

YOU ARE THE ENERGY MANAGER



A Guide To Efficient Use Of Electricity

Fifth Edition

Bangor Hydro-Electric Company

Glossary of Terms

Ampere (Amps): Amount of current or flow of electricity in the wire.

Customer Charge: Customer charge includes distribution related costs that pertain to services, meters, billing, accounting, and information.

Delivery Charge: Combination of Transmission and Distribution (T&D) charges.

Distribution Charge: Covers the costs associated with delivering the electricity to our retail customers and are regulated by the Maine Public Utilities Commission.

Electricity Supplier: A company that is licensed to generate and/or sell electricity.

Electricity Supply Charge: The portion of the billing that applies to the charges for electric energy and capacity from the Electricity Supplier of your choice.

Kilowatt (kW): The rate at which electric energy is delivered at a given instant. One kW = 1,000 watts.

Kilowatt-Hour (kWh): A unit of electrical energy equal to one kilowatt (kW) of power supplied to or taken from an electric circuit steadily for one hour.

Maine Public Utilities Commission (MPUC): The MPUC is an independent agency of the state of Maine created by the Maine Legislature "to assure safe, reasonable and adequate service at rates which are just and reasonable to customers and public utilities." The Commission has jurisdiction over water utilities, electric utilities, water carriers, gas utilities, telephone utilities, and resellers of telephone services.

Restructuring: The process of opening Maine's electricity supply in a competitive market. Customers may choose who generates the electricity they purchase. Electricity will continue to be delivered by local electric companies such as Bangor Hydro.

Service Days: The number of days between the previous meter read date and the current meter read date used for each billing period.

Standard Offer Price: The portion of the billing which applies to the charges for electric energy and capacity. This rate applies when you do not choose an Electricity Supplier. The price is established and regulated by the Maine Public Utilities Commission.

Transmission and Distribution (T&D): Transmission service transmits electricity from power plants through high-voltage lines to distribution substations. Distribution services deliver the electricity from substations to individual customers. Bangor Hydro provides both T&D services.

Transmission Charge: These are related to transmitting the power from power plants across high-voltage power lines to our distribution substations and is regulated by the Federal Energy Regulatory Commission (FERC).

Volts: The force of electricity through the wire.

Watts: A unit of electricity. Measuring the force of its electricity (volts) and the amount of its flow (amps). In mathematical formula: watts = volts x amps.

A Word to You, The Energy Manager



You are the Energy Manager of your household. This booklet provides information you need to manage your use of electricity effectively. It will help you determine how much electricity household items use, the cost of that energy, and what you can do to control those costs. If you feel the cost is too high, use the energy saving ideas in this booklet and learn how to operate your electrical items as efficiently as possible.

Learn how to read your electric meter (see page 15 in this booklet). Then track your usage daily to monitor consumption of electricity in your home. Be a wise manager of your electricity.

Use resources on Bangor Hydro's web site at www.bhe.com

Quick Check — answer six questions, click a button and see what typical daily usage might be for your household.

Bill Analysis — a detailed look at your home's electrical lifestyle.

Energy Manager — This booklet can also be found on our web site.

The Three Parts of Electric Rates

Restructuring has caused many changes in the electric industry. You have experienced some of those changes, particularly in your electric bill. **Three components make up the price of every kWh, whereas there used to be only a single price.**

Keep this information as an easy reference. It is the basis of every calculation you do while working with this booklet. **Find the numbers on your electric bill**, if you do not already know them. Add all three components together for your total cost per kilowatt-hour.

Today's Date: _____ Name of Supplier: _____

Distribution Charge (+) _____ ¢ per kWh

Transmission Charge (+) _____ ¢ per kWh

Electricity Supply Charge (+) _____ ¢ per kWh

Total Cost (=) _____ ¢ per kWh

As you change suppliers, your charges will change. Bangor Hydro no longer sells electricity, but only delivers electricity. Therefore, the electricity supply price you are charged is determined by the supplier you choose, or the Maine Public Utilities Commission (MPUC) Standard Offer price if you do not choose a supplier.

Calculating Electricity Use



Electricity usage for household items will depend on the watt rating and on the length of time the item is operating. To determine the electricity usage of your electrical item, use the following steps:

- A.** Find the watt rating of the item. This is usually on a small metal plate on the back or bottom of the item. Some items will list the volts and amps instead of watts. To obtain the watts, simply multiply

$$\text{(Volts x Amps = Watts).}$$

- B.** Estimate the hours per month the item is used.
C. Using the formula below, calculate the approximate number of kilowatt-hours for each item.

$$\frac{\text{watts x hours of operation} = \text{kWh}}{1,000 \text{ watts}}$$

Example: A 1,500 watt microwave oven with estimated use of 10 hours per month (20 minutes per day).

$$\frac{1,500 \text{ watts x } 10 \text{ hours/month} = 15 \text{ kWh per month}}{1,000 \text{ watts}}$$

- D.** By multiplying the number of estimated kilowatt-hours used per month times the price per kWh, you can determine the approximate operating cost per month of your electrical item.

$$\text{kWh per month x price per kWh} = \text{cost per month}$$

Example: 15 kWh per month x \$.16 per kWh* = \$2.40 estimated cost per month.

- E.** The cost per kilowatt-hour of electricity is made up of three separate components in residential accounts. Add all three together, then use that total in the above calculation.

<i>Example:</i>	Distribution Charge	\$ 0.08494
	Transmission Charge	\$ 0.00914
	Electricity Supply Charge	\$ 0.07300
	Total Cost per kWh	\$0.16708

* To obtain current Transmission & Distribution charges go to www.bhe.com

* To obtain current Standard Offer electricity supply charges go to the Maine Public Utilities web site at <http://janus.state.me.us/mpuc/>

Lifestyle & Electricity



On the next several pages are charts listing many items found in homes. Typical usage and cost—Transmission & Distribution (T&D) only—for each item are also printed. T&D costs are billed by Bangor Hydro. They are combined in these charts into one column “Average Monthly Cost for Delivery (T&D)”.

Two columns in the charts are blank. Instructions are given below for completing those columns. The “Electricity Supply” charge is determined by the company from which you purchase electricity. If you have not selected a company, you probably are on Standard Offer Electricity Supply and that charge is established by the MPUC.

Remember: T&D charges must be added to Electricity Supply charges to calculate total cost.

Using the Charts

There are many ways you can use the charts in this *Energy Manager*. Here is probably the easiest:

1. Mark each item in the list that you use in your home.
2. Add together the “Estimated kWh/Month” for all items you marked.
3. Multiply the total “Estimated kWh/Month” by the total cost per kWh (see page 1). This gives you an estimated monthly cost for the items you marked.
4. Remember, the list may not include everything in your home. Also, your

home may use items less than average or more than average. Therefore, remember this is an average estimate and your total electric bill will probably be close to, but not the same total, as this calculation based on averages.

Another Use of the Charts

To calculate the cost per item, and to fill in the blank column “Average Monthly Cost for Electric Supply” do this calculation:

Multiply “Estimated kWh/Month” (from the charts on pages 4 through 9) by “Electric Supply Charge Per kWh” that you calculated and entered on page 1. This equals “Average Monthly Cost for Electric Supply” for the item you selected.

For each item, add the amount in this column, “Average Monthly Cost for Electricity Supply” to the amount in the “T&D” column and fill in the last column. This will give you the estimated cost per month for that item “Total Cost (T&D plus Supply).”

Lifestyle & Electricity Usage Charts

These charts list typical residential usage. Because there is no “typical” home, costs for your home may differ due to family size or lifestyle, as well as wattage, age, efficiency and extent of use of electrical items.

These charts help you estimate your monthly appliance usage and can help you use high-energy items more wisely. They can help you evaluate purchases of new electrical items.

	Typical Wattage	Typical Period of Use	Estimated kWh/Month	Average Monthly Cost for Delivery (T&D)	Average Monthly Cost for Electricity Supply	Total Cost (T&D plus Supply)
Bathroom/Bedroom						
Bath with water jets	560	20 min./week	0.7	\$ 0.07		
Curling Iron	18	20 min./day	0.2	\$ 0.02		
Electric Blanket (175 watts per control unit)*	175	4 hours/day	22	\$ 2.07		
Hair Dryer	1250	15 min./day	9	\$ 0.85		
Hot Tub—outdoors; summer*	6000	1.5 hours/day	270	\$25.40		
Hot Tub—outdoors; winter*	6000	2.5 hours/day	450	\$42.34		
Shaver, cordless	3	18 hours/mo.	0.1	\$ 0.01		
Waterbed (winter season):						
King size, 70 degree room, covered*	365	12 hours/day	131	\$12.32		
Queen size, 70 degree room, covered*	365	9 hours/day	99	\$ 9.31		
Single size & soft-side, 70° room, covered*	365	6 hours /day	66	\$ 6.21		
Den/Living Room						
Aquarium with light and heater—10 gallon	48	24 hours/day	35	\$ 3.29		
Aquarium with light and heater—50 gallon	128	24 hours/day	92	\$ 8.66		
CD, Compact Disk Player	11	1 hour/day	0.3	\$ 0.03		
Computer and Printer	450	4 hours/day	54	\$ 5.08		
DVD Player	13	12 hours/day	5	\$ 0.47		
Hot Rock or Mat (for reptiles)	20	24 hours/day	14	\$ 1.32		
Radio	20	2 hours/day	1	\$ 0.09		
Stereo	110	1 hour/day	3	\$ 0.28		
TV, Color	200	6 hours/day	36	\$ 3.39		
TV, Large Screen	240	6 hours/day	43	\$ 4.05		
TV, Satellite Dish, 18" or less	20	24 hours/day	14	\$ 1.32		
VCR, videotape player	30	2 hours/day	2	\$ 0.19		

Heating & Air Conditioning

Air Conditioner (8,000 Btu Window Unit)*	1000	6 hours/day	180	\$ 16.93		
Air-to-Air Heat Exchanger	76	24 hours/day	55	\$ 5.17		
Dehumidifier**	550	12 hours/day	198	\$18.63		
Fans: ceiling	60	5 hours/day	9	\$ 0.85		
oscillating	75	2 hours/day	5	\$ 0.47		
window	100	4 hours/day	12	\$ 1.13		
woodstove fan	180	12 hours/day	65	\$ 6.12		
Humidifier (desk top)**	75	24 hours/day	54	\$ 5.08		
Space Heater (electric/portable):						
low heat*	500	8 hours/day	120	\$ 11.29		
medium heat*	1000	8 hours/day	240	\$22.58		
high heat*	1500	8 hours/day	360	\$33.87		

Heating Systems (Whole House) on Bangor Hydro's Electric Heat Rate (700 kWh requirement)

Electric Baseboard Heat (one foot)	250	8 hours/day	60	\$ 1.80		
Electric Baseboard, 10 feet	2500	8 hours/day	600	\$18.00		
Electrically operated Ground Source Heat Pump includes household hot water	5960	8 hours/day	1430	\$42.90		

Other Heating Systems (oil fuel price not included)

Hot Air Furnace (10 amps.)	1200	8 hours/day	288	\$ 27.10		
does not include household hot water						
Hot Water Baseboard Heat with 1 circulator pump [or radiators] (8 amps.) includes household hot water*	960	8 hours/day	230	\$21.68		

*Thermostatically controlled. Cost based on estimated "on" time. **Controlled by humidistat. Cost based on estimated "on" time.

	Typical Wattage	Typical Period of Use	Estimated kWh/Month	Average Monthly Cost for Delivery (T&D)	Average Monthly Cost for Electric- ity Supply	Total Cost (T&D plus Supply)
Kitchen						
Blender	375	15 min./week	0.4	\$ 0.04		
Can Opener	165	30 min./month	0.1	\$ 0.01		
Coffee Maker*	900	20 min./day	9	\$ 0.85		
Dishwasher, air dry cycle	600	3 loads/week	7	\$ 0.66		
Dishwasher, with hot dry cycle*	1500	3 loads/week	18	\$ 1.69		
Food Dehydrator (24 hours/use)	95	1 use/week	9	\$ 0.85		
Food Processor	690	15 min./month	0.2	\$ 0.02		
Freezer—chest, less than 10 years old*	600	3.3 hours/day	59	\$ 5.55		
Freezer—chest, more than 10 years old*	600	4.7 hours/day	85	\$ 8.00		
Freezer—upright, less than 10 years old*	600	5 hours/day	90	\$ 8.47		
Freezer—upright, more than 10 years old*	600	6.4 hours/day	115	\$10.82		
Fry Pan*	1200	1 hour/week	5	\$ 0.47		
Garbage Disposal	373	1 hour/month	0.4	\$ 0.04		
Hot Plate*	1200	1 hour/day	36	\$ 3.39		
Microwave Oven	1200	20 minutes/day	12	\$ 1.13		
Mixer	150	2 hours/mo.	0.3	\$ 0.03		
Range Burner, 6 inches*	1325	1 hour	40	\$ 3.76		
Range Burner, 8 inches*	2350	1 hour	71	\$ 6.68		
Range Oven, baking*	2585	20 hours/mo.	52	\$ 4.89		
Range Oven, broiling*	3400	1 hour/mo.	3	\$ 0.28		
Range Oven, self cleaning feature*	3435	2.5 hours/mo.*	4	\$ 0.38		
Refrigerator—standard, less than 10 years old*	800	3.75 hrs./day*	90	\$ 8.47		
Refrigerator—standard, more than 10 years old*	800	5.6 hours/day*	134	\$12.61		
Refrigerator—side-by-side, less than 10 years old*	900	4.75 hours/day*	128	\$12.04		

Refrigerator—side-by-side, more than 10 years*	900	6.29 hrs./day*	170	\$15.99		
Refrigerator—dormitory size/under counter*	114	9 hours/day	31	\$ 2.92		
Slow Cooker*	280	20 hours/mo.	6	\$ 0.56		
Toaster	1100	4 minutes/day	2	\$ 0.19		
Toaster Oven*	1500	15 hours/mo.	11	\$ 1.03		
Waffle Iron*	1200	2 hours/mo.	2	\$ 0.19		

Laundry Room/Basement/General

Clothes Dryer @ 1 hour per load*	5600	7 loads/week	157	\$14.77		
Clothes Washer @ 30 minutes per load (excluding hot water)	1200	7 loads/week	17	\$ 1.60		
Iron*	1000	5 hours/mo.	5	\$ 0.47		
Sewing Machine	102	5 hours/mo.	1	\$ 0.09		
Sump Pump (1/2 horsepower)	373	2 hours/day	22	\$ 2.07		
Vacuum	1000	4 hours/mo.	4	\$ 0.38		
Water Softener/Water Treatment Systems	4	cyclical	0.6	\$ 0.06		

Lighting

Bug Light	75	4 hours/day	9	\$ 0.85		
Christmas Lights, 64 lights (5 watt)	320	5 hrs./day for 3 wks.	34	\$ 3.20		
Christmas Lights, icicle (100 bulbs)	48	5 hrs./day for 3 wks.	5	\$ 0.47		
Christmas Lights, miniature (50 bulbs)	18	5 hrs./day for 3 wks.	2	\$ 0.19		
Flood Light, incandescent	100	1 hour/day	3	\$ 0.28		
Flood Light, compact fluorescent (equal to 100 watt)	28	1 hour/day	1	\$ 0.09		
Heat Lamp	250	5 hours/mo.	1	\$ 0.09		

*Thermostatically controlled. Cost based on estimated "on" time.

	Typical Wattage	Typical Period of Use	Estimated kWh/Month	Average Monthly Cost for Delivery (T&D)	Average Monthly Cost for Electricity Supply	Total Cost (T&D plus Supply)
Lighting (continued)						
Household (four 60 watt bulbs—each equivalent to one 15 watt compact fluorescent lamp)						
Summer	240	4 hours/day	29	\$ 2.73		
Winter	240	8 hours/day	58	\$ 5.46		
Household (four 15 watt compact fluorescent lamps—each equivalent to one 60 watt bulb)						
Summer	60	4 hours/day	7	\$ 0.66		
Winter	60	8 hours/day	14	\$ 1.32		
Security Light	150	8 hours/day	36	\$ 3.39		
Medical/ Health						
Air Filter/Purifier (tabletop)	45	12 hours/day	16	\$ 1.51		
Air Filter/Purifier (floor model)	198	12 hours/day	71	\$ 6.68		
Battery Charger for electric wheel chair	445	12 hours/day	160	\$15.05		
Chair with seat lift	130	5 minutes/day	0.3	\$ 0.03		
Foot Bath with heater*	75	30 minutes/day	1	\$ 0.09		
Heating Pad*	53	4 hours/day	6	\$ 0.56		
Hospital Bed/motorized adjustments	180	5 minutes/day	0.5	\$ 0.05		
Nebulizer/Medication Vaporizer	75	15 minutes/day	0.6	\$ 0.06		
Oxygen Concentrator	320	24 hours/day	230	\$21.64		
Wheel Chair Lift	560	8 minutes/day	2	\$ 0.19		
Shop/ Garage/Outdoor						
Engine Heater, auto*	750	8 hrs./day for 10 days	60	\$ 5.64		
Engine Heater, truck*	1500	8 hrs./day for 10 days	120	\$11.29		
Garage Door Opener	350	4 uses/day	0.4	\$ 0.04		
Grill, electric*	1500	2 hours/week	12	\$ 1.13		

Heat Tape (35 feet, 7 watts/foot)*	245	12 hours/day	88	\$ 8.28		
Lawn Mower, charger–battery powered unit	40	3 days charging	3	\$ 0.28		
Lawn Mower, electric with cord	1250	8 hours/month	10	\$ 0.94		
Motor, 1/2 horsepower	373	6 hours/mo.	2	\$ 0.19		
Motor, 1 horsepower	746	6 hours/mo.	4	\$ 0.38		
Pump, Swimming Pool	746	12 hours/day	269	\$25.31		
Pump, Septic (1 horsepower)	746	1 hour/mo.	0.7	\$ 0.07		
Pump, Water Well (1 horsepower)	746	1 hour/day	22	\$ 2.07		
Tools—small hand tools (3 ampere)	360	30 minutes/mo.	0.2	\$ 0.02		
Tools—large hand tools (10 ampere)	1200	30 minutes/mo.	0.6	\$ 0.06		

Water Heating: Electric Water Heater

Average Use Per Adult per Month*	4500		125	\$ 11.76		
Average Use Per Child (under 13) per Month*	4500		62	\$ 5.83		
Bath (20 gallons hot water)*		1 per day	72	\$ 6.77		
Clothes Washer (18 gallons hot water)* (using warm wash, cold rinse)		7 loads/week	79	\$ 7.43		
Dishwasher (9 gallons hot water)*		3 loads/week	16	\$ 1.51		
Dishwashing by hand (4 gallons hot water)*		1 load/day	18	\$ 1.69		
Shower, 5 minutes (13 gallons hot water)* (with energy saving showerhead)		1 per day	55	\$ 5.17		
Shower, 5 minutes (21 gallons hot water)* (without energy saving showerhead)		1 per day	92	\$ 8.66		

*Thermostatically controlled. Cost based on estimated "on" time.

What Caused My High Electricity Bill?

A Bill Payer's Checklist for Their Home's Electrical System



When your electric bill is bigger than expected, you probably wonder what caused it.

Sometimes you can remember that you had company, or filled a pool with water, or thawed a pipe by turning on a space heater. Sometimes it seems as though nothing changed. Sometimes things beyond our control, like the weather, may cause a high bill. If you do not remember what changed — use this checklist.

Can the Cause be Found?

Yes, in many cases the cause can be identified, but it takes time. And it takes effort on your part. Do the following steps:

Step #1

Connect to Bangor Hydro's web site at www.bhe.com to use "Quick Check". "Quick Check" lets you compare your bill with a brief calculated estimate after you answer a few questions about your home.

OR:

Complete a "Bill Analysis" questionnaire. Again, connect to BHE's web site at www.bhe.com and do your own Bill Analysis there.

Or you may use the "Bill Analysis" questionnaire in this booklet and mail it to Bangor Hydro for processing. The

results will be mailed to you. "Bill Analysis" will provide an estimate of what your bill might be for a typical month. Compare it with your current bill.

Mark box when completed.

Read this *Energy Manager* booklet. It will be useful when comparing your current bill with the Bill Analysis results. Much of the same information can be found on the www.bhe.com web site.

Mark box when completed.

Step #2

Do daily meter readings to track energy consumption. Please refer to pages 16 and 17. This avoids surprises when the next bill comes in. It also lets the meter tell you what is happening electrically in your home.

Mark box when completed.

Step #3 (advanced level)

Check electrical circuits to identify which circuits use a lot of electricity in your home. Use the procedure and instructions provided on page 18. Use caution while doing this. Bangor Hydro recommends completing this step with a licensed electrician.

Mark box when completed.

Still Need More Help?

With your "Bill Analysis" results and your daily meter reading work sheet at hand, call our Customer Service Center. The results of your readings can be discussed with a Customer Service Representative.

Call: 947-2414 (Bangor) or 1-800-499-6600 (toll free).

Bill Analysis



To request a Bill Analysis please complete pages 10–13 of this booklet and send to the address below. Your answers will then be used to generate a report that will be mailed to you.

Account Name: _____

Account Number: _____

Service Address: _____

Mailing Address: _____

Telephone Number: _____

Please send to:

Bangor Hydro

P.O. Box 932 Bangor, ME 04402-0932

These questions must be answered to calculate your Bill Analysis.

(Check all items included in your home)

How many people are living in your home?

KWh usage changes with the number of people living in your home.

_____ Adults (How many 13 and older?) _____ Children (12 and under?)

HOME HEATING

Which of the following heating systems does your home have?

Forced Hot Air Furnace (FHA) Gallons of oil per year: _____

Oil-based Boiler: Hot Water Baseboard or Radiators

Electric Baseboard Heat (EBBH) Number of rooms heated: _____

Other heating source **with fan** Number of fans: _____
(e.g., woodstove, gas or oil heater)

Other heat source—no electricity needed (e.g., woodstove)

Heat is included in rent

Do you have an **electric** hot water heater?

Yes No

LIGHTING (Check each appropriate box)

Indoor Lights

Outdoor Lights Total Watts for all outdoor lights: _____

Total Hours/Day for all outdoor lights: _____

KITCHEN APPLIANCES

Which of the following kitchen appliances do you have in your home?

Refrigerator #1 Standard Side-by-Side Age of Appliance: _____

Refrigerator #2 Standard Side-by-Side Age of Appliance: _____

Freezer #1 Chest Upright Age of Appliance: _____

Freezer #2 Chest Upright Age of Appliance: _____

Coffee Maker Pots per day: _____

Electric Range

Microwave Oven

Dishwasher Loads/week: **Hot** dry _____ Loads/week: **Air** dry _____

Small Kitchen Appliances

APPLIANCES—Laundry

Which of the following laundry appliances does your home have?

Clothes Washer Number of loads per week: _____

Clothes Dryer Number of loads per week: _____

Clothes Iron Number of hours per week: _____

APPLIANCES—Den/Living Room

Which of the following recreational items do you have in your home?

Personal Computer(s) Total Hours/Day for all: _____

Television(s) Total Hours/Day for all: _____

Satellite Dish

Aquarium(s) with Aerator _____ With heater _____ Total heated gallons

VCR(s), Radio(s), etc.

APPLIANCES—Bathroom/Bedroom

Which of the following appliances and/or furnishings does your home have?

Hot Tub

Hair Dryer

Waterbed—King size Number of beds: _____

Waterbed—Queen size Number of beds: _____

Waterbed—Single size Number of beds: _____

Electric Blanket Number of electric blankets: _____

OTHER ELECTRIC SPACE HEATING/CONDITIONING

Do you have any of the following heating and cooling items in your home?

- Air Conditioning Hours/Day for all: _____ Total Days/Month for all: _____
- Electric Space Heater(s) Total Hrs./Day on: Low _____ Med. _____ High _____
- Window Fan(s) Number of Fans: _____
- Dehumidifier Hours/Day: _____ Used in winter? _____

APPLIANCES — Shop/Garage/Outdoor

Do you have any of the following items?

- Swimming Pool Pump
- Water Pump
- Sump Pump Hours/Day: _____
- Septic Pump
- Heat Tape on Pipes Length of heat tape in feet: _____
- Heat Tape on Roof Length of heat tape in feet: _____
- Auto Engine Heater Days/Month: _____

APPLIANCES — Medical/Health

- Air Filter/Purifier(s) Total Hours/Day for all: _____
- Battery Charger for Wheelchair Hours/Day: _____
- Oxygen Concentrator Hours/Day: _____

Are there any other items in your home that use electricity and are not mentioned on this form? (Example: bread machines, compressors, bathroom heat lamps — do not include small household appliances or lights.)

Hours Used Per Week	Watts*	Item Description

* Wattage can usually be found on a label or embossed on the bottom of an appliance. It may also be found in the owner's manual.

Please contact Bangor Hydro's Customer Service Center at 1-800-499-6600 or (207) 947-2414 should you have any questions regarding this form.

Doing a “Bill Analysis” is Step 1 of understanding what makes up your electric bill. Step 2 is reading your own meter accurately and understanding how the meter records kilowatt-hours. On this page you will find information helpful to both Steps 1 and 2.

What keeps running when you are not home?

Think about the many items in your home that operate without you ever doing anything — refrigerators, clocks, digital control panels on VCRs and microwave ovens, and other “appliances” such as telephone answering machines, cordless telephones (that are plugged into electricity), heating systems in cold weather, well pumps, dehumidifiers, aquariums with pumps or heaters. These items add to your bill as do the items you routinely turn on, such as TVs, lights, medical equipment, fans or air conditioners. You do control what you plug into electricity, but some of those items just keep using electricity even when you are not operating them yourself.

More Information About Meters

☞ Meters operate on electricity, but most also use mechanical dials to record kWh. Being mechanical, an old meter is likely to run slow, not fast, because of wear and friction.

☞ The technology of meters is such that they rarely fail entirely unless they have been tampered with. Lightning strikes and falling ice have also been known to cause damage to meters.

☞ Typical residential mechanical meters have to turn the large horizontal internal disk 139 complete revolutions before one kWh is recorded.

☞ Meters can be tested. Under some conditions, a fee may be charged for the test. A test consists of checking the meter for measuring accurately under light load and full load conditions. Meters must operate within 2% accuracy to be acceptable to the Maine Public Utilities Commission. Bangor Hydro’s practice is to maintain even greater accuracy.

☞ Problems on power lines near your home do not change kWh used in your home. Only electricity that passes through your meter and is used in the home is measured by the meter.

Electrical Safety

All electrical wires should be considered dangerous. Even when you don’t see sparks at the end of a broken wire the wire may still be energized. Call Bangor Hydro to report broken or dangerously hanging electric wires. Teach children to stay away from electric wires, on the pole or on the ground. Teach children not to play around electrical substations. We also encourage you to review with your children the safety information on our web site, www.bhe.com, designed especially for young people.

How to Read Your Meter Accurately



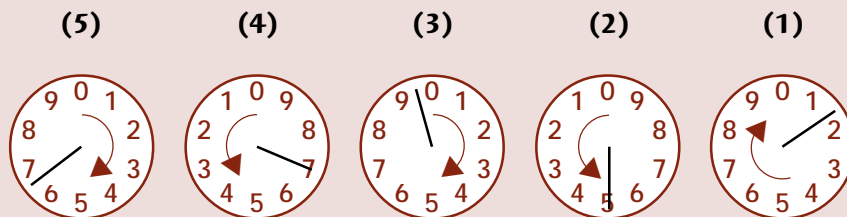
Bangor Hydro reads your meter once a month and calculates a bill based upon the kWh measured by the meter.

You can read the meter whenever you want to, as often as you want to, and can calculate how many kWh you used.

Knowing how to read the meter is a skill you need as the Energy Manager of your home. By reading your meter occasionally, and keeping track of the electric energy used, you can understand what causes your bill to change. You can also monitor conservation efforts that reduce your bill.

How to Read Your Meter the "Right" Way

The illustration below represents a five-dial meter. Each pointer moves from the smaller number to the larger. Notice, however, that some pointers move clockwise while others move counter-clockwise. In order to read your meter the "right" way, begin by reading the dial at the far right and proceed to the left. Record your reading in the same manner, from right to left. (Note: Meters used by some Bangor Hydro customers have a digital read out, and no visible dials. kWh can be read directly from the digital screen.)



Reading = 66951

When the pointer is between two numbers, the smaller number is recorded (see dials 5, 3, and 1). When a pointer is directly on a number, as it is on the second dial, you must look back to the pointer on the dial to the immediate right to see if that pointer has passed 0. In this instance it has; therefore, the correct reading is 5. However, note that the pointer on the fourth dial appears to be directly on 7, but because the pointer on the third dial has not yet passed 0, the correct reading is 6.

Read Your Meter Daily for One Week

Read your meter every day for one week to learn your daily kWh usage.

How To Do It

First Meter Reading

Read your meter at a convenient time of day and record the reading on the work sheet on page 17. Refer to page 14 in this booklet for how to read your meter.

Second Meter Reading

One day later, read your meter at the same time of day and record the reading on the work sheet. Take readings for the next seven days.

Calculation of Meter Readings

Subtract yesterday's reading from today's reading. Your answer is the number of kWh used between those readings. Continue reading your meter for the next seven days.

Example:

Time of Reading	Date	Meter Reading	kWh Result	Comments (daily activities, guests, weather, etc.)	Line #
12:15 PM	6/21/2001	66951			1
12:10 PM	6/22/2001	66989			2
			38	KWh Result is (line 2 minus line 1)	3
					4

Comparison of Results

Add the kWh from each day and divide by seven. This will give you the average kWh per day. Compare your results with the "kWh Per Day" number shown on your bill in the "Energy Comparison" section. Compare with the entries for "this month" and "last month" and "one year ago". If your seven day average is close to your bill averages, you know your usage is normal for your electric lifestyle.

Use the work sheet on page 17 for recording your meter readings.

Work Sheet for Your Meter Readings

(See Instructions at Bottom)

Time of Reading	Date	Meter Reading	kWh Result	Comments (daily activities, guests, weather, etc.)	Line #
					1
					2
				KWh Result is (line 2 minus line 1)	3
					4
				KWh Result is (line 4 minus line 2)	5
					6
				KWh Result is (line 6 minus line 4)	7
					8
				KWh Result is (line 8 minus line 6)	9
					10
				KWh Result is (line 10 minus line 8)	11
					12
				KWh Result is (line 12 minus line 10)	13
					14
				KWh Result is (line 14 minus line 12)	15
					16
				KWh Result is (line 16 minus line 14)	17
					18

Instructions: Select a time of day when it is convenient for you to read your meter. Fill in each of the spaces that are not greyed out as you take readings. The "kWh Result" column is calculated by subtracting the previous reading from the current reading.

Comparison of Usage: Compare numbers in the "kWh Result" column with numbers on your bill in the "Energy Comparison" section for "KWH Per Day". Compare with "This Month", "Last Month", and "One Year Ago" entries.

Step #3 of "What Caused My High Electricity Bill?"

Checking Electrical Circuits



This procedure requires working with fuses or circuit breakers. Do not remove the protective cover from the distribution panel box. Even though you can do the entire testing without accessing panel wiring, it is recommended that you have an electrician work with you.

Before using this process, be sure to read this entire page.

1. Watch the disk turn inside your electric meter while household items are being used. Count the number of seconds it takes for the black section to go around once and come back to the same position. Write the number of seconds on a piece of paper. This is a reference number. (Meters used by some Bangor Hydro customers have a digital read out with no visible disk. These instructions cannot be used.)
2. Turn off all circuit breakers or fuses, except the "Main". The disk in the electric meter will come to a complete stop within five minutes. (Interesting Note: In most meters the disk must make 139 revolutions to measure 1 kWh.)
3. Turn on one circuit breaker or fuse. Repeat "Number 1". Write down which circuit breaker or fuse you are testing and the number of seconds the disk takes to go around once.
4. Turn off the circuit you just tested. Turn on the next circuit breaker or fuse and repeat "Number 1."
5. Use this process to check all individual circuits. Because some electrical items (such as furnace, refrigerator, water heater) do not run constantly, you may have to make them run to do this test completely.

Findings

You will find some circuits with very small numbers and others with bigger numbers. Each number is the number of seconds the disk took to make one complete turn. Small numbers mean the disk turned quickly (electricity is being used faster), and bigger numbers mean the disk is turning slower (electricity is being used less fast).

Small numbers indicate potential high usage circuits. High usage circuits require follow-up. Start with the smallest number of seconds (electricity was used fastest) to follow-up on what you have found.

Follow-Up

Now that you know which circuit has the highest usage (but smallest numbers) you need to find what household electrical items are connected to that circuit.

1. Turn "On" all circuit breakers or fuses.
2. Turn "Off" the one circuit you want to check, the circuit that made the disk turn the fastest.
3. Go around your home and find everything that has no power to it. Check every outlet, every light, every appliance. Make a list of what does not operate and label the list with the circuit breaker or fuse that you had turned off. Note: refrigerator, furnace or some other appliance may not be running at the moment you do this test. You may have to make special efforts to find their circuits.
4. The list you just completed shows what is on this circuit. The items on that list made the disk turn rapidly when you were watching the meter. If you think anything on that list is malfunctioning, have an electrician test it.
5. If nothing is malfunctioning, you may have to make more efficient use of the items on that list to reduce your energy consumption.

Remember: Reducing electrical energy consumption is best accomplished by maintaining items properly and using electrical items efficiently.

My Bill/Your Bill

Comparing Bills? Do It Wisely!



When comparing electric bills with friends and neighbors, keep in mind that there are other things to look at than just the dollar amount. Service Days, appliance electrical wattage, hours of use and other factors must be understood.

Service Days

Each day of service adds dollars and cents to your bill. If your bill averages \$2.00 per day, a 30-day bill is \$60 and a 33-day bill is \$66. Look first at how many Service Days are in the bill.

Appliance Electrical Wattage

In other words, how many watts does the appliance consume? Some clothes dryers are rated at 4,500 watts. Others are rated at 5,500 watts. But what difference do 1000 watts make? They make a difference of about \$0.16 per hour used. If both dryers are run for 10 hours, the 5,500 watt dryer will cost \$1.60 more than the other dryer.

Hours of Use

The more hours something is used, the greater the cost. For example, a yard or security light rated at 150 watts may be used eight hours in winter months. During summer months, the same light may be used only four hours. That is 600 watts less per day. 600 watts per day multiplied by 30 days becomes 18,000 watts (18 kWh) or \$3.00 per month. Hours of use do make a difference in your bill.

Think About These Facts

When you change appliances, do not expect to see significant drops in your electric bill. You may experience some savings, but it is more likely that you added some features to the new appliance that were not on the old. For example, if you remove a refrigerator, but replace it with a refrigerator that has an ice-maker, you can expect your refrigerator to cost more to operate. [For appliance efficiency information go to the government web site www.energystar.gov.]

Think about the weather when you are looking at a high bill. The weather causes many differences in electric bills: the furnace will run more in cooler weather; the dehumidifier may run more because of a rainy spell; air conditioners and fans are turned on in hot weather.

Even though your neighbor's family might be the same size as yours, it's highly unlikely your electric bills will be the same. Even if they run the same number of loads of laundry you do, or also have a two-story home, or keep their outdoor light on the same number of hours, you still cannot do a valid bill comparison by just using dollar amounts. Consider every electrical item in your home, the service days, appliance electricity wattage, hours of use, then compare bills wisely.

An easy way to do comparisons is to do a Bill Analysis of your home by going to our web site at www.bhe.com. Then, when you talk with a friend or neighbor about their bill, have them do a Bill Analysis also and compare results.

Helpful Household Energy Saving Tips



When purchasing a new appliance, ask your dealer about the high-efficiency electric models. Be familiar with the Energy Guide and Energy Star Labels. Visit www.energystar.gov for further information.

Refrigerators/Freezers

- ☞ Place refrigerators and freezers away from sources of heat such as stoves, clothes dryers, dishwashers, heating systems, and direct sunlight.
- ☞ Replace door gaskets when they become hard or out of shape. A tight seal will minimize air leakage.
- ☞ Vacuum or dust external coils at least once a year.
- ☞ Defrost freezers before the ice becomes $\frac{1}{4}$ inch thick.
- ☞ Fill refrigerators and freezers to capacity, but avoid blocking air circulation.
- ☞ Allow hot food to cool before placing in the refrigerator.

Washers/Dryers

- ☞ Use hot water only for heavily soiled or greasy clothes and for sanitation purposes.

- ☞ Wash only full loads or match the water level to the load size.
- ☞ Use cold water in the rinse cycle.
- ☞ Dry full loads of clothes.
- ☞ Avoid overdrying clothes.
- ☞ Vent dryers to the outside to avoid moisture build-up inside the home. Dryers operate less efficiently when they use moist air to dry clothes.
- ☞ Make sure exterior dryer vents close tightly when not in use.
- ☞ Keep lint filters and exterior dryer vents clean.

Dishwashers

- ☞ Pre-rinse only when necessary and then use only cold water.
- ☞ Operate the dishwasher only for full loads.
- ☞ When time allows, air dry the dishes.
- ☞ When washing the dishes by hand, avoid running the water continuously to rinse dishes.

Ranges/Ovens

- ☞ Use cookware with smooth, flat bottoms and tight-fitting lids.
- ☞ Use range-top elements that match the size of the pan you are using. This permits a more efficient transfer of heat.

☞ Cook foods in covered cookware to retain heat. This will enable you to cook at lower temperatures.

☞ Turn elements off a few minutes early and allow retained heat to continue cooking the food.

☞ Preheat the oven only when necessary, generally for bread and pastries only. Meat does not require a preheated oven.

☞ Thaw frozen meats and casseroles in the refrigerator before cooking. This can reduce cooking time by as much as 50%.

☞ Rely on the oven thermostat and recipe time when baking or roasting food. Opening the oven door can lose up to 20% of the heat.

☞ In many cases, microwave ovens use less electricity than conventional ovens, because they cook faster at lower wattage. The microwave oven is more efficient when used to cook small to medium amounts of moderately moist food.

☞ Never use an oven as a heater. It is inefficient, expensive, and dangerous for your family.

Water Beds

☞ Water beds operate more efficiently in heated rooms.

☞ Placing a water bed in an unheated room or on a cold basement floor can reduce efficiency and greatly increase costs.

☞ Place water beds away from windows and exterior walls.

☞ Keep your water bed covered with a comforter or bedspread. An uncovered water bed uses up to one-third more energy to maintain the desired temperature.

Lighting Energy-Saving Tips



Lighting efficiency is expressed in lumens per watt—the amount of light produced from each watt of electrical power consumed. Replacing a bulb with one that produces more lumens per watt can provide you with the same amount of light for less money.

Remember... efficient light sources may cost more initially, but the cost is soon paid back in longer life and lower operating costs. With energy-efficient lighting, you'll save money.

For example, a 75 watt incandescent bulb which lasts 750 hours can be replaced by an 18 watt compact fluorescent bulb which lasts 7000 hours. You save 57 watts every hour the light is on. In eighteen hours you save 1000 watts. In one year you save 125 kWh (about \$21.00) when the bulb is used six hours a day. That's a big savings!

☞ Keep light fixtures clean and use translucent lamp shades with white linings for greater efficiency.

☞ Select the right wattage bulb for the lighting task.

☞ Consider using fluorescent and compact fluorescent lights. Fluorescent lighting produces three to four times more light per watt than incandescent lighting and usually lasts ten times longer.

☞ Install dimmer switches to control lighting levels and energy use.

☞ Save energy by using low wattage light bulbs in areas where minimum lighting is needed.

☞ Get into the habit of turning off lights when they are not in use.

☞ Consider installing timers, photoelectric cells, or occupancy sensors to operate outdoor and indoor lights.

Heating/Cooling

When buying new space heating or cooling equipment, check the efficiency rating. Heating efficiency is expressed as Annual Fuel Utilization Efficiency. Cooling efficiency is expressed as the Energy Efficiency Ratio or the Seasonal Energy Efficiency Ratio. In all cases, the higher the rating, the greater the system's efficiency.

☞ Use properly sized heating and cooling equipment. Oversized equipment reduces operating efficiency.

☞ Seal up your home. Install adequate amounts of insulation in the walls and attic. Weatherstrip and insulate the attic entrance.

☞ To prevent heat from escaping up the chimney, close dampers on unused fireplaces and install fireplace draft barriers.

☞ Set thermostats conservatively. Lowering the thermostat setting in winter and raising it in summer reduces heating and cooling costs by as much as 3% per degree.

☞ Ventilate your attic. Adequate ventilation is necessary for the efficient cooling of your home.

☞ During cold weather, open the drapes to let in the sun's heat. Close them at night.

☞ During hot weather, close the drapes to keep out the sun's heat.

☞ Arrange furniture and drapes so that air circulation will not be obstructed around heating and cooling sources.

☞ Bangor Hydro's Electric Heat Rate greatly reduces the cost of heating electrically if your home qualifies—that is, if 50% or more can be heated by electric heat pump, electric thermal storage or an electric resistance heating system. The Transmission and Distribution rate drops by almost 6 cents per kWh, after you have used 700 kWh per billing period (the threshold requirement). 700 kWh is what a typical home uses in an average month without heating.

Water Heater Improvements and Tips



The following improvements are proven measures that will save on electric water heating costs.

☞ If indicated in the owner's manual, insulate your water heater with a vinyl-backed insulating water heater blanket. Water heaters should be insulated to a minimum R-value of R-10.

☞ Set the thermostats at the same setting—usually 120 degrees. If you have a dishwasher, check the owner's manual for the recommended settings.

☞ Insulating hot water pipes wherever they are accessible will reduce heat loss and save energy cost.

☞ Install water-saving showerheads and faucet aerators.

☞ Install thermal traps where water pipes enter the water heater. Traps prevent heat moving back up the pipes.

☞ Take a shower instead of a bath. The average person uses about half as much hot water in a shower as in a bath.

☞ While you are on vacation for two days or more, a water heater utilizes energy keeping stored water hot. If you are going to be away for two days or more, it pays to turn off the water heater.

☞ Select a water heater with insulation R-value levels of R-10 or greater.

☞ Locate water heaters within the heated living space and as close as possible to areas needing hot water to minimize heat loss and save energy cost.

Water Heater Maintenance

☞ Repair leaky faucets. A slow drip can boost your hot water consumption 15%.

☞ Disconnect the power to the water heater and drain the water out of the water heater once a year until it is free of sediment. Deposits build up on heating elements and can decrease the system's efficiency, and could cause the water heater element to burn out faster.

☞ Some water heaters contain a sacrificial rod (anode rod) that is destroyed by chemicals in the water. When the rod is eaten away, the chemicals attack the tank and fittings. This rod should be examined every five years and replaced if necessary.

☞ If you run out of hot water sooner than usual, have the thermostats and elements in your tank checked and replaced if necessary.

Purchasing a Water Heater



Some people base their purchase on the size of the water heater storage tank; however the "First Hour Rating" (FHR) on the Energy Guide label is the most important figure to consider. The First Hour Rating is a measure of how many gallons of hot water are delivered during a busy hour of hot water use. Before shopping for a water heater, estimate your household's peak hour demand (busiest hour) of hot water use and look for a unit with a FHR in that range. A household can reduce the tank capacity required by making lifestyle changes such as staggering shower times and washing clothes and dishes during times that showers or baths are not essential. To estimate the FHR requirement for your home, use the work sheet below and the following directions.

1) Determine the busiest hour for hot water use in your home — the single hour of the day your household uses the most hot water. This is your busiest hot water hour.*


2) Enter the number of times each event occurs during your busiest hour.

3) Multiply gallons per use (given in the chart) by the number of uses (e.g., two showers in the busiest hour you selected) to determine total gallons for that use.

4) Add together the gallons for all your uses within your busiest hot water hour. The total equals the First Hour Rating required of a water heater in your home.

5) When shopping for a new water heater you should match the FHR below with the FHR of the water heater. The FHR is located on the third column of each water heater label.

After obtaining the proper water heater tank size for your household's needs, determine which one is most energy efficient. One of the energy efficient features to look for is:

 The unit's Energy Factor (EF) is the best indicator of an efficient water heater. The EF is based on the efficiency of the water temperature recovery.

*Calculating First Hour Rating

Shower	23 gal.	x	___	uses in your busiest hot water hr.	=	___	gal. used
Clothes Washer	20 gal.	x	___	uses in your busiest hot water hr.	=	___	gal. used
Bath	20 gal.	x	___	uses in your busiest hot water hr.	=	___	gal. used
Sink	4 gal.	x	___	uses in your busiest hot water hr.	=	___	gal. used
Shaving	2 gal.	x	___	uses in your busiest hot water hr.	=	___	gal. used
Dishwashing	12 gal.	x	___	uses in your busiest hot water hr.	=	___	gal. used
Hand Dishwashing	5 gal.	x	___	uses in your busiest hot water hr.	=	___	gal. used
Food Preparation	2 gal.	x	___	uses in your busiest hot water hr.	=	___	gal. used
Miscellaneous	2 gal.	x	___	uses in your busiest hot water hr.	=	___	gal. used
				FHR Total +		___	gal. used

Bangor Hydro's Service Territory



Bangor Hydro (www.bhe.com) is an electric utility serving a population of about 192,000 in an area encompassing approximately 5,275 square miles in eastern and east coastal Maine. Bangor Hydro is a member of the New England Power Pool and is interconnected with other New England utilities to the south and with the New Brunswick Power Corporation to the north.

Bangor Hydro-Electric Company is in business to provide energy delivery and other related services valued by its customers. Our Customer Service Center is always open. Call us at 947-2414 or 1-800-499-6600.

TTY/TDD (hearing impaired) is 990-6969 (Bangor)
or 1-800-559-0069 (within Maine).

