

UTILITY INFORMATION COLLECTION REQUEST TO POWER A ROBUST ENVIRONMENTAL SERVICES MARKET

by David Elam, Principal Consultant,
Summa Consultants

The regulation of hazardous air pollutant (HAP) emissions from coal-fired power plants dates to the early 1990s and has involved numerous studies, reports, approaches, legal challenges, proposed rules, final rules, and vacated rules (http://www.epa.gov/mercury/control_emissions/decision.htm). After nearly 20 years, HAP emissions from coal-fired power plants remain unregulated. In the meantime, the U.S. Environmental Protection Agency (EPA), state regulatory agencies, utilities, equipment and instrumentation vendors, and environmental consulting and engineering firms have collectively spent millions of dollars preparing for regulations that never materialized or have vanished.

Developments over the past year, and particularly in the past few months, however, clearly indicate that we will have Maximum Achievable Control Technology (MACT) standards for coal- and oil-fired power plants on the books by the end of 2011. And given the advances in both measurement and control technology over the past two decades, it is likely that these regulations will be much more rigorous than those that might have been promulgated earlier.

Compliance requirements will be complex and expensive, providing challenging projects for environmental professionals at electric utilities, environmental engineering and consulting firms, air pollution control and monitoring instrumentation manufacturers and vendors, and construction firms beginning in early 2010 and continuing through 2014.

To put this important opportunity in perspective, it is helpful to review key developments over the past few years. On March 15, 2005, EPA issued the Clean Air

Mercury Rule (CAMR), which established standards for performance-limiting emissions from new and existing power plants, and a cap-and-trade program for mercury. CAMR was intended to dovetail with the Clean Air Interstate Rule (CAIR), relying on the nitrogen oxide (NO_x) and sulfur dioxide (SO₂) control equipment installed to comply with CAIR, to also control mercury emissions.

To regulate mercury emissions from power plants under CAMR, EPA had to revise its December 2000 finding that it was “appropriate and necessary” to regulate utility hazardous air emissions using the MACT standards. On February 8, 2008, approximately 10 months before CAMR was to take effect and after dozens of utilities had invested in expensive continuous mercury monitoring systems (CMMS), the United States Court of Appeals for the District of Columbia Circuit in *State of New Jersey, et al. v. Environmental Protection Agency* vacated EPA’s rule removing power plants from the Clean Air Act list of sources of hazardous air pollutants, thereby effectively destroying the legal basis for CAMR.

The court’s message was clear: It is indeed “appropriate and necessary” for EPA to regulate HAP emissions from power plants using MACT standards as required by Section 112 of the Clean Air Act. As if to drive home that point, in December 2008, the American Nurses Association and other organizations filed a mandatory duty suit against EPA for failure to establish MACT standards for coal- and oil-fired electric generating units by December 20, 2002.

Although EPA had undertaken data-gathering activities in the late 1990s to support promulgation of MACT standards, those data had aged with respect to advances in pollution control equipment and measurement technology. Accordingly, EPA proposed an information collection request (ICR) on July 2, 2009 (*Federal Register* 74, No. 126, 31725-31728), an initiative intended to fill the gaps in EPA’s database. At an estimated cost of \$105 million and with a six-month completion schedule, this ICR involved the completion of a detailed facility questionnaire, submittal of historical fuel and emissions data, and a

complex and comprehensive emission test program. The comment period closed on August 31, 2009, providing EPA time to refine the ICR and distribute it in early January 2010.

In the meantime, EPA had engaged in confidential negotiations with the American Nurses Association to settle the lawsuit. The terms of the proposed consent decree were published on October 28, 2009 (*Federal Register* 74, 207, 55547-55548) with a 30-day comment period. Under the terms of the proposed consent decree, EPA would be required to issue draft MACT standards for coal- and oil-fired electric utility steam-generating units by March 16, 2011, and final MACT standards by November 16, 2011. This would, in all likelihood, translate into a compliance date of November 2014 for existing facilities.

In what appears to underscore a commitment to the schedule set forth in the proposed consent decree, EPA re-proposed the ICR on November 10, 2009 (*Federal Register* 74, No. 216, 58012-58013), providing a comment period of 30 days. Although the scope of the ICR had been slightly reduced and the performance schedule had been slightly extended, the thrust of the ICR remained unchanged. The overall program is now estimated to cost approximately \$95 million (approximately \$5 million in data gathering expense and approximately \$90 million in emission testing expense). In terms of schedule, facilities will have three weeks from the receipt of the letter to describe how they will submit data if multiple units are covered by the ICR; 90 days to complete the questionnaire and submit historical fuel and emission data; and six to eight months to submit emission testing program data.

At the 34th Annual EPA-AWMA Information Exchange in RTP on December 1 and 2, 2009 (<http://www.awma.org/proceedings/2009infoexchange.html>), presentations by EPA staff indicated that the ICR was still on track for distribution in early January 2010.

ICR emission testing requirements (summarized in the nearby table) are comprehensive and complex, covering much more than mercury. ICR data collection

and emission testing requirements will create immediate and substantial project work for environmental professionals at electric utilities and emission testing firms.

As with the development of any MACT standard, this data gathering phase is just the first step in a complex process with significant cost implications. Compliance with a MACT standard for the coal-fired power industry will create a demand for billions of dollars of environmental services and products over the next three to four years and continuing annual demands for millions of dollars in operations, maintenance, and support services and products.

Accordingly, we should expect and prepare for a demand for the following: emission testing services to support the ICR, the design of air pollution control (APC) systems, and performance guarantee and compliance testing of APC systems; consulting services to evaluate proposed MACT standards and develop compliance strategies; engineering services to design and permit APC systems; manufacturing and construction services to fabricate and install APC systems and associated process and emission monitoring instrumentation; and operations and maintenance services to keep APC systems and monitoring instrumentation performing as designed.

The challenge, of course, is identifying specific service needs within the broad group of service opportunities. Fortunately, the structure of the ICR and internal EPA correspondence (May 31, 2006 memo from William Maxwell to Robert Wayland addressing revised New Source Performance Standards for mercury emissions from coal-fired power plants, <http://www.epa.gov/ttn/atw/utility/NSPS-053106.pdf>) provide insight to the direction that EPA is likely to take for MACT. Not surprisingly, that direction reflects the combined CAMR-CAIR approach—namely, reducing mercury emissions using air pollution control devices designed to control particulate, NO_x, and SO₂ emissions from coal-fired power plants.

It therefore seems reasonable to expect that MACT compliance will entail the installation of fabric filters, electrostatic precipitators (ESPs), flue-gas desulfurization (FGD) systems, selective catalytic

Summary of ICR Test Program Source Categories and Test Requirements	
Source Category	Test Method Group
Coal-fired Units with FGD (170 Units)	Acid Gas HAP
Coal-fired Units (50 random Units from entire universe of coal-fired units)	Dioxin/Furans
Coal-fired Units, "most modern" (170 Units)	Non-dioxin/furan HAP (base parameters) CO, VOC, THC
Coal-fired Units, "most modern" (50 of the foregoing 170 Units)	Non-dioxin/furan HAP (supplemental parameters) polycyclic organic matter (POM), formaldehyde (CH ₂ O), methane (CH ₄), oxygen (O ₂), carbon dioxide (CO ₂), oxides of nitrogen (NO _x), volatile and semi-volatile organic HAP
Coal-fired Units, "newest PM controls (170 Units)	Mercury & Non-mercury Metallic HAP
Coal-fired Units, other (50 Random Units from those not otherwise selected)	Acid Gas HAP; Non-dioxin/furan HAP Mercury & Non-mercury Metallic HAP
Coal-fired Units, integrated coal gasification combined-cycle (IGCC) Units (3 Units)	Acid Gas HAP; Dioxin/furan HAP Non-dioxin/furan HAP Mercury & Non-mercury Metallic HAP
Oil-fired Units (100 Random Units)	Acid Gas HAP; Dioxin/furan HAP; on-dioxin/furan HAP Mercury & Non-mercury Metallic HAP
Petroleum Coke-fired Units (16 Units)	Acid Gas HAP; Dioxin/furan HAP Non-dioxin/furan HAP Mercury & Non-mercury Metallic HAP

reduction (SCR) systems, and selective non-catalytic reduction (SNCR) systems, the combination and configuration determined by combustion unit design and fuel. Most certainly, some of the ICR test units will also include activated carbon injection systems for mercury control, technology that will shape a MACT standard for mercury.

During the same time that EPA is developing MACT standards for the coal- and oil-fired electric utility steam generating units, it will be undertaking other significant regulatory initiatives affecting these sources. We can expect revisions to CAIR and the National Ambient Air Quality Standards (NAAQS) and, in the wake of EPA's recent endangerment finding regarding greenhouse gases (GHG), we can expect GHG regulations and permitting requirements—unless, of course, Congress takes legislative action on climate change. And whatever will be removed from the flue gas will have to be dealt with too: EPA announced that, although it has delayed the development of regulations governing coal ash waste, these regulations remain on the horizon. Undoubtedly, this collective

regulatory activity will bear on and shape MACT standards for the industry.

EPA's ICR for the coal- and oil-fired power generation industry will yield a data set that will be used to develop MACT standards for the industry, standards that must dovetail with a range of parallel regulatory activities. Clearly, compliance with these initiatives will be expensive, the cost of which will ultimately be borne by rate payers. This evolving regulatory framework will create technical challenges for both utilities and the environmental services industry; however, those technical challenges offer enormous opportunity to those individuals and organizations willing to keep abreast of and contribute to regulatory development, chart a course of action based on technical analyses and calculated risks, and follow through with cost-effective and efficient service delivery models. ■

David Elam, Jr. CMQ/OE, is principal consultant with Summa Consultants, Inc. (Chapel Hill, NC; www.summaconsultants.com). He is a consulting scientist with 25 years of broad-based EHS management experience in helping environmental organizations build successful enterprises.