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

**$$$$**
Over 120 billion dollars of revenue

WHP will begin producing in 2022

Bay du Nord, world’s largest offshore discovery of 2013

**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...

Global energy demand grows at around 1.3% p.a. versus 2% in the previous 20 years.
The transition to a lower carbon fuel mix continues...

Primary energy consumption by fuel

Shares of primary energy

Billion toe

Renewables
Hydro
Nuclear
Coal
Gas
Oil

Coal
Renewables
Hydro
Nuclear
Gas
Non-fossils

1 Non-fossils includes renewables, nuclear and hydro

2018 BP Energy Outlook
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).

- $335 Billion
- $155 Billion

Source: Rystad Energy UCube
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

- Early Stage Exploration
- Basin/Prospect Evaluations
- Bidding/Lease Rounds
- Exploration Drilling/Appraisal
- Development and Production

Non-Participant

Participant
Nalcor Equity Interests
White Rose Extension – 5%
Hibernia Southern Extension – 10%
Hebron – 4.9%

Location and Distances of Newfoundland Offshore Developments

<table>
<thead>
<tr>
<th>Field</th>
<th>Latitude</th>
<th>Longitude</th>
<th>TN</th>
<th>Hibernia</th>
<th>Hebron</th>
<th>WR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terra Nova (FPSO)</td>
<td>46°28.53’N</td>
<td>48°28.86’W</td>
<td>21</td>
<td>5</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>Hibernia (Platform)</td>
<td>46°45.01’N</td>
<td>48°46.90’W</td>
<td>21</td>
<td>17</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Hebron</td>
<td>46°32.75’N</td>
<td>48°29.94’W</td>
<td>5</td>
<td>17</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>White Rose (FPSO)</td>
<td>46°47.33’N</td>
<td>48°00.99’W</td>
<td>29</td>
<td>30</td>
<td>25</td>
<td></td>
</tr>
</tbody>
</table>
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
Oil prices at all time highs

NL was not attracting any significant geoscience

Resultant license bids reflected this
OPPORTUNITY OF SCALE

THE US GULF OF MEXICO
NALCOR – AIRBUS SATELLITE SEEPS PROJECT
NALCOR – AIRBUS SATELLITE SEEPS PROJECT

[Map of area with grid overlay]

[Diagram showing satellite orbit, Bragg scatter, sea surface ripple-waves, oil-coated gas bubbles, and current]

[Logos: NALCOR, AIRBUS DEFENCE & SPACE]
Satellite Oil Slick
Nalcor-Astrium Survey
Offshore Newfoundland and Labrador Significant Discovery

Satellite Oil Slick
Nalcor-Astrium Survey
Hydrocarbon Migration

Satellite Slick Discovery

Seismic Line (right)

Seismic Data courtesy of TGS Nopec

Offshore Newfoundland and Labrador Significant Discovery

Discovery Well

Seismic Line (right)

Satellite Oil Slick

Nalcor-Astrium Survey

A

B

Discovery Well

Seismic Line (3D View)

Satellite Slick

Hydrocarbon Migration

Seismic Data courtesy of TGS Nopec
• 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
Satellite Slicks

Turbidites/Fans

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
NALCOR EXPLORATION STRATEGY

- Program is one of the largest in the world
- Survey covers over 170,000 line kms (2011-2017)
- Over 15,000 square kms of 3D data collected
- From regional 60x60km grids to detailed 5x5km grid in license round areas

NL SEISMIC INVESTMENT

Scheduled
Upcoming License Rounds
Prospect Imaged in November 2018 License Round Eastern Newfoundland
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NL SEISMIC INVESTMENT UNDERSTANDING OUR RESOURCES

2015 License Round
* Oil - 12 Billion Barrels
* Gas - 113 TCF
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NL SEISMIC INVESTMENT

- **2015 License Round**
  - Oil - 12 Billion Barrels
  - Gas - 113 TCF

- **2016 License Round**
  - Oil – 25.5 Billion Barrels
  - Gas – 20.6 TCF

UNDERSTANDING OUR RESOURCES
NALCOR EXPLORATION STRATEGY

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NL SEISMIC INVESTMENT

2015 License Round
* Oil - 12 Billion Barrels
* Gas - 113 TCF

2016 License Round
* Oil – 25.5 Billion Barrels
* Gas – 20.6 TCF

2018 A/B License Round
* Oil – 11.7 Billion Barrels
* Gas – 60.2 TCF

UNDERSTANDING OUR RESOURCES
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.
A REAL PROBLEM

- Oil prices at all time highs
- NL was not attracting any significant geoscience
- Resultant license bids reflected this
2.55B in total bids have been received in the last 3 years despite global downturn - 50% of the total bids since 1988.
EQUITY ADVANTAGE
GROSS REVENUE = $6200 million
LESS COSTS = $3840 million
ROYALTIES = $770 million
NET PROFIT = $1590 million
NEWCO PROJECT NET CASH FLOW

NOMINAL VALUE GOING FORWARD = $2450 million
88% Production Remaining
PROJECT OPERATING NETBACK

$USD

<table>
<thead>
<tr>
<th>Year</th>
<th>Netback/bbl</th>
<th>Cost/bbl</th>
<th>Oil Revenue</th>
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</thead>
<tbody>
<tr>
<td>2010A</td>
<td>$43</td>
<td>$81</td>
<td>$81</td>
</tr>
<tr>
<td>2011A</td>
<td>$89</td>
<td>$113</td>
<td>$113</td>
</tr>
<tr>
<td>2012A</td>
<td>$86</td>
<td>$116</td>
<td>$116</td>
</tr>
<tr>
<td>2013A</td>
<td>$81</td>
<td>$111</td>
<td>$111</td>
</tr>
<tr>
<td>2014A</td>
<td>$58</td>
<td>$102</td>
<td>$102</td>
</tr>
<tr>
<td>2015A</td>
<td>$12</td>
<td>$48</td>
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<tr>
<td>2016A</td>
<td>$33</td>
<td>$46</td>
<td>$46</td>
</tr>
<tr>
<td>2017A</td>
<td>$41</td>
<td>$54</td>
<td>$54</td>
</tr>
<tr>
<td>2018F</td>
<td>$56</td>
<td>$73</td>
<td>$73</td>
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</tbody>
</table>
## PROJECT SUMMARY PERFORMANCE 2007-2018

(All figures in millions)

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

(1) Includes funded program revenue (PEEP and OGDP) and Sundry revenue
(2) 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

Source: Wood Mackenzie

High prospectivity/low fiscal attractiveness

High prospectivity/fiscal attractiveness

Low prospectivity/fiscal attractiveness

Low prospectivity/high fiscal attractiveness
OUR REACH IS GLOBAL
LOW GHG PER BARREL

SAGD Oil Extraction
84 kg of CO₂ (eq)

Oil Sands Mining
44 kg of CO₂ (eq)

World Average
18 kg of CO₂ (eq)

Offshore East Coast
12 kg of CO₂ (eq)
THANK YOU