



Cascade WaterSense[®] Toilet Replacement Program Residential Survey Report Bellevue, Washington October 12, 2011

I. Introduction

This report summarizes survey results from customers who participated in the Cascade Water Alliance (Cascade) WaterSense[®] Toilet Replacement Program in 2009-10. Through the program, Cascade provided a \$100 rebate to homeowners in its member areas for the purchase and installation of any high-efficiency toilet bearing the US Environmental Protection Agency (EPA) WaterSense[®] ¹ label. All rebate recipients were mailed survey forms, and Cascade received 882 responses representing an 18% return rate. Key findings detailed in this report include:

WaterSense[®] Fixture Quality

- 94% rated performance as “excellent” or “good”
- 97% rated comparative performance as “better than” or “as well as” the old toilet
- 50% of surveyed brands received 4.5 out of 5 rating or higher
- Fewer than 4% reported serious problems, such as clogging

Consumer Information

- Water conservation/environmental protection was primary purchase driver
- Average cost was \$175
- 90% were purchased from hardware store chains

Program Results

- 7,700 toilets installed in residences in Cascade member areas in 2009-10
- Approximately 25 million gallons of water per year conserved
- More than 40 local retailers and plumbers provided or installed WaterSense[®] toilets
- 99% rated the toilet replacement program as “excellent” or “good”

¹ WaterSense[®] is a federal labeling program administered by the EPA that awards a special label to products using 20% less water than the standard or plumbing code requires while still providing superior performance, as determined by independent testing of the product. There are currently more than 500 toilet models with the WaterSense[®] label representing all major brands, styles and price ranges.

Water for today...
and tomorrow

II. About the Survey

Surveys were sent via US Mail to all customers who submitted valid rebate applications during the previous quarter. Most customers purchased their toilets from one to six months prior to receiving the survey. The format was a return postage-paid mailer with the survey portion as a tear-off return card. No customer information, such as name and address, was requested on the return portion of the card.

The survey included eleven questions and a comment section asking for basic information, such as the toilet brand and model, as well as performance-related questions regarding flushing ability, clogs and sewer line backups. The survey tabulation is available as Appendix A to this report. Information on the specific toilet model was sometimes lacking in the returned surveys. Therefore, this report summarizes responses based on the brand of the toilet. The surveys collected information from participating homeowners chased thirty-five models of the following brands:

American Standard	Jacuzzi
Aqua Source	Kohler
Caroma	Pegasus
Cascadian	Toto
Glacier Bay	Water Ridge

The Fine Print

Cascade Water Alliance neither supports nor disputes any statements or opinions from survey respondents regarding the performance of their fixture. This report is provided solely as a tool for prospective customers who are in the market for a new toilet. Customers are advised to utilize many forms of information regarding toilet performance to make their purchasing decision, such as the *Maximum Performance Testing of Popular Toilet Models* by Veritec Consulting, Inc. & Koeller and Company, the EPA WaterSense Toilet website, as well as information from their plumber or local retailer.

Cascade Water Alliance does not promote any retailer, toilet manufacturer or toilet brand or model, but encourages customers to choose a WaterSense[®] labeled toilet and WaterSense[®] labeled products when installing new fixtures or upgrading. Any questions regarding the survey, this report or Cascade's programs should be directed to Michael Brent, Water Resources Manager, Cascade Water Alliance, telephone number: 425.453.1810; email address: mbrent@cascadewater.org.

III. Performance

Ninety-four percent of respondents rated the performance of their WaterSense[®] toilet as "excellent" or "good", and only 0.9% rated their new toilet's performance as "poor". Eighty-three percent of homeowners said the new models worked better than their old toilets. The old toilets, on average, used nearly three times as much water per flush as WaterSense[®] models.

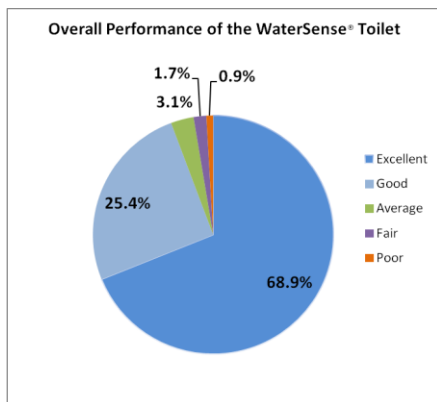


Figure 3.1

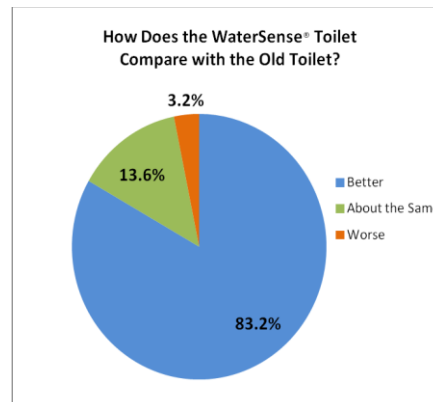


Figure 3.2

Multiple Flushes

Eighty-four respondents reported that their new toilet required multiple flushes more than 10% of the time, and 28 reported significant clogging problems as shown in Figures 3.3 and 3.4, respectively. However, if the single worst performing model is excluded from each of these responses, the number of multiple flushing and clogging reports drops by nearly half. The remaining 50% of negative responses are divided among fifteen different models.

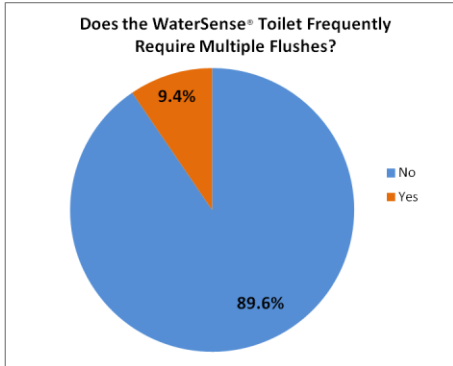


Figure 3.3

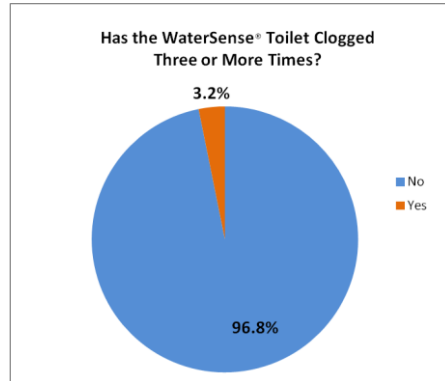


Figure 3.4

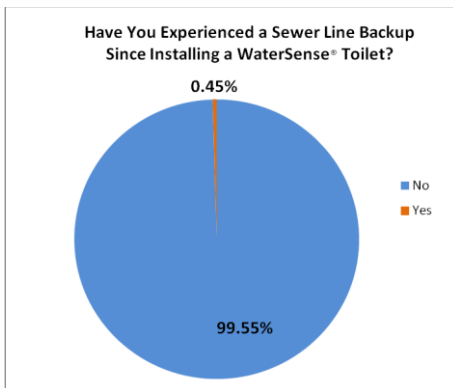


Figure 3.5

Sewer Line Backups

The survey asked if customers had experienced a sewer line backup since installing their WaterSense® toilet. The survey requested that respondents contact Cascade’s Water Resources Manager if this had occurred and included a direct telephone number. To date, no telephone calls describing this problem have been received. Four respondents indicated they had experienced a sewer line backup after installing their toilet. Despite answering “yes” to this question, all four respondents rated their toilet’s performance as “excellent” or “good” and three said the toilet performed “better than” their old toilet. Three of the “yes” respondents also rated Cascade’s program as “excellent”, and the fourth rated it as “good”.

These positive statements call into question the “yes” responses to the sewer line backups and suggest that these four residents may have misunderstood the question or mis-entered their responses. If all four “yes” answers were accurate, the very low number of “yes” responses still validates the negative correlation between installing high-efficiency toilets and then having a sewer line backup, since more than 99.5% of responding customers did not have this experience.

IV. Survey Results by Brand

Brand: **American Standard**

Models Surveyed: Cadet 3, Dual Flush, Evolution, Mainstream Flowise

Number of Survey Responses: 144

Customers Reporting Some Clogging or Double-Flushing: 7.6%

Overall Performance Rating: 🌊🌊🌊🌊 (4.53 on a scale of 1 – 5)

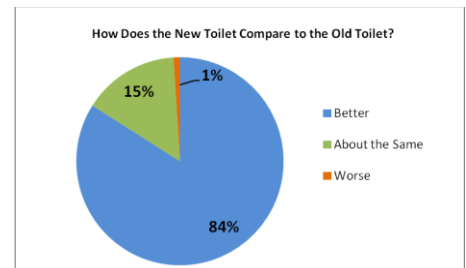


Figure 4.1

Brand: **Aqua Source**

Models Surveyed: Not Provided

Number of Survey Responses: 8

Customers Reporting Some Clogging or Double-Flushing: 12.5%

Overall Performance Rating: 🌊🌊🌊🌊 (4.38)

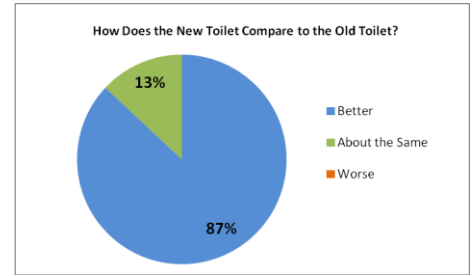


Figure 4.2

Brand: **Caroma**

Models Surveyed: Caravelle, Sydney

Number of Survey Responses: 10

Customers Reporting Some Clogging or Double-Flushing: 10%

Overall Performance Rating: 🌊🌊🌊🌊 (4.8)

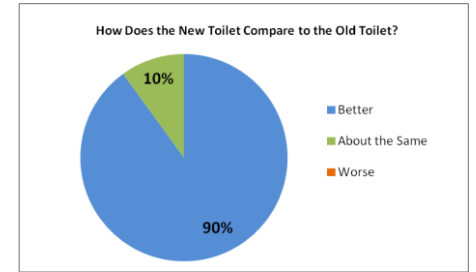


Figure 4.3

Brand: **Cascadian**

Models Surveyed: Toscano

Number of Survey Responses: 5

Customers Reporting Some Clogging or Double-Flushing: 40%

Overall Performance Rating: 🌊🌊🌊 (3.8)

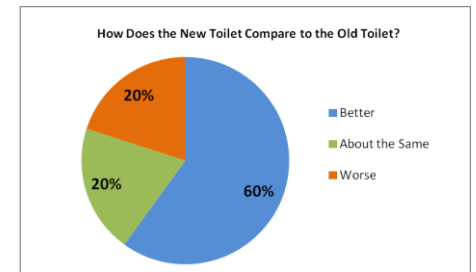


Figure 4.4

Brand: **Glacier Bay**

Models Surveyed: All-In-One, Dual Flush

Number of Survey Responses: 208

Customers Reporting Some Clogging or Double-Flushing: 22%

Overall Performance Rating: 🌊🌊🌊🌊 (4.37)

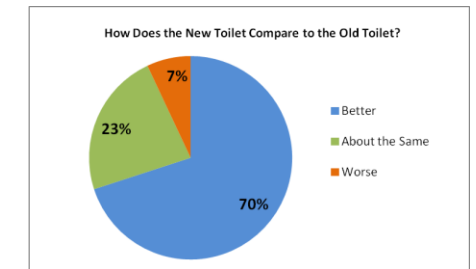


Figure 4.5

Brand: **Jacuzzi**

Models Surveyed: Espree, Perfecta, Prestige

Number of Survey Responses: 28

Customers Reporting Some Clogging or Double-Flushing: 21.4%

Overall Performance Rating: 🌊🌊🌊🌊 (4.46)

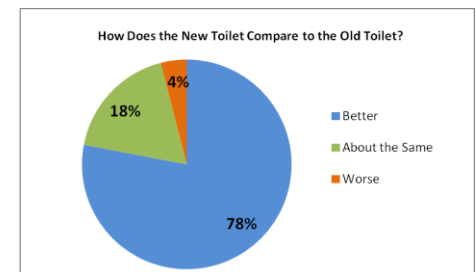


Figure 4.6

Brand: Kohler

Models Surveyed: Cimarron, Highline Pressure Lite, Kelston, Persuade, Sterling, Saile, Wellworth, Windham

Number of Survey Responses: 230

Customers Reporting Some Clogging or Double-Flushing: 7.4%

Overall Performance Rating: 🌊🌊🌊🌊 (4.72)

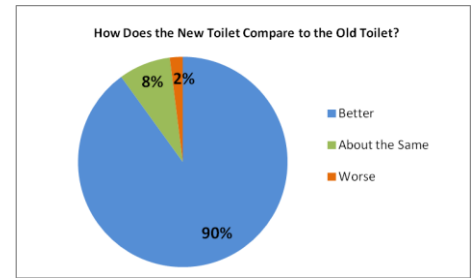


Figure 4.7

Brand: Pegasus

Models Surveyed: Not Provided

Number of Survey Responses: 5

Customers Reporting Some Clogging or Double-Flushing: 60%

Overall Performance Rating: 🌊🌊🌊 (3.2)

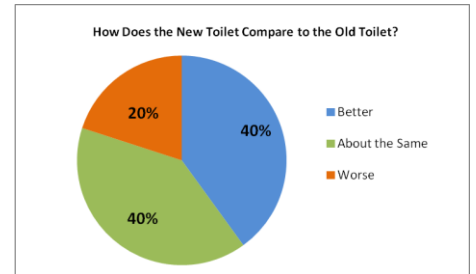


Figure 4.8

Brand: Toto

Models Surveyed: Aquia, Aquia II, Dalton, Drake, ADA Drake, EcoDrake, ADA Ultramax, Eco Ultramax, Eco Ultramax II, Ecomax, Gwenyth, Eco Gwenyth, Promenade

Number of Survey Responses: 215

Customers Reporting Some Clogging or Double-Flushing: 5.1%

Overall Performance Rating: 🌊🌊🌊🌊 (4.85)

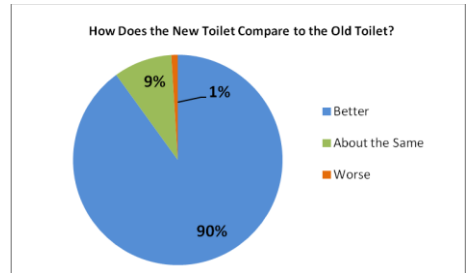


Figure 4.9

Brand: Water Ridge

Models Surveyed: Dual Flush

Number of Survey Responses: 18

Customers Reporting Some Clogging or Double-Flushing: 11%

Overall Performance Rating: 🌊🌊🌊🌊 (4.72)

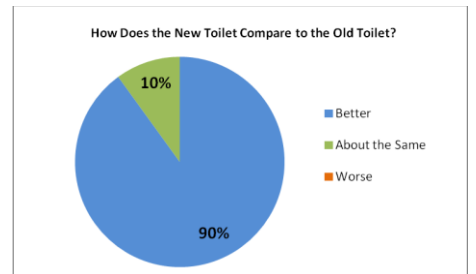


Figure 4.10

V. Consumer Information

As shown in Figure 5.1, the primary drivers for residents purchasing a a desire to conserve water and protect the environment, problems with their old toilet and Cascade’s \$100 rebate. Few people indicated that lowering their water bill was the main reason for purchasing a toilet.

The average age of the toilets being replaced was 22.2 years. This average was based on customer knowledge of the age of their toilet and, in many cases, was an estimate. Figure 5.2 shows the age of the old toilets grouped into three categories corresponding to flush volumes: Toilets manufactured from 1994 to present used 1.6 gallons per flush (gpf); toilets made from 1980 to 1993 used 3.5 gpf; and toilets manufactured before 1980 used up to 5 gpf.

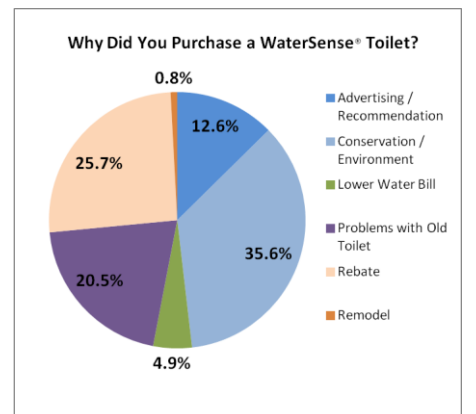


Figure 5.1

The average flush volume of the old toilets was approximately 3.25 gpf, resulting in savings of about 2 gpf with the replacement WaterSense® models, which use no more than 1.28 gpf. This savings estimate does not take into account the problem of “double-flushing” common to many

toilets of the 1990s, old toilets that were leaking, or very old toilets that may have used up to seven gallons per flush. Each of these factors could increase the average flush volume of the old toilets making the savings estimate conservative.

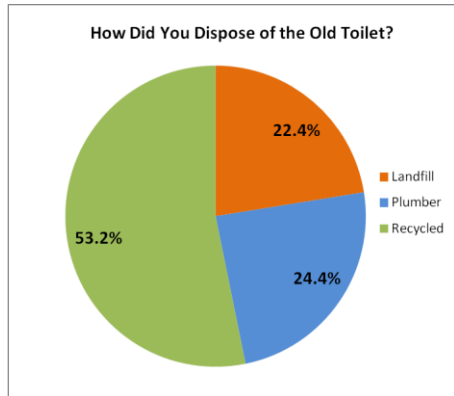


Figure 5.3

Cascade offers a free toilet recycling service for customers participating in this program. The old toilets are crushed and blended with aggregate for road construction projects in King County, Washington. Figure 5.3 shows that about half the respondents took advantage of this service resulting in approximately 250,000 pounds of solid waste diverted from landfills and reused as construction material in 2009 – 10.

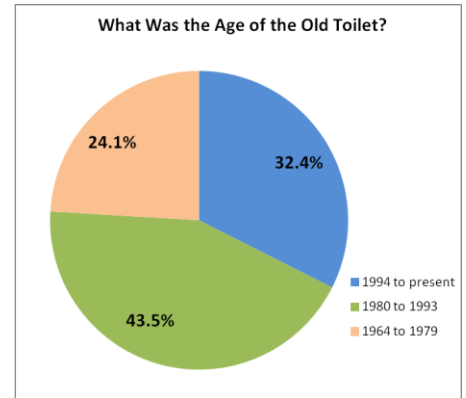


Figure 5.2



Old Toilets at Recycling Facility

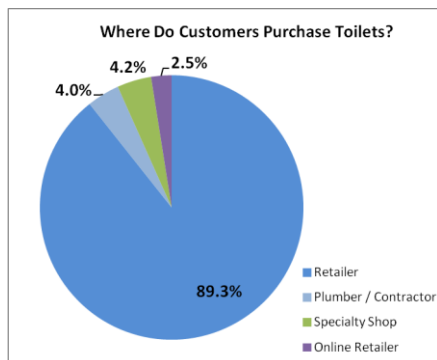


Figure 5.4

Suppliers

Customers purchased their WaterSense® toilets from a variety of sources, but most homeowners found their toilet at home improvement retailers. In 2010, 89% of Cascade customers made their purchase at The Home Depot, Lowes or McLendon Hardware stores. Many plumbers and contractors installed WaterSense® models, with ten accounting for five or more installations. Four percent purchased their toilet at a plumbing distribution or specialty shop.

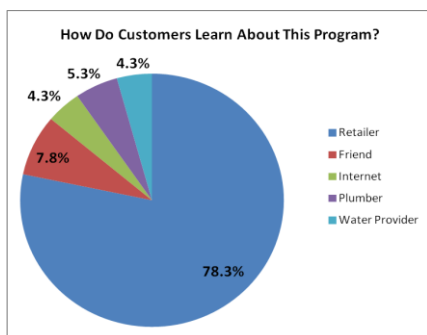


Figure 5.5

Promotion

Customers learn about Cascade’s WaterSense® Toilet Replacement Program in a number of ways, but primarily through local retailer staff or through in-store displays provided by Cascade or created by retailer staff. Nearly eight percent of respondents learned about the program through a friend.

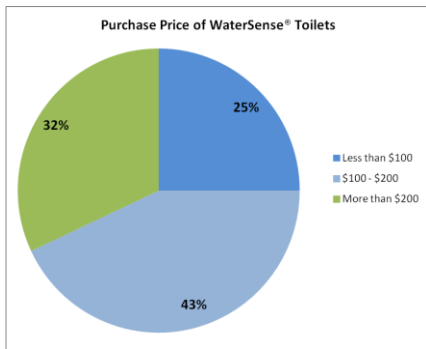


Figure 5.6

Cost

The average cost of WaterSense® toilets purchased by Cascade customers was \$175. This cost does not include installation charges for homeowners who used a plumber or installer. The range of prices for WaterSense® toilets ranged from \$80 to more than \$500. At least 15 models available locally cost less than \$200.

VI. Program Results and Partnerships

Approximately 7,700 toilets were installed under this program in 2009 – 2010. Assuming each WaterSense® toilet saves an average of 9 gallons per day, more than 25 million gallons of water per year have been saved through

this program. Conserved water provides many benefits including a more reliable water supply, less strain on water and wastewater systems, lower customer utility bills, more water available for streams, aquifers and wildlife, and fewer greenhouse gas emissions due to reduced energy demand from water treatment and delivery. Since most toilets last 20 – 30 years, these savings will continue providing benefits for decades.

Cascade has developed effective partnerships with retailers and plumbers who sell and install the fixtures. Many retailers and plumbers report the majority of their toilet sales are now in WaterSense® models. This is a dramatic shift from only two years ago when local hardware stores offered few WaterSense® toilets. Retailer staff and plumbers are the primary means of program promotion, which alleviates the need for Cascade to purchase costly advertising.

The survey results demonstrate that customers are overwhelmingly pleased with the performance of their WaterSense® labeled toilets. This program provides significant long-term financial and environmental benefits and is a win-win-win for homeowners, retailers and plumbers, and Cascade Water Alliance.



Local Retailer Staff with WaterSense® Display