

## Appendix C: Residential Component Surveys

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# Watt Buster Residential Survey #1

1.

1. How long have you lived in your current home?

0 to 5 years

6 to 10 years

11 to 15 years

16 or more years

2. How many people live in your household?

1 to 2

3 to 5

More than 5

3. What are their ages? (check all that apply)

Birth to 5

6 to 10

11 to 17

18 to 24

25 or older

4. What is your primary source of heat?

Natural gas

Electricity

Other (please specify)

5. What are your secondary sources of heat, if any?

Space heaters

Wood

Other (please specify)

# Watt Buster Residential Survey #1

## 6. What expectations do you have for Watt Buster?

Please rate each of the expectations below on a scale from 1 to 5, where "1" means no expectations and "5" means high expectations.

	1	2	3	4	5
Provide a concrete way to reduce electricity use and save money	ja	ja	ja	ja	ja
Offer new insights into my household electricity usage patterns	ja	ja	ja	ja	ja
Receive information that will help guide my decisions to increase efficiency	ja	ja	ja	ja	ja
Compare my household electricity use to similar households in the community	ja	ja	ja	ja	ja
Lead to a broader program to help all Chugach members become more efficient	ja	ja	ja	ja	ja
Learn from others in the community regarding ideas for energy efficiency	ja	ja	ja	ja	ja

## 7. What factors motivated you to participate in Watt Buster?

Please rate each of the factors below on a scale from 1 to 5, where "1" means no influence and "5" means strong influence. If none of the factors apply, please list and rate the one(s) that influenced your decision.

	1	2	3	4	5
Participate in a relevant community activity	ja	ja	ja	ja	ja
Set a positive example for my children	ja	ja	ja	ja	ja
Seemed like the right thing to do	ja	ja	ja	ja	ja
Save money	ja	ja	ja	ja	ja
Gain a better understanding of my household's electricity use	ja	ja	ja	ja	ja
Take steps to help protect the environment	ja	ja	ja	ja	ja
Other (please specify)					
<input style="width: 300px; height: 20px;" type="text"/>					

## 8. Please provide your best estimate of the age of some of the common appliances in your home.

Leave blank if your household does not have the appliance listed.

	Less than 1 year	1-5 years	6-10 years	11+ years
Refrigerator (located in kitchen)	ja	ja	ja	ja
A second refrigerator (located elsewhere in the house)	ja	ja	ja	ja
Stand-alone freezer	ja	ja	ja	ja
Stove	ja	ja	ja	ja
Clothes washer	ja	ja	ja	ja
Clothes dryer	ja	ja	ja	ja
Dishwasher	ja	ja	ja	ja

# Watt Buster Residential Survey #1

9. Over the past five (5) years, has your household undertaken any of the following activities to reduce electricity or natural gas use?

	Yes	No	Maybe
Installed insulation	ja	ja	ja
Replaced windows with new ones that have a higher insulation value	ja	ja	ja
Replaced light bulbs with compact fluorescent bulbs	ja	ja	ja
Installed one or more programmable timers to control lighting use	ja	ja	ja
Installed programmable thermostat(s) to control heat	ja	ja	ja
Installed weatherization materials on doors and windows	ja	ja	ja
Unplug or fully turn off devices to avoid power waste in standby mode	ja	ja	ja

10. Please tell us how consistently your household currently takes the following actions to use electricity more efficiently.

Rate each action on a scale from 1 to 5, where "1" means never and "5" means always.

Leave blank if the action listed does not apply to your household.

	1	2	3	4	5
Turn off lights in unoccupied rooms	ja	ja	ja	ja	ja
Make sure that electronic devices such as computers printers, chargers, TVs, cable boxes or game systems are completely turned off or physically unplugged when not in use (no red or green lights on, and not in standby mode)	ja	ja	ja	ja	ja
In winter, turn down the thermostat before leaving the house	ja	ja	ja	ja	ja
Make sure the dishwasher, washing machine and dryer are fully loaded before use	ja	ja	ja	ja	ja
Turn down temperature of hot water heater	ja	ja	ja	ja	ja

11. What information would be helpful to you to make your household more efficient in the use of electricity?

Rate each on a scale of 1 to 5, where "1" is not helpful and "5" is very helpful.

	1	2	3	4	5
What product models are the most energy efficient?	ja	ja	ja	ja	ja
What appliances, devices and equipment in my home are least efficient?	ja	ja	ja	ja	ja
What habits could be modified to maximize efficiency without impacting our lifestyle?	ja	ja	ja	ja	ja
How does my electricity use compare to others in similar homes?	ja	ja	ja	ja	ja

# Watt Buster Residential Survey #1

12. What do you think are the most significant barriers to becoming more efficient in your household electricity use?

Rate each one on a scale from 1 to 5, where "1" is not significant and "5" is very significant. Check N/A if the listed barrier is not applicable to your household.

	1	2	3	4	5	N/A
High cost of replacing appliances such as refrigerators and stoves with more efficient models	<input type="radio"/>					
"Kids being kids" leaving lights on and carelessly adjusting thermostats	<input type="radio"/>					
Too busy, other more important priorities to stay on top of everything, forget to turn things off or down	<input type="radio"/>					
Preference towards convenience - like sitting down and turning on devices with remote	<input type="radio"/>					
Aren't well informed about the steps that can be taken	<input type="radio"/>					
Work hard all day - want comfort at home	<input type="radio"/>					
Electricity is not all that expensive - not worth the effort	<input type="radio"/>					

13. As a participant in Watt Buster, you have installed a monitoring system that provides your household with near real-time electricity use, compares it to similar households and provides information about how to save electricity and money. As a Watt Buster volunteer, you received this equipment free of charge.

How much do you think other households would be willing to pay on their monthly electric bill to receive these and other benefits?

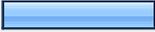
- Up to \$1 per month
- Between \$1 and \$10 per month
- Between \$10 and \$20 per month
- Between \$20 and \$50 per month
- Nothing

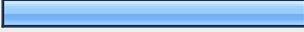
14. How easy or difficult was it to install the Tendril devices?

	1	2	3	4	5
Rate the level of difficulty on a scale of 1 to 5, where "1" is easy and "5" is difficult.	<input type="radio"/>				

15. Do you have other comments or suggestions?

# Watt Buster Residential Survey #1

1. How long have you lived in your current home?			
		Response Percent	Response Count
0 to 5 years		31.1%	28
6 to 10 years		23.3%	21
11 to 15 years		20.0%	18
16 or more years		25.6%	23
		<b>answered question</b>	<b>90</b>
		<b>skipped question</b>	<b>0</b>

2. How many people live in your household?			
		Response Percent	Response Count
1 to 2		46.7%	42
3 to 5		45.6%	41
More than 5		7.8%	7
		<b>answered question</b>	<b>90</b>
		<b>skipped question</b>	<b>0</b>

<b>3. What are their ages? (check all that apply)</b>			
		<b>Response Percent</b>	<b>Response Count</b>
Birth to 5		13.3%	12
6 to 10		21.1%	19
11 to 17		30.0%	27
18 to 24		12.2%	11
<b>25 or older</b>		<b>98.9%</b>	<b>89</b>
		<i>answered question</i>	<b>90</b>
		<i>skipped question</i>	<b>0</b>

<b>4. What is your primary source of heat?</b>			
		<b>Response Percent</b>	<b>Response Count</b>
<b>Natural gas</b>		<b>95.6%</b>	<b>86</b>
Electricity		2.2%	2
Other (please specify)		2.2%	2
		<i>answered question</i>	<b>90</b>
		<i>skipped question</i>	<b>0</b>

<b>5. What are your secondary sources of heat, if any?</b>			
		<b>Response Percent</b>	<b>Response Count</b>
Space heaters		33.3%	14
<b>Wood</b>		<b>45.2%</b>	<b>19</b>
Other (please specify)		21.4%	9
		<i>answered question</i>	<b>42</b>
		<i>skipped question</i>	<b>48</b>

**6. What expectations do you have for Watt Buster? Please rate each of the expectations below on a scale from 1 to 5, where "1" means no expectations and "5" means high expectations.**

	1	2	3	4	5	Response Count
Provide a concrete way to reduce electricity use and save money	1.1% (1)	5.6% (5)	23.3% (21)	27.8% (25)	<b>42.2% (38)</b>	90
Offer new insights into my household electricity usage patterns	0.0% (0)	1.1% (1)	5.6% (5)	22.2% (20)	<b>71.1% (64)</b>	90
Receive information that will help guide my decisions to increase efficiency	0.0% (0)	5.6% (5)	11.1% (10)	36.7% (33)	<b>46.7% (42)</b>	90
Compare my household electricity use to similar households in the community	5.6% (5)	11.1% (10)	26.7% (24)	27.8% (25)	<b>28.9% (26)</b>	90
Lead to a broader program to help all Chugach members become more efficient	0.0% (0)	7.8% (7)	23.3% (21)	31.1% (28)	<b>37.8% (34)</b>	90
Learn from others in the community regarding ideas for energy efficiency	4.4% (4)	10.0% (9)	26.7% (24)	<b>32.2% (29)</b>	26.7% (24)	90
	<b><i>answered question</i></b>					<b>90</b>
	<b><i>skipped question</i></b>					<b>0</b>

**7. What factors motivated you to participate in Watt Buster? Please rate each of the factors below on a scale from 1 to 5, where "1" means no influence and "5" means strong influence. If none of the factors apply, please list and rate the one(s) that influenced your decision.**

	1	2	3	4	5	Response Count
Participate in a relevant community activity	13.3% (12)	7.8% (7)	23.3% (21)	24.4% (22)	<b>31.1% (28)</b>	90
Set a positive example for my children	<b>33.3% (30)</b>	10.0% (9)	20.0% (18)	12.2% (11)	24.4% (22)	90
Seemed like the right thing to do	12.2% (11)	5.6% (5)	20.0% (18)	<b>33.3% (30)</b>	28.9% (26)	90
Save money	1.1% (1)	3.3% (3)	15.6% (14)	30.0% (27)	<b>50.0% (45)</b>	90
Gain a better understanding of my household's electricity use	0.0% (0)	1.1% (1)	4.4% (4)	21.1% (19)	<b>73.3% (66)</b>	90
Take steps to help protect the environment	7.8% (7)	6.7% (6)	18.9% (17)	30.0% (27)	<b>36.7% (33)</b>	90
					Other (please specify)	3
					<b><i>answered question</i></b>	<b>90</b>
					<b><i>skipped question</i></b>	<b>0</b>

8. Please provide your best estimate of the age of some of the common appliances in your home. Leave blank if your household does not have the appliance listed.

	Less than 1 year	1-5 years	6-10 years	11+ years	Response Count
Refrigerator (located in kitchen)	4.4% (4)	<b>38.9% (35)</b>	32.2% (29)	24.4% (22)	90
A second refrigerator (located elsewhere in the house)	4.2% (1)	25.0% (6)	25.0% (6)	<b>45.8% (11)</b>	24
Stand-alone freezer	3.2% (2)	22.2% (14)	31.7% (20)	<b>42.9% (27)</b>	63
Stove	3.4% (3)	34.1% (30)	<b>43.2% (38)</b>	19.3% (17)	88
Clothes washer	4.5% (4)	<b>41.6% (37)</b>	37.1% (33)	16.9% (15)	89
Clothes dryer	3.3% (3)	<b>42.2% (38)</b>	36.7% (33)	17.8% (16)	90
Dishwasher	9.0% (8)	34.8% (31)	<b>38.2% (34)</b>	18.0% (16)	89
	<i>answered question</i>				<b>90</b>
	<i>skipped question</i>				<b>0</b>

<b>9. Over the past five (5) years, has your household undertaken any of the following activities to reduce electricity or natural gas use?</b>				
	<b>Yes</b>	<b>No</b>	<b>Maybe</b>	<b>Response Count</b>
Installed insulation	40.0% (36)	<b>60.0% (54)</b>	0.0% (0)	90
Replaced windows with new ones that have a higher insulation value	31.1% (28)	<b>65.6% (59)</b>	3.3% (3)	90
Replaced light bulbs with compact fluorescent bulbs	<b>85.6% (77)</b>	8.9% (8)	5.6% (5)	90
Installed one or more programmable timers to control lighting use	25.6% (23)	<b>72.2% (65)</b>	2.2% (2)	90
Installed programmable thermostat (s) to control heat	<b>52.2% (47)</b>	47.8% (43)	0.0% (0)	90
Installed weatherization materials on doors and windows	<b>50.0% (45)</b>	48.9% (44)	1.1% (1)	90
Unplug or fully turn off devices to avoid power waste in standby mode	<b>54.4% (49)</b>	35.6% (32)	10.0% (9)	90
	<b><i>answered question</i></b>			<b>90</b>
	<b><i>skipped question</i></b>			<b>0</b>

10. Please tell us how consistently your household currently takes the following actions to use electricity more efficiently. Rate each action on a scale from 1 to 5, where "1" means never and "5" means always. Leave blank if the action listed does not apply to your household.

	1	2	3	4	5	Response Count
Turn off lights in unoccupied rooms	0.0% (0)	1.1% (1)	13.3% (12)	<b>45.6% (41)</b>	40.0% (36)	90
Make sure that electronic devices such as computers printers, chargers, TVs, cable boxes or game systems are completely turned off or physically unplugged when not in use (no red or green lights on, and not in standby mode)	24.4% (22)	<b>28.9% (26)</b>	23.3% (21)	15.6% (14)	7.8% (7)	90
In winter, turn down the thermostat before leaving the house	13.5% (12)	11.2% (10)	13.5% (12)	23.6% (21)	<b>38.2% (34)</b>	89
Make sure the dishwasher, washing machine and dryer are fully loaded before use	0.0% (0)	2.2% (2)	23.6% (21)	34.8% (31)	<b>39.3% (35)</b>	89
Turn down temperature of hot water heater	24.1% (21)	8.0% (7)	<b>29.9% (26)</b>	21.8% (19)	16.1% (14)	87
	<i>answered question</i>					<b>90</b>
	<i>skipped question</i>					<b>0</b>

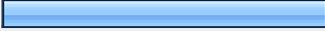
**11. What information would be helpful to you to make your household more efficient in the use of electricity? Rate each on a scale of 1 to 5, where "1" is not helpful and "5" is very helpful.**

	1	2	3	4	5	Response Count
What product models are the most energy efficient?	2.2% (2)	3.3% (3)	16.7% (15)	24.4% (22)	<b>53.3% (48)</b>	90
What appliances, devices and equipment in my home are least efficient?	3.3% (3)	1.1% (1)	5.6% (5)	26.7% (24)	<b>63.3% (57)</b>	90
What habits could be modified to maximize efficiency without impacting our lifestyle?	3.3% (3)	2.2% (2)	8.9% (8)	28.9% (26)	<b>56.7% (51)</b>	90
How does my electricity use compare to others in similar homes?	8.9% (8)	4.4% (4)	17.8% (16)	<b>34.4% (31)</b>	<b>34.4% (31)</b>	90
	<i>answered question</i>					<b>90</b>
	<i>skipped question</i>					<b>0</b>

**12. What do you think are the most significant barriers to becoming more efficient in your household electricity use? Rate each one on a scale from 1 to 5, where "1" is not significant and "5" is very significant. Check N/A if the listed barrier is not applicable to your household.**

	1	2	3	4	5	N/A	Response Count
High cost of replacing appliances such as refrigerators and stoves with more efficient models	4.4% (4)	8.9% (8)	11.1% (10)	18.9% (17)	<b>51.1% (46)</b>	5.6% (5)	90
"Kids being kids" leaving lights on and carelessly adjusting thermostats	17.8% (16)	10.0% (9)	12.2% (11)	14.4% (13)	13.3% (12)	<b>32.2% (29)</b>	90
Too busy, other more important priorities to stay on top of everything, forget to turn things off or down	15.6% (14)	21.1% (19)	<b>27.8% (25)</b>	17.8% (16)	12.2% (11)	5.6% (5)	90
Preference towards convenience - like sitting down and turning on devices with remote	13.3% (12)	12.2% (11)	17.8% (16)	<b>35.6% (32)</b>	15.6% (14)	5.6% (5)	90
Aren't well informed about the steps that can be taken	14.4% (13)	20.0% (18)	<b>28.9% (26)</b>	15.6% (14)	12.2% (11)	8.9% (8)	90
Work hard all day - want comfort at home	15.6% (14)	20.0% (18)	16.7% (15)	20.0% (18)	<b>22.2% (20)</b>	5.6% (5)	90
Electricity is not all that expensive - not worth the effort	<b>35.6% (32)</b>	24.4% (22)	16.7% (15)	6.7% (6)	7.8% (7)	8.9% (8)	90
	<b><i>answered question</i></b>						<b>90</b>
	<b><i>skipped question</i></b>						<b>0</b>

13. As a participant in Watt Buster, you have installed a monitoring system that provides your household with near real-time electricity use, compares it to similar households and provides information about how to save electricity and money. As a Watt Buster volunteer, you received this equipment free of charge. How much do you think other households would be willing to pay on their monthly electric bill to receive these and other benefits?

		Response Percent	Response Count
Up to \$1 per month		22.2%	20
<b>Between \$1 and \$10 per month</b>		<b>50.0%</b>	<b>45</b>
Between \$10 and \$20 per month		6.7%	6
Between \$20 and \$50 per month		1.1%	1
Nothing		20.0%	18
		<i>answered question</i>	<b>90</b>
		<i>skipped question</i>	<b>0</b>

14. How easy or difficult was it to install the Tendril devices?

	1	2	3	4	5	Response Count
Rate the level of difficulty on a scale of 1 to 5, where "1" is easy and "5" is difficult.	<b>46.7% (42)</b>	21.1% (19)	22.2% (20)	6.7% (6)	3.3% (3)	90
						<i>answered question</i>
						<i>skipped question</i>
						<b>90</b>
						<b>0</b>

15. Do you have other comments or suggestions?

		Response Count
		44
		<i>answered question</i>
		<b>44</b>
		<i>skipped question</i>
		<b>46</b>

## Open-Ended Comments

I noticed that you have three devices to plug in to monitor the energy usage, and that alone is going to increase your usage. I think Watt busters should be used to educate and help customers make their homes a little more energy efficient.

Great program so far, the device works great and is great information for us to have. Thanks!

being more conscientious about electricity has made me more aware of conserving other forms of energy as well

Installation was fairly easy, except I had no empty ports and the addition of a switch originally caused a block. The minute-by-minute readout is outstanding, as is the graph on the computer of the 15-minute interval energy use. Very interesting patterns. The next step in consumer education about electrical energy use would be to have a sub-measure of major appliances, or categories of energy use (like lighting) to see how much they add to the total energy use on a daily basis. It would be nice to know how many homes are the "comparables" and whether they have the same number of occupants, similar size, similar age home, etc. If it is an average of homes, would be interesting to see the usage displayed in an icon that shows the highest user, the lowest and the median (like stock graphs). The Tendril system is very nice. On the Tendril Vantage web portal, it is not immediately clear that if you click on a day's use it will show the hourly breakdown. If they add this note on the page, more people would be likely to use it. Nicely done program, Chucach. Professionally implemented! Thank you.

Include instructions on how to use the equipment. I don't know what the monitor is even telling me. What does it all mean?

I don't like how the display is wired. I have seen others that are wired base stations but you can pick up the display and walk around with it wirelessly as you turn on and off devices. Instructions to install were NOT included in my package of devices but it was so easy I just made a few assumptions and plugged it all in flawlessly. I think the program should have included one wall wort style addressable plug to move around the house and monitor/control that single appliance. Does/can tendril data be published on iGoogle via PowerMeter widget? I think it would be convenient to have the display show a graph of real time usage so that you can track the on/off cycle of inefficient appliances. can I add my own zigbee devices into the tendril platform during the trial? I don't have any yet... just curious. I have recently discovered the DASH7 device communication standard. Apparently it has some significant gains in distance and device to device communication. Are you aware of this? I would really like to see this program be permanent addition to your service. It immediately makes me think that you should provide rated usage windows to run appliances like dishwashers/etc in off peak hours and get a benefit for it. I would like to have visibility to my local grid load (graph over time) to help me make decisions on when to actively use electricity. I have also recently learned that without even changing out devices, customers can save energy by balancing the A/B phase load on their circuit breakers. What a concept. Makes sense to me. This means I would need to model the load on each circuit before making an energy

## Open-Ended Comments

saving decision. Do you know if Enstar has any type of gas flow meters to track gas usage in the same manner is what we are doing with electricity? I would love to test that and understand how my boiler is operating throughout the day in varying climate conditions. thanks again.

Overall I enjoy the system, it is easy to use and usually informative. Set-up was fast and easy. Would be willing to pay up to \$3-4 a month to use. I wish it came with the Tendril Volt though as some things like turning off the computer can be hard to measure with things like furnace, water heater, and garage heater turning on a off at will making the Tendril Insight less informative and hard to follow sometimes. The website is great as well, although the graph on the opening screen with the 15 min energy use measurements could use about twice as many hour data points on it or a way to go back as I don't always check it often enough and sometimes miss large sections of the day. Thanks for putting on this trial program.

Thank you so much for choosing me to participate. I did not realize that the baseboard heater in my crawlspace was such a power pig! I need to figure out a different way to keep my pipes from freezing. I've been telling everybody at work and on facebook about these wattbuster gizmos.

I love the program and the equipment works great!

It would be very helpful to be able to determine the electricity used by individual appliances and devices.

Folks at Tendril were extremely helpful when I had problems. They also helped explain how to use the Display although I'm still not certain how useful it is. Time will tell. I'm trying to do things like 1) turn on the oven and see how much it costs me to heat it to 350 degrees, 2) run a load of clothes, 3) run a load through the dryer. So far I haven't been able to pin down just what that costs in kWh or \$'s. Thanks for the opportunity to participate.

When I received my Tendril devices, I was asked about and agreed to install a programmable thermostat device, when it became available (today, March 6th, I received a call from a manager of your program that the device was available and he would research what type I needed, i.e., 2 or 4 wire, for my home heating setup.) I am expecting to hear back from Chugach to get that programmable thermostat installed, if appropriate for my particular situation. Thanks for your interest in supporting this important home energy use research.

I spoke with my brother in Europe and apperntly these devices are very common and most of the newer homes have them in stalled.I don't know if they are available on the open market here but it sure would help people become more energy conscious

Make Volt units available so I can monitor individual devices for power consumption trends.

## Open-Ended Comments

I've already been able to identify some of the highest contributors to energy use. It would be good to have a resource that identifies what is "reasonable" usage for a given type of item (e.g., furnace, electric dryer) to know how much we can realistically improve.

thank u CHugach helps answering my initial ? about how to gewt online with wattbuster

Tendrill website logs you off too quickly. Would like website graphs viewable on in-house display so I don't have to go to the internet.

like the program so far, would much rather have the Watt Buster control device just run off a couple of batteries instead of being plugged in.

it was very esyto install and review thanks

I can not judge the worth of this system yet. It will depend on how much I cut my electric bill over the trial period.

I think i could have gotten more out of the program if it had started in the fall when my usage increases. Right now with increasing daylight and warming trempatures it is hard to guage if the change in costs is due behavior modification because or the change in season.

It was difficult installing the equipment, rather, it was just difficult as my device was picking up on the wrong channel. My husband had to call tech support and the rep stated that our call was the first case of that kind.

The Watt Buster daily energy use chart would be more useful if it showed more than 24 hours, so I could compare, for example, spikes if I turn off the hot tub for a few hours a day, or looking at the effect of turning off some of the phantom load sources like chargers. I replaced sliding glass doors, no windows. Have had programmable thermostats since the house was built in 1981--though sometimes turn off set back in extremely cold weather. Now have boiler control which provides set back for all heating zones at same time, but cannot vary from one zone to the other. Gave up on programmable lighting controls because they were too sensitive to power surges, and kept burning out at \$30 apiece. Other Watt Buster info not considered: hot tub and associated pump, thaw wires for ice dams on roof. I'd love to be able to get rid of those!

It doesn't appear we have a differentiated rate structure, with lower costs at low use times for electricity or other energy use. That would really make a difference...

I don't see how we compare to other households with this device??

It will take a while for me to fully realize the benefits of this program.

## Open-Ended Comments

Thank you for giving me this opportunity.

The tendril devices did not work the first time and then we had to go through a few phone calls to get the new set up and working

I cannot really answer #13 yet because I have not seen any results since I just installed it. Not yet sure what it can do. Also, we installed a new gas furnace this year (#8)

It is doubtful that people would want to pay a monthly premium for equipment that is supposed to save money, because what would have been saved would go to the cost of the equipment. It there is any equipment that could provide the wattage usage for specific appliances, that could also be useful to know.

tendrill devices are still not working in my house? i would love for it to work.. i would love to see how my electricity is being used

The sign up process was easy and the tech support was responsive and helpful.

The last question in 12 is somewhat a double negative and therefore difficult to answer one way or the other.

It is interesting. We look at the device several times a day - still trying to figure out what it means. we need to make a point to check stats. maybe have an iphone app to do that.

The monitor with the screen still shows that the devise is not linked up yet.

It would be nice to know how much energy the Tendril Devices use. Seems ironic to use electricity to track use in a study to reduce consumption. It would be nice if this was funded by grant and the user relized a discount for using the equipment. Power company is kept whole, user is kept whole, and important social study can take place without artificial cost pressures.

I had to keeping moving the translate because it doesn't get a signal, and the insight says my monthly cost is \$0.

Too many devices to install, and the time for them to all sync up made the setup process more convoluted than it needed to be. The Vantage web interface is nice, but needs a way to export data out of it, and needs more than a 36 hour tracking chart. It makes it hard to see usage over time and look for trends that span a week or more in time.

I think this program is great and fun to use. Very good support from Chugach. Thank you for doing this.

I would like to see how it works, and what information I can get from it. Suggest rewarding family for conserving electricity, and this makes it easier to measure.

# Watt Buster Residential Survey #2

**\* Since the first survey, have there been changes in the number of people living in your household? Select the number by which it has increased, decreased or select "no change."**

**Since the first survey, have you purchased any new appliances? (check all that apply)**

	Energy-Efficient model	Older model
Refrigerator	<input type="checkbox"/>	<input type="checkbox"/>
Freezer	<input type="checkbox"/>	<input type="checkbox"/>
Dishwasher	<input type="checkbox"/>	<input type="checkbox"/>
Washer	<input type="checkbox"/>	<input type="checkbox"/>
Dryer	<input type="checkbox"/>	<input type="checkbox"/>
Entertainment electronics	<input type="checkbox"/>	<input type="checkbox"/>
Computers	<input type="checkbox"/>	<input type="checkbox"/>

**Since you installed Watt Buster, has your household been empty for more than 5 days at a time, such as for a family vacation?**

If yes, how many days?

**\* Please rate your experience with Watt Buster (on a scale from 1 to 5, where "1" is "not at all" and "5" is "very").**

	1	2	3	4	5
Are you finding Watt Buster useful?	<input type="radio"/>				
Is Watt Buster living up to your expectations?	<input type="radio"/>				

## Watt Buster Residential Survey #2

**\* Since you installed Watt Buster, has your household done any of the following to increase energy efficiency? (check all that apply)**

- Installed insulation
- Replaced windows with new ones that have a higher insulation value
- Replaced light bulbs with compact fluorescent bulbs
- Installed one or more programmable timers to control lighting use
- Installed programmable thermostat(s) to control heat
- Installed weatherization materials on doors and windows
- Unplug or fully turn off devices to avoid power waste in standby mode
- Other measures
- No changes made

If using other measures, please explain.

**\* Since you installed Watt Buster, how are you evaluating your energy use? (check all those that apply)**

- I just want to see my hourly consumption.
- I selectively turn different appliances on and off to measure their impact.
- I am actively trying to lower my energy consumption.
- Other

If other, please explain.

**\* How often do you check your Insight home display?**

- Every day
- 3-6 times per week
- 1-2 times per week
- Less than once a week

**Comments or Suggestions?**

# Watt Buster Residential Survey #2

1. Since the first survey, have there been changes in the number of people living in your household? Select the number by which it has increased, decreased or select "no change."

	Response Percent	Response Count
No change 	93.3%	70
+1 	2.7%	2
+2 	2.7%	2
+3	0.0%	0
+4	0.0%	0
+5	0.0%	0
+6	0.0%	0
+7	0.0%	0
+8	0.0%	0
+9	0.0%	0
+10	0.0%	0
-1 	1.3%	1
-2	0.0%	0
-3	0.0%	0
-4	0.0%	0
-5	0.0%	0
-6	0.0%	0
-7	0.0%	0
-8	0.0%	0
-9	0.0%	0
-10	0.0%	0
<b>answered question</b>		<b>75</b>
<b>skipped question</b>		<b>0</b>

2. Since the first survey, have you purchased any new appliances? (check all that apply)			
	Energy-Efficient model	Older model	Response Count
Refrigerator	25.0% (1)	75.0% (3)	4
Freezer	0.0% (0)	100.0% (4)	4
Dishwasher	40.0% (2)	60.0% (3)	5
Washer	20.0% (1)	80.0% (4)	5
Dryer	20.0% (1)	80.0% (4)	5
Entertainment electronics	57.1% (4)	42.9% (3)	7
Computers	40.0% (2)	60.0% (3)	5
		<i>answered question</i>	<b>9</b>
		<i>skipped question</i>	<b>66</b>

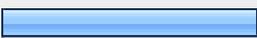
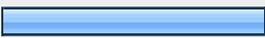
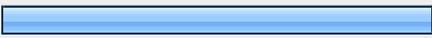
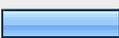
3. Since you installed Watt Buster, has your household been empty for more than 5 days at a time, such as for a family vacation?			
	Response Average	Response Total	Response Count
If yes, how many days?	6.50	104	16
		<i>answered question</i>	<b>16</b>
		<i>skipped question</i>	<b>59</b>

4. Please rate your experience with Watt Buster (on a scale from 1 to 5, where "1" is "not at all" and "5" is "very").						
	1	2	3	4	5	Response Count
Are you finding Watt Buster useful?	6.7% (5)	14.7% (11)	30.7% (23)	24.0% (18)	24.0% (18)	75
Is Watt Buster living up to your expectations?	6.7% (5)	17.3% (13)	25.3% (19)	37.3% (28)	13.3% (10)	75
					<i>answered question</i>	<b>75</b>
					<i>skipped question</i>	<b>0</b>

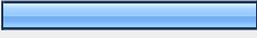
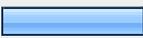
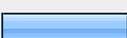
**5. Since you installed Watt Buster, has your household done any of the following to increase energy efficiency?  
(check all that apply)**

		Response Percent	Response Count
Installed insulation		5.3%	4
Replaced windows with new ones that have a higher insulation value		2.7%	2
Replaced light bulbs with compact fluorescent bulbs		30.7%	23
Installed one or more programmable timers to control lighting use		6.7%	5
Installed programmable thermostat (s) to control heat		20.0%	15
Installed weatherization materials on doors and windows		10.7%	8
<b>Unplug or fully turn off devices to avoid power waste in standby mode</b>		<b>52.0%</b>	<b>39</b>
Other measures		20.0%	15
No changes made		26.7%	20
	If using other measures, please explain.		18
<b>answered question</b>			<b>75</b>
<b>skipped question</b>			<b>0</b>

**6. Since you installed Watt Buster, how are you evaluating your energy use? (check all those that apply)**

	Response Percent	Response Count
I just want to see my hourly consumption. 	38.7%	29
I selectively turn different appliances on and off to measure their impact. 	40.0%	30
<b>I am actively trying to lower my energy consumption.</b> 	<b>65.3%</b>	<b>49</b>
Other 	17.3%	13
If other, please explain.		14
<b>answered question</b>		<b>75</b>
<b>skipped question</b>		<b>0</b>

**7. How often do you check your Insight home display?**

	Response Percent	Response Count
<b>Every day</b> 	<b>38.7%</b>	<b>29</b>
3-6 times per week 	21.3%	16
1-2 times per week 	18.7%	14
Less than once a week 	21.3%	16
<b>answered question</b>		<b>75</b>
<b>skipped question</b>		<b>0</b>

**8. Comments or Suggestions?**

	Response Count
	9
<b>answered question</b>	<b>9</b>
<b>skipped question</b>	<b>66</b>

Open-Ended Questions – Watt Buster Survey #2

**Q.3 Since you installed Watt Buster, has your household been empty for more than 5 days at a time, such as for a family vacation?**

Respondents	Response Date	If yes, how many days?
1	05/15/2010	0
2	05/15/2010	0
3	05/15/2010	10
4	05/15/2010	0
5	05/16/2010	7
6	05/16/2010	40
7	05/17/2010	10
8	05/18/2010	0
9	05/18/2010	10
10	05/18/2010	15
11	05/26/2010	0
12	05/26/2010	0
13	05/26/2010	0
14	05/26/2010	12
15	05/27/2010	0
16	05/27/2010	0

**Q.5 Since you installed Watt Buster, has your household done any of the following to increase energy efficiency? (check all that apply)**

- Change the temperatures for the programmable thermostat, turning off lights when leaving a room
- moving more misc electronics to power strips that I can turn off
- installed high eff. gas boiler
- If I had money, I would install weatherization materials on doors and windows.
- Minimizing the time doors are open
- Bug on previous question--will not allow same value for both aspects. Would like to have 3 for both
- used appliances at lower peak times
- Most of these measures were in place prior to Watt Buster. Our phantom load has actually increased from having the 4 Watt Buster devices plugged in, plus leaving the DSL modem and wireless network on overnight (previously it was switched off at night). I am measuring the wattage of the new devices and will report on it later.
- installed Energy Star rated (85% AFUE rated) boiler system 4.15.2010
- I no longer leave my plasma TV on all day for my parrots.
- Replaced screen door.

- New energy efficient garage door
- Am still plagued with unknown 400 usage at night so the current of each breaker is being checked.
- ensure lights are turned off when not at home
- In process of repairing broken window
- installed two LED lights replacing incandescent
- new gas water heater
- New High Efficiency Furnace

**Q.6 Since you installed Watt Buster, how are you evaluating your energy use? (check all those that apply)**

- Planning on ways to save energy in the future.
- I have been also using TED5000. It is interesting to see how the 2 measure usage. I tend to like TED5000 better due to "live" usage graphing which makes it easier to track down problems.
- I would like to selectively turn appliances on and off to measure their impact, but often the translate isn't receiving a signal. I'm not patient enough. I guess.
- I continue to try to keep energy consumption low.
- I haven't. I was pretty conservative to begin with.
- I am too lazy to check the information provided by Watt Buster, and also I feel that with no money to spare for energy efficiency measures and a small house there is little I can do to change my energy use, other than to unplug all devices but I am also too lazy to do that as they're used so often.
- I would like to do more, however have not. I intended to, but have not implemented the changes
- Review of real time and daily consumption has also been informative
- nothing works it worked the first day then nothing.
- Interested in daily, rather than hourly, consumption
- I check both
- not much time to check right now
- review monthly electric bill

**Q 8 Comments or suggestions**

- The idea of the Watt Buster Program is GREAT and I'm really happy to be participating. Expanded future opportunities should be given for folks to avail themselves and there would be "more bang for the buck" if it were done in the winter when there is: no sun, outdoor security lights are on longer, folks aren't gone fishing, folks are cooking indoors rather than BBQing outdoors, auxiliary electric heaters might be used, folks are indoors watching TV rather than doing outdoor activities, vehicles are plugged in when it's cold, and there are probably some others that aren't immediately coming to mind. The winter usage scores would have more "shock value/impact" and therefore be more useful.

- It would be helpful to have a Watt Buster meeting/gathering to talk about how to use it to save on energy and how other people are making it work.
- house sitters were here mainly only to sleep for the 12 days we were out
- This rocks...thanks!
- Very busy past few months, have had time to thoroughly go through watt buster
  
- The website isn't granular enough and doesn't let me see minute by minute tracking for more than 36 hours. I also can't download the data to my computer to analyze it myself.

**Watt Buster Residential – Closing Survey**

**1. Did Watt Buster live up to your expectations?**

Yes/no

**2. Has the Watt Buster experience resulted in changes in your household electrical use or appliances?**

Yes/no

**3. If yes, what are those changes? (check all that apply)**

- Turn off lights in unoccupied rooms
- Make sure that electronic devices are completely turned off or unplugged when not in use
- In winter, turn down the thermostat before leaving the house
- Installed a programmable thermostat
- Run dishwasher, washing machine and dryer only with full load
- Turn down temperature of hot water heater
- Other\_\_\_\_\_

**4. Have you purchased any new appliance/s since March:**    yes/no

**5. If yes, please check which appliance/s you purchased and whether they were energy efficient models**

Refrigerator	energy efficient model? Yes/no
Freezer	energy efficient model? Yes/no
Dishwasher	energy efficient model? Yes/no
Washer	energy efficient model? Yes/no
Dryer	energy efficient model? Yes/no
Entertainment electronics	energy efficient model? Yes/no
Computers	energy efficient model? Yes/no

**6. Do you plan to purchase energy efficient appliances in the future?**

Yes/no

**7. Are you more knowledgeable about your household energy use since participating in Watt Buster?**

Yes/no

**8. Are you more interested in energy efficiency since participating in Watt Buster?**

Yes/no

**9. What information would help your household be more energy efficient?**

*Please rank the following from 1 to 4, with "1" for information that would be most helpful and "4" for least helpful.*

- Information about product models that are most energy efficient
- Information about which appliances, devices and equipment in my home are least efficient
- Information about easy-to-change habits that would maximize efficiency without impacting our lifestyle
- Information about how my electricity use compares to others in similar homes

**10. Now that you have been using a building energy monitor for several months, what do you think are the most significant barriers to becoming more efficient in your household electricity use?**

*Please rank the following from 1 to 7, with "1" for the most significant barrier and "7" for the least significant barrier. Check N/A if the barrier is not applicable to your household.*

- High cost of replacing appliances such as refrigerators and stoves with more efficient models
- "Kids being kids" leaving lights on and carelessly adjusting thermostats
- Too busy, other more important priorities to stay on top of everything, forget to turn things off or down
- Preference towards convenience – like sitting down and turning on devices with remote
- Aren't well informed about the steps that can be taken
- Work hard all day – want comfort at home
- Electricity is not all that expensive – not worth the effort

**11. What did you like about Watt Buster? (check all that apply)**

The counter-top display gave me instant information

Historical data let me compare how we're doing  
It made me more conscious of my energy habits  
Other \_\_\_\_\_

**12. What did you not like about Watt Buster? (open-ended)**

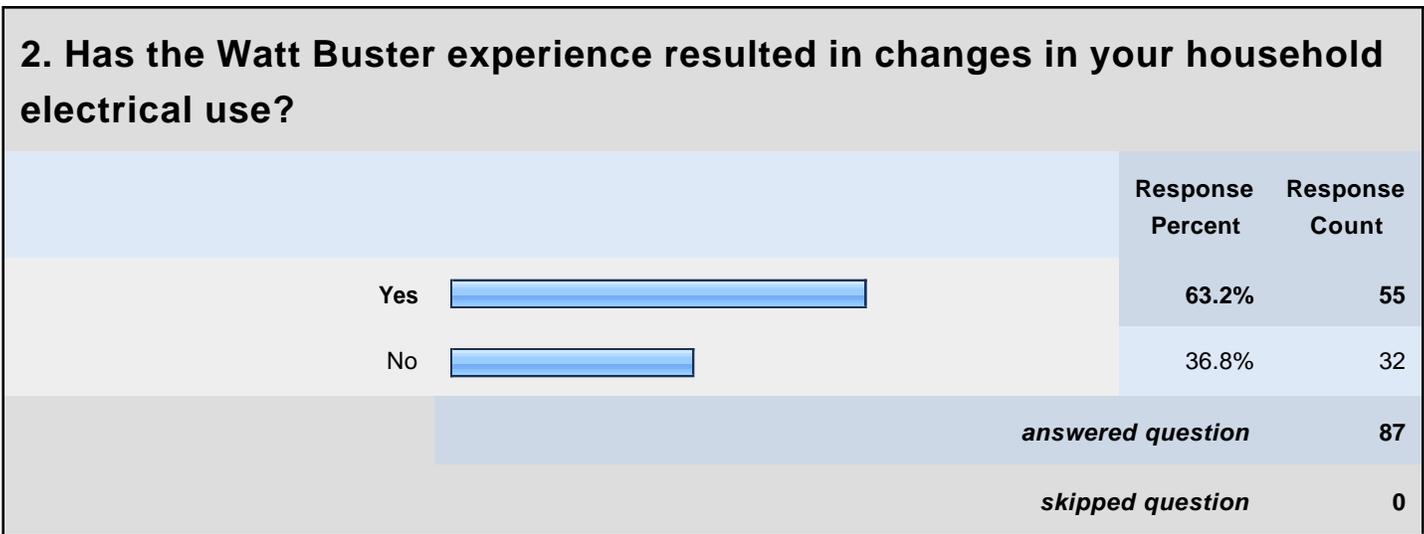
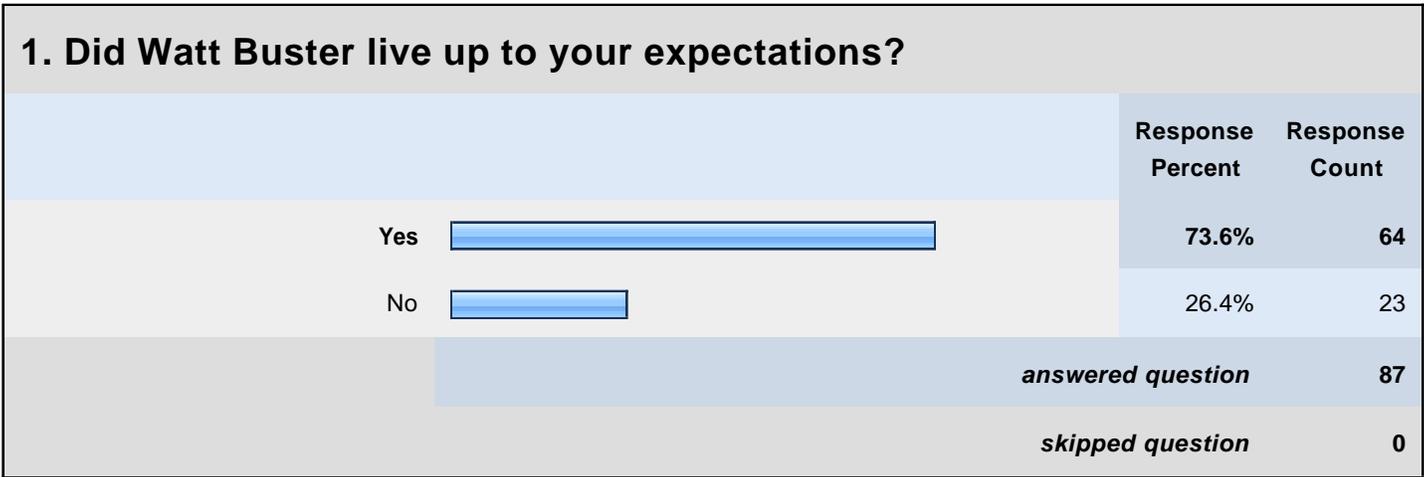
**13. As a Watt Buster volunteer, you received this equipment free of charge. How much do you think other households would be willing to pay on their monthly electric bill to receive these and other benefits?**

- Up to \$1 per month*
- Between \$1 and \$10 per month*
- Between \$10 and \$20 per month*
- Between \$20 and \$50 per month*
- Nothing*

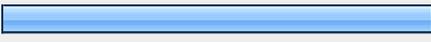
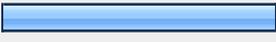
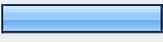
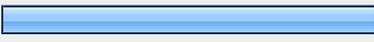
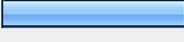
**14. Do you have other comments or suggestions?**  
*[open ended]*

Thank you for participating in Watt Buster.

Watt Buster Residential - Closing Survey



### 3. If yes, what are those changes? (check all that apply)

		Response Percent	Response Count
Turn off lights in unoccupied rooms		79.3%	46
Make sure that electronic devices are completely turned off or unplugged when not in use		65.5%	38
In winter, turn down the thermostat before leaving the house		41.4%	24
Installed a programmable thermostat		24.1%	14
Run dishwasher, washing machine and dryer only with full load		56.9%	33
Turn down temperature of hot water heater		22.4%	13
Other (please specify)		27.6%	16
<b>answered question</b>			<b>58</b>
<b>skipped question</b>			<b>29</b>

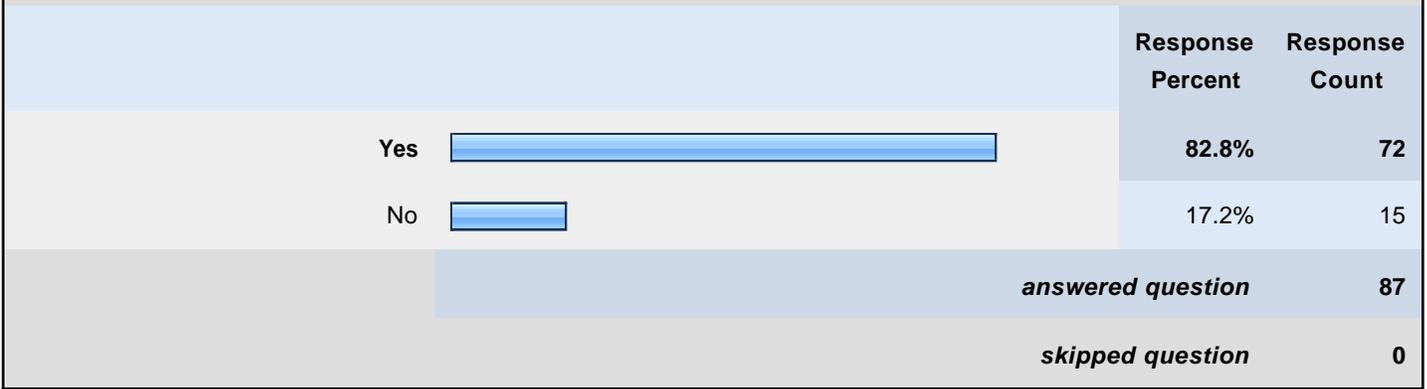
#### 4. Have you purchased any new appliance(s) since March? (check all that apply)

	Purchased	Energy Efficient Model	Response Count
Refrigerator	100.0% (4)	100.0% (4)	4
Freezer	100.0% (1)	100.0% (1)	1
Dishwasher	66.7% (2)	100.0% (3)	3
Washer	66.7% (2)	100.0% (3)	3
Dryer	66.7% (2)	66.7% (2)	3
Entertainment Electronics	83.3% (5)	83.3% (5)	6
Computers	100.0% (7)	57.1% (4)	7
<i>answered question</i>			<b>20</b>
<i>skipped question</i>			<b>67</b>

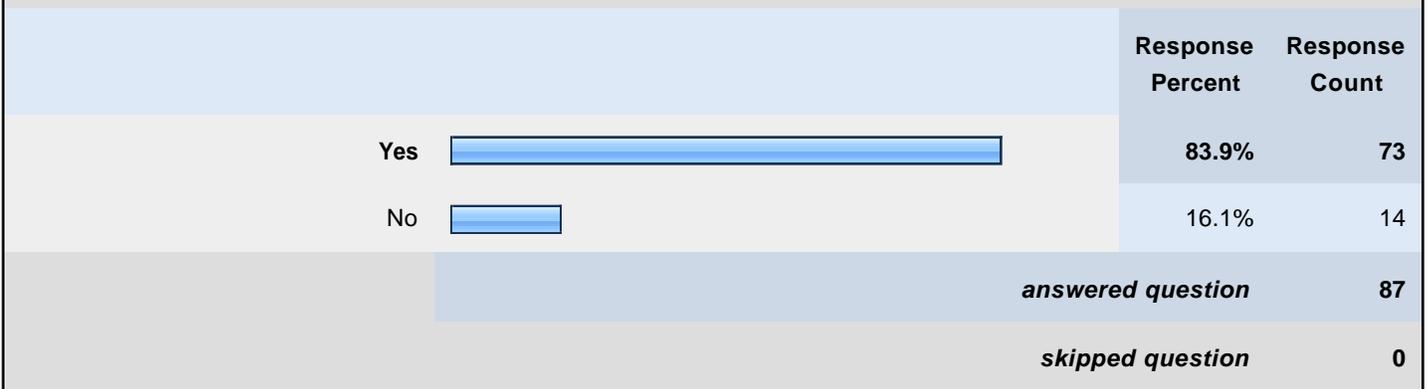
#### 5. Do you plan to purchase energy efficient appliances in the future?

	Response Percent	Response Count
Yes 	88.5%	77
No 	11.5%	10
<i>answered question</i>		<b>87</b>
<i>skipped question</i>		<b>0</b>

**6. Are you more knowledgeable about your household energy use since participating in Watt Buster?**



**7. Are you more interested in energy efficiency since participating in Watt Buster?**



**8. What information would help your household be more energy efficient?  
Please rank the following from 1 to 4, with "1" for information that would be most helpful and "4" for least helpful.**

	1	2	3	4	Response Count
Information about product models that are most energy efficient	<b>47.1% (41)</b>	19.5% (17)	14.9% (13)	18.4% (16)	87
Information about which appliances, devices and equipment in my home are least efficient	<b>59.8% (52)</b>	20.7% (18)	5.7% (5)	13.8% (12)	87
Information about easy-to-change habits that would maximize efficiency without impacting our lifestyle	<b>52.9% (46)</b>	24.1% (21)	12.6% (11)	10.3% (9)	87
Information about how my electricity use compares to others in similar homes	<b>41.4% (36)</b>	11.5% (10)	25.3% (22)	21.8% (19)	87
				<b>answered question</b>	<b>87</b>
				<b>skipped question</b>	<b>0</b>

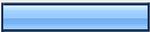
**9. Now that you have been using a building energy monitor for several months, what do you think are the most significant barriers to becoming more efficient in your household electricity use? Please rank the following from 1 to 7, with "1" for the most significant barrier and "7" for the least significant barrier. Check "N/A" if the barrier is not applicable to your household**

	1	2	3	4	5	6	7	N/A	Response Count
High cost of replacing appliances such as refrigerators and stoves with more efficient models	<b>49.4%</b> <b>(43)</b>	19.5% (17)	12.6% (11)	2.3% (2)	3.4% (3)	5.7% (5)	3.4% (3)	3.4% (3)	87
"Kids being kids" leaving lights on and carelessly adjusting thermostats	9.2% (8)	9.2% (8)	9.2% (8)	8.0% (7)	4.6% (4)	6.9% (6)	13.8% (12)	<b>39.1%</b> <b>(34)</b>	87
Too busy, other more important priorities to stay on top of everything, forget to turn things off or down	10.3% (9)	12.6% (11)	<b>18.4%</b> <b>(16)</b>	12.6% (11)	8.0% (7)	<b>18.4%</b> <b>(16)</b>	14.9% (13)	4.6% (4)	87
Preference towards convenience – like sitting down and turning on devices with remote	12.6% (11)	14.9% (13)	<b>21.8%</b> <b>(19)</b>	14.9% (13)	9.2% (8)	9.2% (8)	10.3% (9)	6.9% (6)	87
Aren't well informed about the steps that can be taken	4.6% (4)	8.0% (7)	12.6% (11)	16.1% (14)	11.5% (10)	12.6% (11)	<b>24.1%</b> <b>(21)</b>	10.3% (9)	87
Work hard all day – want comfort at home	14.9% (13)	10.3% (9)	9.2% (8)	14.9% (13)	10.3% (9)	<b>16.1%</b> <b>(14)</b>	<b>16.1%</b> <b>(14)</b>	8.0% (7)	87
Electricity is not all that expensive – not worth the effort	8.0% (7)	3.4% (3)	4.6% (4)	16.1% (14)	12.6% (11)	16.1% (14)	<b>28.7%</b> <b>(25)</b>	10.3% (9)	87
	<b>answered question</b>								<b>87</b>
	<b>skipped question</b>								<b>0</b>

### 10. What did you NOT like about Watt Buster?

	Response Count
	59
<i>answered question</i>	59
<i>skipped question</i>	28

### 11. As a Watt Buster volunteer, you received this equipment free of charge. How much do you think other households would be willing to pay on their monthly electric bill to receive these and other benefits?

	Response Percent	Response Count
Up to \$1 per month 	26.4%	23
<b>Between \$1 and \$10 per month</b> 	<b>49.4%</b>	<b>43</b>
Between \$10 and \$20 per month 	1.1%	1
Between \$20 and \$50 per month 	1.1%	1
Nothing 	21.8%	19
<i>answered question</i>		<b>87</b>
<i>skipped question</i>		<b>0</b>

### 12. Do you have other comments or suggestions?

	Response Count
	46
<i>answered question</i>	46
<i>skipped question</i>	41

**If yes, what are those changes? (check all that apply)**

#	Response Date	Other (please specify)
1	Jul 1, 2010 8:25 PM	unplugging unused devices e.g. tv's really makes a difference
2	Jul 1, 2010 8:30 PM	Don't do so much laundry
3	Jul 1, 2010 9:13 PM	probably get rid of my 33 year-old upright freezer
4	Jul 1, 2010 9:56 PM	Installed energy saving lights throughout
5	Jul 2, 2010 7:43 AM	i don't run water when not needing it. I am on well so this really opened my eyes to electricity use when running water.
6	Jul 2, 2010 3:52 PM	we were already doing the other items listed
7	Jul 5, 2010 5:25 PM	turned off space heater in the crawl space
8	Jul 6, 2010 3:25 PM	overall awareness of power use throughout our home, loved it!
9	Jul 6, 2010 4:11 PM	much greater awareness of consumption patterns which has resulted in a conscious reduction of use
10	Jul 7, 2010 8:40 PM	don't leave computers running all day when not in use. Re-initiated proper use of existing boiler night set back program.
11	Jul 9, 2010 6:09 PM	limiting use of the dryer - hanging clothes to dry
12	Jul 9, 2010 7:26 PM	Installed CFL an LED interior lighting
13	Jul 10, 2010 5:17 PM	awareness of the impact of electricity use
14	Jul 15, 2010 2:04 AM	Attempt to use appliances less, for example washing fuller loads of laundry. Wattbuster demonstrated to us how large the appliance load is in our home.
15	Jul 16, 2010 5:22 PM	Got smart strips
16	Jul 22, 2010 10:40 PM	Conscience of the general usage.

### What did you NOT like about Watt Buster?

#	Response Date	Response Text
1	Jul 1, 2010 8:25 PM	I would like to have Watt Buster for a longer period of time, for a year if possible.
2	Jul 1, 2010 8:29 PM	The lighting on the display unit was not bright and the unit itself did not seem to be well made.
3	Jul 1, 2010 8:30 PM	I think I can go on a website to check my usage ??? I don't know anything about this nor do I know my password.
4	Jul 1, 2010 8:37 PM	would like a better screen to read
5	Jul 1, 2010 8:48 PM	Hard to determine exactly what was happening with graphs. When the electricity to the computer was turned off at night and then turned on during the day, WattBuster did give me the average consumption during that period but not the nuances to try to figure out what was giving the highs during the night when the majority of things were supposedly "off". Consequently, it required flipping off various breakers during the night to narrow it down and then was given access to the "consumption meter" that interfaced between outlet and appliance. That device would have been good to have earlier on; therefore, that's my recommendation - access it earlier on - probably a couple weeks after having WattBuster equipment so that a pattern is known/established and "mysteries" arise.
6	Jul 1, 2010 9:13 PM	It's not the program - it's that I didn't clearly see a benefit from using electricity at different times (e.g., should I do laundry early in the morning, late evening) because we don't have peak rates and off-peak rates. That would be useful I think...
7	Jul 1, 2010 9:19 PM	The need to have someone come to the house to install. Also, who is going to come out and remove?
8	Jul 1, 2010 9:32 PM	Can't say there was anything I didn't like.
9	Jul 1, 2010 10:39 PM	I had know problem ...Just need to check it.. when you by something new .. need to monitor..
10	Jul 1, 2010 11:07 PM	Not completely sure of what benefits I got from my participation.
11	Jul 1, 2010 11:09 PM	nothing
12	Jul 1, 2010 11:35 PM	Didn't work for part of the time, was hard to get the issue resolved so we ended up missing out on monitoring for about 3 weeks.
13	Jul 2, 2010 12:04 AM	Program did not allow me to see different energy usage of appliances nor did I ever learn about how our home usage compared to others. Didn't fulfill what I thought it was supposed to provide.
14	Jul 2, 2010 1:57 AM	There appeared to be a significant lag time between the time the appliance was turned on or off before the meter registered a change.
15	Jul 2, 2010 2:46 AM	Would have liked a more detailed comparison of day to day usage.
16	Jul 2, 2010 2:50 AM	The information was stale. I learned what was causing my peak usage very fast and then would see the same information.
17	Jul 2, 2010 3:22 AM	Did not see the impact of actions that I take. For example, when I turn on the microwave, I don't see how much that costs or how much energy that uses. It is difficult to figure out the actual power/dollar impact of specific appliances since Watt Buster is looking at the entire household and only updates a few times each minute. Not really clear on the impact of things, need more information available to be helpful.
18	Jul 2, 2010 3:48 AM	

**What did you NOT like about Watt Buster?  
Response Text**

<b>#</b>	<b>Response Date</b>	<b>Response Text</b>
19	Jul 2, 2010 6:07 AM	None
20	Jul 2, 2010 7:43 AM	monitor was a bit bland and after 1 or 2 days of using it I never used it for navigating or exploring...just what is my most recent reading. I would rather have more real time feedback about my energy use - down to the second so that I can investigate turning on and off a light or appliance. I bought a TED5000 and had it running along side wattbuster gear the entire demo. I find TED5000 monitor way more useful from a consumption visibility basis. I would carry it around and monitor it.
21	Jul 2, 2010 3:52 PM	not enough information about power being used by individual appliances and electronic equipment
22	Jul 2, 2010 4:37 PM	The display device was hard to read, the graphics were cryptic, somewhat complicated
23	Jul 2, 2010 6:16 PM	I never bothered to check it. I would have been more interested if my information had been emailed to me once a day.
24	Jul 2, 2010 8:18 PM	Not being able to check the individual usage of the major electric appliances
25	Jul 2, 2010 9:24 PM	It would have been more useful to see a longer comparison of cost and usage (i.e. longer than the previous 12 months). More daily detail in energy use, rather than just the monthly average, would have been helpful.
26	Jul 5, 2010 5:25 PM	I could tell there was something about being able see how my home energy use compared to similar houses, but I couldn't figure out how to do that.
27	Jul 6, 2010 3:25 PM	lots to plug in, and Not enough information on display screens, would like more information in the form of a graph or in Dollars.
28	Jul 6, 2010 4:11 PM	nothing, it was great!
29	Jul 6, 2010 9:06 PM	With the Vantage portal, it would have been nice to have the ability to do more "research" on my own--e.g., select the time periods to view and the time interval, overlay weather data, select periods to compare, etc. It also would be good to better identify the usage from a particular item in the house.
30	Jul 6, 2010 10:48 PM	There were no instructions or support for users (it seemed like this was missing) There wasn't any communication with the utility besides the surveys
31	Jul 7, 2010 3:55 AM	I wish there was a classroom Q&A session before the program started - it would have made the program easier to understand, and I would probably gotten much more out of it.
32	Jul 7, 2010 5:17 PM	Just one more electronic device to pay attention to.
33	Jul 7, 2010 8:40 PM	comparison to other 'similar' house seems meaningless without more info on the other house. Couldn't pin down any reason for the few days when I used less energy than others.
34	Jul 8, 2010 4:40 AM	It uses energy to monitor energy. Seems ironic
35	Jul 9, 2010 2:50 PM	I had to replace the model and in the end it went out again.
36	Jul 9, 2010 6:09 PM	Would loved for it to show me peak times and what appliances were using energy in real time.
37	Jul 9, 2010 7:04 PM	The presentations were not signifiant. One screen showed the total cost from the beginning of the day. So what? It would be better to show the instantaneous rate of usage.
38	Jul 9, 2010 7:10 PM	I expected more information from the web portal.
39	Jul 9, 2010 7:26 PM	Can't easily tell what household device is using electricity

## What did you NOT like about Watt Buster?

#	Response Date	Response Text
40	Jul 9, 2010 7:39 PM	I would have liked more information on things to try to reduce my consumption. I would like to have heard about the successes others were having at reducing their bills and how they accomplished it. Would like to have seen all my information on the Tendril device instead of having to go from Tendril to Web. Would be nice to have fewer boxes to install.
41	Jul 9, 2010 8:39 PM	Lack of ability to monitor specific devices or systems to determine where the power was actually being used. Watt Buster only shows data for the entire house.
42	Jul 10, 2010 5:11 AM	It requires attention from the whole family. Some family members could not be bothered to pay attention.
43	Jul 10, 2010 5:55 AM	Program is over.
44	Jul 10, 2010 6:13 PM	Unfortunately for me the equipment that I was provide did not function properly. After two attempts to get the equipment to work I basically gave up. Therefore our participation in the program did not happen as planned. I accept full responsibility for not following thru and swapping out the equipment as requested. That's my loss.
45	Jul 10, 2010 7:21 PM	I didn't work at all flashed the whole time.
46	Jul 12, 2010 8:15 PM	Tried running certain appliances and checking usage, but it was hard to determine effect. If possible it would be nice to have something put on difference appliances that would automatically tell me at end of month how much each appliance was costing me.
47	Jul 13, 2010 11:23 PM	Information was great, but economically not able to make great changes at this time. Made us feel a little guilty about our usage.
48	Jul 14, 2010 12:58 AM	Menu's difficult to understand.
49	Jul 14, 2010 7:20 PM	I had a hard time getting the translate to read my meter. I had to keep moving it. Then the insight would say my monthly bill would be really high, much higher than normal. That didn't make sense. After a while I stopped looking at the insight. It would have been nice if the insight really did tell me what I was using. Actually, it would be nice to know things like which appliance uses "too much", so I could actually do something about it.
50	Jul 15, 2010 2:04 AM	Had a little difficulty setting up the equipment mostly due to the need to add a switch to my home network to provide an available port. Adding the switch was easy, but the network had some difficulty recognizing the Tendril equipment on the network until it was adjusted with the help of Tendril tech support, Also, in final several weeks of use the Transport did not upload the info to the internet. On the positive side, the Tendril customer service folks were outstanding and took the time to help customers, even calling back when they had new approaches to recommend. The final internet communication problem may have been a faulty device. The Tendril customer service folks and I tested several scenarios and the next step was going to be to replace the device, but the program ended sooner. Make note of this if the equipment is reused at another household.
51	Jul 15, 2010 6:17 AM	didn't feel like it told us a lot of information; too many devises to plug in and take up space (space in home, plus space on our router)
52	Jul 16, 2010 5:22 PM	For me I would liked to have had a hands on learning experiece about it. I am not electronic minded and I felt I did'nt use it to its fullest potential.It is a great program and it definetly made me more aware. There are many things about my house which I cannot change which makes it difficult but the cost of the electricty encourages me to be more efficient.

### What did you NOT like about Watt Buster?

#	Response Date	Response Text
53	Jul 16, 2010 10:56 PM	So many hook ups. Had to run 3 devices to get a reading.
54	Jul 17, 2010 9:47 PM	I enjoyed the test, however found we are on track.
55	Jul 19, 2010 5:13 PM	You took my equipment away and didn't even give me a chance keep it, or purchase it, after I asked repeatedly and got no response. Let's face, I don't think any of us were doing this for a wopping \$5 off our monthly electrical bill! I wish I had more time to dedicate to monitoring...I found that during the busy summer months might not have been the best time to try this out, as we are out and about...busy with summer activities. Winter would have been the truer time to see the usage.
56	Jul 20, 2010 2:02 AM	Would like alarms or reminders that can be set. Like when your electricity usage exceeds certain amounts, or is higher than neighbors, etc.
57	Jul 20, 2010 3:33 AM	No matter what I did, I could not seem to significantly lower my consumption. I bought surge protectors for my televisions and completely powered them off when not in use - no significant reduction was noted. I'm rarely home, I hardly cook, I only dry about 3 loads of laundry per week - yet my electricity is always in the \$200 per month range. I feel completely frustrated.
58	Jul 24, 2010 1:18 AM	Very difficult to view detailed by time comparative consumption to understand what actions were consuming electricity.
59	Jul 25, 2010 12:37 AM	

**Do you have other comments or suggestions?**

#	Response Date	Response Text
1	Jul 1, 2010 8:25 PM	<p>Regarding the last question, "how much would other households be willing to pay,? If other households could see a significant savings on their bills they are going to be more likely to use a device similar to Watt Buster. Similar to my refrigerator, it is hard for me to justify buying a new energy efficient refrigerator if I'm only saving a dollar a month in electrical bills and a new appliance is going to cost \$1,200 to \$1,500. I would have to have that appliance for 12 to 15 hundred months to break even, thats 100 to 125 years.</p> <p>What we realized through the program was the value of electricity -- that is, how mach benefit we actually receive for 25 cents an hour of electric use. Our children responded that electricity was already inexpensive and nothing further needed to be done (from a value perspective). I had more interest in following daily consumption patterns in the beginning of the program but this faded through time since daily consumption patterns within a given season do not materially change. We did not have the monitor installed and in use during the dark and coldest months - perhaps this would generate more interest during these time periods. Bottom line is that the cost of electricity is just not a large enough component for use to change our behavior. Having said this, we would be willing to run the dishwasher or washer / dryer on a timer to save money. Thanks for allowing us to participate in the program. We really enjoyed it.</p>
2	Jul 1, 2010 8:29 PM	
3	Jul 1, 2010 8:30 PM	<p>How do I go on the website -- I don't know my password????</p>
4	Jul 1, 2010 9:13 PM	<p>Great Program! Very glad to be able to use it! The 2nd category for #11 should be between \$1-5/month and next should be \$5 - \$10 a month. After than, then jump by \$10 increments because it makes a big difference as to how much you are willing to pay if consumption is \$50/month versus \$1,500/month.</p>
5	Jul 1, 2010 9:19 PM	<p>I'm pretty conscientious about electricity and energy use already - had prior to the program (and before tax incentives) already changed out all the windows and doors, fixed venting and added more insulation in the attic, bought a new water heater, and had energy efficient dishwasher, dryer and fridge. The only major piece remaining is the gas heater, which is not old enough to replace, and we can't really afford to do that yet... I really think incentives around when electricity is used are needed as much as how much. I experienced rolling blackouts in CA, so am sensitive to that.</p>
6	Jul 1, 2010 9:56 PM	<p>Would like to have breakdown of energy usage - breakdown of appliances, lights and boiler</p>
7	Jul 1, 2010 10:39 PM	<p>I liked having the daily monitor of how much electricity we used - liked the graph on the internet to see which household products using electricity would cause it to spike - electric heaters. I wish I could keep the equipment to continue to monitor my usage!</p>
8	Jul 1, 2010 11:07 PM	<p>no other comments.. thanks for the beta test..</p>
9	Jul 1, 2010 11:09 PM	<p>I look forward your final report.</p>
10	Jul 1, 2010 11:35 PM	<p>I actually rarely glanced at it once it was in place. My biggest energy user was a plasma tv and once I was informed about that, I dramatically cut down on its use and saw my bill go down. Other than that, I am already fairly frugal thanks to my upbringing. Lights are only every on when I'm in the room. Heat is turned as low as possible. Appliances not being used are unplugged,ct44</p>

## Do you have other comments or suggestions?

#	Response Date	Response Text
11	Jul 2, 2010 1:57 AM	Complete waste of my time and Chugach's resources.
12	Jul 2, 2010 2:46 AM	no
13	Jul 2, 2010 3:48 AM	Thanks for the opportunity!
14	Jul 2, 2010 6:07 AM	I think it would best serve a household when used in conjunction with the additional outlet meter to plug specific devices to see how effecient it is or is not.
15	Jul 2, 2010 6:33 AM	The ability to control your home energy use through personal remote devices such as cellphones, smart phones, etc.along with email messages, tweets, etc. alerting the user of various changes in use.
16	Jul 2, 2010 7:43 AM	I run my dishwasher with 4 hr delay so it runs at 2am usually. Chugach does not offer off peak rate plans but it would be an interesting idea. Thanks - I trully enjoyed being part of this program and providing feedback. Power consumption is of great interest to me.
17	Jul 2, 2010 3:52 PM	The equipment was helpful in the beginning because we could see how changing some things decreased our power usage. But once you have that information, and make changes, there doesn't seem to be much more you can do.
18	Jul 2, 2010 8:18 PM	Thank you for allowing us to participate. It has been interesting to monitor the power usage as activities changed.
19	Jul 2, 2010 9:24 PM	The timing of future programs should occur during the highest energy use months rather than the lowest energy use months is recommended. Please make an effort to offer the WattBuster program again, possibly over a longer period of time (>6 mos) and during a more energy intensive period to be able to make better comparisons.
20	Jul 5, 2010 5:25 PM	Thank you for letting me try this.
21	Jul 6, 2010 3:25 PM	Good start, I am happy there is a follow up energy program to graduate to, I will be looking forward to being a part of the new program, THANK YOU FOR THIS OPPORTUNITY
22	Jul 6, 2010 4:11 PM	thank you so much for allowing me to particpate; I am grateful for the assistance to be more green, which is a big priority in our home.
23	Jul 6, 2010 9:06 PM	I think the devices would have a greater impact on my behavior is there were pricing incentives/disincentives for using electricity at particular times of day, etc.
24	Jul 6, 2010 10:48 PM	We didn't feel like there was any kind of training or instructions to go with the equipment. Was there an on-line tutorial? If so, I wasn't aware of it An instructional DVD would have been helpful. It also would have been nice to have met at least once with someone from Chugach to get familiarized with the program. It would have been cool to have met with other folks who were participating in the program. At the very least, it would have been nice to have seen success stories about how Watt Buster households were effectively lowering their consumption. There didn't seem to be any ongoing check ins with the users besides the surveys. We didn't feel like we were part of anything special, but it was cool to have the equipment and get the readings.
25	Jul 7, 2010 5:17 PM	Gather Information on Energy Efficient Appliances and how members can get assistance in paying for them.
26	Jul 7, 2010 8:40 PM	on the chart comparing daily usage to that of other's, I did not discover until the last week that if I clicked on a day, it gives a detailed chart of hourly usage for that day. That would have very much enhanced my efforts to reduce usage and to know what I had done that had significant effect.
27	Jul 8, 2010 4:40 AM	Individual energy monitors that plug between an electronic device and the outlet would be equally helpful. This would help pinpoint the energy consumptiong of specific individual electronics. Chugiach could offer online tools to

## Do you have other comments or suggestions?

#	Response Date	Response Text
		help consumers determine breakeven analysis on decisions like a new appliance (annual current appliance consumption) vs (potential new appliance appliance consumption adjusted for life expectancy, cost, and federal incentives)
28 Jul 9, 2010 6:09 PM		If CEA has to use a additional generator to supply steady energy at peak times, then the cost of using energy at those times should be more costly to discourage the convenient use of energy at that time - especially since alot of appliances can be timed to start later.
29 Jul 9, 2010 7:04 PM		The display uses information received every 15 minutes from the meter and then displays the average over that time period. If you really want this program to work use that information real time or at least cut the time down to 30 sec or one minute. What I would like to see is the ability to walk around my house turning appliances off individually and immediately (not 15 minutes later) see the effect it has on my useage. That way I can easily analyze what is using the KW. If I see that a particular item is using a lot of juice and I don't need it, I will shut it off. The way the system is set up now I cannot do that. If the system could do that people would use it as a tool to monitor their useage. If when they turn on a light and they saw the display jump they would be more inclined to not turn it on. If you would like to discuss this further please call me.
30 Jul 9, 2010 7:39 PM		It was interesting to look at my consumption.
31 Jul 9, 2010 8:39 PM		Great idea and well-run evaluation program. Looking forward to the next phase.
32 Jul 10, 2010 6:13 PM		I lost interest when the equipment I was given did not work as advertised.
33 Jul 10, 2010 7:21 PM		find a system that actualy works.
34 Jul 12, 2010 4:59 PM		It was a great idea, we just did not use it to make decisions. The information was interesting, but hard to apply to something real.
35 Jul 12, 2010 8:15 PM		Thanks for giving this a try. I hope you are able to learn something from the program and will share your results with us. I thought I would learn more about my own usage but I don't feel that I did. Maybe that's my fault.
36 Jul 13, 2010 6:39 PM		We purchased a new electric range in the beginning of May. The equipment is burdensome. Put in smart grid technology in concert with all railbelt utilities and provide realtime elec/cost monitoring via the internet.
37 Jul 13, 2010 11:23 PM		It was informative and was a constant reminder about our usage. I had a hard time getting the translate to read my meter. The insight seemed to be telling me the wrong estimate of what my bill would be. After a while, I didn't even look at the insight. It would be nice to know which appliance uses "too much" so I could actually do something about it. I think we already conserve energy by doing all the "easy" things, like turning things off, turning down the thermostat, etc. I really like the programmable thermostat. It works so much better than the one I had. Of course, it's not winter now. My gas bill is so high I turn off the boiler-thing. With a programmable thermostat I don't need to. I don't know how much people would be willing to pay for this. As I said, I stopped looking at it, and I don't think it saved me any money. I wouldn't be willing to pay anything. But others who would save money, they might be willing to pay for it.
38 Jul 14, 2010 7:20 PM		
39 Jul 15, 2010 2:04 AM		Question #2. We already did all of those options prior to the WattBuster program, so behavior did not change, but we do perform those listed actions. Question #9, what are the barriers to more energy efficiency in our house: I ranked these in order, however only one of the listed items is a real barrier in our household: the cost of replacing

### Do you have other comments or suggestions?

#	Response Date	Response Text
		<p>major appliances, We have made dozens of energy improvements in the home, the appliances are the next main improvement needed (laundry, fridge, dishwasher), however the entry cost is high and the payoff is relatively long. Another high cost improvement would be the boiler and side-arm water heater, which again would be very high cost and the savings would be mostly natural gas. The second obstacle is time to perform some of the next highest priority efficiency measures, such as rewiring more efficient T-8 or T-5 lighting in the garage. We do make the time for the conservation measures, such as turning off equipment and lights when not in use. General Comments: As a conservation-minded customer, I was concerned with the energy it takes to power the Tendril equipment, so I measured the Wattage. The three Tendril devices (not including the Set Point) plus the switch I had to install to provide an extra port used 11.2 Watts fairly constantly while in use at home. The whole system (including router and wireless network, but not including the Set Point) used a measured 19.9 W while in use. Once removed from service and plugged in individually, the devices used the following energy fairly consistently across time. The totals while not in use are a little lower than those measured when they were in use. Translate: 1.1W Gateway: 1.9W Insight: 1.1W Set Point: 1.3W Total Tendril Equipment= 5.4W The additional switch used 3.2W And my existing router and wireless network together uses 8.7W The grand total energy use is between 17.3W and 21.2W. Plus I used to turn off the router and wireless network when not in use, which was typically about 16 hours per day. Therefore, I calculate that the average extra energy this system used was 12.24 kWh per month. ((Tendril equip 11.2W x 24hr x 30 days) + (additional internet connection time 8.7W x 16hr x 30days) = 12.24 kWh) Other users likely experienced the same increase in energy use during the test phase. Be sure to back out these energy expenditures from customers when analyzing results. I have not counted the energy that the meter and its signal uses. If it is sending a wireless signal, it will be using some energy. Is this on the customer side or the utility side of the meter, and is the wattage known? I also have results of the responsiveness of the Tendril equipment. In the test scenario, a load was placed on the home and the response of the Tendril equipment to that load was measured. I will provide a graph of the results in a separate document. As I recall, there is an approximate 2 minute delay from the load change until it is registered on the Tendril Insight device. Overall, I am impressed with the equipment, with Chugach Electric's WattBuster program, and with Tendril's support. Thank you for providing this program.</p> <p>I think it is a great program shared my experience with family in europe, most new homes have similar built in devices which is more the norm there than the exception and they are slaves to being much more energy efficient than here. As we live in a duplex I would like to have one for my renters so they could monitor how they are spending money. The electric bill is included in thier rent so for monitering purposes and encouraging them to be more considerate I would love it.Thank you for allowing me into the program.</p>
40	Jul 16, 2010 5:22 PM	Comparing it to the newer trial of Open View, I would much rather have the one device running everything. I do however like the automatic thermostat and being able to use remote on-line access to adjust the settings.
41	Jul 16, 2010 10:56 PM	I powered our Watt Buster equipment with a power strip that also powers several of my computers and peripheral devices. When away from home for extended periods, we try to shut this equipment off. When I did so during the survey, I also lost several days of data gathering (the first time I did this). You might alert future survey participants to this potential.
42	Jul 17, 2010 6:16 AM	

**Do you have other comments or suggestions?**

<b>#</b>	<b>Response Date</b>	<b>Response Text</b>
43	Jul 19, 2010 5:44 AM	Unfortunately I have been too busy since I got into the wattbuster program and have not had the oppurtunity to get involved very much.
44	Jul 19, 2010 5:13 PM	I believe it is very poor foresight from you to ask people to volunteer for something they are interested in and then never give them the incentive to keep the equipment or purchase the equipment. You might want to look ahead a little further in your experiments. You actually have made a poorer relationship with me, when you could have easlily made a better one.
45	Jul 24, 2010 1:18 AM	This program was an inconvenience for me and if I had it to do over again, I would not have participated. I gleaned nothing from the equipment - no measurable reduction in consumption. I was completely disapointed.
46	Jul 25, 2010 12:37 AM	Great idea, but equipment and website in particular were very poorly implemented.

## Comparison Survey

1. How easy was each monitor to use? Please rank them from 1 to 3, with “1” the easiest and “3” for the most difficult.

Tendril  
EnergyHub  
OpenPeak

2. How valuable was the information you got from the energy monitor?  
Please rank the monitors from 1 to 3, with “1” as most valuable and “3” as least valuable.

EnergyHub  
Tendril  
OpenPeak

3. How easy was it to install? Please rank the monitors from 1 to 3, with “1” as the easiest and “3” the most difficult.

OpenPeak  
EnergyHub  
Tendril

4. What did you like about Tendril?

5. What did you dislike about Tendril?

6. What did you like about OpenPeak?

7. What did you dislike about OpenPeak?

8. What did you like about EnergyHub?

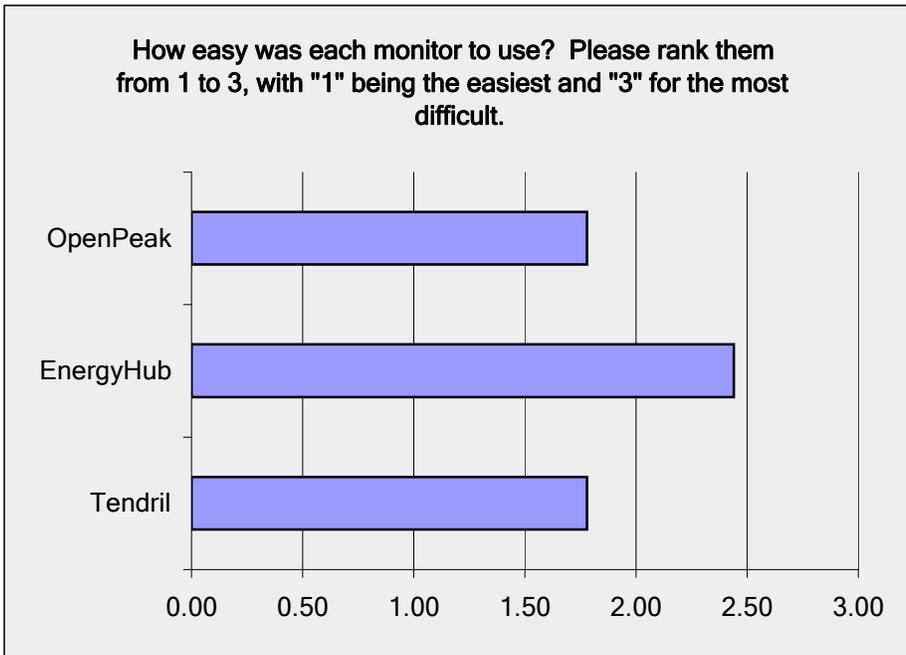
9. What did you dislike about EnergyHub?

10. Other comments?

## Electricity Monitors Comparison Survey

How easy was each monitor to use? Please rank them from 1 to 3, with "1" being the easiest and "3" for the most difficult.

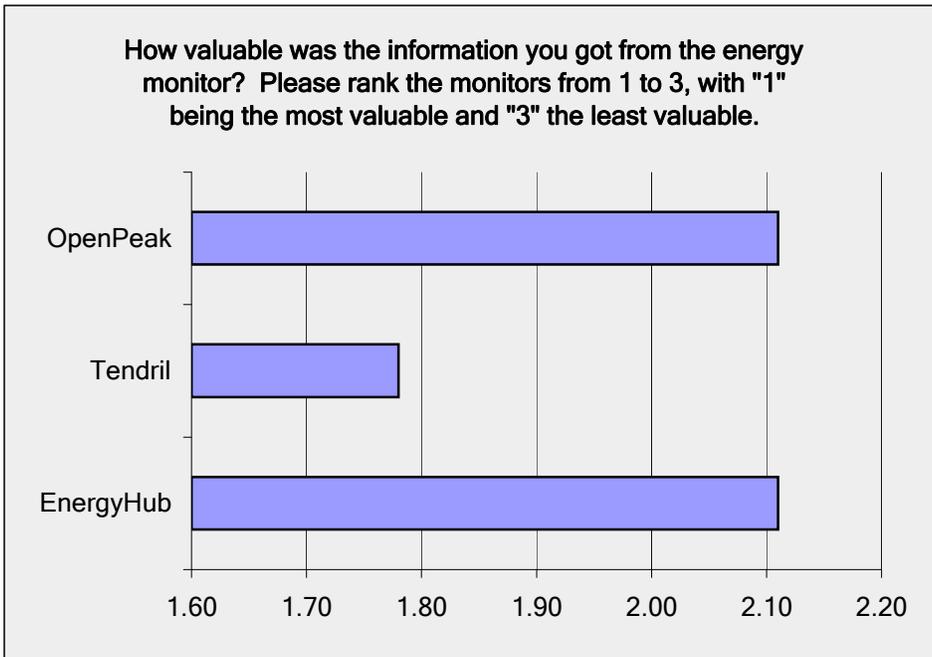
Answer Options	Easy	Moderate	Difficult	Rating Average	Response Count
Tendril	4	3	2	1.78	9
EnergyHub	2	1	6	2.44	9
OpenPeak	3	5	1	1.78	9
<i>answered question</i>					<b>9</b>
<i>skipped question</i>					<b>0</b>



## Electricity Monitors Comparison Survey

How valuable was the information you got from the energy monitor? Please rank the monitors from 1 to 3, with "1" being the most valuable and "3" the least valuable.

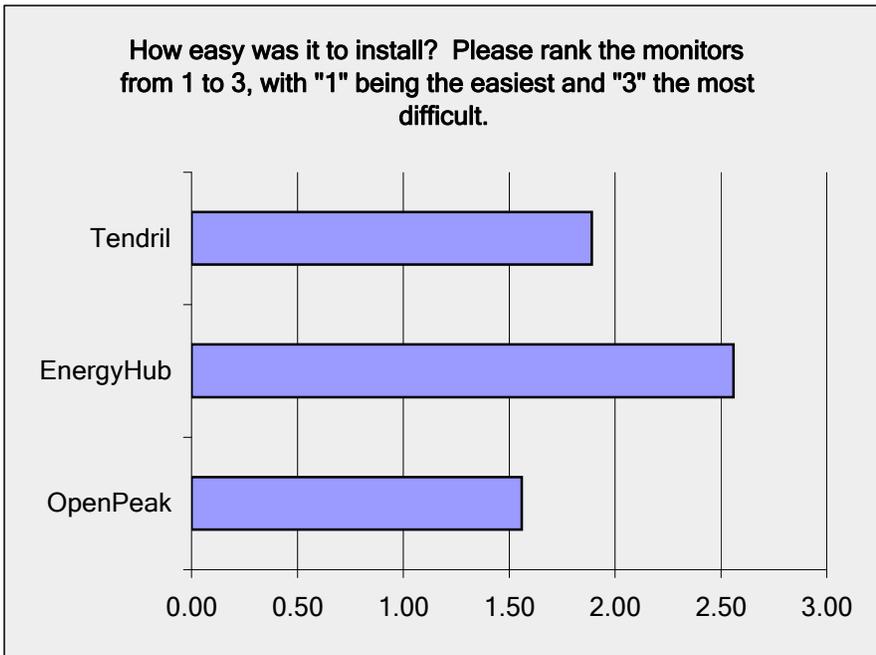
Answer Options	Most Valuable	Valuable	Least Valuable	Rating Average	Response Count
EnergyHub	2	4	3	2.11	9
Tendril	5	1	3	1.78	9
OpenPeak	2	4	3	2.11	9
<i>answered question</i>					<b>9</b>
<i>skipped question</i>					<b>0</b>



## Electricity Monitors Comparison Survey

How easy was it to install? Please rank the monitors from 1 to 3, with "1" being the easiest and "3" the most difficult.

Answer Options	Easy	Moderate	Difficult	Rating Average	Response Count
OpenPeak	4	5	0	1.56	9
EnergyHub	1	2	6	2.56	9
Tendril	4	2	3	1.89	9
<i>answered question</i>					<b>9</b>
<i>skipped question</i>					<b>0</b>



## Electricity Monitors Comparison Survey

What did you like about Tendril?	
Answer Options	Response Count
	9
<i>answered question</i>	9
<i>skipped question</i>	0

Number	Response Date	Response Text
1	Sep 24, 2010 8:33 PM	I like that with Tendril you could monitor or change your thermostate from the internet.
2	Sep 25, 2010 4:54 AM	Excellent wireless connectivity with the meter. Good base station display.
3	Sep 25, 2010 5:23 AM	It shows overall energy consumption with graphs/cost breakdown.
4	Sep 25, 2010 7:23 PM	I liked being able to compare usage one week to the next and see if had improved my energy performance over the work before. I liked being able to check information from my
5	Sep 30, 2010 1:12 AM	It's simplicity and small footprint.
6	Sep 30, 2010 6:12 PM	was nice to see the hourly reading We liked the comparison with other users and the real time usage.[]
7	Sep 30, 2010 6:44 PM	And the usage graph.
8	Oct 1, 2010 10:26 PM	It showed some nice information like to remember to turn off the heat in the garage at the end of the season.
9	Oct 5, 2010 3:41 AM	Output was clear and understandable

## Electricity Monitors Comparison Survey

What did you dislike about Tendril?	
Answer Options	Response Count
	8
<i>answered question</i>	<b>8</b>
<i>skipped question</i>	<b>1</b>

Number	Response Date	Response Text
1	Sep 24, 2010 8:33 PM	I didn't like the transmitter, mainly because my son would constantly unplug it. Also having three devices running.
2	Sep 25, 2010 5:23 AM	Information seems compounded and not easy to analyze.
3	Sep 25, 2010 7:23 PM	It would have been nice to know which specific electronics/appliances were using the most energy. Mainly this device taught me to be more aware of what was on and to turn things off.
4	Sep 30, 2010 1:12 AM	Lacks a colorful screen and interface. Looks old school.
5	Sep 30, 2010 6:12 PM	hard to see and read compared to the other ones
6	Sep 30, 2010 6:44 PM	Would like to have the real time usage broken down in smaller time increments.
7	Oct 1, 2010 10:26 PM	the difficulty to hook it up and ended up being bad equipment and had to be replaced.
8	Oct 5, 2010 3:41 AM	The monitor had to be near the receiver

## Electricity Monitors Comparison Survey

What did you like about OpenPeak?	
Answer Options	Response Count
	8
<i>answered question</i>	<b>8</b>
<i>skipped question</i>	<b>1</b>

Number	Response Date	Response Text
1	Sep 24, 2010 8:33 PM	It was very simple to connect, and view usage.
2	Sep 25, 2010 4:54 AM	Also loved the clock feature. Simple set-up.
3	Sep 25, 2010 5:23 AM	It is like a mini home computer with other features that my kids enjoyed to play with. My kids wished we could keep it. It showed similar electricity consumption information as the Tendril It's style, design and interface. It looks like a modern device, almost 'apple' like in design. I like the various apps, touchscreen and Internet connection. It blends into modern living spaces quite nicely. It would be perfect if offered in various colors.
4	Sep 30, 2010 1:12 AM	everything I really liked that it can also break down
5	Sep 30, 2010 6:12 PM	gas, electric, etc ...
6	Sep 30, 2010 6:44 PM	usage graph, the smaller time increments and the clock.
7	Oct 1, 2010 10:26 PM	The robo clock
8	Oct 5, 2010 3:41 AM	Didn't get much of a chance to play with this one

## Electricity Monitors Comparison Survey

What did you dislike about OpenPeak?	
Answer Options	Response Count
	9
<i>answered question</i>	9
<i>skipped question</i>	0

Number	Response Date	Response Text
1	Sep 24, 2010 8:33 PM	Not as detailed in the usage, and couldn't control the thermostat, and wasn't able to monitor online remotely.
2	Sep 25, 2010 4:54 AM	No ability to monitor individual devices.
3	Sep 25, 2010 5:23 AM	I had to reset it a few times when it went off line My least favorite, it has a lot of gizmos that are redundant to other devices we already own. I didn't like the way it displayed the energy use compared to the tendril, I felt I got more useful info from the tendril. It was also the largest of the three.
4	Sep 25, 2010 7:23 PM	It did not have a web browser to access the Internet.
5	Sep 30, 2010 1:12 AM	really did not see anything
6	Sep 30, 2010 6:12 PM	would like to hav had the comparison graph and usage based on 5 minute time increments.
7	Sep 30, 2010 6:44 PM	It was difficult to get it to read the internet system.
8	Oct 1, 2010 10:26 PM	Seemed difficult to set up
9	Oct 5, 2010 3:41 AM	

## Electricity Monitors Comparison Survey

What did you like about EnergyHub?	
Answer Options	Response Count
	8
<i>answered question</i>	<b>8</b>
<i>skipped question</i>	<b>1</b>

Number	Response Date	Response Text
1	Sep 24, 2010 8:33 PM	n/a
2	Sep 25, 2010 4:54 AM	The ability to monitor individual appliances, and the ability connect with the power meter.
3	Sep 25, 2010 5:23 AM	I am able to see in real time the electric consumption of individual appliances in my home. It is more user friendly.
4	Sep 25, 2010 7:23 PM	I liked that you could program specific outlets on and off. I liked that you could read energy usage from specific outlets
5	Sep 30, 2010 1:12 AM	The other units only provided overall information on your home energy use. What separates EnergyHub from the other units is its ability to monitor energy use on individual appliances/devices.
6	Sep 30, 2010 6:12 PM	very easy to operate
7	Oct 1, 2010 10:26 PM	It gave some good information.
8	Oct 5, 2010 3:41 AM	Monitor is nice, communicates with SmartMeter

## Electricity Monitors Comparison Survey

What did you dislike about EnergyHub?	
Answer Options	Response Count
	9
<i>answered question</i>	9
<i>skipped question</i>	0

Number	Response Date	Response Text
1	Sep 24, 2010 8:33 PM	I was overwhelmed by just opening the box, all the cords, then the directions to set it up where enough to discourage me from trying it out. It rarely worked. The wireless connection was spotty at best on a highly reliable wireless network. The sockets and outlet transmitters were in the same room with the base station and the wireless router. I replaced the entire system once during the test period (after it didn't work at all) and the new one would only work about ten minutes at a time, then drop its connectivity for no apparent reason.
2	Sep 25, 2010 4:54 AM	Not enough plugs for my appliances.
3	Sep 25, 2010 5:23 AM	
		It took a long time to install. The need to move furniture to get to the outlets and rework plug ins to be able to monitor energy use was a hassle for a short term study, I don't think I was able to use it effectively. For instance, I couldn't get to the outlet of my water heater so I could measure it which was one thing I really wanted to measure. We have so many electronics in so many places of our house one strip wasn't enough and the on/off freaked out my kids, they thought thier electronics would be ruined.
4	Sep 25, 2010 7:23 PM	The look and style of the unit. small screen the energy Hub is more of a hassle than I want to deal with.
5	Sep 30, 2010 1:12 AM	
6	Sep 30, 2010 6:12 PM	
7	Sep 30, 2010 6:44 PM	Too many parts to it.
8	Oct 1, 2010 10:26 PM	
9	Oct 5, 2010 3:41 AM	Need to plug in different devices. Also, took a long time to begin monitoring whole home

## Electricity Monitors Comparison Survey

Other comments?	
Answer Options	Response Count
	8
<i>answered question</i>	<b>8</b>
<i>skipped question</i>	<b>1</b>

Number	Response Date	Response Text
1	Sep 24, 2010 8:33 PM	I think Open Peak was the best overall. It didn't take up a lot of room, only one outlet, and didn't require additional set up. With most customers not being tech savvy this would benefit the majority of users.
2	Sep 25, 2010 5:23 AM	Overall my participation in the wattsbusters program has helped my family to be aware of what we need to conserve energy.
3	Sep 25, 2010 7:23 PM	The last study on the energy hub should have been for a longer length of time.
4	Sep 30, 2010 1:12 AM	Thanks for allowing us to participate in this program. Will Chugach be offering customers these types of units in the future?
5	Sep 30, 2010 6:12 PM	thanks for the opprtunity!!! I really enjoyed this
		I liked botjh the Tendril and the Open Peak. the concepte of the Energy Hub is good and if I were going to install one in my hous permanently it might be worth the circus to set it up, but frankly I want a plug and play device. A techno nerd might like the bells and whistles of the Energy Hub but for me I don't see the benefit.[]
6	Sep 30, 2010 6:44 PM	Something I would like is a portable watt meter so I could go around the house and measure the current being used by my household Items. I have shown friends and family the Open Peak and Tendril monitors and the question I get is how energy does the; refrigerator, microwave, hair dryer,. clothes dryer, dishwasher use? and I can't quantify that.
7	Oct 1, 2010 10:26 PM	It was interesting to participate in it and over all and had amused my children with all the information it had.
8	Oct 5, 2010 3:41 AM	To rank systems: 1. Tendril 2. EnergyHub 3. OpenPeak

*Electricity Monitors Survey questions*

Customer name:

Service address:

Account #:

1. Which type of energy consumption monitor did you borrow from Chugach Electric? *[circle all that apply]*

Kill A Watt

Watts Up

2. Why did you borrow the monitor from Chugach Electric? *[circle all that apply]*

I was curious

I want to reduce my energy use

I want to lower my electric bill

3. Was it easy to use? *[yes or no]*

4. Which appliances and other electronics did you monitor? *[circle all that apply – or specify]*

Refrigerator

Microwave

Stand-alone freezer

Television

Computer system

Other *[specify]*

5. Was there one major appliance in particular that you wanted to measure? *[specify]*

6. While taking measurements, was there any one appliance or electronic device with energy consumption that surprised you? *[specify]*

7. Based on what you learned, have you made any changes? *[yes or no]*

8. Based on what you learned, do you intend to make any changes? *[yes or no]*

# Electricity Monitors Survey

<b>1. Customer Name</b>	
	<b>Response Count</b>
	84
<i>answered question</i>	<b>84</b>
<i>skipped question</i>	<b>0</b>

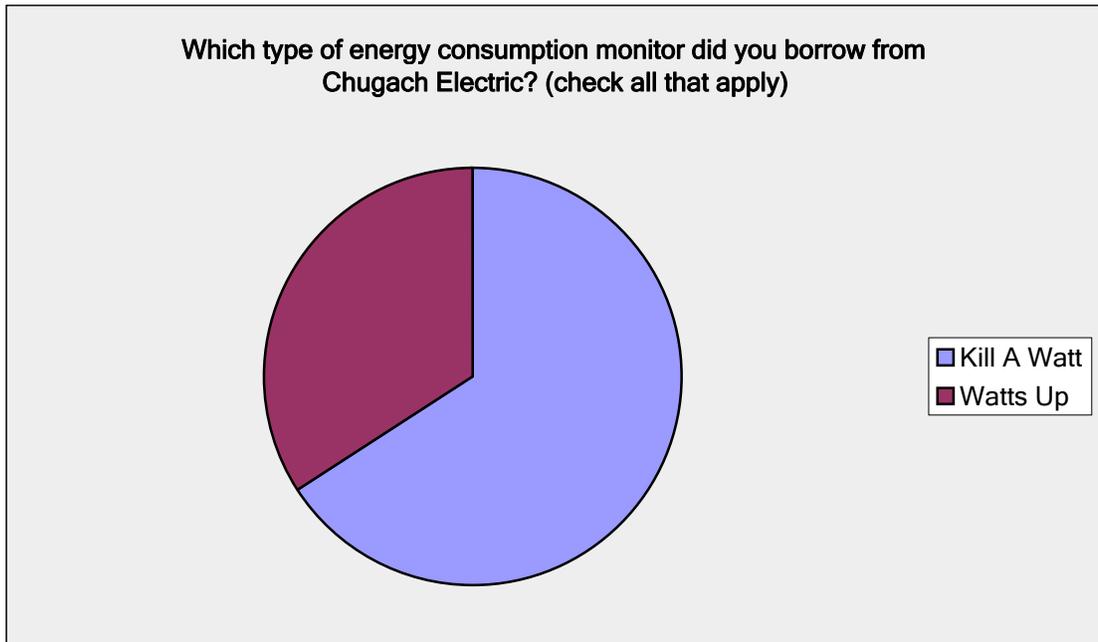
<b>2. Service Address</b>	
	<b>Response Count</b>
	79
<i>answered question</i>	<b>79</b>
<i>skipped question</i>	<b>5</b>

<b>3. Account #</b>	
	<b>Response Count</b>
	66
<i>answered question</i>	<b>66</b>
<i>skipped question</i>	<b>18</b>

## Electricity Monitors Survey

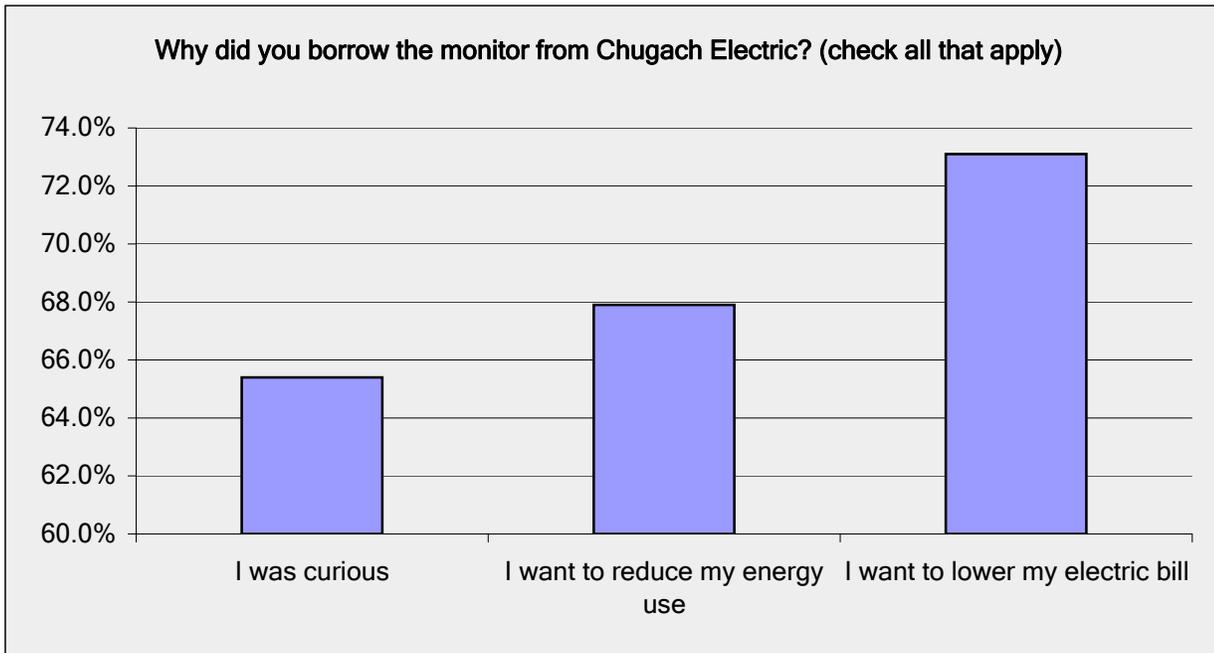
Which type of energy consumption monitor did you borrow from Chugach Electric? (check all that apply)

Answer Options	Response Percent	Response Count
Kill A Watt	65.8%	52
Watts Up	34.2%	27
	<i>answered question</i>	<b>79</b>
	<i>skipped question</i>	<b>5</b>



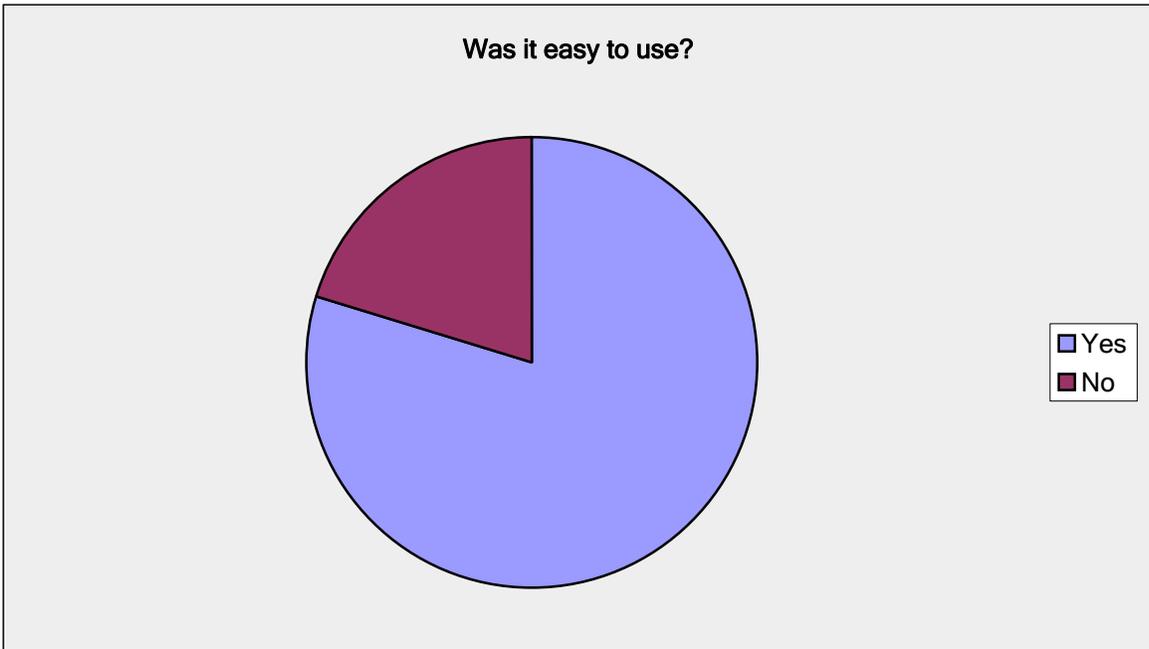
## Electricity Monitors Survey

Why did you borrow the monitor from Chugach Electric? (check all that apply)		
Answer Options	Response Percent	Response Count
I was curious	65.4%	51
I want to reduce my energy use	67.9%	53
I want to lower my electric bill	73.1%	57
<i>answered question</i>		<b>78</b>
<i>skipped question</i>		<b>6</b>



# Electricity Monitors Survey

Was it easy to use?		
Answer Options	Response Percent	Response Count
Yes	79.7%	55
No	20.3%	14
<i>answered question</i>		<b>69</b>
<i>skipped question</i>		<b>15</b>

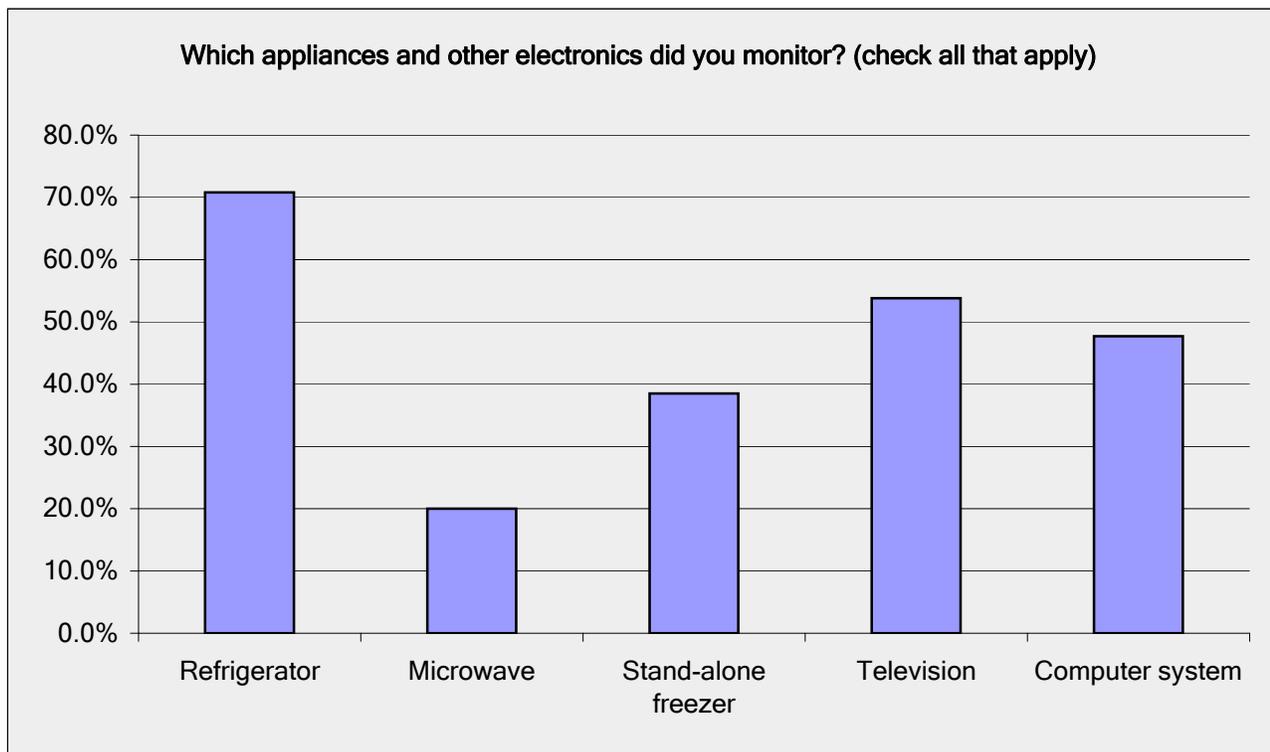


## Electricity Monitors Survey

Which appliances and other electronics did you monitor? (check all that apply)		
Answer Options	Response Percent	Response Count
Refrigerator	70.8%	46
Microwave	20.0%	13
Stand-alone freezer	38.5%	25
Television	53.8%	35
Computer system	47.7%	31
Other (please specify)		39
		<i>answered question</i> <b>65</b>
		<i>skipped question</i> <b>19</b>

Number	Response Date	Other (please specify)
1	Jul 23, 2010 9:55 PM	Chest Freezer
2	Jul 23, 2010 9:55 PM	Furnace, Washing machine, Hot Water heater
3	Jul 23, 2010 9:57 PM	Shop/Garage
4	Jul 23, 2010 9:58 PM	Security System
5	Jul 23, 2010 9:58 PM	Lights
6	Jul 23, 2010 9:59 PM	Head bolt heaters for car and boiler
7	Jul 23, 2010 9:59 PM	Fans, Computer backup and Laser Printer
8	Jul 23, 2010 10:00 PM	Washer and Dryer
9	Jul 23, 2010 10:03 PM	curling iron and blow dryer
10	Jul 23, 2010 10:06 PM	Toaster
11	Jul 23, 2010 10:07 PM	portable phone, engine block heater
12	Jul 23, 2010 10:09 PM	Lizards on lights
13	Jul 23, 2010 10:22 PM	Shredder
14	Jul 23, 2010 10:27 PM	Lights
15	Jul 23, 2010 10:30 PM	Washing Machine
16	Jul 23, 2010 10:34 PM	Wii, PS2, PS3
17	Jul 23, 2010 10:36 PM	pond pump
18	Jul 23, 2010 10:41 PM	Dryer
19	Jul 23, 2010 10:42 PM	Clock radio, stove
20	Jul 23, 2010 10:44 PM	under the weather and not able to use it
21	Jul 23, 2010 10:48 PM	Hepa filter, home theater
22	Jul 26, 2010 6:26 PM	6 computers, heating pad
23	Aug 12, 2010 8:46 PM	Electric lawn mower, LED flashlight
24	Aug 26, 2010 5:07 PM	Heater
25	Aug 26, 2010 5:09 PM	Lamp - already have a fluorescent bulb in it
26	Aug 31, 2010 3:48 PM	x 2
27	Aug 31, 2010 3:53 PM	would like to monitor refrigerator and freezer but plug was not accessible
28	Aug 31, 2010 3:55 PM	curling iron, Xbox, play station, vacuum cleaner
29	Sep 9, 2010 6:57 PM	dryer, toaster
30	Sep 9, 2010 6:58 PM	none

31	Sep 9, 2010 7:02 PM	cell phone & pda. other applicances were too difficult to reach plug.
32	Sep 9, 2010 7:05 PM	chargers, radio, iPod dock
33	Sep 13, 2010 7:13 PM	hot tub
34	Sep 16, 2010 4:48 PM	air cleaner
35	Sep 17, 2010 12:32 AM	freezers - 1 old & 1 new
36	Sep 20, 2010 3:49 PM	Refrigerator Trying to track what caused increase in usage since 11/2009
37	Oct 4, 2010 7:16 PM	Electric Heater
38	Oct 4, 2010 7:19 PM	washer/dryer
39	Oct 4, 2010 7:20 PM	



## Electricity Monitors Survey

Was there one major appliance in particular that you wanted to measure?

Answer Options	Response Count
	62
<i>answered question</i>	62
<i>skipped question</i>	22

Number	Response Date	Response Text
1	Jul 23, 2010 9:55 PM	Chest Freezer
2	Jul 23, 2010 9:55 PM	Furnace
3	Jul 23, 2010 9:55 PM	Computer
4	Jul 23, 2010 9:57 PM	Computer
5	Jul 23, 2010 9:57 PM	TV
6	Jul 23, 2010 9:58 PM	Security System
7	Jul 23, 2010 9:58 PM	Computer and TV
8	Jul 23, 2010 9:59 PM	Head bolt heaters
9	Jul 23, 2010 9:59 PM	Refrigerator and freezer
10	Jul 23, 2010 9:59 PM	No, just wanted to know how much usage each item used
11	Jul 23, 2010 10:00 PM	Refrigerator
12	Jul 23, 2010 10:00 PM	no
13	Jul 23, 2010 10:03 PM	Refrigerator
14	Jul 23, 2010 10:03 PM	clothes dryer
15	Jul 23, 2010 10:04 PM	Refrigerator
16	Jul 23, 2010 10:06 PM	Freezer
17	Jul 23, 2010 10:07 PM	Refrigerator and freezer
18	Jul 23, 2010 10:09 PM	heating lamps
19	Jul 23, 2010 10:09 PM	Stand-alone freezer and old fridge in garage
20	Jul 23, 2010 10:20 PM	refrigerator
21	Jul 23, 2010 10:22 PM	Refrigerator
22	Jul 23, 2010 10:23 PM	Television
23	Jul 23, 2010 10:27 PM	computer
24	Jul 23, 2010 10:30 PM	TV
25	Jul 23, 2010 10:31 PM	chest freezer
26	Jul 23, 2010 10:34 PM	Television
27	Jul 23, 2010 10:36 PM	pond pump
28	Jul 23, 2010 10:41 PM	Refrigerator (couldn't monitor - built-in), range, dishwasher, furnace or hot water heater
29	Jul 23, 2010 10:42 PM	refrigerator
30	Jul 23, 2010 10:47 PM	no
31	Jul 23, 2010 10:48 PM	refrigerator
32	Jul 23, 2010 10:50 PM	freezer
33	Jul 23, 2010 10:51 PM	no
34	Jul 23, 2010 10:56 PM	freezer
35	Jul 23, 2010 11:00 PM	refrigerator
36	Jul 26, 2010 6:26 PM	monitors
37	Aug 2, 2010 11:31 PM	Refrigerator
38	Aug 6, 2010 5:32 PM	Television

39	Aug 12, 2010 8:46 PM	computer & LCD TV, but unable to access outlets
40	Aug 26, 2010 5:07 PM	Heater
41	Aug 26, 2010 5:09 PM	refrigerator
42	Aug 31, 2010 3:48 PM	old refrigerator
43	Aug 31, 2010 3:53 PM	computer
44	Sep 9, 2010 6:57 PM	freezer
45	Sep 9, 2010 6:58 PM	refrigerator & freezer
46	Sep 9, 2010 7:00 PM	freezer, refrigerator, tv
47	Sep 9, 2010 7:02 PM	refrigerator
48	Sep 9, 2010 7:05 PM	computer
49	Sep 9, 2010 9:43 PM	freezer
50	Sep 13, 2010 7:09 PM	no
51	Sep 13, 2010 7:11 PM	computer & refrigerator
52	Sep 13, 2010 7:13 PM	hot tub
53	Sep 13, 2010 7:15 PM	refrigerator - 3; mine and duplex (rental property)
54	Sep 13, 2010 11:35 PM	refrigerator
55	Sep 17, 2010 12:32 AM	listed above
56	Sep 20, 2010 3:49 PM	no
57	Oct 4, 2010 7:10 PM	Refrigerator
58	Oct 4, 2010 7:12 PM	Freezer
59	Oct 4, 2010 7:18 PM	Refrigerator
60	Oct 4, 2010 7:19 PM	Refrigerator
61	Oct 4, 2010 7:20 PM	TV, washer/dryer
62	Oct 4, 2010 7:22 PM	furnace - but it's wired in & I couldn't check it

## Electricity Monitors Survey

While taking measurements, was there any one appliance or electronic device with energy consumption that surprised you?

Answer Options	Response Count
	49
<i>answered question</i>	<b>49</b>
<i>skipped question</i>	<b>35</b>

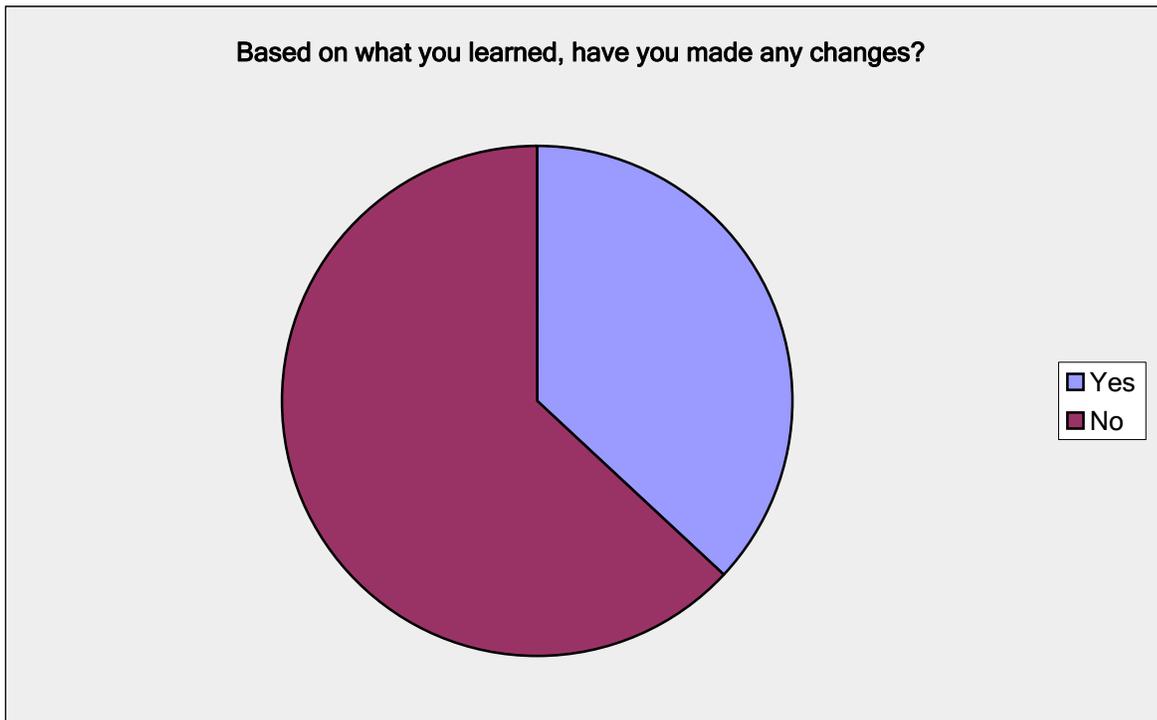
Number	Response Date	Response Text
1	Jul 23, 2010 9:55 PM	Cable Box
2	Jul 23, 2010 9:57 PM	Computer
3	Jul 23, 2010 9:57 PM	No
4	Jul 23, 2010 9:58 PM	TV
5	Jul 23, 2010 9:58 PM	TV
6	Jul 23, 2010 9:59 PM	No
7	Jul 23, 2010 9:59 PM	Freezer low and Laser printer high
8	Jul 23, 2010 9:59 PM	No
9	Jul 23, 2010 10:00 PM	Yes, I thought it would use more as it is old
10	Jul 23, 2010 10:00 PM	no
11	Jul 23, 2010 10:03 PM	No
12	Jul 23, 2010 10:03 PM	no
13	Jul 23, 2010 10:04 PM	no
14	Jul 23, 2010 10:06 PM	toaster
15	Jul 23, 2010 10:09 PM	lamps cost 80 cents a day
16	Jul 23, 2010 10:09 PM	Not really
17	Jul 23, 2010 10:20 PM	no
18	Jul 23, 2010 10:30 PM	TV, Washing Machine
19	Jul 23, 2010 10:31 PM	extra refrigeration
20	Jul 23, 2010 10:34 PM	Microwave
21	Jul 23, 2010 10:36 PM	Refrigerator much lower than expected
22	Jul 23, 2010 10:41 PM	all
23	Jul 23, 2010 10:42 PM	co detector
24	Jul 23, 2010 10:46 PM	no
25	Jul 23, 2010 10:47 PM	no
26	Jul 23, 2010 10:50 PM	not really
27	Jul 23, 2010 10:51 PM	no
28	Jul 23, 2010 10:58 PM	computer plasma tv and media electronics used most
29	Jul 23, 2010 11:00 PM	energy
30	Jul 26, 2010 6:26 PM	heating pad, monitors
31	Aug 2, 2010 11:31 PM	No
32	Aug 12, 2010 8:46 PM	No, had no idea what to expect
33	Aug 26, 2010 5:07 PM	No
34	Aug 26, 2010 5:09 PM	no
35	Aug 31, 2010 3:48 PM	no
36	Aug 31, 2010 3:53 PM	TV
37	Sep 9, 2010 6:57 PM	no
38	Sep 9, 2010 7:02 PM	no
39	Sep 9, 2010 9:43 PM	freezer was very high

40	Sep 13, 2010 7:09 PM	no
41	Sep 13, 2010 7:11 PM	computer was lower than I thought it would be
42	Sep 13, 2010 7:13 PM	(laptop)
43	Sep 13, 2010 7:15 PM	no
44	Sep 17, 2010 12:32 AM	for the good - yes
45	Sep 20, 2010 3:49 PM	no
46	Oct 4, 2010 7:10 PM	no
47	Oct 4, 2010 7:12 PM	no
48	Oct 4, 2010 7:19 PM	Electric Heater
49	Oct 4, 2010 7:22 PM	no

## Electricity Monitors Survey

Based on what you learned, have you made any changes?		
Answer Options	Response Percent	Response Count
Yes	36.9%	24
No	63.1%	41
Other (please specify)		12
<i>answered question</i>		<b>65</b>
<i>skipped question</i>		<b>19</b>

Number	Response Date	Other (please specify)
1	Jul 23, 2010 9:57 PM	Will turn it off more often
2	Jul 23, 2010 10:00 PM	Delayed buying a new one
3	Jul 23, 2010 10:00 PM	Not yet
4	Jul 23, 2010 10:09 PM	put lamps on timer so that they could save money
5	Jul 23, 2010 10:09 PM	still deciding
6	Jul 23, 2010 10:30 PM	not yet
7	Jul 23, 2010 11:00 PM	cleaned behind fridge, coils
8	Aug 12, 2010 8:46 PM	not yet
9	Aug 31, 2010 3:44 PM	I didn't learn nothing too hard to use.
10	Aug 31, 2010 3:55 PM	cut off TV etc. only plug in when using
11	Sep 13, 2010 7:11 PM	unplug when not using
12	Sep 13, 2010 7:15 PM	didn't buy a new refrigerator



## Electricity Monitors Survey

Based on what you learned, do you intend to make any changes?

Answer Options	Response Percent	Response Count
Yes	62.3%	38
No	37.7%	23
Other (please specify)		22
		<i>answered question</i> <b>61</b>
		<i>skipped question</i> <b>23</b>

Number	Response Date	Other (please specify)
1	Jul 23, 2010 9:55 PM	Not sure
2	Jul 23, 2010 9:58 PM	Didn't get to use it
3	Jul 23, 2010 9:59 PM	Maybe
4	Jul 23, 2010 10:00 PM	Buy a new fridge next year instead of this year
5	Jul 23, 2010 10:00 PM	didn't use
6	Jul 23, 2010 10:02 PM	Did not use
7	Jul 23, 2010 10:04 PM	Reported he didn't use it
8	Jul 23, 2010 10:06 PM	Keep freezer full
9	Jul 23, 2010 10:09 PM	Homeschooling 6 kids. Would like to borrow again to do more with fun person.
10	Jul 23, 2010 10:09 PM	not yet
11	Jul 23, 2010 10:34 PM	not sure
12	Jul 23, 2010 10:50 PM	maybe
13	Jul 23, 2010 11:00 PM	turn tv and computer off completely; bought energy star rated fridge
		1) You should notify the person using it that CEA's kWh rate is input. 2) Now that I am more familiar with it I would like to set up a spreadsheet & monitor more appliances. I can estimate now what my usage is better by using the machine. Some of these take time to get a good reading (average).
14	Jul 26, 2010 6:26 PM	wasn't able to use this - we were looking to check the hot tub
15	Aug 6, 2010 5:34 PM	a few
16	Aug 31, 2010 3:55 PM	
17	Sep 9, 2010 6:57 PM	Easy of use: Soft of. I'm a visual person, so a flow chart or photos would have helped.
18	Sep 9, 2010 7:00 PM	Ease of use: Can't move big appliances to plug this into
19	Sep 9, 2010 7:06 PM	No responses given - Jean
20	Sep 16, 2010 4:48 PM	no money to change appliances currently
21	Sep 17, 2010 12:32 AM	Would to check out later this window. Unable to monitor "switches" or direct-wired furnace
22	Sep 20, 2010 3:49 PM	Better choices in energy use

Based on what you learned, do you intend to make any changes?

