

## Landfill Gas Project Protocol Comments

**TO:** Tim Kidman – Policy Manager, California Climate Action Registry  
**FROM:** Adam Penque – Manager of Standards, GHGS  
**DATE:** July 10<sup>th</sup> 2009

**SUBJECT:** Expansion of eligibility to include landfills classified as *bioreactors*.

The purpose of this memo is to recommend that CAR expand the eligibility of the Landfill Gas project Protocol to include bioreactor landfill sites.

The EPA defines bioreactor landfills as;

*A bioreactor landfill operates to rapidly transform and degrade organic waste. The increase in waste degradation and stabilization is accomplished through the addition of liquid and air to enhance microbial processes. This bioreactor concept differs from the traditional “dry tomb” municipal landfill approach.*

During the development of the LFG project protocol version 1.0, eligibility was limited from including landfill sites classified as “bioreactors”. The Landfill workgroup (WG) agreed that because bioreactors accelerate the rate of biogas production, as compared to a traditional “dry tomb” landfills, CAR would have to recognize project types where reductions in emissions occur during the project activity at rates faster than they “would have been emitted” in the baseline. At the time CCAR (now CAR) had only developed a methane avoidance protocol for manure management, a sector where avoided emissions in the baseline occur at roughly the same rate as baseline emissions.

In recent months CAR has expanded its view to include sectors and technologies which mitigate GHG emissions at a rates that are different than those of the baseline, for example co-digestion, CMM and ODS. With this shift to address more complex sectors, it is recommended that CAR reconsider the eligibility of bioreactor landfills. In general, bioreactor landfills shift gas production up, however it is reasonable to assume that the gas collected by the installed collection system would have occurred in the baseline and would have been fugitively emitted to

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the atmosphere, less surface oxidation which is accounted for by the protocol. Therefore the crediting of offsets from a bioreactor landfill project can be done using accounting principals similar to those developed by CAR for other sectors.

By recognizing bioreactor landfill project types CAR will provide a valuable incentive to the technology. The EPA credits bioreactors with the following advantages over more traditional “dry tomb” municipal landfills;

- Decomposition and biological stabilization in years vs. decades in “dry tombs”
- Lower waste toxicity and mobility due to both aerobic and anaerobic conditions
- Reduced leachate disposal costs
- A 15 to 30 percent gain in landfill space due to an increase in density of waste mass
- Significant increased LFG generation that, when captured, can be used for energy use onsite or sold
- Reduced post-closure care

If you have any questions on these comments, please contact Adam Penque at [adam.penque@ghgs.com](mailto:adam.penque@ghgs.com).