

# A New Market Paradigm for Zero-Energy Homes: The Comparative San Diego Case Study

## Volume 2 of 2 (Appendixes)

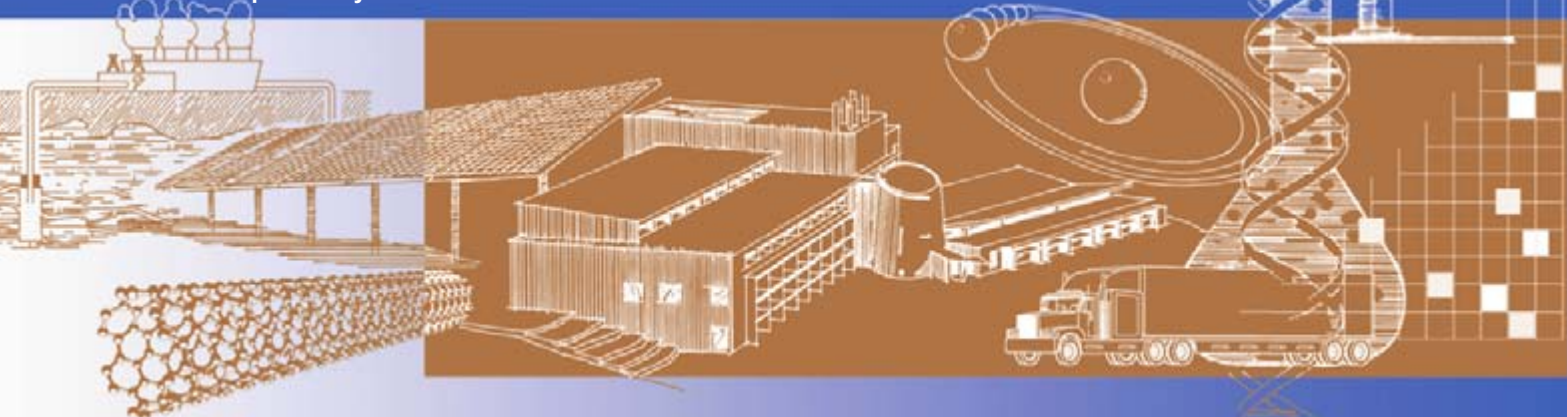
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**Technical Report**  
**NREL/TP-550-38304-02**  
**December 2006**

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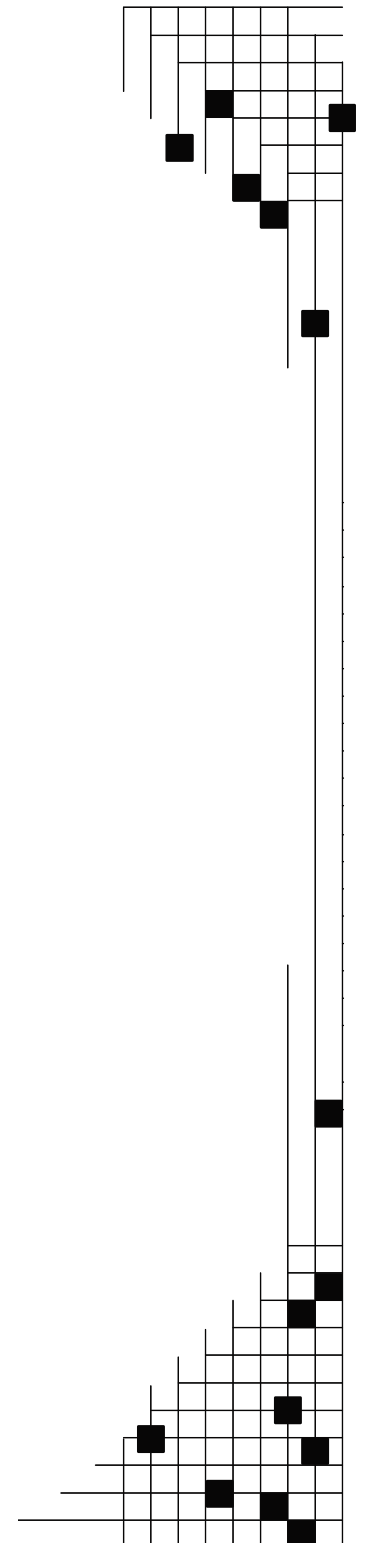
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**Appendix A**  
**New Developments in San Diego**

*Cited in Chapter 1*

## **Appendix A**

### **New Developments in San Diego**

The City of San Diego has, as part of its sustainability initiative, recently started an Expedite program to accelerate the permitting process for building homes with PV systems. The city had adopted a broad goal of achieving 50 MW of self-generated renewable electricity within the next 5 years. As a tangible step to encourage builders to include energy efficiency and PV in their new homes, the city's Expedite program, in essence, puts builders who plan to include solar PV as a standard feature in their homes at the front of the line to receive building permits.

Usually, the permitting process for an undeveloped piece of land takes approximately 24 months. The city cuts that time down to 6 to 9 months if the PV system provides 50% of the estimated electricity needs of the home, based on Title 24's estimate of electricity use per square foot. Although it cost the city nothing to implement, the Expedite program results in a small revenue stream because the city charges a \$500 fee for an Expedite application.

The builder benefits from the program because builders pay finance charges on loans for property they own and are waiting for a building permit to develop. These charges vary, of course, but can often range from \$2,000 to \$4,000 a month. If it takes 24 months to obtain a building permit, the finance charges at the high end of this example could total \$96,000. If the Expedite program results in a building permit in only 6 months, the builder would pay only \$24,000 instead of \$96,000 in finance charges, thus saving \$72,000. In addition, the San Diego builder can recoup half of the installed system cost because of the CEC rebates; therefore, the costs that need to be passed along to the homebuyer are only 50% of the actual installed PV system cost. This price premium ranges from \$8,000 to \$10,000 per home. Because housing demand in San Diego is high, buyers readily pay this premium; in fact, one builder's homes are 100% pre-sold. The company believes that PV may add value to its marketing campaign. It appears that the worst-case scenario for builders is that PV does not interfere with their sales (and may increase the dollar value of sales) while it saves them appreciably in finance charges.

Of course, with houses in the Expedite program, the PV home buyers do not have the option of selecting a PV system for their homes; it comes as a standard feature. Buyers are always free to purchase a conventional rather than a ZEH home. But, all other things being equal, the buyers benefit from purchasing a home with PV as a standard feature because (1) they don't have to decide about an unfamiliar but expensive technology, (2) they should enjoy significant savings on their electricity bills for at least 20 years, (3) they will probably realize appreciated resale value for their homes when they sell, and (4) they can roll the cost into their home mortgage, the monthly incremental cost of which should be less than their electricity savings.

## **Appendix B**

### **Questionnaire for SheaHomes PV Respondents: Household Questionnaire on Purchasing and Owning a High-Performance Home with a Solar PV System**

*Cited in Chapter 2*

PLEASE COMPLETE AND RETURN THIS QUESTIONNAIRE WITHIN 10 DAYS  
(Adult members of your household may wish to complete this questionnaire together.)

*Please Do Not Write Your Name on This Questionnaire*

---

## **Household Questionnaire on Purchasing and Owning a High-Performance Home with a Solar PV System**

---



THIS QUESTIONNAIRE ASKS ABOUT YOUR HOME PURCHASE DECISION AND YOUR EXPERIENCES WITH YOUR NEW HOME. RESIDENTIAL ENERGY IS ALSO A FOCUS OF THIS STUDY.

Are you the original owner of your home, or did you purchase your home from a previous owner?  
*[Please check one response.]*

- ☐ Original owner  
☐ Home purchased from previous owner

Is this the first home you have owned? *[Please check one response.]*

- ☐ Yes      ☐ No

Did you purchase a new home that had already been under contract, but had fallen out of escrow?  
*[Please check one response.]*

- ☐ Yes      ☐ No      ☐ Don't know

When you were looking for your new home, did you also visit existing resale housing?  
*[Please check one response.]*

- ☐ Yes      ☐ No

When you were looking for your new home, did you visit KB Home's Traviata development at Scripps Ranch? *[Please check one response.]*

- ☐ Yes      ☐ No      ☐ Don't remember

Would you say that the decision to purchase your new home was primarily made by one person or was it a joint decision? *[Please check one response.]*

- ☐ One person  
☐ Joint decision

On a scale of 1 to 10, how concerned were you about the electricity costs in San Diego at the time you purchased your home? *[Please circle one response.]*

<b>Not at all concerned</b>										<b>Very concerned</b>
1	2	3	4	5	6	7	8	9	10	

How important were each of the following features in your decision to purchase your new home?  
*[Please circle one response for each feature.]*

		Importance at time of purchase				
		Not at all important				Very important
Location	1. Closeness to work . . . . .	1	2	3	4	5
	2. Freeway access . . . . .	1	2	3	4	5
	3. Access to services, shopping, and entertainment . . . . .	1	2	3	4	5
	4. Great view. . . . .	1	2	3	4	5
	5. Safe area/secure feeling . . . . .	1	2	3	4	5
	6. Quality of schools . . . . .	1	2	3	4	5
	7. Prior familiarity with area . . . . .	1	2	3	4	5
	8. Closeness to friends/family members. . . . .	1	2	3	4	5
	9. Closeness to parks/playgrounds. . . . .	1	2	3	4	5
	10. Desirability of area . . . . .	1	2	3	4	5
Financial	11. Overall home value (size and quality of home for the price) . . . . .	1	2	3	4	5
	12. Investment potential . . . . .	1	2	3	4	5
	13. No Mello Roos taxes. . . . .	1	2	3	4	5
	14. A discount or other incentive. . . . .	1	2	3	4	5
Builder	15. Reputation of builder. . . . .	1	2	3	4	5
	16. Helpfulness and knowledge of sales staff. . . . .	1	2	3	4	5
Community	17. Quality of neighborhood/community . . . . .	1	2	3	4	5
	18. Exterior designs . . . . .	1	2	3	4	5
	19. Feeling of community spirit . . . . .	1	2	3	4	5
Energy	20. Availability of very energy-efficient home . . . . .	1	2	3	4	5
	21. Availability of solar water heating . . . . .	1	2	3	4	5
	22. Availability of solar PV system . . . . .	1	2	3	4	5
	23. The package of energy features taken together . . . . .	1	2	3	4	5
Other	24. Other <i>[Please specify]</i> _____	1	2	3	4	5

Now, please go back over the list and write in below the **numbers** of the three features that were most important to you when you decided to purchase your home.

\_\_\_\_\_  
**Most important**

\_\_\_\_\_  
**Second most important**

\_\_\_\_\_  
**Third most important**

How important were each of the following home features when you made your purchase?  
*[Please circle one response for each item.]*

	Importance at time of purchase				
	Not at all important				Very important
1. Architectural design . . . . .	1	2	3	4	5
2. Size/square footage . . . . .	1	2	3	4	5
3. Floor plan/layout . . . . .	1	2	3	4	5
4. Number of bedrooms . . . . .	1	2	3	4	5
5. Three-car garage . . . . .	1	2	3	4	5
6. Granite countertops as a standard feature . . . . .	1	2	3	4	5
7. Large closets/pantries . . . . .	1	2	3	4	5
8. Single-story option . . . . .	1	2	3	4	5
9. Lot size/yard . . . . .	1	2	3	4	5
10. Quality of construction . . . . .	1	2	3	4	5
11. Spaciousness/openness. . . . .	1	2	3	4	5
12. Quality or sense of light . . . . .	1	2	3	4	5
13. Many amenities included as standard items. . . . .	1	2	3	4	5
14. Availability of many options . . . . .	1	2	3	4	5
15. Quiet area. . . . .	1	2	3	4	5
16. Other <i>[Please specify]</i> _____	1	2	3	4	5
17. Other <i>[Please specify]</i> _____	1	2	3	4	5

How did you **first** hear about SheaHomes' Scripps Highlands development? *[Please check one response.]*

- ☐ Drove by and saw flags, signs, or construction trailer
- ☐ Heard about it from friends, relatives, acquaintances
- ☐ Saw an ad in the newspaper
- ☐ Saw an article in the newspaper
- ☐ Saw it on the Internet
- ☐ From broadcast media coverage (e.g. TV, radio)
- ☐ Had previous experience with the builder
- ☐ Other *[Please specify]* \_\_\_\_\_

How satisfied were you with the performance of the SheaHomes staff in providing you with accurate and adequate information to assist you in your home purchase decision? *[Please circle one response.]*

<b>Not at all satisfied</b>										<b>Very satisfied</b>
1	2	3	4	5	6	7	8	9	10	

How satisfied were you with the performance of the SheaHomes staff in providing information on the energy efficiency and solar energy aspects of your home? *[Please circle one response.]*

<b>Not at all satisfied</b>										<b>Very satisfied</b>
1	2	3	4	5	6	7	8	9	10	

How satisfied were you with the performance of the SheaHomes staff in responding to problems and concerns after you moved in? *[Please circle one response.]*

<b>Not at all satisfied</b>										<b>Very satisfied</b>	<b>No problems or concerns</b>
1	2	3	4	5	6	7	8	9	10		<input type="checkbox"/>



When you were looking for your new home, how well informed would you say you were about energy-efficiency and solar energy features? Would you say you were . . . *[Please circle one response.]*

<b>Not at all informed</b>										<b>Very informed</b>
1	2	3	4	5	6	7	8	9	10	

How well informed would you say you are now? *[Please circle one response.]*

<b>Not at all Informed</b>										<b>Very informed</b>
1	2	3	4	5	6	7	8	9	10	

Please rate your satisfaction with each of the following now that you have lived in your home for a while.  
*[Please circle one response for each item.]*

	<b>Not at all satisfied</b>				<b>Very satisfied</b>
1. Location . . . . .	1	2	3	4	5
2. Investment potential . . . . .	1	2	3	4	5
3. Reputation of builder . . . . .	1	2	3	4	5
4. Size/square footage . . . . .	1	2	3	4	5
5. Layout/floor plan . . . . .	1	2	3	4	5
6. Storage space . . . . .	1	2	3	4	5
7. Lot size/yard . . . . .	1	2	3	4	5
8. Quality of construction . . . . .	1	2	3	4	5
9. The package of energy features . . . . .	1	2	3	4	5
10. Net metering . . . . .	1	2	3	4	5
11. Number of thermostats . . . . .	1	2	3	4	5

How would you rate the overall comfort of your home? *[Please circle one response.]*

<b>Not at all comfortable</b>										<b>Very comfortable</b>
1	2	3	4	5	6	7	8	9	10	

Overall, how energy efficient do you believe your new home to be? *[Please circle one response.]*

<b>Not at all energy efficient</b>										<b>Very energy efficient</b>
1	2	3	4	5	6	7	8	9	10	

Have you ever bragged about your home's energy features to friends and acquaintances or shown them to visitors to your home? *[Please check one response for each item.]*

We've bragged about our . . .

	<b>Yes</b>	<b>No</b>	<b>Don't remember</b>
1. Low-e glass in windows . . . . .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Solar water heating . . . . .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Solar PV system . . . . .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Home's comfort . . . . .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Lower utility bills . . . . .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Digital read-out for solar PV . . . . .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Other <i>[Please specify]</i> _____			

Approximately what was your household's average total monthly utility bill at your prior residence?  
*[Please fill in estimated dollar amount and square footage.]*

\$\_\_\_\_\_ per month for a \_\_\_\_\_ square-foot residence    ☐ Don't know

Approximately what is your household's average monthly electricity bill **now**?  
*[Please fill in estimated dollar amount.]*

\$\_\_\_\_\_ per month    ☐ Don't know

Approximately what is your household's average monthly natural gas bill **now**?  
*[Please fill in estimated dollar amount.]*

\$\_\_\_\_\_ per month    ☐ Don't know

To what extent do you agree with each of the following statements?  
*[Please circle one response for each statement.]*

	Strongly disagree	Disagree	Neutral/ unsure	Agree	Strongly agree
1. Our natural gas bills are lower than they would have been without our solar water heating system . . . . .	1	2	3	4	5
2. Our electricity bills are lower than they would have been without our solar PV system . . . . .	1	2	3	4	5
3. The savings on our utility bills have met or exceeded our expectations . . . . .	1	2	3	4	5
4. We would buy our same house again if we had it to do over. . . . .	1	2	3	4	5
5. If we buy another new home, it will be a very energy-efficient home . . . . .	1	2	3	4	5
6. If we buy another new home, it will have solar water heating. . . . .	1	2	3	4	5
7. If we buy another new home, it will have solar PV . . . . .	1	2	3	4	5

What three or four things do you like best about your new home? \_\_\_\_\_

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Is there anything you are unhappy about? What do you like least? \_\_\_\_\_

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NOW, THINKING ABOUT YOUR SOLAR PV SYSTEM . . .

Please indicate which statement best describes your solar PV system at the time of your home purchase.  
*[Please check one response.]*

- ☐ A 1.2 kilowatt solar PV system that came with the house as a standard feature (pre-plotted system)
- ☐ A 1.2 kW solar PV system purchased as an option
- ☐ A 2.4 kW solar PV system purchased as an option
- ☐ A 2.4 kW solar PV system (a standard 1.2 kW system plus an optional 1.2 kW system)
- ☐ Other *[Please specify]* \_\_\_\_\_

How important to you are each of the following aspects of your solar PV system?  
*[Please circle one response for each item.]*

	Not at all important				Very important
1. Amount of electricity produced . . . . .	1	2	3	4	5
2. Financed through our home mortgage . . . . .	1	2	3	4	5
3. Owning the solar PV system outright . . . . .	1	2	3	4	5
4. Net metering . . . . .	1	2	3	4	5
5. Digital display showing electricity produced and consumed . .	1	2	3	4	5
6. Length of warranty (10-year) . . . . .	1	2	3	4	5
7. Ease of maintenance . . . . .	1	2	3	4	5
8. Attractiveness or unobtrusiveness of the system . . . . .	1	2	3	4	5
9. Upgrade capability . . . . .	1	2	3	4	5
10. Other <i>[Please specify]</i> _____	1	2	3	4	5

Now, please go back over the list and indicate below the **number** of the most important aspect.

**Most important**

About how often do you look at the solar electric digital display that tells you how much electricity your system is producing and how much your home is consuming? *[Please circle one response.]*

Never	Between once a month and every six months	Approximately once a month	At least once a week	Once a day
1	2	3	4	5

In which of the following ways have you used your solar PV digital display? We use it to . . .  
*[Please check all that apply.]*

- ☐ Obtain feedback on the electricity use of specific lights and appliances
- ☐ Determine whether anything has inadvertently been left on before we leave the house
- ☐ Optimally schedule electricity-consuming chores
- ☐ Record our cumulative electricity production and consumption
- ☐ Become more sensitive to our household's electricity consumption patterns
- ☐ Determine whether our system is functioning
- ☐ Help us change our energy-consuming behavior
- ☐ Other *[Please specify]* \_\_\_\_\_
- ☐ We have not used it

Have you ever watched your electric meter run backwards? *[Please check one response.]*

- ☐ Yes      ☐ No

Listed below are some statements concerning the benefits of having a solar PV system on your high-performance home. Please indicate the extent to which you agree with each statement.

*[For each statement, please circle one response.]*

Our solar PV system:	Strongly disagree	Disagree	Neutral/unsure	Agree	Strongly agree
1. Reduces our electricity bills . . . . .	1	2	3	4	5
2. Allows us to sell excess electricity back to the utility company . . . . .	1	2	3	4	5
3. Provides free electricity once our system is paid for . . . . .	1	2	3	4	5
4. Increases our home's resale value . . . . .	1	2	3	4	5
5. Protects us against rising electricity costs . . . . .	1	2	3	4	5
6. Increases our self sufficiency . . . . .	1	2	3	4	5
7. Makes us feel good to have it . . . . .	1	2	3	4	5
8. Provides us an opportunity to be technologically innovative . . . . .	1	2	3	4	5
9. Allows us to help the environment . . . . .	1	2	3	4	5
10. Allows us to increase our awareness of our household's energy use. . . . .	1	2	3	4	5
11. Helps conserve natural resources . . . . .	1	2	3	4	5
12. Helps improve air quality in our area . . . . .	1	2	3	4	5
13. Helps to benefit future generations . . . . .	1	2	3	4	5
14. Helps reduce global warming . . . . .	1	2	3	4	5
15. Helps San Diego's economy . . . . .	1	2	3	4	5
16. Other <i>[Please specify]</i> _____	1	2	3	4	5
17. Other <i>[Please specify]</i> _____	1	2	3	4	5

Who was the single most important source of information on your solar PV system?

*[Please check one response.]*

- ☐ Shea sales staff
- ☐ Shea University
- ☐ Astropower
- ☐ SDG&E
- ☐ Friends, acquaintances, colleagues, personal network
- ☐ Other *[Please specify]* \_\_\_\_\_

Since living in your home, have you learned about the following aspects of solar PV?

*[Please check all that apply.]*

- ☐ Amount or percentage of your electricity use the solar PV system produces
- ☐ How the system works
- ☐ Net metering and interconnecting with the utility grid
- ☐ Savings on the utility bill
- ☐ Tax credits or rebates to help offset the cost
- ☐ Payback period for solar PV system purchase
- ☐ Other *[Please specify]* \_\_\_\_\_

Have you used any of the following to learn about the way your solar PV system operates?

*[Please check all that apply.]*

- ☐ Video on operations and maintenance
- ☐ Factsheet about solar PV systems
- ☐ Operating manual for the system
- ☐ Website
- ☐ Other *[Please specify]* \_\_\_\_\_

How well informed did you feel you were about the solar PV system at the time of purchase? Did you know enough to make an informed decision about adding one to your home or upgrading the one that came with your home? *[Please circle one response.]*

**Not at all  
informed**

1

2

3

4

5

6

7

8

9

**Very  
informed**

10

IF YOU ORIGINALLY PURCHASED YOUR HOME WITH A 1.2 kW SYSTEM (12 PANELS), PLEASE ANSWER THE FOLLOWING QUESTIONS. OTHERWISE, SKIP TO — ★ — BELOW

Why did you decide at the time not to purchase or upgrade to a 2.4 kW solar PV system (24 panels)?

*[Please check all that apply.]*

- ☐ Didn't know a 2.4 kW system was available
- ☐ Didn't know what level of performance to expect
- ☐ Thought it was too expensive to upgrade
- ☐ Wanted other options for the house instead of solar PV system upgrade
- ☐ Missed the cut-off date in the construction schedule
- ☐ Wasn't sure where it would go on the roof
- ☐ Other *[Please specify]* \_\_\_\_\_

Now that you have lived with your PV system for a while, do you wish that you had opted for the 2.4 kW system at the time you purchased your home? *[Please check one response.]*

- ☐ Yes      ☐ No

Have you added on to your solar PV system since you moved into your house? *[Please check one response.]*

- ☐ Yes, we did *[Please specify]*:  
\_\_\_\_\_ Number of kW you added  
\_\_\_\_\_ Number of panels you added
- ☐ No, but we have thought about it
- ☐ No, we haven't considered it

★ How happy are you with your solar PV system? *[Please circle one response.]*

**Not at all  
happy**

1

2

3

4

5

6

7

8

9

**Very  
happy**

10

What have been the best things about having a solar PV system? \_\_\_\_\_

What drawbacks, if any, have there been to having a solar PV system? \_\_\_\_\_

Regarding the operational aspects of your solar PV system, please tell us whether each of the following situations exists. *[Please check one response for each statement.]*

	Yes	No	Don't know
1. Our solar PV system automatically shuts down when there is a utility power outage . .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. SDG&E credits us at the retail rate for the amount of electricity we put into the grid . .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. We have one electric meter . . . . .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. SDG&E bills us only for the net electricity we actually consume . . . . .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. The utility grid's demand for electricity is at its peak on hot sunny afternoons when our system produces the most electricity . . . . .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. We signed an interconnectivity agreement with SDG&E when we purchased our home. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. We pay our electricity bill once a year rather than once a month. . . . .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. We will receive a check from SDG&E at the end of the year if we produce enough electricity. . . . .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

To what extent do you agree with each of the following statements about utilities?  
*[Please circle one response for each statement.]*

	Strongly disagree	Disagree	Neutral/ unsure	Agree	Strongly agree
1. Electricity rates have come down since we purchased our house. . . . .	1	2	3	4	5
2. Power outages are a problem in the San Diego area . . . . .	1	2	3	4	5
3. SDG&E sends clear, concise, and beneficial information about net metering . . . . .	1	2	3	4	5
4. SDG&E was helpful about connecting our solar PV system with the utility grid . . . . .	1	2	3	4	5
5. We are pleased with the billing process for electricity. . . . .	1	2	3	4	5

To what extent do you agree with the following statements about solar PV and water heating systems?  
*[Please circle one response for each statement.]*

	Strongly disagree	Disagree	Neutral/ unsure	Agree	Strongly agree
1. Solar PV systems are a desirable innovation for new homes . . . . .	1	2	3	4	5
2. Solar water heating systems are a desirable innovation for new homes. . . . .	1	2	3	4	5
3. Solar PV systems are cost effective . . . . .	1	2	3	4	5
4. Solar water heating systems are cost effective . . . . .	1	2	3	4	5

Please indicate whether you own any of the following: *[Please check all that apply.]*

- ☐ Two refrigerators
- ☐ Ceiling fans
- ☐ A standalone freezer
- ☐ Dimmer switches for lights
- ☐ Compact florescent light bulbs (CFL)
- ☐ A hot tub
- ☐ A hot water flow regulator
- ☐ A pool
- ☐ Dual zone heating/air conditioning system

WE WONDER WHETHER YOU DO ANY OF THE FOLLOWING.

Please indicate the extent to which you agree or disagree with the following statements.

*[For each statement, please circle one response.]*

In our household . . .	Strongly disagree	Disagree	Neutral/ unsure	Agree	Strongly agree
1. We tend to be thrifty . . . . .	1	2	3	4	5
2. We regularly recycle paper, plastic, or cans . . . . .	1	2	3	4	5
3. In the winter months, we regularly set our thermostat to 70° F or lower . . . . .	1	2	3	4	5
4. In the summer months, we regularly set our thermostat to 75° F or higher. . . . .	1	2	3	4	5
5. When we are away, we modify our thermostat settings to save energy and utility costs . . . . .	1	2	3	4	5
6. We turn off the lights in our house when we are not using them . . . . .	1	2	3	4	5
7. We turn off computers when we leave the house . . . . .	1	2	3	4	5
8. We work to conserve water . . . . .	1	2	3	4	5
9. We are more energy conscious than we used to be . . . . .	1	2	3	4	5
10. In our new home, we use air conditioning less than we did in our previous home . . . . .	1	2	3	4	5
11. We drive fuel-efficient vehicles . . . . .	1	2	3	4	5
12. We practice xeriscaping . . . . .	1	2	3	4	5

WE WOULD LIKE TO KNOW YOUR VIEWS ON CERTAIN ENERGY POLICY QUESTIONS.

In your opinion, which of the following would be the best way to offer solar PV systems to buyers of new homes? *[Please check one response.]*

- ☐ Solar PV systems should be offered as a standard feature with the cost included in the price of the home.
- ☐ Solar PV systems should be offered as an optional feature with the cost added to the price of the home.
- ☐ Both choices should be available.
- ☐ Other *[Please specify]* \_\_\_\_\_
- ☐ Don't know

Why do you feel this way? \_\_\_\_\_

In your opinion, which of the following would be the best way to offer solar water heating systems to buyers of new homes? *[Please check one response.]*

- ☐ Solar water heating systems should be offered as a standard feature with the cost included in the price of the home.
- ☐ Solar water heating systems should be offered as an optional feature with the cost added to the price of the home.
- ☐ Both choices should be available.
- ☐ Other *[Please specify]* \_\_\_\_\_
- ☐ Don't know

To what extent do you favor or oppose the following proposals? *[Please circle one response for each item.]*

	<b>Strongly oppose</b>	<b>Oppose</b>	<b>Neutral/ unsure</b>	<b>Favor</b>	<b>Strongly favor</b>
1. Utility companies should give rebates to buyers of energy-efficient appliances . . . . .	1	2	3	4	5
2. Federal income tax credits should be given to buyers of energy-efficient homes . . . . .	1	2	3	4	5
3. New homes that are technically rated as very efficient should be given an EnergyStar label. . . . .	1	2	3	4	5
4. The California Energy Commission should give a rebate for purchasing a solar PV system. . . . .	1	2	3	4	5
5. The California Energy Commission should give a rebate for purchasing a solar water heater . . . . .	1	2	3	4	5
6. The federal government should support research on highly energy-efficient homes that produce all the energy they use . . . . .	1	2	3	4	5
7. Builders should build very energy-efficient homes if they cost less per month to own and operate than conventional homes. . . . .	1	2	3	4	5
8. Builders should build homes that cut energy bills if their appearance and comfort are superior to that of conventional housing. . . . .	1	2	3	4	5
9. A complete energy package (with efficiency and solar features) should be standard equipment in new homes today if cost effective . . . . .	1	2	3	4	5
10. Affordable housing developments should receive subsidies for installing solar PV systems . . . . .	1	2	3	4	5
11. Affordable housing developments should receive subsidies for installing solar water heaters . . . . .	1	2	3	4	5

Please indicate the extent to which you agree or disagree with the following statements.

*[For each statement, please circle one response.]*

<b>In general . . .</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral/ unsure</b>	<b>Agree</b>	<b>Strongly agree</b>
1. We have a serious responsibility to preserve the environment for future generations . . . . .	1	2	3	4	5
2. Many of the supposed threats to the environment have been greatly exaggerated . . . . .	1	2	3	4	5
3. Current federal regulations provide adequate protection for the environment . . . . .	1	2	3	4	5
4. Individuals need to take personal responsibility for protecting the environment . . . . .	1	2	3	4	5
5. Household energy consumption is not a major contributor to environmental problems . . . . .	1	2	3	4	5



PLEASE TELL US ABOUT YOURSELF AND YOUR HOUSEHOLD. *[If two people have completed the questionnaire together, please select one person as head of household for answering the questions in this section. Please check or fill in the appropriate response.]*

**Reminder: all information will be kept confidential.**

I am:

☐ Male ☐ Female

My age is:

- ☐ 24 years or younger
- ☐ 25 to 39 years
- ☐ 40 to 49 years
- ☐ 50 to 64 years
- ☐ 65 years or older

I am:

- ☐ Married/in a committed relationship
- ☐ No longer married or never married

Which category best describes the composition of your household?

- ☐ One adult
- ☐ Two adults
- ☐ Two adults and children
- ☐ One adult and children
- ☐ Three or more adults
- ☐ Three or more adults and children

In total, how many people live in your household?

\_\_\_\_\_

What is the primary occupation of the chief income provider in your household?

\_\_\_\_\_  
\_\_\_\_\_

Is anyone in your household an employee or contractor of SheaHomes?

☐ Yes ☐ No

Which category best describes your highest level of education?

- ☐ Elementary school through some high school
- ☐ High school graduate or equivalent
- ☐ Some college but no degree
- ☐ Associate's degree
- ☐ Trade or technical school certificate
- ☐ Bachelor's degree
- ☐ Some graduate work, but no degree
- ☐ Master's degree
- ☐ Work beyond the Master's but no additional degree
- ☐ Doctoral degree (Ph.D., M.D., D.V.M., J.D., and others)

Which category best describes your annual household income before taxes?

- ☐ Less than \$50,000
- ☐ \$50,000 to 99,999
- ☐ \$100,000 to 149,999
- ☐ \$150,000 to 199,999
- ☐ \$200,000 to 249,999
- ☐ \$250,000 or more

About how long do you plan to stay in your home?

\_\_\_\_\_ *[Please fill in the number of years]*

or ☐ Permanently

or ☐ Don't know

What city and state did you move from?

- ☐ San Diego area
- ☐ Other *[Please specify]* \_\_\_\_\_

Please indicate the extent to which you agree or disagree with the following statements.  
*[For each statement, please circle one response.]*

	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral/ unsure</b>	<b>Agree</b>	<b>Strongly agree</b>
1. I like to be as independent as possible so I don't have to rely on others to meet my needs . . . . .	1	2	3	4	5
2. I like to experiment with new ways of doing things . . . . .	1	2	3	4	5
3. I am seen as a leader in my work life, social life, or volunteer activities . . . . .	1	2	3	4	5
4. I tend to buy environmentally friendly products, even if they cost more . . . . .	1	2	3	4	5
5. I am willing to accept modifications to my lifestyle if it helps the environment . . . . .	1	2	3	4	5
6. I am intrigued with new technology . . . . .	1	2	3	4	5

PLEASE USE THIS SPACE FOR ANY FURTHER COMMENTS YOU MIGHT HAVE.

THANK YOU VERY MUCH FOR YOUR PARTICIPATION IN THIS STUDY!

*Please complete the Utility Release Form enclosed and seal it in the 'Utility Release Form' envelope. This will release SDG&E to supply data on your home's energy use and utility costs for the study. We will be comparing the energy use of various groups of homes. We will not identify who owns which homes and everyone's confidentiality will be maintained.*

*When you have completed your questionnaire, please fold it in half and place it in the 'Completed Questionnaire' envelope and seal it. Then put the sealed envelopes in the postage-paid, business reply envelope and drop it in the mail. Again, we appreciate your help with this study.*

FOR INFORMATION ABOUT THIS STUDY, PLEASE CONTACT:

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## **Appendix C**

### **Questionnaire for SheaHomes Main Respondents: Household Questionnaire on Purchasing and Owning a High-Performance Home**

*Cited in Chapter 2*

PLEASE COMPLETE AND RETURN THIS QUESTIONNAIRE WITHIN 10 DAYS  
(Adult members of your household may wish to complete this questionnaire together.)

*Please Do Not Write Your Name on This Questionnaire*

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## **Household Questionnaire on Purchasing and Owning a High-Performance Home**

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THIS QUESTIONNAIRE ASKS ABOUT YOUR HOME PURCHASE DECISION AND YOUR EXPERIENCES WITH YOUR NEW HOME. RESIDENTIAL ENERGY IS ALSO A FOCUS OF THIS STUDY.

Are you the original owner of your home, or did you purchase your home from a previous owner?

*[Please check one response.]*

- ☐ Original owner  
☐ Home purchased from previous owner

Is this the first home you have owned? *[Please check one response.]*

- ☐ Yes ☐ No

Did you purchase a new home that had already been under contract, but had fallen out of escrow?

*[Please check one response.]*

- ☐ Yes ☐ No ☐ Don't know

When you were looking for your new home, did you also visit existing resale housing?

*[Please check one response.]*

- ☐ Yes ☐ No

When you were looking for your new home, did you visit KB Home's Traviata development at Scripps Ranch? *[Please check one response.]*

- ☐ Yes ☐ No ☐ Don't remember

Would you say that the decision to purchase your new home was primarily made by one person or was it a joint decision? *[Please check one response.]*

- ☐ One person  
☐ Joint decision

On a scale of 1 to 10, how concerned were you about the electricity costs in San Diego at the time you purchased your home? *[Please circle one response.]*

<b>Not at all</b>										<b>Very</b>
<b>concerned</b>										<b>concerned</b>
1	2	3	4	5	6	7	8	9	10	

How important were each of the following features in your decision to purchase your new home?  
*[Please circle one response for each feature.]*

		Importance at time of purchase				
		Not at all important				Very important
Location	1. Closeness to work .....	1	2	3	4	5
	2. Freeway access .....	1	2	3	4	5
	3. Access to services, shopping, and entertainment .....	1	2	3	4	5
	4. Great view. ....	1	2	3	4	5
	5. Safe area/secure feeling .....	1	2	3	4	5
	6. Quality of schools .....	1	2	3	4	5
	7. Prior familiarity with area .....	1	2	3	4	5
	8. Closeness to friends/family members. ....	1	2	3	4	5
	9. Closeness to parks/playgrounds. ....	1	2	3	4	5
	10. Desirability of area .....	1	2	3	4	5
Financial	11. Overall home value (size and quality of home for the price) .....	1	2	3	4	5
	12. Investment potential .....	1	2	3	4	5
	13. No Mello Roos taxes. ....	1	2	3	4	5
	14. A discount or other incentive. ....	1	2	3	4	5
Builder	15. Reputation of builder. ....	1	2	3	4	5
	16. Helpfulness and knowledge of sales staff. ....	1	2	3	4	5
Community	17. Quality of neighborhood/community .....	1	2	3	4	5
	18. Exterior designs .....	1	2	3	4	5
	19. Feeling of community spirit .....	1	2	3	4	5
Energy	20. Availability of very energy-efficient home .....	1	2	3	4	5
	21. Availability of solar water heating .....	1	2	3	4	5
	22. Availability of solar PV system .....	1	2	3	4	5
	23. The package of energy features taken together .....	1	2	3	4	5
Other	24. Other <i>[Please specify]</i> _____	1	2	3	4	5

Now, please go back over the list and write in below the **numbers** of the three features that were most important to you when you decided to purchase your home.

\_\_\_\_\_  
**Most important**

\_\_\_\_\_  
**Second most important**

\_\_\_\_\_  
**Third most important**

How important were each of the following home features when you made your purchase?  
*[Please circle one response for each item.]*

	Importance at time of purchase				
	Not at all important				Very important
1. Architectural design . . . . .	1	2	3	4	5
2. Size/square footage . . . . .	1	2	3	4	5
3. Floor plan/layout . . . . .	1	2	3	4	5
4. Number of bedrooms . . . . .	1	2	3	4	5
5. Three-car garage . . . . .	1	2	3	4	5
6. Granite countertops as a standard feature . . . . .	1	2	3	4	5
7. Large closets/pantries . . . . .	1	2	3	4	5
8. Single-story option . . . . .	1	2	3	4	5
9. Lot size/yard . . . . .	1	2	3	4	5
10. Quality of construction . . . . .	1	2	3	4	5
11. Spaciousness/openness . . . . .	1	2	3	4	5
12. Quality or sense of light . . . . .	1	2	3	4	5
13. Many amenities included as standard items . . . . .	1	2	3	4	5
14. Availability of many options . . . . .	1	2	3	4	5
15. Quiet area . . . . .	1	2	3	4	5
16. Other <i>[Please specify]</i> _____	1	2	3	4	5
17. Other <i>[Please specify]</i> _____	1	2	3	4	5

How did you **first** hear about SheaHomes' Scripps Highlands development? *[Please check one response.]*

- ☐ Drove by and saw flags, signs, or construction trailer
- ☐ Heard about it from friends, relatives, acquaintances
- ☐ Saw an ad in the newspaper
- ☐ Saw an article in the newspaper
- ☐ Saw it on the Internet
- ☐ From broadcast media coverage (e.g. TV, radio)
- ☐ Had previous experience with the builder
- ☐ Other *[Please specify]* \_\_\_\_\_

How satisfied were you with the performance of the SheaHomes staff in providing you with accurate and adequate information to assist you in your home purchase decision? *[Please circle one response.]*

<b>Not at all satisfied</b>										<b>Very satisfied</b>
1	2	3	4	5	6	7	8	9	10	

How satisfied were you with the performance of the SheaHomes staff in providing information on the energy efficiency and solar energy aspects of your home? *[Please circle one response.]*

<b>Not at all satisfied</b>										<b>Very satisfied</b>
1	2	3	4	5	6	7	8	9	10	

How satisfied were you with the performance of the SheaHomes staff in responding to problems and concerns after you moved in?

*[Please circle one response.]*

<b>Not at all satisfied</b>										<b>Very satisfied</b>	<b>No problems or concerns</b>
1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	



When you were looking for your new home, how well informed would you say you were about energy-efficiency and solar energy features? Would you say you were . . . *[Please circle one response.]*

<b>Not at all informed</b>										<b>Very informed</b>
1	2	3	4	5	6	7	8	9	10	

How well informed would you say you are now? *[Please circle one response.]*

<b>Not at all informed</b>										<b>Very informed</b>
1	2	3	4	5	6	7	8	9	10	

Please rate your satisfaction with each of the following now that you have lived in your home for a while. *[Please circle one response for each item.]*

	<b>Not at all satisfied</b>				<b>Very satisfied</b>
	1	2	3	4	5
1. Location . . . . .	1	2	3	4	5
2. Investment potential . . . . .	1	2	3	4	5
3. Reputation of builder . . . . .	1	2	3	4	5
4. Size/square footage . . . . .	1	2	3	4	5
5. Layout/floor plan . . . . .	1	2	3	4	5
6. Storage space . . . . .	1	2	3	4	5
7. Lot size/yard . . . . .	1	2	3	4	5
8. Quality of construction . . . . .	1	2	3	4	5
9. The package of energy features . . . . .	1	2	3	4	5
10. Number of thermostats . . . . .	1	2	3	4	5

How would you rate the overall comfort of your home? *[Please circle one response.]*

<b>Not at all comfortable</b>									<b>Very comfortable</b>
1	2	3	4	5	6	7	8	9	10

Overall, how energy efficient do you believe your new home to be? *[Please circle one response.]*

<b>Not at all energy efficient</b>									<b>Very energy efficient</b>
1	2	3	4	5	6	7	8	9	10

Have you ever bragged about your home's energy features to friends and acquaintances or shown them to visitors to your home? *[Please check one response for each item.]*

We've bragged about our . . .

	<b>Yes</b>	<b>No</b>	<b>Don't remember</b>
1. Low-e glass in windows . . . . .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Solar water heating . . . . .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Home's comfort . . . . .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Lower utility bills . . . . .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Other <i>[Please specify]</i> _____			

Approximately what was your household's average monthly utility bill at your prior residence?  
*[Please fill in estimated dollar amount and square footage.]*

\$\_\_\_\_\_ per month for a \_\_\_\_\_ square-foot residence    ☐ Don't know

Approximately what is your household's average monthly utility bill **now**?  
*[Please fill in estimated dollar amount.]*

\$\_\_\_\_\_ per month    ☐ Don't know

To what extent do you agree with each of the following statements?  
*[Please circle one response for each statement.]*

	Strongly disagree	Disagree	Neutral/ unsure	Agree	Strongly agree
1. Our utility bills are lower than they would have been without our solar water heating system . . . . .	1	2	3	4	5
2. The savings on our utility bills have met or exceeded our expectations . . . . .	1	2	3	4	5
3. We would buy our same house again if we had it to do over. . . . .	1	2	3	4	5
4. If we buy another new home, it will be a very energy-efficient home . . . . .	1	2	3	4	5
5. If we buy another new home, it will have solar water heating. . . . .	1	2	3	4	5
6. If we buy another new home, it will have solar PV . . . . .	1	2	3	4	5

What three or four things do you like best about your new home? \_\_\_\_\_

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Is there anything you are unhappy about? What do you like least? \_\_\_\_\_

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Were you offered the option of purchasing a solar PV system at the time you bought your new home?  
[Please check the response that best reflects your situation.]

- ☐ Yes, we were offered a solar PV system, but chose not to purchase
- ☐ We don't remember being offered a solar PV system. *[Please skip to ★ on next page]*

How well informed did you feel you were about the solar PV system at the time of purchase? Did you know enough to make an informed decision about adding one to your home or upgrading the one that came with your home? *[Please circle one response.]*

Not at all  
informed

**Very informed**

10

To what extent do you agree with each of the following potential reasons for your decision not to purchase a solar PV system? [For each statement, please circle one response.]

	Strongly disagree	Disagree	Neutral/ unsure	Agree	Strongly agree
1. Energy is not that important . . . . .	1	2	3	4	5
2. It was too expensive . . . . .	1	2	3	4	5
3. We wanted other options instead . . . . .	1	2	3	4	5
4. We didn't know enough to evaluate a solar PV system properly . . . . .	1	2	3	4	5
5. We didn't know where the system would go on our roof . . . . .	1	2	3	4	5
6. We thought the payback would be too long . . . . .	1	2	3	4	5
7. We thought homeowners insurance premium would increase . . . . .	1	2	3	4	5
8. We thought property taxes would increase . . . . .	1	2	3	4	5
9. We were unsure about the reliability of solar PV systems . . . . .	1	2	3	4	5
10. We thought it would negatively affect resale value . .	1	2	3	4	5
11. System could become outdated technologically . . .	1	2	3	4	5
12. We were concerned about maintenance issues . . . .	1	2	3	4	5
13. We did not like how the system looks . . . . .	1	2	3	4	5
14. Other <i>[Please specify]</i> _____	1	2	3	4	5
15. Other <i>[Please specify]</i> _____	1	2	3	4	5

At the time you purchased your home, what is the most you would have been willing to pay to purchase a PV system that could replace 50% to 70% of your electricity requirements (depending on the way your household uses electricity)? *[Please check one response.]*

- ☐ Nothing more
- ☐ Less than \$4,999
- ☐ Between \$5,000 and 6,999
- ☐ Between \$7,000 and 8,999
- ☐ Between \$9,000 and 10,999
- ☐ More than \$11,000

Do you now wish you had chosen to purchase a solar PV system at the time you purchased your home?  
*[Please check one response.]*

- ☐ No
- ☐ Unsure
- ☐ Yes, a 1.2 kW system for \$6,000
- ☐ Yes, a 2.4 kW system for \$10,000

Why do you feel this way? \_\_\_\_\_

★ Have you added on to your solar PV system since you moved into your house? *[Please check one response.]*

- ☐ Yes, we did *[Please specify]:*  
     \_\_\_\_\_ Number of kW you added  
     \_\_\_\_\_ Number of panels you added
- ☐ No, but we have thought about it
- ☐ No, we haven't considered it

To what extent do you agree with each of the following statements about utilities?  
*[Please circle one response for each statement.]*

	Strongly disagree	Disagree	Neutral/ unsure	Agree	Strongly agree
1. Electricity rates have come down since we purchased our house. . . . .	1	2	3	4	5
2. Power outages are a problem in the San Diego area . . . . .	1	2	3	4	5
3. We are pleased with the billing process for utilities . . . . .	1	2	3	4	5

To what extent do you agree with the following statements about solar PV and water heating systems?  
*[Please circle one response for each statement.]*

	Strongly disagree	Disagree	Neutral/ unsure	Agree	Strongly agree
1. Solar PV systems are a desirable innovation for new homes . . . . .	1	2	3	4	5
2. Solar water heating systems are a desirable innovation for new homes . . . . .	1	2	3	4	5
3. Solar PV systems are cost effective . . . . .	1	2	3	4	5
4. Solar water heating systems are cost effective . . . . .	1	2	3	4	5

Please indicate whether you own any of the following: *[Please check all that apply.]*

- ☐ Two refrigerators
- ☐ Ceiling fans
- ☐ A standalone freezer
- ☐ Dimmer switches for lights
- ☐ Compact florescent light bulbs (CFL)
- ☐ A hot tub
- ☐ A hot water flow regulator
- ☐ A pool
- ☐ Dual zone heating/air conditioning system

WE WONDER WHETHER YOU DO ANY OF THE FOLLOWING.

Please indicate the extent to which you agree or disagree with the following statements.

*[For each statement, please circle one response.]*

In our household . . .	Strongly disagree	Disagree	Neutral/ unsure	Agree	Strongly agree
1. We tend to be thrifty . . . . .	1	2	3	4	5
2. We regularly recycle paper, plastic, or cans . . . . .	1	2	3	4	5
3. In the winter months, we regularly set our thermostat to 70° F or lower . . . . .	1	2	3	4	5
4. In the summer months, we regularly set our thermostat to 75° F or higher. . . . .	1	2	3	4	5
5. When we are away, we modify our thermostat settings to save energy and utility costs . . . . .	1	2	3	4	5
6. We turn off the lights in our house when we are not using them . . . . .	1	2	3	4	5
7. We turn off computers when we leave the house . . . . .	1	2	3	4	5
8. We work to conserve water . . . . .	1	2	3	4	5
9. We are more energy conscious than we used to be . . . . .	1	2	3	4	5
10. In our new home, we use air conditioning less than we did in our previous home . . . . .	1	2	3	4	5
11. We drive fuel-efficient vehicles . . . . .	1	2	3	4	5
12. We practice xeriscaping . . . . .	1	2	3	4	5

WE WOULD LIKE TO KNOW YOUR VIEWS ON CERTAIN ENERGY POLICY QUESTIONS.

In your opinion, which of the following would be the best way to offer solar PV systems to buyers of new homes? *[Please check one response.]*

- ☐ Solar PV systems should be offered as a standard feature with the cost included in the price of the home.
- ☐ Solar PV systems should be offered as an optional feature with the cost added to the price of the home.
- ☐ Both choices should be available.
- ☐ Other *[Please specify]* \_\_\_\_\_
- ☐ Don't know

Why do you feel this way? \_\_\_\_\_

In your opinion, which of the following would be the best way to offer solar water heating systems to buyers of new homes? *[Please check one response.]*

- ☐ Solar water heating systems should be offered as a standard feature with the cost included in the price of the home.
- ☐ Solar water heating systems should be offered as an optional feature with the cost added to the price of the home.
- ☐ Both choices should be available.
- ☐ Other *[Please specify]* \_\_\_\_\_
- ☐ Don't know

To what extent do you favor or oppose the following proposals? *[Please circle one response for each item.]*

	<b>Strongly oppose</b>	<b>Oppose</b>	<b>Neutral/ unsure</b>	<b>Favor</b>	<b>Strongly favor</b>
1. Utility companies should give rebates to buyers of energy-efficient appliances . . . . .	1	2	3	4	5
2. Federal income tax credits should be given to buyers of energy-efficient homes . . . . .	1	2	3	4	5
3. New homes that are technically rated as very efficient should be given an EnergyStar label. . . . .	1	2	3	4	5
4. The California Energy Commission should give a rebate for purchasing a solar PV system. . . . .	1	2	3	4	5
5. The California Energy Commission should give a rebate for purchasing a solar water heater . . . . .	1	2	3	4	5
6. The federal government should support research on highly energy-efficient homes that produce all the energy they use . . . . .	1	2	3	4	5
7. Builders should build very energy-efficient homes if they cost less per month to own and operate than conventional homes. . . . .	1	2	3	4	5
8. Builders should build homes that cut energy bills if their appearance and comfort are superior to that of conventional housing. . . . .	1	2	3	4	5
9. A complete energy package (with efficiency and solar features) should be standard equipment in new homes today if cost effective . . . . .	1	2	3	4	5
10. Affordable housing developments should receive subsidies for installing solar PV systems . . . . .	1	2	3	4	5
11. Affordable housing developments should receive subsidies for installing solar water heaters . . . . .	1	2	3	4	5

Please indicate the extent to which you agree or disagree with the following statements.  
*[For each statement, please circle one response.]*

	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral/ unsure</b>	<b>Agree</b>	<b>Strongly agree</b>
In general . . .					
1. We have a serious responsibility to preserve the environment for future generations . . . . .	1	2	3	4	5
2. Many of the supposed threats to the environment have been greatly exaggerated . . . . .	1	2	3	4	5
3. Current federal regulations provide adequate protection for the environment . . . . .	1	2	3	4	5
4. Individuals need to take personal responsibility for protecting the environment . . . . .	1	2	3	4	5
5. Household energy consumption is not a major contributor to environmental problems . . . . .	1	2	3	4	5

PLEASE TELL US ABOUT YOURSELF AND YOUR HOUSEHOLD. *[If two people have completed the questionnaire together, please select one person as head of household for answering the questions in this section. Please check or fill in the appropriate response.]*

**Reminder: all information will be kept confidential.**

I am:

☐ Male ☐ Female

My age is:

- ☐ 24 years or younger  
☐ 25 to 39 years  
☐ 40 to 49 years  
☐ 50 to 64 years  
☐ 65 years or older

I am:

- ☐ Married/in a committed relationship  
☐ No longer married or never married

Which category best describes the composition of your household?

- ☐ One adult  
☐ Two adults  
☐ Two adults and children  
☐ One adult and children  
☐ Three or more adults  
☐ Three or more adults and children

In total, how many people live in your household?

\_\_\_\_\_

What is the primary occupation of the chief income provider in your household?

\_\_\_\_\_  
\_\_\_\_\_

Is anyone in your household an employee or contractor of SheaHomes?

☐ Yes ☐ No

Which category best describes your highest level of education?

- ☐ Elementary school through some high school  
☐ High school graduate or equivalent  
☐ Some college but no degree  
☐ Associate's degree  
☐ Trade or technical school certificate  
☐ Bachelor's degree  
☐ Some graduate work, but no degree  
☐ Master's degree  
☐ Work beyond the Master's but no additional degree  
☐ Doctoral degree (Ph.D., M.D., D.V.M., J.D., and others)

Which category best describes your annual household income before taxes?

- ☐ Less than \$50,000  
☐ \$50,000 to 99,999  
☐ \$100,000 to 149,999  
☐ \$150,000 to 199,999  
☐ \$200,000 to 249,999  
☐ \$250,000 or more

About how long do you plan to stay in your home?

\_\_\_\_\_ *[Please fill in the number of years]*

or ☐ Permanently  
or ☐ Don't know

What city and state did you move from?

- ☐ San Diego area  
☐ Other *[Please specify]* \_\_\_\_\_

Please indicate the extent to which you agree or disagree with the following statements.  
*[For each statement, please circle one response.]*

	Strongly disagree	Disagree	Neutral/ unsure	Agree	Strongly agree
1. I like to be as independent as possible so I don't have to rely on others to meet my needs . . . . .	1	2	3	4	5
2. I like to experiment with new ways of doing things . . . . .	1	2	3	4	5
3. I am seen as a leader in my work life, social life, or volunteer activities . . . . .	1	2	3	4	5
4. I tend to buy environmentally friendly products, even if they cost more . . . . .	1	2	3	4	5
5. I am willing to accept modifications to my lifestyle if it helps the environment . . . . .	1	2	3	4	5
6. I am intrigued with new technology . . . . .	1	2	3	4	5

PLEASE USE THIS SPACE FOR ANY FURTHER COMMENTS YOU MIGHT HAVE.

THANK YOU VERY MUCH FOR YOUR PARTICIPATION IN THIS STUDY!

*Please complete the Utility Release Form enclosed and seal it in the 'Utility Release Form' envelope. This will release SDG&E to supply data on your home's energy use and utility costs for the study. We will be comparing the energy use of various groups of homes. We will not identify who owns which homes and everyone's confidentiality will be maintained.*

*When you have completed your questionnaire, please fold it in half and place it in the 'Completed Questionnaire' envelope and seal it. Then put the sealed envelopes in the postage-paid, business reply envelope and drop it in the mail. Again, we appreciate your help with this study.*

FOR INFORMATION ABOUT THIS STUDY, PLEASE CONTACT:

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NREL/BR-550-33983-3  
 December 2003





## **Appendix D**

### **Questionnaire for SheaHomes Early Respondents: Household Questionnaire on Purchasing and Owning a Highly Energy-Efficient Home**

*Cited in Chapter 2*

PLEASE COMPLETE AND RETURN THIS QUESTIONNAIRE WITHIN 10 DAYS  
(Adult members of your household may wish to complete this questionnaire together.)

*Please Do Not Write Your Name on This Questionnaire*

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## **Household Questionnaire on Purchasing and Owning a Highly Energy-Efficient Home**

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THIS QUESTIONNAIRE ASKS ABOUT YOUR HOME PURCHASE DECISION AND YOUR EXPERIENCES WITH YOUR NEW HOME. RESIDENTIAL ENERGY IS ALSO A FOCUS OF THIS STUDY.

Are you the original owner of your home, or did you purchase your home from a previous owner?  
*[Please check one response.]*

- ☐ Original owner  
☐ Home purchased from previous owner

Is this the first home you have owned? *[Please check one response.]*

- ☐ Yes      ☐ No

Did you purchase a new home that had already been under contract, but had fallen out of escrow?  
*[Please check one response.]*

- ☐ Yes      ☐ No      ☐ Don't know

When you were looking for your new home, did you also visit existing resale housing?  
*[Please check one response.]*

- ☐ Yes      ☐ No

When you were looking for your new home, did you visit KB Home's Traviata development at Scripps Ranch? *[Please check one response.]*

- ☐ Yes      ☐ No      ☐ Don't remember

Would you say that the decision to purchase your new home was primarily made by one person or was it a joint decision? *[Please check one response.]*

- ☐ One person  
☐ Joint decision

On a scale of 1 to 10, how concerned were you about the electricity costs in San Diego at the time you purchased your home? *[Please circle one response.]*

<b>Not at all</b>										<b>Very</b>
<b>concerned</b>										<b>concerned</b>
1	2	3	4	5	6	7	8	9	10	

How important were each of the following features in your decision to purchase your new home?  
*[Please circle one response for each feature.]*

		Importance at time of purchase				
		Not at all important				Very important
Location	1. Closeness to work .....	1	2	3	4	5
	2. Freeway access .....	1	2	3	4	5
	3. Access to services, shopping, and entertainment .....	1	2	3	4	5
	4. Great view. ....	1	2	3	4	5
	5. Safe area/secure feeling .....	1	2	3	4	5
	6. Quality of schools .....	1	2	3	4	5
	7. Prior familiarity with area .....	1	2	3	4	5
	8. Closeness to friends/family members .....	1	2	3	4	5
	9. Closeness to parks/playgrounds .....	1	2	3	4	5
	10. Desirability of area .....	1	2	3	4	5
Financial	11. Overall home value (size and quality of home for the price) .....	1	2	3	4	5
	12. Investment potential .....	1	2	3	4	5
	13. No Mello Roos taxes .....	1	2	3	4	5
	14. A discount or other incentive .....	1	2	3	4	5
Builder	15. Reputation of builder .....	1	2	3	4	5
	16. Helpfulness and knowledge of sales staff .....	1	2	3	4	5
Community	17. Quality of neighborhood/community .....	1	2	3	4	5
	18. Exterior designs .....	1	2	3	4	5
	19. Feeling of community spirit .....	1	2	3	4	5
Energy	20. Availability of very energy-efficient home .....	1	2	3	4	5
	21. Availability of solar water heating .....	1	2	3	4	5
	22. The package of energy features taken together .....	1	2	3	4	5
Other	24. Other <i>[Please specify]</i> _____	1	2	3	4	5

Now, please go back over the list and write in below the **numbers** of the three features that were most important to you when you decided to purchase your home.

\_\_\_\_\_  
**Most important**

\_\_\_\_\_  
**Second most important**

\_\_\_\_\_  
**Third most important**

How important were each of the following home features when you made your purchase?  
*[Please circle one response for each item.]*

	Importance at time of purchase				
	Not at all important				Very important
1. Architectural design . . . . .	1	2	3	4	5
2. Size/square footage . . . . .	1	2	3	4	5
3. Floor plan/layout . . . . .	1	2	3	4	5
4. Number of bedrooms . . . . .	1	2	3	4	5
5. Three-car garage . . . . .	1	2	3	4	5
6. Granite countertops as a standard feature . . . . .	1	2	3	4	5
7. Large closets/pantries . . . . .	1	2	3	4	5
8. Single-story option . . . . .	1	2	3	4	5
9. Lot size/yard . . . . .	1	2	3	4	5
10. Quality of construction . . . . .	1	2	3	4	5
11. Spaciousness/openness . . . . .	1	2	3	4	5
12. Quality or sense of light . . . . .	1	2	3	4	5
13. Many amenities included as standard items . . . . .	1	2	3	4	5
14. Availability of many options . . . . .	1	2	3	4	5
15. Quiet area . . . . .	1	2	3	4	5
16. Other <i>[Please specify]</i> _____	1	2	3	4	5
17. Other <i>[Please specify]</i> _____	1	2	3	4	5

How did you **first** hear about SheaHomes' Scripps Highlands development? *[Please check one response.]*

- ☐ Drove by and saw flags, signs, or construction trailer
- ☐ Heard about it from friends, relatives, acquaintances
- ☐ Saw an ad in the newspaper
- ☐ Saw an article in the newspaper
- ☐ Saw it on the Internet
- ☐ From broadcast media coverage (e.g. TV, radio)
- ☐ Had previous experience with the builder
- ☐ Other *[Please specify]* \_\_\_\_\_

How satisfied were you with the performance of the SheaHomes staff in providing you with accurate and adequate information to assist you in your home purchase decision? *[Please circle one response.]*

<b>Not at all satisfied</b>										<b>Very satisfied</b>
1	2	3	4	5	6	7	8	9	10	

How satisfied were you with the performance of the SheaHomes staff in providing information on the energy efficiency and solar energy aspects of your home? *[Please circle one response.]*

<b>Not at all satisfied</b>										<b>Very satisfied</b>
1	2	3	4	5	6	7	8	9	10	

How satisfied were you with the performance of the SheaHomes staff in responding to problems and concerns after you moved in?

*[Please circle one response.]*

<b>Not at all satisfied</b>										<b>Very satisfied</b>	<b>No problems or concerns</b>
1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	

When you were looking for your new home, how well informed would you say you were about energy-efficiency and solar energy features? Would you say you were . . . *[Please circle one response.]*

<b>Not at all informed</b>										<b>Very informed</b>
1	2	3	4	5	6	7	8	9	10	

How well informed would you say you are now? *[Please circle one response.]*

<b>Not at all informed</b>										<b>Very informed</b>
1	2	3	4	5	6	7	8	9	10	

Please rate your satisfaction with each of the following now that you have lived in your home for a while. *[Please circle one response for each item.]*

	<b>Not at all satisfied</b>				<b>Very satisfied</b>
	1	2	3	4	5
1. Location . . . . .	1	2	3	4	5
2. Investment potential . . . . .	1	2	3	4	5
3. Reputation of builder . . . . .	1	2	3	4	5
4. Size/square footage . . . . .	1	2	3	4	5
5. Layout/floor plan . . . . .	1	2	3	4	5
6. Storage space . . . . .	1	2	3	4	5
7. Lot size/yard . . . . .	1	2	3	4	5
8. Quality of construction . . . . .	1	2	3	4	5
9. The package of energy features . . . . .	1	2	3	4	5
10. Number of thermostats . . . . .	1	2	3	4	5

How would you rate the overall comfort of your home? *[Please circle one response.]*

<b>Not at all comfortable</b>									<b>Very comfortable</b>
1	2	3	4	5	6	7	8	9	10

Overall, how energy efficient do you believe your new home to be? *[Please circle one response.]*

<b>Not at all energy efficient</b>									<b>Very energy efficient</b>
1	2	3	4	5	6	7	8	9	10

Have you ever bragged about your home's energy features to friends and acquaintances or shown them to visitors to your home? *[Please check one response for each item.]*

We've bragged about our . . .

	<b>Yes</b>	<b>No</b>	<b>Don't remember</b>	<b>Don't have</b>
1. Low-e glass in windows . . . . .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Solar water heating . . . . .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Home's comfort . . . . .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Lower utility bills . . . . .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Other <i>[Please specify]</i> _____				

Approximately what was your household's average monthly utility bill at your prior residence?  
*[Please fill in estimated dollar amount and square footage.]*

\$\_\_\_\_\_ per month for a \_\_\_\_\_ square-foot residence    ☐ Don't know

Approximately what is your household's average monthly utility bill **now**?  
*[Please fill in estimated dollar amount.]*

\$\_\_\_\_\_ per month    ☐ Don't know

To what extent do you agree with each of the following statements?  
*[Please circle one response for each statement.]*

	Strongly disagree	Disagree	Neutral/ unsure	Agree	Strongly agree
1. Our utility bills are lower than they would have been without our solar water heating system . . . . .	1	2	3	4	5
2. The savings on our utility bills have met or exceeded our expectations . . . . .	1	2	3	4	5
3. We would buy our same house again if we had it to do over. . . . .	1	2	3	4	5
4. If we buy another new home, it will be a very energy-efficient home . . . . .	1	2	3	4	5
5. If we buy another new home, it will have solar water heating. . . . .	1	2	3	4	5
6. If we buy another new home, it will have solar PV*. . . . .	1	2	3	4	5

What three or four things do you like best about your new home? \_\_\_\_\_

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Is there anything you are unhappy about? What do you like least? \_\_\_\_\_

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Which of the following statements best describes the situation regarding the availability of a solar PV system at your house? *[Please check any statement that applies.]*

- ☐ We were told a solar PV system could not be installed on our house for technical reasons
- ☐ We bought a house before solar water heating and solar PV systems were available
- ☐ We purchased a house that fell out of escrow and the construction schedule prevented us from exercising the solar PV system option
- ☐ Other *[Please specify]* \_\_\_\_\_

\* Solar PV refers to solar electric (photovoltaic, or PV) systems that produce electricity directly from sunlight. The electricity is used in the home and any extra is sent to the utility grid.



If it had been available as an option when you bought your home, what is the most you would have been willing to pay for a solar PV system that could replace 50% to 70% of your electricity requirements (depending on the way your household uses electricity). *[Please check one response.]*

- ☐ Nothing more
- ☐ Less than \$4,999
- ☐ Between \$5,000 and 6,999
- ☐ Between \$7,000 and 8,999
- ☐ Between \$9,000 and 10,999
- ☐ More than \$11,000

Why do you feel this way? \_\_\_\_\_

Have you added a solar PV system since you moved into your house? *[Please check one response.]*

- ☐ Yes, we did *[Please specify]*:  
     \_\_\_\_\_ Number of kW you added  
     \_\_\_\_\_ Number of panels you added
- ☐ No, but we have thought about it
- ☐ No, we haven't considered it

To what extent do you agree with each of the following statements about utilities?  
*[Please circle one response for each statement.]*

	Strongly disagree	Disagree	Neutral/ unsure	Agree	Strongly agree
1. Electricity rates have come down since we purchased our house. ....	1	2	3	4	5
2. Power outages are a problem in the San Diego area .....	1	2	3	4	5
3. We are pleased with the billing process for utilities. ....	1	2	3	4	5

To what extent do you agree with the following statements about solar PV and water heating systems?  
*[Please circle one response for each statement.]*

	Strongly disagree	Disagree	Neutral/ unsure	Agree	Strongly agree
1. Solar PV systems are a desirable innovation for new homes .....	1	2	3	4	5
2. Solar water heating systems are a desirable innovation for new homes. ....	1	2	3	4	5
3. Solar PV systems are cost effective .....	1	2	3	4	5
4. Solar water heating systems are cost effective .....	1	2	3	4	5

Please indicate whether you own any of the following: *[Please check all that apply.]*

- ☐ Two refrigerators
- ☐ Ceiling fans
- ☐ A standalone freezer
- ☐ Dimmer switches for lights
- ☐ Compact florescent light bulbs (CFL)
- ☐ A hot tub
- ☐ A hot water flow regulator
- ☐ A pool
- ☐ Dual zone heating/air conditioning system
- ☐ Solar water heating system

WE WONDER WHETHER YOU DO ANY OF THE FOLLOWING.

Please indicate the extent to which you agree or disagree with the following statements.

*[For each statement, please circle one response.]*

In our household . . .	Strongly disagree	Disagree	Neutral/ unsure	Agree	Strongly agree
1. We tend to be thrifty . . . . .	1	2	3	4	5
2. We regularly recycle paper, plastic, or cans . . . . .	1	2	3	4	5
3. In the winter months, we regularly set our thermostat to 70° F or lower . . . . .	1	2	3	4	5
4. In the summer months, we regularly set our thermostat to 75° F or higher. . . . .	1	2	3	4	5
5. When we are away, we modify our thermostat settings to save energy and utility costs . . . . .	1	2	3	4	5
6. We turn off the lights in our house when we are not using them . . . . .	1	2	3	4	5
7. We turn off computers when we leave the house . . . . .	1	2	3	4	5
8. We work to conserve water . . . . .	1	2	3	4	5
9. We are more energy conscious than we used to be . . . . .	1	2	3	4	5
10. In our new home, we use air conditioning less than we did in our previous home . . . . .	1	2	3	4	5
11. We drive fuel-efficient vehicles . . . . .	1	2	3	4	5
12. We practice xeriscaping . . . . .	1	2	3	4	5

WE WOULD LIKE TO KNOW YOUR VIEWS ON CERTAIN ENERGY POLICY QUESTIONS.

In your opinion, which of the following would be the best way to offer solar PV systems to buyers of new homes? *[Please check one response.]*

- ☐ Solar PV systems should be offered as a standard feature with the cost included in the price of the home.
- ☐ Solar PV systems should be offered as an optional feature with the cost added to the price of the home.
- ☐ Both choices should be available.
- ☐ Other *[Please specify]* \_\_\_\_\_
- ☐ Don't know

Why do you feel this way? \_\_\_\_\_

In your opinion, which of the following would be the best way to offer solar water heating systems to buyers of new homes? *[Please check one response.]*

- ☐ Solar water heating systems should be offered as a standard feature with the cost included in the price of the home.
- ☐ Solar water heating systems should be offered as an optional feature with the cost added to the price of the home.
- ☐ Both choices should be available.
- ☐ Other *[Please specify]* \_\_\_\_\_
- ☐ Don't know

To what extent do you favor or oppose the following proposals? *[Please circle one response for each item.]*

	<b>Strongly oppose</b>	<b>Oppose</b>	<b>Neutral/ unsure</b>	<b>Favor</b>	<b>Strongly favor</b>
1. Utility companies should give rebates to buyers of energy-efficient appliances . . . . .	1	2	3	4	5
2. Federal income tax credits should be given to buyers of energy-efficient homes . . . . .	1	2	3	4	5
3. New homes that are technically rated as very efficient should be given an EnergyStar label. . . . .	1	2	3	4	5
4. The California Energy Commission should give a rebate for purchasing a solar PV system. . . . .	1	2	3	4	5
5. The California Energy Commission should give a rebate for purchasing a solar water heater . . . . .	1	2	3	4	5
6. The federal government should support research on highly energy-efficient homes that produce all the energy they use . . . . .	1	2	3	4	5
7. Builders should build very energy-efficient homes if they cost less per month to own and operate than conventional homes. . . . .	1	2	3	4	5
8. Builders should build homes that cut energy bills if their appearance and comfort are superior to that of conventional housing. . . . .	1	2	3	4	5
9. A complete energy package (with efficiency and solar features) should be standard equipment in new homes today if cost effective . . . . .	1	2	3	4	5
10. Affordable housing developments should receive subsidies for installing solar PV systems . . . . .	1	2	3	4	5
11. Affordable housing developments should receive subsidies for installing solar water heaters . . . . .	1	2	3	4	5

Please indicate the extent to which you agree or disagree with the following statements.  
*[For each statement, please circle one response.]*

<b>In general . . .</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral/ unsure</b>	<b>Agree</b>	<b>Strongly agree</b>
1. We have a serious responsibility to preserve the environment for future generations . . . . .	1	2	3	4	5
2. Many of the supposed threats to the environment have been greatly exaggerated . . . . .	1	2	3	4	5
3. Current federal regulations provide adequate protection for the environment . . . . .	1	2	3	4	5
4. Individuals need to take personal responsibility for protecting the environment . . . . .	1	2	3	4	5
5. Household energy consumption is not a major contributor to environmental problems . . . . .	1	2	3	4	5

PLEASE TELL US ABOUT YOURSELF AND YOUR HOUSEHOLD. *[If two people have completed the questionnaire together, please select one person as head of household for answering the questions in this section. Please check or fill in the appropriate response.]*

**Reminder: all information will be kept confidential.**

I am:

☐ Male ☐ Female

My age is:

- ☐ 24 years or younger
- ☐ 25 to 39 years
- ☐ 40 to 49 years
- ☐ 50 to 64 years
- ☐ 65 years or older

I am:

- ☐ Married/in a committed relationship
- ☐ No longer married or never married

Which category best describes the composition of your household?

- ☐ One adult
- ☐ Two adults
- ☐ Two adults and children
- ☐ One adult and children
- ☐ Three or more adults
- ☐ Three or more adults and children

In total, how many people live in your household?

\_\_\_\_\_

What is the primary occupation of the chief income provider in your household?

\_\_\_\_\_  
\_\_\_\_\_

Is anyone in your household an employee or contractor of SheaHomes?

☐ Yes ☐ No

Which category best describes your highest level of education?

- ☐ Elementary school through some high school
- ☐ High school graduate or equivalent
- ☐ Some college but no degree
- ☐ Associate's degree
- ☐ Trade or technical school certificate
- ☐ Bachelor's degree
- ☐ Some graduate work, but no degree
- ☐ Master's degree
- ☐ Work beyond the Master's but no additional degree
- ☐ Doctoral degree (Ph.D., M.D., D.V.M., J.D., and others)

Which category best describes your annual household income before taxes?

- ☐ Less than \$50,000
- ☐ \$50,000 to 99,999
- ☐ \$100,000 to 149,999
- ☐ \$150,000 to 199,999
- ☐ \$200,000 to 249,999
- ☐ \$250,000 or more

About how long do you plan to stay in your home?

\_\_\_\_\_ *[Please fill in the number of years]*

- or ☐ Permanently  
or ☐ Don't know

What city and state did you move from?

- ☐ San Diego area
- ☐ Other *[Please specify]* \_\_\_\_\_

Please indicate the extent to which you agree or disagree with the following statements.  
*[For each statement, please circle one response.]*

	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral/ unsure</b>	<b>Agree</b>	<b>Strongly agree</b>
1. I like to be as independent as possible so I don't have to rely on others to meet my needs . . . . .	1	2	3	4	5
2. I like to experiment with new ways of doing things . . . . .	1	2	3	4	5
3. I am seen as a leader in my work life, social life, or volunteer activities . . . . .	1	2	3	4	5
4. I tend to buy environmentally friendly products, even if they cost more . . . . .	1	2	3	4	5
5. I am willing to accept modifications to my lifestyle if it helps the environment . . . . .	1	2	3	4	5
6. I am intrigued with new technology . . . . .	1	2	3	4	5

PLEASE USE THIS SPACE FOR ANY FURTHER COMMENTS YOU MIGHT HAVE.

THANK YOU VERY MUCH FOR YOUR PARTICIPATION IN THIS STUDY!

*Please complete the Utility Release Form enclosed and seal it in the 'Utility Release Form' envelope. This will release SDG&E to supply data on your home's energy use and utility costs for the study. We will be comparing the energy use of various groups of homes. We will not identify who owns which homes and everyone's confidentiality will be maintained.*

*When you have completed your questionnaire, please fold it in half and place it in the 'Completed Questionnaire' envelope and seal it. Then put the sealed envelopes in the postage-paid, business reply envelope and drop it in the mail. Again, we appreciate your help with this study.*

FOR INFORMATION ABOUT THIS STUDY, PLEASE CONTACT:

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December 2003



## **Appendix E**

### **Questionnaire for Comparison Respondents: Household Questionnaire on Purchasing and Owning a Recently Built Home**

*Cited in Chapter 2*



PLEASE COMPLETE AND RETURN THIS QUESTIONNAIRE WITHIN 10 DAYS  
(Adult members of your household may wish to complete this questionnaire together.)

*Please Do Not Write Your Name on This Questionnaire*

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## **Household Questionnaire on Purchasing and Owning a Recently Built Home**

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THIS QUESTIONNAIRE ASKS ABOUT YOUR HOME PURCHASE DECISION AND YOUR EXPERIENCES WITH YOUR NEW HOME. RESIDENTIAL ENERGY IS ALSO A FOCUS OF THIS STUDY.

Are you the original owner of your home, or did you purchase your home from a previous owner?  
*[Please check one response.]*

- ☐ Original owner  
☐ Home purchased from previous owner

Is this the first home you have owned? *[Please check one response.]*

- ☐ Yes      ☐ No

Did you purchase a new home that had already been under contract, but had fallen out of escrow?  
*[Please check one response.]*

- ☐ Yes      ☐ No      ☐ Don't know

When you were looking for your new home, did you also visit existing resale housing?  
*[Please check one response.]*

- ☐ Yes      ☐ No

When you were looking for your new home, did you visit SheaHomes' San Angelo or Tiempo developments at Scripps Ranch? *[Please check one response.]*

- ☐ Yes      ☐ No      ☐ Don't remember

Would you say that the decision to purchase your new home was primarily made by one person or was it a joint decision? *[Please check one response.]*

- ☐ One person  
☐ Joint decision

On a scale of 1 to 10, how concerned were you about the electricity costs in San Diego at the time you purchased your home? *[Please circle one response.]*

<b>Not at all</b>										<b>Very</b>
<b>concerned</b>										<b>concerned</b>
1	2	3	4	5	6	7	8	9	10	

How important were each of the following features in your decision to purchase your new home?  
*[Please circle one response for each feature.]*

		Importance at time of purchase				
		Not at all important				Very important
Location	1. Closeness to work . . . . .	1	2	3	4	5
	2. Freeway access . . . . .	1	2	3	4	5
	3. Access to services, shopping, and entertainment . . . . .	1	2	3	4	5
	4. Great view. . . . .	1	2	3	4	5
	5. Safe area/secure feeling . . . . .	1	2	3	4	5
	6. Quality of schools . . . . .	1	2	3	4	5
	7. Prior familiarity with area . . . . .	1	2	3	4	5
	8. Closeness to friends/family members. . . . .	1	2	3	4	5
	9. Closeness to parks/playgrounds. . . . .	1	2	3	4	5
	10. Desirability of area . . . . .	1	2	3	4	5
Financial	11. Overall home value (size and quality of home for the price) . . . . .	1	2	3	4	5
	12. Investment potential . . . . .	1	2	3	4	5
	13. No Mello Roos taxes. . . . .	1	2	3	4	5
	14. A discount or other incentive. . . . .	1	2	3	4	5
Builder	15. Reputation of builder. . . . .	1	2	3	4	5
	16. Helpfulness and knowledge of sales staff. . . . .	1	2	3	4	5
Community	17. Quality of neighborhood/community . . . . .	1	2	3	4	5
	18. Exterior designs . . . . .	1	2	3	4	5
	19. Feeling of community spirit . . . . .	1	2	3	4	5
Energy	20. Energy use of the home . . . . .	1	2	3	4	5
Other	24. Other <i>[Please specify]</i> _____	1	2	3	4	5

Now, please go back over the list and write in below the **numbers** of the three features that were most important to you when you decided to purchase your home.

\_\_\_\_\_  
**Most important**

\_\_\_\_\_  
**Second most important**

\_\_\_\_\_  
**Third most important**

How important were each of the following home features when you made your purchase?  
*[Please circle one response for each item.]*

	Importance at time of purchase				
	Not at all important				Very important
1. Architectural design . . . . .	1	2	3	4	5
2. Size/square footage . . . . .	1	2	3	4	5
3. Floor plan/layout . . . . .	1	2	3	4	5
4. Number of bedrooms . . . . .	1	2	3	4	5
5. Three-car garage . . . . .	1	2	3	4	5
6. Granite countertops as a standard feature . . . . .	1	2	3	4	5
7. Large closets/pantries . . . . .	1	2	3	4	5
8. Single-story option . . . . .	1	2	3	4	5
9. Lot size/yard . . . . .	1	2	3	4	5
10. Quality of construction . . . . .	1	2	3	4	5
11. Spaciousness/openness. . . . .	1	2	3	4	5
12. Quality or sense of light . . . . .	1	2	3	4	5
13. Many amenities included as standard items. . . . .	1	2	3	4	5
14. Availability of many options . . . . .	1	2	3	4	5
15. Quiet area. . . . .	1	2	3	4	5
16. Other <i>[Please specify]</i> _____	1	2	3	4	5
17. Other <i>[Please specify]</i> _____	1	2	3	4	5

How did you **first** hear about KB Home's Traviata development? *[Please check one response.]*

- ☐ Drove by and saw flags, signs, or construction trailer
- ☐ Heard about it from friends, relatives, acquaintances
- ☐ Saw an ad in the newspaper
- ☐ Saw an article in the newspaper
- ☐ Saw it on the Internet
- ☐ From broadcast media coverage (e.g. TV, radio)
- ☐ Had previous experience with the builder
- ☐ Other *[Please specify]* \_\_\_\_\_

How satisfied were you with the performance of the KB Home staff in providing you with accurate and adequate information to assist you in your home purchase decision? *[Please circle one response.]*

<b>Not at all satisfied</b>										<b>Very satisfied</b>
1	2	3	4	5	6	7	8	9	10	

How satisfied were you with the performance of the KB Home staff in responding to problems and concerns after you moved in? *[Please circle one response.]*

<b>Not at all satisfied</b>									<b>Very satisfied</b>	<b>No problems or concerns</b>
1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>

When you were looking for your new home, how well informed would you say you were about energy-efficiency and solar energy features? Would you say you were . . . *[Please circle one response.]*

<b>Not at all informed</b>										<b>Very informed</b>
1	2	3	4	5	6	7	8	9	10	

At the time you were looking for a new home, were you aware that, in your price range and location, highly energy-efficient homes were available that featured solar electric (photovoltaic or PV) systems as well as solar water heating? *[Please check one response.]*

- ☐ Yes, I was aware
- ☐ No, I don't think so

Why did you choose not to buy one of these homes? \_\_\_\_\_

Please rate your satisfaction with each of the following now that you have lived in your home for a while. *[Please circle one response for each item.]*

	<b>Not at all satisfied</b>				<b>Very satisfied</b>
1. Location . . . . .	1	2	3	4	5
2. Investment potential . . . . .	1	2	3	4	5
3. Reputation of builder . . . . .	1	2	3	4	5
4. Size/square footage . . . . .	1	2	3	4	5
5. Layout/floor plan . . . . .	1	2	3	4	5
6. Storage space . . . . .	1	2	3	4	5
7. Lot size/yard . . . . .	1	2	3	4	5
8. Quality of construction . . . . .	1	2	3	4	5
9. Number of thermostats . . . . .	1	2	3	4	5

How would you rate the overall comfort of your home? *[Please circle one response.]*

<b>Not at all comfortable</b>									<b>Very comfortable</b>
1	2	3	4	5	6	7	8	9	10

Overall, how energy efficient do you believe your new home to be? *[Please circle one response.]*

<b>Not at all energy efficient</b>									<b>Very energy efficient</b>
1	2	3	4	5	6	7	8	9	10

Approximately what was your household's average monthly utility bill at your prior residence? *[Please fill in estimated dollar amount and square footage.]*

\$\_\_\_\_\_ per month for a \_\_\_\_\_ square-foot residence ☐ Don't know

Approximately what is your household's average monthly utility bill **now**? *[Please fill in estimated dollar amount.]*

\$\_\_\_\_\_ per month ☐ Don't know

To what extent do you agree with each of the following statements?

*[Please circle one response for each statement.]*

	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral/ unsure</b>	<b>Agree</b>	<b>Strongly agree</b>
1. We would buy our same house again if we had it to do over. ....	1	2	3	4	5
2. If we buy another new home, it will be a very energy-efficient home .....	1	2	3	4	5
3. If we buy another new home, it will have solar water heating. ....	1	2	3	4	5
4. If we buy another new home, it will have solar PV* to produce electricity .....	1	2	3	4	5

What three or four things do you like best about your new home? \_\_\_\_\_

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Is there anything you are unhappy about? What do you like least? \_\_\_\_\_

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To what extent do you agree with each of the following statements about utilities?

*[Please circle one response for each statement.]*

	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral/ unsure</b>	<b>Agree</b>	<b>Strongly agree</b>
1. Electricity rates have come down since we purchased our house. ....	1	2	3	4	5
2. Power outages are a problem in the San Diego area .....	1	2	3	4	5
3. We are pleased with the billing process for utilities .....	1	2	3	4	5

To what extent do you agree with the following statements about solar PV and water heating systems?

*[Please circle one response for each statement.]*

	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral/ unsure</b>	<b>Agree</b>	<b>Strongly agree</b>
1. Solar PV systems are a desirable innovation for new homes .....	1	2	3	4	5
2. Solar water heating systems are a desirable innovation for new homes .....	1	2	3	4	5
3. Solar PV systems are cost effective .....	1	2	3	4	5
4. Solar water heating systems are cost effective .....	1	2	3	4	5

\* Solar PV refers to solar electric (photovoltaic, or PV) systems that produce electricity directly from sunlight. The electricity is used in the home and any extra is sent to the utility grid.

If it had been available as an option when you bought your home, what is the most you would have been willing to pay for a solar PV system that could replace 50% to 70% of your electricity requirements (depending on the way your household uses electricity).

- ☐ Nothing more
- ☐ Less than \$4,999
- ☐ Between \$5,000 and 6,999
- ☐ Between \$7,000 and 8,999
- ☐ Between \$9,000 and 10,999
- ☐ More than \$11,000

Why do you feel this way? \_\_\_\_\_

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Please indicate whether you own any of the following: *[Please check all that apply.]*

- ☐ Two refrigerators
- ☐ Ceiling fans
- ☐ A standalone freezer
- ☐ Dimmer switches for lights
- ☐ Compact florescent light bulbs (CFL)
- ☐ A hot tub
- ☐ A hot water flow regulator
- ☐ A pool
- ☐ Dual zone heating/air conditioning system

WE WONDER WHETHER YOU DO ANY OF THE FOLLOWING.

Please indicate the extent to which you agree or disagree with the following statements.  
*[For each statement, please circle one response.]*

In our household . . .	Strongly disagree	Disagree	Neutral/ unsure	Agree	Strongly agree
1. We tend to be thrifty . . . . .	1	2	3	4	5
2. We regularly recycle paper, plastic, or cans . . . . .	1	2	3	4	5
3. In the winter months, we regularly set our thermostat to 70° F or lower . . . . .	1	2	3	4	5
4. In the summer months, we regularly set our thermostat to 75° F or higher. . . . .	1	2	3	4	5
5. When we are away, we modify our thermostat settings to save energy and utility costs . . . . .	1	2	3	4	5
6. We turn off the lights in our house when we are not using them . . . . .	1	2	3	4	5
7. We turn off computers when we leave the house . . . . .	1	2	3	4	5
8. We work to conserve water . . . . .	1	2	3	4	5
9. We are more energy conscious than we used to be . . . . .	1	2	3	4	5
10. In our new home, we use air conditioning less than we did in our previous home . . . . .	1	2	3	4	5
11. We drive fuel-efficient vehicles . . . . .	1	2	3	4	5
12. We practice xeriscaping . . . . .	1	2	3	4	5



WE WOULD LIKE TO KNOW YOUR VIEWS ON CERTAIN ENERGY POLICY QUESTIONS.

In your opinion, which of the following would be the best way to offer solar PV systems to buyers of new homes? *[Please check one response.]*

- ☐ Solar PV systems should be offered as a standard feature with the cost included in the price of the home.
- ☐ Solar PV systems should be offered as an optional feature with the cost added to the price of the home.
- ☐ Both choices should be available.
- ☐ Other *[Please specify]* \_\_\_\_\_
- ☐ Don't know

Why do you feel this way? \_\_\_\_\_

In your opinion, which of the following would be the best way to offer solar water heating systems to buyers of new homes? *[Please check one response.]*

- ☐ Solar water heating systems should be offered as a standard feature with the cost included in the price of the home.
- ☐ Solar water heating systems should be offered as an optional feature with the cost added to the price of the home.
- ☐ Both choices should be available.
- ☐ Other *[Please specify]* \_\_\_\_\_
- ☐ Don't know

To what extent do you favor or oppose the following proposals? *[Please circle one response for each item.]*

	Strongly oppose	Oppose	Neutral/ unsure	Favor	Strongly favor
1. Utility companies should give rebates to buyers of energy-efficient appliances . . . . .	1	2	3	4	5
2. Federal income tax credits should be given to buyers of energy-efficient homes . . . . .	1	2	3	4	5
3. New homes that are technically rated as very efficient should be given an EnergyStar label. . . . .	1	2	3	4	5
4. The California Energy Commission should give a rebate for purchasing a solar PV system. . . . .	1	2	3	4	5
5. The California Energy Commission should give a rebate for purchasing a solar water heater . . . . .	1	2	3	4	5
6. The federal government should support research on highly energy-efficient homes that produce all the energy they use . . . . .	1	2	3	4	5
7. Builders should build very energy-efficient homes if they cost less per month to own and operate than conventional homes. . . . .	1	2	3	4	5
8. Builders should build homes that cut energy bills if their appearance and comfort are superior to that of conventional housing. . . . .	1	2	3	4	5
9. A complete energy package (with efficiency and solar features) should be standard equipment in new homes today if cost effective . . . . .	1	2	3	4	5
10. Affordable housing developments should receive subsidies for installing solar PV systems . . . . .	1	2	3	4	5
11. Affordable housing developments should receive subsidies for installing solar water heaters . . . . .	1	2	3	4	5

Please indicate the extent to which you agree or disagree with the following statements.

[For each statement, please circle one response].

In general . . .	Strongly disagree	Disagree	Neutral/ unsure	Agree	Strongly agree
1. We have a serious responsibility to preserve the environment for future generations . . . . .	1	2	3	4	5
2. Many of the supposed threats to the environment have been greatly exaggerated . . . . .	1	2	3	4	5
3. Current federal regulations provide adequate protection for the environment . . . . .	1	2	3	4	5
4. Individuals need to take personal responsibility for protecting the environment . . . . .	1	2	3	4	5
5. Household energy consumption is not a major contributor to environmental problems . . . . .	1	2	3	4	5

PLEASE TELL US ABOUT YOURSELF AND YOUR HOUSEHOLD. [If two people have completed the questionnaire together, please select one person as head of household for answering the questions in this section. Please check or fill in the appropriate response.] **Reminder: all information will be kept confidential.**

I am:

☐ Male ☐ Female

My age is:

- ☐ 24 years or younger
- ☐ 25 to 39 years
- ☐ 40 to 49 years
- ☐ 50 to 64 years
- ☐ 65 years or older

I am:

- ☐ Married/in a committed relationship
- ☐ No longer married or never married

Which category best describes the composition of your household?

- ☐ One adult
- ☐ Two adults
- ☐ Two adults and children
- ☐ One adult and children
- ☐ Three or more adults
- ☐ Three or more adults and children

In total, how many people live in your household?

\_\_\_\_\_

What is the primary occupation of the chief income provider in your household?

\_\_\_\_\_

Is anyone in your household an employee or contractor of KB Home?

☐ Yes ☐ No

Which category best describes your highest level of education?

- ☐ Elementary school through some high school
- ☐ High school graduate or equivalent
- ☐ Some college but no degree
- ☐ Associate's degree
- ☐ Trade or technical school certificate
- ☐ Bachelor's degree
- ☐ Some graduate work, but no degree
- ☐ Master's degree
- ☐ Work beyond the Master's but no additional degree
- ☐ Doctoral degree (Ph.D., M.D., D.V.M., J.D., and others)

Which category best describes your annual household income before taxes?

- ☐ Less than \$50,000
- ☐ \$50,000 to 99,999
- ☐ \$100,000 to 149,999
- ☐ \$150,000 to 199,999
- ☐ \$200,000 to 249,999
- ☐ \$250,000 or more

About how long do you plan to stay in your home?

\_\_\_\_\_ [Please fill in the number of years]

- or ☐ Permanently
- or ☐ Don't know

What city and state did you move from?

- ☐ San Diego area
- ☐ Other [Please specify] \_\_\_\_\_

Please indicate the extent to which you agree or disagree with the following statements.  
*[For each statement, please circle one response.]*

	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral/ unsure</b>	<b>Agree</b>	<b>Strongly agree</b>
1. I like to be as independent as possible so I don't have to rely on others to meet my needs . . . . .	1	2	3	4	5
2. I like to experiment with new ways of doing things . . . . .	1	2	3	4	5
3. I am seen as a leader in my work life, social life, or volunteer activities . . . . .	1	2	3	4	5
4. I tend to buy environmentally friendly products, even if they cost more . . . . .	1	2	3	4	5
5. I am willing to accept modifications to my lifestyle if it helps the environment . . . . .	1	2	3	4	5
6. I am intrigued with new technology . . . . .	1	2	3	4	5

PLEASE USE THIS SPACE FOR ANY FURTHER COMMENTS YOU MIGHT HAVE.

**THANK YOU VERY MUCH FOR YOUR PARTICIPATION IN THIS STUDY!**

*Please complete the Utility Release Form enclosed and seal it in the 'Utility Release Form' envelope. This will release SDG&E to supply data on your home's energy use and utility costs for the study. We will be comparing the energy use of various groups of homes. We will not identify who owns which homes and everyone's confidentiality will be maintained.*

*When you have completed your questionnaire, please fold it in half and place it in the 'Completed Questionnaire' envelope and seal it. Then put the sealed envelopes in the postage-paid, business reply envelope and drop it in the mail. Again, we appreciate your help with this study.*

FOR INFORMATION ABOUT THIS STUDY, PLEASE CONTACT:

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## **Appendix F**

### **Base n's, Means, Standard Deviations, and Coefficients of Variation for Scaled Responses**

*Cited in Chapter 6*

## **Appendix F. Base n's, Means, Standard Deviations, and Coefficients of Variation**

### **Descriptive Statistics**

This appendix presents descriptive statistics on the responses to all scaled questions contained in the questionnaires. For each question (or variable), Appendix F presents the number of respondents, an average rating (average score assigned by all respondents), the standard deviation of all responses, and the coefficient of variation (CV) relating the standard deviation (variation in ratings or scores) to the corresponding average value.

The CV, stated in percent, is an index ranging in size from 0 to 100 that indicates the variability in a specific set of responses above and beyond the average response value. High CV values indicate excessive variation. Note, however, that because the survey responses constitute ordinal measurements (where a high average value is considered “good” and a low averaged value is considered “bad”), the CV can only be regarded as a relative measure, and care must be exercised when comparing different CV values.

This appendix contains several tables that present descriptive statistics on the responses to scaled questions or items included in the homeowner questionnaires. A total of 149 such items, representing several broad topical areas (such as homeowner satisfaction with the new home), are encompassed by these tables. Each table gives the number of responses (generally, all homeowners combined) to each of the items in question, along with the associated mean rating (the average score assigned by all respondents), the standard deviation of all responses, and the coefficient of variation (CV). The CV is computed by taking the ratio of the standard deviation to the mean and multiplying by 100. Hence, its values range from 0 to 100 (or more), stated in percent. Because of the way it is computed, the CV carries information about both the mean (center value) and the standard deviation (spread or dispersion), expressing the variability in responses above and beyond the average response. The CV can be an extremely useful tool for comparing the variation among items since it is reported only in terms of percent and is not dependent on the particular scale of each item. However, care must be exercised when interpreting the CV of each item outright, since the scales are discrete ordinal measurements.

The CV values reported here suggest that responses to the individual scaled questions or items in the homeowner surveys are low to moderately high. CV values close to 0 are desired, whereas the ones reported here range from about 12% to about 44%. The following table shows the percentage distribution of CV values reported for all 149 items.

**Table F-1. Percentage Distribution of CV Values Associated with Questionnaire Items Reported on Likert Scales**

Size Interval for CV Values	Number of Occurrences	Percent of Occurrences
<10	0	—
10.1–15	9	6.0
15.1–20	35	23.5
20.1–25	31	20.8
25.1–30	35	23.5
30.1–35	19	12.8
35.1–40	14	9.4
>40	5	3.4
Total	149	100*

\*Does not add to 100 because of rounding.

The six items with the lowest CV values are:

- Importance of safe and secure feeling (11.96)
- Satisfaction with home's location (12.18)
- Satisfaction with investment potential of home (12.54)
- Purchase decision: quality of neighborhood/community (13.17)
- NEP: preserve environment for future generations (13.80)
- Purchase decision: overall home value (14.07)

Interestingly, these items also have some of the highest mean values (on 1-5 scales) among those reported. The high mean values suggest these items are among those having greatest practical significance for homeowners. The corresponding low CV values suggest that homeowners are fairly consistent in their responses to these items.

The six items with the highest CV values are:

- Informed about energy efficiency and solar energy when looking for home (43.66)
- Concern about San Diego's electricity costs (43.11)
- Utilities: electric rates have come down since we moved in (42.69)
- PV barrier: thought it would negatively affect resale value (40.10)
- PV barrier: didn't know where it would go on the roof (40.00)
- PV barrier: energy is not that important (39.44)

The relatively high CV values associated with these items suggests homeowners are rather uncertain about them. Interestingly, all of the items reflect the absence of information or knowledge to a certain degree.

**Table F-2. Descriptive Statistics on Items Pertaining to the Importance of the Factor in the Home Purchase Decision**

<b>Item</b>	<b>Base n<sup>1</sup></b>	<b>Mean<sup>2</sup></b>	<b>Standard Deviation</b>	<b>Coefficient of Variation<sup>3</sup></b>
Purchase decision: close to work	225	3.97	1.040	26.20
Purchase decision: near to freeway	226	4.06	0.917	22.59
Purchase decision: near services	226	3.97	0.819	20.63
Purchase decision: great view	224	3.70	1.180	31.89
Purchase decision: safe and secure feeling	226	4.69	0.561	11.96
Purchase decision: quality of schools	226	4.05	1.250	30.86
Purchase decision: knows area	225	3.75	1.070	28.53
Purchase decision: close to friends	223	3.25	1.250	38.46
Purchase decision: close to parks/playgrounds	223	3.09	1.110	35.92
Purchase decision: desirable area	225	4.39	0.706	16.08
Purchase decision: overall home value	223	4.52	0.636	14.07
Purchase decision: investment potential	225	4.35	0.777	17.86
Purchase decision: mello roos taxes	226	4.49	0.807	17.97
Purchase decision: discount or incentive	217	3.39	1.210	35.69
Purchase decision: builder reputation	224	3.87	0.897	23.18
Purchase decision: helpfulness of staff	226	3.76	0.969	25.77
Purchase decision: quality of neighborhood/ community	226	4.57	0.602	13.17
Purchase decision: exterior design	226	4.05	0.756	18.67



**Table F-2. Descriptive Statistics on Items Pertaining to the  
Importance of the Factor in the Home Purchase Decision  
(continued)**

<b>Item</b>	<b>Base n<sup>1</sup></b>	<b>Mean<sup>2</sup></b>	<b>Standard Deviation</b>	<b>Coefficient of Variation<sup>3</sup></b>
Purchase decision: feeling of community spirit	224	3.66	1.020	27.87
Purchase decision: availability of very energy-efficient home	226	3.79	0.893	23.56
Purchase decision: availability of solar water heating (PV, M, I/e)	172	3.49	1.030	29.51
Purchase decision: availability of solar PV (PV, M)	150	3.34	1.050	31.44
Purchase decision: the package of energy features together (PV, M, I/e)	169	3.56	0.950	26.69
Purchase decision: other	20	4.20	1.240	29.52

<sup>1</sup>All SheaHomes and comparison homes respondents combined

<sup>2</sup>Response scale of 1 to 5 indicating level of importance, with 5 being very important

<sup>3</sup>Coefficient of variation=100\*(Standard Deviation/Mean)

**Table F-3. Descriptive Statistics on Items Pertaining to the Importance of the Home Feature in the Home Purchase Decision**

<b>Item</b>	<b>Base n<sup>1</sup></b>	<b>Mean<sup>2</sup></b>	<b>Standard Deviation</b>	<b>Coefficient of Variation<sup>3</sup></b>
Purchase feature: architectural design	227	4.11	0.801	19.49
Purchase feature: size/square footage	228	4.34	0.627	14.43
Purchase feature: floor plan/layout	227	4.53	0.673	14.86
Purchase feature: number of bedrooms	227	4.16	0.707	16.70
Purchase feature: three-car garage	227	3.93	1.060	26.97
Purchase feature: granite counter tops as standard feature	225	3.59	1.130	31.48
Purchase feature: large closets/pantries	226	3.90	0.889	22.79
Purchase feature: single-story option	217	2.44	1.400	26.48
Purchase feature: lot size/yard	228	3.89	1.030	26.48
Purchase feature: quality of construction	228	4.45	0.691	15.53
Purchase feature: spaciousness/openness	227	4.38	0.683	15.59
Purchase feature: quality or sense of light	227	4.24	0.734	17.31
Purchase feature: many amenities included as standard features	226	4.01	0.822	20.50
Purchase feature: availability of many options	227	3.79	0.920	24.27
Purchase feature: quiet area	222	4.11	0.872	21.22
Purchase feature: first other response	19	4.53	0.964	21.28
Purchase feature: second other response	6	4.17	1.600	38.37

<sup>1</sup>All SheaHomes and comparison homes respondents combined

<sup>2</sup>Response scale of 1 to 5 indicating level of importance, with 5 being very important

<sup>3</sup>Coefficient of variation=100\*(Standard deviation/Mean)

**Table F-4. Descriptive Statistics on Items Pertaining to Satisfaction with the New Home**

<b>Item</b>	<b>Base n<sup>1</sup></b>	<b>Mean<sup>2</sup></b>	<b>Standard Deviation</b>	<b>Coefficient of Variation<sup>3</sup></b>
Satisfaction with staff providing information to help with purchase decision	229	7.65	2.170	28.37
Satisfaction with staff providing information on energy efficiency and solar features (PV, M, I/e)	174	7.24	2.180	30.11
Satisfaction with staff responding to problems after moved in	229	7.09	2.630	37.09
Informed about energy efficiency and solar energy when looking for home	227	5.52	2.410	43.66
Informed about energy efficiency and solar energy now (PV, M, I/e)	174	7.33	1.930	26.33
Satisfaction with home's location	225	4.64	0.565	12.18
Satisfaction with investment potential of home	224	4.64	0.582	12.54
Satisfaction with builder reputation	226	3.72	1.110	29.84
Satisfaction with size/square footage	226	4.35	0.746	17.15
Satisfaction with layout/floor plan	225	4.10	0.881	21.49
Satisfaction with storage space	226	3.76	0.970	25.80
Satisfaction with lot size and yard	226	3.99	0.877	21.98
Satisfaction with quality of construction	225	3.54	1.050	29.66
Satisfaction with the package of energy features (PV, M, I/e)	172	3.92	0.872	22.24
Satisfaction with net metering (PV respondents)	66	3.76	0.993	26.41
Satisfaction with number of thermostats	223	3.43	1.160	33.82

<sup>1</sup>All SheaHomes and comparison homes respondents combined

<sup>2</sup>Response scale of 1 to 5 indicating level of satisfaction, with 5 being very satisfied

<sup>3</sup>Coefficient of variation=100\*(Standard deviation/Mean)

**Table F-5. Descriptive Statistics on Items Pertaining to Homeowner Expectations about Utility Bills and Their Opinions about Buying Future Homes with Energy Efficiency Features**

<b>Item</b>	<b>Base n</b>	<b>Mean<sup>2</sup></b>	<b>Standard Deviation</b>	<b>Coefficient of Variation<sup>2</sup></b>
Utility bills lower with solar water heating (Main owners, Ineligible/Early owners)	97	3.37	0.928	27.54
Gas bills lower than they would have been (PV owners)	70	3.36	1.170	34.82
Electric bills lower than they would have been (PV owners)	70	3.61	1.280	35.46
Utility bills met or exceeded expectations <sup>1</sup>	172 <sup>1</sup>	3.15	0.983	31.21
Would buy same home again <sup>1</sup>	226 <sup>1</sup>	3.93	0.902	22.95
Will buy energy efficiency in new home <sup>1</sup>	226 <sup>1</sup>	4.12	0.785	19.05
Will buy solar water heating in new home <sup>1</sup>	227 <sup>1</sup>	3.77	0.893	23.69
Will buy solar PV in new home <sup>1</sup>	223 <sup>1</sup>	3.69	0.910	24.66

<sup>1</sup>All SheaHomes and comparison homes respondents combined

<sup>2</sup>Likert scale where 1=strongly disagree and 5=strongly agree

<sup>2</sup>Coefficient of variation=100\*(Standard deviation/Mean)

**Table F-6. Descriptive Statistics on Items Pertaining to Importance of PV Attributes<sup>1</sup>**

<b>Item</b>	<b>Base n<sup>1</sup></b>	<b>Mean<sup>2</sup></b>	<b>Standard Deviation</b>	<b>Coefficient of Variation<sup>3</sup></b>
PV attributes: amount of electricity produced	70	4.24	0.892	21.04
PV attributes: finance through home mortgage	70	3.49	1.190	34.10
PV attributes: owning the solar PV system outright	70	3.43	1.110	32.36
PV attributes: net metering	68	3.59	1.030	28.69
PV attributes: digital display showing electricity production and consumption	69	3.88	0.867	22.35
PV attributes: length of warranty	70	4.04	0.806	19.95
PV attributes: ease of maintenance	70	4.07	0.822	20.20
PV attributes: attractiveness/unobtrusiveness of the system	70	3.91	1.030	26.34
PV attributes: upgrade capability	70	3.64	1.040	28.57
PV attributes: other	1	5.00	0.000	0.00

<sup>1</sup>PV homeowners only<sup>2</sup>Response scale of 1 to 5 indicating level of importance, with 5 being very important<sup>3</sup>Coefficient of variation=100\*(Standard deviation/Mean)**Table F-7. Descriptive Statistics on Items Pertaining to Homeowner Perceptions of Comfort and Energy Efficiency of the Home**

<b>Item</b>	<b>Base n<sup>1</sup></b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Coefficient of Variation<sup>4</sup></b>
Perceived comfort of home overall	226	8.33 <sup>2</sup>	1.39	16.69
Perceived energy efficiency of home overall	224	7.11 <sup>3</sup>	1.79	25.18

<sup>1</sup>All SheaHomes and comparison homes respondents combined.<sup>2</sup>Response scale of 1 to 10 indicating level of comfort, with 10 being very comfortable.<sup>3</sup>Response scale of 1 to 10 indicating level of energy efficiency, with 10 being very efficient.<sup>4</sup>Coefficient of variation=100\*(Standard deviation/Mean)

**Table F-8. Descriptive Statistics on Items Pertaining to Perceived Benefits of PV Ownership**

<b>Item</b>	<b>Base n<sup>1</sup></b>	<b>Mean<sup>2</sup></b>	<b>Standard Deviation</b>	<b>Coefficient of Variation<sup>3</sup></b>
Perceived benefits: reduces electricity bills	71	4.17	0.862	20.67
Perceived benefits: sell excess electricity back to utility	71	3.72	1.040	27.96
Perceived benefits: provides free electricity once system is paid for	69	3.43	1.080	31.49
Perceived benefits: increases home's resale value	71	4.03	0.717	17.79
Perceived benefits: protects against rising electricity costs	71	3.51	1.040	29.63
Perceived benefits: increases self-sufficiency	70	3.66	0.915	25.00
Perceived benefits: feels good to have it	71	3.79	0.877	23.14
Perceived benefits: technologically innovative	71	3.62	0.763	21.08
Perceived benefits: helps the environment	71	3.97	0.696	17.53
Perceived benefits: increases our awareness of household energy use	69	3.91	0.818	20.92
Perceived benefits: conserves natural resources	71	4.18	0.946	22.63
Perceived benefits: helps improve air quality in area	71	3.86	0.833	21.58
Perceived benefits: benefits future generations	71	3.93	0.762	19.39
Perceived benefits: helps reduce global warming	71	3.59	0.994	27.69
Perceived benefits: helps San Diego's economy	69	3.64	0.891	24.48
Perceived benefits: first other response	3	3.00	0.000	0.00
Perceived benefits: second other response	4	3.00	0.000	0.00

<sup>1</sup>PV homeowners only<sup>2</sup>Likert scale of 1 to 5 where 1=strongly disagree and 5=strongly agree<sup>3</sup>Coefficient of variation=100\*(Standard deviation/Mean)

**Table F-9. Descriptive Statistics on Items Pertaining to  
Barriers to Purchase of Homes with Solar PV**

<b>Item</b>	<b>Base n<sup>1</sup></b>	<b>Mean<sup>2</sup></b>	<b>Standard Deviation</b>	<b>Coefficient of Variation<sup>3</sup></b>
PV barrier: energy is not that important	38	1.95	0.769	39.44
PV barrier: it was too expensive	38	4.24	0.714	16.84
PV barrier: wanted other options instead	38	3.13	0.777	24.82
PV barrier: didn't know enough to evaluate system	37	2.84	0.928	32.68
PV barrier: didn't know where it would go on the roof	36	2.50	1.000	40.00
PV barrier: payback would be too long	37	3.84	0.986	25.68
PV barrier: thought homeowners insurance premium would increase	34	2.56	0.860	33.59
PV barrier: thought property taxes would increase	35	2.80	0.933	33.32
PV barrier: unsure about the reliability of system	36	3.22	1.050	32.61
PV barrier: thought it would negatively affect resale value	36	2.06	0.826	40.10
PV barrier: could become outdated technologically	37	2.81	1.020	36.30
PV barrier: concerned about maintenance issues	35	3.34	1.080	32.34
PV barrier: did not like how the system looks	35	2.46	0.886	36.02
PV barrier: first other response	2	5.00	0.000	0.00

<sup>1</sup>Main homeowners only.

<sup>2</sup>Likert scale of 1 to 5 where 1=strongly disagree and 5=strongly agree.

<sup>3</sup>Coefficient of variation=100\*(Standard deviation/Mean)

**Table F-10. Descriptive Statistics on Items Pertaining to Satisfaction with PV System**

<b>Item</b>	<b>Base n<sup>1</sup></b>	<b>Mean<sup>2</sup></b>	<b>Standard Deviation</b>	<b>Coefficient of Variation<sup>2</sup></b>
How happy with PV system	68	7.66	2.05	26.76

<sup>1</sup>PV homeowners only

<sup>2</sup>Response scale of 1 to 10 indicating level of satisfaction, with 10 being very satisfied

<sup>2</sup>Coefficient of variation=100\*(Standard deviation/Mean)

**Table F-11. Descriptive Statistics on Items Pertaining to Utility Costs and Operational Aspects**

<b>Item</b>	<b>Base n</b>	<b>Mean<sup>3</sup></b>	<b>Standard Deviation</b>	<b>Coefficient of Variation<sup>4</sup></b>
Utilities: electricity rates have come down since we moved in	223 <sup>1</sup>	2.53	1.080	42.69
Utilities: power outages are a problem in San Diego	223 <sup>1</sup>	2.65	1.000	37.74
Utilities: utility sends clear and beneficial information about net metering	67 <sup>2</sup>	3.10	0.855	27.58
Utilities: utility was helpful in connecting PV system with grid	68 <sup>2</sup>	3.13	0.790	25.24
Utilities: pleased with billing process for electricity	221 <sup>1</sup>	3.11	0.879	28.26

<sup>1</sup>All SheaHomes and comparison home respondents combined

<sup>2</sup>PV homeowners only

<sup>3</sup>Likert scale of 1 to 5 where 1=strongly disagree and 5=strongly agree

<sup>4</sup>Coefficient of variation=100\*(Standard deviation/Mean)

**Table F-12. Descriptive Statistics on Items Pertaining to the Desirability and Cost Effectiveness of Solar PV and Solar Water Heating Systems**

<b>Item</b>	<b>Base n<sup>1</sup></b>	<b>Mean<sup>2</sup></b>	<b>Standard Deviation</b>	<b>Coefficient of Variation<sup>3</sup></b>
Solar PV systems are a desirable innovation for new homes	222	3.97	0.790	19.90
Solar water heating systems are a desirable innovation for new homes	223	4.04	0.787	19.48
Solar PV systems are cost effective	223	3.50	0.816	23.31
Solar water heating systems are cost effective	224	3.65	0.749	20.52

<sup>1</sup>All SheaHomes and comparison homes respondents combined

<sup>2</sup>Likert scale of 1 to 5 where 1=strongly disagree and 5=strongly agree

<sup>3</sup>Coefficient of variation=100\*(Standard deviation/Mean)



**Table F-13. Descriptive Statistics on Items Pertaining to  
Energy-Related Behaviors of Homeowners**

<b>Item</b>	<b>Base n<sup>1</sup></b>	<b>Mean<sup>2</sup></b>	<b>Standard Deviation</b>	<b>Coefficient of Variation<sup>3</sup></b>
Behavior: tend to be thrifty	223	3.50	0.939	26.83
Behavior: regularly recycle paper, plastic, or cans	227	4.21	0.886	21.05
Behavior: in winter set thermostat 70 or lower	226	3.98	1.070	26.88
Behavior: in summer set thermostat 75 or higher	225	3.65	1.180	32.33
Behavior: when away modify thermostat settings	225	4.33	0.855	19.75
Behavior: turn off lights	226	4.45	0.693	15.57
Behavior: turn off computers	225	3.81	1.330	34.91
Behavior: conserve water	224	3.94	0.938	23.81
Behavior: more energy conscious than we used to be	223	4.04	0.939	23.24
Behavior: use air conditioning less than in previous home	221	3.43	1.260	36.73
Behavior: drive fuel-efficient vehicles	222	3.09	1.170	37.86
Behavior: practice xeriscaping	194	2.79	0.834	29.89

<sup>1</sup>All SheaHomes and comparison homes respondents combined

<sup>2</sup>Likert scale of 1 to 5 where 1=strongly disagree and 5=strongly agree

<sup>3</sup>Coefficient of variation=100\*(Standard deviation/Mean)

**Table F-14. Descriptive Statistics on Items Pertaining to Energy-Related Policy Preferences**

<b>Item</b>	<b>Base n<sup>1</sup></b>	<b>Mean<sup>2</sup></b>	<b>Standard Deviation</b>	<b>Coefficient of Variation<sup>3</sup></b>
Policy: utility companies should give rebates for energy-efficient appliances	222	4.35	0.745	17.13
Policy: federal income has credits given to buyers of energy-efficient homes	222	4.33	0.816	18.85
Policy: homes technically rated efficient should be given ENERGY STAR label	222	4.29	0.729	16.99
Policy: California Energy Commission should give rebated for PV	222	4.32	0.807	18.68
Policy: California Energy Commission should give rebates for SWH	222	4.27	0.829	19.41
Policy: federal government should support research on ZEH	220	4.29	0.837	19.51
Policy: builders should build energy-efficient homes if cost is less	221	4.43	0.682	15.40
Policy: builders should build energy-efficient homes if more comfortable and look better	220	4.39	0.735	16.74
Policy: energy package should be standard if cost effective	220	4.40	0.760	17.27
Policy: affordable housing subsidies for PV	221	3.98	1.020	25.63
Policy: affordable housing subsidies for SWH	221	3.94	1.010	25.63

<sup>1</sup>All SheaHomes and comparison homes respondents combined

<sup>2</sup>Likert scale of 1 to 5 where 1=strongly disagree and 5=strongly agree

<sup>3</sup>Coefficient of variation=100\*(Standard deviation/Mean)

**Table F-15. Descriptive Statistics on Items Pertaining to the New Environmental Paradigm**

<b>Item</b>	<b>Base n<sup>1</sup></b>	<b>Mean<sup>2</sup></b>	<b>Standard Deviation</b>	<b>Coefficient of Variation<sup>3</sup></b>
NEP: preserve environment for future generations	220	4.42	0.61	13.80
NEP: threats to environment exaggerated	221	2.98	1.06	35.57
NEP: federal regulations provide adequate protection for environment	220	2.95	0.96	32.51
NEP: individuals need to take responsibility for environment	221	4.37	0.59	13.59
NEP: household energy consumption not a major contributor to environmental problems	220	2.67	1.00	37.42

<sup>1</sup>All SheaHomes and comparison homes respondents combined

<sup>2</sup>Likert scale of 1 to 5 where 1=strongly disagree and 5=strongly agree

<sup>3</sup>Coefficient of variation=100\*(Standard deviation/Mean)

**Table F-16. Descriptive Statistics on Items Pertaining to Early Adopter Characteristics and Attitudes toward the Environment**

<b>Item</b>	<b>Base n<sup>1</sup></b>	<b>Mean<sup>2</sup></b>	<b>Standard Deviation</b>	<b>Coefficient of Variation<sup>3</sup></b>
Like to be as independent as possible	221	4.22	0.791	18.74
Like to experience with new ways of doing things	221	3.88	0.768	19.79
Seen as leader in work, social, or volunteer	219	3.85	0.766	19.90
Buy environmentally friendly even if costs more	221	3.42	0.803	23.48
Willing to modify lifestyle to help environment	221	3.74	0.721	19.28
Intrigued with new technology	220	4.09	0.792	19.36

<sup>1</sup>All SheaHomes and comparison homes respondents combined

<sup>2</sup>Likert scale of 1 to 5 where 1=strongly disagree and 5=strongly agree

<sup>3</sup>Coefficient of variation=100\*(Standard deviation/Mean)

**Table F-17. Descriptive Statistics on Items Pertaining to  
Concern about Electricity Cost in San Diego**

<b>Item</b>	<b>Base n<sup>1</sup></b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Coefficient of Variation<sup>3</sup></b>
Concern about San Diego's electricity costs	224	6.17 <sup>2</sup>	2.66	43.11

<sup>1</sup>All SheaHomes and comparison homes respondents combined

<sup>2</sup>Response scale of 1 to 10 indicating level of concern, with 10 being very concerned

<sup>3</sup>Coefficient of variation=100\*(Standard deviation/Mean)

## **Appendix G**

### **Respondent Characteristics: Demographics, Values and Lifestyles, and Other Variables**

## **Appendix G.**

### **Respondent Characteristics: Demographics, Values and Lifestyles, and Other Variables**

A number of items that pertained to respondent characteristics were included in the questionnaires. These included gender, age, marital status, household composition, household size, occupation, educational attainment, income, length of time the household plans to stay in the home, where households moved from, lifestyle and values, and equipment owned. Appendix G discusses the findings and presents the data tables on these respondent characteristics.

#### **Gender of Head of Household**

At the beginning of the questionnaire's section on demographics, the instruction read: "If two people have completed the questionnaire together, please select one person as head of household for answering the questions [about yourself and your household]."

In response to the questionnaire instructions, more households selected "male" than "female" to characterize the head of household, even though both partners may have been involved in completing the questionnaire. Among SheaHomes respondents, 55% are male and 45% are female heads-of-household. Among comparison homes, 57% are male and 43% are female heads-of-household (Table G-1).

#### **Age**

Home ownership is an adult characteristic. Virtually all respondents are older than 25 years of age. Among SheaHomes respondents, 43% are younger homeowners who are 25–39 years of age, the modal response. Among comparison respondents, the same age range is the modal response at 47%. Approximately one-third of SheaHomes respondents (32%) and 21% of comparison respondents are 40–49 years of age. Twenty-three percent of SheaHomes and 26% of comparison respondents are 50–64 years of age. Finally, a few of the SheaHomes (2%) and comparison (6%) respondents are 65 years of age or older. Thus, a majority (55%) of owners of SheaHomes are 40–64 years of age; a plurality (47%) of comparison homeowners are in that same age range (Table G-2).

#### **Marital Status**

Most (93% of SheaHomes and 98% of comparison) respondents are married or in a committed relationship (Table G-3).

## **Household Composition**

Of SheaHomes households, 68% are composed of adults and children, as do 71% of comparison households. Of SheaHomes households, 32% comprise adults only, as do 29% of comparison households (Table G-4).

### ***Number of Occupants in Household***

Respondents were asked, “In total, how many people live in your household?” Table G-5 shows that virtually all households have two or more occupants (only 3% of SheaHomes households are composed of a single person). Among SheaHomes households, 74% have three or more occupants; similarly 80% of comparison households have three or more occupants. The mean number of occupants for SheaHomes is 3.53 and for comparison homes it is somewhat, but not significantly, larger at 3.86. (A t-test resulted in  $p=.159$ .)

### ***Household Size and Household Composition Combined***

The trend toward somewhat larger households in the comparison community is borne out by the data in Table G-6, which shows that 30% have families with 5 or more persons, including adults and children, compared to 18% of SheaHomes. Approximately one-fourth of the SheaHomes households comprise one- or two-adult households compared with one-fifth of comparison households. However, these differences are not significant.

## **Occupation**

### ***Number of Occupations Reported***

Almost all of both categories of households report only one wage earner (Table G-7).

### ***First Occupation Reported***

As might be expected, most homeowners in the study communities are in professional, management, business, and scientific occupations. Table G-8 shows the details.

## **Highest Level of Educational Attainment**

A large majority of both categories of homeowners have completed a Bachelor’s degree or higher (74% of SheaHomes and 81% of comparison respondents). Comparison respondents have a higher percentage of advanced educational achievement—Master’s degree or higher—(46%) than do SheaHomes respondents (37%) (Table G-9).

## **Annual Household Income before Taxes**

Table G-10 presents detailed data on the income levels of the two respondent categories. A recoded summary of the data is presented in Table G-11 showing a significant difference in income between the categories. Whereas comparison households (76%) are significantly more likely than SheaHomes households (59%) to earn \$100,000–\$199,999 annually, SheaHomes households (19%) are significantly more likely than are comparison households (4%) to earn \$200,000 or more annually.

## **Length of Time the Household Plans to Stay in the New Home**

Respondents were asked: “About how long do you plan to stay in your home?” and asked to fill in the number of years, or indicate “Permanently” or “Don’t know” as alternative responses. The modal response for both categories of homeowners is “Don’t know” (for 46% of SheaHomes and 40% of comparison households). One-third of SheaHomes and 23% of comparison respondents indicate that they plan to stay “Permanently.” Eight percent of SheaHomes and 11% of comparison respondents say they plan to stay in their new homes at least 10 years. The remainder—19% of SheaHomes and 28% of comparison respondents—indicate lengths of time of 1–9 years. Table G-12 summarizes the data.

## **Where Respondent Moved From**

To learn whether most respondents moved to Scripps Highlands from the San Diego area, the questionnaire asked, “Which city and state did you move from?” As shown in Table G-13, most respondents in both categories came from the local area. However, more than one-fifth of comparison respondents came from a different area. To speculate, many of the SheaHomes buyers had seen the construction trailer at Scripps Highlands when the project started, and the probability of their doing so was greatly enhanced if they were local residents.

## **Lifestyle and Values**

Based on prior research on the diffusion of innovations (Rogers 1995) and on opinions about renewable energy (Farhar and Coburn 2000), data were collected on several variables that were hypothesized to be favorably related to renewable energy. These included lifestyle and values (such as environmentalism and self-sufficiency) (Leonard-Barton 1978; Leonard-Barton and Rogers 1979) and innovativeness and opinion leadership (Rogers 1995). Tables G-14 through G-19 show data on these variables.

Regarding innovativeness, opinion leadership, and self-sufficiency, most respondents indicate they like to be as independent as possible so as not to rely on others to meet their needs (Table G-14). Majorities of both categories of homeowners indicate they like to experiment with new ways of doing things (Table G-15), although 26% of SheaHomes and 37% of comparison respondents are neutral or disagree. Large majorities of around 80% of both homeowner categories agree that they are intrigued with new technology (Table G-16). Similarly, two-thirds of SheaHomes and 77% of comparison respondents agree that they are seen as leaders in work, social life, or volunteer activities (Table G-17).



Regarding environmentalism, two-thirds of both categories of respondents agree that they are willing to modify their lifestyles to help the environment (Table G-18). Forty-seven percent of SheaHomes respondents agree that they tend to buy environmentally friendly products even if these cost more, compared with 41% of comparison respondents. However, almost as many of the respondents in both categories ( $\approx 42\%$ ) are neutral on this point (Table G-19).

## **Equipment Owned**

To have a measure of energy-using equipment owned by the study families, the questionnaires asked about ownership of household appliances and amenities. Tables G-20 through G-28 present the data by homeowner categories. The findings are summarized as follows:

- Ceiling fans are owned by 65% of SheaHomes and 59% of comparison respondents (Table G-20).
- Dual-zone heating/air-conditioning systems are owned by 64% of SheaHomes and 63% of comparison respondents (Table G-21).
- Dimmer switches for lights are owned by 49% of SheaHomes and 47% of comparison respondents (Table G-22).
- Compact fluorescent light bulbs (CFLs) are owned by 44% of SheaHomes and 53% of comparison respondents (Table G-23).
- Two refrigerators are owned by 44% of SheaHomes and 29% of comparison respondents (Table G-24). This difference nears significance ( $\chi^2=3.67$ ;  $p=.055$ ).
- Hot tubs are owned by 19% of SheaHomes and 31% of comparison respondents (Table G-25). This difference nears significance ( $\chi^2=3.30$ ;  $p=.068$ ).
- Pools are owned by 16% of SheaHomes and 26% of comparison respondents (Table G-26).
- Standalone freezers are owned by 13% of SheaHomes and 18% of comparison respondents (Table G-27).
- Hot water flow regulators are owned by 9% of SheaHomes and 28% of comparison respondents (Table G-28). This difference is significant ( $\chi^2=12.069$ ;  $p=.001$ ).

**Table G-1. Gender of Head of Household**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
Male	55	57
Female	45	43
Totals	100	100
Base n*	165	53

\*“Base n” is used to refer to the total number of respondents answering a question; it is, therefore, the denominator used in calculating the percentages of responses in each category.

**Table G-2. Age of Head of Household**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
≤24 years old	—*	0
25–39 years old	43	47
40–49 years old	32	21
50–64 years old	23	26
≥65 years old	2	6
Totals	100	100
Base n	171	53

\* ≤.06%

**Table G-3. Marital Status of Head of Household**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
Married/in a committed relationship	93	98
No longer married or never married	7	2
Totals	100	100
Base n	168	53

**Table G-4. Household Composition**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
Adults only	32	29
Adults and children	68	71
Totals	100	100
Base n	167	51

**Table G-5. Number of Occupants in Household**

0	<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
	1	3	
	2	24	20
	3	22	20
	4	33	30
	5	12	20
	6 or more	7	10
	Totals	100	100
	Base n	167	50

**Table G-6. Household Size and Household Composition Combined**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
Adults only, households with 2 or fewer persons	27	20
Adults only, households with 3 or more persons	6	10
Adults with children, households of 4 or fewer persons	49	40
Adults with children, households with 5 or more persons	18	30
Totals	100	100
Base n	166	50

**Table G-7. Number of Occupations Reported**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
One	96	98
Two	4	2
Totals	100	100
Base n	149	45

**Table G-8. First Occupation Reported**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
Scientists, engineers, pilots, other professionals	34	24
Management/self-employed	30	24
Physicians, dentists, pharmacists, attorneys	8	17
Marketing and sales	8	9
Government (locals/state/federal)	8	2
Investments and financial services	5	4
Skilled trades, technicians, semi-professionals	4	13
Retired	4	7
Totals	100	100
Base n	147	46

**Table G-9. Highest Level of Education Attained by Head of Household**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
Elementary school through some high school	—	2
High school graduate or equivalent	3	2
Some college but no degree	13	8
Associate's degree	2	6
Trade or technical school certificate	3	2
Bachelor's degree	37	35
Master's degree	20	19
Work beyond the Master's but no additional degree	3	6
Doctoral degree	14	21
Totals	100	100
Base n	168	532

**Table G-10. Annual Household Income before Taxes**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
< \$50,000	3	2
\$50,000–99,999	20	18
\$100,000–149,999	38	49
\$150,000–199,999	21	27
\$200,000–249,999	11	4
\$250,000 or more	8	—
Totals	100	100
Base n	156	45

**Table G-11. Annual Household Income before Taxes, Recoded Data**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
≤\$99,999	22	20
\$100,000–\$199,999	59	76
≥\$200,000	19	4
Totals	100	100
Base n	155	45

$\chi^2=6.092$ ;  $p=.048$

**Table G-12. Length of Time Plan to Stay in Home**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
1–9 years	19	28
≥ 10 years	8	11
Permanently	33	23
Don't know	46	40
Totals	100	100
Base n	168	53

**Table G-13. Where Respondent Moved From**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
San Diego area	88	79
Other	12	21
Totals	100	100
Base n	170	53

**Table G-14. Like to Be as Independent as Possible**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
Agree	84	88
Neutral	13	8
Disagree	4	4
Totals	100	100
Base n	170	51

**Table G-15. Like to Experiment with New Ways of Doing Things**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
Agree	74	63
Neutral	24	35
Disagree	2	2
Totals	100	100
Base n	170	51

**Table G-16. Intrigued with New Technology**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
Agree	81	80
Neutral	16	18
Disagree	3	2
Totals	100	100
Base n	169	51

**Table G-17. Seen as a Leader in Work, Social Life, or Volunteer Activities**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
Agree	67	77
Neutral	29	22
Disagree	4	2
Totals	100	100
Base n	168	51

**Table G-18. Willing to Modify Lifestyle to Help Environment**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
Agree	66	67
Neutral	29	31
Disagree	5	2
Totals	100	100
Base n	170	51

**Table G-19. Buy Environmentally Friendly Even If Costs More**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
Agree	47	41
Neutral	42	43
Disagree	11	16
Totals	100	100
Base n	170	51



**Table G-20. Ceiling Fans**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
Not owned	35	41
Owned	65	59
Totals	100	100
Base n	171	51

**Table G-21. Dual-Zone Heating/Air-Conditioning System**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
Not owned	36	37
Owned	64	63
Totals	100	100
Base n	171	51

**Table G-22. Dimmer Switches for Lights**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
Not owned	52	53
Owned	49	47
Totals	100	100
Base n	171	51

**Table G-23. Compact Fluorescent Light Bulbs**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
Not owned	56	47
Owned	44	53
Totals	100	100
Base n	171	51

**Table G-24. Two Refrigerators**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
Not owned	56	71
Owned	44	29
Totals	100	100
Base n	171	51

$\chi^2=3.67$ ;  $p=.055$

**Table G-25. Hot Tub**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
Not owned	81	69
Owned	19	31
Totals	100	100
Base n	171	51

$\chi^2=3.30$ ;  $p=.068$

**Table G-26. Pool**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
Not owned	84	75
Owned	16	26
Totals	100	100
Base n	171	51

**Table G-27. Standalone Freezer**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
Not owned	87	82
Owned	13	18
Totals	100	100
Base n	171	51

**Table G-28. Hot Water Flow Regulator**

<b>Response Categories</b>	<b>SheaHomes %</b>	<b>Comparison Homes %</b>
Not owned	91	73
Owned	9	28
Totals	100	100
Base n	171	51

$\chi^2=12.069$ ;  $p=.001$

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**Appendix H**  
**Detailed Factor Analysis Results**

*Cited in Chapter 17*

## **Appendix H.**

### **Detailed Factor Analysis Results**

These factor analysis results were produced with SPSS 13.0. The principal components method was used to extract the initial components. The rotated component matrix was obtained using Varimax rotation with Kaiser normalization. A different number of iterations was required to converge to the solution shown in each table.

**Table H-1. Reasons for Purchase Rotated Component Matrix**

<b>Item</b>	<b>Component</b>					
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
Purchase decision: close to work	-.020	.057	.066	.735	.310	-.174
Purchase decision: near to freeway	.111	.144	-.004	.703	-.098	.268
Purchase decision: near to services	.206	.077	.316	.673	.099	.175
Purchase decision: great view	.097	-.121	.142	.141	.127	.581
Purchase decision: safe and secure	.093	.819	.045	.021	.093	.250
Purchase decision: quality of schools	.124	.627	.270	.260	-.105	-.182
Purchase decision: knows area	-.076	.305	.577	.015	.070	.381
Purchase decision: close to friends	.061	.004	.797	.019	.056	.106
Purchase decision: close to parks/playgrounds	.211	.100	.759	.202	.013	-.115
Purchase decision: desirable area	.113	.159	.443	.059	.613	.030
Purchase decision: overall home value	.228	.454	.054	.046	.474	-.141
Purchase decision: investment potential	.165	-.013	-.119	.119	.694	.375
Purchase decision: no Mello-Roos taxes	.301	.234	-.011	.077	-.024	.586
Purchase decision: discount or incentive	.461	-.027	-.021	.478	.104	.298
Purchase decision: builder reputation	.811	-.009	.033	.029	.168	.126
Purchase decision: helpfulness of staff	.821	.098	.133	-.011	.113	.032
Purchase decision: quality of neighborhood/	.403	.609	.066	.042	.235	.015
Purchase decision: exterior design	.547	.126	.095	.121	.267	.113
Purchase decision: feeling of community	.576	.301	.076	.244	.010	-.034
Purchase decision: availability of very	.696	.220	.031	.119	-.136	.218

**Table H-2. Purchase Features Rotated Component Matrix**

<b>Item</b>	<b>Component</b>		
	<b>1</b>	<b>2</b>	<b>3</b>
Purchase feature: architectural design	.690	.161	.131
Purchase feature: size/square footage	.346	.693	– .196
Purchase feature: floor plan/layout	.699	.328	– .082
Purchase feature: number of bedrooms	.202	.764	.027
Purchase feature: three-car garage	.057	.587	.341
Purchase feature: granite counter tops as standard feature	.295	.351	.579
Purchase feature: large closets/pantries	.547	.324	.440
Purchase feature: single-story option	.052	– .009	.739
Purchase feature: lot size/yard	.024	.576	.301
Purchase feature: quality of construction	.606	– .049	.282
Purchase feature: spaciousness/openness	.741	.177	.133
Purchase feature: quality of sense light	.766	.155	.166
Purchase feature: many amenities included as standard features	.507	.289	.457
Purchase feature: availability of many options	.542	.051	.424
Purchase feature: quiet area	.390	.084	.487



**Table H-3. Attitudes toward Solar Features Rotated Component Matrix**

<b>Item</b>	<b>Component</b>	
	<b>1</b>	<b>2</b>
Solar PV systems are a desirable innovation for new homes	.922	.199
Solar water heating systems are a desirable innovation for new homes	.930	.203
Solar PV systems are cost effective	.145	.927
Solar water heating systems are cost effective	.260	.892

**Table H-4. Equipment Owned Rotated Component Matrix**

<b>Item</b>	<b>Component</b>			
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Own: two refrigerators	-.032	.245	.679	.345
Own: ceiling fans	.108	.738	.161	-.118
Own: standalone freezer	.461	-.367	.403	.003
Own: dimmer switches for lights	.127	.778	-.091	.029
Own: component fluorescent light bulbs	-.016	-.011	.237	-.690
Own: hot tub	.753	.125	-.022	-.084
Own: hot water flow regulator	.046	-.069	.749	-.222
Own: pool	.797	.153	.022	.067
Own: dual zone heating/air conditioning system	-.030	-.106	.199	.702

**Table H-5. Self-Reported Conservation Behaviors Rotated Component Matrix**

<b>Item</b>	<b>Component</b>		
	<b>1</b>	<b>2</b>	<b>3</b>
Behavior: in summer, set thermostat 75°F or higher	.844	.115	.055
Behavior: when away, modify thermostat settings	.756	-.050	.077
Behavior: turn off lights	.240	.011	.774
Behavior: turn off computers	.022	.140	.756
Behavior: more energy conscious than we used to be	.032	.559	.315
Behavior: use air conditioning less than in previous home	.140	.751	.035
Behavior: drive fuel-efficient vehicles	-.023	.670	.132
Behavior: in winter, set thermostat 70°F or lower	.902	-.052	.057
Behavior: conservative water	-.048	.285	.808
Behavior: practice xeriscaping	-.135	.767	.062

**Table H-6. Energy Policy Preferences Rotated Component Matrix**

Item	Component		
	1	2	3
Policy: utility companies should give rebates for energy-efficient appliances	.750	.311	.194
Policy: federal income tax credits given to buyers of energy-efficient homes	.804	.271	.214
Policy: homes technically rated efficient should be given ENERGY STAR label	.258	.608	.157
Policy: California Energy Commission should give rebates for PV	.847	.293	.188
Policy: California Energy Commission should give rebates for SWH	.817	.207	.316
Policy: federal government should support research on ZEH	.185	.622	.476
Policy: builders should build energy-efficient homes if cost is less	.296	.869	.088
Policy: builders should build energy-efficient homes if more comfortable and look better	.218	.810	.154
Policy: energy package should be standard if cost is effective	.259	.704	.337
Policy: affordable housing subsidies for PV	.308	.232	.897
Policy: affordable housing subsidies for SWH	.300	.258	.896

**Table H-7. New Environmental Paradigm Rotated Component Matrix**

Item	Component	
	1	2
NEP: preserve environment for future generations	-.158	.863
NEP: threats to environment exaggerated	.836	-.067
NEP: federal regulations provide adequate protection for environment	.844	-.056
NEP: individuals need to take responsibility for environment	-.035	.888
NEP: household energy consumption not a major contributor to environmental problems	.775	-.143

**Table H-8. Early Adopter Characteristics Rotated Component Matrix**

<b>Item</b>	<b>Component</b>	
	<b>1</b>	<b>2</b>
Like to be as independent as possible	.722	-.060
Like to experiment with new ways of doing things	.607	.380
Seen as leader in work, social, or volunteer	.775	.072
Buy environmentally friendly even if costs more	.037	.867
Willing to modify lifestyle to help environment	.186	.835
Intrigued with new technology	.480	.265

**Table H-9. Satisfaction Rotated Component Matrix**

Item	Component			
	1	2	3	4
Satisfaction with home's location	-.105	.758	.032	-.014
Satisfaction with investment potential of home	.088	.726	.031	-.175
Satisfaction with builder reputation	.743	.207	.172	-.132
Satisfaction with size/square footage	.339	.724	.069	.074
Satisfaction with layout/floor plan	.483	.568	-.055	.299
Satisfaction with storage space	.398	.538	.069	.209
Satisfaction with lot size and yard	.351	.428	.105	-.106
Satisfaction with quality of construction	.831	.101	.178	-.074
Satisfaction with number of thermostats	.574	.064	-.030	.228
Recode: perceived comfort of home overall	.630	.355	.075	.029
Recode: perceived energy efficiency of home overall	.566	.021	.206	-.369
Will buy energy efficiency in new home	.082	.058	.827	-.094
Will buy solar water heating in new home	.159	.049	.879	-.005
Will buy solar PV in new home	.050	.054	.874	.046
Would buy same home again	.581	.084	-.003	-.013
Recode 2: Estimated monthly utility bill	-.032	-.032	-.001	.865

**Table H-10. Barriers to Solar PV Systems\* Rotated Component Matrix**

<b>Item</b>	<b>Component</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
PV barrier: energy is not that important	.103	.175	.028	.003	.848
PV barrier: it was too expensive	.064	-.528	-.010	-.679	.058
PV barrier: wanted other options instead	-.650	.061	-.127	-.060	.523
PV barrier: didn't know enough to evaluate	.151	-.088	.272	.589	.507
PV barrier: didn't know where it would go	-.171	.076	.222	.860	-.021
PV barrier: payback would be too long	.211	-.822	.253	-.070	-.142
PV barrier: thought homeowners insurance	-.063	.110	.927	.203	-.091
PV barrier: thought property taxes would	-.029	-.008	.919	.131	.137
PV barrier: unsure about the reliability of	.783	-.214	-.011	.048	.193
PV barrier: thought it would negatively	.272	.784	.379	.023	.152
PV barrier: could become outdated	.841	.342	-.132	-.125	.020
PV barrier: concerned about maintenance	.788	.096	.046	-.096	.044
PV barrier: did not like how the system	.306	.598	.268	.362	-.004

\*Main homeowners who chose not to adopt PV only.

**Table H-11. Perceived Benefits of Solar PV Ownership Rotated Component Matrix**

<b>Item</b>	<b>Component</b>		
	<b>1</b>	<b>2</b>	<b>3</b>
Perceived benefits: reduces electricity bills	.131	.792	.131
Perceived benefits: sell excess electricity back to utility	-.026	.692	.269
Perceived benefits: provides free electricity once system is paid for	.084	.750	.288
Perceived benefits: increases home's resale value	.013	.560	.604
Perceived benefits: protects against rising electricity costs	.232	.534	.147
Perceived benefits: increases self-sufficiency	.229	.223	.832
Perceived benefits: feels good to have it	.526	.440	.556
Perceived benefits: technologically innovative	.327	.212	.713
Perceived benefits: helps the environment	.592	.546	.152
Perceived benefits: increases our awareness of household energy use	.473	.548	.321
Perceived benefits: conserves natural resources	.581	.539	-.195
Perceived benefits: helps improve air quality in area	.724	.281	.238
Perceived benefits: benefits future generations	.824	.290	.199
Perceived benefits: helps reduce global warming	.877	-.057	.150
Perceived benefits: helps San Diego's economy	.849	-.047	.240

**Table H-12. Solar PV System Attributes Rotated Component Matrix**

Item	Component	
	1	2
PV attributes: importance of amount of electricity produced	.811	.158
PV attributes: finance through home mortgage	.012	.740
PV attributes: owning the solar PV system outright	.354	.413
PV attributes: net metering	.365	.631
PV attributes: digital display showing electricity production and consumption	.800	.190
PV attributes: length of warranty	.797	.280
PV attributes: ease of maintenance	.757	.325
PV attributes: attractiveness/unobtrusiveness of the system	.258	.753
PV attributes: upgrade capability	.367	.709

**Table H-13. Information Channels Used Rotated Component Matrix**

Item	Component		
	1	2	3
Information channels: video on operation and maintenance	.131	.122	.920
Information channels: fact sheet about PV system	-.616	-.497	.465
Information channels: operating manual for PV system	.868	-.209	.236
Information channels: website	-.122	.920	.132



**Table H-14. Uses of Digital Display Rotated Component Matrix**

<b>Item</b>	<b>Component</b>	
	<b>1</b>	<b>2</b>
Use digital display: obtain feedback on electricity use	.744	.236
Use digital display: determine whether anything left on in house	.579	.303
Use digital display: optimally schedule electricity-consuming chores	.299	.780
Use digital display: record cumulative electricity production and consumption	-.051	.878
Use digital display: become more sensitive to household electricity consumption	.621	.117
Use digital display: determine whether system is functioning	.592	-.087
Use digital display: help change energy-consuming behavior	.788	.070

**Table H-15. Aspects Learned since Living with Solar PV Systems Rotated Component Matrix**

<b>Items</b>	<b>Component</b>	
	<b>1</b>	<b>2</b>
Learned about amount of electricity consumed the PV system produces	.743	.157
Learned about how the system works	.782	.022
Learned about net metering and interconnecting with grid	.021	.776
Learned about savings on utility bill	.541	.116
Learned about tax credits or rebates to help offset the cost	.383	.554
Learned about paycheck period for PV system purchase	.365	.619
Learned about other aspect of PV system	-.001	.560

**Table H-16. Operational Aspects of Solar PV Systems Rotated Component Matrix**

<b>Item</b>	<b>Component</b>		
	<b>1</b>	<b>2</b>	<b>3</b>
PV operational aspects: system shuts down in power outage	-.256	.501	.488
PV operational aspects: paid retail rate for electricity put into grid	.518	.129	.534
PV operational aspects: have one electric meter	.132	-.166	.790
PV operational aspects: utility bills only for the electricity	.603	.126	.151
PV operational aspects: utility demand at peak on sunny afternoons	.663	-.048	-.327
PV operational aspects: have interconnectivity agreement with utility	.685	-.136	.148
PV operational aspects: pay electricity bill annually	-.057	.783	.084
PV operational aspects: receive check from utility annually for extra electricity	-.174	-.684	.264

## **Appendix H-1**

### **Factors by Demographics**

## Appendix H1

### Factors by Demographics

The tables in this appendix are for t-tests and analyses of variance of the study's factors by demographics summarized in Chapter 19 (Analysis of Factors by Demographic Variables). The demographic variables included are gender, age, marital status, household composition, educational attainment, occupation, and annual household income.

#### Differences in Factor Scores by Gender

All 49 factors were analyzed by gender; three of the analyses resulted in significant differences. These three factors relate to home purchase decisions, attitudes toward solar features in new housing, and solar PV system attributes. Table H1-1 summarizes the findings from these analyses.

**Table H1-1. Factor Scores by Gender**

<b>Factors</b>	<b>Mean Z-Scores Male</b>	<b>Mean Z-Scores Female</b>
Reasons for purchase: Safe and secure area ( $t = -2.316$ ; $p = .024$ ) (Total $n = 195$ )	-.160 ( $n = 110$ )	.170 ( $n = 85$ )
Attitudes toward solar features: Desirable innovation ( $t = 2.053$ ; $p = .041$ ) (Total $n = 210$ )	.133 ( $n = 119$ )	-.152 ( $n = 91$ )
Solar PV system attributes: System performance (PV owners) ( $t = 2.184$ ; $p = .033$ ) (Total $n = 65$ )	.179 ( $n = 45$ )	-.384 ( $n = 20$ )

#### *Reasons for Purchase by Gender*

This dimension deals with concerns that homebuyers with families exhibit, including if the neighborhood is safe and secure and if the neighborhood and schools are high quality. As Table H1-1 shows, the t-test results in a significant difference between males and females on this dimension. The mean factor score is significantly lower for men than it is for women ( $p = .024$ ). This suggests that the safety, security, and quality of the neighborhood is more significant and salient to women in the home purchase decision than they are to men.

#### *Attitudes toward Solar Features by Gender*

This dimension reflects the sense that solar PV and solar water heating systems are desirable innovations for new homes. As Table H1-1 shows, the t-test results in a significant difference between males and females on this dimension. The mean factor score is significantly higher for men than it is for women ( $p = .041$ ). This suggests that men are generally more interested in and positive toward including these solar features in new housing than are women.

### ***Solar PV Systems Attributes by Gender***

This dimension reflects responses on the importance of PV system attributes, such as the amount of electricity produced, the digital display showing electricity production and consumption in real time, the length of the warranty, and the ease of maintenance. The mean factor score is significantly higher for men ( $p=.033$ ) than it is for women. This suggests that female heads-of-household are significantly less interested in PV system attributes than are their male partners.

### ***Differences in Factor Scores by Age***

The responses by age were recoded into three categories: (1)  $\leq 39$  years old, (2) 40–49 years old, and (3)  $\geq 50$  years old. All 49 factors were analyzed by these three age categories; nine of the analyses resulted in significant differences by age. These nine factors relate to home purchase decisions, home features, attitudes toward solar features in new housing, equipment owned, environmentalism and environmental attitudes, and PV information channels used. Table H1-2 summarizes the findings from these analyses.

### ***Reasons for Purchase by Age***

Two of the dimensions of the home purchase decision factor analysis reported in Chapter 17 were significantly different by age. The first dimension, called company reputation and performance, reflects respondent perception of and experience with the company that offered the home. The reputability of the builder, the helpfulness of the sales staff, and—to a lesser extent—the energy use aspects of the home combine to form this factor. As Table H1-2 shows, the mean factor score for the youngest age group is significantly lower than that of the middle and oldest age groups ( $p=.006$ ), suggesting that this factor is less important in the home purchase decisions by the youngest homebuyers than by the older ones. The mean factor scores for those 40–49 years of age and those aged 50 or older do not differ significantly from each other on this dimension.

The second dimension under the home purchase decision category, called familiarity with the area, reflects previous knowledge of the area and the people who live there, as well as common areas for family and friends to gather. As Table H1-2 shows, the ANOVA results in a significant difference among age categories on this dimension. The mean factor score for the oldest age group is significantly lower than that of the youngest age group ( $p=.002$ ), suggesting that this factor is more important in the home purchase decisions of the older homebuyers than of the younger ones. The mean factor scores for those 40–49 years of age is not significantly different from the other two age groups on this dimension.

### ***Home Features by Age***

One of the dimensions of the home purchase decision reported in Chapter 17 was significantly different—the availability of a single-story option, offered only by SheaHomes. As Table H1-2 shows, there is a significant difference among age categories on this dimension. The mean factor score for the oldest age group is significantly higher than that of the other two age groups ( $p=.006$ ), suggesting that this factor is more important in the home purchase decisions of the older homebuyers than of the younger ones.

**Table H1-2. Factor Scores by Age**

<b>Factors</b>	<b>Mean Z-Scores ≤39 Years Old</b>	<b>Mean Z-Scores 40 to 49 Years Old</b>	<b>Mean Z-Scores ≥50 Years Old</b>
Reasons for purchase: Company reputation and performance (F=5.226; p=.006) (Total n=197)	-.255 (n=87)	.236 (n=61)	.141 (n=49)
Reasons for purchase: Familiarity with area (F=6.543; p=.002) (Total n=197)	.200 (n=87)	.016 (n=61)	-.431 (n=49)
Home feature: Single-story option (F=5.241; p=.006) (Total n=197)	-.223 (n=91)	.142 (n=59)	.304 (n=47)
Attitudes toward solar features: Cost effectiveness of solar features (F=3.047; p=.05) (Total n=215)	.022 (n=95)	.205 (n=65)	-.245 (n=55)
Equipment owned: Pool and hot tub combination (F=2.928; p=.056) (nears significance) (Total n=217)	-.185 (n=95)	.192 (n=64)	.067 (n=58)
Equipment owned: Smaller efficiency measures (F=4.873; p=.009) (Total n=217)	.199 (n=95)	-.0133 (n=64)	-.303 (n=58)
NEP: Environmental attitudes (F=6.579; p=.002) (Total n=217)	-.274 (n=96)	.171 (n=65)	.245 (n=56)
Early adopter characteristics: Environmental attitudes (F=3.747; p=.025) (Total n=214)	-.212 (n=93)	.102 (n=65)	.210 (n=56)
PV information channels used: Video (PV owners) (F=5.039; p=.01) (Total n=52)	-.152 (n=21)	-.220 (n=22)	.892 (n=9)

***Attitudes toward Solar Features by Age***

One of the dimensions of the attitudes toward solar features reported in Chapter 17 was significantly different—the sense that solar PV and solar water heating systems are cost effective in new housing. As Table H1-2 shows, the ANOVA results in a significant difference among age categories on this dimension. The mean factor score for the 40–49 year-old age group is significantly higher than that of the oldest age group ( $p=.05$ ), suggesting that this factor is more important in the home purchase decisions of the homebuyers 40–49 years of age than of those 50 or older. The mean factor scores for those 50 or older and those 39 or younger are not significantly different on this dimension.

### ***Equipment Owned by Age***

Two dimensions of the equipment owned reported in Chapter 17 were significantly different by age: (1) pool and hot tub combination, and (2) smaller efficiency measures. The first dimension reflects a tendency to own both a pool and hot tub. As Table H1-2 shows, the ANOVA results in a significant difference among age categories on this dimension. The difference in mean factor scores between the youngest age group and those who are 40–49 years of age nears significance ( $p=.056$ ), suggesting that this factor may be less important in the home purchase decisions of the youngest homebuyers. The mean factor scores for those 40–49 years of age and those 50 years of age or older are not significantly different on this dimension.

The second dimension under the equipment category, called smaller efficiency measures, includes smaller efficiency measures such as dimmer switches and ceiling fans. As Table H1-2 shows, the ANOVA results in a significant difference among age categories on this dimension. The mean factor score for the oldest age group is significantly lower than that of the youngest age group ( $p=.009$ ), suggesting that a greater tendency of the younger homebuyers than of oldest buyers to own these measures. The mean factor scores for those 40–49 years of age are not significantly different from the other two age groups on this dimension.

### ***Environmentalism and Environmental Attitudes by Age***

Two dimensions of the environmentalism and environmentalism factor analysis reported in Chapter 17 differ significantly by age: (1) anti-environmentalism, and (2) environmentalism. The first dimension reflects anti-environmentalist sentiments relative to environmental protection in general and to housing's role in environmental problems. In general, a low score on this factor indicates a negative attitude toward the environment; conversely a high score indicates a positive attitude toward the environment. Table H1-2 shows that respondents in the youngest age group have a significantly lower mean factor score for environmental support (and may even be characterized as anti-environmental in their attitudes), whereas those 40–49 years of age have significantly higher mean scores. The 50+ age group's mean environmentalism factor scores are the highest of the three age groups. Thus, the oldest buyers appear to be the most environmentally supportive.

Environmental attitudes were also measured using two items presented with the early adopter characteristics described in Chapter 17. This dimension dealt with buying environmentally friendly products even if they cost more, and being willing to modify one's lifestyle to help the environment. Table H1-2 shows that the mean factor score for the oldest age group is significantly lower than that of the other two age groups ( $p=.025$ ), suggesting that the youngest homebuyers have significantly less tendency than do the middle and older age groups to take actions to preserve and improve the environment. The mean factor scores for those 40–49 years of age and those 50 years of age or older are not significantly different on this dimension. This result reinforces the findings from the environmentalism dimension reported above.

### ***PV Information Channels by Age***

One dimension of the PV information channels used reported in Chapter 17 primarily reflects use of a video on PV operations and maintenance as an important channel of PV information. As Table H1-2 shows, the ANOVA results in a significant difference among age categories on this dimension. The mean factor score for the oldest age group is significantly higher than that of the middle age group ( $p=.01$ ), suggesting that the homebuyers 50 years of age or older are significantly more strongly inclined to use the video on PV operations and maintenance as a channel of PV information than are those of the other two age groups. The mean factor scores for those 40–49 years of age and those 39 years of age or younger are not significantly different from each other on this dimension.

### ***Differences in Factor Scores by Marital Status***

The responses on marital status were recoded in two categories: (1) married/in a committed relationship and (2) not married. All 49 factors were analyzed by marital status; seven of the analyses resulted in significant differences and the result of one additional analysis nears significance. These factors relate to home purchase decisions, home features, equipment owned, early adopter characteristics, barriers to PV purchase, and aspects learned since living with PV system. Table H1-3 summarizes the findings from these analyses.

### ***Reasons for Purchase by Marital Status***

Two dimensions of the home purchase decision factor analysis reported in Chapter 17 were significantly different by marital status. The first dimension, called convenience of access, involves convenience of access to and from the neighborhood in terms of closeness to work (for example, the I-15 freeway that runs north and south and can be taken to downtown San Diego) and the proximity of shopping centers and other services. As Table H1-3 shows, the mean factor score for the unmarried group is significantly lower than for the married group ( $p=.02$ ), suggesting that these consideration are not important in the purchase decisions of unmarried heads-of-household.

The second dimension reflects advantages of the property considered by homeowners at the time of purchase. The fact that these homes were exempt from Mello-Roos taxes—which could have amounted to as much as \$500 to \$700 a month—was a positive consideration. In addition, because the homes were built on a mesa some 15 miles east of the Pacific Ocean, they had pleasing views of the surrounding hills and, in some cases, of the ocean. As Table H1-3 shows, the mean factor score is significantly high for married than for unmarried respondents ( $p=.02$ ), suggesting that they consider such advantages as no Mello-Roos taxes and great views as more important in their purchase decisions.

### ***Home Features by Marital Status***

Two dimensions of the home features factor analysis reported in Chapter 17 were significantly different by marital status. The first dimension under the home features category is called size of



home and number of bedrooms. As Table H1-3 shows, the t-test results indicate that married homebuyers have a significantly higher mean factor score than unmarried buyers ( $p=.004$ ) on this dimension.

The second dimension concerned the availability of a single-story option, offered only by SheaHomes, which was critical to a subset of the homebuyers. As Table H1-3 shows, the mean factor score is significantly higher for the unmarried than for the married respondents ( $p=.038$ ).

**Table H1-3. Factor Scores by Marital Status**

<b>Factors</b>	<b>Mean Z-Scores Married/In a Committed Relationship</b>	<b>Mean Z-Scores Not Married</b>
Reasons for purchase: Convenience of access ( $t=2.354$ ; $p=.02$ ) (Total $n=196$ )	.055 ( $n=186$ )	-.685 ( $n=10$ )
Reasons for purchase: Other advantages (no Mello-Roos taxes; great view) ( $t=-2.074$ ; $p=.039$ ) (Total $n=196$ )	-.033 ( $n=186$ )	.638 ( $n=10$ )
Home features: Size of home and number of bedrooms ( $t=2.947$ ; $p=.004$ ) (Total $n=195$ )	.060 ( $n=183$ )	-.809 ( $n=12$ )
Home features: Single-story option ( $t=2.087$ ; $p=.038$ ) (Total $n=195$ )	-.028 ( $n=183$ )	.592 ( $n=12$ )
Equipment owned: Pool and hot tub combination ( $t=2.238$ ; $p=.038$ ) (Total $n=214$ )	.017 ( $n=201$ )	-.358 ( $n=13$ )
Early adopter characteristics: Early adopter (opinion leader; independent, innovative) ( $t=-2.054$ ; $p=.041$ ) (Total $n=212$ )	-.041 ( $n=199$ )	.544 ( $n=13$ )
Barriers to PV purchase: Tangible, immediate financial barriers (Main) ( $t=-2.049$ ; $p=.05$ ) (Total $n=30$ )	-.099 ( $n=27$ )	.110 ( $n=3$ )
Aspects learned since living with PV system: technical aspects (PV owners) ( $t=2.40$ ; $p=.057$ ; nears significance) (Total $n=61$ )	-.019 ( $n=57$ )	-.640 ( $n=4$ )

### ***Equipment Owned by Marital Status***

This dimension reflects ownership of both hot tubs and pools together (as reported in Chapter 17). The t-tests results in Table H1-3 suggest that married homebuyers are more strongly inclined to own pools and hot tubs in combination than are unmarried homebuyers ( $p=.038$ ).

### ***Early Adopter Characteristics by Marital Status***

This dimension includes the variables that are intended to measure early adopter characteristics (opinion leadership, independence, and innovativeness), as reported in Chapter 17. The t-test results in Table H1-3 indicate a significantly higher mean factor score on early adopter characteristics among unmarried than among married respondents ( $p=.041$ ). This suggests that unmarried homebuyers are more strongly inclined to respond that they have early adopter characteristics than are married homebuyers.

### ***Barriers to PV Purchase by Marital Status (Main Respondents Only)***

This dimension deals with tangible, immediate financial barriers reflecting concerns on the part of some main respondents that PV systems might result in unanticipated extra costs, such as increased homeowner insurance premiums and property taxes based on increased home valuation. These concerns suggest that the SheaHomes sales staff might not have explained the broader aspects of PV ownership to prospective homebuyers. The t-test results in Table H1-3 indicate that unmarried respondents have a significantly higher mean factor score than do unmarried homeowners ( $p=.05$ ), suggesting that unmarried respondents are more strongly inclined to be concerned about this dimension than unmarried respondents.

### ***Aspects Learned about Since Living with PV System: Technical Aspects by Marital Status (PV Owners Only)***

This dimension reflects responses that pertain to the technical aspects of the PV system, such as net metering, interconnectivity, and how the system works. The t-test results in Table H1-3 show that married heads-of-household have a higher mean factor score that nears significance ( $p=.057$ ) than do unmarried ones on this dimension. This suggests that married PV owners seem to have learned about these technical aspects of PV systems somewhat more than unmarried respondents.

### ***Differences in Factor Scores by Household Composition***

The responses by household composition were recoded into two categories: (1) households with adults and children and (2) households with adults only. All 49 factors were analyzed by these two categories; nine of the analyses resulted in significant differences. These nine factors relate to reasons for purchase, home features, equipment owned, barriers to PV purchase, conservation behaviors, policy preferences, and use of digital display. Table H1-4 summarizes the findings from these analyses.

### ***Reasons for Purchase by Household Composition***

Four dimensions of the home purchase decision factor analysis reported in Chapter 17 are significantly different by household composition: safe and secure area, familiarity with the area, convenience of access, and other advantages such as no Mello-Roos taxes and great views. The first dimension reflects concerns that homebuyers with families exhibit, including if the

neighborhood is safe and secure, if the schools are good, and, in general, if the home is in a high-quality neighborhood. The mean factor score for households with children is significantly higher than adults-only households ( $p=.000$ ). The t-test results in Table H1-4 indicate that households with children feel like this is more important than do households consisting of adults only.

**Table H1-4. Factor Scores by Household Composition**

<b>Factors</b>	<b>Mean Z-Scores Adults and Children</b>	<b>Mean Z-Scores Adults Only</b>
Reasons for purchase: safe and secure area ( $t= -3.771$ ; $p=.000$ ) (Total $n=193$ )	.200 ( $n=132$ )	-.424 ( $n=61$ )
Reasons for purchase: familiarity with area ( $t= -4.682$ ; $p=.000$ ) (Total $n=193$ )	.225 ( $n=132$ )	-.466 ( $n=61$ )
Reasons for purchase: convenience of access ( $t= -2.933$ ; $p=.004$ ) (Total $n=193$ )	.145 ( $n=132$ )	-.292 ( $n=61$ )
Reasons for purchase: other advantages (no Mello- Roos taxes; great view) ( $t=2.395$ ; $p=.018$ ) (Total $n=193$ )	-.103 ( $n=132$ )	.266 ( $n=61$ )
Home features: size of home and number of bedrooms ( $t= -2.586$ ; $p=.01$ ) (Total $n=191$ )	.148 ( $n=130$ )	-.249 ( $n=61$ )
Policy preferences: financial incentives ( $t= -2.270$ ; $p=.024$ ) (Total $n=213$ )	.095 ( $n=146$ )	-.238 ( $n=67$ )
Barriers to PV purchase: uncertainty about PV systems (Main) ( $t=2.279$ ; $p=.03$ ) (Total $n=30$ )	-.265 ( $n=20$ )	.571 ( $n=10$ )
Conservation behaviors: adjusting thermostats (Main) ( $t=2.055$ ; $p=.041$ ) (Total $n=181$ )	-.090 ( $n=126$ )	.242 ( $n=55$ )
Uses of digital display: optimizing electricity cost swings (PV owners) ( $t= -2.169$ ; $p=.034$ ) (Total $n=63$ )	.108 ( $n=46$ )	-.331 ( $n=17$ )

The second dimension, familiarity with the area, reflects previous knowledge of the area and the people who live there, as well as common areas for family and friends to gather. The t-test results in Table H1-4 indicate that households with children have a significantly higher mean factor score on this dimension than households with adults only ( $p=.000$ ). Although similar to the idea of a safe, secure, and high-quality neighborhood, familiarity with places and people forms a separate dimension.

The third dimension involves convenience of access from the neighborhood in terms of closeness to work and the proximity of shopping centers and other services. The t-test results in Table H1-4 indicate that the mean factor score on this dimension is significantly higher for homebuyers with children than for adults-only households ( $p=.004$ ).

The fourth dimension deals with other advantages of the property considered by homeowners at the time of purchase. The t-test results in Table H1-4 indicate that the mean factor score on this dimension is significantly higher for adults-only households than for homebuyers with children ( $p=.018$ ).

### ***Home Features by Household Composition***

One dimension of home features factor analysis reported in Chapter 17 was the size of home and number of bedrooms. This dimension reflects the homebuyers' interest in the number of bedrooms and the overall square footage of the home. The t-test results in Table H1-4 indicate that more homebuyers with children have a significantly higher factor score than do adults-only households ( $p=.01$ ).

### ***Policy Preferences by Household Composition***

One dimension of the policy preferences factor analysis reported in Chapter 17 relates to preferences concerning financial incentives for energy efficiency and solar features, including rebates and tax credits from various levels of government and utility companies. Mean factor scores differ significantly by household composition; The t-test results in Table H1-4 indicate that households with children have significantly higher factor scores on this dimension than adults-only households ( $p=.024$ ).

### ***Barriers to PV Purchase by Household Composition (Main Respondents Only)***

One dimension of the barriers to PV purchase factor analysis reported in Chapter 17 was uncertainty about PV systems. It reflects some main respondents' concerns about the performance of solar PV systems—whether they would soon become outdated, whether they would require costly and difficult maintenance, and whether they would produce electricity reliably. The t-test results in Table H1-4 indicate that adults-only households have significantly higher mean factor score on this dimension than do households with children ( $p=.03$ ).

### ***Conservation Behaviors by Household Composition (Main Respondents Only)***

One dimension of the self-reported conservation behavior factor analysis reported in Chapter 17 had to do with adjusting thermostats in winter, summer, and when away. The t-test results in Table H1-4 indicate that households with children have significantly lower mean factor score on this dimension than adults-only households ( $p=.041$ ), suggesting that adults-only households manage their thermostats more closely than families do.

### ***Uses of Digital Display by Household Composition (PV Owners Only)***

One dimension of the uses of digital display factor analysis reported in Chapter 17 relates to use of the display for feedback on system performance and electricity use. These responses pertain to using feedback about electricity use to manage energy-related behaviors and monitor electricity production and use. This suggests that, when possible, a household might try to use appliances on sunny afternoons when their electricity production is highest and might avoid other uses at that time or when their electricity production is lower. Mean factor scores differ significantly by household composition on this dimension. The t-test results in Table H1-4 indicate that households with children have a significantly higher mean factor score than do adults-only households on this dimension ( $p=.034$ ), suggesting that families in PV households tend to use the digital displays to manage their electricity-related household chores, whereas households with children do not.

### **Differences in Factor Scores by Educational Attainment**

The questionnaire responses on educational attainment were recoded into five categories: (1) high school graduate or below, (2) some college, (3) bachelor's degree or bachelor's degree plus, (4) master's degree or master's plus, and (5) doctoral degree. All 49 factors were analyzed by these five categories of educational attainment; seven of these analyses resulted in significant differences by this variable. These seven factors relate to reasons for home purchase, importance of home features, attitude toward solar features in new housing, conservation behaviors, and early adopter characteristics. Table H1-5 summarizes the findings from these analyses.

### ***Reasons for Purchase by Educational Attainment***

Three of the dimensions of the home purchase decision factor analysis reported in Chapter 17 are significantly different by age. The first dimension, builder reputation and performance, reflects respondent perception of and experience with the company that offered the home. The reputability of the builder, the helpfulness of the sales staff, and—to a lesser extent—the energy use aspects of the home combine to form this factor. The t-test results in Table H1-5 indicate that homebuyers with some college have a significantly higher mean factor score than do those with Bachelor's, Master's, or doctoral degrees ( $p=.034$ ).

The second dimension, familiarity with area, reflects previous knowledge of the area and the people who live there, as well as common areas for family and friends to gather. The F-test results in Table H1-5 indicate that homebuyers with some college have a significantly lower mean score on this dimension than do high school graduates or those with baccalaureate or more advanced degrees ( $p=.008$ ).

The third dimension, other advantages of the home (e.g., no Mello-Roos taxes and great views), reflects other advantages of the property considered by homeowners at the time of purchase. The F-test results in Table H1-5 indicate that only those with a master's or master's plus or a doctorate do not seem to be concerned with this dimension ( $p=.031$ ).

**Table H1-5. Factor Scores by Educational Attainment**

<b>Factors</b>	<b>Mean Z-Scores H.S. Grad or Below</b>	<b>Mean Z-Scores Some College</b>	<b>Mean Z-Scores Bachelor's or Bachelor's Plus</b>	<b>Mean Z-Scores Master's or Master's Plus</b>	<b>Mean Z-Scores Doctorate</b>
Reasons for purchase: Builder reputation and performance (F=2.662; p=.034) (Total n=195)	-.068 (n=10)	.501 (n=28)	-.047 (n=82)	-.085 (n=45)	-.292 (n=30)
Reasons for purchase: Familiarity with area (f=3.523; p=.008) (Total n=195)	.198 (n=10)	-.576 (n=28)	.215 (n=82)	-.058 (n=45)	-.072 (n=30)
Reasons for purchase: Other advantages (no Mello-Roos taxes; great view) (F=2.720; p=.031) (Total n=195)	.614 (n=10)	.111 (n=28)	.097 (n=82)	-.163 (n=45)	-.386 (n=30)
Home features: Single- story option (F=4.205; p=.003) (Total n=194)	.424 (n=12)	.420 (n=30)	.062 (n=82)	-.244 (n=40)	-.427 (n=30)
Attitudes toward solar features: Desirable innovation (F=3.980; p=.004) (Total n=212)	.214 (n=12)	-.650 (n=30)	.107 (n=86)	.043 (n=50)	.150 (n=34)
Conservation behavior: Adjusting thermostats (F=2.673; p=.034) (Total n=183)	-.339 (n=11)	-.238 (n=27)	.240 (n=79)	-.274 (n=39)	.055 (n=27)
Early adopter characteristics: Early adopter (opinion leader, independent, innovative) (F=2.883; p=.024) (Total n=213)	.808 (n=12)	-.236 (n=32)	.035 (n=86)	-.159 (n=50)	.069 (n=33)

### ***Home Features by Educational Attainment***

One dimension of the home features factor analysis reported in Chapter 17 is the single-story option. This option was offered only by SheaHomes. The F-test results in Table H1-5 indicate that responding heads of households with doctorates have significantly lower mean scores on the dimension than do all others, save those with Master's degrees. Responding heads of households with high school or some college have the highest mean scores on this dimension ( $p=.003$ ).

### ***Attitudes toward Solar Features by Educational Attainment***

One dimension of the attitudes toward solar features factor analysis reported in Chapter 17 is the desirability of solar PV and solar water heating systems as innovations in new housing. The F-test results in Table H1-5 indicate that respondents who had some college education have a significantly lower mean factor score on this dimension than do all other respondents ( $p=.004$ ).

### ***Conservation Behavior by Educational Attainment***

One dimension of the conservation behaviors factor analysis reported in Chapter 17 involves adjusting thermostats in winter, summer, and when away. The F-test results in Table H1-5 indicate that respondents with a bachelor's or bachelors plus have a significantly higher factor score on this factor than do other groups ( $p=.034$ ).

### ***Early Adopter Characteristics by Educational Attainment***

One dimension of the early-adopter factor analysis discussed in Chapter 17 involves such early adopter characteristics as opinion leadership, independence, and innovativeness. The F-test results in Table H1-5 indicate that high school graduates have significantly higher mean factor score on this factor than do all other groups ( $p=.024$ ). This indicates that high-school graduates (or below) are more strongly inclined to see themselves as opinion leaders, independent, and innovative than any other education grouping. This result does not square with the prediction by diffusion theory that innovators and early adopters tend to be more highly educated.

### ***Differences in Factor Scores by Occupation***

These responses on occupation were recoded into two categories: (1) science and engineering occupations and (2) all other occupations. All 49 factors were analyzed by these two occupational categories, resulting in four significant differences by occupation. These four factors relate to satisfaction with home purchase, appliances and equipment owned, solar PV system attributes, and aspects learned about since living with solar PV systems. Table H1-6 summarizes the findings from these analyses.

**Table H1-6. Factor Scores by Occupation**

<b>Factors</b>	<b>Mean Z-Scores Science and Engineering Occupations</b>	<b>Mean Z-Scores All Other Occupations</b>
Satisfaction: Estimated monthly utility bill ( $t = -2.904$ ; $p = .004$ ) (Total $n = 155$ )	-.332 ( $n = 53$ )	.157 ( $n = 102$ )
Equipment owned: Measures for comfort (dual- zone heating/air-conditioning system; CFLs) ( $t = -3.274$ ; $p = .001$ ) (Total $n = 189$ )	-.359 ( $n = 60$ )	.148 ( $n = 129$ )
Solar PV system attributes: System performance (PV owners) ( $t = 2.225$ ; $p = .028$ ) (Total $n = 60$ )	.321 ( $n = 25$ )	-.251 ( $n = 35$ )
Learned since living with solar PV systems: Technical aspects (PV owners) ( $t = 3.915$ ; $p = .000$ ) (Total $n = 57$ )	.492 ( $n = 25$ )	-.432 ( $n = 32$ )

### ***Satisfaction by Occupation***

One dimension of the satisfaction factor analysis reported in Chapter 17 is the estimated monthly utility bill. The questionnaires asked all respondents to estimate their monthly utility bills. These responses were recoded from the actual dollar amounts reported by classifying the dollar amounts into five categories; each category contained 20% of the responses. The categories are (1)  $\leq \$80$  per month, (2)  $\$80.01$ – $\$110$ , (3)  $\$110.01$ – $\$150$ , (4)  $\$150.01$ – $\$210$ , and (5)  $> \$210$ . The  $t$ -test results in Table H1-6 indicate that respondents in the science and engineering occupations have a significantly lower mean factor score on the estimated monthly utility bill factor ( $p = .004$ ).

### ***Equipment Owned by Occupation***

One dimension of the equipment-owned factor analysis reported in Chapter 17 concerns measures for comfort, including ownership of dual-zone heating and air-conditioning systems and CFLs. This dimension shows a significant difference by occupation. The  $F$ -test results in Table H1-6 indicate that those in science and engineering have a significantly lower factor score on the measures-for-comfort dimension than those in all other occupations ( $p = .001$ ).

### ***Solar PV System Attributes by Occupation***

One dimension of the solar PV system attributes factor analysis reported in Chapter 17 is system performance, which differs significantly by occupation. This factor reflects responses on the importance of PV system performance and reliability, as well as feedback on the amount of electricity produced so that PV owners will know the system is performing well. The  $F$ -test results in Table H1-6 indicate that the mean factor score for scientists and engineers is significantly higher than the score for those in all other occupations ( $p = .028$ ).



### ***Aspects Learned Since Living with Solar PV Systems by Occupation (PV Owners Only)***

A dimension of the factor analysis on aspects learned since living with solar PV systems reported in Chapter 17 is technical aspects. Technical aspects was the only dimension in this factor to differ significantly by occupation. This dimension reflects responses that seem to pertain to the technical aspects of the PV system, such as net metering, interconnectivity, and how the system works. The F-test results in Table H1-6 indicate that scientists and engineers have a significantly higher mean factor score on this dimension than do respondents in all other occupations ( $p=.000$ ).

### **Differences in Factor Scores by Annual Household Income**

These responses by income were recoded into three categories: (1)  $\leq \$99,000$ , (2)  $\$100,000$  to  $\$199,000$ , and (3)  $\geq \$200,000$ . All 49 factors were analyzed by these three income categories; four of the analyses resulted in significant differences by income. These four factors relate to reasons for purchase, home features, equipment owned, and PV information channels employed. Table H1-7 summarizes the findings from these analyses.

**Table H1-7. Factor Scores by Annual Household Income**

<b>Factors</b>	<b>Mean Z-Scores <math>\leq \\$99,999</math></b>	<b>Mean Z-Scores \$100,000 to \$199,000</b>	<b>Mean Z-Scores <math>\geq \\$200,000</math></b>
Reasons for purchase: Safe and secure area ( $F=3.319$ ; $p=.038$ ) (Total $n=180$ )	-.041 ( $n=39$ )	.136 ( $n=113$ )	-.412 ( $n=28$ )
Home features: Overall design (quality of light; spaciousness) ( $F=3.611$ ; $p=.029$ ) (Total $n=178$ )	-.326 ( $n=39$ )	.160 ( $n=112$ )	-.111 ( $n=27$ )
Equipment owned: Smaller efficiency measures (dimmer switches; ceiling fans) ( $F=3.350$ ; $p=.037$ ) (Total $n=198$ )	-.308 ( $n=42$ )	.023 ( $n=126$ )	.277 ( $n=30$ )
PV information channels: Web sites (PV owners) ( $F=6.605$ ; $p=.003$ ) (Total $n=49$ )	-.076 ( $n=12$ )	-.322 ( $n=26$ )	.857 ( $n=11$ )

### ***Reasons for Purchase by Annual Household Income***

One dimension of the reasons for the purchase factor analysis reported in Chapter 17 is the safety and security of the area. As discussed earlier, it reflects concerns that the area is safe, the schools good, and the home high-quality. The F-test results in Table H1-7 indicate that homebuyers with an annual household income of  $\geq \$200,000$  have a significantly lower mean score on this dimension than do those with incomes ( $p=.038$ ).

### ***Home Features by Annual Household Income***

One dimension of the home features factor analysis reported in Chapter 17 is the home's overall design (quality of light; spaciousness). As noted earlier, this reflects aspects of the house's overall design, including quality of light, sense of openness, spaciousness, layout, and architectural design. The F-test results in Table H1-7 indicate that respondents with an annual household income of  $\leq \$99,000$  have a significantly lower mean factor score on this dimension than do those with incomes between \$100,000 and \$199,999 ( $p=.029$ ).

### ***Equipment Owned by Annual Household Income***

One dimension of the equipment-owned factor analysis reported in Chapter 17 relates to smaller efficiency measures (dimmer switches; ceiling fans), showed significant differences by annual income. The F-test results in Table H1-7 indicate that respondents with an annual household income of  $\leq \$99,000$  have a significantly lower factor score than those with incomes  $\geq \$200,000$  ( $p=.037$ ).

### ***PV Information Channels by Annual Household Income (PV Owners Only)***

One dimension of this factor, Web sites, shows significant differences by income. PV owners were asked which channels they had used to gather information about their PV systems. The questionnaire mentioned four such channels: a video on operations and maintenance, a fact sheet about solar PV systems, an operating manual, and Web sites (see Chapter 9, Knowledge and Information). The F-test results in Table H1-7 ( $p=.003$ ) indicate that respondents with an annual household income of  $\leq \$99,000$  and those with incomes of \$100,000 to \$199,000 are less inclined to use Web sites as PV information channels than are those with an annual income of  $\geq \$200,000$ .

### **Summary of Demographic Differences on Study Factors by Categories of Homebuyers**

*Among all respondents*, the differences highlight the desire of women, families with children, and those with annual incomes of \$100,000–\$199,999 to live in a safe, secure area. Familiarity with the area is important to younger buyers, families with children at home, and buyers  $\leq 39$  years of age. It is also more important to high-school graduates and those with a bachelor's degree. Convenience of access is a more important factor for the married than the unmarried homebuyers, and for households with both adults and children.

In considering reasons for purchase, builder reputation and performance are more important to those 40–49 years of age and to those with some college. Other advantages of the new homes (e.g., no Mello Roos taxes and great views) are more important to the unmarried, adults-only households, and high-school graduates.

In considering home features, the size of the home and number of bedrooms are more important to households with children. Overall design is more important to those with annual incomes of \$100,000–\$199,999. Weighing in the purchase decision of some respondents is the single-story option, which is more important to those 50+ years of age, the unmarried, and those with high school or some college.

The only difference on satisfaction factors found after respondents had lived in their homes for at least six months was by occupation: scientists and engineers are significantly more satisfied with their monthly utility bills than are others.

Males are more strongly inclined to believe solar features are a desirable innovation in new; least inclined to believe this are those with some college. Those 40–49 years of age believe solar features are cost effective.

Equipment owned also differentiates among respondents on a few key demographic variables. The pool and hot tub combination is more frequently owned by those 40–49 years of age than other age groups, and by the married. Smaller efficiency measures are more frequently owned by those  $\leq 39$  years of age and by those with incomes  $\geq \$200,000$ . Measures for comfort (such as dual-zone heating and air-conditioning systems) are more frequently owned by those working in non-scientific occupations.

Regarding resource-conservation behaviors, adjusting thermostats reportedly occurs more frequently among adults-only households and those with Master's degrees.

Perhaps surprisingly, environmentalism is found to be strongest among the oldest respondents (50 years of age or older) and weakest among the those 39 years of age or younger. Perhaps the younger buyers expect the environmental aspects to be taken care of routinely, whereas the older buyers feel more of a sense of personal responsibility for environmental protection and less trust in institutions to foster environmental protection.

The unmarried homebuyers more frequently exhibit early adopter characteristics than do the married ones to exhibit early-adopter characteristics. As would *not* be expected, those with the lowest educational attainment exhibit higher early-adopter characteristics.

To promote solar features in new housing, homebuyers with children are more strongly inclined to prefer financial incentives such as tax credits and rebates than do adults-only households.

*Among main respondents*, the unmarried are more concerned about the tangible, immediate financial barriers to PV purchase, and households with children are more uncertain about the PV purchase than are the buyers living in adults-only households.

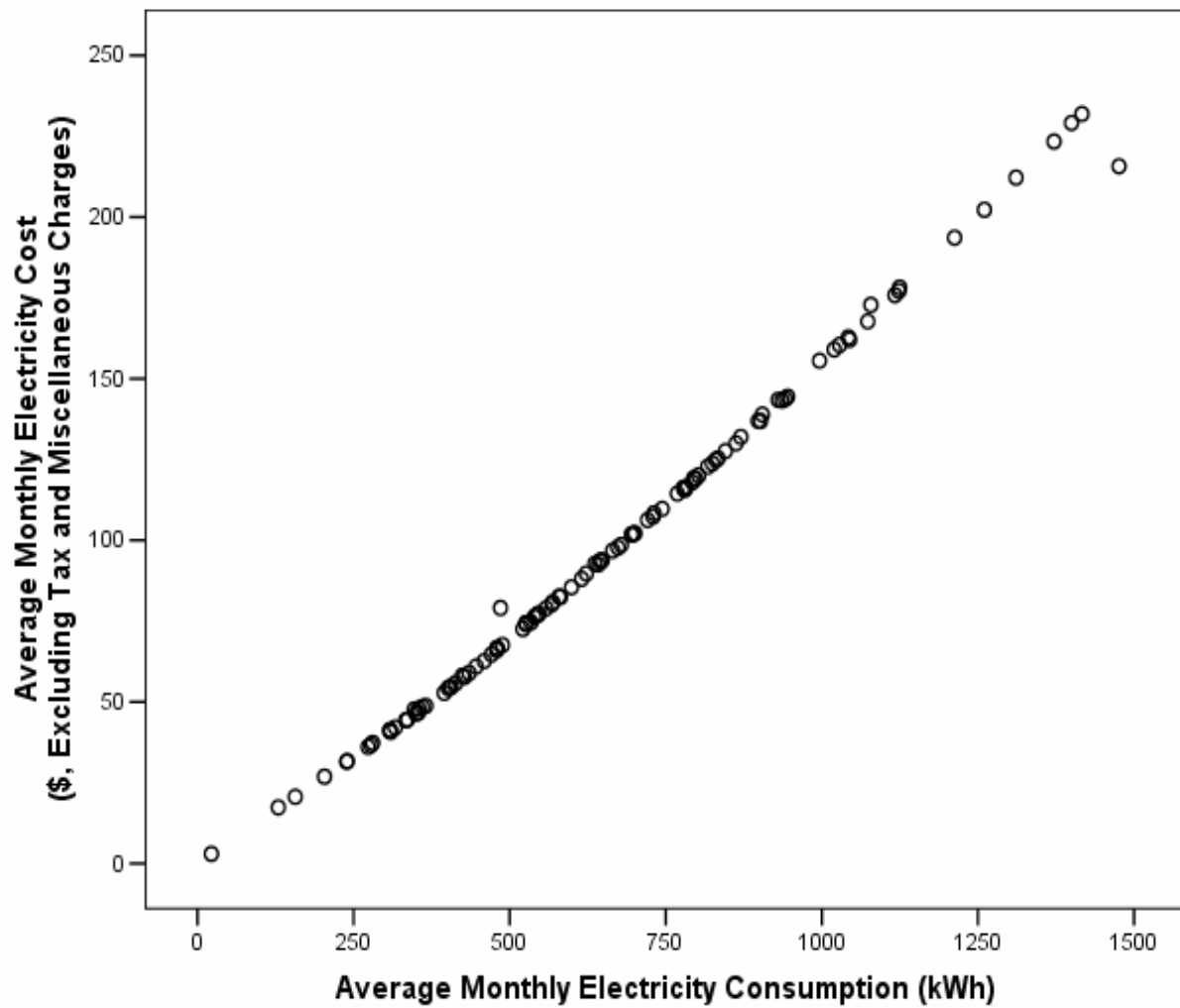
*Among PV owners*, solar PV system performance is more significant to males than to females. Technical aspects learned since living with the PV system are somewhat more important to the

married householders and to scientists and engineers. The digital display showing electricity consumption and production in real time is less important to the adults-only households than to the families with children. Relative to information channels for obtaining information of PV systems, the 50+ age group is more strongly inclined to use the video on PV system operations and maintenance and the highest-income group is more strongly inclined to use Web sites.

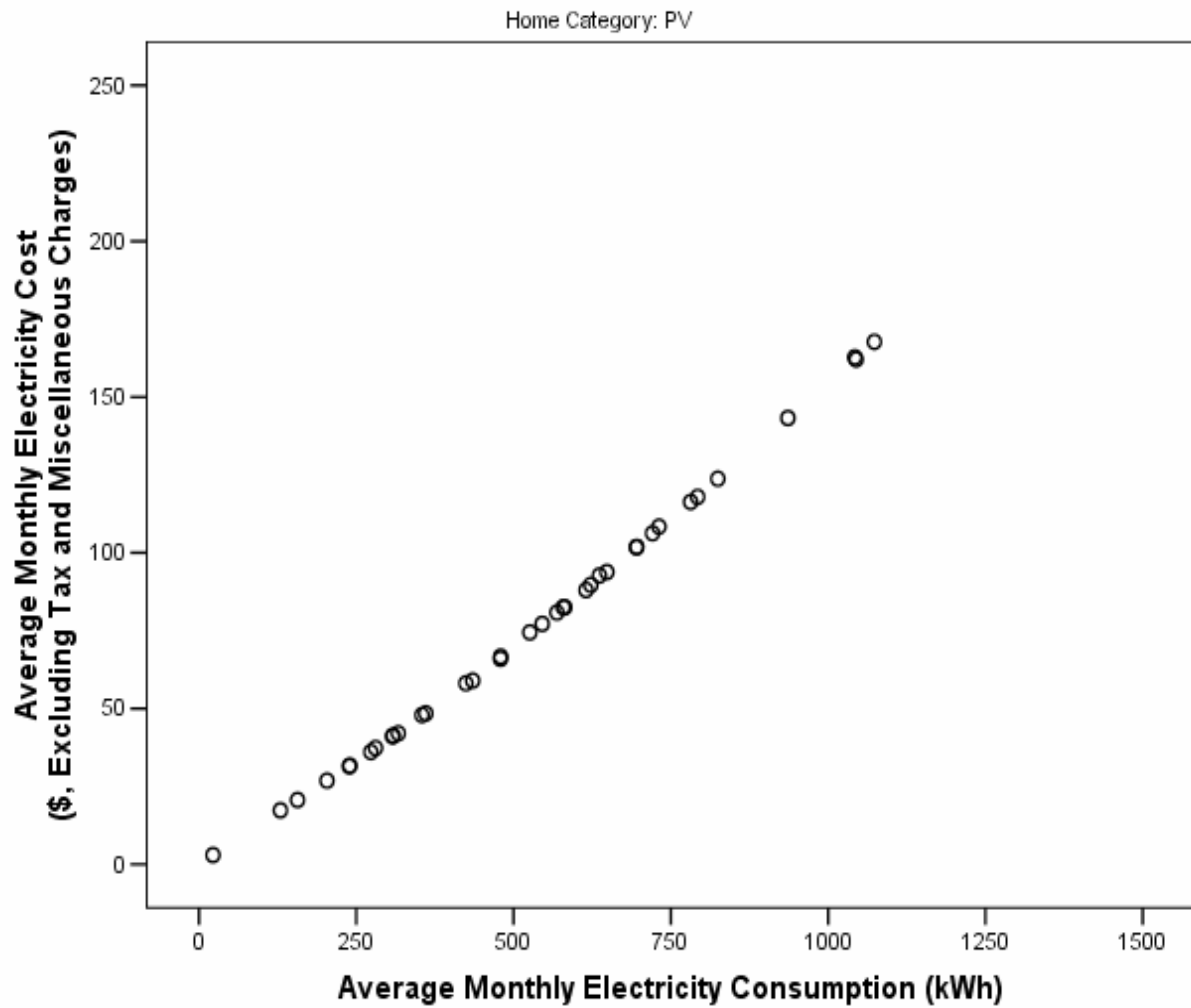
## **Appendix J**

### **Scatter Diagrams of Average Monthly Electricity Consumption by Average Monthly Electricity Cost for All Homes in the Study**

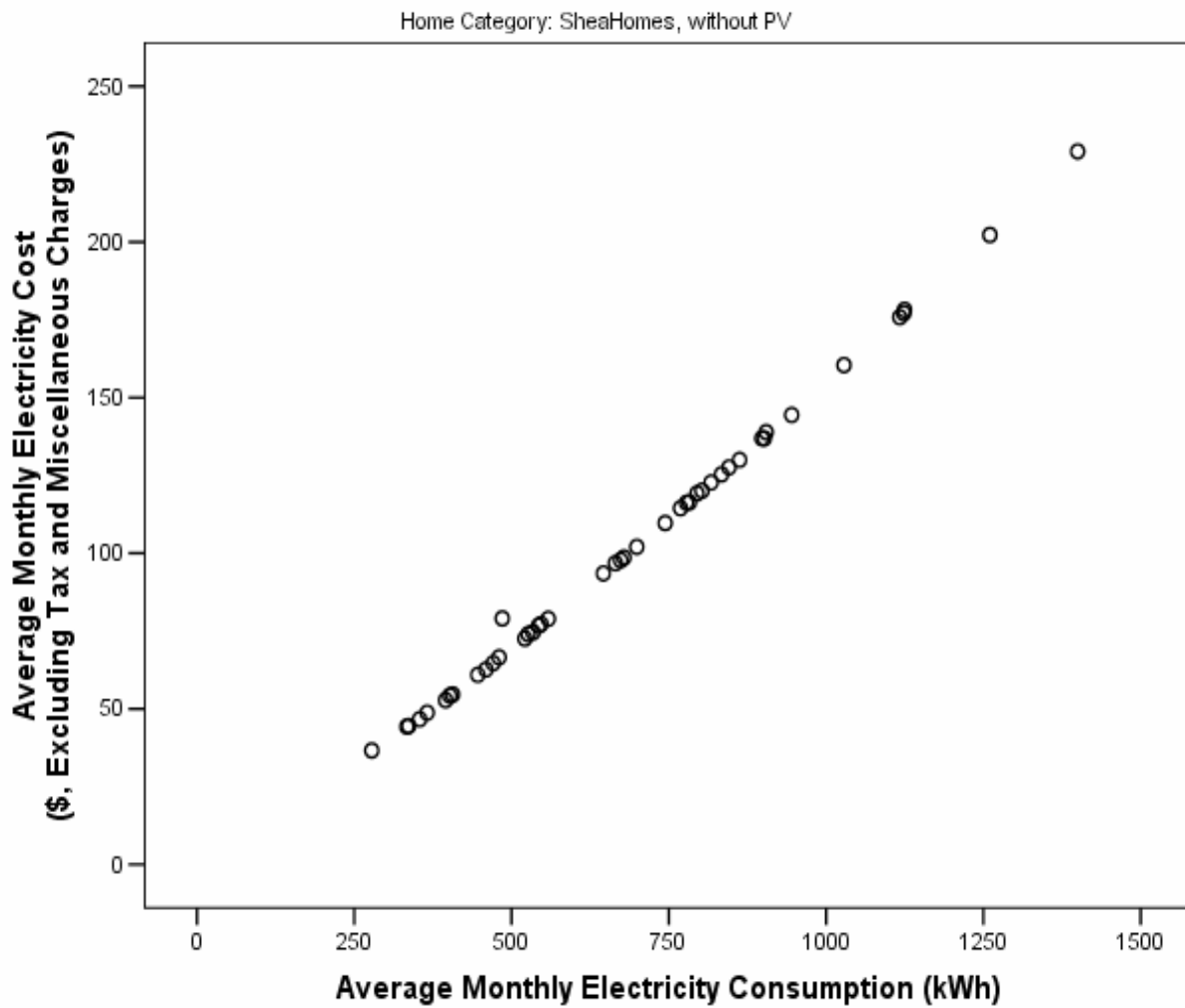
*Cited in Chapter 20*



**Figure J-1. Comparison of Average Monthly Electricity Consumption (kWh) and Average Monthly Electricity Cost (\$), Excluding Taxes and Miscellaneous Charges, for All Homes Combined (n=109)**

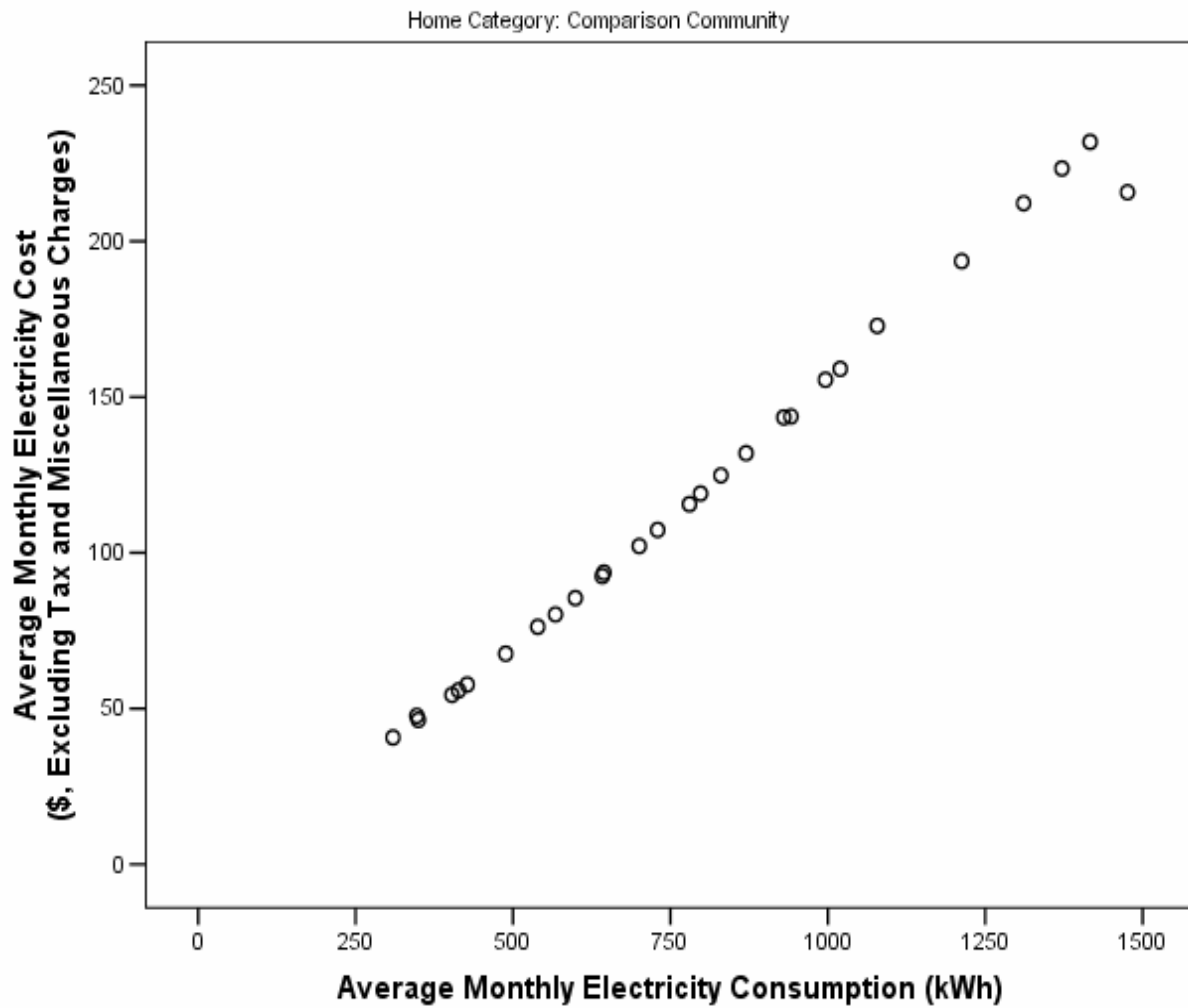


**Figure J-2. Comparison of Average Monthly Electricity Consumption (kWh) and Average Monthly Electricity Cost (\$), Excluding Taxes and Miscellaneous Charges, for Homes in the SheaHomes Communities with PV Systems (n=37)**

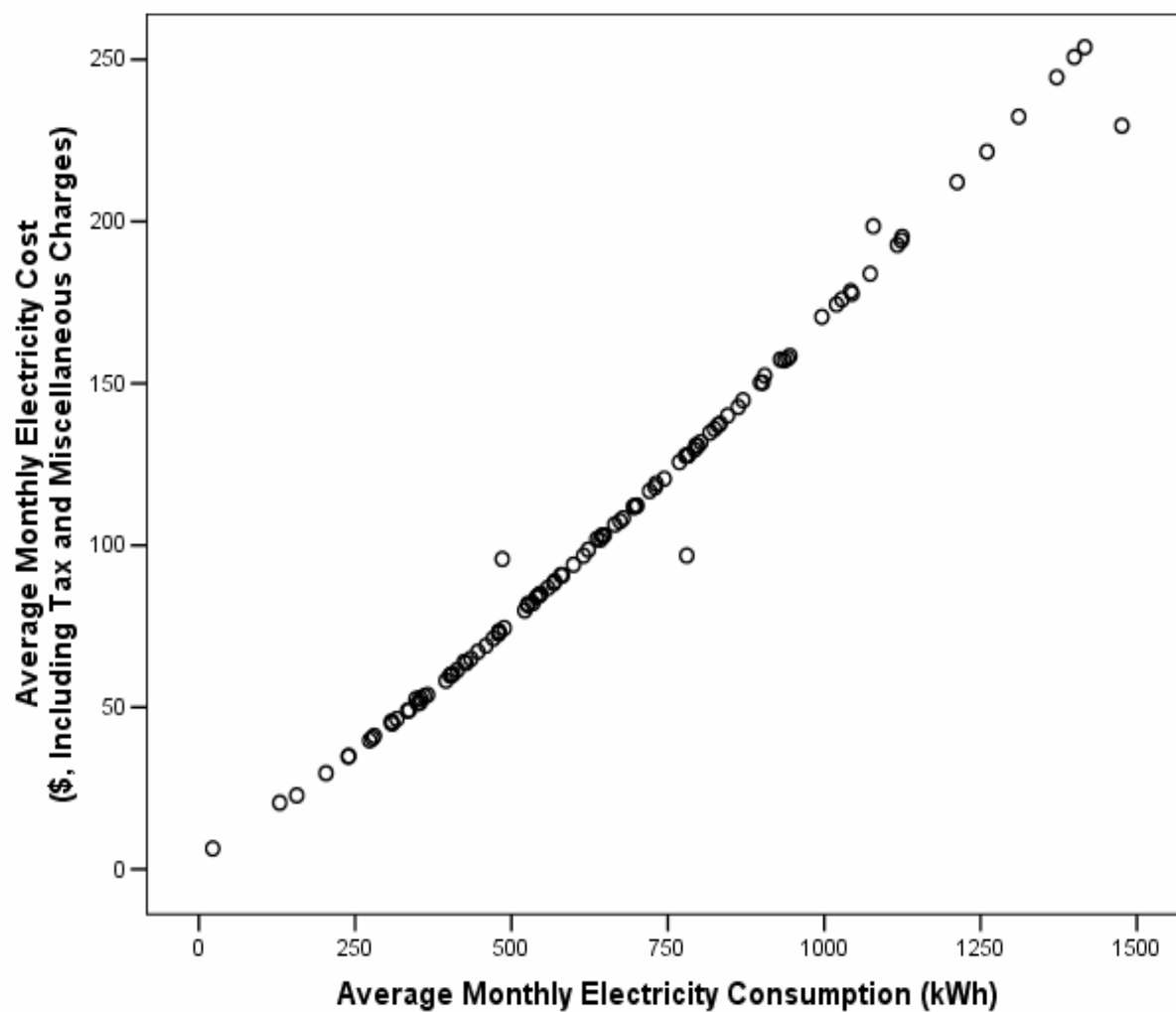


**Figure J-3. Comparison of Average Monthly Electricity Consumption (kWh) and Average Monthly Electricity Cost (\$), Excluding Taxes and Miscellaneous Charges, for Homes in the SheaHomes Communities without PV Systems (n=44)**

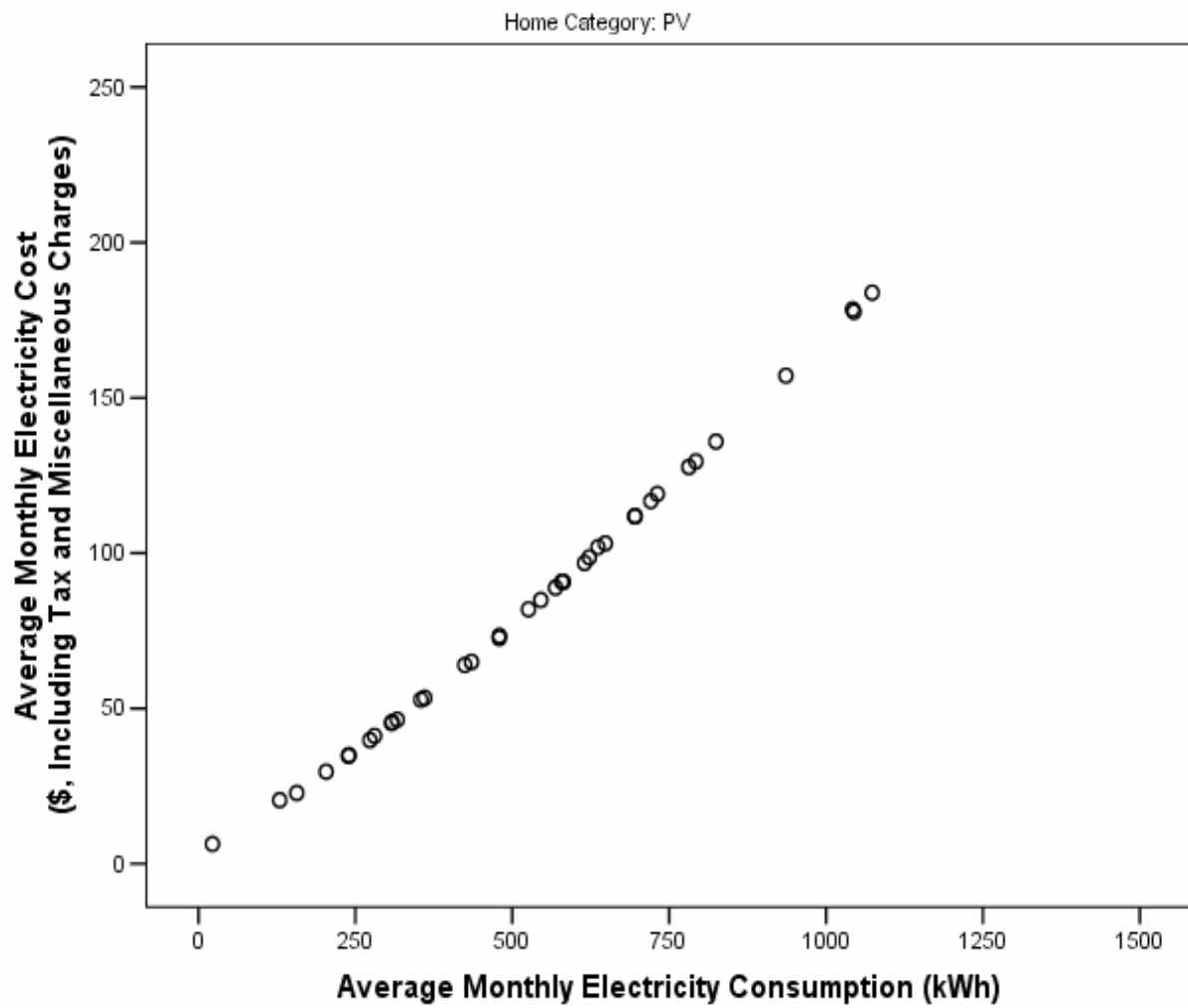




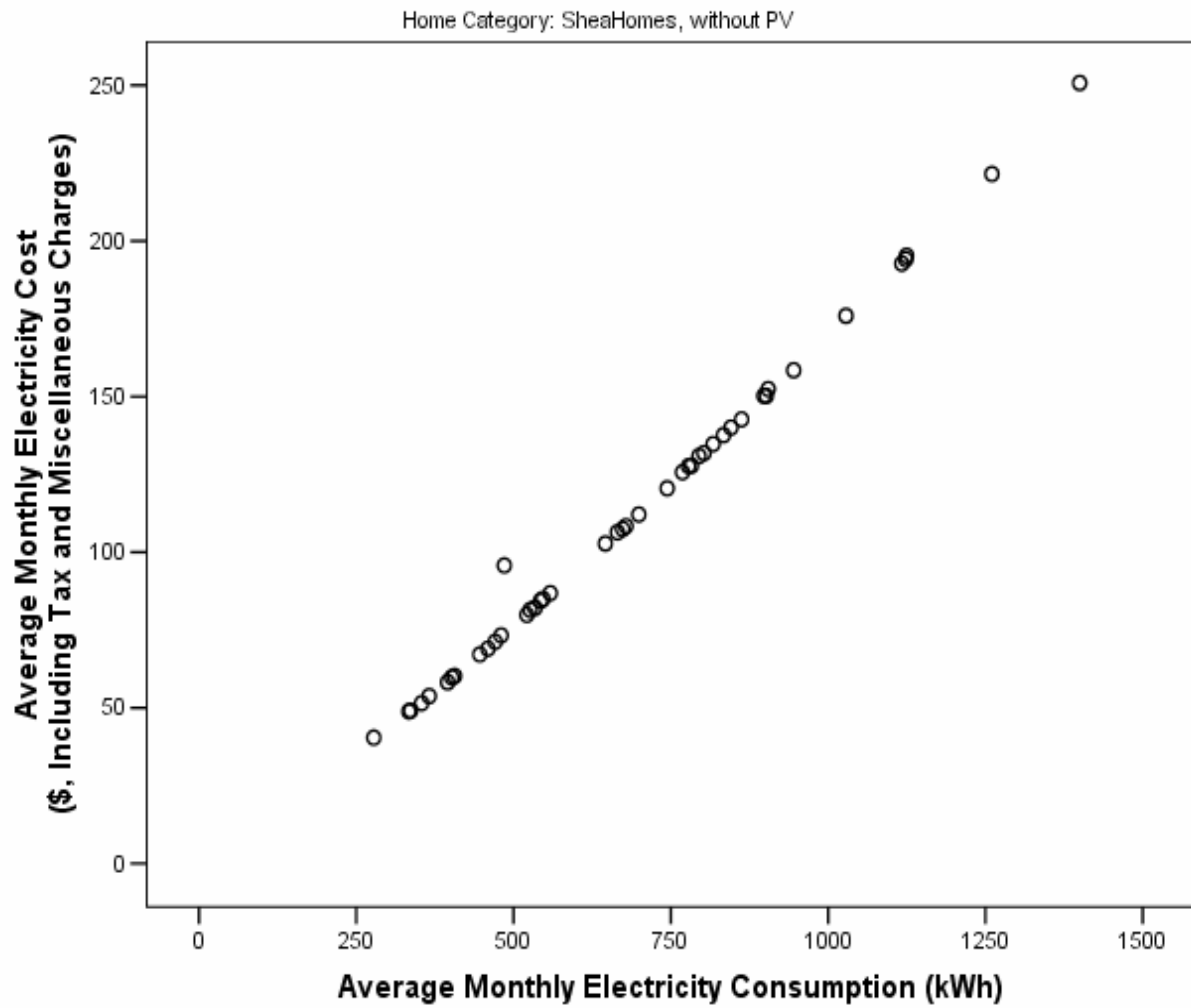
**Figure J-4. Comparison of Average Monthly Electricity Consumption (kWh) and Average Monthly Electricity Cost (\$), Excluding Taxes and Miscellaneous Charges, for Homes in the Comparison Community (n=28)**



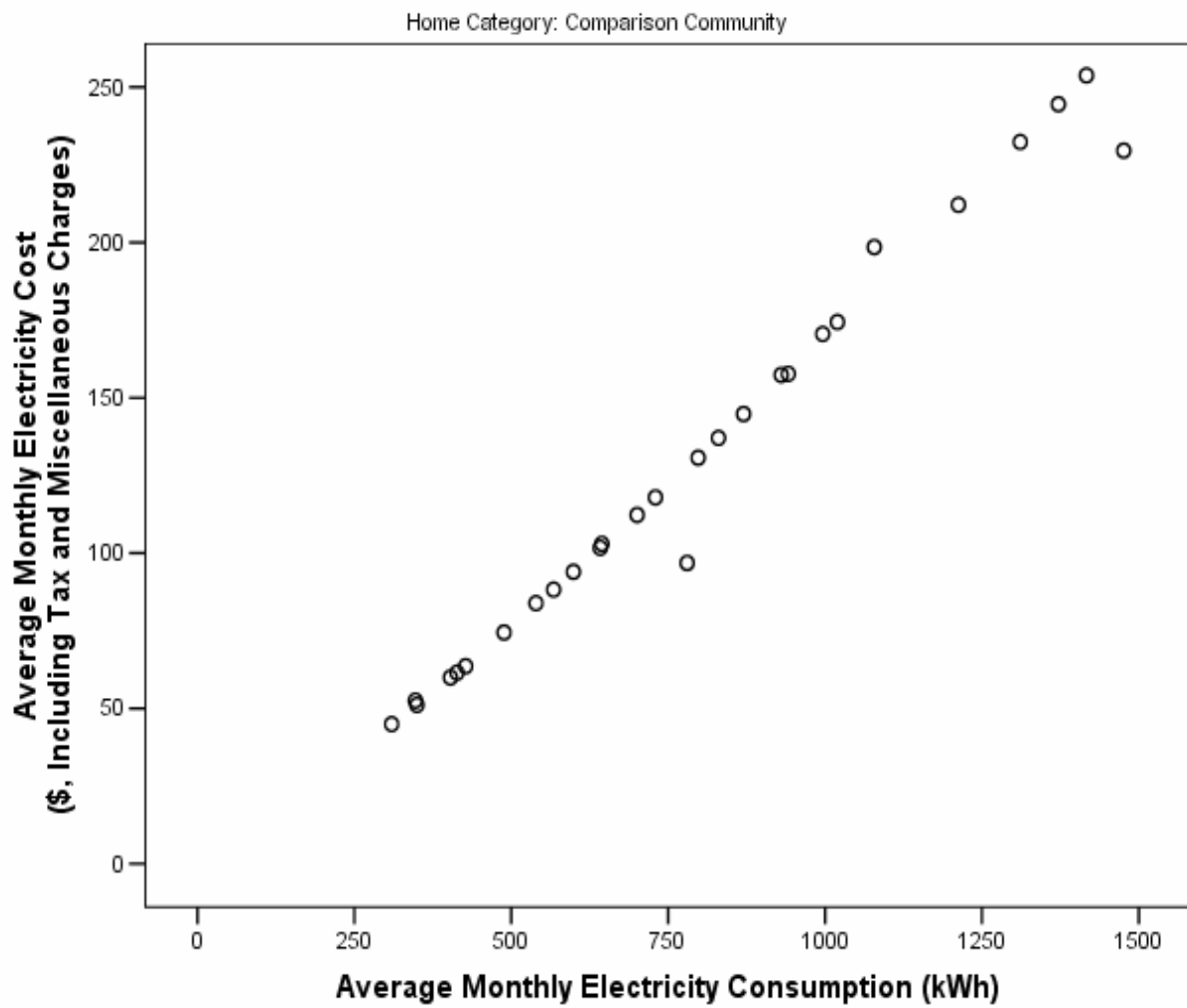
**Figure J-5. Comparison of Average Monthly Electricity Consumption (kWh) and Average Monthly Electricity Cost (\$), Including Taxes and Miscellaneous Charges, for All Homes Combined (n=109)**



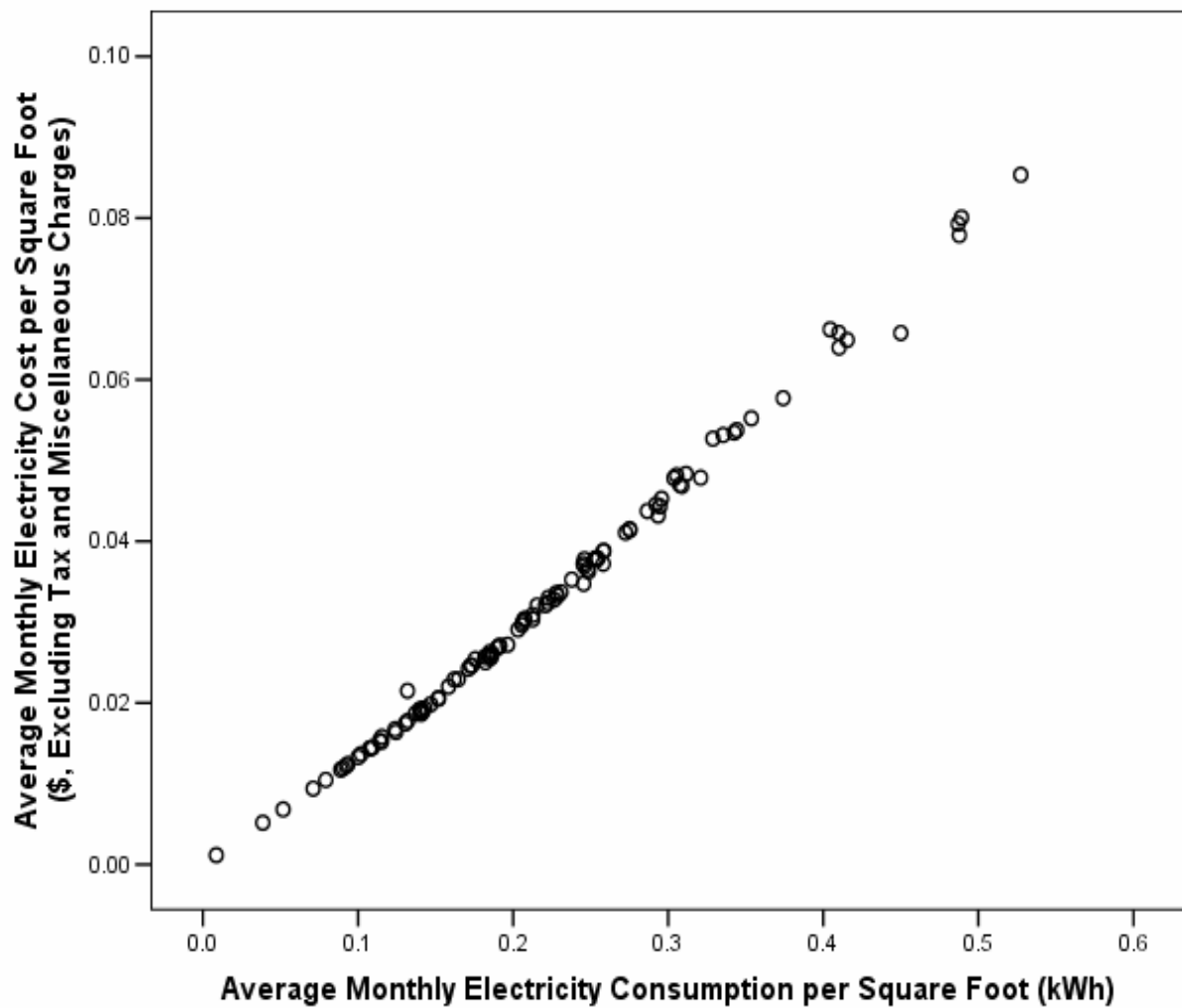
**Figure J-6. Comparison of Average Monthly Electricity Consumption (kWh) and Average Monthly Electricity Cost (\$), Including Taxes and Miscellaneous Charges, for Homes in the SheaHomes Communities with PV Systems (n=37)**



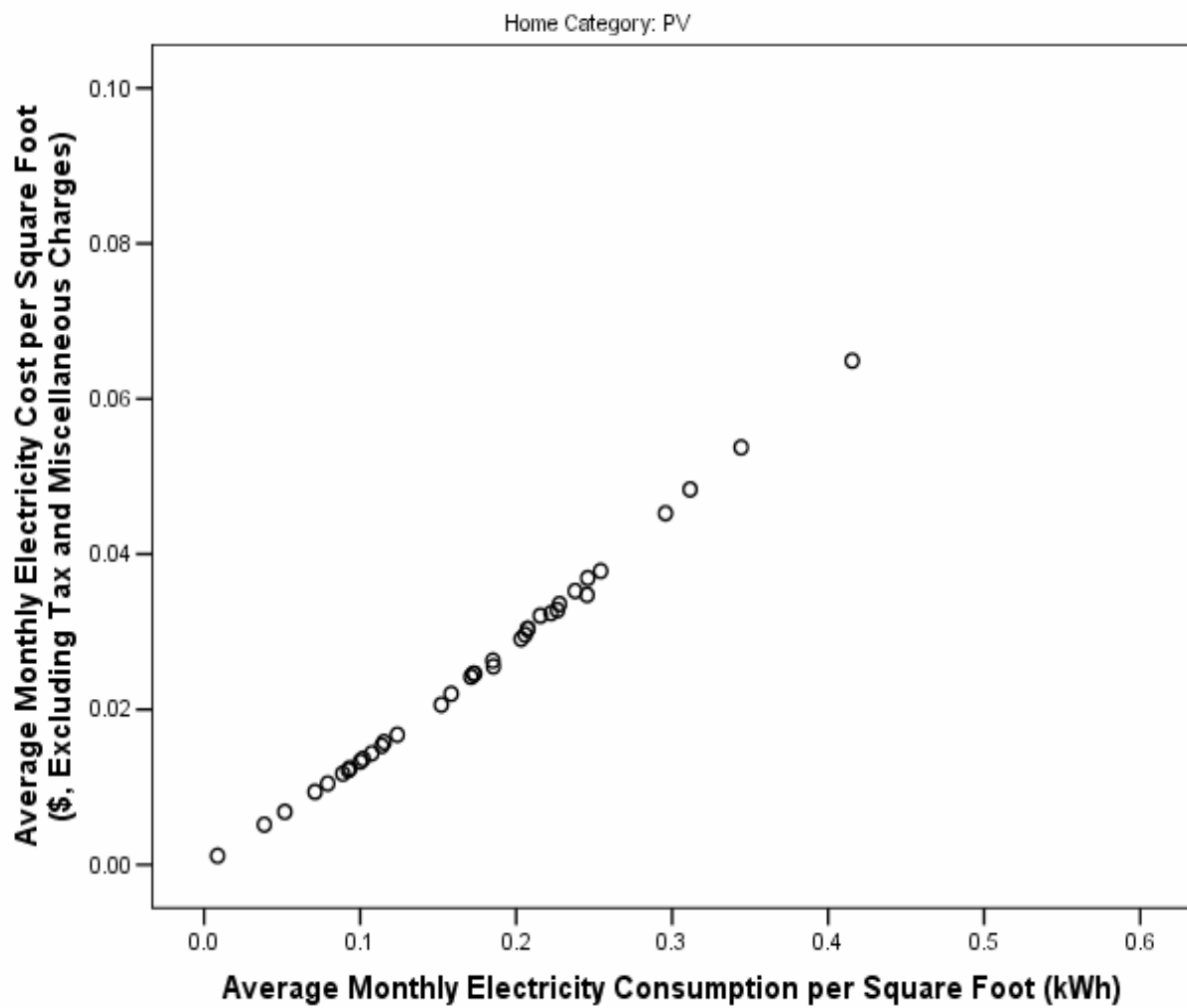
**Figure J-7. Comparison of Average Monthly Electricity Consumption (kWh) and Average Monthly Electricity Cost (\$), Including Taxes and Miscellaneous Charges, for Homes in the SheaHomes Communities without PV Systems (n=44)**



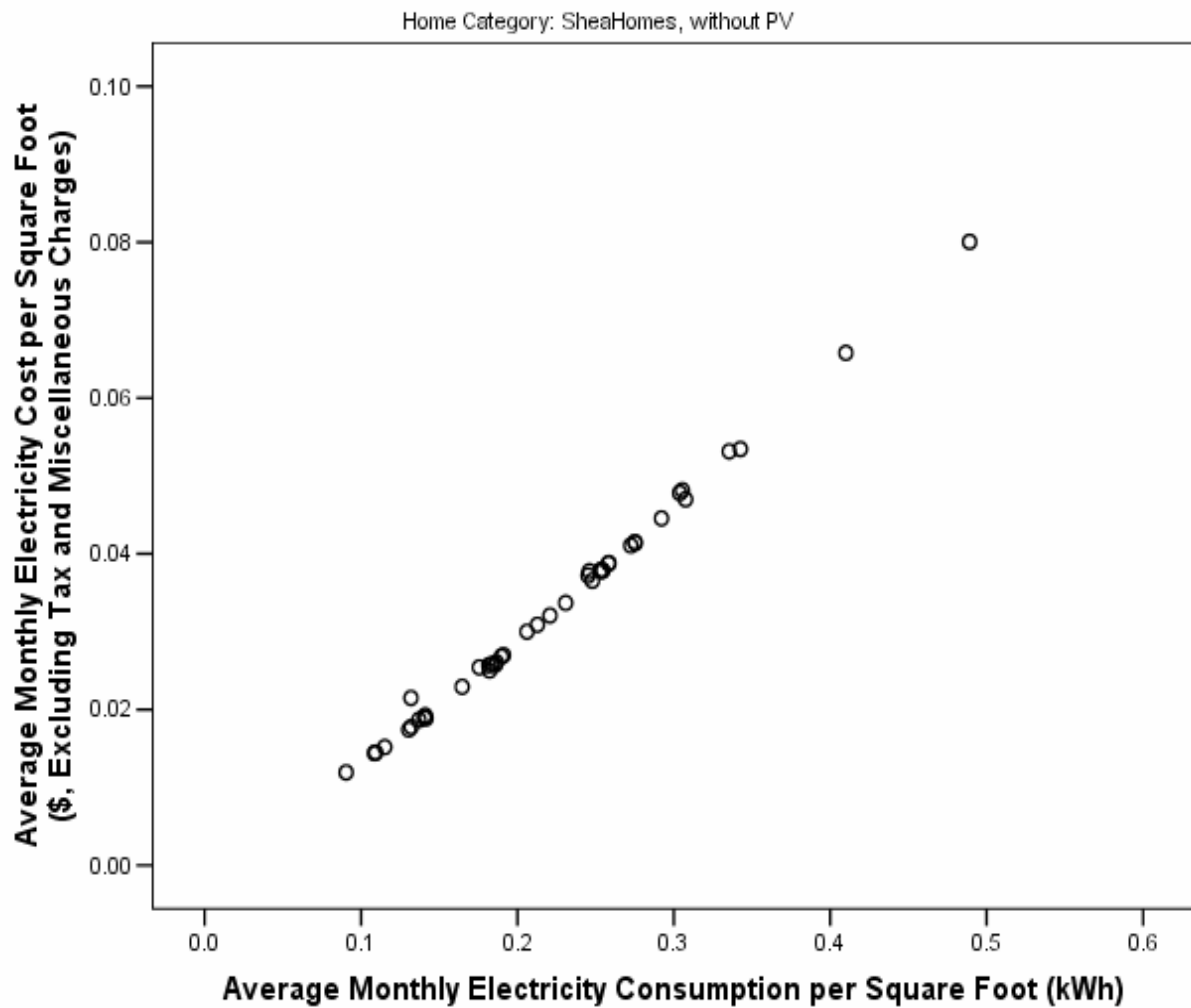
**Figure J-8. Comparison of Average Monthly Electricity Consumption (kWh) and Average Monthly Electricity Cost (\$), Including Taxes and Miscellaneous Charges, for Homes in the Comparison Community (n=28)**



**Figure J-9. Comparison of Average Monthly Electricity Consumption (kWh)/ft<sup>2</sup> and Average Monthly Electricity Cost (\$)/ft<sup>2</sup>, Excluding Taxes and Miscellaneous Charges, for All Homes Combined (n=109)**

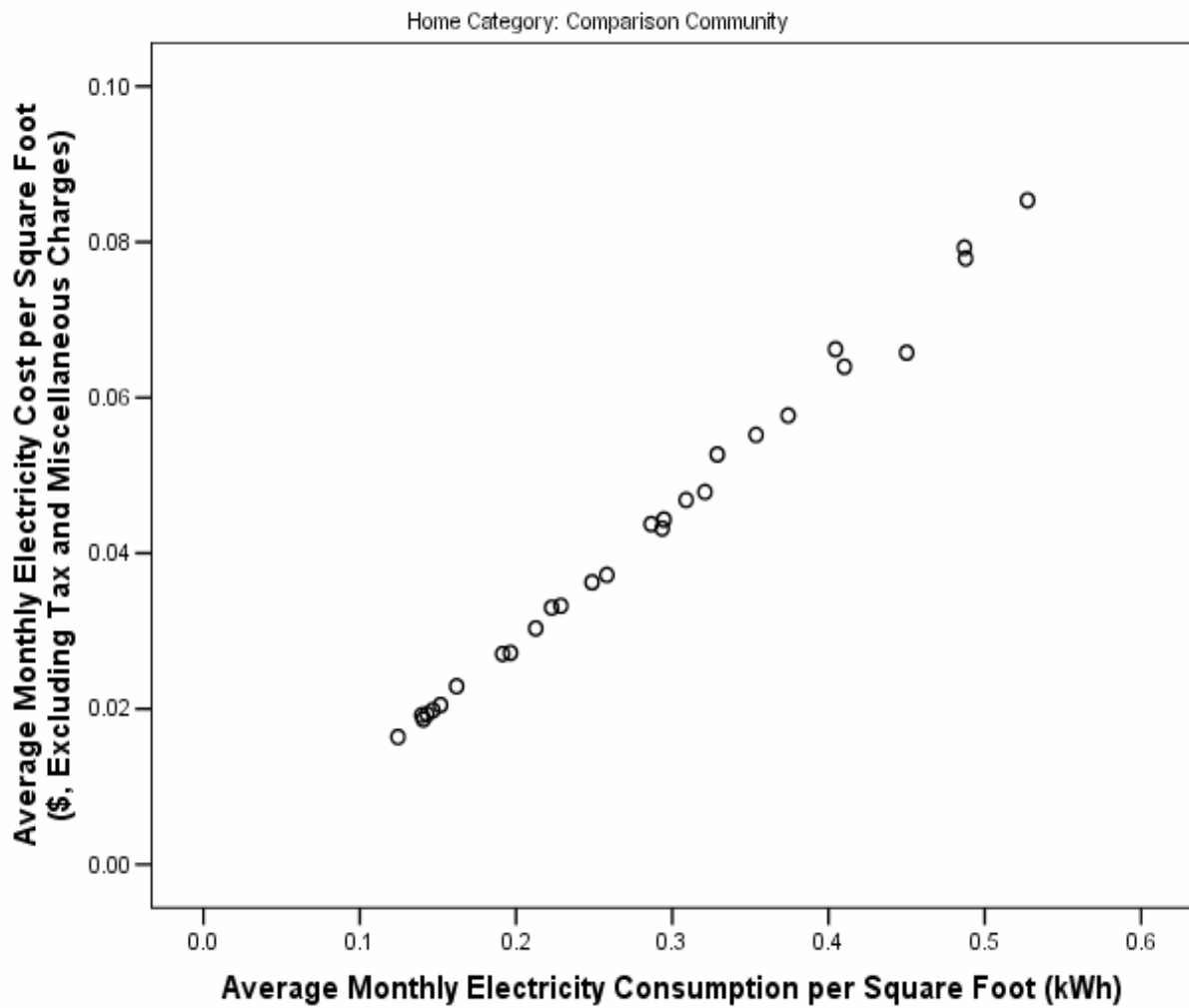


**Figure J-10. Comparison of Average Monthly Electricity Consumption (kWh)/ft<sup>2</sup> and Average Monthly Electricity Cost (\$)/ft<sup>2</sup>, Excluding Taxes and Miscellaneous Charges, for Homes in the SheaHomes Communities with PV Systems (n=37)**

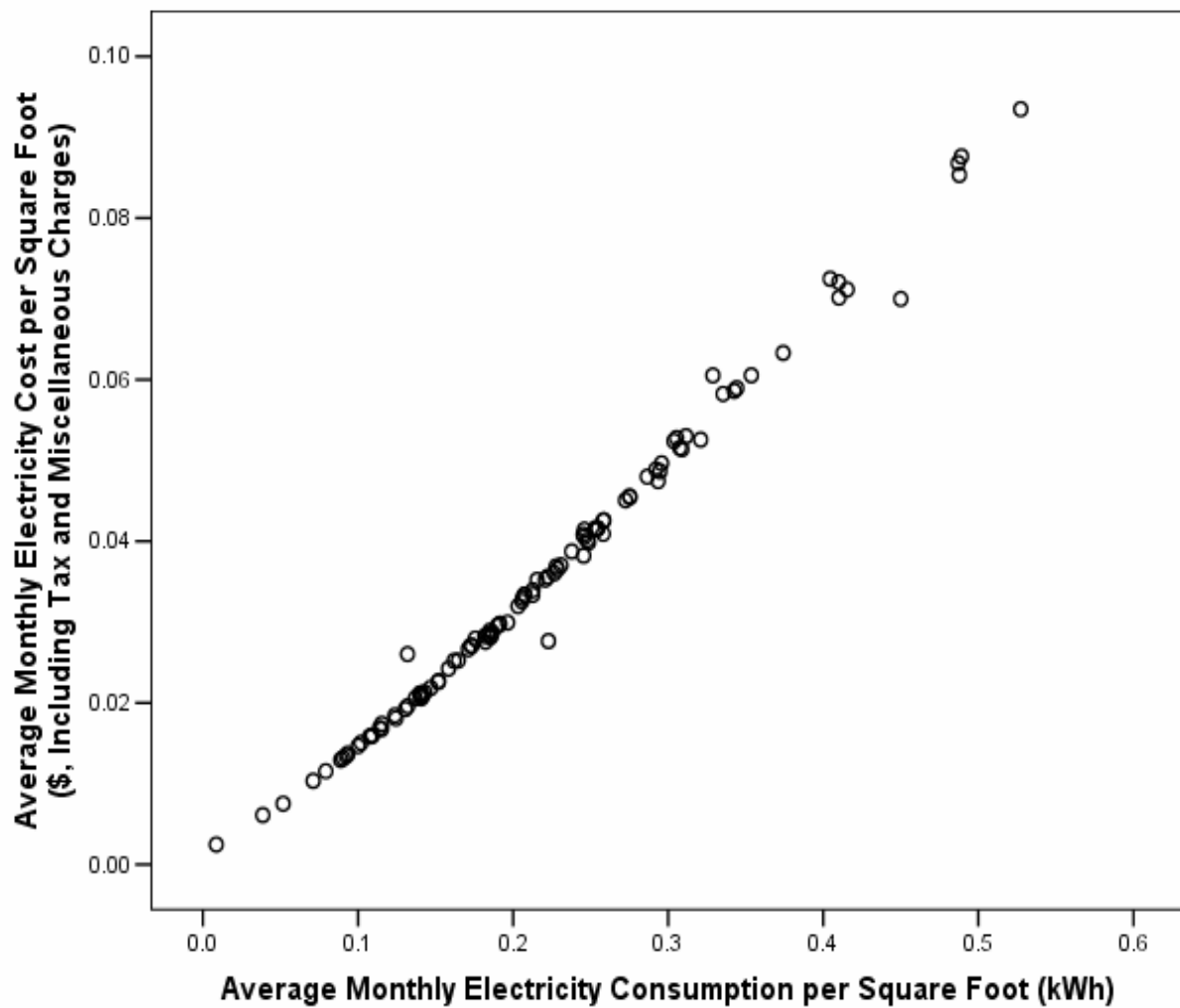


**Figure J-11. Comparison of Average Monthly Electricity Consumption (kWh)/ft<sup>2</sup> and Average Monthly Electricity Cost (\$)/ft<sup>2</sup>, Excluding Taxes and Miscellaneous Charges, for Homes in the SheaHomes Communities without PV Systems (n=44)**

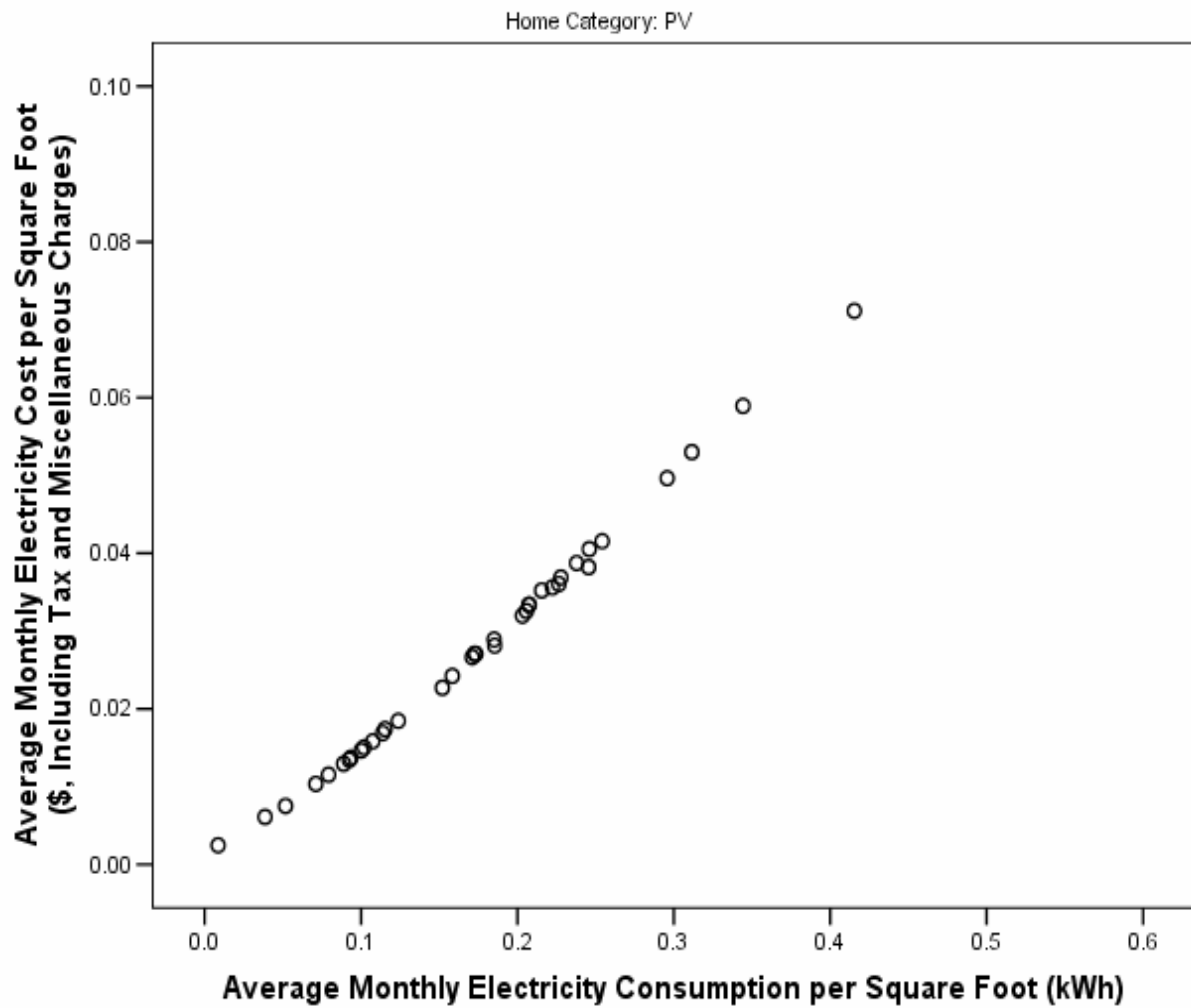




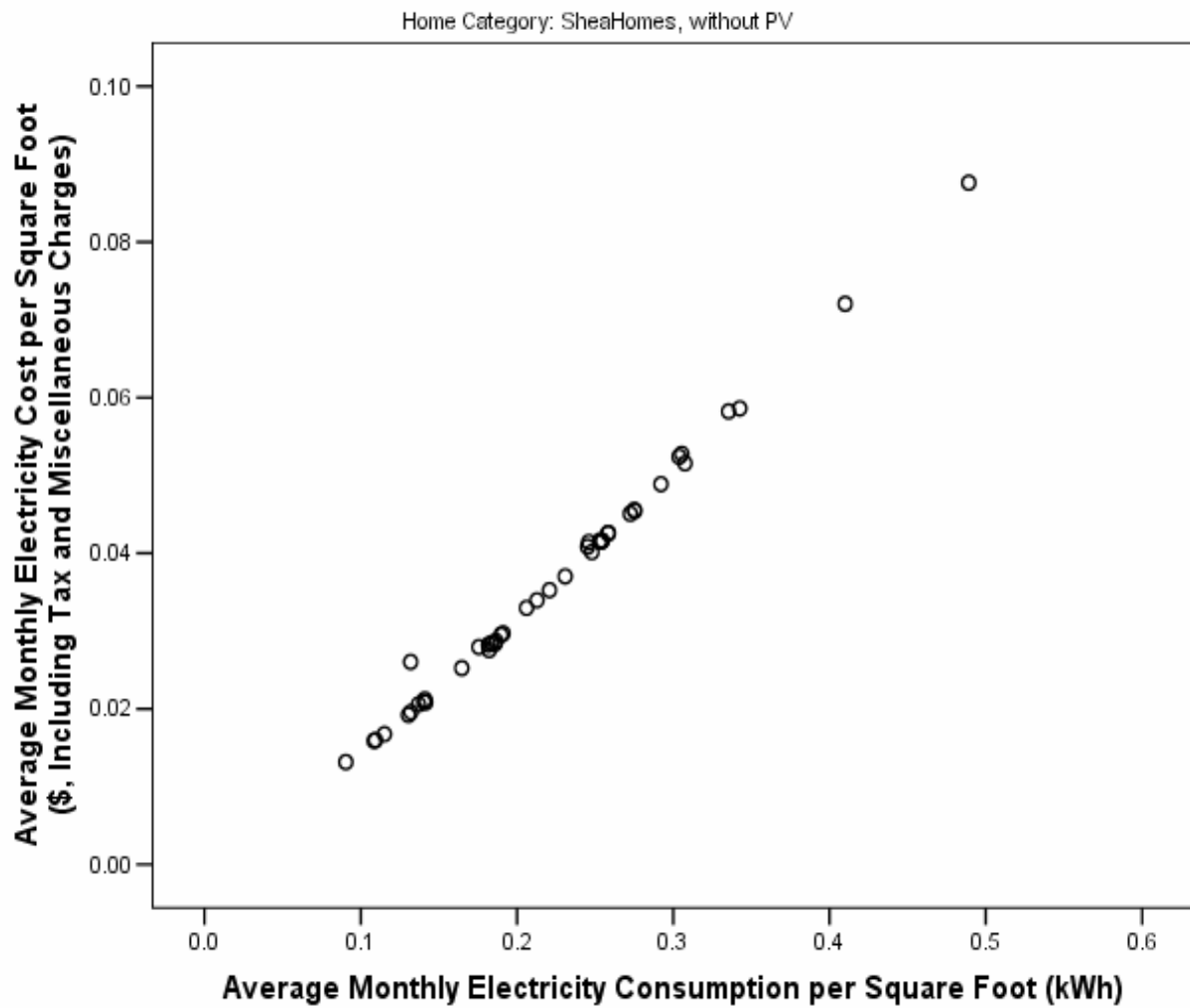
**Figure J-12. Comparison of Average Monthly Electricity Consumption (kWh)/ft<sup>2</sup> and Average Monthly Electricity Cost (\$)/ft<sup>2</sup>, Excluding Taxes and Miscellaneous Charges, for Homes in the SheaHomes Communities without PV Systems (n=44)**



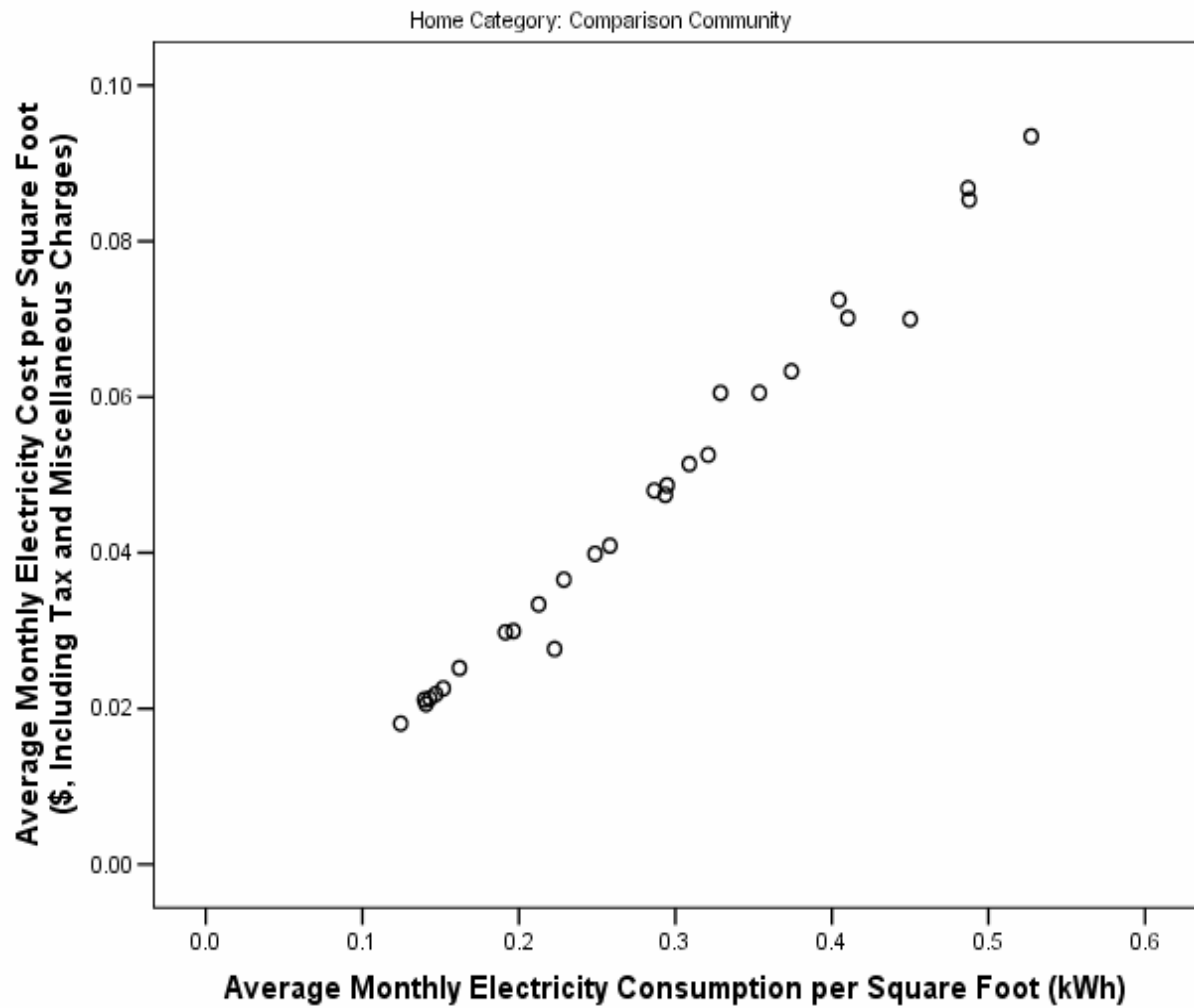
**Figure J-13. Comparison of Average Monthly Electricity Consumption (kWh)/ft<sup>2</sup> and Average Monthly Electricity Cost (\$)/ft<sup>2</sup>, Including Taxes and Miscellaneous Charges, for All Homes Combined (n=109)**



**Figure J-14. Comparison of Average Monthly Electricity Consumption (kWh)/ft<sup>2</sup> and Average Monthly Electricity Cost (\$)/ft<sup>2</sup>, Including Taxes and Miscellaneous Charges, for Homes in the SheaHomes Communities with PV Systems (n=37)**



**Figure J-15. Comparison of Average Monthly Electricity Consumption (kWh)/ft<sup>2</sup> and Average Monthly Electricity Cost (\$)/ft<sup>2</sup>, Including Taxes and Miscellaneous Charges, for Homes in the SheaHomes Communities without PV Systems (n=44)**

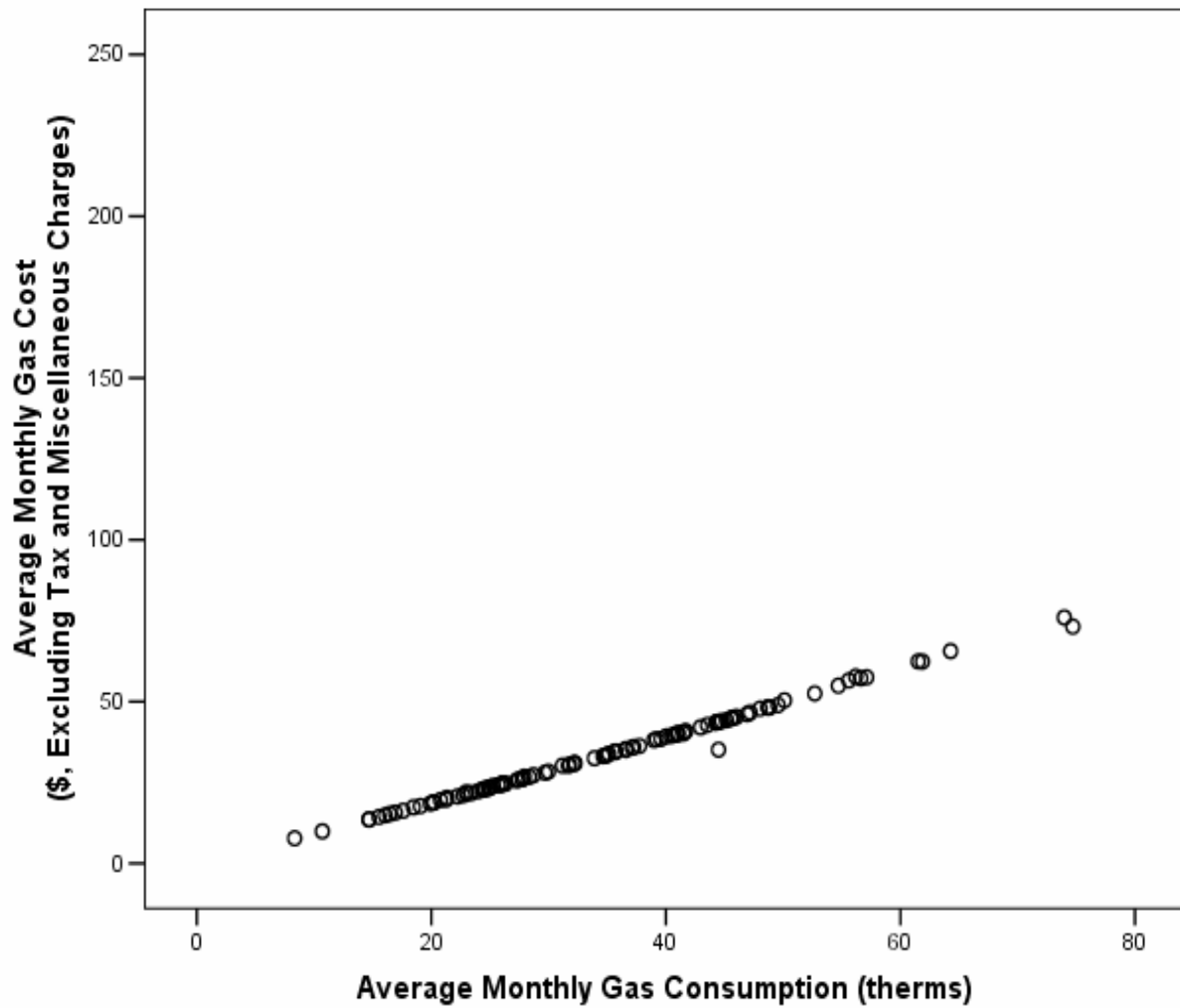


**Figure J-16. Comparison of Average Monthly Electricity Consumption (kWh)/ft<sup>2</sup> and Average Monthly Electricity Cost (\$)/ft<sup>2</sup>, Including Taxes and Miscellaneous Charges, for Homes in the Comparison Community (n=28)**

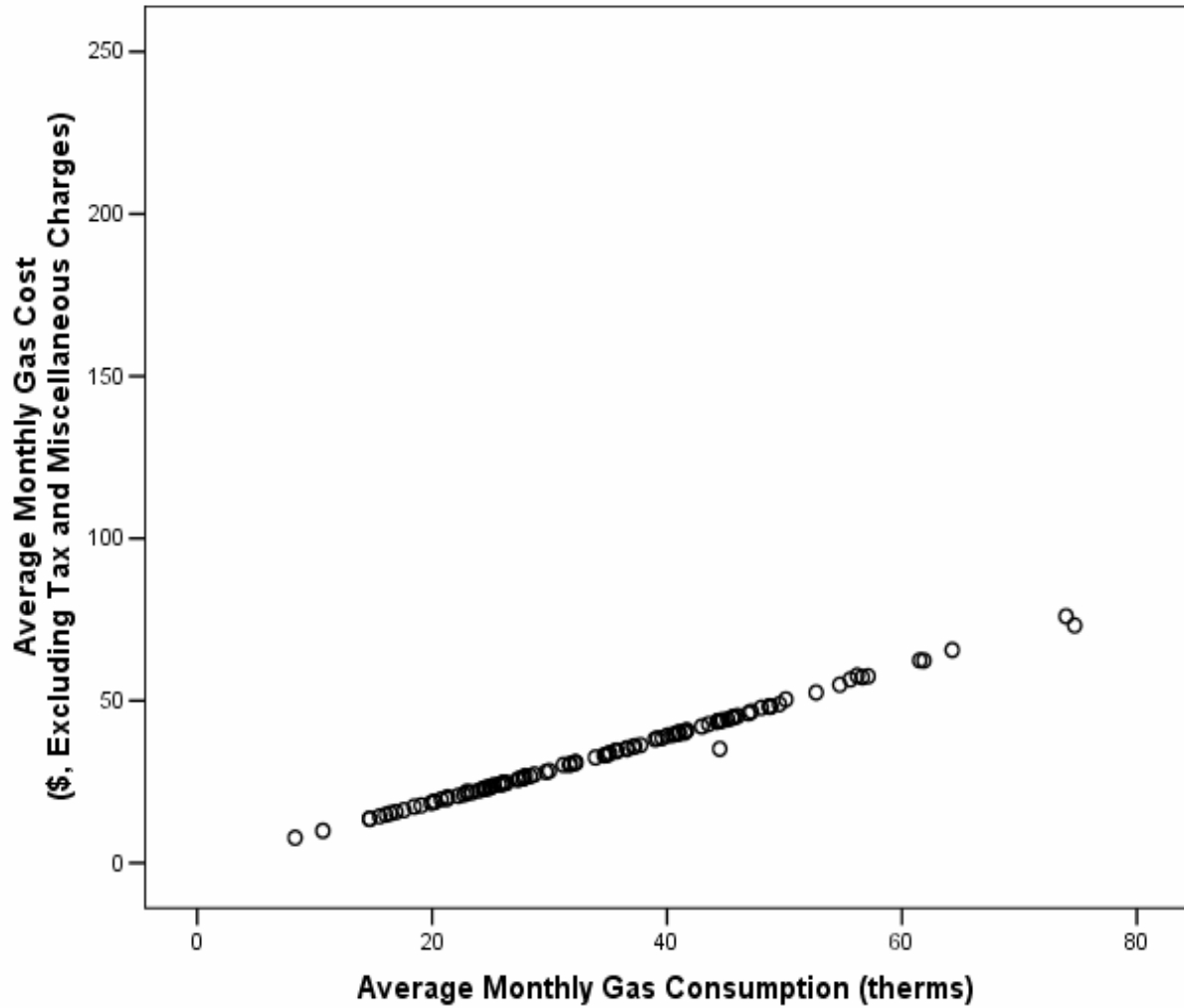
## **Appendix K**

### **Scatter Diagrams of Average Monthly Gas Consumption by Average Cost for All Homes in the Study**

*Cited in Chapter 20*

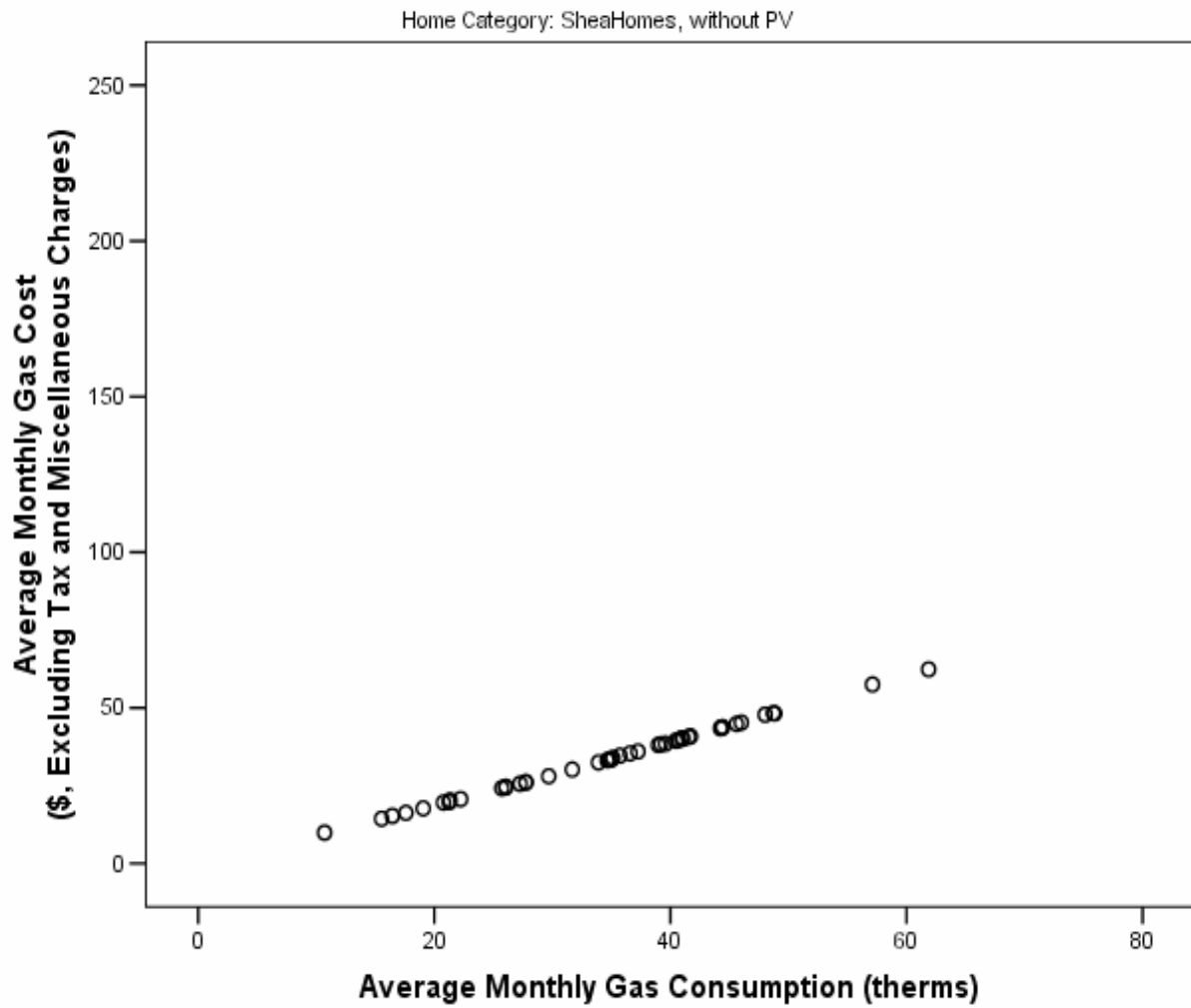


**Figure K-1. Comparison of Average Monthly Gas Consumption (therms) and Average Monthly Gas Cost (\$), Excluding Taxes and Miscellaneous Charges, for All Homes Combined (n=109)**

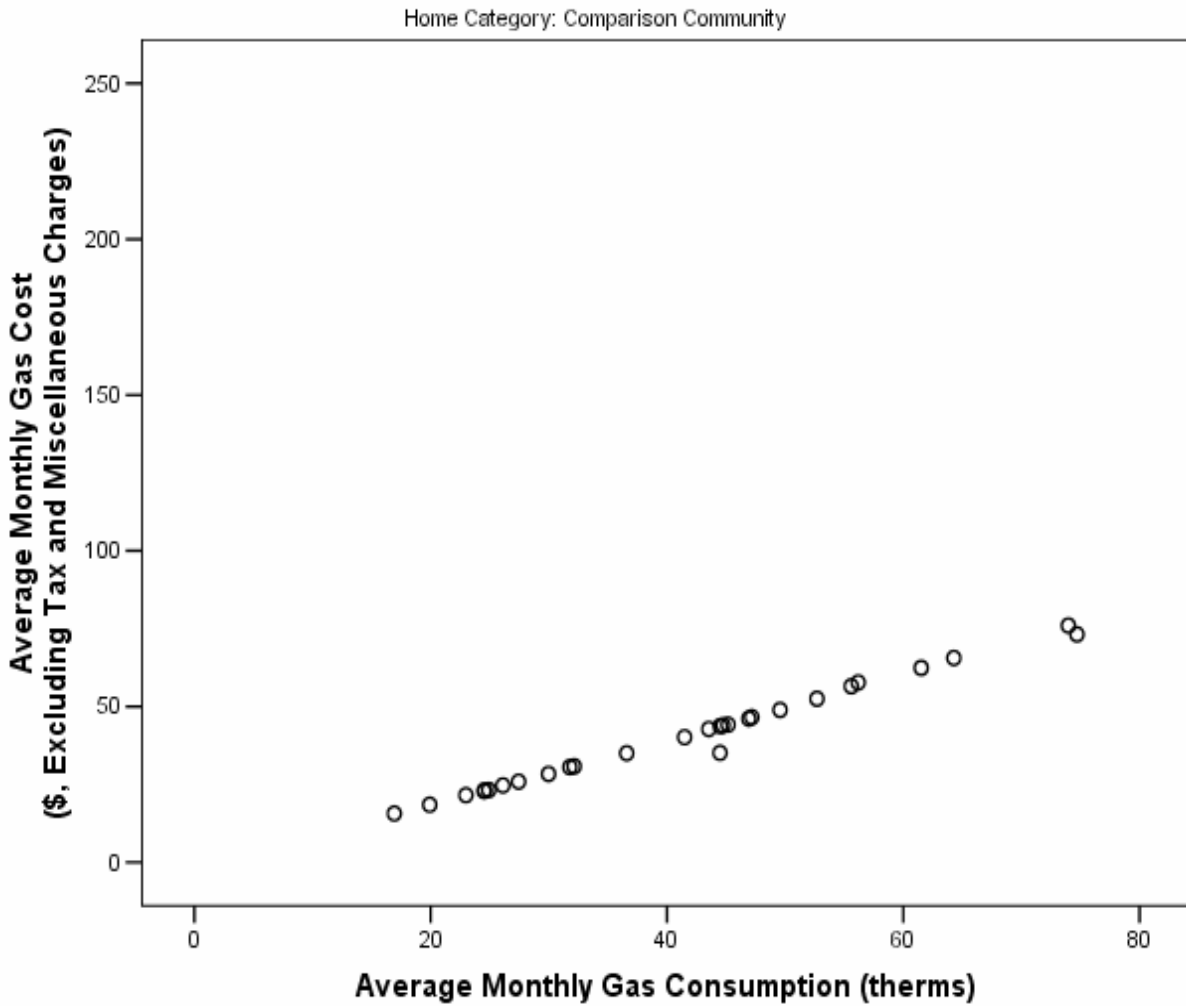


**Figure K-2. Comparison of Average Monthly Gas Consumption (therms) and Average Monthly Gas Cost (\$), Excluding Taxes and Miscellaneous Charges, for Homes in the SheaHomes Community with PV Systems (n=37)**

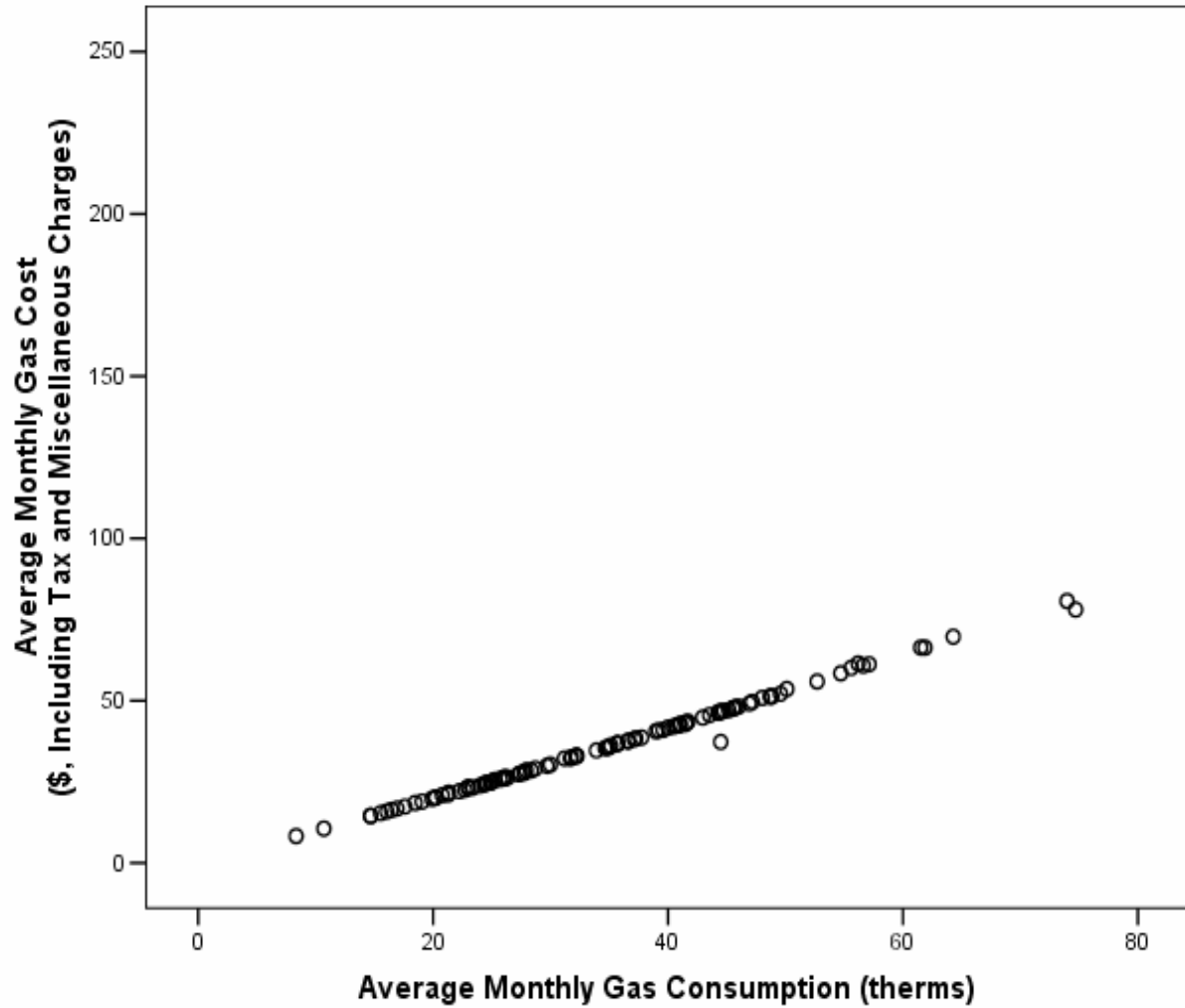




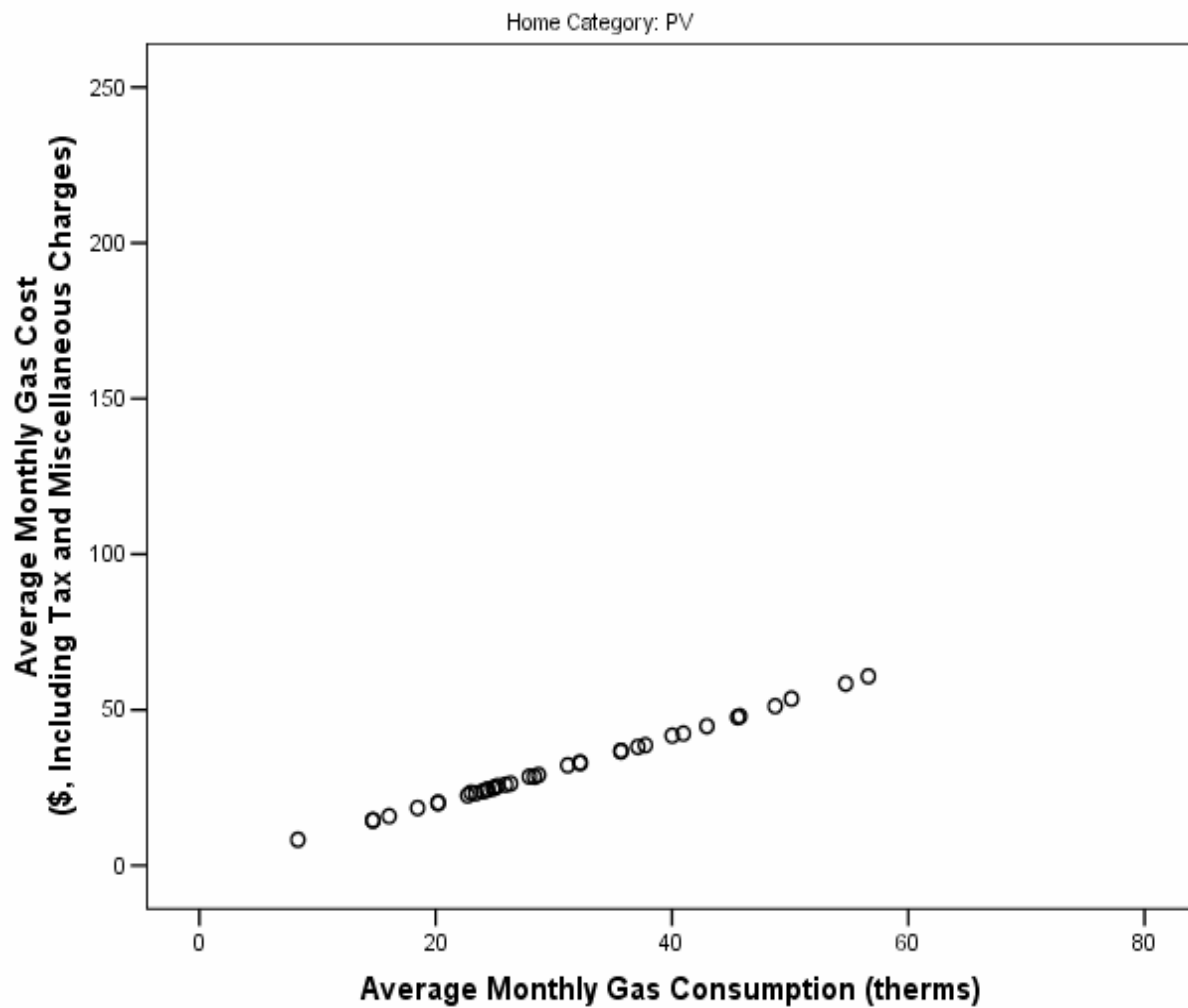
**Figure K-3. Comparison of Average Monthly Gas Consumption (therms) and Average Monthly Gas Cost (\$), Excluding Taxes and Miscellaneous Charges, for Homes in the SheaHomes Community without PV Systems (n=44)**



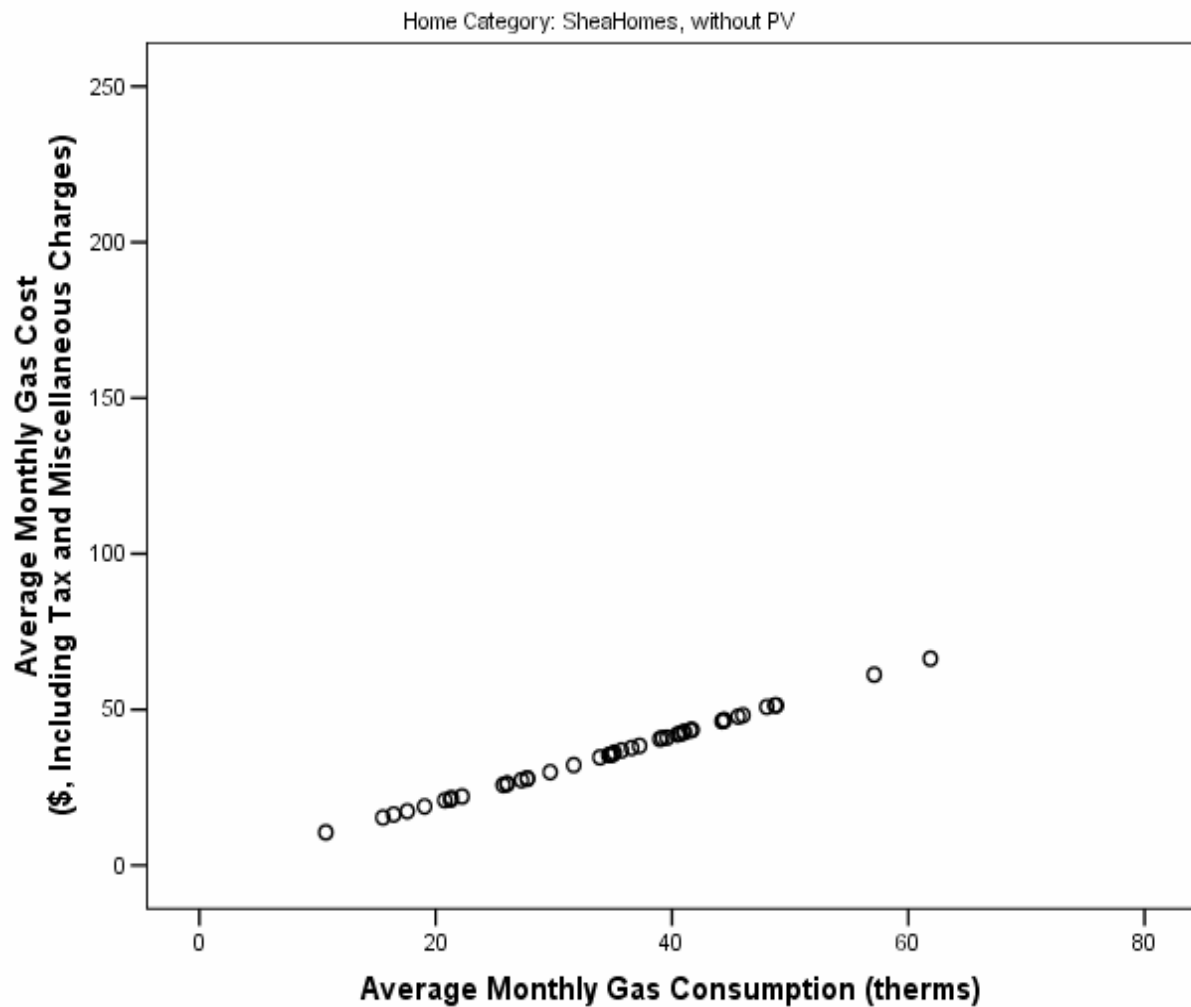
**Figure K-4. Comparison of Average Monthly Gas Consumption (therms) and Average Monthly Gas Cost (\$), Excluding Taxes and Miscellaneous Charges, for Homes in the Comparison Community (n=28)**



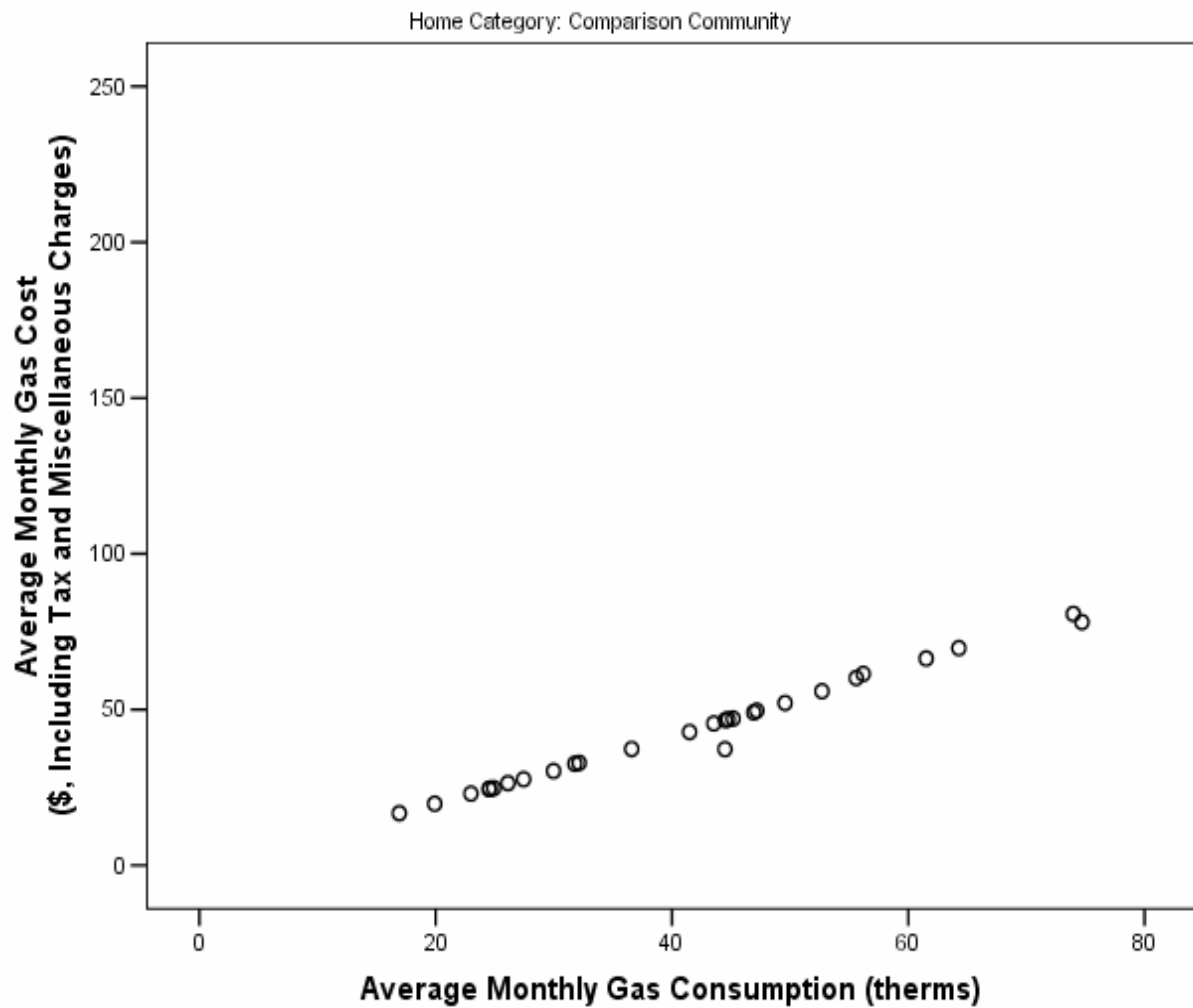
**Figure K-5. Comparison of Average Monthly Gas Consumption (therms) and Average Monthly Gas Cost (\$), Including Taxes and Miscellaneous Charges, for All Homes Combined (n=109)**



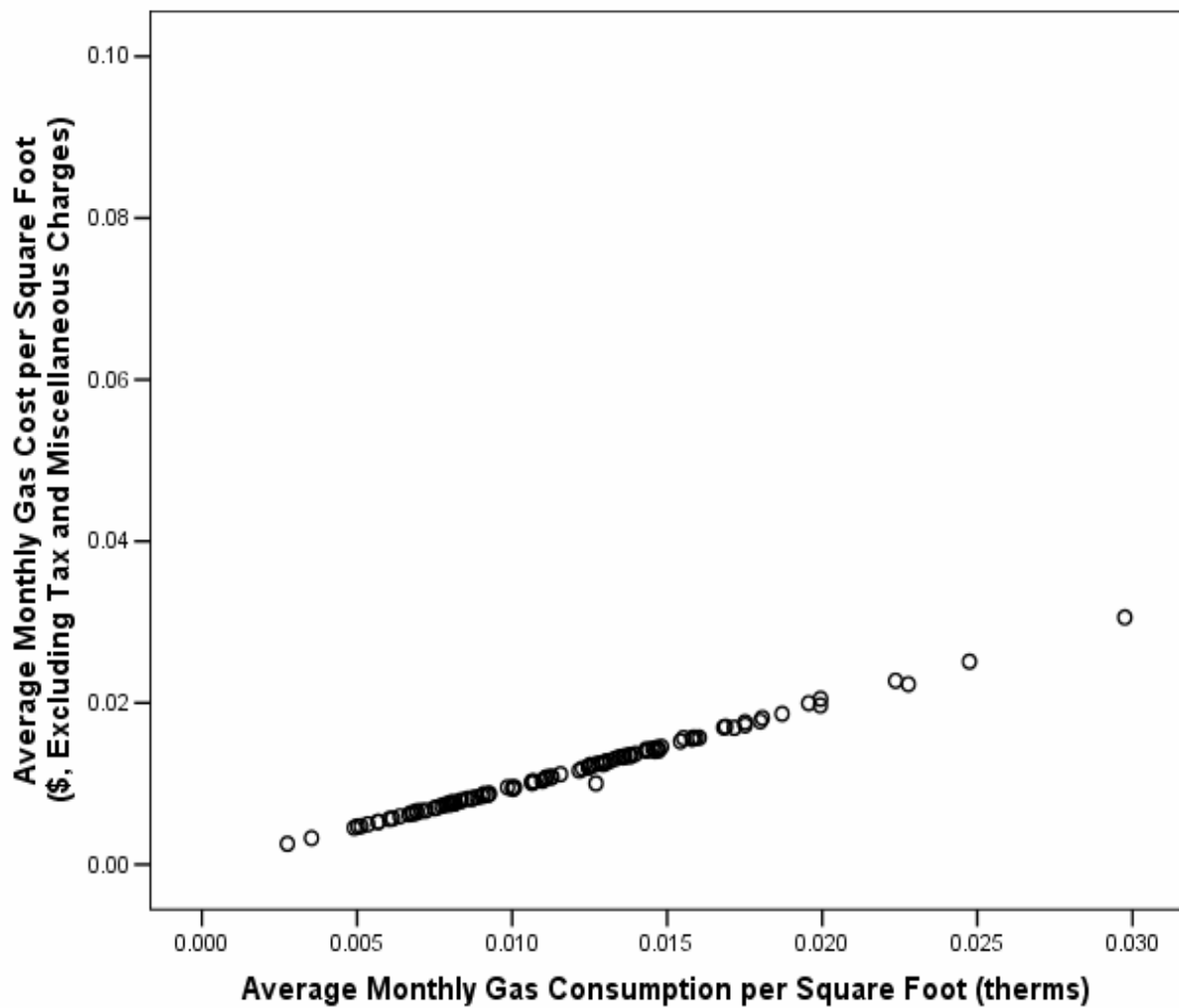
**Figure K-6. Comparison of Average Monthly Gas Consumption (therms) and Average Monthly Gas Cost (\$), Including Taxes and Miscellaneous Charges, for Homes in the SheaHomes Community with PV Systems (n=37)**



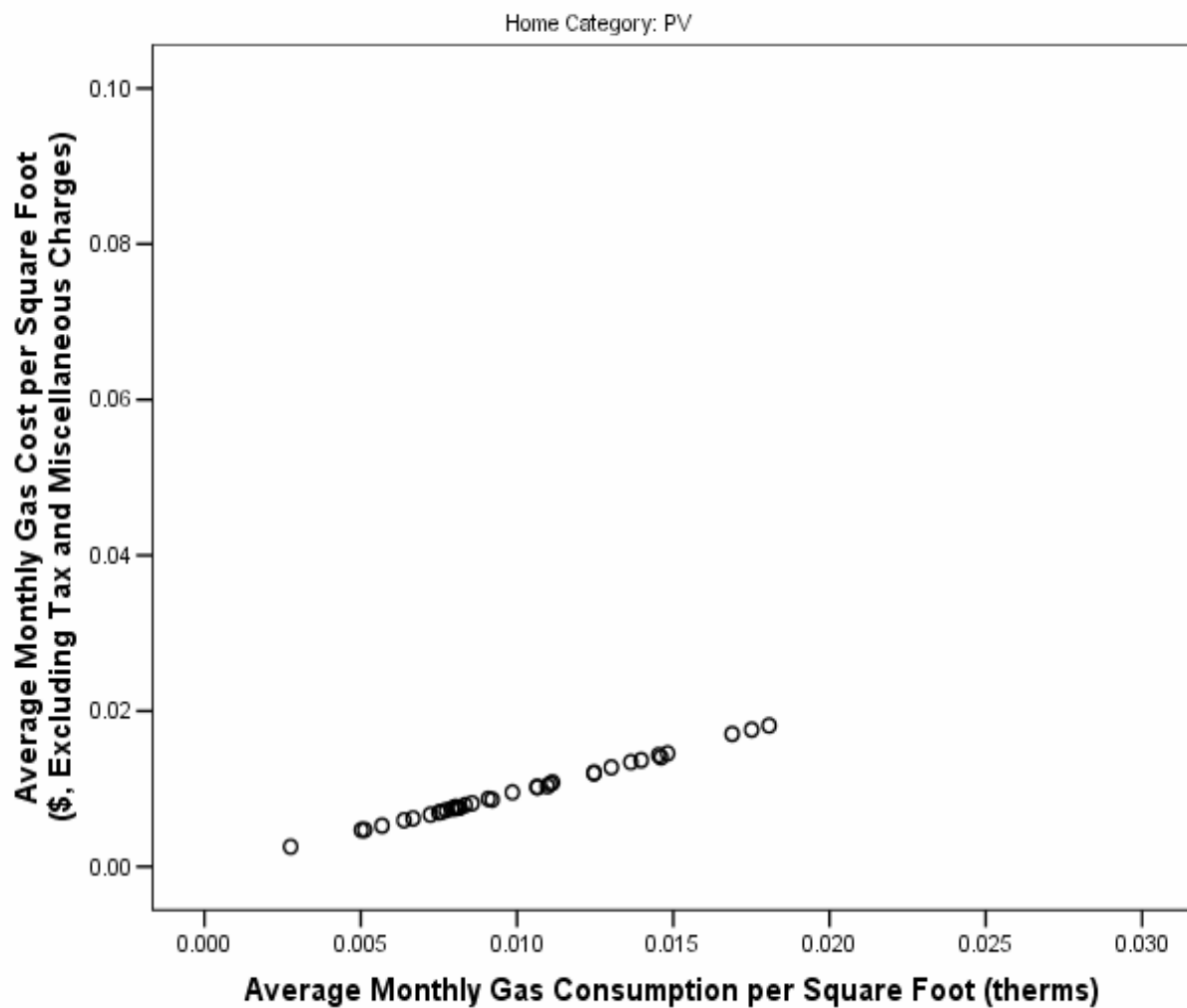
**Figure K-7. Comparison of Average Monthly Gas Consumption (therms) and Average Monthly Gas Cost (\$), Including Taxes and Miscellaneous Charges, for Homes in the SheaHomes Community without PV Systems (n=44)**



**Figure K-8. Comparison of Average Monthly Gas Consumption (therms) and Average Monthly Gas Cost (\$), Including Taxes and Miscellaneous Charges, for Homes in the Comparison Community (n=28)**

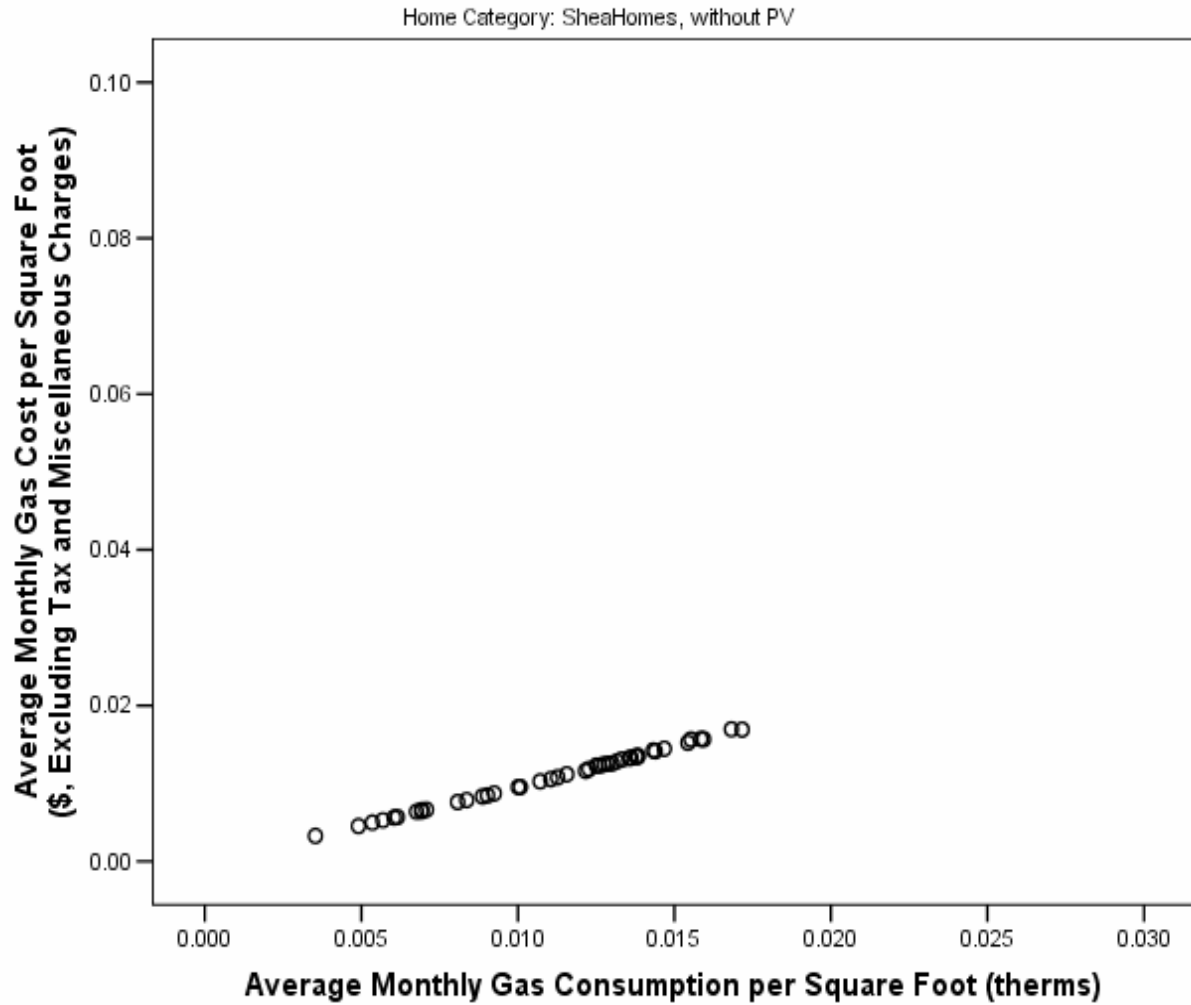


**Figure K-9. Comparison of Average Monthly Gas Consumption (therms)/ft<sup>2</sup> and Average Monthly Gas Cost (\$)/ft<sup>2</sup>, Excluding Taxes and Miscellaneous Charges, for All Homes Combined (n=109)**

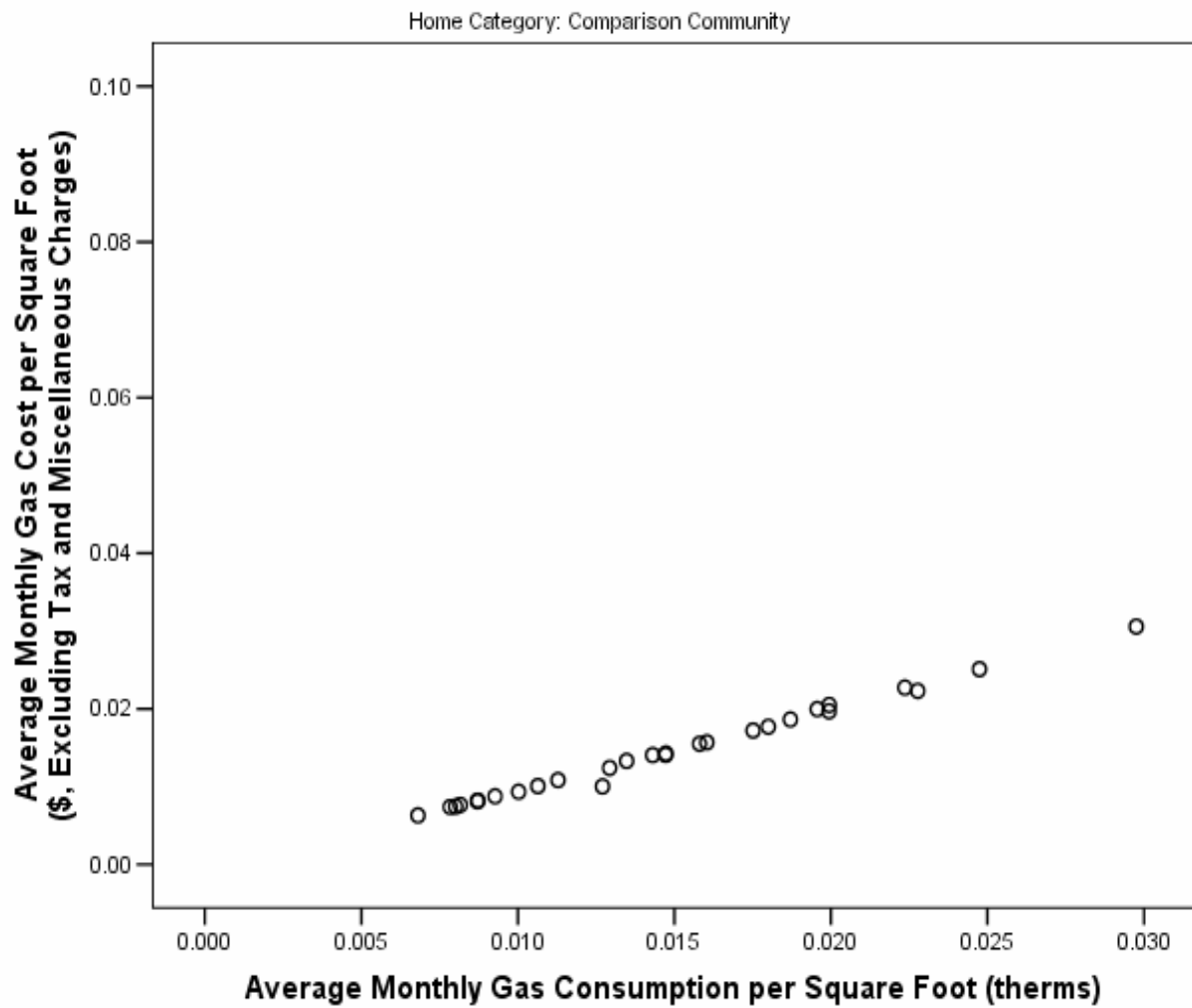


**Figure K-10. Comparison of Average Monthly Gas Consumption (therms)/ft<sup>2</sup> and Average Monthly Gas Cost (\$)/ft<sup>2</sup>, Excluding Taxes and Miscellaneous Charges, for All Homes Combined (n=109)**

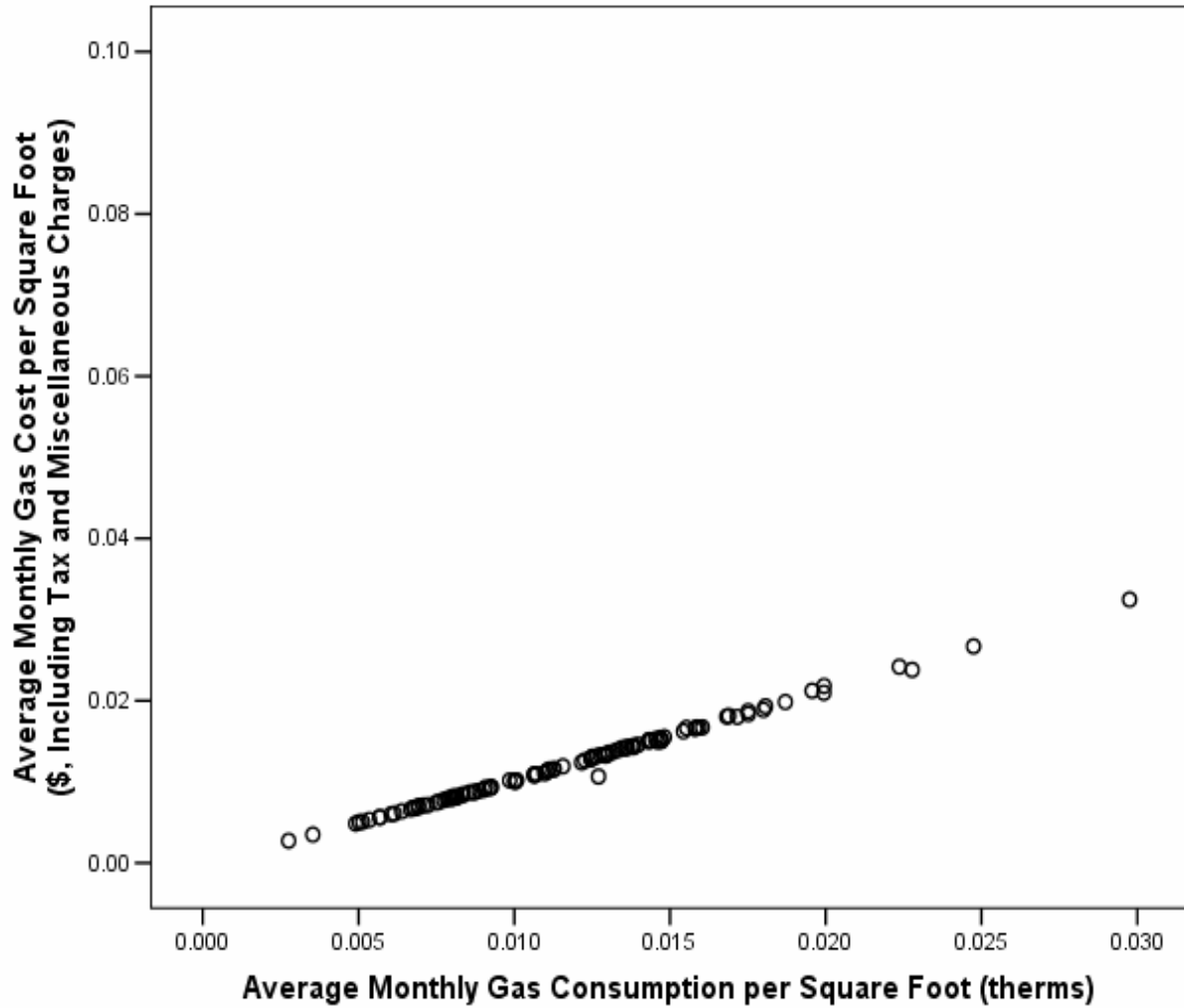




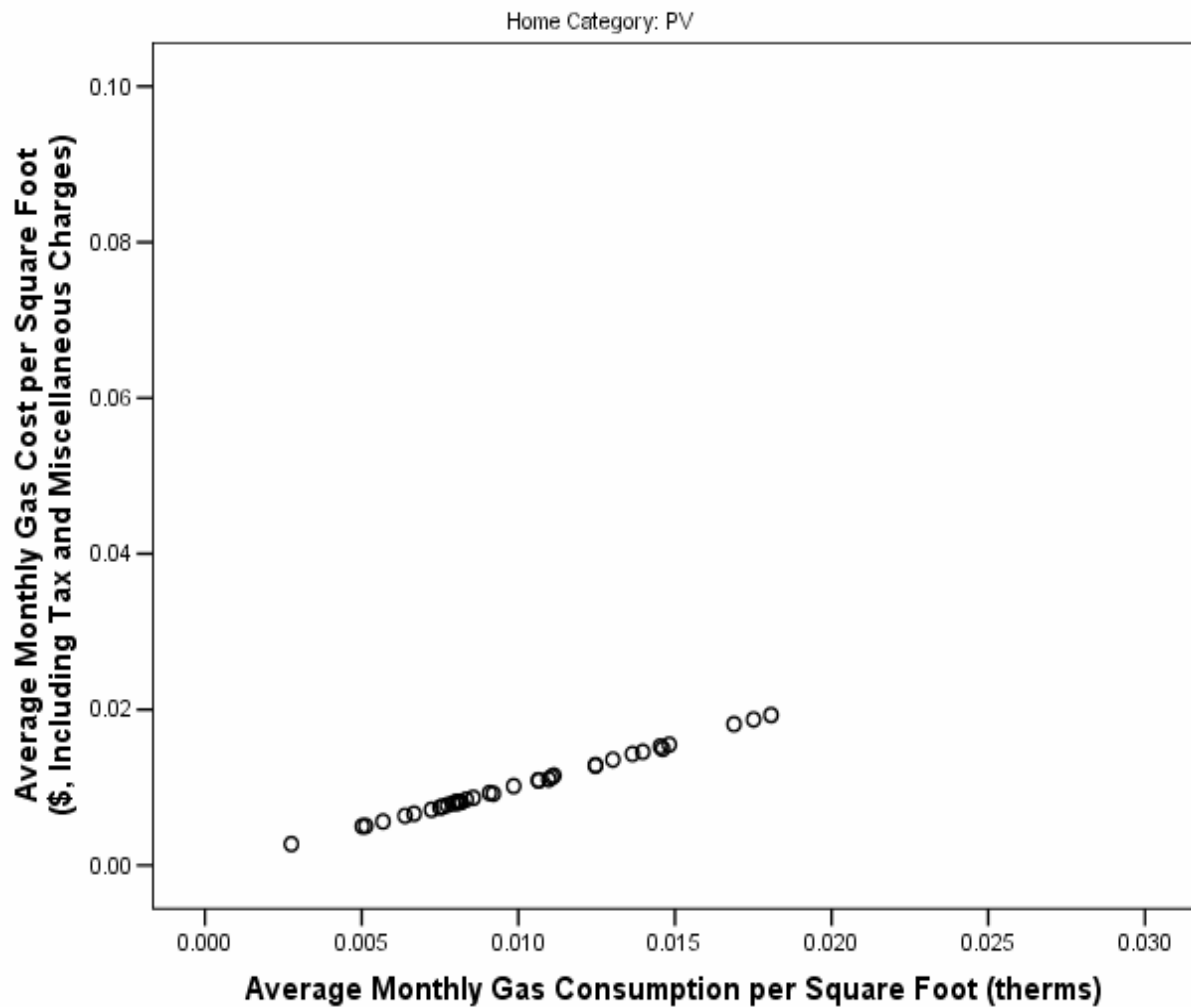
**Figure K-11. Comparison of Average Monthly Gas Consumption (therms)/ft<sup>2</sup> and Average Monthly Gas Cost (\$)/ft<sup>2</sup>, Excluding Taxes and Miscellaneous Charges, for Homes in the SheaHomes Communities without PV Systems (n=44)**



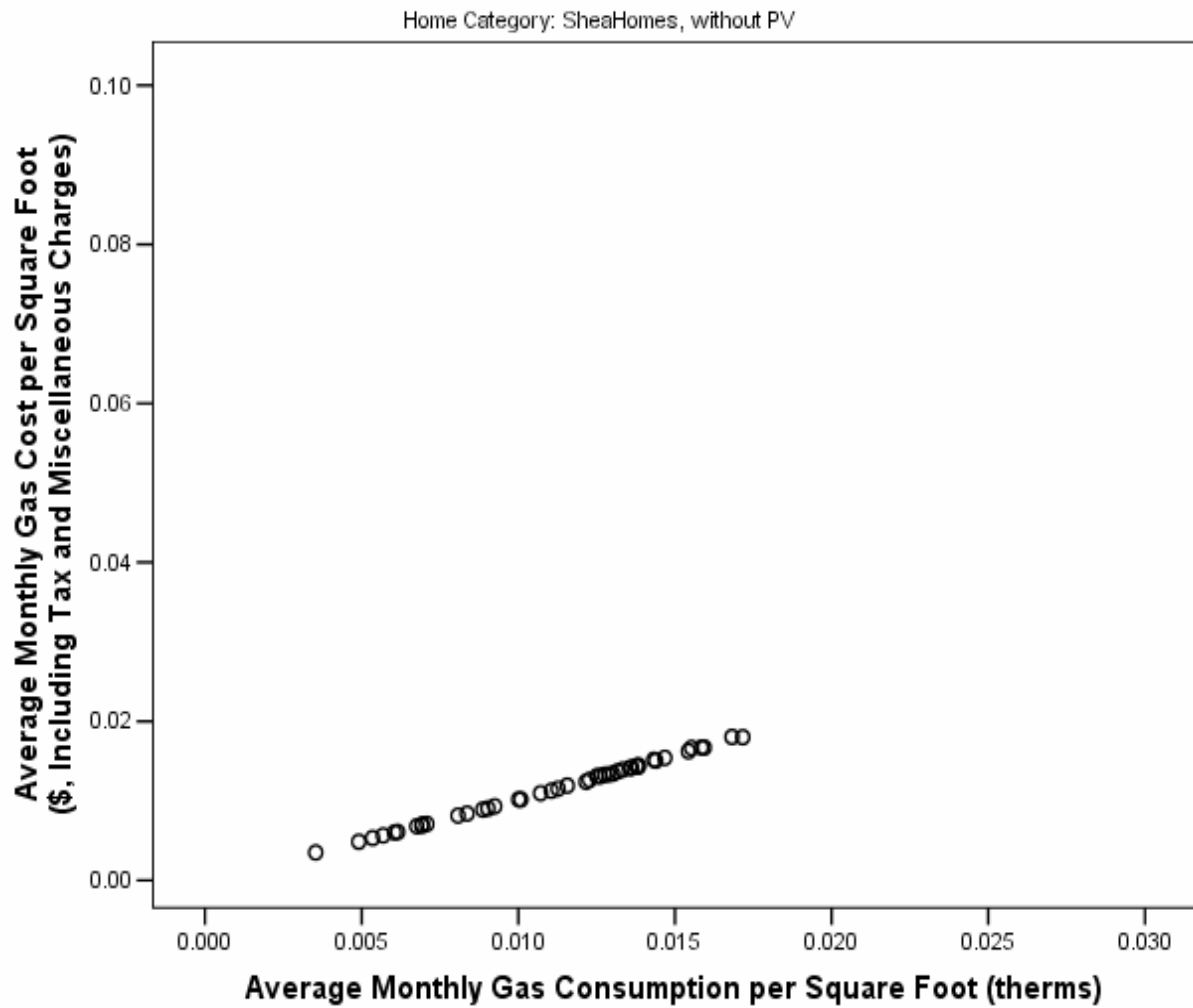
**Figure K-12. Comparison of Average Monthly Gas Consumption (therms)/ft<sup>2</sup> and Average Monthly Gas Cost (\$)/ft<sup>2</sup>, Excluding Taxes and Miscellaneous Charges, for Homes in the Comparison Community (n=28)**



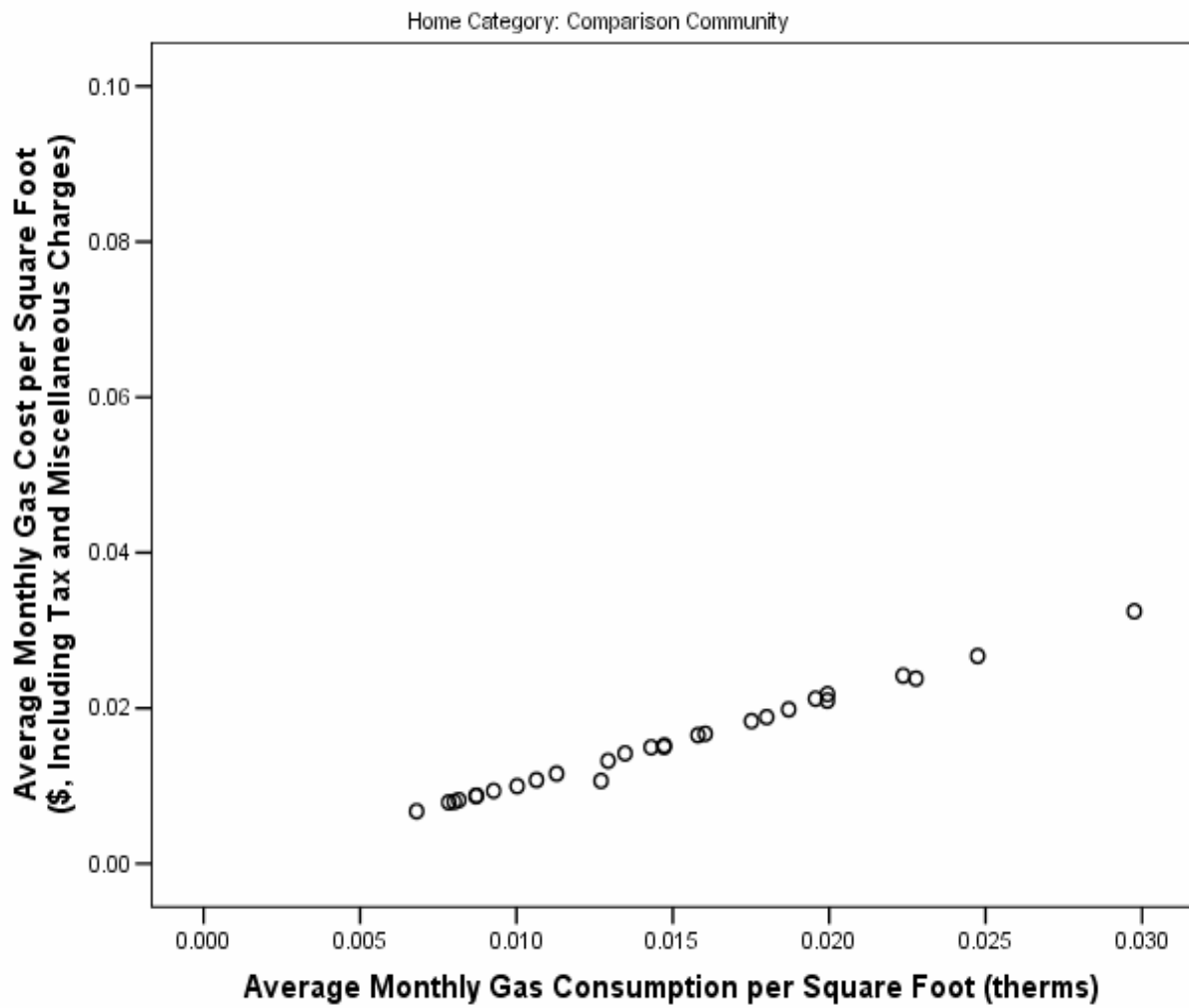
**Figure K-13. Comparison of Average Monthly Gas Consumption (therms)/ft<sup>2</sup> and Average Monthly Gas Cost (\$)/ft<sup>2</sup>, Including Taxes and Miscellaneous Charges, for All Homes Combined (n=109)**



**Figure K-14. Comparison of Average Monthly Gas Consumption (therms)/ft<sup>2</sup> and Average Monthly Gas Cost (\$)/ft<sup>2</sup>, Including Taxes and Miscellaneous Charges, for Homes in the SheaHomes Communities with PV Systems (n=37)**



**Figure K-15. Comparison of Average Monthly Gas Consumption (therms)/ft<sup>2</sup> and Average Monthly Gas Cost (\$)/ft<sup>2</sup>, Including Taxes and Miscellaneous Charges, for Homes in the SheaHomes Communities without PV Systems (n=44)**



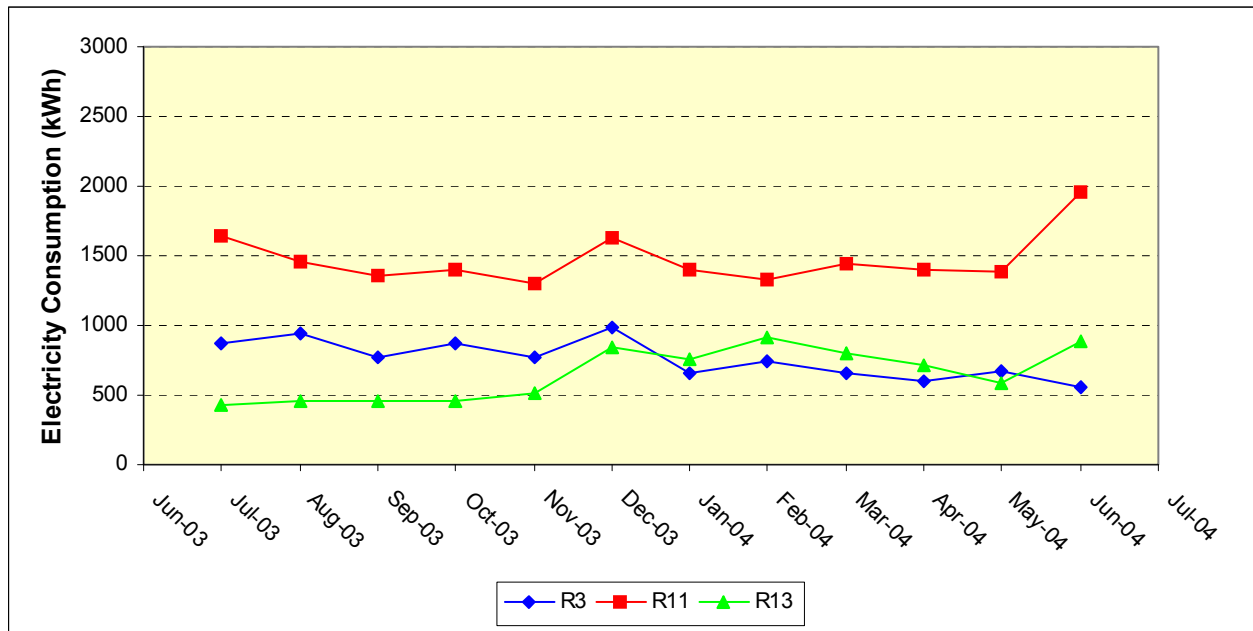
**Figure K-16. Comparison of Average Monthly Gas Consumption (therms)/ft<sup>2</sup> and Average Monthly Gas Cost (\$)/ft<sup>2</sup>, Including Taxes and Miscellaneous Charges, for Homes in the Comparison Community (n=28)**

## **Appendix L**

### **Line Graphs for Month-to-Month Consumption of Electricity for Individual Homes in the Study**

*Cited in Chapter 20*

(a)



(b)

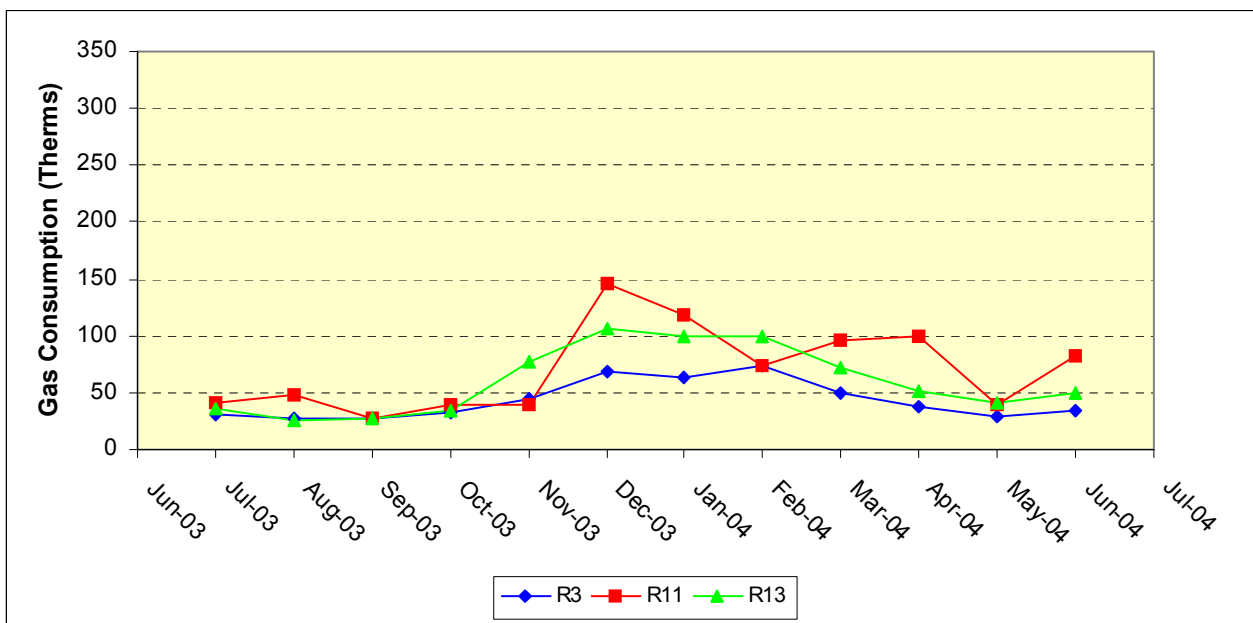
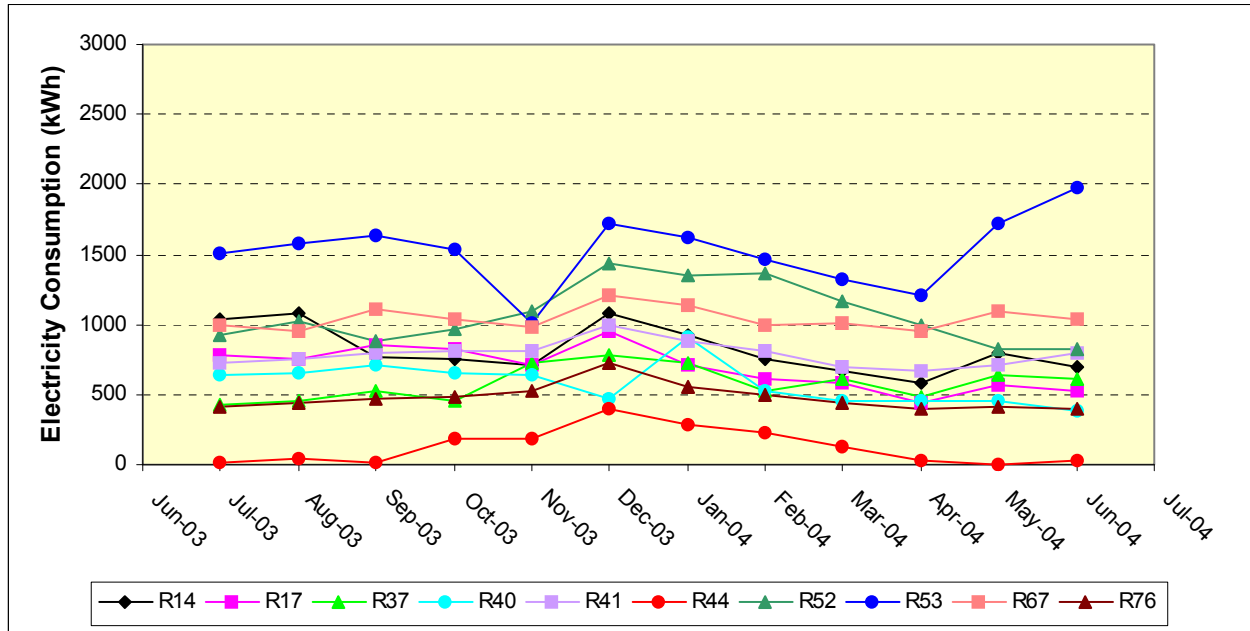


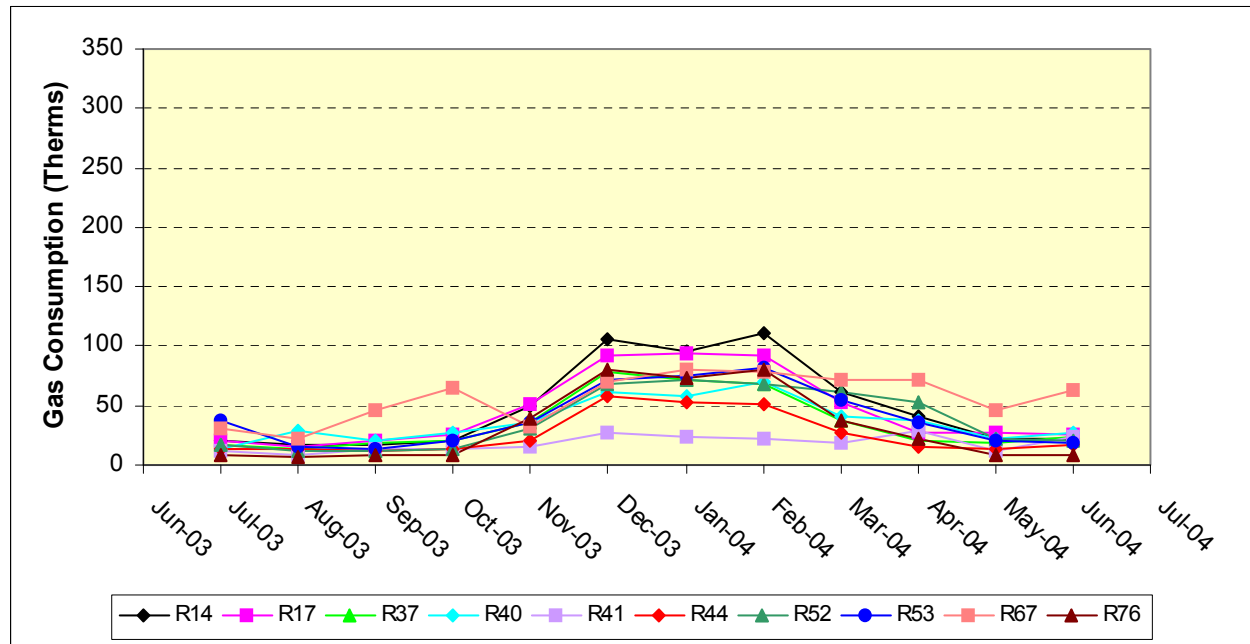
Figure L1. Monthly Utility Consumption in Early Homes: (a) Electricity and (b) Gas.



(a)

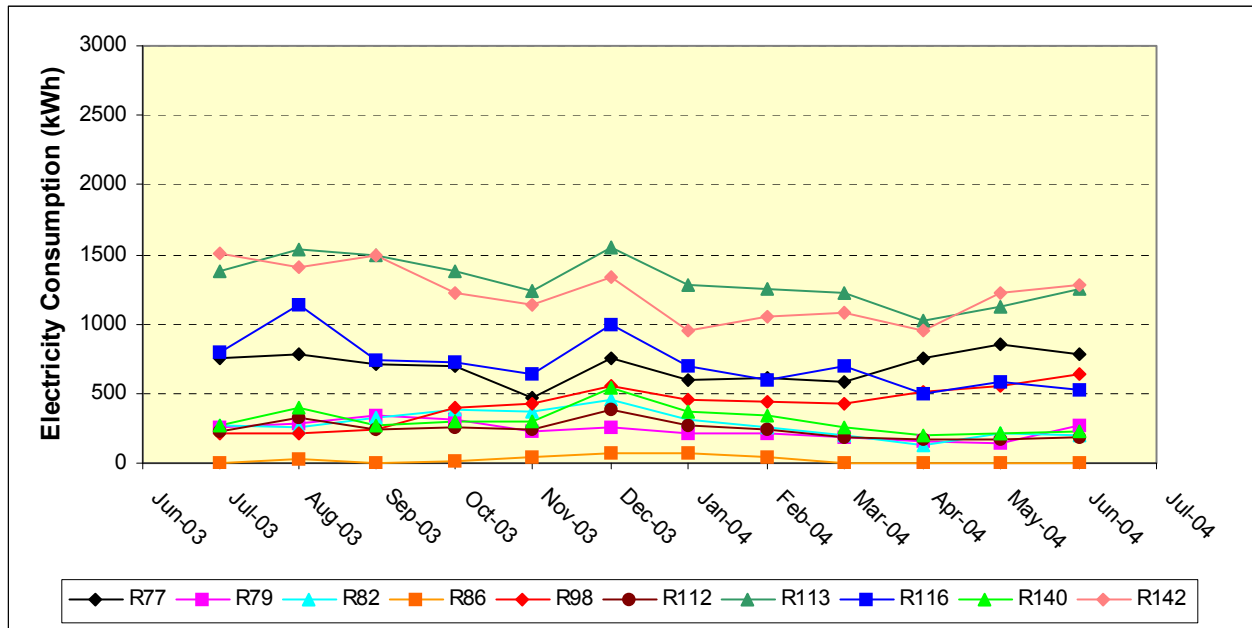


(b)

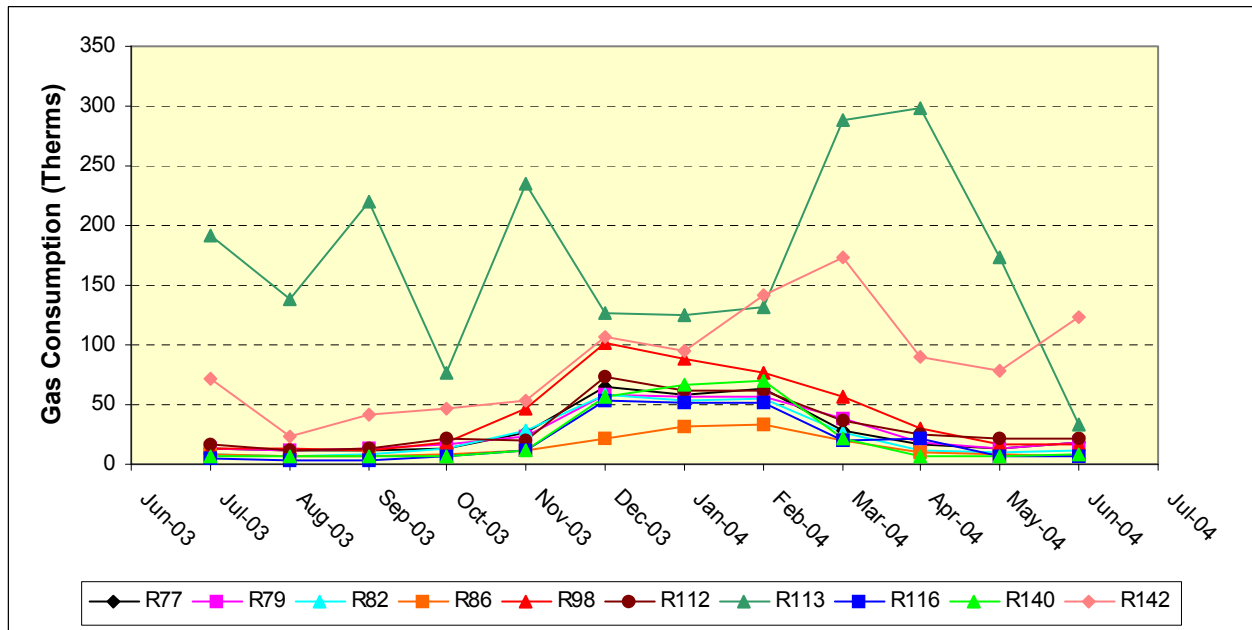


**Figure L2. Monthly Utility Consumption in the First 10 PV Homes: (a) Electricity and (b) Gas. RID53 is a Statistical Outlier with Regard to Total 12-Month Electricity Consumption.**

(a)

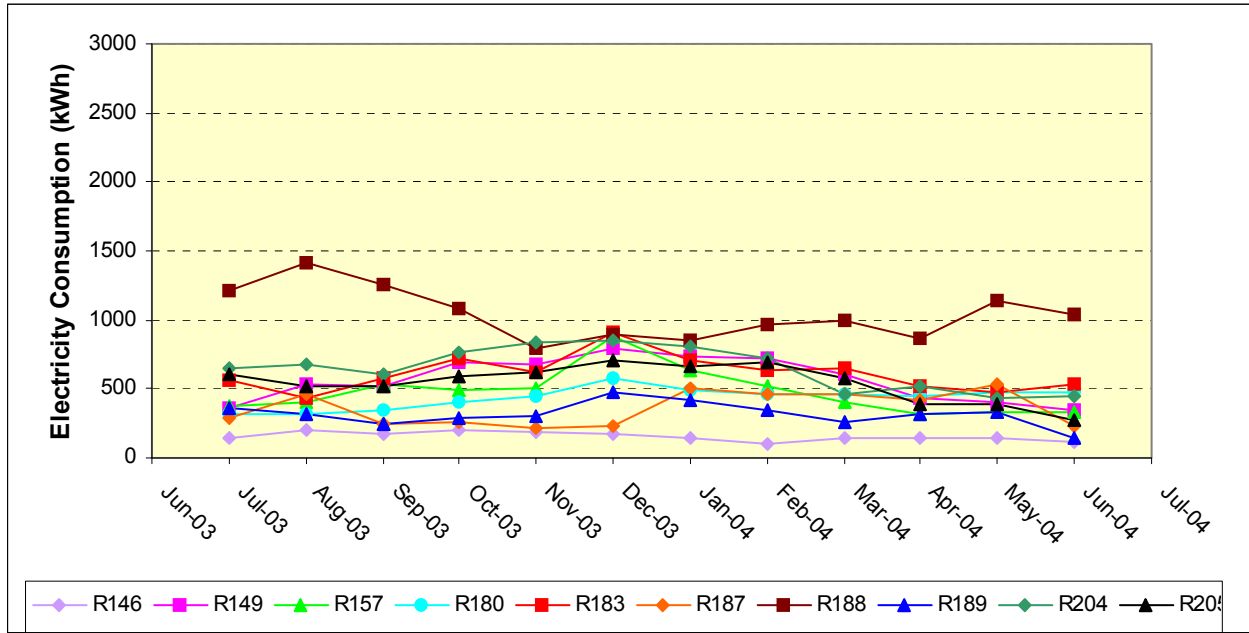


(b)



**Figure L3. Monthly Utility Consumption in the Second 10 PV Homes: (a) Electricity and (b) Gas. RID113 and RID142 are Statistical Outliers with Regard to Total 12-Month Gas Consumption.**

(a)



(b)

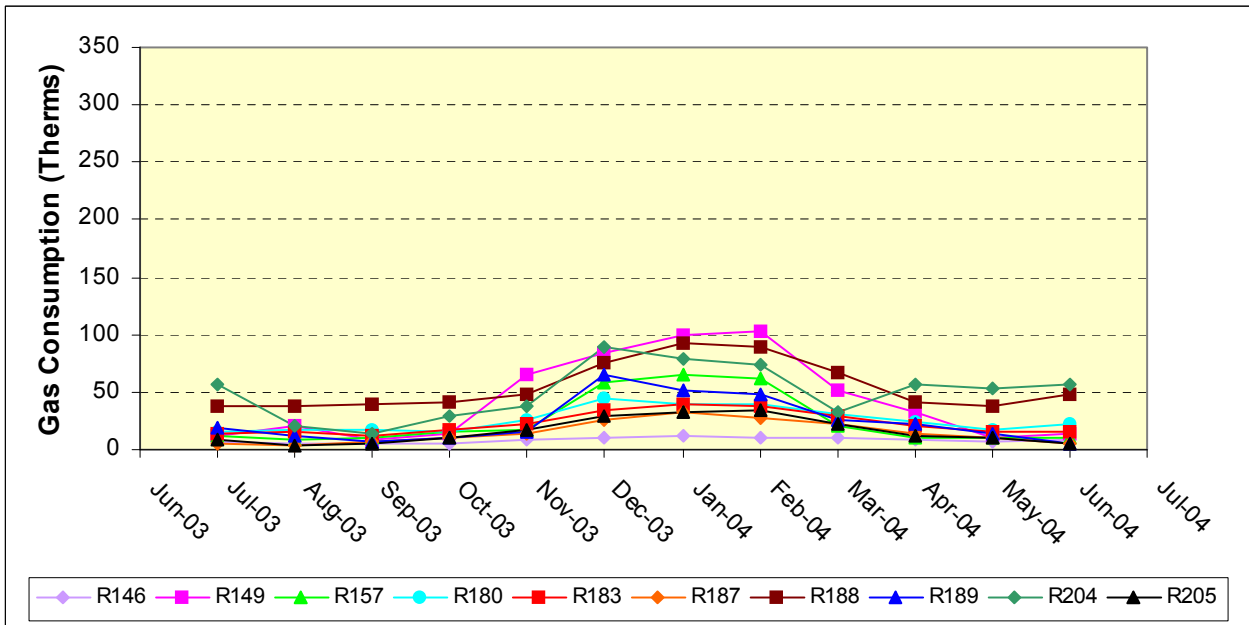
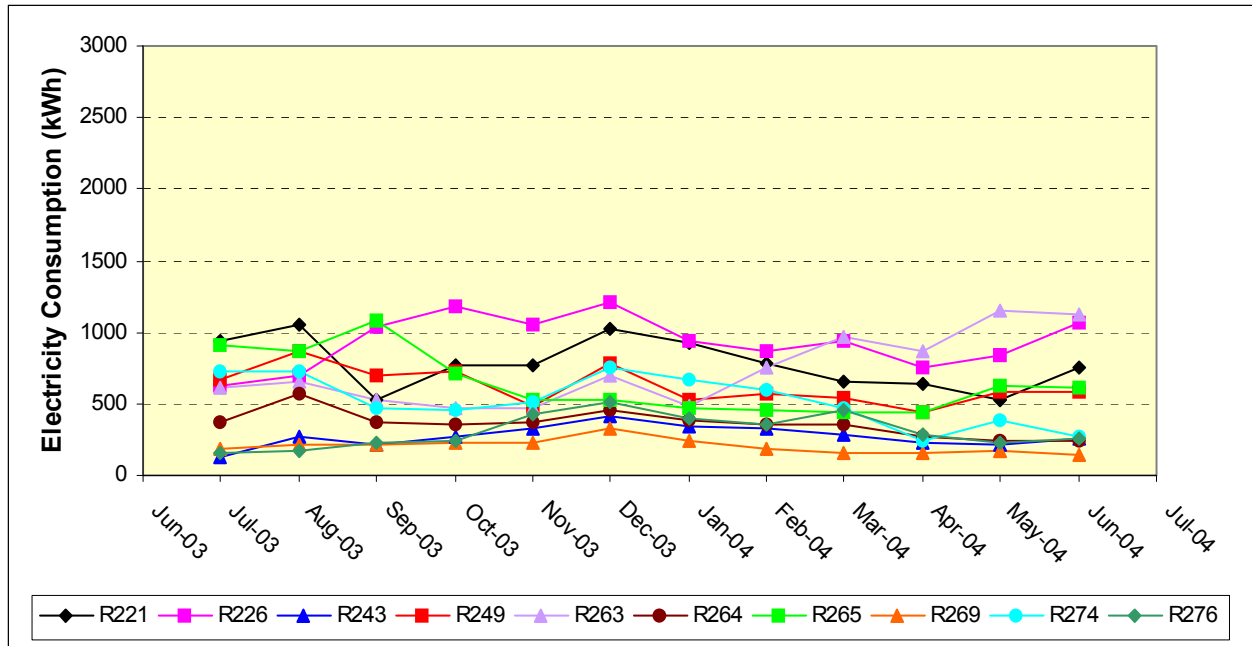


Figure L4. Monthly Utility Consumption in the Third 10 PV Homes: (a) Electricity and (b) Gas.

(a)



(b)

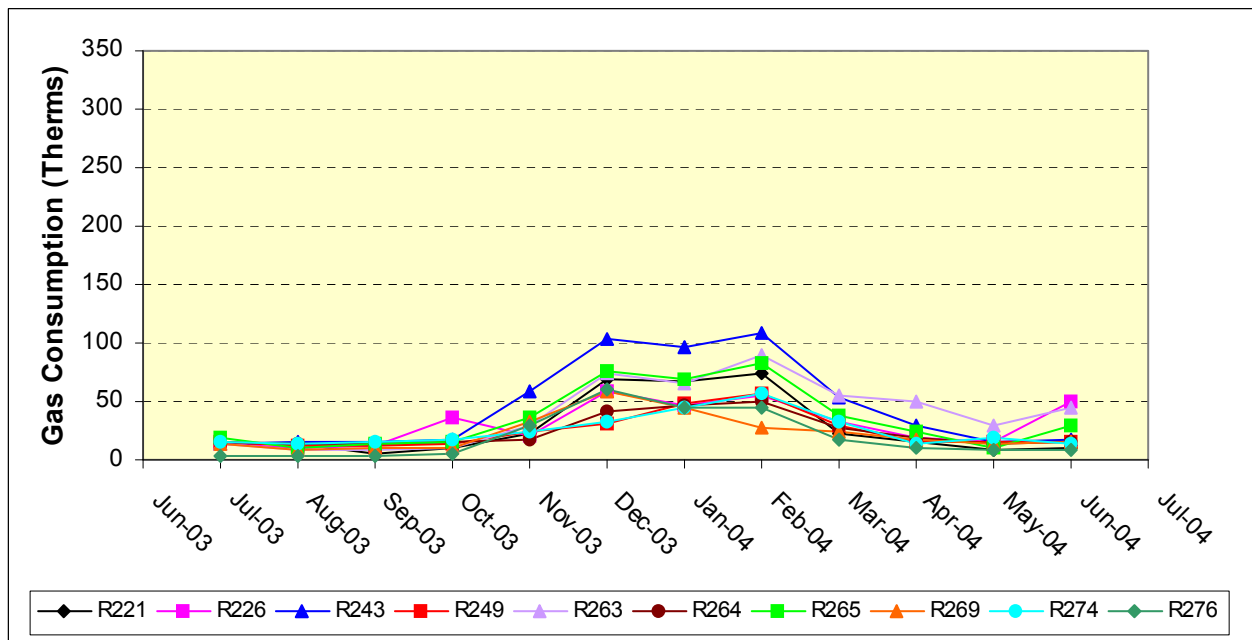
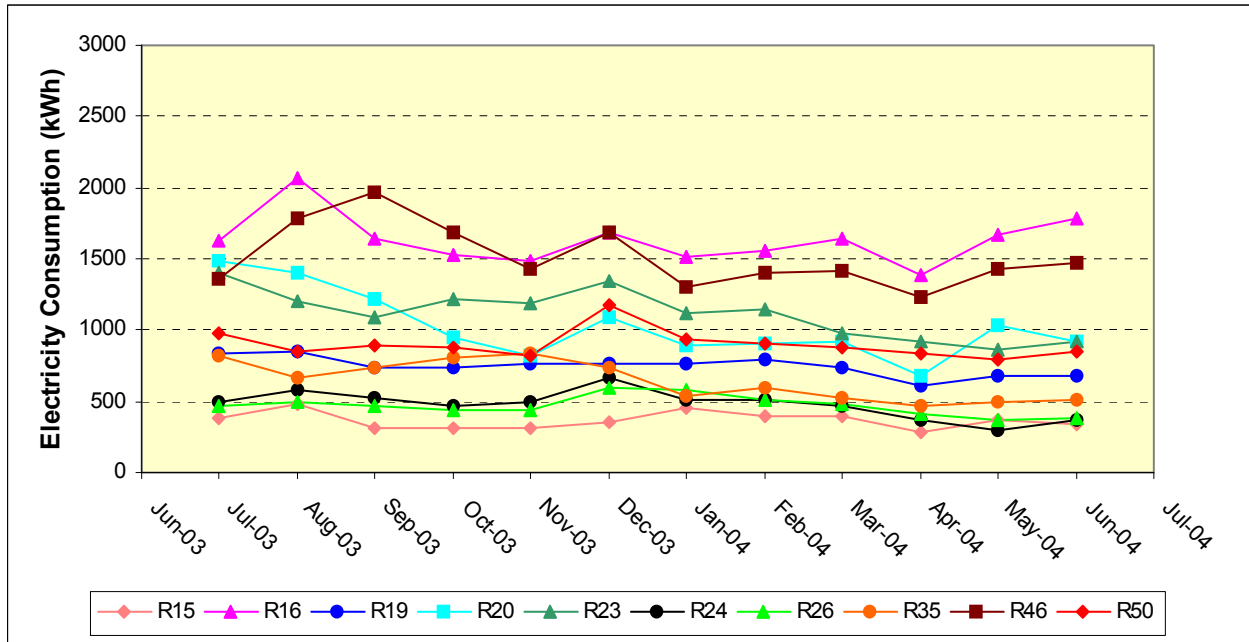
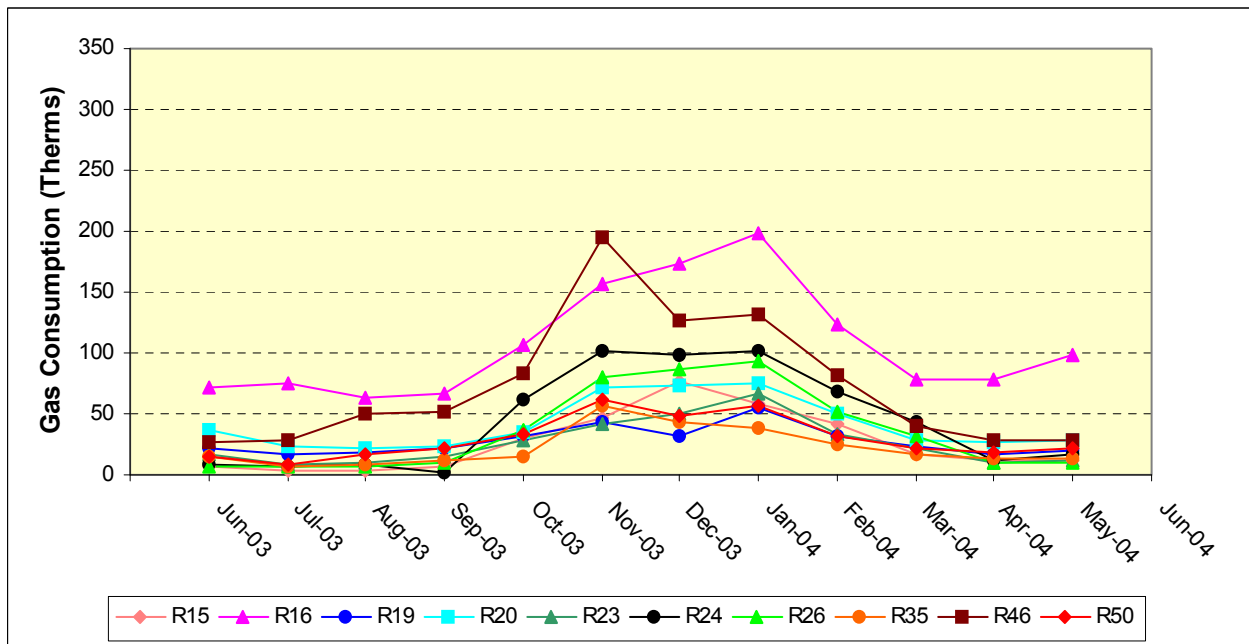


Figure L5. Monthly Utility Consumption in the Fourth 10 PV Homes: (a) Electricity and (b) Gas.

(a)

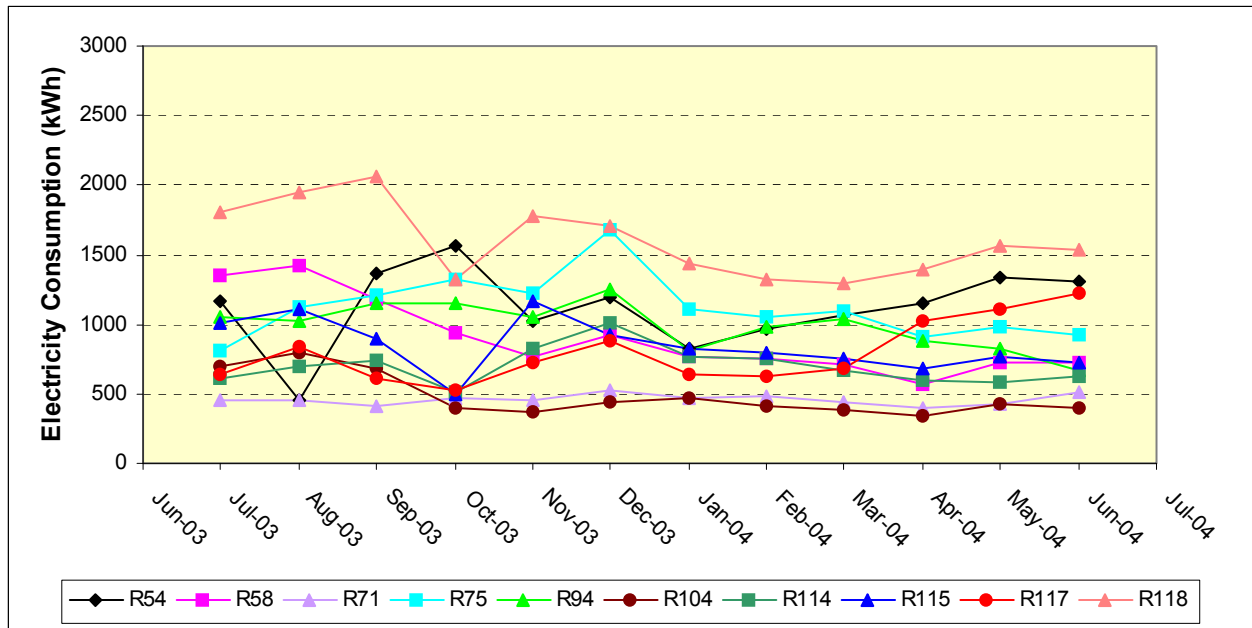


(b)

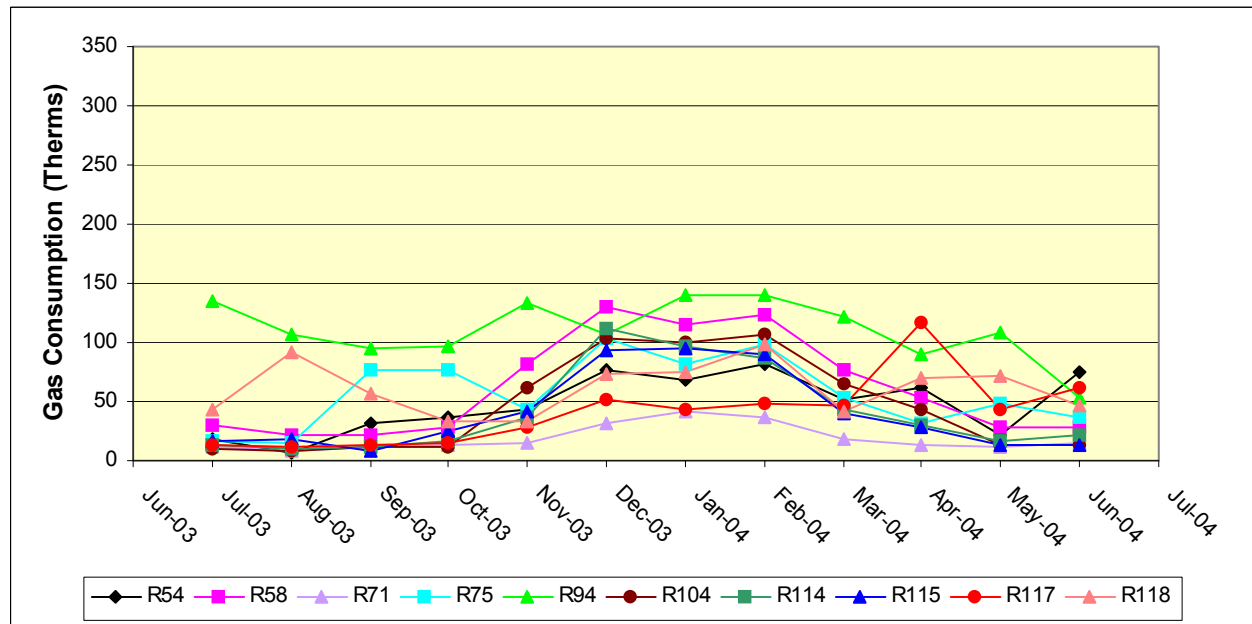


**Figure L6. Monthly Utility Consumption in the First 10 SEE Homes: (a) Electricity and (b) Gas. RID16 and RID46 are Statistical Outliers with Regard to Both Total 12-Month Electricity Consumption and Total 12-Month Gas-Consumption.**

(a)

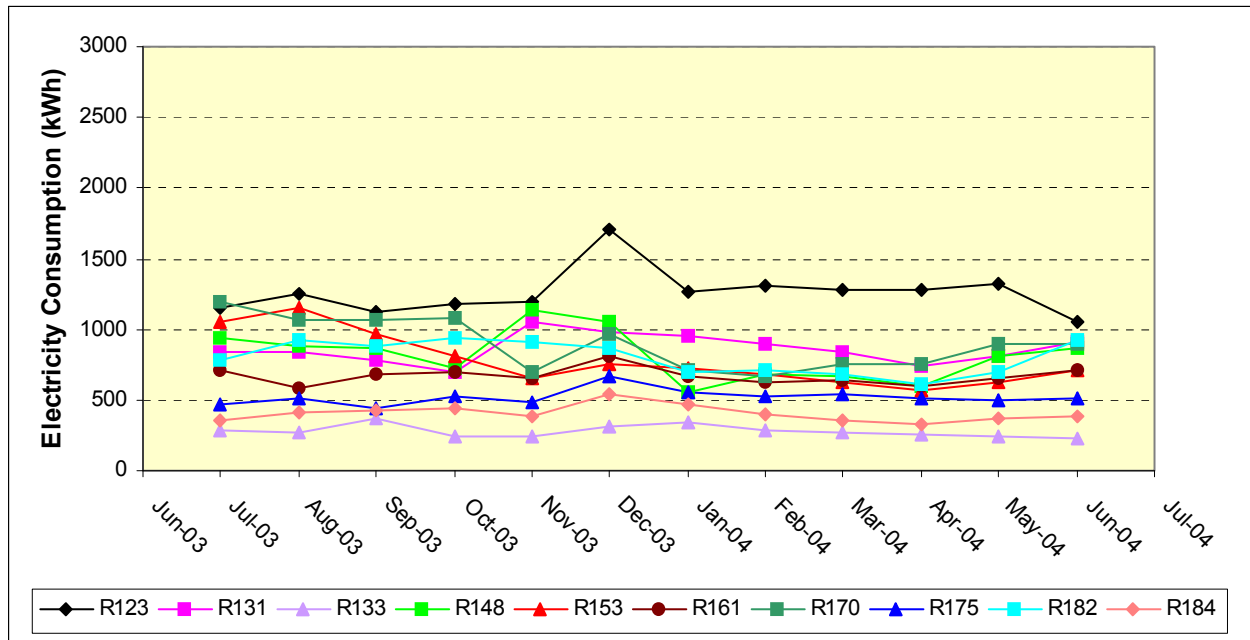


(b)



**Figure L7. Monthly Utility Consumption in the Second 10 SEE Homes: (a) Electricity and (b) Gas. RID118 is a Statistical Outlier with Regard to Total 12-Month Electricity Consumption and RID94 is a Statistical Outlier with Regard to Total 12-Month Gas Consumption.**

(a)



(b)

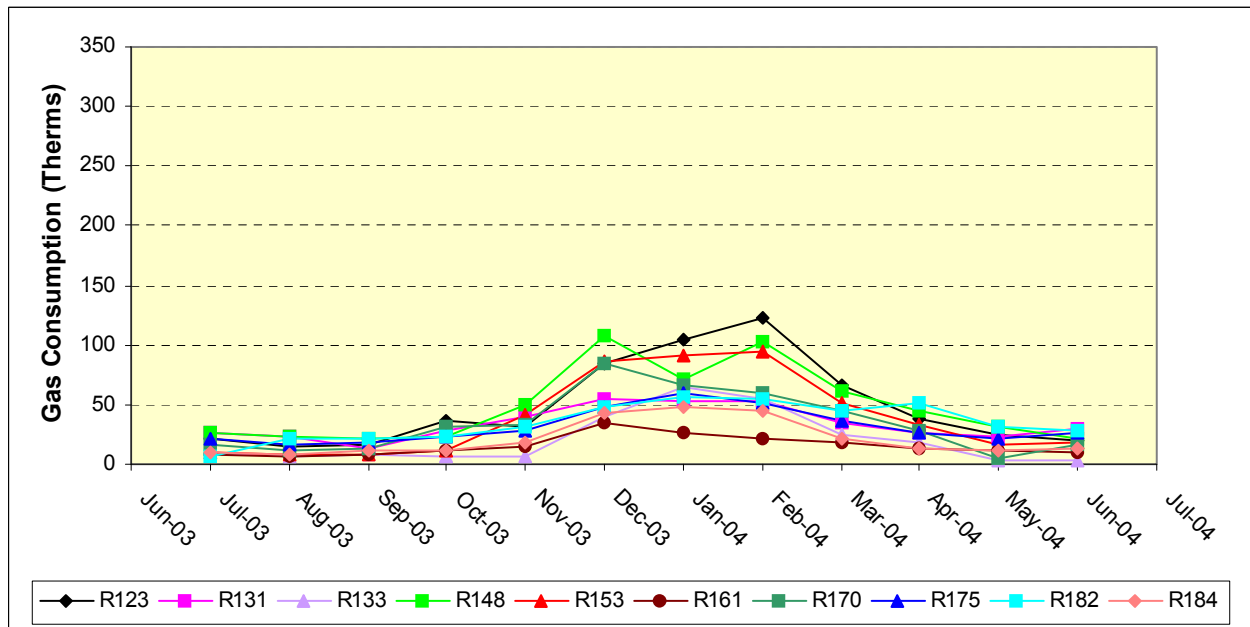
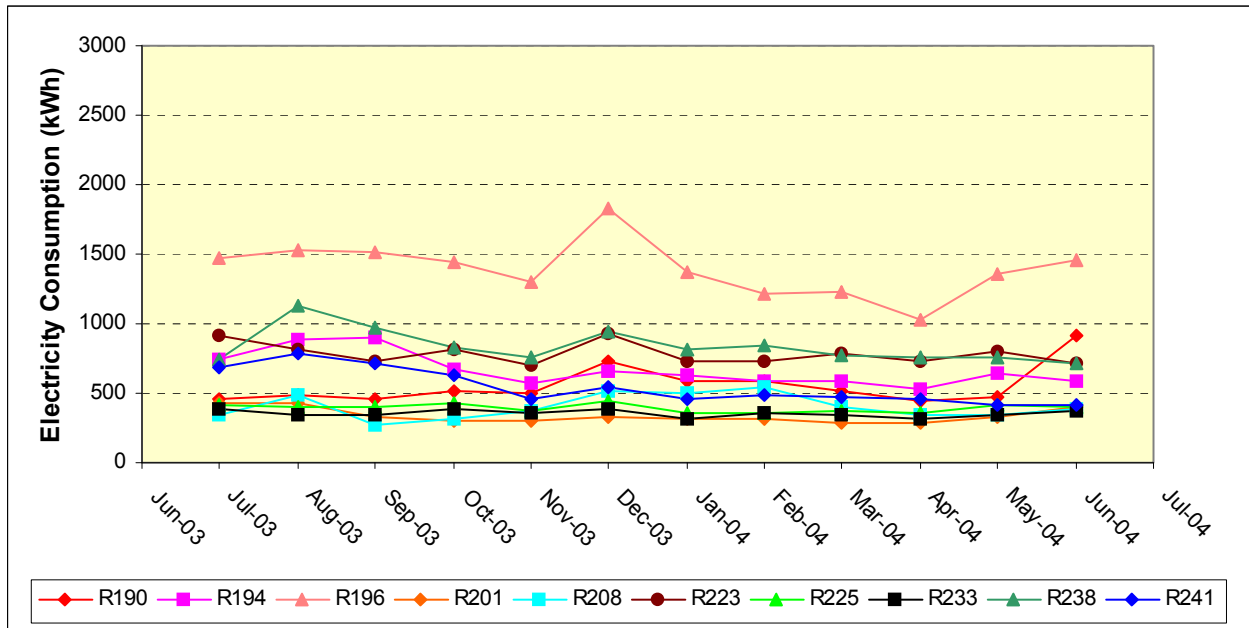


Figure L8. Monthly Utility Consumption in the Third 10 SEE Homes: (a) Electricity and (b) Gas.

(a)



(b)

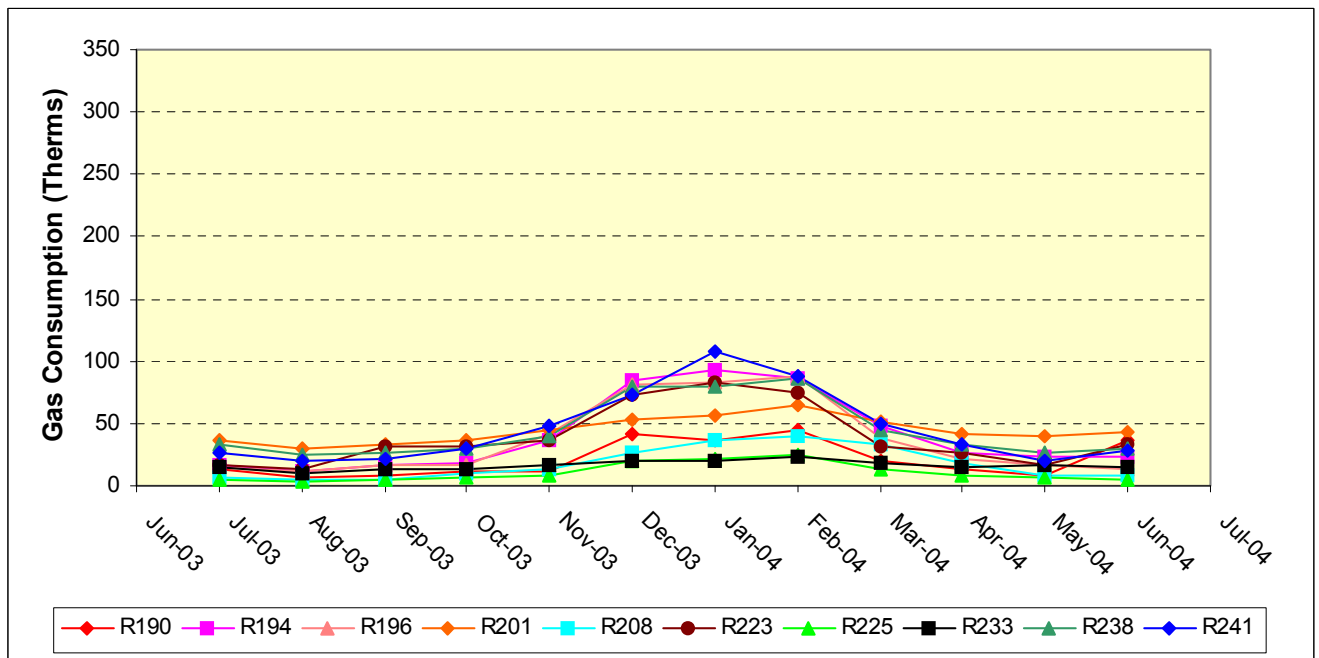
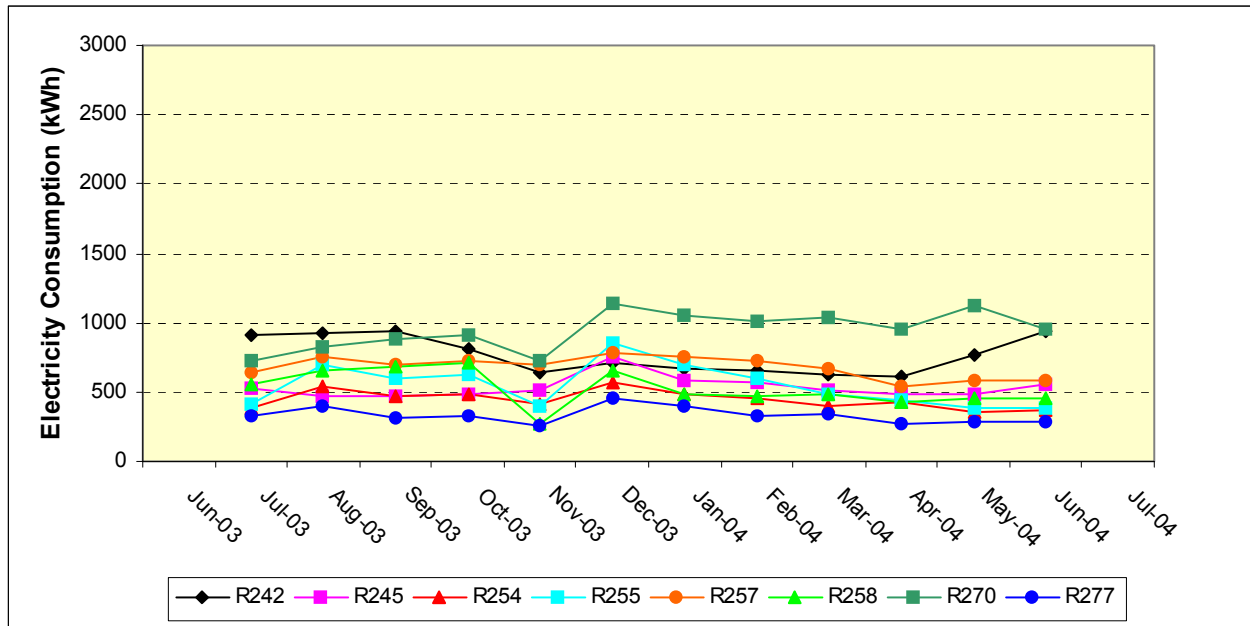


Figure L9. Monthly Utility Consumption in the Fourth 10 SEE Homes: (a) Electricity and (b) Gas.



(a)



(b)

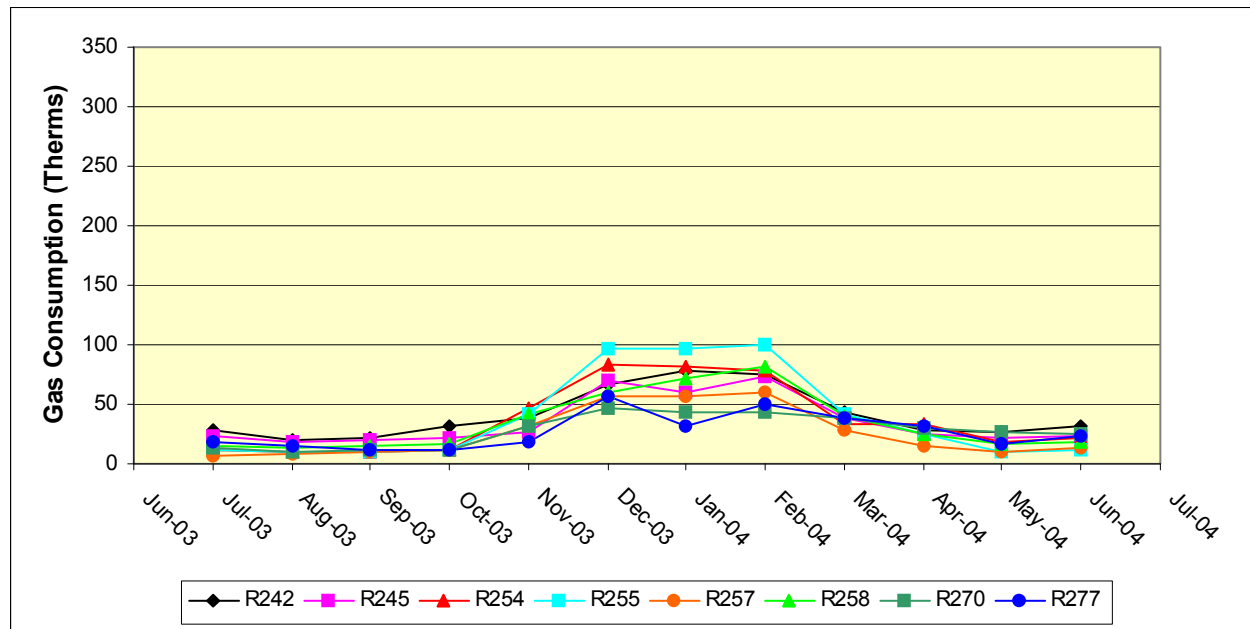
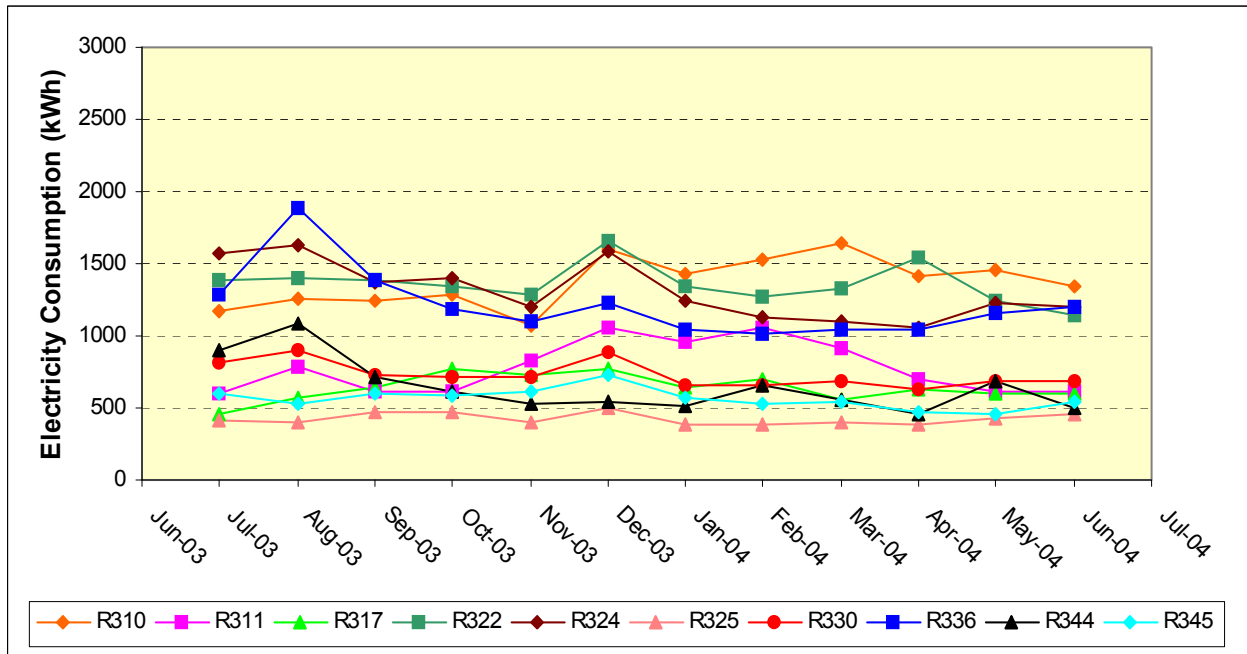


Figure L10. Monthly Utility Consumption in the Last Eight SEE Homes: (a) Electricity and (b) Gas.

(a)



(b)

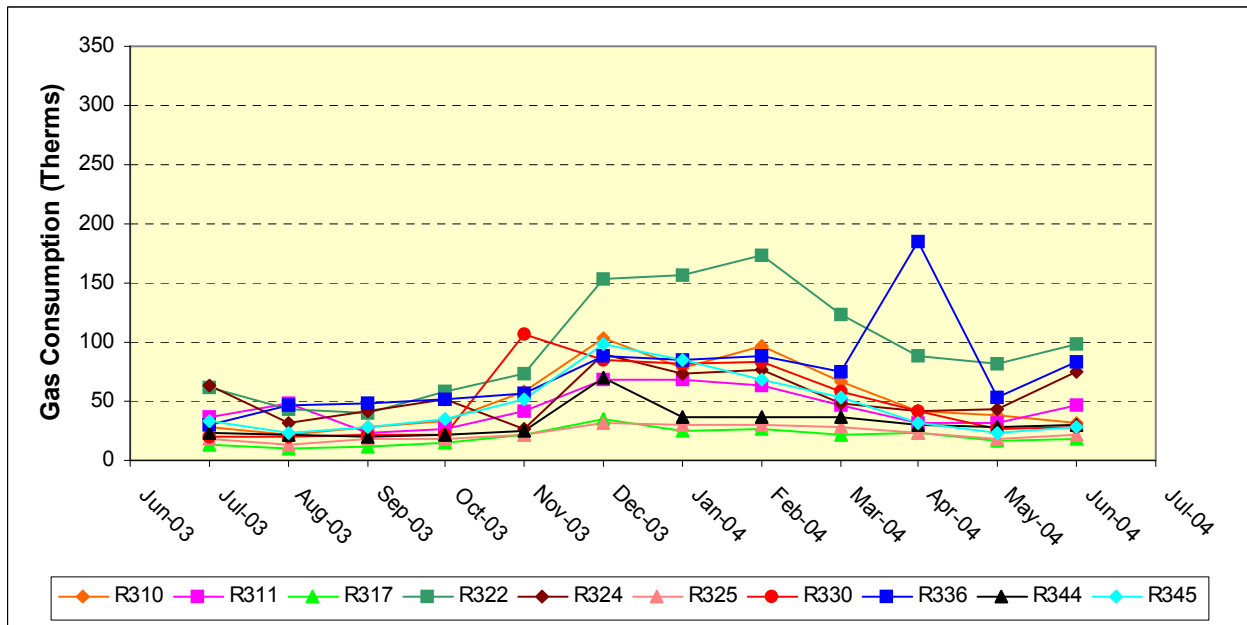
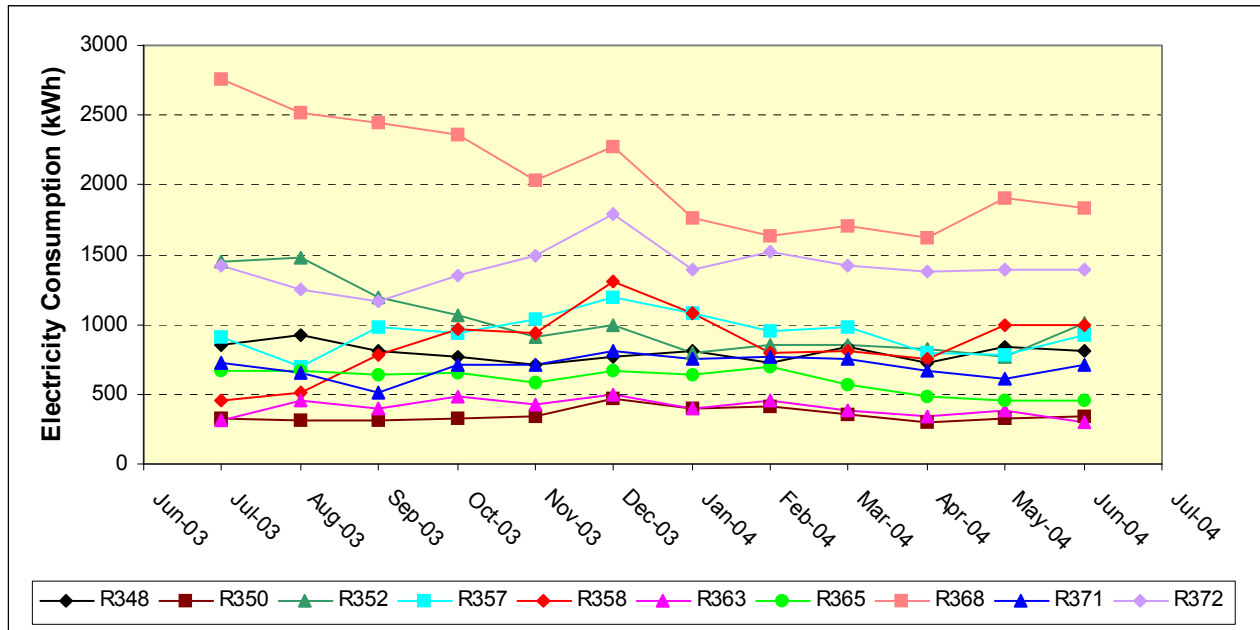


Figure L11. Monthly Utility Consumption in the First 10 Comparison Homes: (a) Electricity and (b) Gas. RID322 is a Statistical Outlier with Regard to Total 12-Month Gas Consumption.

(a)



(b)

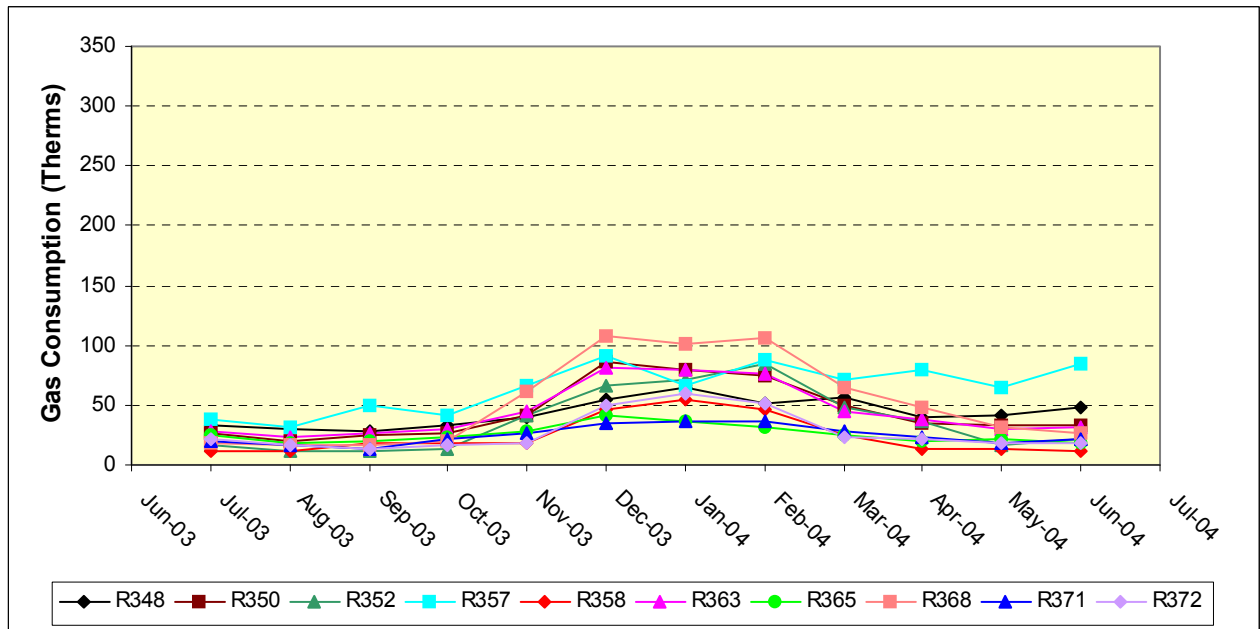
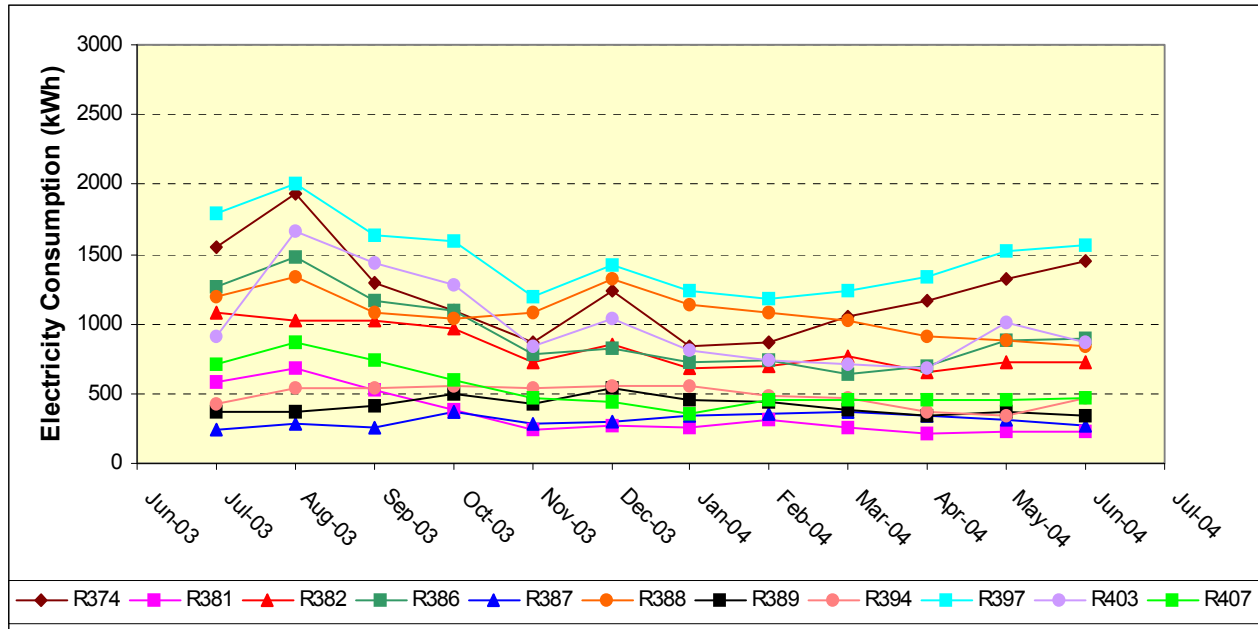


Figure L12. Monthly Utility Consumption in the Second 10 Comparison Homes: (a) Electricity and (b) Gas. RID368 is a Statistical Outlier with Regard to Total 12-Month Electricity Consumption.

(a)



(b)

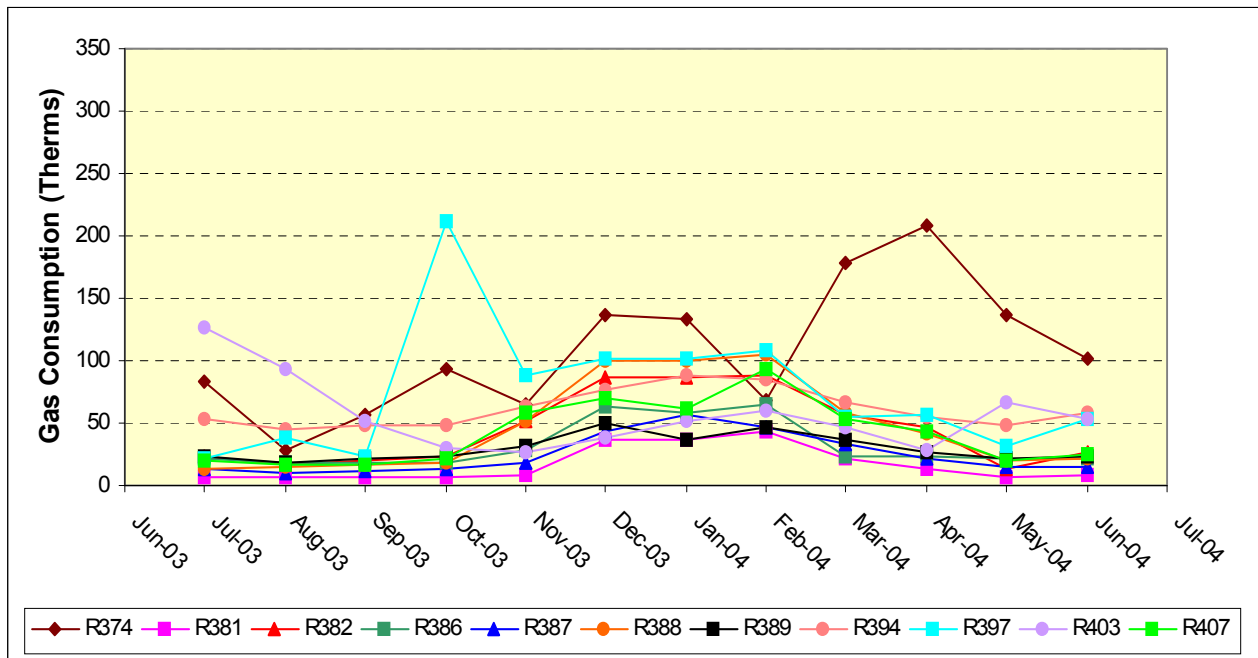
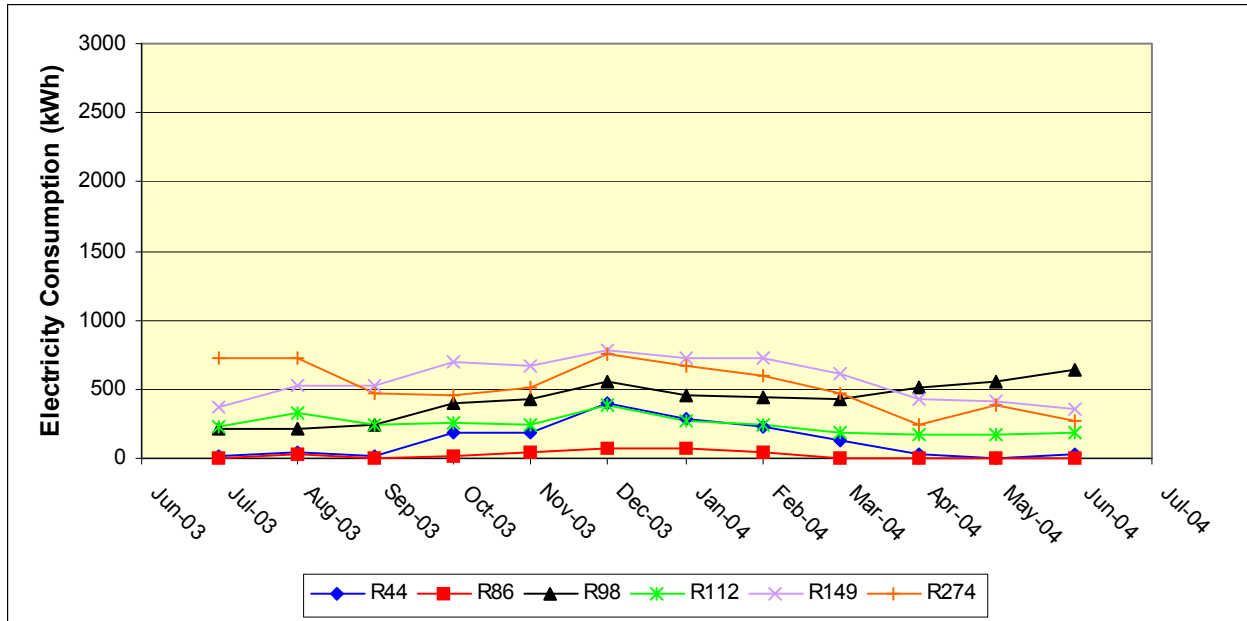
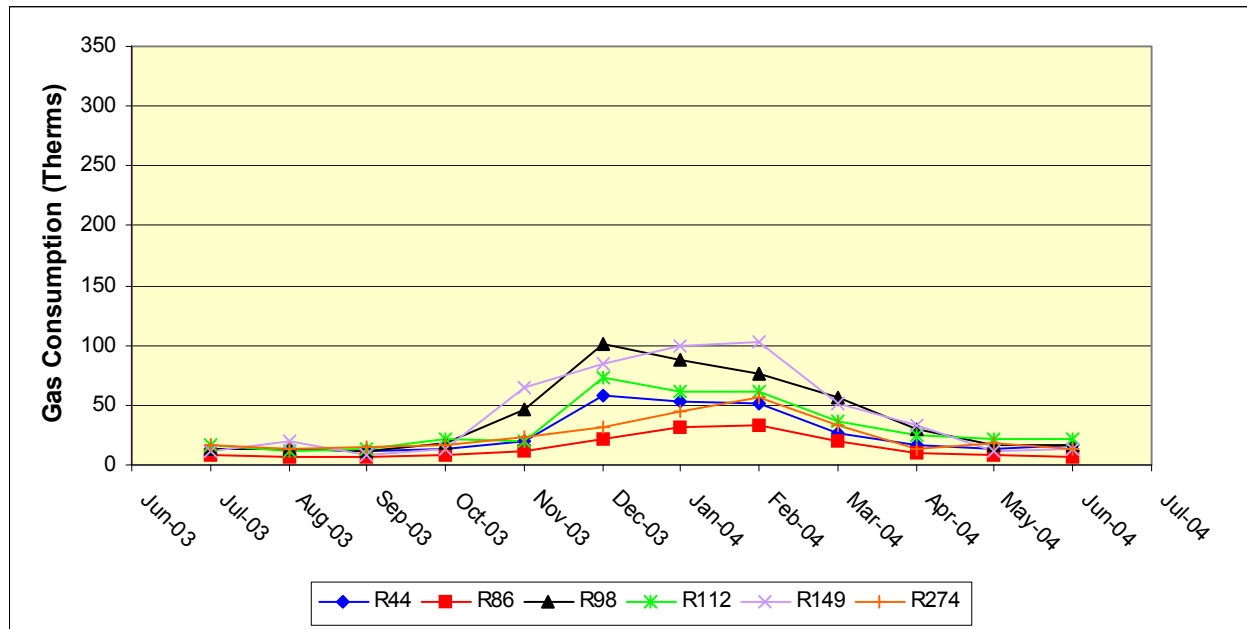


Figure L13. Monthly Utility Consumption in the Last 11 Comparison Homes: (a) Electricity and (b) Gas. RID374 is a Statistical Outlier with Regard to Total 12-Month Gas Consumption.

(a)



(b)



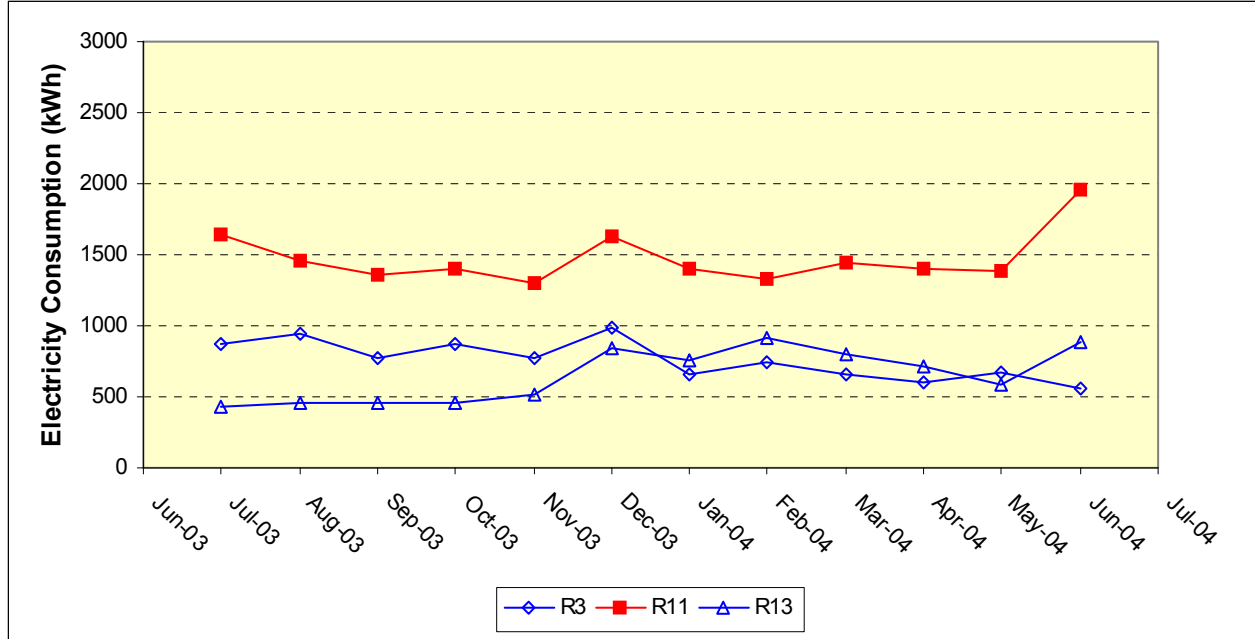
**Figure L14. Monthly Utility Consumption in PV Homes with 2.4-kW Systems:**  
**(a) Electricity and (b) Gas.**

## **Appendix M**

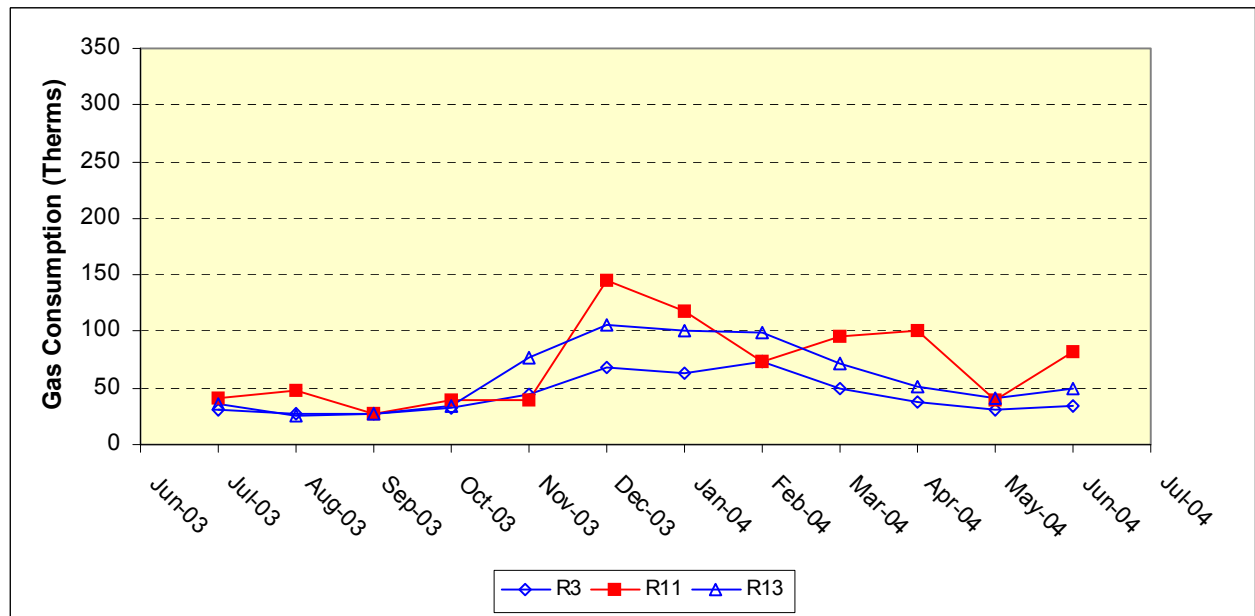
### **Line Graphs for Month-to-Month Consumption of Gas for Individual Homes in the Study**

*Cited in Chapter 20*

(a)

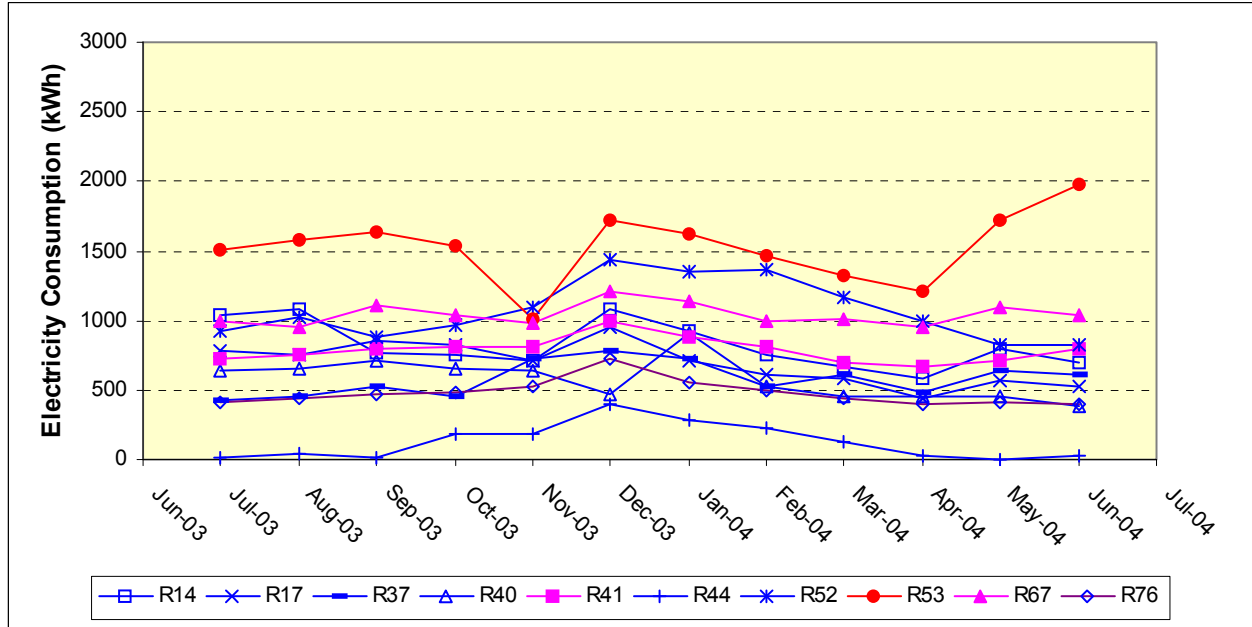


(b)

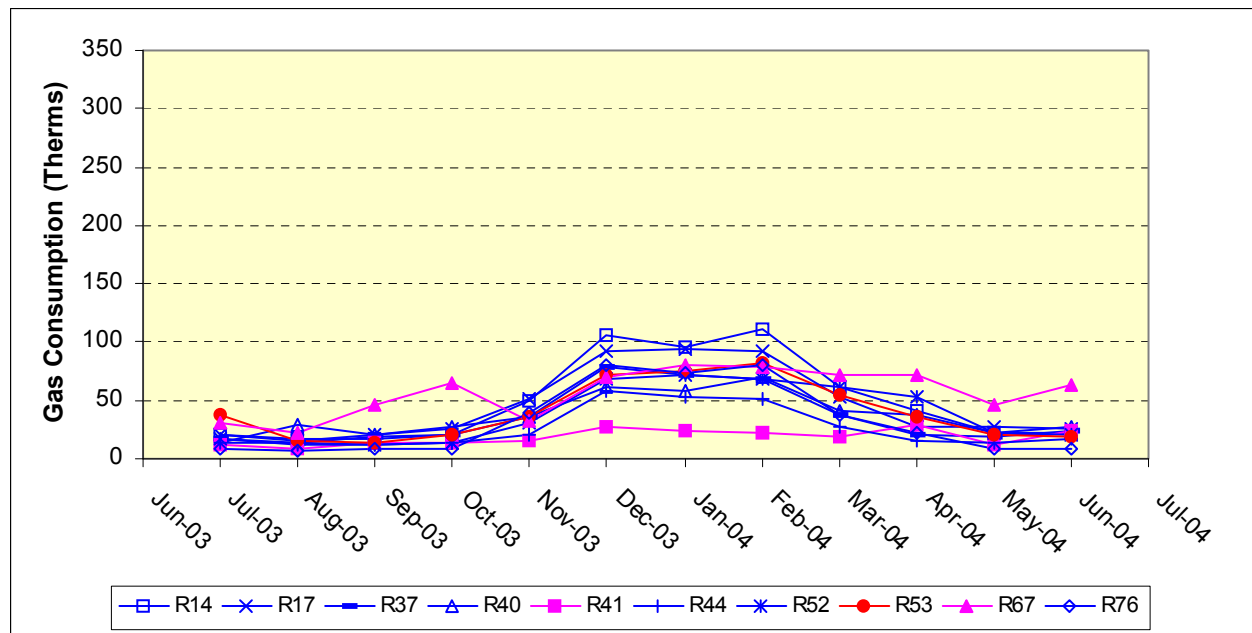


**Figure M1. Monthly Utility Consumption in Early Homes: (a) Electricity and (b) Gas. Homes with Pools are Indicated in Red, Homes with Hot Tubs are Indicated in Blue, Homes with Both are Indicated in Magenta, and Homes with Neither are Indicated in Black.**

(a)



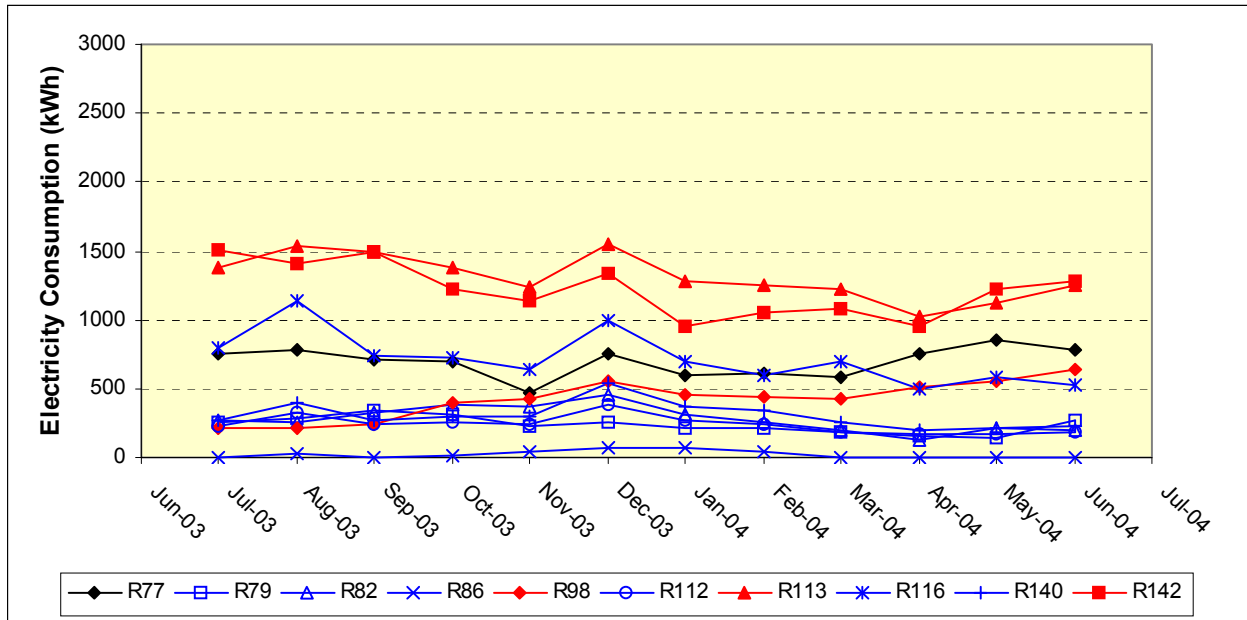
(b)



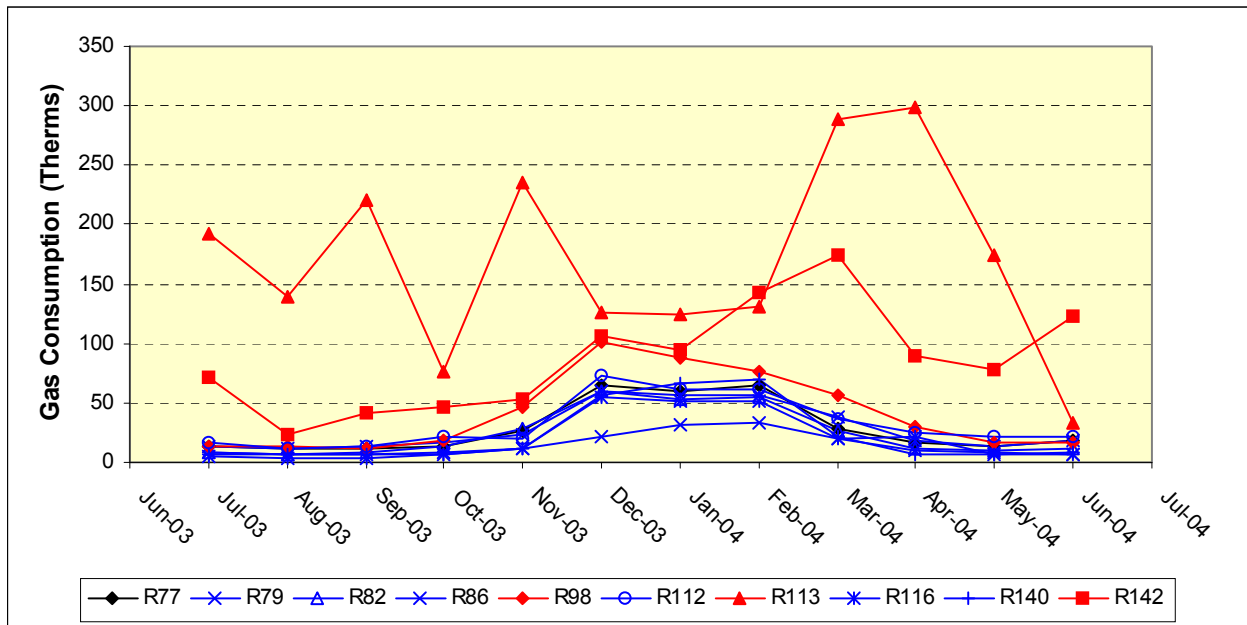
**Figure M2. Monthly Utility Consumption in the First 10 PV Homes: (a) Electricity and (b) Gas. RID44 has a 2.4-kW System, Whereas all Others have 1.2-kW Systems. Homes with Pools are Indicated in Red, Homes with Hot Tubs are Indicated in Blue, Homes with Both are Indicated in Magenta, and Homes with Neither are Indicated in Black. RID53 is a Statistical Outlier with Regards to Total 12-Month Electricity Consumption.**



(a)

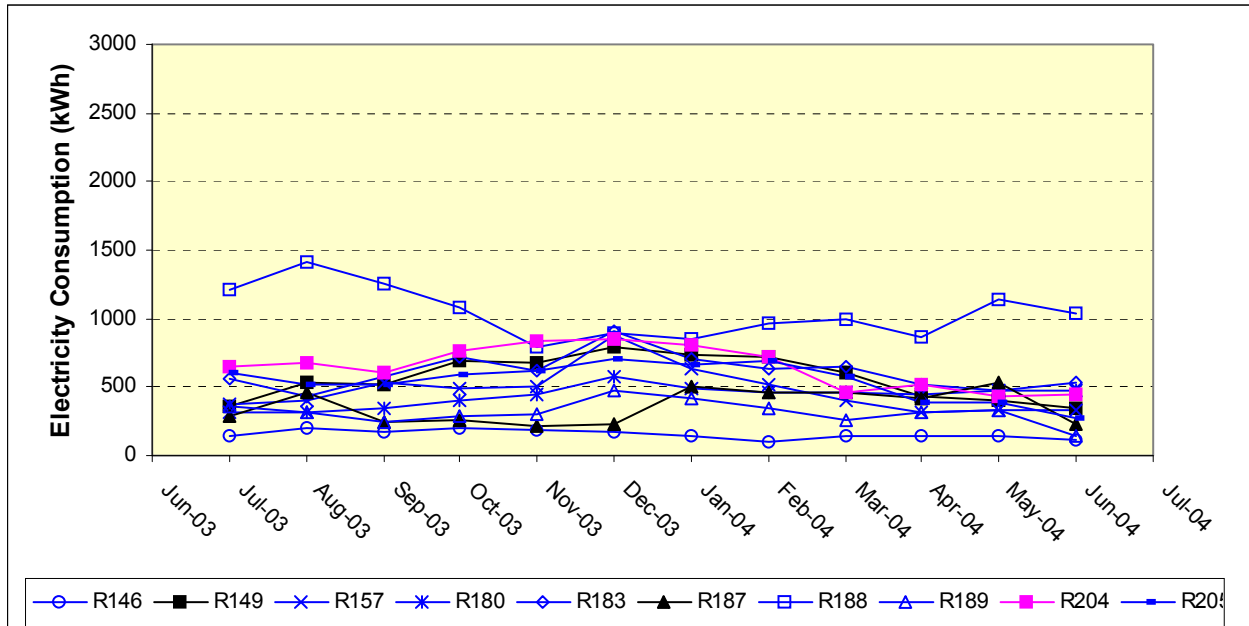


(b)

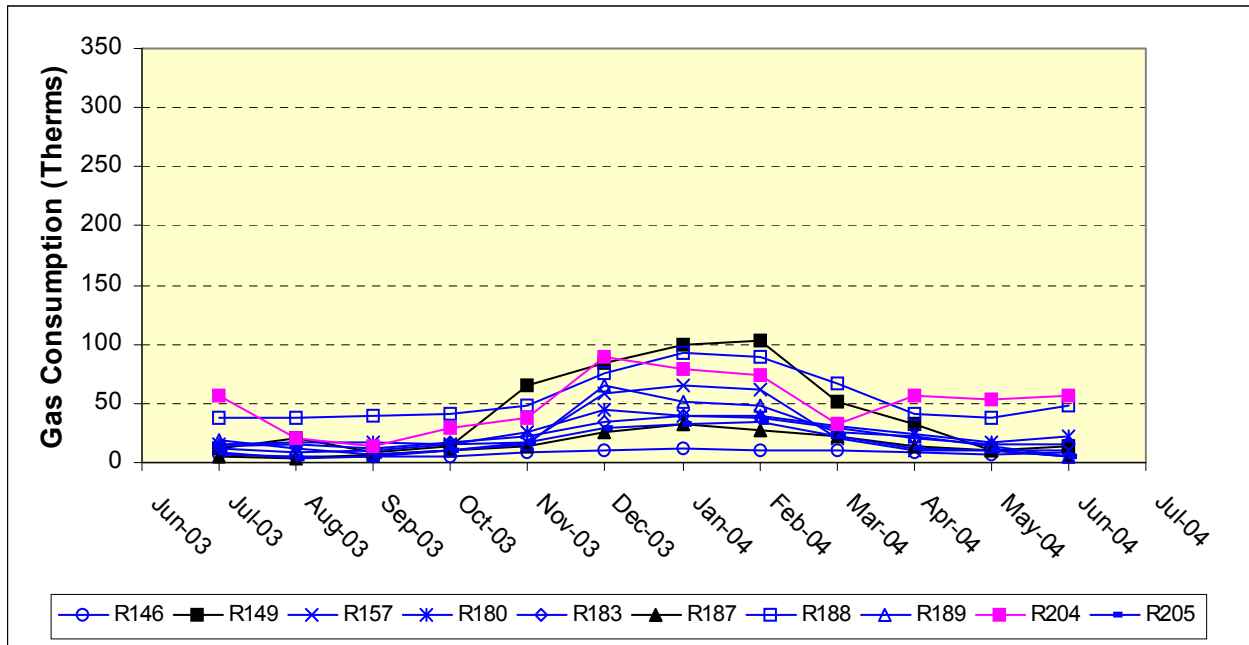


**Figure M3. Monthly Utility Consumption in the Second 10 PV Homes: (a) Electricity and (b) Gas. RID86, RID98, and RID112 have 2.4-kW Systems, Whereas all Others have 1.2-kW Systems. Homes with Pools are Indicated in Red, Homes with Hot Tubs are Indicated in Blue, Homes with Both are Indicated in Magenta, and Homes with Neither are Indicated in Black. RID113 and RID142 are Statistical Outliers with Regard to Total 12-Month Gas Consumption.**

(a)

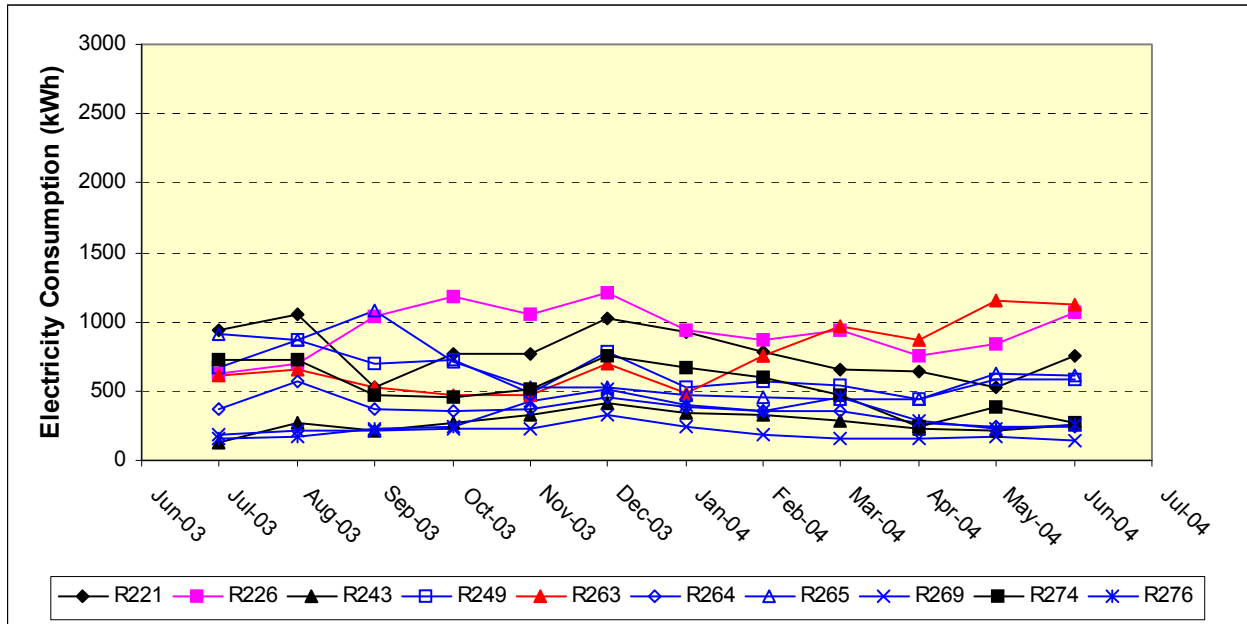


(b)

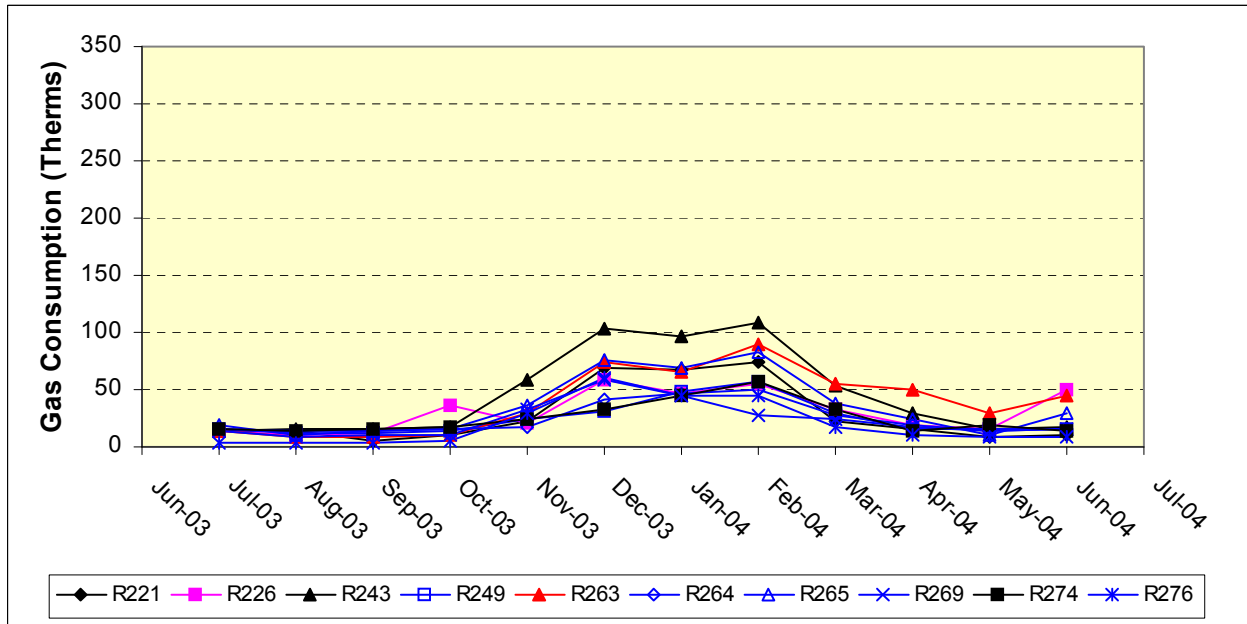


**Figure M4. Monthly Utility Consumption in the Third 10 PV Homes: (a) Electricity and (b) Gas. RID149 has a 2.4-kW System, Whereas all Others have 1.2-kW Systems. Homes with Pools are Indicated in Red, Homes with Hot Tubs are Indicated in Blue, Homes with Both are Indicated in Magenta, and Homes with Neither are Indicated in Black.**

(a)

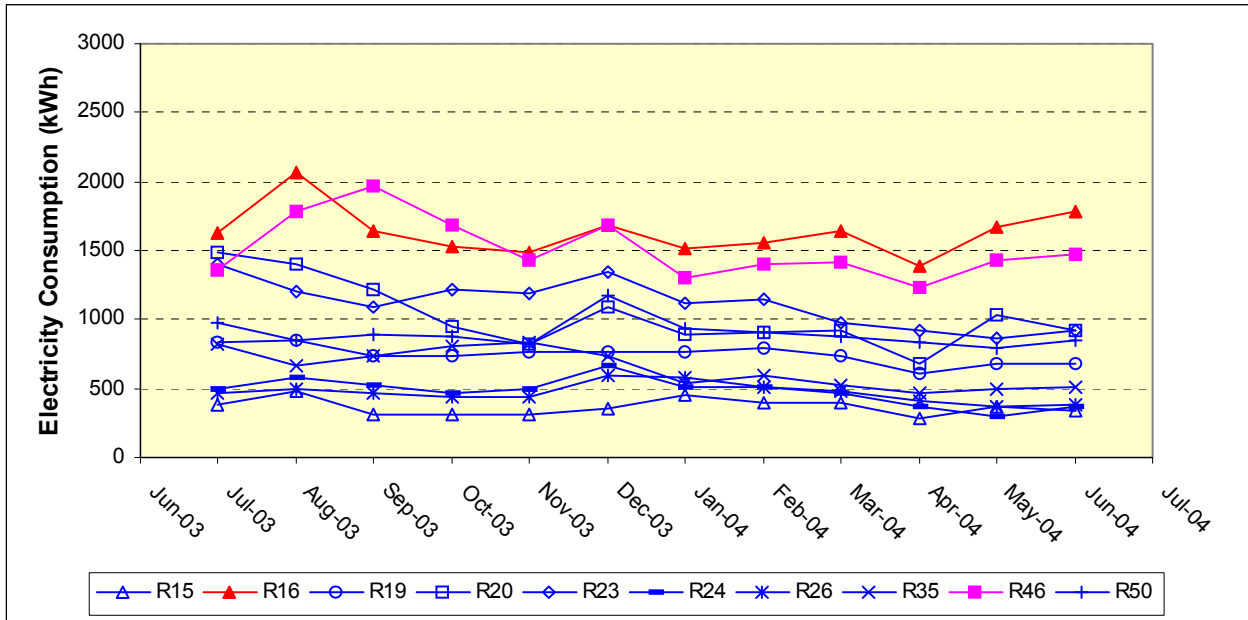


(b)

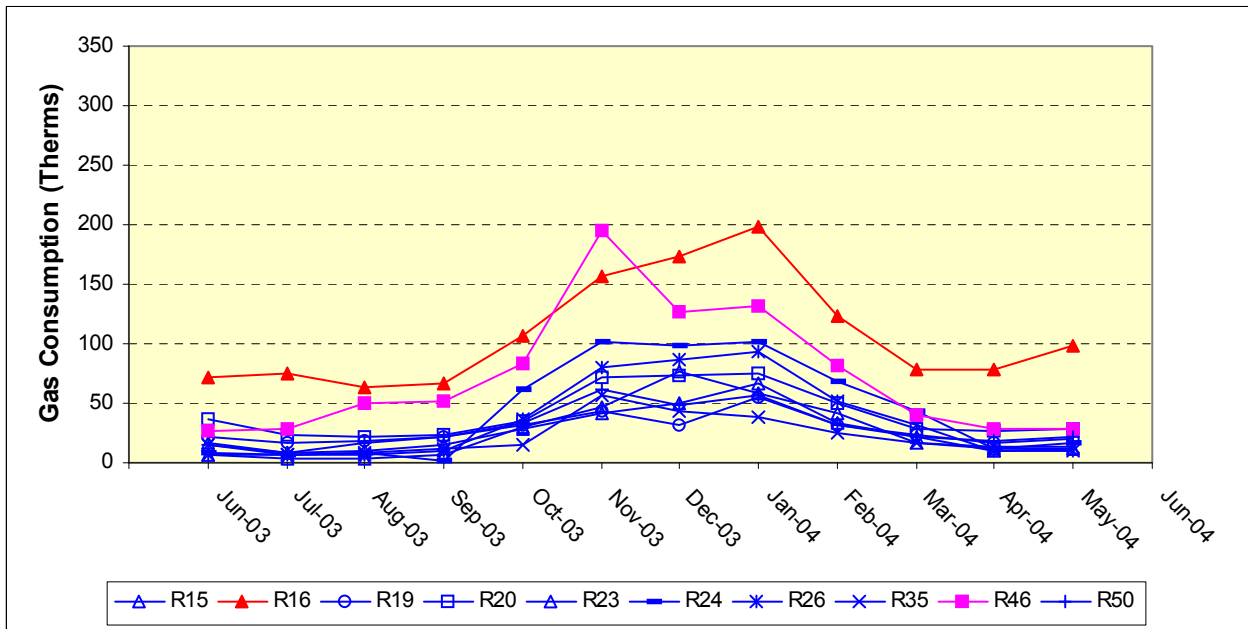


**Figure M5. Monthly Utility Consumption in the Fourth 10 PV Homes: (a) Electricity and (b) Gas. RID274 has a 2.4-kW System, Whereas all Others have 1.2-kW Systems. Homes with Pools are Indicated in Red, Homes with Hot Tubs are Indicated in Blue, Homes with Both are Indicated in Magenta, and Homes with Neither are Indicated in Black.**

(a)

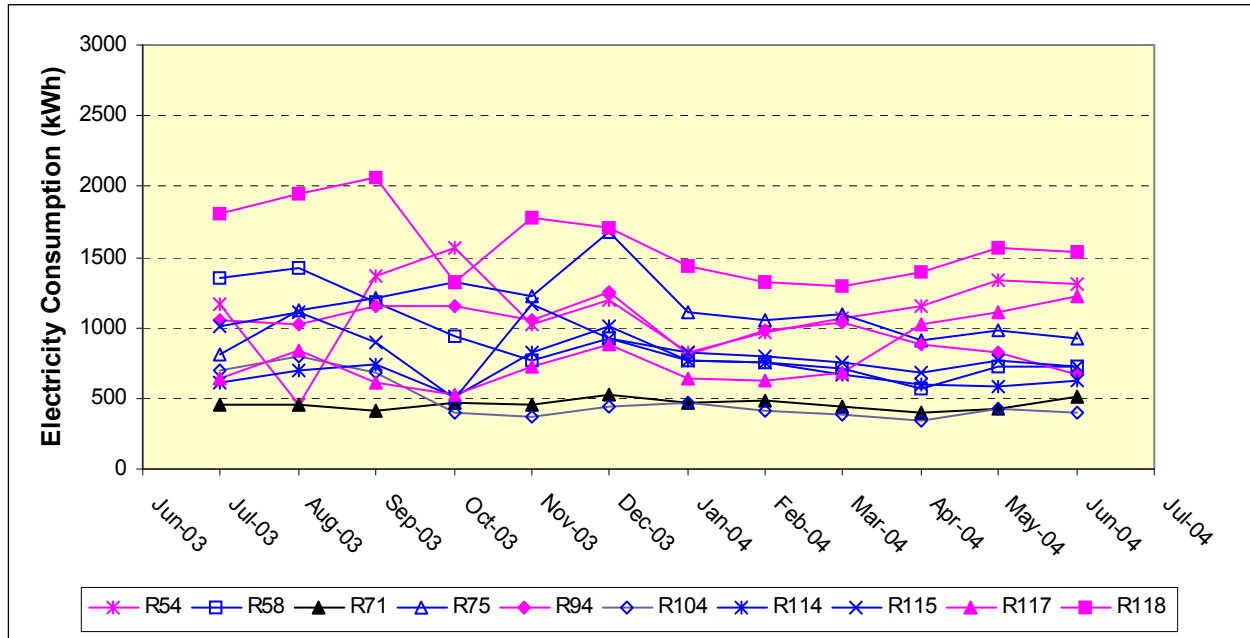


(b)

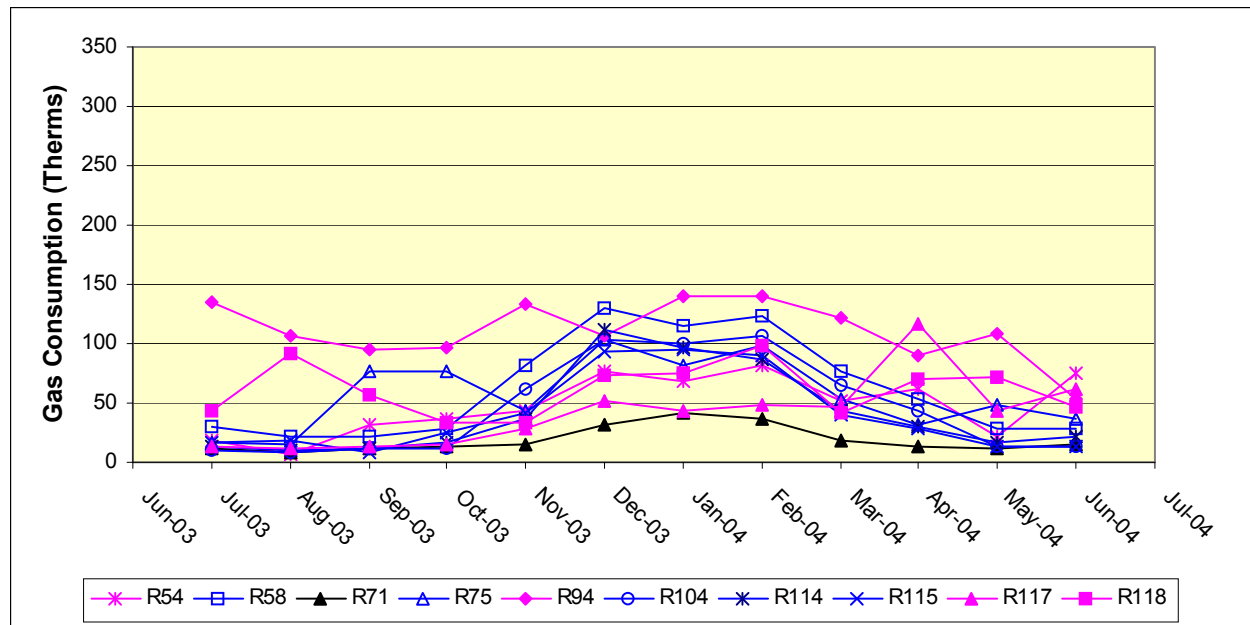


**Figure M6. Monthly Utility Consumption in the First 10 SEE Homes: (a) Electricity and (b) Gas. Homes with Pools are Indicated in Red, Homes with Hot Tubs are Indicated in Blue, Homes with Both are Indicated in Magenta, and Homes with Neither are Indicated in Black. RID16 and RID46 are Statistical Outliers with Regard to Both 12-Month Total Electricity Consumption and 12-Month Total Gas Consumption.**

(a)

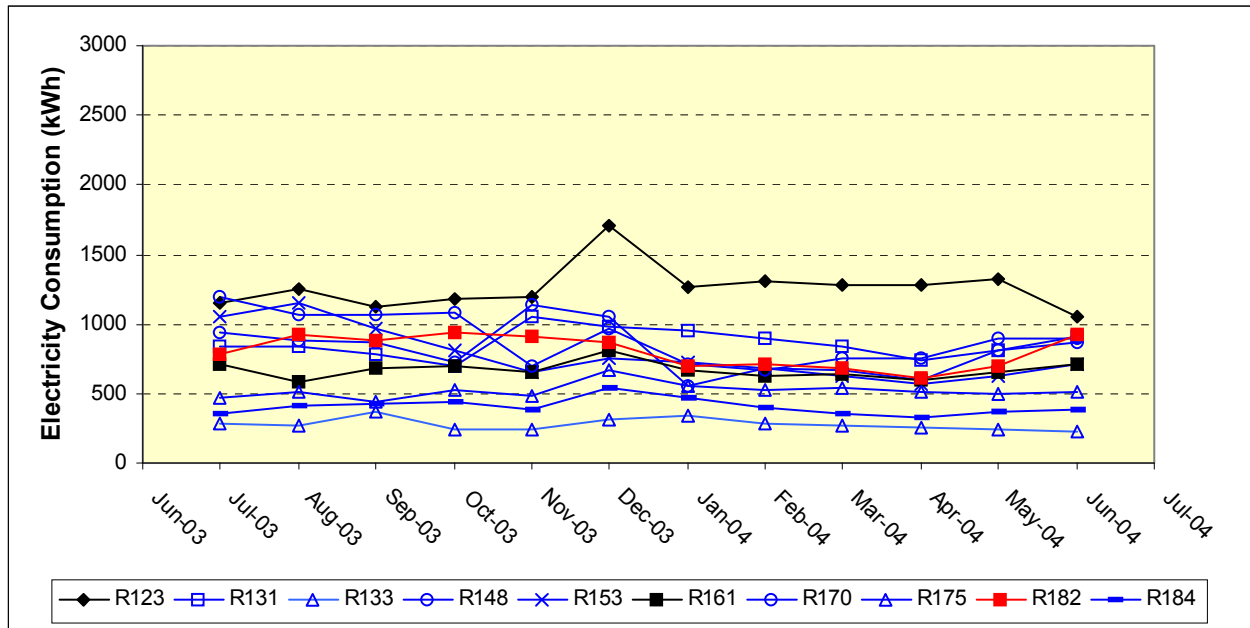


(b)

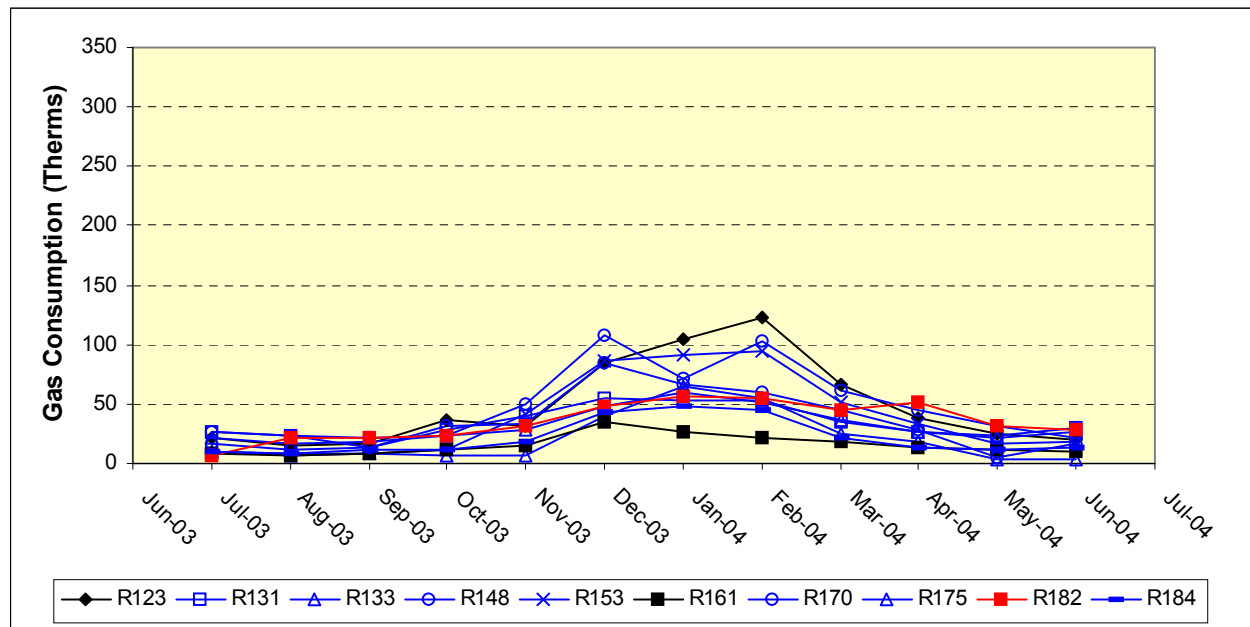


**Figure M7. Monthly Utility Consumption in the Second 10 SEE Homes: (a) Electricity and (b) Gas. Homes with Pools are Indicated in Red, Homes with Hot Tubs are Indicated in Blue, Homes with Both are Indicated in Magenta, and Homes with Neither are Indicated in Black. RID118 is a Statistical Outlier with Regard to 12-Month Total Electricity Consumption and RID94 is a Statistical Outlier with Regard to 12-Month Total Gas Consumption.**

(a)

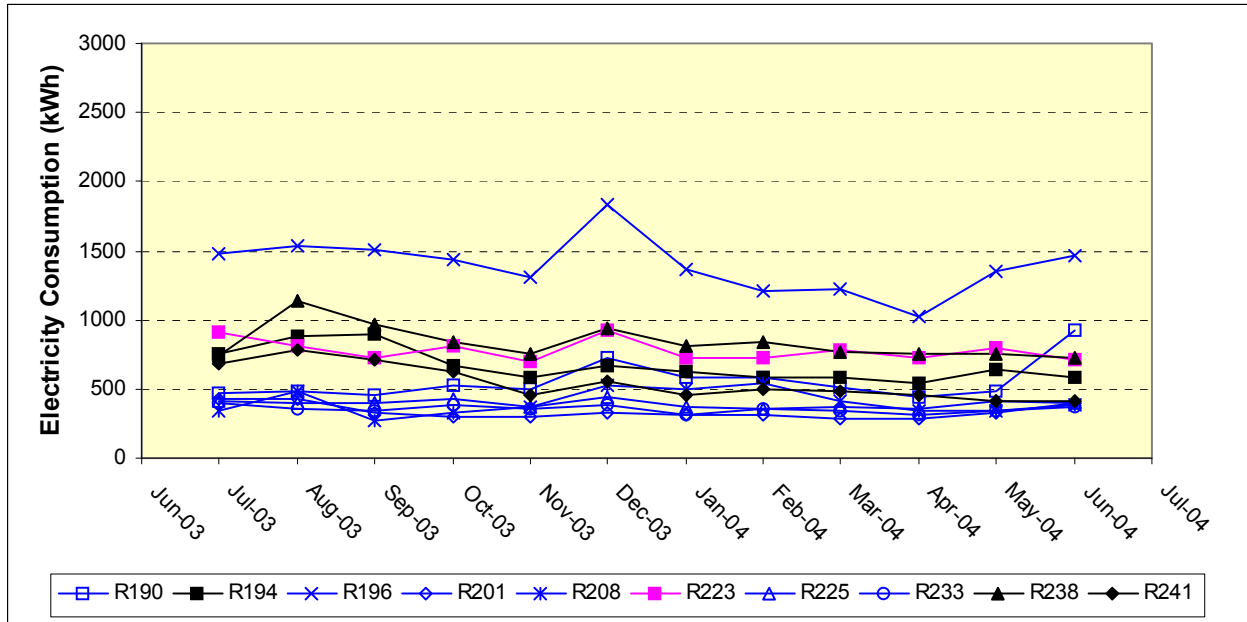


(b)

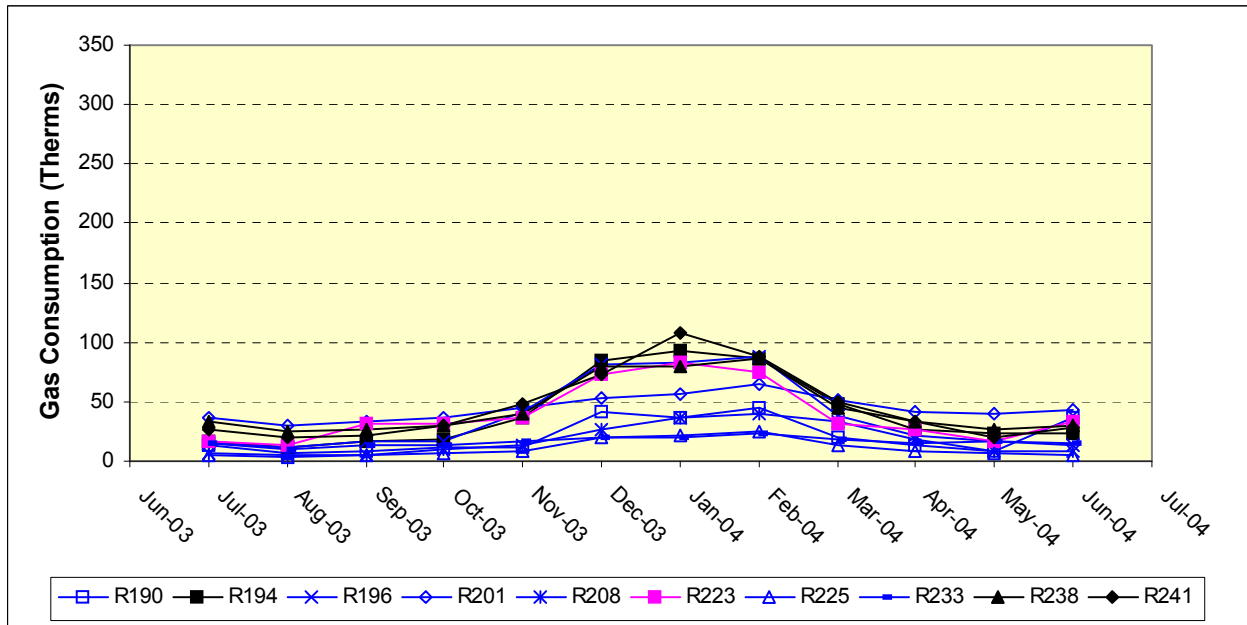


**Figure M8. Monthly Utility Consumption in the Third 10 SEE Homes: (a) Electricity and (b) Gas. Homes with Pools are Indicated in Red, Homes with Hot Tubs are Indicated in Blue, Homes with Both are Indicated in Magenta, and Homes with Neither are Indicated in Black.**

(a)

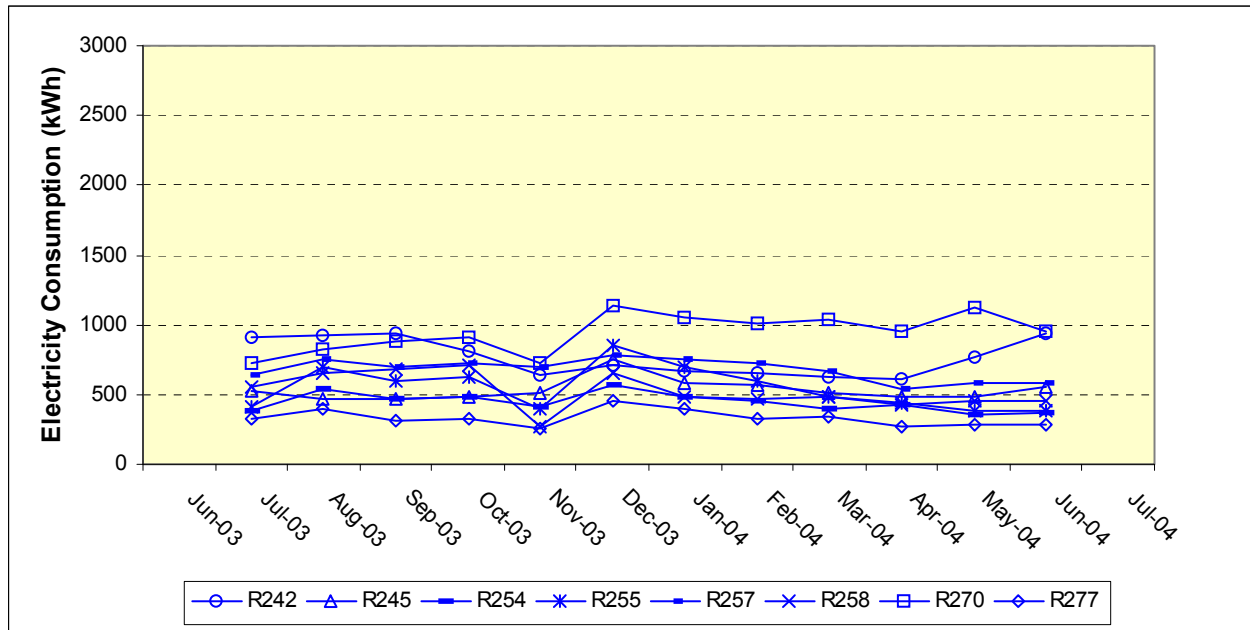


(b)

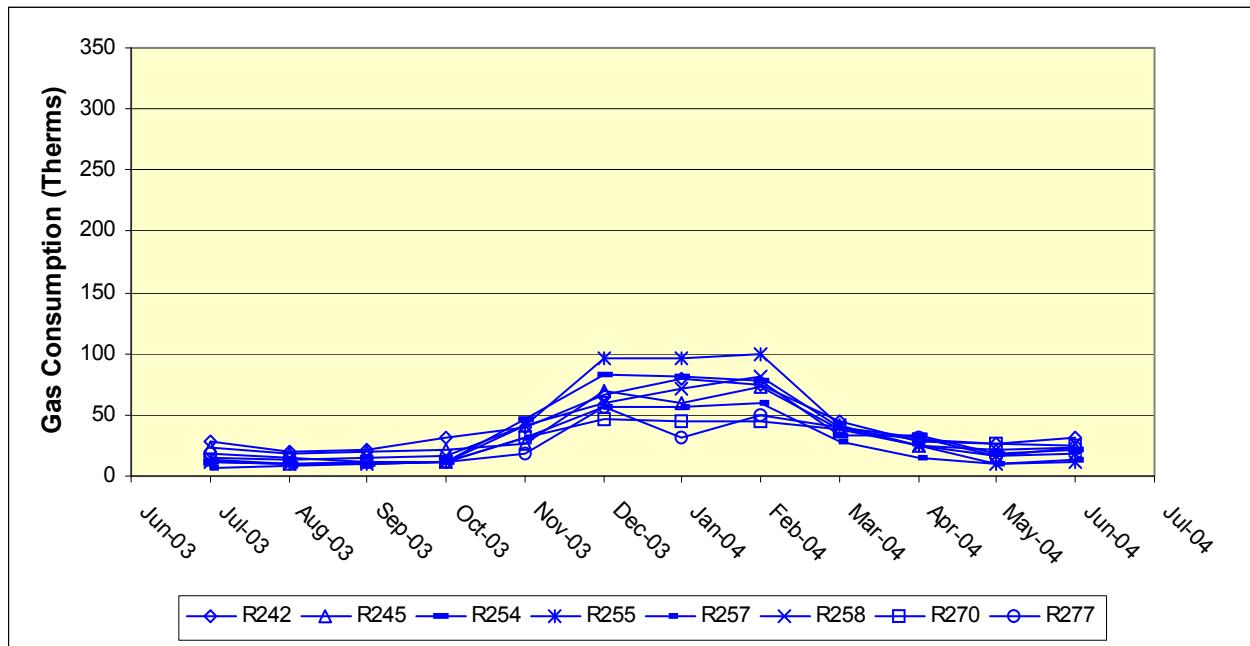


**Figure M9. Monthly Utility Consumption in the Fourth 10 SEE Homes: (a) Electricity and (b) Gas. Homes with Pools are Indicated in Red, Homes with Hot Tubs are Indicated in Blue, Homes with Both are Indicated in Magenta, and Homes with Neither are Indicated in Black.**

(a)



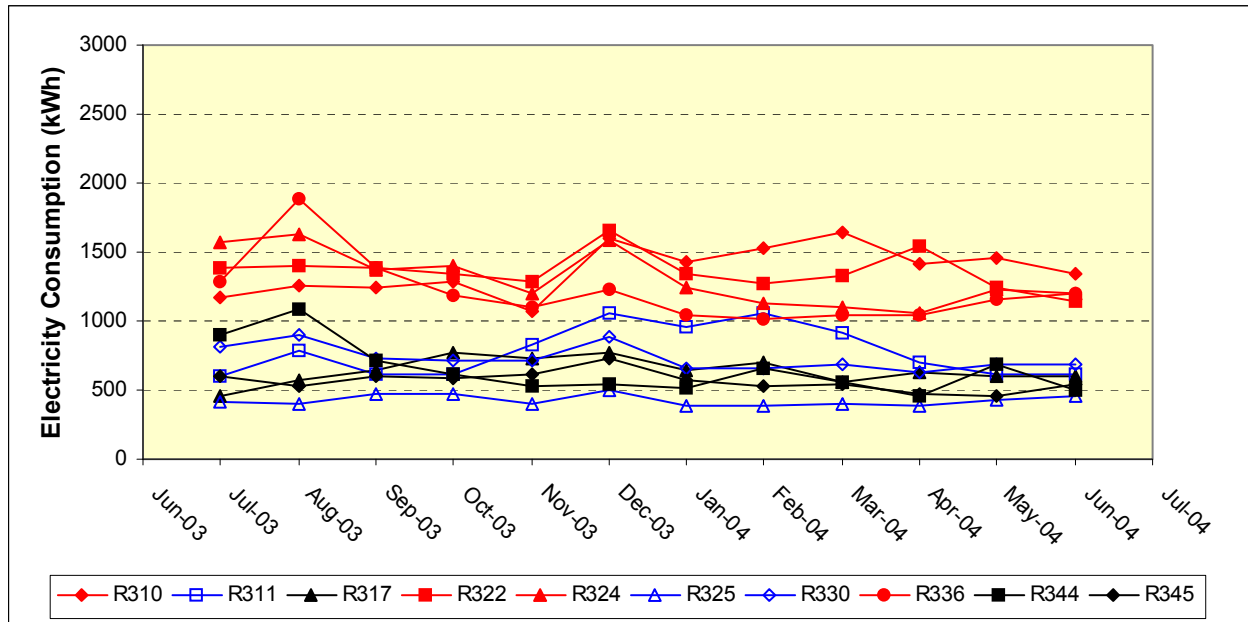
(b)



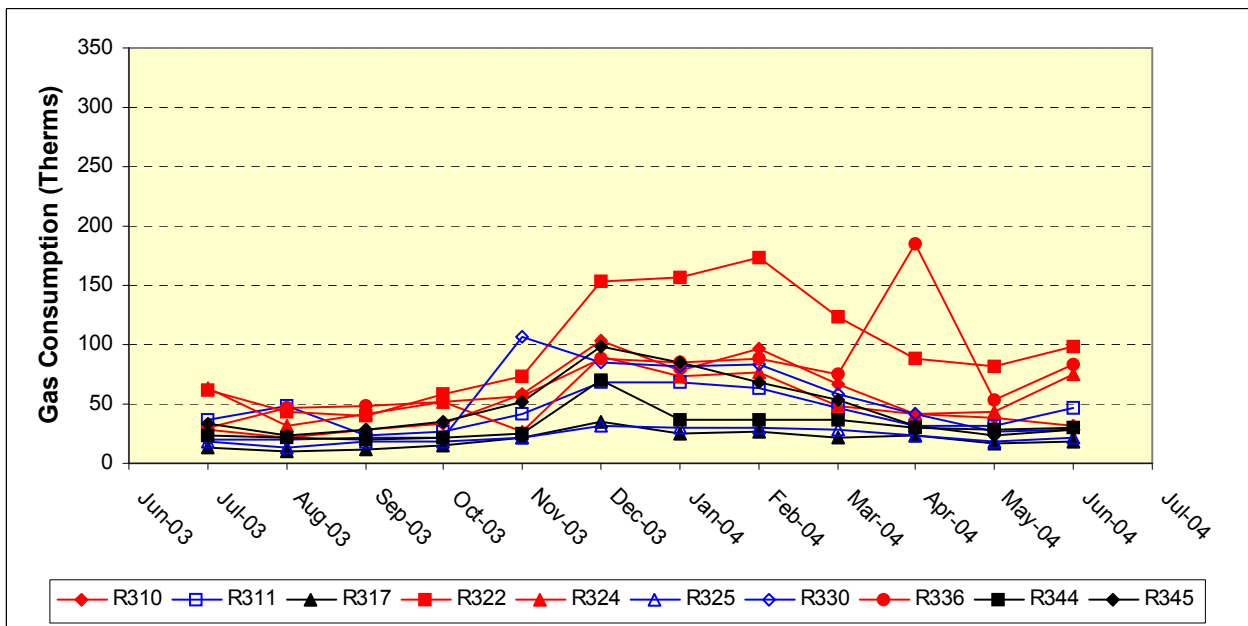
**Figure M10. Monthly Utility Consumption in the Last Eight SEE Homes: (a) Electricity and (b) Gas. Homes with Pools are Indicated in Red, Homes with Hot Tubs are Indicated in Blue, Homes with Both are Indicated in Magenta, and Homes with Neither are Indicated in Black.**



(a)

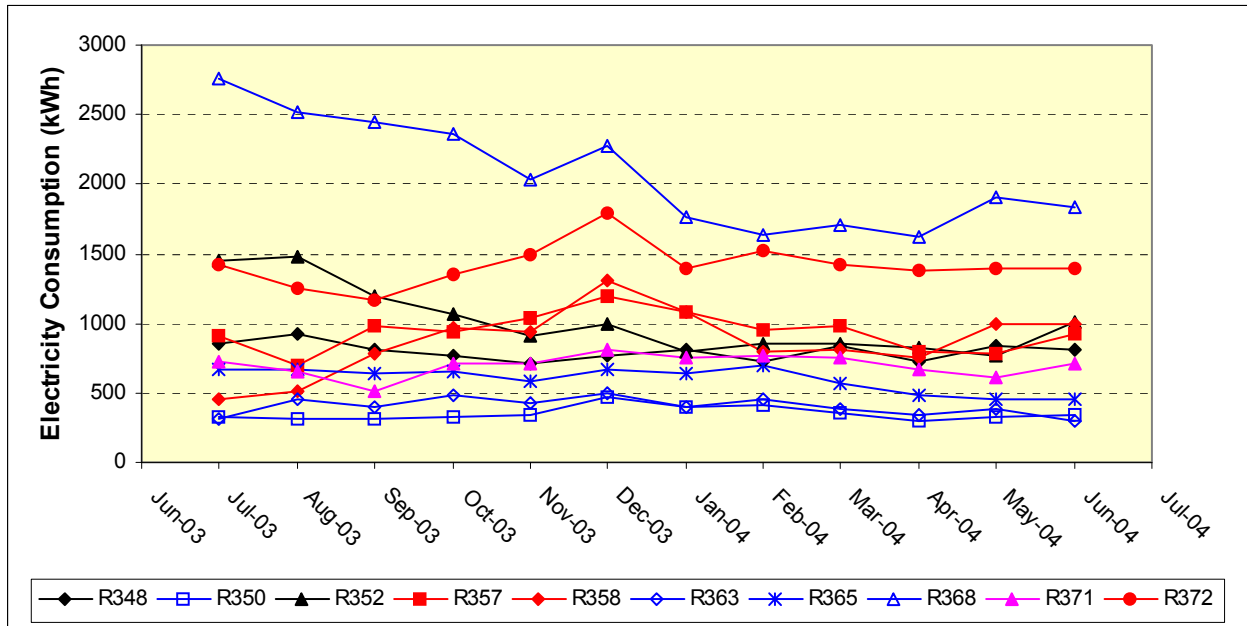


(b)

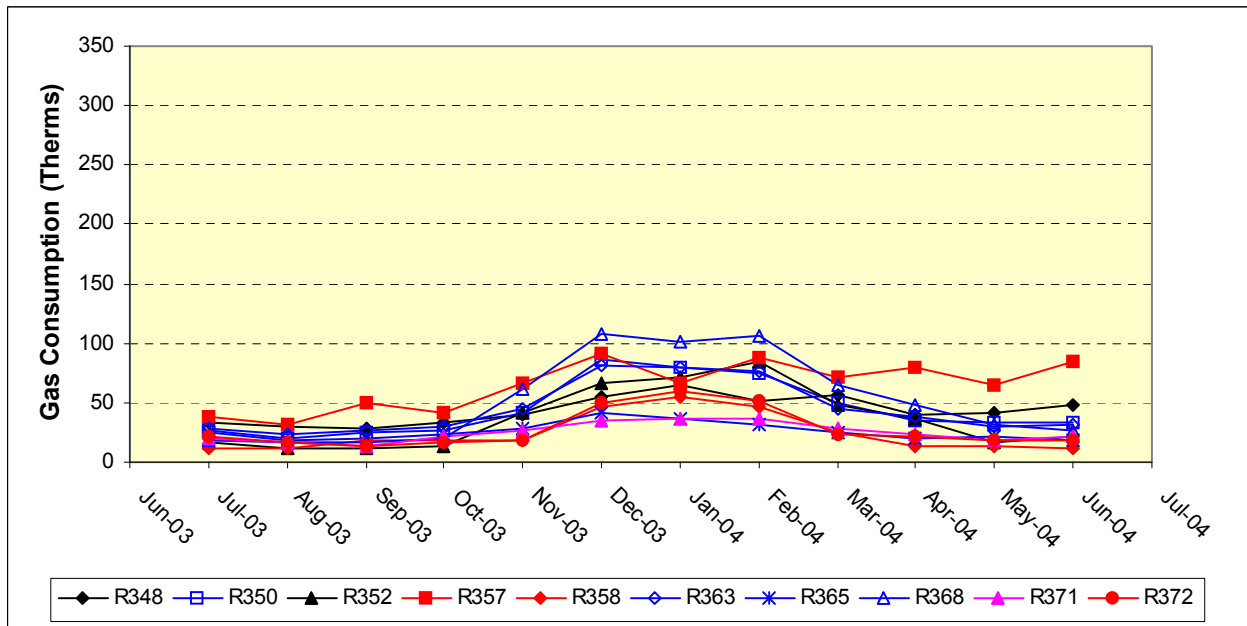


**Figure M11. Monthly Utility Consumption in the First 10 Comparison Homes: (a) Electricity and (b) Gas. Homes with Pools are Indicated in Red, Homes with Hot Tubs are Indicated in Blue, Homes with Both are Indicated in Magenta, and Homes with Neither are Indicated in Black. RID322 is a Statistical Outlier with Regard to Total 12-Month Gas Consumption.**

(a)

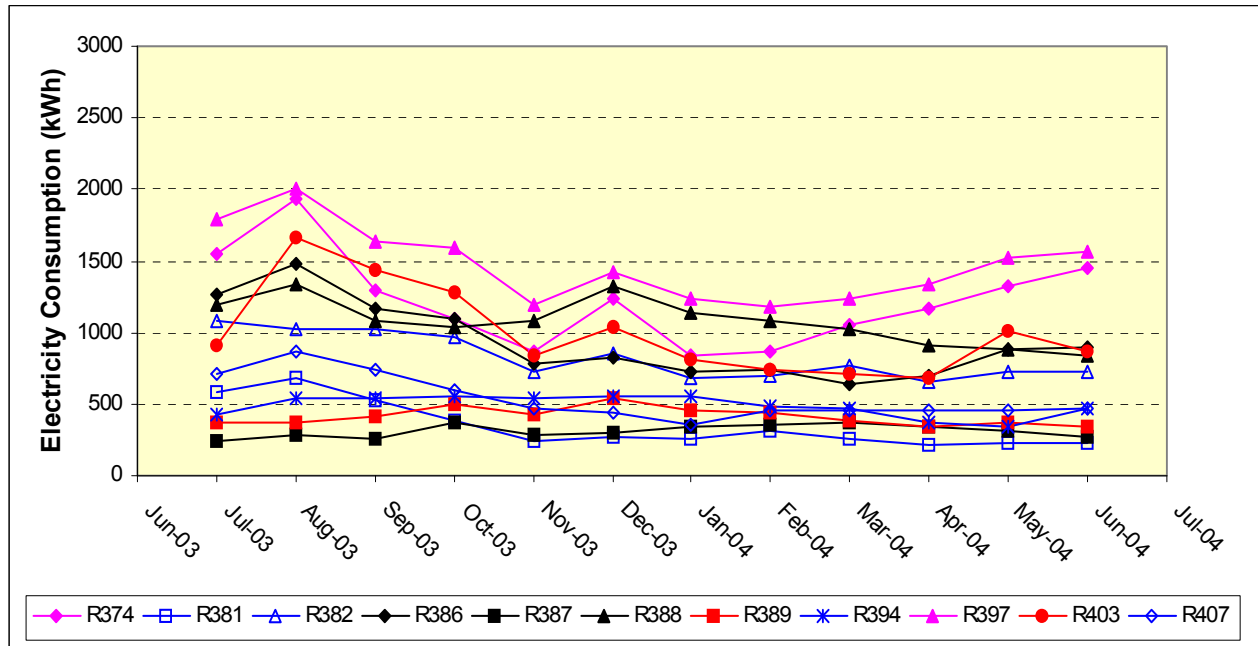


(b)



**Figure M12. Monthly Utility Consumption in the Second 10 Comparison Homes: (a) Electricity and (b) Gas. Homes with Pools are Indicated in Red, Homes with Hot Tubs are Indicated in Blue, Homes with Both are Indicated in Magenta, and Homes with Neither are Indicated in Black. RID368 is a Statistical Outlier with Regard to Total 12-Month Electricity Consumption.**

(a)



(b)

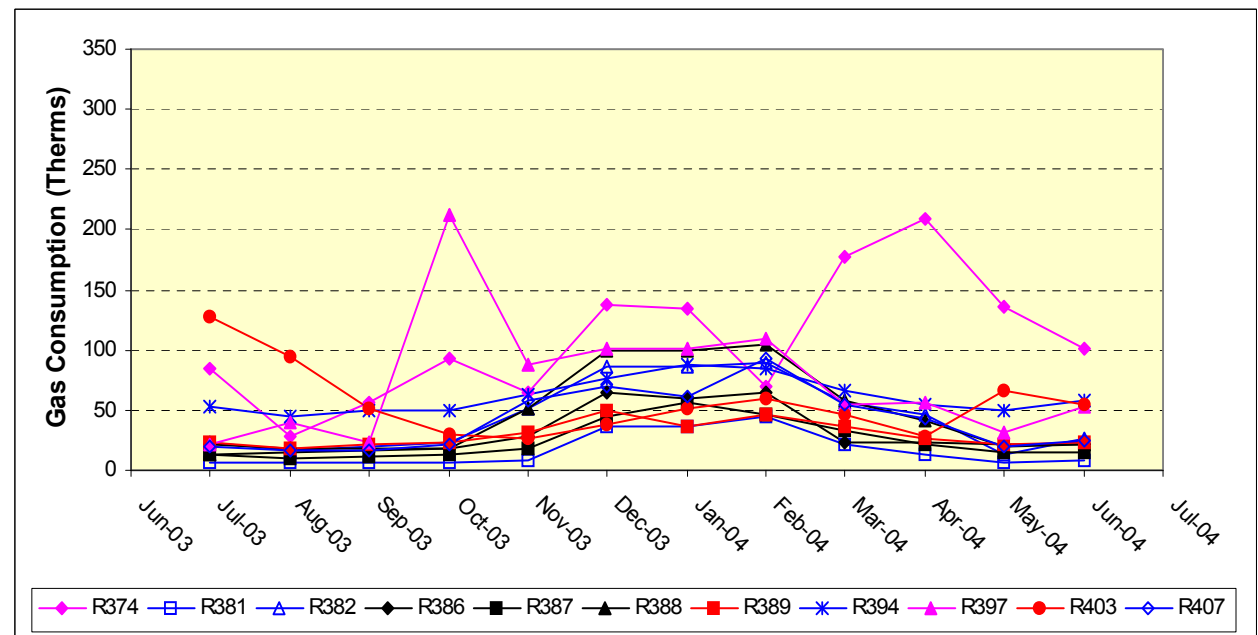
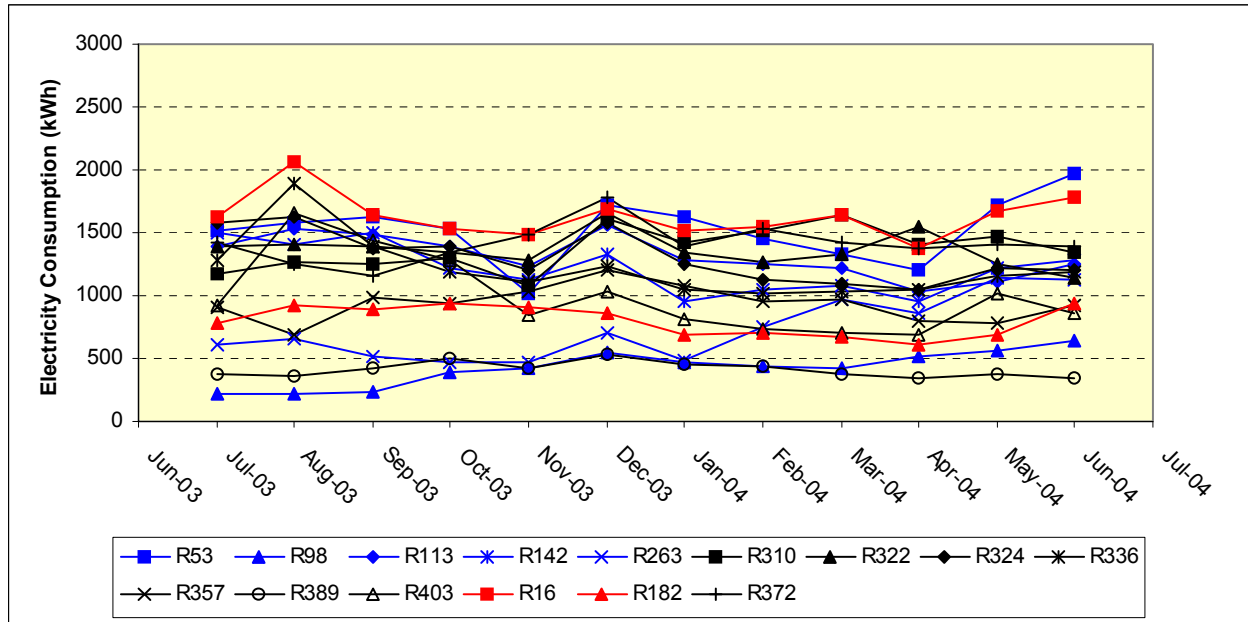
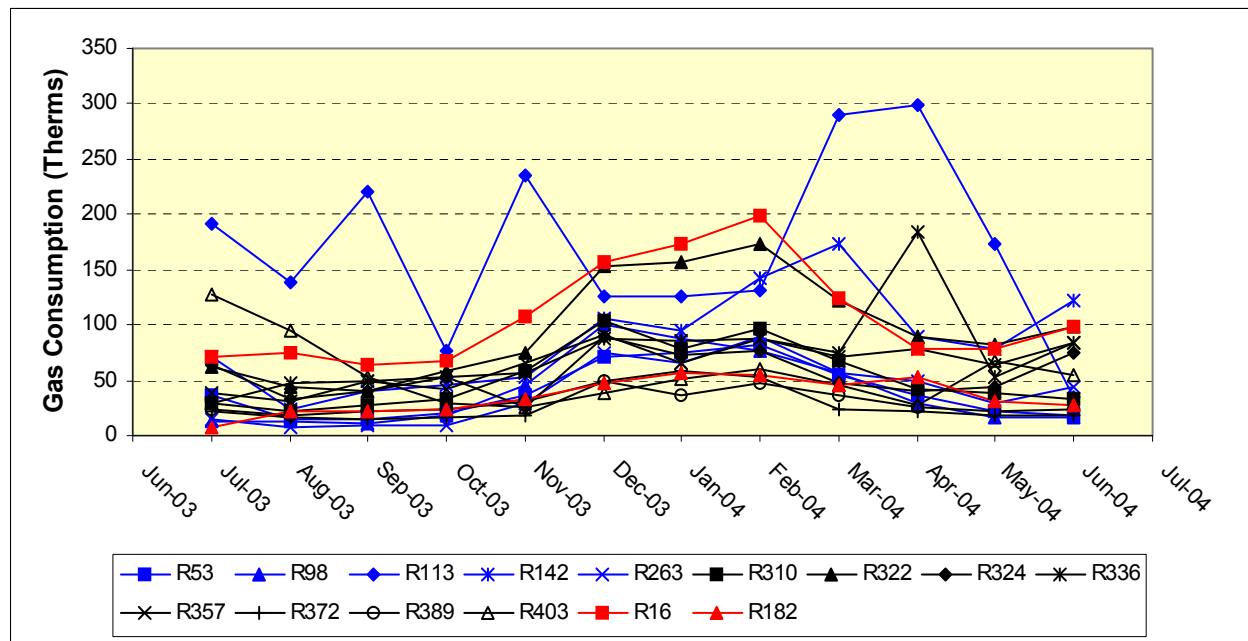


Figure M13. Monthly Utility Consumption in the Last 11 Comparison Homes: (a) Electricity and (b) Gas. Homes with Pools are Indicated in Red, Homes with Hot Tubs are Indicated in Blue, Homes with Both are Indicated in Magenta, and Homes with Neither are Indicated in Black. RID374 is a Statistical Outlier with Regard to Total 12-Month Gas Consumption.

(a)

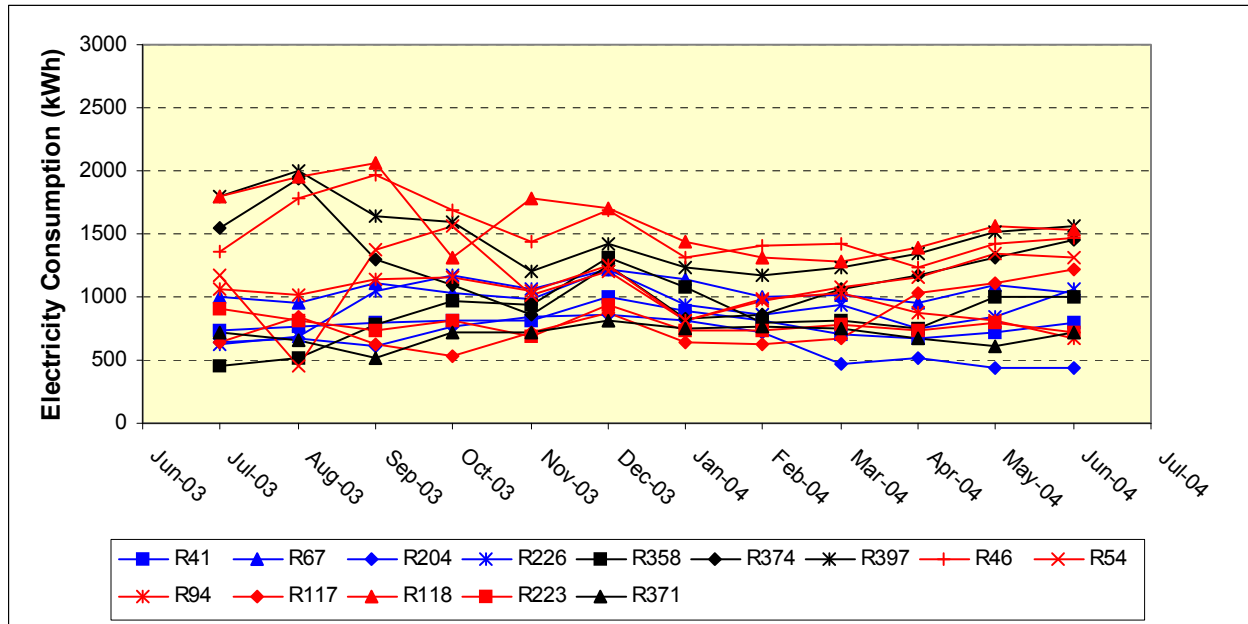


(b)

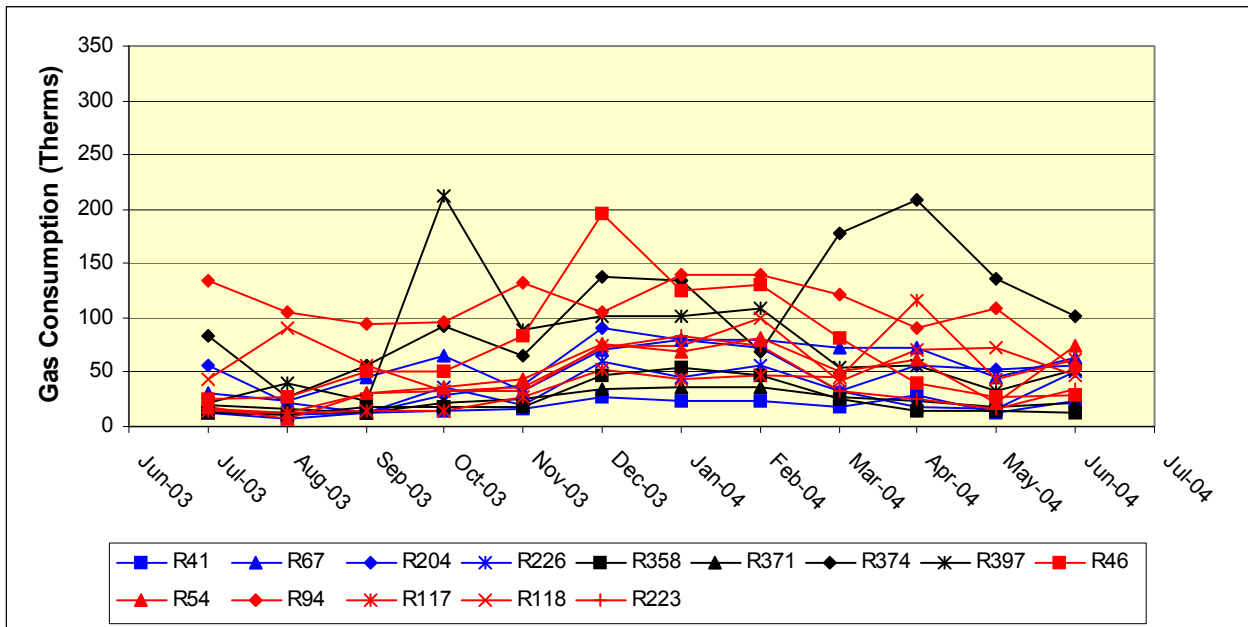


**Figure M14. Monthly Utility Consumption in Homes with Pools: (a) Electricity and (b) Gas. PV Homes are Indicated in Blue, SEE Homes are Indicated in Red, and Comparison Homes are Indicated in Black. RID98 is a PV Home with a 2.4-kW System. RID16 and RID53 are Statistical Outliers with Regard to Total 12-Month Electricity Consumption. RID16, RID113, RID142, and RID322 are Statistical Outliers with Regard to Total 12-Month Gas Consumption.**

(a)

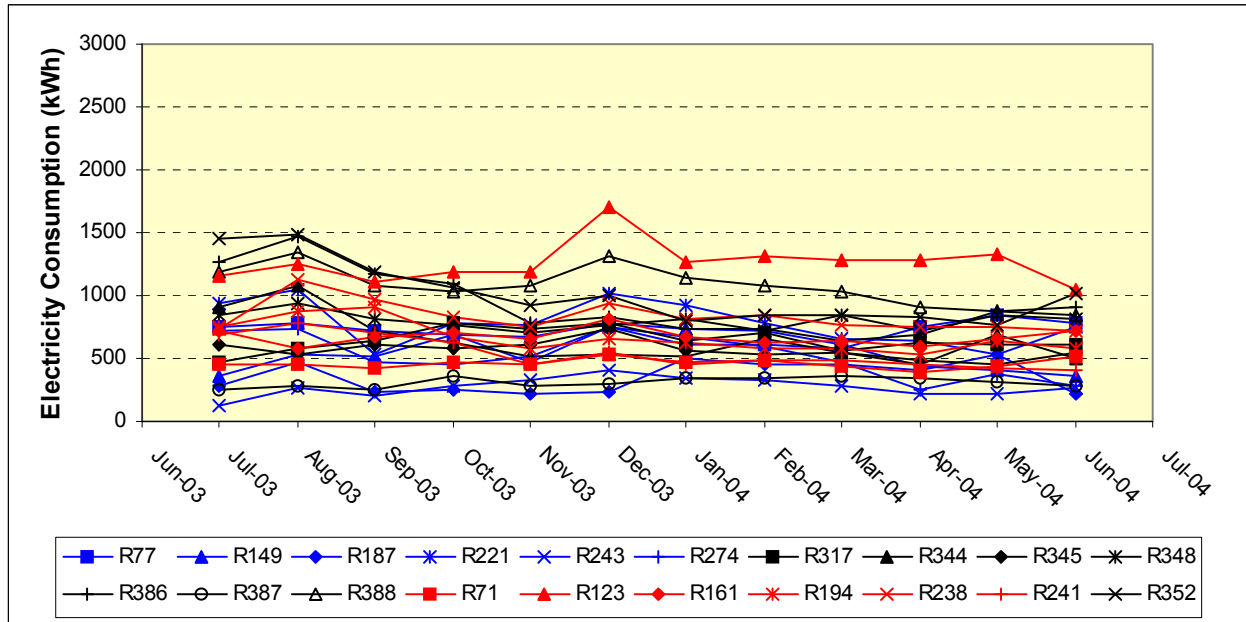


(b)

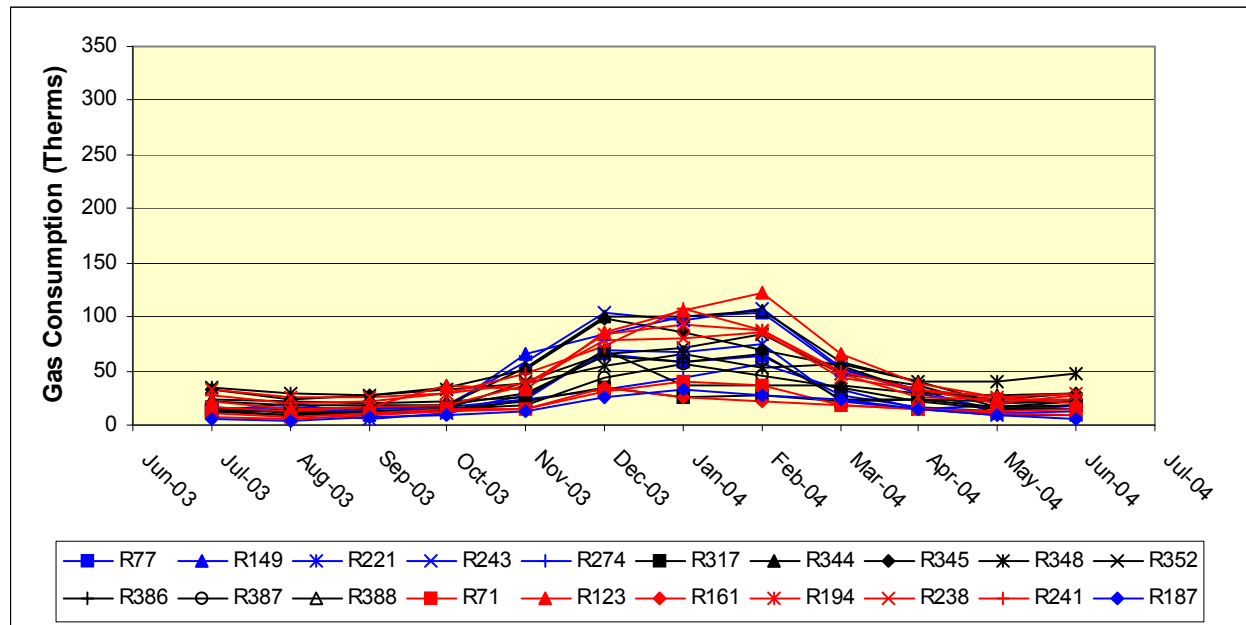


**Figure M15. Monthly Utility Consumption in Homes with Both Pools and Hot Tubs: (a) Electricity and (b) Gas. PV Homes are Indicated in Blue, SEE Homes are Indicated in Red, and Comparison Homes are Indicated in Black. RID46 and RID118 are Statistical Outliers with Regard to Total 12-Month Electricity Consumption. RID46, RID94, and RID374 are Statistical Outliers with Regard to Total 12-Month Gas Consumption.**

(a)

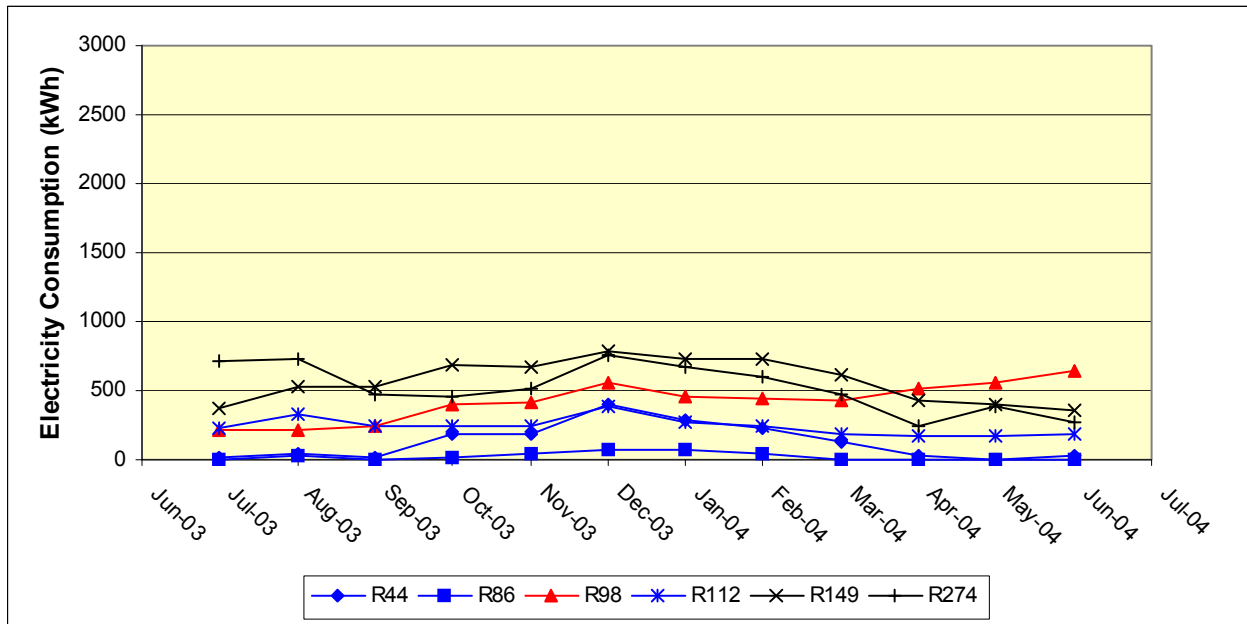


(b)

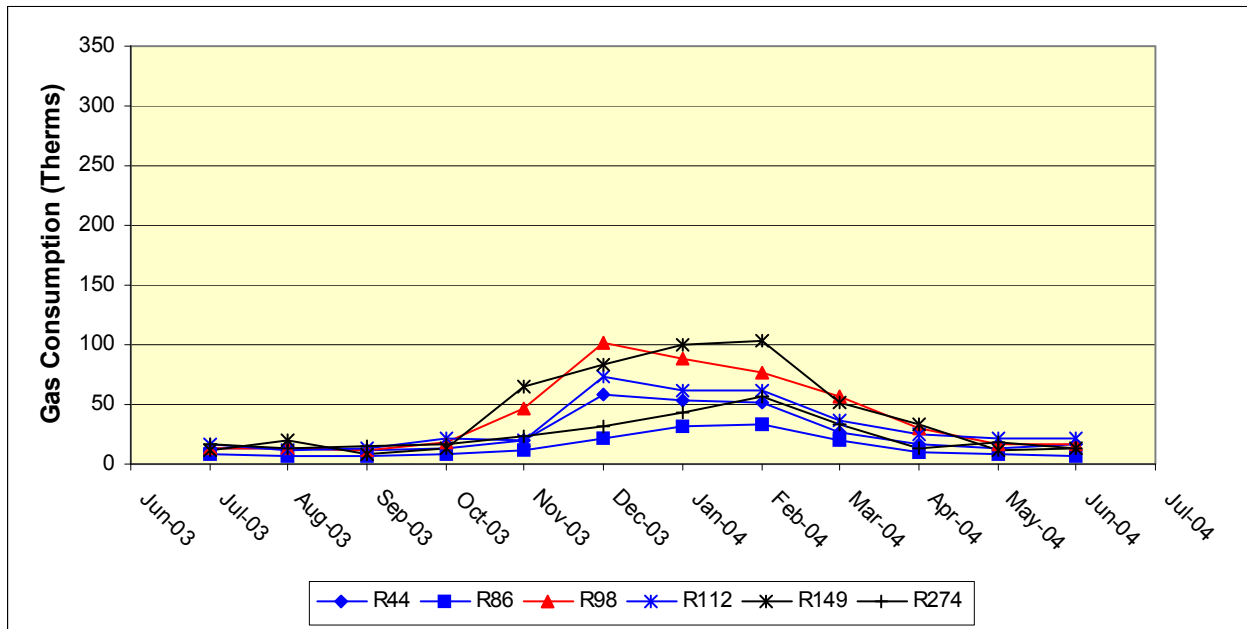


**Figure M16. Monthly Utility Consumption in Homes with Neither Pools nor Hot Tubs: (a) Electricity and (b) Gas. PV Homes are Indicated in Blue, SEE Homes are Indicated in Red, and Comparison Homes are Indicated in Black. RID149 and RID274 are PV Homes with 2.4-kW Systems. RID368 is a Statistical Outlier with Regard to Total 12-Month Electricity Consumption.**

(a)



(b)



**Figure M17. Monthly Utility Consumption in PV Homes with 2.4-kW Systems: (a) Electricity and (b) Gas. Homes with Pools are Indicated in Red, Homes with Hot Tubs are Indicated in Blue, Homes with Both are Indicated in Magenta, and Homes with Neither are Indicated in Black.**

**Appendix N**

**Descriptive Statistics**

**12-Month Utility Consumption and Cost Data**



**Table N-1. Descriptive Statistics on Electricity and  
Natural Gas Consumption, July 2003–June 2004 (n=109\*)**

<b>Statistic</b>	<b>Total 12-Month Electricity Consumption (kWh)</b>	<b>Average Monthly Electricity Consumption (kWh)</b>	<b>Total 12- Month Gas Consumption (therms)</b>	<b>Average Monthly Gas Consumption (therms)</b>
Minimum	267.0	22.3	100.0	8.3
Mean	7,959.4	664.2	419.0	35.1
Median	7,698.0	641.8	417.0	34.8
Maximum	17,707.0	1,475.9	893.0	74.7
Standard deviation	3,658.2	305.3	160.0	13.4
Coefficient of variation	46.0%	46.0%	38.2%	38.2%

\*Outlier and early homes excluded

**Table N-2. Descriptive Statistics on Electricity and  
Natural Gas Consumption per Square Foot, July 2003–June 2004 (n=109\*)**

<b>Statistic</b>	<b>Average Monthly Electricity Consumption/ft<sup>2</sup> (kWh)</b>	<b>Average Monthly Gas Consumption/ft<sup>2</sup> (therms)</b>
Minimum	.009	.000
Mean	.221	.012
Median	.208	.013
Maximum	.527	.030
Standard deviation	.103	.005
Coefficient of variation	46.6%	41.7%

\*Outlier and early homes excluded

**Table N-3. Comparative Descriptive Statistics on Electricity and Natural Gas Consumption, July 2003–June 2004, for Homes in the SheaHomes and Comparison Communities**

<b>Development</b>	<b>Statistic</b>	<b>Total 12-Month Electricity Consumption (kWh)</b>	<b>Average Monthly Electricity Consumption (kWh)</b>	<b>Total 12-Month Gas Consumption (therms)</b>	<b>Average Monthly Gas Consumption (therms)</b>
SheaHomes (n=81*)	Minimum	267.0	22.3	100.0	8.3
	Mean	7,425.8	619.9	391.9	32.8
	Median	6,967.0	581.4	384.0	32.3
	Maximum	16,741.0	1,399.8	739.0	61.9
	Standard deviation	3,341.1	279.0	139.2	11.6
	Coefficient of variation	45.0%	45.0%	35.5%	35.5%
Comparison community (n=28*)	Minimum	3,716.0	309.4	202.0	16.9
	Mean	9,502.8	792.6	497.3	41.6
	Median	9,050.0	754.9	526.5	44.0
	Maximum	17,707.0	1,475.9	893.0	74.7
	Standard deviation	4,138.6	345.3	190.7	15.9
	Coefficient of variation	43.6%	43.6%	38.3%	38.3%

\*Outlier and early homes excluded

**Table N-4. Comparative Descriptive Statistics on Electricity and Natural Gas Consumption per Square Foot, July 2003–June 2004, for Homes in the SheaHomes and Comparison Communities**

Development	Statistic	Average Monthly Electricity Consumption/ft <sup>2</sup> (kWh)	Average Monthly Gas Consumption/ft <sup>2</sup> (therms)
SheaHomes (n=81*)	Minimum	.009	.000
	Mean	.200	.011
	Median	.191	.011
	Maximum	.489	.020
	Standard deviation	.088	.004
	Coefficient of variation	44.0%	36.4%
Comparison community (n=28*)	Minimum	.124	.010
	Mean	.282	.015
	Median	.272	.015
	Maximum	.527	.030
	Standard deviation	.119	.006
	Coefficient of variation	42.2%	40.0%

\*Outlier and early homes excluded

**Table N-5. Comparative Descriptive Statistics on Electricity and Natural Gas Consumption,  
July 2003–June 2004, for Homes in the SheaHomes Communities  
with and without Solar PV Systems**

<b>Home Category</b>	<b>Statistic</b>	<b>Total 12-Month Electricity Consumption (kWh)</b>	<b>Average Monthly Electricity Consumption (kWh)</b>	<b>Total 12-Month Gas Consumption (therms)</b>	<b>Average Monthly Gas Consumption (therms)</b>
<b>With PV (n=37*)</b>	Minimum	267.0	22.3	100.0	8.3
	Mean	6,368.9	531.7	366.0	30.7
	Median	6,535.0	545.5	333.0	27.9
	Maximum	12,868.0	1,073.4	678.0	56.6
	Standard deviation	3,206.6	267.5	140.0	11.7
	Coefficient of variation	50.3%	50.3%	38.2%	38.2%
<b>Without PV (n=44*)</b>	Minimum	3,333.0	277.7	128.0	10.7
	Mean	8,314.7	694.0	413.7	34.6
	Median	8,098.0	676.1	424.0	35.4
	Maximum	16,741.0	1,399.8	739.0	61.9
	Standard deviation	3,223.5	269.4	136.4	11.4
	Coefficient of variation	38.8%	38.8%	33.0%	33.0%

\*Outlier and early homes excluded

**Table N-6. Comparative Descriptive Statistics on Electricity and Natural Gas Consumption per Square Foot, July 2003–June 2004, for Homes in the SheaHomes Communities with and without Solar PV Systems**

<b>Home Category</b>	<b>Statistic</b>	<b>Average Monthly Electricity Consumption/ft<sup>2</sup> (kWh)</b>	<b>Average Monthly Gas Consumption/ft<sup>2</sup> (therms)</b>
With PV (n=37*)	Minimum	.009	.000
	Mean	.174	.010
	Median	.173	.009
	Maximum	.415	.020
	Standard deviation	.088	.004
	Coefficient of variation	50.6%	40.0%
Without PV (n=44*)	Minimum	.090	.000
	Mean	.222	.011
	Median	.217	.012
	Maximum	.489	.020
	Standard deviation	.083	.004
	Coefficient of variation	37.4%	36.4%

\*Outlier and early homes excluded

**Table N-7. Comparative Descriptive Statistics on Electricity and Natural Gas Consumption,  
July 2003–June 2004, for Homes in the Comparison Community and Homes in the  
SheaHomes Communities without Solar PV Systems**

<b>Home Category</b>	<b>Statistic</b>	<b>Total 12-Month Electricity Consumption (kWh)</b>	<b>Average Monthly Electricity Consumption (kWh)</b>	<b>Total 12-Month Gas Consumption (therms)</b>	<b>Average Monthly Gas Consumption (therms)</b>
Comparison community (n=28*)	Minimum	3,716.0	309.4	202.0	16.9
	Mean	9,502.8	792.6	497.3	41.6
	Median	9,050.0	754.9	526.5	44.0
	Maximum	17,707.0	1,475.9	893.0	74.7
	Standard deviation	4,138.6	345.3	190.7	15.9
	Coefficient of variation	43.6%	43.6%	38.3%	38.3%
SheaHomes, without PV (n=44*)	Minimum	3,333.0	277.7	128.0	10.7
	Mean	8,314.7	694.0	413.7	34.6
	Median	8,098.0	676.1	424.0	35.4
	Maximum	1,6741.0	1,399.8	739.0	61.9
	Standard deviation	3,223.5	269.4	136.4	11.4
	Coefficient of variation	38.8%	38.8%	33.0%	33.0%

\*Outlier and early homes excluded

**Table N-8. Comparative Descriptive Statistics on Electricity and Natural Gas Consumption per Square Foot, July 2003–June 2004, for Homes in the Comparison Community and Homes in the SheaHomes Communities without Solar PV Systems**

<b>Home Category</b>	<b>Statistic</b>	<b>Average Monthly Electricity Consumption/ft<sup>2</sup> (kWh)</b>	<b>Average Monthly Gas Consumption/ft<sup>2</sup> (therms)</b>
Comparison community (n=28*)	Minimum	.124	.010
	Mean	.282	.015
	Median	.272	.015
	Maximum	.527	.030
	Standard deviation	.119	.006
	Coefficient of variation	42.2%	40.0%
SheaHomes, without PV (n=44*)	Minimum	.090	.000
	Mean	.222	.011
	Median	.217	.012
	Maximum	.489	.020
	Standard deviation	.083	.004
	Coefficient of variation	37.4%	36.4%

\*Outlier and early homes excluded

**Table N-9. Descriptive Statistics on Electricity Costs, July 2003–June 2004 (n=109\*)**

<b>Statistic</b>	<b>Total 12-Month Electricity Cost, no Taxes or Miscellaneous Charges</b>	<b>Average Monthly Electricity Cost, no Taxes or Miscellaneous Charges</b>	<b>Total 12-Month Electricity Cost, including Taxes and Miscellaneous Charges</b>	<b>Average Monthly Electricity Cost, including Taxes and Miscellaneous Charges</b>
Minimum	\$ 35.76	\$ 2.99	\$ 76.35	\$ 6.39
Mean	\$1,180.75	\$ 98.54	\$1,295.31	\$108.10
Median	\$1,113.00	\$ 92.71	\$1,220.08	\$101.71
Maximum	\$2,775.20	\$231.88	\$3,037.61	\$253.80
Standard deviation	\$ 607.45	\$ 50.70	\$ 662.84	\$ 55.32
Coefficient of variation	51.4%	51.4%	51.2%	51.2%

\*Outlier and early homes excluded

**Table N-10. Descriptive Statistics on Gas Costs, July 2003–June 2004 (n=109\*)**

<b>Statistic</b>	<b>Total 12-Month Gas Cost, no Taxes or Miscellaneous Charges</b>	<b>Average Monthly Gas Cost, no Taxes or Miscellaneous Charges</b>	<b>Total 12-Month Gas Cost, including Taxes and Miscellaneous Charges</b>	<b>Average Monthly Gas Cost, including Taxes and Miscellaneous Charges</b>
Minimum	\$ 92.87	\$ 7.75	\$ 99.25	\$ 8.28
Mean	\$406.11	\$34.00	\$432.68	\$36.22
Median	\$398.49	\$33.27	\$424.80	\$35.47
Maximum	\$916.46	\$76.01	\$973.01	\$80.71
Standard deviation	\$165.68	\$13.85	\$175.99	\$14.71
Coefficient of variation	40.8%	40.8%	40.7%	40.7%

\*Outlier and early homes excluded



**Table N-11. Descriptive Statistics on Combined Utility Bill, July 2003 – June 2004 (n=109\*)**

<b>Statistic</b>	<b>Total 12-Month Combined Utility Bill, no Taxes or Miscellaneous Charges</b>	<b>Average Monthly Combined Utility Bill, no Taxes or Miscellaneous Charges</b>	<b>Total 12-Month Combined Utility Bill, including Taxes and Miscellaneous Charges</b>	<b>Average Monthly Combined Utility Bill, including Taxes and Miscellaneous Charges</b>
Minimum	\$ 198.88	\$ 16.59	\$ 250.52	\$720.91
Mean	\$1,586.87	\$132.54	\$1,727.99	\$144.32
Median	\$1,490.03	\$124.23	\$1,608.33	\$134.20
Maximum	\$3,462.68	\$288.90	\$3,687.10	\$307.63
Standard deviation	\$ 711.54	\$ 59.39	\$ 772.99	\$ 64.51
Coefficient of variation	44.8%	44.8%	44.7%	44.7%

\*Outlier and early homes excluded

**Table N-12. Descriptive Statistics on Average Utility Costs per Square Foot, July 2003–June 2004, Excluding Taxes and Miscellaneous Charges (n=109\*)**

<b>Statistic</b>	<b>Average Monthly Electricity Cost/ft<sup>2</sup></b>	<b>Average Monthly Gas Cost/ft<sup>2</sup></b>	<b>Average Combined Monthly Utility Bill /ft<sup>2</sup></b>
Minimum	\$.001	\$.003	\$.006
Mean	\$.033	\$.011	\$.044
Median	\$.030	\$.011	\$.041
Maximum	\$.085	\$.031	\$.108
Standard deviation	\$.017	\$.005	\$.020
Coefficient of variation	51.5%	45.5%	45.5%

\*Outlier and early homes excluded

**Table N-13. Comparative Descriptive Statistics on Electricity Cost, July 2003–June 2004,  
for Homes in the SheaHomes and Comparison Communities**

<b>Development</b>	<b>Statistic</b>	<b>Total 12-Month Electricity Cost, no Taxes or Miscellaneous Charges</b>	<b>Average Monthly Electricity Cost, no Taxes or Miscellaneous Charges</b>	<b>Total 12-Month Electricity Cost, including Taxes and Miscellaneous Charges</b>	<b>Average Monthly Electricity Cost, including Taxes and Miscellaneous Charges</b>
SheaHomes (n=81*)	Minimum	\$ 35.76	\$ 2.99	\$ 76.35	\$ 6.39
	Mean	\$1,092.91	\$ 91.24	\$1,202.81	\$100.41
	Median	\$ 993.78	\$ 82.54	\$1,150.83	\$ 95.76
	Maximum	\$2,738.94	\$229.09	\$2,998.04	\$250.77
	Standard deviation	\$ 550.41	\$ 45.96	\$ 600.87	\$ 50.18
	Coefficient of variation	50.4%	50.4%	50.0%	50.0%
Comparison community (n=28*)	Minimum	\$ 489.31	\$ 40.74	\$ 539.95	\$ 44.96
	Mean	\$1,434.87	\$119.67	\$1,562.98	\$130.34
	Median	\$1,336.24	\$111.46	\$1,378.74	\$115.12
	Maximum	\$2,775.19	\$231.88	\$3,037.61	\$253.80
	Standard deviation	\$ 698.74	\$ 58.29	\$ 766.64	\$ 63.96
	Coefficient of variation	48.7%	48.7%	49.1%	49.1%

\*Outlier and early homes excluded

**Table N-14. Comparative Descriptive Statistics on Gas Cost, July 2003–June 2004,  
for Homes in the SheaHomes and Comparison Communities**

<b>Development</b>	<b>Statistic</b>	<b>Total 12-Month Gas Cost, no Taxes or Miscellaneous Charges</b>	<b>Average Monthly Gas Cost, no Taxes or Miscellaneous Charges</b>	<b>Total 12-Month Gas Cost, including Taxes and Miscellaneous Charges</b>	<b>Average Monthly Gas Cost, including Taxes and Miscellaneous Charges</b>
SheaHomes (n=81*)	Minimum	\$ 92.87	\$ 7.75	\$ 99.25	\$ 8.28
	Mean	\$378.83	\$31.72	\$403.67	\$33.81
	Median	\$369.57	\$30.99	\$393.93	\$33.04
	Maximum	\$744.61	\$62.37	\$791.95	\$66.35
	Standard deviation	\$143.40	\$12.00	\$152.32	\$12.75
	Coefficient of variation	37.9%	37.9%	37.7%	37.7%
Comparison community (n=28*)	Minimum	\$187.30	\$15.69	\$199.90	\$16.75
	Mean	\$485.05	\$40.58	\$516.61	\$43.22
	Median	\$496.52	\$41.49	\$528.90	\$44.20
	Maximum	\$916.46	\$76.01	\$973.01	\$80.71
	Standard deviation	\$200.43	\$16.72	\$212.86	\$17.76
	Coefficient of variation	41.3%	41.3%	41.1%	41.1%

\*Outlier and early homes excluded

**Table N-15. Comparative Descriptive Statistics on Combined Utility Bill, July 2003–June 2004, for Homes in the SheaHomes and Comparison Communities**

<b>Development</b>	<b>Statistic</b>	<b>Total 12-Month Combined Utility Bill, no Taxes or Miscellaneous Charges</b>	<b>Average Monthly Combined Utility Bill, no Taxes or Miscellaneous Charges</b>	<b>Total 12-Month Combined Utility Bill, including Taxes and Miscellaneous Charges</b>	<b>Average Monthly Combined Utility Bill, including Taxes and Miscellaneous Charges</b>
SheaHomes (n=81*)	Minimum	\$ 198.88	\$ 16.59	\$ 250.52	\$ 20.91
	Mean	\$1,471.74	\$122.96	\$1,606.48	\$134.21
	Median	\$1,397.09	\$116.89	\$1,523.02	\$127.42
	Maximum	\$3,168.80	\$265.08	\$3,456.15	\$289.12
	Standard deviation	\$ 638.40	\$ 53.32	\$ 694.37	\$ 57.99
	Coefficient of variation	43.4%	43.4%	43.2%	43.2%
Comparison community (n=28*)	Minimum	\$ 760.85	\$ 63.37	\$ 832.00	\$ 69.29
	Mean	\$1,919.91	\$160.25	\$2,079.50	\$173.57
	Median	\$1,828.40	\$152.82	\$1,854.83	\$155.06
	Maximum	\$3,462.68	\$288.90	\$3,687.10	\$307.63
	Standard deviation	\$ 814.11	\$ 67.91	\$ 888.28	\$ 4.10
	Coefficient of variation	42.4%	42.4%	42.7%	42.7%

\*Outlier and early homes excluded

**Table N-16. Comparative Descriptive Statistics on Average Utility Costs per Square Foot,  
July 2003–June 2004, for Homes in the SheaHomes and Comparison Communities,  
Excluding Taxes and Miscellaneous Charges**

<b>Development</b>	<b>Statistic</b>	<b>Average Monthly Electricity Cost/ft<sup>2</sup></b>	<b>Average Monthly Gas Cost/ft<sup>2</sup></b>	<b>Average Monthly Combined Utility Bill/ft<sup>2</sup></b>
SheaHomes (n=81*)	Minimum	\$ .001	\$ .003	\$ .006
	Mean	\$ .029	\$ .010	\$ .040
	Median	\$ .027	\$ .010	\$ .038
	Maximum	\$ .080	\$ .018	\$ .093
	Standard deviation	\$ .015	\$ .004	\$ .017
	Coefficient of variation	51.7%	40.0%	42.5%
Comparison community (n=28*)	Minimum	\$ .016	\$ .006	\$ .025
	Mean	\$ .043	\$ .015	\$ .057
	Median	\$ .040	\$ .014	\$ .054
	Maximum	\$ .085	\$ .031	\$ .108
	Standard deviation	\$ .020	\$ .006	\$ .024
	Coefficient of variation	46.5%	40.0%	42.1%

\*Outlier and early homes excluded

**Table N-17. Comparative Descriptive Statistics on Electricity Cost, July 2003–June 2004, for Homes in the SheaHomes Communities with and without Solar PV Systems**

<b>Home Category</b>	<b>Statistic</b>	<b>Total 12-Month Electricity Cost, no Taxes or Miscellaneous Charges</b>	<b>Average Monthly Electricity Cost, no Taxes or Miscellaneous Charges</b>	<b>Total 12-Month Electricity Cost, including Taxes and Miscellaneous Charges</b>	<b>Average Monthly Electricity Cost, including Taxes and Miscellaneous Charges</b>
<b>With PV (n=37*)</b>	Minimum	\$ 35.76	\$ 2.99	\$ 76.35	\$ 6.39
	Mean	\$ 922.32	\$ 77.00	\$1,015.38	\$ 84.77
	Median	\$ 924.49	\$ 77.19	\$1,017.14	\$ 84.92
	Maximum	\$2,010.24	\$167.71	\$2,203.71	\$183.84
	Standard deviation	\$ 509.46	\$ 42.50	\$ 555.80	\$ 46.37
	Coefficient of variation	55.2%	55.2%	54.7%	54.7%
<b>Without PV (n=44*)</b>	Minimum	\$ 439.69	\$ 36.64	\$ 485.20	\$ 40.44
	Mean	\$1,236.37	\$103.21	\$1,360.43	\$113.56
	Median	\$1,175.95	\$ 98.18	\$1,292.66	\$107.92
	Maximum	\$2,738.94	\$229.09	\$2,998.04	\$250.76
	Standard deviation	\$ 547.93	\$ 45.80	\$ 597.85	\$ 49.97
	Coefficient of variation	44.4%	44.4%	44.0%	44.0%

\*Outlier and early homes excluded

**Table N-18. Comparative Descriptive Statistics on Gas Cost, July 2003–June 2004, for Homes in the SheaHomes Communities with and without Solar PV Systems**

<b>Home Category</b>	<b>Statistic</b>	<b>Total 12-Month Gas Cost, no Taxes or Miscellaneous Charges</b>	<b>Average Monthly Gas Cost, no Taxes or Miscellaneous Charges</b>	<b>Total 12-Month Gas Cost, including Taxes and Miscellaneous Charges</b>	<b>Average Monthly Gas Cost, including Taxes and Miscellaneous Charges</b>
<b>With PV (n=37*)</b>	Minimum	\$ 92.87	\$ 7.75	\$ 99.25	\$ 8.28
	Mean	\$352.52	\$29.53	\$375.72	\$31.48
	Median	\$318.58	\$26.73	\$339.93	\$28.52
	Maximum	\$684.47	\$57.18	\$727.62	\$60.79
	Standard deviation	\$144.14	\$12.06	\$153.09	\$12.81
	Coefficient of variation	40.9%	40.9%	40.7%	40.7%
<b>Without PV (n=44*)</b>	Minimum	\$118.55	\$ 9.91	\$126.59	\$10.58
	Mean	\$400.95	\$33.56	\$427.17	\$35.76
	Median	\$409.29	\$34.28	\$436.02	\$36.52
	Maximum	\$744.61	\$62.37	\$791.95	\$66.35
	Standard deviation	\$140.60	\$11.77	\$149.37	\$12.51
	Coefficient of variation	35.1%	35.1%	35.0%	35.0%

\*Outlier and early homes excluded

**Table N-19. Comparative Descriptive Statistics on Combined Utility Bill, July 2003 – June 2004, for Homes in the SheaHomes Communities with and without Solar PV Systems**

<b>Home Category</b>	<b>Statistic</b>	<b>Total 12-Month Combined Utility Bill, no Taxes or Miscellaneous Charges</b>	<b>Average Monthly Combined Utility Bill, no Taxes or Miscellaneous Charges</b>	<b>Total 12-Month Combined Utility Bill, including Taxes and Miscellaneous Charges</b>	<b>Average Monthly Combined Utility Bill, including Taxes and Miscellaneous Charges</b>
With PV (n=37*)	Minimum	\$ 198.88	\$ 16.59	\$ 250.52	\$ 0.91
	Mean	\$1,274.84	\$106.53	\$1,391.10	\$116.25
	Median	\$1,169.29	\$ 97.92	\$1,277.45	\$106.72
	Maximum	\$2,626.12	\$219.24	\$2,856.74	\$238.49
	Standard deviation	\$ 602.92	\$ 50.31	\$ 654.66	\$ 54.62
	Coefficient of variation	47.3%	47.3%	47.0%	47.0%
Without PV (n=44*)	Minimum	\$ 674.66	\$ 56.23	\$ 735.60	\$ 61.32
	Mean	\$1,637.31	\$136.77	\$1,787.60	\$149.32
	Median	\$1,560.13	\$130.11	\$1,753.35	\$146.22
	Maximum	\$3,168.80	\$265.08	\$3,456.15	\$289.12
	Standard deviation	\$ 626.50	\$ 52.37	\$ 681.71	\$ 56.99
	Coefficient of variation	38.3%	38.3%	38.2%	38.2%

\*Outlier and early homes excluded



**Table N-20. Comparative Descriptive Statistics on Average Utility Costs per Square Foot, July 2003–June 2004, for Homes in the SheaHomes Communities with and without Solar PV Systems, Excluding Taxes and Miscellaneous Charges**

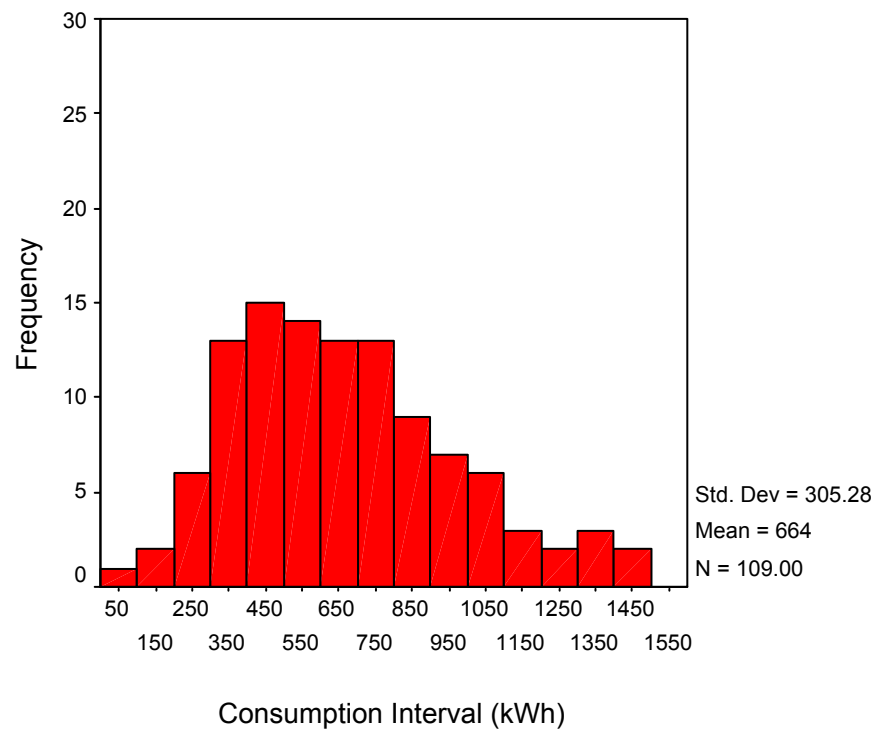
<b>Home Category</b>	<b>Statistic</b>	<b>Average Monthly Electricity Cost/ft<sup>2</sup></b>	<b>Average Monthly Gas Cost/ft<sup>2</sup></b>	<b>Average Monthly Combined Utility Bill/ft<sup>2</sup></b>
With PV (n=37*)	Minimum	\$.001	\$.003	\$.006
	Mean	\$.025	\$.010	\$.035
	Median	\$.025	\$.009	\$.035
	Maximum	\$.065	\$.018	\$.079
	Standard deviation	\$.014	\$.004	\$.016
	Coefficient of variation	56.0%	40.0%	45.7%
Without PV (n=44*)	Minimum	\$.012	\$.003	\$.018
	Mean	\$.033	\$.011	\$.044
	Median	\$.031	\$.012	\$.043
	Maximum	\$.080	\$.017	\$.093
	Standard deviation	\$.014	\$.004	\$.016
	Coefficient of variation	42.4%	36.4%	36.4%

\*Outlier and early homes excluded

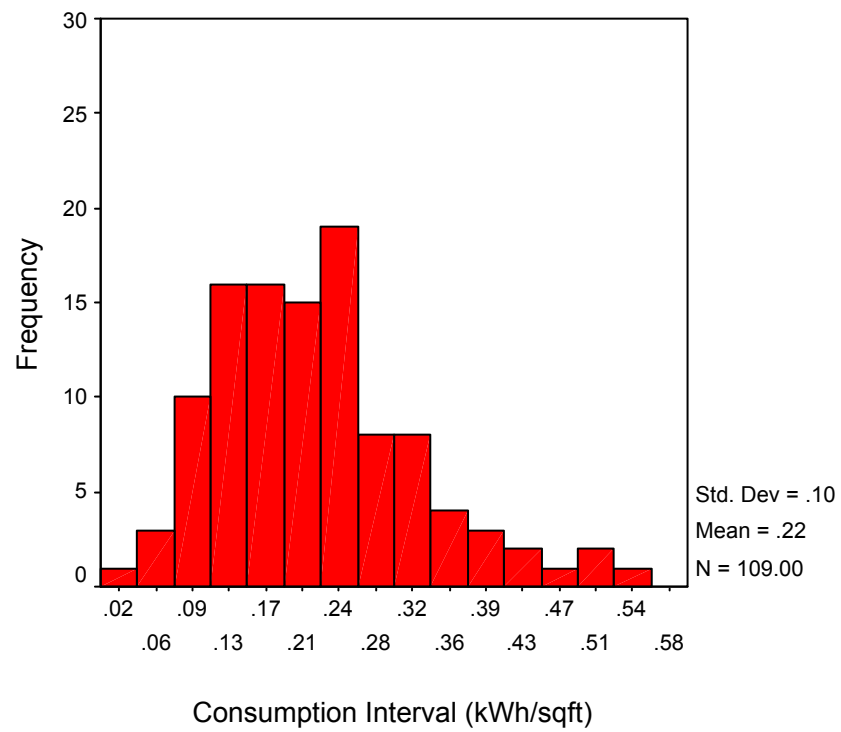
## **Appendix P**

### **Histograms of 12-Month Utility Data for All Homes Combined**

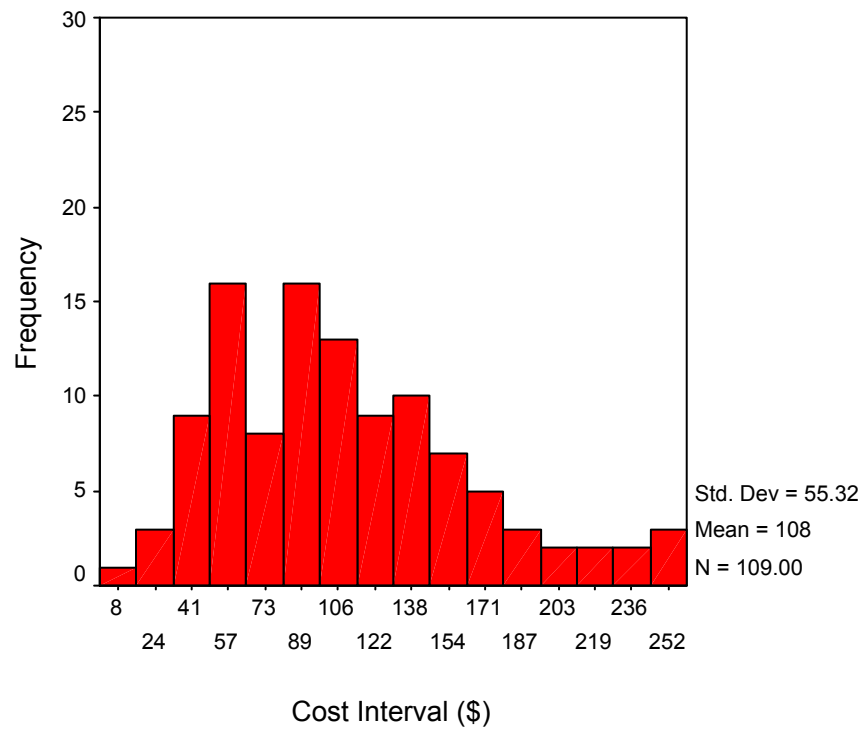
*Cited in Chapter 20*



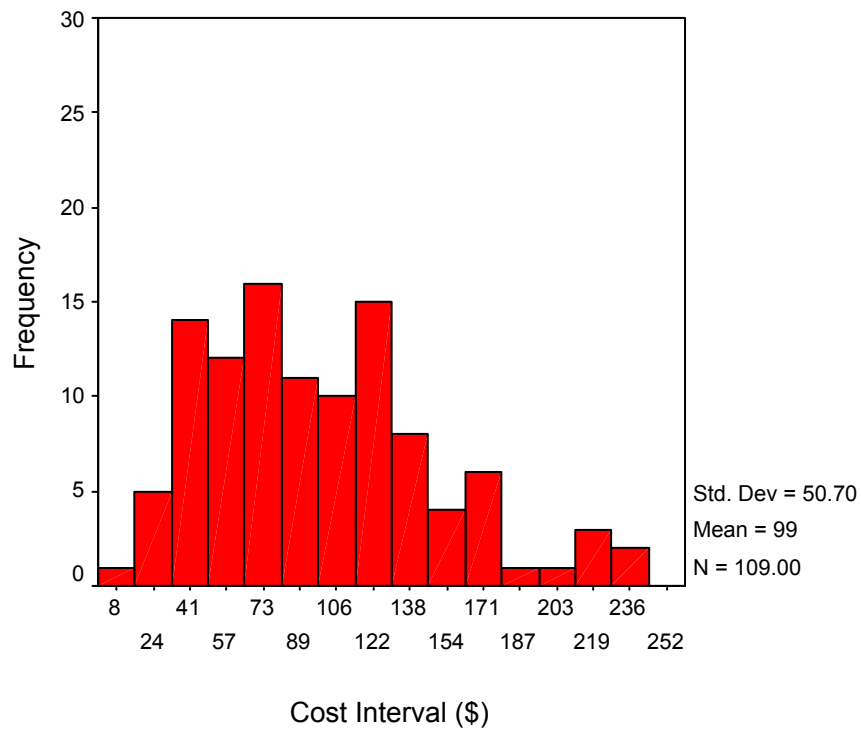
**Figure P-1. Frequency Distribution of Average Monthly Electricity Consumption, July 2003-June 2004, for All Homes in the SheaHomes and Comparison Communities.**



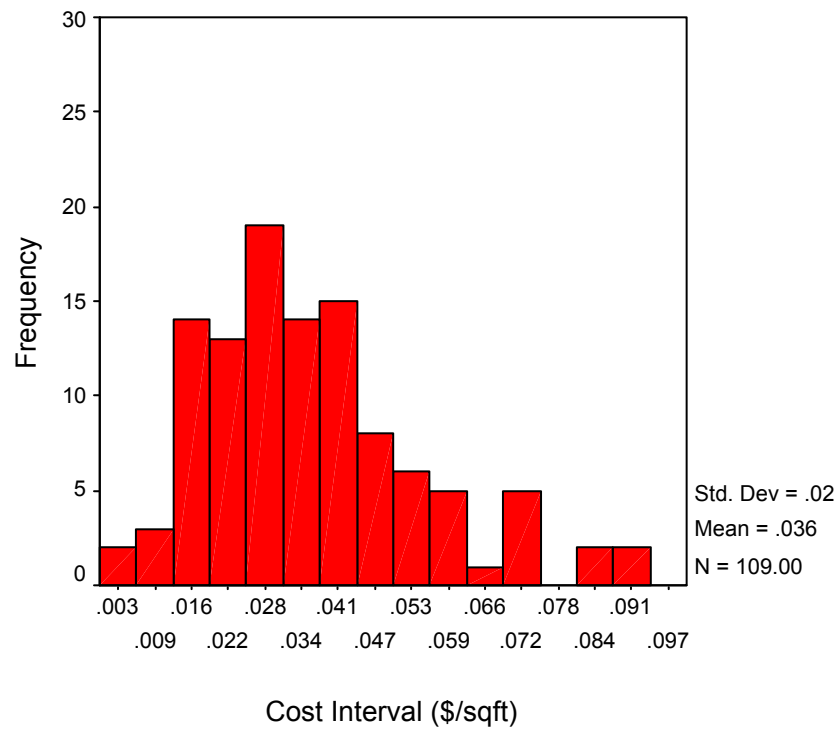
**Figure P-2. Frequency Distribution of Average Monthly Electricity Consumption/ft<sup>2</sup>, July 2003-June 2004, for All Homes in the SheaHomes and Comparison Communities.**



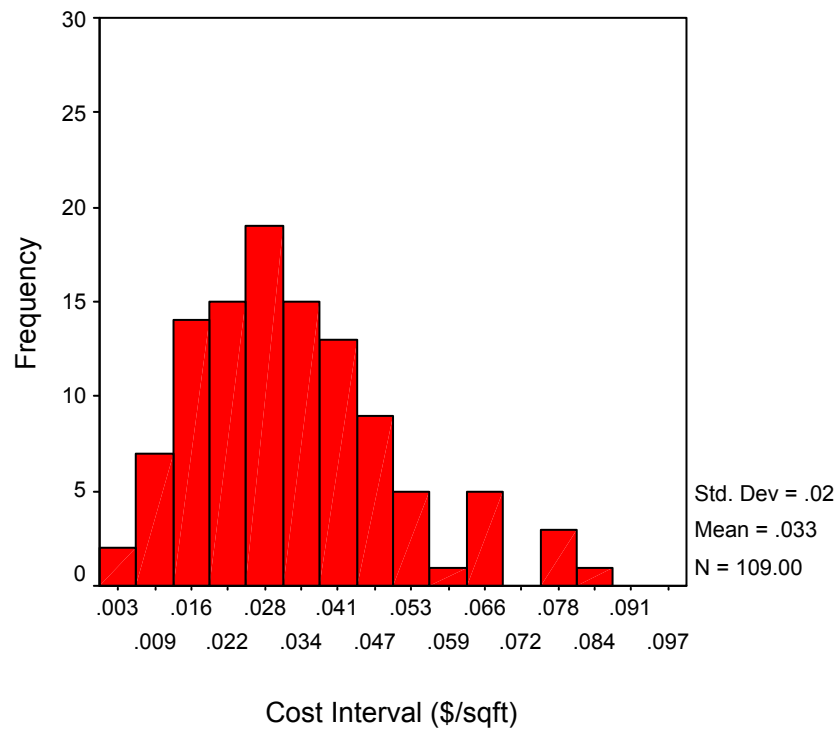
**Figure P-3. Frequency Distribution of Average Monthly Electricity Cost, Including Taxes and Miscellaneous Charges, July 2003-June 2004, for All Homes in the SheaHomes and Comparison Communities.**



**Figure P-4. Frequency Distribution of Average Monthly Electricity Cost, Excluding Taxes and Miscellaneous Charges, July 2003-June 2004, for All Homes in the SheaHomes and Comparison Communities.**

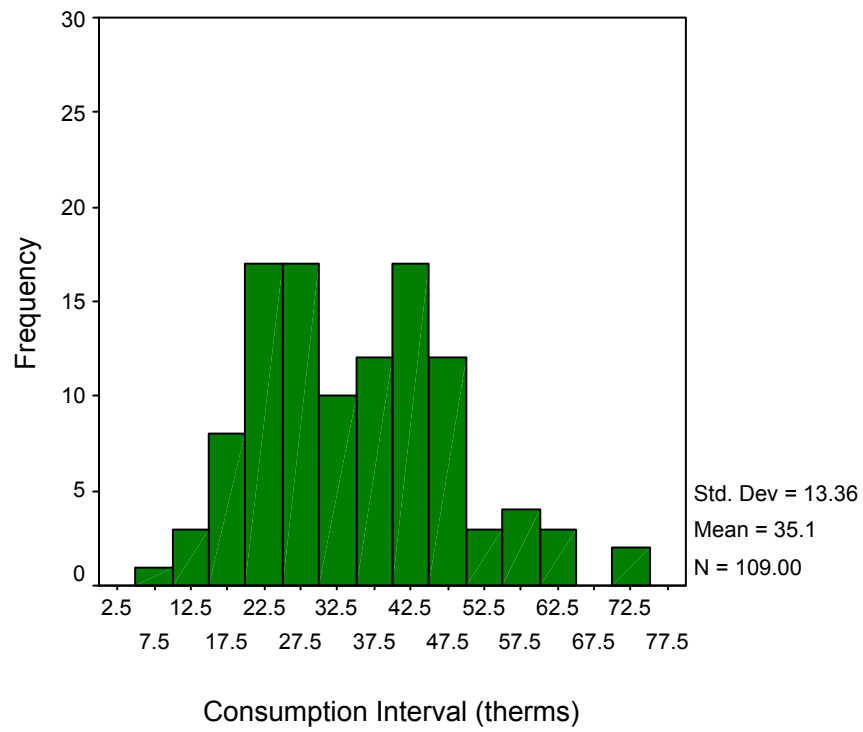


**Figure P-5. Frequency Distribution of Average Monthly Electricity Cost/ft<sup>2</sup>, Including Taxes and Miscellaneous Charges, July 2003-June 2004, for All Homes in the SheaHomes and Comparison Communities.**

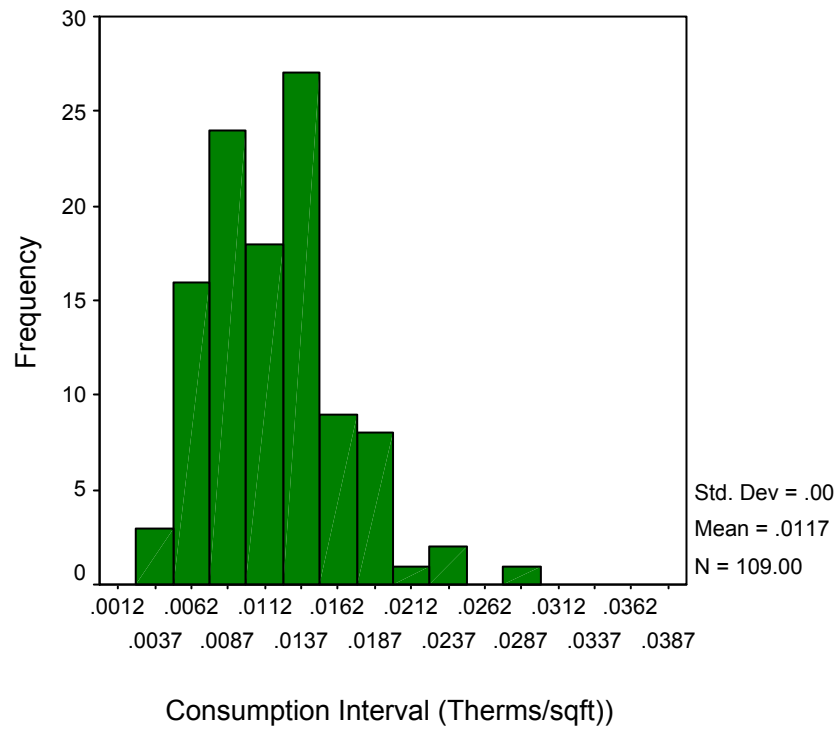


**Figure P-6. Frequency Distribution of Average Monthly Electricity Cost/ft<sup>2</sup>, Excluding Taxes and Miscellaneous Charges, July 2003-June 2004, for All Homes in the SheaHomes and Comparison Communities.**

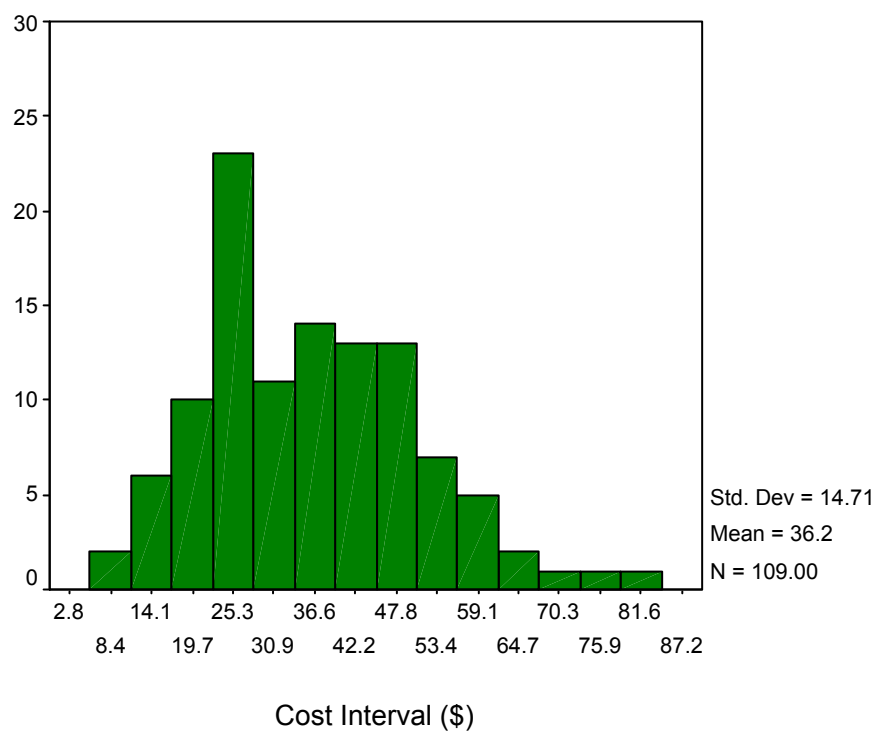




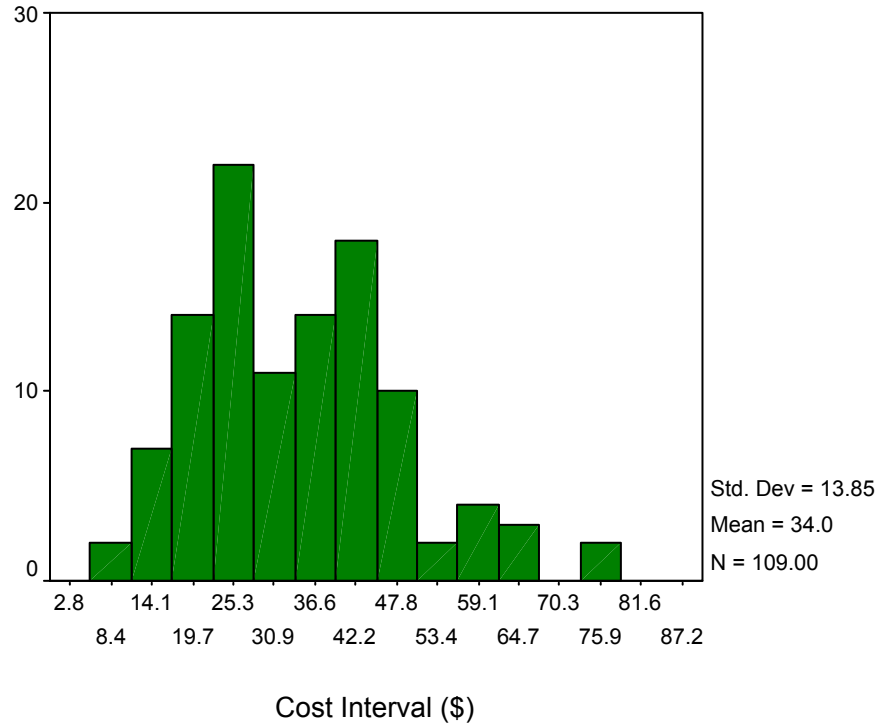
**Figure P-7. Frequency Distribution of Average Monthly Gas Consumption, July 2003-June 2004, for All Homes in the SheaHomes and Comparison Communities.**



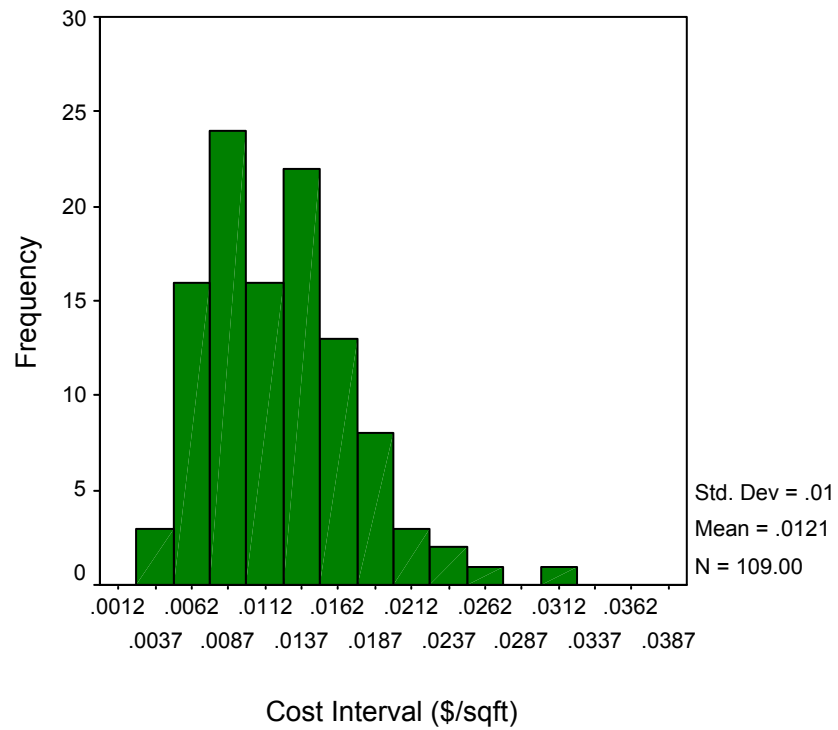
**Figure P-8. Frequency Distribution of Average Monthly Gas Consumption/ft<sup>2</sup>, July 2003-June 2004, for All Homes in the SheaHomes and Comparison Communities.**



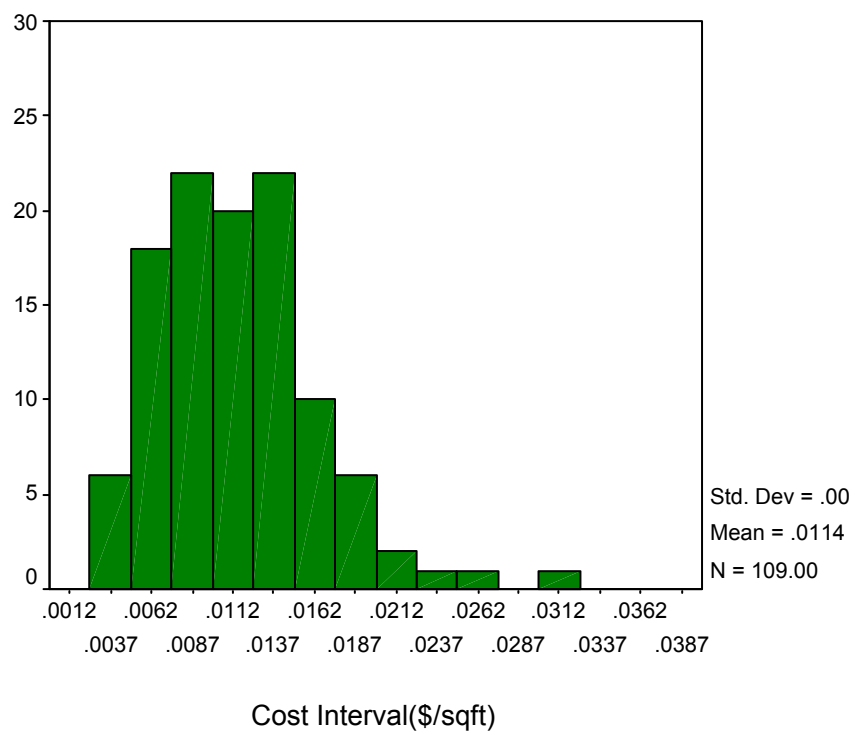
**Figure P-9. Frequency Distribution of Average Monthly Gas Cost, Including Taxes and Miscellaneous Charges, July 2003-June 2004, for All Homes in the SheaHomes and Comparison Communities.**



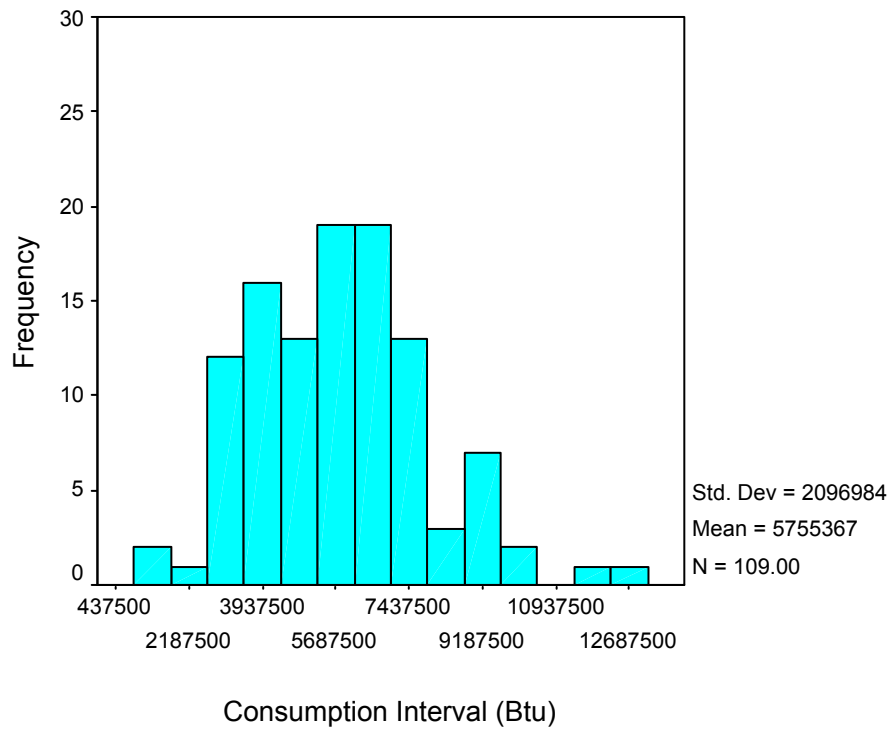
**Figure P-10. Frequency Distribution of Average Monthly Gas Cost, Excluding Taxes and Miscellaneous Charges, July 2003-June 2004, for All Homes in the SheaHomes and Comparison Communities.**



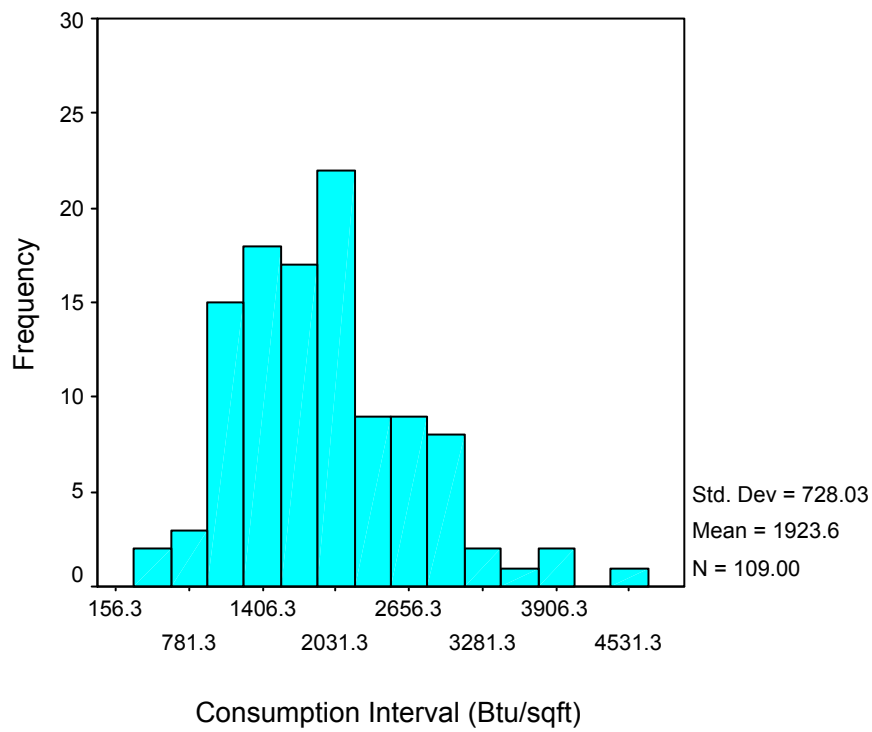
**Figure P-11. Frequency Distribution of Average Monthly Gas Cost/ft<sup>2</sup>, Including Taxes and Miscellaneous Charges, July 2003-June 2004, for All Homes in the SheaHomes and Comparison Communities.**



**Figure P-12. Frequency Distribution of Average Monthly Gas Cost/ft<sup>2</sup>, Excluding Taxes and Miscellaneous Charges, July 2003-June 2004, for All Homes in the SheaHomes and Comparison Communities.**

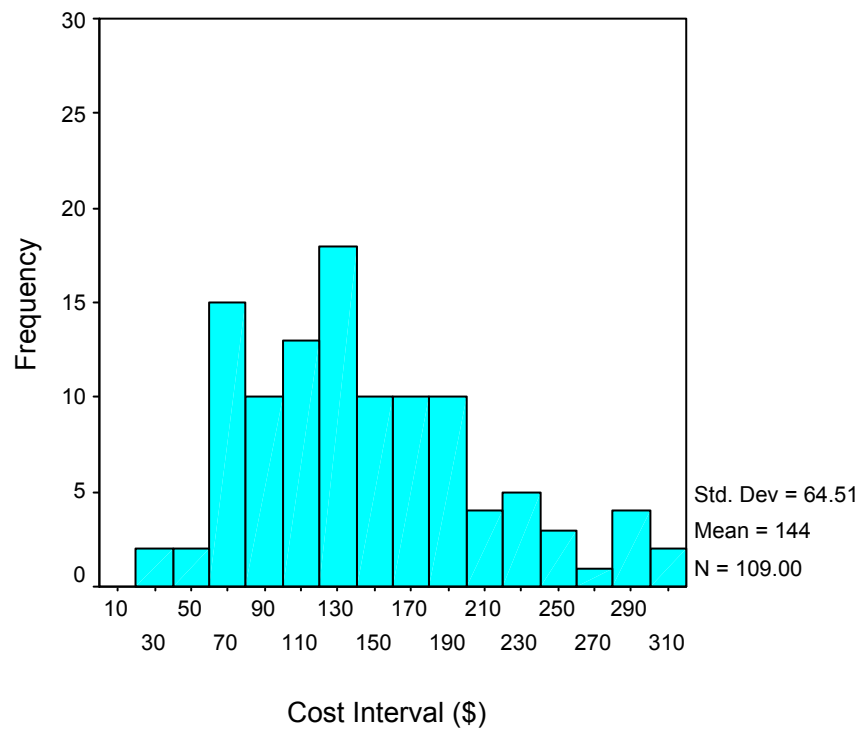


**Figure P-13. Frequency Distribution of Average Monthly Combined Energy Consumption, July 2003-June 2004, for All Homes in the SheaHomes and Comparison Communities.**

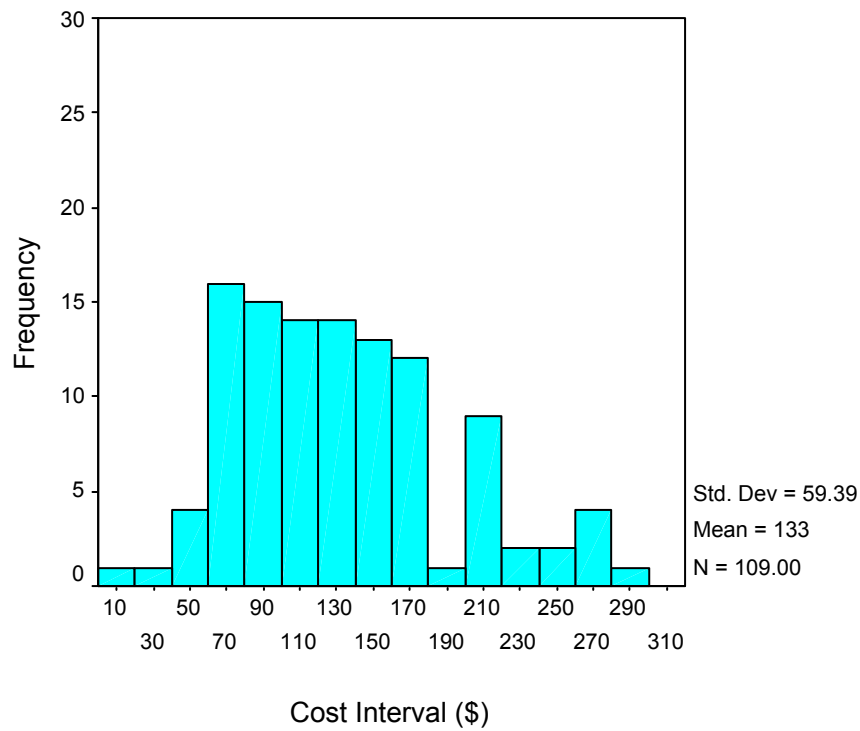


**Figure P-14. Frequency Distribution of Average Monthly Combined Energy Consumption/ft<sup>2</sup>, July 2003-June 2004, for All Homes in the SheaHomes and Comparison Communities.**

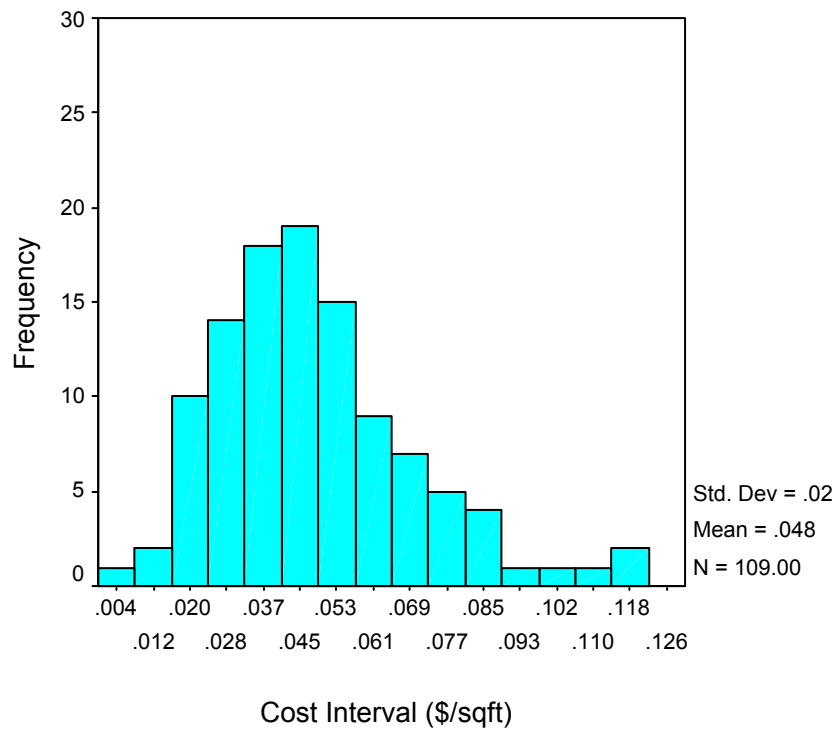




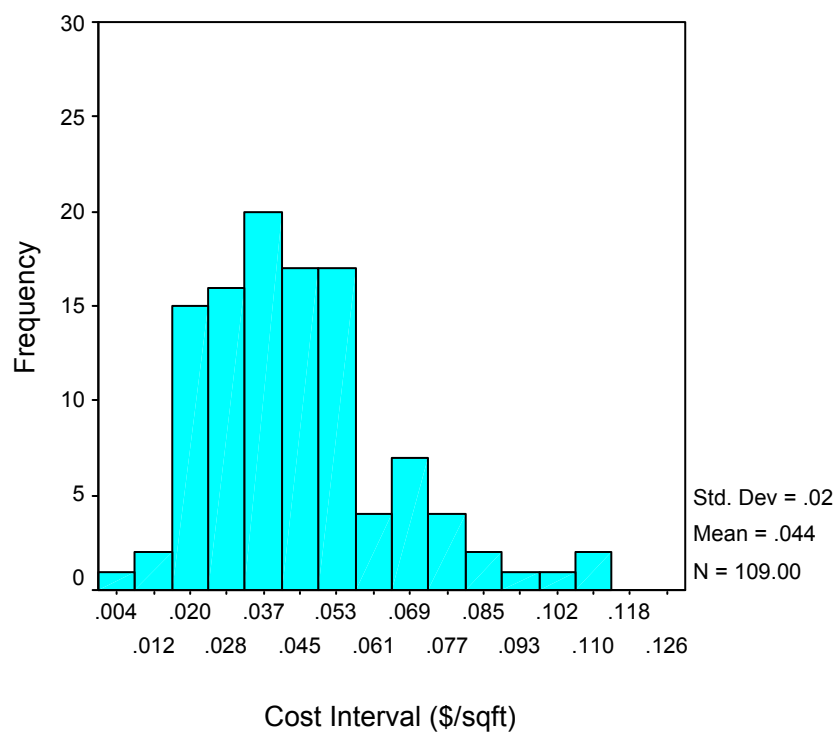
**Figure P-15. Frequency Distribution of Average Monthly Combined Utility Bill, Including Taxes and Miscellaneous Charges, July 2003-June 2004, for All Homes in the SheaHomes and Comparison Communities.**



**Figure P-16. Frequency Distribution of Average Monthly Combined Utility Bill, Excluding Taxes and Miscellaneous Charges, July 2003-June 2004, for All Homes in the SheaHomes and Comparison Communities.**



**Figure P-17. Frequency Distribution of Average Monthly Combined Utility Bill/ft<sup>2</sup>, Including Taxes and Miscellaneous Charges, July 2003-June 2004, for All Homes in the SheaHomes and Comparison Communities.**

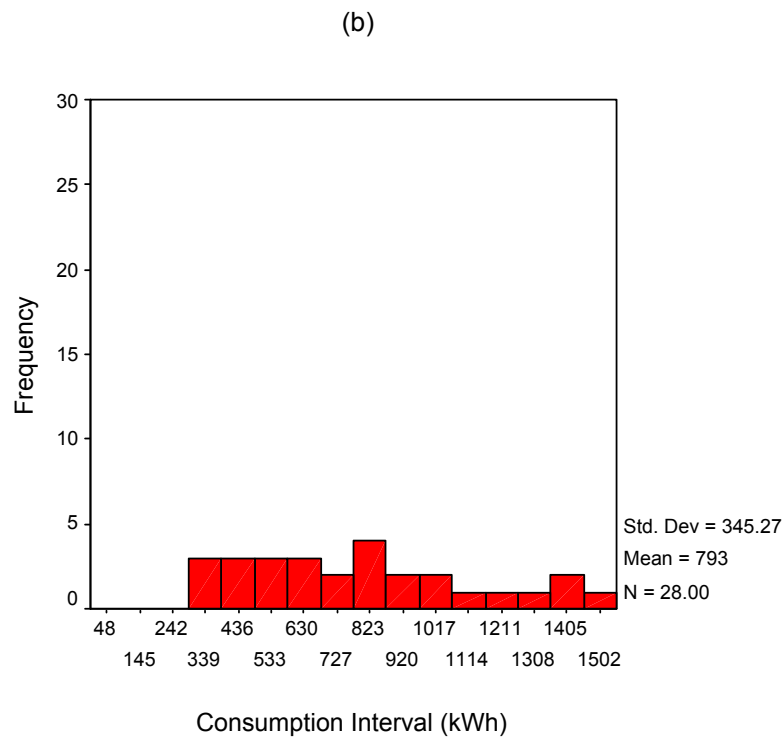
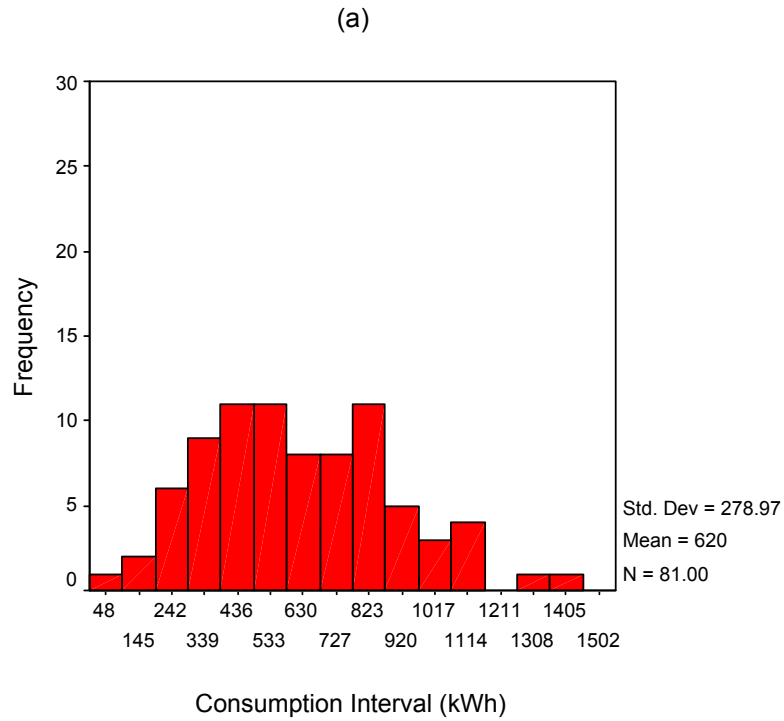


**Figure P-18. Frequency Distribution of Average Monthly Combined Utility Bill/ft<sup>2</sup>, Excluding Taxes and Miscellaneous Charges, July 2003-June 2004, for All Homes in the SheaHomes and Comparison Communities.**

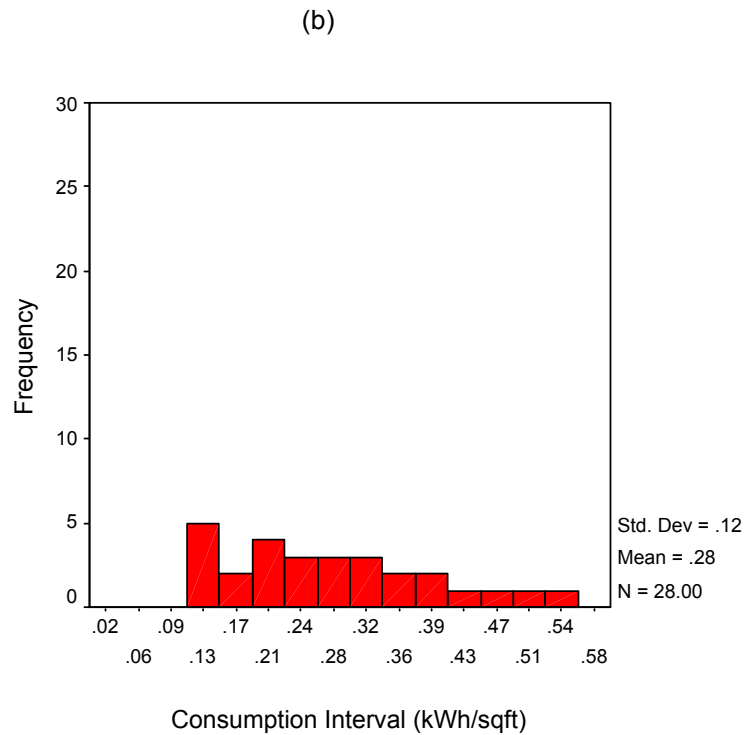
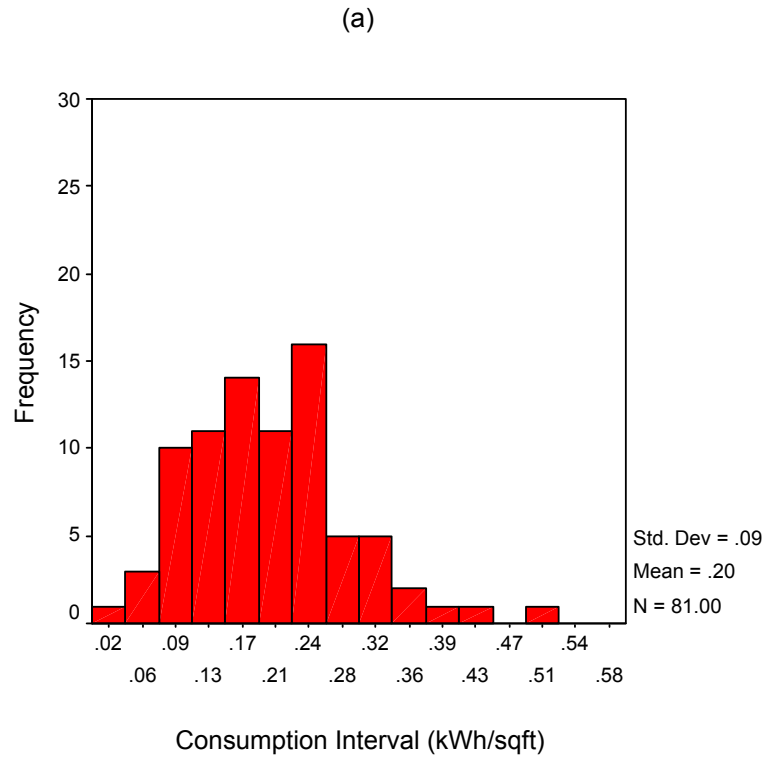
## **Appendix Q**

### **Histograms of 12-Month Utility Data for SheaHomes and Comparison Homes**

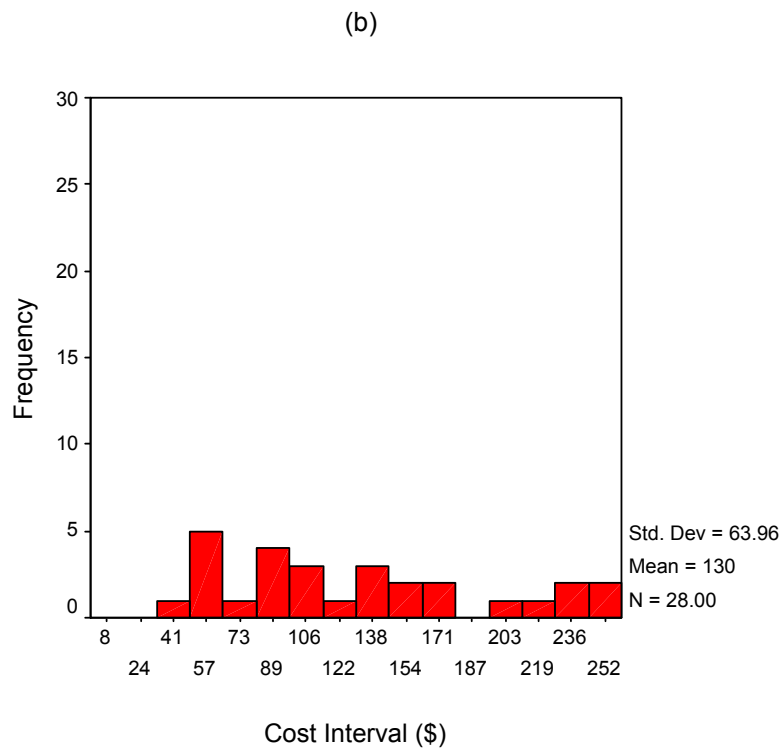
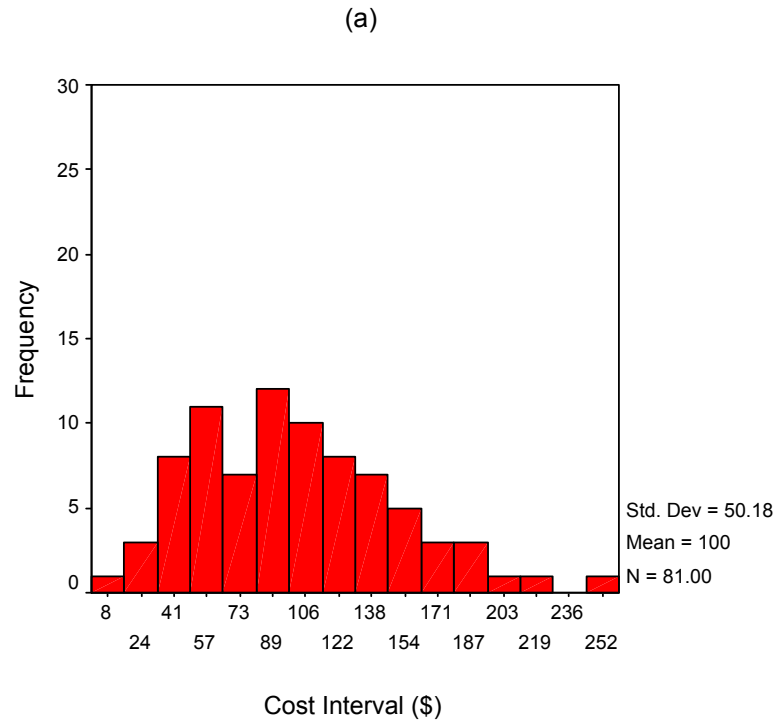
*Cited in Chapter 20*



**Figure Q-1. Frequency Distribution of Average Monthly Electricity Consumption, July 2003-June 2004, for (a) SheaHomes and (b) Comparison Homes.**

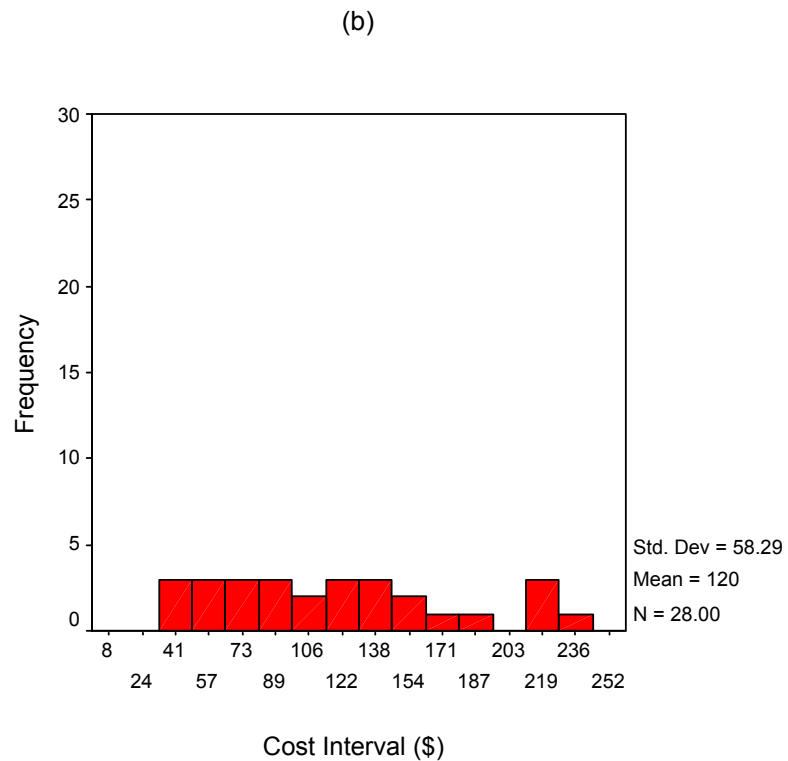
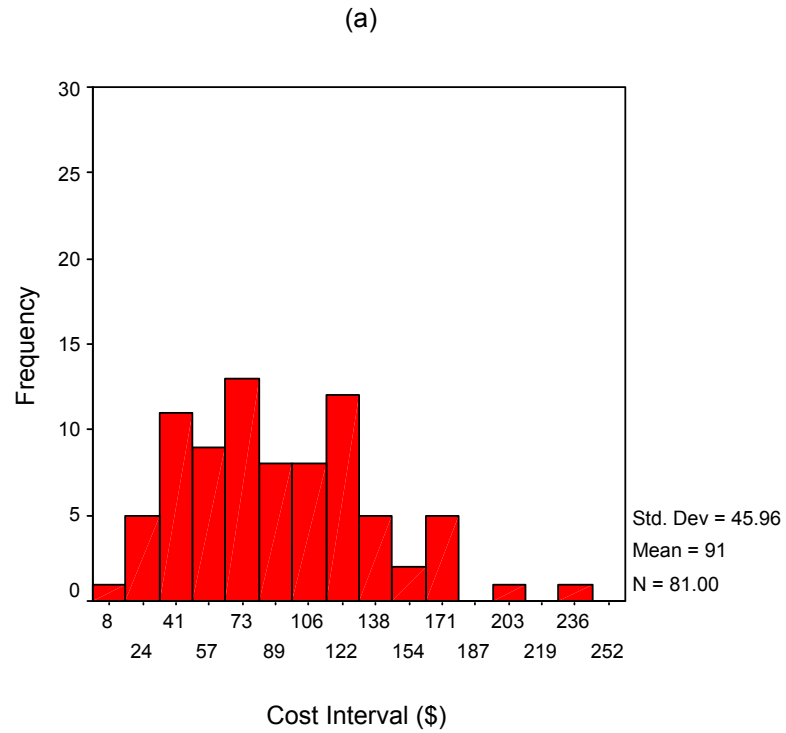


**Figure Q-2. Frequency Distribution of Average Monthly Electricity Consumption/ft<sup>2</sup>, July 2003-June 2004, for (a) SheaHomes and (b) Comparison Homes.**

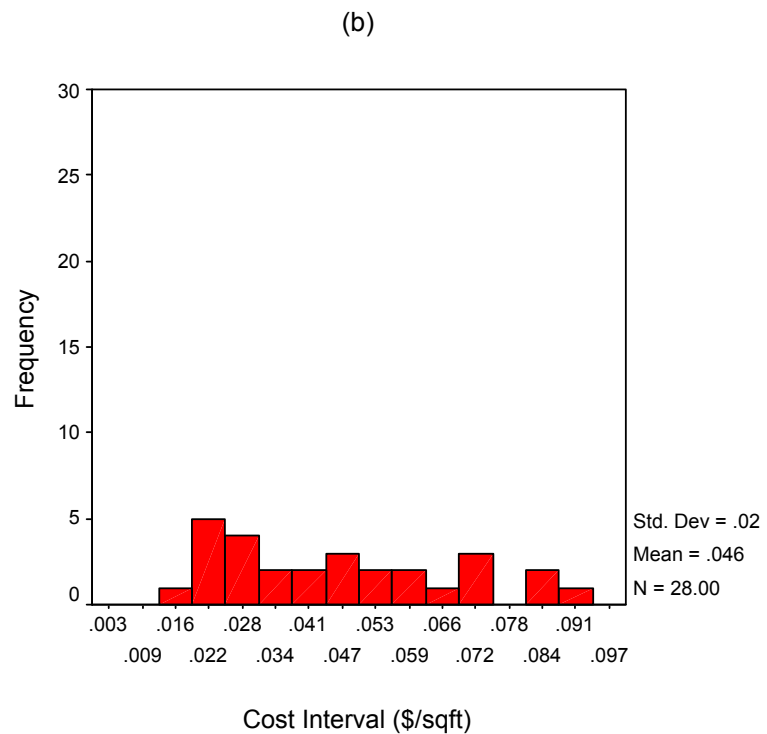
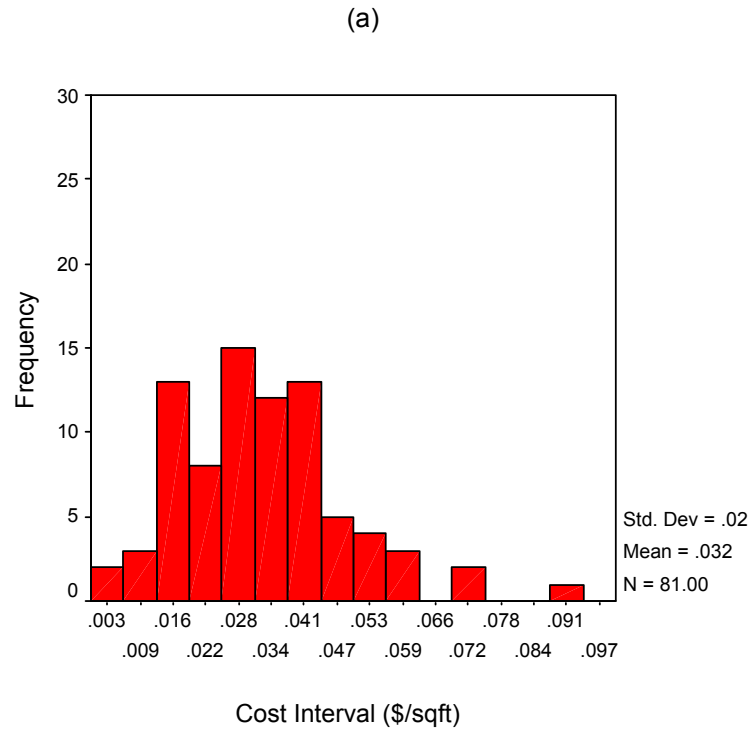


**Figure Q-3. Frequency Distribution of Average Monthly Electricity Cost, Including Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) SheaHomes and (b) Comparison Homes.**

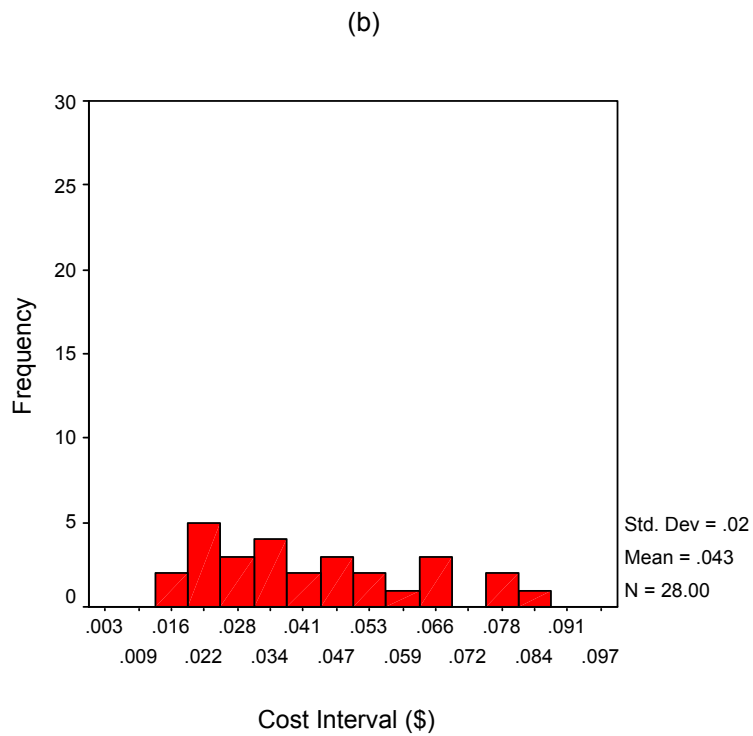
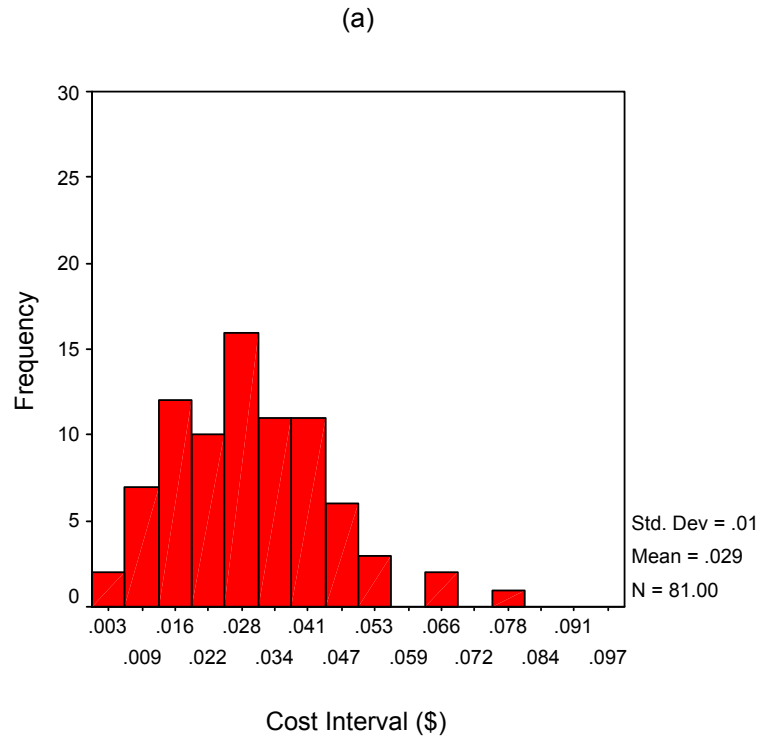




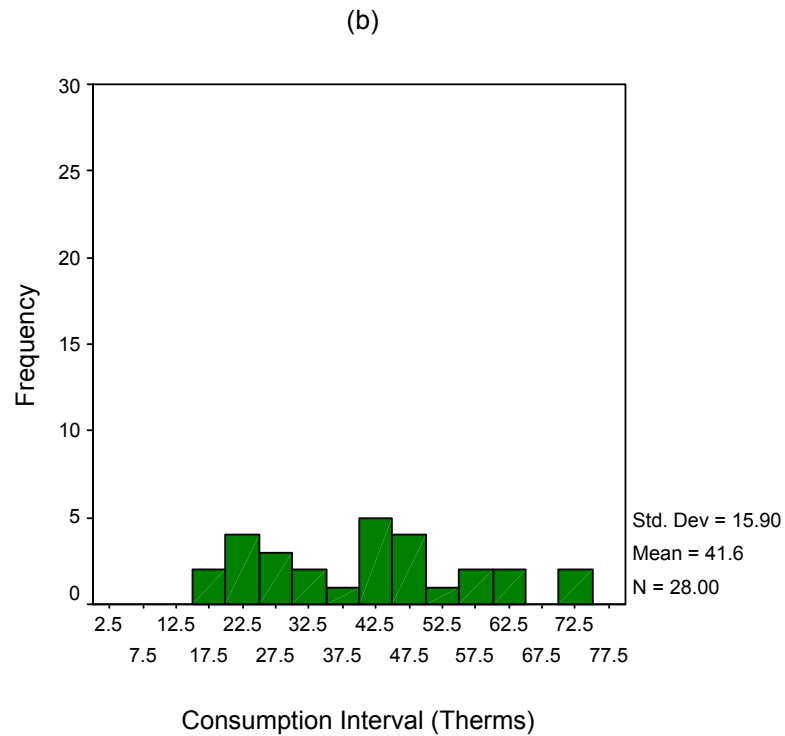
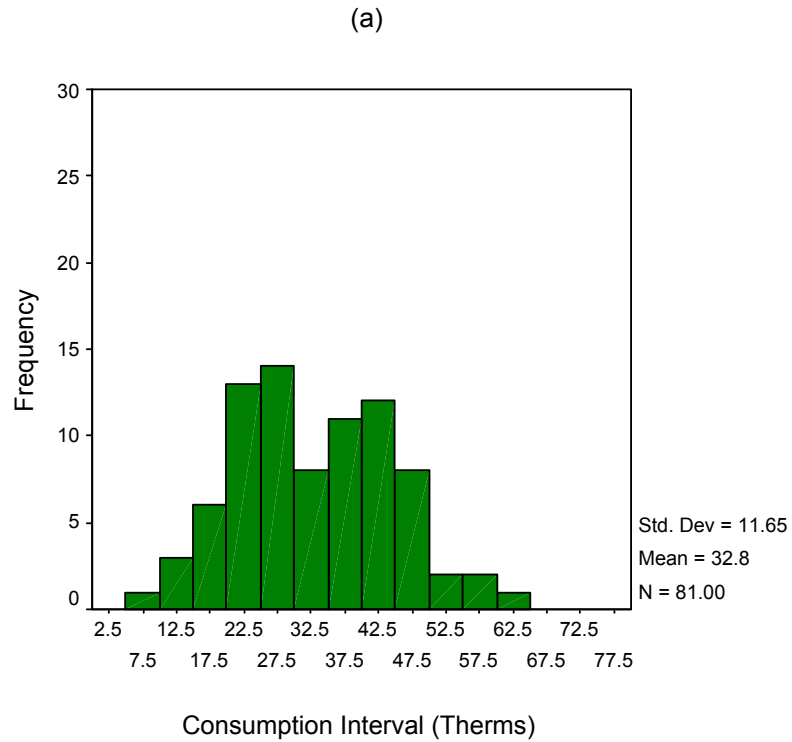
**Figure Q-4. Frequency Distribution of Average Monthly Electricity Cost, Excluding Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) SheaHomes and (b) Comparison Homes.**



**Figure Q-5. Frequency Distribution of Average Monthly Electricity Cost/ft<sup>2</sup>, Including Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) SheaHomes and (b) Comparison Homes.**

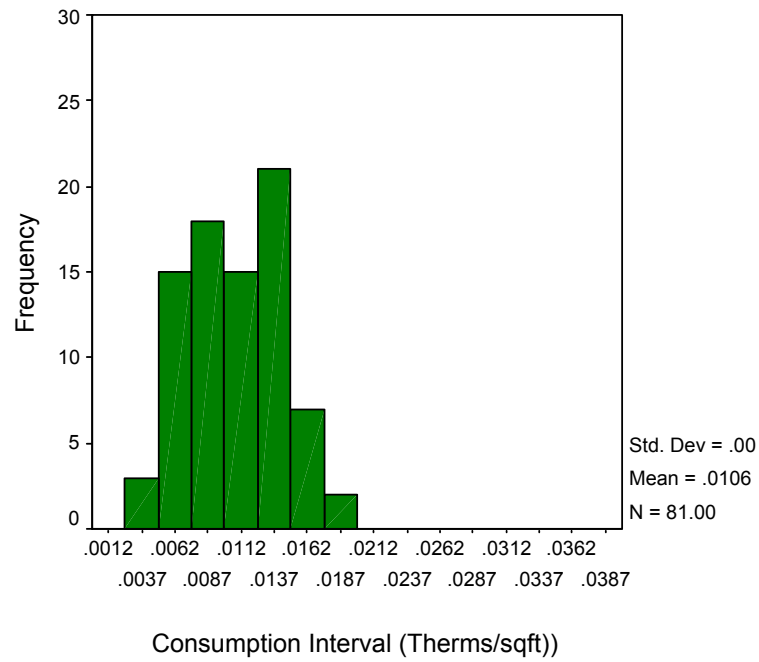


**Figure Q-6. Frequency Distribution of Average Monthly Electricity Cost/ft<sup>2</sup>, Excluding Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) SheaHomes and (b) Comparison Homes.**

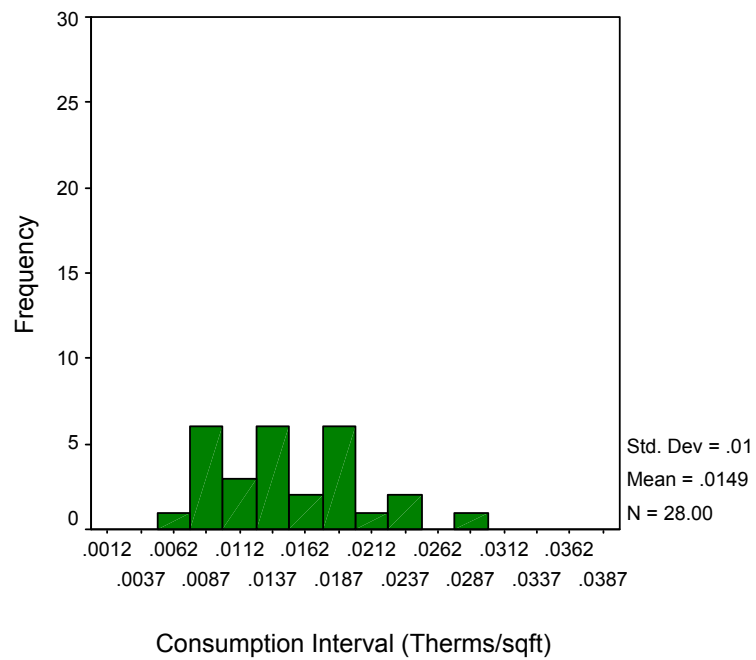


**Figure Q-7. Frequency Distribution of Average Monthly Gas Consumption, July 2003-June 2004, for (a) SheaHomes and (b) Comparison Homes.**

(a)

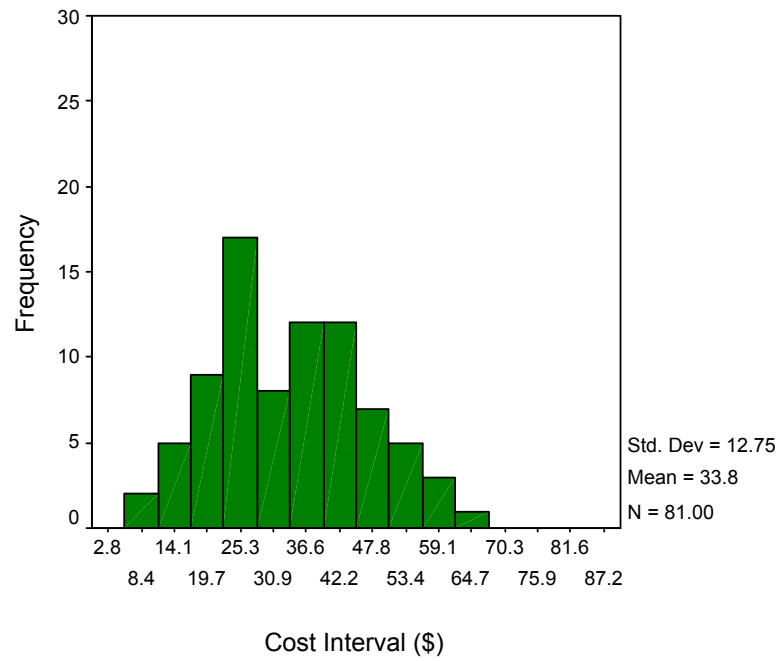


(b)

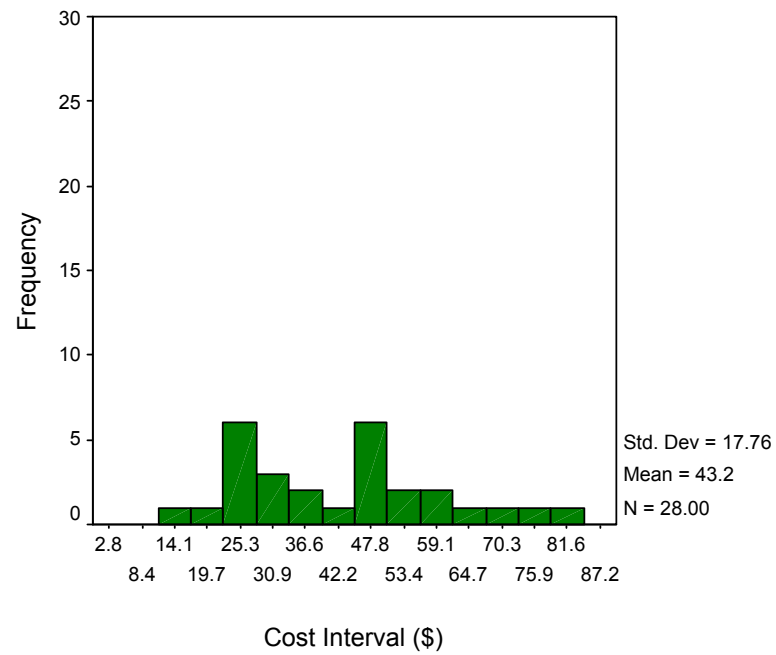


**Figure Q-8. Frequency Distribution of Average Monthly Gas Consumption/ft<sup>2</sup>, July 2003-June 2004, for (a) SheaHomes and (b) Comparison Homes.**

(a)

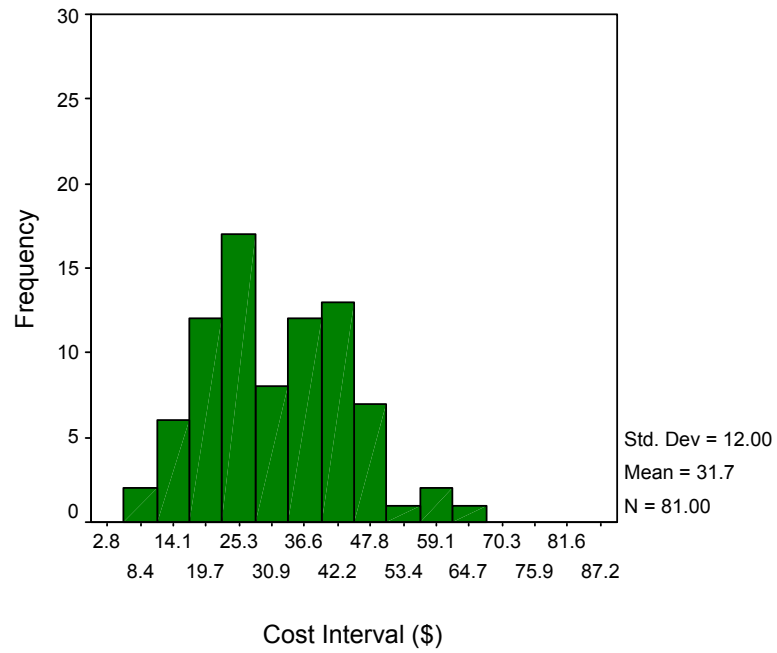


(b)

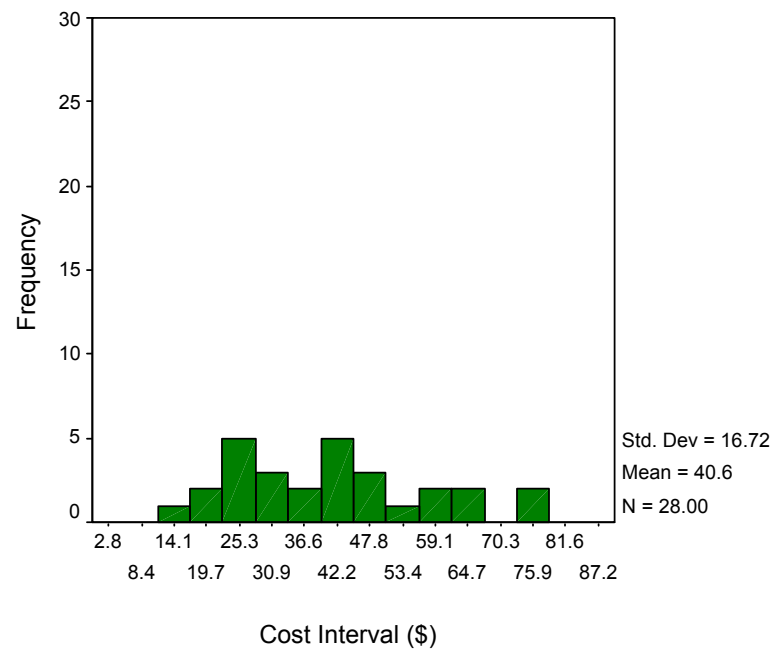


**Figure Q-9. Frequency Distribution of Average Monthly Gas Cost, Including Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) SheaHomes and (b) Comparison Homes.**

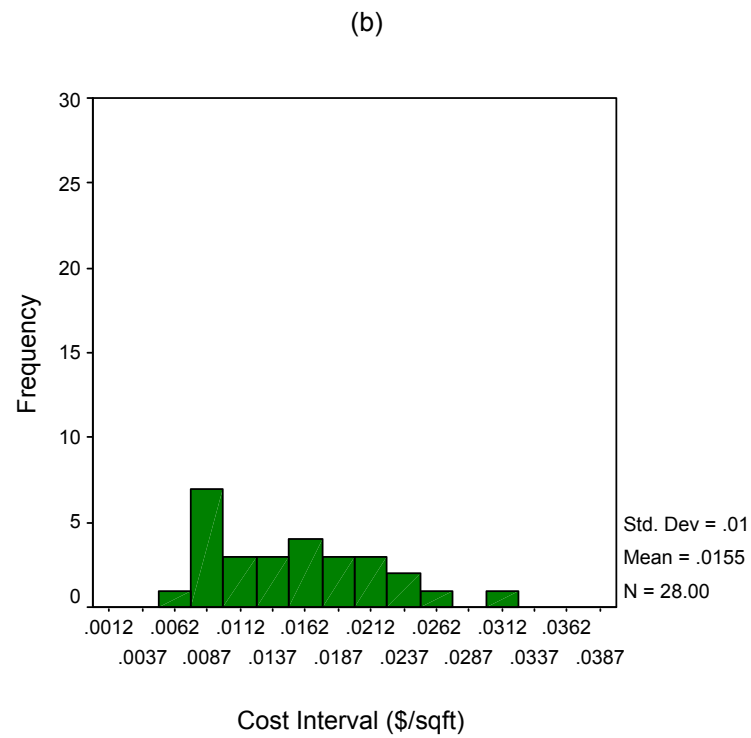
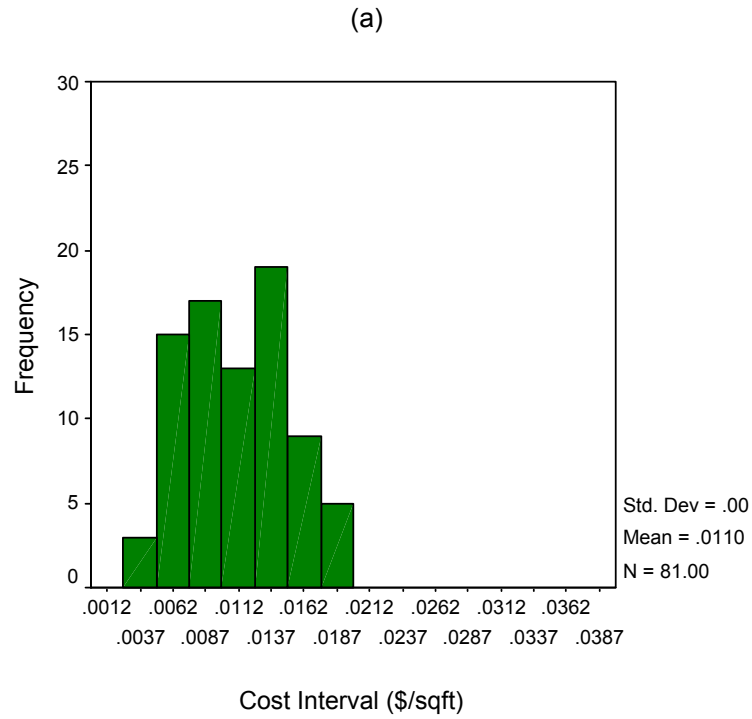
(a)



(b)

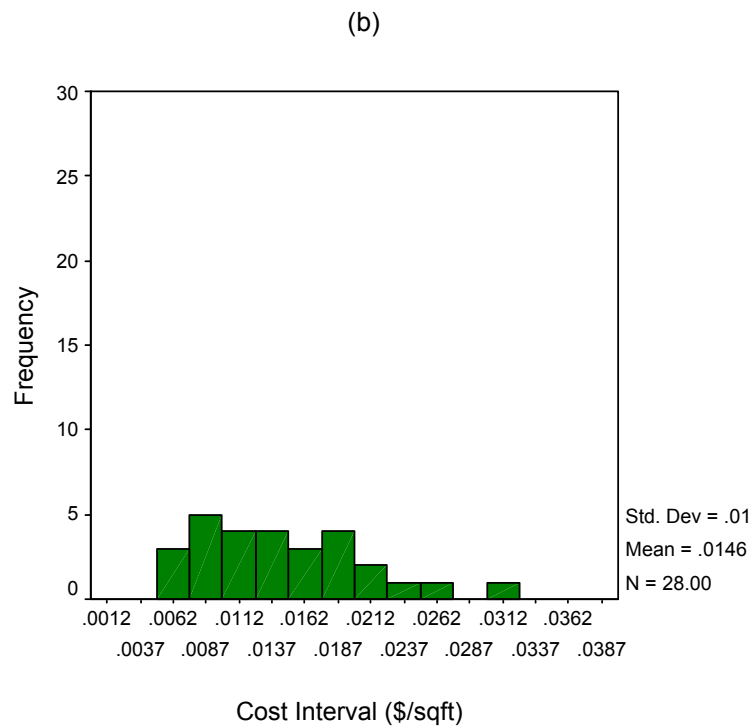
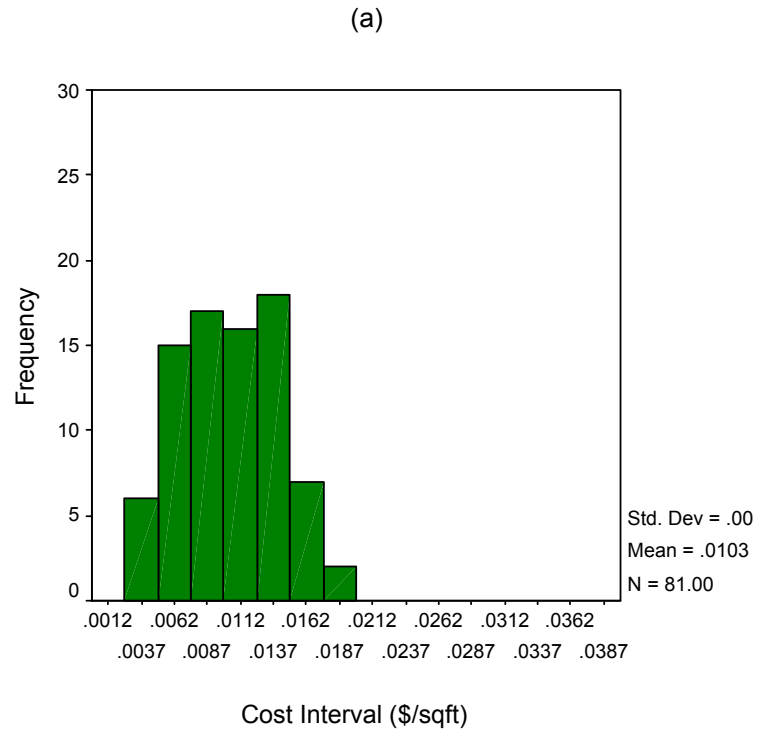


**Figure Q-10. Frequency Distribution of Average Monthly Gas Cost, Excluding Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) SheaHomes and (b) Comparison Homes.**

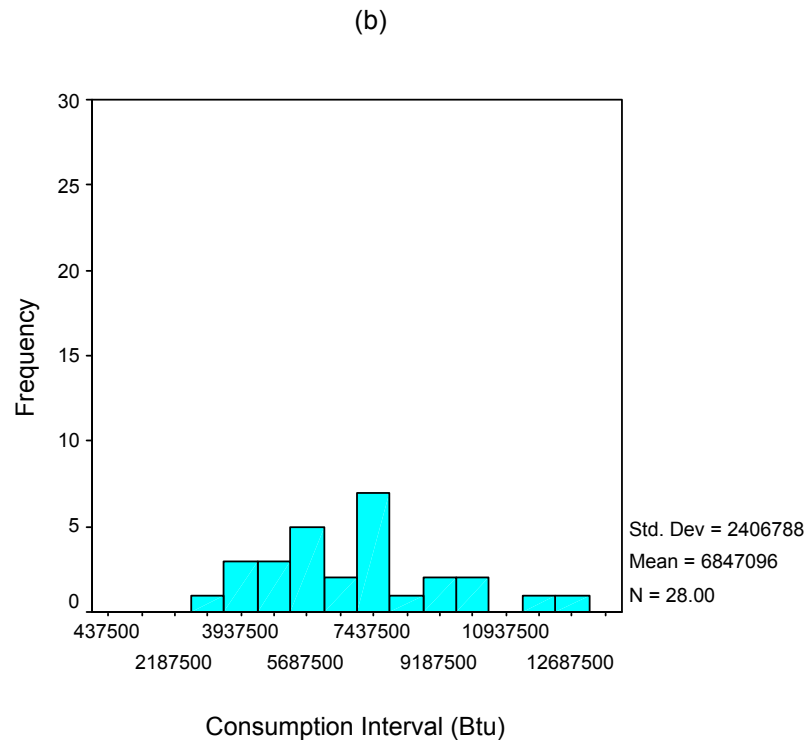
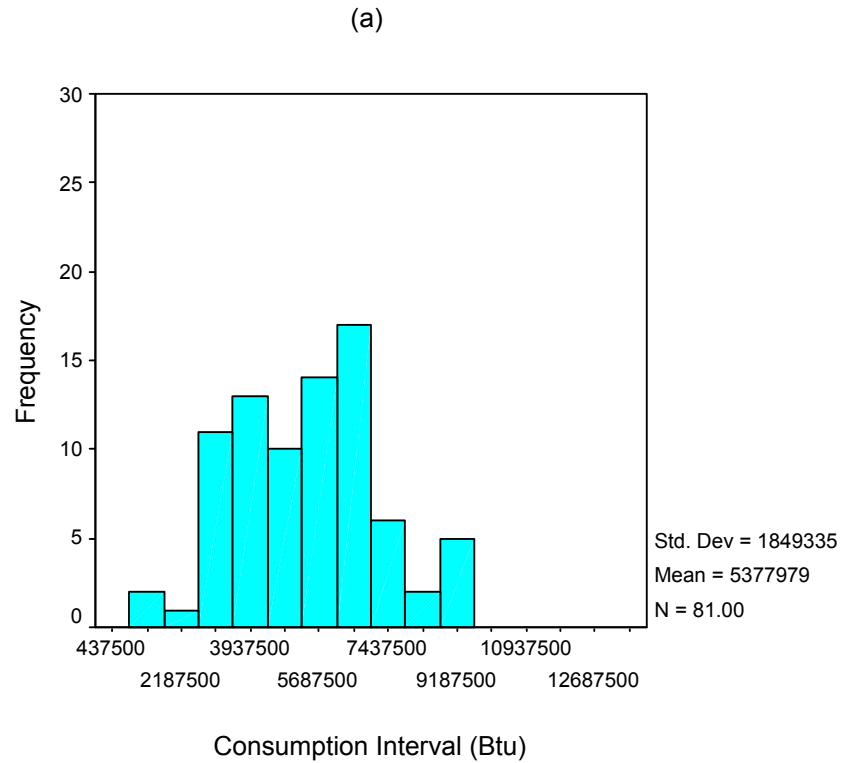


**Figure Q-11. Frequency Distribution of Average Monthly Gas Cost/ft<sup>2</sup>, Including Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) SheaHomes and (b) Comparison Homes.**



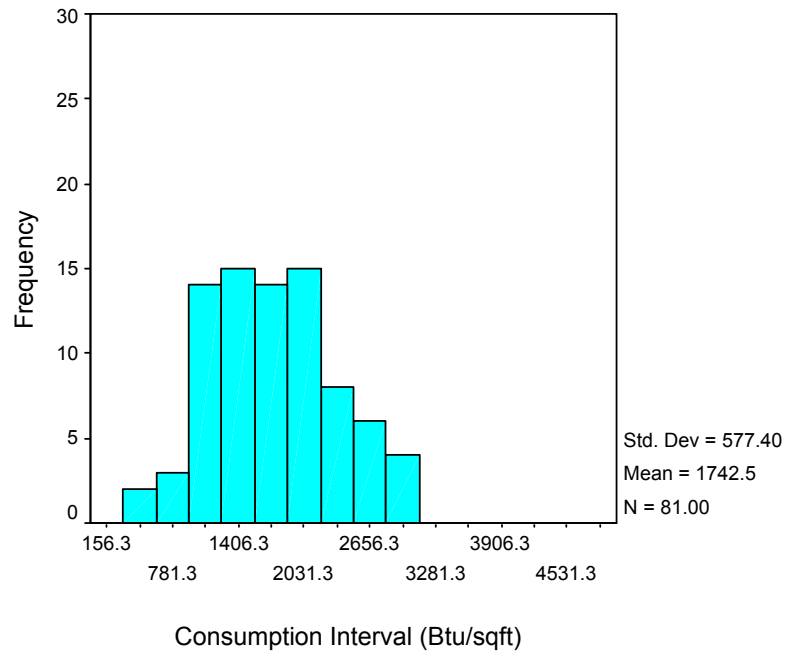


**Figure Q-12. Frequency Distribution of Average Monthly Gas Cost/ft<sup>2</sup>, Excluding Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) SheaHomes and (b) Comparison Homes.**

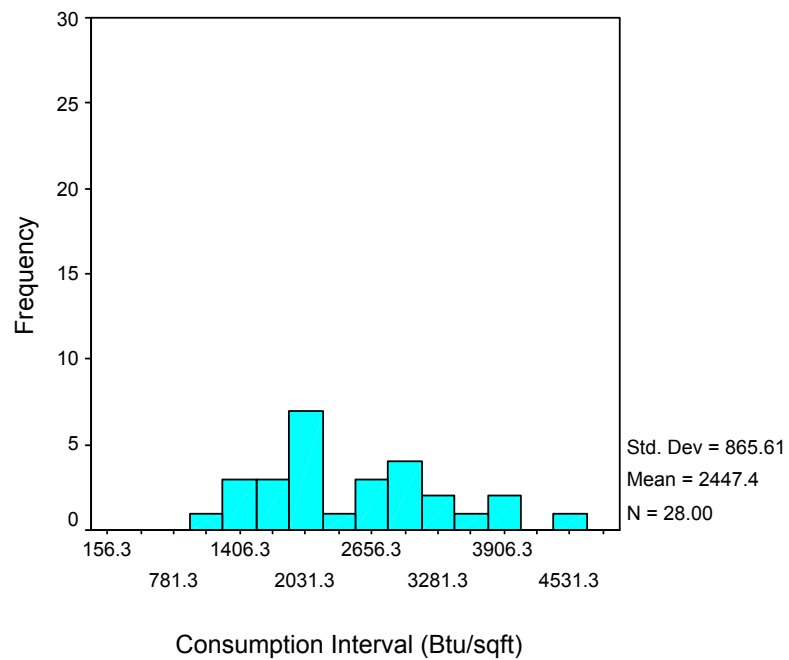


**Figure Q-13. Frequency Distribution of Average Monthly Combined Energy Consumption, July 2003-June 2004, for (a) SheaHomes and (b) Comparison Homes.**

(a)

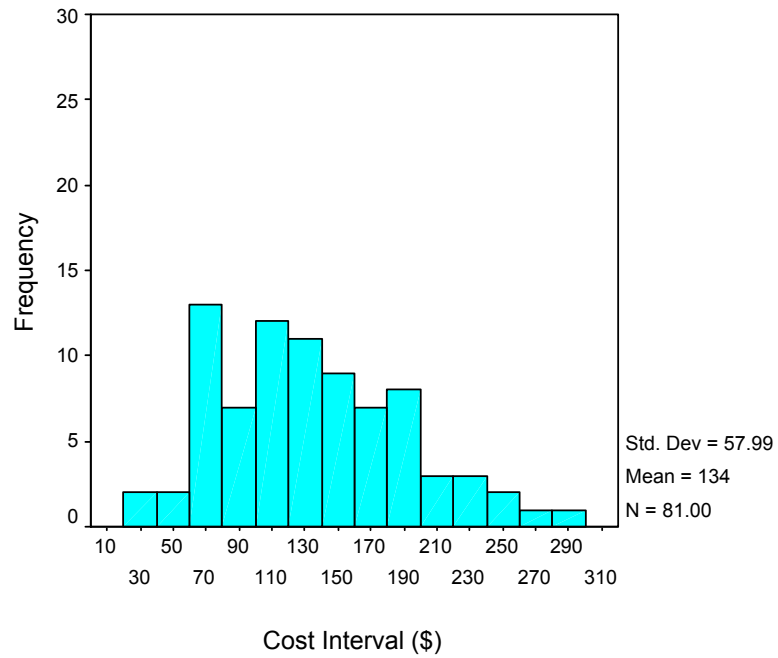


(b)

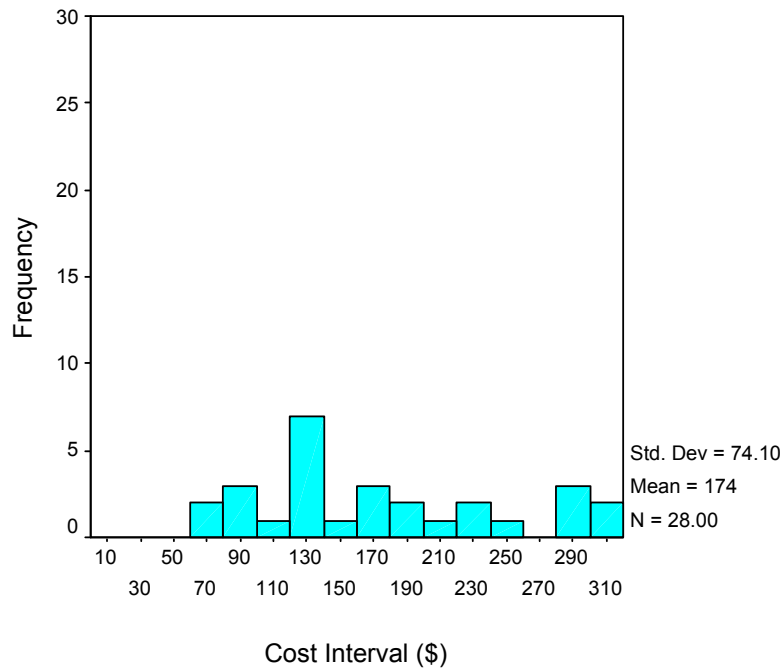


**Figure Q-14. Frequency Distribution of Average Monthly Combined Energy Consumption/ft<sup>2</sup>, July 2003-June 2004, for (a) SheaHomes and (b) Comparison Homes.**

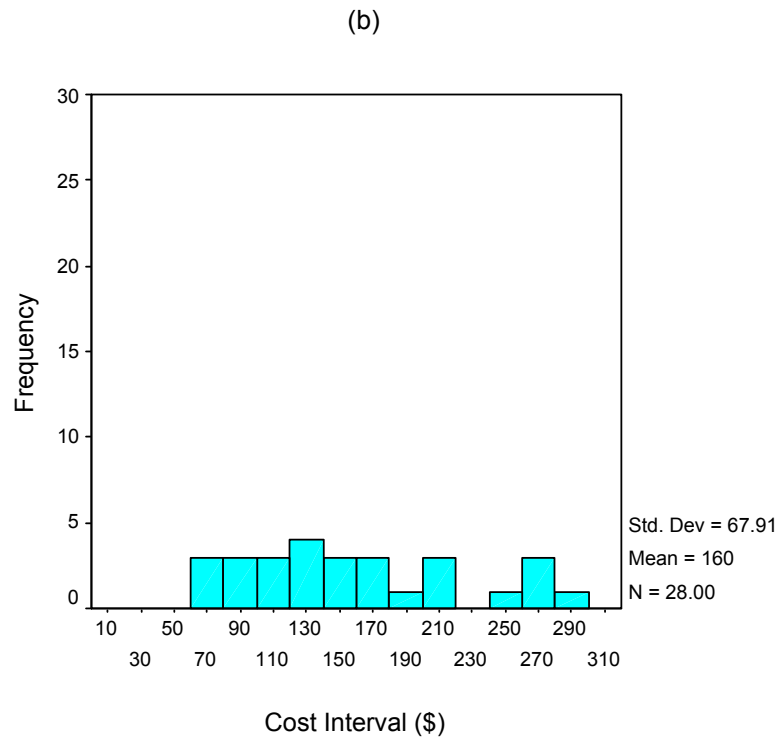
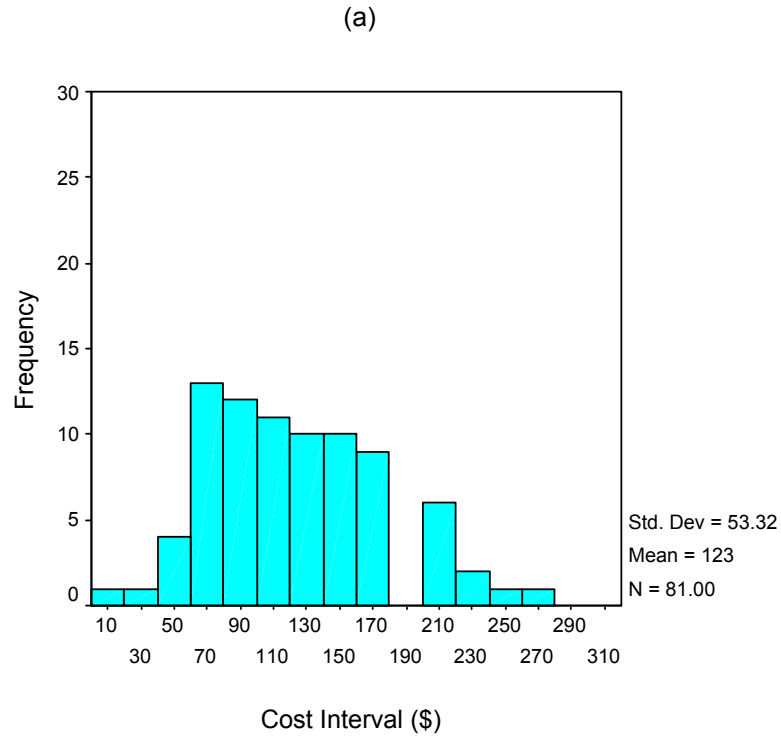
(a)



(b)

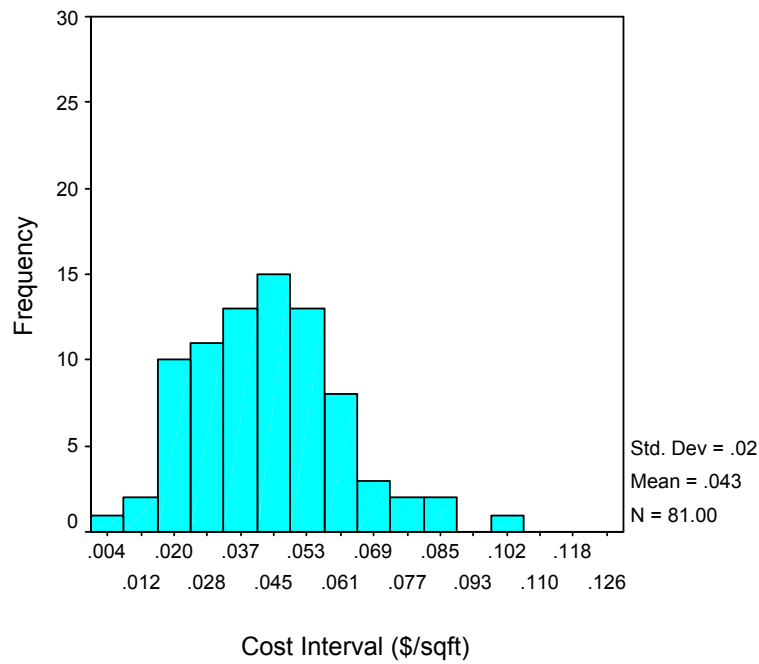


**Figure Q-15. Frequency Distribution of Average Monthly Combined Utility Bill, Including Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) SheaHomes and (b) Comparison Homes.**

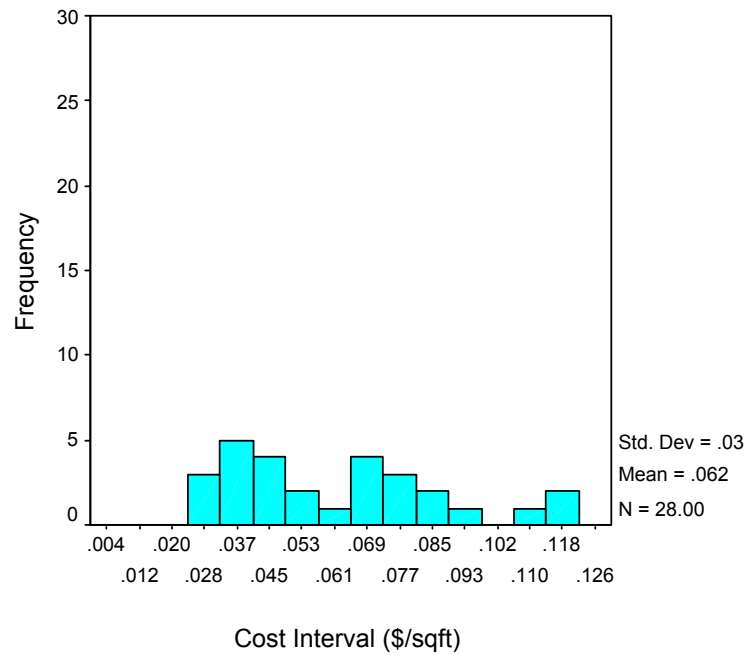


**Figure Q-16. Frequency Distribution of Average Monthly Combined Utility Bill, Excluding Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) SheaHomes and (b) Comparison Homes.**

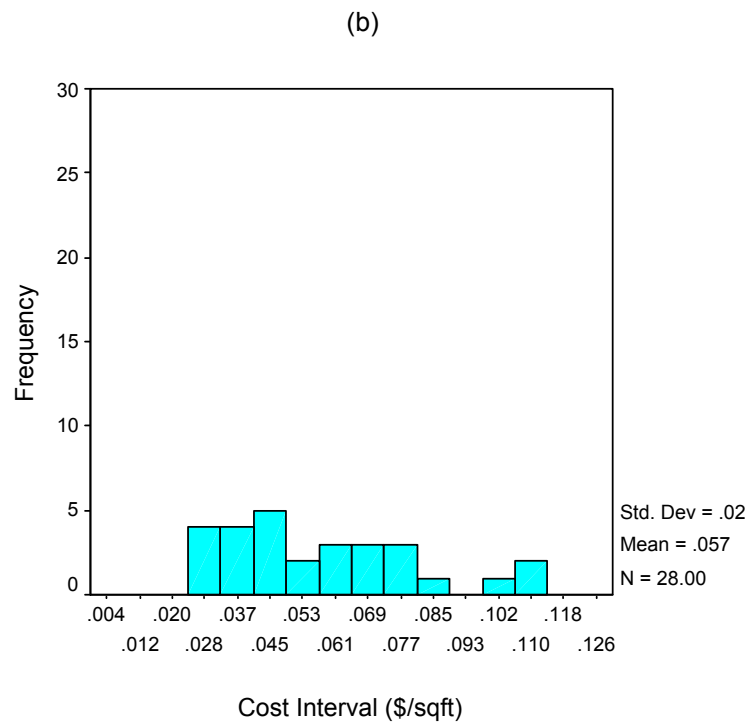
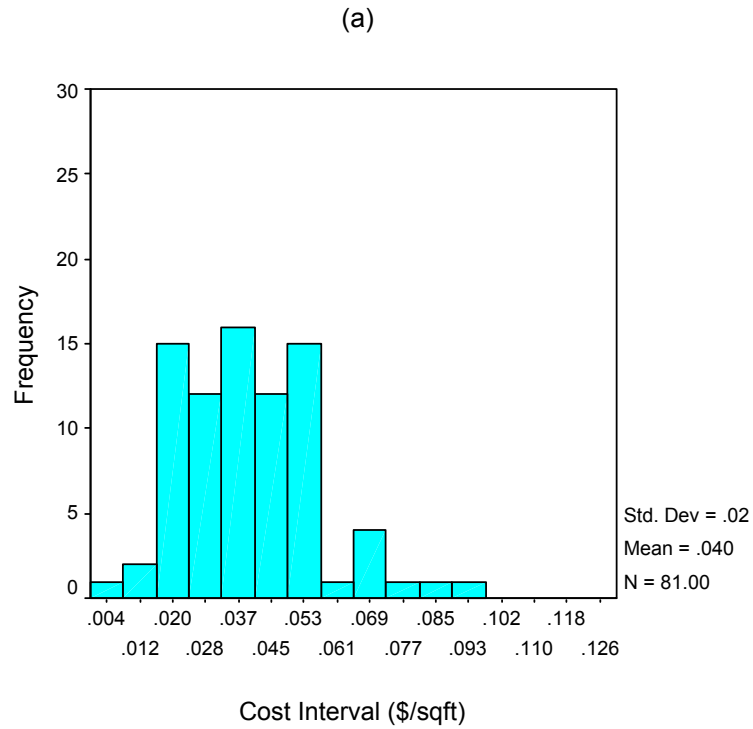
(a)



(b)



**Figure Q-17. Frequency Distribution of Average Monthly Combined Utility Bill/ft<sup>2</sup>, Including Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) SheaHomes and (b) Comparison Homes.**



**Figure Q-18. Frequency Distribution of Average Monthly Combined Utility Bill/ft<sup>2</sup>, Excluding Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) SheaHomes and (b) Comparison Homes.**

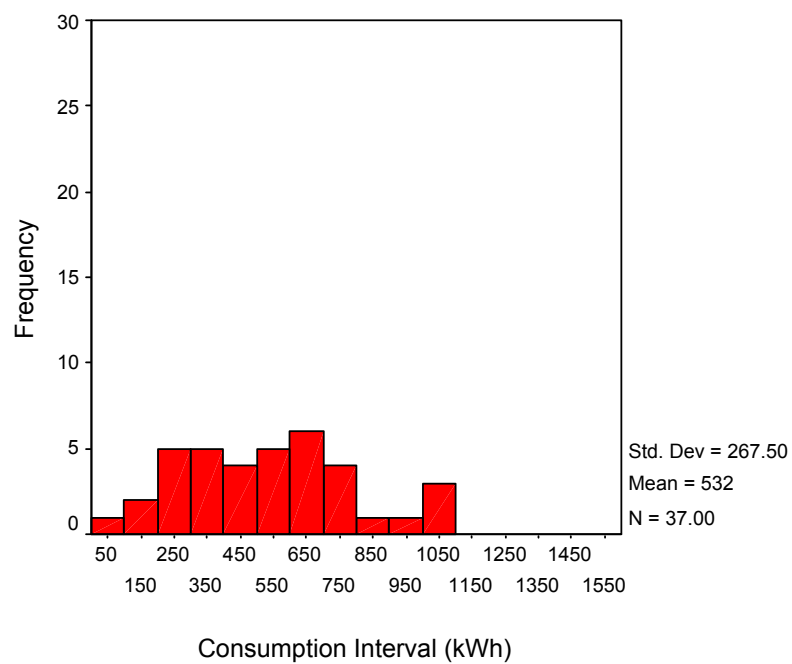
## **Appendix R**

### **Histograms of 12-Month Utility Data for PV and SEE Homes**

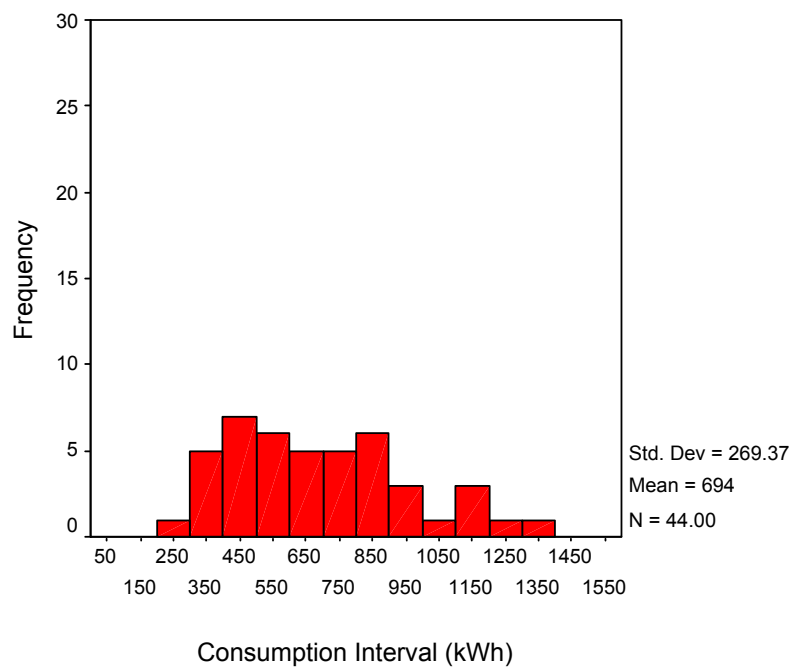
*Cited in Chapter 20*



(a)

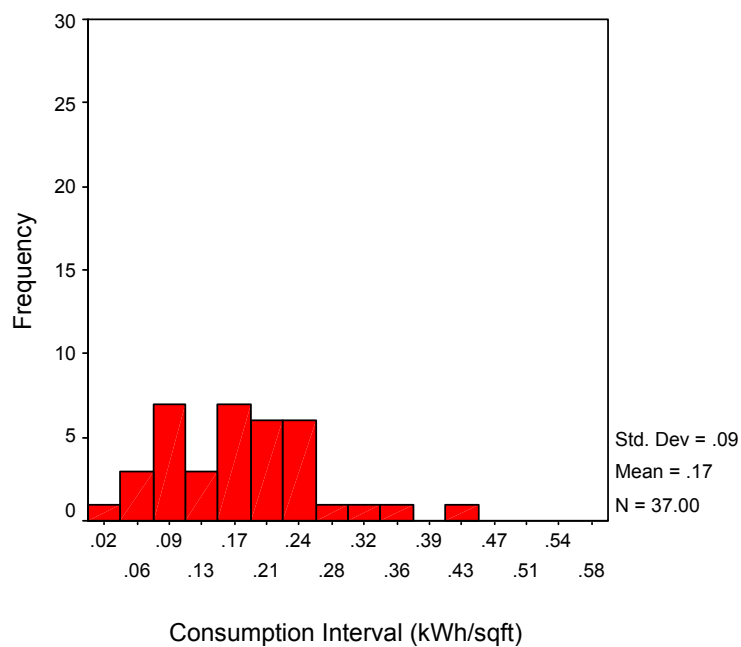


(b)

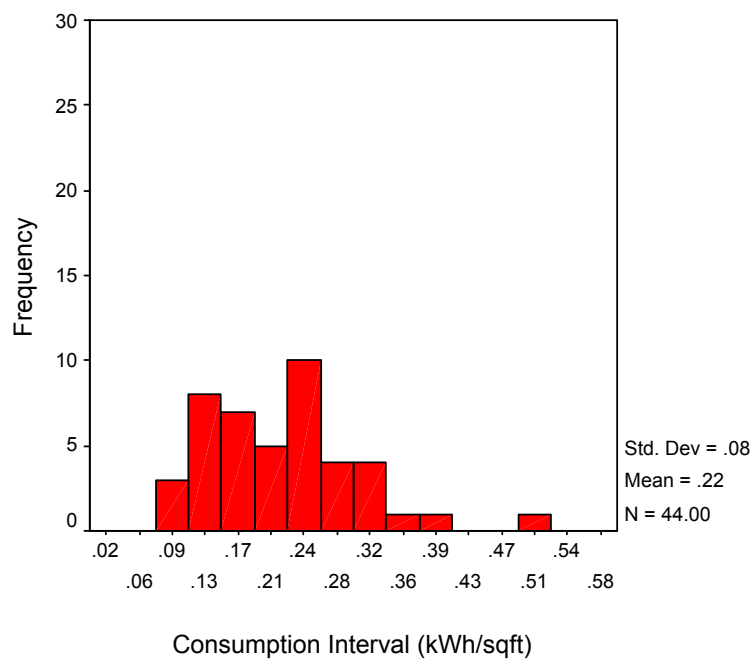


**Figure R-1. Frequency Distribution of Average Monthly Electricity Consumption, July 2003-June 2004, for (a) PV Homes and (b) SEE Homes.**

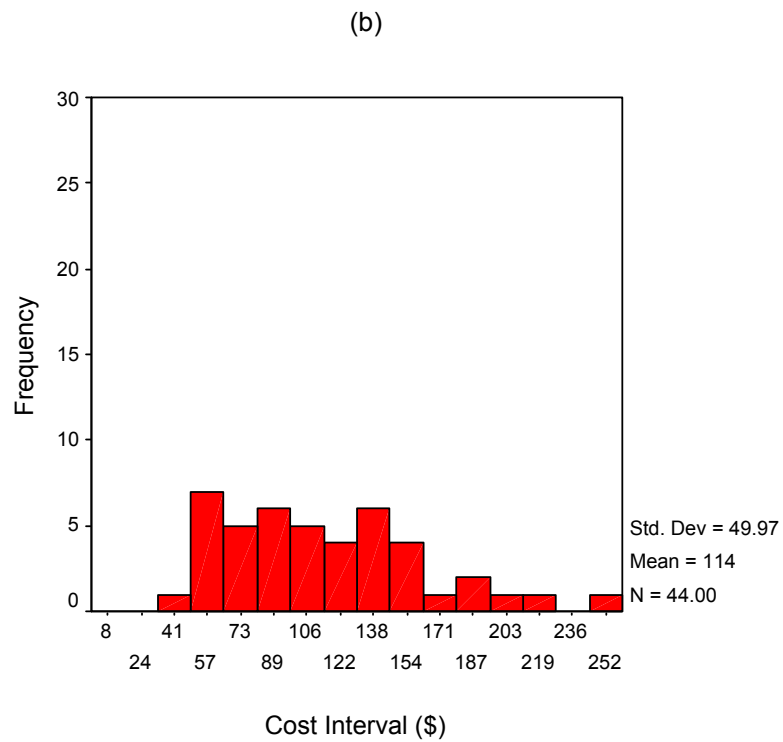
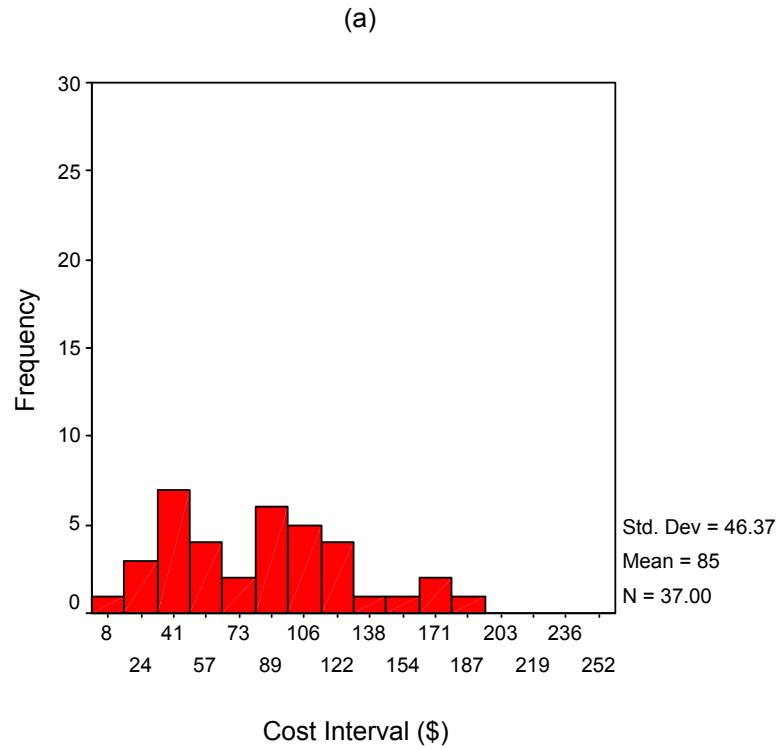
(a)



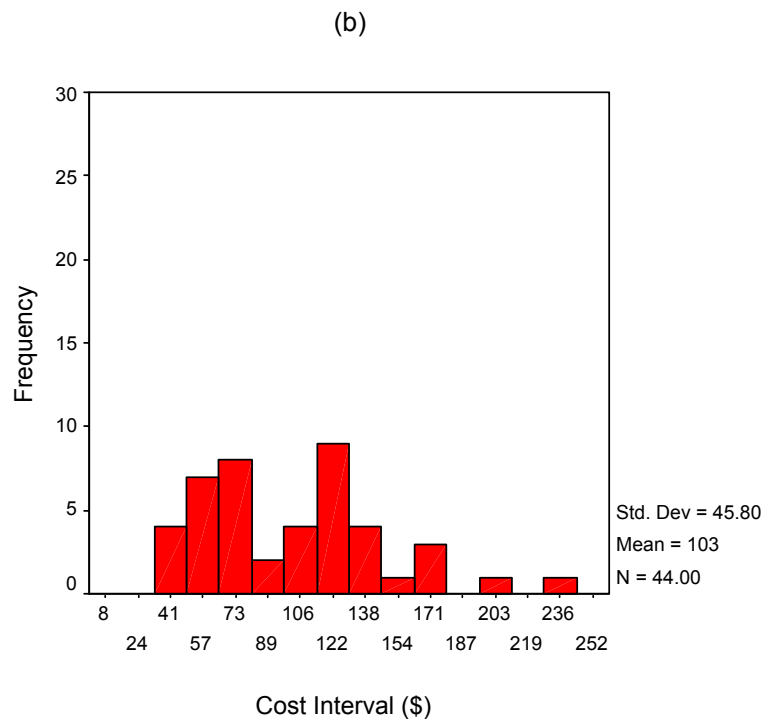
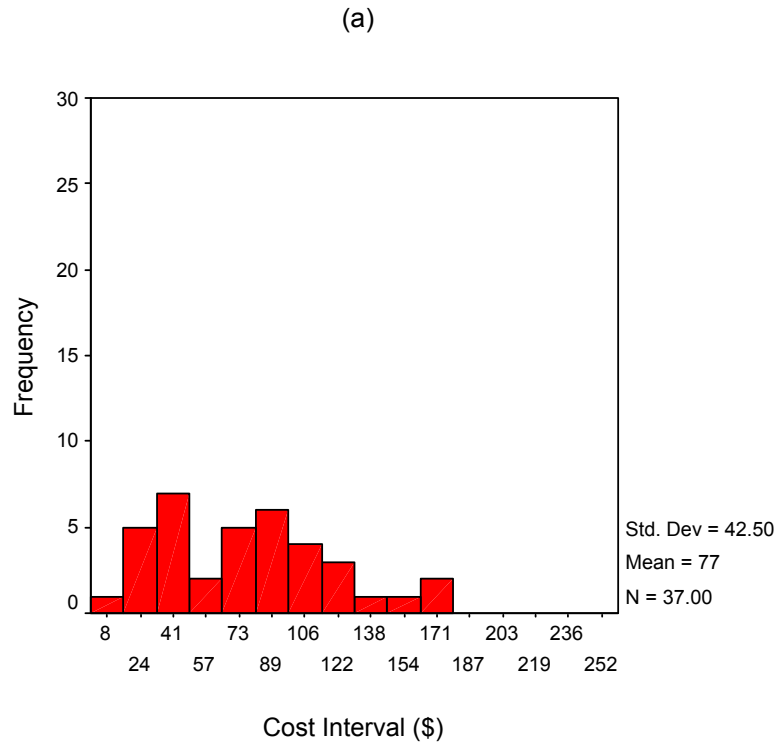
(b)



**Figure R-2. Frequency Distribution of Average Monthly Electricity Consumption/ft<sup>2</sup>, July 2003-June 2004, for (a) PV Homes and (b) SEE Homes.**

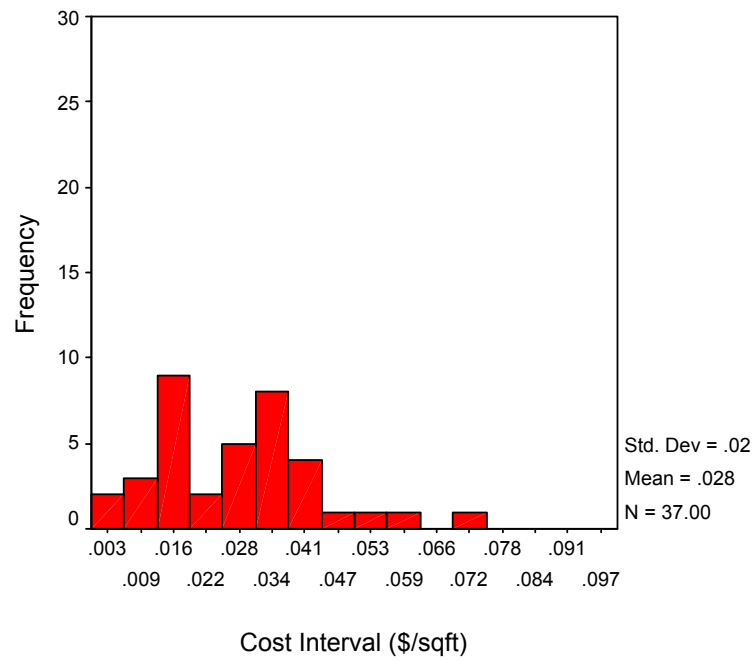


**Figure R-3. Frequency Distribution of Average Monthly Electricity Cost, Including Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) PV Homes and (b) SEE Homes.**

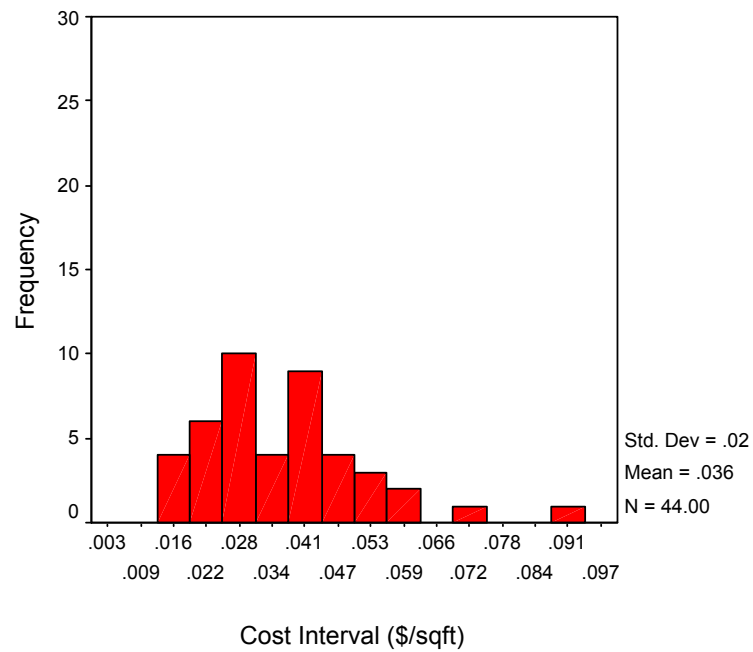


**Figure R-4. Frequency Distribution of Average Monthly Electricity Cost, Excluding Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) PV Homes and (b) SEE Homes.**

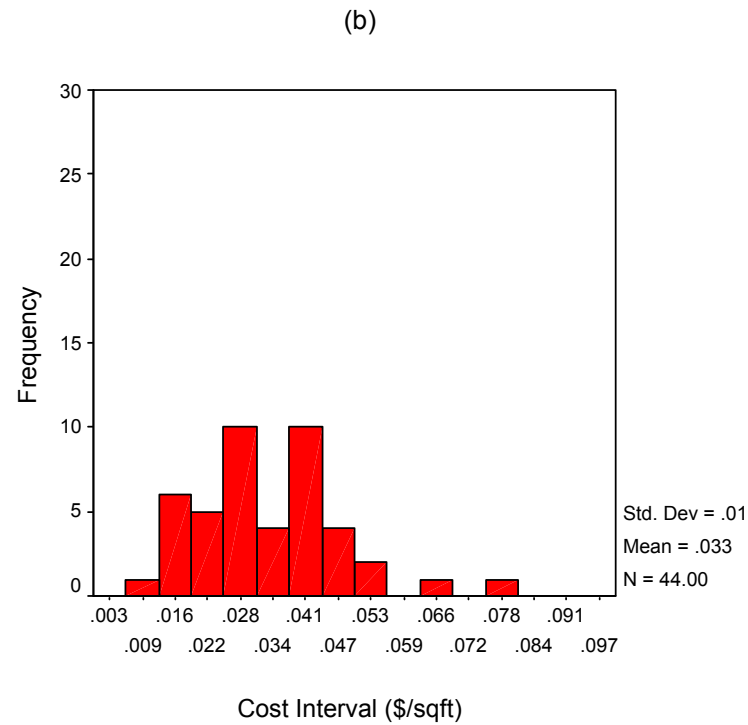
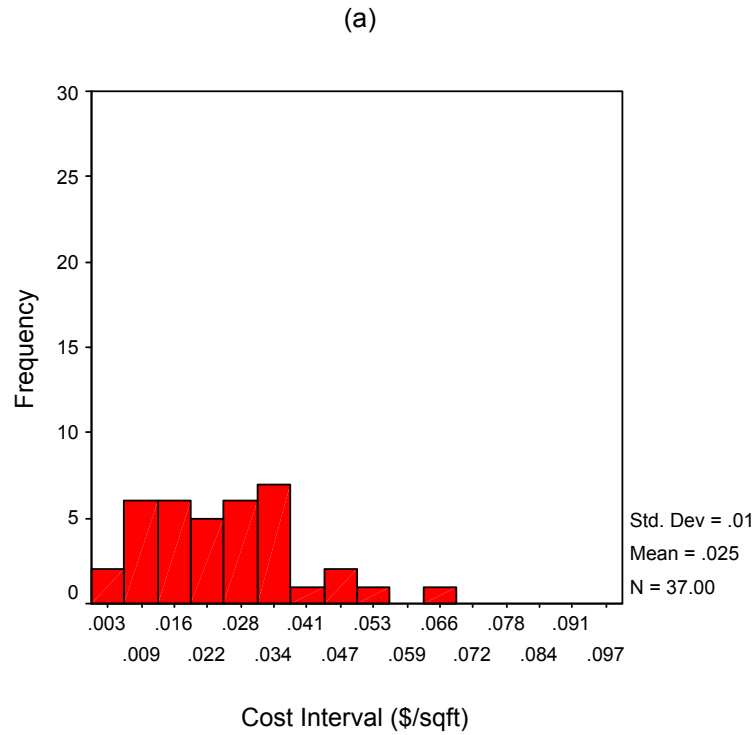
(a)



(b)

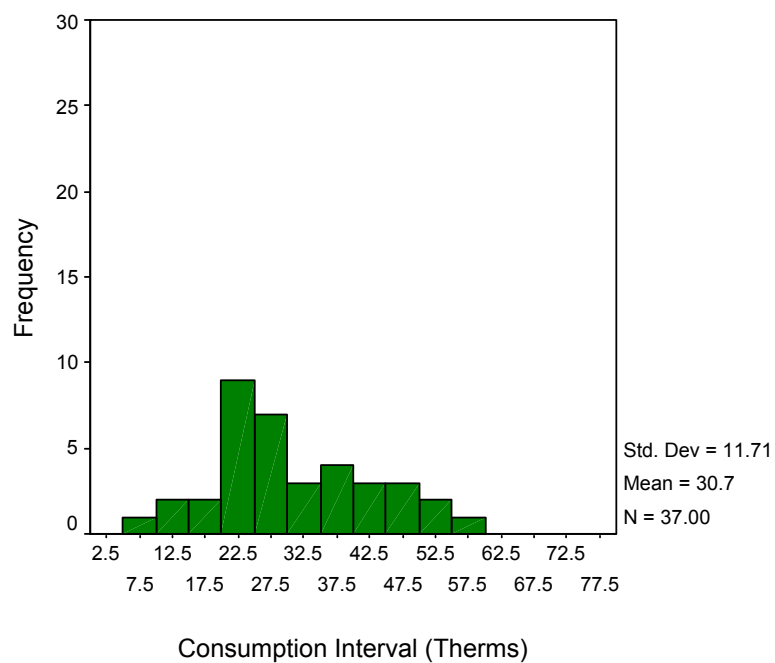


**Figure R-5. Frequency Distribution of Average Monthly Electricity Cost/ft<sup>2</sup>, Including Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) PV Homes and (b) SEE Homes.**

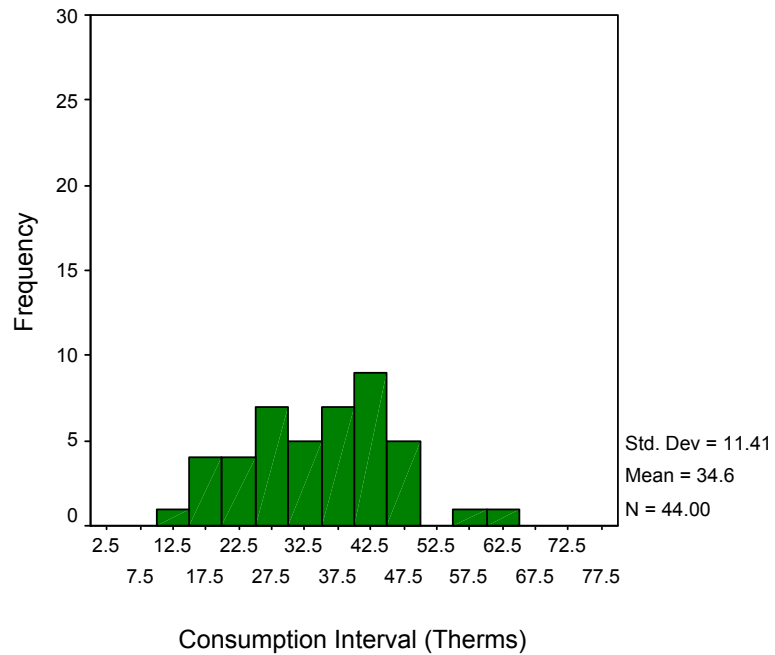


**Figure R-6. Frequency Distribution of Average Monthly Electricity Cost/ft<sup>2</sup>, Excluding Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) PV Homes and (b) SEE Homes.**

(a)

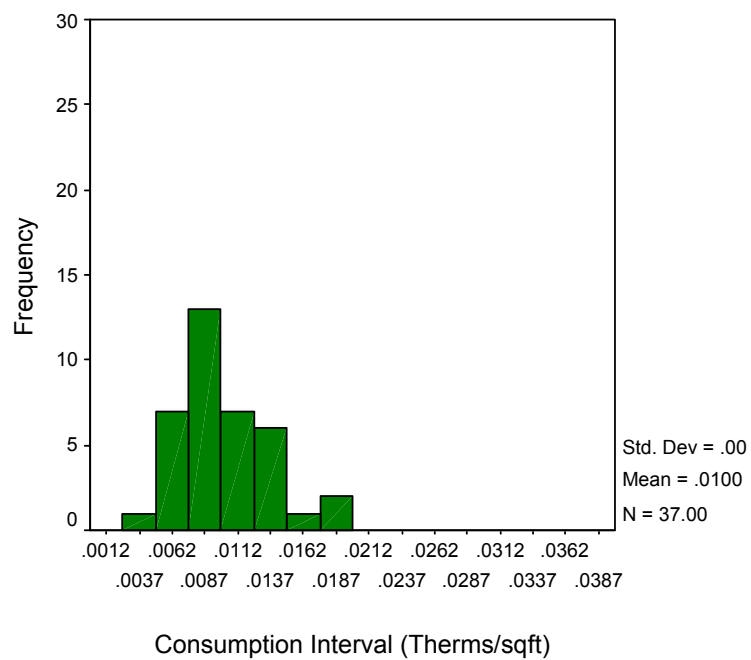


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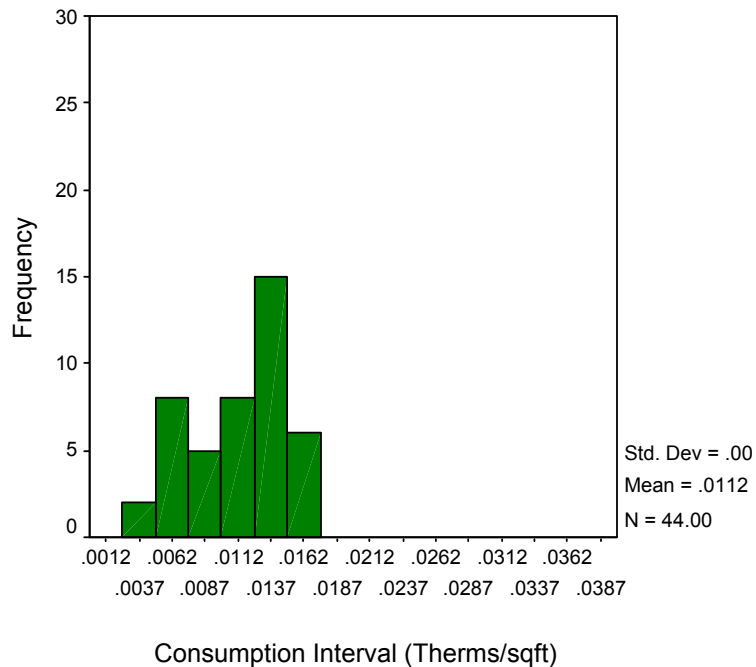


**Figure R-7. Frequency Distribution of Average Monthly Gas Consumption, July 2003-June 2004, for (a) PV Homes and (b) SEE Homes.**

(a)

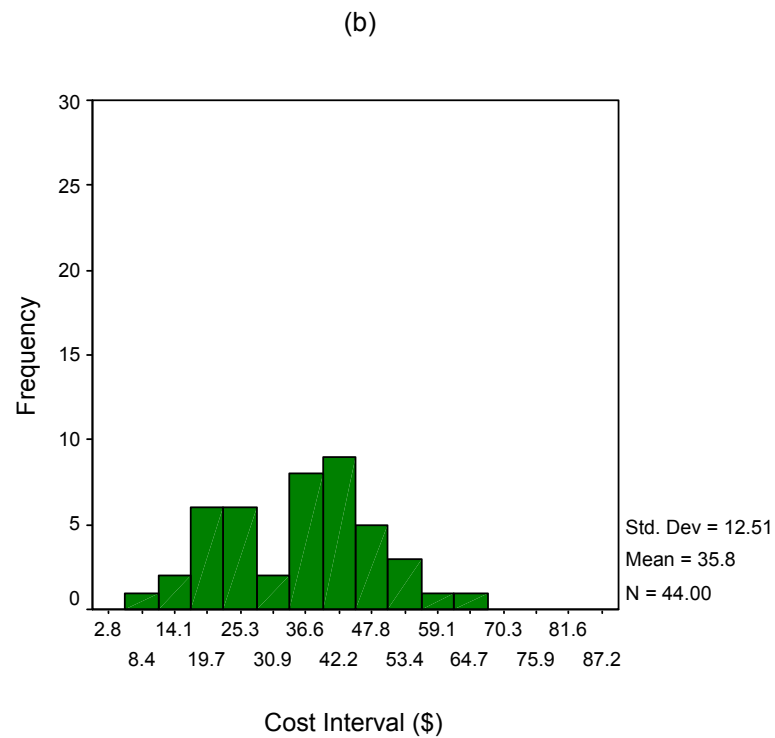
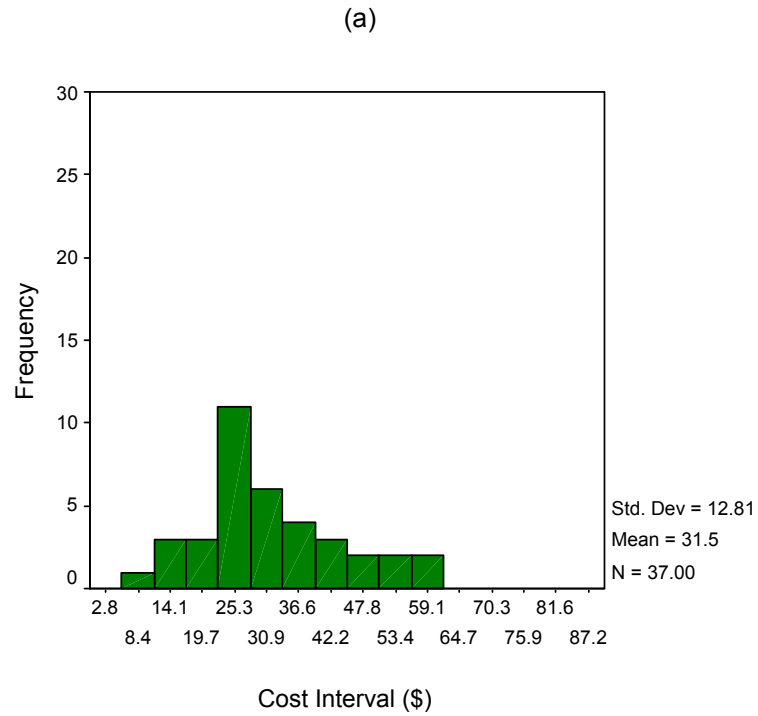


(b)

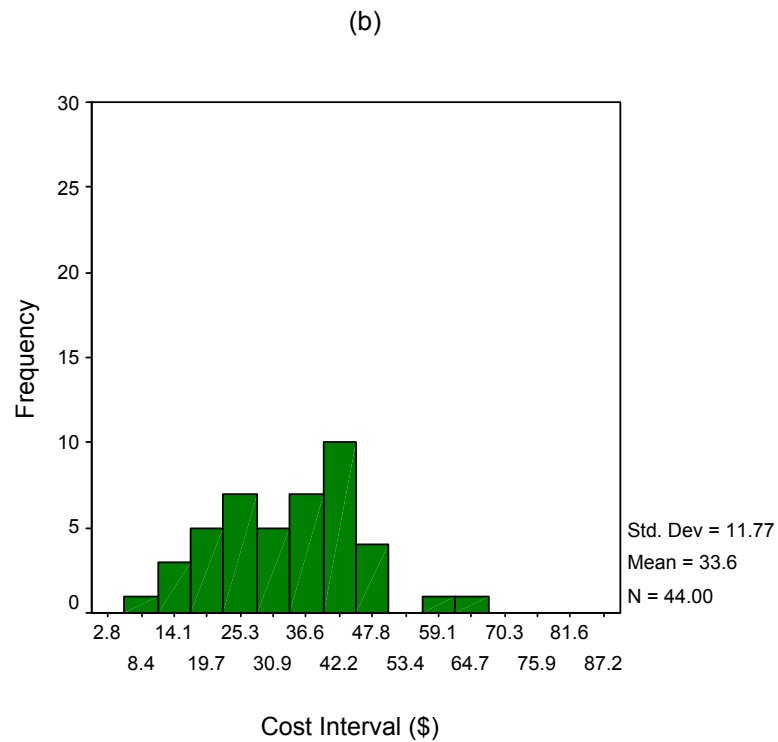
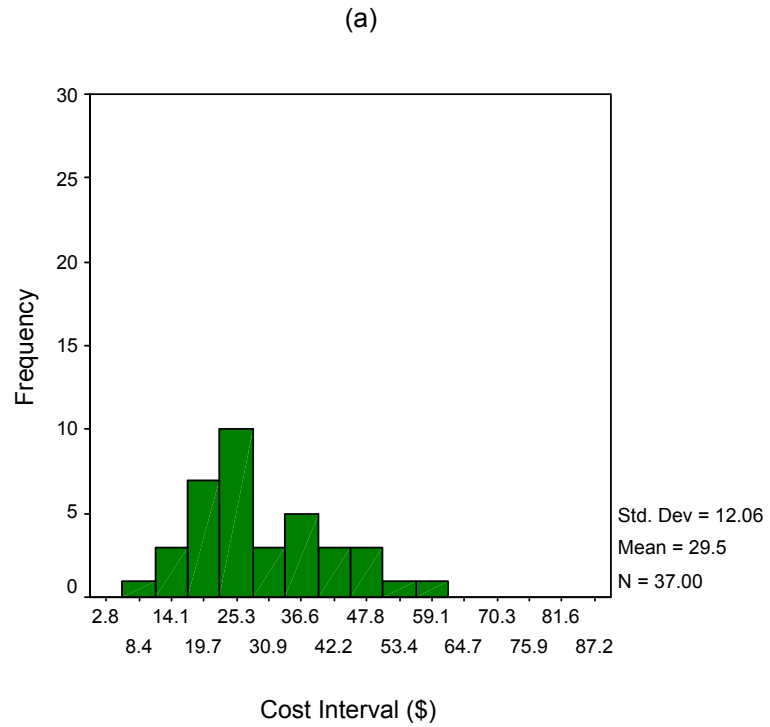


**Figure R-8. Frequency Distribution of Average Monthly Gas Consumption/ft<sup>2</sup>, July 2003-June 2004, for (a) PV Homes and (b) SEE Homes.**

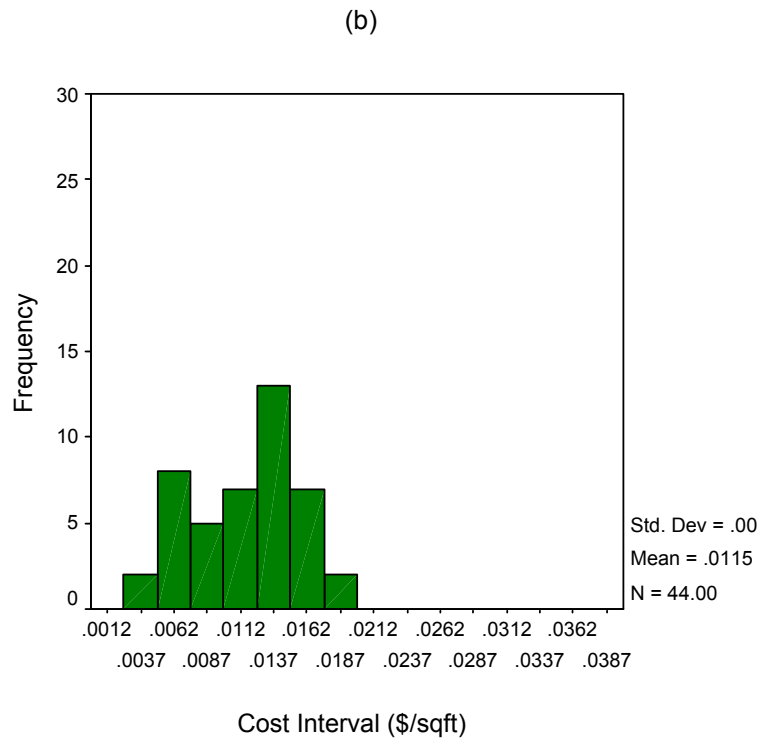
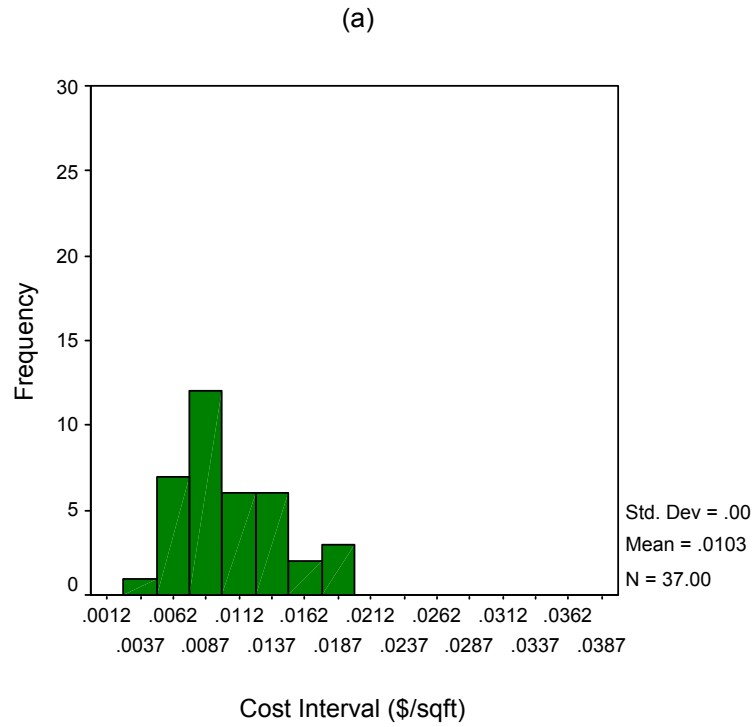




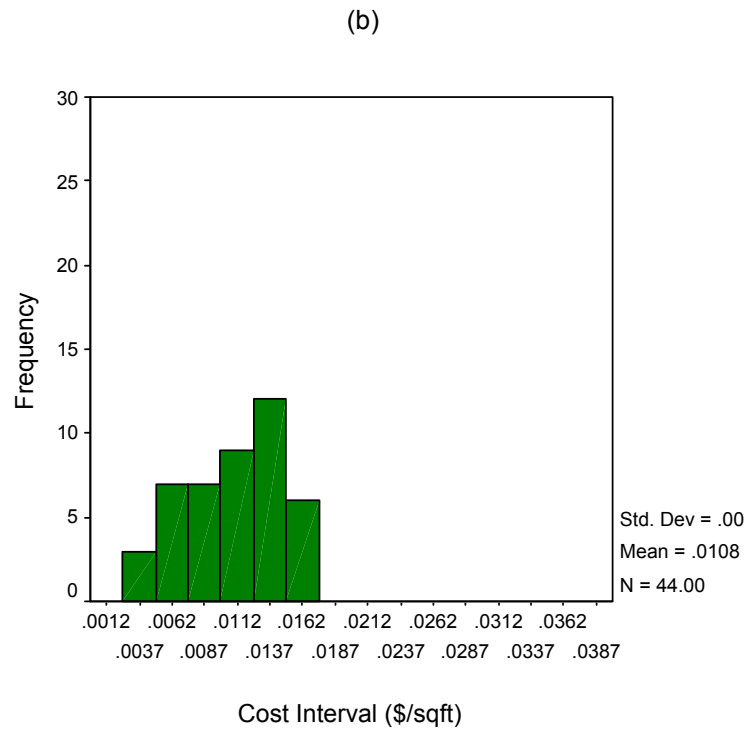
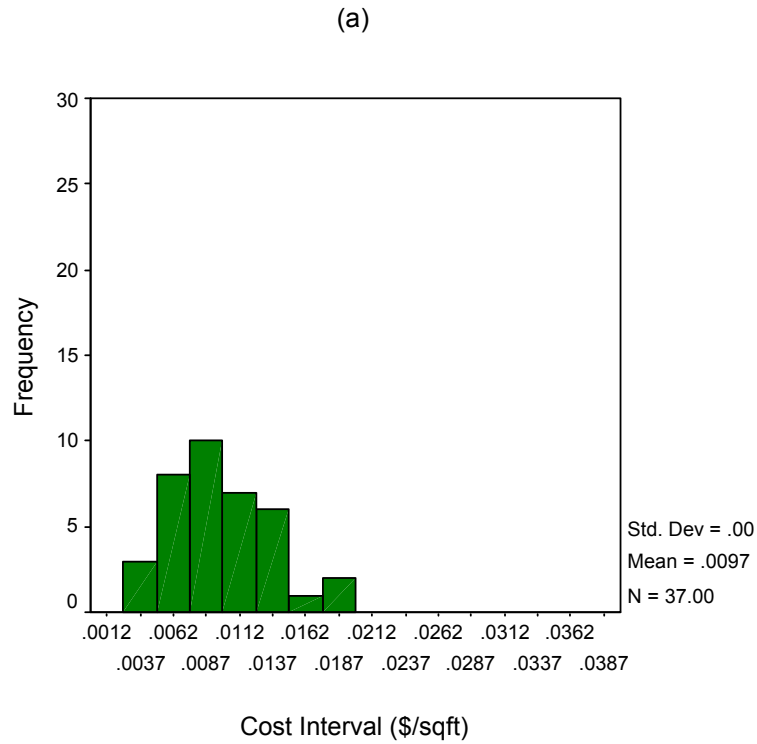
**Figure R-9. Frequency Distribution of Average Monthly Gas Cost, Including Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) PV Homes and (b) SEE Homes.**



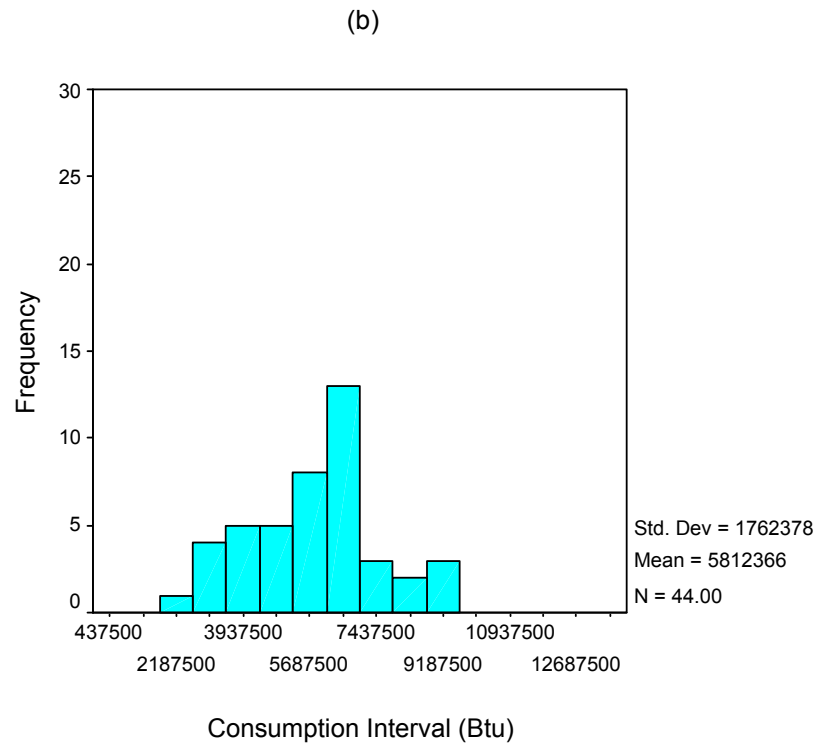
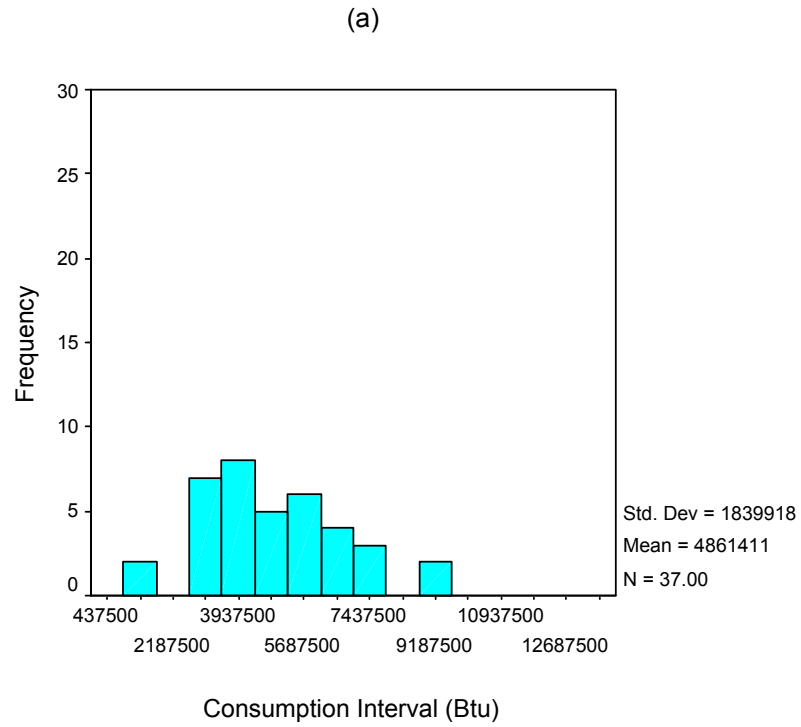
**Figure R-10. Frequency Distribution of Average Monthly Gas Cost, Excluding Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) PV Homes and (b) SEE Homes.**



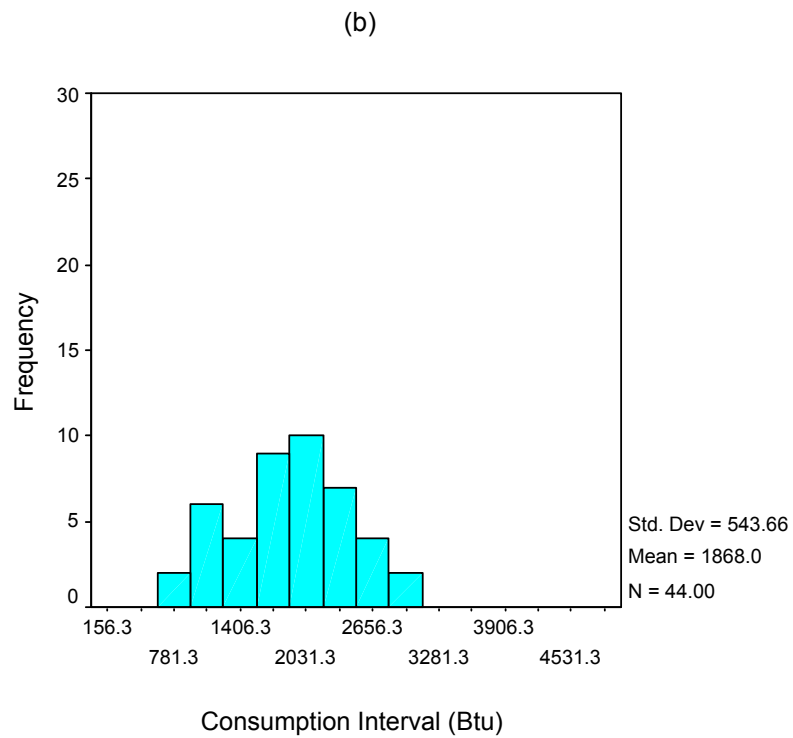
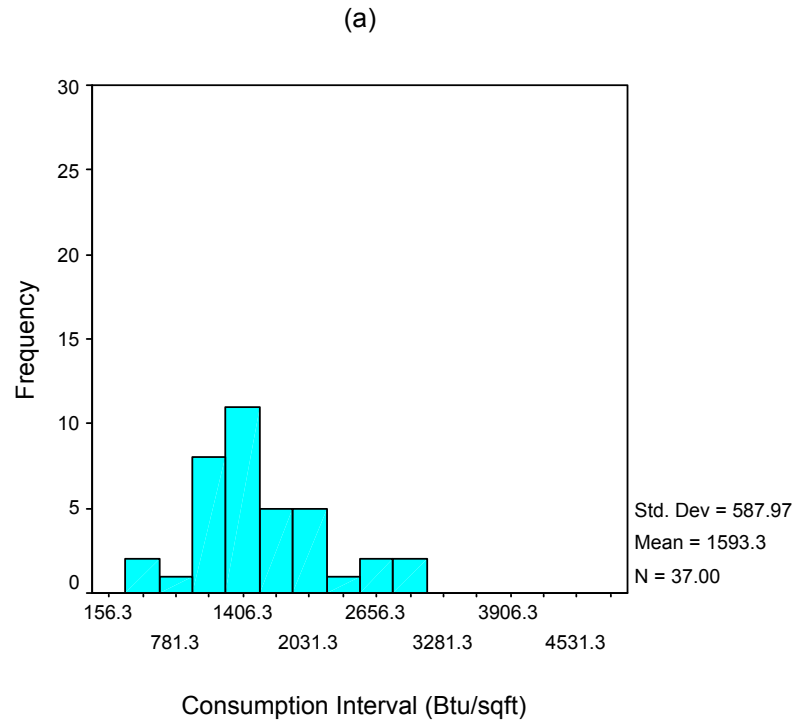
**Figure R-11. Frequency Distribution of Average Monthly Gas Cost/ft<sup>2</sup>, Including Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) PV Homes and (b) SEE Homes.**



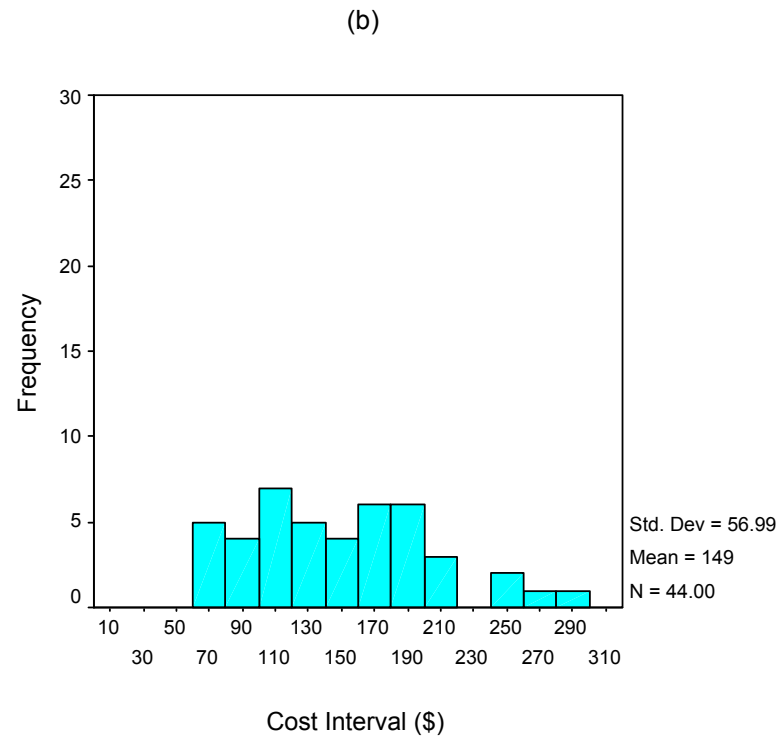
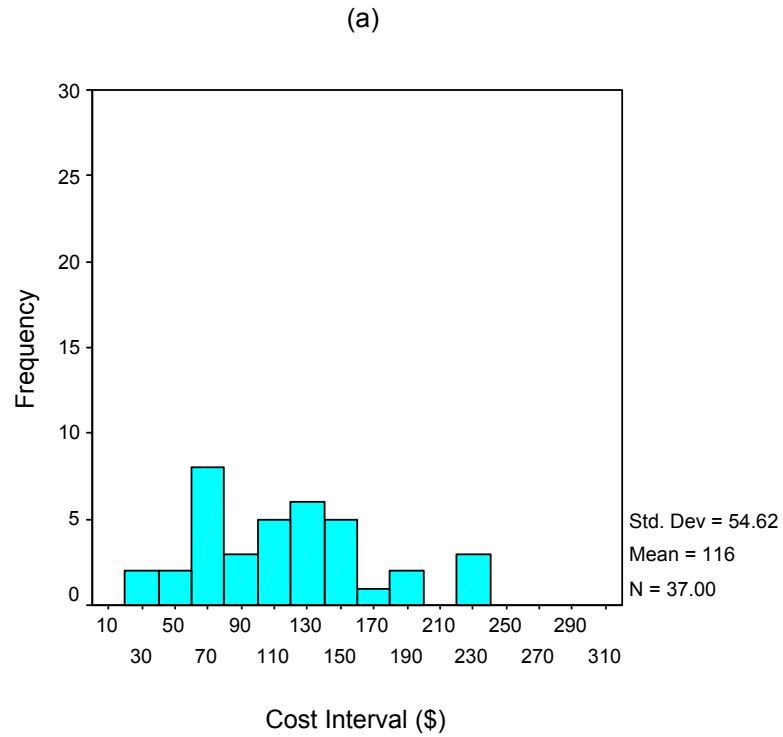
**Figure R-12. Frequency Distribution of Average Monthly Gas Cost/ft<sup>2</sup>, Excluding Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) PV Homes and (b) SEE Homes.**



**Figure R-13. Frequency Distribution of Average Monthly Combined Energy Consumption, July 2003-June 2004, for (a) PV Homes and (b) SEE Homes.**

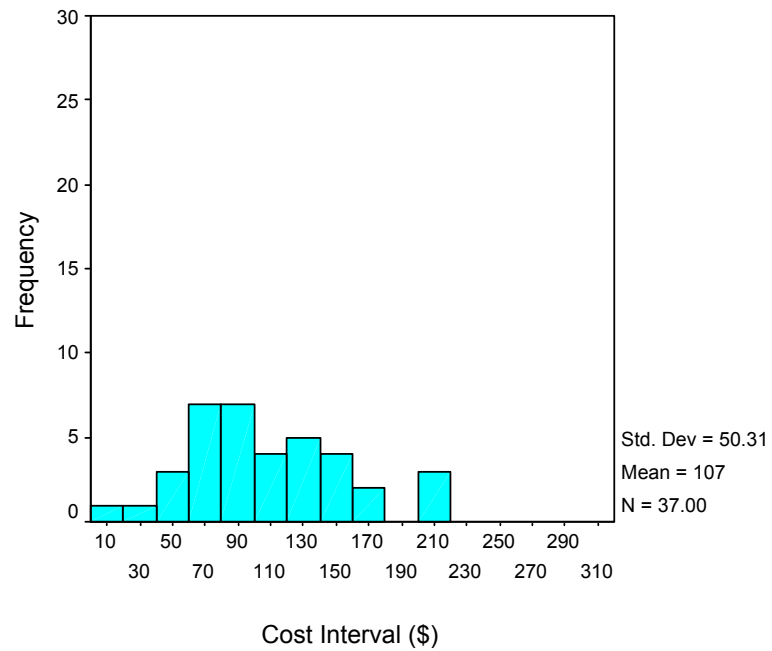


**Figure R-14. Frequency Distribution of Average Monthly Combined Energy Consumption/ft<sup>2</sup>, July 2003-June 2004, for (a) PV Homes and (b) SEE Homes.**

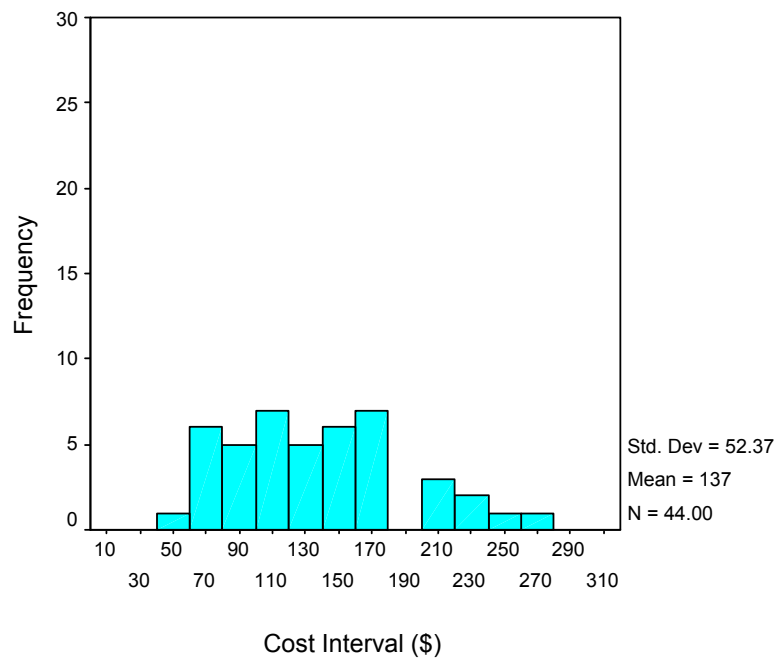


**Figure R-15. Frequency Distribution of Average Monthly Combined Utility Bill, Including Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) PV Homes and (b) SEE Homes.**

(a)

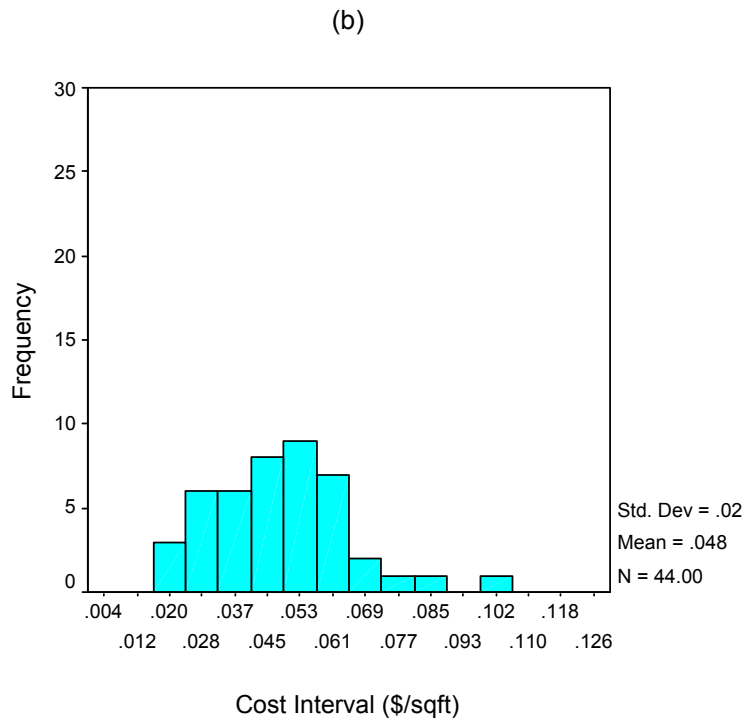
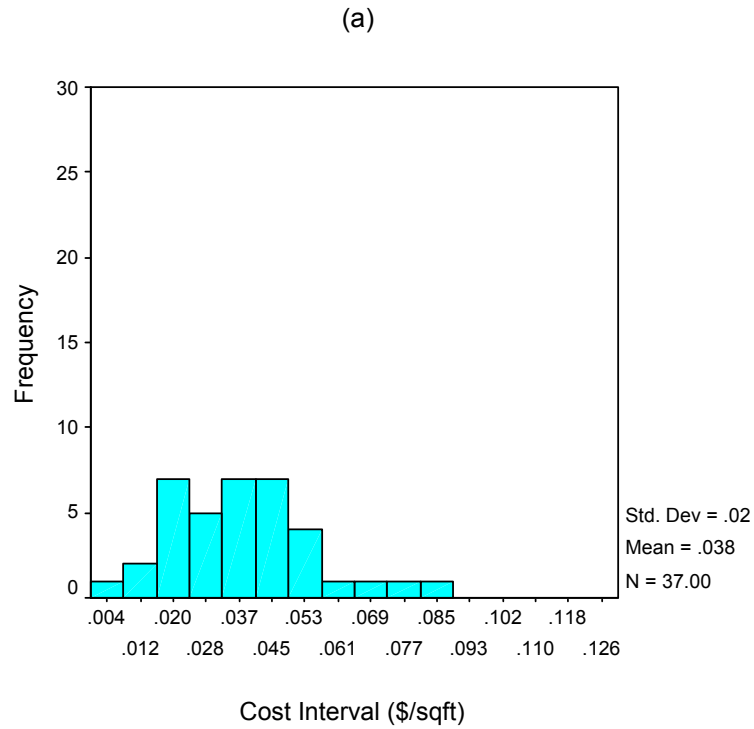


(b)



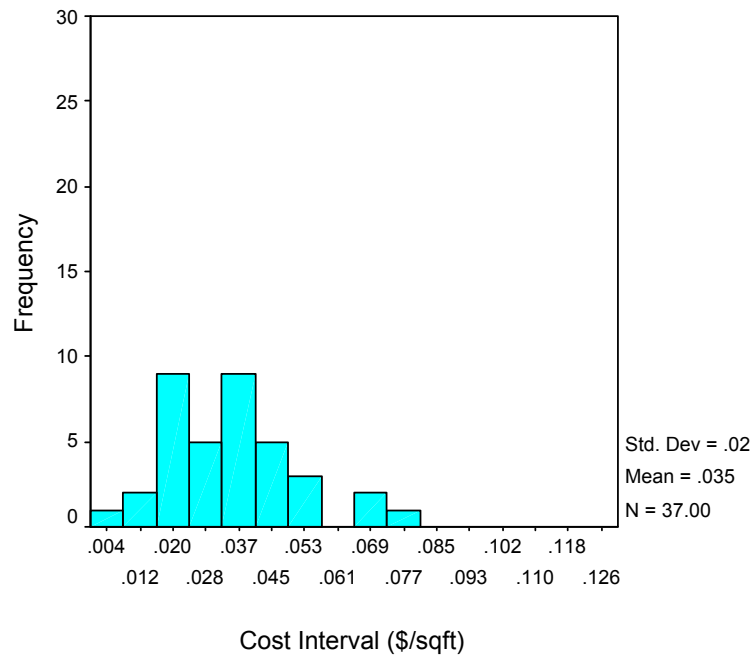
**Figure R-16. Frequency Distribution of Average Monthly Combined Utility Bill, Excluding Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) PV Homes and (b) SEE Homes.**



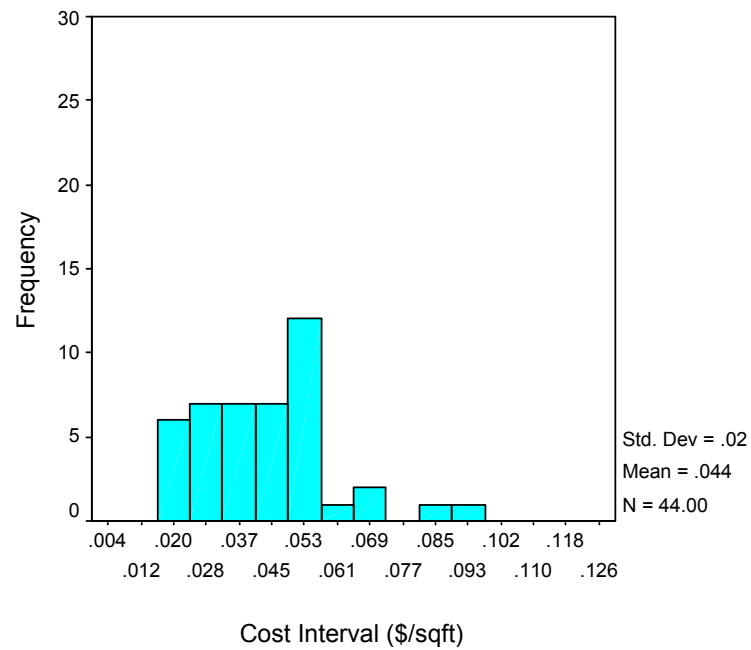


**Figure R-17. Frequency Distribution of Average Monthly Combined Utility Bill/ft<sup>2</sup>, Including Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) PV Homes and (b) SEE Homes.**

(a)



(b)

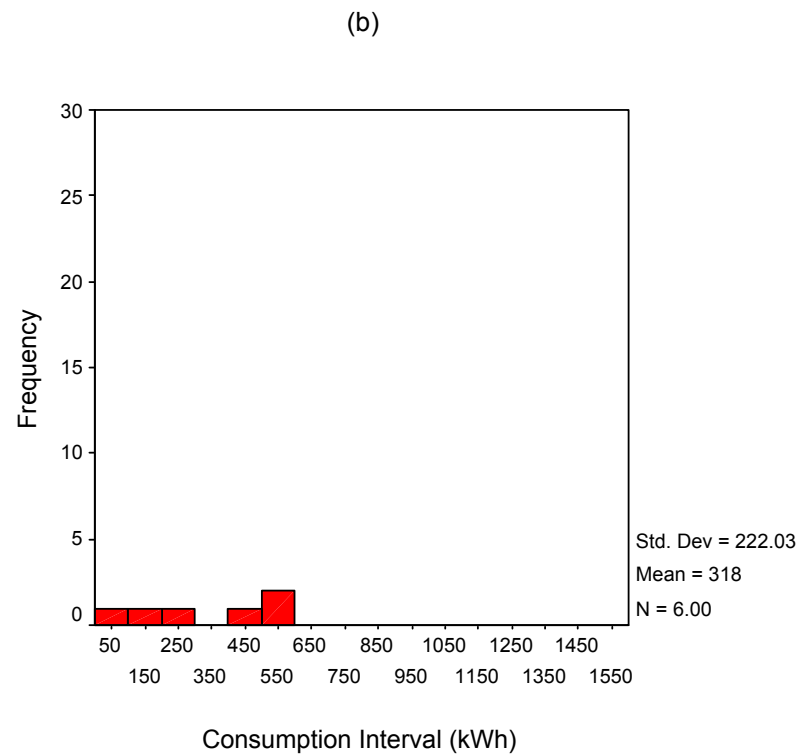
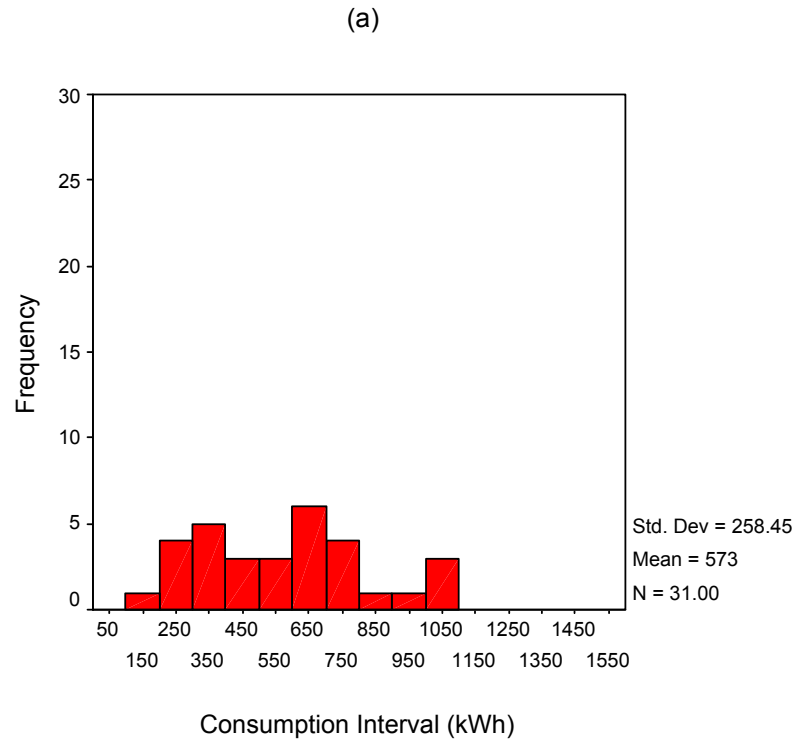


**Figure R-18. Frequency Distribution of Average Monthly Combined Utility Bill/ft<sup>2</sup>, Excluding Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) PV Homes and (b) SEE Homes.**

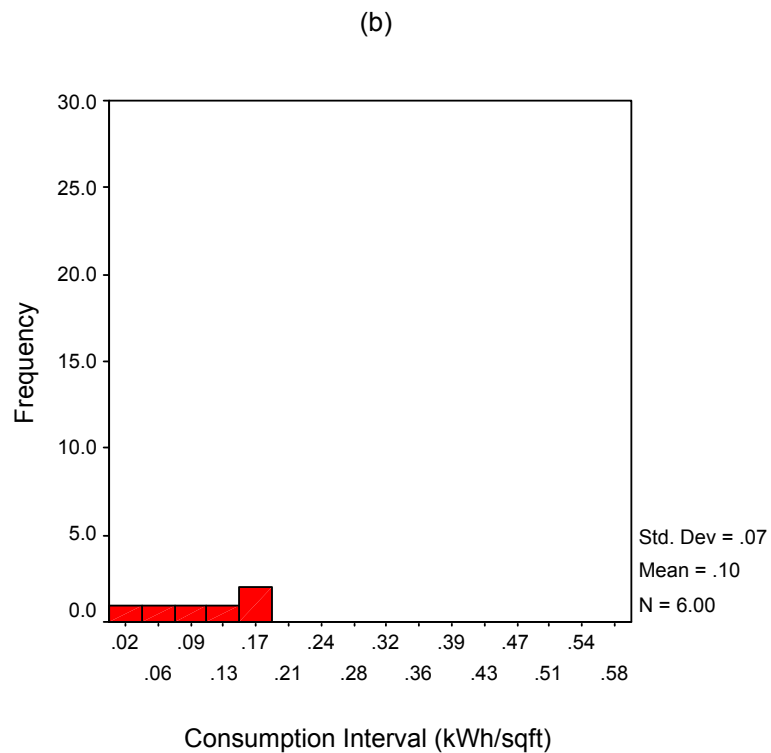
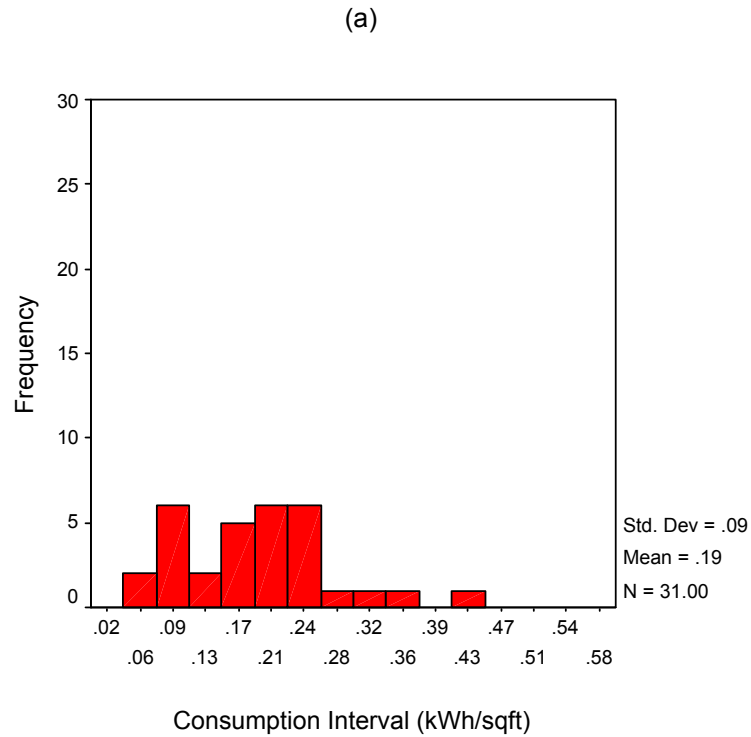
## **Appendix S**

**Descriptive Statistics on Total and Average Electricity Consumption  
and Total and Average Gas Consumption with and without Selected  
Equipment, by Categories of Homes (12-Month Data)**

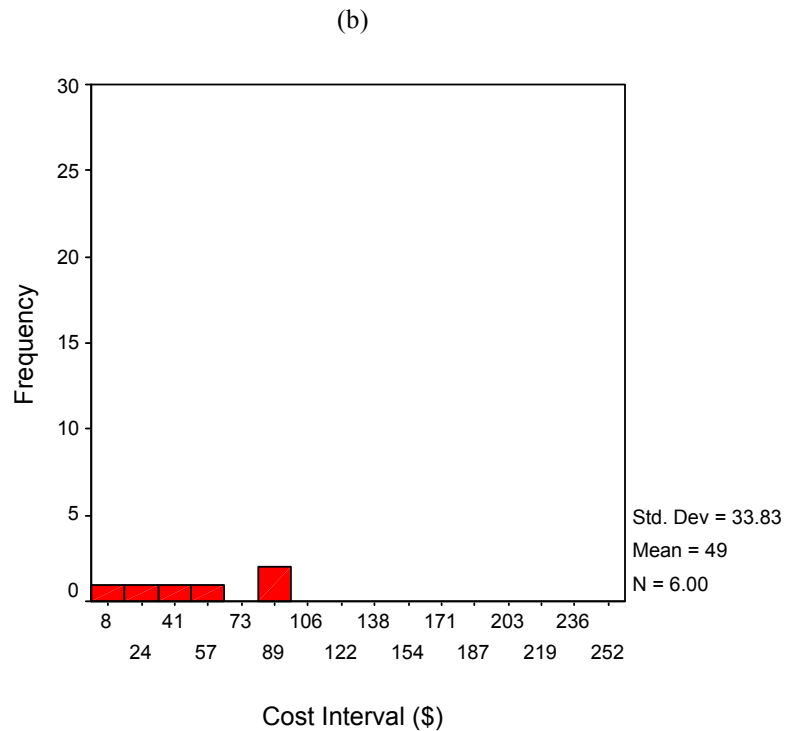
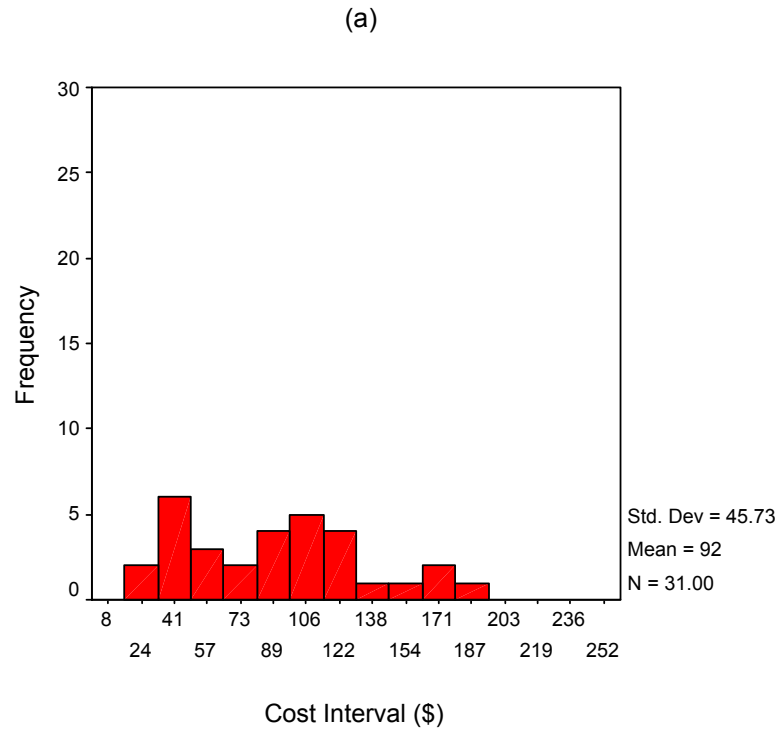
*Cited in Chapter 20*



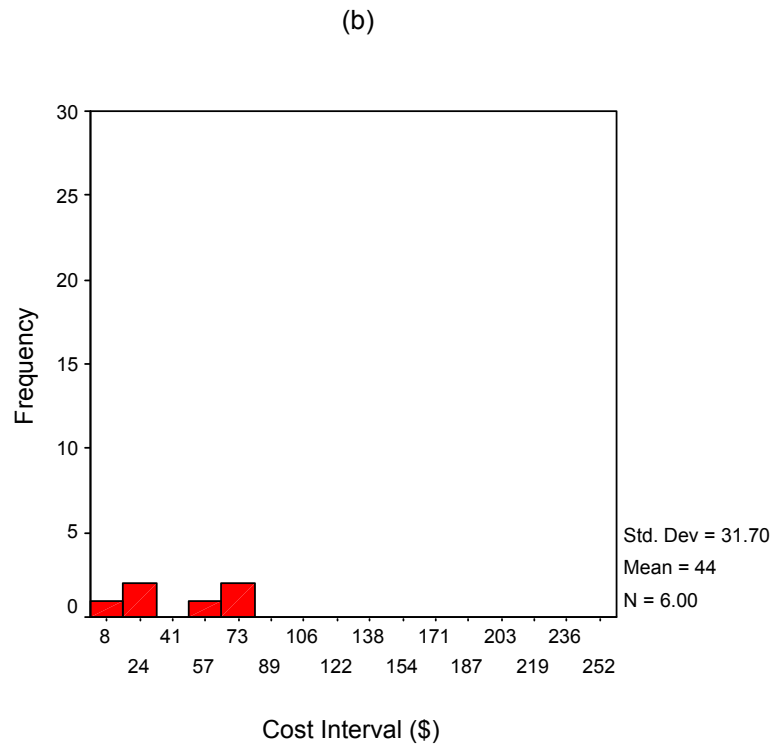
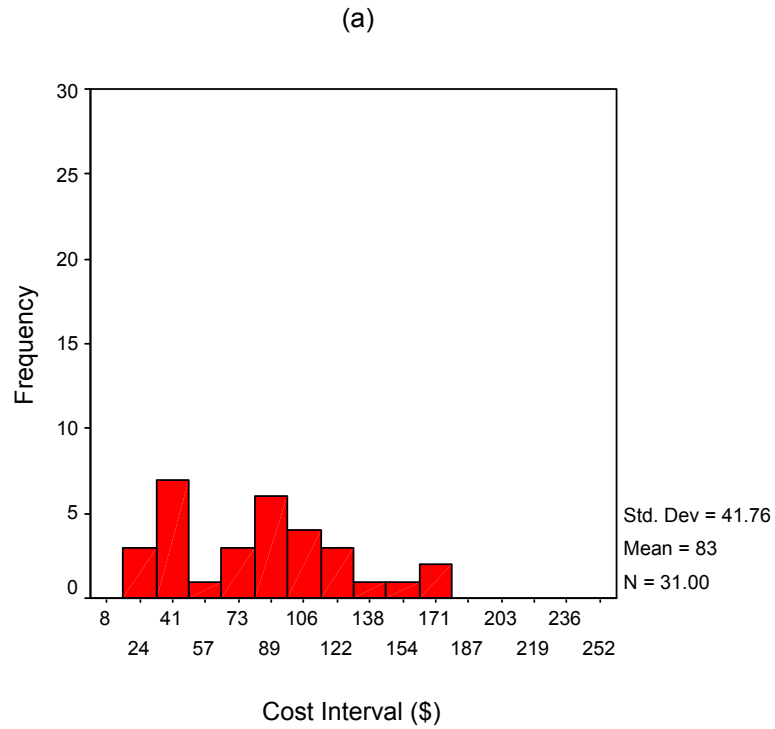
**Figure S-1. Frequency Distribution of Average Monthly Electricity Consumption, July 2003-June 2004, for (a) PV Homes with 1.2-kW Systems and (b) PV Homes with 2.4-kW Systems.**



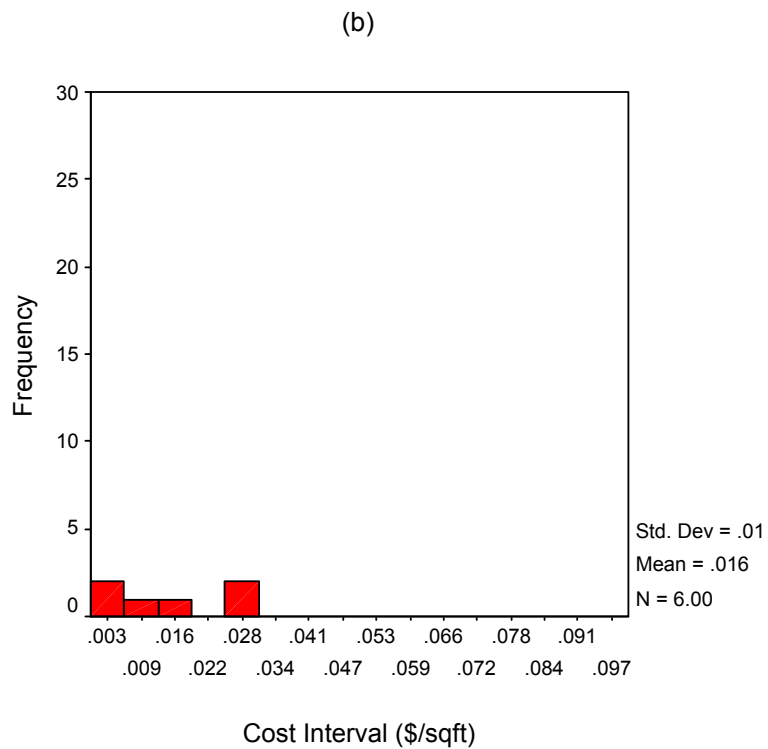
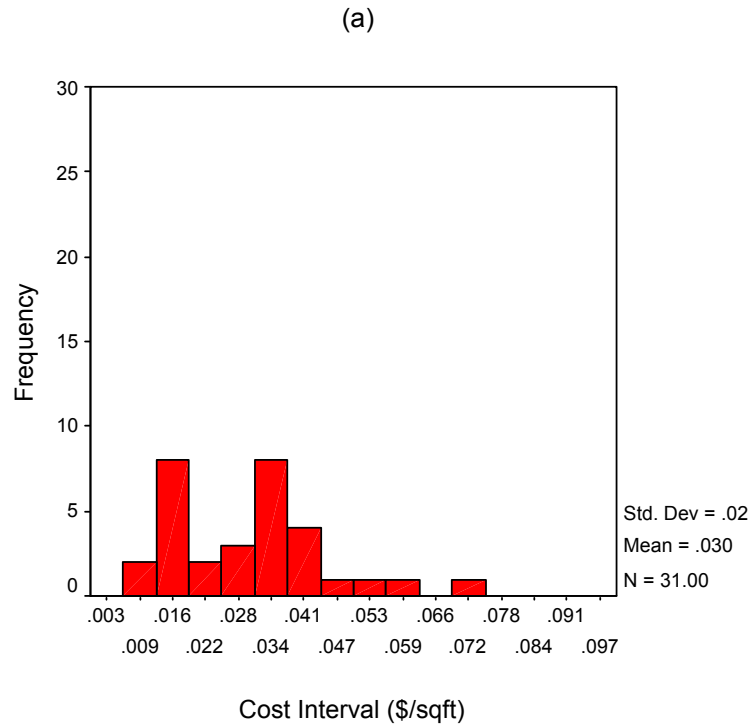
**Figure S-2. Frequency Distribution of Average Monthly Electricity Consumption/ft<sup>2</sup>, July 2003-June 2004, for (a) PV Homes with 1.2-kW Systems and (b) PV Homes with 2.4-kW Systems.**



**Figure S-3. Frequency Distribution of Average Monthly Electricity Cost, Including Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) PV Homes with 1.2-kW Systems and (b) PV Homes with 2.4-kW Systems.**

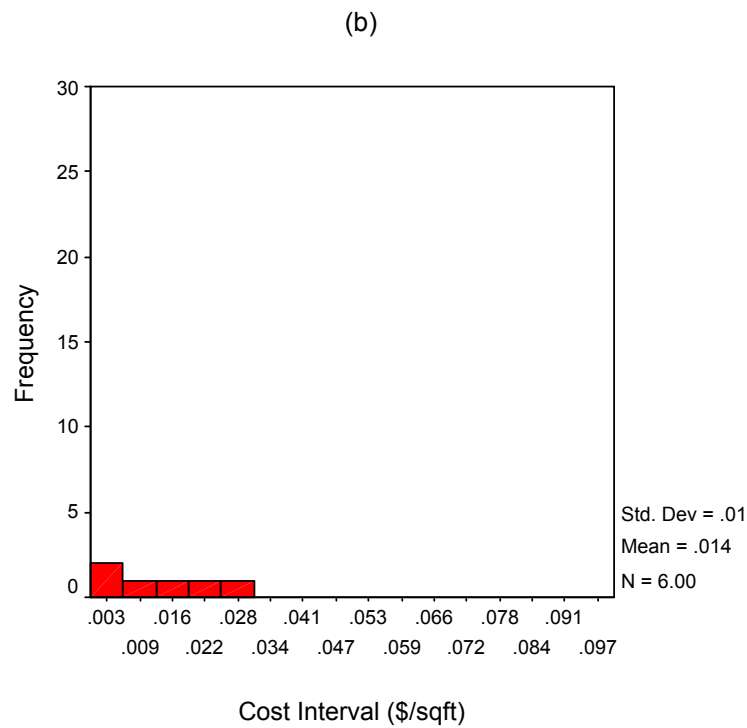
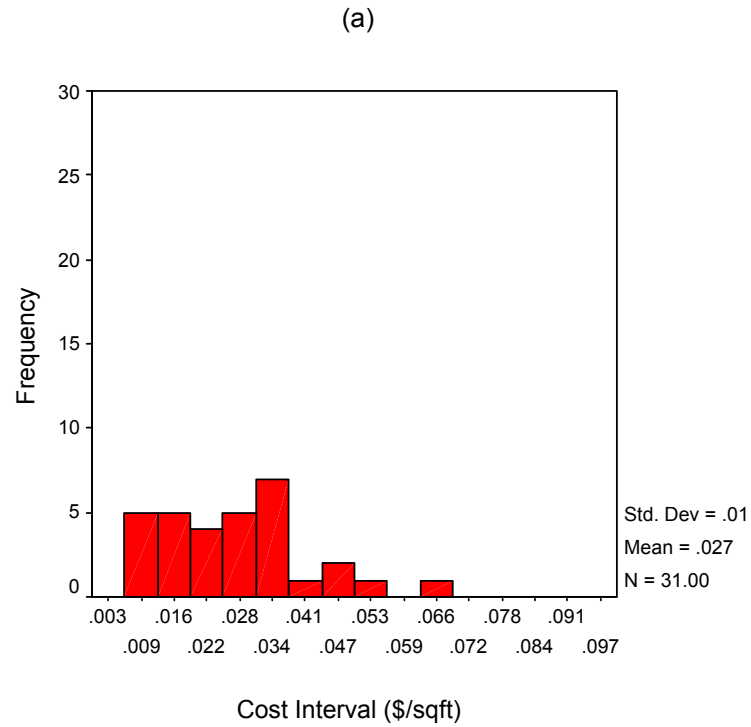


**Figure S-4. Frequency Distribution of Average Monthly Electricity Cost, Excluding Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) PV Homes with 1.2-kW Systems and (b) PV Homes with 2.4-kW Systems.**

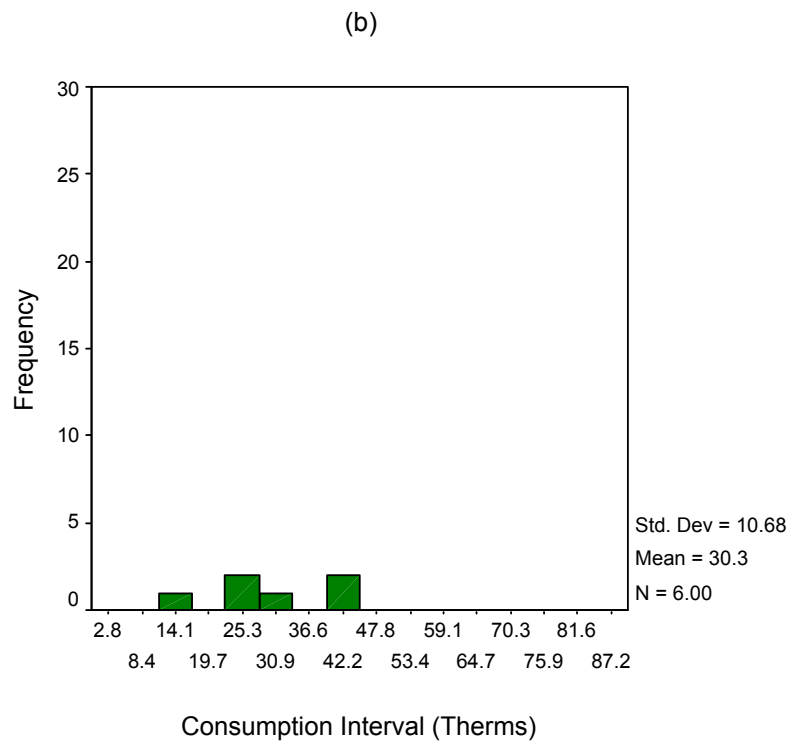
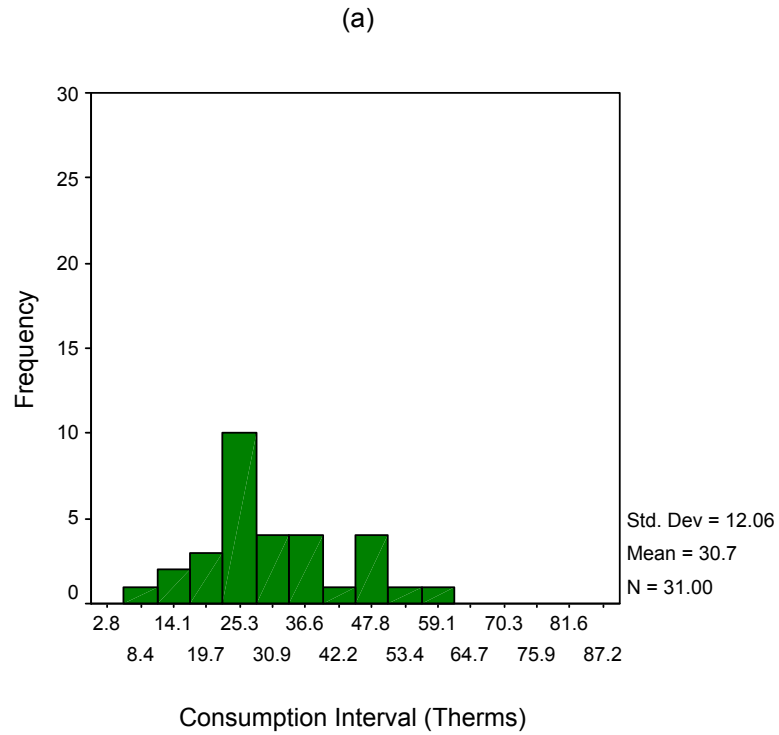


**Figure S-5. Frequency Distribution of Average Monthly Electricity Cost/ft<sup>2</sup>, Including Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) PV Homes with 1.2-kW Systems and (b) PV Homes with 2.4-kW Systems.**

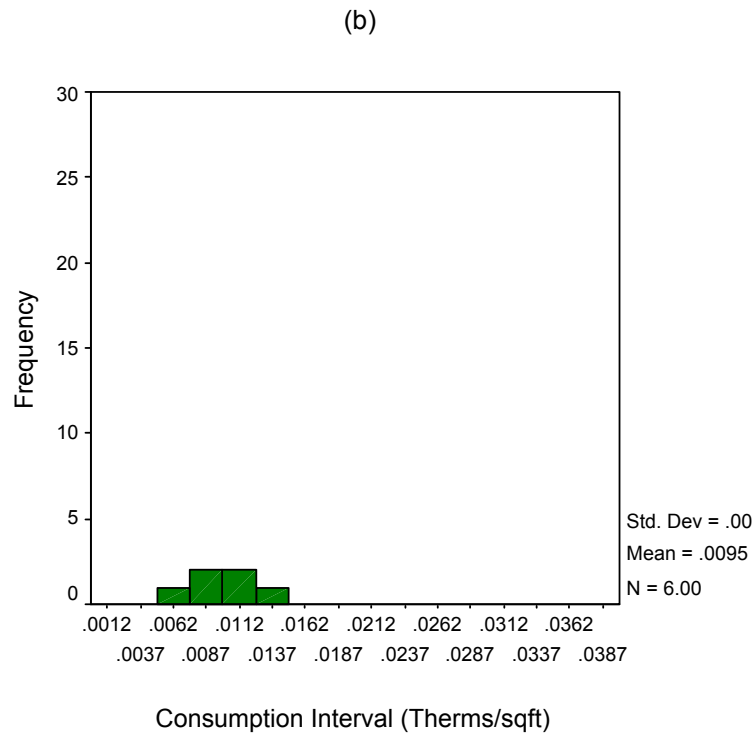
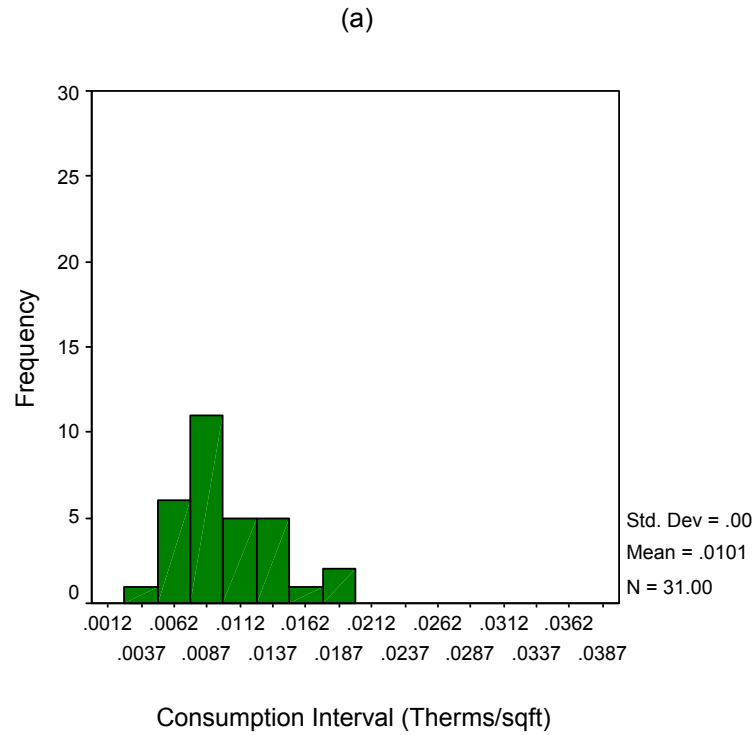




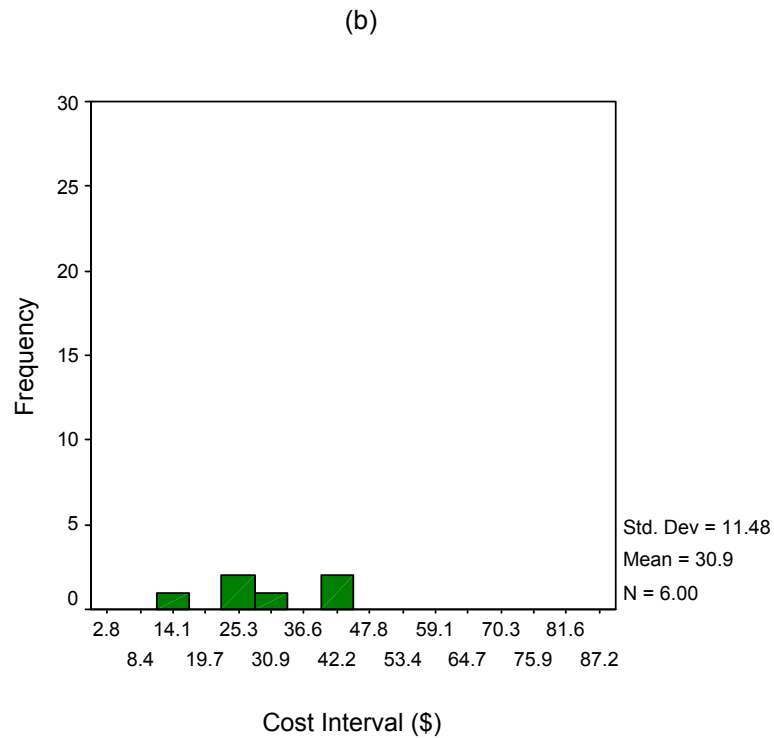
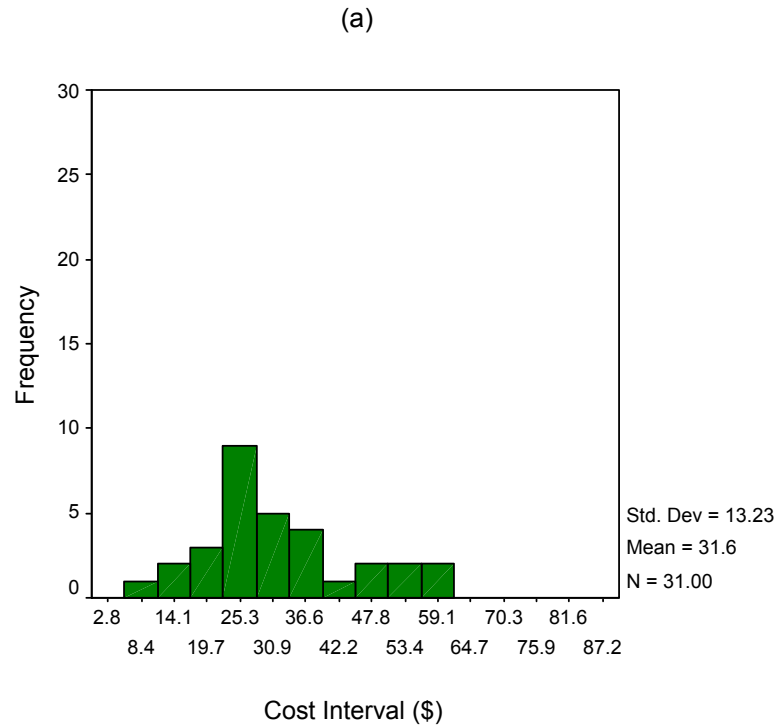
**Figure S-6. Frequency Distribution of Average Monthly Electricity Cost/ft<sup>2</sup>, Excluding Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) PV Homes with 1.2-kW Systems and (b) PV Homes with 2.4-kW Systems.**



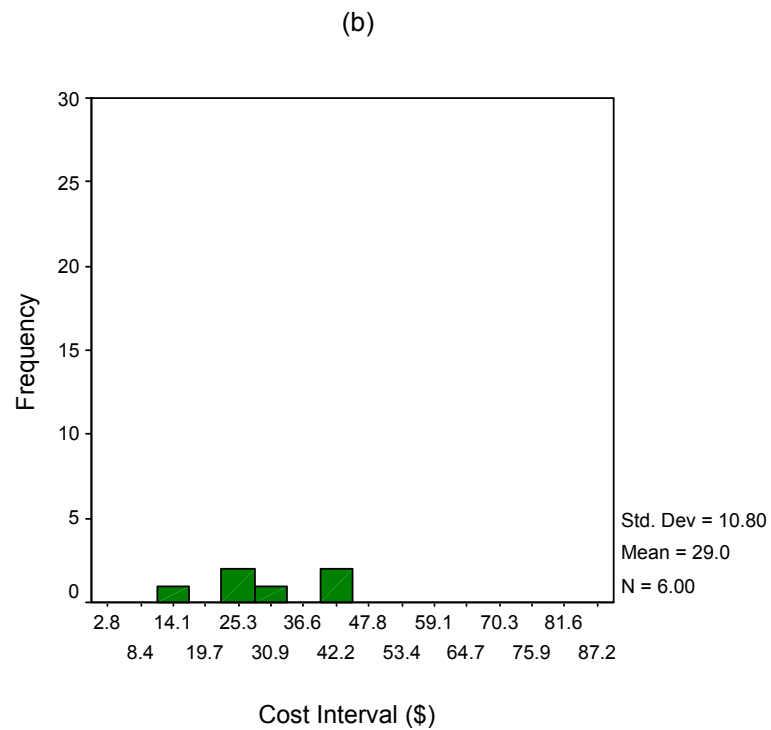
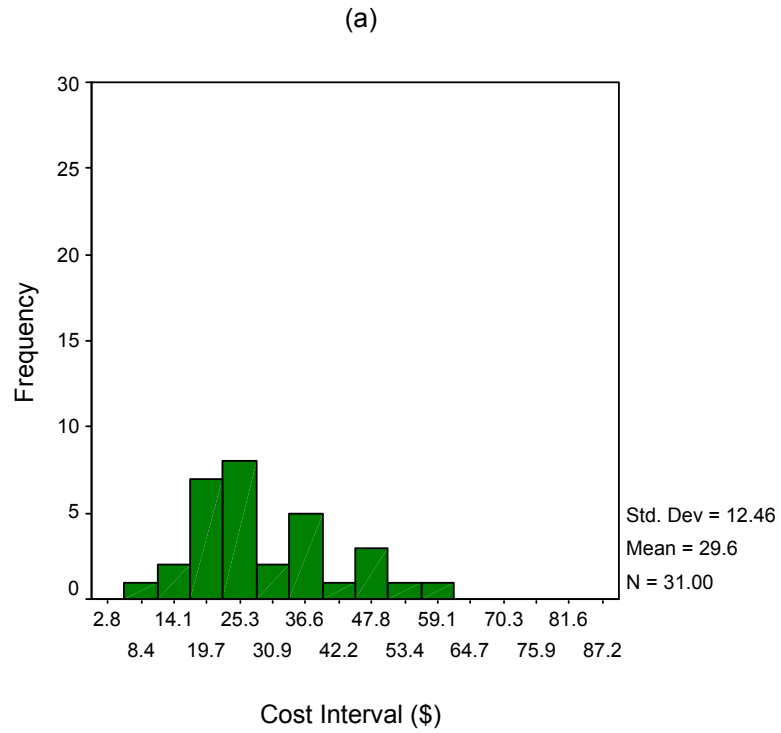
**Figure S-7. Frequency Distribution of Average Monthly Gas Consumption, July 2003-June 2004, for (a) PV Homes with 1.2-kW Systems and (b) PV Homes with 2.4-kW Systems.**



**Figure S-8. Frequency Distribution of Average Monthly Gas Consumption/ft<sup>2</sup>, July 2003-June 2004, for (a) PV Homes with 1.2-kW Systems and (b) PV Homes with 2.4-kW Systems.**

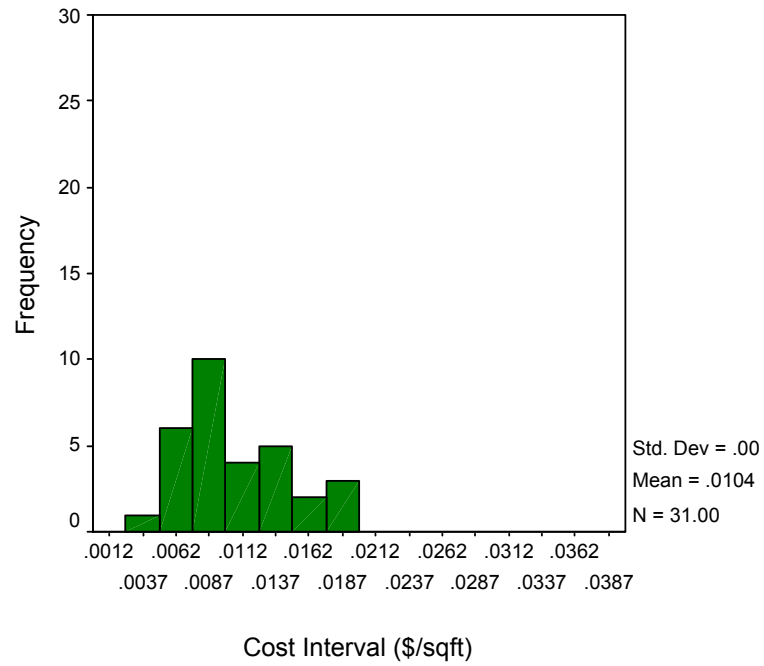


**Figure S-9. Frequency Distribution of Average Monthly Gas Cost, Including Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) PV Homes with 1.2-kW Systems and (b) PV Homes with 2.4-kW Systems.**

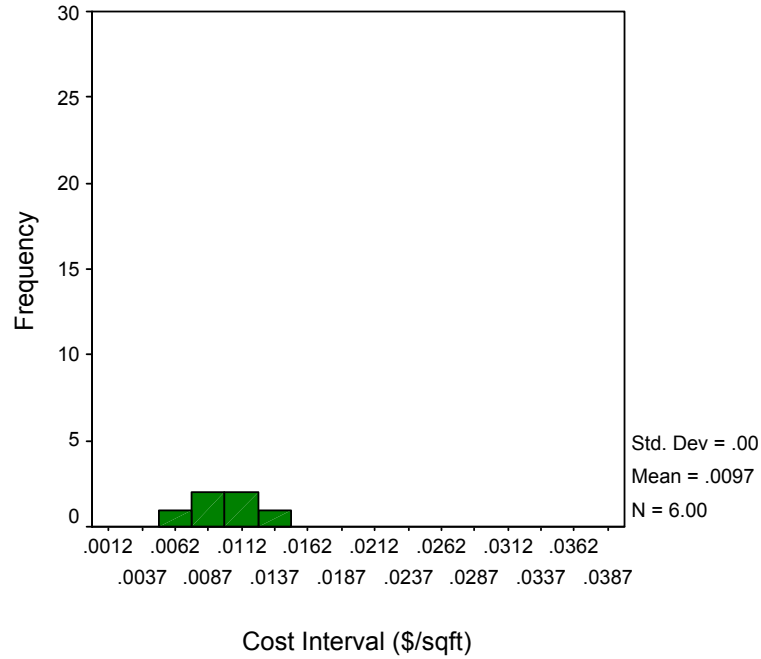


**Figure S-10. Frequency Distribution of Average Monthly Gas Cost, Excluding Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) PV Homes with 1.2-kW Systems and (b) PV Homes with 2.4-kW Systems.**

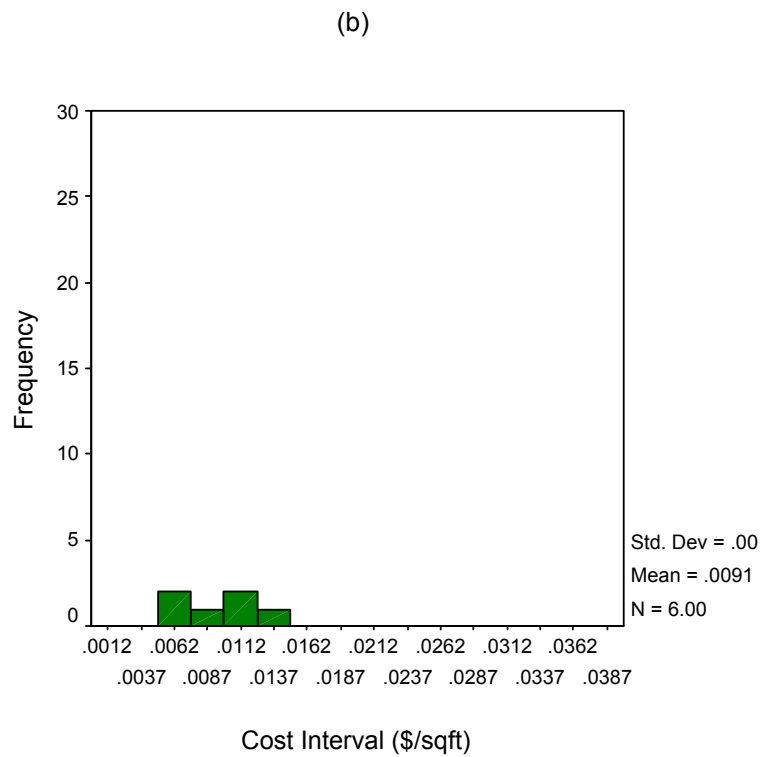
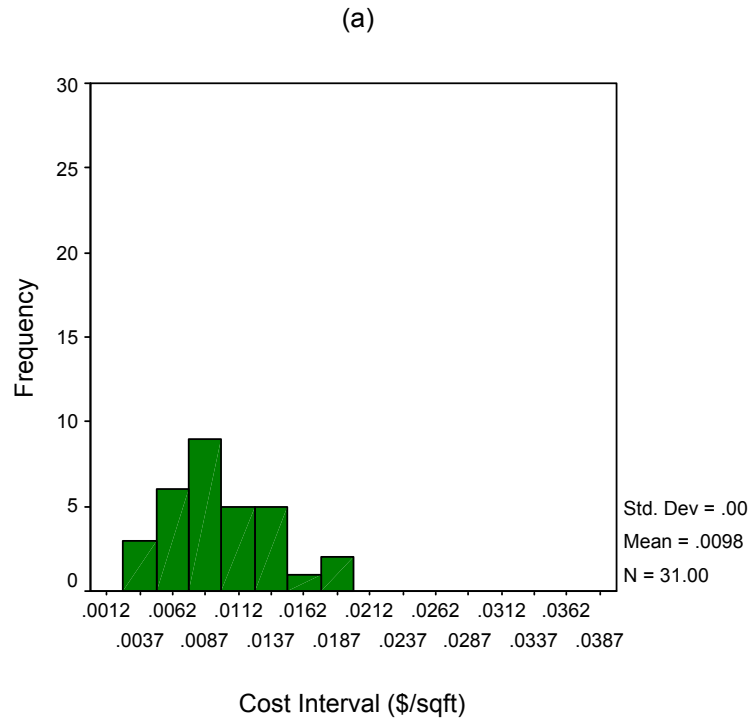
(a)



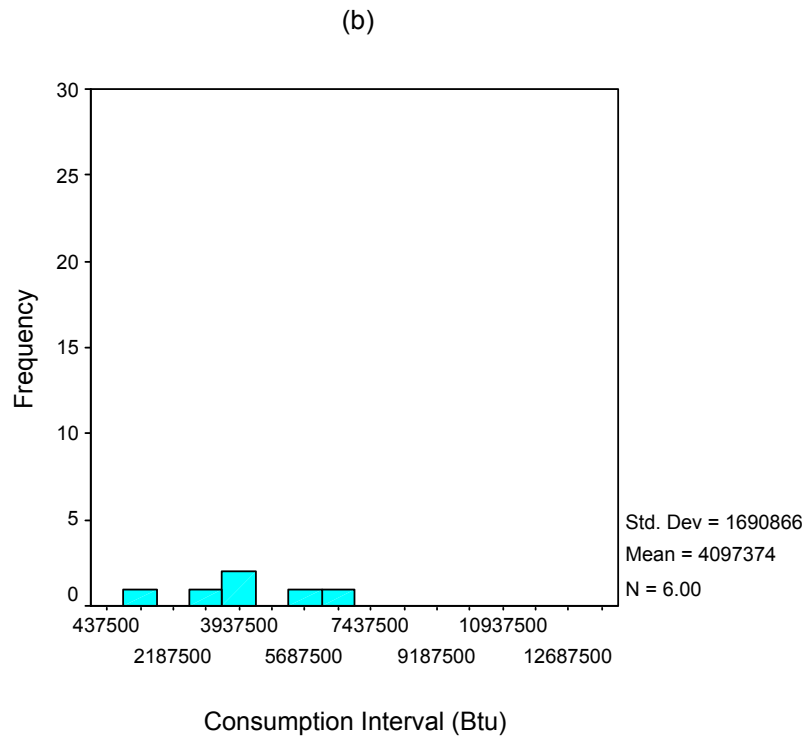
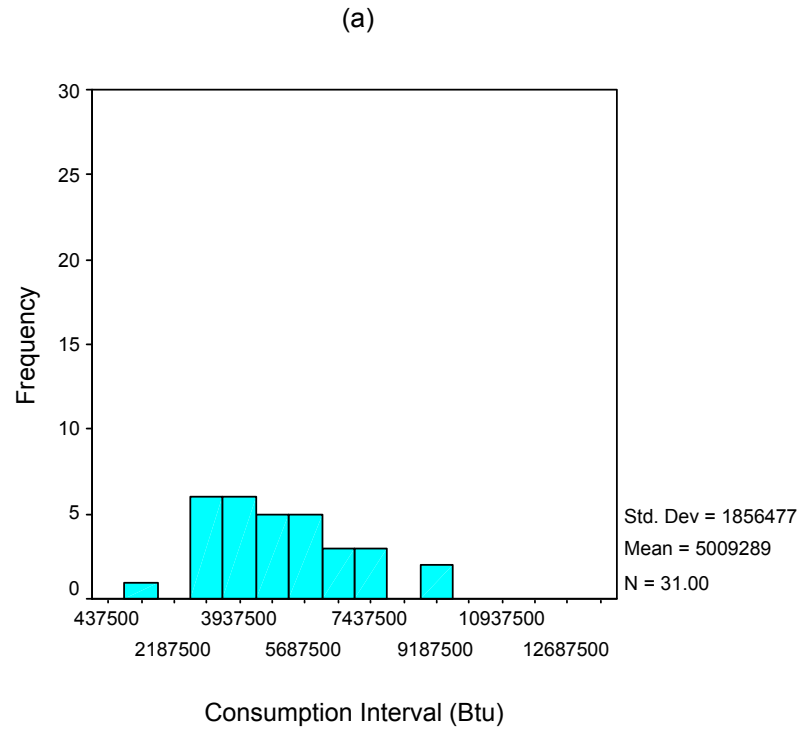
(b)



**Figure S-11. Frequency Distribution of Average Monthly Gas Cost/ft<sup>2</sup>, Including Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) PV Homes with 1.2-kW Systems and (b) PV Homes with 2.4-kW Systems.**

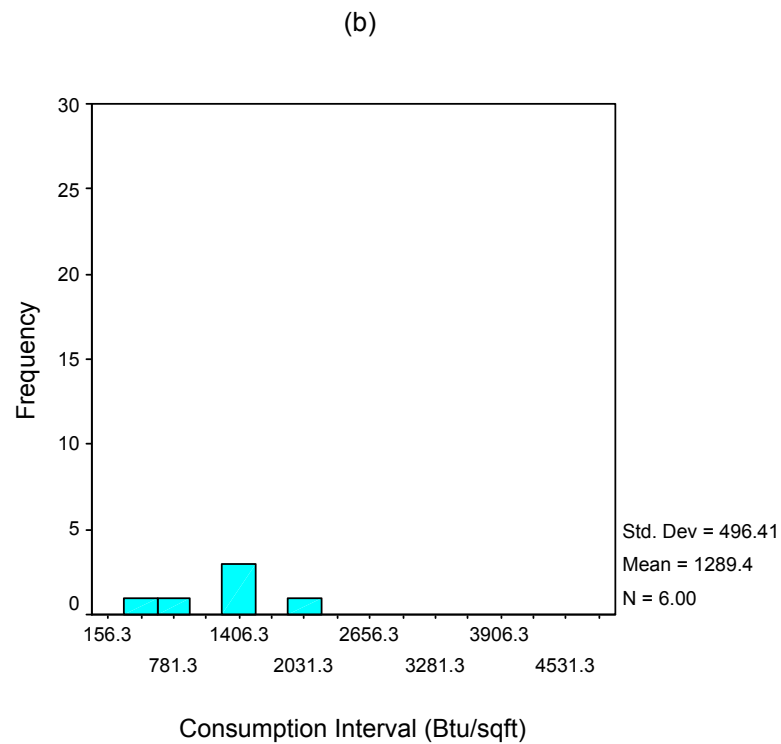
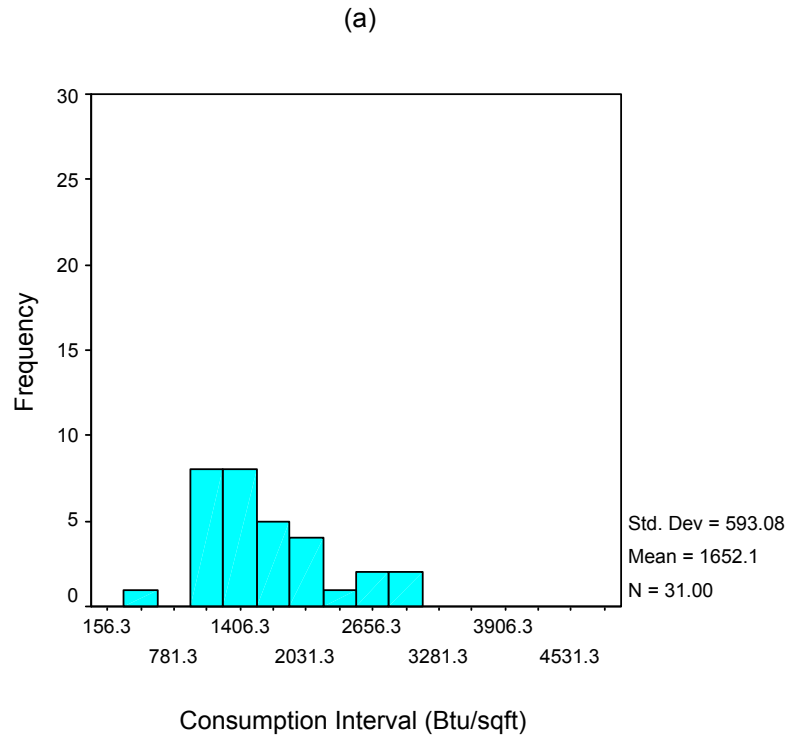


**Figure S-12. Frequency Distribution of Average Monthly Gas Cost/ft<sup>2</sup>, Excluding Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) PV Homes with 1.2-kW Systems and (b) PV Homes with 2.4-kW Systems.**



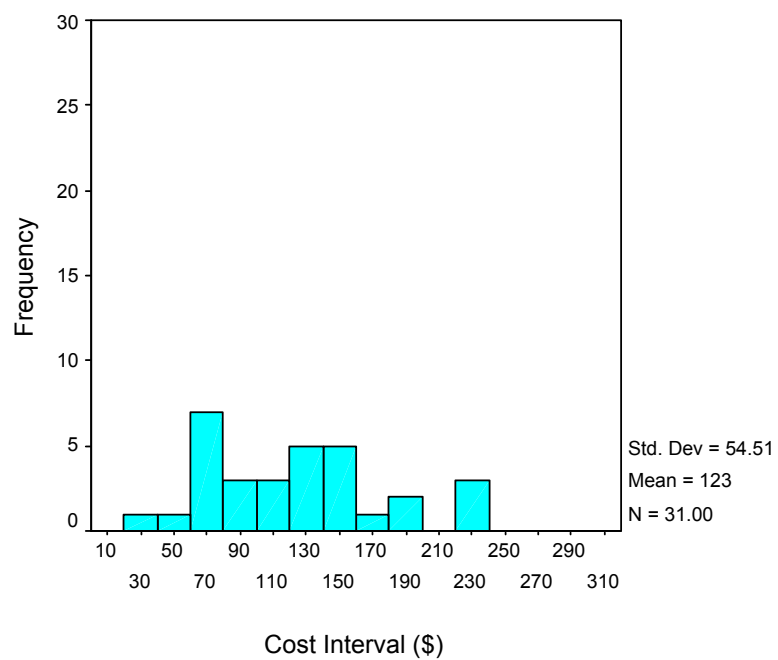
**Figure S-13. Frequency Distribution of Average Monthly Combined Energy Consumption, July 2003-June 2004, for (a) PV Homes with 1.2-kW Systems and (b) PV Homes with 2.4-kW Systems.**



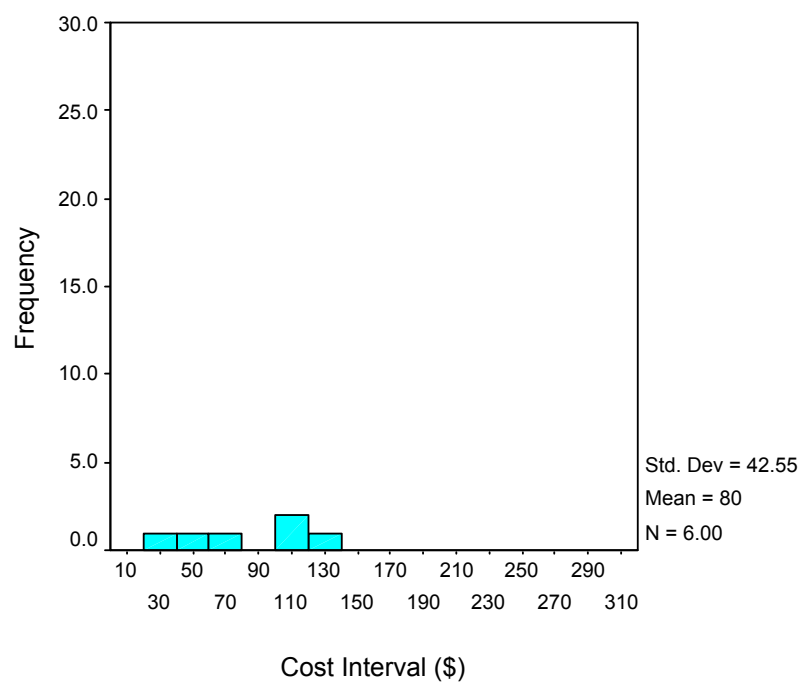


**Figure S-14. Frequency Distribution of Average Monthly Combined Energy Consumption/ft<sup>2</sup>, July 2003-June 2004, for (a) PV Homes with 1.2-kW Systems and (b) PV Homes with 2.4-kW Systems.**

(a)

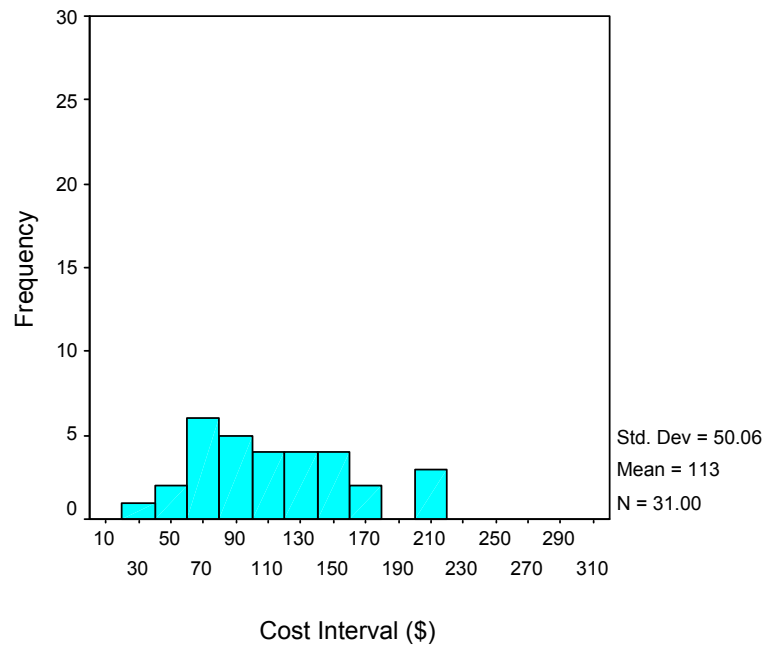


(b)

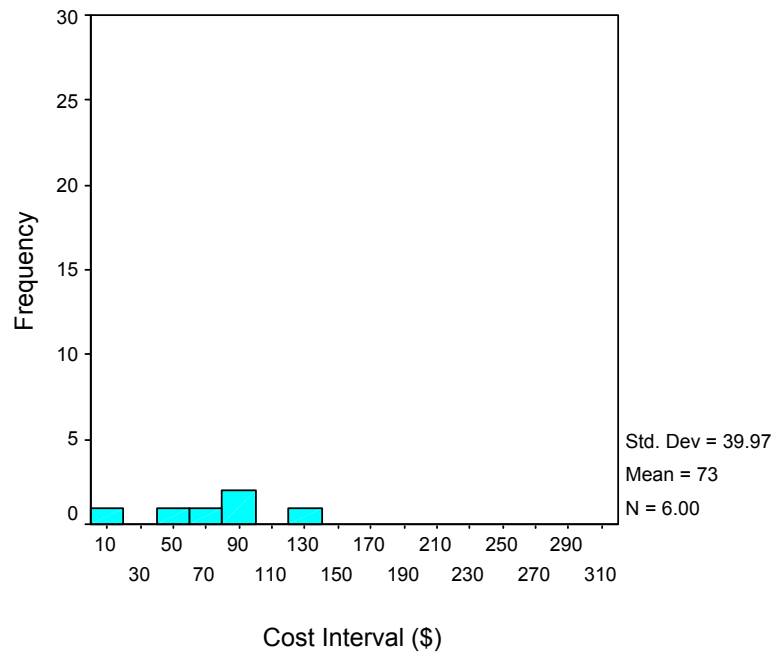


**Figure S-15. Frequency Distribution of Average Monthly Combined Utility Bill, Including Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) PV Homes with 1.2-kW Systems and (b) PV Homes with 2.4-kW Systems.**

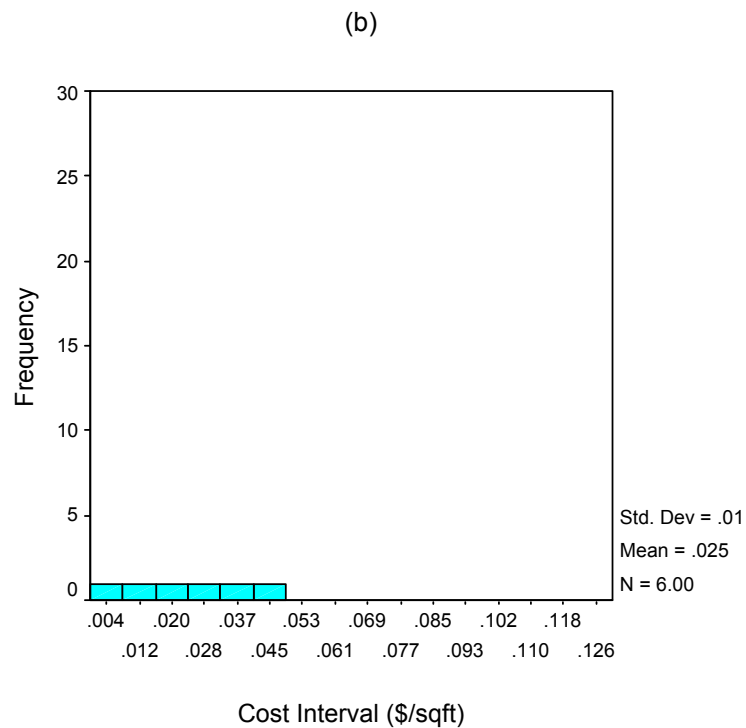
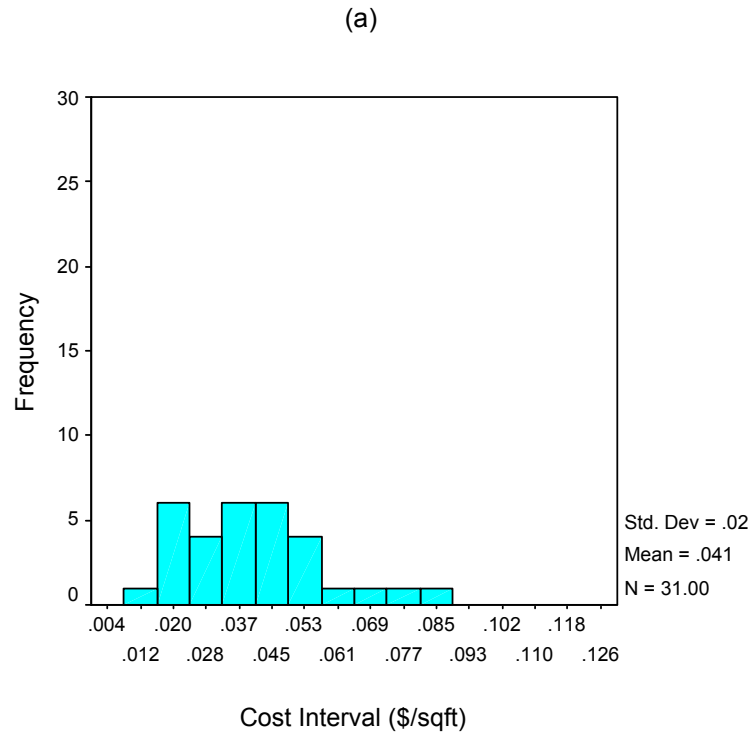
(a)



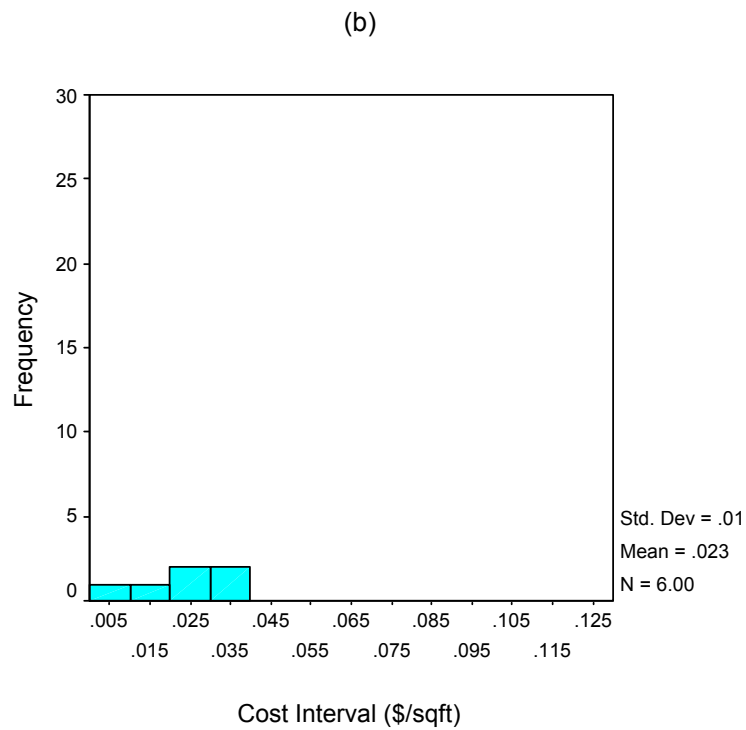
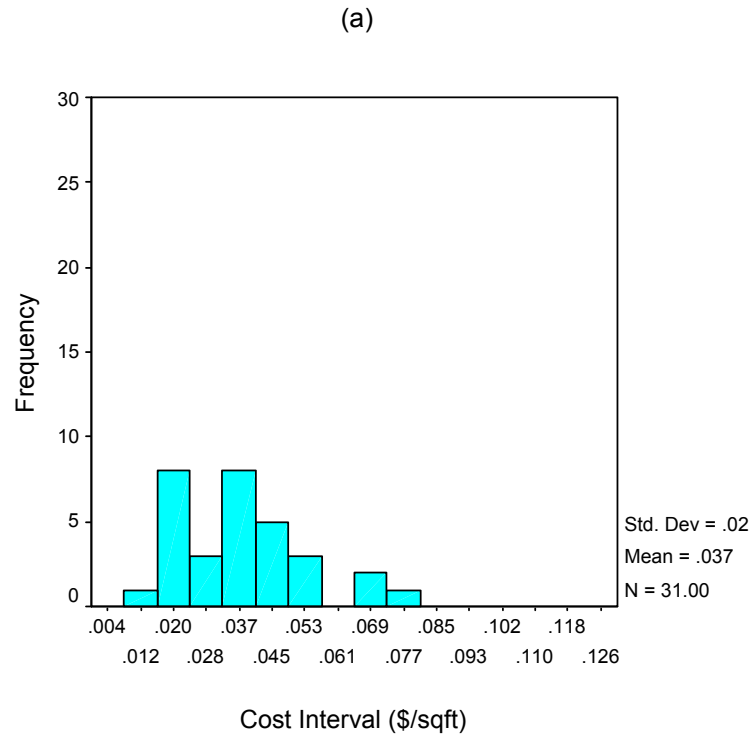
(b)



**Figure S-16. Frequency Distribution of Average Monthly Combined Utility Bill, Excluding Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) PV Homes with 1.2-kW Systems and (b) PV Homes with 2.4-kW Systems.**



**Figure S-17. Frequency Distribution of Average Monthly Combined Utility Bill/ft<sup>2</sup>, Including Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) PV Homes with 1.2-kW Systems and (b) PV Homes with 2.4-kW Systems.**

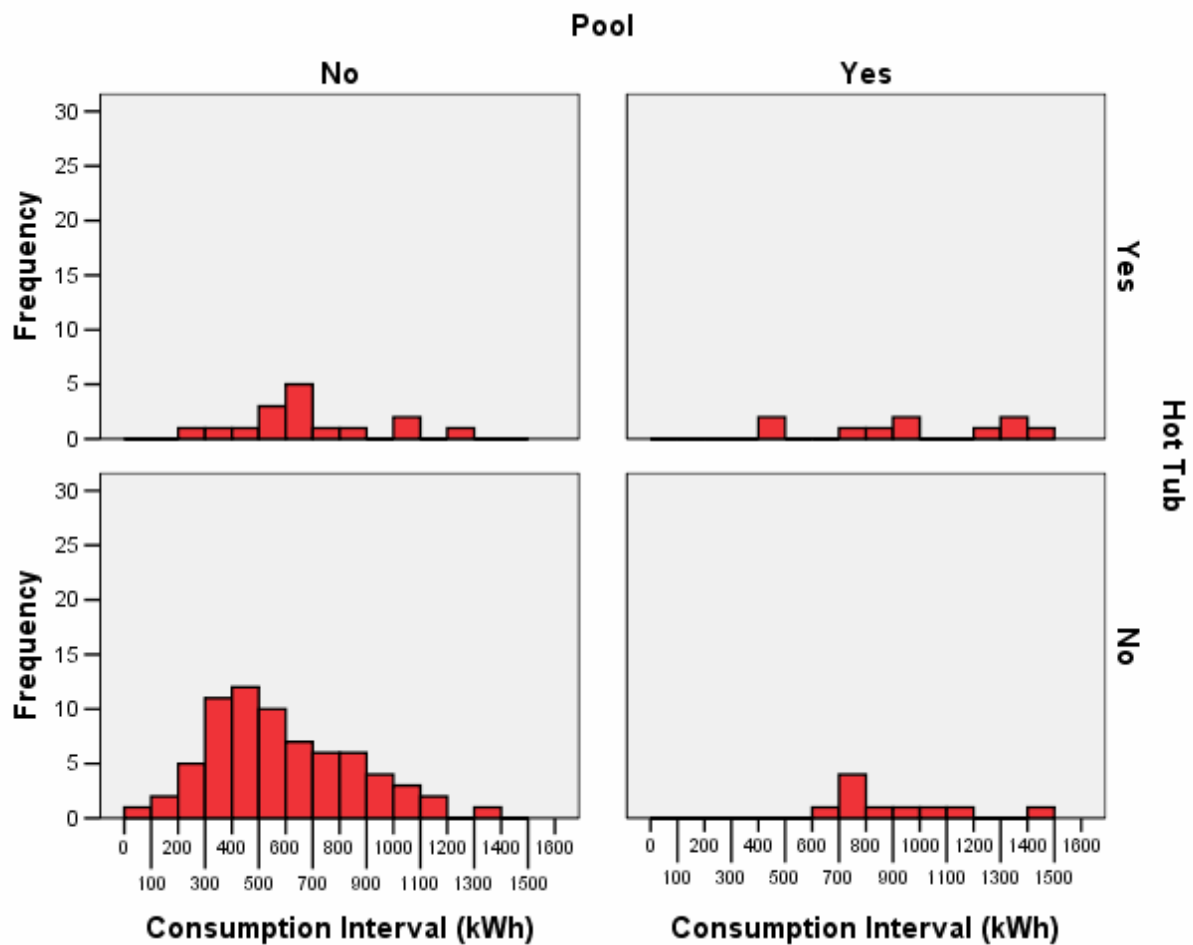


**Figure S-18. Frequency Distribution of Average Monthly Combined Utility Bill/ft<sup>2</sup>, Excluding Taxes and Miscellaneous Charges, July 2003-June 2004, for (a) PV Homes with 1.2-kW Systems and (b) PV Homes with 2.4-kW Systems.**

## **Appendix T**

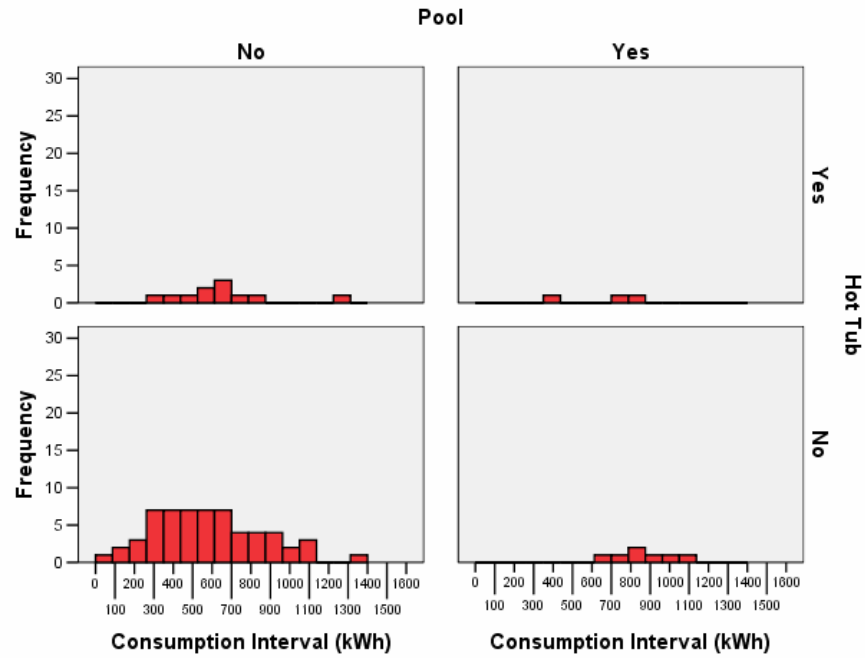
### **Histograms of 12-Month Utility Data for Comparison and SEE Homes**

***Cited in Chapter 20***



**Figure T-1. Frequency Distributions of Average Monthly Electricity Consumption, July 2003-June 2004, for All Homes in the SheaHomes and Comparison Communities, Relative to Four Equipment Ownership Categories: Pools, Hot Tubs, Both, Neither**

(a)



(b)

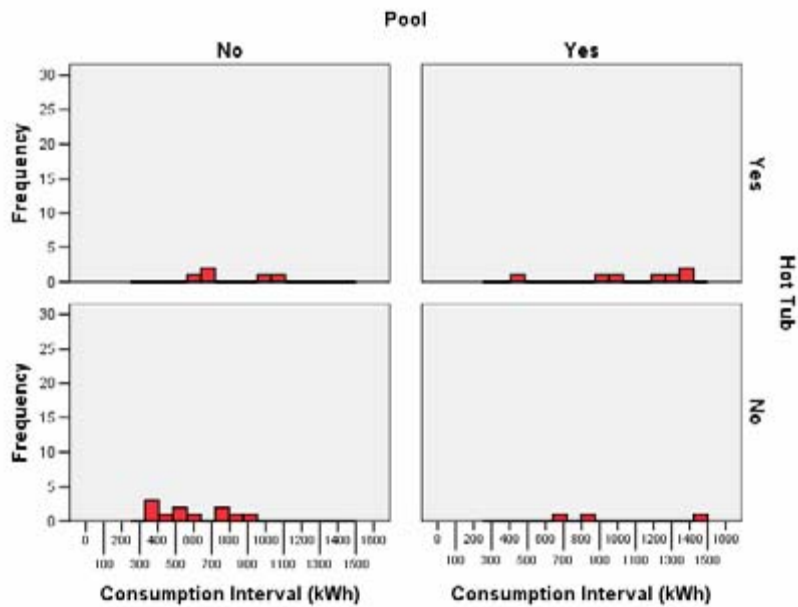
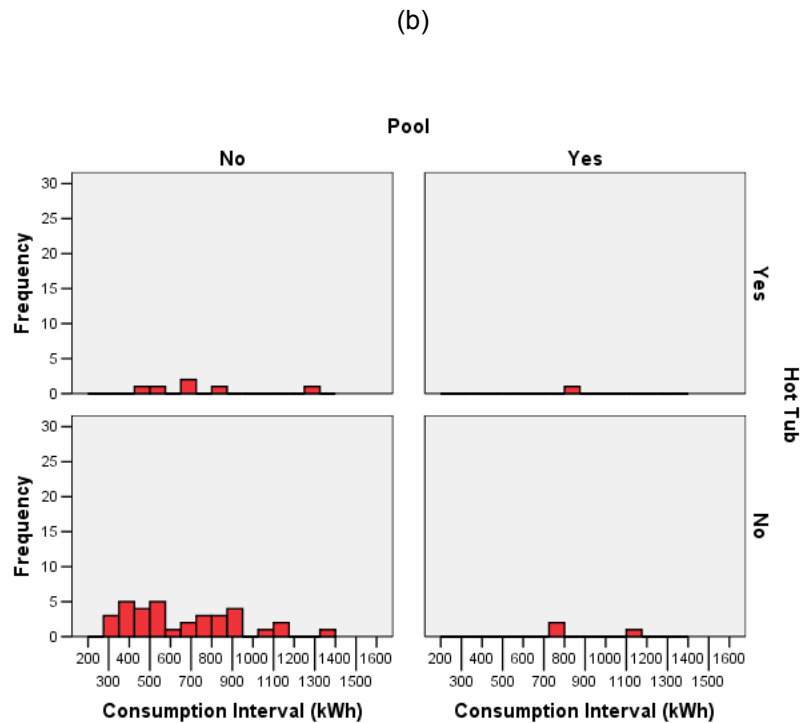
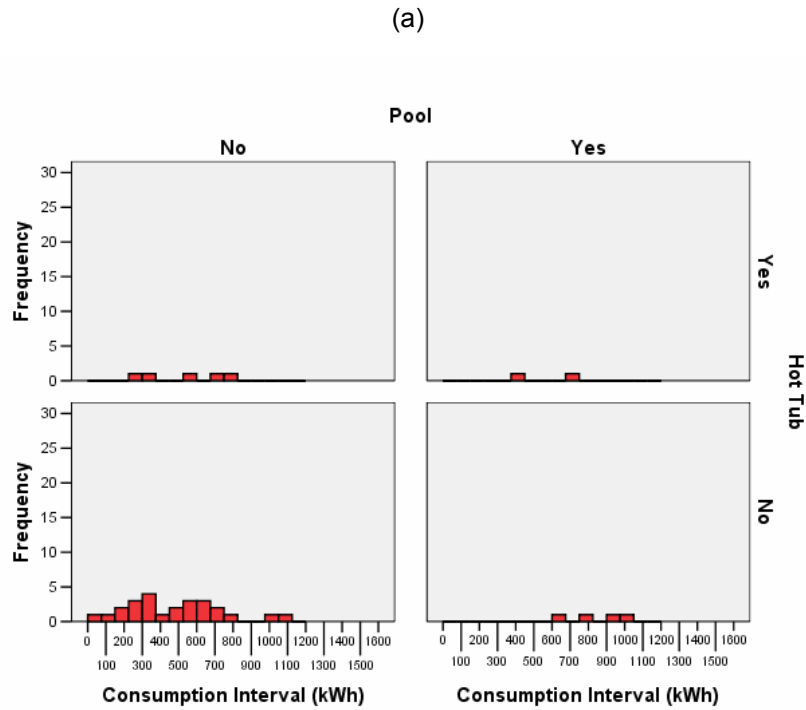
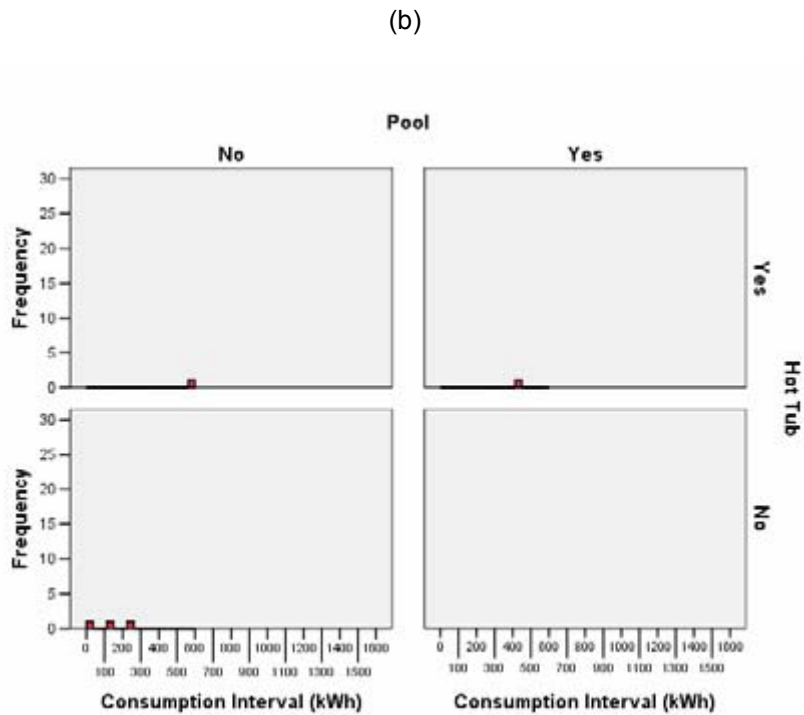
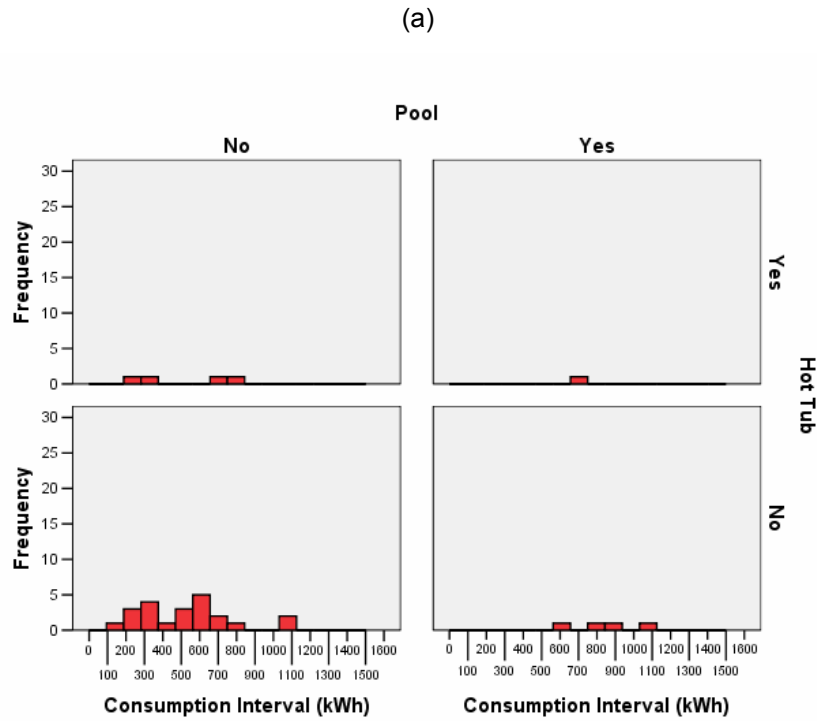


Figure T-2. Frequency Distributions of Average Monthly Electricity Consumption, July 2003-June 2004, for (a) SheaHomes and (b) Comparison Homes, Relative to Four Equipment Ownership Categories.

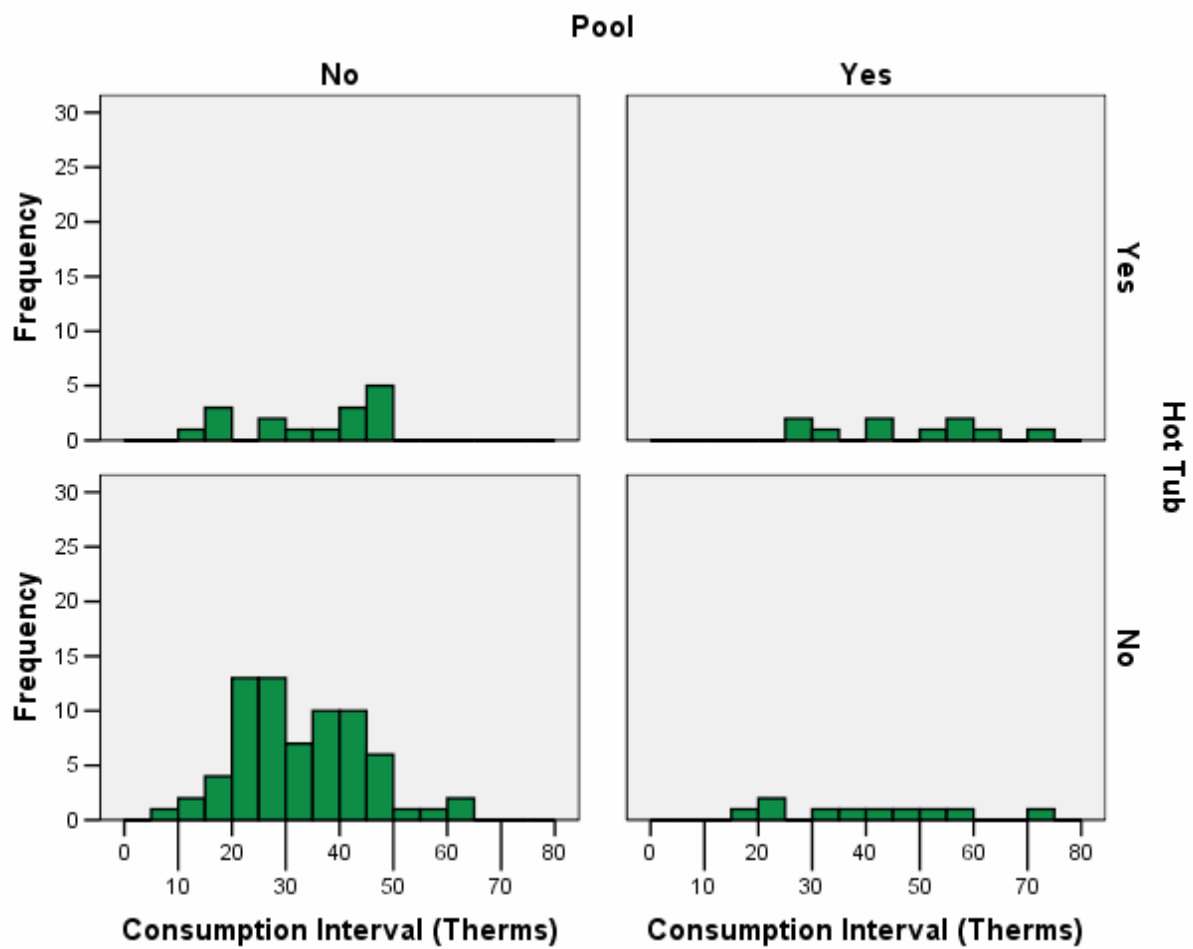




**Figure T-3. Frequency Distributions of Average Monthly Electricity Consumption, July 2003-June 2004, for (a) PV Homes and (b) SEE Homes, Relative to Four Equipment Ownership Categories: Pools, Hot Tubs, Both, Neither.**

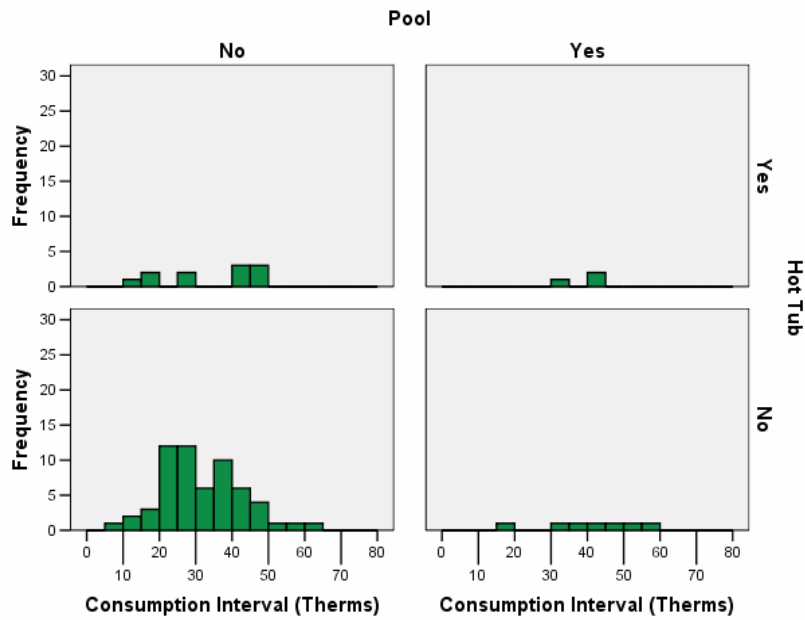


**Figure T-4. Frequency Distributions of Average Monthly Electricity Consumption, July 2003-June 2004, for (a) PV Homes with 1.2-kW Systems and (b) PV Homes with 2.4-kW Systems, Relative to Four Equipment Ownership Categories.**

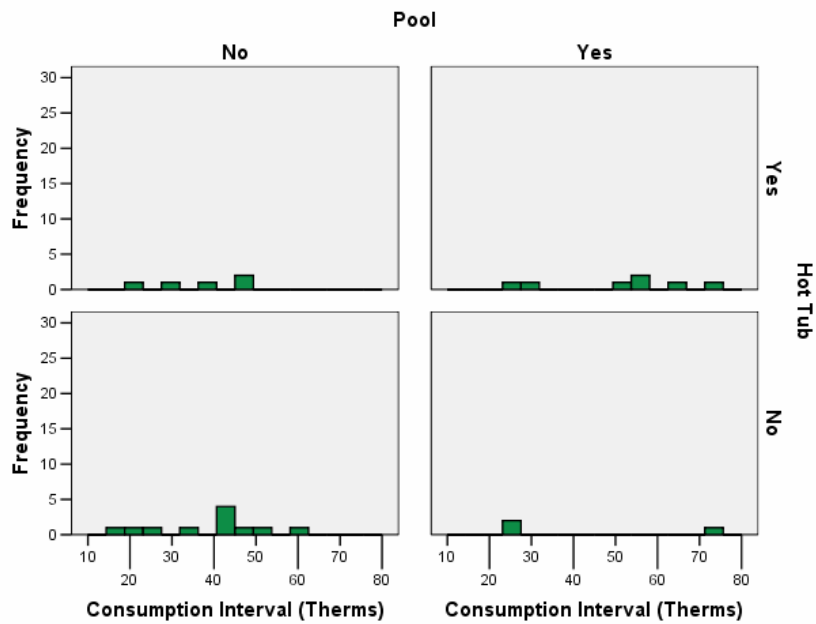


**Figure T-5. Frequency Distributions of Average Monthly Gas Consumption, July 2003-June 2004, for All Homes in the SheaHomes and Comparison Communities, Relative to Four Equipment Ownership Categories: Pool, Hot Tubs, Both, Neither**

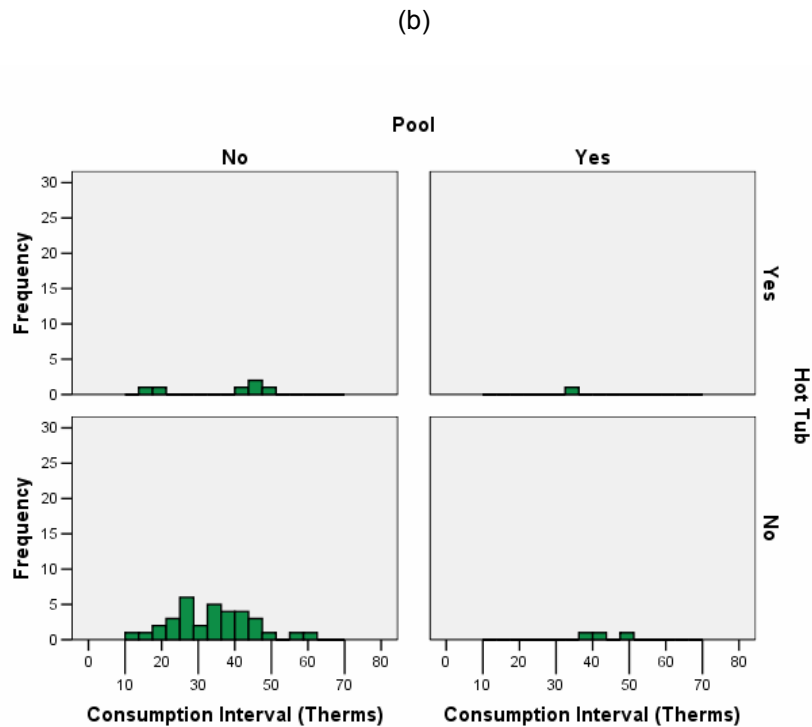
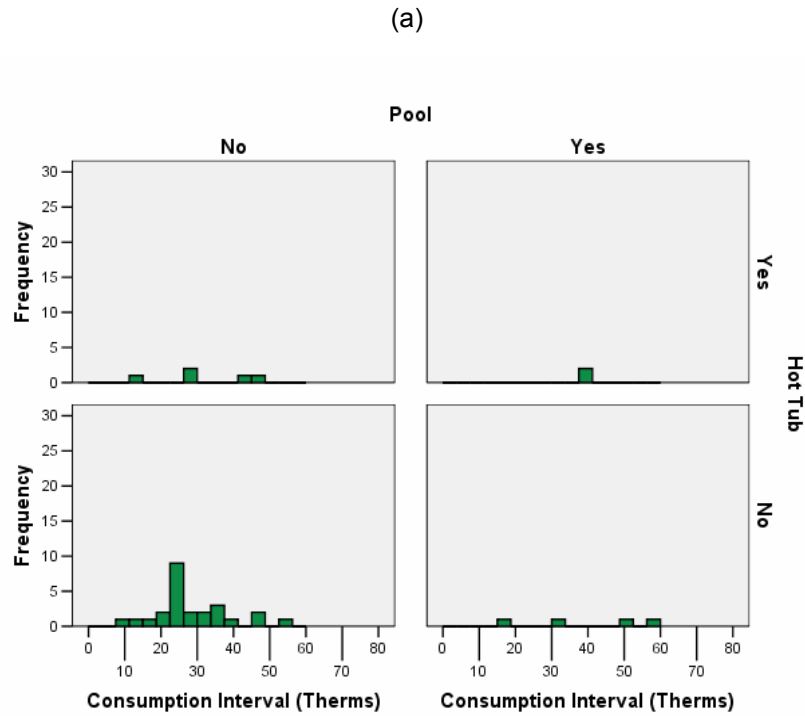
(a)



(b)

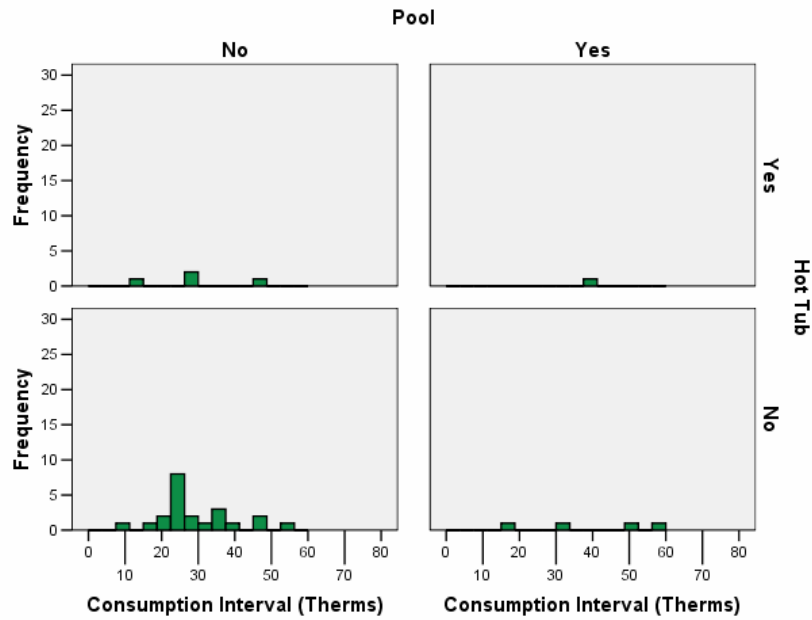


**Figure T-6. Frequency Distributions of Average Monthly Gas Consumption, July 2003-June 2004, for (a) SheaHomes and (b) Comparison Homes, Relative to Four Equipment Ownership Categories: Pools, Hot Tubs, Both, Neither.**

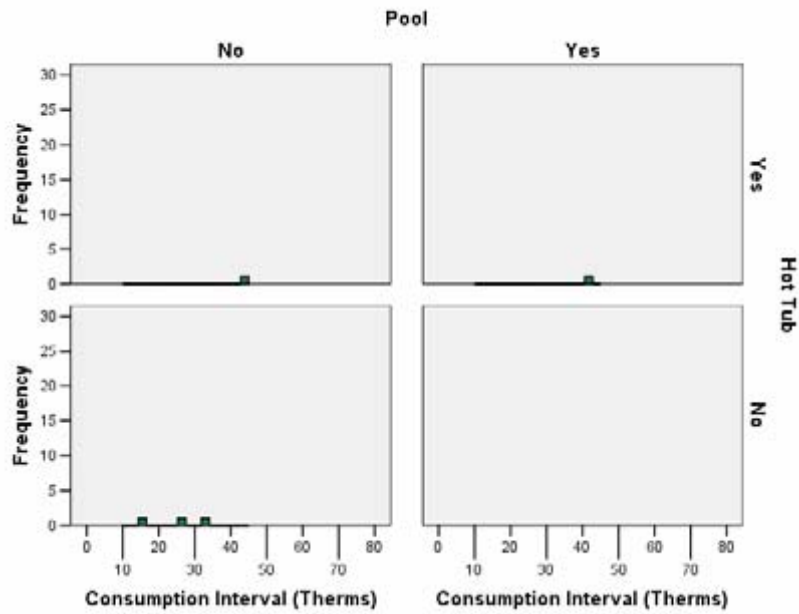


**Figure T-7. Frequency Distributions of Average Monthly Gas Consumption, July 2003-June 2004, for (a) PV Homes and (b) SEE Homes, Relative to Four Equipment Ownership Categories: Pools, Hot Tubs, Both, Neither.**

(a)



(b)



**Figure T-8. Frequency Distributions of Average Monthly Gas Consumption, July 2003-June 2004, for (a) PV Homes with 1.2-kW Systems and (b) PV Homes with 2.4-kW Systems, Relative to Four Equipment Ownership Categories: Pools, Hot Tubs, Both, Neither.**

## **Appendix U**

### **Descriptive Statistics on Average Monthly Electricity Cost, Average Monthly Gas Cost, and Average Monthly Utility Bills with and without Selected Equipment, by Categories of Homes (12-Month Data)**

*Cited in Chapter 20*

**Table U-1. Descriptive Statistics on Average Monthly Electricity Cost  
(Including Taxes and Miscellaneous Charges) for PV Homes, SEE Homes, and  
Comparison Homes with and without Selected Equipment\***

<b>Equipment Category</b>	<b>Statistic</b>	<b>PV Homes**</b>	<b>SheaHomes with 1.2 PV Systems**</b>	<b>SEE Homes</b>	<b>Comparison Homes**</b>
Base case (no special equipment)	n	13	11	19	7
	Mean	\$50.69	\$56.14	\$94.96	\$86.78
	S.D.	\$30.98	\$29.97	\$43.69	\$39.41
Standalone freezer	n	3	3	0	1
	Mean	\$120.00	\$120.00	–	\$137.09
	S.D.	\$50.63	\$50.63	–	–
Two refrigerators	n	9	8	11	4
	Mean	\$95.98	\$105.42	\$113.66	\$103.73
	S.D.	\$46.53	\$39.48	\$58.26	\$46.59
Standalone freezer and two refrigerators	n	0	0	4	0
	Mean	–	–	\$157.51	–
	S.D.	–	–	\$26.32	–
Pool	n	2	1	2	3
	Mean	\$70.86	\$52.84	\$111.03	\$153.73
	S.D.	\$25.49	–	\$37.59	\$57.96
Pool and standalone freezer	n	0	0	0	1
	Mean	–	–	–	\$102.97
	S.D.	–	–	–	–
Pool and two refrigerators	n	3	3	4	1
	Mean	\$93.13	\$93.13	\$126.10	\$101.71
	S.D.	\$46.86	\$46.86	\$66.07	–
Hot tub	n	2	2	3	3
	Mean	\$116.33	\$116.33	\$151.32	\$162.21
	S.D.	\$18.66	\$18.66	\$38.08	\$60.54



**Table U-1. Descriptive Statistics on Average Monthly Electricity Cost  
(Including Taxes and Miscellaneous Charges) for PV Homes, SEE Homes,  
and Comparison Homes with and without Selected Equipment\*  
(continued)**

<b>Equipment Category</b>	<b>Statistic</b>	<b>PV Homes**</b>	<b>SheaHomes with 1.2 PV Systems**</b>	<b>SEE Homes</b>	<b>Comparison Homes**</b>
Hot tub and two refrigerators	n	2	2	0	0
	Mean	\$167.42	\$167.42	–	–
	S.D.	\$14.55	\$14.55	–	–
Pool and hot tub	n	0	0	0	2
	Mean	–	–	–	\$205.76
	S.D.	–	–	–	\$67.95
Pool, hot tub, and standalone freezer	n	0	0	0	2
	Mean	–	–	–	\$146.95
	S.D.	–	–	–	\$120.79
Pool, hot tub, and two refrigerators	n	2	1	1	2
	Mean	\$91.55	\$119.08	\$131.86	\$228.32
	S.D.	\$38.93	–	–	\$22.90

\*“Early” and outlier homes omitted

\*\*Information regarding the presence of refrigerators and freezers is missing for some homes in these categories

**Table U-2. Descriptive Statistics on Average Monthly Electricity Cost per Square Foot  
(Including Taxes and Miscellaneous Charges) for  
PV Homes, SEE Homes, and Comparison Homes with and without Selected Equipment\***

<b>Equipment Category</b>	<b>Statistic</b>	<b>PV Homes**</b>	<b>SheaHomes with 1.2 PV Systems**</b>	<b>SEE Homes</b>	<b>Comparison Homes**</b>
No special features	n	13	11	19	7
	Mean	\$.018	\$.020	\$.030	\$.034
	S.D.	\$.011	\$.011	\$.012	\$.016
Standalone freezer	n	3	3	0	1
	Mean	\$.038	\$.038	—	\$.049
	S.D.	\$.018	\$.018	—	—
Two refrigerators	n	9	8	11	4
	Mean	\$.033	\$.036	\$.037	\$.035
	S.D.	\$.017	\$.015	\$.020	\$.017
Standalone freezer and two refrigerators	n	0	0	4	0
	Mean	—	—	\$.048	—
	S.D.	—	—	\$.005	—
Pool	n	2	1	2	3
	Mean	\$.024	\$.018	\$.037	\$.052
	S.D.	\$.007	-	\$.011	\$.024
Pool and standalone freezer	n	0	0	0	1
	Mean	—	—	—	\$.037
	S.D.	—	—	—	—
Pool and two refrigerators	n	3	3	4	1
	Mean	\$.029	\$.029	\$.040	\$.041
	S.D.	\$.015	\$.015	\$.022	—
Hot tub	n	2	2	3	3
	Mean	\$.036	\$.036	\$.047	\$.054
	S.D.	\$.001	\$.001	\$.009	\$.015

**Table U-2. Descriptive Statistics on Average Monthly Electricity Cost per Square Foot  
(Including Taxes and Miscellaneous Charges) for  
PV Homes, SEE Homes, and Comparison Homes with and without Selected Equipment\*  
(continued)**

<b>Equipment Category</b>	<b>Statistic</b>	<b>PV Homes**</b>	<b>SheaHomes with 1.2 PV Systems**</b>	<b>SEE Homes</b>	<b>Comparison Homes**</b>
Hot tub and two refrigerators	n	2	2	0	0
	Mean	\$.051	\$.051	—	—
	S.D.	\$.002	\$.002	—	—
Pool and hot tub	n	0	0	0	2
	Mean	—	—	—	\$.060
	S.D.	—	—	—	\$.017
Pool, hot tub, and standalone freezer	n	0	0	0	2
	Mean	—	—	—	\$.058
	S.D.	—	—	—	\$.051
Pool, hot tub, and two refrigerators	n	2	1	1	2
	Mean	\$.028	\$.039	\$.042	\$.086
	S.D.	\$.015	—	—	\$.001

\*“Early” and outlier homes omitted

\*\*Information regarding the presence of refrigerators and freezers is missing for some homes in these categories

**Table U-3. Descriptive Statistics on Average Monthly Electricity Cost  
(Excluding Taxes and Miscellaneous Charges) for  
PV Homes, SEE Homes, and Comparison Homes with and without Selected Equipment\***

<b>Equipment Category</b>	<b>Statistic</b>	<b>PV Homes**</b>	<b>SheaHomes with 1.2 PV Systems**</b>	<b>SEE Homes</b>	<b>Comparison Homes**</b>
No special features	n	13	11	19	7
	Mean	\$45.81	\$50.98	\$85.95	\$78.90
	S.D.	\$28.56	\$27.31	\$39.98	\$36.01
Standalone freezer	n	3	3	0	1
	Mean	\$109.26	\$109.26	–	\$124.86
	S.D.	\$46.32	\$46.32	–	–
Two refrigerators	n	9	8	11	4
	Mean	\$87.20	\$95.93	\$103.49	\$101.27
	S.D.	\$42.75	\$36.12	\$53.33	\$43.49
Standalone freezer and two refrigerators	n	0	0	4	0
	Mean	–	–	\$143.58	–
	S.D.	–	–	\$24.12	–
Pool	n	2	1	2	3
	Mean	\$64.37	\$47.92	\$101.04	\$137.36
	S.D.	\$23.26	–	\$34.37	\$49.97
Pool and standalone freezer	n	0	0	0	1
	Mean	–	–	–	\$93.66
	S.D.	–	–	–	–
Pool and two refrigerators	n	3	3	4	1
	Mean	\$84.72	\$84.72	\$114.86	\$92.51
	S.D.	\$42.75	\$42.75	\$60.50	–
Hot tub	n	2	2	3	3
	Mean	\$105.89	\$105.89	\$137.92	\$149.95
	S.D.	\$17.05	\$17.05	\$34.91	\$58.87

**Table U-3. Descriptive Statistics on Average Monthly Electricity Cost  
(Excluding Taxes and Miscellaneous Charges) for  
PV Homes, SEE Homes, and Comparison Homes with and without Selected Equipment\*  
(continued)**

<b>Equipment Category</b>	<b>Statistic</b>	<b>PV Homes**</b>	<b>SheaHomes with 1.2 PV Systems**</b>	<b>SEE Homes</b>	<b>Comparison Homes**</b>
Hot tub and two refrigerators	n	2	2	0	0
	Mean	\$152.65	\$152.65	–	–
	S.D.	\$13.30	\$13.30	–	–
Pool and hot tub	n	0	0	0	2
	Mean	–	–	–	\$187.82
	S.D.	–	–	–	\$62.31
Pool, hot tub, and standalone freezer	n	0	0	0	2
	Mean	–	–	–	\$134.02
	S.D.	–	–	–	\$110.56
Pool, hot tub, and two refrigerators	n	2	1	1	2
	Mean	\$83.25	\$108.39	\$120.09	\$208.47
	S.D.	\$35.55	–	–	\$21.02

\*“Early” and outlier homes omitted

\*\*Information regarding the presence of refrigerators and freezers is missing for some homes in these categories

**Table U-4. Descriptive Statistics on Average Monthly Electricity Cost per Square Foot  
(Excluding Taxes and Miscellaneous Charges) for  
PV Homes, SEE Homes, and Comparison Homes with and without Selected Equipment\***

<b>Equipment Category</b>	<b>Statistic</b>	<b>PV Homes**</b>	<b>SheaHomes with 1.2 PV Systems**</b>	<b>SEE Homes</b>	<b>Comparison Homes**</b>
No special features	n	13	11	19	7
	Mean	\$.015	\$.018	\$.028	\$.031
	S.D.	\$.010	\$.010	\$.011	\$.015
Standalone freezer	n	3	3	0	1
	Mean	\$.034	\$.034	–	\$.044
	S.D.	\$.017	\$.017	–	–
Two refrigerators	n	9	8	11	4
	Mean	\$.030	\$.032	\$.034	\$.034
	S.D.	\$.016	\$.014	\$.018	\$.015
Standalone freezer and two refrigerators	n	0	0	4	0
	Mean	–	–	\$.044	–
	S.D.	–	–	\$.005	–
Pool	n	2	1	2	3
	Mean	\$.022	\$.016	\$.034	\$.047
	S.D.	\$.008	–	\$.010	\$.021
Pool and standalone freezer	n	0	0	0	1
	Mean	–	–	–	\$.033
	S.D.	–	–	–	–
Pool and two refrigerators	n	3	3	4	1
	Mean	\$.027	\$.027	\$.036	\$.037
	S.D.	\$.013	\$.013	\$.020	–
Hot tub	n	2	2	3	3
	Mean	\$.032	\$.032	\$.043	\$.050
	S.D.	\$.001	\$.001	\$.009	\$.015

**Table U-4. Descriptive Statistics on Average Monthly Electricity Cost per Square Foot  
(Excluding Taxes and Miscellaneous Charges) for  
PV Homes, SEE Homes, and Comparison Homes with and without Selected Equipment\*  
(continued)**

<b>Equipment Category</b>	<b>Statistic</b>	<b>PV Homes**</b>	<b>SheaHomes with 1.2 PV Systems**</b>	<b>SEE Homes</b>	<b>Comparison Homes**</b>
Hot tub and two refrigerators	n	2	2	0	0
	Mean	\$.047	\$.047	—	—
	S.D.	\$.002	\$.002	—	—
Pool and hot tub	n	0	0	0	2
	Mean	—	—	—	\$.055
	S.D.	—	—	—	\$.016
Pool, hot tub, and standalone freezer	n	0	0	0	2
	Mean	—	—	—	\$.053
	S.D.	—	—	—	\$.046
Pool, hot tub, and two refrigerators	n	2	1	1	2
	Mean	\$.026	\$.035	\$.038	\$.079
	S.D.	\$.014	—	—	\$.001

\*“Early” and outlier homes omitted

\*\*Information regarding the presence of refrigerators and freezers is missing for some homes in these categories

**Table U-5. Descriptive Statistics on Average Monthly Gas Cost  
(Including Taxes and Miscellaneous Charges) for  
PV Homes, SEE Homes, and Comparison Homes with and without Selected Equipment\***

<b>Equipment Category</b>	<b>Statistic</b>	<b>PV Homes**</b>	<b>SheaHomes with 1.2 PV Systems**</b>	<b>SEE Homes</b>	<b>Comparison Homes**</b>
No special features	n	13	11	19	7
	Mean	\$21.77	\$21.41	\$32.79	\$41.14
	S.D.	\$6.29	\$5.43	\$9.81	\$16.84
Standalone freezer	n	3	3	0	1
	Mean	\$44.40	\$44.40	–	\$47.10
	S.D.	\$12.17	\$12.17	–	–
Two refrigerators	n	9	8	11	4
	Mean	\$34.43	\$35.49	\$34.82	\$41.15
	S.D.	\$10.05	\$10.20	\$15.19	\$15.90
Standalone freezer and two refrigerators	n	0	0	4	0
	Mean	–	–	\$43.75	–
	S.D.	–	–	\$15.29	–
Pool	n	2	1	2	3
	Mean	\$29.63	\$14.49	\$47.20	\$45.37
	S.D.	\$21.42	–	\$0.80	\$6.95
Pool and standalone freezer	n	0	0	0	1
	Mean	–	–	–	\$32.62
	S.D.	–	–	–	–
Pool and two refrigerators	n	3	3	4	1
	Mean	\$35.11	\$35.11	\$31.97	\$19.77
	S.D.	\$10.87	\$10.87	\$17.59	–
Hot tub	n	2	2	3	3
	Mean	\$36.04	\$36.04	\$44.82	\$42.41
	S.D.	\$24.82	\$24.82	\$5.30	\$30.889



**Table U-5. Descriptive Statistics on Average Monthly Gas Cost  
(Including Taxes and Miscellaneous Charges) for  
PV Homes, SEE Homes, and Comparison Homes with and without Selected Equipment\*  
(continued)**

<b>Equipment Category</b>	<b>Statistic</b>	<b>PV Homes**</b>	<b>SheaHomes with 1.2 PV Systems**</b>	<b>SEE Homes</b>	<b>Comparison Homes**</b>
Hot tub and two refrigerators	n	2	2	0	0
	Mean	\$46.50	\$46.50	—	—
	S.D.	\$20.21	\$20.21	—	—
Pool and hot tub	n	0	0	0	2
	Mean	—	—	—	\$48.69
	S.D.	—	—	—	\$29.75
Pool, hot tub, and standalone freezer	n	0	0	0	2
	Mean	—	—	—	\$45.21
	S.D.	—	—	—	\$21.09
Pool, hot tub, and two refrigerators	n	2	1	1	2
	Mean	\$42.07	\$41.73	\$35.66	\$68.30
	S.D.	\$30.49	—	—	\$17.54

\*“Early” and outlier homes omitted

\*\*Information regarding the presence of refrigerators and freezers is missing for some homes in these categories

**Table U-6. Descriptive Statistics on Average Monthly Gas Cost per Square Foot  
(Including Taxes and Miscellaneous Charges) for  
PV Homes, SEE Homes, and Comparison Homes with and without Selected Equipment\***

<b>Equipment Category</b>	<b>Statistic</b>	<b>PV Homes**</b>	<b>SheaHomes with 1.2 PV Systems**</b>	<b>SEE Homes</b>	<b>Comparison Homes**</b>
No special features	n	13	11	19	7
	Mean	\$.008	\$.007	\$.011	\$.016
	S.D.	\$.002	\$.002	\$.004	\$.007
Standalone freezer	n	3	3	0	1
	Mean	\$.014	\$.014	–	\$.017
	S.D.	\$.005	\$.005	–	–
Two refrigerators	n	9	8	11	4
	Mean	\$.012	\$.012	\$.011	\$.014
	S.D.	\$.003	\$.003	\$.004	\$.006
Standalone freezer and two refrigerators	n	0	0	4	0
	Mean	–	–	\$.013	–
	S.D.	–	–	\$.004	–
Pool	n	2	1	2	3
	Mean	\$.010	\$.005	\$.016	\$.015
	S.D.	\$.007	–	\$.001	\$.0005
Pool and standalone freezer	n	0	0	0	1
	Mean	–	–	–	\$.012
	S.D.	–	–	–	–
Pool and two refrigerators	n	3	3	4	1
	Mean	\$.011	\$.011	\$.010	\$.008
	S.D.	\$.004	\$.004	\$.006	–
Hot tub	n	2	2	3	3
	Mean	\$.012	\$.012	\$.014	\$.014
	S.D.	\$.010	\$.010	\$.001	\$.009

**Table U-6. Descriptive Statistics on Average Monthly Gas Cost per Square Foot  
(Including Taxes and Miscellaneous Charges) for  
PV Homes, SEE Homes, and Comparison Homes with and without Selected Equipment\*  
(continued)**

<b>Equipment Category</b>	<b>Statistic</b>	<b>PV Homes**</b>	<b>SheaHomes with 1.2 PV Systems**</b>	<b>SEE Homes</b>	<b>Comparison Homes**</b>
Hot tub and two refrigerators	n	2	2	0	0
	Mean	\$.014	\$.014	—	—
	S.D.	\$.006	\$.006	—	—
Pool and hot tub	n	0	0	0	2
	Mean	—	—	—	\$.015
	S.D.	—	—	—	\$.009
Pool, hot tub, and standalone freezer	n	0	0	0	2
	Mean	—	—	—	\$.017
	S.D.	—	—	—	\$.009
Pool, hot tub, and two refrigerators	n	2	1	1	2
	Mean	\$.013	\$.014	\$.011	\$.026
	S.D.	\$.001	—	—	\$.009

\*“Early” and outlier homes omitted

\*\*Information regarding the presence of refrigerators and freezers is missing for some homes in these categories

**Table U-7. Descriptive Statistics on Average Monthly Gas Cost  
(Excluding Taxes and Miscellaneous Charges)  
for PV Homes, SEE Homes, and Comparison Homes with and without Selected Equipment\***

<b>Equipment Category</b>	<b>Statistic</b>	<b>PV Homes**</b>	<b>SheaHomes with 1.2 PV Systems**</b>	<b>SEE Homes</b>	<b>Comparison Homes**</b>
No special features	n	13	11	19	7
	Mean	\$20.39	\$20.05	\$30.77	\$38.62
	S.D.	\$5.90	\$5.09	\$9.23	\$15.85
Standalone freezer	n	3	3	0	1
	Mean	\$41.68	\$41.68	–	\$44.21
	S.D.	\$11.48	\$11.48	–	–
Two refrigerators	n	9	8	11	4
	Mean	\$32.30	\$33.30	\$32.68	\$38.66
	S.D.	\$9.47	\$9.60	\$14.30	\$14.96
Standalone freezer and two refrigerators	n	0	0	4	0
	Mean	–	–	\$41.06	–
	S.D.	–	–	\$14.40	–
Pool	n	2	1	2	3
	Mean	\$27.81	\$13.56	\$44.32	\$42.59
	S.D.	\$20.14	-	\$0.77	\$6.54
Pool and standalone freezer	n	0	0	0	1
	Mean	–	–	–	\$30.57
	S.D.	–	–	–	–
Pool and two refrigerators	n	3	3	4	1
	Mean	\$32.95	\$32.95	\$30.01	\$18.51
	S.D.	\$10.23	\$10.23	\$16.57	–
Hot tub	n	2	2	3	3
	Mean	\$33.85	\$33.85	\$42.13	\$39.73
	S.D.	\$23.38	\$23.38	\$5.01	\$28.97

**Table U-7. Descriptive Statistics on Average Monthly Gas Cost  
(Excluding Taxes and Miscellaneous Charges)  
for PV Homes, SEE Homes, and Comparison Homes with and without Selected Equipment\*  
(continued)**

<b>Equipment Category</b>	<b>Statistic</b>	<b>PV Homes**</b>	<b>SheaHomes with 1.2 PV Systems**</b>	<b>SEE Homes</b>	<b>Comparison Homes**</b>
Hot tub and two refrigerators	n	2	2	0	0
	Mean	\$43.71	\$43.71	—	—
	S.D.	\$19.06	\$19.06	—	—
Pool and hot tub	n	0	0	0	2
	Mean	—	—	—	\$45.75
	S.D.	—	—	—	\$28.07
Pool, hot tub, and standalone freezer	n	0	0	0	2
	Mean	—	—	—	\$42.45
	S.D.	—	—	—	\$19.90
Pool, hot tub, and two refrigerators	n	2	1	1	2
	Mean	\$39.52	\$39.24	\$33.46	\$64.26
	S.D.	\$0.40	—	—	\$16.61

\*“Early” and outlier homes omitted

\*\*Information regarding the presence of refrigerators and freezers is missing for some homes in these categories

**Table U-8. Descriptive Statistics on Average Monthly Electricity Cost per Square Foot  
(Excluding Taxes and Miscellaneous Charges)  
for PV Homes, SEE Homes, and Comparison Homes with and without Selected Equipment\***

<b>Equipment Category</b>	<b>Statistic</b>	<b>PV Homes**</b>	<b>SheaHomes with 1.2 PV Systems**</b>	<b>SEE Homes</b>	<b>Comparison Homes**</b>
No special features	n	13	11	19	7
	Mean	\$.007	\$.007	\$.010	\$.015
	S.D.	\$.002	\$.002	\$.003	\$.006
Standalone freezer	n	3	3	0	1
	Mean	\$.013	\$.013	–	\$.017
	S.D.	\$.004	\$.004	–	–
Two refrigerators	n	9	8	11	4
	Mean	\$.011	\$.011	\$.010	\$.013
	S.D.	\$.003	\$.0	\$.004	\$.006
Standalone freezer and two refrigerators	n	0	0	4	0
	Mean	–	–	\$.012	–
	S.D.	–	–	\$.004	–
Pool	n	2	1	2	3
	Mean	\$.009	\$.005	\$.015	\$.014
	S.D.	\$.006	–	\$.001	\$.0004
Pool and standalone freezer	n	0	0	0	1
	Mean	–	–	–	\$.011
	S.D.	–	–	–	–
Pool and two refrigerators	n	3	3	4	1
	Mean	\$.010	\$.010	\$.009	\$.007
	S.D.	\$.004	\$.004	\$.005	–
Hot tub	n	2	2	3	3
	Mean	\$.011	\$.011	\$.013	\$.013
	S.D.	\$.009	\$.009	\$.001	\$.008

**Table U-8. Descriptive Statistics on Average Monthly Electricity Cost per Square Foot  
(Excluding Taxes and Miscellaneous Charges)  
for PV Homes, SEE Homes, and Comparison Homes with and without Selected Equipment\*  
(continued)**

<b>Equipment Category</b>	<b>Statistic</b>	<b>PV Homes**</b>	<b>SheaHomes with 1.2 PV Systems**</b>	<b>SEE Homes</b>	<b>Comparison Homes**</b>
Hot tub and two refrigerators	n	2	2	0	0
	Mean	\$.013	\$.013	—	—
	S.D.	\$.005	\$.005	—	—
Pool and hot tub	n	0	0	0	2
	Mean	—	—	—	\$.014
	S.D.	—	—	—	\$.009
Pool, hot tub, and standalone freezer	n	0	0	0	2
	Mean	—	—	—	\$.016
	S.D.	—	—	—	\$.009
Pool, hot tub, and two refrigerators	n	2	1	1	2
	Mean	\$.012	\$.013	\$.011	\$.025
	S.D.	\$.001	—	—	\$.008

\*“Early” and outlier homes omitted

\*\*Information regarding the presence of refrigerators and freezers is missing for some homes in these categories

**Table U-9. Descriptive Statistics on Average Monthly Combined Utility Bill  
(Including Taxes and Miscellaneous Charges)  
for PV Homes, SEE Homes, and Comparison Homes with and without Selected Equipment\***

<b>Equipment Category</b>	<b>Statistic</b>	<b>PV Homes**</b>	<b>SheaHomes with 1.2 PV Systems**</b>	<b>SEE Homes</b>	<b>Comparison Homes**</b>
No special features	n	13	11	19	7
	Mean	\$72.46	\$77.56	\$127.75	\$127.92
	S.D.	\$31.81	\$30.29	\$45.64	\$42.18
Standalone freezer	n	3	3	0	1
	Mean	\$164.40	\$164.40	–	\$184.18
	S.D.	\$62.78	\$62.78	–	–
Two refrigerators	n	9	8	11	4
	Mean	\$130.41	\$140.90	\$148.49	\$144.88
	S.D.	\$53.46	\$46.19	\$68.29	\$61.71
Standalone freezer and two refrigerators	n	0	0	4	0
	Mean	–	–	\$201.26	–
	S.D.	–	–	\$36.29	–
Pool	n	2	1	2	3
	Mean	\$100.50	\$67.32	\$158.23	\$199.10
	S.D.	\$46.92	-	\$36.79	\$55.93
Pool and standalone freezer	n	0	0	0	1
	Mean	–	–	–	\$135.60
	S.D.	–	–	–	–
Pool and two refrigerators	n	3	3	4	1
	Mean	\$128.24	\$128.24	\$158.07	\$121.48
	S.D.	\$36.14	\$36.14	\$80.48	–
Hot tub	n	2	2	3	3
	Mean	\$152.37	\$152.37	\$196.14	\$204.62
	S.D.	\$6.16	\$6.16	\$43.34	\$90.66



**Table U-9. Descriptive Statistics on Average Monthly Combined Utility Bill  
(Including Taxes and Miscellaneous Charges)  
for PV Homes, SEE Homes, and Comparison Homes with and without Selected Equipment\*  
(continued)**

<b>Equipment Category</b>	<b>Statistic</b>	<b>PV Homes**</b>	<b>SheaHomes with 1.2 PV Systems**</b>	<b>SEE Homes</b>	<b>Comparison Homes**</b>
Hot tub and two refrigerators	n	2	2	0	0
	Mean	\$213.92	\$213.92	—	—
	S.D.	\$34.76	\$34.76	—	—
Pool and hot tub	n	0	0	0	2
	Mean	—	—	—	\$254.44
	S.D.	—	—	—	\$38.19
Pool, hot tub, and standalone freezer	n	0	0	0	2
	Mean	—	—	—	\$192.17
	S.D.	—	—	—	\$141.88
Pool, hot tub, and two refrigerators	n	2	1	1	2
	Mean	\$133.62	\$160.81	\$167.51	\$296.62
	S.D.	\$38.45	—	—	\$5.35

\*“Early” and outlier homes omitted

\*\*Information regarding the presence of refrigerators and freezers is missing for some homes in these categories

**Table U-10. Descriptive Statistics on Average Monthly Combined Utility Bill per Square Foot (Including Taxes and Miscellaneous Charges) for PV Homes, SEE Homes, and Comparison Homes with and without Selected Equipment\***

<b>Equipment Category</b>	<b>Statistic</b>	<b>PV Homes**</b>	<b>SheaHomes with 1.2 PV Systems**</b>	<b>SEE Homes</b>	<b>Comparison Homes**</b>
No special features	n	13	11	19	7
	Mean	\$.025	\$.026	\$.041	\$.050
	S.D.	\$.011	\$.011	\$.013	\$.018
Standalone freezer	n	3	3	0	1
	Mean	\$.052	\$.052	–	\$.065
	S.D.	\$.023	\$.023	–	–
Two refrigerators	n	9	8	11	4
	Mean	\$.044	\$.048	\$.048	\$.049
	S.D.	\$.020	\$.017	\$.023	\$.023
Standalone freezer and two refrigerators	n	0	0	4	0
	Mean	–	–	\$.061	–
	S.D.	–	–	\$.006	–
Pool	n	2	1	2	3
	Mean	\$.034	\$.024	\$.054	\$.067
	S.D.	\$.014	–	\$.010	\$.024
Pool and standalone freezer	n	0	0	0	1
	Mean	–	–	–	\$.048
	S.D.	–	–	–	–
Pool and two refrigerators	n	3	3	4	1
	Mean	\$.040	\$.040	\$.050	\$.049
	S.D.	\$.011	\$.011	\$.027	–
Hot tub	n	2	2	3	3
	Mean	\$.048	\$.048	\$.062	\$.067
	S.D.	\$.010	\$.010	\$.010	\$.023

**Table U-10. Descriptive Statistics on Average Monthly Combined Utility Bill per Square Foot  
(Including Taxes and Miscellaneous Charges) for PV Homes, SEE Homes, and Comparison  
Homes with and without Selected Equipment\*  
(continued)**

<b>Equipment Category</b>	<b>Statistic</b>	<b>PV Homes**</b>	<b>SheaHomes with 1.2 PV Systems**</b>	<b>SEE Homes</b>	<b>Comparison Homes**</b>
Hot tub and two refrigerators	n	2	2	0	0
	Mean	\$.065	\$.065	—	—
	S.D.	\$.008	\$.008	—	—
Pool and hot tub	n	0	0	0	2
	Mean	—	—	—	\$.075
	S.D.	—	—	—	\$.008
Pool, hot tub, and standalone freezer	n	0	0	0	2
	Mean	—	—	—	\$.075
	S.D.	—	—	—	\$.060
Pool, hot tub, and two refrigerators	n	2	1	1	2
	Mean	\$.041	\$.052	\$.053	\$.112
	S.D.	\$.017	—	—	\$.008

\*“Early” and outlier homes omitted

\*\*Information regarding the presence of refrigerators and freezers is missing for some homes in these categories

**Table U-11. Descriptive Statistics on Average Monthly Combined Utility Bill  
(Excluding Taxes and Miscellaneous Charges)  
for PV Homes, SEE Homes, and Comparison Homes with and without Selected Equipment\***

<b>Equipment Category</b>	<b>Statistic</b>	<b>PV Homes**</b>	<b>SheaHomes with 1.2 PV Systems**</b>	<b>SEE Homes</b>	<b>Comparison Homes**</b>
No special features	n	13	11	19	7
	Mean	\$66.20	\$71.04	\$116.72	\$117.52
	S.D.	\$29.39	\$27.62	\$41.67	\$38.68
Standalone freezer	n	3	3	0	1
	Mean	\$150.94	\$150.94	–	\$169.07
	S.D.	\$57.78	\$57.78	–	–
Two refrigerators	n	9	8	11	4
	Mean	\$119.50	\$129.23	\$136.16	\$139.94
	S.D.	\$43.40	\$42.45	\$62.78	\$56.95
Standalone freezer and two refrigerators	n	0	0	4	0
	Mean	–	–	\$184.64	–
	S.D.	–	–	\$33.57	–
Pool	n	2	1	2	3
	Mean	\$92.18	\$61.49	\$145.36	\$179.95
	S.D.	\$43.40	–	\$33.61	\$47.67
Pool and standalone freezer	n	0	0	0	1
	Mean	–	–	–	\$124.23
	S.D.	–	–	–	–
Pool and two refrigerators	n	3	3	4	1
	Mean	\$117.66	\$117.66	\$144.87	\$111.02
	S.D.	\$32.66	\$32.66	\$74.09	–
Hot tub	n	2	2	3	3
	Mean	\$139.74	\$139.74	\$180.05	\$189.69
	S.D.	\$6.33	\$6.33	\$39.87	\$87.19

**Table U-11. Descriptive Statistics on Average Monthly Combined Utility Bill  
(Excluding Taxes and Miscellaneous Charges)  
for PV Homes, SEE Homes, and Comparison Homes with and without Selected Equipment\*  
(continued)**

<b>Equipment Category</b>	<b>Statistic</b>	<b>PV Homes**</b>	<b>SheaHomes with 1.2 PV Systems**</b>	<b>SEE Homes</b>	<b>Comparison Homes**</b>
Hot tub and two refrigerators	n	2	2	0	0
	Mean	\$196.36	\$196.36	—	—
	S.D.	\$32.36	\$32.36	—	—
Pool and hot tub	n	0	0	0	2
	Mean	—	—	—	\$233.57
	S.D.	—	—	—	\$34.24
Pool, hot tub, and standalone freezer	n	0	0	0	2
	Mean	—	—	—	\$176.47
	S.D.	—	—	—	\$130.46
Pool, hot tub, and two refrigerators	n	2	1	1	2
	Mean	\$122.77	\$147.63	\$153.55	\$272.74
	S.D.	\$35.15	—	—	\$4.41

\*“Early” and outlier homes omitted

\*\*Information regarding the presence of refrigerators and freezers is missing for some homes in these categories

**Table U-12. Descriptive Statistics on Average Monthly Combined Utility Bill per Square Foot (Excluding Taxes and Miscellaneous Charges) for PV Homes, SEE Homes, and Comparison Homes with and without Selected Equipment\***

Equipment Category	Statistic	PV Homes**	SheaHomes with 1.2 PV Systems**	SEE Homes	Comparison Homes**
No special features	n	13	11	19	7
	Mean	\$.023	\$.025	\$.038	\$.046
	S.D.	\$.010	\$.010	\$.012	\$.016
Standalone freezer	n	3	3	0	1
	Mean	\$.047	\$.047	–	\$.060
	S.D.	\$.021	\$.021	–	–
Two refrigerators	n	9	8	11	4
	Mean	\$.041	\$.044	\$.044	\$.047
	S.D.	\$.018	\$.016	\$.021	\$.020
Standalone freezer and two refrigerators	n	0	0	4	0
	Mean	–	–	\$.056	–
	S.D.	–	–	\$.005	–
Pool	n	2	1	2	3
	Mean	\$.030	\$.021	\$.049	\$.060
	S.D.	\$.013	–	\$.009	\$.022
Pool and standalone freezer	n	0	0	0	1
	Mean	–	–	–	\$.044
	S.D.	–	–	–	–
Pool and two refrigerators	n	3	3	4	1
	Mean	\$.037	\$.037	\$.046	\$.045
	S.D.	\$.010	\$.010	\$.025	–
Hot tub	n	2	2	3	3
	Mean	\$.044	\$.044	\$.056	\$.063
	S.D.	\$.010	\$.010	\$.009	\$.023

**Table U-12. Descriptive Statistics on Average Monthly Combined Utility Bill per Square Foot  
(Excluding Taxes and Miscellaneous Charges)  
for PV Homes, SEE Homes, and Comparison Homes with and without Selected Equipment\*  
(continued)**

<b>Equipment Category</b>	<b>Statistic</b>	<b>PV Homes**</b>	<b>SheaHomes with 1.2 PV Systems**</b>	<b>SEE Homes</b>	<b>Comparison Homes**</b>
Hot tub and two refrigerators	n	2	2	0	0
	Mean	\$.060	\$.060	—	—
	S.D.	\$.007	\$.007	—	—
Pool and hot tub	n	0	0	0	2
	Mean	—	—	—	\$.068
	S.D.	—	—	—	\$.007
Pool, hot tub, and standalone freezer	n	0	0	0	2
	Mean	—	—	—	\$.069
	S.D.	—	—	—	\$.055
Pool, hot tub, and two refrigerators	n	2	1	1	2
	Mean	\$.037	\$.048	\$.049	\$.103
	S.D.	\$.015	—	—	\$.007

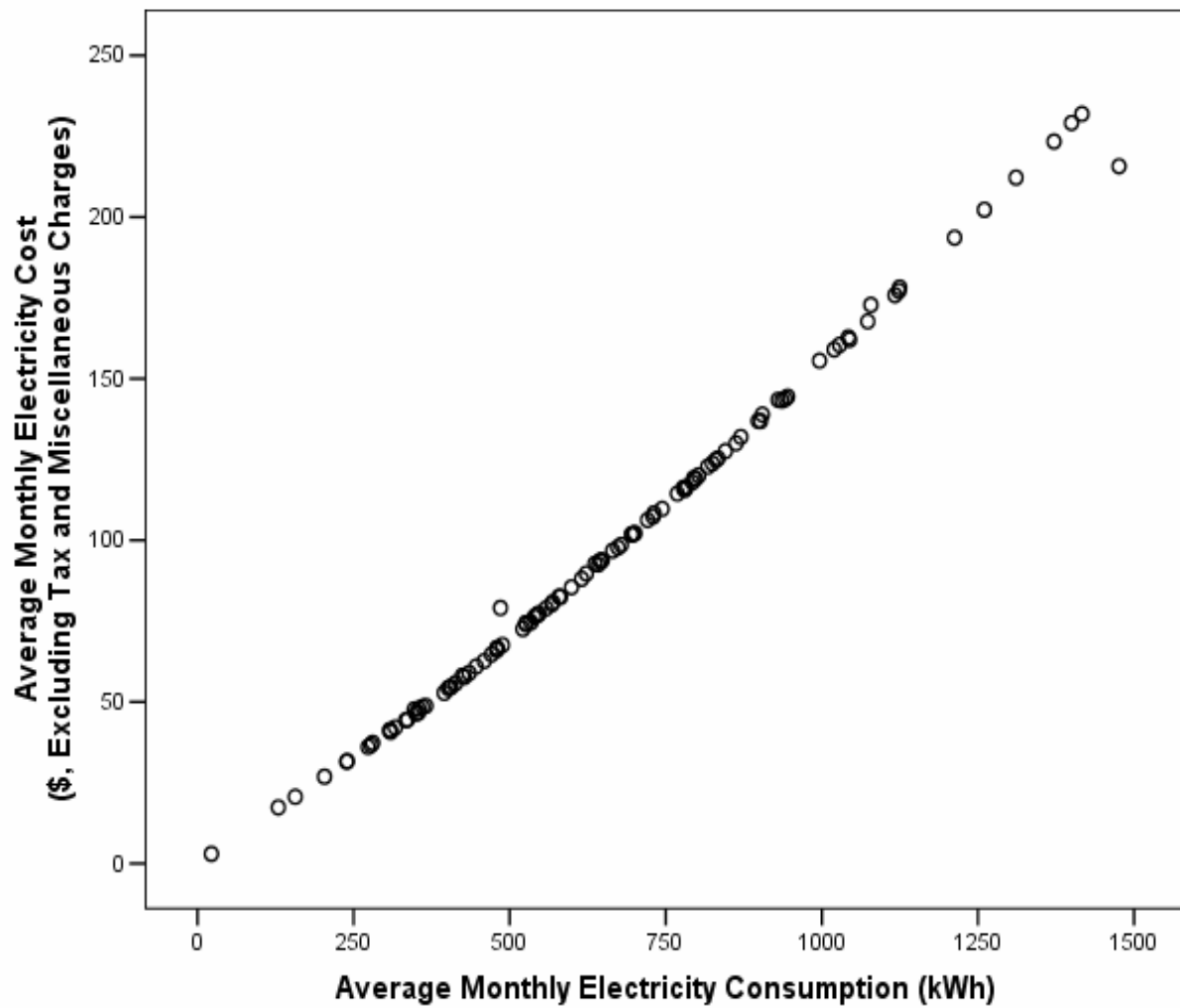
\*“Early” and outlier homes omitted

\*\*Information regarding the presence of refrigerators and freezers is missing for some homes in these categories

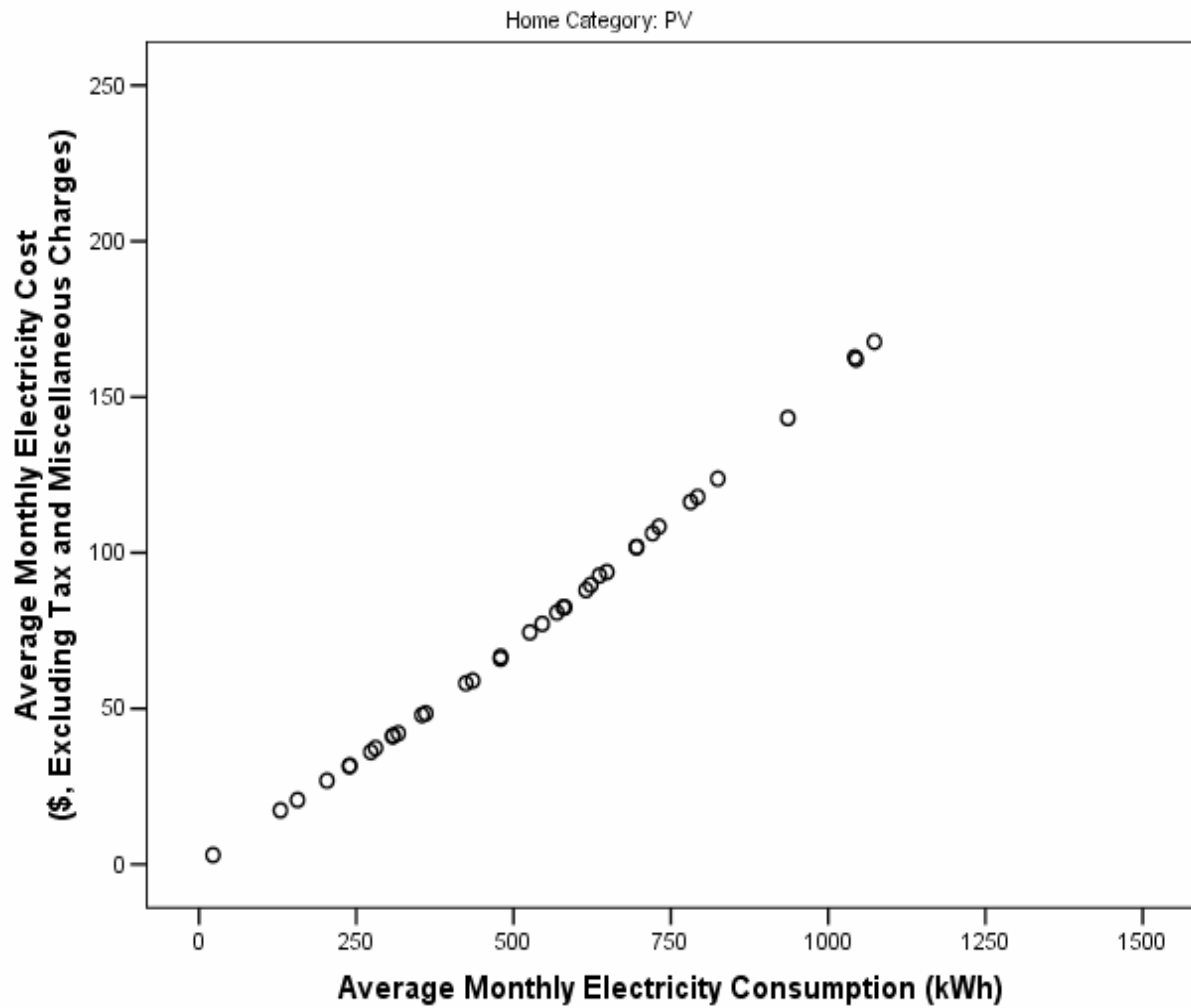
## **Appendix V**

### **Scatter Diagrams of Average Monthly Electricity Cost Consumption by Average Monthly Cost for All Homes in the Study**

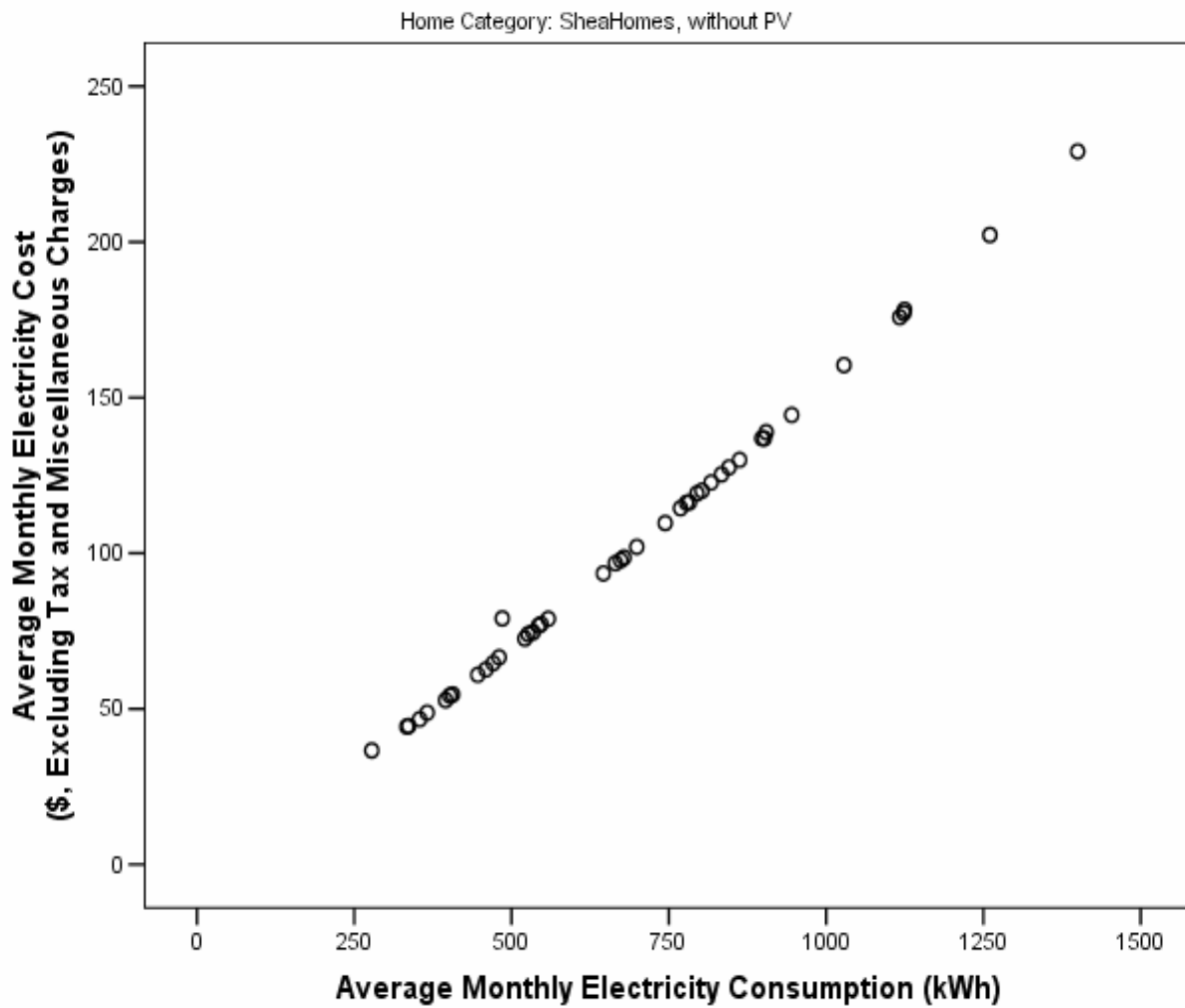




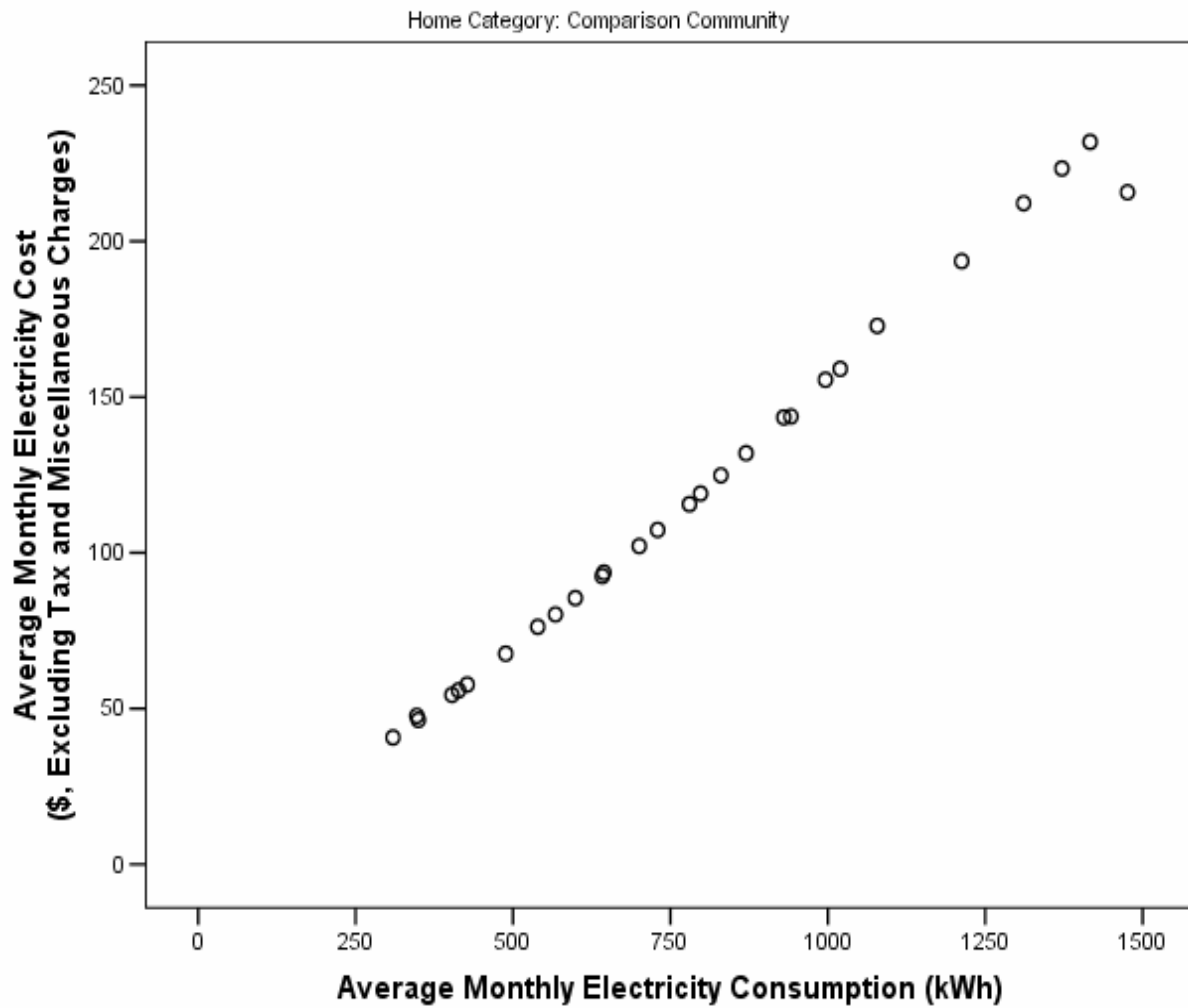
**Figure V-1. Comparison of Average Monthly Electricity Consumption (kWh) and Average Monthly Electricity Cost (dollars), Excluding Taxes and Miscellaneous Charges, for All Homes Combined (n=109)**



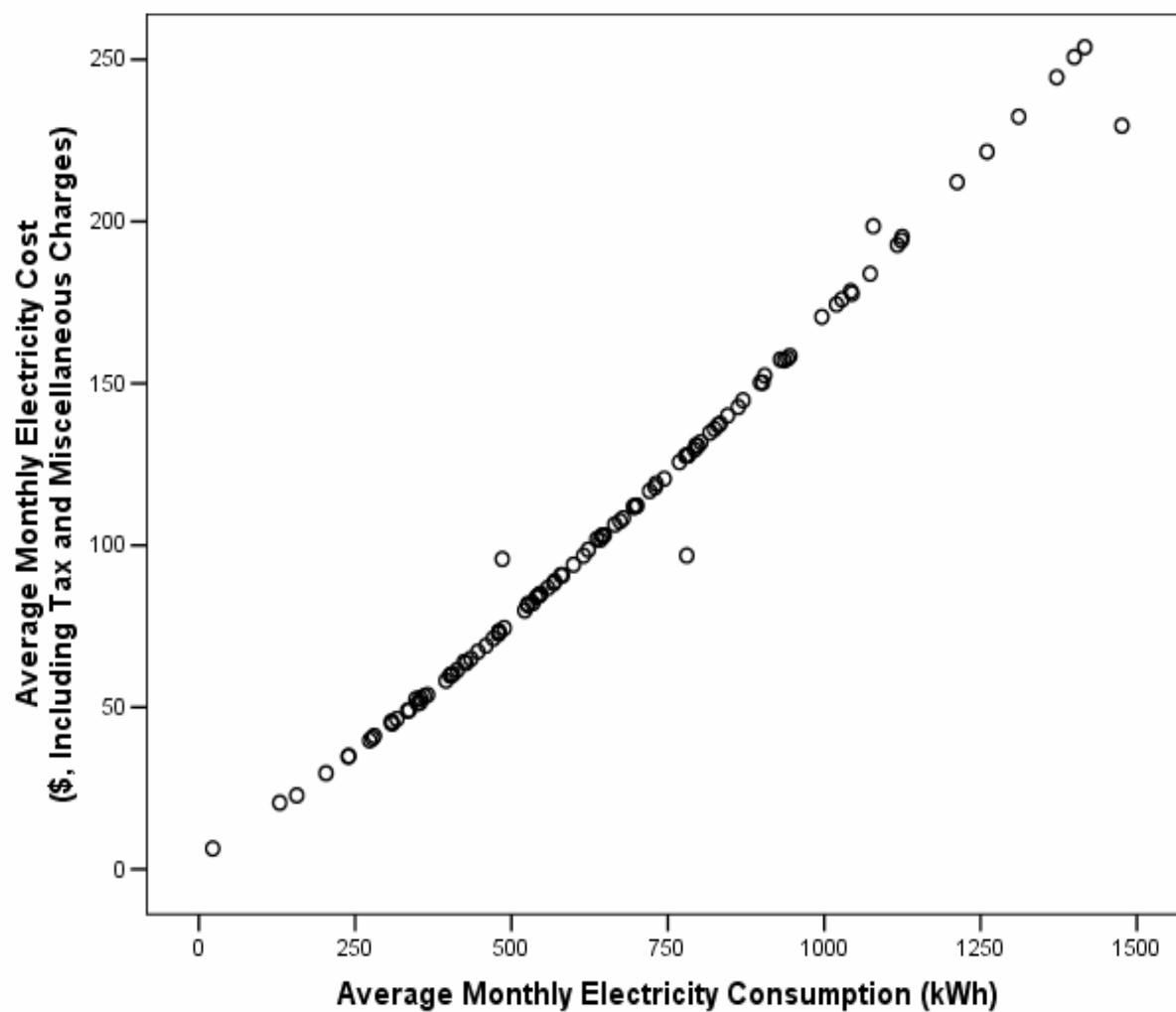
**Figure V-2. Comparison of Average Monthly Electricity Consumption (kWh) and Average Monthly Electricity Cost (dollars), Excluding Taxes and Miscellaneous Charges, for Homes in the SheaHomes Communities with PV Systems (n=37)**



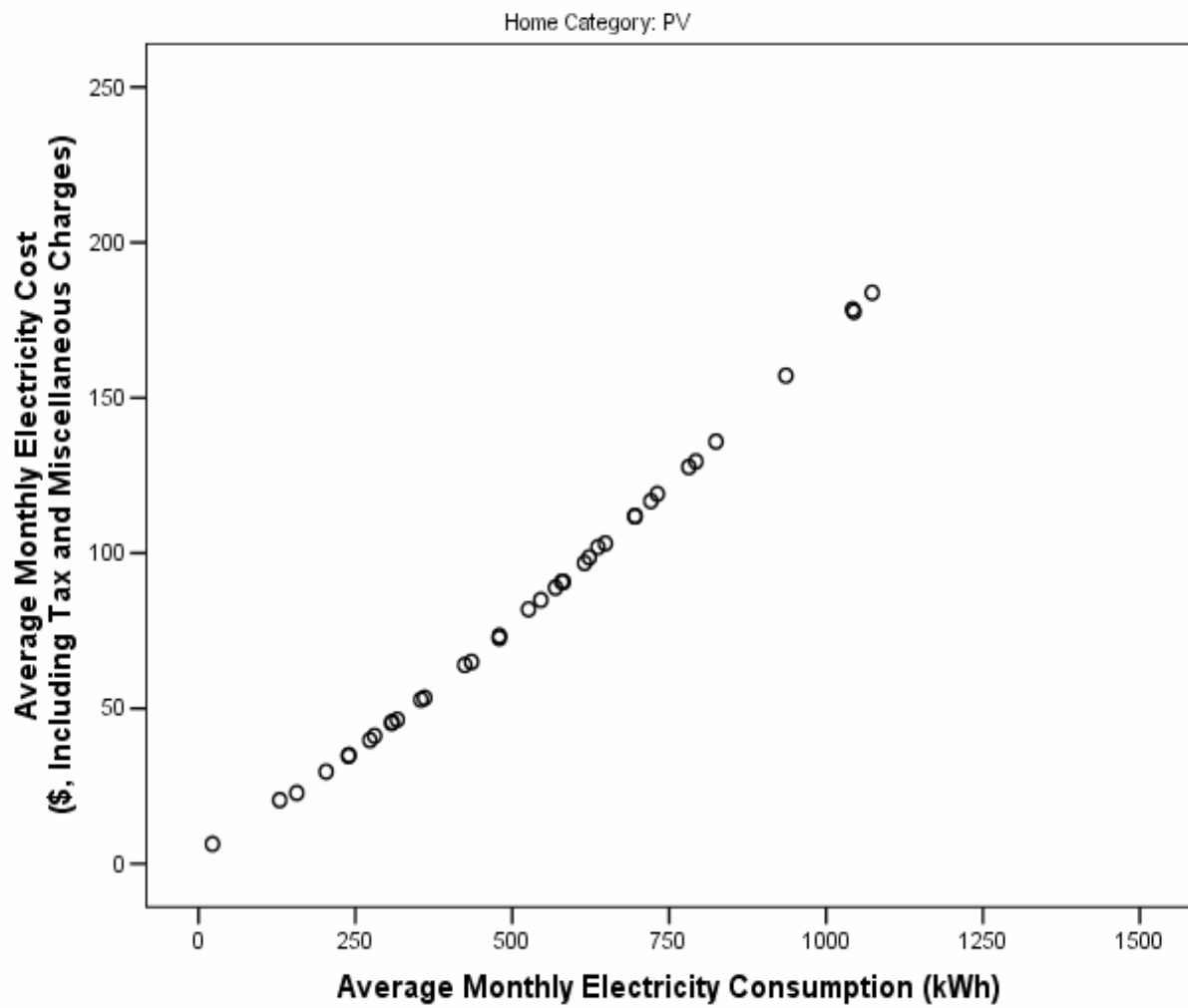
**Figure V-3. Comparison of Average Monthly Electricity Consumption (kWh) and Average Monthly Electricity Cost (dollars), Excluding Taxes and Miscellaneous Charges, for Homes in the SheaHomes Communities without PV Systems (n=44)**



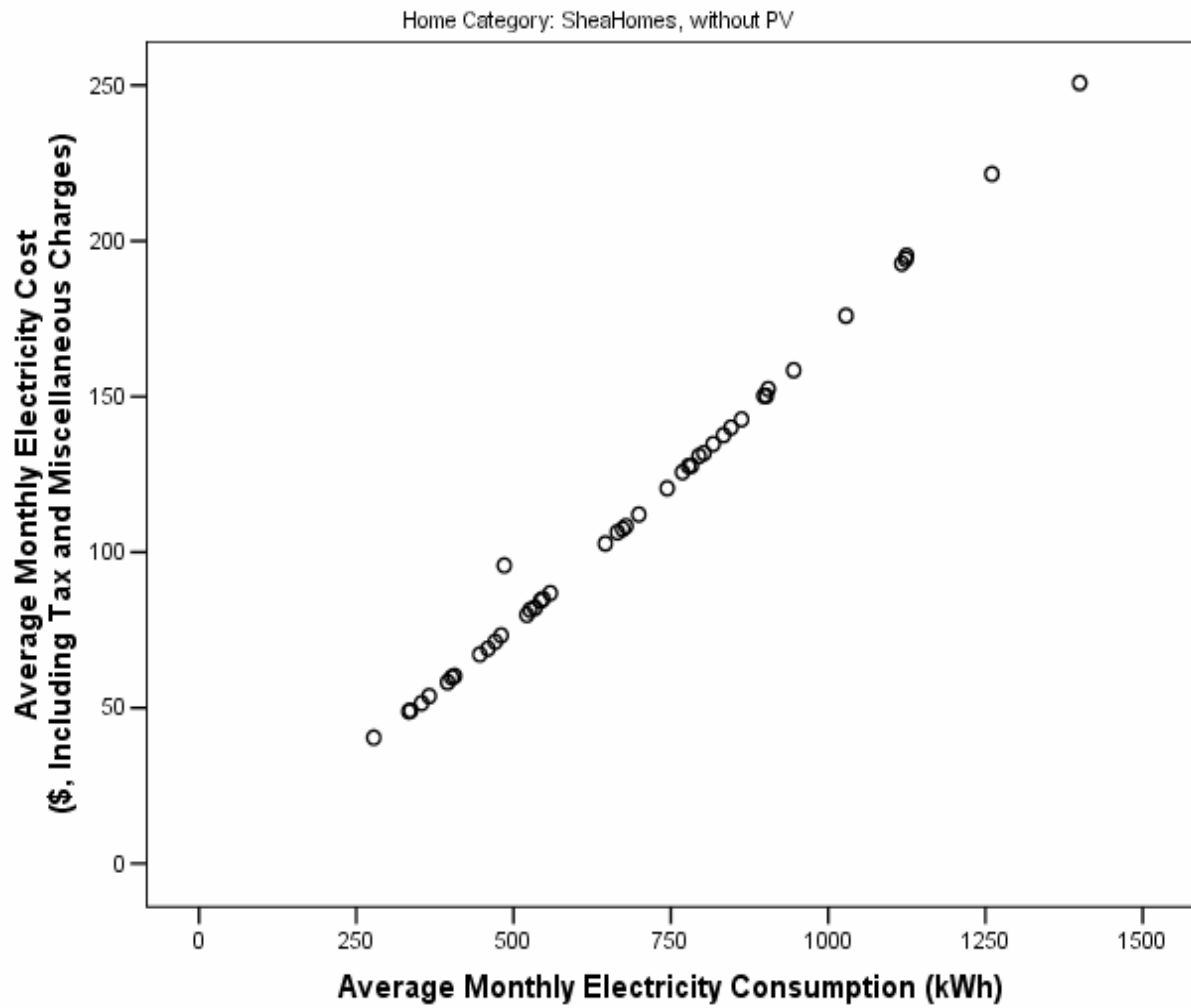
**Figure V-4. Comparison of Average Monthly Electricity Consumption (kWh) and Average Monthly Electricity Cost (dollars), Excluding Taxes and Miscellaneous Charges, for Homes in the Comparison Community (n=28)**



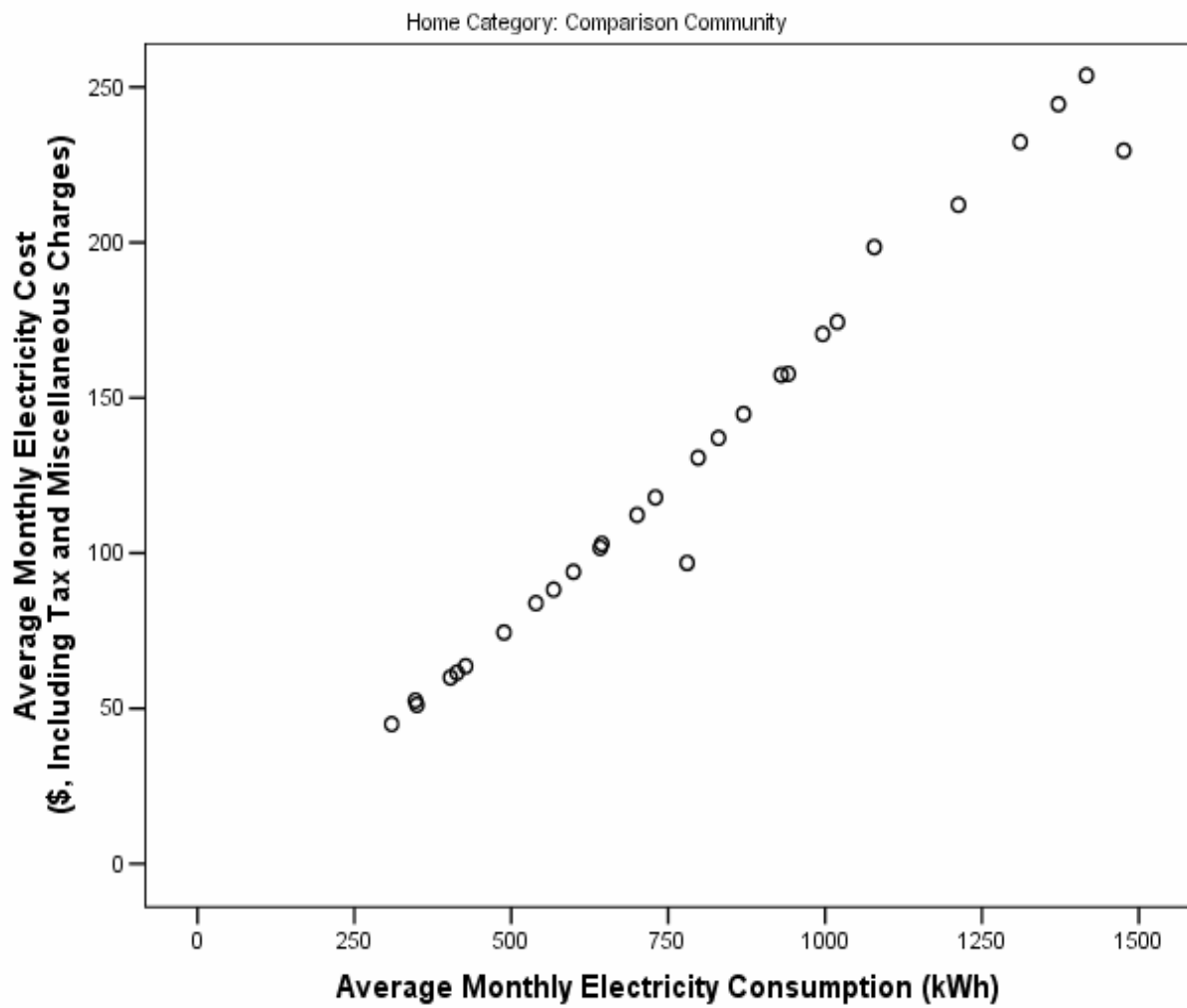
**Figure V-5. Comparison of Average Monthly Electricity Consumption (kWh) and Average Monthly Electricity Cost (dollars), Including Taxes and Miscellaneous Charges, for All Homes Combined (n=109)**



**Figure V-6. Comparison of Average Monthly Electricity Consumption (kWh) and Average Monthly Electricity Cost (dollars), Including Taxes and Miscellaneous Charges, for Homes in the SheaHomes Communities with PV Systems (n=37)**

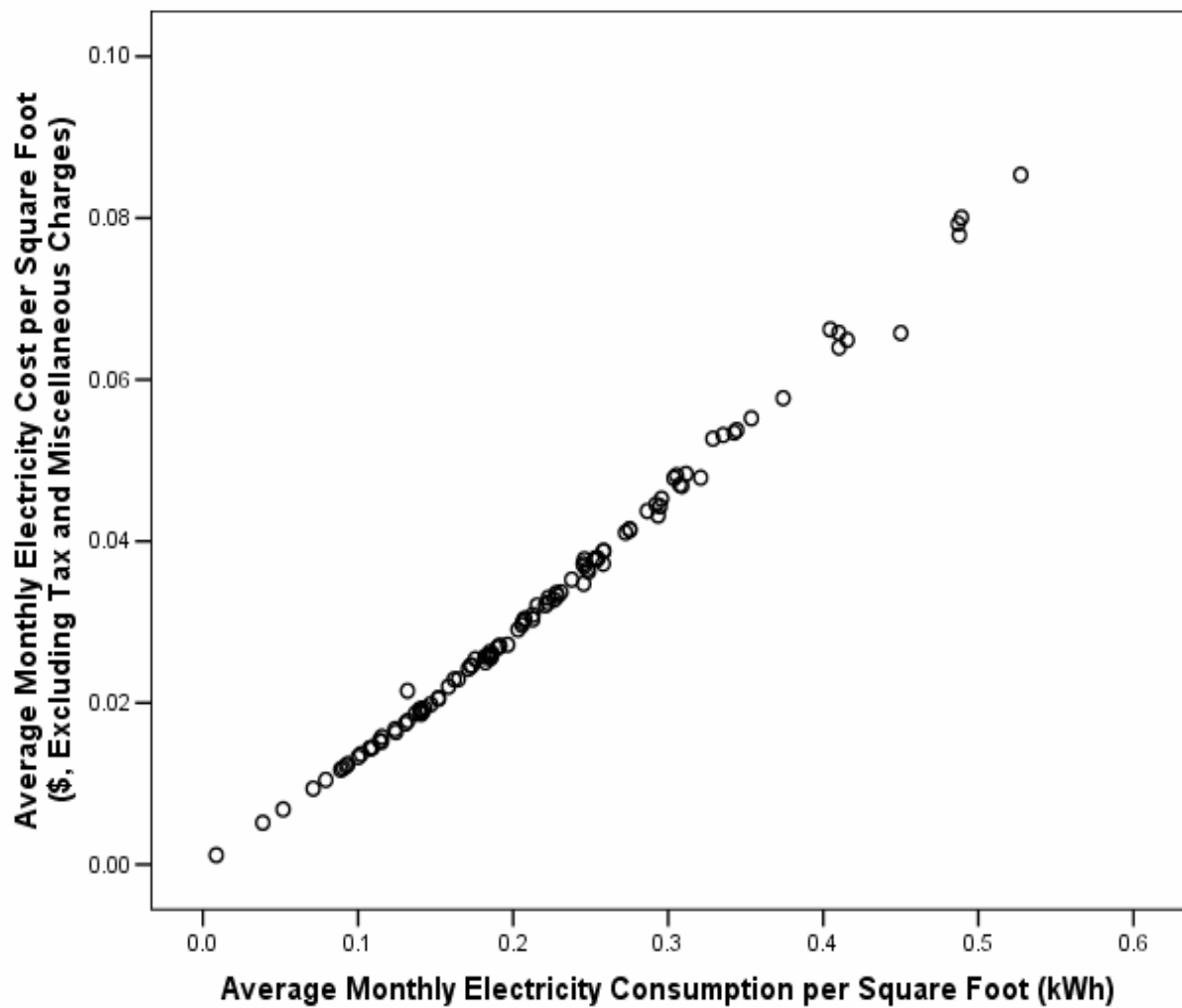


**Figure V-7. Comparison of Average Monthly Electricity Consumption (kWh) and Average Monthly Electricity Cost (dollars), Including Taxes and Miscellaneous Charges, for Homes in the SheaHomes Communities without PV Systems (n=44)**

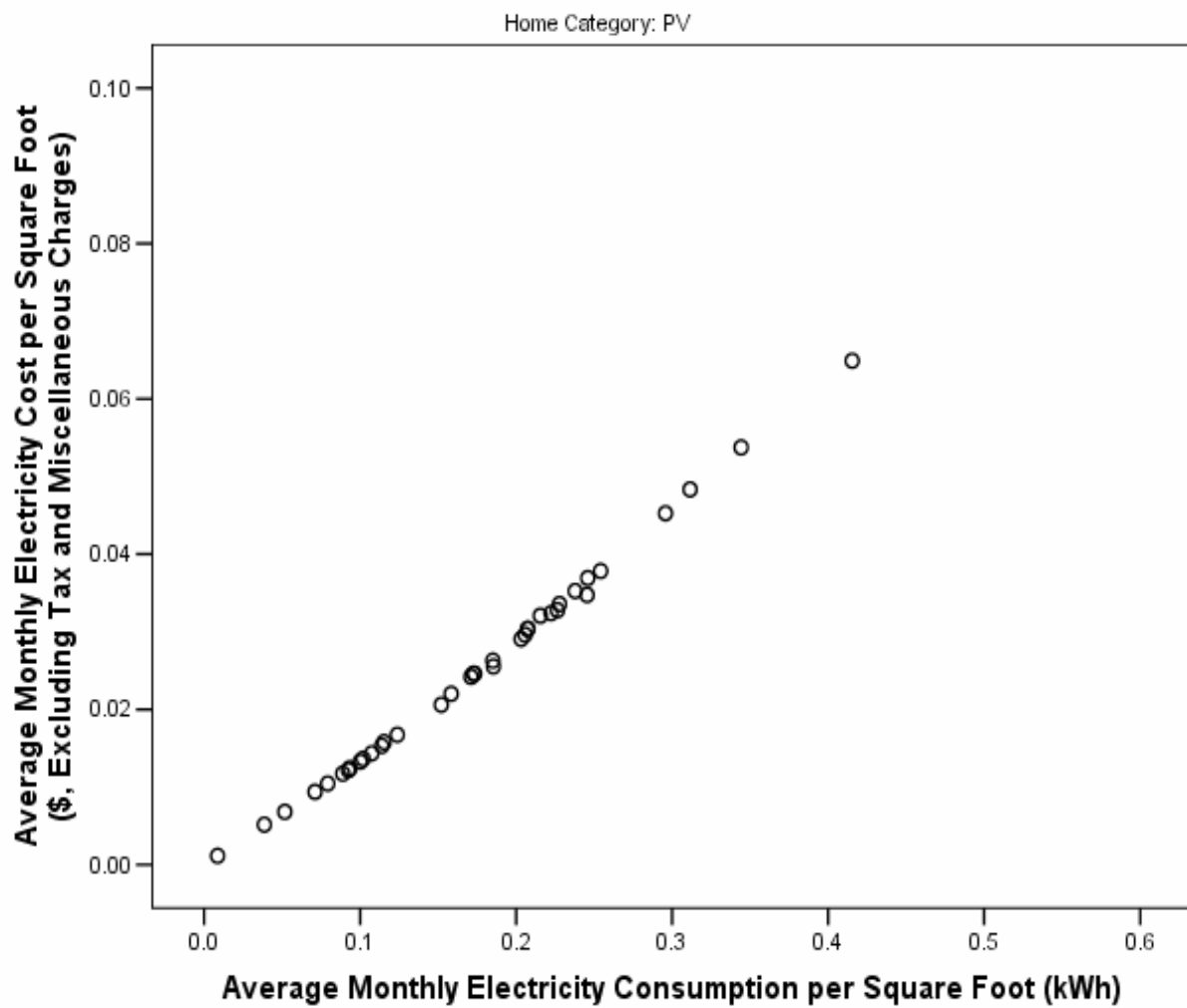


**Figure V-8. Comparison of Average Monthly Electricity Consumption (kWh) and Average Monthly Electricity Cost (dollars), Including Taxes and Miscellaneous Charges, for Homes in the Comparison Community (n=28)**

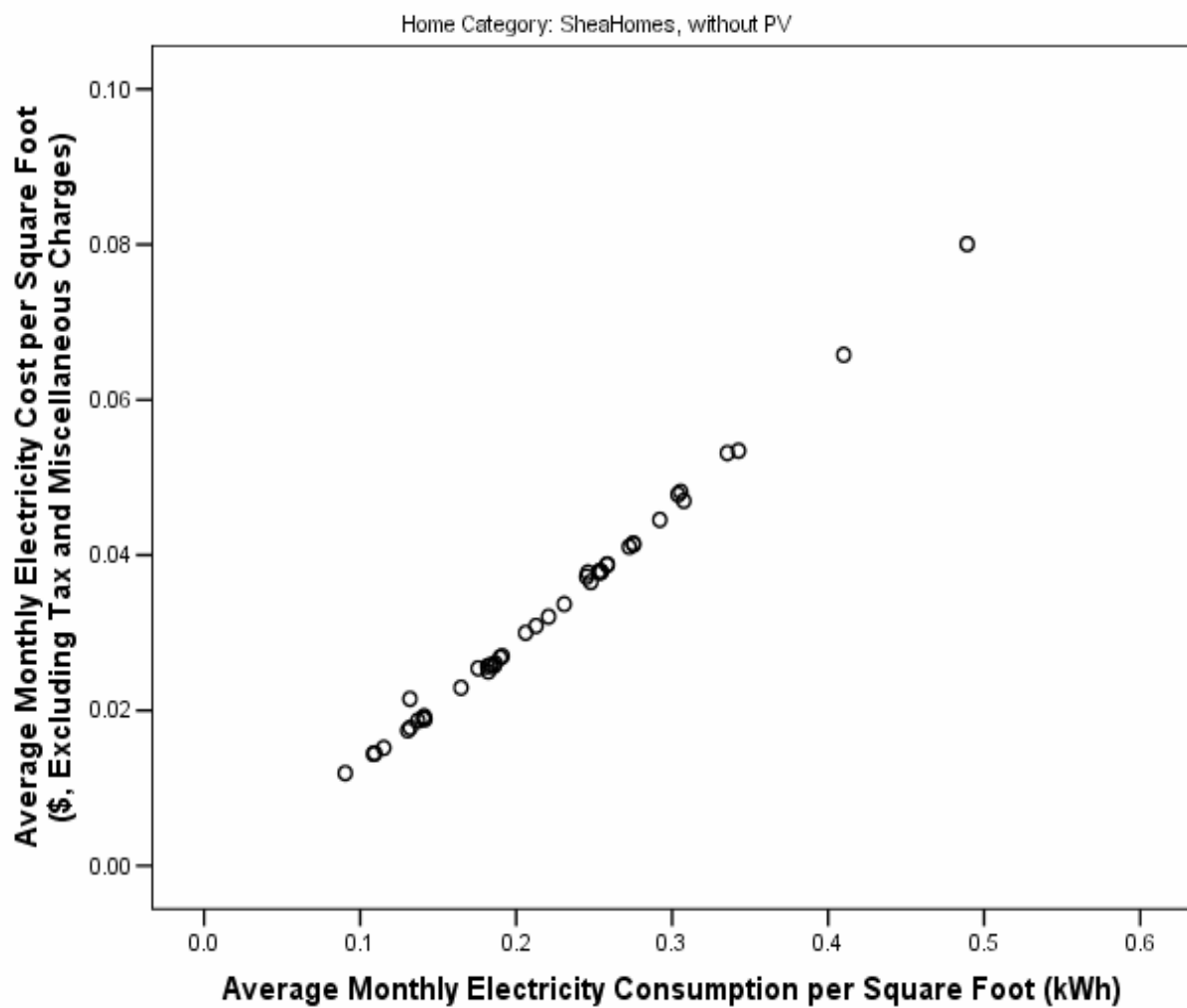




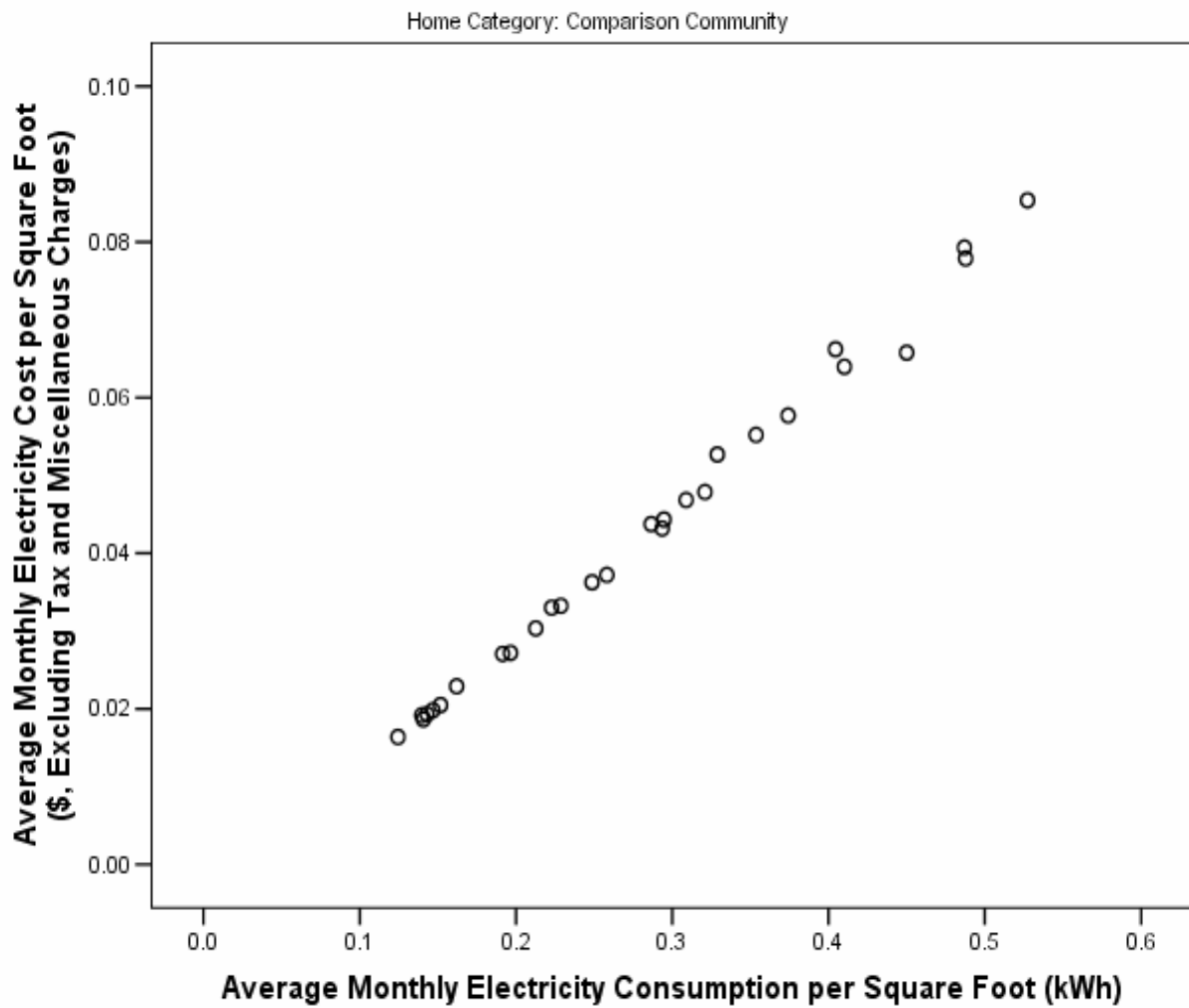
**Figure V-9. Comparison of Average Monthly Electricity Consumption (kWh)/ft<sup>2</sup> and Average Monthly Electricity Cost (dollars)/ft<sup>2</sup>, Excluding Taxes and Miscellaneous Charges, for All Homes Combined (n=109)**



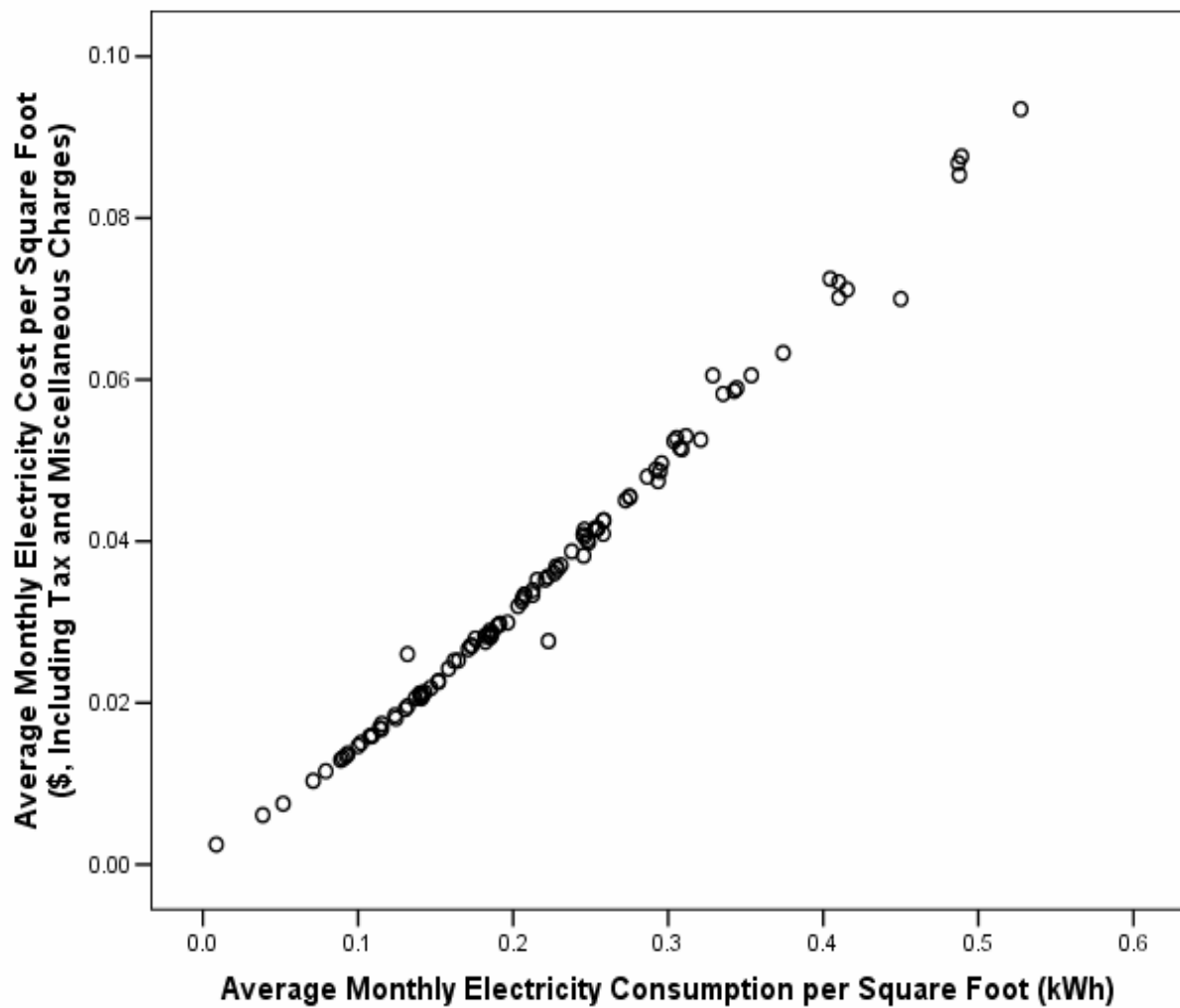
**Figure V-10. Comparison of Average Monthly Electricity Consumption (kWh)/ft<sup>2</sup> and Average Monthly Electricity Cost (dollars)/ft<sup>2</sup>, Excluding Taxes and Miscellaneous Charges, for Homes in the SheaHomes Communities with PV Systems (n=37)**



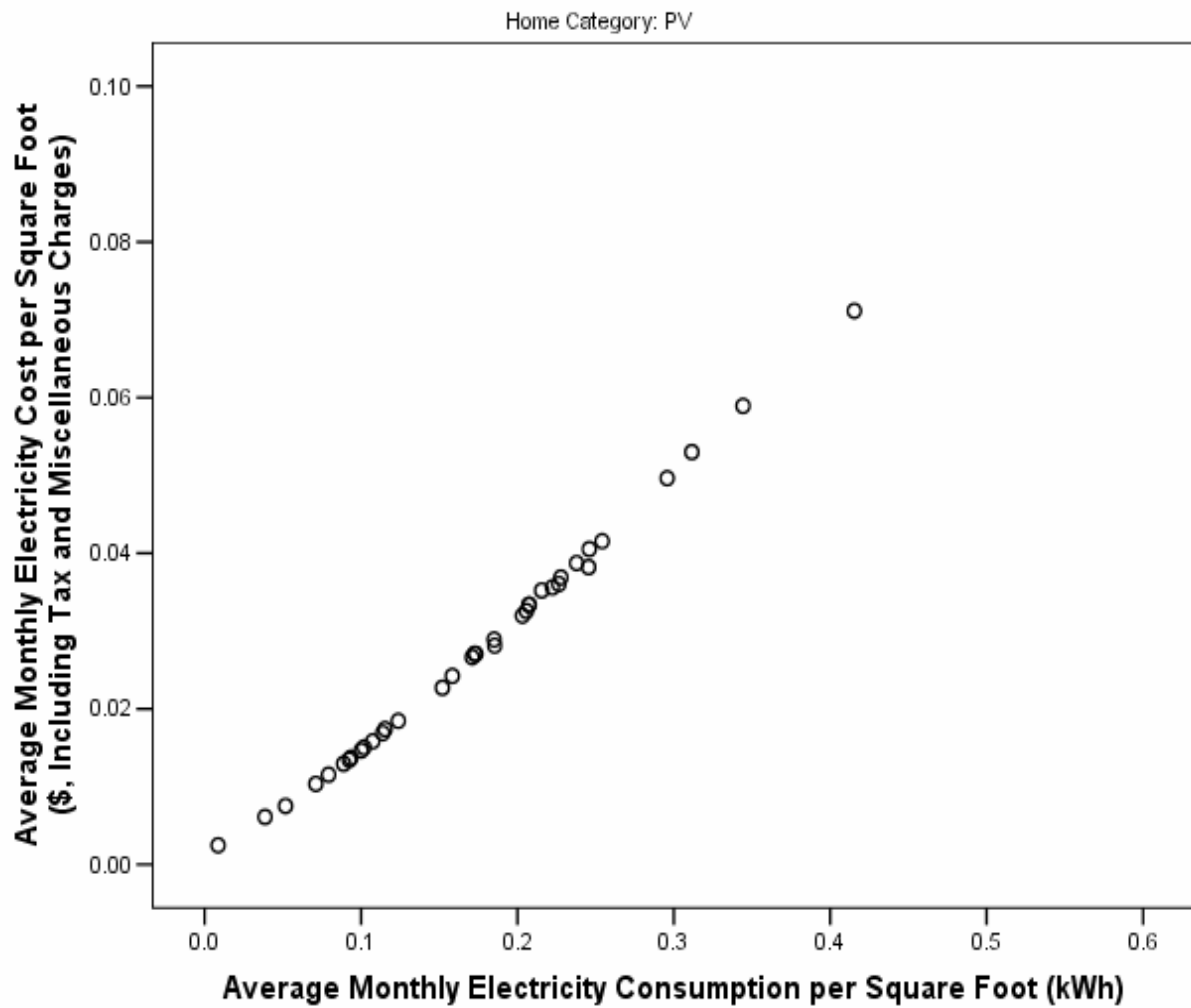
**Figure V-11. Comparison of Average Monthly Electricity Consumption (kWh)/ft<sup>2</sup> and Average Monthly Electricity Cost (dollars)/ft<sup>2</sup>, Excluding Taxes and Miscellaneous Charges, for Homes in the SheaHomes Communities without PV Systems (n=44)**



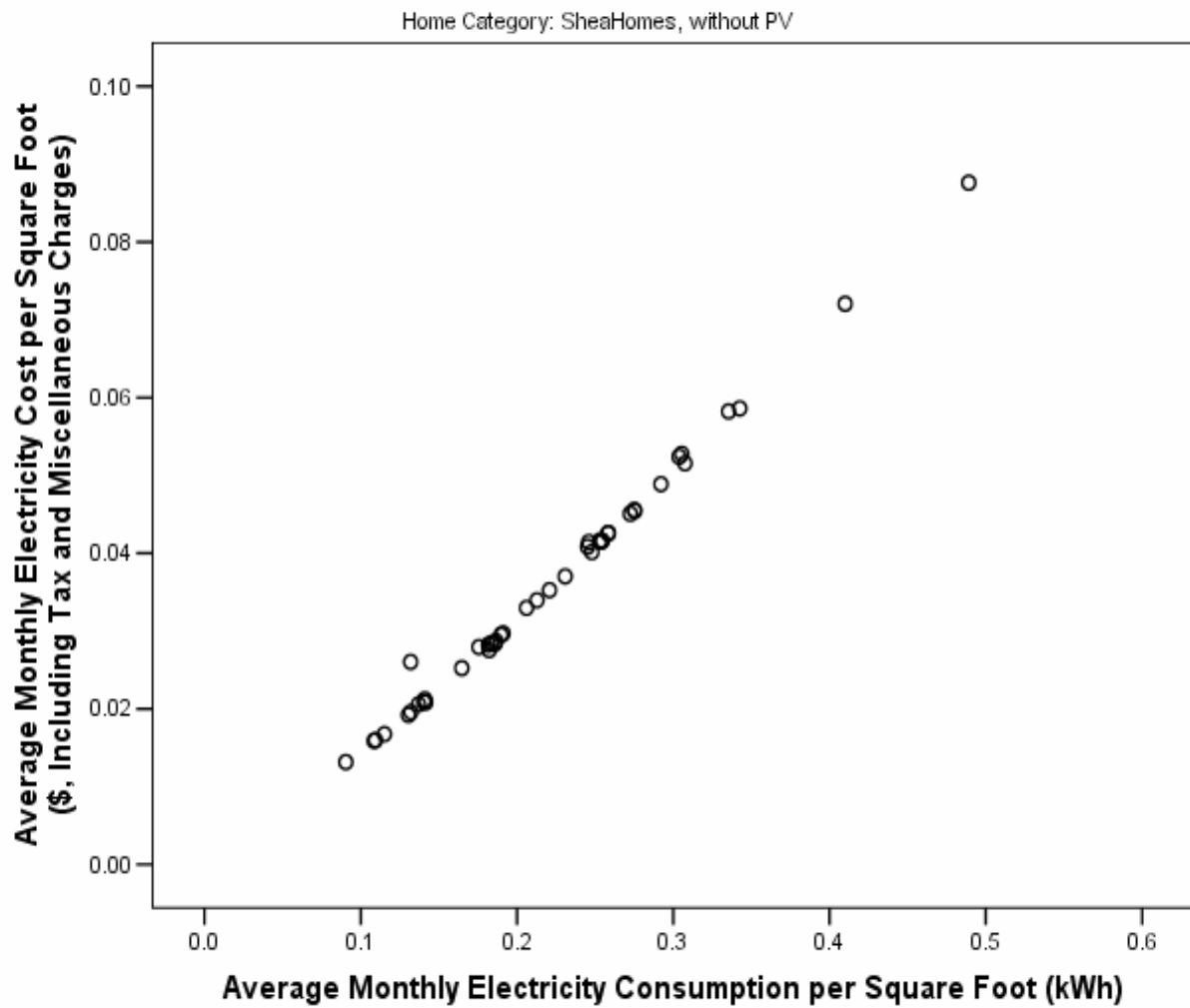
**Figure V-12. Comparison of Average Monthly Electricity Consumption (kWh)/ft<sup>2</sup> and Average Monthly Electricity Cost (dollars)/ft<sup>2</sup>, Excluding Taxes and Miscellaneous Charges, for Homes in the Comparison Community (n=28)**



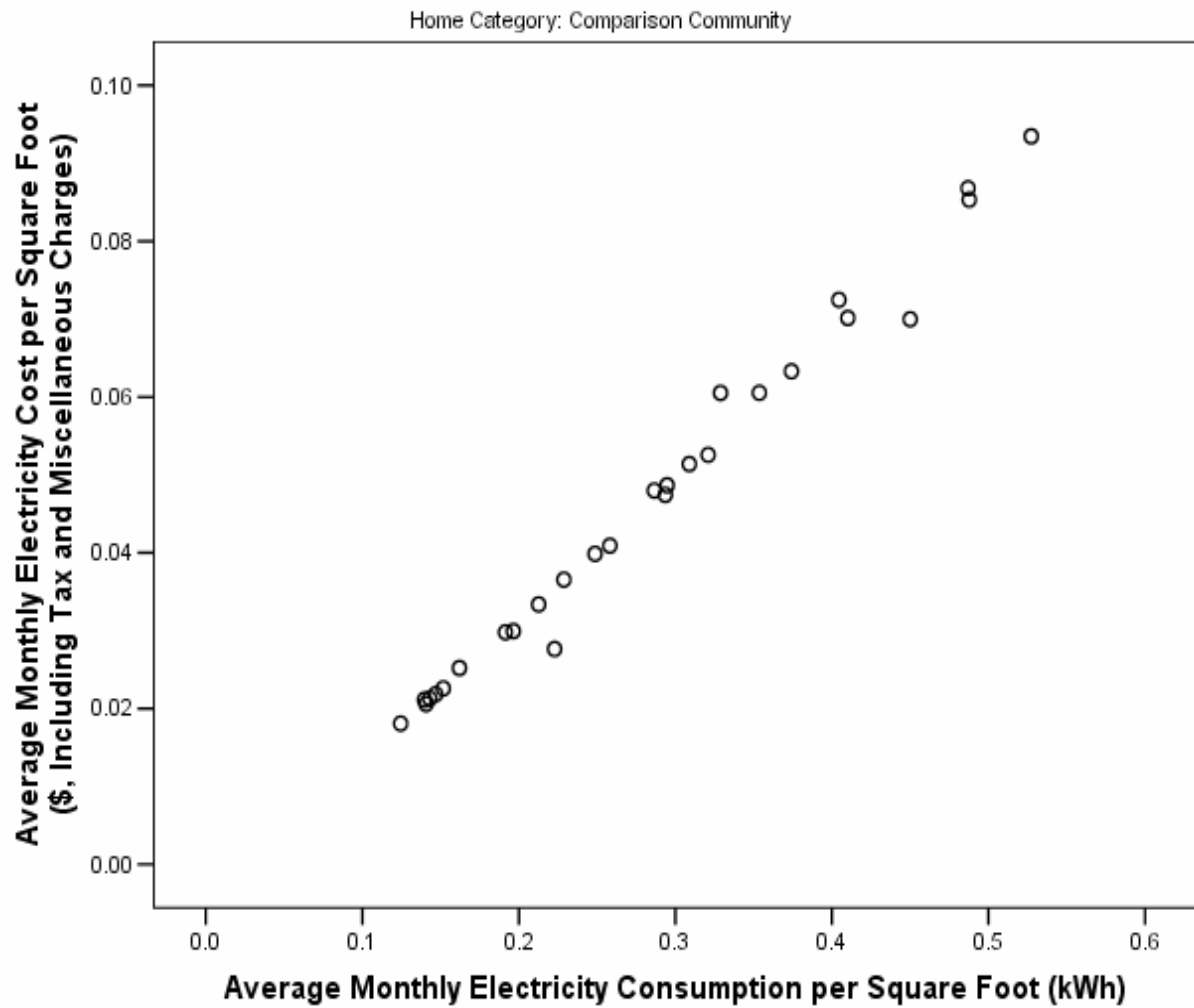
**Figure V-13. Comparison of Average Monthly Electricity Consumption (kWh)/ft<sup>2</sup> and Average Monthly Electricity Cost (dollars)/ft<sup>2</sup>, Including Taxes and Miscellaneous Charges, for All Homes Combined (n=109)**



**Figure V-14. Comparison of Average Monthly Electricity Consumption (kWh)/ft<sup>2</sup> and Average Monthly Electricity Cost (dollars)/ft<sup>2</sup>, Including Taxes and Miscellaneous Charges, for Homes in the SheaHomes Communities with PV Systems (n=37)**



**Figure V-15. Comparison of Average Monthly Electricity Consumption (kWh)/ft<sup>2</sup> and Average Monthly Electricity Cost (dollars)/ft<sup>2</sup>, Including Taxes and Miscellaneous Charges, for Homes in the SheaHomes Communities without PV Systems (n=44)**



**Figure V-16. Comparison of Average Monthly Electricity Consumption (kWh)/ft<sup>2</sup> and Average Monthly Electricity Cost (dollars)/ft<sup>2</sup>, Including Taxes and Miscellaneous Charges, for Homes in the Comparison Community (n=28)**



## **Appendix W**

### **Electricity and Gas Consumption for 1.2-kW and 2.4-kW Solar PV Systems in the SheaHomes Communities**

*Cited in Chapter 21*

**Table W-1. Comparative Descriptive Statistics on Electricity and Natural Gas Consumption,  
July 2003–June 2004, for Homes in the SheaHomes Communities  
with Different Sizes of Solar PV Systems**

<b>Home Category</b>	<b>Statistic</b>	<b>Total 12-Month Electricity Consumption (kWh)</b>	<b>Average Monthly Electricity Consumption (kWh)</b>	<b>Total 12-Month Gas Consumption (therms)</b>	<b>Average Monthly Gas Consumption (therms)</b>
Homes with 1.2-kW systems (n=31*)	Minimum	1,880.0	156.6	100.0	8.3
	Mean	6,864.2	572.9	366.8	30.7
	Median	6,967.0	581.4	333.0	27.9
	Maximum	12,868.0	1,073.4	678.0	56.6
	Standard deviation	3,097.3	258.4	144.3	12.0
	Coefficient of variation	45.1%	45.1%	39.2%	39.2%
Homes with 2.4-kW systems (n=6*)	Minimum	267.0	22.3	176.0	14.7
	Mean	3,809.5	318.4	361.7	30.3
	Median	3,972.5	332.0	346.5	29.1
	Maximum	68.21	568.9	515.0	43.0
	Standard deviation	2,662.6	222.0	127.5	10.7
	Coefficient of variation	69.8%	69.8%	35.3%	38.3%

\*Outlier homes excluded

**Table W-2. Comparative Descriptive Statistics on Electricity and Natural Gas Consumption per Square Foot, July 2003–June 2004, for Homes in the SheaHomes Communities with Different Sizes of Solar PV Systems**

<b>Home Category</b>	<b>Statistic</b>	<b>Average Monthly Electricity Consumption/ft<sup>2</sup> (kWh)</b>	<b>Average Monthly Gas Consumption/ft<sup>2</sup> (therms)</b>
Homes with 1.2-kW systems (n=31*)	Minimum	.052	.000
	Mean	.189	.010
	Median	.203	.009
	Maximum	.415	.020
	Standard deviation	.085	.004
	Coefficient of variation	45.0%	50.0%
Homes with 2.4-kW systems (n=6*)	Minimum	.009	.010
	Mean	.100	.010
	Median	.097	.009
	Maximum	.185	.010
	Standard deviation	.071	.003
	Coefficient of variation	71.0%	30.0%

\*Outlier homes excluded

**Table W-3. Comparative Descriptive Statistics on Electricity Cost, July 2003–June 2004, for Homes in the SheaHomes Communities with Different Sizes of Solar PV Systems**

<b>Home Category</b>	<b>Statistic</b>	<b>Total 12-Month Electricity Cost, no Taxes or Miscellaneous Charges</b>	<b>Average Monthly Electricity Cost, no Taxes or Miscellaneous Charges</b>	<b>Total 12-Month Electricity Cost, including Taxes and Miscellaneous Charges</b>	<b>Average Monthly Electricity Cost, including Taxes and Miscellaneous Charges</b>
Homes with 1.2-kW systems (n=31*)	Minimum	\$ 247.97	\$ 20.66	\$ 273.59	\$ 22.79
	Mean	\$ 998.42	\$ 83.34	\$ 1,097.42	\$ 91.60
	Median	\$ 993.78	\$ 82.54	\$91,093.09	\$ 90.79
	Maximum	\$2,010.24	\$167.71	\$ 2,203.71	\$183.84
	Standard deviation	\$ 500.48	\$ 41.76	\$ 548.06	\$ 45.73
	Coefficient of variation	50.1%	50.1%	49.9%	49.9%
Homes with 2.4-kW systems (n=6*)	Minimum	\$ 35.76	\$ 2.99	\$ 76.35	\$ 6.39
	Mean	\$529.13	\$44.24	\$ 591.48	\$49.45
	Median	\$537.09	\$44.91	\$ 591.98	\$49.49
	Maximum	\$968.90	\$80.81	\$1,065.73	\$88.89
	Standard deviation	\$380.06	\$31.70	\$ 405.71	\$33.83
	Coefficient of variation	71.7%	71.7%	68.5%	68.5%

\*Outlier homes excluded

**Table W-4. Comparative Descriptive Statistics on Gas Cost, July 2003–June 2004, for Homes in the SheaHomes Communities with Different Sizes of Solar PV Systems**

<b>Home Category</b>	<b>Statistic</b>	<b>Total 12-Month Gas Cost, no Taxes or Miscellaneous Charges</b>	<b>Average Monthly Gas Cost, no Taxes or Miscellaneous Charges</b>	<b>Total 12-Month Gas Cost, including Taxes and Miscellaneous Charges</b>	<b>Average Monthly Gas Cost, including Taxes and Miscellaneous Charges</b>
Homes with 1.2-kW systems (n=31*)	Minimum	\$ 92.87	\$ 7.75	\$ 99.25	\$ 8.28
	Mean	\$353.73	\$29.64	\$376.98	\$31.59
	Median	\$318.58	\$27.73	\$339.93	\$28.53
	Maximum	\$684.47	\$57.18	\$727.62	\$60.79
	Standard deviation	\$148.85	\$12.46	\$158.07	\$13.23
	Coefficient of variation	42.1%	42.1%	41.9%	41.9%
Homes with 2.4-kW systems (n=6*)	Minimum	\$163.12	\$13.61	\$174.17	\$14.53
	Mean	\$346.30	\$28.99	\$369.21	\$30.91
	Median	\$328.96	\$27.63	\$350.93	\$29.48
	Maximum	\$504.22	\$42.05	\$536.92	\$44.78
	Standard deviation	\$128.82	\$10.80	\$136.98	\$11.48
	Coefficient of variation	37.2%	37.2%	37.1%	37.1%

\*Outlier homes excluded

**Table W-5. Comparative Descriptive Statistics on Combined Utility Bill, July 2003–June 2004, for Homes in the SheaHomes Communities with Different Sizes of Solar PV Systems**

<b>Home Category</b>	<b>Statistic</b>	<b>Total 12-Month Combined Utility Bill, no Taxes or Miscellaneous Charges</b>	<b>Average Monthly Combined Utility Bill, no Taxes or Miscellaneous Charges</b>	<b>Total 12-Month Combined Utility Bill, including Taxes and Miscellaneous Charges</b>	<b>Average Monthly Combined Utility Bill, including Taxes and Miscellaneous Charges</b>
Homes with 1.2-kW systems (n=31*)	Minimum	\$ 340.84	\$ 28.41	\$ 372.84	\$ 31.07
	Mean	\$1,352.15	\$112.98	\$1,474.40	\$123.19
	Median	\$1,347.51	\$112.47	\$1,472.86	\$122.94
	Maximum	\$3,168.80	\$219.24	\$2,856.74	\$238.49
	Standard deviation	\$ 599.88	\$ 50.06	\$ 653.21	\$ 54.51
	Coefficient of variation	44.3%	44.3%	44.2%	44.2%
Homes with 2.4-kW systems (n=6*)	Minimum	\$ 198.88	\$ 16.59	\$ 250.52	\$ 20.91
	Mean	\$ 875.43	\$ 73.23	\$ 960.69	\$ 80.36
	Median	\$ 957.97	\$ 80.15	\$1,040.56	\$ 87.19
	Maximum	\$1,473.12	\$122.87	\$1,602.65	\$133.67
	Standard deviation	\$ 479.21	\$ 39.97	\$ 510.27	\$ 42.55
	Coefficient of variation	54.6%	54.6%	53.0%	53.0%

\*Outlier homes excluded

**Table W-6. Comparative Descriptive Statistics on Average Utility Costs per Square Foot,  
July 2003–June 2004, for Homes in the SheaHomes Communities with Different Sizes  
of Solar PV Systems, Excluding Taxes and Miscellaneous Charges**

<b>Home Category</b>	<b>Statistic</b>	<b>Average Monthly Electricity Cost/ft<sup>2</sup></b>	<b>Average Monthly Gas Cost/ft<sup>2</sup></b>	<b>Average Monthly Combined Utility Bill/ft<sup>2</sup></b>
Homes with 1.2-kW systems (n=31*)	Minimum	\$.007	\$.003	\$.009
	Mean	\$.027	\$.010	\$.037
	Median	\$.029	\$.009	\$.037
	Maximum	\$.065	\$.018	\$.079
	Standard deviation	\$.014	\$.004	\$.016
	Coefficient of variation	51.9%	40.0%	43.2%
Homes with 2.4-kW systems (n=6*)	Minimum	\$.001	\$.005	\$.006
	Mean	\$.014	\$.009	\$.023
	Median	\$.013	\$.009	\$.024
	Maximum	\$.026	\$.014	\$.040
	Standard deviation	\$.010	\$.003	\$.012
	Coefficient of variation	71.4%	33.3%	52.2%

\*Outlier homes excluded

**Table W-7. Comparative Descriptive Statistics on Average Utility Costs per Square Foot, July 2003–June 2004, for Homes in the SheaHomes Communities with Different Sizes of Solar PV Systems, Including Taxes and Miscellaneous Charges**

<b>Home Category</b>	<b>Statistic</b>	<b>Average Monthly Electricity Cost/ft<sup>2</sup></b>	<b>Average Monthly Gas Cost/ft<sup>2</sup></b>	<b>Average Monthly Combined Utility Bill/ft<sup>2</sup></b>
Homes with 1.2-kW systems (n=31*)	Minimum	\$.008	\$.003	\$.010
	Mean	\$.030	\$.010	\$.041
	Median	\$.032	\$.009	\$.040
	Maximum	\$.071	\$.019	\$.086
	Standard deviation	\$.015	\$.004	\$.018
	Coefficient of variation	50.0%	40.0%	43.9%
Homes with 2.4-kW systems (n=6*)	Minimum	\$.002	\$.006	\$.008
	Mean	\$.016	\$.010	\$.025
	Median	\$.014	\$.009	\$.026
	Maximum	\$.029	\$.015	\$.043
	Standard deviation	\$.011	\$.003	\$.013
	Coefficient of variation	68.8%	30.0%	52.0%

\*Outlier homes excluded



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