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February 27, 2026

Via Electronic Transmittal

Clerk of Council
Council of the City of New Orleans
1300 Perdido Street
Rm. 1E09
New Orleans, LA 70112

> **Re: Forecast of Delta New Orleans Gas Company, LLC's Design-day Peak Demand, filed pursuant to Council Resolution R-00-650**

Dear Clerk:

Please find enclosed the report *"Forecasting Peak Load for Delta New Orleans Gas Company, LLC"* and the associated model outputs included within the report (the "Report"), prepared by Delta Utilities Gas Supply on behalf of Delta New Orleans Gas Company, LLC ("DNO" or the "Company").

The Report is filed pursuant to Council of the City of New Orleans ("Council") Resolution No. R-00-650, which provides in part:

> ENO will develop and initiate a load forecasting process that uses a model for forecasting the Company's design-day peak demand. The Company will submit to the Council for review, not later than March 1, 2002 based upon then currently available data and every twenty-four (24) months thereafter. The Company's model(s) used for this purpose as well as all workpapers used in the determination of the design-day peak demand.[1]

DNO's current estimate is subject to change, and if more current information on customer growth causes a need to modify the existing peak design day in the next two winter seasons, these forecasts will be updated using the same version of the forecast model herewith filed with the Council.

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[1] Council Resolution No. R-00-650, Attachment "A," paragraph no. 3 (October 19, 2000). Resolution No. R-00-650 was made applicable to DNO by Council Resolution and Order No. R-24-791.

A current summary of the results of the Report is set forth below:

Total DNO Gas System:

Peak Design Month	January
Total Design Day peak demand (mcf)	161,811
NJ Customer design-day peak demand (mcf) (non-coincident)	(5,419)
Firm design-day demand (mcf)	156,392

DNO respectfully requests the Council accept this filing. If you have any questions concerning this filing, please do not hesitate to contact me.

Very truly yours,

Carrie R. Tournillon

CRT/

cc: All Council Members (by electronic email), Council Utilities Regulatory Office (by electronic mail), Council Advisors (by electronic mail)

Forecasting Peak Load for Delta New Orleans Gas Company, LLC

Maximum Daily Quantity (MDQ) – 2026

Prepared by Delta Utilities

February 27, 2026

I. Introduction

This report presents Delta New Orleans Gas Company, LLC's ("Delta Utilities") econometric and statistical forecast of daily natural gas requirements for a Design-day Peak Demand (Maximum Daily Quantity – MDQ) for its 2026 regulatory filing.

The forecast represents the Design-day peak demand, defined as the level of gas required under exceptional cold weather conditions. The purpose of this filing is to determine the quantity of natural gas required to meet firm load obligations under extreme winter conditions.

II. Executive Summary

Final 2026 Peak Day MDQ Determination:

Component	MCF/Day
Residential & Commercial (R&C) MDQ (Ensemble, 95% PI upper bound)	143,729
Non-Jurisdictional (NJ) + Large Municipal (LM) Historical Maximum	18,082
Total Peak Day MDQ	161,811
NJ Customer Non-coincident Peak Demand	(5,419)
Firm Design-day Demand	**156,392**

Design assumptions include a 1-in-30 Heating Degree Day (HDD) of 41, forecast HDD of 46, prior-day HDD of 41, wind speed of 18.3 mph, and application of the upper 95% prediction interval.

III. Methodology Overview

Delta Utilities developed an updated MDQ forecasting process for the 2026 filing that reflects both econometric best practice and American Gas Association (AGA) peak day forecasting guidance.

The process includes: (1) design weather determination using 40 years of historical weather data and extreme-value analysis for the 1-in-30 HDD, combined with use of the coldest historical day as the design-day HDD, (2) customer segmentation to isolate structurally distinct load behavior, (3) regression-based daily sendout modeling for Residential & Commercial customers, (4) cold-day subsample testing, (5) ensemble forecasting across superior models, and (6) application of a 95% prediction interval upper bound.

IV. Data Sources

The following datasets were used in the 2026 MDQ process:

• 40-year NOAA MSY daily weather data (1986–2025) for HDD65 construction and extreme value analysis.

• Residential & Commercial daily throughput dataset (winter days) used for econometric model estimation.

• Historical daily NJ and LM flow data for maximum observed peak estimation.

• Wind speed reference from prior MDQ filings (18.3 mph on the coldest day).

V. Design Weather Determination

Delta Utilities compiled 40 years (1986–2025) of NOAA MSY weather data to estimate extreme design conditions. Heating Degree Days (HDD65) were calculated for each day. Extreme cold-day conditions were estimated using a Block Maxima approach with a Generalized Extreme Value (GEV) distribution.

The 1-in-30 design day was estimated and rounded to 41 HDD. Delta Utilities adopts 41 HDD as the prior-day design condition for the MDQ forecast. Previous filings used 50 HDDs for design day conditions, prompting us to use the coldest day on record as our design day HDD rather than our 1-in-30 HDD calculation. The coldest day on record since 1982 is 46 HDD according to previous MDQ filings, we used this value as the design day HDD within our model. This day featured a wind speed of 18.3 mph, which was also included in our model.

VI. Customer Segmentation

Customers were segmented into Residential & Commercial (R&C), Non-Jurisdictional (NJ), and Large Municipal (LM) categories to reflect structural differences in usage patterns.

VII. Residential & Commercial Econometric Model Specification

R&C daily throughput was modeled using multiple regression with the dependent variable defined as daily MCF. The model specification includes contemporaneous weather effects, lag effects, and seasonal indicators.

Explanatory variables included:

• HDD (same day)

• HDDt-1 (lagged one day)

• Wind Speed

• MCF_lag1 (previous day's MCF)

• Day-of-week indicator variables (Sunday reference)

• Month indicator variables (January reference)

A nonlinear threshold variable HDDX was constructed as HDDX = max(0, HDD – base), where base was tested from 45 through 85. The base that produced the highest adjusted R^2 was retained in each model. This process resulted in HDDX bases of **54** for the full-sample model and **61** for the Top-30 cold-day model.

VIII. Model Stability Testing

Delta Utilities evaluated model stability by testing three estimation windows, each created by sequentially removing the oldest year of data while maintaining at least three full winter seasons (data begin November 2020). This produced windows beginning November 2020, November 2021, and November 2022. Each model was estimated using the same specification and compared on adjusted R^2 and standard error of regression. This approach ensures the MDQ forecast reflects a model that performs consistently across different historical periods and is not overly influenced by early-period data. The model using the full winter data set used data beginning 11/1/2020 because using all data yielded the highest R^2.

IX. Cold-Day Subsample Testing

To ensure model validity under extreme cold conditions, the R&C modeling process was repeated using only the top 30 coldest winter days within each estimation window. This ensures the estimated HDD response reflects behavior during MDQ-relevant conditions. The Top-30 cold-day model was constructed using the 30 highest-HDD days beginning 11/1/2021.

X. Model Selection Criteria

Models were ranked and selected based on adjusted R^2 and standard error of regression, statistical significance, and interpretability. The two best-performing models—one from the full winter dataset and one from the cold-day subsample—were selected for ensemble forecasting.

XI. Forecast Conditions

Forecasts were generated under design conditions consistent with the MDQ definition:

Input Variable	Value
HDD	46
HDDt-1	41
Wind Speed	18.3 mph
MCF_lag1	Long Run Value (LRV) (see Appendix C)

Month and Day variables were selected to maximize forecasted MDQ for each model. Because the regression includes lagged throughput (MCF_{t-1}), and because a design-day has no historical prior day, this value is replaced with the model-consistent Long Run Value (LRV).

XII. Forecast Uncertainty and Prediction Interval

For each selected model, the forecast standard error was used to compute the upper 95% prediction interval. This upper bound represents a conservative planning requirement consistent with MDQ filing objectives.

XIII. Ensemble Forecast Results (R&C)

The upper 95% prediction interval forecasts from the two selected models were averaged using an ensemble method. The resulting R&C MDQ is 143,729 MCF.

XIV. NJ and LM Peak Determination

NJ and LM loads were estimated separately using historical daily maximum observed flows over the most recent six-year period. The NJ and LM total of 18,082 MCF represents the non-coincidental sum of each segment's maximum observed winter throughput.

XV. Final 2026 Peak Day MDQ

Adding the NJ and LM peak to the R&C MDQ results in a total Peak Day Maximum Daily Quantity of 161,811 MCF.

XVI. Comparative Analysis vs. Prior Assumptions

To benchmark the new methodology against prior filings, the ensemble approach was evaluated under the weather assumptions (HDD=50, HDDt-1=45) included in the 2024 MDQ filing. Under these weather conditions, the current methodology would produce an MDQ estimate of 172,888 MCF.

XVII. Conclusion

Delta Utilities' 2026 MDQ filing reflects rigorous daily modeling, use of historical extreme-day weather conditions, customer segmentation, ensemble regression forecasting, and a 95% upper prediction interval consistent with the forecasting principles outlined in the AGA Statistics Load Forecast Methods Committee and broader industry practice. The recommended Peak Day MDQ is 161,811 MCF. This Peak Day MDQ includes the NJ customers volume of 5,419. Reducing the Peak Day MDQ by the NJ volume yields a Firm Design-day Demand of 156,392 MCF.

Appendix A – Final Model Outputs (Summary Tables)

This appendix provides summary tables for the two final R&C models used in the ensemble.

Table A-1. Final Full-Sample (All Data November 2020 Forward) R&C Model Summary

```
--- FINAL MODEL SUMMARY ---

                        OLS Regression Results
==============================================================================
Dep. Variable:                    MCF   R-squared:                       0.978
Model:                            OLS   Adj. R-squared:                  0.977
Method:                 Least Squares   F-statistic:                     2343.
Date:                Wed, 18 Feb 2026   Prob (F-statistic):               0.00
Time:                        11:11:28   Log-Likelihood:                 -7525.3
No. Observations:                 816   AIC:                         1.508e+04
Df Residuals:                     800   BIC:                         1.516e+04
Df Model:                          15
Covariance Type:            nonrobust
==============================================================================
                 coef    std err          t      P>|t|      [0.025      0.975]
------------------------------------------------------------------------------
const        9492.0535    650.915     14.583      0.000    8214.350    1.08e+04
HDD          1504.9220     25.653     58.664      0.000    1454.567    1555.277
HDDt1        -391.9730     51.803     -7.567      0.000    -493.659    -290.287
MCF_lag1        0.3644      0.025     14.366      0.000       0.315       0.414
wind          293.5032     26.448     11.097      0.000     241.587     345.419
Nov         -1585.0389    309.701     -5.118      0.000   -2192.961    -977.117
Dec          -790.2146    282.650     -2.796      0.005   -1345.038    -235.391
Feb          -264.5367    292.892     -0.903      0.367    -839.465     310.391
Mar         -1550.1271    313.279     -4.948      0.000   -2165.074    -935.180
Day_Mon       -34.3024    324.146     -0.106      0.916    -670.579     601.974
Day_Tue        -2.8545    325.136     -0.009      0.993    -641.075     635.366
Day_Wed       144.0836    324.131      0.445      0.657    -492.164     780.331
Day_Thu       272.9144    325.116      0.839      0.401    -365.267     911.096
Day_Fri       577.9156    325.256      1.777      0.076     -60.540    1216.371
Day_Sat       207.9295    325.588      0.639      0.523    -431.178     847.037
HDDX          557.7180     45.579     12.236      0.000     468.249     647.187
==============================================================================
Omnibus:                       22.652   Durbin-Watson:                   1.775
Prob(Omnibus):                  0.000   Jarque-Bera (JB):               48.088
Skew:                          -0.081   Prob(JB):                     3.61e-11
Kurtosis:                       4.178   Cond. No.                     3.08e+05
==============================================================================
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Table A-2. Final Cold-Day (Top 30, November 2021 Forward) R&C Model Summary

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--- FINAL MODEL SUMMARY (COLD-DAYS-ONLY) ---

                        OLS Regression Results
==============================================================================
Dep. Variable:                    MCF   R-squared:                       0.984
Model:                            OLS   Adj. R-squared:                  0.973
Method:                 Least Squares   F-statistic:                     88.71
Date:                Wed, 18 Feb 2026   Prob (F-statistic):           7.02e-13
Time:                        11:20:37   Log-Likelihood:                -263.13
No. Observations:                  30   AIC:                             552.3
Df Residuals:                      17   BIC:                             570.5
Df Model:                          12
Covariance Type:            nonrobust
==============================================================================
                 coef    std err          t      P>|t|      [0.025      0.975]
------------------------------------------------------------------------------
const         115.8697    330.627      0.350      0.730    -581.692     813.431
HDD          1386.8055    647.229      2.143      0.047      21.271    2752.340
HDDt1         483.0353    232.657      2.076      0.053      -7.827     973.898
MCF_lag1       -0.0135      0.105     -0.129      0.899      -0.235       0.208
wind         1174.3851    148.787      7.893      0.000     860.472    1488.298
Nov          4.106e-13   3.94e-13      1.042      0.312    -4.21e-13    1.24e-12
Dec         -6221.3130   1081.859     -5.751      0.000   -8503.835   -3938.791
Feb          -164.7438   1263.612     -0.130      0.898   -2830.731    2501.244
Mar         -9.862e-13   2.99e-13     -3.299      0.004    -1.62e-12   -3.55e-13
Day_Mon     -1962.9075   1556.551     -1.261      0.224   -5246.943    1321.127
Day_Tue     -2768.3156   1651.194     -1.677      0.112   -6252.031     715.400
Day_Wed     -4641.9676   1523.631     -3.047      0.007   -7856.547   -1427.388
Day_Thu     -3266.5649   1612.724     -2.025      0.059   -6669.115     135.985
Day_Fri      -157.1310   1597.164     -0.098      0.923   -3526.852    3212.590
Day_Sat        61.0489   1291.160      0.047      0.963   -2663.061    2785.159
HDDX          923.3267    680.259      1.357      0.192    -511.894    2358.547
==============================================================================
Omnibus:                        1.147   Durbin-Watson:                   1.885
Prob(Omnibus):                  0.564   Jarque-Bera (JB):                0.888
Skew:                          -0.089   Prob(JB):                        0.641
Kurtosis:                       2.176   Cond. No.                     2.58e+22
==============================================================================
```

Appendix B – Extreme Value Method (GEV) for 1-in-30 Design HDD

Delta Utilities estimated the 1-in-30 design HDD using a Block Maxima approach with a Generalized Extreme Value (GEV) distribution. Annual maxima were constructed from the daily HDD65 series, and the GEV distribution was fitted to the annual maxima.

The fitted GEV model was used to compute the 30-year return level. The return level was rounded to the nearest whole HDD for use as a prior-day design condition in the MDQ forecast. The resulting 1-in-30 HDD is 41.

This approach is consistent with standard extreme value methods for estimating rare-event design conditions and supports a transparent, data-driven definition of extreme cold in New Orleans.

Appendix C – Long Run Value (LRV) Method for Lagged MCF

The R&C regression models include lagged daily throughput (MCF_lag1) as an explanatory variable. For forecasting under extreme design conditions, an assumption is required for the prior day's throughput. Delta Utilities adopts a Long Run Value (LRV) approach, consistent with dynamic regression forecasting practice.

C.1 Model Form

Let the estimated regression for daily R&C throughput be written as:

$$MCF_t = \alpha + \beta'X_t + \rho \cdot MCF_{t-1} + \varepsilon_t$$

where X_t includes HDD_t, HDD_{t-1}, $Wind_t$, $HDDX_t$, and seasonal indicators, and ρ is the coefficient on lagged MCF.

C.2 Definition of Long Run Value

The Long Run Value is the steady-state expected throughput under fixed assumed design conditions. Assuming X_t is constant at design values and ε_t has mean zero, the conditional expectation satisfies:

$$E[MCF_t] = \alpha + \beta'X + \rho \cdot E[MCF_{t-1}]$$

In steady state, $E[MCF_t] = E[MCF_{t-1}] = \mu$, so:

$$\mu = \alpha + \beta'X + \rho \cdot \mu$$

Solving for μ yields the Long Run Value:

$$LRV = \mu = (\alpha + \beta'X) / (1 - \rho)$$

C.3 Application in Peak Day Forecasting

For the MDQ forecast, Delta Utilities sets X equal to the assumed design-day conditions (HDD=46, HDD_{t-1}=41, Wind=18.3 mph, and the month/day indicators that maximize the MDQ estimate). The LRV is computed separately for each of the two final ensemble models using their respective coefficient estimates.

The resulting LRV is then used as the assumed value for MCF_{t-1} when generating the design-day forecast for MCF_t.

C.4 Rationale for LRV Approach

The LRV approach has three advantages for MDQ estimation:
1. It avoids arbitrary selection of a single historical day as the prior-day throughput.
2. It is internally consistent with the fitted dynamic regression structure.

3. It produces a stable prior-day value aligned with the assumed extreme weather conditions.

C.5 Forecast Uncertainty

The LRV is a conditional expectation. Forecast uncertainty is incorporated separately through the model's forecast standard error and the computation of the upper 95% prediction interval.