



**KING COUNTY**

1200 King County Courthouse  
516 Third Avenue  
Seattle, WA 98104

**Signature Report**

**Ordinance 18893**

**Proposed No.** 2018-0375.4

**Sponsors** Dembowski, Balducci, von Reichbauer and Gossett

1 AN ORDINANCE related to solid waste management;  
2 adopting the 2019 Comprehensive Solid Waste  
3 Management Plan as a revision of the 2001 Comprehensive  
4 Solid Waste Management Plan; amending Ordinance  
5 14236, Section 3, and K.C.C. 10.25.010 and Ordinance  
6 14236, Section 12, and K.C.C. 10.25.100, adding a new  
7 section to K.C.C. chapter 10.25, adding a new section to  
8 K.C.C. chapter 10.08 and repealing Ordinance 14236,  
9 Section 4, and K.C.C. 10.25.020, Ordinance 14236, Section  
10 5, as amended, and K.C.C. 10.25.030, Ordinance 14236,  
11 Section 6, as amended, and K.C.C. 10.25.040, Ordinance  
12 14236, Section 7, as amended, and K.C.C. 10.25.050,  
13 Ordinance 14236, Section 8, as amended, and K.C.C.  
14 10.25.060, Ordinance 14236, Section 9, as amended, and  
15 K.C.C. 10.25.070, Ordinance 14236, Section 10, as  
16 amended, and K.C.C. 10.25.080 and Ordinance 14236,  
17 Section 11, and K.C.C. 10.25.090.

18 **STATEMENT OF FACTS:**

19 1. The purpose of the Comprehensive Solid Waste Management Plan is to

20 plan for solid waste and materials reduction, collection, and handling and  
21 management services and programs in the geographic area for which King  
22 County has comprehensive planning authority for solid waste management  
23 by law or by interlocal agreement or both.

24 2. The 2019 Comprehensive Solid Waste Management Plan was prepared  
25 in accordance with RCW 70.95.080, which requires that each county  
26 within the state, in cooperation with the various cities located within such  
27 county, prepare and periodically update a coordinated, comprehensive  
28 solid waste management plan.

29 3. King County and all cities in King County except Seattle and Milton  
30 have executed the Amended and Restated Interlocal Agreement ("the  
31 interlocal agreement"). Under the interlocal agreement, King County  
32 serves as the planning authority for solid waste.

33 4. On January 8, 2018, the solid waste division of the department of  
34 natural resources and parks made available the public review draft  
35 comprehensive solid waste management plan for a sixty-day public  
36 comment period and transmitted the plan to the Washington state  
37 Department of Ecology for a one-hundred-twenty-day comment period.  
38 On April 16, 2018, the solid waste division transmitted the public  
39 comment it had received to the Washington state Department of Ecology,  
40 and on May 7, 2018, the Washington state Department of Ecology  
41 provided comment on the plan, which the division incorporated.

42 5. The county solid waste advisory committee and metropolitan solid

43 waste management advisory committee reviewed and commented upon  
44 the draft plan.

45 6. The solid waste division conducted the public review and comment  
46 procedures required by the state Environmental Policy Act.

47 7. The interlocal agreement sets forth the process for adoption of the  
48 comprehensive solid waste management plan within the meaning of the  
49 interlocal agreement, including approval by the council, approval by the  
50 cities, and transmittal of the plan to the Washington state Department of  
51 Ecology for its approval which is required by RCW 70.95.094.

52 8. The interlocal agreement also provides that the county shall codify  
53 solid waste financial policies at the same time as comprehensive solid  
54 waste management plan updates.

55 BE IT ORDAINED BY THE COUNCIL OF KING COUNTY:

56 SECTION 1. The 2019 Comprehensive Solid Waste Management Plan,  
57 Attachment A to this ordinance, is hereby approved.

58 SECTION 2. Ordinance 14236, Section 3, and K.C.C. 10.25.010 are each hereby  
59 amended as follows:

60 ~~((A. The solid waste policies, as set forth in this chapter.))~~ Solid waste policies  
61 shall be set forth in the comprehensive solid waste management plan. The policies shall  
62 provide direction for the operation and further development of the solid waste  
63 management system, its capital improvement program and, as necessary, the  
64 development of subsequent policies. ((If there is any inconsistency between solid waste  
65 policies adopted in this chapter and the text in the solid waste plan, Attachment A to

66 ~~Ordinance 14236, the policies control.~~

67 ~~B. The explanatory material, as set forth in this chapter, provides background~~  
68 ~~information and generally describes the objectives of these policies.))~~

69 SECTION 3. The following are each hereby repealed:

70 A. Ordinance 14236, Section 4, and K.C.C. 10.25.020;

71 B. Ordinance 14236, Section 5, as amended, and K.C.C. 10.25.030;

72 C. Ordinance 14236, Section 6, as amended, and K.C.C. 10.25.040;

73 D. Ordinance 14236, Section 7, as amended, and K.C.C. 10.25.050;

74 E. Ordinance 14236, Section 8, as amended, and K.C.C. 10.25.060;

75 F. Ordinance 14236, Section 9, as amended, and K.C.C. 10.25.070;

76 G. Ordinance 14236, Section 10, as amended, and K.C.C. 10.25.080; and

77 H. Ordinance 14236, Section 11, and K.C.C. 10.25.090.

78 SECTION 4. Ordinance 14236, Section 12, and K.C.C. 10.25.100 are each  
79 hereby amended as follows:

80 ~~(A. For the purposes of subsection B of this section, the financing and rates~~  
81 ~~policies provide broad policy guidelines governing payment for the solid waste~~  
82 ~~management system in the county. The policies are based on the principle that the solid~~  
83 ~~waste management system should be paid for by those who use it and should be kept as~~  
84 ~~low as possible. The policies provide opportunities for jurisdictions that have a~~  
85 ~~contractual agreement with King County for the cooperative management of solid waste~~  
86 ~~to expand their role in developing regional solid waste policies and rates.~~

87 ~~B. The financing and rates policies are~~

88 ~~FIN-1. The county shall maintain, conduct, operate and account for the disposal~~

89 ~~of solid waste as a utility of the county. The solid waste system shall be a self-supporting~~  
90 ~~utility financed primarily through fees for disposal.~~

91 ~~FIN 2. The county shall charge garbage disposal fees directly to users of the~~  
92 ~~solid waste disposal system to pay for solid waste services.~~

93 ~~FIN 3. The county shall maintain a rate structure based on tonnage, recognizing~~  
94 ~~that the structure does not provide a self-hauler subsidy, unless the executive~~  
95 ~~demonstrates that a different rate structure would benefit the system as a whole.~~

96 ~~FIN 4. The county should keep garbage disposal fees as low as possible and~~  
97 ~~should manage the solid waste system to keep rate increases as low as possible while~~  
98 ~~meeting the costs of managing the system and providing service to solid waste customers.~~

99 ~~FIN 5. The county should provide technical assistance to the cities in~~  
100 ~~developing collection contracts and grants.~~

101 ~~FIN 6. The county should develop and implement a grant program for the cities~~  
102 ~~that will consolidate grant programs and contracts wherever possible. The county should~~  
103 ~~provide technical assistance to aid the cities in identifying, applying for and~~  
104 ~~administering grants.~~

105 ~~FIN 7. The county should provide opportunities to expand the role of cities in~~  
106 ~~developing and reviewing regional solid waste policies and rates by establishing a solid~~  
107 ~~waste policy work group to work in conjunction with the solid waste advisory committee~~  
108 ~~to make recommendations regarding system operations to the King County executive. As~~  
109 ~~part of these recommendations, the executive shall evaluate the costs and benefits of~~  
110 ~~alternative rate structures on individual customer classes.~~

111 ~~FIN 8. The county is committed to working with the cities that are impacted by~~

112 ~~transfer stations to explore funding to mitigate potential impacts from these facilities.~~  
113 ~~Any statutorily authorized host fees should be in amounts directly attributable to the solid~~  
114 ~~waste facility provided that the cities can establish that the fee is reasonably necessary to~~  
115 ~~mitigate for impacts of the solid waste facility as required in state law.)) The following~~  
116 ~~solid waste system financial policy provides broad policy guidance for the solid waste~~  
117 ~~management system in the county:~~

118 F-1. Keep tipping fees as low as reasonable, while covering the costs of  
119 effectively managing the system, protecting the environment, encouraging recycling and  
120 providing service to customers.

121 NEW SECTION. SECTION 5. There is hereby added to K.C.C. chapter 10.25 a  
122 new section to read as follows:

123 The solid waste division shall report to the council annually on progress in  
124 establishing and maintaining the buffer as required by policy D-5 in chapter six of the  
125 2019 Comprehensive Solid Waste Management Plan, with the first report filed no later  
126 than April 1, 2020. Reports shall be filed in the form of a paper original and an electronic  
127 copy with the clerk of the council, who shall retain the original and provide an electronic  
128 copy to all councilmembers, the council chief of staff and the lead staff to the committee  
129 of the whole or its successor.

130 NEW SECTION. SECTION 6. There is hereby added to K.C.C. chapter 10.08 a  
131 new section to read as follows:

132 The solid waste division shall transmit to the council annually by April 1 the  
133 report required by WAC 173-351-200 (11), as amended. The report shall be filed in the  
134 form of a paper original and an electronic copy with the clerk of the council, who shall

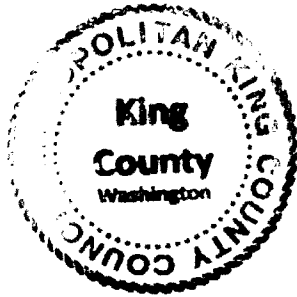
135 retain the original and provide an electronic copy to all councilmembers, the council chief  
136 of staff and the lead staff to the committee of the whole or its successor.

137        SECTION 7. Sections 1 through 6 of this ordinance take effect forty-five days  
138 after the solid waste division transmits the 2019 Comprehensive Solid Waste

139 Management Plan to the Washington state Department of Ecology, unless the  
140 Washington state Department of Ecology disapproves the plan.  
141

Ordinance 18893 was introduced on 7/30/2018 and hearing held/closed and passed by the Metropolitan King County Council on 4/24/2019, by the following vote:

Yes: 5 - Mr. McDermott, Mr. Dembowski, Mr. Upthegrove, Ms. Kohl-Welles and Ms. Balducci  
No: 2 - Ms. Lambert and Mr. Dunn  
Excused: 2 - Mr. von Reichbauer and Mr. Gossett



KING COUNTY COUNCIL  
KING COUNTY, WASHINGTON

Rod Dembowski, Chair

ATTEST:

Melani Pedroza, Clerk of the Council

APPROVED this 10<sup>th</sup> day of MAY, 2019.

Dow Constantine, County Executive

RECEIVED  
2019 MAY 10 PM 2:36  
CLERK  
KING COUNTY COUNCIL

Attachments: A. 2019 Comprehensive Solid Waste Management Plan, updated April 17, 2019



Attachment A Updated April 17, 2019



# 2019 Comprehensive Solid Waste Management Plan

July 2018

# Executive Summary

This Comprehensive Solid Waste Management Plan (Plan) sets strategies for managing solid waste in King County over the next six to 20 years. Required by the Revised Code of Washington (RCW) 70.95, this Plan will guide actions by King County, all cities in King County except Seattle and Milton, and private companies that provide curbside collection and processing of recyclable materials.

This Plan addresses the many public and private components of the regional solid waste system, including:

- The King County Solid Waste Division's (division's) operation of the Cedar Hills regional landfill, ten transfer facilities, nine closed landfills, and many programs to prevent and recycle waste;
- City efforts to promote recycling and provide for curbside pick-up of materials, either as a direct city service or through contracts with private haulers; and
- Private companies' collection of materials at the curbside and operation of processing facilities that convert recyclable and organic materials into marketable products.

Partnerships among system participants are key to the successful implementation of this Plan. In 2018, the final city signed the Amended and Restated Interlocal Agreement, securing participation of all 37 partner cities through 2040. This milestone reaffirms the county's responsibility to provide disposal through 2040, allows costs and risks to be shared across the large regional customer base, and strengthens opportunities to work together to achieve environmental goals.

This Plan benefitted from extensive public input including nearly two years of collaboration between the division and its two advisory committees. The input helped the Plan address time-critical service choices facing the regional system:

**Recycling.** Waste prevention and recycling are long-standing priorities. Much progress has been made through expanded recycling options and services, customer education, and other means. However the region's recycling percentage still hovers in the low 50s and stronger markets for recyclables are needed in light of factors such as China's recent import restrictions on recyclable materials. This Plan offers a variety of waste prevention and recycling approaches that allow system participants to tailor approaches to their jurisdiction's needs while working together to harmonize approaches to achieve better results for the region.

**Transfer.** This Plan recommends the continued modernization of the transfer system. Station upgrades are completed or underway in all urban areas (except for Northeast King County) to improve services and meet future needs. This Plan recommends that the 1960s era Houghton station in Kirkland be replaced with a modern station so that equitable levels of service are available throughout the urban area including the fast-growing Northeast part of King County.

**Disposal.** The Cedar Hills Regional Landfill has provided cost-effective, environmentally responsible waste disposal for more than 50 years. Built capacity at the landfill will be exhausted in 2028 however, leaving only ten years to put the next disposal method in place. To meet disposal needs, this Plan recommends further development of Cedar Hills to maximize disposal capacity, while affirming that garbage shall not be disposed of, nor shall soils be stockpiled, within 1,000 feet of the property line at the landfill, in accordance with the Settlement Agreement. To account for technological advances, this Plan does not specify the next disposal method after ultimate closure of Cedar Hills. Evaluation of future disposal methods will begin before the next plan update.

Although many challenges lie ahead for the regional solid waste system, working together under this Plan, system participants can achieve more through collective effort that continues the region's commitment to customer-oriented environmentally responsible solid waste services.

## Diversion of Waste

Reducing the amount of waste delivered to the landfill (waste diversion) is the most effective strategy for extending landfill life. The division will continue to practice current methods of waste diversion and may implement further strategies, as discussed below and in more detail in Chapter 4, *Sustainable Materials Management*.

### Current Strategies for Waste Diversion

Waste is currently diverted from Cedar Hills through two primary methods – waste prevention and recycling and a ban on the acceptance of most construction and demolition debris.

Waste prevention and recycling efforts have proven a successful strategy for extending the life of the landfill. During a 20-year period, an estimated 10 million tons of materials that would otherwise have been disposed in the landfill were recycled, extending the landfill's life by approximately 10 years.

Banning most construction and demolition debris from Cedar Hills has also contributed to extending landfill life. Since the disposal ban went into effect in 1994, an estimated 4 million tons of construction and demolition debris has been diverted from the landfill (see Chapter 4, *Sustainable Materials Management* for more information about construction and demolition debris recycling and disposal).

### Potential Strategies for Waste Diversion

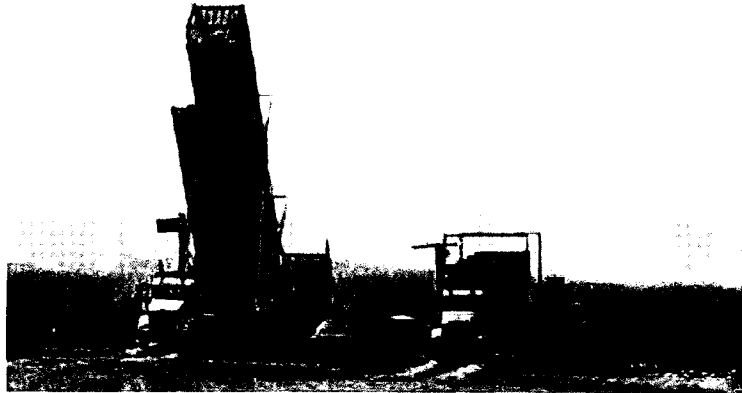
The division will continue to consider diverting a portion of the solid waste stream to another recycling, recovery, or disposal option(s) while the landfill is still in operation. However, a cost-benefit analysis, including a comparative analysis of greenhouse gas emissions, would precede any decision to pursue early diversion because the cost of adding a new disposal method to the cost of operating Cedar Hills may outweigh the benefits of extending landfill life. Possible diversion options include waste conversion technologies such as anaerobic digestion, demonstration projects of other evolving technologies that promote resource recovery, or exporting some waste to an out-of-county landfill. Environmental, social, economic, and other criteria also would play into any waste diversion decision.

### Operational Efficiencies

The division has made a series of operational changes to increase landfill capacity and density. These changes include reducing the amount of soil and rock buried in the landfill, using more efficient unloading and compaction equipment, and taking advantage of natural settlement. Some of the key changes and efficiencies achieved are described below:

- The division has implemented strategies to minimize the placement of soil in the landfill. For example, in the past, six inches of compacted soil was used to cover the entire surface of the active solid waste disposal area at the end of each working day. Daily cover serves to control litter and discourage foraging by animals, such as rodents and birds. However, the use of soil consumes valuable landfill space. The division now uses retractable tarps to cover most of the waste at the end of each day to reduce the amount of soil buried in the landfill. The tarps serve the same function as daily soil cover. At the start of each day's operations, the tarps are rolled up, and more solid waste is placed directly on top of the previous day's waste. Soil is still used to cover side slope areas. However, as much of this soil as possible is removed before more waste is placed, and the soil is then reused. Together, these practices have resulted in a reduction of the volume of soil buried in the landfill.

- Tippers now empty trailers and containers rather than the walking floor trailers previously used. Walking floor trailers require a large, rock covered surface for the trucks to drive on as the walking floor rolls the garbage out the back of the trailer. These large rock surfaces are not required with the tippers. Instead, the garbage trailers are backed onto the tipper, which tilts the trailer, allowing the garbage to slide out of the back and into the refuse area. The use of tippers not only reduces the use of rock, it also decreases unloading time for each trailer by at least half, and reduces damage to equipment and tires.



*Tippers empty trailers more efficiently*

- Heavier equipment and improved methods have increased waste compaction. Packing the waste to a greater density allows more airspace for additional solid waste in each landfill area.
- Another strategy for increasing landfill capacity is taking advantage of the natural settling that occurs as waste placed in each area decomposes. As this natural settling occurs, the level of the landfill drops below the permitted height, allowing more waste to be added to bring the height of a previously filled area back up to its planned level. To take advantage of this natural settling, the division has delayed final closure of Areas 5 and 6, and will delay final closure of Area 7, to allow settling to occur so that additional waste can be added before final cover is applied.

With these operational changes, more solid waste can be placed within the already designed and permitted refuse areas. The division will continue to pursue these and other best management practices that preserve airspace and make more efficient use of landfill capacity. The division will also work with subject matter experts to determine best practices related to use of top lifts and temporary covers, including how long temporary covers should be used prior to applying final cover. The division will provide a report on the best practices with implementing actions to the King County Council no later than April 1, 2020.

## New Area Development

During 2009 and 2010, the division explored alternatives for developing new refuse areas to extend the landfill life. A wide range of alternatives was originally identified. Based on a preliminary assessment of operational and engineering feasibility, as well as likely environmental impacts, five action alternatives were developed that would extend landfill life for an additional three to 13 years beyond the then projected closure date. The environmental impacts of these alternatives were evaluated in an environmental impact statement (EIS), with the Final EIS issued in July 2010. The EIS determined that none of the five action alternatives would result in any significant unavoidable adverse environmental impacts compared with the no action alternative (KCSWD 2010a).

The preferred alternative from the Final EIS develops 56.5 acres for a new Area 8 in the southwestern portion of the landfill and extends landfill life for eight to nine years. It maximizes the use of readily available space at the landfill, with the least amount of disruption to existing landfill structures. Garbage shall not be disposed of, nor soils be stockpiled, within 1,000 feet of the property line at the landfill, in accordance with the Settlement Agreement. At the same time, this alternative preserves the flexibility to implement further development should it be necessary in the future and balances the cost of future development and operations with savings to the ratepayer.



Developing a new area requires extensive excavation and preparation

In 2000 King County entered into a Settlement Agreement in the following consolidated class action cases: *Anderson et al v. Cedar Grove Composting Inc, et al* (King County Superior Court Case No. 97-2-22820-4 SEA and *Rick I. and Kim M. Brighton, et al v. Cedar Grove Composting et al* (King County Superior Court Case No. 97-2-21660-5 SEA (hereinafter referred to as the "Settlement Agreement").

Following publication of the Final EIS, the division submitted a Project Program Plan for implementing the preferred alternative to the County Council for approval (KCSWD 2010b). The County Council approved the Project Program Plan in December 2010.

### Permitted Capacity Planned for Cedar Hills through 2028

Cedar Hills has built capacity remaining in four areas (Areas 5, 6, 7, and 8). The estimated capacities are based on the difference between existing landfill contours (September 2, 2017 aerial survey) and the approved design contours at completion.

As the landfill ages, it settles. Airspace from settlement can be recovered for disposal. Settlement occurs due to consolidation and to loss of mass from leachate and more importantly, gas production. As gas is collected, it is removed from the landfill. The airspace gas once occupied consolidates and the landfill settles. Soil surcharge can be used to accelerate settlement. Areas 5 and 6 both have areas of soil stockpiled over them to accelerate settlement. This soil will be recovered later for other uses. Cedar Hills landfill has additional planned capacity in Area 8. Area 8 is currently under construction, which began in 2017 and will be ready for use in 2018. In addition to Area 8, a top lift over Areas 7 and 8 is planned to bring those areas to a permitted maximum design elevation of 800 feet. Such activity would be done only to the extent that such activity would be consistent with the terms and conditions of the Settlement Agreement, which requires King County to make a good faith effort to keep the maximum height of areas 5, 6, and 7 of the Landfill at or below 788 feet above sea level.

The table below presents current and planned capacity in cubic yards and tons by area, as of September 2, 2017. It is based on an air space utilization of 1,600 pounds of refuse disposed per cubic yard of air space consumed, and an average yearly 1,025,000 tons (forecasted between 2017 and 2028). 1,600 pounds per cubic yard is the airspace utilization achieved in Area 7 using current operational practices (compaction, daily cover usage, and rock recovery). The terms and conditions of the Settlement Agreement may impact the actual utilization of the Area Capacity described in the table.

Area Capacity	Estimated Cubic Yards	Estimated Tons	Estimated Number of Years
5 Top Lift	1,923,000	1,538,400	1.4
6 Top Lift	1,367,000	1,093,600	1
7	2,070,000	1,656,000	1.5
8	7,842,000	6,273,600	5.7
7 & 8 Top Lift	1,061,000	848,800	0.8
Total	14,263,000	11,410,400	10.4

## The Next Disposal Option

### A Disposal Option Must Be Selected as Part of This Plan's Approval

With permitted capacity (Area 8) at the landfill predicted to be used by 2028, the disposal option for beyond 2028 must be selected. The selection is needed to provide substantial lead time to complete financial, operational, and infrastructure preparations, including completion of environmental review under the State Environmental Policy Act (SEPA). Interlocal agreements also require the county to consult with partner cities at least seven years before Cedar Hills closes, triggering a consultation in 2021 if no new Cedar Hills capacity is built. For these reasons, selecting a disposal option as part of approval of this Plan is essential to ensure there is no gap in the division's ability to dispose of waste and meet contractual obligations.

### Further Development of Cedar Hills is Recommended

For the Public Review Draft Plan issued in January 2018, the division used information from the *Conversion Technology Report* (R.W. Beck 2007), the *Waste-to-Energy Study* (Normandeau 2017), and an updated *Cedar Hills Site Development Alternatives Final Report* (KCSWD 2017a) to identify three options to meet the county's disposal needs after currently permitted capacity at Cedar Hills is used: 1) Further develop Cedar Hills, 2) waste export, and 3) waste to energy (mass burn) facility. After public comment and careful consideration of the three disposal options, the option to further develop the Cedar Hills Landfill is recommended.

This recommendation will further develop Cedar Hills to maximize disposal capacity, extending the division's over 50-year practice of managing its waste locally. The increased capacity shall not all result in either disposal of garbage or stockpiling of soils within 1,000 feet of the property line at the landfill, in accordance with the Settlement Agreement, but will develop new cells within the existing footprint of the landfill and increase the height from the permitted 800 feet up to 830 feet, only to the extent that such activity would be consistent with the terms and conditions of the Settlement Agreement, which requires King County to make a good faith effort to keep the maximum height of areas 5, 6, and 7 of the Landfill at or below 788 feet above sea level. Based on the 2018 tonnage forecast, maximizing the development of the landfill should extend capacity through the planning horizon of this Plan. Landfill life could be extended if recycling increases, recessions occur, or more complex development approaches are used. To account for emerging technologies, the next disposal option after Cedar Hills is not specified in this Plan, but would be evaluated in collaboration with regional partners prior to the next Plan update to ensure no gap in service. The recommended further development is consistent with county policy to maximize the life of the Cedar Hills landfill. The *Conversion Technology Report* (R.W. Beck 2007) and more recent division analysis concluded that Cedar Hills disposal is the most economical way to handle King County's waste. Other advantages include the division's experience in landfill operation, availability of space in a county-owned landfill with state of the art environmental controls, and collection of landfill gas to produce renewable energy.

Developing Cedar Hills to the maximum extent feasible has the lowest rate impact of the three options considered, the lowest greenhouse gas emissions and the lowest risk because of long-term experience in its operation. Other benefits include that waste created in King County will continue to be managed locally, the division will maintain control over the system, and landfill gas will continue to be delivered to the Bio-Energy Washington facility, resulting in pipeline-quality natural gas, revenue for the division, and reduced greenhouse gas emissions. Table 6-1 includes a comparison of key attributes of the three options.

To reduce impacts on neighboring communities, King County shall implement a bird management plan.

## Other Long-Term Disposal Options Considered

Waste export and a waste to energy (mass burn) facility (described below) were also considered as disposal options in the Public Review Draft Comp Plan. Those options are not recommended as the next disposal option after current permitted Cedar Hills capacity (Area 8) is used in 2028, but could be undertaken after an expanded Cedar Hills ultimately closes. This plan does not consider the option of developing a replacement landfill either in King County or in another county, in keeping with policy established in the 2001 Plan. Conditions in King County such as land availability, environmental considerations, public acceptance, cost, and other issues would impede any effort to site a replacement landfill in the county. In addition, there are existing landfills outside of King County with significant capacity available.

### Waste Export

This option would export waste via rail to an out-of-county landfill after permitted capacity at Cedar Hills is used by 2028. Waste export by rail is a proven disposal option used by neighboring jurisdictions, including the City of Seattle and Snohomish County. There are several regional landfills available by rail with combined capacity sufficient to handle the county's waste in the long term (KCSWD 2017c). This option would transfer a significant portion of the County's waste management activities into the private sector for long haul and landfilling. This option is not recommended as the next disposal option after 2028 for several reasons. It has higher costs than further development of the Cedar Hills landfill. It requires modifying transfer stations for rail-ready transport, division operational changes, and requires sufficient lead time for contracting for services.

The Waste Export option would require all of the county's waste to be exported on trains. According to the Washington State Freight Rail Plan, it is unclear if the freight rail system will have adequate rail capacity by 2028 (Normandeau 2017) to accommodate all of the county's waste. In addition, according to the Washington State Department of Transportation 2014 "Landslide Mitigation Action Plan," rail service can be disrupted by landslides and flooding. If service interruptions stretch from days to weeks, unsanitary conditions could occur at transfer stations and eventually in the neighborhoods where collection services must be stopped. Scarce rail capacity and service disruptions could increase costs and require robust contingency planning.

### Waste to Energy Facility

Under this option, all of the region's municipal solid waste would be directed to a waste to energy facility built in King County when current permitted capacity at Cedar Hills is reached by 2028. As discussed previously, a recent study identified a mass burn facility as the best waste to energy technology for consideration by King County (Normandeau 2017). Mass burn facilities operate successfully in many parts of the U.S. and the world.

To handle the county's projected tonnage, the facility would require approximately a 40 acre site and be designed to handle 5,000 tons-per-day so that it could operate 20 years before further disposal capacity is needed. After 20 years, an added/expanded waste to energy facility or other disposal method would be required. A waste to energy facility would reduce waste to ash 90 percent by volume and 75 percent by weight, while offsetting some costs through the sale of electricity and increasing recycling by as much as two percent by recovering metals after the waste is burned. Non-processable, bypass waste, and ash would be transported to an out-of-county landfill by rail. This option is not recommended as the next disposal option after 2028 for several reasons. It has the highest cost of the options considered, it requires guaranteed amounts of consistent feedstock, has potential for inefficient operation in early years when less capacity is used, and it has the highest greenhouse gas emissions of the options considered. As with waste export, rail capacity constraints could disrupt export of ash and bypass waste. At 5,000 tons per day, the facility would be among the largest in the world with associated implementation and siting risks.



## Next Steps

Several actions will need to be taken in order to further develop the Cedar Hills Landfill beyond its current permitted capacity. The following steps are needed at Cedar Hills to maximize disposal capacity:

- Move facilities currently located at the landfill that are on areas permitted for refuse disposal.
- Revise the Project Program Plan (KCSWD 2010b) and Cedar Hills Site Development Alternatives Final Report (KCSWD 2017a) for the development of Cedar Hills and conduct a new SEPA environmental review, since increasing the height of the landfill up to 830 feet was not considered in the 2010 EIS (KCSWD 2010a).
- Apply to Public Health – Seattle and King County for a permit modification to allow the landfill to be expanded up to 830 feet in height only to the extent that such modification would be consistent with the terms and conditions of the Settlement Agreement, which requires King County to make a good faith effort to keep the maximum height of areas 5, 6, and 7 of the Landfill at or below 788 feet above sea level.
- Develop new landfill cells.
- While Cedar Hills expansion is underway, the region will need to review the latest technological advances and take those into account during the next Plan update to properly evaluate disposal options for the ultimate closure of Cedar Hills.

Given the longer life of the facility, King County will develop and implement a bird management plan for the Cedar Hills Regional Landfill. The bird management plan shall include at least the following elements:

- An inventory of birds at least seagull-sized or larger that inhabit the Cedar Hills Regional Landfill, including species and number of birds, to be updated annually;
- Design suggestions to minimize attractiveness of the site to birds;
- A description of proposed bird control methods including equipment, construction activities, permits required (including federal and state fish and wildlife permits), and other operation and maintenance requirements related to bird control;
- Description of staff resources and training needed to implement the control plan thoroughly and completely;
- Performance metrics related to bird management; and
- A monitoring plan to, on at least an annual basis, assess the efficacy of the bird management plan and allow further adaptation and improvement of the plan. It will also provide a basis for determining if bird use of the area changes through time.

In recognition of the longer life of the landfill and to ensure transparency of landfill operations, the solid waste division shall transmit to the council each year the annual report submitted to the local health jurisdiction and the department of ecology, as required by WAC 173-351-200 (11), as amended.

Even with further development, Cedar Hills landfill capacity will ultimately be exhausted and a new disposal option will be needed. The next disposal option is not specified in this plan so that the latest technological advances can be considered when the choice is made. The Transfer Plan suggested that one disposal option - waste export - is best evaluated within 5 years of initiating service to ensure decisions consider current market conditions. Other disposal options such as waste to energy likely require a longer lead time. Although the Amended and Restated Interlocal Agreement requires consultation with cities at least seven years before Cedar Hills closes, evaluation of the next disposal option should begin prior to the next Plan update to ensure enough time for method selection, planning, and implementation.

### Factors in Selecting a Long-Term Disposal Method

In cooperation with advisory committees, the division identified several criteria be used in selecting a long-term disposal option (see below). It is particularly important that disposal options are consistent with the commitment of the County and its partner cities to Zero Waste of Resources by 2030. Any long-term disposal option also must be responsive to increases in population, housing, and solid waste tonnage, as well as the specific composition of King County's waste. The 2018 tonnage forecast projects solid waste tons increasing to 1,275,000 tons by 2028 and continuing to grow, reaching 1,564,000 tons in 2040. This forecast assumes that the region's recycling rate remains at 52 percent.

King County's Office of Performance, Strategy and Budget will engage with the Solid Waste Division and the regional partners to develop a plan for long-term disposal, to be recommended to the King County Executive, who will transmit legislation to the King County Council implementing the next long-term disposal method. The Executive will transmit a progress report that outlines how this plan will be developed, including timing for development and transmittal of this plan, to the Council by December 31, 2021.