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I have served the industry as Chairman of the BioEnergy Producers Association since its founding in 2004.

Over the past decade our Association unsuccessfully sponsored four comprehensive legislative campaigns intended to address the statutory provisions that have discouraged developers from attempting to site and permit municipal solid waste conversion projects in the state. Among these roadblocks, current solid waste statute Includes:

A definition of gasification that is universally acknowledged to be scientifically inaccurate.

A definition that requires the entire gasification-related manufacturing process, including the bioenergy production step, to have zero emissions (consider how many petroleum refineries there would be in the state if they had to comply with that definition),

In statute, conversion technologies, including low temperature technologies, remain generally equated with incineration.

MSW, when used to produce renewable energy, chemicals and other biobased products does not qualify as landfill diversion.

It places conversion technologies under feedstock volume and content limitations that had been drafted to regulate the incineration of MSW in cement kilns.

Contracts have been grandfathered in California that allow landfill biogas producers to inject biomethane into a pipeline in another state and sell it into California for the production of power, but you can't inject the same biomethane into a pipeline within the state.

But what has changed in the past 13 years?

AB 341, passed in 2011, set a policy goal that not less than 75% of California's *solid waste* be source reduced, recycled, or composted by the year 2020.

SB 1383 has mandated a 50% reduction in the statewide disposal of *organic waste* from the 2014 levels by 2020 and a 75% reduction by 2025.

AB 584 mandates that 50% of our power be renewable by 2025.

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

And the Governor wants to reduce California's consumption of petroleum transportation fuels 50% by 2030.

Beginning in 2020, green waste will no longer receive credit for landfill diversion when used *in landfills* as alternate daily cover.

All of this means that the major waste management companies, waste haulers and public jurisdictions will have to find new sources for the disposal of their wastes.

The *Low Carbon Fuel Standard* has created a major demand for technologies in California that can produce qualifying fuel. Today, there is essentially no 2020 LCFS-compliant gasoline being produced.

From the more than *33.2 million tons of post-recycled solid waste* the state placed in landfills last year, CTs theoretically could produce 1.6 billion gallons of LCFS-compliant biofuels. It is never going to reach that goal, but the point is, we need to get started.

And in addition to biofuels, MSW residuals -- post-recycled waste -- represent one of the state's best potential sources for the production of renewable natural gas. However, the state's mandate for 75% organics landfill diversion will reduce the amount of landfill biogas available for power production or conversion to renewable natural gas.

So, how has the state been doing by clinging to the traditional hierarchy of waste reduction, re-use and recycling alone?



During the six years since the passage of AB 341, waste disposal in California has *increased* from 30.4 million to 33.2 million tons per year, and its recycling rate has actually declined, falling to 44% in 2016 from a high of 50% in 2012. 76.5 million tons of waste were generated in California in 2016.

California's Solid Waste Disposal			
	Landfilled	Per Resident Disposal	Statewide Recycling Rate
	(Tons per Year)	(lbs/resident/day)	Rate
2010	30.4	5.4	49%
2011	29.9	5.4	49%
2012	29.3	5.3	50%
2013	30.2	5.3	50%
2014	31.2	5.4	50%
2015	33.2	5.7	47%
2016	35.2	6.0	44%

In its 2012 AB 341 planning document, CalRecycle stated that achieving its landfill diversion goals would require “an intellectually honest re-assessment of what truly constitutes recycling in California.”

In its 2017 report on the state of disposal and recycling, released just several days ago, CalRecycle admitted that “...Despite CalRecycle’s commitment to achieving the statewide 75 percent recycling goal, existing programs and tools have not led to the desired result of increasing recycling and decreasing disposed waste.”

It goes on to say, “Five new initiatives, including the statewide 75 percent recycling goal and the organics waste reduction targets, continue to push California towards additional recycling and composting”.

Why, our industry asks, only towards recycling and composting? Why not try the waste conversion technologies of the 21<sup>st</sup> century?

And what truly constitutes recycling in California?

California’s statutory definition says that recycling is “*the process of collecting, sorting, cleansing, treating, and reconstituting of materials that would otherwise become solid waste, and returning them to the economic mainstream **in the form of raw material for new**, reused, or reconstituted products, which meet the quality standards necessary to be used in the marketplace.*”

This defines a process--a pathway that transforms materials from being waste into *raw materials* for use in the creation of new biobased products, which obviously would include renewable fuels. It is a provision that has been ignored by CalRecycle for the past decade.

Compare this with the statute in the state of New York:

“When granting a beneficial use determination, the department shall determine, on a case-by-case basis, the precise point at which the solid waste under review **ceases to be solid waste**. Unless otherwise determined for the particular solid waste under review, that point occurs when it is used in a manufacturing process to make a product or used as an effective substitute for a commercial product or used as a fuel for energy recovery.”

To reach the state’s goal of 75% diversion, CalRecycle estimates that an additional 23 million tons of solid waste will need to be recycled, reduced or composted in 2020.

Stated another way, this would mean reducing by approximately 10 million tons the volume of waste the state is currently placing in landfills.

**Can this be accomplished in less than four years?...**

**In a growing economy?...**

**Without expanding the state’s solid waste processing toolbox?...**

Most industry professionals believe it will be impossible without the introduction of new technologies for productive waste disposal. Yet, in its policy implementation, CalRecycle

persists in a policy of solid waste management narrowly focused on source reduction, reuse, traditional product recycling, anaerobic digestion and composting as the only viable alternatives to landfilling,

The California Energy Commission and Air Resources Board have been quietly pressing CalRecycle to review its policies, but to date, without success.



Shown above is CalRecycle’s own chart. It estimates that approximately 100 new or expanded anaerobic digestion or composting facilities, each at a capacity of 100 tons per day, and at a total infrastructure investment of \$2-3 billion, without established and proven markets for the output, will be required to achieve its diversion goals.

None of the agency’s related planning documents have ever mentioned conversion technologies as playing any role in this initiative.

As far back as 2010, the California Air Resources Board stated that its #1 solution for meeting the GHG reduction goals of California’s Low Carbon Fuel Standard was to “increase use of biofuels from waste materials.”

**Potential New California Biorefineries to Meet 2020 Goals**

- **24 new potential commercial scale biofuel facilities projected in CA by 2020**
  - 18 New Cellulosic Ethanol plants
  - 6 New Biodiesel/Renewable Diesel plants

To meet its LCFS goals, seven years ago, ARB projected the need for 24 new commercial scale advanced biofuels facilities in California by 2020 -- nothing has been done.

Due to the repressive statutory and regulatory policies governing MSW in California during the past decade, technology providers either sited in, or relocated to other states, \$1 billion in conversion technology projects.

However, these statutory provisions do not apply to single-stream, non-putrescible cellulosic wastes.

### **The Challenge in Agriculture**

California's San Joaquin Valley annually generates 14 million tons of agricultural waste, ranging from fruit and nut tree removals to food processing wastes to crop residues.

Central California is facing a biomass disposal crisis due, among many factors, to its ban on open field burning, the on-going closure of the state's biomass combustion plants and the presence of 105 million dead, bark beetle-infested trees in its forests.

In substantial part, due to its inability to productively dispose of these wastes in an environmentally sensitive manner, the San Joaquin Valley has some of the nation's worst air quality.

These wastes hold the technical potential to produce approximately 2.8 billion gallons of renewable fuels.

California consumes three billion gallons of diesel annually; state government mandates the use of renewable diesel in many of its vehicles and the public wants renewable fuels. However, only 250 million gallons per year of renewable diesel are currently available in the marketplace.

For these reasons, we believe that the near-term focus for conversion technologies in the State of California will be in the agricultural sector.

Once our state legislators see first-hand the positive contribution that conversion technologies can make to addressing the state's challenges of waste disposal, we believe they will come to demand legislative action to enable these technologies to address its massive resource of municipal solid waste.