

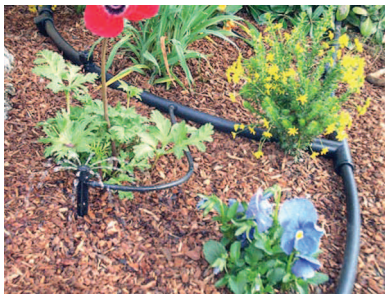
# Conservation Landscaping for the Lake Tahoe Basin



## How To: Convert Lawn Sprinklers to Micro-Irrigation For Water Conservation

No need to call in the professionals. Converting your lawn sprinklers to micro-irrigation, also known as drip irrigation, is an easy and rewarding weekend project. The underground distribution pipes, controller and water source are already in place and don't need to be changed saving you time, money and labor.

Micro-irrigation supply manufacturers keep it simple by utilizing compression fittings and screw-on adapters that connect the various components of the irrigation system. Various ready-to-assemble conversion kits are also available. Once installed, a micro-irrigation system is easy to modify. Tubing and emitters can be added and subtracted to adjust to your landscape's changing requirements.



### Follow these general steps to get started:

Review your valve zones and determine which valves you want to convert to micro-irrigation. Look at which sprinkler heads are on which valve and choose which sprinkler heads you want to retain. All heads in this zone need to be either converted to drip or capped off. To take a head off-line, dig around the sprinkler head to reveal the entire head and then some more. Unscrew the sprinkler head taking care not to knock dirt into the threaded PVC riser. Most residential PVC irrigation lines are  $\frac{3}{4}$  inch, but verify this on your property before purchasing materials. Install a threaded PVC cap immediately. Caps can be removed at a later time as needed.

Select the valve in your irrigation vault that feeds the lines that you want to convert. Remove the valve and install a low flow valve which has a built in pressure reducer and filter.

### Adapt the risers to micro-irrigation one of two ways: Starting from Scratch

- Screw a  $\frac{3}{4}$ " FPT (Female Pipe Thread) compression fitting adapter onto the riser and secure a  $\frac{1}{2}$ " compression tee or elbow fitting to the adapter.
- Insert the  $\frac{1}{2}$ " (16mm – 18mm) polyethylene (poly) tubing into the compression fitting.

- Run  $\frac{1}{2}$ " poly tubing through the area to be irrigated. This line is the micro-irrigation equivalent to your underground PVC lines. You can junction from this line to more  $\frac{1}{2}$ " poly tubing with compression fittings until you have brought the line as close to your planting area as possible.
- Often the  $\frac{1}{2}$ " poly tubing can not get close enough to individual plants to put water where it is needed. In these cases, Connect the  $\frac{1}{2}$ " poly tubing with  $\frac{1}{4}$ " distribution line by punching a hole in the  $\frac{1}{2}$ " poly tubing, inserting a straight or tee connector barb and attaching the  $\frac{1}{4}$ " distribution line. This  $\frac{1}{4}$ " distribution line, also known as spaghetti tubing, is easy to moved around plants.
- Insert the appropriate emitter to the end of the  $\frac{1}{4}$ " distribution line at the plant watering zone. Emitters deliver measured volumes of water through individual drip emitters, micro-spray risers or low flow bubblers. In some cases, emitters are attached directly to the  $\frac{1}{2}$ " poly tubing.

**HINT:** When attaching  $\frac{1}{4}$ " distribution line, start at the plant then work your way back to the  $\frac{1}{2}$ " poly tubing. Secure all above ground tubing with fasteners or in a shallow trench, and cover with mulch.

Or

### Use a distribution manifold

- Screw a micro-irrigation distribution manifold, sometimes called an octopus or bug, directly onto the riser.
- Fit the  $\frac{1}{4}$ " distribution tubing onto the barbed manifold outlets. Some manufacturers produce this type of distribution hub with a built in pressure regulator. If this is the case, pressure can be regulated at this connection point instead of the valve box.
- The rest of the steps are the same as starting from scratch.



Distribution Manifold

### Not all emitters are created equal

Notice how flow rates vary widely depending on emitter

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type and adjustment. For water efficiency and plant health, avoid using high flow and low flow emitters in the same irrigation zone.

**Point source emitters** deliver set amounts of water between ½ gallon to 5 gallons per hour. Some can be taken apart and manually cleaned. These emitters can be inserted at the end of a distribution line or directly into the poly tubing. Each emitter wets a single location. Typically use: sparsely planted trees, shrubs and perennial beds.

**Line source emitters** deliver water at regular intervals along a linear path. Flow rates and emitter spacing vary and are usually expressed in gallons per minute per 100 foot section. Thin wall drip line or tape falls in this category. Typical use: row crops.

**Micro spray emitters** operate by throwing water through the air in predetermined patterns, either fixed or spinning. Flow rates are fixed and variable between 5 and 30 gallons per hour. They mount to stakes and can be inserted directly into the poly tubing. Typical use: densely planted ground covers.

Low flow bubblers typically operate between 2 and 20 gallons per hour. Typical use: planter boxes or tree wells where deep localized watering is desired.



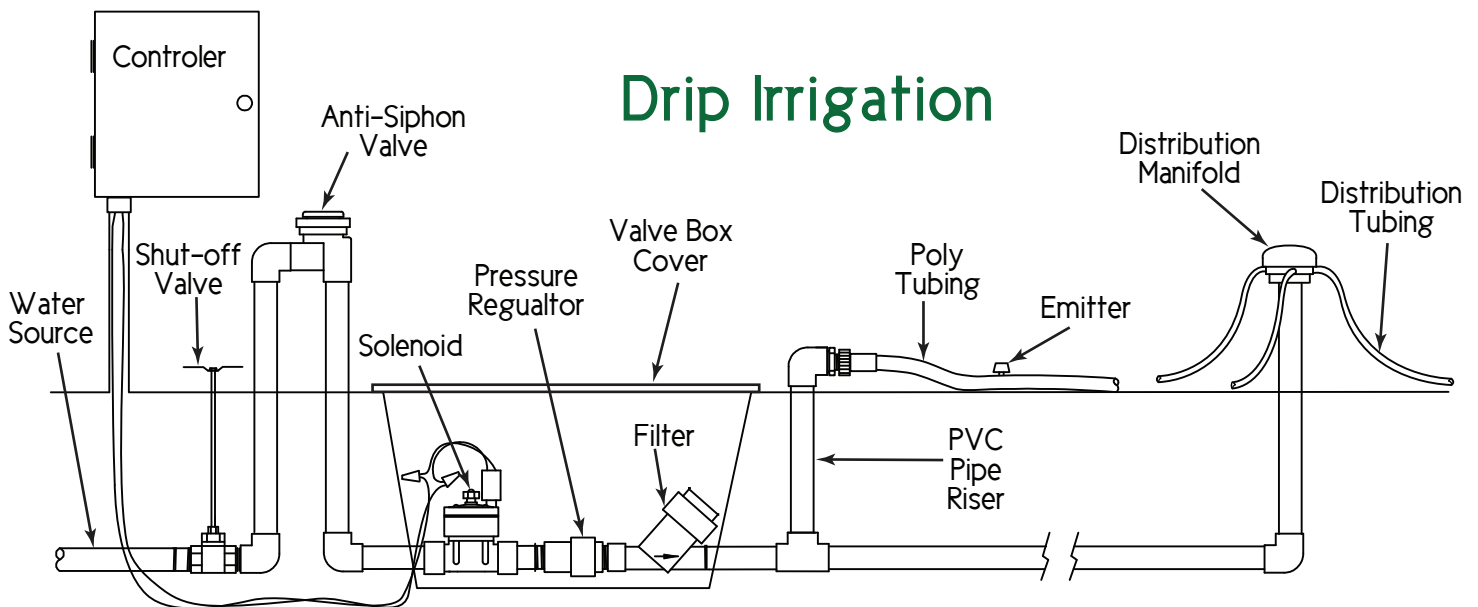
Point Source Emitter

**HINT:** If it is difficult to insert the poly tubing into a compression fitting, wear gloves to improve grip and pre-heat tubing in the sun, hot water or over flame.

## Don't forget to:

- Flush the system clear of debris before you attach the emitters
- Use removable end caps on the poly tubing so you can flush the system and drain water from the lines before winter and use cleanable emitters when available
- Plan for pressure loss from too many emitters on one line or too much friction along a long line
- Plan a maintenance schedule
- above ground components are more susceptible to damage and distribution lines are easily severed while landscaping
- small openings are easy to clog
- Separate high and low water need plants so each watering area can be scheduled according to need and match water and plant needs
- Evaluate the wetting depth and area of emitters and make adjustments for water conservation and plant health
- Adapt the micro-irrigation system as plant watering needs change
- Protect your irrigation system from freezing conditions when undergoing system modifications-automatic drain valves may have been taken off-line during the conversion
- Don't mix and match ½" with 5/8" tubing and components.

## Drip Irrigation



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