ELI Webinar
April 8, 2020
Fugitive Methane Gas Leaks, Safety, Reliability and Climate from Electric Utilities & Industrials

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Observations & Recommendations Not Meant to Oppose Natural Gas as Fuel or Commodity for Manufacturing

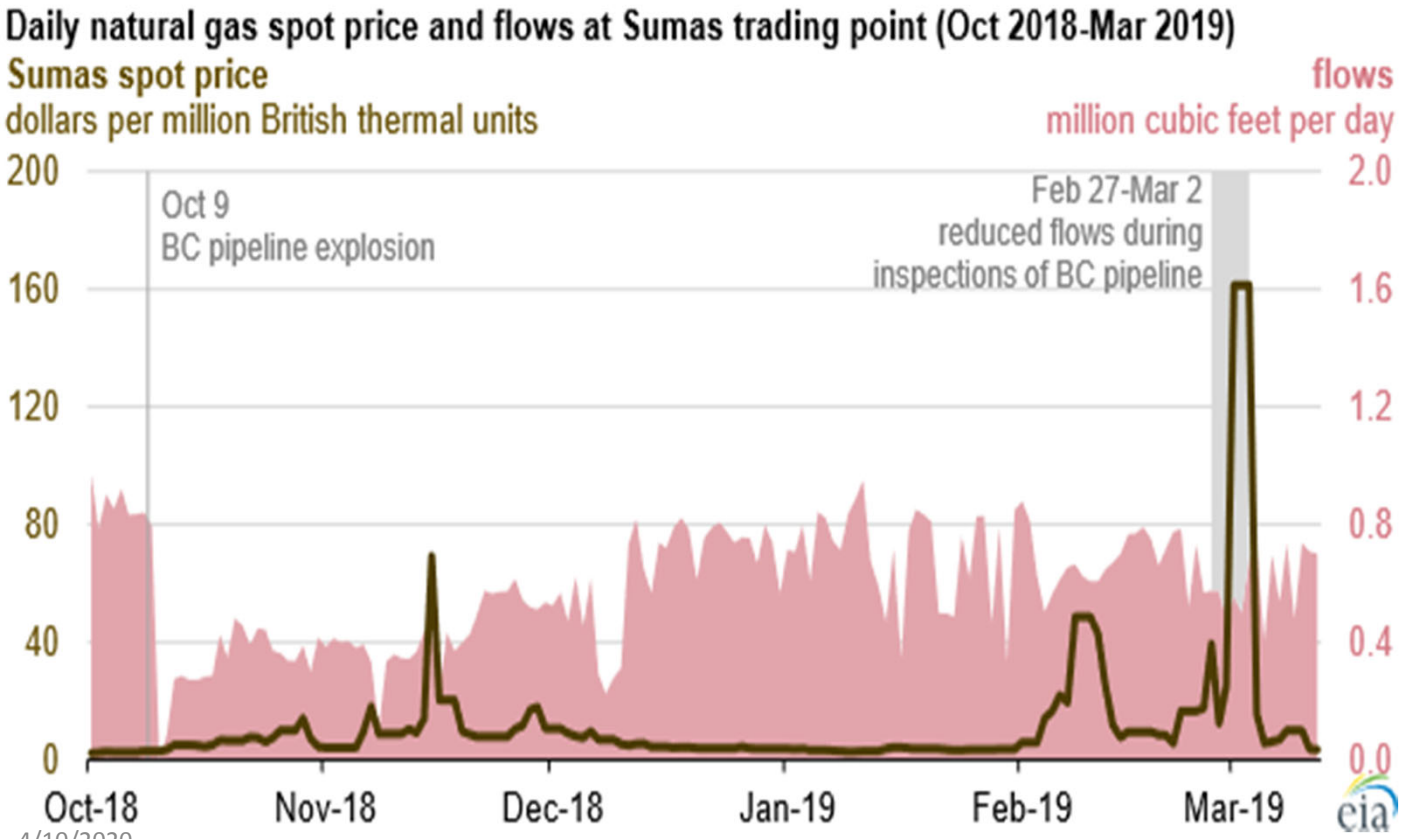
- >16 years working for electric utilities
- > 16 years working for manufacturers and oil/gas sectors
- >2 years non-paid policy advisor for North American Electric Reliability Corporation (NERC) on gas-electric issues (at the bulk electric level)
- Goal to improve gas transmission & distribution system for all customers and to keep natural gas as primary fuel for electric generation—until **or IF** we have sufficient & safe battery technology to back up renewables (Arizona battery fire)

Example: Enbridge Pipeline in BC Canada

- Ruptured/explosion on Oct. 9, 2018 and partially repaired Nov 2018
- **Reduced gas capacity by approx. 20% for >5 months** with frequent repair & maintenance events
- Root cause is still under Canadian safety agency (NEB)
- Storage & pressure variability
- Impacted customers in 3 US Northwestern states (OR, WA, & ID)
- Impacted customers in 1 Canadian Province
- Approx. **70% of all gas** used in 3 affected states comes from Canada—not from southern CA including large NW cities in NW: Seattle, Vancouver, Portland
- Gas storage in region is very limited in region so reliance upon pipelines/compressor stations is essential for electric utilities and their hospitals, fire, police, EMT, communications systems & hospitals
- Price sensitive to gas force majeure events- price spikes up to **$200/MMBtu in March 2019**
- **Not totally resolved at pre-rupture pressure levels until 2019- approx. 5 months later**

Price Spikes for All NW Gas Customers

Source: EIA based upon Natural Gas Intelligence (prices) and Genscape NatGas RT (flow)



Agriculture Industry & Small Business Crops Unable to Afford Replacement Fuel Costs

- Canadian Growers Association reported in trade publications & website that many Canadian winter 2019 greenhouse plantings were curtailed due to $200 MMBtu spot prices that made agriculture plantings no longer affordable – all result of Enbridge pipeline rupture for six days in Oct 2018

East Tennessee Pipeline Station- 2018

- Dec 15 2018 pipeline explosion on west section; force majeure event
- Dec 16- compressor station pump failed on NE pipeline section; force majeure event
- Dec 25 ME section of pipe fully returned to service
- Dec 30 West section of pipe returned 80% of capacity to service but 20% gas shortage for firm contract holders

What Happened to East TN Pipeline Station's Industrial Customer

- One factor had a loss of production
- More expensive gas purchased by factor through alternative suppliers
- Alternative fuel was far more expensive than firm gas in contract (proprietary information)
- Less power production due to less steam available from local utility (district steam is still provided by many utilities for manufacturing plants)
- Higher power costs (confidential)

Gulf South Pipeline

- Factories lost production
- Factory temporarily replaced natural gas supply needed for fuel delivered with LNG truck deliveries (LNG trucks are acceptable but not as safe as natural gas pipelines)
- LNG delivery is extremely expensive
- Physical tie-in to feed-gas line to service the factor presented many new non-standard work and operational issues on factory site

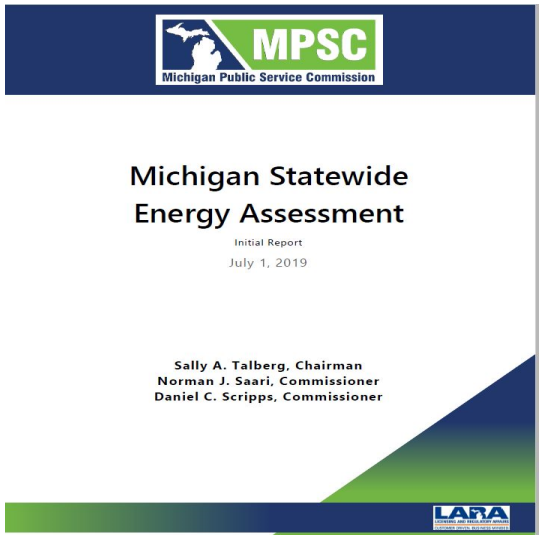
Jan. 2019 MI Consumers Energy Reed City Compressor Station Fire (caused by maintenance conducted by utility)

What Happened to Industrial Users?

- 100 companies affected including 18 auto plants & dozens of their suppliers. Affected industries included chemical plants and semiconductor plants that cannot easily shut down
- Lost power for **ONE WEEK** due to nat gas reduction
- Demand Side Management prevented longer loss of power

Michigan's PUC Look Back Study 2019 on Jan. 2019 Compressor Station Fire

https://www.michigan.gov/documents/mpsc/Sea_Initial_Report_with_Appendices_070119_659452_7.pdf



NERC's 2017 Study Identified Vulnerability to Pipeline Incidents

- NERC's Single Point of Disruption study (using DOE/Argonne Lab data)
- 12 US underground gas storage facilities have potentially significant impact on >140 electric generation plants if facilities become inoperable, see p. 14
- 18 locations (affecting more than 18 power plants & their hospital or factory customers) would experience voltage support and stability issues if gas supply is interrupted, see p. 20

Note: a few of the 18 locations were cyber security issues not natural gas but that information is not disclosed

NERC Single Point of Disruption Study

Table 4.1 Major Underground Storage Facilities						
UGS Rank	Underground Storage Facility (UGS)	UGS Type	Maximum Daily Deliverability (Mcf/d)	Nameplate Capacity At-Risk (MW)	Distance of Farthest Plant (Miles)	Number of Plants At-Risk
1	Storage Facility XYZ	Salt Cavern	2,665,000	13,800	490	19
2	Storage Facility XYZ	Salt Cavern	2,500,000	13,700	480	17
3	Storage Facility XYZ	Depleted Reservoir	550,000	9,100	270	14
4	Storage Facility XYZ	Salt Cavern	3,200,000	9,200	340	14
5	Storage Facility XYZ	Salt Cavern	2,300,000	9,000	240	16
6	Storage Facility XYZ	Depleted Reservoir	1,860,000	7,820	40	16
7	Storage Facility XYZ	Depleted Reservoir	1,680,000	7,600	50	18
8	Storage Facility XYZ	Salt Cavern	765,000	3,800	290	5
9	Storage Facility XYZ	Depleted Reservoir	275,000	3,600	330	6
10	Storage Facility XYZ	Depleted Reservoir	800,000	3,400	350	7
11	Storage Facility XYZ	Salt Cavern	2,400,000	2,500	320	6
12	Storage Facility XYZ	Depleted Reservoir	1,555,000	2,200	170	4

NERC's Gas Infrastructure Vulnerability Locations in North America? (2017 Report)

Why EPA's OOOOa Rule Is NEEDED For Fugitive Emissions

- Even if agnostic on climate issues- fugitive emissions for midstream & distribution (LDC) or local gas utilities is a step in right direction to identify where leak repairs are appropriate

- DOT's PHMSA has been slow to propose rules and finalize rules to address larger (non-fugitive) leak safety regulations for almost 10 years;
- PHMSA does not look at gas not delivered, outage dates or durations of outages when it considers costs-benefits
- PHMSA does not consider benefits to electric utilities or factory users of natural gas for reliability or costs when fuel supply is curtailed
- Congress established a secondary cost-benefit test before proposing safety regulations under Parts 191 and 192 in Regulatory Impact Analysis

EPA's OOOOa Fugitive Leak Rule Shouldn't Be Revoked but Should Have Surgical Corrections

- Industry should be allowed to use emerging technology sensors, remote sensors, portable sensors and not only be allowed to use FLIR camera technologies;
- Pipeline owner/operators should have leeway to repair during shoulder season
- Identification of leaks should be disclosed to nat gas customers
- Rule should include gathering pipelines >11 inches and LDC local gas utilities but with longer phase in time
- My two cents worth: Small oil/gas producers should be allowed to begin LDAR after first year of production or costs will squeeze out smaller producers- use IRS criteria to differentiate from large companies.
- 111 and 112 regulations are common for many industrial sectors- there should be no presumption that VOC controls address methane. Midstream has no VOC emissions.

Excerpt from GAO Study on DOT/PHMSA

Jan. 2013 GAO Pipeline Safety: Better Data and Guidance Needed to Improve Pipeline Operator Incident Response points out:

"There is … a loss to shippers in the form of deferred shipment, storage, or lost or deferred gas production, and *potentially a loss to end users in the form of having to make unplanned alternative supply arrangements for some period of time*. These costs … are difficult to estimate." p.121 from PHMSA's RIA

Carnegie Mellon Electricity Industry Center Working Paper by Gerad Freeman, Jay Apt, Michael Dworkin

Many gas infrastructure gas failure events not captured by any single Federal Government Agency—not FERC, DOE, PHMSA

- Using GADS/NERC & FERC 588 data & FOIAs Carnegie Mellon researchers found events not reported to PHMSA
- Even Aliso Canyon's gas leak in Los Angeles area was not reported to PHMSA until press pointed this out
- Ex 2011 gas service was interrupted for 35 days and 30 people evacuated- no report to FERC.
- March 2011 gas gathering line in Gulf of Me161616x struck by dredging op & out of commission for 250 days.
- No corresponding gas outage to electric outage for as little as 2% derating for 30 minutes or 600 feet of cubic feet of gas consumption. The comparable PHMSA reporting requirement is 5,000 times more than the reportable level to FERC.

"Gas supply failures affected one in five natural gas plants in U.S.- 2012-2016"

- "Fix the Reporting of Natural Gas Pipeline Outages and Pressure Drops"

Thank you- for follow up questions or contact

Copies of comments submitted to EPA regarding OOOOa rule (methane) and to PHMSA- see website

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