

#### **ASX ANNOUNCEMENT**

22 August 2019

#### CORPORATE PRESENTATION

Big Star Energy Ltd ("Big Star" or the "Company") (ASX:BNL) is pleased to release its updated corporate presentation.

As outlined in the presentation, the Company's strategy is to provide its shareholders with exposure to multiple high-value helium projects and conventional oil assets in North America.

Big Star Managing Director, Joanne Kendrick, commented "I believe that our helium-focused strategy has the potential to transform the Company. The commodity has seen three supply shocks in the last decade resulting in helium's end users being rationed as demand outstrips supply. Helium price is now 100 times greater than the hydrocarbon gas price in the USA.

"Our subsurface oil and gas skill set and helium knowledge gives us a great advantage in the exploration and development of helium which is conducted in almost the same way as with conventional hydrocarbons. The progress of our helium initiative has been particularly pleasing since we first announced it on 29 March 2019. Within our initial focus area identified earlier this year, we now have 30 prospects and leads with an exciting technical work program well underway including the reprocessing of aero-magnetics and gravity data and an in-field geochemical survey. Our leasing programme is also progressing strongly with our first lease secured over the Enterprise helium prospect today."

#### For further information, please contact:

Joanne Kendrick
Managing Director
info@bigstarenergy.com.au

#### **About Big Star:**

Big Star Energy Ltd (ASX:BNL) is an independent oil and gas exploration and production company, headquartered in Australia, with operations and exploration in North America. Big Star's strategy is to provide its shareholders with exposure to multiple high-value helium projects and conventional oil assets in North America. For further information, please visit the Company's website at <a href="https://www.bigstarenergy.com.au">www.bigstarenergy.com.au</a>

#### **About Helium:**

Helium is a unique industrial gas that exhibits characteristics both of a bulk, commodity gas and of a high value specialty gas and is considered a "high tech" strategic element. Due to its unique chemical and physical qualities, Helium is a vital element in the manufacture of

MRIs and semiconductors and is critical for fibre optic cable manufacturing, hard disc manufacture and cooling, space exploration, rocketry, lifting and high-level science. There is no way of manufacturing helium artificially and most of the world's reserves have been derived as a by-product of the extraction of natural hydrocarbon gas.



### **DISCLAIMER**



This presentation has been prepared by Big Star Energy Limited (ACN 009 230 835) (**BNL**). Each recipient of this presentation is deemed to have agreed to accept the qualifications, limitations and disclaimers set out below.

None of BNL and/or its subsidiaries or their respective directors, officers, employees, advisers or representatives (**BNL Parties**) make any representation or warranty, express or implied, as to the accuracy, reliability or completeness of the information contained in this presentation, including any forecast or prospective information. The forward looking statements included in this presentation involve subjective judgment and analysis and are subject to significant uncertainties, risks and contingencies, many of which are outside the control of, and are unknown to, the BNL Parties. Actual future events may vary materially from the forward looking statements and the assumptions on which those statements are based. Given these uncertainties, you are cautioned to not place undue reliance on such forward looking statements.

This presentation is a general overview only and does not purport to contain all the information that may be required to evaluate an investment in BNL. The information in this presentation is provided personally to the recipient as a matter of interest only. It does not amount to an express or implied recommendation with respect to any investment in BNL nor does it constitute financial product advice.

The recipient, intending investors and respective advisers, should:

- conduct their own independent review, investigations and analysis of BNL and of the information contained or referred to in this presentation; and/or
- seek professional advice as to whether an investment in BNL is appropriate for them, having regard to their personal objectives, risk profile, financial situation and needs.

Nothing in this presentation is or is to be taken to be an offer, invitation or other proposal to subscribe for shares in BNL.

Except insofar as liability under any law cannot be excluded, none of the BNL Parties shall have any responsibility for the information contained in this presentation or in any other way for errors or omissions (including responsibility to any persons by reason of negligence).

#### **Prospective Resources Cautionary Statements:**

Prospective resources are the estimated quantities of petroleum that may potentially be recovered by the application of a future development project relate to undiscovered accumulations. These estimates have both an associated risk of discovery and a risk of development. Further exploration appraisal and evaluation is required to determine the existence of a significant quantity of potentially moveable hydrocarbons.

The estimates of prospective resources in this document were prepared at an evaluation date of 26 April 2019 and first announced to the ASX on 29 April 2019. The Company confirms that it is not aware of any new information or data that materially affects the information included in the relevant market announcement and that all the material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed.

The estimates of prospective resources in this document were calculated using the deterministic method and all totals are arithmetically added.

The estimates of prospective resources in this document are based on and fairly represent information and supporting documentation prepared by, or under the supervision of, Mr Trent Spry who is employed as an Executive Director of Big Star Energy Limited and a member of the American Association of Petroleum Geologists (AAPG) and the Petroleum Exploration Society of Australia (PESA). Mr Spry meets the requirements of qualified petroleum reserves and resources evaluator as defined in Chapter 19 and rule 5.41 of the ASX Listing Rules and consents to the inclusion of this information in the form and context in which it appears in this document. The estimates of prospective resources have been prepared in accordance with the Petroleum Resources Management System (PRMS) sponsored by the Society of Petroleum Engineers (SPE) and American Association of Petroleum Geologists.

## **CORPORATE STRATEGY**





**HELIUM** 



NORTH AMERICA



MULTIPLE PROSPECTS



CONVENTIONAL OIL

- High value industrial gas; inelastic demand at 100x price of methane
- Growing demand from hightech manufacturing
- Experts forecast continuing supply gap in sellers market
- Growing global market now larger than lithium
- Early mover advantage

- Proven, producing helium in multiple locations
- Well developed helium market
- Ready to deploy surface processing and transport technologies
- Relatively low cost and fast lead-time environment

- Continuously feed the project pipeline
- Position for growth; scale up upon success
- Disciplined, portfolio approach to manage subsurface uncertainty

- High-value conventional oil
- Hedge against helium market cycles

### **GROWTH INITIATIVES / PLAN**



#### **NEAR TERM**

#### Secure prospective resources

Mature helium prospects into multi-well drilling program

- Leasing packages over several prospects
- Geophysical and geochemical work programs
- Mature to drill ready

Percy Creek oil prospect, 2D/3D seismic program, mature to drill ready, seek farmin partners

#### **MEDIUM TERM**

## Convert prospective resources to reserves and contingent resources

Manage capital budgets and realise value with strategic farmout/s

Execute drilling program

Acquisition/farmin targeting helium contingent resources and/or reserves

#### **LONG TERM**

#### Scale up and monetise

Convert initial drilling to production and early cashflow

Full field developments and follow up opportunities



## **VALUE PROPOSITION**





**HELIUM FOCUS** 



# PROVEN TEAM OF HIGHLY EXPERIENCED SUBSURFACE PROFESSIONALS



# FOR RETURNS ON INVESTMENT

- High value commodity with growing demand
- Rare exposure on the ASX
- Targeting high-concentration helium streams

- Internally generated opportunities; early movers
- Full value chain exposure
- Control projects, right-size capital budget and timing
- Feed the project pipeline

- Low market capitalisation offers high leverage to success
- Low amount of risk-capital required to test the concept
- North American location offers short lead times
- Developed helium market in USA, low cost environment

### THE BOARD



### ROSS WARNER

**EXECUTIVE CHAIRMAN** 

Lawyer with 15+ years in oil and gas particularly in the United States, UK and Indonesia

Experienced executive with previous and current board roles on AIM and ASX

### JOANNE KENDRICK

MANAGING DIRECTOR

Petroleum and reservoir engineer with 20+ years in upstream oil and gas. Successful experience across the value-chain including new ventures, exploration, development, marketing, production and optimisation.

Formerly Deputy MD ASX-listed Nido Petroleum (7 years), technical & asset management roles at Gulf Canada; Newfield Exploration, Woodside Energy and Clyde Petroleum

### TRENT SPRY

**EXECUTIVE DIRECTOR** 

Experienced geoscientist with 20+ years in upstream oil, gas and helium. Originated numerous projects from concept or acquisition through to discovery, appraisal, development and exit in the USA, Australia and Asia

Formerly with BHP Petroleum, Woodside Energy, RPS Energy, and Entek Energy Ltd in technical, new ventures, managerial, executive officer, director, consultant and advisory roles

### MICHAEL POLLAK

NON-EXECUTIVE DIRECTOR

Chartered accountant and MBA with 20+ years commercial and corporate advisory experience

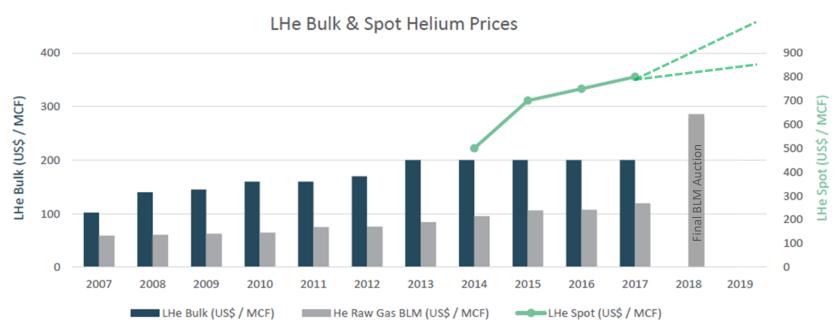
Involved with recapitalization of many ASX listed companies including current director position at MOQ Limited and previously including UCW Limited, Janison Education Group Limited, Rhipe Limited, Prospect Resources Limited and Metalicity Limited



## WHY HELIUM? THE BOOM NOBODY NOTICED...



- Currently in "Helium Shortage 3.0" – third supply shortage in last 10 years
- US Bureau of Land Management (BLM) auction prices have increased 5-fold since 2007. Final public auction held Aug-18
- Demand continuing to grow despite commodity price increases
- Majority of wholesale helium is sold under long-term contract with industrial gas companies
- Contracts are mostly take or pay with open escalation pricing
- Present spot market significantly higher than contracted, with prices as high as US\$1,000/mcf paid by some desperate end users



Sources: Edison research, Bureau of Land Management (BLM), USGS

## WHAT IS HELIUM?

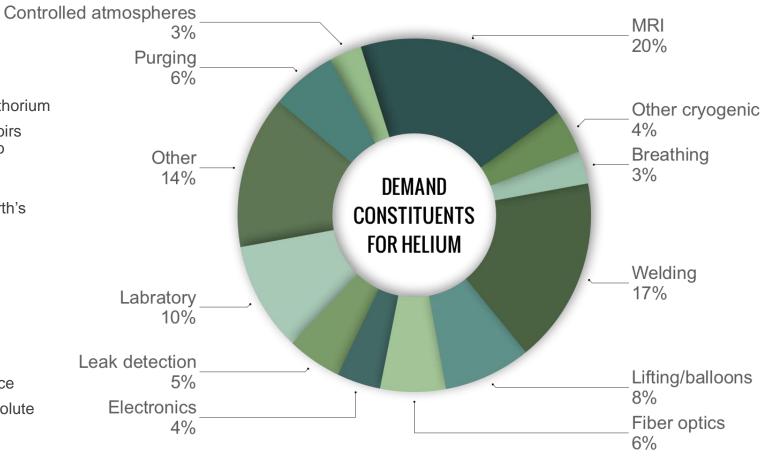


#### FINITE IRREPLACEABLE RESOURCE

- Generated by the radioactive decay of uranium and thorium
- Accumulates in commercial quantities only in reservoirs overlain by competent seal and otherwise escapes to atmosphere
- Helium does not accumulate at greater than 5ppm in atmosphere because it is light enough to escape Earth's gravitational pull and escape into space

## A UNIQUE SET OF PHYSICAL AND CHEMICAL PROPERTIES

- Non-toxic, non-flammable gas
- · Chemically and radiologically inert gas
- Coldest boiling point (-269°C) of any known substance
- Only known substance which remains a liquid at absolute zero
- · Lighter than air



Critical and irreplaceable in a number of high-tech applications including space exploration, atomic energy, MRI, fibre optics, semi and super conductors

## **VALUE CHAIN DIFFERENCES:**

## **HELIUM V NATURAL GAS**



		NATURAL GAS	HELIUM
EXPLORATION &	DEVELOPMENT	<ul> <li>Created by thermogenic maturation of organic matter</li> <li>Subsurface skills and technology used to quantify potential and chance of success</li> <li>Accumulations proven with drilling</li> <li>Reservoir pressure and quality drives recovery factor &amp; production well density</li> </ul>	<ul> <li>Generated by the radioactive decay of uranium and thorium</li> <li>Exploration and development techniques and costs similar to natural gas</li> <li>Up to ~10% helium in raw gas</li> </ul>
SURFACE	PROCESSING	Physical separation is routinely used for surface processing which relies upon density differences between gas, hydrocarbon liquids and water	<ul> <li>For large projects where hydrocarbon gas is main product, cryogenic liquefaction is routine (eg Bayu/Undan) relying on differences in boiling points</li> <li>For smaller and helium only projects, pressure swing adsorption (PSA) is routinely used relying upon helium's low levels of intermolecular attraction in comparison to nitrogen, CO<sub>2</sub> and hydrocarbon gases</li> </ul>
MARKETING &	DISTRIBUTION	<ul> <li>Low commodity price</li> <li>Well developed, unregulated market</li> <li>Publicly available reference pricing</li> <li>Extensive pipeline network in North America connects supplier and customer</li> </ul>	<ul> <li>~100 x price of natural gas</li> <li>Developed market for long-term take or pay contracts</li> <li>Emerging spot market &lt;5% of demand</li> <li>Limited public pricing information</li> <li>Transport/delivery by road in HP cylinders</li> </ul>
	S N	NPV10 up to US\$1 per mcf of natural gas resource	NPV10 up to US\$100 per mcf of helium resource

## CHARACTERISTICS OF A HELIUM DEVELOPMENT



## IDEAL ASSET CHARACTERISTICS

- 5-10% helium concentration in raw gas
- · Shallow, low pressure gas
- Onshore USA
- Within trucking distance to industrial gas plant with capacity

## PROCESSING SMALLER ONSHORE HELIUM FIELDS

- Modular pressure swing adsorbtion (PSA) units available with 2mmcfd raw gas capacity
- Concentrates helium from 3%+ in raw gas streams up to ~98%
- Plant mobilisation time to site 4-6 months
- Can be leased either for a monthly rate or a share of revenue

#### DEVELOPMENT SCALE TO FILL ONE PSA PLANT

- 5-10 vertical development wells
- 5,000-10,000 acres
- Annual helium production 35-70mmcf

#### HELIUM MARKETING

- · Sell at plant gate
- Take or pay contracts of 10+ years
- Sale price US\$250/mcf -US\$1,000/mcf (current contract spot spread)

# HELIUM PORTFOLIO

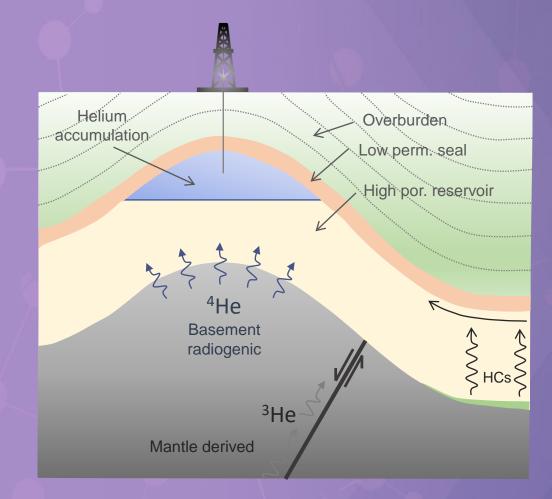




## BIG STAR'S HELIUM PORTFOLIO

- Screening studies have identified areas with proven helium produced to surface and remaining prospectivity
- Initial focus area selected for advancement based on:
  - Proven area with helium production 5-10%
  - Significant remaining prospectivity
  - Low cost drilling environment
  - Low leasing cost environment
  - First mover advantage
- · 30 self generated prospects and leads identified

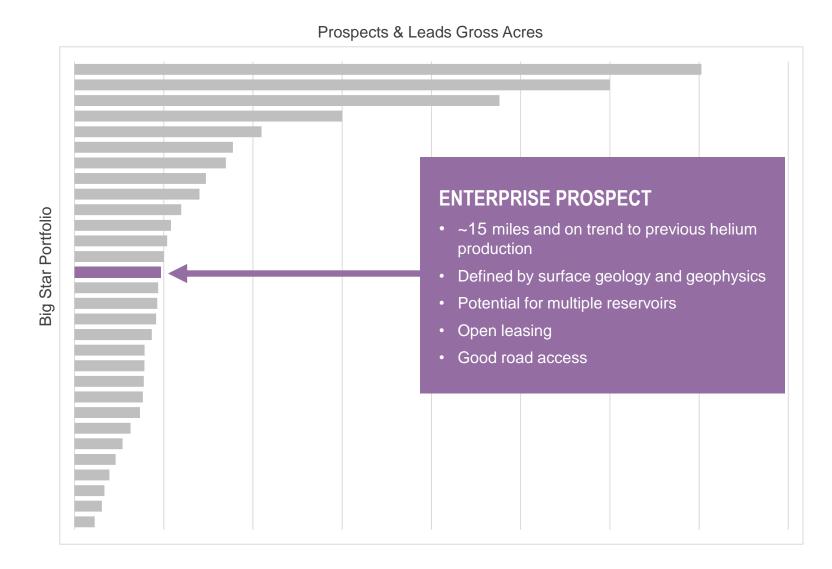




### ENTERPRISE PROSPECT SELECTION



- Initial lease acquired at Big Star's first helium prospect "Enterprise"
- Big Star has 100% working interest and is the operator
- Approximately 5,000 gross acres targeted for leasing over Enterprise
- 30 helium prospects and leads identified within the initial focus area
- Targeting 4 additional prospects from portfolio of 30 for next phase of leasing



## LOW COST WORK PROGRAMME



LEASING \$50K / prospect	Initial leases secured from targeted 5000 gross acres at Enterprise prospect  Continue leasing Enterprise  Lease several additional prospects				
GEOPHYSICS \$30K	Reprocess existing gravity and aero-magnetics data to refine prospects  Initial draft report received; final report due this quarter Confirm regional geology, prospect structures and sizes				
GEOCHEMISTRY \$40K	Test for anomalous helium concentrations at surface  • Mobilised to field in August 2019  • Additional prospect-scale geochemical work to support drilling				
DRILLING \$300-400/WELL	Targeting 3-5 well drilling program  • Ready for permitting 1Q2020				
Lead	Lead Lead Prospect Lead Lead				



## **BIG STAR'S OIL PROSPECT**

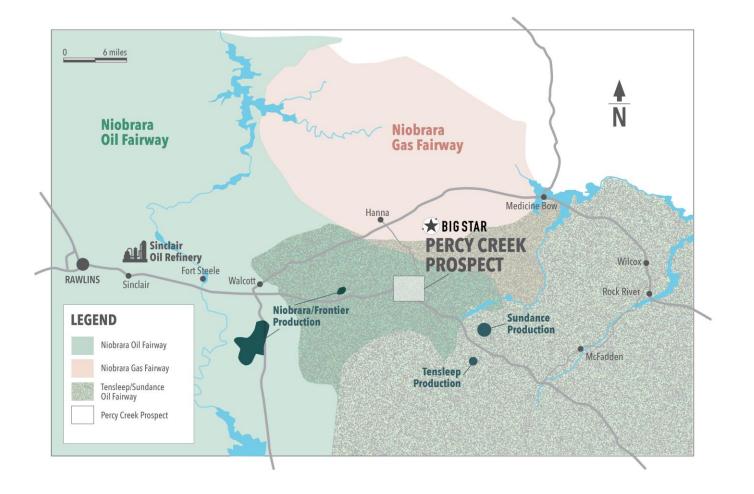
## PERCY CREEK



### BNL has rights to acquire up to 100% working interest in the leases

- 2019 Program US\$360k to be ready for drill (seismic, permitting, etc) secures 20% WI and overriding royalty
- Exclusive option to drill well by end-2020 to test all 4 reservoir targets (circa US\$1.8m dry hole and past costs) secures remaining 80% WI





## BIG STAR'S OIL PROSPECT PERCY CREEK

#### Farmin and drilling option for 100% working interest

- 5,228 gross acres with additional 29,900 gross acres covered by AMI
- Operational control over work program

#### Conventional oil analogues

- Sundance Formation Elk Mountain Field Anshutz-1 well, 450bopd initial rate and 1mmbbl produced
- Tensleep Formation Summit Pass Creek #1, 400bopd initial rate and 350mbbl produced
- Up to 12 potential conventional development well locations at Percy Creek

**Unconventional oil analogues** – recent deal flow in Niobrara ranges from US\$6,000-\$16,000/acre where commerciality has been demonstrated

Note 1: The prospective resources shown were calculated by the deterministic method at an evaluation date of 26 April 2019 and are calculated at 100% gross working interest. They are the estimated quantities of petroleum that may potentially be recovered by the application of a future development project relate to undiscovered accumulations. These estimates have both an associated risk of discovery and a risk of development. Further exploration appraisal and evaluation is required to determine the existence of a significant quantity of potentially moveable hydrocarbons.



Multiple Reservoir Targets	Best Case Prospective Resources <sup>1</sup> (mmbbl)	Geological chance of success	Distance to producing analogue
Tensleep (conventional)	3.1	25%	8.5 miles
Sundance (conventional)	6.1	25%	8.5 miles
Frontier (unconventional)	45.2	80%	6 miles
Niobrara (unconventional)	20.7	80%	6 miles
Total	75.1		

## IN CLOSING...



### **GROWTH INITIATIVES / PLAN**



#### **NEAR TERM**

#### Secure prospective resources

Mature helium prospects into multi-well drilling program

- Leasing packages over several prospects
- Geophysical and geochemical work programs
- Mature to drill ready

Percy Creek oil prospect, 2D/3D seismic program, mature to drill ready, seek farmin partners

#### **MEDIUM TERM**

## Convert prospective resources to reserves and contingent resources

Manage capital budgets and realise value with strategic farmout/s

Execute drilling program

Acquisition/farmin targeting helium contingent resources and/or reserves

#### **LONG TERM**

#### Scale up and monetise

Convert initial drilling to production and early cashflow

Full field developments and follow up opportunities



## **VALUE PROPOSITION**





**HELIUM FOCUS** 



# PROVEN TEAM OF HIGHLY EXPERIENCED SUBSURFACE PROFESSIONALS



# FOR RETURNS ON INVESTMENT

- High value commodity with growing demand
- Rare exposure on the ASX
- Targeting high-concentration helium streams

- Internally generated opportunities; early movers
- · Full value chain exposure
- Control projects, right-size capital budget and timing
- Feed the project pipeline

- Low market capitalisation offers high leverage to success
- Low amount of risk-capital required to test the concept
- North American location offers short lead times
- Developed helium market in USA, low cost environment

## **CORPORATE STRUCTURE**

#### TICKER:

**BNL.ASX** 

#### INDUSTRY:

Oil and Gas

#### **CASH POSITION:**

- \$0.45m cash at bank (30 June 2019)
- \$0.33m tranche 2 cash received July

#### **CAPITAL STRUCTURE AS AT 20 AUGUST 2019:**

• Shares on issue: 470m

• Unlisted Options: 91.875m at 1c expiring June 2020

• Market cap: \$2.8m at 0.6c





Shareholder/s	Ownership	Fully Diluted
Board & Mgmt	12.6%	21.8%
HSBC Nominees	6.1%	5.1%
Elliot Holdings	4.3%	5.0%
Oceanview	4.3%	5.3%
Top 20%	64.3%	70.1%



## CONTACTS

Big Star Energy Limited (BNL.ASX)

Unit 6, 245 Churchill Avenue, Subiaco, WA 6008

ACN 009 230 835

www.bigstarenergy.com.au

info@bigstarenergy.com.au