

# This presentation premiered at WaterSmart Innovations

[watersmartinnovations.com](http://watersmartinnovations.com)



# Commercial, Industrial, & Institutional (CII) Sectors:

## *Tools to Make a Difference*

*Russ Sands / Becky Fedak*

CII accounts for 17% of water use and 18% of energy use nationally.

– EPA WaterSense

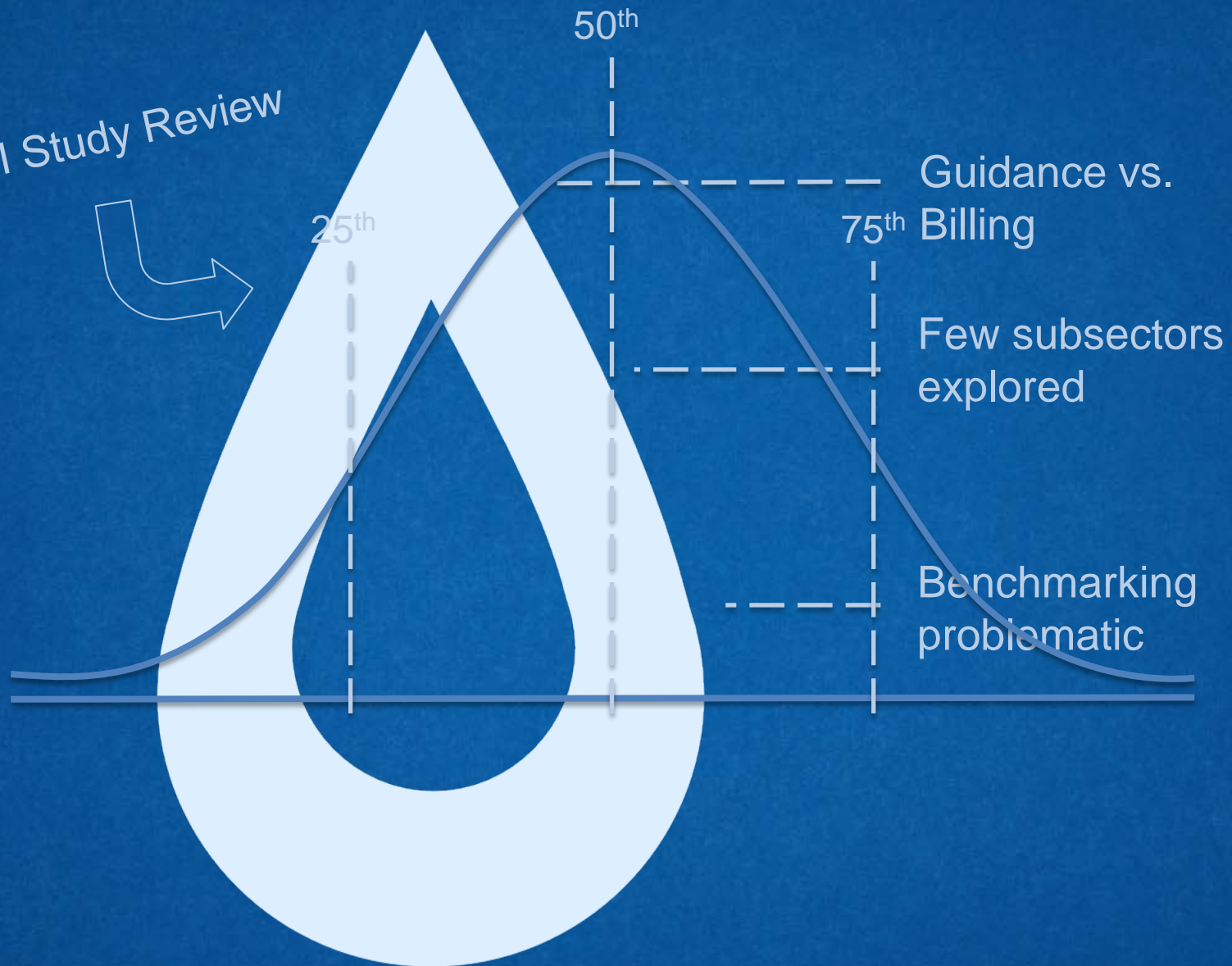
Locally CII accounts for 25% of water use and 75% of energy use.

– City of Boulder





CII Study Review





# NAICS CODES & VARIATION

- North American Industrial Classification System
- Classification Codes help
- High variation in use



# SUBSECTOR VARIATION

(NOT MET BY NAICS CODES)

## Hotels:

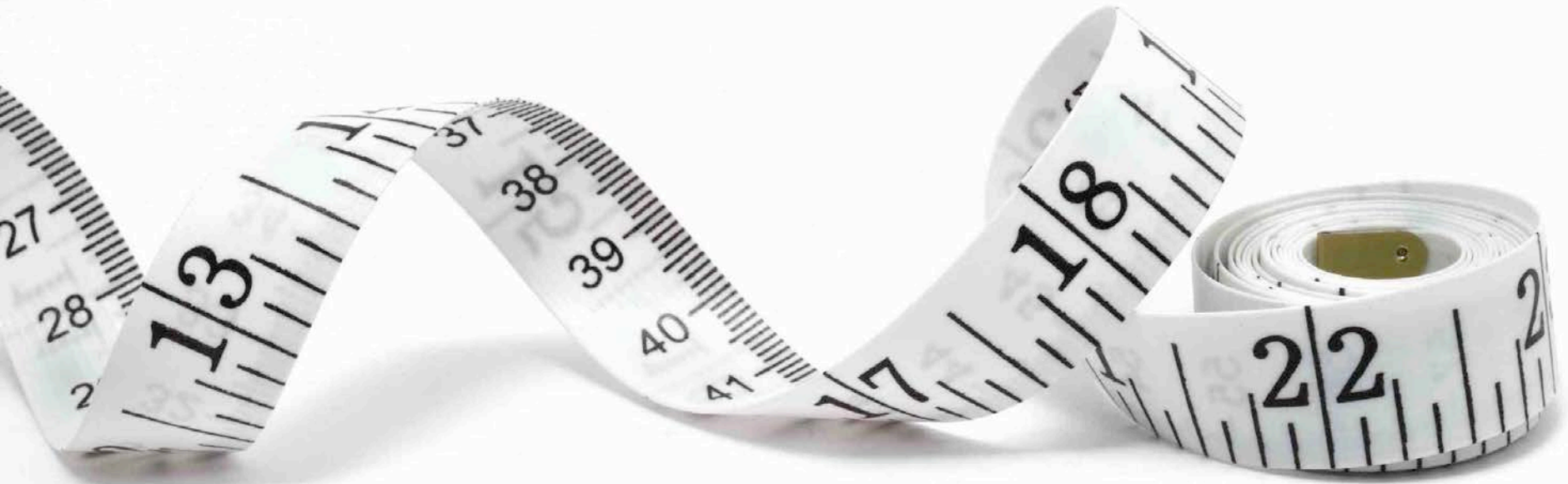
- With a pool
- With a restaurant
- With in-house laundry





# Picking A Normalizing Factor

- High Use vs. Inefficiency
- One size does not fit all



# Incorporating Water Assessments



- Unique businesses
- Unique Water Uses
- Customer Complaints



# Creating a Successful Tool

- Easy to use
- Comprehensive
- Supports WaterSense
- Supports ENERGYSTAR
- Incorporates Benchmarks
- Adaptable



# Existing Tools and Resources

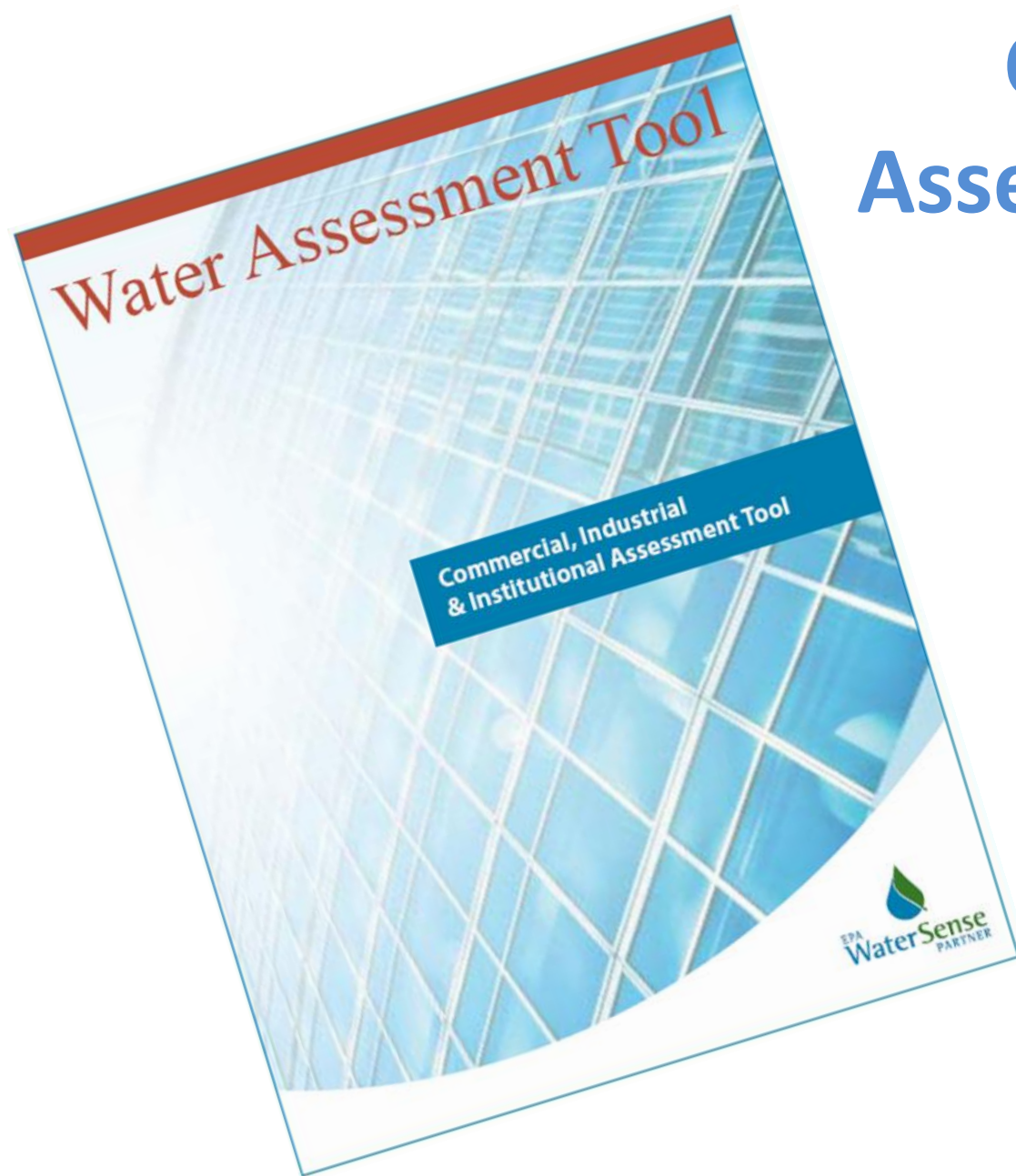
- **South Florida**
  - Self-assessment guide
  - Calculators (kitchen, cooling towers, domestic plumbing, appliances, irrigation, leaks)
- **East Bay Municipal Utility District - Watersmart Guidebook**
- **Colorado WaterWise workgroup - ICI Assessment Toolkit**
- **EPA WaterSense -WaterSense at Work Manual and H2Otel Challenge**
- and more...



# Goals for a New Water Assessment Tool

- Support assessment as well as opportunity identification
- Calculate costs and benefits
- Identify resources, rebates, next steps
- Build on existing tools and resources
- Formatted for easy use in the field
- Useable by different customers (utilities and/or end-users)
- Meet needs for Boulder CII water budget work
- Easily translated for use beyond Boulder





# CII Water Assessment Tool Demo

# CII Water Assessment Tool - Introduction

	A	B	C	D	E	F	G	H	I	J	K
1	<b>CII Water Assessment Tool - Introduction</b>										<b>v 1.2</b>
2											
3	The Commercial, Industrial, and Institutional (CII) Water Assessment Tool was developed for City of Boulder Utilities Division to provide a template for basic water conservation assessments of CII customers. The Tool is intended for use by Utilities' staff, technicians, and/or end-users without a technical background in water conservation assessments. The Tool is not to be used to recommend projects, but to screen for potential water conservation opportunities. The tool draws heavily on resources from EPA WaterSense® and ENERGY STAR.										
4											
5	<b>Navigation and Instructions</b>										
6											
7	<b>Tab</b>		<b>Description</b>								
8	The following two tabs are the only ones necessary for a basic assessment.										
9	<a href="#">Assessment</a>		All the inputs necessary to complete a basic assessment.								
10	<a href="#">Results</a>		Assessment results including water and cost savings.								
11	<a href="#">Report</a>		User friendly report of opportunities.								
12											
13	The Detailed input tabs can be used to modify the assumptions regarding individual fixtures and appliances.										
14	<a href="#">Appliances - Detailed Input</a>		More detailed inputs for clothes washers and residential dishwashers.								
15	<a href="#">Kitchen App - Detailed Input</a>		More detailed inputs for commercial dishwashers and other kitchen appliances.								
16	<a href="#">End-Use Fixt - Detailed Input</a>		More detailed inputs for end-use fixtures like faucets and toilets.								
17											
18	<b>Cell Color Coding</b>										
19											
20	Required input										
21	Optional input										
			More Inform								
			Help and T								

**Help or Tip Bubble**  
 This frame will appear with help or tip text relevant to the cell you've just clicked on.

Terms of Use | Introduction | Assessment | Results | Report

# CII Water Assessment Tool - Assessment

## CII Water Assessment Tool - Inputs

ABC Office

v 1.2

Prepared by: Seth Jansen  
Date of Assessment: Tuesday, August 20, 2013

## Facility Information

Customer name:	ABC Office	Address:	111 Pearl St		
Assessment contact name:	Joe Smith	City:	Boulder		
Phone:	303-111-2222	State:	CO	Zip:	80301
Fax:					
Water/facility contact name:	Joe Smith				
Phone:					
Fax:					
Annual indoor water consumption (kgal):	60				
Annual outdoor water consumption (kgal):	0				
Building size (sq. ft.):	5,000				
Irrigated area (sq. ft.):	0				
		Sub-sector:	Office		
		Comparison to Similar Businesses in Boulder:	Average		

## Utility Information (select your utility for the drop down or enter your own rates)

Water Provider:	Test	Electricity rate (\$/kWh):	\$1.00
Water rate (\$/kgal):	\$1.00	Natural gas rate (\$/th):	\$1.00
Wastewater rate (\$/kgal):	\$1.00	Leak Flag:	no

## Assessment Survey Questions

Do you have separate meters for indoor and outdoor water?	Yes
What process do you use to check for leaks or replace water fixtures?	Free text in this field.....
Would knowing how your consumption compares with other similar businesses help you reduce use?	Yes
What is an acceptable payback period (in number of years) for implementing water efficient devices or practices?	3
Do you receive and review your water bill or is it paid by another party?	Paid by so
Do you know that your business has a water budget and do you understand how it was calculated?	Know but don't understand budget calculation

The City is interested in gaining a better understanding of how facility managers and business owners are obtaining information about City programs and services being offered. Responses to the next questions will help inform future marketing and outreach efforts. Please check all that apply.



# CII Water Assessment Tool – Assessment (cont'd)

## CII Water Assessment Tool - Inputs

ABC Office

v 1.2

### Water-use Assessment

Estimated year of install for existing equipment	1994 and later
Building hot water fuel type	natural gas
Number of restroom users	15 people
Number of shower users	0 people
Annual days of operation	250 days
Are urinals available?	no

Follow links to EPA WaterSense® Best Management Practices for more information

Appliances	Type	Conventional Quantity	ENERGY STAR Quantity	Facility type	Dryer type
Clothes Washer	Residential	1	0	standard	natural gas
Dishwasher (residential)	Residential use	1	0		
Dishwasher (commercial)	Low-temp Under Counter	1	0		
	Low-temp Door Type	0	0		
	Low-temp Single Tank Conveyor	0	0		
	Low-temp Multi Tank Conveyor	0	0		
	High-temp Under Counter	0	0		
	High-temp Door Type	0	0		
	High-temp Single Tank Conveyor	0	0		
	High-temp Multi Tank Conveyor	0	0		
	High-temp Pot, Pan, Utensil	0	0		
Steam Cooker	Electric	0	0		
Steam Cooker	Natural Gas	1	0		
Ice Machine - Batch	Ice Making Head	0	0		
Ice Machine - Batch	Remote Condensing Unit/Split System	1	0		
Ice Machine - Batch	Self Contained Unit	1	0		
Ice Machine - Continuous	Ice Making Head	0	0		
Ice Machine - Continuous	Remote Condensing Unit/Split System	0	0		
Ice Machine - Continuous	Self Contained Unit	0	0		

Booster heater fuel	electric
Booster heater fuel	natural gas
Booster heater fuel	natural gas
Booster heater fuel	natural gas
Booster heater fuel	electric

# CII Water Assessment Tool – Assessment (cont'd)

Other Systems		Number of Units	Idle Hours Per Day	Current Idle Flow Rate (GPM)	Reduced Idle Flow Rate (GPM)		
Food Disposal	Reduce idle water flow rate	0	0	0	0		
		Number of Units	Square Feet Served	Square Feet per Ton	Cooling Hours	Current COC	Proposed COC
Cooling Tower(s)	Cycles of Concentration (COC)	0	0	0	0	0	0
		Number of Units	Water Savings (gal/unit)	Electricity Savings (kWh/unit)	Natural Gas Savings (Th/unit)	Potential Rebate (\$/unit)	Total Installed Cost (\$/unit)
Custom Project	Describe	0	0	0	0	0	0

## End-use Fixtures (toilets, urinals, faucets, showerheads, pre-rinse spray valves)

Location	Existing Fixture	Quantity	Existing Flow(GPM)/flush(GPF) Rate	Retrofit Flow(GPM)/flush(GPF) Rate
	Bathroom aerator	3	0.5	0.5
	Kitchen/other aerator	2	1.5	1.5
	Dual flush toilet	2	1.1	1.1
	Tank toilet	0	1.6	1.28
	Showerhead	1	2.5	2
	Pre-rinse spray valve	0	3	1.6
	Urinal flush valve	0	1	0.5

More information from  
EPA WaterSense®  
Best Management  
Practices

[Toilets](#)

[Urinals](#)

[Faucets](#)

[Showerheads](#)

[Pre-rinse spray valves](#)

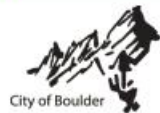
[Other opportunities](#)

Restore End-use  
Defaults

# CII Water Assessment Tool – Report

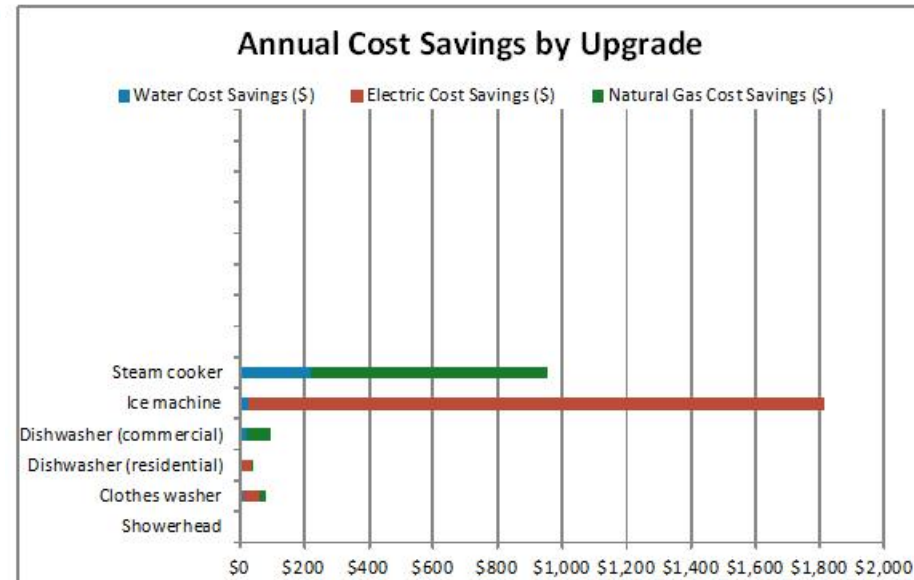
## City of Boulder Water Conservation Assessment Report

ABC Office Primary Contact: Joe Smith  
111 Pearl St 303-111-2222  
Boulder, CO 80301



### Potential opportunities for water and cost savings

Qty.	Annual Savings*	Resource	Cost
1	Water	139,500 gallons	\$300
1	Electricity	1,900 kWh	\$1,900
1	Natural Gas	820 therms	\$820
1	Total Savings	-	\$3,020
2	Installed Cost**		\$1,100
1	Potential Rebate***		\$0 +
	Simple Payback		0.4 years





# VETTING THE TOOL

- In-depth testing in Boulder
- Nation-wide pilot phase
  - Summer 2014
  - 20 participants
  - Variety of facilities throughout the country

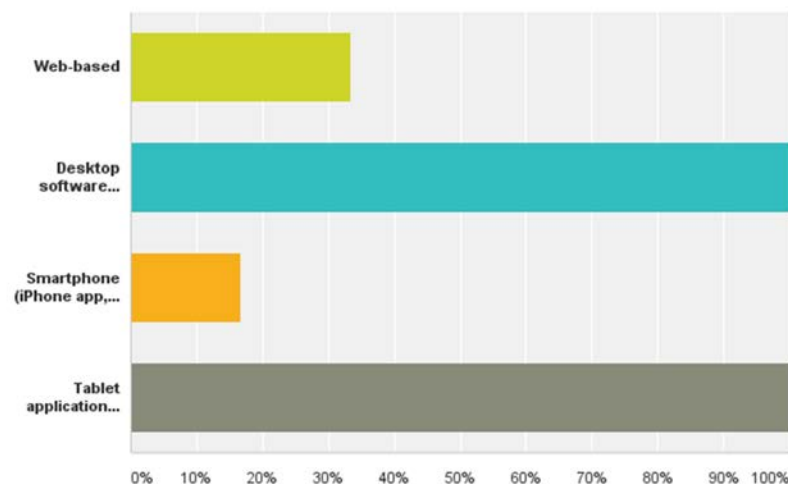


# Feedback from Pilot Study

- Only simple tool needed for most facilities
- Improve functionality for field use
- Interest in expanding outdoor use component
- Block structure and seasonal rates
- Seasonal and other normalizing factors
- Benchmarking and data collection

Q8 What kind of platform would you recommend for this tool? (check all that apply)

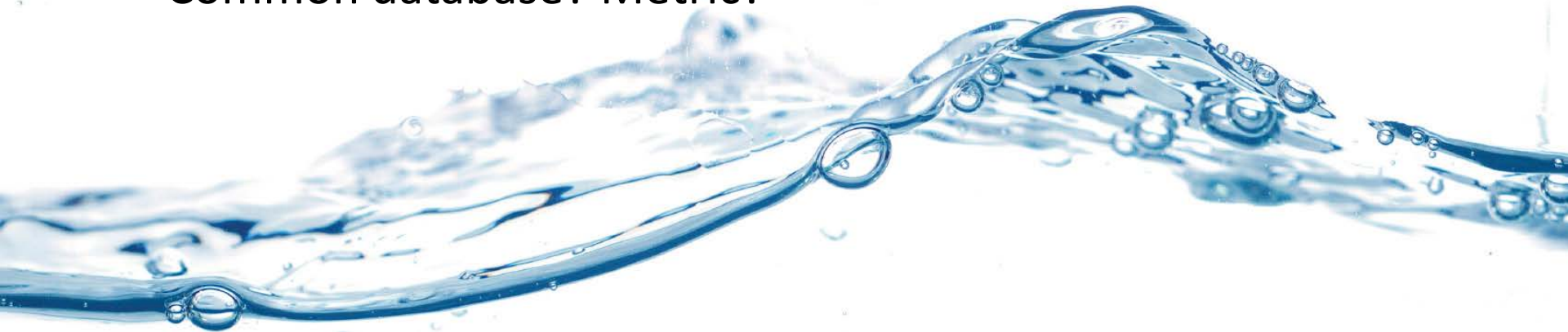
Answered: 6 Skipped: 0



Raising the Bar on Energy Performance

# Where do we go from here?

- Incorporate pilot feedback
- Create a Simplified App (everyday user)
- Excel Tool (for more in-depth analysis)
- Data collection for standardized benchmarking
- Common database? Metric?



# QUESTIONS?

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Becky Fedak [bfedak@brendlegroup.com](mailto:bfedak@brendlegroup.com)

