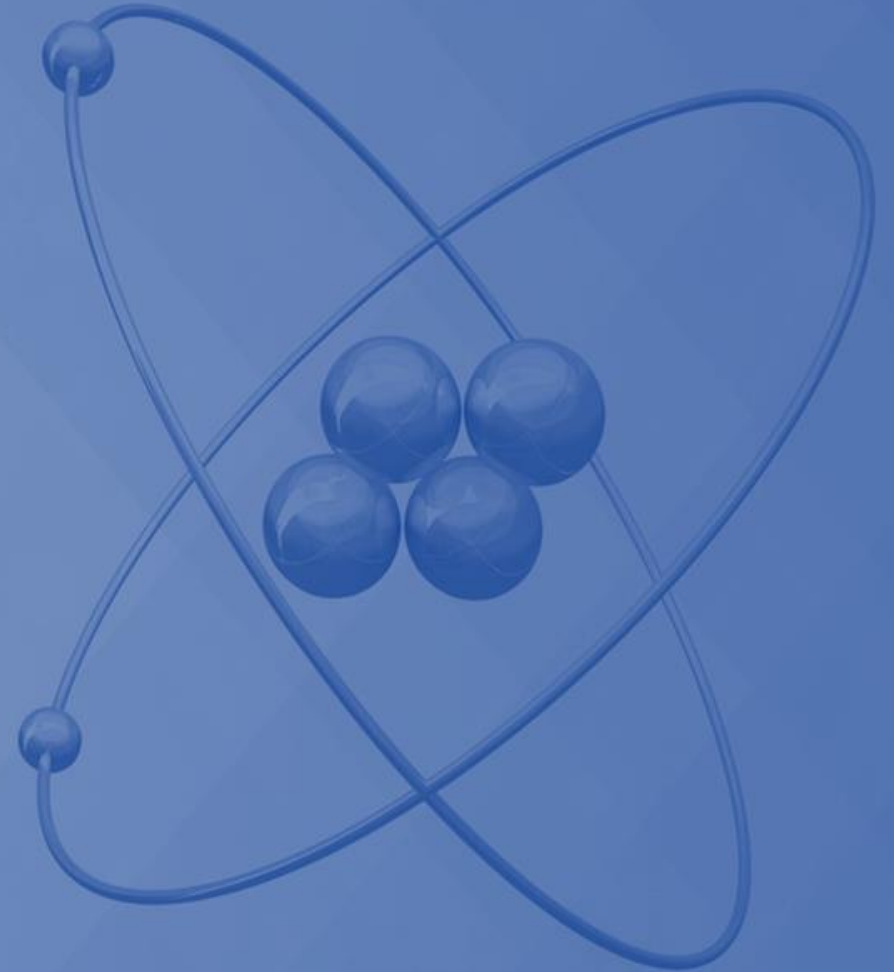




# BIG STAR ENERGY

## CORPORATE PRESENTATION

December 2019



# DISCLAIMER



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- 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.

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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).

The Company may be unable to secure oil and gas leases on commercially acceptable terms in respect of all, some or part of the prospects and leads identified in this presentation. The terms of oil and gas leases entered into after the date of this presentation may be substantially different to the terms of the oil and gas leases referred to in this presentation.

The Company is undertaking customary due diligence to verify the gross and net acreage in relation to the leases announced on 28 November 2019 and 5 December 2019.

The proposed work programmes and other activities described in this document are subject to finance.

The timetable for the various events and activities included in this presentation is the Company's current estimate. It involves subjective judgment and analysis and is subject to significant uncertainties, risks and contingencies, many of which are outside the control of, and are unknown to, the BNL Parties. The targeted date for each event and activity assumes, and is subject to, each prior event or activity having occurred on the stated date.

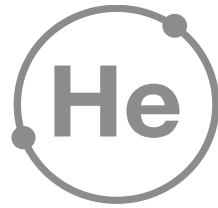
## Competent Person

The geological information in this document is based on and fairly represents 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.

## ASX Disclosure

The Board has authorised this announcement to be given to ASX. Security holders and other interested parties can contact Joanne Kendrick, Managing Director at [info@bigstarenergy.com.au](mailto:info@bigstarenergy.com.au).

# CORPORATE STRATEGY



## WHY HELIUM?

- High value industrial gas
- US\$300/mcf long term contract rates
- High tech applications
- Growing supply-demand gap
- Sellers market – competition for new supplies



## NORTH AMERICA

- High concentration helium resources
- Mature helium market and supply chain
- Low cost / fast lead-time environment
- High margin product
- Familiar geology and jurisdiction

# 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

# 2019 ACHIEVEMENTS



## Targeted top-4 helium areas in USA

- ✓ Range of helium concentrations 5-10% in produced raw gas

## First mover in Las Animas, Colorado

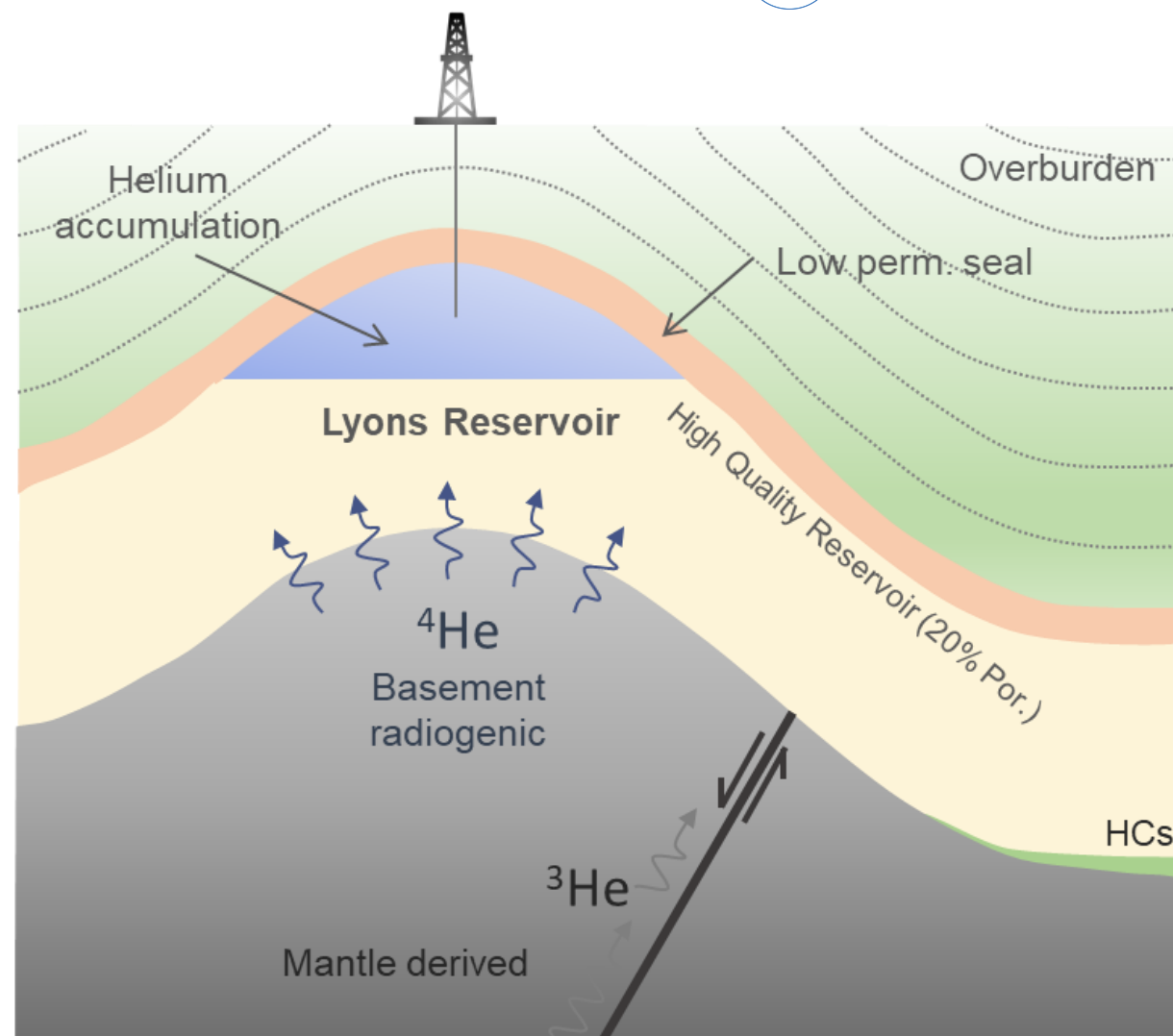
- ✓ Pervasive shallow high-quality sandstone reservoir ~20% porosity
- ✓ Historical production analogue - Model Dome helium field
  - ✓ 8% helium concentration
  - ✓ 500-1,000mcf / vertical well initial rates
- ✓ Low cost leasing and drilling
- ✓ Trucking distance to customers

## Generated prospect and lead portfolio

- ✓ Active helium system established
- ✓ Identify two reservoir/seal pair targets
- ✓ Subsurface structural definition

## Secured dominant land position

- ✓ **92,000 gross (40,000 net) acres leased**
  - ✓ 11 prospects (and additional leads)
  - ✓ 12 elevated helium readings (regional soil gas survey)

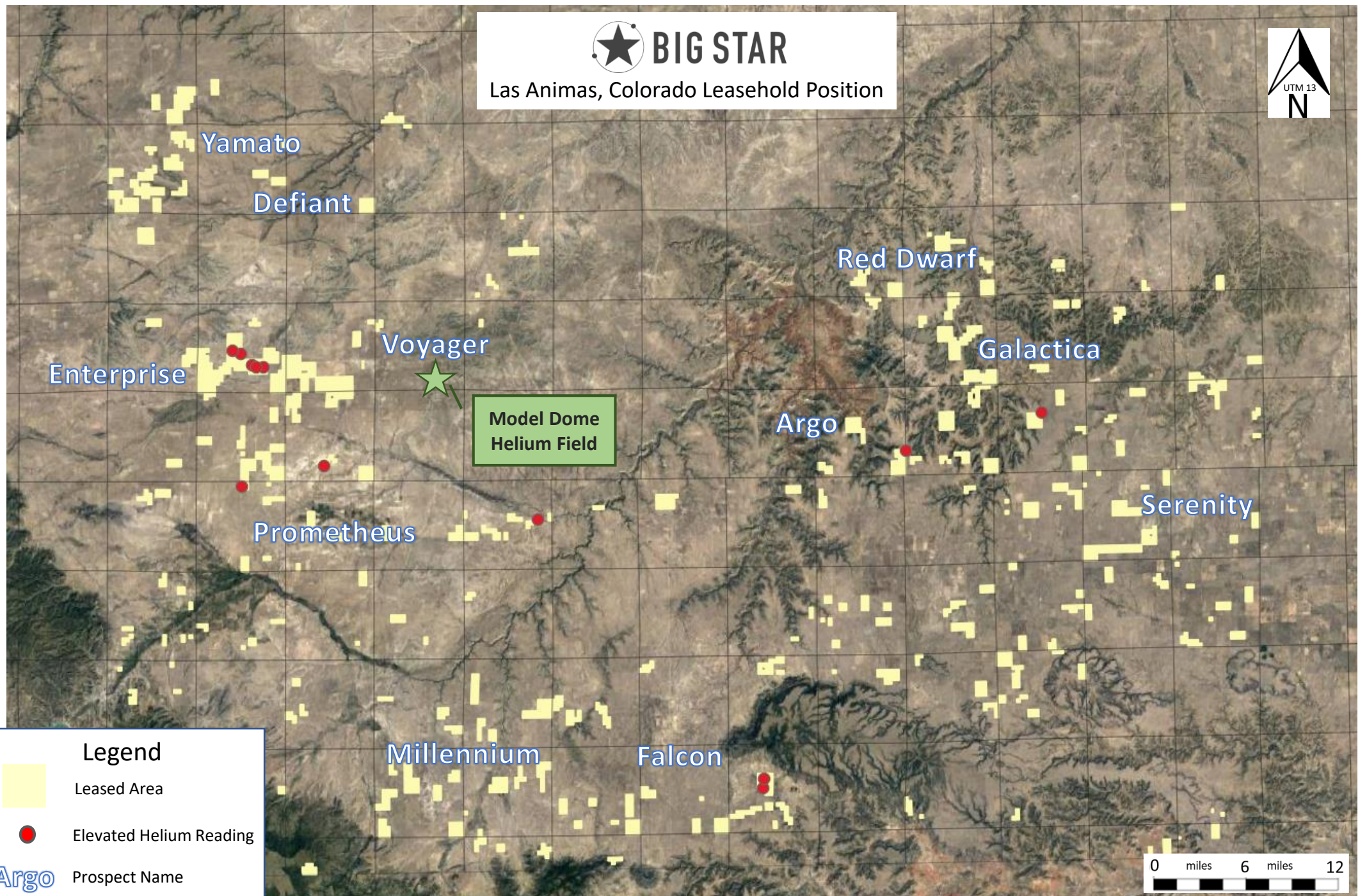


Generalised prospect schematic





Las Animas, Colorado Leasehold Position



### Legend



Leased Area



Elevated Helium Reading



Prospect Name





# NEAR TERM GOALS



## **Mature 5 prospects to drill-ready status**

- Consolidate leasing
- Prospect-scale soil gas surveys
- Subsurface data integration
- Prospective resource estimates

## **Plan and permit 5 well locations**

## **Success case planning**

- Scalable pre-development engineering
- Finalise surface equipment selection

## **Progress offtake discussions with mid-stream and end-users**

## **Drilling campaign**

- 3 to 5 wells @ ~1200ft total depth
- Estimated US\$400k dry hole cost for single-target well



# HELIUM DEVELOPMENT CONCEPT



## DEVELOPMENT CONCEPT

- 5-10 simple vertical producers
- Off the shelf surface processing equipment
  - One facility per 5-10,000 acre development
  - 2mmcf/d raw gas nameplate capacity
  - 35-70mmcf helium per annum
- Plant mobilisation time to site ~6 months



## HELIUM OFFTAKE

- 10+ year contract
- Sellers market
  - Potential for development funding by buyer
  - Take or pay with price reopeners
  - Retain spot market component
- Sell at plant gate to industrial gas company
- OR deliver by road (tube trailer) to end-user

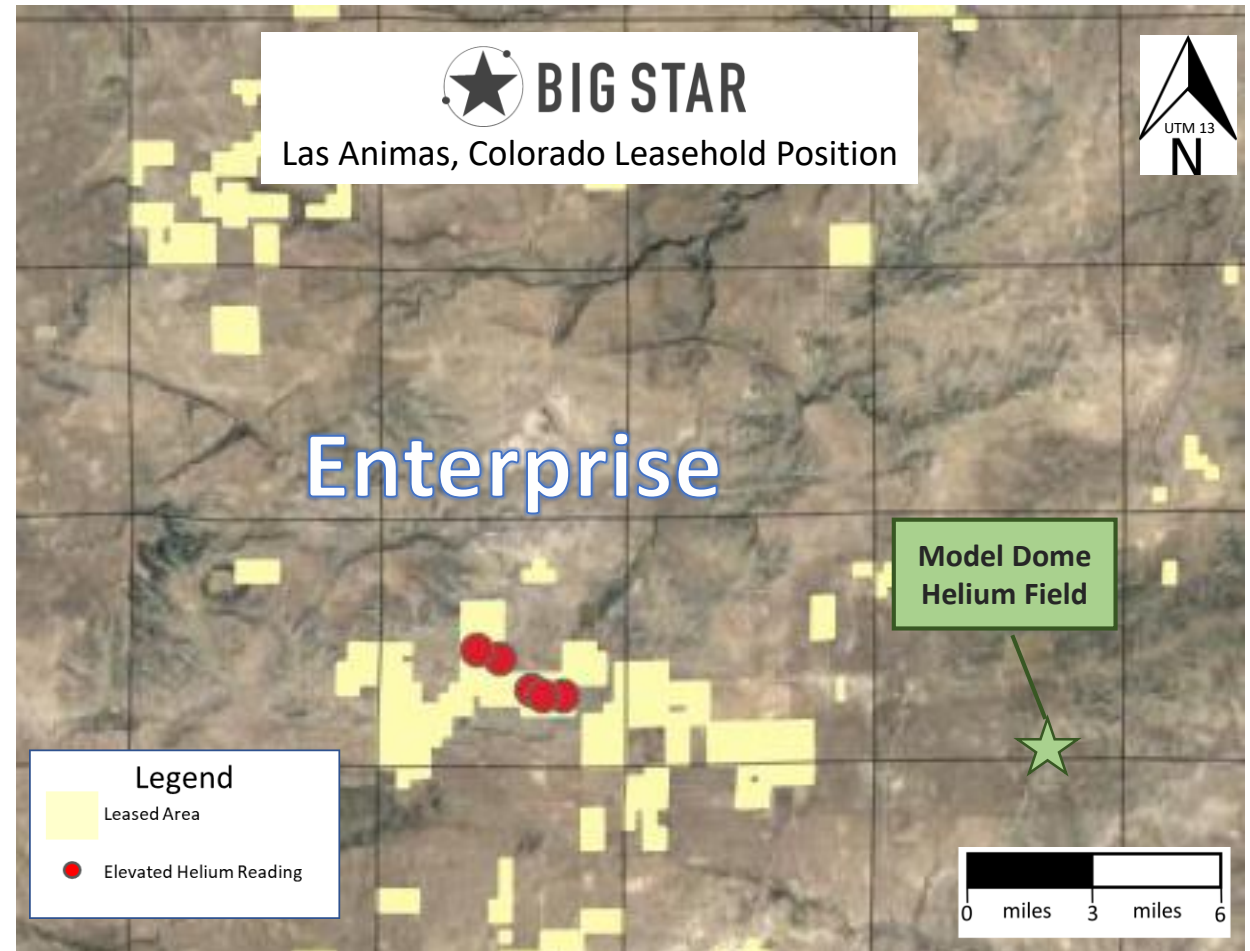




# ENTERPRISE PROSPECT

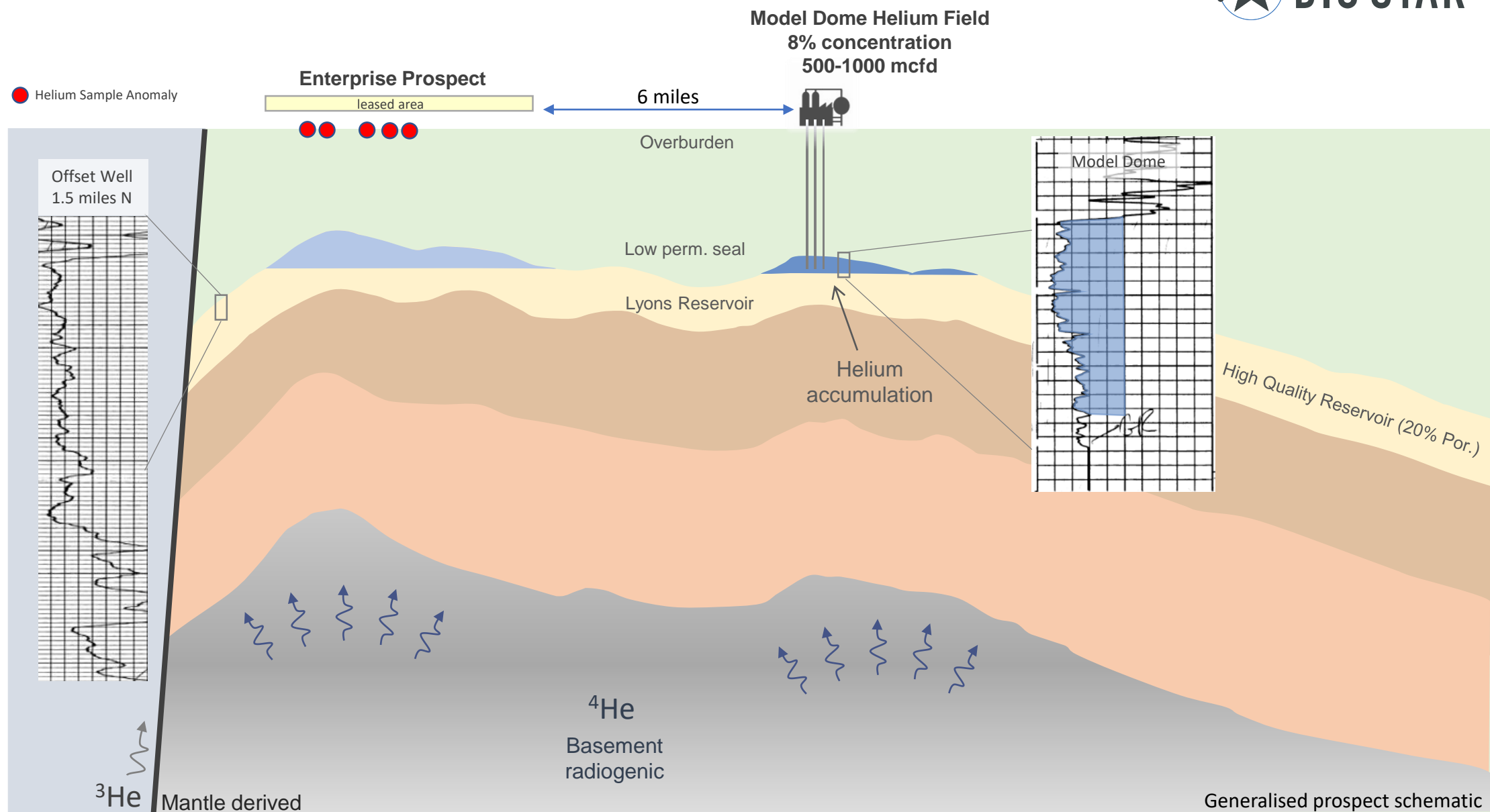


- Enterprise leasing position (as at 6 Dec 2019)
  - 12,213 gross (4,865 net) acres leased
  - 12.5% royalty, 5+5 year term
  - No minimum work commitments
- 5 soil gas samples collected from leased area
  - 10%-21% above normal atmospheric levels
  - Active helium charge confirmed at Enterprise
- Helium system elements
  - Within 6 miles of historical helium production with:
    - 8% helium concentration
    - 500-1,000mcf / vertical well initial rates
  - Active helium charge proven
  - Structure identified at multiple levels
  - Shallow target depth ~1,000ft
  - Good quality, low pressure reservoir ~ 20% porosity
  - Competent overlying anhydrite seal in area
  - Subsurface data integration ongoing

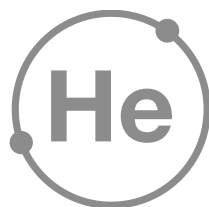


# ENTERPRISE PROSPECT

## SCHEMATIC CROSS-SECTION



# VALUE PROPOSITION



## HELIUM FOCUS

- High value commodity
  - Growing demand supply gap
  - Rare exposure on the ASX
- Mature US market
- Dominant land position in “top-4” location
- Early mover advantage



## PROVEN TEAM

- Action-oriented subsurface professionals
  - Internally-generated opportunities
  - 2019 targets delivered
- Full value chain exposure
- Control projects
  - Right-size capital budget and timing



## EXCELLENT POTENTIAL FOR RETURNS ON INVESTMENT

- High leverage to success
  - Low market capitalisation
  - Low amount of risk-capital required to test the concept
  - Short lead times
- Scale-up potential
  - Exposure to multiple prospects
  - Modular development concept

# CORPORATE STRUCTURE



## TICKER:

BNL.ASX

## INDUSTRY:

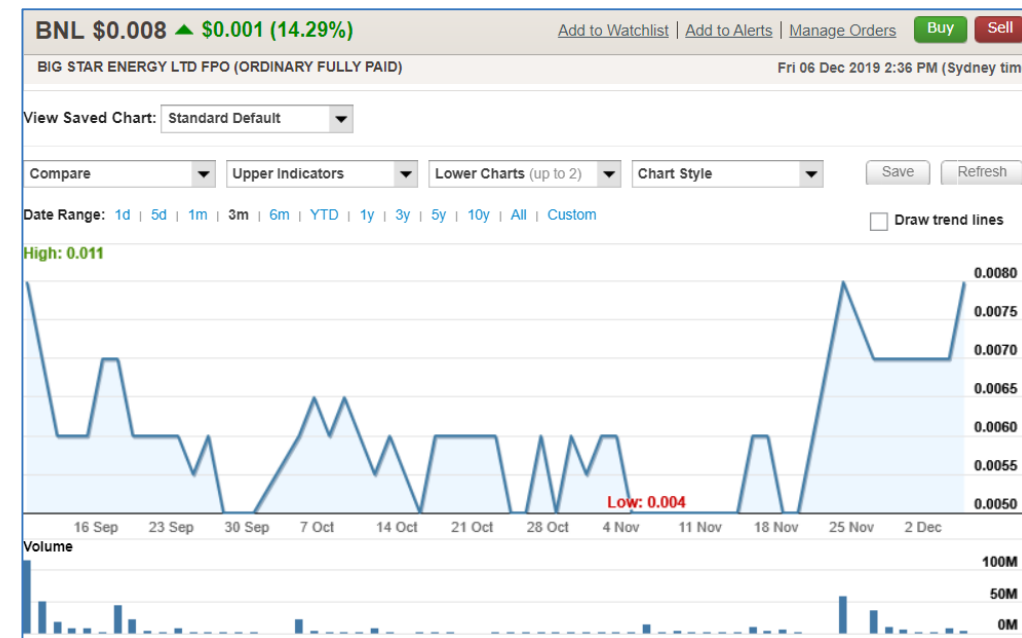
Oil and Gas

## CASH POSITION:

- \$0.26 million cash at bank (30 September 2019)
- \$0.58 million in placing proceeds received October 2019

## CAPITAL STRUCTURE AS AT 6 DEC 2019:

- Shares on issue: 587 million
- Unlisted Options: 101.875 million at 1c expiring June 2020
- Market cap: \$4.7 million at 0.8 cents



Shareholder/s	Ownership	Fully Diluted
Board & Management	10.1%	17.7%
Oceanview	3.4%	4.4%
Elliot Holdings	3.4%	4.1%
Pamplona Opportunities	3.2%	4.1%
Top 20%	54.3%	50.3%





# BIG STAR ENERGY

## CONTACTS

Big Star Energy Limited (BNL.ASX)

Unit 6, 245 Churchill Avenue, Subiaco, WA 6008

ACN 009 230 835

**[www.bigstarenergy.com.au](http://www.bigstarenergy.com.au)**

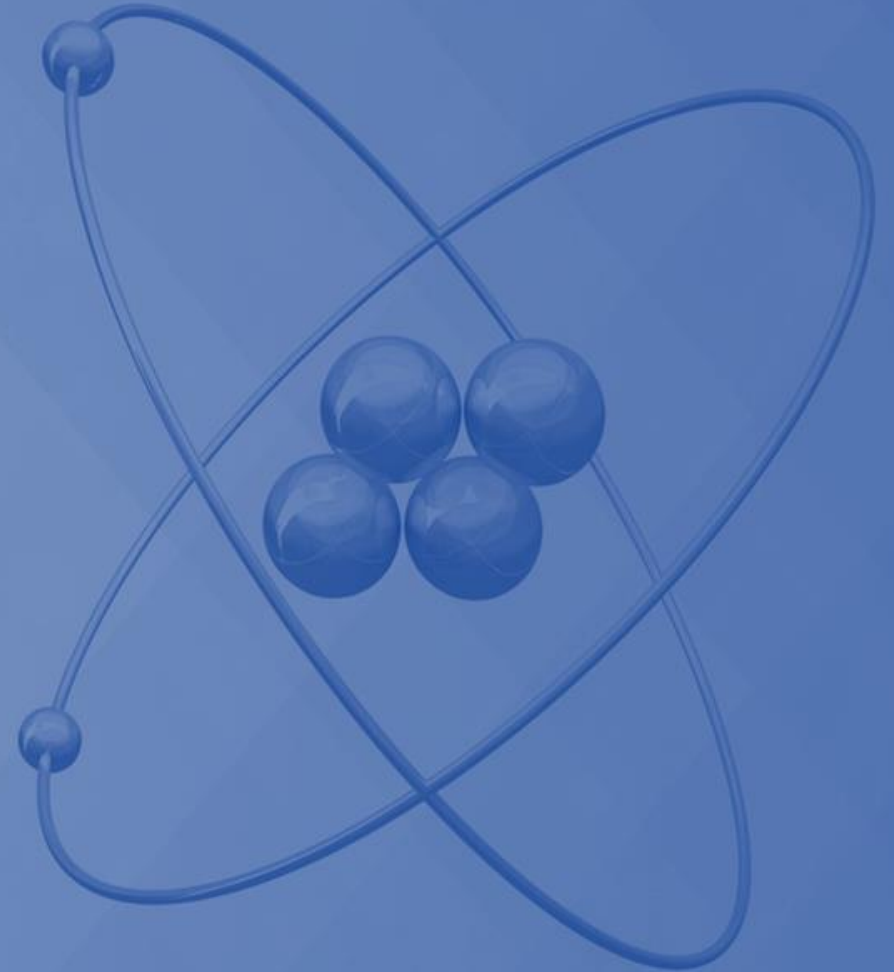
**[info@bigstarenergy.com.au](mailto:info@bigstarenergy.com.au)**



# BIG STAR ENERGY

## SUPPORT SLIDES

December 2019



# WHAT IS HELIUM?

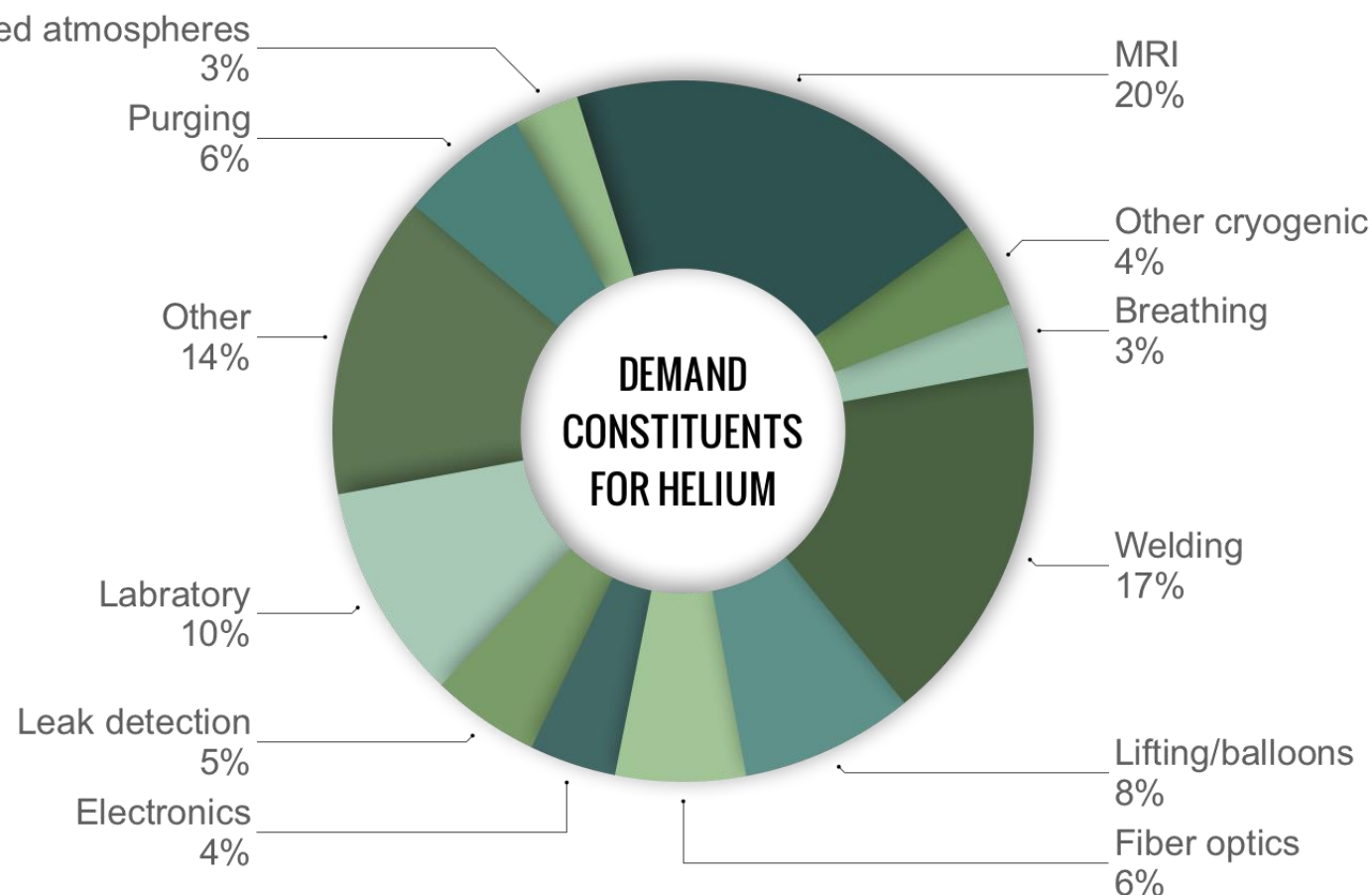


## FINITE IRREPLACEABLE RESOURCE

- 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

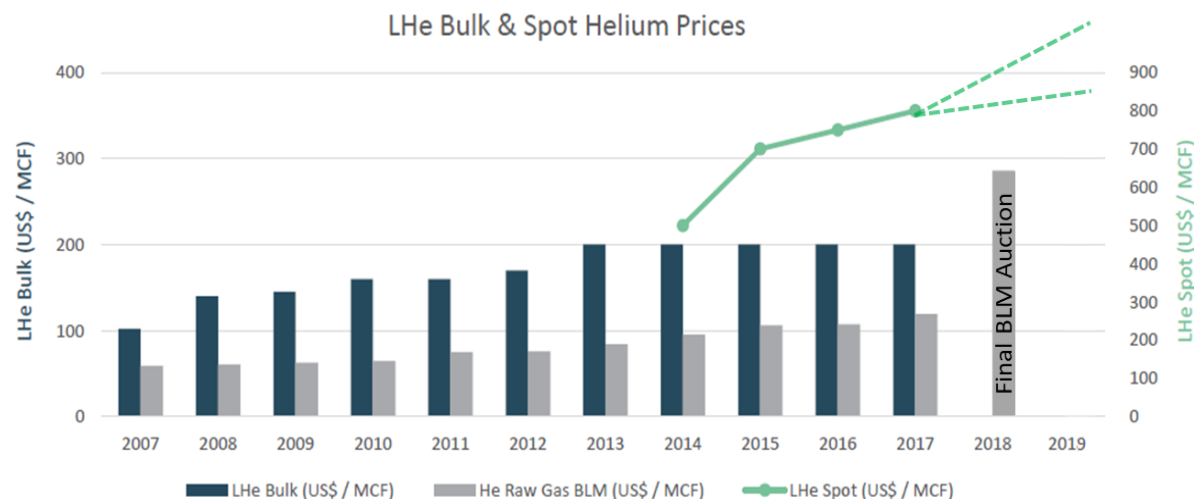
## A UNIQUE SET OF PHYSICAL AND CHEMICAL PROPERTIES

- 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**

# HELIUM MARKET



Sources: Edison research, USGS, BLM

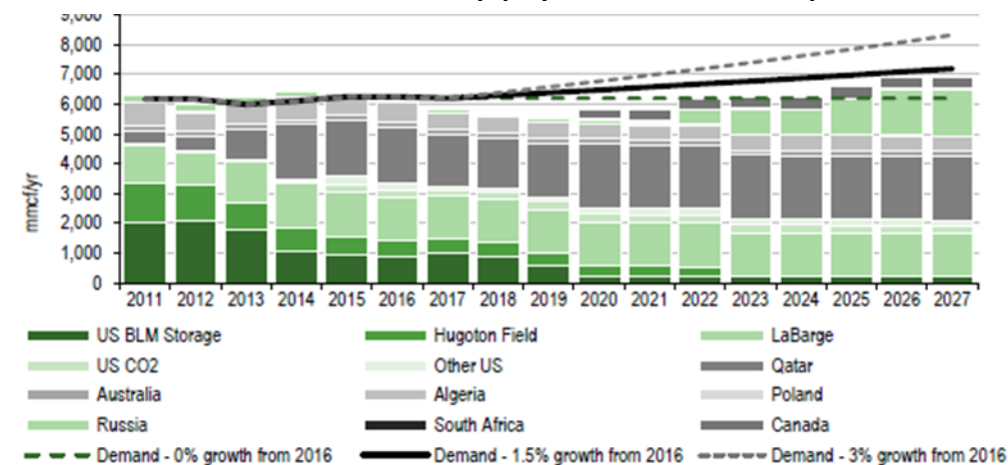
## HELIUM MARKETING

- Majority of wholesale helium is sold under long-term contract to industrial gas companies
  - Generally take or pay with open escalation pricing
  - US\$250-US\$300/mcf currently achievable
- Present spot market significantly higher than contract market
- Spot prices up to US\$1,000/mcf
- Opportunity to contract with big gas industrials, or sell direct to end-users

## SUPPLY DEMAND GAP FORECAST TO CONTINUE

- Demand
  - Currently in shortage by ~10%; end-users subject to allocation system
  - Demand growing despite commodity price increases
- Supply
  - Current sources declining or flat
  - Cannot respond to increased prices; by-product of LNG production
  - BLM storage sell down complete (20% global supply withdrawn)
  - Potential project delays and geopolitical issues of new sources

## Helium Supply/Demand Gap



Source: Source: JR Campbell & Associates report for BLM Office of Minerals Evaluation, public and private company data and Edison Investment Research, various



# UNITS & GLOSSARY



Unit	Measure
B	Prefix - billions
mm	Prefix - millions
m	Prefix - thousands
/d	Suffix - per day

Unit	Measure
Bcf	Billion cubic feet
mmcf	million cubic feet
mcf	thousand cubic feet

Term	Description
gross acres and net acres	The minerals in a tract of land may be owned by one or more owners. Each owner may lease its respective percentage share of the minerals. The gross area of the tract of land is referred to as the "gross acres" of a lease. The "net acres" refers to the lessor's percentage share of the gross acres.
lead	A project associated with a potential accumulation that is currently poorly defined and requires more data acquisition and/or evaluation to be classified as a Prospect. A project maturity sub-class of Prospective Resources.
net revenue interest or NRI	A share of production after all burdens, such as royalty and overriding royalty, have been deducted from the working interest. It is the percentage of production that each party actually receives.
NPV10	Net present value using a discount rate of 10%.
oil and gas lease	An agreement between a mineral owner (lessor) and an oil and gas company (lessee) permitting the lessee to explore, drill and produce oil and gas from the tract of property. Typically, the lease provides that lessee will pay a Royalty to the lessor. Also referred to as a "mineral lease" or a "lease".
operator	The owner of the right to drill or produce a well, or the entity contractually charged with drilling of a test well and production of subsequent wells.
overriding royalty	A percentage share of production, or the value derived from production, which is free of all costs of drilling and producing, and is created by the lessee or working interest owner and paid by the lessee or working interest owner.
PRMS	The Petroleum Resources Management System of the Society of Petroleum Engineers, World Petroleum Council, American Association of Petroleum Geologists and Society of Petroleum Evaluation Engineers as revised in June 2018.
prospect	A project associated with an undrilled potential accumulation that is sufficiently well defined to represent a viable drilling target. A project maturity sub-class of Prospective Resources.
royalty	A percentage share of production, or the value derived from that production, paid from a producing well.
statutory pooling	All of the major US oil and gas producing states other than California and Kansas have adopted some kind of mandatory pooling scheme to facilitate the development of oil and gas resources owned by more than one stakeholder. These rules provide a process to compel all mineral estate owners in a drilling area to contribute or pool their mineral estate to the drilling of a well in relation to that mineral estate
working interest or WI	A percentage of ownership in an Oil and Gas Lease. Working Interest owners are obliged to pay a corresponding percentage of the cost of leasing, drilling and producing and operating a well or unit. After payment of Royalties, the working interest also entitles its owner to a share in production revenues with other working interest owners, based on the percentage of working interest owned.

# MINERAL RIGHTS IN USA



1. The system of mineral ownership and development in the USA is substantially different to the system in Australia. The following is a general description of the system that commonly applies in the oil and gas producing states. It is important to note that local variations may apply.
2. The owner of land owns the surface and all oil, gas and other minerals beneath his/her tract, unless a severance has occurred that creates two distinct estates: the surface estate and the mineral estate. A severance of the mineral estate results from a conveyance or reservation of all, or a portion, of the oil, gas and other minerals in and to a specific tract.
3. The oil, gas and other minerals beneath a tract of land are a part of the realty until produced and become personal property when brought to the surface. Because the mineral estate is considered real property, it may be acquired, divested, encumbered, devised and inherited, thereby resulting in the possibility that an unlimited number of persons ("mineral owners") may own undivided interests in a tract's minerals.
4. Accordingly, the mineral estate in a tract may be owned by one or more distinct owners and each distinct owner may comprise one or more persons. The mineral estate may be divided amongst distinct owners by depth or geological formation. Where there is more than one distinct owner of a mineral estate, each such owner will own a percentage share of that mineral estate. The percentage shares of that mineral estate need not be equal. Therefore, each such distinct owner owns its percentage share of an undivided share in the mineral estate in that tract. In addition, private individuals may own the mineral rights directly beneath public surface owners or users, eg the mineral rights beneath a public road. This is commonly summarised by referring to the lessor's "net acreage" in a tract. This means the lessor's percentage share of the undivided total area of the tract's minerals ("gross acres") net of the percentage share of other mineral owners in the same tract. For example, assume the mineral rights in a tract of 100 acres are owned by 4 mineral owners in equal shares. If one of those mineral owners leases its mineral interests to a lessee, the lessee will have an interest in 100 gross acres and 25 net acres. If a second mineral owner leases its mineral interests to the same lessee, the lessee will then have an interest in 100 gross acres and 50 net acres.
5. If an owner of a mineral estate, whether severed or intact with the surface, chooses to pursue development of and production from the minerals beneath the ground, such owner may exercise its rights and may generate revenue through one or more of these methods: (1) the "right to develop" the mineral estate by contracting directly with a drilling and operating company and directly selling the minerals; (2) the "right to lease" the mineral estate to a third party, specifying the terms of the lease and defining the minerals that may be produced; (3) the "right to receive a bonus payment" for leasing the mineral estate, usually calculated per acre, from the lessee for leasing the mineral estate; (4) the "right to receive delay rentals" when the mineral estate is leased but not being produced; and (5) the "right to receive royalty payments" based on a percentage of minerals produced by the lessee. Given the inherent risk, cost of development and required technology to produce oil and gas, most mineral owners do not independently develop their minerals, and as a result, rely on their ability to lease to a third party.
6. The oil and gas lease serves as both a conveyance and a contract which establishes the parties' rights and obligations. There is no "standard form" of lease. The details within the lease are the contract which defines the rights and obligations of the parties.
7. An oil and gas lease creates rights in relation to the mineral estate only and does not grant surface rights to the lessee. Surface rights must be negotiated separately with the surface right owners. This process is facilitated by legislation.
8. The execution of an oil and gas lease that reserves a royalty to the lessor creates the leasehold estate and a royalty interest. The lessee acquires the working interest, or the cost bearing interest, which provides the lessee the right to develop the oil and gas the subject of the lease at its sole risk and expense ("working interest" or "WI"). The lessee may keep and sell its proportionate share of the oil and gas produced from the lease until the lease expires ("net revenue interest" or "NRI"). The NRI is the lessee's share of production derived from the lease after royalties and other burdens. The leasehold estate created by the oil and gas lease may be conveyed, assigned and encumbered similar to any other real estate, and it is common for the original lessee to assign undivided working interests to numerous parties, who share the burden of costs in developing the mineral estate. Generally, a lease will include a provision that allows the lessee to continue to produce the lease as long as it is economically producing a minimum amount of oil and gas. Such a lease is said to be "held by production" or "HBP".
9. The identity of the mineral ownership in respect of any tract may not be maintained in any single definitive register. The landman establishes the title of the mineral owner by ascertaining the chain of transfers from the original date of grant to the present day. It is customary before drilling a well on a leased property to obtain a drilling title opinion, by which the lessor(s) in question are determined to have the required authority to grant the right to explore, exploit and to assign the minerals in a specific tract of land based on a thorough examination of the chain of title. If errors are found in the course of that examination, it is customary for the lessor and lessee to conduct "Title Curative," which involves, but is not limited to, executing instruments, affidavits, conveyances and filing previously unrecorded documents to resolve any disputes, ambiguities or errors so that the operator has substantial support for its claims prior to undertaking the expense of drilling.
10. All of the major US oil and gas producing states other than California and Kansas have adopted some kind of mandatory pooling scheme to facilitate the development of oil and gas resources owned by more than one stakeholder. These rules provide a process to compel all mineral estate owners in a drilling area to contribute or pool their mineral estate to the drilling of a well in relation to that mineral estate.

# OTHER ASSETS



## TEXAS

**BNL has 4 wells (3 operated) in Dawson County, Texas**

- Minor non-material production
- Various options under consideration for the disposal of all or part of this asset.

For further information see the Company's Half-Year Financial Report for the half year ended 30 June 2019

