

Reducing Energy Use at “Home”

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University of Iowa

April 8, 2013

Agenda

1. Learning Objectives
2. Understanding Your Energy Bill
3. Energy Efficiency Tips and Tidbits
4. Lighting Demonstration

Learning Objectives

Learning Objectives

Following this session, you will be able to:

1. Read and understand your energy bill
2. Reduce your energy usage at your place of residence

Understanding Your Energy Bill



Customer Service; 1-888-427-5632
PO Box 8020 Davenport IA 52808-8020
www.midamericanenergy.com

ACCOUNT NUMBER	DUE DATE	AMOUNT DUE
52090 - 88170	Do Not Pay	\$42.87

Service Address: JILL S LITWILLER
1803 21ST AVE PL
CORALVILLE IA 52241

Date: 03/27/13

ACCOUNT SUMMARY

EBILL

LAST BILL AMOUNT	PAYMENTS RECEIVED	AMOUNT DUE
\$45.86	\$45.86	\$42.87

Blah
Blah
Blah
Blah
Blah
Blah
Blah
Blah

If payment is received after April 18, 2013, a late payment charge of \$0.64 will be assessed on your next bill.



ACCOUNT NUMBER	DUE DATE	AMOUNT DUE
52090 - 88170	Do Not Pay	\$42.87

The amount due will be deducted from your account on Apr 18, 2013.

\$42.87

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JILL S LITWILLER
2150 STEVENSON DR
AMES IA 50010-4354

MidAmerican Energy Company
PO Box 8020
Davenport IA 52808-8020
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EBILL

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\$45.86	\$45.86	\$42.87

If the scheduled payment is canceled and payment is received after April 18, 2013, a late payment charge of \$0.64 will be assessed on your next bill.

ELECTRIC CHARGES

Meter No: S98396528	Rate: 10 Residential	Winter	02/26/13 to 03/27/13	29 billing days		
	Company Reading	03/27/13	19574	Basic Service Charge		6.00
	Company Reading	02/26/13	19445	Energy Charge	129 x 0.09178	11.84
	Total kWh		129	1.00% Electric Franchise Fee		0.18
				Total		\$18.02

GAS CHARGES

Meter No: S10259505	Rate: 60 Residential		02/26/13 to 03/27/13	29 billing days		
	Company Reading	03/27/13	520	Basic Service Charge		10.00
	Company Reading	02/26/13	500	Delivery Charge	20 x 0.19697	3.94
	Total ccf		20	Gas Supply Charge	20 x 0.53299	10.66
	20 ccf x 0.988 pressure x 1.029 BTU factor = 20 therms			1.00% Gas Franchise Fee		0.25
				Total		\$24.85

MESSAGE CENTER



This is the “meat” of your energy bill!

Electricity Portion Of The Energy Bill



ELECTRIC CHARGES

Rate: 10 Residential		Winter	02/26/13 to 03/27/13 29 billing days		
Meter No: S98398528	Company Reading	03/27/13	19574	Basic Service Charge	6.00
	Company Reading	02/26/13	19445	Energy Charge	129 x 0.09178 11.84
	Total kWh		129	1.00% Electric Franchise Fee	0.18
Total					\$18.02

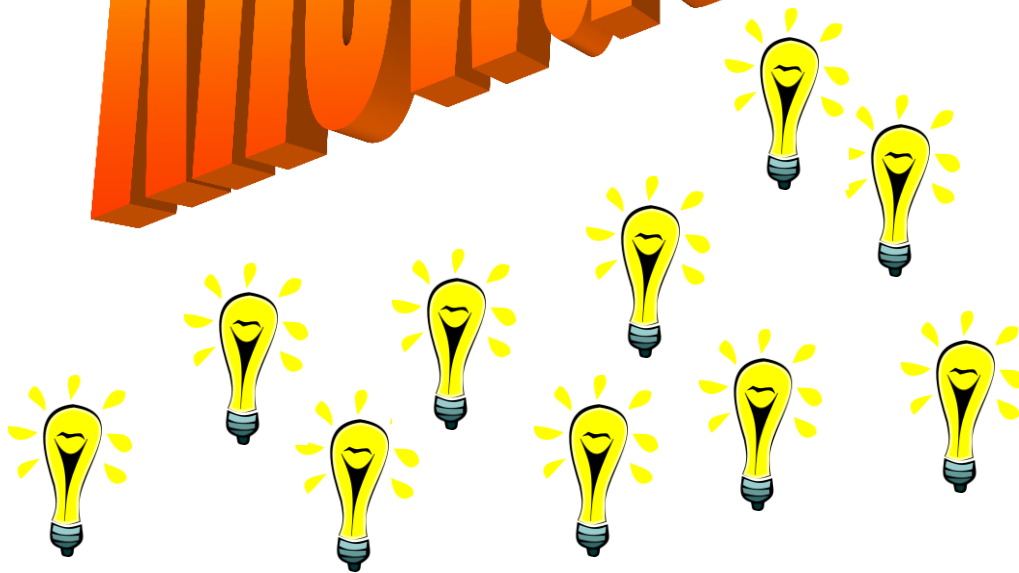


Utility companies charge for the amount of electrical energy (kWh) “consumed”.

Kilowatt-Hour

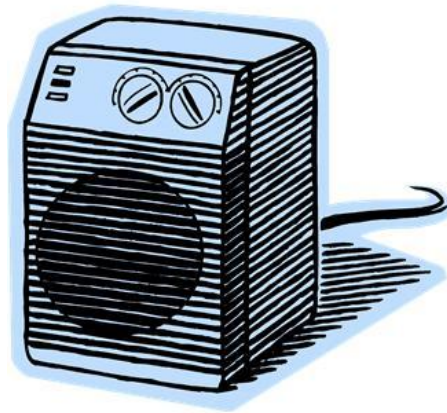
One Kilowatt-Hour (or kWh) is a specific *amount* of energy.

Kilowatt-Hour



- Ten 100 Watt light bulbs
- “On” for One hour
- Consume 1 kWh of energy

Kilowatt-Hour



- One 1,000 watt electric heater
- “On” for One hour
- Consumes 1 kWh of energy.

Watt

FACTOID

1000 WATTS = 1 KILOWATT

- The “rate” at which energy is being consumed
- Equal to One Joule/second

A “joule” is a very small amount of “energy” – the amount of “energy” a 1-watt light bulb consumes in 1 second.

~ \$0.092 per kWh

ELECTRIC CHARGES

Rate: 10 Residential		Winter	02/26/13 to 03/27/13 29 billing days	
Meter No: S98398528	Company Reading	03/27/13	19574	Basic Service Charge 6.00
	Company Reading	02/26/13	19445	Energy Charge 129 x 0.09178 11.84
	Total kWh		129	1.00% Electric Franchise Fee 0.18
				Total \$18.02

129 Kilowatt-Hours



For this billing period, each Kilowatt-Hour (or kWh) consumed costs
9.2 cents per kWh.

FACTOID

THE “KWH EQUATION”

$$\frac{\text{Watts} \times \text{Total \# Of Hours "ON"}}{1,000} = \text{kWh}$$

Natural Gas Portion Of The Energy Bill

GAS CHARGES

Rate: 60 Residential				02/26/13 to 03/27/13 29 billing days		
Meter No: SI0259505	Company Reading	03/27/13	520	Basic Service Charge		10.00
	Company Reading	02/26/13	500	Delivery Charge	20 x 0.19697	3.94
	Total ccf		20	Gas Supply Charge	20 x 0.53299	10.66
20 ccf x 0.988 pressure x 1.029 BTU factor = 20 therms				1.00% Gas Franchise Fee		0.25
Total						\$24.85



Utility companies charge for the amount of natural gas energy (therms) “consumed”.

Therm



ONE THERM = 100,000 BTU

Therm



ONE THERM = 100,000 BTU

One Gallon of Gas = 120,900 BTU

~\$0.73 per therm

GAS CHARGES

Rate: 60 Residential				02/26/13 to 03/27/13 29 billing days		
Meter No: SI0259505	Company Reading	03/27/13	520	Basic Service Charge		10.00
	Company Reading	02/26/13	500	Delivery Charge	20 x 0.19697	3.94
	Total ccf		20	Gas Supply Charge	20 x 0.53299	10.66
20 ccf x 0.988 pressure x 1.029 BTU factor = 20 therms				1.00% Gas Franchise Fee		0.25
Total						\$24.85

20 Therms



For this billing period, each therm of natural gas consumed costs about 73 cents.

Energy Efficiency Tips and Tidbits

Law Of The House!



**Always turn things “OFF”
when they do not
need to be “ON”!**

Lighting



- **Turn lights OFF when not needed**
- **Replace incandescent bulbs with new compact fluorescent or LED bulbs**
- **Select bulbs that have the highest “Lumens per Watt”**

GENERAL PURPOSE



super soft white 60

regular, everyday light™

Light Output
(Lumens)

Power Used
(Watts)



light output:

840 lumens

energy used:

60 watts

life:

1000 hours

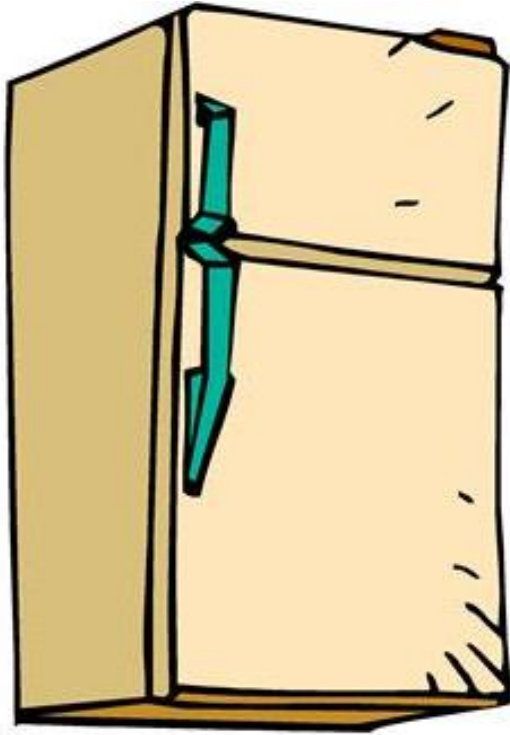
contains:

2 bulbs (A19)

To save energy costs, find the bulbs with the light output you need, then choose the one with the lowest watts.

Divide the number of **Lumens** by the **Wattage** of the bulb to get “Lumens per Watt”. The “higher” the number the better!

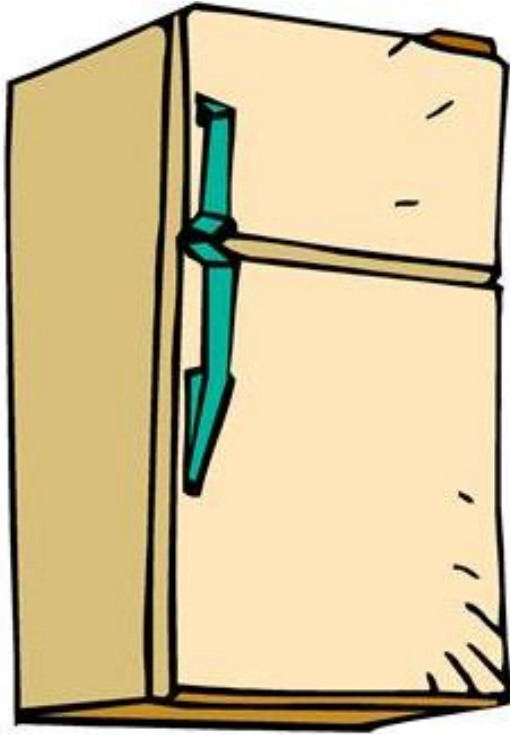
Refrigerators



FACTOIDS

- **Largest single energy consumer in the house**
- **Old ones consume 2x to 3x more energy than new ones**

Refrigerators



- **Purchase only ENERGY STAR units**
- **Make sure the doors are 100% shut**
- **Clean the “condenser” coils at least two times per year**

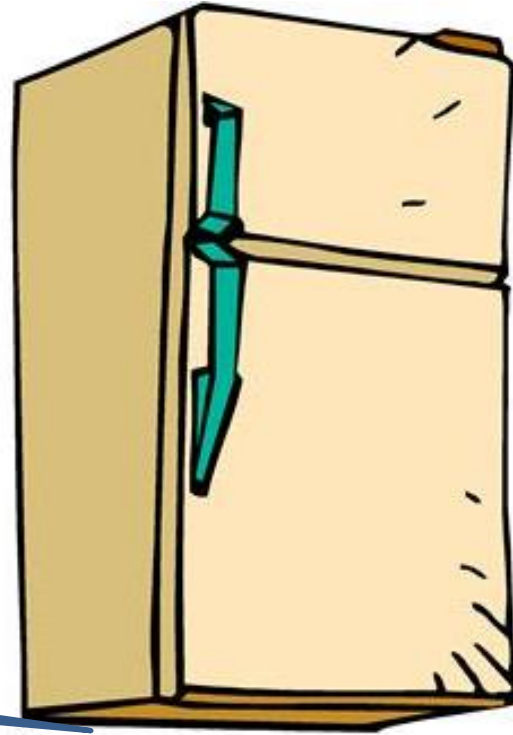
Refrigerators

(Condenser Coils – Where are they?)

Back of the fridge

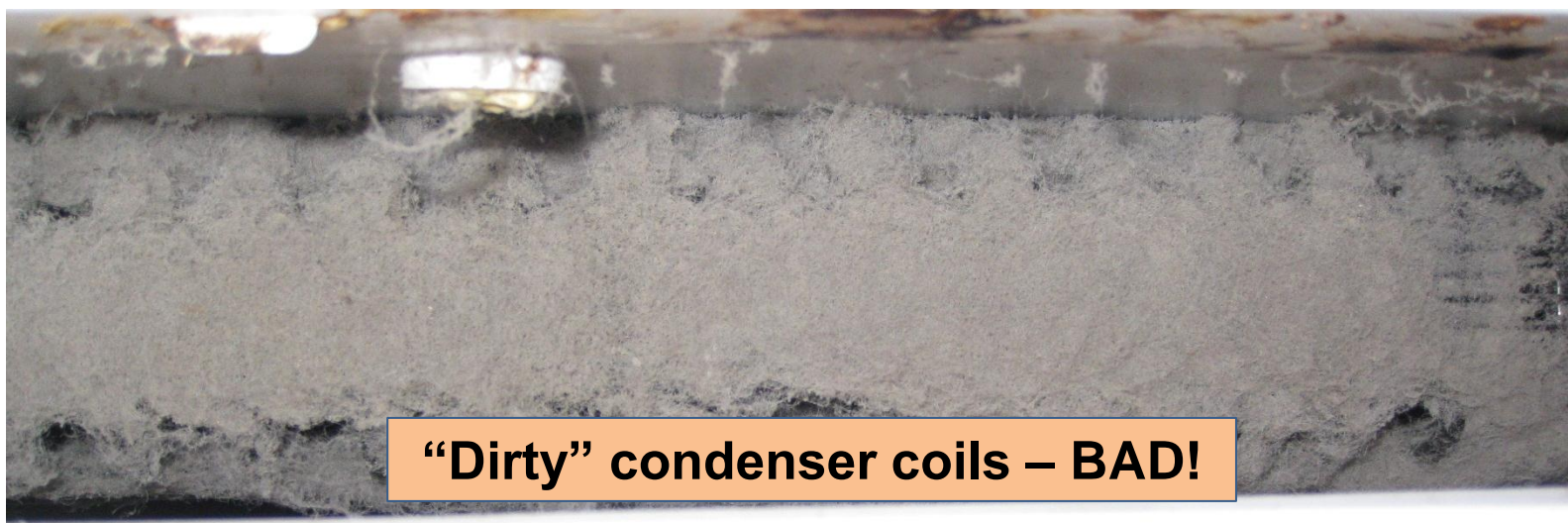
or

Bottom of the fridge





“Semi-clean” condenser coils



“Dirty” condenser coils – BAD!

Dishwashers



- **Purchase only ENERGY STAR units**
- **Run only full loads**
- **Allow dishes to air-dry**

Dishwashers



- **Could be a 1000 Watt heating coil**

**Electric heating element
(inside/bottom of tub)**

Electronic Devices



- **Purchase only ENERGY STAR units**
- **Shut off when not being used**

Electronic Devices



Scenario



x 5



x 5

“On” 24 hrs/day for 31 days

Scenario



100 Watt

x 5



150 Watt

x 5

\$93

Scenario



x 5



x 5

$\{(1,250 \text{ Watts} \times 24 \text{ Hrs/Day} \times 31 \text{ Days/Month})/1,000\} \times \$0.10 \text{ per kWh} = \$93$

Heating and Cooling Systems



- **Check the furnace filter monthly – replace if necessary**
- **Do not keep your house comfortable when no one is there**

Heating and Cooling Systems



- Setting your thermostat “back” by 7°F to 8°F
- For 8 hrs/day =

10% Savings on your heating and cooling costs

Water Heaters



- **Maintain the water temperature as low as possible**
- **Install low flow shower heads**
- **“Blow it down” once per month**

Water Heaters



Drain some water out of the water heater monthly to remove the scale.

“Scale” builds up over time in the bottom of the water heater acting like a “blanket of insulation” making your water heater “work harder”.

Recap

- **Review your energy bill**
- **Turn stuff OFF when not needed**
- **Maintain your equipment**
- **Do not keep your place comfortable when no one is there**

**“Go Forth And
Waste Energy No
More!”**

Lighting Demonstration

Lighting Demonstration

Light Bulb Type	Incandescent	Halogen	Compact Fluorescent	LED
Lumens	850	800	880	800
Wattage	60	43	14	13
Lumens per Watt	14.2	18.6	62.8	61.5
Life (Hours)	~1,000	~1,000	~8,000	~25,000
Cost (per bulb)	\$0.37	\$3.98	\$9.98	\$24.98
Cost of Energy (\$/kWh)	\$0.10	\$0.10	\$0.10	\$0.10
Hours per Year	8,760	8,760	8,760	8,760
Annual Energy Usage	~\$52	~\$37	~\$12	~\$11

Thank You!

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