



Solutions For Smart Irrigation



Water Is The Issue

Water is a limited natural resource – availability is a concern, especially with repeated years of drought in parts of the Americas, Australia, and elsewhere in the World. But, we as consumers often don't think about it, because when we turn on the shower in the morning, water comes out of the shower head. Water is essential to the survival of every living thing on the planet. Learning about smart water practices is becoming increasingly important, now and for the future.



*"When the well is dry, we know the worth of water."
~Ben Franklin ~*

Does Your Landscaping Meet Your Needs & Location?

Lush, green grass looks beautiful. But, depending on your geographic location & needs, the benefit of a large yard may not equal the water costs to keep it green. Some elements to consider, include:

- Turf is necessary if you have children or pets that will be playing on it. If not, consider a smaller lawn.
- Use native plants for ornamentals. They are better designed to survive the weather conditions in your area without supplemental irrigation.
- If you live in an arid or semi-arid environment, turn towards drought-tolerant plants and avoid high water use varieties (tropical).

Green Is Good:

Trees, shrubs, flowers, and healthy turf are a vital source of oxygen and offer many valuable environmental and personal comfort benefits such as:

- Reducing noise pollution through blockage and absorption
- Preventing erosion and runoff
- Minimizing pollution effects on groundwater, streams, rivers, and lakes
- Shading houses, buildings, and their surrounding areas, reducing energy use for cooling

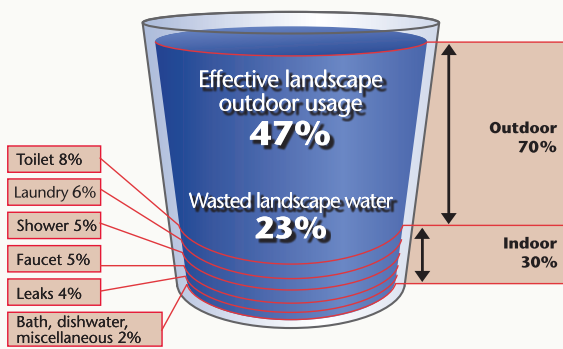


Professionally-Installed Irrigation Systems

A professionally designed and installed irrigation system is the best assurance that your turf and landscape will be watered as efficiently as possible. Knowledge of water-conserving technologies as well as local regulations and restrictions are key aspects of irrigation planning. Improved design practices and advanced sprinkler system technologies in the hands of a professional makes it possible – and environmentally responsible – to conserve water and have an attractive, healthy landscape.

How Much Water Am I Using For Irrigation?

As a homeowner, your water bill does not typically indicate how much water is used for your irrigation systems. If your water bill is \$20 a month, you've probably never even considered it. If you live in a location where your water costs can result in a bill that is hundreds of dollars a month, it may be top of your mind. There is usually no tracking of how much of your water goes to irrigation versus indoor use. However, average estimates are that up to 70% of household water use goes to irrigation.



Why Irrigate?

Irrigation is meant to replenish water lost to the root zone of plants that has not been replenished by natural rainfall. Plant water needs



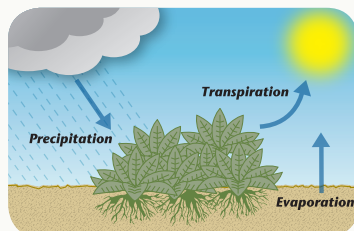
follows a bell curve where the highest demand is in the hottest months of the year. Plants need the moisture content of the soil in the root zone to remain at a level where they can easily "pull" needed water through their root system.

How is Water Lost?

Water is lost to the plants through three primary mechanisms:

- **Deep percolation** – Draining of the water to a point below the root zone so the plant can no longer reach it.
- **Soil Evaporation** – Evaporation of water from the soil surface.
- **Plant Transpiration** – Evaporation of water from the plant leaves (sweating).

You will sometimes hear this type of water loss referred to as "Evapo-Transpiration", or ET, which is the combined effect of soil evaporation and plant transpiration.



Proper Irrigation Control

How Can I Tell if I am Watering Too Much?

Your irrigation controller should have a Season Adjust % or Water Budget % adjustment option. Decrease the watering % by 10%. Wait two weeks and see if parts of your landscape become stressed. If not, you were over-watering. Decrease another 10% and see what the reaction is. If you reach a point where a section of your grass starts to be stressed while other parts are still green and lush, then you have a sprinkler uniformity problem, which is compounding the issue.



Smart Controllers

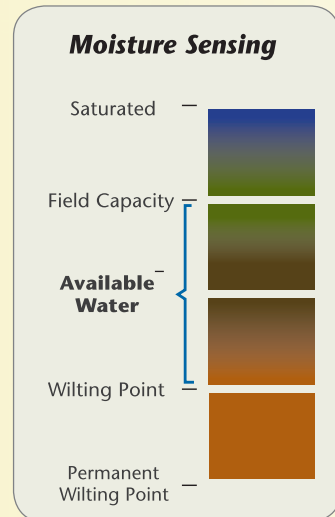
Irrigation Smart Controllers are designed to automatically determine how much water plants actually need and to irrigate only that amount, no more, no less. They are generally broken down into two categories: ET-Adjusting and Soil Moisture sensing.

ET Versus Soil Moisture Sensing Controllers

ET Controllers utilize weather sensors to estimate how much water is lost through evaporation and transpiration using data for air temperature, solar radiation, humidity, and wind. That "water loss" estimate is used to drive irrigation runtime and frequency. Soil moisture sensing systems like Toro's Precision™ Soil Sensor utilize an in-ground reading of soil moisture content and estimate the amount available for plant water use. When the available amount drops below a set level, it drives irrigation to replenish the water.



ET Sensor add-on for EVOLUTION® controller



Anatomy Of A Smart Irrigation System

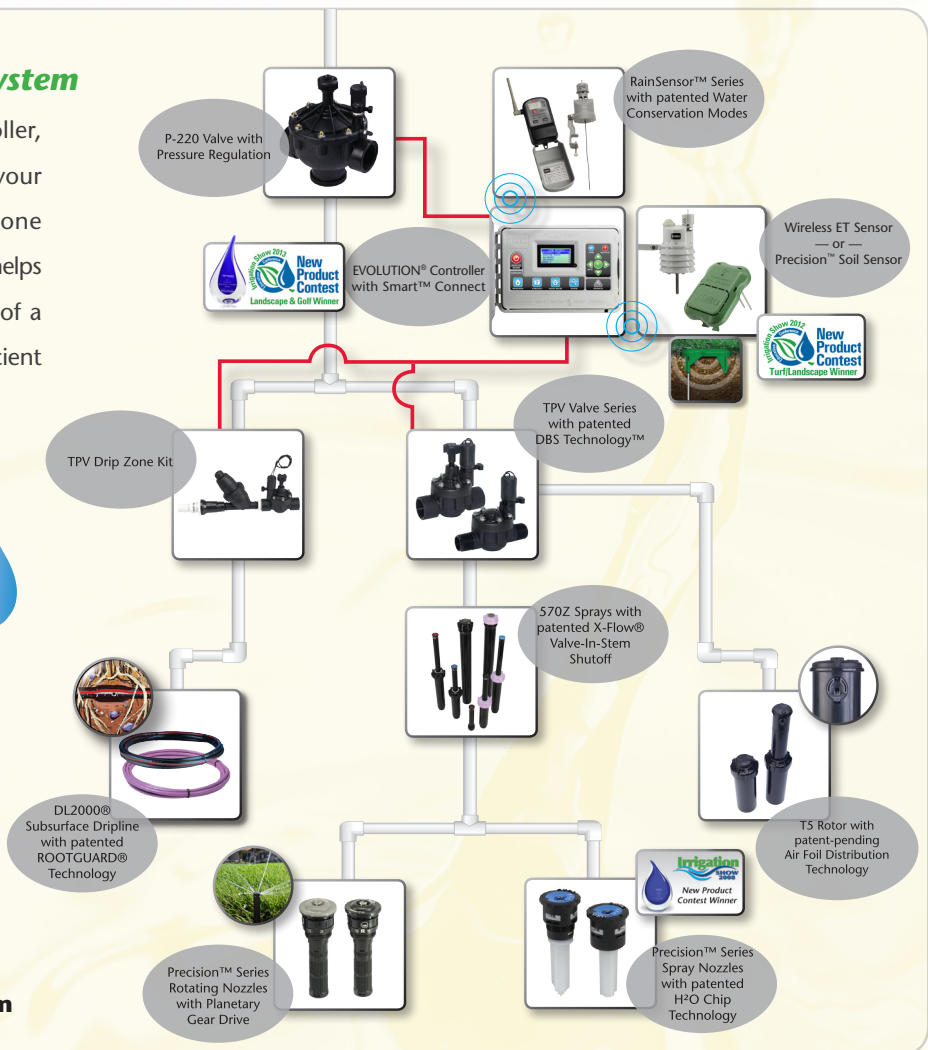
All the parts of an irrigation system... controller, valves, sprinklers... work together to ensure your plants get proper watering. Replacing just one portion of a system with efficient products helps save water. Over time, replacing all components of a system (or installing a new system) with efficient irrigation products ensures optimum savings.

MONEY SAVER



Municipalities and water districts nationwide are offering homeowner rebates for installing water conserving irrigation products. Check you your local water district or municipality for rebates in your area.

For rebates in your area, visit us at:
www.torowatersmart.com/rebates.htm



What Irrigation Sprinklers Should I be Using?

The following are basic guidelines to consider for irrigation applications:

- **Within 5 feet of your foundation or hardscapes:** Drip or Micro Irrigation.
- **Planted areas that are not more than 5 feet wide:** Drip or Micro Irrigation
- **Shrub or ornamental beds:** Fixed Sprays, or Micro Irrigation if plant size will hinder sprays from effective distribution.
- **Planted Areas 5-15' in Diameter:** Fixed Sprays
- **Planted Areas 15-24' in Diameter:** Rotary Spray Nozzles
- **Planted Areas >24' in Diameter:** Rotors
- **Trees:** Drip Irrigation
- **Steep Slopes:** Drip or Rotors (low precipitation rate prevents runoff)



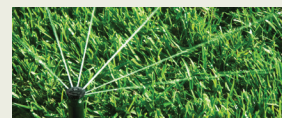
Subsurface Drip



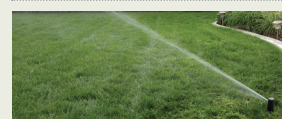
Micro Irrigation



Fixed Sprays



Multi-Stream Rotary Sprays



Rotors

Professionally-Installed Irrigation Systems

The performance of an automatic sprinkler system is only as good as the professionals installing it. Choosing a quality contractor ensures long-lasting, efficient operation. Look for a licensed professional with an established reputation. Expertise in irrigation planning is critical to the initial design and installation of your system. A solid background in irrigation planning helps you avoid common do-it-yourself pitfalls such as uneven sprinkler coverage and poor water pressure. You can also rely on a professional to know about water regulations in your area and provide the most efficient and precise system available.

Signs of Water Waste

A properly designed, installed, and maintained irrigation system is critical to saving water. Some common problems a professional contractor can help correct are:

- Sprinklers running in the rain
- Water puddling or running off soil without being absorbed
- Sprinklers spraying in the wrong direction or installed at an angle, resulting in improper coverage
- Sprinklers with broken tops or missing nozzles
- Plant growth obstructing sprinklers
- Sprinklers under so much pressure that the water blows away in the wind instead of landing on the landscape
- A dribble or weak stream of water from the nozzle – a sign of clogging or inadequate pressure
- Edge of one sprinkler spray not reaching another or overlapping resulting in spots that are too dry or too wet
- Sprinklers watering the hardscape (driveways, sidewalks, streets, etc.)
- Drip or micro-irrigation tubing missing emitters
- Water leaking from valves – during or after operation



Misting from overpressure



Geyser due to missing nozzle or broken sprinkler



Runoff from overspray or excessive irrigation



Homeowners have trusted the Toro name for almost 100 years. Toro products mow our lawns, trim our hedges and clear our walks. Count on Toro Irrigation solutions for quality assurance, season after season.

To learn more visit us at: www.toro.com