Better Plants®
U.S. DEPARTMENT OF ENERGY

Understanding Your Utility Bills:

Water

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U.S. DEPARTMENT OF ENERGY

Meeting Recording Announcement

This Zoom call is being recorded and may be posted on DOE's website or used internally. If you do not wish to have your voice recorded, please do not speak during the call or disconnect now. If you do not wish to have your image recorded, please turn off your camera or participate only by phone. If you speak during the call or use a video connection, you are presumed to consent to recording and to the use of your voice or image.

New - Better Climate Challenge

- **Portfolio-wide reduction in carbon emissions of at least 50% in 10 years**
  - **25% in 10 years for energy intensive sectors**

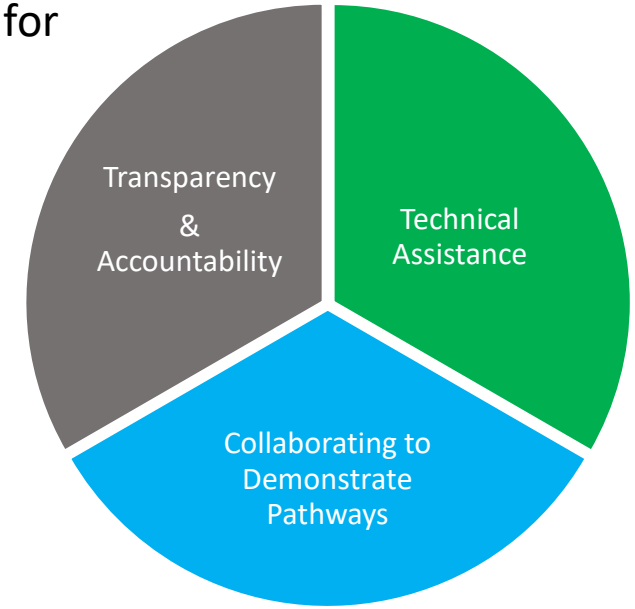
Better Climate CHALLENGE
U.S. DEPARTMENT OF ENERGY

- ***Goal Parameters***
- Reduction includes Scope 1 & 2 emissions – no offsets
- Baseline up to 5-years back from join date
- Encouraged to establish an absolute target, but intensity-based targets will be accepted
- Pursue an energy efficiency target that will contribute towards the 50% emissions reduction. This target is intended to encourage prioritizing energy efficiency when pursuing a decarbonization plan.

Core program components – transparency, accountability, and technical assistance

Transparency & Accountability

- Annual energy and emissions data reporting for 10-year commitment
- Breakdown of emissions reductions by energy efficiency, renewable energy, and renewable energy certificates



Technical Assistance

- Data driven solutions to address barriers and overcome hurdles, that can be deployed at scale to the market
- Identify technology gaps that can inform R&D

Collaborating to Demonstrate Pathways

- Partners commit to work with DOE and showcase their barriers and solutions
- Regularly connect with DOE to provide updates and discuss progress
- Actively participate in a working group with peers and technical experts to discuss barriers, exchange best practices, and identify solutions

Participation

What does an organization commit to?

- Reduce GHG emissions across their U.S. building or plant portfolio by at least 50% over 10 years without the use of offsets.
- Pursue an energy efficiency target to demonstrate how their organization is prioritizing building performance as a decarbonization strategy.
- Participate in at least one working group to discuss barriers, exchange best practices, and identify solutions.
- Develop an organization-wide plan with GHG emissions reduction milestones.
- Share portfolio-wide energy performance and scope 1 and 2 emissions data for the duration of the 10-year goal timeframe.

How will DOE work with organizations?

- Provide technical assistance and support partners' commitment to measure, track, and improve portfolio-wide GHG performance.
- Collect and share best practices and highlight options that have been used to measure and reduce operational GHG emissions.
- Facilitate peer-to-peer learning among partners and convene working groups to discuss barriers and identify solutions.
- Provide national recognition for achieving program milestones and GHG emissions reductions.

Why Join?

It's Good for your Organization and for the Future

- Save energy and money and be ready for the future. Greater energy efficiency and efforts to decarbonize position you well for future resilience and success
- Continue to be leaders in your local communities – and on the national level

Drive Market Transformation with Other Leaders

- Join a network of market leaders that are stepping forward to work together as part of this national platform
- Help inform DOE and other federal R&D, prioritization

Technical Assistance and Peer-to-Peer Exchange and Network

- Partners can access peer-to peer exchange opportunities and leverage technical assistance from DOE and the national labs
- Learn and share real-world challenges and solutions through meetings, webinars, conferences, regional meetups

Recognition

- National recognition for leadership, innovation, results and shared solutions

Energy Awareness Month

Yesevents.com/EnergyAwareness

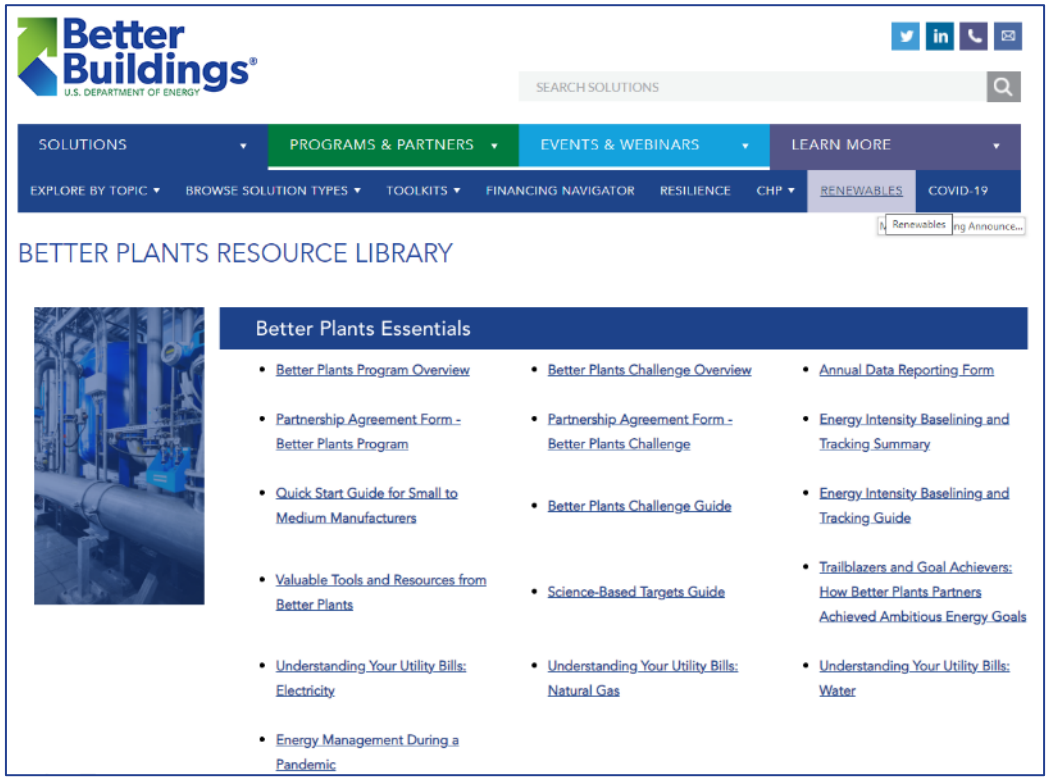
Energy Awareness Month Webinar Schedule

Date	Title
Thursday, Oct 7, 1pm – 2pm ET:	Quick Start Guide to Saving Energy for Small to Medium Manufacturers
Tuesday, Oct 12, 11am – 12pm ET	The Updated Energy Intensity Baselining and Tracking Guide
Thursday, Oct 14, 1pm – 2pm ET	Understanding Your Electricity Bills
Tuesday, Oct 19, 11am – 12pm ET	Understanding Your Natural Gas Bills
Tuesday, Oct 26, 11am – 12pm ET	Understanding Your Water Bills
Thursday, Oct 28, 1pm – 2pm ET	Lessons Learned From Goal Achievers

Yesevents.com/EnergyAwareness

Engaging with DOE

- Have questions? Please use the Zoom chat!
- Want to learn more? energy.gov/BBSC



Today's Presenter

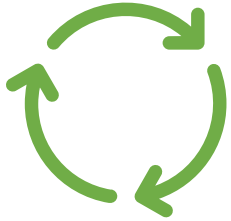
Alex Botts
Oak Ridge National Laboratory

About Better Buildings, Better Plants

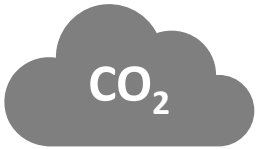
Helping manufacturers and other industrial partners save money and improve their resource efficiency.

Increased Energy Productivity

Greater Water Savings



Improved Waste Reduction



Lower Carbon Emissions

Better Plants Resources

NO-COST SOFTWARE & TOOLS

Access to no-cost software and tools to identify and implement energy saving opportunities and manage energy use.

- **60+ Calculators**
- **20+ No-Cost Tools for Loan**
- **Financing Navigator**
- **No-Cost Resources & Guides**

TRAINING & EDUCATION

In-Plant Trainings Conducted to Date

Multi-day trainings for staff to identify, implement, and replicate energy savings projects.

No-Cost Webinars & Growing

RECOGNITION

49 Better Project & Better Practice Winners

For innovative and industry-leading accomplishments in implementing and promoting company-wide practices, principles, and procedures of energy management, as well as improvement projects at individual facilities.

Goal Achievers

National Recognition in Media and Online

Solutions on Solution Center

INNOVATION & LABS

National Labs Across the Country

Partnerships with the National Labs spurs innovation.

Lab Technology Days

Sneed peek at early-stage R&D Technologies

Field Validation

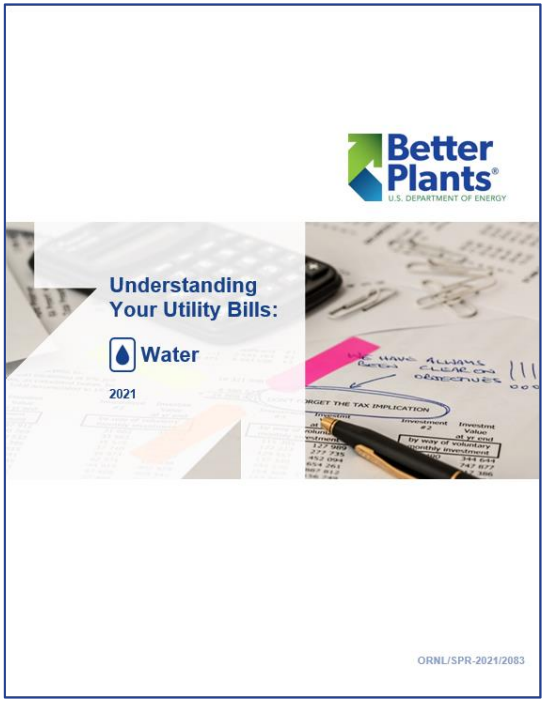
A new pilot for partners to accelerate the voluntary adoption of cost-effective, high-impact technologies while reducing adoption risks.

What Leadership Looks Like

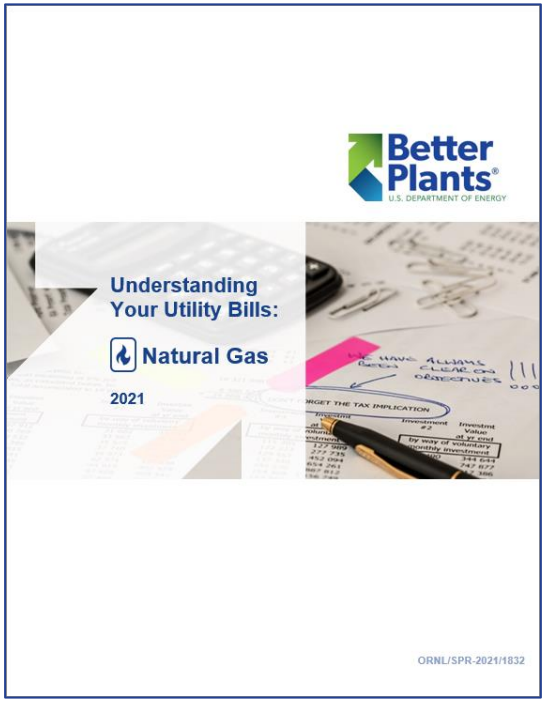
250+ partners across the United States and territories

Understanding your Utility Bills

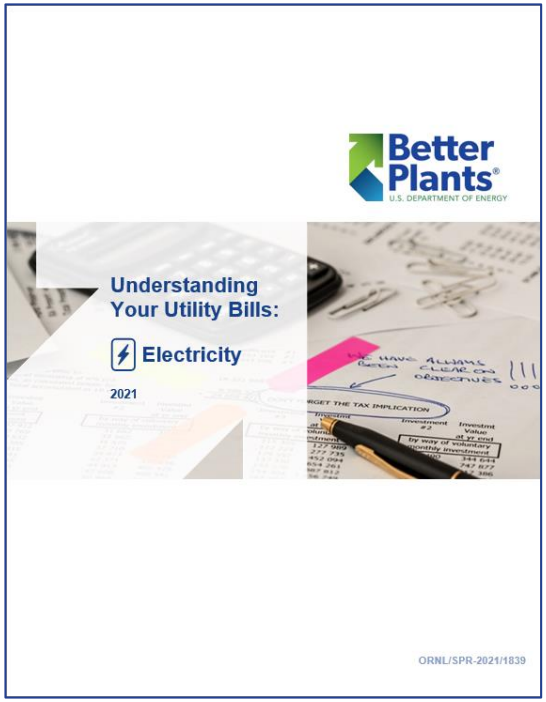
Just one in a series of guidance documents:



Water Bills



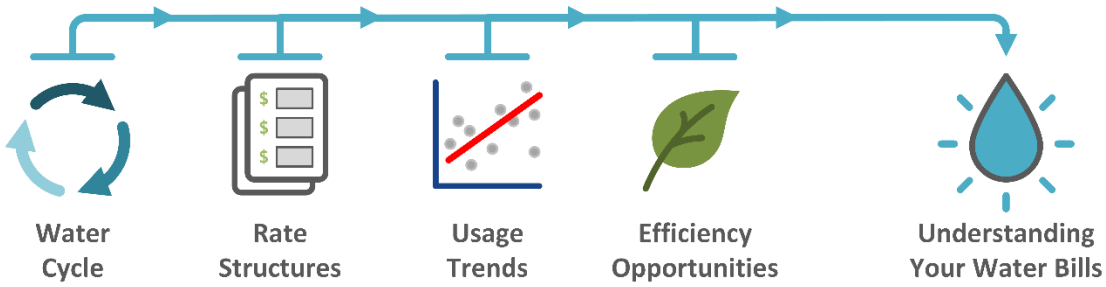
Natural Gas Bills



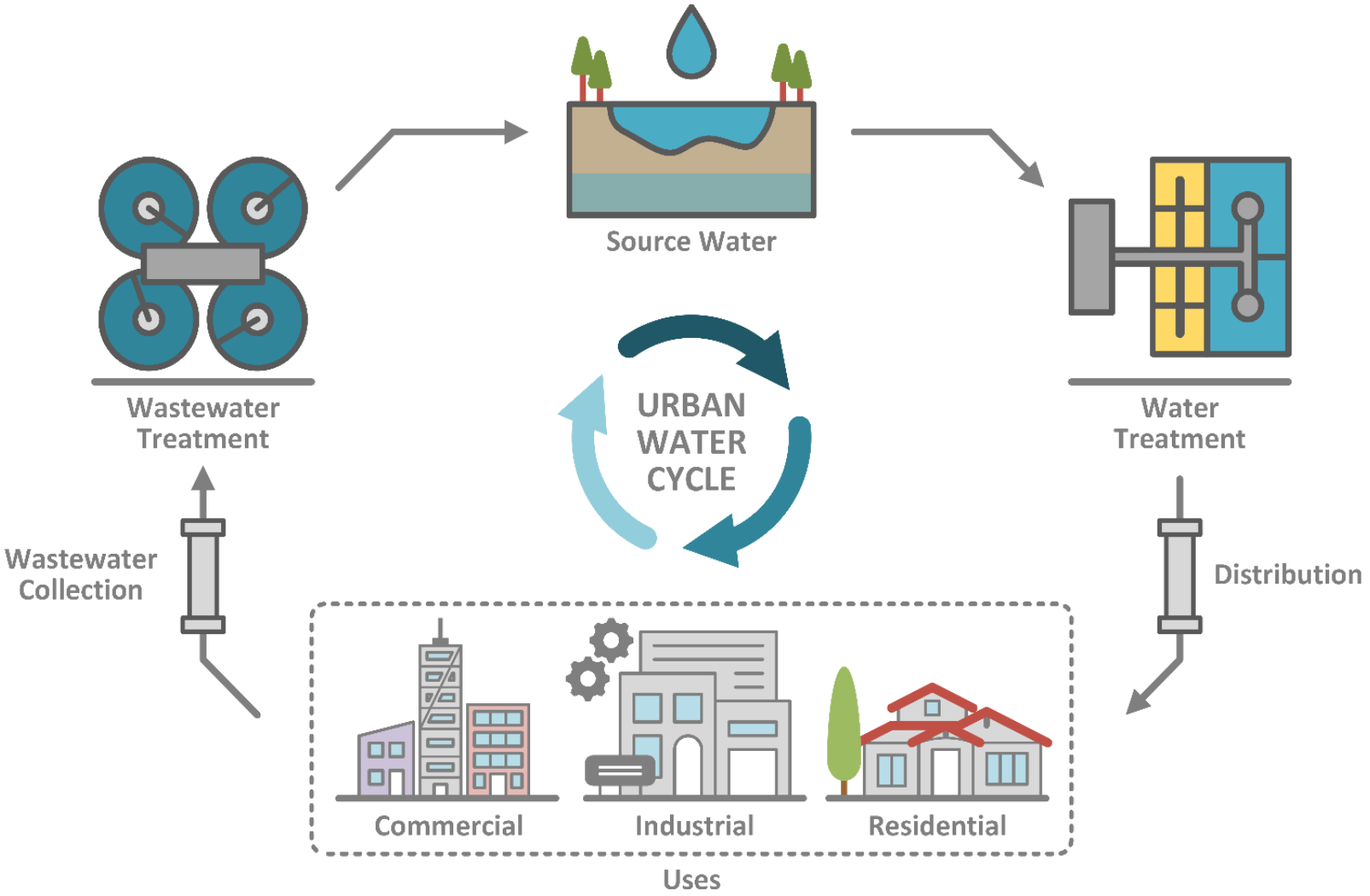
Electricity Bills

Using the Guide

- Water bills can be hard to decipher
- Some bills can be very detailed, some are very short
- Some charges appear each month, some do not
- Understanding your bills and why your utility charges different fees is important to save water and cost
- The guide covers the basics of water and sewer bills:

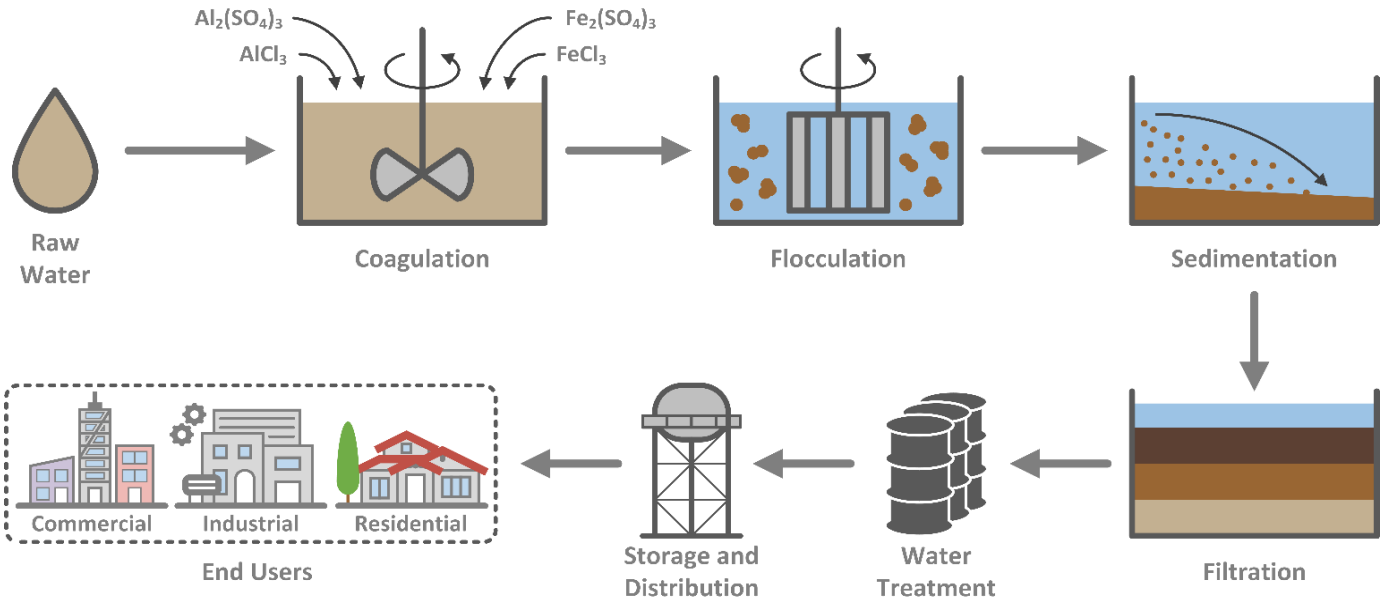


The Urban Water Cycle

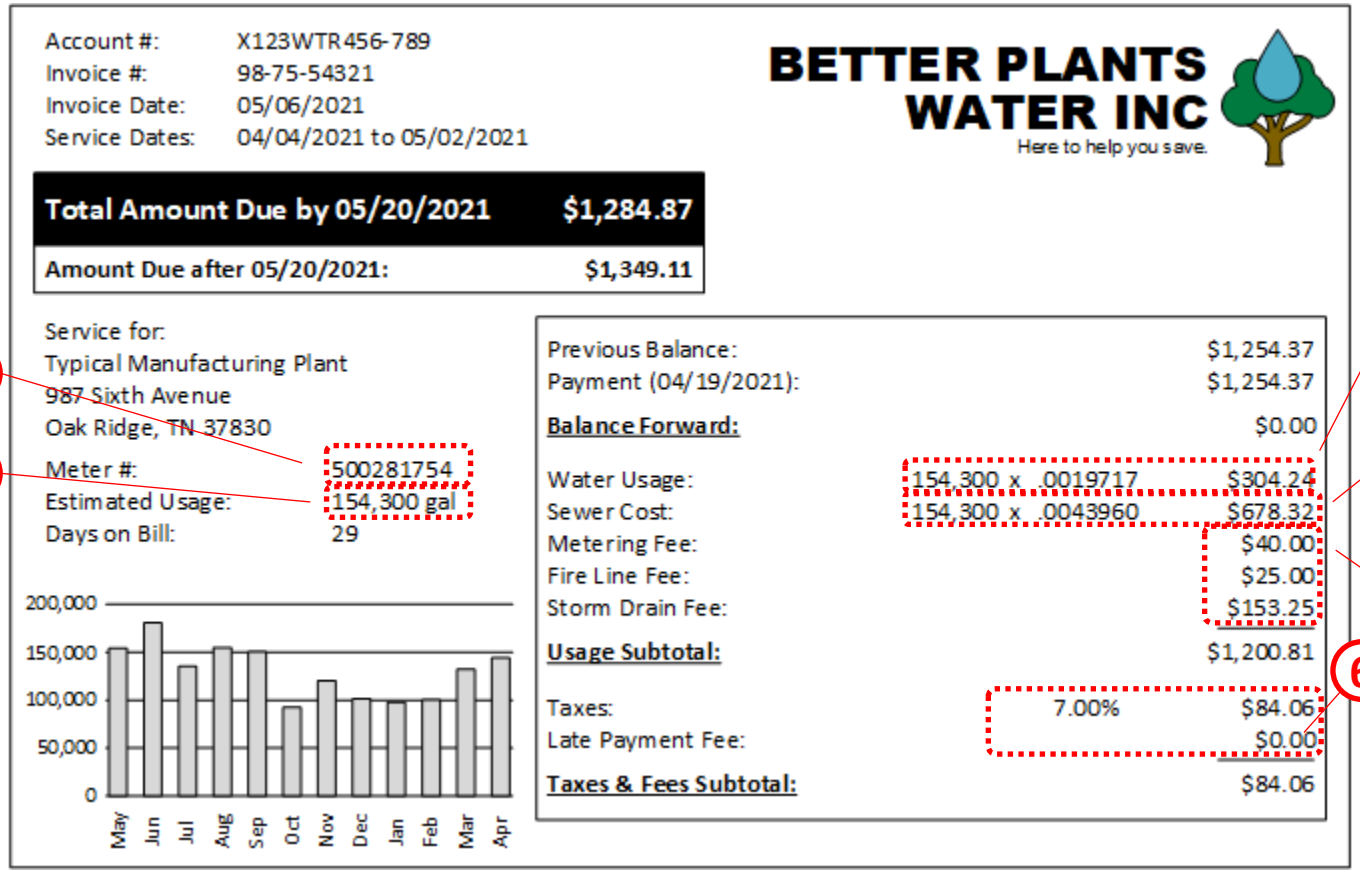


Treatment Process

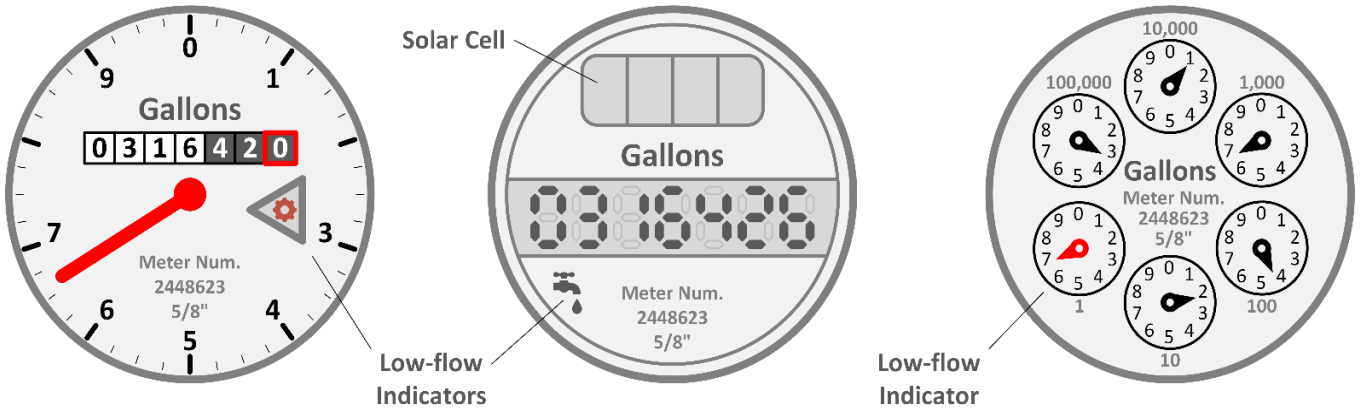
1. **Coagulation and flocculation**—Positively charged chemicals are added to the incoming water and debris, causing them to bind with each other forming floc.
2. **Sedimentation**— Floc will settle to the bottom, forming a layer of sediment.
3. **Filtration**—Filtration systems include activated carbon, reverse osmosis membrane, or mixed media (sand, gravel, and charcoal) or a combination
4. **Disinfection** —Chemicals or UV lights can be used to remove any remaining impurities and help protect the treated water during distribution to end users.



Key Components to Your Water Bills



Consumption Charges



(a) Analog (b) Digital (c) Dial

- Water ***Consumption*** or ***usage*** is the total amount of water your facility uses to make products
- Usually measured in gallons or cubic feet in the US
- Without sewer metering this value can also be used as the sewer volume

Sewer Charges

Without a sewer meter the sewer volume is assumed to equal the incoming volume

- Water In = Water Out

If the process consumes a lot of water the facility can:

- Install a sewer meter
- Apply for an **evaporation credit**

Some facilities can treat their own water to meet EPA standards to avoid **sewer treatment surcharges**

Example: Evaporation Credits for a Cooling Tower

The plant monitors both the make-up water rate (12,000 gal/day) and the bleed-off rate (4,500 gal/day). The difference between these two values is the estimated evaporation volume. If the current sewer rate is $0.003/gal and the drift rate is negligible, calculate how much of an evaporation credit the plant could receive.

$$Evaporated\ Water\ Volume = Make\text{–}up\ Water - Bleed\text{–}off\ Water$$

$$= 12{,}000\,\frac{gal}{day} - 4{,}500\,\frac{gal}{day} = 7{,}500\,\frac{gal}{day}$$

$$Evaporation\ Credit\ Savings = Evaporation\ Rate \times Sewer\ Rate$$

$$= 7{,}500\,\frac{gal}{day} \times 30\,\frac{days}{month} \times \frac{\$0.003}{gal} = \$675/month \text{ or } \mathbf{\$8{,}100/year}$$

Industrial Water and Sewer

Industrial Water

- Not as rigorously treated as regular municipal water
- Can be used as process water for non-sensitive products
- Costs **less** than municipal water

Industrial Sewer

- Longer and more involved treatment process
- Used when water is too contaminated for regular municipal treatment
- Costs **more** than municipal sewer

Riders and Fees

- Several other charges can be listed on your bills
- ***Riders*** are modifications to your rate structure
- Usually very descriptive and for specific purposes

Storm Drain Fees

Fire Line Fees

Standby Fees

Sewer Treatment Surcharge

Non-Water Charges

- Some charges on your bills may not be related to consumption or sewer volume
- Fixed charges are built into your rate structure but ensuring you have the right schedule can save costs
- Some charges can be avoided with a little planning

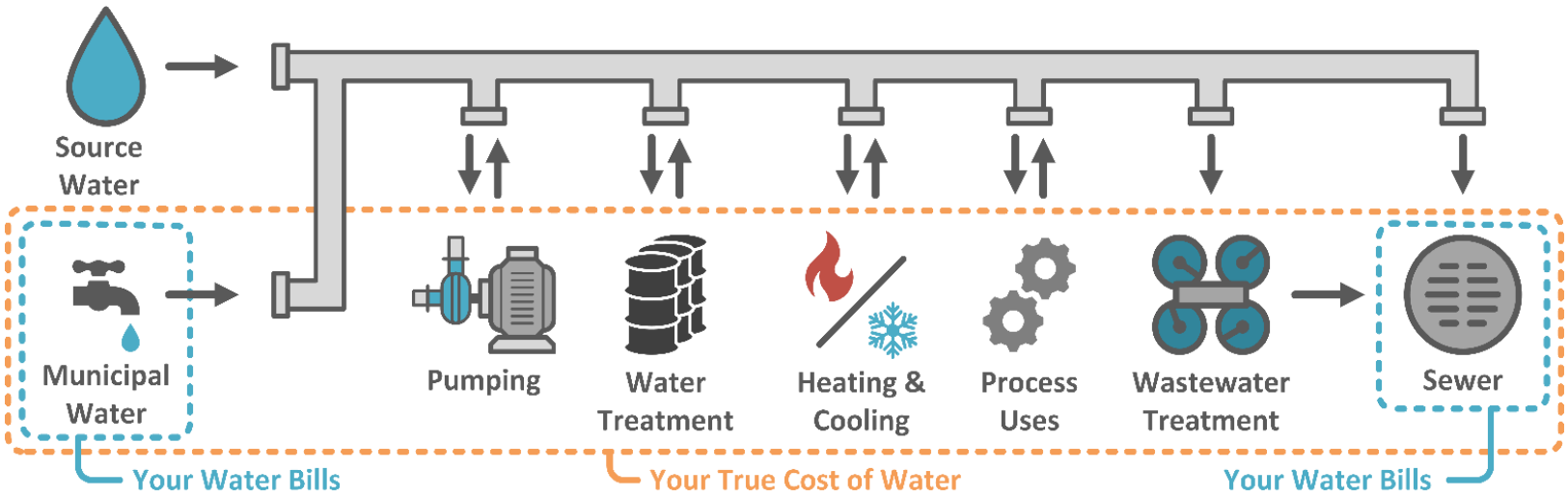
Customer Fees
Metering Fees
Etc.

Late Payment Fees
Insufficient Funds Fees
Etc.

Local Taxes
State Sales Tax
Etc.

→ Some states allow sales tax exemptions for manufacturers under certain conditions!

True Cost of Water

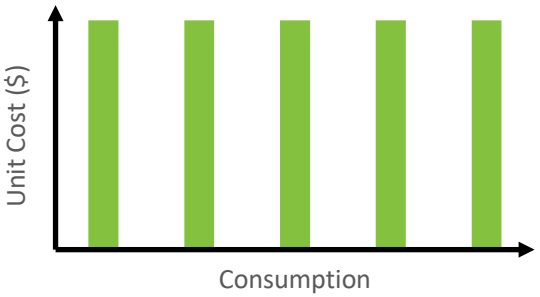


- Includes **all** the costs per unit of water
- Used to better evaluate possible project costs/savings
- Better Plants program has developed the Plant Water Profiler Tool (PWPEx).

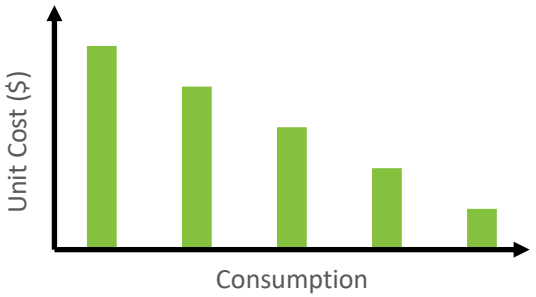
Rate Structures

There are several common pricing options:

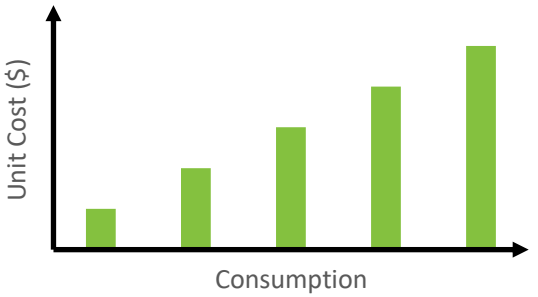
Uniform



Decreasing Block Rate

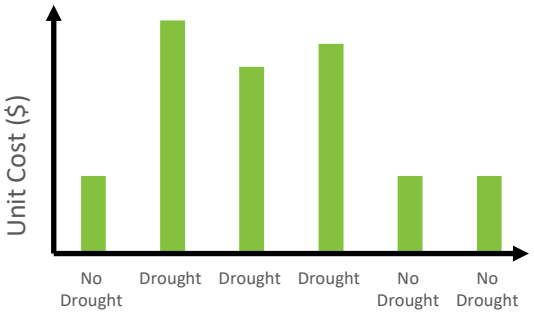


Increasing Block Rate

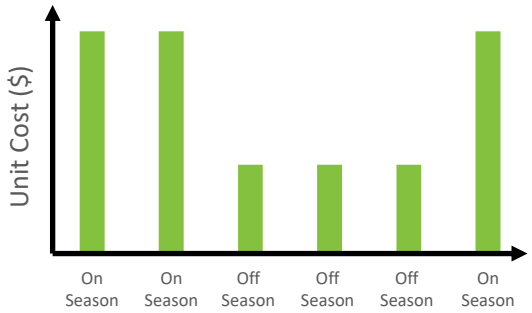


Time of Use Pricing

Drought Rates



Seasonal Rates



Example: Decreasing Block Rate

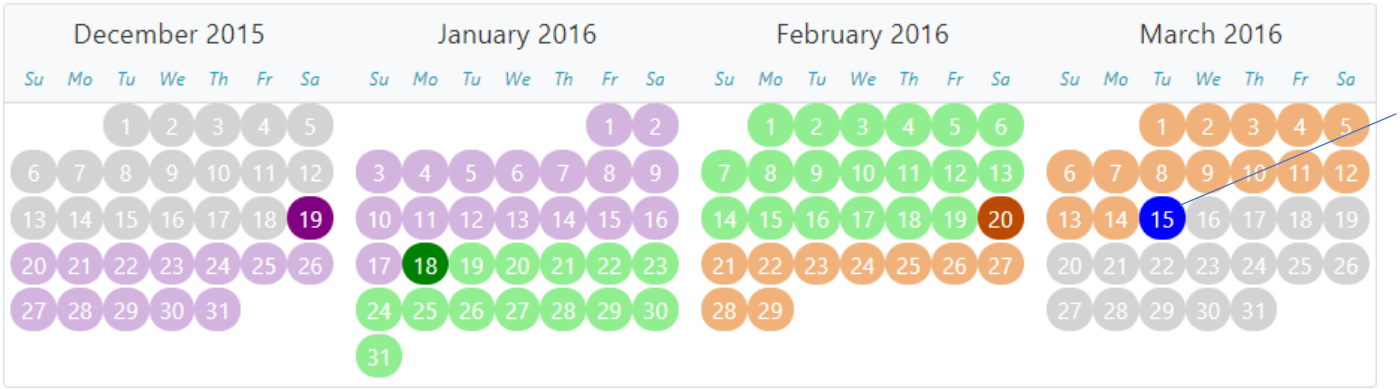
A manufacturers total consumption volume is 524,300 gallons for the month. How much is their consumption charge using the block rate below?

Block Tier	Unit Cost	Block Limit	Customer Volume in Block	Total Volume	Charge
Block 1	$13.9450 per 1,000 gallons	1,500	1,500	1,500	$20.91
Block 2	$9.16800 per 1,000 gallons	28,500	28,500	30,000	$261.29
Block 3	$6.67700 per 1,000 gallons	870,000	494,300	524,300	$3,300.44
Block 4	$4.34300 per 1,000 gallons	8,100,000	0	524,300	-

$$Total\ Water\ Usage\ Charge = Block\ 1\ Charge + Block\ 2\ Charge + Block\ 3\ Charge$$
$$= \$20.91 + \$261.29 + \$3{,}300.44 = \$\mathbf{3,582.64}$$

Calendarization

- Billing periods depend on when the utility reads your water meters
- Normalizing water and sewer data for billing periods is known as ***Calendarization***
- Divide consumption by days on bill and allocate water to calendar month



Opportunities for Cost and Energy Savings

- Sewer Water Metering
- Evaporation Credits
- Discharge Water to Appropriate Places
- Use suitable sources of Water
- Avoiding Late Fees
- Analyze your Water Usage
- Tax Exemptions
- Recreate your Bills

Questions?

All of the resource documents can be found at the Better Plants Resource Library