



GREEN LIGHT NEW ORLEANS RAIN BARREL METHODOLOGY

The Green Light New Orleans rain barrel water retention methodology has been developed by students of the Tulane University EENS undergraduate course “Pathways to Urban Sustainability” during the fall semester 2018.

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Students:

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Research explanation:

- Audrey:
 - I counted half barrels as ~.14-.28 inches, and assumed they emptied within 24 hours.
 - I counted full barrels as >.29 inches, and assumed they emptied within 48 hours.
 - If two big rainfalls occurred back to back I only counted them as one full barrel.

- Zack:
 - I counted half barrels as ~ .12-.29 inches and assumed they emptied in 24hrs
 - I counted full barrels as > .3 inches and assumed they emptied within 48hrs
 - I did not count barrels as halves if they were made full within 48hrs

- Mckenzie: airport 2015 and 2017
 - .33 inch of rain = 1 full barrel
 - If it rained more than .33 inch in a 48 hour period, I counted it as one full barrel
 - 2 days for full barrel to empty, 1 day for half barrel to empty

- Olivia:
 - I counted one full rain barrel as .30 inches of rain, and once this amount was hit I assumed it took 48 hours to empty the full rain barrel, so stopped counting additional rain events afterwards for two days. I continued this pattern while sorting through the data, and additionally, if it rained but not enough to fill a whole barrel, I considered .15 inches of rain as a half barrel, and made the assumption that these took 24 hours, or a day, to empty.

- Anna Louise:
 - $0.30 \leq 1$ barrel
 - $0.15 \text{ inches} \leq \frac{1}{2} \text{ barrel} < 0.30 \text{ inches}$
 - I counted a full 48 hours as the time needed to drain 1 full barrel; 24 hours and the time needed to drain $\frac{1}{2}$ barrel

Rain Barrel Data

2013-2017

Rationale of Calculations

85% of water is diverted by the “Earth Minded” water diverter

*per Edwin Beck from EarthMinded on December 7th 2018

x = Average square footage of house = 1300feet

G = 50 gallons held in one rain barrel

s = 4 rain spouts on a typical house

r = inches of rain, we must solve for r

$$G = (x)(r)(7.48052 \text{ ft}^2/\text{gal})(1/12 \text{ ft/inches})(1/s)(.85) \quad \rightarrow \quad r = [(50)(4)(12)] / [(1300)(7.48052)(.85)]$$

$$r = 0.2903 \text{ inch} \rightarrow \sim 0.3 \text{ inch}$$

How data was analyzed

- Data downloaded from New Orleans Airport daily rainfall report (<https://www.ncdc.noaa.gov/cdo-web/datasets/GHCND/stations/GHCND:USW00012916/detail>)
- Approximately 0.30 inches of rainfall = 1 full barrel (0.15-0.29 inches counted as ½ barrel*)
- Takes 48 hours to use/drain 1 full barrel (24 hours to drain ½ barrel)

*minor discrepancies between numbers are likely due to slightly different ½ barrel values used (ex. .14 inches or .13 inches instead of .15)

Total Rainfall Data

	Barrel Count 1	Barrel Count 2	Average
2013	51.5	52	51.75
2014	40.5	41.5	41
2015	44.5	43	43.75
2016	47.5	47.5	47.5
2017	42	41	41.5

Conclusion

	Average Barrel Count (A)	[(A) * 50 gal] = Total annual gallons of water saved
2013	51.75	2,587.5 gallons
2014	41	2,050 gallons
2015	43.75	2,188 gallons
2016	47.5	2,375 gallons
2017	41.5	2075 gallons
Average	45.1	2,255.1