



**APPA WHITE PAPER ON RECIPROCATING INTERNAL
COMBUSTION ENGINE (“RICE”) NESHAP RULES**

SUMMARY: In March 2010, the Environmental Protection Agency (EPA) issued its final rules revising the National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines (RICE NESHAP).¹ The new rules, which are incorporated into the existing EPA RICE regulations², for the first time subject many previously unregulated engines, including those designated for emergency use, to federal regulation. The primary goal of these rules is to reduce toxins from diesel engines through the regulation of formaldehyde. APPA members operate hundreds of RICE units that will be subject to these rules, yet on average only operate a very small number of hours per year. Many of these member utilities are located in rural communities in the Midwest and Plains states, and have strong concerns regarding how the rules will adversely impact power supply and system operations. They are also concerned about the cost of complying with the new emissions standards, and believe the costs exceed those estimated by EPA.³ This white paper provides background on key provisions of the new RICE rules and discusses the specific concerns APPA members have with them. It then provides some examples from APPA members of how the new rules will adversely impact their operations.

BACKGROUND: On March 3, 2010, EPA published a final rule revising the National Emission Standards for Hazardous Air Pollutants for existing stationary compression ignition RICE (CI RICE NESHAP). The new rules, which are incorporated into the existing EPA RICE regulations, for the first time subject many previously unregulated engines, including those designated for emergency use, to federal regulation, including emission standards, control requirements, and/or management practices. While they only apply to stationary RICE units, the new rules include provisions for RICE units located at area sources of hazardous air pollutants (HAPs) and RICE units with a site rating of 500 or greater brake horsepower (bhp) located at major sources of HAPs. In addition, the rules include provisions for existing non-emergency compression ignition (CI) engines with a site rating of greater than 500 bhp at major sources as well as revised provisions related to Startup, Shutdown, and Malfunction (SSM) events for engines previously regulated under the rule.⁴

The new rules also state that owners and operators must minimize the startup period for RICE units to the amount of time needed for appropriate and safe loading of engines, not to exceed 30 minutes. After this time, engines must meet the numerical emission standards, if applicable. For those engines that require periodic oil changes, the schedule for changing engine oil can be

¹ Under the NESHAPs, a major source is defined as a site that emits more than 10 tons per year (tpy) of any single HAP or more than 25 tpy of combined HAPs. An area source is a site that emits HAPs, but is not considered a major source.

² The RICE regulations are located in Code of Federal Regulations at 40 CFR Part 63, Subpart ZZZZ.

³ APPA members are aware that under the Clean Air Act, cost is not a determining factor when EPA is promulgating regulations to protect public health. The U.S. Supreme Court settled this issue in *American Trucking Association v. EPA*, 531 U.S. 457 (2001).

⁴ This rule should not be confused with a separate rulemaking on Spark Ignition (SI) RICE engines.

extended if the oil is part of an oil analysis program. Such a program must analyze parameters such as Total Base Number, viscosity, and percent water content in order to qualify. If certain limits are met during the analysis, then the owner or operator is not required to change the oil. However, if any of the limits are exceeded, the oil must be changed prior to continuing use of the engine.

The new rules include recordkeeping and reporting requirements for many engines. For example, all owners and operators of existing stationary RICE units with 100 hp or greater, existing emergency stationary RICE units, and existing stationary RICE units that are not subject to numerical emission standards, must submit all applicable notifications as required in §63.6645 of Title 40 of the CFR and NESHAP General Provisions. Initial notification forms were due on August 31, 2010.

Under the new rules, RICE engines can continue to operate if they are retrofitted with a catalyst that helps them meet the new emissions requirements. EPA estimates the cost of retrofits range anywhere from \$60,000 to \$100,000. In addition, the new rules allow RICE units to run for emergency purposes without retrofit.⁵ While the rules do not clearly define what constitutes an emergency, they nonetheless implicitly preclude designating the use of RICE units for voltage support as an emergency purpose. Emergency RICE units are allowed to operate for up to 50 hours for non-emergency purposes that do not generate income for a facility.⁶ One exception to the revenue-generating ban is provided in the rules – emergency RICE engines can be used for up to 15 hours per year to generate revenue when a regional transmission authority or equivalent balancing authority determines they are needed to prevent a potential electrical blackout or to maintain system voltage.⁷

The compliance date for all applicable emission limitations and operating limitations for affected RICE units is May 3, 2013.

IMPACT ON PUBLIC POWER: The new EPA RICE rules will impact hundreds of very small units operated by APPA members, particularly ones located in rural areas in the Midwest and Plains states. APPA members owning and/or operating these units have strong concerns that the new rules will adversely impact power supply and system operations. They also have concerns with the cost of retrofitting or replacing these units to comply with the new emissions standards mandated by EPA.

One concern APPA members have is with the EPA's definition of emergency. While the final RICE rules allow engines to be run for emergency purposes without retrofit or replacement, they do not sufficiently allow them to operate under conditions where they are necessary to maintain the grid and system reliability. For example, under the new RICE rules voltage support does not constitute an "emergency" use, yet many utilities in rural communities must use these units to

⁵ Emergency RICE units are only permitted to operate for a total of 100 hours per year for maintenance checks and readiness testing. There is no time limit for their length of operation if they are running for emergency purposes.

⁶ Under the RICE rules, supplying power to an electric grid or otherwise supplying power as part of a financial arrangement with another entity are two examples cited as not being allowed under the 50 hour limitation. See page 9654 of the Final CI RICE Rule (Federal Register Vol. 75, No. 41, March 3, 2010).

⁷ If an emergency RICE unit is operated for a demand response program, the hours are counted as part of the 50 hours of operation allowed per year for non-emergency situations.

keep system voltage at acceptable levels. Low voltage can damage customer equipment and lead to a collapse of the power delivery system. There are industry standards, both mandatory and voluntary, that compel many utilities to maintain grid reliability.⁸ In the event of system low voltage, utilities adhering to these standards would have operational justification to employ RICE units to preserve system stability.

Public power systems also use RICE units for support during critical transmission and sub-transmission system outages. APPA members have been asked by RTOs and equivalent balancing authorities to operate RICE units to help reduce the loading of transmission grid facilities. In addition, APPA members are concerned that the new rules will preclude use of RICE units for line maintenance under the emergency designation. Public power systems served radially by a single transmission line or transformer can presumably use RICE units for backup power when weather-related and other types of damages occur to radial facilities that result in a total power outage. However, under the new rules, they would not be able use emergency RICE units when radial lines and transformers periodically have to be taken out of service for routine maintenance. When such maintenance occurs, the local generation is the only means of providing power to customers. Otherwise, the system would go dark.

For example, during summer peak conditions, there may be times when the primary transmission feed may become inadequate due to an outage somewhere on the transmission system. To prevent low voltage or an overload of the backup or the primary feeds, which would adversely affect power services to the community, public power systems must operate their RICE units in order to prevent a potential outage. In addition, the transmission grid to which these public power systems are connected is owned by third parties. These third party owners anticipate that RICE units will, at times, be run in parallel to the grid for voltage support when the transmission system may have capacity issues during peak load events. Such operation mitigates the low voltage situations that can be a precursor to outages.

The city of Waterloo, Illinois, an APPA member with an approximate population of 10,000 people, has dealt with low voltage issues for a number of years. Although a variety of transmission projects have helped, under peak conditions, voltage can still drop to levels that create reliability issues. During these times, the city has to operate some RICE units to avoid equipment damage or the risk of outages.

Waterloo's RICE units are being operated to prevent an interruption of power to the community where the main transmission line cannot adequately support the needs of the city. The power generated by this system's RICE units is not sent to the grid, but rather utilized by the community's own citizens.

APPA members in Kansas also have insufficient transmission to serve their native load. All of APPA's members in the Kansas Power Pool (KPP) are within the Southwest Power Pool (SPP) footprint. However, all of KPP's RICE generation is considered by SPP to be outside of its

⁸ IEEE 1250 establishes a guide for providing electric distribution service to all types of power quality sensitive equipment. It defines voltage sag and gives acceptable voltage sags for service and load. ANSI C84.1 sets the maximum allowable voltage sag at -5% or -8.3% under unusual conditions. NEC sets forth a 5% maximum voltage drop on circuits behind the meter. NERC Var-002 1.1b allows a system operator to engage generator operators (typically before the last step of shedding load) to maintain appropriate voltage levels.

authority, as all are either deemed to be “behind-the-meter” generation or connected to voltages below SPP’s opinion of what is actually transmission. Eighteen cities in the KPP currently do not have sufficient transmission to serve their native load and are not notified by SPP when they need to generate. The monitoring of voltage determines the need to generate. When voltages in these cities drop below acceptable levels, they have to bring on their generation. This decision is made locally, not by the RTO or the host transmission owner. KPP member cities receive no guidance from SPP on this issue.

In addition, APPA members have concerns with the provisions that limit the use of emergency RICE units for revenue-generating purposes for up to 15 hours per year. Under the new rules, emergency RICE units can be used for revenue generating purposes only when a regional transmission authority or equivalent balancing authority determines they are needed to prevent a potential electrical blackout, maintain system voltage, or a similar situation. APPA members do not believe 15 hours is a sufficient amount of time for such a carve-out. Some public power systems have entered into contracts with regional transmission organizations to supply capacity from RICE units as demand resources during emergency conditions. Many of these RICE units are “behind-the-meter” generation and would be limited to only 15 hours of operation under the new rules. However, regional transmission organizations, such as the Midwest Independent Transmission System Operator (MISO), require demand resources to be capable of operation for a minimum of 20 hours. PJM Interconnection RTO requires a minimum of 60 hours.

For example, the Resale Power Group of Iowa (RPGI) is a joint action agency comprised of 25 participant members. Twenty of these members are generation owners. Across its membership the group has 94 engines with approximately 150 MW of capacity. Installation dates for these engines range from the 1930s to 2009. Approximately half of all the engines have been installed since 2000.

RPGI is a MISO market participant and lists these units as capacity resources in its Module E filing to MISO. These units are also offered into the MISO Energy Only market. In addition to being used for demand response by MISO, these units are used for voltage support, line maintenance, and most importantly, local reliability. There have been numerous times over the last several years when some of RPGI’s communities would have been without power had it not been for their locally owned generation facilities. Over the years, RPGI has also had power supply contracts with interruptible service clauses that required it to either run its engines or purchase energy directly from the market during the curtailment periods. The operating limitations imposed on emergency units are a real burden for many of RPGI’s generation owners.

Additionally, APPA members believe the rule limiting emergency RICE units to 50 hours of operation for non-emergency purposes that do not generate revenue is problematic. The rule fails to make a distinction between activities that are undertaken for reliability purposes, but generate revenue, and activities that are undertaken for purely economic purposes. All power that is generated, even during an emergency, necessarily generates revenue to cover the cost of such generation. It is one thing to preclude an activity such as peak shaving for economic purposes (i.e., it is cheaper to generate power with a RICE unit than to purchase power on the wholesale market); it’s another to preclude activities that are solely done for reliability purposes,

such as voltage support, peak shaving due to transmission constraints, and line maintenance. Additionally, APPA members, as units of local government, do not make profits and charge their customers cost-based rates. As such, they believe what they receive is better categorized as compensation than revenue.

APPA members also are concerned with the cost of complying with the new RICE regulations. EPA estimates the cost of retrofitting existing RICE units will range between \$60,000-100,000. These costs could be even higher if additional equipment is required for retrofit. While these costs may seem modest to some, they would extend directly to municipal and local operating budgets during a very difficult economic period. Municipal governments are already seeking larger contributions from the public power utilities they govern to fend off other dramatic shortfalls in municipal budgets for essential government services such as fire, police, schools, and EMT personnel.

In addition, some APPA members own RICE units that may not reach a high enough exhaust temperature in the 30 minute window the rules allow for startup time for the catalyst to be effective in attaining the required reduction of emissions. This is a significant issue both because of the rule itself and the fact that no utility wants to be fined for failure to meet the limits. They will be forced to abandon these units and replace them with expensive new units, a substantial cost for these small communities.

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