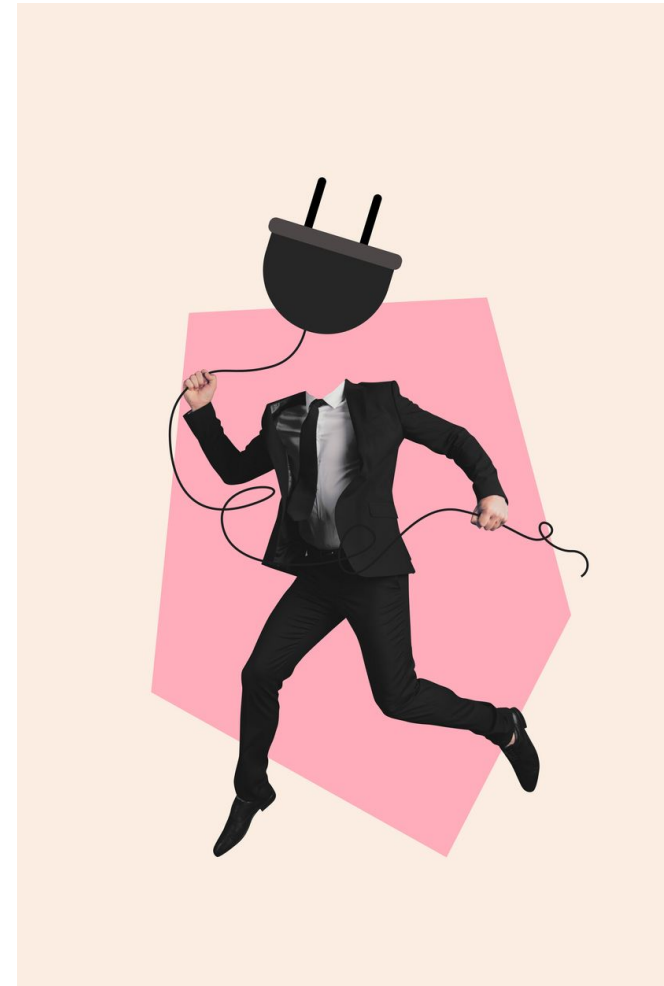


# Eco-Economics: Watt You Need to Know!



# Certificate Requirements

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To earn professional development hours for webinars, you must:

- Watch a minimum of 45-minutes and you will automatically receive a professional development certificate via e-mail within 24 to 48 hours.



# Presenter

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# Objectives

- Evaluate the benefits and costs of various products in order to make household purchasing decisions.
- Compare the benefits and costs of conducting consumer research.
- Identify U.S. government programs (the Federal Trade Commission and the Environmental Protection Agency) that aid consumers in researching appliance energy costs.

# Session Agenda

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- Activator
- Scenario 1 Activity (Round 1)
- Share Out
- Content Delivery
- Activity Round 2
- Considering Costs
- Debrief



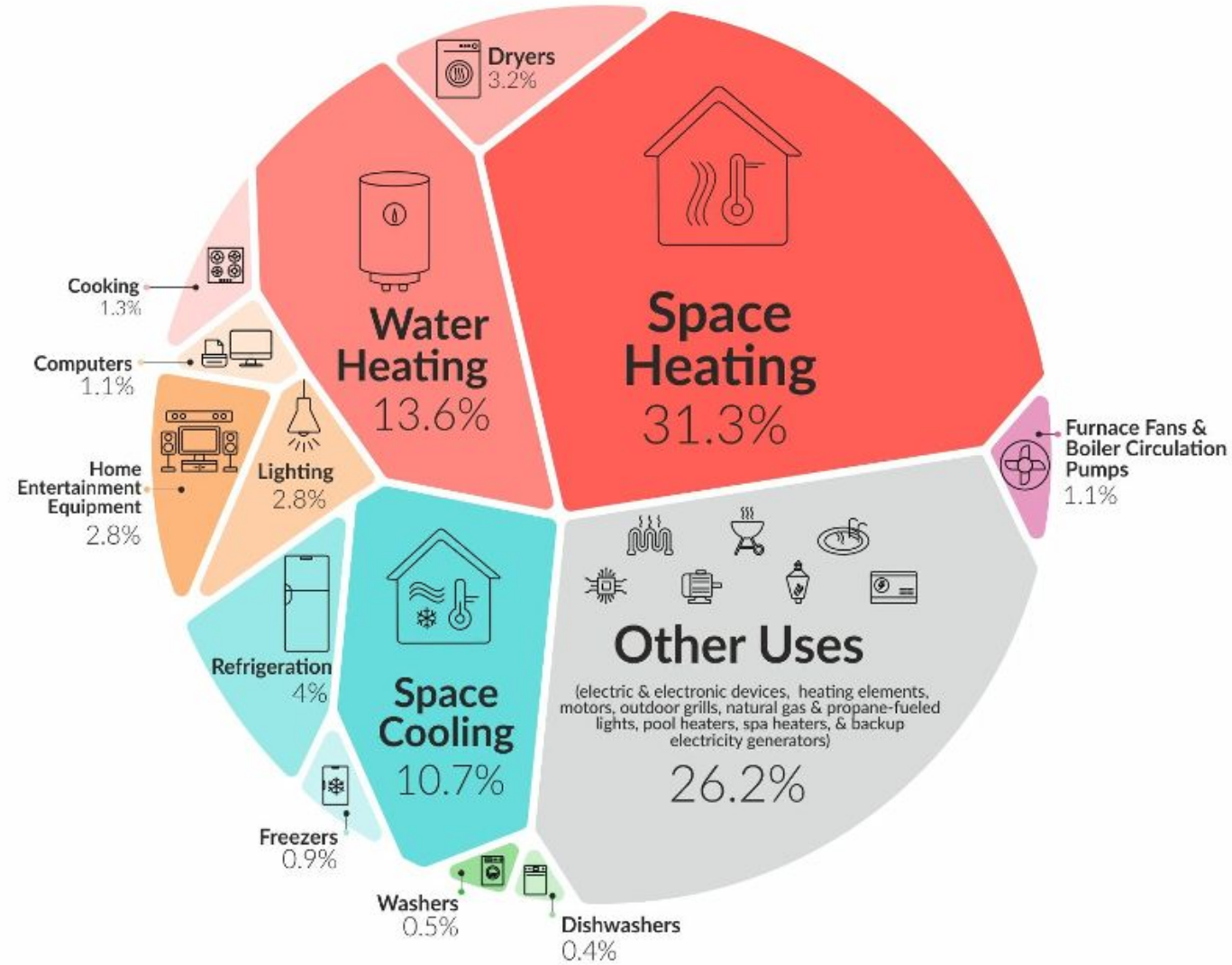
# Activator

- What electricity-powered household devices do you use on a daily basis?
- Which household devices do you think use the most power?



# Residential Energy Use by Appliance

Percentage of Total Gross End-Use Energy Consumption in Single-Family Households



## Scenario

You have just secured your first full-time job and are financially ready to move into your own place! A family friend who lives near your employer's headquarters has offered to rent their 500-square-foot guesthouse to you for the next year. In addition to rent, you will be responsible for paying utilities (the guesthouse has its own water and power meters).





## Scenario, continued

The only catch is that the guesthouse has been unused for several years and will need a few things before you can live there comfortably. In exchange for a below-market rental rate for the next 12 months, you will need to purchase the items listed below:

- 8 light bulbs
- Compact refrigerator
- Window air conditioner
- Electric water heater





# Round 1

Using the information provided on *Activity 1.1: Consumer Decision Making*, rank your options for each appliance.

## Sample

	Ranking Rounds		
	1	2	3
Most Preferred	D		
↓	A		
	C		
Least Preferred	B		

# Let's Debrief

1. How did you decide on your rankings for each appliance?
2. What other information would help you make your appliance purchasing decisions?





# Key Terms

**Economic decision making** is the process of reaching a conclusion after considering the alternatives.

**Cost/benefit analysis** is the process of examining what you gain (benefits) and what you give up (costs) of each available alternative and then using that information to arrive at a decision.





# Your Finances


You have carefully reviewed your finances and have determined that you can spend **up to \$1,100** from your savings account to purchase appliances for the guesthouse. If you spend more than \$1,100, you will need to borrow the additional money from your parents. Repaying the loan will mean that, for one or more months, you will have to reduce the amount of income you have allocated to entertainment spending in the budget you developed in line with your wages at your new job.

# Price Data

Option	8 Light Bulbs	Compact Refrigerator	Window Air Conditioner	Electric Water Heater
A	\$20	\$329	\$179	\$427
B	\$20	\$368	\$229	\$479
C	\$23	\$449	\$254	\$483
D	\$25	\$600	\$270	\$759



# Let's Debrief

1. Were your rankings in Round 2 different from those in Round 1? Why or why not?
2. Did you always rank the option with the lowest price as your most preferred option? Why or why not?
3. If you purchase each of your most preferred appliances, will you spend more or less than the \$1,100 you have allocated for this purpose?



# Key Terms

**Opportunity cost** is the next-best alternative a person gives up when making a choice. It's not every alternative – it is your second choice.

Imagine you were to spend an hour watching videos on YouTube when you get home from school. What would be your next best use of that hour?





# How Much Will Using That Appliance Cost You Each Year?

## Step 1: Calculate watt-hours (Wh) per year

- device wattage x hours used per day x 365 days per year = Wh per year
- Example: 150-watt television used for 4 hours per day
- 150 watts x 4 hours per day x 365 days per year = 219,000 Wh per year



## Step 2: Convert Wh per year to kilowatt-hours (kWh) per year

- Wh per year  $\div$  1000 = kWh per year
- Example: Television using 219,000 Wh per year
- 219,000 Wh per year  $\div$  1000 = 219 kWh per year

## Step 3: Calculate annual energy costs

- kWh per year x price per kWh = energy cost per year
- The average price for one residential kWh in the U.S. as of 2023 rounds to \$0.16.
- Example: Television using 219 kWh per year at the national average price
- 219 kWh per year x \$0.16 per kWh = \$35.04 per year



# Conducting Consumer Research

You have **2 minutes** to research the energy costs associated with running appliances for one year.

Choose which appliances to research wisely!

Mark your final rankings in the third column on  
Activity 1.1





# Let's Debrief

1. For which appliances did you conduct energy cost research? Why?
2. Were your rankings in Round 3 different from those in Round 2? Why or why not?
3. Was it worth it to conduct energy cost research?



# Consumer Resources



<b>Program</b>	<b>U.S. Government Agency</b>	<b>What It Does</b>
Energy Labeling Rule	Federal Trade Commission	Requires manufacturers of certain appliances to provide information on energy use and energy cost to consumers in an easy-to-read format
ENERGY STAR	Environmental Protection Agency	Applies a special label to appliances that meet strict energy efficiency standards





U.S. Government Federal law prohibits removal of this label before consumer purchase.

# ENERGYGUIDE

Dishwasher Capacity: Standard XYZ Corporation Models G39, X88, Z33

**Estimated Yearly Energy Cost**  
(when used with an electric water heater)

**\$21**

\$28 \$43  
Cost Range of Similar Models


The estimated yearly energy cost of this model was not available at the time the range was published.

**150 kWh**  
Estimated Yearly Electricity Use

**\$13**  
Estimated Yearly Energy Cost  
(when used with a natural gas water heater)

Your cost will depend on your utility rates and use.

- Cost range based only on standard capacity models.
- Estimated energy cost based on four wash loads a week and a national average electricity cost of 14 cents per kWh and natural gas cost of \$1.21 per therm.
- For more information, visit [www.ftc.gov/energy](http://www.ftc.gov/energy).



Sample EnergyGuide tag  
(for a dishwasher)

## Lighting Facts Per Bulb

**Brightness 820 lumens**

**Estimated Yearly Energy Cost \$7.23**  
Based on 3 hrs/day, 11¢/kWh  
Cost depends on rates and use

**Life 1.4 years**  
Based on 3 hrs/day

**Light Appearance**

Warm Cool

2700 K

**Energy Used 60 watts**

Lighting Facts box required under  
the Energy Labeling Rule.

# Let's Debrief



1. Were the annual energy costs for the ENERGY STAR certified refrigerator and window air conditioners lower than those of the other options you considered?
2. In your final rankings, did you rank any of the ENERGY STAR appliances as your most preferred option? Why or why not?
3. How might your final rankings have been different if you knew you were going to pay to operate these appliances for 5 years instead of 1 year?



# Annual Energy Costs Based on \$0.16/kWh



Option	8 Light Bulbs	Compact Refrigerator	Window Air Conditioner	Electric Water Heater
<b>A</b>	\$20.96	\$60.00	\$55.36	\$564.96
<b>B</b>	\$18.24	\$60.48	\$65.28	\$399.04
<b>C</b>	\$13.28	\$47.52	\$59.04*	\$390.24
<b>D</b>	\$11.20	\$46.72*	\$60.00*	\$558.88

\*ENERGY STAR Certified





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# Thank you

