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April 16, 2024

Ms. Melanie Sandoval  
New Mexico Public Regulation Commission  
P. O. Box 1269  
142 W Palace Ave  
Santa Fe, New Mexico 87501

**Subject: New Mexico Gas Company, Inc.'s Integrated Resource Plan for the Planning Period of 2024 through 2033 in Compliance with 17.7.4.9 NMAC**

Dear Ms. Sandoval:

Enclosed is New Mexico Gas Company Inc.'s ("NMGC") Natural Gas Integrated Resource Plan ("IRP") for the period of 2024 through 2033. This compliance filing is pursuant to Section 9 of 17.7.4, which requires that public utilities supplying natural gas service to customers shall file an IRP every four years.

NMGC has posted a copy of its IRP to its website at [https://www.nmgco.com/en/regulatory\\_filings](https://www.nmgco.com/en/regulatory_filings),

If you have any questions, please contact me at (505) 288-1820.

Sincerely,

*/s/ Anita Hart*

Anita Hart  
Director, Regulatory Affairs

cc: Ed Rilkoff – NMPRC  
Tim Martinez – NMPRC

# 2024

# Integrated Resource Plan



New Mexico  
GAS COMPANY®  
AN EMERA COMPANY

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# TABLE OF CONTENTS

|   |                    |
|---|--------------------|
| <a href="#">Safe Harbor Statement</a>   | <a href="#">1</a>  |
| <a href="#">IRP Regulatory Requirements</a>                                     | <a href="#">2</a>  |
| <a href="#">IRP Public Advisory Process</a>                                     | <a href="#">3</a>  |
| Announcement of Public Advisory Meetings  | 3                  |
| IRP Public Advisory Meeting Topics  | 3                  |
| Internet Posting of Information   | 4                  |
| <a href="#">New Mexico Gas Company's Delivery System Overview</a>               | <a href="#">4</a>  |
| Northwest System  | 5                  |
| Southeast Transmission System   | 11                 |
| Independent Systems   | 12                 |
| <a href="#">Current Load Forecast</a>   | <a href="#">13</a> |
| <a href="#">Gas Supply Sources &amp; Strategy</a>                               | <a href="#">15</a> |
| Gas Supply  | 15                 |
| Gas Basin Diversity   | 15                 |
| Contract Supplier and Transportation Diversity                                  | 15                 |
| Storage   | 16                 |
| Natural Gas Supply Sources  | 17                 |
| <a href="#">Anticipated Resources to be Added During Planning Period</a>        | <a href="#">19</a> |
| Artesia Mainline Replacement  | 19                 |
| Truth or Consequences Mainline  | 19                 |
| Distribution System Projects  | 20                 |
| Lea County Compressor Station Compressor Replacement                            | 20                 |
| <a href="#">Resources and Infrastructure Under Consideration</a>                | <a href="#">21</a> |
| Albuquerque Mainline Reinforcement  | 21                 |
| Taos Mainline Reinforcement   | 21                 |
| Storage   | 21                 |
| Brazos Pipeline Reinforcement   | 21                 |
| Expansion to Unserved and Underserved Areas                                     | 22                 |
| Demand Side Considerations  | 22                 |
| Proactive and Targeted Customer Communications                                  | 22                 |
| Demand Response   | 22                 |
| Energy Efficiency   | 22                 |
| Greenhouse Gas Reduction  | 23                 |
| GHG Emissions Reduction Initiatives   | 23                 |
| <a href="#">NMGC Energy Efficiency Program</a>                                  | <a href="#">25</a> |
| Introduction  | 25                 |
| Energy Efficiency Program Development Methodology                               | 25                 |
| Energy Efficiency Public Advisory Process                                       | 25                 |
| 2023 – 2025 Portfolio of Energy Efficiency Programs                             | 25                 |
| Energy Efficiency Impact on Integrated Resource Plan                            | 27                 |
| <a href="#">Appendix A - Public Advisory Meeting Presentation and Summaries</a> |                    |
| <a href="#">Appendix B - Delivery System Details</a>                            |                    |
| <a href="#">Appendix C - Design Day Study Methodology</a>                       |                    |
| <a href="#">Appendix D - 2023-2024 Winter Supply Portfolio Supply Sources</a>   |                    |

## SAFE HARBOR STATEMENT

This document contains forward-looking statements. Such statements are subject to a variety of risks, uncertainties, and other factors, most of which are beyond New Mexico Gas Company, Inc.'s ("NMGC" or the "Company") control, and many of which could have a significant impact on the Company's operations, results of operations, and financial condition, and could cause actual results to differ materially from those anticipated.

The information in this document is based on the best available information at the time of preparation. The Company undertakes no obligation to update any forward-looking statement or statements to reflect events or circumstances that occur after the date on which such statement is made or to reflect the occurrence of unanticipated events, except to the extent the events or circumstances constitute material changes in the Integrated Resource Plan ("IRP") that are required to be reported to the New Mexico Public Regulation Commission ("NMPRC" or "Commission") pursuant to Rule 17.7.4 New Mexico Administrative Code ("NMAC").

# IRP REGULATORY REQUIREMENTS

In accordance with Rule 17.7.4 NMAC IRP for Gas Utilities (“IRP Rule”), NMGC has established a process to analyze and determine the most cost-effective portfolio of resources to supply the natural gas needs of its customers for the planning period of 2024-2033. By Rule, NMGC’s IRP shall contain NMGC’s jurisdictional:

- Current load forecast,
- Description of existing portfolio of resources,
- Summary of foreseeable resource needs for the planning period,
- Anticipated resources to be added during the planning period and the evaluation of various options that could reasonably be added to the utility’s resource portfolio,
- A summary description of natural gas supply sources and delivery systems,
- A summary identification of critical facilities susceptible to supply-source or other failures,
- Description of the public advisory process, and
- Other information that may aid the Commission in reviewing the utility’s planning processes.

# IRP PUBLIC ADVISORY PROCESS

Pursuant to 17.7.4.12 NMAC, NMGC initiated its Public Advisory process one year prior to the filing date of April 16, 2024 by providing notice to the Commission, intervenors in our most recent rate case, and participants in the most recent energy efficiency and IRP proceedings 30-days prior to the Company’s first IRP public advisory meeting. Throughout the development of the IRP, NMGC held Public Advisory meetings to facilitate stakeholder and public participation and input. Participating stakeholders included representatives of the NMPRC Utility Staff (“Staff”), Western Resource Advocates (“WRA”), Tiger Natural Gas (“Tiger”), Southwest Energy Efficiency Project (“SWEEP”), and Southern Energy Alliance (“SEA”).

## Announcement of Public Advisory Meetings

In advance of each of the scheduled public advisory meetings, NMGC printed and published notices of the meetings in various publications to promote awareness and encourage participation. These publications included the Albuquerque Journal, which is circulated in every county that NMGC provides natural gas utility service, customer bills, NMGC’s website and NMGC’s Facebook, X (formerly Twitter) and LinkedIn social media platforms. Interested parties had the option to attend in-person, or to join the meetings on Microsoft Teams.

**Table 1 - Public Meetings and Notifications**

| Meeting Location | Meeting Date | Meeting Notification Date and Publication  |
|------------------|--------------|--|
| Albuquerque      | 6/23/2023    | April 16, 2023 - Albuquerque Journal<br>April 14 - May 12, 2023 - Customer Bill Message Notice, social media and NMGC web site |
| Santa Fe         | 12/14/2023   | November 13 - December 14, 2023 - Customer Bill Message Notice, social media and NMGC web site                                 |
| Farmington       | 2/1/2024     | December 28, 2023 - January 25, 2024 - Customer Bill Message Notice, social media and NMGC web site                            |
| Anthony          | 3/12/2024    | January 26 - March 12, 2024 - Customer Bill Message Notice, social media and NMGC web site                                     |
| Roswell          | 3/13/2024    | January 26 - March 12, 2024 - Customer Bill Message Notice, social media and NMGC web site                                     |

## IRP Public Advisory Meeting Topics

In each of the meetings held across the state, a presentation was made addressing items required by the IRP Rule. This included a description of NMGC’s system, NMGC’s gas supply targets, gas supply strategies, and potential additional resources. Information was also provided about NMGC’s energy efficiency program. NMGC responded to questions and comments from meeting participants. Appendix A includes the public advisory meeting presentation and additional details regarding topics of discussion.

# Internet Posting of Information

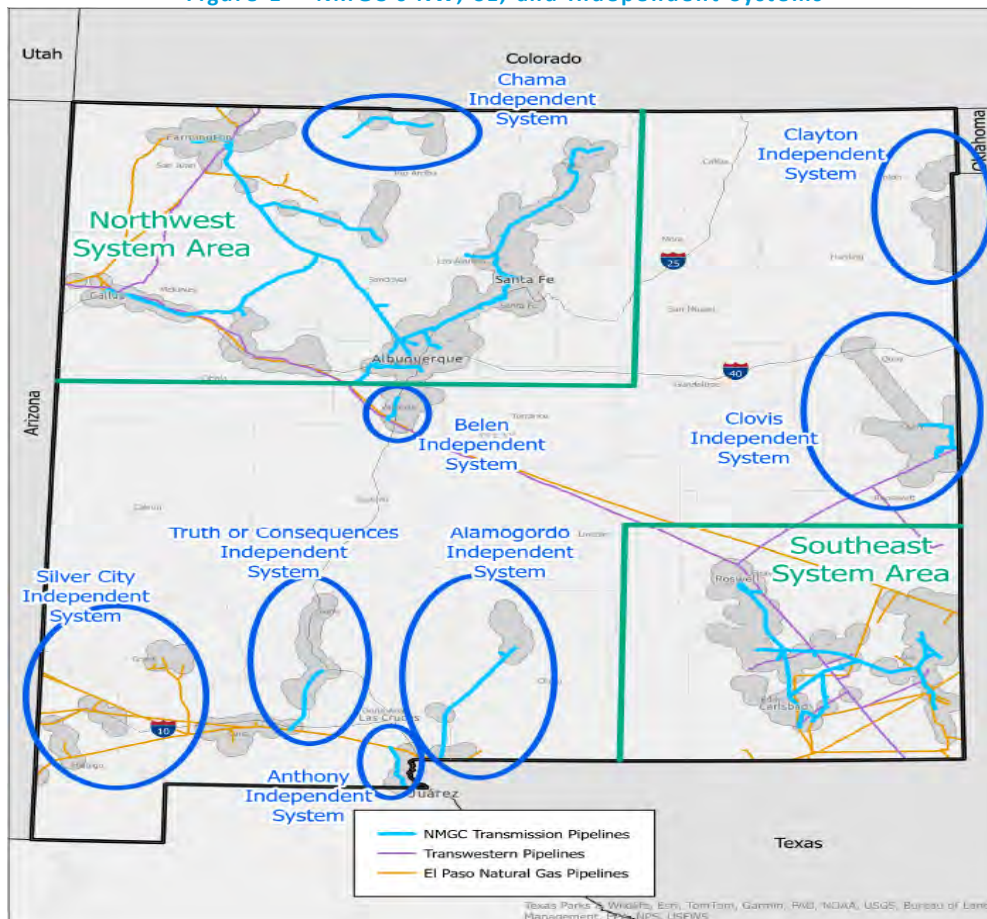
NMGC established an internet posting for IRP information. The Company's website shares a general description of the IRP process, meeting invitations, as well as a link to the NMPRC Rules, including the Gas IRP rule.

The IRP information can be found here: [https://www.nmgco.com/en/regulatory\\_filings](https://www.nmgco.com/en/regulatory_filings).

## NEW MEXICO GAS COMPANY'S DELIVERY SYSTEM OVERVIEW

NMGC's service territory is throughout the state of New Mexico serving approximately 549,000 meters<sup>1</sup> or approximately 1.3 million New Mexicans in 26 of New Mexico's 33 counties and serves the Navajo Nation, Jicarilla Apache Nation, Fort Sill Apache Nation, and 15 Pueblos. NMGC owns, operates, and maintains over 12,500 miles of transmission and distribution pipelines throughout the state. For planning purposes, NMGC divides its service area into the Northwest (NW) system, the Southeast (SE) system, and the independent systems. A detailed description of system segments including pipeline size and Maximum Allowable Operating Pressure ("MAOP") is included in Appendix B.

Figure 1 – NMGC's NW, SE, and Independent Systems



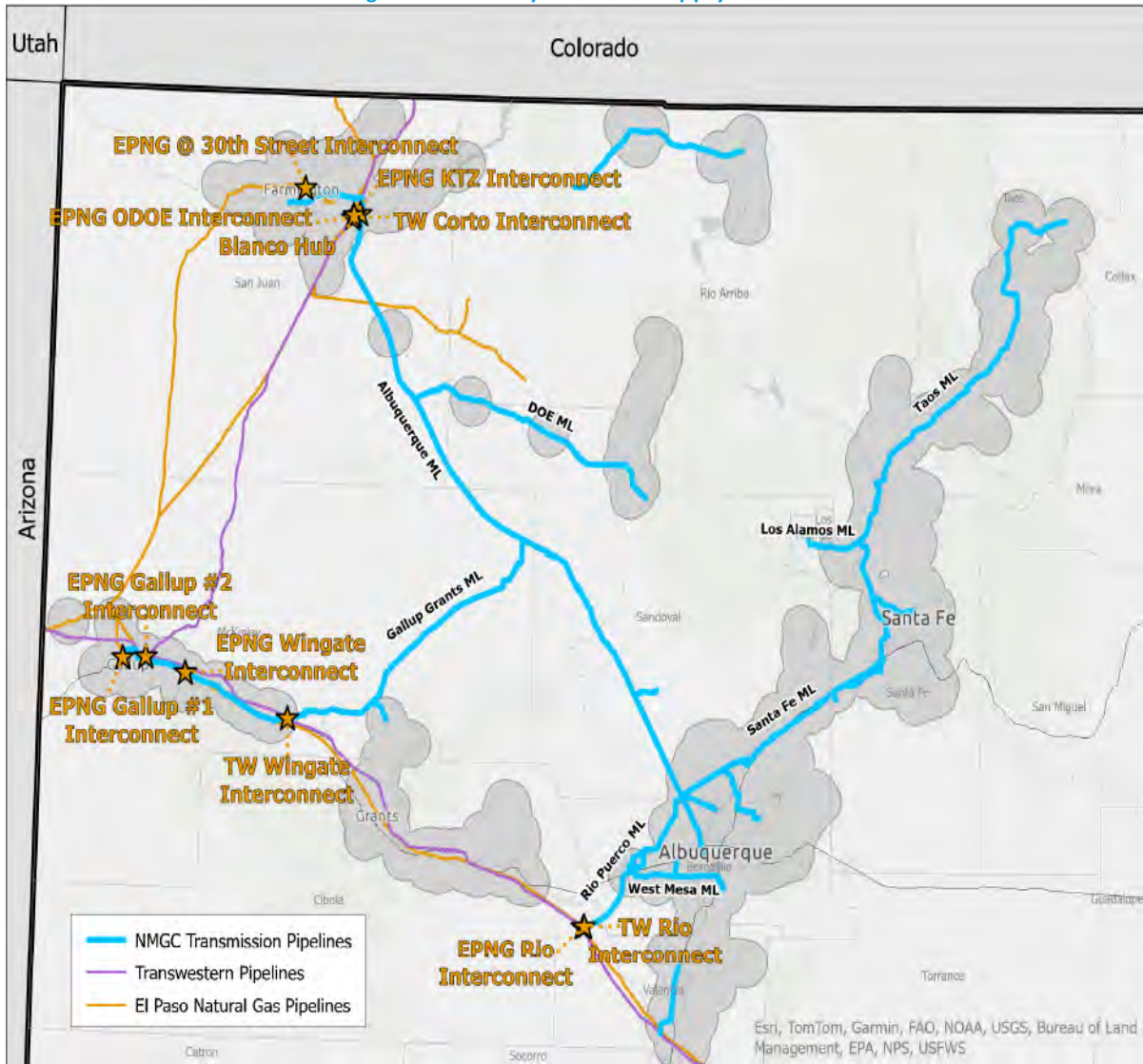
<sup>1</sup> NMGC meter count as of March 2024.



# Northwest System

The NW system, which covers most of northern New Mexico, is made up by the following major service areas: the Albuquerque Metro area, the Santa Fe/Los Alamos area, the Española/Taos/Red River area, the Gallup-Grants area, and the Farmington area. The NW system is NMGC's largest system in both infrastructure and customers. This system accounts for approximately 69% of the total transmission and distribution pipeline mileage and approximately 79% of the total NMGC customers. Natural gas is delivered into the NW system from interstate pipelines, processing plant tailgates, and the Blanco Hub through the gas receipt points depicted in the following figure.

Figure 2 – NW System and Supply Points

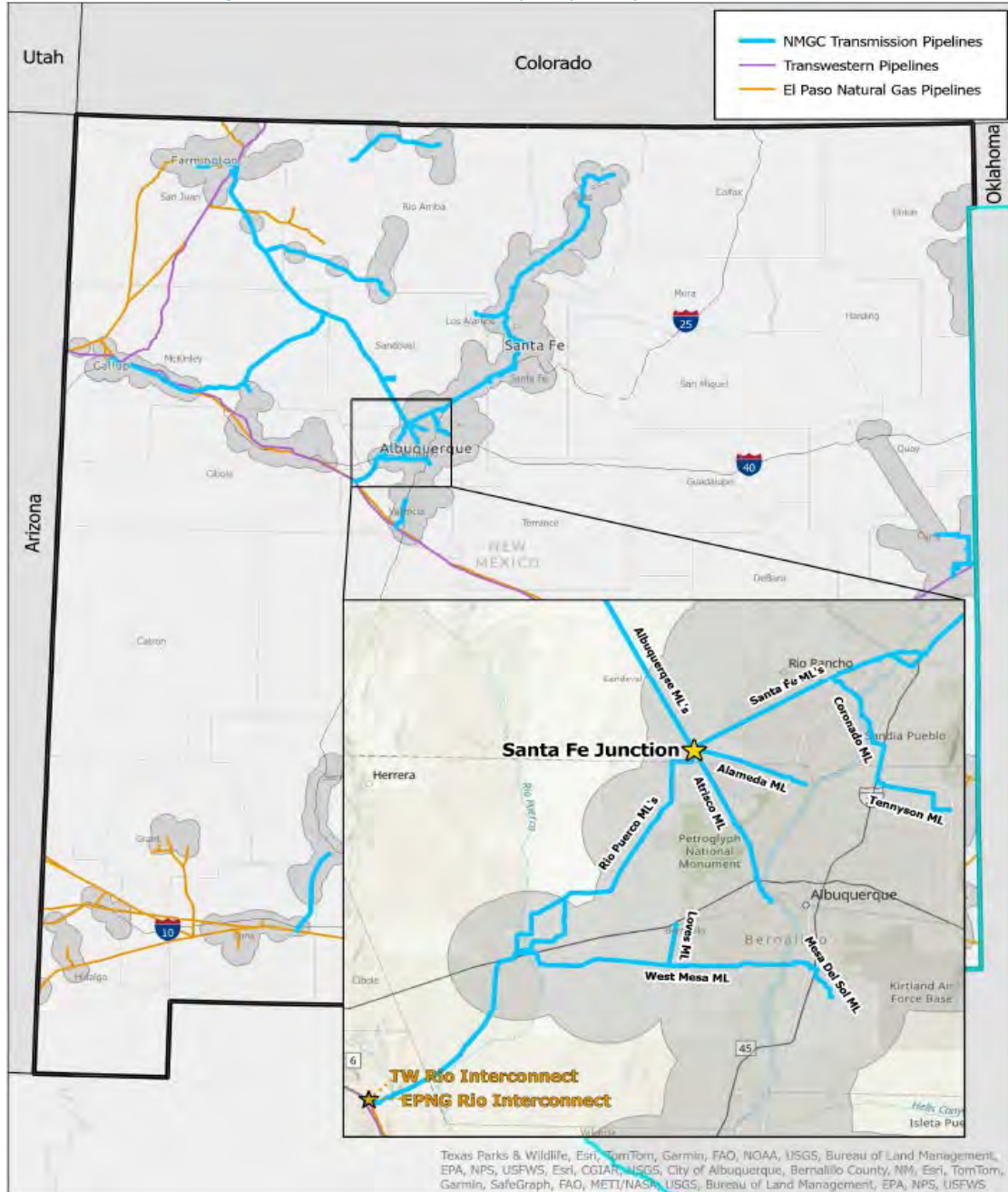




### Albuquerque Metro Area

The Albuquerque Metro area is comprised of Albuquerque, Rio Rancho, Bernalillo, and the East Mountains as well as the Pueblos of Isleta, Sandia, and Santa Ana. This is NMGC’s largest customer base amounting to approximately 55% of total customers served by NMGC. Major NMGC transmission pipelines that deliver gas to the Albuquerque Metro area are described in the table below. Gas is supplied to these pipelines through numerous supply points in the Farmington area (see Farmington area description) and the Transwestern (“TW”) and El Paso Natural Gas (“EPNG”) interconnects with Interstate Pipelines shown in the map below.

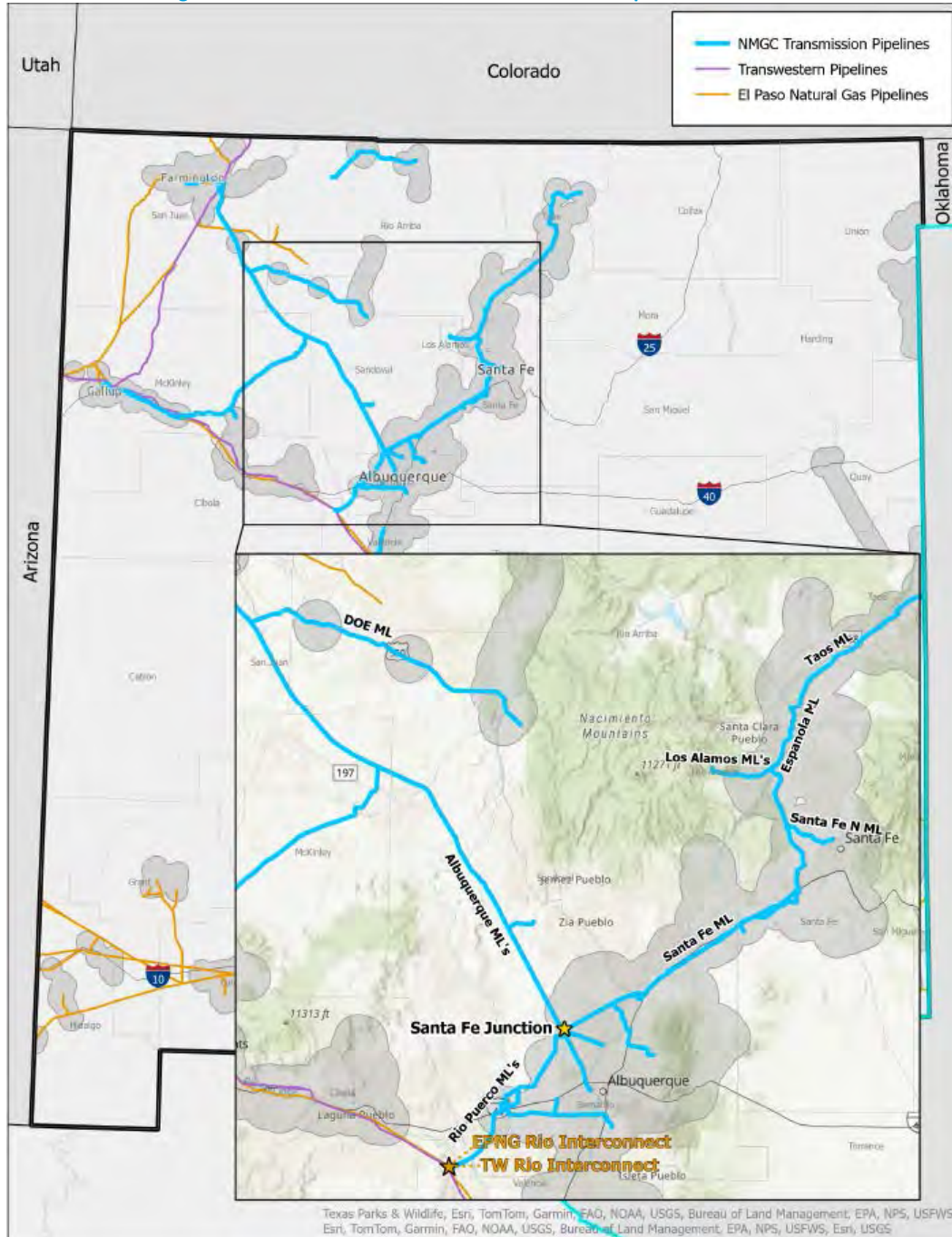
Figure 3 – Overview of Albuquerque Pipelines and Area



### Santa Fe/Los Alamos Area

The Santa Fe/Los Alamos area includes Santa Fe and Los Alamos as well as other communities in the area including the Pueblos of San Felipe, Santo Domingo, Cochiti, Tesuque, San Ildefonso, Pojoaque, and Nambe. This area comprises 10% of NMGC's customer base. The pipelines that serve this area include the Santa Fe 20 inch mainline and the Santa Fe 12 inch mainline. Gas is supplied to these pipelines from the Santa Fe Junction.

Figure 4 – Overview of Santa Fe and DOE Pipelines and Area

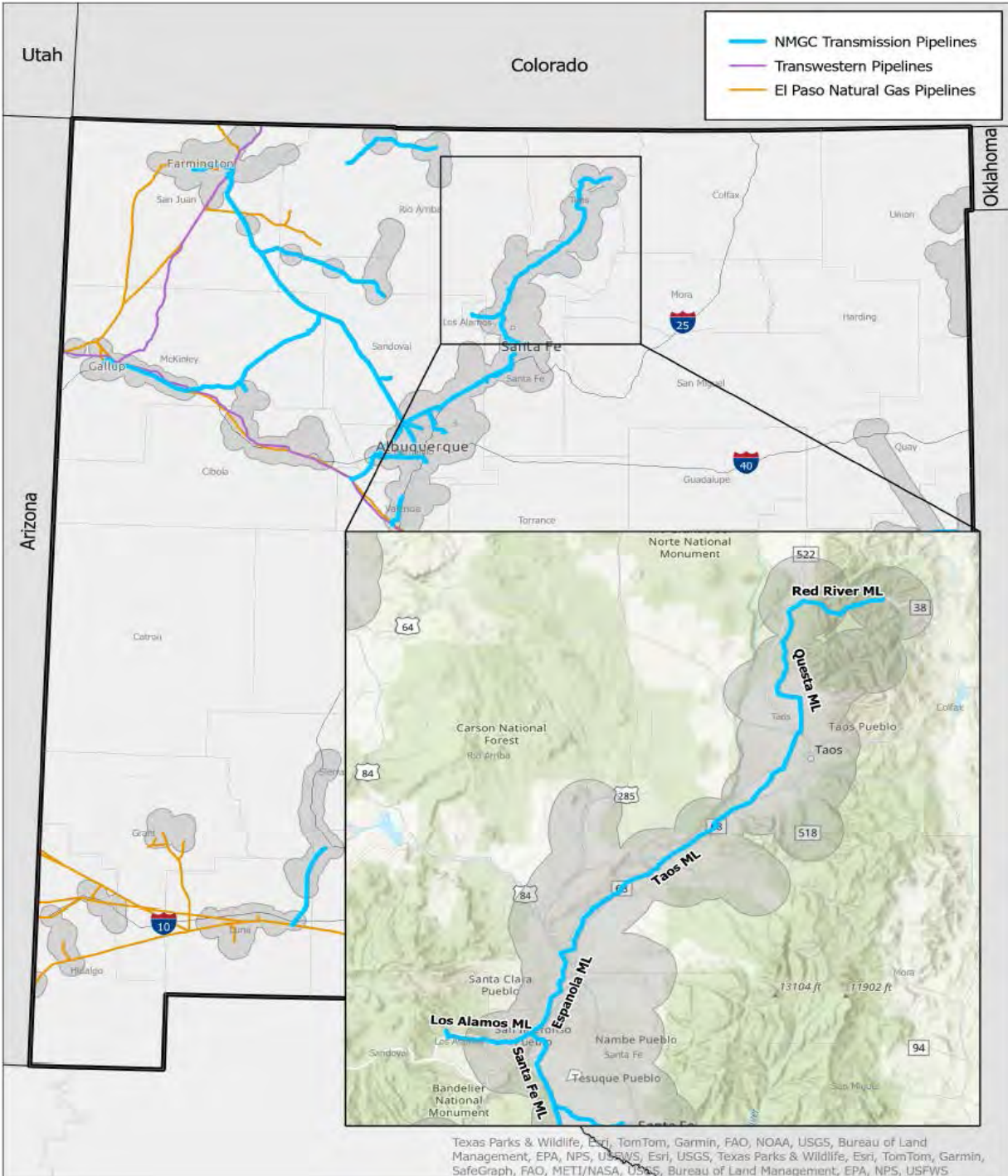




### Española/Taos/Red River Area

The Española/Taos/Red River area includes Taos, Española, Questa and Red River, and other communities in the area including the Pueblos of Santa Clara, San Juan, and Taos. This area comprises 5% of the total customer base. The pipeline supplying this area is the Taos mainline which is supplied by the Santa Fe 20 inch mainline and the Santa Fe 12-inch mainline.

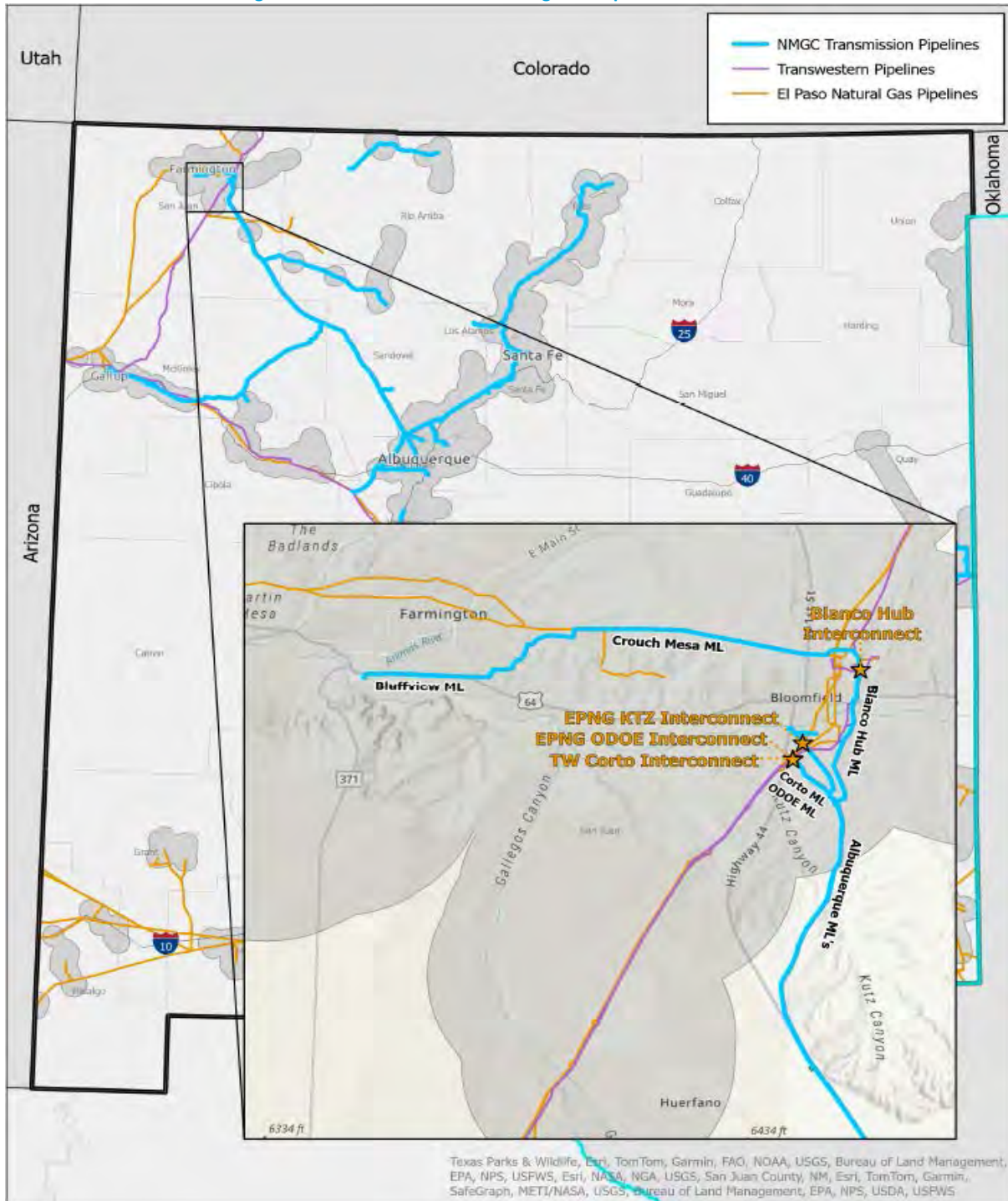
Figure 5 – Overview of the Taos Mainline and Area



### Farmington Area

The Farmington area includes Farmington and Bloomfield as well as other smaller communities in the area including the Navajo Nation. This area comprises 6% of NMGC's customer base. The pipelines that serve this area include Crouch Mesa, Bluffview, Farmington mainlines, and DOE mainline, which are supplied by the interconnects shown in the map below.

Figure 6 – Overview of Farmington Pipelines and Area

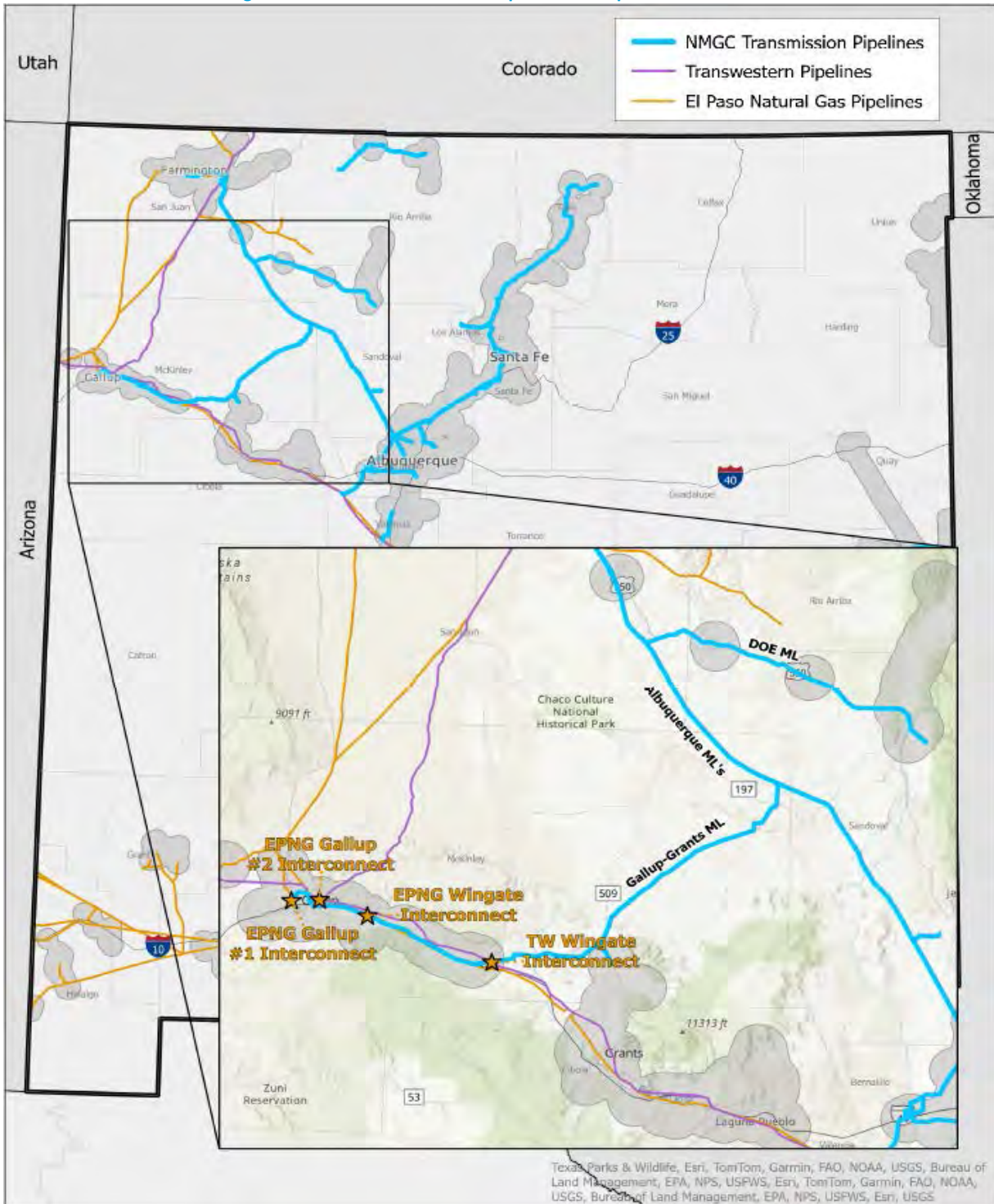




### Gallup-Grants Area

The Gallup-Grants area includes Gallup, Grants and other communities in the area along with parts of the Navajo Nation and the Pueblos of Acoma and Laguna. This area comprises 3% of NMGC’s customers. The major NMGC gas transmission pipeline in the area is the Gallup-Grants mainline, which is supplied from the Albuquerque mainlines and interconnects shown in the map below.

Figure 7 – Overview of Gallup-Grants Pipeline and Area

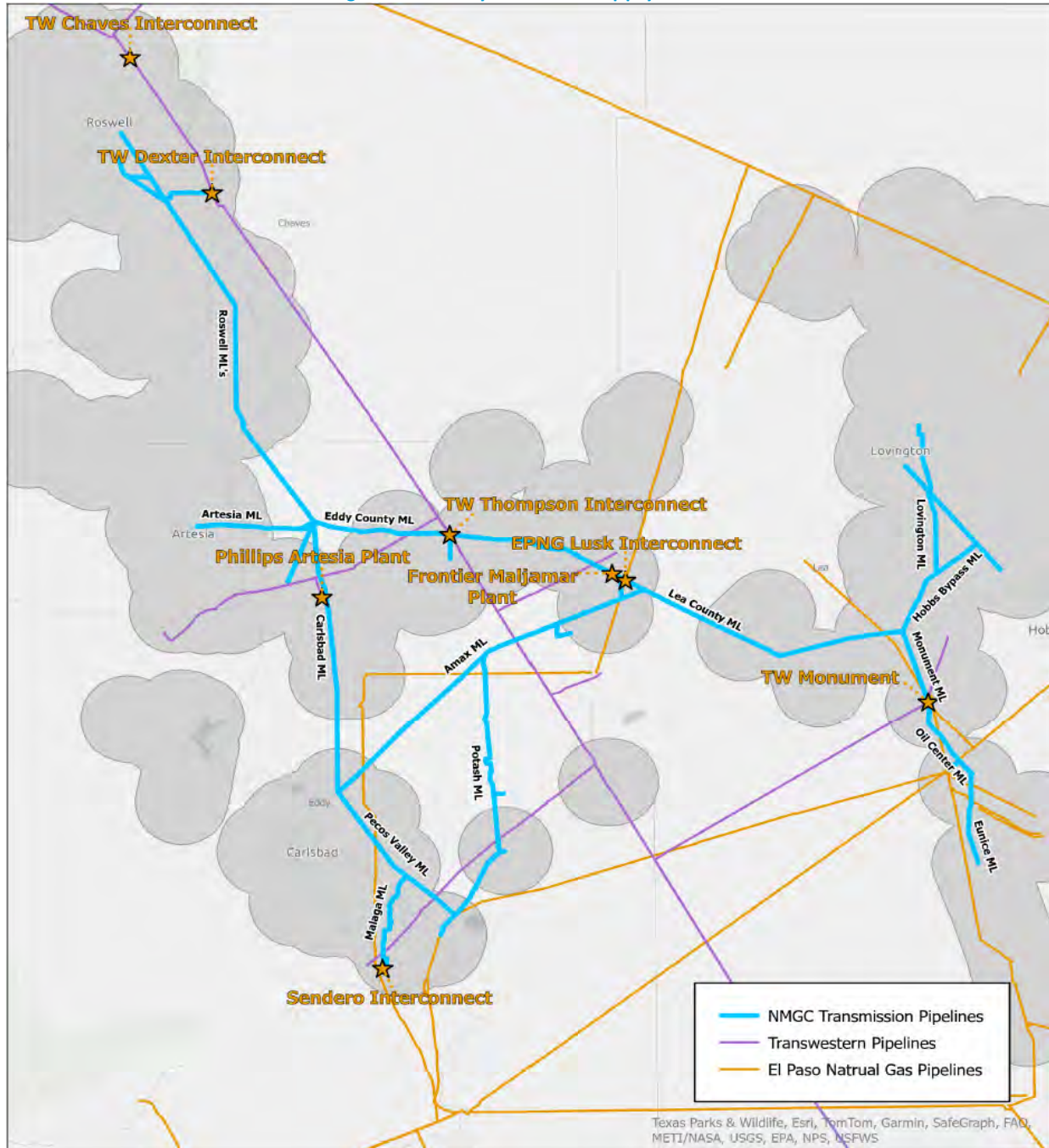


Texas Parks & Wildlife, Esri, TomTom, Garmin, FAO, NOAA, USGS, Bureau of Land Management, EPA, NPS, USFWS, Esri, TomTom, Garmin, FAO, NOAA, USGS, Bureau of Land Management, EPA, NPS, USFWS, Esri, USGS

# Southeast Transmission System

The southeast system supplies Roswell, Artesia, Carlsbad, and Lovington, Eunice, and other communities in the area. The SE system accounts for 13% of transmission and distribution pipeline mileage and supplies 6% of NMGC's total customers. Natural gas is delivered into the SE system from interstate pipelines and processing plant tailgates as shown in the following figure.

Figure 8 – SE System and Supply Points



# Independent Systems

NMGC serves several areas that are not connected to the larger Northeast and Southeast systems. They are typically served by an NMGC owned transmission pipeline supplied from an interstate pipeline. These Systems total approximately 16% of the total customer base served by NMGC.

## ***Clovis Area Transmission System***

This independent transmission system is made up of approximately 50 miles of 4 through 10-inch diameter pipe and serves Clovis, Portales, and Tucumcari as well as nearby communities. This system is supplied gas through direct interconnects with both TW and EPNG interstate pipelines.

## ***Belen Area Transmission System***

This independent transmission system is 13.8 miles of 8 and 12-inch diameter pipe and serves Belen and Los Lunas, and nearby communities. This system is supplied through direct interconnects with both TW and EPNG interstate pipelines.

## ***Alamogordo Area Transmission System***

This independent transmission system is primarily comprised of two parallel pipelines each 68 miles in length and contains both 4 and 6-inch diameter pipe to serve Alamogordo, Tularosa, Chaparral and White Sands, as well as Holloman Air Force Base. This system is served through a direct interconnect with EPNG.

## ***Truth or Consequences (T or C) Area Transmission System***

This independent transmission system is approximately 41 miles of 4 and 8-inch pipe and serves T or C, Elephant Butte, the Ft. Sill Apache Nation, and nearby communities. This system is served through a direct interconnect with EPNG.

## ***Anthony Area Transmission System***

This independent transmission system is 24 miles of 6 to 12-inch diameter pipe and serves Sunland Park and Santa Teresa. This area is also comprised of small distribution systems that serve Anthony, La Union and other smaller nearby communities in the area. Each system is served through a direct interconnect with EPNG.

## ***Silver City Area***

The Silver City area is characterized by small distribution systems in the southwest corner of the state that serve Silver City, Bayard, and portions of Deming and Lordsburg, as well as other communities in the area. Each system is served through direct interconnects with EPNG.

## ***Chama Area***

This independent transmission system is comprised of approximately 40 miles of 4 and 6-inch diameter pipe which serves the Jicarilla Apache Nation and the communities of Chama, Dulce, and Lumberton. This system is supplied by natural gas production near Dulce.

## ***Clayton Area***

This independent system is comprised of small distribution systems that feed Clayton and nearby communities in the northeast part of the state. The distribution systems are supplied by direct interconnects with West Texas Gas.



# CURRENT LOAD FORECAST

NMGC designs the natural gas transmission systems’ capacity to operate and provide service to meet design day criteria. A design day is the highest flow volume that gas operations must accommodate within a single gas day. Most of the gas on the NMGC system is used for heating purposes, which means more gas is consumed as temperatures decrease. The Heating Degree Day (“HDD”) is an index that is approximately proportional to the space heating load. It is defined as the difference between 65°F and the average of the high and low temperatures for the day and is widely used to correlate heat load with temperature. NMGC uses for its planning a refinement of the HDD which includes the effect of wind on space heating requirements, which is termed a Wind-Adjusted Heating Degree Day (“HDDW”).

In November 2023, NMGC contracted Marquette Energy Analytics (“MEA”) to complete a Design Day Study for the Northwest, Southeast, and Remote systems. MEA completed the following analysis for NMGC:

- Calculated the expected demand for conditions with an expected return frequency of once every 30 years, once in every five years and once in every year
- Calculated the demand expected under these conditions for the prior heating season, and estimated the growth of the demand for the next 10 heating seasons
- Calculated a confidence interval around the estimated demand

To calculate this demand, MEA uses weather data and historical demand and applies this data to design day conditions. This data is then adjusted to match current NMGC customer base characteristics to estimate the total design day for each system. Appendix C provides additional detail with respect to the modeling methodology. The design day forecast results for load centers are evaluated and adjusted by the Company to incorporate confidence intervals, impacts due to changes to system configuration, and known increases or decreases to system measurements and loads affecting those area forecasts. The final design day load forecasts for the major system areas include the addition of non-heat sensitive demand, which is comprised of large industrial and commercial customers.

Over the five-year period between December 2017 and December 2022 used for NMGC’s most recent sales forecast, the number of customer meters served by NMGC increased from 524,553 to 545,185, an average increase of approximately 4,126 meters per year. The increased meter counts are distributed between sales and transportation customers, primarily across the residential and small general service customer classes. The Company is forecasting customer growth through the IRP planning period, reaching approximately 593,000 by the end of the 2033/2034 heating season.

**Table 2 – NMGC Meter Counts 2017-2022**

| <b>Customer Meters December 2017 - December 2022</b> |                 |                 |                           |                            |
|--|-----------------|-----------------|---------------------------|----------------------------|
| <b>Area</b>  | <b>Dec 2017</b> | <b>Dec 2022</b> | <b>Meter Count Change</b> | <b>Avg Change Per Year</b> |
| Northwest  | 410,649         | 428,243         | 17,594                    | 3,519                      |
| Southeast  | 32,911          | 32,328          | -583                      | -117                       |
| Remote   | 80,993          | 84,614          | 3,621                     | 724                        |
| <b>Total</b>   | <b>524,553</b>  | <b>545,185</b>  | <b>20,632</b>             | <b>4,126</b>               |

Below are summary tables of current and projected design day load forecasts and HDDWs for NMGC’s systems over the 10-year planning period. Overall, the total design day loads for heat sensitive demand

are expected to increase by approximately 2% between the 2024-2025 and 2033-2034 Heating Seasons, primarily due to increased customer counts. Some load center forecasts indicate a reduction in design day loads associated with reduced customer counts or due to reduced system load center measurements in recent years. Total design day load is projected to decrease by the end of the 10-year planning period due to forecasted reduction in natural gas fired electric generation<sup>2</sup>.

**Table 3 - Design Day Forecast**

| <b>Northwest System Design Day Loads</b> |                                      |                  |                               |
|--|--------------------------------------|------------------|-------------------------------|
| <b>Load Center</b>                       | <b>Design Day Forecast (MMBtu/d)</b> |                  | <b>Design Day Temperature</b> |
|  | <b>2024-2025</b>                     | <b>2033-2034</b> | <b>HDDW</b>                   |
| Albuquerque                              | 413,834                              | 422,061          | 68                            |
| Santa Fe                                 | 78,721                               | 78,202           | 70                            |
| Espanola                                 | 12,487                               | 13,333           | 70                            |
| Taos                                     | 13,428                               | 13,901           | 73                            |
| Los Alamos                               | 17,462                               | 17,042           | 70                            |
| Farmington                               | 48,067                               | 51,711           | 71                            |
| Gallup Grants                            | 30,857                               | 29,273           | 71                            |
| Non-Heat Sensitive Demand                | 98,000                               | 55,000           |                               |
| <b>NW Area Total</b>                     | <b>712,857</b>                       | <b>680,523</b>   |                               |

| <b>Southeast System Design Day Loads</b> |                                      |                  |                               |
|--|--------------------------------------|------------------|-------------------------------|
| <b>Load Center</b>                       | <b>Design Day Forecast (MMBtu/d)</b> |                  | <b>Design Day Temperature</b> |
|  | <b>2024-2025</b>                     | <b>2033-2034</b> | <b>HDDW</b>                   |
| Roswell                                  | 19,436                               | 18,943           | 63                            |
| Artesia                                  | 7,105                                | 7,199            | 62                            |
| Carlsbad                                 | 11,550                               | 12,654           | 61                            |
| Eunice Lovington                         | 7,535                                | 7,809            | 61                            |
| Non-Heat Sensitive Demand                | 75,000                               | 75,000           |                               |
| <b>SE Area Total</b>                     | <b>120,625</b>                       | <b>121,605</b>   |                               |

| <b>Remote System Design Day Loads</b> |                                      |                  |                               |
|---------------------------------------|--------------------------------------|------------------|-------------------------------|
| <b>Load Center</b>                    | <b>Design Day Forecast (MMBtu/d)</b> |                  | <b>Design Day Temperature</b> |
|                                       | <b>2024-2025</b>                     | <b>2033-2034</b> | <b>HDDW</b>                   |
| Belen                                 | 29,081                               | 30,228           | 70                            |
| Clovis                                | 24,228                               | 23,735           | 68                            |
| Alamogordo                            | 21,625                               | 22,479           | 56                            |
| Anthony                               | 11,087                               | 12,935           | 54                            |
| Silver City                           | 9,049                                | 8,856            | 55                            |
| Truth or Consequences                 | 5,199                                | 5,769            | 56                            |
| Clayton                               | 2,080                                | 3,185            | 69                            |
| Chama                                 | 2,015                                | 2,063            | 76                            |
| <b>Remote Area Total</b>              | <b>104,364</b>                       | <b>109,251</b>   |                               |

<sup>2</sup> The Non-Heat Sensitive Demand reduction for the Northwest Load Center between the 2024/2025 Heating Season and the 2033/2034 Heating Season is associated with the retirement of the PNM Reeves generating station identified in the December 2023 Integrated Resource Plan filed by Public Service Company of New Mexico (PNM) in case NMPRC Case No. 23-00409-UT.

# GAS SUPPLY SOURCES & STRATEGY

## Gas Supply

NMGC's gas supply strategy consists of diversifying supplies between supply basins, using multiple suppliers and differing contract types, thereby creating transportation diversity, and through contracts for gas storage. Sourcing supplies from multiple supply basins provides alternatives in the event a supply basin underperforms due to production or processing reductions. Supply disruptions can be caused by winter storms, electrical outages and technical or mechanical issues. Freezing weather can cause operational difficulties in gas wells, production facilities, and interstate pipelines connected to the NMGC system. Electrical failures can shut down production and processing plants. Once a processing plant goes offline, it may take days to resume full operations. During extreme weather events, it is possible for these basins to experience production reductions of 40% to 50%. The loss of large amounts of gas supply during periods of high demand creates supply challenges for NMGC. By having multiple sources and supply contract options, NMGC increases its flexibility in the way it sources gas and supplies its systems. Gas purchased in advance of need and placed in storage provides a source of firm gas that can be used for short-term peak demand needs. A description of the existing portfolio of resources for 2023-2024 winter heating season is included in Appendix D. The Company anticipates annual supply resource needs to be comparable to the overall levels identified in this summary.

## Gas Basin Diversity

NMGC primarily contracts for supplies from the San Juan and Permian Basins and augments its portfolio with supplies sourced from the Piceance and Green River basins to allow for supply diversity and flexibility in sourcing. Should one supply basin become constrained due to regional weather conditions or other production issues, supplies can be increased from other basins. NMGC began sourcing gas from the Piceance basin in northwestern Colorado and the Green River basin in southwest Wyoming in 2015 to further diversify our gas supply.

## Contract Supplier and Transportation Diversity

To provide the most reliable gas supply, NMGC enters into several types of contracts with multiple suppliers. By having multiple supply sources and contract options, NMGC has greater flexibility in the event that supply from a geographical area is disrupted or a specific supplier fails to perform.

NMGC does not own or control natural gas production or processing. NMGC contracts with producers and marketers for supplies from market pooling points or directly from processing plant tailgates. NMGC diversifies its supply portfolio to guard against the effects of supplier default. These contracts are spread between the supply basins and receipt points on NMGC's delivery systems. NMGC also enters into contracts which specify supply exclusivity and replacement provisions, higher degrees of supply reliability, greater nomination options, and/or delivery point flexibility.

All of the natural gas consumed by NMGC customers must be transported from its source to its point of use. NMGC owns and operates approximately 1,500 miles of transmission pipelines, which serve a significant portion of its transportation needs. For the remainder, NMGC relies on contractual relationships with third-party pipelines. NMGC currently contracts for interstate transportation services from TW, EPNG, TransColorado ("TC"), OkTex, and West Texas Gas. There are two processing plants that

are connected to NMGC's northwest transmission system via the Blanco Hub<sup>3</sup>. These processing plants generally provide reliable gas supply to the NMGC system since they eliminate the need to contract for transportation services on interstate pipelines. The gas supply from these plants makes up a large percentage of the total gas on the NMGC system. Should a processing plant cease to produce gas for any reason, NMGC is forced to react to the loss of a large amount of gas supply on short notice. Multiple processing plants that previously supplied gas directly to NMGC's transmission system have shut down over the past decade, increasing the risk that production at the remaining facilities could have significant impact on NMGC's supply. To address this issue, NMGC has made system changes which allow for switching to alternate sources of supply. These include the addition of new interstate pipeline interconnects and modifications to the NMGC transmission system.

NMGC holds firm rights for adequate capacity to serve its customers but is mindful that future growth in customer demand may require additional capacity. NMGC works closely with the interstate pipelines to maximize the flexibility of the capacity the Company currently holds and to strategically add to its interstate transportation portfolio as opportunities arise.

With production increasing from the Permian basin along with increased demand from Arizona, California, and Mexico, NMGC expects interstate pipeline capacity to become constrained and more expensive over time. There are several segments of interstate pipeline in New Mexico that are already constrained during the winter months. To address these issues, NMGC has begun diversifying its interstate transportation beyond TW and EPNG to include TransColorado and supplies delivered to the TW La Plata receipt point via Northwest Pipeline, which provide access to the Piceance basin.

## Storage

NMGC currently contracts for storage services at the Keystone Gas Storage ("KGS") facility in Winkler County, Texas, which is connected to both TW and EPNG pipelines. Storage is used within the supply portfolio as a swing supply source during higher demand periods, a replacement supply during times of supply disruption, and to provide daily operational balancing. NMGC has injection rights of between 45,000 MMBtu/day and 65,000 MMBtu/day depending on the amount of gas in storage. During the peak winter months, NMGC has rights to withdraw up to 190,000 MMBtu/day. Interstate pipeline transportation is required to move gas from the storage facility to NMGC facilities.

NMGC's gas transmission and distribution pipelines also serve as a limited source of short-term gas storage. The term for this type of gas storage is linepack. During times of lower demand, pressure can be increased in the pipeline system, allowing the pipes to store gas for use during times of greater usage. This type of storage is typically effective to serve the higher morning and evening peak-hour loads. NMGC has established parameters for useable linepack on its NW system.

NMGC also contracts for mobile gas storage supplies in the form of Liquefied Natural Gas ("LNG") and/or Compressed Natural Gas trailers. These trailers are used to provide backup supply for isolated/remote systems during the heating season or to supply gas to isolated systems during maintenance or construction activities that would result in the system being disconnected from its supply source.

In order for gas storage to be the most effective to meet the needs of NMGC's customers, it should be as near as possible to major demand areas. If storage is located with direct access from and to NMGC's

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<sup>3</sup> Harvest Midstream Milagro & DCP Val Verde

system rather than an interstate pipeline, NMGC can dispatch gas more quickly and based on need rather than according to national gas scheduling cycles, which could delay storage-gas flow significantly. Currently, other than the Company’s lineup provided by having gas in its pipes, the only suitable gas storage available to NMGC is remote from NMGC’s demand areas and must be transported to NMGC’s system through interstate pipelines. Further, since the storage services are contracted from third-parties, those services are subject to contractual *force majeure* provisions at the discretion of the provider, which may reduce NMGC’s access to its gas in storage. Finally, the cost for these storage services is expected to increase in the future due to demand from other regional utilities, gas-fired generation and industrial natural gas users, and other activity in the Permian basin. NMGC’s current storage agreement expires in 2025, with an option to extend the agreement through 2027.

Since the NMPRC decision denying the Company’s LNG filing, the Company is initiating a renewed examination of alternatives open to the Company to enhance the reliability of storage gas to the Company. Alternatives being considered include alternative LNG Storage designs or locations, additional off-system underground storage in West Texas or New Mexico, additional demand-side opportunities, and options open to the Company to modify contracting opportunities, if any, that provide advantages to customers over the Company’s current gas-storage program.

## Natural Gas Supply Sources

NMGC ensures contracts for the upcoming winter heating season are competitively priced. NMGC develops and issues an annual request for proposal to solicit bids from potential suppliers specifying volumes and contract types needed at specific receipt points or supply pools.

Winter supply portfolio targets based on design day loads are developed to meet demand during a design day event. The following figure depicts NMGC’s overall gas supplies for the 2023-2024 winter season. These totals can change from year-to-year based on revisions to design day demand and the amount of gas that NMGC transportation customers are expected to provide.

Figure 9 – 2023-2024 Winter Season Supply Targets



NMGC is an open access pipeline which allows NMGC customers to choose their own gas provider and use NMGC pipelines to transport their supply. Historically, these customers have been the larger industrial and commercial end-users. On an annual basis, these customers provide approximately half of NMGC's approximately 90 Bcf of volumetric average throughput.

### *Declining San Juan Basin*

NMGC sources natural gas from several regional supply basins, but a greater percentage of gas is sourced from the San Juan and Permian basins due to their proximity.

NMGC currently contracts for approximately 60% of design day gas supply from the San Juan basin. The San Juan basin currently produces approximately 1.6 Bcf/d. Although the San Juan basin has seen steady decline for the past several years in production and investment, it still produces a significant amount of natural gas. The decline is being driven by economics which favor drilling and development of liquid rich plays and lower cost natural gas from shale and tight formations in other basins. Therefore, production companies have been restructuring drilling and production programs to areas with more favorable economics and where production assets can be consolidated at scale.

To address this issue, NMGC has contracted for transportation and supplies from the Piceance and Green River basins. In addition, to broaden access to existing San Juan basin production, NMGC has added a new high-pressure interconnect to the NW system. This interconnect allows NMGC to have more supply options in the El Paso San Juan Pool.

While production in the San Juan is decreasing, gas production in the Permian basin has been steadily increasing in recent years. Drilling activity in the Permian basin is primarily focused on crude oil with natural gas being a by-product, commonly referred to as associated gas. The market for hydrocarbon liquids has prompted more exploration and development in this area, and an increase in natural gas output has resulted.

Most of this new gas is expected to flow to the Gulf Coast for LNG exports although some will flow across New Mexico to markets in Arizona, California, and Mexico. As the San Juan basin declines and the Permian basin increases in natural gas output, NMGC may source more gas from the Permian basin, subject to the availability of interstate pipeline capacity. NMGC's Rio Puerco Mainline Looping Project, which was completed in 2016, has increased NMGC's receipt capacity from interstate pipelines that are transporting Permian basin gas supplies. NMGC's Malaga Interconnect, completed in the winter of 2020, also provides an additional source of Permian supply to the SE system.

## ANTICIPATED RESOURCES TO BE ADDED DURING PLANNING PERIOD

NMGC ensures the sizing of its transmission and distribution systems are sufficient in order to allow for safe, reliable service and to accommodate future growth. Projects which substantially increase system capacity are often large in size, capital intensive, and require long planning cycles. Existing pipeline infrastructure is continually evaluated regarding safety and operational suitability. Based on these evaluations, segments are enhanced, or their operational parameters revised to best serve the customer.

NMGC's pipelines and facilities across the state must traverse public, private, and Native American jurisdictions. Based on historical experience, right-of-way ("ROW") costs are one of the fastest growing costs of new gas facility construction. Access to facilities on public lands is also becoming increasingly difficult and conditioned with limitations that restrict necessary evaluation and maintenance activities and contribute to increased costs.

To address these issues, NMGC is proactively working with stakeholders to provide adequate timing for project planning and construction. In some cases, alternate pipeline routes and facility locations can be identified to avoid contentious and/or expensive ROW and to avoid access issues.

The following projects are currently in advanced planning or under construction.

### Artesia Mainline Replacement

The Artesia Mainline is comprised of three sections, all of which provide gas to customers in and around the City of Artesia. The first segment, constructed in 1967, is a six-inch coated steel pipeline in southeast New Mexico which needs to be replaced. The other two segments are eight-inch pipelines that were constructed after 1970 with more modern materials and have necessary records, and do not need to be replaced. The Artesia Six-Inch Mainline does not have traceable, verifiable, and complete pressure test and material records that are now required by federal regulations. This means that NMGC must perform pressure tests and material verification tests for the entire pipe. This pipeline will be tested to establish the MAOP at 720 psig increasing the capacity in the line.

Estimated Cost: \$5.7 Million

Estimated Completion: December 2025

### Truth or Consequences Mainline

The T or C Mainline is a four-inch distribution pipeline that was originally constructed in 1967. Because of the standards in place at the time of its construction, over 50 years ago, the T or C Mainline is constructed of four-inch coated steel pipe that incorporates low frequency electric resistance welded long seams, which are no longer used in the industry. Also, inspections have revealed that the pipe has a wall of 0.141 inches, requiring highly skilled welders to perform any repairs. Additionally, NMGC is experiencing higher demand primarily from the area's chile producers who use gas to dehydrate part of the chile crop in southern New Mexico. NMGC is replacing parts of the T or C Mainline in order to bring it up to modern pipeline standards. NMGC replaced 3.5 miles in 2023. In 2026, NMGC will replace approximately 3.1 miles of pipeline that run through the business district of Garfield, New Mexico. During the replacement, NMGC



will install a modern eight-inch pipe which will satisfy current demand and reinforce the system supply of gas from Garfield to Truth or Consequences.

Estimated Cost: \$6.9 Million

Estimated Completion: December 2026

## Distribution System Projects

NMGC continuously updates and enhances its distribution systems with projects that range from adding system capacity, installing secondary feeds, adding and/or rebuilding station infrastructure, and replacing pipe. These projects, which will continue through this planning period, ensure system reliability and system flexibility to meet customer demand today and in the future. Included in this category of projects are System Reinforcements, Legacy Replacements, and Town plant Specifics.

Estimated Cost: \$32 million

Estimated Completion Date: 2024-2029

## Lea County Compressor Station Compressor Replacement

The Lea County Compressor station is part of the Company's southeast transmission system and is located between NMGC and EPNG at the Lusk interconnect. A new compressor and cooling system will be installed to provide increased reliability and flexibility and to enable the company to fully utilize southeast transmission system capacity during peak periods.

Estimated Cost: \$7.0 million

Estimated Completion Date: 2027-2028

# RESOURCES AND INFRASTRUCTURE UNDER CONSIDERATION

## Albuquerque Mainline Reinforcement

The Albuquerque Mainline brings gas from northwest New Mexico to the Santa Fe Junction, a major distribution point of the NW system. In addition to gas from the San Juan basin, the Albuquerque mainline receives gas from pipelines reaching into northwestern Colorado, Utah, Wyoming, and Canada. Depending on the market dynamics of gas supply and transportation, NMGC may wish to reinforce the Albuquerque mainline system to enable it to transport more gas by adding capacity through pipeline replacements and hydrotesting.

## Taos Mainline Reinforcement

The Taos ML brings gas from Española to Questa and supplies the customers in all the communities in between. NMGC is weighing options for Maximum Allowable Operating Pressure “MAOP” reconfirmation, as required by Pipeline and Hazardous Materials Safety Administration “PHMSA”, for the Taos ML. PHMSA allows pipeline replacements or hydrotesting as reconfirmation methods. NMGC must comply with the regulation by 2034. Engineering analysis is under way to determine the best method to reinforce the system.

## Storage

As discussed in the Gas Supply Sources and Strategy section, the most effective storage for meeting the needs of NMGC’s customers would be storage connected to NMGC’s system as near as possible to major demand areas. As detailed in the Storage Options Report filed with Company’s response to the 2021 Winter Storm Uri event<sup>4</sup>, a variety of on system storage options are available including LNG, Propane Air Blending, New Underground Storage, and compressed natural gas (“CNG”) facilities. The storage option report identified on-system LNG as the best option across multiple evaluation criteria including proximity, reliability, and operability.

NMGC’s December 2022 application for a Certificate of Public Convenience and Necessity, to construct and operate an on-system LNG storage facility, was not approved by the NMPRC in Q1 2024. As a result, the Company continues to consider available resource and infrastructure options to enhance the reliability of storage gas. Resource and infrastructure alternatives being considered include alternative LNG Storage designs or locations, additional linepack opportunities, additional off-system underground storage in West Texas or New Mexico, and additional demand-side programs, if any, that provide advantages to customers over the Company’s current gas-storage program.

## Brazos Pipeline Reinforcement

Along with consideration of bulk LNG storage, the Company has considered the use of smaller permanent LNG or CNG facilities in certain areas to ensure supply reliability to isolated systems or installing a pipeline

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<sup>4</sup> NMPRC Case 21-00095-UT NMGC Exhibit TCB-2

to reinforce the supply. In particular, the Brazos line, which serves the community of Dulce within the Jicarilla Apache Nation along with the communities of Dulce and Lumberton in northern New Mexico, has access to a single source of supply from gas produced by the Jicarilla Apache Energy Corporation (“JAECO”) Blackhawk plant. If there are declines in the reliability or capacity of the Blackhawk supply to the Company’s X-41 receipt point or if the facility ceases to operate, permanent on-system storage along with pipeline extensions to connect the Brazos line to the Company’s Northwest system will be needed.

## Expansion to Unserved and Underserved Areas

Large areas of New Mexico do not have natural gas service due to distance from existing natural gas infrastructure and high costs to extend facilities. From 2016 through 2020, NMGC’s Infrastructure Expansion Program, funded by Emera Inc. under a commitment related to its acquisition of NMGC in 2016, enabled the expansion into 76 unserved communities (mostly neighborhoods or business areas) as well as 2,070 conversion rebates for customers switching to natural gas as a fuel source. In addition, NMGC continues to evaluate the feasibility of options to provide supply to communities that are not close to existing gas infrastructure.

## Demand Side Considerations

### Proactive And Targeted Customer Communications

The Company has enhanced internal procedures to assess the need to initiate proactive customer communications related to severe weather and market pricing events, with a focus on advising customers about the potential for higher gas prices. Previous communications and notifications have principally relied on the Company’s web site, social media, information included with printed or online bills, and conventional communications/advertising in print, radio and television. The Company has enhanced how it provides information through these traditional channels. In future, the Company will also use direct communication to customers via email, text messaging, and autodialing/pre-recorded messages. The Company will assess the costs, the effectiveness, and customer feedback regarding these kinds of communications in response to weather and anticipated gas pricing.

### Demand Response

Conceptually, Demand Response allows a utility to reduce system load during peak demand periods to address supply or operational constraints by way of a variety of mechanisms including fuel switching, voluntary curtailment, or voluntary load reduction. The potential reduction in system demand that may be achievable, and costs associated with the different programs are highly dependent on the amount of industrial load switching or curtailment available and the sophistication of the metering hardware and software. The Company continues to evaluate the potential of Demand Response programs and anticipates engaging industry consultants to assist in assessing the viability of Demand Response for NMGC and potentially performing a demand response study to identify and quantify the costs and opportunities for Demand Response as an augment to conventional supply resources.

### Energy Efficiency

The Company expects to continue to offer energy efficiency programs under the Efficient Use of Energy Act (“EUEA”) over the course of the IRP Planning Period. The current Energy Efficiency plan approved under NMPRC Case No. 22-00232-UT is for the period expiring in March 2025, with an updated plan covering 2026 through 2029 expected to be filed in the second half of 2025. The current plan is described

in more detail in the NMGC Energy Efficiency Program section of this IRP. From an overall system and supply planning standpoint, incremental annual energy efficiency program results are not anticipated to deliver a material offset to peak customer demand, in general due to a focus on achieving overall energy savings as the core program scope. The impact that energy efficiency program participation has on the design day forecast is reflected in the underlying load data that is used to develop that forecast.

## Greenhouse Gas Reduction

NMGC has conducted studies that inventory the Company's greenhouse gas ("GHG") impact on the state, as well as to help consider how to reduce these impacts. NMGC has completed several initiatives to reduce greenhouse gas emissions, including the repair of all Grade 3 leaks throughout its systems, the replacement of valve controllers with alternatives with substantially lower emissions (aka Wizard controllers), the installation of solar photo voltaic systems at company facilities, and the acquisition of lower emission fleet vehicles. The Company continues to evaluate strategies and opportunities to reduce its carbon dioxide and methane emissions (together "GHG Emissions") within the state of New Mexico.

### GHG Emissions Reduction Initiatives

#### *Advanced Mobile Leak Detection*

NMGC has begun using Advanced Mobile Leak Detection ("AMLD") units that are capable of sensing natural gas in parts per billion. AMLD systems allow the company to survey its system while moving faster and with detection equipment that is more sensitive than older equipment. This allows NMGC to find and repair leaks sooner than with conventional technology, reducing the amount of gas unintentionally released into atmosphere and enhancing public and customer safety.

#### *Mobile Flares*

NMGC has purchased mobile flaring units to reduce methane emissions from natural gas venting related to inspection, maintenance, and construction activities. The flaring equipment burns natural gas that would otherwise be vented directly to the atmosphere, significantly reducing GHG emissions associated with those activities. NMGC has 49 permitted locations where the flares can be used and three units companywide.

#### *Certified Low Emission Gas*

NMGC is reviewing emerging regulations, performance standards, and markets associated with gas produced at facilities that can provide measurable evidence that gas producers are reducing the quantity of natural gas emitted at production facilities. Certified gas generally involves the producers of natural gas using different monitoring and detection technology to demonstrate that production wells and associated systems are not emitting natural gas to atmosphere as part of their normal operations. The Company is working on identifying the availability and costs associated with certified low emission gas as well as the potential regulatory and compliance considerations that may accompany the use of certified low emission gas as a mechanism for reducing GHG emissions.

#### *Renewable Natural Gas*

NMGC reviewing emerging technologies, costs, and markets associated with gas produced through biochemical processes generally characterized as Renewable Natural Gas ("RNG"). RNG is typically derived from biogas produced from organic waste at landfills, farms, and wastewater treatment facilities via anaerobic digestion which is processed to be interchangeable with pipeline quality natural gas. NMGC is currently involved in the transportation of RNG produced at facilities connected to the Company's system.

The Company's current understanding is that the cost of RNG is substantially higher than conventional natural gas and developing RNG facilities requires credits associated with various state specific greenhouse gas and low carbon fuel standards and requirements in order to be economically viable. However, as technology matures or as legislative and regulatory requirements evolve, the Company may identify opportunities to integrate RNG into its gas supply portfolio or to become involved in developing RNG resources.

#### ***Natural Gas Heat Pump Pilot***

NMGC is engaged with manufacturers and installers piloting the installation of heat pumps fueled by natural gas as part of its Research and Development program. Natural Gas Heat pumps have the potential to offer significant reductions in overall energy consumption and associated GHG emissions.

#### ***Hydrogen Blending***

NMGC has tested the blending hydrogen with natural gas to help ascertain the effects of the blends on piping and other system components as well as the effects on typical residential or other end-user appliances and equipment. Blends of up to 20% hydrogen have been tested in a closed system that does not serve customers. No decision regarding the use of hydrogen blending on NMGC's customer distribution system have been made.

#### ***Compressor Electrification***

NMGC operates 18 compressors on its system with a total mechanical horsepower of approximately 21,000 HP. The majority of NMGC's compressor fleet is powered by natural gas. In the Company's most recent rate case filing (NMPRC case 23-00255-UT), the Company developed cost estimates for converting the Company's compression fleet to electric compressors. The Company does not believe electrification is currently an economic alternative, however, the Company will continue to evaluate options for emissions reductions from its compressor fleet over the ten-year IRP planning horizon.

# NMGC ENERGY EFFICIENCY PROGRAM

## Introduction

Pursuant to the Efficient Use of Energy Act (“EUEA”) and consistent with the NMPRC Energy Efficiency Rule 17.7.2 NMAC (“EE Rule”), the NMGC Energy Efficiency Program helps customers reduce their energy use and save money on their bills by providing incentives for implementing energy efficiency measures in their homes and businesses. The EUEA authorizes cost-effective public utility investments in energy efficiency and load management. The EUEA requires the NMPRC to direct utilities to evaluate and implement cost-effective energy efficiency programs. Since 2009, the Commission has engaged an independent evaluator and third-party contractor, through a competitive bidding process, to ensure compliance with the measurement and verification (“M&V”) reporting requirements of the EE Rule. EcoMetric has been as the independent third-party evaluator for the 2023 – 2025 period.

## Energy Efficiency Program Development Methodology

The EE Rule requires use of a cost-effectiveness threshold test for program design and implementation, as measured by the Utility Cost Test (“UCT”). The UCT is the ratio of the net-present-value of the benefits of a program to the costs that includes the utility’s costs to implement the program and the savings are based on the avoided gas costs. A benefit-cost ratio greater than 1.0 indicates that the program is cost-effective and is beneficial to the ratepayer. All programs proposed and delivered by NMGC have a UCT of 1.0 or above.

## Energy Efficiency Public Advisory Process

NMGC holds annual Energy Efficiency Public Advisory Group<sup>5</sup> meetings, to share information about achieved energy savings, pending programs, and potential new program. The group provided significant input prior to NMGC proposing its 2023-2025 NMGC energy efficiency programs.

## 2023 – 2025 Portfolio of Energy Efficiency Programs

Approved by the NMPRC in March 2023 (NMPRC Case No. 22-00232-UT), the current portfolio includes program applications for sales and transportation customers in the residential and commercial customer classes.

### Residential

- The Water Heating Program
- The Space Heating Program
- The New Homes Program
- The Income Qualified Program
- Native American Energy Efficiency Program
- The Multi-Family Program

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<sup>5</sup>Members of the Energy Efficiency Public Advisory Group included: New Mexico Department of Justice, New Mexico Public Regulation Commission Staff; New Mexico Department of Energy Minerals and Natural Resources; New Mexico Mortgage Finance Authority; the Southwest Energy Efficiency Project; ICF International; CLEARResult; Public Service Company of New Mexico; AARP; Raton Natural Gas; and Zia Natural Gas. Public Advisory Group meetings have also periodically included residential customers from the metro Albuquerque region.

- Manufactured Home Communities Program
- Home Energy Reports

Commercial

- The Commercial Efficient Buildings Program

The following table shows anticipated participation and net annual therm savings for each program. Therm savings have been adjusted from gross to net to account for the number of therms credited to the programs as reported by the independent evaluator.

**Table 4 – Anticipated Energy Efficiency Program Participation**

| <b>Summary of Anticipated Program Participation</b> |   |                      |
|---|---|----------------------|
| <b>Program</b>                                      | <b>2023-2025<br/>Estimated Average Annual<br/>Participation</b> | <b>Therm Savings</b> |
| Water Heating                                       | 16,171  | 228,464              |
| Space Heating                                       | 2,688   | 220,800              |
| New Homes   | 1,150   | 400,752              |
| Income Qualified                                    | 1,787   | 528,208              |
| Multi-Family  | 4,000   | 372,969              |
| Efficient Buildings                                 | 269   | 1,570,777            |
| Home Energy Reports                                 | 220,000   | 1,210,000            |
| All Programs  |   | 4,531,970            |

The 2023 – 2025 Energy Efficiency program annual budget is approximately \$15 million, approximately 4.2% of estimated annual revenues for the program period. Total program spending is capped at 5% of estimated customer bills under the EUEA<sup>6</sup>.

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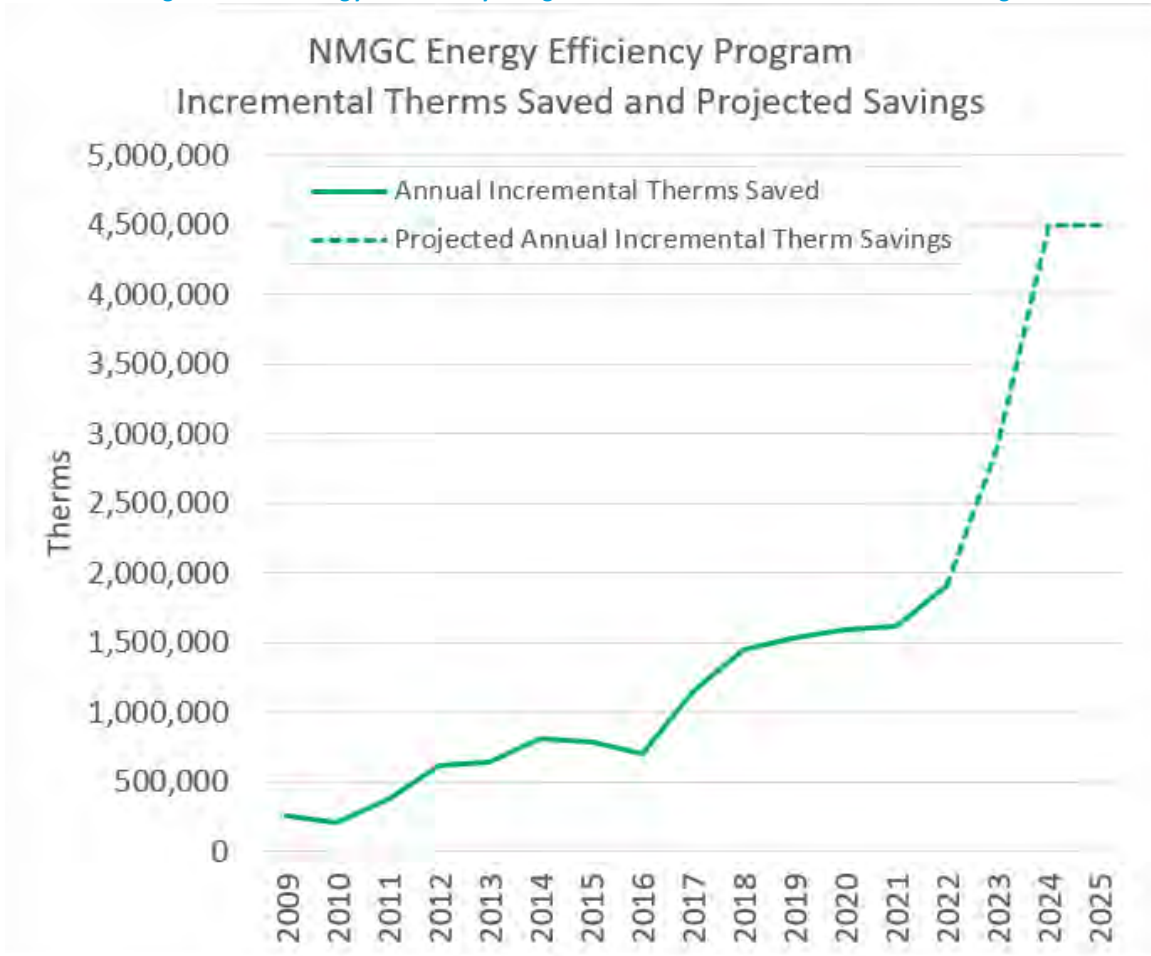
<sup>6</sup> NMSA Section 62-17-6(A)(2)



# Energy Efficiency Impact on Integrated Resource Plan

The following chart illustrates historical and planned savings from energy efficiency program implementation through 2025. The 2024 and 2025 incremental therm savings represent approximately 0.4% to 0.5% of the annual therm throughput.

Figure 10 – Energy Efficiency Program Incremental Annual Therm Savings



**APPENDIX A - PUBLIC ADVISORY MEETING  
PRESENTATION AND SUMMARIES**

# IRP Meeting Summaries

## ***First IRP Meeting – Albuquerque, NM***

During the dates of April 14 through May 12, 2023, NMGC included in all customers' bills a notice of information for the first IRP meeting. There was also a public notice published in the Albuquerque Journal and on social media channels, as well as on the IRP page on the NMGC web site.

June 23, 2023, at 10 a.m. - NM One Call Building 1021 Eubank Blvd. NE, Albuquerque, NM 87112

The meeting was held both in person and via Microsoft Teams. There were 16 people (in person and virtual) that attended the meeting. Members from NMPRC Staff (attended via Teams), Tiger Natural Gas, Presbyterian Health and Western Resource Advocates attended. Gerald Weseen welcomed attendees. Anita Hart presented a safety message. Kyle Brayton delivered the IRP presentation. There were comments and questions from a few attendees. Discussion included items on gas supply flow, the Design Day Study, advanced metering, and general LNG questions.

## ***Second IRP Meeting – Santa Fe, NM***

During the dates of November 13 through December 14, 2023, NMGC included in all customers' bills a notice of information for the second IRP meeting. Notice was also provided on social media channels, as well as on the IRP page on the NMGC web site.

December 14, 2023, at 2 p.m. – Teams meeting only.

This meeting was noticed as being in person at the Santa Fe Convention Center in addition to the virtual option. Since there was a high likelihood of winter weather conditions in Santa Fe on December 14, NMGC changed the meeting to Teams-only and sent a notice to participants via email. Signage about the change was also posted at the Convention Center.

There were 24 people who participated in the meeting. Members from NMPRC Staff, Tiger Natural Gas and Western Resource Advocates attended. Anita Hart welcomed participants, made introductions, and provided a safety message. Kyle Brayton delivered the IRP presentation. There were comments and questions from a few attendees and the discussion included items on low emissions gas, the Design Day Study, line extensions, conversion rebates and renewable natural gas.

## ***Third IRP Meeting – Farmington, NM***

During the dates of December 28, 2023, and January 25, 2024, NMGC included in all customers' bills a notice of information for the third IRP meeting. Notice was also provided on social media channels, as well as on the IRP page on the NMGC web site.

February 1, 2024, at 1 p.m. – Courtyard by Marriot Farmington 560 Scott Ave, Farmington, NM 87401

This meeting was held in person and via Teams. There were 17 attendees. All non-NMGC attendees attended virtually. Representatives from NMPRC Staff, Tiger Natural Gas, Southwest Energy Efficiency Project, and Western Resource Advocates attended. Anita Hart provided a welcome message, introductions, and the safety message. Kyle Brayton delivered the IRP presentation.

There were comments and questions from a few attendees and the discussion included items the Design Day Study, energy efficiency programs and efficient homes and system planning.

***Fourth IRP Meeting – Anthony, NM***

During the dates of January 26 through March 12, 2024, NMGC included in all customers' bills a notice of information for both the fourth and fifth IRP meetings. Notice was also provided on social media channels, as well as on the IRP page on the NMGC web site.

March 12, 2024, at 2 p.m. – NMGC's Anthony Office 350 Acosta Road, Anthony, NM 88201

This meeting was held in person and via Teams. Eight people attended, all virtually except for three NMGC representatives. Two members from NMPRC Staff attended. Anita Hart provided a welcome message, introductions, and a safety message. Kyle Brayton delivered the IRP presentation. There was one question in the meeting about NMGC gas system and gas supply.

***Fifth IRP Meeting – Roswell, NM***

During the dates of January 26 through March 12, 2024, NMGC included in all customers' bills a notice of information for both the fourth and fifth IRP meetings. Notice was also provided on social media channels, as well as on the IRP page on the NMGC web site.

March 13, 2024, at 2 p.m. – Fairfield Inn & Suites 1201 N Main Street, Roswell, NM 88021

This meeting was held in person and via Teams. Eight people attended the meeting, all virtually except three NMGC team members. Two members from NMPRC Staff attended. Anita Hart welcomed participants, made introductions, and provided a safety message. Kyle Brayton delivered the IRP presentation. There were comments and questions from attendees and including comments regarding sustainability tax credits renewable natural gas.

# New Mexico Gas Company 2024 Integrated Resource Plan

Public Advisory Meeting

Roswell

March 13, 2024



## Agenda

- Welcome and Introductions
- Safety Moment
- Overview of the IRP Process
- Gas System Overview and Planning Process
- Energy Efficiency
- Discussion



## Safety – Daylight Savings Tips

Although an hour does not seem like much difference, it can disrupt our schedules and affect our energy levels for a few days as our bodies adjust. In fact, losing just two hours of sleep is the equivalent of having three beers.

- Fatigue caused by insufficient sleep is proven to affect workplace and roadway safety. The day after we adjust our schedules to account for “spring forward” and “fall back” sees an increase in fatal traffic accidents and in workplace accidents.
- Plan ahead: Give yourself extra time to drive to and from work. Use extra caution while driving. Because the darker part of the day will be in the morning hours, know that other drivers will also be adjusting to the time change and may be more prone to mistakes. Defensive driving is key!
- Rest up: Go to bed earlier to get your usual amount of sleep so you can be well rested and alert.
- Defer the dangerous: Schedule particularly hazardous work later in the week (where possible) after employees have had more time to adjust their sleep schedules.
- Step up the safety: Take extra safety precautions and assign extra safety monitors on days following the switch to help avoid potential workplace injuries before they occur.

<https://sccaweb.org/resource/safety-tip-of-the-month-daylight-saving/>

3



## NMGC Gas Management

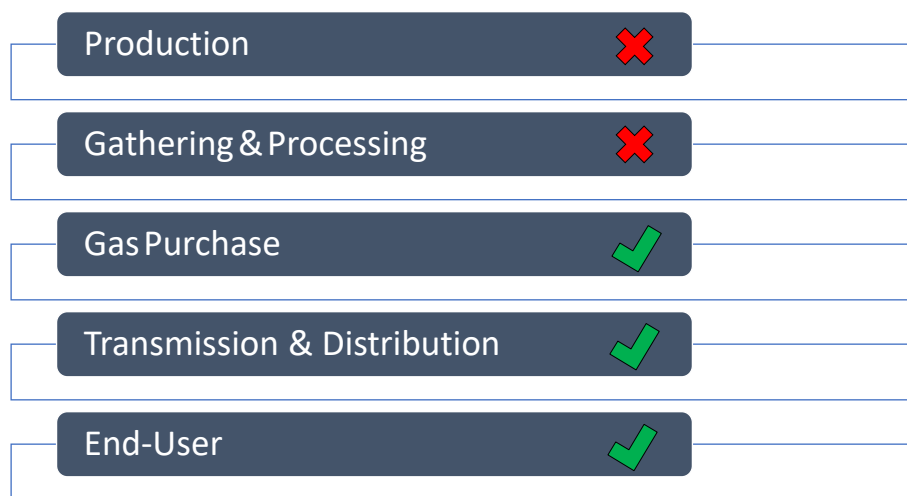
***Kyle Brayton***  
***Director, Gas Management***



# Integrated Resource Planning

- Required by NMPRC Rule - NMAC 17.7.4
- Filed with the NMPRC every four (4) years
- Identification of projects, plans, and programs to meet expected needs
- Includes a 10-year planning horizon
  - Gas supply and demand
  - System capacity
  - Energy efficiency

# Natural Gas Supply Chain



# Natural Gas Production Basins

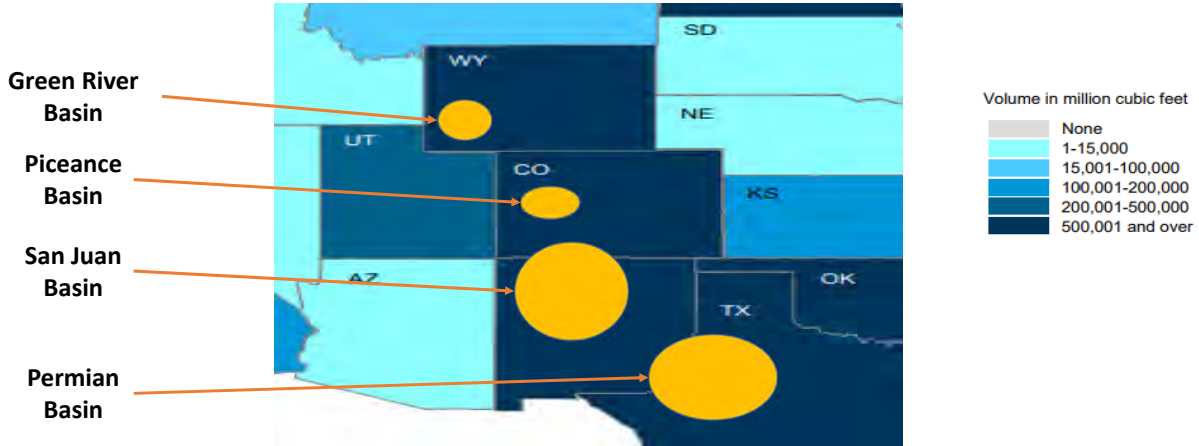
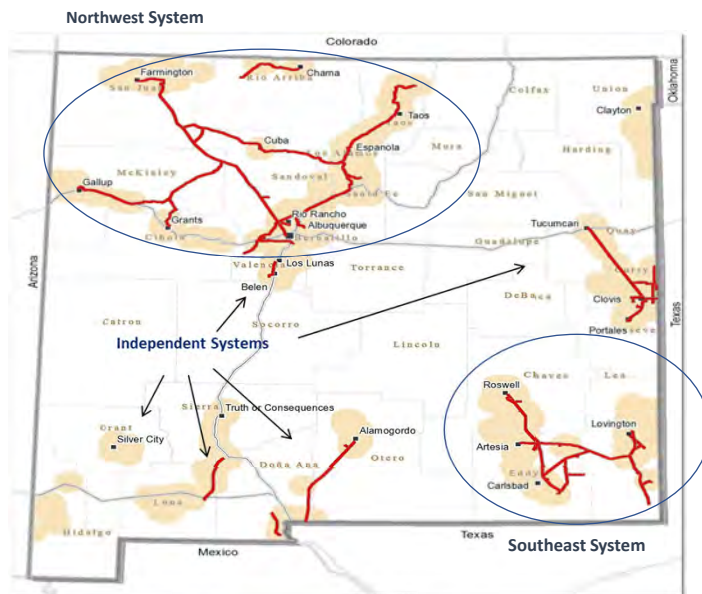


Figure 3. Marketed production of natural gas in the United States and the Gulf of Mexico, 2021  
U.S. Energy Information Administration

# NMGC System Overview

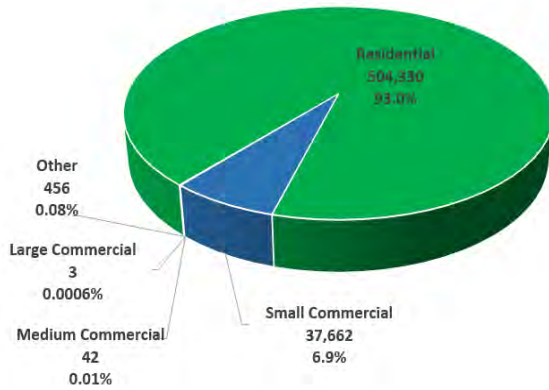


- Three separate systems
  - Northwest
  - Southeast
  - Independent
- ≈1,500 miles of transmission
- ≈11,000 miles distribution
- ≈540,000 meters in 26 counties
- ≈80 to 90 Bcf of annual throughput

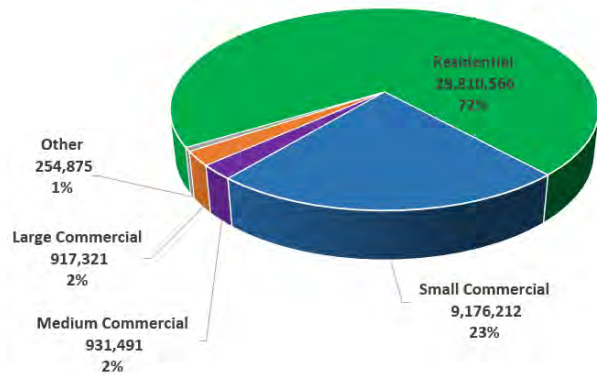


# NMGC Sales Customers

Sales Meters by Customer Type  
April 2023

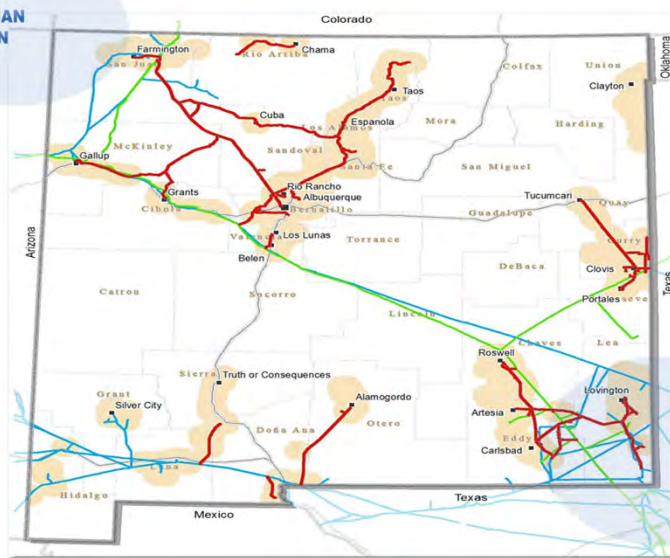


Sales Consumption (MMBtu) by Customer Type  
October 2022 - April 2023



# NMGC's Access to Gas Supply

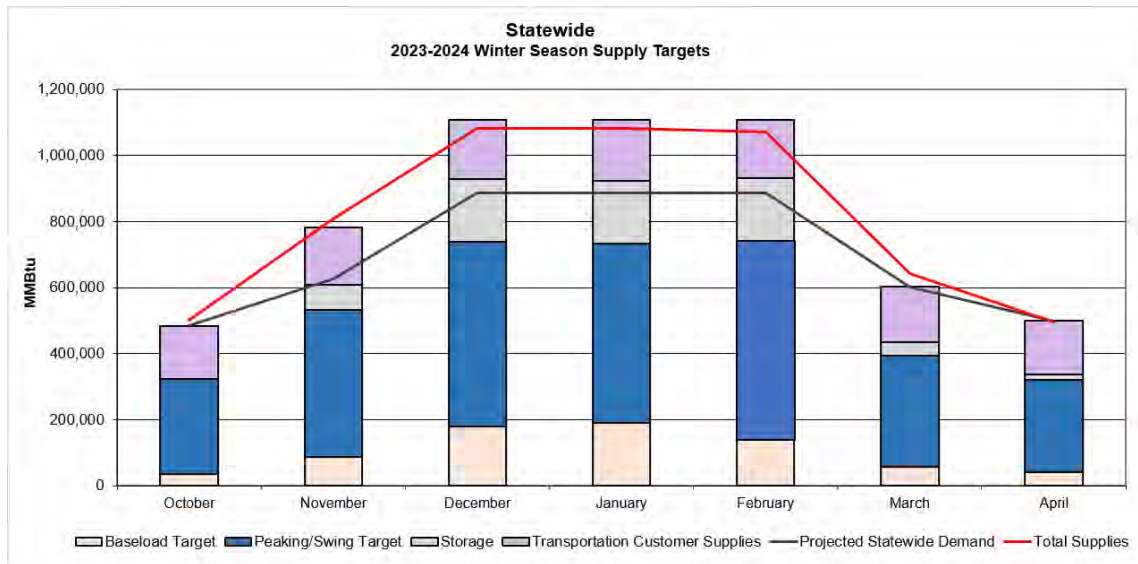
SAN JUAN  
BASIN



- NMGC
- Transwestern
- El Paso Natural Gas
- ▲ Storage

PERMIAN  
BASIN

# Supply Plan Targets



# Plan Considerations

- Load forecast and design day update
  - Evaluating current capacity and 10 year forecasted demand
  - Includes extreme weather events, customer growth, and energy efficiency program impacts
- Capacity and demand measures will be evaluated case-by-case
- Propose measures to ensure safe, reliable, and cost-effective gas service

## Supply-Side Resources, Issues, & Strategy

- Contract, supplier, and transportation diversification
- Cost competitive supply
- Gas basin diversity
- Storage and Liquefied Natural Gas (LNG)
- Renewable Natural Gas
- Certified Low Emission Gas

13

## 2020 IRP Projects and Enhancements

- Malaga Pipeline and Interconnect
- Santa Fe Mainline Looping
- Pecos Valley Mainline
- Redondo Compressor Upgrades
- T or C Mainline Looping

14

## Future Projects and Enhancements

- Albuquerque mainline looping and pressure uprates
- Expansion to unserved and underserved areas
- Ongoing distribution system improvements
- Pipeline Integrity Management Program
- Automated Meter Reading
- LNG production/storage

15



## NMGC Energy Efficiency

***Steve Casey***

***Manager, Energy Efficiency Program***



# NMGC Energy Efficiency Programs

The 2022 Energy Efficiency Program plan ended on March 31, 2023

- NMGC's 2022 Energy Efficiency program year began April 1, 2022, with a budget of \$7.8 million and a net annual savings goal of 1,509,440 therms.
- The final independent measurement and verification (M&V) evaluation report for Program Year 2022 was concluded on June 14, 2023.
- The M&V report determined the company operated high-quality energy efficiency programs that achieved significant energy savings and resulted in satisfied participants.
- The evaluation determined that NMGC's Energy Efficiency programs realized a net annual savings of 1,910,696 therms for the 2022 program year.



*The NMGC Energy Efficiency department celebrated its 11<sup>th</sup> win of the US Environmental Protection Agency and Department of Energy's ENERGY STAR Partner of the Year – Sustained Excellence award for superior leadership, innovation and commitment to sustainability through energy efficiency programs.*



17

# Energy Efficiency Plan

## **New Three-Year Plan (2023 -2025)**

- On March 22, 2023, the NMPRC approved NMGC's 2023 -2025 program plan substantially as filed. The 2023 Program Year began on April 1. The annual budget is \$15 million, with an expectation of annual net savings of 4,531,970 therms.
- NMGC continues to offer Water Heating, Space Heating, New Homes, Income Qualified, Multi-Family and Efficient Buildings programs to its residential and commercial customers. The Native American Energy Efficiency Program will continue as well as a mid-stream program.

## **Two New Programs:**

### **Manufactured Home Communities**

- NMGC expects to serve approximately 560 homes per year with an estimation of 166,700 therms to be saved annually once the program is fully operational come the 2024 program year. The first mobile home community receiving these services began on December 5, 2023.
- In New Mexico, there are approximately 64,000 manufactured homes that are 17.5% of all housing stock. In many counties, manufactured homes comprise one-third of the housing stock. There are 224 manufactured home communities within NMGC's service territory.
- According to the DOE, manufactured homes can consume 50% more energy than site-built homes of equal size and age.

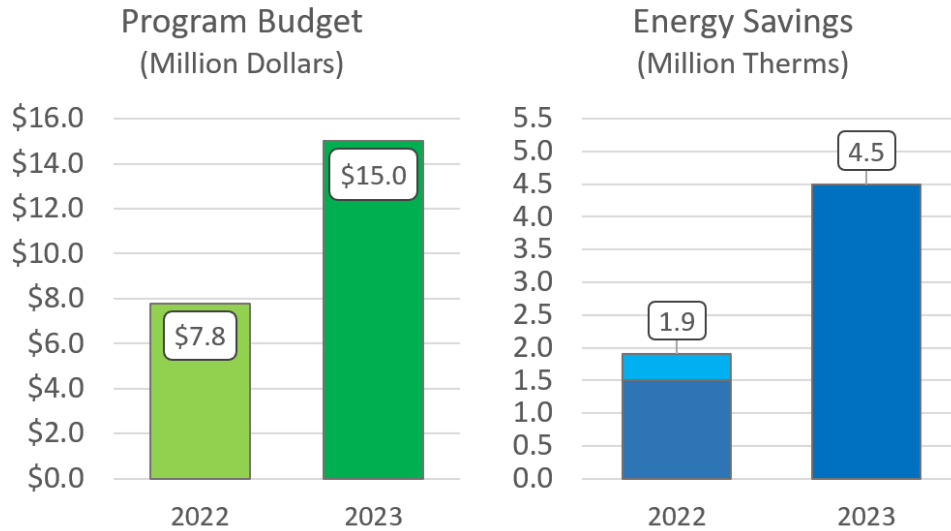
### **Home Energy Reports**

- Reports began being delivered in January 2024 reaching approximately 170,000 customers. Five reports per year will be provided educating customers on cost-effective behavioral savings and to increase engagement in saving energy and participation in other services and programs offered by NMGC.
- The Home Energy Reports are expected to increase to almost 250,000 customers by 2025 with estimated savings of 1,210,000 therms.

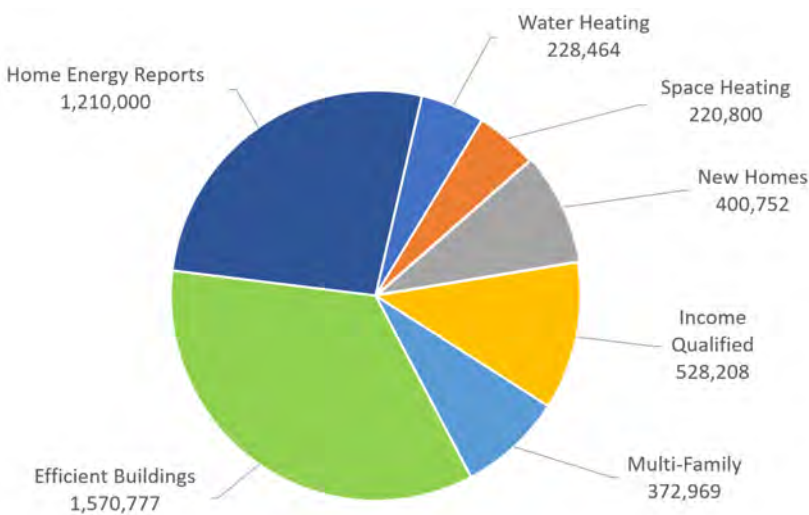


18

# NMGC Energy Efficiency Plan



# 2023 Energy Efficiency Programs and Estimated Savings

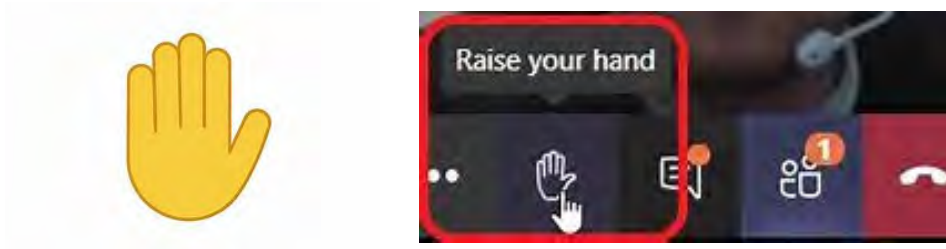


Estimated net savings from Energy Efficiency programs in 2023 is 4,531,970 therms



## Open Discussion

- Please raise your hand (in person or on Teams site)



21

## NMGCO's IRP Resources and Contact Information

Website: [https://www.nmgco.com/en/regulatory\\_filings](https://www.nmgco.com/en/regulatory_filings)

Email Address: [2024irp@nmgco.com](mailto:2024irp@nmgco.com)

Phone Number: 505-697-4426

22

## APPENDIX B - DELIVERY SYSTEM DETAILS

The Pipeline/Area Descriptions provided below are aggregations of multiple routes and MAOP districts for the purposes of providing summary description of the Transmission pipelines included NMGC's delivery system.

Table B-1 – Northwest System Details

| Pipeline/Area Description    | Length (miles) | Diameter (inches) | Maximum Allowable Operating Pressure (psig) |
|------------------------------|----------------|-------------------|---|
| Alameda ML                   | 14.5           | 16,20             | 466   |
| Albuquerque ML High Pressure | 189.2          | 20,24             | 600 - 1,003                                 |
| Albuquerque ML Low Pressure  | 74.9           | 20                | 550   |
| Atrisco ML                   | 23.1           | 4,12,20           | 400   |
| Blanco Hub ML                | 4.7            | 12                | 1,100                                       |
| Bluffview ML                 | 3.8            | 8                 | 1,220                                       |
| Coronado ML                  | 8.9            | 16                | 600   |
| Corto ML                     | 2.1            | 12                | 800   |
| Crouch Mesa ML               | 12.7           | 12                | 1,220                                       |
| Delta Persons (Cobisa)       | 0.6            | 10,12             | 500   |
| DOE Los Alamos ML            | 7.9            | 12                | 600 - 720                                   |
| DOE ML                       | 54.5           | 1,2,12            | 492 - 680                                   |
| Española ML                  | 6.9            | 6                 | 375   |
| Farmington ML                | 4.0            | 2,4,6,8,12        | 550   |
| Gallup-Grants ML             | 106.4          | 6,8               | 720   |
| Los Alamos MLs               | 20.2           | 6,8,12            | 492 - 600                                   |
| Loves ML                     | 2.9            | 6                 | 932   |
| Mesa Del Sol ML              | 3.0            | 10                | 493   |
| ODOE ML                      | 2.1            | 12                | 800   |
| Questa ML                    | 26.2           | 2,4,6,8           | 375   |
| Red River ML                 | 11.6           | 2,4,6             | 375   |
| Rio Puerco ML                | 70.8           | 16,24             | 913 - 1,009                                 |
| San Ysidro ML                | 4.9            | 12                | 960   |
| Santa Fe ML (Albuquerque)    | 32.2           | 4,12,16,20        | 600 - 875                                   |
| Santa Fe MLs                 | 77.3           | 4,12,20           | 600 - 875                                   |
| Santa Fe N ML                | 9.5            | 2,8               | 600   |
| Taos ML                      | 51.5           | 8,12              | 375   |
| Tennyson ML                  | 5.5            | 10                | 600   |
| West Mesa ML                 | 18.7           | 6,16,20           | 895 - 913                                   |



**Table B-2 – Southeast System Details**

| <b>Pipeline/Area Description</b> | <b>Length (miles)</b> | <b>Diameter (inches)</b> | <b>Maximum Allowable Operating Pressure (psig)</b> |
|----------------------------------|-----------------------|--------------------------|--|
| Amax ML                          | 54.1                  | 4,6,8,10                 | 333 - 600  |
| Artesia ML                       | 22.1                  | 4,6,8                    | 348 - 940  |
| Carlsbad ML                      | 25.7                  | 4,8                      | 590  |
| Eddy County ML                   | 24.3                  | 4,12                     | 870  |
| Eunice ML                        | 8.5                   | 8                        | 600  |
| Hobbs Bypass ML                  | 10.7                  | 8                        | 600  |
| Lea County ML                    | 34.5                  | 6,8,10                   | 600 - 1,120  |
| Lovington ML                     | 27.4                  | 2,4,6,8                  | 300 - 600  |
| Malaga ML                        | 10.7                  | 12                       | 1000   |
| Monument ML                      | 9.2                   | 8                        | 600  |
| Oil Center ML                    | 8.5                   | 6,8,10                   | 600  |
| Pecos Valley ML                  | 15.3                  | 8,10,12                  | 590  |
| Potash ML                        | 31.0                  | 4,6,8                    | 350  |
| Roswell ML                       | 54.1                  | 1,2,6,8,10               | 348 - 1,000  |

**Table B-3 – Remote System Details**

| <b>Pipeline/Area Description</b> | <b>Length (miles)</b> | <b>Diameter (inches)</b> | <b>Maximum Allowable Operating Pressure (psig)</b> |
|----------------------------------|-----------------------|--------------------------|--|
| Alamogordo                       | 140.0                 | 4,6                      | 720 - 1,185  |
| Anthony                          | 24.0                  | 6,12                     | 1,085  |
| Belen                            | 13.8                  | 8,12                     | 961  |
| Clovis                           | 49.9                  | 1,2,4,6,8,10             | 300  |
| T or C                           | 40.6                  | 4,6,8                    | 818  |
| Chama                            | 39.6                  | 4,6                      | 400  |

APPENDIX C - DESIGN DAY STUDY  
METHODOLOGY

## New Mexico Gas Co DDS 2023



## Report on the Design Day Study for Albuquerque 18-Dec-2023

|   |   |
|---|---|
| STATEMENT OF CONFIDENTIALITY                    | 2 |
| EXECUTIVE SUMMARY                               | 3 |
| CALCULATION OF DESIGN DAY CONDITIONS            | 4 |
| ACQUISITION AND VALIDATION OF LOAD DATA         | 6 |
| DETRENDING LOAD DATA                            | 6 |
| DESIGN DAY FORECASTING MODELS                   | 6 |
| WINTER SEVERITY ADJUSTMENT                      | 7 |
| SUMMARY OF DESIGN DAY DEMAND FOR PRIOR<br>YEARS | 7 |
| DESIGN DAY GROWTH ESTIMATE FOR 2023-2024        | 8 |
| DESIGN DAY GROWTH TEN-YEAR FORECAST             | 9 |
| DESIGN DAY FORECAST SUMMARY                     | 9 |

## Statement of confidentiality

This report, along with all accompanying appendices and documents, falls under the terms of the Marquette Energy Analytics Software License Agreement and its enclosed terms of mutual confidentiality executed between New Mexico Gas Co and Marquette Energy Analytics.

All original and derived data generated for this report remain confidential as required under clause six of the license agreement. Likewise, the techniques, tools, and processes employed by Marquette Energy Analytics to produce this report remain the sole property of Marquette Energy Analytics, as specified in clause eight of the license agreement.

## Executive summary

New Mexico Gas Co (NMGC) retained Marquette Energy Analytics to perform a Design Day study for their Albuquerque territory. The purpose of a Design Day study is to forecast the quantity of natural gas expected to be used during an extreme cold winter day, a “Design Day”.

The assumed weather conditions on a Design Day are the Design Day Conditions (DDC). DDCs are stated as a “1-in-N-year” condition, meaning that the condition is expected to be exceeded once every ‘N’ years. Marquette Energy Analytics presents the DDC as wind-adjusted temperature (TempW) and equivalently as a wind-adjusted heating degree day (HDDW).

NMGC elected to use 1-in-30-year DDC. Table 1 shows the corresponding TempW and HDDW for this condition. The DDC For Albuquerque is a TempW -2.8 or 67.8 HDDW. This means Marquette Energy Analytics expects one day that is at least as cold as 67.8 HDDW every 30 years.

*Table 1 – Design Day Conditions in both TempW and HDDW.*

### 1-in-30-year Design Day Condition

| Design Day Condition | TempW | HDDW |
|----------------------|-------|------|
| Albuquerque          | -2.8  | 67.8 |

Marquette Energy Analytics forecasted the Albuquerque Design Day demand as if the DDC were to occur during the upcoming 2023-2024 winter through the 2032-2033 winter. The Albuquerque Design Day demand forecast for 2023-2024 is 399,089 Dth.

*Table 2 – Design Day forecast by winter (Dth). Forecasts for winters out to the 2032-2033 winter are available in Albuquerque.xlsx.*

### Albuquerque Design Day forecast by winter

|                              | 2022-2023 | 2023-2024 | 2024-2025 | 2025-2026 | 2026-2027 |
|------------------------------|-----------|-----------|-----------|-----------|-----------|
| <b>Design Day Demand</b>     | 397,477   | 399,089   | 400,446   | 401,560   | 402,937   |
| <b>99% Confidence Demand</b> | 430,947   | 432,560   | 433,916   | 435,030   | 436,407   |

In Table 2, the Design Day demand forecast is presented in two ways – as a standard *Design Day Demand* and a *99% Confidence Demand*. The standard forecast is the expected level of demand if the DDC occurs. The 99% confidence forecast is the level of demand for which there is a 99% probability that actual demand will not exceed if the DDC occurs.

This report reviews the details of Marquette Energy Analytics’ Design Day estimation and forecasting methodology; including the collection of data, calculation of the DDC, detrending of historical demand data to account for customer growth and changes in customer composition and behavior, and the models used to calculate and forecast Design Day demand.



## Calculation of Design Day Conditions

The calculation of the Design Day Condition (DDC), that is, the wind-adjusted temperature (TempW) or wind-adjusted heating degree days (HDDW) associated with a 1-in-N-year condition, is a statistical analysis of historical weather between 02-Jan-1950 and 15-Oct-2023. This analysis was limited to historical days between November 1<sup>st</sup> and March 31<sup>st</sup>.

A 1-in-30-year Design Day Condition (DDC) is a weather event that is expected to occur once every 30 years. For a 1-in-30-year event, there is a 3.3 chance of it occurring in any given year, and an approximately 63.8 chance of it occurring at least once in a 30-year period. Equivalently, there is a 36.2 chance of a 1-in-30-year event NOT occurring in a 30-year period. It is also possible for more than one 1-in-30-year event to occur in a 30-year period.

## Weather data set

The weather data used in the analysis is sourced from WeatherBank/AccuWeather and the US National Oceanic and Atmospheric Administration (NOAA) back to 1950.

While the data received from the sources is hourly, the values used in this study are daily average temperatures aligned to the gas day. For the Albuquerque territory, this means that the weather is the daily average temperature between 8 AM and 8 AM each day.

## Weighted combination of weather stations

Most service territories do not have a single centrally located weather station that represents the weather of the entire territory. For this reason, Marquette Energy Analytics used data from an optimally weighted combination of weather stations to represent the service territory. The optimal weights for each weather station were calculated to minimize error when modeling natural gas demand. Specifically, Marquette Energy Analytics calculated the weights that minimize the Root Mean Squared Error (RMSE) of the regressions used to model demand.

An initial set of potential weather stations were selected based on geographic proximity to the service territory. An iterative optimization process was then used to select the optimal set of weights with the objective of minimizing the regression's RMSE.

The optimization process can select weather stations outside the geographic territory. Due to geographical barriers, imperfect sensors, and many other obstacles, no weather station is a perfect representation of an area. Using multiple weather stations often works as a better proxy to estimate weather in areas in between weather stations. The weighted combination of weather stations for Albuquerque are in Table 3 below.

*Table 3 – Weighted Combination of Weather Stations for Albuquerque.*

### Weighted Weather Station Combination

| Weather Station Name | Call Sign | Weight |
|----------------------|-----------|--------|
| Albuquerque, NM      | KABQ      | 0.846  |
| Farmington, NM       | KFMN      | 0.114  |
| Santa Fe, NM         | KSAF      | 0.040  |

## Wind adjusted heating degree days (HDDW)

Marquette Energy Analytics has found that wind significantly improves the accuracy of demand estimates and forecasts, especially at colder temperatures. For this reason, wind is included in all of Marquette Energy Analytics' models and forecasts.

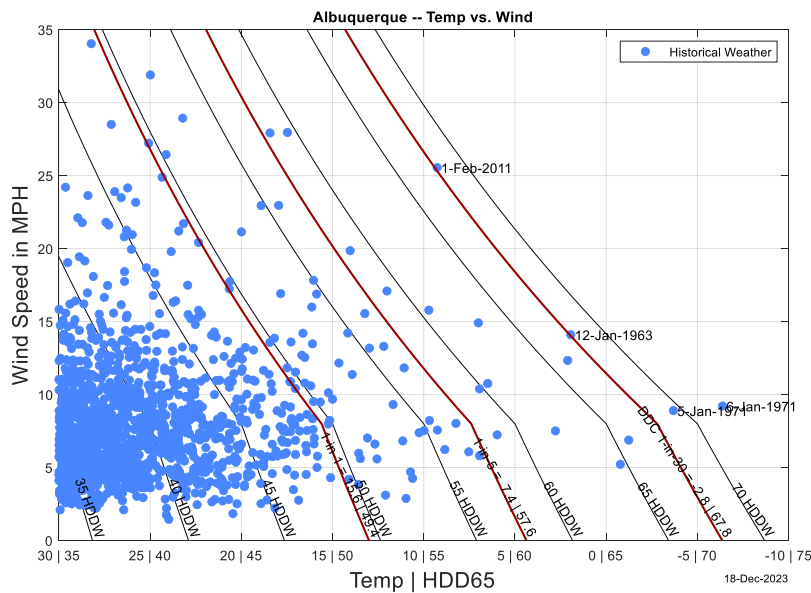
Similar to the wind chill effect people experience, buildings lose more heat on windier days. Wind-Adjusted Heating Degree Day (HDDW) approximates this effect and is expressed in Equation 1. This methodology for incorporating wind was developed internally by Marquette Energy Analytics and has been found to greatly reduce modeling error when compared to using HDD without wind.

*Equation 1 – Wind-Adjusted Heating Degree Days (HDDW)*

$$HDDW = \begin{cases} HDD \times \frac{72 + Wind}{80}, & Wind > 8 \\ HDD \times \frac{152 + Wind}{160}, & Wind \leq 8 \end{cases}$$

*Note: Equation is based on wind speed represented in mph and base temperature in °F*

Figure 1 illustrates the relationship between temperature, wind, and HDDW using historical weather for Albuquerque. Each dot represents a day of weather with temperature on the x-axis and wind on the y-axis. The red line in the plot represents all combinations of temperature and wind that produce the 1-in-30 DDC. Days to the right of or above the red line are events that are more extreme than the DDC.



*Figure 1: Temperature vs. Wind for Albuquerque.*

## Summary of Design Day Conditions

NMGC elected to use a 1-in-30-year DDC which is shown in Table 1. For Albuquerque The DDC is a TempW of -2.8 or 67.8 HDDW. Meaning that a wind-adjusted temperature of at least as cold as -2.8 is expected to occur at least once every 30 years.

Table 1 – Design Day Conditions

### 1-in-30 Year Design Day Condition

| Design Day Condition (°F) | TempW | HDDW |
|---------------------------|-------|------|
| Albuquerque               | -2.8  | 67.8 |

## Acquisition and validation of load data

The demand (referred to equivalently as load or sendout) data used in Marquette Energy Analytics’ analysis was provided by NMGC. Before any forecasting analysis began a thorough review of the data for possible errors and omissions was conducted. In consultation with NMGC corrections and adjustments were made as necessary. The load data used in this study was daily data aligned to the gas day from 31-Dec-2014 to 30-Apr-2023.

## Detrending load data

When forecasting rare events, such as a Design Day, it is important to use a long history of data because it’s more likely to include historical extreme cold events. Since customer base characteristics change over time due to many factors (growth in customer base, energy efficiency, changes in customer behavior, changes in customer class composition, etc.), using unadjusted older load data might cause a forecasting model to understate or overstate the Design Day demand if it were to occur today.

Therefore, older historical load data is “detrended” to ensure that forecasts based on the historical data reflect the current customer base characteristics. To do this, Marquette Energy Analytics created simple regression models to fit “windows” of historical data. The difference in the regression coefficients between different windows of data was used to estimate how much the customer characteristics, such as baseload and headload (use per HDDW), have changed. This information was then used to adjust older historical load data to act like current customer data. Data that has gone through his processes is called “detrended load”.

## Design Day forecasting models

At the core of Marquette Energy Analytics’ detrending and forecast analysis are five slightly different linear regression models of natural gas demand. In addition to weather variables, the models use different combinations of day-of-week and day-of-year cyclical coefficients as explanatory variables. The base model is a five-parameter linear regression model with these parameters:

- 1) Constant
- 2) HDDW65 – Wind-Adjusted HDD with a reference temperature of 65°F
- 3) HDDW55 – Wind-Adjusted HDD with a reference temperature of 55°F
- 4)  $\Delta$ MHDDW – Day-to-Day change in the average of HDDW55 and HDDW65
- 5) CDD65 – Cooling Degree Day (CDD) with a reference temperature of 65°F (CDD65 = MAX(0, Temp – 65)).

The five regression models are:

- 1) The base model trained on all days
- 2) The base model trained on just Monday through Thursday data
- 3) The base model plus day-of-week coefficients (13-parameters)
- 4) The base model with day-of-year coefficients (13-parameters)
- 5) The base model with both day-of-week and day-of-year coefficients (21-parameters).

These five models are used to detrend historical demand data as described in the previous section and then are used to create Design Day forecasts. For forecasting, three additional linear fits are calculated using the detrended load from Model #1 and #2. These three linear fits are:

- 1) A line fit through the 20% coldest days of Model #1 detrended data
- 2) A line fit through the 20% coldest Monday through Thursday of Model #1 detrended data
- 3) A line fit through the 20% coldest days of Model #2 detrended data

Each of the five component regression models, along with the three linear fit models is evaluated at the DDC, for a total of eight estimates. This technique of combining forecasts derived from different methods, often called “ensemble forecasting” has been shown to be more accurate than a singular forecast and is a well-accepted practice in the forecasting field. The mean value of a weighted gaussian mixture model ensemble of the eight estimates is used as the final Design Day estimate.

## Winter severity adjustment

Marquette Energy Analytics has found that in warmer climates demand per HDDW is larger during colder winters than it is during an average winter. The eight forecasts described in the previous section assume that the Design Day will occur in an average winter. This works well for most areas but for Albuquerque this methodology understates the Design Day demand when it occurs in a colder winter.

Since extreme cold events typically occur during colder winters, a winter severity adjustment must be added to the Design Day estimate. For Albuquerque, a winter severity adjustment of 1,164 Dth was applied to each Design Day estimate.

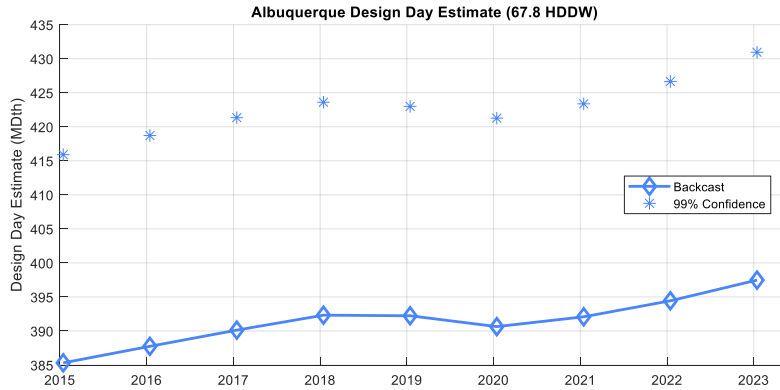
## Summary of Design Day demand for prior years

This ensemble forecast is used to estimate what the Design Day demand would have been, if the Design Day condition of 67.8 HDDW, had occurred in each of the last 5 winters. The ensemble Design Day estimate for 2022-2023 is 397,477 Dth. The other previous winters are shown in Table 4 and Graph 2 below.

Table 4: Design Day estimate for prior winters (Dth). Estimates for winters back to the 2014-2015 winter are available in Albuquerque.xlsx.

### Albuquerque prior winter Design Days

|                                | 2018-2019 | 2019-2020 | 2020-2021 | 2021-2022 | 2022-2023 |
|--------------------------------|-----------|-----------|-----------|-----------|-----------|
| <b>Design Day Demand</b>       | 392,233   | 390,640   | 392,082   | 394,431   | 397,477   |
| <b>99% Confidence Forecast</b> | 422,995   | 421,267   | 423,371   | 426,659   | 430,947   |



Graph 2: Design Day estimates for prior winters. Estimates for winters back to the 2014-2015 winter are available in Albuquerque.xlsx.

### Design Day growth estimate for 2023-2024

Growth to the next heating season is accomplished by evaluating recent historical trends in baseload and heatload and usage per customer. This is done by weighting the one-year, two-year, and five-year baseload and heatload trends. From this Marquette Energy Analytics calculated the Albuquerque Design Day demand forecast for 2023-2024 to be 399,089 Dth.

### 99% Confidence forecast

The Design Day demand forecast is presented in two ways – a standard Design Day forecast of the expected level of demand, and a 99% confidence forecast.

The standard forecast is the expected demand if a 1-in-30-year weather event occurs. Assuming a normal distribution, there is a 50% probability that demand will exceed the forecast, and accordingly, a 50% chance that demand will be below the forecast.

The 99% confidence forecast includes an upward adjustment of the Design Day forecast by 2.5 standard deviations of the gaussian mixture model ensemble, which produces a forecast with an approximately 99% confidence level. This means if a 1-in-30 weather event occurs (67.8 HDDW), there is a 99% probability that the demand will not exceed the 99% confidence forecast.

In this analysis, the Albuquerque 99% confidence forecast for 2023-2024 is 432,560 Dth, which is 33,470 Dth (8.42%) greater than the standard 2023-2024 Design Day forecast. The choice to use the standard Design Day forecast or the 99% confidence forecast depends on the level of reliability needed from the forecast.

## Design Day growth ten-year forecast

Marquette Energy Analytics also forecasted the Design Day growth out ten years. A long-term forecasting model was used to forecast changes in the baseload and heatload out ten years. This was accomplished with an ensemble of models that fit the historical data with linear and exponential trends of both the baseload and heatload demand.

Additionally, Marquette Energy Analytics incorporated economic components into the forecast. Specifically, forecasts of GDP from the Congressional Budget Office and commodity price forecasts derived from NYMEX Natural Gas futures were used.

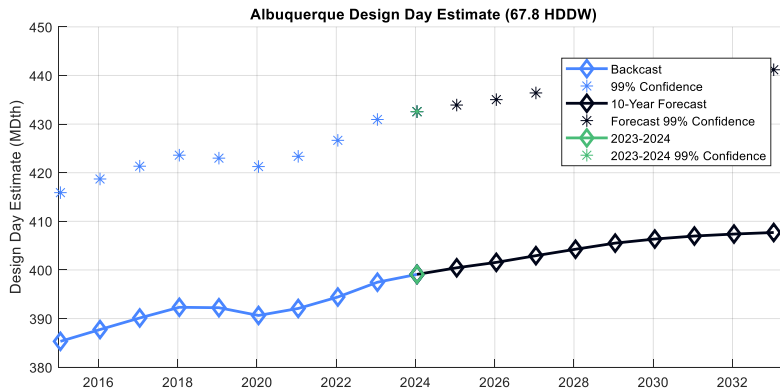
## Design Day forecast summary

Marquette Energy Analytics forecasted the Albuquerque Design Day demand as if the DDC were to occur during the upcoming 2023-2024 winter through the 2032-2033 winter. The Albuquerque Design Day demand forecast for 2023-2024 is 399,089 Dth.

Table 2 – Design Day forecast by winter (Dth). Forecasts for winters out to the 2032-2033 winter are available in Albuquerque.xlsx.

### Albuquerque Design Day forecast by winter

|                                | 2022-2023 | 2023-2024 | 2024-2025 | 2025-2026 | 2026-2027 |
|--------------------------------|-----------|-----------|-----------|-----------|-----------|
| <b>Design Day Demand (Dth)</b> | 397,477   | 399,089   | 400,446   | 401,560   | 402,937   |
| <b>99% Confidence Forecast</b> | 430,947   | 432,560   | 433,916   | 435,030   | 436,407   |



Graph 3: Design Day forecasts by winter.



# APPENDIX D - 2023-2024 WINTER SUPPLY PORTFOLIO SUPPLY SOURCES

Table D-1 – 2023-2024 Winter Supply Contracts

| Baseload Contracts                       |  | Contract # | Price | Location              | Oct-23                               | Nov-23         | Dec-23           | Jan-24           | Feb-24           | Mar-24         | Apr-24         |        |
|--|--|------------|-------|-----------------------|--------------------------------------|----------------|------------------|------------------|------------------|----------------|----------------|--------|
|  |  | 25337      |       | Milagro/IB Link       | 5,000                                | 5,000          | 5,000            | 5,000            | 5,000            | 5,000          | 5,000          |        |
|  |  | 25337      |       | Milagro               | 5,000                                | 15,000         | 20,000           | 20,000           | 20,000           | 15,000         | 10,000         |        |
|  |  | 25337      |       | Florida Plant         | 5,000                                | 5,000          | 15,000           | 15,000           | 15,000           | 5,000          | 5,000          |        |
|  |  | 25421      |       | TW WTX Pool           | -                                    | -              | -                | -                | -                | -              | -              |        |
|  |  | 25421      |       | EP Keystone Pool      | 4,000                                | -              | -                | -                | -                | -              | 4,000          |        |
|  |  | 25443      |       | Milagro/IB Link       | -                                    | -              | 15,000           | 15,000           | -                | -              | -              |        |
|  |  | 25444      |       | EP Blanco Pool        | -                                    | 8,000          | 9,000            | 9,000            | 8,000            | -              | -              |        |
|  |  | 25445      |       | EP Bondad St          | -                                    | 5,000          | 10,000           | 10,000           | 5,000            | -              | -              |        |
|  |  | 25430      |       | Malaga                | 5,000                                | 7,000          | 11,000           | 12,000           | 9,000            | 5,000          | 5,000          |        |
|  |  | 25450      |       | Milagro               | 10,000                               | 5,000          | 40,000           | 40,000           | 40,000           | -              | 10,000         |        |
|  |  | 25459      |       | Milagro               | -                                    | 20,000         | 20,000           | 20,000           | 20,000           | 20,000         | -              |        |
|  |  | 25451      |       | TW Blanco Pool        | -                                    | -              | 9,000            | 19,000           | -                | -              | -              |        |
|  |  | 25425      |       | TW Blanco Pool        | -                                    | 2,000          | 5,000            | 5,000            | 2,000            | 2,000          | -              |        |
|  |  | 25424      |       | EP Bondad St          | -                                    | 5,000          | 5,000            | 5,000            | 5,000            | -              | -              |        |
|  |  | 25423      |       | EP Blanco Pool        | -                                    | -              | -                | -                | -                | -              | -              |        |
|  |  | 25427      |       | EP Blanco Pool        | 1,000                                | 5,000          | 5,000            | 5,000            | 5,000            | 2,000          | 1,000          |        |
|  |  | 25426      |       | EP Keystone Pool      | -                                    | 6,000          | 10,000           | 10,000           | 6,000            | 4,000          | -              |        |
| <b>Total Baseload Contracted Volumes</b> |  |            |       |                       | <b>35,000</b>                        | <b>88,000</b>  | <b>179,000</b>   | <b>190,000</b>   | <b>140,000</b>   | <b>58,000</b>  | <b>40,000</b>  |        |
|  |  |            |       |                       | Northwest                            | 25,000         | 65,000           | 150,000          | 155,000          | 105,000        | 40,000         | 25,000 |
|  |  |            |       |                       | Southeast                            | 4,000          | 7,000            | 11,000           | 12,000           | 9,000          | 5,000          | 4,000  |
| <i>Baseload Recommendations</i>          |  |            |       |                       |                                      |                |                  |                  |                  |                |                |        |
|  |  |            |       |                       | El Paso Blanco Independent Systems   | 1,000          | 3,000            | 4,000            | 4,000            | 3,000          | 2,000          | 1,000  |
|  |  |            |       |                       | El Paso Keystone Independent Systems | 4,000          | 6,000            | 10,000           | 10,000           | 6,000          | 4,000          | 4,000  |
|  |  |            |       |                       | Transwestern Independent Systems     | 1,000          | 2,000            | 4,000            | 4,000            | 2,000          | 2,000          | 2,000  |
| <b>Total Baseload Recommendation</b>     |  |            |       |                       | <b>25,000</b>                        | <b>88,000</b>  | <b>179,000</b>   | <b>190,000</b>   | <b>140,000</b>   | <b>58,000</b>  | <b>41,000</b>  |        |
| <b>Overall Overage/(Deficit)</b>         |  |            |       |                       | <b>-</b>                             | <b>-</b>       | <b>-</b>         | <b>-</b>         | <b>-</b>         | <b>-</b>       | <b>(1,000)</b> |        |
| Peaking Contracts                        |  | Contract # | Price | Location              | Oct-23                               | Nov-23         | Dec-23           | Jan-24           | Feb-24           | Mar-24         | Apr-24         |        |
|  |  | 25338      |       | TW/EP/SJ              | 20,000                               | 20,000         | 20,000           | 20,000           | 20,000           | 20,000         | 20,000         |        |
|  |  | 25433      |       | IB Link/Milagro       | 40,000                               | 40,000         | 40,000           | 35,000           | 40,000           | 40,000         | 40,000         |        |
|  |  | 25434      |       | TWSJ                  | -                                    | 10,000         | 20,000           | 20,000           | 20,000           | -              | -              |        |
|  |  | 25435      |       | EPSJ Pool             | -                                    | 20,000         | 20,000           | 20,000           | 20,000           | -              | -              |        |
|  |  | 25421      |       | EP Keystone           | 34,628                               | 77,915         | 77,690           | 78,431           | 77,647           | 77,869         | 34,628         |        |
|  |  | 25421      |       | TW WTX                | 60,000                               | 120,000        | 195,000          | 195,000          | 195,000          | 95,000         | 50,000         |        |
|  |  | 25422      |       | TW/EP/SJ              | 25,000                               | 25,000         | 25,000           | 25,000           | 25,000           | 25,000         | 25,000         |        |
|  |  | 25454      |       | TWSJ Pool             | -                                    | 30,000         | 30,000           | 30,000           | 30,000           | 30,000         | -              |        |
|  |  | 25458      |       | EPSJ Pool             | 10,000                               | 10,000         | 10,000           | 10,000           | 10,000           | 10,000         | 10,000         |        |
|  |  | 25429      |       | EPSJ Pool             | -                                    | 5,000          | 5,000            | 5,000            | 5,000            | -              | -              |        |
|  |  | 25428      |       | Bondad St             | 5,000                                | 5,000          | 5,000            | 5,000            | 5,000            | 5,000          | 5,000          |        |
|  |  | 25439      |       | Bondad St             | 5,000                                | 5,000          | 5,000            | 5,000            | 5,000            | 5,000          | 5,000          |        |
|  |  | 25431      |       | La Plata              | -                                    | -              | 30,000           | 30,000           | 40,000           | -              | -              |        |
|  |  | 25436      |       | Bondad                | 8,000                                | 15,000         | -                | -                | 5,000            | 10,000         | 8,000          |        |
|  |  | 25448      |       | YWRH                  | -                                    | 40,000         | 40,000           | 40,000           | 40,000           | 40,000         | -              |        |
|  |  | 25461      |       | TW Rio                | 30,000                               | -              | 18,000           | 6,000            | 28,000           | -              | 30,000         |        |
|  |  | 25432      |       | Artesia               | -                                    | -              | 10,000           | 10,000           | 10,000           | -              | -              |        |
|  |  | 25446      |       | EPSJ Pool             | 5,000                                | 15,000         | 15,000           | 15,000           | 15,000           | 5,000          | 5,000          |        |
|  |  | 25447      |       | EPSJ Pool             | -                                    | 15,000         | 15,000           | 15,000           | 15,000           | -              | -              |        |
|  |  | 25440      |       | TWSJ Pool             | -                                    | 10,000         | 10,000           | 10,000           | 10,000           | -              | -              |        |
|  |  | 25441      |       | EP Rio                | -                                    | -              | 10,000           | 10,000           | 10,000           | -              | -              |        |
|  |  | 25442      |       | EPSJ Pool             | -                                    | 10,000         | 10,000           | 10,000           | 10,000           | -              | -              |        |
|  |  | 25438      |       | TWSJ/EP/SJ            | -                                    | 10,000         | 10,000           | 10,000           | 10,000           | -              | -              |        |
|  |  | 25455      |       | IB Link/Milagro       | 35,000                               | -              | -                | -                | -                | -              | 35,000         |        |
|  |  | 25456      |       | TWSJ/Milagro/IB link  | -                                    | -              | 10,000           | 10,000           | 10,000           | -              | -              |        |
|  |  | 25457      |       | TWSJ Pool             | -                                    | -              | 20,000           | 20,000           | 20,000           | -              | -              |        |
|  |  | 25452      |       | TWSJ Pool             | -                                    | 15,000         | 15,000           | 15,000           | 15,000           | 15,000         | -              |        |
|  |  | 25453      |       | EPSJ Pool             | -                                    | 10,000         | 15,000           | 15,000           | 15,000           | -              | -              |        |
|  |  | 25449      |       | Milagro/EP/SJ Pool    | 10,000                               | -              | 10,000           | 10,000           | 10,000           | -              | 10,000         |        |
|  |  | 25423      |       | EPSJ Pool             | 44,705                               | 68,166         | 68,166           | 68,166           | 68,166           | 68,166         | 44,705         |        |
|  |  | 25423      |       | EPSJ Pool             | 20,000                               | 20,000         | 20,000           | 20,000           | 20,000           | 20,000         | 20,000         |        |
| <b>Total Peaking Contracted Volumes</b>  |  |            |       |                       | <b>352,333</b>                       | <b>596,081</b> | <b>776,856</b>   | <b>762,597</b>   | <b>803,813</b>   | <b>466,035</b> | <b>342,333</b> |        |
| Natural Gas Storage                      |  | Contract # | Price | Location              | Oct-23                               | Nov-23         | Dec-23           | Jan-24           | Feb-24           | Mar-24         | Apr-24         |        |
|  |  | 29018      |       | TW WTX or EP Keystone | 160,000                              | 160,000        | 190,000          | 190,000          | 190,000          | 160,000        | 80,000         |        |
| <b>Total Storage</b>                     |  |            |       |                       | <b>160,000</b>                       | <b>160,000</b> | <b>190,000</b>   | <b>190,000</b>   | <b>190,000</b>   | <b>160,000</b> | <b>80,000</b>  |        |
| <b>TOTAL PEAK DAY CONTRACTED VOLUMES</b> |  |            |       |                       | <b>512,333</b>                       | <b>756,081</b> | <b>966,856</b>   | <b>952,597</b>   | <b>993,813</b>   | <b>626,035</b> | <b>422,333</b> |        |
| <b>TOTAL FIRM SUPPLIES</b>               |  |            |       |                       | <b>547,333</b>                       | <b>844,081</b> | <b>1,145,856</b> | <b>1,142,597</b> | <b>1,133,813</b> | <b>684,035</b> | <b>462,333</b> |        |