



WHITE PAPER

Circle RO System Marketing Claims

JULY 2015

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1.1 TABLE DATA EXPLANATION

MODELS TESTED



Brondell
Circle RC100



Premier
RO-Pure Plus



GE
PXRQ15RBL

The shaded areas on the tables on the following pages represent a volume of 24 ounces of water – the equivalent of 2 “standard” glasses of water. In real life, users of RO systems do not drink an entire tank of water all at once, but instead dispense water from the tank by drinking a glass or two at a time. The system then refills that 24 ounces to return to a full tank. This is referred to as “topping off”.

With conventional RO systems, back pressure builds up in the system as the tank is filled with water and the air in the tank is displaced. Because of this build up in back pressure, the RO membrane creates a tremendous amount of wastewater as it tries to push through the greater amount of back pressure from the displaced air from the nearly full tank. This is why conventional RO systems are at their most inefficient during this “topping off” stage.

Pages 3-6 show a comparison that represents the average wastewater output for each product as it replaces the subtracted 24 ounces of filtered water to return to the tank’s full capacity. This is referred to as the “Top Off Efficiency Average”.

Our marketing materials make statements both with a qualifier (“Up to 10X...”) and without a qualifier (“10X More Efficient...”). As illustrated by the data found on pages 3-6, both claims are substantiated.

1.2 BRONDELL CIRCLE RC100 VS. PREMIER RO-PURE PLUS

TOP OFF EFFICIENCY AVERAGE

Circle RC100 Average	2.4 Liters
RO-Pure Plus Average	20 Liters
Circle RC100 Efficiency	8.3 X

NOTE: The yellow highlighted figures support Brondell’s “10X Efficiency” claim. At the same Occupied Volume, RO-Pure Plus wastewater output is **10.14 times** as much water as Circle RC100.

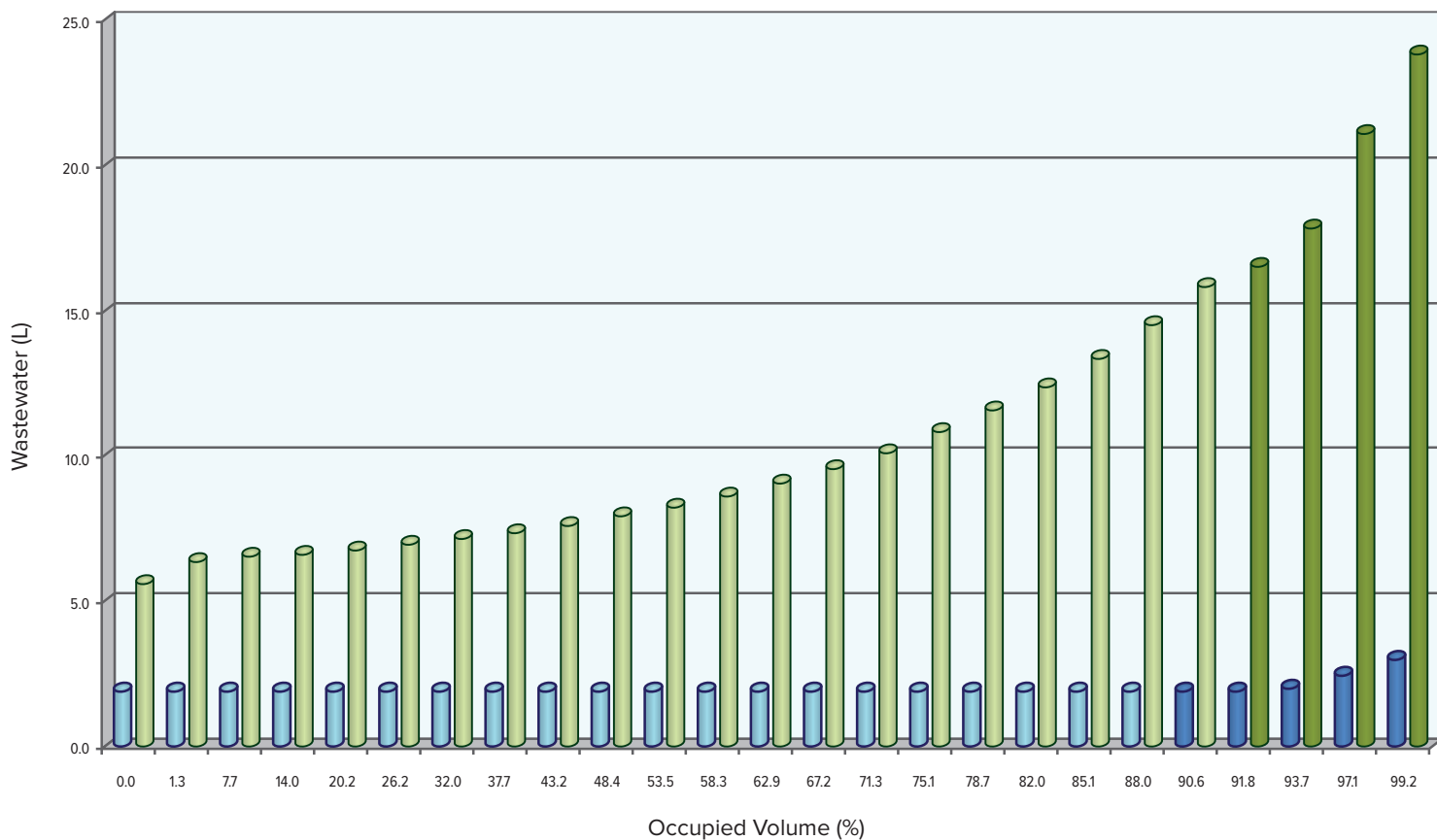
Brondell Circle RC100

OCCUPIED VOLUME (%)	WASTE WATER/ 1 LITER OF PURIFIED WATER (L)
0.0	2.1
1.9	2.1
5.7	2.1
9.5	2.1
13.3	2.1
17.1	2.1
21.0	2.1
24.8	2.1
28.6	2.1
32.4	2.1
36.2	2.1
40.0	2.1
43.8	2.1
49.5	2.1
55.2	2.1
61.0	2.1
66.7	2.1
72.4	2.1
78.1	2.1
83.8	2.1
91.4	2.1
95.2	2.1
97.1	2.1
98.9	2.6
99.4	3.1

Premier RO-Pure Plus

OCCUPIED VOLUME (%)	WASTE WATER/ 1 LITER OF PURIFIED WATER (L)
0.0	5.7
1.3	6.5
7.7	6.6
14.0	6.8
20.2	6.9
26.2	7.1
32.0	7.3
37.7	7.5
43.2	7.8
48.4	8.1
53.5	8.4
58.3	8.8
62.9	9.2
67.2	9.7
71.3	10.3
75.1	10.9
78.7	11.7
82.0	12.6
85.1	13.5
88.0	14.7
90.6	16.0
91.8	16.7
93.7	18.0
97.1	21.3
99.2	24.0

1.2 BRONDELL CIRCLE RC100 VS. PREMIER RO-PURE PLUS



1.3 BRONDELL CIRCLE RC100 VS. GE PXRQ15RBL

TOP OFF EFFICIENCY AVERAGE

Circle RC100 Average	2.4 Liters
PXRQ15RBL Average	20 Liters
Circle RC100 Efficiency	8.3 X

NOTE: The yellow highlighted figures indirectly support Brondell’s “10X Efficiency” claim. Though a reading for PXRQ15RBL was not registered at an Occupied Volume of 97.1% (thus making a direct comparison with Circle RC100), one can extrapolate the data to estimate what the reading would have been at the 97.1% volume, and it would be above the 10X claim threshold.

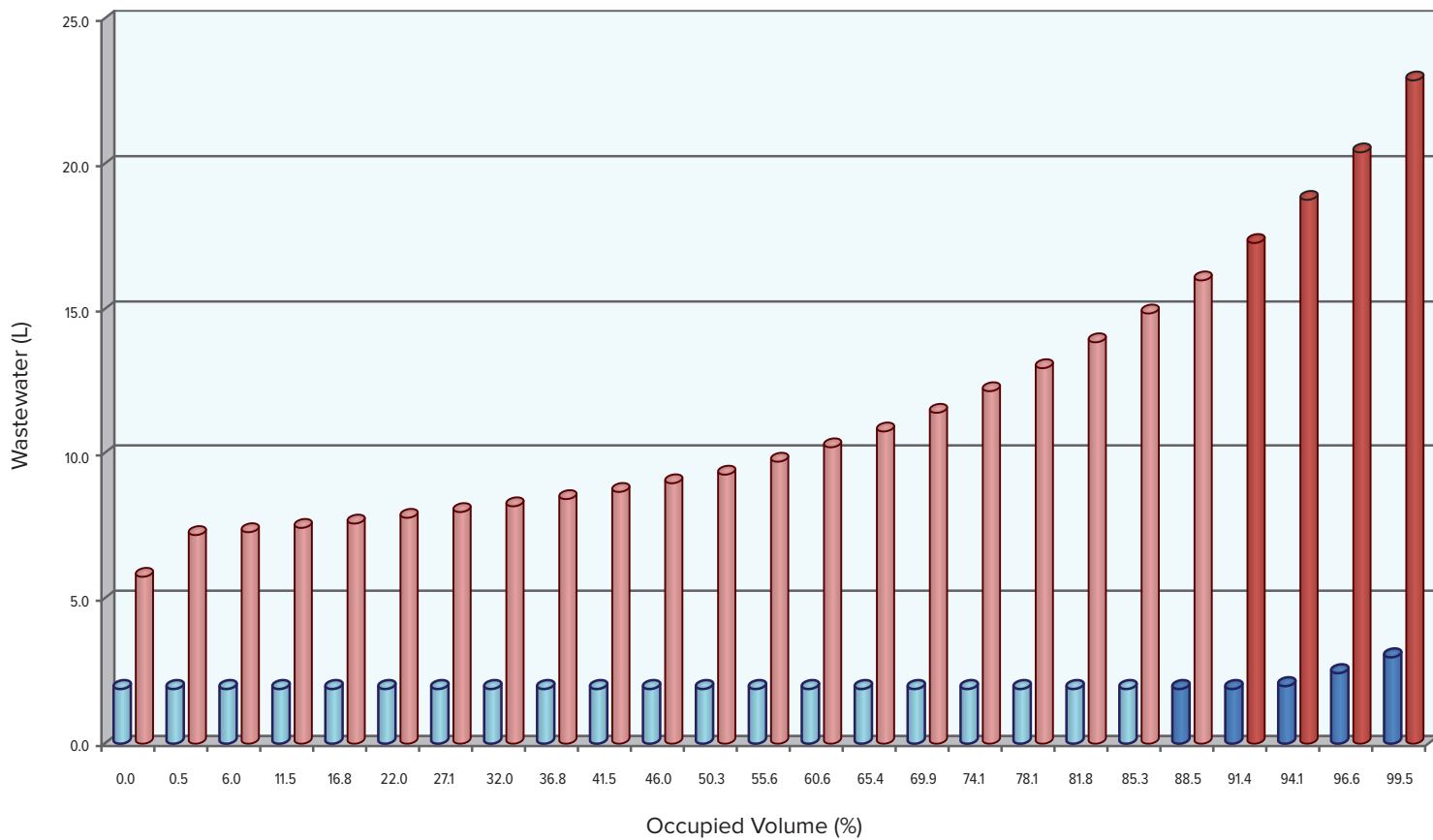
Brondell Circle RC100

OCCUPIED VOLUME (%)	WASTE WATER/ 1 LITER OF PURIFIED WATER (L)
0.0	2.1
1.9	2.1
5.7	2.1
9.5	2.1
13.3	2.1
17.1	2.1
21.0	2.1
24.8	2.1
28.6	2.1
32.4	2.1
36.2	2.1
40.0	2.1
43.8	2.1
49.5	2.1
55.2	2.1
61.0	2.1
66.7	2.1
72.4	2.1
78.1	2.1
83.8	2.1
91.4	2.1
95.2	2.1
97.1	2.1
98.9	2.6
99.4	3.1

GE PXRQ15RBL

OCCUPIED VOLUME (%)	WASTE WATER/ 1 LITER OF PURIFIED WATER (L)
0.0	5.9
0.5	7.4
6.0	7.5
11.5	7.6
16.8	7.8
22.0	8.0
27.1	8.1
32.0	8.4
36.8	8.6
41.5	8.8
46.0	9.1
50.3	9.4
55.6	9.9
60.6	10.4
65.4	10.9
69.9	11.6
74.1	12.3
78.1	13.1
81.8	14.0
85.3	15.0
88.5	16.1
91.4	17.4
94.1	18.9
96.6	20.5
99.5	23.0

1.3 BRONDELL CIRCLE RC100 VS. GE PXRQ15RBL



2.1 PREMIER RO-PURE PLUS VS. BRONDELL CIRCLE RC100

Premier RO-Pure Plus vs. Brondell Circle RC100 Cost of Ownership Analysis

Water Cost Data

Average drinking/cooking water use per capita per day ¹	2 gallons
Average family size in household ²	3.13 people
Average drinking/cooking water use per family	2,284.9 gallons/year
Average cost of water³	0.0045 per gallon

Premier RO-Pure Plus

Average drinking/cooking water use per family	2,284.9 gallons/year
"Top Off Method" ratio of filtered water to wastewater	20.0 gal. waste/gal. filtered
Wastewater, using "Top Off Method"	45,698 gallons/year
Total cost of wastewater	\$206.93 per year
Total cost of wastewater	\$17.24 per month

Brondell Circle RC100

Average drinking/cooking water use per family	2,284.900 gallons/year
"Top Off Method" ratio of filtered water to wastewater	2.4 gal. waste/gal. filtered
Wastewater, using "top off" model	5,483.76 gallons/year
Total cost of wastewater	\$24.83 per year
Total cost of wastewater	\$2.07 per month

Summary

Cost of monthly drinking/cooking water with Premier RO-Pure Plus	\$17.24 per month
Cost of monthly drinking/cooking water with Brondell Circle RC100	\$2.07 per month
Cost difference of monthly drinking/cooking water	\$15.18 more per month with RO-Pure Plus
Wastewater consumed, using "Top Off Method"	3,351 more gallons per month with RO-Pure Plus
Cost of Brondell Circle RC100 (retail price on brondell.com) ⁴	\$429.00
Cost of Premier RO-Pure Plus (retail price on geapplianceparts.com) ⁴	\$199.95
Cost difference	\$229.05 more initial cost with Circle
Time to make up cost of Circle RC100	28.27 months
Time to make up cost difference between Circle RC100 and RO-Pure Plus	15.09 months

Footnotes 1-4: Please see Page 13 for calculation details.

2.1 GE PXRQ15RBL VS. BRONDELL CIRCLE RC100

GE PXRQ15RBL vs. Brondell Circle RC100 Cost of Ownership Analysis

Water Cost Data

Average drinking/cooking water use per capita per day ¹	2 gallons
Average family size in household ²	3.13 people
Average drinking/cooking water use per family	2,284.9 gallons/year
Average cost of water ³	0.0045 per gallon

GE PXRQ15RBL

Average drinking/cooking water use per family	2,284.9 gallons/year
"Top Off Method" ratio of filtered water to wastewater	20.0 gal. waste/gal. filtered
Wastewater, using "Top Off Method"	45,698 gallons/year
Total cost of wastewater	\$206.93 per year
Total cost of wastewater	\$17.24 per month

Brondell Circle RC100

Average drinking/cooking water use per family	2,284.900 gallons/year
"Top Off Method" ratio of filtered water to wastewater	2.4 gal. waste/gal. filtered
Wastewater, using "top off" model	5,483.76 gallons/year
Total cost of wastewater	\$24.83 per year
Total cost of wastewater	\$2.07 per month

Summary

Cost of monthly drinking/cooking water with GE PXRQ15RBL	\$17.24 per month
Cost of monthly drinking/cooking water with Brondell Circle RC100	\$2.07 per month
Cost difference of monthly drinking/cooking water	\$15.18 more per month with PXRQ15RBL
Wastewater consumed, using "Top Off Method"	3,351 more gallons per month with PXRQ15RBL
Cost of Brondell RC100 (retail price on brondell.com) ⁴	\$429.00
Cost of GE PXRQ15RBL (retail price on geapplianceparts.com) ⁴	\$279.99
Cost difference	\$149.01 more initial cost with Circle
Time to make up cost of Circle RC100	28.27 months
Time to make up cost difference between Circle RC100 and PXRQ15RBL	9.82 months

Footnotes 1-4: Please see Page 13 for calculation details.

2.3 BRONDELL CIRCLE RC100 VS. COMPETITION SUMMARY

As illustrated in the data on the previous two pages, savings in the cost of drinking water is just over \$15 per month in favor of the Circle RC100 versus the Premier RO-Pure Plus model and versus the GE PXRQ15RBL (coincidentally the “Top Off Method” ratio value is the same for both of the competing models).

As an example, over a 10-year period, your Circle could save you \$1,821.60 on the cost of water.

According to a study from Circle of Blue*, municipal water costs have increased 41% since 2010, as cities are forced to spend millions of dollars to update water supply networks. “Some assessments peg the national cost of repairing and replacing old pipes at more than \$US 1 trillion over the next two decades.” In other words, that \$15 savings per month is likely to grow more and more.

In addition to saving money, using the Circle RC100 system saves water – lots of it. 3,300 gallons of water

As an example, over a 10-year period, your Circle could save 402,120 gallons of water. That’s enough to provide drinking and cooking water to 176 families for an entire year.**

* <http://www.circleofblue.org/waternews/2015/world/price-of-water-2015-up-6-percent-in-30-major-u-s-cities-41-percent-rise-since-2010/>

** see data on page 8

3.1 COMPLETE “10X MORE EFFICIENT” RO SYSTEM TEST DATA TABLES

MANUFACTURER: Premier MODEL: RO-Pure Plus

Tested by the Environmental Technology Institute, a WQA-certified lab
in Seoul, Korea on April 29, 2015

TIME (mins.)	ACCUMULATED PERMANENT VOLUME (L)	BACK PRESSURE (PSI)	TDS REDUCTION (%)	OCCUPIED VOLUME (%)	WASTE WATER/ 1 LITER OF PURIFIED WATER (L)
0	0.0	0.0	92.8	0.0	5.7
1	0.1	5.7	92.3	1.3	6.5
7	0.7	6.4	92.2	7.7	6.6
13	1.3	7.1	92.0	14.0	6.8
19	1.8	7.9	91.8	20.2	6.9
25	2.4	8.8	91.6	26.2	7.1
31	2.9	9.7	91.4	32.0	7.3
37	3.4	10.7	91.1	37.7	7.5
43	3.9	11.7	90.8	43.2	7.8
49	4.4	12.8	90.4	48.4	8.1
55	4.8	14.0	90.0	53.5	8.4
61	5.2	15.2	89.5	58.3	8.8
67	5.7	16.5	89.0	62.9	9.2
73	6.0	17.7	88.4	67.2	9.7
79	6.4	19.0	87.8	71.3	10.3
85	6.8	20.3	87.0	75.1	10.9
91	7.1	21.6	86.2	78.7	11.7
97	7.4	22.9	85.2	82.0	12.6
103	7.7	24.1	84.2	85.1	13.5
109	7.9	25.3	83.0	88.0	14.7
115	8.2	26.5	81.7	90.6	16.0
118	8.3	27.0	81.0	91.8	16.7
123	8.4	27.9	79.7	93.7	18.0
133	8.7	29.6	76.7	97.1	21.3
140	8.9	30.7	74.4	99.2	24.0

Rated pressure into RO system: 48psi



Data used in “10X” comparisons on pages 3-4

3.1 COMPLETE “10X MORE EFFICIENT” RO SYSTEM TEST DATA TABLES

MANUFACTURER: GE MODEL: PXRQ15RBL

Tested by the Environmental Technology Institute, a WQA-certified lab
in Seoul, Korea on April 29, 2015

TIME (mins.)	ACCUMULATED PERMANENT VOLUME (L)	BACK PRESSURE (PSI)	TDS REDUCTION (%)	OCCUPIED VOLUME (%)	WASTE WATER/ 1 LITER OF PURIFIED WATER (L)
0	0.0	8.4	94.8	0.0	5.9
1	0.0	8.5	94.0	0.5	7.4
16	0.5	9.1	93.9	6.0	7.5
31	1.0	9.8	93.7	11.5	7.6
46	1.5	10.5	93.6	16.8	7.8
61	1.9	11.2	93.4	22.0	8.0
76	2.4	11.9	93.3	27.1	8.1
91	2.8	12.7	93.1	32.0	8.4
106	3.2	13.5	92.9	36.8	8.6
121	3.6	14.3	92.6	41.5	8.8
136	4.0	15.2	92.4	46.0	9.1
151	4.4	16.0	92.1	50.3	9.4
170	4.9	17.1	91.8	55.6	9.9
189	5.3	18.3	91.3	60.6	10.4
208	5.8	19.4	90.9	65.4	10.9
227	6.2	20.5	90.3	69.9	11.6
246	6.5	21.7	89.8	74.1	12.3
265	6.9	22.8	89.1	78.1	13.1
284	7.2	23.9	88.4	81.8	14.0
303	7.5	25.0	87.6	85.3	15.0
322	7.8	26.0	86.7	88.5	16.1
341	8.0	27.0	85.7	91.4	17.4
360	8.3	27.9	84.7	94.1	18.9
379	8.5	28.8	83.5	96.6	20.5
403	8.8	29.9	81.8	99.5	23.0

Rated pressure into RO system: 48psi



Data used in “10X” comparisons on pages 5-6

3.1 COMPLETE “10X MORE EFFICIENT” RO SYSTEM TEST DATA TABLES

MANUFACTURER: Brondell MODEL: Circle RC100

Tested by the Environmental Technology Institute, a WQA-certified lab
in Seoul, Korea on April 29, 2015

TIME (mins.)	ACCUMULATED PERMANENT VOLUME (L)	BACK PRESSURE (PSI)	TDS REDUCTION (%)	OCCUPIED VOLUME (%)	WASTE WATER/ 1 LITER OF PURIFIED WATER (L)
0	0.0	0.0	95.9	0.0	2.1
1	0.1	0.0	95.9	1.9	2.1
3	0.4	0.0	95.9	5.7	2.1
5	0.6	0.0	95.9	9.5	2.1
7	0.8	0.0	95.9	13.3	2.1
9	1.1	0.0	95.9	17.1	2.1
11	1.3	0.0	95.9	21.0	2.1
13	1.6	0.0	95.9	24.8	2.1
15	1.8	0.0	95.9	28.6	2.1
17	2.0	0.0	95.9	32.4	2.1
19	2.3	0.0	95.9	36.2	2.1
21	2.5	0.0	95.9	40.0	2.1
23	2.8	0.0	95.9	43.8	2.1
26	3.1	0.0	95.9	49.5	2.1
29	3.5	0.0	95.9	55.2	2.1
32	3.8	0.0	95.9	61.0	2.1
35	4.2	0.0	95.9	66.7	2.1
38	4.6	0.0	95.9	72.4	2.1
41	4.9	0.0	95.9	78.1	2.1
44	5.3	0.0	95.9	83.8	2.1
48	5.8	0.0	95.9	91.4	2.1
50	6.0	0.6	95.9	95.2	2.1
51	6.1	2.8	95.7	97.1	2.1
52	6.2	13.1	94.2	98.9	2.6
52.4	6.3	20.1	92.4	99.4	3.1

Rated pressure into RO system: 50psi



Data used in “10X” comparisons on pages 3-6

3.2 “SAVES YOU MONEY” SOURCE CITATIONS

Average drinking/cooking water use per capita per day ¹	2 gallons
Average family size in household ²	3.13 people
Average drinking/cooking water use per family	2,284.9 gallons/year
Average cost of water³	0.0045 per gallon

1 United States EPA Document, “Water on Tap”, December 2009: http://water.epa.gov/drink/guide/upload/book_waterontap_full.pdf

2 Statista: <http://www.statista.com/statistics/183657/average-size-of-a-family-in-the-us/>

3 Circle of Blue, “The Price of Water 2013”, June 2013: http://www.circleofblue.org/waternews/wp-content/uploads/2013/06/2013_finaltables.jpg (see below)

CIRCLE OF BLUE 2013 SURVEY BREAKDOWN

Seattle	\$90.36 per month	Dallas	\$42.62 per month
San Francisco	\$87.20 per month	Houston	\$58.28 per month
San Jose	\$52.26 per month	Memphis	\$23.58 per month
Fresno	\$19.75 per month	Chicago	\$34.68 per month
Los Angeles	\$66.35 per month	Milwaukee	\$33.64 per month
San Diego	\$80.83 per month	Indianapolis	\$53.04 per month
Las Vegas	\$41.13 per month	Detroit	\$37.02 per month
Phoenix	\$38.75 per month	Columbus	\$52.00 per month
Tucson	\$46.45 per month	Atlanta	\$91.92 per month
Salt Lake City	\$26.13 per month	Jacksonville	\$43.30 per month
Denver	\$30.00 per month	Charlotte	\$48.43 per month
Santa Fe	\$153.78 per month	Baltimore	\$51.15 per month
Austin	\$72.19 per month	Philadelphia	\$62.70 per month
San Antonio	\$41.20 per month	New York	\$54.24 per month
Ft. Worth	\$45.66 per month	Boston	\$74.18 per month

Average Water Bill	\$55.09 per month
	\$661.13 per year
Average Cost of Water	\$0.0045 per gallon



ABOUT BRONDELL

Brondell is a leading developer and distributor of healthy home products that improve daily living, one room at a time. Since 2003, Brondell has been known for innovative design and functionality, while maintaining the highest quality products and service. Brondell's commitment to healthy living sets a new standard for luxury and consciousness in the home. Their unique blend of the latest technology and modern design has earned Brondell numerous awards.

Past awards include *Kitchen & Bath Industry Show (KBIS)* Best of KBIS Kitchen Silver Award, *Electronic House* Home Health Technology Product of the Year, *Good Housekeeping* VIP Award, *Home Magazine* Best American Building Products Award, and *Wired Tools* Top 100 Cool Gadgets.

Brondell is a Mark Cuban-backed, privately held company headquartered in San Francisco, CA.

