



**KING COUNTY**

1200 King County Courthouse  
516 Third Avenue  
Seattle, WA 98104

**Signature Report**

**November 10, 2015**

**Motion 14451**

**Proposed No. 2015-0241.2**

**Sponsors Dembowski**

1           A MOTION approving a report related to resource recovery  
2           at solid waste division transfer stations in accordance with  
3           the 2015/2016 Biennial Budget Ordinance, Ordinance  
4           17941, Section 105, Proviso P2.

5           WHEREAS, Ordinance 17941 contained a proviso in Section 105 stating that  
6           \$1,755,617 and 9.00 FTEs shall not be expended or encumbered until the executive  
7           transmits a report by June 30, 2015, on the materials recovery program and a motion that  
8           approves the report and the motion is passed by council, and

9           WHEREAS, the report shall include, but not be limited to:

- 10           1. A description of the program;
- 11           2. An analysis of the benefits of the program, including the costs of the program  
12           and the effectiveness of the program at achieving the county's adopted waste reduction  
13           goals; and
- 14           3. Recommendations for funding alternatives, including but not limited to a  
15           surcharge for comingled self-haul loads entering the transfer stations, with the goal that  
16           the program costs should be fully offset by program revenues, and

17           WHEREAS, the executive has transmitted to the council the required report and a  
18           motion;

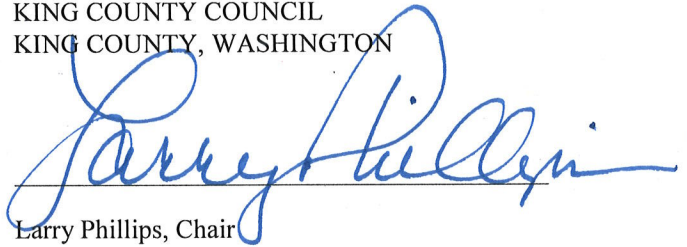
19           NOW, THEREFORE BE IT MOVED by the Council of King County:

20           The report related to the materials recovery program in accordance with the  
21 2015/2016 Biennial Budget Ordinance 17941, Section 105, Proviso P2, is hereby  
22 approved.  
23

Motion 14451 was introduced on 7/6/2015 and passed by the Metropolitan King  
County Council on 11/9/2015, by the following vote:

Yes: 7 - Mr. Phillips, Mr. von Reichbauer, Mr. Gossett, Mr. Dunn,  
Mr. McDermott, Mr. Dembowski and Mr. Upthegrove  
No: 0  
Excused: 2 - Ms. Hague and Ms. Lambert

KING COUNTY COUNCIL  
KING COUNTY, WASHINGTON



Larry Phillips, Chair

ATTEST:



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Anne Noris, Clerk of the Council

**Attachments:** A. Transfer Station Resource Recovery Report Revised dated November 3, 2015

**Attachment A Revised**

**November 3, 2015**

**Transfer Station Resource Recovery Report**

Prepared in accordance with  
Adopted Budget Ordinance 17941, Section 105, Proviso P2

**June 2015**



**King County**

Department of Natural Resources and Parks  
**Solid Waste Division**





## Introduction

This report has been developed to meet the requirements of the 2015/2016 Biennial Budget Ordinance 17941, Section 105, Proviso P2 which states:

Of this appropriation, \$1,755,617 and nine full-time employees (FTEs) shall not be expended or encumbered until the executive transmits a report on the materials recovery program by June 30, 2015 and a motion that approves the report is passed by council.

The report shall include, but not be limited to:

1. A description of the program;
2. An analysis of the benefits of the program, including the costs of the program and the effectiveness of the program at achieving the county's adopted waste reduction goals; and
3. Recommendations for funding alternatives, including but not limited to a surcharge for comingled self-haul loads entering the transfer stations, with the goal that the program costs should be fully offset by program revenues.

## Seventy-eight percent of materials disposed at transfer stations could be recycled

In 2013, 895,054 tons of materials were primarily recycled through curbside, multi-family and business recycling programs. Despite the large amount of materials collected at the curb by private hauling companies and processed at private facilities, 809,165 tons were disposed as garbage at the Cedar Hills Regional Landfill. Recent waste characterization studies show that 78 percent of the disposed tons are potentially recyclable including materials with market demand such as metal, paper and organics. This represents a significant barrier to the region's goal of achieving a 70 percent recycling rate.

Achieving a 70 percent recycling rate requires focus on all waste generators: self-haul, commercial, single family, and multi-family. Even more important, strategies should be focused on commodities most prevalent in the waste stream. Both haulers and the division have active roles in harvesting resources from the waste stream. A resource recovery program at transfer stations is an important component of the county's strategy for achieving 70 percent recycling.

The overall goal of the resource recovery program is to significantly increase the diversion of recyclable materials that are currently disposed at division transfer stations. The division needs to expand methods to recover recyclables materials. All of the recycling that has occurred at transfer stations has been done by self-haul customers bringing in separated loads of materials and depositing them in containers provided at the stations. The division is seeking to harvest materials that are dumped with garbage on the tipping floor consistent with the recommendations in the 2013 Optimized Transfer Station Recycling Feasibility Study.

Significant amounts of wood, metal and cardboard are disposed at Bow Lake, Enumclaw, and Shoreline Recycling and Transfer Stations even though containers and financial incentives are provided for self-haul customers to recycle these materials. The resource recovery program would recover wood, metal and cardboard from self-haul and commercial garbage loads at these three transfer stations. These materials

represent 14 percent of all materials disposed. Also, these readily recyclable materials can be easily identified and separated from the waste stream. These stations were selected because they all have tipping floors and space that enable staff to recover these materials.

The 2001 Comprehensive Solid Waste Management Plan states “The County should, where feasible, provide areas for expanded collection of secondary recyclable and reusable materials at new and upgraded transfer stations” (Waste Reduction and Recycling Policy 10). The division estimates that an additional 10,000 tons each year would be recycled through resource recovery of these materials at these three transfer stations, resulting in an increase to the overall county’s recycling rate by 0.6 percent.

**Table 1 lists the tons of wood, scrap metal and cardboard disposed by commercial and self-haul customers at three stations.**

**Table 1. 2014 tons disposed (based on 2011 waste characterization study)**

	Commercial (tons)			Self-haul (tons)		
	Bow Lake	Shoreline	Enumclaw	Bow Lake	Shoreline	Enumclaw
Cardboard	5,047	1,178	505	1,125	262	112
Wood	1,367	319	137	3,654	853	365
Metal	2,208	515	221	3,715	867	371
	8,621	2,012	862	8,494	1,982	849
<b>Total</b>	<b>11,495</b>			<b>11,325</b>		

Combined Totals (tons)			
	Bow Lake	Shoreline	Enumclaw
Cardboard	6,171	1,440	617
Wood	5,021	1,172	502
Metal	5,922	1,382	592
	17,115	3,994	1,712
<b>Total</b>	<b>22,820</b>		

In 2014, self-haul customers disposed 214,654 tons of garbage at division transfer stations. About 47 percent of all self-haul tonnage in King County was disposed at Bow Lake (24 percent), Enumclaw (6 percent), and Shoreline (17 percent). Self-haul tonnage is comprised of bulky recyclable materials not readily recycled in curbside programs. By comparison, single-family curbside customers disposed 195,108 tons, and commercial customers disposed of 310,352 tons. Although commercial recycling is widely available, commercial tonnage disposed at the transfer station still contain highly recyclable materials such as wood and cardboard. The transfer stations can play a significant role in recovering recyclable materials disposed by self-haul and commercial customers.

## **Resource recovery will double the amount of recycling at transfer stations at a fraction of current recycling costs**

Transfer station customers can recycle paper, tin, aluminum and plastic containers at no charge. These “curbside materials” are the same materials that people can recycle at home through curbside collection. The cost to recycle these materials is supported by garbage tip fees, paid by all transfer station users, not just the customers bringing their curbside materials to our stations. In 2013, 9,508 tons of recyclable materials were collected system wide, with curbside materials accounting for 2,374 tons (25 percent) of the total amount. The division spent \$345,351 to recycle these curbside materials (net cost including the revenue from the value of the material). This represents \$145/ton to recycle these materials.

The proposed resource recovery program is projected to divert approximately 10,000 tons each year at a net cost of \$34 per ton. Implementing resource recovery programs at the Bow Lake, Enumclaw and Shoreline transfer stations will effectively double the amount of recycling occurring at division transfer stations and drop boxes.

## **Transfer station design makes resource recovery feasible and retains private sector participation in processing materials**

The Shoreline Recycling and Transfer Station is one of the division’s newest stations and is designed with the space to recycle more materials, as well as a tip floor where sorting of materials can take place. At older transfer stations materials are dumped directly into trailers that are hauled to the landfill, making resource recovery impractical. The division contracts with private vendors to process all recyclable materials collected at the transfer stations and drop boxes.

The resource recovery pilot was launched in April 2014 at Shoreline. It retains the private sector’s role in processing wood, metal and cardboard and would increase the amount of wood, metal and cardboard being processed at private facilities.

The program was developed collaboratively with a team of scale operators, transfer station operators, program staff, management, and private sector haulers and processors. The scope of the program included:

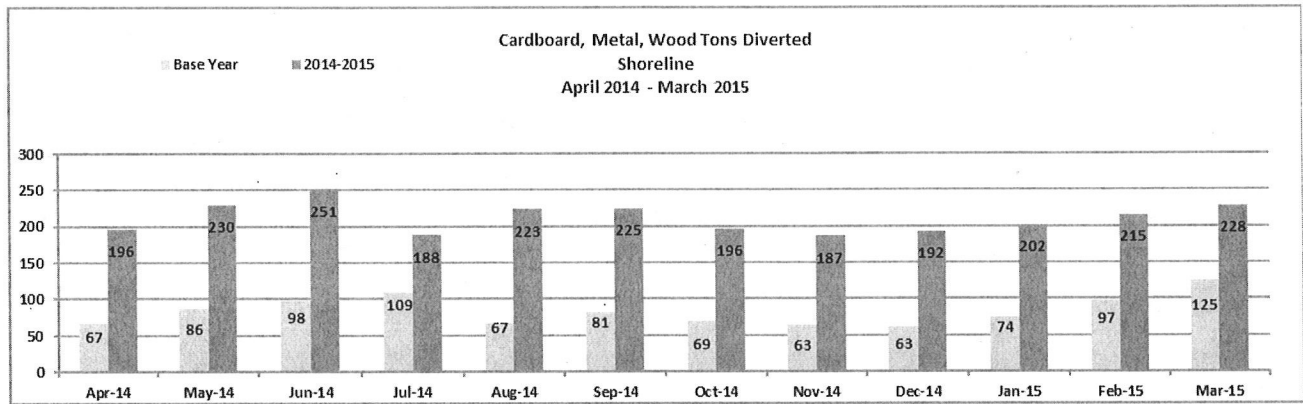
- Targeting clean wood, scrap metal and cardboard for recovery.
- Standardization of recovery methods while evaluating the feasibility of targeting additional materials for diversion.
- Assigning transfer station staff to recover material tipped on the garbage floor by both self-haul and commercial customers through mechanical separation.
- Transfer station staff engagement with self-haul customers to encourage recycling.
- Applying lessons learned and implementing best practices at additional transfer stations where feasible.



## Shoreline resource recovery pilot increases recycling by 250 percent

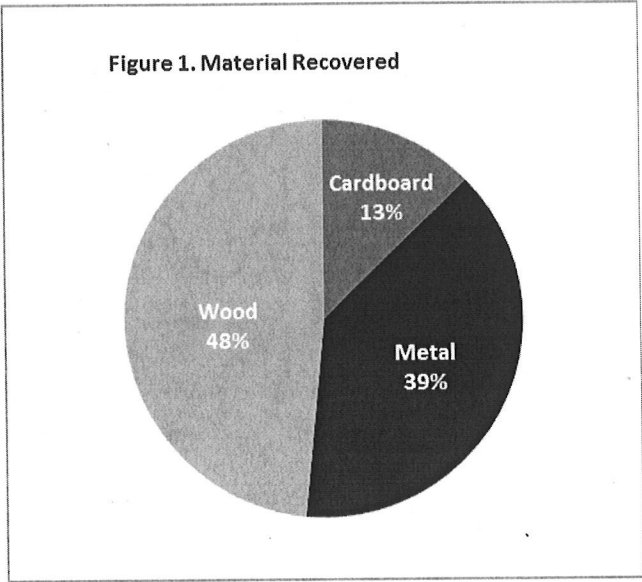
Before implementing the resource recovery program, 999 tons of wood, metal and cardboard were recycled at the Shoreline station in one year. The amount of cardboard, wood and scrap metal greatly increased as a result of the pilot. Table 2 shows the more than 1,500 tons (250 percent increase) recovered at Shoreline during the pilot over the previous year.

**Table 2. Summary of tons recovered from Shoreline pilot**



There are three Transfer Station Operators (TSOs) that operate the station and the existing recycling area. For the pilot program, an additional TSO was added to do resource recovery. Planned staffing levels for the pilot at Shoreline were set at 8 hours per day Monday through Friday for a total of 40 hours per week. Staffing hours were expanded to include weekends starting in July. Staffing was accomplished through the use of voluntary overtime for the duration of the pilot. A total of 1,764 staffing hours were dedicated to resource recovery in 2014 from April through December, an average of 44 hours each week.

**Figure 1. Percentage of each material recovered during the year-long pilot**



The largest share of the material recovered from the tipping floor was wood (48 percent) from commercial loads. The extra staff person spent much of their time recovering materials from commercial loads. The next largest increase in tons recovered came from directing self-haul customers to use the metal bins in the self-haul tipping area (39 percent). Self-haul customers found it convenient to put metal into the recycling containers rather than dumping them on the tipping floor.

The estimated tonnage, costs and revenues to operate a resource recovery program at Bow Lake, Enumclaw and Shoreline are summarized in the Table 3 below.

**Table 3. Estimated additional tons and recycling revenue from resource recovery**

Bow Lake	Additional Tons (2015)	Additional Tons (2016)	New Revenue
Cardboard	602	1,203	\$167,818.50
Metal	2,254	4,507	\$527,319.00
Wood	2,263	4,526	\$0.00
<b>Total</b>	<b>5,118</b>	<b>10,236</b>	<b>\$695,137.50</b>
*Shoreline	Additional Tons (2015)	Additional Tons (2016)	New Revenue
Cardboard	220	220	\$40,920.00
Metal	650	650	\$101,400.00
Wood	780	780	\$0.00
<b>Total</b>	<b>1,650</b>	<b>1,650</b>	<b>\$142,320.00</b>
Enumclaw	Additional Tons (2015)	Additional Tons (2016)	New Revenue
Cardboard	43	85	\$11,857.50
Metal	184	368	\$43,056.00
Wood	216	432	\$0.00
<b>Total</b>	<b>443</b>	<b>885</b>	<b>\$54,913.50</b>
<b>Totals</b>	<b>7,211</b>	<b>12,771</b>	<b>\$892,371.00</b>

\*Shoreline projections based on actual tons from the 2014 pilot

The estimated staffing levels are summarized below. Total staffing costs for 2015 – 2016 are \$1,775,617.

**Table 4. Additional staffing for resource recovery requested in 2015/2016 budget**

Facility	Classification	2015	2016	Total FTEs	Shift
Shoreline	Transfer Station Operators	2		2	7/10 Shift A&B
Bow Lake	Transfer Station Operators	2		2	7/10 Shift A&B
Bow Lake	Transfer Station Operators		2	2	2 <sup>nd</sup> Shift A & B
Enumclaw	Transfer Station Operators	.5	.5	1	7/10 Shift A&B
	Truck Drivers	2		2-1	7/10 Shift A&B
<b>Total New Positions</b>				<b>9-8</b>	Reduced by 1 Truck Driver

To operate the program additional staffing is needed to recover materials that are dumped on the tipping floor. In order to have one employee do resource recovery at all hours when the stations are open, two FTEs need to be hired; one for Shift A and one for Shift B. The additional TSO will operate an excavator and use other means to recover materials. The additional staff will not only be actively engaged in recovery of wood, metal and cardboard but also guide and assist customers with other disposal and recycling needs.

Private vendors currently transport cardboard and metal to recycling facilities. This practice would continue. Division truck drivers currently transport wood and yard waste from Shoreline, Enumclaw and Bow Lake. Additional truck driver staffing is needed due to the increased volume of wood that is expected to be recovered through the program. Annually, the resource recovery program at the three designated transfer stations will generate about 362 loads of clean wood. This equates to an estimated 30 loads per month. The cycle time to process one load is 2.5 hours, which includes unloading and time at the Cedar Grove facilities. The division's 2015/16 budget request included two truck drivers to provide seven-day coverage for hauling of wood to support the resource recovery efforts. After operating the pilot at Shoreline and operational experience gained by hauling wood from Bow Lake and Enumclaw, the division proposes to reduce one truck driver position. One truck driver on a 4/10 split shift would be hired and would work Mondays, Tuesdays, Thursdays and Fridays, which are the heaviest volume days. This change in staffing will lower the costs of the resource recovery program by \$197,290 over the two year period.

## **New revenue from recycled materials covers more than half the costs of the resource recovery program**

The primary cost of the resource recovery program is additional staffing at a cost of \$1,775,617. The division is revising the staffing plan by reducing one truck driver position representing a savings of

\$197,290. The additional revenue projected from the recovery of recyclable materials is \$892,371. The new revenue covers more than half the costs of the resource recovery program. In summary, the 2015 – 2016 resource recovery expenditures and revenues are:

<b>Resource Recovery Expenditures and Revenues</b>	
Staffing cost in 2015/2016 Biennial Budget	\$1,775,617
Savings from reducing 1 Truck Driver position	(\$ 197,290)
Revenue from additional cardboard and metal	\$ 892,371
Net additional cost over two years	\$ 685,956

The division expects to divert an additional 19,982 tons (2015-16) due to resource recovery efforts at a net cost of \$685,956. This represents about \$34 per ton to recover these materials. For comparison purposes, 2,374 tons of curbside materials are recovered from our transfer stations at a cost of \$345,351, results in a per ton cost of \$145.

When resource recovery is fully operational at these three stations, the division expects to recover an additional 10,000 tons each year. This doubles the amount of materials recycled system-wide (approximately 9,500 tons) and results in an increase in the overall recycling rate by 0.6 percent.

## **Green house gas reductions due to resource recovery program is the equivalent of taking 9,700 cars off the road**

The resource recovery program also supports the Strategic Climate Action Plan (SCAP) Priority Actions by 2020 to harvest recyclable materials from transfer station tip floors through targeted sorting. Other benefits include greenhouse gas (GHG) reductions.

Approximately 12,000 million metric tons of carbon dioxide equivalents (MTCO<sub>2e</sub>) were reduced in 2014 from the transfer station recycling program. Table 5 shows the tons of GHG that would be reduced through resource recovery at these three stations, from the targeted materials found on Table 1, which would be the equivalent of taking 9,700 cars off the road. The numbers presented in this table for wood are increases in GHG production because wood otherwise buried in the landfill sequesters carbon. Typically carbon embedded within wood are released into the atmosphere when recycled. However, wood recycling has many other resource conservation benefits. All other numbers in Table 5 represent GHG reductions.

**Table 5. Potential greenhouse gas (GHG) reductions – MTCO2E**

	Bow Lake	Shoreline	Enumclaw	Total
Cardboard	(21,500)	(5,000)	(2,100)	(28,600)
Wood	800*	200*	100*	7,300*
Metal	(14,000)	(3,300)	(1,400)	(18,700)
<b>MTCO2E</b>	<b>(34,700)</b>	<b>(8,100)</b>	<b>(3,400)</b>	<b>(46,200)</b>

\*Wood recycling increases GHG emissions.

## Surcharge alternatives to support resource recovery program

Although the resource recovery efforts result in additional operating costs of about \$685,944 for the biennium, these costs are included in the division's 2015/16 budget. An increase in tip fees was not needed to cover these costs. However, there is value in analyzing other methods for recovering the costs to operate this program, such as a sorting surcharge.

The division already charges customers fees to recycle certain materials such as refrigerators and other major appliances. These fees recover the cost of handling these materials.

**Table 6. Current recycling fees charged at King County Transfer Stations and Drop Boxes**

Appliances	Yard waste and clean wood
Refrigerant type: \$30 each	Minimum fee: \$12
Other major appliances: \$10 each	Per ton fee: \$75

The division does not charge customers to recycle paper, tin, aluminum, plastic containers (curbside materials) at transfer stations. The annual cost to provide this service is \$345,351 (2014). The service is paid for by garbage tip fee revenue. It is not known how many customers pay the garbage tip fee and then recycle their curbside materials for free, or how many customers recycle their curbside materials and do not pay the garbage tip fee. Since some customers use collection boxes located away from the scale house, it is difficult to track how many dispose of materials there.

Customers could pay a surcharge to cover the costs of resource recovery at the Bow Lake, Enumclaw and Shoreline stations. The annual estimated additional cost to do resource recovery is \$342,972 based on a two year cost of \$685,956. The alternatives presented are for illustrative purposes only and to show the potential range in surcharges. If any of these surcharges were preferred the division would want to do a

more refined analysis to establish the actual surcharge. One option is to charge customers a surcharge at stations where resource recovery is occurring. Another surcharge option is based on how the division charges the tip fee. That is, to charge the same fee at all facilities, even though the costs to operate and offer services vary at each station. Also, resource recovery efforts benefit the entire solid waste system, not just the transfer stations that are doing resource recovery.

#### Surcharge options at transfer stations with resource recovery to recover program costs

<p><b>\$1.55/transaction = charge all self-haul customers at Bow Lake, Enumclaw, Shoreline.</b> \$342,972/221,052 (2013 self-haul transactions at these three stations)</p>
<p><b>\$1.30/transaction = charge all commercial and self-haul customers at Bow Lake, Enumclaw, Shoreline</b> (because some/large portion of materials recovered come from commercial customers). \$342,972/264,035 (2013 commercial and self-haul transactions at these three stations)</p>
<p><b>\$0.57/transaction = charge all self-haul customers at all transfer stations and drop boxes.</b> \$342,972/601,166 (2013 system wide self-haul transactions)</p>
<p><b>\$0.48/transaction = charge all commercial and self-haul customers at all transfer stations and drop boxes.</b> \$342,972/707,255 (2013 system wide commercial &amp; self-haul transactions)</p>

Alternatively, or in addition to per transaction fee, a per ton surcharge could be established. One reason for not doing this is that most self-haul customers pay the minimum charge and not a per ton fee.

Another alternative would be to apply the surcharge only to customers with “unsorted loads.” Meaning, if they had any metal, cardboard or wood in their garbage load (and intend to dump it as garbage on the tip floor), they would pay the surcharge. It would also need to be decided if the surcharge would apply to self-haul and commercial customers. One downside to this approach is that customers may learn over time to tell the Scale Operator that they have a sorted load in order to avoid the surcharge. It would be difficult for Transfer Station Operators to know when they see customers dumping unsorted loads, whether or not they paid the surcharge.

The division is studying the structure and type of fees to support its solid waste system. Currently, nearly all of the division’s revenue comes from garbage tip fees. The tip fee not only pays for the costs to operate the transfer stations and landfill, it also pays for the costs of all recycling programs, outreach, grants to cities, as well as administrative costs. The study will look at alternative methods for “unbundling” the tip fee to explore alternative fee structures to pay for non-disposal costs. The division will conduct a rate study in 2016 to determine if a tip fee increase is needed. It is expected that the rate study will be transmitted to Council for its consideration in 2016 for possible changes to the tip fee in 2017. The division will analyze these alternatives and other mechanisms for paying for the resource recovery efforts in the fee structure study as well as the 2016 rate study, in order to take a holistic look at the division’s fee structure.

## Resource Recovery Work May Also Improve Customer Service Times

There may be a nexus between this resource recovery initiative, and emerging work that the Division is exploring to reduce customer time on site at transfer stations. Demand management efforts would likely involve transfer station staff in outreach and engagement with customers at transfer stations, as will the resource recovery effort. Both would seek to emphasize convenience and accessibility of recycling, encourage higher levels of diversion, and seek to facilitate more rapid turnaround of transfer station visits. Signage and other communications along with additional station resources could effectively address both needs.

For these reasons, the Division will, in its implementation of the resource recovery initiative, explore and test efforts to assist with the management of transactions to reduce time on site and cueing time for customers. While the exact parameters of this effort will be developed as the initiative gets underway, the demand management elements could include some or all of the following elements: staff assistance with unloading and informational engagement with customers—particularly during peak utilization periods; web cameras and digital signage to help inform users of operational procedures; convenient placement of recycling receptacles to facilitate recyclables diversion; a bulky materials pickup service allowing residents one or more free or low-cost pickup appointments annually, to avoid transfer station visits.

The Division will establish performance parameters such as time-on-site or other measures for this effort. Initial performance levels will be established, and as various demand management strategies are tested, performance levels will be monitored and tracked against baselines, to ascertain the most effective strategies or combination of strategies. A report describing results will be transmitted to Council by March 30, 2017.



## Summary and recommendations

The resource recovery program is an essential component of the county's strategy for achieving 70 percent recycling. The region can only achieve 70 percent recycling if strategies are deployed to increase recycling among all waste generators: self-haul, commercial, single family and multi-family. Implementing this program at three stations would result in a net cost of \$34 per ton, which is less than the current cost of \$145 per ton to collect curbside materials, while retaining private sector participation in processing materials.

The benefits of resource recovery at the transfer stations include:

- Consistency with the recommendations of the 2013 Optimized Transfer Station Feasibility Study, and the 2001 Comprehensive Solid Waste Management Plan;
- Supports the Strategic Climate Action Plan to Priority Actions by 2020 to harvest recyclable materials from transfer station tip floors through targeted sorting;
- Furthers the goals of the County Strategic Plan by recycling materials currently disposed as waste at transfer stations to safeguard and enhance King County's natural resources and environment;
- Valuable resources currently being disposed are recovered from the waste stream;
- Additional wood, metal and cardboard are recycled from commercial and self-haul customers through increased customer engagement to encourage recycling and through recovering materials from the tipping floors;
- Initiating resource recovery at just three transfer stations will double the amount of material recycled at our transfer stations and drop boxes;
- Additional revenue from cardboard and scrap metal offset some but not all of the additional costs of the program; and
- Additional green house gas reductions result through increased recovery and recycling.

The Solid Waste Division recommends that Council approve the expenditure of \$1,755,617 and staffing level of nine FTEs to implement the resource recovery programs at Bow Lake, Enumclaw and Shoreline for the remainder of 2015 and for all of 2016. There will be savings from the division's original request due to the reduction of one FTE and the delay in program implementation in 2015. The division will further analyze surcharges and fee structures to recover the costs of the program, through the comprehensive rate study work that will be done in 2015 and early 2016. If surcharges are ultimately implemented, they should be applied to both self-haul and commercial customers given that materials are recovered from both generators.