



October 20, 2017

Public Comments of EcoHub LLC  
on the Proposed RFP Responses to the  
**“PHASE II REQUEST FOR PROPOSALS FOR THE FINANCING, DESIGN, CONSTRUCTION,  
OPERATION, AND MAINTENANCE OF A SOLID WASTE MANAGEMENT PROJECT”**

**Summary:**

**CTDEEP must reissue the CSWSP RFP on an accelerated basis.**

**None of the submitted bids meet key elements of the RFP and the one bidding team that can actually deliver on the requirements was disqualified on a false premise.**

**Failure to get this right will commit the State of Connecticut to uneconomic, dirty, and regressive waste management practices for 30 years, completely undermining the forward-looking Sustainable Material Management Plan that was unanimously approved by the legislature, with the express purpose of eliminating the State’s reliance on incineration as its principal waste management strategy.**

**Current proposals in response to the Resource Rediscovery RFP:**

- **Fail to achieve the State Diversion Goals or Maximize Material Recovery**
- **Ignore current market reality resulting from China’s import ban of recovered materials**
- **Fail to maximize economic benefits and/or will result in unacceptable economic and social costs**

In multiple ways, outlined below, the three finalist responses or the respondents themselves fail to fulfill one or more of the following requirements of the RFP, as well as the objectives of Connecticut state sustainable materials management policy:

- None of the proposals meet the State diversion goal of 60% using the State’s definition of diversion;
- All of the proposing teams are lacking in necessary management or technology experience or solution required to fulfill the goals of the RFP.
- None of the proposals generate nearly the potential jobs that could be created from a full and effective processing of the discarded material stream.
- Connecticut is missing the opportunity to be a world leader in ending waste, while adding 1,000 good jobs and stimulating the economy in the Hartford area.

2800 Post Oak Blvd. 58<sup>th</sup> Floor, Suite 5858  
Houston, TX 77056  
(832) 426-4735  
www.ecohub.net

- Finally, all of the finalists bids each rely heavily on increased “recycling” at a time when the world recycling market is collapsing due to China’s recent ban on import of recyclables.

With essentially zero landfill capacity in the state, reliance on the failed recycling market exposes the state to financial default of the successful bidders due to poor economics. It also will expose Connecticut residents to significant financial burden and risk if the State needs to mitigate the impending financial disaster.

## **Introduction**

The Connecticut Comprehensive Materials Management Strategy (CMMS), released in 2016, is one of the most forward looking and ambitious state plans developed for the solid waste sector. The CMMS was authorized by Section 22a-241a of the Connecticut General Statutes (CGS) as a plan to achieve 60 percent diversion of the state’s waste by January 1, 2024, “a target that received the unanimous support of the Connecticut General Assembly in 2014 with the passage of *An Act Concerning Connecticut’s Recycling and Materials Management Strategy* (P.A. 14-94).”<sup>1</sup>

The CMMS emphasized source reduction, reuse and recycling as the principal avenues to achieve the state goal of 60% diversion—incineration and other forms of thermal conversion are explicitly not considered diversion.

Every day we learn more about the severe impact China’s import ban is having on the current single stream market:

- Single stream recycling tip fees more than doubling in the span of 2 months;
- The value of a ton of recovered recyclables falling by half in the same time period;
- State policy makers considering “temporary” allowances to dispose of recyclables in landfills.

Exactly what is CTDEEP/MIRA going to tell Connecticut’s residents when, not if, the materials they have faithfully separated and paid for separate collection end up being dumped into the landfill because there is no market for it and warehousing is no longer an option? And who will end up paying the disposal tip fee on top of the single stream processing fee when this happens?

Ignoring the reality of the Chinese market would be the ultimate breach fiduciary responsibility from both a policy and a fiscal perspective and necessitates reissuing an RFP capable of addressing this fundamental and material change in market conditions.

---

<sup>1</sup> February 5, 2016 draft CMMS, p.4



## **Finalist Proposals Fail to Meet the 60% State Diversion Goal**

Connecticut state policy and both the Phase 1 & Phase 2 RFPs clearly state that the 60% diversion goal is from both landfill and combustion.

All of the Finalist proposals say they meet the RFP's requirement of meeting the State's 60% diversion goal, but none of them actually do, without making a mockery of the RFP's requirement that waste incineration does not count toward the calculation diversion.

### Covanta's Maximum Diversion Rate Fails to Even Hit 40%

In numerous places, the Covanta Phase 2 proposal Executive Summary (ES) gives significant lip service to the State's 60% diversion goal, but at the end of the day the company hopes to avoid being held to this fundamental requirement of the RFP by asserting that it is impossible to achieve.

For example, in spite of rhetoric proclaiming "Principle #1: Commitment to the Environment," the attached chart declares that 44.5% of the material stream is "Not Currently Recoverable," which is demonstrably false, given the diversion rates achieved in San Francisco, Seattle and the City of Los Angeles.

A close reading of the ES indicates that Covanta will help meet (as opposed to actually meet) the State's 60% diversion target by the 2024 date, but fails to document how it will achieve this goal. In fact, Covanta's own numbers and assertions clearly demonstrate that the company only intends to divert 38% of the Phase 2 material it processes, which is a fairly generous assessment of the foreseeable performance of the material recovery and processing structure it proposed.

The only numbers provided in the ES are for Phase 1 and produce a maximum diversion rate of 34%  $(100,000 \text{ (SSR)} + 92,000 \text{ (SSO)}) / 570,000$ , which is below the RFP 35% baseline assumption for current diversion rates. Moreover, to achieve their anemic Phase 1 diversion rate, Covanta's proposal relies on unproven assumptions about customer behavior regarding source separation of organics, and reliance on a currently non-existent "market" to supply the necessary infrastructure to manage these separated organics.

More significantly, Covanta fails to mention the significant additional costs imposed on consumers from having an additional organics collection route imposed on household served by the CSWSP. The proposed \$75/household "mitigation fund" may offset the cost of new bins, but consumers will end up spending significantly for the collection route, which is typically 2/3 to ¾ of total material processing costs. Organics collection in



Houston is \$500/ton, so the economic impact of the proposed source separated organics proposal on CSWSP customers must be factored in.

Applying Covanta's underlying unproven participation assumptions fails to achieve the targets set forth by the State in Phase 2: If organics are 40% of the waste stream and Covanta anticipates 75% of the participants diverting 80% of their organics, this represents a maximum diversion of 24% of the waste stream. When added to the generous 14% diversion assumption from source-separated recyclables (100,000/698,000), Covanta's plan will only achieve a 38% diversion rate, less than a 3 percent improvement over the current program. Post incineration metals recovery may nudge the diversion rate slightly, but nothing meaningful.

#### Mustang Renewable Power Ventures Proposal only Diverts 56%

Based on the Phase 2 material flow diagram, the Mustang group plans to landfill 29% of material it receives (231,000 tons), which is the basis of their claim that their proposal exceeds 70% diversion. However, 15% of the material processed will be allocated to refuse derived fuel (RDF) that is supplied to a cement kiln. There is no distinction between burning garbage in an incinerator to produce electricity and burning garbage in a cement kiln to produce cement, therefore this material should not be considered toward achievement of the State diversion goal. Finally, 8,000 tons of ADC (alternative daily cover) is credited to the diversion category. ADC is landfill cover and no leading jurisdiction allows ADC to be counted toward diversion. Connecticut should not turn the clock backward by doing so. The result is a maximum 56% diversion rate. We should also point out that Mustang counts 30% mass evaporation from AD/composting and RDF processing, which is higher than we see for these processes, which are typically in the 20% range, which is what is used by the Sacyr-Rooney team. The implication of this excessive evaporation rate is a 10% bump in the team's diversion rate, which may be closer to 46%.

#### Sacyr-Rooney Proposal only Diverts 51%

The Sacyr-Rooney Proposal creates 386,000 tons of RDF (which is 48% of the proposed Phase 2 material flow) and clearly not compliant with the RFP's main objective of 60% diversion.

### **China is a "Sputnik" Moment for the US Recycling Industry and the State has a Fiduciary Responsibility to Factor in this Material Change in Market Conditions.**

China's announcement in July that it was banning the import of mixed paper and plastic, effective January 1, 2018 fundamentally changes the structure and dynamic of the global recovered paper and plastic scrap commodities market. In a July [press statement](#), Robin Wiener, President of ISRI, the largest recycling trade group in the U.S., stated, "A



ban on imports of scrap commodities into China would be catastrophic to the recycling industry.”

In 2016, China imported 67% of plastic scrap and over half of the recovered paper. Because of China’s dominance, the US domestic processing industries for these materials were decimated and can only handle a fraction of what is generated. The situation is the same globally. Other markets are small and will take years, if not decades to replace China’s demand.

The initial signs of this catastrophe are visible daily through press reports and conversations with professionals throughout the industry.

Because essentially no markets for recovered material exist any more, single stream processing fees have gone through the roof. At a material recovery facility in New England, a ton of source separated recycled material that cost \$41 to process in October of this year now costs over \$90—a **100% increase in 1 month**. Casella reported on a webinar this week (10/17) that the material value of a recycled ton dropped by half. Even before the China import ban, most of the major recyclers were charging upward of \$75 a ton to process recyclables and now over \$90 is the rule, rather than the exception.

At some point, collected recycled materials must go somewhere, either to markets, or to interim warehouses until demand catches up or storage runs out, or, as is being considered in Oregon, to the landfill as a “temporary” measure.

- Does CTDEEP honestly think that people will start separating their materials again after the betrayal of learning that all their work is just going to end up in the landfill?
- Who will pay the landfill tipping fee on top of the material processing fee?
- This represents an annual liability of tens of millions of dollars either for the citizens of the state or the “successful” bidder on this RFP.
- How will CTDEEP/MIRA address this crisis?

There clearly is no provision for this situation in the RFP and any promises of both recycling more material and keeping rates comparable are financially impossible to fulfill under new market conditions using business as usual approaches.

#### **Final Bidder Proposals Fall Under Existing Solid Waste Processing Patents**

In our September 1, 2016 letter to Mr. Lee Sawyer (attached) we noted the following:

“It is also important to note that the MaxDiverter and EcoHub system is currently covered by 10 patents encompassing over 200 claims. In fact, we are the exclusive global patent holders for municipal separation and



manufacturing systems in America, China, Japan and Mexico. We have 25 additional patent-pending applications in the US and 23 Patent Cooperation Treaty (PCT) patent-pending applications in China, India, Japan, Brazil, Mexico, Canada and the European Union. These are process patents, rather than individual machine patents. It will be important to carefully evaluate the proposals of the bidders selected to proceed to Phase II of the Resource Recovery RFP process for infringement of our patents.”

The Mustang and Sacyr proposals involve mixed waste sorting and two or more processing technologies, which are clearly covered by multiple patents developed by inventor George Gitschel, founder of EcoHub.

- US 9,061,289 B2: Mechanized Separation and Recovery System for Solid Waste
- US 8,393,558 B2: Mechanized Separation and Recovery System for Solid Waste
- US 9,713,812 B1: Methods and Systems for Separating and Recovering Recyclables Using a Comminution Device
- US 9,650,650 B2: Systems and Methods for Processing Mixed Solid Waste
- US 8,632,024 B2: Systems and Methods for Processing Mixed Solid Waste
- US 2015/0108042 A1: Advanced Solid Waste Sorting Systems and Methods
- US 9,649,666 B2: Mechanized Separation of Mixed Solid Waste and Recovery of Recyclable Products Using Optical Sorter
- US 8,684,288 B2: Mechanized Separation of Mixed Solid Waste and Recovery of Recyclable Products
- US 8,322,639 B2: Mechanized Separation of Mixed Solid Waste and Recovery of Recyclable Products
- US 8,398,006 B2: Mechanized Separation of Mixed Solid Waste and Recovery of Recyclable Products

Since our September 1 letter, we have been granted an additional US patent, for a total of 11 patents covering 220 claims. In addition we have 11 international patents covering mixed waste sorting and processing and another 20 patents pending, many of which are 1-2 years along in the process. We file continuation patent applications on every issued patent, effectively expanding the claims coverage (this is due to the vast disclosure content of each patent), so we are comfortable with the degree of intellectual property protection afforded by these patent awards.

In his response to our letter, then Project Manager Lee Sawyer stated,

“It is possible that there may yet be opportunities to partner with the developer who is ultimately selected.”

EcoHub is open to partnering with the successful bidder to ensure that the state’s goals are met without burdening the consumer or infringing on protected intellectual property. In addition, because EcoHub’s business model does not rely on the commodity markets, the winning proposal has a chance to be financially sustainable.



## The Wrong Bidders Qualified for Phase 2

As demonstrated above, none of the bidders meet the 60 percent State diversion threshold. **This means that business as usual is not capable of meeting the State's ambitious goal.**

EcoHub was created to achieve diversion rates and the material quality necessary to bring the economy to its true circular potential. Unfortunately,

- EcoHub was incorrectly disqualified from the Phase II proposal process based on a false and faulty premise that was not consistently applied to other qualifying bidders.
- None of the successful bidders have the capacity to fulfill the RFP's requirements.

CTDEEP's September 2016 letter regarding EcoHub's disqualification states that our proposal fell short of meeting the following minimum criteria to DEEP's satisfaction:

“System demonstrated at a minimum of one (1) facility of similar size or unit size reasonably scalable to project requirements (1,500 and 2,250 TPD of post recycled MSW and 50,000 and 100,000 TPY of source separated recyclables), and must have been in operation processing similar feedstock for at least six months prior to the date of submission of the proposal.”

The letter goes on to state,

“We note that the Rosemont (sic) facility - although clearly an impressive success - averages 850 TPD of inbound MSW. Moreover, the Rosemount (sic) facility does not include use of the MaxDiverter or VictaSort systems, both of which are crucial to your proposal.”

This statement is both inaccurate and based on a fatally flawed premise. The Rosedale facility is permitted and has the mechanical capacity to process 2,250 tons of material per day. The fact that it is currently processing 850 tons on one shift due to insufficient inbound material is irrelevant to the plant's capability/capacity. Just because a driver is the sole passenger in a car, does not mean that the car can carry only one passenger. The fact is that the Rosedale facility has achieved nearly 50% diversion (diversion figures fluctuate depending on whether the glass lines can be operated cost effectively).

The MaxDiverter is based on the design that Mr. Gitschel created for Rosedale using proven equipment that allows additional separation based on density and dimension,



plus optical sorters to boost performance over human pickers. All proven, all engineered, all guaranteed.

The technologies and equipment specified for use in the proposed MaxDiverter™ and VictaSort™ systems are employed at hundreds of active facilities around the world. Each piece of equipment incorporated into the MaxDiverter and VictaSort systems has a long history of successful performance at some 600 facilities designed, constructed and operated by the EcoHub team. In the intervening period, new facilities in Europe, which were planned at the time of our submittal are now operational. We would invite CTDEEP and/or potential partners to visit the facility and understand how it is similar to and varies from the proposed systems.

Both the MaxDiverter and the VictaSort have four levels of guarantees. First, EcoHub has secured performance guarantees from the individual equipment manufacturers regarding their products' performance. Second, we have system performance guarantees from the system integrator, Stadler, which is the largest and most experienced mechanical waste separation systems company in the world. The system is further guaranteed by a performance bond issued by a major surety firm. Lastly, major global Engineering, Procurement and Construction firms will provide full EPC Wrap performance guarantees for the MaxDiverter, VictaSort and suite of backend technologies. Both Stadler and the equipment companies guarantee the equipment and system performance to

1. Separating 95% of incoming waste into defined material streams
  - a. We can create between 30 and 40 separate streams of materials, depending on the needs of our partners and the opportunities in the local market for each separate material stream and resulting products.
2. Each separated material stream is guaranteed to be 95% pure (5% or less contamination).
3. Equipment and system uptime is guaranteed to be 97% of operating hours.

**None of the proposed mixed waste processing bidders has these guarantees because none of them has designed, built or operated mixed waste separation facilities.**

Attachment A to this letter (taken from our Phase I proposal) identifies and discusses the Roseville representative facility that we invited you to visit to demonstrate the quality of our sorting systems and back-end conversion and manufacturing partners. Roseville is the largest, most successful and longest-running mixed waste processing facility in the world.



The MaxDiverter and VictaSort systems, proposed to be implemented at the Hartford EcoHub, do not incorporate proven, reliable technology. The innovative aspect of our proposed system is the unique configuration and combination of proven, reliable systems that have been successfully operating at our teams' active facilities and other waste processing/recycling facilities for decades.

The combination and configuration of equipment proposed for EcoHub-Hartford was developed specifically to achieve 95% separation of incoming waste into defined material streams, with 95% purity of each separated material stream (guaranteed performance.) Incoming waste can consist of unsorted MSW, post recycled MSW and source separated recyclables from residential and commercial sources.

We understand that our proposed system for separation of 95% of incoming waste into defined material streams, with 95% purity of each separated material stream is revolutionary, but this is exactly the approach needed given the 'perfect storm' that is destroying the current structure of recycling in the U.S..

**End of Waste with Economic Development**

Our EcoHub partners take the clean and consistent separated material streams and manufacture or convert them into market-ready products through on-site environmentally friendly processes and technologies.

This will allow us to provide Connecticut with not only the most environmentally beneficial option available, but the cheapest as well. This will also allow us to create over 1,000 jobs, stimulate more than \$1 billion worth of private investments and make Connecticut a leader in sustainable resource allocation. The three finalists' proposals will add very few jobs and provide little or no benefit to the local economy.

The following table summarizes our back-end partners, their products, the employment associated with their facilities. Please note that not all partners are located at every EcoHub.

EcoHub Component	Products	Floor/Land Area	Total Investment	Full-Time Employees
MaxDiverter	30-40 95%-pure material streams	307,000 ft2	\$150 million	125
VictaSort	20-30 95%-pure material streams	140,000 ft2	\$75 million	25



Reclamation Technology Systems & Voith Technologies <sup>2</sup>	Pulp, tissue, linerboard, syn-gas, bio-gas, bio-diesel	50,000 ft2 to 400,000 ft2	\$25 million \$400 million	25 to 374
ECOR	Pulp, Molded fiber products	150,000 ft2	\$38 million	200
JET Recycling America	Outdoor construction products	120,000 ft2	\$90 million	225
Anaerobic Digestion	Biogas & soil amendment	5 acres	\$25 million	25
Green Monster	eWaste recycling	20,000 ft2	\$9 million	30
Composting & Wood operation	Wood pellets, ethanol	5 acres	Site Owner	8
Metal, Plastics, Glass	Commodities	3 acres	Site Owner	4
Site improvements	Intermodal transfer station, wastewater treatment, site restoration, parking	30 acres	\$15 million	
Center of Excellence		50,000	\$5 million	20
Daycare & Fitness Center		20,000	\$2 million	10
<b>Total:</b>		<b>~70 acres</b>	<b>\$825 million</b>	<b>Up to 900</b>

### Other Considerations

- It's not clear that Covanta's proposal redeveloping the Hartford plant site with speculative real estate development is consistent with MIRA's organizational mission and brief.
- Covanta plan hinges on approval and expansion of additional incineration capacity at its Bristol facility, which is a) exactly what the RFP is trying to avoid and b) not at all guaranteed from a regulatory perspective.
- Covanta's proposal does almost nothing to reduce local environmental impacts, merely shifts existing impacts to a different locale, while significantly worsening global environmental impacts through dramatic increase in truck-miles necessary to move material to the appropriate facilities;
- Covanta's proposal principally shifts the diversion burden to Connecticut households, exposing them to potentially cost increases in the near future from adding new collection routes, which involves additional truck and bin purchases, as well as the personnel costs of additional drivers. On top of this, Covanta intimates in its proposal that it will impose punitive pricing on black bin disposal to discourage "cheating" on organic diversion. We cannot imagine that this will be popular with residents served by CSWSP.

<sup>2</sup> Voith is one of the world's largest suppliers of paper and tissue manufacturing machines and facilities.



**ATTACHMENT A**



## Case Study of Roseville

# 10. Reference Facilities

EcoHub members have a wide range of reference facilities that demonstrate the breadth and depth of capabilities required to successfully implement the proposed approach. For example, ReCommunity alone operates 25+ MRFs while Stadler has implemented over 200 recycling systems. EcoHub conversion and manufacturing partners also have reference facilities.

EcoHub has a variety of sites it would like to recommend for a visit by the DEEP & MIRA that show the potential of its sorting system, as well as the promise of back-end technology partners with which EcoHub has allied itself. These sites include ReCommunity facilities, Western Placer Waste Management Authority's facility in Roseville, California, the EcoGlen facility in De Pere, Wisconsin, and the City of Edmonton facility and various facilities in the EU (designed by Stadler principles), some of which are described below.

1.	Name of the Project	Western Placer Waste Management Authority Materials Recovery Facility
2.	Location of Project	Roseville, California. USA
3.	Owner Contact Information	Name: Nortech E-mail: Telephone:
4.	Client Contact Information	Name: Paul Szura, General Manager, Nortech Waste, LLC E-mail: Telephone: (916) 645-5230 x. 105; (196) 759-7003 mobile
5.	Description of Applicant's Scope of Responsibility	System engineering, equipment specification and supply. System commissioning and operational training. This work conducted by EcoHub CEO, George Gitschel, while President of Rose Waste Systems.
6.	Contract Value (USD)	\$24.5 million (2007)
7.	Project Consultant	Machinex; Rose Waste Systems
8.	O&M Contractor	Western Placer Waste Management Authority
9.	Project Description	Conversion of an obsolete mixed municipal waste separation facility with a 25% landfill diversion rate. Completely reconfigured the separation technologies and



		increased capacity to 150 tons/hour. Increased diverted material fraction from 25% to 50%.
10.	Feedstock Details	The facility takes in unsorted residential and commercial MSW from Western Placer County (no curbside recycling). The hourly capacity is 150 tons, but daily inbound MSW has been averaging 850 tons per day. The facility is up 98% of the time.
11.	History of Operations, including Start-up Date	Facility began operation in 1997. Capacity and sorting upgrade completed and commissioned in 2007. Facility still in operation.
12.	Duration of Contract(s)	Rose Waste System contract with the facility was in place from 2003 until 2008.
13.	Other Technical Information to demonstrate strengths of proposed system / technology / approach	None of the separated materials have been rejected by China's Green Fence, which has very stringent quality requirements.

## The Western Placer County Mixed Waste MRF – EcoHub Reference Facility in Roseville, CA

In early 2002, Mr. George Gitschel, then CEO of Rose Waste Systems, Inc. and now CEO of EcoHub, first conceptualized the idea of using modified Single Stream Recycling Disc Screens in Dirty MRF applications. His theory was that these types of screens, if fed properly, could possibly facilitate the separation of two-dimensional and three-dimensional items. Mr. Gitschel theorized that this concept would dramatically improve recovery, while significantly reducing costs. It is noteworthy that Mr. Gitschel was heavily involved with the development of Single Stream Recycling Systems, during their infancy, in the early 1990's. He has spent the last 30 years designing, integrating and building some of the most innovative recycling systems in the industry.

Mr. Gitschel's relationship with Nortech LLC (a partnership involving Wastech, Norcal Waste Systems – now Recology, and John F. Sexton Company), the contract operator of the Western Placer County Waste Management Authority's MRF, began in the mid-1990's. He initially replaced the facility's single-ram baler with a two-ram baler. Then, he added additional FE and NF recovery equipment. He designed and installed a fines recovery system and other advanced recovery and processing components. He also supplied a mobile compost screen system and advanced windrow turner.



In mid-2003, Mr. Gitschel ran his Dirty MRF disc screen theory by Mr. Wayne Trehwitt, the President of Nortech. As it happened, the operating contract was coming up for renewal in 2005 and Nortech needed an edge to improve recovery and operations going into the RFP process. Mr. Trehwitt thought that the idea was interesting, but he was very skeptical that it would actually work. Mr. Gitschel had just received an order for an advanced Single Stream MRF for a large independent waste disposal and recycling company located in Southern California, EDCO Disposal. Mr. Gitschel was granted permission to conduct a 25-ton test run of garbage (sourced from the Placer County MRF) in January of 2004. The test was a tremendous success and culminated in Mr. Gitschel's design of a complete plant addition to the Placer County MRF. Mr. Gitschel worked with his supplier, Machinex Industries (Quebec, Canada) and won the facility equipment supply bid.

In 2007, Mr. Gitschel's team completed the installation of the most advanced and unique Dirty MRF in the USA for the Western Placer County Waste Authority. The older existing Dirty MRF and its building were left intact and operating during the new building construction and the new equipment installation. All major tie-ins between the new and the old system were made during the evening or on the weekends, so the plant shut down was a mere 9 days, despite almost 1 year of building construction and new equipment installation. All told, the Major Dirty MRF Addition (150 Tons per Hour of Capacity) included (2) Walking Floor In-feed Systems, (2) Large Trommel Screens (now 4), Bag Breaker, (91) Conveyors, (14) Rubber Disc Screens, (3) Electromagnets, (3) Eddy Current Separators, Diverters, Shuttle Conveyors, (3) Transfer Trailer Load Out Systems, (20) Automated Walking Floor Bunkers, 200 HP 2 Ram Baler, (2) Back Scraping Drums, Platforms, Controls, Structure, Engineering and Integration. Approximate value = \$20,000,000.00.

The net results of this highly innovative approach and system exceeded everyone's expectations. The recovery and diversion were doubled, while the second processing shift was eliminated. The facility was commissioned in 2007. It is located in Roseville, CA. The facility takes in unsorted residential and commercial MSW from Western Placer County (no curbside recycling). The hourly capacity is 150 tons, but daily inbound MSW has been averaging 850 tons per day. The facility is up 98% of the time. There are approximately 240 employees. The tipping fee is approximately \$68 per ton. There are no conversion technologies on the Dirty MRF site, at this time.



However, despite all of these efforts, there was still more than 55% of the inbound MSW going to the adjacent landfill. Mr. Gitschel knew that he could do better. This was an excellent leap, but it was nowhere near what could really be achieved. EcoHub has dramatically improved this original design concept, to make our new system significantly more efficient and operationally cost effective. The EcoHub Patented Mining Recyclables Facility System will recover twice the recyclables, at one-third the operating costs (or less), as the Western Placer County MRF. Furthermore, the EcoHub System will recover all of the available wet organic materials (food and green waste) and dry organic materials (wood and textiles) for conversion into renewable energy. The EcoHub System, when fully built out, will provide overall diversion rates of up to 95% (versus 55% diversion through the Western Placer County MRF).



**Western Placer County Integrated Facility Including Dirty MRF, Composting, C&D Processing and Landfill**



**Building Exterior of MRF**



**Raw MSW on the Tip Floor**



**One of Five 30' Long by 8' Diameter Trommel Separators (10" to 12" cut)**



**Two of Ten Specialty Disc Screens That Separate Cans, Bottles and Fines From Large Paper**



**One of Two 3-Way Polishing Screens Separating 2" Minus Fines, 3 Dimensional Items (Containers), and 2-Dimensional Items (Paper and Plastic Film). Screen in Back of Photo.**



**3-Dimensional Material Lines Where Containers Are Removed With Manual Sorting (Plastic & Glass), Cross Belt Magnets (Ferrous), and Eddy Current Separators (Aluminum Cans and Mixed Non-Ferrous)**

*\*Plant has upgraded to Optical Sorting for Plastic and Glass Container Recovery*



**Small Fiber Manual Sorting Line (QC or Sorting)**





**Aluminum Can (UBC) Bales**



**UBCs & Other Mixed Non-Ferrous Bales**



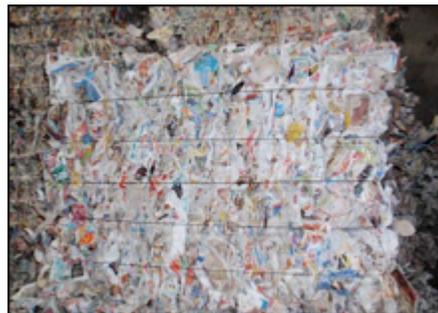
**Cardboard (OCC) Bales**



**Colored HDPE Bales**



**Mixed Paper Bales**



**Newspaper Bales**



**Natural HDPE Bales**



**Film Plastic**



**3/8" Minus Fines for Alternative Daily Cover**



**Loose #3 - #7 Plastic**



**Separated Glass Bottles**



**Carpet Padding Bales**



**E-Waste**



**Mixed Ferrous Metal**



**Mixed #3 - #7 Plastic Bales  
Cans**



**Household Hazardous Waste - Aerosol**



**Electric Motors**



**Batteries**



**Separated PETE to Baler**



**Separated Mixed Non-Ferrous**



**Compost Windrows from Separated Wood and Green Waste**