

Natural Gas Proceedings

PNWER Annual Summit- Calgary, AB

July 18, 2016

Co-Chairs:

- Rep. Caddy McKeown, Oregon State Legislature
- Ian Burkheimer, Director of Business Development, Plum Energy

Speakers:

- Mark Tomlinson, Director Marketing and Business Development, Spectra Energy
 - Tom Ferrara, Group Manager, Air Quality Services, GHD Services
 - Ines Piccinino, Assistant Deputy Minister, Upstream Development Division, Ministry of Natural Gas Development, British Columbia
 - Jason McIvor, Vice President of Business Development, Cyropeak
 - Betsy Spomer, CEO, Jordan Cove LNG
 - David Bennett, Director, External Relations, Fortis BC Methanol
 - Clay Riding, NW Innovation Works
-

Discussion Topics

Methane Emissions Reductions

Mark Tomlinson

- Spectra is a Fortune 500 company that covers everything from production of natural gas, to the delivery of products to the end user.
- More than half of the gas produced in British Columbia goes through a Spectra system at one point or another
- The shale gas revolution is spread across the whole of North America
- There has been a dramatic increase of U.S production of shale gas in recent times
- A huge reason for the increase is the Marcellus Fault Line and its available shale gas
- Canadian natural gas exports to the U.S. have been declining due to increased production in recent years.
- The U.S. is forecast to become a net exporter of natural gas in the next couple years
- It is expected that recoverable shale gas will increase as new technology becomes available. This provides ample supply of natural gas for the future.
- Alberta and British Columbia alone could supply Canada's gas needs for 250 years
- There is a lot of gas available for a reasonable price
- Progress in horizontal drilling has allowed for more gas to be obtained by each well and helped to lower prices
- Production capabilities are scalable and allow for prices to remain low
- Gas supply across the North American continent is vast and available at reasonable prices

- Market conditions are leading to greater investment in natural gas infrastructure, as well as the volume of production

Tom Ferrara

- Methane is a more potent greenhouse gas than carbon dioxide
- Scientific studies are unsure on the extent of methane leaking from natural gas transmission systems
- Estimates of leaks and vented emissions range from 1% - 16%
- A 2012 study estimated the greenhouse gas benefits of natural gas are lost at emissions rate of 3.2% of production, but there are uncertainties in the measurements
- Current studies focus on the risk of catastrophic failures of distribution systems, as well as the prominence and scale of leaks from distribution systems
- The safety of the system and customers is primary concern for gas distribution companies
- Resources aren't available to fix every small leak in distribution systems
- It would take over 100 years to fix every small leak detected by regulators
- An independent study found large differences between EPA listed leak volumes of distribution systems and actual tested levels
- This is partly due to upgrades to distribution systems and better technology to help prevent leaks
- There are a small number of emitters that are the cause of a majority of detected leaks

Ines Piccinino

- British Columbia renewed its climate plan about a year and a half ago, which includes representation from First Nations communities and environmental groups
- One of the goals was lowering methane emissions by 40% in the next few years from upstream measurements
- Environmental plan seeks to protect the environment of British Columbia and maintain the competitiveness of their natural gas industry
- Regulations need to be coordinated with the federal government to ensure there is no duplication

Innovation in Liquid Natural Gas Markets

Betsy Spomer

- Regulating water emissions was the result of improving air quality in the 1970s
- Marine Pollution regulations have been ratified by 95% of cargo transport originating from countries around the world
- All ships operating in an Emission Control Area (entire North America coastline) must burn fuel with less than 1.5% sulfur
- NOX requires a fuel change to get an 80% reduction and will be required on ships built after 2016
- Liquid Natural Gas (LNG) lowers carbon dioxide emissions, a 90% reduction in NOX, and improvements in other greenhouse gas emissions

David Bennett

- Energy needs will continue to grow and traditional renewable technology is struggling to meet demand, all possible options should be explored
- Natural gas is a cleaner burning fuel and can be generated in renewable ways
- New ferries in British Columbia will rely on both batteries and natural gas to limit their environmental impact over the course of their service
- Arctic communities could benefit through greater access to LNG
- Whitehorse has reserves of LNG to meet energy needs, but did not utilize any last year due to a warm winter. LNG allows for flexibility and is available on demand

Clay Riding

- Methanol demand will significantly increase in the next few years
- Replacing coal with methanol, and other more sustainable practices, could reduce greenhouse gas emissions by 90%
- The Pacific Northwest has a relatively low carbon footprint

Ian Burkheimer

- LNG is being utilized in mining vehicles to help reduce greenhouse gas emissions
- The low price of oil is limiting the adaptation of LNG based equipment as compared to previous years

Update on Natural Gas Export Terminals in the Pacific Northwest

Ines Piccinino

- There are over 20 LNG projects being proposed in British Columbia
- LNG can provide hundreds of years of fuel for the North American economies
- There are additional opportunities to add value to LNG resources as well
- The use of LNG in transportation and energy production will be crucial in the coming years as societies shift away from oil
- The developing world will require greater resources moving forward and LNG has the ability to meet many of those demands

Questions and Discussion

Rep. Caddy McKeown: What can be done in the interim year to incentivize the gathering of more concrete scientific data on methane emissions? Or can it be collected and put in one place?

Ian Burkheimer: We're trying to find a place that puts all of these studies together. Washington State University has that.

Betsy Spomer: I think this is so important - to get our arms around methane emissions, because it has been used to discredit the entire natural gas industry. We have been looking, today at a lot of the distribution side, but a lot of really interesting research has taken place at the upstream side as well.

Comment: Many of the reports rely on estimates rather than hard data and further studies could provide proper data to draw on in policy decisions.

Ines Picininno: There is a lot of measuring of volume of leaks but there's also a lot estimation. Measuring leaks more will result in a lot of data. A few wells drilled 30 years ago will represent much higher leakage risk than a slew of modern wells drilled with the latest technology. The data we collect could be a repository.

Comment: It is very helpful for people who are thinking about decision making to have better information, from a neutral source. People want to know this is the right path for that economy.

Comment: We assume that if we make good measurements, have good quality assurance and are transparent with the data, then people will believe it. But with some people - you're never going to change their mind.

Comment: Methane emissions have been a criticism of natural gas use and consolidated scientific reports can help industry and the public to gain a better understanding of the data.

Rep. Caddy McKeown: Is there anything we missed today that you'd like us to cover next year?

Answer: On the distribution side, I'd like to see more discussion on bringing natural gas service to rural areas and economically challenged areas. How can the natural gas industry better engage and target expanding markets for distribution?

Ian Burkheimer: If you see barriers between the U.S. and Canada in terms of transportation, let us know. With PNWER's Regulatory Cooperation Council group and Transportation group, we may be able to address those. There are differences in transportation requirements for LNG between the U.S. and Canada.

Comment: How can PNWER help to improve and identify legislation through the LEHI Program?

Action Items	Leads	Status
1	NWGA will reach out to industry associations to identify existing methane emissions research for distribution to PNWER	In progress
2	Explore a session on methane emissions regulations at next year's Summit including a: --Science panel --Regulatory panel --Industry panel	In progress

3	Organize a twice annual call with industry to identify issues in for the RCC on cross-border transport of CNG and LNG		In progress
4	Convene a work group around value added opportunities for natural gas		In progress
5	Seek funding to develop a study to identify methane leaks in the system and share best practices with regional stakeholders		In progress