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PUBLIC INTEREST COMMENT

Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category

RIN 2040–AF14

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INTRODUCTION

The Regulatory Studies Program of the Mercatus Center at George Mason University is dedicated to advancing knowledge about the effects of regulation on society. As part of its mission, the program conducts careful and independent analyses that employ contemporary economic scholarship to assess rulemaking proposals and their effects on the economic opportunities and the social well-being available to all members of American society.

This comment addresses the efficiency and efficacy of this proposed rule covering effluent limitations guidelines (ELG) for steam electric power generation from an economic point of view. Specifically, it examines how the proposed rule may be improved by more closely examining the societal goals the rule intends to achieve and whether this proposed regulation will successfully achieve those goals. In many instances, regulations can be substantially improved by choosing more effective regulatory options or more carefully assessing the actual societal problem. In this particular case, the EPA has pressed ahead with ELGs notwithstanding its poor estimation of the cost and benefit elements in its calculations.

SUMMARY OF THE PROPOSED RULEMAKING

The Environmental Protection Agency (EPA) has proposed revisions to the effluent limitations guidelines and standards applying to the "Steam Electric Power Generating Point Source Category"(henceforth "steam electric industry") under the Clean Water Act.[1] The steam electric industry comprises approximately 1,000

1. Navigation and Navigable Waters, 33 U.S.C. 1311–1361.

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plants generating electricity from fossil or nuclear fuel and using a steam/water system as a heat exchange. The regulations were last updated in 1982 and the EPA claims they no longer provide adequate control of wastewater discharges. The Clean Water Act requires the EPA to monitor and revise ELGs in terms of best available practices.[2] The proposed ELGs lower wastewater discharges into surface waters and those going to publicly owned treatment works. The aim is to reduce metals and other pollutants discharged into surface waters. The EPA claims there will be reductions of between 0.47 billion to 2.62 billion pounds annually and reduced water use of 50–103 billion gallons per year, depending on which detailed option is selected. The EPA also claims that health benefits are associated with the reductions.[3]

It is important to realize that the ELGs are not enumerated as emissions limits, but rather are listings of best practice technologies for handling particular effluents (see table 1-2 in the Regulatory Impact Analysis for the proposals).[4] The cost and other impacts analyzed in the rulemaking stem from modeling estimations of the impact of applying these technologies.

The proposed regulatory changes generally lower permitted wastewater discharges. For most existing sources of wastewater entering surface water, the same requirements are applied by each of the EPA's four preferred regulatory alternatives, which differ in terms of the requirements applicable to existing discharges of pollutants found in two waste streams. The EPA estimates different levels of costs for the four alternatives. One criticism of starting with just four alternatives is that the alternatives being considered are, in fact, quite narrow. The major provisions of the alternatives for both existing sources and new sources of pollutants are summarized below, along with proposals for the control of *new* wastewater sources, for which there really are no alternative regulatory proposals. The EPA manages to count a total of eight alternatives for old and new sources by matching the proposals for new sources to the alternatives for existing sources. This is misleading because the proposals for new sources are just minor tweaks to the four alternatives for existing sources.

In proposing ELGs, the EPA's principal focus is on the application of economically attainable best available technologies (BAT). These are the second most stringent standards possible (the EPA could instead use an average of best performances within an industry and then exercise considerable discretion in constructing the standards). The EPA decides exactly how it will combine factors such as age of plant, location, and non-water environmental impacts in identifying a BAT. The current approach does not identify any reason to impose standards that are available within the industry upon firms in the industry that are not using those standards. There is no fully developed benefit-cost analysis properly incorporating considerations of externalities. Rather, there is a hazy view of external costs that might exist, but are not accurately quantified.

Existing Sources of Wastewater Discharges into Surface Water

1. **Alternative 3a** in the proposed regulation subjects existing sources discharging into surface water, except for oil-fired units and small units (under 50 MW), to effluent limits derived from BATs.[5] It requires:

    - zero discharge for all pollutants in fly-ash–transport water and wastewater from flue-gas mercury control systems;

2. 33 U.S.C. 1251, sec. 402.
3. RIN 2040-AF14, 34432.
4. US Environmental Protection Agency, "Regulatory Impact Analysis for Proposed Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category," EPA-821-R-13-005 (Washington: April 2013): 1-3.
5. RIN 2040-AF14, 34435.

- lower limits for mercury, arsenic, selenium and total dissolved solids in wastewater from gasification processes;

- lower limits for copper and iron in nonchemical, metal-cleaning wastes; and

- lower limits for bottom-ash–transport water and combustion residual leachate from landfills.

2. **Alternative 3b** would impose BAT-derived lower limits for mercury, arsenic, selenium, and nitrate/nitrite in discharges of flue-gas-desulphurization wastewater from steam electric facilities with a total capacity of 2,000 MW or greater, and is otherwise identical to 3a.

3. **Alternative 3** would impose BAT-derived lower limits for mercury, arsenic, selenium, and nitrate/nitrite in discharges of FGD wastewater, with the exception of small generating units (i.e., 50 MW or smaller), and is otherwise identical to 3a.

4. **Alternative 4** would impose zero-discharge effluent limits for all pollutants in bottom ash-transport water, except for generating plants with designed capacities below 400 MW, and is otherwise the same as 3a.

Existing Sources of Wastewater Discharges to Publicly Owned Treatment Works

For discharges to publicly owned treatment works, the EPA is proposing to establish pretreatment standards for existing sources (PSES) that are equal to the proposed BAT for surface emissions, with the following exceptions:

- lower limits for discharges of nonchemical metal-cleaning wastes will not be established only for copper;

- PSES will not be established under alternatives 3a, 3b, 3, and 4 for discharges of bottom-ash–transport water; and

- other than the pretreatment standards for copper, the EPA is not proposing pretreatment standards for discharges from oil-fired units and small generators.

New Sources of Wastewater Discharges into Surface Water

The proposed rulemaking would establish new source performance standards (NSPS) for discharges into surface water, including:

- lower limits for mercury, arsenic, selenium, and nitrate/nitrite discharges from flue-gas desulphurization;

- a zero-discharge standard for all pollutants in fly-ash–transport water, bottom-ash–transport water, and wastewater from flue-gas mercury control systems;

- lower limits for mercury, arsenic, selenium, and total dissolved solids in discharges of wastewater from gasification processes;

- lower limits for mercury and arsenic in discharges of combustion residual leachate; and

- lower limits for suspended solids, oil and grease, copper, and iron in discharges of nonchemical metal-cleaning wastes.

New Sources of Wastewater Discharges to Publicly Owned Treatment Works

- For discharges to publicly owned treatment works, the EPA is proposing tougher pretreatment standards for new sources (PSNS) equal to the NSPS for new sources surface emissions noted above, except for a zero-discharge standard for all pollutants in fly-ash–transport water. The current NSPS already includes a zero-discharge standard for pollutants in fly-ash–transport water. The PSNS would not include standards for total suspended solids, oil and grease, or iron in nonchemical metal cleaning wastes.

THE UNDERLYING ANALYSIS

Many of the underlying plant-level data result from a questionnaire that the EPA circulated among 733 plants, covering technical and cost aspects of operating during 2009.[6]

- In resulting statistical work, the EPA concluded that the age and location of plants did not affect emissions performance, which is implausible. It may be the case that responses to the questionnaire were not accurate reflections of reality but possibly embodied what plant managers wished to reveal about emissions.

THE COSTS AND BENEFITS OF THE PROPOSAL

As required by Executive Order 12866,[7] the EPA assessed the regulatory proposal (ELGs) as an economically significant regulatory action because it is likely to have an annual effect on the economy of $100 million or more. The EPA accordingly prepared an analysis of the potential benefits and costs associated with the ELGs.[8]

- The EPA has carried out a partial analysis of costs and benefits, at best amounting to a cost-effectiveness appraisal of alternatives, which are rather narrow. There is an effort to model the impact of the regulatory proposal on generating costs for each alternative and to examine impacts such as those on markets and employment (likely to fall by around 1.6 percent in the sector). Benefits are not fully quantified.

- Compliance costs are also calculated, but many environmental benefits are either not quantified or result, as in the case of estimated health benefits, from inference and assumptions worked through complex modeling. Not only would it be difficult for the independent researcher to replicate the results, but such an exercise does not give well-grounded estimates; actual benefits could easily be higher or lower.

- By the EPA's own admission in section 4.2.3 of the Regulatory Impact Analysis, the analysis of plant-level impacts is subject to uncertainties and limitations, including plant-revenue values differing from those estimated using earlier databases and deviations from a zero-cost pass-through assumption. Plant-level impacts could exceed or be less than those projected in the analysis; there is no way of telling.

6. RIN 2040-AF14, 34442.
7. Exec. Order No. 12866, 58 Fed. Reg. 51735 (October 4, 1993).
8. EPA, Regulatory Impact Analysis, 10-1.

- It is difficult to unearth some of the important conclusions in this regulatory proposal. For example, it will cost the average household between nothing and $7.22 on an annual electricity bill, depending on location and exactly what is done. Why can't this sort of information be more prominently recorded?

POOR QUANTIFICATION

Many calculations in the analysis supporting the regulatory proposal are so poorly carried out that they are misleading.

- One example of poor calculation, concerning the estimation of electricity demand by households:

  > To calculate average annual electricity sales per household, EPA divided the total quantity of *residential* sales . . . for 2009 in each . . . region by the number of households in that region. . . . For this analysis, EPA assumed that the average quantity of electricity sales per household by NERC region would remain the same in 2014 as in 2009.[9]

  Why make this assumption? It is most unlikely that electricity consumption would show that pattern. This is just a simple, although important, element in the body of analysis, which is fatally flawed by poor quantification.

- More generally, costs are estimated by extrapolation from known data, which is questionable because it implies linear relationships when these may not be appropriate, but many benefits are simply left not quantified, as in the case of some health benefits.

FURTHER POINTS FOR CONSIDERATION

- There will be a general tightening across the board on these emissions, but they affect a small part of the generating industry (just over 1000 plants in 2010).

- The EPA claims high benefits and low costs, but it has not carried out a complete benefit-cost analysis. Since benefits and costs may easily be higher or lower than the estimates, the EPA has not really calculated anything and cannot really claim anything other than an unquantified statement that the proposals are a good thing.

- The EPA has made many spurious, rule-of-thumb type assumptions in analyzing this proposal and gives the impression that it would have found a basis for proceeding with tighter regulation regardless of the underlying economics. The approach seems to reflect a common administrative view that quantification, however spurious, is a valuable exercise.

- Poor analysis may be worse than useless, but that is not the impression given by this regulatory proposal and associated regulatory impact assessment.

- Is there a systemic problem to be addressed in the steam electric industry? It seems as though the regulator is gaining information about possible improvements because they are happening in parts of the baseline existing development of the sector. It requires a major research project to explain why these practices appear to be growing without regulatory change. Likely explanations are the need to avoid workplace hazards and the risk of being liable for damages in tort

9. EPA, Regulatory Impact Analysis, Section 7.3.1.

vis-à-vis the local community. The EPA does not consider baseline momentum apart from making a claim that current effluent levels are simply too high.

- With admittedly poor quantification of benefits, the most that the EPA can claim is that it has assessed the costs of achieving certain technical changes in regulation that are motivated by command and control concerns. Better understanding of why best practices are improving and diffusing would help the EPA determine whether a new regulation is needed at all or which alternative approaches might better help reduce emissions at lower cost.

CONCLUSION

This is an important area of environmental concern. The regulations were last updated in 1982 and the EPA claims that they no longer provide adequate control of wastewater discharges, although it does not really support that claim beyond general references to health concerns and observations of water deterioration in bodies, such as the Chesapeake Bay. The rulemaking needs to have a firmer basis in economic analysis and be less reliant on a whole series of assumptions that are built one upon another. Better analysis is needed to show whether there is a systemic problem to be addressed in the first place. This rulemaking is at a proposal stage, and we can only hope that public discussion between now and 2014 will encourage the EPA to undertake a more detailed analysis of the benefits of its proposals and consider a wider variety of alternatives.