

# Visitor Consumption

## The Park by the Numbers

Each year, the National Park Service provides outdoor experiences for millions of visitors. Using the numbers for the park you are at today, determine an estimate for the potential resource usage by these visitors.

Remember, this number is only a small fraction of what is taking place beyond the parks.

**Park Name:** \_\_\_\_\_

**Number of Visitors in 2018:** \_\_\_\_\_

(You may want to round up)

1. If each visitor flushes a toilet with a 3 gallon tank, how many gallons of water would be used? (*Visitors x 3*) \_\_\_\_\_
2. If each visitor flushes a toilet with a 1.6 gallon tank, how many gallons of water would be used? (*Visitors x 1.6*) \_\_\_\_\_
3. If every visitor arrived in a car with four people total, how many cars would have been driven to the park? (*Visitors/4*) \_\_\_\_\_
4. If every visitor arrived by bus, with 25 people per bus, how many buses would have been driven to the park? (*Visitors/25*) \_\_\_\_\_
5. If every visitor used two paper towels after using the restroom, how many paper towels would be used? (*Visitors x 2*) \_\_\_\_\_
6. It costs about one Kilowatt Hour or 12 cents, to charge a cell phone. How much would it cost for all of those visitors to charge their phones before visiting the park? (*Visitors x 0.12*) \_\_\_\_\_



## Bridging the Watershed

Sustainability

Date: \_\_\_\_\_

Teacher: \_\_\_\_\_

Park: \_\_\_\_\_

Study Site: \_\_\_\_\_

Park Rangers & Educators: (one per row)

Group Members: (one per row)

	Yesterday	Today
Air Temperature	<input type="text"/> °C	<input type="text"/> °C
Cloud Cover	<input type="checkbox"/> Clear <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Cloudy	<input type="checkbox"/> Clear <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Cloudy
Precipitation	<input type="checkbox"/> None <input type="checkbox"/> Rain <input type="checkbox"/> Other	<input type="checkbox"/> None <input type="checkbox"/> Rain <input type="checkbox"/> Other

How could weather affect today's field study?

# Solar Scavenger Hunt

## Renewable Energy

Complete the chart below as you hunt for the best site for solar energy at this park.

Renewable Energy					
Location:	Time:		Trial 1	Trial 2	Trial 3
What impacts this location as a potential solar harvesting site? <i>[Examples: trees, clouds, historic site, pedestrian traffic]</i>	Angle of Panel:		0 (flat)	45	Optimal _____
	Volts: (Record Highest)				
Renewable Energy					
Location:	Time:		Trial 1	Trial 2	Trial 3
What impacts this location as a potential solar harvesting site?	Angle of Panel:		0 (flat)	45	Optimal _____
	Volts: (Record Highest)				
Renewable Energy					
Location:	Time:		Trial 1	Trial 2	Trial 3
What impacts this location as a potential solar harvesting site?	Angle of Panel:		0 (flat)	45	Optimal _____
	Volts: (Record Highest)				

What factors could impact the effectiveness of solar energy harvesting? Why?

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Water

Transportation

After completing your solar and wind tests, are either of these forms of energy a viable option for this park, and if so, where? Construct an argument based on evidence for why the park should pursue or not pursue this option.

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# Park Recommendations

Now that you have observed the resource usage and sustainability status of the park, use this space to make recommendations to improve sustainability. You should draw or write your suggestions for each of the four areas.

On which area do you think the park should focus? Why?

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Energy	
Waste	

# Wind Energy Engineering

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## Renewable Energy

	Trial 1	Trial 2	Trial 3	Trial 4
# of Blades				
Blade Material				
Shape of Blades				
Angle of Blades				
Volts Generated				
Use the space below to describe/draw your most efficient design.				

How does your device “capture” the renewable energy source?

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What factors impacted the effectiveness of your design?

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# Park Sustainability

## Sustainability Data Collection

**Directions:** As you visit the park, observe the sustainability efforts in the areas of Energy, Water, Waste, and Transportation. For each observation, decide on the score most closely reflects what you see or learn about the park's practices. Suggestions are provided within each area of observation, however, **you may decide as a group the score that is deserved.** The indicators listed are suggestions only. Items with an asterisk (\*) may require information from a Park Ranger.

		Indicators of Resource Consumption			Score
Observations	(-1) High Consumption	(0) Minimal Impact	(+1) Sustainable		
Energy	Park Owned Vehicles	Mostly Gas-Powered	Some Hybrid/Electric	Electric Vehicles	
	Appliances*	No Energy Star Label		Energy Star Label	
	Energy Source*	Standard Grid Electricity		Renewable Energy	
	Light Bulbs*	Incandescent/Fluorescent	CFL	LED	
	Light Switches	On/off switches	On/off switches w/signs	Motion Activated	
	Hand Drying	Paper Towels	Hand Dryers	Air Blade Model	
	<b>Total Energy Score</b>				

		Indicators of Resource Consumption			Score
Observations	(-1) High Consumption	(0) Minimal Impact	(+1) Sustainable		
Water	Irrigation Management	Automatic Sprinklers	Maintenance Plan	Low demand for water	
	Drinking Water	Water Bottles for Sale	Water Fountain	Bottle Refill Station	
	Toilets*	>3.5 gal. toilet	3.5-.1 gal toilet	Waterless toilet	
	Stormwater*		No Stormwater Management	Stormwater Management	
	Sinks	Traditional Faucets	Timer Faucets	Sensor Faucets	
	<b>Total Water Score</b>				

		Indicators of Resource Consumption			Score
Observations	(-1) High Consumption	(0) Minimal Impact	(+1) Sustainable		
Waste	Concessions	Single Use Packaging	Recyclable Packaging	Reusable drink containers	
	Directions for Trash Disposal	No Directions Given	Ranger gave directions	Signage or clear directions	
	Trash	Trash cans only	Trash and recycling	Trash free park	
	Hand Drying	Paper Towels	Recycled paper towels	Hand Dryers	
	Education		No signs or info about waste	Signs or info about waste	
	<b>Total Waste Score</b>				

		Indicators of Resource Consumption			Score
Observations	(-1) High Consumption	(0) Minimal Impact	(+1) Sustainable		
Visitor Transportation	Public Transportation	No Public Transportation	Accessible by bus	Accessible by Metro/Train	
	Bicycles	Bike Racks absent	Bike racks present, empty	Bike racks in use/Capital Bikeshare	
	Vehicles	< 50% of cars hybrid/electric	50-75% of cars hybrid/electric	>75% cars hybrid/electric	
	Vehicle Plug-In		No Station	Plug-In Station	
	<b>Total Transportation Score</b>				

**If you found other areas of sustainability or impact, provide that information.**

Observation	Score
<b>Total Score</b>	
<b>Sustainability Rating</b>	

**Directions:** Find the total score for all of the sustainability areas and then an overall total. Use the scale below to assign a Sustainability Rating.

Heavy Impact	Average Impact			Minimal Impact			Mildly Sustainable			Highly Sustainable
≤ -10	-8	-6	-4	-2	0	2	4	6	8	≥ 10