

# RAIN BARREL INSTALLATION GUIDE



**COLORADO  
WATER CENTER**  
COLORADO STATE UNIVERSITY



**Colorado State University**



**COLORADO  
WATER CENTER**  
COLORADO STATE UNIVERSITY

## About Us

The Colorado Water Center is one of 54 Water Resources Research Institutes created by the Water Resources Act of 1964, which collectively form the [National Institutes for Water Resources](#). As a division under [CSU's Office of Engagement and Extension](#), the Center aims to connect all water expertise in Colorado's higher education system with research and education needs of Colorado's water managers and users, building on the [rich water history at Colorado State University](#).



**Research**



**Engagement**



**Education**

## Mission

The Colorado Water Center leads interdisciplinary research, education, and outreach to address complex and evolving water-related challenges in Colorado and beyond. We do so by fostering collaboration between higher education and water stakeholders, synthesizing objective water knowledge to inform decision-making, and inspiring the next generation of water leaders.

*Want to learn more?*

Visit the [Colorado Water Center](#) website to learn about additional resources, research, and opportunities for engagement.

*Have a question?*

We would love to hear from you! Please email:  
[CoWaterCenter@colostate.edu](mailto:CoWaterCenter@colostate.edu)



Scan the QR code to visit the CoWC website

# TABLE OF CONTENTS

<b>Colorado Rain Barrel Regulations</b> .....	<b>4</b>
<b>Considerations</b> .....	<b>5</b>
<b>Where to Buy Rain Barrels</b> .....	<b>6</b>
<b>Rain Barrels to be Cautious of</b> .....	<b>7</b>
<b>Recommended Rain Barrel Type &amp; Cost</b> .....	<b>9</b>
<b>Supplies Needed</b> .....	<b>10</b>
<b>Rain Barrel Diverter</b> .....	<b>11</b>
<b>How To Install your Rain Barrel</b> .....	<b>12</b>
• <b>Choosing a Location</b> .....	<b>12</b>
• <b>Create a Base</b> .....	<b>13</b>
• <b>Drill a Spigot Hole</b> .....	<b>14</b>
• <b>Drill a Fill Hole and Connect Hose</b> .....	<b>15</b>
• <b>Install Diverter</b> .....	<b>16</b>
• <b>Insert Diverter into Downspout</b> .....	<b>17</b>
• <b>Considerations for 2 Barrels</b> .....	<b>18</b>
• <b>Test your System</b> .....	<b>19</b>
<b>Winterizing</b> .....	<b>20</b>
<b>Maintenance</b> .....	<b>21</b>
• <b>Cleaning Your Barrel</b> .....	<b>22</b>
<b>Decorating Your Barrel</b> .....	<b>23</b>
<b>Frequently Asked Questions</b> .....	<b>24</b>



# COLORADO RAIN BARREL REGULATIONS

In 2016, Rainwater Harvesting was legalized for the very first time, but there are some restrictions which are listed below:



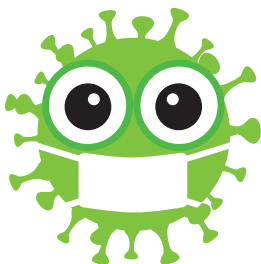
Maximum of **2 rain barrels** with the combined storage of **110 gallons or less**

Used for **outdoor purposes**: watering lawns, plants, or gardens



Container must have a **sealable lid** to prevent mosquito breeding

**Never drink or cook with water from a rain barrel**



Rain water is untreated and may contain **contaminants** that could harm you or your pets if ingested

**Single-family residence or Multi-family residence** ( 4 or fewer units) can only install 2 barrels with a combined maximum storage of 110 gallons



# CONSIDERATIONS

**Before purchasing and installing your rain barrel, there are several considerations to keep in mind.**

## **Rain barrels come in many different sizes. We recommend:**

Two 55 gallon barrels - maximizes the amount of water you can store.



## **Home Owner's Associations**

Check with your HOA before you purchase your rain barrel as they may have aesthetic and/or location requirements. HOAs legally CANNOT prevent you from installing rain barrels.



## **Spigot Placement/Overflow Planning**

Ensure spigot placement maximizes access to barrel water. Plan to use water to avoid overflow. If your barrel has an overflow valve, direct it away from your house or flood-prone areas. Overflow water can be directed toward your lawn or garden.



## **Winterization needed, just like your sprinkler system**

Need a winterization cap and barrel storage plan for winter.



# WHERE TO BUY RAIN BARRELS

**Rain barrels and connection kit can be purchased from a variety of stores.**

Rain barrels and the connection kit parts are available at the stores below. Be sure to follow the instructions on your installation kit if you purchase a different kit than described in this guide.

Colorado Rain Catcher (Fort Collins)

Container Reclaimer (Longmont) - Barrels Only

Blue Barrel (Nationwide)

Target, Sam's, Walmart, Lowe's, Amazon, Home Depot

## Rain Barrel Materials

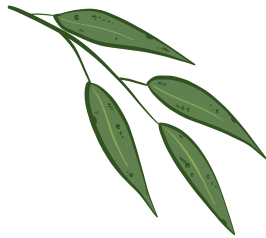
- Plastic Barrels work best for rain barrels. Metal barrels need to be painted with a plastic paint coating to prevent rust.
- Closed top barrels with removable lids are usually more expensive but easier to clean.
- Closed top barrels with screw caps are more common but may be more difficult to clean.



- Upcycled barrels may need additional cleaning. Make sure your barrel is food-safe.
- BEWARE buying from Facebook Marketplace, Craigslist and avoid barrels that stored dangerous chemicals.

# RAIN BARRELS TO BE CAUTIOUS OF

When looking for a rain barrel, be cautious of these designs as they may be illegal or difficult to clean or winterize.



**Screens** let in sunlight that can cause algae growth. Beware using screens with large holes as they may not keep insects or particulates out of your rain barrel.



Terracotta barrels of this design are popular because there is a small planter included in the top, but if this depression is not filled with a plant then it will accumulate water and create a **mosquito breeding ground!**



This **spigot is high**. Once the water level falls below the spigot, you would not be able to draw water out of the barrel.

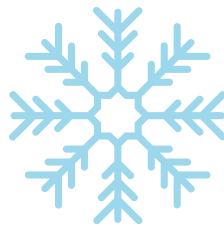
# RAIN BARRELS TO BE CAUTIOUS OF

When looking for a rain barrel, be cautious of these designs as they may be illegal or difficult to clean or winterize.



This is Illegal! Rain barrels **need a sealable lid** or a screw-on cap.

This design will be more **difficult to winterize** because you will need to add on a downspout extender to ensure melt water does not pour onto your foundation in the winter months



Rain barrels of this design are appealing if you want to place decorations on top. However, they store water inside a plastic bag which could make **cleaning difficult.**





# RECOMMENDED RAIN BARREL TYPE & COST

We recommend rain barrels with the following design properties. Rain barrels do not have to be expensive.

## Recommended Properties



- Rain Barrel with a diverter
- Easy to clean out
- Simple installation
- Overflow will go out of your existing downspout
- Easy Winterization

## Estimated Costs

- DIY 55 gallon barrel with lid - \$30-\$50
- Rain Barrel adapter parts - \$40
- Watering can - \$3
- **Total = \$73 - \$93**



# SUPPLIES NEEDED

Make sure you have all the necessary supplies before installation.



- Rain barrel with sealable lid or caps
- Diverter kit - diverter, fill hose, fill hose seal, threaded rubber spigot seal, winterization cap, hole saw kit, 2 stainless steel screws, and plastic full port spigot

- Drill
- Gloves
- Eye Protection
- Level
- Tape Measure
- Pencil
- Wrench



# RAIN BARREL DIVERTER

Be sure to buy a kit with all the necessary components for a Do It Yourself rain barrel.

Diverters move water from your downspout to your barrel



## Pros

- Easy to install
- Do not need to remove downspout
- Cost effective
- Kit includes hole saws and spigot



## Cons

- Unable to see clogs
- Potential for clogging - smaller interior opening for large materials

# HOW TO INSTALL YOUR RAIN BARRELL

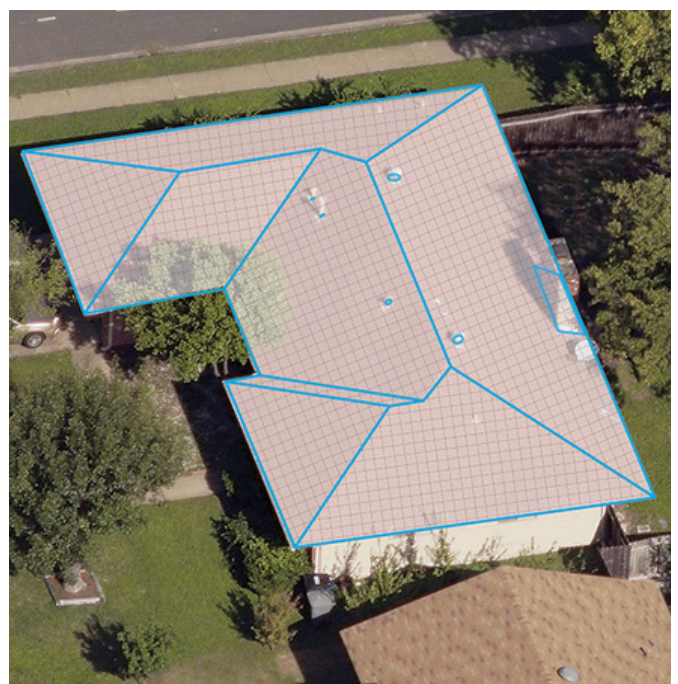
## 1. Choose a Location



- Walk around your home - look at downspout locations
- Choose a location based on
  - Proximity to where you need the water
  - Ease of making a level base in that area

### Larger Catchment Area = More Water in your Barrel

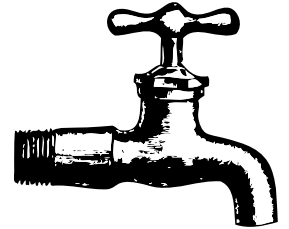
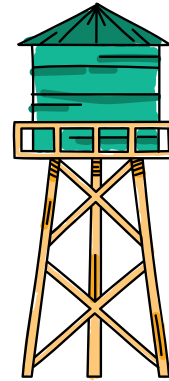
- Determine the size of your catchment area
- Catchment Area = Amount of water you can collect from that downspout/roof line
  - Look at your house in satellite view (Google Maps) to see which downspout will collect most water



# HOW TO INSTALL YOUR RAIN BARRELL

## 2. Create a Base

- Adding a base to your barrel will create water pressure (just like a water tower)
- Adding a bases improve access to spigot

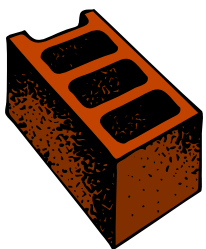


### Without base



- Select a flat location for the barrel within three feet of the downspout (<3ft desirable to prevent drooping in the connection hose)
  - It is **very important to have a flat and stable base**. Full barrels can weigh ~500 pounds and can injure you, children or pets if unstable!

### With base



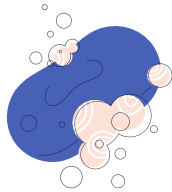
- Purchase a commercially available rain barrel stand or construct a simple base with wood, cinder blocks, bricks, or extra patio pavers



# HOW TO INSTALL YOUR RAIN BARRELL

## 3. Drill a Spigot Hole in your Barrel

- Measure up 3 inches from the bottom of the barrel, make a mark with a pencil.
- Carefully drill the spigot hole, centered on the mark using the SMALLEST hole saw.
- Immediately after drilling the hole, insert the gasket while the plastic is still warm. This should make insertion easier. Rub soap around the gasket edges to help insertion if necessary.



**Sitting on the barrel gives you more control**



**Closed spigot**

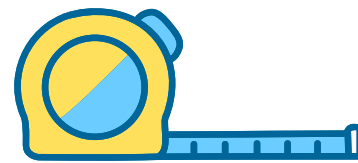
- The direction of the gasket does not matter (rain drop can face up or down).
- Make sure the spigot is CLOSED after installation. If the spigot is open, water will flow out of your rain barrel.

# HOW TO INSTALL YOUR RAIN BARRELL

## 4. Drill a Fill Hole and Connect Hose



- Consider the location of the barrel BEFORE drilling the fill hole. The hole should be on the side of the barrel closest to the downspout.
- Measure down 3 inches from the top of the barrel, make a mark with a pencil.



- Assemble the MEDIUM hole saw according to your kit instructions.
- Carefully drill the hole, centered on the mark.
- Insert medium rubber fitting.



# HOW TO INSTALL YOUR RAIN BARRELL

## 5. Install Diverter



**WARNING: Always wear eye protection and gloves when drilling into metal**



- Place your barrel on the stand with the spigot facing out.
- Measure your downspout - always drill on the 3" side (Your downspout could be 2"x3" or 3"x4").
- Use a level to mark the downspout at the height of the intake hole.
  - The tube **MUST BE LEVEL** with the intake hole to allow water to flow back out the downspout. If the diverter is too high on the downspout, excess water will flow out the top of your barrel. If the diverter is too low, your barrel will not fill.



- Use the largest hole saw to drill into the 3" side of the downspout. Be careful to not drop the metal cutting into the downspout if your downspout is connected to a pipe that runs underground.
- Use pressure when drilling and make sure you are holding the hole saw straight





# HOW TO INSTALL YOUR RAIN BARRELL

## 6. Insert Diverter into Downspout

Squeeze the sides of the rubber diverter and insert into the downspout. The cup and arrow should be facing UP to ensure rain water capture.



- Secure the diverter to the downspout with the two small screws.
- Insert fill tube to the diverter and into the barrel's top hole.

- Make sure the diverter is completely flush (no gaps) and completely inserted. You should hear a 'pop' when the diverter is inserted all the way.

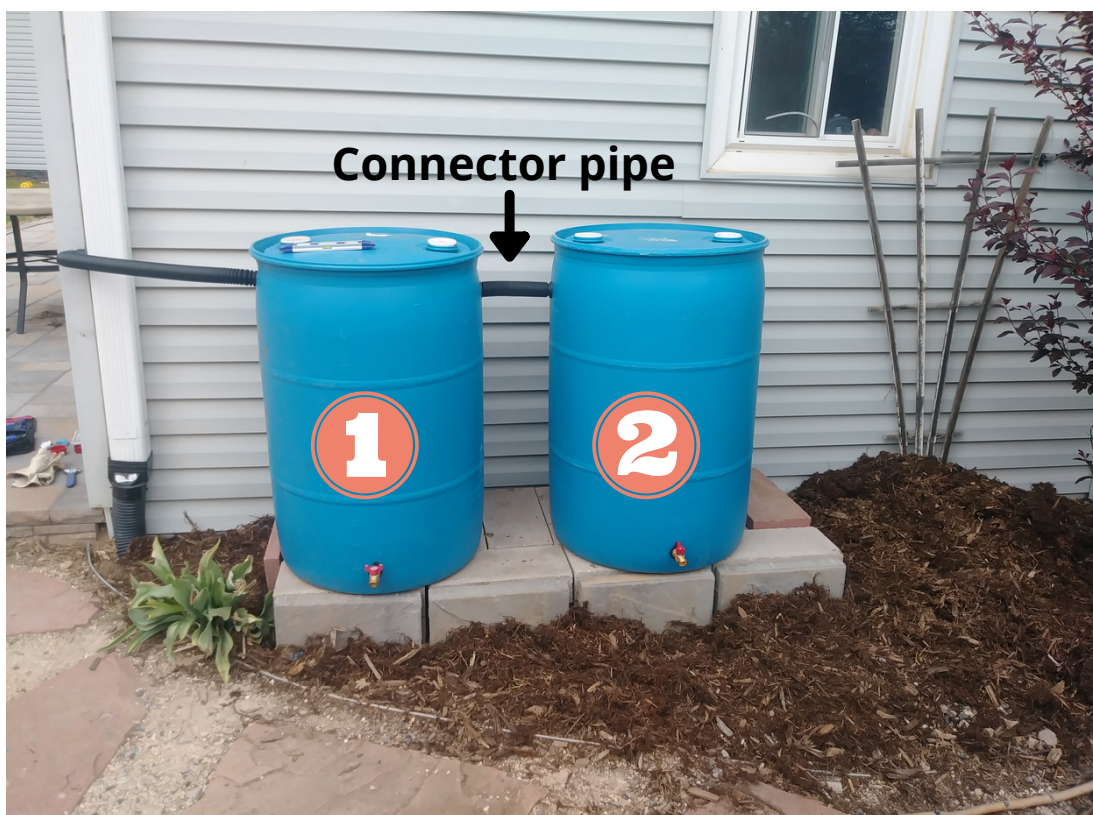


# HOW TO INSTALL YOUR RAIN BARRELL

## 7. Considerations for 2 Rain Barrels

You can install your rain barrels in different locations OR connect your barrels together to increase storage

- Rain barrel connection kits available - Colorado Rain Catcher (\$6.50)



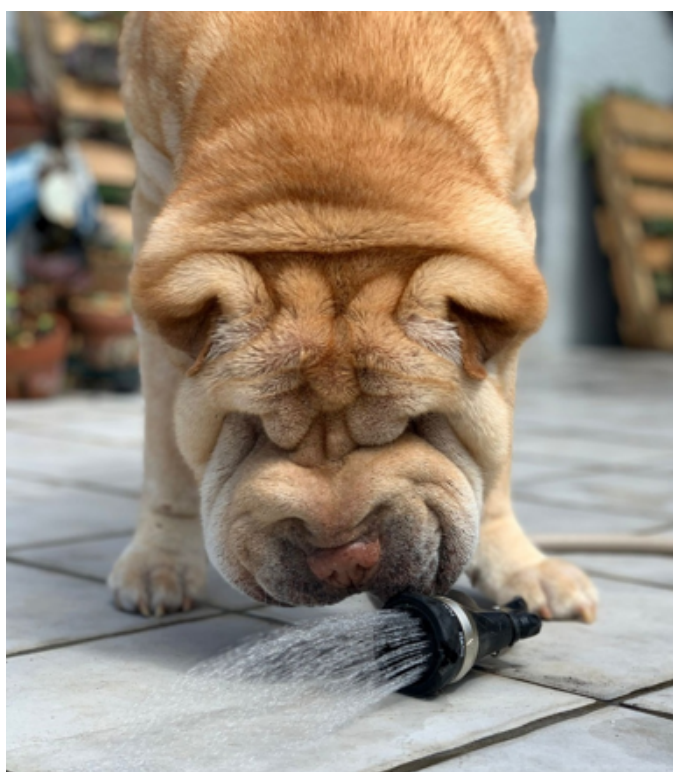
- Installation adjustment if connecting barrels: Drill an additional intake hole on the first barrel.
- Connector pipe **MUST** be level **AND** **BELOW** the intake hole of the first barrel. This will allow your second barrel to fill first and will prevent overflows.



# HOW TO INSTALL YOUR RAIN BARRELL

## 8. Test your System

It is important to test your rain barrel system before you attempt to capture rain water. You will want to check for leaks or potential system failures.



- Using a hose, spray water on the roofline above the rain barrel
- Water should flow to the gutters, through the downspout, through your diverter, and into your rain barrel
- Double check that your barrel is stable and not susceptible to falling over
- Always monitor children and pets around rain barrels!

# WINTERIZING

**Just like your sprinkler system, your rain barrel will need special care before the winter, usually in October before the first snow.**



Be sure to empty your rain barrel in the winter. If it is full, the water will freeze and crack your rain barrel.



**Frozen barrel not winterized**

1. Empty barrel
2. Remove tubing
3. Rinse out any debris
4. Remove diverter, place winterization cap on using the same screws from the diverter
5. Check winterization cap for leaking
6. Leave barrel in place or store for winter

Rain barrels are light when empty and may blow away in the wind. Be sure to secure your rain barrel or store it in a safe place.



# MAINTENANCE

## Regularly maintain your rain barrel to keep the barrel and water clean.

If maintenance is neglected, sludge will collect on the bottom or algae may grow in your barrel.

- Clean out gutters in the spring before reconnecting your barrel.
  - Optional: gutter covers will prevent debris from falling into gutters.



- First flush - wait to connect barrel until after the first rain in spring. The first rain will 'flush out' debris in your gutters and downspout.
- Rinse out barrel to prevent algae blooms.
- Use the water in your barrel! The longer water sits in your barrel, the more likely algae will grow.

# CLEANING YOUR BARREL

**Cleaning your barrel is important for maintaining water quality and preventing algae blooms**



**Before cleaning**

If your rain barrel looks like this, it is time to clean! A barrel with a removable lid will be easier to clean than a barrel with a screw cap.



**After cleaning**

1. Disconnect your barrel from your house
2. Rinse out barrel with a hose
3. Use a long-handled scrubber
4. Add cleaning products:
  - 16 oz. box of baking soda
  - 64 fl. oz. distilled white vinegar
  - Put baking soda and vinegar in barrel
  - Turn the barrel on its side and swish vigorously
5. Rinse out barrel with a hose

# DECORATING YOUR BARREL

**Rain barrels can be functional and fabulous!**

- Do not decorate your barrel while it is attached to your house. Decorate before installation, or remove your barrel from your house before you decorate.
- White rain barrels are more susceptible to algae blooms and must be painted.



- Use sand paper (100 weight) on the exterior
- Wipe down the barrel and allow to dry
- Spray plastic paint primer - paint will not stick without it (30 minute dry time)
  - Rust-oleum 2x Ultracover Primer to coat metal barrels in plastic (1.5 cans are needed to cover one 55 gallon barrel)
- Create your own design or use cardboard stencils
- For artistic barrels use acrylic paint and protect your work by spraying with paint sealer when done

# FREQUENTLY ASKED QUESTIONS

## ***Will collecting water off an asphalt roof leach pollutants?***

Yes, pollutants from your roof may leach into your rain barrel water. This is why you and your pets should not drink water from your barrel.

## ***Is it safe to use rainwater on a garden?***

Even though rain barrel water is untreated, it is still safe to use this water on your outdoor garden. Studies have shown that water collected from roofs is still safe for gardens because soil naturally filters water and prevents toxins from entering plants ([Winters, McCall, & Kingfisher 2014](#)). However, this does not apply to plants that the water will directly touch. You should water leafy greens with drinking water instead of rain barrel water. Always thoroughly wash your garden veggies before eating them.

## ***Will algae grow in my barrel?***

Algae may grow in your barrel. While this type of algae is not harmful to your health or your garden, it may smell or make cleaning difficult. Algae grows due to excess nutrients, like Nitrogen and Phosphorus, in water and sunlight exposure. You can prevent algae growth by preventing leaf litter from getting in your barrel and reducing sunlight exposure. It is easier for sunlight to penetrate through white rain barrels, so we highly recommend painting your barrel before installation if it is white.

## ***How do I keep leaves and particles out of my barrel?***

You can prevent leaves and particles from entering your barrel by regularly cleaning out your rain gutters. Barrels with filters and screens still allow small particulates into your barrel. Instead, opt for barrels that have fully sealable lids or screw caps.

## ***Can mosquitos still get in my barrel?***

Depending on the type of rain barrel you have, mosquitos may get in your barrel. Mosquitos may enter barrels with screens or filters. If you have an issue with mosquitos, you can purchase Mosquito Dunk which kills mosquito larvae and is harmless to pollinators, wildlife, and is safe on plants.