Australia

Building A MRF And Composter In Perth

Regional Council implements collection strategy and recovery center that will process 200,000 tons of residuals per year, diverting 85 percent from landfills.

Stuart McAll

TEN YEARS AGO, the Southern Metropolitan Regional Council (SMRC) in Perth, Australia questioned whether traditional waste management was best serving the community. Market research soon demonstrated that ratepayers were willing to pay an additional premium to divert more waste from landfills and achieve sustainable goals.

Various collection methods were tested throughout the region to determine type and size of collection bins and the most appropriate mechanism to encourage residential source separation. Attitudinal surveys before and after the trials defined the level of community support and commitment to each collection strategy. The information helped develop a user-friendly collection system that would have public support and facilitate maximum recovery of uncontaminated material from the waste stream.

In early 1997, a Regional Waste Management Strategy was adopted for a collection system and regional resource recovery centre (RRRC) capable of recycling 80 percent of all domestic residuals generated within the boundaries of member councils that wished to participate. Five of the seven member councils resolved to participate in a $70 million (AUD) project (approximately $36 million U.S.).

The collection system adopted by the SMRC is one that had been successfully developed over four years in one of the participating member councils, the city of Melville. Customer surveys there revealed that 100 percent of households were satisfied with the system, with 88 percent rating it as good or excellent.

Collection System

The integrated collection system provides each household with a comprehensive disposal service comprising: Weekly collection of a mobile bin for general household waste, including food, small green waste and nonrecyclable materials; Fortnightly collection of a mobile bin for commingled dry recyclables; Three curb-side collections each year of large green waste items; and Annual bulk waste collection. Adoption of this collection system by all the participating member councils meant that the various waste streams would have a consistent format. This enabled the SMRC to characterize the waste streams accurately and select technologies appropriate to optimizing resources recovery.

Commingled recyclables collected are around 9.5 pounds per household per week, including 1.7 pounds of nonrecyclables or contaminated recyclables (18 percent).

All the participating member councils have now implemented the regional collection system and all major contracts for construction of facilities for the RRRC have been entered into. Initially project partners were concerned over the most appropriate location of the RRRC, as the cost of transporting waste to the facility would not be equal between participants. To overcome this problem, it was agreed that the gate fee for each council would be adjusted to reflect the distance the waste from each council had to be transported.

Proportional Funding

The capital and interest repayments from each council, it was agreed, would be directly proportional to each council's population. Funding from the SMRC was dictated by the contractual methodology adopted by project participants. The methodology was as follows:

- Collection systems were to be funded and operated by respective councils, each of which has implemented day labor and/or contractor service delivery;
- Recycling was tendered as a ten-year build-own-operate contract — awarded to the Recycling Company of Western
Australia, with ownership of the building being transferred to the SMRC at the end of the contract;

- The green waste processing facility was tendered out as a design-and-construct (requiring the SMRC to fund $1 million AUD) and a disposal contract for the resulting mulch by-product;
- Mixed solid waste processing was tendered out as a design-and-construct contract, with a one-year proving period. This contract was awarded to Bedminster Bioconversion (Australasia) Pty Limited, which required the SMRC to fund $34.5 million AUD;
- The project development, site infrastructure and holding costs were also funded by the SMRC, requiring $4.15 million AUD.

The total of $39.65 million (AUD) required to be contributed by the SMRC was sourced from the Western Australian Treasury Corporation. Now the SMRC is proceeding with construction of its regional resource recovery centre (RRRC) on a 12 hectare site.

The SMRC initially called for expressions of interest to supply the processing technology. Ten submissions were received and fully evaluated, and four technology suppliers were selected and invited to submit tenders. Three tenders were received and evaluated, with Bedminster being successful.

The in-vessel composting plant is designed to receive mixed solid waste and biosolids which, through biomechanical means, separates the organic from the inorganic fraction and composts the organic material to a quality that complies with Australian product standards and industry needs. An estimated 80 percent of materials entering this facility from weekly household collections are expected to be recovered as compost.

A separate on-site facility, processing clean green waste from curbside collection is designed to return 100 percent of the material as mulch/soil amendment or compost. This facility began operating at the end of 2001. A third plant has been designed to optimize recovery of commingled recyclables. It is estimated that 85 percent to 90 percent of recovered material will be sold to international markets. The contract for this facility has been awarded to Recycling Company of Western Australia and the facility started operating on-site in July, 2001.

Impact On Landfills

Implementation of the SMRC’s strategy will significantly reduce local governments’ dependence on landfilling with a projected 85 percent reduction of waste to landfill. Currently the region sends 80 percent to 90 percent of its domestic municipal waste to landfill. Three landfills currently operate within the region and would provide 22 years of landfilling at the region’s current waste generation rate and projected population growth. However, several landfills adjacent to the region are planned for closure, so pressure on the region’s landfill space will escalate.

Opportunities to construct new landfills within the region are extremely limited, so new landfills will have to be developed outside the region, significantly increasing transportation costs. This is expected to send gate fees from the current figure of around $50 AUD/ton (just under $26 US) to near $75 AUD/ton (just less than $37 US) in the next five to six years.

At the RRRC, facilities for green waste processing, administration and education became operational in July and December last year, with the Bedminster waste composting facility due for commissioning by September, 2002. When fully operational, the RRRC will process around 200,000 tons of residuals/year. The SMRC’s waste reduction strategy has successfully married community behavior with advanced processing technology and end product utilization — all in one holistic package.

Stuart McAll is with the Southern Metropolitan Regional Council, in Boonagoon, Australia.

### TABLE 1. Waste received per annum (ton)

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commingled recyclables (MRF)</td>
<td>30,000</td>
</tr>
<tr>
<td>Green waste (processing)</td>
<td>30,000</td>
</tr>
<tr>
<td>Mixed solid waste (composting)</td>
<td>109,000</td>
</tr>
<tr>
<td>Biosolids</td>
<td>27,000</td>
</tr>
<tr>
<td><strong>Total Waste Received</strong></td>
<td><strong>197,000</strong></td>
</tr>
</tbody>
</table>

### TABLE 2. Products recovered per annum (ton)

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compost</td>
<td>55,000</td>
</tr>
<tr>
<td>Recyclables</td>
<td>27,000</td>
</tr>
<tr>
<td>Mulch</td>
<td>30,000</td>
</tr>
<tr>
<td><strong>Total products recovered</strong></td>
<td><strong>112,000</strong></td>
</tr>
<tr>
<td>Waste sent to landfill</td>
<td>24,700</td>
</tr>
<tr>
<td>Process mass loss</td>
<td>58,000</td>
</tr>
</tbody>
</table>

**SCAT Model 481 In Action**

**SCAT Model 4832 In Action**

SCAT Engineering, Inc., 202 Lucust, P.O. Box 237, Hopkinton, IA 52237
800 843.7228 or sales@scat.com 317 842.1145

www.scat.com

**Aeration: Seeing Is Believing!**

With SCAT's patented Elevating Face Technology, you can actually see your compost being aerated. You don’t have to imagine it. You can see it!