



December 23, 2024

VIA ELECTRONIC FILING

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
400 North Street
Harrisburg, Pennsylvania 17120

Re: National Fuel Gas Distribution Corporation
Delta Fund for Research and Development Projects Report

Dear Secretary Chiavetta;

Pursuant to R-00061493 Settlement paragraph 18 A.3, "Distribution will file with the Commission and serve upon other Parties on or before December 31 an annual report for the preceding twelve-month period ended September 30, setting forth revenues for the Delta Fund for research and development projects and expenditures for such projects. In addition, Distribution will describe in the annual report projects that have been funded". The enclosed report is submitted under this settlement agreement.

Very truly yours,

A handwritten signature in black ink that reads "Erik M. Solomon".

Erik M. Solomon
Assistant General Manager
Energy Services Department

Encl.

Cc: Office of Special Assistants (E-Mail)
Office of Consumer Advocate (E-Mail)
Office of Small Business Advocate (E-Mail)

I. INTRODUCTION/BACKGROUND

The provisions of R-00061493 Settlement paragraph 18 A.3 were adopted on November 30, 2006, and effective January 1, 2007. Paragraph 18 A.3 states:

“3. The Joint Petitioners agree to \$526,466 to fund the Delta research and development program pursuant to the Statement of Scott E. Swartzfager No. 14. The deferral treatment and review process outlined in R-00049656 will continue. The company will not expend these dollars on additional customer outreach for enhanced energy efficiency.

Distribution will be permitted to record a regulatory asset or liability for differences between the annual rate allowance and annual expenditures. However, Distribution will not be permitted to retroactively recover in a future proceeding any expenditures in excess of the annual rate allowance and any deferred balance from the previous year’s Delta funding. Distribution will provide for review of research projects as described in its testimony. In order to implement this Settlement, the Joint Petitioners request that the Commission’s Final Order in this proceeding include the following language to allow Distribution to qualify for deferred accounting under SFAS 71:

“National Fuel Gas Distribution Corporation’s accounting policies conform to the Statement of Financial Accounting Standards No. 71 ‘Accounting for the Effect of Certain Type of Regulations’ which are in accordance with the accounting requirements and ratemaking practices of regulatory authorities. The application of these accounting policies allows the Company to defer expenses and income on the balance sheet as regulatory assets and liabilities when it is probable that those expenses and income will be allowed in the rate-setting process in a period different from the period in which they would have been reflected in the income statement by an unregulated Company.

“Because research and development projects often require a commitment over multiple years and because the expenditures for such projects may not match on an annual basis revenue for funding of research and development projects, deferred accounting is appropriate and is approved. The regulatory deferral treatment sought for the Research and Development expenditures and rate relief requested in the case are in accordance with SFAS No. 71.

“The Company will manage the costs of the Research and Development expenditures to match revenues deferred pursuant to this Order to eliminate any differences between deferred costs and deferred revenues at the end of a five-year period commencing on the day after the R-00049656 Order was entered.”

Distribution will file with the Commission and serve upon other Parties on or before December 31 an annual report for the preceding twelve-month period ended September 30, setting

forth revenues for the Delta Fund for research and development projects and expenditures for such projects. In addition, Distribution will describe in the annual report projects that have been funded.”

The provisions of R-00049656 Settlement paragraph 44 were adopted on March 23, 2005, and effective April 15, 2005. Paragraph 44 states:

"44. Distribution's proposal to fund the Delta research and development program pursuant to the Supplemental Statement of Ruth Friedrich-Alf No. 102 S2 is approved. Increased rates in this proceeding provide for recovery of \$526,466 in Delta research funds. Distribution will be permitted to record a regulatory asset or liability for differences between the annual rate allowance and annual expenditures. However, Distribution will not be permitted to retroactively recover in a future proceeding any expenditures in excess of the annual rate allowance and any deferred balance from the previous year's Delta funding. Distribution will provide for review of research projects as described in its testimony. In order to implement this agreement, the Parties request that the Commission's Final Order in this proceeding include the following language to allow Distribution to qualify for deferred accounting under SFAS 71:

'National Fuel Gas Distribution Corporation's accounting policies conform to the Statement of Financial Accounting Standards No. 71 'Accounting for the Effect of Certain Type of Regulations' which are in accordance with the accounting requirements and ratemaking practices of regulatory authorities. The application of these accounting policies allows the Company to defer expenses and income on the balance sheet as regulatory assets and liabilities when it is probable that those expenses and income will be allowed in the rate-setting process in a period different from the period in which they would have been reflected in the income statement by an unregulated Company.

'Because research and development projects often require a commitment over multiple years and because the expenditures for such projects may not match on an annual basis revenue for funding of research and development projects, deferred accounting is appropriate and is approved. The regulatory deferral treatment sought for the Research and Development expenditures and rate relief requested in the case are in accordance with SFAS No. 71.

'The Company will manage the costs of the Research and Development expenditures to match revenues deferred pursuant to this Order to eliminate any differences between deferred costs and deferred revenues at the end of a five-year period commencing on the day after this Order is entered.'

Distribution will file with the Commission and serve upon other Parties on or before December 31 an annual report for the preceding twelve-month period ended September 30, setting forth

revenues for the Delta Fund for research and development projects and expenditures for such projects. In addition, Distribution will describe in the annual report projects that have been funded."

As presented in R-00049656 Statement No. 102 (page 15).

"On an annual basis coming off of September 30, a reconciliation of revenues and expenditures with a description of projects funded will be on file on or before December 31 with the Office of Trial Staff, Office of Consumer Advocate and the office of Small Business Advocate. At the fifth reconciliation, Distribution will file a five-year report."

As presented in R-00049656 Statement No. 102 S2 (page 7)

"Annual revenues will be deferred to offset the costs of the Research and Development expenditures (expenses) to both the Gas Technology Institute ("GTI") fund and local projects.

The Company will manage the cost of the Research and Development expenditures to match revenues deferred pursuant to this Order to eliminate any differences between deferred costs and deferred revenues at the end of a five-year period commencing on the day after this Order is entered."

It is under these guidelines and agreements that Distribution files the following report for the period ended September 30, 2024.

National Fuel Gas Distribution Corporation
Pennsylvania Division

**II. Annual Filing of Delta Fund Revenues and Expenditures
For the period ended September 30, 2024**

Year Ended	Annual		Cumulative		Balance
	Expenditures	Revenues	Expenditures	Revenues	
Sept. 2005	\$92,300	\$113,927	\$92,300	\$113,927	(\$21,627)
Sept. 2006	\$376,800	\$526,466	\$469,100	\$640,393	(\$171,293)
Sept. 2007	\$596,800	\$526,466	\$1,065,900	\$1,166,859	(\$100,959)
Sept. 2008	\$526,493	\$526,466	\$1,592,393	\$1,693,325	(\$100,932)
Sept. 2009	\$376,368	\$526,466	\$1,968,761	\$2,219,791	(\$251,030)
Sept. 2010	\$455,911	\$526,466	\$2,424,672	\$2,746,257	(\$321,585)
Sept. 2011	\$721,800	\$526,466	\$3,146,472	\$3,272,723	(\$126,251)
Sept. 2012	\$280,300	\$526,466	\$3,426,772	\$3,799,189	(\$372,417)
Sept. 2013	\$626,800	\$526,466	\$4,053,572	\$4,325,655	(\$272,083)
Sept. 2014	\$278,891	\$526,466	\$4,332,463	\$4,852,121	(\$519,658)
Sept. 2015	\$276,800	\$526,466	\$4,609,263	\$5,378,587	(\$769,325)
Sept. 2016	\$458,404	\$526,466	\$5,067,667	\$5,905,053	(\$837,386)
Sept. 2017	\$500,530	\$526,466	\$5,568,197	\$6,431,519	(\$863,322)
Sept. 2018	\$362,547	\$526,466	\$5,930,744	\$6,957,985	(\$1,027,241)
Sept. 2019	\$445,438	\$526,466	\$6,376,182	\$7,484,451	(\$1,108,269)
Sept. 2020	\$452,883	\$526,466	\$6,829,065	\$8,010,917	(\$1,181,852)
Sept. 2021	\$468,422	\$526,466	\$7,297,487	\$8,537,383	(\$1,239,896)
Sept. 2022	\$865,588	\$526,466	\$8,163,075	\$9,063,849	(\$900,774)
Sept. 2023	\$517,264	\$526,466	\$8,680,339	\$9,590,315	(\$909,976)
Sept. 2024	\$587,533	\$526,466	\$9,267,872	\$10,116,781	(\$848,909)

Note 1: Rates were effective April 15, 2005, therefore the report ended September 30, 2005, does not represent a 12 month period of revenue collection.

III. DESCRIPTION OF ACTUAL EXPENDITURES - PERIOD ENDED SEPTEMBER 2024

A. GTI Utilization Technology Development Program

\$129,500 was submitted to Utilization Technology Development, NFP (UTD) for the April 1, 2024, through March 31, 2025, dues. \$112,948 has been allocated to specific projects as listed below.

UTD Payments, Fees, Credits, Carryover

Payments to UTD	129,500.00
Administration Fees	-12,950.00
Carryover of Unallocated Funds from Prior Year	3,447.81
Funds Available for Allocation	119,997.81

Large Commercial and Industrial Customers

1.19.C.2 Integrated, Self-Powered, High-Efficiency System - Phase 2	-2,497.50
2.20.A.2 Low Emission Efficient Burner for Ovens and Dryers – Phase 2	-1,850.00

2.20.E.3 Energy Source Options for Industrial and Large Commercial Gas Users - Phase 3	-2,664.00
2.21.A.2 High Hydrogen Burner for Commercial and Industrial Applications - Phase 2	-3,700.00
2.21.B Energy Recovery from Brewing/Distilling Operations - Field Demo	-252.71
2.22.D.2 High Performance Adjustable Port Burner - Phase 2	-3,330.00
2.23.A Decarbonizing Large Commercial and Industrial Equipment with Hydrogen	-3,700.00
2.23.C Controlled Mixing Burner for Process Heating	-3,330.00
2.23.D Flex Fuel Gas Nozzle and Burner for Boilers	-2,960.00
2.24.A Semi-Open Gas Absorption Heat Pump Industrial Dryer using Ionic Liquids	-2,960.00
2.24.B Fuel-flexible Infrared Ultra-Low NOx Steam Boiler	-2,257.00
2.24.C FlexGen-H High Efficiency, Fuel-Flexible, Ultra-Low NOx Regenerative Burner	-3,330.00
2.24.D Noble Thermodynamics Zero Emission CHP System	-2,035.00
2.24.E Fuel-flexible, Ultra-low NOx, Cross-cutting Omnivore Combustion System	-666.00
2.24.H Hydrogen-blending at Asphalt Plants - Field Tests	-2,960.00
2.24.I Carbon Capture Technologies for Large Commercial and Industrial Systems	-3,478.00

Food Preparation and Service Customers

1.17.H.5 Residential Cooking Pollutants and IAQ - Phase 5	-544.99
1.17.H.6 Residential Cooking Indoor Air Quality - Phase 6	-2,590.00
1.19.A.3 High Efficiency Smart Convection Oven - Phase 3	-740.00
1.20.K Field Evaluation of Indoor Air Quality in Residential Kitchens	-73.63
1.20.K.3 Field Evaluation of IAQ in Residential Kitchens – Phase 3	-1,110.00
1.21.G.4 Technical Support to Address Gas Foodservice Technologies - Phase 4	-3,700.00
1.21.H.3 CFS Burner Technology Carbon Reduction Including Hydrogen Blending - Phase 3	-1,850.00
1.23.K CFS Decarbonization Tool Development and Demonstration	-203.50
1.23.M Advanced Controls for Residential Kitchen Ventilation Systems	-1,480.00
1.23.N Next Generation Commercial and Residential Range Top Burner	-1,295.00
1.24.M Mitigating Methane Emissions from Kitchen Ranges and Rangetops	-1,480.00

Residential and Light Commercial Customers

1.15.E.2 Gas-fired High-Efficient Liquid Desiccant AC and Humidity Control – Phase 2	-801.05
1.16.H.5 EnergyPlus Models for Advanced Gas Space Heating and Combi Systems - Phase 5	-394.79
1.18.F.4 Mitigating Methane Emissions from ResCom End Use Equipment – Phase 4	-2,220.00
1.20.B Boostheat Thermal Compression-based Gas Heat Pump	1,712.73
1.21.B.4 Technical Support for ResCom Gas Equipment Testing, Perf. and Safety - Phase 4	-2,775.00
1.21.E Gas Engine Heat Pump Modeling, Testing and Implementation	-836.94
1.21.F Commercial Heat Pump Water Heater Field Performance Comparison	-1,408.96
1.22.A Hydrogen Blending End-Use Performance and Safety Field Demonstration	-2,064.97
1.22.E.2 Deep Energy Customized Affordable Retrofit of Bldg. Envelopes and Mech. - Phase 2	-1,339.03
1.22.G.2 Safe Use of Hydrogen in Buildings - Phase 2	-2,960.00
1.22.H.2 Hybrid Fuel-Fired and Elec-Driven Rescom HVAC Systems – Phase 2	-2,960.00
1.22.P.2 Emerging Distributed Methane Pyrolysis Technologies - Phase 2	-948.68
1.23.E Combustion Technology for Emerging Low Carbon Manufactured Gases	-1,095.20
1.23.F Integrating Hybrid Fuel-fired and Elec-driven ResCom HVAC with PV in Generac Nanogrid	2,595.18
1.23.G Accelerated Life Testing of ResCom Equipment Components with H2-Blended Gases	-1,295.00

1.23.H Impacts of H2-Blended Gas on Venting, Condensation, and Weatherized Equipment	-1,233.21
1.23.I Inherently Safe ResCom Combustion Systems for Hydrogen-Blended Gases	-1,558.07
1.23.J Hydrogen Flame Visibility and Colorants	-1,726.79
1.24.A High-Efficiency Thermally-driven Liquid-Liquid Separation Cooling Systems	-1,258.00
1.24.B Non-Intrusive Building Envelope Air Infiltration Detection Tools	-2,183.00
1.24.C Maximizing Efficiency of Gas Absorption Heat Pumps coupled with Commercial Boilers	-2,590.00
1.24.E Tour Engine ENABLE Microgrid mCHP System	-2,220.00
1.24.F Salt Hydrate Energy Storage for High-Efficiency Gas HVAC Systems	-3,330.00
1.24.H Safe 100% Hydrogen Appliances for Homes	-3,700.00
1.24.I Modern Interchangeability Indices for Hydrogen-Enriched Natural Gas	-2,960.00
1.24.Q CarbonQuest End-Use Carbon Capture	-3,700.00
1.24.R Impact of Trace Constituents in Renewable Natural Gas on Appliances	-1,480.00

Clean Transportation and Advanced Energy System Customers

2.20.G.3 Smart CNG Station Field Demonstration - Phase 3	-370.00
2.21.F CNG Locomotive Field Demonstration	-4,409.29
2.21.G.2 Distributed RNG/Biogas Production and Cleanup - Phase 2	-3,700.00
2.21.I.4 Technical Support for Clean Transportation Testing, Performance and Safety - Phase 4	-1,850.00

Memberships/Other

1.23.P.2 UTD Program Technology Transfer Communication - Phase 2	-851.00
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Adjustments and Miscellaneous Refunds

Refund - 1.10.A Web Program Upkeep	17.01
Refund - 1.19.C Integrated, Self-Powered, High-Efficiency Burner System	24.24
Refund - 1.20.A Robur and SMTI Low-Capacity Gas Absorption Heat Pump Laboratory Evaluation	17.60
Refund - 1.20.J Integrated CHP System for Multi-Family Buildings	1.91
Refund - 1.21.H CFS Burner Technology Carbon Reduction Including Hydrogen Blending	15.35
Refund - 1.22.B Modern Electron Thermionics for Self-Powered Furnaces and Boilers	3.31
Refund - 2.19.D Triathalon 2030 5-ton Cold Climate GHP - Lab Test	4.30
Refund - 2.20.D.2 Recovering Water and Energy from Industrial Furnace Exhaust - Phase 2	0.81
Refund - 2.21.C Zero Emissions Processes with Carbon Recovery	29.65
Refund - 2.21.D.2 High-Efficiency Crop Drying Process – Phase 2	630.44
Refund - 2.21.I Technical Support for Clean Transportation Testing, Performance and Safety	197.42

Funds Allocated to Projects	-112,948.40
Unallocated Funds	7,991.45

B. GTI Operations Technology Development Program

\$184,500 was submitted to Operations Technology Development, NFP (OTD) for the 2024 membership fee. \$253,195 has been allocated to specific projects as listed below.

Payments to OTD, Fees, Carryover

Payments to OTD	184,500.00
Administration Fees	13,837.50
Carryover of Unallocated Funds from Prior Year	111,506.81
Funds Available for Allocation	282,169.31

Allocations to Projects

(1), (2) and (4) Historic Projects

1.14.g.8 RMD/NGD Consumer Behavior Study Update	-76.38
1.14.g.8 Refund RMD/NGD Consumer Behavior Study Update	384.57

(5) Construction/ Infrastructure Techniques

5.16.d.3 REMS Phase 3: Development of Field-Ready Prototype	-18,450.00
5.18.p Refund Noncamera-Based Technology to Detect Cross Bores	436.55

5.21.e.2 Development and Evaluation of the CoSMiC Eye Satellite Based Pipeline Monitoring System Phase 2 -Pipeline Right-of-Way Monitoring for Class Location Designation -12,505.04

5.21.q Refund Development of a MDPE and HDPE Allowable Pull Load calculator 534.31

5.22.j Design and Placement of Compact Service Regulators -179.33

5.22.j.4 Testing of New Pietro Fiorentini Gas Service Regulators -3,690.00

5.22.v Refund Update to ASTM F2897 0.45

5.23.g Plastic Gas Pipe Damage Assessment due to high pressure water jets and cross bores -372.69

5.23.j Material Inspection and Testing Training Program -1,424.34

5.23.n.2 Developing Acceptance Criteria for Mechanical Tapping Tee Anomalies – Phase 2 -36,900.00

5.23.v Evaluation of Viega MegaPress Fittings -1,355.34

5.24.e Sensing Water Accumulation in Mains -5,296.63

5.24.f Product Standards for Plastic Tapping Tees -5,535.00

5.24.h Hydrogen Blending Pilot Gas Quality Evaluation and System Modeling -2,104.04

5.24.w Community Geothermal Systems Opportunities for LDCs to Consider -11,070.00

5.24.z SUSTAIN H2 Storage -18,450.00

(6) Memberships/Other

6.11.a PRCI Membership -3,690.00

6.11.a 2023 Refund PRCI Membership 99.63

6.14.a Quality Audit Program -7,380.00

0.00

(7) Methane Emissions/Detection and Gas Quality	0.00
7.16.a.3 Refund Leak Repair Prioritization - Ph 3	192.06
7.18.b Refund Biomethane Justification Study for Improved/ Accepted Gas Quality Standards	56.69
7.18.h.2 Refund Gas Quality Resource Center (7.11.a and 7.18.h)	84.80
7.19.b.2 Refund Advanced Leak Detection Technologies for Grading Leaks Phase 2	102.56
7.22.e Refund Emissions Quantification and Reduction Strategies Report	64.69
7.22.h Veritas Gas Measurement and Verification Initiative	-18,450.00
7.22.k Optical Gas Imaging (OGI) and handheld laser methane detectors for large leak identification	-927.67
7.22.l Open Hydrogen Initiative	-18,450.00
7.23.g Investigate Feasibility of Pipeline Thermographic Internal Inspection for Leak Detection	-2422.12
7.23.i Net-Zero Infrastructure Program	-18,450.00
7.23.n Satellite Methane Detection for Distribution Applications	-1415.12
7.23.q Workshops on Decarbonization Pathways that leverage the Natural Gas Infrastructure for non-utility stakeholders	-984.49
7.24.c Near Field Fixed Monitoring	-8,538.71
7.24.e Technology Roadmap for Compressor Station Methane Emissions and Mitigation Scenarios	-3,690.00
7.24.k Comparison of a Correlative Calorimeter to Online GCs	-11,070.00
7.24.r Impact of Trace Constituents in Renewable Natural Gas on Appliances	-3,690.00
 (8) Intelligent Utilities	
8.20.l Refund Enhanced Locating Technologies for Underground Pipelines with Better Accuracy	54.36
8.21.b.2 High-Accuracy Locating Technology - Phase 2 - On site pilots	-2,224.33
8.21.g Refund GNSS Testing in an Urban Environment	340.33
8.21.h Refund Tracking Software Development for Pipeline Safety Management Systems	135.29
8.22.c.2 Automation of Digital MTR Processing Pilots	-7,380.00
8.23.b 3D monitoring of terrain over pipelines	-1,177.85
8.23.d SSR CORRECTION SERVICE FOR GNSS UTILITY MAPPING APPLICATIONS	-3,395.17
8.23.f Developing Routing Solution for Leak Survey	-799.99
8.23.g.2 Steel Material Traceability Unique IDs and Smart Tags - API Recommended Practice Phase 2	-1,178.59
8.23.l Traceability Template for Assemblies	-776.75
8.24.k Evaluation of One Call Damage Prevention Software	-11,070.00
 (9) Risk and Decision Analysis/Model	
9.22.a Reserve Strain Capacity Determination- PHMSA cost share	-1,887.07
9.24.a Natural Gas Ban Effects on Local Gas Distribution Companies	-9,225.00
 Adjustments and Miscellaneous Refunds	
Board Designated Net Assets 2024	16,905.97
G&A Refund	1,632.40
 Funds Allocated to Projects	-253,195.35
Unallocated Funds	47,512.33

C. SUMMARY OF ACTUAL EXPENDITURES PERIOD ENDED 2024

Utilization Technology Development (UTD) Program - GTI	\$ 129,500
Operations Technology Development Program (OTD) - GTI	\$ 184,500
Emerging Technology Program (ETP) - GTI	\$ 24,230
Low-Carbon Resources Initiative (LCRI) – GTI	\$ 111,500
North American Gas Heat Pump Collaborative – RI LLC	\$ 9,250
Natural Gas Vehicle (NGV) Technology Demo	\$ 2,764
Hybrid Heating and Cold Climate Heat Pump- Demos	\$ 47,680
Potential CHP, Dynamic Risk, Venancio	\$ 76,659
Zero Net Energy (ZNE) Home Review	\$ 1,450
Total Pennsylvania Delta Funds Program Expenditures	\$ 587,533

IV. PROJECTED EXPENDITURES - PERIOD ENDING SEPTEMBER 2025

Expenditures for National Fuel Gas Distribution Corporation's ("National Fuel") Pennsylvania Delta Funds RD&D Program are projected to be between \$450,000 and \$970,000 of which \$526,466 is collected on an annual basis. The balance will be covered by unutilized funds from prior years. In 2025 the following planned charges are projected:

1. **Utilization Technology Development (UTD)** membership fees of approximately \$129,500. Specific projects to be determined.
2. **Operations Technology Development (OTD)** membership fees of approximately \$184,500. Specific projects to be determined.
3. **Emerging Technology Program (ETP)** membership fees of approximately \$9,230.
4. **Low-Carbon Resources Initiative (LCRI)** membership fees of approximately \$111,500.
 - a. LCRI is an effort lead by the Electric Power Research Institute (EPRI) and the GTI Energy (GTI) to collaborate on addressing the need to accelerate development and demonstration of low carbon energy technologies.
5. **North American Gas Heat Pump Collaborative** membership fees of approximately \$12,500
 - a. The North American Gas Heat Pump Collaborative is membership-based collaborative to accelerate the commercialization and market acceptance of gas heat pumps in North America. The goal of this collaboration is to enhance market share of gas heat pump technologies and energy efficient gas technologies.
6. **Local Opportunity Projects** spending estimate of approximately \$514,000 (see below). Funds not used for the development of qualified local technology projects in National Fuel territory may be allocated to the national GTI programs described above.
 - 1) \$350,000 – CHP Incentive Program
 - 2) \$30,000 -- NGV Technology Demonstration
 - 3) \$14,000 – High Efficiency Commercial Stovetops (Paid)
 - 4) \$70,000 – Fuel Injected Tunnel Technology
 - 5) \$50,000 – CNG Gas Dryer Demo

SUMMARY OF PROJECTED EXPENDITURES - PERIOD ENDED 2025

Utilization Technology Development Program - GTI	\$ 129,500	Planned
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Operations Technology Development Program - GTI	\$ 184,500	Planned
Emerging Technology Program – GTI	\$ 9,230	Planned
Low-Carbon Resources Initiative – GTI	\$ 111,500	Planned
North American Gas Heat Pump Collaborative – RI LLC	\$ 12,500	Planned
CHP Incentive Program	\$ 350,000	Potential
NGV Technology Demos	\$ 30,000	Potential
High Efficiency Commercial Stovetops	\$ 14,000	Paid
Fuel Injected Tunnel Technology	\$ 70,000	Potential
CNG Gas Dryer Technology Demonstration	\$ 50,000	Potential
Total Pennsylvania Delta Funds Program Expenditures	\$ 447,230	Planned
Total Pennsylvania Delta Funds Program Expenditures	\$ 514,000	Potential/Paid
Total Pennsylvania Delta Funds Program Expenditures	\$ 961,230	Planned, Potential/Paid

V. STATUS UPDATE OF LOCAL OPPORTUNITY PROJECTS – 2024

Funding of gas industry research through GTI, as an example, returns many benefits, including ensuring continued improvement and availability of energy-efficient, low emissions and cost-effective gas technologies, while leveraging the funding resources of gas utilities across North America. The Local Opportunity Projects portion of this program intends to identify projects for direct local support offering equal, or better, benefits than GTI. This is challenging, but National Fuel endeavors to identify and develop these opportunities. Funds available through this portion of the program, beyond the minimum commitments to GTI, may be used for qualified local projects. Funds not used locally are sent to GTI to be allocated to suitable projects, as shown in the previous supported project listings.

Summaries for Local Opportunity Projects active or completed in 2024 are provided below.

1. **Hybrid Heating Demonstrations.** National Fuel installed twelve (12) hybrid systems in its Pennsylvania service territory. National Fuel is investigating the operating costs and impact on greenhouse gas (GHG) emissions that contribute to climate change associated with utilizing an electric Air Source Heat Pump (ASHP) in combination with a high efficiency natural gas furnace for heating (and cooling), as compared to a traditional gas furnace only and central electric air conditioning.
2. **Cold Climate Air Source Heat Pump Demonstrations.** National Fuel installed two (2) cold climate air source heat pumps (ccASHP) in its Pennsylvania service territory. National Fuel is conducting a study to determine the monthly energy cost and usage changes, cold climate equipment performance and GHG emissions associated with utilizing a ccASHP as the sole energy source for the residences' heating and cooling needs.
3. **NGV Technology Demonstration.** National Fuel has purchased a total of four (4) Ford F-250 pickup trucks that have been modified to include Adsorbed Natural Gas (ANG) technology. ANG is a low-pressure technology that reduces tank pressure from 3,600 to 900 psi. The low-pressure enables private, daily fueling with the use of a small, low-cost fueling device that can be installed wherever a natural gas line is available, thereby eliminating the lack and high cost of high pressure/fast-fill stations. The cost of the vehicle modification and the fueling device was shared with an Alternative Fuels Incentive Grant (AFIG) and National Fuel. There is one fueling device at Oil City Service Center, Sharon Service Center, and one at Erie Service Center. One of these trucks is operating out of the Oil City Service Center, one out of Sharon Service Center, and two out of the Erie Service Center. AFIG funding and Delta funds paid for two trucks and fueling devices. National Fuel's Operations group purchased the additional two trucks.

VI. PROSPECTIVE LOCAL OPPORTUNITY PROJECTS – 2025

1. **CHP Incentive Program.** In accordance with the PUC CHP Policy Statement, National Fuel is evaluating an incentive program to promote the implementation of CHP projects in its service territory. There is currently a large industrial customer evaluating the installation of a 5 MW CHP generation system within our operating territory. This project is in the engineering design process. Additionally, there is a hardwood kiln drying facility, which was identified through the use of our CHP feasibility questionnaire, in the evaluation process to add a 200 kw microturbine CHP unit. Based upon the results of the engineering and evaluation studies, National Fuel would partially fund the installation of the CHP system.
2. **NGV Technology Demonstration.** National Fuel is currently receiving quarterly reports on the operation of the four purchased ANG pick-up trucks. National Fuel will continue to review these reports to see how the ANG platform affects fuel savings and the reduction of GHG emissions. Additionally, National Fuel will continue to work alongside local transportation companies and participate in events to promote the ANG platform in public as well as private modes of transportation.
3. **High Efficiency Commercial Stovetops.** National Fuel has partnered with two commercial restaurants to evaluate the efficiency claims, up to 33%, on a particular restaurant grade stove. Gas consumptions on existing stoves were measured and will be compared to newly installed high efficiency stove installations. National Fuel will be compiling data to evaluate the energy savings of the new stoves and validating the claims of reduced cook times.
4. **Fuel Injected Tunnel Technology.** National Fuel is in the development process with a regional FIT technology consultant and a local transportation company to install this technology into 10 mid-sized delivery trucks along with a fueling station. FIT technology displaces 20-50% of the diesel fuel with natural gas and improves MPG by 10-50%. It additionally saves on the installation of high dollar fast fill stations for the vehicles. National Fuel would partially fund the installation and maintenance cost of the small compressor driven fueling station. A study would be performed to analyze and demonstrate the energy savings and reduced emissions reflected by this technology.
5. **CNG Gas Dryer Technology.** National Fuel is collaborating with a local commercial company to install a rapid-fill CNG fueling station. Currently, the station is equipped with an electric gas dryer. However, the customer has data suggesting that a natural gas-fired dryer might be more energy-efficient. National Fuel is considering investing in the gas-fired dryer and is gathering data to compare the efficiency of both technologies.

National Fuel intends to continue efforts to identify other beneficial Local Opportunity Projects for development which may provide direct benefit to its Pennsylvania consumers, businesses, and industries.