The 90% Solution:
Molecular Recycling for a Sustainable Future

California prides itself in being environmentally progressive. Indeed, the state is on the cutting edge when addressing issues such as carbon credits and greenhouse gas reduction. But, ironically, when it comes to policies for reducing dependency on landfills and returning waste stream materials to beneficial use, California is literally clinging to the past.

In 1989, California's Legislature enacted AB 939, which ~~calls~~ requires each jurisdiction ~~for the state~~ to divert 50% of its waste from disposal by the year 2000 through an integrated waste management hierarchy. ~~source reduction, recycling, and composting~~. In 2011, AB 341 ~~extended this diversion goal to~~ established a statewide recycling goal of 75% by 2020. But, significantly, no new recovery tools for achieving these goals have been added for nearly a quarter-century. In fact, AB 341 narrows the options to only source reduction, recycling, or composting.

Neither the state's statutory hierarchy of waste management practices or AB 341 mentions energy recovery as an acceptable strategy for reducing the volume of post-recycled organic residuals prior to landfilling. Advanced bioenergy technologies which extend the reach of beneficial reuse and recovery have been embraced virtually everywhere across North America, in Europe and nations like Japan, but are patently ignored in California. Indeed, lawmakers have consistently blocked efforts to integrate these clean energy technologies, thereby lessening the State's effectiveness in addressing not only landfill diversion, but its low carbon fuel and greenhouse gas (GHG) reduction goals~~,~~ as well.

Opening the window to the deployment of conversion technologies capable of producing a wide range of biofuels, biochemicals and other ~~biobased~~bio based products from the ~~biomass~~ biogenic fraction of solid waste would ultimately enable the efficient recovery and beneficial use of as much as 90% of the materials now being placed in landfills.

For example, at its plant in the city of Edmonton, Canada, Enerkem, through thermal treatment, is transforming 300 tons of post-recycled solid waste to ~~reduced~~ low carbon liquid fuels every day. By expanding its recycling program to include the recovery of energy from its post-recycled organic residues, Edmonton has reached its goal of diverting 90% of its solid waste from landfills.

In June of this year, California's Department of Resources Recycling and Recovery (CalRecycle) reported that Californians recycled about 50% of their solid waste in 2013, roughly the same as in 2012. To meet its 2020 goal of 75% landfill diversion, the state, in only six years, will need to increase its recycling rate by 25 percentage points.

Many industry experts agree that, without assistance from conversion

White Paper addressing the subject, "Comparative Life Cycle Greenhouse Gas Emissions Analysis of Alternative Scenarios for Treatment and/or Disposal of 1,000 Tons per Day of Post-Recycled Residuals from a Mixed-Waste Materials Recovery Facility."

This White Paper was commissioned to compare and contrast the total ~~greenhouse gas (~~GHG~~)~~ emissions between the disposal of 1,000 tons per day (tpd) of residuals from a mixed waste Materials Recovery Facility (MRF) in a modern sanitary landfill (baseline scenario) with the GHG emissions from processing the residuals at an integrated MRF containing a conversion technology facility designed to achieve maximum diversion from landfills.

The results of this White Paper support the implementation of integrated MRFs with conversion technology to minimize GHG emissions from traditional landfill transport and disposal.

~~This~~ The County of Los Angeles ~~will~~ hopes to introduce this White Paper to government, the public and media in ~~February~~ spring of 2015. ~~with the assistance of~~ Cerrell Associates will assist in planning and~~,~~ implementing a media event ~~planning~~ yet to be announced.

~~The County is in discussions with Senator Ricardo Lara regarding a public hearing on the document and its implications for waste disposal policy and potential legislation to be held by his Senate Committee. The hearing would take place in late February or early March, soon after the release of the White Paper. Senator Lara is interested in sponsoring additional legislation in the 2015 session of the legislature that will address inconsistencies in statute and advance the cause of conversion technologies. The substance of that legislation is now being considered.~~

The Southern California Conference is conceived as a follow-on to that hearing that will address what is necessary to unify policy implementation by the ~~C~~California Energy ~~C~~Commission (CEC), California Air Resources Board (CARB), CalRecycle, local jurisdictions and the legislature that will result in a statutory and regulatory environment consistent with the findings of the White Paper, and will encourage the use of conversion technologies in pursuit of programs that will enable individual jurisdictions to achieve as high as 90% diversion of solid waste from landfills.

It is suggested that Nurit Katz, Chief Sustainability Officer at UCLA, who was a member of the peer review team for the White Paper, be invited to review the study and opportunities for UCLA and the state university system to encourage policies consistent with its findings. Another suggested participant in this connection would be Mark Gold, Associate Director, UCLA Institute of the Environment and Sustainability.

Mary Nichols of CARB is seen as ~~a~~ critical to embracing the findings of the White

b. Gasification as it relates to power production. The definitions for organic waste, solid waste, source separated waste and biomass as applied to ~~the~~California's Renewable Portfolio Standard Program and the Federal Renewable Fuel Standard.
c. Elements in statute and regulation that discourage public jurisdictions from providing their waste streams or otherwise participating in conversion technology projects.
d. An assessment of recent California legislation impacting conversion technologies, i.e., AB 341, AB 1126, SB 498~~, SB 804~~.

6. Political and stakeholder attitudes toward conversion technologies in California today.
   a. The current definition of recycling and the need for its full recognition and implementation. (Michael Theroux)
   b. The realizable potential for the implementation of anaerobic digestion and composting in California as a percentage of the total waste stream.
   c. How to most productively recover and ~~productively~~ use the dry fraction of the post-recycled waste stream, which cannot be treated through anaerobic digestion or composting.
   d. Landfill diversion credit. What is receiving credit today? How should these rules be revised?

7. Enabling policy – Looking beyond the universally recognized need to correct erroneous and confusing language in statute, which deprives stakeholders of clear and reliable pathways to permitting and secure operations.

8. Breaking the Logjam – Strategies for 2015
   a. The current assumption is that CalRecycle has no intention of conducting the series of Conversion Technology Workshops previously announced in connection with its ~~SB~~ AB 341 policy assessment.
   b. Assessment of the Leadership and Committee Structure of the new Legislature.
   c. The potential for legislative or judicial relief.

The concept outlined herein has been prepared for presentation to the ~~Department of Public Works'~~Los Angeles County Integrated Waste Management Task Force's Alternate Technologies Advisory Sub-Committee at its meeting on January 15, 2015.

Interested Parties to be Invited:

Waste Management Organizations – Landfill operators
Waste Haulers
Public Jurisdictions (City and County)
Representatives of Solid Waste Agencies
Interested Legislators or Staff Members

g. The Advanced Biofuels Association and other Washington-based Associations

The Press

University students interested in the Waste Management industry will be invited to attend. The conference will be advertised and promoted on ~~University~~ university ~~Campuses~~ campuses and in ~~Waste~~ waste ~~Management~~management-related classes.

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