Raquel J. Webster
Senior Counsel

September 17, 2021

BY ELECTRONIC MAIL

Luly E. Massaro, Commission Clerk
Rhode Island Public Utilities Commission
89 Jefferson Boulevard
Warwick, RI 02888

RE: Docket 5165 – 2021 Distribution Adjustment Clause (DAC)
Responses to PUC Data Requests – Set 3

Dear Ms. Massaro:

I have enclosed National Grid's[1] response to the Public Utilities Commission's Third Set of Data Requests in the above-referenced docket.[2]

Thank you for your attention to this filing. If you have any questions, please contact me at 781-907-2121.

Very truly yours,

Raquel J. Webster

Enclosures

cc: Docket 5165 Service List
Leo Wold, Esq.
Al Mancini, Division
John Bell, Division

[1] The Narragansett Electric Company d/b/a National Grid (National Grid or the Company).

[2] Per practice during the COVID-19 emergency period, the Company is providing a PDF version this report. The Company will provide the Commission Clerk with five (5) hard copies and, if needed, additional hard copies of this report upon request.

40 Sylvan Road, Waltham, MA 02451
T: 781-907-2121 ■ raquel.webster@nationalgrid.com ■ www.nationalgrid.com

Certificate of Service

I hereby certify that a copy of the cover letter and any materials accompanying this certificate was electronically transmitted to the individuals listed below.

The paper copies of this filing are being hand delivered to the Rhode Island Public Utilities Commission and to the Rhode Island Division of Public Utilities and Carriers.

Joanne M. Scanlon

September 17, 2021
Date

Docket No. 5165 – National Grid –2021 Annual Distribution Adjustment Charge Filing (DAC) - Service List as of 9/13/2021

Name/Address	E-mail	Phone
Raquel J. Webster, Esq. Jennifer Hutchinson, Esq. National Grid 40 Sylvan Road Waltham, MA 02451	raquel.webster@nationalgrid.com; Celia.obrien@nationalgrid.com; Joanne.scanlon@nationalgrid.com; Brooke.Skulley@nationalgrid.com; Jennifer.Hutchinson@nationalgrid.com;	781-907-2121
Steven Boyajian, Esq. Robinson & Cole LLP One Financial Plaza, 14th Floor Providence, RI 02903	SBoyajian@rc.com; lpimentel@rc.com;	401-709-3337
Ryan Scheib Melissa Little Michael Pini Jeffrey Oliveira James Allen Theresa Burns National Grid	Ryan.Scheib@nationalgrid.com; Melissa.Little@nationalgrid.com; michael.pini@nationalgrid.com; Jeffrey.oliveira@nationalgrid.com; James.h.allen@nationalgrid.com; Theresa.Burns@nationalgrid.com;	
Leo Wold, Esq. Division of Public Utilities & Carriers 89 Jefferson Boulevard Warwick, RI 02888	Leo.Wold@dpuc.ri.gov; John.bell@dpuc.ri.gov; Al.mancini@dpuc.ri.gov; Margaret.L.Hogan@dpuc.ri.gov; eullucci@riag.ri.gov; MFolcarelli@riag.ri.gov; Christy.hetherington@dpuc.ri.gov;	401-780-2130

Jerome D. Mierzwa Lafayette Morgan Exeter Associates 10480 Little Patuxent Parkway, Suite 300 Columbia, Maryland 21044	jmierzwa@exeterassociates.com; lmorgan@exeterassociates.com;	410-992-7500
David Effron Berkshire Consulting 12 Pond Path North Hampton, NH 03862-2243	Djeffron@aol.com;	603-964-6526
File an original & nine (9) copies w/: Luly E. Massaro, Commission Clerk Public Utilities Commission 89 Jefferson Blvd. Warwick, RI 02888	Luly.massaro@puc.ri.gov; Patricia.lucarelli@puc.ri.gov; Todd.bianco@puc.ri.gov; Alan.nault@puc.ri.gov;	401-780-2107

PUC 3-1

Request:

Referring to the response to Division 3-1, which indicates that Company is considering changing the way it administers its AGT program, please provide a description of how the Company administers the application process for the AGT program currently.

Response:

Please see Attachment PUC 3-1 for a description of the purpose, scope and administration of the Advanced Gas Technology program. Please see Section III of Attachment PUC 3-1 for a description of how the Company administers the application process for the AGT program.

THE NATIONAL GRID
RHODE ISLAND
ADVANCED GAS TECHNOLOGY PROGRAM

PROGRAM INFORMATION FOR
COMMERCIAL & INDUSTRIAL CUSTOMERS

TABLE OF CONTENTS

November, 2015

Dear valued customer:

Welcome to National Grid's Advanced Gas Technology program for our Commercial and Industrial customers. The Advanced Gas Technology (AGT) program influences the demand for natural gas during certain months of the year to improve the utilization of the distribution system and thereby lower the average unit cost of natural gas supply services to all firm customers. This program is based upon adding natural gas load rather than reducing load through conservation efforts.

Over the years of successful AGT programs, customers have determined the single most important benefit to them (relating to an Energy Project) is the reduction of capital cost. Therefore, the National Grid program is identical to other New England utilities' programs by virtue of its one-time, cash payment (i.e., incentive) to customers willing to install and operate natural gas technologies for their businesses in a certain way.

We are pleased to offer a program that helps you implement cost effective natural gas technologies to reduce your company's total energy cost. This document is designed to assist you in understanding the purpose, scope and administration of the Advanced Gas Technology program. It attempts to clearly explain the program and answer any questions you may have at your leisure. If it does not, please contact our Advanced Gas Technology Administrator at _____.

Very truly yours,

II. PROGRAM OVERVIEW

This section is a quick, introductory guide to the National Grid (NGRID) Advanced Gas Technology (AGT) program.

- ***Business Customers with energy Projects located within National Grid's service area are eligible to receive AGT incentives***.
- ***The AGT program is based on adding natural gas load; not conservation***.
- ***$300,000 in incentives available each year of the program***.
- ***Incentives of up to $50,000 per customer in any single program year.***[1]
- ***All projects and technologies are eligible providing they use more than 31% of natural gas in summer months (i.e., May - October) compared to the total year (i.e. September - August).***

Common natural gas technologies and applications typically meeting the eligibility criteria are listed below. The list depicted below is not all inclusive, it simply serves as an illustration of some technologies generally meeting the criteria due to typical operational schedules. There may be many others not listed below. It is important to note the award and incentive amount determination are not dependent upon which technology is used, but rather on the natural gas load profile and economics resulting from any kind of natural gas technology.

TECHNOLOGY	APPLICATION
Air Compressor	Product cooling or movement
Compressed Natural Gas	Personal or fleet cars and trucks
Engine-Driven Pump	Municipal water pumping
Convection Oven & Burner	Curing, drying and forming
Absorption/Engine Driven Chiller	Office air conditioning or process cooling
Desiccant Dehumidifier	Office or process dehumidification
Engine-Driven Generator	Cogeneration
Catalytic Infra-Red Heater	Curing, drying and forming
Incinerator	Solid waste or air pollutant destruction
Boiler & Burner	Process heating (i.e., steam, hot water, etc.)

[1] *Incentives greater than $50,000 per customer per year are allowed under certain circumstances. These instances are handled on a case-by-case basis. For more information, please contact our AGT Administrator.*

- **Eligible Energy Projects must:**

  1. Be located within National Grid's service area;

  2. Result in incremental natural gas load relative to previous years after normalizing for weather;

     This ensures the Energy Project provides benefits through added load. This is important, because the basis for the AGT program is the increased utilization of existing fixed resources like mains, services, and year-round supply contracts.

  3. Use more than 31% of its natural gas in the months of May through October, when compared to the months of September through August; and

     This ensures the natural gas technology provides benefits through improved utilization during the summer months, when the distribution system has available capacity.

  4. Be fully operational prior to issuance of any incentive.

- **Incentive amounts are individually calculated based on the estimated operating schedule of the technology; not prescriptive.**

  Each application will be reviewed for three items: (1) addition of natural gas load, including evaluation of revenues generated by the equipment; (2) load factor of added natural gas load; and (3) installation and operation of the Energy Project, including expected date of operation and associated installation, operation and maintenance costs by National Grid. Lastly, the Energy Project's *Technical Report* will be reviewed for engineering soundness. Applications for projects not meeting these criteria will be returned to the customer.

- **Three calculations will be performed for each project to determine the award amount**.

  National Grid's AGT program is designed to provide the largest incentives to the projects with the most significant benefit to all of the firm customers. To achieve this objective, three calculations are completed for each eligible project. The resulting incentives are based on the lesser of:

  1. 75% of the net margin generated over the accepted lifetime of the technology under the appropriate rate;
  2. 75% of the difference in costs between the Base and Alternate Energy Projects; and
  3. the capital contribution required to lower the Base Energy Project's simple payback to 1.5 years, when compared to the Alternate Energy Project.

All of these represent varying costs required to achieve a given benefit for the firm customers. Therefore, every Energy Project will have three cost-to-benefit ratios. In order to perform these three calculations, National Grid must receive a completed *Technical Report*. An example of a typical *Technical Report* is included in Appendix A.

Finally, it is important to note that there is a relationship between the AGT program's incentive and the Contribution In Aid of Construction (CIAC) for a new service/main or an upgrade to an existing service/main. For the case of new customers or customers whose application requires an investment in a new main, service and/or meter, the AGT incentive may be reduced by the contribution toward that investment.

The information provided in this Program Overview and the remaining document exclusively address the portions of the AGT program intended for the business community.

III. APPLICATION

This section explains the step-by-step procedure a customer follows when submitting an AGT Application. It also introduces and explains the various forms required to be executed between the customer and National Grid. Lastly, it references the purpose and location of the *Technical Guideline & Standard Reporting Format*.

Procedure

1. Customer identifies a potential Energy Project. The customer is considering two differently fueled technologies to satisfy an application's requirements. One of the Energy Project's technologies must be fueled by natural gas.
2. Customer makes a preliminary determination of the Energy Project's eligibility as defined in this document and contacts our AGT Administrator to clarify any concerns prior to commencing with the application process.
3. Customer requests AGT Application forms from our AGT Administrator or uses the forms provided in the appendices of this document.
4. Customer either directly performs an engineering analysis and assembles a *Technical Report* or contracts with an appropriate company (i.e., engineer, contractor, etc.) to perform the engineering analysis and assembles a *Technical Report*.
5. Customer determines if the final engineering analysis results in an Energy Project meeting the eligibility requirements detailed in this document.
6. If the customer's Energy Project meets the eligibility criteria, then the customer completes an AGT Application form, attaches the *Technical Report* and submits the completed application package to National Grid's AGT Administrator.
7. National Grid receives the completed AGT Application package, reviews the application package for completeness, reviews the Energy Project for eligibility and enters the appropriate information into an AGT tracking system.
8. The Energy Project's *Technical Report* is reviewed for a variety of characteristics like accuracy, engineering soundness, etc.
9. Upon approval of the project and associated incentive, the Company will send a letter of Award and Acceptance to the appropriate customers.
10. Customer executes the letter of Award & Acceptance and returns one original to National Grid, while keeping the second.
11. Customer installs the Energy Project and notifies National Grid's AGT Administrator upon complete, continuous and commercial operation of the Energy Project.
12. An authorized National Grid representative will visit the site and review the Energy Project for installation and operation compliance. This will be no later than two weeks after a customer contacts the AGT Administrator for a final inspection.
13. Upon a successful final inspection, National Grid will distribute the customer's incentive no later than two weeks after the inspection.

Distribution

Prior to distributing an incentive to a customer, the Energy Project will be inspected by an authorized National Grid representative for the following items...

1. free of items potentially affecting the Energy Project's correct operation;
2. waiver of lien between the customer and the installing contractor(s);
3. commercial operation; and
4. absence of outstanding issues on all of customer's accounts with National Grid.

The first bullet item ensures the project is completely installed and operational. The second item prevents the project from being legally stopped upon commencing its operation. The third item verifies the project is operating as an integral, day-to-day part of the customer's operations and in accordance with the *Technical Report*. The last item resolves any outstanding financial matters between a given customer's natural gas accounts and National Grid.

The term "commercial operation" refers to the commencement of the project's day-to-day operation that results in the anticipated natural gas usage. Projects not being utilized in the manner outlined in the customer's *Technical Report* will not receive the awarded incentive until such conditions preventing its anticipated utilization are resolved.

The verification of a project meeting the four criteria outlined above will be performed by an authorized National Grid representative. The inspection will occur within two weeks of contacting the Advanced Gas Technology Administrator.

Distribution of the incentive will only be made to the original applicant. Incentives will be forwarded to the original applicant within two weeks of a successful inspection by an authorized National Grid representative.

Forms

This section briefly explains the purpose of each form used in the AGT program. Since some of the forms are for special circumstances, not all customers or Energy Projects may be required to use every form during the course of receiving an incentive. The forms associated with the following explanations may be found in *Appendix B - Program Forms*.

AGT Application

The application form is referred to as the AGT Application. Its purpose is to organize and summarize the appropriate information on the customer and the customer's Energy Project. This form must be completed and submitted by all customers prior to National Grid evaluating a customer's Energy Project for an incentive. A "completed" AGT Application form refers to one which is fully complete and is free of significant errors, National Grid may, at its sole discretion, return an incomplete or error filled AGT Application to the customer. The AGT Application is inclusive of the *Technical Report*. Lastly, the applicant must be the Energy Project's owner.

Award & Acceptance (Firm Service Rates)

The Award & Acceptance form is a letter with the purpose of notifying the customer of National Grid's commitment to providing an incentive and also to acknowledge the customer's acceptance of the incentive. This particular form is used for all instances where the customer's project is using a firm supply of natural gas. The form is distributed to the customer by National Grid's AGT Administrator upon selecting its Energy Project. It contains various terms and conditions associated with the award and acceptance of an incentive both the customer and National Grid must follow. The most notable is the commitment of operating the Energy Project as outlined in the *Technical Report*.

Energy Project Compliance & Completion

The Energy Project Compliance & Completion form is used to verify the Energy Project has been installed and is operating as the *Technical Report* detailed as well as verifying the Energy Project's completion. The significance of this form is it allows the AGT Administrator to authorize the forwarding of the incentive to the customer.

Award Termination

The Award Termination form is used to terminate an incentive commitment National Grid has made to a customer or a customer's commitment to install or operate an Energy Project for any reason. An example of the latter occurrence may be a corporate decision to move the facility after National Grid has already committed to providing an incentive or a change in customer priorities after an incentive commitment. An example of the former is a customer that is not able to install and operate the Energy Project in the agreed upon time frame.

Technical Guideline & Standard Reporting Format

In order to ensure the success of each Energy Project from both the customer's and National Grid's perspectives and to assist in determining the incentive amount, National Grid requires the submission of a *Technical Report* with each AGT Application. The *Technical Report* will allow the AGT Administrator and Quality Control Manager to understand and evaluate the Energy Project from engineering and financial perspectives. The Quality Control management will be performed by an independent engineering company. Any questions related to an Energy Project's engineering soundness must be resolved prior to determining an award and incentive amount. Regardless of project size or complexity, all *Technical Reports* are required to be assembled in accordance with the *Technical Guideline & Standard Reporting Format* detailed in *Appendix A* of this document.

IV. QUESTIONS

Questions related to the C&I portions (i.e., NGV, Cogeneration and Customized C&I) of National Grid's AGT program may be directed to the National Grid's Advanced Gas Technology Administrator at781-907-1539.

V. GLOSSARY

This section summarizes and defines common terms used throughout this document.

AGT.....	Advanced Gas Technology program.
NGRID.....	The National Grid.
CCF.....	One hundred cubic feet of natural gas at standard conditions of 60^{o}F and 14.7 psig.
PSIG.....	Pounds per square inch gauge.
LNG.....	Liquefied Natural Gas.
NG.....	Natural Gas.
NGV.....	Natural Gas Vehicle.
CNG.....	Compressed Natural Gas.
DF.....	Dual Fuel.
Off-Peak.....	The months of May, June, July, August, September & October.
On-Peak.....	The months of November, December, January, February, March & April.
C&I.....	Commercial and Industrial.
CIAC.....	Contribution In Aid of Construction

APPENDIX A

TECHNICAL GUIDELINE & TYPICAL REPORTING FORMAT

THE NATIONAL GRID

COMMERCIAL & INDUSTRIAL

ADVANCED GAS TECHNOLOGY PROGRAM

Company Name
Street Address
City, State

Project Name:

PROCESS BOILER

Date

TABLE OF CONTENTS

1.0 ENERGY PROJECT SUMMARY

The Base Energy Project is a one-for-one replacement of an existing high pressure steam, No.4 oil fired boiler. It will utilize a dual fuel burner (i.e., No.4 oil and natural gas) boiler and will provide 75 pounds per square inch gage steam to the same manufacturing process application as the current boiler. The Company's manufacturing process does not require any modification due to the Base Energy Project. The new, 125 horsepower steam boiler will completely satisfy the manufacturing process' load.

The Base Energy Project will be installed in The Company's manufacturing facility located at Street Address in City, Rhode Island. Since this facility does not currently have a natural gas service, a new one is required to serve the boiler. It will consist of approximately 155 feet of 2 inch diameter plastic pipe connected to an existing main in front of Street Address.

This facility's existing, monthly natural gas usage will not be impacted, since there is not any monthly usage at this time. Based upon the National Grid's current service schedules and the manufacturing processes' historic No.4 oil usage, it appears the most appropriate schedule for the new boiler is Commercial & Industrial, Medium. Depending upon the magnitude of the incentive, the Base Energy Project is scheduled for completion in December, 2015.

2.0 CURRENT GAS USAGE

As previously mentioned, The Company's Street Address manufacturing facility currently does not have a natural gas service, therefore, there is not any monthly natural gas usage to report.

3.0 APPLICATION

The manufacturing process utilizing the boiler's steam is a curing and drying application. The Company manufactures various types of equipment such as…

- xxxxxxxxx
- xxxxxxxxx
- xxxxxxxxx
- xxxxxxxxx

Raw material is in the form of rolled lines. This material is typically purchased from companies like DuPont. Depending upon the specific product's thickness, strength and durability specifications, an appropriate number of rolled lines are twisted together to form a finished product. Certain products are coated with an epoxy like substance or are dyed, requiring heat to cure or dry prior to packaging, respectively. Curing and drying take place in vertical process ovens called towers. The coated or dyed lines are pulled into the bottom of a vertical oven by an electric motor, "climb" to the top of the tower, reverse direction (180^{o}) on a pulley and return to the bottom of the tower for winding and packaging.

Each tower has three sections where heat is "injected" to cure or dry the lines. Seventy-five pound per square inch (psig) steam from the No.4 oil process boiler is sent to finned tubes in each section. Fresh air is pulled into the bottom of an oven via a single fan. The air simply passes across each finned tube section and fills the oven with warm air. Steam condensate is returned to the boiler room, mixed with make-up water, treated and routed back to the boiler.

The oil boiler operates off differential steam pressure maintaining approximately 75 psig at all times. The No.4 oil is pumped from a 10,000 gallon underground storage tank to the boiler's burner via the necessary

valves, fittings, filters and an electrically fueled oil heater. (The boiler room is located below grade in a basement.) The heater raises the temperature of the oil to about 130 ^{o}F just prior to entering the burner. Unused oil is returned to the tank through a steam-to-oil heat exchanger designed to keep the oil warm in the tank.

Based upon the foreseeable future, The Company does not anticipate any reduction in the process' load. In fact, the new boiler has been slightly over-sized in order to accommodate future growth.

4.0 LOAD

The Company does not possess any actual metering data of its high pressure steam load for the tower manufacturing process. However, the following sections illustrate our engineering estimate of the processes' monthly load reported in thousands of British Thermal Units, or kBtu. For the purposes of this Technical Report, standby, distribution and heat exchanger thermal losses, etc. have been omitted, since the Base Energy Project will not result in a modification of the manufacturing process. Therefore, the pertinent "load" is the amount of heat leaving the boiler, not the amount of steam directly utilized by the process. The existing boiler is an International Watertube Boiler built and installed in 1960 and has received tune-ups twice a year.

The equation used to calculate the heat leaving the boiler was derived by the author and is not specifically cited. It is presented in this manner to keep the load calculation concise.

$$Q_{Process} = F_{Oil} * E_{Oil} / C_{kBtu} * N_{Efficiency}$$

where,

$Q_{Process}$	= Heat leaving boiler, kBtu/ 1 month;
F_{Oil}	= Amount of No.4 oil used in one month, gallons/1 month;
E_{Oil}	= Energy content of No.4 oil, Btu/ 1 gallon;
C_{kBtu}	= Conversion factor, 100,000 Btu/ 1 kBtu; and
$N_{Efficiency}$	= Average, estimated boiler efficiency, no units.

8,209 = (8,088) * (145,000) / (100,000) * 0.70

The following table details the historic No. 4 oil usage and the corresponding estimated amount of heat leaving the boiler each month. The historic oil usage is taken from a copy of The Company's monthly consumption record located in *Appendix D - Detailed Application Load Calculations*.

"PROCESS" LOAD

MONTH & YEAR	HISTORIC NO. 4 OIL CONSUMPTION (GALLONS)	"PROCESS" LOAD (kBtu)
January, -2014	0	0
February, 2014	0	0
March, 2014	0	0
April, 2014	0	0
May, 2014	8,088	8,209
June, 2014	6,110	6,202
July, 2014	4,073	4,134
August, 2014	5,650	5,735
September, 2014	3,784	3,841
October, 2014	0	0
November, 2014	0	0
December, 2014	0	0
Totals	**27,705**	**28,121**

Notes:

1. The Company does not possess a recent burner or boiler efficiency test. The existing boiler's efficiency is assumed to be 70%.
2. All months showing zero (except October) are when the new boiler will be operating on oil due to the existing natural gas distribution system's limitations in City at this time.
3. kBtu refers to 100,000 Btu.

5.0 BASE PROJECT

The Base Energy Project for this Technical Report is defined as the process steam boiler with dual fuel capability. The two fuels are natural gas and No.4 oil.

5.1 SYSTEM DESCRIPTION

The Base Energy Project's natural gas technology is a common, high pressure steam boiler. It is a 125 horsepower Cleaver-Brooks, packaged fire-tube boiler with a Cleaver-Brooks dual fuel burner system. The model number is CB900-125-150, where 900 refers to No.4 oil/natural gas fuels; 125 refers to horsepower and 150 refers to design steam pressure (i.e., 150 psig). It is capable of operating on either natural gas or No.4 oil. This boiler will be controlled with common pressure controls monitoring steam pressure to determine whether or not fuel is needed to maintain 75 psig. Since this boiler is a one-for-one replacement, it will integrate with the existing steam distribution system and manufacturing process without modification.

No.4 oil will be delivered from two aboveground, double walled oil storage tanks. Both 2,500 gallon tanks will be located in the room adjacent to the boiler room. Natural gas will be delivered via an underground service from xxxxxx Street to the boiler room. The exhaust flue and electric power panels will be new, but placed in the same space they currently occupy.

A schematic diagram of the boiler house is located *Appendix A* of this *Technical Report*.

5.2 SCOPE OF WORK

Permitting

The only permits required for this installation are the town of xxxxxx's local building, plumbing/mechanical and electrical permits.

Engineering

Design engineering is not required for this project, since it is a simple one-for-one replacement. The only difference between the existing and new boiler is the size; with the new boiler being 25 horsepower larger.

Civil Installation

In order to remove the existing boiler and rig the new boiler into place, the existing masonry wall must be demolished. This wall is at the outside grade, while the boiler rests one grade below. An overhead door will be installed in lieu of replacing the wall.

Although the existing concrete foundation will be reused, a small extension at the burner end of the boiler will be formed and poured to bridge an existing drain.

The two new oil tanks will be located in the room next to the boiler. Each tank is 2,500 gallons and has a double containment system. As with the boiler room wall at outside grade, the corresponding wall for the oil tanks must also be demolished in order to rig the oil tanks into place. The room housing the oil tanks has been gutted, cleaned and prepared for the tanks.

Mechanical Installation

This portion of the installation consists of steam header, flue, condensate return and tank, city water, compressed air and oil delivery and pre-heat subsystem interconnections. The only new system is the natural gas piping system.

The existing steam header located directly above the boiler will be reused. The only connection required is to the gate valve. This steam line is 8 inches in diameter.

A new flue (included as part of the boiler package) will be installed. It will be located directly above the new boiler. The new flue is approximately 16 inches in diameter and 25 feet in height.

The existing condensate return system will be replaced. This system will be located in the oil storage room adjacent to the boiler room. It will consist of a new 270 gallon receiving tank, pump, vent and the associated fittings and valves. The city water will be from the existing city water connection point without any changes.

The existing air compressor will be used with only slight modification to the delivery piping to satisfy the new connection point on the Cleaver-Brooks boiler. The compressed air is used to atomize the No.4 oil at the burner.

The existing primary, steam pre-heat system will not be replaced due to the tanks being located inside the building as opposed to outside and underground. A new fuel oil delivery and storage system will be installed. Two 2,500 gallon, double containment, steel oil storage tanks will be rigged and installed in the room adjacent to the boiler room. The tanks will be interconnected through common manifolds on both the supply and return. Oil will flow through a single filter and be pumped (new, 3 HP pump) through 1 1/8" carbon steel, screwed pipe with the appropriate fittings to the electric pre-heater. After the pre-heater, oil is pumped through a duplex oil filter (re-used) and delivered to the burner's control valve. This is all 1 1/8" piping. Unused oil is returned to the oil storage tanks via 1 1/8" piping.

A new natural gas service will be installed by National Grid. It will consist of approximately 155' of 2" plastic piping and the associated valves, regulator and meter header. The meter header will be located just outside the boiler room at grade level. A 2" natural gas, carbon steel pipe will be installed from the meter, through the masonry wall (on the burner side of the boiler), overhead from the boiler and a vertical run down to the burner. A pressure regulating valve will reduce the pressure from about 25" of water column (W.C.) to 12" W.C. An approved natural gas fuel train will be installed adjacent to the boiler and will consist of two control valves, vents and an isolation valve, along with miscellaneous fittings.

Electrical Installation

The electrical installation for this project is minimal due to the packaging of the various equipment. The only major electrical work will consist of routing power to the burner panel on the boiler, condensate return pump and electric pre-heater for the oil.

Rigging

The boiler will be rigged off of a trailer and positioned at the edge of the boiler room at outside grade. The boiler will be rolled onto outside grade level timbers. The timbers will be systematically removed until the boiler is completely lowered into the room and positioned. Final leveling to Cleaver-Brooks specifications will be performed by a millwright.

Start-Up & Testing

This will be performed by the local Cleaver-Brooks technician. The technician will be accompanied as needed by the mechanical and electrical installation contractors.

5.3 CAPITAL COST

Description of Task	Number of Units	Base Energy Project ($)
Permitting		
Local Building	1	$0
Engineering	0	$0
Major Equipment		
Steam Boiler (125 HP)	1	$81,000
Exhaust Flue	1	$0
Cond. Return Package	1	$0
Oil Storage Tank	2	$23,000
Civil Installation		
Masonry	1 Lot	$3,000
Overhead Door	1	$2,000
Oil Tank Removal	Not Eligible	$0
Asbestos Removal	Not Eligible	$0
Mechanical Installation	1 Lot	$4,481
Electrical Installation	1 Lot	$3,000
Utility Installation (NG Service)	1 Lot	$5,763
Rigging	1 Lot	$2,000
Project Management	0	$0
Start-Up & Testing	0	$0
TOTALS	**N/A**	**$124,244**

Notes:

1. Permitting - Included in Atlas' lump-sum quotation.
2. Engineering - Not required due the simplicity of the project.
3. Project Management - Performed by xxxxxxx by separately hiring contractors.
4. Start-Up & Testing - Included in the costs for Boiler and Mechanical and Electrical Installations.

5.4 ENERGY USAGE

The methodology used to calculate the quantity of natural gas the boiler will consume is derived by the author.

$$NG_{Usage} = Q_{Process} * C_{kBtu} / N_{Efficiency} / LHV$$

where,

NG_{Usage} = Natural gas used by the boiler, CCF;
$Q_{Process}$ = Heat leaving the boiler, kBtu/ 1 month;
C_{kBtu} = Conversion factor, 100,000 Btu/ 1 kBtu;
$N_{Efficiency}$ = Reported new boiler's efficiency at 75% firing, no units; and
LHV = Lower Heating Value of natural gas, 92,520 Btu/ 1 CCF.

10,954 = (8,209) * (100,000) / (0.81) / (92,520)

CURRENT & BASE ENERGY PROJECT NATURAL GAS USAGE

MONTH & YEAR	PROCESS LOAD (kBtu)	CURRENT NG USAGE (CCF)	BASE NG USAGE (CCF)
January, 2014	0	0	0
February, 2014	0	0	0
March, 2014	0	0	0
April, 2014	0	0	0
May, 2014	8,209	0	10,954
June, 2014	6,202	0	8,276
July, 2014	4,134	0	5,516
August, 2014	5,735	0	7,653
September, 2014	3,841	0	5,125
October, 2014	0	0	0
November, 2014	0	0	0
December, 2014	0	0	0
TOTALS	**28,121**	**0**	**37,524**

Notes:

1. Usage is not shown for January-March, November and December because it is not relevant to this *Technical Report*. The boiler is only approved to operate on natural gas from April-October. April's usage is not shown as an economic consideration to avoid being "bumped" into the Large, High Load Factor rate and a monthly demand charge on the natural gas, while October's usage is not shown due to no oil drops.

5.5 OPERATIONS & MAINTENANCE COSTS

Cost of Fuels

There are two fuels consumed by the boiler for the aforementioned months of operation on natural gas - natural gas and electricity. Natural gas is used as the main fuel in the boiler, while electricity is used to operate the burner's blower motor.

Natural gas will be purchased from the National Grid under its Commercial & Industrial, Medium, service schedule. Although this is a firm service schedule, it has been determined this boiler must be curtailed along with the non-firm customers located in the City area due to inadequate capacity during National Grid's on-peak season. Therefore, this boiler will operate on natural gas from May to October each year and adhere to the non-firm curtailment procedures as The Company's Lower Mill facility's non-firm account currently follows. Under this operating scenario, The Company will incur a customer charge for each month (12) and a commodity charge will be as the service schedule indicates. The monthly cost of natural gas is computed as follows.

$$NG_{Cost} = CC + (CCF_1 * CCF_{1\$}) + (CCF_2 * CCF_{2\$}) + (NG_{Usage} * GCC)$$

where,

NG_{Cost}	= Cost of natural gas, $/month;
CC	= Customer charge, $/month;
CCF_1	= First step volume thru meter, CCF/month;
CCF_2	= All other step volume thru meter, CCF/month;
$CCF_{1\$}$	= First step volume price, $/CCF;
$CCF_{2\$}$	= All other volume thru meter price, $/CCF;
NG_{Usage}	= Total volume thru meter, CCF/month; and
GCC	= Gas Charge Clause, $/CCF.

6,313.90 = (28) + (675 * 0.6504) + (10,279 * 0.4679) + (10,954 * 0.0947)
For Medium C&I: 8,421.60 = (70.00) + (675 * 0.1923) + (10,279 *0.1923) + (10,954 * 0.5701)

COST OF NATURAL GAS

MONTH & YEAR	NATURAL GAS USAGE (CCF)	NATURAL GAS COST ($)
January, 2014	0	$28.00
February, 2014	0	$28.00
March, 2014	0	$28.00
April, 2014	0	$28.00
May, 2014	10,954	$6,313.90
June, 2014	8,276	$4,807.27
July, 2014	5,516	$3,554.49
August, 2014	7,653	$4,456.77
September, 2014	5,125	$3,034.52
October, 2014	0	$28.00
November, 2014	0	$28.00
December, 2014	0	$28.00
TOTALS	**37,524**	**$22,362.95**

1. Electricity for the burner will be purchased from National Grid at Rate G-32, the rate schedule under which the facility receives electric service pursuant to National Grid's electric tariffs, including Last Resort Service at rates applicable to Rate G-32 unless the facility receives its electric supply from a Nonregulated Power Producer. When the burner is operating on natural gas, the Cleaver-Brooks cut-sheet indicates it will consume less electricity than on oil. Therefore, no calculations of electricity cost is provided below for natural gas. (The estimate for oil is calculated in the Alternate Energy Project section of this *Technical Report*.)

Labor & Materials

Only the incremental labor and material costs are illustrated in this section. Since the Company does not have to add labor to operate the new boiler, then there is not any associated operating labor cost. Also, since the amount of boiler feedwater chemicals is independent of the fuel used, there is not any incremental operating material cost. Lastly, according to a local Cleaver-Brooks representative, the annual maintenance cost for a dual fuel (No.4 oil and natural gas) is the same as for a No.4 oil only boiler (both are about $900). Since there is not any incremental cost, the maintenance is not shown below.

SUMMARY OF ANNUAL O&M COSTS FOR BASE PROJECT

O&M ITEM DESCRIPTION	ANNUAL COST
Fuel	
Natural Gas	$22,362.95
Electricity	$0
Operations	$0
Maintenance	$0
TOTALS	**$22,362.95**

6.0 ALTERNATE PROJECT

The Alternate Energy Project for this *Technical Report* identical to the Base Energy Project, without the natural gas service, meter header and piping in the boiler room.

6.1 SYSTEM DESCRIPTION

The system's description is identical to the Base energy Project's, without the natural gas service, meter header and piping in the boiler room.

6.2 SCOPE OF WORK

Mechanical Installation

This area of work will be the only one with a significant difference between the Base and Alternate Energy Projects. The natural gas underground service and piping from the outlet side of the meter header to the burner's fuel train will not be performed. This is inclusive of the associated venting and minor controls work.

6.3 CAPITAL COST

Description of Task	Number of Units	Base Energy Project ($)
Permitting		
Local Building	1	$0
Engineering	0	$0
Major Equipment		
Steam Boiler (125 HP)	1	$81,000
Exhaust Flue	1	$0
Cond. Return Package	1	$0
Oil Storage Tank	2	$23,000
Civil Installation		
Masonry	1 Lot	$3,000
Overhead Door	1	$2,000
Oil Tank Removal	Not Eligible	$0
Asbestos Removal	Not Eligible	$0
Mechanical Installation	1 Lot	$3,000
Electrical Installation	1 Lot	$3,000
Rigging	1 Lot	$2,000
Project Management	0	$0
Start-Up & Testing	0	$0
TOTALS	**N/A**	**$117,000**

Notes:

1. Engineering - Not required due the simplicity of the project.
2. Project Management - Performed by Equipment by separately hiring contractors.
3. Start-Up & Testing - Included in the costs for Boiler and Mechanical and Electrical Installations.

6.4 ENERGY USAGE

The energy used by the Alternate Energy Project consists of No.4 oil and electricity. The No.4 oil is based upon the historic consumption taken from *Appendix D - Detailed Application Load Calculations*.

The boiler will use about 7.6 kilowatts (i.e., 5 kilowatts for oil heater, 3 hp for oil storage tank pump and 0.5 hp for oil pump shown on Cut Sheet in *Appendix B - Manufacturer's Performance Data Sheets* with 0.746 kW/hp as the conversion.) more electricity when operating on No.4 oil for this particular model boiler. Since the burner's electric energy usage is relatively small, the average cost of a kilowatt-hour from The Company's corresponding monthly bills has been used to determine the average price of electricity. The customer charge has been omitted, because it does not represent an incremental cost to operate the boiler. With these items in mind, the monthly usage of electricity may be calculated as follows.

$$E_{Usage} = Oil_{Usage} / Oil_{Hourly} * E_{Burner}$$

where,

E_{Usage} = Electricity used by burner, kWh/month;
Oil_{Usage} = Oil used by the boiler, Gallons/month;
Oil_{Hourly} = Ave. rated oil demand (Light & Heavy) on burner, CCF/hour;
E_{Burner} = Rated electricity demand on burner, kW; and

1,696 = (8,088) / (36.25) * (7.6)

ELECTRICITY USAGE

MONTH & YEAR	HISTORIC OIL USAGE (GALLONS)	BURNER'S ELECTRICITY USAGE (kWh)
January, 2014	0	0
February, 2014	0	0
March, 2014	0	0
April, 2014	0	0
May, 2014	8,088	1,696
June, 2014	6,110	1,281
July, 2014	4,073	854
August, 2014	5,650	1,185
September, 2014	3,784	793
October, 2014	0	0
November, 2014	0	0
December, 2014	0	0
TOTALS	**27,705**	**5,809**

6.5 OPERATIONS & MAINTENANCE COSTS

Cost of Fuels

There are two fuels consumed by the boiler for the aforementioned months of operation- - No.4 oil and electricity. No.4 oil is used as the main fuel in the boiler, while electricity is used to operate the burner's blower motor.

The Company currently purchases its No.4 oil from a variety of suppliers throughout the year. The cost of No.4 oil at the Upper Mill facility is as follows.

$$Oil_{Cost} = Oil_{Usage} * Oil_{Price}$$

where,

Oil_{Cost} = Cost of No.4 oil, $/month;
Oil_{Usage} = Total gallons used, Gallons/month; and
Oil_{Price} = Price from supplier, $/Gallon.

4,922.36 = (8,088) * (0.6086)

The Company currently purchases its electricity from Narragansett Electric Company under the G-30 service rate. The cost of electricity (incremental for oil firing of the burner) for the burner at the Upper Mill facility is as follows.

$$E_{Cost} = E_{Usage} * E_{Price}$$

where,

E_{Cost} = Total cost of electricity, $/month;
E_{Usage} = Electricity used by burner, kWh/month; and
E_{Price} = Ave. electricity price, $/kWh.

99.52 = (1,696) * (0.05868)

COST OF NO. 4 OIL AND ELECTRICITY

MONTH & YEAR	OIL USAGE (GAL.)	OIL PRICE ($/GAL.)	OIL COST ($)	ELEC. USAGE (kWh)	ELEC. PRICE ($/kWh)	ELEC. COST ($)
Jan, 2014	0	0	0	0	0	0
Feb, 2014	0	0	0	0	0	0
Mar, 2014	0	0	0	0	0	0
Apr, 2014	0	0	0	0	0	0
May, 2014	8,088	$0.6086	$4,922.36	1,696	$0.05868	$99.52
Jun, 2014	6,110	$0.5455	$3,333.01	1,281	$0.05868	$75.17
Jul, 2014	4,073	$0.5663	$2,306.54	854	$0.06063	$51.78
Aug, 2014	5,650	$0.5897	$3,331.81	1,185	$0.06187	$73.32
Sep, 2014	3,784	$0.6312	$2,388.46	793	$0.06142	$48.71
Oct, 2014	0	0	0	0	0	0
Nov, 2014	0	0	0	0	0	0
Dec, 2014	0	0	0	0	0	0
TOTAL	**27,705**	**$ 0.59**	**$16,282.18**	**5,809**	**$ 0.06**	**$ 348.50**

Labor & Materials

Same explanation as in the Base Energy Project.

SUMMARY OF ANNUAL O&M COSTS FOR ALTERNATE PROJECT

O&M ITEM DESCRIPTION	ANNUAL COST
Fuel	
No.4 Oil	$16,282.18
Electricity	$348.50
Operations	$0
Maintenance	$0
TOTALS	**$16,630.68**

7.0 SUMMARY TABLE

Energy Project	Capital Cost	O&M Costs	Simple Payback (Yrs.)	Load Factor (%)	Annual Gas Usage (CCF)	Equip. Life (Years)
Current	N/A	N/A	N/A	N/A	N/A	N/A
Base	$124,244	$22,363	N/A	N/A	37,524	25
Alternate	$117,000	$16,631	(1.26)	100%	0	25
Differences	$7,244	($5,732)	N/A	N/A	37,524	0

Notes:

1. Load factor is 100%, since natural gas is only used between May and October.
2. ASHRAE Handbook of HVAC Systems & Applications, 1987; Page 49.7. See *Appendix H*.

8.0 APPENDIX A - Schematic Diagram

9.0 APPENDIX B - Manufacturer's Performance Data Sheets

10.0 APPENDIX C - Detailed Capital Cost Estimate

11.0 APPENDIX D - Detailed Application Load Calculations

12.0 APPENDIX E - Detailed Energy Usage Calculations

13.0 APPENDIX F - Average Price of Electricity Calculation

14.0 APPENDIX G – National Grid Load Approval Letter & Quotation

15.0 APPENDIX H - ASHRAE's Equipment Service Life

APPENDIX B

AGT PROGRAM FORMS

THE NATIONAL GRID

COMMERCIAL & INDUSTRIAL ADVANCED GAS TECHNOLOGY PROGRAM

AGT APPLICATION

APPLICANT'S MAILING INFORMATION	APPLICANT'S CONTACT INFORMATION
Company Name:	Contact Name:
P.O. Box:	Department:
Street Address:	Title:
City/Town	Telephone #:
State & Zip Code:	Fax #:

ENERGY PROJECT INFORMATION	NATIONAL GRID USE ONLY
Base Energy Project Name:	Application Receipt Date:
Company Name	Technical Report Receipt Date:
Building Name:	Quality Control Returned:
Street Address:	Incremental NG:
City/Town:	Service Rate:
Application Date:	Load Factor:
Technical Report Date:	Incentive:

THE NATIONAL GRID

COMMERCIAL & INDUSTRIAL ADVANCED GAS TECHNOLOGY PROGRAM

LETTER OF AWARD & ACCEPTANCE

FIRM SERVICE RATES

This *Letter of Award & Acceptance* confirms National Grid's commitment to provide _____ with an $_____ incentive corresponding to _____ installing a gas fired process boiler.

The incentive is a result of _____ *AGT Application*, dated _____, submitted to National Grid's Commercial & Industrial Advanced Gas Technology Program. The incentive is solely intended for the installation of a gas fired boiler for process and may not be used towards any other endeavor other than the Conversion Energy Project cited in the aforementioned *AGT Application* and corresponding *Technical Report*.

This commitment is based upon _____ Energy Project consuming an incremental amount of natural gas as indicated in the attached table, *NATURAL GAS USAGE - Table No.1* under _____ service rate as indicated in the *AGT Application* and *Technical Report* and National Grid has executed a copy of the *Letter of Energy Project Compliance & Completion* prior to _____; Energy Projects not meeting these criteria will result in a termination of the AGT incentive.

CUSTOMER agrees to allow National Grid periodic access to its Energy Project's invoices, records, utility bills, etc. to confirm the actual versus estimated performance as documented in the *AGT Application* and *Technical Report*. The periodic access will not exceed the first two years of the Energy Project's commercial operation. Upon National Grid identifying the Energy Project under performing, _____ is obligated to return the full incentive to within four weeks from the date of a *Letter of Termination* from National Grid.

By signing this *Letter of Award & Acceptance*, National Grid acknowledges the award and acknowledges _____ intent to proceed with the Energy Project. Moreover, _____ further commits to National Grid that _____ will install and operate the Conversion to Natural Gas Energy Project in accordance with the *AGT Application* and the *Technical Report*, both dated _____, as well as the following correspondence...

DATE	AUTHOR	SUBJECT
5/12/99	----------	Gas Fired Process Boiler

This *Letter of Award & Acceptance* and corresponding incentive may not be assigned to another party without the prior written approval of National Grid.

CUSTOMER warrants to National Grid that the undersigned is a representative of CUSTOMER and is authorized to execute this *Letter of Award & Acceptance.*

NATIONAL GRID	**CUSTOMER**
Name (Authorized Signature)	Name (Authorized Signature)
Name (Print)	Name (Print)
Title (Print)	Title (Print)
Date	Date

NATURAL GAS USAGE

Table No.1

MONTH & YEAR	HISTORICAL USAGE (CCF)	ANTICIPATED USAGE (CCF)	INCREMENTAL USAGE (CCF)
January,			
February,			
March,			
April,			
May,			
June,			
July,			
August,			
September,			
October,			
November,			
December,			
Totals			

NATURAL GAS SERVICE RATE

Check the natural gas service rate the Energy Project's incremental consumption of natural gas will occur under.

- ☐ Small, High Load Factor
- ☐ Small, Low Load Factor
- ☐ Medium, High Load Factor
- ☐ Medium, Low Load Factor
- ☐ Large, High Load Factor
- ☐ Large, Low Load Factor
- ☐ Extra-Large, High Load Factor
- ☐ Extra-Large, Low Load Factor
- ☐ CNG Vehicle – Firm
- ☐ CNG Vehicle – Interruptible
- ☐ Gas Lamps
- ☐ Non-Firm Sales - No.2 Oil
- ☐ Non-Firm Sales - No.4 Oil
- ☐ Non-Firm Sales - No.6 Oil
- ☐ Non-Firm Sales – Propane
- ☐ Non-Firm Transportation
- ☐ Flexible Firm
- ☐ Firm Transportation
- ☐ Standby
- ☐ Balancing

NATIONAL GRID

COMMERCIAL & INDUSTRIAL ADVANCED GAS TECHNOLOGY PROGRAM

LETTER OF ENERGY PROJECT COMPLIANCE & COMPETITION

Customer warrants to National Grid that the "Duel Fuel Conversion of Process Boilers and Glass Furnaces" Energy Project is operating and is being maintained as outlined in the GE Lighting *AGT Application*, dated May 8th, 1997 and *Technical Report* of the same date.

Customer further warrants to National Grid there are not any punchlist items, executed or pending liens, life safety or other applicable Federal, State or local code violations, or any other potential or pending encumbrances that might jeopardize the Energy Project's commercial operation in Customer's aforementioned *AGT Application* and *Technical Report*.

Customer agrees it has disclosed and provided sufficient information to National Grid and its authorized representative, prior to and during the site inspection, for the representative to determine any reason the Energy Project is not in full compliance to receive the incentive.

National Grid acknowledges its review and inspection of "Sample" Energy Project on this 4th day of November 2014 Based upon Customer agreeing to the aforementioned terms and conditions and National Grid's authorized representative's review and inspection of the Energy Project, National Grid hereby acknowledges the completion, commercial operation and compliance of the Energy Project.

Customer warrants to National Grid that the undersigned is a representative of Customer and is authorized to execute this *Letter of Energy Project Compliance & Completion*.

NATIONAL GRID	**CUSTOMER**
Name (Authorized Signature)	**Name (Authorized Signature)**
Name (Print)	**Name (Print)**
Title (Print)	**Title (Print)**
Date	**Date**

APPENDIX C

EQUIPMENT MANUFACTURERS

PUC 3-2

Request:

How many AGT program applications were processed during the last three years, if any? Please describe each and the outcome of each application. Please also include in the count any applications now pending.

Response:

There were no AGT program applications processed in the past three years.

PUC 3-3

Request:

Referring to the response to Division 3-1 and the reference to the development of the natural gas distribution margin for a job and the calculations of the CIAC, please explain how the distribution margin and the CIAC is calculated for a typical customer requesting a gas service connection that requires a capital investment, providing a schedule showing the rate components that are used in the calculations. Please also provide an example of a hypothetical project to illustrate the calculations. Please indicate the extent to which the CIAC calculation that is applied in the context of an AGT application would differ from what occurs for a gas service connection.

Response:

Please see Attachment PUC 3-1 for the current calculation of margin and the CIAC for a typical gas service connection.

Please see pages 5, 6, 8 and 14-30 of Attachment PUC 3-1.

Please see Attachment PUC 3-3 for the calculations for a hypothetical project.

MARGIN CALCULATION — Firm Sales Service

Rates for Effect 05/01/21	Customer Charge (Monthly)	Demand Rate (MADQ Th)	Distribution $ Head (Th)	Distribution $ Tail (Th)	Embedded Gas Cost	Head Margin (per Th)	Tail Margin (per Th)
SMALL LOW LOAD FACTOR	$ 25.00	$ -	$ 0.5232	$ 0.4619	$ -	$ 0.5232	$ 0.4619
SMALL HIGH LOAD FACTOR	$ 25.00	$ -	$ 0.5232	$ 0.4619	$ -	$ 0.5232	$ 0.4619
MEDIUM LOW LOAD FACTOR	$ 85.00	$ 1.5000	$ 0.2725	$ -	$ -	**$ 0.2725**	
MEDIUM HIGH LOAD FACTOR	$ 85.00	$ 1.5000	$ 0.2725	$ -	$ -	**$ 0.2725**	
LARGE LOW LOAD FACTOR	$ 200.00	$ 1.5000	$ 0.2643	$ -	$ -	**$ 0.2643**	
LARGE HIGH LOAD FACTOR	$ 200.00	$ 2.0500	$ 0.1767	$ -	$ -	**$ 0.1767**	
EXTRA LARGE LOW LOAD FACTOR	$ 500.00	$ 1.5000	$ 0.0508	$ -	$ -	**$ 0.0508**	
EXTRA LARGE HIGH LOAD FACTOR	$ 500.00	$ 2.0500	$ 0.0433	$ -	$ -	**$ 0.0433**	

Calculation of Current Distribution Margin

MADQ-Current (Th)	26,266	Customer	Demand	Distribution $			TOTAL
Month	Current (Th)	Charge		M, L, XL	Small Low	Small High	MARGIN
Jan	814,239	$ 500	$ 53,845	$ 35,257	-	-	$ 89,601
Feb	713,326	$ 500	$ 53,845	$ 30,887	-	-	$ 85,232
Mar	771,750	$ 500	$ 53,845	$ 33,417	-	-	$ 87,762
Apr	635,224	$ 500	$ 53,845	$ 27,505	-	-	$ 81,850
May	631,286	$ 500	$ 53,845	$ 27,335	-	-	$ 81,680
Jun	637,478	$ 500	$ 53,845	$ 27,603	-	-	$ 81,948
Jul	625,631	$ 500	$ 53,845	$ 27,090	-	-	$ 81,435
Aug	625,898	$ 500	$ 53,845	$ 27,101	-	-	$ 81,446
Sep	594,280	$ 500	$ 53,845	$ 25,732	-	-	$ 80,077
Oct	596,348	$ 500	$ 53,845	$ 25,822	-	-	$ 80,167
Nov	620,901	$ 500	$ 53,845	$ 26,885	-	-	$ 81,230
Dec	704,221	$ 500	$ 53,845	$ 30,493	-	-	$ 84,838
TOTAL	7,970,582	$ 6,000	$ 646,138	$ 345,126	$ 0	$ 0	$ 997,264
						average distribution margin / Th	$ 0.125
Off Peak=May-Oct	3,710,921		Rate Classification	8	EXTRA LARGE HIGH LOAD FACTOR		
Off Peak / Total	47%		Load Factor	1			

Calculation of Proposed Distribution Margin

MADQ-Proposed (Th)	40,743	Customer	Demand	Distribution $			TOTAL
Month	Proposed (Th)	Charge		M, L, XL	Small Low	Small High	MARGIN
Jan	1,263,044	$ 500	$ 83,524	$ 54,690	-	-	$ 138,714
Feb	1,128,997	$ 500	$ 83,524	$ 48,886	-	-	$ 132,909
Mar	1,258,293	$ 500	$ 83,524	$ 54,484	-	-	$ 138,508
Apr	1,112,689	$ 500	$ 83,524	$ 48,179	-	-	$ 132,203
May	1,211,862	$ 500	$ 83,524	$ 52,474	-	-	$ 136,498
Jun	1,226,560	$ 500	$ 83,524	$ 53,110	-	-	$ 137,134
Jul	1,268,664	$ 500	$ 83,524	$ 54,933	-	-	$ 138,957
Aug	1,243,527	$ 500	$ 83,524	$ 53,845	-	-	$ 137,869
Sep	1,179,193	$ 500	$ 83,524	$ 51,059	-	-	$ 135,083
Oct	1,109,531	$ 500	$ 83,524	$ 48,043	-	-	$ 132,067
Nov	1,110,803	$ 500	$ 83,524	$ 48,098	-	-	$ 132,122
Dec	1,206,836	$ 500	$ 83,524	$ 52,256	-	-	$ 136,280
TOTAL	14,319,999	$ 6,000	$ 1,002,287	$ 620,056	$ 0	$ 0	$ 1,628,342
						average distribution margin / Th	$ 0.114
Off Peak=May-Oct (Th)	7,239,337		Rate Classification	8	EXTRA LARGE HIGH LOAD FACTOR		
Off Peak / Total	51%		Load Factor	1.00			
Incremental Distribution Margin per year		$ 631,078					

PUC 3-4

Request:

Refer to the response to Division 3-1 and the statement "[t]he Company has experienced success this year with the use of energy efficiency technical assessment studies to identify potential AGT program measures." Please elaborate on the nature of the success, describe the studies, identify the potential program measures, and explain how the studies were used to identify the measures.

Response:

The Company recommends using the same engineering technical assistance studies used for energy efficiency projects to determine if a customer's gas application fits the usage criteria required for the AGT Program. Each time a customer is required to pursue an engineering study for an energy efficiency project, combining the study to evaluate AGT eligibility reduces cost and simplifies both the application and approval process.

In the example of a natural gas fired combined heat and power ("CHP") project, the application is thoroughly studied by the engineering firm reviewing the proposed usage, duration, and hours/months operation. Flat load periods or non-heating periods usage is easily determined when a measure proposed sequence of operation is submitted for review in an energy efficiency engineering study.

For example, please see pages 1-4 in Attachment PUC 3-4 from a typical study of this type showing proposed electric (kWh) and gas (Therm) usage for a full 12-month period.

Appendix A – Utility Details

Electric Peak and Super Peak Periods

The following peak and super peak periods provided by National Grid were utilized in the analysis.

% Summer On Peak (Input)	% of electric energy savings that occur between 7am-11pm, M-F, June-Sept, excluding holidays. Period represents approximately 1,380 hours.
% Summer Off Peak (Input)	% of electric energy savings that occur between June-Sept outside of the Summer On Peak Period. Period represents approximately 1,550 hours.
% Winter On Peak (Input)	% of electric energy savings that occur between 7am-11pm, M-F, Oct-May, excluding holidays. Period represents approximately 2,600 hours.
% Winter Off Peak (Input)	% of energy savings that occur between Oct-May outside of the Winter On Peak hours. Period represents approximately 3,230 hours.
Summer Peak kW (Input)	Average kW savings that occur over the ISO-NE Summer Peak Demand period (1pm-5pm, M-F, June-August, holidays excluded). Note that demand savings are average over the period. Ensure savings are discounted appropriately for operational shutdowns.
Winter Peak kW (Input)	Average kW savings that occur over the ISO-NE Winter Peak Demand period (5p-7pm, M-F, Dec and Jan, holidays excluded). Note that demand savings are average over the period. Ensure savings are discounted appropriately for operational shutdowns.

Average kW Savings	kW	Percent
Summer On-Peak Savings	1,242.6	96.10%
Summer Off-Peak Savings	1,173.8	90.78%
Winter On-Peak Savings	1,144.6	88.52%
Winter Off-Peak Savings	1,175.8	90.94%
On Peak Savings	1,177.4	91.06%
Off Peak Savings	1,175.1	90.88%
Super Peak Summer Savings	1,163.4	89.98%
Super Peak Winter Savings	1,126.3	87.11%
Super Peak Savings	1,154.6	89.30%

System Operating Efficiency

Electric, thermal and total operating efficiency is as follows:

System Efficiency	Electric	Thermal	Total
	34.82%	23.95%	58.77%

Historical Electricity Use (including Energy Conservation Measure impacts)

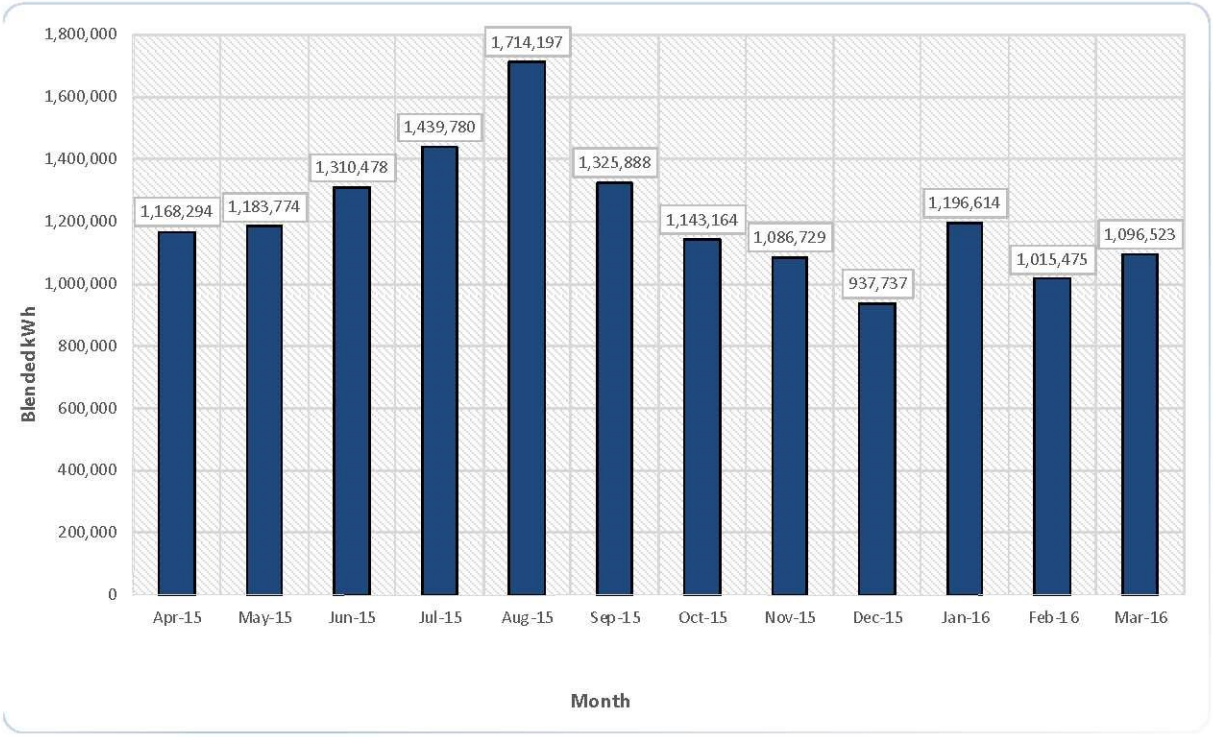
Facility:	
Address:	
City, State:	
ZIP:	

Delivery Company:	
Delivery Account#:	
Rate Classification:	

Supply Company:	N/A
Supply Account#:	N/A

From	To	kWh	Total Blended $ per kWh
4/17/2015	5/16/2015	1,168,294	
5/17/2015	6/16/2015	1,183,774	
6/17/2015	7/16/2015	1,310,478	
7/17/2015	8/16/2015	1,439,780	
8/17/2015	9/16/2015	1,714,197	
9/17/2015	10/16/2015	1,325,888	
10/17/2015	11/16/2015	1,143,164	
11/17/2015	12/16/2015	1,086,729	
12/17/2015	1/16/2016	937,737	
1/17/2016	2/16/2016	1,196,614	
2/17/2016	3/16/2016	1,015,475	
3/17/2016	4/16/2016	1,096,523	
		14,618,652	**$0.122**

Notes:
1. Blended rate provided by National Grid.



Historical Natural Gas Use (Fuel Oil use was minimal and reported as Natural Gas use here)

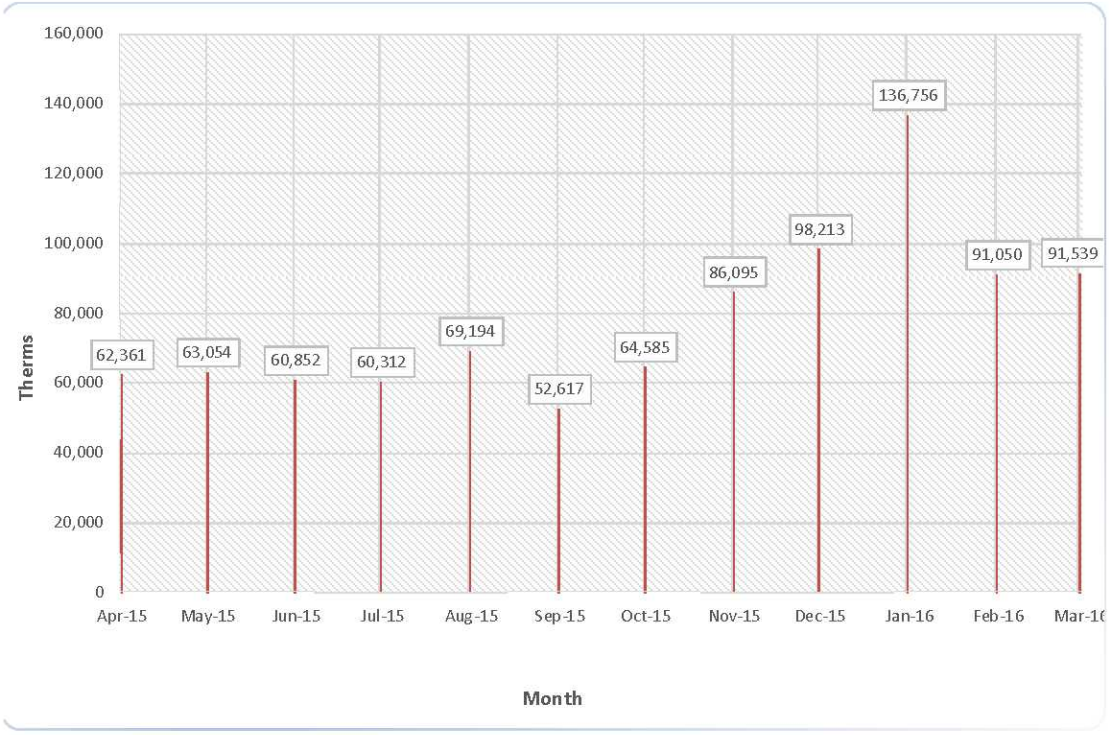
Facility:	
Address:	
City, State:	
ZIP:	

Delivery Company:	
Delivery Account#:	
Rate Classification:	

Supply Company:	N/A
Supply Account#:	N/A

From	To	Therms	Total $ per Therm
4/17/2015	5/16/2015	62,361	
5/17/2015	6/16/2015	63,054	
6/17/2015	7/16/2015	60,852	
7/17/2015	8/16/2015	60,312	
8/17/2015	9/16/2015	69,194	
9/17/2015	10/16/2015	52,617	
10/17/2015	11/16/2015	64,585	
11/17/2015	12/16/2015	86,095	
12/17/2015	1/16/2016	98,213	
1/17/2016	2/16/2016	136,756	
2/17/2016	3/16/2016	91,050	
3/17/2016	4/16/2016	91,539	
		936,628	**$0.640**

Notes:
1. Rate provided by National Grid.



PUC 3-5

Request:

Does the Company believe it is in the interest of ratepayers to continue the AGT program, including the provisions which allow for recovery of incentives under the Distribution Adjustment Clause? If yes, please explain why.

Response:

The Company believes the continuance of the AGT Program is in the interest of its customers.

The AGT Program was designed to lower gas rates and, consequently, gas bills of the Company's customers by flattening annual gas loads by increasing consumption in the off-peak season months. Improving the Company's load factor by adding consistent, annual baseload consumption and off-peak consumption benefits all rates throughout the year (delivery and supply). Additionally, the Company has endeavored to employ the AGT Program to advance decarbonization and efficiency measures and will continue to do so in the future, if permitted.

PUC 3-6

Request:

Please indicate whether or not the Company believes that continuation of the AGT program conflicts with the objectives of the recently enacted Act on Climate, given that the AGT program is designed to promote the development of gas technologies that increase usage of natural gas delivered on the Company's system during periods of low demand which brings in more margin for the Company. Please explain the response.

Response:

The Company does not believe that the AGT program conflicts with the objectives of the 2021 Act on Climate as codified in R.I. Gen. Laws §§ 42-6.2-1, *et seq*. The AGT program is not designed to increase the burning of natural gas by customers in the aggregate, but to find ways to optimize the manner in which natural gas is used. This is consistent with one of the stated purposes of the 2021 Act on Climate which is to reduce expenditures on energy. *See* R.I. Gen. Laws § 42-6.2-3.

As stated in the Company's response to data request PUC 3-5, the AGT program influences the demand for natural gas during certain months of the year to improve the utilization of the distribution system by increasing the company's load factor, and thereby lower the average unit cost of natural gas supply services to all firm customers.

While the 2021 Act on Climate has accelerated the timeframes for the State's reduction in greenhouse gas emissions from those set forth in the R.I. Gen. Laws § 42-6.2-2(a)(i) prior to amendment by the Act, the State's aggressive greenhouse reduction targets have co-existed with the AGT program for years.