



December 29, 2016

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
P.O. Box 3265
North Office Building
Harrisburg, Pennsylvania 17105-3265

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.

Acknowledgement hereof is desired and duplicate letter is enclosed with a self-addressed, stamped envelope for that purpose.

Very truly yours,

A handwritten signature in black ink, appearing to read "Eric H. Meini".

Eric H. Meini
General Manager
Rates and Regulatory Affairs

Encl.

Cc: Office of Special Assistants
Office of Consumer Advocate
Office of Small Business Advocate

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 revenues 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 revenues 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, 2016.

National Fuel Gas Distribution Corporation
Pennsylvania Division

Annual Filing of Delta Fund Revenues and Expenditures
For the period ended September 30, 2016

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)

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.

DESCRIPTION OF ACTUAL EXPENDITURES - PERIOD ENDED SEPTEMBER 2016

GTI Utilization Technology Development Program

\$129,500 was submitted to Utilization Technology Development, NFP (UTD) for the April 1, 2016 through March 31, 2017 dues. \$105,773 has been allocated to specific projects as listed below.

UTD Payments, Fees, Credits, Carryover

Payments to UTD	\$129,500
Administration Fees	\$12,950
Carryover of Unallocated Funds from Prior Year	-\$788
Funds Available for Allocation	\$115,762

Allocations to Projects

Residential/Commercial Space Conditioning

1.10.U Refund	\$89
1.11.R Refund	\$24
1.11.M.5 Building America Whole House Retrofit Program (Phase 5)	-\$2,439
1.12.P.3 Air Handler Enhancements for Condensing Combis Phase 3	-\$236
1.12.U.2 Gas Heat Pump Modeling	-\$1,193
1.13.D.2 Refund	\$12
1.13.D.3 Codes & Standards for Advanced Gas Technologies (Phase 3)	-\$30

1.13.D.4 Codes and Standards for Advanced Gas Technologies - Phase 4	-\$4,440
1.13.F.2 Gas Absorption Heat Pump for Space Conditioning - Phase 2	-\$3,737
1.13.I Refund	\$171
1.13.I.3 Gas Appliances in Tight Houses (Phase 3)	-\$837
1.14.E.2 Heating System Competitive Performance Phase 2	-\$470
1.14.J.2 Multifamily Infrastructure Challenges – Phase 2	-\$2,405
1.15.C Next Generation Advanced Gas Dryer Development	-\$2,556
1.15.E Gas-fired High-Efficient Liquid Desiccant Air Conditioning and Humidity Control – Commercial	-\$102
1.16.C High Performance Building Initiative	-\$3,700
1.16.D Residential Gas Heat Pump Market Assessment and Value Engineering	-\$3,737
1.16.H EnergyPlus Built-in Models for Advanced Gas Space Heating Systems and Combi Systems	-\$3,700

Residential/Commercial Water Heating

1.11.G.2 Low Cost Condensing Prototype Phase 2	-\$2,959
1.12.Q.4 Unplugged Water Heater - Smart Flue Damper Beta Integration	-\$740
1.15.H Water Quality Impacts on Compact HXs	-\$325
1.15.H.2 Maintenance-Free Tankless HXs - Coatings Development	-\$1,332
1.16.I Commercial Gas-Fired Heat Pump Water Heater	-\$3,700
1.16.L SuperPerm Burner for Water Heaters	-\$2,997

Commercial Food Service

1.13.B.3 CFS Information and Calculators - Phase 3	-\$58
1.14.A.2 Next Generation CFS Burners - Phase 2	-\$402
1.14.C.2 Demonstration of Next Gen Low Oil Volume Fryer	-\$932
1.15.G Residential Kitchen Cooking Ventilation Effectiveness	-\$580
1.16.A Chain Restaurant Equipment Usage Survey	-\$518
1.16.B CFS Codes and Standards	-\$999

Distributed Generation/Combined Cooling Heating and Power

2.12.F.3 Reliability Assessment of Natural Gas vs. Diesel for Standby Generation Phase 3	-\$174
2.12.F.4 Address Regulatory Barriers in Natural Gas Emergency Power Supply Systems	-\$4,403
2.15.M CHP Interconnection Equipment Review	-\$11
2.15.M.2 CHP Interconnection Policy - Phase 2	-\$666
2.16.H Test and Demonstrate AO Smith Micro-CHP System	-\$7,622

Industrial Solutions

2.12.M.2 Low Nox Ribbon Burner Post-Demonstration Monitoring and Commercialization	-\$814
2.14.B Refund	\$30
2.14.O Field Validation of Gas Quality Sensor for Natural Gas	-\$444
2.14.O.2 Field Validation of Gas Quality Sensor for Natural Gas - Spectrometer Upgrade	-\$1,221
2.15.A On-site Electrical Generation	-\$3,443
2.15.B Valuable Products From Natural Gas	-\$2,198
2.15.D Advanced Retention Nozzle	-\$3,491
2.16.A Next Generation Infrared Burner	-\$3,700
2.16.B On Demand Heat and Power System	-\$703
2.16.I Burner Development/Design for 400 kW/400 BHP FlexCHP	-\$407

Transportation

2.12.T.3 Free Piston Linear Motor Compressor Phase 3	-\$2,381
2.13.G.2 CWI 6.7 liter MD Natural Gas Engine Field Trials Phase 2	-\$696
2.14.K.2 Design of Mitigation Solutions for CNG Contamination - Phase 2	-\$7,770
2.16.L Exploratory Phase for a 14-15 Liter HD Heavy Duty Natural Gas Engine for Class 8 Trucks	-\$2,738
2.16.M CNG Dispenser Full Fills	-\$7,585
2.16.N NGV Codes and Standards Monitoring, Development and Support	-\$4,181
2.16.O NGV America Technology Committee Participation and Representation	-\$1,887
2.16.P Test and Validate Scroll Labs Small-Scale Scroll Compressor Fill Device	-\$3,996

Other

1.07.D Refund	\$5
1.08.P Refund	\$12
1.10.A Web Program Upkeep	-\$231
1.10.W Development of an End Use New Technology Roadmap	-\$231

Funds Allocated to Projects**-\$105,773**

Unallocated Funds

\$9,989

* as of 2016 UTD uses negatives numbers for allocations to projects and positives for refunds

GTI Operations Technology Development Program

\$184,500 was submitted to Operations Technology Development, NFP (OTD) for the 2016 membership fee. \$201,078 has been allocated to specific projects as listed below.

Payments to OTD, Fees, Carryover

Payments to OTD	\$184,500
Administration Fees	-\$13,837
Carryover of Unallocated Funds from Prior Year	\$64,890
Funds Available for Allocation	\$235,553

Allocations to Projects**(1) Pipe and Leak Location**

1.08.a.2 GPS Excavation Encroachment Phase 2	-\$3,690
1.11.c Refund	\$82
1.14.d Field Measurement of Leak Flow Rate	\$0
1.14.d.2 Field Measurement of Leak Flow Rate Ph2	\$0
1.14.g.2 Evaluation of Residential Methane Detectors-Phase 2	-\$4,909
1.14.g.2a Evaluation of Residential Methane Detectors-Phase 2 Pilot	-\$3,996
1.15.a.2 Cross Bores – Sewer System Cleanout Safeguard Device – Phase 2	-\$4,096
1.15.e Triple Plus Shut Off Valve Pilot Program	-\$5,535

(2) Pipe Materials, Repair, and Rehabilitation

2.11.d Refund	\$0
2.12.a Integrated Expert Monitoring and Training System for Butt Fusion	\$0
2.14.a Composite Repair Wrap for Polyethylene (PE) Systems	\$0
2.14.e Guidelines/Best Practices for Scraping PE Pipe and Fittings	\$0
2.15.a Semi Automated Fusion Equipment Industry Steering Committee	\$0

(3) Excavation and Site Restoration

3.8.b Refund	\$0
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(4) Pipeline Integrity Management and Automation

4.07.g Refund	\$115
4.08.a Refund	\$725
4.11.c Refund	\$0
4.15.a Field Ready Butt Fusion Inspector Phase 2a (2b)	-\$17,299

(5) Operations Infrastructure Support

5.07.p (GTI) GNSS (GPS) Consortium	-\$5,535
5.08.e Refund	\$49
5.08.e.2ab Enhanced Material Tracking and Traceability-Development of Standardized Protocols/Identifiers for Meters, Regulators, and Transmission Pipelines, Phase 2	\$0
5.09.f Refund	\$0
5.10.a Refund	\$0
5.10.d.2 Remote Field QA/QC Phase 2	\$0
5.11.e.3 Intelligent Utility System - Phase 3: Automated Component Validation Software	-\$1,230
5.11.n Refund	\$10
5.11.s.3 Breakaway Disconnect/Shut-off - Product Development and Evaluation, Phase 3	-\$3,063
5.11.t Essential Data Capture for PE Fusion Operations	-\$1,686
5.11.t.3 Essential Data Capture for PE Fusion Operations, Ph 3	-\$3,653
5.12.g.2 Large Diameter - High Pressure (60 psig) Inflatable Stoppers – Evaluation of Kleiss MCS60-1016 System for the US Natural Gas Industry, Ph 2	-\$2,030
5.13.b.2 GPS-Based GIS Conflation System Ph 2	-\$3,690
5.14.a RFID Testing Program	\$0
5.14.c Refund	\$201
5.14.d.2a Tracking and Traceability for Transmission-Phase 2a Standards for MTR and Coating Reports, Rev	\$0
5.14.d.2b Tracking and Traceability for Transmission-Phase 2b Data Collection Technology	-\$2,565
5.14.d.4 Tracking and Traceability for Transmission: Steel Pipeline Material Traceability	-\$11,070

5.14.f Refund	\$1,561
5.14.n Construction Compliance Monitoring System	\$0
5.14.n.2 Construction Compliance Monitoring System Ph2	-\$1,845
5.14.p Pipe Insertion Technologies - Develop Devices to Use with Jameson Directional Insertion Tool	\$0
5.14.t Methods to Detect Inserted Plastic in Steel Mains	\$0
5.14.t Refund	\$0
5.14.x Refund	\$22
5.15.c Review and Gap Analysis of PE Access Fittings	\$0
5.15.f No Stub Service Lateral Retirement	-\$4,315
5.15.g Remote Service Abandonment No Excavation	-\$197
5.16.d Stopping Off LP Mains with No Excavation	-\$11,070
5.16.f Improved Safe Excavation Productivity for Locating Buried Utilities	-\$7,380
5.16.n Method to Prevent Blowdown of Gas to Atmosphere	-\$2,251
(6) Memberships /Other	
6.08.a (GTI) Carbon Management Information Center	-\$9,225
6.11.a PRCI Membership	-\$1,845
6.14.a Quality Audit Program	-\$7,380
6.16.a Center for Methane Research	-\$9,225
6.a (GTI) SMP	-\$36,900
(7) Methane Emissions/Detection and Gas Quality	
7.10.b.2 Refund	\$0
7.10.c.4 Improving Methane Emission Estimates for Natural Gas Distribution Companies Phase 4	\$0
7.14.a Refund	\$319
7.15.b.2 Remote Gas Sensing and Monitoring Phase 2	-\$5,535
7.15.c Evaluating Leaks from Slow Crack Growth and the Impact on Pipeline Emissions Phase 1	-\$3,690
7.16.d Implications of Odorant Dispersion in a Natural Gas Pipeline	-\$4,502
(8) Intelligent Utilities	
8.16.a Intelligent Field Data Collection Platforms	-\$3,690
8.16.b Remote QA/QC: Fusion Inspection and Reporting	-\$7,360
8.16.d Paperless As-Builting Solution	-\$3,690
(9) Risk and Decision Analysis/Models	
9.16.c Best Practices and Methodology for Implementing RCV and ASV Programs	-\$3,911
9.16.d Model of AC Earth Faults and Associated Risks	-\$7,232
Adjustments and Miscellaneous Refunds	
Board Designated Net Assets 2015	\$0
G&A Refund	\$1,127

Funds Allocated to Projects	-\$201,078
Unallocated Funds	\$34,474

*OTD uses negatives numbers for allocations to projects and positives for refunds

Local Opportunity Projects

\$135,174 was expended for Local Opportunity Projects in 2016.

SUMMARY OF EXPENDITURES - 2016

Utilization Technology Development Program	\$ 129,500
Operations Technology Development Program	\$ 184,500
Emerging Technology Program	\$ 9,230
Local Opportunity Projects	<u>\$ 135,174</u>
Total Pennsylvania Delta Funds Program Expenditures	<u>\$ 458,404</u>

PROJECTED EXPENDITURES - PERIOD ENDING SEPTEMBER 2017

Expenditures for National Fuel Gas Distribution Corporation's Pennsylvania Delta Funds RD&D Program are projected to be \$523,230 in 2017 consisting of the following planned charges:

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. **Local Opportunity Projects** spending estimate of \$200,000. Funds not used for the development of qualified local technology projects in National Fuel territory may be allocated to the national Gas Technology Institute programs described above.

STATUS UPDATE OF LOCAL OPPORTUNITY PROJECTS - 2016

Funding of gas industry research through the Gas Technology Institute (GTI), as an example, returns many benefits, including insuring 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.

Updates on two Local Opportunity Projects are provided.

1. **CNG Bi-Fuel Demonstration Vehicle.** A 2015 Chevy Impala equipped with a bi-fuel CNG/gasoline system was purchased to provide hands-on demonstrations at various trade shows, and expos throughout the region and to serve as a moving billboard for CNG. The bi-fuel option allows the vehicle to run on either CNG or gasoline, while seamlessly switching between fuel types. This option helps to alleviate concern over the relative scarcity of CNG fueling stations, which has been a barrier to adoption, by allowing the vehicle to run on gasoline when CNG is not readily available. Custom graphics have been added to the vehicle to help promote CNG and increase awareness when it is on the road. Regular use by National Fuel sales and marketing personnel will serve to gather real-world information and experiences related to owning and operating of a bi-fuel CNG passenger vehicle. This information, along with the ability to provide hands-on demonstrations to fleet managers and other interested parties, should help increase knowledge, and adoption of CNG as a clean, and cost effective transportation fuel.
2. **Pennsylvania CHP Market Assessment and Site Surveys.** The objective of this project is to better understand the current market potential of Combined Heat and Power (CHP) in National Fuel's Pennsylvania service territory and to develop screening tools, which incorporate gas and electric tariff rates specific to our region. In addition to developing a report on market potential, selected contractor CDH Energy will work alongside National Fuel representatives to assess the viability of CHP at a number of selected customer facilities. These assessments will be provided to the customer free of charge, thereby eliminating an early barrier to adoption of the technology. The market assessment portion of the project has been completed and 64 MW of economically viable CHP potential was identified in National Fuel's Pennsylvania territory. To date, one assessment has been conducted and results presented to the customer. Eight additional assessments are budgeted for, most of which are anticipated to occur in 2017.

PROSPECTIVE LOCAL OPPORTUNITY PROJECTS – 2017

1. **Small-scale LNG production.** The goal of this project is to develop, test, and demonstrate a small scale LNG liquefaction plant. If successful, the plant design would allow for cost-effective production of liquefied natural gas using distribution pipelines as the source. In addition to development and testing of the plant itself, this project will also provide valuable information regarding the permitting and regulatory requirements for LNG production and plant siting. National Fuel plans to provide co-funding for this project, with the majority of funding coming from other sources. Preliminary discussions regarding project plans have occurred and a finalized funding agreement is expected soon.
2. **CNG Forklift Demonstration.** The goal of the project is to increase exposure to CNG powered forklifts and to demonstrate the savings achievable versus propane or electric models. The project involves purchase of a Toyota CNG forklift and a small scale compressor / fueling station and should provide valuable data regarding operating costs, reliability, and maintenance requirements. Co-funding for purchase of the forklift and fueling station will be provided with additional funding coming from other sources. The project is being conducted at a facility which serves as an incubator, providing low cost manufacturing space, and housing multiple tenants. The CNG forklift will be made available to all tenants, hopefully promoting greater adoption of the technology. A viability presentation will be developed and will include information on equipment costs, operating costs, and maintenance costs, as well as notes on tenant's experiences with the equipment. A funding agreement for this project is also expected to be finalized soon.

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