



ATTORNEYS & COUNSELORS AT LAW EST. 1884

One Tampa City Center, Suite 2000  
201 N. Franklin Street  
P.O. Box 1531 (33601)  
Tampa, FL 33602  
813.273.4200 Fax: 813.273.4396

[WWW.MFMLEGAL.COM](http://WWW.MFMLEGAL.COM)  
EMAIL: [INFO@MFMLEGAL.COM](mailto:INFO@MFMLEGAL.COM)

625 Court Street, Suite 200  
P.O. Box 1669 (33757)  
Clearwater, FL 33756  
727.441.8966 Fax: 727.442.8470

September 19, 2017

**VIA E-PORTAL FILING**

Ms. Carlotta S. Stauffer  
Commission Clerk  
Florida Public Service Commission  
2540 Shumard Oak Boulevard  
Tallahassee, Florida 32399-0850

**Re: NEW FILING - Petition for approval of tariff modifications to accommodate receipt and transportation of renewable natural gas from customers, by Peoples Gas System**

Dear Ms. Stauffer:

Attached for electronic filing with the Commission on behalf of Peoples Gas System, please find Peoples' petition referenced above.

Please note that this tariff filing is not being made pursuant to the file-and-suspend provisions of Section 366.06(3), *Florida Statutes*, in order to permit the Commission Staff sufficient time to address the filing and make a recommendation to the Commission.

We appreciate your usual assistance.

Sincerely,

  
ANSLEY WATSON, JR.

AWjr/a  
Attachment

cc: Ms. Kandi M. Floyd

**BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

In re: Petition for approval of tariff modifications	)	
to accommodate receipt and transportation of	)	Docket No.
renewable natural gas from customers, by Peoples	)	
Gas System.	)	Submitted for Filing:
_____	)	9-19-17

**PETITION FOR APPROVAL OF TARIFF MODIFICATIONS**

Peoples Gas System ("Peoples" or the "Company"), by and through its undersigned attorneys, hereby requests the Commission's approval of modifications to its Natural Gas Tariff, Original Volume No. 3 (the "Tariff"), that will accommodate the receipt and transportation of renewable natural gas from the Company's customer, submits herewith new and revised tariff sheets to become effective the date of the Commission's vote, and in support of its request states:

1. The name and address of the petitioner are:

Peoples Gas System  
702 N. Franklin Street  
Tampa, Florida 33602

2. The persons to whom notices, orders and pleadings in this docket should

be addressed are:

Ansley Watson, Jr., Esquire  
David T. Kronenfeld, Esquire  
Andrew M. Brown, Esquire  
Macfarlane Ferguson & McMullen  
Post Office Box 1531  
Tampa, Florida 33601-1531

Paula K. Brown  
Peoples Gas System  
Post Office Box 111  
Tampa, Florida 33601-0111

Kandi M. Floyd  
Peoples Gas System  
Post Office Box 111  
Tampa, Florida 33601-0111

3. Peoples is a natural gas local distribution company ("LDC") providing sales and transportation delivery of natural gas throughout most of the State of Florida, and is a public utility subject to the Commission's regulatory jurisdiction under Chapter 366, *Florida Statutes*.

4. By this petition, Peoples seeks the Commission's approval of modifications to its Tariff that will accommodate the receipt of renewable natural gas from customers on the Company's distribution system, payment by customers for services provided by the Company in connection with the receipt of such gas, and the delivery of such gas by the Company to other points on the Company's system.

### **BACKGROUND**

5. With the advent of legislation and public opinion focusing on "renewable" energy, a number of local distribution companies in the United States have begun to accept gas into their systems from customers who produce pipeline quality gas from renewable biomass sources such as wastewater treatment plants, landfills, livestock manure, municipal solid waste, agricultural residues and energy crops. Virtually all of these potential sources of renewable gas produce gas consisting primarily of methane (as does traditional geologic natural gas). Gas obtained from these renewable energy sources can be used to offset traditional geologic pipeline gas, thereby resulting in environmental benefits.

6. "Right in Our Own Backyard," a recent article in the July 2017 issue of *American Gas* magazine (attached to this petition as Exhibit A), provides a succinct description of how the use of natural gas derived from biogas sources has developed and is being pursued by LDCs in the United States and some foreign countries. As noted in the article, renewable gas results in greenhouse gas reduction, enhances diversity of supply, and provides economic and environmental benefits by using renewable gas produced by local waste collection resources. Absent the cleanup and use of the gas produced by these sources, the gas would either simply escape into the atmosphere, or would be – as much of it has for many years – "flared" (with the results of the combustion being released into the atmosphere).

7. Peoples has been approached by several potential customers who desire to deliver pipeline quality gas derived from biogas sources into the Company's distribution system. These potential projects are related to waste-to-energy RFPs issued by local governments including Hillsborough County, Polk County, Volusia County, and City of St. Petersburg and could have the ability to bring value by beneficially reusing waste gas that is currently flared. In some cases, the customers propose that Peoples transport the gas and re-deliver an equivalent quantity of gas to compressed natural gas ("CNG") fill stations receiving gas service on the Company's system. In other cases, the customer would want Peoples to receive the gas for delivery to other purchasing customers on the Company's system. Finally, depending on the price, the gas could be purchased by Peoples for system supply, thereby displacing a portion of the geologic natural gas historically purchased with gas from a renewable source on the Company's system.

8. Market conditions currently provide incentives to landfill operators, wastewater treatment plant owners, and developers to consider investing in and implementing projects to convert the biogas they produce into renewable, pipeline quality gas. These incentives include, among others, the ability to obtain environmental benefits and to use waste sources for energy that has market value which can offset costs traditionally incurred by the producers.

9. Interest on the part of various developers and biogas generators has also been spurred by the availability of the U.S. Environmental Protection Agency's renewable fuels standard program under which Renewable Identification Number ("RIN") credits can be created when renewable natural gas is used as a transportation fuel. These credits can be traded, and used by obligated parties under the Clean Air Act (as amended) to meet the Act's requirements. In addition, the California Low Carbon Fuels Standard calls for at least a 10% reduction in the carbon intensity of California's transportation fuels by 2020. Both of these credits are valuable, and are a factor in the desires of biogas

producers/developers to produce pipeline quality gas from biogas resources. One of the first requirements for creation of a RIN is the delivery of renewable natural gas into a commercial natural gas pipeline system such as Peoples'.

10. There are significant opportunities for Florida LDCs such as Peoples to provide services that would contribute to the reduction of greenhouse gases, provide partial solutions to waste generators, and create and maintain employment opportunities for the cleanup of the biogas to pipeline quality.

### **PROPOSED TARIFF PROVISIONS**

11. Attached to this petition are legislative format versions of the new and revised tariff sheets for which the Commission's approval is sought. "Clean" versions of the sheets follow the legislative ones.

12. There are two purposes for the Tariff changes for which Peoples seeks the Commission's approval. The first is to make relatively minor language changes to accommodate receipt of renewable gas from customers on the Company's system. The second is to make available to biogas producers conditioning services that may be required for the producers to deliver renewable gas that meets the quality requirements of the Tariff into the Company's system.

#### **Receipt of Renewable Gas from Customers**

13. Historically, Peoples has used its transmission and distribution facilities to receive natural gas from the interstate pipelines to which it is connected, and to transport and deliver the gas received (either for its own account for system supply sales customers or for the accounts of transportation customers) to customers on its distribution system. Thus, the language used in many portions of the Tariff is based on and reflects this historical flow of gas in the Company's system.

14. Currently and historically, the receipt points for gas entering the Peoples system have been interconnections (gate stations) between upstream pipelines and points on Peoples' system. Interconnections between Peoples and biogas producers would be new receipt points for gas coming into the Company's system. These new receipt points may or may not be located in areas in which the incoming gas is needed to serve Peoples' customers in the same area.

15. Most of the Tariff modifications are needed to recognize that a biogas customer could be delivering gas into the system, rather than taking it out. This is particularly true in the case of the changes to Rate Schedules GS-3, GS-4 and GS-5 which, among other things, provide that in the case of a biogas producer connected to the Company's system, the distribution charge provided in the rate schedule applies to the terms of gas delivered into the Company's system by the customer, as opposed to the terms delivered out of the system to the customer.

#### Pipeline Quality Gas

16. As noted in the *American Gas* article mentioned previously, those LDCs using renewable natural gas do not equate it with the biogas generated by a landfill, but require that it meet compositional standards necessary to be "pipeline quality" in order to be received into their pipeline systems. The cost of upgrading the biogas produced by landfills, water treatment plants and other renewable sources, and delivering the resulting pipeline quality gas into Peoples' system would vary from source to source.

17. The Tariff modifications with respect to gas quality are relatively minor since Peoples believes the Tariff's existing provisions related to quality are sufficient to protect its pipeline system and the appliances and equipment of customers through which renewable natural gas will pass. Those provisions give the Company discretion to reject, or not accept, deliveries of gas into the system that do not meet the Tariff's quality requirements. Further, in most, if not all, portions of the Company's system, renewable

natural gas delivered into the system would be blended quickly with traditional geologic natural gas. The primary goal of these Tariff changes is to ensure that the renewable natural gas delivered into the Company's system by a biogas customer does not adversely affect the safety or operation of the system or of customer appliances and equipment downstream of the of the point at which the renewable gas is introduced

Rate Schedule RNGS (Renewable Natural Gas Service)

18. Finally, Peoples seeks the Commission's approval of a new rate schedule -- Rate Schedule RNGS (Renewable Natural Gas Service) -- that will provide biogas producers on the Company's system with options for delivering pipeline quality gas into the system. As noted earlier in this petition, the cost of upgrading or cleaning biogas to meet the Tariff's quality requirements may vary from source to source.

19. The Tariff provisions proposed in Rate Schedule RNGS are similar to those proposed by Peoples when it first sought additional options for natural gas vehicle service in 2013,<sup>1</sup> and reflect Peoples' efforts to continue meeting the needs of its customers. The customer would pay the GS-3, GS-4 or GS-5 rate according to its annual deliveries into the system, as well as other applicable charges under various clauses and riders, and any applicable taxes, for the renewable gas it delivered into Peoples' system. In addition, the Customer would pay the Monthly Services Charge provided by Rate Schedule RNGS. The RNG Service provided by Peoples would not include services related to the capturing or production of biogas, and title to the gas – both before and after conditioning – would remain with the customer.

**CONCLUSION**

---

<sup>1</sup> See Order No. PSC-13-0446-PAA-GU, issued October 1, 2013 in Docket No. 130197-GU. The NGV rate schedules were further modified and approved by the Commission's Order No. PSC-17-0195-TRF-GU, issued May 19, 2017 in Docket No. 170038-GU.

20. Peoples believes the tariff changes for which approval is sought herein will continue to address the needs of customers and are responsive to inquiries from owners and developers of biogas production sources. Service under these tariff provisions will cover costs and provide benefits to Peoples' system and its general body of ratepayers while maintaining current safety and operational requirements for the Company's gas distribution system.

21. Peoples believes the tariff modifications for which approval is sought are reasonable and appropriate, as well as consistent with the legislatively expressed State policy of encouraging the use of renewable fuels.



WHEREFORE, Peoples Gas System respectfully requests that the Commission will enter its order permitting the revised tariff sheets submitted with this petition to become effective on the date of the Commission's vote disposing of this petition.

Respectfully submitted,



Ansley Watson, Jr.

Phone: (813) 273-4321

E-Mail: [aw@macfar.com](mailto:aw@macfar.com)

Andrew M. Brown

Phone: (813) 273-4909

E-mail: [ab@macfar.com](mailto:ab@macfar.com)

David T. Kronenfeld

Phone: (813) 273-4345

E-mail: [dtk@macfar.com](mailto:dtk@macfar.com)

Macfarlane Ferguson & McMullen

P. O. Box 1531

Tampa, Florida 33601-1531

Fax: (813) 273-4396

Attorneys for Peoples Gas System

**REVISED/NEW TARIFF SHEETS**

**LEGISLATIVE STYLE**

**INDEX OF TECHNICAL TERMS AND ABBREVIATIONS**

<u>TERM</u>	<u>SHEET NO.</u>
ABSOLUTE PRESSURE	4.101
APPLICATION FOR GAS SERVICE	4.101
AUTHORIZED PAYMENT AGENT	4.101
<u>BIOGAS</u>	<u>4.101</u>
BILLING PERIOD	4.101
BRITISH THERMAL UNIT	4.101
BTU	4.101
COMMISSION	4.101
COMPANY	4.101
CUBIC FOOT OF GAS	4.101
CUSTOMER	4.101
CUSTOMER'S INSTALLATION	4.101
FORCE MAJEURE	4.101
GAS	4.101-1
GAS SERVICE	4.101-1
GAS SERVICE FACILITIES	4.101-1
HIGH PRESSURE	4.101-1
MAIN	4.101-1
METER	4.101-1
METER READING DATE	4.101-1
NORMAL BUSINESS HOURS	4.101-1
PANAMA CITY OPERATING AREA	4.101-1
POINT OF DELIVERY	4.101-1
RESIDENTIAL	4.101-1
<u>RNG</u>	<u>4.101-1</u>
STANDARD DELIVERY PRESSURE	4.101-1
THERM	4.101-1
THIRD PARTY GAS SUPPLIER	4.101-2
YEAR ROUND CUSTOMER	4.101-2

## TECHNICAL TERMS AND ABBREVIATIONS

**ABSOLUTE PRESSURE.** Atmospheric pressure of 14.73 p.s.i.a. plus gauge.

**APPLICATION FOR GAS SERVICE.** A request for Gas Service made to the Company by a prospective Customer. Applications for residential Gas Service may be made by telephone or in person at the office of the Company. An application for any other class of Gas Service offered by Company shall be submitted to the Company in writing on the Company's standard form of Application For Gas Service.

**AUTHORIZED PAYMENT AGENT.** A legal entity designated by the Company as authorized to receive, on behalf of the Company, payment of bills for Gas Service rendered by Company to Customers. A third party with which a Customer may enter into a payment processing arrangement (or to which a Customer may direct that bills for Gas Service be mailed or otherwise delivered) is not an Authorized Payment Agent unless the Company has entered into an agreement with such third party to act as an Authorized Payment Agent of the Company.

**BILLING PERIOD.** Bills are rendered each month, based on regularly scheduled Meter readings which are approximately 30 days apart.

**BIOGAS.** Untreated gas produced from agricultural, animal, or municipal waste.

**BRITISH THERMAL UNIT.** The quantity of heat required to raise the temperature of one pound of water from 59°F. to 60°F. at a constant pressure of 14.73 p.s.i.a.

**BTU.** British Thermal Unit.

**COMMISSION.** The Florida Public Service Commission.

**COMPANY.** Peoples Gas System, a division of Tampa Electric Company, a Florida Corporation.

**CUBIC FOOT OF GAS.** For Gas delivered at the Standard Delivery Pressure, a Cubic Foot of Gas is the volume of Gas which, at the temperature and pressure existing in the Meter, occupies one cubic foot. For Gas delivered at other than the Standard Delivery Pressure, a Cubic Foot of Gas is that volume of Gas which, at a temperature of 60°F. and at Absolute Pressure of 15.09 pounds per square inch for Panama City Operating Area and 14.98 pounds per square inch for the remainder of PGS's service territory, occupies one cubic foot.

**CUSTOMER.** Any person or prospective user (not limited to account holder or payor) of the Company's Gas Service, his authorized representative (builder, architect, engineer, electrical contractor, etc.), or others for whose benefit such Gas Service is or is proposed to be supplied (property owner, landlord, tenant, occupant, renter, etc.). When Gas Service is desired at more than one location, the Point of Delivery at each such location shall be considered as a separate Customer.

**CUSTOMER'S INSTALLATION.** All pipe, fittings, appliances and apparatus of every type (except metering, regulating and other similar equipment which remains the property of the Company) located on the Customer's side of the Point of Delivery and used in connection with or forming a part of an installation for utilizing Gas for any purpose.

**FORCE MAJEURE.** Any cause, whether of the kind herein enumerated or otherwise, and whether caused or occasioned by or happening on account of the act or omission of Company or Customer or any other person or concern, not reasonably within the control of the Company and which by the exercise of due diligence the Company is unable to prevent or overcome, and such causes shall include but not be limited to:

- (1) (a) in those instances where the Company, Customer or a third party is required to obtain servitudes, rights-of-way grants, permits or licenses to enable the Company to fulfill its obligations hereunder, the inability of such party to acquire, or the delays on the part of such party in acquiring, at reasonable cost and after the exercise of reasonable diligence, such servitudes, rights-of-way grants, permits or licenses; and
- (b) in those instances where the Company, Customer or a third party is required to furnish

## TECHNICAL TERMS AND ABBREVIATIONS (Continued)

materials and supplies for the purpose of constructing or maintaining facilities or is required to secure grants or permissions from any governmental agency to enable such part to fulfill its obligations hereunder, the inability of the party to acquire, or the delays on the part of such party in acquiring, at reasonable cost and after the exercise of reasonable diligence, such materials and supplies, permits and permissions;

- (2) a hurricane, storm, heat wave, lightning, freeze, severe weather event, earthquake or other act of God; or
- (3) fire, explosion, war, riot, labor strike, terrorism, acts of the public enemy, lockout, embargo, civil disturbance, interference or regulation by federal, state or municipal governments, injunction or other legal process or requirement.

It is understood and agreed that the settlement of strikes, lockouts or other labor difficulties shall be entirely within the discretion of the party having the difficulty.

**GAS.** Natural Gas or a mixture of gases suitable for fuel, delivered through the Company's distribution system, having a heating value of not less than 1,000 BTU's per cubic foot.

**GAS SERVICE.** The supplying of Gas (or the transportation of Gas) by the Company to a Customer.

**GAS SERVICE FACILITIES.** The service line, Meter, and all appurtenances thereto necessary to convey Gas from the Company's Main to the Point of Delivery and which are owned by Company.

**HIGH PRESSURE.** Gas delivered at any pressure above the Standard Delivery Pressure.

**MAIN.** The pipe and appurtenances installed in an area to convey Gas to other Mains or to service lines.

**METER.** Any device or instrument used to measure and indicate volumes of Gas which flow through it.

**METER READING DATE.** The date upon which an employee of the Company reads the Meter of a Customer for billing purposes.

**NORMAL BUSINESS HOURS.** 8 a.m. to 5 p.m. Monday through Friday, excluding Federal holidays.

**PANAMA CITY OPERATING AREA.** The Panama City Operating Area consists of those Counties and Communities identified in Section 6.

**POINT OF DELIVERY.** The point at which Company's Gas Service facilities are connected to the Customer's Installation, and at which the Customer assumes responsibility for further delivery and use of the Gas. In all cases, the Point of Delivery for Gas to a Customer shall be at the outlet side of the meter or regulator, if any, whichever is farther downstream. The Point of Delivery shall be determined by Company.

**RESIDENTIAL.** When used to modify the term "Customer," means a Customer whose use of Gas is for residential purposes, regardless of the rate schedule pursuant to which such Customer receives Gas Service provided by Company.

**RNG.** Renewable Natural Gas, or gas produced from agricultural, animal, or municipal or other waste that, with or without further processing, (a) has characteristics consistent with the Company's compositional and quality standards for Gas, and (b) in the sole view of the Company does not otherwise pose a hazard to inclusion in the Company's distribution lines when co-mingled with Gas.

**STANDARD DELIVERY PRESSURE.** The Standard Delivery Pressure for Panama City Operating Area shall be 10 inches of water column (.36 p.s.i.g.). The Standard Delivery Pressure for the remainder of PGS service territory shall be 7 inches of water column (.25 p.s.i.g). No adjustment will be made for variations from the normal atmospheric pressure at the Customer's Meter. Gas delivered at Standard Delivery Pressure may vary from three inches to 15 inches of water column.

~~THERM.~~ - A unit of heat equal to one hundred thousand (100,000) BTUs.

---

**TECHNICAL TERMS AND ABBREVIATIONS (Continued)**

**THERM.** A unit of heat equal to one hundred thousand (100,000) BTUs.

**THIRD PARTY GAS SUPPLIER.** Any legal entity, other than the Company, providing Gas for transportation and delivery to a Customer on the Company's distribution system.

**YEAR ROUND CUSTOMER.** A Customer who receives (or who it is estimated will receive) Gas Service from Company during each month of a year, and who pays a Customer charge for each such month.

## MEASUREMENT (Continued)

- e. Unless determined to be otherwise by a gravity balance the specific gravity of the flowing Gas shall be assumed to be 0.6.
  - f. When sales or transportation volumes are metered at pressures of 10 p.s.i.g. (pounds per square inch gauge) and over, and where such volumes are also corrected for flowing temperatures other than assumed 60 degrees Fahrenheit, such volumes shall be corrected for deviations from Boyles Law by use of the appropriate supercompressibility factor.
3. Sales and Transportation Unit
- a. The sales and transportation unit of the Gas shall be the Therm, being 100,000 BTUs. The number of Therms billed to a Customer shall be determined by multiplying the number of Cubic Feet of Gas delivered at the Standard Delivery Pressure and 60 degrees Fahrenheit, by the total heating value of such gas in BTUs per cubic foot and dividing the product by 100,000.
  - b. The total heating value of the Gas delivered to the Customer shall be determined as that reported monthly by the Company's Gas transporters, provided such value is applicable to the Gas delivered to the Customer, or such value shall be determined by the Company by use of a calorimeter or other instrument suitable for heating value determination. The total heating value shall be corrected to and expressed as that contained in the Unit of Sales and Transportation Volume defined above.

4. Quality

All Gas delivered or caused to be delivered into the Company's facilities shall conform to the Gas quality specifications set forth in the FERC or FPSC Tariff of the ~~interstate~~-pipeline company that delivers such Gas to a Delivery Point on the Company's system or in the event Gas is delivered to the Company's facilities other than by a ~~n-interstate~~-pipeline company, such Gas shall be merchantable and

- a. be free of objectionable liquids and solids and be commercially free from dust, gums, gum-forming constituents, or other liquid or solid matter which might become separated from the Gas in the course of transportation through the interstate or intrastate pipeline or the Company's system or which could cause inaccurate measurement;
- b. be free from noxious and harmful fumes when burned in a properly designed and adjusted burner;
- c. not contain more than 20 grains of total sulfur or 0.25 grains of hydrogen sulfide per 100 cubic feet of Gas;
- d. not contain more than 3% by volume of carbon dioxide or nitrogen;



### MEASUREMENT (Continued)

- e. not contain more than 1% by volume of oxygen;
- f. not contain more than 7 pounds of water per 1,000 MCF;
- g. have a temperature of not more than 120 degrees Fahrenheit, nor less than 40 degrees Fahrenheit;
- h. have a maximum Wobbe value of 1,396
- i. have a gross heating value of at least 1,000 BTU per ~~cubit~~ cubic foot of dry Gas but not higher than 1,075 BTU per cubic foot of dry Gas at 60 degrees Fahrenheit and at a pressure of 14.73 pounds per square inch absolute.

To the extent within its control, the Company shall deliver Gas which is free of dangerous or objectionable quantities of impurities such as hydrogen sulfide or other impurities which may cause excessive corrosion of Mains or piping or from noxious or harmful fumes when burned in a properly designed and adjusted burner. This provision is intended to protect the health and safety of the public and in no manner does it guarantee compatibility with the operation of delicate or sensitive machinery, instruments, or other types of apparatus which may be damaged by moisture, grit, chemicals or other foreign substances which may be present in the Gas but which are nevertheless within limits recognized as allowable in good practice.

Company, at its sole option, may refuse to accept any Gas or RNG tendered to Company by a Customer or for its account if such Gas or RNG does not meet the requirements of this paragraph 4 at the time of such tender.

## INDEX OF RATE SCHEDULES

	<u>SHEET NO.</u>
<b>GENERAL APPLICABILITY PROVISIONS:</b>	
A. Character of Service	7.101
B. Purchased Gas Adjustment Clause	7.101-1
C. Energy Conservation Cost Recovery Adjustment Clause	7.101-2
D. Swing Service Charge	7.101-3
E. RESERVED FOR FUTURE USE	7.101-4
F. Tax and Fee Adjustment Clause	7.101-5
G. Competitive Rate Adjustment Clause	7.101-5
H. Conditions for Transportation of Customer-Owned Gas	7.101-7
I. Main Extension Program	7.101-7

## RATE SCHEDULES

<b>RESIDENTIAL RATES:</b>	
Residential Service (RS)	7.201
<b>GENERAL SERVICE RATES:</b>	
Small General Service (SGS)	7.301
General Service - 1 (GS-1)	7.302
General Service - 2 (GS-2)	7.303
General Service - 3 (GS-3)	7.303-2
General Service - 4 (GS-4)	7.303-4
General Service - 5 (GS-5)	7.304
Commercial Street Lighting Service (CSLS)	7.306
<b>SPECIAL FIRM GAS RATES:</b>	
Natural Gas Vehicle Service-1 (NGVS-1)	7.401
Natural Gas Vehicle Service-2 (NGVS-2)	7.401-2
Natural Gas Vehicle Service-3 (NGVS-3)	7.401-4
Residential Standby Generator Service (RS-SG)	7.402-1
Commercial Standby Generator Service (CS-SG)	7.403
<u>Renewable Natural Gas Service (RNGS)</u>	<u>7.404</u>
<b>WHOLESALE RATES:</b>	
Wholesale Service - Firm (WHS)	7.501
<b>INTERRUPTIBLE RATES:</b>	
Small Interruptible Service (SIS)	7.601
Interruptible Service (IS)	7.603
Interruptible Service - Large Volume (ISLV)	7.605
Contract Interruptible Service (CIS)	7.607

---

**GENERAL APPLICABILITY PROVISIONS (Continued)**

**F. TAX AND FEE ADJUSTMENT CLAUSE**

The bill for Gas Service computed under the rates in this tariff shall be increased by the appropriate proportionate part of all taxes, licenses, assessments, or fees imposed by any governmental authority based on the production or consumption of natural Gas or on revenues derived from the consumption of Gas. Should franchise fees be included in the basis for determining the amount of the State Regulatory Trust Fund fees, the franchise fee addition reflected in the bill shall be computed at a factor of 1.00503 of such franchise fee. All of the foregoing additions to the bill will be shown separately from the amount billed for Gas.

**G. COMPETITIVE RATE ADJUSTMENT CLAUSE**

The Distribution Charge for Gas delivered after September 30, 1989 to Customers other than those served under Company's Rate Schedules ISLV and CIS and those Customers receiving a discount under a Rate Schedule NGVS-2 or RNGS special contract rate approved by the Commission is subject to adjustment in accordance with the following provisions, for prior shortfalls or surpluses in Company's contract interruptible service revenues.

1. For the purposes of this clause, the following definitions shall apply:
  - a. "Actual revenue" means Company's actual non-gas revenue derived from service provided under its Rate Schedule CIS and those Customers receiving a discount under a Rate Schedule NGVS-2 or RNGS special contract rate approved by the Commission during a determination period.
  - b. "Base revenue" means the non-gas revenue which Company would have derived had all Gas delivered under Company's Rate Schedule CIS and any Rate Schedule NGVS-2 or RNGS special contract rate during a determination period been billed at the distribution charge established for service under applicable interruptible rate schedules in Company's last base rate proceeding.
  - c. "Surplus" means the amount, if any, by which Company's actual revenue exceeds its base revenue for a determination period.
  - d. "Shortfall" means the amount, if any, by which Company's base revenue exceeds its actual revenue for a determination period.
2. The existence of a shortfall or surplus shall be determined by comparing Company's actual revenue with its base revenue. This determination shall be made each year for the twelve (12) months ending September 30 ("determination period").
3. Adjustments to rates pursuant to this clause shall be implemented during an "adjustment period", which shall be the eleven (11) months ending September 30 in the year following the determination period in the event of a surplus. In the event of a shortfall, any eleven (11) successive months ending on a September 30 within five (5) years following the determination period may be an adjustment period.

**GENERAL APPLICABILITY PROVISIONS (Continued)**

4. In the event of a surplus, Company shall reduce rates to Customers (other than Customers served under Rate Schedules ISLV and CIS and those Customers receiving a discount under a Rate Schedule NGVS-2 or RNGS special contract rate approved by the Commission) to credit them with revenues equal to the surplus.
5. In the event of a shortfall, Company may increase rates to Customers (other than Customers served under Rate Schedules ISLV and CIS, and those Customers receiving a discount under a Rate Schedule NGVS-2 or RNGS special contract rate approved by the Commission) to recover an amount not to exceed the amount of the shortfall.
6. A surplus refund or shortfall recovery shall be implemented during an adjustment period by reducing or increasing the distribution charge prescribed in each rate schedule of this tariff (except Rate Schedules ISLV and CIS and any Rate Schedule NGVS-2 or RNGS special contract rate approved by the Commission) by an adjustment factor computed as follows and rounded to the nearest .001 cent per Therm:

In event of a surplus, subtract: 
$$\frac{\text{Surplus Refund to Customers}}{\text{PTS}}$$

In event of a shortfall, add: 
$$\frac{\text{Shortfall Recovery}}{\text{PTS}}$$

Where PTS is the projected Therm consumption for Customers (excluding Customers serviced under Rate Schedules ISLV and CIS and those Customers receiving a discount under a Rate Schedule NGVS-2 or RNGS special contract rate approved by the Commission) during the adjustment period.

Any variation between the actual refund to Customers and the amount calculated pursuant to the preceding paragraph, or between the actual shortfall recovery and the amount which Company elected to recover in an adjustment period, shall be "trued-up" during the succeeding adjustment period pursuant to methodology approved by the Commission.

7. Company may defer all or any portion of a shortfall recovery to a subsequent adjustment period or portion thereof.

## GENERAL SERVICE - 3 Rate Schedule GS-3

### Availability:

Throughout the service areas of the Company.

### Applicability:

Gas delivered to any Customer (except a Customer whose only Gas-consuming appliance or equipment is a standby electric generator) using and RNG delivered into Company's system by any Customer delivering, -50,000 through 249,999 Therms per year. A Customer eligible for service pursuant to this rate schedule is eligible for transportation service under Rider NCTS and may be eligible for transportation service under Rider ITS.

### Monthly Rate:

Customer Charge:	\$150.00 per month
Distribution Charge:	\$0.19670 per Therm

The bill for the Therms billed at the above rates shall be increased in accordance with the provisions of the Company's Purchased Gas Adjustment Clause set forth on Sheet No. 7.101-1, unless Customer receives transportation service under the Company's Rider NCTS or Rider ITS. Company's Purchased Gas Adjustment Clause shall not apply to bills for Therms of RNG delivered into Company's system.

Minimum Bill: The Customer charge.

### Special Conditions:

1. When the Customer receives service under the Company's Natural Choice Transportation Service Rider (Rider NCTS), the rates set forth above shall be subject to the operation of the Company's Swing Service Charge set forth on Sheet No. 7.101-3.
2. Except in the case of Therms of RNG delivered into the Company's system, the rates set forth above shall be subject to the operation of the Energy Conservation Cost Recovery Adjustment Clause set forth on Sheet No. 7.101-2.
3. A contract for an initial term of one year may be required as a condition precedent to service under this schedule, unless an extension of facilities is involved, in which case the term of the contract shall be the term required under the agreement for the facilities extension.
4. The rates set forth in this schedule shall be subject to the operation of the Company's Competitive Rate Adjustment Clause set forth on Sheet No. 7.101-5.

## GENERAL SERVICE - 4 Rate Schedule GS-4

### Availability:

Throughout the service areas of the Company.

### Applicability:

Gas delivered to any Customer (except a Customer whose only Gas-consuming appliance or equipment is a standby electric generator) using, and RNG delivered into Company's system by any Customer delivering, 250,000 through 499,999 Therms per year. A Customer eligible for service pursuant to this rate schedule is eligible for transportation service under Rider NCTS or Rider ITS.

### Monthly Rate:

Customer Charge:	\$250.00 per month
Distribution Charge:	\$0.15215 per Therm

The bill for the Therms billed at the above rates shall be increased in accordance with the provisions of the Company's Purchased Gas Adjustment Clause set forth on Sheet No. 7.101-1, unless Customer receives transportation service under the Company's Rider NCTS or Rider ITS. Company's Purchased Gas Adjustment Clause shall not apply to bills for Therms of RNG delivered into Company's system.

Minimum Bill: The Customer charge.

### Special Conditions:

1. When the Customer receives service under the Company's Natural Choice Transportation Service Rider (Rider NCTS), the rates set forth above shall be subject to the operation of the Company's Swing Service Charge set forth on Sheet No. 7.101-3.
2. Except in the case of Therms of RNG delivered into the Company's system, the rates set forth above shall be subject to the operation of the Energy Conservation Cost Recovery Adjustment Clause set forth on Sheet No. 7.101-2.
3. A contract for an initial term of one year may be required as a condition precedent to service under this schedule, unless an extension of facilities is involved, in which case the term of the contract shall be the term required under the agreement for the facilities extension.
4. The rates set forth in this schedule shall be subject to the operation of the Company's Competitive Rate Adjustment Clause set forth on Sheet No. 7.101-5.

## GENERAL SERVICE - 5 Rate Schedule GS-5

### Availability:

Throughout the service areas of the Company.

### Applicability:

Gas delivered to any Customer (except a Customer whose only Gas-consuming appliance or equipment is a standby electric generator) using, and RNG delivered into Company's system by any Customer delivering, a minimum of 500,000 Therms per year or more at one billing location.

A Customer eligible for service under this rate schedule is eligible for transportation service under either Rider NCTS or Rider ITS.

### Monthly Rate:

Customer Charge: \$300.00 per month

Distribution Charge: \$0.11321 per Therm

The bill for the Therms billed at the above rates shall be increased in accordance with the provisions of the Company's Purchased Gas Adjustment Clause set forth on Sheet No. 7.101-1, unless Customer receives transportation service under either the Company's Rider NCTS or Rider ITS. Company's Purchased Gas Adjustment Clause shall not apply to bills for Therms of RNG delivered into Company's system.

Minimum Bill: The Customer charge.

### Special Conditions:

1. When the Customer receives service under the Company's Natural Choice Transportation Service Rider (Rider NCTS), the rates set forth above shall be subject to the operation of the Company's Swing Service Charge set forth on Sheet No. 7.101-3.
2. Except in the case of Therms of RNG delivered into the Company's system, the rates set forth above shall be subject to the operation of the Energy Conservation Cost Recovery Adjustment Clause set forth on Sheet No. 7.101-2.
3. A contract for an initial term of one year may be required as a condition precedent to service under this schedule, unless an extension of facilities is involved, in which case the term of the contract shall be the term required under the agreement for the facilities extension.
4. The rates set forth in this schedule shall be subject to the operation of the Company's Competitive Rate Adjustment Clause set forth on Sheet No. 7.101-5.



**RENEWABLE NATURAL GAS SERVICE**  
**Rate Schedule RNGS**

**Availability:**

Throughout the service areas of the Company.

**Applicability:**

For biogas conditioning/upgrading services for RNG produced by eligible Customers, to be utilized onsite by Customer, or delivered into Company's distribution system for transportation and delivery pursuant to Rate Schedules GS-3, GS-4 or GS-5 to a compressed natural gas station or other point of delivery on Company's system. Renewable Natural Gas Service ("RNG Service") under this Schedule is contingent on arrangements mutually satisfactory to the Customer and Company for the design, location, construction, and operation of conditioning facilities required for the Company's provision of RNG Service.

**Monthly Services Charge:**

RNG Service is available under the rate schedules referenced under "Applicability" above based on Customer's annual deliveries of RNG into Company's distribution system as determined by Company. The charges, terms and conditions of the applicable rate schedule shall apply unless otherwise provided in this rate schedule. In addition to those charges provided by the rate schedule pursuant to which the Customer delivers RNG to Company, Customer shall pay a Monthly Services Charge, which shall be equal to a mutually agreed percentage multiplied by the Company's Gross Investment, as determined by the Company, in the facilities required to provide RNG Service to the Customer. As used in this schedule, "Gross Investment" means the total installed cost of such facilities, as determined by Company, which facilities may include but are not limited to blowers, chillers, condensate removal equipment, compressors, heat exchangers, driers, gas constituent removal equipment, quality monitoring equipment, storage vessels, controls, piping, metering, propane injection, and any other related appurtenances including any redundancy necessary to provide reliable RNG Service, before any adjustment for accumulated depreciation, a contribution in aid of construction, etc. The agreement between Company and Customer may require a commitment by the Customer to purchase RNG Service for a minimum period of time, to take or pay for a minimum amount of RNG Service, to make a contribution in aid of construction, to furnish a guarantee, such as a surety bond, letter of credit, other means of establishing credit, and/or to comply with other provisions as determined appropriate by the Company.

The Company's provision of RNG Service does not include the provision of electricity, natural gas, or any other fuels required to operate the Company's facilities or to be added to the RNG produced by Customer. Company-provided RNG Service shall not include services related to the capturing or production of biogas or RNG. Ownership of RNG produced by Customer shall remain with Customer before, during and after Company's provision of RNG Service, and Customer shall remain solely responsible for determining the end-user of such RNG.



**RENEWABLE NATURAL GAS SERVICE (continued)**

If the Company, alone or in partnership with another entity, responds to a competitive situation of a government agency or commercial customer that will deliver to Company RNG in a quantity greater than 100,000 Therms per year, the Company may provide RNG Service at rates and charges set on an individual Customer basis via a special contract as long as the rate is above incremental cost with a reasonable return. At the Company's discretion, it may recover the difference between the otherwise applicable tariff rate and the approved special contract rate under this rate provision through Company's Competitive Rate Adjustment Clause set forth on Sheet No 7.101-5.

If a Customer desires to phase in its deliveries of RNG into Company's system over a period of years the Monthly Services Charge may, in the discretion of Company, be phased-in over the term of the agreement between Customer and Company. The terms of any such phase-in shall be included in the agreement between Customer and Company.

## GAS TRANSPORTATION AGREEMENT

This Gas Transportation Agreement (the "Agreement") is made and entered into as of the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by and between Peoples Gas System, a Division of Tampa Electric Company, a Florida corporation ("PGS"), and \_\_\_\_\_, a \_\_\_\_\_ ("Shipper"), who hereby agree as follows:

### ARTICLE I - DEFINITIONS

As used herein, the following terms shall have the meanings set forth below. Capitalized terms used herein, but not defined below, have the meanings given for such terms in PGS's FPSC Tariff.

"Business Day" means the Days Monday through Friday (excluding any federal banking holiday falling on any such Day).

"Facility" means Shipper's \_\_\_\_\_ facility located in \_\_\_\_\_, Florida.

"FPSC" means the Florida Public Service Commission or any successor agency.

"Maximum Delivery Quantity" or "MDQ" means the maximum amount of Gas that PGS is obligated to cause to be delivered ~~to for~~ Shipper's account pursuant to this Agreement on any Day at the PGS Delivery Point(s), and is stated in Appendix B.

"Maximum Transportation Quantity" or "MTQ" means the maximum amount of Gas that PGS shall be obligated to receive pursuant to this Agreement on any Day at the PGS Receipt Point(s), and is stated in Appendix A.

"Nomination" means a notice delivered by Shipper to PGS in the form specified in PGS's FPSC Tariff, specifying (in MMBtu) the quantity of Gas Shipper desires to purchase, or to have PGS receive, transport and ~~redeliver~~, at the PGS Delivery Point(s). "Nominate" means to deliver a completed Nomination.

"PGS Delivery Point(s)" means the point(s) listed in Appendix B.

"PGS Receipt Point(s)" means the point(s) of physical interconnection between Transporter and PGS, or between Shipper and PGS listed in Appendix A.

"Supplier(s)" means person(s) (other than PGS) from which Shipper purchases Gas transported hereunder.

### ARTICLE II - TERM

This Agreement is effective on the date first written above. The term shall commence at the beginning of the Day commencing on \_\_\_\_\_ and continue until the beginning of the Day commencing on \_\_\_\_\_ (the "Termination Date") (the "Initial Term"). [PROVISIONS AGREEABLE TO PGS AND SHIPPER WITH RESPECT TO ANY EXTENDED OR "SECONDARY" TERM]

**REVISED/NEW TARIFF SHEETS**

---

**INDEX OF TECHNICAL TERMS AND ABBREVIATIONS**

<u>TERM</u>	<u>SHEET NO.</u>
ABSOLUTE PRESSURE	4.101
APPLICATION FOR GAS SERVICE	4.101
AUTHORIZED PAYMENT AGENT	4.101
BIOGAS	4.101
BILLING PERIOD	4.101
BRITISH THERMAL UNIT	4.101
BTU	4.101
COMMISSION	4.101
COMPANY	4.101
CUBIC FOOT OF GAS	4.101
CUSTOMER	4.101
CUSTOMER'S INSTALLATION	4.101
FORCE MAJEURE	4.101
GAS	4.101-1
GAS SERVICE	4.101-1
GAS SERVICE FACILITIES	4.101-1
HIGH PRESSURE	4.101-1
MAIN	4.101-1
METER	4.101-1
METER READING DATE	4.101-1
NORMAL BUSINESS HOURS	4.101-1
PANAMA CITY OPERATING AREA	4.101-1
POINT OF DELIVERY	4.101-1
RESIDENTIAL	4.101-1
RNG	4.101-1
STANDARD DELIVERY PRESSURE	4.101-1
THERM	4.101-1
THIRD PARTY GAS SUPPLIER	4.101-2
YEAR ROUND CUSTOMER	4.101-2

---

## TECHNICAL TERMS AND ABBREVIATIONS

**ABSOLUTE PRESSURE.** Atmospheric pressure of 14.73 p.s.i.a. plus gauge.

**APPLICATION FOR GAS SERVICE.** A request for Gas Service made to the Company by a prospective Customer. Applications for residential Gas Service may be made by telephone or in person at the office of the Company. An application for any other class of Gas Service offered by Company shall be submitted to the Company in writing on the Company's standard form of Application For Gas Service.

**AUTHORIZED PAYMENT AGENT.** A legal entity designated by the Company as authorized to receive, on behalf of the Company, payment of bills for Gas Service rendered by Company to Customers. A third party with which a Customer may enter into a payment processing arrangement (or to which a Customer may direct that bills for Gas Service be mailed or otherwise delivered) is not an Authorized Payment Agent unless the Company has entered into an agreement with such third party to act as an Authorized Payment Agent of the Company.

**BILLING PERIOD.** Bills are rendered each month, based on regularly scheduled Meter readings which are approximately 30 days apart.

**BIOGAS.** Untreated gas produced from agricultural, animal, or municipal waste.

**BRITISH THERMAL UNIT.** The quantity of heat required to raise the temperature of one pound of water from 59°F. to 60°F. at a constant pressure of 14.73 p.s.i.a.

**BTU.** British Thermal Unit.

**COMMISSION.** The Florida Public Service Commission.

**COMPANY.** Peoples Gas System, a division of Tampa Electric Company, a Florida Corporation.

**CUBIC FOOT OF GAS.** For Gas delivered at the Standard Delivery Pressure, a Cubic Foot of Gas is the volume of Gas which, at the temperature and pressure existing in the Meter, occupies one cubic foot. For Gas delivered at other than the Standard Delivery Pressure, a Cubic Foot of Gas is that volume of Gas which, at a temperature of 60°F. and at Absolute Pressure of 15.09 pounds per square inch for Panama City Operating Area and 14.98 pounds per square inch for the remainder of PGS's service territory, occupies one cubic foot.

**CUSTOMER.** Any person or prospective user (not limited to account holder or payor) of the Company's Gas Service, his authorized representative (builder, architect, engineer, electrical contractor, etc.), or others for whose benefit such Gas Service is or is proposed to be supplied (property owner, landlord, tenant, occupant, renter, etc.). When Gas Service is desired at more than one location, the Point of Delivery at each such location shall be considered as a separate Customer.

**CUSTOMER'S INSTALLATION.** All pipe, fittings, appliances and apparatus of every type (except metering, regulating and other similar equipment which remains the property of the Company) located on the Customer's side of the Point of Delivery and used in connection with or forming a part of an installation for utilizing Gas for any purpose.

**FORCE MAJEURE.** Any cause, whether of the kind herein enumerated or otherwise, and whether caused or occasioned by or happening on account of the act or omission of Company or Customer or any other person or concern, not reasonably within the control of the Company and which by the exercise of due diligence the Company is unable to prevent or overcome, and such causes shall include but not be limited to:

- (1) (a) in those instances where the Company, Customer or a third party is required to obtain servitudes, rights-of-way grants, permits or licenses to enable the Company to fulfill its obligations hereunder, the inability of such party to acquire, or the delays on the part of such party in acquiring, at reasonable cost and after the exercise of reasonable diligence, such servitudes, rights-of-way grants, permits or licenses; and
- (b) in those instances where the Company, Customer or a third party is required to furnish

---

## TECHNICAL TERMS AND ABBREVIATIONS (Continued)

materials and supplies for the purpose of constructing or maintaining facilities or is required to secure grants or permissions from any governmental agency to enable such part to fulfill its obligations hereunder, the inability of the party to acquire, or the delays on the part of such party in acquiring, at reasonable cost and after the exercise of reasonable diligence, such materials and supplies, permits and permissions;

- (2) a hurricane, storm, heat wave, lightning, freeze, severe weather event, earthquake or other act of God; or
- (3) fire, explosion, war, riot, labor strike, terrorism, acts of the public enemy, lockout, embargo, civil disturbance, interference or regulation by federal, state or municipal governments, injunction or other legal process or requirement.

It is understood and agreed that the settlement of strikes, lockouts or other labor difficulties shall be entirely within the discretion of the party having the difficulty.

**GAS.** Natural Gas or a mixture of gases suitable for fuel, delivered through the Company's distribution system, having a heating value of not less than 1,000 BTU's per cubic foot.

**GAS SERVICE.** The supplying of Gas (or the transportation of Gas) by the Company to a Customer.

**GAS SERVICE FACILITIES.** The service line, Meter, and all appurtenances thereto necessary to convey Gas from the Company's Main to the Point of Delivery and which are owned by Company.

**HIGH PRESSURE.** Gas delivered at any pressure above the Standard Delivery Pressure.

**MAIN.** The pipe and appurtenances installed in an area to convey Gas to other Mains or to service lines.

**METER.** Any device or instrument used to measure and indicate volumes of Gas which flow through it.

**METER READING DATE.** The date upon which an employee of the Company reads the Meter of a Customer for billing purposes.

**NORMAL BUSINESS HOURS.** 8 a.m. to 5 p.m. Monday through Friday, excluding Federal holidays.

**PANAMA CITY OPERATING AREA.** The Panama City Operating Area consists of those Counties and Communities identified in Section 6.

**POINT OF DELIVERY.** The point at which Company's Gas Service facilities are connected to the Customer's Installation, and at which the Customer assumes responsibility for further delivery and use of the Gas. In all cases, the Point of Delivery for Gas to a Customer shall be at the outlet side of the meter or regulator, if any, whichever is farther downstream. The Point of Delivery shall be determined by Company.

**RESIDENTIAL.** When used to modify the term "Customer," means a Customer whose use of Gas is for residential purposes, regardless of the rate schedule pursuant to which such Customer receives Gas Service provided by Company.

**RNG.** Renewable Natural Gas, or gas produced from agricultural, animal, or municipal or other waste that, with or without further processing, (a) has characteristics consistent with the Company's compositional and quality standards for Gas, and (b) in the sole view of the Company does not otherwise pose a hazard to inclusion in the Company's distribution lines when co-mingled with Gas.

**STANDARD DELIVERY PRESSURE.** The Standard Delivery Pressure for Panama City Operating Area shall be 10 inches of water column (.36 p.s.i.g.). The Standard Delivery Pressure for the remainder of PGS service territory shall be 7 inches of water column (.25 p.s.i.g). No adjustment will be made for variations from the normal atmospheric pressure at the Customer's Meter. Gas delivered at Standard Delivery Pressure may vary from three inches to 15 inches of water column.

---

**TECHNICAL TERMS AND ABBREVIATIONS (Continued)**

**THERM.** A unit of heat equal to one hundred thousand (100,000) BTUs.

**THIRD PARTY GAS SUPPLIER.** Any legal entity, other than the Company, providing Gas for transportation and delivery to a Customer on the Company's distribution system.

**YEAR ROUND CUSTOMER.** A Customer who receives (or who it is estimated will receive) Gas Service from Company during each month of a year, and who pays a Customer charge for each such month.

### MEASUREMENT (Continued)

- e. Unless determined to be otherwise by a gravity balance the specific gravity of the flowing Gas shall be assumed to be 0.6.
  - f. When sales or transportation volumes are metered at pressures of 10 p.s.i.g. (pounds per square inch gauge) and over, and where such volumes are also corrected for flowing temperatures other than assumed 60 degrees Fahrenheit, such volumes shall be corrected for deviations from Boyles Law by use of the appropriate supercompressibility factor.
3. Sales and Transportation Unit
- a. The sales and transportation unit of the Gas shall be the Therm, being 100,000 BTUs. The number of Therms billed to a Customer shall be determined by multiplying the number of Cubic Feet of Gas delivered at the Standard Delivery Pressure and 60 degrees Fahrenheit, by the total heating value of such gas in BTUs per cubic foot and dividing the product by 100,000.
  - b. The total heating value of the Gas delivered to the Customer shall be determined as that reported monthly by the Company's Gas transporters, provided such value is applicable to the Gas delivered to the Customer, or such value shall be determined by the Company by use of a calorimeter or other instrument suitable for heating value determination. The total heating value shall be corrected to and expressed as that contained in the Unit of Sales and Transportation Volume defined above.
4. Quality
- All Gas delivered or caused to be delivered into the Company's facilities shall conform to the Gas quality specifications set forth in the FERC or FPSC Tariff of the pipeline company that delivers such Gas to a Delivery Point on the Company's system or in the event Gas is delivered to the Company's facilities other than by a pipeline company, such Gas shall be merchantable and
- a. be free of objectionable liquids and solids and be commercially free from dust, gums, gum-forming constituents, or other liquid or solid matter which might become separated from the Gas in the course of transportation through the interstate or intrastate pipeline or the Company's system or which could cause inaccurate measurement;
  - b. be free from noxious and harmful fumes when burned in a properly designed and adjusted burner;
  - c. not contain more than 20 grains of total sulfur or 0.25 grains of hydrogen sulfide per 100 cubic feet of Gas;
  - d. not contain more than 3% by volume of carbon dioxide or nitrogen;



### MEASUREMENT (Continued)

- e. not contain more than 1% by volume of oxygen;
- f. not contain more than 7 pounds of water per 1,000 MCF;
- g. have a temperature of not more than 120 degrees Fahrenheit, nor less than 40 degrees Fahrenheit;
- h. have a maximum Wobbe value of 1,396
- i. have a gross heating value of at least 1,000 BTU per cubic foot of dry Gas but not higher than 1,075 BTU per cubic foot of dry Gas at 60 degrees Fahrenheit and at a pressure of 14.73 pounds per square inch absolute.

To the extent within its control, the Company shall deliver Gas which is free of dangerous or objectionable quantities of impurities such as hydrogen sulfide or other impurities which may cause excessive corrosion of Mains or piping or from noxious or harmful fumes when burned in a properly designed and adjusted burner. This provision is intended to protect the health and safety of the public and in no manner does it guarantee compatibility with the operation of delicate or sensitive machinery, instruments, or other types of apparatus which may be damaged by moisture, grit, chemicals or other foreign substances which may be present in the Gas but which are nevertheless within limits recognized as allowable in good practice.

Company, at its sole option, may refuse to accept any Gas or RNG tendered to Company by a Customer or for its account if such Gas or RNG does not meet the requirements of this paragraph 4 at the time of such tender.

---

## INDEX OF RATE SCHEDULES

---

	<u>SHEET NO.</u>
<b>GENERAL APPLICABILITY PROVISIONS:</b>	
A. Character of Service	7.101
B. Purchased Gas Adjustment Clause	7.101-1
C. Energy Conservation Cost Recovery Adjustment Clause	7.101-2
D. Swing Service Charge	7.101-3
E. RESERVED FOR FUTURE USE	7.101-4
F. Tax and Fee Adjustment Clause	7.101-5
G. Competitive Rate Adjustment Clause	7.101-5
H. Conditions for Transportation of Customer-Owned Gas	7.101-7
I. Main Extension Program	7.101-7

## RATE SCHEDULES

<b>RESIDENTIAL RATES:</b>	
Residential Service (RS)	7.201
<b>GENERAL SERVICE RATES:</b>	
Small General Service (SGS)	7.301
General Service - 1 (GS-1)	7.302
General Service - 2 (GS-2)	7.303
General Service - 3 (GS-3)	7.303-2
General Service - 4 (GS-4)	7.303-4
General Service - 5 (GS-5)	7.304
Commercial Street Lighting Service (CSLS)	7.306
<b>SPECIAL FIRM GAS RATES:</b>	
Natural Gas Vehicle Service-1 (NGVS-1)	7.401
Natural Gas Vehicle Service-2 (NGVS-2)	7.401-2
Natural Gas Vehicle Service-3 (NGVS-3)	7.401-4
Residential Standby Generator Service (RS-SG)	7.402-1
Commercial Standby Generator Service (CS-SG)	7.403
Renewable Natural Gas Service (RNGS)	7.404
<b>WHOLESALE RATES:</b>	
Wholesale Service - Firm (WHS)	7.501
<b>INTERRUPTIBLE RATES:</b>	
Small Interruptible Service (SIS)	7.601
Interruptible Service (IS)	7.603
Interruptible Service - Large Volume (ISLV)	7.605
Contract Interruptible Service (CIS)	7.607

---

**GENERAL APPLICABILITY PROVISIONS (Continued)**

**F. TAX AND FEE ADJUSTMENT CLAUSE**

The bill for Gas Service computed under the rates in this tariff shall be increased by the appropriate proportionate part of all taxes, licenses, assessments, or fees imposed by any governmental authority based on the production or consumption of natural Gas or on revenues derived from the consumption of Gas. Should franchise fees be included in the basis for determining the amount of the State Regulatory Trust Fund fees, the franchise fee addition reflected in the bill shall be computed at a factor of 1.00503 of such franchise fee. All of the foregoing additions to the bill will be shown separately from the amount billed for Gas.

**G. COMPETITIVE RATE ADJUSTMENT CLAUSE**

The Distribution Charge for Gas delivered after September 30, 1989 to Customers other than those served under Company's Rate Schedules ISLV and CIS and those Customers receiving a discount under a Rate Schedule NGVS-2 or RNGS special contract rate approved by the Commission is subject to adjustment in accordance with the following provisions, for prior shortfalls or surpluses in Company's contract interruptible service revenues.

1. For the purposes of this clause, the following definitions shall apply:
  - a. "Actual revenue" means Company's actual non-gas revenue derived from service provided under its Rate Schedule CIS and those Customers receiving a discount under a Rate Schedule NGVS-2 or RNGS special contract rate approved by the Commission during a determination period.
  - b. "Base revenue" means the non-gas revenue which Company would have derived had all Gas delivered under Company's Rate Schedule CIS and any Rate Schedule NGVS-2 or RNGS special contract rate during a determination period been billed at the distribution charge established for service under applicable interruptible rate schedules in Company's last base rate proceeding.
  - c. "Surplus" means the amount, if any, by which Company's actual revenue exceeds its base revenue for a determination period.
  - d. "Shortfall" means the amount, if any, by which Company's base revenue exceeds its actual revenue for a determination period.
2. The existence of a shortfall or surplus shall be determined by comparing Company's actual revenue with its base revenue. This determination shall be made each year for the twelve (12) months ending September 30 ("determination period").
3. Adjustments to rates pursuant to this clause shall be implemented during an "adjustment period", which shall be the eleven (11) months ending September 30 in the year following the determination period in the event of a surplus. In the event of a shortfall, any eleven (11) successive months ending on a September 30 within five (5) years following the determination period may be an adjustment period.

---

**GENERAL APPLICABILITY PROVISIONS (Continued)**

4. In the event of a surplus, Company shall reduce rates to Customers (other than Customers served under Rate Schedules ISLV and CIS and those Customers receiving a discount under a Rate Schedule NGVS-2 or RNGS special contract rate approved by the Commission) to credit them with revenues equal to the surplus.
5. In the event of a shortfall, Company may increase rates to Customers (other than Customers served under Rate Schedules ISLV and CIS, and those Customers receiving a discount under a Rate Schedule NGVS-2 or RNGS special contract rate approved by the Commission) to recover an amount not to exceed the amount of the shortfall.
6. A surplus refund or shortfall recovery shall be implemented during an adjustment period by reducing or increasing the distribution charge prescribed in each rate schedule of this tariff (except Rate Schedules ISLV and CIS and any Rate Schedule NGVS-2 or RNGS special contract rate approved by the Commission) by an adjustment factor computed as follows and rounded to the nearest .001 cent per Therm:

In event of a surplus, subtract: 
$$\frac{\text{Surplus Refund to Customers}}{\text{PTS}}$$

In event of a shortfall, add: 
$$\frac{\text{Shortfall Recovery}}{\text{PTS}}$$

Where PTS is the projected Therm consumption for Customers (excluding Customers serviced under Rate Schedules ISLV and CIS and those Customers receiving a discount under a Rate Schedule NGVS-2 or RNGS special contract rate approved by the Commission) during the adjustment period.

Any variation between the actual refund to Customers and the amount calculated pursuant to the preceding paragraph, or between the actual shortfall recovery and the amount which Company elected to recover in an adjustment period, shall be "trued-up" during the succeeding adjustment period pursuant to methodology approved by the Commission.

7. Company may defer all or any portion of a shortfall recovery to a subsequent adjustment period or portion thereof.

**GENERAL SERVICE - 3**  
**Rate Schedule GS-3**

**Availability:**

Throughout the service areas of the Company.

**Applicability:**

Gas delivered to any Customer (except a Customer whose only Gas-consuming appliance or equipment is a standby electric generator) using, and RNG delivered into Company's system by any Customer delivering, 50,000 through 249,999 Therms per year. A Customer eligible for service pursuant to this rate schedule is eligible for transportation service under Rider NCTS and may be eligible for transportation service under Rider ITS.

**Monthly Rate:**

Customer Charge:	\$150.00 per month
Distribution Charge:	\$0.19670 per Therm

The bill for the Therms billed at the above rates shall be increased in accordance with the provisions of the Company's Purchased Gas Adjustment Clause set forth on Sheet No. 7.101-1, unless Customer receives transportation service under the Company's Rider NCTS or Rider ITS. Company's Purchased Gas Adjustment Clause shall not apply to bills for Therms of RNG delivered into Company's system.

Minimum Bill:	The Customer charge.
---------------	----------------------

**Special Conditions:**

1. When the Customer receives service under the Company's Natural Choice Transportation Service Rider (Rider NCTS), the rates set forth above shall be subject to the operation of the Company's Swing Service Charge set forth on Sheet No. 7.101-3.
2. Except in the case of Therms of RNG delivered into the Company's system, the rates set forth above shall be subject to the operation of the Energy Conservation Cost Recovery Adjustment Clause set forth on Sheet No. 7.101-2.
3. A contract for an initial term of one year may be required as a condition precedent to service under this schedule, unless an extension of facilities is involved, in which case the term of the contract shall be the term required under the agreement for the facilities extension.
4. The rates set forth in this schedule shall be subject to the operation of the Company's Competitive Rate Adjustment Clause set forth on Sheet No. 7.101-5.

**GENERAL SERVICE - 4**  
**Rate Schedule GS-4**

**Availability:**

Throughout the service areas of the Company.

**Applicability:**

Gas delivered to any Customer (except a Customer whose only Gas-consuming appliance or equipment is a standby electric generator) using, and RNG delivered into Company's system by any Customer delivering, 250,000 through 499,999 Therms per year. A Customer eligible for service pursuant to this rate schedule is eligible for transportation service under Rider NCTS or Rider ITS.

**Monthly Rate:**

Customer Charge:	\$250.00 per month
Distribution Charge:	\$0.15215 per Therm

The bill for the Therms billed at the above rates shall be increased in accordance with the provisions of the Company's Purchased Gas Adjustment Clause set forth on Sheet No. 7.101-1, unless Customer receives transportation service under the Company's Rider NCTS or Rider ITS. Company's Purchased Gas Adjustment Clause shall not apply to bills for Therms of RNG delivered into Company's system.

Minimum Bill:	The Customer charge.
---------------	----------------------

**Special Conditions:**

1. When the Customer receives service under the Company's Natural Choice Transportation Service Rider (Rider NCTS), the rates set forth above shall be subject to the operation of the Company's Swing Service Charge set forth on Sheet No. 7.101-3.
2. Except in the case of Therms of RNG delivered into the Company's system, the rates set forth above shall be subject to the operation of the Energy Conservation Cost Recovery Adjustment Clause set forth on Sheet No. 7.101-2.
3. A contract for an initial term of one year may be required as a condition precedent to service under this schedule, unless an extension of facilities is involved, in which case the term of the contract shall be the term required under the agreement for the facilities extension.
4. The rates set forth in this schedule shall be subject to the operation of the Company's Competitive Rate Adjustment Clause set forth on Sheet No. 7.101-5.

**GENERAL SERVICE - 5**  
**Rate Schedule GS-5**

**Availability:**

Throughout the service areas of the Company.

**Applicability:**

Gas delivered to any Customer (except a Customer whose only Gas-consuming appliance or equipment is a standby electric generator) using, and RNG delivered into Company's system by any Customer delivering, a minimum of 500,000 Therms per year or more at one billing location.

A Customer eligible for service under this rate schedule is eligible for transportation service under either Rider NCTS or Rider ITS.

**Monthly Rate:**

Customer Charge: \$300.00 per month

Distribution Charge: \$0.11321 per Therm

The bill for the Therms billed at the above rates shall be increased in accordance with the provisions of the Company's Purchased Gas Adjustment Clause set forth on Sheet No. 7.101-1, unless Customer receives transportation service under either the Company's Rider NCTS or Rider ITS. Company's Purchased Gas Adjustment Clause shall not apply to bills for Therms of RNG delivered into Company's system.

Minimum Bill: The Customer charge.

**Special Conditions:**

1. When the Customer receives service under the Company's Natural Choice Transportation Service Rider (Rider NCTS), the rates set forth above shall be subject to the operation of the Company's Swing Service Charge set forth on Sheet No. 7.101-3.
2. Except in the case of Therms of RNG delivered into the Company's system, the rates set forth above shall be subject to the operation of the Energy Conservation Cost Recovery Adjustment Clause set forth on Sheet No. 7.101-2.
3. A contract for an initial term of one year may be required as a condition precedent to service under this schedule, unless an extension of facilities is involved, in which case the term of the contract shall be the term required under the agreement for the facilities extension.
4. The rates set forth in this schedule shall be subject to the operation of the Company's Competitive Rate Adjustment Clause set forth on Sheet No. 7.101-5.

## RENEWABLE NATURAL GAS SERVICE Rate Schedule RNGS

**Availability:**

Throughout the service areas of the Company.

**Applicability:**

For biogas conditioning/upgrading services for RNG produced by eligible Customers, to be utilized onsite by Customer, or delivered into Company's distribution system for transportation and delivery pursuant to Rate Schedules GS-3, GS-4 or GS-5 to a compressed natural gas station or other point of delivery on Company's system. Renewable Natural Gas Service ("RNG Service") under this Schedule is contingent on arrangements mutually satisfactory to the Customer and Company for the design, location, construction, and operation of conditioning facilities required for the Company's provision of RNG Service.

**Monthly Services Charge:**

RNG Service is available under the rate schedules referenced under "Applicability" above based on Customer's annual deliveries of RNG into Company's distribution system as determined by Company. The charges, terms and conditions of the applicable rate schedule shall apply unless otherwise provided in this rate schedule. In addition to those charges provided by the rate schedule pursuant to which the Customer delivers RNG to Company, Customer shall pay a Monthly Services Charge, which shall be equal to a mutually agreed percentage multiplied by the Company's Gross Investment, as determined by the Company, in the facilities required to provide RNG Service to the Customer. As used in this schedule, "Gross Investment" means the total installed cost of such facilities, as determined by Company, which facilities may include but are not limited to blowers, chillers, condensate removal equipment, compressors, heat exchangers, driers, gas constituent removal equipment, quality monitoring equipment, storage vessels, controls, piping, metering, propane injection, and any other related appurtenances including any redundancy necessary to provide reliable RNG Service, before any adjustment for accumulated depreciation, a contribution in aid of construction, etc. The agreement between Company and Customer may require a commitment by the Customer to purchase RNG Service for a minimum period of time, to take or pay for a minimum amount of RNG Service, to make a contribution in aid of construction, to furnish a guarantee, such as a surety bond, letter of credit, other means of establishing credit, and/or to comply with other provisions as determined appropriate by the Company.

The Company's provision of RNG Service does not include the provision of electricity, natural gas, or any other fuels required to operate the Company's facilities or to be added to the RNG produced by Customer. Company-provided RNG Service shall not include services related to the capturing or production of biogas or RNG. Ownership of RNG produced by Customer shall remain with Customer before, during and after Company's provision of RNG Service, and Customer shall remain solely responsible for determining the end-user of such RNG.



### **RENEWABLE NATURAL GAS SERVICE (continued)**

If the Company, alone or in partnership with another entity, responds to a competitive situation of a government agency or commercial customer that will deliver to Company RNG in a quantity greater than 100,000 Therms per year, the Company may provide RNG Service at rates and charges set on an individual Customer basis via a special contract as long as the rate is above incremental cost with a reasonable return. At the Company's discretion, it may recover the difference between the otherwise applicable tariff rate and the approved special contract rate under this rate provision through Company's Competitive Rate Adjustment Clause set forth on Sheet No 7.101-5.

If a Customer desires to phase in its deliveries of RNG into Company's system over a period of years the Monthly Services Charge may, in the discretion of Company, be phased-in over the term of the agreement between Customer and Company. The terms of any such phase-in shall be included in the agreement between Customer and Company.

## GAS TRANSPORTATION AGREEMENT

This Gas Transportation Agreement (the "Agreement") is made and entered into as of the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by and between Peoples Gas System, a Division of Tampa Electric Company, a Florida corporation ("PGS"), and \_\_\_\_\_, a \_\_\_\_\_ ("Shipper"), who hereby agree as follows:

### ARTICLE I - DEFINITIONS

As used herein, the following terms shall have the meanings set forth below. Capitalized terms used herein, but not defined below, have the meanings given for such terms in PGS's FPSC Tariff.

"Business Day" means the Days Monday through Friday (excluding any federal banking holiday falling on any such Day).

"Facility" means Shipper's \_\_\_\_\_ facility located in \_\_\_\_\_, Florida.

"FPSC" means the Florida Public Service Commission or any successor agency.

"Maximum Delivery Quantity" or "MDQ" means the maximum amount of Gas that PGS is obligated to cause to be delivered for Shipper's account pursuant to this Agreement on any Day at the PGS Delivery Point(s), and is stated in Appendix B.

"Maximum Transportation Quantity" or "MTQ" means the maximum amount of Gas that PGS shall be obligated to receive pursuant to this Agreement on any Day at the PGS Receipt Point(s), and is stated in Appendix A.

"Nomination" means a notice delivered by Shipper to PGS in the form specified in PGS's FPSC Tariff, specifying (in MMBtu) the quantity of Gas Shipper desires to purchase, or to have PGS receive, transport and deliver, at the PGS Delivery Point(s). "Nominate" means to deliver a completed Nomination.

"PGS Delivery Point(s)" means the point(s) listed in Appendix B.

"PGS Receipt Point(s)" means the point(s) of physical interconnection between Transporter and PGS, or between Shipper and PGS listed in Appendix A.

"Supplier(s)" means person(s) (other than PGS) from which Shipper purchases Gas transported hereunder.

### ARTICLE II - TERM


This Agreement is effective on the date first written above. The term shall commence at the beginning of the Day commencing on \_\_\_\_\_ and continue until the beginning of the Day commencing on \_\_\_\_\_ (the "Termination Date") (the "Initial Term"). [PROVISIONS AGREEABLE TO PGS AND SHIPPER WITH RESPECT TO ANY EXTENDED OR "SECONDARY" TERM]

Issued By: T. J. Szelistowski, President  
Issued On:

Effective:

EXHIBIT A

FEATURE



---

# Right in Our Own **BACKYARD**

---

24 AMERICAN GAS JULY 2017





In many ways, renewable natural gas is the ultimate form of recycling. The energy industry has been using it to generate electricity or fuel vehicles for decades, but here's a new concept: injecting RNG into pipelines for direct use in our homes and businesses. It's happening here—and around the world—and the sources are closer than you think. **BY EDWARD REMINGTON**

**W**hen it comes to natural gas, the word “fossil” might no longer be accurate to describe the natural gas flowing through pipeline networks.

For years, some utilities have been capturing greenhouse gas emissions from decaying organic material in landfills, wastewater treatment plants, farms and other sources and using it to generate electricity and fuel vehicles rather than letting it simply float into the atmosphere or be flared.

Now, as the world moves to reduce greenhouse gas emissions and energy users strive to reduce their carbon footprint, utility companies in the United States and worldwide are taking a closer look at injecting renewable natural gas into pipeline systems for direct use by consumers, providing the same fuel needs that geologic natural gas sources have long supplied.

An American Gas Foundation study projects that RNG has the potential to serve about 50 percent of the U.S. residential market and 10 percent of the total natural gas market. In order to get there, said Donald Chahbazpour, National Grid's

climate change compliance director, there needs to be a paradigm shift.

“People think natural gas has a static carbon footprint,” Chahbazpour told *American Gas*. “Geologic natural gas has the lowest carbon footprint already, and [by] using renewable natural gas, we can lower that even further. [For example] there is so much methane produced from the dairy sector. If you capture that, the renewable natural gas from that feedstock actually has a negative carbon footprint.”

National Grid, whose U.S. gas and electric operations serve New York, Massachusetts and Rhode Island, is one of the pioneers among U.S. utility companies to add RNG to its pipelines. Through one of its legacy companies, Brooklyn Union, it has been capturing gas from the Staten Island landfill for pipeline delivery since the 1980s.

“The biggest driver of renewable gas is greenhouse gas reduction, but what makes renewable gas more compelling is that it also enhances diversity of supply while providing a solution for using local waste resources to produce renewable energy,” reports a 2010 white paper from



## ACROSS THE POND

North America has an ample supply of geologic natural gas. But it's a different story in Europe, where countries have been importing most of their natural gas for years.

Many Western European countries are seeking to reduce their reliance on Russia, one of the continent's major gas providers. For that reason, and because of the environmental benefits, there is strong interest in Europe in capturing biogas and converting it to renewable natural gas, also referred to as synthetic natural gas or Bio-SNG.

As in the United States, much of the RNG produced in Europe has been used as transport fuel in countries including Italy and Sweden. In addition, like their ally across the Atlantic, European countries are working to add more RNG into pipeline systems.

For example, JV Energen of Dorchester, England, was the first commercial plant to inject "green gas" into the existing United Kingdom gas network via the Rainbarrow Farm Anaerobic Digester Plant, earning a number of industry awards in 2013.

### Other recent projects include:

- In Norway, water purification business Sterner is developing a pilot biogas facility to process sludge at the Smøla Hatchery and Hatcheries in Nordmøre, funded by government agency Innovation Norway. The country wants to increase the production of biogas to achieve its goal of becoming a low-carbon society by 2050.
- In April, biomethane was transported for the first time from the United Kingdom to Europe via the interconnector pipeline to energy company Essent in the Netherlands. The gas was imported to meet the country's growing demand.
- Austria recently reported that the productivity of its biogas plants has increased in the last 10 years, thanks to larger plants, automation and increased efficiency. In addition, the plants are expected to provide more services to existing heating grids.
- National Grid UK is part of a commercial-scale demonstration plant for RNG that is under construction in Swindon, England, and set to begin operations in January 2018. The plant is designed to produce biomethane from household waste, enough to power 1,500 homes.

With the UK's and the European Union's aggressive carbon and greenhouse gas reduction goals, substantial progress on RNG in Europe and around the globe can be expected in the years to come.

National Grid, *Renewable Gas—Vision for a Sustainable Gas Network*.

It's important to note, however, that "renewable natural gas" is not just another name for biogas or landfill gas. For safety and quality reasons, pipeline operators and utilities have very specific standards on the composition of gas entering their systems.

"We don't consider biogas 'natural gas' until it meets pipeline quality or transportation fuel standards," said David Cox, co-founder of the Coalition for Renewable Natural Gas, a nonprofit national trade group that advocates for increased development, deployment and use of RNG.

Added Chahbazzpour: "RNG means it's pipeline quality. We take the biogas, remove the CO<sub>2</sub> and clean it up. You do not inject biogas into the pipeline."

National Grid is using the knowledge it has gained from its Staten Island project, along with its company commitment toward sustainability, to capture more renewable gas, this time from New York City's massive Newtown Creek wastewater plant.

The Newtown Creek plant treats more than a billion gallons of wastewater per day. Officials say the public-private partnership involving the city, National Grid and Waste Management will reduce the amount of organic waste sent to landfills, produce enough reliable clean energy to heat 5,200 homes and improve air quality by reducing the vehicle emissions equivalent of 19,000 cars.

For years National Grid was one of the few utilities to source RNG for its pipeline system, but more companies are now adopting the process.

On the West Coast, both Southern California Gas Co. and NW Natural have plans to capture biogas, upgrade it to RNG and inject it into pipelines for use by their customers. As in National Grid's case, the burners on the end users' systems won't be able to tell the difference between the renewable and the traditional, fossil-based natural gas that has been flowing through the network for generations.





“We live in one of the most environmentally aware parts of the country—and one that does not produce natural gas,” Bill Edmonds, NW Natural’s director of Environmental Management and Sustainability told *American Gas*. “So we have been very sensitive to concerns our customers and community may have about [hydraulic fracturing] and about methane emissions all along the natural gas value chain.”

Responding to that concern, NW Natural and the City of Portland, Oregon, jointly announced an RNG partnership in April ahead of Earth Day. NW Natural will take renewable natural gas from Portland’s largest wastewater treatment plant for injection into NW Natural’s pipeline system and to fuel part of Portland’s heavy-duty vehicle fleet.

City officials say the project, Portland’s single largest climate action project, will cut greenhouse gas emissions by 21,000 tons per year. It will generate more than \$3 million in annual revenue for the city and replace the use of 1.34 million gallons of diesel fuel with clean RNG—enough to run 154 garbage trucks for an entire year.

The Portland partnership is NW Natural’s first foray into putting RNG into its pipeline system (other than some short-lived pilot projects in the 1980s, when technology and conditions were not as favorable as today). But NW Natural customers have supported biogas projects at Pacific Northwest dairy farms since 2008 through Smart Energy, a voluntary program that enables residential and business customers to offset emissions from their own natural gas usage. NW Natural works with The Climate Trust, a nonprofit that funds greenhouse gas reduction projects, such as farm biodigesters, in exchange for carbon credits that are then purchased by Smart Energy customers.

“The typical cow produces 120 pounds of manure per day,” NW Natural’s Smart Energy website explains. “Methane emitted

from cow waste is 21 times more potent than CO<sub>2</sub>.”

Biodigesters capture the methane from dairy cow manure and use it to produce biogas. Some farms also use it to generate electricity that they sell to local electric utilities.

“The captured methane is a renewable and on-demand energy source,” Edmonds explained. “Heat generated in this process can also be reused. Byproducts such as fertilizer and animal bedding help close the resource loop, reducing waste, protecting air and water quality and creating more sustainable revenue streams for our region’s farmers and communities.”

Meanwhile, SoCalGas and waste management company CR&R Environmental announced in March that RNG from an anaerobic digestion facility in Perris, California, is being used to fuel CR&R’s waste-hauling trucks. SoCalGas built a 1.4-mile pipeline to bring the carbon-neutral RNG into its distribution system.

While it’s the first time that RNG supply has been directly interconnected with and piped into the SoCalGas system, company officials say it won’t be the last. “We’re exploring several different approaches to bringing more renewable gas into our system and delivering it to customers,” said Lisa Alexander, SoCalGas’ vice president, customer solutions and communications.

“This is exciting because it reduces short-lived climate-pollutant emissions—the methane from dairy manure and food waste and green waste—while creating a renewable fuel for our customers. California aims to reduce those short-lived climate pollutant emissions by 40 percent by 2030.”

Alexander said SoCalGas is also assisting biogas producers in cleaning up their raw biogas to convert it to pipeline-quality RNG.

“We regularly meet with several potential producers, ranging from wastewater plants and landfills to dairies and

organic waste diversion project developers, to educate them on connecting to our system,” she added.

Cox, of the Coalition for Renewable Natural Gas, said there are about 40 projects injecting RNG into pipelines in the United States—a number that is sure to grow as more people and businesses realize the benefits of adding renewable fuel to the existing pipeline mix.

He and Johannes D. Escudero founded the Coalition for Renewable Natural Gas six years ago, when they worked to change an obscure California law that outlawed gas originating from landfills to be injected into pipelines in the state. While working on the legislation, it quickly became clear that many utilities and pipeline companies saw the economic and environmental potential for capturing RNG and using it as a fuel supply for homes, businesses and vehicles.

Cox noted that many Fortune 500 companies have made a commitment to become carbon neutral or even carbon negative. RNG helps them achieve their goals by lowering the overall carbon intensity of their fuel use.

That desire is “a great opportunity for the natural gas community to embrace renewable natural gas,” Cox said. “The volume we are producing today is relatively small, but as we scale up, I think it will be a huge help to the natural gas industry.”

National Grid’s Chahbazpour calls it a “no-brainer” for natural gas utilities to work to increase the use of RNG as they face increasing pressure to “go green.” And the fact that there is already a substantial natural gas transportation network helps.

“[RNG] can be distributed via the same pipeline network as geologic natural gas, and can be used in the same ways and in the same equipment to generate electricity, heat homes, create durable plastics and power vehicles,” states the Coalition for Renewable Natural Gas’ *Fueling America’s Growth with Renewable Natural Gas* white paper.



Added SoCalGas' Alexander: "Our nation has made a substantial investment in this infrastructure, and today we have one of the most robust systems on the planet. In most urban and semi-urban areas, there are pipelines within a reasonable distance that can accommodate renewable gas by building out distribution or transmission pipeline extensions. Conveniently, this is also where much of our organic waste is located."

But if RNG, like geologic natural gas, is composed of mostly methane (CH<sub>4</sub>), how can it be considered carbon neutral or even carbon negative? The answer lies in the life cycle of the gas.

"Unlike geologic natural gas, producing and using RNG captures and uses

biogases from decomposing organic wastes that would otherwise go directly into the atmosphere, so it emits much less greenhouse gas over its life cycle," reports the Coalition's white paper.

"The more RNG is produced and carried by natural gas infrastructure, the more it contributes to positive impacts and sustainability goals of the natural gas industry as a whole.

"The U.S. generates over 70 million tons of organic waste per year across every city, town and rural county in America. That includes 1,750 large landfills, 8,000 large farms and dairies, and 17,000 wastewater treatment facilities. And the advantage of capturing gas from these facilities, besides reducing

greenhouse gas emissions into the atmosphere, is that these natural generators of gas are everywhere communities are, not just in deep, million-year-old geologic formations."

"Policymakers think of wind and solar as the only source of renewables," said National Grid's Chahbazpour. "We have to raise awareness. People don't realize this opportunity exists."

After all, as the Coalition for Renewable Natural Gas' white paper points out, developing local RNG sources is "like discovering an inexhaustible gas well in a community's backyard." Added Cox, "We absolutely believe that long term, every community can have their own source of renewable natural gas." ♦

WEEC Featured Special Guest President George W. Bush

**WEEC 2017**  
 World Energy Engineering Congress  
**40 Years**  
 Sept. 27-29, 2017  
 Georgia World Congress Center, Atlanta, Georgia

— Presented By —

**Energy, Power and Facility Management,  
 and Sustainable Energy Solutions Expo**  
 Join business, industrial and institutional energy users at the  
 largest energy conference and technology expo in the U.S.  
[www.energycongress.com](http://www.energycongress.com)

**40 Years**  
**AEE**  
 Association of Energy Engineers

ATTENDANCE 770.447.5083 x226 | SEMINARS 770.925.9633 | EXHIBITS 770.279.4392