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June 5, 2018

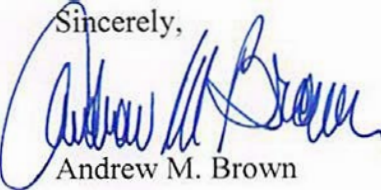
Ms. Carlotta S. Stauffer
Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850

Re: 20180117-GU - In re: Petition for approval of tariff modifications for the use of natural gas for gas heat pumps by customers of Peoples Gas System.

Dear Ms. Stauffer:

Attached for electronic filing in the above docket on behalf of Peoples Gas System, please find its Response to Staff's First Data Request (Nos. 1-22).

Your assistance in this matter is greatly appreciated.

Sincerely,

Andrew M. Brown

AB/plb
Attachment
cc: Office of Public Counsel
Ms. Kandi M. Floyd
Ansley Watson, Jr., Esq.

**PEOPLES GAS SYSTEM
DOCKET NO: 20180117-GU
STAFF'S FIRST DATA REQUEST
REQUEST NO. 1
PAGE: 1 OF 3
FILED: JUNE 5, 2018**

- 1.** Paragraph 12 of the petition states that the proposed commercial GHP rates include a monthly customer charge of \$35. However, proposed Tariff Sheet No. 7.405 (Rate Schedule CS-GHP) indicates a monthly customer charge of \$30. Please reconcile the difference.

- A.** The proposed Tariff Sheet No. 7.405 has been corrected to reflect the \$35 customer charge and is attached.

Peoples Gas System
a Division of Tampa Electric Company
Original Volume No. 3

Original Sheet No. 7.405

COMMERCIAL GAS HEAT PUMP SERVICE
RATE SCHEDULE CS-GHP

Availability:

Throughout the service areas of the Company.

Applicability:

Gas delivered to any Commercial Customer utilizing a Gas Heat Pump for heating and cooling.

Monthly Rate:

Customer Charge:	\$35.00 per month
Distribution Charge:	\$0.2063 per Therm
Minimum Bill:	The Customer charge

Special Conditions:

1. The gas provided for GHP would be separately metered and would appear separately on Customer bills.
2. 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.
3. The rates set forth above shall be subject to the operation of the Energy Conservation Cost Recovery Adjustment Clause set forth in Sheet No. 7.101-2.
4. 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.
5. 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.
6. 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.
7. 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.

Peoples Gas System Original Sheet No. 7.405
a Division of Tampa Electric Company
Original Volume No. 3

COMMERCIAL GAS HEAT PUMP SERVICE
RATE SCHEDULE CS-GHP

Availability:

Throughout the service areas of the Company.

Applicability:

Gas delivered to any Commercial Customer utilizing a Gas Heat Pump for heating and cooling.

Monthly Rate:

<u>Customer Charge:</u>	<u>\$35.00 per month</u>
<u>Distribution Charge:</u>	<u>\$0.2063 per Therm</u>
<u>Minimum Bill:</u>	<u>The Customer charge</u>

Special Conditions:

1. The gas provided for GHP would be separately metered and would appear separately on Customer bills.
2. 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.
3. The rates set forth above shall be subject to the operation of the Energy Conservation Cost Recovery Adjustment Clause set forth in Sheet No. 7.101-2.
4. 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.
5. 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.
6. 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.
7. 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.

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- 2.** Please state how many Peoples customers currently have GHP systems installed and please explain the basis for this petition (for example, has Peoples seen an increase in GHP installations recently?).
 - A.** Peoples previously had no reason to survey customers for the installation of GHP systems, however the Company believes the number is low. Communications with equipment manufacturers indicate there is growing interest in the use of GHPs, particularly with commercial customers. This, along with GHP service inquiries from residential and commercial customers, prompted Peoples to look more closely at the opportunities to serve this unique load and ultimately develop the proposed tariff.

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- 3.** Please state how many residential and commercial customers Peoples projects will take service under the proposed tariffs.

- A.** Peoples has not yet established projections for customer participation in the proposed tariffs. The application of this technology for cooling is new to Florida and with the potential to be applied in a variety of markets. Peoples expects early adopters to be within the commercial markets, and residential customers seeking the benefits from the resiliency of GHP plus power systems.

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- 4.** Please state with examples what type of commercial customers would use GHP systems.
 - A.** Peoples anticipates the following commercial customers would use a GHP system: senior living facilities, nursing homes, convenience stores, restaurants, and any business with interest in resilient cooling or back-up power. Also, see response to No. 7.

**PEOPLES GAS SYSTEM
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- 5.** Paragraph 15 of the petition states that the separate tariff for GHP service will help encourage large residential and commercial customers adopt the more efficient GHP technology. Please explain why this specifies large customers as opposed to all customers.

- A.** The intent was to highlight the residential profile that most closely aligns with GHP system sizing (tonnage) as currently available in the market. The proposed tariff is not intended to be exclusionary. At present, the capacity of available GHP systems is too high to be economically feasible for smaller customers. As manufacturers develop a wider variety of equipment options, including lower tonnage units, smaller residential customers will be able to take advantage of the benefits GHPs can provide.

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- 6.** Does Peoples have any plans to develop conservation programs that focus on the use of GHP systems? Please explain. If yes, how does the company view the advocacy of GHP systems as a form of conservation and not overall load building?
- A.** Peoples has approved within its existing energy conservation program a gas space conditioning program for an allowance of \$150 / ton which would be applicable to GHP. Peoples does not intend to modify the allowance amount of this existing program.

**PEOPLES GAS SYSTEM
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7. Please describe the benefits and risks associated with GHP technology for customers converting from traditional electric HVAC systems. As part of this response, please provide information quantifying the increased efficiency associated with GHP technology.

A. There are two types of GHP systems with slightly different benefits. A basic GHP system utilizes a high-efficiency natural gas-powered engine to drive the compressor for either cooling or heating, which lowers operating costs. A basic system also improves the effectiveness of existing back-up generation because back-up generation no longer needs to address traditional cooling or heating systems and can be used for other critical functions. Basic GHP also reduces the size requirements for back-up generators.

A power producing GHP system (GHP plus power), provides reliability without dependency on the electric grid. Not only can the power producing GHP system fully operate in the event of power loss, but it can also provide additional back-up power using the surplus energy produced.

The primary risk for either type of GHP technology is the fact that this is new and emerging technology. The initial purchase cost is higher than that of a traditional electric heat pump and a robust network of service providers is still being developed.

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- 8.** Paragraph 5 of the petition states that “GHP technology is marginally less expensive to operate than a traditional electric heat pump system.” Please provide comparison data and approximate costs to operate the two types of HVAC systems.

- A.** The attached table shows a comparison between a traditional electric heat pump, and a gas heat pump.

Market	Capacity (tons)	Electric HP SEER	Region	Electric Rate (\$/kWh)	NG Commodity Charge (\$/therm)	NG Customer Charge (\$/month)	NG Base Charge (\$/therm)	Annual Cooling Run Hours	Annual Heating Run Hours
Residential	8	12	North FL	\$0.10	\$0.49	\$20.00	\$0.0999	2,291	584
Residential	8	12	Central FL	\$0.10	\$0.49	\$20.00	\$0.0999	2,669	417
Residential	8	12	South FL	\$0.10	\$0.49	\$20.00	\$0.0999	3,003	108
Senior Living Facility	30	12	North FL	\$0.10	\$0.49	\$35.00	\$0.2063	2,635	1,184
Senior Living Facility	30	12	Central FL	\$0.10	\$0.49	\$35.00	\$0.2063	3,170	822
Senior Living Facility	30	12	South FL	\$0.10	\$0.49	\$35.00	\$0.2063	3,941	266

Electric HP Consumption (kWh)	Electric HP Utility Cost (\$)	M-Trigen Consumption (therms)	M-Trigen Utility Cost (\$)	Yanmar Consumption (therms)	Yanmar Utility Cost (\$)	Blue Mountain Consumption (therms)	Blue Mountain Utility Cost (\$)	Average GHP Consumption (therms)	Average GHP Utility Cost (\$)
26,136	\$2,614	1,875	\$1,639	1,496	\$1,356	2,137	\$1,834	1,836	\$1,610
28,055	\$2,805	2,013	\$1,741	1,598	\$1,432	2,280	\$1,941	1,963	\$1,705
28,282	\$2,828	2,029	\$1,753	1,598	\$1,432	2,278	\$1,939	1,968	\$1,708
130,193	\$13,019	9,409	\$8,077	8,749	\$7,149	14,041	\$11,101	10,733	\$8,776
136,091	\$13,609	9,835	\$8,404	9,115	\$7,431	14,735	\$11,629	11,228	\$9,155
143,420	\$14,342	10,365	\$8,812	9,562	\$7,775	15,613	\$12,297	11,846	\$9,628

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- 9.** What is the installed cost of a GHP system for a residential and a commercial customer?
- A.** The total installed cost will differ based on individual design, and with consideration to number of cooling/heating zones in the building envelope, total tonnage, age of the structure, etc. Based on manufacturers' expectations, initially the installed cost for GHP will range between \$4,400 and \$8,000 per ton.

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- 10.** Can non-GHP homes and businesses be retrofitted to accommodate a GHP system, or can GHP only be installed during the construction process? Please explain.
 - A.** GHP systems can be installed during construction or as a retrofit to existing homes and businesses. As with traditional heating and cooling systems, the applicability of GHP as a solution for an existing structure would require a site-specific evaluation. However, generally, the refrigerant piping lengths allowed with GHP provide flexibility in locating outdoor/indoor equipment. The ability to connect multiple indoor air handlers to a single outdoor condenser result in fewer building penetrations and shortened piping runs. This makes it easier to install as a retrofit option than traditional HVAC systems.

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- 11.** Paragraph 7 states that a GHP system, in a residential application, significantly increases the natural gas load. To accommodate the increased natural gas load, will Peoples have to install larger mains and/or other equipment to serve a residential customer with a GHP system? If yes, please state how those costs will be recovered.
 - A.** Peoples Gas does not anticipate the need for larger mains or other equipment resulting from serving a GHP system. However, as with most situations where gas load is significantly increased, Peoples Gas may perform a system analysis to ensure system reliability for all customers. In a case where a larger main or other equipment is required, Peoples Gas would perform traditional analyses per tariff requirement in Mains and Services Section 5.601 to determine potential cost impacts to the GHP customer(s) requiring the new service.

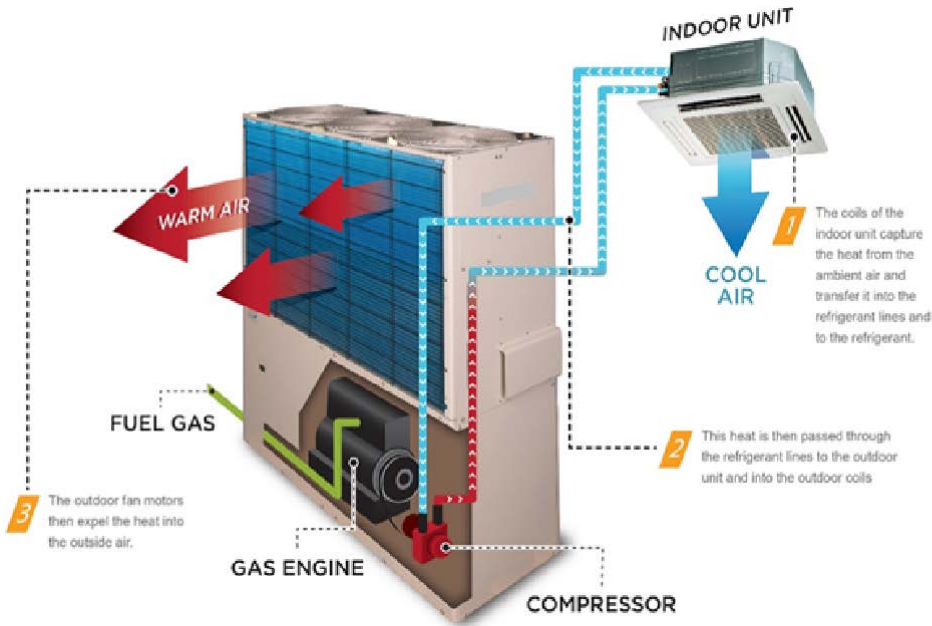
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- 12.** Who will provide the installation of the GHP system?
- A.** The customer will work directly with the equipment manufacturer(s) and their approved contractors.

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- 13. Please provide a diagram of a typical GHP system that Peoples intends to provide gas for, showing how it would be connected to customers' premises.

- A. The GHP system would be connected to a customer's premises in the same manner as a traditional HVAC system. The diagram below illustrates a typical GHP system.



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- 14.** Please provide an estimate of the cost to modify Peoples' billing system to accommodate the new tariffs.

- A.** Peoples anticipates the cost to modify its billing system to include the new proposed Residential and Commercial GHP rate class tariffs to be minimal.

**PEOPLES GAS SYSTEM
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- 15.** How and when will Peoples inform customers of the new GHP tariffs?
- A.** Peoples Gas will communicate to customers specific information about the GHP tariffs once they are approved by the PSC. The communication plan includes public relations outreach, advertising, on-bill messaging, and digital channels including the company web site. Peoples Gas will also use its sales team to communicate with specific commercial and industrial customers. Peoples Gas will work through its industry allies, manufacturers, distributors and installation and service contractors to ensure tariff information is shared and leveraged into GHP technology installations across the Peoples Gas Florida service territory.

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- 16.** Please provide any examples of other gas companies providing unique tariff rates for GHP systems that the company referenced or used as a model for this petition.

- A.** As indicated in the response to No. 7, GHP technology is new and emerging and Peoples is not aware of any other unique tariff rates for GHP technology in Florida or other states.

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17. Referring to page 1 of 3 of Exhibit A and page 1 of 4 of Exhibit B, please give the basis for assuming a 33 percent estimate of installs for each region and a 33 percent estimate for each system manufacturer. Additionally, please support the natural gas usage estimates by each manufacturer's system and region.

A. As noted in the Company's Petition, GHP technology would allow residential customers to heat and cool their homes with natural gas. In some cases, GHP technology also provides a residential customer with a source of back-up power generation. The Company is aware of three manufacturers that are expected to have GHP products available in markets serving Peoples' customers. These manufacturers are M Trigen, Yanmar and Blue Mountain (Sierra). The consumption characteristics of the GHP units produced by each manufacturer are similar. Peoples Gas is not able to project which specific manufacturer of GHPs may gain the largest share of the market over the next several years, therefore, the Company derived the rate on the simplified assumption that each manufacturer captures an equal share of the market. Additionally, the consumption characteristics of GHP units in different Florida markets served by Peoples Gas are similar, but not the same. The Company is not able to project the proportion of GHP units employed in each of its markets and therefore derived the rate on the simplified assumption that an equal proportion of GHPs are installed in the Northern, Central and Southern Florida markets.

See the attached information supporting the natural gas usage estimates relied upon to derive the proposed rates. In conjunction with preparing this response, the Company determined that the residential usage information for South Florida contained on page 1 of Exhibit A was incorrect. The corrected usage information is reflected in the attached supporting information. The corrected usage information would result in a small reduction in the proposed delivery charge from \$0.1010 to \$0.0999 per therm. Exhibit A and updated tariff sheet No. 7.201 are attached.

Residential

Market Analysis	North FL	Central FL	South FL
Annual KWH	19,060	21,923	24,200
Maximum kW Demand	11.66	10.87	7.01
Annual AC KWH	4,977	6,923	9,741
Annual Space Heat KWH	1,449	1,175	441
Average Square Feet	3,076	3,142	2,837
AC Run Hours	5,729	6,673	7,507
Space Heat Run Hours	1,946	1,390	360
Cooling Capacity (Tons)	3.6	3.5	3.0
Full-Load Equivalent AC Run Hours	2,291	2,669	3,003
Full-Load Equivalent Space Heat Run Hours	584	417	108

Residential

GHP System Specs	M Trigen GHP 1	M Trigen GHP 2	M Trigen GHP 3	Yanmar GHP 1	Yanmar GHP 2	Yanmar GHP 3	Sierra GHP 1	Sierra GHP 2	Sierra GHP 3
Model	GA+ 105	GA+ 53	Blank	NNCP0096J	Blank	Blank	XGP096E1NH	Blank	Blank
Capacity (tons)	5.0	3.0	0.0	8.0	0.0	0.0	8.0	0.0	0.0
Cooling Fuel Consumption (BTU/hr)	57,508	33,828	0	63,000	0	0	73,000	0	0
Heating Fuel Consumption (BTU/hr)	57,508	33,828	0	68,000	0	0	79,500	0	0
Water Heating BTU Output (BTU/hr)	23,040	14,080	0	0	0	0	0	0	0
Loading Factor	71%	71%	71%	81%	81%	81%	100%	100%	100%
No. of Units Required	1	1	1	1	1	1	1	1	1
North Florida Total Natural Gas Use	1,875			1,496			2,137		
Central Florida Total Natural Gas Use	2,013			1,598			2,280		
South Florida Total Natural Gas Use	2,029			1,598			2,278		

Convenience Store

Market Analysis	North FL	Central FL	South FL
Annual KWH	178,730	207,473	226,106
Maximum kW Demand	32.61	37.62	35.84
Annual AC KWH	31,125	44,124	73,540
Annual Space Heat KWH	5,175	2,725	289
Average Square Feet	2,993	2,955	2,955
AC Run Hours	5,390	5,614	5,793
Space Heat Run Hours	2,619	2,112	839
Cooling Capacity (Tons)	5.8	6.0	5.5
Full-Load Equivalent AC Run Hours	2,695	2,807	2,897
Full-Load Equivalent Space Heat Run Hours	1,310	1,056	420

Convenience Store

GHP System Specs	M Trigen GHP 1	M Trigen GHP 2	M Trigen GHP 3	Yanmar GHP 1	Yanmar GHP 2	Yanmar GHP 3	Sierra GHP 1	Sierra GHP 2	Sierra GHP 3
Model	GA+ 105	GA+ 53	Blank	NNCP0096J	Blank	Blank	XGP096E1NH	Blank	Blank
Capacity (tons)	5.0	3.0	0.0	8.0	0.0	0.0	8.0	0.0	0.0
Cooling Fuel Consumption (BTU/hr)	57,508	33,828	0	63,000	0	0	73,000	0	0
Heating Fuel Consumption (BTU/hr)	57,508	33,828	0	68,000	0	0	79,500	0	0
Water Heating BTU Output (BTU/hr)	23,040	14,080	0	0	0	0	0	0	0
Loading Factor	71%	71%	71%	81%	81%	81%	100%	100%	100%
No. of Units Required	1	1	1	1	1	1	1	1	1
North Florida Total Natural Gas Use	2,611			2,104			3,008		
Central Florida Total Natural Gas Use	2,519			2,022			2,889		
South Florida Total Natural Gas Use	2,162			1,715			2,448		

Nursing Home

Market Analysis	North FL	Central FL	South FL
Annual KWH	444,091	526,101	659,825
Maximum kW Demand	88.27	97.95	115.55
Annual AC KWH	130,548	152,225	211,199
Annual Space Heat KWH	17,835	20,346	3,453
Average Square Feet	29,791	29,228	28,207
AC Run Hours	5,270	6,339	7,883
Space Heat Run Hours	2,369	1,644	532
Cooling Capacity (Tons)	30.9	33.0	30.9
Full-Load Equivalent AC Run Hours	2,635	3,170	3,941
Full-Load Equivalent Space Heat Run Hours	1,184	822	266

Nursing Home

GHP System Specs	M Trigen GHP 1	M Trigen GHP 2	M Trigen GHP 3	Yanmar GHP 1	Yanmar GHP 2	Yanmar GHP 3	Sierra GHP 1	Sierra GHP 2	Sierra GHP 3
Model	GA+ 105	GA+ 105	GA+ 105	NNCP120J	NNCP120J	NNCP120J	LNHS with AV	LNHS with AV	Blank
Capacity (tons)	5.0	5.0	5.0	10.0	10.0	10.0	15.0	15.0	0.0
Cooling Fuel Consumption (BTU/hr)	57,508	57,508	57,508	93,000	93,000	93,000	186,000	186,000	0
Heating Fuel Consumption (BTU/hr)	57,508	57,508	57,508	96,000	96,000	96,000	179,000	179,000	0
Water Heating BTU Output (BTU/hr)	23,040	23,040	23,040	0	0	0	100,000	100,000	0
Loading Factor	71%	71%	71%	81%	81%	81%	100%	100%	100%
No. of Units Required	2	2	2	1	1	1	1	1	1
North Florida Total Natural Gas Use	9,410			8,750			14,043		
Central Florida Total Natural Gas Use	9,834			9,114			14,734		
South Florida Total Natural Gas Use	10,366			9,563			15,614		

Small Office

Market Analysis	North FL	Central FL	South FL
Annual KWH	331,966	292,684	291,236
Maximum kW Demand	88.21	76.62	69.79
Annual AC KWH	76,816	83,187	84,053
Annual Space Heat KWH	17,936	7,494	1,746
Average Square Feet	13,997	14,118	13,840
AC Run Hours	5,104	5,380	6,615
Space Heat Run Hours	788	429	80
Cooling Capacity (Tons)	26.0	22.6	21.7
Full-Load Equivalent AC Run Hours	2,552	2,690	3,308
Full-Load Equivalent Space Heat Run Hours	394	215	40

Small Office

GHP System Specs	M Trigen GHP 1	M Trigen GHP 2	M Trigen GHP 3	Yanmar GHP 1	Yanmar GHP 2	Yanmar GHP 3	Sierra GHP 1	Sierra GHP 2	Sierra GHP 3
Model	GA+ 105	GA+ 105	GA+ 53	NNCP144JN	NNCP144JN	Blank	INHS with AV	XGP096E1NH	Blank
Capacity (tons)	5.0	5.0	3.0	12.0	12.0	0.0	15.0	8.0	0.0
Cooling Fuel Consumption (BTU/hr)	57,508	57,508	33,828	119,000	119,000	0	186,000	73,000	0
Heating Fuel Consumption (BTU/hr)	57,508	57,508	33,828	117,000	117,000	0	179,000	79,500	0
Water Heating BTU Output (BTU/hr)	23,040	23,040	14,080	0	0	0	100,000	0	0
Loading Factor	71%	71%	71%	81%	81%	81%	100%	100%	100%
No. of Units Required	2	2	1	1	1	1	1	1	1
North Florida Total Natural Gas Use	5,550			5,688			7,628		
Central Florida Total Natural Gas Use	5,472			5,613			7,522		
South Florida Total Natural Gas Use	6,307			6,476			8,670		

Medium Office

Market Analysis	North FL	Central FL	South FL
Annual KWH	472,815	374,164	479,545
Maximum kW Demand	138.64	107.60	118.21
Annual AC KWH	148,364	108,262	94,870
Annual Space Heat KWH	23,285	7,689	6,444
Average Square Feet	39,562	41,311	39,622
AC Run Hours	5,318	5,255	5,750
Space Heat Run Hours	75	381	30
Cooling Capacity (Tons)	59.9	57.7	54.4
Full-Load Equivalent AC Run Hours	2,659	2,628	2,875
Full-Load Equivalent Space Heat Run Hours	38	191	15

Medium Office

GHP System Specs	M Trigen GHP 1	M Trigen GHP 2	M Trigen GHP 3	Yanmar GHP 1	Yanmar GHP 2	Yanmar GHP 3	Sierra GHP 1	Sierra GHP 2	Sierra GHP 3
Model	GA+ 105	Blank	Blank	NNCP120J	Blank	Blank	INHS with AV	Blank	Blank
Capacity (tons)	5.0	0.0	0.0	10.0	0.0	0.0	15.0	0.0	0.0
Cooling Fuel Consumption (BTU/hr)	57,508	0	0	93,000	0	0	186,000	0	0
Heating Fuel Consumption (BTU/hr)	57,508	0	0	96,000	0	0	179,000	0	0
Water Heating BTU Output (BTU/hr)	23,040	0	0	0	0	0	100,000	0	0
Loading Factor	71%	71%	71%	81%	81%	81%	100%	100%	100%
No. of Units Required	12	1	1	6	1	1	4	1	1
North Florida Total Natural Gas Use	13,286			12,238			20,051		
Central Florida Total Natural Gas Use	13,885			12,812			20,913		
South Florida Total Natural Gas Use	14,240			13,113			21,497		

Quick Service Restaurant

Market Analysis	North FL	Central FL	South FL
Annual KWH	269,384	298,254	259,918
Maximum kW Demand	60.69	64.09	56.29
Annual AC KWH	75,712	96,173	113,064
Annual Space Heat KWH	12,770	12,017	6,497
Average Square Feet	2,954	2,896	2,911
AC Run Hours	5,036	5,804	6,782
Space Heat Run Hours	1,799	1,096	340
Cooling Capacity (Tons)	16.1	16.1	14.3
Full-Load Equivalent AC Run Hours	2,518	2,902	3,391
Full-Load Equivalent Space Heat Run Hours	900	548	170

Quick Service Restaurant

GHP System Specs	M Trigen GHP 1	M Trigen GHP 2	M Trigen GHP 3	Yanmar GHP 1	Yanmar GHP 2	Yanmar GHP 3	Sierra GHP 1	Sierra GHP 2	Sierra GHP 3
Model	GA+ 105	Blank	Blank	NFZP168JN	Blank	Blank	INHS with AV	Blank	Blank
Capacity (tons)	5.0	0.0	0.0	14.0	0.0	0.0	15.0	0.0	0.0
Cooling Fuel Consumption (BTU/hr)	57,508	0	0	168,000	0	0	186,000	0	0
Heating Fuel Consumption (BTU/hr)	57,508	0	0	147,000	0	0	179,000	0	0
Water Heating BTU Output (BTU/hr)	23,040	0	0	0	0	0	100,000	0	0
Loading Factor	71%	71%	71%	81%	81%	81%	100%	100%	100%
No. of Units Required	3	1	1	1	1	1	1	1	1
North Florida Total Natural Gas Use	4,210			4,514			6,294		
Central Florida Total Natural Gas Use	4,250			4,619			6,379		
South Florida Total Natural Gas Use	4,387			4,835			6,612		

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Full Service Restaurant

Market Analysis	North FL	Central FL	South FL
Annual KWH	423,510	455,415	507,759
Maximum kW Demand	88.04	90.79	111.58
Annual AC KWH	108,720	129,783	232,387
Annual Space Heat KWH	15,171	5,841	1,121
Average Square Feet	12,237	11,915	12,032
AC Run Hours	5,802	6,044	7,016
Space Heat Run Hours	2,536	1,821	938
Cooling Capacity (Tons)	43.3	43.1	44.5
Full-Load Equivalent AC Run Hours	2,901	3,022	3,508
Full-Load Equivalent Space Heat Run Hours	1,268	911	469

Full Service Restaurant

GHP System Specs	M Trigen GHP 1	M Trigen GHP 2	M Trigen GHP 3	Yanmar GHP 1	Yanmar GHP 2	Yanmar GHP 3	Sierra GHP 1	Sierra GHP 2	Sierra GHP 3
Model	GA+ 105	Blank	Blank	NNCP144JN	NNCP120J	Blank	INHS with AV	Blank	Blank
Capacity (tons)	5.0	0.0	0.0	12.0	10.0	0.0	15.0	0.0	0.0
Cooling Fuel Consumption (BTU/hr)	57,508	0	0	119,000	93,000	0	186,000	0	0
Heating Fuel Consumption (BTU/hr)	57,508	0	0	117,000	96,000	0	179,000	0	0
Water Heating BTU Output (BTU/hr)	23,040	0	0	0	0	0	100,000	0	0
Loading Factor	71%	71%	71%	81%	81%	81%	100%	100%	100%
No. of Units Required	9	1	1	2	2	1	3	1	1
North Florida Total Natural Gas Use	15,406			14,392			22,997		
Central Florida Total Natural Gas Use	14,532			13,571			21,752		
South Florida Total Natural Gas Use	14,697			13,717			22,093		

High Intensity Retail

Market Analysis	North FL	Central FL	South FL
Annual KWH	314,496	360,726	438,439
Maximum kW Demand	74.37	81.04	88.28
Annual AC KWH	72,350	89,784	144,005
Annual Space Heat KWH	13,097	2,292	1,793
Average Square Feet	10,475	10,496	9,516
AC Run Hours	4,122	4,555	5,104
Space Heat Run Hours	1,173	610	89
Cooling Capacity (Tons)	28.2	27.9	29.0
Full-Load Equivalent AC Run Hours	2,061	2,278	2,552
Full-Load Equivalent Space Heat Run Hours	587	305	45

High Intensity Retail

GHP System Specs	M Trigen GHP 1	M Trigen GHP 2	M Trigen GHP 3	Yanmar GHP 1	Yanmar GHP 2	Yanmar GHP 3	Sierra GHP 1	Sierra GHP 2	Sierra GHP 3
Model	GA+ 105	GA+ 105	GA+ 105	NNCP120J	NNCP120J	NNCP120J	INHS with AV	INHS with AV	Blank
Capacity (tons)	5.0	5.0	5.0	10.0	10.0	10.0	15.0	15.0	0.0
Cooling Fuel Consumption (BTU/hr)	57,508	57,508	57,508	93,000	93,000	93,000	186,000	186,000	0
Heating Fuel Consumption (BTU/hr)	57,508	57,508	57,508	96,000	96,000	96,000	179,000	179,000	0
Water Heating BTU Output (BTU/hr)	23,040	23,040	23,040	0	0	0	100,000	100,000	0
Loading Factor	71%	71%	71%	81%	81%	81%	100%	100%	100%
No. of Units Required	2	2	2	1	1	1	1	1	1
North Florida Total Natural Gas Use	6,522			6,048			9,767		
Central Florida Total Natural Gas Use	6,362			5,880			9,564		
South Florida Total Natural Gas Use	6,397			5,893			9,653		

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PEOPLES GAS SYSTEM
GAS HEAT PUMP
EXHIBIT A
PAGE 1 OF 3
FILED: MAY 9, 2018

Peoples Gas System Typical Residential Gas Heat Pump Usage (Therms)						
		<u>M Trigen</u>	<u>Yanmar</u>	<u>Sierra</u>	<u>Weighted Average</u>	<u>100% L.F. Peak Month</u>
	Percentage of Installs	33%	33%	33%		
North FL	33%	1,875	1,496	2,137	1,836	
Central FL	33%	2,013	1,598	2,280	1,963	
South FL	33%	2,029	1,598	2,278	1,968	
	Weighted Average	1,972	1,564	2,232	1,923	160

Peoples Gas System
Residential GHP Rate Design
per Docket No. 080318-GU

<u>Item</u>	<u>Amount</u>
GHP Revenue Requirements	
Customer Unit Cost	\$ 177.39
Peak Month Volume	160
Capacity Unit Cost	\$ 1.38
Capacity Costs	\$ 220.80
Total Revenue Requirements	\$ 398.19
Residential GHP Rate Design	
Monthly Customer Charge	\$ 20.00
Total Revenue Requirements	\$ 398.19
Less Customer Charge Revenues	(240.00)
Net Remaining Revenue Requirements	\$ 158.19
Total Annual Volume	1,923
GHP Cost per Therm	\$ 0.0823
Delivery Charge	
Non-GHP Usage	202 therms
Non-GHP Cost	\$ 0.2678 per therm
GHP Usage	1,923 therms
GHP Cost	\$ 0.0823 per therm
Residential with GHP Blended Delivery Charge	\$ 0.0999

Peoples Gas System
a Division of Tampa Electric Company
Original Volume No. 3

Eighth Revised Sheet No. 7.201
Cancels Seventh Revised Sheet No. 7.201

**RESIDENTIAL SERVICE
Rate Schedule RS**

Availability:

Throughout the service areas of the Company.

Applicability:

Gas Service for residential purposes in individually metered residences and separately metered apartments. Also, for Gas used in commonly owned facilities of condominium associations, cooperative apartments, and homeowners associations, (excluding any premise at which the only Gas-consuming appliance or equipment is a standby electric generator), subject to the following criteria:

1. 100% of the Gas is used exclusively for the co-owner's benefit.
2. None of the Gas is used in any endeavor which sells or rents a commodity or provides service for a fee.
3. Each Point of Delivery will be separately metered and billed.
4. A responsible legal entity is established as the Customer to whom the Company can render its bills for said services.
5. RS-GHP refers to any Residential Customer utilizing a gas heat pump ("GHP") for heating and cooling.

Customers receiving service under this schedule will be classified for billing purposes according to annual usage as follows:

<u>Billing Class</u>	<u>Annual Consumption</u>
RS-1	0 – 99 Therms
RS-2	100 – 249 Therms
RS-3	250 – 1,999 Therms
RS-GHP	All Therms

Monthly Rate:

<u>Billing Class</u>	<u>Customer Charge</u>
RS-1	\$12.00 per month
RS-2	\$15.00 per month
RS-3	\$20.00 per month
RS-GHP	\$20.00 per month

Distribution Charge: \$0.26782 per Therm for RS-1, RS-2, and RS-3
\$0.0999 per Therm for RS-GHP

Minimum Bill: The Customer charge.

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

Effective:

Peoples Gas System ~~Seventh-Eighth~~ Revised Sheet No. 7.201
a Division of Tampa Electric Company Cancels ~~Sixth-Seventh~~ Revised Sheet No. 7.201
Original Volume No. 3

**RESIDENTIAL SERVICE
Rate Schedule RS**

Availability:

Throughout the service areas of the Company.

Applicability:

Gas Service for residential purposes in individually metered residences and separately metered apartments. Also, for Gas used in commonly owned facilities of condominium associations, cooperative apartments, and homeowners associations, (excluding any premise at which the only Gas-consuming appliance or equipment is a standby electric generator), subject to the following criteria:

1. 100% of the Gas is used exclusively for the co-owner's benefit.
2. None of the Gas is used in any endeavor which sells or rents a commodity or provides service for a fee.
3. Each Point of Delivery will be separately metered and billed.
4. A responsible legal entity is established as the Customer to whom the Company can render its bills for said services.

5. RS-GHP refers to any Residential Customer utilizing a gas heat pump ("GHP") for heating and cooling.

Customers receiving service under this schedule will be classified for billing purposes according to annual usage as follows:

<u>Billing Class</u>	<u>Annual Consumption</u>
RS-1	0 – 99 Therms
RS-2	100 – 249 Therms
RS-3	250 – 1,999 Therms
<u>RS-GHP</u>	<u>All Therms</u>

Monthly Rate:

<u>Billing Class</u>	<u>Customer Charge</u>
RS-1	\$12.00 per month
RS-2	\$15.00 per month
RS-3	\$20.00 per month
<u>RS-GHP</u>	<u>\$20.00 per month</u>

Distribution Charge: \$0.26782 per Therm for RS-1, RS-2, and RS-3
\$0.0999 per Therm for RS-GHP

Minimum Bill: The Customer charge.

Issued By: ~~William N. Cantrell~~ T. J. Szelistowski, President
Issued On: ~~May 19, 2009~~

Effective: ~~June 18, 2009~~

**PEOPLES GAS SYSTEM
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- 18.** Are the three GHP manufacturers listed (M Trigen, Yanmar, and Sierra) the only systems available to customers currently?
- A.** To our knowledge, yes.

**PEOPLES GAS SYSTEM
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- 19.** Please give more information about GHP systems' back-up electrical power generation. What percentage of customer installs do you anticipate having this feature?
- A.** GHP plus Power includes internal back-up electrical power generation. Customers making the investment would likely choose the solution that has power integrated into the system. Those that do not have electrical generation internal to the system require minimal kW output from an external back-up generator. The Company is not certain of the percentage of customer installs having the integrated back-up electrical power.

**PEOPLES GAS SYSTEM
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20. Referring to Special Condition 1 under the proposed Rate Schedule CS-GHP, please discuss why the gas for a GHP system would be separately metered. Additionally, if commercial customers being billed for both the GHP system and other natural gas usage would pay two customer charges, please explain why.

A. The Company is proposing to separately meter commercial GHP use in order to ensure that the reduced GHP delivery charge is applied only to GHP consumption. Non-GHP use by commercial customers varies significantly for each customer. Additionally, GHP use by commercial customers will vary significantly depending on the type of customer and size of GHP equipment installed. Without separately metering commercial GHP use, the Company is unable to determine the quantity of gas that should receive the lower price. Separate metering also provides the Company with the opportunity to gain additional information concerning actual GHP use by commercial customers. The requirement to separately meter GHP usage leads to incremental metering and other costs that are recovered through a separate customer charge as a means of maintaining the cost-based nature of the GHP service. The need for and level of the separate customer charge would be assessed in a subsequent base rate case as further information is gained regarding GHP use by commercial customers.

Separate metering is not necessary for residential GHP customers for two reasons. The first is that the non-GHP use is more certain than is the case for commercial customers. The second is that non-GHP use represents a much smaller proportion of natural gas use by residential customers that install a GHP. Therefore, in lieu of separate metering of residential GHP use, the Company derived the residential GHP rate to incorporate a base level of consumption priced at the standard residential cost of \$0.26782 per therm.

**PEOPLES GAS SYSTEM
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- 21.** Referring to Special Condition 6 under the proposed Rate Schedule CS-GHP, please clarify under what circumstances a contract to take service would be required.
 - A.** The language referenced in Special Condition 6 is existing language and intended to address the potential requirement for minimum load commitments as part of the customer's Gas Service Agreement. This condition also references the situation where a gas main extension is required and where feasibility may require customer load commitments beyond a one-year period.

**PEOPLES GAS SYSTEM
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- 22.** Fifth Revised Sheet No. 7.101-3 shows the addition of a Commercial Standby Generator service charge to Peoples' tariffs. Please explain why that charge was added at this time.
- A.** While modifying the Swing Service Charge tariff sheet no. 7.101-3 to include the Residential and Commercial Gas Heat Pump Swing Service Rate, it was noticed that the Commercial Standby Generator rate that is identified in Tariff Sheet 7.403, Special Condition No. 1 had not been included. The rate was added to correct the tariff sheet.