Establishing a Resource Recovery Park at Tajiguas Landfill: Doing Something Different than Landfilling and Getting More Resources from Our Trash

By Mark Schleich, Resource Recovery & Waste Management Deputy Director, County of Santa Barbara (Fall 2011)

This fall, the County of Santa Barbara Department of Public Works in partnership with the cities of Santa Barbara, Goleta, Buellton and Solvang, will be proposing a comprehensive resource recovery park that will address the challenges of managing our community's waste and completely change the way we operate the Tajiguas Landfill. Since the Tajiguas Landfill was last expanded in 2002, the County Public Works staff has been looking into alternatives to landfilling. This Resource Recovery Park proposal is a culmination of research that has included two feasibility studies, a request for proposals, a proposal review process and a comprehensive public outreach effort that has included over 80 presentations to stakeholders over the past five years.

Recycling programs are hugely successful in the communities served by the Tajiguas Landfill; these communities include the unincorporated areas of the South Coast, Cuyama and Santa Ynez Valleys, as well as the cities of Santa Barbara, Goleta, Solvang and Buellton. Together these communities recycle more than 70% of the waste they generate. But these efforts are not enough, since we still buried over 175,000 tons of waste at the County owned and operated Tajiguas Landfill last year.

As effective as our many recycling programs are, we are still faced with waste that can't be recycled, such as paper contaminated with food or items made of many different materials like a juice box that cannot be effectively separated out into paper, metal and plastic.

We are also confronted with the realization that our waste, like many other aspects of our daily life, has a real environmental impact. When our waste decomposes, it creates methane, which, according to the U.S. EPA, is 21 times worse than carbon dioxide as a greenhouse gas. We currently have a state-of-the-art methane gas collection system at our landfill that generates enough power for 3,000 homes on the South Coast. This system collects about 75% of the methane that is generated by our landfill. The remaining 25% that escapes our collection system has the greenhouse gas impact equivalent to 22,000 cars on the road every year.

To address these challenges and move away from landfilling, the County of Santa Barbara and its partner cities will be proposing new facilities that will pull out any recyclables still left in our trash cans, convert our food waste and organic waste into a compost-like material and potentially convert the remaining residual into a gas that can be used to generate electricity.

There is a common misconception that all of our trash is sorted through. It isn't, but it can be. At the landfill, we still see high-value recyclables, like aluminum, being buried. With a materials recovery

facility (MRF) sorting through all of our trash, we can pull out those recyclables and get them to markets for reuse. This MRF would not replace any of our current recycling programs. This facility working in tandem with our existing programs would ensure that we as a community are recycling to the maximum extent feasible.

This MRF will also allow us to sort out our organics, which is the common cause of methane gas generation in landfills worldwide. Once the organic waste is separated from our waste, we can speed up the decomposition process of this material in an air-tight container. This is called anaerobic digestion or "AD." This process captures all of the methane potential of our organic material, generates green energy, and greatly reduces our future greenhouse gas impact. The residual from the organics can be cured as a compost that can be used as a soil amendment or a land reclamation project.

Finally, we are proposing that material that is not recyclable or organic be either processed by thermal gasification or landfilled. The lack of existing large-scale thermal gasification facilities in the US has allowed for a lot of speculation due to an absence of data related to air emissions. Thermal gasification facilities have been used in Europe and parts of Asia, but air emission regulations are different from US standards and the waste processed at these facilities is different than the waste proposed to be processed in Santa Barbara. Thermal gasification facilities are often confused with incinerators, however, there is a big difference between the two. Although gasification technologies use high levels of heat, this is done in a low or zero-oxygen environment. This lack of oxygen does not allow the material to ignite and instead creates a synthesis gas that can be further processed and used later as a fuel. This extra step allows for greater control over potential air emissions. Recent studies produced by Los Angeles County's similar conversion technology program support this claim. (http://socalconversion.org/pdfs/UCR_Emissions_Report_62109.pdf and http://www.socalconversion.org/pdfs/Conversion_Technology_Environmental_Factsheet.pdf)

Including the recent studies and emerging data, we continue to work closely with the local Air Pollution Control District to make sure that rigorous analysis is performed before a facility like this becomes a part of our proposed resource recovery park. Thermal gasification can reduce the volume and mass of waste by up to 99%. In addition, residual from both the anaerobic digester and thermal gasification facility are preferable to unprocessed solid waste because they are inert and free of potentially harmful environmental impacts like greenhouse gas emissions.

If thermal gasification is not used at this proposed facility, an expansion of the existing traditional landfill disposal area may be needed. We are currently scheduled to fill our existing capacity in 2023. Whether or not we need to expand the existing landfill capacity depends on when the Resource Recovery Park opens and our own community's level of trash production.

These facilities along with the existing power plant would make up the proposed Resource Recovery Park. Our recommendation to the Santa Barbara County Board of Supervisors will be to perform a full Environmental Impact Report (EIR) of this proposal. The EIR process will give us additional opportunity for community feedback and give us a better understanding of the potential benefits and challenges of these different facilities. We developed this proposed Resource Recovery Park using goals and criteria

that were based upon community feedback. This project will continue to be publically discussed and defined through community input. A project specific web site, that includes contact information and feedback forms as well as several past reports, presentations and FAQ sheets, can be found at: www.conversiontechnologystudy.com.