

**Is my Rain-Barrel the Right Size for my Roof?
(Or is Your Roof the Right Size for Our Rain-Barrel?)**

It is easy to calculate the quantity of rainfall that will be directed through your downspout to your rain-barrel. All you need is a tape measure and a calculator. Just follow these simple steps:

- 1) **Measure** the area of your roof by measuring the length and width of your house (in feet, rounded off to the nearest whole foot) and multiplying the numbers together. The average home in the Nine Mile Run (NMR) basin has a roof area of approximately 1,300 square feet.
- 2) **Examine** the roof area that drains toward each downspout that will be connected to your rain barrel(s) and estimate what fraction of the roof area will feed your rain barrel. Whatever the configuration of your roof, gutters, and downspouts, you can estimate the percentage of the roof area that drains to the roof leader that feeds your rain-barrel.
Example #1: If your house has a peaked roof with gutters along the front and back, and your house has 2 downspouts, than each downspout would receive one-half or 50% of the roof area.
Example #2: If your house has a Queen Anne style with four gutters of equal length and four downspouts, each downspout would receive one-quarter or 25% of the roof area.
- 3) **Multiply** the roof area (in square feet) times the percentage of the roof draining toward the roof leader. Be sure to convert the percentage to a decimal – 50% would become 0.50, 30% would become 0.30, and so on. Some calculators perform this conversion for you, automatically.
Example #1: Your 1,200 square foot roof has a typical peak, a gutter running along the front and back of the house, and 2 downspouts. Each downspout receives 50% of the flow. The roof area draining to your rain-barrel is 1,200 times 0.50, or 600 square feet.
Example #2: Your Queen Anne style home and has a total roof area of 1,400 square feet and 25% of the roof area drains to each downspout. The roof area draining to your rain barrel is 1,400 times 0.25, or 350 square feet.
- 4) **Use** the attached tables to determine the gallons of rain water that will drain into your rain barrel for each of three storm sizes: a 1.0-inch storm, a 0.70-inch storm, and a 0.50-inch storm. In Pittsburgh a “typical” rain year includes 71 storm events for a total annual accumulation of 36.5 inches. On average, there are only about 7 storms a year that produce an inch or more of rain depth. One average there are about 24 storms a year that produce a half-inch or more of rain depth.
Example #1: The roof area draining to your rain-barrel is 600 square feet. The table tells you that a 1.0 inch storm will produce 374 gallons of rain water, and your 150 gallon rain barrel will overflow. A 0.7 inch storm will produce 163 gallons and a 0.5 inch storm will produce 51 gallons. Your rain-barrel will overflow, on average, about 15 times a year and store the other 56 storms without overflowing.

Table A for larger roof areas

Total Storm Depth	Roof area (in square-feet) draining to the downspout feeding your rain barrel						
	900	850	800	750	700	650	600
1.0-inch storm (exceeded 7 times/year)	561 gal	530 gal	499 gal	468 gal	436 gal	405 gal	374 gal
0.7-inch storm (exceeded 14 times/year)	245 gal	231 gal	218 gal	204 gal	190 gal	177 gal	163 gal
0.5-inch storm (exceeded 24 times/year)	76 gal	72 gal	68 gal	64 gal	59 gal	55 gal	51 gal

Example #2: The roof area draining to your rain-barrel is 350 square feet. The table tells you that a 1.0 inch storm will produce 218 gallons of rain water, which will overflow your 150 gallon rain-barrel. A 0.7-inch storm will produce 95 gallons and a 0.5 inch storm will produce 30 gallons. Your rain barrel, on average, will overflow about 10 times a year and store the other 61 storms without overflowing.

Table B for Smaller roof areas

Total Storm Depth	Roof area (in square-feet) draining to the downspout feeding your rain barrel						
	550	500	450	400	350	300	250
1.0-inch storm (exceeded 7 times a year)	343 gal	312 gal	281 gal	249 gal	218 gal	187 gal	156 gal
0.7-inch storm (exceeded 14 times a year)	150 gal	136 gal	122 gal	109 gal	95 gal	82 gal	68 gal
0.5-inch storm (exceeded 24 times a year)	47 gal	42 gal	38 gal	34 gal	30 gal	25 gal	21 gal

Remember that it is not a bad thing for your rain-barrel to overflow. The idea is for the rain-barrel to capture and control a majority of the rainstorms. The largest and most intense storms may produce more rain volume than your rain-barrel can store. That is why the rain-barrels are equipped with overflow hoses. Make sure the overflows are directed away from the foundation of your home and away from the service lateral that connects your home to the public sewer system.