

ARCTIC STORM OF FEBRUARY 2011



August 7, 2014

NMGC Presentation

Presentation will cover the following topics:

- Arctic Storm of Early 2011
- NMGC's Pre-Storm Preparations
- What Happened?
- NMGC's Actions
- Restoration & Recovery
- Post Event Actions
- Additional Measures Taken by NMGC Since February 2011 Outage
- LANL Modeling & Report
- FERC Investigation
- PRC Investigation

Natural Gas Industry in New Mexico

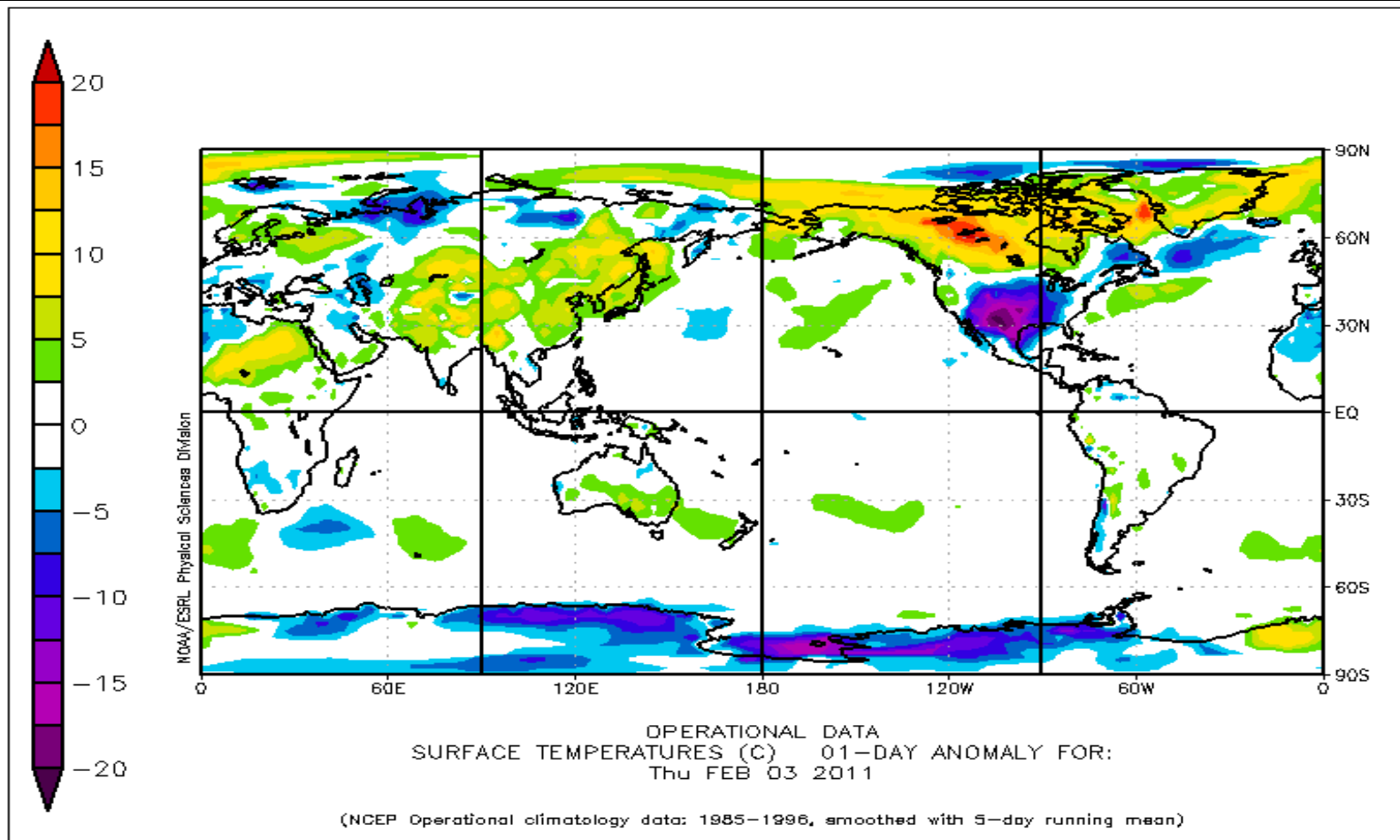
- Interstate transmission pipelines deliver to local gas distribution companies (LDCs) such as NMGC
- NMGC transmission and distribution systems deliver to homes and businesses



Arctic Storm: January 30 – February 3, 2011

- Once-in-50-year storm
- Over widespread area of Arizona, New Mexico, Texas, and even into Mexico
- Albuquerque experienced 88 consecutive hours below freezing, and northern New Mexico even colder
- Gusty winds made Arctic cold temperatures even worse: wind chills of -20°F to -50°F
- Resulted in record gas usage

February 2011 - A Global Anomaly



NMGC's Pre-Storm Preparations

- Above-forecast gas purchases by:
 - 35% on February 1st
 - 55% on February 2nd
 - 62% on February 3rd
- Increased line pack
- Maximum storage draw-down
- All key personnel put on call
- Compressor stations were prepped for cold weather and manned 24/7
- Constant communications maintained with suppliers and pipeline operators

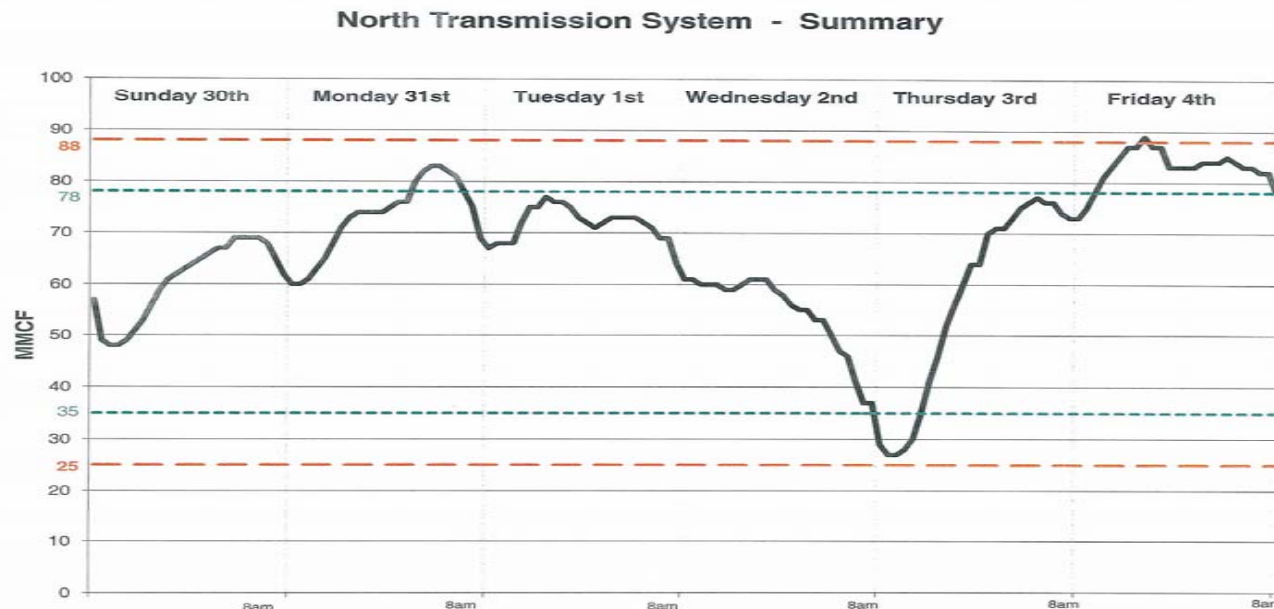
What Happened?

- Supplies were not delivered:
 - Wellhead freeze-offs
 - Electrical outages affected natural gas production operations
 - 20% deliveries missed
- Interstate pipeline pressures dropped, consequently the local distribution system pressures also dropped
- Demand for gas soared
 - Customer demand was 69% higher than on an average February peak day
 - Demand was 14% higher on Feb. 3rd than on Feb. 2nd



What Happened?

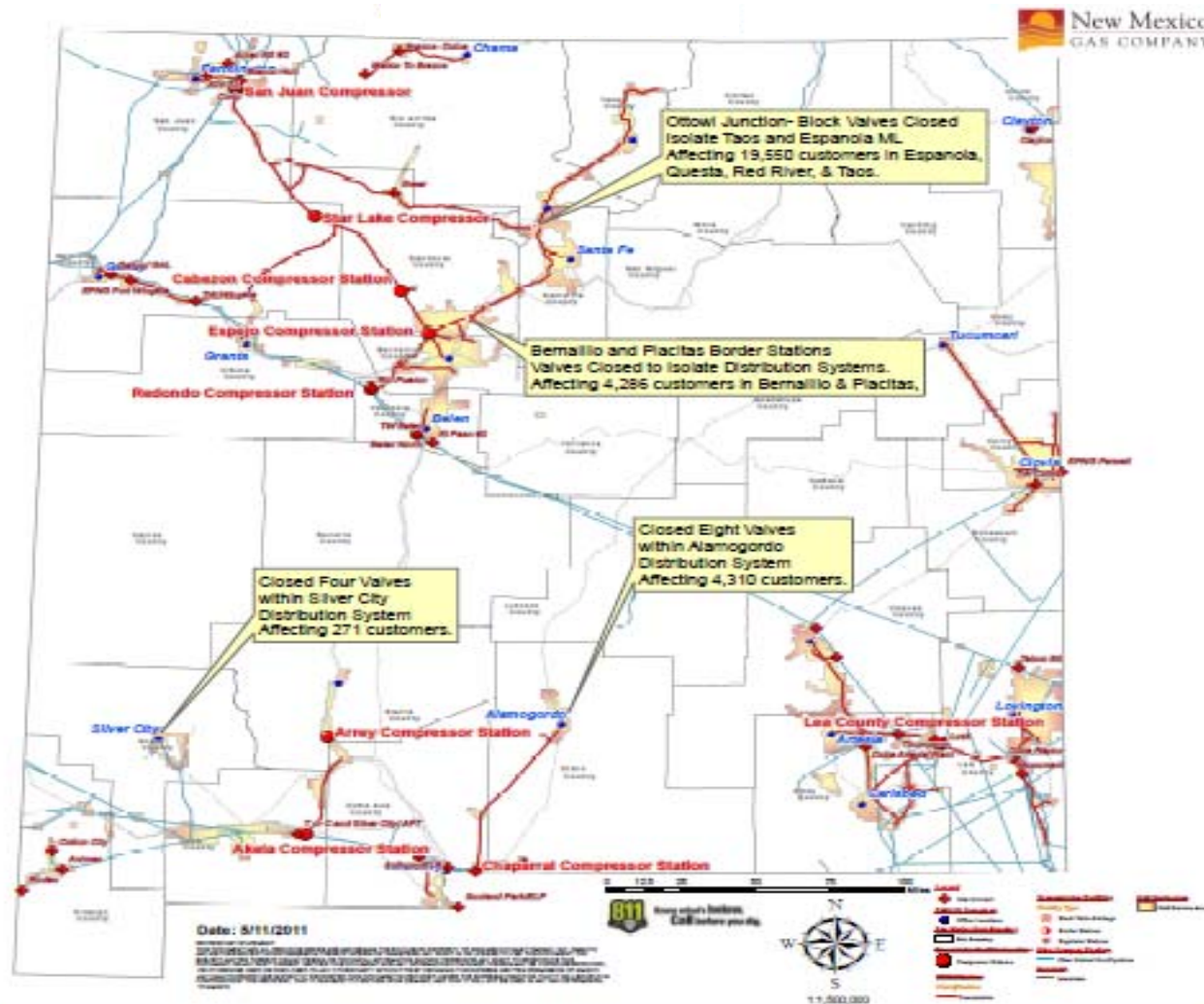
- As a result of increased demand and reduced supply:



What Happened?

- Voluntary and involuntary curtailments were not enough
- In order to avoid catastrophic system failure, service was curtailed to 28,000 customers

28,000 Customers were Curtailed



NMGC's Actions

- As pressures in the system continued to fall, demand continued to be high, and supplies were not delivered, NMGC had to preserve the integrity of the entire system by reducing the total demand
- System design dictated that NMGC reduce demand by taking the following steps:
 - Identify critical valves that were easily accessible by crews and accessible quickly
 - Close valves to those portions of the system already experiencing low pressure
 - Terminate service to one of two PNM electric generation plants
 - Actions had to be taken within 20-30 minutes

NMGC's Actions

- Why not other areas?
 - NMGC evaluated curtailments in other areas, including parts of Albuquerque and Santa Fe, but their systems and valve configurations were too complex to complete a shut down in the time available
 - In a System Emergency, NMGC takes actions necessary to maintain system operations to as many customers as possible

Restoration & Recovery

- In order to restore service following shut down, all meters needed to be physically visited twice: first to shut them down in order to purge the lines of air, and second to turn the meter back on and relight appliances, which also requires customers to be home
- Over 1,000 individuals participated in the recovery process
 - This included over 200 NMGC employees, 200 employees from other utilities, 280 local plumbers and contractors, 300 National Guardsmen, as well as a number of fire personnel, and state, tribal and local police
 - Recovery efforts were supported by the Governor's Office and state, tribal and local agencies, as well as the generosity of businesses, families and individuals across New Mexico
- Service restored by Tuesday afternoon

Relief Fund

- NMGC voluntarily established a \$1 million relief fund to help alleviate the hardships to the hardest hit customers and to supplement other sources of assistance
- Over 2200 claims filed
- All but \$14,000 paid out to date

Additional Measures Taken by NMGC Since February 2011 Outage

- Developed and tested a comprehensive emergency communications plan and tested and used that plan in drills and in several events including the Thompson Ridge fire. ECP has been filed with the PRC
- Installed additional isolation valves throughout the distribution system to facilitate curtailment of customers in a supply shortage situation
- Acquired 1 BCF of additional storage at the Keystone underground storage facility in Texas, and negotiated for backup electric supply at that facility
- Studied and proposed a backup Liquefied Natural Gas storage facility that would be located west of Rio Rancho and able to feed both northern and southern legs of the distribution system

Additional Measures Taken by NMGC Since February 2011 Outage

- Engaged in incident command training and exercises with the state EOC and Homeland Security and used that training during the Thompson Ridge fire
- Identified GPS location points for all customers, giving us more precise location of customer meters
- Re-negotiated several gas supply contracts with gas suppliers to provide more favorable terms including, in some instances, waiver of force majeure clauses by suppliers
- Negotiated higher pressure minimums on EPNG transmission line
- Worked with PNM to create better pathways for communication to assure cooperation and assistance in future gas shortage situations
- Improved pipeline communications with TW and EPNG and participated in table top mock exercise drills with EPNG

Additional Measures Taken by NMGC Since February 2011 Outage

- Reconfigured compressors on the southern segment of Company's distribution system
- Upgraded and reinforced various parts of the distribution system on both north and south segments of the Company's system
- Cooperated fully with investigations by the PRC, FERC, Utility Staff and others into the events of February 2011
- In total, NMGC continues to make significant investments in the system - \$94 million over the past 3 years

LANL Modeling & Report

Report issued April 2011 – presented to PRC

- Had scheduled gas deliveries been received, the system would have remained stable and no service interruptions would have occurred
- If the [Ottowi] value not been shut [by the Company], the locations north of Ottowi would have run out of gas due to the lack of supply into the [NMGC] system and the system would have been driven to a low line pack and pressure condition, thus, there would likely have been instabilities and outages in other locations [on the NMGC system]
- ... shutting in the valve at Ottowi junction was the only action that allowed the [NMGC] system to recover from the shortage of gas
- This study confirms that the proper amount of load was shed, as the system was able to recover with little margin for error

FERC Investigation

Investigation commenced Feb. 2011 – Report issued Aug. 2011

- The February 2011 weather event that descended upon the Southwestern states was unusually severe in terms of temperature, wind and duration of the event
- FERC found that “the principle cause of the gas service curtailments experienced in several southwestern states was the production declines in the supply of natural gas, which led to volume and pressure reductions in the pipelines”
- Estimated drop in production from the production basins in Texas and New Mexico of 5.55 Bcf per day (approximately 20% greater than in past)
- The declines in these basins, together with the large increases in demand, were almost exclusively responsible for the gas curtailments in Texas, New Mexico and Arizona
- FERC concluded that specific measures can and should be taken to improve the reliability of natural gas supply to consumers during extreme cold weather events, such as during the event of February 2011 – not all of which are subject to FERC’s jurisdiction

PRC Investigation

Investigation commenced Feb. 2011 – Final Order issued Dec. 2012

- The February 2011 system emergencies were caused by a combination of a failure of upstream industry segments to supply and deliver scheduled gas to NMGC because of a severe winter storm affecting the southwestern U.S., weather-driven freeze-offs and rolling electrical blackouts in Texas, and high weather-driven demand for gas by NMGC customers
- NMGC reasonably and prudently anticipated and planned for this winter storm and nominated and scheduled significantly more than enough gas supplies to meet the anticipated needs of its customers
- NMGC reasonably and prudently mitigated the resulting curtailments of gas utility service by first voluntarily curtailing large end-users and customers, by seeking voluntary reduction of gas usage by all customers, by initiating involuntary curtailments of large customers, and then by curtailing gas utility service to customers appropriately, as necessary to maintain the integrity of as many segments of the system as possible

PRC Investigation

continued

- Given the options available and the timeframes within which actions had to be taken NMGC made reasonable and prudent decisions in determining the segments of the NMGC system in which gas utility service to customers should be curtailed
- Had NMGC not declared system emergencies on February 3, 2011, uncontrolled outages would have occurred that would have threatened the public health and safety as well as continued gas utility service to the remaining segments of the NMGC system
- At all times on February 3, 2011, NMGC used reasonable diligence to render continuous service to all of its End-Users
- NMGC restored service in a reasonable, prudent and timely manner, consistent with industry standards, and consistent with its obligations under the PUA, PRC rules and regulations, and NMGC tariffs
- NMGC fully complied with all applicable rules, regulations and tariffs
- NMGC could have communicated better with local officials and the Public

Summary and Questions