Buckeye Power Sales
Reliable Power Professionals Since 1947

If you have not followed the EPA regulations closely, there may be some misunderstanding and/or lack of marketplace knowledge regarding the Environmental Protection Agency's (EPA) Tier 4 interim emission regulations for Off-Road Diesel Engines, when fitted by Original Equipment Manufacturers (OEM), which includes generator set manufacturers. This Tier further reduces the emission of nitrous oxides (NOx) and particulate matter (PM) from levels established in Tiers 1 through 3. This Information Sheet discusses how the EPA flexibility program can be used by the manufacturers of generator sets, particularly in mobile applications such as rental.

1.0 FLEXIBILITY OFFERED BY EPA TO ASSIST MANUFACTURERS TRANSITION TO TIER 4 FINAL (UP TO 7-YEAR GRACE PERIOD)

January 1, 2012 was the start date for OEM's to install diesel engines that comply with Tier 4i exhaust emission regulations. With few exceptions, Tier 4i off-highway diesel engines of 175hp and larger must now meet these standards. This horsepower range comprises a large segment of the power construction and industrial equipment produced for mobile applications such as excavators, wheel loaders, cranes, mining trucks and agricultural machinery.

After Tier 4i and Tier 4 Final regulations were proposed in 2003 and finalized in 2004, EPA has been taking comments and input from equipment manufacturers on how best to implement their rules for the greatest effectiveness and the least negative economic impact. It determined that a requirement to comply with provisions of Tiers 1, 2, 3 and 4 under their current timetable would create an unreasonable economic burden for some, while not leading to significant environmental benefits for the public.

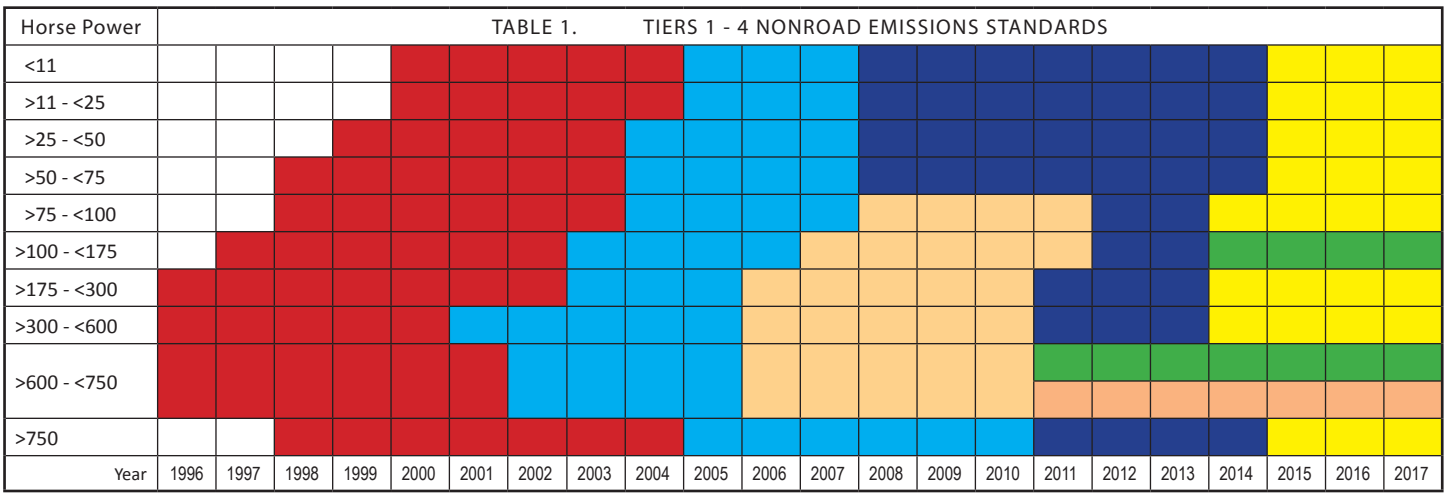
When Tier 2 off-highway diesel engine emission standards were introduced, EPA instituted a number of flexibility provisions to give OEM's some control during the transition to the new standards, which have been extended to include the usage of previous Tier models instead of Tier 4 Interim and Tier 4 Final engines for up to a seven (7) year phase-in period. (Continued over)

2.0 DESIGNATION 4I (INTERIM FLEXING) 4F (FINAL)

The new Tier 4i and Tier 4f engines are a result of a development process in order to reduce exhaust emissions that started back in the early 1990's. Engine manufacturers had made substantial strides in this regard during this time frame by in-engine design changes and the introduction of new technologies such as high pressure common rail fuel injection, electronic engine controls, exhaust gas recirculation (EGR) and multi-stage turbo charging.

To reach Tier 4 final levels exhaust after-treatment devices are necessary. Not only the new engines cleaner burning – but they are more fuel efficient.

TABLE 1. TIERS 1 - 4 NONROAD EMISSIONS STANDARDS



3.0 ISSUES MANUFACTURERS HAVE TO ADDRESS FOR TIER 4 FINAL:

One consequence of these latest developments is that the engine envelope has become somewhat larger. This creates a challenge for off-highway OEM's to fit into existing machines, and this is especially true for Tier 4i and Tier 4f models. With the eventual introduction of the Tier 4 regulations, this becomes even more complicated as the OEM will need to accommodate the various exhaust after-treatment devices with these models such as selective catalytic reduction (SCTR), tanks for diesel emission fluid (DEF) and diesel particulate filters (DPF).

The EPA Flexibility Rules allow the OEM to avoid having to make major changes to install Tier 4i engines, and then later face further redesign modifications again for Tier 4f.

4.0 REASONS FOR FLEXING:

These EPA Flexibility Rules will permit the OEM to delay the incorporation of Tier 4 Final engines until 2021 and 2022 depending on provision the OEM selects. Alternatively, if the OEM converts to Tier 4i immediately, it can continue to utilize this Tier 4i engine model until 2020. In applications using engines of 750hp and above, the OEM can use Tier 2 engines until 2017 when they will be required to use Tier 4 Final engine models.

Provisions permit the OEM to use existing inventories of previous Tier engines without affecting the flexibility allowance, until such inventory is consumed.

5.0 LIMITATIONS OF FLEXING:

However, while the use of previous Tier engines is allowed, the EPA guidelines limit the number to be installed each year, and over the duration of this transition period. These limitations are based either on a percentage of production allowance (80% over seven years of transition) or with a small volume allowance. The latter case is primarily for OEM's with limited product offerings, the OEM must choose only one of the three options:

- A total of 700 units over the entire Tier 4 allowance period, involving one engine family per power category
- For engines below 175hp, 525 units in a single power category with no more than 150 units annually in multiple engine families over the Tier 4 transition period
- For engines greater than 175hp, 350 units in a single power category with no more than 100 units annually in multiple families over the Tier 4 transition allowance period

The OEM will need to confirm in writing annually to the engine manufacturer detailing the number of previous Tier engines, giving assurance that these engines are required to meet demand, with quantity, model and specific rating for that calendar year.

6.0 PENALTIES FOR NON-COMPLIANCE:

The penalties are severe for non-compliance as an OEM or dealer can be fined $37,500 per violation, while an individual other than the OEM or dealer can be fined $3,750 per violation.

Stationary (non-mobile) engines used to power strictly emergency/standby generator sets are exempt from the use of Tier 4i and Tier 4f engines. However, prime power or mobile generators must utilize engine that comply with current regulations.

To fulfill our commitment to be the leading supplier in the power generation industry, the Buckeye Power Sales team ensures they are always up-to-date with the current power industry standards as well as industry trends. As a service, our Information Sheets are circulated on a regular basis to existing and potential power customers to maintain their awareness of changes and developments in standards, codes and technology within the power industry.

Buckeye Power Sales
Reliable Power Professionals Since 1947

USA
ULTIMATE SERVICE ASSOCIATES
A NORTH AMERICAN SITE SERVICES CO.

CANAL WINCHESTER, OH
8155 Howe Industrial Parkway
Canal Winchester, OH 43110
(614) 751-4515
(866) 889-2628

CINCINNATI, OH
4992 Rialto Road
West Chester, OH 45069
(513) 755-2323
(800) 368-7422

CLEVELAND, OH
8465 Tower Drive
Twinsburg, OH 44087-0394
(330) 425-9165
(800) 966-2825

TOLEDO, OH
12400 Williams Road
Perrysburg, OH 43551
(855) 638-2728

CHICAGO, IL
1308 Marquette Drive
Romeoville, IL 60446
(630) 914-3000

INDIANAPOLIS, IN
1707 S. Franklin Road
Indianapolis, IN 46239
(317) 271-9661
(800) 632-0339

FORT WAYNE, IN
7525 Maplecrest Road #221
Fort Wayne, IN 46835
(855) 638-2721