

# Conservation Program

# Planning with Waterwatch<sup>©</sup>

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# Typical Water Conservation Project Plan

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- **Assess current water demands**
- Evaluate effectiveness of existing conservation practices and programs
- Review of state-of-the art conservation programs
- Assess programmatic options benefits & costs
- Program Recommendations



# Assess Water Demands

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- Internally generated data will give you broad based water use trends over time and hopefully by class.
  - Average day consumption
  - Average & peak day draft
- What this **does not** provide.
  - Information on customer practices and attitudes
  - Changes in the customer base
  - Changes in the economic base
  - Impact of plumbing fixture laws



# Filling the Info Gap

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- The Waterwatch<sup>®</sup> survey process
  - Demographic info
  - Indoor water use practices
  - Outdoor water use practices

Most Important:

**BREAKDOWN BY END USE CATEGORIES**



# Survey Findings

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## **Demographics**

**Number of people in household**  
**When was the home built**

## **Indoor Use**

**Number of showers**

**Average Use Per week**

**Low-flow showerhead**

**Time per shower**

**Number of toilets**

**Approximate age**

**Water saving device**

**Do you have a dishwasher**

**Loads per week**

**Do you have a clothes washer**

**Type of washer** Top Load vs. Front Load

**Loads per week**



# Survey Findings

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## **Outdoor Use**

**Water lawn**

**On a schedule or when needed**

**How often watered**

**Frequency**

**Daily**

**Every other day**

**Every 3-7 days**

**Less frequently**

**Watering method**

**Water Manually**

**Automatic Sprinkler**

**Automatic sprinkler system**

**Number of Zones**

**When installed**

**Who sets the water schedule**



# Survey Findings

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## **Outdoor Use**

**Swimming pool**

**Style & Size**

**In ground or Above ground**

**Use a Pool Cover**

**Drain Annually**

**Hot tub or spa**

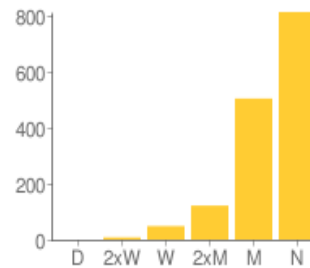
**Fountain, pond or other outdoor water feature**

# Other Statistics

## Wash car or other vehicle

### Results

Daily	3	<b>0%</b>
2-3 times/week	12	<b>1%</b>
Weekly	56	<b>4%</b>
Twice a month	125	<b>8%</b>
Monthly or less	510	<b>34%</b>
Never	814	<b>54%</b>
	1520	



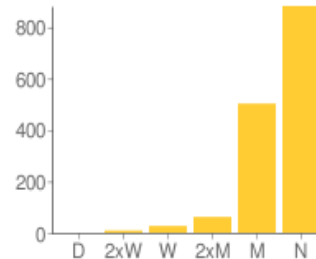
### Statistics

Response Rate: 91.12%

## Clean driveway, sidewalk, patio, etc.

### Results

Daily	4	<b>0%</b>
2-3 times/week	9	<b>1%</b>
Weekly	33	<b>2%</b>
Twice a month	67	<b>4%</b>
Monthly or less	510	<b>34%</b>
Never	882	<b>59%</b>
	1505	



### Statistics

Response Rate: 90.23%



# Fixture Statistics

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## ■ SHOWERS

### Waterwatch<sup>®</sup>: Low-flow Showerhead Statistics

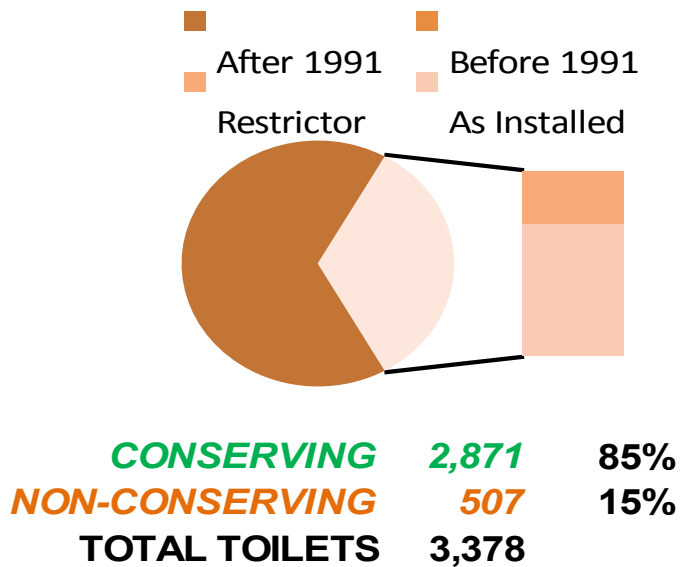
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	Count	Percentage
<b>SHOWER 1</b>		
Yes	825	68%
No	384	32%
<b>SHOWER 2</b>		
Yes	423	63%
No	247	37%
<b>SHOWER 3</b>		
Yes	76	53%
No	67	47%
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<b>ALL SHOWERS</b>		

# ■ TOILETS

## Waterwatch© Survey: Volume Retrofit Device in Toilet Statistics

After 1991	YES	2,244	100%
	NO	-	0%
		<b>2,244</b>	
1981-1991	YES	85	22%
	NO	295	78%
		<b>380</b>	
Before 1981	YES	97	22%
	NO	353	78%
		<b>450</b>	
No Age	YES	150	49%
	NO	154	51%
		<b>304</b>	





# Typical Key Findings

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■ **About 2/3 of basic plumbing fixtures are water conserving**

**HOWEVER 1/3 are not**

■ **99% have washing machines**

**HOWEVER 85% are top loaders**

■ **80% water their lawn every 3-7 days on average for 20-30 minutes per area/zone**

**HOWEVER Most water intuitively**

■ **5% of those that water have an automatic sprinkler system with 5 zones on average**

**HOWEVER 73% over 5 years old**



# End Use per Waterwatch<sup>®</sup> Survey

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## Domestic/Indoor Water Use (Annual gallons)

	Average Use	Distribution
Shower	14,717	27%
Sink & Tub	6,117	11%
Toilet	13,909	26%
Kitchen Sink	5,310	10%
Clothes Washer	10,201	19%
Dishwasher	1,069	2%
Leaks	2,407	4%
<b>TOTAL</b>	<b>53,731</b>	



# Using the data

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- Compute potential water savings for water conservation programmatic options
- Cost / Benefit Analysis
- Program Budgeting
- Water Demand Forecasting
- Water Demand Management & Conservation programming planning

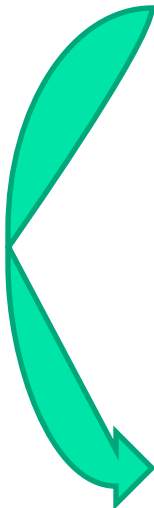


# Potential Water Savings

FIXTURE/APPLIANCE	STATUS	POTENTIAL
SHOWER	2/3s low flow	LOW
TOLIET	85% low volume	LOW
FAUCETS	3/4s low flow	LOW
DISHWASHING	2% of use	LOW
CLOTHES WASHING	84% top loaders	MODERATE
LEAKS	4% of use	LOW

## Clothes Washing Savings Potential

TYPE OF MACHINE	IN PLACE	NUMBER OF MACHINES	LOADS PER DAY	IN PLACE USE		ALL FRONT LOAD USE	
				GALLONS PER LOAD	GALLONS USED	GALLONS PER LOAD	GALLONS USED
Top Load	84%	50,400	36,216	40	1,448,640	15	543,240
Front Load	16%	9,600	7,653	15	114,789	15	114,789
<b>TOTAL</b>		<b>60,000</b>	<b>43,869</b>		<b>1,563,429</b>		<b>658,029</b>
<b>TOTAL POTENTIAL SAVINGS IN MGD</b>							<b>0.91</b>



# Benefit / Cost Analysis

PROGRAM OPTION: Low Flow Device Program

Measure	EDUC			Program, participation rate, duration
Target	ALL CUSTOMERS			
Total number		190,518		Program costs
Unit	CUSTOMER			
Target percent		100%		Program impact on water use
Program target		190,518		
Expected penetration rate		25%	percent of households that will adopt conservation measures	Customer & Utility savings
Expected penetration		47,630	based on info provided by UWNJ	
Program implementation duration		1		
Program life time		20		Overall program benefits / costs
JWNJ cost per unit		\$ -		
Variable program cost		\$ -		
Start-up cost		\$ 10,000	UWNJ estimate for new program materials and set-up	



# Program, participation rate, duration

## Low flow Device Distribution Program

Target	Single Family	<b>Non Low Flow as per Waterwatch<sup>®</sup> Survey</b>	
Total number	50,000	SHOWERS	25%
Unit	HOUSEHOLD	<u>TOILETS</u>	<u>15%</u>
Target percent	20%	COMPOSITE	20%
Program target	10,000		
Expected penetration rate	50%		
Expected penetration	5,000		
Program implementation duration	5	YEARS	
Program life time	20	YEARS	



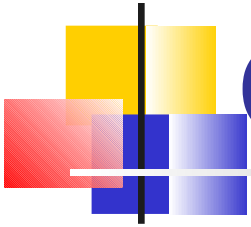
# Program costs

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Utility cost per unit	\$ 15.00	→ Utility cost for conservation device kit
Variable program cost	\$ 75,000	
Start-up cost	\$ 15,000	→ Program promotional materials and set-up
Annual oper cost during implementation	\$ 5,000	→ Management
Annual oper cost after implementation	\$ -	
Total implementation cost	\$ 115,000	
Total Operating cost after implementation	\$ -	
Total program cost	\$ 115,000	
Annual program cost during implementation	\$ 23,000	
Annual program cost over life time	\$ 5,750	

# Program impact on water use

		BASED ON WATERWATCH® SURVEY STATISTICS			
Gallons saved per unit per year	8,000	<u>Toilet/HH</u>	<u>Flushes/Day</u>	<u>Save/toilet</u>	<u>GPD</u>
Total program savings MG	800	2.5	8	0.50	10.00
Annual program savings in gallons MG	40	<u>Shower/HH</u>	<u>Mins/Day</u>	<u>Save/min</u>	<u>GPD</u>
Annual program savings in MGD	0.11	2.0	12	1.00	12.00
		Total GPD			22.00
		Annual savings per HH			8,000
Customer cost per unit	\$ 10.00	Customer cost for conservation device kit			
Total customer cost	\$ 50,000				
Annual customer cost	\$ 2,500				



# Customer & Utility savings

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Customer unit cost of water/1000 gals	\$ 2.50	→	Unit cost per 1000 gallons as per tariff
Reduction in customer water bill	\$ 20.00		
Total customer savings	\$ 100,000	→	
Annual customer savings	\$ 5,000		
Unit cost of water/1000 gals	\$ 1.00		Variable water cost per 100 gallons
Total Utility variable production savings	\$ 800,000		
Annual Utility variable production savings	\$ 40,000		



# Overall program benefits / costs

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Total Utility Annual Cost	\$ 10,750	Annual cost less customer savings (lost revenue)
Total Utility Annual Benefit	\$ 40,000	Annual variable production savings
Utility B/C ratio	3.75	
Total Customer Annual Cost	2,500	Annual customer cost to implement
Total Customer Annual Benefit	5,000	Annual customer savings on bills
Customer B/C ratio	2.00	
Total Annual Program Cost	\$ 13,250	Annual cost less lost revenue plus customer costs
Total Annual Program Benefit	\$ 45,000	Annual production savings plus customer savings
Overall B/C ratio	3.40	



# Other Uses

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- Regulatory Issues
  - Rate Cases
  - Environmental Impact Statements
  - Water Supply Permits
- Long Run Planning
  - Timing of need for new supply
- Drought Planning
- Customer Service
- Customer Outreach & Education



# Questions & Comments

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For more information contact

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Thanks for your time  
& interest

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