

**DEFINING THE OPPORTUNITY:**

# **OFFSHORE NEWFOUNDLAND AND LABRADOR**

Jim Keating, Nalcor Energy – Oil and Gas  
MUN Economics Department, September 27, 2018  
*Check Against Delivery*



HIBERNIA, TERRA NOVA, WHITE ROSE, AND HEBRON HAVE PRODUCED

**1.7 BILLION**  
BARRELS OF OIL SINCE 1997



WILL BEGIN  
PRODUCING  
IN 2022



\$\$\$

OVER  
**120 BILLION**  
DOLLARS  
OF REVENUE

NEARLY  
**50 BILLION**  
DOLLARS  
OF INVESTMENTS



## GOVERNMENT REVENUES

More than \$20 billion in offshore royalties have been paid to the Government of Newfoundland and Labrador since production began in 1997 and \$15 billion to Canada in federal tax, net profits interest, and CHHC interest.

*Source: Government of Newfoundland and Labrador*



## JOBS

More than 5,200 people worked in the province's offshore industry in 2017

*Source: Government of Newfoundland and Labrador*



## SPENDING

More than \$50 billion has been invested to build Canada's offshore oil industry. Of this only \$5 billion was for exploration.

*Source: CAPP/Statistics Canada*



## LOCAL BUSINESSES

600 supply and service companies support the industry

*Source: Newfoundland and Labrador Oil and Gas Industries Association (Noia)*

# **THE GLOBAL VIEW**

# Oil is still king by 2040...

Fuels

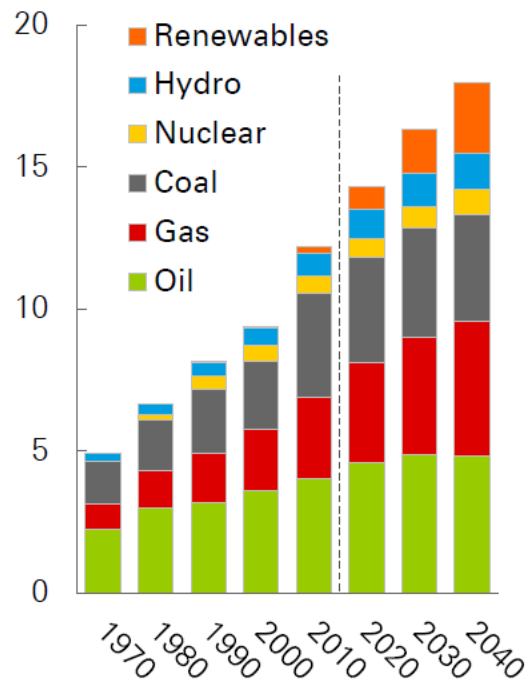
Global energy demand grows at around 1.3% p.a.  
verses 2% in the previous 20 years.

The transition to a lower carbon fuel mix continues...

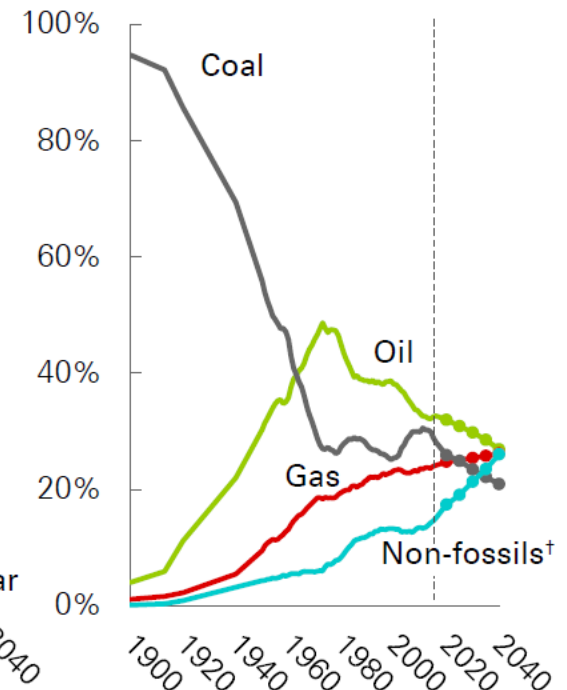
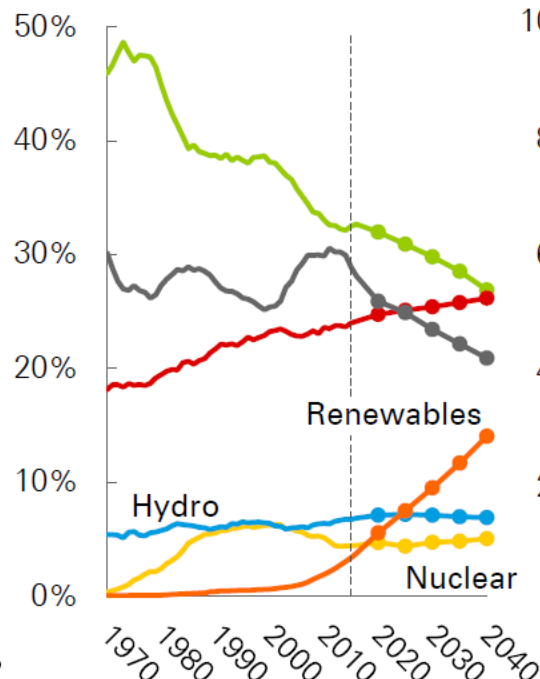


Primary energy  
consumption by fuel

Billion toe

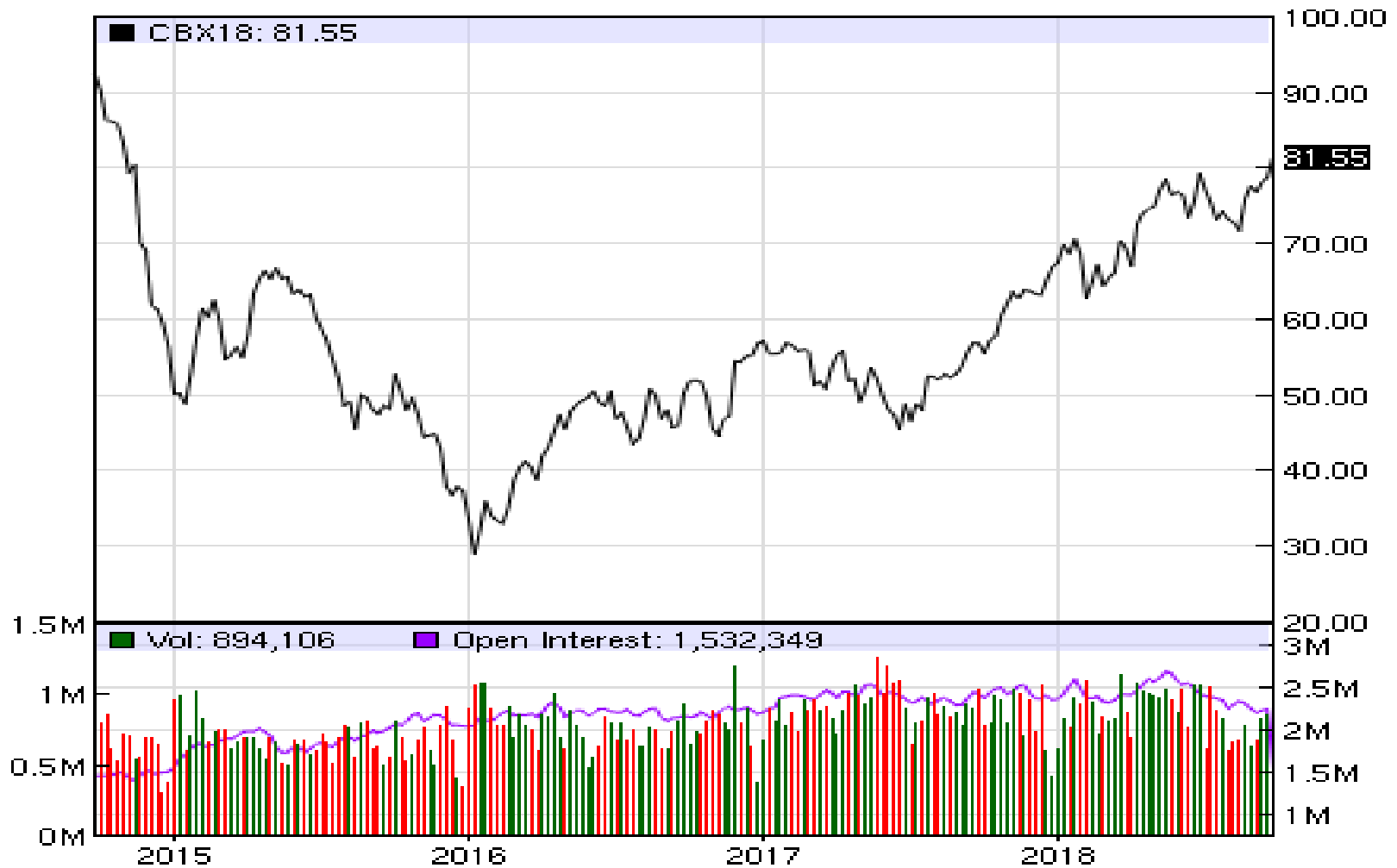


Shares of primary energy



† Non-fossils includes renewables, nuclear and hydro

# BRENT OIL PRICE: Four Year High

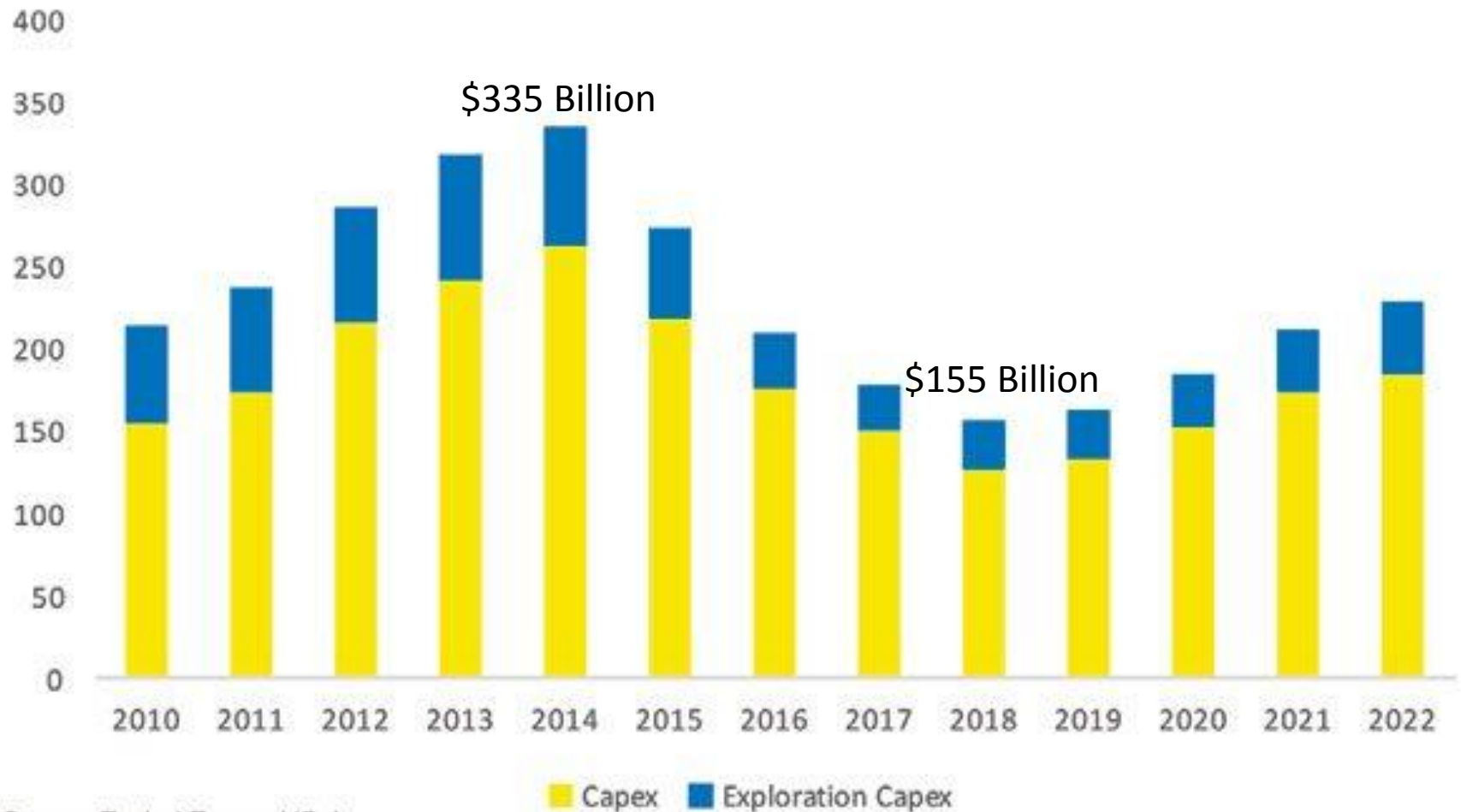


## Changing Sentiment: Shale vs Offshore

- Shell says that offshore drilling is now more competitive than onshore shale drilling, upending what has become conventional wisdom since the 2014 oil market meltdown.
- “The most excitement at the moment is from the deepwater...Deepwater can compete if not demonstrate higher returns because of fundamental cost reduction,” Andy Brown, Shell’s head of exploration and production (*Financial Times* August 2018).

# Offshore Investment Set to Grow

Figure 1. Global offshore investments (US\$ billion).





# OUR APPROACH

# PILLARS OF STRATEGY

## PROSPECTIVITY

- ✓ New Data (2D/3D seismic)
- ✓ Resource Assessment

## FISCAL CERTAINTY

- ✓ Royalty
- ✓ Benefits
- ✓ Equity

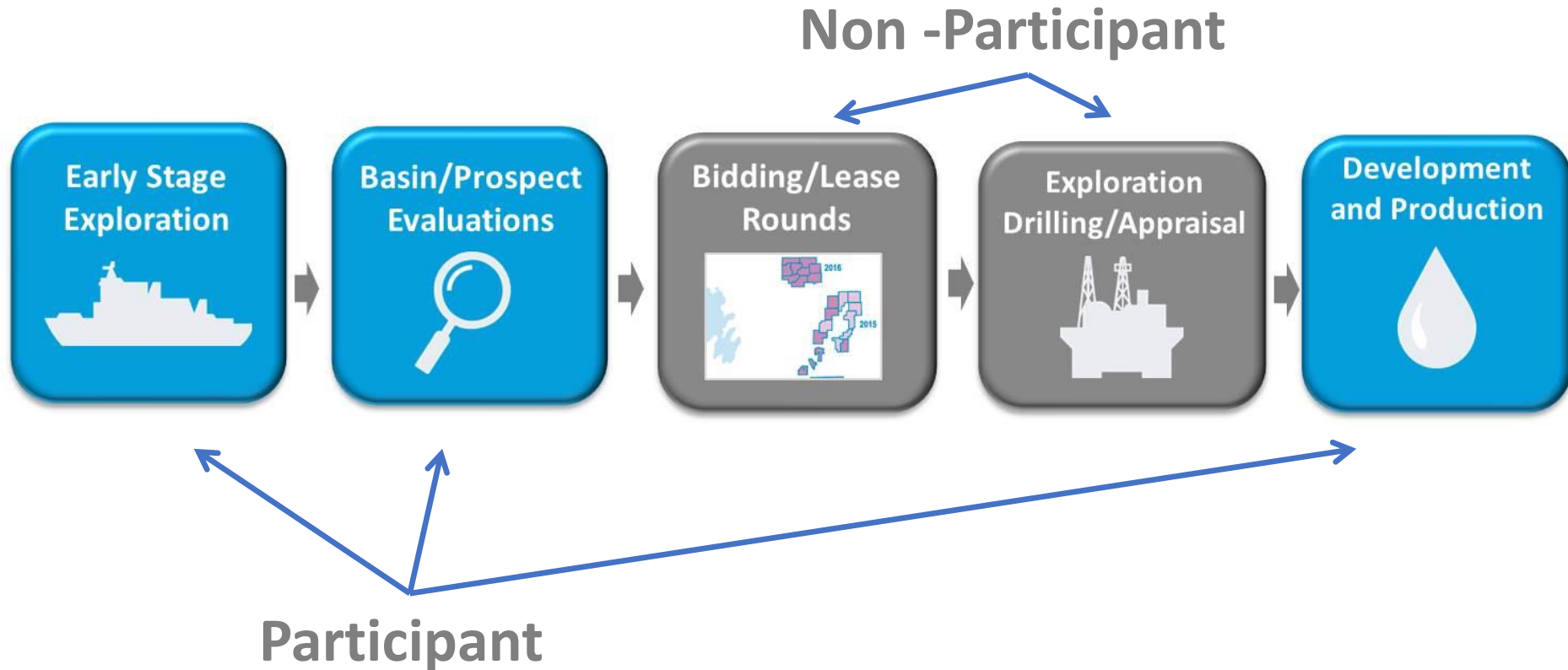
## REGULATORY

- ✓ Remove Barriers (CTA)
- ✓ Scheduled License Rounds
- ✓ Proven Pathway to Development

## INDUSTRY EXPERTISE

- ✓ Established Supply and Service Base
- ✓ Top-tier Companies
- ✓ Capable and Driven Workforce

# OUR ROLE IN NL'S OFFSHORE





Location and Distances of Newfoundland Offshore Developments

Field	Latitude	Longitude	Distance To (nm)			
			TN	Hib	Heb	WR
Terra Nova (FPSO)	46°28.53'N	48°28.86'W	—	21	5	29
Hibernia (Platform)	46°45.01'N	48°46.90'W	21	—	17	30
Hebron	46°32.75'N	48°29.94'W	5	17	—	25
White Rose (FPSO)	46°47.33'N	48°00.99'W	29	30	25	—



## Nalcor Equity Interests

White Rose Extension— 5%

Hibernia Southern Extension – 10%

Hebron – 4.9%

St. John's



Hibernia



White Rose



Hebron

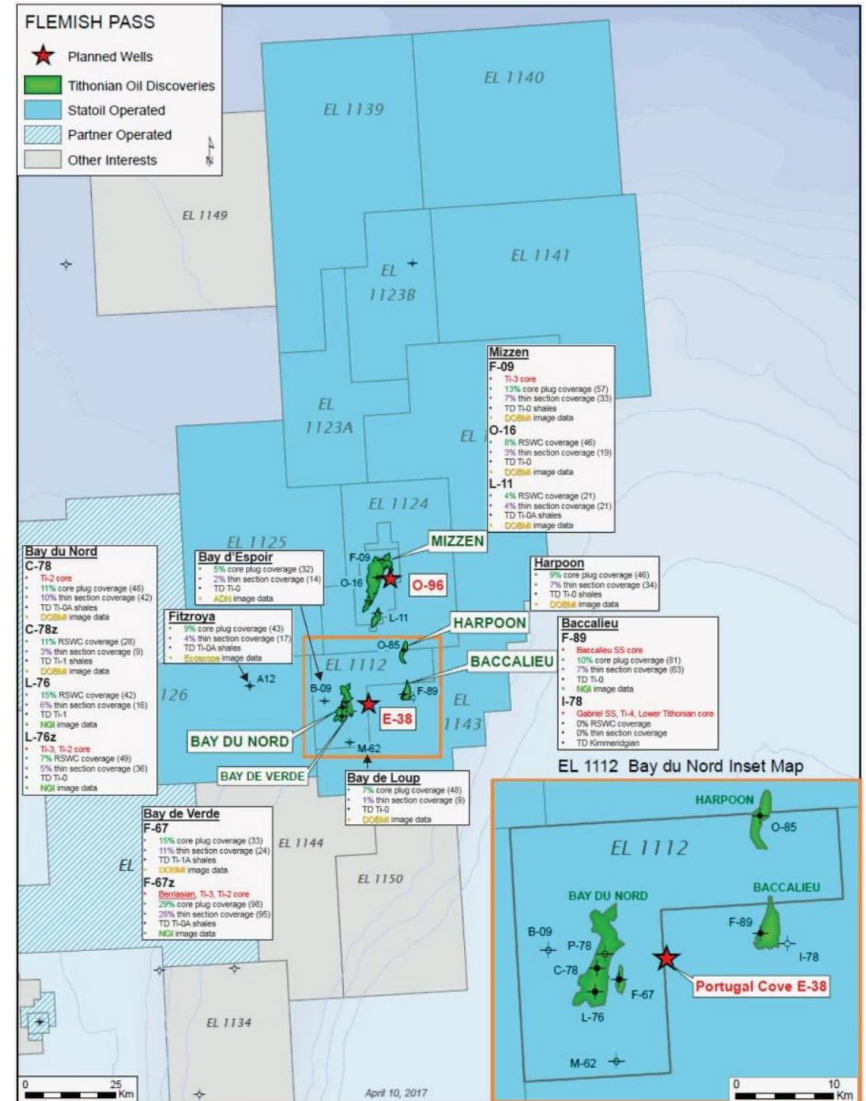
Terra Nova



# BAY DU NORD – POTENTIAL NEXT PROJECT

## Equity back-in of 10%

- Largest oil discovery in the world in 2013
- A “basin opening” project
- Current status: FPSO concept; Final Investment Decision (FID) late 2020; First Oil 2025

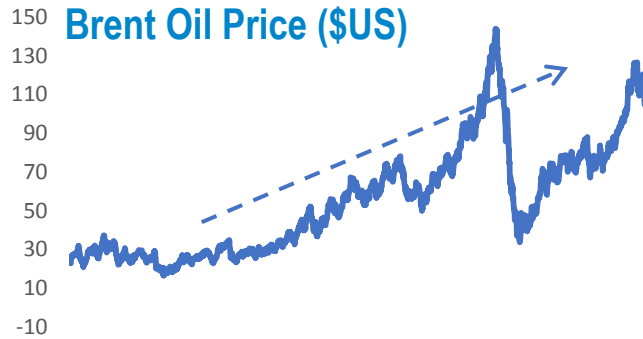


**UNLOCKING FUTURE POTENTIAL**

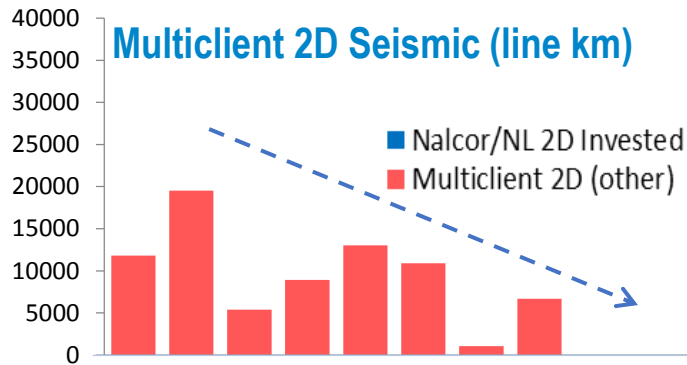
## A REAL PROBLEM

- Oil prices at all time highs
- NL was not attracting any significant geoscience
- Resultant license bids reflected this

**Brent Oil Price (\$US)**



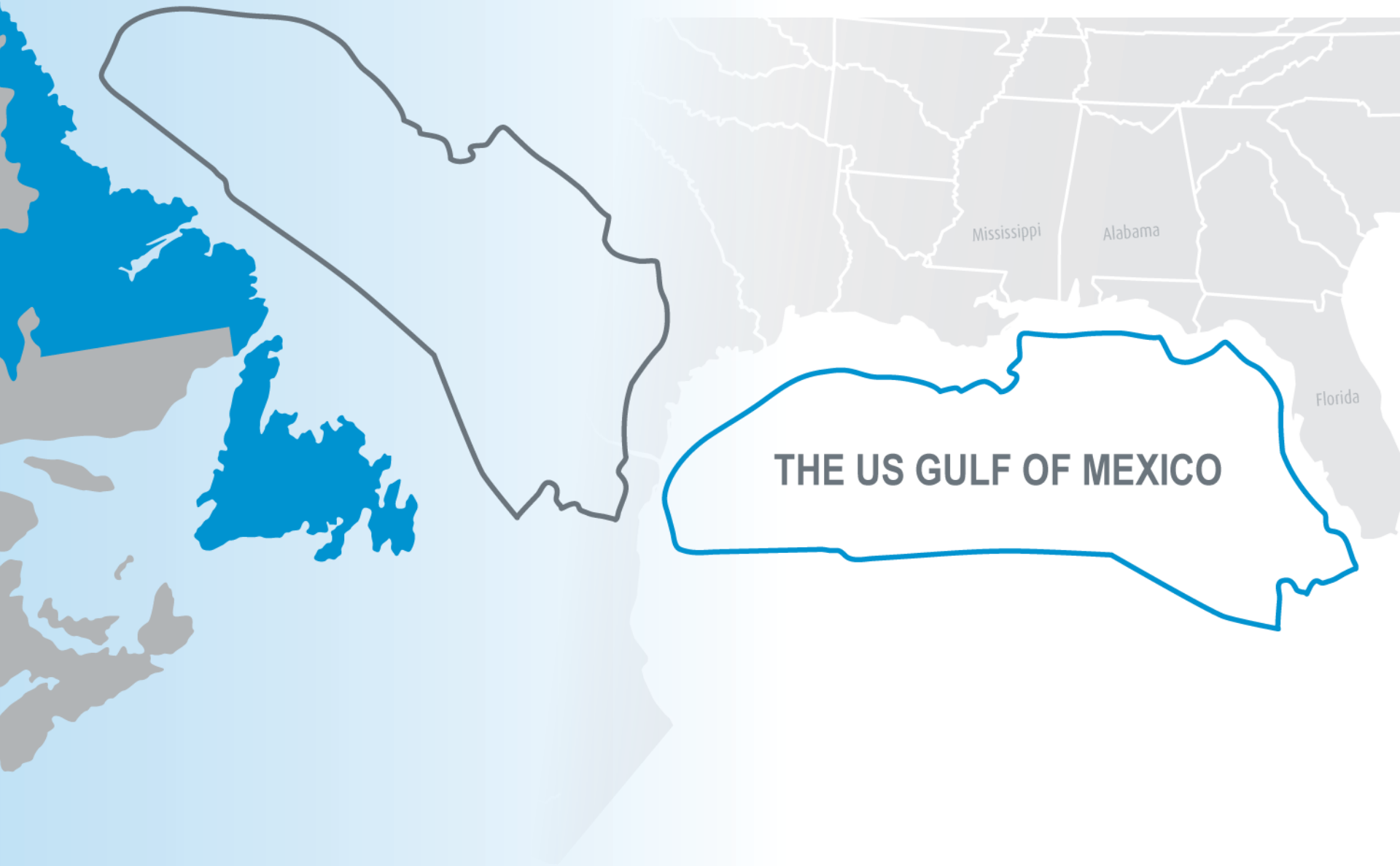
**Multiclient 2D Seismic (line km)**



**Total Bids (\$M)**

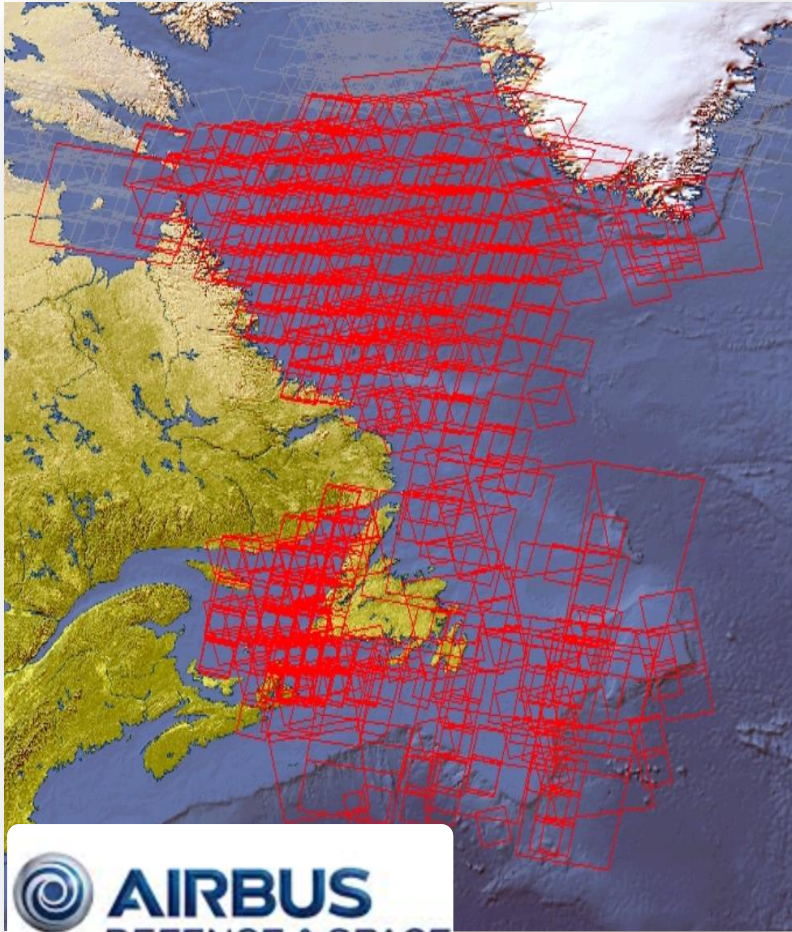


# OPPORTUNITY OF SCALE



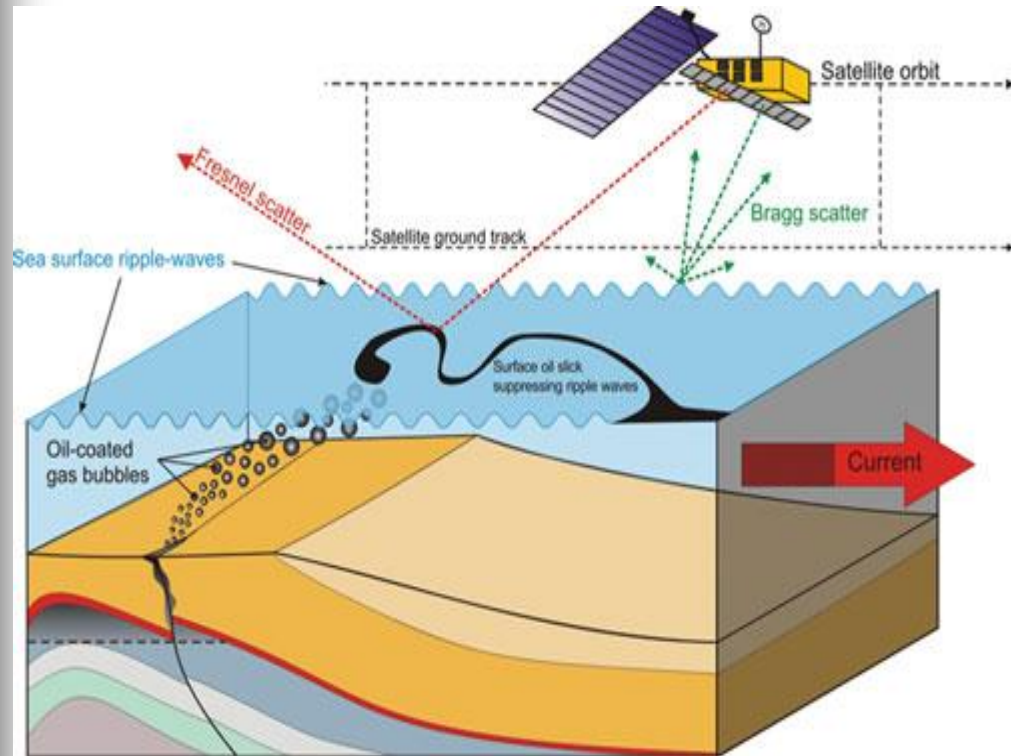
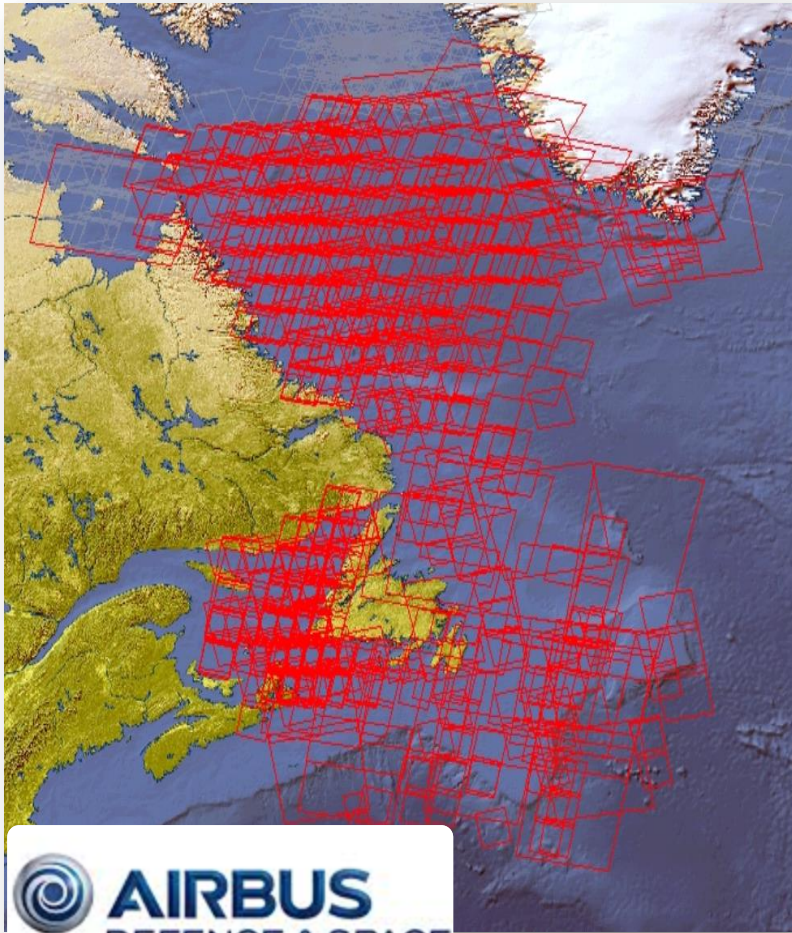


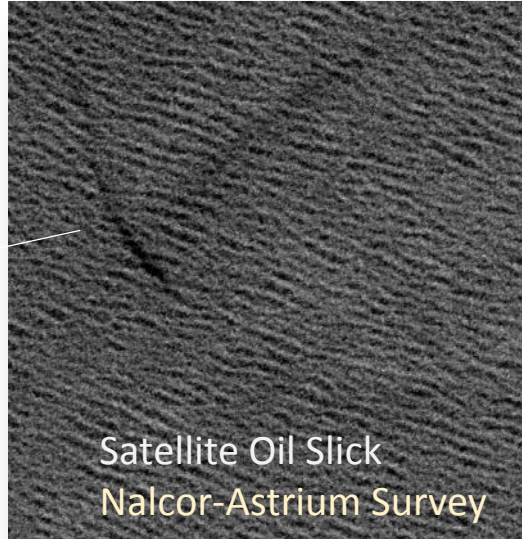
# NALCOR – AIRBUS SATELLITE SEEPS PROJECT



DEFENCE & SPACE

# NALCOR – AIRBUS SATELLITE SEEPS PROJECT

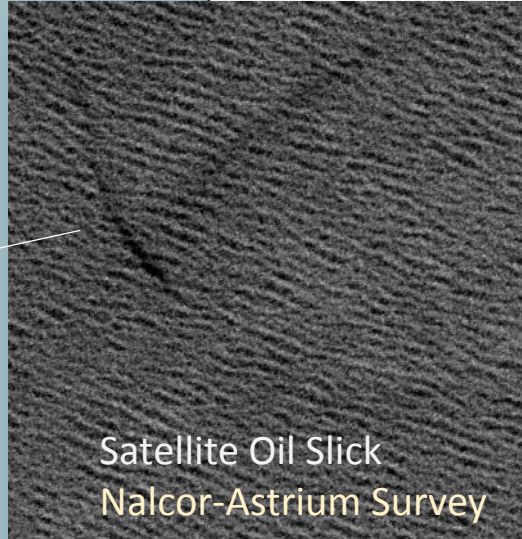




Satellite Oil Slick  
Nalcor-Astrium Survey

# Offshore Newfoundland and Labrador Significant Discovery

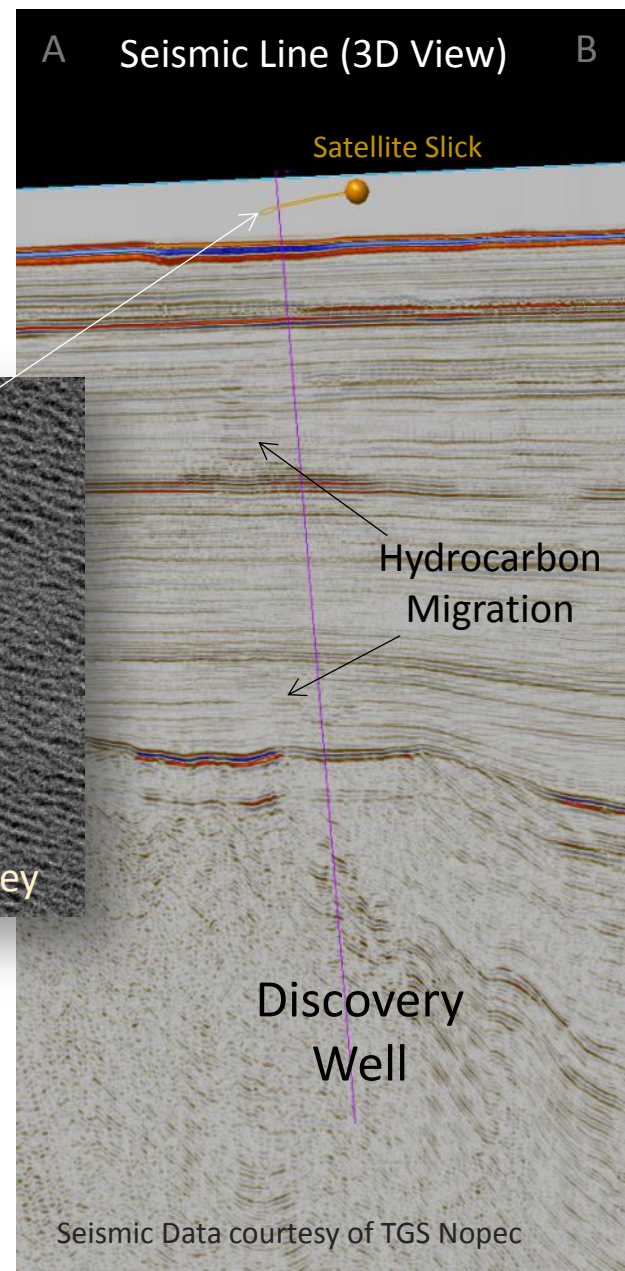
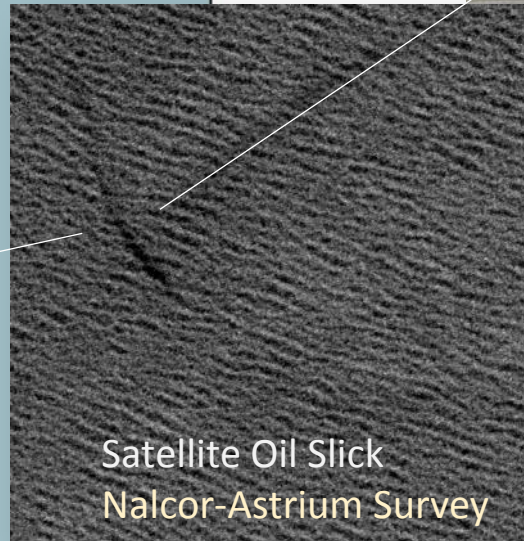
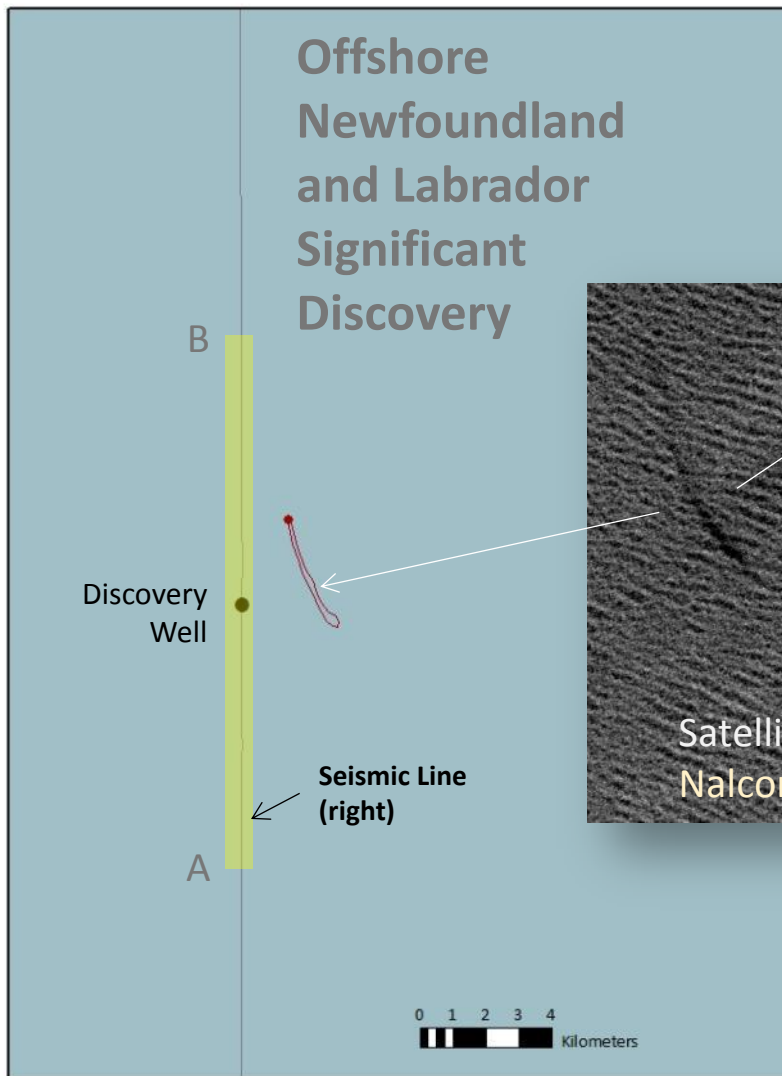
Discovery  
Well



Satellite Oil Slick  
Nalcor-Astrium Survey

0 1 2 3 4  
Kilometers



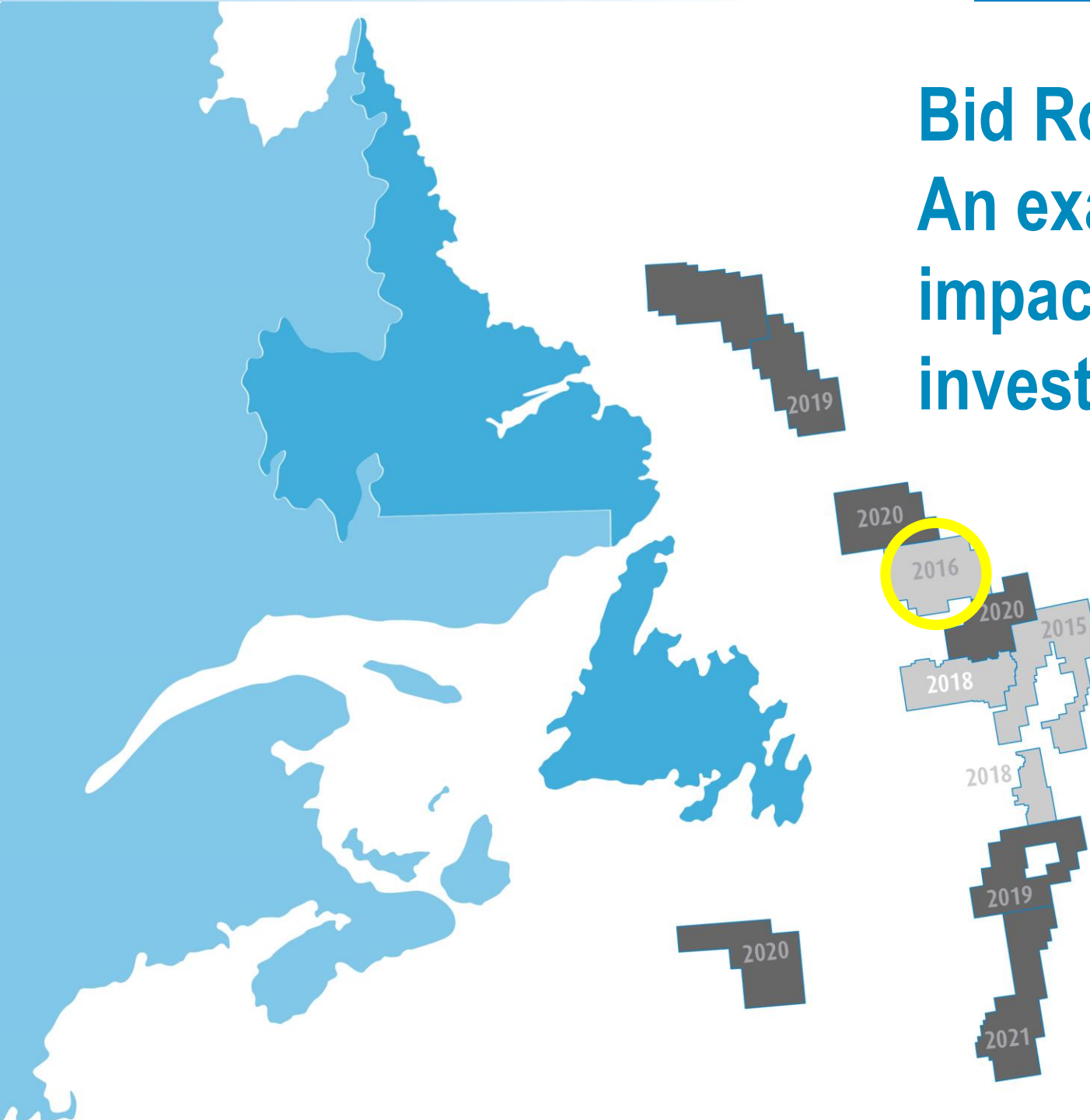


## UNDERSTANDING OUR RESOURCES

- Approx. 1.8 million square km of offshore area
- 650 leads & prospects & over 20 Basins
- Over 170,000 line kms of multilclient 2D Seismic data collected plus additional 3D
- Detailed resource assessments conducted & results released prior to bid closing



# Bid Round 2016: An example of the impact of our investments








Orphan Basin



Cape Freels

 Mizzen

 Bay du Nord

St. John's

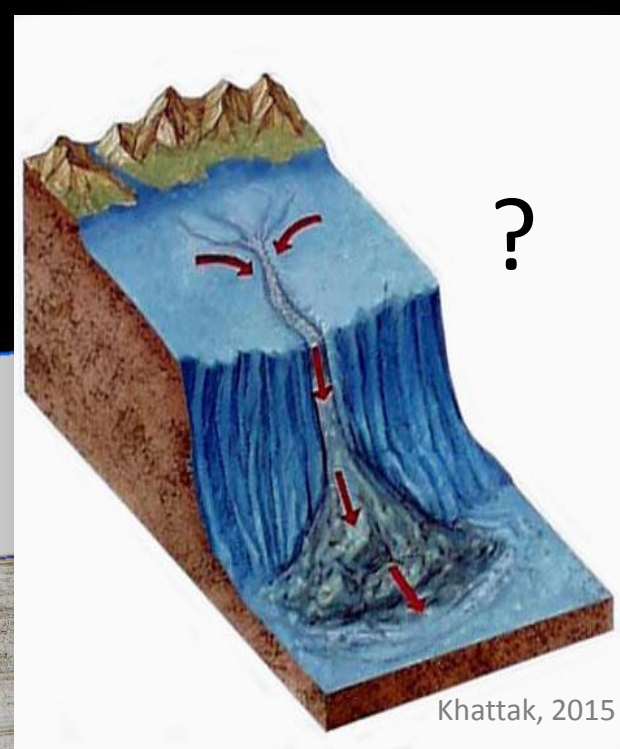
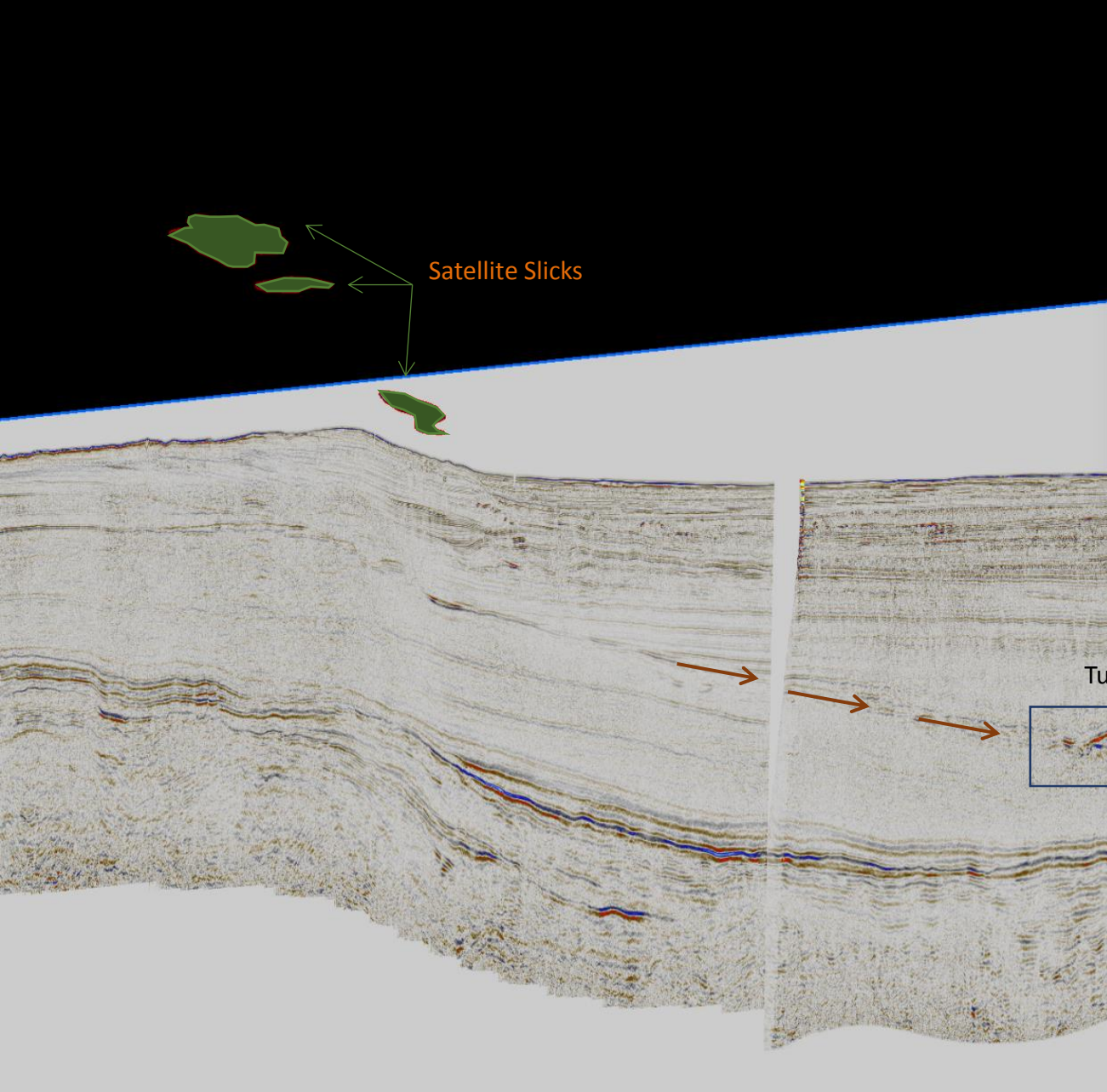
Hibernia

Hebron

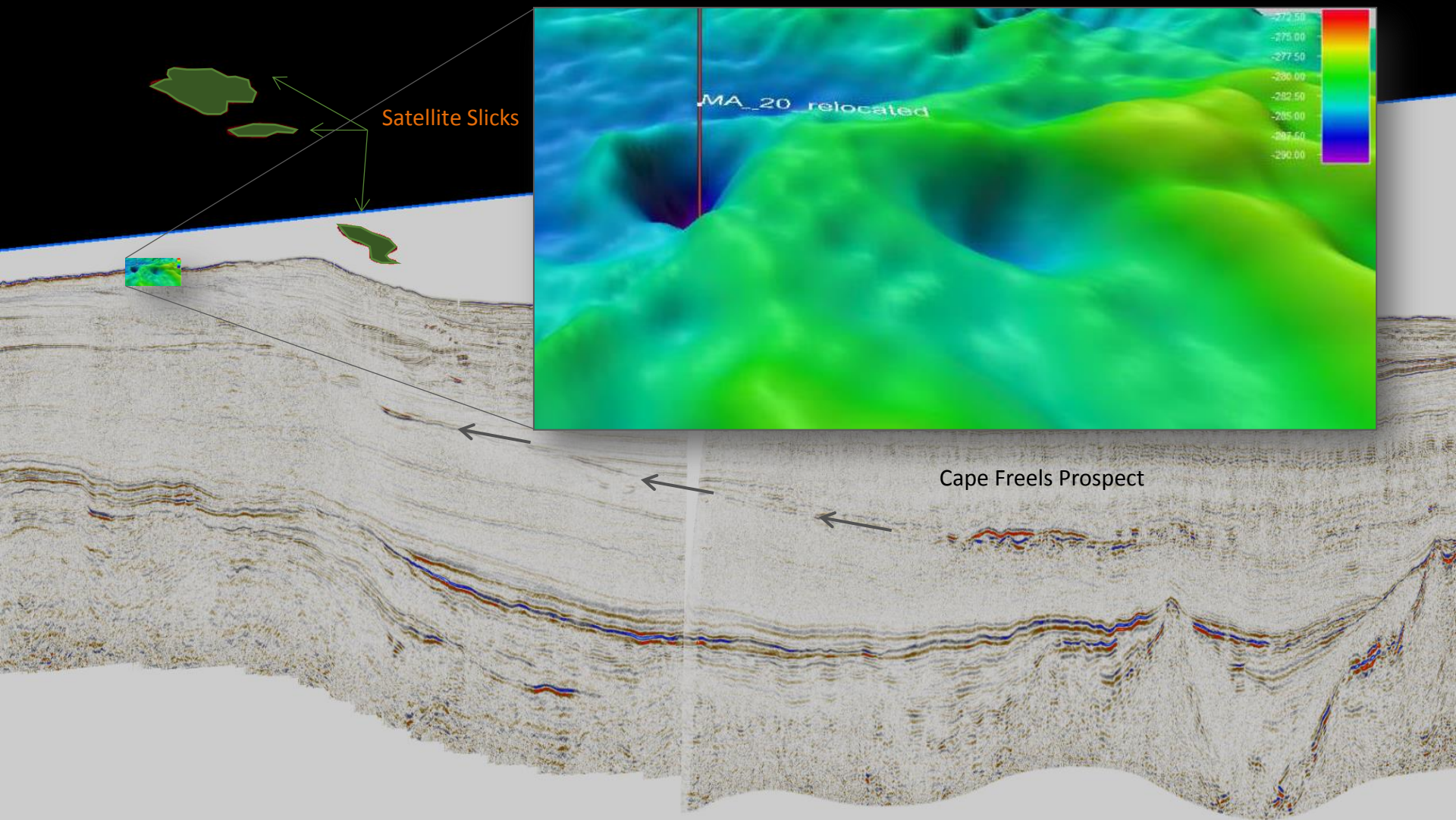
Terra Nova

White Rose





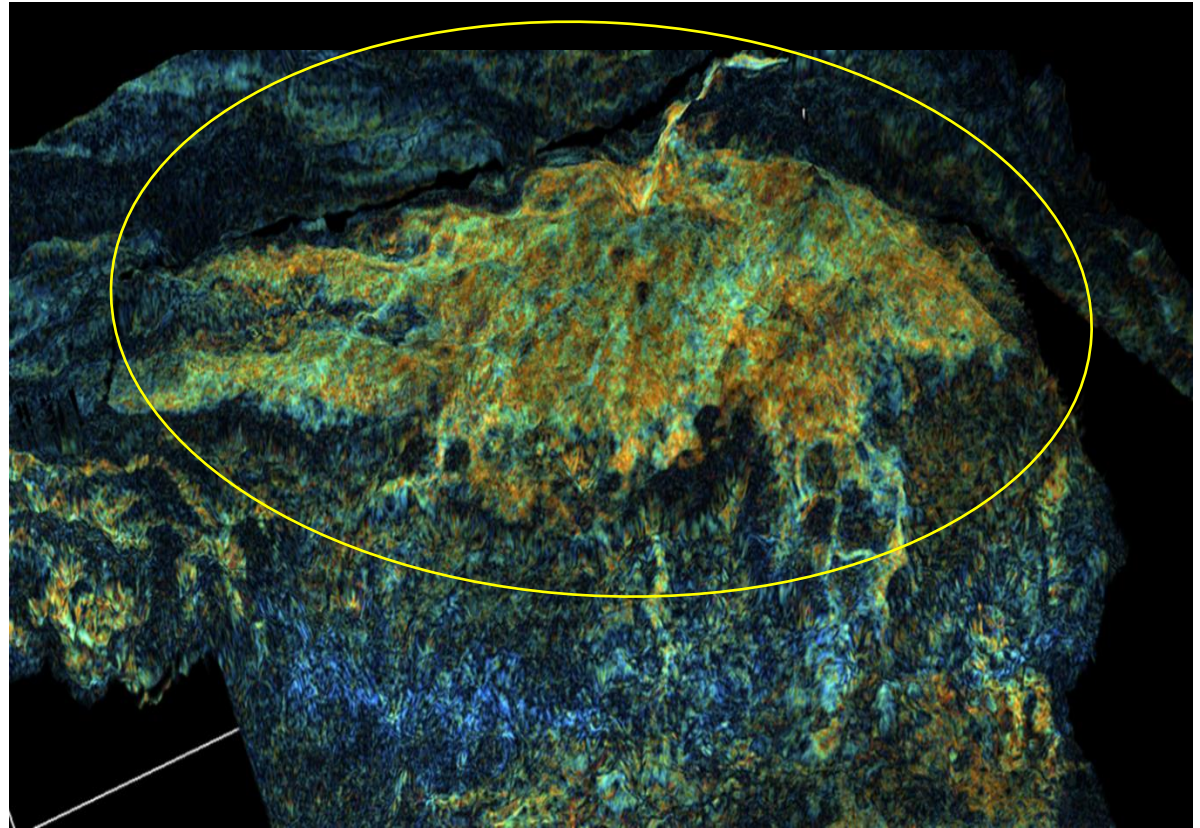




# 2015 West Orphan 3D



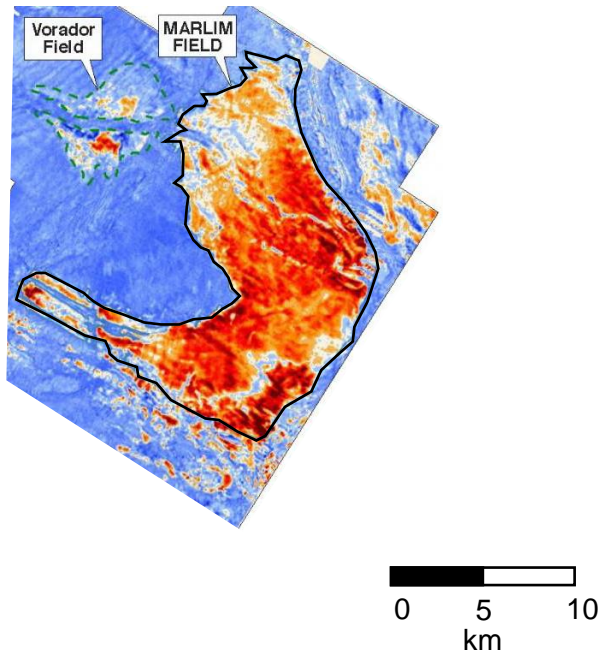
Khattak, 2015





# GEOLOGICAL ANALOGS

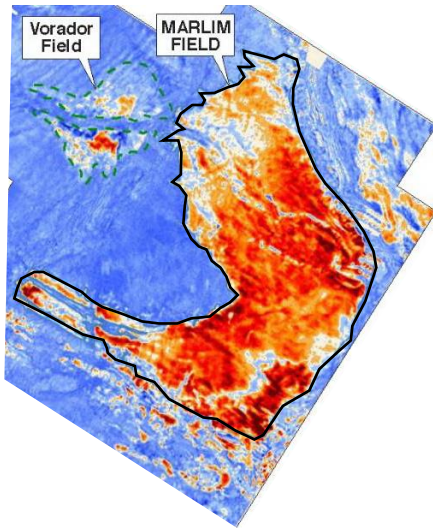
## Marlim Field, Brazil



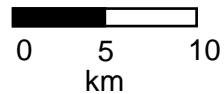
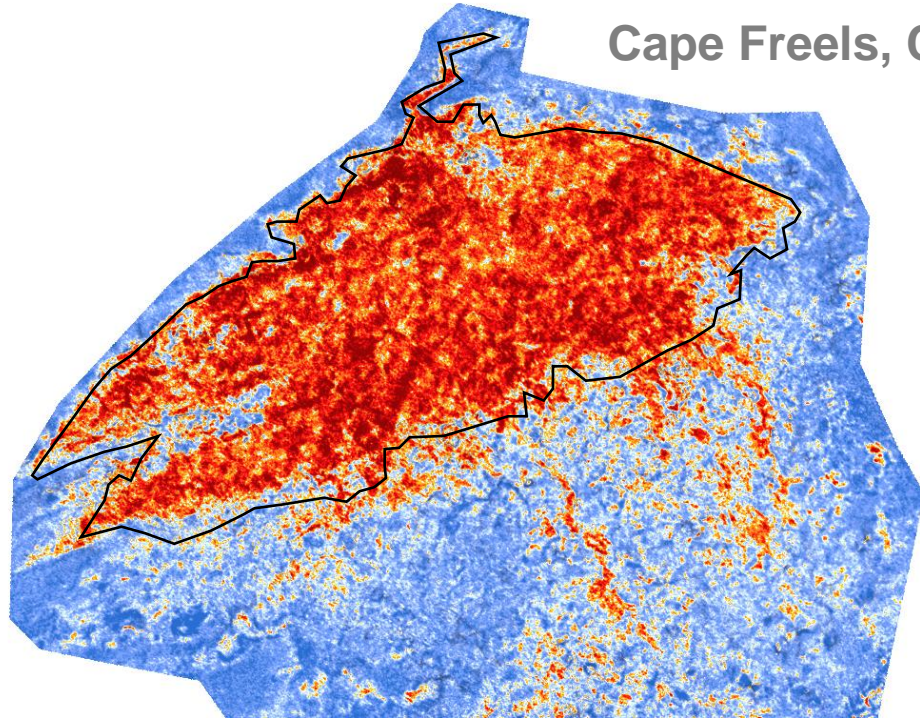
# GEOLOGICAL ANALOGS

Same Scale

Marlim Field, Brazil

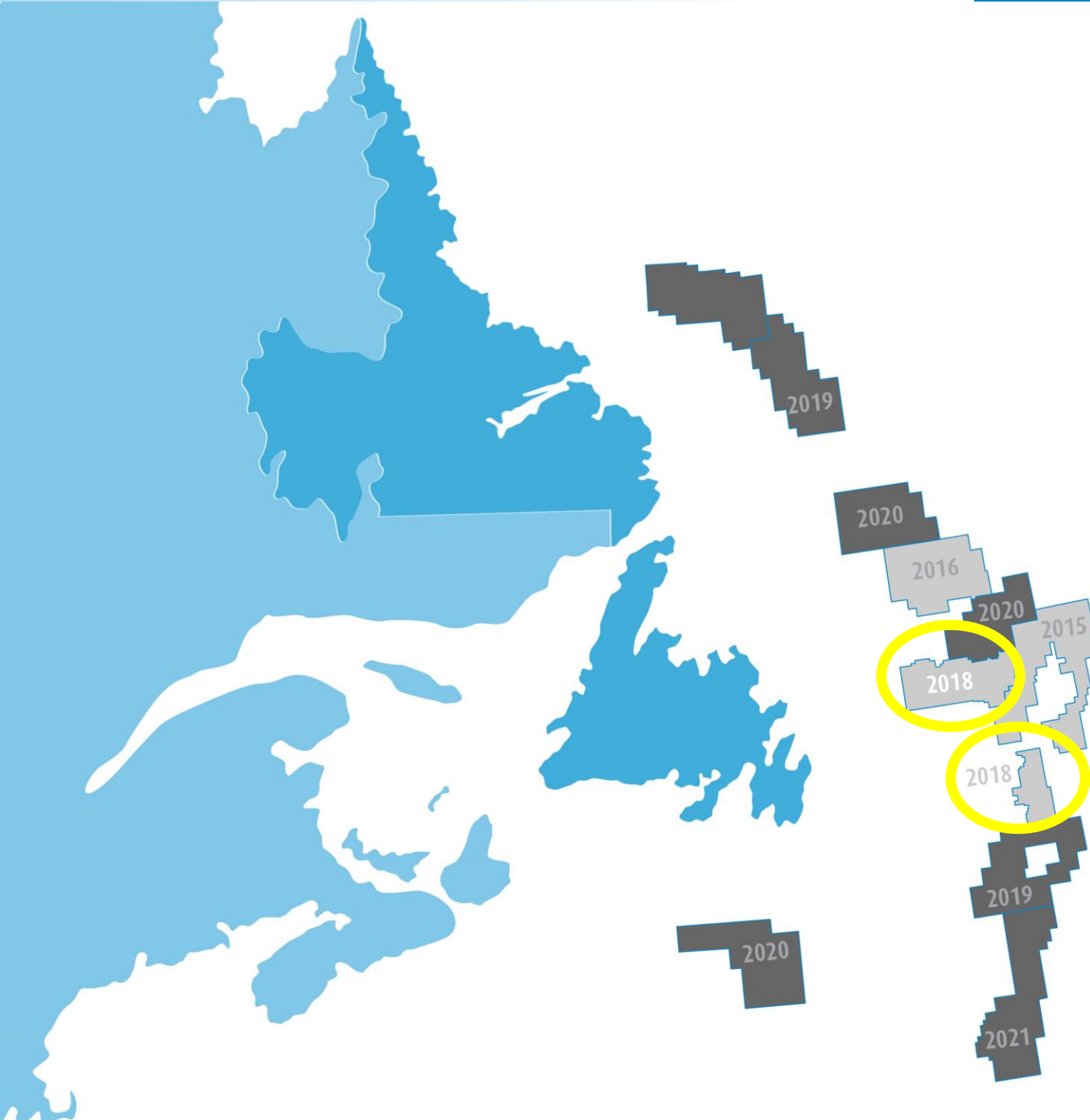


Cape Freels, Canada



BP et al. Bid \$461 Million for this license area

# Scheduled Upcoming License Rounds





Ramform Thethys



2017 3D Seismic Program

Fugro Discovery

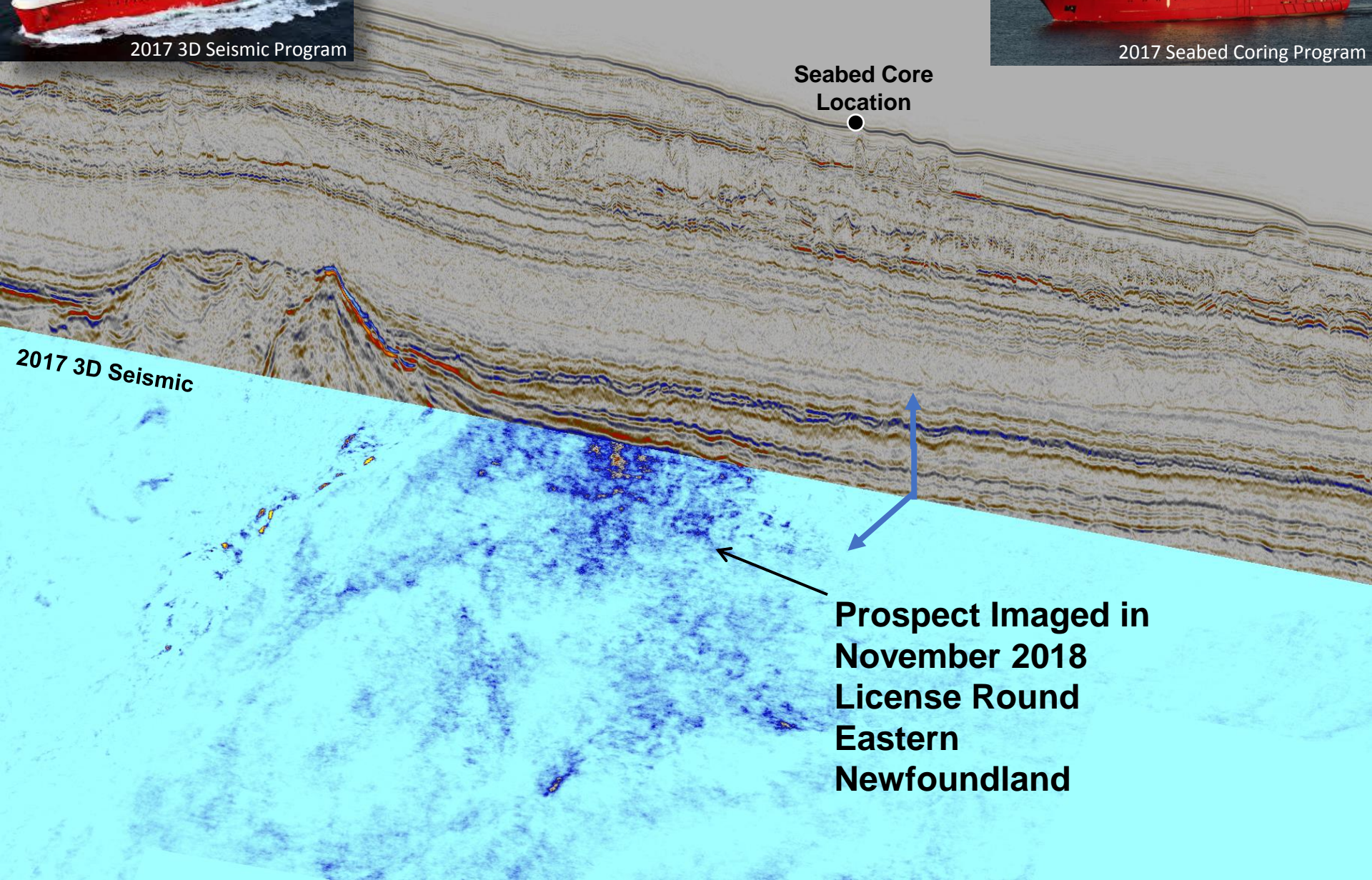


2017 Seabed Coring Program

Seabed Core  
Location



2017 3D Seismic



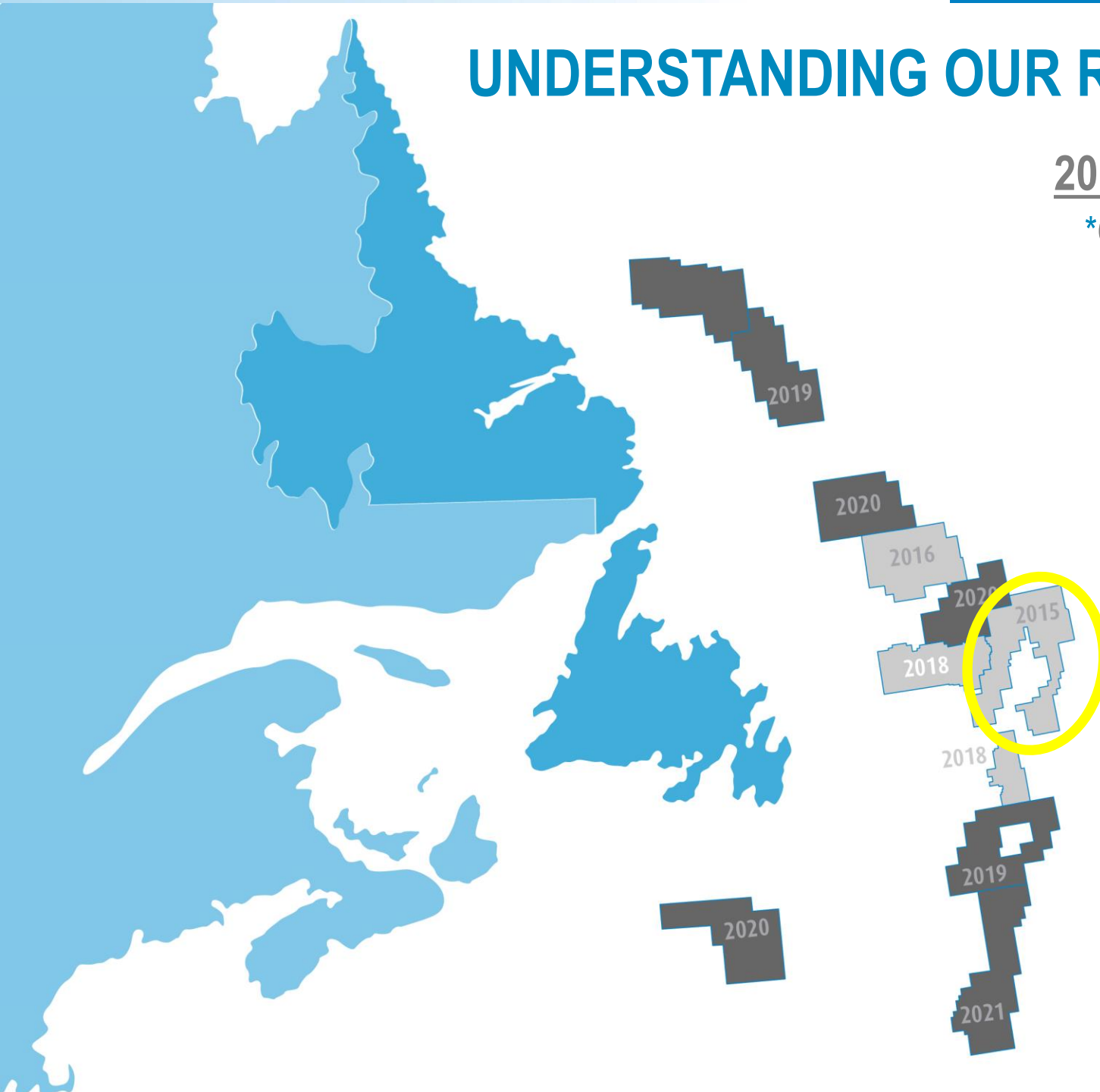
Prospect Imaged in  
November 2018  
License Round  
Eastern  
Newfoundland

# UNDERSTANDING OUR RESOURCES

## 2015 License Round

\*Oil - 12 Billion Barrels

\*Gas - 113 TCF





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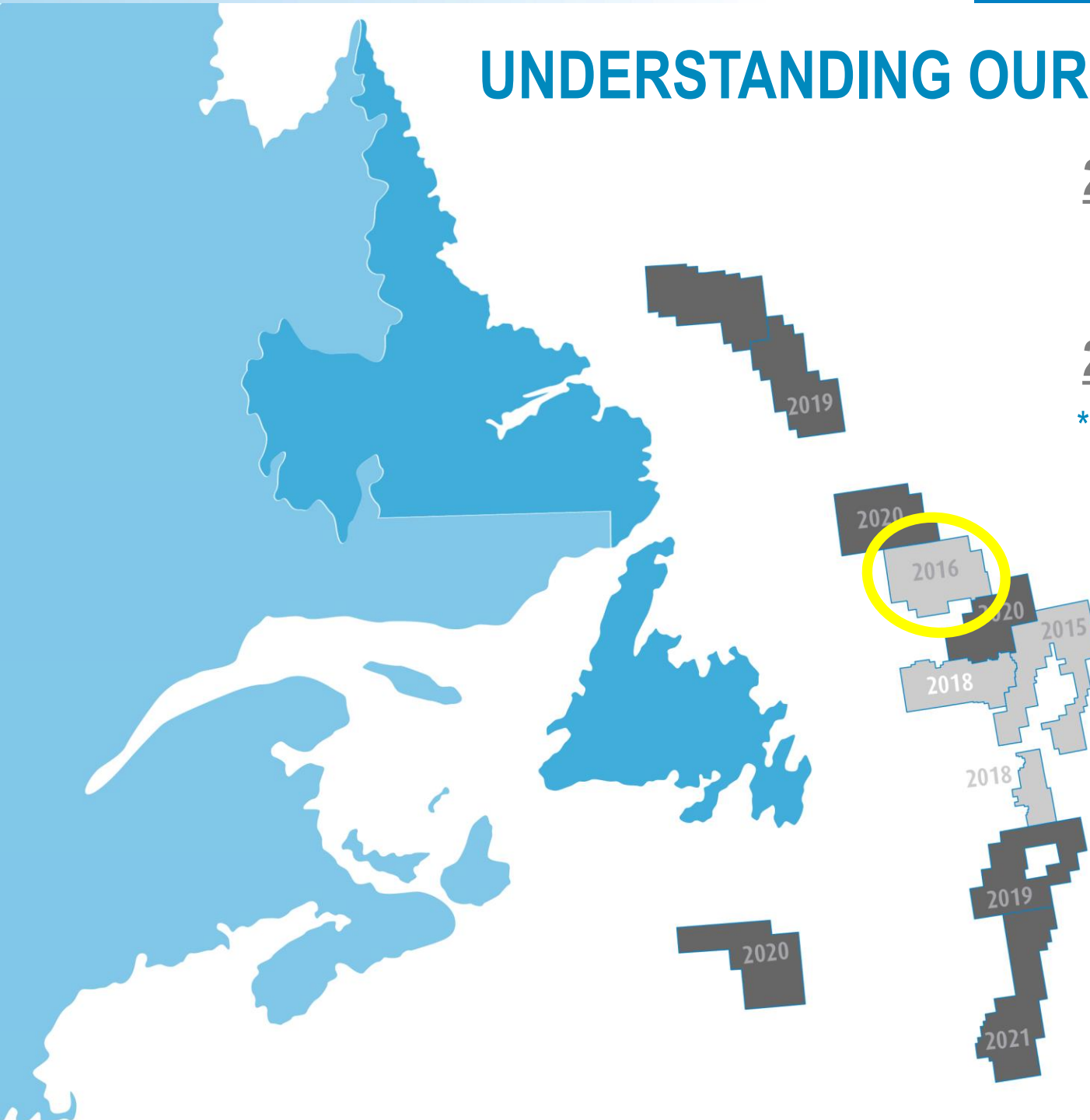
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## 2016 License Round

\*Oil – 25.5 Billion Barrels

\*Gas – 20.6 TCF



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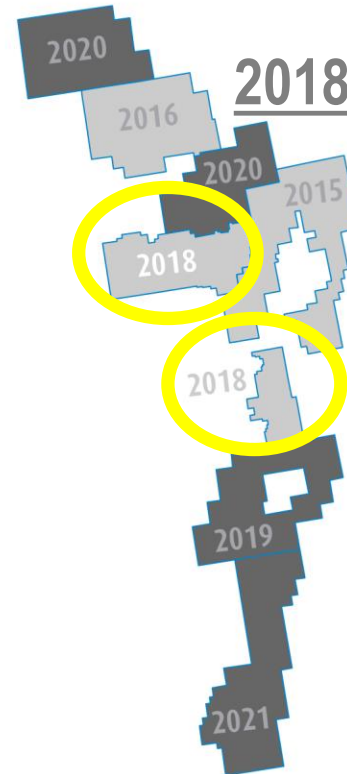
\*Oil – 25.5 Billion Barrels

\*Gas – 20.6 TCF

## 2018 A/B License Round

\*Oil – 11.7 Billion Barrels

\*Gas – 60.2 TCF





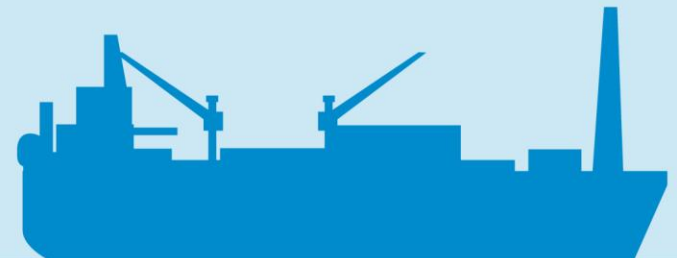
# UNLOCKING THE POTENTIAL: OFFSHORE NEWFOUNDLAND AND LABRADOR

**49.2 BILLION**  
BARRELS OF OIL



**193.8 TRILLION**  
CUBIC FEET OF GAS

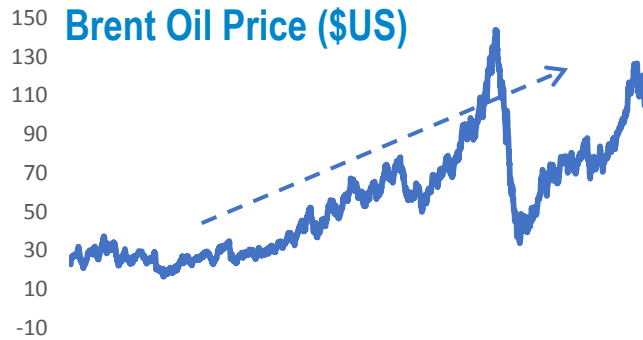
In-place resource estimates identified in independent resource assessments representing less than 7% of Offshore NL potential.



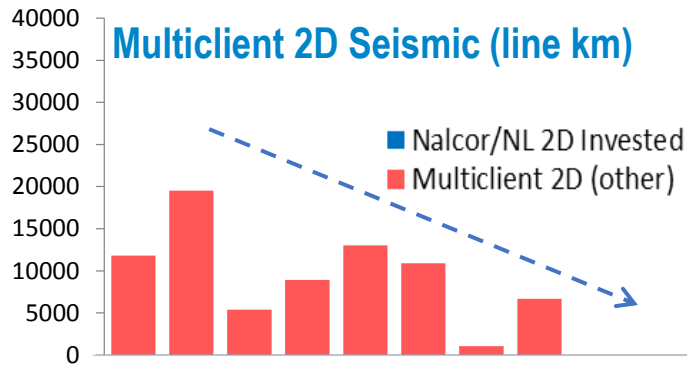
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**Brent Oil Price (\$US)**

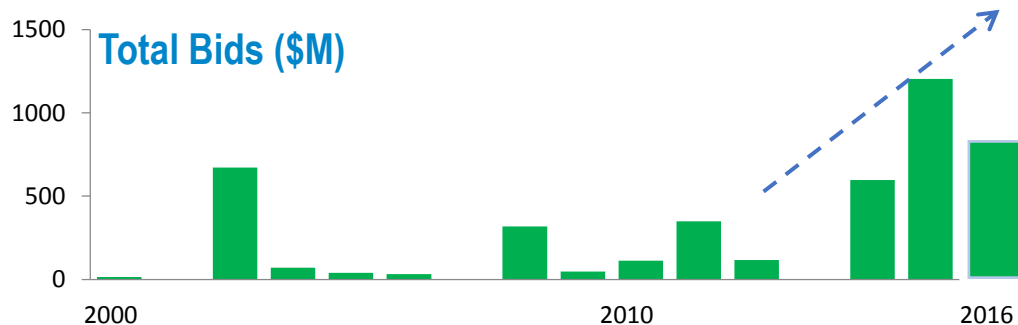
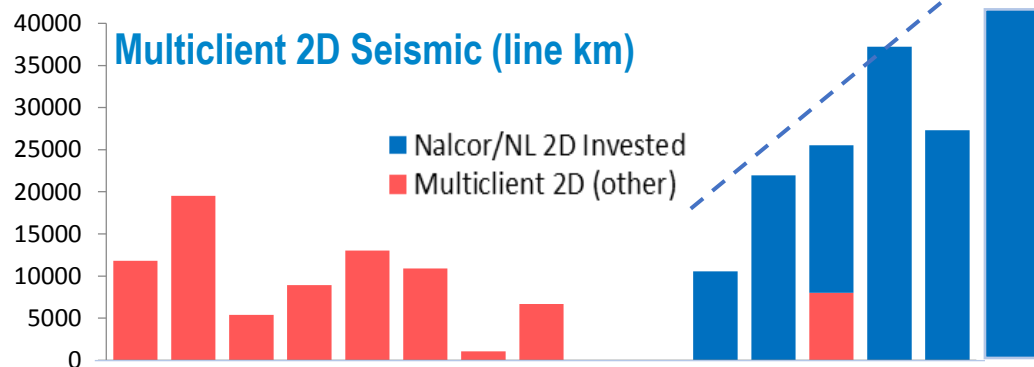


**Multiclient 2D Seismic (line km)**



**Total Bids (\$M)**





2.55B in total bids have been received in the last 3 years despite global downturn - 50% of the total bids since 1988.

## 7 NEW ENTRANTS IN THE LAST 2 YEARS

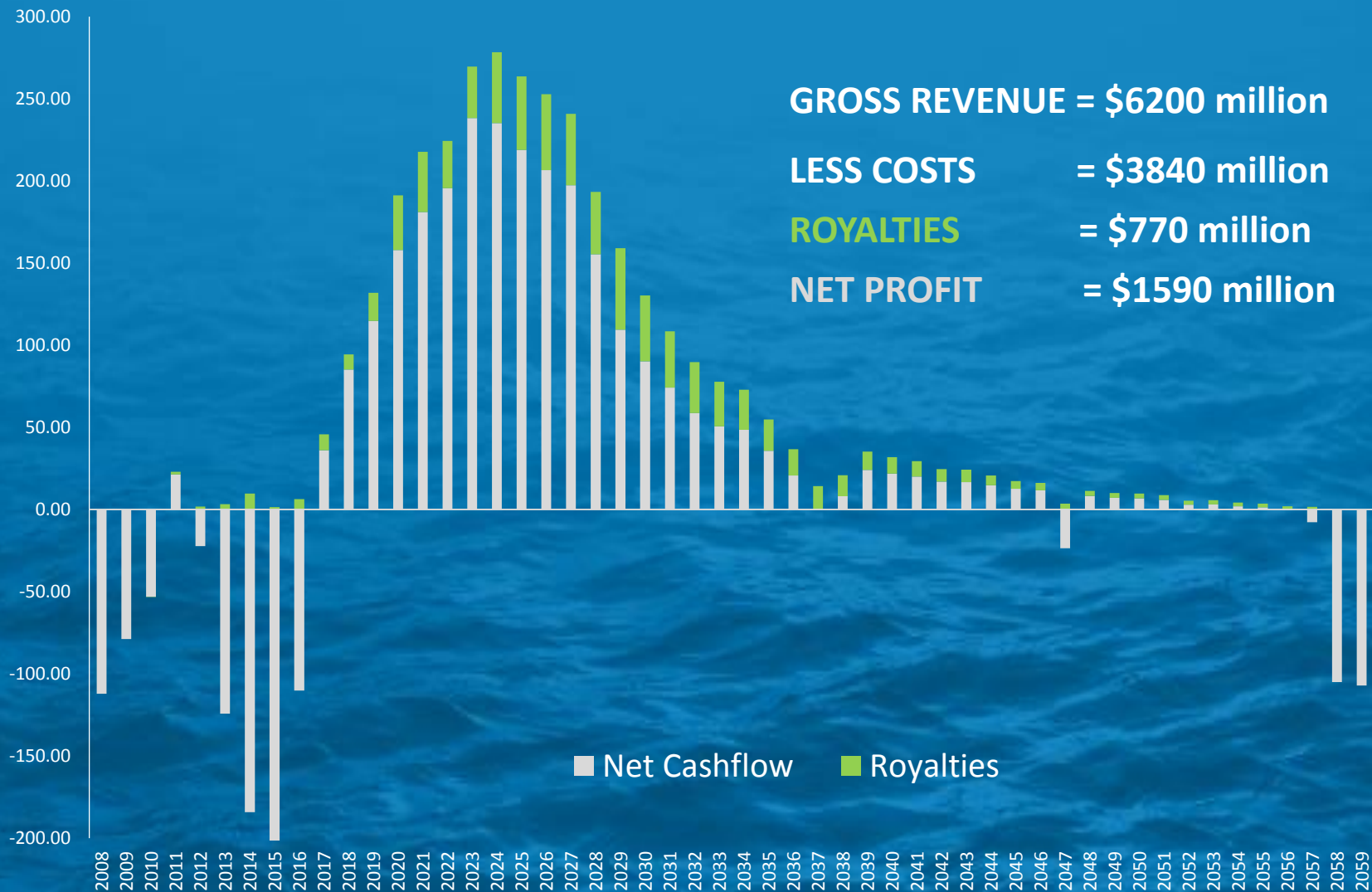


## EXISTING COMPANIES



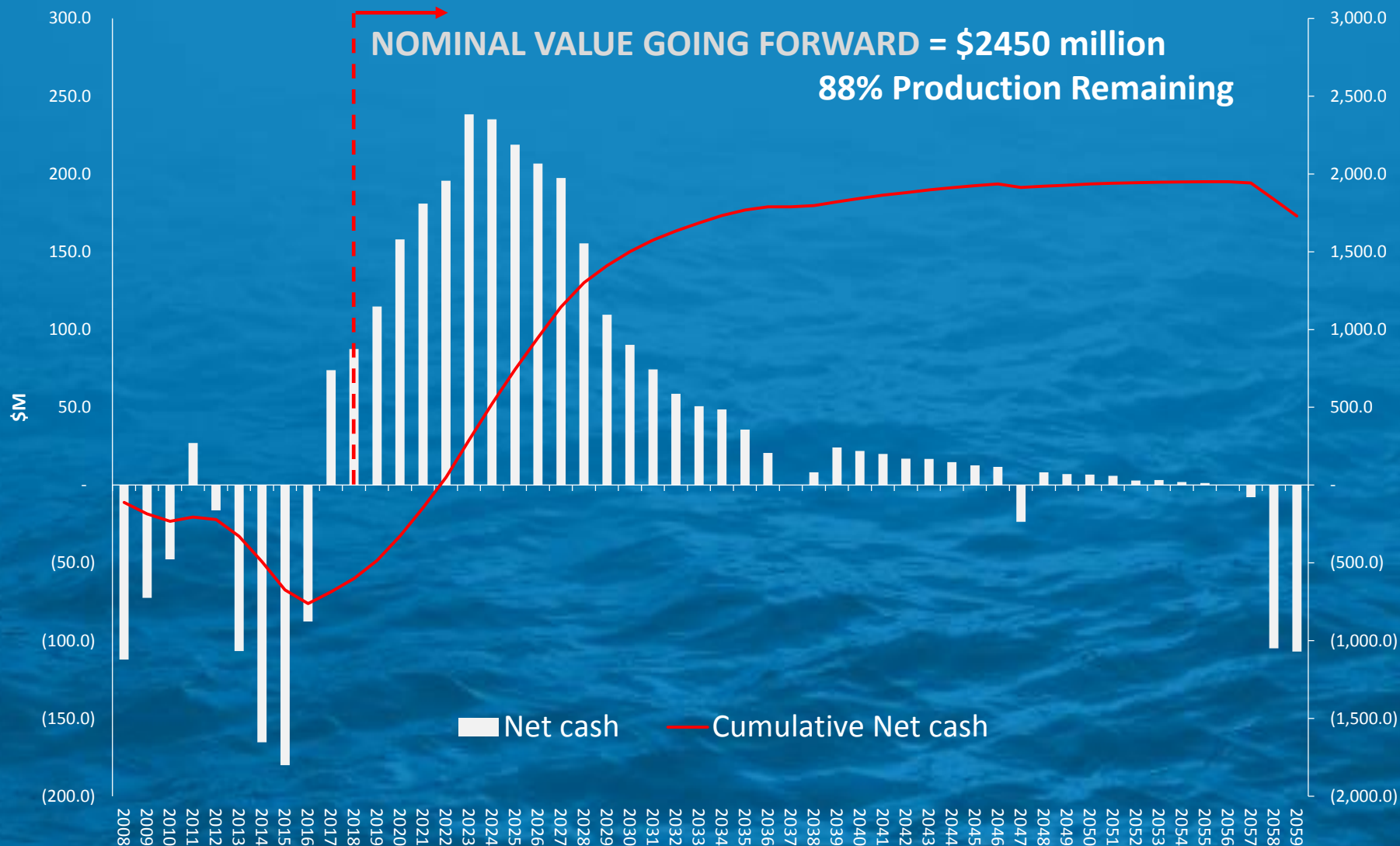
**EQUITY ADVANTAGE**

# NEWCO PROJECT NET CASH FLOW



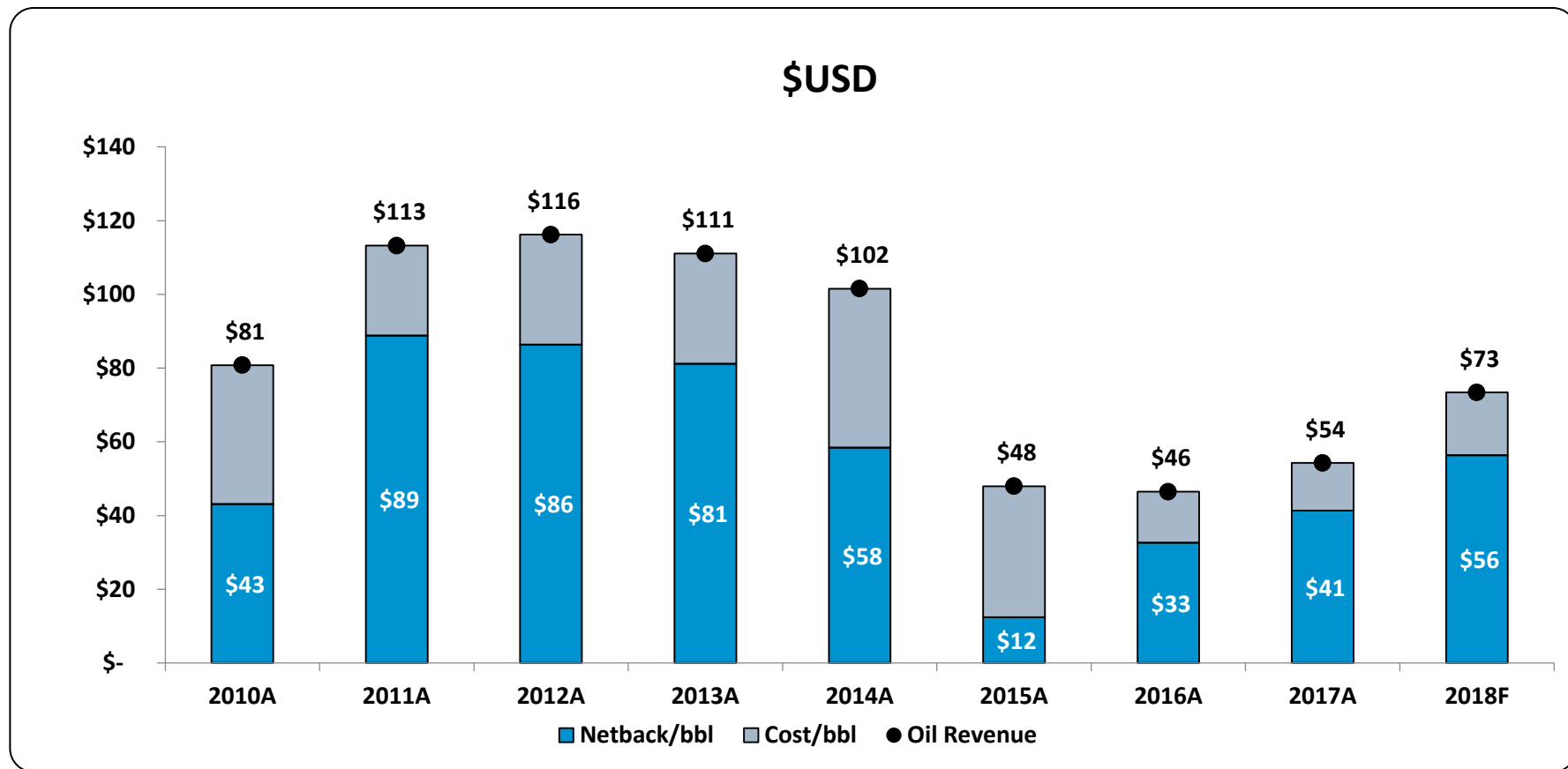


# NEWCO PROJECT NET CASH FLOW





# PROJECT OPERATING NETBACK



# PROJECT SUMMARY PERFORMANCE

## 2007- 2018

<i>(All figures in millions)</i>	White Rose	HSE	Hebron	Total
Production	4.0	7.4	0.6	12.1
<b>Revenue</b>				
Oil & Lease revenue	375	526	163	1,064
	375	526	163	1,064
<b>Expenses</b>				
Royalty & NPI	19	31	0	51
Production Costs	74	73	20	168
	93	104	20	218
<b>Cash Generated by Operations</b>	281	422	142	846
<b>Capital Investment</b>				
Project Acquisition	30	30	110	170
Project Development Costs	247	337	661	1,245
<b>Project Investment 2007-2018</b>	277	367	771	1,415
<b>Net</b>	5	54	(628)	(569)
<b>% Investment Recovered</b>	101.7%	114.8%	18.5%	59.8%
<b>Mbarrels remaining at Dec. 31 2018</b>	8.0	16.0	35	59

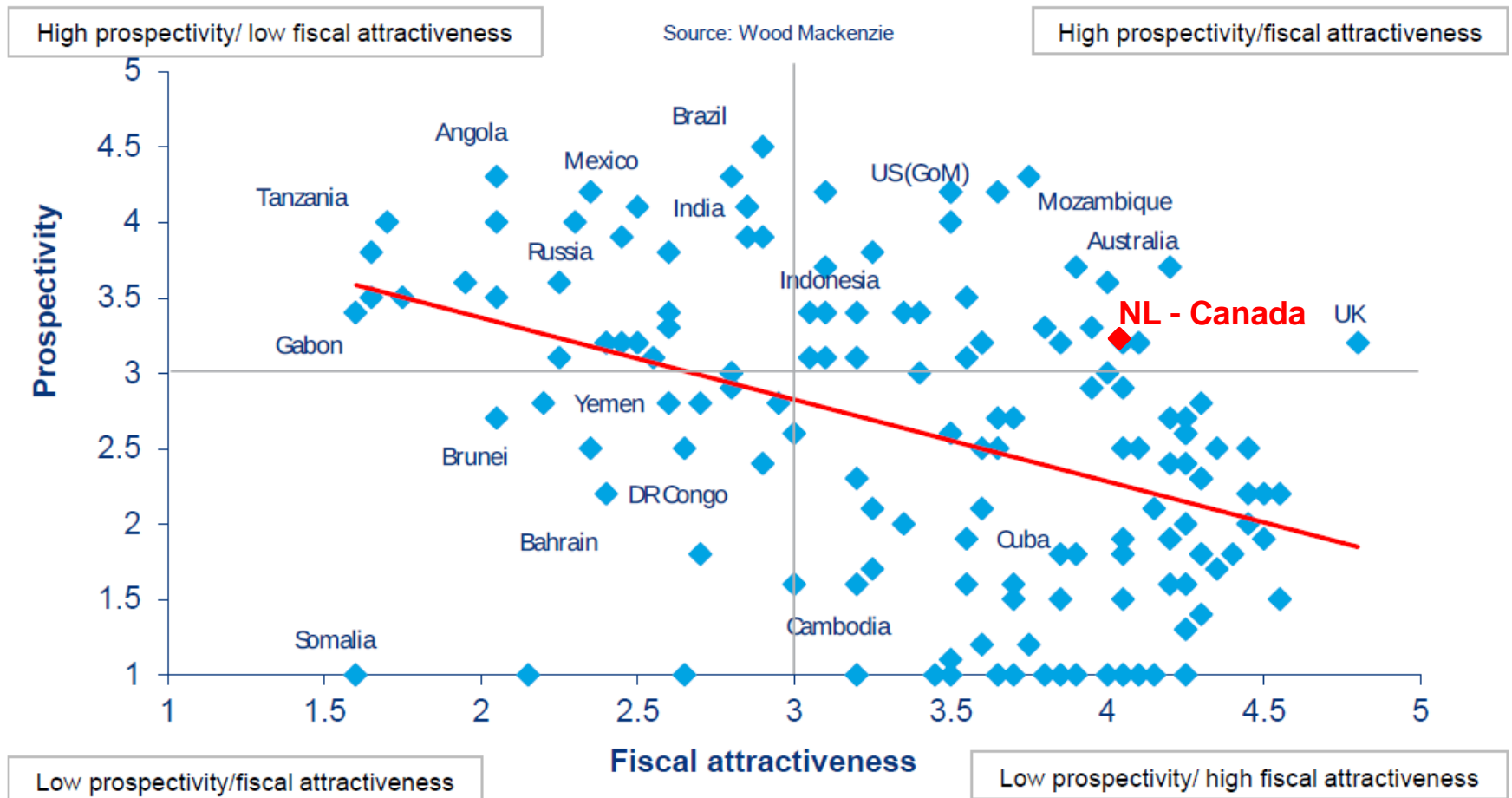
<sup>(1)</sup> Includes funded program revenue (PEEP and OGDG) and Sundry revenue

<sup>(2)</sup> Includes O&M costs, funded program expense, interest (excludes accretion), other income/expense (excludes NBV of disposed assets)

# **OFFSHORE NL'S ADVANTAGE**

# GLOBAL COMPETITIVENESS

Fiscal attractiveness vs Prospectivity indices



# OUR REACH IS GLOBAL

USA 41.3%

CANADA 35.6%

UK 6.5%

NORWAY 3.3%

DENMARK 0.2%

CHINA 1.7%

INDIA 2.5%

ITALY 2.3%

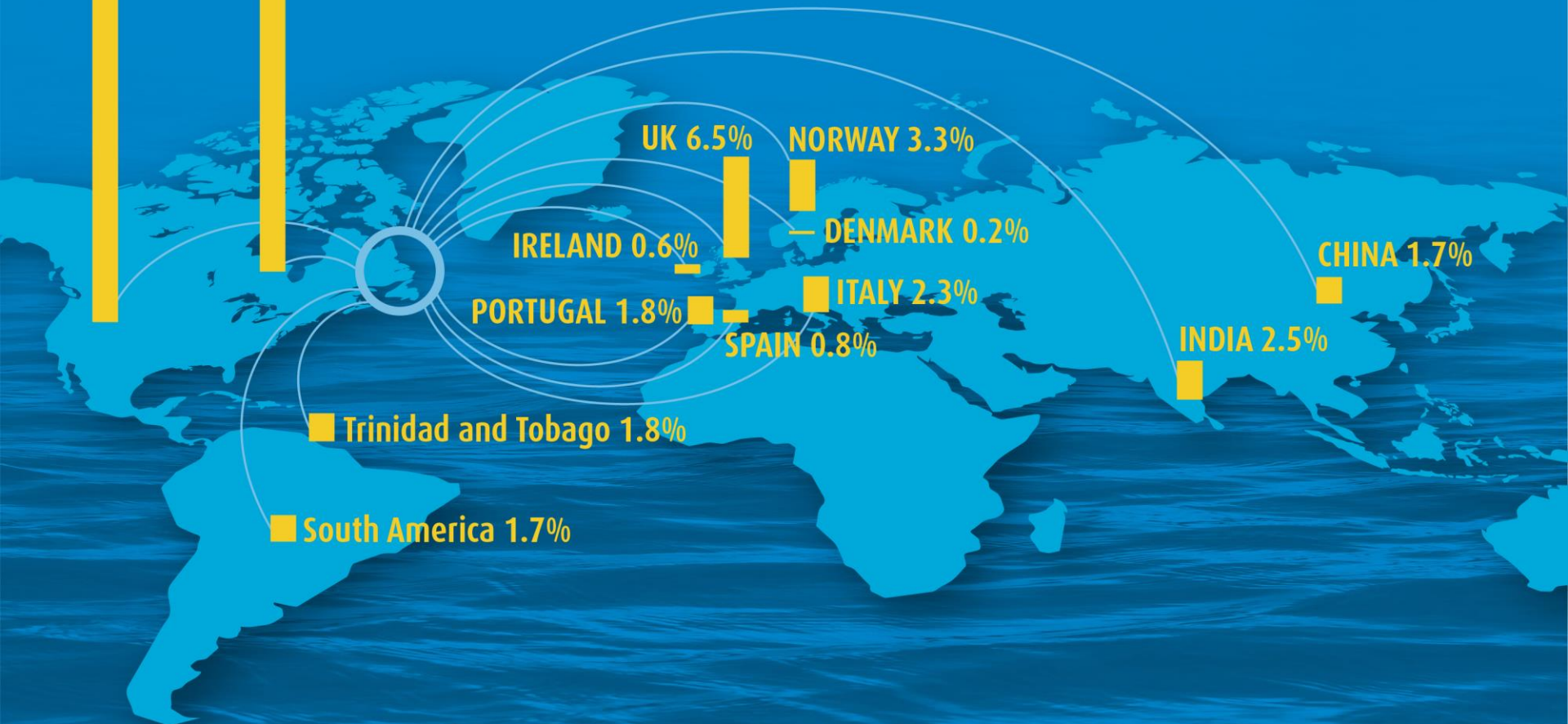
SPAIN 0.8%

PORTUGAL 1.8%

IRELAND 0.6%

Trinidad and Tobago 1.8%

South America 1.7%



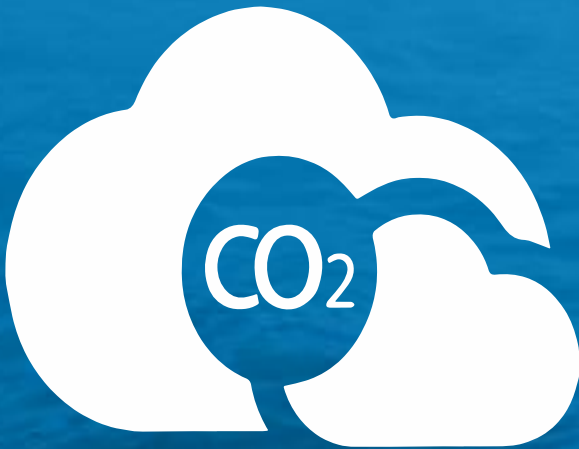
# LOW GHG PER BARREL

SAGD Oil Extraction

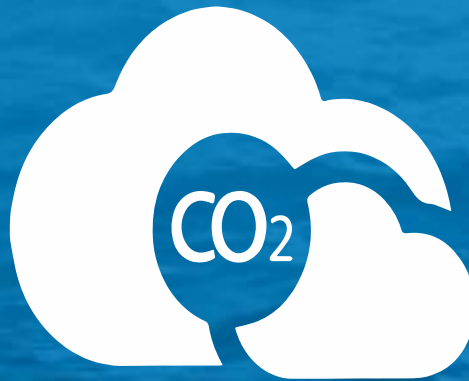
Oil Sands Mining

World Average

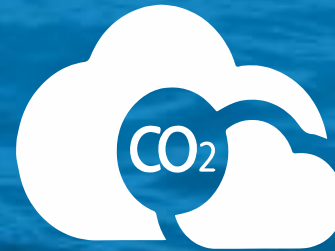
Offshore East Coast



84 kg of CO<sub>2</sub> (eq)



44 kg of CO<sub>2</sub> (eq)



18kg of CO<sub>2</sub> (eq)



12 kg of CO<sub>2</sub> (eq)





**THANK YOU**