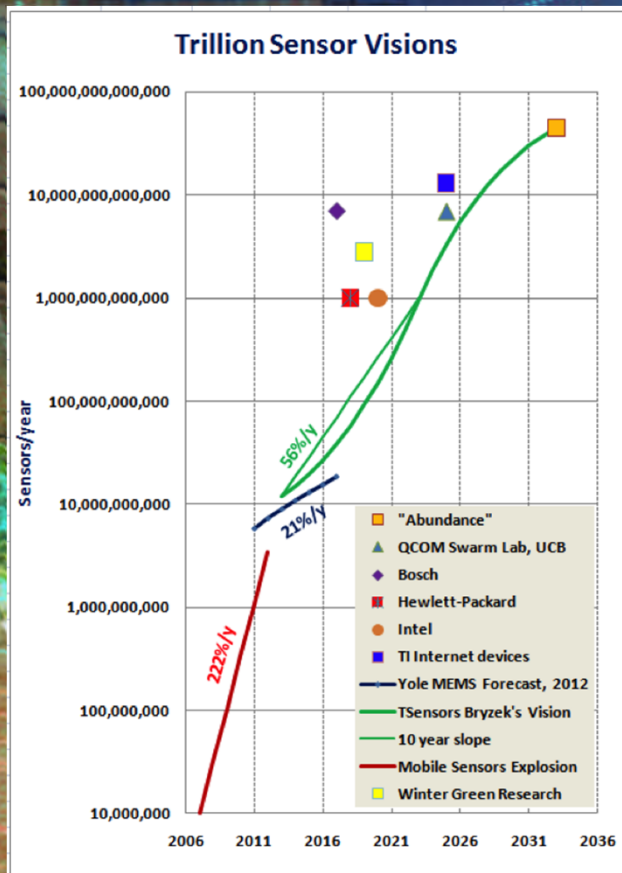


An aerial night view of a city, likely New York City, with a grid of digital lines and a circular pattern overlaid on the image. The text "Water Conservation Strategies For Commercial Buildings" is centered in the middle of the image.

# Water Conservation Strategies For Commercial Buildings

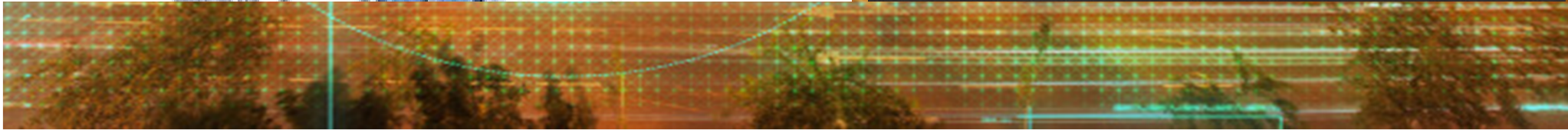
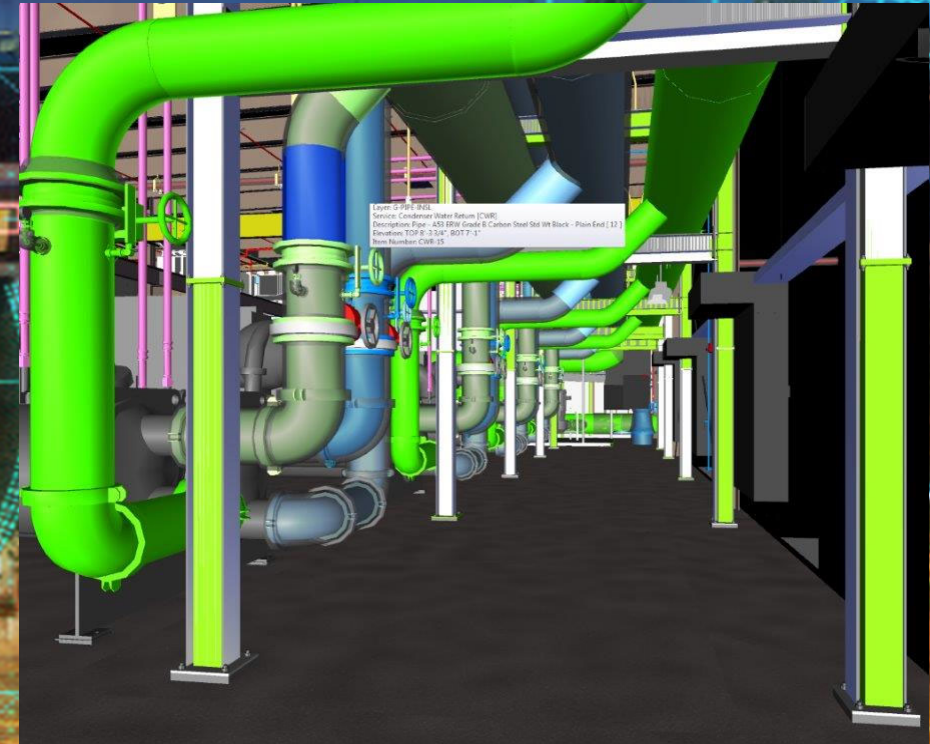
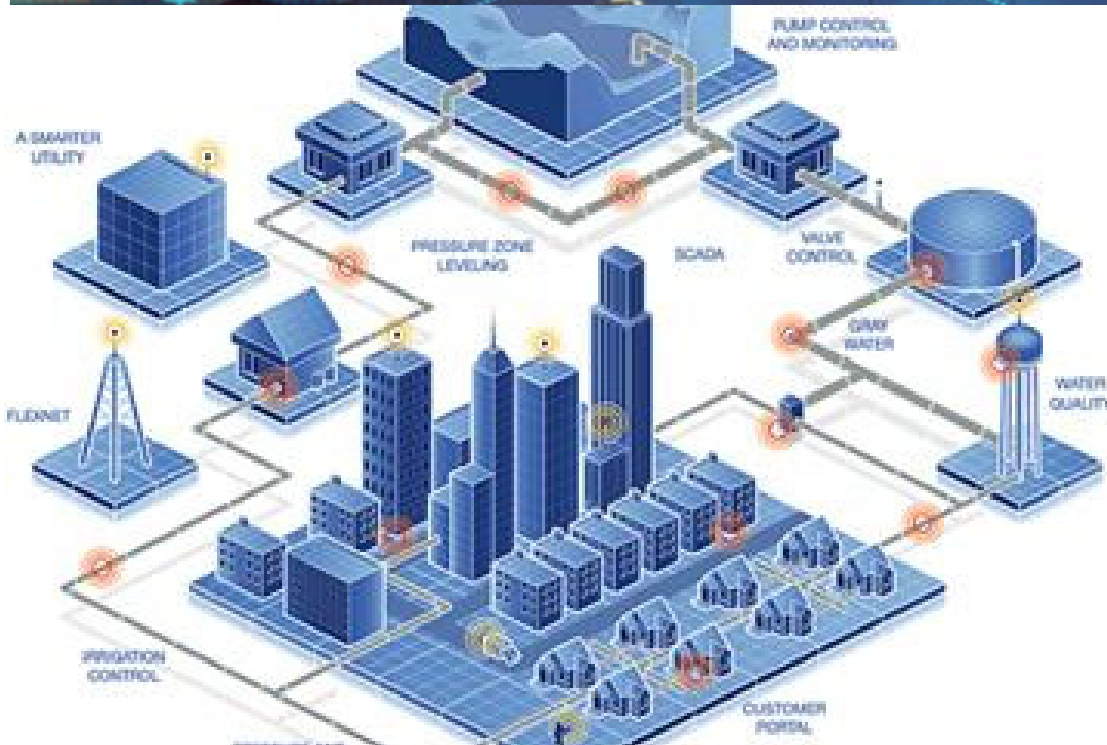


# A Trillion Sensor Economy





# Water Sensors from Source to Use



# Key Takeaways:

- Most Building Mgmt. Systems don't monitor water use
- Data drives Conservation and verifies the results
- Hidden Value in process water optimization
- Water Conservation opens new opportunities for Energy Savings



# Cooling Towers Consume 30% - 50%

**Evaporative  
Cooling Systems  
Consume Large  
Volumes of Water**

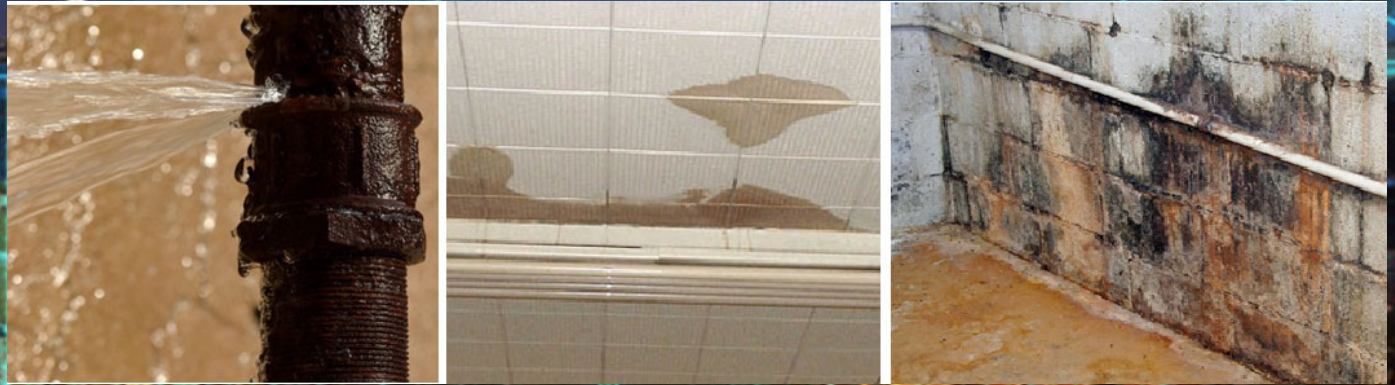
**Most Buildings  
Don't Monitor  
Water Use**



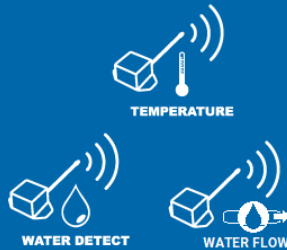


# Most Water Leaks Go Unnoticed Until Damage Occurs

Water Damage  
Insurance Claims  
Cost 3X  
of Other Claims



Identifying Leaks when  
they Occur  
Reduces Risk while  
Saving Cost



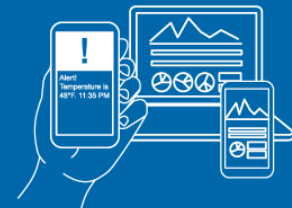
## Wireless Sensors

Monitor & detect conditions  
you want to know about.



## Wireless Gateway

Relays information to online  
monitoring software.



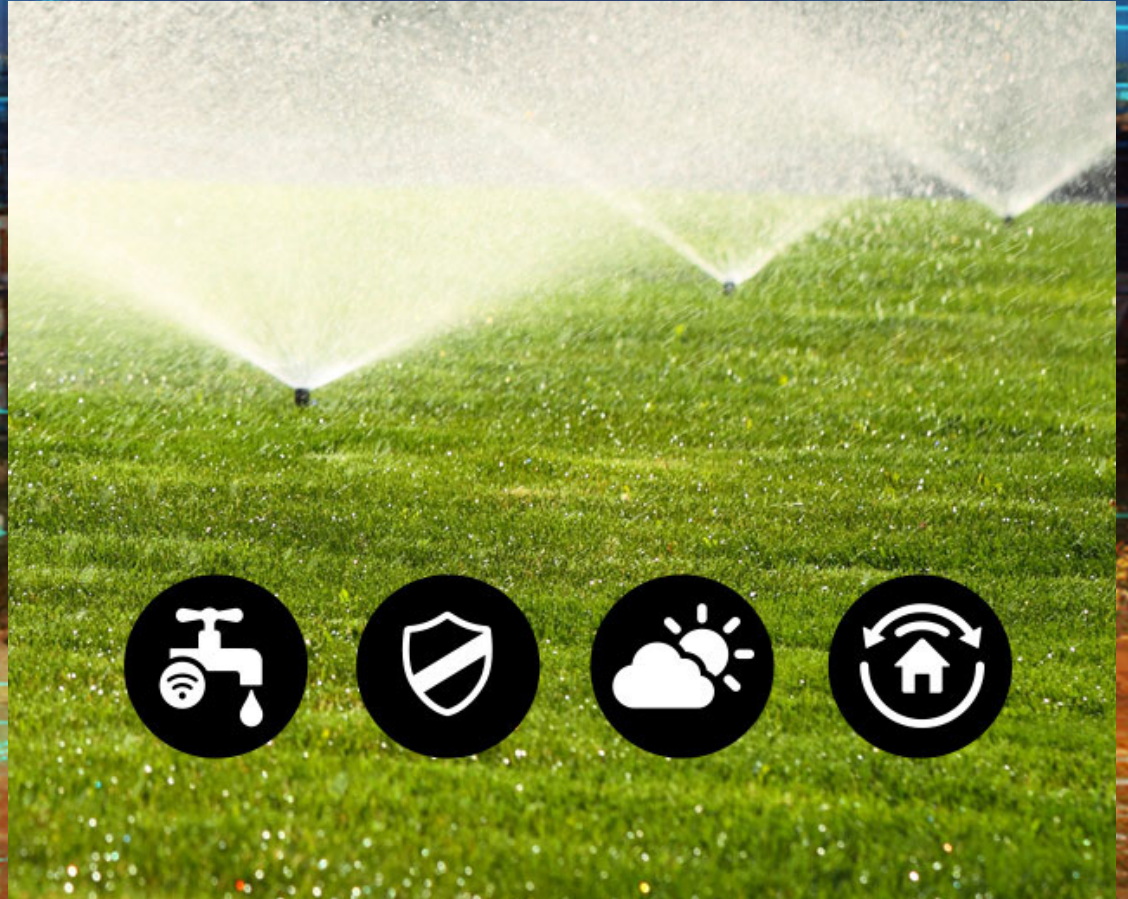
## Dashboard & Alerts

Get alerts for any issue.  
Access data from anywhere.



# Smart Irrigation

- 50% - 70% less water
- Precision watering
- Weather Adjustments
- Malfunction Alerts
- Reduced Chemical Use





# New Technologies that Improve Performance

**Electronic Water Conditioning Prevents Limescale While reducing chemical use, Conserving Millions of Gallons of Water per Year per Building.**



**Wireless Sensors and Cloud-based Analytics Measure & Verify Performance and Cost Savings**





# HydroFLOW Electronic Water Conditioning



Breakthrough Technology for  
preventing scale while reducing  
Water, Energy and Chemical Costs

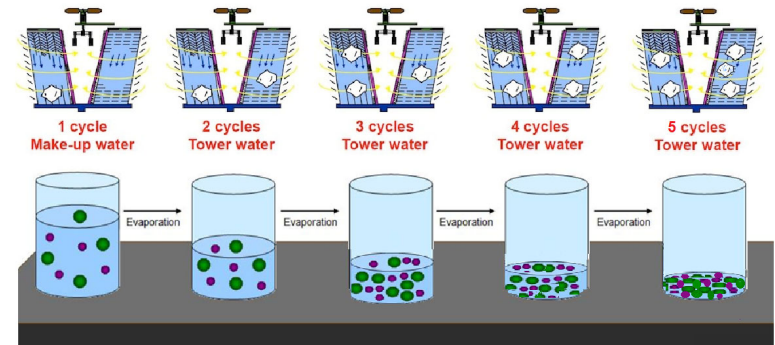


# Cooling Towers Consume Large Water Volumes

## Cycles of Concentration

- When water evaporates, dissolved calcium remains
- Calcium concentrations increase with each cycle
- Increased risk of lime scale accumulation on equipment
- Scale Inhibitor chemistry does not prevent scale

**Large Volumes of Water are Wasted each Day  
to Prevent Scale Formation on Equipment**



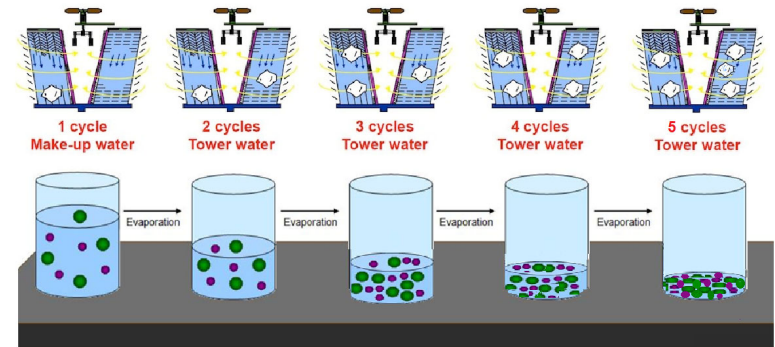


# Buildings Consume Large Water Volumes

## Cycles of Concentration

- When water evaporates, dissolved calcium remains
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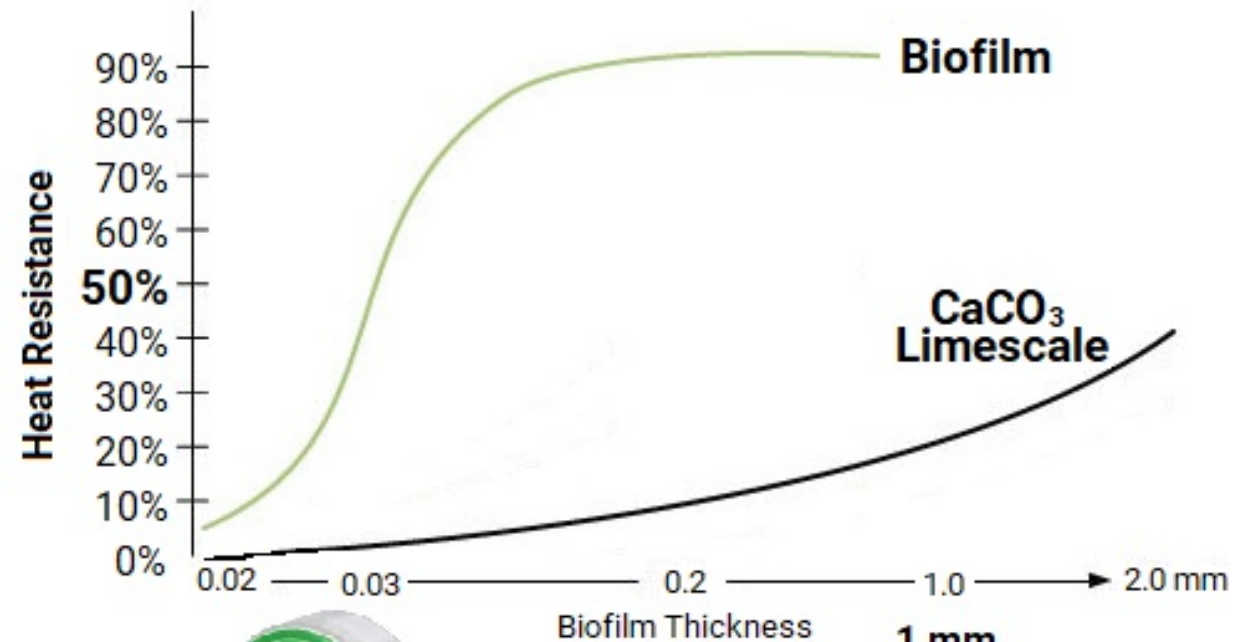
**Large Volumes of Water are Wasted each Day  
to Prevent Scale Formation on Equipment**



# Scale and Biofilm Reduce Energy Efficiency



## Reduction of Heat Transfer





# Safely Increasing Conductivity Reduces Water *and* Sewer Costs

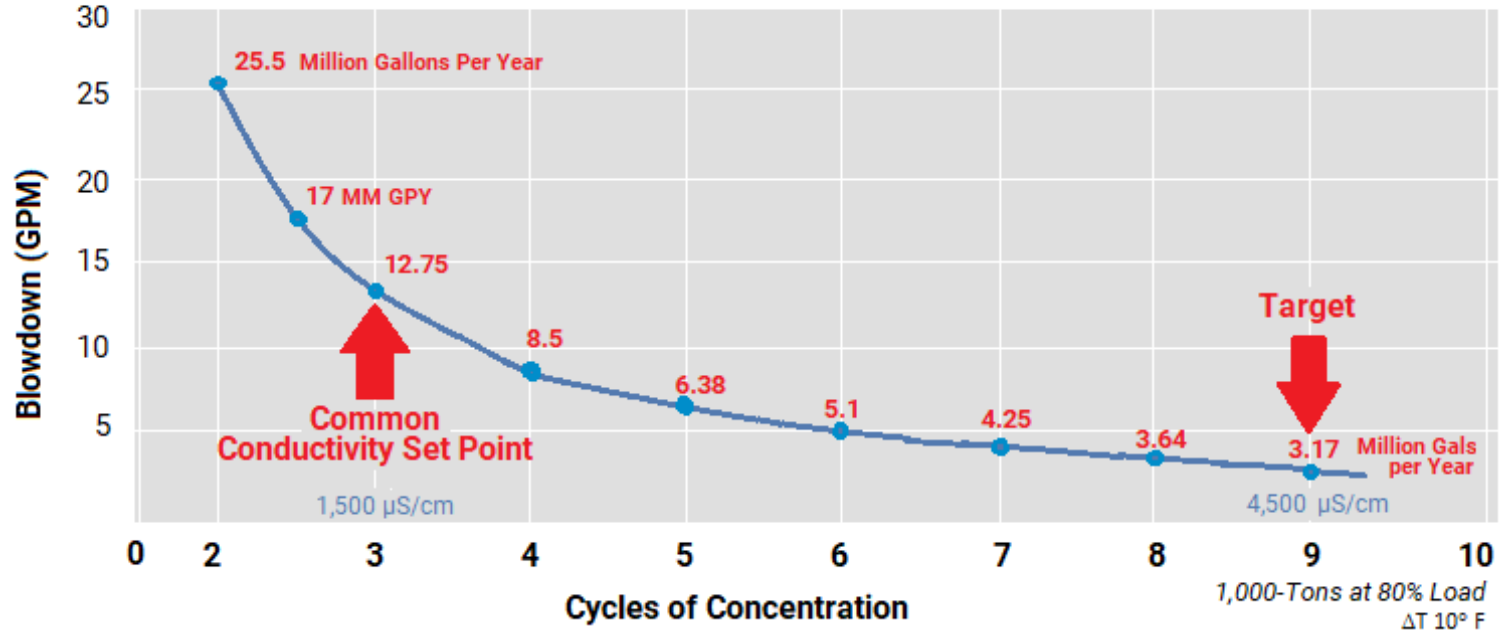
## 3 Cycles of Concentration



## 9 Cycles of Concentration

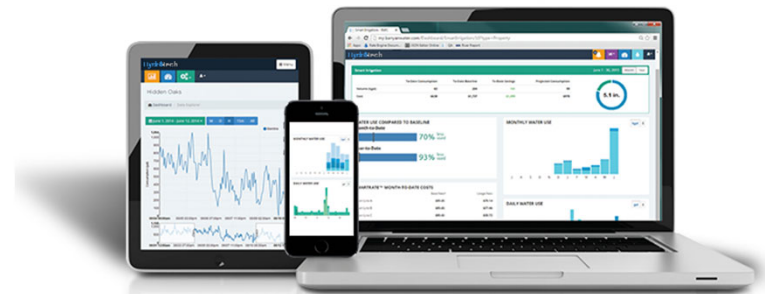


## Cycles of Concentration and Water Conservation



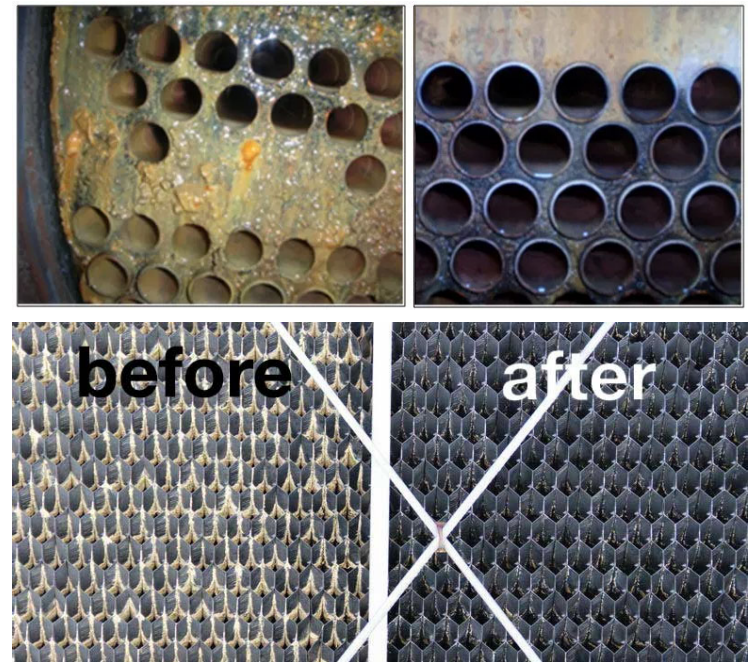
# Increased Cooling System Efficiencies = Water AND Energy Cost Savings

- Increasing Cycles of Concentration Increases Water Conservation
- Reduce energy use by 10-15% from scale and biofilm prevention
- Decrease Labor and Repairs
- Reduce OpEx and Extend Asset Value





# Electronic Water Conditioning: Scale and Biological Control



# Electronic Water Conditioning: Scale and Biological Control

## 2019 Examples Cooling Towers with No Change in Chemistry

Month 1



Month 6 – April 2019



Astra Zeneca Medical Facility, Maryland

Month 1



Month 4 – May 2019



Lamar University, Beaumont Texas



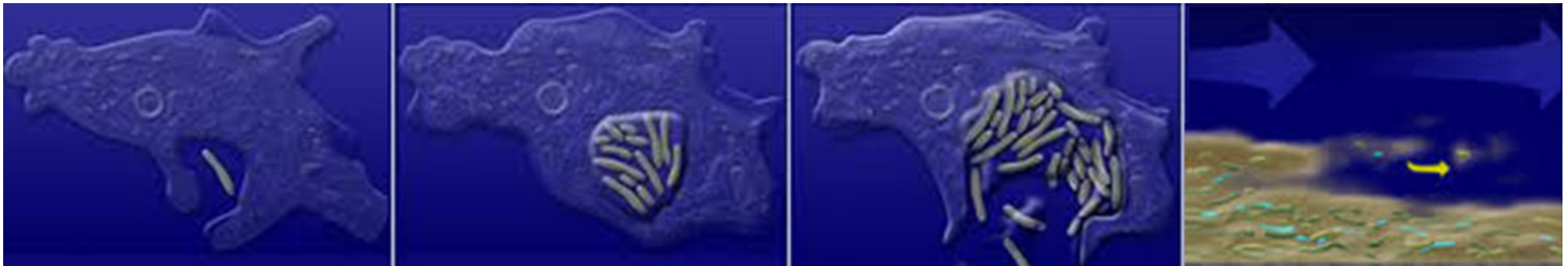
# Legionella Prevention for Cooling Towers

The Pulsed frequency causes biofilm and algae to detach from Pipes and equipment


Enhances Biocide and reduces consumption

Legionella habitat is removed by disrupting algae and biofilm, preventing colonization

An effective Secondary Bio-Control Program that operates 24/7



# Managing Water from a Monthly Bill?



City of Dallas Utilities And Services

Amount Due by 6/19/18 \$7,840.76  
Amount Due after 6/19/18 \$8,232.80

Customer Name: [REDACTED]

Account Number: [REDACTED] Invoice 050801705080 Issued 6/4/18 Page: 1 of 2

Service Address: [REDACTED]

**INVOICE SUMMARY**

Previous Balance	\$5,817.97
Payment(s)	(\$5,817.97)
Balance Forward	\$0.00
<b>Current Charges (See back for details)</b>	
Water Charges	\$4,783.35
Sewer Charges	\$3,057.41
<b>Total Current Charges</b>	<b>\$7,840.76</b>
<b>Total Amount Due</b>	<b>\$7,840.76</b>

**WATER CONSERVATION TIP**

Did you know that watering your lawn deeply twice a week is all it ever needs? Push a 6-inch screwdriver into your lawn - if it goes into the soil easily, your lawn doesn't need water. For more information, go to [SaveDallasWater.com](http://SaveDallasWater.com).

**SPECIAL MESSAGES**

United Way Dallas wants you to be prepared for the unexpected! Boost your emergency savings and earn \$60 in rewards. Go to [SaverLife.org/Dallas](http://SaverLife.org/Dallas) to sign up today.

Join nonprofit BCL of Texas at the 6th annual Home Buyer Fair on Saturday, June 16th from 9am-1pm at Concord Church in Dallas, 6808 Pastor Bailey Dr. [www.homebuyerfair.com](http://www.homebuyerfair.com).

Call 311 to request or report an emergency water turn-off, a water main break, a water meter leak, a fire hydrant leak, or a clogged or overflowing wastewater main.

**BE A GOOD NEIGHBOR!**

**Operation WaterShare.** Helps pay water bills for customers facing temporary financial setbacks.


**Mayor's Summer Reading Program.** The Mayor's Summer Reading program attracts 16,000+ Dallas children choosing to spend summer reading at Dallas Libraries. The program helps students retain reading skills. Programs and prizes make it fun!

**CONTACT US?**

Phone: (214) 651-1441  
Email: [WaterSpecialtyUnit@dallascityhall.com](mailto:WaterSpecialtyUnit@dallascityhall.com)  
Mail: 1500 Marilla, 3ANorth, Dallas, TX 75201

Keep this portion for your records

Please return this portion with your payment 00127 15-081

 Dallas Water Utilities  
PO Box 660025  
Dallas TX 75266-0025

**ACCOUNT NUMBER:**  
100425300

**MAIL PAYMENT TO:**  
City of Dallas  
City Hall, 2D South  
Dallas TX 75277

Amount Due by 6/19/18 \$7,840.76  
Amount Due after 6/19/18 \$8,232.80

Operation WaterShare \_\_\_\_\_  
Mayor's Summer Reading \_\_\_\_\_  
Total Amount Enclosed \$ \_\_\_\_\_

☐ Check here for change of address on back

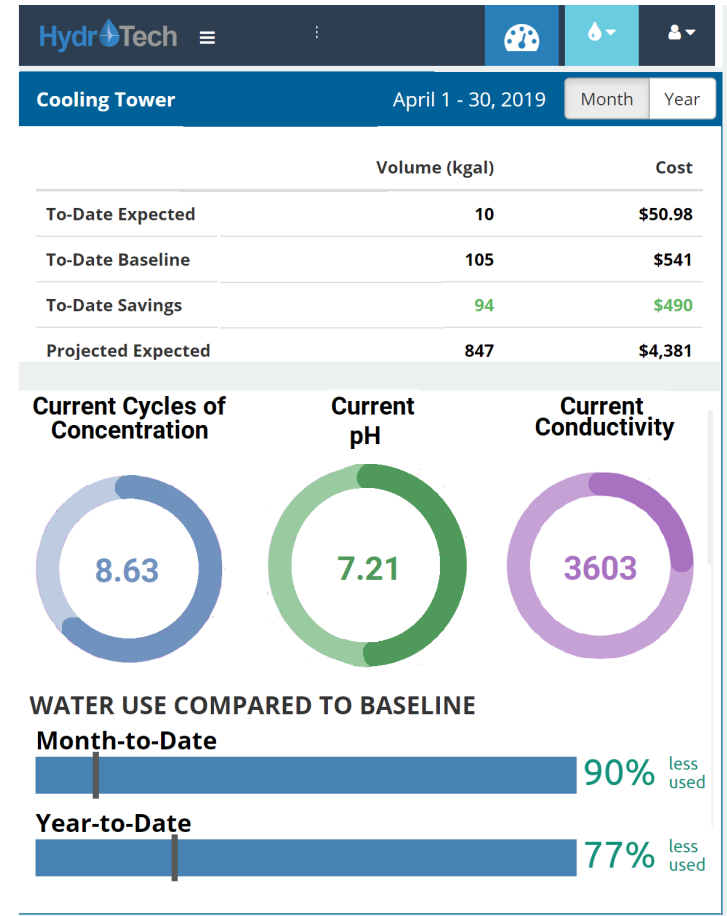
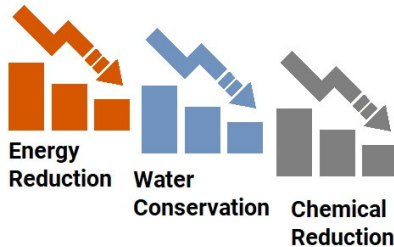
8407653001 00007640765 84076532600 00000000001 101 43 20640765





# Cloud-Based Water Performance Monitoring

- Monitor Make-up and Blowdown Water Use
- Cycles of Concentration
- Conductivity & pH Monitoring
- Baseline Comparisons of Historic Use
- Evaporation Credit Reporting
- Alarms and Reporting



# After 3 Years of Operation

## Sysco Foods Headquarters in Houston

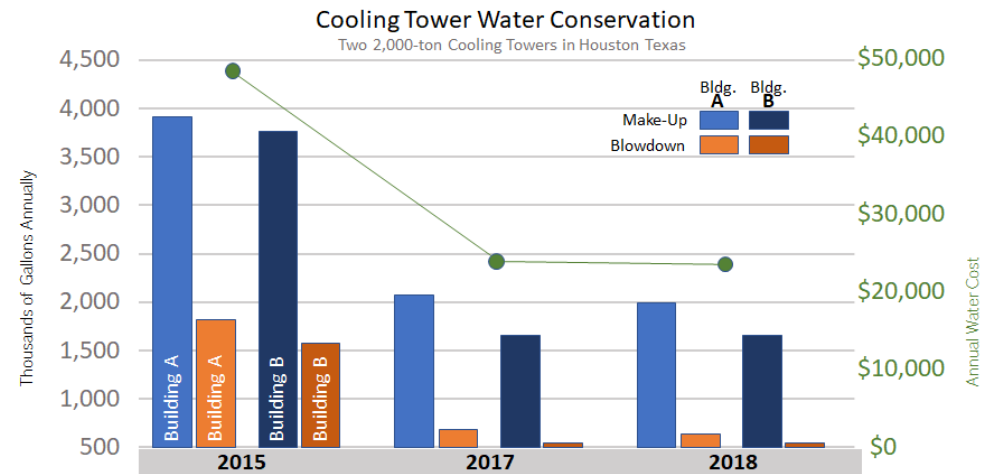
- 4 Million Gallons conserved per Year
- Scale formation & Biofilm prevented
- Optimized Efficiency
- Reduced Maintenance & Repairs

### Cost Savings Annually

- Water Use Reduced 45% - \$19,000
- Wastewater Reduction - \$20,000
- Energy Use Reduced 10% - \$34,562
- Chemical use reduced 80%

Estimated Annual  
Water & Sewer  
Savings  
**\$39,000**

Estimated Annual  
Energy Savings  
10% of \$345,625  
**\$34,562**





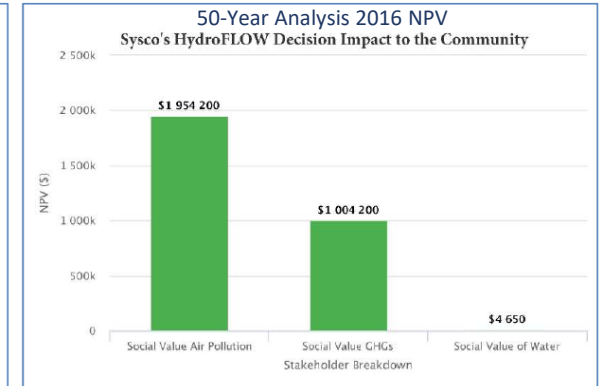
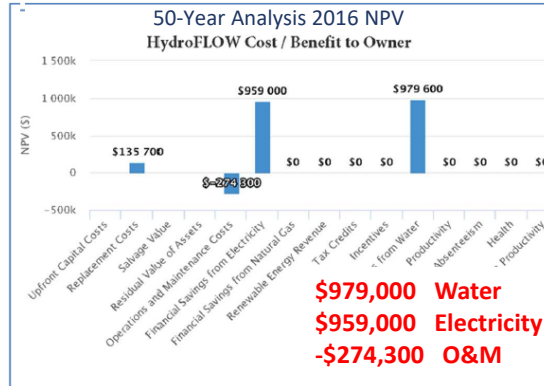
# Formal 3<sup>rd</sup> Party Engineering Study

Performance Outcome Verification and Social, Environmental and Financial Benefits  
of  
HydroTech Solutions High-Performance Water Management Program  
at  
Sysco Corporate Headquarters Houston, Texas



Prepared For:  
Prepared by:  
Date:

Mike Williams - Sysco  
David MacLean - President McMac Cx  
April 15, 2019

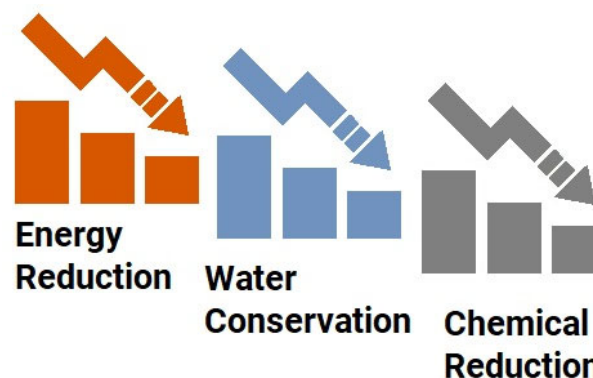


The Program's technology delivers Annual Savings:

- >\$39,000 Water & Sewer Reduction Annually
  - Annual potable water use reduction of 4,341,024 gallons, saving Sysco \$19,600 annually (Simple Payback).
  - Annual wastewater reduction of 3,069,224 gallons, saving Sysco \$20,000 annually (Simple Payback).
- 10% electricity use reduction by the cooling plant, saving Sysco \$34,500 annually (Simple Payback).

# Financial Gains from High Performance Water Management

Financial Impact and ANALYSIS							
Operating Expenses	Monthly Performance	Yr 1	2	3	4	5	60 - Month Performance
High-Performance Water Management	\$ 1,806	\$ 21,672	\$ 21,672	\$ 21,672	\$ 21,672	\$ 21,672	\$ 108,360
Water Bill Savings (rate escalation 4%)	\$ (3,258)	\$ (39,092)	\$ (40,656)	\$ (42,282)	\$ (43,973)	\$ (45,732)	\$ (211,736)
Electric Bill Savings (rate escalation at 4%)	\$ (2,883)	\$ (34,596)	\$ (35,980)	\$ (37,419)	\$ (38,916)	\$ (40,473)	\$ (187,384)
Maintenance & Repair Savings	\$ (50)	\$ (600)	\$ (600)	\$ (600)	\$ (600)	\$ (600)	\$ (3,000)
Chemical Efficiency Savings	\$ (300)	\$ (3,600)	\$ (3,600)	\$ (3,600)	\$ (3,600)	\$ (3,600)	\$ (18,000)
<b>Net Change in Actual Operating Expenses</b>	<b>\$ (4,685)</b>	<b>\$ (56,216)</b>	<b>\$ (59,164)</b>	<b>\$ (62,229)</b>	<b>\$ (65,417)</b>	<b>\$ (68,733)</b>	<b>\$ (311,760)</b>
<b>Change in Net Operating Income</b>	<b>\$ 4,685</b>	<b>\$ (56,216)</b>	<b>\$ (59,164)</b>	<b>\$ (62,229)</b>	<b>\$ (65,417)</b>	<b>\$ (68,733)</b>	<b>\$ (311,760)</b>
<b>Gallons of Water Saved</b>	<b>305,027</b>	<b>3,660,323</b>	<b>3,660,323</b>	<b>3,660,323</b>	<b>3,660,323</b>	<b>3,660,323</b>	<b>18,301,617</b>





## **Key Takeaways:**

- **Hidden Value in process water optimization**
- **Data drives the decision and verifies the results**
- **Water Conservation opens new opportunities for Energy Savings**
- **New Construction or Retrofits**

# High Performance Water Management for Energy Savings

## HydroTech Solutions

Pete Baldwin

Chief Operating Officer

HydroTech Solutions, LLC

817-894-5280

[pete.baldwin@hydrotech.solutions](mailto:pete.baldwin@hydrotech.solutions)

[www.hydrotech.solutions](http://www.hydrotech.solutions)