Customer Research with Waterwatch©

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Typical Project Plan

- 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

- 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

- The Waterwatch survey process
  - Demographic info
  - Indoor water use practices
  - Outdoor water use practices

Most Important:

BREAKDOWN OF USE BY END USE CATEGORIES

Survey Findings

- Demographics
  - Number of people in household
  - When was your 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

- 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 times
    - Water Manually
    - Automatic Sprinkler
  - Automatic sprinkler system
    - Number of Zones
    - When installed
    - Who sets the water schedule

Survey Findings

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

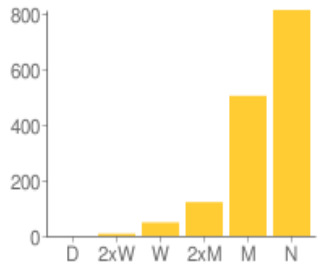
Other Statistics

Wash car or other vehicle

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

Statistics

Response Rate: 91.12%

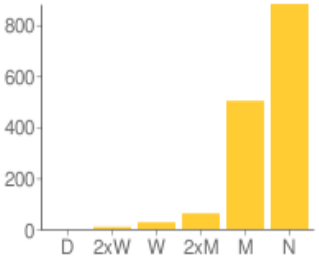


Clean driveway, sidewalk, patio, etc.

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

Statistics

Response Rate: 90.23%



Fixture Statistics

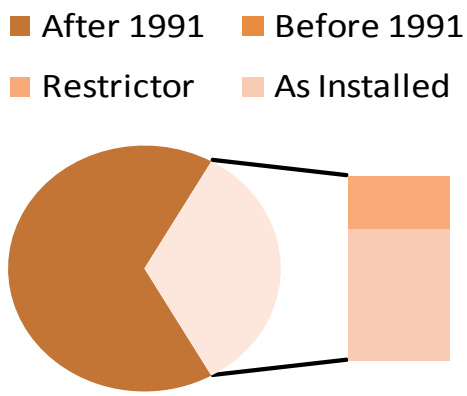
- SHOWERS

Waterwatch: Low-flow Showerhead Statistics		
	Count	Percentage
SHOWER 1		
Yes	825	68%
No	384	32%
SHOWER 2		
Yes	423	63%
No	247	37%
SHOWER 3		
Yes	76	53%
No	67	47%
ALL SHOWERS		
Yes	1324	65%
No	698	35%

TOILETS

Waterwatch Survey: Volume Retrofit Device in Toilet Statistics

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



CONSERVING	*2,871*	85%
NON-CONSERVING	*507*	15%
TOTAL TOILETS	3,378	

Typical Key Findings

- **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 Survey

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%
TOTAL	53,731	

Using the data

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

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

				IN PLACE USE		ALL FRONT LOAD USE	
TYPE OF MACHINE	IN PLACE	NUMBER OF MACHINES	LOADS PER DAY	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
TOTAL		**60,000**	**43,869**		**1,563,429**		**658,029**
						TOTAL POTENTIAL SAVINGS IN MGD	**0.91**

Benefit / Cost Analysis

PROGRAM OPTION: Low Flow Device Program

Measure	EDUC	
Target	ALL CUSTOMERS	
Total number	190,518	
Unit	CUSTOMER	
Target percent	100%	
Program target	190,518	
Expected penetration rate	25%	Percent of households that will adapt conservation measures
Expected penetration	47,630	based on info provided by UWNJ
Program implementation duration	1	
Program life time	20	
UWNJ cost per unit	$ -	
Variable program cost	$ -	
Start-up cost	$ 10,000	UWNJ estimate for new program materials and set-up
Annual oper cost during implementation	$ 50,000	UWNJ estimate for promotion & management
Annual oper cost after implementation	$ 70,000	UWNJ estimate for promotion & management
Total implementation cost	$ 60,000	
Total Operating cost after implementation	$ 1,330,000	
Total program cost	$ 1,390,000	
Annual program cost during implementation	$ 60,000	
Annual program cost over life time	$ 69,500	
		BASED ON UWNJ STATISTICS
Gallons saved per unit per year	4,767	Total use 2007 (TG) 30,271,131
Total program savings MG	4,541	Total Customers 190,518
Annual program savings in gallons MG	227	Use per customer per year (Gals) 158,900
Annual program savings in MGD	0.62	Savings potential * 3.0%
		Annual 4,767
Customer cost per unit	$ 50	Customer cost to implement various projects
Total customer cost	$ 2,381,475	
Annual customer cost	$ 119,074	
Customer unit cost of water/1000 gals	$ 3.74	Unit cost per 1000 gallons as per current tariff
Reduction in customer water bill	$ 17.83	
Total customer savings	$ 849,166	
Annual customer savings	$ 42,458	
UWNJ unit cost of water/1000 gals	$ 0.75	UWNJ variable water cost per 100 gallons
Total UWNJ variable production savings	$ 3,405,747	
Annual UWNJ variable production savings	$ 170,287	
Total UWNJ Annual Cost	$ 111,958	Annual UWNJ cost less customer savings (i.e., lost revenue)
Total UWNJ Annual Benefit	$ 170,287	Annual UWNJ variable production savings
UWNJ B/C ratio	1.52	
Total Customer Annual Cost	119,074	Annual customer cost to implement
Total Customer Annual Benefit	42,458	Annual customer savings on bills
UWNJ B/C ratio	0.36	
Total Annual Program Cost	$ 231,032	Annual UWNJ cost less lost revenue plus customer costs
Total Annual Program Benefit	$ 212,746	Annual UWNJ production savings plus customer savings
Overall B/C ratio	0.92	

Program, participation rate, duration

Program costs

Program impact on water use

Customer & UWNJ savings

Overall program benefits / costs

Program, participation rate, duration

Low flow Device Distribution Program

Target	Single Family	
Total number	50,000	
Unit	HOUSEHOLD	
Target percent	20%	
Program target	10,000	
Expected penetration rate	50%	
Expected penetration	5,000	
Program implementation duration	5	YEARS
Program life time	20	YEARS

NonLF Devices as per Waterwatch Survey

SHOWERS	25%
TOILETS	15%
COMPOSITE	20%

Program costs

UWNJ 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

Gallons saved per unit per year		8,000
Total program savings MG		800
Annual program savings in gallons MG		40
Annual program savings in MGD		0.11
Customer cost per unit	$	10.00
Total customer cost	$	50,000
Annual customer cost	$	2,500

BASED ON WATERWATCH SURVEY STATISTICS

Toilet/HH	Flushes/Day	Save/toilet	GPD
2.5	8	0.50	10.00
Shower/HH	Mins/Day	Save/min	GPD
2.0	12	1.00	12.00
		Total GPD	22.00
		Annual savings per HH	8,000

Customer cost for conservation device kit

Customer & Utility savings

Customer unit cost of water/1000 gals	$	2.50	→ Unit cost per 1000 gallons as per current 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 ariable production savings	$	800,000	
Annual Utility variable production savings	$	40,000	

Overall program benefits / costs

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	