



**KING COUNTY**

1200 King County Courthouse  
516 Third Avenue  
Seattle, WA 98104

**Signature Report**

**November 5, 2013**

**Motion 13997**

**Proposed No. 2013-0365.1**

**Sponsors Phillips**

1           A MOTION accepting the executive response to 2013-14  
2           Biennium Budget Ordinance, Ordinance 17476, Section  
3           109, Proviso P1, restricting \$1,000,000 in budget authority  
4           pending the county executive's transmittal of a report and  
5           motion related to the solid waste advisory committee's  
6           accomplishments in 2011 and 2012 and work plan or goals  
7           for 2013 and 2014 and describing the research and analysis  
8           being conducted regarding strategies and options for waste  
9           disposal after the closure of the Cedar Hills landfill.

10           WHEREAS, 2013-14 Biennium Budget Ordinance, Ordinance 17476, contains a  
11           proviso in Section 109, stating that \$1,000,000 may not be encumbered or expended until  
12           the executive transmits a report and a motion that acknowledges receipt of the report and  
13           said motion is adopted by council, and

14           WHEREAS, the King County executive has transmitted to the King County  
15           council the requested report;

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

17           The report related to the solid waste advisory committee's 2011 and 2012  
18           accomplishments and 2013 and 2014 work plans and describing the research and analysis  
19           being conducted regarding the strategies and options for waste disposal after the closure

20 of the Cedar Hills landfill submitted in compliance with 2013-14 Biennium Budget  
21 Ordinance, Ordinance 17476, Section 109, is hereby acknowledged; the \$1,000,000 is  
22 released.  
23

Motion 13997 was introduced on 8/19/2013 and passed by the Metropolitan King  
County Council on 11/4/2013, by the following vote:

Yes: 8 - Mr. Phillips, Mr. Gossett, Ms. Hague, Ms. Patterson, Ms.  
Lambert, Mr. Dunn, Mr. McDermott and Mr. Dembowski  
No: 0  
Excused: 1 - Mr. von Reichbauer

KING COUNTY COUNCIL  
KING COUNTY, WASHINGTON

  
Larry Gossett, Chair

ATTEST:

  
\_\_\_\_\_

Anne Noris, Clerk of the Council

**Attachments:** A. Solid Waste Advisory Committee 2011-2012 Accomplishments and 2013-2014 Work  
Plan

**Solid Waste Advisory Committee  
2011-2012 Accomplishments and 2013-2014 Work Plan  
AND  
Research and Analysis of Post-Cedar Hills  
Waste Disposal Options**

Prepared in accordance with  
Adopted Budget Ordinance 17476,  
Section 109, Proviso 1

**July 2013**



**King County**

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

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## Introduction

This report was developed to meet the requirements of Adopted Budget Ordinance 17476, Section 109, Proviso 1 which states:

- *Of this appropriation, \$1,000,000 shall not be encumbered or expended until the executive transmits a report and a motion that acknowledges receipt of the report, and the motion is passed by council. The motion shall reference the proviso's ordinance section, proviso number and subject matter in both the title and the body of the motion.*
- *The executive must file the report and motion required by this proviso by August 1, 2013, in the form of a paper original and an electronic copy with the clerk of the council, who shall retain the original and provide an electronic copy to all councilmembers, the council chief of staff and the lead staff to the transportation, economy and environment committee or its successor.*
- *The report shall describe the solid waste advisory committee's accomplishments in 2011 and 2012 and the solid waste advisory committee's work plan or goals for 2013 and 2014. The report shall also describe the research and analysis being conducted regarding strategies and options for waste disposal after the closure of the Cedar Hills landfill.*

The report is presented in two sections. The first section addresses the Solid Waste Advisory Committee 2011 and 2012 accomplishments and 2013 and 2014 work plans. Section two describes the research and analysis the Solid Waste Division (division) is conducting regarding strategies and options for waste disposal after the closure of the Cedar Hills Regional Landfill.

## **Section One – Solid Waste Advisory Committee 2011-2012 Accomplishments and 2013-2014 Work Plan**

### **Background**

Under Washington state law each County is required to have a Solid Waste Advisory Committee (SWAC):

RCW 70.95.165(3)

*Each county shall establish a local solid waste advisory committee to assist in the development of programs and policies concerning solid waste handling and disposal and to review and comment upon proposed rules; policies; or ordinances prior to adoption. Such committees shall consist of a minimum of nine members and shall represent a balance of interests including, but not limited to, citizens, public interest groups, business, the waste management industry, and local elected public officials. The members shall be appointed by the county legislative authority.*

In accordance with state law, SWAC is also established in King County code:

*K.C.C. 10.28*

*The King County Solid Waste Advisory Committee is hereby established to be comprised of a countywide group of representatives of citizens, public interest groups, business, labor, the waste management industry, local elected public officials, the recycling industry, manufacturers located in King County, and marketing and education interests to provide for coordination and information exchange between the groups about solid waste issues and to provide on-going public input and advice to King County on solid waste management issues including the marketing and use of recycled materials.*

*10.28.020 Composition*

*The King County solid waste advisory committee shall be composed of at least nine and not more than twenty members representing a balance of interests among the groups listed in K.C.C.10.28.010. The members shall include one representative from each of the two bargaining units representing the greatest number of solid waste division employees. Representatives of the bargaining units may be county employees.*

The King County SWAC has been operating in an advisory capacity to the division since 1985. Representation on SWAC includes interested citizens, public interest groups, labor, recycling businesses, the marketing sector, manufacturing, the waste management industry, and local elected officials; membership is balanced geographically. SWAC typically meets with the division monthly to discuss solid waste management planning and decisions that affect County residents and businesses and the services they receive.

## Accomplishments

The division values the perspectives provided by the wide-range of interests represented on the SWAC. In 2011 and 2012, SWAC provided the division with expertise and guidance related to many aspects of solid waste operations and planning. The committee's most significant accomplishments during this time period are listed below.

### 2011 Accomplishments

- SWAC reviewed and provided feedback on updates to K.C.C. Title 10 and the updates to the draft *Comprehensive Solid Waste Management Plan*.
- SWAC received briefings and provided feedback on the division's twenty year financial plan and rate study. The committee supported the division's rate proposal and approved a motion supporting the rate-setting process. In April, the committee sent a letter to the King County Executive and Metropolitan King County Council expressing SWAC's support for the rate proposal.
- Through presentations from SWD staff, SWAC was educated about and provided comments on a variety of the division's programs and projects, including: schools recycling programs, carpet recycling market development, green building, EcoConsumer, product stewardship, closed landfills, the Community Litter Cleanup Program, emergency debris management, the Bow Lake and Houghton Transfer Station capital projects, and the County's climate change initiative.
- In accordance with adopted Ordinance 16997, SWAC received training on the Public Records Act in advance of moving to individual County email accounts for all SWAC-related communications.
- Each year SWAC selects a facility to tour. These tours provide committee members with valuable insight into how the solid waste management system works – from transfer and disposal of solid waste to processing of recyclable materials. In 2011, SWAC toured Total Reclaim, a construction and demolition materials recycling facility in Tacoma.

### 2012 Accomplishments

- Utilizing information on product stewardship gained from presentations in 2011, SWAC drafted and approved a letter to the Board of Health supporting the creation of a safe, effective, and convenient product stewardship program for the disposal of unwanted household medicines from residents in King County.
- SWAC reviewed and provided feedback on the analysis of transfer station usage as required by a Solid Waste Division 2012 budget proviso.

- The committee received presentations and provided feedback on a variety of topics including plastics-to-fuel waste conversion technology, emergency planning, single stream recycling, siting a new transfer station in south King County, the Factoria Recycling and Transfer Station reconstruction project, and the division's Washington Utilities & Transportation Commission regulated revenue sharing agreements with the garbage and recycling haulers that serve unincorporated areas of the County.
- The committee toured the new building at the Bow Lake Recycling and Transfer Station. This tour familiarized SWAC members with the type of facility being constructed as a result of the Solid Waste Transfer and Waste Management Plan.
- The committee contributed to development of the division's 2013/2014 budget by providing feedback on budget proposals.



## Work Plans

The SWAC work plan is aligned with the division's work program – each year the division examines its own work program and identifies elements that it believes would be of interest to the SWAC. Then, using the guidelines developed by SWAC for determining agenda items, a draft work program is developed for the committee. The draft work program is reviewed at the first meeting of the year. Committee members are encouraged to provide input at this time, and the final work program is approved at this meeting. The committee may add or delete items throughout the year if new and unexpected issues arise. Presentations from outside parties must be approved by vote.

### 2013 Work Plan

<p><b>1<sup>st</sup> quarter</b></p>	<p>2013 Work Plan Review and Comment            Secure Loads Update            Plastic Bags Programs and Policies            State Legislation Update            Comprehensive Solid Waste Management Plan Update            Sustainable Solid Waste Management Study Scope Review            Division Priorities            Quarterly Solid Waste Division Report</p>
<p><b>2<sup>nd</sup> quarter</b></p>	<p>Financial Policies Development            Cedar Hills and Landfill Gas-to-Energy Update            Green Building Ordinance Review            Illegal Dumping Clean-Up Report            Solid Waste Division Capital Asset Management Plan Report            State Legislation Update            Waste Conversion Technology Briefing            Quarterly Solid Waste Division Report</p>
<p><b>3<sup>rd</sup> quarter</b></p>	<p>Facility Tour: Bow Lake Grand Opening            Single- and Multi-Family Recycling Status Briefing            Waste Conversion Technology Briefing            Quarterly Solid Waste Division Report</p>
<p><b>4<sup>th</sup> quarter</b></p>	<p>Carpet Recycling Presentation            Mattress Recycling Update            Budget Preview            State Legislation Preview            Waste Conversion Technology Briefing            Quarterly Solid Waste Division Report</p>

As described above, SWAC develops its work plan at the beginning of the year. The work program described below is tentative, based upon information available at this time. As events unfold over the course of 2013, topics of interest to the committee may change. An updated work program will be developed in late 2013, for review and approval by the committee in January 2014.

**2014 Work Plan**

<p><b>1<sup>st</sup> quarter</b></p>	<p>State Legislation Update          Rates Development Discussion          Comprehensive Solid Waste Management Plan Implementation          Waste Conversion Technology Presentation          Quarterly Solid Waste Division Report</p>
<p><b>2<sup>nd</sup> quarter</b></p>	<p>State Legislation Update          Rates Development Discussion          Comprehensive Solid Waste Management Plan Implementation          Waste Conversion Technology Presentation          Quarterly Solid Waste Division Report</p>
<p><b>3<sup>rd</sup> quarter</b></p>	<p>Facility Tour          Quarterly Solid Waste Division Report          Comprehensive Solid Waste Management Plan Implementation          Waste Conversion Technology Presentation</p>
<p><b>4<sup>th</sup> quarter</b></p>	<p>Budget Preview          State Legislation Preview          Comprehensive Solid Waste Management Plan Implementation          Waste Conversion Technology Presentation          Quarterly Solid Waste Division Report</p>

Additional information about SWAC, including agendas and meeting minutes, can be viewed on the division’s website <http://your.kingcounty.gov/solidwaste/about/swac.asp>.

## **Section Two – Research and Analysis of Post-Cedar Hills Waste Disposal Options**

Waste prevention and recycling are the priority approaches to solid waste management in King County; however, not all materials present in the waste stream can be handled using these methods. Currently, about 63 percent of the King County waste stream consists of materials with value for which recycling options are widely available; about 15 percent are materials with value, but for which there are not recycling options; and the remaining 22 percent are materials with little or no value.

The division is evaluating options for disposal after Cedar Hills reaches capacity and closes and/or for early diversion of a portion of the waste stream. Disposal refers to management of the unrecycled portion of the municipal solid waste stream, and could include one or more of the following:

- Waste conversion technologies
- Incineration that includes resource recovery and waste-to-energy
- Landfilling that includes resource recovery and waste-to-energy

### **Background**

In the late 1980s, both King County and the City of Seattle planned to convert from landfilling to incineration. Public opposition led both jurisdictions to abandon plans to build incinerators and to embrace recycling and waste reduction, along with exploring the use of out-of-county landfills. However, during the past decade, technological advancements have resulted in renewed interest in exploring other options for disposal.

The division is investigating a wide range of technologies and systems in various stages of development that convert solid waste to usable resources. Hundreds of companies are forming, developing new methods, obtaining patents, and improving waste conversion technology systems. Many universities, consultants, and organizations are conducting studies, and partnerships are forming to fund, build, and operate facilities. Meanwhile, jurisdictions are undertaking rule making efforts to define terms and establish regulations that both facilitate the development of these technologies and protect the environment and the public. The division is committed to gaining an understanding of how these technologies could serve the region in the future.

### **Terminology**

As the industry evolves, the terms used to describe waste disposal technologies and related elements are changing. For example, waste conversion technologies are now usually defined separately from incineration – in 2011, the Solid Waste Association of North America (SWANA) described “waste conversion technologies” as “non-incineration technologies that are used to convert the non-recyclable portion of the municipal solid waste stream to electricity, fuels,

and/or industrial chemical feedstocks.” However, the same terms are sometimes used differently by different people, groups, or organizations.

To reduce confusion and facilitate common use and understanding, the division uses the following definitions. The division will revise these definitions if needed as more standard industry definitions are established.

- **Waste conversion technologies** are non-incineration technologies that use thermal, chemical, or biological processes, sometimes combined with mechanical processes, to convert the non-recycled portion of the waste stream to electricity, fuels, and/or chemicals that can be used by industry.
- **Incineration** is a disposal method that converts waste materials into ash, flue gas, and heat using controlled flame combustion.
- **Waste-to-energy technologies** recover energy from waste materials and include both waste conversion technologies and incineration with energy recovery, such as mass burn waste-to-energy, refuse-derived fuel, and advanced thermal recycling.
- **Systems** are unique technological methods for processing specified feedstock that are developed and patented by companies. These systems may use one technology or a sequence of technologies to convert material into electricity, fuels, and/or chemicals that can be used by industry. While systems generally have some residual material that must be disposed, many systems combine technologies to recover or further refine residual for use as marketable products or components in marketable products.
- **Feedstock** is the input material used by waste conversion and waste-to-energy technologies. The feedstock used by systems can be municipal solid waste (MSW); selected materials removed from MSW, such as organics; or MSW combined with sewage sludge. Each system has unique requirements regarding the types, size, and amount of feedstock processed per day.

### **Waste Conversion Technologies**

Conversion technologies are developing rapidly. In this environment a new conversion technology could emerge that is more promising than the prevailing technology. The technologies listed below are as described in an article by Jeremy K. O'Brien (SWANA 2011).

- **Gasification** is a commercially proven manufacturing process that converts such hydrocarbons as coal, petroleum coke, biomass (such as wood and agricultural crops or wastes) and other organics to a synthesis gas (syngas), which can be further processed to produce chemicals, fertilizers, liquid fuels, hydrogen, and electricity. In a gasification facility, hydrocarbon feedstock is injected with air or oxygen and steam into a high-temperature, pressurized reactor until the chemical bonds of the feedstock are broken. The resulting reaction produces syngas. The syngas is then cleansed to remove such impurities as sulfur, mercury, particulates, and trace minerals.
- **Pyrolysis** is a process that involves the thermal decomposition of feedstock at high temperatures (750°F to 1500°F) in the absence of air. The resulting end product is a mixture

of solids (char), liquids (oxygenated oils), and gases (methane, carbon monoxide, and carbon dioxide). The oils and fuel gases can be used directly as boiler fuel or refined for higher-quality uses such as engine fuels, chemicals, adhesives, and other products. The solid residue contains most of the inorganic portion of the feedstock as well as large amounts of solid carbon or char.

- **Plasma arc gasification** is a heating method that can be used in both pyrolysis and gasification systems. This technology was developed for the metals industry in the late nineteenth century. Plasma arc technology uses very high temperatures (7,000°F) to break down the feedstock into elemental byproducts. When municipal solid waste is processed, the intense heat breaks up the molecular structure of the organic material to produce such simpler gaseous molecules as carbon monoxide, hydrogen, and carbon dioxide. The inorganic material is vitrified to form a glassy residue.
- **Anaerobic digestion** is the bacterial breakdown of organics in the absence of oxygen. It can occur over a temperature range from 50°F to 160°F. Anaerobic digestion of MSW can occur naturally, as in a landfill, or in a controlled environment, such as an MSW anaerobic-digestion facility. In the latter, inorganic and recyclable components are first removed from MSW, which is then reduced in size, and finally placed in an airtight vessel called a digester, where the process occurs. Biogas can be used as fuel for engines, gas turbines, fuel cells, boilers, and industrial heaters. It can also be used in other processes and in the manufacture of chemicals.

### **Landfilling**

Although waste conversion technologies and waste-to-energy are the focus of the division's current research, landfilling may still be a viable alternative for disposal when Cedar Hills reaches capacity and closes. While the division will no longer own or operate a landfill, landfill capacity is available regionally. The division will continue to track landfill capacity and technological advances.

There have been significant advances in systems that capture landfill gas and convert it to use as an energy source. The Environmental Protection Agency database currently lists 862 operational landfill gas-to-energy facilities in the United States, six of them in Washington State. Over 18 percent of the projects have begun just since January 2010. Since upgrades were made to the Bio Energy Washington landfill gas-to-energy plant at Cedar Hills last fall, it has been generating enough power to serve the needs of about 20,000 homes.

## Research and Analysis

Although closure of Cedar Hills is not imminent, the division recognizes the importance of pursuing developments in municipal solid waste management. The division is committed to the continued exploration of emerging technologies as well as advances in established disposal methods such as incineration and landfilling with energy recovery.

### Background – Conversion Technology Study

In 2007, the division hired a private consulting firm, R.W. Beck, to review available information regarding current and emerging technologies for the processing of solid waste (Conversion Technology Report; R.W. Beck 2007).

The Conversion Technology Report provides a preliminary look at a range of technologies and compares them with waste export to an out-of-county landfill. For the purposes of the study, it was assumed that the County would select a single facility with the ability to handle about 3,200 tons of waste per day. Since the report was produced, the division has concluded that a combination of disposal methods for specific components of the waste stream should also be evaluated.

The report identified three proven incineration technologies that would produce energy and could manage the County's entire waste stream – mass burn waste-to-energy, refuse derived fuel, and advanced thermal recycling. These three were identified as having sufficient operating experience handling the volume of solid waste generated in King County. In addition, each has the demonstrated ability to meet permit requirements for air quality and to produce a manageable amount of ash and other residuals that can be properly disposed of or potentially reused.

Key conclusions of the report are as follows:

- The three incineration technologies and the waste export disposal option are each capable of handling the quantity and composition of the King County waste stream while meeting all applicable regulatory requirements.
- The incineration technologies are compatible with County efforts to increase recycling up to a 70 percent recycling rate.
- The incineration technologies are more expensive than the waste export disposal option.
- An informed decision on disposal options will require a more detailed analysis.

Beyond these established technologies, the report identified five other technologies, some established and some emerging, that could handle all or specific components of the County's waste stream. More detailed information can be found in the [Conversion Technology Report](#).

## **Ongoing Research and Tracking**

Due to rapid advances in the industry, the division is now tracking many more waste conversion technologies and systems than those initially recommended by the Conversion Technology Report. The division has assigned staff whose regular duties include researching waste conversion technologies, as well as monitoring changing definitions, legislation and regulations, and companies and partnerships that are developing systems or providing disposal service.

Through a wide-range of sources – including industry publications, industry and jurisdiction websites, seminars, and personal contacts –division staff monitors industry, academic, and government sources to ensure a broad range of perspectives, scopes, and findings. Relevant information is often proprietary and difficult to obtain, but compiling the constantly evolving and expanding information is important for a thorough analysis and understanding of the options that are available.

A complete assessment of how well a given company, system or technology matches unique County requisites, limitations, and resources calls for reliable information and objectivity. Information about options that is based on early development phases is less reliable. The phases of development include:

- Conceptual – includes the identification of success criteria, alternatives, risks, and a selected system design.
- Pilot – a small facility is built and operated to generate information about the behavior of a system and is used to reduce risk in the design and construction of larger facilities. Businesses sometimes continue to operate the pilot facility in order to test ideas for new products, feedstock, or operating conditions.
- Demonstration – bigger than a pilot facility, but smaller than full-scale production, a facility may be built to demonstrate the commercial feasibility of a system. These facilities may continue to operate to augment the processing of a commercial facility.
- Commercial – a full production facility.

Each of these development phases includes its own implementation steps, such as planning, permitting, construction, testing, and operating.

## **Regional Approaches**

During the last 25 years as local landfills closed, many of the jurisdictions around King County were faced with decisions about disposal. Two of the County's closest neighbors chose rail export to an out-of-county landfill. Seattle contracts with Waste Management (WM) for disposal at their landfill in Arlington, Oregon and Snohomish County contracts with Allied Waste (AW) for disposal at their Roosevelt landfill in Eastern Washington.

Seattle's contract with WM extends to 2028 with no current plans to exercise an early opt out option in 2019. In August 2012, the Snohomish County Council voted to extend the contract with AW to 2017, with an option for an additional year to allow the County to open up the work

to competing bids and extend interlocal agreements for long term funding. Snohomish County is continuing to monitor disposal alternatives; however, there are currently no plans to revise the rail export system.

Through contact with these other jurisdictions, the division will continue to track regional developments in waste disposal and consider regional partnerships.

### **Sustainable Solid Waste Management Study**

While the division continuously monitors developments in the solid waste management industry, an outside perspective is desired. Consequently, the division has issued a Request for Proposals to hire a consultant to conduct a study that will assist the division in future planning.

The study will identify and evaluate best practices and make recommendations to meet the future needs of the King County solid waste system in the areas of:

- Resource recovery at division facilities
- Construction and demolition debris management
- Organics processing
- Disposal alternatives and technologies
- Sustainable system financing

The selected consultant will provide the division with a summary of best practices, from both public and private sector solid waste systems, and a matrix of options that the division could feasibly implement and which includes an analysis of the fiscal, environmental, and operational implications and anticipated advantages and disadvantages of each option. The study is intended to help inform the discussion of future solid waste management options. Study completion is planned for first quarter 2014.

### **Considerations**

As systems or technologies progress through development phases, the options that are available expand. For each one, there are environmental, cost, and other implications. Other considerations include short- and long-term capacity needs and tolerance for risk and control. Development, selection, and implementation of new technologies and systems are inherently risky. However, acquiring a thorough understanding of the facts, including both the pro and con aspects of available technologies, will help make informed choices and utilize policies, regulations, public education, and contractual and partnership agreements that both encourage success and anticipate and mitigate potential problems.

### **Risk**

The quickly changing waste disposal industry presents both unique opportunities and challenges. New companies, investments, systems and partnerships are forming, developing and changing constantly; sometimes these ventures fail, which is a significant financial risk; for example the failure of an energy and resource recovery facility infrastructure project bankrupted Harrisburg, Pennsylvania. Additionally, waste conversion technologies currently have few established standards or best management practices, which add an element of



environmental risk. Past track records highlight the potential risk for both financial and environmental damages, such as the cleanup of contaminated soil, sediment, and water of the RMAC International, Inc. tire gasification operation abandoned in the mid-1990s in Troutdale, Oregon, which cost the public over \$1,000,000. However, technological improvements have created environmental protection capabilities, and efforts are underway throughout the country to evaluate policies, regulatory authority, reporting requirements, and technological and operational best practices to assure community and environmental protection.

Risk appropriate policies and regulatory authorities are evolving to catch up with the rapid pace of development, facilitating technological solutions to help solve long-term waste management challenges while protecting the environment. For example, Washington State adopted revisions related to composting and anaerobic digestion on March 25, 2013. However, budget constraints forced the state to place the remainder of the Solid Waste Laws Update Project on hold. Plans are underway to determine next steps on the update project.

### **System Attributes**

Each proposed system, like each of the communities they hope to serve, has unique capacities, constraints, and benefits. Just because a system worked for someone else doesn't mean it's the right choice, and conversely, just because it didn't work for someone else doesn't mean it shouldn't be considered. Performance history and current status, size, and scale may or may not allow for direct comparison with proposed projects. Available information may be based on estimates or projections, which have limited reliability. Considerations would include the following:

- System capacity (note that an increase of three-fold or more from pilot to commercial operation is considered high-risk)
- Feedstock requirements, including amount, type, size, preprocessing or pretreatment, and contamination tolerances
- Energy and water requirements
- Feedstock reliability, for example certainty of a feedstock source, supply, and cost can be affected by new markets or competition for waste as it evolves into a resource
- Availability of suitable sites and length of time for development
- Operating life – how long will the facility be needed?
- Markets for energy produced or other products
- Residue and handling requirements
- Ownership and operation

## Climate

The *Strategic Climate Action Plan (SCAP)* governs King County's efforts to prevent and mitigate climate change. Although disposal is not specifically called out in the SCAP, the solid waste system and the work of the division is an important part of the County's response to climate change. As called for in SCAP Goal Area 4, "Consumption and Materials Management," the division encourages residents and businesses in King County to consume less and recycle more. Compatibility with increased recycling levels will be included as a selection criterion when the time comes to choose a post-Cedar Hills closure disposal method. Greenhouse gas implications of various disposal technologies would also be considered.

## Screening and Evaluation Criteria

For the draft *2013 Comprehensive Solid Waste Management Plan* the division, in collaboration with its advisory committees, developed draft criteria by which disposal options may be screened and evaluated when making future decisions. The screening and evaluation criteria fall into six categories, each with a number of sub-categories. Specific requirements can be developed based on these criteria when it is time to make selections for either partial waste diversion or for disposal after Cedar Hills reaches capacity and closes.

- Environmental
  - Human health
  - Climate change
  - Air quality
  - Water quality
  - Energy production
  - Resource conservation
  - Compatibility with waste prevention and recycling
- Social
  - Environmental justice
  - Social justice/equity
  - Effects on livability and character of communities
- Economic
  - Capital cost
  - Financing
  - Operating cost
  - Revenue generated
  - Risk
- Availability
  - Capacity
  - Start date
  - Operating life of facility
  - Siting, design, permitting, and construction requirements

- Operating and maintenance personnel
- Financial assurance and insurability
- Operating history
  - Proven performance
    - Ability to handle amount of waste
    - Operator record
    - Safety record
    - Regulatory compliance
  - Compliance with regulatory requirements
  - Ability to respond after an emergency
  - Ability to provide performance guarantees
- Contract and operational requirements
  - Minimum level of waste required
  - Composition of waste required
  - Contract flexibility
    - Length of commitment required
    - Opportunity for contract reopeners
  - Waste not accepted/ability to handle special waste
  - Residue disposal requirements
  - Compatibility with waste prevention and recycling
  - Compatibility with current collection and transfer systems

## Conclusions

Waste conversion technologies and waste-to-energy with resource recovery are technologically viable waste management options that continue to evolve. Each technology, system, feedstock, and community has unique requirements and potential benefits. Waste export to an out-of-county landfill also appears to continue to be a viable option. The range of options is complex; there is no simple answer and a single system may not address all needs.

The experience of others will inform long-term planning choices that will support a sustainable solid waste disposal system for King County. As jurisdictions develop regulatory protections, and commercial-scale waste management systems utilizing these technologies begin to provide more reliable information, informed choices may become easier. Working examples of new technology systems may also de-mystify and improve acceptance for potential projects.

As specified in the new solid waste interlocal agreements, the division will intensify its scrutiny of disposal options at least seven years before the projected closure date of the Cedar Hills Regional Landfill (currently estimated to be in early 2026). The division will engage its advisory committees and other stakeholders to finalize selection criteria and perform a thorough analysis of viable disposal options, the results of which will be used to make a final recommendation for which disposal method(s) to use after the closure of Cedar Hills. If necessary, the Comprehensive Solid Waste Management Plan will be amended before actions are taken to implement the recommended disposal method(s).