

Acid Gas Re-Injection

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Kwoen Gas Plant, BC

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Increasing Revenue through Fuel Gas Savings
& Methane Emissions Reduction
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Forward Looking Statements

This presentation includes forward-looking statements. The forward-looking statements reflect management's current beliefs and assumptions with respect to such things as the outlook for general economic trends, industry trends, commodity prices, capital markets, and the governmental, legal and regulatory environment.

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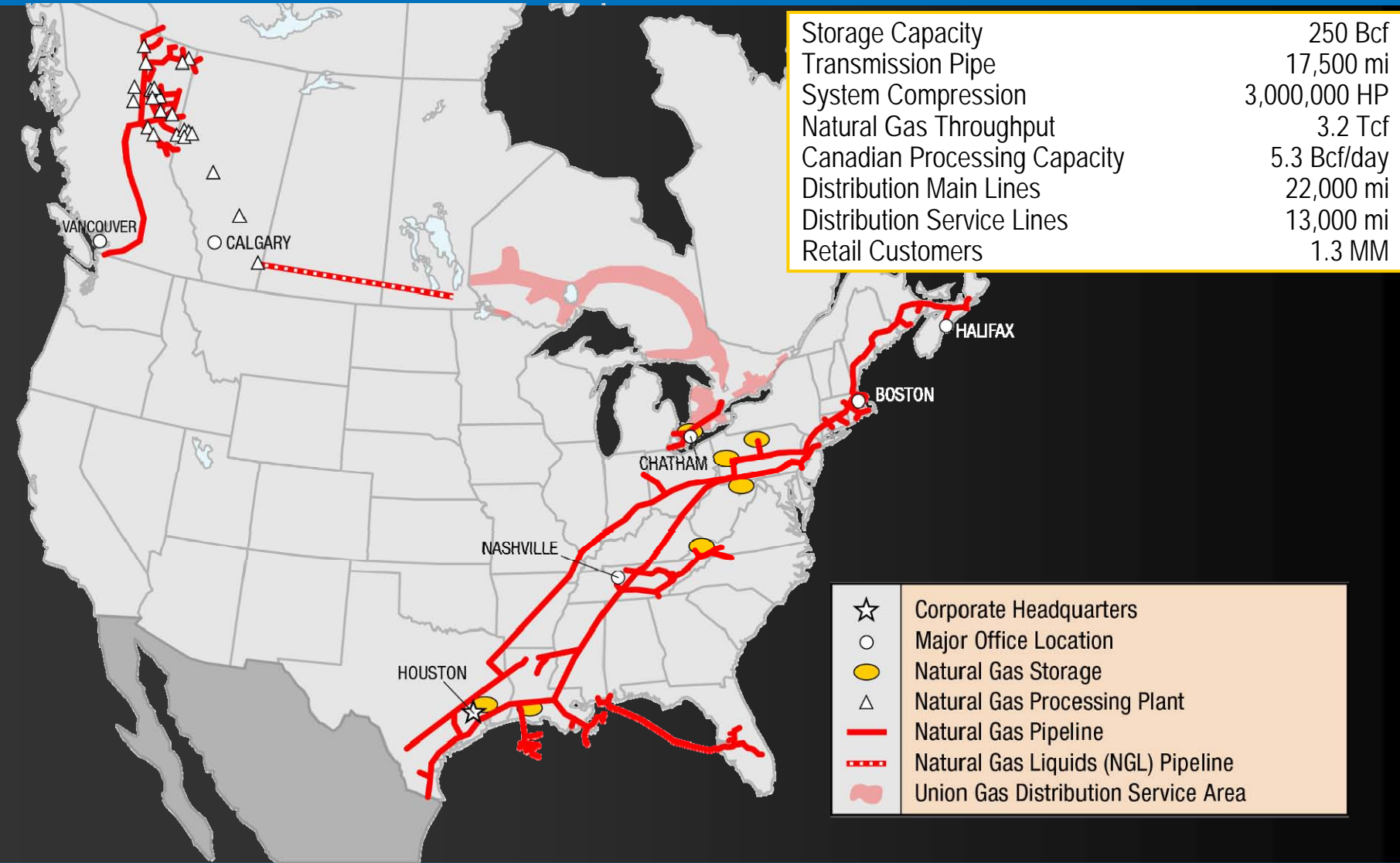
Topics

- Spectra Energy At A Glance
- Spectra Energy's Acid Gas Re-Injection Experience
- Kwoen – Acid Gas Re-Injection
- Kwoen – More Methane to Market & Reduced Emissions
- Closing Thoughts

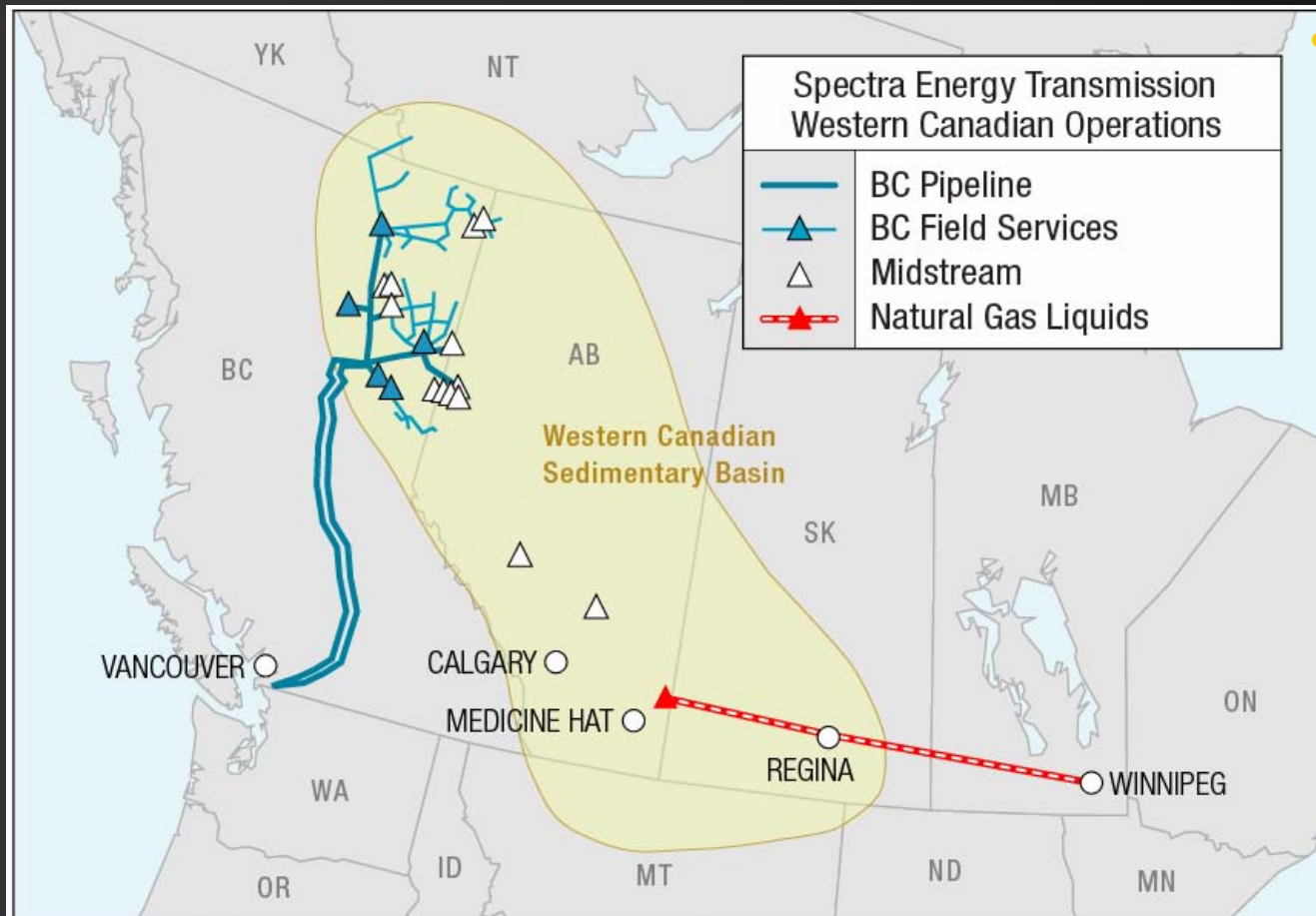


Spectra Energy Transmission System

Largest Pure-Play Midstream System in North America



Spectra Energy Transmission's Western Canadian Operations

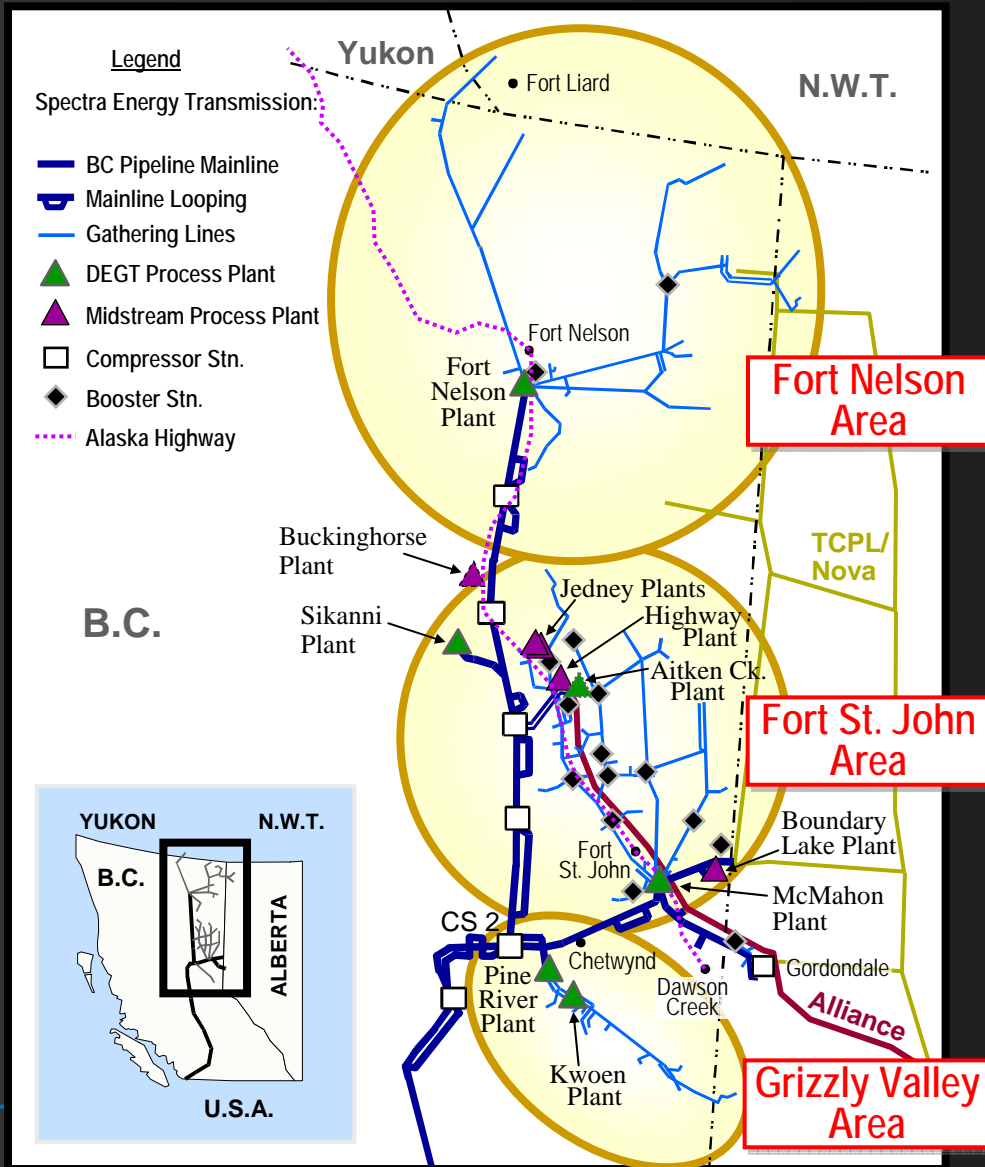


Our western Canadian operations are comprised of four distinct and separate businesses:

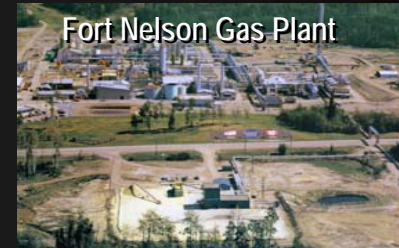
- **BC Pipeline:** Our NEB-regulated cost of service transportation business
- **BC Field Services:** Our NEB-regulated integrated gathering, and processing business
- **Midstream:** Provincially regulated gathering and processing business
- **Natural Gas Liquids:** Our Empress, Alberta based NGL extraction, fractionation, transportation, storage, and marketing business.

BC Field Services

Significant Processing Potential



Ft Nelson = 1.0 Bcf/d (raw)



McMahon = 620 Mmcf/d (raw)



Pine River = 560 Mmcf/d (raw)



Western Canadian Sedimentary Basin

The most Acid Gas Re-injection projects in the world

WCSB – confluence of opportunity & experience for world class Acid Gas Re-injection (AGR) & Carbon Capture Storage (CCS) Projects

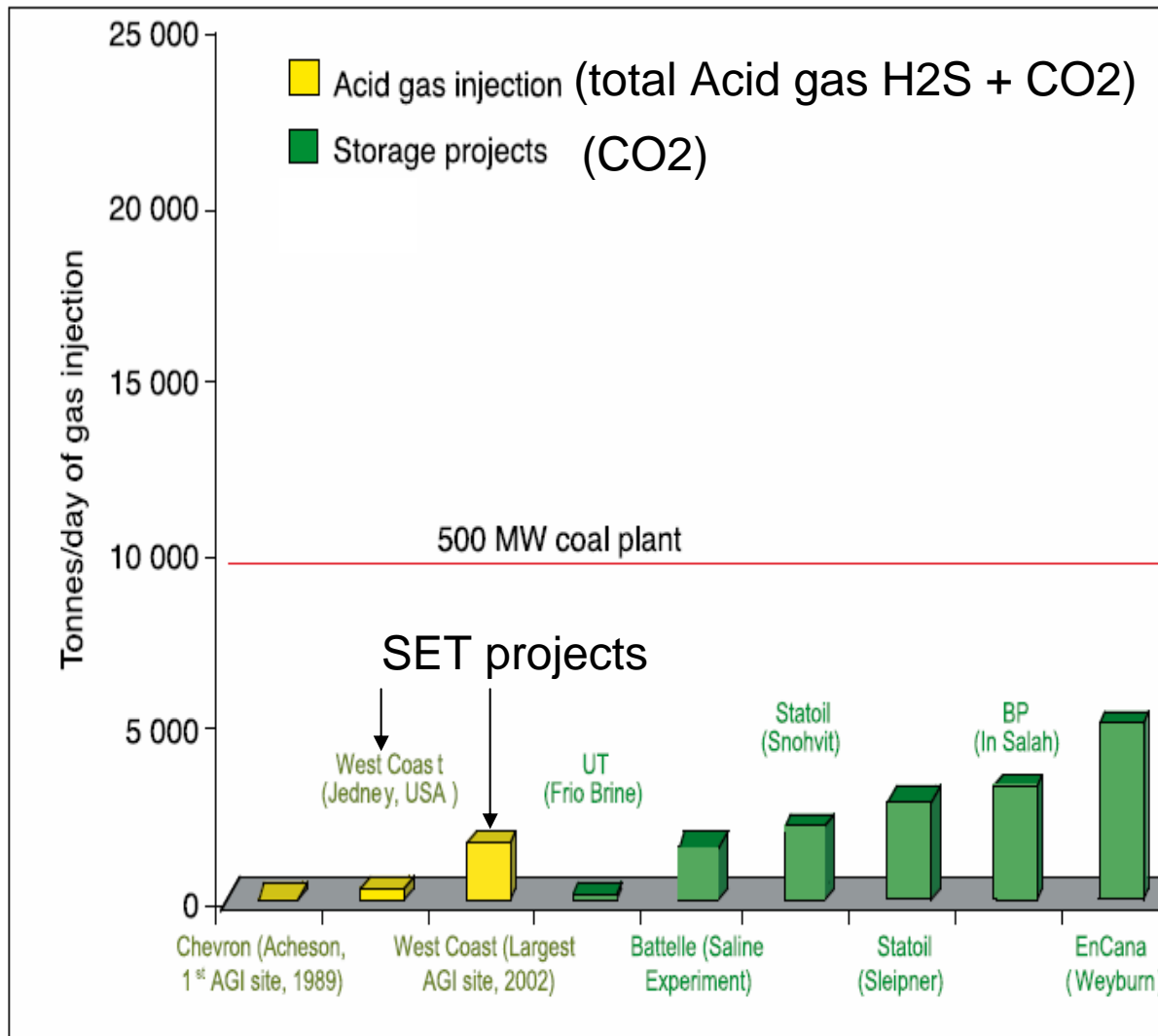
44 CO₂-rich acid gas injection projects are currently operating in Western Canada since the early 1990s:

- Mostly small scale
- A total of 2.5 Mt CO₂ and 2.0 Mt H₂S had been injected in Western Canada by the end of 2003
- Provide important examples of effectively managing injection of CO₂ & H₂S
- No detectable leakage

BC Field Services operates the largest of these at Kwoen, BC Facility (30 Mmcf/d H₂S/CO₂)



BC Field Services AGR Ranking– “leaders in the field”



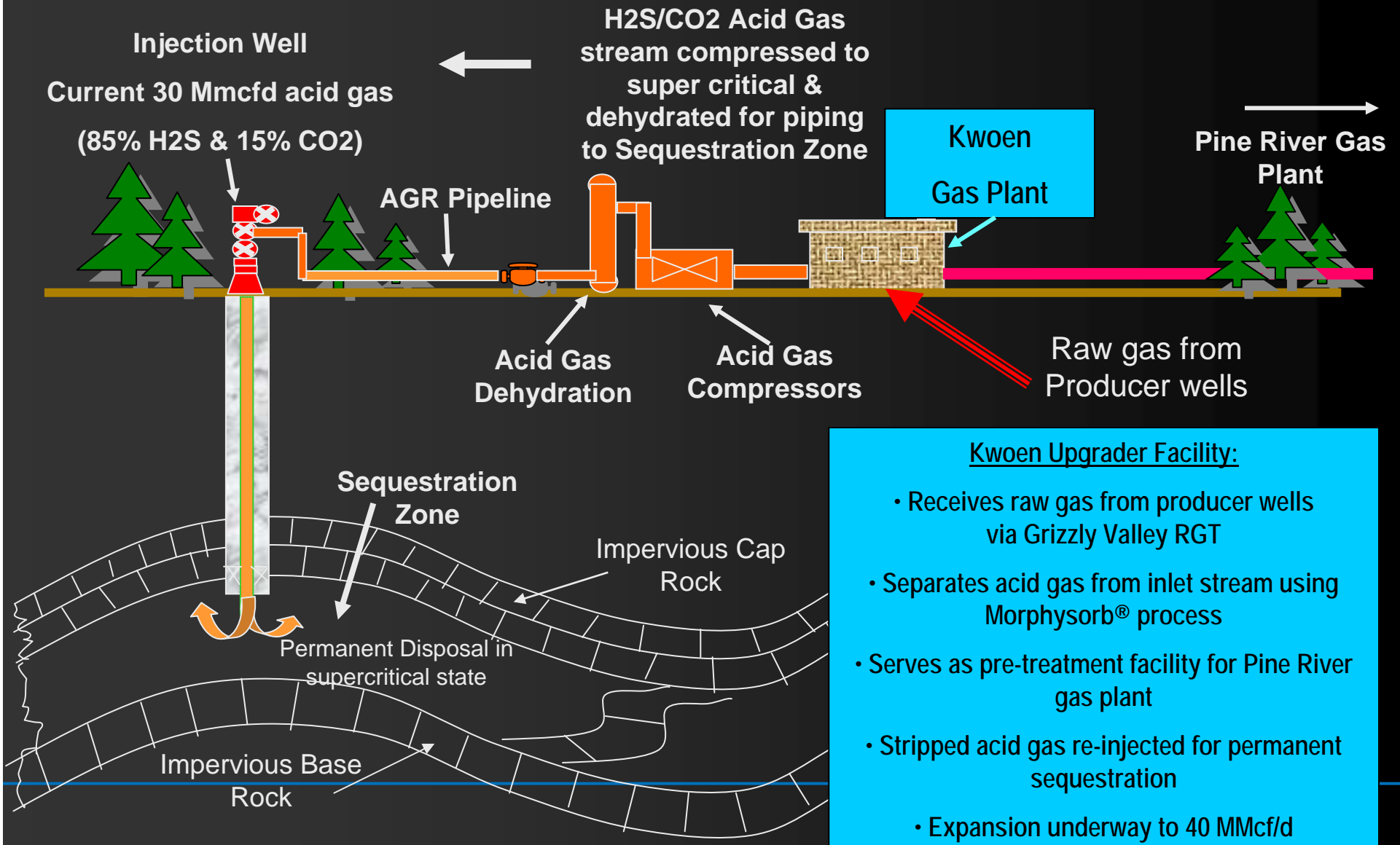
BC Field Services AGR/CCS projects

- Jedney 1 ~ 39 Kt CO₂/yr
- Jedney 2 ~ 30 Kt CO₂/yr
- Sikanni ~ 5 Kt CO₂/yr
- Kwoen ~ 100 Kt CO₂/yr (largest AGR in North America)

Adapted from Page 233. Carbon Dioxide Capture and Storage. IPCC (2005)
http://arch.rivm.nl/env/int/ipcc/pages_media/SRCCS-final/SRCCS_WholeReport.pdf

Kwoen Facility

Acid Gas Capture, Pipeline & Storage



Kwoen Facility

More Methane to Market + Reduced Emissions

Conventional Processing & Sulphur Recovery:

- Stripped acid gas sent through sulphur recovery to remove most of hydrogen sulphide & converted to elemental sulphur
- Remaining hydrogen sulphide + entrained CO₂ is incinerated
- Significant Customer fuel gas used:
 - gas drive compression
 - incineration to heat SO₂ & CO₂ for stack and dispersion into atmosphere
- GHG emissions significant:
 - combustion CO₂
 - formation CO₂
- SO₂ and NO_x emissions dispersed into atmosphere

VS

Kwoen – Capture, pipeline & storage

- Significantly lower fuel gas used
 - electric drive compression
 - no incineration
- Lower GHG emissions:
 - less combustion CO₂ w/ electric drive compression & no incineration required
 - Formation CO₂ not emitted but re-injected
- Lower SO₂ emissions:
 - H₂S re-injected & stored
- More methane to market

Other Consideration:

Kwoen built in 2002 is a mixture of best cost alternative for our customers + maximum use of locational advantage

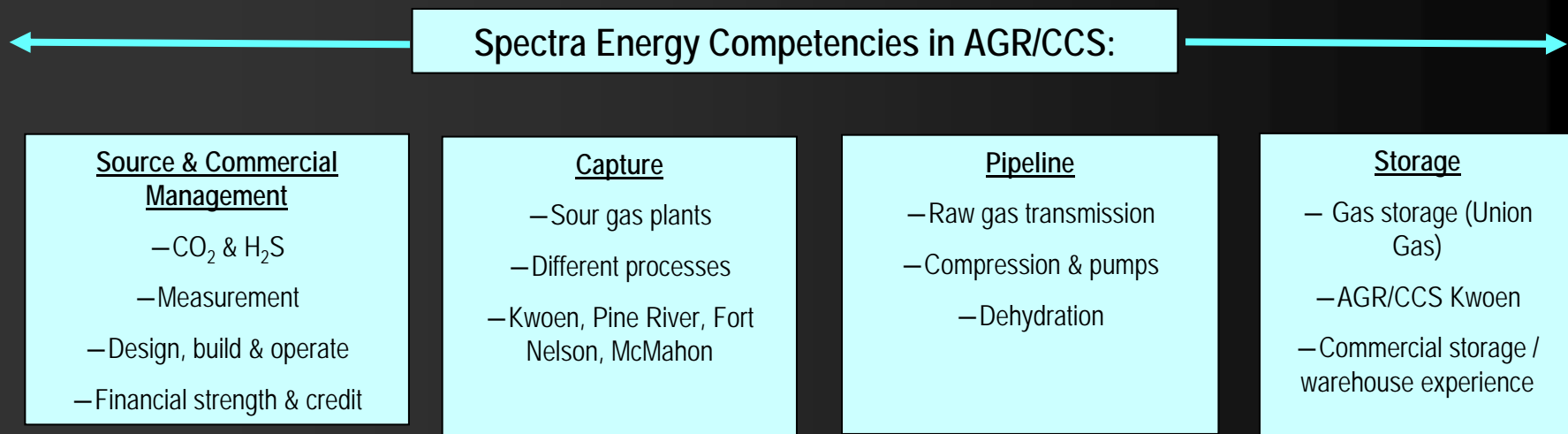
- Best capital & operating cost alternative
- Relatively inexpensive electrical supply available vs burning customer gas for fuel
- Appropriate disposal reservoir availability (Containment, depth, injectivity and size)
- Experienced staff to build, operate & manage large scale sour gas plants & AGR projects

Closing Thoughts

- Climate Change, Clean Air Act, Kyoto => some form of GHG /Clean Air emission control is coming
 - need clear policy & regulation framework for CO₂ emission credits & Clean Air from federal government
 - Federal framework should recognise & accept provincial regulations and agencies governing application, approval & monitoring of acid gas injection schemes (ie. AEUB, OGC, etc)
- Western Canada Sedimentary Basin AGR projects demonstrate proven technology, stable geological setting and provincial regulatory framework exists to manage and permanently store CO₂ and H₂S
- Similar AGR to Spectra Energy Transmission's Kwoen can effectively deliver:
 - more methane to market => value to customers
 - reduce CO₂ and SO₂ emissions => value to the environment & the plant's neighbours

Closing Thoughts

- Turning a waste into an additive value proposition => translating Kwoen from AGR to CCS supplying CO2 emission credits:
 - CO2 permanently stored + total plant has considerably less CO2 emitted than injected
 - In applying internationally recognized standards & in-house measurement program combined => CO2 emission credits in the “warehouse”
 - Commercial contracts in place with the shippers who own the CO2 in the “warehouse”
 - Working on product definition, pricing & transaction => added new potential value



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