

New Rules for Landfills

The new rules will ultimately replace the existing NSPS rule (40 CFR Part 60, Subpart WWW) and EG rules (40 CFR Part 60, Subpart Cc and state-equivalent rules).

BY PATRICK SULLIVAN

The USEPA landfill gas (LFG) rules were published in the Federal Register on August 29, 2016. These include an Emission Guideline (EG) rule (under Title 40 Code of Federal Regulations (40 CFR) Part 60, Subpart Cf) and a New Source Performance Standards (NSPS) rule (under 40 CFR Part 60, Subpart XXX). Both rules will affect newly defined NSPS sites (i.e., landfills that are new or expanded in capacity after July 17, 2014) and EG sites (i.e., existing landfills that have not been expanded or were not newly constructed after July 17, 2014), respectively.

The new NSPS rule takes effect 60 days from publication in the Federal Register. States and local air jurisdictions have nine months from publication to prepare their EG rules. EPA has an additional four months to approve or disapprove of the state/local EG rules. Thus, for existing sites subject to the new EG rule, there will be a time lag before the EG rule becomes effective in their jurisdiction.

What's New

The major component of both rules is that the 50 mg/year of non-methane organic compounds (NMOCs) emission threshold, which triggers the need for an LFG collection and control system (GCCS), will be lowered to 34 mg/year for all landfills—with one exception. Existing, closed sites, as defined in the rule under the closed landfill subcategory (sites that are already closed or close within 13 months of publication), can continue to use the 50 mg/yr threshold. This appears to be the centerpiece of EPA's

plan to create additional NMOC and methane reductions from landfills nationally.

Other Key Components

Treatment Definition. The definition of LFG treatment has reverted to the original NSPS definition of filtration, dewatering and compression, without numeric limits or special monitoring, which has been in common use in the industry. EPA has added a notation that beneficial use can include technologies beyond combustion, such as vehicle

Surface Monitoring. All penetrations to the landfill cover must now be monitored during each quarterly surface emission monitoring (SEM) event. This is in addition to monitoring the required serpentine path across the landfill surface, the path around the perimeter of the landfill, and for areas where visual observations suggest a potential leak. Monitoring penetrations can add significant time and cost to quarterly SEM events. EPA considers penetrations to be the largest source of surface emission

exceedances, and so they are mandating additional monitoring. However, at the industry's request, EPA has provided some guidance on penetrations to define what they are and what they aren't. Per EPA, LFG wellheads are a regulated penetration type while, for example, fence posts are not. Also, latitude and longitude must be recorded for each exceedance location within +/- 4 meter accuracy. The use of hand-held global positioning system (GPS) devices for flagging SEM exceedances

should satisfy EPA's proposed requirements for location data.

Tier 4. A new Tier 4 methodology has been added to the rules to assess whether a GCCS is required once NMOC emissions exceed 34 mg/year. The voluntary procedure includes four quarters of SEM with no allowed exceedance of the 500 parts per million by volume (ppmv) threshold for methane and then quarterly SEM for active sites and annual SEM for closed sites after the initial monitoring period. Monitoring under Tier 4 must be conducted during wind conditions less than 4 mph average and 10 mph instantaneous, and wind



fuels, pipeline quality gas, etc. This is a major victory for the LFG-to-energy (LFGE) industry, which was concerned that a rigid definition of treatment could negatively impact existing and new LFGE projects with additional costs and new compliance issues. However, the rules include a requirement for each regulated landfill to develop a treatment system monitoring plan for approval, to address treatment criteria. However, the regulations are unclear on whether the plan has to be submitted, and if so, how. There is a lingering concern that this plan requirement could give states and local agencies the ability to require numeric limits and monitoring requirements on a site-by-site basis.

speed monitoring is required during the SEM event. If wind speeds exceed these thresholds, a wind barrier can be used, but no monitoring can occur when instantaneous wind speeds exceed 25 mph. This is generally a positive development, which should be very helpful for dry climate, or low gas-producing landfills, which only triggered the GCCS requirements due to a high NMOC concentration during Tier 2 testing and/or model defaults that over-predict LFG generation. However, the wind speed requirement, the fact that no landfill with NMOC emissions over 50 Mg/year (based on Tier 1 and 2 data) can use Tier 4, and the fact that one single exceedance can cause a failure of the Tier 4 may limit its value. The use of the Tier 4 process also includes notifications for each SEM event and annual reporting of results.

Wellhead Criteria. EPA has removed the wellhead monitoring threshold criterion for oxygen. Oxygen monitoring will still be required monthly, but no limits or exceedances will exist. Maintaining negative pressure and a temperature of less than 131°F are still requirements as in the existing NSPS and EG rules. Alternative timeline requests have been clarified as only being required if the exceedance cannot be corrected in 15 days. If this occurs, a root cause analysis must be conducted, and the exceedance remediated within 60 days. If not completed by 60 days, then the landfill must conduct a corrective action analysis and develop an implementation schedule, and complete remediation within 120 days. If more than 120 days will be necessary, the landfill must submit the root cause and corrective action analyses as well as the implementation schedule by 75 days. If more than 120 days is necessary, then Administrator approval is also required. This is one of the major issues put forth by industry and represents a success story for this rule development. Removing the oxygen requirement will eliminate a large number of wellhead exceedances and avoid the situation of operating the GCCS to meet arbitrary wellhead criteria rather than to minimize emissions.

Criteria for Removing GCCS. For removal/decommissioning of the GCCS, the following three criteria must be met: (1) the landfill must be closed, (2) GCCS must have operated for 15 years or the landfill must demonstrate that GCCS could not operate

for 15 years due to declining flow, and (3) the calculated NMOC emission rate at the landfill is less than 34 mg/year on three consecutive test dates (50 mg/year for the closed landfill subcategory). This proposed provision provides some additional flexibility for eliminating GCCS requirements, but it is only a slight improvement over existing criteria.

Startup, Shutdown, and Malfunction (SSM) Requirements. The rule will now apply at all times, including SSM. This

would remove the former SSM exemption that was contained within the existing NSPS/EG rules and allowed landfills to avoid non-compliance during periods of SSM. In recognition of the unique nature of landfill emissions, and consistent with the need for standards to apply at all times, EPA has indicated that a work practice standard applies during SSM events. During such events, owners or operators must shut down the gas mover system and close all valves in the GCCS, which could contribute to the potential venting of the

gas to the atmosphere, within one hour. The landfill owner or operator must also keep records and submit reports of all periods when the collection and control device is not operating. The rules also contain criteria for managing SSM events for monitoring devices required for compliance with various rule requirements. By complying with the work practice standard and monitoring device SSM criteria, it is hoped that landfills can avoid potential compliance issues associated with SSM events. Specific details on how to deal with SSM events under the new criteria still have to be worked out with EPA since this is such a large departure from existing requirements.

Rule Clarifications and Minor Changes

GCCS Design Plans. Design Plans must be updated under two situations: (1) due 90 days after expansion of the GCCS into a new area, and (2) if changes made to the GCCS were not consistent with current plan. Third-party review/verification will not be required for Design Plans, as considered under the draft rules. Under the new rules, landfills must notify the state/local agency when a Design Plan has been completed and submit the signature page, stamped by a professional engineer. The agency will have 90 days to request a full copy of the plan to be submitted for review. If EPA doesn't, no submittal is required, although the landfill is still at risk for ensuring the Design Plan meets the rule criteria. If submittal is requested, the landfill is bound by requirements for working with the agency to get the plan approved and then complying with it.



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Electronic Reporting. Electronic filing will be required for performance test reports, NMOC emission rate reports, annual reports, Tier 4 reports, and liquids addition at landfills through EPA's Central Data Exchange (CDX) using the Compliance and Emissions Data Reporting Interface (CEDRI).

Owners or operators are allowed to maintain electronic copies of the records in lieu of hard copies to satisfy federal recordkeeping requirements. Although this may seem simple, experience with electronic reporting under the federal greenhouse gas reporting rule has been more complex and costly than originally thought.

EPA Method 25A. EPA Method 25A is now included in the rule for testing low NMOC concentrations on the control device outlet. The return of EPA Method 25A is an important allowance for stack testing of control devices for NMOC destruction demonstrations.

EPA Method 18. This method is not allowed for NMOC analysis by itself. It can, however, be used in conjunction with Method 25A.

Waste Definitions. EPA has clarified the definitions of "household waste" and "segregated yard waste" so that landfills that take these materials will not be defined as MSW landfills under the rules unless they accept other materials that would classify them as MSW. This should clear up previous confusion and avoid enforcement actions that several EPA regions attempted against C&D landfills.

Liquids Addition Landfills. EPA elected not to include any additional regulations for liquids addition landfills (i.e., those that recirculate leachate and/or accept liquid wastes); however, they are requiring specific information to be submitted as part of the electronic reporting that would help them decide how to regulate liquids addition landfills in the future.

Portable Meters. EPA has explicitly allowed the use of portable meters for compliance with EPA Methods 3A and 3C (nitrogen and oxygen). This rule change allows the continued use of portable meters commonly used in the industry.

Low-Producing Areas. EPA still requires that low-producing areas must be generating less than 1% of the NMOC emissions of the landfill as a whole before they can be removed from the gas collection and monitoring requirements. However, with the new rules, actual gas flow data and site-specific NMOC concentrations can be used in lieu of the LFG generation model for estimating NMOC emissions. This offers some additional flexibility but is much more limited than the industry had hoped for.

Industry Involvement

The landfill industry will be reviewing these rules in detail and will be providing guidance to the industry in conjunction with the Solid Waste Association of North America (SWANA) and the National Waste and Recycling Association (NW&RA). The industry will also continue to work with EPA on interpretations of the rules, and a copy of the rules and related documents is available at: www.epa.gov/ttn/atw/landfill/landflpg.html. **MSW**

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LANDFILL > EMISSIONS

How the Latest NSPS Rules Will Affect Small and Midsize Landfill Operators

The federal law, which is an update of the emissions standards passed in 1996, lowers the nonmethane organic compound emissions (NMOC) threshold from 50 mega grams to 34 mega grams a year.

As the latest New Source Performance Standards (NSPS) take effect later this month, many landfills will be regulated on their gas emissions for the first time.

Others will be mandated to run their gas collection systems significantly longer. Operators will have to move fast to come up with capital, and to figure out just what they have to do, to comply.

The federal law, which is an update of the emissions standards passed in 1996, lowers the nonmethane organic compound emissions (NMOC) threshold from 50 mega grams to 34 mega grams a year.

“Some sites that would never have to install gas emissions systems under the old rule will have to go from doing nothing to having to install full landfill gas and control systems,” says Patrick Sullivan, senior vice president of Long Beach, Calif.-based SCS Engineers. The technology, he says, will come with a startup cost of about \$500,000 for small landfills, and could be upward of \$2 million for a midsize landfill.

Some midsized operations are at least part of the way there; they have systems in place. But the new threshold will push them over the edge sooner, requiring them to start their systems earlier. And those facilities will be running them longer since the same reduced threshold applies at end of life.

Who will be impacted and when?

It’s unclear how many landfills will be impacted. For others that will be impacted, the timing is still hazy. The challenge is that there is no one rule or set date that applies to every site, nationwide.

There is the federal EPA legislation (NSPS) and there is a federal emission

guideline, which is a blueprint for states and local air jurisdictions that take their authority from the EPA but write their own rules, based on federal guidelines.

“With the federal regulations [operators] have to comply right out of the gate with specified timelines. But those subject to state regulations don’t have to do anything until after EPA reviews and approves the rule prepared by the state,” Sullivan says. “It has taken 13 months to three years for the process to be completed and for states’ rules to be implemented.”

Gearing up for expedited timetables

A lot of operators are working to determine what to do about the sped-up timetables. And they have to figure out how to pay for major projects that lie ahead of them.

Installation and ongoing operational and monitoring costs will hit small landfills hardest, while big players have economies of scale on their side; their initial capital outlay is overall less expensive.

Some companies may be able to access low-interest rate loans for emission controls. Sullivan has also seen cases where energy developers, who want to turn landfill gas into energy, will pay for all or part of the system and or take gas as a tradeoff.

Industry stakeholders say it’s been a process trying to get regulators to see what it will take for operators to be able to comply.

“Landfill regulators often have never been to one of these sites ... it’s challenging for them to fully understand what factors impact how we operate,” says Anne Germain, director of waste and recycling technology for the National

Waste & Recycling Association. “They don’t retain for instance that landfills are area sources rather than point sources. So any uncontrolled emissions are not coming out of a pipe, but from the ground and are spread out over a huge area.”

Germain brought members of the Small Business Administration, charged with reviewing the federal rule, to a landfill to shed light on their scenario.

“They could look and say, yes, I see how this could be more challenging than if you just had a valve you could turn,” she says. “Emissions are controlled, but they could see it’s complex. ...We argued strongly that operating with lower thresholds would call for increased flexibility in the way we operate.”

While the final rule provides some flexibility, she adds, “It was not the degree of flexibility we hoped for, and it remains to be seen how useful it will be.”

SCS is looking to determine how its clients will be captured by the rules and when.

“We are working to get clients through what they are subject to now and what they will be subject to in the future. And we are providing timelines so they can prepare for what they need to do at different points,” says Sullivan.

[Landfills] will have to file reports and see if they are subject to regulations and will also have to file NMOC estimates. If estimates are below the threshold you are done, and don’t have to install a gas system—at least for another year.

Source URL: <http://www.waste360.com/emissions/how-latest-nsps-rules-will-affect-small-and-midsize-landfill-operators>

Current Leading Issues in Solid Waste Financial Planning

Long-term financial planning is a necessary evil in an era where solid waste agencies are faced with the mantra of doing things cheaper, quicker, and faster. BY MARC J. ROGOFF

Over the past 35 plus years in the solid waste industry, first as a solid waste agency manager and now for the last 30 years as solid waste consultant, I find many agencies continuing to grapple with major issues of finding funding sources for their programs and developing fair and equitable rates for their customers. The planning issues, which we will discuss in the following paragraphs, appear to bubble up to the surface whenever rate or financial planning studies are being considered.

Fleet Replacement

With the ever increasing costs of vehicles and equipment for solid waste management, many communities are evaluating their budgets and how they approach their overall vehicle and equipment replacement programs. Historically, local governments have reduced fleet sizes and deferred replacements during economic downturns or times of budget shortfalls to provide a balance against the need to increase user fees or rates to meet operating expenses. While one can argue that the decision to reduce fleet replacement spending is a valuable corrective action, it could result in increasing fleet expenses for these agencies if they tip the balance of fleet replacement spending too far.

All vehicles and equipment used in public works eventually wear out and become more expensive to maintain and operate. That is, unplanned maintenance and repairs due to component failures tend to rise with increasing age of the vehicles or equipment. These unpredictable incidents result in such events as increasing shop time, delays in securing major parts for repair, as well as delays in getting the vehicle or equipment back into operation.

Capital costs tend to decline over time, while operating and maintenance costs increase. The combination of these two basic curve functions results in a "U-Shaped" cost curve, oftentimes called "total costs." The economic theory of vehicle and equipment

replacement predicts that vehicles and equipment should ideally be replaced during the flat portion of the curve, that is, at the time annual operating costs begin to outweigh capital costs. Deferring replacement purchases in order to accommodate short-term budget shortfalls can result in future increased replacement costs and oftentimes unmanageable fleet replacement backlogs.

Commonly, public sector organizations attempt to purchase solid waste vehicles and equipment using cash generated from their annual operating income. In essence, this is somewhat akin to an individual paying for a personal vehicle in cash from his or her annual salary—a somewhat daunting task for most people. Similarly, many agencies have historically used cash as the primary means of funding their replacement program. Since it involves no interest or debt financing costs, cash purchases are viewed by many finance and solid waste managers as a financially prudent method for funding fleet replacement. Unfortunately, the use of cash to primarily fund vehicle and equipment replacements results in volatile funding requirements with high annual peaks and valleys.

For example, in order for many agencies to replace a "big ticket" vehicle or piece of equipment, it might be necessary to freeze a significant portion of other fleet replacements and cut other operational programs (i.e., training, safety, and professional development, etc.) within the agency's overall budget authority. In my opinion, this almost always results in a deferral of some replacement purchases. Typically, where agencies use cash as the primary means to fund vehicle and equipment purchases, one often finds older fleets, higher maintenance costs, and backlogs in purchases.

There are a number of alternative vehicle/equipment purchasing programs which are being used by solid waste agencies to preserve cash. Each of the financing methods described below has its own particular advantages and disadvantages, which can be

influenced by local municipal circumstances. Clearly, there is no single best approach to financing fleet replacement costs. With the financial challenges facing local governments today in providing cost-effective and timely solid waste management services, evaluation of these various approaches should be made focusing on ways to minimize costs and providing value-added services to the public.

Guaranteed Buy-Back Programs

These buy-back programs are an alternative to an outright cash purchase of fleet equipment. That is, the agency has the right to sell, lease, trade or otherwise dispose of the vehicle. However, in the bid for equipment, the bidder guarantees that he will repurchase the machine from the agency at the end of a specified hourly or annual term from the date of delivery. Typically, many agencies use these provisions to keep maintenance costs to a minimum and to enable them to procure new equipment at a frequent rate.

Sinking Fund

In order to fund fleet replacements, many solid waste agencies have used a sinking or revolving fund to spread the costs of funding new vehicles or equipment over a longer period of time. Essentially, this type of financing approach requires that an agency make periodic payments into a fleet replacement fund thereby ensuring that there will adequate funds available for the replacement vehicle or unit when it comes due for replacement.

For example, if the initial purchase price for a vehicle is \$120,000 and the replacement cycle is determined to be six years, then \$20,000 is budgeted every year to pay for the replacement of the vehicle. In comparison to the cash method, a sinking fund helps even out the annual volatility of the agency's replacement funding needs. Critical to its success is the ability of the agency to properly account for the inflationary increases in purchase prices for the replacement vehicles or equipment, interest earning on the funds

placed in reserve, and salvage values of the vehicles or equipment, if any.

In essence, a basic advantage to this approach is that it enables the agency to predict its annual funding needs over a long planning horizon. Notwithstanding, a major disadvantage of the sinking fund method of funding, however, is that it oftentimes is prohibitively expensive to establish for most agencies if there already a large backlog of fleet replacement needs. That is, a large amount of cash must be deposited initially to create the working capital necessary to start replacing vehicles or equipment. Further, there is always the temptation on the part of municipal officials to raid such funds during lean budget years undermining a well-designed fleet replacement program in a single year.

Debt Financing

In comparison to cash or sinking fund financing programs, debt financing typically allows solid waste agencies an option to spread out the costs of fleet replacement. Rather than trying to accumulate cash reserves in a sinking fund, an agency can borrow funds from financial institutions, either as lines of credit, fixed-term, bank loans or bonds, repaying

the outstanding principal and interest on a periodic basis once the vehicles or equipment are placed in service. Similar to the sinking fund method of financing fleet replacement, debt financing enables the agency to eliminate the peaks and valleys in replacement funding requirements. Also, in some respects the predictable natures of the annual expenditures have tended to make replacement funding less subject to controversial budget decision making. Historically, many solid waste agencies have shied away from debt financing to fund their fleet replacements. Oftentimes, much of this is due to local or managerial preferences to avoid high interest charges for vehicles and equipment that have a short lifespan. In other cases, state or local laws prohibit the use of debt financing without voter approval.

Leasing

Leasing or lease-purchase options are other commonly used methods by solid waste agencies for financing fleet replacements. Usually, these financing programs are offered directly from the manufacturer or third-party distributor. In comparison to the other financing methods discussed in the paragraphs above, leasing enables the agency

to pay a fee ("installment purchases") for a vehicle or equipment and then essentially "walk away" from it after a specified period.

New municipal lease programs now being offered on the market allows agencies to have new trucks every two years with full factory warranties on the vehicle chassis and body. A variant of leasing is a lease-purchase where an agency can own the equipment. Overall, there is no hard and fast rule in lease financing since the terms may differ from manufacturer to manufacturer. In most cases, their obligation terminates if the department fails to appropriate funds to make the renewal year's lease payments. Because of this provision, neither the lease nor the lease payments are considered debt. Payments can be structured monthly, quarterly, semi-annually, or annually based on the cash flow of the agency.

What makes municipal leasing financially desirable is its treatment of interest under Section 103 of the Federal Internal Revenue Code. The interest earnings under a properly structured and documented lease are exempt from federal income tax under the same tax laws that enable a municipal bond to carry a tax-exempt rate. Because the lessor does

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not pay federal tax on the interest earned, the tax-exempt lease oftentimes carries a much lower interest rate than other kinds of leases and installment loans thus significantly lowering the cost of financing for the borrower. This enables the agency to replace vehicles or equipment more frequently without having to acquire significant cash reserves before purchases the replacements.

Assessment Programs

Special solid waste assessments are increasingly being evaluated by many solid waste agencies. A non-ad valorem special assessment is a charge (or assessment) against a specific parcel of property based on a specific benefit which the property has or will receive. The assessment normally is billed annually as a separate line item on the property tax (or ad valorem tax) bill. For collection purposes, it is considered a part of the tax bill and carries the same penalties for failure to pay as do the property taxes on the tax bill. However, unlike the ad valorem tax which is based on the assessed value of the property, the non-ad valorem special assessment is based solely on the benefit received by the property for the service received.

Non-ad valorem special assessments typically are authorized and regulated by state statute and contain several provisions which generally must be strictly followed to ensure the validity of the assessment. Many local governments have utilized these statutes to impose fees for solid waste disposal, collection, or recycling services.

Advantages of Using a Non-Ad Valorem Special Assessment

Billing

Since non-ad valorem special assessments are billed annually on the property tax bill, there are many benefits:

- Low Administrative Costs: The use of the property tax billing system results in low administrative costs.
- High Collection Rate: Property tax collection rates, and thus special assessment collection rates, are considerably higher than those obtained through monthly billing processes.
- Mortgage System: Those residents who pay their property taxes as part of their mortgage will be able to pay the assessment monthly as part of their mortgage payment.
- Reliable Revenue Source: The revenue source is very stable, very constant and collection levels are predictable.
- High Levels of Participation: Historically, as solid waste charges increase, program participation decreases. In many cases, the very individuals who need the service the most are the first to drop out. Since the service is already paid for under the special assessment system, there is incentive to participate.

Flexibility

Non-ad valorem special assessment systems are flexible. They can be designed to support any or all aspects of a solid waste management system. They can design and implement a non-ad valorem special assessment program tailored to a local government's system, (mandatory service, voluntary service, franchised service, or free-market service). For example, a system could assess:

- all solid waste system costs
- residential collection and disposal costs, charge a tipping fee for commercial

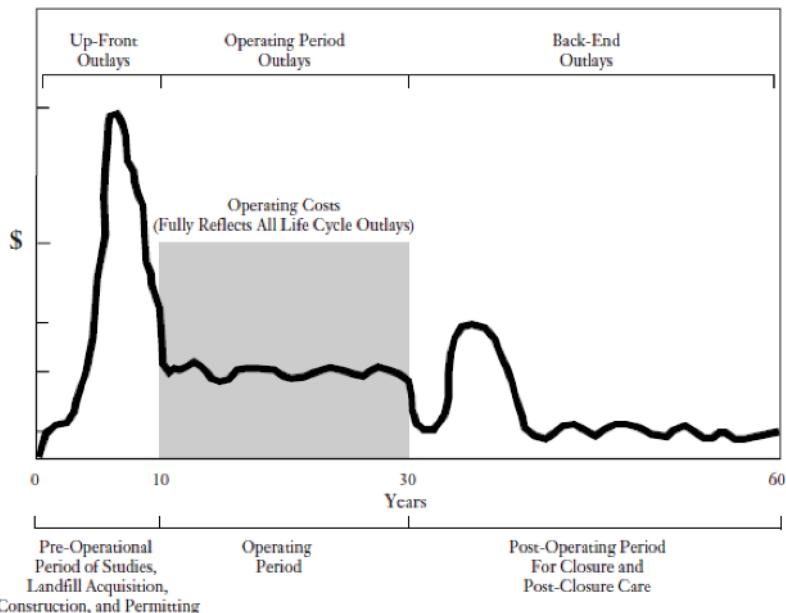


Exhibit 1. Illustration of landfill life cycle outlays and costs

disposal, and allow the haulers to bill all commercial collection services

- residential disposal costs, charge a tipping fee for commercial disposal, and allow the haulers to bill all residential and commercial collection services
- the capital and debt portions of the disposal costs, charge a tipping fee for disposal operating costs, and allow the haulers to bill for all collection costs
- all residents for disposal, assess all residents within an "urban" zone for collection, and allow the hauler to bill those residents outside the "urban" zone for collection as needed; charge a tipping fee for commercial disposal; and allow the hauler to bill commercial collection services
- all disposal and recycling costs and allow all residential and commercial customers to choose their own collection options

Areas of Concern

There are two major areas of concern when designing and implementing a special assessment program. First, the assessment for each parcel must be based on the benefit received by that parcel. Properties receiving like benefits should be assessed equally, and properties receiving unequal benefits should be assessed on that basis.

Second, the "assessment role" (the list of all properties to be assessed), should be complete and accurate. The best source of data for compiling the assessment roll is the records of the county or city official responsible for property appraisal and valuation. However, limitations may exist with the data because these records are maintained for the purpose of determining property valuations, not for performing solid waste assessments. Additional information must be developed in order to convert the initial records into a complete and accurate assessment role.

Post-Closure Reserves for landfills

Lastly, I am increasingly being asked by many solid waste agencies to provide financial guidance on the long-term costs of operating a landfill. Full-cost accounting (FCA) for landfill management has been advocated by US Environmental



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Protection Agency (USEPA), beginning with the promulgation of the landfill disposal regulations in the 1980s. FCA, unlike cash flow accounting, considers direct, indirect (overhead), upfront (past), and back-end (future financial liability) expenses. As shown in Exhibit 1, landfill assets last for many years and exhibit all of these costs, which must be considered in effectively pricing a landfill's long-term tipping fee.

The Federal landfill regulations (Subtitle D 40 CFR 258) and implementing Arizona regulations mandate specific standards for all owners/operators to follow when closing a landfill and setting up a program of monitoring and maintenance during a 30-year post-closure period.

For 30 years after closure, the owner/operator is responsible for maintaining the integrity of the final cover, monitoring ground water and methane gas, and continuing leachate management. All landfills must also comply with the financial assurance criteria. The owner/operator must demonstrate financial responsibility for the costs of closure, post-closure care, and corrective action for known releases. This requirement can be satisfied by the following mechanisms:

- trust fund with a pay-in period
- surety bond
- letter of credit
- insurance
- guarantee
- state assumption of responsibility
- multiple mechanisms (a combination of those listed above)

Existing Federal and State landfill regulations require that consistent monitoring procedures be followed each year during the 30-year post-closure care (PCC) period. This essentially means that the operating entity of the landfill must continue to monitor for groundwater contamination and LFG in a similar fashion as during the pre-closure period.

The 30-year PCC period prescribed in the regulations can be decreased or extended by the Director of the implementing agency of an approved state if it is determined that a change is protective of human health and the environment. Unfortunately, there is little, if any, guidance provided by USEPA to make this affirmative decision, and if this decision is made, what ground rules can be established on the frequency of monitoring that can be required.

Presently, there is significant uncertainty on the methodology that will be used by state regulators in evaluating whether or not any landfill at the end of its responsibility at the 30-year PCC period will need any additional annual monitoring. Some large agencies and private operators, as well as professional solid waste organizations (Environmental Research and Education Foundation and Solid Waste Association of North America), have developed research programs based on analyzing the monitoring data that indicate the performance of the landfill.

Final Words

Getting a firm handle on a solid waste agency's operations is a tremendous challenge for any solid waste agency manager, particularly in this era of "lean and mean" local government. Doing more with less is the watchword for most city and county commissioners across the country still reeling from the financial impacts of the Great Recession. The three financial planning issues discussed above are critical whenever a customer or tipping fee analysis is conducted. **MSW**

Marc J. Rogoff is a Project Director with SCS Engineers in Tampa, FL.

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The Value of Solid Waste Rate Analysis

Marc J. Rogoff, Ph.D. • Laurel Urena, M.S., E.I.T. • SCS Engineers

Why should we conduct a rate analysis for our solid waste system? What value does it bring to our agency? SCS Engineers' consultants are often asked these questions by clients and prospective clients.

Getting a firm handle on your solid waste agency's operations is a tremendous challenge for any public works director, particularly in this era of "lean and mean" local government. Doing more with less is the watchword for most city or county commissions in Florida still reeling from the financial impacts of the Great Recession. In our opinion, what most agencies sorely lack is a firm financial roadmap to direct their operations into the future.

Why is financial planning important?

The spotlight of public attention is often focused on solid waste agencies because of the perceived high costs of providing collection, recycling, and disposal services. The demand by public decision-makers to keep local government operations' costs low has often meant that agencies have not



Exhibit 1. Example of a Pro Forma Rate Model

raised their solid waste rates even while costs for critical items such as labor, benefits, fuel, maintenance, and vehicles have increased dramatically in recent years. On top of these public pressures, many agencies still spend a portion of their revenues on unrelated activities or "free" services, which makes full cost accounting difficult and adds to agency overhead. A rapidly changing market and menu of solid waste management technologies also allows for added operations efficiencies, additional revenues, and capital risk, all of which should be considered as the field evolves. In addition to these pressures in the public arena, competition from private sector vendors intensifies the threat of privatization and is used as a hammer by politicians seeking ways to keep rates and taxes low during their terms in office.

For these reasons, strategic financial planning has become an essential task for public works managers looking to keep operations financially sustainable while also meeting the needs of the public stakeholders. SCS Engineers recommends that agencies

proactively engineer, design, and manage a strategic, sustainable, and detailed approach to long-term financial planning. A detailed approach that uses a Pro Forma Rate Model (Exhibit 1) provides the flexibility to establish fair, equitable, and effective solid waste system rates, while enabling decision-makers to compare and contrast potential alternative strategies that address the following key issues:

- Revenue Sufficiency
- Fair and Equitable Cost Recovery
- Cost of Service
- Cost Allocation
- Level of Service Standards
- Capital Project Needs
- Customer Classification
- Recycling Incentives

If conducted properly, a rate study can help an agency create a long-range financial business plan. Each rate study requires a task plan and a project concept to achieve the following:

- Development of a tailored rate model
- Identification of a capital investment plan and fleet replacement schedule, including consideration of closure and long-term care

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MARK GOHEEN

"A solid waste rate analysis will provide your agency with a deeper understanding of how to establish rates and appropriately allocate costs to the various functions of your operation."

- Independent evaluation of personnel, materials and supplies, and indirect expenses
- Development of a revenue/rate plan and alternative rate structures
- Identification of industry standard rates for comparable solid waste systems
- Recommendation of increased efficiencies to reduce operations expenses
- Review and recommendations on the operation of a solid waste system

In short, a solid waste rate analysis will provide your agency with a deeper understanding of how to establish rates and appropriately allocate costs to the various functions of your operation. This financial analysis can also be used to estimate and plan for various contingencies year-by-year. For example, if your agency would like to buy new collection vehicles or expand your landfill or recycling center, a rate study will allow you to assess how the purchase would impact your current budget. You can then determine if you will have adequate surpluses during the fiscal year to procure these items or if a rate adjustment might be necessary at some point. Importantly, if the final recommendation of the rate study is a rate increase, you will be armed with information that will strengthen your case when requesting a fee increase.

SCS Engineers has nearly five decades of experience in solid waste planning and management. We assist our solid waste clients with waste collection studies, facility feasibility assessments, facility site selection, property acquisition, environmental permitting, operation plan development, solid waste facility benchmarking, ordinance development, solid waste plans, financial assessments, rate studies/audits, development of construction procurement documents, bid and RFP evaluation, contract negotiation, bond financings, and other long-term financial planning. These services we offer here at SCS provide you with the foundations

necessary to successfully carry your solid waste operation decades into the future.

Marc Rogoff is SCS Engineers' National Expert on Solid Waste Rate Studies and serves as Chair of the Florida

APWA's Solid Waste Committee. He can be reached at (813) 804-6729 or mrogoff@scsengineers.com. Laurel Urena is a Project Professional with SCS who works on a variety of sustainable materials management projects. ☀

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