

Behind the Renewable Energy Curtain in California

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By James L. Stewart, special to The Digest

At this month's COP21 Conference in Paris, California's two most recent Governors, Arnold Schwarzenegger and Jerry Brown, heralded the legislative and regulatory initiatives of the past decade that have placed California in the forefront of environmental and climate change policy. These programs most certainly provided inspiration for the agreement that was achieved.

Rightly so, it would seem, considering what has been mandated:

- In 2005, by Executive Order, Schwarzenegger established greenhouse gas emission reduction targets requiring the state, by 2010, to reduce GHG emissions to 2000 levels; to 1990 levels by 2020; and by 2050, to 80% below 1990 levels.
- Early in 2006, noting that California's biomass has the potential to power more than three million homes or produce enough fuel to run more than two million automobiles on an annual basis, the Governor established targets requiring the state to produce a minimum of 20% of its biofuels, including ethanol and biodiesel, within California by 2010 and 40% by 2020, and he ordered the state's regulatory agencies to cooperate through its Bioenergy Interagency Working Group to achieve these goals.
- In August of 2006, Schwarzenegger AB 32, the Global Warming Solutions Act, setting the stage for California's transition to a sustainable, low-carbon future, and affirming as law his goal to reduce the state's GHG emissions to 1990 levels by 2020.
- Early in 2007, he established a statewide goal requiring petroleum refiners and other fuel providers to reduce the carbon intensity of California's transportation fuels by at least 10% by 2020. The Air Resources Board adopted the Low Carbon Fuel Standard in 2009.
- In 2012, Jerry Brown further targeted that by 2050, GHG emissions from the transportation sector should be 80% less than 1990.

- And this past April, he increased the state's overall GHG emissions reduction target to 40% below 1990 levels by 2030.
- In October, the Governor signed SB 350, which requires that 50% of the electricity sold to retail customers be generated from eligible renewable energy resources by December 31, 2030.

With the most aggressive series of carbon emissions reduction benchmarks ever enacted by any government in North America, one would expect a concerted, cooperative effort by state government to meet these goals.

But what do you find if you look behind the curtain?

An empty stage where municipal solid waste (MSW) feedstocks have been concerned. During the past decade, the state has placed 340 million tons of solid waste in landfills. Throughout this time, its legislative/regulatory bureaucracy has obstructed the introduction of conversion technologies capable of producing power, biofuels, chemicals, renewable natural gas and other biobased products from MSW feedstocks—most particularly technologies using gasification.

For example, ever since its first publication in 2006, California's annual BioEnergy Action Plan, the key document guiding the state's Bioenergy Interagency Working Group, has included language directing CalRecycle "to work to promulgate changes to existing law to develop a regulatory framework for biomass waste conversion facilities, meeting environmental standards, that clearly distinguishes them from disposal, and provides clear permitting pathways for their development, as well as provides diversion credits to local jurisdictions for solid waste processed by these technologies."

Have any of these goals been achieved?

Not as far as MSW-related technologies are concerned.

In contrast, recent statutes passed and signed by Governor Brown have specifically denied public jurisdictions and project developers the recycling and landfill diversion credit essential to fund and operate these projects. They have denied RPS credit to facilities that generate power from MSW *before* it is placed in a landfill. However, if biomethane is created using anaerobic digestion ("AD") or by a decaying landfill, it receives this credit.

And among other repressive provisions, the state's legislative bureaucracy, for more than a decade, has blocked all efforts to amend or remove from statute a definition of gasification that is universally acknowledged to be scientifically inaccurate, and which leaves developers vulnerable to spurious legal challenges and possible shutdown due to lack of compliance.

The definition restricts the use of air or oxygen in the gasification process (a disqualifying element for most technologies), and requires zero emissions, not simply from the gasification step, but from the *entire* biorefining process. This is a physical impossibility and a standard that would shut down every power plant and petroleum refinery in the state, not to mention any gasification—and anaerobic digestion facilities, as well.

In contrast over the past five years, the administration, through regulatory decision-making alone, classified anaerobic digestion as composting, and as recycling rather than disposal, exempting these technologies from having to follow the same uncertain and time-consuming siting provisions and permitting pathways required of other conversion technologies, enabling them to receive landfill diversion credit, and to qualify the power they produce for the RPS.

Assembly Bill 341, passed in 2011, requires CalRecycle, the state's integrated waste management agency, to adopt a mandatory program of commercial recycling and to pursue a new statewide goal of 75% recycling, to be achieved by 2020 through source reduction, recycling, and composting (including anaerobic digestion). Both the legislation and CalRecycle's subsequent policy initiatives have specifically ignored the potential role of MSW conversion technologies in this effort.

What are the implications?

According to a March 2015 CalRecycle report, "In order for California to reach a statewide recycling rate of 75%, at least half of the solid waste that is currently being disposed would need to be recycled." Including approximately seven million tons of material that will no longer be counted as recycling (such as green waste when used as alternate daily landfill cover), the state is projected to generate 43 million tons of disposal-related activity in 2020.

In order to reach 75% recycling, roughly 22 million additional tons of material will need to be recycled in 2020—a massive increase considering the fact that California's recycling rate has essentially been stalled at 50% since 2010.

The goal is unrealistic. The infrastructure does not exist.

For example, Los Angeles County does not currently have a single anaerobic digestion facility operating on a commercial basis. Preliminary estimates indicate that the County's jurisdictions would need 36 facilities, each with a processing capability of 250 tons-per-day, to meet the state's goals for anaerobic digestion, plus an additional five million tons of composting capacity per year.

Further, the state's Air Resources Board has long recognized that organic waste is one of the only feedstocks that, on a life-cycle basis, will meet the emissions reduction objectives of California's Low Carbon Fuel Standard. As early as 2010, its staff declared

that 24 waste-to-biofuels facilities would be required in the state by 2020—18 plants that produce biofuels from waste products and six new biodiesel/renewable diesel plants—to assist in meeting the goals of this program.

The state's increased mandates for 50% renewable power and the reduction of organics going to landfills present a challenge for the renewable natural gas (RNG) industry. With the volume of organics reaching landfills in decline, producers will begin to see a reduction in landfill biogas output. For them, a major alternative will be to produce biomethane through gasification of the post-recycled organics that are being mandated for diversion from landfills.

For Southern California Gas alone, 50% renewable power means 50 billion cubic feet of renewable natural gas per year. Southern California Gas has estimated the types and number of facilities that the utility will require to meet that goal. It includes 14 gasification facilities capable of producing 42,000 SCFM of RNG from municipal solid waste.

Consider that on a statewide basis. Organic waste could generate 243.6 billion cubic feet of renewable natural gas per year, more than 10% of California's total use of natural gas.

This past October, in a letter to the California Air Resources Board, representatives of such organizations as the League of California Cities; Solid Waste Association of North America, California Chapters; Los Angeles County Sanitation Districts and waste management companies Republic Services and Waste Management expressed concern about its draft strategy for achieving 75% organics recycling in 2020 and 90% by 2025.

It said that 75% organics diversion will require nine million additional tons of organics diversion capacity statewide by 2020—four years from now. This equates to an additional 120 compost operations and 12-15 more AD facilities over the next five years—not including the substantial additional capacity necessary to collect, process, and deliver organics to these facilities.

Stating that it takes a minimum of five years to finance, site, permit and build a new composting or anaerobic digestion facility, the letter noted that it would be impossible for the industry to finance, site, permit and build 150 facilities in four years or 300 in nine years without historic and monumental changes to local siting processes, permitting, and CEQA.

It estimated that \$2-3 billion in infrastructure funding would be required, along with “a wholesale revision of California's view on conversion technologies.”

The state has an unparalleled opportunity and incentive for the production of low carbon biofuels, biobased chemicals and other products from organic waste. Why, when confronted with a massive challenge for organics disposal reduction, would its

leadership not want to bring to bear all of the technical resources available?

It just doesn't make sense.

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