



November 17, 2014

Katrina Sideco
Low Carbon Fuel Standard Program
California Air Resources Board
1001 "I" Street
P.O. Box 2815
Sacramento, CA 95812

Via Email: katrina.sideco@arb.ca.gov

Subject: Reauthorization of Low-Carbon Fuel Standard, Revisions to the CA-GREET model and the need for minimum LCFS price stability

Dear Ms. Sideco:

Thank you for the opportunity to submit comments to you regarding the re-adoption of the California Low Carbon Fuel Standard (LCFS). As further discussed below, Waste Management (WM) supports CARB's re-authorization of the LCFS regulation at the earliest opportunity and strengthening it with mechanisms to insure greater certainty and predictability in the value of LCFS credits. However, we have very significant concerns with the proposed modifications to the CA-GREET model that underpins full-fuel-cycle pathways under the LCFS. Therefore, we strongly urge you to delay adoption of the proposed revisions to CA-GREET until our concerns have been thoroughly addressed and important new data from various ongoing studies can be incorporated.

WM has supported California's Low Carbon Fuel Standard from the beginning. The LCFS provides a market-based mechanism to facilitate the development of low carbon alternative fuels to reduce GHG emissions. WM is well positioned to both produce low carbon fuels from waste biomass and utilize such fuels in our fleet. As I'm sure you are well aware, CARB's own LCFS pathway analyses clearly indicate that waste derived fuels have the lowest carbon intensity of any renewable fuels currently being considered by the agency. WM has a fleet of approximately 2600 HD refuse and recycling vehicles operating in California. Already more than half of those vehicles have been converted to natural gas and most of those are being fueled by waste-derived low carbon renewable natural gas. WM is meeting the needs of this fleet both through Renewable Natural Gas produced in California and imported via pipeline from other states. These investments in and growth of renewable fuels by WM in California are directly attributable to the LCFS.

WM believes that California should continue on this successful path by reauthorizing the LCFS regulation in early 2015. This timeline will provide regulatory certainty to help continue investments in the development and use of low-emissions alternative transportation fuels and advanced vehicle technologies.

Request to Delay CA-GREET modifications for Natural Gas and Renewable Natural Gas

In August of this year, CARB announced it would be updating the CA-GREET model used to estimate “full fuel-cycle” GHG emissions from transportation fuels. However, CARB did not provide essential details for public review until October 10, 2014. CARB staff requested receipt of public comments very soon thereafter, apparently so the Board could vote on and finalize these proposed changes at its February, 2015 meeting. We strongly believe that CARB is moving too fast to vet its proposed new carbon intensity (CI) values for natural gas and renewable natural gas, and other changes to the current model. This push for expediency is happening at the expense of accuracy and completeness for the proposed update to the CA-GREET model.

It is our understanding that the proposed changes could have the effect of reducing the LCFS credit value of fueling by natural gas by 16% and by renewable natural gas by as much as 25%. Providing just nine business days for stakeholders to review and comment on the proposed changes is unfair, and is contrary to due process that should be provided to the proposed substantial technical changes.

1. First, revising the CA-GREET model is not necessary to reauthorize the LCFS regulation. Indeed, neither AB 32 nor the 2009 LCFS regulation require an updating of CA-GREET as part of the LCFS reauthorization.
2. Second, while we welcome the opportunity to participate in a dialogue with CARB to update CA-GREET, insufficient time and information have been provided to fully assess the proposed changes, and engage in such a dialogue.
3. Third, as others have advised us, it is likely there will be significant publications within the next several months of significant new data on methane leakage and other related issues (including studies that CARB has funded and/or sanctioned). It is clearly premature to change the CI values for natural gas before that information becomes available.

A number of related issues remain unresolved given the limited data currently available. Using a national methane leakage rate for all natural gas (geologic and renewable) is too simplistic and results in an unfair program that dismisses California’s gains in environmental regulations and industry’s adherence to these regulations. Furthermore, applying a 2% leakage rate to landfill-gas-derived Renewable-CNG and Renewable-LNG is inappropriate since it is based on an “apples(biomethane)-to-oranges(natural gas)” comparison, is inconsistent with the actual operations of RNG production facilities at

landfills, and further excludes the carbon benefits of early well installation and the capture and destruction of “unregulated methane” at the same sites.

Changing the CA-GREET Model to include new methane leakage rates will not result in more accurate projections. The preliminary indication is that proposed changes to the CA-GREET Model will result in higher CI’s for CNG, LNG and their renewable counterparts as described above. If adopted, this upward adjustment will have a chilling impact on the market and reduce the economic incentive for production of low-carbon fuels. Assessing higher CI’s will reduce the number of LCFS credits generated from RNG vehicle fuel projects and thereby slow NG and RNG adoption. Furthermore, given the serious and potentially negative impact on the renewable fuels industry, changing the value basis for these low carbon fuels without compelling reasons or valid scientific basis will signal to investors that they cannot count on market stability.

We urge the ARB to take the correct course of action and delay implementing any new methane leakage rates. The ARB should continue to gather additional data on RNG production before applying any new assumptions regarding methane leakage or the CI of RNG. WM and its renewable natural gas (RNG) business partners would be pleased to provide CARB staff with information regarding the measures being applied to minimize fugitive methane emissions from our RNG facilities.

The ARB should continue its good work to better understand the regional and segmented differences between the natural gas systems. With new data on the horizon, and an updated GREET soon to be available, the ARB will be in a far better position to evaluate and adopt more accurate leakage rates at a later date once updated information has been reviewed - and once the pressure of a fast-approaching deadline to re-adopt an improved LCFS has passed.

It is also important to note that the LCFS program relies on a credit trading market defined largely by the CI values for fuels that CARB staff is proposing to modify. Significant changes made hastily to any regulatory or incentive program will create uncertainty and reduce confidence in that program. By rushing to adopt new CI values before significant new natural gas data can be evaluated, CARB risks relying on inaccurate, incomplete or outdated data. The consequence will be to destabilize the LCFS credit trading market, and delay or halt investment plans developed to comply with the LCFS. While WM is currently committed to developing and fueling our fleet with Natural Gas and Renewable Natural Gas, we have not committed to providing such fuels to other users. This is due, in part, to credit value uncertainty that accompanies the LCFS (and the federal RFS2). Further uncertainty in the value of natural gas and renewable natural gas LCFS credits could result in delays to plans to expand renewable natural gas production and development for WM’s own fleet.

To be clear, WM does not oppose revisions to the CA-GREET model that are based on the best information and which are well considered and thoroughly vetted.

Unfortunately, the current proposal does not take into account new independent, peer-reviewed information about methane leakage that we have been advised by NGVA and CNGVC (of which WM are members) that will emerge in the next few months. Instead, CARB is proposing a schedule that virtually guarantees that it will have already adopted a revised CA-GREET model before that information becomes completely available.

Request to Stabilize and Support LCFS values that can Finance New Fuel Development

From a purely economic standpoint, fossil natural gas is the cheapest option for WM to consider for its fleet of HD vehicles. Using natural gas (\$3.50/MMBTU) to fuel a fleet rather than diesel (\$25/MMBTU) is easily justified. Using low carbon renewable natural gas also makes economic sense as compared to diesel. However, the production of renewable natural gas from landfill gas and other biogenic waste sources typically requires revenues in the range of \$8 to \$12 per MMBTU. However, from a purely economic standpoint, it does not make sense to produce renewable natural gas (say, \$10/MMBTU) over fossil natural gas (\$3.50) – unless the renewable or low carbon value can make up the difference (i.e., “bridge the gap”).

An LCFS credit price of \$50/ton appears to be the breakpoint in developing new renewable natural gas supplies. Currently, the federal RFS2 can be relied upon to provide a value of about \$3/MMBTU for renewable natural gas that is considered to be a cellulosic biofuel. Thus, at \$50/ton, LCFS value can marginally support new renewable natural gas development:

Base Natural Gas Value:	\$4.00 / MMBTU
RFS2 Credit Value:	\$3.00/ MMBTU
LCFS Credit Value of \$50/ton:	<u>\$3.33/ MMBTU</u>
Total Value	\$10.33/MMBTU

Thus, if the above Renewable and Low Carbon Credit values can be assured, renewable natural gas developers such as WM will be encouraged to invest in new renewable natural gas development. As a potential developer of renewable natural gas, WM needs an “all-in” prices (NG market price + renewable credit value + low carbon credit value) of at least \$10/MMBTU to make the investment worthwhile. These values need to be sustained for at least the period necessary to pay back the \$10-\$30 million cost of new commercial scale renewable natural gas development. This generally requires a payback period of up to 10 years. In our view, in order to make the LCFS a viable incentive program to stimulate renewable natural gas development a long-term predictable LCFS value of *at least* \$50/ton is required. We strongly urge CARB to find ways to stabilize the LCFS so that this value can be realized over the payback period of such investments.

WM requires an all-in price (natural gas market price plus renewable premiums) of approximately \$10/MMBTU to reach investment thresholds for the development of new

renewable natural gas production facilities. Although still considerably cheaper than diesel (~\$25/MMBTU), this price is still much more than fossil natural gas with which RNG must compete. To get access to capital to build new renewable natural gas facilities, WM needs a fixed-rate, long-term contract (or a regulatory minimum price) to reduce or eliminate the risk of commodity price volatility. These contracts are difficult or impossible to get for RINs and LCSF at this time, which therefore stifles capital investment. Other developers that WM has discussed this matter with share similar opinions.

A guaranteed LCFS floor of \$3.33/MMBTU (\$50/ton -- LCFS credit) may not quite get developers to the investment grade threshold, but it takes away most of the volatility risk for the margin between natural gas price and the ~\$10/MMBTU total RNG value that investors require. With an LCFS floor of \$50/ton, developers could potentially accept the commodity risk for the last \$1-\$3 that would be filled by RINs. In summary, WM requests that CARB consider mechanisms that provide reasonable assurance of a \$50 floor price for LCFS credits. Such a floor price eliminates most, but not all of the commodity price risk for a developing a new RNG facility.

Conclusion

WM shares the ARB's goal of a stronger LCFS. We believe this goal is best achieved by an LCFS that is credible, stable and predictable. A strong LCFS must be rooted in robust data and must take note that changes, particularly those with significant market impacts, must be made based on compelling evidence and complete information. In the case of methane leakage attributable to natural gas systems and processing of RNG, the evidence is lacking. In the case of a predictable value for LCFS fuel credits, greater certainty that can be realized by at least a \$50/ton LCFS credit is essential to spur further investments.

Please let me know if you have any questions or concerns about these comments. I can assure you that WM is committed to working cooperatively with CARB to ensure implementation of a reauthorized LCFS that will meet California's low carbon fuel goals.

Sincerely,



Charles A. White, P.E., Consultant
For Waste Management

cc: Virgil Welch, Office of the Chair, vwelch@arb.ca.gov
Mike Waugh, Chief, Transportation Fuels Branch, mwaugh@arb.ca.gov
Chan Pham, LCFS program cpham@arb.ca.gov
John Courtis, Manager, Alternative Fuels Section, jcourtis@arb.ca.gov