16-5-4

Chuck White Testimony – CARB May 19, 2016 – SLCP Strategy

Chuck White, Consultant to the Solid Waste and Recycling Industry in California. Member of SWANA. I support the objectives of Zero Waste provided that cost-effective ways can be identified to achieve that goal. I have no objection to the diversion of organic waste if a means can be identified to cover the costs of that activity while ensuring protection of human health, public safety and the environment. I'm here to day to discuss concerns with the provision of the SLCP strategy dealing with organic wastes:

> "ARB, in conjunction with CalRecycle, will develop a regulation by 2018 to effectively eliminate the disposal of organics in landfills by 2025".

Summary of Key Issues that need to be Further Considered

- **75% Recycling is already the goal.** CalRecycle already has a strategy to recycle 75% of all solid waste by 2020 – including organic green waste and food waste. The results of this effort will not be known and understood until well after 2020.
- **Existing Legislation to achieve 50% recycling of organics will not be fully implemented until 2020 – or later**. AB 1826 and AB 1594 have already been enacted with support from local government and industry to require the collection and recycling of organic waste from all large generators of solid waste by 2020. These will be the easiest organic wastes to collect and process separately at approximately 100 new facilities at a likely cost of over $1 Billion. Although CalRecycle is seeking authority to expend as much at $100,000 per year between now and 2020, a complete plan to site, permit and finance the necessary facilities has yet to be established. The results and effectiveness of these programs will not be known until sometime after 2020.
- **What cost and Who Pays?** Getting to 90% diversion or organics by 2025 will have to focus on much more difficult materials to separate and use beneficially – either at the point of generation or subsequent processing. It is not clear how this will be done, nor at what cost. To create sufficient infrastructure to get from 50% to 90% may involve an additional $1-2 Billion or more. It is not clear how this will be financed and what the true benefits will be.
- **Facility Siting and Permitting.** Facility Siting and Permitting will be difficult enough to get to 75% by 2020, let alone getting to 90% by 2025 – particularly in Southern California. It is unlikely that most communities, including EJ communities, will support the siting and permitting of organic waste collection and processing facilities in their midst. There have

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been numerous instances over the years of organic waste processing facilities causing odor and vector concerns.

- **Conversion Technologies.** High temperature combustion and conversion technologies are currently discouraged, both in law and in practice, in California. In my view, beneficially using up to 90% of the organics in the waste stream will certainly require the use of high temperature technologies to process mixed residual solid wastes containing organics to extract energy and/or fuel value. Other uses of such mixed residual organic wastes are extremely limited. The permitting and siting hurdles for such facilities is not addressed in the SLCP strategy and must be considered.

- **Landfill Early Action Measure.** One of the first measures that CARB implemented after the passage of AB 32 was the Landfill Early Action Measure to reduce the concentration of methane at the surface of virtually all California landfills. Approximately 95% of all landfill waste in-place in California has an active gas collection system operating in compliance with this early action measure. The SLCP does not provide any findings on the success or adequacy of this measure and does not appear to recognize any benefit from this landfill emission control measure. Prior to embarking on a costly organic waste diversion program, the efficacy and possible improvement to this early action measure should be thoroughly evaluated.

- **Uncertainty over Landfill Methane emissions.** The Draft SLCP strategy acknowledges that there is incomplete and uncertain information about actual landfill methane emission. There is no direct measurement of such emissions. Emission estimates are based on modelling assumptions. As the ARB states in the SLCP Strategy on Page 72 - 73:

  > "However, quantifying emissions from landfills is difficult, due to their area-wide nature and several landfill-specific factors (size, age, materials deposited, local atmospheric conditions, soils, landfill cover, and gas collection system) . . . Estimates of methane collection efficiency at landfills, both with and without gas collection systems, vary widely . . . Continuing evaluation of major sources of methane in the State is necessary, and this includes landfill emissions."

- **Accuracy of Modeling Methods and Emission Estimates.** The Strategy relies on a First Order Decay (FOD) model with default assumptions for landfill gas (LFG) collection efficiency and methane oxidation. This is widely viewed by experts as the most inaccurate approach to estimating LFG emissions as it relies on a LFG generation model with a recognized wide range of uncertainty, as well as default values for LFG collection

efficiencies based on studies that do not represent California landfills. It also relies on outdated data for methane oxidation in landfill covers. The SW industry is planning to submit additional written submittals outlining the deficiencies of these methods.

- **Direct Measurement Studies Validate Lower Landfill Methane Emissions than Estimated by FOD Models & Significantly Higher Oxidation Rates than Defaults**

  Direct emission measurements, in contrast, are more granular, and may analyze such issues as total site emissions, emissions from particular equipment or processes at a site, and how emissions change by season. In this way, direct emission measurements can be used to validate emission models and quantify emissions. There are number direct measurement studies that do not appear to even be mentioned in the Strategy.

- **CalMIMM landfill methane model.** The CalMIMM model is a state of the art program for estimating landfill methane emission. It is based on individual sites and operating conditions and has been field verified using flux boxes and other remote sensing technologies. It was developed under a contract by the California Energy Commission by USDA and Landfills+ Inc. It would seem appropriate that this new state of the art modeling system should be applied to all California landfills prior to adopted a strategy to expend $ Billions to divert organic with unknown cost and unknown effectiveness. Further, this model could be used to evaluate the efficacy of additional improved landfill operating methods including gas field tuning and improved cover materials.

- **Improved Landfill Management Strategies.** The Draft SLCLP strategy apparently only assumes that 75% of landfill methane generated methane is adequate controlled. The rest is apparently assumed to be released fugitively. Most of these assumed releases appear to be based on lack of gas collection early in the period of waste placement or ineffective operation of gas collection once installed. There is growing evidence that early placement of gas collection, more finely tuned gas systems and use of appropriate cover materials can greatly enhance the control of fugitive emissions. Such landfill improvements would likely be much more cost effective than organic waste diversion – but have yet to be evaluated or even considered. The ARB should support further research and evaluation of earlier installation of gas collections systems as a more cost effective was to control fugitive methane emissions from landfills.

Summary and Recommendations

I wish to strongly suggest that the proposed SLCP Strategy be amended to delay further increased goals of organic waste from landfills in California until the existing statutes,

regulations and policies are implemented and evaluated – sometime after 2020. Only then will the ARB have an accurate picture of what will be required to "effectively eliminate the disposal of organics in landfills" and the likely cost and effectiveness in reducing methane emissions.

The SW industry looks forward to working with the ARB to implement the most cost-effective methods to minimize the generation and emissions of SLCPs from all aspects of solid waste and recycling systems.

> "ARB, in conjunction with CalRecycle, will evaluate additional methods to effectively minimize SLCP emissions from the solid waste & recycling sector not later than 2022 after implementation of AB 1826 and AB 1596 and after full evaluation of SLCP emissions from this sector in coordination and cooperation with the solid waste and recycling sector."