WaterSense® Public Meeting

Notice of Intent (NOI) for Point-of-Use Reverse Osmosis (RO) Systems

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February 16, 2022

Housekeeping

- All attendees are muted to minimize background noise.
- Please type questions into the Zoom chat. We will have a dedicated time for Q&A at the end of each section and at the end of the presentation as time allows.
- This PowerPoint presentation will be posted on the public website following the call.
- Submit written comments to: watersense-products@erg.com
- This meeting is meant to be an open discussion.
- All questions, comments, and concerns are welcome!

Meeting Purpose

At this meeting, we will:

- Explain the research and findings about the product category
- Answer questions about the material so that interested parties can provide more precise comments
- Begin to gather information on how to fill data gaps or on additional information that may be available
- Explain WaterSense's specification development process and next steps

Generally, we do not:

- Provide resolution to comments or concerns
- Agree on specifics of a specification such as scope, criteria, or test methods
- Guarantee that WaterSense will develop a specification or provide a timeline for its completion

Agenda

- Introduction to WaterSense
- RO Systems Background
- WaterSense NOI and Outstanding Data Gaps
  - Scope
  - Water Efficiency Criteria
  - Performance and Product Testing
  - Product Marking, Documentation, and Marketing
  - System Impacts and Other Considerations
- Next Steps
- Questions and Discussion

Poll Question

Question: Please tell us who you are. Do you represent a:

- RO System and/or RO Membrane Manufacturer/Retailer
- Water and/or Energy Utility
- Certifying Body
- Other

Part 1

Introduction to WaterSense

Why WaterSense?

Water shortages expected in 36 states

Communities face major infrastructure investments

Consumers challenged by rising utility bills

Much of water used outdoors is wasted

No program like ENERGY STAR for water

2006

look for WaterSense Meets EPA Criteria

Identify high-performing technology

Promote water-efficient behavior/action

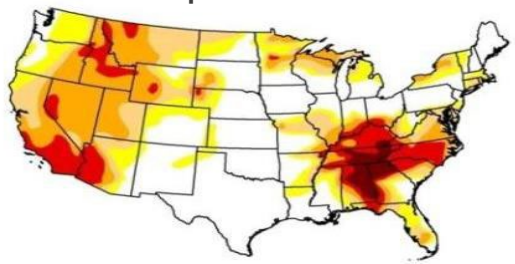
Help consumers save money

Reduce need to expand infrastructure capacity

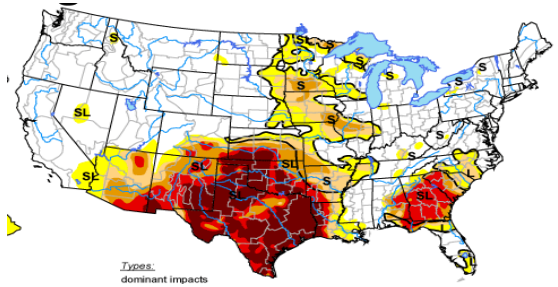
Save water for critical needs

Water Supply Reliability Is a Challenge

Sep. 2007



Oct. 2011



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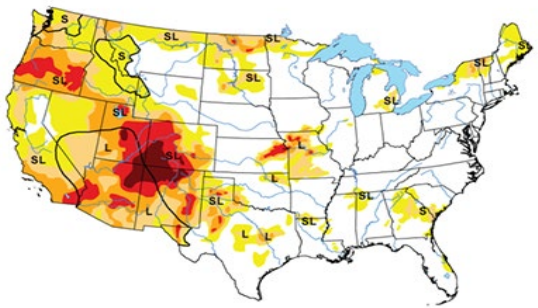
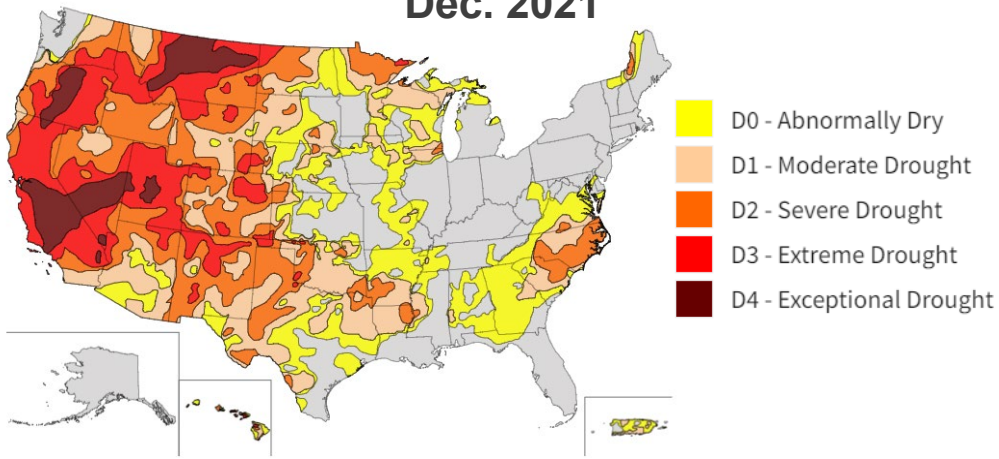
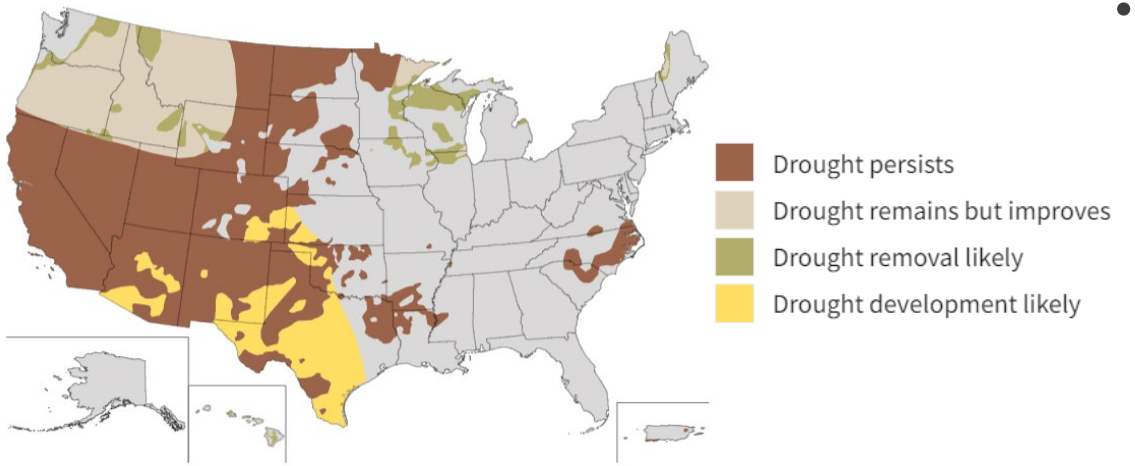


Dec. 2021



Seasonal Drought Outlook



- Drought happens somewhere every year
- Extreme weather changes increase uncertainty and concern about water scarcity and risk
- Competition for supplies to meet public, agricultural and energy needs will increase

Maps obtained from Drought.gov

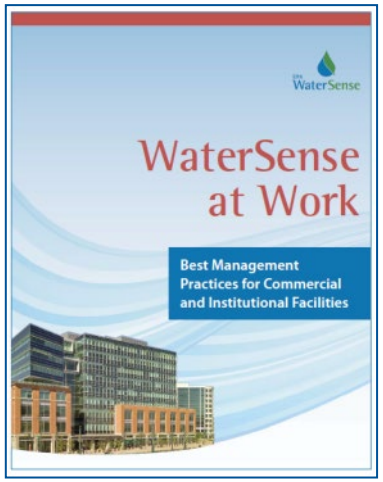
The WaterSense Vision

- WaterSense offers people a simple way to use less water
- Our vision is that all Americans will understand the importance of water efficiency and take actions to reduce their water use – in their homes, outdoors, and at work

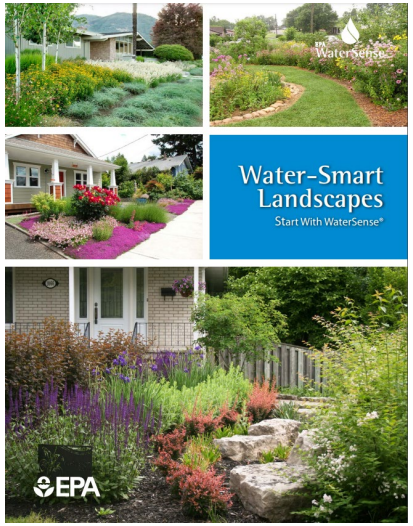
How will we achieve it?

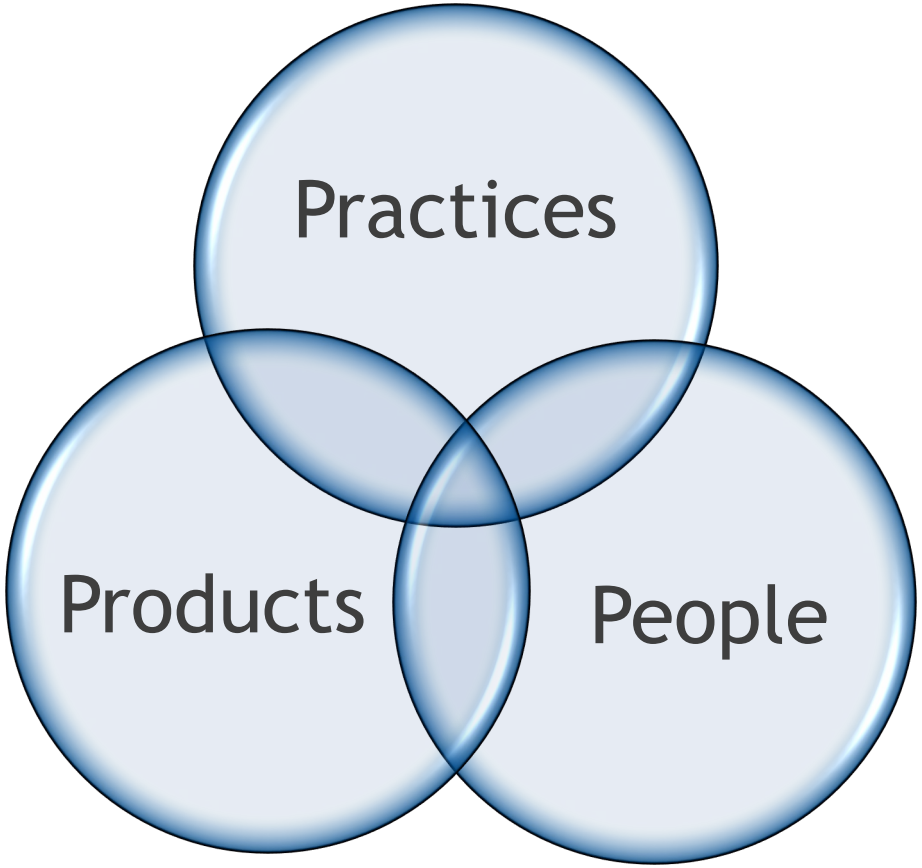
- By transforming the marketplace for products and services that use water
- By promoting a nationwide ethic of water efficiency to conserve water resources for future generations and reduce water infrastructure costs

WaterSense Program Overview



Actions that can be taken to reduce water use – at home, outdoors, and at work





Fixtures and technologies save water

Partners reach users to change behavior

What's Special About WaterSense?

A label with integrity

- Third-parties independently certify that products and homes meet EPA criteria
- Backed by the credibility of EPA

Simple to understand

- Label tells consumer that a product is more efficient
- Manufacturers can compete on degree of efficiency or other features

Smart use of resources

- EPA provides national standardization and outreach for water efficiency
- Manufacturers absorb product research, testing, and branding costs
- Licensed certifying bodies certify the products and police the label
- EPA, manufacturers, retailers, and other partners help market/incentivize purchase of labeled products

WaterSense Labeled Products

Lavatory Faucets
Labeled since 2007
18,600 labeled models

Weather-Based Irrigation Controllers
Labeled since 2011
750 labeled models

Tank-Type Toilets
Labeled since 2007
4,600 labeled models

Flushometer-Valve Toilets
Labeled since 2015
1,500 labeled models

Flushing Urinals
Labeled since 2009
760 labeled models

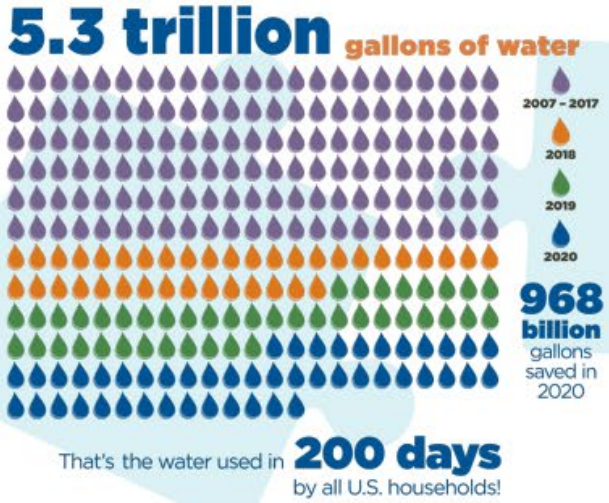
Spray Sprinkler Bodies
Labeled since 2017
85 labeled models

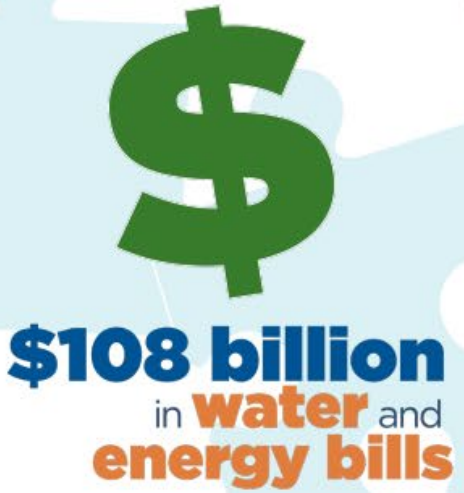
Showerheads
Labeled since 2010
11,400 labeled models

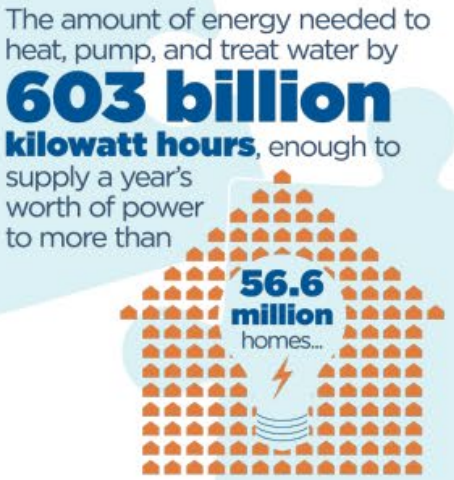
Soil Moisture-Based Irrigation Controllers
Labeled since 2021
2 labeled models

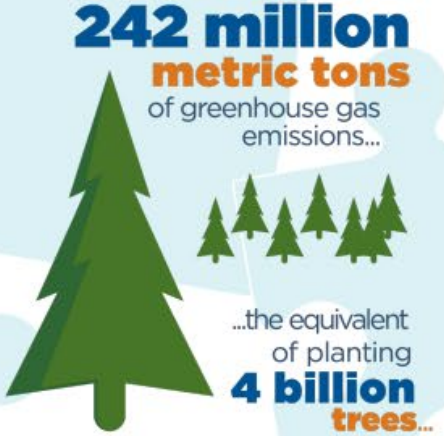
Accomplishments

Since 2006, WaterSense labeled products have saved:









Specification Development Process

We are here

Product Research

- Evaluates product differentiation in the marketplace, availability of performance standards/specifications, water, energy, and cost savings potential, stakeholder support

Notice of Intent

- Identifies a potential path forward and outstanding data gaps and research needs
- Invites participation and requests feedback/data from stakeholders

Draft Spec

- Invites public comment on proposed water efficiency and performance criteria for products that will be eligible for the WaterSense label

Final Spec

- Provides final water efficiency and performance criteria for eligible WaterSense labeled products
- Establishes third-party infrastructure for certifying products

WaterSense Product Evaluation Factors

WaterSense uses the following factors in determining which products to label. Products must:

- Offer equivalent or superior performance to conventional models
- Be at least 20 percent more water-efficient than conventional models
- Realize water savings on a national level
- Provide measurable results
- Achieve water efficiency through several technology options
- Be effectively differentiated by the WaterSense label
- Be tested and independently certified

Working with Standards Organizations

- Where feasible, EPA engages with existing standards committees as early in the process as possible
  - ASME/CSA – plumbing fixtures and fittings
  - ASABE – soil moisture sensors, weather-based irrigation controllers
  - ICC – landscape sprinklers
  - ASTM – test methods
  - **For RO systems, EPA will engage with NSF and ASSE, as applicable**
- Balanced standards committees give EPA input from testing and certifying organizations, manufacturers, water efficiency experts, utilities, NGOs, and other stakeholders
- EPA leverages resources of standards committees to:
  - Identify and evaluate appropriate performance measures (based on user needs)
  - Develop test methods so that performance measures can be reliably evaluated in a laboratory
  - Conduct round robin testing to ensure test method repeatability
  - Get buy in of methods and requirements among manufacturer and certification community before publishing a draft specification

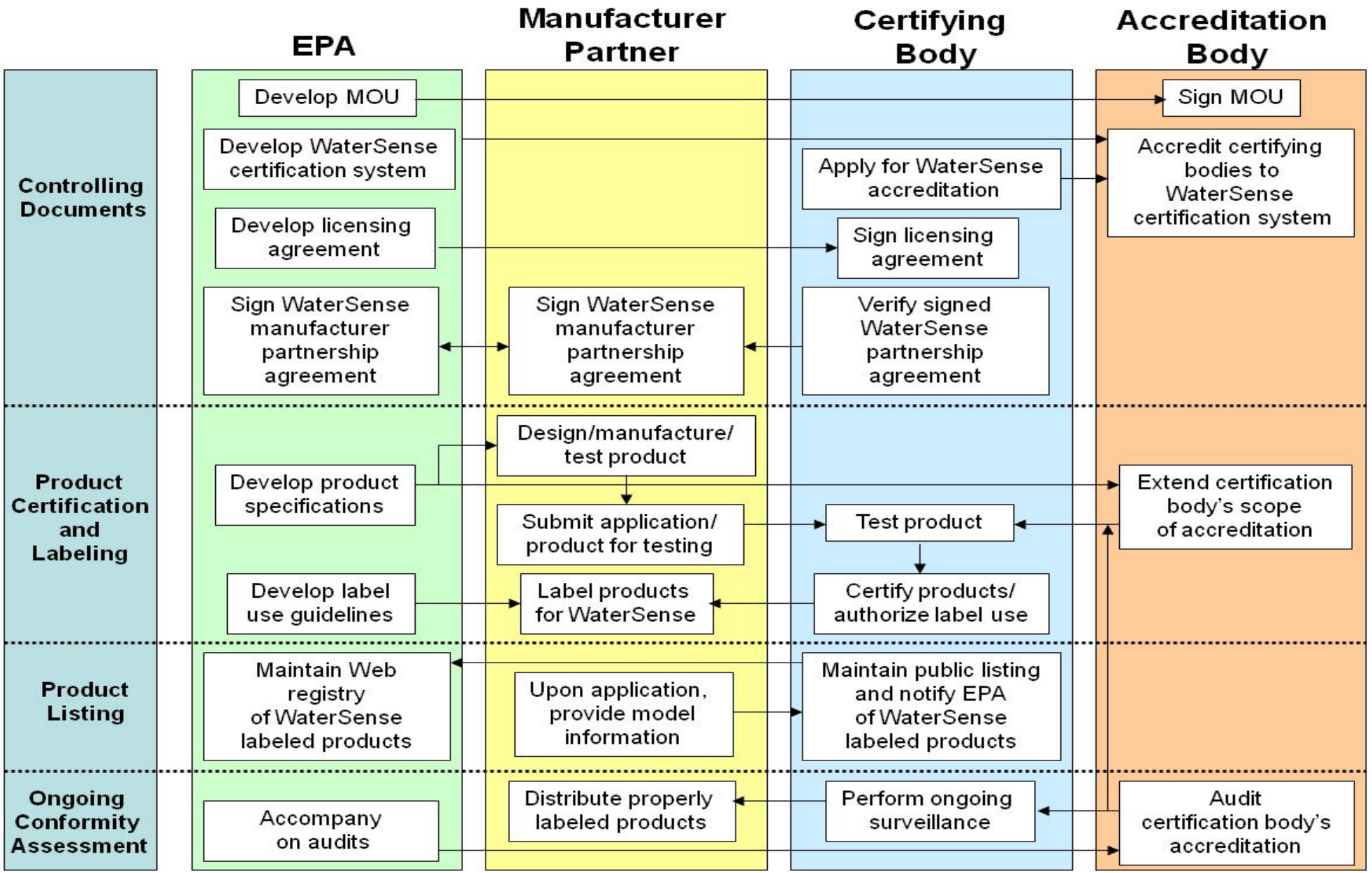
WaterSense Product Certification

Independent third-party certification is the key to bringing labeled products to market and ensuring confidence in the WaterSense brand

- EPA established the *WaterSense Product Certification System* in March 2009 (revised most recently in 2016)
- The system guides certification and labeling for all WaterSense labeled products and includes:
  - Eligibility and requirements for accreditation and product certifying bodies
  - Production inspection and testing requirements
  - Requirements for issuing the WaterSense label
  - Requirements for ongoing surveillance of labeled products
  - Procedures for handling label misuse

www.epa.gov/watersense/certification-systems

Product Certification Overview



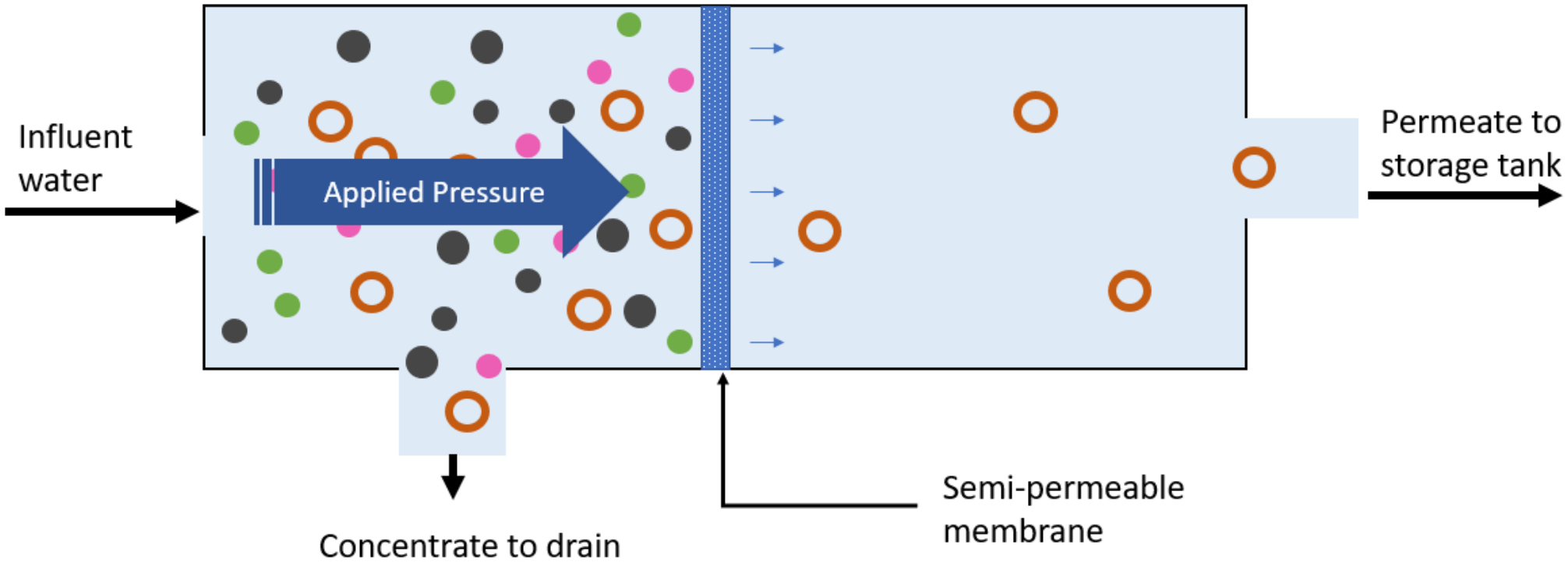
Part 2

Reverse Osmosis System Background

Reverse Osmosis Background

Reverse Osmosis (RO):

Water treatment process in which pressure forces water through a semi-permeable membrane, creating a stream of treated water, called “permeate,” and a stream of reject water, called “concentrate.”



What Is an RO System?

RO System:

A water treatment system that incorporates the process of RO to remove contaminants from influent water

RO systems significantly reduce contaminants such as:

- Total dissolved solids (TDS)
- Heavy metals
- Bacteria and viruses
- Volatile organic compounds (VOCs)
- Herbicides and pesticides

RO system applications:

- Drinking water treatment
- Wastewater treatment
- Desalination

The WaterSense NOI focuses on RO systems intended to treat drinking water.

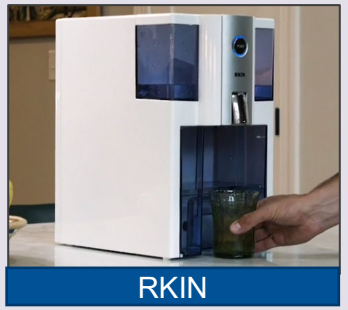
Types of RO Systems

Point-of-Use (POU)

A plumbed-in or faucet-mounted RO system used to treat the drinking and/or cooking water at a single tap


Aquasana

Under-sink


RKIN

Reservoir-Type Countertop


APEC Water Systems

Faucet-Mounted Countertop

Point-of-Entry (POE)

An RO system used to treat the water supply at the entry of a building or facility for drinking and for washing, flushing, or other non-consumption use

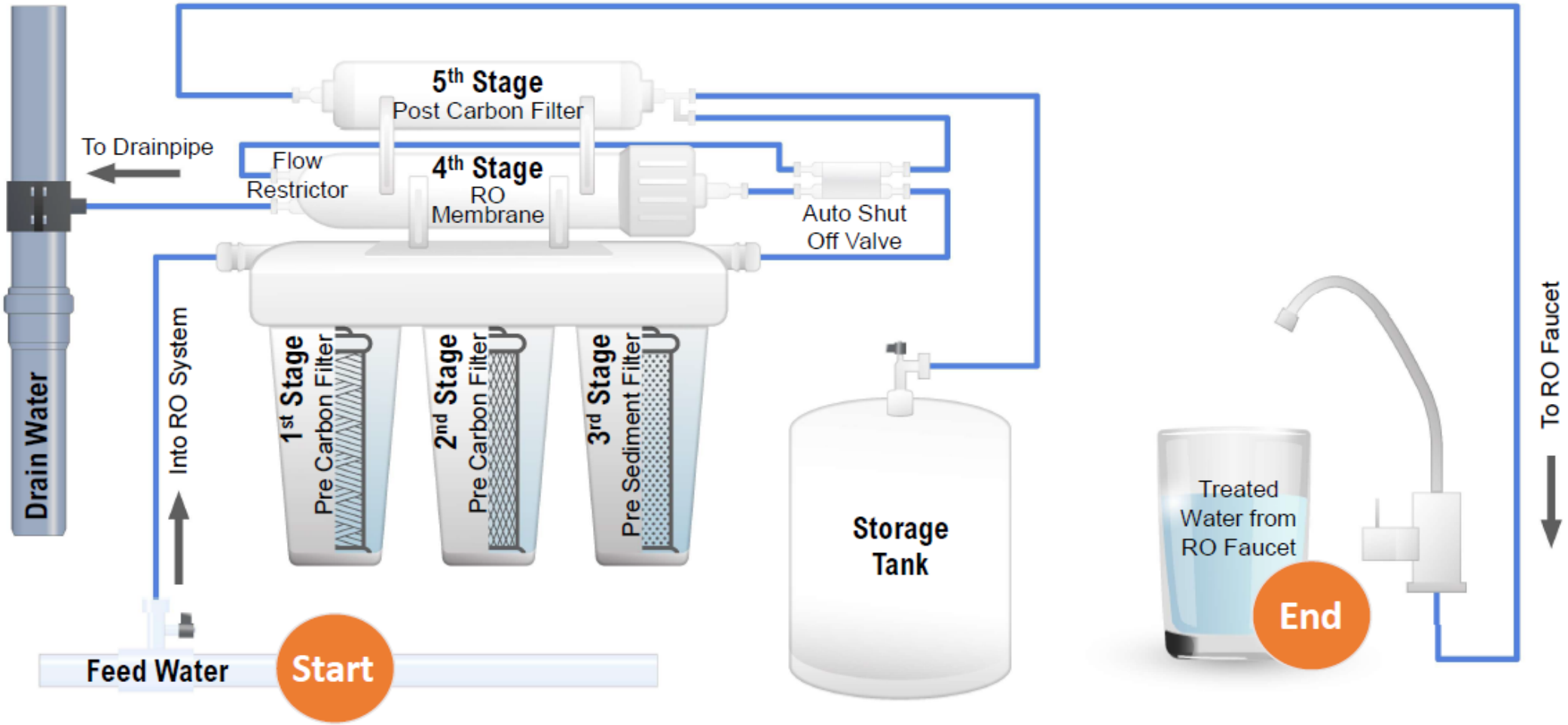

Westfair Water Systems

Whole house


Apex Water Filters

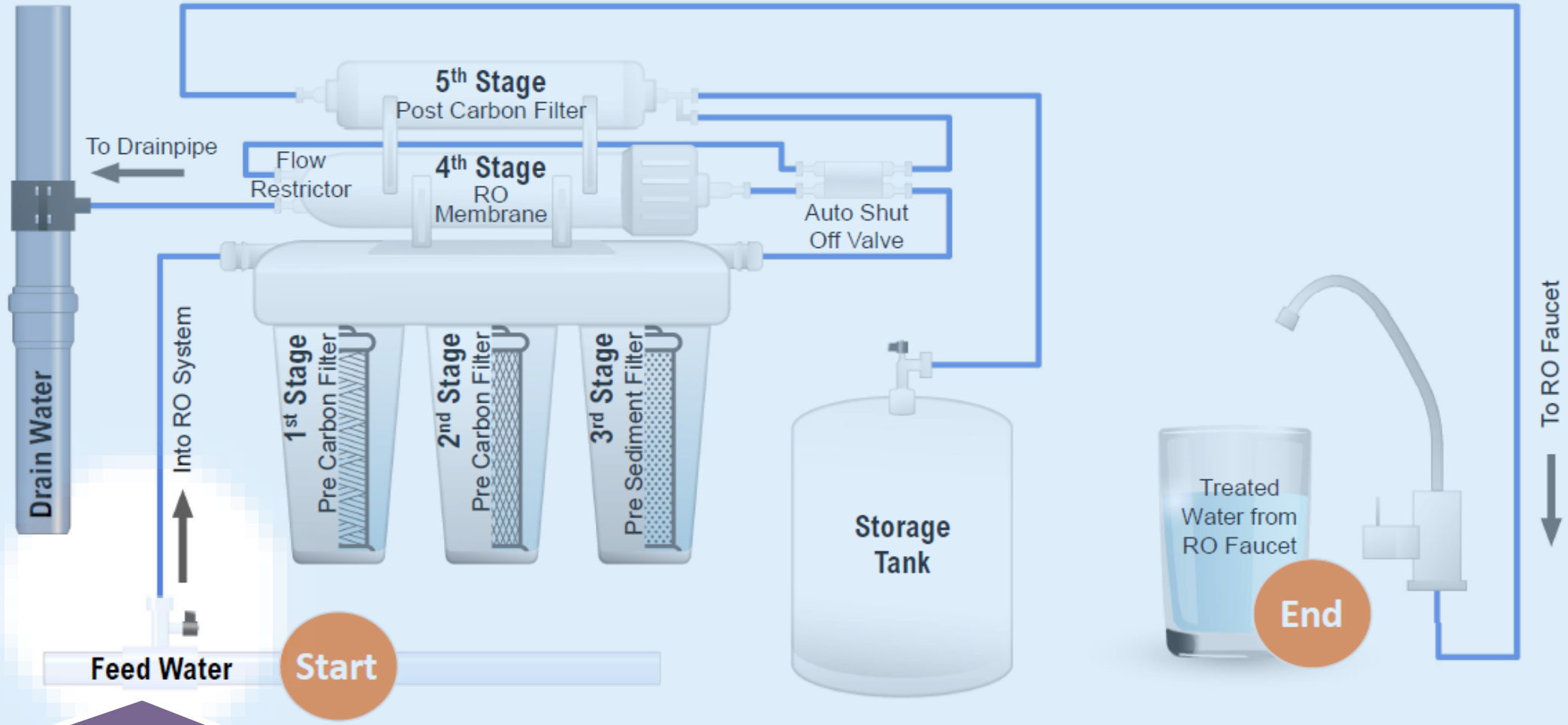
Commercial POE system

RO System Diagram



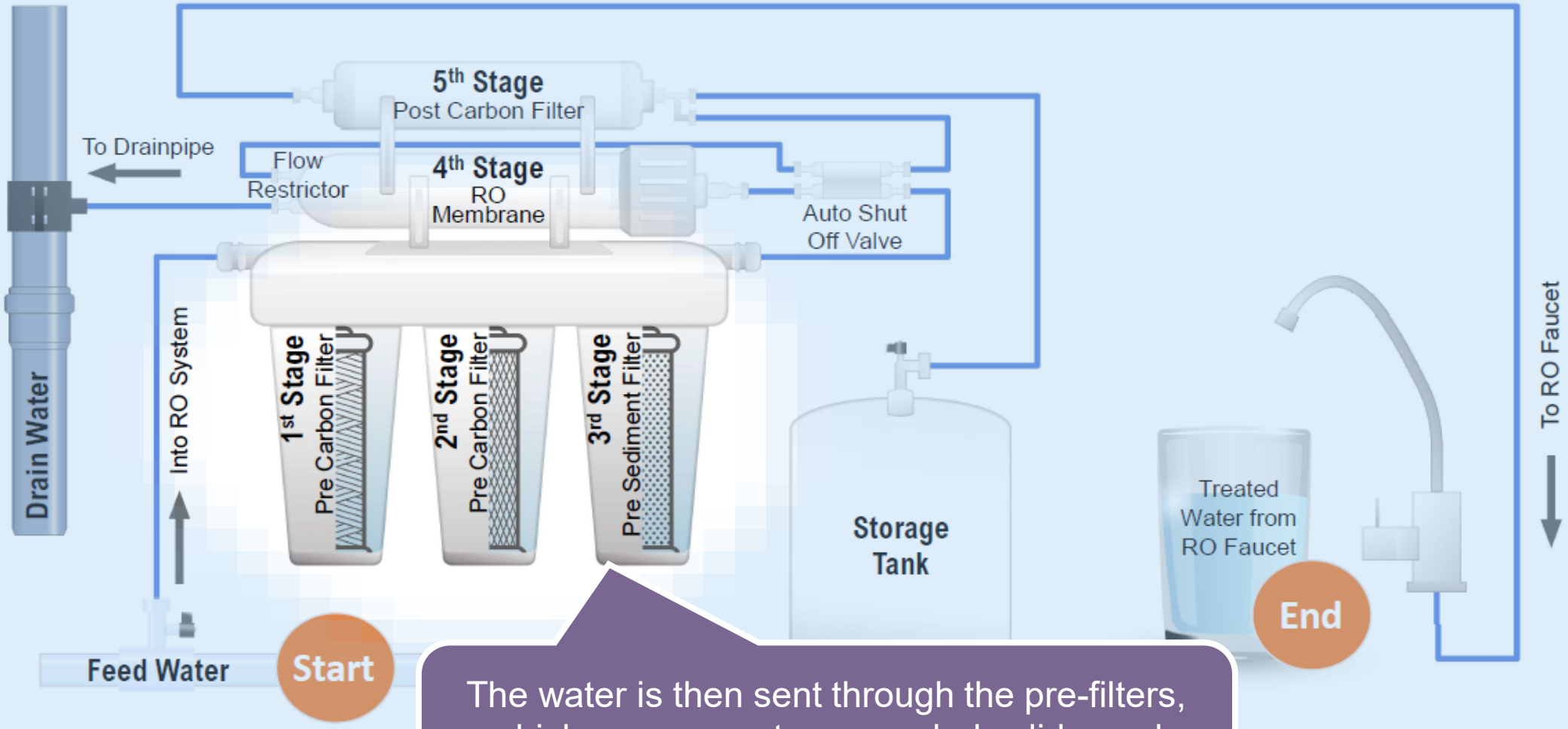
Typical under-sink POU system configuration

RO System Diagram



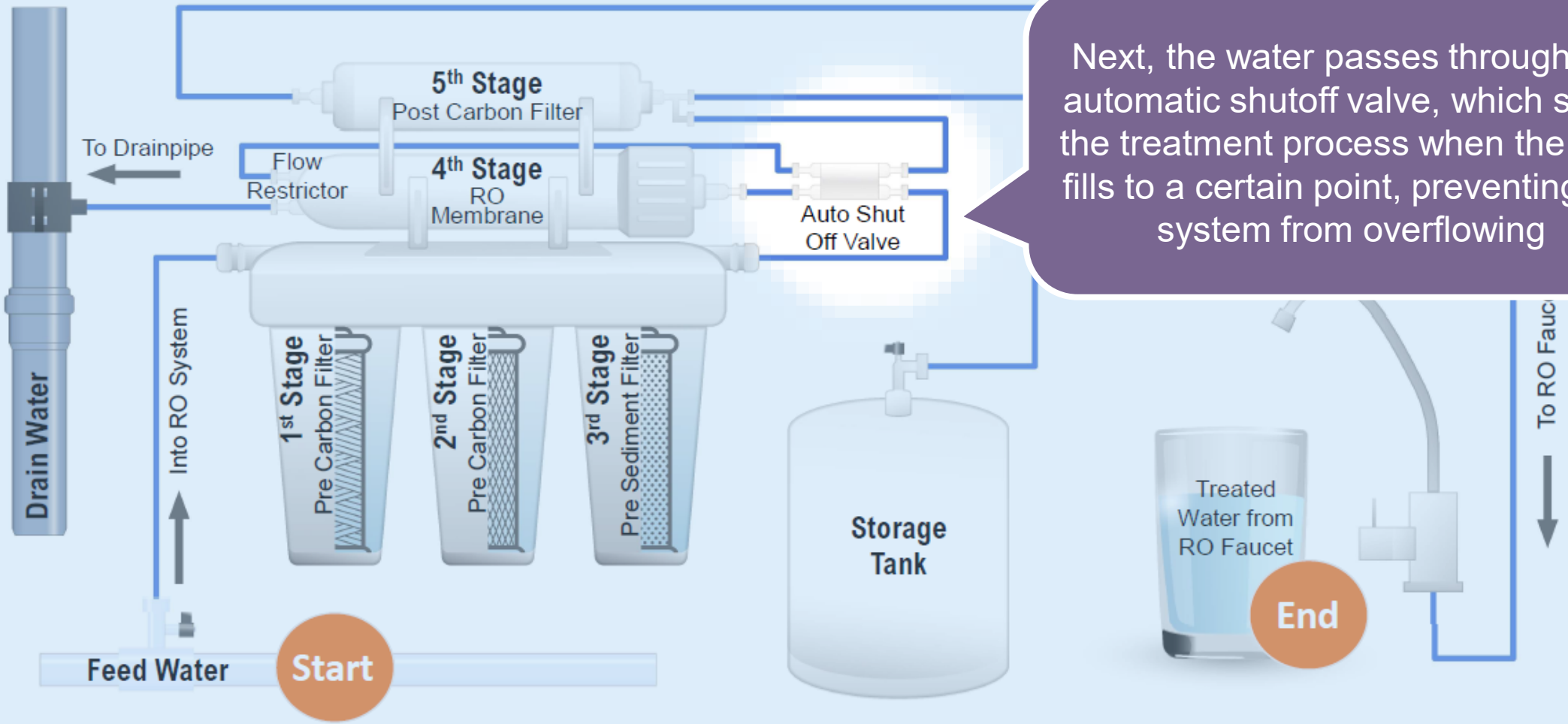
Incoming feedwater enters the system through the faucet's cold water supply line

RO System Diagram



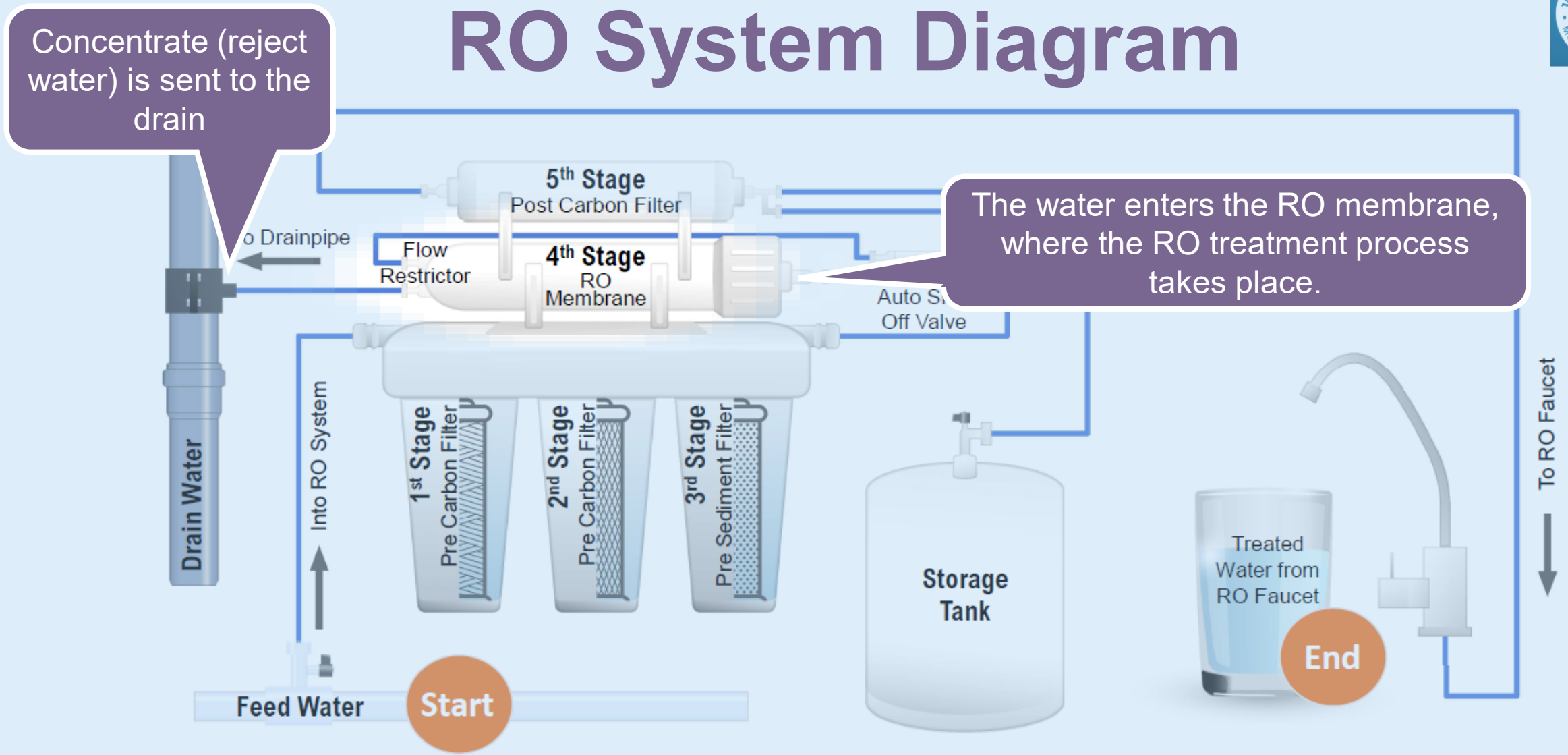
The water is then sent through the pre-filters, which remove rust, suspended solids, and chlorine that can damage the RO membrane

RO System Diagram

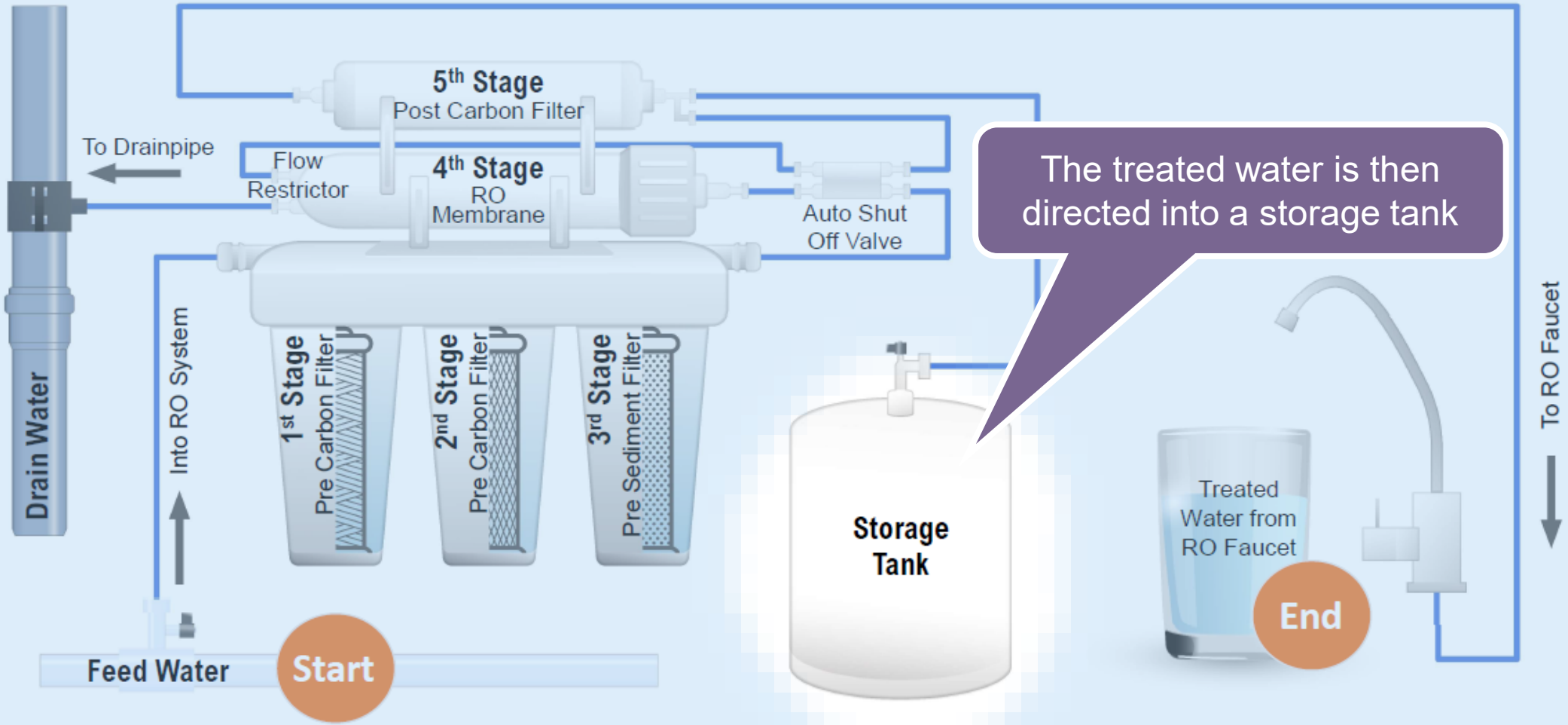


Next, the water passes through the automatic shutoff valve, which stops the treatment process when the tank fills to a certain point, preventing the system from overflowing

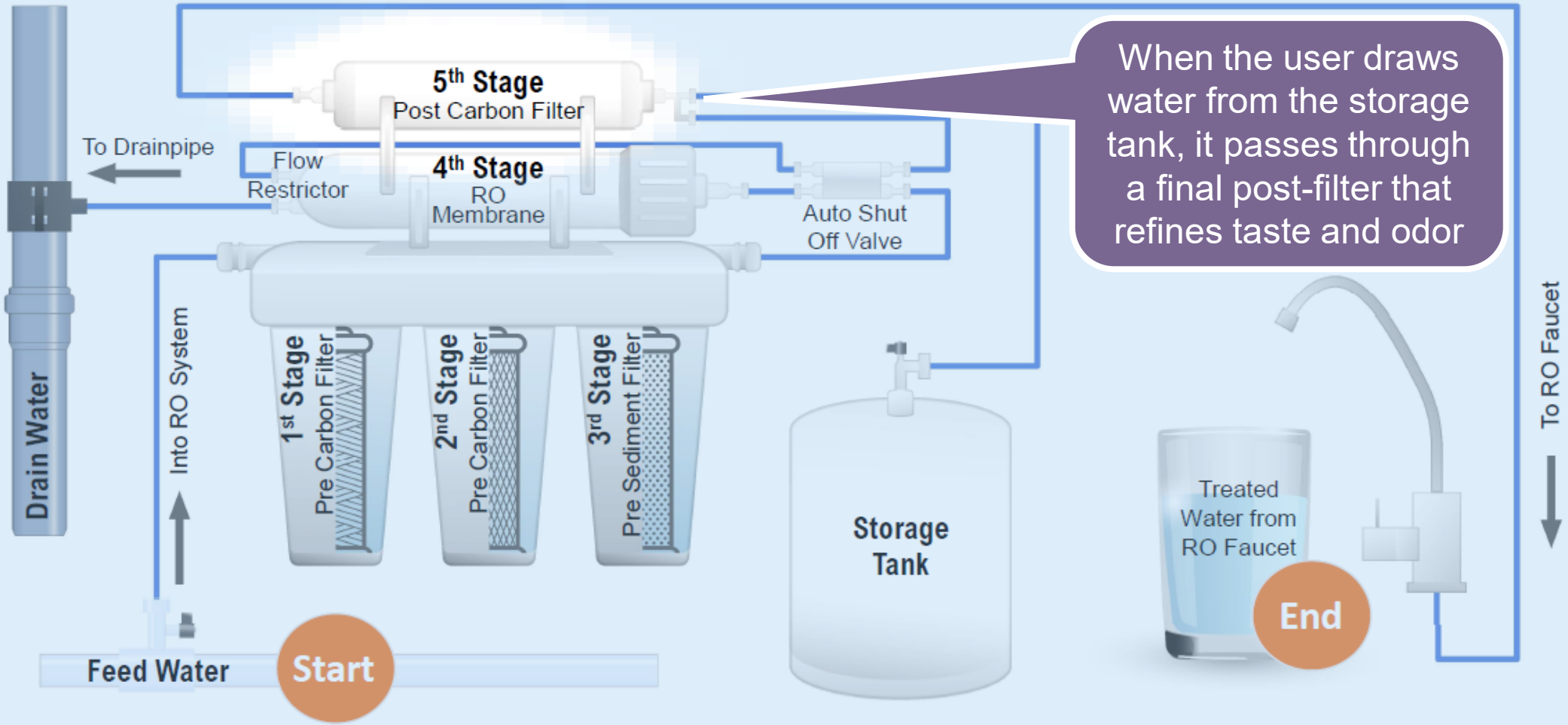
RO System Diagram



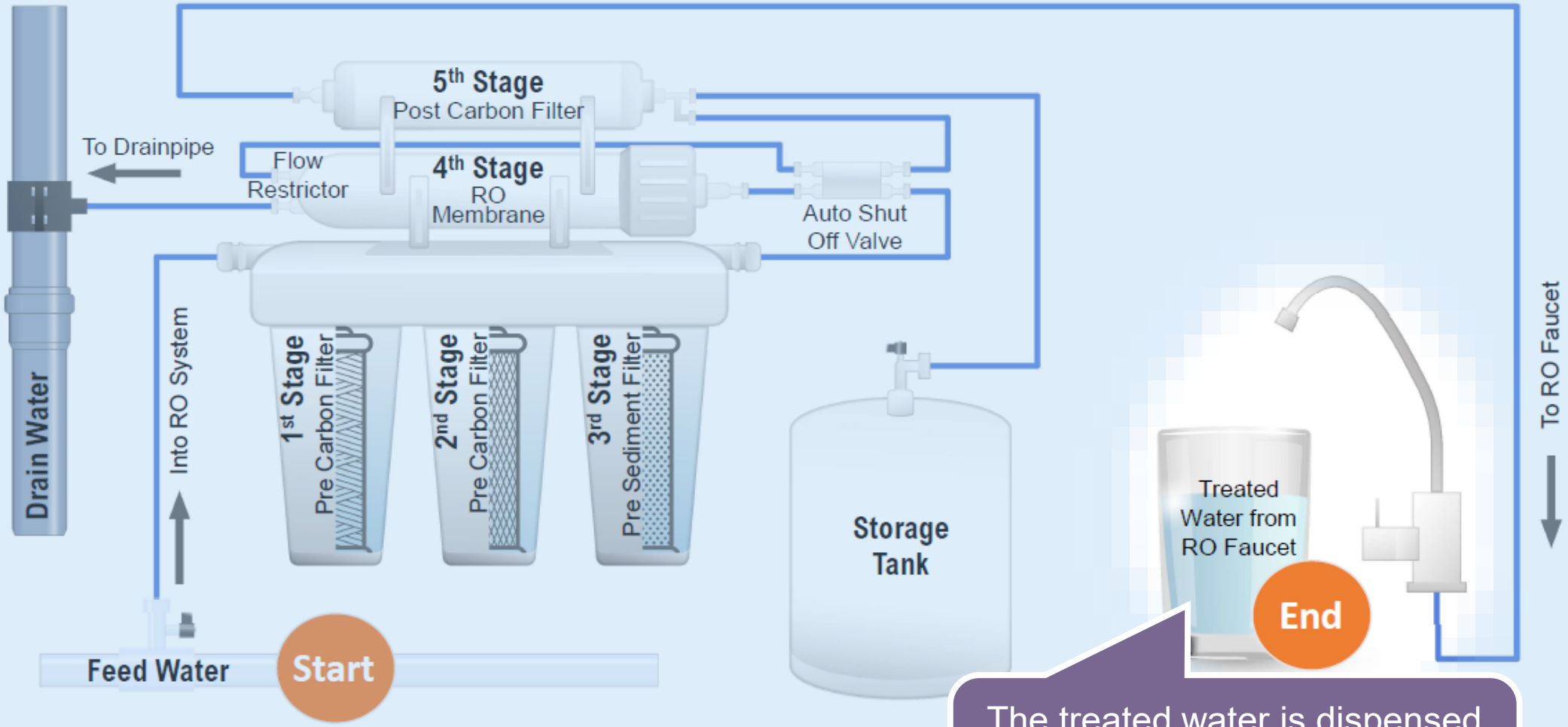
RO System Diagram



RO System Diagram



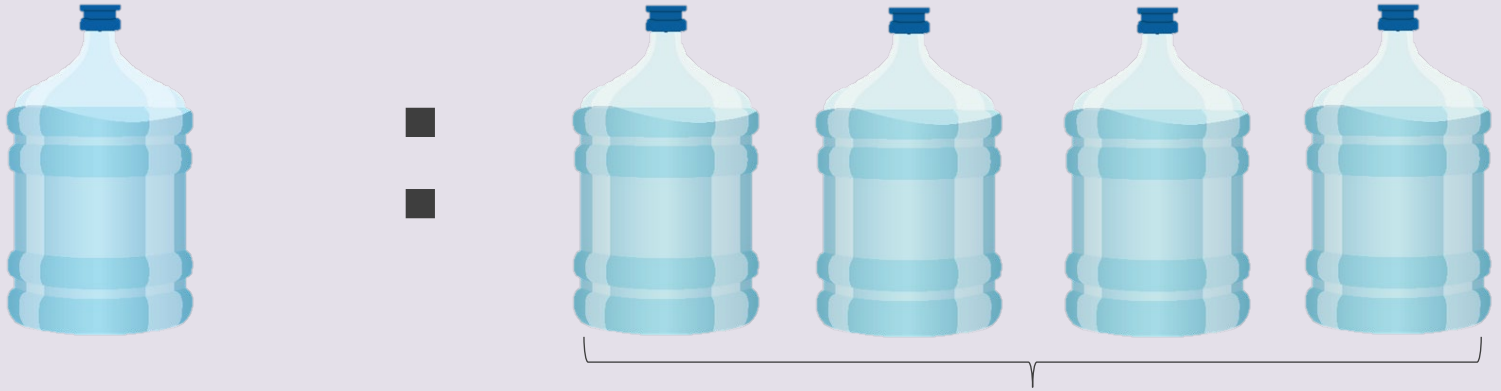
RO System Diagram



The treated water is dispensed out of the RO faucet for drinking, cooking, or other use

RO System Water Use

- While RO systems can improve water quality, these systems also can generate a significant amount of water waste during operation
- A typical residential POU RO system will generate about **four gallons of concentrate for every gallon of permeate** produced



For every 1 gallon of treated water produced…

… 4 gallons of concentrate are sent down the drain.

Existing Standards and Test Methodologies

- There are no current federal requirements that regulate water use of RO systems
- However, there are multiple existing consensus-based industry standards used to certify RO systems based on performance, design and construction, and materials.
- Some of these standards include water efficiency testing procedures and criteria

Existing Standards and Test Methodologies

NSF/ANSI 58-2020 *Reverse Osmosis Drinking Water Treatment Systems*

Scope/Application

POU RO drinking water treatment systems designed to be used for the reduction of specific substances that may be present in drinking water (public or private) considered to be microbiologically safe and of known quality.

- Materials
- Structural performance
- Performance, including flow control, connections, and storage capacity
- TDS reduction by 75 percent
- Verification of other chemical and mechanical reduction claims
- Verification of recovery and efficiency rating claims

ASSE 1086-2020 *Performance Requirements for Reverse Osmosis Water Efficiency—Drinking Water*

Scope/Application

Residential RO systems used to treat drinking water. RO water treatment equipment reduces total dissolved solids, heavy metals, inorganics, and organics water contaminants.

Through reference to NSF/ANSI 58, this standard is intended for residential POU systems, not POE.

- Requires compliance with NSF/ANSI 58
- Membrane life test for high-efficiency membrane systems
- Minimum system efficiency and recovery rating (which impact water efficiency) of 40 percent, tested in accordance with NSF/ANSI 58

Existing Standards and Test Methodologies

ASSE 1087-2018 *Commercial and Food Service Water Treatment Equipment Utilizing Drinking Water*

Scope/Application

Commercial water treatment equipment used in POE and POU applications connected to building plumbing to improve the water quality characteristics of potable water.

- Service flow capacity
- Pressure loss
- Pressure shock
- Structural integrity
- Materials
- Compliance with NSF/ANSI 58 for POU devices

ASSE *Listing Evaluation Criteria (LEC) for Point of Entry Reverse Osmosis Systems* (ASSE LEC 2006)

Scope/Application

POE RO system used to treat drinking water with a permeate flow of two gallons per minute (gpm) or greater. POE ROs are typically installed after the water meter in residences or businesses.

- Chemical reduction claims
- Materials safety and performance

Product Market and Water Savings Data

- EPA has not identified or been provided with any information that communicates current market size or trends.
    - Anecdotally, it has been suggested that approximately 1 million units are sold per year.
- To date, there are no known studies that focus specifically on residential or POU RO systems and their potential for water savings.
- This is a data gap that may require further research to demonstrate the potential for water savings within the RO systems product category.

Product Market Data

NOI Questions and Data Gaps

Existing Studies

- Are there any existing studies that investigate water savings potential of RO systems or the impact of water efficiency on RO systems?

Product Market

- WaterSense is seeking RO system market data on the number of installed units and new units sold annually to assess the impact of a potential WaterSense specification on potential water savings.

Questions and Discussion

Part 3

WaterSense Notice of Intent (NOI)

WaterSense NOI: Scope

EPA has modified NSF/ANSI 330 definitions to define the following terms:

- **RO System:** A system that incorporates a water treatment process that removes undesirable materials from water by using pressure to force the water molecules through a semipermeable membrane.
- **POU RO System:** A plumbed-in or faucet-mounted RO system used to treat the drinking and/or cooking water at a single tap or multiple taps, but not used to treat the majority of water used for washing and flushing or other non-consumption purposes at a building or facility. Any batch RO system or device not connected to the plumbing system is considered a point-of-use RO system.
- **POE RO System:** An RO system used to treat the water supply at the entry of a building or facility for drinking and for washing, flushing, or other non-consumption use. A POE RO system has a minimum initial clean-system flow rate of not less than 15 liters per minute at 103 kilopascals pressure drop and 18 ± 5 °C water temperature (not less than four gallons per minute at 15 psig pressure drop and 65 ± 10 °F water temperature).

WaterSense NOI: Scope

- EPA intends to limit the scope of a potential WaterSense specification to POU RO systems, as previously defined, consistent with the applicability of NSF/ANSI 58
- Within the POU category, WaterSense does not intend to distinguish among the different types of POU RO systems (e.g., countertop, under-sink) in terms of the water efficiency or performance requirements
- WaterSense also does not intend to distinguish between residential and commercial units
- EPA intends to exclude POE RO systems from the scope of a potential WaterSense specification

WaterSense NOI: Scope

NOI Questions and Data Gaps

- WaterSense is seeking input on the definitions of “RO system,” “POU RO system,” and “POE RO system” and would also be interested in other accepted industry definitions
- WaterSense is seeking input on the intended scope of a potential specification that includes POU RO systems, as defined previously, and excludes POE systems

WaterSense NOI: Scope

- WaterSense is considering whether to include high-efficiency RO membranes (in addition to entire systems) in the scope of its specification to help distinguish them from typical membranes

- Potential benefits of distinguishing high-efficiency membranes:
  - Help consumers identify appropriate replacement parts for their high-efficiency system
  - Encourage consumers with less efficient systems to purchase compatible high-efficiency membranes to increase water efficiency

WaterSense NOI: Scope

- Beyond potential consideration for labeling RO membranes, WaterSense does not intend for the specification to apply to other accessories or “add-on” devices intended to improve product efficiency, production rate, or otherwise impact the operation of an RO system
- These products include:
  - Permeate pumps
  - Retrofit recirculation kits
  - RO reject diversion systems

WaterSense NOI: Scope

NOI Questions and Data Gaps

- WaterSense is seeking feedback on whether labeling high-efficiency RO membranes would be beneficial to consumers
- Is it feasible to swap out the membrane in a typical RO system for a higher efficiency membrane to increase the system's water efficiency?
- WaterSense is seeking feedback on its intent to exclude other add-on/aftermarket companion products from the scope of the specification

WaterSense NOI: Scope

- There are a variety of “hybrid” systems within the marketplace that combine RO treatment with other methods of water treatment, including filtration and even ultraviolet (UV) disinfection
- The additional treatment technologies may fall within the scope of other NSF/ANSI standards. For example:
  - Filters are tested and certified according to NSF/ANSI 42 *Drinking Water Treatment Units—Aesthetic Effects* and/or NSF/ANSI 53 *Drinking Water Treatment Units—Health Effects*
  - UV systems are tested and certified according to NSF/ANSI 55 *Ultraviolet Microbiological Water Treatment Systems*
- WaterSense intends to allow hybrid systems to earn the WaterSense label, provided the RO portion of the system meets the scope and all water efficiency and performance requirements of a future specification

WaterSense NOI: Scope

NOI Questions and Data Gaps

WaterSense is seeking input on its intent to include hybrid systems within the scope of a specification. Further, WaterSense seeks feedback on whether it should require that components of hybrid systems be tested and certified to other applicable standards (e.g., NSF/ANSI 42 for filtration, NSF/ANSI 55 for UV).

Questions and Discussion

WaterSense NOI: Water Efficiency

- EPA identified three parameters to define RO system water use/efficiency:

Recovery Rating

- Percentage of the influent water to the membrane portion of the system that is available to the user as RO treated water when the system is operated without a storage tank, or when the storage tank is bypassed and the permeate is open to the atmosphere
- All products have a recovery rating
- Does not incorporate backpressure from tank and therefore will always be higher than efficiency rating

Efficiency Rating

- Percentage of the influent water to the system that is available to the user as RO treated water under operating conditions that approximate typical daily usage
- Only systems equipped with an automatic shutoff valve and a pressurized or non-pressurized tank will have an efficiency rating
- Incorporates backpressure from tank and therefore will always be lower than recovery rating

Pure-to-Waste Ratio

- Ratio summarizing the amount of permeate produced per gallon of concentrate produced
- There are no specific testing procedures for determining pure-to-waste ratio, and the term is sometimes used synonymously with recovery rating, efficiency rating, or neither

WaterSense NOI: Water Efficiency

- NSF/ANSI 58 defines and sets the testing procedures for “efficiency rating” and “recovery rating,” metrics used to convey an RO system’s water efficiency
- For the purposes of this NOI, the calculations from both efficiency rating and recover rating can be simplified as:

$$\textit{Percent recovery and percent efficiency} = \frac{permeate\ volume}{concentrate\ volume + permeate\ volume} * 100\%$$

WaterSense NOI: Water Efficiency

- Therefore, a system (with a storage tank) that generates 4 gallons of concentrate for every 1 gallon of permeate produced would have an efficiency rating of 20%:

$$Percent\ Efficiency = \frac{1\ gallon\ permeate}{4\ gallons\ concentrate + 1\ gallon\ permeate} * 100\% = 20\%$$

WaterSense NOI: Water Efficiency

- The NSF/ANSI 58 standard does not establish criteria for water efficiency, only test methods
- ASSE 1086 references the test methods in NSF/ANSI 58 and further establishes a **minimum system efficiency of 40 percent**
- This efficiency criteria applies regardless of whether the RO system has a tank (i.e., the results of recovery rating and efficiency rating, as applicable, must be at least 40 percent)

WaterSense NOI: Water Efficiency

- EPA intends to adopt the NSF/ANSI 58 testing procedures for recovery rating and efficiency rating
- EPA is also considering adopting criteria to require RO systems to achieve a recovery rating of at least 40 percent and an efficiency rating (as applicable) of at least 40 percent. These criteria align with the requirements of ASSE 1086
- Based on EPA market research, typical RO systems currently on the market have efficiency ratings between 10 and 20 percent

WaterSense NOI: Water Efficiency

Estimated Water Savings:

- The average household uses approximately 950 gallons of water per year for drinking and cooking
- A typical RO system with a 15 percent efficiency rating will send approximately 5,400 gallons of water down the drain per year
- A high-efficiency RO system with a 40 percent efficiency rating will send approximately 1,430 gallons of water down the drain per year
- **A high-efficiency system can reduce water use by approximately 4,000 gallons per household per year**

WaterSense NOI: Water Efficiency

NOI Questions and Data Gaps

- WaterSense is seeking feedback from stakeholders regarding the viability of using the NSF/ANSI 58 recovery rating and efficiency rating test methods to evaluate RO system water efficiency
- WaterSense is seeking feedback from stakeholders on this proposed water efficiency criteria for POU RO systems

WaterSense NOI: Water Efficiency

Automatic Shutoff Devices

- WaterSense intends to require that all RO systems be equipped with an automatic shutoff device.
- Required by ASSE 1086 and other green/water efficiency building standards (e.g., ASHRAE 189.1, IAPMO WE•Stand)

NOI Questions and Data Gaps

WaterSense is seeking input on whether requiring an automatic shutoff valve is a reasonable expectation for a water-efficient RO system

WaterSense NOI: Water Efficiency

System Maintenance and Modifications

During discussions with stakeholders, some indicated that it may be possible for consumers to make modifications or changes to the system after purchase (e.g., replace RO membrane with less efficient model) that would decrease product efficiency.

NOI Questions and Data Gaps

- WaterSense is seeking feedback on the likelihood of these post-purchase modifications and the magnitude of their effect on the RO system's water efficiency
- WaterSense is also seeking suggestions on how to encourage and inform consumers to purchase appropriate replacement parts to maintain their system's water efficiency

Questions and Discussion

WaterSense NOI: Performance and Product Testing

TDS and Contaminant Reduction

- NSF/ANSI 58 evaluates and specifies criteria for total dissolved solids (TDS) percent reduction. A system must meet a **minimum of 75 percent TDS reduction** to be certified

- The NSF/ANSI 58 standard also allows for and provides testing methods and requirements for the removal of other more specific contaminants to verify manufacturer reduction claims

- WaterSense is considering requiring that all labeled products conform to the applicable requirements of NSF/ANSI 58 to ensure adequate contaminant reduction performance criteria are met

WaterSense NOI: Performance and Product Testing

NOI Questions and Data Gaps

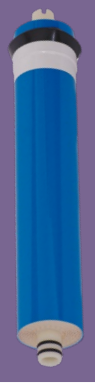
WaterSense is seeking feedback from stakeholders regarding the viability of requiring that WaterSense labeled RO systems meet all of the requirements of NSF/ANSI 58, including the 75 percent TDS reduction requirement

WaterSense NOI: Performance and Product Testing

Membrane and Filter Lifespan

- Filter replacement is important to ensure that the membrane and filters will perform adequately and maintain efficiency throughout their prescribed lifespan

Pre- and post-filters last about **6 to 12 months**



Membranes last about **1 to 3 years**

- Consumers may find it costly, burdensome, or difficult to keep up with regular maintenance if the filters and membrane need to be replaced more frequently

WaterSense NOI: Performance and Product Testing

Membrane and Filter Lifespan

- ASSE 1086 includes testing procedures and requirements for the membrane life of high-efficiency membranes and systems. The following criteria must be met:
  - The percent TDS reduction shall be a minimum of 75 percent each day
  - The flow rate shall not decrease by more than 50 percent of the Day 1 reading throughout the test
  - The system recovery shall be on average a minimum of 40 percent. One tenth of the sample readings may be less than 40 percent but no less than 30 percent. The final recovery measurement shall be a minimum of 40 percent
- WaterSense is considering incorporating the ASSE 1086 membrane life test procedures and criteria into a potential specification

WaterSense NOI: Performance and Product Testing

NOI Questions and Data Gaps

WaterSense is seeking feedback from stakeholders regarding the viability of using the ASSE 1086 membrane life test methods to evaluate membrane lifespan and RO system performance

WaterSense NOI: Marking, Documentation, and Marketing

"Treated-to-Waste Ratio"

- WaterSense is considering whether to require that the efficiency rating (for systems with a storage tank) or recovery rating (for systems without a storage tank) be displayed on the product, product packaging, and associated specification sheet
- However, the distinction between the two values may not be clear to consumers and displaying the value as a percent may be confusing
- WaterSense is considering defining the term "treated-to-waste ratio" as the ratio equivalent of the efficiency rating (for systems with a storage tank) or recovery rating (for systems without a storage tank), as applicable, of a given RO system

WaterSense NOI: Marking, Documentation, and Marketing

NOI Questions and Data Gaps

WaterSense is seeking input on the proposed “treated-to-waste ratio” definition and any other reasonable ways to mark products, product packaging, and specification sheets that would be easy for the consumer to understand

WaterSense NOI: Marking, Documentation, and Marketing

Hybrid Systems

- For hybrid systems that use additional treatment technologies (e.g., UV), product marking should specify that the WaterSense label and criteria apply solely to the RO portion of the treatment process

NOI Questions and Data Gaps

If WaterSense decides not to require certifications or criteria pertaining to the additional treatment technology(ies), WaterSense is seeking input on how to incorporate packaging/labeling requirements that clarify which treatment technology is certified under the WaterSense label

WaterSense NOI: Marking, Documentation, and Marketing

Messaging

- In many cases, RO systems are not the most water-efficient drinking water treatment solution for a given application

- EPA intends to use careful and considerate messaging so as not to promote the use of RO systems over other water treatment technologies that may be equally or more appropriate

NOI Questions and Data Gaps

WaterSense is seeking input on messaging that can be used so as not to promote the purchase of RO systems when they are not necessary

WaterSense NOI: System Impacts and Other Considerations

Cost to Consumer

- More efficient RO systems may be more expensive than average systems. Similarly, higher efficiency RO systems may have more expensive membranes than average systems (with relatively similar lifespans).

- However, during stakeholder conversations, some indicated it is possible to produce and sell high-efficiency systems, filters, and membranes at similar costs to standard systems and components

NOI Questions and Data Gaps

WaterSense is seeking input on the impact of high-efficiency systems on product and maintenance costs

WaterSense NOI: System Impacts and Other Considerations

Energy Consumption

- Some more efficient RO systems use electric pumps to achieve greater efficiency/recovery ratings
- WaterSense is interested in understanding the current market for RO systems that use energy, particularly as it relates to improving water efficiency
- Would a WaterSense specification encourage and increase the use of electric pumps to achieve greater efficiencies? How much energy do these types of systems consume?

WaterSense NOI: System Impacts and Other Considerations

NOI Questions and Data Gaps

WaterSense is seeking input on the efficiency gains possible from incorporating an electric pump in a system and how much energy these systems tend to use. Should WaterSense consider including a maximum energy or minimum pump efficiency requirement for electric RO systems in its specification? If so, are there data available that could help establish these criteria?

WaterSense NOI: System Impacts and Other Considerations

Wastewater Quantity and Quality

- EPA has not identified any data suggesting there are potential impacts of concern with respect to the discharge of a concentrated waste stream from RO systems
- EPA does not have data on specific impacts to onsite septic systems

NOI Questions and Data Gaps

WaterSense is seeking input on whether RO systems contribute any negative impacts to wastewater and wastewater treatment systems, including septic systems, and whether those impacts are exacerbated with high-efficiency systems. If there are negative impacts, what best practices can be used to mitigate those impacts?

WaterSense NOI: System Impacts and Other Considerations

Use of POU and POE RO Systems to Meet Drinking Water Regulations

- EPA allows small public water systems (PWS) to use POU and POE treatment systems to meet the requirements of the National Primary Drinking Water Regulations (NPDWRs)
- A similar regulation was passed in California as part of the Safe and Affordable Funding for Equity and Resilience (SAFER) program, which aims to minimize disproportionate environmental burdens to disadvantaged communities by ensuring access to safe, clean, and affordable drinking water
- PWSs that are currently using or considering RO systems under these EPA and California allowances may benefit from greater system-wide efficiency

Questions and Discussion

Next Steps

- NOI can be reviewed at www.epa.gov/watersense/point-use-reverse-osmosis-systems
- Submit written comments or additional information and data to watersense-products@erg.com
- EPA will review comments and data submission to determine next steps for developing a draft specification

Contact Us

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