

11 3/2

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

ORIGINAL  
FILE COPY

REBUTTAL TESTIMONY

OF

VERNON I. KRUTSINGER

DOCKET NO. ~~950002-EG~~  
ENERGY CONSERVATION COST RECOVERY

FILED: February 1, 1995

ACK  \_\_\_\_\_

~~APP~~ 4 \_\_\_\_\_

APP \_\_\_\_\_

CAF \_\_\_\_\_

CMR \_\_\_\_\_

CTC \_\_\_\_\_

~~EAC~~ Brady \_\_\_\_\_

LE 1 \_\_\_\_\_

LE 4 \_\_\_\_\_

C \_\_\_\_\_

I \_\_\_\_\_

S 1 \_\_\_\_\_

W \_\_\_\_\_

T \_\_\_\_\_

RECORDS SECTION  
 \_\_\_\_\_  
 EPSC BUREAU OF RECORDS

DOCUMENT NUMBER-DATE  
 01229 FEB-1 95  
 FPSC-RECORDS/REPORTING

1                   **REBUTTAL TESTIMONY OF VERNON I. KRUTSINGER**  
2                   **ENERGY CONSERVATION COST RECOVERY, DOCKET NO. 950002-EG**

3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26

**Q: Please state your name, title, and business address.**

A: My name is Vernon I. Krutsinger, and I am Manager, Energy Utilization, for Peoples Gas System, Inc. My business address is 111 Madison Street, Seventeenth Floor, Tampa, Florida 33602.

**Q: Are you the same Vernon I. Krutsinger who has previously filed testimony in this proceeding?**

A: Yes. On behalf of Peoples Gas System, Inc., I filed testimony in support of the Company's ECCR true-up in November 1994, and, on January 17, 1995, I filed additional testimony in support of the Company's requested ECCR factors for April 1995 through March 1996.

**Q: What is the purpose of your rebuttal testimony?**

A: My rebuttal testimony will respond to the intervenor testimony filed by Mr. John Currier on behalf of Tampa Electric Company ("TECO") on January 17, 1995.

**Q. Have you reviewed the testimony that Mr. John E. Currier submitted on behalf of Tampa Electric Company?**

A. Yes.

1 **Q: Please summarize your rebuttal testimony.**  
2 **A:** Mr. Currier's testimony basically presents unsubstantiated,  
3 undocumented, unproven, and conclusory allegations that  
4 Peoples has engaged in false and misleading advertising and  
5 promotional activities; these allegations are not supported  
6 by any evidence or rational demonstration, and the Commission  
7 should reject them. While some of the values used in  
8 Peoples' advertising are not identical to values that TECO  
9 uses, or that TECO wishes Peoples would use, they are neither  
10 false nor misleading: my testimony and exhibits demonstrate  
11 that Peoples' advertising is supported by sound data from  
12 reputable sources. Moreover, Peoples' numeric values would  
13 never (except by coincidence) be the same as TECO's average  
14 system numbers, in any event. Peoples serves twelve  
15 different service areas throughout Florida, and TECO is  
16 effectively a monopoly provider serving all homes and  
17 businesses in its territory: even in TECO's service area,  
18 Peoples serves less than five percent of TECO's customers.

19  
20 **Q: What is your understanding of Mr. Currier's basic premise or**  
21 **philosophy with respect to advertising energy services?**

22 **A:** I understand Mr. Currier's basic position to be that  
23 consumers should decide which energy products and services  
24 they want to use based on sound information. As Mr. Currier  
25 stated at page 3, lines 17-21 of his testimony,  
26 "The ultimate choice between gas and electric  
27 service should be left to the consumers. So long

1 as consumers are offered accurate price and  
2 product information, they will be in the best  
3 position to choose their energy sources for  
4 themselves."  
5

6 **Q: What is your position this issue?**

7 A: I agree with Mr. Currier that consumers should, and will,  
8 make their own decisions, and I further agree that their  
9 decisions should be based on accurate price and product  
10 information.  
11

12 **Q: Do you perceive Mr. Currier's testimony to imply anything**  
13 **about Peoples Gas System's advertising and promotional**  
14 **activities in this regard?**

15 A: Yes. Mr. Currier states, over and over, that Peoples engages  
16 in false and misleading advertising. See, for example, his  
17 testimony at page 3, lines 4-7 (allegations of false and  
18 misleading advertising by Peoples); page 3, lines 7-12  
19 (alleged discrepancies in Peoples' advertising); page 4,  
20 lines 5-7 (alleged inaccurate and misleading cost  
21 comparisons); and page 5, lines 15-18 (alleged false and  
22 misleading statements in widely-distributed advertisements  
23 concerning comparisons of electric and gas usage).  
24

25 **Q: What is your response to this accusation?**

26 A: This accusation is itself false. Peoples has, and will  
27 continue to advertise in an honest and responsible way to

1 promote the safe and efficient use of natural gas to the  
2 consuming public. More significantly, Mr. Currier has  
3 provided no proof, nor any evidence, nor any demonstration  
4 that any of Peoples' advertising materials are either false  
5 or misleading. All his testimony really does is present  
6 numerous conclusory allegations that Peoples' advertising is  
7 false and misleading and then cite to various Peoples Gas  
8 materials and the energy usage and cost values presented  
9 therein, without any demonstration that any of these values  
10 are either false or misleading.

11  
12 **Q: What other statements by Mr. Currier give you cause for**  
13 **concern?**

14 A. Many of his statements give me cause for concern. First, on  
15 page 3, lines 4-7, Mr. Currier states, "This testimony  
16 describes in more detail the false and misleading advertising  
17 Peoples Gas has provided to homebuilders, potential home  
18 buyers, and existing customers." In this statement, Mr.  
19 Currier accuses Peoples of false and misleading advertising,  
20 a conclusion which is never substantiated or proven in his  
21 entire testimony. His support for such statements, which are  
22 repeated throughout his testimony, represent his opinion  
23 only.

24 Next, on page 3, lines 7-12, Mr. Currier states that, "I  
25 will point out several discrepancies in reported appliance  
26 efficiencies and cost comparisons presented by Peoples Gas  
27 through various advertising media. I will also address how

1 this advertising causes harm to both Peoples and Tampa  
2 Electric customers." As to the first part of this statement,  
3 there are no "discrepancies" in any of the advertising  
4 presented in his testimony. As to the second, again, Mr.  
5 Currier never proved that any harm has come to anyone as a  
6 result of any advertising done by Peoples nor has he claimed  
7 that there was any intention to mislead or intent to cause  
8 harm.

9 Mr. Currier not only did not prove any harm to TECO; he  
10 also did not explain how his exhibits indicate harm being  
11 perpetrated by PGS upon TECO. I am unable to determine from  
12 Mr. Currier's exhibits any real or imagined harm to TECO.

13  
14 **Q: What is your response to Mr. Currier's statement on page 3,**  
15 **lines 21-23, that "The relative efficiencies of gas and**  
16 **electric appliances are a vital consideration when consumers**  
17 **select new appliances"?**

18 **A:** I do not agree with Mr. Currier's statement. This is not a  
19 valid conclusion. Consumers are many times confused when  
20 higher efficiency appliances (electric versus gas) do not  
21 result in lower annual operating costs. Most consumers  
22 select new appliances based upon "least life-cycle cost of  
23 operation and ownership", and, if there happens to be an  
24 efficiency gain with the new purchase, then some consumers  
25 get an additional "warm fuzzy" from this aspect of the  
26 purchase.

27

1 Q: What is your response to Mr. Currier's statement at page 3,  
2 lines 23-25, and page 4, lines 1-2, that, "Because consumers  
3 have little access to independent technical comparisons of  
4 gas and electric appliances specific to Tampa Electric's  
5 and/or Peoples service area, they rely heavily on utilities,  
6 home builders and appliance sale information"?

7 A: In the first place, Mr. Currier's premise is untrue:  
8 customers do have access to independent technical comparisons  
9 of appliances. The two major appliances which Mr. Currier  
10 uses as examples in his testimony to accuse Peoples of false  
11 and misleading advertising are heating and water heating.  
12 Both of these appliances are required to have United States  
13 Department of Energy Rating stickers on them which show the  
14 annual operating costs as estimated by DOE. See my Exhibit  
15 \_\_\_\_ (VIK-1). I believe that there are numerous sources for  
16 operating costs of both gas and electric appliances. Some of  
17 those include manufacturers, dealers, utilities, builders,  
18 and governmental agencies. Although the various sources for  
19 this information do not always use the same data, and  
20 comparisons may be confusing, it is completely unreasonable  
21 to accuse any one of these entities of false advertising  
22 without proof or substantiation.

23

24 Q: Please continue.

25 A: On page 4, lines 5-16, Mr. Currier repeats his false  
26 accusations against Peoples without proof. Again, I am  
27 unable to determine from Mr. Currier's comments any real harm

1 to TECO. Mr. Carrier does not explain or offer any proof for  
2 his allegations.

3 On page 4, lines 23-25, and page 5, lines 1-6, Mr.  
4 Carrier states that, "Peoples has provided brochures and  
5 brochure packets to homebuilders and potential home buyers in  
6 residential developments. They have also published  
7 advertisements within the Builders Association of Greater  
8 Tampa's monthly publication the "Building Barometer",  
9 promoting their Residential Homebuilders Program with an ad  
10 comparing gas and electric costs (Document No. 1 of Carrier's  
11 Exhibit). This publication is available to homebuilders in  
12 Tampa Electric's service area."

13 **I agree with this statement** in regard to page 1 of 2 of  
14 Document 1. However, Mr. Carrier makes no specific  
15 allegations concerning this ad. This makes it very difficult  
16 for me to understand his accusations. As to page 2 of 2 of  
17 document No. 1, this ad makes no comparison of gas and  
18 electric appliances in anyway. Again, Mr. Carrier makes no  
19 specific allegations directed at Peoples in this ad.

20 On page 5, lines 6-9, he makes reference to a monthly  
21 newsletter (Document No. 2). Page 1 of this newsletter makes  
22 no comparisons of gas and electricity. Page 2 of the  
23 newsletter does make comparisons of the percentage of savings  
24 by using gas instead of electricity. Again, however, Mr.  
25 Carrier makes no specific allegations. I have provided a  
26 detailed explanation of the comparison assumptions used by  
27 PGS to make the calculations used for purposes of the ad and



1 the sources of the input data supporting those calculations.  
2 See my Exhibit \_\_\_\_ (VIK-2).

3

4 **Q. What do you find offensive to the allegations as made by**  
5 **Currier?**

6 A. On page 5, lines 15-21, Mr. Currier calls attention to  
7 Document No. 3 of his exhibit, and claims that "Peoples has  
8 made false and misleading statements in widely distributed  
9 advertisements concerning comparisons of kilowatt-hour usage  
10 of various electric appliances and the corresponding therm  
11 usage levels of gas appliances. These advertisements have  
12 been made available to homebuilders and potential home buyers  
13 in residential developments in Tampa electric's service area  
14 (Document No. 3)." Again, Mr. Currier's accusations against  
15 Peoples are totally lacking in specifics or proof as to what  
16 is supposedly false and misleading.

17

18 **Q: What about his allegations that Peoples' advertising uses**  
19 **different energy usage values than those developed in either**  
20 **the so-called "SRC Study" or by TECO's modeling efforts?**

21 A: On page 5, lines 23-25, and on page 6, lines 1-17, Mr.  
22 Currier states that,

23 Average usage levels for electric appliances are  
24 well-established in Florida and have been  
25 addressed by this Commission. In the recent  
26 electric DSM goal setting hearings, the Commission  
27 accepted a Synergic Resources Corporation (SRC)

1 study concerning annual energy usage in  
2 Florida for various electric end uses  
3 including water heating, strip heating, and  
4 heat pumps (Document No. 4). Other electric  
5 appliances that were not addressed in the SRC  
6 study, including electric ranges and clothes  
7 dryers, have been modeled by Tampa Electric  
8 and other utilities. The usage levels for  
9 electric appliances as shown by these  
10 references are as follows:

11	<u>End Use</u>	<u>Annual Usage</u>	<u>Source</u>
12	Resistance Water Heating	2788 kwh	SRC study
13	Cooking	600 kwh	Modeling
14	Resistance Heating	1954 kwh	SRC study
15	Heat Pump	1105 kwh	SRC study
16	Clothes Dryer	800 kwh	Modeling

17  
18 First, let me point out that the "average usage levels  
19 for electric appliances " in Florida have not been "well  
20 established in Florida" and have not been addressed by "this  
21 commission" in the context in which Mr. Carrier makes  
22 accusations against Peoples. Peoples and other parties, gas,  
23 electric, and others objected to the numbers used in the SRC  
24 Study on numerous occasions, and used different values in  
25 their analyses presented in the goals dockets. In addition,  
26 the numbers used in the SRC Study were for the purposes of  
27 establishing criteria for input data for Cost Effectiveness

1 analysis for electric DSM Programs and for goal setting, not  
2 for input data to be used by gas utilities for the purpose of  
3 advertising to specific potential customers in specific  
4 target markets. The percentage saving will be the same  
5 whether you start with 209 therms or 191 therms. A  
6 conservative approach is always best when you tell the  
7 consumer what a product or service will do for them.

8 On page 6, line 4, he refers to his Document No. 4,  
9 which is a chart showing new and existing single family  
10 prototypes from the SRC Study. The assumption here is that  
11 because someone decided that TECO should use these  
12 assumptions for purposes of deriving the avoided costs to  
13 TECO from various electric DSM programs, then Peoples should  
14 automatically adopt them for advertising purposes.

15 It is appropriate to point out here that Documents 1 and  
16 3 included in Mr. Carrier's testimony are copies of ads  
17 developed and originally printed prior to the publishing of  
18 SRC Study (March 5, 1993). My Exhibit \_\_\_\_ (VIK-3) shows the  
19 assumptions used by Peoples compared to the assumptions in  
20 Mr. Carrier's Document No. 4.

21 Pertaining to Documents 2, 5, and 7, all of these  
22 assumptions were produced in PGS' response to staffs second  
23 set of interrogatories attachments. Document 3 included in  
24 Mr. Carrier's testimony contains comparisons between gas and  
25 electric operating costs for water heating, cooking, heating,  
26 and clothes drying. Document No. 3, included in his  
27 testimony, refers to two ads. One is dated May 1991, which

1 is WAY beyond the scope of this hearing and the other was  
2 dated in 1993. Both of these ads were designed to describe  
3 PGS' Energy Conservation Allowance Programs and give the  
4 consumer an idea of the possible savings available when using  
5 gas instead of electricity. Both of these ads were designed  
6 to specifically address PGS' approved gas replacement of  
7 electric resistance appliances. The 1991 ad used the  
8 assumptions contained in Peoples' 1990 Commission-approved  
9 Energy Conservation filing, FPSC Docket No. 900089-EG, Order  
10 No. 23462, issued September 11, 1990. Exhibit \_\_\_\_ (VIK-4)  
11 shows the sources and all of the calculations used to arrive  
12 at the costs and savings in the 1993 ad contained in Mr.  
13 Currier's Document No. 3.

14 My Exhibit \_\_\_\_ (VIK-5) outlines the numbers presented  
15 by Mr. Currier on page 6, lines 13-17, along with those of  
16 TECO and SRC at various times since 19\_\_\_. In addition you  
17 will see comparisons of the same appliances from FPC and FPL.  
18 There are significant differences between TECO's own numbers  
19 and between TECO's numbers and the SRC Study numbers, and  
20 there are even more significant variances among the  
21 utilities. Peoples' service areas encompass all three of  
22 these major electric monopolies and the majority of PGS ads  
23 prior to 1994 represents state-wide assumptions for  
24 comparison purposes based on PGS' mix of customers not based  
25 on global electric statistics that are only available to a  
26 monopoly that literally has captive every single household  
27 that wishes to turn on the lights. On a percentage basis,

1 PGS has less than 5% of TECO's customer base.

2

3 **Q: Do you have any comments or response to Mr. Currier's**  
4 **allegations regarding Peoples' water heating energy usage**  
5 **values?**

6 **A:** Yes. On page 7, lines 1-4, Mr. Currier states, "Peoples  
7 represented this number to be 5,598 kwh per year. That is  
8 more than 200% of actual usage. At the same time, it appears  
9 Peoples has understated gas water heating therm usage." The  
10 inference here is that this is "understated" and therefor  
11 "false and misleading". Mr. Currier provides no proof again  
12 except to refer the commission to a study which Peoples is on  
13 record objecting to and as mentioned above, has no bearing on  
14 the way Peoples conducts itself with regard to advertising.  
15 Peoples does not agree that the SRC Study even attempted to  
16 establish the average usage levels of electric appliances and  
17 the mere assertion of this does not make it so.

18 Peoples has an obligation to the public at large and  
19 it's ratepayers to provide accurate information upon which  
20 they can make decisions. All of the ads in question are  
21 accurate.

22 Exhibit \_\_\_\_ (VIK-6) is a copy of page 139 taken from  
23 the October 1994, Consumers' Directory of Certified  
24 Efficiency Ratings for Residential Heating and Water heating  
25 Equipment, published by GAMA. Exhibit \_\_\_\_ (VIK-4) is a  
26 calculation sheet used by PGS to confirm the reasonableness  
27 of the calculations used in the ads mentioned by Mr. Currier

1 (Documents 1 and 3). On page 9, lines 1-10, Mr. Carrier  
2 states, "and the U. S. Department of Energy approximates an  
3 average usage of 15 gallons per person per day of hot water.  
4 The 97 gallons per day usage would thus equal approximately  
5 6.5 people within the household on a daily basis. Based on  
6 the same gallon usage of 97 gallons per day, the annual  
7 natural gas usage would be 276 therms compared to the 191  
8 therms stated in Peoples' advertisement. It is noted that  
9 within the Tampa Electric service area, the average household  
10 is approximately 2.8 people." The key to making an accurate  
11 comparison is to use a consistent BTU requirement for a  
12 specific application for both the electric and gas appliance.  
13 This could be the average consumption of some set of electric  
14 customers or some set of customers of a gas utility or some  
15 other standard produced by a legitimate credible source.  
16 Peoples chose GAMA for the source and verified the number as  
17 reasonable based PGS' historical data. As you can see by the  
18 calculations in Exhibit \_\_\_\_ (VIK-4), PGS followed the  
19 industry accepted way of arriving at the input and  
20 calculations which resulted in the cost comparisons in our  
21 ads. Mr. Carrier claims a 2.8 person average per household  
22 and PGS' calculations include 3 persons. The consumer can  
23 more easily relate this to his personal situation by using  
24 the chart provided than any other method I can think of, and  
25 he can then more readily see how hot water consumption  
26 relates to his personal lifestyle and that of his family.

27

1 Q: Do you have any comments or response to Mr. Currier's  
2 allegations regarding Peoples' electric cooking energy usage  
3 values?

4 A: Yes. In Mr. Currier's testimony on page 7, lines 10-15, he  
5 states, "Electric cooking uses approximately 600 kwh per  
6 year. In 1991, Peoples used 722 kwh for electric cooking per  
7 year. By 1993, Peoples used an inflated figure of 1,465.5  
8 kwh per year. During the same period, Peoples'  
9 representations about gas cooking remained constant at 50  
10 therms per year. On page 7, line 6, he uses the "inflated"  
11 which is misleading. As you can see in Exhibit \_\_\_\_\_ (VIK-  
12 4), PGS converted from the 50 therm per year consumption  
13 number to an electric equivalent. This number is not  
14 inflated.

15

16 Q: Do you have any comments or response to Mr. Currier's  
17 allegations regarding Peoples' space heating energy usage  
18 values?

19 A: Yes. Mr. Currier's remarks on page 7, lines 18-21, are false  
20 and misleading. Document No. 3, included in his testimony,  
21 refers to two ads. One is dated May 1991, which is WAY  
22 beyond the scope of this hearing and the other was dated in  
23 1993. Both of these ads were designed to describe PGS Energy  
24 Conservation Allowance Programs and give the consumer an idea  
25 of the possible savings available when using gas instead of  
26 electricity. Both of these ads were designed to specifically  
27 address PGS approved gas replacement of electric resistance

1 appliances. The 1991 ad contained a comparison of a heat  
2 pump, since the heat pump has been a very popular appliance  
3 being pushed by the electric industry, manufacturers and the  
4 HVAC industries. However, the reference and comparison was  
5 dropped in the 1993 ad because it may have improperly left  
6 the consumer the impression that the PGS ECP may provide  
7 allowances for the installation of gas to replace the heat  
8 pump, whereas the approved program applies only to the  
9 replacement of EXISTING STRIP HEAT in an existing residential  
10 dwelling.

11 Documents 2, 5, and 7, all specifically compare natural  
12 gas heating to electric heat pump heating systems. Document  
13 7 is a cover sheet which was designed to give to a builder  
14 and although it makes no mention of electric heat pumps, it  
15 contained the brochure in Mr. Currier's Document No. 5, which  
16 does refer to the electric heat pump.

17 On page 8, lines 4 and 5, Mr. Currier states, "Peoples'  
18 1993 advertisements claimed 5,400 kwh per year for strip  
19 heating, 250% of the actual usage." This statement is  
20 misleading and I have provided the assumptions and  
21 calculations in Exhibit \_\_\_\_ (VIK-2).

22

23 **Q: Do you have any comments or response to Mr. Currier's**  
24 **allegations regarding Peoples' clothes drying energy usage**  
25 **values?**

26 **A: Yes. I do not agree with Mr. Currier's statement that "The**  
27 **electric energy usage for electric clothes drying is**



1 approximately 800 kwh per year." (page 8, lines 8-9).  
2 Peoples' estimates for clothes drying energy usage are based  
3 on Peoples' own experience with its customers' usage for this  
4 purpose, converted to kWh for comparison purposes.  
5

6 **Q: Do you have any comment or response to Mr. Currier's**  
7 **allegations at page 9, lines 12-23, that consumers and**  
8 **builders are misled by Peoples' generic advertising?**

9 **A:** Yes. This ad (Mr. Currier's Document No. 5) clearly states  
10 that the "Comparison (is) based on 2,278 square foot gas home  
11 equipped with combination central heating/hot water heater,  
12 gas range and dryer; electric home equipped with electric  
13 heat pump, electric water heater, range and dryer." A  
14 reasonable person reading this ad would understand that the  
15 percentage of savings depicted in the ad are related to the  
16 appliances referred to in the ad itself. The input data,  
17 sources and calculations used to arrive at these percentage  
18 savings are contained in Exhibit \_\_\_\_\_ (VIK-2) and are proof  
19 that they are far from false or misleading. These values are  
20 based on assumptions used by the Florida Department of  
21 Community Affairs ("DCA") in its Building Energy Rating  
22 System manual and agreed to by the 4 major EIOU's and the gas  
23 industry. There are still a large percentage of electric  
24 resistance strip heating units being installed in homes being  
25 built in this state. Peoples' ad could have used strip heat  
26 as the basis of the comparison and instead of a 32% savings  
27 shown . 50%+ savings by merely qualifying the ad with a note

1 to this effect. The largest area served by Peoples is in the  
2 south climate zone where these strip heat units are still  
3 being aggressively marketed.  
4

5 **Q. What other, if any, statements made by Mr. Carrier do you**  
6 **disagree with or find objectionable?**

7 A. Every accusation contained on pages 10-13. Peoples'  
8 Commission approved Energy Conservation Builder Program may  
9 have been successful, however, the success of the program is  
10 not based on any false or misleading ads or  
11 misrepresentations, nor on allegedly inflated energy usage or  
12 cost savings values, nor on the reliance on such by builders,  
13 developers, or consumers, nor on "lucrative cash incentives,"  
14 simply because, as I have proven, no such ads exist and the  
15 only incentives are those approved by the Commission. Mr.  
16 Carrier also makes unsubstantiated claims of "harm to TECO"  
17 as a result of "loss of revenues" (page 11, lines 14-15).  
18 It's my understanding that the electric utility business is  
19 one of the most capital intensive businesses in the United  
20 States. And it is this fact that causes new customers to put  
21 pressure on rates, causing them to increase, cause me to  
22 question this claim. TECO has been approached to include gas  
23 in the planning of facilities in gas communities, which would  
24 mitigate potential "stranded investment" and reduce the cost  
25 differential of using gas to the participant.

26 Then on page 11, lines 23-25, and on page 12, lines 1-9,  
27 he complains that a brochure (Document 7) containing "Builder

1 Benefits" package that indicated their "builder value  
2 packages include fireplaces, water heaters and other  
3 installations including propane". This is not a true  
4 statement. The brochure and the inserts provided with it  
5 only refer to Peoples Gas, not Peoples Gas System nor Peoples  
6 Gas Company. I maintain that PGS does not actually sell or  
7 install any of those items. Peoples Gas Company does sell  
8 and install those packages. I agree with Mr. Carrier that the  
9 "Leisure Package option" (line 5) is not of the Commission  
10 approved Residential Builder Program and no where in any ad  
11 produced by Mr. Carrier is there any reference depicting the  
12 "Leisure Package option" as a Commission approved program nor  
13 any reference to a Commission approved allowance.

14 Mr. Carrier further states on page 12, lines 15-25, "The  
15 Commission has jurisdiction over Peoples' ability to recover  
16 the costs of advertising. The extent to which a utility is  
17 entitled to recover costs associated with advertising is part  
18 of the rate making process. Peoples should not be entitled  
19 to recover costs associated with false and misleading  
20 advertising. Tampa Electric respectfully submits that the  
21 Commission can most effectively exercise its authority in  
22 this instance by disallowing recovery of all costs and grant  
23 other relief it deems necessary associated with Peoples'  
24 false and misleading advertising."

25 My response is that PGS only paid half of the costs to  
26 produce and print the document in question and therefore is  
27 only requesting that amount for cost recovery related to the

1           program in question in this proceeding.

2

3   **Q:   What do you want the Commission to do?**

4   A:   Since all of the accusations of Mr. Currier against Peoples  
5       for false and misleading advertising remain undocumented and  
6       unsupported and without proof of harm, I respectfully request  
7       that the Commission deny Mr. Currier's request stated above.

8

9   **Q.   Does this conclude your rebuttal testimony?**

10  A.   Yes, it does.

11

12

WATER HEATER-NATURAL GAS  
FIRST HOUR RATING  
68 GALLONS

MODEL  
41V40  
H00586

# ENERGYGUIDE

ESTIMATES ON THE SCALE  
ARE BASED ON A NATIONAL  
AVERAGE NATURAL GAS  
RATE OF \$.6054 PER  
THERM

ONLY MODELS WITH  
FIRST HOUR RATING  
OF 65 TO 74  
GALLONS ARE USED  
IN THE SCALE

Model with  
lowest  
energy cost

\$140

\$162

Model with  
highest  
energy cost

\$174

THIS MODEL

Estimated yearly energy cost

Your cost will vary depending on your local energy rate and how you use the product. This energy cost is based on U.S. Government standard tests. MEETS NAECA REQUIREMENTS

How much will this model cost you to run yearly?

Yearly Cost		
Estimated yearly \$ cost shown below		
COST PER THERM	0.40	\$107
	0.50	\$134
	0.60	\$161
	0.70	\$187
	0.80	\$214
	0.90	\$241

Ask your salesperson or local utility for the energy rate in your area.

**IMPORTANT** Removal of this label before consumer purchase is a violation of federal law (42 U.S.C. 6302)

(Part No. AX-01855)

WATER HEATER-ELECTRIC  
FIRST HOUR RATING  
49 GALLONS

MODEL  
81V400 C  
H00678

# ENERGYGUIDE

ESTIMATES ON THE SCALE  
ARE BASED ON A NATIONAL  
AVERAGE ELECTRIC  
RATE OF \$.0824 PER  
KILOWATT HOUR

ONLY MODELS WITH  
FIRST HOUR RATING  
OF 48 TO 55  
GALLONS ARE USED  
IN THE SCALE

Model with  
lowest  
energy cost

\$381

\$402

Model with  
highest  
energy cost

\$421

THIS MODEL

Estimated yearly energy cost

Your cost will vary depending on your local energy rate and how you use the product. This energy cost is based on U.S. Government standard tests. MEETS NAECA REQUIREMENTS

How much will this model cost you to run yearly?

Yearly Cost		
Estimated yearly \$ cost shown below		
COST PER KILOWATT HOUR	0.04	\$195
	0.06	\$293
	0.08	\$391
	0.10	\$488
	0.12	\$586
	0.14	\$683

Ask your salesperson or local utility for the energy rate in your area.

**IMPORTANT** Removal of this label before consumer purchase is a violation of federal law (42 U.S.C. 6302)

(Part No. AX-01855)

DOCKET NO. 950000000000  
PEOPLES GAS SYSTEM, INC.  
WITNESS: KRUTSINGER  
EXHIBIT (VIR-1)  
PAGE 1 OF 2

Dishwasher  
Capacity: Standard

Frigidaire  
Model: DW6500A

# ENERGYGUIDE

Estimates on the scale are based on a national average electric rate of 8.25¢ per kilowatt hour and a natural gas rate 58.0¢ per therm.

Only standard size dishwashers are used in the scale.

## Electric Water Heater

Model with lowest energy cost

\$46

**\$59**

Model with highest energy cost

\$82

## Gas Water Heater

Model with lowest energy cost

\$25

**\$29**

Model with highest energy cost

\$46

Estimated yearly energy cost

Estimated yearly energy cost

Your cost will vary depending on your local energy rate and how you use the product. This energy cost is based on U.S. Government standard tests.

## How much will this model cost you to run yearly?

with an electric water heater

with a gas water heater

Loads of dishes per week	2	4	6	8	12
Estimated yearly \$ cost shown below					
Cost per kilowatt hour	2¢	\$ 5	\$ 9	\$ 14	\$ 28
	4¢	\$ 9	\$ 18	\$ 28	\$ 37
	6¢	\$ 14	\$ 28	\$ 41	\$ 55
	8¢	\$ 18	\$ 37	\$ 55	\$ 73
	10¢	\$ 23	\$ 46	\$ 69	\$ 92
	12¢	\$ 28	\$ 55	\$ 83	\$ 110

Loads of dishes per week	2	4	6	8	12
Estimated yearly \$ cost shown below					
Cost per therm (100 cubic feet)	30¢	\$ 7	\$ 14	\$ 21	\$ 28
	40¢	\$ 8	\$ 16	\$ 24	\$ 32
	50¢	\$ 9	\$ 17	\$ 26	\$ 35
	60¢	\$ 9	\$ 19	\$ 28	\$ 37
	70¢	\$ 10	\$ 20	\$ 31	\$ 41
	80¢	\$ 11	\$ 22	\$ 33	\$ 44

Ask your salesperson or local utility for the energy rate (cost per kilowatt hour or therm) in your area, and for estimated costs if you have a propane or oil water heater.

**Important** Removal of this label before consumer purchase is a violation of federal law (42 U.S.C. 6302).

Part No. 154148901A

Clothes Washer  
Capacity: LARGE

Model(s) LA800

# ENERGYGUIDE

Estimates on the scale are based on a national average electric rate of 8.24¢ per kilowatt hour and a natural gas rate of 60.54¢ per therm.

Only **LARGE** size clothes washers are used in the scale.

## Electric Water Heater

Model with lowest energy cost

\$22

**\$94**

Model with highest energy cost

\$150

## Gas Water Heater

Model with lowest energy cost

**\$38**

Model with highest energy cost

\$55

Estimated yearly energy cost

Estimated yearly energy cost

Your cost will vary depending on your local energy rate and how you use the product. This energy cost is based on U.S. Government standard tests.

## How much will this model cost you to run yearly?

with an electric water heater

with a gas water heater

Loads of clothes per week	2	4	6	8	12
Estimated yearly \$ cost shown below					
Cost per kilowatt hour	2¢	\$ 6	\$ 11	\$ 17	\$ 23
	4¢	\$ 11	\$ 23	\$ 34	\$ 46
	6¢	\$ 17	\$ 34	\$ 52	\$ 69
	8¢	\$ 23	\$ 46	\$ 69	\$ 92
	10¢	\$ 29	\$ 57	\$ 86	\$ 115
	12¢	\$ 34	\$ 69	\$ 103	\$ 138

Loads of clothes per week	2	4	6	8	12
Estimated yearly \$ cost shown below					
Cost per therm (100 cubic feet)	30¢	\$ 4	\$ 8	\$ 12	\$ 16
	40¢	\$ 6	\$ 12	\$ 18	\$ 24
	50¢	\$ 8	\$ 15	\$ 22	\$ 29
	60¢	\$ 9	\$ 19	\$ 28	\$ 37
	70¢	\$ 11	\$ 22	\$ 33	\$ 44
	80¢	\$ 13	\$ 25	\$ 38	\$ 51

Ask your salesperson or local utility for the energy rate (cost per hour or therm) in your area, and for estimated costs if you have a oil water heater.

**Important** Removal of this label before consumer purchase is a violation (42 U.S.C. 6302).

(Part No. )

DOCKET NO. 154148901A  
 PEOPLES GAS SYSTEM, INC.  
 WITNESS: KRUTSINGER  
 EXHIBIT (VIX-1)  
 PAGE 2 OF 2

## Who says home and water heating have to cost a lot?

T

oday's smart homeowners are lowering their home heating and hot water bills up to 38% with gas.



Air heated by gas is warm, comfortable and economical. Gas heat enters a room at around 120°F. On the other hand, electric heat pumps blow air out at about 95°F, which is below normal body temperature.



On average, gas hot water heaters produce more hot water and have a quicker recovery period than electric models. And direct venting allows easy installation in tight areas of your home. In fact, water and space heating can now be combined to carry on two functions, inexpensively. With HYDRO-HEAT, air is blown over

### GAS versus ELECTRIC COSTS

Cost per 1 million BTU:

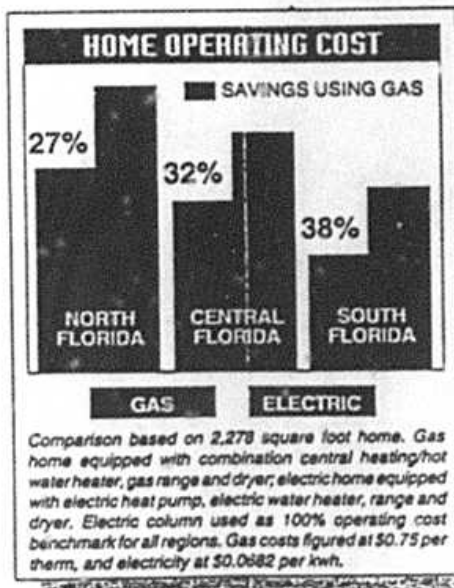
Natural Gas: \$ 7.50

Propane: \$13.65

Electricity: \$19.99

*Above costs assume natural gas rate of \$0.75 per therm; propane rate of \$1.25 per gallon; electricity rate of \$0.0682 per kilowatt hour.*

the hot water heater coil, absorbed, then blown through your home as warm heat. The process is efficient, economical and environmentally friendly. Water heater sediment build-up and corrosion are reduced by frequent water circulation, which in turn allows a longer life for your heating unit.



Gas heat provides an increase in warm water and an even circulation of warm air throughout your house. So keep the energy bills down and the comfort up: heat your home and water with gas.



The same operating features are available on natural gas or propane home and water heater systems. Propane gas service is available from all Peoples Gas offices for homes not on a natural gas main.

Square Feet:  
Bedrooms:

2,278  
4

Gas Combo Heat  
versus  
Electric Heat Pump

	North		Central		South	
	Natural	Electric	Natural	Electric	Natural	Electric
Space Heating	\$257.29	\$267.35	\$149.36	\$157.19	\$52.74	\$58.31
Water Heating	179.30	297.34	166.29	275.75	156.48	259.49
Cooking	24.25	46.83	24.25	46.83	24.25	46.83
Drying	34.81	67.22	34.81	67.22	34.81	67.22
Total	\$495.65	\$678.74	\$374.70	\$546.99	\$268.28	\$431.86
Savings	<u>\$183.09</u>	26.97%	<u>\$172.29</u>	31.50%	<u>\$163.58</u>	37.88%
\$/Therm	\$0.75000		\$0.75000		\$0.75000	
\$/KWH		\$0.06820		\$0.06820		\$0.06820
Therms	661		500		358	
KWHs		9,952		8,020		6,332



Region:	North
Square Feet:	2,278
Bedrooms:	4

	Natural Gas Gas Combo Heat		Electric Electric Heat Pump	
	Amount	Unit	Amount	Unit
Design Heat Loss	47,300	BTU	47,300	BTU
times				
Number of Degree Days	1239	Degrees F	1239	Degrees F
times				
Hours in One Day	24	Hours	24	Hours
times				
Empirical Correction Factor	0.78	Factor	0.78	Factor
Equals Numerator	1,097,079,984		1,097,079,984	
Design Temperature Difference	41	Degrees F	41	Degrees F
times				
AFUE or SPF	0.78	KBTUs	2.00	KBTUs
times				
Heating Value of Fuel	100,000	BTU	3,413	BTU
Equals Denominator	3,198,000		279,866	
Numerator divided by Denominator Equals Energy Consumption	343.05	Therm	3,920.02	KWH
times \$/Energy Unit	\$0.75000	Therm	\$0.06820	KWH
Equals Energy Cost	\$257.29	\$	\$267.35	\$

Region:	North
Square Feet:	2,278
Bedrooms:	4

	Natural Gas Natural Gas W.H.		Electric Electric W.H.	
	Amount	Unit	Amount	Unit
Bedrooms times	4	Room	4	Room
Energy Used in MMBTUs	3.347	MMBTU	3.347	MMBTU
Equals Sub-Total	13.388	MMBTU	13.388	MMBTU
divided by				
Energy Factor	0.56	KBTUs	0.90	KBTUs
Equals Energy Used	23.907	MMBTU	14.876	MMBTU
\$/Energy Unit	\$7.50	\$/MMBTU	\$19.99	\$/MMBTU
Energy Used times				
\$/Energy Unit				
Equals Energy Cost	\$179.30	\$	\$297.34	\$

Region:	North
Square Feet:	2,278
Bedrooms:	4

	Natural Gas		Electric	
	Amount	Unit	Amount	Unit
Bedrooms	4	Room	4	Room
times				
Constant	173	KBTUs	173	KBTUs
equals Sub-total	692		692	
plus KBTUs	1,651	KBTUs	1,651	KBTUs
equals Sub-total	2,343	KBTUs	2,343	KBTUs
times				
Efficiency Multiplier	1.38	Factor	1.00	Factor
Equals KBTUs	3,233	KBTUs	2,343	KBTUs
times .001	0.001	Factor	0.001	Factor
Equals Energy Used	3.233	MMBTU	2.343	MMBTU
<b>\$/Energy Unit</b>	<b>\$7.50</b>	<b>\$/MMBTU</b>	<b>\$19.99</b>	<b>\$/MMBTU</b>
Energy Used				
times				
\$/Energy Unit				
Equals Energy Cost	<b>\$24.25</b>	<b>\$</b>	<b>\$46.83</b>	<b>\$</b>

Region:	North
Square Feet:	2,278
Bedrooms:	4

	Natural Gas Natural Gas Dryer		Electric Electric Dryer	
	Amount	Unit	Amount	Unit
Bedrooms	4	Room	4	Room
times				
Constant	793	KBTUs	793	KBTUs
equals Sub-total	3,172		3,172	
plus KBTUs	191	KBTUs	191	KBTUs
equals Sub-total	3,363	KBTUs	3,363	KBTUs
times				
Efficiency Multiplier	1.38	Factor	1.00	Factor
Equals KBTUs	4,641	KBTUs	3,363	KBTUs
times .001	0.001	Factor	0.001	Factor
Equals Energy Used	4.641	MMBTU	3.363	MMBTU
\$/Energy Unit	\$7.50	\$/MMBTU	\$19.99	\$/MMBTU
Energy Used				
times				
\$/Energy Unit				
Equals Energy Cost	\$34.81	\$	\$67.22	\$
Total Cost of All Appliances	\$495.65	\$	\$678.74	\$

Region:	Central
Square Feet:	2,278
Bedrooms:	4

	Natural Gas Gas Combo Heat		Electric Electric Heat Pump	
	Amount	Unit	Amount	Unit
Design Heat Loss times	39,795	BTU	39,795	BTU
Number of Degree Days times	683	Degrees F	683	Degrees F
Hours in One Day times	24	Hours	24	Hours
Empirical Correction Factor Equals Numerator	0.82	Factor	0.82	Factor
	534,902,105		534,902,105	
Design Temperature Difference times	34	Degrees F	34	Degrees F
AFUE or SPF times	0.79	KBTUs	2.00	KBTUs
Heating Value of Fuel Equals Denominator	100,000	BTU	3,413	BTU
	2,686,000		232,084	
Numerator divided by Denominator Equals Energy Consumption	199.14	Therm	2,304.78	KWH
times \$/Energy Unit Equals Energy Cost	\$0.75000	Therm	\$0.06820	KWH
	\$149.36		\$157.19	

Region:	Central
Square Feet:	2,278
Bedrooms:	4

	Natural Gas Natural Gas W.H.		Electric Electric W.H.	
	Amount	Unit	Amount	Unit
Bedrooms times	4	Room	4	Room
Energy Used in MMBTUs	3.104	MMBTU	3.104	MMBTU
Equals Sub-Total	12.416	MMBTU	12.416	MMBTU
divided by				
Energy Factor	0.56	KBTUs	0.90	KBTUs
Equals Energy Used	22.171	MMBTU	13.796	MMBTU
\$/Energy Unit	\$7.50	\$/MMBTU	\$19.99	\$/MMBTU
Energy Used times \$/Energy Unit Equals Energy Cost	\$166.29	\$	\$275.75	\$

Region:	Central
Square Feet:	2,278
Bedrooms:	4

Bedrooms  
 times  
 Constant  
 equals Sub-total  
 plus KBTUs  
 equals Sub-total  
 times  
 Efficiency Multiplier  
 Equals KBTUs  
 times .001  
 Equals Energy Used  
  
 \$/Energy Unit  
  
 Energy Used  
 times  
 \$/Energy Unit  
 Equals Energy Cost

Natural Gas Natural Gas Range		Electric Electric Range	
Amount	Unit	Amount	Unit
4	Room	4	Room
173	KBTUs	173	KBTUs
692		692	
1,651	KBTUs	1,651	KBTUs
2,343	KBTUs	2,343	KBTUs
1.38	Factor	1.00	Factor
3,233	KBTUs	2,343	KBTUs
0.001	Factor	0.001	Factor
3.233	MMBTU	2.343	MMBTU
\$7.50	\$/MMBTU	\$19.99	\$/MMBTU
\$24.25	\$	\$46.83	\$

Region:	Central
Square Feet:	2,278
Bedrooms:	4

	Natural Gas Natural Gas Dryer		Electric Electric Dryer	
	Amount	Unit	Amount	Unit
Bedrooms	4	Room	4	Room
times				
Constant	793	KBTUs	793	KBTUs
equals Sub-total	3,172		3,172	
plus KBTUs	191	KBTUs	191	KBTUs
equals Sub-total	3,363	KBTUs	3,363	KBTUs
times				
Efficiency Multiplier	1.38	Factor	1.00	Factor
Equals KBTUs	4,641	KBTUs	3,363	KBTUs
times .001	0.001	Factor	0.001	Factor
Equals Energy Used	4.641	MMBTU	3.363	MMBTU
\$/Energy Unit	\$7.50	\$/MMBTU	\$19.99	\$/MMBTU
Energy Used				
times				
\$/Energy Unit				
Equals Energy Cost	\$34.81	\$	\$67.22	\$
Total Cost of All Appliances	\$374.70	\$	\$546.99	\$



Region:	South
Square Feet:	2,278
Bedrooms:	4

	Natural Gas Gas Combo Heat		Electric Electric Heat Pump	
	Amount	Unit	Amount	Unit
Design Heat Loss times	35,597	BTU	35,597	BTU
Number of Degree Days times	214	Degrees F	214	Degrees F
Hours in One Day times	24	Hours	24	Hours
Empirical Correction Factor Equals Numerator	0.83	Factor	0.83	Factor
	151,745,739		151,745,739	
Design Temperature Difference times	26	Degrees F	26	Degrees F
AFUE or SPF times	0.83	KBTUs	2.00	KBTUs
Heating Value of Fuel Equals Denominator	100,000	BTU	3,413	BTU
	2,158,000		177,476	
Numerator divided by Denominator Equals Energy Consumption	70.32	Therm	855.02	KWH
times \$/Energy Unit Equals Energy Cost	\$0.75000	Therm	\$0.06820	KWH
	\$52.74	\$	\$58.31	\$

Region:	South
Square Feet:	2,278
Bedrooms:	4

Bedrooms  
 times  
 Energy Used in MMBTUs  
 Equals Sub-Total

divided by  
 Energy Factor  
 Equals Energy Used

\$/Energy Unit

Energy Used  
 times  
 \$/Energy Unit  
 Equals Energy Cost

Natural Gas Natural Gas W.H.		Electric Electric W.H.	
Amount	Unit	Amount	Unit
4	Room	4	Room
2.921	MMBTU	2.921	MMBTU
11.684	MMBTU	11.684	MMBTU
0.56	KBTUs	0.90	KBTUs
20.864	MMBTU	12.982	MMBTU
\$7.50	\$/MMBTU	\$19.99	\$/MMBTU
\$156.48	\$	\$259.49	\$

Region:	South
Square Feet:	2,278
Bedrooms:	4

	Natural Gas Natural Gas Range		Electric Electric Range	
	Amount	Unit	Amount	Unit
Bedrooms	4	Room	4	Room
times				
Constant	173	KBTUs	173	KBTUs
equals Sub-total	692		692	
plus KBTUs	1,651	KBTUs	1,651	KBTUs
equals Sub-total	2,343	KBTUs	2,343	KBTUs
times				
Efficiency Multiplier	1.38	Factor	1.00	Factor
Equals KBTUs	3,233	KBTUs	2,343	KBTUs
times .001	0.001	Factor	0.001	Factor
Equals Energy Used	3.233	MMBTU	2.343	MMBTU
\$/Energy Unit	\$7.50	\$/MMBTU	\$19.99	\$/MMBTU
Energy Used				
times				
\$/Energy Unit				
Equals Energy Cost	\$24.25	\$	\$46.83	\$

Region:	South
Square Feet:	2,278
Bedrooms:	4

	Natural Gas Natural Gas Dryer		Electric Electric Dryer	
	Amount	Unit	Amount	Unit
Bedrooms	4	Room	4	Room
times				
Constant	793	KBTUs	793	KBTUs
equals Sub-total	3,172		3,172	
plus KBTUs	191	KBTUs	191	KBTUs
equals Sub-total	3,363	KBTUs	3,363	KBTUs
times				
Efficiency Multiplier	1.38	Factor	1.00	Factor
Equals KBTUs	4,641	KBTUs	3,363	KBTUs
times .001	0.001	Factor	0.001	Factor
Equals Energy Used	4.641	MMBTU	3.363	MMBTU
\$/Energy Unit	\$7.50	\$/MMBTU	\$19.99	\$/MMBTU
Energy Used				
times				
\$/Energy Unit				
Equals Energy Cost	\$34.81	\$	\$67.22	\$
Total Cost of All Appliances	\$268.28	\$	\$431.86	\$

# Electric Rate Comparison \*

	<u>PgS</u>	<u>1,000 KWH</u>	<u>1,000 KWH</u>	<u>Gas wo</u>	<u>Gas</u>	<u>Customer</u>	<u>Gas with</u>			
	<u># Cust</u>	<u>w/Cust</u>	<u>wo/Cust</u>	<u>Customer</u>	<u>Monthly</u>	<u>Customer</u>	<u>Customer</u>			
		<u>Charge</u>	<u>Charge</u>	<u>Charge</u>	<u>Therms</u>	<u>Charge</u>	<u>Charge</u>			
						<u>per Therm</u>	<u>Charge</u>			
<u>North</u>										
JEA	13,298	\$69.15	\$919,557	\$61.65	819,822	\$0.75	55	\$7.00	\$0.127080	\$0.87708
<u>Central</u>										
FPC	38,840	80.58	\$3,129,727	71.73	2,785,993					
ORL	22,435	75.00	1,682,625	67.50	1,514,363					
TECO	14,231	83.09	1,182,454	74.59	1,061,490					
LKLD	6,054	75.10	454,655	67.60	409,250					
	<u>81,560</u>	<u>\$79.08</u>	<u>\$6,449,461</u>	<u>\$70.76</u>	<u>\$5,771,096</u>	<u>\$0.75</u>	<u>42</u>	<u>\$7.00</u>	<u>\$0.168000</u>	<u>\$0.91800</u>
<u>South</u>										
FPL	81,631	\$72.36	\$5,906,819	\$66.71	5,445,504	\$0.75	30	\$7.00	\$0.234637	\$0.98464
<u>Total</u>	176,489	\$75.22	\$13,275,837	\$68.20	\$12,036,522					

DOCKET NO. 950002-EG  
 PEOPLES GAS SYSTEM, INC.  
 WITNESS: KRUTSINGER  
 EXHIBIT \_\_\_\_\_ (VIK-2)  
 PAGE 15 OF 15

\* Based on february 94 comparison of residential electric rates compiled by Florida Municipal Electric Association, Inc., - Tallahassee, Florida. Franchise fees and other local and state taxes not included.

## Residential Energy Cost Comparisons

This report establishes a methodology for comparing operating costs for natural gas, propane, and electricity. This methodology takes into consideration the multitude of variables required for such an analysis for space heating, water heating, cooking, and drying for residential applications. Each application is covered in its own section with formulas for each application.

The efficiency factors for heating and water heating examples should be taken directly from the Gas Appliance Manufacturer Associations (GAMA) rating book. It is important to note that there has been a new ASHRAE calculation used for combo heating systems and GAMA has recently just published the first ratings under this new ASHRAE formula. (See attachment).

Baseline Btu consumptions are based on information obtained from the Department of Community Affairs (DCA) for annual Btu consumption by the various types of appliances. The significance of using DCA baseline consumption data is useful primarily from a point of reference. Since the primary focus of this analysis was for developing cost comparisons for new construction the decision was made to use DCA numbers developed for the building code for heating and water heating.

The cooking and clothes drying figures were developed from the Synergic Resources Corporation (SRC) statewide report on Energy Efficiency for Electricity in the State of Florida. These numbers are currently relied upon by the DCA and Public Service Commission as a result of the consensus of the electric utilities. That does not mean that they are the best numbers available; however, they are a good starting point. For specific comparisons for field use the assumptions may be changed where better information is available.

---

## I. Space Heating

The energy estimating method utilized in space heating is derived from the "ASHRAE" Handbook 1981 Fundamentals. "Part 1: Single Measure Method of chapter 28, 28.2 through 28.4," is adopted for the energy use computations for all heating systems. The recommended form of the energy equation is:

$$E = \frac{(H_L) \times (D) \times (24) (C_D)}{(\Delta T) \times (K) \times (V)}$$

$$EC = E \times \text{Price Per Energy Unit}$$

Where:

E = fuel or energy consumption for the estimate period Kwh, therms or gallons.

$H_L$  = design heat loss, expressed in btu/hr including infiltration and ventilation. These calculations should be derived from a manual J calculator.

D = number of degree days for the estimated period. Degree day is defined as the average temperature of the day minus 65°F summed for the year.

Jacksonville Degree Days (DD)	1239
Tampa Degree Days (DD)	683
Miami Degree Days (DD)	214

24 = 24 hours/day

$\Delta T$  = design temperature difference, (degree °F) is the difference between the set indoor temperature for heating and the heating design temperature which is the lowest outdoor temperature 1% of the time.

Jacksonville	99% Design Temperature	29°F
Tampa	99% Design Temperature	36°F
Miami	99% Design Temperature	44°F

K = a correction factor which includes the effects of rated full load efficiency, load performance, oversizing, and energy conservation devices.

V = heating value of fuel in Btu units consistent with  $H_L$  and E.  
Electricity = 3412 Btu/Kwh, natural gas = 100,000 btu/therm  
Propane = 91600 Btu/gallon.

$C_D$  = empirical correction factor for heating effect vs (65°F) degree days. (Considers internal heat load contributions from miscellaneous appliances, lighting, and etc.)

Jacksonville Correction Factor $C_D$	0.78
Tampa Correction Factor $C_D$	0.82
Miami Correction Factor $C_D$	0.83

This formula may be used for calculations energy comparison for gas furnaces, propane furnaces, gas combo heat systems, propane combo heat systems, electric air to air heat pumps and electric heat strips. The heat loss calculations maybe based on base cases used in development of the Florida Energy Efficiency code for Building Construction for new homes with, 1060 sq. ft., 1489 sq. ft., and 2278 sq. ft. or your actual manual J calculations.

## I. WATER HEATING OPERATING COSTS COMPARISONS

The Florida Department of Community Affairs (DCA) uses the following assumptions for developing water heating calculations for the Florida Energy Efficiency Code for Building Construction ("Code"). The btu assumptions below are used to develop the calculations and multipliers for the Energy Performance Index (EPI) calculations for North, Central and South climate zones.

1. North Climate Zone:  

$$\frac{3,347,000 \text{ BTU/yr/person}}{1,000,000}$$

$$3.347 = \text{MMBTU/yr/person}$$
2. Central Climate Zone:  

$$\frac{3,104,000 \text{ BTU/Yr/person}}{1,000,000}$$

$$3.104 = \text{MMBTU/yr/person}$$
3. South Climate Zone:  

$$\frac{2,921,000 \text{ BTU/yr/person}}{1,000,000}$$

$$2.921 = \text{MMBTU/yr/person}$$

The DCA correlates the number of bedrooms in a home to the number of persons and multiplies the number of bedrooms by the btu/yr/person to estimate the annual hot water energy usage. The following formula uses the same logic to arrive at a water heating cost per year.

Formula:  $EC = BR \times \text{MMBTU} + EF \times ER$   
 EC = Energy Cost to consumer per year.  
 BR = Number of bedrooms considered.  
 EF = Energy Factor<sup>1</sup>  
 ER = Energy Rate on a MMBTU basis. (See attachment)  
 MMBTU = Energy Used as assumed by DCA. (See attachment)

<sup>1</sup>Energy Factor (EF) - A measure of the overall efficiency of a water heater determined by comparing the energy supplied in heated water to the total daily consumption of the water heater.

First Hour Rating - The amount of hot water that the water heater can supply in the first hour of operation. It is a combination of how much water is stored in the water heater and how quickly the water can heat cold water to the desired temperature.

The recovery efficiency only represents how efficiently energy is transferred to the water when the burner is firing. It should not be used in place of the energy factor to compare water heater efficiencies.

reference: Gas Appliance Manufacturers Association (GAMA) 1993.



The following is an example of any alternative to the DCA method of determining the hot water btu requirements of a household with the two (2) people. In addition to the usage variables you must consider the differences in ground water temperatures required for temperature rise variable.

<u>Use</u>	<u>Average Gallons of Hot Water Per Usage</u>	<u>Time Used</u>	<u>Gallons/day</u>
Shower	15	2/day	30
Shaving	2	1/day	2
Hands & Face Washing	4	4/day	16
Hair Shampoo	4	2/day	8
Automatic	14	1/day	14
Food Preparation	5	1/day	5
Automatic Clothes Washer	32	2/week	9
Total (Peak Hour Demand)			84 gallons/day

Annual hot water usage (Assuming 3 week vacation) 28,896 gallons  
 x 8.33 Btu/gallon  
 x 50° Temperature rise  
 12,035,184 Btu/yr

NATURAL GAS  
 $\frac{12,035,184 \text{ Btu/yr}}{.54EF^1} = 22,287,377 \text{ Btu/yr}$

ELECTRIC  
 $\frac{12,035,184 \text{ Btu/yr}}{.90EF^2} = 13,372,427 \text{ Btu/yr}$

$\frac{22,287,377 \text{ Btu/yr}}{1000} = 222.87 \text{ therms/yr}$

$\frac{13,372,427 \text{ Btu/yr}}{3412} = 3919 \text{ kwh/yr}$   
 3412 Btu/kwh

<sup>1</sup> Gas water heater efficiency factor 54%  
<sup>2</sup> Electric water heater energy factor 90%

### III. Cooking

The base cooking load assumed is 1651,000 Btu per year and a variable load based on additional people/bedrooms in the house of 173,000 Btu/yr per person/bedroom. The relative efficiencies of gas to electric 72% (1.38 multiplier).<sup>1</sup>

Formula:

$$\begin{aligned} \text{Stove Energy Use (SSE)} \\ = (\#BR \times .173 + 1.651 \times SEM) \end{aligned}$$

Where:

- SSE = Stove Energy Use
- #BR = Number of Bedrooms
- SEM = Stove End Use Efficiency Multiplier  
= 1.0 Electric; 1.38 Gas or Propane
- EC = SSE x Energy Rate

### IV. Clothes Drying

Clothes dryer energy use was taken from SRC, 1992, table C-4-0 page C-28. Relative efficiencies of electric and gas dryer were taken from SRC, 1992B, page 9. The average base load for drying clothes is 191,000 Btu/yr with incremental increases for additional persons/bedrooms of 793,000 Btu/yr.

Clothes Dryer Energy Use

$$\begin{aligned} \text{SDE (Dryer Energy)} &= (\#BR \times .793 + .191) \times DEM \\ \text{EC} &= \text{SDE} \times \text{Energy Rate} \end{aligned}$$

Where:

- DEM (Dryer end use efficiency multiplier) = 1.0 Electric, 1.38 gas #BR = Number of bedrooms.

<sup>1</sup>Reference: SRC, 1993, Table C-4-0, page C-28 (827kwy/yr). Relative efficiencies from Sheppard et., al., 1990 page 134. 1,651,000 Btu + 1,000,000 = 1.651 MMBTU base load and 173,000 + 1,000,000 Btu = .173 MMBTU.

SPACE HEATING EXAMPL

Central Climate Zone:

Assumptions:

- 2,278 sq. ft. home 39,795 Btuh heat loss.
- Gas rate is 75¢/therm.
- Electric rate is 8¢/kwh.
- Indoor set temperature is 70°F.
- Design temperature (99%) is 36°F.

Natural Gas

Gas heat combo system with a 79% AFUE.

$$E = \frac{39,795 \times 683 \times 24 \times 0.82}{34 \times 0.79 \times 100,000}$$

$$E = 199.14 \text{ therms/yr}$$

$$EC = \$149.36$$

Electric

Electric air to air heat pump with a 2.2 (HSPF) factor.

$$E = \frac{39,795 \times 683 \times 24 \times 0.82}{34 \times 2.2 \times 3413}$$

$$E = 2095.25 \text{ kwh/yr}$$

$$EC = \$167.62$$

Propane

Propane heat combo system with 79% AFUE.

$$E = \frac{39,795 \times 91,600}{34 \times 0.79 \times 91,600}$$

$$E = 217.41 \text{ gallons/yr}$$

$$E = 217.41 \text{ gallons/yr}$$

$$EC = \$271.76$$

### WATER HEATING EXAMPLE

Central Climate Zone:

Natural Gas

Assumptions:

- 4 bedroom/people
- 3.104 MMBTU/yr/person
- Gas rate \$7.50/MMBTU

$$\begin{aligned} EC &= BR \times MMBTU + EF \times ER \\ EC &= 4 \times 3.104 + .56 \times \$7.50 \\ EC &= \$166.29 \end{aligned}$$

Electric

Assumptions:

- 4 bedroom/people
- 3.104 MMBTU/yr/person
- Gas rate \$7.50/MMBTU

$$\begin{aligned} EC &= BR \times MMBTU + EF \times ER \\ EC &= 4 \times 3.104 + .90 \times \$23.45 \\ EC &= \$323.51 \end{aligned}$$

Propane

Assumptions:

- 4 bedroom/people
- 3.104 MMBTU/yr/person
- Gas rate \$7.50/MMBTU

$$\begin{aligned} EC &= BR \times MMBTU + EF \times ER \\ EC &= 4 \times 3.104 + .56 \times \$13.63 \\ EC &= \$302.20 \end{aligned}$$

### COOKING EXAMPLE

Central Climate Zone:

Natural Gas

Assumptions:

- A 3 bedroom home
- A gas stove with a SEM = 1.38
- Gas rate is 75¢/therm

$$\begin{aligned} SSE &= (3 \times .173 + 1.651) \times 1.38 \\ SSE &= (.519 + 1.651) \\ SSE &= 2.2946 \\ SSE &= 2.99\text{MMBTU or }29.9\text{therms} \\ EC &= \$22.46 \end{aligned}$$

### Propane

#### Assumptions:

- A 3 bedroom home
- A propane stove with a SEM = 1.38
- Propane rate is \$1.25/gallon

$$SSE = 2.99 \text{ MMBTU/yr}$$

$$EC = \$40.75$$

### Electric

#### Assumptions:

- A 3 bedroom home.
- An electric stove with a SEM = 1.0
- Electric rate is \$0.08/kwh or \$23.50/MMBTU/yr

$$SSE = (3 \times .173 + 1.651) \times 1.0$$

$$SSE = 3.841 \text{ MMBTU/yr}$$

$$EC = \$90.26$$

### CLOTHES DRYING EXAMPLE

Central Climate Zone:

Natural Gas

#### Assumptions:

- A 3 bedroom home.
- A gas dryer with SDE = 1.38
- Gas rate is \$0.75/therm or \$7.50/MMBTU

$$SDE = 3.55 \text{ or } 35.5 \text{ therm/yr}$$

$$EC = \$28.40$$

### Electric

#### Assumptions:

- A 3 bedroom home.
- An electric dryer with a SDE = 1.0
- Electric rate is \$0.08/kwh or \$23.50/MMBTU

$$\text{SDE} = (3 \times .793 + .191) \times 1.0$$

$$\text{SDE} = (2.379 + 191) \times 1.0$$

$$\text{SDE} = (2570)$$

$$\text{SDE} = 25.70 \text{ MMBTU/yr}$$

$$\text{EC} = \$60.40$$

### Propane

#### Assumptions:

- A 3 bedroom home.
- A propane dryer with a SDE = 1.38
- Propane rate is \$1.25/gallon or \$13.63/MMBTU

$$\text{SDE} = 38.76 \text{ gallons per year}$$

$$\text{EC} = \$48.45$$

Natural Gas Energy Code Analysis  
 Date: 2/14/94

Climate Zones:

	North	Central	South
	1060 sq. ft.	1060 sq. ft.	1060 sq. ft.
Heat Loss	27,086 Btu/Hr	22,594 Btu/Hr	20,334 Btu/Hr
Heat Gain	16,545 Btu/Hr	16,545 Btu/Hr	15,422 Btu/Hr
Elect. Strip	139.8 EPI	98.5 EPI	95.6 EPI
Elect. HP	102.3 EPI	82.1 EPI	89.2 EPI
Nat. Gas	85.9 EPI	69.1 EPI	73.2 EPI
	1489 sq. ft.	1489 sq. ft.	1489 sq. ft.
Heat Loss	33,616 Btu/Hr	28,233 Btu/Hr	25,417 Btu/Hr
Heat Gain	20,103 Btu/Hr	20,103 Btu/Hr	19,097 Btu/Hr
Elect. Strip	139.4 EPI	97.3 EPI	96.4 EPI
Elect. HP	100.1 EPI	80.2 EPI	90.1 EPI
Nat. Gas	86.7 EPI	69.9 EPI	77.1 EPI
	2278 sq. ft.	2278 sq. ft.	2278 sq. ft.
Heat Loss	47,300 Btu/Hr	39,795 Btu/Hr	35,597 Btu/Hr
Heat Gain	27,270 Btu/Hr	27,270 Btu/Hr	26,124 Btu/Hr
Elect. Strip	152.1 EPI	97.6 EPI	91.8 EPI
Elect. HP	102.9 EPI	76.9 EPI	84.1 EPI
Nat. Gas	93.1 EPI	69.6 EPI	74.5 EPI

Heat loss / Heat gain Calc. Design DIT. based on ASHRAE 99% Design Temp. for Tallahassee, Orlando, and Miami.

Natural Gas EPI based on 10 SEER / 78% AFUE / .54 EF DWH

Electric Heat Pump EPI based on 10 SEER / 6.8 HSPF / .88 EF DWH

Electric Strip EPI based on 10 SEER / 1 COP / .88 EF DWH

Structural components and insulation levels vary with climate zone. These various building levels were derived from The State of Fla., DCA, FLA/RES93 computer program.

**ELECTRIC Vs. NATURAL GAS WATER HEATING**

Assumptions based on busiest one hour period in the morning  
**CALCULATIONS FOR HOT WATER USAGE**  
**THREE PERSON HOUSEHOLD**

DOCKET NO. 950002-EG  
 PEOPLES GAS SYSTEM, INC  
 WITNESS: KRUTSINGER  
 EXHIBIT \_\_\_\_\_ (VIK-4)  
 PAGE 1 OF 4

Selected Usage	Gals/ea.	Gals/Usage	
SHOWERS (3)	20		60
SHAVING	2		2
HANDS & FACE (3)	4		12
HAIR SHAMPOO (3)	4		12
FOOD PREPARATION			5
HAND DISHWASHING			4
MISCELLANEOUS			4
	<b>TOTAL</b>		<b>99 Gals./ Day*</b>

\* Actual usage will vary with each individual.

3,412 BTUs = 1 KWH  
 1 THERM 100,000 BTUs  
 8.4 BTU's REQUIRED TO HEAT 1 GALLON OF WATER 1 DEG.  
 50 DEGREE TEMPERATURE RISE

**APPLIANCE EFFICIENCY:**

ASSUMES REPLACING AN ELECTRIC RESISTANCE WATER HEATER HAVING AN  
 WITH A NATURAL GAS WATER HEATER HAVING A

78 % efficiency rating (1)  
 78 % efficiency rating (2)

(1) Based on the assumption of approximately 10% deterioration of the electric water heater from existing stock in field.  
 (2) Based on manufactures rating for the efficiency of a combo system.

**HOT WATER REQUIRED**

99 GAL PER DAY X 30 DAYS = 2,956 GAL PER MONTH  
 2,956 GAL PER MONTH X 12 MONTHS = 35,474 GAL PER YEAR

**ENERGY REQUIRED**

35,474 GAL X 8.4 BTU X 50 DEG.RISE = 14,899,248 BTUs PER YEAR

**ENERGY EQUIVALENT**

14,899,248 BTU / 3,412 = 4,367 KWH PER YR  
 14,899,248 BTU / 100,000 = 149 THERMS PER YR

**APPLIANCE EFFICIENCY**

4,367 KWH PER YEAR / 149 = 29.31 KWH / THERM  
 78 % (ELECTRIC) = 5,598 KWH PER YR  
 78 % (GAS) = 191 THERMS PER YR

**ENERGY CONCLUSION**

TO HEAT 22,680 GALLONS OF WATER 50deg. WILL REQUIRE  
 5,598 KWH PER YEAR (ELECTRICITY)  
 or  
 191 THERMS PER YEAR (GAS)

**COST OF ENERGY** \$0.075 /KWH (est.) or 0.73995 /THERM (actual 12/1/94)

5,598 KWH @ \$0.075 \* = \$420  
 191 THMS 0.75000 \* = \$143  
 DIFFERENCE = \$276.61 Savings with Natural Gas

Note: Therms used are the result of a sub-metering program conducted by Peoples.



*Peoples Gas System, Inc.*

ELECTRIC Vs. NATURAL GAS

CALCULATIONS FOR HOUSE HEATING

PEOPLES GAS SYSTEM, INC.  
WITNESS: KRUTSINGER  
EXHIBIT \_\_\_\_\_ (VIK-4)  
PAGE 2 OF 4

APPLIANCE EFFICIENCY:

WILL VARY WITH THE TYPE OF UNIT. ( SEE ATTACHMENT )

COST TO OPERATE USING ESTIMATED CONSUMPTION TAKEN FROM HANDOUT

FUEL	kWh / THERM	BTUs	ENERGY COSTS/UNIT	COST TO OPERATE
ELECTRICITY	5400	18,424,800	0.075 /kWh	\$405.00
NATURAL GAS	272	27,200,000	0.73995 /THERM	\$201.27
SAVINGS WITH NATURAL GAS				\$203.73

NATURAL GAS @ 68% EFFICIENCY.

ELECTRICITY  $27,200,000 \times 68\% = 18,400,000 / 3413 = 5391 / 99\% = 5445$

Note: Therms used for calculation are a result of a sub-metering program conducted within Peoples service area.

*Peoples Gas System, Inc.*

ELECTRIC Vs. NATURAL GAS

CALCULATIONS FOR COOKING

DOCKET NO. 2000-01  
PEOPLES GAS SYSTEM, INC.  
WITNESS: KRUTSINGER  
EXHIBIT \_\_\_\_\_ (VIK-4)  
PAGE 3 OF 4

APPLIANCE EFFICIENCY:

THERE ARE NO EFFICIENCY RATINGS OR STANDARDS FOR COOKING.

COST TO OPERATE USING ESTIMATED CONSUMPTION TAKEN FROM HANDOUT

FUEL	kWh / THERM	BTUs	ENERGY COSTS/UNIT	COST TO OPERATE
NATURAL GAS	50	5,000,000	0.73995 /THERM	\$37.00
ELECTRICITY	1465.5	5,000,286	0.075 /kWh	\$109.91
SAVINGS WITH NATURAL GAS				\$72.92

NATURAL GAS @ 90% EFFICIENCY.

ELECTRICITY  $5,000,000 \times 90\% = 4,500,000 / 3413 = 1318 / 90\% = 1465$

Note: Therms used for calculation are a result of a sub-metering program conducted within Peoples service area.

*Peoples Gas System, Inc.*

ELECTRIC Vs. NATURAL GAS

CALCULATIONS FOR CLOTHES DRYING

DOCKET NO. 950002-EG  
PEOPLES GAS SYSTEM, INC.  
WITNESS: KRUTSINGER  
EXHIBIT \_\_\_\_\_ (VIK-4)  
PAGE 4 OF 4

APPLIANCE EFFICIENCY:

THERE ARE NO EFFICIENCY RATINGS OR STANDARDS FOR CLOTHES DRYING.

COST TO OPERATE USING ESTIMATED CONSUMPTION TAKEN FROM HANDOUT

FUEL	kWh / THERM	BTUs	ENERGY COSTS/UNIT	COST TO OPERATE
ELECTRICITY	1318.5	4,500,041	0.075 /kWh	\$98.89
NATURAL GAS	45	4,500,000	0.73995 /THERM	\$33.30
SAVINGS WITH NATURAL GAS				<b>\$65.59</b>

NATURAL GAS @ 80% EFFICIENCY.

ELECTRICITY  $4,500,000 \times 80\% = 3,600,000 / 3413 = 1,055 / 80\% = 1,318.5$

Note: Therms used for calculation are a result of a sub-metering program conducted within Peoples service area.

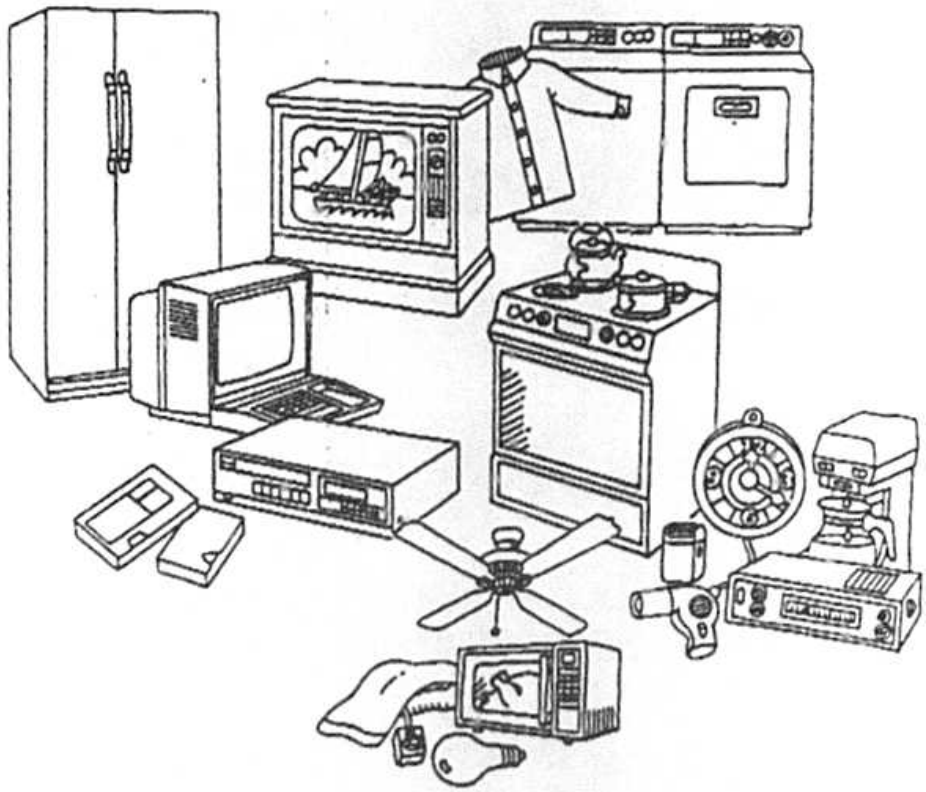
**CHRONOLOGICAL GAS AND ELECTRIC APPLIANCE LOAD DATA SUMMARY**

	PGS 9/11/90	SRC 1/07/93	SRC 3/05/93	SRC 3/17/93	B&A 2/14/94	TECO 11/23/94	B&A 11/29/94
WH Gas	209 Therms	121 Therms		122 Therms	200 Therms		
WH Electric	3,720 KWh .75 KW	2,133 KWh	2,788 KWh	2,305 KWh .49 KW	3,500 KWh .7 KW	2,788 KWh	3,061 KWh
Heating Gas	270 Therms	109 Therms		109 Therms			
Heating Electric	3,400 KWh 5 KW		1,967 KWh 4.4 KW		2,500 KWh 5.0 KW	1,954 KWh	1,967 KWh
Heat Pump Electric		1,251 KWh	1,553 KWh 2.3 KW	1,251 KWh 1.92 KW	1,750 KWh 2.5 KW	1,105 KWh	1,553 KWh
A/C Gas							
A/C Electric		3,728 KWh	4,221 KWh 3.0 KW	3,728 KWh 1.92 KW	4,500 KWh 2.5 KW		4,221 KWh
Range Gas	50 Therms	26 Therms		35 Therms			
Range Electric	750 KWh	475 KWh		627 KWh .15 KW	750 KWh .2 KW	600 KWh	722 KWh
Dryer Gas	54 Therms	36 Therms		33 Therms			
Dryer Electric	1000 KWh	890 KWh		827 KWh .13 KW	1,000 KWh .2 KW	800 KWh	1,000 KWh
WH & Resistance Heat						4,742 KWh	5,028 KW
WH & Heat Pump						3,893 KWh	4,614 KW
Avoided Unit	\$721/KW *				\$600/KW	\$397/KW	

\* FPSC Order 22341

Special Note: Florida Solar Energy Center used 4,062 KWh (Resist. WH) and 2,325 KWh (HP WH) in 1983 - Tampa Area  
Dan Hart (TECO) used 2,853 KWh (Resist. WH) for TECO Average on 6/07/94 at DOE

# Your Reference Guide to Home Appliance Energy Use



# KILOWATT HOUR CONSUMPTION OF ELECTRIC APPLIANCES

Appliance	Typical Wattage	KWH for Typical Period of Use	Estimated Monthly Use	KWH Monthly Use
* Air Conditioner Room *5,000 BTU *** (SEER 6)	833	.833 for 1 hour	180 hrs. (6 hr. day)	150
**12,000 BTU *** (SEER 6)	2,000	2.0 for 1 hour	180 hrs. (6 hr. day)	360
**12,000 BTU *** (SEER 8)	1,500	1.5 for 1 hour	180 hrs. (6 hr. day)	270
...: Central (3-ton) (SEER 7.5)	4,800	4.8 for 1 hour	A normal cooling season is approx. 1250 operating hrs.	
...: Central (2 1/2-ton) (SEER 7.5)	4,000	4.0 for 1 hour	A normal cooling season is approx. 1250 operating hrs.	
...: Central (2-ton) (SEER 7.5)	3,200	3.2 for 1 hour	A normal cooling season is approx. 1250 operating hrs.	
* Blanket	175	.175 for 1 hour	240 hrs.	
Blender	720	.012 for 1 min.	15 mins.	
Broiler (portable)	1,500	.75 for 30 min.	Once a week	
Can Opener	248	.0008 for 10 sec.	100 times	
Carving Knife	100	.008 for 5 min.	30 mins.	
Clock	2	.048 for 24 hours	Continuous 720 hrs.	1.44
* Clothes Dryer	7 lb. load 14 lb. load	5,000 4.7 for 1 load	24 loads 24 loads	113
Coffee Maker: Automatic Percolator	850	.1416 for 10 mins.	Once a day	4.25
Automatic Drip	1,500	.025 for 1 min.	Once a day	.75
Computer, Personal	60	.03 for 30 mins.	10 hrs.	.5
* Convection Oven (Portable)	1,500	1.5 for 1 hour.	Once a week	.6
Corn Popper	575	.144 for 15 mins.	Once a week	575
Curling Iron	40	.04 for 1 hr.	10 hrs.	.4
* Deep Fat Fryer	1,500	.375 for 15 mins.	Once a week	1.5
** Dehumidifier	240	.240 for 1 hr.	30 days a month	7.2
Dishwasher (13 gal. Hot Water—140°F)	1,200	3.44 for 1 load Soak N Scrub (drying unit on)	Once a day	103
		3.18 for 1 load Soak N Scrub (drying unit off)	Once a day	95
		2.9 For 1 load Normal cycle	Once a day	87
Dishwashing/Hand (3 gal. Hot Water—140°F)		.51	Once a day	15.3
Disposal	420	.007 for 1 min.	One hr.	.42
Electric Fireplace	1,500	1.5 for 1 hr.	10 hrs.	15
Electric Train	15	.015 for 1 hr.	2 hrs.	.03
Electrostatic Cleaner	50	.050 for 1 hr.	24 hrs./day for 30 days	.36
Fans: Attic (Whole House)	375	.375 for 1 hour	150 hrs.	56.25
Ceiling	80	.08 for 1 hour	150 hrs.	12
Exhaust—Small	200	.2 for 1 hour	30 hrs.	6.0
Furnace	250	.25 for 1 hour	250 hrs.	62.5
Rollabout	171	.171 for 1 hour	60 hrs.	10.26
Window	200	.2 for 1 hour	60 hrs.	12
* Fondue/Chafing Dish	800	.4 for hour	Once a week	1.6
* Food Dehydrator	875	3.255 for 10 hours	Once a week	13.07
Food Processor	690	.058 for 5 mins.	Once a week	2.1

*5000 kWh/yr.*

DOCKET NO. 950002-EG  
PEOPLES GAS SYSTEM, INC.  
WITNESS: KRUTSINGER  
EXHIBIT \_\_\_\_\_ (VIK-5)  
PAGE 3 OF 11

*1356 kWh/yr.*

\* Controlled by thermostat. KWH based on estimated appliance "on" time.  
\*\*\* (SEER) Seasonal Energy Efficiency Ratio.

Appliance	KWH for Typical Period of Use	KWH for Typical Period of Use	KWH for Typical Period of Use
<b>FREEZERS</b> (80% operating time = 18 hours per day)			
	Units manufactured between 1972-1988	Units manufactured between 1978-1988	Units manufactured between 1988-plus
* Chest Freezers—Manual Defrost 15 cu. ft.	103	DOCKET NO. 950002-EG PEOPLES GAS SYSTEM, INC. WITNESS: KRUTSINGER EXHIBIT _____ (VIK-5) PAGE 4 OF 11	
19 cu. ft.	160		
23 cu. ft.	138		
* Upright Freezers—Automatic Defrost 15 cu. ft.	179		
16 cu. ft.	152	135	100
19 cu. ft.	203	181	134
* Manual Defrost 16 cu. ft.	122	112	86
19 cu. ft.	133	122	94
Figures calculated from (AHAM) Association of Home Appliance Manufacturers Directory (Jan. 1988) with 30% increase added to reflect actual and not test conditions.			

Appliance	Typical Wattage	KWH for Typical Period of Use	Estimated Monthly Use	KWH Monthly Use
* Fry Pan	1,150	.575 for 1 hour	Once a week	2.3
Garage Door Opener	350	.006 for 1 opening	3 hrs. (3 opens, 3 closes a day)	1.08
Garden Tools Edger	480	.48 for 1 hour	2 hrs.	.96
Hedge Trimmer	288	.288 for 1 hour	2 hrs.	.58
Lawn Mower	1,200	1.2 for 1 hour	4 hrs.	4.8
Golf Cart (An 8-hr. charge period)	603	4.824 (for an 8-hr. charge period)	1 charge (8 hrs.) yields 50 miles/charge	4.824
* Griddle	1,200	.3 for 30 mins.	2 hrs.	1.2
Hair Dryer Soft Bonnet	400	.4 for 1 hr.	10 hrs.	4.0
Hard Bonnet	1,200	1.2 for 1 hr.	10 hrs.	12
Hand Held	1,000	1.0 for 1 hr.	10 hrs.	10
Hair Rollers	350	.35 for 1 hr.	10 hrs.	3.5
Hand Mixer	120	.06 for 30 mins.	2 hrs.	.24
* Heating Pad	65	.065 for 2 hrs.	6 hrs.	.195
Heat Lamp	250	.25 for 1 hr.	5 hrs.	1.25
Hi-Fi/Stereo	100	.1 for 1 hr.	10 hrs.	1.0
Hot Tubs/Spas: Above Ground ¼ H.P. pump (water)	1260	1.260 for 1 hr.	Refers to pump only. Wattage of heating element determined by the spa size.	
1 H.P. pump (air)	1480	1.480 for 1 hr.	Refers to pump only. Wattage of heating element determined by the spa size.	
Below Ground 1½ H.P. pump (water)	1840	1.840 for 1 hr.	Refers to pump only. Wattage of heating element determined by the spa size.	
1½ H.P. pump (air)	1840	1.840 for 1 hr.	Refers to pump only. Wattage of heating element determined by the spa size.	

H.P. = Horse Power  
\*Controlled by thermostat. KWH based on estimated appliance "on" time.

Movie Projector	150	.15 for 1 hr.	2 hrs.	3
Outdoor Grill	1,500	1.5 for 1 hr.	4 hrs.	6
Power Tools:				
Electric Drill	287	.005 for 1 min.	30 mins.	14
Circular Saw	1,150	.019 for 1 min.	30 mins.	575
Jig Saw	287	.005 for 1 min.	30 mins.	14
Table Saw	1,380	.023 for 1 min.	30 mins.	59
Chain Saw	1,380	.023 for 1 min.	30 mins.	59
Sander	287	.005 for 1 min.	30 mins.	14
Pressure Cooker	1,300	1.3 for 1 hr.	6 hrs.	78
Radio	75	.075 for 1 hr.	60 hrs.	4.5
Radio/Record Player	110	.110 for 1 hr.	10 hrs.	1.1
Range:				
*Small Surface Unit	1,300	.65 for 1 hr. medium setting	3 times a day	58.5
*Large Surface Unit	2,400	1.2 for 1 hr. medium setting	3 times a day	108
*Oven (non-self-cleaning)	3,200	.992 for 1 hr.	20 hrs.	198
*Oven (self-cleaning)	3,200	.8 for 1 hr.	20 hrs.	16
Broiler Unit	3,600	.9 for 15 mins.	1 hr.	3.6
*Self-Cleaning Feature	4,000	4 for 2 hrs.	1 time	4

\*Controlled by thermostat. KWH based on estimated appliance "on" time.

3

WITNESS: KRUTSINGER  
EXHIBIT \_\_\_\_\_ (VIK-5)  
PAGE 6 OF 11

*REFRIGERATOR / FREEZERS (80% operating time = 18 hours per day)	Units manufactured		
	between 1972-1988	between 1978-1988	between 1988-plus
*Top Freezer Models—Automatic Defrost			
14 cu. ft.	146	143	98
15 cu. ft.	150	135	100
16 cu. ft.	151	137	101
17-18 cu. ft.	151	137	101
19-20 cu. ft.	163	147	109
21-22 cu. ft.	177	160	118
23-25 cu. ft.	196	177	131
*Side-by-Side Models—Automatic Defrost			
18 cu. ft.	210	183	143
19-20 cu. ft.	194	168	131
21 cu. ft.	211	182	142
22 cu. ft.	222	181	150
23-24 cu. ft.	237	203	159
25 cu. ft.	226	195	152
*Partial Automatic Defrost			
12-14 cu. ft.	114	103	87

Some larger refrigerator / freezers and or freezers will be more energy efficient and use fewer kilowatt hours.

Appliance	Typical Wattage	KWH for Typical Period of Use	Estimated Monthly Use	KWH Monthly Use
Septic Tank Aerator	300	.3 for 1 hr.	30 hrs.	9
Sewing Machine	75	.075 for 1 hr.	6 hrs.	375
Shaver	14	.002 for 10 mins.	10 mins./day	0.69
Shaving Cream Dispenser	60	.002 for 2 mins.	2 mins./day	0.6
Slide Projector	150	.15 for 1 hr.	2 hours/day	3
*Slow Cooker:				
Low	75	.6 for 8 hrs.	32 hrs.	2.4
High	150	1.2 for 8 hrs.	32 hrs.	4.8
*Space Heater:				
Portable	1500	1.5 for 1 hr.	60 hrs. (2 hrs./day)	90
Portable	1650	1.65 for 1 hr.	60 hrs. (2 hrs./day)	99
Standing Mixer	150	.075 for 30 mins.	2 hrs.	3
Spa (Portable) Heater Only	1500	1.5	Once a day for 1 hr.	450
1/4 H.P. Pump 1584 x 80% load factor	1260	1.26 = 2.78 per hr.	Once a day for 1 hr.	378
Spa (Heater/1/4 H.P. Pump) (Spa and heater used together)	2760	2.78 per hour	Once a day for 1 hr.	82.8
Sump Pump	85	.0014 for 1 min.	2 hrs.	17
Sun Lamp	250	.25 for 1 hr.	3 hrs.	75
Table Lamp	75	.075 for 1 hr.	10 hrs.	75
Television:				
Color: Tube Type	300	.3 for 1 hr.	210 hrs.	63
Solid State	200	.2 for 1 hr.	210 hrs.	42
Black & White: Tube Type	160	.16 for 1 hr.	210 hrs.	33.6
Solid State	55	.055 for 1 hr.	210 hrs.	11.6

\*Controlled by thermostat. KWH based on estimated appliance "on" time.  
Reference 1987 AHAM Directory of Certified Refrigerator and Freezers—June edition.

4



WITNESS: KRUTSINGER

EXHIBIT \_\_\_\_\_ (VIK-5)

PAGE 7 OF 11

Appliance	Typical Wattage	KWH for Typical Period of Use	Estin Month	
*Toaster	1,100	.036 for 2 mins.	2 time:	
*Toaster Oven	1,400	.7 for 30 mins.	2 hrs.	2.8
Toothbrush	7	.001 for 5 mins.	2 times a day	.03
Trash Compactor	400	.003 for 30 sec.	15 min	.09
Vacuum Cleaner	650	.325 for 30 mins.	2 hrs.	1.3
Vaporizer	450	.48 for 1 hr.	10 hrs.	4.8
Video Cassette Recorder	30	.03 for 1 hr.	30 hrs.	.9
*Waffle Iron	1,200	.6 for 30 mins.	2 hrs.	2.4
Washer: (12 gals. hot water used) Automatic (Warm Wash/Cold Rinse)	500	2.29 per load	30 loads	69
Wringer Type (Warm Wash/Cold Rinse)	280	2.18 per load	30 loads	65
Water-Distilled Drinking: (Residential Use) 3 1/2 Hr. cycle yields 1 gal.	1100	1.1 per Hr.	8 hr./day	264
Yields 7 gal. per 24-hrs.	1100	26.4 per 24 hrs.	24 hr. day	792
*Waterbed Heater 1) Water heated to 85-90° / quilted comforter (no other heat on)	400	3.6 per day	Everyday usage	108
2) Same conditions as Case #1 except normal house heating at night	400	3 per day	Daily/monthly usage	90
3) Quilted comforter—heat on no thermostat on Waterbed Heater	400	9.6 per day	Daily/monthly usage	288
4) Unmade bedsheet only covering waterbed water heated to 85-90° left on all the time	400	4.8 per day	Daily/monthly usage	144
Water Heating You can heat one gallon of water from 70 degrees to 140 degrees for about .17 KWH. To determine the cost of hot water, multiply the number of gallons you use by .17 KWH used to heat. (Does not include pipe and tank loss equaling 66 KWH/month for a 40 gallon tank.)*				
Tub bath 15 gal. hot water (per person)		2.55 KWH	30 baths	76.5
Shower (no flow restrictor used) 10 gal. hot water 3 gal. per min. (per person/ie: 3 min. shower)		1.7 KWH	30 showers	51
Water Pump 1/2 HP	1,128	.90 per hr.	8 hr./day	216
3/4 HP	1,584	1.28 per hr.	8 hr./day	302
1 HP	1,848	1.48 per hr.	8 hr./day	355
1 1/2 HP	2,304	1.84 per hr.	8 hr./day	442
*Wok Pan	1,000	.5 for 30 mins.	2 hrs.	2.0

\*Controlled by thermostat. KWH based on estimated appliance "on" time.

\*Pipe and tank loss calculations

HTL = A x U x T.D.

HTL = 17.22 x 259 x 70° = 312 BTUs per hour x 720 hours per month =

224,640 BTUs per month = 66 KWH/month

3413 (BTUs per KW)

*Family of 3 → 2628 KWH per yr*

**INPUT DATA COMPARISON  
PARTICIPANT TEST  
GAS MEASURES - Gas WH New**

PEOPLES GAS SYSTEM, INC.  
WITNESS: KRUTSINGER  
EXHIBIT \_\_\_\_\_ (VIK-5)  
PAGE 8 OF 11

PGS

Input Data	TECO	FPC	FP&L	TECO	FPC	FP&L
KW				0.61	0.99	0.24
KWh	2788	2521	2553	2788	1636	1660
Electric Rate \$/ Kwh	0.075	0.072	.071	—	—	0.071
Gas Rate \$/Therm	0.75	0.75	.75	—	—	0.81
Electric Efficiency	0.9	0.9	0.9	—	—	—
Gas Efficiency	0.56	0.56	0.56	—	—	0.66
Electric Customer O&M	—	—	—	—	—	\$126
Gas Customer O&M	—	—	—	\$207	\$ 70	\$153
Electric Energy Cost	\$208	\$181	\$181	—	—	—
Gas Energy Cost	\$115	\$104	\$104	—	—	—
Electric Equipment Cost	\$109	\$109	\$109	—	—	—
Gas Equipment Cost	\$159	\$159	\$159	\$455	\$521	—
Electric Installed Cost	\$299	\$299	\$299	—	—	\$259
Gas Installed Cost	\$564	\$564	\$564	—	—	\$739
Annual Operating Hours	—	—	—	—	—	—
EFLH	—	—	—	—	—	—
Non- Recurring Rebate/ Incentive	\$250	\$250	\$250	—	\$789*	\$754*

\*Incentive necessary to pass Participant Test (Calculated by Electric Utilities)

**INPUT DATA COMPARISON  
PARTICIPANT TEST  
GAS MEASURES - Gas WH Existing  
PGS**

PEOPLES GAS SYSTEM, INC.  
WITNESS: KRUTSINGER  
EXHIBIT \_\_\_\_\_ (VIK-5)  
PAGE 9 OF 11

Input Data	TECO	FPC	FP&L	TECO	FPC	FP&L
KW						0.24
KWh	3061	2767	2266			1660
Electric Rate \$/ KWh	0.075	0.072	0.071			0.071
Gas Rate \$/Therm	0.75	0.75	0.75			.81
Electric Efficiency	.82	.82	.82			---
Gas Efficiency	.56	.56	.56			.66
Electric Customer O&M	---	---	---			\$126
Gas Customer O&M	---	---	---			\$153
Electric Energy Cost	\$228	\$198	\$160			---
Gas Energy Cost	\$115	\$104	\$ 85			---
Electric Equipment Cost	\$109	\$109	\$109			---
Gas Equipment Cost	\$199	\$199	\$199			---
Electric Installed Cost	\$309	\$309	\$309			\$330
Gas Installed Cost	\$604	\$604	\$604			\$259
Annual Operating Hours	---	---	---			---
EFLH	---	---	---			---
Non- Recurring Rebate/ Incentive	\$440	\$440	\$440			\$345*

\*Incentive necessary to pass Participant Test (Calculated by Electric Utilities)

6/94

INPUT DATA COMPARISONPARTICIPANT TEST

GAS MEASURES - Gas WH with Hydro-Heat (Existin

PAGE 10 OF 11

PGS

Input Data	TECO	FPC	FP&L	TECO	FPC	FP&L
KW				3.4	3.63	2.712
KWh	4775	4481	2969	3896	1476	2208
Electric Rate \$/ Kwh	.0746	.0708	.0708	---	---	.071
Gas Rate \$/Therm	.75	.75	.75	---	---	.81
Electric Efficiency	.82	.82	.82	---	---	---
Gas Efficiency	.56 & .79	.56 & .79	.56 & .79	---	---	.59 & .85
Electric Customer O&M	---	---	---	---	---	\$150
Gas Customer O&M	---	---	---	\$414	\$98	\$171
Electric Energy Cost	\$356	\$317	\$210	---	---	---
Gas Energy Cost	\$115	\$104	\$85	---	---	---
Electric Equipment Cost	\$504	\$504	\$167	---	---	---
Gas Equipment Cost	\$680	\$680	\$445	\$921	---	---
Electric Installed Cost	\$704	\$704	\$476	---	---	\$259
Gas Installed Cost	\$1530	\$1530	\$1050	---	\$2672	\$3891
Annual Operating Hours	---	---	---	---	---	2100
EFLH	---	---	---	---	---	---
Non- Recurring Rebate/ Incentive	\$880	\$880	\$880	\$921*	\$2294*	\$3844*

\* Incentive necessary to pass Participant Test (Calculated by Electric Utilities)

1/10/95

GAS TECHNOLOGIES

		1	2	3	4	5	6	7	8	9	10	11
Participant Test	FPC	1.00	1.00	1.00	1.00	1.00	1.00	1.77	1.00	1.00	2.12	1.00
	FP&L	.22	.31	.54	.46	.42	.28	.41	.53	.21	.45	.49
	GULF	(.01)	.15	.42	.35	.18	.19	.07	.57	.17	.37	.22
	TECO	(39,267)	(20,024)	(378)	(5,923)	(7,039)	(118)	- a -	(47)	(1,169)	(64,240)	(17,043)
RIM Test	FPC	.22	.35	.62	.48	.68	.99	1.06	.52	.15	.91	.58
	FP&L	1.01	1.02	1.03	1.03	1.04	1.03	1.01	.84	1.02	1.00	.91
	GULF	(.02)	.29	.31	.45	.57	.58	.39	.66	.33	.69	.57
	TECO	1.00	1.00	1.00	.80	1.00	1.10	- a -	.90	1.00	1.20	1.00
TRC Test	FPC	.22	.35	.62	.48	.68	1.00	1.88	.50	.15	1.93	.58
	FP&L	.29	.48	.67	.72	.75	.27	.76	.59	.19	.72	.78
	GULF	(.00)	.10	.31	.23	.15	.12	.06	.38	.11	.30	.18
	TECO	.10	.20	.30	.10	.40	.50	- a -	.40	.20	.30	.40

- |  |                                    |  |
|--|------------------------------------|--|
| 1) Absorption Commercial Single Effect     | 5) Gas Engine Driven Water Chiller | 9) New Installation Residential Cogeneration                 |
| 2) Absorption Commercial Double Effect     | 6) Double Integrated Appliance     | 10) Commercial/Industrial Cogeneration                       |
| 3) Residential Gas Heat Pump and Hot Water | 7) Desiccant Dehumidifier          | 11) Gas Engine Driven Centrifugal Chiller with Heat Recovery |
| 4) Gas Engine Driven Air Conditioner       | 8) New Installation Water Heater   |  |

a) TECO - Not a viable DSM measure. Summer peak of measure is higher than electric baseline technology.  
 Double-lined cells with bold data passed the test without the addition of incentives.  
 Shadowed cells nearly passed.

Table developed by commission staff from exhibits 6, 36, 51 and 156.

How To Use This Chapter

The first hour rating and energy factor can be used to select the right size water heater for your needs and, at the same time, select an energy efficient model.

FIRST: Find the right size water heater for your needs by finding those models with a first hour rating that matches (within one or two gallons) your peak hour demand.

To estimate your peak hour demand:

1. Determine during what general time of day (morning, noon, evening) there is usually the most use of hot water in your home, keeping in mind the number of people in your home.
2. Using the following table, determine what your maximum usage of hot water in one hour could be; this is your peak hour demand:

NOTE: This table does not estimate total daily hot water usage. As an example, an average of 4 gallons of hot water is used each time dishes are washed by hand but dishes washed by hand are usually done 3 times a day. The average daily hot water usage for hand dishwashing, 12 gallons, is about the same as the average hot water usage for an automatic dishwasher, used once a day.

<u>Use</u>	<u>Average Gallons of Hot Water per Usage</u>	<u>Times Used During One Hour</u>	<u>Gallons Used in One Hour</u>
Shower	20	x _____	_____
Bath	20	x _____	_____
Shaving	2	x _____	_____
Hands and Face Washing	4	x _____	_____
Hair Shampoo	4	x _____	_____
Hand Dishwashing	4	x _____	_____
Automatic Dishwasher	14	x _____	_____
Food Preparation	5	x _____	_____
Wringer Clothes Washer	26	x _____	_____
Automatic Clothes Washer	32	x _____	_____
<b>TOTAL (Peak Hour Demand)</b>			<b>=====</b>

EXAMPLE: Your household uses the most hot water in the morning. In the busiest one hour period of the morning, the uses are

3 showers	-	20 x 3 = 60
1 shave	-	2 x 1 = 2
1 shampoo	-	4 x 1 = 4
Handwashing of dishes	-	4 x 1 = 4
(Peak Hour Demand)		<u>70 gallons</u>

In this case, the peak hour demand is 70 gallons and you should look in the second column of each listing for those models of water heaters with a first hour rating of 68 to 72 gallons.

NOTE: Models under each manufacturer's name are listed from the lowest to the highest first hour rating.

SECOND: Look at the energy factor (E<sub>f</sub>) listed in the third column for those models that have the first hour rating that you need. The higher the E<sub>f</sub>, the more energy efficient is the water heater. The E<sub>f</sub> can be used to estimate a yearly cost of operation for a water heater. Tables 1 through 6 provide estimated yearly costs of operation for various fuel costs and various energy factors. Once you know the cost of fuel in your area, you can find the estimated annual cost of operation for any model using its energy factor and the appropriate table. (The cost of fuel in your area should be available from your fuel supplier.)

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing has been served by hand delivery (\*) or by United States Mail, postage prepaid, on the following individuals this 13<sup>th</sup> day of February, 1995:

Mary Elizabeth Culpepper, Esq.\*  
Division of Legal Services  
Florida Public Service Commission  
101 East Gaines Street  
Fletcher Building, Room 212  
Tallahassee, Florida 32399-0860

Lee L. Willis, Esquire  
James D. Beasley, Esquire  
Macfarlane, Ausley, Ferguson &  
McMullen  
227 S. Calhoun Street  
Tallahassee, Florida 32301

Jack Shreve, Esquire  
John Roger Howe  
Deputy Public Counsel  
Office of Public Counsel  
c/o The Florida Legislature  
111 West Madison Street  
Room 812  
Tallahassee, Florida 32399-1400

Wayne L. Schiefelbein  
Gatlin, Woods, Carlson & Cowdery  
1709-D Mahan Drive  
Tallahassee, Florida 32308

Jeffrey A. Stone, Esquire  
G. Edison Holland, Esquire  
Beggs & Lane  
P.O. Box 12950  
Pensacola, FL 32576-2950

Joseph A. McGlothlin, Esquire  
Vicki Gordon Kaufman, Esquire  
McWhirter, Reeves, et al.  
315 S. Calhoun St., # 716  
Tallahassee, FL 32301

John W. McWhirter, Jr., Esq.  
McWhirter, Reeves, et al.  
Post Office Box 3350  
Tampa, FL 33601

Floyd R. Self, Esquire  
Messer, Vickers, et al.  
215 S. Monroe Street  
Suite 701  
Tallahassee, FL 32301

Debbie Stitt  
Energy Conservation Analyst  
St. Joe Natural Gas Company  
Post Office Drawer 549  
Port St. Joe, FL 32456

James A. McGee, Esquire  
Florida Power Corporation  
Post Office Box 14042  
St. Petersburg, FL 33733

Charles Guyton, Esquire\*  
Steel, Hector & Davis  
215 S. Monroe St., Ste. 601  
Barnett Bank Bldg.  
Tallahassee, FL 32301

  
ROBERT SCHEFFEL WRIGHT