

# Cutting California's GHG

By Patrick S. Sullivan

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**A**B 32, California's landmark climate-change legislation, was signed into law on September 27, 2006. The primary goal of AB 32 is to create programs that will allow California to reduce its greenhouse gas (GHG) emissions to below 1990 levels by 2020. Provisions of this legislation authorize the California Air Resource Board (CARB) the jurisdiction to do the following:

- Develop the 1990 baseline and subsequent years' inventories of statewide GHG emissions
- Require mandatory reporting of GHG emissions for specified sources

- Develop early-action rules for achieving GHG reductions from major GHG emitters identified in the statute
- Establish a cap-and-trade program to set GHG emission limits on sources within the state and develop a GHG-reduction credit-trading program to allow growth to occur while achieving the reduction goal
- Set up compliance and enforcement programs to implement the various aspects of AB 32

The MSW industry has been very involved with the AB 32 program since its inception. This has been accomplished through the advocacy efforts of the Solid Waste Association of North



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America (SWANA) and the Solid Waste Industry for Climate Solutions (SWICS) group, which includes representatives of SWANA. Initially, SWICS focused on the GHG inventory process to ensure that landfills and other solid waste facilities were fairly and accurately represented in the statewide inventory. To that end, SWICS developed two guidance documents to supplement the inventory methodology used by CARB for landfill GHG estimates: (1) *Current MSW Industry Position and State-of-the-Practice on LFG Collection Efficiency, Methane Oxidation, and Carbon Sequestration in Landfills* (October 2008) and (2) *Current MSW Industry Position and State-of-the-Practice on LFG Collection Efficiency, Methane Oxidation, and Carbon Sequestration in Landfills* (July 2007). SWICS recommends use of these guidances when completing site-specific estimates of landfill GHG emission and carbon sequestration.

Based on CARB's inventory, the landfill industry is the only industry category in the state whose GHG emissions are already less than their 1990 baseline. For 2005, the most recent year to have been inventoried by CARB, landfills emit approximately 1.2% of the statewide GHG emissions. Using SWICS inventory methods, the value would probably be approximately 0.8% or less. Despite this fact, landfills have been identified for further regulation under AB 32, as detailed below.

The mandatory reporting regulations under AB 32 were the first set of requirements to be formally promulgated under the law. Beginning in 2009, regulated industries will be required to report their annual GHG emissions. Although landfills are not specifically regulated, many landfill facilities will have to report due to GHG emissions in excess of the threshold of: (1) 25,000 metric tons of carbon dioxide from stationary combustion (about 1,700 standard cubic feet per minute of LFG at 50% methane) and/or (2) 1.0 MW of power generation. Once these trigger levels are hit, GHG emissions must be reported annually in accordance with CARB's "Mandatory Reporting of Greenhouse Gas Emissions" (§95100-95133 of Title 17 of the California Code of Regulations). The 2008 reports (due April 1, 2009) are not required to be third-party verified, but subsequent years' reports will be. Mandatory reporting for landfills will include GHG emissions from the following:

- All stationary combustion sources, detailed by fuel type
- Specified process or fugitive emissions
- Combustion of if biomass-derived fuel, separately reported
- Purchased or acquired electricity, heat, and/or steam
- All *de minimis* sources (calculated as less than 3% of total carbon-dioxide equivalent emissions, not to exceed 20,000 metric tons)

GHG emissions from renewable energy or biogenic emissions (such as from LFG combustion) are not exempted, although SWICS pushed for this provision. Also, CARB has suggested that it will expand the mandatory reporting requirement in the future to include more regulated industries, sources, and pollutants, which could include landfills as a source category.

The second set of requirements from AB 32 includes the proposed early-action measures for GHG reductions. These are typical "command and control" type regulations, which mandate controls on specified industries to achieve GHG reductions. The early-action rule for methane reductions at landfills specifically targets LFG emissions. CARB has predicted that an annual reduction of one million metric tons of carbon-dioxide equivalent from additional methane reductions can be achieved at landfills through the implementation of this new rule. The best way to describe the

proposed rule, which as of December 2008 is in its third version, is the New Source Performance Standards (NSPS) “on steroids.” CARB is essentially creating a new LFG rule that is a hybrid of the NSPS and the most stringent local air district requirements from the South Coast Air Quality Management District’s (SCAQMD’s) Rule 1150.1. Currently, the proposed rule includes the following primary requirements for landfills with 450,000 or more tons of refuse in place that have not been closed for more than 30 years:

- Prepare and submit for approval an LFG system design plan demonstrating that the existing or proposed LFG system will comply with the new rule requirements.
- Install an LFG collection-and-control system (GCCS) designed to handle the maximum expected gas-generation rate for the entire landfill, similar to the NSPS. However, the rule regulates the entire landfill and does not allow the NSPS provision for installing a GCCS only in areas with waste greater than five years old.
- Complete annual source testing for any gas-control device for a methane destruction efficiency of 99%, with an allowance for an outlet concentration of 3,000 parts per million by volume (ppmv) of methane at 15% oxygen for lean-burn internal combustion engines.
- Limit surface emissions to 500 ppmv as methane above back-

ground, including quarterly surface emissions monitoring (SEM) on a 25-foot spacing across the landfill (versus the 100-foot spacing under the NSPS). Note that original drafts of the rule had a proposed a 200-ppmv limit, but the SWICS worked to get this provision removed.

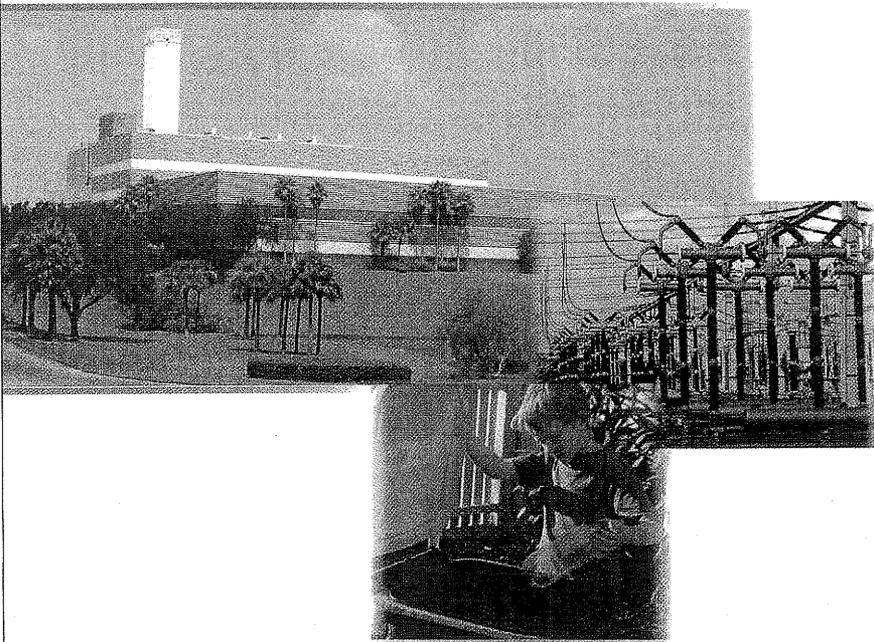
- Integrated surface sampling (ISS) in accordance with SCAQMD Rule 1150.1, which includes collection of composite LFG sam-

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ples over multiple 50,000-square-foot grids across the landfill surface and an ISS compliance limit of 25 ppmv as methane (versus a 50-ppmv limit in the SCAQMD rule).

- Corrective action and remonitoring requirements for SEM or ISS exceedance similar to the NSPS rule. However, GCCS expansions must occur within 45 days after the third exceedance (versus 120 days from the initial exceedance, under the NSPS).

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Although the third version of the draft rule is an improvement over previous versions, SWICS still has some issues with the rule, which were enumerated in recent comments to CARB, as summarized below.

## How the proposed regulation will be implemented and enforced for situations where a landfill has different owners and operators should be explored.

SWICS believes that reducing the current 50 ppmv ISS standard from SCAQMD Rule 1150.1 to 25 ppmv is too drastic of a reduction before understanding the impacts of such a move. A more prudent approach would be to leave it at 50 ppmv, collect the data and re-evaluate the need to change the ISS limit in a future rulemaking. This is a similar approach to what is being used for the 500 ppmv versus 200 ppmv instantaneous SEM limit. CARB will still gain significant methane reduction by introducing the new ISS standard to the remainder of the landfills

outside the SCAQMD, fulfilling the obligation of the early action mandate.

The rule needs a phase-in period to account for the many landfills around the state that have to adjust systems and install new collectors to meet the new surface standards. For many landfills without comprehensive LFG collection systems, this could mean major modifications as well as operational adjustments in order to comply. As an example, for the first year, a landfill could have 120 days to expand the GCCS after the third exceedance (similar to the NSPS rule) before the 45-day period kicks in. In this way, the operator can develop new procedures for compliance and well installation to meet tighter time frames.

Local air districts, such as the SCAQMD, have many programs in place that are equivalent to requirements proposed by CARB.

These existing programs could serve to comply with various requirements of the new CARB rule, thus eliminating duplicative requirements. For example, local permits for gas-collection systems can take the place of design plans. Also, local requirements for source tests, breakdown notifications, and variances, for examples, can also be used in place of proposed requirements. CARB should explore this approach to minimize the administrative burden of the rule.

How the proposed regulation will be implemented and enforced for situations where a landfill has different owners and operators should be explored. There are numerous cases in the state where the landfill owner and operator are different parties as well as where there are contract operators of the LFG system and third-party developers, which own the LFG rights.

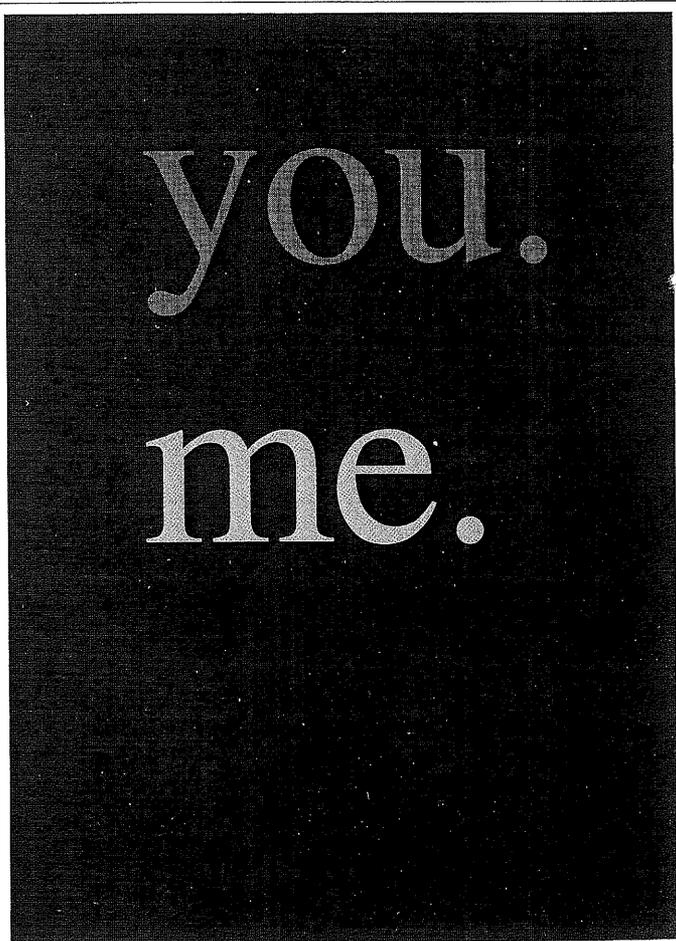
Operation within temperature limits, derived from the most recent source test, should apply to enclosed flares only. Optimization of destruction efficiency for boilers, turbines, or engines is based more on specific design features of those devices, which are not suitable for easy measurement. Further, flow should not be one of the parameters measured during a source test that becomes an operating limit for the control device, as flow will commonly change over time and should not be a limiting factor on the control device.

Several sections of the proposed rule allow requests for exemptions or alternatives. For each of these requests, the enforcement authority should abide by definitive time requirements for approving the request.

CARB needs to firm up how enforcement will be coordinated with local districts. Additionally, if delegation to the local air districts is allowed, how will CARB deal with the lag time between CARB rule approval and an air district's adoption of their local rule?

CARB should also explore with local air districts and the EPA how Title V permits will be impacted by a local air district adopting or amending a local rule to incorporate the state requirements. Will the new requirements become federally enforceable?

Subsection (e)(2)(B)2.a.i. of the draft rule seems to imply that open flares will be prohibited unless the flare meets the provisions of this subsection. It is our understanding that open flares are intended to be allowed until 2018, at which time the flare must meet the standards imposed by this subsection. This should be clarified.



Subsection (e)(9)(A)2 is overly restrictive and would prevent nearly any alternative methods of compliance regardless of other operations, safety, or environmental concerns unless they also meet "...equivalent levels of enforceability and methane emission control." For example, the 45-day compliance period after a third exceedance could not be waived, because it would never meet the equivalency test. As an alternative, consider loosening this standard to accommodate health and safety or other environmental impacts, or use the variance method currently used by the SCAQMD.

Industry believes that CARB should reinstate the rule exemption for sites that meet the surface emissions limits without an LFG system. Clearly, if a landfill can meet the primary emission limit within the rule without a very expensive LFG system, then such a site should not be required to install such a system. The cost of a new LFG system would not be justified for a landfill that essentially already complies with the rule.

CARB's new definition of "solid waste" appears to potentially include nondegradable waste. This definition could be interpreted as the rule regulating inert or construction-and-demolition waste landfills. This may likely be an oversight, since CARB has from the beginning intended to regulate MSW landfills, which

typically accept degradable waste that produces methane. The SWICS recommends clarification of definitions to clearly state that MSW landfills accepting degradable waste are regulated by the rule. We suggest using California Integrated Waste Management Board definitions for MSW landfills in order to be consistent with other state regulations.

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The SWICS requests that CARB utilize the results of the cost-effectiveness analysis for the rule to determine the MMBtu-per-hour threshold for rule exemption, rather than the minimum size of a flare that a vendor can manufacture.

The SWICS believes that the proposed requirements for notification of upset or breakdown should be clarified to indicate that they are only necessary when the upset or breakdown

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causes actual noncompliance with the rule. LFG systems commonly have short-term downtime or upset events that do not result in excess emissions or do not cause any areas of noncompliance. Some of these downtime events would actually be allowed under provisions of the rule. It would be a severe burden on the landfills to report every single upset or breakdown event.

The SWICS recommends that the rule be revised to allow use of site-specific waste characterization for determination of a  $L_0$  value for the LFG modeling. If these data are available, they would result in a more accurate LFG-generation estimate for a particular site.

These requirements must become effective by January 2010 (likely by fall 2009), and full compliance could be required as early as June 2012. As such, the new CARB rule will likely be the first air-quality requirement to trigger GCCS installation at many smaller landfills not regulated by the NSPS and will require more extensive monitoring at all landfills, beyond NSPS provisions. However, the

rule was still in draft form as of December 2008, so all of the details are not certain at this time.

The final and probably most far-reaching element of AB 32 is the cap-and-trade program. CARB recently approved the scoping plan for this program, which essentially creates a roadmap for implementation. Many of the details of the cap-and-trade program have yet to be developed; however, the scoping plan includes a commitment for the reduction of 1 million metric tons of carbon-dioxide equivalents through the CARB early action rule for landfills and an additional reduction of 9 million metric tons of carbon-dioxide equivalents through increased recycling and zero waste. How the recycling element of the program is implemented could have significant impact on landfills by reducing gate tonnages and removing organic materials, which will decrease gas production and energy recovery potential. It is unclear whether the reductions from increased recycling are realistic and whether the true life cycle effects of such a program have been weighed.

The SWICS has asked for essential public services, such as landfills, to be exempt from cap-and-trade, since they have to grow to keep up with populations; however, it is unclear whether CARB will consider this. The scoping plan does exclude biogenic emissions from regulation under the cap-and-trade program, which should limit the impact on landfills and other solid waste facilities that emit biogenic carbon dioxide.

All of the AB 32 programs must be in place by January 1, 2010, with reductions beginning by 2012. As such, 2009 will be a big year for GHG regulation in California, with the AB 32 program taking a final form that could become the model for other states or for a federal climate-change program. **MSW**

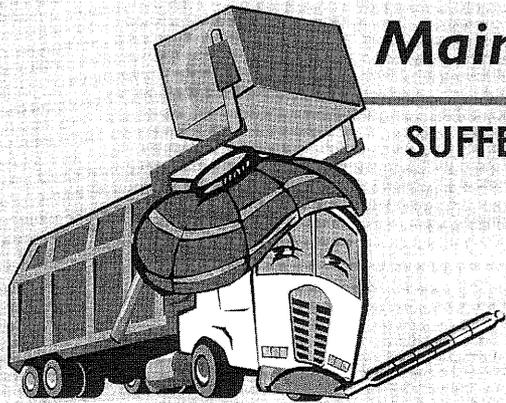
*Patrick S. Sullivan, R.E.A., C.P.P. is senior vice president with SCS Engineers.*

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