2012 RECYCLING SYSTEMS EXCELLENCE AWARD
CHECKLIST AND RELEASE

2012 Applications must be submitted to SWANA no later than Friday, April 13, 2012

*** PLEASE NOTE THAT ENTRY REQUIREMENTS HAVE CHANGED ***

Application Checklist (Please make sure the following items are included in your submittal packet)

• Completed release statement (this page), to be scanned and included in digital submission
• Check (made payable to SWANA) or credit card payment for nomination fee (in U.S. dollars) via Excellence Award Nominations
• At least 2 pictures of your operation (may be included in nomination text)
• One copy of your award submittal uploaded using your purchased 2012 SWANA Excellence Awards Application Uploading Instructions
• If you would like to mail your submission, please contact Jesse Maxwell, Program Coordinator, at jmaxwell@swana.org or (240) 494-2237.

Release Statement: I certify that the information provided in this application is accurate and correct to the best of my knowledge. SWANA reserves the right to publish the enclosed information. Nominations become the property of SWANA. My signature gives SWANA the right to reprint or make available for purchase any portion of this submittal.

Signature: ___________________________ Date: 4/13/12
Rethinking and Remaking the 21st Century Recycling Center
San Mateo County, California
EXECUTIVE SUMMARY

Through a five-year and $45 million dollar master plan construction project, RethinkWaste has designed an innovative recycling system that maximizes diversion and return on investment for the 12 member agencies it serves.

The capital investments required for conversion to single-stream recycling and increased transfer station diversion are substantial, but so are the rewards. In the first year of operations, the residential recycling diversion rate has increased 25 percent, organic materials diversion has increased 30 percent, and C&D diversion has been increased to a diversions rate of 77 percent. The increases in material diversion and the on-site operational efficiencies gained through the system improvements are projected to provide a 200 percent return on investment over the life of the recycling system. Numerous building, equipment, and traffic flow improvements have enhanced the way customers, workers and neighbors experience the facility. Notable LEED features include the comprehensive tours and education program, the addition of solar power (which supplies enough power to process the recyclables) and numerous energy and water efficiency features. When all of these master plan improvements are considered together as the Shoreway Environmental Center, the facility serves as a national model for the industry.
Originally, all facets of solid waste collection, handling, processing, and disposal were performed by Allied Waste out of the Shoreway transfer station and collection corporation yard. In 1999, RethinkWaste took the first step toward remaking the recycling system by purchasing the property and facilities from Allied Waste. Between 2007 and 2012, RethinkWaste embarked on a master planning and construction process to create a state-of-the-art collection and recycling system that is one of the best in the nation.

INTRODUCTION

This application for the 2012 SWANA Recycling System Excellence Award is focused on RethinkWaste's five-year effort to update its recycling systems to boost diversion and maximize cost-efficiency. The heart of the recycling system improvements involved a $45 million master plan and construction effort to rebuild the materials recovery facility (MRF) and transfer station buildings at the Shoreway Environmental Center and added single-stream processing equipment.

RethinkWaste has overhauled all aspects of the solid waste handling services program, including remaking the entire collection program, remaking the facility operations services, and developing a focused and sustained public education program.

All of these changes in waste services were developed in concert and launched in January 2011, when a new collection contractor and a new facility operations contractor started service. The 16-acre Shoreway Environmental Center is the hub for all of RethinkWaste’s recycling and materials handling infrastructure and is the home for the 125-vehicle collection fleet and support personnel. The Shoreway Environmental Center is now a national model for innovative recycling and material handling operations, as well as sustainable building practices.
1. DESIGN OF THE SYSTEM

RethinkWaste owns and manages the Shoreway Environmental Center. Under a contract with RethinkWaste, South Bay Recycling operates the MRF and transfer station, and Recology provides collection services. As facility owner, RethinkWaste is responsible for all site improvements.

Design of a State-of-the-Art Recycling System—The Master Planning Process

Prior to the master plan process, the Shoreway facilities consisted of a patchwork of older buildings that were undersized for the diversion activities and traffic envisioned under the new recycling programs. When the SBWMA board of directors committed to updating the entire Shoreway Environmental Center, the agency staff turned to J.R. Miller and Associates and HDR for assistance in the master plan process.

The New MRF Building and Equipment Design

The old MRF building was a converted warehouse structure built in 1953 that housed 15-year-old, dual-stream processing equipment. At the start of the design process, a feasibility study was conducted to consider expanding the old MRF building. After examining the costs to correct the many building deficiencies, including the need for substantial seismic updates, RethinkWaste decided to demolish the 48,000-square-foot building and construct a larger, clear-span structure that could house the new, single-stream processing equipment.

A major challenge to the master planning was to provide continuous recycling and transfer operations during the construction process. A construction phasing plan was established that provided temporary space in the transfer station building to transload dual-stream materials to an independent off-site MRF operator during the 12-month MRF building demolition, new building construction and single-stream equipment installation.

Designing a new MRF building gave the design team a unique opportunity to integrate the equipment layout and building design for maximum operational efficiency and space utilization. A new 71,000-square-foot, pre-engineered metal MRF building was designed concurrently and in sync with the design of the single-stream processing equipment provided by Bulk Handling Systems (BHS). Benefits of this integrated and collaborative design process include:

- Laying out the equipment in long runs along the south and west sides of the building.
- Building large entry and tipping bays for safe and easy vehicle access.
- Centrally locating the tipping area near the scales to minimize on-site traffic flow.
- Building large and easy-access baler-feed conveyor floor pits.
- Locating fiber and container balers near the commodity loading docks.
- Sizing and building adequate material storage areas that do not impinge on processing equipment function.
- Upsizing the power supply so that additional equipment can be added in the future.
- Locating office, worker and maintenance areas to provide convenient and easy access to the equipment.
- Integrating public viewing and equipment tour access with the environmental education area.

The BHS recycling equipment selection process also was completed in a unique way. Instead of being “prescriptive” in the specification process, RethinkWaste encouraged industry creativity during the RFP process by integrating the facility operator selection and equipment design process. This required the future MRF operators to partner with an equipment manufacturer to design the “best system.” As part of the RFP process, RethinkWaste provided performance-based specifications for the equipment that included throughput requirements, residue levels limits, commodity quality requirements and a preference for labor-saving technologies.

The team of South Bay Recycling and BHS designed a 45-ton-per-hour, dual-infeed recycling system (30-ton-per-hour, residential single-stream line and a 15-ton-per-hour commercial
To solve this problem, the design team expanded the facility by adding a 21,000-square-foot addition on the southern half of the building. The combination of the expansion and more efficient use of the space created a 30 percent increase in usable tipping floor area. This has provided the following benefits:

- Solved the public safety problem by providing separate locations for public and commercial vehicles to unload.
- Increased the public tipping area from 6 to 12 slots.
- Virtually eliminated public and commercial vehicle waiting time.
- Allowed more space for vehicle maneuvering and better visibility.
- Provided more space for materials sorting, which has boosted diversion.

During construction of the transfer station, many other features were added that improved the facility function and aesthetics, including:

- Relocating entrances and exits and building a bridge over the transfer station tunnel to reroute traffic to improve traffic flow.
- Matching new building siding and roof to that on the new MRF exterior to unify the appearance of the buildings.
- Creating new equipment maintenance bays and employee areas.
- Adding sustainable features such as additional skylights and translucent wall panels, solar panels, natural ventilation, and upgrades to energy-efficient lighting fixtures.

Additionally, the transfer station renovations were designed with an eye towards future diversion activities. To accommodate a planned mixed-waste sorting system, one wall of the building was built to be expandable so that a new addition can be built without disrupting the structural and seismic integrity of the existing building.

The six-month transfer station construction was performed after the MRF building construction and was completed without significant disruption to waste handling operations.
New Entrance Road and Scale Complex Improve Safety, Traffic Flow
Prior to building the MRF and transfer station buildings, a new entrance road and scale complex were constructed to relieve on-site traffic congestion, to eliminate the problem of vehicles overflowing onto city streets, and to allow the other phases of construction to proceed without requiring the facility to be shut down. The traffic and scale improvements accomplished the following objectives:

1. Simplify facility entry—by replacing the three previous separate access drives with a single driveway entrance for all customers.
2. Make traffic flows and operations safer—by creating one-way directional traffic flow and eliminating intersections.
3. Improve scale processing—by adding a new scale and RFID readers for route trucks; this measure has cut scale transaction in half.
4. Eliminate traffic spill-over onto city streets—by doubling vehicle queuing space.

Since the new entrance and scale complex were constructed, the daily traffic overflow problems have disappeared, avoiding the need for flagmen to direct traffic.

Buy-back and Drop-off Center
The old Public Recycling Center (which included the materials buy-back and drop-off) was located deep in the operational center of the Shoreway complex. This created an unfriendly customer experience that required customers to wait in line at the scales with the large trucks and unload next to heavy equipment operations. By moving the Public Recycling Center to the front of the MRF building, customers enjoy easy access at a streetside location that avoids the scales, in an area that is dedicated to their needs, is not crowded with heavy equipment operations, and is next to the education center and other public access areas of the facility.

Environmental Education Center
In keeping with the RethinkWaste’s core values to promote resource conservation behavior, a unique environmental education component was added to the master plan design that includes tour features at both the MRF and transfer station. Visitors can now walk onto the transfer station tipping floor, tour the MRF sorting equipment via a continuous platform that follows the flow of recyclables and learn about resource conservation through the many museum-quality displays.

Diversion Goals and Environmental Enhancements
The master plan changes implemented by RethinkWaste have boosted diversion and significantly enhanced the environmental benefits of the Shoreway Environmental Center.

The conversion to single stream has had an immediate benefit of increasing residential recycling 25 percent and diverting 8,100 additional tons per year from disposal and into commodities.

The collection program changes and improvements to the transfer station have led to a 30 percent increase in organics materials diversion and an average diversion rate as high as 77 percent for construction and demolition (C&D) material diversion.
Numerous sustainable design features were added into the new buildings at the Shoreway Environmental Center that make it model of how to integrate green features into waste management facilities. These include:

- **The nation's first solar-powered MRF** — In January 2012, 2,700 photovoltaic panels were installed on the roof, which, when the sun is shining, generate a full 100 percent of the MRF’s equipment electricity needs.

- The facility was **submitted to the U.S. Green Building Council for LEED certification in 2012**. Sustainable elements cited in the LEED application include:
  - Shading element/features for reducing interior heat gain
  - Translucent wall panels for increased daylighting
  - Low VOC carpet with recycled material content
  - High solar reflectance roof coating
  - Parking for low emitting/fuel efficient vehicles
  - Low water usage plumbing fixtures used in all toilet rooms
  - Water efficient irrigation system and planned reclaimed water connection
  - Plantings to provide ground-shading to reduce heat island effect
  - Recycled material for interior wall and floor finishes and recycled steel building framing
  - Reuse of 50,000 square feet of the existing transfer station building structure
  - 96.3% of construction, demolition and land clearing waste diverted from the landfill during MRF demolition
  - New facilities constructed on the existing site so that new land was not disturbed

**2. REGULATORY COMPLIANCE**

California has progressive waste diversion and recycling legislation, as well as strict operating standards for solid waste facilities. The process of remaking RethinkWaste’s recycling and solid waste collection and materials handling infrastructure was focused on meeting and exceeding local and state diversion and operational standards.

**Waste Diversion**

Assembly Bill (AB) 939 is a statewide California waste diversion mandate that requires cities to divert 50 percent of their waste stream from disposal. The 12 member agencies that make up RethinkWaste committed significant time and resources to creating state-of-the-art programs and recycling infrastructure to boost recycling. Over the past five years, RethinkWaste quite literally rethought and remade the entire collection and materials handling infrastructure to create a recycling system that maximized diversion.

Specific improvements that have increased diversion include:

- Converting the entire residential and commercial collection program to single-stream recycling has increased program participation and has recovered 30 percent more recyclable and compostable materials in the first year of operation.

- Building the new MRF building included $16 million in new state-of-the-art sorting equipment that recovered 93 percent of the in-feed single-stream material.

- A new Public Recycling Center has attracted more customers and has increased diversion by paying for recyclable material and by accepting a broad range of materials (electronics, batteries, oil, paint and light bulbs, fluorescent tubes, sharps, cooking oil, hardback and soft-cover books, used clothing and household goods) for free.
30% increase in recycling
Conversion to single-stream recycling
Change to cart-based collection systems
Increase from biweekly to weekly collection
3. PLANNING
During its 28-year operating history, the Shoreway complex evolved to process different materials and volumes. These changes were not made in a systematic fashion and culminated in the accumulation of operational inefficiencies and unsafe practices. With changes to the collection programs and the goal of increasing recycling, RethinkWaste used the master plan process to seize the opportunity to remake the existing structures and traffic flows.

Once RethinkWaste made the decision to convert to a single-stream collection system, the next link in the materials handling chain was to improve the processing of the recyclables at the Shoreway facilities. Based on experiences in other communities, the transfer station expansion and remodel has increased organic material diversion and C&D diversion by providing more space for material recovery and reuse efforts, such as:

- Mechanical picking with an excavator and grapple-thumb to recover scrap from C&D before it is shipped to a specialized C&D recycler.
- The addition of a reusable item recovery program with St. Vincent DePaul, whose workers manually sort out household items in good condition for resale in their retail stores.
- Sorting of Inbound waste loads to remove white goods, scrap metal, ridged plastics, electronics, carpet and padding for recycling.
- Dedicated area for customers to self-unload/sort dirt, rock, and concrete for reuse as inert fill.

Overall, the transfer station has achieved a 77 percent self-haul diversion rate, with a 2012 year-to-date diversion rate of 83 percent.

Site Compliance
The state and local municipalities strictly regulate the operations of waste management facilities for compliance with operational standards to protect public health and the environment. Operational factors were thoughtfully incorporated into the new facility to address the following regulatory areas:

- Master plan improvements to eliminate traffic congestion and vehicles stacking onto city streets.
- Bay water protection measures include landscape bioswales near vehicle parking, sediment traps for paving areas near building exits, roof water filters, and containment of all water that comes in contact with waste materials.
- Litter reduction achieved by enclosing all materials storage.
- Bird mitigation measures include elimination of outside storage, installation of roll-up doors at all transfer station entrances and installation of bird-wire in all open areas.

Operational Standards and Compliance
The new Shoreway Environmental Center, like all facilities in California, operates under a permit issued by CalRecycle, the state agency that provides oversight and enforcement of the Public Resource Code for Solid Waste Facilities. During and after the master plan process, RethinkWaste has been in compliance with state standards for operations and has received no violations from the local enforcement agency (LEA) during monthly facility inspections. Other ways the facility ensures that it is a good neighbor and provides a safe experience for workers and customers include:

- Twice-daily litter patrols on site and on surrounding city roads ensure a clean area and protection of water ways.
- Noise, dust, litter and nuisances are mitigated through all materials handling activities occurring inside the facility.
- Clear and well-lighted directional signage and messaging ensure that customers stay safe and divert materials into the proper areas at the facility.
- All facility operations are monitoring and recording using extensive video surveillance, radiation detection equipment, access point control and load checking.
- Regular monthly, quarterly and annual safety training for all employees (e.g., equipment safety, lock-out tag-out, fire safety, hot work, evacuation, slip and fall, confined spaces, etc.)
RethinkWaste Recycling System
San Mateo County, California
Rethinking and Remaking the 21st Century Recycling Center

As mentioned previously, a two-year master planning process was initiated with JR Miller and Associates and HDR, Inc., which had the following goals:

- Increase efficiency and safety for facility operations and all customers.
- Create a MRF building design to accommodate a new large-volume single-stream recycling system and a 30 percent increase in residential and commercial volumes.
- Construct a convenient and safe area Public Recycling Center for buy-back and drop-off customers.
- Increase transfer station handling and storage space to:
  - Accommodate a 30 percent increase in compostable materials volumes
  - Provide expanded tipping floor space for self-haul customers
  - Provide sufficient space for materials diversion activities
  - Provide building flexibility for future transfer station sorting programs/services
  - Eliminate traffic backup overflows onto neighboring city streets.
  - Enhance customer service and safety through improved traffic flows, decreased waiting times and upgraded directive signage.
  - Develop a phased construction strategy to minimize interruptions to daily operations.
  - Justify capital improvements through operational cost savings over time.
  - Achieve LEED certification by incorporating sustainable design features.
  - Provide a first-class education center to promote resource conservation, waste reduction, reuse and recycling.

Site Master Planning—an Effective Process

The team set about developing several concept designs to address the goals of the project. The master planning team prepared and evaluated concepts using project criteria and goals—as concepts were dismissed, new ones evolved. As part of the master planning process, RethinkWaste met with the city of San Carlos Planning Department and proposed different architectural styles. After considering several design options, the city selected a high-tech architectural style that blends in with its Silicon Valley neighbors. (Further discussed in the Public Acceptance, Appearance and Aesthetics section).

At least 18 different conceptual layouts were considered until a final site master plan was selected. All of the above-listed goals were met through the master planning process. The final site master plan was presented to the RethinkWaste board of directors along with a preliminary construction cost. The board adopted the plan in April 2007, with construction beginning in October 2009.

Construction followed three distinct construction phases that provided uninterrupted operations during the 22-month construction project:

- **Phase I** – Traffic and scale reconfiguration
- **Phase II** – MRF and transfer station building construction
- **Phase III** – Single-stream equipment installation
4. PERFORMANCE, ECONOMICS & COST-EFFECTIVENESS

The new Shoreway Environmental Center is a showpiece of efficient design. Embedded in the design process is the concept that the capital investments in Shoreway should pay for themselves through operational savings over the life of the facility. Because the master planning process provided the opportunity to evaluate the overall site function from an integrated approach, the design team was able to think creatively about designing the most efficient recycling system.

Important features of the Shoreway Environmental Center have been described in detail in prior sections. The purpose of this section is to highlight the performance and economics of these features in context with their design goals. The facility design incorporated numerous elements that resulted in improved operational efficiency.

**Traffic Flow Efficiency**

Traffic was simply not flowing at the old facility. Since the master plan traffic improvements have been in place, there has been no vehicle overflow onto city streets. The reduction in wait times for collection and transfer trucks at the scales and to enter MRF and the transfer station has created a cost savings estimated at approximately 4,000 labor hours, or $400,000 annually.

**Equipment and Operational Design Performance**

MRF and transfer station buildings were designed to maximize operational efficiency, which translates into the several forms of savings presented below:

**Equipment Downtime, Maintenance and Clean-up** – Since catch-up for equipment downtime is usually done on overtime, downtime is costly. Since the day the system was started on April 4, 2011, the BHS equipment has not experienced more than a half-day of continuous downtime, with infrequent equipment downtime episodes. Equipment preventative maintenance and cleaning had averaged one to one-and-a-half hours per day. The system “drops” little material on the floor, so facility cleanup is minimal. Dust generation and cleaning are greatly reduced by the system’s dust collection and misting system.

**Single-Stream System Sorting Efficiency** – Most single-stream plans average one ton per labor hour (e.g., a 25 ton-per-hour system needs 25 sorters to operate). With improved sorting precision and the highly automated sort lines, the Shoreway MRF operates at over two tons per labor hour. By improving on the industry average, the recycling system is able to save 52,000 labor hours, or $520,000 annually.

**Single-Stream System Sorting Effectiveness** – For the first year of operation, the MRF has maintained an average residual rate of 7 percent. This is well below the industry average of 15 percent and below the 10 percent design goal for the facility. Based on bettering the industry average recovery rate by 8 percent (15% minus 7.0%), the MRF is recovering 5,200 additional tons. With a combined commodity sale price and disposal savings of over $200 per ton, this translates to approximately $1,040,000 in savings per year.

**MRF Residue Conveyor Bridge & Scale** – There are roughly 17 tons of MRF residual generated each day. This material is conveyed to the transfer station without the use of vehicles. This results in savings of four roll-off trips per day, totaling approximately 1,040 trips, or $104,000 per year.

Optical sorting of plastics.

Bridge conveyor for MRF residue.
Reverse Vending Machines at the Buyback Center – The automated reverse vending machines at the buyback center provide customer convenience. Because they are integrated into the single-stream system, the containers do not need to be forklifted to the MRF in-feed. This saves two 15-minute forklift trips per day, equaling 130 labor hours, or $13,000 per year.

Building Design Performance
It is not possible to quantify the potential benefits of a workforce made happier by a better work environment, but increased productivity, decreased turnover, reduced injuries and other benefits have been presented by sociologists as tangible benefits from better workplace design. Quantifiable benefits from the new buildings primarily revolve around energy savings.

Solar Array – With 2,700 panels producing 230 watts each, the Shoreway Environmental Center is able to power the 650-kW MRF sorting equipment using only solar power. Since the $2,500,000 capital cost for the solar system was covered through a public-private power purchase agreement (PPA), RethinkWaste has no direct capital cost for the system and the $100,000 per year in power savings accrue to the benefit of the RethinkWaste and its member agencies.

Indoor Lighting – The combination of 130 new skylight panels, the large translucent wall panels on the building sides, the high-efficiency metal-halide lights, and a photo-eye control system that controls the lights has helped reduce the power needed for artificial lighting by 50 percent, or a savings of roughly $32,600 per year.

Truck/Trailer Efficiency
The transfer truck payloads have increased from 22 tons per load for all materials to 25.5 tons through the use of new super-light trailers operated by South Bay Recycling. When considered on an annual basis, this translates to approximately 1,500 trips or $535,000 saved per year.

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Increase in Recycling as Compared to Disposal

Recyclable Materials Increase – A 25 percent increase in residential recycling was achieved by the converting the recycling collection and processing system to single-stream recycling. This was accompanied by a corresponding decrease in solid waste generation. This translates to approximately 11,700 additional tons, or $2,340,000 per year in commodity revenues (based on $200 per ton) and disposal avoidance.

Organics Diversion Increase – A 30 percent increase in organics diversion was achieved through the addition of food waste to residential organics collection and weekly cart-based collection. Since the Bay Area cost of composting is similar to the cost of disposal, RethinkWaste did not expect savings from this program. However, by the measure of increased diversion, the program has been a tremendous success and diverts an additional 23,000 tons of materials per year—for the first time ever, more residential organics were collected in 2011 than solid waste.

C&D Diversion Increase – The construction of additional self-haul floor space at the transfer station enabled new sorting and recovery efforts to be implemented, which have resulted in additional waste diversion. Since the Bay Area cost of C&D processing is similar to the cost of disposal, RethinkWaste did not expect savings from this program.
Summary of Recycling System Performance

A total of $45 million dollars in capital was invested in the equipment, building, site and programmatic elements at the Shoreway Environmental Center, described in this application. The Performance Economics Summary table below attempts to total the economic benefits offered by performance enhancements made by RethinkWaste. Using appropriate depreciation schedules (life), the initial cost of the $45,000,000 in capital improvements is computed to arrive at a yearly cost of $2,058,333.

When this amount is compared to the annual benefit of $4,263,000 (shown in the Performance Economics Summary table), it is very clear that the operational saving from the recycling system improvements are a great return on investment. In fact, when the cost of the capital improvements are compared to the total lifetime benefit of $80,512,000, the recycling system shows a 200 percent return on investment.

5. UTILIZATION OF EQUIPMENT/ SYSTEMS AND TECHNOLOGIES

RethinkWaste purchased the $16 million single-stream recycling equipment from BHS as a turnkey system. The equipment vendor selection was based on several factors, including:

- Price of the system.
- Efficiency and effectiveness of the system at materials recovery.
- Quality of the materials and construction.
- Proven capabilities of similar systems in other locations.
- Company’s ability to deliver and install a turnkey system in six months.
- System controls and reporting capabilities.

As mentioned, the equipment design and vendor selection was included as part of the Facility Operations Contractor RFP process. The goal of integrating the equipment design with the operator selection was to have the MRF operator intimately involved in the recycling system design. In this way, RethinkWaste leveraged the technical expertise of the RFP responders, and the agency was able to share the responsibility for equipment design with the other stakeholders involved in facility operations.

Instead of being prescriptive about the equipment design, RethinkWaste gave equipment vendors performance parameters upon which to design a single-stream system. Specifically, the system was to provide:

- A separate in-feed for residential and commercial single-stream.
- Sorting throughput capability of 30 and 15 tons per hour of residential and commercial single-stream, respectively.
- Ability to meet rigorous product quality specifications.
- Capacity for two balers—one for fiber and one for containers.
- Extensive use of technology to maximize recovery and labor efficiency.
- A maximum residue level of 10 percent.

BHS was selected to design, manufacture and install the single-stream system because the company excelled in meeting all categories. Now, after a year of operations, the system is performing exactly as designed and expected. Unique system features include:

- Separate residential and commercial sort lines to facilitate the recovery of bulky items (e.g. wood, scrap metals, large plastic items) for recycling.

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### PERFORMANCE ECONOMICS SUMMARY

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<td>$46,800,000</td>
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<tr>
<td>Increase Organic Tons</td>
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<td>Increase C&amp;D Tons</td>
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<td><strong>$4,263,000</strong></td>
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RethinkWaste Recycling System
San Mateo County, California
Rethinking and Remaking the 21st Century Recycling Center

- Metering bin and large, 12-man presort stations on in-feed.
- Tight connections to minimize system spillage and waste.
- Glass breaker and removal at first (OCC) screen to protect downstream equipment from abrasion.
- Four NRT optical plastic container sorters, which allow the entire container line to be operated with only six sorters.
- Three-level container sort platform to minimize equipment footprint.
- Two separate sort lines for mixed paper and newspaper.
- Fully integrated pneumatic film collection and baling system for recovery of film at all sort stations.
- Hoods and dust collection system with four-unit bag house system located at all fiber screens.
- Split conveyor container QC stations to allow each sorter to QC multiple streams.
- Container line bypass system that allows fiber sort system to operate in the event the container line is down.
- Two-ram baler for containers and high-speed, single-ram baler for fiber baling.
- Dual-baler feed capability, so all materials can be fed to either baler, allowing for full system to operate in case of baler failure.
- Large sub-grade conveyor pits for easy cleaning and belt maintenance.
- Aspirators and air classifiers remove shredded fiber from broken glass stream and residue.
- Two post-sort stations to sort any recyclables from the plant residue line.
- Integrated system platform to second floor of office/tour area for easy access.
- Climate-controlled control room centrally located on second level next to sort lines.
- Auxiliary system control touch screens located at presort station.
- 26 video cameras and DVR system for monitoring system performance remotely.
- Internet-connected system controls so entire sort system can be operated and monitored from BHS headquarters.
- Easy-to-use touch-screen user interface, data recording and reporting software system.
- Approximately 200 high-efficiency motors and extensive use of variable frequency drives for power conservation.
- Large-capacity fiber and container storage bays to reduce need to switch between different materials at balers.
- Preventative maintenance software diagnostic tool that anticipates potential motor/gear/conveyor failures by monitoring electrical supply current.
- Color coordinated painting of equipment systems to provide easy identification by tours.

Integration of MRF Equipment

The MRF residue is conveyed to the neighboring transfer station building by a conveyor bridge that deposits the materials on the tipping floor for disposal. This system saves trucking time by shuttling material between the buildings and through an integrated conveyor belt-scale that instantaneously records the weight of residue materials.

Additional labor-saving integration is provided by the automated reverse vending machines located at the public recycling center (buyback and drop-off center) for customer convenience. The two reverse vending machines work like an ATM and provide payment to customers as they feed in beverage containers. The machines are fully integrated into the container line so that they feed into the sort system automatically.

A Solar-Powered MRF!

As described in the Design of System section, the MRF and the transfer station roofs are covered by a solar array of approximately 2,700 solar panels. On a sunny day, these panels generate 650 kilowatts of AC power, which equate to the average power consumption by the BHS single-stream sort system.
High Performance Tractor Trailers

Twenty tractor trailers make approximately 60 trips per day hauling materials from the transfer station to the landfill, to composting facilities and to C&D processors. Using older, heavier truck and trailer rigs, Allied Waste was averaging 22 tons per load for all materials. South Bay Recycling provides this transportation service using new, super-light, custom-designed stainless steel trailers that are able to achieve an average payload of 25.5 tons. When this 15 percent increase in payload is multiplied over South Bay Recycling's 10-year facility operations service contract, the savings in diesel, greenhouse gas emissions, reduced traffic congestion and cost are significant.

Air Supply/Ventilation – In the production areas of the buildings, an air handling system with ducts distribute external air into the buildings. To augment this system, roll-up doors and roof hatches provide convective air flow so that odors, heat and humidity do not build up in the buildings. The office and employee areas are located within the footprint of the MRF and transfer station buildings but have HVAC systems that are controlled independently from the larger building.

Lighting and Shading

Skylights and Translucent Wall Panels – Skylights and large translucent wall panels were used extensively throughout the MRF and transfer station with the goals of adding more natural lighting and reducing the energy cost of artificial lighting. The natural light is distributed evenly throughout the building interiors, giving the spaces a clean “museum” feel.

Artificial Lighting Control – Photo-eye lighting controls are used to monitor the light levels inside the buildings. On sunny days, the combination of the translucent wall panels and skylights supply enough natural light that the photo-eyes shut off the lights during much of the day.

Shade Features in Office Area – Shade features overhang the office windows and education center rooms and reduce direct sun entering the building. These features reduce glare and excessive solar heat gain that would increase the cost of building cooling.

Floor-to-Ceiling Glass Windows – To provide nice views of the facility operations and create a better office environment for workers, floor-to-ceiling windows are located throughout the MRF offices.

Noise

Waste handling activities create a lot of noise. To keep noise from moving off-site, all heavy equipment activity and materials sorting is performed inside buildings. To mitigate noise exposure to the employees at the MRF, hoods have been placed on the screens to contain both noise and dust. Acoustic sound walls have been built around the baler and other hydraulic pumps/motors. For customers using the public recycling center, masonry walls block the highway noise and create a protected area for materials drop-off.
Site Traffic and Other Safety Concerns

Improving traffic and vehicle safety were major concerns going into the master planning process.

Traffic Safety at the Transfer Station – The expansion of the transfer station was largely premised on the need to separate large commercial collection vehicles from small, public self-haul vehicles. By providing a dedicated and separate public tipping area, the risk of collision or personnel injury has been greatly reduced.

Traffic Inbound/Outbound Flow – Phase I of master plan construction addressed traffic safety and vehicle stacking by moving the scales deep into the property, adding a third scale lane and creating more inbound scale lanes. This has eliminated vehicle overflow onto the city streets and the associated risk of traffic accidents. Additionally, major entrances and exits to the facility were designated for inbound or outbound traffic to reduce the potential for head-on collisions.

Traffic Flow On-site – Traffic flows were designed to minimize vehicle crossings after vehicles pass the scales and move to their destinations. Large trucks travel in separate lanes from public vehicles. Directional signage and pavement striping guide customers to their destinations. For efficiency and safety, thought was given to minimizing the distance that vehicles needed to travel once on site. Worker and visitor walkways were striped, and major crossing points and a concrete-embedded, flashing-light crosswalk system was installed where public tours cross exiting traffic.

Public Recycling Customers – The public recycling center was relocated from its original location in the back of the facility to the front of the MRF building. This allows customers to pull into the center without adding to the scale traffic or encountering large vehicles inside the facility.

Fall Protection – At the transfer station, tractor trailers are top-loaded through floor pits. An overhead fall protection harness system was added so that workers are protected from falling into the trailers during loading. At the MRF, extra-wide catwalks were constructed with continuous railings to protect the workers and visitors.

Sort Equipment Safety/OSHA Compliance – OSHA was called for a voluntary inspection of the MRF sorting equipment soon after start-up to provide safety suggestions. The equipment was found to be largely compliant, and supplemental equipment guarding and gates at platform stairs were added for extra precaution in areas where public tours are given.

Fire Suppression with Foam System – The MRF and transfer station fire alert and monitoring systems were all upgraded during construction, and a unique foam-based fire suppression system was added to the regular overhead sprinkler system to provide an extra level of fire safety.

Shoreway Employees Training and Safety Program – RethinkWaste stipulated that South Bay Recycling provide comprehensive and ongoing training of its employees. This training includes monthly, quarterly and annual reviews of equipment operations and health and safety trainings that are consistent with California standards.

7. PUBLIC ACCEPTANCE, APPEARANCE AND AESTHETICS

As discussed in the Design of System and Planning sections, the Shoreway master planning process was attentive to the needs of the many users of the facility. The Shoreway Environmental Center is in a highly visible location along Highway 101, approximately 100 feet from the highway. This highway is the major thoroughfare in Silicon Valley, and thousands of people travel the road daily and view the front of the facility. Given the extreme visibility of the facility, San Carlos and the RethinkWaste board were interested in creating an attractive building. There are several high-tech neighbors (e.g., Oracle, Nikon) that have polished office exteriors, and there was a substantial design effort to create an office-compatible exterior.

Design features selected for the exterior include:

- Large glass sections (including faux windows) with brushed aluminum frames.
Architectural wings walls, level parapet caps and overhanging shade features.
- Sleek metal panel skin with large wall sections of translucent polycarbonate plastic.
- Complete re-skinning of the transfer station with metal panels that match the MRF to give the facility a unified architectural impression.
- Masonry block walls and landscaping along the roadway to screen the working areas.
- Facility scales located at the back of facility to conceal truck stacking.

RethinkWaste was recognized as a winner of a 2011 Business Beautification Award for new construction for its Shoreway Environmental Center at the San Carlos Chamber of Commerce Recognition Gala on January 19, 2012.

In addition to pleasing aesthetic design, the RethinkWaste board was interested in using the high visibility of the facility for promotion. Large LED back-lit signs with the words Shoreway Environmental Center and Education Center were installed at the front of the MRF and transfer station buildings. At the street level, monument signs are located along the frontage road so that visitors and customers can identify the facility and appropriate entrances.
The largest publicly-owned and -operated MRF in North America, the SBWMA Shoreway Environmental Center (SEC) is located in San Carlos, California, “The City of Good Living,” which is located approximately halfway between San Francisco to its north and San Jose to the south.

Built and owned by the South Bay Regional Waste Management Authority (RethinkWaste), the brand-new 70,200-square-foot MRF replaced the old Shoreway Recycling and Disposal Center to better serve the approximately 92,000 single-family households and 10,000 businesses that feed the SEC.

RethinkWaste is a joint powers authority with 12 member agencies (the cities of Belmont, Burlingame, East Palo Alto, Foster City, Menlo Park, Redwood City, San Carlos and San Mateo; the towns of Atherton and Hillsborough; the County of San Mateo; and the West Bay Sanitary District) in San Mateo County, which is also where the facility receives its single-stream materials from.

The recycling system for the $26 million MRF was designed, manufactured and installed by Bulk Handling Systems, “designed together for maximum efficiency and recovery,” according to RethinkWaste. It processes approximately 245 tons per day, on average, handling 60 tons of containers and 185 tons of fiber daily.

The facility is being run under a 10-year contract by South Bay Recycling and the materials processed at the center are collected by the area’s franchise hauler, Recology San Mateo County.

When the SEC was built, it was intended to be “California’s greenest recycling center and transfer station,” and thus included numerous environmentally-friendly features, including a roof-mounted photovoltaic system; a reflective, “cool” roof; numerous windows, translucent panels and skylights for passive lighting; and a rainwater capture system. The building was also built using a prime-fed materials, with recycled content as well as a comprehensive construction waste management plan diverted 95 percent of construction waste and debris from the landfill during construction of the new buildings, according to RethinkWaste.

In addition to the MRF, the facility houses an Environmental Education Center which has “museum-quality exhibits” promoting waste reduction and recycling to visiting schools, community groups and the general public.

The SBWMA Shoreway Environmental Center runs one shift per day per week (Monday to Thursday), and employs 38 workers (22 sorters and eight operators, with eight for operational support), plus administrative employees.

*Know of a North American MRF that you feel Resource Recycling readers should know about? If so, e-mail your recommendation, with high-resolution pictures, to dylan@resource-recycling.com, and your facility may just be highlighted in a future “MRF of the Month” column.

**MRF of the Month**

**SBWMA Shoreway Environmental Center (SEC)**

**Location:** San Carlos, California

**Start-up date:** April 4, 2011

**Number of processing lines:** Two – one residential, one commercial

**Throughput:** 30 tons per hour for residential, 15 tons per hour for commercial

**Tons of material processed in 2011:** Approximately 65,000 tons

**Residue rate:** 7.5 percent

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New recycling machinery makes it easier for residents to be green

By: Niko Kyriakou | Examiner Staff Writer | 08/06/11 4:00 AM

When it comes to saving the planet, convenience is everything.

Rethink Waste’s recycling plant in San Carlos, which reopened in January, now uses high-tech machinery to separate paper, glass and metal so customers can toss materials into a single bin.

Since reopening, there has been a 34 percent increase in glass, metal, paper and plastic recycled from the 92,000 households in Rethink Waste’s service area, said operations manager Hilary Gans. That increase coincides with the switch from customers using two 18-gallon cartons — one for glass, plastic and metal containers, and one for paper — to a single 64-gallon blue bin for all recyclables.

Pat Gray, a resident of Burlingame, said the new system makes recycling easier.

“We used to have separate bins, but we just have one great big bucket and all the stuff goes in it,” she said.

The amount of trash diverted from the landfill also is up, from 50 percent in 2010 to 66 percent since January, said Mario Puccinelli, general manager of Recology San Mateo County, which Rethink Waste hires to transport garbage on its new fleet of 200 trucks. “Without the new sorting machinery, none of this would be economically possible,” said Gans.

Rethink Waste — a joint-powers authority serving 12 San Mateo County cities, including Burlingame, Redwood City and San Mateo — spent $16 million on the new sorting machines at its revamped Shoreway Environmental Center.

The 70,000-square-foot sorting station is packed with a pin-ball-machinelike network of humming conveyor belts, multicolored chutes and workers who sort recyclables into neatly packaged bales destined to become new products.

The machines, custom designed for Rethink Waste by Bulk Handling Systems, do 90 percent of the sorting, while some 50 workers — many of them hired through the county’s Vocational Rehabilitation Services — do the rest.

There are numerous skylights throughout the new building that save on lighting and shine a
hazy glow on the plant’s prize machine: a $250,000 bright-red device larger than a pickup truck that does the work of 20 men.

The machine uses infrared scanners to identify and separate each different type of plastic. As containers speed toward the machine’s gaping mouth along a black, tonguelike conveyor belt, a video camera analyzes them before blasting air that pushes plastic bottles into separate chutes.

Elsewhere, a massive magnet draws up cans and other metal, and a series of whirring disks fling paper upward, allowing only heavier containers to slip through narrow openings below.

Rethink Waste began the $46 million renovation of its 16-acre complex three years ago with the aim of capturing more recyclables, said outreach manager Monica Devincenzi. The sorting station was rebuilt for seismic safety while the old traffic-ridden public drop-off center has been expanded to make visiting the facility to dispose of recyclables, batteries or paint more convenient.

Some 50 trucks take trash that accumulates from sorting to the landfill in Half Moon Bay, and yard trimmings are brought to composting plants.

The environmental center’s new structures will soon be topped with solar panels capable of generating 45 percent of the complex’s energy needs and saving $2.1 million in energy costs over the next 20 years, said Devincenzi.

Late last year, Rethink Waste also started accepting food waste along with yard waste in its green composting bins. That has helped increase the amount of organic material recycled by 30 percent since January. Businesses need to be more careful not to put plastic bags in the bins, however, and should use bioplastics available at Costco or Safeway, Devincenzi said.

Rethink Waste, which is also called the South Bayside Waste Management Authority, will hold a grand reopening of its plant and recycling education center in September.

**Plastic bags the bane of recycling sorters**

Rethink Waste’s state-of-the-art facility can work wonders when it comes to sorting recyclables — but even the primo machines need a human touch.

Workers who pick nonrecyclables off the machines’ conveyer belts say they’ve found basketballs, sex toys, pillows, furniture — even a hog’s head.

Yet the worst thing for the machines is film plastic — especially plastic bags, which wrap around the rotating gears and cause the machines to shut down at least once a day, said plant operations manager Hilary Gans.

Other no-nos include ceramic cups, shards of which can jam machines, and items made from various types of plastic such as toys or remote controls.

Although the machines won’t choke on food-soiled paper, it’s essentially useless for recycling since recyclables must be reasonably pure before incineration lest structural weaknesses occur in remade products, said Rethink outreach manager Monica Devincenzi.

Once sorted, the plant compresses recyclable materials into aluminum, tin, clear plastic, colored plastic and various paper cubes that weigh about 1,200 pounds each. These are then sold to be used to make new products.

The metal is mostly sold to domestic markets while the paper is shipped out of Oakland’s port,
primarily to China, where it sells for around $200 a ton, said Gans. Such paper bales are the largest export from many U.S. ports, Gans said.

Rethink Waste makes about $100 million a year selling recycled materials. That money goes to reducing the cost of trash handling and disposal.

**Trash talk**

**Money in, money out**

$100 million: What Rethink Waste makes in a year selling recycled material

$46 million: Cost of renovations and machines (funded with a $56 million bond issued by Rethink Waste)

$16 million: Cost of machines

45 percent: Energy needs supplied by solar panels planned for Shoreway rooftops

$2.1 million: Energy cost savings from solar panels over the next 20 years

**Recent improvements**

30 percent: Household recycling increase since January

16 percent: Increase from last year in trash diversion from landfills

93 percent: Recyclable materials captured after coming into plant

**Rethink Waste’s Shoreway Environmental Center**

- Serves 92,000 residences and 10,000 businesses in the cities of Belmont, Burlingame, East Palo Alto, Foster City, Menlo Park, Redwood City, San Carlos and San Mateo; the towns of Atherton and Hillsborough; and the West Bay Sanitary District
- Six days a week the public can drop off garbage, compost, recyclables, waste oil, oil filters, electronics, batteries, paint, scrap metal and syringes, among other items, at 225-333 Shoreway Road in San Carlos.

**Don’t try to compost or recycle these items**

Film plastics such as plastic bags, porcelain, food-soiled paper, items constructed with multiple materials

*Sources: Rethink Waste, Recology of San Mateo County*

nkyriakou@sfexaminer.com

January 5, 2012

Mr. Kevin McCarthy  
Executive Director  
SBWMA / RethinkWaste  
610 Elm St., Ste. 202  
San Carlos, CA 94070

Dear Don:

Congratulations to you and the South Bay Waste Management Authority/RethinkWaste as a winner of a 2011 Business Beautification Award for new construction! These awards are presented jointly by the City of San Carlos and the San Carlos Chamber of Commerce. A formal presentation takes place at our annual Recognition Gala, held this year on January 19 at the Hotel Sofitel San Francisco Bay. Your business should have received an invitation in the mail.

We sincerely hope you or a representative can attend the gala to receive the award. If you cannot find the invitation, you can go on our website, www.sancarloschamber.org, for information and to reserve a dinner seat(s). Please let us know if we can expect you.

Congratulations again for contributing to making San Carlos an attractive place to do business.

Sincerely,

Dave Bouchard  
CEO

P.S. If you have a professional photo of the outside of your building and can forward it to us, we would like to use it in our media presentation that evening.
RethinkWaste celebrated the grand opening of its Shoreway Environmental Center, San Carlos, Calif., Sept. 27, 2011, inviting its board of directors and staff, local and state officials and community leaders to view the newly transformed facility. The Shoreway Environmental Center features a new 70,200-square-foot material recovery facility (MRF), which is home to a dedicated Environmental Education Center. The Shoreway campus also includes a 76,780-square-foot transfer station building, which enables a 30,000-ton-per-year increase in organic materials from local residents and businesses, a new Public Recycling Center, where residents can redeem CRV (California redemption value) bottles and cans and drop off other recyclables, a new scale house and related traffic enhancements.

Kevin McCarthy, executive director of RethinkWaste, says each of these enhancements was part of a master plan of capital improvements designed to enhance diversion capabilities at the integrated facility, improve customer convenience and safety through redesigned traffic flow and provide long-term transfer and processing capacities.

San Carlos-based RethinkWaste (the legal name of which is the South Bayside Waste Management Authority), owns the Shoreway Environmental Center, which receives all of the residential and commercial recyclables, organic materials and solid waste collected in the service area by Recology San Mateo County. South Bay Recycling (SBR) operates the facility for RethinkWaste, which is a joint powers authority made up of 12 member agencies (Atherton, Belmont, Burlingame, East Palo Alto, Foster City, Hillsborough, Menlo Park, Redwood City, San Carlos, San Mateo, the County of San Mateo and the West Bay Sanitary District) in San Mateo County. SBR is a joint venture between the California companies Community Recycling & Resource Recovery Inc. and Potential Industries Inc.

Need for Expansion
McCarthy says the introduction of single-stream recycling services necessitated the expansion of the Shoreway Environmental Center. "With the rollout of new residential and commercial
single-stream recycling services planned for Jan. 1, 2011, we needed new processing equipment to handle the expected 30 percent increase in tonnage and to handle a commingled stream of recyclables versus the previous dual-stream [program]," he says.

The pre-existing 48,000-square-foot MRF building, which was originally built in 1968 and retrofitted into a MRF in the early '90s, was inefficient in terms of building layout, McCarthy says. "The new MRF building is 70,000 square feet and is substantially free span, allowing for a more efficient use of floor space."

![Shoreway Environmental Center visitors enter the MRF through the Environmental Education Center (left) and are greeted by RethinkWaste's mascot (middle) before viewing museum-quality displays (right).](image)

**LEEding through Example**

The Shoreway Environmental Center also features a number of green-building attributes. "As a public agency dedicated to promoting resource conservation and recycling, we wanted to ensure that our facility reflected our core sustainability goals and values," McCarthy says. "We have incorporated dozens of LEED (Leadership in Energy and Environmental Design) and sustainable design features as part of the entire facility master plan," he adds.

Among the notable green-building features are:

- All new buildings feature white (cool) roofs, which cool the surrounding area by reflecting the sun's heat instead of absorbing it.
- A roof-mounted photovoltaic system to be installed this fall will generate renewable energy for the Shoreway Environmental Center.
- Windows, translucent panels and skylights increase natural light and provide a connection with the outdoors.
- Building materials contain post-consumer recycled content.
- The construction waste management plan diverted 95 percent of construction debris from the landfill during construction of the new buildings.

"Many of the features noted above will save us money over the life of the project," McCarthy says. "Our end goal is to

**EDUCATIONAL INITIATIVE**

According to RethinkWaste, its new Shoreway Environmental Center in San Carlos, Calif., is "a national model for sustainable building practices and innovative recycling and material handling operations" and includes an Environmental Education Center that offers tours of the MRF.

This component of the Shoreway Environmental
also achieve a LEED certification for the facility."

Single-Stream Switch
In a press release announcing the event, RethinkWaste boasts that its new MRF features "the most technologically advanced single-stream processing equipment in the country."

That system, worth roughly $17.6 million, was supplied by Bulk Handling Systems (BHS), Eugene, Ore., and includes a 30-ton-per-hour residential single-stream system and a 20-ton-per-hour commercial system. According to BHS, they incorporate "the latest in patented screening, air and optical technologies to ensure maximum recovery and purity of recyclables at high throughput rates."

McCarthy says the system "has dramatically improved the efficiency of the operations and produced exceptional operational results." The system, which has been in operation since May 2011, has a residue rate of less than 8 percent.

"The equipment selection decision was made as part of, not separate from, the selection of the facility operator," McCarthy says. "Of the maximum available points of 500 for evaluating the facility RFP (request for proposal) responses, 75 points, or 15 percent, was allotted to 'MRF installation and startup proposal (MRF equipment design, installation and startup.)' The key criteria used to evaluate each 'MRF proposal' were the design of the single-stream system, functionality and capabilities of the system (e.g., throughput, effectiveness at sorting materials, labor conservation, etc.), separation efficiency, level of detail, installation plan and company's past experience."

With the change to single-stream collection of recyclables, additional materials also were accepted for recycling. McCarthy says a wider range of plastic containers, excluding plastic bags, and scrap metal items weighing less than 10 pounds, excluding cable, wire, chain, banding, hand tools and automotive parts, are now welcome.

Funding Fundamentals
The capital improvements to the Shoreway Environmental Center cost $47 million. McCarthy says RethinkWaste analyzed six financing options, including variable rate

Center is a source of pride and excitement for RethinkWaste and features what the agency describes as "museum-quality exhibits promoting resource conservation and RethinkWaste programs."

Kevin McCarthy, executive director of RethinkWaste, says the education center "was created to deliver the unifying message behind all the work we do at RethinkWaste: the message of resource conservation." He adds, "Our education center will teach this message to school children to provide that foundational knowledge of why waste reduction, recycling and composting matter. This education center also fills a critical void in our county, as no such type of education center previously existed."

IN CASE YOU WERE WONDERING...

RethinkWaste has compiled the following information on its Shoreway Environmental Center's material recovery facility (MRF) in San Carlos, Calif.:
financing and hybrid options of fixed and variable rate debt, before deciding to use tax-exempt bond proceeds and a member agency loan. "The actual approval of the bond sale occurred on July 23, 2009," he says. "We chose the tax-exempt revenue bonds as the most conservative, risk-averse and proven financing vehicle available."

McCarthy says RethinkWaste used many best practices in its procurement effort, such as including MRF equipment design and installation as part of the scope of services within the facility operations RFP. "In our case, this resulted in seven companies responding to our RFP, with several of the responders submitting multiple equipment design options," he says. "This drove innovation by the potential facility operators and the equipment manufacturers they partnered with."

RethinkWaste set performance standards for the single-stream equipment specifications in the RFP rather than prescribe detailed equipment features and layout. The agency also looked for detailed system test requirements and product quality standards from bidders.

Potential proposers were engaged to review an early draft of the facility operations RFP, McCarthy says. "This was important for early buy-in by the proposers, established trust between the proposers and the JPA (joint powers authority) and provided valuable feedback in the drafting of the final RFP documents."

The selected facility operator, SBR, and its selected equipment manufacturer, BHS, were engaged in the final design of the single-stream equipment that RethinkWaste purchased, he adds.

Finally, McCarthy suggests that public entities include provisions in their facility operations agreements to minimize inbound contamination from franchised loads of recyclables, revenue guarantees and sharing agreements and a structure to reduce plant residue.

This bidding process resulted in a new MRF that has helped to invigorate San Mateo County’s recycling program. "We are excited to unveil this new community asset that provides critical green infrastructure to support financial sustainable and environmentally sound programs for our service area of over 450,000 residents," McCarthy says.

- The MRF receives 500,000 pounds of recyclables per day, which is equal to the weight of 50 elephants.
- The amount of paper recovered for recycling each year at the MRF saves 817,700 trees. Each year, these trees absorb more than 20.4 million pounds of carbon dioxide, offsetting emissions from nearly 1,800 cars during that same time.
- The amount of glass recovered for recycling per year at the MRF saves enough energy to run 1,100 100-watt bulbs or 5,500 compact florescent bulbs for one year.
- The amount of aluminum recovered for recycling per year at the MRF saves enough energy to run 76,800 computers for three hours or to power a home for more than one year.
- The yearly energy savings from recycling plastics recovered at the MRF equals about 17.5 million kilowatts, enough energy to power 1,650 households for one year.
- If all the conveyor belts used in the MRF were laid end to end, they would be nearly 1 mile long, which is longer than the middle span of