COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100
http://dpw.lacounty.gov

GAIL FARBER, Director

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

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August 17, 2016

TO: Each Supervisor

FROM: Gail Farber
Director of Public Works

BOARD MOTION OF JANUARY 27, 2015, ITEM NO. 21-A
CONVERSION TECHNOLOGY PROJECTS
SEMI-ANNUAL STATUS REPORT: FEBRUARY THROUGH JULY 2016

On January 27, 2015, the Board adopted a motion by Supervisor Mark Ridley-Thomas instructing the Director of Public Works to provide semi-annual reports in writing that include clear benchmarks for measuring the actual progress being made towards establishing viable conversion technology projects, in conjunction with the Boards' approval of a technical services contract with Alternative Resources Incorporated to assist the County of Los Angeles and potential project developers in developing conversion technology projects in the County.

Attached is the third report in response to this motion for the period of February through July 2016. Future updates on Public Works' conversion technology efforts will be provided within the annual Roadmap to a Sustainable Waste Management Future report. If you have any questions regarding this report, please contact me or your staff may contact Mr. Daniel J. Lafferty at (626) 458-3500 or dlaff@dpw.lacounty.gov.

CS:jl
H/ao/EPD/Semi-Annual CT Memo Feb-July 2016

Attach.

cc: Chief Executive Office (Rochelle Goff)
County Counsel
Executive Office
Department of Public Health
Department of Regional Planning
Los Angeles County Integrated Waste Management Task Force
Regional Planning Commission
Sanitation Districts of Los Angeles County

CONVERSION TECHNOLOGY PROGRAM

SEMI-ANNUAL STATUS REPORT

February 2016 – July 2016

Prepared by the County of Los Angeles Department of Public Works

Cover Photos

Top Left: Pitchess Detention Center in Castaic, CA

Top Right: County Sanitation Districts Organics Recovery Pilot in Puente Hills, CA

Bottom: CR&R Anaerobic Digestion Facility (Rendering) in Perris, CA

1.0 Executive Summary

This is the third report, in response to the January 27, 2015, motion by Supervisor Mark Ridley-Thomas reporting on progress of conversion technology (CT). The report details progress of three CT projects in the last 6 months, as well as public outreach, benchmarking, milestones, and next steps. The projects are:

1. Joint Water Pollution Control Plant – County Sanitation Districts (Districts) and Waste Management Inc. (WM) continue to digest food waste at the Districts' Plant in the City of Carson. Public Works and the Districts continue to conduct pilot food waste collection programs in unincorporated areas of Los Angeles County, which was a large reason for the increased supply of digested food waste from 25 tons per day (tpd) to 40 tpd.

2. Perris Materials Recovery Facility, CR&R Incorporated – This privately developed anaerobic digestion facility in Riverside County will begin operating the 230 tpd Phase I digester in fall 2016. Construction of Phase II is approximately 50 percent complete and should be completed by the end of 2016.

3. Pitchess Detention Center, Los Angeles County Sheriff's Department – This proposed $20 million project would digest 40,000 tons per year (tpy) of organic waste from the Pitchess Detention Center (PDC), in addition to nearby County facilities, and the surrounding region. Public Works is providing technical assistance to the Sheriff's Department and preparing a draft Request for Qualifications and Proposals.

Public Outreach – The 2016 Southern California Conversion Technology Conference was hosted by Public Works on July 29, 2016. The conference was very successful in educating stakeholders on the benefits of conversion technologies and what needs to be done to overcome the barriers to their development.

Benchmarking and Milestones – The initial Semi-Annual Report established numerical milestones to measure progress in implementing the CT program starting with the current in-County CT capacity of 65 tpd and continuously increasing the capacity to reach 3,000 tpd of conversion capacity by 2035. In addition to the potential project at PDC, the Districts' facility in Carson is likely to develop additional capacity. Thus, the County is on track to achieve the next milestone of 200 tpd in-County waste conversion capacity by 2020.

Conclusion – CTs have the ability to play a critical role in reducing our reliance on landfills and recovering energy, fuels, and other products from waste. Public Works will continue to facilitate the development of these projects by providing technical assistance, educating stakeholders, and working to remove regulatory barriers.

2.0 Background

On January 27, 2015, the County of Los Angeles Board of Supervisors adopted a motion by Supervisor Mark Ridley-Thomas instructing the Director of Public Works to provide semi-annual reports in writing that include clear benchmarks for measuring the actual progress being made towards establishing viable CT projects, including the amount of waste to be diverted, financial viability, project status, and significant impediments that will allow the Board to meaningfully assess the efficacy of CTs in meeting the County's goal of a sustainable waste management future. This is the third report in response to that motion for the period of February 2016 to July 2016.

In October 2014, the Board adopted the Roadmap to a Sustainable Waste Management Future, which established waste diversion targets of 80 percent by 2025, 90 percent by 2035, and 95 percent or more by 2045. The successful development of CTs is important in achieving these targets since it is not economically feasible to reduce, reuse, or recycle the entire waste stream.

3.0 Project Development Highlights

The following CT projects have achieved progress in the last 6 months.

3.1 Joint Water Pollution Control Plant (JWPCP), County Sanitation Districts of Los Angeles County and Waste Management Inc.

In 2013, the County Sanitation Districts partnered with Waste Management (WM) to establish a demonstration project at the Districts' Joint Water Pollution Control Plant (JWPCP) in the City of Carson, California. As part of this project, WM collects food waste, cleans and processes it into a slurry and delivers it to the JWPCP where it is co-digested with sewage sludge to create biogas, which is converted into electricity. WM recently increased the supply of food waste to JWPCP from 25 tpd to 40 tpd, largely due to the continued food waste collection pilot programs within the Garbage Disposal Districts (GDDs), which began in October 2015 as first noted in our previous report. The Districts determined that it can be technically viable to expand the co-digestion project at JWPCP into a commercial-scale anaerobic digestion facility.

Starting in July 2016, the food waste pilot collection program was expanded to include the County's commercial franchise. This program will provide insight on the challenges and costs associated with separate organic waste collection, which can be reviewed before being implemented throughout the unincorporated County areas. The pilot programs are expected to further increase the amount of food waste already being digested at the JWPCP and thus, increasing the production of biogas.

In addition, the Districts partnered with Anaergia, a renewable energy and waste-to-resources company, to pilot a small-scale "press" at the Puente Hills Materials

Recovery Facility. The press is an advanced material separation technology that recovers organics from the waste stream by separating the dry inorganic fraction of the waste from the wet organic fraction. Public Works sent waste from County unincorporated areas including GDDs and commercial franchise accounts during the testing of the press. The press will also help with determining organics recovery rates and contamination levels of different types of commercial and residential loads. A complete analysis and report of the results is currently being prepared by the Districts.

The Districts also signed a contract to convert 144 tpd of the biosolids from JWPCP to biofuel using pyrolysis and Fischer-Tropsch Technology at a facility in Rialto, California. The project has completed all air quality testing permits and is expected to complete construction by the end of 2016. Pyrolysis is a type of gasification, which is a non-combustion thermal conversion technology. The Fischer-Tropsch Technology uses chemical processes to convert gases into liquid fuels.

3.2 Perris Materials Recovery Facility, CR&R Incorporated

CR&R Waste and Recycling Services, a local solid waste management company, has completed construction of a 230 tpd anaerobic digestion project at the Perris Materials Recovery Facility and Transfer Station in Riverside County. The project is designed to convert organic waste into renewable fuels for use by their waste collection vehicles.

This facility has plans to scale-up in four equal phases and ultimately digest up to 1,075 tpd, which could allow the facility to process organic waste generated in County of Los Angeles unincorporated areas. The facility is also expected to process waste from the City of Los Angeles starting in 2017. Construction of the Phase I digester has been completed and all testing for gas and water leaks have passed. Phase I began seeding (the inoculation process of introducing bacteria with existing digestate) on August 1, 2016. Full operation began shortly thereafter. Construction of Phase II is approximately 50 percent complete and should be operational by the end of the year. The facility will serve as a reference for viable CT projects that can separate the organic fraction of the waste stream, and we are benefiting from the lessons learned in successfully developing this project.

3.3 Pitchess Detention Center, Los Angeles County Sheriff's Department

The Los Angeles County Sheriff's Department (LASD) with assistance from Public Works is analyzing the feasibility of implementing an anaerobic digestion system at Pitchess Detention Center (PDC), a cluster of jail facilities in Castaic, California. It has been calculated that a facility capacity of at least 40,000 tons per year (approximately 130 tpd) is viable. However, additional consideration would need to be given to the availability and commitment of organic waste feedstock within the region.

The system would include an anaerobic digester, which would process source-separated food and green waste to create biogas for energy generation and

heat as well as compost for farming operations. Such a facility could receive and process food and green waste from other County departments, as well as potentially the surrounding areas and provide compost and renewable energy or biofuels to other County departments.

Public Works is currently working with Alternative Resources Inc. (ARI) and LASD to prepare a Request for Qualifications and Proposals (RFQP). The RFQP for the concept project would have an option to bid with either public or private ownership. In the private ownership scenario, the owner would deliver PDC feedstock and receive or beneficially use biogas and compost. The contractor would design, build, own, and operate the facility and would be responsible for marketing excess compost and coming to an agreed upon rate with LASD for the biogas generated. In the private ownership option, the contractor would assume project risk and be responsible for feedstock acquisition.

In the public ownership scenario, the County would own and finance the facility and assume project risk. The facility would be developed for a known amount of feedstock controlled by the County and may engage a broker to help secure the feedstock. In the public ownership scenario, the County could promote the project as a County-owned sustainability effort.

The proposed project has numerous potential benefits. It would help conserve natural resources and reduce landfill disposal, thereby assisting County departments and potentially businesses in complying with State mandates, including Assembly Bill (AB) 1826, AB 341, and AB 32. This project aligns with the strategies outlined in the Roadmap to a Sustainable Waste Management Future and County Strategic Plan. By diverting food waste into the composting and anaerobic digestion system, the project would reduce traffic and pollution from trash hauling. The anaerobic digestion facility would be mutually beneficial to all parties involved and create useful products including a rich soil amendment for PDC farmland and biogas that could be used for low carbon electricity and heat generation, and vehicle fuel. The facility would also reduce costs associated with trash disposal, water usage and sewer fees, kitchen clarifier cleanout fees, and compost expenses. Additionally, the project could potentially provide job training opportunities for inmates or job opportunities for former inmates.

The estimated capital cost of the project is approximately $20 million including piping to transport the biogas to the power plant, with a total annual operation and maintenance cost of approximately $2 million. Project costs could be offset by revenue generated from waste tipping fees and sale of excess compost, in addition to decreasing costs associated with waste disposal and purchase of natural gas to generate heat and electricity. There are also many upcoming grant opportunities that can help offset project costs; however, they require the project to be shovel-ready.

4.0 Public Outreach

A Comparative Greenhouse Gas (GHG) Emissions Analysis was commissioned by Public Works to compare the net GHG emissions of two scenarios. The baseline scenario is a transport and disposal of residuals from a mixed waste Materials Recovery Facility (MRF) in a modern sanitary landfill. The alternative scenario is processing the residuals at an Integrated MRF with CT. The Comparative Analysis shows the net environmental benefits of managing residual solid waste using anaerobic digestion and gasification at an integrated MRF facility as opposed to transporting it to a landfill for disposal. This analysis will provide tremendous assistance in educating stakeholders of the necessity for CT facilities to improve air quality and combat climate change. Public Works released the Comparative Analysis in February 2016, which has been mentioned in multiple waste management media articles.

4.1 Southern California Conversion Technology Conference

On July 29, 2016, Public Works hosted the Southern California Conversion Technology Conference, which was attended by approximately 200 people. The goal of the conference was to educate conference attendees, which were made up of elected officials, regulators, representatives of local jurisdictions, members of industry, and environmental groups, on the many benefits of an integrated approach with CTs. Conference agenda topics included: conversion technologies and best practices throughout the world, environmental findings from CT studies and projects, CTs and sustainability, and California projects, permitting, and legislation. There were a total of 20 speakers including Assemblymember Mike Gatto.

Because of the success of the 2016 Conference, Public Works plans to host more CT conferences in the future. Videos of the conference panels will be posted on the www.SoCalConversion.org website.

5.0 Benchmarking and Milestones

The goal for the CT program is to reduce the dependence on landfills and ensure there is sufficient, sustainable capacity available to the County to meet future needs. Public Works set benchmarks for the program based on current waste disposal quantities and the disposal reduction targets established in the County's Roadmap as well as State laws, such as AB 1826 for organic waste. Although a significant portion of organic waste will be diverted using composting and land application, additional CT facilities will be needed to meet this goal.

The following milestones have been identified to measure our progress:

Timeframe	Milestone	Capacity (tons per day)	Status
Today	County Sanitation Districts anaerobic digestion co-digestion at Carson facility	65* (can be expanded in the future)	Completed
12/31/2015	Construction of Perris anaerobic digestion facility	230	Completed
12/31/2020	In-County conversion technology capacity (projection)	200	On track
12/31/2025	In-County conversion technology capacity (projection)	500	On track
12/31/2035	In-County conversion technology capacity (projection)	3,000	On track

*This was reported as 84 tpd in previous reports, which was the amount of slurry that can currently be digested. The amount of food waste that can be digested is 65 tpd with the water being the remaining 19 tpd, which needs to be added to create the slurry.

After a small number of facilities become operational and demonstrate their viability, the market for CT in the County will quickly expand. Achieving 2025 and 2035 milestones will require investment by the private sector. The 2020 milestone could be achieved by the development of additional capacity at the Districts' Carson facility. In addition, the potential anaerobic digestion projects at PDC could be built by 2020 with streamlined permitting.

Although the County does not have direct control over the timing of the private projects, State mandates are driving business development, which will lead to projects being developed in the next few years. To accelerate this investment, Public Works can take a number of steps, as described below.

6.0 Next Steps

- Work with the Districts in continuing to implement the organic waste collection program, with the goal of increasing the anaerobic digestion of food waste in the County.
- Work with Alternative Resources Inc. and LASD on finalizing the RFQP for the project at PDC.
- In collaboration with Regional Planning, prepare a draft Recycling and Waste Facilities Ordinance, which will ensure these types of facilities have appropriate zoning as well as a streamlined permitting process.

- Obtain feedback from 2016 conference and implement suggested changes into project development, grant requests, future legislation, and future conferences.
- Continue to serve as a resource and catalyst for CT project development in the County for other CT projects in various stages of development, such as potential projects at PDC.
- Work with ARI to update list of potential CT sites and look for potential sites that were not identified in the past.

Legislative barriers have historically been a major impediment to the development of CTs in California. Senate Bill 498 (SB 498), authored by Senator Ricardo Lara in 2014 and sponsored by the County, cleared a significant hurdle for the siting of biomass conversion facilities in the County by providing waste diversion and renewable energy credit to such facilities. The County prepared a recommended legislative proposal, which was approved by the Board of Supervisors, adding "non-recyclable byproduct or residue from composting" to the definition of biomass as a way to encourage CT projects to use this feedstock. The County is working with Assemblymember Das Williams to incorporate these amendments into AB 2313. If signed into law, these provisions would build on the success of SB 498.

Public Works will continue to facilitate the development of CTs in the County by working with stakeholders to identify barriers and creating solutions to those barriers as described in this report.

Public Works' next status report will be submitted in October 2017 as part of the annual Roadmap to a Sustainable Waste Management Future report.