### CNG Export Terminal

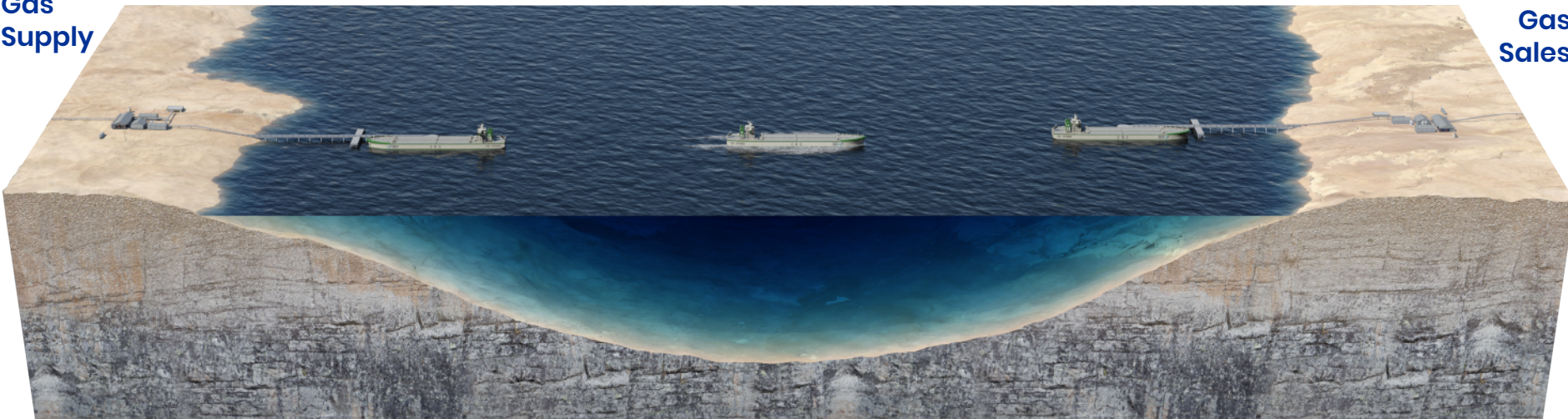
Gas Metering, Compression Facilities &  
Pipeline to CNG Loading Jetty

### CNG Import Terminal

CNG Unloading Jetty, Scavenging Facilities  
& Pipeline to Customer

Gas  
Supply

Gas  
Sales





# DEVELOPING A GLOBAL CNG PORTFOLIO



# HEADS OF AGREEMENT WITH TWINZA OIL TO EXPORT CNG

## HOA EXECUTED WITH TWINZA OIL TO EVALUATE THE CNG TRANSPORT OF PNG OFFSHORE GAS TO THE EAST COAST OF AUSTRALIA, SUPPLY OF 100MMSCF/DAY OF CNG (EQUIVALENT TO 0.7MTPA OF LNG)

- HOA signed with Twinza Oil Limited to undertake a joint study on the commerciality of exporting offshore gas from the PNG Pasca A field via CNG Optimum ships
- Twinza is 100% owner & operator of the Pasca A field, located in the Gulf of Papua
- Final project plan approvals for the development of the liquids rich offshore field is the next step for Twinza, who are targeting **Final Investment Decision in 2019**
- The Pasca A field facilities are designed for the **production of 100 MMscf/d of dry gas** and first liquids production is currently **scheduled in 2021**
- GEV and Twinza are focused on key gas markets in Queensland, Australia & PNG mining projects using high cost fuels for power generation
- Joint Pre-Feasibility study as required to be completed on schedule



# PASCA CNG PROJECT

<b>GAS SOURCE:</b>	Pasca A field, Gulf of Papua, PNG
<b>GAS VOLUMES:</b>	100 MMscf/day (~0.7 Mtpa LNG equivalent)
<b>TERM:</b>	10 years
<b>CONTRACT PRICE:</b>	Dependent on delivery location
<b>OPTIMUM 200 SHIPS:</b>	Up to 4
<b>SHIPPING DISTANCE:</b>	Up to 2,000 km
<b>FRONT END ENG. &amp; DESIGN:</b>	Q4 2018 – Q1 2019
<b>TARGET FID:</b>	2019
<b>FIRST GAS:</b>	2022
<b>CNG IMPORT LOCATION(S):</b>	Queensland, Australia & Domestic PNG



**MINIMAL ADDITIONAL INVESTMENT IN PASCA DEVELOPMENT WITH GAS COMPRESSION ALREADY INCLUDED IN THE LIQUID FIELD DEVELOPMENT PLAN**



# **PASCA CNG PROJECT**

## **KEY MILESTONES IN 2019**

- SECURE GAS SUPPLY AGREEMENT WITH TWINZA**
- SECURE GAS SALES AGREEMENT**
- FINAL INVESTMENT DECISION**

# INDIA'S IMPORTED GAS VOLUMES SET TO RISE 300% BY 2040

## INDIA OVERTAKES CHINA AS THE LARGEST GROWTH MARKET FOR ENERGY BY THE LATE 2020's

BP Energy Outlook for India, 2018

- The Indian government's goal is to increase the energy mix from 6.5% natural gas to 15% supported by a nationwide gas grid and setting up of gas infrastructure
- Equates to +300% increase in the volumes of imported gas required (21mtpa in 2017 to +70mtpa) to meet this requirement
- Increase in volume places India's growth for imported gas second behind China & ahead of Japan
- Development of domestic gas infrastructure for industrial/consumers use and construction of 10,000 CNG filling stations.

**+165%**  
Growth in  
India's Total  
Energy  
Consumption

**+241%**  
Growth in  
Power  
Consumption

**11%**  
Share of  
Global Energy  
Consumption

**+291%**  
Growth in  
Gas Imports

- Multiple investment grade energy companies are seeking economic supply of gas
- Delivered CNG will be very cost competitive vs current delivered LNG cargoes under contract or spot pricing
- CNG infrastructure will be a fraction of LNG receiving terminals being commissioned or proposed for delivery by 2020
- Foreign companies now committing to significant investment in gas infrastructure assets – India closing the gap to be 'investment grade'



# HOA WITH INDIAN OIL CORP FOR PURCHASE OF CNG

## HEADS OF AGREEMENT WITH INDIA OIL CORPORATION LIMITED FOR THE SUPPLY UP TO 220 MMSCF/D OF IMPORTED CNG FOR 20YRS (EQUIVALENT TO 1.5MTPA OF LNG)

- Under the Heads of Agreement, parties will commence negotiations for a **binding Gas Sale Agreement for 20yrs, starting late 2021**, priced using a link to Brent crude and delivered to Port of Dahej, an established multi-commodity port that is connected to the India's gas infrastructure network
- Indian Oil Corporation Limited is the largest energy company in India (**137th in Fortune Global 500, 2018**) engaged in the complete supply chain of petrochemical products in India along with a global portfolio of energy assets
- Annual revenues of **USD 63B**; Enterprise Value of **USD 35B** (Bloomberg); BBB - rating
- 33% of the country's oil refining capacity; 11 refineries with 80.7MMtpa capacity; 13,200km of pipelines; 44% petroleum market share in FY18; 2<sup>nd</sup> largest in domestic petrochemicals



IOCL Executive Director Shailesh Kumar Sharma & GEV CEO Maurice Brand



# HOA WITH INDIAN OIL CORP FOR PURCHASE OF GAS

<b>GAS SOURCE:</b>	Middle East gas
<b>GAS VOLUMES:</b>	220MMscf/day (~1.5Mtpa LNG equivalent)
<b>TERM:</b>	20 years
<b>CONTRACT PRICE:</b>	Linked to Brent Crude
<b>OPTIMUM 200 SHIPS:</b>	Up to 6
<b>SHIPPING DISTANCE:</b>	Up to 2,500KM
<b>TARGET FID:</b>	2019
<b>FIRST GAS:</b>	2022
<b>CNG IMPORT LOCATION:</b>	Port of Dehaj, Gulf of Cambay (Nominated by Indian Oil Corp)



**SCOPE FOR CONTRACTED VOLUMES TO EXPAND BY 300%**



# MIDDLE EAST TO INDIA CNG PROJECT

## KEY MILESTONES IN 2019

- SECURE GAS SUPPLY AGREEMENT FROM MIDDLE EAST
- CONVERT HOA WITH INDIAN OIL INTO GAS SALES AGREEMENT
- FINAL INVESTMENT DECISION

# PORT MERIDIAN ACCESS INTO THE UK MARKET

- GEV holds 5% equity interest in Meridian Holdings Co.
- GEV holds port capacity & gas sale rights up to 300 MMscf/d (2.3Mtpa LNG equivalent) to supply Uniper Global Commodities SE
- Discussions underway with two identified proven gas reserves located that are suitable for the transport of gas as CNG
- Port Meridian is a proposed deep-water port located 37km offshore, north west England
- Designed for 750 MMscf/d delivery to the UK national transmission system and can accept CNG or LNG vessels
- Unique technical fit for CNG delivery to Europe
- Permitted for offshore unloading with proposed 55 km offshore pipeline to the Onshore Facilities connected to the UK grid.
- European gas pricing has significantly increased during 2018 confirming viability for marine importation of gas





# **PORT MERIDIAN CNG PROJECT**

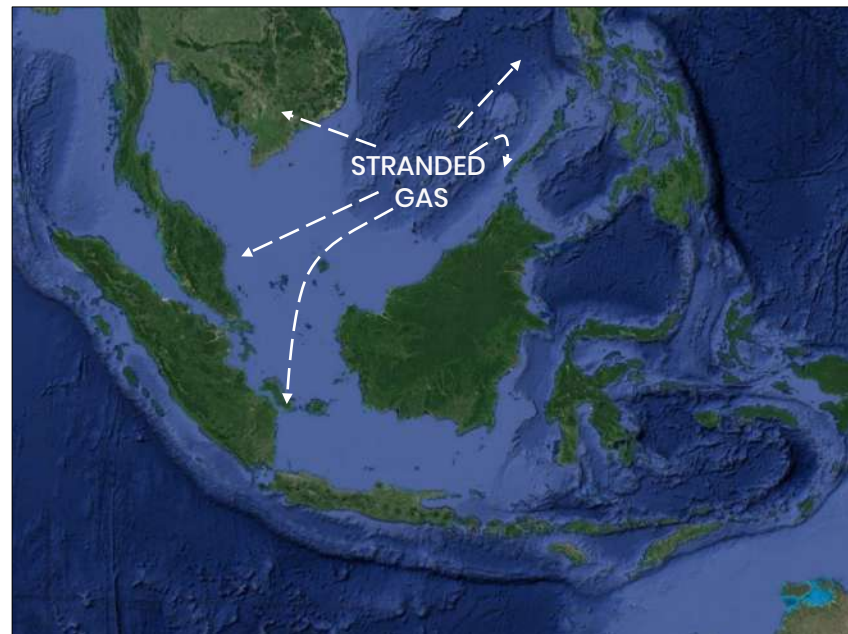
## **KEY MILESTONES IN 2019**

- EXTEND UNIPER GAS SALES AGREEMENT TO DECEMBER 2019**
- SECURE HOA FOR GAS SUPPLY**
- DEVELOP LONG TERM FUNDING PLAN FOR PORT MERIDIAN**



# PURSuing MALAYSIAN STRANDED GAS

- Letter of Intent signed with Tamarind Resources Pte Ltd, an oil and gas operator headquartered in Kuala Lumpur, Malaysia.
- Objectives are to jointly identify, evaluate and pursue an interest/operatorship in gas fields in the Malaysian region, using GEV's proprietary CNG Optimum ships to export gas to South East Asian gas markets.
- First commercial case established to target an offshore Malaysian gas field with a proposal lodged with government authorities to conduct further due diligence and potential interest/operatorship in such field.
- Regional due diligence has identified multiple discovered stranded gas resources suitable for regional markets.
- Potential target markets within 2,500km (1350nm) include:
  - Domestic Malaysia
  - Exports to Philippines, Vietnam, Indonesia or Singapore
- **Low cost strategy to gain equity gas resource exposure and benefit from the re-rate to commercial gas reserves through the application CNG transport solution.**





# **MALAYSIA CNG PROJECT**

## **KEY MILESTONES IN 2019**

**→ SECURE GAS SUPPLY FOR CNG COMMERCIALISATION**

**→ IDENTIFY TARGET GAS SALE MARKETS**

# BOARD & SENIOR MANAGEMENT



**Maurice Brand**  
**Chairman and CEO**

Over 30 years' experience in the international energy industry.

Founder and MD of listed Liquefied Natural Gas Limited (LNG.ASX) 2002–2016; and Energy Equity Corporation Limited in 1985.

Successful energy sector entrepreneur successfully taking LNG to a market valuation of A\$2.5B and raising over \$400m in equity.



**Garry Triglavcanin**  
**Executive Director**

Bachelor of Mechanical Eng. & MBA with 25 years' experience in the international energy industry across commercial, technical & legal aspects of project development.

12 years with Liquefied Natural Gas Limited as Group Commercial Manager, developing a range of projects, including the Australian Fisherman's Landing LNG Project, Magnolia United States LNG Project and the Middle East Qeshm Island LNG Project.



**Paul Garner**  
**Non-Executive Director**

Over 15 years' experience in the international energy industry, directly focusing on capital raising & restructuring of companies at various stages of their development.

Instrumental in acquiring the prospect in the Gulf of Mexico that produced the High Island 24L gas discovery in 2006 for Entek Energy Limited.

Director and management roles in various ASX listed juniors.



**Jens Jensen**  
**Non-Executive Director**

Over 30 years' experience in international shipping, having arranged over US\$100 billion in shipping transactions.

A partner at Pillarstone Europe, where his main responsibility is shipping portfolio/investments.

Engaged as part of the senior management of Frontline Ltd/Fredriksen group from September 2004 to November 2015.



**John Fitzpatrick**  
**Chief Technical Officer  
GEV Canada**

Over 30 years' of experience as a structural engineer specializing in analysis, design, construction and deployment.

Previous Director of Engineering at SeaNG.

Responsible for the Optimum ship design.

Published & presented peer reviewed papers on the topics of offshore structures/ships & participated in the development of ABS rules for CNG Ships.



**David Stenning**  
**Chief Operating Officer  
GEV Canada**

Over 30 years' of engineering experience in the international energy industry, with leadership roles in engineering and management.

Leading the development of the Optimum ship

Published and presented technical and economic papers in the fields of offshore engineering, project management and marine CNG.



## IN SUMMARY

- ✓ WELL POSITIONED TO BENEFIT FROM SIGNIFICANT MARKET GROWTH
- ✓ THE LEADING GLOBAL MARINE CNG TRANSPORT PROVIDER
- ✓ OUR BUSINESS MODEL HAS NO KNOWN GLOBAL CNG COMPETITORS
- ✓ READY TO ROLL OUT THE COMMERCIALISATION OF CNG OPTIMUM
- ✓ OUR TEAM IS EXPERIENCED IN IMPLEMENTING INNOVATIVE ENERGY SOLUTIONS

Jack Toby  
Company Secretary

+61 8 9322 6955

+61 417 962 369

jtoby@gev.com

Maurice Brand  
Chairman & CEO  
mbrand@gev.com

Garry Triglavcanin  
Executive Director  
gt@gev.com