

## **Muscatine Power and Water Environmental Issues Q&A June 2011**

Muscatine Power and Water (MP&W) has a Core Value to “proactively comply with environmental regulations and engage in responsible environmental stewardship, recognizing that our operations impact the environment.” The Utility operates with this Core Value in mind. MP&W has an excellent record of environmental compliance and is invested in the health of the community. MP&W also believes that reliable, coal-fired base-load generation is an important part of the nation’s energy production inventory, along with renewable energy sources. Following are some answers to frequently asked customer questions about environmental issues.

### **Q. What are the significant environmental air quality related issues that face MP&W?**

The U.S. Environmental Protection Agency (EPA) has begun issuing several new and revised air quality rules that affect power plants. These rules further regulate air pollutant emissions from our electric generating units and establish more stringent standards for local air quality. With these new and revised rules, EPA is expanding the list of regulated pollutants in addition to making existing emission limits more stringent.

MP&W is evaluating alternatives to comply with the new EPA rules. The Utility’s compliance strategy strives to find the right mix of air pollution control technologies and operating considerations based on financial implications and risk assessment factors. The cost of new emission control technologies is significant and some of the needed technology is still under development.

The number and magnitude of the new EPA rules, relatively short compliance deadlines, and uncertainty associated with the new rules make compliance more complex. Most of these rules require compliance in about three years. There is some uncertainty regarding the new EPA rules because in the recent past some EPA rules were vacated by courts after the rules went into effect, rules could be litigated by affected parties and take years to wind through the courts, and in some instances, EPA has altered rules after final rules were issued.

The process to implement environmental compliance solutions has many steps, including research and selection of a control technology, designing a project, obtaining environmental permits, financing, public bidding, lead time on materials, construction, and acceptance testing. These factors make it a challenge to plan compliance in the limited timeframe allowed by EPA.

The new and revised EPA rules include:

- Small Boiler MACT (Maximum Achievable Control Technology) – Sets new emission limits for hazardous air pollutants (HAPs) from small fossil-fuel-fired boilers, including MP&W’s Unit 7. Regulated pollutants are particulate matter (for heavy metals), hydrogen chloride, mercury, carbon monoxide, and dioxins/furans.
- Electric Generation Units MACT (also called the Air Toxics Rule) – Replaces the Clean Air Mercury Rule (CAMR), the mercury cap-and-trade program struck down in the courts. Sets

emission limits for large boilers generating electricity, including MP&W's Units 8 and 9. Regulated pollutants are mercury, chloride, and particulate matter.

- Clean Air Transport Rule – Replaces the Clean Air Interstate Rule that was overturned in the courts. Expected to include a cap-and-trade program to regulate sulfur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>).
- Greenhouse Gas Tailoring Rule – Regulates carbon dioxide (CO<sub>2</sub>) emissions from fossil-fueled electric generating units and industrial boilers. Requires best achievable technology (BACT) for new or modified sources.
- National Ambient Air Quality Standard (NAAQS) for SO<sub>2</sub> – Sets a more stringent limit for the one-hour concentration of SO<sub>2</sub> in ambient air to protect community health. The Iowa Department of Natural Resources (IDNR) has a local air quality monitor to measure SO<sub>2</sub>.
- NAAQS for Nitrogen Dioxide (NO<sub>x</sub>) – Sets a limit for the one-hour concentration of NO<sub>x</sub> in ambient air. The IDNR has air quality monitors at certain locations throughout the state to measure NO<sub>x</sub>.
- New Source Performance Standards – Anticipated regulation establishing emissions standards for existing and modified plants.
- NAAQS for Ozone – EPA is expected to issue a more stringent standard for ozone. The nearest ozone monitor to Muscatine is in the Quad Cities.
- Generating Station Effluent Guidelines – Addresses discharges to waterways by focusing on flue gas desulfurization systems (SO<sub>2</sub> removal processes) and coal ash ponds.
- Cooling Water Intake Structure 316(b) changes – Sets more stringent rules on the use of river water to be more protective of aquatic life.
- Coal Combustion Residue – EPA initiated rule-making that could designate coal combustion residue (fly ash, bottom ash, and slag) as hazardous material. An Agency decision was expected last year but the EPA has postponed it a few times already.

#### **Q. How do these regulations affect our rates?**

Like most Midwest communities, Muscatine relies on coal as a cost-effective fuel for generating electricity. Many complex federal and state air quality regulations that focus on electric utilities have recently been mandated and many others are pending. The impacts of these regulations on MP&W's expenses and operations could be significant. MP&W is continuously reviewing and analyzing the regulatory changes, with the goal of identifying strategies and options for cost-effective compliance that balances minimizing emissions with cost and reliability considerations.

#### **Q. Does air quality in Muscatine meet all air quality standards?**

On most days, the air quality in Muscatine reflects that of the rest of the state but IDNR air quality monitors in Muscatine indicate that PM<sub>2.5</sub> and SO<sub>2</sub> concentrations periodically exceed the ambient air quality standards.

#### **Q. What has MP&W done to address air quality issues in Muscatine?**

MP&W has been making voluntary and pro-active incremental investments in emission control technology and process improvements for many decades. In many cases, the Utility invested in improvements to reduce air pollution before being required to do so by regulators. Examples include:

- Installing the first scrubber in the state in 1983 to control SO<sub>2</sub> emissions. Only recently have investor-owned utilities retrofitted similar systems on older plants.
- On-going multi-phase project to reduce dust from coal handling.
- Using two live storage coal silos to reduce particulate emissions from coal handling operations.
- Using electrostatic precipitators to obtain 95-99.6 percent removal of particulate from boiler flue gas.
- Using fabric filters to collect particulate emissions from material handling operations (coal and coal combustion products).
- Reducing SO<sub>2</sub> emissions by switching to subbituminous coal and making a 65 percent reduction in permitted emissions from Units 7 and 8. The coal switch also facilitated an increase in the amount of scrubbed SO<sub>2</sub> from Unit 9 from 94 to 98 percent based on the annual average. (MP&W previously obtained coal from mines in southern Illinois and now uses coal from the Powder River Basin in Wyoming.)
- Installing over-fire-air (OFA) systems on Units 8 and 9 in 2008 to reduce NO<sub>x</sub> emissions. The Utility accepted lower permitted NO<sub>x</sub> emissions limits for the units. IDNR also set carbon monoxide (CO) emissions limits, which these units did not have previously.
- Maintaining compliance with emission regulations for all three of its generating units.

**Q. What happens when the local ambient air quality does not meet a standard?**

EPA rules require that IDNR investigate the problem and develop a plan to bring an area into compliance with the ambient air quality standard. Initially, IDNR will report the problem to EPA and ask that an area represented by a monitor be classified as “non-attainment,” meaning a given area has not maintained attainment with the ambient air quality standard. Concurrently, IDNR will conduct air quality computer modeling to determine which nearby sources are contributing to the reoccurring problem.

Using the results of its modeling, IDNR then contacts the alleged contributing sources and works with them to achieve emissions reductions of the air pollutant that are exceeding the standard. IDNR uses air quality monitoring to estimate the potential impact of the changes proposed by the alleged contributing source will have on the local air quality. IDNR and the source(s) enter into a binding agreement that the source(s) will reduce the emissions of the pollutant within a specified time period. After the standard is met for three calendar years as determined by data from the air quality monitor, IDNR asks EPA to reclassify the area as “attainment.”

**Q. MP&W burns coal to generate electricity. What happens to the waste products remaining after combustion?**

MP&W produces bottom ash, fly ash, slag, and synthetic gypsum as a result of burning coal and the operation of pollution removal systems. Bottom ash is the coarse, mineral portion of the coal that does not burn and comes from the bottom of the furnace. Fly ash is the fine, light mineral portion of the coal that does not burn and is collected with an electrostatic precipitator. Slag is another form of bottom ash. Synthetic gypsum is produced when limestone slurry is used to remove SO<sub>2</sub> from the flue gas before it is released into the air.

MP&W tries to utilize as much of these coal combustion by-products as possible. Historically, about 75 percent has been used instead of landfilled. These by-products provide cost-effective components for numerous industries. Bottom ash is used to manufacture cement or for traction improvement on roads

during the winter. Fly ash is used in concrete. Slag is used as blasting grit and for roofing shingles. Synthetic gypsum is used to manufacture wallboard. Materials that cannot be utilized are taken to the MP&W landfill for disposal. In 2008, MP&W received the Governor's Environmental Excellence Award for its work in recycling coal combustion by-products and reducing the amount of waste going to the landfill.

As noted above, the EPA is currently considering a rule that could affect the use of these coal combustion by-products. If MP&W were unable to recycle these products for beneficial uses, the material would need to be landfilled at a significant cost to MP&W and its customers.

**Q. Does MP&W have any renewable energy in its portfolio?**

Generating electricity with renewable energy sources is another means of lowering emissions. MP&W evaluated participating in a wind farm in Iowa with other municipal utilities, but determined that participation at this time is not economically feasible. The Utility remains open to evaluating proposals from wind developers. Currently, energy production costs for wind energy are significantly higher than from the existing coal-fired units. MP&W promotes the use of renewable energy with programs for residential and business customers. MP&W continues to believe a balance of renewables with other conventionally fueled generation resources is needed for reliable and economical power production.

**Q. What can individuals do to help improve local air quality?**

- Get a free MP&W energy inspection. A home energy audit is often the first step in making your home more efficient. Conduct an audit to see what steps you can do to save energy and reduce heating and cooling bills. MP&W offers these inspections free to residential customers.
- Consider energy consumption when purchasing new appliances.
- Replace your old furnace with a more efficient model.
- Compost leaves and bushes instead of burning.
- Use public transportation, walking, or biking whenever possible. Gas-powered vehicles emit pollutants that contribute to many air quality issues.
- Maintain your vehicle with regular maintenance and tune ups. Keeping tires properly inflated improves gas mileage and can reduce your car's emissions by more than half.
- Drive smart. Avoid idling. Aggressive driving, such as speeding and rapid acceleration wastes gas. Combine multiple errands into one trip. Starting a car after it has been sitting for more than an hour causes up to five times more pollution than starting up when the engine is warm.
- Replace inefficient wood-burning stoves with EPA-certified wood stoves that burn more cleanly and efficiently, save money, reduce the risk of fire, and improve air quality inside and outside your home.
- Reduce lawn mower emissions. Lawn mowers, like any engine, need proper maintenance to reduce pollution. When purchasing a new mower, consider purchasing an electric mower. Utilize native plants and landscaping to reduce area to be mowed.

***For more information on any air quality issue, visit [www.epa.gov](http://www.epa.gov).***