


# Oil Sands and Heavy Oil Technologies Conference

## Visionaries

### Climbing over the Wall



Presentation by:  
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# Oil Sands Have Hit a Wall

1928

1972

2009

1948

1975

1967

Each time a Visionary has led the industry over the wall and achieved a new level of performance.

# Hitting the Wall – 1928



- There is no huge pool of light source oil – oil sands are just what they seemed to be!
- Road paving not a realistic application.
- Where do we go from here?

# Hitting the Wall – 1948

- Commercial attempts early in the 40s were a disaster – ended in a series of fires.
- No commercial interest in this intractable resource.

# Hitting the Wall – 1967

- Alberta Government announces that it will only approve small projects to reduce competition with the conventional oil industry.
- Potential commercial projects lack unequivocal private sector support.

# Hitting the Wall – 1972

- A second potential commercial project had shaky private sector support.
- Limited vision of what this industry could mean to Canada.

# Hitting the Wall – 1975

- Multinational companies cease work on insitu leases.
- No demonstrated insitu recovery technology is available.

# Hitting the Wall – 2009

- Existing technologies no longer environmentally acceptable.
- Water and air no longer free.
- Hydrogen from natural gas an unacceptable long term source.
- US Congress does not want Alberta's 'dirty oil'.
- Upgrading capacity in Canada is severely limited.

# Hitting the Wall – 1928



Visionary #1

No light oil 'silver bullet'; have to learn how to use oil sands as they are.

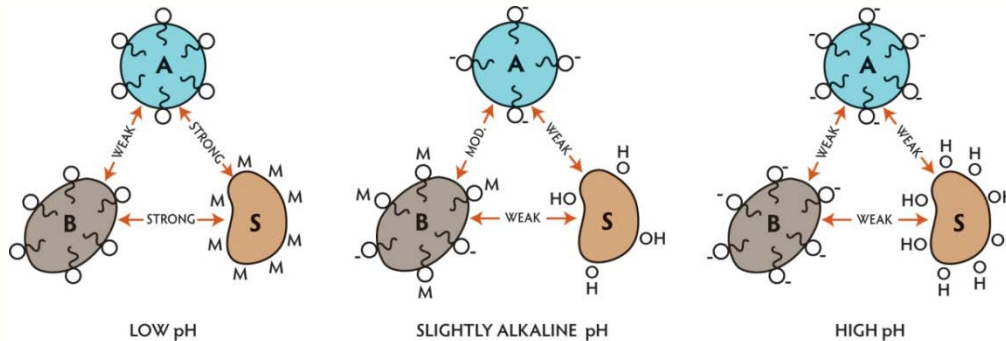
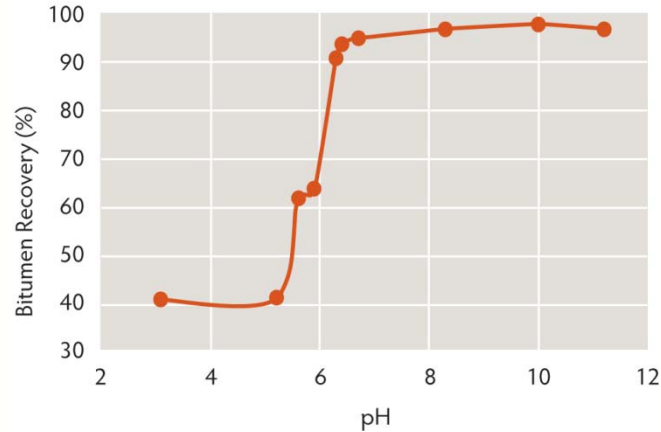
1. Visionary #1 developed a bitumen extraction process.
2. Enunciated 6 'statements' that define the process - These that have stood the test of time.
3. This process is the basis of current surface-mined oil sand projects.
4. Visionary #1 pursued oil sands research with determination and limited support.

# Visionary #1: Climbing the Wall – 1928



Karl Clark

Effect of pH on Bitumen Recovery



Legend:

- ~O Carboxylic Acid
- ~O<sup>-</sup> Carboxylate Ion
- ~OM Polyvalent Metal Carboxylate

- A Air
- B Bitumen
- S Solid

↑  
Corroborating  
evidence  
by later  
researchers  
←

# Hitting the Wall – 1948



Visionary #2

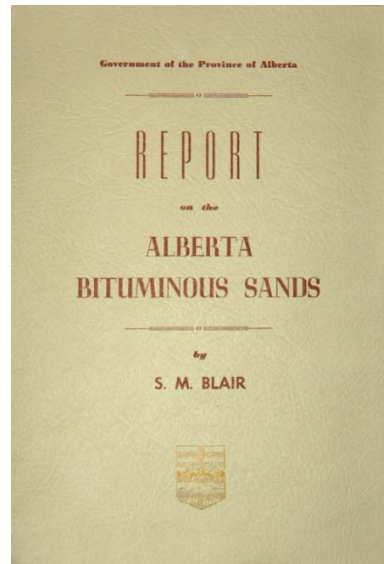
A legacy of early-decade failed commercial attempts.

1. Alberta Government commissioned a hot water process demonstration plant at Bitumount, 80 km north of Fort McMurray.
2. Entire Alberta legislature visited the plant in 1949.
3. Independent evaluation by Sidney Blair, stated that “oil sands were a commercially viable source of crude oil that could compete on the world market”.

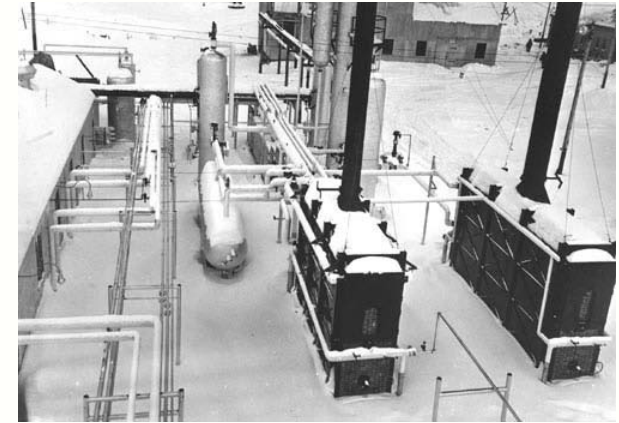
# Visionary #2: Climbing the Wall – 1948



Premier  
Ernest Manning



Cover of Blair Report



Bitumount Plant  
Copyright of Provincial Archives

Visionary #2 championed this demonstration project and maintained a life-long belief in the importance of the Alberta Oil Sands to Canada.

# Hitting the Wall – 1967



Visionary #3

Alberta Government confirmed that it will only provide permits for small projects; private sector commitment appeared shaky.

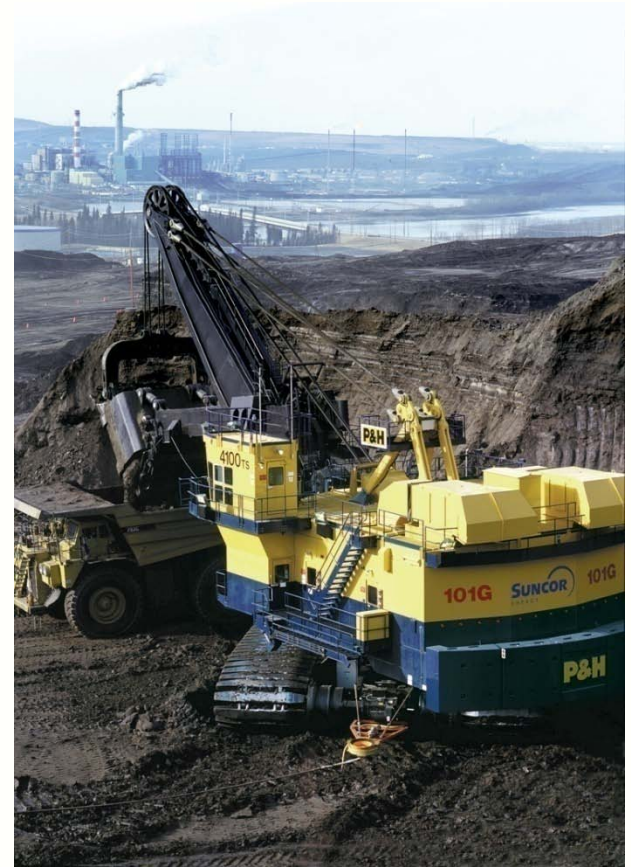
1. Board Meeting of a Company interested in the oil sands: “Gentlemen, either you approve this project or I will handle it myself” – reported by attendee.
2. The company filed an application for 31,500 bpd project in 1967, later amended to 45,000 bpd.

# Visionary #3: Climbing the Wall – 1967



J. Howard Pew

1. ERCB Board Meeting  
“I believe in the future of this project and I will put up my money with no reservations if the permit is granted”.
2. The result: Great Canadian Oil Sands project – now Suncor. K.A. Clark was engaged as a key consultant.



# Hitting the Wall – 1972



Visionary #4

Next project in line put on hold – sponsors reevaluating their resolve.

1. Oil price never quite caught up to project costs.
2. Visionary # 4 expanded research effort with the first dedicated oil sand research laboratory.
3. Tirelessly kept anxious participants on hold.
4. Developed long term strategy for upgrading the bitumen.

# Visionary #4: Climbing the Wall – 1972



Frank Spragins

(photo by Karsh,  
courtesy of  
Spragins family)

1. Syncrude project launched, with a core group of believers and Alberta Government equity support.
2. Currently producing over 300,000 bpd, with significant expansion plans.



Photo courtesy  
of Syncrude

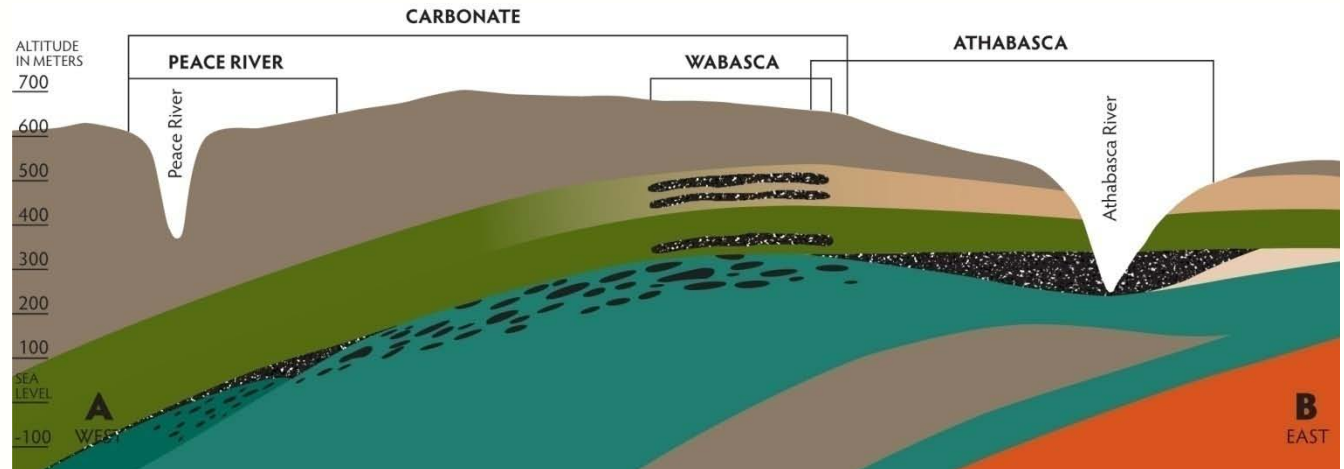
# Hitting the Wall – 1975



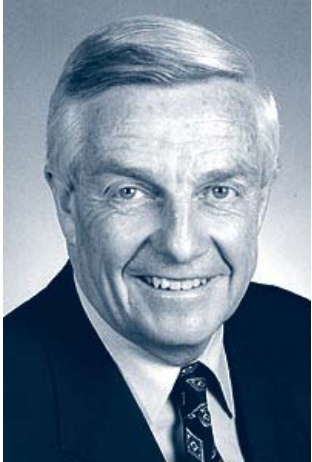
Visionary #5

Work on the deeply buried oil sands (90%) stalled.

1. No demonstrated technology available for the Peace River, Wabasca, and the deeply buried Athabasca deposits; but limited progress on Cold Lake deposit.
2. Very few multinational oil companies had active lease development plans.



# Visionary #5: Climbing the Wall – 1975



Rt. Hon. Peter  
Lougheed

1. Alberta Government established \$100 million technology development fund (AOSTRA); grew to \$1 billion dollar public/private sector fund (1980 dollars).
2. Insitu demonstration projects launched in all major oil sand deposits, evolving into multiple commercial projects over subsequent decades.
3. SAGD process was one of many major advances.
4. Led to major enhancement in scientific, engineering and entrepreneurial oil sands capability.
5. At the 2009 Summit of the Americas, AOSTRA was proposed as a model for energy development.

# Hitting the Wall – 2009

Visionary #6 faces enormous challenges for the oil sands.

1. Water is no longer free – new processes needed to minimize water use (surface mining and insitu).
2. Air is no longer available as a ‘free dump’, and CO<sub>2</sub> must be reduced.
3. Hydrogen and bitumen will forever be joined at the hip. Natural gas cannot continue to be the principal source of hydrogen.
4. The next stage in oil sand development – producing ‘clean’ upgraded value-added products.

# Visionary #6: Climbing the Wall – 2009

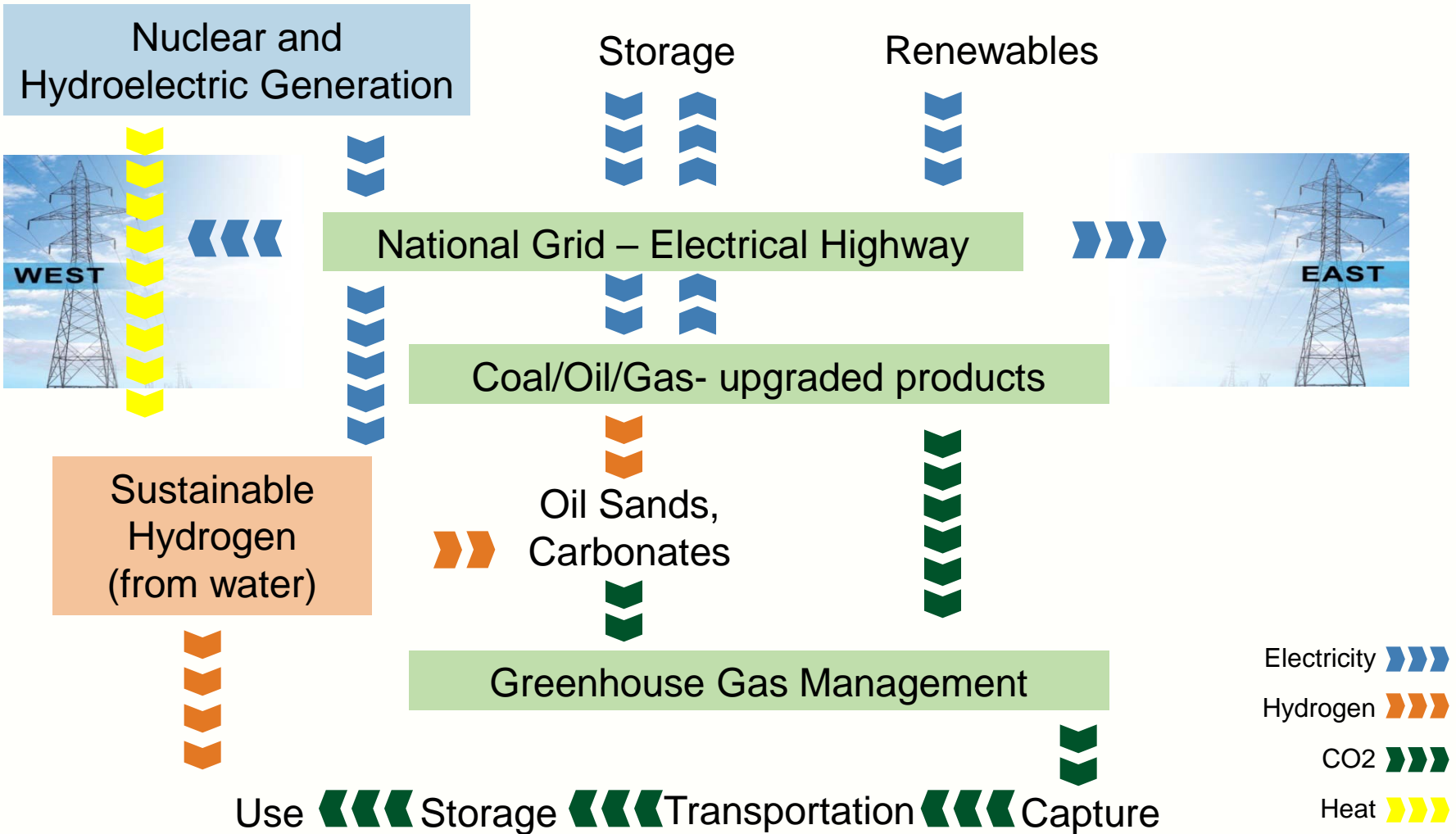
But there is an even bigger challenge – changing Canada over this century.

Visionary #6 will:

- See energy as an integrated system with the oil sands, coal, hydro, nuclear and renewable energy all performing key roles.

# The Evolution of an Energy System

(Slide provided by the Canadian Academy of Engineering )



# Visionary #6: Climbing the Wall – 2009

Visionary #6 will:

- Help formulate the national will to make Canada a world leader in sustainable energy.
- Establish the public/private sector partnerships and investment needed to make this happen.

Who is Visionary #6?

Past Visionaries have come from Research, Public and Private sectors.  
Who is Visionary #6 and where will he/she come from?

