

# The Three-Step Process to Save Money by Saving Water

October 6<sup>th</sup>, 2015

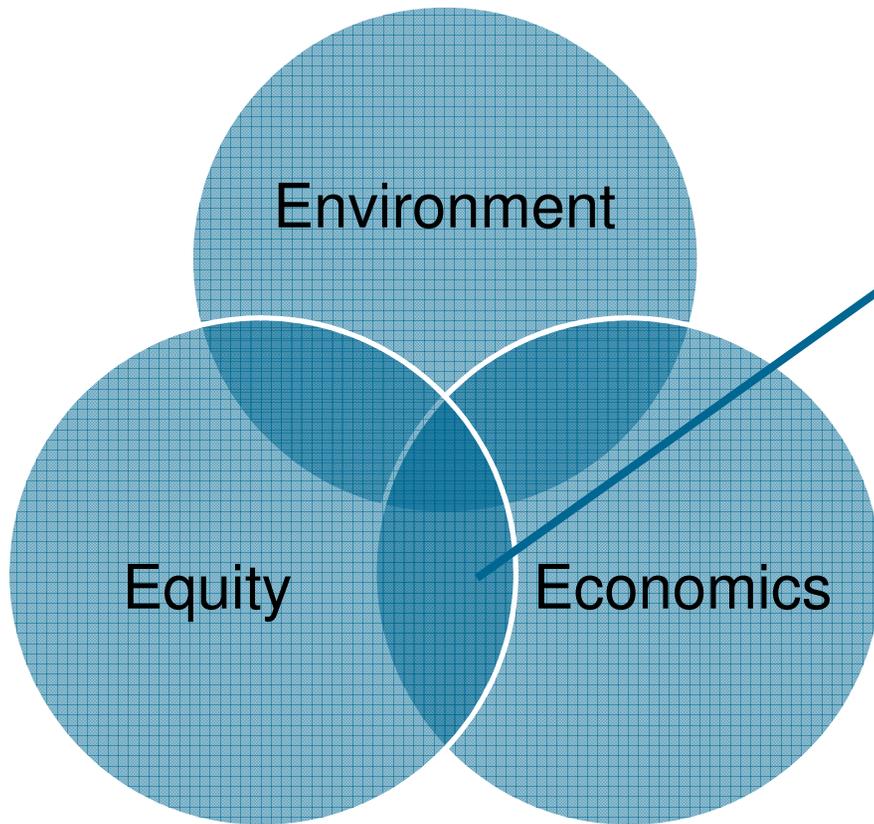
Housing Washington

Spokane, WA

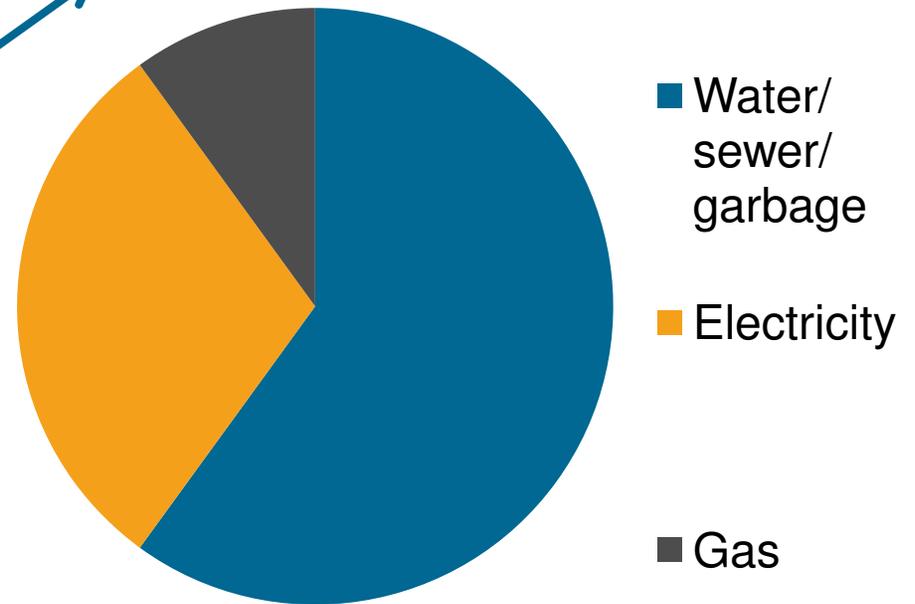


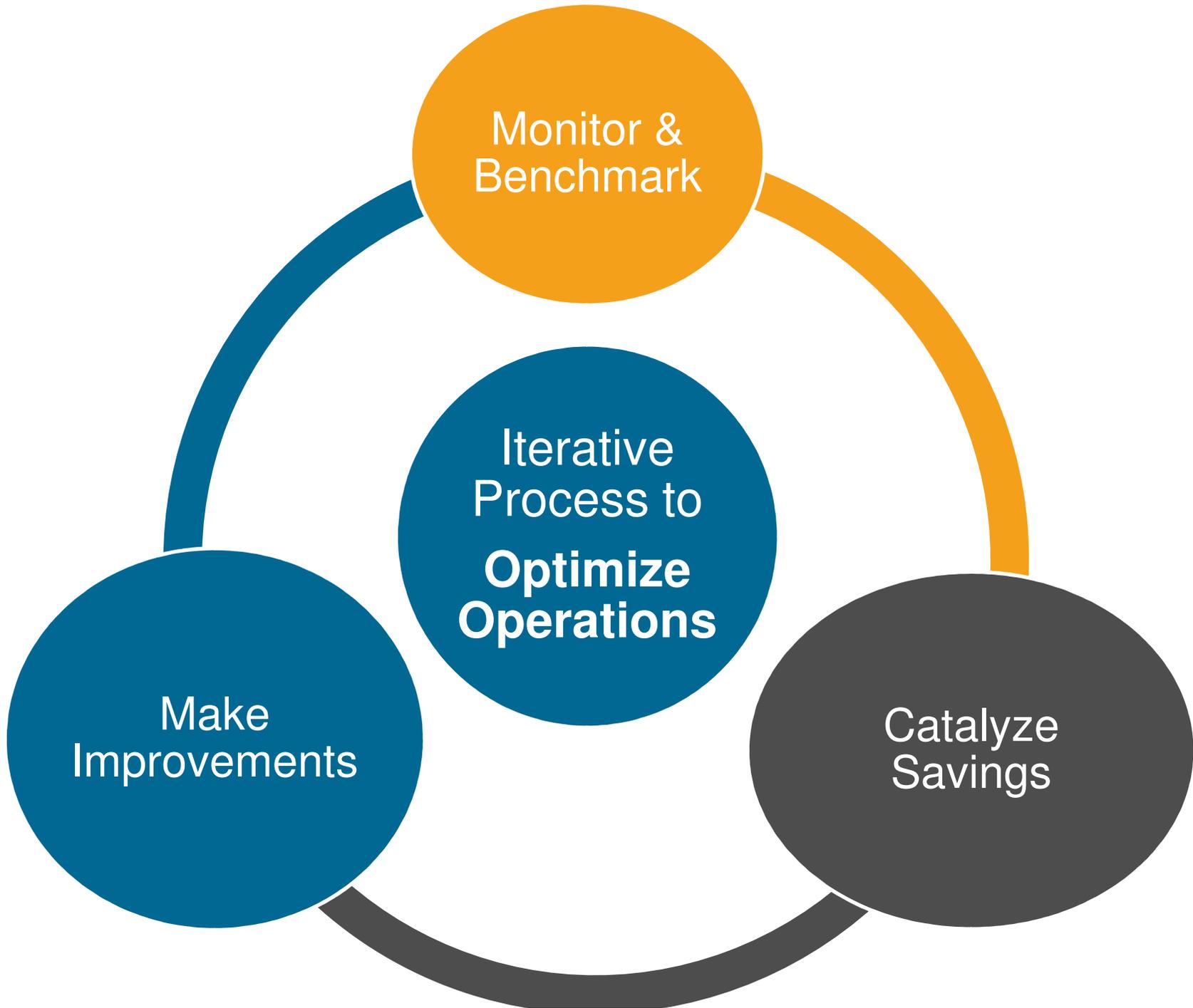
# Why Focus on Water?

---



**Owner-Paid Utility Costs**



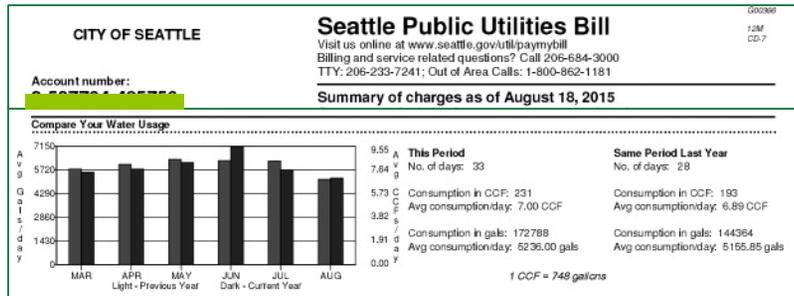


# Factors that Influence Water Use

- Number of Residents (total and per bedroom)
- Type of Residents
- Efficiency and condition of fixtures, appliances, and plumbing
- Laundry
- Dishwashers
- Irrigation
- Commercial Tenants(s) and billing set-up
- Who pays the bills

RENEW

# Monitoring Water Use



B75    fx =B74/B6

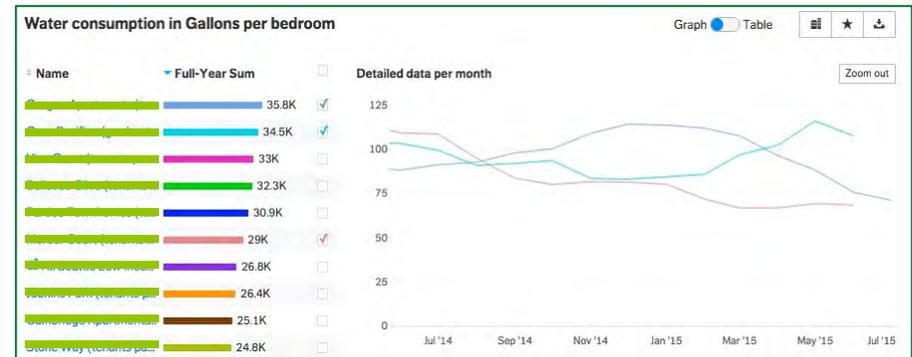
	A	S	T	U	V
		Building A	Building B	Building C	Building D
79					
80					
81	<b>WATER USE</b>				
82	Gallons per day	51	64	64	82
83	Oppty to 1st Quartile %	0%	12%	13%	32%
84	Potential Water Savings	\$0	\$6,409	\$8,074	\$14,174
85					

## Utility Bills

## Spreadsheets

**Water Performance**  
 Date Generated: 08/26/2015 04:24 PM EDT  
 Number of properties in report: 5

Property id	Year Ending	Property GFA - EPA Calculated (Buildings) (ft²)	Water Use (All Water Sources) (kgal)	Total Water Cost (All Water Sources) (\$)	Indoor Water Use (All Water Sources) (kgal)	Indoor Water Cost (All Water Sources) (\$)	Indoor Water Intensity (All Water Sources) (gal/ft²)
2432000	12/31/13	50667	Not Available	Not Available	Not Available	Not Available	Not Available
2473909	12/31/12	50667	Not Available	Not Available	2278.9	Not Available	44.98
2480554	12/31/13	100000	4416.6	Not Available	4416.6	Not Available	44.17
2082354	12/31/12	100000	5234.7	Not Available	5234.7	Not Available	52.35
2070507	12/31/13	62277	2063.9	Not Available	1967.4	Not Available	31.59
2636201	12/31/12	62277	1933.4	Not Available	1829.5	Not Available	29.38
2082301	12/31/13	18045	794.6	6241.83	794.6	6241.83	44.04



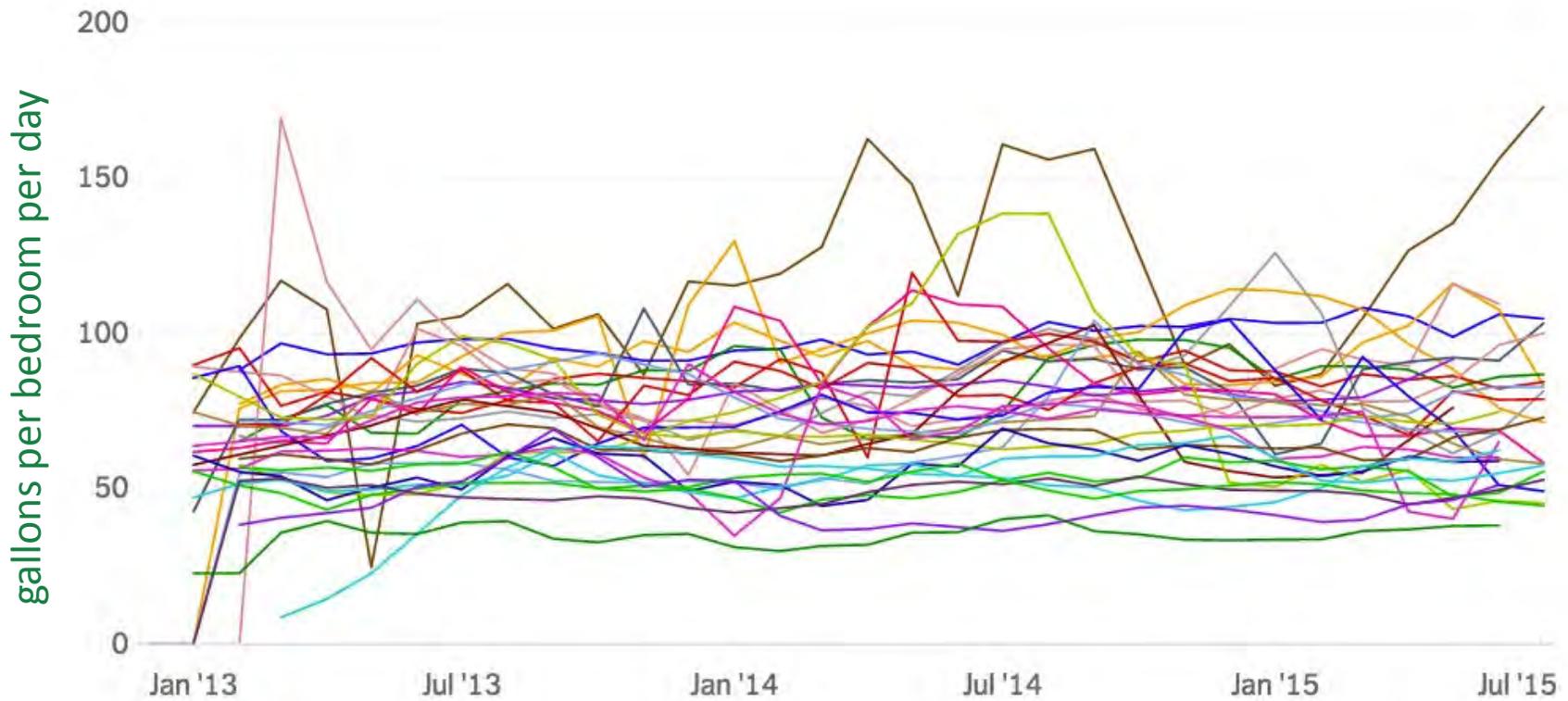
## EPA's Portfolio Manager

## WegoWise or Energy Scorecards

# RENEW

# Water Consumption

## Variation in a 30 Building Portfolio



**RENEW**

# What do the extremes look like?

## Inefficient

- Old Toilets (>1.23gpf)
- No aerators in lav faucets
- Standard showerhead + long wait for water
- No dishwasher
- Top-load washing machine

**~120 gallons/person/day**

## Efficient

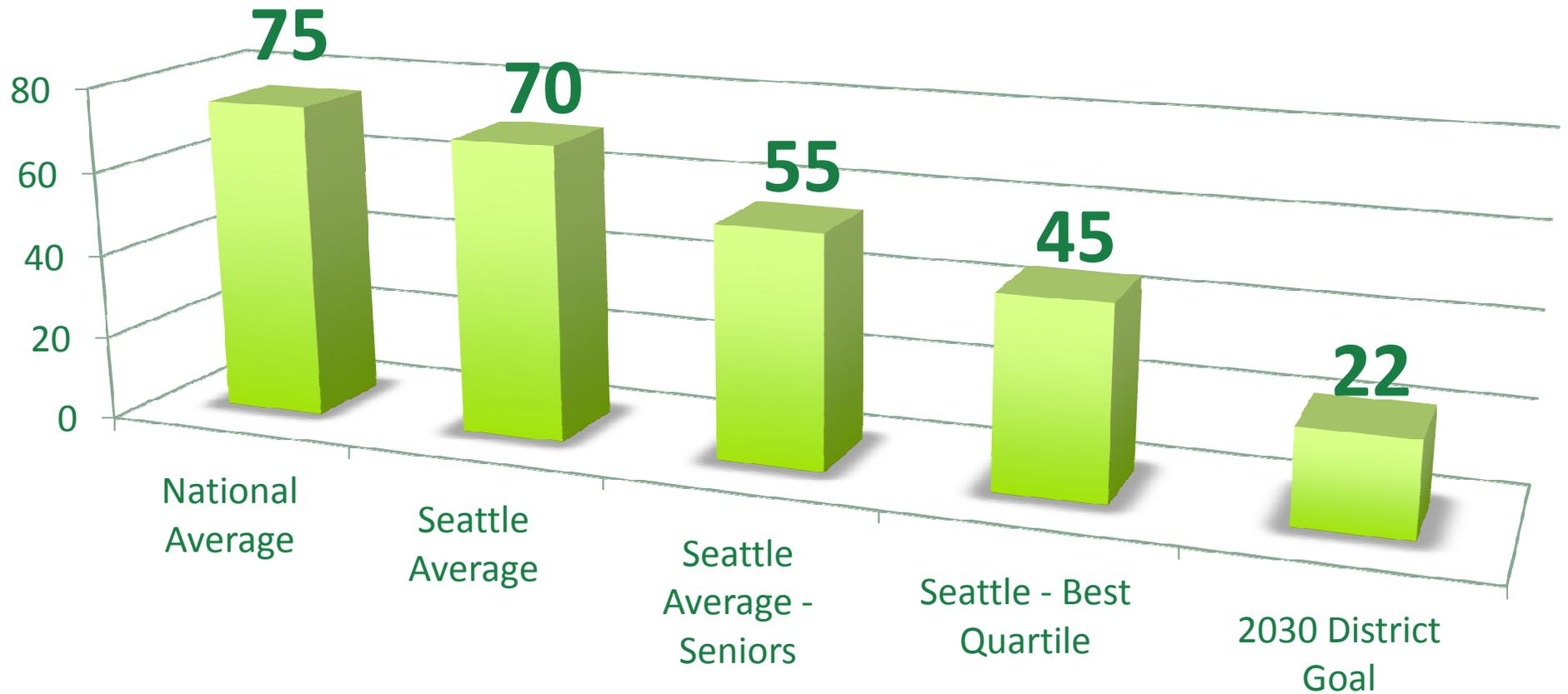
- WaterSense® toilet
- Watersense® lav aerator
- WaterSense® showerhead & showerstart
- EnergyStar® dishwasher
- EnergyStar® clothes washer

**24 gallons/person/day**

**RENEW**

# Benchmark: (gal/person/day)

[# of Residents per bedroom will play a factor!]



# RENEW

# Water Savings From Submetering

Housing Washington  
October 6, 2015



# Agenda

1. Background
2. SHA's Incentive Program -  
How it Works
3. Case Study At Rainier Vista
4. Conclusions

# Water Billing At HOPE VI

- ❖ Submeters Installed During HOPE VI Original Construction
- ❖ Residents Billed For Full Water Usage 2000–2013
- ❖ Resident Dissatisfaction Came to a Head in 2011
- ❖ SHA Designed a New Water Billing System which was implemented in 2013

# Objectives of New Billing System

- ❖ Rebuild Resident Trust
- ❖ Make Water Bills More Affordable
- ❖ Continue to Promote Resident Self-sufficiency
- ❖ Continue to Promote Conservation
- ❖ Reduce Administrative Burden
- ❖ Create a Viable & Sustainable Program

# Water \$mart Billing

**Overage threshold  
national average**



Payment due for the  
amount OVER



Buffer – No Bill / No Credit



**Incentive threshold -  
actual usage**



Credit due for the  
amount UNDER

# Case Study At Rainier Vista

- ❖ 72 units
- ❖ 4,548 CCFs annual water use
- ❖ \$80,000 annual water and sewer cost

# Case Study At Rainier Vista

## Average Annual Water/Sewer Use

Pre-Submeters: **4,548 CCF**

Post-Submeters: **3,515 CCF**

---

Savings: **1,033 CCF**  
**(772,684 G)**

**23% Reduction**

# Case Study At Rainier Vista

## Cost Analysis

Installation: (\$36,642)

Annual program costs: (\$6,607)

Annual water savings: \$18,197

---

Annual savings: \$11,590

**Payback period: 3 years**

# Quantifying Conservation Results

Under Water \$mart billing HOPE VI consumption has gone down by 2%

- **2% = \$35K Cost Savings**

Usage at HOPE VI is 12% lower than the National Average

- **12% = \$212K Avoided Cost**

• Under threshold billing usage at the Rainier Vista Apartments decreased by 23%

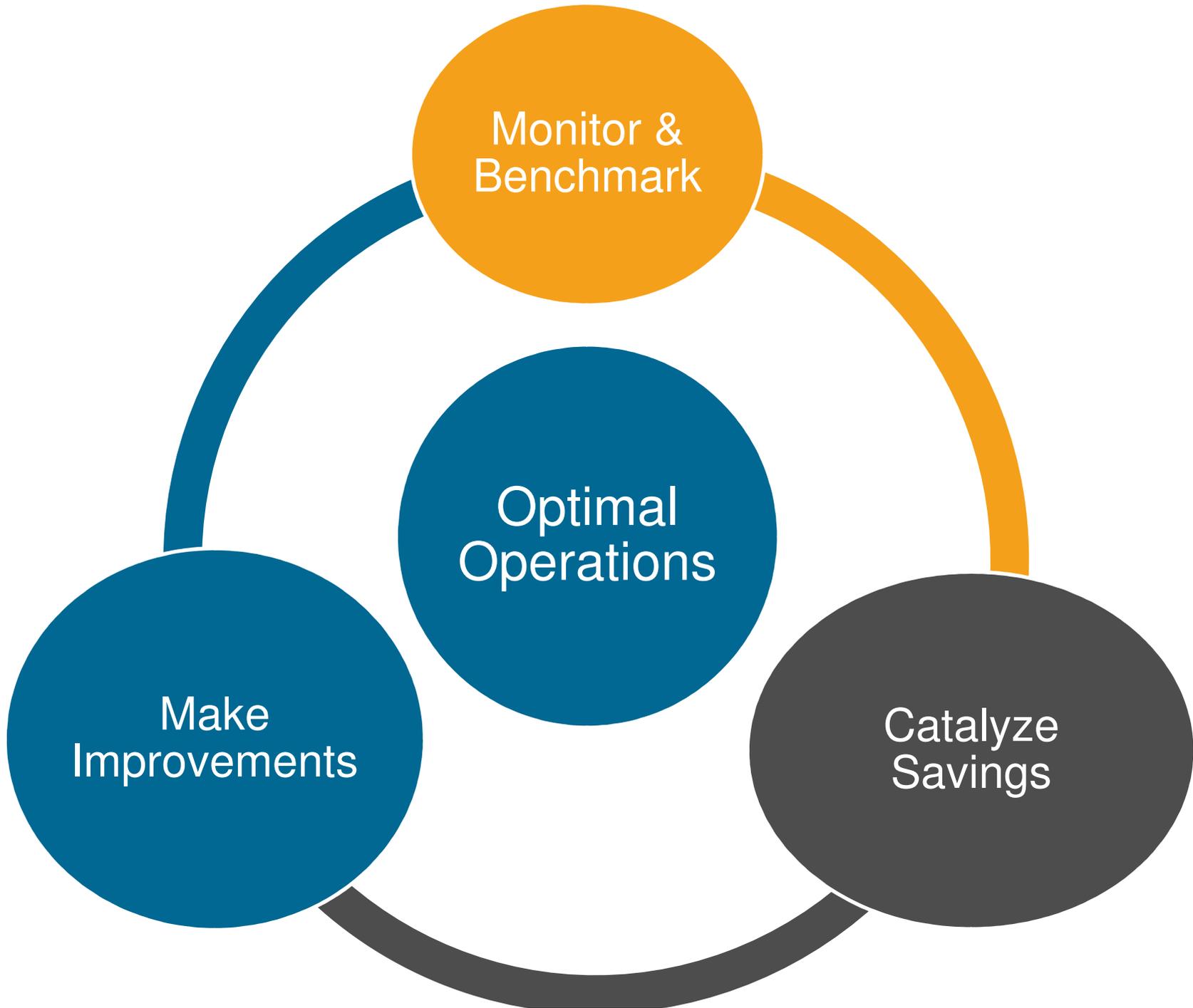
- **23% = \$405K Avoided Cost**

# Conclusions

- ❖ The Water \$mart program has successfully met most of its objectives
- ❖ The program continues to promote water conservation
- ❖ Contracting out the water billing has proven to be more efficient and less expensive than billing in-house

# Conclusions (Cont'd)

- ❖ Administrative burden reduced by 75%
- ❖ Utilities team spends more time on conservation
- ❖ Residents have more confidence in the system
- ❖ More households are up to date and compliant on their bills



# Water Conservation Efforts in Multifamily Housing



## Housing Washington 2015

Holly Anderson, Catholic Charities Housing Services, Yakima

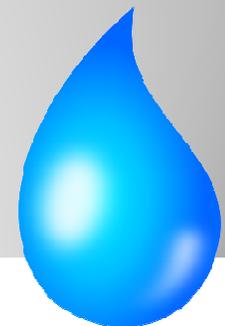
# CCHS Portfolio

## Washington State Map



# **Investment In Water Conservation – Today's Talk**

- **Landscaping Capital Needs Assessments**
- **Water Audits**
- **New Development Commitment to Water Conservation**
- **Challenges**
- **Lessons Learned**



# **Landscaping Needs Assessment: Villa Santa Maria**



- **45 Units, Farmworker Housing**
- **Utilized 5.5 million gallons of potable water for irrigation in 2013**
- **LCNA created landscape maintenance instructions & labels in English and Spanish**
- **Reduced irrigation consumption by 27% in 2014**
  - **Saved 1.5 million gallons of potable water!**

# **Water Audit, Villa Santa Maria**

- **Finding: Irrigation System operating at 50% efficiency**
- **Recommendation: Irrigation System Re-Commissioning**
- **Estimated Savings: 250,000 gallons / year (\$2,000 per year)**
- **Estimated Cost of Re-Commissioning: \$4,000**
- **Difficulties Procuring Irrigation Professional (location, scale of project)**

# Up-Front Commitment to Water Conservation



*Xeriscaping*

*No Washers /  
Dryers in Units*

*Water-Conserving  
Central Laundry  
Facilities*

*Low-Flow Fixtures  
Through-Out*

*Sub-Meter Water*

HUGE cost-savings

\$18,000 per year savings

(New vs. old developments in the same town)

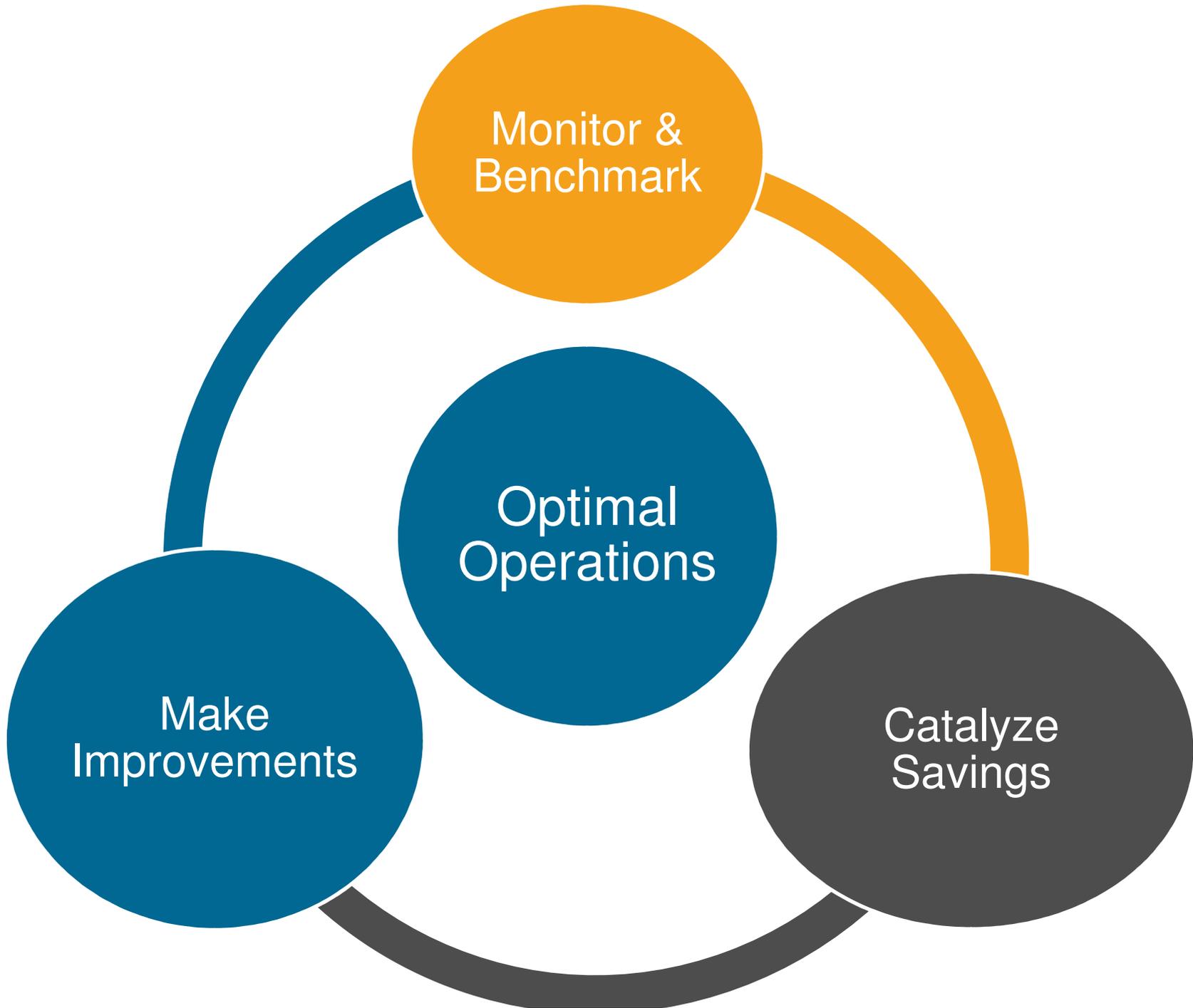
# Challenges

- **Landscape CNAs = time intensive and technical**
  - Difficult to quantify most impactful recommendations
- **Right tools for the right people**
  - In Central WA = translation of all instructions, manuals, etc.
- **Staffing (anyone else short staffed?)**
  - Choose projects carefully so as not to get overwhelmed.
  - More resources = department growth



## Lessons Learned

- **Choose your team wisely**
  - Highly technical in nature
- **Consider and involve end-users (community manager, residents, site staff)**
  - All communication must be language-appropriate
- **Invest for success**
  - Modest up-front costs can yield lasting operational changes and savings at projects
- **Recognize site staff are key to success**
- **Feed info from Asset Mgt -> Development**
  - Ensures mistakes are not repeated



# Water Stories and ESDS Preview

**Lynda Carey**  
*Construction Consultant*





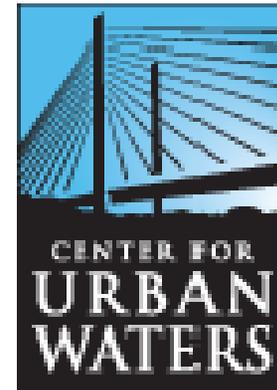
Housing Washington, October 6, 2015



Housing Washington, October 6, 2015

# Water ReUse - CASE STUDY

*Tacoma, WA*



**Water Reuse + Efficient Fixtures = 46% Water Savings!**  
[400,000 gallons per year (equivalent of 8,000 bathtubs)]

Housing Washington, October 6, 2015



Housing Washington, October 6, 2015

ESDS 3.0

Evergreen Sustainable  
Development Standard



Department of Commerce  
Housing Trust Fund  
ESDS Version ~~2.0~~ 3.0

**ESDS 3.0**  
**Biggest Bang!**

## Water Conservation

- Water ReUse
- Water Metering
- Efficient Plumbing Layout & Design
- Landscaping & Irrigation

# Upcoming EGC / ESDS Training

---

- **What:** Intro to 2015 Enterprise Green Community (EGC) Criteria + relationship to soon-to-be-released Evergreen Sustainable Development Standard v3.0 (ESDS v3.0)
- **Who:** development staff, architects, engineers, green building consultants, construction managers, + others
- **When:** October 14<sup>th</sup>, 2015 10:00am-3:00pm
- **Where:** WSHFC, 1000 Second Ave Suite 2700, Seattle
- **Register:** by TOMORROW (Oct 7<sup>th</sup>)
- **Cost:** \$10
- **Contact:** [mstarkey@enterprisecommunity.org](mailto:mstarkey@enterprisecommunity.org)



# Thank You!

---

- Bob Wyda, Seattle Housing Authority  
bob.wyda@seattlehousing.org
- Holly Anderson, CCHS-Yakima  
handerson@ccyakima.org
- Lynda Carey, Falkin Associates  
Lcarey@falkinassociates.com
- Elly Bunzendahl, O'Brien & Company  
elly@obrienandco.com

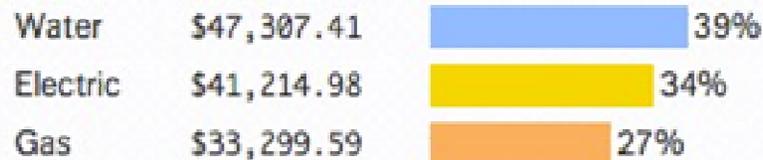


# Appendix: Sample Utility Breakdown

## Owner pays all utilities, 75 units

### Cost

Amount spent in \$ this year



## Owner pays water & common area, Elect Heat, 125 units

### Cost

Amount spent in \$ this year



## Owner pays water & common area, 100 units, seniors

### Cost

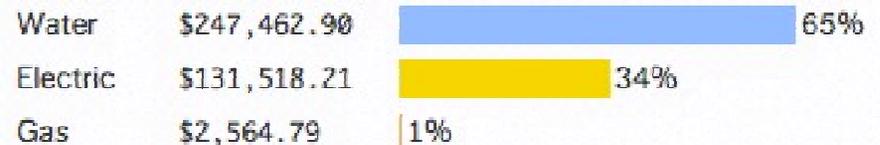
Amount spent in \$ this year



## Owner pays water & common area, 300 units

### Cost

Amount spent in \$ this year



# RENEW

# Appendix: Sample: How it adds up!

90 gallons/per bedroom/day

6,750 gallons/day (75 unit building)

2,463,750 gallons/year

3,293 CCF (hundred cubic feet)/year

1 CCF=748 Gallons

\$5.00 per CCF for Water (in Seattle)

\$11.84 per CCF for Sewer (in Seattle)

---

**\$38,995.00 /year**

**RENEW**

# Appendix: Sample “extremes” calcs

## Inefficient

- Old Toilet 6 flushes per day = 19 gallons
- Washing in Bathroom sink 8 minutes = 12 gallons
- Shower with standard showerhead 12 minutes per day = 30 gallons
- Hand washing dishes in kitchen sink = 50 gallons
- 2 loads of laundry per week in top loader = 7 gallons

**118 Gallons per day/person**

## Efficient

- Watersense® Toilet 4 flushes per day = 3 gallons
- Bathroom w/Watersense® aerator 8 minutes = 2 gallons
- Watersense® showerhead & Showerstart® 7 minutes per day = 6 gallons
- Energy Start Dishwasher .5 loads per day = 2 gallons
- Misc. kitchen washing= 8 gallons
- 2 loads of laundry Energy Star Washer= 4 gallons

**24 Gallons per day/person**

**RENEW**