



Shale Gas – The Facts about the Environmental Concerns

26 September 2012

Sapporo, Japan

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TOPICS OF DISCUSSION



- Background
- Original Approach
- Observations that shifted the approach to work
- Deconstructing shale extraction
- Final document
- Customer awareness and acceptance of Shale Gas
- Feedback from the World Shale Oil & Gas Summit
- Challenges for your work
- General discussion

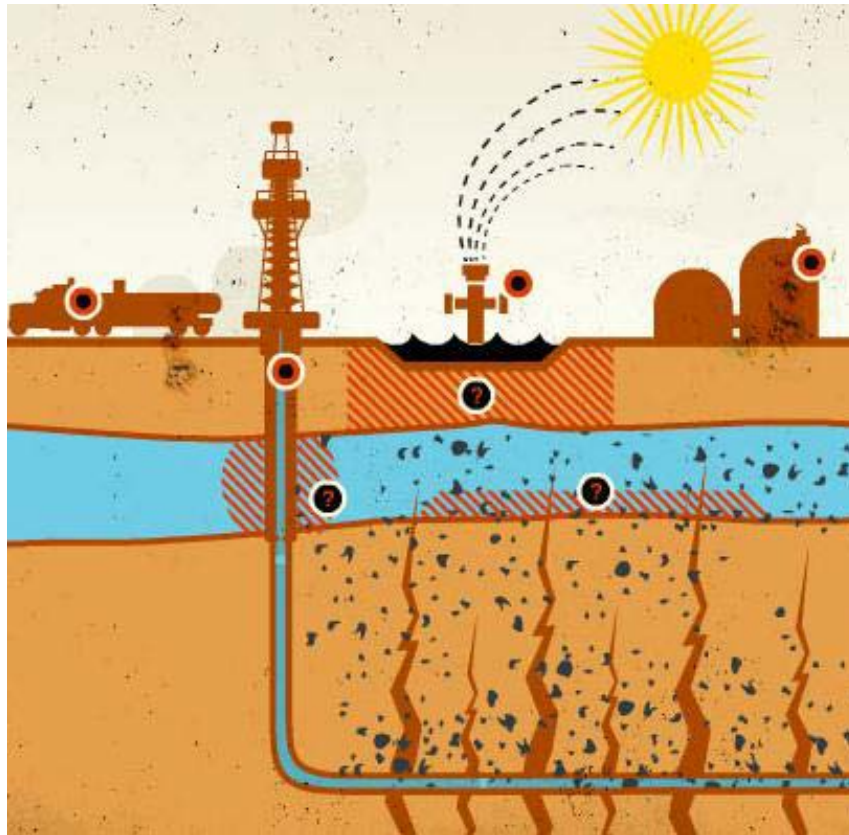
BACKGROUND OF THIS WORK



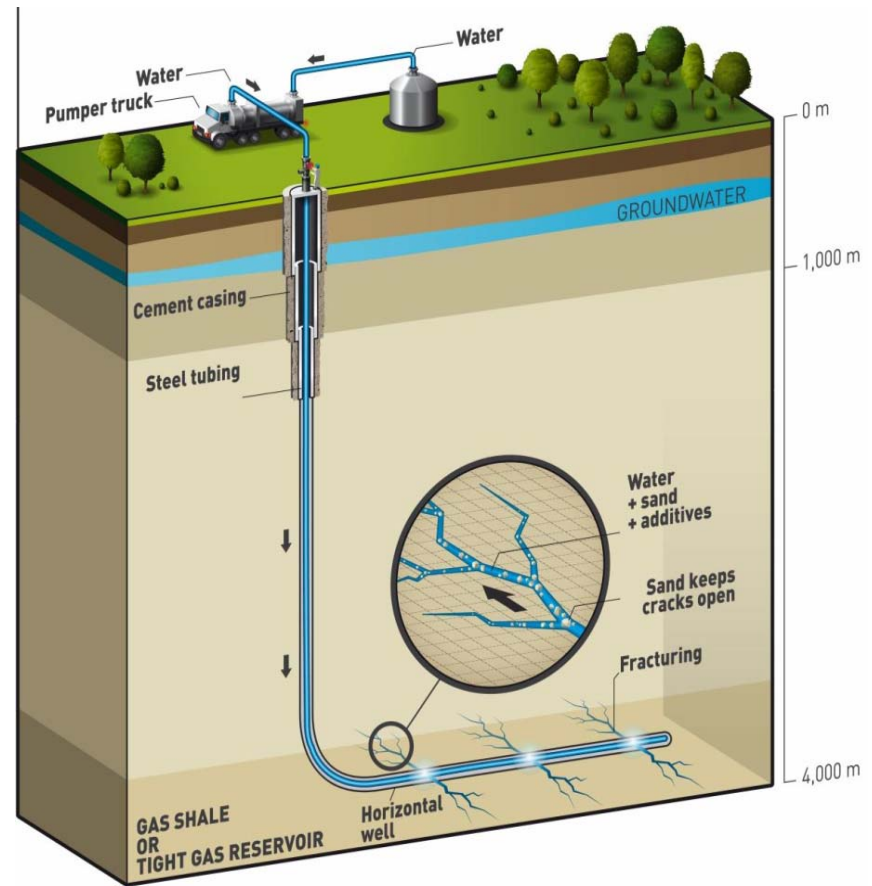
- ❑ IGU discussions in late 2011 determined need to respond to negative attacks on shale gas
- ❑ Agreement reached to develop document about “The Myths of Shale Gas”
- ❑ Established small team and began work in early January for publication at the WGC
- ❑ Developed and executed plan with necessary adjustments to approach
 - ❑ Initially identified top myths related to shale gas
 - ❑ Launched comprehensive research on each myth
 - ❑ Final documents are a single page per myth
 - ❑ The Myth
 - ❑ The Facts
 - ❑ The Details
 - ❑ Industry Best Practices
 - ❑ Concurrently developed creative
 - ❑ Develop “The Details” and best practice recommendations
 - ❑ Presented to IGU executive committee in March 2012 and released at WGC

A VIEW FROM TWO PERSPECTIVES

From Gasland:



From Total:



SHALE GAS MYTHS AND FACTS



	Topic	Claim Statement
1	Land use footprint	Shale gas drilling takes up a large land use footprint
2	Volume of water usage	Fracking uses enormous quantities of water
3	Water quality issues – contamination	Fracking contaminates drinking water
4	Managing wastewater	Disposal of wastewater causes environmental issues
5	Chemicals used in fracturing fluids	Fracking fluids are toxic or radioactive
6	Air emissions	Emissions during the fracking process are worse than coal
7	Fracking causes earthquakes	Fracking causes earthquakes
8	Regulations	Shale gas extraction is an unregulated business
9	Principles/Best Practices	

EARLY EXAMPLES OF CREATIVE CONCEPT

Shale Gas: Environmental Claims and Facts



The Claims

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The Facts

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Recommended Industry Best Practices and Policies

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Multiple protective layers extend from surface to below aquifers

Groundwater aquifers

Private well, about 152.4 metres deep

Public well, about 304.8 metres deep

Several layers of steel tubes encased in cement protect ground-water supplies

Protective steel casing encased in cement extends to shale depth

Shale Fractures

Depth from surface is typically more than 1.6 kilometres

International Gas Union

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Shale Gas: Environmental Claims and Facts



The Claims

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OBSERVATIONS THAT SHIFTED THE APPROACH TO THIS



- ❑ Significant negative and extreme claims placed industry in reactive and defensive mode
- ❑ Early industry claims by that shale gas extraction is safe with no issues not viewed as credible
- ❑ General public awareness towards shale gas remains relatively low; however, opinions of those aware are very negative
- ❑ High awareness of shale gas with elected officials and bureaucrats; however, fear towards “perceived” or real environmental issues very high
- ❑ Many jurisdictions imposed moratoriums on shale gas extraction: Quebec, Newfoundland, France, South Africa
- ❑ Media coverage of shale gas intensifying
- ❑ Quality and objective research now emerging or developing
- ❑ Recent industry activity to establish best practices a very positive step
- ❑ Still time to proactively influence perceptions **and issues** related to shale extraction

OBSERVATIONS THAT SHIFTED THE APPROACH TO THIS

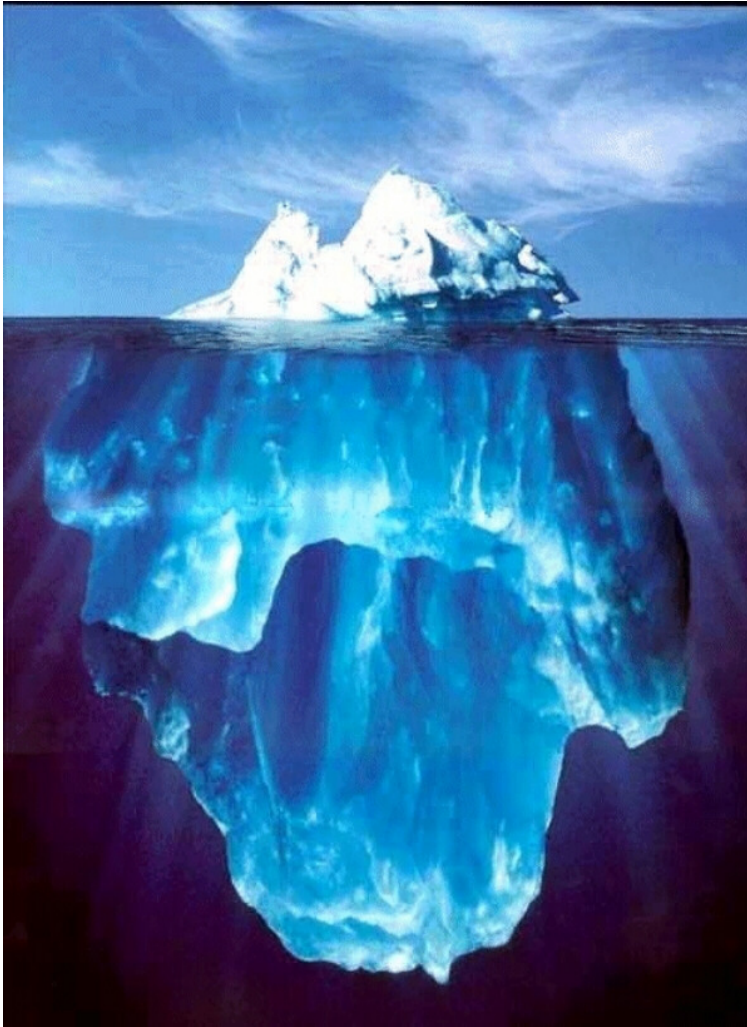


- ❑ Need to reshape the conversation
 - ❑ Conventional gas and shale gas are the same natural gas
 - ❑ Conventional gas extraction and shale gas extraction technically use similar process but actual process differs
 - ❑ Shale gas extraction is an industrial process with some risk even with steps taken to mitigate risk

- ❑ Due to above, approach moved to “Claims and Facts” from “Myths”

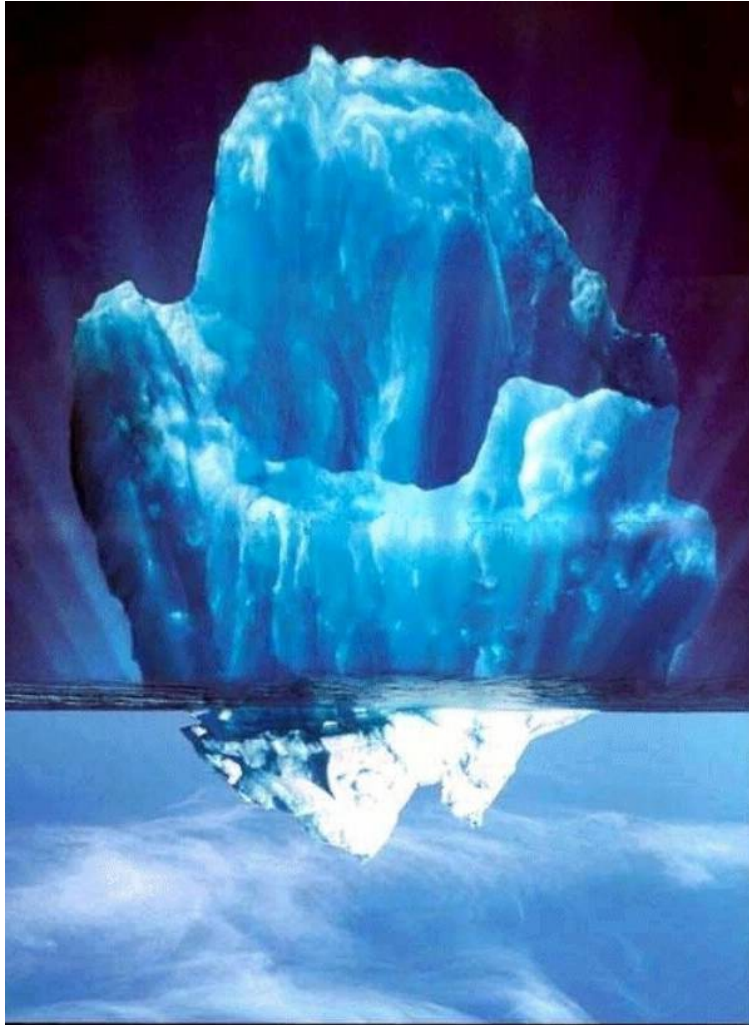
- ❑ In view of this shift, approach was reshaped to present main issues within extraction process by deconstructing shale extraction process

OBSERVATIONS THAT SHIFTED THE APPROACH TO THIS



- Early attacks generally about sub-surface

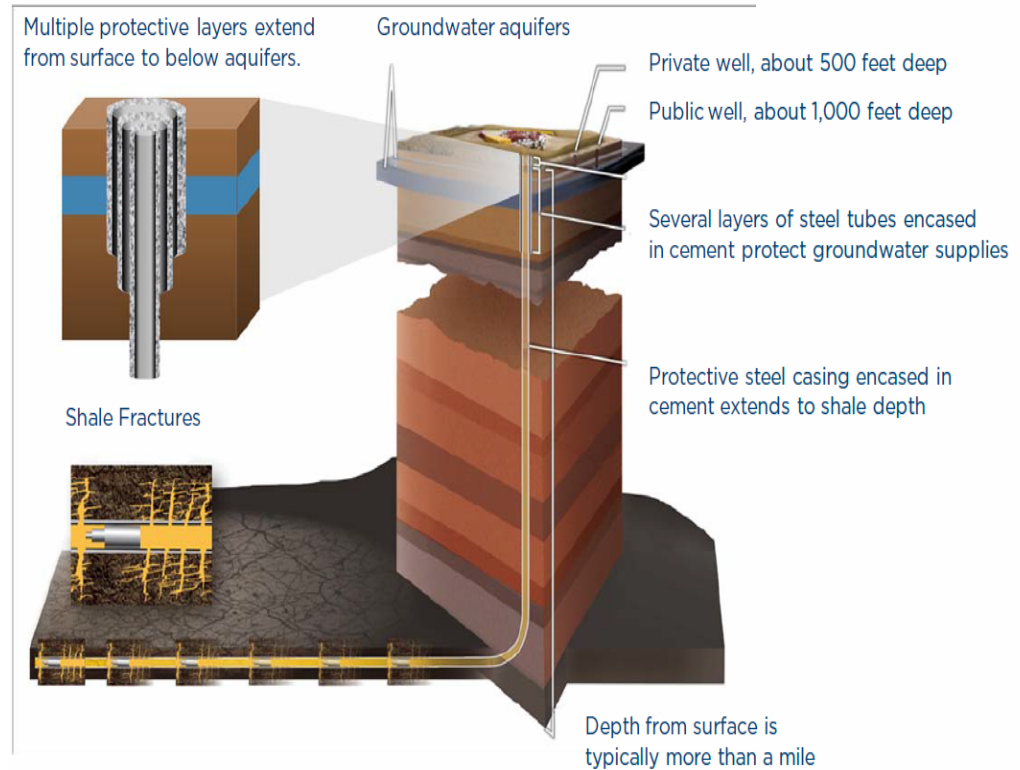
OBSERVATIONS THAT SHIFTED THE APPROACH TO THIS



- Focus and attention shifting to surface impacts

DECONSTRUCTING THE SHALE GAS PROCESS

- ❑ The process:
 - ❑ Site development & preparation
 - ❑ Vertical drilling
 - ❑ Horizontal drilling
 - ❑ Hydraulic fracturing
 - ❑ Managing wastewater
 - ❑ Well production
- ❑ Other issues:
 - ❑ Life-cycle GHG emissions
 - ❑ Regulations





International Gas Union (IGU)

News, views and knowledge on gas – worldwide

Shale Gas

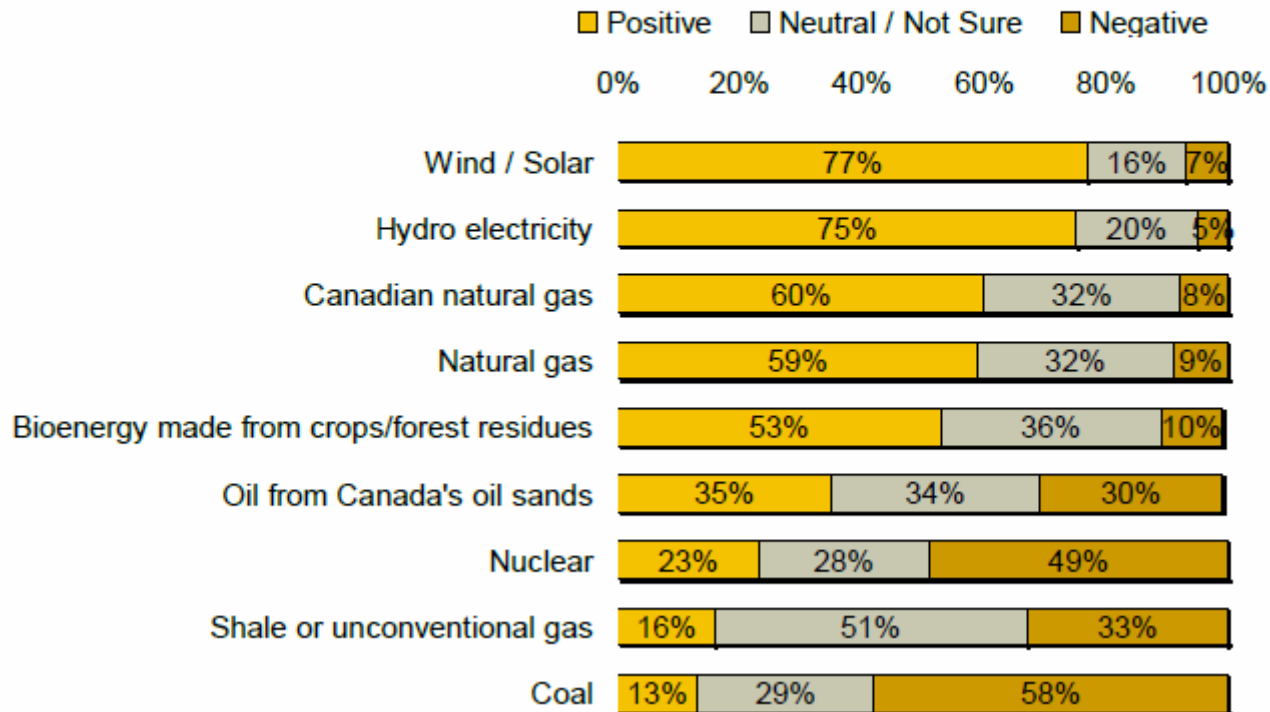
The Facts about the Environmental Concerns

CUSTOMER AWARENESS AND ACCEPTANCE OF SHALE GAS



IMPRESSIONS OF ENERGY SOURCES

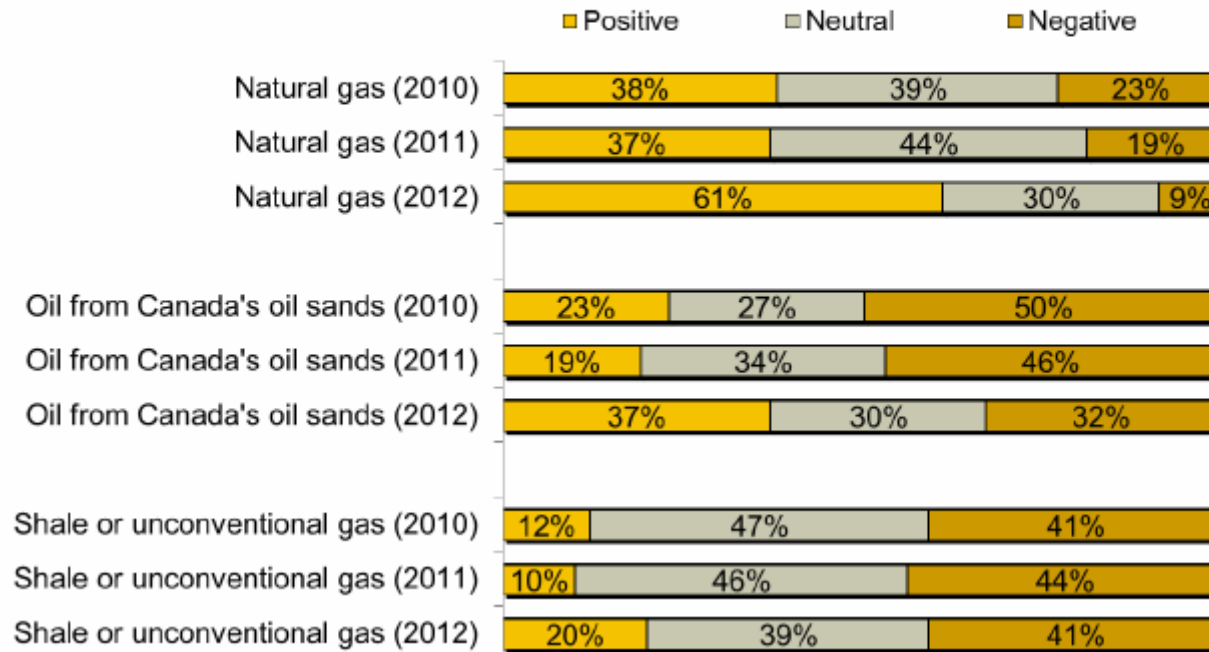
For each type of energy... are your overall feelings very negative, negative, neutral, positive, very positive.



CUSTOMER AWARENESS AND ACCEPTANCE OF SHALE GAS



IMPRESSIONS OF ENERGY TYPES

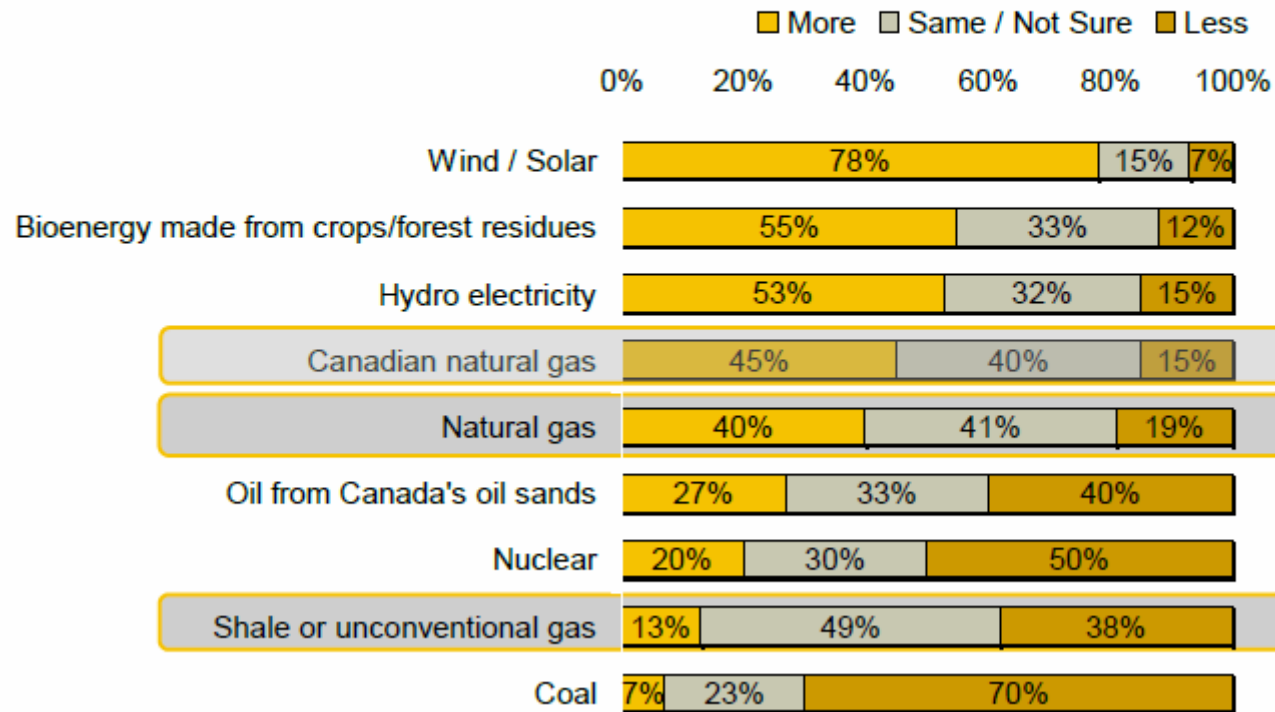


CUSTOMER AWARENESS AND ACCEPTANCE OF SHALE GAS



FUTURE USE OF ENERGY SOURCES

Do you think it would be better if Canadian consumers, businesses and power utilities were to use a lot more of each one of these types of energy in the future, a little more, about the same amount as now, a little less, or a lot less?



FEEDBACK FROM THE WORLD SHALE OIL & GAS SUMM



- ❑ Vast majority of participants were from outside of North America
- ❑ Lots of very positive feelings about the prospects, the issue is current price level. Belief that the industry needs \$4-5
- ❑ Liquids prices have declined in North America as supply is exceeding demand
- ❑ There is a shift to shale oil from even wet gas and this will ultimately slow down supply growth
- ❑ Industry is finally responding to the above ground issues, largely environmental, ie. water, truck traffic, noise, air pollution, etc. "the industry has focused all of their activities on downhole issues, however, they have not managed surfaced activities well"
- ❑ The level of innovation that is going on is impressive but rarely talked about. Drilling time has been reduced to half of what it used to be just a few years ago, reuse of water is significantly up, micro seismic technologies have evolved significantly
- ❑ Environmental Defence presented a case that greater focus is needed on methane leakage from natural gas infrastructure.

CHALLENGES FOR YOUR WORK



- How do you stay current and relevant in a rapidly changing "debate"?
- How do you stay current and updated on all of the evolving research and information?
- Is it possible to have staged report outs as opposed to one report in 2015?
- How can your valuable work maximize its impact?

THANK YOU
