

# Water Usage in Restaurants

## **Project Purpose**

Each day, restaurants use thousands of gallons of water, and over time the amount of water being used builds up. A lot of the water being used is wasted, and with the growing demand for water we can't afford to waste that much water. Surprisingly, an average restaurant uses 25,000 gallons of water per day which is a lot of water. The water is being used for many different reasons, including kitchen/dishwashing, landscaping, heating and cooling, restroom, and other.

### **Question**

How one glass of water served at a restaurant, can become an exponential problem that contributes to unnecessary water waste within our state.

## Hypothesis

One glass of water served at a restaurant is an exponential problem. Though it might not seem like much, I know that over time all of that water will add up especially considering how popular restaurants are nowadays. And considering the issues with water that the world already faces, saving any water will help.

## Experiment Procedure

Observational data was collected with permission from local Tucson restaurants.

### **I quantified and measured the following:**

- ~ number of seats per restaurant room
- ~ number of customers
- ~ tallied, were customers automatically served water?
- ~ did they receive water?
- ~ size of glass or cups in ounces
- ~ an approximate percentage of how much water was consumed
- ~ was the water refilled?
- ~ using baseline data from observations above, I can create a mathematical model; how many restaurants, how many seats, how many customers on average per day, hours of operation and days open per week, multiply collected observation data by day, then month, per year and on.
- ~ Determine how even that ONE glass of water can impact our state!

# Results

Questions	Oregano's
Seats per restaurant?	110 seats
Seats per restaurant room?	40 in the smaller room, 70 in the larger one.
Number of customers?	100
Where customers automatically served water?	No, they asked before originally serving water.
Did customers receive water?	Most did, but a few ordered different drinks instead.
Size of glasses or cups in ounces?	20 ounces
Average percentage of water consumed?	25% of water per glass.
Was the water refilled?	Yes, though they did not ask before refilling water and just brought another glass out.

# Notes & Graphs

Oreganos

5:00 pm

- almost every table was full except for 1 or 2
- most tables had a lot of glasses of water, but barely anything had been drunk from them
- asked us if we wanted water before giving it to us
- most people said they wanted water instead of declining getting a drink
- no drink cups

5:40 pm

- gave me a whole new glass instead of just refilling my glass
- didn't ask before giving me a new glass

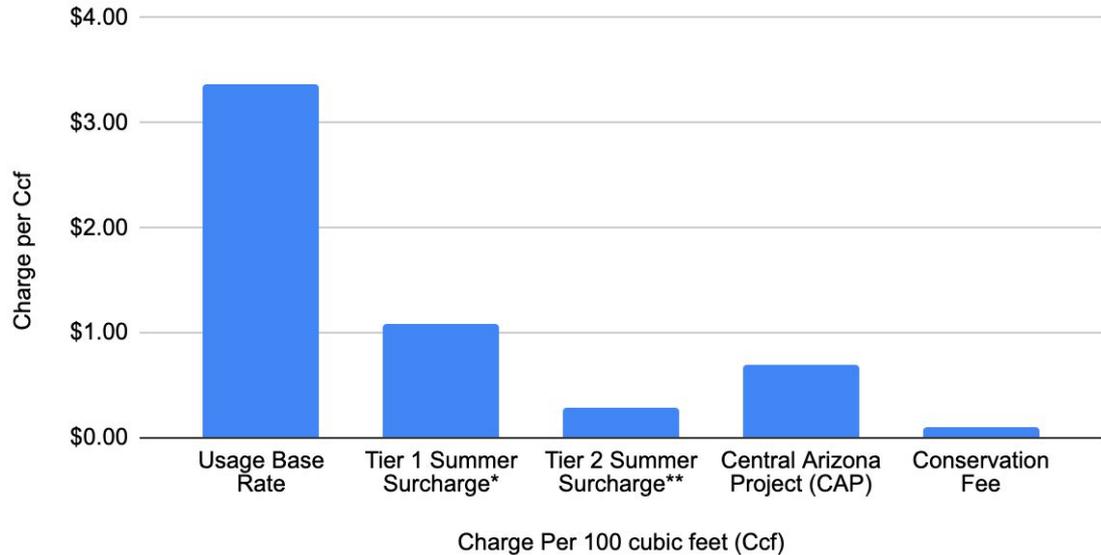
6:10 pm

- many people left at least half of their water at the table
- people order water along with other drinks and don't drink the water

Overall details

- about 35 chairs in the small room
- 110 seats in all
- 100 seats were being used

Charge per Ccf  
Ccf = 748 Gallons vs. Charge Per 100 cubic feet (Ccf)



## Water usage

- Every 8 ounce glass need 16 more ounces of water to wash the glass
- The average american eats 260 restaurant meals per year, there are approximately 315 million americans; about 6 ounces of water is left over for every meal; there is 128 ounces per gallon; so about 3.8 billion gallons of water is wasted just from the leftover water in customers' glasses per year.
- If 315 million americans use 260 glasses of water per year, and the average dishwasher holds 20 glasses per rack; and each rack uses 4 gallons of water; the total water used washing dishes comes out to around 16.4 billion gallons per year

## How to reduce water waste (as a restaurant)

**To reduce water waste, one important thing restaurants can do is create a plan for managing water usage, this list should include ideas like:**

- **Check the equipment**
  - Make sure the automatic sensors in the bathroom are working correctly
  - Check for leaks
  - Check equipment to make sure it is not using more water than necessary
- **Replace and upgrade equipment**
  - Look for leaks, fix any as soon as possible
  - Replace items that use water continually, like food disposals and dipper wells, with models that use less water or turn them off when they are not being used.
  - Upgrade equipment such as dishwashers, ice machines, steam cookers, and other equipment that uses water with more efficient brands like ENERGY STAR qualified models
  - Use more efficient spray valves for cleaning.
- **Save water while serving customers**
  - Only serve water upon request
  - Ask before refilling customers' water

## How to reduce water waste (as a customer)

**As a customer, the best thing you can do to save water is make sure to only use water you need to.**

- **Don't waste water you ordered**
  - Try to finish any water you ordered, then it will at least be going to use.
  - Only order water if you are going to drink it, if you are not thirsty you should turn down getting water along with your meal.
  - If you are getting another drink, consider not getting water as well.
- **Don't use water you don't need to.**
  - Don't run bathroom faucets for any longer than necessary.

## Conclusion

In conclusion, the water usage in restaurants is extremely high and with the growing demand for water this won't end up well. If restaurants only served customers water upon request and customers only requested water if they intended to drink it, they could save up to 20 billion gallons of water per year in America. All of that water is enough to fill up 31,000 olympic swimming pools. Saving that water would also benefit restaurants, since they would save more then \$8,000 per year from all of the water they would no longer be using. Though at first glance, this might not seem like much of an issue, the water supply is going down and lake mead is 16 feet lower than it was a year ago; and saving this water could definitely help. Water is necessary for so many different things, farming has already been affected by the lack of water. We need to stop taking water for granted since in the future we might not have any left. Though this project is still a work in progress, I have inspired others to think more about this issue; so I would say this project was definitely a success.

## Bibliography

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EPA, Environmental Protection Agency, <https://www.epa.gov/guidance>.