

# ARGONNE'S *NGINSIGHT* TOOL FOR ELECTRIC SECTOR RELIABILITY



## ARGONNE NATIONAL LABORATORY

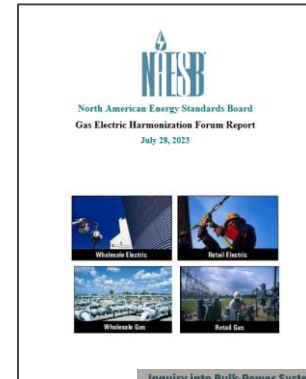
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Mike McLamore  
Bob Schacht

# Relevance of *NGInsight* Tool for Electric-Gas Sector Coordination and Communications

- Recommendations of North American Energy Standards Board (NAESB) report to “identify concrete actions (...) to improve the reliability of the natural gas infrastructure system necessary to support the Bulk Electric System”:

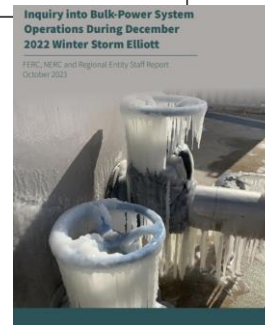
***Recommendation 2:*** The FERC should take steps to facilitate the expansion of the Argonne National Laboratory NGInsight tool, with funding from a federal governmental agency, such as the Department of Energy, to improve situational awareness and communication between the natural gas pipeline system and Bulk Electric System operators. Access to and use of this tool should include appropriate security protocols and market protections.

***Recommendation 3:*** The FERC should take steps to facilitate the expansion of the Argonne National Laboratory NGInsight tool, with funding from a federal governmental agency, such as the Department of Energy, to improve situational awareness and communication between owners and operators of natural gas production and processing facilities and Bulk Electric System operators. Such communication could include aggregated volume data or confirmed scheduled quantities for key upstream receipt points. Access to and use of the tool should include appropriate security protocols and market protections.



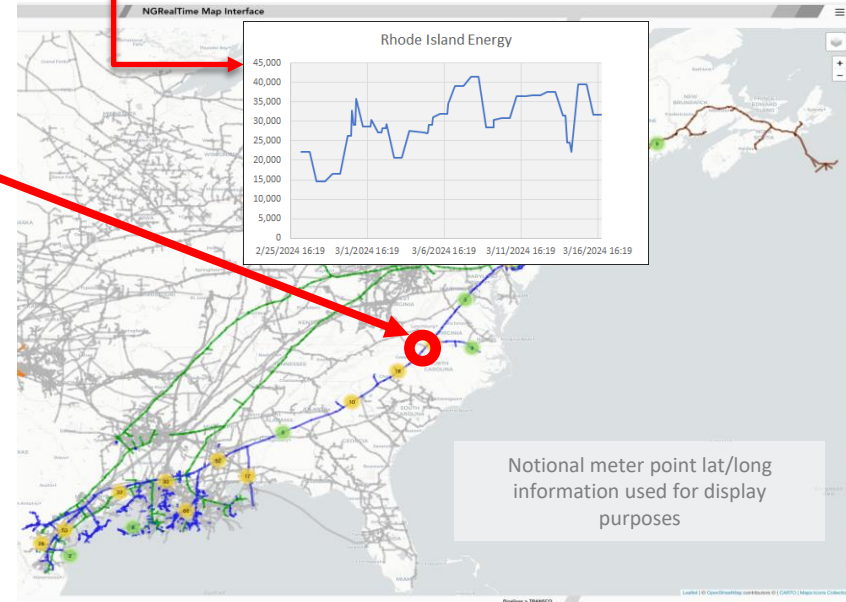
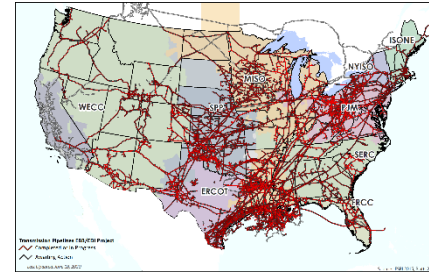
- FERC–NERC Final Report on Winter Storm Elliott supported these recommendations:

NAESB Report Recommendations 2 and 3 identified a potential tool that can be used to accomplish the desired information sharing—Argonne National Laboratory’s *NGInsight* Tool.<sup>315</sup> The tool makes it possible to identify the potential impact of weather or other critical events on overall natural gas supply.<sup>316</sup>

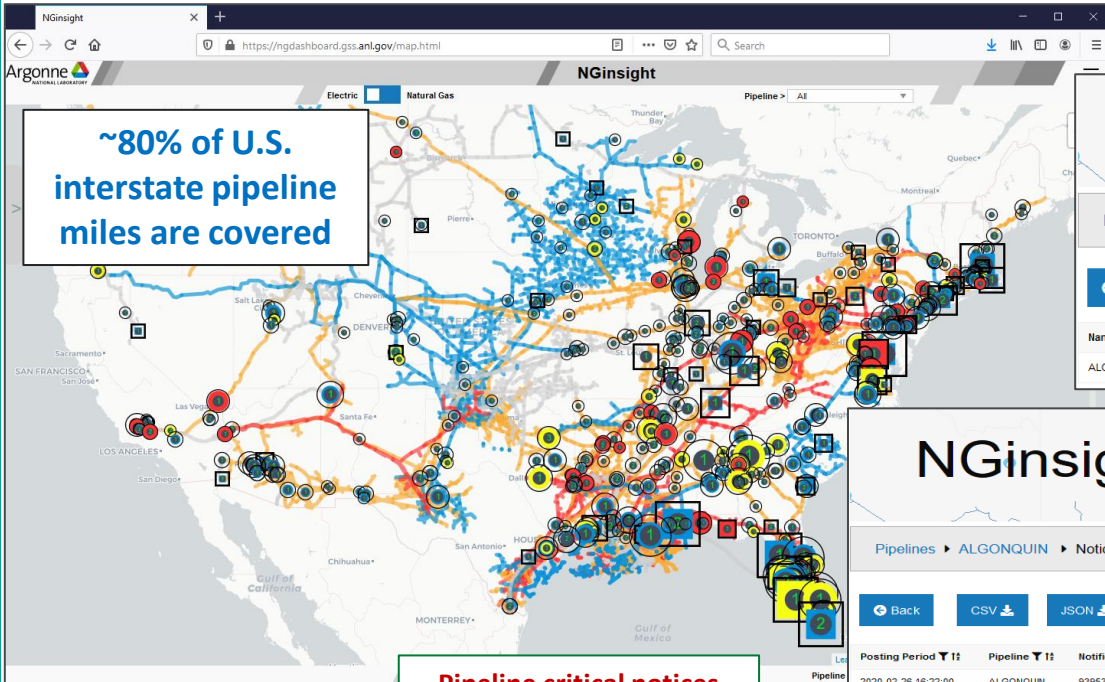


# Near-Real-Time Natural Gas Interstate Pipeline Data

- Argonne-developed *NGInsight* viewer:
  - Natural gas supply for gas-fired generators.
  - Interruptible vs. firm MW capacity served.
  - Dual-fuel vs. single-fuel plants; single connect vs. multiple connect.
  - Ranked critical notices.
  - Rankings customized for individual user organizations.
  - Outreach to electric and gas industry companies including EIA, EIPC, ISO-NE, NY-ISO, PJM, AGA, and INGAA for testing.



# NGinsight Assimilates Near-Real-Time Gas Data



Map Display

Reports Display

## NGinsight Reports

Pipelines ▸ ALGONQUIN

[Back](#) [Locations](#) [History](#) [Posting](#) [Notices](#)

Name ▼ 1: ALGONQUIN

## NGinsight Reports

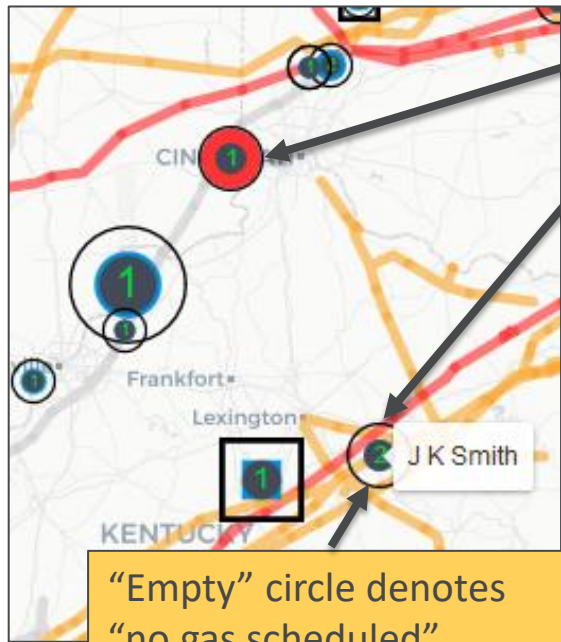
Pipelines ▸ ALGONQUIN ▸ Notices

[Back](#) [CSV](#) [JSON](#) From: 02/20/2020 To: mm/dd/yyyy [Filter](#)

Posting Period ▼ 1:	Pipeline ▼ 1:	Notification ID ▼ 1:	Is Critical ▼ 1:	Subject ▼ 1: +	User Rating ▼ 1:
2020-02-26 16:22:00	ALGONQUIN	93953	N	AGT PLANNED OUTAGES PRESENTATION / WEBCAST - TUESDAY, MARCH 3, 2020 +	-
2020-02-26 15:34:00	ALGONQUIN	93947	Y	AGT Pipeline Conditions for 2/27/2020 +	-
2020-02-26 15:28:00					-
2020-02-26 11:48:00					-
2020-02-26 11:36:00					-

Currently, receiving up to 6,500 notices per month (or about 80,000 per year)

# NGINSIGHT Shows Which Generators Could Have Multiple Natural Gas Supply Points



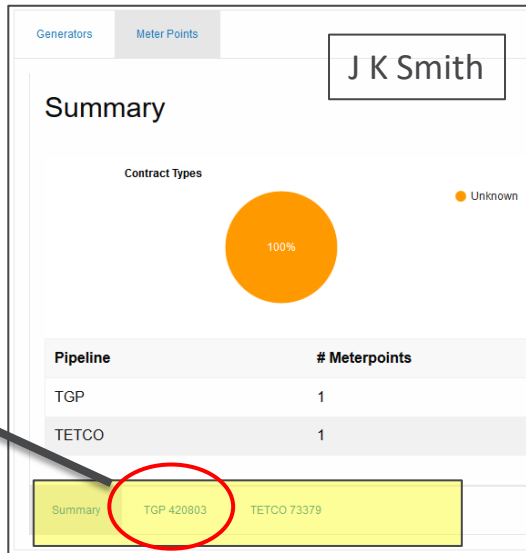
“1” → only one meter point provides gas supply

“2” → two meter points provide gas supply

“Empty” circle denotes “no gas scheduled”

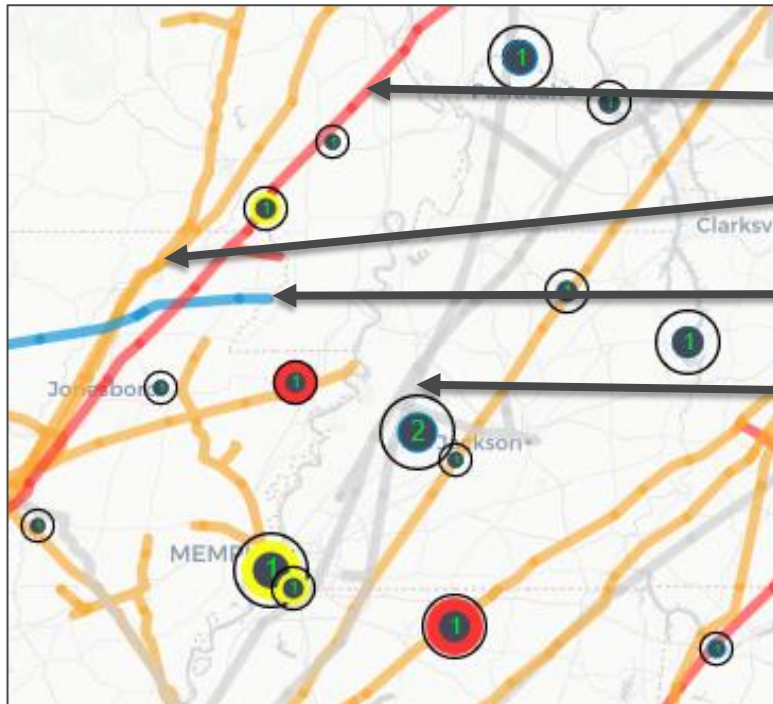
### Daily Gas Nominations

Pipeline	TGP							
Meterpoint	420803							
Name	EWTFWR/TGP J K Smith SALES CLARK							
Entity	MQ							
Longitude								
Latitude								
Effective	Posting	Cycle	TSQ	OAC	DC	DoF	QT	I
2020-02-27 09:00:00	2020-02-26 21:45:00	EVE	0	274611	274611	D	DPQ	N
2020-02-26 09:00:00	2020-02-26 21:45:00	ID3	0	274611	274611	D	DPQ	N



**Number within icon denotes the number of meter points that provide NG fuel to the generating plant.**

# NGINSIGHT Shows What Pipeline Notices Should Be Examined More Closely Today



**Red:** Severity 5 Notices – Most Important

**Orange:** Severity 4 Notices – Important

**Blue:** Severity 1-3 Notices – Advisory

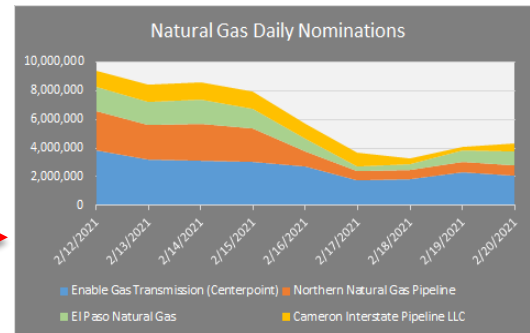
**Grey:** No notices posted

The tool currently rank notices 1 through 5, with 5 being the “most important” requiring the user to contact the pipeline for further information. The tool uses Machine Learning and Natural Language processing algorithms to support this task. It accounts for terms such as “OFO”, force majeure, etc. provided by individual users.

**Pipeline color denotes potential relevance and severity of real-time notices.**

# Natural Gas Production Data

- EBB data can be used to determine scheduled volumes (not actual flow) of natural gas production as a function of State, county, and pipeline:
  - Can be used to identify future reductions in natural gas supply due to extreme weather, etc.
- Pipeline nomination data provides the type for each receipt point:
  - Helps determine which receipt point is associated with a “Gas Processing Plant” or “Gathering System Interconnect”.
  - Argonne has compiled list of pipelines connected to each processing plant (see example below).
- Comparing scheduled volumes from one cycle to the prior could provide indicator that production is experiencing issues during extreme weather, etc.



EBB Receipt Point Descriptions	
CITYGATE	R
COMPRESSOR	R
END USER	R
<b>GAS PROCESSING PLANT</b>	R
<b>GATHERING SYSTEM INTERCONNECT</b>	R
INTERSTATE INTERCONNECT	R
INTRASTATE INTERCONNECT	R
LNG TERMINAL	R
MEXICO BORDER	R
PARK AND LOAN	R
POOL POINT	R
STORAGE	R
THROUGHPUT METER	R

EXAMPLES OF NATURAL GAS PROCESSING PLANTS CONNECTED TO MULTIPLE GAS PIPELINES									
NAME	STATE	COUNTY	Plant Capacity	Meter Station Name1	Pipeline1	Meter Station Name2	Pipeline2	Meter Station Name3	Pipeline3
MOBILE BAY GAS PLANT (MOBILE BAY PROCESSING)	AL	MOBILE	300.0	16706 - DUKE - MOBILE BAY (R)	Gulf South Pipeline Company, LP	15915 - DEFS Mobile Bay (R)	Gulfstream Natural Gas System, L.L.C.	75008 - MBPP Inlet Primary (X)	Dauphin Island Gathering
WILLIAMS MOBILE BAY GAS PLANT	AL	MOBILE	690.0	16714 - WILLIAMS FLD SERVICE - MOBILE BAY (R)	Gulf South Pipeline Company, LP	15922 - Williams Mobile Bay (R)	Gulfstream Natural Gas System, L.L.C.	24265 - MOBILE BAY PLT WFS MP 123.1 (R)	Transcontinental Gas Pipe Line Company, LLC
YELLOWHAMMER GAS PLANT	AL	MOBILE	200.0	16719 - SHELL-YELLOWHAMMER - MOBILE BAY (R)	Gulf South Pipeline Company, LP	17794 - YELLOWHAMMER M3560 MP 122.859 (R)	Transcontinental Gas Pipe Line Company, LLC	N/A	N/A
BADGER WASH GAS PLANT	CO	MESA	N/A	4890 - BADGER WASH RECEIPT (R)	Northwest Pipeline Corporation	4889 - BADGER WASH DELIVERY (D)	Northwest Pipeline Corporation	N/A	N/A

# Current and Proposed Tool Capabilities

## CURRENT STATUS:

- **Provides near-real-time gas-electric situational awareness to >75% of U.S. interstate and offshore gas transmission pipelines:**
  - Gas volumes as a function of pipeline cycle (minimum of five times per day).
  - Unsubscribed capacity available for additional available supply:
  - Nominated gas supply to directly-connected gas-fired electric generators.
- **Current and future gas pipeline conditions:**
  - Critical updates (outages, restrictions).
- **Machine-learning-based ranking of critical notices to identify those most-significant to individual tool users.**
- **Incorporates outside feeds such as weather alerts, major wildfires, hurricanes, etc.:**
  - Provides situational awareness during hurricanes, extreme cold weather, etc.

## PROPOSED ENHANCEMENTS:

- **Build out remaining 25% of gas interstate pipelines:**
  - Contact and sign new EDI access agreements for remaining gas interstate pipelines.
  - Conduct EBB web scraping for pipelines and storage areas without EDI.
- **Include EBB data from intrastate pipelines (e.g., in California and Texas):**
  - Collect nomination and notice data from LDCs such as SoCalGas, PG&E, etc. who provide EBB data via the web.
- **Provide near-real-time information on natural gas production:**
  - EBB data would be used to determine scheduled volumes of natural gas production as a function of State, county, and pipeline.
  - Each cycle's scheduled nominations would be compared with prior cycles to identify potential supply issues.



# THANK YOU VERY MUCH FOR YOUR TIME AND CONSIDERATION!

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