

King County Residential Recycling Behavior Audit

June 2006

Background and Objectives

To enhance and maintain responsible recycling behaviors, King County is developing a Regional Recycling Campaign for launch in 2006. To assist in the development of specific messages that are meaningful and persuasive, qualitative research has been commissioned. This research was designed to explore how decisions are made about waste disposal and to examine the processes used and behaviors exhibited in typical King County households.

Specifically, the research objectives included:

- Investigate why King County curbside participants choose to dispose some of their recyclable materials; and,
- Explore tactics and programs that may enhance recycling behaviors.

Methods

A series of nine in-home “immersion” interviews were conducted with families in King County in May 2006. Respondents were arbitrarily selected and screened on the telephone to ensure that they met these criteria:

- Curbside recyclers of at least some of the materials in their household;
- A good mix of households with different sizes of containers for recycling and garbage;
- A good mix of demographics, including age, employment, household composition, education and income;
- A good representation of King County communities (not including the City of Seattle), including about one-half from the northeast and one-half from the south region;
- A relatively equal mix of households living in communities that offer single-stream and dual-stream collection systems;
- A representative mix of households living in communities with different levels of service (weekly versus bi-weekly collection of recyclables); and,
- Households living in communities with varying recycling rates.

Families were requested to set aside a total of two hours and were asked to ensure that all family members were present during the interview. While families were informed in advance that the interview was about the management of the household’s waste, no advance warning was provided indicating that the household’s waste would be sorted and examined. Notice was not provided primarily to ensure that the

situation encountered at the time of the interview accurately reflected the family’s typical decisions and behaviors. Households were interviewed at least three days following a trash collection event to ensure the enough trash was available to acquire a solid understanding of how each family managed their waste. At the conclusion of the interview, each household was given a \$250 cash honorarium in appreciation for the family’s time.

Two facilitators attended each in-home interview—a waste characterization expert and a qualitative research expert. A standard protocol was followed that divided the interview into three segments:

1. Introductions of the research team and family members, and quick highlights on the background and purpose of the research, the research protocol (what could be expected during the interview) and how the aggregated results would be used;
2. Exploration of waste management behaviors, including the visual identification of where trash and recycling containers were located inside and outside the home; and,
3. Waste sort of containers inside and outside the home, examining what was being recycled and what was being disposed, plus an investigation of the rationale behind “errant” behaviors.

Participant Demographic and Community Characteristics

The following table presents information about the nine families that participated in this research and the communities in which they live.

Family	Community Characteristics					Household Characteristics		
	Area	Waste Stream	Can Size	Frequency of Collection	Recycling Rate	Household Composition	Education	Income
#1	Redmond	Single	64	Weekly	62%	1 adult 1 child	Some College	\$25-\$50K
#2	Lake Forest Park	Dual	96	Bi-Weekly	60%	2 adults, 2 children	Some College	\$50-\$75K
#3	Federal Way	Dual	64 & 24	B-Weekly	50%	2 adults, 1 child	High School	\$75-\$100K
#4	Redmond	Single	64	Weekly	62%	2 adults	4-Yr College	\$100-\$150K
#5	Kent	Dual	90 & 64	Bi-Weekly	50%	2 adults, 2 children	High School	\$100-\$150K
#6	Maple Valley	Single	34	Bi-Weekly	38%	2 adults, 2 children	4-Yr College	\$25-\$50K
#7	Federal Way	Dual	64 & 24	Be-Weekly	50%	2 adults, 2 children	4-Yr College	\$50-\$75K
#8	Uninc KC (Bothell)	Single	90	Weekly	61%	2 adults, 1 child	4-Yr College	\$75-\$100K
#9	Bellevue	Single	96	Weekly	65%	2 adults, 1 child	Post Grad	\$150K+

Limitations

In-home “immersion” interviews are a very useful technique for exploring specific issues in great detail. The opportunity to enter into someone’s private space—their home—and explore how and why they make the decisions they do provides an extremely rich understanding of attitudes and behaviors.

Still, the results of this research cannot be considered statistically significant or predictive in nature. While the results show tremendous consistency from family to family—consistency that would not be expected by chance—a sample size of nine is simply too small from which to draw conclusions that are presumed to represent other households.

Management Summary

The following paragraphs present the key findings from the nine in-home interviews conducted. After presenting these aggregated key findings, an individual situation analysis is presented for each participating family.

The Woman in the Home is the Boss

While it is typically to see that all members of the household actively participate in some of the trash and recycling decisions and all household members are held accountable for responsible behaviors, it is clearly the female head of household who makes and disseminates most of the rules. Women tend to organize, control and monitor the collection and removal systems. They tend to have the stronger recycling ethic and are less likely to exhibit lazy behaviors. And they are more likely to be the leaders in ensuring responsible behaviors. Males and children are less likely to take initiative in directing the recycling behaviors of others in the household. Further, they seem to have attitudes toward recycling and other environmental issues that are not quite as strong. During the course of the nine interviews conducted here, one male whispered that he recycled “*according to the sound system*”—indicating that when his wife was around and likely to be noticing his actions, his behavior was more likely to be in conformity. Further, more than one Mother was heard to express sentiments such as, “*I have to kick butt*” in order to ensure that the recycling was properly sorted and disposed.

The Kitchen is the Hub

The largest and most frequently used trash container and recycling container is typically located in or very near the kitchen. Smaller trash containers are located in bedrooms, bathrooms and laundry rooms. These trash containers are typically emptied into the main trash container in the kitchen rather than being taken directly outdoors to the curbside container. Smaller recycling containers are sometimes found in computer rooms. These recycling containers are often less formal (they may just be a box or plastic bag), they typically only contain mixed waste paper, and they are usually emptied into the large(r) mixed waste paper container located in the kitchen.

The Recycling Ethic is Mature

The evidence suggests that most people understand how to recycle and they truly believe that there are environmental benefits associated with recycling. While some confusion is evident, the vast majority are (mostly) aware of what can and cannot be recycled. For instance, most everyone knows that newspaper can be recycled and there is very little evidence of newspaper in the regular trash. Most everyone knows that mixed waste paper can be recycled, and while there are some mistakes that happen, most of the mixed waste paper seems to be recycled. Deeper confusion is evident with plastics. Most people know that plastics can be recycled, but they lack clarity on what should be done with certain types of plastics. While not necessarily common, the confusion around what to do with plastics can be significant and have a

major impact on the household's behaviors. As one woman told us, *"We're so confused about plastics we just don't recycle any of them."*

Many of those interviewed in this research told stories that strongly indicated that their household's recycling behaviors are very different today than they were when they were growing up. The presence of a very effective curbside collection program—which makes it much easier to recycle—seems to be one of the major reasons that behaviors are different today. Still, many of those interviewed agreed that they came from environments in which it was highly encouraged to conserve and reuse materials. Several people mentioned that, as a child, their family would haul all of their own trash to the dump. One gentleman told a story about how his brother found a "barely-worn" robe at the dump one day and brought it home for his grandmother, who wore that robe another 20 years.

Whether or not the household hauled away their own trash, other people also had stories supporting the notion that recycling is not a brand new ethic. A female told us stories about her father who found it offensive when she used paper plates at one of her children's birthday parties. Another woman of Japanese heritage told stories about growing up with limited space and limited resources and explained that she found it important to recycle so that all of society could *"preserve their lifestyle of abundance."*

While people recycle because the program is available and because it's considered the right way to behave in order to be a good steward of the environment, economics also plays an important role. Most people believe that it makes good economic sense to recycle since it means that the cost of removing the garbage will be lower. Beyond the social good, there is a feeling that it would be incredibly stupid not to recycle—why in the world would anyone throw all those papers and plastics in their garbage can when they have to pay for garbage and recycling is (generally considered) free?

While not 100%, Most Households Recycle the Vast Majority of Their Recyclable Materials

While every household tends to make mistakes or exhibit some lazy behaviors, evidence from these households would suggest that, as a percentage, there are very few recyclables in the regular trash. As mentioned before, as a percentage, it is more likely that recyclable plastics are found in the trash than other types of recyclable materials. Still, the evidence from landfills shows that the percentage of recyclable materials being thrown away is much higher than would be expected given the behaviors of those interviewed in this research. The reason for this gap cannot be explained by those who participated in this research.

Five Primary Factors Drive Recycling Mistakes

There seem to be five areas that contribute most significantly to recycling mistakes:

1. **Confusion:** Households retain old and/or receive contradictory instructions on what can and/or cannot be recycled. Sometimes households are merely

Another issue, albeit not as prevalent, is the confusion caused by different systems and different instructions for different municipalities. In one case, the materials listed as recyclable by the municipality was slightly different from that listed by the hauler. For households in this community, what they recycle may be different just based on the source of their information. Another example is among people who are mobile and/or have close friends or relatives in other communities. A few people talked about the differences between what they could recycle at their homes and what their parents (for instance) could recycle in their communities.

Further, for some there is confusion caused by the explanations provided for what is and what is not recyclable. If the item in question is not explicitly addressed on the informational sheet, that item is likely to be placed in the trash. Further, if the item seems to be listed but is a little different variety (jug versus bottle), the confusion can be enough of an irritant to cause some people to throw it out. Several people remember the slogan, "*When it doubt, throw it out,*" and many people seem to live by that motto.

2. **Capacity:** Although not a mistake, per se, the lack of capacity in the recycling container will drive some people to dispose of recyclables in the regular trash. Once the recycling container is full, some people believe that the only reasonable way left to dispose of materials is to place them in the regular trash. Whether true or not, there is a perception among some people that they have more room in the trash (because of a bigger container and/or because of more frequent pick-ups) and that this system seems to be backwards in terms of the ratio of recyclables to trash in their own households. Several people mentioned that they wanted bigger recycling containers and/or more frequent service.
3. **Space and Distance:** The amount of space available for sorting trash and recyclables inside the home can drive decisions. In households where space is a bigger concern and there are fewer containers for separating materials, it is more likely that mistakes will be found. Further, the degree to which there is distance between where the recyclable is first generated and where the correct receptacle is located can drive lazy behaviors. If it's a hassle to get to the right recycling container, the propensity to place recyclables (either paper, cans or plastics) in the regular trash is higher.

A few of the households participating in this research did not have different indoor containers for different types of recyclable materials. Further, some households engaged in the practice of placing all materials—whether recyclable

or not—in one master container and then sorting the materials outdoors at the time of disposal. When the space is not available to sort and store immediately, mistakes seem more likely to happen. As one woman explained, *“I need to remodel my kitchen just to accommodate our recycling.”*

4. **Ease:** Closely connected with space and distance, the degree to which it is made easy to recycle will drive mistakes. Another example: It is much more likely to find that items that need to be washed out will be thrown in the regular trash, simply because it takes too much time and effort to wash it out before putting it in the recycling bin.
5. **Tolerance for Error in Recycling:** Beyond the other issues, there also seems to be a certain tolerance for error with recycling that is below the 100% mark. People do not seem to believe that absolutely everything needs to be recycled. If something slips by and doesn't get recycled, it's not that big of a deal. Much of this attitude seems to be driven by noticing the behaviors of others. One of the males participating in this research worked in an environment in which a large portion of recyclable materials were not recycled. Knowing this, he seemed hard-pressed to believe that perfection mattered for him.

Other Issues Leading to Mistakes

Beyond these drivers, some people explained that they did not always understand the logic behind some of the decisions about what is and what is not recyclable. The degree to which we can make it intuitive to know what kinds of plastics belong in and which kinds do not may enhance correct behaviors. Likewise, the degree to which we can help people understand why such things as plastic lids cannot be placed in the regular recycling container may help them understand the system better and be better stewards.

Possible System Improvements

The results of this research indicate that there are three broad areas in which program improvements may help increase positive behaviors:

1. Providing simple, clear, easy-to-read and uniform directions on what materials can be recycled and why;
2. Making it easy to recycle—including providing sorting techniques and storage containers that work well in kitchens; and,
3. Providing choices—offering options in terms of the frequency of pick-up service and/or the size of recycling containers that are available to households.

Detailed Findings

The pages that follow present an individual explanation of the behaviors and attitudes at each of the nine households participating in this research.

Family #1

Residence:	Renter of duplex in Redmond valued at roughly \$500,000 Single parent of a 16-year old child Full-time employed as Administrative Assistant for Environmental Consulting firm Some college experience Income of \$25,000 - \$50,000
Community:	Collection service provided by Waste Management Single-stream collection with 64 gallon recycling can Community recycling rate of 62%
Disposal Flow:	<p>The primary trash receptacle is located in the kitchen. Other trash containers are located in the two bedrooms and two bathrooms. There are no containers used exclusively for recycling. Most recycling is taken immediately to the outdoor container. Some recycling is said to be temporarily stored in the trash containers until those trash containers are emptied.</p> <p>Recycling containers have not been used indoors because of the perceived lack of space.</p>
Recycling Ethic:	<p>The adult head of household describes herself as a “fanatic” about recycling. She believes that recycling just makes sense and that there is no reason not to recycle everything that can be recycled—in fact, you’d have to be “stupid” not to recycle because it makes economic and environmental sense.</p> <p>The 16-year old daughter is not as fanatic about recycling. She claims that she would be more likely to recycle if there was a separate container located in the kitchen just for recycling (like at her friend’s house). It is just too much of a hassle to take individual recyclables outdoors every time one is ready for disposal.</p> <p>The economics are of great importance in driving decisions for this family. Until recently, before the City of Redmond began charging for recycling, this household set out their recycling at curbside (for free) and the regular trash was disposed of through a system of “illegal” dumping at a near-by apartment complex. Now</p>

that the household is being charged for recycling, they also take their garbage to the curbside; however, all indications are that the containers are not taken to the curb on a regularly-scheduled basis. The household does not generate enough trash to warrant the regularly scheduled pick-up service.

Recycling "Mistakes":

Analysis of the material in the trash containers (inside the home and outside) indicates that this family does not recycle 100% of the materials generated that could, technically, be recycled.

A milk container was discovered in the kitchen trash. There was confusion about whether this type of container could be recycled.

A soda can was found in the outside trash can. This soda can belonged to the daughter and was in the trash can because the recycling bin was too full.

Two aluminum cans were located in the regular trash. One of these cans was dirty and the head of household explained that she couldn't recycle an item that was not clean. The second can had been cleaned and could have been recycled; however, it mistakenly was deposited in the trash container.

A pudding container was discovered in the trash. There was confusion over whether this type of plastic was recyclable, and even if it was, it wasn't an item that the household would typically wash out and place in the recycling container.

Opportunities:

- Updated information about what is and is not recyclable.
- More or better information about the importance and benefits of recycling.
- Indoor recycling containers for storage that are attractive and/or do not take up too much space.
- Economic rewards for exemplary recycling.

Family #2

- Residence: Owner of single family home in Lake Forest Park valued at roughly \$330,000
Two adults and two children, ages 12 and 15 years
Male employed full time as a Third-Party Administrator for Worker's Compensation
Female employed as a bartender and a maker of candles
Female has some college experience
Income of \$50,000 - \$75,000
- Community: Collection service provided by Allied
Dual-stream collection with 96 gallon recycling can
Community recycling rate of 60%
- Disposal Flow: The primary trash receptacle is located in the kitchen and the primary recycling container is also located in the kitchen. The female head-of-household "made" both of them—taking regular containers and labeling each with the types of items that could be deposited. Other trash containers are scattered throughout the house as well as in the garage and back yard. The house is currently in disarray because of the construction associated with turning the garage into a bedroom.
- Recycling Ethic: Members of this household have been living in the same household together for 11 years. Prior to living together, the male head of household would take his garbage to his parent's house for disposal and the female head of household lived in an apartment building. When they moved in together they signed up for garbage service. Garbage is an expense they would rather not incur, but the quantity of garbage generated by the household is thought to be substantial. The recycling container—typically meant to be of a size sufficient for two weeks—is full in one week. Large quantities of bottles, cans, papers and plastics are all collected—and the quantities are even larger during the summer months when they entertain more often.
- While it is generally known that recycling is the right thing to do, the primary impetus for separating is based on economics. The household is very sensitive about the costs of collecting the garbage and they work to keep their collection costs to a minimum.
- However sound the principles of recycling, the ethic is not strong enough to cause modification in behavior when the recycling container is full. A full recycling container

means that excess materials will be deposited in the regular trash can (as long as room is available).

Neither of the children can recall having received any information in school about the importance of recycling. Both children claim that their primary information about what and why to recycle is based on what they've learned from their mother.

Recycling "Mistakes":

Analysis of the material in the trash containers (inside the home and outside) indicates that this family does not recycle 100% of the materials generated that could be recycled.

Two glass bottles were discovered in the outdoor trash container, one of which was blamed on the neighbor.

One aluminum can and one tin can were also found in the outdoor trash container, along with two soda bottles. The aluminum and tin cans were food cans and had not been cleaned out. The "owner" of the soda bottles was not announced; although, a comment suggested that both bottles may have come from the male head of household.

A plastic food container was discovered in the outdoor trash container and because it had not been cleaned out it was deemed to belong in the trash.

Various plastic bottles were found in the trash container located inside the garage. It was explained that separate recycling containers were not available in the garage so everything went into one trash can. Because of the construction, and the fact that contractors in addition to family members were regularly working in the garage, it was difficult to tell who might be responsible for placing these soda bottles in the trash. It was also unclear whether or not the soda bottles would have been removed and placed in with the regular recyclables when the trash was taken outdoors.

Opportunities:

- Larger recycling containers and/or more frequent collection of recyclables.
- Updated information about what is and is not recyclable.
- Economic incentives for recycling.
- More or better information about the importance of recycling.

Family #3

- Residence: Owner of single family home in Federal Way valued at roughly \$250,000
Two adults and one child at home, age 18
Male employed full time as a maintenance mechanic
Female employed as a bill collector
Female has completed high school
Income of \$75,000 - \$100,000
- Community: Collection service provided by Waste Management
Dual-stream collection with 64 gallon can
Community recycling rate of 50%
- Disposal Flow: The primary trash receptacle and the primary recycling container are located in the kitchen. The female head of household has modified a wicker-style basket to make the receptacle for recyclable papers. There is a trash container in an upstairs office or computer room, in the bedrooms and in the bathrooms.
- Recycling Ethic: The female head of household is a champion for recycling; however, the ethic does not appear to be very strong for either the male head of household or the son living at home. While both males recycle when convenient, they primarily do so because the female insists that it must be done. The female head of household typically goes through the trash generated inside the household and separates out the materials that may have been placed there in error by other members of the household.
- The female was raised in California and taught that it was appropriate behavior to conserve and reuse natural resources. She occasionally uses the rinse water from her washing machine to water the lawn.
- The family's neighbor is apparently known as an avid recycler and composter. The neighbor has an indoor container system that he designed for storage of recyclables indoors. The neighbor also composts all of his yard waste and some of his food waste and uses this compost for his garden. The neighbor has often assisted this family with chores such as taking out the recycling cans and bringing them back into the yard. Part of the recycling behaviors may be driven by a need to respect the values held by the neighbor (he is said to be "an incredible person.")

Recycling “Mistakes”:

Analysis of the material in the trash containers (inside the home and outside) indicates that this family does not recycle 100% of the materials generated that could be recycled.

Mixed waste paper was placed in the trash containers—both indoors and outdoors. Most of these waste papers seem to have been generated in an office or computer room and were thought to have been placed in the trash by the father and/or son.

Food cartons were placed in the trash - some were soiled and not considered recyclable because they were dirty. In another case, it was questioned whether a milk carton could be recycled.

Plastic soda bottles and aluminum cans were discovered in the trash. The males in the household admitted to lazy behaviors and said they would place these types of items in the trash if that was the most convenient method of disposal.

Opportunities:

- Larger recycling containers and/or more frequent collection of recyclables. The recycling container fills up first and the trash container is used for recyclables when needed.
- Clarity about the importance of sorting and information about what happens with recyclables. Geographic boundaries and rule differences have allowed these people to note that neighbors do not have to sort their recyclables. Noticing that all materials get dumped into one truck may contribute to lazy recycling behaviors.
- Updated information about what is and is not recyclable.
- Economic incentives for recycling.

Family #4

- Residence: Owner of single family townhome in Redmond possibly valued around \$650,000
Two adults
Male employed full time as an accountant
Female employed full-time as a pediatric nurse
Both have completed a 4-year college degree
Income of \$100,000 - \$150,000
- Community: Collection service provided by Waste Management
Single-stream collection with 32 gallon recycling container and 32 gallon trash container.
Disposal of trash and visibility of trash containers are tightly controlled by neighborhood CCRs.
Community recycling rate of 62%
- Disposal Flow: The primary trash receptacle and the primary recycling container are located in the pantry in the kitchen. There is an additional trash can in the two bedrooms, the computer room, the laundry room and both bathrooms (every room except the living room).
- Taking out the trash from each room is one of the cleaning person's responsibilities. However, the female head of household often goes around and removes the trash prior to the arrival of the cleaning person. The female head of household removes the trash from bedrooms, bathrooms and the computer room and sorts it prior to disposing any of it. Most of the sorting occurs in the kitchen.
- Recycling Ethic: Both heads of household believe strongly that recycling is the right thing to do. The male head of household is a self described pack rat and believes that most everything can and should be reused. The female head of household believes that recycling will ultimately contribute to "saving the planet."
- Recycling is not taken lightly. There is a system developed for the household and both the male and female adhere to the basic principles of the system. For instance, mail is brought into the kitchen sorted immediately. The junk mail goes directly into the recycling container in the pantry. Mixed waste paper that is generated in the computer room goes directly into a special container just for mixed waste paper. Bottles and cans also have their own container and are placed in this container as they are used.

The information regarding what is and what is not recyclable provided by the local haulers is kept taped to the wall in the garage next to the recycling and trash containers. This document is referred to when there are questions about whether a particular material is recyclable.

Recycling "Mistakes":

Analysis of the material in the trash containers (inside the home and outside) indicates that this family does not recycle 100% of the materials generated that could be recycled.

Small amounts of mixed waste paper and newspaper were noted in the trash receptacle. The presence of this paper in the trash can was "blamed" on the cleaning person. Apparently it was trash placed in the receptacles after the female head of household cleaned up for the cleaning person but before the cleaning person actually arrived.

A few soda bottles were found in the trash container. This was blamed on laziness and sparked a discussion about whether lids from plastic bottles were recyclable.

A milk container was discovered in the trash bin. Both household members felt that this type of packaging was not recyclable.

Opportunities:

- Updated and/or more clearly defined information about what is and is not recyclable.
- Less restrictive CC & Rs and/or cart options that more easily conformed to rules and regulations (wheels that are not as noisy).

Family #5

Residence: Owner of single family home in Kent valued around \$300,000
Two adults and two children, ages 4 and 7
Male employed full time as the manager of a fleet leasing company
Female employed full-time as a business analyst
The male head of household has a high school diploma
Income of \$100,000 - \$150,000

Community: Collection service provided by Allied
Dual-stream collection with 90 gallon recycling container and 64 gallon trash container
Community recycling rate of 50%

Disposal Flow: Trash cans are located in the kitchen, family room and bathrooms. Newspaper, other mixed waste paper and some recyclable cans are stored on the kitchen counter until someone takes them outside to the main curbside recycling container. No plastics are recycled.

Recycling Ethic: While this household's stated commitment to recycling is comparably weak, behaviors indicate that there is still a level of knowledge and adherence to engaging in the behavior of recycling. The family has been recycling paper for a few years and has made a conscientious effort to add in metal cans to what is currently being recycled by the household. None of the plastics generated by the household are currently being recycled—primarily because they believe it is too time consuming and confusing to understand what types of plastics can and cannot be included.

The male head of household grew up in a household that did not have garbage pick-up—everything was hauled to the dump. The male continued with this practice until the arrival of the first child and the presence of diapers made this self-haul system unacceptable. The female head of household grew up with a father who was avid about recycling and the reuse of materials. She commented that her "dad recycled everything, and her grandma was ten times worse." The daughter has been chastised by the father for using paper plates when reusable plates could have been used instead. While the female understands and does not necessarily disagree with her father, she also believes that time is already so limited that it is her duty to allocate whatever time she has available to the children rather than obsessing about what is and is not recycled.

Recycling “Mistakes”:

Analysis of the material in the trash containers (inside the home and outside) indicates that this family does not recycle 100% of the materials generated that could be recycled.

As noted previously, no plastics are currently recycled; however, the family apparently does not use many household products packaged in plastic.

Metal cans are recycled sporadically. Those that need to be washed before being recycled are disposed of with the regular trash because of the amount of time it takes to wash out the can.

A little mixed waste paper was found in the regular trash. In comparison to the amount of mixed waste paper in the kitchen and in the recycling bin the amount was quite small. Still, the error was apparently made for the sake of convenience.

Opportunities:

- To be embraced fully, the system of recycling needs to be made substantially easier for this household. That would include clarification of what is and what is not recyclable, preparation instructions (washing) and the availability of storage containers that are the right size and easy to use.
- Further, information about how recyclables are used may enhance the likelihood that the household engages in the behavior.
- Economic incentives could go a long way toward encouraging recycling behaviors.

Family #6

- Residence: Owner of a single family home in Maple Valley valued around \$360,000
Two adults and two children, ages 5 and 6
Male employed full time as a high school PE teacher
Female not employed outside the home
Both heads of household have a 4-year college degree
Income of \$25,000 - \$50,000
- Community: Collection service provided by Allied
Single-stream collection with 32 gallon recycling container
Community recycling rate of 38%
- Disposal Flow: The primary trash can is located under the kitchen sink and the primary recycling bin is located in the kitchen pantry. The only other trash containers are located in the bathrooms. There is a plastic sack kept near the computer for mixed waste paper; however, it fills up slowly and is not removed very often.
- Recycling Ethic: Both parents believe that recycling is the responsible thing to do and recycling has become an expected behavior—one to which they give very little thought. They recycle what is convenient to recycle and they don't seem to give much thought to going out of their way to be better at it. Part of the reason that it doesn't seem important to capture 100% of all recyclables may be that the male head of household works in a school at which many recyclable materials are thrown in the trash. There could be the belief that "one more mistake" (at the household level) isn't going to make a difference.
- Recycling "Mistakes": Analysis of the material in the trash containers (inside the home and outside) indicates that this family does not recycle 100% of the materials generated that could be recycled.
- The male head of household is typically "blamed" for the recycling mistakes. Two cans and two plastic bottles were found in the trash and all four were identified as "Dad's." Further, a tin can of beans was found in the trash and the female head of household explained to her children that "Daddy didn't recycle his Bush beans." Also in the trash can were a yogurt container and a cottage cheese container. These items were thrown in the regular trash because they were dirty and the female did not feel like washing out the containers. Further, a milk carton was

discovered in the regular trash. The milk carton was considered confusing—the female thought it was not recyclable but the male explained that, at work, these types of containers were considered recyclable even though the school did not have a program to do so. Further, because one of the children just had a birthday party, there was some wrapping paper in the trash can. The female said she would typically recycle wrapping paper, but must have been feeling tired and lazy after the party so everything just got scooped up and placed in the trash can.

Opportunities:

- To be embraced fully, this household may need more or better education on why it is important to recycle, and the system of recycling needs to be made substantially easier. Making it easier would include clarification of what is and what is not recyclable and what needs to be washed, what needs to have labels removed and so on.
- Further, information about how recyclables are used downstream may enhance the likelihood that the household engages in the behavior.
- Economic incentives could go a long way toward encouraging recycling behaviors.
- And, a larger recycling container (or more frequent service) would help encourage recycling. They explained that their blue recycling container gets full before the scheduled pick-up time so some recyclables end up in the trash because there is more room there.

Family #7

- Residence: Owner of single family home in Federal Way valued around \$275,000
Two adults and two children, ages 3 and 8 months
Male employed full time as a middle school science teacher
Female not employed outside the home now, but has had a career teaching
Both heads of household have a 4-year college degree
Income of \$50,000 - \$75,000
- Community: Collection service provided by Waste Management
Dual-stream collection with 64 gallon recycling container
Community recycling rate of 50%
- Disposal Flow: The primary trash can is located under the kitchen sink. Recyclable newspaper and mixed waste paper are stacked in the dining room until the stack is large enough to remove, at which time it goes into the outdoor location that is regularly stored in the garage. Recyclable cans and bottles are stored on the kitchen counter and taken to the curbside container (located in the garage) on a regular basis. There is a trash container located in all three bedrooms as well as one in each of the two bathrooms.
- Recycling Ethic: Both parents believe that recycling is the responsible thing to do and they also seem to believe that recycling is just an expected behavior—why wouldn't someone recycle? The male has taught "recycling" as a module in his middle school science class and has also put together a special class program focusing on environmental responsibility. His mother (who was visiting) seems very involved in recycling and has strong opinions about the fact that recycling is an important activity. The female head of this household explained that she learned a lot about recycling because the father of her first boyfriend was very interested in recycling. And, she's been very interested in recycling ever since.
- Recycling "Mistakes": Analysis of the material in the trash containers (inside the home and outside) indicates that although this family does not recycle 100% of the materials generated that could be recycled, they do a very good job of coming close.
- A glass jar of tomato sauce was found in the regular trash. This jar was not recycled because it was too dirty to recycle and too hard to clean to make it

worth the time and effort to recycle. Not to clean it was a conscientious decision—the female questioned whether its value as a recycled item was worth the resources necessary to clean it.

A few stray items of mixed waste paper were found in the upstairs trash container from the master bedroom. It was explained that this must have been junk mail that wound up being upstairs—which in and of itself was unusual, but it was also unusual that the materials would not have been removed prior to emptying the bedroom trash container into the regular trash bin.

Wrapping paper was found in the three-year old's trash container. The female knew that the wrapping paper was in there and explained that she probably would have removed it when emptying the garbage.

Although questionable, this household elects to put juice boxes in with the recyclable plastics. They also put any pizza boxes that are not greasy in with the mixed waste paper.

Opportunities:

- To make recycling easier, the female head of household suggested that manufacturers start putting numbers back on the different plastics to identify which types of plastics can and cannot be recycled. She is interested in whatever can happen to make it less cumbersome and less time consuming to decide where to place an item.
- While the household does a pretty good job of cleaning most recyclables beforehand, the less cleaning required, the more likely something will be recycled.

Family #8

- Residence: Owner of single family home in Unincorporated King County (Bothell) valued around \$450,000
Two adults and one child, age 10
Male employed full time as a police officer
Female employed full time (inside the home) as the Administrative Director of a non-profit agency (Association of Massage Therapists)
Both heads of household have a 4-year college degree
Income of \$75,000 - \$100,000
- Community: Collection service provided by Waste Management
Single-stream collection with 90 gallon recycling container
Community recycling rate of 61%
- Disposal Flow: The primary trash can is located under the kitchen sink. The primary recycling container for bottles and cans is located under the kitchen sink. Recyclable newspapers and mixed waste paper are placed in a container in the hall closet. Plastic bags are kept in the hall closet also.
- Trash containers are located in the office, laundry room, bathrooms and in the family room down stairs. Trash that is generated downstairs goes directly to the garage and then outside to the curbside trash container. Trash generated upstairs is transferred to either the kitchen or hall closet before being removed. Shredded paper goes in with the yard waste because the fibers are too small to recycle.
- Recycling Ethic: The adults and child in this household are very committed to the recycling ethic. It is the right thing to do, it is expected of them and it makes excellent economic and environmental sense. Plus, it fits in nicely with their highly developed need for order and organization.
- The female head of household explained that, as a child, her parents did not recycle anything. Virtually everything was thrown in the regular trash. When she got married and they purchased their first house, there was a curbside recycling program for which they signed up. It made economic sense to use the recycling program. Since then, they have learned more about the need to recycle and believe that it is a valuable way to preserve the environment.
- The 10-year old daughter believes that she's learned most of what she knows about recycling from school. As

a second grader, her teacher would make anyone who mistakenly threw a recyclable into the regular trash go hug a tree as “punishment.” Interestingly, the Mother disagreed—her belief was that her daughter probably learned more about recycling at home than at school.

Recycling “Mistakes”:

Analysis of the material in the trash containers (inside the home and outside) indicates that this family comes very close to recycling 100% of the “right” things.

While they claim confusion over some types of plastic tubs, the evidence would suggest that they have an excellent understanding of the right place to put these “confusing” plastics.

The household elects not to recycle items such as mayonnaise jars and peanut butter jars because the amount of water it takes to clean these types of jars is in excess of the relative value of reusing the glass/plastic container.

Opportunities:

- There is no indication that any program is needed to help this family improve.

Family #9

- Residence: Owner of single family home in Bellevue valued around \$990,000
Two adults and one child, age 14
Male typically employed as an anesthesiologist (currently on medical leave)
Female employed full time (inside the home) as the husband's business manager
The male head of household has post graduate degrees and the female has a 4-year college degree
Income of \$150,000 +
- Community: Collection service provided by Waste Management
Single-stream collection with 96 gallon recycling container
Community recycling rate of 65%
- Disposal Flow: The primary trash can is located under the kitchen sink. The primary recycling container for bottles and cans is located behind the kitchen sink. There is a mixed system for storing newspaper and mixed waste paper—some is kept under the sink and when that area fills, others are stored on the kitchen counter. Plastic bags are stored in a wicker basket on the floor by the front door. Shredded paper is placed in a plastic bag and disposed of in the regular trash.
- Trash containers are located in the office, the bedrooms, and bathrooms. The trash is removed from these locations to the main trash and recycling containers in the kitchen.
- Recycling Ethic: The adults in this household are very committed to the recycling ethic. The female head of household is Japanese and believes that her heritage is partly responsible for her strong feelings about conservation and environmental responsibility. She says that people in her culture are used to living in very small spaces and natural resources are considered limited and important to conserve. In order to continue living our lifestyle of abundance we must conserve what we have available.
- The male head of household did not grow up with the same conservation ethic, but has adopted readily his wife's values. Recycling makes sense and is the right thing to do.
- The household has been recycling for about 12 years - since moving into the home in which they currently live.

The availability of the curbside program has made it easy for them to engage in responsible actions.

Recycling "Mistakes":

Analysis of the material in the trash containers (inside the home and outside) indicates that this family comes very close to recycling 100% of the "right" things.

A magazine and very small amounts of office paper were found in the trash. This magazine was likely placed there by the female head of household and she wasn't sure what could have happened. Neither was she sure why there would ever be small amounts of office paper in the trash.

Plastic food containers were found in the trash. The female felt that it was questionable whether the plastic was recyclable, and even if it was, it was a nuisance to clean out and recycle.

A paper toilet paper roll and a couple of small food boxes were found in the trash. There was no evidence that the household would normally consider a toilet paper roll recyclable (because they never thought about it) and they were genuinely surprised that the food boxes were there.

Opportunities:

- The female expressed confusion about what to do with these items:
 - Lids to plastic tubs (like margarine)
 - Cellophane
 - Certain types of plastics
- The male expressed confusion over the logic behind the fact that tops to plastic bottles could not be recycled and that pizza boxes could not be recycled.
- More information about what can be recycled and why may make sense for households like this.