

US EPA ARCHIVE DOCUMENT

MEMORANDUM

TO: Docket.

FROM: EPA, Clean Air Markets Division

SUBJECT: An Analysis of the Impact of Boilermaker Labor Availability on the Installation of Pollution Control Equipment

DATE: January 28, 2004

In analyzing emission reduction options for electric generating units (EGUs) under the proposed Interstate Air Quality Rule (IAQR), one significant consideration was the impact that engineering factors (such as the availability of boilermaker labor, construction equipment, structural steel, reagents etc.) had on the ability of sources to install pollution control equipment. The engineering factors analysis was largely based on a previous analysis, which is also available in the docket, entitled, "Engineering and Economic Factors Affecting the Installation of Control Technologies for Multi-pollutant Strategies" (October 2002).¹

Two important conclusions from the 2002 study were that: 1) resource considerations had the biggest impact in the short-term, because in the longer term markets would be able to respond and 2) the availability of boilermakers was the most important short-term consideration. Therefore, this analysis focuses on the impact that the availability of boilermakers will have on installation of control equipment by the first phase compliance deadline for the IAQR of January 1, 2010. This analysis looks at three questions: 1) what time period will boilermakers be needed to install pollution control equipment; 2) how many boilermakers will be available in that period; and 3) how many controls can those boilermakers install in that period?

What Time Period Will Boilermakers Be Needed to Install Pollution Control Equipment?

_____ For purposes of this analysis, EPA is assuming that most companies do not begin control installations until after their States have finalized SIPs². Based on the schedule in the IAQR

¹Unless otherwise noted, information used in the IAQR is from the 2002 Engineering Factors Report.

²McIvaine Company (a company that tracks information on environmental retrofits) reports that companies have announced they will be installing selective catalytic reduction systems on 84,400 GW worth of capacity in SIP Call States that are outside of the Ozone Transport Control Region. Of this only about 20% of the SCR was installed within 2 years of the SIP submittal date (October 30, 2000). More than half of the total capacity was installed in 2003 (between 26 months and 38 months after the SIP submittal date) and about 20% of the total projected capacity is projected to be installed in the first half of 2004, more than 38 months after the SIP submittal date.

proposal, this would mean that most pollution control installations would not begin until mid to late 2006³. This would provide a minimum of three years to install pollution control equipment. While sources would have at least three years to install pollution control equipment, much of the boilermaker labor would be needed during a shorter time period. Boilermakers do not begin much of their work until after all the pollution control equipment design and planning has been done and the foundations for the equipment have been laid. Most of the planning and foundation work would be done in the first 15 months of the three year period. In addition, most companies are likely to try to complete construction several months before the compliance deadline, so that they will have time to test and optimize the installed equipment. Assuming that all controls are installed in a 3 year period, that the first 15 months are spent designing and installing foundations and that the final three months are spent optimizing equipment, this compresses the time that boilermakers will be needed into 18 months (between March 2008 and October 2009).

How Many Boilermakers Will Be Available for Installation of Emission Controls in the 18 Month Period between March 2008 and October 2009?

The International Brotherhood of Boilermakers, the boilermakers union, has a goal of having 28,000 members by 2005. This would require a 5.3% annual growth in boilermakers between 2002 and 2005. In the 2002 analysis, which was considering legislative options to reduce emissions from power plants, it was assumed that this growth rate in boilermakers continued beyond 2005. In this analysis a more conservative assumption is being made that boilermaker labor remains constant at 28,000 person years annually beyond 2005. This assumption is being made because under a regulatory structure there is more uncertainty about the final requirements until States have submitted SIPs and any litigation has been resolved. Because of this uncertainty there is less incentive to make needed retrofits early. Less retrofits (and thus less demand for boilermaker labor) between 2005 and 2007 would likely lead to less growth in boilermakers.

In 2001, the average age of a boilermaker union member was 48. Therefore, in order to maintain a pool of 28,000 boilermakers, continued recruitment and training will continue to be required after 2005. Furthermore, in the past, when there has been limited demand for boilermakers in the power sector For instance, between 1994 and 1998, boilermaker union membership declined from 20,800 boilermakers to 15,400 boilermakers (1).

Between 2001 and 2003, approximately 35% of boilermaker labor was involved in environmental retrofits for the power sector (1). Assuming this same percentage continues to be available for environmental retrofit work, approximately 9,800 boilermakers (or 14,700 boilermaker years), during the 18 month period) would be available to perform control installations.

³If the IAQR is finalized sometime in the first half of 2005, State SIPs would be due between mid 2006 to the end of 2006.

How Many Controls Can those Boilermakers Install between March 2008 and October 2009?

EPA projects that approximately 52 GW of flue gas desulfurization (scrubber) capacity and 27 GW of selective catalytic reduction (SCR) capacity will need to be installed between March 2008 and October 2009. This breaks down to approximately 49 GW of flue gas desulfurization capacity (scrubbers) and 24 GW of SCR that are installed solely for purposes of meeting the IAQR requirements and an additional 3 GW of scrubbers and 3 GW of SCR are installed for other purposes such as the NO_x SIP Call and other State rules⁴.

According to the 2002 study 0.152, boilermaker-year/MW are needed for installation of scrubbers resulting in demand for approximately 7,900 boilermaker years for installation of scrubbers. For SCRs, 0.175 boilermaker-year/MW are required. This results in about 4,700 boilermaker-years for SCRs and a total of about 12,600 boilermaker-years for both scrubbers and SCRs. Assuming that there are 14,700 boilermaker years available, there would be enough boilermakers to install all of the projected controls. EPA believes that the extra 2,100 boilermaker years (about 15%) represent a reasonable contingency to account for the fact that boiler-makers would not be able to work 100% of the time (e.g. time lost due to illness, inclement weather or moving from job-site to job-site and other factors) or that the construction activities requiring boiler makers may not be evenly spread over the assumed 18-month period.

References

1. "Design for Constructability", J.A. Hines, D.S. Fedock and A. Kokinos, Babcock and Wilcox, presented at The US EPA/DOE/EPRI Combined Power Plant Air Pollutant Control Symposium, "The Mega Symposium" August 20-23, 2001, Chicago Illinois
2. "Engineering and Economic Factors Affecting the Installation of Control Technologies for Multi-pollutant Strategies" (October 2002), prepared for USEPA by ARCADIS

⁴EPA assumes that controls installed in the base case are installed evenly over the five year period. For scrubbers about 10 GW of scrubbers are projected in the base case. This results in the installation of about 3 GW of scrubbers every 18 months. For SCRs about 15 GW of SCRs are installed in the base case. This results in the installation of about 3 GW of SCR per ozone season. Installation of SCRs for the 2008 ozone season would be expected to be completed by March of 2008, therefore about 3 GW of SCR would be expected to be installed between March 2008 and March 2009.