

## Memorandum

To: Mayor and City Council

July 8, 2008

From: Suja Lowenthal, Second District 

Subject: Conversion Technology

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### REQUESTED ACTION:

Respectfully request the Council support the County of Los Angeles' efforts to evaluate and promote development of next generation conversion technologies that minimize landfill disposal, create "green collar" jobs, and utilize waste material in an environmentally beneficial manner.

Request that the City Manager work with the County of Los Angeles to ensure that Long Beach is considered for any future partnerships for the development of conversion technology facilities.

Request the City's legislative advocates work with the County of Los Angeles to support legislation that establishes a viable permitting process for conversion technologies that protect public health, safety and the environment, and provides full diversion credit for these technologies under the California Integrated Waste Management Act.

### BACKGROUND INFORMATION:

The City of Long Beach is among the nation's leaders in waste diversion due to the thoughtful planning and investment by city leaders and the Environmental Services Bureau in the Southeast Resource Recovery Facility (SERRF), which began commercial operation in 1988. According to City documents, SERRF is a publicly owned solid waste management facility that uses mass burn technology to reduce the volume of solid waste by about 80% while recovering electrical energy. The facility is owned by a separate authority created by a joint powers agreement between the Sanitation Districts of Los Angeles County and the City of Long Beach, but is operated by a private company under contract. Residential and commercial solid waste from Long Beach and surrounding contracting communities is combusted in high temperature boilers to produce steam, which in turn is used to run a turbine-generator creating 36 megawatts of electricity. The SERRF site generates enough power each year to supply 40,000 residential homes with electricity and has reduced solid waste from entering landfills by over four million cubic yards. In addition, the SERRF site has allowed the City to keep the cost for waste management significantly below average, passing the savings on to our residents in their monthly bills. Each month, an average 825 tons of metal are recycled rather than sent to a landfill. As a public service and at the request of law enforcement agencies within California,

SERRF began destroying narcotics and drug related paraphernalia in 1992. The program has been a tremendous success. SERRF has destroyed an average of 17,000 pounds of narcotics each month. This commitment by the City of Long Beach to assist in the removal of illegal narcotics from our cities' streets has saved law enforcement agencies hundreds of staff hours and thousands of dollars in alternative disposal costs.

The County of Los Angeles has evaluated next generation conversion technologies, which are capable of converting post-recycled residual solid waste into marketable products, green fuels, and clean, renewable energy, and identified a number of viable technologies for Southern California. This next generation thermal conversion technology differs from our current SERRF technology in that it eliminates the residue combustion ash, which is currently treated and sent to an authorized landfill to be used as road base material. This difference is significant, since the only local landfill permitted to receive the ash is Puente Hills and it is scheduled to close in 2013.

Our existing SERRF site provides a valuable service to the residents of our city, pushing our diversion rate to 69% and converting our waste to electricity. However, next generation conversion technologies can further enhance our efforts to become our own "wasteshed". Conversion technologies may also provide us with the electricity necessary to support increased demand from cold-ironing in the harbor and Port. Just as our predecessors pursued technologies reducing the economic and environmental impacts of sending waste to local landfills, it makes sense that we explore opportunities to increase our conversion rate, better serve our residents, and further diminish our footprint on the environment.

# CONVERSION TECHNOLOGY FACT SHEET

## Los Angeles County Department of Public Works

### What are Conversion Technologies?

- Conversion technologies are thermal, chemical and biological processes capable of converting post-recycled residual solid waste into useful products and chemicals, green fuels like ethanol and biodiesel, and clean, renewable energy.
- Conversion technologies are not incinerators - there is no combustion of waste.

### Conversion Technologies Benefits

- Diversion of solid waste from landfill disposal (87 to 100 percent diversion, depending on technology), reducing dependence on remote landfilling.
- Potential to recover additional recyclables after conversion.
- Reduces air pollution, including greenhouse gas emissions, from disposal and transportation avoidance as well as fuel/electricity offsets.
- Produces renewable fuels and/or energy (up to 50 MW from a 1,000 tons per day facility), supporting the State's bioenergy and RPS goals and promoting energy independence from imported fossil fuels.
- Creates local high-quality "green collar" jobs and promotes economic development.

### What is the Southern California Conversion Technology Demonstration Project?

- The project, spearheaded by the County of Los Angeles in coordination with the multi-stakeholder Alternative Technology Advisory Subcommittee, works to promote the development of a fully operational demonstration conversion technology facility. The goal of the project is to demonstrate the technical, environmental and economic benefits of conversion technologies, and to forge permitting and legislative pathways for future projects.

### How Would the Demonstration Project be Developed?

The project would be a public-private partnership between a materials recovery facility (MRF), a conversion technology supplier, and the County of Los Angeles. The MRF and the technology supplier would negotiate a partnership and develop a site-specific proposal. The County would select one or more of the best proposals, and work closely with the selected proposals to facilitate project development and make sure the project is successful, including providing a number of specific incentives.

The project would fundamentally be developed as follows:

- MRF Operator - provide the trash necessary for conversion and a site location for the conversion technology facility.
- Technology Supplier - provide the technology; finance, design, build, own and/or operate the facility, as negotiated with the MRF operator.
- County of Los Angeles - facilitate project development by sponsoring a competition and providing potential incentives; obtain operating data from the facility to promote development of future facilities.

## Why is it Imperative for Los Angeles County to Develop Conversion Technologies?

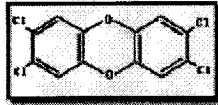
- Each year, Los Angeles County residents and businesses generate 24 millions tons of waste. After recycling half of what we generate, that still leaves 12 million tons per year for disposal, or approximately 36,000 tons per day.
- Currently, 20 percent of the County's waste is exported out of County, primarily by trucks. With the closure of the Puente Hills landfill in 2013 (which handles 1/3 of the County's waste stream), that number is expected to increase significantly.
  - Under the best-case scenario, 45 percent of our waste will continue to be exported by 2020.
  - Under the worst-case scenario (with no landfill expansions approved and no conversion technologies developed), up to 80 percent of our waste would be exported.
  - The increase in exports will be at considerable cost to County residents and businesses, and will increase traffic congestion and pollution.
- Waste-by-Rail will not alleviate this issue, since:
  - The system is only permitted to handle up to 8,000 tons per day, only ½ of which can come from the Puente Hills Materials Recovery Facility (MRF).
  - The projected cost for waste-by-rail has steadily increased due to competition for limited rail capacity.

## What has Los Angeles County Done to Pursue Conversion Technology Development?

- Evaluated over a hundred conversion technology suppliers from around the world.
- Sponsored and endorsed legislation to advance conversion technology development.
- Released a Phase I Evaluation Report (August 2005). The Phase I study screened and ranked conversion technologies that could be developed in Southern California, and identified possible locations for their development.
- Released a Phase II Evaluation Report (October 2007). The Phase II study scrutinized the short-listed conversion technologies and locations. As a result of this detailed technical analysis, four conversion technology suppliers were recommended for development, in partnership with the County, at four materials recovery facility locations. These technologies and locations will participate in a County-sponsored "competition" to select the optimum pairing. The competition is structured in such a way as to leverage maximum private-sector financing and development.
- Established an online resource center for conversion technology information: [www.SoCalConversion.org](http://www.SoCalConversion.org)



## Conversion Technologies: Dioxin and Furan Emissions



2,3,7,8-Tetrachlorodibenzo-p-dioxin



2,3,7,8-Tetrachlorodibenzofuran



3,3',4,4',5,5'-Hexachlorobiphenyl

Conversion technologies are a safe and clean alternative to traditional waste management practices. Conversion technologies are an array of biological, chemical and thermal processes capable of converting post-recycled residual solid waste into useful products, green fuels, and clean, renewable energy. These technologies include processes such as anaerobic digestion, pyrolysis, fermentation, gasification and thermal depolymerization. Some produce no dioxin or furans at all, while others produce only extraordinarily low levels of these pollutants, anticipated to be well below U.S. EPA regulatory requirements.

Dioxins and furans are formed as the result of combustion processes such as the incineration of municipal solid waste and from burning wood, coal or other fuels. These chemicals occur naturally in the environment through such things as volcanic eruptions and forest fires. In large enough doses, dioxins can have adverse health effects, such as chloracne. Over the past 30 years, ambient dioxin levels have dropped dramatically as better pollution control technology has arrived on the scene. The Federal Environmental Protection Agency (U.S. EPA) has imposed strict emissions regulations - their new source limit restricts dioxin production to no more than one part per billion.

The Los Angeles County Solid Waste Task Force has analyzed data from the three thermal conversion processes currently under consideration by the County. Our research, and review of stack test results, reveals that conversion technologies will likely easily comply with U.S. EPA regulations. In fact, these conversion technologies have been shown in actual operation to produce dioxins and furans in amounts **orders of magnitude lower than U.S. EPA limits**, far less than many commonplace and natural activities and well within safe guidelines.

Technology/Standard	Lbs Dioxins/Furans per ton MSW processed
U.S. EPA limit for new sources	0.000000001617131 ( $1.62 \times 10^{-9}$ )
International Environment Solutions	0.00000000014174 ( $1.42 \times 10^{-11}$ )
Ntech Environmental	0.000000000087715 ( $8.77 \times 10^{-11}$ )
Interstate Waste Technologies	0.000000000000081 ( $8.1 \times 10^{-14}$ )

*Note:* Dioxin and furan emissions listed herein are evaluated on a basis known as ITEQ (International Toxic Equivalents), which accounts for the relative toxicity of the individual compounds. In the United States, dioxin and furan emissions are often reported on a total mass basis, which does not account for the toxicity of the individual compounds. U.S. EPA published an equivalency between total mass and toxic equivalents, specifically for traditional waste-to-energy technology, in 60 FR 65396. The total mass statistics available in the United States were converted to ITEQ to provide for an “apples to apples” comparison. For comparison, traditional waste-to-energy facilities in California, on average, generate 0.00000000540838 ( $5.41 \times 10^{-10}$ ) Lbs Dioxins/Furans per ton MSW processed, also well below the U.S. EPA limit for new sources.

These are infinitesimally small figures. Thermal conversion technologies emit dioxins and furans at levels less than 1/100 of EPA mandates. IWT produces emissions only 1/10,000 of EPA-mandated levels. In fact, IWT releases less than 1 part per 100 trillion, amounts so small they can be measured in molecules. **To put this in perspective, conversion technologies can produce less than 1/10 of 1 percent as much dioxins and furans as wood-burning stoves.**

### Conclusion

**Conversion technologies are not significant producers of dioxins or furans.** Our research has revealed that conversion processes are safe and clean technologies and are likely to easily meet dioxin and furan regulations which are protective of the public health. In addition to the protection of federal regulatory requirements, the public will benefit from an added site specific review and analysis of dioxin and furan emissions by the local Air Quality Management District during air permitting of any projects.

