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<th>Meaning</th>
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<tr>
<td>ADC</td>
<td>Alternative Daily Cover</td>
</tr>
<tr>
<td>AMOWRP</td>
<td>Apartment Move-Out Waste Reduction Program</td>
</tr>
<tr>
<td>BYOB</td>
<td>Bring Your Own Bag</td>
</tr>
<tr>
<td>C&amp;D</td>
<td>Construction and Demolition</td>
</tr>
<tr>
<td>CalGreen</td>
<td>California Green Building Code</td>
</tr>
<tr>
<td>CalRecycle</td>
<td>California Department of Resources, Recovery and Recycling (previously CIWMB)</td>
</tr>
<tr>
<td>CCCs</td>
<td>Certified Used Oil Collection Centers</td>
</tr>
<tr>
<td>CEDs</td>
<td>Covered Electronic Devices</td>
</tr>
<tr>
<td>CEQA</td>
<td>California Environmental Quality Act</td>
</tr>
<tr>
<td>CPI</td>
<td>Consumer Price Index</td>
</tr>
<tr>
<td>CIWMB</td>
<td>California Integrated Waste Management Board (now CalRecycle)</td>
</tr>
<tr>
<td>CRT</td>
<td>Cathode Ray Tubes</td>
</tr>
<tr>
<td>CRV</td>
<td>California Refund Value</td>
</tr>
<tr>
<td>DIY</td>
<td>&quot;Do-it-yourself&quot; home mechanic</td>
</tr>
<tr>
<td>DTSC</td>
<td>Department of Toxic Substance Control</td>
</tr>
<tr>
<td>DWR</td>
<td>Davis Waste Removal Company</td>
</tr>
<tr>
<td>EIR</td>
<td>Environmental Impact Report</td>
</tr>
<tr>
<td>EPA</td>
<td>(United States) Environmental Protection Agency</td>
</tr>
<tr>
<td>EPR</td>
<td>Extender Producer Responsibility</td>
</tr>
<tr>
<td>EPS</td>
<td>Expanded Polystyrene</td>
</tr>
<tr>
<td>E-Waste</td>
<td>Electronic waste</td>
</tr>
<tr>
<td>HHW</td>
<td>Household Hazardous Waste</td>
</tr>
<tr>
<td>HHWE</td>
<td>Household Hazardous Waste Element (HHWE)</td>
</tr>
<tr>
<td>iBIN</td>
<td>In Apartment Recycling Bin</td>
</tr>
<tr>
<td>LEA</td>
<td>Local Enforcement Agency</td>
</tr>
<tr>
<td>MOU</td>
<td>Memorandum of Understanding</td>
</tr>
<tr>
<td>NRC</td>
<td>Natural Resources Commission</td>
</tr>
<tr>
<td>OMRI</td>
<td>Organics Material Review Institute</td>
</tr>
<tr>
<td>OPP</td>
<td>Oil Payment Program</td>
</tr>
<tr>
<td>PAYT</td>
<td>Pay As You Throw</td>
</tr>
<tr>
<td>PHHWF</td>
<td>Permanent Household Hazardous Waste Facility</td>
</tr>
<tr>
<td>PPD</td>
<td>Pounds Per Person Per Day</td>
</tr>
<tr>
<td>PRC</td>
<td>Public Resource Code</td>
</tr>
<tr>
<td>Prop 218</td>
<td>Proposition 218</td>
</tr>
<tr>
<td>PS</td>
<td>Polystyrene</td>
</tr>
<tr>
<td>RFP</td>
<td>Request For Proposals</td>
</tr>
<tr>
<td>RRG</td>
<td>Regional Recycling Group</td>
</tr>
<tr>
<td>RRP</td>
<td>Resource Recovery Park</td>
</tr>
<tr>
<td>RWQCB</td>
<td>Regional Water Quality Control Board</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>SPBC</td>
<td>Save the Plastic Bag Coalition</td>
</tr>
<tr>
<td>SRRE</td>
<td>Source Reduction and Recycling Element</td>
</tr>
<tr>
<td>SWAG</td>
<td>Stuff We All Get</td>
</tr>
<tr>
<td>SWMP</td>
<td>Storm Water Management Plan</td>
</tr>
<tr>
<td>UBG</td>
<td>Used Oil Block Grant</td>
</tr>
<tr>
<td>UCD</td>
<td>University of California, Davis</td>
</tr>
<tr>
<td>U-Waste</td>
<td>Universal waste</td>
</tr>
<tr>
<td>WM</td>
<td>Waste Management</td>
</tr>
<tr>
<td>WMRA</td>
<td>Waste Management Recycle America</td>
</tr>
<tr>
<td>YCCL</td>
<td>Yolo County Central Landfill</td>
</tr>
</tbody>
</table>
Definitions

**Anaerobic Digestion**—The biological decomposition of organic matter with little or no oxygen.

**Base-year generation tonnage**—CalRecycle-approved initial waste generation amount (disposal + diversion) for any jurisdiction. Diversion rates for all subsequent years are calculated using the base-year generation amount, as modified by CalRecycle-approved adjustment method. If the base year tonnage is inaccurate, or if there are major changes in the nature of a jurisdiction's solid waste production, subsequent diversion rate calculations will be inaccurate. Jurisdictions with base-year-related diversion rate calculation problems often choose to establish a new base year by conducting a new diversion study or generation study. With the implementation of the SB 1016 measurement system, CalRecycle will only accept new base year studies commenced prior to June 30, 2008. A jurisdiction may conduct a generation study for internal review purposes; however, CalRecycle will not review it for compliance determination.

**Composting**—The biological decomposition of organic materials such as leaves, grass clippings, brush, and food waste into a soil amendment. Composting is a form of recycling. The CalRecycle Organic Materials Management Web site addresses many aspects of composting.

**Diversion**—For waste measurement purposes, diversion is any combination of waste prevention (source reduction), recycling, reuse and composting activities that reduces waste disposed at CalRecycle-permitted landfills and transformation facilities. Diversion is achieved through the implementation of diversion programs. Please see Public Resources Code section 41780.

**Integrated Waste Management**—Managing waste by multiple techniques to achieve solid waste and resource conservation goals. The techniques may include waste reduction, reuse, recycling, composting, transformation, disposal to landfills, and other means.

**Zero Waste**—The zero waste philosophy focuses on the most efficient use of natural resources in order to maximize the reduction of waste and protect the environment. It also includes but is not limited to maximizing recycling and ensuring that products are made to be reused, repaired or recycled back into the environment. Zero waste involves utilizing the most effective industry processing or manufacturing practices to efficiently conserve the use of raw materials, including front-end design for efficiency while educating consumers. It includes promoting technology to encourage source reduction on the front end and recycling and other technologies on the back end, and harnessing the energy potential in “waste” by using new and clean technology to convert the material directly into green fuel or gas to produce electricity.
Executive Summary

The Integrated Waste Management Plan (Plan) is an adaptive document compiled by staff with collaborative input from the Davis Natural Resources Commission (NRC), industry experts, and the community at large. The Plan goal is to reduce waste disposal to 1.9 pounds per person per day calculated by The California Department of Resources Recycling and Recovery (CalRecycle) by the year 2020 and as close to zero pounds per person per day as possible by year 2025. Davis City Council’s (City Council) 2012-2014 goals is consistent with CalRecycle’s current statewide recycling target and Resolution 11-185, passed by the City Council in 2011, supports development of such a plan to guide the City’s solid waste and recycling programs (Programs) over the next several years.

Adopting the Plan initiates the process for the City Council to begin developing and implementing the recommended Programs that will enable the City to work towards meeting its zero waste objective. Once the Plan is adopted by the City Council, specific Programs will be reviewed by the NRC and will require City Council approval. Most of the recommended Programs will require several years for full implementation once approved and some actions will require updates to the Davis Municipal Code.

The City will need to coordinate with its contract waste and recycling hauler and maintain an updated service Agreement to provide cost-effective services. Continuing business as usual with the current solid waste services and existing programs will not allow the City to divert additional materials from going to landfill. A multi-year rate projection included in the draft estimates projected maximum rate increases that would be required to meet the Plan’s primary goal to cost-effectively achieve the City’s weight-based waste reduction targets.

The Plan will include on-going monitoring, annual City Council and NRC reporting, and will require annual solid waste rate increases to fund Program implementation.

Community Participation

Community involvement is key to successful Program implementation. Because Davis is a university town with a high turn-over rental population, constant public and innovative outreach is very important, especially if new programs are being developed. Each Program will have specific public outreach actions that will be part of the approval process and be carried forward in the implementation phase.

A community workshop was conducted on March 21, 2013 to discuss the City’s solid waste and recycling planning. More than 20 people attended the workshop including City Council members, NRC members, CalRecycle staff, Yolo County staff, and consultants. The workshop also served as the initial public review process of the draft Plan. The table below summarizes the recommendations from the workshop.
### March 2013 NRC Workshop Recommendations

<table>
<thead>
<tr>
<th>Item</th>
<th>Schedule</th>
<th>Current Status / Plan section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curbside residential organics cart program. Recommends a phased roll out approach with focus on protecting bike lanes and increasing diversion of food scraps.</td>
<td>Fiscal Year 2013-2014</td>
<td>Current pilot on East 8th Street between railroad tracks and B Street.</td>
</tr>
<tr>
<td>Rate analysis and DWR Contract amendments</td>
<td>Fiscal Year 2013-2014</td>
<td>Procedures review complete</td>
</tr>
<tr>
<td>City ordinance regarding contamination of waste stream</td>
<td>Fiscal Year 2013-2014</td>
<td>AB 341 requires businesses and multi-family customers to arrange for recycling services.</td>
</tr>
<tr>
<td>Standardization of waste receptacles at public facilities</td>
<td>Fiscal Year 2013-2014</td>
<td>City ordinance may be updated to be inline with state regulation.</td>
</tr>
<tr>
<td>Substantially enhance public outreach program</td>
<td>Fiscal Year 2013-2014</td>
<td>RFQ for mobile app as outreach tool to be completed in FY 2012-2013.</td>
</tr>
<tr>
<td>Continue to work with UCD and Yolo County on a digester and complete organics diversion study.</td>
<td>Fiscal Year 2013-2014</td>
<td>Continued on-going collaboration with UCD and Yolo County.</td>
</tr>
<tr>
<td>Multi-family and commercial food scrap collection to be fully implemented by December 2017</td>
<td>Fiscal Year 2016-2017</td>
<td>Depends on organics diversion study and available markets.</td>
</tr>
</tbody>
</table>

### Public Outreach

The City plans to conduct public outreach as part of implementing the recommended Programs. Outreach actions will take place during the Program development stage as well as during implementation. One of the key targeted outreach elements will be related to implementing the Organics Program, involving how organic materials are prepared for collection. Many of the other programs such as Commercial Recycling will overlap during the outreach timeline. Staff will deliver multiple messages in an effective manner in order to increase efficiency. The outreach program will utilize help from consultants and consist of:
• Targeted outreach to all customers with program change information
• Programmatic outreach to customers as appropriate
• Facebook, Twitter, City website, and email list postings
• Smart phone applications
• Business waste audits and recycling plans to potential Green Business Partners
• Annual workshops and periodic surveys

Meeting Waste Reduction Targets

The City’s waste reduction targets are established in resolution 11-185. Expanding and improving the following programs are recommended to divert approximately 8,583 tons of waste per year from the landfill using the following primary criteria: reducing landfill disposal, converting landfill waste to the recycling/composting stream, and cost-effectiveness as defined by potential rate impacts.

• Organics Program – collect yard materials and food scraps for composting from all customers (green carts)
• Multifamily Recycling Program – increase outreach to maximize recycling in apartments
• Commercial Recycling Program – increase waste audits and outreach to businesses
• Construction and Demolition Program - increase waste reduction and recycling for construction activities

In order to meet the City’s waste reduction targets, programs are required in both the Residential and Commercial sectors as indicated below:

**Per Capita Single Family Residential Disposal Target**

![Graph showing per capita single family residential disposal target from 2013 to 2020 with data points for 2013: 2.6, 2014: 2.5, 2015: 2.0, 2016: 1.7, 2017: 1.5, 2018: 1.3, 2019: 1.1, 2020: 1.9. The graph indicates that the Organics Program has an earliest implementation date.]
PER CAPITA COMMERCIAL DISPOSAL TARGET

<table>
<thead>
<tr>
<th>Year</th>
<th>Per Capita Disposal (Lbs.)</th>
</tr>
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<tbody>
<tr>
<td>2013</td>
<td>12.1</td>
</tr>
<tr>
<td>2014</td>
<td>12</td>
</tr>
<tr>
<td>2015</td>
<td>11</td>
</tr>
<tr>
<td>2016</td>
<td>10</td>
</tr>
<tr>
<td>2017</td>
<td>9</td>
</tr>
<tr>
<td>2018</td>
<td>8</td>
</tr>
<tr>
<td>2019</td>
<td>7.3</td>
</tr>
<tr>
<td>2020</td>
<td>8.3</td>
</tr>
</tbody>
</table>

Commercial waste audits and outreach
Multi-family outreach, C&D ordinance update, business workshops, organics program begins
Expansion of multi-family outreach, expansion of commercial recycling outreach, C&D workshops

ESTIMATION OF TONNAGE DIVERTED USING CALRECYCLE 2008 WASTE CHARACTERIZATION DATA

<table>
<thead>
<tr>
<th>Program</th>
<th>Tonnage Diverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>City-Wide Organics</td>
<td>4,557</td>
</tr>
<tr>
<td>Expanded Multi-Family Recycling Outreach</td>
<td>784</td>
</tr>
<tr>
<td>Expanded Commercial Recycling Outreach</td>
<td>994</td>
</tr>
<tr>
<td>Expanded C&amp;D Recycling Program</td>
<td>2,248</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8,583</strong></td>
</tr>
</tbody>
</table>

FUTURE ORGANIC PROCESSING OPTIONS

<table>
<thead>
<tr>
<th>Facility</th>
<th>Waste Stream</th>
<th>Agency Coordination</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCD Bio-digester project¹</td>
<td>Food waste only</td>
<td>City / Davis Waste Removal &amp; Clean World Partners</td>
</tr>
<tr>
<td>Yolo County BioGreen digester project²</td>
<td>Yard waste and food waste</td>
<td>All Yolo County cities &amp; Yolo County</td>
</tr>
<tr>
<td>Northern Recycling Compost – Zamora³</td>
<td>Yard waste and food waste</td>
<td>City / Davis Waste Removal &amp; Napa Recycling</td>
</tr>
<tr>
<td></td>
<td>(capacity currently expanding)</td>
<td></td>
</tr>
</tbody>
</table>

¹Coordination between UCD and Davis began in October 2012
²Discussions between Yolo County and Davis began in March 2012
³Pilot program began in February 2011
Plan Implementation

After the working draft has been adopted by the City Council, additional actions are required to synchronize Plan actions with the contract waste hauler Agreement provisions and solid waste rates. The Plan provides the goals and recommended actions to achieve the waste reduction target, the contract waste hauler Agreement dictates service structures and levels to ensure services are provided consistent with Plan recommendations, and solid waste rates need to be updated annually to provide funding to implement the Plan recommendations.

Preliminary Implementation Schedule

Prior to implementation, the City Council would need to approve the suite of actions contained in the Implementation Schedule. The table below summarizes the preliminary time frame to implement each of the recommended actions. Recommended start dates are provided to show prioritization, however City Council will establish the actual time frames and implementation priorities.

<table>
<thead>
<tr>
<th>Preliminary Implementation Approach for Recommended Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Action Item</strong></td>
</tr>
<tr>
<td>Single Use Carryout Bag Ordinance</td>
</tr>
<tr>
<td>Environmentally Acceptable Food Packaging Ordinance</td>
</tr>
<tr>
<td>Scavenging Ordinance</td>
</tr>
<tr>
<td>Residential Organics Pilot Program</td>
</tr>
<tr>
<td>Standardization of City Facility Bins Phase 1</td>
</tr>
<tr>
<td>Standardization of City Facility Bins Phase 2</td>
</tr>
<tr>
<td>Mandatory Apartment Food Scrap &amp; Recycling Program</td>
</tr>
<tr>
<td>Expansion of Commercial Food Scrap Program</td>
</tr>
</tbody>
</table>
**Contract Hauler Agreement Amendments**

The City has an existing Agreement with Davis Waste Removal, Inc. (DWR) to provide full solid waste and recycling services (garbage, recycling, yard materials, and street sweeping). The current Agreement was last updated in 2004. Much has changed since that time. The State has adopted more ambitious recycling goals, DWR’s fleet needs to be updated with alternative fuel trucks (to be consistent with City Climate Action Plan goals), and services need modification in order to meet City goals. The City Attorney recommends that the legal aspects of the Agreement be updated as well, to minimize the City’s liabilities going forward.

The City is considering the addition of a Franchise Fee provision to the Agreement which allows the City to recover costs it incurs by allowing the contractor the solid waste franchise. Franchise Fees are very common in solid waste agreements throughout California and are primarily focused on addressing transportation and administrative related City costs associated with providing solid waste services to the community. Ideally the DWR Agreement amendments are approved concurrent with Plan adoption, or shortly thereafter, to align programs and services.

**Solid Waste Rates**

The City evaluates its solid waste revenue requirements annually and makes changes to solid waste rates through the Proposition 218 Notice process. The next solid waste rate process is scheduled for June 2013 with City Council approval of a Prop. 218 Notice. The City Council will make decisions about 2013 rates considering the following factors: Solid Waste Fund revenue requirements (including Plan recommendations), variable residential rates, whether or not to add a Franchise Fee, and related issues. An estimated multi-year maximum residential variable rate schedule is presented below to indicate the magnitude of possible future solid waste rate increases.

**Estimated Maximum Multi-Year Solid Waste Rates: Residential Variable Rate Scenario**

<table>
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</thead>
<tbody>
<tr>
<td>35-gallon</td>
<td>$28.06</td>
<td>$28.90</td>
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<td>65-gallon</td>
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<td>$34.96</td>
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<tr>
<td>95-gallon</td>
<td>$37.06</td>
<td>$38.17</td>
<td>$39.32</td>
<td>$40.50</td>
<td>$41.71</td>
<td>$42.96</td>
</tr>
</tbody>
</table>

*Process approval only*

Maximum rate assumptions: 3% average annual increases in both Contractor payments + landfill fees, full Plan implementation with 3% average annual increases in City program revenue requirements, and 5% Franchise Fee starting in 2013.

The City will use the estimated rates above as a guideline for assessing cost-effectiveness for implementing recommended Programs. Rate impacts at or below the above estimates will be considered cost-effective, while rate impacts above will be considered non cost-effective.
Year 2020 and Beyond

Once adopted, the Plan will be implemented with the involvement of the City Council, NRC and the community. It is recommended that the City amend the Plan as warranted during implementation, and prepare a comprehensive Plan update every five years. Staff will provide annual progress reports to the NRC and the City Council. Meeting the 2020 goal is only the first step toward the City’s zero waste policy objectives. As technology advances, markets develop, and opportunities to divert waste from the landfill arise, the shift from disposal to commodity will continue to evolve. Targeting the last 25% of the waste stream will be challenging and must be balanced with reasonable customer rates and other trade-offs. An updated waste characterization study specific to Davis could be conducted if necessary to identify the remaining waste percentages. Staff recommends waiting on this study investment until preliminary information is available on the results of Plan implementation. Outreach will continue to be of the keys for success in meeting the City’s zero waste goals.

### Annual NRC and City Council Action Items

<table>
<thead>
<tr>
<th>Action Item</th>
<th>NRC Schedule</th>
<th>City Council</th>
<th>Public Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid Waste Annual Report</td>
<td>November</td>
<td>January</td>
<td>Annual Reporting</td>
</tr>
<tr>
<td>Solid Waste Utility Rates</td>
<td>May</td>
<td>June/July</td>
<td>Prop 218</td>
</tr>
<tr>
<td>Integrated Waste Management Plan (update every 5 years)</td>
<td>April 2013</td>
<td>July 2013</td>
<td>Public Review</td>
</tr>
</tbody>
</table>

1 Introduction

The City of Davis (City) is responsible for providing solid waste services to the community. The City of Davis Public Works Department Recycling Program (hereafter referred to as the Recycling Program) is responsible for solid waste outreach to all businesses and residents within the city. The City has an exclusive franchise agreement with DWR for the collection of all solid waste within the city limits. This includes garbage, recycling, yard materials collection, and street sweeping services.

Solid waste services need to be provided taking into account that the City has a large multi-family residential rental sector and land yet to be developed. With a population of about 65,000, the City is a unique student populated community with approximately 11,000 multi-family units and 25,000 residents living in multi-family residential housing. Many of the 32,000 students from the adjacent University of California Davis live within the City.

This is the City’s first Integrated Waste Management Plan. If the City continues its current solid waste practices, it will not meet its waste reduction target by 2020. Therefore, the City Council and community need to consider policy choices and make decisions about changes to solid waste service to enable it to meet the 2020 goal. The NRC advises the City Council on solid waste policy issues and will be involved in plan development and implementation aspects annually.

The Plan is intended to be a living, breathing document that will be reviewed annually and be updated every five years.

2 Plan Goals

The Plan provides an overview of the current disposition of the solid waste generated within the City, associated challenges that face our community, and key recommendations in the form of a waste reduction strategy, intended to help guide the City in long range policy formation.

The Plan has three main goals: (1) to position the City to achieve the year 2020 waste reduction target and close to zero waste by 2025, (2) to maintain a high level of measured customer satisfaction with service, and (3) to maintain the lowest comparable utility rates possible. There are several objectives that will need to be accomplished in order to meet these goals. Utilizing local disposal options for solid waste is in the best interest of the City in order to maximize savings in transportation of wastes, and to meet the City Climate Action Plan goals over time.

The long range plan for meeting solid waste reductions will have an impact on future solid waste rates. Part of the solid waste challenge over time will be to meet long-range State mandated recycling goals while maintaining reasonable solid waste rates.
The California Department of Resources, Recycling and Recovery (CalRecycle), solid waste industry and professional community recognize and support a zero waste goal. CalRecycle has a goal of reaching 75% recycling by 2020. The City echoes this goal with its own year 2020 waste reduction target.

## 2.1 Achieve Year 2020 Waste Reduction Target

By the year 2020, if the City is to achieve its waste reduction target, the waste stream will look markedly different. The top four priorities laid out in this plan expected to significantly change the composition of the waste stream. Implementation of a City-wide Organics program will remove most organic waste from the waste stream. Increasing recycling education and outreach for the multi-family and commercial sectors will decrease recyclable material in the trash. Focusing on and expanding the current construction and demolition recycling programs currently in place will reduce the drop-box tonnage currently being landfilled.

See Appendix R for details on calculating the waste reduction target and the potential tonnage reduction achieved by the four Plan priority programs.

## 2.2 Davis Waste Removal Contract

The current contract with the City’s franchised waste hauler, DWR was last signed in 2004. Several amendments have been made since then, but the bulk of the contract has remained unchanged. The City’s current DWR contract is in Appendix B.

The City is currently negotiating an updated contract with DWR and in FY 2013-2014, the City Council will consider executing the new contract. The new contract includes more flexibility to modify service to meet the City’s goals, provisions for capital investments, provisions for periodic amendments and some new contractor service requirements. The flexibility element is extremely important as the City Council will be considering changes to solid waste service within the next few years. Containerization of yard materials, collection of food scraps from all customers, street sweeping changes, single-family variable cart rates, and other details will be considered. Any changes to the current service not included in the new contract would require a future contract amendment.

A new item in the contract currently being negotiated is a requirement for DWR to accept electronics for recycling at their 2nd Street recycling center. Due to State laws regarding electronic recycling, someone must be onsite to gather residency information from each customer that recycles electronics. Under the new contract, DWR would accept electronics for recycling during their California Refund Value (CRV) buyback center hours, where there is already a staff person available to assist customers. Another option being discussed in the new contract is for the City of Davis to sign paperwork vouching for all the electronics dropped off at DWR, ensuring that any electronic waste dropped off after hours can be recycled without issue.

The new contract also includes some flexibility for scheduling the annual Bulky Items Drop-Off Days. In the old contract, the Bulky Days were required to be in April. The new contract allows for negotiations between the City and DWR to select the best date each year.

## 2.3 Maintain High Level of Measured Customer Satisfaction with Service

It is the stated mission of the Davis Public Works Department to:
2013 Davis Integrated Waste Management Plan

Provide Superlative Public Works Service to All Davis Citizens Using the Guiding Principles of Public Safety, Environmental Stewardship, Integrity and Respect.

In keeping with this mission, the Plan aims to maintain customer satisfaction with solid waste services. Customer satisfaction is currently being monitored the following ways:

- Contact with customers:
  - Phone—Recycling Program staff receive numerous phone calls from businesses and residents alike with questions, comments and concerns
  - Events—Recycling Program staff interact with residents and businesses at events such as Chamber Day on the Quad, Celebrate Davis!, the Recycled Art Faire, and various other events and community presentations.

- PWWeb—email account that receives public requests for service, concerns and suggestions.

- Mention in the local media, including letters to the editor of the Davis Enterprise, Davis Wiki posts and other media outlets.

- Comments on the Recycling Program’s Facebook page and Twitter account

- Public comment during NRC and City Council meetings

The City Recycling Program will continue to monitor customer satisfaction through these means. The City may also occasionally explore customer satisfaction surveys to receive more public input.

2.4 Solid Waste Service Rates

The City’s objective is to provide quality and competitive solid waste services while keeping solid waste rates as low as possible for all customers. Rate comparison studies have been completed, comparing the City’s solid waste rates to other jurisdictions.

At the present, only commercial customers are paying a variable garbage rate, where the service level and size of their garbage container determines their garbage charges. Currently, single-family customers are charged a flat-rate for a standard 95 gallon garbage cart. Smaller garbage carts are available upon request, however, there is no price difference in cart sizes (current service levels are discussed in detail in section 9.2.1).

In order to encourage waste reduction and recycling, this Plan recommends that City Council consider switching to a variable can rate for single-family customers. Under this new system, a standard garbage cart would be 65 gallon sized. A smaller 32 gallon garbage cart would be cheaper and a larger 95 gallon cart would be more expensive. This option is discussed in detail in section 9.2.1.

The rate structure for commercial customers will need to be addressed in the future. At present the cost of yard material and recycling collection is already included in the cost of commercial trash service, so both yard material pick-up and recycling is available to all businesses at no extra cost. As evident from the commercial food scrap pilot program (see section 3.1.3.2), one of the biggest drawbacks to businesses participating in the program is the extra fee that is currently assessed to all businesses that collect food scraps. Instead, it is worth considering including the cost of recycling, yard material and food scrap collection into the commercial trash rates, so that all three are offered at no additional cost.

Although the inclusion of food scrap collection in a commercial trash rate seems to be a simple matter, there are a few complications that must be considered carefully. First, Prop 218 requires that customers only be charged for services that they actually receive. Some commercial customers may be unable to receive food scrap
collection services. The limited space found in the downtown area, for example, may not make it possible for businesses to have an organics cart for food scraps and yard material collection.

The amount of contamination found in recycling carts at multi-family properties can be very high. Given that recycling is sorted before processing, this can be mitigated. However, food scraps and yard materials are not sorted before being sent to a composting facility. Repeated contamination may result in the customer being charged and the organics carts being hauled as trash. In such extreme circumstances, the organics carts may be removed if they are not being used properly. An extensive amount of outreach and education would be required in order to reduce contamination of organics carts if offered to multi-family properties. San Francisco has addressed contamination by banning recyclables and organics in the trash. San Jose has addressed this problem by processing all multi-family garbage as compostable material, and has achieved a 65% diversion rate from their multi-family sector.

At present, there is no formal reserve policy or fund balance target for the solid waste fund. As discussed in section 9.2, this is something that needs to be addressed in order for the solid waste fund to have long-term financial stability. Future solid waste rate adjustments will need to consider building up a reserve fund balance consistent with the fund reserve target.

The City may consider a multi-year solid waste rate plan for up to the next 5 years if needed to implement policies requiring a long term financial commitment. This allows for some financial stability in planning and gives customers a fair glimpse of what their solid waste rates will be in the future. This is discussed in detail in section 9.

As with any rate discussion, adherence to Prop 218 must always be considered. As is required under the law, customers must be properly notified of any proposal to increase utility rates. The City’s next Prop 218 solid waste rate process will be in June 2013. The Council would consider approving the Prop 218 Notice in June 2013, then consider approving the updated rate ordinance in September 2013. If rates are adopted, they would go into effect in December 2013.

For more information on City solid waste rates, see section 9. A regional comparison of solid waste rates and services is shown in Appendix L.

### 2.5 Solid Waste Policy

Several policy changes are also discussed in this plan. A few of the more important issues are discussed below.

An ordinance to address the reoccurring issue of scavenging recyclables must be considered in the future. Both the City and DWR receive numerous complaints about scavengers coming onto their property, rrummaging through trash and recycling bins, making noise and making a mess. Scavenging is often thought of as a source of additional revenue for the homeless or low-income population, but this is not always the case. Organized groups with flatbed trucks have been spotted accessing recycling bins and even venturing onto private property to steal recyclables from garages and side yards. This large scale scavenging has caused DWR to shut down all scavenging from the recycling bins in their recycling center. Currently, the City Municipal Code does clearly state that DWR takes ownership of recyclables once they are placed into the recycling carts, however the ordinance does not have a very good enforcement or penalty clause. It may be beneficial to change the language of the code in order to enable the police to enforce the code more easily and address the scavenging issue.
A special event recycling requirement may be enacted that requires customers who rent City facilities for events to ensure that recycling is included along with trash service. Currently, the City’s facility rental policy requires customers to indicate the amount of trash service required and who will be supplying the service. Adding an additional element to require recycling would be simple. As DWR offers recycling service at no extra cost and recycling bins for events are available from the City upon request, this should not be a problem.

A few internal policies and procedures may need to be updated, including the City’s Waste Reduction and Recycling Policy and Procedures, to ensure that the City purchases materials with a minimum percentage recycled-content, that the City places an emphasis on recycling and waste diversion at all facilities, and to work with custodial services to further City zero-waste goals. The City may also require its vendors and contractors to meet the same goals.

2.5.1 Implement Zero Waste Strategies/Policies

The City’s zero waste resolution provides the basis for the development of the Plan: to prioritize Recycling Program actions, evaluate solid waste service costs, and assess long range solid waste rate impacts. Many communities in California have adopted similar policies to guide and prioritize waste reduction.

Some examples of zero waste strategies include:

- Extended producer responsibility, whereby industries that design and market consumer products assume ownership of products at the end of their useful life and responsibility for recycling the products in an environmentally sound manner. For example, a law recently enacted in the state requires retailers of cellular phones to take back and recycle old phones at no charge to the customer.
  - In July 2010 the City passed Resolution No. 10-102 in support of extended producer responsibility.
- Adopting and implementing an environmentally preferable purchasing policy for City procurement.
  - In 1989 the City passed Ordinance No. 1565, requiring City departments to purchase recycled content products.
- Promoting and facilitating increased green building practices.
  - In January 2011, the City adopted Tier 1 of the California Green Building Code.
- Adopting citywide laws to reduce or ban the use of disposable, toxic, or non-renewable product category.
  - As recommended by the November 2011 NRC meeting, the City is working on an ordinance to reduce the distribution of single-use carryout bags. The NRC accepted the draft ordinance at its March 2012 meeting.
- Banning the disposal of easily recyclable materials, corrugated cardboard, paper or yard trimmings.
- Banning single-use plastic bags and expanded polystyrene take-out food containers.
- Developing additional financial incentives to maximize recycling and reduce waste for businesses and residents.
- Adopting and implementing an organizational value of putting zero waste principles into practice in all City government operations and activities.

The Plan has been written to identify zero waste strategies that the City can implement to achieve the stated goals.
3 Priority Program Action Plans

This section details the four targeted main areas the City will focus on in order to reduce the maximum amount of waste from the landfill. Some of these targeted areas include new programs, others expand upon existing programs. The preliminary implementation schedule for these programs is listed in the Executive Summary of the Plan.

3.1 Expand Organics Program

3.1.1 Organics Background

One of the main ways that the Recycling Program plans to achieve its year 2020 waste reduction target is to remove all organics from the landfill. The Plan looks at composting and recycling as acceptable and effective alternatives to landfilling organics.

Composting is a means of using natural decomposition process to turn organic materials, such as food scraps and yard materials into a nutrient-rich soil supplement for gardens or farms. Returning organic matter to the land perpetuates natural nutrient cycles and is an ecologically sensible means of using organic wastes. It also has the potential to divert a significant amount of waste from our landfill.

Organics are materials that came from organisms that were once alive, or derived from or produced through the biological activity of a living thing. This includes food scraps, yard materials, paper, cardboard, lumber, and other organically derived materials.

Burying organics in a landfill has immediate environmental impacts. When food waste is disposed in a landfill it quickly rots and becomes a significant source of methane—a potent greenhouse gas with 21 times the global warming potential of carbon dioxide. In the U.S., landfills account for more than 20% of all methane emissions.

Diverting organics from the landfill also assists in the production of viable products from waste materials:

- Paper and cardboard can be recycled into new paper products
- Yard materials and lumber can be recycled into mulch
- Yard materials, food scraps and lumber can be turned into compost.
- Lumber can be salvaged for reuse.

According to the California Department of Resources, Recycling and Recovery, food scraps make up 15.5% of the overall total waste stream that is currently landfilled, and when combined with food soiled paper and other non-recyclable organic materials, comprise over 30% of our currently disposed materials. Collecting all the food scraps, food soiled paper and other non-recyclable organic materials from all customers (businesses and residents) would be the most effective means for the City to meet the year 2020 waste reduction target.
3.1.2 Organics Program Existing Conditions

Currently, DWR collects yard materials from loose piles on the street. These materials are brought to DWR’s green material transfer site on County Road 105D, where the yard materials are stored for up to seven days before being packed into large trucks and hauled to Northern Recycling Compost, in Zamora. The yard materials are composted in open windrows and sold to a compost broker. See section 8 for the tonnage of yard materials collected by DWR for composting.

The City began a pilot commercial food scrap collection program in 2011, but this program is still in its infancy. No such program exists yet for the residential sector.

Many jurisdictions have encouraged customers to include food scraps with their yard material for weekly collection. However, due to the loose-in-the-street method of collecting yard materials that is currently in practice in Davis, this is not possible. In order to collect food scraps from customers, the City would need to distribute a separate food scrap collection container (that would be set out at the curb once a week for collection) or would need to issue a large cart for collecting combined yard materials and food scraps. To maximize efficiency, minimize cost, promote bike safety, decrease visual blight and for numerous other reasons, this Plan supports the option of issuing a large cart for combined yard materials and food scrap collection.

An extensive community outreach program would need to be implemented before such a change could be enacted, and it may take a year to achieve complete participation in the new collection program. Containerizing yard materials would also allow the City to decrease the frequency of street sweeping (currently done weekly) and allow residents and businesses to place food scraps in with yard materials for collection.

Expanding solid waste services to include containerized food scrap collection and yard material collection will require a long-term, cost-effective composting solution. Therefore, a composting feasibility study is proposed to look in-depth at the most economic and environmentally sound method to collect and location to process the City’s organic wastes.

3.1.3 Proposed City-Wide Organics Program

4,557 estimated potential tons removed from landfill / year*

*estimated tonnage is based on CalRecycle 2008 Waste Characterization Study

Estimated additional cost per residential and commercial customer: less than $0.50 / month / year

Work Flow Plan

- City Council approves Integrated Waste Management Plan
  - Top solid waste priorities and program identified
- Davis Waste Removal Contract updated
- City Council receives draft organics program ordinance
  - Draft ordinance to include food waste with yard waste collection in organic carts
  - Street sweeping reduction
    - 1x per month residential
    - Nov-Dec weekly residential
    - 1x per week downtown core area
Requires updates to Davis Municipal Code: 32.01.010, 32.01.040, 32.01.050, 32.01.070, 32.01.080, 32.01.090

- Prop 218 solid waste rates
  - Prop 218 mailer to ratepayers with information on organics program
    - Public hearing on solid waste rates begins
    - Public hearing on draft organics program ordinance begins
  - Workshops
  - Social media and online outreach
  - Surveys

- City Council adopts solid waste rates
- City Council adopts organics program ordinance
- City Council approves updates to Davis Municipal Codes
- Updated solid waste rates effective
- Organics program community outreach
  - Workshops
  - Social media and online outreach
  - Contract services for residential outreach: $5000
  - Business and multifamily outreach
  - Business waste audits
  - Contract services for business outreach and audits: $5000

- Infrastructure investments
  - Davis Waste Removal order additional 18,000 carts and 4 fleet vehicles
  - City of Davis purchase 25,000 residential indoor food waste totes ($100K)
- Implementation of system-wide organics program begins
  - Davis Waste Removal delivers organic carts
  - Residential totes delivered by contract or volunteer group
  - Social media and online outreach

- Commercial outreach
  - Waste audits with restaurant and food customers
  - Multifamily workshops
  - Social media and online outreach

- Residential outreach
  - Community meetings
  - Online videos
  - Social media and online outreach
  - Printed outreach distributed

Program Elements
- Eliminates loose on the street collection of yard waste, city-wide
- One 95 gallon organics cart per household
- Yard waste & food waste
  - Pick up 1x per week
- One 95 gallon organics cart per multifamily property, each additional cart for a fee
  - Yard waste & food waste
  - Pick up 1x per week
- One 65 gallon organics cart per food related business
  - Yard waste & food waste
2013 Davis Integrated Waste Management Plan

- Pick up 2x per week
- Street sweeping reduction
  - 1x per month residential
  - Nov-Dec weekly residential
  - 1x per week downtown core area
- Maintain reasonable solid waste rates
- Requires public hearings
- Updates to ordinance
- Outreach programs
- Annual community workshops
- Provide indoor organics totes

3.1.3.1 Yard Material Containerization Pilot

In order to enhance safety for bicyclists, in the fall of 2002 the Recycling Program began a pilot program to change the procedure for collecting yard material along Eighth Street between B Street and the railroad tracks. Each address in the test area was given a 90-gallon, wheeled cart at no additional charge (apartment properties received more). All customers in the pilot area were asked to place yard material carts in the gutter by 7 a.m. every Tuesday for collection. Tuesday was selected as pick-up day since that is when residents of the adjacent community of El Macero have their yard material carts emptied by DWR. This allows the most economical and efficient use of DWR trucks and crews.

The pilot has been successful. Occasionally there are piles of yard materials placed in the street in the pilot area, and the City sends out reminder notices. The volume of material collected from the pilot is difficult to quantify however, as it is mixed with the materials coming from El Macero. Since the cost of the program is so low and the bicycle safety benefit is so great, the City decided to continue the program. The City pays DWR to operate this program. In 2011, the payment from the City to DWR for this pilot was $135 a month.

3.1.3.2 Commercial Food Scrap Collection Pilot Program

In the fall of 2010, a few local businesses contacted the City with an interest in starting a food scrap collection program. After meeting with businesses and DWR the City drafted a plan and received support from the NRC and City Council to move forward with a pilot program to collect food scraps from businesses in Davis.

The pilot began in May 2011. DWR delivered 65-gallon carts to participating restaurants, grocery stores and other commercial businesses to collect food scraps.

Food scraps are heavier and more putrescible than yard trimmings and must be handled appropriately. To avoid odor, health and safety concerns, organics carts are collected twice a week, Monday and Friday. The food scraps are taken to a local compost facility for processing and composting. Acceptable items in the food scrap carts include fruit, vegetables, pasta, bread, rice, meat, dairy, coffee grinds & filters, tea bags, paper plates, paper towels and paper napkins.

As of October 2012, there were 64 food scrap carts located at 26 businesses in Davis including restaurants, grocery stores, schools, and a hospital (see the table below). DWR collects approximately 5 tons of food scraps per week. From May 2011 to September 2012, DWR collected a total of 316.7 tons of food scraps from pilot participants. As of October 2012, these businesses were participating in the pilot:
Since the pilot program began, several businesses have cancelled their food scrap cart service. Two dropped out citing cost issues. The Davis Farmers Market stopped their food scrap cart service when the Wednesday Night Market season ended, and then started it again when the season resumed.

Staff documented four main issues of concern that businesses expressed regarding the pilot:

1. **Levels/Frequency of Service**—pick-up service may need to be offered more frequently than twice a week for some businesses to be able to successfully participate.
2. **Container Size**—the 65 gallon cart used in the pilot worked well for some. Others requested 1 yard bins or larger. One business requested that their trash compactor be hauled as food waste. Multiple container sizes may need to be addressed for a City-wide program as some businesses do not have space for multiple food scrap carts.
3. **Cost**—if at all possible, food scrap collection would need to be available at no extra cost, or offered for cheaper than the cost of trash disposal, in order to incentivize businesses to separate their food waste.
4. **Shared Waste Areas**—many businesses located within business parks share their trash dumpsters and recycling carts with other businesses. These businesses had a hard time with the pilot because property managers often billed them separately for the food scraps carts and they did not receive a discount on their trash service. Some businesses also had issues with other businesses using and/or contaminating their food scrap carts.

Results from a survey of pilot participants can be found in Appendix N.

Levels of service and space constraints go hand-in-hand. Many businesses, particularly those in the downtown area, have very limited space for refuse. Many have dumpsters that are emptied daily or near daily. For these businesses to participate in the pilot, collection would have to be more frequent than once a week as they do not have ample space for the number of carts needed to hold several days’ worth of food scraps.

Cost was no doubt a contributing factor to the low level of participation in the pilot program. The 65 gallon carts used for the pilot cost the same as a regular trash cart. Table 4-2 provides a cost breakdown.
Table 3-1 Cost of the Food Scrap Carts, as of February 2013

<table>
<thead>
<tr>
<th># of 65 gallon carts</th>
<th>Monthly</th>
<th>Bi-Monthly</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$103.22</td>
<td>$206.44</td>
</tr>
<tr>
<td>2</td>
<td>$193.34</td>
<td>$386.68</td>
</tr>
<tr>
<td>3</td>
<td>$270.32</td>
<td>$540.64</td>
</tr>
<tr>
<td>Each additional cart</td>
<td>$77.37</td>
<td>$154.74</td>
</tr>
</tbody>
</table>

In some instances, once food scraps were removed from the trash, businesses could downsize their trash service, resulting in no net change in overall cost or a cost savings. However, many businesses share trash service with others, such as those located in a business park. These businesses do not necessarily see cost savings. In order for this program to be successful and be extended city-wide, the cost of food scraps will have to be cheaper than trash, or included with the cost of trash service, like recycling currently is.

The pilot program was originally intended to run until December 2011, but continues by request of DWR and the pilot program participants.

3.1.3.3 Backyard Composting Education

The City offers a free, year-round Composting Correspondence Course for Davis residents in single-family homes. Residents are mailed a packet of information about composting and a quiz. After filling out and returning the quiz, residents can pick up a compost bin. The bins used to be free, but in 2010 the purchase price for the bins doubled. Faced with either discontinuing the program or charging residents a fee, the City began charging a $10 fee to offset the cost for the compost bins.

Figure 3-1 Compost Correspondence Course

City staff offers composting classes in the spring and fall that covers various types of composting, with an emphasis on composting food scraps. Class attendees can receive a starter set of composting worms and a backyard compost bin.
### 3.1.4 Evaluation of Composting Alternatives

#### 3.1.4.1 Yard Material Carts

An alternative to collecting yard materials loose in the street is to “containerize” the yard materials—to collect it in carts, similar to how trash and recycling is collected. The City recognizes that any discussion of containerization of yard materials should be considered in conjunction with a residential and commercial food scrap collection.

As of July 2013, there are only 3 cities in California that offer exclusive loose in the street pick-up of yard materials: Davis, San Jose and Modesto.

One of the key issues with containerization, particularly as it relates to the goals of the Plan, is its effect on diversion. There is the potential that containerization of yard materials can lead to less material being collected. With loose-in-the-street collection of yard materials, customers can place as much yard materials as they wish, provided they follow the proper pile placement guidelines. Customers seem to be taking full advantage of the virtually unlimited yard materials collection; see section 8 for DWR yard material collection data. Once residents are no longer given the simple option of piling virtually unlimited amounts of yard materials on the street and are limited to what can be placed into one or two carts each week, any excess materials may be placed into the trash or recycling carts instead. This is common problem in other jurisdictions, particularly those with variable cart rates. Contamination of recycling carts is an issue of concern, and must be considered and coordinated out with DWR.

Containerization also may lead to increased contamination of the yard material collected. DWR collectors cannot see what is in a cart until it is being emptied—however, with the loose-in-the-street collection system, it is much easier for drivers to visually estimate the amount of contamination in piles. More heavily contaminated piles may be skipped until the contamination is removed.
Another item to consider is the potential impacts associated with residents having to store an additional cart on their property.

By switching from loose-in-the-street to containerized collection of yard materials, the City may be able to reduce operating costs by reducing the frequency of street sweeping service. In Davis, street sweeping is performed every week following yard material collection, to clean up any remaining yard debris that the claw may leave behind. The City of San Jose offers loose-in-the-street collection of yard materials and only performs street sweeping monthly.

However, in some ways containerized collection may be more expensive. The cost of the carts is just one factor. It typically takes a driver more time to empty several carts full of yard materials than it takes to scoop up the same amount of material loose in the street.

Loose-in-the-street yard materials collection may negatively affect storm water quality. In March 2003, the Regional Water Quality Control Board (RWQCB) staff, reviewed the City’s Storm Water Management Plan (SWMP) and found the current yard material management program to be inadequate. RWQCB staff contended that loose yard material in the street degraded storm water quality and that yard material containerization was needed. In December 2006, the City was issued a storm water permit that did not require containerization, only enhanced education on the proper placement of yard material piles. It is very possible that future permits could continue to advocate or require containerization.

Another reason to switch from loose-in-the-street collection of yard material to automated collection in carts is to facilitate food scrap collection. This is discussed in more detail in 3.1.4.2 and 3.1.4.3 below.

Perhaps one of the most contentious points in the containerization debate is the concern for bicycle safety. The current collection method of yard materials loose in the street poses safety concerns for bicycle riders. The conflict between piles of yard materials and bicyclists in the same bike lane has been recognized over the years and appears in the City of Davis Bicycle Plan as an issue needing improvement. This is a public safety issue. Yard material carts may also pose a hazard to bicyclists, if they are place in the bike lane. To limit this potential hazard, the City of Sacramento placed a notice on their yard material carts to draw attention to bicycle safety, see the figure below.

Aesthetics have been another argument in favor of containerization. Over the last several years, especially after converting to automated trash and recycling pick up, some residents have voiced their preference for containerized pick up for yard materials. The concern is the aesthetics of having yard materials loose in the
street and blowing material on windy days. During pick-up, loose materials are spread and dispersed in the wake of “the claw”.

The program would be more accepted by the public if food scraps were accepted in the yard material carts from the beginning of the new program. The City would include a number of community workshops to solicit feedback, allow customers to voice concerns and to help explain the benefits of containerization.

### Table 3-2 Pros and Cons of Containerized Yard Materials

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to collect food scraps from all customers</td>
<td>Limited material collected each week, potential for lost yard material tonnage if reminder material is placed in the trash</td>
</tr>
<tr>
<td>Cleaner pick-up of yard materials, reduced necessity for weekly street sweeping</td>
<td>Potential for increased contamination of yard materials</td>
</tr>
<tr>
<td>Reduced complaint log for improperly placed yard material piles</td>
<td>Complaints for residents with large/established trees</td>
</tr>
<tr>
<td>Increased bike safety</td>
<td>Residents will have 3 carts to store, businesses will have four</td>
</tr>
<tr>
<td>Improved storm water quality</td>
<td></td>
</tr>
<tr>
<td>Improved City aesthetics</td>
<td></td>
</tr>
<tr>
<td>Reduce organic matter load into the waste water treatment plant</td>
<td></td>
</tr>
<tr>
<td>Water and energy conservation from reduced garbage disposal use</td>
<td></td>
</tr>
</tbody>
</table>

If the City should decide to switch to collection of yard materials in carts, the City would need to notify DWR at least nine months in advance of the change so that DWR can order the carts and appropriate collection equipment. Once DWR receives the carts, they can distribute them to all customers within one month.

Although it may take customers some time to become accustomed to the new collection method, during the adjustment timeframe DWR cannot operate both collection systems at the same time. As soon as containerized collection begins, the loose-in-the-street pick-up will need to stop in order to keep costs low. Running both systems simultaneously will be very expensive and will only prolong the time it takes for customers to adjust to the new system. Extensive outreach will need to be done prior to and for the first few months of the new system.

#### 3.1.4.2 Residential Collection of Food Scraps

The 2008 CIWMB Waste Characterization Study identified food scraps as comprising 25.4% of the total residential waste stream. As shown in Appendix R, this represents a significant amount of material in Davis. In order to reach the City’s year 2020 waste reduction target, it is necessary to begin collecting food scraps for composting.

Of 21 jurisdictions surveyed, 5 currently have a residential food scrap collection program in place.
### TABLE 3-3 Jurisdictional Survey of Residential Food Scrap Collection Programs

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Residential Food Scrap Collection?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auburn</td>
<td>No</td>
</tr>
<tr>
<td>Berkeley</td>
<td>Yes</td>
</tr>
<tr>
<td>Chico</td>
<td>No</td>
</tr>
<tr>
<td>Davis</td>
<td>No</td>
</tr>
<tr>
<td>Dixon</td>
<td>Yes</td>
</tr>
<tr>
<td>Elk Grove</td>
<td>No</td>
</tr>
<tr>
<td>Fairfield</td>
<td>Yes</td>
</tr>
<tr>
<td>Folsom</td>
<td>No</td>
</tr>
<tr>
<td>Galt</td>
<td>No</td>
</tr>
<tr>
<td>Palo Alto</td>
<td>No</td>
</tr>
<tr>
<td>Roseville</td>
<td>No</td>
</tr>
<tr>
<td>Sacramento</td>
<td>No</td>
</tr>
<tr>
<td>Sacramento County</td>
<td>No</td>
</tr>
<tr>
<td>San Francisco</td>
<td>Yes</td>
</tr>
<tr>
<td>San Jose</td>
<td>No</td>
</tr>
<tr>
<td>Santa Barbara</td>
<td>No</td>
</tr>
<tr>
<td>Vacaville</td>
<td>Yes</td>
</tr>
<tr>
<td>Vallejo</td>
<td>No</td>
</tr>
<tr>
<td>West Sacramento</td>
<td>No</td>
</tr>
<tr>
<td>Winters</td>
<td>No</td>
</tr>
<tr>
<td>Woodland</td>
<td>No</td>
</tr>
</tbody>
</table>

One major curtailment for cities that wish to collect food scraps for composting is lack of nearby facilities that accept food scraps for composting or anaerobic digestion. The City is fortunate in that the facility that currently takes all of Davis’ yard materials for composting also accept food scraps—Northern Recycling Compost in Zamora. All the food scraps collected from the City’s Commercial Food Scrap Collection Pilot program are currently being sent to the Zamora composting facility.

Collecting food scraps has been a relatively simple switch for some jurisdictions that have simply allowed customers to include food scraps with their yard material for weekly collection. However, due to the loose-in-the-street method that is currently in practice in Davis, this is not possible. In order to collect food scraps from customers, the City would need to implement some form of containerized collection of food scraps. To maximize efficiency, minimize cost, promote bike safety, decrease visual blight and for numerous other reasons, this Plan supports issuing a large cart (95 gallon) for comingled collection of yard materials and food scraps.

Implementing a food scrap collection program for all single-family residents will not only benefit the City Recycling Program, but will also benefit the City’s Wastewater Treatment Plant. Food scraps that go down sink drains potentially create problems in the collection system carrying waste to the plant. In addition to potential collection system concerns, the plant must be able to treat the additional load (organic matter) that food scraps represent. This can be problematic at some facilities.
There is also the water saving benefit of collecting food scraps. Running an in-sink disposer uses a lot of water and energy. If residents save their food scraps for collection by DWR instead of using their sink disposers, they will save water and energy.

### 3.1.4.3 City-Wide Collection of Commercial Food Scraps

The 2008 CIWMB Waste Characterization Study identified food scraps as comprising 15.4% of the total commercial waste stream; food scraps make up a large component of the waste stream in Davis. For this reason, and in keeping with the stated goals of the Plan, collecting food scraps from commercial customers is a priority item for the Recycling Program.

Out of 21 jurisdictions surveyed, nine had a commercial food scrap collection program currently in place.

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Commercial Food Scrap Collection?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auburn</td>
<td>No</td>
</tr>
<tr>
<td>Berkeley</td>
<td>Yes</td>
</tr>
<tr>
<td>Chico</td>
<td>N/A</td>
</tr>
<tr>
<td>Davis</td>
<td>Pilot only</td>
</tr>
<tr>
<td>Dixon</td>
<td>Yes</td>
</tr>
<tr>
<td>Elk Grove</td>
<td>No</td>
</tr>
<tr>
<td>Fairfield</td>
<td>Yes</td>
</tr>
<tr>
<td>Folsom</td>
<td>Yes</td>
</tr>
<tr>
<td>Galt</td>
<td>No</td>
</tr>
<tr>
<td>Palo Alto</td>
<td>Yes</td>
</tr>
<tr>
<td>Roseville</td>
<td>No</td>
</tr>
<tr>
<td>Sacramento</td>
<td>No</td>
</tr>
<tr>
<td>Sacramento County</td>
<td>No</td>
</tr>
<tr>
<td>San Francisco</td>
<td>Yes</td>
</tr>
<tr>
<td>San Jose</td>
<td>Yes</td>
</tr>
<tr>
<td>Santa Barbara</td>
<td>Yes</td>
</tr>
<tr>
<td>Vacaville</td>
<td>N/A</td>
</tr>
<tr>
<td>Vallejo</td>
<td>No</td>
</tr>
<tr>
<td>West Sacramento</td>
<td>No</td>
</tr>
<tr>
<td>Winters</td>
<td>No</td>
</tr>
<tr>
<td>Woodland</td>
<td>No</td>
</tr>
</tbody>
</table>

Virtually any business could sign-up for the Commercial Food Scrap Collection Pilot Program, but few have done so. In order to extend this program, several issues that came up in the pilot must be addressed (see section 3.1). The City Recycling Program surveyed the pilot program participants to gauge the effectiveness of the program. Results of the survey can be found in Appendix N.

Some jurisdictions that offer food scrap collection for businesses, such as Marin, have worked the cost of the service into the garbage rate, so that the garbage rate pays for the garbage and food scrap service. This is similar to what Davis does with commercial recycling. The cost of commercial recycling service is worked into the
garbage rate, so that there is no additional cost for recycling. A business can order a 1 yard bin that is emptied once a week, and then have as many recycling carts as they need.

The same principal could be applied for food scrap service, where a business pays one set cost for trash service and receives unlimited food scrap and recycling collection at no extra charge. This would alleviate the concerns voiced by businesses that wanted to participate in the food scrap pilot but couldn’t due to the extra cost.

With the cost issue resolved, many more businesses would voluntarily separate out their food scraps, especially as they may be able to lower their trash bill by removing food scraps. More businesses participating would make a multi-day collection route and multi-sized bins more feasible.

Offering food scrap collection service at no extra cost would eliminate the issues of sharing the cost of food scrap collection between businesses in a business park. Contamination still could be an issue that would need to be addressed, as it is difficult to pinpoint who is contaminating a shared bin. Frequent outreach and monitoring of the food scrap collection bins may be required. Outreach for this program may need to include site visits by City staff to help train employees on separating out all organics from the waste stream.

Potential problems with this billing method may arise, due to the requirements of Prop 218 and the fact that all customers may not have access to food scrap collection: businesses without space for an additional cart or bin for organics or multi-family communities with repeatedly high contamination rates.

Rolling the cost of commercial food scrap collection into commercial garbage rate may cause the commercial rates to increase dramatically. Unlike recycling service where DWR can sell the recyclables and receive revenue, DWR pays a per ton fee for compostables they bring to the compost facility. Food scraps are generally very wet, and therefore very heavy. In residential collection, where food scraps make up a small portion of the overall material collected, the increase in tonnage would be minor. In commercial collection, food scraps can make up a large portion of the total material collected, increasing the tonnage collected, and driving up the system costs.

Another consideration for commercial collection would be the level and frequency of collection and the size of the container used. In the pilot, several businesses expressed concern that the twice a week pick-up was not sufficient for their business, given the lack of space they had for storage of a limited number of food scrap collection carts. Instead of a 65 gallon cart for food scrap collection, maybe alternate size bins would be possible and/or more frequent pick-ups.

Levels of service and space constraints go hand-in-hand. Many businesses, particularly those in the downtown area, have a very limited space for refuse. Many have dumpsters that are emptied daily or nearly every day. For these businesses to participate in the pilot, collection would have to be more frequent than once a week as they do not have ample space for the number of carts needed to hold several days’ worth of food scraps.

3.2 Expand Multi-Family Recycling Outreach Program

Multi-family and commercial customers receive variable rate services, with cost dependent upon the size and number of the waste bins subscribed and the frequency of pick-up. Recycling service is provided at no additional cost. Multi-family and commercial customers are currently on the same routes, so it is impossible to get an accurate accounting of multi-family versus other commercial customers. By looking at accounts and total subscribed yardage (garbage), DWR estimates that 35% of all subscribed garbage is from multi-family.
Municipal Code 32.03 requires that multi-family properties have adequate space for recycling carts in their waste enclosures and required that when new leases are signed, resident is to be informed about the availability of recycling and be given a recycling flier.

Due to the close proximity of UC Davis and the ever changing student population, multi-family properties in Davis often experience a 50% turnover rate each year. This necessitates continual outreach to apartments every year. In addition to this, students come from all over the globe to attend UC Davis, and each is used to dealing with recycling and trash in a different way. All of this combined makes recycling programs at multi-family properties challenging. Recycling carts are not used to capacity, many recyclables are tossed in the trash and the recycling carts themselves are often contaminated with trash.

In order to increase recycling and reduce trash generation at multi-family properties, the City proposes to increase the amount of outreach to apartments for the next few years. At that point in time the results will be measured for success to see if such a program is warranted to continue, or if it should be halted or reformatted. The schedule below outlines this new multi-family outreach plan.

**784 estimated potential tons removed from landfill / year***

*estimated tonnage is based on CalRecycle 2008 Waste Characterization Study.

Estimated additional cost per multi-family customer: less than $0.10 / month / year

**Work Flow Plan**

- City Council approves Integrated Waste Management Plan
  - Top solid waste priorities and programs identified
- Five multi-family properties with highest subscribed solid waste service identified
  - Site visits with property managers and their staff
    - Ensure compliance with City Code in distributing recycling information when leases are signed by tenants
    - Provide managers recycling information packets, plus fliers for all rental units: $2000
    - Train property management maintenance staff to leave cardboard stacked near dumpsters for recycling pick-up
  - Print 50 recycling posters to post outside near recycling carts and mailboxes
  - Inspect and ensure minimum of 2 recycling carts in each trash enclosure
  - Set up recycling bins next to mail boxes to promote junk mail recycling
  - Multi-family community on site presentations
    - encourage junk mail reduction--have forms to stop junk mail available for residents to fill out
  - Monitor recycling and trash generation before and after outreach at each property
- Expand multi-family presentations to all 175 multi-family properties: $8000
  - Recruit and train volunteers to assist with presentations
  - Develop and post online training materials
  - Focus on cardboard recycling and move-out waste reduction
  - Create recycling competitions between multi-family properties—pizza party or similar prizes for The residents and staff of the winning property recycling bin giveaways
  - Offer free recycling bins to residents that attend the presentations

**Program Elements**

- Increase in-person outreach at multi-family properties
- Increase communication with property managers
  - iBIN recycling program
  - Cardboard recycling
  - Recycling fliers distributed when leases are signed
  - Ensure proper infrastructure is in place (recycling carts)
- Establish a yearly outreach program
  - May-June: recycling fliers, letters to all property managers
  - June-September: move-out waste reduction messages
    - Apartment Move-Out Waste Reduction Program
    - Mini-AMOWRP programs for smaller properties
      - kits distributed with fliers, posters and instructions on running your own AMOWRP
  - September-October: recycling presentations given to properties
- Create an email listserv for recycling updates/newsletters, social media
- On campus outreach
- Requires annual outreach to residents moving from on-campus to off-campus

### 3.2.1 Current Multi-Family Recycling Programs

Every year the City distributes recycling packets to all the multi-family property managers in May and June. These packets include information for the managers about reducing waste at their property, proper hazardous waste disposal and assistance available to help increase recycling at their property (posters, bin labels etc. provided for free by the City Recycling Program). Also included in the packet are recycling fliers for all their residents, with instructions to pass these out in September, or whenever new residents arrive. Many managers start assembling move-in packets for new residents in June, which is why the packets are sent out so early.

#### 3.2.1.1 iBIN Recycling Program

In 2006, the City started an iBIN Recycling pilot program and gave 750 apartment units in Davis their own recycle bins. These iBINs (in-apartment recycling bins) made it easier for residents to collect and transport recycling to the recycling carts in their community’s trash enclosure. Surveys showed that apartment properties that participated in the iBIN Recycling Pilot Program collected more recycling than other apartments.

In the fall of 2007, the City was awarded over $95,000 in grants from the California Department of Conservation to expand the pilot program to all apartments in Davis. Thus, the iBIN Recycling Program began.
The grants funded the purchase of 11,000 iBIN recycling containers that were given to apartment managers in the spring of 2008 to distribute to their residents. Educational literature about recycling, waste reduction and proper disposal of hazardous waste was distributed along with the iBINs. Apartment managers are asked to add the iBINs to the check-out list so that residents know that the iBIN has to stay in their apartment when they leave.

As per usual outreach, every year the City gives recycling fliers to all apartment properties to distribute to their residents in September after turnover.

### 3.3 Expand Commercial Recycling Outreach Program

DWR data shows that a significant portion of the material going to the landfill comes from the commercial sector (see section 8). Despite the fact that reducing waste and recycling is incentivized in the solid waste rates, there is still a large volume of recyclables, particularly paper and cardboard, generated from commercial customers that is going to the landfill.

The City offers free waste audits to businesses, where City staff goes to the business to look at what types of waste they produce, view the business set-up and current trash and recycling service levels, and will offer suggestions and advice about how to reduce waste, increase recycling and sometimes, even save money. Staff may also offer free recycling fliers, posters, recycling bins, bin labels and recycling presentations for employees.

Due to limited staff time, waste audits are typically done on a per request basis only. In order to increase recycling and reduce trash generation in the commercial sector, the City proposes to increase the amount of outreach to businesses for the next few years. At that point in time the results will be measured for success to see if such a program is warranted to continue, or if it should be halted or reformatted. The schedule below outlines this new commercial recycling outreach plan.
994 estimated potential tons removed from landfill / year*
* estimated tonnage is based on CalRecycle 2008 Waste Characterization Study.
Estimated additional cost per commercial customer: less than $0.05 / month / year

Work Flow Plan

- City Council approves Integrated Waste Management Plan
  - Top solid waste priorities and programs identified
- Phase 1
  - Free indoor recycling bin incentives: $1000
  - Distribute 5,000 postcards, chamber of commerce email-blast, and/or email to businesses— free indoor recycling bin offered with waste audit
  - Hire an intern/temp to conduct business waste audits: $8000
  - Contact businesses with large trash generation and/or no recycling service
  - Assess current recycling practices, offer recycling bins
  - Invitation to participate in the Partners For a Greener Davis Program
  - Encourage staff to leave cardboard stacked near dumpsters for pick-up
  - Print 800 recycling posters to post outside near recycling carts
  - Print and distribute recycling bin labels for indoor recycling bins
  - Ensure minimum of 2 recycling carts in each trash enclosure
  - Monitor recycling and trash generation before and after outreach
  - Recognize businesses who do well on waste audits via social media
- Offer workshops twice a year
- E-newsletter sent out quarterly via Chamber of Commerce
- Offer to speak at Chamber Brown Bag lunches
- Phase 2: expand outreach to all businesses
  - Contact commercial property owners (business parks)
    - Offer recycling incentives to tenants
    - Look into municipal code updates requiring distribution of recycling information when leases are signed (just like for multi-family)
    - Work with finance department regarding billing of commercial tenants
    - Create recycling competitions between tenants at business parks, winners get an employee pizza party or similar prize
  - Continue waste audits
- Mandatory recycling ordinance
- Alternatives to compactors
- Offer recycling competitions

Program Elements

- increase in-person outreach
- increase communication with Chamber of Commerce, Downtown Davis BA
- business waste audits
  - cardboard recycling
  - recycling fliers and posters distributed
  - ensure proper infrastructure is in place (recycling carts)
- create an email listserv for recycling updates/newsletters
- apply for CalRecycle grants for program
3.4 Expand Construction and Demolition Recycling Program

As described in detail in 3.4.1 below, the City adopted a Construction and Demolition (C&D) Ordinance in 2007 requiring 50% diversion of waste for qualifying construction and demolition projects. In 2010, the City of Davis adopted the CalGreen Building Code Tier 1 standards, which requires 65% diversion on all construction projects. However, due to limited staffing, only the City’s C&D ordinance is regularly enforced. This only captures the larger projects. The CalGreen Building Code, which captures all construction projects, regardless of size, does not include demolition projects. The 65% diversion required by CalGreen Tier 1 standards also presents a challenge. The C&D sorting facility that the YCCL utilizes only guarantees a 50% diversion. This presents a potential problem for some contractors who are trying to reach 65% diversion.

In addition, limited staffing resources have contributed to limited outreach for either program. Not all projects are being scrutinized for compliance with the CalGreen diversion requirement, typically only the large projects are. More communication is required between DWR and City staff to ensure that all these projects follow through with ordering C&D bins instead of having their waste hauled as trash to the YCCL.

DWR reports show that a large amount of the trash being sent to the landfill is coming from drop-boxes. Many of these drop-boxes come from construction sites, tenant improvements and deconstruction projects. In order to increase C&D recycling and reduce drop-box trash generation, the City proposes to expand the C&D recycling program and increase outreach for the next few years. At that point in time the results will be measured for success to see if such a program is warranted to continue, or if it should be halted or reformatted. The schedule below outlines this expanded C&D recycling program.

2,248 estimated potential tons removed from landfill / year*

* estimated tonnage is based on CalRecycle 2008 Waste Characterization Study

Estimated additional cost per roll-off customer: less than $1 / roll-off container delivered

Work Flow Plan

- City Council approves Integrated Waste Management Plan
  - Top solid waste priorities and programs identified
- Update C&D ordinance, City Municipal Code 32.04
  - Reflect CalGreen Tier 1 standards—65% diversion required on all projects
  - Include deconstruction as an option
- Review internal policy of plan check, permits and requiring C&D diversion
- Work with DWR on communication regarding C&D vs. trash roll-off bins
- Create/update outreach materials
  - Fliers explaining C&D diversion ordinance at Community Development Department front desk
  - Webpage on DavisRecycling.org
    - Downloadable posters to label roll-off bins
    - Best practices C&D diversion guide
    - List of local reuse/recycling/deconstruction options
- Fund 50% inspector to audit construction sites during permit inspections for C&D recycling compliance
- Offer C&D diversion workshops for contractors
- Work with County on regional options for sorting roll-off bins
- Increase deconstruction options/outreach
Program Elements

- Capture projects that generate recyclable waste at permit time
- Identify sources of materials and divert to Yolo County sort facility
- Communication with Community Development Department front desk
- Training of DWR roll-off drivers

3.4.1 Existing Construction and Demolition Recycling Program

In 2005, the CIWMB directed all jurisdictions to adopt a C&D ordinance to recycle 50% of the waste generated from projects. Davis adopted a C&D ordinance in 2007 to help the City meet the state-mandated diversion goals. The ordinance was derived from reviewing similar ordinances throughout the state, and was prepared over the course of a year with comments from the Community Development and Sustainability Department and DWR. The full text of the ordinance is shown in Appendix A.

The key components of the ordinance are as follows:

- C&D projects would be required to achieve a 50% recycling rate.
- The diversion requirements in the ordinance applies to all C&D projects requiring a building permit with the following exceptions:
  1. Residential additions of less than 1,000 square feet of gross floor area;
  2. Tenant improvements involving less than 3,000 square feet of gross floor area;
  3. New structures of less than 1,000 square feet of gross floor area;
  4. Demolition of less than 1,000 square feet of gross floor area; and
  5. Any permit at the discretion of the Chief Building Official or designee.
- Provisions for a “good faith effort” are included if the 50% goal is not met, considering such factors as the availability of markets for the C&D debris, size of the project, and the documented efforts of the applicant to divert the C&D debris.
- When applying for a building or demolition permit, applicants will receive information about the program from the Community Development and Sustainability Department. The applicant will fill out and submit the recycling plan form to the Community Development and Sustainability Department for review. For all construction where DWR is the waste hauler, no additional submittals will be required. DWR will provide all appropriate information directly to the City.
- For those sites where the contractor is “self-hauling” (as defined by ordinance) the following applies:
  o When the project is complete, the applicant must return the approved recycling plan with the appropriate documentation, and the compliance official will then make the following determination of whether the applicant has complied with the diversion requirements:
    ▪ Full compliance: the applicant has fully complied with the diversion requirements;
    ▪ Substantial compliance: the applicant has made a “good faith effort” to comply but for an unforeseen reason could not fully comply; or
    ▪ Noncompliance: the applicant is not in substantial compliance or fails to submit the required documentation

The ordinance contains language that says it would take effect once a C&D facility is operational in Yolo County or one year from Council approval, whichever is first. Yolo County Central Landfill negotiated a contract with Waste Management to operate a C&D sorting facility at the landfill that guarantees a 50% diversion of materials. The sort facility opened in 2008, at which point the C&D ordinance went into effect.
In 2010, the City of Davis adopted the CalGreen Building Code Tier 1, which requires 65% diversion on all construction projects.

### 3.5 Davis City Council Action Items

Many of the action items in the programs proposed above require City Council approval. The schedule below gives an approximate timeline for these items to go to City Council.

**Adopt Integrated Waste Management Plan**

*Establish 2020 waste diversion goals consistent with City policy.*

#### Work Flow Plan

- City Council adopts Integrated Waste Management Plan
  - Establishes Solid Waste priorities and programs to meet goal
- City Council updates Davis Waste Removal contract
- City Council receives draft organics program ordinance
- City Council adopts organics program ordinance
- City Council approves Programs recommended in Plan
- Receive Plan Annual Report
  - Program implementation status
  - Measurable goal progress

#### Solid Waste Rates:

- Prop. 218 Notice Approval - Solid Waste Rates
- Adopt Solid Waste Rate Ordinance
- Rates effective

#### Program Elements

- Adopt Plan to guide future efforts
- Approve Programs to meet goal
- Monitor Plan progress through annual reports and actual waste reduction
- Maintain updated DWR Agreement to allow service to meet goals
- Establish Solid Waste Rates to accomplish Plan goals and objectives

### 4 Implementation Schedule

This plan identifies a number of alternatives to the solid waste program to meet the stated goals of this plan. The Natural Resources Commission and City Council will need to weigh in on these alternatives, prioritize them, and City Council must give direction to staff before these can be implemented.

The preliminary implementation schedule for the recommended priority program is listed below.
4.1 FY13-14 IWMP Priorities

1. New Zero Waste Policies

The NRC has developed draft Single Use Carryout Bag and Recyclable-Compostable Food Service Container Ordinances that can be adopted as part of the City’s zero waste efforts. The City Council has been awaiting the outcome of state legislation on both policies, and it does not appear that either policy will be making it through the 2013 legislative session. Concurrently a large number of local agencies have adopted either or both policies to improve local diversion rates. The City Council to adopt these ordinances in FY13-14 with consideration for those impacted.

Council Schedule: July 2: Approve Single Use Carryout Bag Process/Schedule
Oct. 15: Approve Recyclable-Compostable Food Service Container Ordinance Process/Schedule

2. City Ordinances

A. The City needs to adopt an anti-scavenging ordinance to provide enforcement for those stealing recycled materials from customer carts. Scavenging of recycled material carts has been occurring on a large scale (entire streets) and needs to be addressed. This is a legal issue and impacts the City’s diversion rate. This would be a high priority item for Council consideration by December 2013.

Council Schedule: Dec. 2013 - Consider adoption

B. The City could adopt a Zero Waste Event ordinance ensuring that all events held at City Facilities follow zero waste practices. An ordinance could be developed and considered by the Council during FY13-14.

Council Schedule: Dec. 2013 - Consider adoption

D. The City could adopt an ordinance prohibiting contamination of any solid waste stream. This policy would encourage customers to maximize recycling and composting, and would be helpful if the City adopts residential variable rates to encourage customers that downsize cart sizes to focus on recycling, composting and reducing waste generation to avoid waste stream contamination. An ordinance could be developed and considered by the Council during FY13-14.

Council Schedule: Mar. 2014 - Consider adoption

3. FY13-14 Pilot Programs

A. Pilot Residential Organics Program

Implement a pilot organics program during 2014 working with accounts in the 8th Street corridor who already receive green waste carts. The goal of the pilot program would be to assess the effectiveness of combining green and food waste in the current green waste carts. Participating customers would be surveyed to assess acceptance, challenges, and overall effectiveness of the pilot program. The City Council could use the pilot program experience to design and approve a system-wide program.

B. Pilot Green Waste Containerization Program

Implement a pilot program that would expand the current 8th street corridor green waste cart pilot to include critical bike safety routes and include the elimination of street green waste collection. The areas considered for inclusion in the pilot program would be consistent with those identified by the City and Bicycle Advisory Commission. The program would be coordinated with the City’s contract waste hauler with some lead time required for rolling out the pilot program. Cost of the pilot program would also be considered which could affect the size and areas included in the pilot program. It is recommended that this pilot program also be implemented during 2014, concurrent with the Pilot Residential Organics Program, with a customer survey process to provide important information to the Council on expanding the program in the future.


4. Accelerate Commercial Recycling Program

Accelerate the implementation of a mandatory commercial recycling program by providing a detailed roll-out plan within six months of Plan adoption. The goal of the accelerated program would be full implementation within two years. The driver for the program is new state legislation requiring the City to increase collection of recyclables from the commercial sector. Increasing diversion rates for commercial accounts will be required for the City to meet its 2020 diversion targets. Staff would provide waste audits and workshops to assist commercial customers increase their recycling efforts. During FY13-14 key commercial accounts would be targeted as a basis for decisions about a large scale program.

_Council Schedule:_ Jan. 2014 – Review/Approve Program Rollout Plan

5. Standardization of Public Facility Refuse Bin Program – Phase I

The goal of the Program would be to offer the public standardized updated refuse bins at major City Facilities to lead by example in the pursuit of zero waste policies. Each location would offer bins to maximize recycling. Phase I roll-out at several key City Facility locations by December 2013.

6. Construction/Demolition (C & D) – Phase I

The goal of the Program would be to coordinate with Yolo County on updating its current C&D contract for regional processing of C & D materials to improve diversion targets equivalent to the state’s 75 diversion target. This process will take most of FY13-14 to complete.

4.2 FY14-15 IWMP Priorities

These programs are suggested to take place within 2 years of the Plan’s implementation.

1. Expand Apartment Move-out Program

The goal of the Expanded Program would be to include all apartment complexes. About 45 MFR properties participate in the Program on an annual basis. An approach to expand the Program would be
considered by the Council in FY14-15. There would be additional cost and more volunteers required to expand the Program. This information would be considered as part of the approval process.

_Council Schedule: Oct. 2014 - Consider Program Options_

2. **Mandatory Apartment Food Scrap and Recycling Program**

The goal of the Program would be to increase waste diversion in Apartments. During FY13-14 staff would work with a representative sample of Apartments to identify best practices to achieve the diversion goals of a large scale Mandatory Program. The Council could consider the information generated from the FY13-14 initial adapters to design and approve a large Program in FY14-15.

_Council Schedule: Nov. 2014 - Consider Program Options_

3. **Expansion of Commercial Food Scrap Program**

The City currently has a voluntary commercial organics program to encourage composting of food waste, primarily in restaurants. The goal of the Program would be to increase participation and diversion of food waste in the restaurant sector. The current voluntary Program would be continued in FY13-14 with an Expanded Program to be considered by the Council in FY14-15.

_Council Schedule: Dec. 2014 - Consider Program Options_

4. **Standardization of Public Facility Refuse Bin Program – Phase II**

The goal of the Program would be to offer the public standardized updated refuse bins at major City Facilities to lead by example in the pursuit of zero waste policies. Each location would offer bins to maximize recycling. Phase II would roll-out additional bins at City Facility sites by December 2014.

5. **Construction/Demolition (C & D) – Phase II**

With the updated C & D contract in place, implement new C & D contract operation to achieve minimum 75% diversion target for C & D materials generated from cities in Yolo County.

### 4.3 Program Alternatives

All of the suggested alternatives in this plan are summarized in the table below. Each alternative discussed in the Plan is listed, along with whether or not it meets the five goals of this plan and the impacts on recycling program staff and budget. The staff time required is an estimate based on the overall time it would take to implement each alternative. The cost does not include staff time, only additional supplies, materials and outreach required to develop and implement, each alternative. The staff suggested priority is based on the alternatives ability to meet the plans goals, the staff time required and the cost.
### Table 4-1 Compilation of Alternatives and the Goals of the Plan

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<thead>
<tr>
<th>Key:</th>
<th>Y = Yes</th>
<th>N = No</th>
<th>P = Possibly</th>
<th>M = Moderate</th>
<th>L = Low</th>
<th>1 = High Priority</th>
<th>2 = Medium Priority</th>
<th>3 = Low Priority</th>
<th>Goal: Maintain highest level of customer satisfaction with service</th>
<th>Goal: Maintain lowest comparable utility rates possible</th>
<th>Goal: Achieve 2020 waste reduction target</th>
<th>Goal: Divert organic waste from landfill</th>
<th>Goal: Implement zero waste strategies/policies</th>
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5 Services provided by DWR

5.1 Collection and Street Sweeping

A discussion of the current collection and street sweeping services is listed below. Davis Municipal Code, Chapter 32 which contains the governing text for waste and recycling services is listed in Appendix A.

5.1.1 Curbside Service Levels and Schedule

The figures below show the current curbside pick-up and street sweeping schedules.
DWR runs collections on all holidays except Christmas and New Year's Day.

Curbside customers receive weekly trash, recycling and yard materials pick-up. Yard materials are picked up bi-weekly for two months during the maximum leaf drop season.

Residential customers have one 95 gallon garbage cart and one 64 gallon split-recycling cart. Upon request, 35 or 65 gallon trash carts are available. Additional trash carts are available for a monthly service fee, additional split-recycling carts are available at no extra charge. All trash and recyclables must be placed inside the carts, with the exception of cardboard, which can be flattened and placed on the ground next to the trash and recycling carts for free pick-up.
Recycling carts have two compartments: paper and cardboard goes on one side, and glass bottles, plastics, and metals go on the other side. The DWR recycling trucks have two compartments, so that when the recycling cart is upended into the collection truck, one lid directs the paper into one compartment and the other lid directs the plastics, glass and metals down a chute into the other compartment (see the figure below).

**Figure 5-3 Single-Family Curbside Service**

Yard materials can be placed loose in the street in piles. DWR collects yard materials using a truck with a large claw that scoops up the yard materials and places them into a back loader truck (see the figures below). DWR has collected yard materials for composting since 1981. The yard materials are sent to a composting facility and turned into finished compost.

**Figure 5-4 DWR Pick-up Of Yard Materials**

Yard materials may be placed in piles 18” from the curb or gutter. Piles should not exceed 5’x5’x5’. Yard materials should be placed directly in front of the property they came from, not across the street or around the corner; this constitutes illegal dumping and DWR will not pick up these piles. Yard material piles should never block bike lanes, sidewalks, traffic lanes, fire hydrants, driveways or storm drain inlets.

Acceptable materials in yard material piles include: grass clippings, brush, leaves, prunings, weeds, discarded floral displays, indoor plants, Christmas trees, and branches up to 8 inches in diameter. Yard material piles may not contain sod, soil, fruit, flowerpots, florists' wire, stumps, fencing, bricks, concrete, rocks, wood (dimensional lumber), and branches larger than 8 inches in diameter.
Residents living on “terrace” streets cannot place yard materials in piles on the street as these streets are too narrow. Residents living on these streets may either place yard materials out on the nearest main street or may find alternative means to dispose of their yard materials.

5.1.2 Street Sweeping

Most areas of town receive weekly street sweeping. This is largely due to the collection of yard materials in the street in loose piles. After DWR picks-up a yard material pile, there is usually a residue of debris left behind on the street. DWR typically sweeps the streets the day after yard materials pick-up to remove any remaining yard material debris as well as other debris.

The downtown core area and major arterial streets are swept twice a week. “Terrace” streets do not have their streets swept weekly; these streets are too small. See Figure 5-6 below for the map of downtown street sweeping and parking restrictions.

![Figure 5-5 Downtown Street Sweeping and Parking Restrictions](image)

The City receives occasional complaints regarding parked cars and yard material piles that hamper street sweeping. Sometimes a resident doesn’t have a driveway and must park on the street, making yard material
collection and street sweeping difficult, if not impossible. However, there is nothing written in the Municipal Code restricting yard material piles or street parking on street sweeping days. Only the downtown core area has signage for street sweeping parking restrictions.

### 5.2 Bulky Items Drop-off

The DWR contract requires DWR to hold Bulky Items Drop-Off event every year, during the month of April at the DWR recycling center, 2727 2nd Street. Bulky Items Drop-Off days allows Davis residents the opportunity to drop-off large bulky items at a central collection point for free. At this event, residents are invited to bring old refrigerators and freezers, large appliances, mattresses, furniture, sinks, bathtubs, toilets, scrap wood, scrap metal, and other bulky items for free disposal. Materials that are brought to the Bulky Items Drop-off are separated out. Scrap metal, wood, plastics, cardboard and appliances are recycled. Since 2008, electronics and rigid plastics are accepted and recycled as well.

During the event, DWR separates out good and salvageable material to a scavenging area for reuse. These items are available for individuals to take at no charge. The amount of material taken from the scavenging area is difficult to quantify, but the scavenging area is viewed by both DWR and the City as a successful way to keep good, usable items out of the landfill.

### 5.3 Evaluation of Alternatives

This section looks at a variety of collection system alternatives. A solid waste rate study was completed in November 2011 by HF&H Consultants and shared with the City of Davis Recycling Program. The data was collected from a survey of 14 agencies in the Sacramento region: Auburn, Citrus Heights, Elk Grove, Folsom, Galt, Sacramento, Sacramento County, El Dorado Hills, Rocklin, Roseville, Rancho Cordova, West Sacramento, Woodland, and Davis. The results of their surveys pertaining to collection frequency are shown in the table below.

**Table 5-1 Overview of Residential Collection Services**

<table>
<thead>
<tr>
<th>Collection</th>
<th>Garbage</th>
<th>Recycling</th>
<th>Yard Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekly Collection</td>
<td>14</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Every Other Week Collection</td>
<td>0</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

Recycling Program staff conducted a survey of other jurisdictions as well. Results are shown in the table below.
### Table 5-2 2011 HF&H Consultants Survey of Residential Services

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Auburn</td>
<td>Monthly</td>
<td>Yes</td>
<td>Weekly</td>
<td>N/A</td>
</tr>
<tr>
<td>Berkeley</td>
<td>Monthly</td>
<td>Yes</td>
<td>Weekly</td>
<td>Weekly</td>
</tr>
<tr>
<td>Chico</td>
<td>Bi-weekly</td>
<td>Yes</td>
<td>Weekly</td>
<td>Weekly</td>
</tr>
<tr>
<td>Davis</td>
<td>Weekly</td>
<td>No</td>
<td>Weekly</td>
<td>Weekly</td>
</tr>
<tr>
<td>Dixon</td>
<td>Bi-weekly</td>
<td>Yes</td>
<td>Weekly</td>
<td>Weekly</td>
</tr>
<tr>
<td>Elk Grove</td>
<td>Bi-monthly</td>
<td>Yes</td>
<td>Bi-weekly</td>
<td>Bi-weekly</td>
</tr>
<tr>
<td>Fairfield</td>
<td>Weekly</td>
<td>Yes</td>
<td>Weekly</td>
<td>Weekly</td>
</tr>
<tr>
<td>Folsom</td>
<td>Periodically</td>
<td>Yes</td>
<td>Bi-weekly</td>
<td>Bi-weekly</td>
</tr>
<tr>
<td>Galt</td>
<td>Twice a Month</td>
<td>Yes</td>
<td>Bi-weekly</td>
<td>Bi-weekly</td>
</tr>
<tr>
<td>Palo Alto</td>
<td>Weekly</td>
<td>Yes</td>
<td>Weekly</td>
<td>Weekly</td>
</tr>
<tr>
<td>Roseville</td>
<td>Every 2-3 Weeks</td>
<td>Yes</td>
<td>Bi-Weekly</td>
<td>N/A</td>
</tr>
<tr>
<td>Sacramento</td>
<td>Bi-Monthly</td>
<td>Yes</td>
<td>Weekly</td>
<td>Weekly</td>
</tr>
<tr>
<td>Sacramento County</td>
<td>Bi-monthly</td>
<td>Yes</td>
<td>Bi-weekly</td>
<td>Bi-weekly</td>
</tr>
<tr>
<td>San Francisco</td>
<td>Weekly</td>
<td>Yes/No</td>
<td>Weekly</td>
<td>Weekly</td>
</tr>
<tr>
<td>San Jose</td>
<td>Monthly</td>
<td>Yes/No</td>
<td>Weekly</td>
<td>Weekly</td>
</tr>
<tr>
<td>Santa Barbara</td>
<td>Weekly</td>
<td>Yes</td>
<td>Weekly</td>
<td>Weekly</td>
</tr>
<tr>
<td>Vacaville</td>
<td>Bi-Weekly</td>
<td>Yes</td>
<td>Weekly</td>
<td>Weekly</td>
</tr>
<tr>
<td>Vallejo</td>
<td>Monthly</td>
<td>Yes</td>
<td>Weekly</td>
<td>Weekly</td>
</tr>
<tr>
<td>West Sacramento</td>
<td>Monthly</td>
<td>Yes</td>
<td>Weekly</td>
<td>Weekly</td>
</tr>
<tr>
<td>Vallejo</td>
<td>Monthly</td>
<td>Yes</td>
<td>Weekly</td>
<td>Weekly</td>
</tr>
<tr>
<td>West Sacramento</td>
<td>Monthly</td>
<td>Yes</td>
<td>Weekly</td>
<td>Weekly</td>
</tr>
<tr>
<td>Winters</td>
<td>Weekly</td>
<td>No</td>
<td>Weekly</td>
<td>Bi-weekly</td>
</tr>
<tr>
<td>Woodland</td>
<td>Weekly</td>
<td>Yes/No</td>
<td>Weekly</td>
<td>Weekly</td>
</tr>
</tbody>
</table>

It is important to note that while some jurisdictions offer bi-weekly collection of recycling or yard materials, no California jurisdiction offers bi-weekly garbage collection because it would be a violation of State Law. Public Resource Code (PRC) 40057 requires that:

> Each county, city, district, or other local governmental agency which provides solid waste handling services shall provide for those services, including, but not limited to, source reduction, recycling, composting activities, and the collection, transfer, and disposal of solid waste within or without the territory subject to its solid waste handling jurisdiction.

Title 14 of the California Code of Regulations (CCR) Article 5 requires that all residents and businesses must have refuse removed on a weekly basis.

**Section 17331. Frequency of Refuse Removal.**

(H) The owner or tenant of any premises, business establishment or industry shall be responsible for the satisfactory removal of all refuse accumulated by him on his property or his premises. To prevent propagation, harborage, or attraction of flies, rodents or other vectors and the creation of nuisances, refuse, except for inert materials, shall not be allowed to remain on the premises for more than seven days, except when:

(a) disruptions due to strikes occur, or
(b) severe weather conditions or “Acts of God” make collection impossible using normal collection equipment, or
(c) official holidays interrupt the normal seven day collection cycle in which case collection may be postponed until the next working day. Where it is deemed necessary by the local health officer because of the propagation of vectors and for the protection of public health, more frequent removal of refuse shall be required.

A list of collection alternatives is presented below.

5.3.1 Street Sweeping Reduction

In conjunction with switching to containerized yard material collection (discussed in detail in section 3), the City could switch from the current weekly street sweeping schedule to an “as needed” street sweeping. This would save money.

The current weekly street sweeping policy stems from two main factors—the loose in the street collection of yard materials and compliance with the City’s National Pollutant Discharge Elimination System (NPDES) permit. As part of the requirement in the State’s Small MS4 General Permit (the document that sets the regulations for the City’s storm water discharge), the City is required to implement best management practices as part of its municipal operations in order to minimize the discharge of pollutants to the surface waters of the State. Street sweeping of the public streets to remove yard materials is consistent with this requirement, in lieu of City not containerizing yard material collection. If yard materials were collected in carts instead of in loose piles in there street, the streets should be cleaner and there may not be such a need for weekly street sweeping. It is important to note however, that the City’s argument against the Regional Water Quality Control Board (RWQCB) initial finding was that the associated weekly street sweeping reduced the volume of yard materials (via street tree leaf fall) entering storm drains. Due to this factor, the RWQCB may have issues with the City altering the street sweeping service.

There are several issues that repeatedly come up with the current street sweeping policy. In some areas of town, when the street sweepers come by there are usually cars parked on the street, limiting DWR’s access to the gutters and virtually eliminating the usefulness of a weekly street sweeping program. Switching to a less frequent street sweeping schedule may help, as residents would be incentivized to move their cars on that particular day.

Some areas of Davis do not need as much street sweeping as others. Neighborhoods with fewer mature trees do not receive as much debris in the gutter as neighborhoods with many mature trees.

If the City were to consider an alternative street sweeping policy, it may be possible to maximize street sweeping in core areas, and minimize sweeping in other areas that do not have the same need.

A survey of which streets need frequent sweeping could be done now, and some streets could immediately be cut back to an every other week or monthly sweeping schedule.

Street sweeping is also a contract issue with DWR. It must be recognized that if the City wants to change the street sweeping policy, it has to be reflected in the contract and the City would need to give DWR adequate time to adjust to a service change (likely six months’ notice for any service changes).
It is possible to perform street sweeping monthly or every other week during off-peak leaf drop seasons. For example, from winter to summer, streets could be swept once a month. During the leaf drop season, streets could be swept weekly. Downtown areas could be swept every other week.

It is important to consider that decreasing street sweeping and removing yard materials collection may lead to a build-up of leaves on the street. Some waste consultants have noted that residents may sweep fallen leaves into piles for collection, but will not scoop them up to place in yard material carts. Policy could be considered that would cite residents if they allow leaves and debris to block storm drain inlets, etc.

5.3.2 Alternative Collection System

Instead of having a multiple bin system for customers with a trash bin, paper recycling cart, comingled recycling cart and organics cart, the City could switch to a wet/dry collection system. With such a system only two carts or bins would need to be provided to customers. One bin would collect “wet” materials, compostable organics such as food scraps, yard materials and food soiled paper, while the other bin would collect everything else, dry trash and recyclables. The organics would be sent for composting, while the other dry materials would be sorted at DWR. The mixed dry material would need to be processed through both the paper and comingled sorting lines in order to have all the materials properly sorted out, but the end result should be a higher diversion than is currently achieved through the multiple-bin system. This system would require a complete change in the current collection system—including replacing the split-recycling carts currently in use for single-family residential customers and the recycling carts used by commercial customers. This system may also require DWR to obtain a Solid Waste Facility Permit from CalRecycle. See Appendix O for details of a similar project proposal.

6 Education and Public Information

Two main types of outreach are described in this Plan, programmatic outreach and targeted outreach. Programmatic outreach includes all the regular outreach conducted by the City as the normal course of business in assisting customers to be familiar with recycling, composting and waste reduction.

This Plan recommends that the City continue to utilize electronic outreach methods whenever possible, via internet, social media, email list groups, e-newsletters and other electronic outreach options. However, with the advent of the City’s new billing system, utility bill inserts have become possible, and expanding the use of bill stuffers as a form of outreach is definitely encouraged. An occasional postcard mailed out to all residents is also possible and effective to remind residents about recycling options. The City will continue to document outreach improvements that are cost effective.

There are a number of changes proposed in this plan for programmatic outreach. Surveys will be considered for future use, especially in light of the proposed solid waste service changes discussed in this plan. The City will also improve the amount and quality of outreach to businesses. One such improvement would be the creation of an e-newsletter that is sent out to businesses at regular intervals.
Targeted outreach refers to the outreach required for specific issues. Several such issues will be coming to light in the next several years: containerization, consideration of a variable single-family residential rate, and a long-term composting option, just to name a few. A specific outreach plan will need to be implemented for each of these types of large scale issues. Developing an approach plan in advance will be helpful in assisting the City when these projects are discussed with the community.

### 6.1 Existing Conditions

The City employs a wide variety of outreach strategies to educate the public about source reduction and reuse of materials. A selection of the City’s current outreach programs are listed below. Some outreach occurs regularly every year, others are ongoing.

<table>
<thead>
<tr>
<th>Outreach Task</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certified Used Oil Collection Centers</td>
<td>Every 2-4 Weeks</td>
</tr>
<tr>
<td>New Resident Outreach</td>
<td>Biweekly</td>
</tr>
<tr>
<td><strong>Davis Enterprise Environmental Column</strong></td>
<td>Once A Month</td>
</tr>
<tr>
<td>Social Media Marketing Campaign</td>
<td>Continuous</td>
</tr>
<tr>
<td><strong>Oversee Recycling Programs At City Facilities</strong></td>
<td>Continuous</td>
</tr>
<tr>
<td>Clearstream Recycler Rental Program</td>
<td>Continuous</td>
</tr>
<tr>
<td>Responding To Citizen Requests/Complaints</td>
<td>As Requested</td>
</tr>
<tr>
<td>Community Recycling Presentations</td>
<td>As Requested</td>
</tr>
<tr>
<td><strong>Business Recycling Assessments</strong></td>
<td>As Requested</td>
</tr>
<tr>
<td>DavisRecycling.org Updates</td>
<td>Continuous</td>
</tr>
</tbody>
</table>
### Table 6-2 Yearly Outreach Calendar

<table>
<thead>
<tr>
<th>Outreach Task</th>
<th>Typical Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compost Classes</td>
<td>Spring and Fall</td>
</tr>
<tr>
<td>Bulky Items Drop-Off Day</td>
<td>March-April</td>
</tr>
<tr>
<td>Recycled Art Faire</td>
<td>April</td>
</tr>
<tr>
<td>AMOWRP</td>
<td>May—August</td>
</tr>
<tr>
<td>Celebrate Davis!</td>
<td>May</td>
</tr>
<tr>
<td>Yearly Apartment Outreach</td>
<td>May</td>
</tr>
<tr>
<td>Certified Used Oil Collection site visits</td>
<td>July</td>
</tr>
<tr>
<td>Design Yolo County Recycling Calendar</td>
<td>August - November</td>
</tr>
<tr>
<td>Chamber Day on the Quad</td>
<td>October</td>
</tr>
<tr>
<td>Certified Used Oil Collection Centers</td>
<td>Every 2-4 Weeks</td>
</tr>
<tr>
<td>New Resident Outreach</td>
<td>Biweekly</td>
</tr>
<tr>
<td>Davis Enterprise Environmental Column</td>
<td>October</td>
</tr>
<tr>
<td>Social Media Marketing Campaign</td>
<td>Continuous</td>
</tr>
<tr>
<td>Oversee Recycling Programs At City Facilities</td>
<td>Continuous</td>
</tr>
<tr>
<td>Clearstream Recycler Rental Program</td>
<td>Continuous</td>
</tr>
<tr>
<td>Responding To Citizen Requests/Complaints</td>
<td>As Requested</td>
</tr>
<tr>
<td>Community Recycling Presentations</td>
<td>As Requested</td>
</tr>
<tr>
<td>Business Recycling Assessments</td>
<td>As Requested</td>
</tr>
<tr>
<td>DavisRecycling.org Updates</td>
<td>Continuous</td>
</tr>
</tbody>
</table>

### 6.1.1 Recycling Outreach Budget

In the past, the City’s recycling program has printed a multi-page garbage and recycling guide on a biennial basis. More recently, the printing of this guide has been reduced to every few years. Savings from the cost of printing and associated postage help reduce the outreach budget. In an effort to move towards zero waste, the City has been shifting from a printed material outreach strategy to online and e-communication. When possible, instead of printing and mailing, information is posted on the City’s website or distributed via social media.

### Table 6-3 Recycling Program Printing Budget

<table>
<thead>
<tr>
<th>Expenditure</th>
<th>FY 2009-2010</th>
<th>FY 2010-2011</th>
<th>FY 2011-2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printing</td>
<td>$13,678</td>
<td>$18,898</td>
<td>$11,891</td>
</tr>
<tr>
<td>Postage</td>
<td>$0</td>
<td>$4,317</td>
<td>$4,256</td>
</tr>
<tr>
<td>Total</td>
<td>$13,678</td>
<td>$23,215</td>
<td>$16,147</td>
</tr>
</tbody>
</table>

As discussed in detail in Section 9, the City receives grant funding from CalRecycle that is used for outreach. These funds may only be used for specific purposes—used oil recycling and beverage container recycling.
6.1.2 DavisRecycling.org

Since 2000, the City has had a website, DavisRecycling.org, with recycling information for all Davis customers. The website is continually updated by City staff, with more information being added all the time.

Specific features that make this website useful include:

- Recyclopodia—over 250 individual items are listed here along with simple ways to recycle or reuse them locally.
- Downloadable posters and recycling fliers.
- Apartment, single-family home and business specific recycling information.
- Hazardous waste, universal waste and electronic waste information.
- News page—recent press releases, PDFs of the monthly Davis Enterprise Environmental Column and other recycling news items.
- DavisRecycling.org website:
  - Reuse and Reduce pages and fliers
  - Downloadable posters and fliers
  - Recyclopedia—a listing of over 250 different items and how to reuse and recycle them locally
  - Videos
    - Backyard composting
    - Worm composting
    - Commercial food scrap collection program
  - Press releases and past environmental columns
As part of the City’s new website upgrade that occurred in August 2012, staff are in the process of transferring all the pages and content from the old DavisRecycling.org to a new webpage. The process should be completed by Spring 2013.

### 6.1.3 Social Media

Since the fall of 2010, the Recycling Program staff has been using social media to help spread recycling messages and news. Recycling Program staff manages the Facebook and Twitter accounts and tries to post and tweet at least 3 times a week, or as time allows.
The City has a recycling Facebook page: Facebook.com/DavisRecycling.org. As of February 19, 2013, the DavisRecycling.org Facebook page has 1,265 fans. Just for comparison, that’s more fans than any other local jurisdiction has on their Facebook page, even more than the Davis Enterprise Facebook page.

![Figure 6-2 DavisRecycling.org Facebook Page](image)

The City has customized the DavisRecycling Facebook page with branding and apps. The DavisRecycling Twitter account is tied to the Facebook page. A YouTube app has also been added, so that the Recycling Program staff could share informative recycling and composting videos on the Facebook page.
FIGURE 6-3 TWEETS TO PAGE APP ON DAVISRECYCLING.ORG FACEBOOK PAGE

- **Davis Recycling**
  - Here’s one in honor of Valentine’s Day tomorrow. Thanks for following us and thanks for recycling! [Link](http://t.co/VQ0N0zc)
  - About 2 days ago

- **Davis Recycling**
  - Mark your calendars! Bulky Items Drop-Off Days will be April 11-12 4-7 p.m. & April 13 10am-4pm at DWR, 2727 2nd St. [Link](http://t.co/kH0m8cOl)
  - About 2 days ago

- **Davis Recycling**
  - Keep your Valentine’s Day simple. Cards that play music may be fun, but they contain batteries that are illegal to throw in the trash.
  - About 6 days ago

- **Davis Recycling**
  - Free household hazardous waste days at the Yolo County Landfill today & Sat 7:30am-3:30pm
  - About 11 days ago

- **Davis Recycling**
  - Time for an oil change? Check your owner’s manual for your oil change interval to save time, money & the environment. [Link](http://t.co/M99glujc)
  - About 38 days ago

- **Davis Recycling**
  - The average CA family of 4 leaves $2.21 worth of CRV containers at the curb each week. Put that $ back in your wallet. [Link](http://t.co/K8by6jZ)
  - About 38 days ago

- **Davis Recycling**
  - Win this compost bin! Come to the free composting class at 6pm on Jan 23 at the Hallmark Inn. [Link](http://t.co/l8hJ_ZnQ) [Link](http://t.co/GeuzzRGO)
  - About 41 days ago

- **Davis Recycling**
  - Food scraps make up 25% of your trash. Composting is simple, pest free & only takes 5 min a week. Free composting class [Link](http://t.co/)
One of the benefits of Facebook as an outreach tool is the Insights tool that provides statistics and demographics of all the people who have liked a page, commented, viewed, shared, etc. The demographics in the figure below show that a majority of the DavisRecycling.org fans are women, and most fans are between the ages of 18-24.
The chart below shows the number of people who saw the content of the DavisRecycling.org Facebook page from February to March 2012. This data is broken down into unique (organic) users, people who saw the pages’ paid advertisements (the City did not pay for advertising, so this number remains zero), people who saw stories on their friends pages (viral), and the total number of people who saw any content associated with the DavisRecycling.org Facebook page.
The chart below shows the number of people who visited the DavisRecycling.org Facebook page; it’s broken down into overall views and unique views. This Figure also shows the number of people who visited the Twitter to Pages tab, YouTube tab and viewed pictures as well as the number of people who got to the page from a URL other than Facebook.com.

**Figure 6-7 January - February 2013 Page Views**

The page posts data shown in the figure below displays how many people viewed and gave feedback on individual posts.
The Recycling Program ran Facebook advertisements January-February 2013, using grant funds. During this time, the Facebook page received a total of 716 new likes.

Recycling Program staff attended Chamber Day on the Quad in 2011 and offered students the chance to spin the prize wheel if they liked the DavisRecycling Facebook page. City staff brought a laptop so that students could log into Facebook and like the page. The page grew 50 fans from that single event.

The City also has a Twitter account for recycling: [Twitter.com/DavisRecycling](http://Twitter.com/DavisRecycling). As of February 19, 2013, the Twitter account has 189 followers and 10 lists (groups of Twitter accounts that are following DavisRecycling).
6.1.4 Miscellaneous Electronic Outreach

More and more, the City is emphasizing electronic means to send messages, updates and reminders to residents and businesses. Below is a list of some of the electronic outreach methods currently used by Recycling Program staff.

- **Email Lists**  City staff sends out emails to apartment communities, community service groups, green businesses and other miscellaneous community groups about upcoming events such as composting classes, bulky items events and other important recycling, composting and waste reduction information.

- **Earth 911.com**  This is a free online guide to local resources including recycling centers, how to recycle, pollution prevention and how to help protect the environment. The City has an account with Earth 911 and manages the data for several sites in Davis, keeping the information on what is accepted for recycling and reuse updated.

- **Davis Wiki**  This local Wiki has several pages on recycling, composting, waste reduction, etc. City staff keeps an eye on these pages and updates them as needed.

- **Davis Community Network Calendar of Events**  City staff use this online calendar to post event information on composting classes and bulky item drop-off days.
The City also has a variety of brochures, posters and fliers that are available to download from DavisRecycling.org. Staff is in the process of reorganizing the material on DavisRecycling.org so that there will soon be a separate webpage for all the posters, fliers, labels, etc. that are available to download.

### 6.1.5 Printed Outreach

For budgetary and environmental reasons, the City is starting to move away from printed outreach materials, where possible. However, there are still a variety of brochures, pamphlets, guides and fliers that the City does still produce and distribute on a regular basis. Some of these are listed below.

- Recycling Guide (discussed in detail in 10.1.6)
- iBIN Recycling Fliers
- Construction and Demolition Diversion
- Regional Recycling Group Backyard Composting Guide
- Worm Compost Brochure
- Food Scrap Composting Brochure
- Grasscycling Brochure
- Yard Materials Management
- Pollution Prevention and Yard Material Piles
- Yolo County Household Hazardous Waste Fliers
- Yolo County Recycling Calendars
- iBIN Recycling Fliers
- Yard Material Placement Guides
- iBIN Recycling Magnets
- Split-Cart Recycling Magnets
- Used Motor Oil Recycling Magnets
- Used Motor Oil Recycling Brochures
- Buy Recycled Brochure
- Shop Smart Brochure
- Utility Bill Inserts

These brochures are available online at DavisRecycling.org.

When possible, these materials are printed in-house either in the City mailroom or by using the Public Works Department printers and copy machines. If the job is large or more complex, the City will send out a request for quotes to local printers, specifying a minimum recycled-content paper. The lowest bidder is awarded the job.

### 6.1.5.1 Davis Recycling Guide

Every few years, the City produces a comprehensive recycling booklet that is mailed out to all Davis addresses. The latest version, “Recycling is the Key” was sent out February 2011. This 8th edition recycling guide has user-friendly navigation bars on the sides and QR scan codes that link directly to DavisRecycling.org. Recycling Program staff use the QR codes to link printed material to electronic information as part of the effort to switch to electronic outreach.
This booklet includes information on the acceptance of all rigid plastics #1-#7 and the weekly Household Hazardous Waste Drop-Off Days held at the Yolo County Central Landfill. The printing and distribution of this guide was funded by CalRecycle.

Extra copies of the Davis Recycling Guide are available at City Hall and DWR. Copies are also distributed by staff at events. Recycling Program staff receives community development reports and sends out the recycling guides to new homeowners in town.

6.1.5.2 Utility Bill Inserts

The City switched to enveloped mailers for utility bills in February 2012. This switch made it possible to include fliers with the utility bills. There is a fee for including a bill insert in the utility bill.

The Recycling Program was the first to take advantage of this opportunity and included the Yolo County Household Hazardous Waste Drop-off Event flier with the February 2012 utility bill. A recycling flier was also included with the June 2012 utility bill.

The main benefit of utility bill inserts is the ability to widely distribute outreach messages while avoiding the cost of postage, which can cost more than simply printing a flier. However, utility bill inserts are limited to the people who receive city utility bills—usually only property owners will receive these messages. Residents living in rental housing will generally not receive these messages. Utility bill inserts may be best utilized when combined with other forms of outreach.

6.1.5.3 Outreach Distribution

One of the issues with printed materials is the difficulty of getting the material to the target audience. Delivering printed material directly to addresses via the postal service is effective, but very expensive. For example, a simple black and white printed postcard that was mailed out to all Davis addresses in 2008 cost $6,472: $2,321 to print the postcard and $4,151 for postage.
More commonly, printed materials are available at “outreach hot spots”—areas with high traffic where the targeted audience is likely to see and pick up the materials. Such “hot spots” where printed outreach materials may be found include the following:

- Outreach events
- City Hall
- Public Works Department
- Yolo County Public Library, Davis Branch
- Community Chambers
- City events, workshops and classes
- Bulletin Boards at the Core Area Pond (Dog Park), Mace Ranch Channel and Northstar Park.

Another strategy that Recycling Program staff use for outreach distribution is inclusion with other published pieces. Sometimes the articles are written by City staff, sometimes staff just provides some general content and others write articles. This includes some of the following pieces:

- Articles and notes in the Senior Scene, The Digging Fork and other community newsletters
- Utility bill messages and bill inserts
- Articles in the City of Davis Pulse employee newsletter
- Articles in the City of Davis Utility Connection newsletter

### 6.1.6 In-Person Outreach

Recycling Program staff attend various community events to help promote recycling, waste reduction, and to answer questions and concerns of customers. Staff brings recycling displays and recycling, composting and waste reduction brochures.

Some of these events that have been done in the past include:

- Celebrate Davis!
- Chamber Day on the Quad
- Cool Davis Festival
- Recycled Art Faire/Green Schools Expo
- Davis Green Home and Garden Show
- Yolo County Fair
- Celebrate UC Davis
- Davis Farmers Market
Some of the strategies used at events to engage the public include:

- Recycle Toss game—toss a plastic bottle or aluminum can onto a recycling bin and win a grocery tote bag
- Prize Wheels—answer a recycling question, like the DavisRecycling.org Facebook page, or follow DavisRecycling on Twitter and spin the wheel to win a prize
- Reusable Bag Pledge—sign a pledge to bring reusable bags when shopping and receive a reusable grocery bag made from recycled plastic bottles.

The City also offers occasional workshops for residents to attend and learn more about the recycling program. One such workshop was done on April 17, 2012 at the Davis Senior Center.

6.1.7 Media Used in Outreach

The City makes use of both free and paid local media. Below is a list of free media sources that the Recycling Program has used.
Since 1995, the Davis Enterprise has graciously granted the Recycling Program a free Environmental Column. Currently, the Environmental Column is printed in the Davis Enterprise on the first Friday of every month. The column covers current events, seasonal recycling and waste reduction reminders and various other timely environmental messages (example: water conservation reminders in the summer, street sweeping reminders in the fall, etc.).

City staff often sends recycling, composting and waste reduction information for inclusion in various community newsletters, including the Senior Scene, The Gardening Fork, the Covell Commons newsletter, various apartment community newsletters and others.

Below is a list of paid media sources that the Recycling Program has used.

- Newspaper Advertisements
- Radio Advertisements
  - RRG Used Oil Recycling Campaign advertisements
  - Entercom radio advertising
- Television
  - RRG Used Oil Recycling Campaign TV advertisements
- Billboards along I-80 (partnership with Yolo County to promote used oil recycling)
Recycling Program staff partners with other nearby jurisdictions on various projects.

The Northern California Regional Recycling Group (RRG) is a collaboration of Northern California cities, counties and other public agencies that work together on waste reduction and recycling concepts through a variety of projects and media campaigns that promote personal action and behavior change. The RRG cities and counties collectively create outreach campaigns to avoid duplication and purchase regional media to promote recycling and waste reduction at a fraction of the cost that individual jurisdictions would have paid for equal media outreach. The cities and counties contribute funds that pay for regional media buys, jointly organized events, as well as the development of outreach materials, guides, booklets, publications and other educational tools. This multi-jurisdiction collaboration creates the financial leverage necessary to make an impact in behavior change across the entire regional area.

The RRG has two main projects every year—the Regional Used Oil campaign and the Holiday Recycling Campaign.

Regional Used Oil campaign includes a website (RecycleUsedOil.com), TV and radio spots as well as surveys and focus groups to determine the effectiveness of the campaign. The campaign promotes recycling of used oil and filters and places an emphasis on extended oil change intervals. RRG participants pool their funds (most, including Davis, use CalRecycle used motor oil recycling grant funds) for this campaign.
The Holiday Recycling campaign features TV and radio spots, a website (HolidayRecycling.com) and television talk shows to spread the waste reduction and recycling messages during the holiday season (Reduce, reuse, recycle and rejoice!). Davis occasionally takes part in this campaign, using CalRecycle beverage container grant funds if any are available.
Recycling Program staff also work with other recycling coordinators within Yolo County on various projects, including the production of the Yolo County Recycling Calendar, staffing a recycling booth at the Yolo County Fair, used motor oil recycling outreach, and joint grant applications. In past years, Davis, Yolo County and Woodland have pooled their grant funds to purchase advertising space on a billboard along I-80 and in Woodland to promote used motor oil recycling, see the figure below.

**Figure 6-16 Used Oil Recycling Billboard**

![Image of a billboard promoting used oil recycling.](image)

### 6.1.9 Special Events Recycling Program / Clearstream Rental

AB 2176, the large venues and large events recycling law, requires large venue facilities and large events in each city and county to plan for solid waste reduction and upon request, report information regarding their waste reduction efforts to their local jurisdiction. The City has begun the steps to turn regular events into zero waste events (4th of July Celebration and the Environmental Service Recognition Awards being some examples.) The City also offers free downloadable posters for diverting waste at events on DavisRecycling.org, along with a webpage about holding zero waste events and a webpage about the Clearstream Recycler rental program. The table below shows the increased diversion rates achieved at the 4th of July Celebration.

<table>
<thead>
<tr>
<th>Year</th>
<th>Trash Disposed (tons)</th>
<th>Recycling Collected (tons)</th>
<th>Compost Collected (tons)</th>
<th>Diversion</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>2.34</td>
<td>0.13</td>
<td>0</td>
<td>5.26%</td>
</tr>
<tr>
<td>2009</td>
<td>1.95</td>
<td>0.07</td>
<td>0</td>
<td>3.46%</td>
</tr>
<tr>
<td>2010</td>
<td>2.31</td>
<td>0.07</td>
<td>0</td>
<td>2.94%</td>
</tr>
<tr>
<td>2011</td>
<td>1.04</td>
<td>0.11</td>
<td>0.13</td>
<td>18.75%</td>
</tr>
<tr>
<td>2012</td>
<td>0.2</td>
<td>0.43</td>
<td>0.71</td>
<td>85.00%</td>
</tr>
</tbody>
</table>

Since 2007, the City has rented out Clearstream Recyclers for people to use at events in Davis. Residents that are interested in renting the Clearstream Recyclers can contact the Recycling Program to make a reservation and schedule a pick-up time. See the chart below for the number of Clearstreams rented each year and the number of events the Clearstreams are requested for each year.
Table 6-5 Clearstream Recycler Rentals

<table>
<thead>
<tr>
<th>Year</th>
<th># of Clearstreams Rented</th>
<th># of Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>44</td>
<td>4</td>
</tr>
<tr>
<td>2008</td>
<td>100</td>
<td>11</td>
</tr>
<tr>
<td>2009</td>
<td>231</td>
<td>12</td>
</tr>
<tr>
<td>2010</td>
<td>137</td>
<td>13</td>
</tr>
<tr>
<td>2011</td>
<td>207</td>
<td>10</td>
</tr>
</tbody>
</table>

Figure 6-17 Clearstream Recyclers

6.2 Evaluation of Alternatives

Listed below are some alternative options for outreach. In looking at outreach alternatives, it is important to consider that zero waste strategies place a higher emphasis on paperless forms of outreach.

6.2.1 Targeted Outreach

In addition to the City’s regular programmatic outreach, the City also performs targeted outreach on new policies and programs. A few of the possible upcoming issues that will require extensive targeted outreach include the implementation of a variable single-family residential rate and a composting solution (containerization of yard materials and acceptance of food scraps for composting).

These issues require a multi-faceted outreach program utilizing all methods of current outreach and possibly some of the alternatives listed above as well. Below is a possible outreach schedule for one of these issues.

- Council direction—take the item to City Council and receive direction on the scheduled outreach and implementation schedule
- Survey customers about their preferences and concerns
- Press releases with up-to-date information on current stage of implementation
- Community meetings/workshops
- Creation of a webpage to distribute information
- Meeting with businesses groups (Davis Downtown Business Association, Chamber of Commerce, etc.)
- Meeting with community groups (Lions Club, Rotary Club, Soroptimist, Odd Fellows, etc.)
• Creating an advisory committee (similar to the Water Advisory Committee)
• Schools—posters and education materials

6.2.2 Surveys

Surveys are a useful tool to engage the community involvement and assess their opinions, preferences and concerns about current and future solid waste policy. Through the use of electronic and in person surveys, the City could increase the amount of surveys that are done in order to help determine future solid waste policy.

6.2.3 Social Media Campaign

Using the existing Facebook and Twitter accounts, the Recycling Program could launch a social media campaign to build a recycling community, engage with customers on waste reduction and recycling topics, address customer concerns and build awareness on environmental issues.

A Facebook outreach campaign may have the following elements:
• Update Facebook page
• Create a brand look for DavisRecycling.org on Facebook specific to the message being sent
• Experiment with extreme customization
• Frequent posting of pictures
• Ask questions
• Create contests
• More frequent postings
• Facebook ads
• Use Facebook Events for composting classes, and other special events

A Twitter outreach campaign may have the following elements:
• Update Twitter page
• Create a brand look for DavisRecycling on Twitter specific to the message being sent
• More frequent posting
• Ask questions
• Create contests

The City may also look into further encouraging other online reuse options such as Facebook Marketplace, Freecycle and Craig’s List.

6.2.4 Quarterly Mailer

The City could create a quarterly mailer that addresses current solid waste issues (such as the Utility Connection newsletters used to do). This is a very effective method of outreach as it can reach every address in Davis. This alternative may be costly as postage is often more expensive than printing costs. The City may be able to use CalRecycle grant funds to pay for the mailer.
6.2.5 Email Listserv

Recycling Program staff may be able to, with the support of City Information Systems staff, develop a listserv so that customers can sign up to receive recycling, composting and waste reduction information, news items and event information. The City website, DavisRecycling.org and social media sites can direct residents and businesses to sign up for the listserv. City staff can send out emails when events are coming up, or about timely seasonal information.

6.2.6 Posters, Sign Boards and Billboards

There are a variety of large print media that the City can use to promote recycling and waste reduction. A few options are discussed below.

The Recycling Program could use or add additional “billboards” at Unitrans bus stops. The Street Smarts program purchased outdoor frames to hold their posters and placed them at the Unitrans bus stops throughout the city. It may be possible to partner with Street Smarts and use the poster boards when they are not in use by Street Smarts. Another option may be to purchase frames specifically for the Recycling Program to use at the Unitrans bus stops.

The City could also look into paying for advertising on the billboards on Unitrans buses. Advertising on Unitrans can cost anywhere from $850 to more than $1,500 for a few months of advertising, depending on the size and placement of the advertisement. There is also a long waiting list for these ad spaces, so the City may have to wait a few months to a few years to get an advertisement up.

There is also the potential of advertising on shopping carts, as certain companies provide this service at select grocery stores. This option has the benefit of reaching consumers as they are making decisions on what items they are purchasing. The cost for this type of advertising is unknown.

There may be an option to purchasing park benches with advertising options or kits to convert existing benches into ad spaces.

Large billboards are not available to advertise on in Davis, except along Interstate 80. The City has partnered with other Yolo County jurisdictions in the past to purchase billboard advertising to promote used motor oil recycling (see section 6.1). One month of such advertising can cost $7,000. The City could advertise on the billboards again, but this type of advertising reaches mostly out-of-towners, not Davis businesses and residents.

The City often does have banners hanging downtown above certain streets. It is possible to place some recycling message on the banners, but this may not be the best option as the impressions are so short (banner cannot be seen from far away like a billboard) and limited in design (not able to put a lot of text and information on them) that they are limited in scope. They could be used to promote simple recycling slogans (“Reduce, Reuse, Recycle and Compost!” or “Have you been Recycling? iBIN Recycling!”).

6.2.7 Yearly Recycling Update Meetings and Other Community Meetings

The City could also hold a number of community meetings each year for residents to gather feedback about current services and programs and talk about the Plan and the current projects. These could be incorporated into
the composting classes that staff teach, or could be done separately. Staff could also publicize and promote the NRC November meeting more, so that when staff presents the Annual Report to the NRC, more members of the community can be there to listen to the status updates and provide comment.

Staff could also hold an annual briefing to the business community as well. Every year, the City could meet with the Davis Chamber of Commerce or the Davis Downtown Business Association. During these meetings, staff can present the current and projected projects and gather feedback about current services and programs.

7 Regulation and Policy

7.1 Existing Regulation and Policy

7.1.1 Diversion Requirements

In 1989, the Integrated Waste Management Act (AB 939) was passed and enacted Public Resources Code (PRC) section 41780, which required a 25% reduction of solid waste disposal by cities and counties by 1995 and 50% by 2000. The planning requisites in this section require waste diversion from landfill or transformation facilities through source reduction, recycling, and composting activities identified in city, county and regional agency Source Reduction and Recycling Elements (SRRE).

Under AB 939, diversion was calculated from a base year, where the State calculated: 1) how much waste was prevented (waste prevention), 2) how much waste was recycled and composted; and 3) how much waste was disposed. The total of these three activities was considered the total waste generated. The total materials prevented, recycled and composted were considered diverted and the tons landfilled were not diverted. This was the process that was used to determine whether the City achieved the 50% diversion mandate.

The City easily met the 1995 goal of 25% diversion, but meeting the 2000 goal was not as easy. In addition to the base year problems noted above, in 2000, California’s waste reporting system was based on estimates of population, employment and taxable sales, not on the amount of trash disposed. Due to a surging economy, high levels of business activity and construction, achieving a 50% diversion rate was more difficult for Davis. Diversion rates did not include the tons of yard materials that were collected each week for composting by DWR—the State’s calculations did not consider these materials “diverted” using their reporting procedures. The City did achieve the State-calculated 50% diversion in 2001.

In 2007, SB 1016 was passed, changing the way the State measured waste diversion. The goal of the new per capita disposal measurement system was to make the AB 939 process of goal measurement simpler, timelier, and more accurate. SB 1016 changed to a disposal-based indicator—the per capita disposal rate—which uses only two factors: a jurisdiction's population (or in some cases employment) and its disposal as reported by disposal facilities. The AB 939 50% solid waste disposal reduction requirement is now measured in terms of per-capita disposal expressed as pounds of waste generated per person per day, or pounds per employee per day. The focus is on program implementation, actual recycling, and other diversion programs instead of estimated numbers.
It is often requested that the City’s diversion or per capita disposal rate be compared to other local agencies. The charts and tables presented in section 8 offer such a comparison. However, it must be noted that CalRecycle itself strictly advises against such comparisons:

Advisory! The per capita disposal rate is a jurisdiction-specific index and cannot be compared between jurisdictions. The per capita disposal rate is used as one of several “factors” in determining a jurisdiction’s compliance with the intent of AB 939, and allows the California Department of Resources Recycling and Recovery (CalRecycle) and jurisdictions to set their primary focus on successful implementation of diversion programs. Meeting the disposal rate targets is not necessarily an indication of compliance.


Unfortunately, this warning is rarely heeded and comparisons between other jurisdictions are frequently performed regardless. If a comparison must be done, the best way to compare one jurisdiction to another is to look at the waste generation. The tables and figures in section 8 compare the residential and employee waste generation per capita numbers of several jurisdictions.

The State of California took another step to increase diversion in 2011, when the governor signed AB 341, increasing the current State goal from 50% diversion to 75% recycling by 2020. AB 341 created the Mandatory Commercial Recycling law, which requires that all businesses that generate four or more cubic yards of waste each week and all multi-family communities with five or more units must arrange for recycling service. Most Davis customers that fall under the Mandatory Commercial Recycling Law are already required to recycle under Chapter 32 of the Davis Municipal Code (see Appendix A). The few customers that do not are reviewed yearly by DWR and City staff for compliance.

The City’s past, current and future projected diversion rates and per capita disposal rates are shown in section 8.

### 7.1.2 Davis City Council Goals and Key Objectives 2012-2014

The Recycling Program is guided by several of the City Council 2012-2014 key objectives of Fiscal Stability, Sustainability and Community Strength and Effectiveness. The Sustainability goal and guiding principles are listed below.

**Sustainability**

Enact policies that strive to meet the needs of the present without compromising the ability of future generations to meet their own needs.

**Guiding Principles:**

- Reduce the community’s carbon footprint and achieve measurable GHG emission reductions.
- Focus on mobility systems that will reduce carbon emissions.
- Increase water and energy efficiency of existing resources and explore alternatives.
- Conserve resources in an environmentally responsible manner.
- Promote reduction of resource consumption and waste generation, preserve agriculture, promote local food production, reduce automobile and energy use, foster a healthy and vibrant economic climate based on green technologies, and create a people-centric urban design environment.
- Actively participate in regional planning activities in the areas of transit, air quality, water and wastewater resources, land use and agricultural and open space conservation.
- Prioritize cost effective actions that build on past success and establish a foundation for long-term actions.

**Actions**

- 5—Prioritize actions to implement Climate Action and Adaptation Plan across all council goals.
- 5—Review staffing necessary to support Sustainability
- 5—Collaborate with DJUSD, PTAs, non-profit organizations and others to promote Ride/Walk Davis and to increase bicycling and walking to school, using education and encouragement programs or infrastructure improvements where appropriate. (See Beyond Platinum Action in Infrastructure.)
- 4—Advance development of community energy plan.
  - Conduct Energy Assessment to evaluate energy service and production options.
  - Consider steps necessary to establish local control of energy production, distribution and efficiency programs.
- 4—Complete and implement an innovative Integrated Waste Management Plan
- 3—Address long-term maintenance and funding needs for wildlife habitat areas (West Area and Northstar ponds, Putah Creek, Covell Drain and dedicated species habitats for owls, fox, etc.). Prioritize areas within City limits.
- 3—Continue to pursue implementation of urban limit line, farmland protection and habitat conservation through acquisition of open space/easements.
- 3—Expand alternative energy facilities, such as community solar facilities and other competitive technologies.
- 2—Establish community-based farms.
- 1—Work with local Non-Governmental Organizations and subject matter experts to develop, identify funding for and begin implementation of a community based engagement plan to reduce household GHG emissions, drive local demand-side green economic activity and enhance community resiliency.
- 1—Implement an energy efficiency and renewable energy production program for city operations to achieve cost savings and GHG reductions consistent with the CAAP (41% reduction below 2010).
- 1—Add/upgrade spaces/options for charging e-vehicles and review utilization of the spaces.
- Identify and implement practices to reduce use of paper in all aspects of city business.
- Collaborate with organizations promoting sustainable programs/projects which assist with implementation of the Climate Action Plan, such as Valley Climate Action Center, Cool Davis Foundation, UC Davis, etc.
- Begin an assessment of climate-related vulnerabilities of local food, water and energy supplies, infrastructure and the public health system.

**7.1.3 Alignment of Natural Resources Commission Priorities with Council Direction**

The purpose/functions of the Natural Resources Commission that relate to the recycling program are as follows:

- Advises the City Council on the preservation, management and enhancement of the city's natural resources.
- Reviews and recommends ways to implement the Yolo County Solid Waste Plan and improve city-wide recycling efforts.
- Advises on environmental matters relating to global warming, and toxic and hazardous substances.
1. Single use carryout bags
2. Commercial food composting
3. Zero waste for City facilities
4. Polystyrene for food and packaging
5. Green waste containerization

The Recycling Program is guided by several of the NRC 2007 Goals and Objectives. Each of these key goals and their action items that are addressed by the Recycling Program are listed below.

**Goal 4:** Identify ways to improve air quality and reduce greenhouse gas emissions.
- Action Item E: Study and recommend ways to reduce the City’s contribution to the problem of global warming.

**Goal 7:** Promote regional environmental resource planning to preserve our natural resources.
- Action Item B: Integrate actions for other goals into regional approach for resource planning (e.g., water supply, air quality, and natural habitat).
- Action Item B: Monitor potential impacts to natural resources, including open space from development.

**Goal 8:** Recognize individual, business, and community actions to improve natural resources stewardship.
- Action Item A: Encourage City to develop outreach to residents and commercial customers for education on pollution load reduction.

**Goal 9:** Promote public involvement, increase community education and awareness, and identify topics of interest related to natural resource issues and energy efficiency.
- Action Item A: Hold public forums on specific subjects of significant interest a minimum of two times each year.
- Action Item B: Develop public outreach program similar to National Water Quality Day.
- Action Item C: Study and promote economic benefits of Davis environmental stewardship.

### 7.1.4 Davis Climate Action Plan

The 2010 City of Davis Climate Action Adaptation Plan (CAAP) listed an item to “Adopt zero-waste goal for Davis and begin planning process.” The City adopted a zero waste resolution in December 2011 (see Appendix C). Waste Reduction Objective 1 of the Action and Adaptation Plan is to reduce total solid waste generated by 10% and Objective 2 is to recover 75% of all waste generated. See Appendix I for the CAAP pages related to solid waste and recycling.
7.1.5 Yolo County Climate Action Plan

The Unincorporated Yolo County Greenhouse Gas Emissions Inventory of the Yolo County Climate Action Plan lists solid waste as comprising 0.3% of the 1990 Historic Inventory. This number increased to 1.1% in the 2008 Base-Year Inventory. The Climate Action Plan outlines 3 action items for solid waste:

- **Reduce waste-related emissions**
  - SW-1.1 Organics materials diversion – 90% diversion of organics materials (i.e., food waste, yard materials, soiled paper)
  - SW-1.2 Construction and demolition waste diversion – 75% diversion of construction and demolition waste
  - SW-1.3 Waste reduction and recycling – 4.2 lbs. per resident per day and 3.25 lbs. per person per employee per day by 2020 (including organic wastes and C&D)

7.1.6 Ordinance No. 1565, Purchase of Recycled Products by the City

In 1989 the City passed Ordinance No. 1565, requiring City departments to purchase recycled content products. Key features of this ordinance include:

- The City shall purchase recycled products whenever sufficient quantities are readily available and meet the city’s specifications.
- The City shall purchase recycled products that contain the highest percentage of recovered materials, and are produced to the greatest extent with postconsumer materials.
- All City departments shall establish purchasing practices which maximize the purchase of materials, goods and supplies that are produced from recovered materials, and/or may be recycled or reused when discarded.
- To promote the use of products made from recovered materials, the City, to the extent practicable, shall label applicable products to indicate that they are recycled products.

7.1.7 Zero Waste Resolution

Zero waste is theoretically simple: “a systems approach to avoid the creation of waste in the first place.” In practice, it is far more difficult to achieve. The notion of zero waste challenges our basic assumptions, business practices, and day-to-day behavior in making decisions about what we buy and consume, and how we handle the materials and byproducts left over from those decisions.

The Zero Waste International Alliance adopted the following definition of zero waste to assist communities in defining Zero Waste:

*Zero waste is a goal that is ethical, economical, efficient and visionary, to guide people in changing their lifestyles and practices to emulate sustainable natural cycles, where all discarded materials are designed to become resources for others to use.*

*Zero waste means designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them.*
Implementing zero waste will eliminate all discharges to land, water or air that are a threat to planetary, human, animal or plant health.

Zero waste is defined as follows by CalRecycle:

The zero-waste philosophy focuses on the most efficient use of natural resources in order to maximize the reduction of waste and protect the environment. It also includes but is not limited to maximizing recycling and ensuring that products are made to be reused, repaired or recycled back into the environment. Zero-waste involves utilizing the most effective industry processing or manufacturing practices to efficiently conserve the use of raw materials, including front-end design for efficiency while educating consumers. It includes promoting technology to encourage source reduction on the front end and recycling and other technologies on the back end, and harnessing the energy potential in “waste” by using new and clean technology to convert the material directly into green fuel or gas to produce electricity.

A zero waste strategy is timely for the City. The state has set a target date for achieving zero waste statewide by 2025. Other California municipalities have either established such goals or are in the process of adopting them.

In December 2011, the City Council approved a resolution giving the City a goal of achieving 1.9 pounds of waste generated per person, per day (75% diversion equivalent) by 2020, as calculated by CalRecycle, through zero waste strategies. This was a landmark event and made Davis the first jurisdiction in the Central Valley area to implement a zero waste goal. This resolution will be used as a guiding principle to create a framework for defining how the City’s solid wastes will be managed in the future.

The City’s zero waste resolution is shown in Appendix C.

7.1.8 Extended Producer Responsibility Resolution

The United States Environmental Protection Agency (EPA) estimates that approximately 75% of today’s waste stream comes from manufactured products, including common household hazardous waste items. Electronics contain lead, cadmium, and other toxic heavy metals that pose a threat to public health and the environment when improperly disposed. Other products also contain toxic constituents, such as the mercury contained in fluorescent lights.

Under today’s waste management system, the responsibility for managing the end-of-life of these products’ waste falls on local governments. Many products today are actually designed for disposal, rather than reuse or recycling. Both the toxicity of the waste stream, and the volume of waste is concerning to local governments.

As producers continuously generate consumer products containing hazardous materials, the collection burden falls on the local government to provide legal collection methods. The cost of these collection programs is costly for the City of Davis and Yolo County.

Extended Producer Responsibility (EPR) is an environmental policy approach in which producers assume responsibility—financial and/or physical—for the management of post-consumer products, so that those who produce and use products bear the costs of recycling and proper disposal. When brand owners are responsible for ensuring their products are re-used or recycled responsibly, and when health and environmental costs are
included in the product price, there is a strong market incentive to design and purchase goods that are durable, easier to recycle, and less toxic.

Yolo County adopted an EPR resolution in 2008, followed by West Sacramento and Winters in 2009 and Davis and Woodland in 2010. Yolo was the second county in the state to have every jurisdiction pass an EPR resolution. The City’s EPR Resolution is found in Appendix D.

Statewide support of EPR resolutions, followed by a state law demanding compliance with EPR guidelines, will ultimately reduce the City’s financial burden for ensuring proper disposal of household hazardous waste, universal waste and other problematic products and packaging.

The EPR resolution does not directly impact the manufacturers or producers of these products. However, the EPR resolution clearly sends a signal that the City cannot afford to finance the disposal of these waste streams and seeks an understanding from producers that they bear some responsibility for the products they produce.

### 7.2 Alternative Policies

Several policy changes are also discussed within this document. These policies are listed below.

#### 7.2.1 Scavenging Ordinance

One issue that has come up several times is the possibility of a stricter scavenging ordinance and enforcement. Currently, CRV materials are being heavily scavenged from customer’s recycling bins. The City receives frequent complaints from customers—residents, multi-family and businesses alike.

According to the City of Davis Municipal Code removing recyclables from the DWR recycling carts and trash bins is considered stealing (see Appendix A).

Scavenging is not just a matter of a few homeless people looking to make a bit of money. It’s becoming an organized black-market recycling system. The City has received calls about people in flatbed trucks stealing recyclables from the curb and from side yards.

The problem is not just limited to Davis. It’s an issue throughout California, which is why Assembly Bill (AB) 1778 was passed. AB 1778 requires scrap yards that buy $100 or more of CRV bottles and cans or $50 or more of newsprint, to document transactions and to pay for these materials by check. AB 1778 was designed to reduce organized recycling theft in California.

Scavengers are not only stealing from DWR, they’re stealing from the residents and business owners of Davis because the revenue generated from the sale of recyclables goes directly back to the rate payers in the form of lower service rates. Recycling service is provided at no extra cost to Davis ratepayers because the revenue from the recyclables subsidizes the cost for the collection. When scavengers steal the recycling, they remove that revenue and cut the funding to the recycling program.

The City created a webpage about scavenging ([Recycling.CityofDavis.org/Scavenging](http://Recycling.CityofDavis.org/Scavenging)) in order to help address citizens’ concerns and allay the scavenger’s claims that the City never advertises the illegality of scavenging. Residents who see someone removing recyclables from a cart or bin are encouraged to:
• Get the license plate number of the vehicle
• Get detailed description of the individual
• Take a picture, if you can and it is safe to do so (send the picture to pwweb@cityofdavis.org)
• Call the non-emergency police number (747-5400) to report the crime

The City does encourage residents to bring their recycling carts out to the curb the morning of their scheduled pick-up instead of the night before to help reduce the likelihood of theft. Customers are also encouraged to remove all CRV containers from your recycling bin and bring them to a recycling center to redeem the CRV themselves.

In order to address the scavenging issue, the City may need to write a stricter ordinance that would administer fines for scavenging. The City Manager’s office received notice of several scavenging issues in March 2011 and has been considering action.

7.2.2 Updating the Waste Reduction Policy and Waste Reduction Procedure

The City has an internal waste reduction policy and waste reduction procedure. The Waste Reduction Procedure is part of the City of Davis Municipal Code (Ordinance No. 1565, Purchase of Recycled Products by the City aka City Municipal Code 15.02.070 Purchase of recycled products, see section 7.1.6 above). Both of these documents need to be updated with current information and increased recycled-content requirements.

7.2.3 Special Event Recycling Requirements

The City may choose to look into requiring recycling at events at City parks and facilities. Currently, any event held at a City park or facility, as part of the facility rental form, is required to indicate their waste management plan. There is an option motioned for recycling, but it is not a requirement. With very little extra effort, it would be possible to require that as part of their event plan submittal, customers indicate how they will collect recycling. Customers may choose to rent the Clearstreams owned by the City, use the recycling bins already in place at City parks and facilities, or use their own bins to collect recyclables during their event. After the event is over, recyclables can be dropped off for free 24/7 at the DWR recycling facility, or if the event is large enough, DWR may be able to provide a few recycling carts for the collected recyclables.

7.2.4 Zero Waste at City Facilities

The City may choose to implement zero waste at all City facilities. Recycling and composting options could be required at all City facilities.

7.2.5 Single-Use Carryout Bag Ordinance

Plastic bags make up 50-60% of the litter at the YCCL and can cause major problems on windy days. The YCCL receives regular citations from County LEA for litter (usually plastic bags) observed during regular inspections. In 2010, YCCL staff estimated that 1,815 hours were spent picking up litter at the YCCL. This equates to roughly $34,000 a year spent for plastic bag litter clean-up costs.
As recommended by the NRC in November 2011, staff has researched and developed an ordinance to restrict the use of single-use carryout bags. The NRC approved the draft ordinance at its March 2012 meeting (see the draft in Appendix G). As of July 2012, fifty different jurisdictions in California have passed similar ordinances.

Key points from the draft ordinance:

- Applies to all grocery, convenient stores, liquor stores, and large drugstores
- Limits the distribution of single-use carryout bags
- Places a 10 cent paper bag-pass-through fee on all paper bags (fee is kept by the retailer)
- Reusable bags may be sold for no less than 10 cents, and cannot be given out for free (except during a time-limited promotion)
- Low income exemptions

The draft ordinance would also restrict the distribution of single-use plastic carryout bags at City facilities and parks unless exempted by the Public Works Director. One such exemption would be the distribution of bags distributed at dog parks for waste pick-up.

One of the most time consuming elements of developing a carryout bag ordinance is compliance with California Environmental Quality Act (CEQA) in order to reduce future legal liabilities. The CEQA process has been highly contentious for this issue, with ten different jurisdictions being sued to date by the Save the Plastic Bag Coalition. Most of the lawsuits have been based on allegations that the jurisdictions did not follow the proper CEQA process. Some of the lawsuits are based on the interpretation of Proposition 26 as it applies to placing fees on paper bags. Staff has met with Californians Against Waste (CAW) on multiple occasions to discuss ordinance language, CEQA documentation requirements, and the potential threat of litigation.

A carryout bag ordinance is a highly charged political item, as can be seen by the number of articles, letters to the editor and other mentions in the local paper, blogs and community websites in Davis since the potential ordinance was first announced in the spring of 2011. Several issues regarding banning plastic bags are outlined below.

The 2008 CIWMB Waste Characterization Study reported that plastic grocery and other merchandise bags make up 0.3% of the overall waste stream, and 0.6% of the residential waste in California (see the figure below). By weight, this equates to 123,405 and 76,760 tons per year, respectively, state-wide.

<p>| Table 7-1 Composition of Grocery and Other Merchandise Bags In the Waste Stream |
|---------------------------------------------|---------------------|---------------------|</p>
<table>
<thead>
<tr>
<th>Material Type</th>
<th>Overall Waste Stream</th>
<th>Commercial Waste</th>
<th>Residential Waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper Grocery and Other Merchandise Bags</td>
<td>0.4%</td>
<td>0.4%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Plastic Grocery and Other Merchandise Bags</td>
<td>0.3%</td>
<td>0.2%</td>
<td>0.6%</td>
</tr>
</tbody>
</table>

The pie chart below shows 2010 DWR collection data on the various waste streams in comparison to the plastic bags component to show the effect of plastic bags on the waste stream in Davis (assuming that plastic bags make up 0.6% of the residential waste stream).
Since plastic bags do not significantly contribute to the amount of waste going to the landfill, a carryout bag ordinance is not a priority item to achieve the City’s 2020 waste reduction target.

Plastic bags at the landfill are blown about by the wind and can contribute to litter. The landfill uses screens to catch litter that is blown by the wind, but some litter escapes these screens. The City of Davis is only one contributor to the material at the landfill. Banning bags in Davis will not alleviate the bag problem at the YCCL unless all the other cities adopt similar laws. At this point in time, none of the other cities in Yolo County, nor the County itself, are pursuing a carryout bag ordinance.

Plastic bags are also an issue for DWR, where they are a litter issue and a nuisance at their recycling facility. DWR’s customers live in and around Davis, banning plastic bags may have a significant impact in litter reduction for DWR.

One of the concerns with banning plastic bags and not paper bags is the potential increase in the amount of paper bags being used, and the possible increase in paper bags going into the landfill. In the City of Manhattan Beach vs. Save the Plastic Bag Coalition, the Court report stated:

"On this record, it is undisputed that the manufacture, transportation, recycling, and landfill disposal of paper bags entail more negative environmental consequences than do the same aspects of the plastic bag “life cycle.”

Since a paper bag weighs more than a plastic bag, the effect of paper bags on the waste stream is more substantial.

Paper bags are accepted for recycling curbside and in all DWR recycling bins. In Davis, plastic bags can only be recycled at grocery stores. This should make it more likely that paper bags will be recycled instead of landfilled.
Plastic bags are not accepted by DWR for recycling. A recycling option does exist however—AB 2449 requires large grocery stores and pharmacies to take back plastic bags for recycling, so residents can bring their plastic bags back to the store for recycling. However, this system hasn’t been very effective. According to CAW, in California, 14 billion plastic bags are distributed annually, and only 3% are recycled.

Attempts to create a state-wide restriction on plastic bags have failed (AB 298 in 2012 and SB 405 in 2012) See Appendix H for the full text of AB 298.

Data from other jurisdictions that have passed similar carryout bag laws show that this is a successful way to encourage reusable bags. Washington DC imposed a 5 cent fee on both paper and plastic single-use bags in 2009. Since then they have reduced single use bags by 80%. According to CAW, each Californian uses an estimated average of 375 plastic bags and 72 paper bags every year. In Davis, that equates to an annual total of approximately 24.6 million plastic bags and 4.7 million paper bags.

The NRC approved staff’s draft carryout bag ordinance in March 2012. At the September 25, 2012 City Council meeting, the Council directed staff to look into re-writing the ordinance to charge a fee for plastic and paper single-use bags. They directed staff to come back to Council early January with an updated draft ordinance.

It is important to note that if the Council does pass a carryout bag ordinance, the ordinance would not likely go into effect until 6 months to 1 year from ordinance adoption. The City could also allow 6 months from implementation for full compliance, as stores adjust their practices and use up their current supply of plastic carryout bags.

### 7.2.6 Expanded Polystyrene Reduction

Polystyrene (PS) resin granules impregnated with a blowing agent (typically pentane) creates “expandable (or “expanded”) polystyrene” (EPS), often called Styrofoam™ (a trademarked form of EPS). Expanding beads fuse together to form the finished product, which is white, and generally made up of 90 to 95% air. EPS is estimated at 0.8% (by weight) of the materials landfilled. However, due to its lightweight nature, its volume is much greater. Small EPS beads are used for cups and containers, medium beads for shape-molded packaging, and large beads for the expanded loose-fill packaging (peanuts). It insulates, is lightweight, and resists moisture. Loose-fill peanuts sold in California that contain recycled material are often colored green.

Polystyrene food packaging is lightweight and aerodynamic, so it is easily blown into gutters and storm drains. Polystyrene is also very brittle, so when littered it quickly breaks into small pieces making cleanup very difficult. Plastic litter is seen as a threat to natural ecosystems. Wildlife may mistake plastic litter for food, and may ingest small or large pieces. The plastic does not break down in their digestive system, but often lingers, leading to reduced appetite, reduced nutrient absorption, and ultimately death by starvation. According to a California Department of Transportation study during 1998–2000, polystyrene represented 15% of the total volume of litter recovered from the storm drains. In 1999, the U.S. Coastal Clean-Up program reported that 2% of the litter picked up was foam cups.

The 2008 Waste Characterization Study commissioned by CIWMB does not specifically call out polystyrene as a material type. Rather it is listed under two different material types:
#3-#7 Other Containers means plastic containers other than sealed containers and #3-#7 buckets of five gallons or less in size, made of types of plastic other than HDPE (high-density polyethylene) or PETE (polyethylene terephthalate) that include boxes, clamshells, jars, bottles, and cartons. Items may be made of PVC (polyvinyl chloride), LDPE (low-density polyethylene), PP (polypropylene), PS (polystyrene), or mixed resins. When marked for identification, these items may bear the number 3, 4, 5, 6, or 7 in the triangular recycling symbol and may also bear the letters PS, PP, PVC, etc. Examples include bakery packaging with hinged lids, hardware and fastener packaging, food containers such as bottles for salad dressings and vegetable oils, flexible and brittle yogurt cups, syrup bottles, margarine tubs, microwave food trays, and clamshell-shaped fast food containers. This type also includes some shampoo containers, vitamin bottles, foam egg cartons, and clamshell-like muffin containers.

Remainder/Composite Plastic means plastic that cannot be put in any other type. These items are usually recognized by their optical opacity. This type includes items made mostly of plastic but combined with other materials. Examples include auto parts made of plastic attached to metal, plastic drinking straws, foam drinking cups, produce trays, foam packing blocks, packing peanuts, cookie trays found in cookie packages, plastic strapping, foam plates/bowls, and new Formica, vinyl, or linoleum.

The chart below shows the portion of the waste stream that these two material types make up (according to the 2008 CIWMB Waste Characterization Study). Note that these material types includes many other items as well, that PS and EPS make up only a portion of the total waste that falls in these categories.

### Table 7-2 Composition of Plastics (including EPS and PS)

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Overall Waste Stream</th>
<th>Commercial Waste</th>
<th>Residential Waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>#3-#7 Other Containers</td>
<td>0.4%</td>
<td>0.4%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Remainder/Composite Plastic</td>
<td>2.8%</td>
<td>4.0%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Total</td>
<td>3.2%</td>
<td>4.4%</td>
<td>2.3%</td>
</tr>
</tbody>
</table>

As of September 2012, more than 60 municipalities in California have passed ordinances or enacted resolutions banning polystyrene foam food service ware.

Potential course of action required for implementing a ban on polystyrene food service ware used or sold in retail stores and restaurants:

- City staff conducts research:
  - Polystyrene environmental effects
  - Polystyrene effects on waste stream
  - Ordinances from other municipalities
  - Sustainable alternatives
  - Data collection on amount of restaurants currently using polystyrene take-out containers
  - Data collection on amount of retail stores selling using polystyrene cups, plates, bowls, etc.
- Draft ordinance language
- Outreach to restaurants and retail stores
  - Request for comments on potential ban
- Refine draft ordinance language
• Approval process  
  o NRC  
  o City Council  
• CEQA documentation/process  
• Outreach to restaurants and retail stores  
  o Request for comments on potential ban  
• Approval process  
  o NRC  
  o City Council  
• Press releases and other outreach

Implementing this alternative would only achieve one of the plan goals. As the amount of EPS in the waste stream is so minimal, removing it from the trash will not significantly decrease the City’s waste generation nor positively affect the City’s progress in reaching its waste reduction target; it may in fact have the opposite effect. If EPS take-out food containers are banned, restaurants may switch to paper ones instead. Food soiled paper take-out containers are not acceptable for recycling, and must either be composted by the resident or thrown in the trash. An increase of paper take-out containers in the trash is a concern since paper take-out containers are heavier, and the waste reduction target is based on weight. Replacing EPS with paper take-out containers may actually increase the City’s waste generation.

One way to counteract this negative affect would be to wait to enact such a ban until a food-scrap collection program is established for all businesses and residents in Davis. With such a program, food scraps and food-soiled paper (such a paper take-out containers) could be collected for composting instead of ending up in a landfill. Another way would be to encourage businesses to use recyclable plastic take-out containers (preferably plastic #1 or #2, which have a high recycling value) instead.

### 7.2.7 Mandatory Recycling

One tactic that has been used in other jurisdictions is to mandate recycling—to require all customers to recycle. There are two main ways to do such a program: to make it unlawful not to have access to recycling, and to make it unlawful to throw recyclables in the trash.

Recently, Governor Jerry Brown signed AB 341, which requires that all commercial customers that generate more than four cubic yards of commercial solid waste per week (and multifamily residential dwellings of five units or more) have access to recycling services. DWR already offers free recycling service to all customers, so this mandate doesn’t change much in Davis. Staff will be working with DWR to make sure that all businesses are in compliance with this new state law.

The more complicated and involved option is banning the placement of recyclables in the trash. Seattle, San Francisco, and Morgan Hill have implemented such laws.

Seattle banned recyclables from the trash in 2006. If more than 10% of a business’s trash was recyclable, the businesses received a warning. After three warnings, businesses can receive a $50 fine. Households do not receive fines, but their trash can be tagged by the hauler with a requested to sort out the recycling before it will be picked up. When this happens their trash will not be picked up until the next week. The first month that the ordinance went into effect, 71 apartments were tagged. This dropped to only 44 by the next month. For single-family residential homes, 227 garbage cans were tagged the first month and only 133 the next month.
San Francisco has a mandatory recycling and composting ordinance that requires all residents and businesses to sort their waste into recycling, composting or trash. The ordinance makes it unlawful to mix recyclables, compostables, or trash, or deposit refuse of one type in a collection container designated for another type. Fines of $100 are given for non-compliance.

It is not clear if this alternative will help achieve the Plan goal of maintaining a high level of customer satisfaction with service. Some customers may appreciate the devotion to diversion that such a law exudes; others may see this as an example of excessive and intrusive government policy. Such a plan, if implemented, would have to be done very carefully and include public concerns. Enforcement is likely to be expensive—more expensive than any fines that are collected—as staff time will be required to monitor recycling bins for contamination.

### 7.2.8 Commercial Trash Compactor Restrictions

As it is identified in section 8, a large percentage of the waste stream in Davis comes from commercial customers. One of the hurdles for businesses to overcome in achieving higher recycling rates, is that it is often too “easy” to throw all their waste in the trash, rather than sorting it out for recycling and composting. Recycling service is free in Davis with regular trash service—therefore, a business can save money by recycling more and throwing out less garbage. Removing trash service options that reduce the financial incentive that recycling offers would be one way to utilize a policy to reduce the amount of trash produced by commercial customers. One such option is restricting the use of trash compactors for commercial customers as a regular trash service option.

Trash compactors offer businesses a low cost method of discarding large amounts of trash. Trash compactors are popular in business parks and areas that generate high volumes of waste. A trash compactor can take large amounts of trash and compact it, necessitating fewer hauls to the landfill, therefore saving in trash hauling costs. However, what the City has observed from areas of town with trash compactors is that recycling rates at these locations are very low. Recycling carts or bins are usually not in the same enclosure as trash compactors—instead, they are placed nearby. Employees at a business that use a trash compactor may not notice the recycling areas if they have not been notified by management that recycling is available. Unlike regular 2-6 yard trash bins, compactors are not likely to fill up as quickly, so employees may not look around for other options to dispose of cardboard or other recyclables.

It may be possible to draft an ordinance that would restrict the use of trash compactors unless an exemplary recycling program is in place at that business. The presence of recycling carts alone would not be enough to qualify as “exemplary” and allow trash compactors, as any business can request recycling carts from DWR for free. The continued use of these recycling carts and evidence of a strong cardboard recycling program would need to be shown before an exemption is made to allow the continued use of a trash compactor.

### 7.2.9 Mandatory Apartment Waste Reduction Programs During Turnover

As noted in section 11, the AMOWRP program has expanded since 2006 to include many apartments. Each year, apartments are invited to participate. Many decline, stating various reasons why—low turnover that year, concerns about scavengers, lack of interest, etc. Staff has placed an artificial limit on the number of participants, a limit of 50 apartment properties, merely due to the amount of time required by this project, and
the limited staffing allowed. Still, staff has never had to turn away apartments from participating due to over enrollment.

Due to the scope of this project and the fact that it is fairly restricted to the end of August (and in some cases, the end of June), there is a great deal of potential to concentrate resources during this time to maximize diversion.

One of the unstated goals with the AMOWRP is to gradually make the program self-sufficient. A certain amount of assistance may be provided during the yearly event, but eventually staff hopes that this program would be something set up and run by the apartment managers themselves, and not City staff. Some apartments have already begun to take steps in this direction. Others opt out of the AMOWRP program, claiming to have their own alternative program in place instead.

One way that would lead to increased involvement and diversion would be to require all apartments of a certain size to participate in some sort of move-out waste reduction program. This could take many forms. Apartments could choose to participate in the AMOWRP; they could set up their own move-out program, or could file for an exemption.

The AMOWRP, as stated above, is limited in its ability to accommodate every apartment property in town; there are too many apartments and staff is too limited to make this a possible option for all apartments to take. The AMWROP could be redesigned slightly so that only the largest apartments may take this option, or the first to sign up for the program each year. Staff could enforce a registration cap of 50 apartments. Any that apply afterwards would be required to set up their own move-out program.

If such an ordinance would be implemented, many apartments would likely set up and manage their own type of move-out program (to meet City minimum standards), where materials are separated for reuse and recycling. City staff could provide assistance in the form of a “how to” guide on setting up a move-out program: electronic copies of fliers and posters, a list of places to take items for reuse and recycling, lists of thrift stores, non-profits, etc. that will collect reused items, etc. Such “do-it-yourself move-out kits” can easily be supplied to all apartments, can be posted on DavisRecycling.org, etc.

Between creating the language for the ordinance, setting up workshops with apartment managers, creating an outreach campaign and getting approval from NRC and City Council, this would be a time-intensive option to set-up. However, as the move-out program has shown, this may be a very effective way to divert a large amount wasted material. As shown in section 11, the AMOWRP has already succeeded in reducing turnover waste by 40% at participating apartments. If this same program was applied at all large apartments in the City, not just the few that participate in the AMOWRP, the waste diversion could be significant.

Mandatory Move-out Waste Reduction Program ordinance would require the following items:

- Drafting of the Ordinance
  - Definitions
  - Exemptions
    - Maybe apartment properties with fewer than 25 units are exempt
  - Requirements
    - Must show proof of participation in a move-out waste reduction program
      - AMOWRP
      - Privately run move-out program
  - Draft outreach plan
7.2.10 Rate Adjustments

There will be a need for solid waste rate adjustments in the future, whether to keep up with landfill tipping fee increases, DWR contract increases or as part of a new solid waste program coming online. These rate adjustments will follow the required Prop 218 process, (see section 9.3 below).

8 Performance Measures

8.1 State-Calculated Diversion

For waste measurement purposes, diversion is any combination of waste prevention (source reduction), recycling, reuse and composting activities that reduces waste disposed at landfills and transformation facilities.

City staff will use the per capita disposal and goal measurement system calculated by CalRecycle for Davis as a measure of performance. The State publishes these numbers every August for the preceding year. CalRecycle’s calculated per capita disposal numbers (the State used to refer to these numbers as diversion) for Davis are shown below.

The CIWMB commissioned a waste characterization study in 2008 to look at the components of the waste stream statewide. Significant tables and figures can be found in Appendix J. The entire study is available on the CalRecycle website, CalRecycle.ca.gov. This study is referenced throughout this document as “2008 CIWMB Waste Characterization Study.”
City of Davis’ 1995-2006 per capita rates are calculated from the per capita disposal target set for Davis by CalRecycle in 2007 and the CalRecycle assigned diversion rates pre 2007. Data from 2007-2009 is provided by CalRecycle.

City of Davis’ 1995-2006 per capita rates are calculated from the per capita disposal target set for Davis by CalRecycle in 2007 and the CalRecycle assigned diversion rates pre 2007. Data from 2007-2009 is provided by CalRecycle.
Figure 8-3 City of Davis Diversion

City of Davis’ post 2006 diversion rates are calculated from the per capita disposal target set for Davis by CalRecycle in 2007. Data from 1995-2006 is provided by CalRecycle.

Comparison of Davis’ Diversion to other jurisdictions:

As the charts above show, the City of Davis is on track with its goal of reaching its year 2020 waste reduction target. However, it is often requested that the City’s CalRecycle calculated diversion or per capital disposal rate be compared to other local agencies. The charts and tables below offer such a comparison. However, it must be noted that CalRecycle itself strictly advises against such comparisons:

Advisory! The per capita disposal rate is a jurisdiction-specific index and cannot be compared between jurisdictions. The per capita disposal rate is used as one of several "factors" in determining a jurisdiction's compliance with the intent of AB 939, and allows the California Department of Resources Recycling and Recovery (CalRecycle) and jurisdictions to set their primary focus on successful implementation of diversion programs. Meeting the disposal rate targets is not necessarily an indication of compliance.


The best way to compare one jurisdiction to another is to look at the generation. The tables and figures below compare the residential and employee waste generation of several jurisdictions.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Auburn</td>
<td>13,410</td>
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<tr>
<td>Berkeley</td>
<td>114,046</td>
<td>3.2</td>
<td>5.1</td>
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<td>3.3</td>
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<tr>
<td>Chico</td>
<td>86,900</td>
<td>6.1</td>
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<td>4.7</td>
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<td>4.7</td>
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<td>Davis</td>
<td>65,915</td>
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<td>Dixon</td>
<td>18,435</td>
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<td>154,594</td>
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<td>104,815</td>
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<td>2.7</td>
<td>2.5</td>
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<td>2.9</td>
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<td>6.5</td>
<td>4.6</td>
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<td>Sacramento</td>
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<td>5.5</td>
<td>4.8</td>
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<td>5.0</td>
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<td>Sacramento County</td>
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<td>5.5</td>
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<td>West Sacramento</td>
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<td>5.9</td>
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<td>5.1</td>
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<tr>
<td>Winters</td>
<td>6,624</td>
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<td>3.9</td>
<td>3.7</td>
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<tr>
<td>Woodland</td>
<td>55,549</td>
<td>6.4</td>
<td>5.9</td>
<td>4.9</td>
<td>4.7</td>
<td>4.3</td>
</tr>
</tbody>
</table>

**Figure 8-4 Comparison of 2011 Residential Generation (Pounds/Person/Day)**

![Graph showing comparison of 2011 residential generation (pounds/person/day)](chart.png)
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Auburn</td>
<td>6,591</td>
<td>10.1</td>
<td>8.4</td>
<td>8.8</td>
<td>11.1</td>
<td>10.9</td>
</tr>
<tr>
<td>Berkeley</td>
<td>61,464</td>
<td>6.9</td>
<td>8.4</td>
<td>7.5</td>
<td>6.2</td>
<td>6.2</td>
</tr>
<tr>
<td>Chico</td>
<td>38,748</td>
<td>12.1</td>
<td>11.5</td>
<td>10.2</td>
<td>11.1</td>
<td>10.6</td>
</tr>
<tr>
<td>Davis</td>
<td>14,265</td>
<td>15.5</td>
<td>14.1</td>
<td>13.5</td>
<td>15.5</td>
<td>12.1</td>
</tr>
<tr>
<td>Dixon</td>
<td>5,182</td>
<td>13.7</td>
<td>11.2</td>
<td>12.4</td>
<td>14.0</td>
<td>13.1</td>
</tr>
<tr>
<td>Elk Grove</td>
<td>26,281</td>
<td>20.2</td>
<td>17.8</td>
<td>14.1</td>
<td>18.9</td>
<td>17.2</td>
</tr>
<tr>
<td>Fairfield</td>
<td>34,403</td>
<td>15.8</td>
<td>15.2</td>
<td>15.6</td>
<td>15.4</td>
<td>13.4</td>
</tr>
<tr>
<td>Folsom</td>
<td>34,759</td>
<td>9.3</td>
<td>8.5</td>
<td>7.8</td>
<td>8.3</td>
<td>7.8</td>
</tr>
<tr>
<td>Galt</td>
<td>3,394</td>
<td>20.8</td>
<td>17.6</td>
<td>17.2</td>
<td>18.9</td>
<td>20.4</td>
</tr>
<tr>
<td>Palo Alto</td>
<td>91,785</td>
<td>4.9</td>
<td>5.1</td>
<td>3.4</td>
<td>2.6</td>
<td>2.6</td>
</tr>
<tr>
<td>Roseville</td>
<td>62,066</td>
<td>9.3</td>
<td>9.0</td>
<td>8.3</td>
<td>8.7</td>
<td>7.9</td>
</tr>
<tr>
<td>Sacramento</td>
<td>288,115</td>
<td>9.3</td>
<td>8.5</td>
<td>7.7</td>
<td>9.0</td>
<td>8.1</td>
</tr>
<tr>
<td>Sacramento County</td>
<td>151,885</td>
<td>18.1</td>
<td>17.2</td>
<td>15.5</td>
<td>17.5</td>
<td>16.4</td>
</tr>
<tr>
<td>San Francisco</td>
<td>539,167</td>
<td>6.2</td>
<td>5.5</td>
<td>4.8</td>
<td>5.0</td>
<td>4.4</td>
</tr>
<tr>
<td>San Jose</td>
<td>341,505</td>
<td>10.6</td>
<td>9.8</td>
<td>9.1</td>
<td>9.8</td>
<td>8.7</td>
</tr>
<tr>
<td>Santa Barbara</td>
<td>53,549</td>
<td>9.1</td>
<td>8.8</td>
<td>8.8</td>
<td>9.2</td>
<td>7.8</td>
</tr>
<tr>
<td>Vacaville</td>
<td>29,166</td>
<td>21.1</td>
<td>19.3</td>
<td>17.1</td>
<td>17.3</td>
<td>15.0</td>
</tr>
<tr>
<td>Vallejo</td>
<td>28,745</td>
<td>18.5</td>
<td>14.3</td>
<td>12.4</td>
<td>12.7</td>
<td>12.6</td>
</tr>
<tr>
<td>West Sacramento</td>
<td>25,073</td>
<td>11.8</td>
<td>11.4</td>
<td>10.1</td>
<td>11.7</td>
<td>10.2</td>
</tr>
<tr>
<td>Winters</td>
<td>1,599</td>
<td>18.0</td>
<td>15.6</td>
<td>18.1</td>
<td>20.5</td>
<td>17.6</td>
</tr>
<tr>
<td>Woodland</td>
<td>19,865</td>
<td>16.4</td>
<td>15.3</td>
<td>13.5</td>
<td>14.0</td>
<td>12.0</td>
</tr>
</tbody>
</table>

Figure 8-5 Comparison of 2011 Employee Generation (Pounds/Person/Day)
8.2 DWR Data

DWR gives the City quarterly reports on the total amount of trash, recycling and compost that they haul. The information from those reports is a very useful tool in monitoring the performance of various recycling programs.

<table>
<thead>
<tr>
<th>Table 8-3 DWR Tonnage Data 2000-2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
</tr>
<tr>
<td>1992</td>
</tr>
<tr>
<td>1993</td>
</tr>
<tr>
<td>1994</td>
</tr>
<tr>
<td>1995</td>
</tr>
<tr>
<td>1996</td>
</tr>
<tr>
<td>1997</td>
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<td>2003</td>
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<td>2004</td>
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<td>2005</td>
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<tr>
<td>2006</td>
</tr>
<tr>
<td>2007</td>
</tr>
<tr>
<td>2008</td>
</tr>
<tr>
<td>2009</td>
</tr>
<tr>
<td>2010</td>
</tr>
<tr>
<td>2011</td>
</tr>
<tr>
<td>2012</td>
</tr>
</tbody>
</table>
**Figure 8-6 2012 DWR Collection (by Tonnage)**

- **Roll-Off Boxes**: 12.3%
- **Recycling**: 13.5%
- **Yard Materials**: 23.1%
- **Commercial Food Scraps**: Collected 0.4%
- **Inerts (concrete, soil, etc.)**: 2.7%
- **C&D**: 0.6%
- **Residential Garbage**: 24.3%

**Table 8-4 2012 DWR Collection By Material Type**

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Tons</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recycling</td>
<td>7,062.78</td>
<td>13.5%</td>
</tr>
<tr>
<td>Yard Materials</td>
<td>12,038.27</td>
<td>23.1%</td>
</tr>
<tr>
<td>Commercial Food Scraps</td>
<td>234.38</td>
<td>0.4%</td>
</tr>
<tr>
<td>Inerts (concrete, soil, etc.)</td>
<td>1,388.35</td>
<td>2.7%</td>
</tr>
<tr>
<td>C&amp;D</td>
<td>301.7</td>
<td>0.6%</td>
</tr>
<tr>
<td>Residential Garbage</td>
<td>12,700.78</td>
<td>24.3%</td>
</tr>
<tr>
<td>Commercial Garbage</td>
<td>12,019.15</td>
<td>23.0%</td>
</tr>
<tr>
<td>Roll-Off Boxes</td>
<td>6,421.85</td>
<td>12.3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>52,167.26</td>
<td>100%</td>
</tr>
</tbody>
</table>
Figure 8-7 Residential Recycling and Garbage Collected by DWR

Figure 8-8 Commercial Recycling and Garbage Collected by DWR
**Figure 8-9 Plastics Collected for Recycling by DWR**

**Figure 8-10 Yard Materials Collected by DWR**
These numbers have visibly dropped since 2006, largely due to the success of the AMOWP, the C&D Diversion Ordinance, the C&D sorting facility at the YCCL and due to the economy.
This data shows the tonnage of DWR drop boxes from July to September that are sent to the landfill. Essentially, this shows data from apartment turnover, as well as other wastes. The significant drop in waste since 2006 can be partially attributed to the AMOWRP.

### 8.3 Percentage Participation in Programs

The City will also measure performance by tracking and quantifying participation in City programs. This will be determined by a variety of ways: sign-up sheets at classes, head counts at events, cart-set-out rates on collection days, etc.

### 8.4 Utility Rates for Solid Waste

The long range plan for meeting solid waste reductions will have an impact on future solid waste rates because a large portion of costs for solid waste disposal are fixed. Part of the solid waste challenge over time will be to meet long-range state mandated recycling goals while maintaining reasonable solid waste rates. Rate impacts can be managed by evaluating solid waste disposal service levels and costs, and structuring services to minimize cost impacts. The City will consider solid waste rates in measuring performance.

### 8.5 Comparisons to Other Agencies

The City has looked at its performance as compared to other agencies to measure program success. Comparing per capita disposal numbers, solid waste rates, participation rates and other program data to other agencies will give another perspective on the City’s overall performance. See Appendix L for some comparisons.

---

### 9 Solid Waste Rates and Funding

#### 9.1 Existing Conditions

##### 9.1.1 Past and Current Rates, and Rate Structure

All properties within the City are required to subscribe to solid waste collection and handling services provided by DWR. The franchise agreement with DWR establishes rates for solid waste services, which are passed on to property owners within the city. In addition, the City utilizes the solid waste rates to cover administrative and operational costs for its sanitary and refuse services, including its recycling program, and to maintain the State mandated per capita disposal target.

On average, the City collects about $9 million per year for the solid waste fund with the expenditure breakdown as follows:

- 85% to DWR for garbage, yard material and recycling services
- 7% to DWR for street sweeping service
- 4% for billing and other inter-City department costs
- 4% for City’s solid waste program (materials, outreach and staff time).

Solid waste rate increases cover the increasing cost of garbage, recycling and yard material collection, and street sweeping service.

See Appendix L for a comparison of solid waste rates for single-family garbage service in Davis and other jurisdictions.

Over the past 16 years, solid waste rates have averaged a 2.23% yearly increase. However, as the table below shows, this has not been a regular steady increase, but rather a fluctuating series of increases.

<table>
<thead>
<tr>
<th>Year</th>
<th>DWR Increase</th>
<th>City Rate Increase</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>0.00%</td>
<td>0%</td>
<td>0.00%</td>
</tr>
<tr>
<td>1999</td>
<td>2.61%</td>
<td>0%</td>
<td>2.61%</td>
</tr>
<tr>
<td>2000</td>
<td>0.00%</td>
<td>0%</td>
<td>0.00%</td>
</tr>
<tr>
<td>2001</td>
<td>4.23%</td>
<td>8.84%</td>
<td>-4.61%</td>
</tr>
<tr>
<td>2002</td>
<td>4.42%</td>
<td>0%</td>
<td>4.42%</td>
</tr>
<tr>
<td>2003</td>
<td>3.47%</td>
<td>3.17%</td>
<td>0.30%</td>
</tr>
<tr>
<td>2004</td>
<td>1.99%</td>
<td>0%</td>
<td>1.99%</td>
</tr>
<tr>
<td>2005</td>
<td>1.53%</td>
<td>6.68%</td>
<td>-5.15%</td>
</tr>
<tr>
<td>2006</td>
<td>1.73%</td>
<td>4.61%</td>
<td>-2.88%</td>
</tr>
<tr>
<td>2007</td>
<td>2.52%</td>
<td>1.87%</td>
<td>0.65%</td>
</tr>
<tr>
<td>2008</td>
<td>3.08%</td>
<td>2.27%</td>
<td>0.81%</td>
</tr>
<tr>
<td>2009</td>
<td>2.44%</td>
<td>1.80%</td>
<td>0.64%</td>
</tr>
<tr>
<td>2010</td>
<td>2.16%</td>
<td>0%</td>
<td>2.16%</td>
</tr>
<tr>
<td>2011</td>
<td>1.39%</td>
<td>3.01%</td>
<td>-1.62%</td>
</tr>
<tr>
<td>2012</td>
<td>2.36%</td>
<td>0%</td>
<td>2.36%</td>
</tr>
<tr>
<td>Average</td>
<td>2.26%</td>
<td>2.15%</td>
<td>0.11%</td>
</tr>
</tbody>
</table>

9.1.2 Revenue Requirements and Reserves

The current contract with Davis Waste Removal is built around landfill disposal fees and annual Consumer Price Index adjustments (transportation costs). On average, the City increases payments to DWR 2-3% annually, but in the past have not implemented regular rate increases to the customer (see table 8-1). This policy of non-uniform rate increases is not sustainable.

A regular yearly increase of 2-3% to the customer is more in sync with the contract and reflects real world costs. At present, the City does not have a reserve policy or plan for the solid waste fund. This is not a fiscally responsible way of dealing with such a major utility. It is important to establish priorities, policy and reserve requirements for the different financial requirements of the solid waste fund. It is recommended that the City develop a solid waste fund reserve policy that will be discussed as part of the June 2013 rate discussion for the 2013-2014 rate adjustments.
The table below shows unfunded reserves needed in the Solid Waste Fund. These reserves are discussed in detail below.

### Table 9-2 Solid Waste Fund Reserve Needs

<table>
<thead>
<tr>
<th>Reserve</th>
<th>Amount Required</th>
<th>Amortized Over</th>
<th>Min. Reserve Requirement</th>
<th>Current Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old Davis Landfill Closure</td>
<td>$5,000,000</td>
<td>20 years</td>
<td>$250,000</td>
<td>$0</td>
</tr>
<tr>
<td>YCCL Tipping Fees</td>
<td>$120,000</td>
<td>5 years</td>
<td>$24,000</td>
<td>$0</td>
</tr>
<tr>
<td>CalRecycle Grant Funds</td>
<td>$35,000</td>
<td>2 years</td>
<td>$17,500</td>
<td>$0</td>
</tr>
<tr>
<td>Penalties/Fines</td>
<td>$90,000</td>
<td>5 years</td>
<td>$18,000</td>
<td>$0</td>
</tr>
<tr>
<td>Storm</td>
<td>$50,000</td>
<td>5 years</td>
<td>$10,000</td>
<td>$0</td>
</tr>
<tr>
<td>Transportation Mitigation Fee</td>
<td>$1,500,000</td>
<td>15 years</td>
<td>$100,000</td>
<td>$0</td>
</tr>
<tr>
<td>Franchise Tax (2-15%)</td>
<td>$192,000 - $1,400,000</td>
<td>5 years</td>
<td>$40,000 - $216,000</td>
<td>$0</td>
</tr>
<tr>
<td>Hazardous/Disaster Waste</td>
<td>$35,000</td>
<td>5 years</td>
<td>$7,000</td>
<td>$0</td>
</tr>
<tr>
<td>Emergency Garbage Service</td>
<td>$700,000</td>
<td>5 years</td>
<td>$140,000</td>
<td>$0</td>
</tr>
<tr>
<td>Total</td>
<td>$7,530,000</td>
<td></td>
<td>$782,500</td>
<td>$0</td>
</tr>
</tbody>
</table>

Old Davis Landfill Closure—The largest reserve needed is to manage closing costs of the Old Davis Landfill. The Old Davis Landfill is located just north of the City on County Road 102. At this time, the landfill is being used as a shooting range and go-cart track. If the City were to need or use that land for other urban purposes, such as housing, commercial, etc., the landfill would have to undergo an extensive environmental documentation, clean-up, and management process before development can occur.

YCCL Tipping Fees—At this time, tipping fees are generally raised marginally each year. However, it is not unheard of for tipping fees to jump much higher. The City has a 20 year tipping fee contract with the County that was signed in 2009. The contract has automatic tipping fee increases based on the consumer price index (CPI) or 3%, whichever is lower. See the table below for recent tipping fees. This fund is recommended to be built up over 5 years, starting with June 2013 rates. Local tipping fees are also a potential pass through mechanism for the State to recover revenues associated with meeting its long term Integrated Waste Management and Climate Action Plan objectives.
The Integrated Waste Management Account Disposal Tipping Fee is a state-wide tipping fee for all landfills. This fee is used to fund CalRecycle and many of its programs. CalRecycle’s current maximum tipping fee of $1.40 per ton took effect on July 1, 2001. State law AB 1220 currently caps the tipping fee at this level. In the past, attempts to raise the tipping fee have been defeated (e.g., AB 1610, Nunez in 2007). Due to successful waste reduction and recycling programs statewide, increased diversion has meant a loss in revenue for CalRecycle. The State may seek to supplement revenue by increasing their tipping fee. Depending on the amount of this increase, it may have a substantial effect on the overall tipping fees at the YCCL.

CalRecycle Grant Funds—As mentioned in 13.1.4 below, the City receives grant funds from the State which it uses for various recycling programs. If the State were to cease these grant programs, the City would need to find a way to fund those same recycling programs through the Solid Waste Fund.

Penalties/Fines—A reserve is also needed in case of any penalties or fines that the City receives for solid waste issues. AB 939 comes with a fine of $10,000 per day for jurisdictions that are found to be non-compliant.

Storm—A storm reserve is needed for maintaining storm water quality over time in the absence of current DWR street sweeping practices.

Transportation Mitigation Fee—This is required to help pay for the cost to the City’s streets and transportation infrastructure due to wear and tear on the roads from DWRs heavy garbage and recycling equipment. The heavy garbage trucks, recycling trucks, and especially the yard material claw, place a wear and tear strain on the City’s pavements and transportation infrastructure.

Franchise Tax Reserve—This reserve is needed for uncollected revenues associated with normal franchise taxes collected by local governments.

Hazardous/Disaster Waste—A reserve is needed for hazardous waste and disaster waste. This reserve would pay for clean-up costs in the event of a hazardous waste spill in the City, or waste from a natural disaster. Davis is on the Interstate 80 corridor and on a major passenger and freight railway hub. In the event of a large spill, a
minimum of $35,000 built up over 5 years will be required to mobilize clean-up efforts in coordination with other agencies.

Emergency Garbage Service—A reserve is needed to provide emergency garbage service to customers in the event that DWR is not able to perform its duties with short term notice.

### 9.1.3 Past and Current Solid Waste and Recycling Program Budget

<table>
<thead>
<tr>
<th>Table 9-4 City Solid Waste Program Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>City Programs</td>
</tr>
<tr>
<td>Inter-Departmental Transfers</td>
</tr>
<tr>
<td>DWR Payments for Street Sweeping</td>
</tr>
<tr>
<td>TOTAL</td>
</tr>
</tbody>
</table>

*Some inter-departmental data not included/available.

**$520,372 is estimated

Due to a decrease in program spending the past few years and an increase in solid waste rates in FY 2011-2012, the City has already begun to build up some amount of reserve fund balance for the Solid Waste Fund.
### Table 9-5 Number of Full Time Recycling Program Staff by Jurisdiction, as of January 2012

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>2010 Population</th>
<th>Full Time Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auburn</td>
<td>13,300</td>
<td>0.5</td>
</tr>
<tr>
<td>Chico</td>
<td>86,103</td>
<td>1</td>
</tr>
<tr>
<td>Davis</td>
<td>65,547</td>
<td>1.2</td>
</tr>
<tr>
<td>Elk Grove</td>
<td>152,925</td>
<td>3</td>
</tr>
<tr>
<td>Fairfield</td>
<td>104,249</td>
<td>1</td>
</tr>
<tr>
<td>Folsom</td>
<td>72,201</td>
<td>2</td>
</tr>
<tr>
<td>Galt</td>
<td>23,641</td>
<td>1</td>
</tr>
<tr>
<td>Roseville</td>
<td>118,233</td>
<td>1</td>
</tr>
<tr>
<td>San Francisco</td>
<td>804,989</td>
<td>11</td>
</tr>
<tr>
<td>Santa Barbara</td>
<td>88,741</td>
<td>6.75</td>
</tr>
<tr>
<td>West Sacramento</td>
<td>48,597</td>
<td>1.5</td>
</tr>
<tr>
<td>Winters</td>
<td>6,618</td>
<td>0.1</td>
</tr>
<tr>
<td>Woodland</td>
<td>55,362</td>
<td>3.5</td>
</tr>
</tbody>
</table>

### 9.1.4 Grants Received

The City receives grant funding through CalRecycle. The two main grant funds are from the City/County Payment Funds and the Oil Payment Program (OPP) (formerly the Used Oil Black Grant (UBG)). These funds are used for outreach and to support various recycling programs, however, these funds are not guaranteed. As history has shown, when the state has budget troubles, the grant funds are not given out, or are severely reduced. Therefore, the City does not use these funds to run or pay for any standing program. This ensures that if the grant funding were to go away, none of the City’s programs would have to end.

Pursuant to Public Resources Code Section 14581(a)(4)(A) of the California Beverage Container Recycling and Litter Reduction Act, CalRecycle distributes funds to eligible cities and counties specifically for beverage container recycling and litter cleanup activities. These funds come in several forms—an annual City/County Payment Fund and competitive grants. The goal of CalRecycle’s beverage container recycling program is to reach and maintain an 80% recycling rate for all California Refund Value (CRV) beverage containers—aluminum, glass, plastic and bi-metal. These funds may only be used to assist in reaching and maintaining this goal.

The table below shows the history of the City/County payment funds received by Davis. Due to the state’s budget crisis, funds were restricted in FY 2009-2010.

### Table 9-6 City/County Payment Funds Received by the City of Davis

<table>
<thead>
<tr>
<th>Grant</th>
<th>FY 2011-2012 Funding</th>
<th>FY 2010-2011 Funding</th>
<th>FY 2009-2010 Funding</th>
<th>FY 2008-2009 Funding</th>
<th>FY 2007-2008 Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>City/County Beverage Container Payment Fund</td>
<td>$17,950</td>
<td>$17,664</td>
<td>$8,169</td>
<td>$17,035</td>
<td>$17,165</td>
</tr>
</tbody>
</table>
The City/County payment funds pay for most of the City’s recycling outreach—recycling guides, brochures, recycling calendars, advertisements, recycling bins, etc. All purchases must be approved by CalRecycle.

The state also gives grant funding to develop and maintain used oil and filter collection programs. These OPP and UBG payments are awarded annually to local governments. Funding is determined on a per capita basis. The City typically uses these funds to purchase oil drain pans, rags, funnels, cardboard mats, local advertisements, recycling calendars, and recycling guides. Materials are given to “Do-It-Yourselfers” (DIYers) to assist in collecting and transporting used oil to a recycling center (see 9.1.3 for more information on this program). The table below shows current and past funding by UBG and OPP payments.

<table>
<thead>
<tr>
<th>Grant</th>
<th>OPP3</th>
<th>OPP2</th>
<th>OPP1 and OPP1A</th>
<th>UBG 15</th>
<th>UBG 14</th>
<th>UBG 13</th>
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<tbody>
<tr>
<td>Amount</td>
<td>$18,504</td>
<td>$19,311</td>
<td>$21,164</td>
<td>$8,910</td>
<td>$16,692</td>
<td>$16,751</td>
</tr>
<tr>
<td>Grant Duration</td>
<td>June 2014</td>
<td>June 2013</td>
<td>June 2012</td>
<td>June 2012</td>
<td>June 2011</td>
<td>June 2010</td>
</tr>
</tbody>
</table>

In February 2011, Governor Brown placed restrictions on all state spending, including the spending of grant funds and eliminated the use of funds for “S.W.A.G” items (Stuff We All Get). This executive order means that the City can no longer purchase “give away” items with State grants, including, but not limited to, magnets, key chains, calendars, pencils, pens, tee-shirts, etc.

The City occasionally applies for other grant funding, such as the Beverage Container Recycling grant, a statewide competitive grant. The City received two of these grants in 2007 (Beverage Container Recycling Grant and Low Income Multi-Family Grant), totaling $95,575. These grants are very competitive and are only given out for specific projects; the City received these grants to fund the iBIN Recycling Program. They both include an extensive application, quarterly reporting and documentation.

The City could apply for a competitive beverage container grant again in the future, but would need a specific, unique and worthy project in order for the State to consider funding. Staff has considered applying for funding to purchase more recycling bins for the downtown, parks and greenbelts, but since we already have some recycling containers in these areas, it is unlikely that the State would consider this to be a “worthy” project. All projects must be specifically related to increasing the amount of CRV collected for recycling—a project that increased paper, electronics, plastic bags, or EPS recycling would not be eligible for these grants.

### 9.2 Evaluation of Alternatives

#### 9.2.1 Single-Family Variable Can Rate Structure

Currently, single-family residential customers can request a 35, 65 or 95 gallon garbage cart. The cart size may be switched once per year without a fee; additional switches are charged a fee. The figure below shows the breakdown of current garbage cart sizes being used by single-family residents in Davis as of July 31, 2012.
Popular among municipalities with higher landfill and/or solid waste transportation costs, is a “Pay As You Throw” or a variable can rate structure which charges customers by the size of the garbage carts or by the weight of the trash.

There are a number of reasons to consider a single-family variable can rate structure:

- Environmental sustainability: encouraging decreased waste generation.
- If City-wide food scrap collection is in place, most waste items would be acceptable for recycling or composting, reducing the amount of trash going into a garbage cart significantly.
- Social engineering: provide people with a smaller sized garbage cart, they will generate less waste (this idea of “right sizing” a garbage cart is based on today’s world of extensive recycling programs, composting options and reducing waste).
- Equitable billing: should customers who generate less waste pay the same as customers who generate more? Some argue that those who generate more waste should pay more for the additional recycling outreach required to shift behavior.
- It can be the most effective single action to increase diversion
- It is already implemented by majority of California jurisdictions
- Supported by both EPA and Calrecycle

There are some concerns with switching to a single-family variable can rate structure:

- Contamination of Recyclables – Many cities have reported increased contamination as a result of switching to variable rates; when customers are confronted with a full garbage container, they will put excess garbage in the recycling container. This has a negative impact on the quality of the recycled material. San Jose went from a 5% contamination rate to about 30% contamination when they switched to cart service. Alternatively, San Diego has 96 gallon cart service for garbage, recycling and yard waste and has less than 5% contamination in the recycling carts.
- Increased Administrative Requirements – Variable can rates require changes to billing systems to accommodate and manage the multiple service levels.
• Increased Costs – There are certain additional costs associated with variable can rates including container costs (for both new containers and the larger associated container inventory) and administrative costs, including costs related to the transition to variable can rates, ongoing updating of billing records and costs associated with cart exchanges for customers that change service levels.
• Rate Equity – If rates for larger containers are set at a level above the associated cost, accounts with larger service larger volumes will be subsidizing accounts with smaller service volumes.
• Illegal Disposal. Variable rates not only incentivize waste reduction, but may also create an incentive to dispose of waste illegally.

Other considerations in switching to a single-family variable can rate structure:

• Outreach campaign required to target customers who downsize their trash, addressing the necessity of separating out recyclables to prevent customers from placing excess trash in their recycling carts.
• Requires updates to current DWR contract.
• Need to give DWR adequate time to order and distribute new garbage carts.
• Consider setting the default customer size at 65 gallons.

In December 2009, a variable can rate study was conducted in Davis. The study just looked at landfill disposal fees and did not take into account other factors, such as the added costs of ordering, storing, maintaining parts for 3 different cart sizes, or the increased administrative costs for maintaining different customer classes. The study made the following findings:

• The weight of trash in both the 35 and 65 gallon carts was fundamentally the same.
• 95 gallon carts contained averaged only 10 more pounds than the 35 gallon cart.
• The difference in the disposal cost between a 35 gallon cart and 95 gallon cart was only $0.83.

The study concluded that at the time, it did not make sense for the City to adopt a variable can rate because the cost of administering such a program would negate any savings realized. See Appendix K for the full variable can rate study.

A rate study done in 2009 showed that Davis’ 95 gallon cart flat rate was 30% below the average of other communities and 36% below the rate average of cities with variable can rates. A 2008 comparison of pounds landfilled per person per day showed Davis’ 3.3 lbs. per person per day is 30% below the average of other communities and 32% below cities with variable rates. The statewide average was 5.1 lbs. per person per day.

At the request of the NRC in the fall of 2011, City staff revisited variable can rate structures, this time comparing per capita disposal rates of communities with and without variable can rate structures (see Appendix L). Cities without variable can rate structures ran the gamut of per capital disposal, some were higher and some were lower than cities with variable can rate structures.

In the spring of 2013, staff worked with R3 Consulting Group to serve as the City’s solid waste rate consultant and assist with the development of rate structure options for the FY 2103-2014 rate process. R3 looked at whether or not the City should implement a residential variable can rate, and if so how the rate should be structured and when it should be implemented. The following information was considered in developing the residential rate structure options:

• Annual revenue requirements from the residential user class including expected increases in Contract
- Waste Hauler and Landfill fees;
- The costs of providing weekly solid waste services;
- Expected changes in customer behavior dependent on rate structure design;
- Expected increases in administrative and service costs dependent on rate structure; and
- Potential impact on future City diversion rates.

The entire report is found in Appendix S. The R3 study came to these findings:

- Switching to variable can rates will increase overall costs to the City.
- The cost of service rate structure will likely have little impact of diversion due to the small rate differential.
- A larger rate differential may increase diversion, but the City is not likely to realize the same increase in diversion as other jurisdictions that have implemented variable can rates due to its preset higher diversion rates.
- If City wishes to implement variable can rates:
  - It would be best to do so in conjunction with a containerized green waste and residential organics program.
  - It should consider a 20-gallon cart option and mandatory recycling and/or organics diversion ordinance.

City Council will consider switching to a single-family variable can rate in June 2013 as part of the Proposition 218 rate process.

It is important to note the time required under the Proposition 218 process for rate changes. After approval of the rate structure, the City would need to prepare and send a Public Hearing notice to customers. The notice must be mailed 60 days before the Public Hearing date. At the Public Hearing (which occurs during two City Council meetings) the rate change must be read twice (September 2013); Council can vote to approve the rate change after the second reading. Forty five days after the approval the rates can go into effect (December 2013). This same process would be repeated with every rate change that is required.

- Council approves rate structures—July 2013
- Council approves Prop 218 Notice—July 2013
- Council approves rates—September 2013
- Direct mail to residential customers for cart pre-order—October 2013
- New rates go into effect—December 1, 2013
- DWR begins to deliver carts—December 2013

An alternative to the standard variable can rate schedule is a case rate schedule, where residents are charged a base service rate that covers administration costs, program costs, and the cost to have the solid waste trucks stop at each house. Additional rates are added for recycling, compost and trash disposal/processing services. This type of rate structure also avoids one of the major pitfalls of variable can rate systems—loss of revenue source. With solid waste rates based solely on how much trash a resident throws away, in theory residents could diverting so much material away from the garbage that there is no longer enough revenue collected to pay for the recycling and composting of the other wastes. By ensuring that all collection streams are budgeted for in the rate system, this is not a problem. It is also an equitable system—those with more trash, pay more for trash service. Residents that have more recyclables pay for more recycling service, etc. Residents that reduce waste
and compost their own materials are rewarded by lower service rates. See Appendix P for alternative rate structures.

9.3 Projected Solid Waste Rates

Solid waste rates are based on CPI adjustments to DWR and YCCL tipping fees. The CPI adjustment is based on fuel and transportation costs, while the YCCL tipping fees is based on landfill operational costs. The chart below shows a base rate projection assuming a 3% annual increase, actual rates will be based on deviation base rate assumptions and City policy decisions that could affect the future rates. Future rate risk factors include high inflation rates and the State increasing fees that impact local solid waste costs and rates.

![Figure 9-3 Projected Monthly Single-Family Solid Waste Rates Through 2020](#)

Changes to the DWR fleet from diesel to CNG would help stabilize the transportation costs. YCCL is looking to expand their operations to become a resource recovery park by the year 2014. The City will pursue a multi-year solid waste rate plan once more information is known about the City’s preferred long-term composting solution.

9.3.1 One and Five Year Rate Recommendations

Typically, the City issues single-year rate increase notices. However, the City may consider at a 5-year rate increase for solid waste in 2013. There are several beneficial reasons for the City to consider multi-year rate increases at this time:

- Adopting a multi-year rate plan would position the City to secure the best available financing and grant funding opportunities to fund large capital improvement projects.
- Identifying a reliable revenue plan would benefit the City by cost-effectively planning and implementing its other capital improvement projects related to repair and replacement of the current utility infrastructure.
- Provide customer with a certainty of maximum utility rates over the next five years.
9.3.2 Proposition 218 Notice Schedule

Proposition 218 (Prop 218) was approved by State voters in 1996 and requires that the City give notification to all property owners of rate increases on most utilities. This notification takes the form of a mailing that includes the proposed rate, reasons for the rate increase, information on the public hearing, and instructions for those who wish to protest the rate increase. If the majority of property owners protest the rate increase, then the rate increase could not be implemented.

The City typically has a public hearing for rate increases in September. At that time, the Council opens the public hearing and considers any public testimony protesting the proposed rate increases. The Council considers taking an action to adopt the actual rates two weeks later. Per Prop 218 process, notices must be mailed at least 60 days before the hearing. Rates must be approved by City Council 45 days prior to their effective date.

<table>
<thead>
<tr>
<th>Action</th>
<th>Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>City Council Prop 218 Approval of Prop 218 Mailer</td>
<td>July 9, 2013</td>
</tr>
<tr>
<td>Proposition 218 notice mailed</td>
<td>June 26, 2013</td>
</tr>
<tr>
<td>Protest Hearing - Ordinance introduced</td>
<td>September 10, 2013</td>
</tr>
<tr>
<td>Council action on rates - Ordinance Adopted</td>
<td>September 24, 2013</td>
</tr>
<tr>
<td>Rates become effective</td>
<td>December 1, 2013</td>
</tr>
</tbody>
</table>

10 Recycling

DWR trucks bring recyclables collected from all the recycling carts in the City to their recycling center at 2727 2nd Street in Davis. Here the material is placed on conveyor belts. Magnets remove the ferrous metals and workers sort through the rest of the material by hand. There are two separate sorting lines: one for paper, one for plastics, glass and metals. See Appendix M for pictures of the sorting at DWR.

10.1 Materials Collected by DWR

See the figure below for a history of the materials accepted for recycling by DWR.
Davis has a dual-stream recycling system: paper is collected separately from containers (glass, metals and plastic). This preserves the quality of the paper, as it does not get contaminated with liquids and other contaminants often found in used containers.

The materials currently accepted by DWR for recycling with paper include:

- Junk mail
- Magazines
- Cereal boxes
- Catalogs
- Envelopes
- Shoe boxes
- Gift boxes
- Wrapping paper
- Paperboard egg cartons
- Receipts
- Small cardboard boxes
- Phone books
- Office and copy paper
- Color paper
- Notebook paper
- Paper bags
- Newspaper
- Paper towel & toilet paper tubes
- Paper advertisements

Staples and glassine windows are okay, but paper clips and clasps should be removed. Bindings must be removed from paperback and hardback books. Large cardboard boxes must be flattened and stacked outside of the recycling cart.

Cardboard is acceptable for recycling when all packing materials (packing peanuts, etc.) has been removed. Cardboard should be flattened and stacked next to recycling carts (or place in cardboard bin, if present). Small pieces can be placed in the recycling cart with paper.

All containers must be empty with the lids removed (lids can be placed in the recycling cart). Paper or plastic labels are OK. Plastics glass and metals accepted in the recycling carts include:
- Rigid plastics #1-#7
- Plastic caps and lids
- Plastic toys
- Plastic laundry baskets
- Plastic crates
- Plastic buckets
- Plastic flower pots
- Plastic nursery trays
- Plastic garbage cans
  - plastic containers
- children’s outdoor plastic toys (slides, sandboxes, play kitchens, etc.)
- metal caps

- CD and DVD cases
- CDs and DVDs
- Disposable plastic utensils
- Large reusable plastic water bottles
- Clean PVC pipe (no dirt)
- Plastic furniture
- Other miscellaneous rigid plastic items
- Aluminum cans
- Tin/steel cans
- empty aerosol
  - glass food jars (all colors are OK)
- Glass beverage bottles (all colors are ok)
- Aluminum foil

These items should NOT be placed in the recycling carts:

- Photographs
- Blueprint paper
- Light bulbs/tubes
- Window glass
- Glass dish ware
- Porcelain/ceramic
- Plastic bags
- Plastic film & wrap
- Expanded polystyrene
- Styrofoam \textsuperscript{TM} brand foam
- Packing peanuts
- Disposable foam food containers
- Pizza boxes with grease or food stuck to them
- Electronics
- Garden hoses & tires
- Compostable “plastic” items (corn or potato starch, etc.)
- Scrap metal
- Juice boxes
- Milk cartons
- Paper towels & tissues
- Plastic & wax coated paper
- Mylar paper & mylar plastic
- Carbon & thermal fax paper
- Waxed cardboard

10.2 Drop-Off Recycling Services

DWR recycling center at 2727 2\textsuperscript{nd} Street also offers free drop-off recycling 24 hours a day, 7 days a week for all these materials:

- Cardboard
- Plastics #1-#7
- Rigid plastics
- Aluminum cans
- Tin foil
- Paper
- Glass bottles
- Steel cans
- Scrap metal
- Used motor oil and oil filters

DWR also offers CRV buyback Monday – Friday from 9:30 a.m. to 2:00 p.m. and Saturday from 8:00 a.m. to 4:00 p.m.
Drop-off recycling is available for select materials elsewhere in the City as well. A few such options are listed below:

- Grocery stores and large pharmacies collect plastic bags for recycling (as required by AB 2447)
- CRV beverage containers can be redeemed at these locations:
  - Davis Waste Removal, 2727 2nd St.
  - TOMRA Pacific Inc. at Save Mart, 1900 Anderson Rd.
  - V. Lopez Recycling, 400 Mace Blvd.
- Printer cartridges are collected by several non-profit groups, the schools and many others.
- Cell phones can be recycled at any store that sells cell phones

### 10.3 Expansion of Materials Accepted

One alternative to consider is to expand the list of items acceptable for recycling.

#### 10.3.1 Expansion of Materials Accepted in Recycling Carts

As listed above, there are several types of materials that are not accepted for recycling in the recycling carts. Items that currently have recycling markets are discussed below.

Electronics are not recommended for collection in recycling carts as they can be damaged in collection and transport, releasing hazardous chemicals. Electronics are best suited for drop-off recycling program, not automated collection in recycling carts. Electronics are discussed in further detail in section 12.

Plastic bags and other clean plastic film could potentially be collected for recycling, but when co-mingled with other recyclables, the plastic film is easily contaminated by liquid wastes during collection, giving the material a very low recycling value. Contaminated plastic film does not have a stable recycling market.

Expanded polystyrene (EPS) does have a recycling market, although not a very reliable or profitable one. Collecting EPS curbside is not a viable option as the material gets dirty when mixes with other recyclables and renders it unacceptable for most recycling markets.
Cartons, such as milk cartons and juice boxes do have a recycling market available. Refrigerated cartons, such as milk cartons, are mostly paper, with layers of plastic on the inside and outside. Shelf-stable cartons, such as juice boxes, are paper cartons lined with plastic, with a layer of aluminum and another layer of plastic on the inside. The Carton Council, a group of carton manufacturers that assist in setting up recycling markets and systems for cartons, has expressed interest in setting up a market in the Sacramento area. The Carton Council estimates that cartons make up 0.5% of the residential waste stream. The 2008 CIWMB Waste Characterization Study listed cartons under “All Other Remainder/Composite Paper” which makes up 4.5% of the total waste stream:

All Other Remainder/Composite Paper means items made mostly of paper but combined with large amounts of other materials such as wax, plastic, glues, foil, food, and moisture, that also are not packaging for items other than food. Examples include some waxed or plastic-impregnated corrugated cardboard (common for packaging produce or seafood), aseptic packages, plastic-coated paper milk cartons, waxed paper, tissue, paper towels, blueprints, sepia, onion skin, fast food wrappers, carbon paper, self adhesive notes, and photographs.

It may be possible to upgrade the sorting system at the DWR sorting facility to add another sorting station so that another material can be pulled off the sorting line and separated for recycling. However, cartons exist in such small amounts in the waste stream as to make collection cost prohibitive, especially due to the small size of Davis. Larger jurisdictions may be able to service a large enough area and collect enough material to make collection profitable. A drop-off recycling program may be a better option for these materials.

10.3.2 Expansion of Materials Accepted for Drop-off Recycling

Another way to expand the materials that are recyclable is to offer drop-off recycling at the DWR recycling center. This way, the recyclables are pre-sorted and must only be allocated a space to collect them and time to process and bale them before sale. If local markets existed for the following items, this may be the simplest and economical way to collect and recycle these items:

- Cartons (milk, juice, etc.)
- Electronics (discussed further in section 12)

Despite the seemingly simple convenience of a drop-off recycling option, this may still not be a feasible method of collecting EPS. UCD recently started an EPS drop-off recycling pilot program. They are partnering with Greenfreak, a company that brings a mobile unit to densify the EPS onsite and then haul the resulting material away. As of July 2, Greenfreak charges a $450 fee for the first 2 hours of densifying the EPS, and each additional hour is $100. UCD is a good fit for this program as their laboratories generate a large amount of EPS that is suitable for the Greenfreak program. Greenfreak only accepts clean, white “Grade A” EPS. Greenfreak will not accept packing peanuts, clamshells, or pieces that have labels, tape or any other foreign materials/contaminates. The EPS must also be dry.

Most recyclables have a market value and can be sold once collected. However, Greenfreak does not pay for the EPS material they collect, so operating a continuous drop-off recycling program will be costly. This type of drop-off program might work well for any business (such as UCD) that produces large quantities of clean Grade A EPS. Such a business would see a significant drop in their garbage generation as all the EPS is sorted out for densification. If enough EPS is generated on a regular basis, the savings produced from decreased garbage service may exceed the cost of operating a drop-off EPS recycling program onsite.
In summary, a continuous drop-off program at the DWR recycling center would be costly—especially as there would be no way to offset the collection cost by selling the densified EPS. The City will continue to monitor the UCD pilot program to see if such a program could become feasible at the DWR recycling center.

11 Source Reduction and Reuse

11.1 Existing Conditions

11.1.1 Outreach Strategies

The City employs a wide variety of outreach strategies to educate the public about source reduction and reuse of materials. See section 6 for detailed information on the City’s outreach strategies. A small sampling of some of the strategies used specifically for source reduction and reuse include:

- DavisRecycling.org
  - Waste reduction and reuse fliers and information
  - Recyclopedia
- June-September Environmental Column—highlights reusing and donating unwanted items
- Recycling Program’s Twitter tweets and Facebook posts encouraging reuse and reusing

11.1.2 Apartment Move-Out Waste Reduction Program

The Apartment Move-Out Waste Reduction Program (AMOWRP) is a partnership between the Recycling Program and managers at apartment properties in Davis to reduce the amount of good, usable material that typically ends up in the landfill during the yearly August turnover.

Apartment properties in Davis experience an average 50% turnover rate every year as students come from all over the world to attend UCD, move off campus and into the City, then graduate from UCD. This itinerant population of students creates a need for constant outreach to multi-family communities.

When the AMOWRP first started in Davis, it was limited to only a few apartment properties where City staff picked up wood, scrap metal, appliances etc. for recycling. By 2006 the program was reformatted and had broadened to include more apartments. The table below shows the AMOWRP participation for the past 6 years.
In Davis, most apartment leases begin September 1 and end August 31; City-wide, moving day for apartment residents is at the end of August. Apartment managers usually request large 30-yard dumpsters from DWR, to hold the extra ‘trash’ that is generated during August turnover. Most of what is thrown in these dumpsters is perfectly good and usable. The residents are in a time crunch and they must vacate their apartments by their deadline. In their hurry to move-out, a lot of good ‘stuff’ is thrown away. In some cases, nearly everything they own is discarded: clothing (even brand-new clothes with the tags still on), linens, canned food, furniture, home décor, kitchen appliances, pots and pans, serving ware, dishes, etc.

The City Recycling Program invites the larger apartment properties to participate in the AMOWRP. The City recruits volunteers to assist with the program, and engages the help of local community groups. Recycling Program staff also contact local non-profit groups and compile a “wish list” of items that the non-profits are in need of. The wish lists are given to the volunteers who will be working at the donation stations so that they can collect items for the non-profits. Non-profit groups are also given a map of the donation stations so they can look for needed items themselves.

On the first day of the program, Recycling Program staff set up the donation stations at all the participating apartment properties. Donation stations are usually set up next to the large 30-yard dumpsters. Blue caution tape printed with “www.davisrecycling.org” is used with traffic cones to delineate the donation station area. Clearstream Recyclers lined with clear plastic bags and marked with “Donate Clothes Here” signs are placed in the donation stations. Signs are placed on the dumpsters, traffic cones and blue tape, instructing apartment residents to leave good, reusable items in the donation area and use the dumpster only for broken furniture.

During the AMOWRP, apartment managers, Recycling Program staff and volunteers encourage residents to bring all their unwanted, reusable items to the donation station. New residents moving in, current residents, apartment staff, volunteers and local non-profit groups are invited to take whatever they want from the donation station. The donation station essentially becomes a swapping station. Clothes, shoes, and linens are collected by Recycling Program staff and dropped off at local non-profits.

Items left in the donation station do not stay there long. Although the City does not advertise the locations of the donation stations (they are located on private property), many people know about the crazy move-out mess and come to Davis to look for treasures amid the towering piles of discards. As a result, hundreds of people come to the dumpsters and the donation stations at each apartment every day, searching for useable items. Much of what is donated is taken for reuse.
The City does not actively discourage people from searching for items, but occasionally the apartment management does. Some are concerned about the liability of having people on their property, going through their dumpsters amid broken glass and furniture. Others are concerned about the mess that they leave behind. Apartment maintenance staff will often try to stack mattresses and broken furniture carefully inside the dumpsters to maximize space. However, sometimes people rummage through the dumpsters looking for usable items, un-stacking items and leaving a mess outside the dumpsters.

The large pool of volunteers that donate their time and talent for the AMOWRP have had a positive effect on this program. The main job of the volunteers is to keep the donation station tidy, stacking books, bagging up clothing and linens, placing cushions on sofas, matching tables with chairs, essentially making it look like a garage sale. If a donation station remains neatly organized, more items are likely to be donated, noticed and taken. However, if a donation station is not well kept, it becomes a messy pile of mixed recyclables, reusable items and trash. When this happens, the usable items are hidden, and there is less of a chance of them being reused. In an effort to keep the property neat and tidy, the maintenance staff is likely to throw the whole mess into the dumpster.

The high turnover of residents at apartment properties is not the only challenge. At some properties, apartment managers change frequently too. Each time new management comes onboard, City staff must start the process of encouraging participation in the AMOWRP all over again.

Measuring success in this program is challenging because it is impossible to measure the amount of items taken. Instead the City looks at what is left behind and draws comparisons and conclusions from those numbers. The chart below shows the tonnage of waste generated at 56 different apartments during turnover in the past 4 years. This is only the waste coming from the 30 and 40-yard dumpsters that are ordered to help deal with the excess trash from turnover.

A total of 186.59 tons of waste was collected from the 43 apartment complexes in 2011, compared to 436.2 tons from those same apartments in 2007—a 43% reduction in waste.

This program is economically viable to the apartment managers because properties that reduce the amount of waste they generate can save money.
The AMOWRP has been recognized by the California Resource and Recovery Association, who bestowed the 2012 Pavitra Crimmel Reuse Award on the City Recycling Program for the outstanding reuse efforts of the Apartment Move-Out Waste Reduction Program (AMOWRP). This award recognizes special achievement by a private business, government agency, community-based organization or school in the reuse of materials.

11.2 Evaluation of Alternatives

11.2.1 Reusable Bag Campaign

Since March 2008, the Recycling Program purchased and distributed 2,925 grocery tote bags, made from recycled plastic bottles (see the figure below). These bags cost $3.13 - $4.03 each (paid for with grant funds from CIWMB and CalRecycle) and were given away during Chamber Day on the Quad, Celebrate Davis and other events, often after residents signed a pledge promising to use the bag when they go grocery shopping.

Since October 2010, the State has halted the use of all State grant funds on any “SWAG” item, which includes tote bags (see section 9). City staff had reduced the amount of bags given away previous to this announcement due to the fact that so many residents already had reusable bags. At every event attended, other vendors were handing out reusable totes as well.

From the observations of City staff, a large portion of the community already has reusable tote bags. When City staff attempted to hand them out at Farmers Market events, the bags were generally refused—residents said they already had plenty and did not need any more. The issue does not seem to be that the public does not have reusable shopping bags; the issue is that residents are not bringing the bags with them to the stores. Many forget them at home, or in the car. The best solution may be to focus outreach on helping residents remember to BYOB—Bring Your Own Bag. Distribution of reusable bags could continue for those residents that still do not
have them, but the main focus of the outreach should be centered on starting a new habit, bringing your reusable bags.

A reusable bag outreach campaign could take several forms:

- Distributing reusable bags at community events
  - Farmers Market, Celebrate Davis!, etc.
- Working with retailers
  - Encourage incentives to customers who bring their own bags
    - Advertise to residents which retailers offer incentives
  - Development and placement of outreach materials
    - Reminder “BYOB” signs on the entrance doors, in the parking lots, on grocery carts and check stands
- Reusable bag contest—prize awarded to residents that bring reusable bags while shopping
- Distribution of “shopping lists” with Item #1 being: “Bring your reusable bags.” An example of this is shown in the figure below.
- General outreach campaign—month long campaign via newspaper, radio, bulk mail postcard etc. encouraging the use of reusable bags.

**Figure 11-3 Examples Of BYOB Shopping Lists**

The City did ask for permission to use CalRecycle grant funds to print these shopping lists. While the City’s grant manager was impressed by the idea and commended the City for its originality, permission was not granted as the shopping list did not meet the requirements for grant expenditures (see section 9 on grants). The City printed these in June 2012 using printing and outreach funds remaining at the end of the fiscal year. These funds may not be available in subsequent years.
All these outreach activities require funds for which the Recycling Program does not have grant money and would have to be budgeted for out of the Recycling Program fund.

11.2.2 Deconstruction

The City of Davis actively promotes the recycling of construction and demolition materials through its C&D ordinance (see section 3). Another option for dealing with demolition waste is deconstruction.

Each year, as many as 100,000 residential buildings are demolished in the United States. This represents more than 8 million tons of wood, plaster and drywall, metals, masonry, and other building materials, much of which end up in local landfills.

Typically, when a building is taken down, heavy equipment is used in demolition. All parts of the structure are reduced into rubble, wood, masonry, metals, and other materials. These materials may be sent to a C&D sorting facility, where the materials are recycled. Most C&D facilities can recycle 50% or more of “mixed C&D waste,” but the materials are typically “down-cycled” and converted into new materials or products of lesser quality and reduced functionality. Lumber is often ground up for mulch or composting; concrete, rock and brick are crushed for use as fill, etc.

Deconstruction is the selective dismantling of materials from buildings before, or instead of, demolition. Through deconstruction, materials may be salvaged for reuse or recycling. Some salvaged materials, such as wood flooring, ornate trim, bricks, electrical and plumbing fixtures, may retain to up to 75% of the items’ original value.

CalRecycle supports deconstruction and is working with contractors, engineers, architects, and local governments to encourage this method.

The City has been approached by a local branch of a non-profit group that offers deconstruction services.

A deconstruction program may be implemented without a significant cost expense, but staff time will be required to investigate all aspects of such a program (permits required, certifications, requirements and outreach implantation).

Several options are available for the City in regards to setting up a deconstruction program:

- Create a deconstruction webpage on DavisRecycling.org
  - List local contractors that offer deconstruction services
  - List step-by-step process of a deconstruction project
- Create a flier on deconstruction, post online and have copies available at the Community Development and Sustainability Department front counter for people when they come for building permits.
- List deconstruction options on the online Recyclopedia
- Update the C&D ordinance to include deconstruction options.

The 2008 CIWMB Waste Characterization Study determined that C&D materials currently make up 29% of the waste stream. Between the City’s C&D ordinance and the CalGreen Tier 1 diversion requirements implemented by the City, a majority of the C&D materials in Davis are currently being diverted. As such, a
deconstruction program is not likely to have a significant effect on the City’s per capita disposal target. However, it is in keeping with the goal of promoting zero waste strategies.

Reuse of materials is more environmentally preferable than recycling, so reusing C&D materials via deconstruction or a similar method is preferable to recycling these materials at the landfill C&D sorting facility.

### 12 Special Waste

For the purpose of this plan, special wastes include hazardous wastes, universal waste and other electronic wastes.

Household hazardous waste (HHW) is waste that results from products purchased by the general public for household use that may pose a hazard to "human health or the environment.” Examples include paints, solvents, cleaners, bleaches, pesticides, used motor oil, chemicals for pool and hobby use, and similar products with toxic properties. The statutory definition of HHW from the California Code of Regulations follows (Title 14, Chapter 9, Section 18720):

> Household hazardous wastes" are those wastes resulting from products purchased by the general public for household use which, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may pose a substantial known or potential hazard to human health or the environment when improperly treated, disposed, or otherwise managed.

Improper disposal of HHW, such as pouring it down the drain, pouring it on the ground, or throwing it in the garbage, can result in disruption of wastewater systems, damage to environmentally sensitive groundwater, or injury to solid waste workers. For these reasons, the State of California is requiring communities to inform citizens of the problems these products pose and to provide them with an opportunity for their proper disposal.

If there were only a few households disposing of HHW, it would not be a problem. But there are over 12 million households in the State of California, and the total accumulation of HHW is significant. Without reducing the amount of HHW in the waste stream, the concentration of toxic constituents would increase because of the reduction of other solid waste. Additionally, municipal landfills (Class III) are prohibited from accepting any form of hazardous waste. Much the way sewer systems and sanitary landfills were introduced to address health needs of other eras; household hazardous waste management programs are addressing the needs of today. California State law has been actively addressing these issues. Assembly Bill 939 (AB 939) addressed reduction of solid wastes entering State landfills and required a Household Hazardous Waste Component within the Source Reduction and Recycling Element (SRRE). Because of the significance of HHW beyond its small percentage of the total waste stream, AB 2707 elevated that component to a separate Household Hazardous Waste Element (HHWE). Other recent legislation has allowed "small quantity commercial source" participation in HHW collection programs (AB 2641), and AB 2597 has encouraged the collection of recyclable HHW. These three bills all took effect January 1, 1991.
In February 2006, the California Department of Toxic Substance Control (DTSC) banned all Universal Waste (or u-waste) from the trash. U-waste includes TV and computer monitors, fluorescent bulbs and tubes, batteries, and other mercury-containing devices. These items are illegal to throw in the trash.

12.1 Existing Conditions

12.1.1 Weekly Household Hazardous Waste Drop-Off Days at YCCL

Prior to the permanent HHW facility at the YCCL, HHW events were occasionally offered at DWR. During the fiscal year 1990-1991, six events were held at DWR. Two of the HHW drop-off events were cosponsored by the City and County and were open to all Yolo County residents. Davis residents also had the option to participate in two additional events open to all County residents that were held in Woodland and West Sacramento.

Yolo County opened a collection facility at the YCCL in 1993, where household hazardous waste (HHW) days were held bi-monthly from 9:00 a.m. – 2:00 p.m. Construction of the permanent HHW facility at the YCCL was completed in January 2007, and HHW events were offered the first Friday and Saturday of every month (an increase from 6 events per year to 24 events per year). In October 2010, the County started offering HHW drop-off events every Friday and Saturday from 7:30 am to 3:30 pm.

Funding for HHW programs events comes from the tipping fees collected at the landfill. A portion of the tipping fee is allocated to the HHW program through the Solid Waste Enterprise Fund. Nearly all residential garbage generated in Yolo County and its four incorporated cities comes to the landfill, thus providing revenue for the HHW program.

The HHW drop-off events accept the following items for disposal:

- Antifreeze
- Automotive products
- Batteries
- Brake/transmission fluid
- Fire extinguishers
- Floor & furniture cleaners
- Fluorescent bulbs/tubes
- Gasoline & flammables
- Household cleaners
- Mercury thermometers
- Paint, oil/latex
- Pesticides & herbicides
- Pharmaceuticals (non-controlled)
- Poisons
- Pool chemicals
- Propane tanks
- Solvents
- Syringes (containerized)
- Used motor oil/filter

The Yolo County Central Landfill accepts the following HHW and U-Waste items daily for recycling:

- Household batteries
- Fluorescent bulbs or tubes ($2.00 convenience fee applies, regardless of whether a resident brings in one bulb or several)
- Printer cartridges
- Wall-mounted thermostats
- Electronic devices
- Diesel oil
- Non-chlorinated power steering fluid
- Differential clutch fluid
- Transmission fluid
- Hydraulic fluid
- Kerosene
- Auto batteries
Many Davis residents participate in the HHW program, as shown in the chart below.

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Total # of Residents Attending</th>
<th># of Davis Residents</th>
<th>% Davis Residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 2011-December 2011</td>
<td>5,146</td>
<td>2,395</td>
<td>38%</td>
</tr>
<tr>
<td>FY 2010-2011</td>
<td>7,009</td>
<td>3,700</td>
<td>53%</td>
</tr>
<tr>
<td>FY 2009-2010</td>
<td>5,442</td>
<td>2,609</td>
<td>48%</td>
</tr>
<tr>
<td>FY 2008-2009</td>
<td>4,750</td>
<td>2,781</td>
<td>59%</td>
</tr>
<tr>
<td>FY 2007-2008</td>
<td>4,404</td>
<td>2,607</td>
<td>59%</td>
</tr>
<tr>
<td>FY 2006-2007</td>
<td>4,220</td>
<td>2,362</td>
<td>56%</td>
</tr>
</tbody>
</table>

As the chart above shows, since the County started offering weekly HHW days the number of participants increased dramatically. In the first 6 months of FY 2011-2012 there were almost as many attendees as the entire FY 2010-2011.

12.1.2 Free Senior/Disabled HHW Pick-Up

Yolo County offers free pick up of HHW materials from senior and disabled Yolo County residents. Residents may contact the landfill to request this service. In 2011, 30 Davis residents made use of this program.

12.1.3 Battery Collection Sites

To make proper disposal of household batteries easier and to protect the environment from the mercury, cadmium and other dangerous chemicals found in batteries, the jurisdictions in Yolo County started a battery collection program in 1998. Convenient locations were chosen at retail and public buildings where residents could easily properly dispose of their household batteries. In February 2006, the DTSC imposed a landfill ban on all household batteries. Under the ruling, household batteries cannot be thrown away in the trash.

Residents of Yolo County can drop off batteries at sites located in Davis, Winters, Woodland, West Sacramento and in unincorporated Yolo County. Each jurisdiction oversees the battery drop-off sites that are located in their authority.

In Davis, residents can drop off alkaline, lithium and rechargeable batteries at these sites in Davis:

- Aggie Ace, 606 W. Covell Blvd.
- Davis Ace Hardware at 3rd & G Sts.
- Davis Food Co-Op, 620 G St.
- Davis Senior Center, 646 A St.
- CVS Pharmacy (Longs Drug Store), 1550 E. Covell Blvd.
- CVS Pharmacy (Longs Drug Store), 1471 W. Covell Blvd.
- Hibbert Lumber at 5th & G Sts.
- Nugget Market, 1414 East Covell Blvd.
- Nugget Market, 409 Mace Blvd.
- Rite Aid, 655 Russell Blvd.
- Rite Aid, 2135 Cowell Blvd.
- Yolo County Library - Mary L. Stephens Branch, 315 East 14th St.

From 1998 to early 2008, the County picked up batteries every other month. Batteries are collected at the sites in 2 ½ gallon buckets or 30 gallon drums. Prior to the pick-up day, City staff calls each battery drop-off site to see if their buckets or drums are filled. The City gives the County a list of all the sites that need their batteries picked up. The County picks them up the following week and brings them back to the YCCL for consolidation and disposal through their hazardous waste contractor. As of July 2012, Yolo County charges a $32 fee per site pick-up to cover the cost of fuel for the County vehicle and the labor costs.

The battery program became so popular that bi-monthly battery pick-ups were not frequent enough. Buckets and barrels filled with batteries too quickly, sometimes as often as every 2-3 weeks. In 2008, the City signed a new Memorandum of Understanding (MOU) with the County and switched to monthly battery pick-ups.

**Table 12-2 Battery Collection Data**

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Gallons of Batteries Collected</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2011-2012</td>
<td>787.02</td>
<td>$1,260.00</td>
</tr>
<tr>
<td>FY 2010-2011</td>
<td>749</td>
<td>$1,232.00</td>
</tr>
<tr>
<td>FY 2009-2010</td>
<td>935.5</td>
<td>$1,736.00</td>
</tr>
<tr>
<td>FY 2008-2009</td>
<td>920</td>
<td>$1,652.00</td>
</tr>
<tr>
<td>FY 2007-2008</td>
<td>925.5</td>
<td>$975.00</td>
</tr>
</tbody>
</table>

**12.1.4 Used Motor Oil Recycling**

CalRecycle encourages the recycling of used motor oil by certifying used oil recycling collection centers throughout the state. Certified Used Oil Collection Centers (CCCs) will take used motor oil from the public and will pay 40¢ a gallon. Most centers will take up to 5 gallons at a time.

Davis has six CCCs, all of which accept used motor oil and used oil filters from the public for recycling:

- AAMCO Transmission, 965 Olive Drive
- Davisville Express Lube, 2014 Lyndell Terrace
- Davis Waste Removal, 2727 Second Street
- Jiffy Lube, 1625 Research Park Drive
- O’Reily Auto Parts, 1681 Research Park Drive
- SpeeDee Oil Change and Tune-up, 2000 F Street

The City receives yearly non-competitive used oil recycling grant and payment funds from CalRecycle to provide funding for activities that reduce the amount of illegally disposed used oil, recycle used oil/used oil filters, and reclaim used oil. This program is mandated by the California Oil Recycling Enhancement Act,
which authorizes the collection of four cents from oil manufacturers for every quart of lubricating oil sold, transferred, or imported into California (see section 9.1.4 for more information about grant funds).

These grant funds allow the City to purchase and distribute used oil containers, rags, funnels, and drain mats so that "do-it-yourself" oil changers can more easily and safely collect and transport their used oil to a CCC for recycling. These items are given out at no charge to residents along with educational literature on the proper way to change and dispose of used oil. The City also promotes the recycling of used oil by yearly presentations to Davis High School auto shop classes, various media advertising, free filter exchange events, participation in the Regional Recycling Group Used Oil and Filter Recycling Media Campaign and other various recycling outreach (see section 6.1.8. for details).

**Figure 12-1 April 2013 Used Oil Filter Exchange Event**

The figure below shows the amount of used motor oil collected at CCCs in Davis, as reported by CalRecycle.

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Gallons of DIY Oil Collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2010-2011</td>
<td>4,362</td>
</tr>
<tr>
<td>FY 2009-2010</td>
<td>4,632</td>
</tr>
<tr>
<td>FY 2008-2009</td>
<td>10,387</td>
</tr>
<tr>
<td>FY 2007-2008</td>
<td>10,365</td>
</tr>
<tr>
<td>FY 2006-2007</td>
<td>9,714</td>
</tr>
<tr>
<td>FY 2005-2006</td>
<td>11,989</td>
</tr>
</tbody>
</table>

The Figure below shows the amount of used motor oil recycled at DWR since they first started collecting motor oil in 1993.
In addition to spreading the word about recycling used motor oil and filters, the City also strongly promotes the “3,000 Mile Myth” message, about oil change intervals; needing to change your car's oil at 3,000 miles is a myth. Many cars today can go longer without resulting in engine wear. Automakers are regularly recommending oil changes at 5,000, 7,000 or even 10,000 miles based on driving conditions. Research conducted by CalRecycle shows that nearly three-quarters of California drivers change their motor oil more often than automaker recommendations. Following the 3,000 mile myth generates millions of gallons of waste oil every year that can pollute California's natural resources. The City encourages residents to check their vehicle's user manual for guidelines on when to change their oil.

Newer cars can go for longer periods of time without an oil change. This may be partly why the amount of used oil collected at CCCs is so low in recent years. The low numbers may also be due to the CCCs not reporting all the oil they collect.

12.1.5 Electronics Recycling

Due to ongoing technological advancement, many electronic products become obsolete within a short period of time, creating a large surplus of unwanted electronic products, or “e-waste.” Some e-waste contains hazardous chemicals, so disposing of e-waste in landfills has the potential to cause severe human and environmental health impacts. To avoid these risks, the Electronic Waste Recycling Act (Senate Bill 50) was signed into law in 2004. SB 50 established and funded a program for consumers to return, recycle, and ensure safe and environmentally sound disposal of covered electronic devices (CEDs). CEDs include: cathode ray tube devices (including televisions and computer monitors), LCD desktop monitors, laptop computers with LCD displays, LCD televisions, plasma televisions and portable DVD players with LCD screens.

As noted previously, the City has been accepting e-waste at the annual Bulky Items Drop-off Days since 2008.

Currently, Davis residents have the following options to recycle their e-waste in or near town:

- The Goodwill Donation Xpress (2939 Spafford Drive, Suite 110)
Yolo County SPCA Thrift Store (920 3rd Street)
Yolo County Central Landfill, 44090 County Road 28H, Woodland

More recycling options are available in Woodland, West Sacramento and surrounding areas.

All three of the locations listed above are CalRecycle Approved Participating Collectors and Recyclers under the Covered Electronic Waste Recovery and Recycling Payment System. These places accept e-waste for free every day during their normal operating hours. The YCCL has been collecting e-waste for years. In 2006, 42% or 4,519 units of CED were collected from Davis.

E-waste can also be donated for reuse at several thrift stores in town.

12.2 Evaluation of Alternatives

The Recycling Program does not have a budget for collecting HHW or U-waste, other than the programs listed in 9.1. The City has always supported all collection efforts by the County for HHW and U-Waste. Since the programs provided by the County are already paid for through the tipping fees at the landfill, residents are already paying for these services. The City has always preferred to encourage residents to use the County’s programs since residents have already paid for them. In order for the City to offer any other collection options for special wastes, the City would have to re-allocate funds in the budget. In a sense, Davis residents would be paying twice—once for County services to dispose of special wastes and once for City services to dispose of special wastes.

A City-run collection site for special wastes would be different from the County program in that a drop-off location within the City may be closer for residents than the YCCL. A City program may address different collection strategies for special wastes, as discussed below. However, it is important to realize that other than making it easier for residents to dispose of their special wastes by offering a closer drop-off site or mail-back options, any City program is likely to be a redundancy of the current programs run by the County at the YCCL.

Given the current economy and how the City, the County, businesses, and residents are all stretched to their financial limits, it may not make sense for the City to offer redundant services at this time. The alternatives presented look into possibilities of City programs for the following wastes assuming that a budget were to be found for these collection alternatives.

12.2.1 Expand Fluorescent Bulbs and Tubes Disposal Options

Fluorescent bulbs and tubes are considered U-Waste and are illegal to dispose of in the trash. As described in 9.1.1, fluorescent bulbs and tubes can be brought to the weekly HHW days at YCCL every Friday and Saturday for free disposal. The YCCL also accepts fluorescent bulbs and tubes daily for a nominal $2.00 convenience fee, regardless of whether a resident brings in one bulb or several.

In 2006, Yolo County received a state grant to coordinate take-back points for universal wastes, primarily fluorescent bulbs and household batteries for recycling. This project was funded by a grant from the CIWMB and was limited in scope as follows:

“*To plan and develop countywide collection of universal waste. Targeted locations will be retail stores for the containment and shipping of universal waste. The Contractor will research costs then*
coordinate with cities and retailers to establish collection points and place proper containment for materials at participating retail stores."

As part of the grant, Con10u was hired by the County to research, plan, collect, and compile information in coordination with Household Hazardous/Universal waste stakeholders to include jurisdictions, retailers and residents throughout Yolo County. Con10u was to consult with jurisdictions, residents and retailers to determine the most cost effective collection system; identify collection point participants, determine collection and equipment costs, establish collection sites, identify strategies to reduce the illegal dumping of hazardous wastes and compile information in report format.

Con10u successfully signed up several locations in Yolo County, including Davis Ace Hardware, as take-it-back partners. The grant paid for collection boxes that were given to take-it-back partners to collect and ship fluorescent bulbs and tubes for safe disposal. Davis Ace Hardware began collecting fluorescent bulbs and tubes from residents in July 2007. So many fluorescents were turned in however, that the grant funds ran out by February 2008. Davis ACE Hardware did not wish to pay for the cost of disposal themselves, so once the last box was sealed and shipped off for disposal, Davis ACE Hardware placed signs up in their store letting customers know that they did not accept fluorescent bulbs and tubes anymore. Con10U was unable to establish a collection site at any other location in Davis. Other cities within Yolo County have locations to bring their CFLs and tubes, but these locations are privately funded, not funded by the Cities or the County. Home Depot, IKEA and Orchard Hardware, for example, take back CFLs and fluorescent tubes at their retail locations in Yolo County. Davis does not have any of these large stores in town.

It may be possible to engage Davis Ace Hardware, or find another retailer that is interested in taking back fluorescent bulbs or tubes. Despite efforts made so far, no such retailer has been found. The disposal cost combined with the sheer number of fluorescent bulbs or tubes that would be collected, is too daunting a number for local businesses to manage.

It has been suggested that the City open a collection site at a City facility or at DWR. In order to set up this type of program, funding would need to be found to pay for the disposal costs. This is extremely unlikely as the State does not offer any long-term financial assistance to manage these wastes. The cost of the City operating this type of program on its own budget would be so expensive that it would necessitate an increase customers rates. As mentioned in 10.1.1, customers already pay for a regional hazardous waste collection program (the Yolo County Household Hazardous Waste Drop-Off Program) through the landfill tipping fees.

Another option would be to put the burden of disposal of these toxic products back upon the manufacturers. As mentioned in 2.9, the City passed a resolution in support of EPR. Some jurisdictions, San Luis Obispo County for example, passed an EPR ordinance, requiring that retailers who sell batteries and fluorescents bulbs must establish a collection program to take used batteries and bulbs back from the public. Such an option could be possible in Davis, but would hurt local stores if prices are raised, incentivizing customers to go out of town to shop. This type of law would work best at a regional level, even better at the state level.

Senate Bill 589, sponsored by Senator Lowenthal, would require manufacturers to establish a recovery program for the management of end-of-life household fluorescent bulbs and tubes. This is the kind of program that would be most effective and most cost efficient to residents, businesses and local government. This is a two year bill and like all legislation, it is not guaranteed to pass and become law. A decision on this bill will be made by September 1, 2013. Given the high cost of implementing a local collection program however, it may be in the City’s best interest to wait and see how this bill progresses.
12.2.2 Expand Electronics Recycling Options

As mentioned above, the YCCL accepts e-waste for free recycling every day during its normal operating hours. However, the YCCL is four miles outside the City limits. Two locations currently exist in Davis where residents can take their e-waste: the Goodwill Donation Xpress, and the SPCA Thrift Store. These stores offer a valuable service to the community, with a convenient locations and operating hours. However, as these businesses run independently from the Recycling Program, there is no guarantee as to their continued acceptance of e-waste; they can stop taking e-waste at any time.

Another option is to have an e-waste recycling option within the City of Davis that the City has some control over. The most convenient and simplest way to operate this type of program may be for DWR to accept e-waste. Due to regulations on CED recovery and recycling payment systems, recyclers that accept CED from residents must collect certain information (name, zip code, etc.). As such, e-waste cannot be accepted for drop-off recycling 24/7 as are other recyclables. There must be a person on staff to collect the information from residents as they drop-off their e-waste. It may be possible, however, to offer free e-waste recycling at the DWR recycling center during the CRV buyback hours, as there are staff available assisting customers in redeeming their CRV.

The problem with this option is that the recycling center at DWR is open 24/7. If e-waste is only accepted during certain hours, there will undoubtedly be an illegal dumping issue with people dropping off e-waste during odd hours. There are security cameras installed at the recycling center, but this may not be enough to deter people from illegal dumping.

Illegal dumping will mean that DWR may have other items, refrigerators for example, and other items that are not accepted as e-wastes. DWR will have to haul those items to the landfill, increasing their operations cost. Also, since DWR cannot certify that any CED dropped off came from Davis, they cannot receive payment for those e-waste items.

12.2.3 Expand Pharmaceutical Disposal Options

Pharmaceuticals and personal care products (PPCPs) are a diverse group of chemicals including prescription and over-the-counter drugs, nutritional supplements, fragrances, cosmetics, and sunscreen agents.

PPCPs can be introduced into the environment through many routes:
- Treated and untreated sewage
- Leaching from landfills
- Disposal of expired and unused PPCPs in the toilet
- Animal manure
- Industrial manufacturing waste streams

Steroids, prescription and nonprescription drugs and other PPCPs have been detected in water samples collected from streams considered susceptible to contamination from various wastewater sources, for instance those downstream from intense urbanization or livestock. Potential risk to aquatic organisms due to exposure to PPCPs in the environment has been identified as a primary concern given that aquatic organisms may be continually exposed to chemicals, including multi-generational exposures.

Most pharmaceuticals are accepted for free at the YCCL during HHW events. Federal law prohibits anyone except law enforcement from accepting controlled substances, since law enforcement agents are not staffing the
YCCL HHW events, pharmaceuticals that contain morphine, Vicodin, codeine and other controlled substances are not accepted.

At the YCCL, pharmaceuticals get manifested as toxic/poisonous solids, so there is no data on exactly how much is collected. In 2010, a total of 41,333 pounds of toxic/poisonous solids were collected from Yolo County residents during HHW events. It is estimated that less than 0.005% of those materials are pharmaceuticals, which equates 207 pounds collected in 2010. As of August 2011, the YCCL reported an increase in the amount collected and estimated that approximately 500-750 pounds will be collected by the year’s end.

The City of Woodland Environmental Services Division offered pharmaceutical collection events in 2010 and 2011. Woodland’s wastewater treatment plant and the pretreatment program both sponsored the event with funds from their budgets. The Woodland Police Department sponsored the event by providing an officer to be onsite, in uniform and on duty. A local pharmacy also lent their assistance as two pharmacists volunteered their time during the event. A hazardous waste disposal company, Veolia Environmental Services was hired to collect and dispose of all the pharmaceuticals from the event. The four hour events were held at the front parking lot of the Municipal Corporation Yard at 655 N. Pioneer Avenue. See the figure below for event statistics.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Attendees</th>
<th>Non-Controlled Pharmaceuticals Collected</th>
<th>Controlled Pharmaceuticals Collected</th>
<th>Pharmaceutical Disposal Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>80</td>
<td>198 lbs.</td>
<td>18 lbs.</td>
<td>$1257</td>
</tr>
<tr>
<td>2011</td>
<td>70</td>
<td>194 lbs.</td>
<td>12 lbs.</td>
<td>$1090</td>
</tr>
</tbody>
</table>

Davis could potentially use Woodland’s model and partner with the Police Department, the pre-treatment program and a local pharmacy to host a similar event.

One challenge with offering these events is that it makes it seem as though this is the only disposal option for pharmaceuticals. Thus far, the City has referred people to the YCCL HHW days for pharmaceutical disposal. Since residents already pay for this program through the landfill tipping fees, the City has not sought to offer anything further as a program exists that already has funding.

Other options:

- Purchase and distribute mail-in envelopes that are pre-addressed to a company licensed to accept and dispose of non-controlled pharmaceuticals. These bags can cost around $3 each.
- Increase the amount of outreach on the current pharmaceutical disposal options (YCCL HHW drop-off days).

12.2.4 Expand Sharps Disposal Options

In 2008, the State of California banned sharps from landfills because they pose a threat to solid waste workers and the general public. Sharps are defined as hypodermic needles, pen needles, intravenous needles, lancets, and other devices that are used to penetrate the skin for the delivery of medications.
An estimated 400 million sharps are disposed of in California each year. A growing number of individuals treat medical conditions like migraines, infertility, arthritis, and blood disorders with injection medications. Many California cities and counties have struggled to develop a plan to handle sharps amid budget cuts and personnel shortages. Many solid waste workers sort through materials by hand. The presence of needle devices disposed of in household trash and curbside recycling bins exposes waste workers to needle stick injuries and their resultant infections.

Yolo County proposed a pilot project and was awarded $213,000 in grant funds by CalRecycle to implement a convenient and cost-effective method of collecting sharps from the public and to educate residents and other stakeholders about EPR.

Yolo County used grant funds to purchase sharps containers to give out to the public as a way to educate sharps users about how and where they can dispose of sharps. Limited quantities of the free sharps containers remain, but most pharmacies and drug stores sell sharps containers. Residents can dispose of containerized sharps at the weekly HHW drop off days at the YCCL. Yolo County collected more than 1,500 pounds of sharps (over 82,000 needles) through this grant funded project.

There is no statewide collection system for sharps that has sustainable funding. So far, the State has not enacted product stewardship legislation for sharps. There is no current EPR legislation in the works for sharps.

Here is a short list of what some other jurisdictions are doing:

- City of Sacramento—requires that all retail stores, hospitals, and other distributors of sharps for home use, take back the sharps at the end of their life at no additional cost to the customer at the time of return.
- The City of Cypress—residents can receive up to 3 free sharps disposal containers a year. Disposal containers come in a pre-paid box that can be mailed directly to an incineration company.
- City of Folsom—Many Folsom pharmacies accept sharps free of charge. They must be in an approved container, which are supplied to customers at no cost by certain pharmacies.
- City of San Dimas—Residents can have up to three subsidized mail back sharps containers per year (1st = free, 2nd and 3rd = $5.00 each). There are two locations where San Dimas residents can pick up their containers.
- City of San Francisco—SF Recycling & Disposal buys sharps containers, delivers them to participating Walgreens, and arranges for a medical waste company to pick up the full containers. More than 1,500 containers are distributed to the residents of San Francisco each month.

Options for dealing with sharps waste:

- Encourage pharmacies, doctors’ offices and hospitals to take back sharps for disposal.
- Require pharmacies, doctors’ offices and hospitals to take back sharps for disposal.
- Set-up sharps disposal collection kiosks that are regularly serviced. Kiosks could be placed at DWR, City Hall and/or Public Works.
- Purchase sharps containers and give them to pharmacies, doctors’ offices and hospitals to distribute to patients.
- Distribute a limited amount of subsidized sharps containers to residents (first one free, second and third for a small fee).
13 Yolo County Central Landfill and Other Facilities

13.1 Yolo County Central Landfill

The YCCL is located at 44090 County Road 28H, Woodland, CA. It is open Monday thru Saturday from 6:30 a.m. to 4:00 p.m. and Sunday from 9:00 a.m. to 5:00 p.m.

The landfill operations are primarily funded through the fees collected for waste disposal. The remaining funding comes from royalties, grants and recycling sales. No tax dollars or general fund money goes toward landfill operating expenses.

The landfill accepts the following for free recycling every day:

- Household batteries
- Fluorescent bulbs & tubes ($2 handling fee)
- Printer cartridges
- Wall-mounted thermostats
- Electronics
- Cds
- Dvds
- Floppy disks
- Vhs tapes
- Latex paint
- Used motor oil and filters
- Diesel fuel
- Diesel oil
- Non-chlorinated power steering fluid
- Differential clutch fluid
- Transmission fluid
- Hydraulic fluid
- Kerosene
- Auto batteries
- Paper
- Cardboard
- Glass
- Metals
- Plastics #1-#7
- Scrap metals
- Triple rinsed agricultural plastics
The landfill also accepts wood, yard materials, concrete, soil, rock and appliances for recycling for a fee.

The primary sources of solid waste come from Davis, Woodland, West Sacramento, Winters and the Unincorporated County. See the figure below for the distribution of the waste that comes into the YCCL.

### Table 13-1 Source and Tonnage of Trash Received at YCCL

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>2010 Tonnage</th>
<th>2011 Tonnage</th>
<th>Percentage of 2010 Tonnage</th>
<th>Percentage of 2011 Tonnage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Davis</td>
<td>34,764</td>
<td>30,513</td>
<td>19%</td>
<td>18%</td>
</tr>
<tr>
<td>West Sacramento</td>
<td>37,798</td>
<td>34,244</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>Winters</td>
<td>4,681</td>
<td>4,728</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Woodland</td>
<td>45,091</td>
<td>42,010</td>
<td>24%</td>
<td>25%</td>
</tr>
<tr>
<td>Yolo-Unincorporated</td>
<td>13,482</td>
<td>17,710</td>
<td>7%</td>
<td>11%</td>
</tr>
<tr>
<td>Out of County</td>
<td>49,507</td>
<td>38,095</td>
<td>27%</td>
<td>23%</td>
</tr>
<tr>
<td>Total</td>
<td>185,323</td>
<td>167,300</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

The YCCL is permitted to accept 1,800 tons of waste per day. Currently, it averages about 1,000 tons of waste disposed per day. It is interesting to note that Davis ships the fewest pounds per person to the landfill than anywhere else in County.

At YCCL, the wood facility is operated under Waste Management Recycle America (WMRA). Yard materials and wood waste is accepted at the landfill at a reduced tipping fee and is transferred to WMRA’s Sacramento location for processing (grinding). A portion of the material is delivered back to the YCCL and used for alternative daily cover (ADC) or vegetative cover at the landfill. Materials that are not used for ADC or vegetative cover are sent offsite and used for soil amendments or to produce electricity at a biomass facility.

The C&D facility at the YCCL accepts these materials mixed together as C&D waste:

- Cardboard
- Carpet Padding
- Gypsum/Wall Board
- Concrete
- Asphalt
- Dirt
- Soil
- Gravel
- Bricks
- Scrap Metals
- Steel
- Aluminum
- Copper
- Shrink Wrap
- Plastic Strapping & Tubing
- Clean Plastics #1, #2, #4 and #5 (PETE, HDPE, LDPE and PP)
- Lumber
- Painted Wood
- Branches
- Yard Materials
- Pallets

C&D materials brought to the YCCL are transferred to a C&D sorting facility where the materials are sorted for recycling. The sorting facility guarantees that a minimum of 50% of the C&D materials will be sorted out for recycling. However, the sorting facility usually reports that closer to 75% of material is actually diverted from the trash. Any residual materials are brought back to the YCCL for disposal.
YCCL has a reuse center that offers free reusable products such as paint, glue, varnish, household cleaners, and automotive products. These are items that were brought to the YCCL HHW days by Yolo County residents. As these products were at least half full and in good condition, staff set them aside for reuse. The reuse center items are available to the public during the HHW drop-off days.

The YCCL is not operating at capacity and has a current anticipated closing date of 2081.

In September 2012, the landfill announced plans to create a reuse facility onsite at the landfill. The landfill is also looking into constructing a composting facility as well.

### 13.2 Composting Facilities

There are two composting facilities near Davis; Northern Recycling Compost – Zamora, and Jepson Prairie Organics (owned and operated by Recology) in Vacaville. UCD is constructing a anaerobic digester that should be operational in early 2013.

Northern Recycling Compost – Zamora is permitted for 300 tons of yard material per day and permitted for a pilot program of 75 tons of yard materials and food scraps (mixed) per day. This facility uses aerated static piles for composting. The compost from this facility is certified by Organics Material Review Institute (OMRI) as an approved compost amendment on certified organic soils. This facility is in the process of becoming permitted to expand its operations to accept 700 tons a day of mixed food waste and yard materials and to operate a biomass gasification unit.

Below is a table showing the distance from each of the compost site options. Distance and driving time were taken from Google Maps estimates, based on a starting address of 23 Russell Blvd. (City Hall).

<table>
<thead>
<tr>
<th>Compost Facility</th>
<th>Distance</th>
<th>Driving Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>UC Davis Anaerobic Digester</td>
<td>4.5 miles</td>
<td>11 minutes</td>
</tr>
<tr>
<td>Yolo County Central Landfill</td>
<td>6.3 miles</td>
<td>15 minutes</td>
</tr>
<tr>
<td>City of Davis Wastewater Treatment Plant</td>
<td>6.6 miles</td>
<td>17 minutes</td>
</tr>
<tr>
<td>Jepson Prairie Organics/Recology</td>
<td>19.6 miles</td>
<td>28 minutes</td>
</tr>
<tr>
<td>Northern Recycling Compost – Zamora</td>
<td>22.5 miles</td>
<td>28 minutes</td>
</tr>
</tbody>
</table>

Jepson Prairie Organics is permitted to accept 750 tons per day of mixed yard materials and food scraps. It is currently accepting food scraps from the Bay area and yard materials from Dixon, Vacaville and Vallejo, which are all ground and composted in aerated static piles. Jepson Prairie Organics is also certified by OMRI.

Currently all of the yard materials collected by DWR are brought to Northern Recycling Compost – Zamora. Food scraps collected as part of the commercial food scrap collection pilot program are also sent to the Zamora facility for composting.

#### 13.2.1 Alternative Compost Facilities

This feasibility study would look into and consider the costs, strengths and weakness of several composting facility concepts: a regional compost facility at the Yolo County Central Landfill (YCCL), a City-owned
digester located at the wastewater treatment plant, partnering with UC Davis to use their anaerobic digester, and continuing to use the Zamora composting facility.

Due to the close location, planned longevity, level of control and other factors, a regional composting facility located at the YCCL or UC Davis options may be the most viable (subject to the completion of the feasibility study). A City-owned digester may only be able to handle food waste, and the last resort may be to continue with bringing compostable materials to Zamora, due to the long distance to the facility and associated transportation costs.

The City will be completing a compost solution feasibility study in 2013-2014 to determine the best long-term composting option for the City’s organic waste.

The cost of implementing residential and city-wide commercial food scrap collection service is unknown at this time. In order to determine the costs, the City must know the location that the food scraps will be taken to. At present, the food scraps collected through the commercial pilot program are being sent to the Zamora compost facility—the same location the rest of the City’s yard materials is sent. This is one of a number of reasons why the City is interested in securing a long-term option for composting. The composting option selected would determine the rate changes associated with food scrap collection.

A long-term composting solution is required in order to determine the method of collecting food scraps, because the collection method is in part dependent on the method of processing them. For example, if the City were to choose to send the food scraps to a local anaerobic digester, the digester may only accept food scraps and not yard materials. Many digesters run a primarily “liquid” system and are not interested in accepting yard materials. If the City chose to use such a facility, food scraps would need to be collected separately from yard materials. Some digesters, particularly those that function in conjunction with waste water treatment plants, are able to accept more “solid” materials and will take food scraps mixed with yard materials.

Choosing which facility to bring the City’s food scraps will also dictate what types of “food scraps” will be accepted for collection. More exclusive food scrap collection programs, such as in Sonoma County, only accept fruits, vegetables, breads, grains and rice. They do not accept meat. Other more inclusive programs, such as the City of Fairfield, accept bones, meat and fish. In San Jose, dirty diapers are accepted with food scraps. Other facilities can accept waxed cardboard, milk cartons and juice boxes. A composting facility in Bakersfield has a new technology of composting that allows it to accept food wrappers and plastic bags (the plastics are separated out as part of the compost process and then landfilled).

Yolo County is looking into opening up a composting facility at the YCCL. The compost facility would be designed to handle all yard materials generated by Davis, Woodland, West Sacramento, Winters and the unincorporated county—at least 50,000 tons per year. The County reports that each of these jurisdictions must commit to sending all yard materials collected within their community to the facility in order to operate the facility economically.

The County developed a composting option with Waste Management (WM), to determine whether they would consider composting. WM had expressed interest in negotiating an amendment to their agreement with Yolo and construct and operating a state of the art $7 million composting facility at the landfill. The facility would use an in-vessel composting system. The County was aiming to have the facility permitted and open for yard material composting by fall of 2013, and ready to accept food waste for composting by 2016. However, after much research, this option turned out to be too expensive.
The County is currently working on another proposal for an anaerobic digestion facility, the Yolo BioGreen Digester Project. The proposed facility would be built onsite at the YCCL and would accept yard materials, food scraps and fats, oils and grease. The Yolo BioGreen Digester project would produce and sell compost and biogas and proposes to convert the biogas into CNG. The facility would also have the ability to produce electric solar energy as well (1 megawatt solar farm), enough to sustain itself and sell some back to the grid. The facility is being designed for a capacity of 50,000 tons of material per year. See the project overview flow chart below.

**Figure 13-2 Yolo BioGreen Digester Project Overview**

In order to proceed and build the Yolo BioGreen Digester, the County believes that all jurisdictions within the County could need to commit to a long term waste agreement to send all their organic waste to the facility. At this point it is unclear whether all jurisdictions would be willing to enter a long term waste agreement such as this. The County is continuing research on the project and will keep the jurisdictions updated on information on the project design, timeframe, cost and other important details.

### 13.3 Private Recycling and Reuse Facilities

There are a variety of other recycling and reuse facilities in and around Davis, including, but not limited to the following:
• Green Zone Recycling Center, 225 Industrial Way, Woodland
• Recycle City, 3348 Jefferson Blvd., West Sacramento
• Sims Metal Management, 130 N 12th St., Sacramento
• J & M Recycling, 1310 E Beamer St., Woodland
• J & M Recycling, 2205 Rice Ave., West Sacramento
• Goodwill Store, 120 Main St., Woodland
• Granite Construction, 15660 County Rd. 87, Esparto
• Habitat for Humanity, 8351 Umbria Ave., Bldg 5, Bay 1, Sacramento
• Hidden Treasures Thrift Store, 1107 Olive Dr., Davis
• R & R Thrift, 2801 Spafford St., Davis
• Sacramento Surplus Book Room, 4121 Power Inn Rd., Sacramento
• SPCA Yolo County Thrift Store, 920 3rd St., Davis
• Woodland Bio-Mass, 1786 E. Kentucky Ave., Woodland
• Woodland Toy Library, 1017 Main St., Woodland
• Davis Community Meals, 202 F St., Davis
• Food Bank of Yolo County, 1244 Fortna Ave., Woodland
• Yolo Community Care Continuum, 1950 5th St., Davis
• Yolo Wayfarers’ Center, 207 4th St., Woodland

These facilities provide recycling and reuse opportunities. Some are non-profit organizations, others are for-profit businesses. The City does not operate, monitor or oversee these facilities.

13.4 Resource Recovery Park

CalRecycle defines a Resource Recovery Park (RRP) as “the colocation of reuse, recycling, compost processing, manufacturing, and retail businesses in a central facility. The public can bring all their wastes and recoverable materials to this facility at one time.” An RRP is a one-stop service center that allows the public to reduce waste, sell valuable materials and buy items at a reuse, recycling, compost, and recycled-content retail store. RRPs can turn the task of throwing something away into a fun learning experience.

Some successful examples are out there, such as Urban Ore, a 3 acre privately run resource recovery park located at a transfer station in Berkeley, the Monterey Recovery Park in Marina, California, operated by the Monterey Regional Waste Management District (MRWMD) and the 53-acre San Leandro RR Park at the Davis Street Transfer Station in San Leandro.

The 2010 Davis Climate Action Adaptation Plan 2015 Objective 2 (Recover 75% of all waste generated) listed “Create a City salvage yard for the City to promote reuse of goods and reduce consumption, expanding on existing program with extended hours of operation and increased seasonal availability based on the UC Davis schedule” as a priority II item.

At the City of Davis Climate Action Team Community Forum on June 26, 2008, all attendees were asked to provide feedback and comment on several lists of action items to reduce carbon emissions. Attendees were asked to choose five consumption and waste reduction actions from a list of 24 that they would be most willing to support. Attendees were also asked to indicate which five actions that they would not support. Action item W: *Create a city salvage yard to promote reuse of goods received*, received 40 votes of support and no votes of opposition.
RRP’s usually are developed at landfills or transfer stations that offer waste disposal, composting, reuse and recycling. There isn’t an active landfill, transfer station or compost facility within the City of Davis. Per the current contract with the City, DWR does operate a recycling center on 2nd Street that is open 24/7, and there are multiple reuse stores throughout the city. Within Yolo County, there is one compost facility, Northern Recycling Compost in Zamora. The YCCL is the only active landfill in the County and is in the early stages of developing a compost facility.

The chart below compares current facilities/properties that offer different services or currently have certain processes in operation.

<table>
<thead>
<tr>
<th>Potential Location</th>
<th>Reuse</th>
<th>Recycling</th>
<th>Compost</th>
<th>Manufacturing</th>
<th>Retail</th>
<th>Haz Waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>YCCL</td>
<td>Yes</td>
<td>Yes</td>
<td>Maybe</td>
<td>No</td>
<td>Maybe</td>
<td>Yes</td>
</tr>
<tr>
<td>DWR Recycling Center</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>City Property</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Local Thrift Store</td>
<td>Yes</td>
<td>Yes/No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

The YCCL has a reuse area for certain hazardous wastes (such as paint, fertilizers, etc.) that are recovered from the HHW facility. These materials are available to County residents and businesses at no cost during HHW drop off days. The YCCL has extensive recycling options for many different items. The landfill is a transfer site for C&D materials and other wastes and has a permanent hazardous waste collection facility. The YCCL is also exploring the possibility of opening composting and reuse facilities. The landfill does not offer manufacturing services.

The DWR recycling Center does offer recycling, but no other amenities of a RRP. A few offer recycling of e-waste and other items as well, but none are transfer centers or have any other RRP amenities. The best option would be to support Yolo County in developing a RRP at the YCCL.
References


California Code of Regulations, Title 14.

California Department of Resources, Recycling and Recovery. 1001 I Street, Sacramento. www.CalRecycle.ca.gov


City of Davis. 2010 Davis Climate Action Adaptation Plan. 2010.


Superior Court, County of Los Angeles, Judge David P. Yaffe. Save the Plastic Bag Coalition v. City of Manhattan Beach. July 14, 2011.


Appendix A - City of Davis Municipal Code Chapter 32

CITY OF DAVIS MUNICIPAL CODE CHAPTER 32: MANAGEMENT OF GARBAGE, OTHER WASTES, RECYCLABLES, AND FEES THEREFOR

Article 32.01 IN GENERAL
32.01.010 Definitions.
For the purpose of this chapter, the following words and phrases shall have the meanings respectively ascribed to them by this section:

Business and commercial waste. Solid waste comprised of combustible and noncombustible packaging materials, waste paper, fabrication wastes, discarded parts from repair operations and similar waste materials, excluding garbage waste, that are produced by stores, shops and businesses in the course of their operation.

Communally serviced residence. Apartments, quadruplexes, condominiums, mobile home parks and other resident occupancies at which wastes from individual resident units are commingled in a common container or a group of containers.

Construction debris waste. Concrete, brick wastes, dirt, scrap lumber, wallboard, pipe, wiring and packaging materials generated by the construction, repair, remodel, modification, demolition or removal of buildings or structures.

Garbage waste. Kitchen and table offal and every accumulation of animal, vegetable and other matter that attends the preparation, consumption, decay or dealing in or storage of meats, fish, fowl, fruits or vegetables. Food slops or liquids, when placed in a plastic liner within the garbage container, shall be considered as garbage waste. Garbage waste shall also include cans, bottles, containers, wrappings and packaging materials soiled with foods and waste material.

Hazardous waste. Waste defined as hazardous by Public Resources Code Section 40141 as it now exists or may subsequently be amended; namely, a waste or combination of wastes which, because of its quantity, concentration, toxicity, or physical, chemical or infectious characteristics, may do either of the following: (1) cause or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed of, or otherwise managed. “Hazardous waste” includes extremely hazardous waste and acutely hazardous waste, and any other waste as may hereafter from time to time be designated as hazardous by the Environmental Protection Agency (“EPA”) or other agency of the United States government, or by the California legislature or any agency of the State of California empowered by law to classify or designate waste as hazardous, extremely hazardous or acutely hazardous.

Household waste. Packaging material not associated with food products, discarded clothing, furniture, small appliances, toys and other waste material generated in the course of residential living. Ashes and excrement (disposable diapers, cat litter, and dog droppings) are considered a household waste when placed inside a plastic liner within the garbage container.

Individually serviced residence. Single-family houses, each dwelling unit of a duplex, triplex, quadruplex, mobile home park, condominium or other residence facility at which wastes are stored and made available for collection by or at each individual residence unit.

Industrial waste. Wastes produced in large quantities from factories, industrial plants, and mining plants.
**Occupancy.** Individually serviced and communally serviced residences, governmental, business and commercial establishments, factories and other industrial plants and any other development or premises on a parcel of land.

**Recyclables.** Magazines, newspapers, and clean office paper that is not contaminated by garbage or other waste material, cardboard, clean cans, food containers, food container glass, glass and plastic beverage containers, and other material collected or accepted as part of the city recycling program.

**Refuse.** Synonymous with “solid waste,” refuse includes garbage waste or rubbish.

**Restricted areas.** As designated by the city, these are areas where, in the city’s opinion, a combination of high density, lack of space for containers, and street width under thirty feet makes the curbside placing, maintaining or collection of garbage, waste and recyclables hazardous to the health and welfare of the residents.

**Rubbish.** Solid waste that is not garbage waste, including but not limited to combustible and noncombustible material, shrubbery, yard trimmings, clippings, wood, paper, packing materials, crockery, pasteboard, discarded clothing, rugs, straw, rubber, metal, plastic, and construction waste and debris.

**Solid waste.** Synonymous with “refuse,” solid waste includes garbage waste or rubbish.

**Special waste.** Wastes not fitting into the above categories, including but not limited to dead animals, abandoned automobiles and major parts thereof, large furniture objects, tree trunks, stumps, sod, garden rubble, dirt, major limbs exceeding eight inches in diameter, and street sweepings.

**Yard refuse.** Trimmings and prunings from trees and shrubs, leaves, grass clippings, weeds, vines, dropped fruit from on-site trees, arising from the development, maintenance and care of residential gardens and yards.

When the word “waste” or “waste matter” is used, it refers to any or all of the above. (Ord. 955 §2; Ord. 967 §2; Ord. 1254 §1; Ord. 1524 §1; Ord. 2054 § 1, 2001; Ord. 2173 §1, 2005)

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**32.01.020 Mandatory service.**

Except as permitted in Sections 32.01.070 and 32.01.080, each occupancy shall subscribe to waste collection service as provided by the city or its duly authorized agent. (Ord. 995 §2; Ord. 967 §2; Ord. 2173 §1). (Ord. 955 §2; Ord. 967 §2; Ord. 2054 § 1, 2001; Ord. 2173 §1, 2005)

**32.01.030 Prohibited acts.**

(a) No garbage or other waste matter shall be burned, nor shall garbage, waste materials, yard refuse or rubbish be allowed to accumulate, be buried, dumped, scattered, or placed on any property within the city, except as otherwise permitted by this code or other ordinances. Nothing in this section shall prohibit composting if it is not violative of basic sanitary standards or other applicable standards established by the city, county, state, or other agency having jurisdiction.

(b) The city or its duly authorized agent shall have the exclusive right to gather and collect garbage, yard refuse, recyclables, and other solid waste within the city. It shall be unlawful for any person, except as otherwise provided in this chapter, to gather or collect garbage, yard refuse, recyclables or other solid wastes within the city. Pursuant to California Public Resources Code Section 40059, the city reserves the right to issue an exclusive franchise for the handling of solid wastes. Notwithstanding any other provisions set forth in this chapter to the contrary, the exclusive right shall exclude:

1. The collection, transportation, recycling, and disposal of any solid waste otherwise within the scope of this chapter which is transported to an appropriate disposal facility by an officer or full-time permanent employee of the commercial, construction, or industrial enterprise that generated the Solid Waste (but not including any independent contractor, non-employee agent, or representative, or other contractor of such enterprise).
2. The sale or donation of source-separated recyclables by the person or entity that generated such material (the “generator”) to any person or entity other than the city’s duly authorized agent; provided, however, if the generator is required to pay a monetary or non-monetary consideration for the collection, transportation, transfer, or processing of recyclables, the fact that the generator receives a reduction or discount in price (or in other terms of the consideration, the generator is required to pay) shall not be considered a sale or donation.
(c) A resident may petition the city manager for permission to collect and haul away the wastes generated on the premises of such resident. Such a permit may be granted by the city manager, if, in his/her opinion, such would be in the best interests of the city. Such a permit may be used subject to any conditions reasonably related to the protection of the public health and welfare, and shall be for a period not to exceed one year. Permit requirements will include proof that waste will be properly disposed of at an authorized facility. (Ord. 955 §2; Ord. 967 §2; Ord. 2054 § 1, 2001; Ord. 2173 §1, 2005)

32.01.040 Waste containers.
(a) All waste, except as otherwise provided, shall be placed within acceptable containers.
(b) The following containers are acceptable for the deposit of solid waste.
(1) Contractor supplied and approved “semitautomated” or “automated” ninety to one hundred gallon wheeled carts with flytight lids or city and contractor approved alternative sized cart.
(2) Bin-type containers, adequate in capacity and structurally designed so as to be compatible with the collection equipment used for waste collection in the city.
(3) Compaction containers, special bulk-volume, drop-box or roll-off containers of sanitary design, adequate in capacity and structurally designed so as to be compatible with the collection equipment used for waste collection in the city.
(4) All waste containers supplied by the contractor shall be and remain the property of the contractor.
(c) Nothing in this chapter shall be construed so as to allow the maintenance of less than one receptacle per dwelling unit, except as the same is permitted by the terms of a portable bin-type container service.
(d) All containers shall, when filthy, leaking, or in a defective state, be cleaned by the subscriber and repaired or replaced by the owner of the container.
(e) Subscribers shall provide the “compactor” containers specified in subsections (b)(3) of this section. The city or its duly authorized agent shall provide containers for subsection (b)(1), (2) and (3), (excepting compactor containers) of this section as a part of the monthly service cost. The city or its duly authorized agent will provide services to privately owned cubic yard containers meeting the specifications of this paragraph if in good condition, but without price discount. (Ord. 955 §2; Ord. 967 §2; Ord. 1179, Exh. A; Ord. 1519 §1; Ord. 1524 §2; Ord. 2054 § 1, 2001; Ord. 2173 §1, 2005)

32.01.050 Placement of waste containers.
(a) Individually serviced residences. Containers of garbage waste and household waste in ninety to one hundred gallon carts from individually serviced residences shall be placed in the street gutter immediately adjacent to the curb, immediately adjacent to occupants property, but in no event on the sidewalk. Carts shall have a minimum distance of three feet between them and any other object. Such placement shall occur no earlier than 5:00 p.m. on the day prior to the scheduled collection day, nor later than 6:00 a.m. on collection day. Emptied containers shall be removed from the curb by seven a.m. on the day following collection. Containers that are to be collected from other than curbside location shall be placed in an accessible location no more than seventy-five feet from the street.
(b) All other occupancies. Carts, bins, bulk waste containers and other vessels used for waste storage by all other occupancies shall be placed such that they are easily accessible for collection, and in conformity with applicable zoning restrictions.
(c) Special waste. Special waste shall be placed as individually determined through an agreement between waste generator and waste collector. (Ord. 1300 §2; Ord. 2054 § 1, 2001; Ord. 2173 §1, 2005)

32.01.060 Ownership of wastes and recyclables.
Garbage and other containerized solid wastes shall remain the property of the generator until the material is removed from the container by the city or the city’s authorized collector. Yard refuse waste shall remain the property of the generator until the material is collected by the city or the city’s authorized waste collector.
Recyclables placed at the curb shall become the property of the city or the city’s authorized recyclables collector at the time of the placement at the curb. Recyclables placed inside of commercial containers shall become the property of city-authorized waste collector at the time they are placed in the container. It shall be unlawful for any generator to place hazardous waste in solid waste or recycling containers, and any hazardous waste so placed shall remain the property of the generator. (Ord. 955 § 2; Ord. 967 § 2; Ord. 1524 § 3; Ord. 2054 § 1, 2001; Ord. 2173 § 1)

32.01.070 Garbage service—Individually serviced residences.
(a) The frequency of garbage service for individually serviced residences shall be once per week.
(b) The basic garbage service to individually serviced residences not in a restricted area shall be the collection of one, ninety to one hundred gallon cart or other size authorized by the contractor and city, of premises-generated household wastes.
(c) The basic service to individually serviced residences in a restricted area shall be determined by the contractor and city.
(d) Physically handicapped residents may request “handicapped service.” This handicapped service shall consist of the retrieval of one, ninety to one hundred gallon cart located at an accessible point no greater than seventy-five feet from the curb. The petition for handicapped service shall be submitted to and approved by the city manager. Residents may become eligible for handicapped service by showing their valid disability parking permit or license issued by the State of California. Eligibility for handicapped service shall be on an annual basis.
(e) A resident may petition the city manager for permission to collect and haul wastes in accordance with Section 32.01.070.
(f) Special wastes shall be placed for collection as individually determined through an agreement between the waste generator and the waste collector. (Ord. 955 § 2; Ord. 967 § 2; Ord. 1254 § 2; Ord. 1477 § 1; Ord. 1519 § 2; Ord. 2054 § 1, 2001; Ord. 2173 § 1)

32.01.080 Commercial and industrial waste management.
(a) The frequency of waste collection generated by businesses, communally serviced residences, industrial occupancies, and other generators shall be:
(1) Construction debris waste, special waste and industrial waste shall be collected at such frequency that sanitation, aesthetic and nuisance problems do not occur.
(2) Food stores and markets, restaurants and other occupancies generating substantial quantities of garbage waste shall have the same removed at least two times per week.
(3) All other occupancies shall have waste removed at least once a week.
(4) Notwithstanding subparagraphs (1), (2), and (3) of this subsection, every occupancy shall subscribe to or shall independently provide a waste removal schedule more frequently where necessary to maintain sanitary, nuisance-free, clean and aesthetic conditions on the premises.
(5) Except in cases of emergency no collection shall be made on Sunday.
(b) A business may apply to the city manager for permission to collect and self-haul the wastes generated on the premises of such business. A permit may be granted by the city manager, if, in his/her opinion, such would be in the best interests of the city. Such a permit may be issued subject to any conditions reasonably related to the protection of the public health and welfare, and shall be for a period not to exceed one year.
(c) Construction waste disposal and recycling are included in the exclusive franchise rights of the city except as provided for in Sec. 32.01.030(b). (Ord. 955 § 2; Ord. 967 § 2; Ord. 2054 § 1, 2001; Ord. 2173 § 1)

32.01.090 Yard refuse management.
(a) Only leaves, tree and shrub prunings (maximum branch diameter of eight inches) and grass clippings may be placed in the street to be removed by the city’s yard refuse and street cleaning equipment or city’s authorized collector’s yard refuse and street cleaning equipment, and then only upon the following conditions:

(1) Yard refuse waste shall be placed or maintained in piles immediately adjacent to the property from which they originated, such piles in no event to exceed five feet in width or five feet in height or five feet in length, the same to be so placed and maintained as not to restrict reasonable gutter drainage or use of bicycle paths or bike lanes.

(2) No yard refuse waste piles shall be placed or maintained in such a way as to restrict reasonable access to a fire alarm box, fire hydrant, standpipe, alley, driveway, public sidewalk, or any other public facility.

(3) No yard refuse waste piles shall be placed or maintained in a restricted area. Plastic bags or other containerized yard waste shall not be placed in the street.

(4) The provisions of paragraphs (1) and (2) of subsection (a) of this section notwithstanding, small quantities of yard refuse constituting less than one-sixth cubic meter in volume, equivalent to less than one thirty-two gallon garbage can, shall be containerized as specified in Section 32.01.040.

(b) All other yard refuse, including sod, garden rubble, and dropped fruit from on-site fruit trees, shall be containerized as specified in Section 32.01.040.

(c) Inorganic material (rock, gravel, concrete, etc.) may not be placed in the street for collection. (Ord. 955 § 2; Ord. 967 § 2; Ord. 1254 § 3; Ord. 1524 §§ 4,5; Ord. 2054 § 1, 2001; Ord. 2173 § 1)

32.01.100 Recyclables collection.

(a) Individually serviced residences shall containerize recyclable waste in contractor provided sixty-four gallon carts and place the cart in the street gutter, adjacent to the residents property, but in no event on the sidewalk, on the day of the week that garbage is collected. Carts shall have a minimum distance of three feet between them and any other object. Paper shall be placed in the portion of the cart designated for such. All other recyclables, tin cans including bimetal-topped cans, food container glass, accepted plastic containers and aluminum cans, shall be placed in the portion of the cart designated for such. Corrugated cardboard must be flattened for collection. Flattened cardboard that is less than two cubic feet must be placed in the cart along with the newspaper. Corrugated cardboard in excess of two cubic feet must be flattened and placed curbside within five feet of the curb for collection.

(b) Communally serviced residences shall place recyclables within receptacles provided by the city or the city’s authorized agent near the garbage area of the communally serviced residence. (Ord. 955 § 2; Ord. 967 § 2; Ord. 2054 § 1, 2001; Ord. 2173 § 2)

32.01.110 Recycling collection sites for existing communally serviced residences.

(a) Recycling collection sites required. As of the effective date of the ordinance codified in this section, existing communally serviced residences, as defined in Section 32.01.010 of this chapter, consisting of ten or more units, shall make recycling carts available for use by tenants and shall be required to provide and maintain space on-site for recycling carts. The city’s waste removal entity shall supply the recycling carts. Existing complexes with nine or fewer units are exempt from the requirements of this section, but are required to designate curbside locations and instruct new tenants on the use of curbside recycling services.

(b) Recycling collection site plans. The owner or owner’s agent of each communally serviced residence shall submit a recycling collection site plan (hereinafter “plan” to the public works department for providing space for recycling carts. To the extent possible, the plans must comply with the goal of siting three recycling carts within, or next to, each trash enclosure. A minimum of three carts must be sited at each complex. Existing trees or other significant landscaping features (grass is not considered a significant landscaping feature) and space currently designated for automobile or bicycle parking shall not be eliminated or reduced in size to accommodate recycling carts. Any plan that proposes to site fewer than three carts per trash enclosure shall
submit written explanation as to the basis for requesting exemption from the goal. Such plan shall be submitted on a form prescribed by the city.

(c) **Exemption from site plan and architectural approval.** Recycling collection site plans conforming to subsection (b) shall not be subject to the requirements of Chapter 40, Article 40.31 of this Code, site plan and architectural approval, unless the plan indicates the elimination or relocation of any existing tree(s), or the elimination or reduction in size of any significant landscaping feature or space currently designated for automobile or bicycle parking.

(d) **Action by public works director.** The city recognizes the existence of hardships based upon the unique features inherent in each applicant’s complex that may interfere with the goal of siting three recycling carts at each trash enclosure. As such, the public works department will work with each applicant and the city’s waste removal entity to formulate an acceptable plan that allows for flexibility in the number of carts sited and their location(s). The city’s primary goal is to institute an accessible recycling collection program at each complex while minimizing undue hardships for the owner(s). The public works director shall approve the plan if the director is satisfied that the plan conforms to the requirements and intent of this section and that any additional conditions or requirements stipulated by the director and deemed necessary in the public interest have been or will be met.

(e) **Notification of action taken.** The applicant shall be notified in writing of the action taken by the public works director. An approved plan must be fully implemented within six months after approval date. Applicants must resubmit revised plans within one month after a plan is denied.

(f) **Building permits must be accompanied by recycling enclosure retrofit plans.** Issuance of a building permit for an existing communally serviced residence shall be conditioned upon provision of a recycling enclosure(s) that conforms to the standards set by the city for new development or an approved plan to accommodate recycling carts.

(g) **Appeals.** Any determination of the public works director may be appealed to the planning commission. Appeals shall be initiated only upon written request for a hearing before the planning commission. Such appeal shall specify with reasonable certainty the portion or portions of the public works director’s determinations which the applicant feels to be in error. Such appeal shall be accompanied by a fee set by resolution by the city council. In the absence of such request being filed within fifteen days after the determination of the public works director, such determination is final.

(h) **Education.** At the time a lease or rental agreement is signed, the manager or homeowner’s association representative, or other appropriate agent of the owner or owners of each communally serviced residence that is subject to this section shall (1) inform all new tenants of the availability of recycling, the location of the recycling collection site(s), and the materials that may be recycled, and (2) provide all new tenants with a flyer describing the city’s recycling program. The flyers shall be provided to the managers and homeowner’s associations by the city’s waste removal and recycling entity.

(i) **Violations.** Any violation of this section shall be deemed a nuisance and shall be punishable in accordance with Chapter 23 of this Code. (Ord. 1543 § 1; Ord. 2054 § 1, 2001; Ord. 2173 § 1)

**32.01.120 Fees and related regulations for waste management services.**

Fees and related regulations for waste management services shall be established and may be amended from time to time, by resolution of the city council (Ord. 955 § 2, Ord. 967 § 1; Ord. 1055 §1; Ord. 1091 § 1, Ord. 1179, Exh. A; Ord. 1300 § 1; Ord. 2054 § 1, 2001; Ord. 2173 § 1)

**32.01.130 Commencement of liability for charges for new buildings.**

(a) **Single-family residence.** Liability for charges under this article shall commence with respect to new single-family residences upon occupancy or issuance of a temporary occupancy permit by the city building official, whichever first occurs, and prior to actual occupancy. Billing shall be bimonthly in advance.
(b) **Multiple buildings including duplexes.** Liability for charges under this article shall commence with respect to new multiple buildings upon occupancy of any unit or issuance of a temporary occupancy permit for any unit by the city building official, whichever first occurs, and prior to actual occupancy. Billing shall be bimonthly in advance.

(c) **Commercial and industrial buildings.** Liabilities for charges under this article shall commence with respect to new commercial and industrial buildings upon occupancy or upon the issuance of a permit for temporary occupancy of any unit by the city building official, whichever first occurs, and prior to actual occupancy. Billing shall be bimonthly in advance.

(d) A credit shall be allowed against subsequent billings where the city manager has permitted the customer to collect and haul away their own wastes in accordance with Section 32.01.070 or Section 32.01.080(b).

(e) For business, industry and communally serviced residences, services and charges therefore shall begin at the ordering of waste collection service, or upon the issuance of a permit for temporary occupancy by the city building official, whichever first occurs. The amount of waste collection service ordered may be changed monthly as necessary to reflect the need for such service. (Ord. 955 § 2; Ord. 967 § 2; Ord. 1055. § 3, 4; Ord. 1519 § 3; Ord. 2054 § 1, 2001; Ord. 2173 § 1)

**32.01.140 Billing procedure.**

(a) For all single-family dwellings, duplexes, multiple-family units, mobile homes and other residential parcels, billing shall be made by the city to the owner of the parcel as on the recorded deed.

(b) For all commercial or industrial parcels, billing shall be mailed to the person specified by the owner of the parcel, and if not specified, then to the owner of the parcel.

(c) In all cases not specifically provided for above, or where the billing procedure specified above proves impractical or inconvenient, as determined by the finance director, the billing by the city shall be to the person responsible for the payment of the bill, as elsewhere specified in this chapter.

(d) For bulk waste and special waste collection service, the fees as prescribed in Section 32.01.120 shall be billed by the city or its duly authorized agent to the person ordering such waste collection service. (Ord. 955 § 2; Ord. 967 § 2; Ord. 1055 §§ 3, 4; Ord. 1519 §§ 3, 4; Ord. 2054 § 1, 2001; Ord. 2173 § 1, 2005)

**32.01.150 Refunds.**

When any refund becomes due and owing by virtue of action of the city council or by virtue of any error made in ascertaining the charge applicable to any customer, the city’s finance director is authorized to make such refund and to expend such public money from the specific fund established for the deposit of sanitation service and use charges. (Ord. 1055 § 5; Ord. 2054 § 1, 2001; Ord. 2173 § 1, 2005)

**32.01.160 Remedies of city, penalties, etc., concerning collection of charges.**

(a) The remedies provided herein shall be in addition to all other remedies authorized by law and the enumeration of certain remedies shall not preclude the application of any other remedies not herein enumerated.

(b) The charge imposed by this article shall be a civil debt owing to the city from the person responsible for its payment, and the city may institute action in any court of competent jurisdiction to collect such debt, together with applicable penalties, interest, costs and other expenses.

(c) Bills are due and payable on the date of presentation and shall become delinquent thirty days thereafter, if not paid.

(d) The basic penalty for nonpayment of the charges within the time and in the manner prescribed herein shall be ten percent.

(e) The city shall include a statement on its bill to each property owner in substantially the following form: “Charges for sanitation services and facilities shall constitute a lien against the lot or parcel of land against which the charge is imposed if said charges remain delinquent for 60 days.”
Pursuant to such notice, such charges shall become a lien against the lot or parcel of land against which the charges were imposed if such charges remain delinquent for a period of sixty days. The city shall cause to be recorded with the county recorder all such delinquent charges, and when so recorded such charges shall have the force, effect and priority of a judgment lien and continue for three years from the time of recording unless sooner released or otherwise discharged. (Ord. 1055 § 5; Ord. 1519 § 5; Ord. 2054 § 1, 2001; Ord. 2173 § 1)

**Article 32.02 REDEMPTION VALUE: WINE AND SPIRIT COOLER CONTAINERS**

32.02.010 Definitions.

For the purpose of this article, the following terms shall be defined as follows:

(a) **City** means all that territory within the corporate limits of the City of Davis, State of California.

(b) **City manager** means the city manager of Davis or designee.

(c) **Consumer** means every person who, for his or her use or consumption, purchases wine cooler or spirit cooler in a container from a dealer in the city.

(d) **Container** means any sealed device, however denominated, made of glass, metal, plastic, or other material or any combination of materials, which directly holds or contains wine cooler or spirit cooler. “Container” does not include cups or other similar open or loosely sealed receptacles.

(e) **Dealer** means any person who engages in the sale to a consumer of wine cooler or spirit cooler in a container or containers in the city.

(f) **Empty** as used herein to describe a container, means a container which is all of the following:

1. Has the original seal or closure broken or removed;
2. Does not contain foreign materials other than the residue of wine cooler or spirit cooler originally packaged in the container;
3. Bears the refund value marking pursuant to Section 32.02.020(c) herein; and
4. Is not broken, crushed, or dismembered.

(g) **Distributor** means any person who engages in the sale of wine cooler or spirit cooler in a container or containers to a dealer in the city. “Distributor” includes any person who imports or otherwise transports wine cooler or spirit cooler in containers from outside the city for sale to a dealer in the city.

(h) **Person** means any individual person or group of individual persons, or partnership, association, corporation or any other entity of any type whatsoever.

(i) **Place of business** as used herein with respect to a dealer, means the location at which a dealer sells, or offers for sale, wine cooler or spirit cooler in a container or containers. “Place of business” as used herein with respect to a distributor, means any location from which said distributor directly transports wine cooler or spirit cooler in containers to any dealer, if said location is within the State of California.

(j) **Sale** (or “sold” or “sell”) means any commercial transaction (other than by vending machine) by any dealer in which wine cooler or spirit cooler in a container or containers is transferred to a consumer for a monetary consideration for the purpose of off-premise consumption, or any commercial transaction by which a distributor transfers wine cooler or spirit cooler in a container or containers to a dealer for a monetary consideration for the purpose of sale by the dealer for off-premise consumption.

(k) **Spirit cooler** means a liquid intended for human consumption containing distilled spirits to which is added concentrated or unconcentrated juice or flavoring material and containing not more than eight percent alcohol by volume.

(l) **Vending machine** means any mechanical device which, upon insertion of coins, sells or dispenses wine cooler or spirit cooler in containers.

(m) **Wine cooler** means a liquid intended for human consumption containing wine to which is added concentrated or unconcentrated juice or flavoring material and containing not more than seven percent alcohol by volume. (Ord. 1441 § 1)

32.02.020 Distribution requirements.
(a) Every wine cooler or spirit cooler container sold or offered for sale by a distributor to a dealer for sale by
the dealer within the city shall have a refund value of not less than five cents for redemption by a dealer from
the distributor.

(b) It shall be unlawful for a distributor to knowingly sell or offer to sell a wine cooler or spirit cooler
container to a dealer for sale by the dealer within the city and for a dealer to purchase such a container for such
purposes from a distributor unless the distributor charges and the dealer agrees to pay a refund value of not less
than five cents.

(c) Every wine cooler or spirit cooler container sold or offered for sale by a dealer within the city shall clearly
indicate by embossing or by a stamp or label or other method, securely affixed to the container by the
distributor, that the container has a refund value.

(d) It shall be unlawful for a distributor to knowingly sell or offer to sell a wine cooler or spirit cooler
container to a dealer for sale by the dealer within the city and for a dealer to purchase such a container for such
purposes or to store or offer to sell such a container for such purposes unless the container is embossed, stamped
or labeled with, or by other method indicates the message required by subsection (c) above. (Ord. 1441 § 1)

32.02.030 Retail requirements.
(a) Every wine cooler or spirit cooler container sold or offered for sale by a dealer within the city shall have a
refund value of not less than five cents for redemption by a consumer from the dealer.

(b) It shall be unlawful for a dealer to sell or offer to sell a wine cooler or spirit cooler container within the
city unless the dealer charges a refund value of not less than five cents. (Ord. 1441 § 1)

32.02.040 Distributor redemption requirements.
(a) It shall be unlawful for a distributor to refuse to accept from a dealer any empty wine cooler or spirit
cooler container which has been marked in the manner prescribed by Section 32.02.020 (c), of the kind, size and
brand sold by the distributor, or to refuse to pay to the dealer a refund value for such container of not less than
five cents.

(b) It shall be unlawful for a distributor to refuse to accept from a consumer any empty wine cooler or spirit
cooler container which has been marked in the manner prescribed by Section 32.02.020 (c) herein, of the kind,
size and brand sold by the distributor when the container has been delivered by the consumer to the distributor’s
place of business, or to refuse to pay to the consumer for such container a refund value of not less than five
cents. (Ord. 1441 § 1)

32.02.050 Retail redemption requirements.
It shall be unlawful for a dealer who sells wine cooler or spirit cooler in containers to refuse to redeem a wine
cooler or spirit cooler container from a consumer or refuse to pay a refund value for the container of not less
than five cents to the consumer, when the request for redemption is made at the dealer’s place of business
within the city and the container is embossed, stamped or labeled with, or by other method indicates a message
that the container has a refund value, unless either:
(a) The container is not empty; or
(b) The container contained a brand or type of wine cooler or spirit cooler which the dealer is not offering for
sale at the time redemption is requested and has not offered for sale for a period of at least ninety days. (Ord.
1441 § 1)

32.02.060 Inspection authority.
The city manager or the manager’s designee is authorized to enter the business premises during business hours
of any dealer engaged in the sale of wine cooler or spirit cooler in containers in the city for the sole purpose of
inspecting said premises and determining whether the dealer is in compliance with this article. (Ord. 1441 § 1)
32.02.070 Violation and fine.
Any dealer or distributor found in violation of any provision of this article shall be guilty of a misdemeanor and shall be punished by a fine not exceeding three hundred dollars. For purposes of this article, each day of a continuing violation shall constitute a separate offense. (Ord. 1441 § 1)

Article 32.03 ADEQUATE AREAS FOR COLLECTING RECYCLABLE MATERIALS

32.03.010 Definitions.
For purposes of this article, the following terms shall be defined as follows:

Development project means any of the following:
(1) A project for which a building permit is required for a commercial, industrial or institutional building, public facility, or residential building having five or more living units, where solid waste is collected and loaded, and any residential project where solid waste is collected and loaded in a location serving five or more living units.
(2) The definition of development project only includes subdivisions or tracts of single-family detached homes if, within such subdivisions or tracts, there is an area where solid waste is collected and loaded in a communal location. In such instances, recycling areas as specified in this ordinance are only required to serve the needs of the living units which utilize the solid waste collection and loading area.

Improvements means an addition made to property or to a facility which adds value to the property or facility, prolongs its useful life, or adapts it to new use. Improvements should be distinguished from repairs. Repairs keep facilities in good operating condition, do not materially add to the value of the facility, and do not substantially extend the life of the facility.

Public facility includes, but is not limited to, buildings, structures and outdoor recreation areas owned by the city.

Recycling area or areas for recycling means space allocated for collecting and loading of recyclable materials. Such areas shall have the ability to accommodate the appropriate receptacles for recyclable materials. For existing residential buildings or projects between five and nine living units, “recycling areas or areas for recycling” may mean, at the discretion of the planning and building department, curbside recycling. (Ord. 1765 § 1)

32.03.020 General requirements.
(a) Any new development project for which an application for a building permit is submitted on or after September 1, 1994, shall include adequate, accessible, and convenient areas for collecting and loading recyclable materials.
(b) Any existing development project for which an application for a building permit is submitted on or after September 1, 1994, for modifications that add thirty percent or more to the existing floor area shall include adequate, accessible and convenient areas for collecting and loading recyclable materials. (Ord. 1765 § 1)

32.03.030 Guidelines for all development projects.
(a) The location, size, and design of the recycling areas shall be subject to the review and approval of the planning and building department in consultation with the fire department and the public works department.
(b) Areas for recycling shall be adequate in capacity, number, and distribution to serve the development where the project occurs.
(c) Dimensions of the recycling areas shall accommodate receptacles sufficient to meet the recycling needs of the development project.
(d) An adequate number of bins or containers to allow for the collection and loading of recyclable materials generated by the development should be located within the recycling areas of development projects.
(e) Any recycling areas shall be located so they are at least as accessible and convenient as the locations where solid waste is collected and loaded. Whenever feasible, areas for collecting and loading recyclable materials should be within or adjacent to the trash collection areas.

(f) Recycling areas should be designed to be architecturally compatible with nearby structures and with the existing topography and vegetation in accordance with city standards and shall comply with all applicable federal, state or local laws.

(g) Recycling areas or the bins or containers placed therein must provide protection against adverse environmental conditions which might render the collected materials unmarketable.

(h) The city recommends, but does not require, that applicants consider security to prevent the theft of recycling materials by unauthorized persons, while allowing authorized persons access for disposal of materials. (Ord. 1765 § 1)

32.03.040 Additional guidelines for multifamily development projects.

(a) To the extent possible, multifamily complexes must site three recycling carts within, or next to, each trash enclosure.

(b) Any project which proposes to site fewer than three carts per enclosure shall submit written explanation as to the basis for requesting an exemption. The planning and building department in consultation with the public works department shall make the determination of whether or not the exemption should be granted. (Ord. 1765 § 1)

32.03.050 Education.

(a) Each container for recyclable material shall identify which materials are acceptable for that container.

(b) At the time a lease or rental agreement is signed, the manager or homeowner’s association representative, or other appropriate agent of the owner or owners of each communally serviced residence or multitenant commercial complex that is subject to this section shall:

1. Inform all new tenants of the availability of recycling, the location of the recycling collection site(s), and the materials that may be recycled; and

2. Provide all new tenants with a flyer describing the city’s recycling program. The flyers shall be provided by the city. (Ord. 1765 § 1)

32.04 DIVERSION OF CONSTRUCTION AND DEMOLITION DEBRIS

32.04.010 Short title.

This article shall be known as the “Diversion of Construction and Demolition Debris Ordinance of the City of Davis.” (Ord. 2299 § 1, 2007)

32.04.020 Definitions.

For the purpose of this article the following terms shall have the meanings given in this section:

(a) **Applicant** means any individual, firm, limited liability company, association, partnership, political subdivision, industry, public or private corporation, or any other entity whatsoever who applies to the city for applicable permits to undertake any construction, demolition, or renovation project within the city.

(b) **Contractor** means any person or entity holding, or required to hold, a contractor’s license of any type under the laws of the State of California, or who performs (whether as a contractor, subcontractor or owner-builder) any construction, demolition, remodeling, or landscaping service relating to buildings or accessory structures within the city.

(c) **Construction** means the building of any facility or structure or any portion thereof including any tenant improvements to an existing facility or structure.

(d) **Construction and demolition debris** includes:
Discarded materials generally considered to be not water soluble and nonhazardous in nature, including but not limited to metals, glass, brick, concrete, asphalt material, pipe, gypsum, wallboard, and/or lumber, generated as part of a construction, demolition or renovation project; of a structure and/or landscaping, and including rocks, soils, tree remains, trees, and other vegetative matter that normally results from land clearing, landscaping and development operations for a construction or demolition project;

Clean cardboard, paper, plastic, wood, and metal scraps resulting from any construction or demolition project;

Other nonhazardous wastes that are generated at construction or demolition projects, provided such amounts are consistent with best management practices of the industry.

Demolition means the decimating, razing, tearing down or wrecking of any facility structure, pavement or building, whether in whole or in part, whether interior or exterior.

Divertible materials includes:

Masonry building materials generally used in construction including, but not limited to, asphalt, concrete, rock, stone, and brick;

Wood materials including any and all dimensional lumber, fencing or construction material. Some wood materials that are chemically treated or contaminated may not be divertible;

Vegetative materials include trees, tree parts, shrubs, stumps, logs, brush or any other type of plants that are cleared from a site for construction or other use;

Metals including all metal scrap, but not limited to, pipes, siding, window frames, door frames and fences;

Roofing materials including wooden, asphalt, stone and/or slate based roofing material.

Divert means to use material for any purpose other than disposal in a landfill such as re-use or recycling.

Project means any activity involving construction, demolition, or renovation, and which requires issuance of a permit from the city.

Project site means a lot or parcel where demolition, construction, addition, or alteration is proposed. In the case of a residential subdivision under construction, “project site” means the parcels proposed for development in a particular phase by a homebuilder.

Recycling means the process of collecting, sorting, cleansing, treating, and reconstituting materials that would otherwise become solid waste, and returning them to use in the form of raw material for new, reused, or reconstituted products which meet the applicable quality standards.

Renovation means any change, addition, or modifications to an existing structure for which a permit is required.

Re-use means further or repeated use of construction or demolition debris.

Waste reduction and recycling plan means a completed form submitted before the issuance of a building and/or demolition permit, approved by the public works director or designee, for the purpose of compliance with this article. Forms shall be obtained from the city.

Waste reduction and recycling report means a completed city-provided form submitted after demolition or construction, as a precedent to final inspection and issuance of any certificate of occupancy, approved by the public works director or designee, for the purpose of compliance with this article. (Ord. 2299 §1, 2007)

32.04.030 Applicability.
All projects requiring a building permit with the following exceptions:

Residential additions less than one thousand square feet of gross floor area;

Tenant improvements involving less than three thousand square feet of gross floor area;

New structures of less than one thousand square feet of gross floor area;

Demolition of less than one thousand square feet of gross floor area;

Any project at the discretion of the chief building official or designee. (Ord. 2299 §1, 2007)

32.04.040 Exemptions.
(a) Emergency work (demolition, construction, addition, or alteration performed in conjunction with an emergency or a building/structure deemed substandard by the California Building Code through the chief building official).
(b) A project contaminated by hazardous substances or waste as defined by state or federal law. (Ord. 2299 §1, 2007)

32.04.050 Exclusive franchise.
Construction and demolition debris disposal and recycling are included in the exclusive franchise rights of the city except as provided for in Section 32.01.030(b). (Ord. 2299 §1, 2007)

32.04.060 Diversion requirements.
Fifty percent of construction and demolition debris generated from applicable construction, remodeling, or demolition projects shall be diverted from disposal to landfills through recycling, reuse and diversion programs. Separate calculations, plans and reports are required for the construction portion and demolition portion of projects. (Ord. 2299 §1, 2007)

32.04.070 Information required before issuance of building or demolition permit.
(a) Submittal of waste reduction and recycling plan. Every applicant shall submit a completed waste reduction and recycling plan as part of the building permit application submission. A single plan may be used for multiple building permits where construction activity is occurring concurrently by the same applicant. Separate waste reduction and recycling plans must be submitted for each batch of building permits requested.
(b) Approval of waste reduction and recycling plan. Notwithstanding any other provisions of this article, no building or demolition permit shall be issued for any project as defined in Section 32.04.030 unless and until the public works director or designee has approved the waste reduction and recycling plan.
(c) Denial of waste reduction and recycling plan. If the public works director or designee determines that the waste reduction and recycling plan is incomplete he or she shall return it to the applicant. The applicant must then submit additional information before the waste reduction and recycling plan can be reviewed and the building or demolition permit issued. (Ord. 2299 §1, 2007)

32.04.080 Compliance with diversion requirements.
(a) Inspection authority. During demolition or construction, city may inspect project sites to determine compliance with the waste reduction and recycling plan.
(b) Proof of diversion. After the waste reduction and recycling plan is approved and the building permit is issued, there are no additional reporting requirements on projects where the City of Davis sole franchisee, Davis Waste Removal, is responsible for waste removal. The city will receive all pertinent information from Davis Waste Removal. For projects where “self haul” as defined in Section 32.01.030 is being utilized, applicants will be required to submit proof of compliance before final inspection. Proof of compliance to be submitted with end of project reports includes:
(1) Submittal of a completed city-provided waste reduction and recycling report form;
(2) Receipts from the vendor or facility which collected or received each material showing the actual weight of that material (recyclables and solid waste). Each receipt must clearly state the project title and date. If the receipt provides information for multiple projects, the project titles and the amounts of material for each project must be clearly identified.
(3) Weight slips/count of material salvaged or re-used in current project. Each receipt must clearly state the project title and date. If the receipt provides information for multiple projects, the project titles and the amount of material for each project must be clearly identified.
(4) Any additional information needed to support a good faith effort determination. (Ord. 2299 § 1, 2007)
32.04.090 Determination of compliance.
For all projects where Davis Waste Removal, the Davis franchisee, is the waste hauler, fifty percent compliance is assumed on behalf of the applicant. On “self haul” projects the public works director or designee shall review the end of project waste reduction and recycling report and determine whether the applicant has complied with the diversion requirement, as follows:

(a) **Full compliance.**公共 works director or designee will notify the applicant and the building department if they determined that the diversion requirements have been met.

(b) **Good faith effort to comply.** If the public works director or designee determines that the diversion requirement has not been achieved, he or she shall determine on a case-by-case basis whether the applicant has made a good faith effort to comply with this article. In making this determination, the public works director or designee shall consider the availability of markets for the construction debris, the size of the project, and the documented efforts of the applicant to divert construction debris. The applicant and the building department will be notified if “good faith effort to comply” has been issued.

(c) **Noncompliance.** If the public works director or designee determines that the applicant has not made a good faith effort to comply, the applicant will receive a “noncompliance” determination. A one thousand dollar penalty for noncompliance may be assessed. The applicant has a right to a hearing to protest the validity of the penalty. (Ord. 2299 § 1, 2007)

32.04.100 Option to revise.
The city will periodically evaluate this diversion of construction and demolition debris article to determine its effectiveness in reducing the amount of construction and demolition debris landfilled. If the city determines that additional construction and demolition debris can reasonably be diverted beyond that which is required herein, the city may amend these provisions and implement additional measures to divert more materials. (Ord. 2299 § 1, 2007)

32.04.110 Recycling encouraged.
Nothing in this chapter shall limit the right of an individual or applicant to donate, sell or otherwise dispose of recyclables, provided that such disposal is in accordance with provisions of this chapter. (Ord. 2299 § 1, 2007)

32.04.120 Rules and regulations.
The public works director is authorized to make all necessary and reasonable rules and regulations with respect to the enforcement of this article. All such rules and regulations shall be consistent with the provisions of this article. (Ord. 2299 § 1, 2007)

32.04.130 Implementation.
All provisions of this article will be come effective and enforceable when a construction and demolition sort facility is operating in Yolo County or one year from the passage of the ordinance codified in this article, whichever is earlier. (Ord. 2299 § 1, 2007)
Appendix B - Davis Waste Removal Contract

AGREEMENT

This agreement, for reference purposes dated October 1, 2004, is made and entered into at Davis, California, by and between the CITY OF DAVIS, a Municipal Corporation, hereinafter referred to as "CITY," and DAVIS WASTE REMOVAL COMPANY, INC., a California Corporation, and hereinafter referred to as "CONTRACTOR".

1. SCOPE OF THIS AGREEMENT

1.1 Purpose of this Agreement.

The purpose of this Agreement is to provide for a quality waste management service to the citizens and businesses of the City of Davis at a fair market cost. This Agreement sets down the terms and conditions under which CONTRACTOR shall provide the services of collection, transporting, processing, and disposal or marketing of wastes and recyclables that are generated in or occur within the City of Davis, and the compensation to be received by CONTRACTOR therefor. This Agreement also provides for the orderly transition to a successor operation of wastes and recyclables management by a CITY-sponsored successor, in the event that CONTRACTOR does not comply with the terms of this Agreement, or requests a termination to providing the required services.

2. SERVICE AND OPERATIONS

2.1 General. CONTRACTOR shall provide, as from time to time called upon by CITY and by individual subscribers, collection and hauling service of such wastes and recyclables as are generated or occur within the City of Davis. The waste collection and recycling services shall be as provided for in Chapter 32 of the Municipal Code of Davis, as set forth in Exhibits A and B of this Agreement, and as from time to time amended.

The CITY and CONTRACTOR acknowledge that during the first 90 days of this agreement the Waste Service Component detailed below in section(s) 3.1 (A) and 3.1 (B) will be implemented in phases as carts and equipment are delivered to the CONTRACTOR. It is understood and agreed that until such time as carts and equipment are put in service, the CONTRACTOR will provide service as outlined in the Agreement between the CITY and
CONTRACTOR dated August 1, 2001. Upon delivery of carts to the residents, section(s) 3.1 (A) and 3.1 (B) of this Agreement will be in force.

2.2 Compliance with Laws. All services performed by CONTRACTOR shall be in accordance with all applicable City, County, Regional, State, and Federal ordinances, laws, requirements, restrictions, and licensing provisions.

3. WASTE SERVICE COMPONENTS

3.1 Basic Service Components. The basic service components to be performed by CONTRACTOR under the terms of this Agreement are:

A. Residential Waste Collection. This consists of waste containerized in a ninety to one hundred gallon cart, or city and contractor approved alternate sized cart, provided by the contractor, placed in the ‘street gutter’ adjacent to the residents property for collection on a once-per-week basis. Handicapped retrieval service for residential subscribers shall be made available to those qualifying subscribers without additional charge.

B. Commercial waste collection service on a once/week to six times/week basis, with CONTRACTOR furnishing waste bins or carts where appropriate.

C. Drop box waste collection service, including the use of customer owned compactor boxes, on a schedule or on call, with CONTRACTOR furnishing or offering to furnish non-compactor drop boxes or hauling subscriber’s boxes.

D. Loose garden refuse collection from the streets and gutters, on a once/week basis except for a two-month period during the maximum leaf drop season when such collection shall be at least bi-weekly.

E. Residential Recycling Collection. This consists of collection of cans (aluminum and tin), food container glass, cardboard, plastic beverage containers, newspapers, and mixed paper, containerized in 64 gallon wheeled carts provided by the Contractor, placed in the ‘street gutter’ adjacent to the residents property for collection on a once-per-week basis. Individually-serviced residences may include apartment complexes with one through nine units.

F. Commercial Recycling Collection. This consists of collection of mixed paper, food container glass and beverage container collection from apartments and other communally-served dwellings shall be performed as compliance by apartment owners is made
with respect to the requirements of Ordinance No. 1543 requiring recycle container space at all apartment complexes. Newspaper, mixed papers, food container glass and beverage container collection from all businesses and communally-served dwellings shall be performed or made available. Additionally, CONTRACTOR shall provide citizen access to CONTRACTOR’s facility where the above same materials may be dropped off, and where waste oil and scrap metal may be delivered. CONTRACTOR’s marketing effort shall attempt to find markets for all collected recyclables with due consideration for economics.

G. Street Sweeping. CONTRACTOR shall perform weekly street sweeping in conjunction with or shortly following CONTRACTOR’s weekly loose garden refuse collection service. The downtown core area and major CITY thoroughfares, consisting of approximately 12 curb miles of streets, shall be swept twice weekly. Attached as Exhibit B to this Agreement is a map depicting the actual streets to be swept.

H. Special Services. Bulky Item Turn-In Program. CONTRACTOR shall provide a Bulky Item Turn-In Program once per year in the month of April during which single-family residential units may dispose of large or bulky objects. CONTRACTOR shall attempt to recycle white goods collected during the Bulky Item Turn-In Program. Advertising for this event will be the responsibility of the CITY. Any advertising or promotional literature shall be subject to review by the CONTRACTOR prior to publication.

4. PERFORMANCE REQUIREMENTS

4.1 Contractor Equipment and Workforce. CONTRACTOR shall provide the equipment and workforce reasonably necessary to properly and safely accomplish the waste and recyclables collection and processing service within the City of Davis. CONTRACTOR shall exercise competent supervision over the operation.

4.2 Contractor Service Quality. CONTRACTOR shall perform this service in a courteous, professional, and quality manner. CONTRACTOR shall be exceptionally careful to minimize litter in collecting and transporting waste materials and at its corporation yard. CONTRACTOR shall replace lids or covers on containers immediately after emptying same, and shall repair or replace at CONTRACTOR expense any container damaged as a result of CONTRACTOR’s handling, normal wear and tear excepted.
4.3 **Collection Schedule.** CONTRACTOR shall adhere to the collection frequency schedule of Chapter 32 of the Municipal Code of Davis, and shall have specific routes and collection days for adhering to that schedule. CONTRACTOR shall furnish CITY with “Residential Refuse Collection Day Scheduling Maps,” and shall not make changes to same without first informing CITY.

4.4 **Contractor Corporation Yard.** CONTRACTOR shall maintain a proper office and corporation yard for the management and control of the waste collection and recycling service. Said office shall be staffed by a person or persons who will respond to a telephone maintained on premises during all regular office hours of CITY, except as authorized by CITY.

4.5 **Complaint Correction.** CONTRACTOR shall attempt to promptly correct any complaint relative to service or missed service. In the event that complaints are registered with CITY rather than with CONTRACTOR, CITY shall inform CONTRACTOR of the complaint, and CONTRACTOR shall promptly and properly respond to the complaint as if it had come directly to CONTRACTOR.

4.6 **Start and Stop Orders.** CONTRACTOR and CITY shall cooperate in the taking of orders for service. Starts and stops, as a result of new or changed occupancies of residences and businesses, shall primarily be the responsibility of CITY, but details of the frequency and days of collection, the furnishing of waste bins, and the like, may be referred to CONTRACTOR for on-site decisions between CONTRACTOR and subscriber. The primary responsibility for taking orders for industrial and special waste collection work shall be with CONTRACTOR.

4.7 **Residential Waste Collection Start Time.** CONTRACTOR shall not begin residential waste collection service prior to 7:00 a.m. during the months of October through May, nor prior to 6:00 a.m. during the months of June through September.

4.8 **Inspection of Records.** CONTRACTOR’s operational and financial records shall be open for inspection by CITY at all times, but shall remain confidential with respect to third parties.

4.9 **Quarterly and Annual Recycling Reports.** CONTRACTOR will provide calendar year quarterly reports and an annual report, due in March to the CITY for the preceding year detailing the amount of recycled material collected and the revenue derived from same. Such detail will be by specified recycled material (e.g., aluminum, food container glass,
newsprint, etc.). Whenever possible, the report will show source of recycled material (residential curbside, commercial, drop-off center). CITY to approve the format of the annual and quarterly reports.

4.10 Waste Diversion Goals. CONTRACTOR shall make a reasonable effort to attain and maintain the following waste diversion goal: 50% by December 31, 2001. The goal represents the percent of the total waste stream that is to be diverted from the landfill for the twelve-month period ending December 31 of each goal year. The parties intend that this waste diversion figure operate as a true goal, and shall not be construed as a performance standard. CONTRACTOR will keep detailed records of all materials collected and not landfilled. An annual report shall be provided to CITY showing percent of the City of Davis waste stream (in tons) diverted and the shipping/delivery locations by material type. This report may be combined with the reports submitted in Section 4.9. The report is due in March of each year.

4.11 Hazardous Material Spills. In the course of performing contracted services should CONTRACTOR encounter a spill of hazardous materials, CITY shall be responsible for the clean up of said spill. CONTRACTOR may bill CITY for costs incurred by CONTRACTOR during the clean up of said spills.

4.12 Adjusting Service Components. The basic service components can be altered by City Council, with corresponding adjustments in compensation pursuant to the procedure on rate setting of Section 5. CITY shall consult with CONTRACTOR prior to changing the basic service components.

4.13 Yolo County Central Landfill. Unless directed otherwise by CITY, CONTRACTOR will use the Yolo County Central Landfill as the primary facility for the disposal of residual solid waste.

5. COMPENSATION AND RATES

5.1 Contractor’s Rates.

A. CONTRACTOR shall provide services to customers pursuant to this Agreement at the rates set forth in the attached Exhibit A, the contents of which are incorporated by this reference. The Exhibit A rates will apply at the commencement of this Agreement and may be increased based on the provisions herein addressing rate adjustments. The Exhibit A
rates are inclusive of all solid waste handling services to be provided, including collection, transportation, processing, disposal, and container and bin costs, and costs associated with moving bins from standard enclosures such distance as is reasonably necessary to dump them (but not including costs associated with moving bins beyond such distance in unusual circumstances or due to special requests by customers). No other charges shall be imposed by CONTRACTOR for such services unless approved by CITY.

B. Annual Consumer Price Index Adjustments. Commencing on August 1, 2005, the CONTRACTOR component associated with any of the rates set forth in Exhibit A shall be adjusted, and such component of said rates shall be adjusted annually thereafter during the term hereof (the “Adjustment Dates”), by adjusting the previous year’s rates as set forth in Exhibit A, less landfill component to determine the base rates. The landfill component is calculated by averaging the cost of disposal of the previous year’s weight per unit of service (i.e., subscribed yard, residential garbage service, yard waste). The adjustment to the base rates shall be made by multiplying each base rate by the mean average percent change in the Consumer Price Index, All Items, San Francisco-Oakland-San Jose, as maintained and published by the Bureau of Labor Statistics, United States Department of Labor, for the preceding three years ending in December of the prior year under consideration. After each Annual Consumer Price Index Adjustment, the rates established become the new base rate to which the landfill component is added. If the service does not contain a landfill component associated with its respective rate, no deduction will be made prior to applying the Annual Consumer Price Index Adjustment. In the event that said index is no longer maintained or is substantially modified, the parties shall agree on a different index of adjustment, or shall adjust the rates pursuant to the procedure recited in paragraph C below.

C. Alternative Bi-Annual Adjustment Method. Ninety days prior to August 1, 2006, and every two years thereafter, in lieu of the annual Consumer Price Index adjustments to CONTRACTOR component set forth in subparagraph B hereinabove, CONTRACTOR shall have the option, if it chooses, to petition the CITY for an adjustment to the CONTRACTOR component based upon the prevailing rates then in effect for comparable service in the surrounding communities of Woodland, West Sacramento, City of Sacramento, County of Sacramento, Vacaville and Dixon. CONTRACTOR shall fully tabulate and evaluate
the rate survey data, and shall furnish to CITY the specific sources and contact persons for each item of information. CITY will assist in the gathering of information from these other agencies. Based on this data and CONTRACTOR’s interpretation of it, CONTRACTOR shall prepare a “Compensation Proposal” of payment rates and charge rates for the various kinds of classes of service that CONTRACTOR is called upon to provide. Upon submission of CONTRACTOR’s Compensation Proposal to CITY, the City Manager shall assemble a Review Board. The Review Board shall consist, by way of example and not by way of limitation, of representatives from the City Manager, Finance, and Public Works offices, and may include a technical representative from the County of Yolo. The Review Board shall evaluate and determine the reasonableness of CONTRACTOR’s Compensation Proposal. The parties shall negotiate and attempt to resolve any differences. If CONTRACTOR and the Review Board reach agreement on the Compensation Proposal, the same shall be submitted to the City Council for approval. If the parties cannot agree within a 90 day period, the annual method of adjustment recited in Subparagraph B of this Section 5.1 shall be implemented until a settlement can be reached. CITY and CONTRACTOR shall negotiate in good faith. If CONTRACTOR chooses not to apply this alternative bi-annual adjustment, the rates shall be adjusted as set forth in Subparagraph B of this section.

D. Adjustments to Landfill Component. The landfill component of CONTRACTOR’s rates shall be adjusted upward or downward to reflect any change in landfill tipping fees, within thirty (30) days of a landfill tipping fee increase or decrease.

5.2 City Adjustment of Rates. The parties acknowledge that the difference between the CITY’s customer rate and amount payable to CONTRACTOR represents the administrative and other costs to the CITY of operation and administration of sanitary and refuse services. In the event CITY determines that its costs have changed, CITY may revise its rates charged to customers upwards or downwards, as appropriate, so long as CONTRACTOR’s net payment for each type of service remains the same as provided herein.

5.3 Customer Payments Collected by CONTRACTOR for Drop Box Services. For any drop box services billed and collected by CONTRACTOR, CONTRACTOR shall remit to CITY the difference between the amount due CONTRACTOR and the adopted rate.
4.3 Collection Schedule. CONTRACTOR shall adhere to the collection frequency schedule of Chapter 32 of the Municipal Code of Davis, and shall have specific routes and collection days for adhering to that schedule. CONTRACTOR shall furnish CITY with “Residential Refuse Collection Day Scheduling Maps,” and shall not make changes to same without first informing CITY.

4.4 Contractor Corporation Yard. CONTRACTOR shall maintain a proper office and corporation yard for the management and control of the waste collection and recycling service. Said office shall be staffed by a person or persons who will respond to a telephone maintained on premises during all regular office hours of CITY, except as authorized by CITY.

4.5 Complaint Correction. CONTRACTOR shall attempt to promptly correct any complaint relative to service or missed service. In the event that complaints are registered with CITY rather than with CONTRACTOR, CITY shall inform CONTRACTOR of the complaint, and CONTRACTOR shall promptly and properly respond to the complaint as if it had come directly to CONTRACTOR.

4.6 Start and Stop Orders. CONTRACTOR and CITY shall cooperate in the taking of orders for service. Starts and stops, as a result of new or changed occupancies of residences and businesses, shall primarily be the responsibility of CITY, but details of the frequency and days of collection, the furnishing of waste bins, and the like, may be referred to CONTRACTOR for on-site decisions between CONTRACTOR and subscriber. The primary responsibility for taking orders for industrial and special waste collection work shall be with CONTRACTOR.

4.7 Residential Waste Collection Start Time. CONTRACTOR shall not begin residential waste collection service prior to 7:00 a.m. during the months of October through May, nor prior to 6:00 a.m. during the months of June through September.

4.8 Inspection of Records. CONTRACTOR’s operational and financial records shall be open for inspection by CITY at all times, but shall remain confidential with respect to third parties.

4.9 Quarterly and Annual Recycling Reports. CONTRACTOR will provide calendar year quarterly reports and an annual report, due in March to the CITY for the preceding year detailing the amount of recycled material collected and the revenue derived from same. Such detail will be by specified recycled material (e.g., aluminum, food container glass,
newsprint, etc.). Whenever possible, the report will show source of recycled material (residential curbside, commercial, drop-off center). CITY to approve the format of the annual and quarterly reports.

4.10 Waste Diversion Goals. CONTRACTOR shall make a reasonable effort to attain and maintain the following waste diversion goal: 50% by December 31, 2001. The goal represents the percent of the total waste stream that is to be diverted from the landfill for the twelve-month period ending December 31 of each goal year. The parties intend that this waste diversion figure operate as a true goal, and shall not be construed as a performance standard. CONTRACTOR will keep detailed records of all materials collected and not landfilled. An annual report shall be provided to CITY showing percent of the City of Davis waste stream (in tons) diverted and the shipping/delivery locations by material type. This report may be combined with the reports submitted in Section 4.9. The report is due in March of each year.

4.11 Hazardous Material Spills. In the course of performing contracted services should CONTRACTOR encounter a spill of hazardous materials, CITY shall be responsible for the clean up of said spill. CONTRACTOR may bill CITY for costs incurred by CONTRACTOR during the clean up of said spills.

4.12 Adjusting Service Components. The basic service components can be altered by City Council, with corresponding adjustments in compensation pursuant to the procedure on rate setting of Section 5. CITY shall consult with CONTRACTOR prior to changing the basic service components.

4.13 Yolo County Central Landfill. Unless directed otherwise by CITY, CONTRACTOR will use the Yolo County Central Landfill as the primary facility for the disposal of residual solid waste.

5. COMPENSATION AND RATES

5.1 Contractor’s Rates.

A. CONTRACTOR shall provide services to customers pursuant to this Agreement at the rates set forth in the attached Exhibit A, the contents of which are incorporated by this reference. The Exhibit A rates will apply at the commencement of this Agreement and may be increased based on the provisions herein addressing rate adjustments. The Exhibit A
rates are inclusive of all solid waste handling services to be provided, including collection, transportation, processing, disposal, and container and bin costs, and costs associated with moving bins from standard enclosures such distance as is reasonably necessary to dump them (but not including costs associated with moving bins beyond such distance in unusual circumstances or due to special requests by customers). No other charges shall be imposed by CONTRACTOR for such services unless approved by CITY.

B. Annual Consumer Price Index Adjustments. Commencing on August 1, 2005, the CONTRACTOR component associated with any of the rates set forth in Exhibit A shall be adjusted, and such component of said rates shall be adjusted annually thereafter during the term hereof (the “Adjustment Dates”), by adjusting the previous year’s rates as set forth in Exhibit A, less landfill component to determine the base rates. The landfill component is calculated by averaging the cost of disposal of the previous year’s weight per unit of service (i.e., subscribed yard, residential garbage service, yard waste). The adjustment to the base rates shall be made by multiplying each base rate by the mean average percent change in the Consumer Price Index, All Items, San Francisco-Oakland-San Jose, as maintained and published by the Bureau of Labor Statistics, United States Department of Labor, for the preceding three years ending in December of the prior year under consideration. After each Annual Consumer Price Index Adjustment, the rates established become the new base rate to which the landfill component is added. If the service does not contain a landfill component associated with its respective rate, no deduction will be made prior to applying the Annual Consumer Price Index Adjustment. In the event that said index is no longer maintained or is substantially modified, the parties shall agree on a different index of adjustment, or shall adjust the rates pursuant to the procedure recited in paragraph C below.

C. Alternative Bi-Annual Adjustment Method. Ninety days prior to August 1, 2006, and every two years thereafter, in lieu of the annual Consumer Price Index adjustments to CONTRACTOR component set forth in subparagraph B hereinabove, CONTRACTOR shall have the option, if it chooses, to petition the CITY for an adjustment to the CONTRACTOR component based upon the prevailing rates then in effect for comparable service in the surrounding communities of Woodland, West Sacramento, City of Sacramento, County of Sacramento, Vacaville and Dixon. CONTRACTOR shall fully tabulate and evaluate
the rate survey data, and shall furnish to CITY the specific sources and contact persons for each item of information. CITY will assist in the gathering of information from these other agencies. Based on this data and CONTRACTOR's interpretation of it, CONTRACTOR shall prepare a "Compensation Proposal" of payment rates and charge rates for the various kinds of classes of service that CONTRACTOR is called upon to provide. Upon submission of CONTRACTOR's Compensation Proposal to CITY, the City Manager shall assemble a Review Board. The Review Board shall consist, by way of example and not by way of limitation, of representatives from the City Manager, Finance, and Public Works offices, and may include a technical representative from the County of Yolo. The Review Board shall evaluate and determine the reasonableness of CONTRACTOR's Compensation Proposal. The parties shall negotiate and attempt to resolve any differences. If CONTRACTOR and the Review Board reach agreement on the Compensation Proposal, the same shall be submitted to the City Council for approval. If the parties cannot agree within a 90 day period, the annual method of adjustment recited in Subparagraph B of this Section 5.1 shall be implemented until a settlement can be reached. CITY and CONTRACTOR shall negotiate in good faith. If CONTRACTOR chooses not to apply this alternative bi-annual adjustment, the rates shall be adjusted as set forth in Subparagraph B of this section.

D. Adjustments to Landfill Component. The landfill component of CONTRACTOR's rates shall be adjusted upward or downward to reflect any change in landfill tipping fees, within thirty (30) days of a landfill tipping fee increase or decrease.

5.2 City Adjustment of Rates. The parties acknowledge that the difference between the CITY's customer rate and amount payable to CONTRACTOR represents the administrative and other costs to the CITY of operation and administration of sanitary and refuse services. In the event CITY determines that its costs have changed, CITY may revise its rates charged to customers upwards or downwards, as appropriate, so long as CONTRACTOR's net payment for each type of service remains the same as provided herein.

5.3 Customer Payments Collected by CONTRACTOR for Drop Box Services. For any drop box services billed and collected by CONTRACTOR, CONTRACTOR shall remit to CITY the difference between the amount due CONTRACTOR and the adopted rate.
5.4 **Uncollected Funds.** In the event any amount due from any customer is uncollectible, from whatever cause, said amount shall be itemized and subtracted from any payment due under this agreement. Each party shall make a reasonable good faith effort to collect all customer payments for which it is responsible. If uncollected amounts are later collected, payment will be made with the next billing cycle schedule thereafter.

5.5 **Reopener for Change in CONTRACTOR’s Expenses.** If CONTRACTOR’s net cost of fuel and/or insurance increases by more than twenty-five (25) percent in any contract year (August 1 to July 31), CONTRACTOR may request an adjustment in rates to offset the amount of such increased costs. Nothing herein shall obligate CITY to agree to such adjustment, but the parties shall negotiate in good faith.

5.6 **Reopener for Change in Recycling Revenues.** If CONTRACTOR’s net cost of service from its current recycling activities decreases by more than twenty-five (25) percent in any contract year (August 1 to July 31), CITY may request an adjustment in rates to offset the amount of such net income which exceeds twenty-five (25) percent. Nothing herein shall obligate CONTRACTOR to agree to such adjustment, but the parties shall negotiate in good faith.

If CONTRACTOR’s net cost of service from its current recycling activities increases by more than twenty-five (25) percent in any contract year (August 1 to July 31), CONTRACTOR may request an adjustment in rates to offset the amount of such revenue loss. Nothing herein shall obligate CITY to agree to such adjustment, but the parties shall negotiate in good faith.

5.7 **Statement of Service Cost Allocation.** Immediately after each rate adjustment hereunder, CONTRACTOR shall provide CITY with a statement of its service cost allocation for each component of residential service provided pursuant to this agreement (i.e., basic garbage service, yard refuse, street sweeping, recycling, and special services).

5.8 **Service Definition.** For purposes of rate computation under this agreement, “service” shall mean each separate place where a container or group of containers is located, even if located on the same parcel of real property.

5.9 **Payment Schedule.** Payment by CITY to CONTRACTOR, and payment by CONTRACTOR to CITY, of the above payments, shall be by the 10th of the month following the month of service.
5.10 **Residential Can Rate Consideration.** The CITY and CONTRACTOR agree to consider negotiating a different rate structure for residential service, coincident with the next scheduled residential truck fleet replacement by the CONTRACTOR.

6. **CITY SERVICE.**

CONTRACTOR shall provide bin and drop box (other than for construction) service for waste collection and recycling service to CITY at such locations and frequency as CITY shall specify, at no cost to CITY, exclusive of special pick-ups.

7. **GENERAL PROVISIONS.**

7.1 **Payments to Contractor.** CITY shall pay CONTRACTOR for all special pick-up services rendered to CITY facilities by the fifteenth of the month following the month service was rendered.

7.2 **New Agreement.** This Agreement embodies the entire understanding and agreement between the parties regarding the subject matter hereof and supersedes all previous agreements between CITY and CONTRACTOR including, without limitation, that certain Agreement dated August 1, 2001, and any amendments thereto.

7.3 **Savings Clause and Entirety.** If any non-material provision of this Agreement is for any reason held to be invalid or unenforceable, the invalidity or unenforceability of such provision shall not affect the validity and enforceability of any of the remaining provisions of this Agreement.

7.4 **Term of this Agreement.** The term of this Agreement shall be for a twelve-year period beginning October 1, 2004 and terminating July 31, 2017. The parties agree that by their mutual consent, each expressed in writing and received at least 90 days before the termination of the current term ending on July 31, 2017, that this Agreement may be extended for an additional period of ten years upon the same terms and conditions as set forth in this Agreement.

7.5 **Waivers of Performance.** Failure by CITY to at any time require of CONTRACTOR the performance of any provisions of this Agreement shall in no way affect the right of CITY to thereafter enforce same, nor shall a waiver by CITY of any breach of any
provision of this Agreement be held as a waiver of any succeeding breach of such provision, or as a waiver of any provision itself.

7.6 Accountability to CITY. The collection and disposal of refuse directly affects the public health and welfare. Therefore, CONTRACTOR shall be accountable to the CITY for its performance. CONTRACTOR shall obey all Federal, State, and Local laws, ordinances and regulations and generally conduct its performance of this Agreement so as to faithfully and competently collect and dispose of refuse in a safe and efficacious manner. At any time the CITY determines that it is appropriate to meet with CONTRACTOR to discuss performance of this Agreement, CONTRACTOR will do so in good faith. If at any time the CITY determines that CONTRACTOR is guilty of substandard performance, and after notice of such and CONTRACTOR’s failure to remedy the cited deficiencies, CITY may take all actions permitted pursuant to the “Breach by Contractor” provision of the Agreement.

7.7 City Authority. Whenever the context of this Agreement requires CITY to perform an act, and said act is to be performed by an individual, CITY shall be interpreted as meaning the City Manager or his or her authorized appointee.

7.8 Exclusive Agent. Except as otherwise permitted by law or ordinance, CONTRACTOR shall be the exclusive agent to collect, transport, process, and dispose of or market all wastes and recyclables generated or occurring within the Davis City limits, and in any territory hereinafter annexed to the CITY. The CITY warrants that it has the authority to grant such an exclusive right as described in the Agreement and as delegated to it by Public Resources Code Section 40059. The CITY covenants that during the term of this Agreement it will not engage other individuals or itself become involved in the activity of collecting and disposing of solid waste and recycling or any other similar activity that would impair the exclusive right of the CONTRACTOR.

Ownership of wastes (hazardous or prohibited waste excluded) shall vest with CONTRACTOR at the time and point of collection by it. Waste materials in CONTRACTOR’s containers shall remain the property of the waste generator until the time of pickup by CONTRACTOR. Recyclable materials placed in CONTRACTOR’s containers shall become the property of CONTRACTOR at such time as they are placed in said containers. Ownership of curbside placed recyclables shall vest with CONTRACTOR at the time they are placed at the
curb by generator. CITY shall be the enforcement agent regarding ownership and scavenging of recyclable materials. CONTRACTOR reserves the right to select which processing, recycling, or material recovery facility it shall use to sort, process and recycle solid wastes generated within the CITY. CONTRACTOR expressly consents to CITY’s ability to direct the location for ultimate disposal of all residual solid waste hereunder, and waives any and all rights to challenge CITY. In the event CITY’s exercise of its waste flow control prerogative results in additional cost or expenses to CONTRACTOR, the rates shall be adjusted to the extent necessary to offset for these added costs or expenses.

7.9 **Breach by CONTRACTOR.** In the event CONTRACTOR should default in the performance of any material provisions of the Agreement, and the default is not cured within 30 days after receipt of written notice of default from CITY, then CITY may, at its option, hold a hearing at its next City Council meeting to determine whether this Agreement should be terminated. In the event CITY decides to terminate this Agreement, CITY may, at its option, either directly undertake performance of the services or arrange with other persons to perform the service with or without a written agreement. In either event, CONTRACTOR shall be liable to CITY for any expense CITY incurs in performing the services in excess of the amount that would be payable to CONTRACTOR had it performed the services under this Agreement up to a limit of 150% of CONTRACTOR’s compensation for services for the time period involved.

In the event CITY exercises its option under this paragraph to terminate this Agreement, CITY shall pay to CONTRACTOR the amount due CONTRACTOR under the terms of the Agreement for the services performed as of the date of termination. CITY may, in that event, take possession of CONTRACTOR’s equipment necessary to perform the services required under this Agreement, and retain it until CITY can purchase or otherwise acquire equipment suitable for that purpose, but in no event longer than 120 days. CITY shall compensate CONTRACTOR for the reasonable rental value of its equipment and facilities during the period CITY retains possession of it.

CITY and CONTRACTOR acknowledge that CONTRACTOR serves the suburban area outside the City of Davis with the same objective of protecting the public health and safety of that area. CITY shall leave available to CONTRACTOR the necessary vehicles, supplies, facilities, and access to records to enable CONTRACTOR to properly serve said accounts.
7.10 **Force Majeure.** Neither the CONTRACTOR nor the CITY shall be liable for the failure to perform their duties nor for any resultant damage, loss, etc., if such failure is caused by a catastrophe, riot, war, governmental order or regulation, accident, act of God, or other similar or different contingency beyond the reasonable control of the CONTRACTOR or CITY.

If such circumstances persist for more than 10 days or if after their cessation the CONTRACTOR is unable to render full or substantial performance for a period of 10 days, CONTRACTOR may terminate this Agreement upon written notice given to the CITY.

7.11 **Arbitration and Award.** Any controversy or claim arising out of or relating to this Agreement, or breach thereof, shall be settled by arbitration in accordance with the rules of the American Arbitration Association, under its Commercial Arbitration Rules. Judgment upon the award rendered by the arbitrators may be entered in any court having jurisdiction thereof.

7.12 **Liquidated Damages.** Because of the difficulty of determining actual damages, the parties have agreed that if CONTRACTOR defaults the terms of the Agreement and CITY exercises takeover action, or if CONTRACTOR terminates its services with less than 120 days notice, a $25,000 liquidation damages fee shall be levied on CONTRACTOR. This damage amount shall be paid to CITY by CONTRACTOR in cash, or shall be deducted from CITY’s final payment to CONTRACTOR for services rendered, or shall be a deduction against any CITY purchase of CONTRACTOR’s assets. If CITY exercises the termination privilege of Paragraph 7.8, or if CONTRACTOR’s Compensation Proposal of Paragraph 5.2A. is not approved within the 90-day time limit, no liquidated damages fee shall be levied on CONTRACTOR.

7.13 **Insurance and Indemnification.**

A. CONTRACTOR shall carry public liability insurance in the amount of $1,000,000 for the death or injury of one person, $1,000,000 for the death or injury of more than one person, and $1,000,000 property damage. Said insurance shall be primary to any other policy of insurance, and shall carry an endorsement having the CITY, its officers and employees, as additional named insureds, and shall further provide that the policy shall not be cancelled and/or reduced without 10 days written notice to CITY. In the event of such cancellation or reduction, CITY may provide such coverage, the cost of same to be borne by CONTRACTOR.
B. CONTRACTOR or the insurer provided for above shall appear and defend all actions against CITY or its officers or employees arising out of CONTRACTOR’s performance of its obligations under this Agreement, or the failure of performance of any of the terms or obligations imposed hereunder, and shall indemnify and save CITY, its officers, employees and agents, free and harmless of and from all claims, actions, or causes of action arising from CONTRACTOR’s negligence connected with CONTRACTOR’s performance of its obligations under this Agreement or the failure of performance of any of the terms or obligations imposed hereunder.

7.14 Corporate Ownership. CONTRACTOR states that at the time of signing this Agreement, the stock of Davis Waste Removal Company, Inc. is owned by Paul E. Hart and Paul E. Geisler, Jr. CONTRACTOR shall inform CITY of any stock transfer proposals in the future, and shall not consummate any stock transfer until at least 30 days after informing CITY. If CITY does not respond within 30 days, CITY approval shall be considered granted. CITY shall not unreasonably withhold consent.

7.15 Assignment and Subcontractors. This Agreement is not assignable, in whole or in part. CONTRACTOR may subcontract out portions of its service work, but only if approval from CITY is first obtained. If CONTRACTOR’s request for subcontract approval is not acted upon within 30 days, it shall be considered approved.

7.16 Notices. All notices to be given hereunder shall be deemed delivered upon personal service upon any of the officers of CONTRACTOR, the names and addresses of same to be delivered to CITY upon execution of this Agreement, and as changed in writing from time to time, or upon deposit, postage prepaid, in the United States Mail, to:

Davis Waste Removal Company, Inc.
P.O. Box 1170
Davis, CA 95617-1170
ATTN: Paul Hart

Notice to CITY shall be deemed delivered upon personal service to the City Manager of the City of Davis, or upon deposit, postage prepaid, in the United States Mail, to:

City of Davis
c/o City Manager
23 Russell Boulevard
Davis, CA 95616
7.17 **Continuity.** This Agreement shall inure to and be binding upon the successors or assigns of both parties.

IN WITNESS WHEREOF, the parties have caused this Agreement to be signed on the day and year first written above, upon which date this Agreement becomes effective.

CITY OF DAVIS, a Municipal Corporation

By: [Signature]
City Manager

DAVIS WASTE REMOVAL COMPANY, INC.

By: [Signature]
President

ATTEST:

[Signature]
## Contractor Sanitation Compensation Monthly Rates by Type of Service Effective October 1, 2004

### Individually Serviced Residences

<table>
<thead>
<tr>
<th>LEVEL OF SERVICE</th>
<th>PER MONTH</th>
<th>CART SERVICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURBSIDE CART</td>
<td>$23.91</td>
<td>LEVEL OF SERVICE</td>
</tr>
<tr>
<td>ADDITIONAL CART</td>
<td>$5.56</td>
<td>1XWK 1XWK 1XWK 1XWK</td>
</tr>
<tr>
<td>HANDICAPPED</td>
<td>$23.91</td>
<td>SAT SAT SAT SAT</td>
</tr>
<tr>
<td>NO GARBAGE</td>
<td>$12.94</td>
<td>MD-WK MD-WK MD-WK MD-WK</td>
</tr>
<tr>
<td>DROP BOX SERVICE</td>
<td></td>
<td>EACH ADD'L CART</td>
</tr>
<tr>
<td>LEVEL OF SERVICE</td>
<td>PER YARDS</td>
<td>1XWK 1XWK 1XWK 1XWK</td>
</tr>
<tr>
<td>20 YARDS</td>
<td>$118.78</td>
<td>SAT SAT SAT SAT</td>
</tr>
<tr>
<td>30 YARDS</td>
<td>$140.93</td>
<td>MD-WK MD-WK MD-WK MD-WK</td>
</tr>
<tr>
<td>40 YARDS</td>
<td>$163.71</td>
<td>SAT SAT SAT SAT</td>
</tr>
<tr>
<td>CUSTOMER OWNED COMPACTO</td>
<td></td>
<td>MD-WK MD-WK MD-WK MD-WK</td>
</tr>
<tr>
<td>NO GARBAGE SERVICE</td>
<td></td>
<td>EACH ADD'L YARD</td>
</tr>
<tr>
<td>LEVEL OF SERVICE</td>
<td>PER MONTH</td>
<td>1XWK 1XWK 1XWK 1XWK</td>
</tr>
<tr>
<td>NONE</td>
<td>$12.94</td>
<td>SAT SAT SAT SAT</td>
</tr>
</tbody>
</table>

### Business and Community Serviced Residence

<table>
<thead>
<tr>
<th>LEVEL OF SERVICE</th>
<th>CART SERVICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURBSIDE CART</td>
<td>$23.91</td>
</tr>
<tr>
<td>ADDITIONAL CART</td>
<td>$5.56</td>
</tr>
<tr>
<td>HANDICAPPED</td>
<td>$23.91</td>
</tr>
<tr>
<td>NO GARBAGE</td>
<td>$12.94</td>
</tr>
<tr>
<td>DROP BOX SERVICE</td>
<td></td>
</tr>
<tr>
<td>LEVEL OF SERVICE</td>
<td>PER YARDS</td>
</tr>
<tr>
<td>20 YARDS</td>
<td>$118.78</td>
</tr>
<tr>
<td>30 YARDS</td>
<td>$140.93</td>
</tr>
<tr>
<td>40 YARDS</td>
<td>$163.71</td>
</tr>
<tr>
<td>CUSTOMER OWNED COMPACTO</td>
<td></td>
</tr>
<tr>
<td>NO GARBAGE SERVICE</td>
<td></td>
</tr>
<tr>
<td>LEVEL OF SERVICE</td>
<td>PER MONTH</td>
</tr>
<tr>
<td>NONE</td>
<td>$12.94</td>
</tr>
</tbody>
</table>

**Landfill Rate**: $31 per ton, brush at $29 per ton
AMENDMENT NO. 1 TO AGREEMENT
DATED OCTOBER 1, 2004 BETWEEN
CITY OF DAVIS AND
DAVIS WASTE REMOVAL COMPANY, INC.

WHEREAS, the agreement dated October 1, 2004, by and between the City of Davis ("City") and Davis Waste Removal Company, Inc. ("Contractor") provides for periodic adjustments to rates due to changes in the Consumer Price Index; and

WHEREAS, the City and Contractor have agreed on an updated Exhibit "A," and the following paragraphs:

NOW, THEREFORE, the parties hereto agree that the agreement referred to above shall be amended as follows:

Section II 3.A) Compensation Rate
The new base rate exhibit for contractor payments for August 1, 2006 to July 31, 2007 is attached as Exhibit "A."

All prior amendments to this agreement are repealed to the extent they conflict with the terms hereof.

All other terms and covenants contained in said agreement shall remain unchanged and in full force and effect.

IN WITNESS WHEREOF, the parties have caused this Amendment No. 1 to be signed on this 20th day of June, 2006.

CITY OF DAVIS

By: ____________________________
Bill Emlen
City Manager

DAVIS WASTE REMOVAL CO., INC.

By: ____________________________
Paul E. Hart
President

Attachment

J:\PW\SOL\assets\States\CA\DWR\DWRAMDMT_1.doc
### CITY OF DAVIS CUSTOMER RATES FOR WASTE MANAGEMENT SERVICES EFFECTIVE AUG. 1, 2006

**BEFORE CITY FEES**

<table>
<thead>
<tr>
<th>A. Individually served residents shall pay the following fees:</th>
<th>C. Businesses and community served residences shall pay the following fees:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Curbside collection:</td>
<td>(1) Commercial cart and bin service, dollar amount per month:</td>
</tr>
<tr>
<td>$24.95</td>
<td><strong>LEVEL OF SERVICE</strong></td>
</tr>
<tr>
<td>(2) Handicapped service:</td>
<td><strong>- 1XWK</strong></td>
</tr>
<tr>
<td>$24.95</td>
<td><strong>- MIDWEEK</strong></td>
</tr>
<tr>
<td>(3) No garbage collection (all other surcharges except actual garbage collection):</td>
<td><strong>- SAT</strong></td>
</tr>
<tr>
<td>$13.90</td>
<td><strong>- MIDWEEK</strong></td>
</tr>
<tr>
<td>(4) An individually served residence that is to be vacant for sixty days or more shall be entitled to the &quot;no garbage&quot; rate of subparagraph (6), providing notification is given to the City prior to occurrence of the vacancy.</td>
<td><strong>- SAT</strong></td>
</tr>
</tbody>
</table>

**B. Dropbox service, cost per unit of service:**

<table>
<thead>
<tr>
<th>LEVEL OF SERVICE</th>
<th>PER PICK UP</th>
<th><strong>DOES NOT INCLUDE LANDFILL FEES</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>YARDS <strong>20</strong></td>
<td>$124.79</td>
<td><strong>30 YARDS</strong> $153.15</td>
</tr>
<tr>
<td><strong>40 YARDS</strong></td>
<td>$202.10</td>
<td><strong>50 YARDS</strong> $269.25</td>
</tr>
<tr>
<td>CUSTOMER OWEV COMPACTORI</td>
<td>$160.48</td>
<td></td>
</tr>
</tbody>
</table>

**NO GARBAGE SERVICE**

<table>
<thead>
<tr>
<th>LEVEL OF SERVICE</th>
<th>PER MONTH</th>
<th><strong>COMMERCIAL NO GARBAGE BILLING (all services except actual garbage collection)</strong> $13.90</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td>$13.90</td>
<td></td>
</tr>
</tbody>
</table>

**PER EXTRA CART**

<table>
<thead>
<tr>
<th><strong>LEVEL OF SERVICE</strong></th>
<th><strong>- 1XWK</strong></th>
<th><strong>- MIDWEEK</strong></th>
<th><strong>- SAT</strong></th>
<th><strong>- MIDWEEK</strong></th>
<th><strong>- SAT</strong></th>
<th><strong>- MIDWEEK</strong></th>
<th><strong>- SAT</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>YARDS</strong> <strong>20</strong></td>
<td><strong>36.76</strong></td>
<td><strong>23.68</strong></td>
<td><strong>21.02</strong></td>
<td><strong>21.27</strong></td>
<td><strong>20.94</strong></td>
<td><strong>21.90</strong></td>
<td><strong>21.13</strong></td>
</tr>
<tr>
<td><strong>30 YARDS</strong></td>
<td><strong>38.96</strong></td>
<td><strong>25.98</strong></td>
<td><strong>24.60</strong></td>
<td><strong>24.82</strong></td>
<td><strong>24.53</strong></td>
<td><strong>25.42</strong></td>
<td><strong>24.64</strong></td>
</tr>
<tr>
<td><strong>40 YARDS</strong></td>
<td><strong>41.16</strong></td>
<td><strong>28.08</strong></td>
<td><strong>26.82</strong></td>
<td><strong>27.05</strong></td>
<td><strong>26.76</strong></td>
<td><strong>27.62</strong></td>
<td><strong>26.85</strong></td>
</tr>
<tr>
<td><strong>50 YARDS</strong></td>
<td><strong>43.36</strong></td>
<td><strong>30.18</strong></td>
<td><strong>28.92</strong></td>
<td><strong>29.15</strong></td>
<td><strong>28.87</strong></td>
<td><strong>29.72</strong></td>
<td><strong>29.04</strong></td>
</tr>
</tbody>
</table>

**FA-COMPACTED YD:**

<table>
<thead>
<tr>
<th><strong>PER EXTRA YARD</strong></th>
<th><strong>- 1XWK</strong></th>
<th><strong>- MIDWEEK</strong></th>
<th><strong>- SAT</strong></th>
<th><strong>- MIDWEEK</strong></th>
<th><strong>- SAT</strong></th>
<th><strong>- MIDWEEK</strong></th>
<th><strong>- SAT</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>49.21</strong></td>
<td><strong>54.13</strong></td>
<td><strong>96.67</strong></td>
<td><strong>104.91</strong></td>
<td><strong>147.48</strong></td>
<td><strong>152.38</strong></td>
<td><strong>194.95</strong></td>
<td><strong>202.16</strong></td>
</tr>
<tr>
<td><strong>52.46</strong></td>
<td><strong>57.39</strong></td>
<td><strong>103.24</strong></td>
<td><strong>109.79</strong></td>
<td><strong>157.25</strong></td>
<td><strong>160.55</strong></td>
<td><strong>208.01</strong></td>
<td><strong>214.59</strong></td>
</tr>
</tbody>
</table>

**FA-COMPACTED YD:**

<table>
<thead>
<tr>
<th><strong>PER EXTRA YARD</strong></th>
<th><strong>- 1XWK</strong></th>
<th><strong>- MIDWEEK</strong></th>
<th><strong>- SAT</strong></th>
<th><strong>- MIDWEEK</strong></th>
<th><strong>- SAT</strong></th>
<th><strong>- MIDWEEK</strong></th>
<th><strong>- SAT</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>49.21</strong></td>
<td><strong>54.13</strong></td>
<td><strong>96.67</strong></td>
<td><strong>104.91</strong></td>
<td><strong>147.48</strong></td>
<td><strong>152.38</strong></td>
<td><strong>194.95</strong></td>
<td><strong>202.16</strong></td>
</tr>
<tr>
<td><strong>52.46</strong></td>
<td><strong>57.39</strong></td>
<td><strong>103.24</strong></td>
<td><strong>109.79</strong></td>
<td><strong>157.25</strong></td>
<td><strong>160.55</strong></td>
<td><strong>208.01</strong></td>
<td><strong>214.59</strong></td>
</tr>
</tbody>
</table>

(2) The following special provisions apply to the above cart and bin rates:

(a) The above rates are for containers no fuller than level full.

(b) Containers located at multiple stations on one occupancy shall be considered separate services, unless the locations and access to the multiple stations expedites waste collection.

(c) Containers stored in difficult-to-service locations shall be serviced at a surcharge rate negotiated between subscriber and the City or its fully authorized agent.

(d) Containers filled or holding compacted garbage cubes will be charged weight maintenance surcharge per above per month.

(3) Commercial no garbage billing (all services except actual garbage collection) $13.90

(4) A vacant business or vacant community served residence shall be entitled to the "no garbage" rate, providing notice is given to the City at the start of the vacancy period.
AMENDMENT NO. 2 TO AGREEMENT
DATED OCTOBER 1, 2004 BETWEEN
CITY OF DAVIS AND
DAVIS WASTE REMOVAL COMPANY, INC.

WHEREAS, the agreement dated October 1, 2004, by and between the City of Davis ("City") and Davis Waste Removal Company, Inc. ("Contractor") provides for periodic adjustments to rates due to changes in the Consumer Price Index; and

WHEREAS, the City and Contractor have agreed on an updated Exhibit “A,” and the following paragraphs:

NOW, THEREFORE, the parties hereto agree that the agreement referred to above shall be amended as follows:

Section II 3.A) Compensation Rate
The new base rate exhibit for contractor payments for August 1, 2007 to July 31, 2008 is attached as Exhibit “A.”

All prior amendments to this agreement are repealed to the extent they conflict with the terms hereof.

All other terms and covenants contained in said agreement shall remain unchanged and in full force and effect.

IN WITNESS WHEREOF, the parties have caused this Amendment No. 2 to be signed on this 1st day of May, 2007.

CITY OF DAVIS

By: Bill Emlen
City Manager

DAVIS WASTE REMOVAL CO., INC.

By: Paul E. Hart
President

Attachment

J:\W\SO\waste\SRates0708\DWRAMDMT_2.doc
### 2013 Davis Integrated Waste Management Plan

#### Exhibit A

**LANDFILL AT 36.00/TON + COM REC *** CONTRACTOR SANITATION COMPENSATION MONTHLY RATES BY TYPE OF SERVICE**

<table>
<thead>
<tr>
<th>INDIVIDUALLY SERVICED RESIDENCES</th>
<th>BUSINESS AND COMMUNALLY SERVICED RESIDENCES</th>
<th>CART SERVICE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LEVEL OF SERVICE</strong></td>
<td><strong>PER MONTH</strong></td>
<td><strong>LEVEL OF SERVICE</strong></td>
</tr>
<tr>
<td><strong>CURBSIDE</strong></td>
<td>$25.36</td>
<td><strong>-1XWK-</strong></td>
</tr>
<tr>
<td>1</td>
<td>$43.65</td>
<td>$47.61</td>
</tr>
<tr>
<td>2</td>
<td>$75.50</td>
<td>$80.55</td>
</tr>
<tr>
<td>3</td>
<td>$102.31</td>
<td>$112.38</td>
</tr>
<tr>
<td><strong>HANDICAPPED</strong></td>
<td>$25.36</td>
<td><strong>-1XWK-</strong></td>
</tr>
<tr>
<td>1</td>
<td>$27.27</td>
<td>$31.29</td>
</tr>
<tr>
<td><strong>NO GARBAGE</strong></td>
<td>$14.19</td>
<td><strong>-1XWK-</strong></td>
</tr>
<tr>
<td><strong>BIN SERVICE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>$16.56</td>
<td>$18.38</td>
</tr>
<tr>
<td>3</td>
<td>$19.66</td>
<td>$21.48</td>
</tr>
<tr>
<td>4</td>
<td>$22.76</td>
<td>$24.58</td>
</tr>
<tr>
<td>5</td>
<td>$25.86</td>
<td>$27.68</td>
</tr>
<tr>
<td>6</td>
<td>$29.96</td>
<td>$31.78</td>
</tr>
<tr>
<td><strong>LEVEL OF SERVICE</strong></td>
<td><strong>PER YARDS</strong></td>
<td><strong>-1XWK-</strong></td>
</tr>
<tr>
<td><strong>DROP BOX SERVICE</strong></td>
<td><strong>= LEVEL OF SERVICE</strong></td>
<td><strong>= LEVEL OF SERVICE</strong></td>
</tr>
<tr>
<td><strong>LEVEL OF SERVICE</strong></td>
<td><strong>= LEVEL OF SERVICE</strong></td>
<td><strong>= LEVEL OF SERVICE</strong></td>
</tr>
<tr>
<td>1</td>
<td><strong>$12.46</strong></td>
<td><strong>$14.28</strong></td>
</tr>
<tr>
<td>2</td>
<td><strong>$16.56</strong></td>
<td><strong>$18.38</strong></td>
</tr>
<tr>
<td>3</td>
<td><strong>$19.66</strong></td>
<td><strong>$21.48</strong></td>
</tr>
<tr>
<td>4</td>
<td><strong>$22.76</strong></td>
<td><strong>$24.58</strong></td>
</tr>
<tr>
<td>5</td>
<td><strong>$25.86</strong></td>
<td><strong>$27.68</strong></td>
</tr>
<tr>
<td>6</td>
<td><strong>$29.96</strong></td>
<td><strong>$31.78</strong></td>
</tr>
<tr>
<td>**** DOES NOT INCLUDE LANDFILL FEES **</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>10 YARDS</strong></td>
<td>$197.84</td>
<td><strong>$219.68</strong></td>
</tr>
<tr>
<td><strong>30 YARDS</strong></td>
<td>$197.84</td>
<td><strong>$219.68</strong></td>
</tr>
<tr>
<td><strong>40 YARDS</strong></td>
<td>$207.18</td>
<td><strong>$229.02</strong></td>
</tr>
<tr>
<td><strong>50 YARDS</strong></td>
<td>$276.03</td>
<td><strong>$297.87</strong></td>
</tr>
<tr>
<td><strong>CUSTOMER OWNED COMPACTOR</strong></td>
<td>$185.62</td>
<td><strong>$207.46</strong></td>
</tr>
<tr>
<td><strong>NO GARBAGE SERVICE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>LEVEL OF SERVICE</strong></td>
<td><strong>PER SERVICE</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td><strong>$14.19</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Note: All rates are exclusive of landfill fees and include all service fees.*
AMENDMENT NO. 3 TO AGREEMENT
DATED OCTOBER 1, 2004 BETWEEN
CITY OF DAVIS AND
DAVIS WASTE REMOVAL COMPANY, INC.

WHEREAS, the agreement dated October 1, 2004, by and between the City of Davis ("City") and Davis Waste Removal Company, Inc. ("Contractor") provides for periodic adjustments to rates due to changes in the Consumer Price Index; and

WHEREAS, the City and Contractor have agreed on an updated Exhibit "A," and the following paragraphs:

NOW, THEREFORE, the parties hereto agree that the agreement referred to above shall be amended as follows:

Section II 3.A) Compensation Rate
The new base rate exhibit for contractor payments for August 1, 2008 to July 31, 2009 is attached as Exhibit "A."

All prior amendments to this agreement are repealed to the extent they conflict with the terms hereof.

All other terms and covenants contained in said agreement shall remain unchanged and in full force and effect.

IN WITNESS WHEREOF, the parties have caused this Amendment No. 3 to be signed on this 6th day of May, 2008.

CITY OF DAVIS

By: Bill Emlen
City Manager

DAVIS WASTE REMOVAL CO., INC.

By: Paul E. Hart
President

Attachment
J:\PWSOL\Rates\SRates0809\DWRAMDT_3.doc
<table>
<thead>
<tr>
<th>Individually Serviced Residences</th>
<th>Business and Community Serviced Residences (City Fees Not Included)</th>
<th>$38.00/ton</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CART SERVICE</strong></td>
<td><strong>(ALL)</strong></td>
<td><strong>1xWK</strong></td>
</tr>
<tr>
<td><strong>Level of Service</strong></td>
<td><strong>Per Month</strong></td>
<td><strong>Mid Week</strong></td>
</tr>
<tr>
<td>Curbside</td>
<td>$25.90</td>
<td>$44.79</td>
</tr>
<tr>
<td>Handicapped</td>
<td>$25.90</td>
<td>$77.48</td>
</tr>
<tr>
<td>No Garbage</td>
<td>$14.55</td>
<td>$104.58</td>
</tr>
<tr>
<td>Each Additional Cart</td>
<td>$27.50</td>
<td>$33.09</td>
</tr>
</tbody>
</table>

| BIN SERVICE                     | **(ALL)** | **1xWK** | **2xWK** | **3xWK** | **4xWK** | **5xWK** | **6xWK** |
| **Level of Service** | **Per Yard** | **Mid Week** | **Sat** | **Mid Week** | **Sat** | **Mid Week** | **Sat** | **Mid Week** | **Sat** | **Mid Week** | **Sat** | **Mid Week** | **Sat** | **Mid Week** | **Sat** |
| **Yards**                      | $28.35    | $41.05   | $46.95   | $91.25   | $99.40   | $233.00  | $240.30  | $309.30   | $328.10  | $383.40   | $391.60  | $450.10   |
| **2 Yards**                    | $100.34   | $114.91  | $195.13  | $297.24  | $302.84  | $519.76  | $530.75  | $581.04   | $595.94  | $681.88   | $691.94  | $760.85   |
| **3 Yards**                    | $121.08   | $141.86  | $235.31  | $354.83  | $361.23  | $732.03  | $742.08  | $870.82   | $880.69  | $1,004.04 | $1,014.04 | $1,100.65 |
| **4 Yards**                    | $185.52   | $219.65  | $395.12  | $705.89  | $713.64  | $1,326.95 | $1,336.95 | $1,632.37 | $1,642.37 | $1,921.04 | $1,931.04 | $2,221.45 |
| **5 Yards**                    | $205.93   | $240.72  | $416.97  | $835.65  | $845.65  | $1,685.70 | $1,705.70 | $2,126.84 | $2,146.84 | $2,569.49 | $2,609.49 | $3,089.94 |
| **6 Yards**                    | $235.11   | $280.02  | $444.67  | $975.86  | $985.86  | $1,905.50 | $1,925.50 | $2,504.47 | $2,524.47 | $3,133.47 | $3,163.47 | $3,773.97 |

**DROP BOX SERVICE**

**LEVEL OF SERVICE**

**Per Yard**

**10 Yards** $131.76

**20 Yards** $131.76

**30 Yards** $161.80

**40 Yards** $213.50

**50 Yards** $294.53

**Customer Owned Compactor** $169.72

**NO GARBAGE SERVICE**

**LEVEL OF SERVICE**

**Per Month**

**NONE** $14.55
AMENDMENT NO. 4 TO AGREEMENT  
DATED OCTOBER 1, 2004 BETWEEN  
CITY OF DAVIS AND  
DAVIS WASTE REMOVAL COMPANY, INC.

WHEREAS, the agreement dated October 1, 2004, by and between the City of Davis ("City") and Davis Waste Removal Company, Inc. ("Contractor") provides for periodic adjustments to rates due to changes in the Consumer Price Index; and

WHEREAS, the City and Contractor have agreed on an updated Exhibit “A,” and the following paragraphs:

NOW, THEREFORE, the parties hereto agree that the agreement referred to above shall be amended as follows:

Section II 3.A) Compensation Rate  
The new base rate exhibit for contractor payments for August 1, 2009 to July 31, 2010 is attached as Exhibit “A.”

All prior amendments to this agreement are repealed to the extent they conflict with the terms hereof.

All other terms and covenants contained in said agreement shall remain unchanged and in full force and effect.

IN WITNESS WHEREOF, the parties have caused this Amendment No. 4 to be signed on this  
20th day of May, 2009.

CITY OF DAVIS  
DAVIS WASTE REMOVAL CO., INC.

By:  
Bill Emlen  
City Manager

By:  
Paul E. Hart  
President

Attachment  
J:\PWSOL\rates\Srates\0910\DWRAMDMT_4.doc
## Curb Service

### Individually Serviced Residences

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<th>Per Month</th>
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</thead>
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<td>Handicapped</td>
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<tr>
<td>No Garbage</td>
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<th>1x/wk Sat</th>
<th>2x/wk Mid-Week</th>
<th>2x/wk Sat</th>
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<th>3x/wk Sat</th>
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<th>4x/wk Sat</th>
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<th>5x/wk Sat</th>
<th>6x/wk Mid-Week</th>
<th>6x/wk Sat</th>
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### Drop Box Service

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<th>Per Yard</th>
<th>Pick Up</th>
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**Does not include Landfill Fees**

### BIN Service

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<th>2x/wk Sat</th>
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<th>3x/wk Sat</th>
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**ADD SURCHARGE FOR PER COMPACTED YD**

<table>
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<th>Per Month</th>
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</thead>
<tbody>
<tr>
<td>None</td>
<td>$14.84</td>
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</tbody>
</table>

---

2013 Davis Integrated Waste Management Plan
AMENDMENT NO. 5 TO AGREEMENT
DATED OCTOBER 1, 2004 BETWEEN
CITY OF DAVIS AND
DAVIS WASTE REMOVAL COMPANY, INC.

WHEREAS, the agreement dated October 1, 2004, by and between the City of Davis ("City") and Davis Waste Removal Company, Inc. ("Contractor") provides for periodic adjustments to rates due to changes in the Consumer Price Index; and

WHEREAS, the City and Contractor have agreed on an updated Exhibit “A,” and the following paragraphs:

NOW, THEREFORE, the parties hereto agree that the agreement referred to above shall be amended as follows:

Section II 3.A) Compensation Rate
The new base rate exhibit for contractor payments for August 1, 2010 to July 31, 2011 is attached as Exhibit “A.”

All prior amendments to this agreement are repealed to the extent they conflict with the terms hereof.

All other terms and covenants contained in said agreement shall remain unchanged and in full force and effect.

IN WITNESS WHEREOF, the parties have caused this Amendment No. 5 to be signed on this 16th day of May, 2010.

CITY OF DAVIS

By: ____________________________
Bill Emlen
City Manager

DAVIS WASTE REMOVAL CO., INC.

By: ____________________________
Paul E. Hart
President

Attachment
### Business and Communally Serviced Residences

#### Landfill at $38.19/ton + Com Rec *** Contractor Sanitation Compensation Monthly Rates by Type of Service

**INDIVIDUALLY SERVICED RESIDENCES**

<table>
<thead>
<tr>
<th>Level of Service</th>
<th>Per Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curbside</td>
<td>$27.22</td>
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<td>Handicapped</td>
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**Drop Box Service**

<table>
<thead>
<tr>
<th>Level of Service</th>
<th>Pick Up Yards</th>
<th>Per Yards</th>
</tr>
</thead>
</table>
| **Does not include landfill fees**
| 10 Yards         | $137.90       |
| 20 Yards         | $137.90       |
| 30 Yards         | $169.37       |
| 40 Yards         | $223.48       |
| 50 Yards         | $297.75       |
| Customer Owned Compactors | $199.58 |

**Bin Service**

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<th>Level of Service</th>
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<th>MD-WK</th>
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<th>MD-WK</th>
<th>ALL</th>
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<th>MD-WK</th>
<th>ALL</th>
<th>+SAT</th>
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</table>

**Each Add'l Yard**

| Add Surcharge for Per Compacted Yd | $57.87 | $63.31 | $114.03 | $121.27 | $173.75 | $177.40 | $229.88 | $237.16 | $286.02 | $295.07 | $349.72 |

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2013 Davis Integrated Waste Management Plan
Appendix C - City of Davis Zero Waste Resolution

RESOLUTION NO. 11-185, SERIES 2011

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF DAVIS
ADOPTING A GOAL TO REDUCE WASTE THROUGH ZERO WASTE STRATEGIES

WHEREAS, the City of Davis has taken steps towards promoting optimizing the use of resources and materials, including programs and policy goals to reduce, reuse, compost and recycle materials that would otherwise be landfilled; and

WHEREAS, the City of Davis has already achieved the California Integrated Waste Management Act of 1989 (AB 939) that requires all California jurisdictions achieve a landfill diversion rate of 50 percent by the year 2000 and reduce, reuse, recycle, and compost all discarded materials to the maximum extent feasible before any landfilling or incineration of waste; and

WHEREAS, AB 341 has been signed by the Governor and increases the current AB 939 state goal to 75 percent of waste diverted from the landfill by 2020; and

WHEREAS, in 2009, the residents of Davis landfilled 3 pounds of Municipal Solid Waste (MSW) per person per day (60% diversion equivalent) and employees landfilled 13.5 pounds of MSW per day (59% diversion equivalent); and

WHEREAS, the seventh strategic priority of the California Department of Resources, Recycling and Recovery’s (CalRecycle) 2001 Strategic Plan is promoting a “zero-waste California,” where the public, industry, and government strive to reduce, reuse, or recycle all municipal solid waste materials back into nature or the marketplace in a manner that protects human health and the environment and honors the principles of California’s Integrated Waste Management Act; and

WHEREAS, the Zero Waste International Alliance adopted the following definition of Zero Waste on November 29, 2004 to assist communities in defining Zero Waste:

Zero Waste is a goal that is ethical, economical, efficient and visionary, to guide people in changing their lifestyles and practices to emulate sustainable natural cycles, where all discarded materials are designed to become resources for others to use.

Zero Waste means designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them.

Implementing Zero Waste will eliminate all discharges to land, water or air that are a threat to planetary, human, animal or plant health.

WHEREAS, Optimizing Reducing, Reusing, Recycling and Rebuying (OR^4) exemplifies the Zero Waste Alliance definition and supports local, state, and regional Zero Waste policy by setting the goal to Optimize Reducing, Reusing, Recycling and Rebuying materials; and
WHEREAS, On July 6, 2010 the Davis City Council adopted a resolution supporting Extended Producer Responsibility (EPR) principals in support of statewide efforts to hold producers responsible for Universal Waste products and other product waste management costs; and

WHEREAS, the City of Davis Climate Action and Adaptation Plan year one work plan recommends adopting a Zero Waste Goal and beginning a planning process; and

WHEREAS, the City of Davis Climate Action and Adaptation Plan Waste Reduction Objective 1 is to reduce total solid waste generated by 10 percent and Objective 2 is to recover 75 percent of all waste generated by 2020; and

WHEREAS, at the March 2011 Natural Resources Commission meeting, the City of Davis Recycling Program presented its goal of achieving 1.9 pounds of waste generated per person, per day (75 percent diversion equivalent) by 2020, as calculated by CalRecycle.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Davis hereby adopts a goal of 1.9 pounds of waste generated per person, per day (75 percent diversion equivalent) by 2020, as calculated by CalRecycle; and

BE IT FURTHER RESOLVED that the Public Works Department will develop a resource management plan (Plan) by 2012 in collaboration with the Natural Resources Commission which incorporates specific, feasible and quantifiable waste reduction goals and identifies specific zero waste implementation actions; and

BE IT FURTHER RESOLVED that the Natural Resources Commission will periodically review and update the Plan at least every five years.

PASSED AND ADOPTED by the City Council of the City of Davis this 6th day of December, 2011 by the following vote:

AYES: Greenwald, Souza, Swanson, Wolk, Krovoza

NOES: None

ATTEST:

Zoe S. Mirabile, CMC
City Clerk

Joseph F. Krovoza
Mayor
Appendix D - City of Davis EPR Resolution

RESOLUTION NO. 10-102, SERIES 2010

RESOLUTION OF THE CITY OF DAVIS
SUPPORTING EXTENDED PRODUCER RESPONSIBILITY

WHEREAS, on February 8, 2006 California’s Universal Waste Rule (CCR, Title 22, Division 4.5, Chapter 23) became effective; and

WHEREAS, the Universal Waste Rule bans landfill disposal of certain products that are deemed hazardous, including household batteries, fluorescent bulbs and tubes, thermostats and other items that contain mercury, as well as electronic devices such as video cassette recorders, microwave ovens, cellular phones, cordless phones, printers, and radios; and

WHEREAS, it is anticipated that the list of Universal and other waste products determined to be hazardous and therefore banned from landfills will continue to grow as demonstrated by the ban of sharps in September 2008; and

WHEREAS, state policies currently make local governments responsible for achieving waste diversion goals and enforcing product disposal bans, both of which are unfunded mandates; and

WHEREAS, the costs to manage Universal Waste and other products banned from landfills are currently paid by utility customers of the City of Davis; and

WHEREAS, there are environmental and human health impacts associated with improper management of Universal Waste, sharps, and other products; and

WHEREAS, Extended Producer Responsibility (EPR) is a policy approach in which producers assume responsibility for management of waste products and which has been shown to be effective; and

WHEREAS, when producers are responsible for ensuring their products are recycled responsibly, and when health and environmental costs are included in the product price, there is strong incentive to design and purchase goods that are more durable, easier to repair and recycle, and less toxic; and

WHEREAS, it is timely to develop and support EPR legislation to address product stewardship for hazardous and problematic products currently banned from landfill disposal and those which will be added to the list of banned items in the future; and

WHEREAS, EPR framework legislation establishes transparent and fair principles and procedures for applying EPR to categories of products for which improved design and management infrastructure is in the public interest; and

NOW, THEREFORE BE IT RESOLVED by the City Council of the City of Davis that by adoption of this Resolution, the City of Davis urges the California Department of Resources Recycling and Recovery (CalRecycle), formerly known as the California Integrated Waste Management Board, to continue taking timely action to implement the framework for an EPR System in California to manage Universal and other waste products; and

BE IT FURTHER RESOLVED that the City Council urges the California Legislature to enact framework EPR legislation which will give producers the incentive to design less toxic products and make them easier to reuse and recycle; and

BE IT FURTHER RESOLVED, that the Public Works Director or designee be authorized to send letters to the League of California Cities, the California State Association of Counties, the California Department of Resources Recycling and Recovery, and the State legislature and to use other advocacy methods to urge support for EPR Framework legislation and related regulations; and

BE IT FURTHER RESOLVED that the City of Davis encourages manufacturers to share in the responsibility for eliminating waste by minimizing excess packaging, designing products for durability, reusability and the ability to be recycled; using recycled materials in the manufacture of new products; and providing financial support for collection, processing, recycling, or disposal of used materials.

PASSED AND ADOPTED by the City Council of the City of Davis this 6th day of July, 2010, by the following vote:

AYES: Greenwald, Heystek, Saylor, Souza, Asmundson

NOES: None

Ruth Uy Asmundson, Ph.D.
Mayor

ATTEST:

Zoe S. Mirobile, CMC
City Clerk
Appendix E - Waste Reduction Procedure

15.02.070 Purchase of recycled products.

(a) Definitions.

(1) **Recycled product.** Any product which is at least partially composed of recovered materials.

(2) **Recovered material.** Material and byproducts which have been recovered or diverted from solid waste, but such term does not include those materials and byproducts generated from, and commonly reused within, an original process (such as mill broke). This term includes material defined as postconsumer material.

(3) **Postconsumer material.** Postconsumer materials are those recovered materials which have served their intended uses and have been separated and diverted from the solid waste stream for the purposes of collection and recycling. These do not include manufacturing wastes.

(4) **Mill broke.** Trimmings of paper machine rolls.

(b) Procurement program for purchase of recycled products.

(1) **Preference.** The city shall purchase recycled products whenever sufficient quantities are readily available and meet the city’s specifications. The city shall purchase recycled products that contain the highest percentage of recovered materials, and are produced to the greatest extent with postconsumer materials.

All city departments shall establish purchasing practices which maximize the purchase of materials, goods and supplies that are produced from recovered materials, and/or may be recycled or reused when discarded.

(2) **Promotion.** To promote the use of products made from recovered materials, the city, to the extent practicable, shall label applicable products to indicate that they are recycled products.

The city shall cooperate with neighboring agencies in an effort to develop a comprehensive, consistent and effective procurement effort intended to stimulate the market for recycled products.

(3) **Certification of Recovered Material Content.** The city shall require the seller to certify in writing on a form prescribed by the city, that the recycled product sold to the city contains the minimum percentage or recovered materials set forth in the city’s product specification and shall also specify the percentage of postconsumer materials contained in the product.

(4) **Annual Status Report.** City staff shall prepare and deliver to the city council an annual status report documenting the types, quantities and dollar amounts of recycled products purchased in the previous year, any additions or revisions to the previous year’s specifications, and document those instances whereby an exemption, as listed in subsection (e) of this section, was used to purchase something other than the specified...
recycled product. The report shall also contain the status of the city’s efforts to develop markets for recycled products including efforts to establish cooperative procurement programs with other agencies.

(c) **Product specifications.**

(1) The city shall review and revise product specifications so as to conform to the following guidelines:

(A) Specifications shall not require the use of products made from virgin materials.

(B) Specifications shall not exclude the use of recycled products.

(C) Specifications shall, whenever possible, clearly identify both the expected performance standard(s) for each particular product, and the specific intended use.

(D) Performance standards must be reasonable and not so stringent as to purposely exclude recycled products.

(E) A minimum percentage of recovered material content shall be incorporated into each specification when it is known that there are sufficient and readily available supplies of a particular recycled product able to meet the city’s specifications.

(F) A minimum percentage of postconsumer material content shall be incorporated in each specification when it is known that there are sufficient and readily available supplies of a particular recycled product able to meet the city’s specifications.

(2) Monitoring and Revising Specifications. City staff shall continually monitor the availability of recycled products so as to create new specifications and revise existing product specifications to reflect the availability of newly marketed products and increases in recovered material content (specifically, increases in the postconsumer material content).

(d) **Equipment and machinery purchases.** The city shall purchase, whenever feasible, equipment and machinery that is compatible with the city’s applicable recycled products specifications.

(e) **Exemptions.**

(1) If the city finds it is unable to purchase a sufficient supply of a particular specified recycled product, the city may purchase a nonrecycled product until such time as a sufficient supply of the recycled product becomes available.

(2) No product shall be purchased that will negatively impact the health and safety of employees and citizens.

(3) A nonrecycled product may be substituted for the specified recycled product whenever:

(A) A particular piece of equipment or operation is unable to function properly with the material specified. In these instances, the preferred substitute product shall be a recycled product containing the highest percentage of recovered material and postconsumer material that allows the particular piece of equipment or operation to function. The substitution of a nonrecycled product shall be used as the last resort;
(B)  In cases of operational emergency, the city may purchase products from the nearest capable vendor when the specified recycled product cannot be purchased by the time needed.

(4)  If the purchase of a recycled product would significantly impact a department’s adopted budget, the department shall document the impact and submit the issue to council for policy direction.

(f)  **City consultant contracts.** All city contracts for consultant work, requiring the submittal of paper document(s) to the city, shall specify that the submitted document must be produced on recycled paper, when practicable, conforming to the city’s specifications. All such documents shall be required to have the front cover labeled in such a way as to identify that the document was produced on recycled paper. Where practicable, the pages of all such documents shall be produced double-sided.

(g)  **Public works contracts.** This section shall not apply to public works contracts required to be awarded to the lowest responsible bidder under state law. (Ord. 1565 § 1)
Appendix F - Waste Reduction Policy

Administrative Policy

Program: No
Policy: Yes
Procedure: Yes
Form: No

Waste Reduction Policy

Purpose
The purpose of the Waste Reduction Policy is to reduce to the greatest extent possible, the amount of waste generated and the amount of waste needing landfill disposal, from municipal operation.

Policy
This policy includes waste reduction, recycling, and purchasing of recycled products.

Waste Reduction

- **Re-use of paper**: Paper for re-use will be collected, and the use of scratch pads and forms made from this recycled paper is highly encouraged.

  All offices will have collection containers for re-useable paper in duplicating rooms as well as in selected other locations. Large quantities of the same size paper, used on only one side, should be placed in the re-use containers.

- **Copying**: All duplicating is done on both sides of a page unless special circumstances preclude doing so. Unless absolutely necessary, single-sided copies should not be made.

- **Other items**: Whenever possible, re-useable items (such as coffee mugs) should be chosen and throwaway items (such as foam cups) should be avoided. Consideration should also be given to items with less packaging.

Recycling
Containers for collecting recyclable materials will be placed at all city public buildings including City Hall, the police station, all fire stations, the Corporation Yard, the Senior Center, and the Veterans Memorial building. All materials currently collected as part of our contracted services with Davis Waste Removal should be collected at city facilities. Items placed in these containers become the property of the City/DWR and may not be removed. At present, these include:

- **Mixed paper**: All facilities will have collection containers for the purpose of collecting mixed paper. This includes computer, copier, and writing paper (white and colored),
newspaper, magazines and other office paper products. Recycling containers will be located at or near all desks, in duplicating machine areas. Individuals will take their desk-generated recyclable paper to the central containers where the paper will be collected by the custodians for conveyance to Davis Waste Removal (DWR) recycling carts.

- **Aluminum and glass**: All kitchens, lunch rooms, break rooms, and vending machine areas will have containers for collecting beverage cans and bottles. Some plastics are also to be recycled. When items are placed in City-supplied containers, custodians will take them to DWR recycling carts.

- **Corrugated cardboard**: Provision for cardboard recycling will be made at all building central trash bin areas.

**Recycling of Other Products**

- **Oil**: All waste crankcase oil from Fleet Services operations will be recycled.

- **Freon**: All freon from Fleet Services operations will be recycled.

- **Antifreeze**: All antifreeze will be recycled.

- **Scrap Metal**: Scrap metal is collected at the east end of the corporation yard.

- **Pallets**: Wooden shipping pallets are collected for surplus sale in the Corp. Yard.

**Recycling At City Parks**
Receptacles for the recycling of glass and aluminum will be located at selected parks.

**Purchase Of Recycled Products**
The City shall purchase recycled products whenever sufficient quantities are readily available and meet the City's specifications. See also, Waste Reduction Procedure concerning purchasing recycled materials.

**Responsibility**
Public Works, for the administration of this policy.
All departments, for implementing this policy.

Approved:

/ signed James Antonen

James Antonen
City Manager

* Includes former policy 7.21 Waste Reduction/Recycling Policy for Municipal Operations (July 1992); Recycled Paper Use
Appendix G -Draft Carryout Bag Ordinance

ORDINANCE NO. 12-XXX
AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF DAVIS ADDING ARTICLE 32.05 TO THE CITY OF DAVIS MUNICIPAL CODE TO REDUCE THE DISTRIBUTION OF CARRYOUT BAGS AND PROMOTE THE USE OF REUSABLE BAGS

WHEREAS, on December 6, 2011, the City Council adopted Resolution No. 11-185, Series 2011, in which the City announced its intention to strive to implement zero waste strategies, and

WHEREAS, the City Council desires to conserve resources, reduce greenhouse gas (GHG) emissions, waste, litter and pollution, and

WHEREAS, an important goal of the City of Davis is to procure and use sustainable products and services; and

WHEREAS, the use of single-use carryout bags (plastic, paper, and biodegradable) has–negative environmental impacts, including GHG emissions, litter, water consumption, solid waste generation and effects on wildlife; and

WHEREAS, from an overall environmental and economic perspective, a shift to reusable bags is a better alternative to the continued use of single-use plastic and paper carryout bags; and

WHEREAS, studies and impacts from similar policies adopted in other jurisdictions have shown a dramatic reduction in the use of single-use carryout bags; and

WHEREAS, the City Council recognizes that the unique facts and circumstances of Applicable Stores and City Facilities, as defined in the Ordinance, justify regulating the use of single-use carryout bags in these establishments; and

WHEREAS, this Ordinance is not intended to be a first step towards a comprehensive ordinance that would impose substantially similar regulations on all retail establishments within the City.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF DAVIS DOES HEREBY ORDAIN AS FOLLOWS:

SECTION 1. The City Council hereby adopts the recitals of this Ordinance as true and correct and such recitals are hereby incorporated by reference as though fully set forth in the text of this Ordinance.

SECTION 2. Article 32.05 is hereby added to the City of Davis Municipal Code to read in full as set forth in the attached Exhibit “A”, incorporated by this reference.
SECTION 3. If any section, subsection, subdivision, paragraph, sentence, clause or phrase added by this Ordinance, or any part thereof, is for any reason held to be unconstitutional or invalid or ineffective by any court of competent jurisdiction, such decision shall not affect the validity or effectiveness of the remaining portions of this Ordinance or any part thereof. The City Council hereby declares that it would have passed each section, subsection, subdivision, paragraph, sentence, clause or phrase thereof irrespective of the fact that any one or more subsections, subdivisions, paragraphs, sentences, clauses or phrases are declared unconstitutional, invalid or ineffective.

SECTION 4. The City Clerk shall certify to the adoption of this Ordinance and shall cause the same or a summary thereof to be published as required by law.

SECTION 5. This Ordinance shall take effect and be in full force and effect thirty (30) days from and after the date of its final passage and adoption.

THE FOREGOING ORDINANCE was first read at a regular meeting of the Davis City Council on the ________________, and was passed and adopted at a regular meeting of the Davis City Council on the ____ day of ________________, 2012.

AYES:
NOES:
ABSENT:
ABSTAIN:

________________________________________
Joseph Krovoza, Mayor of the City of Davis

ATTEST:

________________________________________
Zoe Mirabile, City Clerk of the City of Davis
EXHIBIT “A”

ARTICLE 32.05 DISPOSABLE BAG REDUCTION PROGRAM

32.05.01 Definitions

For purposes of this article, the following definitions shall apply:

a) “Applicable Store” means a retail establishment, not including food venders and restaurants, that provides Single-Use Carryout Bags to its customers as a result of the sale of a product and that meets any of the following:
   1) Is a retail supermarket, convenience food store, foodmart, or other entity which sells canned food, dry grocery, and Perishable Food.
   2) Is over 10,000 square feet of retail space that generates sales or use tax pursuant to the Bradley-Burns Uniform Local Sales and Use Tax Law and has a pharmacy licensed pursuant to Chapter 9 of Division 2 of the Business and Professions Code.
   3) Has a Type 20 or 21 license issued by the California Department of Alcoholic Beverage Control.

b) “City Facility” means a park, building or other facility located on City property or operated by the City.

c) “Paper Bag Cost Pass-Through” means the cost which must be collected by an Applicable Store from their customers when providing a Recycled Paper Bag.

d) “Perishable Food” means frozen foods, refrigerated foods, breads, and fresh produce. Perishable Food does not include items found in vending machines.

e) “Postconsumer Material” means a material that would otherwise be destined for solid waste disposal, having completed its intended end use and product lifecycle. Postconsumer Material does not include materials and byproducts generated from, and commonly reused within, an original manufacturing and fabrication process.

f) "Recycled Paper Bag" means a paper carryout bag provided by an Applicable Store to a customer at the point of sale that meets all of the following applicable requirements:
   1) Except as otherwise provided in this section, the paper carryout bag contains a minimum of 40 percent Postconsumer Materials.
   2) An eight pound-rated or smaller Recycled Paper Bag shall contain a minimum of 20 percent Postconsumer Material.
   3) The paper carryout bag is accepted for curbside recycling in Davis.
   5) Printed on the paper carryout bag is the percentage of Postconsumer Material content.

g) "Reusable Bag" means a bag with handles that is specifically designed and manufactured for multiple reuses and meets all of the following requirements:
   1) Is machine washable or easily cleaned or disinfected.
   2) Does not contain lead, cadmium, or any other heavy metal in toxic amounts, as defined by applicable State and Federal standards and regulations for packaging or reusable bags.
   3) If made of plastic, is a minimum of at least two and one-quarter millimeters thick.
   4) Has a minimum lifetime of 125 uses, which for purposes of this subdivision, means the capability of carrying a minimum of 22 pounds 125 times over a distance of at least 175 feet.

h) “Single-Use Carryout Bag” means a bag other than a Reusable Bag provided at the check stand, cash register, point of sale, or other location for the purpose of transporting food or merchandise out of an Applicable Store. Single-Use Plastic Carryout Bags and Recycled Paper Bags however:
1) Do not include bags that are integral to the packaging of the product.
2) Do not include bags without handles provided to the customer to transport produce, bulk food or meat from produce, bulk food or meat department within an Applicable Store to the point of sale.
3) Do not include bags without handles provided to the customer to hold prescription medication dispensed from a pharmacy.
4) Do not include bags without handles provided to the customer to protect a purchased item from damage or contaminating other purchased items at check-out (including a small paper bag for greeting cards).

i) "Single-Use Plastic Carryout Bag" means any bag that is less than two and one-quarter millimeters thick and is made predominantly of plastic derived from petroleum or from bio-based sources, such as corn or other plant sources, that is provided by an Applicable Store or at a City Facility to a customer at the point of sale and that is not a Reusable Bag.

32.05.02 Carryout Bag Regulation

(a) On and after July 1, 2013 an Applicable Store shall not provide a Single-Use Carryout Bag to a customer at the point of sale, except as provided in Sections 32.05.03 or 32.05.04.
(b) An Applicable Store may make Reusable Bags available for purchase by a customer and shall charge no less than 10 cents for Reusable Bags.
(c) On and after July 1, 2013, an Applicable Store may provide Reusable Bags to customers at no cost only when combined with a time-limited store promotional program.
(d) No person shall distribute a Single-Use Plastic Carryout Bag at a City sponsored, organized or permitted event at any City Facility unless otherwise permitted in this article or approved by the Public Works Director or designee.
(e) All other retail stores not required to reduce the distribution of Single-Use Carryout Bags under this article are encouraged to voluntarily reduce the distribution of Single-Use Carryout Bags.
(f) Nothing in this article shall prohibit stores from encouraging and providing incentives for the use of Reusable Bags through education and through credits or rebates for customers that bring their own carryout bags at the point of sale for the purpose of carrying away goods.
(g) Nothing in this article shall prohibit customers from using bags of any type that they bring to the store themselves or from carrying away goods that are not placed in a bag.

32.05.03 Recycled Paper Bag Cost Pass-Through.

On and after July 1, 2013, except as provided in Section 32.05.04 an Applicable Store may only provide a Recycled Paper Bag to a customer if it collects a Paper Bag Cost Pass-Through from the customer for each Recycled Paper Bag provided.

(a) The Paper Bag Cost Pass-Through shall be no less than 10 cents, which has been determined to be the actual average cost for a retailer to provide a Recycled Paper Bag.
(b) No Applicable Store collecting a Paper Bag Cost Pass-Through pursuant to this Section shall rebate or otherwise reimburse a customer for any portion of this pass-through.
(c) All Applicable Stores shall indicate on the customer transaction receipts the number of Recycled Paper Bags provided and the total amount of the Paper Bag Cost Pass-Through.
(d) When requested by the Public Works Director or designee, Applicable Stores required to collect a Paper Bag Cost Pass-Through shall report to the City, on a form prescribed by the Public Works Department, a summary of all payments of Paper Bag Cost Pass-Throughs received. The form shall be signed by a
responsible officer or agent of the Store who shall swear or affirm that the information provided on the form is true and complete.

(e) Applicable Stores shall keep complete and accurate record or documents of the purchase of any Recycled Paper Bag by the Applicable Store for a minimum period of three years from the date of purchase, which records shall be available for inspection at no cost to the City during regular business hours by a City employee authorized to enforce this Chapter. These records may be kept at the corporate level.

32.05.04 Exemptions

Notwithstanding the requirements contained in Sections 32.05.02 and 32.05.03, an Applicable Store may provide a customer participating in the California Special Supplemental Food Program for Women, Infants, and Children pursuant to Article 2 of Chapter 1 of Part 2 of Division 106 of the Health and Safety Code and a customer participating in the Supplemental Food Program pursuant to Chapter 10 of Part 3 of Division 9 of the Welfare and Institutions Code, with a Reusable Bag or a Recycled Paper Bag at no cost at the point of sale.

32.05.05 Enforcement

Any person violating this article shall be guilty of an infraction and shall be subject to a fine in the amount of one hundred dollars ($100) for the first violation, two hundred dollars ($200) for the second violation, and five hundred dollars ($500) for the third and subsequent violations occurring within a one-year period.

32.05.06 City Collaboration with Businesses

The City may periodically contact Applicable Stores to assess the effectiveness of this article and to provide assistance for implementation efforts. This may include periodic surveys, outreach meetings and/or written communications with Applicable Stores.
Appendix H - City of Davis 2010 Climate Action Adaptation Plan

The pages shown below are excerpt from the 2010 Climate Action Adaption Plan, as it related to solid waste and recycling.

### 2015 Actions — Energy Efficient Community Design (transportation and energy use)

<table>
<thead>
<tr>
<th>Priority</th>
<th>Action</th>
<th>Potential GHG Reduction</th>
<th>Estimated Cost</th>
<th>Funding Source</th>
<th>Key Metrics</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>Promote mixed use development (residential/commercial) in and outside the downtown to provide essential services to all residents, including providing incentives for commercial development.</td>
<td>Undetermined</td>
<td>Undetermined</td>
<td>Continuation of existing policy</td>
<td>Number of residential units build downtown.</td>
<td>High density mixed use projects in and around the downtown serve to minimize vehicles trips and create an even more vibrant downtown.</td>
</tr>
<tr>
<td>III</td>
<td>Develop and initiate a carbon neutral development design competition</td>
<td>Undetermined</td>
<td>Low cost to City</td>
<td>Private</td>
<td>Number of submittals for carbon neutral design competition.</td>
<td>Would serve to show what a carbon neutral design in the central valley would look like.</td>
</tr>
</tbody>
</table>

### 4. Consumption and Waste

Consumption and waste are important factors when considering local GHG emissions due to the energy embedded in products Davis residents purchase (upstream emissions), and the energy needed to process and repurpose solid waste (downstream emissions). While the ability of the community to directly influence product manufacturing is limited, consumer awareness of the upstream emissions can be addressed at the local level. In addition, the course the community chooses to take to address downstream emissions is directly influenced by the volume and type of solid waste that the community produces.

Davis was an early pioneer in the recycling effort. In the early 1970's a non-profit (Resource Awareness Committee of Davis) started a small locally based program which evolved to a formal program with the support of a City ordinance in 1974 requiring the separation of newspapers from garbage. In the decades since, Davis has continued to strive for creative approaches to minimize waste production (e.g. composting classes), and a greater rate of recycling materials (e.g. I-BIN recycling containers for apartment
The City’s current approach is summarized by the “4 R’s” approach, listed in priority order:

1. Reduce waste in the first place; buy products in bulk and with less packaging.
2. Reuse old items; find a new use for the item or find a new user.
3. Recycle.
4. Rebuy items made from recycled materials to increase demand for recycling.

The objectives and actions in this section are intended to spur continued innovation in the reduction and processing of solid waste in Davis.

<table>
<thead>
<tr>
<th>2015 Objective 1: Reduce total solid waste generated by 10%</th>
<th>Description/Discussion:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential GHG savings: TBD</td>
<td>Solid waste processing is energy intensive (collection and disposal), and the GHG emissions related to the breakdown of waste is significant (Methane, a high intensity GHG gas). In addition, reduction in solid waste reduces GHG emissions associated with the manufacture of products, packaging, storage, shipping, etc. These “upstream” GHG emissions are difficult to calculate, but are significant.</td>
</tr>
</tbody>
</table>

### 2015 Actions – Solid Waste Reduction (Pre consumer/Post consumer)

<table>
<thead>
<tr>
<th>Priority</th>
<th>Action</th>
<th>Potential GHG Reduction</th>
<th>Estimated Cost</th>
<th>Funding Source</th>
<th>Key Metrics</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Adopt Zero-waste goal for Davis and begin planning process</td>
<td>N/A - Foundation</td>
<td>Undetermined</td>
<td>Undetermined</td>
<td>Adoption of plan.</td>
<td>Include consideration of “pay as you throw” pricing systems</td>
</tr>
<tr>
<td>II</td>
<td>Move to zero waste community (10% reduction)</td>
<td>2,450 MT</td>
<td>Undetermined (assume low overall cost)</td>
<td>Marketing, incentives</td>
<td>Undetermined</td>
<td>Solid waste collection</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2015 Objective 2: Recover 75% of all waste generated</th>
<th>Description/Discussion:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential GHG savings: TBD</td>
<td>This is an increase of 25% over current estimates of 50% diversion rate. Because Davis does not get credit for its early success in recycling, this additional 25% reduction is more difficult to reach. The GHG emissions related to the breakdown of waste is significant (Methane, a high intensity GHG gas). In addition, recovery and adaptive reuse of materials reduces GHG emissions associated with the manufacture of products, packaging, storage, shipping, etc. Elimination of these “upstream” GHG emissions is difficult to calculate, but are significant.</td>
</tr>
</tbody>
</table>
### 2015 Actions – Solid Waste Reduction (Recycling)

<table>
<thead>
<tr>
<th>Priority</th>
<th>Action</th>
<th>Potential GHG Reduction</th>
<th>Estimated Cost</th>
<th>Funding Source</th>
<th>Key Metrics</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>Increase recovery of waste by 25%</td>
<td>1,843 MT</td>
<td>Undetermined</td>
<td>Private</td>
<td>Waste recovery rate</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>Provide weekly curbside collection of food waste and other compostable materials in addition to recycling</td>
<td>Undetermined</td>
<td>Undetermined</td>
<td>Private</td>
<td>Waste recovery rate</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>Create a City salvage yard for the City to promote reuse of goods and reduce consumption, expanding on existing program with extended hours of operation and increased seasonal availability based on the UC Davis schedule.</td>
<td>Undetermined</td>
<td>Undetermined</td>
<td>Undetermined</td>
<td>Waste recovery rate</td>
<td></td>
</tr>
</tbody>
</table>

#### 2015 Objective 3:
Maximize the efficiency of the waste collection system

**Description/Discussion:**

Solid waste collections is energy intensive. Technological advances and reduction in solid waste disposal as described in objectives one and two above may present opportunities to make the waste collection system more energy efficient.

Potential GHG savings: TBD
### 2015 Actions – Solid Waste Collection System (Energy)

<table>
<thead>
<tr>
<th>Priority</th>
<th>Action</th>
<th>Potential GHG Reduction</th>
<th>Estimated Cost</th>
<th>Funding Source</th>
<th>Key Metrics</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>Establish a kitchen green waste program and shift residential garbage collection to every other week</td>
<td>Undetermined</td>
<td>Undetermined</td>
<td>Private</td>
<td>Increased waste diversion and reduced VMT for garbage collection</td>
<td>Recycling collection to remain weekly</td>
</tr>
<tr>
<td>III</td>
<td>Convert collection vehicles to alternative fuels</td>
<td>98 MT</td>
<td>High</td>
<td>Private</td>
<td>MPG of waste collection vehicles</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>$250k incremental cost for hybrid (Source: NYC pilot program)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 2015 Objective 4: Reduce water use by 10% over 2010 levels

**Potential GHG savings:** TBD

**Description/Discussion:**
The production, shipping, and treatment of water are energy intensive. Reduction in water use also has many co-benefits, including the ability to adapt to future climate conditions that may reduce overall availability for municipal uses.

### 2015 Actions – Water Conservation

<table>
<thead>
<tr>
<th>Priority</th>
<th>Action</th>
<th>Potential GHG Reduction</th>
<th>Estimated Cost</th>
<th>Funding Source</th>
<th>Key Metrics</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Establish a local financing district for water conservation (AB 811)</td>
<td>Undetermined</td>
<td>Undetermined</td>
<td>Program start up – EECBG and SEP</td>
<td>Number of Davis residential property owners participating</td>
<td>Participate in California-FIRST program pilot program</td>
</tr>
</tbody>
</table>

*Davis Climate Action and Adaptation Plan – City Council Review*
Appendix I - California 2008 Statewide Waste Characterization Study: Significant Tables and Figures
Significant Tables and Figures

Contractor's Report
To The Board

California 2008 Statewide Waste Characterization Study

Produced Under Contract by:

Cascadia Consulting Group

The tables and figures in this document are excerpted from the California 2008 Statewide Waste Characterization Study, California Integrated Waste Management Board Publication #IWMB-2009-023. The table and figure names and numbers match those in the full report. For other data and more information, see the complete study or the Executive Summary. A list of material types and their definitions used in this study can be found in Appendix B of the report.

California Environmental Protection Agency
Table ES-1: Estimated Contribution of Each Sector to California's Overall Disposed Waste Stream

<table>
<thead>
<tr>
<th>Sector</th>
<th>Est. Percentage of Disposed Waste Stream</th>
<th>Est. Tons Disposed Statewide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial</td>
<td>49.5%</td>
<td>19,672,547</td>
</tr>
<tr>
<td>Residential</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single-family residential</td>
<td>21.6%</td>
<td>8,583,746</td>
</tr>
<tr>
<td>Multifamily residential</td>
<td>8.4%</td>
<td>3,351,428</td>
</tr>
<tr>
<td>Self-hauled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial self-hauled</td>
<td>20.4%</td>
<td>8,115,068</td>
</tr>
<tr>
<td>Residential self-hauled</td>
<td>3.3%</td>
<td>1,302,534</td>
</tr>
</tbody>
</table>

Totals: 100% 39,722,818

Numbers may not total exactly due to rounding.

Figure 5: Overview of California’s Overall Disposed Waste Stream

![Pie chart showing waste stream composition]

<table>
<thead>
<tr>
<th>Material Class</th>
<th>Est. Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper</td>
<td>17.3%</td>
</tr>
<tr>
<td>Glass</td>
<td>1.4%</td>
</tr>
<tr>
<td>Metal</td>
<td>4.6%</td>
</tr>
<tr>
<td>Electronics</td>
<td>0.5%</td>
</tr>
<tr>
<td>Plastic</td>
<td>9.6%</td>
</tr>
<tr>
<td>Other Organic</td>
<td>32.4%</td>
</tr>
<tr>
<td>Inerts and Other</td>
<td>29.1%</td>
</tr>
<tr>
<td>HHW</td>
<td>0.3%</td>
</tr>
<tr>
<td>Special Waste</td>
<td>3.9%</td>
</tr>
<tr>
<td>Mixed Residue</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

Total: 100%

Numbers may not total exactly due to rounding.
Table 6: Ten Most Prevalent Material Types in California’s Overall Disposed Waste Stream

<table>
<thead>
<tr>
<th>Material</th>
<th>Est. Percent</th>
<th>Cum. Percent</th>
<th>Est. Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>15.6%</td>
<td>15.6%</td>
<td>6,168,120</td>
</tr>
<tr>
<td>Lumber</td>
<td>14.5%</td>
<td>30.0%</td>
<td>5,765,482</td>
</tr>
<tr>
<td>Remainder/Composite plastics and Other</td>
<td>5.5%</td>
<td>35.5%</td>
<td>2,175,822</td>
</tr>
<tr>
<td>Remainder/Composite Paper</td>
<td>5.2%</td>
<td>40.7%</td>
<td>2,056,546</td>
</tr>
<tr>
<td>Uncoated Corrugated Cardboard</td>
<td>4.8%</td>
<td>45.5%</td>
<td>1,805,897</td>
</tr>
<tr>
<td>Remainder/Composite Organic</td>
<td>4.3%</td>
<td>49.8%</td>
<td>1,719,743</td>
</tr>
<tr>
<td>Leaves and Grass</td>
<td>3.8%</td>
<td>53.6%</td>
<td>1,612,532</td>
</tr>
<tr>
<td>Bulky Items</td>
<td>3.5%</td>
<td>57.1%</td>
<td>1,393,091</td>
</tr>
<tr>
<td>Carpet</td>
<td>3.2%</td>
<td>60.3%</td>
<td>1,285,473</td>
</tr>
<tr>
<td>Rock, Soil and Fines</td>
<td>3.2%</td>
<td>63.5%</td>
<td>1,259,808</td>
</tr>
</tbody>
</table>

Total 63.5% 25,231,814

Any differences between cumulative percent figures and the sum of estimated percent figures are due to rounding.
Table 2: Composition of California’s Overall Disposed Waste Stream

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Plastic</td>
<td>13.6%</td>
<td>5.8%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Paper</td>
<td>26.0%</td>
<td>0.1%</td>
<td>25.9%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Glass</td>
<td>0.5%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Metal</td>
<td>6.4%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Food Waste</td>
<td>18.5%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Yard Waste</td>
<td>47.4%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.1%</td>
</tr>
</tbody>
</table>
Figure 6: Overview of Commercial Disposed Waste

Table 9: Ten Most Prevalent Material Types in Commercial Disposed Waste

<table>
<thead>
<tr>
<th>Material</th>
<th>Est. Percent</th>
<th>Cum. Percent</th>
<th>Est. Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lumber</td>
<td>15.7%</td>
<td>15.7%</td>
<td>3,083,666</td>
</tr>
<tr>
<td>Food</td>
<td>15.4%</td>
<td>31.1%</td>
<td>3,032,805</td>
</tr>
<tr>
<td>Uncataloged Corrugated Cardboard</td>
<td>15.4%</td>
<td>46.5%</td>
<td>1,423,930</td>
</tr>
<tr>
<td>Remainder/Composite Paper</td>
<td>6.2%</td>
<td>52.7%</td>
<td>1,219,271</td>
</tr>
<tr>
<td>Remainder/Composite Inerts and Other</td>
<td>5.1%</td>
<td>47.6%</td>
<td>994,639</td>
</tr>
<tr>
<td>Remainder/Composite Plastic</td>
<td>4.0%</td>
<td>51.6%</td>
<td>788,056</td>
</tr>
<tr>
<td>Carpet</td>
<td>3.5%</td>
<td>55.2%</td>
<td>697,461</td>
</tr>
<tr>
<td>Prunings and Trimmings</td>
<td>3.3%</td>
<td>58.5%</td>
<td>668,561</td>
</tr>
<tr>
<td>Remainder/Composite Organic</td>
<td>3.2%</td>
<td>61.7%</td>
<td>628,700</td>
</tr>
<tr>
<td>Other Miscellaneous Paper</td>
<td>3.0%</td>
<td>66.7%</td>
<td>587,256</td>
</tr>
</tbody>
</table>

Total  
66.7%  13,117,616

Any differences between cumulative percent figures and the sum of estimated percent figures are due to rounding.
<table>
<thead>
<tr>
<th>Category</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential Waste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yard Waste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food Waste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction Waste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial Waste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restaurant Waste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office Waste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hotel Waste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retail Waste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entertainment Industry Waste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrial Waste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturing Waste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aerospace Industry Waste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electronics Industry Waste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Waste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education and Government Waste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing and Equipment Industry Waste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Healthcare Waste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Waste</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure 7: Overview of Overall Residential Disposed Waste

Numbers may not total exactly due to rounding.

Table 11: Ten Most Prevalent Material Types in Overall Residential Disposed Waste

<table>
<thead>
<tr>
<th>Material</th>
<th>Est. Percent</th>
<th>Cum. Percent</th>
<th>Est. Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>25.4%</td>
<td>25.4%</td>
<td>3,034,040</td>
</tr>
<tr>
<td>Remainder/Composite Organic</td>
<td>8.4%</td>
<td>33.8%</td>
<td>1,002,937</td>
</tr>
<tr>
<td>Lumber</td>
<td>6.7%</td>
<td>40.5%</td>
<td>734,637</td>
</tr>
<tr>
<td>Leaves and Grass</td>
<td>6.0%</td>
<td>46.5%</td>
<td>710,233</td>
</tr>
<tr>
<td>Remainder/Composite Paper</td>
<td>6.0%</td>
<td>52.5%</td>
<td>714,716</td>
</tr>
<tr>
<td>Other Miscellaneous Paper</td>
<td>4.6%</td>
<td>57.1%</td>
<td>538,988</td>
</tr>
<tr>
<td>Textiles</td>
<td>4.2%</td>
<td>61.2%</td>
<td>506,658</td>
</tr>
<tr>
<td>Remainder/Composite Inerts and Other</td>
<td>2.8%</td>
<td>64.1%</td>
<td>339,929</td>
</tr>
<tr>
<td>Uncouated Corrugated Cardboard</td>
<td>2.7%</td>
<td>66.8%</td>
<td>323,058</td>
</tr>
<tr>
<td>Mixed Residue</td>
<td>2.5%</td>
<td>69.3%</td>
<td>297,515</td>
</tr>
<tr>
<td>Total</td>
<td>69.3%</td>
<td>100%</td>
<td>8,268,092</td>
</tr>
</tbody>
</table>

Any differences between cumulative percent figures and the sum of estimated percent figures are due to rounding.
Figure 8: Overview of Single-Family Residential Disposed Waste

Special Waste 0.3%
HHW 0.3%
Inerts and Other 9.6%
Other Organic 51.1%
Paper 18.7%
Glass 2.1%
Metal 4.1%
Electronics 0.7%
Plastic 10.0%

Numbers may not total exactly due to rounding.

Material Class | Est. Percent
--- | ---
Paper | 18.7%
Glass | 2.1%
Metal | 4.1%
Electronics | 0.7%
Plastic | 10.0%
Other Organic | 51.1%
Inerts and Other | 9.6%
HHW | 0.3%
Special Waste | 0.3%
Mixed Residue | 3.0%
Total | 100.0%

Figure 9: Overview of Multifamily Residential Disposed Waste

Special Waste 4.5%
Mixed Residue 1.1%
HHW 0.3%
Inerts and Other 15.4%
Other Organic 42.1%
Paper 21.8%
Glass 3.1%
Metal 3.7%
Electronics 0.7%
Plastic 7.3%

Numbers may not total exactly due to rounding.

Material Class | Est. Percent
--- | ---
Paper | 21.8%
Glass | 3.1%
Metal | 3.7%
Electronics | 0.7%
Plastic | 7.3%
Other Organic | 42.1%
Inerts and Other | 15.4%
HHW | 0.3%
Special Waste | 4.5%
Mixed Residue | 1.1%
Total | 100%
Figure 10: Overview of Overall Self-hauled Disposed Waste

Table 20: Ten Most Prevalent Material Types in Overall Self-hauled Disposed Waste

<table>
<thead>
<tr>
<th>Material</th>
<th>Est. Percent</th>
<th>Cum. Percent</th>
<th>Est. Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lumber</td>
<td>23.2%</td>
<td>23.2%</td>
<td>1,961,918</td>
</tr>
<tr>
<td>Remander Composite Inerts and Other</td>
<td>10.4%</td>
<td>33.5%</td>
<td>840,854</td>
</tr>
<tr>
<td>Bulky Items</td>
<td>9.2%</td>
<td>42.8%</td>
<td>749,947</td>
</tr>
<tr>
<td>Rock, Soil and Fines</td>
<td>8.9%</td>
<td>51.6%</td>
<td>718,500</td>
</tr>
<tr>
<td>Asphalt Roofing</td>
<td>7.9%</td>
<td>59.6%</td>
<td>644,234</td>
</tr>
<tr>
<td>Gypsum Board</td>
<td>3.9%</td>
<td>63.4%</td>
<td>313,223</td>
</tr>
<tr>
<td>Carpet</td>
<td>3.8%</td>
<td>67.3%</td>
<td>309,971</td>
</tr>
<tr>
<td>Other Ferrous</td>
<td>3.1%</td>
<td>70.4%</td>
<td>264,087</td>
</tr>
<tr>
<td>Concrete</td>
<td>3.1%</td>
<td>73.5%</td>
<td>252,774</td>
</tr>
<tr>
<td>Leaves and Grass</td>
<td>2.6%</td>
<td>76.1%</td>
<td>212,560</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>76.1%</strong></td>
<td><strong>6,177,167</strong></td>
<td></td>
</tr>
</tbody>
</table>

Any differences between cumulative percent figures and the sum of estimated percent figures are due to rounding.
### Table 2: Composition of Overall Self-Hauled Disposed Waste

<table>
<thead>
<tr>
<th>Material Type</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper and Cardboard</td>
<td>20%</td>
<td>25%</td>
<td>30%</td>
</tr>
<tr>
<td>Plastics</td>
<td>15%</td>
<td>20%</td>
<td>25%</td>
</tr>
<tr>
<td>Glass</td>
<td>10%</td>
<td>12%</td>
<td>14%</td>
</tr>
<tr>
<td>Metals</td>
<td>30%</td>
<td>35%</td>
<td>40%</td>
</tr>
<tr>
<td>Wood</td>
<td>5%</td>
<td>7%</td>
<td>9%</td>
</tr>
<tr>
<td>Landfill Rejection</td>
<td>10%</td>
<td>12%</td>
<td>14%</td>
</tr>
<tr>
<td>Other</td>
<td>5%</td>
<td>6%</td>
<td>7%</td>
</tr>
</tbody>
</table>

Additional data on composition and management practices for each year can be found in the detailed sections of the report.
Figure 11: Overview of Commercial Self-hauled Disposed Waste

<table>
<thead>
<tr>
<th>Material Class</th>
<th>Est. Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper</td>
<td>5.6%</td>
</tr>
<tr>
<td>Glass</td>
<td>0.2%</td>
</tr>
<tr>
<td>Metal</td>
<td>4.3%</td>
</tr>
<tr>
<td>Electronics</td>
<td>0.1%</td>
</tr>
<tr>
<td>Plastic</td>
<td>5.5%</td>
</tr>
<tr>
<td>Other Organic</td>
<td>13.4%</td>
</tr>
<tr>
<td>Inerts and Other</td>
<td>61.0%</td>
</tr>
<tr>
<td>Mixed Residue</td>
<td>0.0%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

Numbers may not total exactly due to rounding.

Figure 12: Overview of Residential Self-hauled Disposed Waste

<table>
<thead>
<tr>
<th>Material Class</th>
<th>Est. Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper</td>
<td>5.0%</td>
</tr>
<tr>
<td>Glass</td>
<td>1.6%</td>
</tr>
<tr>
<td>Metal</td>
<td>9.0%</td>
</tr>
<tr>
<td>Electronics</td>
<td>2.1%</td>
</tr>
<tr>
<td>Plastic</td>
<td>7.2%</td>
</tr>
<tr>
<td>Other Organic</td>
<td>14.6%</td>
</tr>
<tr>
<td>Inerts and Other</td>
<td>47.6%</td>
</tr>
<tr>
<td>HHW</td>
<td>0.6%</td>
</tr>
<tr>
<td>Special Waste</td>
<td>11.3%</td>
</tr>
<tr>
<td>Mixed Residue</td>
<td>0.3%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

Numbers may not total exactly due to rounding.
Appendix J - 2010 Variable Can Rate Study

STAFF REPORT

DATE: January 21, 2010

TO: Natural Resources Commission

FROM: Sue Gedestad, Assistant Public Works Director
       Richard Tsai, Sr. Utility Resource Specialist

SUBJECT: Variable Cart Rate for Residential Curbside Garbage

Recommendation
Review Davis Waste Removal’s report on “Cart Weight Survey for Landfill Cost Study” completed by Dr. Robert H. Shumway, Professor Emeritus, Department of Statistics, UC Davis.

Review staff’s sanitation rate survey and comparison of estimated per capita disposal rate for 2008.

Support staff’s recommendation for continuation of the current flat rate structure.

Fiscal Impact
Based on the weight of material received at the Yolo County Central Landfill, the true cost difference between disposal of garbage from a 35 gallon cart and a 65 gallon cart are at an estimated 83 cents and 76 cents respectively than that of a 95 gallon cart. Implementing a variable cart rate that requires additional administration of the 14,000 plus accounts will increase costs for the entire program and eclipse or eliminate the 83 cents and 76 cents price differential.

Background
DWR provides curbside garbage collection, street sweeping, green waste/brush removal and recycling services to the City. In December 2004, unlimited curbside garbage collection was changed to a 95 gallon default cart size. 65 and 35 gallon size carts are available for customers with space and manageability issues. The 95 gallon default cart size was selected carefully from a study done in 1988 which shows more than half of the customers would exceed the 65 gallon size. A variable cart rate was not adopted because the difference in cost to transport and dispose garbage between 35, 65 or 95 gallon carts was (and continues to be) less than $1. Experience shows that when customers are confronted with a full garbage container, they will put garbage in the recycling container. This has a negative impact on the quality of the recycled material.

The interest for a variable cart rate has been proposed by some customers as an opportunity to save on garbage disposal costs and serve as an opportunity for environmental benefit. In December 2009 a statistical analysis was done comparing the amount of waste in the 35, 65 and 95 gallon carts. The results show that the amount of trash in both the 35 and 65 is fundamentally the same. Per the study, 95 gallon carts contained about 10 more pounds than the 35 gallon cart. The difference in the disposal cost between a 35 gallon cart and 95 gallon cart is 83 cents. To
administer a variable can rate, there would be city costs associated with tracking all 14,000 residential accounts. This cost would reduce, if not negate the saving in trash disposal.

Also, the rate study shows that Davis’ current 95 gallon flat rate is 30% below the average of other communities and 36% below the rate average of cities with variable can rates. A 2008 comparison of pounds landfilled per person per day shows Davis’ 3.3 lbs. per person per day is 30% below the average of other communities and 32% below cities with variable rates. The statewide average is 5.1 lbs per person per day.

When comparing the City’s per capita waste disposed to other communities, Davis is one of the lowest. It is difficult to see that a variable rate would improve significantly the city’s diversion. There also is no real cost savings to individuals choosing the smaller carts.

In the context of what City of Davis utility rates are experiencing, staff believes that the benefits of a variable rate do not outweigh the cost. As such, staff is recommending continuation of the current flat rate structure.

Attachments:
DWR Cart Weight Survey for Landfill Cost Study
Chart 1 Davis vs other cities monthly garbage
Chart 2 Davis vs other cities lbs. landfilled per person per day
Cart Weight Survey for Landfill Cost Study

Kenneth L. Shepard  
Controller, Davis Waste Removal Co., Inc.  
Robert H. Shumway  
Professor Emeritus, Department of Statistics, UC-Davis  
January 9, 2010

1. Introduction
The City of Davis (City) currently allows residents the option of three different sized carts for residential waste collection. Waste collection service is provided via contract by Davis Waste Removal Company, Inc. (DWR). The cart sizes or classes are categorized by volume into 35 gallon (938 carts), 65 gallon (1,588 carts) and 95 gallon (10,986 carts) containers. The objective of this analysis is to estimate the total tonnage contributed to landfill by each cart class and to assign an average cost to each class allowing for the uncertainty due to sampling.

We do not consider other potentially greater contributions to cost such as additional personnel and equipment costs that may be attributed to using multiple classes. The survey is also limited to one four-week period in December including Christmas (November 30th-December 26th) and this time period may not be completely representative of collections taken at other times of the year. There will be potential seasonal variations in the number of carts in use as well as measurement errors in determining the cart weight. There will also be variations in the number of carts not utilized during the week for this time period which will affect the total load on the landfill.

2. Survey Design
The Survey was designed to give reasonable estimators for the actual mean weight of cart content of each of three sizes of carts, along with the estimated uncertainty of that mean estimator. This data can then be compared to the total annual residential disposal by weight attributed to each size cart. Costs are calculated at the current rate of $37.08 per ton per year charged at the Yolo County Landfill.

The total annual residential disposal used was a three-year average for the years 2006, 2007, and 2008, as provided by DWR. This annual total suggested that the mean weights in the three cart classes would be on the order of 11, 22, and 31 lbs per week for the 35, 65, and 95 gallon containers. It seemed to be reasonable to design for a maximum range of approximately 40 lbs in the 95 gallon class, leading to an approximation of 8 lbs for the standard deviation expected in a single cart for one week. A sample of 100 households per
class gives an approximate margin of error of $2 \times \frac{8}{\sqrt{100}} \approx 1.6$ lbs for the mean estimator and which we considered to be reasonable for a small pilot study of this kind.

Based on the above computation and in the interest of keeping the study cost reasonable, we chose to sample randomly 100 residential customer addresses in each of the three cart classes and to weigh the carts in use during the week for four consecutive weeks essentially confined to December. The carts were weighed and the gross weight of the cart including contents was recorded. A net weight of the contents for each cart was estimated by subtracting the average weight of five empty carts from the gross weight. In the analysis, we used the gross weight for estimating the means and subtracted the estimated empty cart weight later to estimate the average net weight of the contents. If the gross weights are all adjusted by subtracting the empty cart average weight, negative values sometimes occurred when the contents were light or the empty cart weights were not as assumed. Carts not utilized during the week were not included in the mean. Variations in the cart utilization (70-90% during the study) may introduce additional variability during other time periods. For example, Table 1 below shows the number of carts in each category that were weighed out of the 100 that would have been available if all carts were in the sample.

**Table 1: Carts per 100 in the Sample Utilized by Customers**

<table>
<thead>
<tr>
<th>Class</th>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>35 gal</td>
<td>79</td>
<td>74</td>
<td>75</td>
<td>77</td>
</tr>
<tr>
<td>65 gal</td>
<td>87</td>
<td>80</td>
<td>85</td>
<td>83</td>
</tr>
<tr>
<td>95 gal</td>
<td>88</td>
<td>88</td>
<td>79</td>
<td>71</td>
</tr>
</tbody>
</table>

It is clear that if all carts were utilized each week, the means might be larger unless customers were either saving trash for the next collection or possibly using trash compactors.

3. Estimation of Weekly Cart Weight Means

Table 2 below summarizes the the weekly mean net weights for carts that were utilized in each class. Mean net weights, approximating the weight of the trash contents, were computed by subtracting the empty cart weights 22.3 lbs, 30.4 lbs, and 38.5 lbs from the mean gross weights of the 35, 65, and 96 gallon containers respectively. We remark that the weights in the 95 gallon containers are substantially higher uniformly over the four week period. Furthermore, the 35 and 65 gallon carts contain essentially the same mean trash weights.

**Table 2: Estimated Weekly Mean Net Weights With Standard Errors**

<table>
<thead>
<tr>
<th>Class</th>
<th>Week 1(se)</th>
<th>Week 2(se)</th>
<th>Week 3(se)</th>
<th>Week 4(se)</th>
</tr>
</thead>
<tbody>
<tr>
<td>35 gal</td>
<td>24.75(2.58)</td>
<td>20.09(1.39)</td>
<td>20.33(1.26)</td>
<td>22.62(1.57)</td>
</tr>
<tr>
<td>65 gal</td>
<td>24.24(1.95)</td>
<td>22.07(1.72)</td>
<td>23.56(1.69)</td>
<td>21.41(1.41)</td>
</tr>
<tr>
<td>95 gal</td>
<td>34.54(2.69)</td>
<td>31.94(2.46)</td>
<td>28.07(2.01)</td>
<td>33.20(2.22)</td>
</tr>
</tbody>
</table>
The situation is shown graphically in Figure 1 in terms of time profiles and with the upper and lower 95% confidence intervals indicated for each week. We note that the values over the four weeks were reasonably constant with the exception of the third week mean weight for the 95 gallon class.

![Figure 1: Weekly Mean Profiles With 95% Confidence Intervals](image)

Table 1 shows that the standard errors in the 95 gallon class were larger than predicted by the design. The histograms in Figure 2 show the distributions of the weights and it is clear that the assumption of the assumed range as 40 lbs was off by a factor of two. The histograms also show that the normality assumptions made in computing the confidence intervals for the mean are not seriously violated so that the means based on relatively large samples will also be normal.

4. Estimation of Weekly Cart Weight Means, Annual Residential Tonnage and Cost

In the previous section the mean weekly weights did not vary greatly over time indicating that averaging over weeks to get a weekly net weight would be sensible. A weighted weekly average is given in Table 3 below with standard errors of the weighted means.

A formal test of hypothesis that the 35 gallon and 65 gallon mean weights are equal cannot be rejected. Testing the hypothesis that the average of the 35 gallon and 65 gallon mean weights is equal to the 95 gallon mean weight leads to rejection at a very high significance level. We can conclude that it is not likely that the two lower capacity classes have unequal
mean weights but it is strongly like that their mean weight differs substantially from that of the 95 gallon carts.

**Table 3: Estimated and Observed Annual Residential Tonnage (ART)**

<table>
<thead>
<tr>
<th>Class</th>
<th>Survey Estimate Weekly Mean (se)</th>
<th>Survey Estimate ART(se)</th>
<th>95% Conf. Int. Survey ART</th>
<th>Previous Data ART</th>
</tr>
</thead>
<tbody>
<tr>
<td>35 gal</td>
<td>21.99(.90)</td>
<td>.5718(.0234)</td>
<td>[.5259,.6178]</td>
<td>.3015</td>
</tr>
<tr>
<td>65 gal</td>
<td>22.86(.86)</td>
<td>.5940(.0222)</td>
<td>[.5504,.6376]</td>
<td>.5600</td>
</tr>
<tr>
<td>95 lb.</td>
<td>31.98(1.20)</td>
<td>.8314(.0312)</td>
<td>[.7703,.8925]</td>
<td>.8184</td>
</tr>
</tbody>
</table>

It would be of interest to go from these weighted weekly averages to an estimated yearly tonnage, obtained by multiplying by the estimated average weekly weight in lbs by 52/2000. These values are also given in Table 3 along with the associated confidence intervals. Comparing these results with previous ART estimates based on total annual residential tonnage shows good agreement for the 65 gallon and 95 gallon contents but the survey results disagree with the ART totals by about a factor of two. The survey shows what may be a counterintuitive result, namely that the 35 and 65 gallon carts contain essentially the same trash weights.

**Table 4: Estimated Annual Costs and Confidence**

<table>
<thead>
<tr>
<th>Class</th>
<th>Cost</th>
<th>95% Conf. Int.</th>
<th>ART</th>
</tr>
</thead>
<tbody>
<tr>
<td>35 gal</td>
<td>21.20</td>
<td>[19.50,22.91]</td>
<td>11.18</td>
</tr>
<tr>
<td>65 gal</td>
<td>22.03</td>
<td>[20.41,23.64]</td>
<td>20.76</td>
</tr>
<tr>
<td>95 gal</td>
<td>30.83</td>
<td>[28.56,33.10]</td>
<td>30.35</td>
</tr>
</tbody>
</table>

It is instructive to consider the cost implications of the survey by scaling the tonnage by multiplying the annual residential tonnage by the cost per ton of $37.08. The results shown in Table 4 imply that contribution to annual costs contributed by the two lower capacity categories is the same, namely in the range $20-$24 with 95% confidence whereas the cost contribution of the 95 gallon carts is about $29-$33 at the 95% confidence level.

4. Conclusions

The results of the survey indicate that the distinction between 35 and 65 gallon carts is minor as far as the weight of the trash contributed to the landfill load. In fact, the average costs attributed to the 35 gallon and 65 gallon classes were estimated as $21.20 and $22.03 respectively, indicating that the $11.18 currently assigned to the 35 gallon containers on an annual tonnage basis is too low. Perhaps, the use of both the 35 gallon and 65 gallon options
is unnecessary and might be replaced by a single class of perhaps 65 gallon containers. The yearly cost contribution of the 95 gallon class estimated as $30.83 compares favorably to the current DWR value estimated as $30.35.

**Figure 2**: Weekly Histograms of Gross Cart Weights by Class.
<table>
<thead>
<tr>
<th>City</th>
<th>Variable Rate per 56 gal cart</th>
<th>Monthly Charge per 56 gal cart (2008)</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Jose (V)</td>
<td>$5.9</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Berkeley (V)</td>
<td>$3.6</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>San Francisco (V)</td>
<td>$4.5</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Sacramento (V)</td>
<td>$3.7</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Palm (V)</td>
<td>$2.7</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Woodland (V)</td>
<td>$5.5</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Santa Barbara (V)</td>
<td>$4.2</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Davis</td>
<td>$5.5</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Elk Grove (V)</td>
<td>$3.5</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Altun (V)</td>
<td>$5.7</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Folsom (V)</td>
<td>$4.5</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>West Sacramento (V)</td>
<td>$7.3</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Dixon</td>
<td>$3.4</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Chico (V)</td>
<td>$5.7</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Oroville</td>
<td>$5.4</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Williams (V)</td>
<td>$3.9</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Yes, Landfilled per Person per Day</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Davis &amp; Other Cities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City</td>
<td>lbs. Landfilled per person per day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>-----------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Sacramento</td>
<td>7.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Palo Alto</td>
<td>5.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woodland</td>
<td>5.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auburn</td>
<td>5.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chico</td>
<td>5.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sacramento</td>
<td>5.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santa Barbara</td>
<td>5.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roseville</td>
<td>4.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Berkeley</td>
<td>4.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Dorado</td>
<td>4.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dixon</td>
<td>4.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Victorville</td>
<td>3.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Francisco</td>
<td>3.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Jose</td>
<td>3.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elk Grove</td>
<td>3.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Davis</td>
<td>3.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oak (v)</td>
<td>2.7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(2008)
## Appendix K - Solid Waste Rate History

### Table L-1 Past and Present Single-Family Garbage Rates in Davis

<table>
<thead>
<tr>
<th>Year</th>
<th>Monthly Rate</th>
<th>Bi-Monthly Rate</th>
<th>Increase</th>
<th>Percent Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995-1996</td>
<td>$21.00</td>
<td>$42.00</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1996-1997</td>
<td>$21.72</td>
<td>$43.44</td>
<td>$0.72</td>
<td>3.43%</td>
</tr>
<tr>
<td>1997-1998</td>
<td>$21.72</td>
<td>$43.44</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>1998-1999</td>
<td>$21.72</td>
<td>$43.44</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>1999-2000</td>
<td>$21.72</td>
<td>$43.44</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>2000-2001</td>
<td>$21.72</td>
<td>$43.44</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>2001-2002</td>
<td>$23.64</td>
<td>$47.28</td>
<td>$1.92</td>
<td>8.84%</td>
</tr>
<tr>
<td>2002-2003</td>
<td>$23.64</td>
<td>$47.28</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>2003-2004</td>
<td>$24.39</td>
<td>$48.78</td>
<td>$0.75</td>
<td>3.17%</td>
</tr>
<tr>
<td>2004-2005</td>
<td>$24.39</td>
<td>$48.78</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>2005-2006</td>
<td>$26.02</td>
<td>$52.04</td>
<td>$1.63</td>
<td>6.68%</td>
</tr>
<tr>
<td>2006-2007</td>
<td>$27.22</td>
<td>$54.44</td>
<td>$1.20</td>
<td>4.61%</td>
</tr>
<tr>
<td>2007-2008</td>
<td>$27.73</td>
<td>$55.46</td>
<td>$0.51</td>
<td>1.87%</td>
</tr>
<tr>
<td>2008-2009</td>
<td>$28.36</td>
<td>$56.22</td>
<td>$0.63</td>
<td>2.27%</td>
</tr>
<tr>
<td>2009-2010</td>
<td>$28.87</td>
<td>$57.74</td>
<td>$0.51</td>
<td>1.80%</td>
</tr>
<tr>
<td>2010-2011</td>
<td>$28.87</td>
<td>$57.74</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>2011-2012</td>
<td>$29.74</td>
<td>$59.48</td>
<td>$0.87</td>
<td>3.01%</td>
</tr>
</tbody>
</table>
The two tables below show the trend of solid waste rates for DWR commercial customers. Two yard bins serviced twice a week is one of the most popular types of commercial service offered. The 30-yard Drop-Box table shows the fee per unit of service—it does not include landfill costs.

**Table L-2 Commercial Solid Waste Rates – 2 Yards with Twice-a-Week Pick-Up**

<table>
<thead>
<tr>
<th>Year</th>
<th>Monthly Rate</th>
<th>Increase</th>
<th>Percent Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-2003</td>
<td>$236.78</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2003-2004</td>
<td>$236.78</td>
<td>$0</td>
<td>0.00%</td>
</tr>
<tr>
<td>2004-2005</td>
<td>$236.78</td>
<td>$0</td>
<td>0.00%</td>
</tr>
<tr>
<td>2005-2006</td>
<td>$251.96</td>
<td>$15.18</td>
<td>6.41%</td>
</tr>
<tr>
<td>2006-2007</td>
<td>$257.55</td>
<td>$5.59</td>
<td>2.22%</td>
</tr>
<tr>
<td>2007-2008</td>
<td>$262.24</td>
<td>$4.69</td>
<td>1.82%</td>
</tr>
<tr>
<td>2008-2009</td>
<td>$268.15</td>
<td>$5.91</td>
<td>2.25%</td>
</tr>
<tr>
<td>2009-2010</td>
<td>$272.97</td>
<td>$4.82</td>
<td>1.80%</td>
</tr>
<tr>
<td>2010-2011</td>
<td>$272.97</td>
<td>$0</td>
<td>0.00%</td>
</tr>
<tr>
<td>2011-2012</td>
<td>$281.16</td>
<td>$8.19</td>
<td>3.00%</td>
</tr>
</tbody>
</table>

**Table L-3 Thirty Yard Drop-Box Service Rates**

<table>
<thead>
<tr>
<th>Year</th>
<th>Rate</th>
<th>Increase</th>
<th>Percent Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-2003</td>
<td>$151.09</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2003-2004</td>
<td>$151.09</td>
<td>$0</td>
<td>0%</td>
</tr>
<tr>
<td>2004-2005</td>
<td>$151.09</td>
<td>$0</td>
<td>0%</td>
</tr>
<tr>
<td>2005-2006</td>
<td>$165.07</td>
<td>$13.98</td>
<td>9.25%</td>
</tr>
<tr>
<td>2006-2007</td>
<td>$157.90</td>
<td>-$7.17</td>
<td>-4.34%</td>
</tr>
<tr>
<td>2007-2008</td>
<td>$157.90</td>
<td>$0</td>
<td>0%</td>
</tr>
<tr>
<td>2008-2009</td>
<td>$167.85</td>
<td>$9.95</td>
<td>6.30%</td>
</tr>
<tr>
<td>2009-2010</td>
<td>$171.79</td>
<td>$3.94</td>
<td>2.35%</td>
</tr>
<tr>
<td>2010-2011</td>
<td>$171.79</td>
<td>$0</td>
<td>0%</td>
</tr>
<tr>
<td>2011-2012</td>
<td>$176.91</td>
<td>$5.12</td>
<td>2.98%</td>
</tr>
</tbody>
</table>
The following table shows single-family residential service rates effective January-June 2013 from the individual jurisdictions in the Regional Recycling Group (RRG).

### TABLE L-4 2013 RRG SOLID WASTE & RECYCLING RATE COMPARISON STUDY

#### Jurisdictions Similar to Davis

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Rate</th>
<th>Recycling</th>
<th>Method</th>
<th>Green Waste</th>
<th>Method</th>
<th>Street Sweeping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Davis</td>
<td>$30.63</td>
<td>Weekly</td>
<td>Dual-stream</td>
<td>Weekly</td>
<td>Loose piles of yard waste only</td>
<td>Weekly</td>
</tr>
</tbody>
</table>

#### Jurisdictions not comparable to Davis: Bi-weekly Service

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Rate</th>
<th>Recycling</th>
<th>Method</th>
<th>Green Waste</th>
<th>Method</th>
<th>Street Sweeping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceres</td>
<td>$21.16</td>
<td>Bi-weekly</td>
<td>Comingled</td>
<td>Bi-weekly</td>
<td>Loose piles of leaves and limbs only,</td>
<td>No</td>
</tr>
<tr>
<td>Citrus Heights</td>
<td>$25.75</td>
<td>Bi-weekly</td>
<td>Single-stream</td>
<td>Bi-weekly</td>
<td>Single-stream yard waste only.</td>
<td>No</td>
</tr>
<tr>
<td>Elk Grove</td>
<td>$30.73</td>
<td>Bi-weekly</td>
<td>Single-stream</td>
<td>Bi-weekly</td>
<td>Single-stream yard waste only.</td>
<td>No</td>
</tr>
<tr>
<td>Folsom</td>
<td>$25.50</td>
<td>Bi-weekly</td>
<td>Single-stream and 5 drop-off sites</td>
<td>Bi-weekly</td>
<td>Single-stream yard material and dimensional lumber.</td>
<td>Monthly on major surface streets.</td>
</tr>
<tr>
<td>Rancho Cordova</td>
<td>$30.17</td>
<td>Bi-weekly</td>
<td>Single-stream</td>
<td>Bi-weekly</td>
<td>Single-stream yard waste only.</td>
<td>Monthly</td>
</tr>
<tr>
<td>Sacramento</td>
<td>$30.76</td>
<td>Bi-weekly</td>
<td>Single-stream</td>
<td>Bi-weekly</td>
<td>Single-stream yard waste only.</td>
<td>No</td>
</tr>
<tr>
<td>Lodi</td>
<td>$76.56</td>
<td>Bi-weekly</td>
<td>Single-stream</td>
<td>Bi-weekly</td>
<td>Single-stream yard materials and wood scraps.</td>
<td>No</td>
</tr>
<tr>
<td>Richmond</td>
<td>$86.68</td>
<td>Bi-weekly</td>
<td>Single-stream</td>
<td>Bi-weekly</td>
<td>Single-stream yard waste, food scraps, soiled paper</td>
<td>No</td>
</tr>
</tbody>
</table>

#### Jurisdictions not comparable to Davis- No Green Waste

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Rate</th>
<th>Recycling</th>
<th>Method</th>
<th>Green Waste</th>
<th>Method</th>
<th>Street Sweeping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placer County</td>
<td></td>
<td>None</td>
<td>N/A</td>
<td>Not included</td>
<td>N/A</td>
<td>No</td>
</tr>
<tr>
<td>Stanislaus</td>
<td>$19.32</td>
<td>Dual-stream</td>
<td>Not included</td>
<td>N/A</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Tuolumne</td>
<td>$28.55</td>
<td>Single-stream</td>
<td>Not included</td>
<td>N/A</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>
### Jurisdictions not comparable to Davis- Misc.

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Rate</th>
<th>Recycling</th>
<th>Method</th>
<th>Green Waste</th>
<th>Street Sweeping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auburn</td>
<td>$27.73</td>
<td>Weekly</td>
<td>single-stream</td>
<td>Weekly</td>
<td>Single-stream yard waste only</td>
</tr>
<tr>
<td>Berkeley</td>
<td>$86.72</td>
<td>Weekly</td>
<td>Multi-stream</td>
<td>Weekly</td>
<td>Multi-stream yard material, food waste, food contaminated paper and waxed paper.</td>
</tr>
<tr>
<td>Butte</td>
<td>No Rate (varies by hauler based on market)</td>
<td>Varies by hauler</td>
<td>Single-stream</td>
<td>Frequency varies by hauler.</td>
<td>Single-stream</td>
</tr>
<tr>
<td>Modesto</td>
<td>$26.73</td>
<td>None</td>
<td>N/A</td>
<td>Weekly</td>
<td>Single-stream yard waste, food scraps.</td>
</tr>
<tr>
<td>San Francisco*</td>
<td>$86.53</td>
<td>Weekly</td>
<td>Single-stream</td>
<td>Weekly</td>
<td>Single-stream food scraps, yard waste, paper.</td>
</tr>
<tr>
<td>San Jose</td>
<td>W GW cart $94.20, w/ loose GW $88.85</td>
<td>Weekly</td>
<td>Single Stream</td>
<td>Weekly</td>
<td>Single-stream or loose piles yard waste.</td>
</tr>
<tr>
<td>Vallejo</td>
<td>$71.28</td>
<td>Weekly</td>
<td>Single-stream</td>
<td>Weekly</td>
<td>Single-stream</td>
</tr>
<tr>
<td>Winters</td>
<td>$34.91</td>
<td>Bi-weekly</td>
<td>Single-stream</td>
<td>Weekly</td>
<td>Loose piles of yard waste or single stream container.</td>
</tr>
<tr>
<td>W. Sacramento</td>
<td>$24.13</td>
<td>Weekly</td>
<td>Single-stream</td>
<td>Weekly</td>
<td>Single-stream yard waste only</td>
</tr>
</tbody>
</table>

* SF is currently changing their rate and compost & recycling containers, which are required and will no longer be included in the trash rate. http://sfdpw.org/modules/showdocument.aspx?documentid=3032
**Figure L-3 Single-Family Monthly Solid Waste Rate Comparison**

- Bi-weekly
- Other Comparisons
- No Green Waste

<table>
<thead>
<tr>
<th>Jurisdictions</th>
<th>Rate (in $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Davis</td>
<td>$0.00</td>
</tr>
<tr>
<td>Elk Grove</td>
<td>$10.00</td>
</tr>
<tr>
<td>Sacramento</td>
<td>$20.00</td>
</tr>
<tr>
<td>Lodi</td>
<td>$30.00</td>
</tr>
<tr>
<td>Richmond</td>
<td>$40.00</td>
</tr>
<tr>
<td>Placer County</td>
<td>$50.00</td>
</tr>
<tr>
<td>Stanislaus</td>
<td>$60.00</td>
</tr>
<tr>
<td>Tuolumne</td>
<td>$70.00</td>
</tr>
<tr>
<td>W. Sacramento</td>
<td>$80.00</td>
</tr>
<tr>
<td>Vacaville</td>
<td>$90.00</td>
</tr>
<tr>
<td>Modesto</td>
<td>$100.00</td>
</tr>
<tr>
<td>Auburn</td>
<td></td>
</tr>
<tr>
<td>Chico</td>
<td></td>
</tr>
<tr>
<td>Winter</td>
<td></td>
</tr>
<tr>
<td>Vallejo</td>
<td></td>
</tr>
<tr>
<td>San Francisco</td>
<td></td>
</tr>
<tr>
<td>Berkeley</td>
<td></td>
</tr>
<tr>
<td>San Jose</td>
<td></td>
</tr>
</tbody>
</table>

**Figure L-4 Jurisdictions with rates greater than Davis with equal or less service**

- Davis: weekly recycling, weekly green waste, weekly street sweeping
- Elk Grove: bi-weekly recycling, bi-weekly green waste, no street sweeping
- Sacramento: bi-weekly recycling, bi-weekly green waste, no street sweeping
- Winters: bi-weekly recycling, weekly green waste, weekly street sweeping
- Woodland: weekly recycling, weekly/monthly green waste, weekly street sweeping
- Vallejo: weekly recycling, weekly green waste, no street sweeping
- Lodi: bi-weekly recycling, bi-weekly green waste, no street sweeping
- San Francisco: weekly recycling, weekly green waste, bi-monthly street sweeping
- Richmond: bi-weekly recycling, bi-weekly green waste, no street sweeping
- Berkeley: weekly recycling, weekly green waste, monthly street sweeping
Appendix L - Pictures of Sorting at DWR

(Left) Paper is emptied from a recycling truck onto the tipping floor. (Right) Plastics, glass and metals wait to be loaded onto the conveyor belts for sorting.

Conveyor belts bring recyclables up to the platform for sorting. Below the platform are the storage bays for each sorted material type.
(Left) DWR employees sort out plastics and metals on the conveyor belt. (Right) Contaminants are removed from the conveyor belts by DWR employees.

(Left) Paper comes out of the baler at DWR. (Right) Baled recyclables waiting to be sold.
Appendix M - Commercial Food Scrap Collection Pilot Program Survey Results

In January 2012, the City sent out a survey to all the participants in the Commercial Food Scrap Pilot Program as part of an effort to gauge the results of the pilot. The responses to the survey are shown below.

1. Overall, are you satisfied with the way the food scrap collection program has been going?
   - Very satisfied – 6
   - Satisfied – 3
   - Not satisfied – 1

2. How interested are you in continuing to collect food scraps?
   - Very interested—10
   - Somewhat interested—0
   - Not interested—0

3. How would you rate the frequency of the current twice a week pick-up service?
   - Reasonable—the pick-ups are frequent enough—9
   - Not adequate—more frequent pick-ups are needed—1

4. If the City and/or DWR had the resources, in your opinion what is the most helpful thing that could be provided to businesses participating in a food scrap collection program?
   - Educational posters—4
   - Site visits and presentations to businesses—5
   - Liners for the food scrap carts—3
   - Indoor containers to collect food scraps, clearly labeled with color pictures of acceptable items—4
   - Food scrap carts with clear labeling and color pictures of what is accepted—5
   - Quarterly replacement of food carts (swap out dirty for clean). Training videos to show students how to sort waste—2

5. What has been the most challenging part of the food scrap collection program?
   - Training staff to sort food scraps—1
   - Keeping the cart and collection containers clean—2
   - Contamination in the food scrap cart—2
   - Other people/businesses using the food scrap cart—1
   - Cost—6
• Other: Compostable bags are really expensive and difficult to locate which I could see this prohibiting others from participating—1

6. Did you receive enough educational information about collecting food scraps?

• Yes—8
• No—2

7. What do you think are the most compelling reasons that businesses would have for not participating in this pilot program?

• No time to train staff to sort food scraps—2
• Concern about potential odors and mess—6
• Concern for contamination in the food scrap cart—1
• Cost—7
• No space for carts—3
• Not wanting to add to their existing work load—1

Additional Comments Received:

• On item 7 these are the reasons given to me when I try to recruit new business to the pilot (cost, no space for carts). It has gone wonderfully for our restaurant.
• So far we have had no noticeable obnoxious odors from our food cart. It’s too bad a residential food scrap collection probably is not logistically possible. I feel guilty not separating food scraps at home.
• The program is more expensive than regular garbage! We were going to cancel until we worked something out. Also, train employees that not all compostable bags are small and green! Overall a very promising program!
• This is a program that makes sense and once businesses are involved they will probably wonder why they didn’t participate sooner.
• The most compelling reasons for schools/business to participate in this program are the environmental and financial benefits. The monthly fee could be the same as another regular trash pick-up, but you know that you are reducing the amount of trash sent to the landfills. This is an important message that you can advertise to your customers, and customers in Davis care about these kinds of things. It might take some personnel training at the beginning, but in our experience the benefits surpassed the challenges! We reduced from 2 to 1 trash cans a day, and we have two shifts of 250 people here. We all feel very proud that we are contributing to reduce the amount of trash sent to the landfills; that the food scraps are being composted and that means reuse the resources.
• Cost was the main reason that we could no longer continue with the program.
Appendix N - Cascadia Consulting White Paper on Solid Waste Program Options for the City of San Jose

DATE: September 9, 2010

RE: Menu of Program Options

Collection System

In the three-bin system option, Allied will maintain the current collection system. Clean recyclables, clean compostables, and all other materials will be separately collected in those three categories. Clean recyclables will be processed at the Recyclery at Newby Island; clean compostables will be processed at the Newby Island compost facility, or other organics processing facility selected by the City; and materials currently landfilled will be processed, either at an anaerobic digestion facility or an aerobic composting facility. Only process residue from each of the three facilities will be landfilled.

For the two-bin system option, Allied proposes a wet-dry system where clean organics are collected in one bin, and all other materials are collected in the other. Clean organics will be processed at the Newby Island compost facility, or other organics processing facility selected by the City; and all other materials collected will be processed at the Recyclery at Newby Island to recover recyclables. Depending on the quantity and composition of the residue from the second stream (the percentage of soiled paper and improperly separated organic materials), it will either be landfilled or sent to an anaerobic digestion facility.

The cities of San Jose and Portola Valley have been spearheading these wet-dry programs since 2002 with commercial and multi-family customers.

Allied will increase the convenience of recycling by providing at least as much service capacity to individual businesses as it provides garbage service. One of the primary impediments to increasing commercial diversion is that businesses are asked to proactively contact haulers to request services. To remove this barrier, we are proposing that every subscribing business be provided at least an equal volume of recycling service.
Menu of Options

City of San Jose Commercial Collection Proposal

Many office buildings in the City of San Jose still have their employees take home recycling.

From a survey of San Jose Businesses conducted during the 2008 Zero Waste Planning Process

Allied will route its collection vehicles to separately collect specific materials in order to maximize clean loads delivered to our processing facility. This program will initially focus on retail cardboard, bar and restaurant glass, florists and food service compostable organics, but may include other materials as the program develops.

Allied will implement a “True Single Stream” collection system for office buildings to reduce truck trips and maximize diversion. True Single Stream means collecting all bagged garbage and recyclables together. At the processing facility, the bags of garbage will be separated and shipped to the City’s organics processing facility or digester. Materials in recyclables bags will be sorted by material type and processed for market. Organic rich loads will be separate from the other two streams, and all clean organics will be hauled to the Newby compost facility or other selected facility. Allied is currently providing these services to County owned buildings.

Allied will convert its entire San Jose truck fleet to compressed natural gas [CNG] vehicles if feasible, the vehicles will be powered by methane from the Newby Island landfill.

In dense, hard-to-serve areas such as the Downtown core, Allied will employ split body metal bins with a Butterfly lid and split body trucks. This will reduce the number of bins that in places where space is limited, and the number of trucks required to provide services.

The City of Palo Alto is currently providing a similar service with a split bin, except two trucks are required to perform the collection.

Alternately, a dumpster-free program could be offered to businesses with limited or no space for bins. In this system garbage would be placed at the curb in black bags, compostables in green bags, and recyclables in clear bags. The cities of Seattle, San Francisco and New York, among others, offer this bagged service to commercial and residential customers in dense urban areas.

The three biggest obstacles to business recycling?

1. Space limitations for recycling containers
2. Hauler does not offer the desired service
3. Separating materials is not convenient or takes too much time

From a survey of San Jose Businesses conducted during the 2008 Zero Waste Planning Process
**Business Technical Assistance**

Allied will provide every business in San Jose with customized educational materials, access to technical assistance and resources that maximize their participation. Allied, through a subcontract with Cascadia Consulting Group, will conduct a more thorough on-site outreach and technical assistance program with larger volume business customers.

Business technical assistance will be targeted by sector to identify specific opportunities, address unique barriers, and ultimately reduce waste. In conjunction with participating businesses, Cascadia staff will perform waste assessments, surveys, and other research to uncover new opportunities.

Waste prevention and Environmentally Preferable Purchasing principles and practices will be an integral part of our outreach efforts. We will offer assistance to purchasing staff in order to reduce packaging and other wastes, reuse materials where possible, and ensure the remainder is recyclable under the City’s program.

To maximize reuse, Allied in partnership with Cascadia, will identify materials each business can donate to RAFT and other organizations offering refurbished goods for donation or sale.

Technical assistance staff will be equipped with electronic tools to facilitate paperless and efficient outreach and customer service on a real time basis. These tools will be designed to interface with Allied’s account management software systems.

We will also provide customers with assistance and resources related to other environmental programs that further the City’s Green Vision. These resources could address energy efficiency, renewable energy, fats oils and grease management (FOG), green building and reducing San Jose’s carbon footprint. Services may include providing links to green contacts and vendors, direct education about best practices for handling FOG, and offering LEED.

**Cascadia Consulting Group** is a national leader in designing, implementing, and evaluating commercial waste prevention and diversion programs.

In the past 20 years, our technical assistance programs have reached over 10,000 businesses and institutions; diverted thousands of additional tons of waste per year to recycling, composting, and other beneficial use; and shaped some of the nation’s largest and most successful commercial recycling and composting programs.
Menu of Options

City of San Jose Commercial Collection Proposal

certified waste audits and consulting on green building materials.

Customer Service

Allied will expand its web-based customer service, including 'online bill payment' options and incentives, downloadable educational materials, and connections to other service providers.

Businesses will be encouraged to recycle more unusual items, such as fluorescent tubes, electronics, and batteries with options that are convenient for them.

Allied will work with individual businesses to maximize their bin size to reduce the frequency of service and truck trips.

Allied will work with businesses to schedule collection services based on location, so as to minimize total distance traveled by collection vehicles each day.

Customer Rates

Allied is proposing five alternate customer rate structures: Charging for all collection services; weight-based charges for services; modified collection services; increasing the fee spread in the current volume-based cost of services; and, rates configured by element of service. Each of these rate structures is described in detail in Attachment A.

Allied's overarching goal is for the rate structure to provide financial incentives for businesses to lower their cost of service by changing the frequency of service, reducing container size, or reconfiguring service levels.

The rate structure will provide for a higher cost of service for contaminated loads of compostables and recyclables that require additional processing.
Processing Recyclables

Allied will design and use processing systems that achieve the “highest and best use” for recyclables. Our processing system will first be used to sort for primary material groupings. Then, we will run a second shift for a secondary sort. For example, mixed plastics from a primary sort could be resorted to: PET bottles, other PET, natural HDPE, colored HDPE, HDPE film, other PEs, crystalline polystyrene, expanded polystyrene foam, rigid plastics, and PLA.

Allied’s processing system will reduce broken glass as much as possible. Broken glass is one of the most challenging contaminants for non-glass recyclers and composters to handle. Our goal is to reduce the unwanted glass often found in loads of market-bound paper, plastic, metal, and organics, thereby increasing material value and opportunities for domestic processors. (See “Softening the Blow” in Resource Recycling, Attachment B)

Processing Organics

Allied will process clean organics into a high quality compost using windrow technology. The products will be sold for high-quality end uses such as landscaping and gardening applications.

Allied will process mixed organics in-vessel. This will produce a lower quality compost that might contain impurities, and make it unsuitable for use in backyard gardens, but would be suitable for other applications such as roadside erosion control by CalTrans or local highway departments. It could also be used in orchards or for non-food crops (i.e., cotton).

Market Development

Allied will support the development of new green manufacturing businesses that use recovered materials such as:

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1 This section is dependent on the company or companies selected to process the City’s organic wastes.

2 The CalTrans spec for roadside compost applications already allows for use of this type of compost from Zanker’s Z-Best facility.
Menu of Options

City of San Jose Commercial Collection Proposal

Glass panels—Glass could be fused to create panels that can be used to surface commercial buildings or parking structures. Mixed color glass or color-sorted glass can be used to make decorative ‘mosaic’ patterns on the panels. These panels would be purchased by the City and ‘green’ contractors to replace granite, marble or stone coverings for concrete buildings. This business could easily be established and operate within the San Jose RMDZ.

Cellulose insulation—Some of the recovered newspaper and mixed paper grades could be used to manufacture cellulose insulation. This material could help further the City’s Green Vision by providing materials to retrofit existing housing, reducing the City’s overall energy demand. Cascadia can assist upfront in securing a letter of support from the CIMA and investigate CDBG funding opportunities.

High quality compost and mulch produced from clean commercial organics would be purchased by City. This could be paid for using surcharge funding from franchise fee payments on organics-generating businesses.

Wood overs from composting – This initiative addresses the City’s goal of reducing the amount of recoverable materials in ADC. Should the City decide to move forward with a biogas facility, Allied will make some of the wood from the commercial collection system available to the City’s facility. Overs from compost screening currently used as ADC at the landfill might be better used at the biogas facility.

Plastics for lubricant – Technology exists for producing a high quality lubricant from dirty mixed plastics by heating these materials in the absence of oxygen, or by microwaves. Dirty mixed plastics are expected to be the dominant material in the waste stream once the recyclable and organic materials have been removed. Plast2fuel and similar technologies are ready for use in communities throughout the West Coast. (See Attachment C)

Expanded polystyrene foam—This low weight, high volume material could be shipped to Stockton to Timbron (http://www.timbron.com/recycler.htm) for use in manufacturing products such as molding and base boards.

Tracking and Reporting

Allied will track all required programmatic features on a real-time basis, including number of businesses served, those requesting service changes, those actively recycling, tons collected, marketed, landfilled; and other features.
Allied will prepare and submit reports based on tracked data. These reports will be readily understandable for City Council and interested citizens. They could also be posted on Allied and/or the City’s websites for increased transparency. (See Resource Venture Annual Report, Attachment D)

Other Environmental Features

Allied will track and report greenhouse gas emissions and other sustainability performance metrics for its own internal operations. Metrics could include: energy, water, waste generation, and carbon footprint per employee, per square foot, per ton of waste processed. Cascadia is prepared to assist Allied in measuring and projecting GHGs to share in the company’s proposal.

Allied will continue to adopt and promote green energy solutions – We will install photo-voltaic panels on the roof of the Newby MRF; evaluate alternate technologies at highly visible public locations (such as San Jose City Hall; Macy’s at Westfield Valley Fair; County government facilities); and evaluate options for vertical wind turbines at our facilities.

To facilitate closed loop recycling, Allied will process Poly Lactic Acid (PLA) materials for recycling instead of composting. Mixed plastics will be sorted to recover PLA plastic bottles, cups, clamshells and other items. NatureWorks, the largest manufacturer of PLA products in the U.S., has agreed to repurchase this material and ship it to the Midwest to be reprocessed into lactic acid for use in new PLA products.

Allied will extend convenient electronics recycling program options to customers. Allied will offer drop off events throughout the service area to support local non-profit organizations.

Allied will support legislation designed to eliminate toxic and hard-to-recycle materials from the waste stream. Allied will work with individual and groups of businesses to encourage them to become active supporters of EPR-related policies.

✓ Allied will financially support the City’s litter cleanup and anti-graffiti programs.
✓ Allied will financially support Resource Area for Teaching [RAFT] and identify opportunities for businesses to donate materials to RAFT.
✓ Allied will donate reusable building materials recovered from the collection system to Habitat for Humanity or similar agencies.
Menu of Options

City of San Jose Commercial Collection Proposal

Allied will establish a ‘Last Chance Mercantile’ reuse site at the Newby Recyclery, or an alternate site selected by the City (e.g., the Environmental Resource Center or WPCP buffer lands).

Allied will establish a purchasing cooperative for compostable, recycled-content, and other green products and packaging that could be purchased by City businesses for a reduced rate.

In partnership with customers, we will proactively address local, state and national requirements such as mandatory commercial recycling and disposal packaging ordinances.

To monitor and enhance the quality of incoming and outbound materials from our processing facilities, we propose regularly conducting audits. This information will help us better inform customers about common contaminants and alter our processing capabilities and equipment for increased diversion.

Program Promotion

Allied will invite public affairs representatives from businesses in its service area to tour the Recyclery and find out more about what happens to the materials they discard and recycle.

Allied will distribute reusable bags, compost, and other green prizes to employees at high participating businesses.

Allied will implement a business recycling recognition program. This program will include a competition between individual and groups of businesses for reducing waste and increasing diversion. In addition, Allied will produce and make available on our website case studies that inspire other businesses to take action.

Allied will work with the San Jose Chamber of Commerce, business and trade associations, civic organizations, and other business groups to ‘get the word out’ about the benefits of waste prevention and commercial recycling, and increase participation.

Allied will work with the City of San Jose Environmental Services Department to maximize the effectiveness of this Franchise.
13.6 Cost Proposals

Diversion Incentives and Disincentives (13.6.4)

We suggest adding a per ton or per percentage point financial bonus if the contractor exceeds the City’s 75% diversion goal. If the contractor falls short of that goal, a similar per ton or per percentage point surcharge could be applied.

Environmentally Preferable Procurement Policy (28.0)

Allied will develop an environmentally preferable procurement policy in compliance with the requirements outlined in the RFP. The policy will be shared as an attachment to the proposal. Allied will continually revisit and update its EPP policy to minimize the environmental impacts associated with procured products and packaging. At a minimum, this policy will address:

- durability
- energy and water efficiency
- remanufactured parts and recycled content
- ability to reuse or recycle
- existence of harmful or dangerous chemicals
- carbon footprint
- other lifecycle impacts

If desired, Cascadia is prepared to assist Allied with the development and implementation of an EPP policy before submitting the company’s proposal.
Attachment A. Alternative Rate Structures and Rate Schedules

Allied will offer a side-by-side comparison of the potential rate options, including a concise assessment of the advantages and disadvantages of each alternative, based on clear criteria. The evaluation will identify and estimate expected impacts on the customer base, changes in quantities of materials diverted from disposal, the types and sizes of collection containers used, the cost of implementing the changes, and other impacts.

Options will be designed to supply sufficient revenues to conduct the operations necessary to achieve the City's goals. Particular emphasis will be placed on designing incentives to encourage businesses to reduce the amount of resources requiring collection and to reward those who participate in achieving the City's Zero Waste goals. The new Rate Structure and Rate Schedule will be designed to promote efficiency, including reducing the number of vehicle miles driven for collection operations. (Increasing collection efficiency not only saves money but also produces environmental and community benefits through reduced emissions, greenhouse gases, and truck travel through neighborhoods.)

Alternatives to be Considered

To support and advance the City's Zero Waste goals, Allied proposes to evaluate the following rate structure options:

**Charging for all collection services** – Waste prevention is the most cost-effective way to deliver waste management services, just as energy conservation often costs less than building new power plants. Having to collect and process or landfill less waste reduces the cost of the system more than any other approach.

Encouraging businesses to review their service needs on a regular basis, and as they take steps to reduce wastes, would allow them to reduce the cost of service and could greatly increase the efficiency of the collection system. It would also provide a small incentive for them to reduce the amount of materials that need to be recycled.

**Charging for collection of recyclables from commercial accounts** is common. But the lack of sufficient rate differential between the cost of garbage service and recyclables service may act as an impediment to increasing recovery of recyclables.

**Weight-based collection charges** – Generally, businesses have a more direct incentive to reduce use of electricity than they have for reducing garbage because the unit of service cost for electricity (kilowatt) is small, while the unit of service cost for garbage bin service (by the cubic yard) is large. Turning off an electric light switch saves money, but in a business paying for two cubic yard of garbage per week, reducing garbage generation by 25% does not produce a collection savings. Garbage service levels are also not easily modified from week to week, so subscribers may choose a larger size to ensure they have enough space for occasional larger loads.
Charging by the pound for materials collected reduces the unit cost to a level that businesses can have a direct impact on their cost of service. They will also be able to gain direct financial benefits from smaller changes in their behavior.

The Recycle Bank program works based on the pounds of recyclable materials set out for collection – with on-board scales on trucks and RFID (radio frequency identification) tags on the containers. This technology could become an integral part of future collection contracts for both recyclable materials and garbage.

**As needed collection schedule** – California State law requires “putrescible” wastes to be collected weekly, but “non-putrescible” materials can be collected less frequently. All customers would be provided at least weekly collection service for garbage, but by providing large recyclables containers, some businesses would not require weekly collection, thus increasing the efficiency of the overall system.

**Increasing the fee spread in the current volume-based cost of services** – In the current refuse rate system, the cost to collect garbage is proportional to the amount of wastes set out for collection. Under this option, the increment for additional waste collection would increase at a steeper rate – that is, the second cubic yard of service would cost significantly more than the first. Water utilities often use such an inclining block rate structure to increase incentives for conservation.

We would model this rate system for at least three levels of “spread” in collection charges. We will compare the rate structure in the new contract with alternatives that would generate the same total revenue by charging larger volumes at higher rates.

The rate increases would not be expected to have a straight-line increase in revenue, as some customers would likely opt for lower levels of service (commonly known as “attrition” in the waste industry).

This approach would make garbage rates more analogous to water and electricity rates, which have lower unit rates to cover base usage levels and incrementally higher rates for higher usage, and would provide incentives for waste prevention.

**Rates configured by element of service** – Rather than charging businesses a single waste rate, under this option, charges would be calculated and shown based on the separate factors that drive program costs. These factors could include the cost of reaching each business (base transportation), the cost of processing the collected materials, and the cost of disposing of the garbage (and residuals from processing recyclables and compostables). This system would make collection rates more directly related to the cost of service.

As recycling and organics collection programs are put in place, the unit cost of managing garbage will likely become higher than the unit cost of collecting recyclables. Accordingly, identifying the details of the rates would provide incentives for businesses to sort more of their recyclables and organics for separate collection and reward those who do so.
Innovative rate structures for a zero-waste world BY RICHARD GERTMAN

In a large number of communities, residents and businesses pay for garbage service, but recycling and yard debris collection services are provided for FREE. Or, I mean at no additional charge.

This means that all of the revenue needed to fund the services provided must be raised from garbage collection fees. As cities move to collect more recyclables and compostables — and, therefore, less garbage — there is less money in the system to pay for more services.

The cities that have asked their haulers to provide these services are not at risk if there is a shortfall, but the haulers providing service to the cities are seriously at risk. If the haulers are successful in doing what they are asked to do, there will not be enough revenue to cover the costs of their operations.

When there is no more (or much less) garbage, where will the money come from?

Garbage collection fees must generate sufficient revenues to pay for the full range of services that we are used to, the city’s franchise fee, other program fees, and provide the contractor a reasonable profit.

As we continue to promote an expansion of recycling, composting, and collection of organics other than yard debris to both residential and commercial collection systems, the amount of garbage service will be reduced. It won’t take long for the system to no longer generate sufficient revenue to cover the costs. This means the more successful the program, the more rate hikes have to be raised. However, in most communities, this would not be sustainable.

Charging for garbage collection only works if the only service covered is garbage collection — and the amount of service provided decreases at the same rate as the revenue decreases. But in fact, in most cities, the same service providers are asked to provide more service for less money. To fairly compensate contractors for all the work they do, we need to change the way we bill our customers for service. There are many options available, and individual cities will need to select the one that best accommodates local conditions.

Among the many options that may work to maintain revenue, as the amount of garbage decreases:

- Alternative 1 — Charge for all collection services
- Alternative 2 — Charge based on weight collected
- Alternative 3 — Base the cost for higher level of service...
• Alternative 4 – Charge based on service type

Each of these alternatives has some advantages. The “ultimate” system for a particular community likely will be a combination of alternatives that combine to provide a workable structure.

Alternative 1 – Charge for all collection services

When residential recycling programs were initially introduced, they were provided for “free” (that is, the costs were included in the rate charged to collect garbage), to encourage residents to recycle. That concept was important because recycling was mostly a new behavior, and organizers wanted to make sure that people would participate. But, recycling is now well-established, so it is no longer necessary to pretend that there is no cost to collecting recyclables.

It is likely that charging for all collection services will not negatively impact participation in recycling programs today.

In Palo Alto, California, for example, the charge for residential garbage service is essentially $1 per gallon ($32 for the first 32-gallon container, $64 for 64-gallons and $96 for 96-gallons). So, a household with a 32-gallon garbage can, a 64-gallon recycling roll cart and a 96-gallon yard debris roll cart, pays $31 to cover the cost of all of these services. This is 16 cents per gallon of total service.

If we charged for each cart by size, and a resident began grasscycling and composting at home, and then switched to a 64-gallon roll cart for yard debris, the cost of service would drop by $5.12 per month (32 x 16 cents). The reduced charge for collection directly translates to a reduced cost of service to the contractor that has less material to collect and process, but $5.12 per month is more than the amount saved by the hauler.

An alternate rate structure might be to charge one-third of the total for each of the three services, so that collection of 64-gallons of recyclables, and 96-gallons of yard debris, each cost the same as the collection of 32-gallons of garbage. In this alternative, if the average Palo Alto resident switched to a 64-gallon cart for plant trimmings, they would reduce their cost of service by $3.44 per month (one-third of $10.33).

It should be noted that it is common for commercial waste generators to be charged for collection of recyclables, because most franchise agreements do not require the same level of recycling opportunities for businesses as they do for residents. However, as the commercial sector is responsible for a large percent of the revenues and profits of collection companies, programs that reduce commercial garbage collection services, and hence revenues, are rarely encouraged by haulers.

Alternative 2 – Charge based on weight collected

Generally, people have a direct incentive to reduce use of electricity since turning off an electric light switch immediately saves money. The primary increment of service for residential garbage collection is the 32-gallon can equivalent. This increment is too large to allow the resident much opportunity to reduce their costs. For a 64-gallon roll cart user to reduce their service level, they would have to cut their waste in half. The increment of service needs to be smaller to allow people to make a difference, in the way they can with such metered utilities as electricity, natural gas or water.

Charging by the pound for materials collected reduces the increment to a level that residents and businesses can have a direct impact on the cost – and they will be able to see the direct benefit of changing their behavior.

In a weight-based alternative, each cart would be outfitted with a radio frequency identification (RFID) tag to identify the type of cart and customer. When the cart is emptied, the weight of the contents would be electronically recorded and the customer would be billed the appropriate amount for the type of material set out.

The problem with charging by weight has been that we do not currently have technology that can accurately weigh a load on a moving lift arm, especially after conducting hundreds of starts, stops and lifts each day. The requirement for charging customers based on weight is that the charges cannot exceed the amount owed for the accurate weight.

In commerce, a customer cannot be charged more for a weighed item than the price (per pound) times the number of pounds. But, the customer can be charged less. So the solution to this problem is to charge for less than the weight the scale records. For example, if the scale records the weight of the contents of a cart at 100 pounds, and the accuracy of the scale is within 10 percent, then the contents are expected to weigh at least 90 pounds. Further, to insure that the customer is not being overcharged – say if there were really only 89 pounds in the cart, the charges could be set at 80 percent of the recorded weight (80 pounds), which is well below the actual weight. To recover the revenue needed to fund the operations, the price per pound that is charged would then simply be set at 1.25 times (~ 100/80) the amount of the weight recorded.

The RecycleBank program provides incentives to residents based on the number of pounds of recyclable materials set out for collection. The system uses onboard scales on trucks and RFID tags on the carts. The collection industry is working to make this technology an integral part of future collection contracts.

Alternative 3 – Increase the cost for higher level of service

In this alternative, service charges would not increase in a straight line; instead, customers with larger service volume would pay proportionally more than those with smaller volumes.

In an electric or water utility fee structure, it is common for there to be a base charge or a baseline use charge, with higher charges per unit of service above that baseline to encourage conservation. This type of fee structure might have some positive applications in the waste management industry.

The fixed-base service charges would cover the hauler’s customer service functions, the cost of billing the customers and other base administrative costs. The variable rates would cover the collection and processing of recyclables and compostables, and the collection and disposal of garbage. In this alternative, when a customer shifts service level, they are still paying for the full cost of the services they receive.

A “conservation” price signal can be sent by charging more for larger generators. So, the first increment would be at the base rate (one times); the second increment might be at 1.25 times the first increment; and the third increment would be 1.5 times the first increment. So, if the first 32-gallon equivalent is $32, the second 32-gallon increment would be $40, and 64-gallons of
service would be $72 (instead of $64); and the third increment would be $48. Altogether, the three-can rate might be $120 instead of $96.

These higher rates would not be expected to create a direct increase in revenue, as it would be expected that some residents would opt for lower levels of service in response to the fees. If this response includes a reduction from the current amount of garbage generated by the customer, and an increase in recycling rates, then the conservation signal would be successful.

**Alternative 4 – Charge based on service type**
The cost of collection and processing of the recyclables and compostables is generally higher than the cost of collection and disposal of garbage. In this alternative, charges for collection would be based on the cost of the recyclables and compostables processing system employed.

The cost of processing a wide variety of mixed recyclables is higher than the cost of processing a relative few different material types. Along the same line, the cost of processing mixed organics is higher than for processing only clean plant trimmings. But, these higher-cost options also yield a higher recovery rate. Clearly, it costs more to sort eight material types than to sort five materials at a materials recovery facility.

As higher recovery rates become more important to communities, the rate structure must be adjusted to provide these higher revenues to pay for the higher diversion. So, the program design should dictate the charges for service. The higher cost of processing a wide stream of recyclables, and the full range of organics, will cause higher rates. If communities elect to maximize recovery through expanded collection and processing programs, they will have to require residents and businesses to subscribe for the full range of services. They will not be able to make these programs work if individuals can opt out of paying for the full program. This may also allow us to include the value of the loss of resources, in the cost of collection and disposal of materials in a landfill.

In the calculations of the costs of collection services.

When cities first started collecting recyclables at the curb, the unit cost of recycling was much higher than the unit cost of garbage, because only a few pounds of recyclable materials were recovered at each stop, and many pounds of garbage were collected. Now, with expanded recycling and plant trimming collection programs in place, the unit cost of collecting the remaining garbage is higher than the unit cost of collecting recyclables.

**Alternative 5 – The ultimate rate system**
Rather than a single factor rate (volume), the ideal rate structure might include:
- Base service charge
- Charges for the type of material collected
- The number of pounds of material collected
- Charges for processing the collected materials (not landfills them)
- Transfer fees and landfill fees.

Charging for these multiple factors allows garbage rates to more directly reflect the cost of service.

The base service charge would include the cost of setting up service (e.g., the cost of getting the truck and driver to the household or business, customer service and billing, administration, franchise fee, and other factors).

Charges by material type would reflect the cost of managing recyclable and compostable materials and disposal of the residue at a landfill.

Charges by the pound sends the message that the individual can make a difference, and that no change is too small to matter.

And, the loss of resources to landfills would be included in the charges for collection.

Alternatives that are designed to minimize the increment of service allows the customer to more easily affect the amount they pay for service; and, charging for service by the pound provides the smallest increment of service.

As for the electric utility fees, there can be a base charge and a baseline charge that ensures a minimum revenue when the customer’s service is reduced.

**No zero waste without commercial recycling**
Much of this discussion is directed at residential services, since most communities focus on residential services when making decisions about services provided and charges for services. However, these rate structures apply equally to commercial services. In fact, since the focus is generally on residential services, the recovery rates for commercial recyclables are often very low. In many communities, haulers have given up their profits from residential collection services by providing collection of recyclables and compostables without being fully compensated for these additional services.

They are, therefore, reluctant to provide commercial collection of recyclables, because that would further reduce their income while adding costs. To make the haulers partner in expanding recovery rates, service charges need to be set to recover the cost of the programs.

Communities should evaluate their program goals and how the achievement of these goals is affected by their rate structure. They should change the rate structure now and not wait for the end of the current contract. If the changes are a win-win for the city (more diversion) and the hauler (appropriate payment for services), then the contract can easily be amended.

Zero waste future is coming – it just needs to be paid for.

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Appendix P - A Modest Proposal: Dual Stream Residential Garbage Collection

A MODEST PROPOSAL
LOOKING TO REDUCE THE AMOUNT OF ORGANIC MATERIALS SENT TO LANDFILL?
OUR AUTHOR OFFERS A PROPOSAL FOR A NEW WAY FORWARD

BY RICHARD GERTMAN

Dual-Stream Residential Garbage Collection.

The goal of the new sustainable materials management program is to recover all discarded organic materials and keep them out of our landfills. This will eliminate landfill methane-generated materials and, more importantly, the recovered organic can be used to produce methane in an anaerobic digester and then be composted, so that the compost can be used to improve the quality of our soils.

Over 150 communities across the U.S. have added food scrap collection to their residential plant trimming collection program. Most of these programs only include the total amount collected, so there is little specific data available on how much of the discarded food is being separated for composting. Additional information indicates that, in many cases, more than 80 percent of the available food scraps are still being disposed of as garbage and burned in the landfills serving those communities. Often, the amount of food scraps in the plant trimming containers is so small that the food is not visible when the collected loads are dumped at the compost facility. This means that the compost facility operators often do not need to make any changes to their operating permits to accept the collected food scraps. The lack of separation may reflect a negative response by residents to putting spoiled food from their refrigerators and kitchen cabinets into their yard waste cart.

If our goal is to recover a significant percentage of the food scraps for composting, it is clear that the current system is not working. Getting residents to put their garbage in a yard waste cart doesn’t seem right to the people that we trust to provide us clean plant trimmings. We need a collection system that is convenient and that residents are willing to participate in.

Another way forward?
An alternative approach is a dual-stream residential garbage collection system. In this system, a typical 12-gallon garbage cart (for one) would be replaced by a 64-gallon or 96-gallon split-body garbage cart. All of the material currently being disposed of as garbage and mixed together in one cart would continue to be disposed of in one cart, but the cart would have two sides. One side of the new cart would be for compostable materials (wet materials from the kitchen), and the other side would be for trash (all dry wastes that aren’t locally recyclable) from elsewhere in the house.

This dual-stream garbage collection system allows individuals to sort wastes into the standard categories they are used to, while we educate them about how organic should be managed. At the same time, it allows for the collection of all compostable organic without “contaminating” the separately-collected plant trimmings. And it does not require that all of the plant trimmings be processed as food waste, as a successful organic collection program would. Further, recovering food scraps in a split cart does not require adding an ad-
Compostable organics to be collected in the split-body cart would include: Produce trimmings; plate scrapings (including meat and cheese); spoiled food; food-soiled paper; flower bouquets; and any other items that could be processed at a local compost facility. Residents would be asked to place the compostable materials in one side of the split cart, and all other materials that are currently disposed of as garbage into the side of the cart.

Collection of clean source separated recyclables and compostable plant trimmings would continue without change to maintain the highest value of these materials.

Proposed pilot program
To develop a clear understanding of how well residents will prepare compostable organics for separate collection in a dual-stream garbage system, the concept needs to be tested.

Implementing a pilot scale program would also provide specific information on how clean the collected compostables will be, and if collection and processing of these materials can be done in a cost-effective way.

The total pilot area would need to be large enough to provide a statistically-valid sample (a minimum of 300 households), and last for at least 12 weeks to provide an opportunity for residents to get used to the new program. Examination of the contents of individual split-body carts will provide data on participation rates and sorting behavior at specific households.

Examining loads from completed routes will help identify the overall success of the pilot. Weighing the garbage collected from the households in the pilot program, and the compostable materials and materials still delivered to landfill and several weeks into the pilot, will provide an additional measure of the effectiveness of this new collection system.

Split-cart recycling
Communities that currently use split-body collection vehicles for dual-stream collection of recyclables (paper and containers) from split-body recycling carts, can most easily implement this system since they already have the appropriate equipment and have routed for a dual-stream collection system. They might even be able to use existing recycling collection vehicles to pilot the dual-stream garbage program. They would need to purchase additional split-body carts with appropriate (different) color-coded lids (or might just be able to switch lids if they had extra recycling carts); distribute the carts, and prepare and distribute informational materials to explain how the program works and why the pilot program is being tried.

If the pilot program area was the same as a full garbage collection route one day each week, it might be possible to use a back-up recycling collection vehicle to service the pilot area. If the pilot were to cover a small area four days each week as a way to provide more geographic diversity, it might be possible to use a regular recycling vehicle for about an hour in the morning, prior to the recycling driver collecting recyclables.

Piloting the system in four smaller areas over four days a week might also allow testing of slightly different outreach messages to test the public’s response to the dual-stream garbage collection concept, and testing of residents’ attitudes and behavior relating to variables such as mandatory or voluntary participation in the pilot, and collection of food scraps only or food scraps with other locally compostable organics (paper, other).

In the “optional service” scenario areas, residents would be told that if they did not want to separate organics, they could put all of their garbage in the dry trash side on the cart, but must leave the wet side empty. In the ‘mandatory service’ scenario every house in the pilot service area would be told that they must separate organics from other trash. It would be expected that some of the households who might resist the separation at first, would begin to participate over time.

The collected organics would be delivered to a processing facility permitted to accept food scraps, if one were available; or to an alternate location that is permitted to receive garbage (landfill or transfer station), where the loads would be analyzed for quality of sorting by the residents.

If a permitted compost facility is available, the organics would be composted. If an anaerobic digester is available, the organics may be digested to recover their methane before composting the digestate.

However, even if an appropriate organics processing facility is not currently available, garbage could be collected in two streams to determine the diversion potential and quality of the preparation by residents.
Then, the collected wastes could be landfilled, just as they otherwise would have been. In this case, the data from the collection pilot would provide valuable information about whether this system might be an option for the future changes in a local area. If successful, the data could be used as the basis for permitting an appropriate compost facility.

Dual-stream garbage without carts
Split-cart recycling is not necessary to make this concept work. Communities that do not use carts for dual-stream or multi-stream collection of recyclables can still implement a dual-stream garbage collection system.

Manual garbage collection communities could ask their residents to put wet garbage in one can, and use a different can for dry garbage. Can stickers could be distributed that would list the acceptable materials and the can weight limits, since wet food scraps can be heavy. Unless a split-body truck were used, an additional pass by the garbage collection vehicle would be required to test the system.

Single-stream recycling
Communities that currently collect recyclables in a single stream could implement this program by leasing a split-body truck which is no longer being used from a community that has abandoned collection of garbage and recyclables in a split-body truck. For the pilot scale program, a community might be able to use two separate collection vehicles and two small carts instead of a single split-body cart to collect the wet and dry portions of the garbage.

Individual responsibility
This program provides individual residents a convenient opportunity to make a positive impact on our environment—conserving resources, while reducing methane generating organic materials destined for landfill.

Processing the collected organics
Having a local organics processing facility is a key to the success of a food scrap collection program. If successful in recovering a high percentage of food scraps, the separately-collected food scraps will need to be processed "in-vessel" to avoid environmental problems, including minimizing odors and vectors. The food scraps can be processed aerobically in a compost program or anaerobically in a digester.

If the food scraps are free of contaminants, and if the local wastewater treatment facility has extra capacity, the separately collected organics can be pulped and loaded into the treatment plant digester.

If excess capacity is not available at the local wastewater treatment plant, there are several economically viable technologies for "dry" digestion or composting of the food scraps.

Richard Gertman is the principal for the Cascadia Consulting Group. He can be contacted by phone at (408) 249-0691 or by email at richard@cascadiaconsulting.com. If you are interested in participating in a real-world test this new idea, please contact Richard to discuss the details of this concept.

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Appendix Q - Waste Reduction Target and Tonnage Reduction Estimates

In order to determine if Davis will be able to meet its goals, a quantifiable way is needed to assess exactly how much tonnage would need to be diverted from the landfill. In 2011, CalRecycle reported that Davis’ per capita disposal rate was 2.6 lbs. The 50% equivalent target set by CalRecycle for Davis is 3.8 lbs. With that information, it is possible to calculate a “diversion” percentage.

\[
3.8 \text{ lbs. x 2 = 7.6 lbs.} \\
1 - (2.6 / 7.6 ) = 65.8\%
\]

Using the CalRecycle 2011 Adjusted Reporting-Year Disposal Amount for Davis (31,449.12), which represents the amount of waste going to the landfill, it is possible to calculate the total generation and the amount diverted. If there was 65.8% of the waste diverted, there was 34.2% disposed.

\[
\frac{31,449.12}{34.2\%} = 91,956.49 \text{ tons generated} \\
91,956.49 \times 65.8\% = 60,507.37 \text{ tons diverted}
\]

In order to reach 75% diversion, Davis would have to divert more than 60,507.37 tons.

\[
91,956.49 \times 75\% = 68,967.37 \text{ tons needed for 75% diversion} \\
68,967.37 \text{ tons} - 60,507.37 \text{ tons} = 8,460 \text{ tons}
\]

In order to reach 75% diversion, using these calculations, Davis would need to divert an additional 8,460 tons of waste from the landfill.

<table>
<thead>
<tr>
<th>Tonnage Reduction Target</th>
<th>65.8% Diversion</th>
<th>75% Diversion</th>
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</thead>
<tbody>
<tr>
<td>Landfilled</td>
<td>31,449.12</td>
<td>22,989.12</td>
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<tr>
<td>Diverted</td>
<td>60,507.37</td>
<td>68,967.37</td>
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<tr>
<td>Total Generation</td>
<td>91,956.49</td>
<td>91,956.49</td>
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</table>

additional tonnage needed to divert to reach 75% = 8,460.00

The tables below show the calculations used to determine the potential tonnage reduction possible by implementing the top four plan priority programs. These calculations are based on CalRecycle’s 2008 Waste Characterization Study using DWR 2012 reported tonnages by sector. The charts show the differences between a 25%, 50%, 75% and 100% recovery rate for organics and recycling. As shown by the charts, a minimum 75% recovery rate will be required in order to meet the target 8,460 tons of waste diversion.
## R-2 Tonage Reduction with a 25% Recovery Rate

Data from "California 2006 Statewide Waste Characterization Study" by Cascadia Consulting Group

### Material

<table>
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<tr>
<th>Material Description</th>
<th>Commercial (Ent. Tons)</th>
<th>Single-Family Residential (Ent. Tons)</th>
<th>Multifamily Residential (Ent. Tons)</th>
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<tbody>
<tr>
<td><strong>Paper</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Unclassified Corrugated Cardboard</td>
<td>2.17%</td>
<td>750</td>
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<td>Paper Bags</td>
<td>0.6%</td>
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<td>HDPE Containers</td>
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<tr>
<td>Miscellaneous Plastic Containers</td>
<td>0.4%</td>
<td>33</td>
<td>0.6%</td>
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<tr>
<td>Plastic Trash Bags</td>
<td>1.2%</td>
<td>93</td>
<td>1.0%</td>
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<tr>
<td>Plastic Grocery and Other Merchandise Bags</td>
<td>0.2%</td>
<td>17</td>
<td>0.7%</td>
</tr>
<tr>
<td>Non-Bag Commercial and Industrial Packaging</td>
<td>0.8%</td>
<td>66</td>
<td>0.6%</td>
</tr>
<tr>
<td>Film Products</td>
<td>0.2%</td>
<td>15</td>
<td>0.0%</td>
</tr>
<tr>
<td>Other Film</td>
<td>1.7%</td>
<td>131</td>
<td>1.2%</td>
</tr>
<tr>
<td>Reclaimable Plastics</td>
<td>2.0%</td>
<td>153</td>
<td>2.5%</td>
</tr>
<tr>
<td>Remanufactured Plastics</td>
<td>0.4%</td>
<td>313</td>
<td>1.9%</td>
</tr>
<tr>
<td><strong>Other Organic</strong></td>
<td>10.4%</td>
<td>2,370</td>
<td>12.4%</td>
</tr>
<tr>
<td>Food</td>
<td>15.4%</td>
<td>1,204</td>
<td>26.5%</td>
</tr>
<tr>
<td>Lumber</td>
<td>3.0%</td>
<td>232</td>
<td>7.5%</td>
</tr>
<tr>
<td>Paints and Primings</td>
<td>3.3%</td>
<td>261</td>
<td>3.5%</td>
</tr>
<tr>
<td>Branches and Stumps</td>
<td>0.5%</td>
<td>40</td>
<td>0.5%</td>
</tr>
<tr>
<td>Marbles</td>
<td>0.0%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Textiles</td>
<td>1.4%</td>
<td>111</td>
<td>4.5%</td>
</tr>
<tr>
<td>Carpet</td>
<td>1.5%</td>
<td>277</td>
<td>1.4%</td>
</tr>
<tr>
<td>Remanufactured Organic</td>
<td>3.2%</td>
<td>250</td>
<td>3.3%</td>
</tr>
<tr>
<td><strong>Inerts and Other</strong></td>
<td>17.8%</td>
<td>2,160</td>
<td>17.6%</td>
</tr>
<tr>
<td>Limestone</td>
<td>0.0%</td>
<td>66</td>
<td>0.7%</td>
</tr>
<tr>
<td>Asphalt Paving</td>
<td>0.0%</td>
<td>2</td>
<td>0.0%</td>
</tr>
<tr>
<td>Asphalt Rovings</td>
<td>2.3%</td>
<td>181</td>
<td>3.2%</td>
</tr>
<tr>
<td>Lumber</td>
<td>15.7%</td>
<td>1,227</td>
<td>15.1%</td>
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<tr>
<td>Asbestos</td>
<td>1.5%</td>
<td>114</td>
<td>0.3%</td>
</tr>
<tr>
<td>Rock, Soil and Ashes</td>
<td>2.3%</td>
<td>179</td>
<td>1.1%</td>
</tr>
<tr>
<td>Remanufactured Inerts and Other</td>
<td>5.3%</td>
<td>395</td>
<td>2.3%</td>
</tr>
<tr>
<td><strong>Household Hazardous Waste (HHW)</strong></td>
<td>0.3%</td>
<td>22</td>
<td>0.3%</td>
</tr>
<tr>
<td>Paint</td>
<td>0.2%</td>
<td>16</td>
<td>0.5%</td>
</tr>
<tr>
<td>Vehicle and Equipment Fluids</td>
<td>0.0%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Used Oil</td>
<td>0.0%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Batteries</td>
<td>0.0%</td>
<td>2</td>
<td>0.1%</td>
</tr>
<tr>
<td>Remanufactured Household Hazardous</td>
<td>0.3%</td>
<td>6</td>
<td>0.2%</td>
</tr>
<tr>
<td><strong>Special Waste</strong></td>
<td>3.3%</td>
<td>245</td>
<td>3.3%</td>
</tr>
<tr>
<td>Wood</td>
<td>0.2%</td>
<td>13</td>
<td>0.1%</td>
</tr>
<tr>
<td>Treated Medical Waste</td>
<td>0.0%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Bulky Items</td>
<td>2.5%</td>
<td>194</td>
<td>0.1%</td>
</tr>
<tr>
<td>Tires</td>
<td>0.0%</td>
<td>22</td>
<td>0.0%</td>
</tr>
<tr>
<td>Remanufactured Special Waste</td>
<td>0.2%</td>
<td>16</td>
<td>0.1%</td>
</tr>
<tr>
<td><strong>Mixed Waste</strong></td>
<td>0.1%</td>
<td>11</td>
<td>0.0%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>100.0%</td>
<td>7,418</td>
<td>100.0%</td>
</tr>
<tr>
<td><strong>Sample Count</strong></td>
<td>7,812</td>
<td>12,701</td>
<td>4,207</td>
</tr>
</tbody>
</table>

### City Wide Organics Program

<table>
<thead>
<tr>
<th>Component</th>
<th>Ent. Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>1,204</td>
</tr>
<tr>
<td>Other Organics/Remanufactured Paper</td>
<td>120</td>
</tr>
<tr>
<td>Subtotal</td>
<td>1,325</td>
</tr>
</tbody>
</table>

### Commercial and Multi-Family Outreach

<table>
<thead>
<tr>
<th>Component</th>
<th>Ent. Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Targeted Recyclables</td>
<td>1,256</td>
</tr>
<tr>
<td>Subtotal</td>
<td>1,256</td>
</tr>
</tbody>
</table>

### Overall Program Totals

<table>
<thead>
<tr>
<th>Component</th>
<th>Ent. Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tonnage Required to Achieve 75% Diversion Rate</td>
<td>8,450</td>
</tr>
<tr>
<td>Remaining Tonnage Required</td>
<td>4,159</td>
</tr>
</tbody>
</table>
## R-3 Tonnage Reduction with a 50% Recovery Rate

Data from "California 2006 Statewide Waste Characterization Study" by Cascadia Consulting Group

<table>
<thead>
<tr>
<th>Material</th>
<th>Commercial (Est. Tons)</th>
<th>Single-Family Residential (Est. Tons)</th>
<th>Multifamily Residential (Est. Tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper</td>
<td>2,171</td>
<td>1,644</td>
<td>1,670</td>
</tr>
<tr>
<td>Cardboard</td>
<td>269</td>
<td>240</td>
<td>280</td>
</tr>
<tr>
<td>Newspapers</td>
<td>343</td>
<td>300</td>
<td>360</td>
</tr>
<tr>
<td>Bottles and Containers</td>
<td>318</td>
<td>240</td>
<td>270</td>
</tr>
<tr>
<td>Glass</td>
<td>326</td>
<td>214</td>
<td>236</td>
</tr>
<tr>
<td>Metal</td>
<td>186</td>
<td>114</td>
<td>156</td>
</tr>
<tr>
<td>Electronics</td>
<td>68</td>
<td>38</td>
<td>54</td>
</tr>
<tr>
<td>Plastics</td>
<td>900</td>
<td>677</td>
<td>1,090</td>
</tr>
<tr>
<td>Other Organics</td>
<td>1,500</td>
<td>1,500</td>
<td>1,500</td>
</tr>
<tr>
<td>Mixed Residue</td>
<td>81</td>
<td>100</td>
<td>114</td>
</tr>
</tbody>
</table>

### Waste and Other

<table>
<thead>
<tr>
<th>Material</th>
<th>Estimate (Est. Tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>City Wide Organics Program</td>
<td>1,124</td>
</tr>
<tr>
<td>Subtotal (Availabilities)</td>
<td>1,325</td>
</tr>
<tr>
<td>Capture Rate</td>
<td>58%</td>
</tr>
<tr>
<td>Total (Diverted Tonnage)</td>
<td>668</td>
</tr>
<tr>
<td>Diverted Tonnage</td>
<td>1,103</td>
</tr>
</tbody>
</table>

### Overall Program Totals

<table>
<thead>
<tr>
<th>Material</th>
<th>Est. Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tonnage Required to Achieve 75% Diversion Rate</td>
<td>8,400</td>
</tr>
<tr>
<td>Remaining Tonnage Required</td>
<td>2,200</td>
</tr>
</tbody>
</table>

### Mixed Residue

<table>
<thead>
<tr>
<th>Material</th>
<th>Estimate (Est. Tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed Residue</td>
<td>81</td>
</tr>
</tbody>
</table>
## R-4 Tonnage Reduction with a 75% Recovery Rate

<table>
<thead>
<tr>
<th>Material</th>
<th>Commercial</th>
<th>Single-Family Residential</th>
<th>Multifamily Residential</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Est. Tons</td>
<td>Est. Tons</td>
<td>Est. Tons</td>
</tr>
<tr>
<td>Paper</td>
<td>20,7%</td>
<td>1,617</td>
<td>15,6%</td>
</tr>
<tr>
<td>Unrestored Corrugated Cartboard</td>
<td>7.2%</td>
<td>565</td>
<td>2.1%</td>
</tr>
<tr>
<td>Paper Bag</td>
<td>0.4%</td>
<td>18</td>
<td>0.5%</td>
</tr>
<tr>
<td>Newspapers</td>
<td>1.0%</td>
<td>76</td>
<td>2.2%</td>
</tr>
<tr>
<td>White Ledges/Ream</td>
<td>1.1%</td>
<td>89</td>
<td>1.4%</td>
</tr>
<tr>
<td>Magazines and Catalogs</td>
<td>0.6%</td>
<td>47</td>
<td>1.3%</td>
</tr>
<tr>
<td>Phone Books and Directories</td>
<td>0.3%</td>
<td>4</td>
<td>0.1%</td>
</tr>
<tr>
<td>Other Miscellaneous Paper</td>
<td>0.3%</td>
<td>233</td>
<td>0.4%</td>
</tr>
<tr>
<td>Remanufactured/Composites Paper</td>
<td>0.2%</td>
<td>486</td>
<td>0.5%</td>
</tr>
<tr>
<td>Glass</td>
<td>2.8%</td>
<td>83</td>
<td>2.3%</td>
</tr>
<tr>
<td>Clear-Glass Bottles and Containers</td>
<td>0.4%</td>
<td>24</td>
<td>0.7%</td>
</tr>
<tr>
<td>Green-Glass Bottles and Containers</td>
<td>0.2%</td>
<td>12</td>
<td>0.4%</td>
</tr>
<tr>
<td>Brown-Glass Bottles and Containers</td>
<td>0.3%</td>
<td>20</td>
<td>0.4%</td>
</tr>
<tr>
<td>Other Colored Glass Bottles and Containers</td>
<td>0.3%</td>
<td>7</td>
<td>0.2%</td>
</tr>
<tr>
<td>Tin-Lid</td>
<td>0.1%</td>
<td>17</td>
<td>0.1%</td>
</tr>
<tr>
<td>Remanufactured/Composites Glass</td>
<td>0.3%</td>
<td>22</td>
<td>0.3%</td>
</tr>
<tr>
<td>Metal</td>
<td>4.5%</td>
<td>550</td>
<td>4.2%</td>
</tr>
<tr>
<td>TerraLace</td>
<td>0.6%</td>
<td>45</td>
<td>0.9%</td>
</tr>
<tr>
<td>Major Appliances</td>
<td>0.3%</td>
<td>7</td>
<td>0.0%</td>
</tr>
<tr>
<td>Used Oil Filters</td>
<td>0.6%</td>
<td>4</td>
<td>0.0%</td>
</tr>
<tr>
<td>Other Ferrous</td>
<td>2.0%</td>
<td>138</td>
<td>1.3%</td>
</tr>
<tr>
<td>Aluminum Cans</td>
<td>0.3%</td>
<td>8</td>
<td>0.3%</td>
</tr>
<tr>
<td>Other Non-Ferrous</td>
<td>0.2%</td>
<td>17</td>
<td>0.3%</td>
</tr>
<tr>
<td>Remanufactured/Composites Metal</td>
<td>1.5%</td>
<td>114</td>
<td>1.2%</td>
</tr>
<tr>
<td>Electronics</td>
<td>0.5%</td>
<td>18</td>
<td>0.7%</td>
</tr>
<tr>
<td>Breanne</td>
<td>0.2%</td>
<td>15</td>
<td>0.3%</td>
</tr>
<tr>
<td>Computer-related Electronics</td>
<td>0.0%</td>
<td>1</td>
<td>0.0%</td>
</tr>
<tr>
<td>Other Small-Consumer Electronics</td>
<td>0.3%</td>
<td>4</td>
<td>0.2%</td>
</tr>
<tr>
<td>Video Display Devices</td>
<td>0.2%</td>
<td>1</td>
<td>0.1%</td>
</tr>
<tr>
<td>Plastic</td>
<td>11.3%</td>
<td>847</td>
<td>10.0%</td>
</tr>
<tr>
<td>PET Containers</td>
<td>0.5%</td>
<td>35</td>
<td>0.8%</td>
</tr>
<tr>
<td>HDPE Containers</td>
<td>0.6%</td>
<td>29</td>
<td>0.6%</td>
</tr>
<tr>
<td>Miscellaneous Plastic Containers</td>
<td>0.4%</td>
<td>33</td>
<td>0.6%</td>
</tr>
<tr>
<td>Plastic Trades Bags</td>
<td>1.2%</td>
<td>92</td>
<td>0.9%</td>
</tr>
<tr>
<td>Plastic Granules and Other Merchandising Bags</td>
<td>0.2%</td>
<td>17</td>
<td>0.2%</td>
</tr>
<tr>
<td>Non-Bag Commercial and Industrial Packaging Film</td>
<td>0.8%</td>
<td>66</td>
<td>0.6%</td>
</tr>
<tr>
<td>Film Products</td>
<td>2.2%</td>
<td>15</td>
<td>0.3%</td>
</tr>
<tr>
<td>Other Film</td>
<td>1.7%</td>
<td>131</td>
<td>1.9%</td>
</tr>
<tr>
<td>Durable Plastic Items</td>
<td>2.0%</td>
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<td>2.7%</td>
</tr>
<tr>
<td>Remanufactured/Composites Plastic</td>
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<tr>
<td>Other Organic</td>
<td>60.4%</td>
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<tr>
<td>Food</td>
<td>13.4%</td>
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<td>22.6%</td>
</tr>
<tr>
<td>Leaves and Grass</td>
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<td>0.0%</td>
</tr>
<tr>
<td>Furskins and Trimmings</td>
<td>0.3%</td>
<td>261</td>
<td>0.2%</td>
</tr>
<tr>
<td>Stems and Stumps</td>
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<td>40</td>
<td>0.0%</td>
</tr>
<tr>
<td>Marves</td>
<td>0.0%</td>
<td>20</td>
<td>0.0%</td>
</tr>
<tr>
<td>Tubilites</td>
<td>1.6%</td>
<td>111</td>
<td>1.7%</td>
</tr>
<tr>
<td>Carpet</td>
<td>3.5%</td>
<td>277</td>
<td>4.8%</td>
</tr>
<tr>
<td>Remanufactured/Composites Organic</td>
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<td>3.8%</td>
</tr>
<tr>
<td>Barks and Other</td>
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<tr>
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<td>66</td>
<td>0.7%</td>
</tr>
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<td>Asphalt Paving</td>
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<td>2</td>
<td>0.0%</td>
</tr>
<tr>
<td>Asphalt Roofing</td>
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<td>0.3%</td>
</tr>
<tr>
<td>Lumber</td>
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<td>Corrugated Board</td>
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<td>0.4%</td>
</tr>
<tr>
<td>Rock, Soil and Fines</td>
<td>2.3%</td>
<td>179</td>
<td>1.3%</td>
</tr>
<tr>
<td>Remanufactured/Composites and Other</td>
<td>5.3%</td>
<td>295</td>
<td>3.9%</td>
</tr>
<tr>
<td>Household Hazardous Waste (HHW)</td>
<td>0.8%</td>
<td>22</td>
<td>0.3%</td>
</tr>
<tr>
<td>Fume</td>
<td>0.2%</td>
<td>16</td>
<td>0.0%</td>
</tr>
<tr>
<td>Valsheet and Equipment Fluids</td>
<td>0.0%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Used Oil</td>
<td>0.0%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Batteries</td>
<td>0.0%</td>
<td>2</td>
<td>0.0%</td>
</tr>
<tr>
<td>Remanufactured Household Hazardous</td>
<td>0.0%</td>
<td>3</td>
<td>0.0%</td>
</tr>
<tr>
<td>Special Waste</td>
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<td>245</td>
<td>4.3%</td>
</tr>
<tr>
<td>Acid</td>
<td>0.2%</td>
<td>13</td>
<td>0.1%</td>
</tr>
<tr>
<td>Treated Medical Waste</td>
<td>0.0%</td>
<td>2</td>
<td>0.0%</td>
</tr>
<tr>
<td>Bulky Items</td>
<td>2.5%</td>
<td>194</td>
<td>1.3%</td>
</tr>
<tr>
<td>Tires</td>
<td>0.3%</td>
<td>22</td>
<td>0.0%</td>
</tr>
<tr>
<td>Remanufactured Special Waste</td>
<td>0.2%</td>
<td>16</td>
<td>0.1%</td>
</tr>
<tr>
<td>Mixed Residue</td>
<td>0.3%</td>
<td>11</td>
<td>0.6%</td>
</tr>
<tr>
<td>Bottoms</td>
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<td>11</td>
<td>1.2%</td>
</tr>
<tr>
<td>Totals</td>
<td>100.0%</td>
<td>7,812</td>
<td>100.0%</td>
</tr>
<tr>
<td>Sample Count</td>
<td>7,812</td>
<td>12,701</td>
<td>100.0%</td>
</tr>
<tr>
<td>Citywide Organics Program</td>
<td>1,204</td>
<td>3,360</td>
<td>510</td>
</tr>
<tr>
<td>Food</td>
<td>1,204</td>
<td>3,360</td>
<td>510</td>
</tr>
<tr>
<td>Other Organics/Composites Paper</td>
<td>10.0%</td>
<td>120</td>
<td>337</td>
</tr>
<tr>
<td>Substantial (Available Tonnage)</td>
<td>1,235</td>
<td>3,706</td>
<td>1,443</td>
</tr>
<tr>
<td>Capture Rate</td>
<td>795%</td>
<td>795%</td>
<td>795%</td>
</tr>
<tr>
<td>Total (Diverted Tonnage)</td>
<td>942</td>
<td>2,760</td>
<td>4,197</td>
</tr>
</tbody>
</table>

### Commercial and Multi-Family Outreach

| Substantial (Available Tonnage) | 1,256     | 882                       |
| Capture Rate                  | 795%       | 795%                      |
| Total (Diverted Tonnage)      | 942        | 662                       | 1,604                   |

<table>
<thead>
<tr>
<th>Drop-Offs</th>
<th>Capture Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>35%</td>
<td></td>
</tr>
</tbody>
</table>
## R-5 Tonnage Reduction with a 100% Recovery Rate

Data from "California 2008 Statewide Waste Characterization Study" by Cascardi Consulting Group

<table>
<thead>
<tr>
<th>Material</th>
<th>Commercial</th>
<th>Single-Family Residential</th>
<th>Multifamily Residential</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Est. Tons</td>
<td>Est. Tons</td>
<td>Est. Tons</td>
</tr>
<tr>
<td><strong>Paper</strong></td>
<td>16,717</td>
<td>1,449</td>
<td>3,307</td>
</tr>
<tr>
<td><strong>Recycling</strong></td>
<td>40.3%</td>
<td>35.5%</td>
<td>37.2%</td>
</tr>
<tr>
<td><strong>Plastics</strong></td>
<td>1,647</td>
<td>1,034</td>
<td>1,820</td>
</tr>
<tr>
<td><strong>Metals</strong></td>
<td>399</td>
<td>399</td>
<td>399</td>
</tr>
<tr>
<td><strong>Organics</strong></td>
<td>1,771</td>
<td>1,771</td>
<td>1,771</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>1,349</td>
<td>1,349</td>
<td>1,349</td>
</tr>
</tbody>
</table>

**City Wide Organics Program**

| Food | 1,204 | 3,169 | 450 |
| Other Organics/Composite Paper | 10.0% | 11.0% | 10.0% | 10.0% | 10.0% | 10.0% | 10.0% | 10.0% | 10.0% | 10.0% | 10.0% | 10.0% | 10.0% | 10.0% | 10.0% | 10.0% | 10.0% |

**Overall Program Totals**

| Tonnage Required to Achieve 75% Diversion Rate | 3,840 |
| Remaining Required Tonnage | 4,420 |
Appendix R - Variable Rate Policy Report – Options and Trade-offs

- Variable Can Rates -
Overview and Discussion of Issues Related to their
Potential Implementation in the City of Davis

Objectives
- To provide a general overview of residential variable can rates;
- To comment on the basis for and reasonableness of the City’s calculated cost-of-service
  variable can rate structure; and
- To identify and review specific issues (and pros and cons) related to the implementation
  of variable can rates in the City of Davis.

Note: The concept of variable can rates is also often referred to as “pay-as-you-throw” or “unit
pricing” and the terms are used interchangeably in this document.

Issue Under Consideration
Should the City implement residential variable can rates, and if so:
- How should those rates be structured; and
- When should they be implemented?

Summary Findings
Research has demonstrated that variable can rates ("pay-as-you-throw") is the most effective
single action that can increase recycling and diversion, and can be one of the most cost-
effective. The City's 2012 "franchised" residential diversion rate (58%) however is comparable, if
not superior, to the franchised residential diversion rate in various other jurisdictions that have
implemented variable can rate structures. This includes jurisdictions with very aggressive
variable can rate structures that exceed the cost-of-service for larger service volumes.

We assume that the City’s high existing residential diversion rate is due, at least in part, to its
long history of residential diversion programs and active participation in those programs by the
City’s residents, even without the associated financial incentives that variable can rates provide.
As such, it does not appear that the City can expect to realize anything close to the level of
increased diversion that certain other jurisdictions achieved with the implementation of variable
can rates. Additionally, implementing a variable can rate will require changes in the City’s billing
system and ongoing coordination with Davis Waste Removal (DWR) to assure that customer
requested changes in service levels are accurately translated to the City’s billing data base on a
regular basis.

Should the City wish to implement variable can rates, we suggest that it do so as part of the
implementation of containerized green waste and its planned residential organics diversion
program (yard waste and food waste), if those options are pursued in the future. This will allow
for coordinating the roll-out of variable can rates with those options, minimizing required
resources and costs and providing the best opportunity to use variable can rates to assist in
maximizing the diversion of residential organics.

The City has estimated that the difference in the cost to service a 35-, 65- and 95-gallon
container is less than one dollar ($1.00) per month. If variable can rates are pursued it seems
unlikely that “equitable” rates based on cost-of-service will provide the type of financial incentive
necessary to encourage residents to aggressively divert residential organics and recyclable
- Variable Can Rates -
Overview and Discussion of Issues Related to their Potential Implementation in the City of Davis

materials if they would not otherwise do so regardless of the financial impacts. As such, any consideration of variable can rates needs to address the issue of the level of financial incentive necessary to drive the desired behavior versus the associated impact on rate equity. As part of any such discussion, we strongly suggest that the City consider implementing a mandatory residential recycling/diversion ordinance in conjunction with, or as an alternative to, a residential variable can rate.

Background
Residential curbside recycling began in Davis in 1974 with newspaper, with bottles and cans added later that year. A city ordinance was passed at that time that required separation of newspaper from other garbage. In 1976, DWR became the City’s franchised waste hauler, collecting garbage (in customer provided cans), recyclables (in crates with paper separated from containers and yard waste (loose in the street).

In 2004, the City and DWR rolled out wheeled solid waste and recycling carts to the City’s residents. While 30-, 60-, and 90-gallon solid waste carts were offered, a flat (uniform) rate structure was implemented rather than a variable can rate structure, with all accounts paying the same rate regardless of service volume up to 90-gallons.¹

In 2011, the City passed a Zero Waste Resolution which established a 75 percent diversion goal by 2020, based on the State’s reported diversion rate for the City (the City’s 2011 state reported diversion rate was 67 percent). In support of the City’s Zero Waste Resolution and the management and improvement of its solid waste collection system, the City drafted a Solid Waste Management Plan. That plan identifies a number of options to increase diversion including consideration of a variable can rate structure. Other related issues under consideration include containerized green waste collection and the implementation of a residential organics program (i.e., collection of containerized food waste and green waste).

Overview
The term variable can rate (or pay-as-you-throw) refers to the structuring of garbage collection rates so that different sized containers are charged different rates, as compared to a flat rate where the price is the same regardless of service volume (e.g., the cost for a 30 gallon container is that same as a 60 or 90 gallon container).

There are four general types of variable can rate pricing structures:

1. **Regressive:** The per-unit cost of the container decreases as container size increases.
2. **Volume-based:** The per-unit cost is the same for all container sizes.
3. **Progressive:** The per-unit cost of the container increases as the container size increases.
4. **Cost-of-Service:** The price is set based on the (estimated) actual cost to service the different container sizes, with the cost differential typically reflecting estimated differences in disposal costs, with higher disposal costs associated with increased container sizes (and associated increase container weights).

¹ There is an additional charge for accounts that requested greater than 90-gallon weekly service.
- Variable Can Rates -
Overview and Discussion of Issues Related to their
Potential Implementation in the City of Davis

Attachment 1 provides examples of each of the above rate structures. Attachment 2 compares
the City’s current rate structure to the rate structures in a number of neighboring jurisdictions, a
number of Bay Area “zero waste” jurisdictions, and the City of Seattle. As shown:

- The cities of Dixon and Vacaville both have a flat rate for up to 90-gallons of service,
similar to the City;
- In Yolo County, the cities of Winters, West Sacramento and Woodland all have variable
can rates, with Winters and West Sacramento’s employing a “regressive” variable can rate and Woodland employing a “hybrid” variable can rate structure involving a
combination of pricing structures;
- The cities of Citrus Heights, Elk Grove, Fairfield, and Rancho Cordova all have
regressive variable can rates;
- The City of Berkeley has a volume-based variable can rate structure with 20 gallon and
13 gallon service level options; and
- The City of Palo Alto has a progressive variable can rate structure with a 20 gallon
service level option.

Pros

The United States Environmental Protection Agency (EPA) supports variable can rates (pay-as-
you-throw) because it encompasses the following three interrelated components that are key to
successful community programs:

- Environmental sustainability;
- Economic sustainability; and
- Equity.

Attachment 3 provides a page from the EPA’s Pay-As-You-Throw website that expands on the
above three components, as well as a number of pages from CalRecycle’s website on Pay-As-
You-Throw pricing, including associated benefits.

In addition to the benefits of variable can rates cited by the EPA and Cal Recycle. A 2006
report, “Pay As You Throw (PAYT) in the US: 2006 Update and Analyses”, by Skumatz
Economic Research Associates, Inc. (SERA)² reported the following with respect to variable can
rates (PAYT):

- PAYT Programs are available to about 25 percent of the US population (nearly 75
million) and about 26 percent of the communities in the US (more than 7,000) – including
30 percent of the largest cities in the US;
- The largest number of programs are available in Minnesota (mandated), Iowa,
Wisconsin, California, New York, Washington and Pennsylvania, each with more than
200 programs;
- The research has demonstrated that PAYT is the most effective single action that can
increase recycling and diversion, and can be one of the most cost-effective;

² SERA is considered one of, if not the premier firm nationally with respect to the review and analysis of the impacts of
pay-as-you-throw and variable can rates.
Variable Can Rates -
Overview and Discussion of Issues Related to their
Potential Implementation in the City of Davis

Trash in both the 35 and 65 is fundamentally the same. Per the study, 95 gallon carts contain about 10 more pounds than the 35 gallon cart. The difference in disposal cost between a 35 gallon cart and 95 gallon cart is 83 cents. To administer a variable cart rate, there would be city costs associated with tracking all 14,000 residential accounts. This cost would reduce, if not negate the savings in trash disposal.

- Based on the weight of material received at the Yolo County Central Landfill, the true cost difference between disposal of garbage from a 35 gallon cart and a 65 gallon cart are at an estimated 83 cents and 76 cents respectively than that of a 95 gallon cart. Implementing a variable cart rate that requires additional administration of the 14,000 plus accounts will increase costs for the entire program and eclipse or eliminate the 83 cents and 76 cents price differential.

- When comparing the City’s per capita waste disposed to other communities, Davis is one of the lowest. It is difficult to see that a variable cart rate would improve significantly the city’s diversion. There are also no real cost savings to individuals choosing the smaller carts.

A decision as to whether or not the City should implement variable can rates is largely, if not wholly, related to what the associated objectives are (e.g., providing rate equity, increased diversion, and/or other factors), and the extent to which variable can rates effectively achieve those objectives.

The issues of rate equity and the additional diversion potential of variable can rates are discussed below.

Rate Equity

As discussed above, in its 2010 Staff Report (Attachment 4) City staff calculated that the cost difference between disposal of garbage from a 35 gallon cart and a 65 gallon cart are at an estimated 83 cents and 76 cents respectively than that of a 95 gallon cart. The City has since updated its calculation of residential cost-of-service rates, which is shown in the following table.

<table>
<thead>
<tr>
<th>Size (gal)</th>
<th>Rate</th>
<th>$/gal</th>
<th>Rate Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>$32.89</td>
<td>$0.94</td>
<td>-</td>
</tr>
<tr>
<td>65</td>
<td>$33.07</td>
<td>$0.51</td>
<td>$0.18</td>
</tr>
<tr>
<td>95</td>
<td>$33.35</td>
<td>$0.35</td>
<td>$0.46</td>
</tr>
</tbody>
</table>

As shown, these updated rates reflect a smaller price differential than calculated in 2010 and account for estimated administration, container inventory and contamination related costs.

While the rate differentials shown above would vary slightly if cart costs (and potentially certain other costs) were included, the fact that there is a very small difference in the cost (rate) to service a 35, 65 or 95 gallon cart is consistent with the findings of similar cost-of-service analyses conducted by R3 and other parties. Furthermore, if the City implements cost-of-service rates there would be additional associated costs (e.g., increased container inventory,
management and administrative costs, public education) that "would reduce, if not negate the savings in trash disposal" as staff has reported. This calls into question any economic benefits associated with the City establishing a cost-of-service rate intended to provide "rate equity".

Additional Diversion Potential

As noted above, variable can rates have been reported to be "the most effective single action that can increase recycling and diversion". The City of Davis, however, has a long history of recycling, having implemented one of the first curbside recycling programs in the area in 1974; a full 15 years before AB 939⁵. In considering the potential benefits of implementing a variable can rate in the City, the potential for additional resulting diversion needs to be considered. While variable can rates have, in general, been demonstrated to increase diversion, it is not clear that the potential for the associated increases in diversion reported by other jurisdictions exists in the City of Davis since the City's residential diversion programs are already diverting a substantial amount of the residential waste stream.

The following table provides a breakdown of franchised waste generation, diversion and disposal tonnages by waste stream based on 2012 data provided by the City, as well as the associated diversion rates.

<table>
<thead>
<tr>
<th>2012 Waste Generation, Diversion and Disposal Tonnages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material Stream</td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>Recycling</td>
</tr>
<tr>
<td>Yard Materials</td>
</tr>
<tr>
<td>Commercial Food Scrap</td>
</tr>
<tr>
<td>Inerts Diverted</td>
</tr>
<tr>
<td>C&amp;D Diverted</td>
</tr>
<tr>
<td>C&amp;D Disposed</td>
</tr>
<tr>
<td>Garbage Disposed</td>
</tr>
<tr>
<td><strong>Total Generated</strong></td>
</tr>
<tr>
<td><strong>Total Diverted</strong></td>
</tr>
<tr>
<td><strong>Diversion Rate</strong></td>
</tr>
</tbody>
</table>

As shown, the 2012 residential diversion rate is estimated to be 58 percent. This compares favorably to various other jurisdictions for which we have similar data, including the City of Elk Grove, whose 2012 residential franchised diversion rate was approximately 40 percent.

As an additional point of reference, the collective 2012 residential franchised diversion rate for the South Bayside Waste Management Authority's (SBWMA) 11 member agencies in San

- Variable Can Rates -
Overview and Discussion of Issues Related to their
Potential Implementation in the City of Davis

San Mateo County was 66.7 percent. This is one of the highest documented franchised residential diversion rates in the State. The SBWMA is serviced by Recology and has a very well established and comprehensive solid waste management system, including its own transfer station and material recovery facility. Residential services include weekly single stream recycling (including the collection of cell phones and batteries) and weekly organics collection (yard waste and food waste). The member agency jurisdictions all have what can be considered aggressive variable can rates. The residential rates for the City of San Mateo, the largest of the member agencies, are shown below.

<table>
<thead>
<tr>
<th>Size (gal)</th>
<th>Rate</th>
<th>$/gal</th>
<th>Rate Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>$13.04</td>
<td>$0.65</td>
<td>$ -</td>
</tr>
<tr>
<td>32</td>
<td>$20.85</td>
<td>$0.65</td>
<td>$ 7.81</td>
</tr>
<tr>
<td>64</td>
<td>$45.90</td>
<td>$0.72</td>
<td>$32.86</td>
</tr>
<tr>
<td>96</td>
<td>$71.26</td>
<td>$0.74</td>
<td>$58.22</td>
</tr>
</tbody>
</table>

While the SBWMA’s franchised residential diversion rate is higher than the City’s (66.7% vs. 57.9%) it includes residential organics and other curbside materials not currently provided to Davis’ residents, and is backed by dedicated SBWMA staff and considerable financial resources in support of maximizing diversion. If the same programs and resources were available in the City, a case can be made that the City’s franchised residential diversion rate could approach that of the SBWMA.

Attachments:

1. Examples of Variable Can Rate Structures
2. Rate Structures in Other Jurisdictions
3. Information on Pay-As-You-Throw Pricing
   a) EPA Pay-As-You-Throw
   b) Cal Recycle Pay-As-You-Throw
4. City of Davis, Draft Integrated Waste Management Plan; Appendix K – 2010 Variable Can Rate Study
   a) Staff Report to Natural Resources Commission; January 21, 2010; Variable Cart Rate for Residential Curbside Garbage
   b) Cart Weight Survey for Landfill Cost Study
Attachment 1
EXAMPLES OF VARIABLE CAN RATE STRUCTURES

<table>
<thead>
<tr>
<th>Flat Rate</th>
<th>Regressive Rate</th>
<th>Progressive Rate</th>
<th>Volume Based Rate</th>
<th>Cost-of-Service Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size (gallons)</td>
<td>Sample Rates</td>
<td>Size (gallons)</td>
<td>Sample Rates</td>
<td>Size (gallons)</td>
</tr>
<tr>
<td></td>
<td>Rate</td>
<td>$/gal</td>
<td>Rate</td>
<td>$/gal</td>
</tr>
<tr>
<td>32</td>
<td>$ 25.00</td>
<td>$ 0.78</td>
<td>32</td>
<td>$ 20.00</td>
</tr>
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<td>64</td>
<td>$ 25.00</td>
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<td>$ 20.00</td>
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<tr>
<td>96</td>
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<td>$ 35.00</td>
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<tr>
<td></td>
<td>Rate</td>
<td>$/gal</td>
<td>Rate</td>
<td>$/gal</td>
</tr>
<tr>
<td>32</td>
<td>$ 10.00</td>
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<td>32</td>
<td>$ 60.00</td>
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<tr>
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<td>$ 12.00</td>
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<td>64</td>
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<tr>
<td>96</td>
<td>$ 15.00</td>
<td>$ 0.80</td>
<td>96</td>
<td>$ 150.00</td>
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</tbody>
</table>
## Attachment 2

### RATE STRUCTURES IN DAVIS AND OTHER JURISDICTIONS

<table>
<thead>
<tr>
<th>City</th>
<th>Size (gal)</th>
<th>Current Rate</th>
<th>Rate</th>
<th>Equal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Davis (2013)</td>
<td>13</td>
<td>$0.01</td>
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<tr>
<td></td>
<td>17</td>
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<tr>
<td></td>
<td>31</td>
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<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>60</td>
<td>$0.09</td>
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<td></td>
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<tr>
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<td>80</td>
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<tr>
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<td>$0.15</td>
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<table>
<thead>
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</thead>
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<table>
<thead>
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<tr>
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<tr>
<td></td>
<td>70</td>
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</tr>
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<td>20</td>
<td>$0.02</td>
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<tr>
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<td>30</td>
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<td></td>
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<td>$0.05</td>
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<table>
<thead>
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<th>Current Rate</th>
<th>Rate</th>
<th>Equal</th>
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</thead>
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<td>30</td>
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<td>$0.09</td>
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<table>
<thead>
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<th>Rate</th>
<th>Equal</th>
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</thead>
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Pay-As-You-Throw Programs

Pay-As-You-Throw

Note: EPA no longer updates this information, but it may be useful as a reference or resource.

In communities with pay-as-you-throw programs (also known as unit pricing or variable-rate pricing), residents are charged for the collection of municipal solid waste—ordinary household trash—based on the amount they throw away. This creates a direct economic incentive to recycle more and to generate less waste.

Traditionally, residents pay for waste collection through property taxes or a fixed fee, regardless of how much—or how little—they generate. Pay-As-You-Throw (PAYT) breaks with tradition by treating trash services just like electricity, gas, and other utilities. Households pay a variable rate depending on the amount of service they use.

Most communities with PAYT charge residents a fee for each bag or can of waste they generate. In a small number of communities, residents are billed based on the weight of their trash. Either way, these programs are simple and fair. The less individuals throw away, the less they pay.

EPA supports this new approach to solid waste management because it encompasses three interrelated components that are key to successful community programs:

1. **Environmental Sustainability** - Communities with programs in place have reported significant increases in recycling and reductions in waste, due primarily to the waste reduction incentive created by PAYT. Less waste and more recycling mean that fewer natural resources need to be extracted. In addition, greenhouse gas emissions associated with the manufacture, distribution, use, and subsequent disposal of products are reduced as a result of the increased recycling and waste reduction PAYT encourages. In this way, PAYT helps slow the buildup of greenhouse gases in the Earth's atmosphere which leads to global climate change. For more information on the link between solid waste and global climate change, go to [EPA’s Climate Change Website](http://www.epa.gov/epawaste/conserve/tools/payt/index.htm).

2. **Economic Sustainability** - PAYT is an effective tool for communities struggling to cope with soaring municipal solid waste management expenses. Well-designed programs generate the revenues communities need to cover their solid waste costs, including the costs of such complementary programs as recycling and composting. Residents benefit, too, because they have the opportunity to take control of their trash bills.

3. **Equity** - One of the most important advantages of a variable-rate program may be its inherent fairness. When the cost of managing trash is hidden in taxes or charged at a flat rate, residents who recycle and prevent waste subsidize their neighbors' wastefulness. Under PAYT, residents pay only for what they throw away.

EPA believes that the most successful programs bring these components together.
through a process of careful consideration and planning. This Web site was developed as part of EPA's ongoing efforts to provide information and tools to local officials, residents, and others interested in PAYT.

To find out more about how these programs work, review the following sections:

- **Communities** - View maps showing the kinds of programs communities are using, read testimonials from local planners, or find a program near you.
- **Articles & Research** - Read through studies from the growing body of PAYT research and browse more than 50 magazine articles on PAYT.
- **Resources** - Explore products designed to help communities plan and implement a program.
- **Topics** - Find detailed information on PAYT organized by topic, complete with links to case studies and related products.
- **Links** - Connect to other Web sites containing additional ideas and material on PAYT.
- **Frequent Questions** - Review answers to frequently asked questions about these programs.
- **Site Map** - Scan a complete, linked list of this site’s contents for the information you need.

Thousands of communities across the country are using PAYT to manage trash in a way that is fair, economically sound, and environmentally sustainable. EPA hopes that this Web site will provide you and your organization with all the information you need.
Waste Prevention World
Pay as You Throw

Introduction
The idea of "pay as you throw" or "unit pricing" has been around a long time. We face it every day for almost everything we buy: dollars per gallon of gasoline, per loaf of bread, per overnight video rental, per kilowatt-hour of electricity, or per cubic foot of water. In fact, prices that are not set by the unit are the exception, rather than the rule: all-you-can-eat pizza buffets, copier service agreements, and government services such as police and fire protection.

Municipal solid waste (household garbage disposal) has traditionally been funded through taxes or flat rate billing. This pricing scheme creates the same incentive as the all-you-can-eat pizza buffet: the smart economic move is to eat--or throw away--all you can, because the more you get for a fixed price, the better deal you're getting. All you-can-dump solid waste pricing has played a significant part in creating the national solid waste crisis, exemplified by disappearing landfill capacity, rising disposal costs, limited use of recycling programs, and the attitude that unlimited waste service is a right.

Therefore, unit pricing for solid waste disposal means charging a fee for each unit disposed. The unit may be measured by the bag, by the can, or by the pound.

Benefits of unit pricing
Although the transition to a unit pricing system can be difficult for agencies accustomed to flat rate billing, unit pricing can make a profound change that leads to a variety of benefits. Most importantly, it creates the connection between each customer's cost and disposal habits, and provides an incentive for customers to make smarter choices in how they handle their waste.

All unit pricing systems offer important advantages for both the solid waste agencies and their customers:

- **Increased awareness of solid waste costs.** Traditionally, true solid waste operational costs have been obscured from the consumer by being lumped into one general tax bill that covers many public services. Unit pricing makes customers aware of the cost of the waste services they use, and reinforces that awareness every time a customer pays a garbage bill or buys a pre-paid garbage bag or tag/sticker.
- **Incentive to reduce waste.** When customers have to pay more for each can or bag disposed, they are likely to think twice before purchasing excessively packaged products at the store, or throwing old lettuce into the trash instead of the compost pile.
- **Incentive to recycle.** If throwing away is more expensive because the true costs of disposal are accounted for, recycling becomes a more economically beneficial option. This financial incentive can help increase use of recycling programs, and can reduce total waste management system costs.
- **Reduced dependence on landfills or incinerators.** Unit pricing will reduce tonnage going to landfills or incinerators. Therefore, the need for expansion of landfills is postponed.
- **Stabilized system costs.** Final disposal is often the most unstable, and sometimes the most expensive, component of solid waste system cost. The incentives created by unit pricing by reducing the impact of landfill costs can help stabilize system costs.
- **Equity among customers.** Flat-rate billings and taxes make no distinction between high- and low-level disposers. With
Attachment 3

Unit Pricing Introduction

unit pricing, customers are charged according to the amount of waste they dispose.

Help in meeting legislated diversion goals. The State of California, as well as other states and counties across the country, has mandated recycling or disposal reduction goals for communities within its jurisdiction. Unit pricing systems can create incentives that encourage customers to change their disposal habits to help meet these goals.

Waste Prevention World Home

Last updated: January 1, 1997
Waste Prevention Information Exchange: [wsipinfo@calrecycle.ca.gov](mailto:wsipinfo@calrecycle.ca.gov)

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Weighing in on Unit Pricing Systems

- How they work
- Weight-based
- Variable can
- Tag/Sticker
- Hybrid
- Bag

How do unit pricing systems work?

The term "unit pricing" does not refer to a particular pricing system, but rather describes any funding system that charges customers according to the amount of waste disposed. Virtually all current unit pricing systems can be classified by one of the five types described below. Additionally, minor design elements within each system can be tailored to meet a community's unique solid waste goals.

Below are the strengths and weaknesses of each system. Note: some incentives to reduce waste and recycle (a strength), as well as potential risk of illegal dumping (a weakness), are common to all.

Weight-based | Variable can | Tag/Sticker | Hybrid | Bag

Weight-based

Each can of refuse is weighed as it is dumped into the truck. Computer records bill customers according to the weight of the refuse disposed.

- Offers flexible billing system options.
- Pound-by-pound charging system creates a clear waste reduction and recycling incentive at all disposal levels.
- Requires no collector judgment at the curb.
- Generates excellent data to target waste diversion and management program modifications.
- Currently implemented on a pilot basis only.
- New approach with minimal data available—may be tough political sell.
- Is potentially expensive to set up, including computer systems, cans, and scales.
- Results in slower work for collectors under some system designs.

Variable Can

Customers "subscribe" to a set number and/or varying sizes of cans per collection week. Alternatively, waste collectors can record weekly empties in a route book and bill the customer accordingly. Service is purchased on a per can basis.

Strengths
- System rewards consistent waste reduction.
- Compatible with automatic collection systems.
- Fairly stable revenue stream.

Weaknesses
- Most expensive system currently in operation, because of billing, inventory, and customer service costs.
- Fixed subscription level removes week-to-week incentive to reduce waste below that level.

Attachment 3

How Unit Pricing Systems Work

→ Waste agency has many options in the design of rate structures.
→ Collectors must ensure that refuse is in approved containers that are not overweight.

Weight-based | Variable can | Tag/Sticker | Hybrid | Bag

Tag/Sticker
Each container (bag or can) of refuse set out for collection must have an official tag/sticker on it (possibly marked with the city logo). Tags/stickers are sold at a price that includes some or all of the cost of providing refuse collection and management service. Service is purchased on a per-tag/sticker basis.

Strengths
→ Easy to implement and operate.
→ Can be implemented rapidly, no billing system needed.
→ Compatible with franchise or contract system.
→ Allows customers flexibility in their disposal level, while providing an incentive to reduce even below one unit of refuse.
→ Improves collector efficiency.
→ Limits need for customer service representatives (CSR) and enforcement.
→ Low purchase and distribution costs.

Weaknesses
→ May be incompatible with automated or semi-automated collection systems.
→ Provides uncertain revenues.
→ Difficult to enforce container size limits at the curb.
→ Has potential for animals scattering garbage when used with bags.
→ May encourage customers to keep excess refuse for later collection.
→ Confusion regarding assigned value of tag/sticker can cause customer service problems.
→ Tags/stickers can fall off in cold weather.

Weight-based | Variable can | Tag/Sticker | Hybrid | Bag

Hybrid
A set level of service (one can or bag per week, for example) is funded through taxes or flat-rate billing. Additional refuse must be set out in a city logo-marked bag, or in a bag or can accompanied by a city tag/sticker (priced to contribute revenue for solid waste service).

Strengths
→ Fairly stable revenue stream.
→ Low implementation cost.
→ Politically easier to implement than other systems.
→ Natural transition step to other systems.
→ Discourages illegal dumping.

Weaknesses
→ No incentive to minimize waste below base level.
→ Requires two-part revenue recovery system (fixed and variable recovery).
→ Total costs may not be apparent to customers.

Weight-based | Variable can | Tag/Sticker | Hybrid | Bag

Bag
All refuse set out for collection must be contained in specially marked garbage bags (usually marked with the city logo). Bags are sold at a price that includes some or all of the cost of providing refuse collection and management service. Service is purchased on a per-bag basis.

Strengths
→ Easy to implement and operate.
→ Can be implemented rapidly.

Weaknesses
→ Less compatible with automatic or semi-automatic collection systems.
Attachment 3

How Unit Pricing Systems Work

- No billing system needed.
- Compatible with franchise or contract haulers.
- Allows customers flexibility in their disposal level, while providing an incentive to reduce even below one bag of refuse.
- Improves collector efficiency.
- Gives neighborhoods a tidy appearance, with no empty cans on the street.
- Limits need for customer service representatives (CSR) and enforcement.

- Provides unstable revenue stream, has potential for problems with animals scattering garbage from damaged bags.
- May encourage customers to keep excess garbage for following collection.

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Appendix S - Early Draft of Preliminary Implementation Schedule

Below is the draft implementation schedule and estimated diversion tonnage that was presented at the March 2013 IWMP workshop.