

SANTA BARBARA COUNTY
AIR POLLUTION CONTROL DISTRICT
POLICIES AND PROCEDURES

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Topic:	<u>Equivalent Routine Replacement</u>	
Distribution:	<u>APCD Staff</u>	

1.0 APPLICABILITY

The issue of “replacements” affects Regulations II, VIII and XIII. This Policy and Procedure (P&P) pertains specifically to Rules 202 D.8 (*Repair and Maintenance*) and D.9 (*Replacement*). However, the interpretation of the word ‘routine’ in this P&P also applies to Rules 102 and 1301 (*Modification*).

2.0 BACKGROUND

During the revision of SBCAPCD Regulations II and VIII in April 1997, the words *equivalent* and *routine* were discussed and two permit exemptions (202 D.8 and D.9) were modified as follows:

RULE 202 D.8. “A permit shall not be required for routine repair and maintenance of permitted equipment, not involving structural changes. As used in this paragraph, maintenance does not include operation.”

RULE 202 D.9. “A permit shall not be required for equivalent routine replacement in whole or in part of any article, machine, equipment or other contrivance where a Permit to Operate had previously been granted under Rule 201, providing emissions are not increased and there is no potential for violating any ambient air quality standard. An equivalent piece of equipment has a Potential to Emit, operating design capacity or actual demonstrated capacity less than or equal to that of the original piece of equipment, and is subject to the same limitations and permit conditions as the equipment being replaced. The owner or operator shall notify the District within 30 days of an equivalent routine replacement, unless the replacement equipment is identical as to make and model, and routine in which case notification is not required. This provision shall not grant any exemption from New Source Performance Standards.”

During the revision process, the SBCAPCD asked the USEPA, Region IX, whether a replacement that qualifies as *routine* would be subject to NSR and permitting. The USEPA responded as follows:

“Although EPA regulations exclude ‘routine maintenance, repair and replacement’ [51.165(a)(1)(v)(C)(1)] from the definition of physical or operational change, it is EPA’s opinion that such a determination should be made on a case-by-case basis. As an example, the mere fact that a source is replacing an emissions unit or components thereof with ‘functionally identical equipment’ does not necessarily mean that the replacement is routine and, therefore, excluded from NSR. For this reason, EPA interprets the regulations to mean that a state or district must

determine, on a case-by-case basis, whether a project to replace an emissions unit in whole or part with functionally equivalent equipment is routine repair or replacement, commonly made in that industry. If, however, the project is intended to regain or increase capacity or to extend the expected useful life of an emissions unit or in some other way is non-routine and there is an increase in emissions, then the project may be subject to federal NSR requirements.”

In addition, EPA Region IX stated, in a November 1999 comment regarding the proposed Title V permit for the Exxon SYU Project, “We do not believe that replacement of an IC engine with a new engine would be allowed by EPA’s policy on routine repair and maintenance of an emission unit.”

3.0 DEFINITIONS

- A. Emission Unit - An identifiable piece of equipment which emits or would have the potential to emit any affected pollutant.
- B. Equivalent Replacement - An Emission Unit (EU) with a Potential to Emit and an operating design capacity or actual demonstrated capacity less than or equal to that of the original EU.
- C. Identical Replacement - An EU that is equivalent and has the same make and model number of the original EU.
- D. Routine - A prescribed and detailed course of action that is performed at fixed intervals.
- E. Expected useful life - That period of time during which an emission unit is expected to perform within its operating design capacity, while being routinely repaired or maintained.
- F. Operating Design Capacity (or Capacity) - Refers to actual capability of equipment as defined by heat rate, fuel use rate, compression rate, and/or emission rate (e.g., MMBtu/hr, SCFM, lbs/hr, gm/HP-hr, ppm). This definition excludes non-emission related design capacity designations such as power (electrical) capability (e.g., MW).

4.0 POLICY

Consistent with EPA direction, determination of an *equivalent routine replacement* will be made on a case-by-case basis. Below are general guidelines.

- A. *Equivalent routine replacements* of permitted EUs are exempt from NSR and permitting.
- B. An *equivalent routine replacement* must be both *equivalent* and *routine* to be exempt from NSR and permitting.
- C. An *equivalent routine replacement* cannot increase emissions, actual or potential, above that of those permitted for the original EU.
- D. *Routine* repair and maintenance of permitted or non-permitted EUs is exempt from NSR and permitting.
- E. An *equivalent replacement* cannot exceed the operating design capacity of the original EU or increase the actual or potential capacity of the existing process or production line (i.e., de bottleneck).
- F. An equivalent replacement cannot increase capacity of the original EU. If an EU has lost capacity due to wear and tear not regainable by routine repair and maintenance, the

replacement cannot regain this lost capacity. If it does, it is not equivalent to the EU it replaces at the time of replacement.

- G. A *routine* replacement cannot extend the expected useful life of the original EU. Useful life is associated with each individual EU and is not the expected life of the project. To be routine, the replacement interval of the EU must be clearly documented in a manual of procedures, or documented in literature commonly issued for that EU, or qualify as common industry practice in a manner found acceptable to the SBCAPCD as being consistent with the intent of SBCAPCD rules and this P&P.
- H. Emission control units or components do not qualify as *equivalent routine replacements* unless the replacement is authorized in the operating permit.
- I. When a replacement qualifies as an *equivalent routine replacement*, notification of the SBCAPCD within 30 days following the replacement is required, unless the replacement equipment is identical as to make and model, and routine in which case notification is not required. Fees will not be charged for SBCAPCD's review of replacement notifications.
- J. When a replacement qualifies as an *equivalent routine replacement*, the replacement EU is not subject to NSR provisions of Regulation VIII. As such, the replaced EU cannot create Emission Reduction Credits or an NEI decrease.
- K. When the replacement EU is not an *equivalent routine replacement*, the replacement EU requires an ATC permit and is treated as a new EU subject to NSR. The replaced EU may generate Emission Reduction Credits per Rule 806 or be used as an NEI decrease.
- L. An *identical replacement* is *equivalent* but may not be *routine* if it extends the expected useful life of the EU.
- M. A *non-routine replacement* is considered a modification and is subject to NSR.
- N. Any EU subject to federal requirements (i.e., NSPS, NESHAPS, MACT) cannot be considered as a *routine equivalent replacement*.

5.0 **PROCEDURE**

- A) The SBCAPCD must receive a written replacement notification request from the applicant. Notwithstanding the above, for specific device replacements (e.g., IC engine replacements and tank replacements), the SBCAPCD has a notification process that must be followed in order to qualify.
- B) The permit engineer evaluates each EU replacement notification on a case-by-case basis to determine if it is a *routine equivalent replacement*.
- C) The permit engineer determines if the replacement EU is equivalent by checking that the replacement EU: 1) will have actual emissions and potential emissions (PTE) less than or equal to that of the original EU; 2) has a design capacity equal to or less than that of the original EU; 3) does not regain or increase capacity of the original EU; and 4) does not de bottleneck an existing process or production line.
- D) The permit engineer determines whether a whole or partial replacement is routine by determining whether the replacement EU constitutes a comprehensive life-extending project. Only EUs that have a documented service life with a scheduled change out on a regular basis are considered routine. The engineer is responsible for completing a *routine equivalent*

replacement evaluation approval form. The engineer's supervisor must approve the engineer's findings.

6.0 EXAMPLES OF PERMIT EXEMPTION REQUESTS BASED ON RULE 202 D.8 /D.9

- A) A source requests an exemption based on Rule 202 D.8 (*Routine Repair and Maintenance*) to replace the tank top and /or a number of shell staves of a permitted API bolted steel tank in petroleum product or produced water service. The source needs to replace the tank top and/or a number of shell staves periodically due to normal internal corrosion conditions. For single ring API bolted steel tanks with capacities of 100 to 1000 barrels, the replacement of a tank roof in whole or in part and up to 50 percent of the total number of shell staves qualifies as a routine repair/replacement, and is exempt provided the dimensions, use, and capacity of the tank remain the same. For two and three ring API bolted steel tanks having capacities of 200 to 10,000 barrels, the replacement of a tank roof in whole or in part and up to the equivalent number of one ring of shell staves qualifies as routine, and is exempt provided the dimensions, use, and capacity of the tank remain the same. If the cumulative amount of shell stave replacements for any tank exceed the replacement criteria above, such replacement shall not qualify for this exemption.

To demonstrate the above exemption criteria are met, the source must submit a *Tank Repair Reporting Form* (ENF-101) for each tank repair project to document the number of rings, the number of staves per ring, and the number of staves in each ring to be replaced. The Form must be submitted prior to initiating the repair work.

Note: this approval does not relieve the source of their reporting obligations under SBCAPCD Rule 1001 where such notification is required for demolition of regulated structures. In addition, the requirements of SBCAPCD Rule 343. *Petroleum Storage Tank Degassing*, apply where applicable.

- B) A source requests an exemption based on Rule 202.D.8 to replace the floor of an API bolted steel tank. The replacement of a tank floor or any portion of a tank that will require the source to completely dismantle the tank is considered a comprehensive life extending project and will not qualify for this exemption.
- C) A source operates several ICEs equipped with NSCR control systems. Based on a documented maintenance schedule in their Rule 333 I&M Plan, which is incorporated into their operating permit, they replace these catalysts every 3 years or 24,000 operating hours, whichever comes first. The catalyst replacement qualifies as an *equivalent routine replacement* and is exempt from permit per Rule 202 D.9 because the operating permit provides for the replacement.
- D) A source requests an *equivalent routine replacement* approval for the replacement of an old 20,000 bbl fixed roof tank (constructed prior to NSPS effective date) with a 15,000 bbl fixed roof tank. The actual and permitted emissions of the new tank will be less than the original and there is documentation via an 'operations manual' that the tank requires replacement within a prescribed period of time. The request is not accepted because the installation of a new tank triggers NSPS applicability to the EU since the new tank greater than 10,001 bbls (951 cubic meters) is subject to NSPS Kb and, therefore, requires a permit. If the original EU had been permitted subject to NSPS, the *equivalent routine replacement* would have been approved if the applicable NSPS has not been changed since the original permitting action.
- E) As part of ongoing routine maintenance, a source discovers that a burner gets damaged by thermal stress and needs to be replaced. The source requests an *equivalent routine replacement* exemption for an identical burner. The request is approved.

- F) A source wants to replace an existing ICE catalyst, specified in a permit, with an equivalent catalyst not listed on the permit and made by a different manufacturer. The source requests APCD approval for a permit exemption. The catalyst change-out is documented in the original equipment manual to occur at a standard interval. This replacement is considered equivalent and routine and qualifies as a *routine equivalent replacement*. Alternatively, if the change-out was based on quarterly NOx readings exceeding a specified ppmv value in the PTO, then change-out in any quarter exceeding the ppmv value would also be equivalent and routine.
- G) Oil production from a reservoir is expected to last 40 years. The source can document in an operations manual that the process heaters and storage tanks wear out in 20 years. The source claims that identical replacements of the heaters and tanks are equivalent routine replacements and thus exempt from NSR and permitting since the useful life of the project is 40 years. The identical replacements are not exempt from NSR and permitting because the project's life has nothing to do with the useful life of the individual EUs.
- H) A source requests a Rule 202 D.8 exemption for the repair of an ICE. The repairs include the following: 1. A valve job; 2. Installation of new seals and bearings; 3. Bore out the cylinders; 4. Replace muffler; 5. Replace carburetor, points, plugs, condenser and wires; and 6. Install new gasket seals. The engine block is not replaced. The requested repair is considered routine since it is common practice. It is considered part of the life of the engine, does not extend its normal life, and does not affect the horsepower rating or increase emissions. At some point the engine cannot be repaired and, at that point, the replacement is subject to NSR and permitting. The life of the engine is based on whether these repairs can be physically and economically done. If so, the repairs do not extend the engine's life.
- I) A source intends to replace an old gasoline fired ICE with a new identical ICE fired on LPG and requests a Rule 202 D. 9 exemption. The request is denied because the replacement is not routine since it extends the useful life of the Emissions Unit.
- J) A source requests a Rule 202 D.9 exemption for the replacement of a 20 year old non-functioning 27.5 MMBtu/hr steam generator with a functioning 20 year old MMBtu/hr steam generator. The replacement is not considered an equivalent routine replacement.
- K) A source intends to replace standard fuel injectors on a turbine with new injectors which are "low NOx" fuel design. The source does not submit an ERC application and is not installing the injectors to correct compliance deficiencies. The replacement is considered routine replacement because it does not extend the life of the EU (in this case, the turbine) while reducing emissions.
- L) A source intends to replace several electric driven hydrocarbon pumps which are listed in the source's permit(s). The electric driven pumps are not an integral part of a control system such as gas collection or vapor recovery system. The emissions are solely fugitive hydrocarbon emissions from components and the net emission increase from those components qualifies as de-minimis per Rule 202. The request is approved as an equivalent routine replacement. If the source was previously subject to BACT for ROC emitting components, then the de-minimis components installed are also required to meet BACT technology/standards.
- M) A 3.0 MW turbine has its turbine blades replaced as a matter of routine repair and maintenance. The blade manufacturer has a new generation of blades with greater efficiency and is phasing out the old blade lines. With the new technology, the fuel use for the turbine will remain the same and the emissions will not increase but the power output will increase to 3.5 MW. This excess power will be sold to the local utility. The turbine blade replacement project is exempt because it is a routine maintenance of a turbine with state-of-the-art OEM

parts. Since the mechanical capacity of the turbine remains unchanged (even though the power capacity is increased), the exemption is granted.

- N) A source has 50 oil wells and 55 ICEs under permit. Each oil well requires one ICE to operate. The extra five ICEs are listed on the permit as spares and there is a permit limitation that no more than 50 ICEs can operate simultaneously. The PTE of the source is based on the 50 wells and 50 ICEs and does not include the spare ICEs.

Scenario 1: One of the ICEs (engine A) needs to be removed from a well for repair and maintenance and is replaced by one of the five spares (engine B). This is considered an acceptable replacement; no permit action is required and the PTE does not change.

Scenario 2: It is found that engine A cannot be repaired; the source replaces engine B with another ICE (engine C) not currently listed as a spare on the permit and returns engine B to the spare pool. This replacement (engine C) extends the useful life of the emissions unit and must go through NSR. Optionally, see Section O below for use of the temporary engine replacement provision.

Scenario 3: The source decides to leave engine B on the well and adds another ICE (engine D) to the spare pool to replace engine B. The addition of engine D is not considered a routine replacement and engine D must go through NSR.

- O) A source has an IC engine that fails and must be repaired off-site and does not have a backup engine permitted. In this case, the source may make application to the District to incorporate a *Temporary Engine Replacements* condition in their Permit to Operate for the affected engine(s). Please refer to text below that addresses this routine repairs and maintenance scenario. Once this condition is incorporated in the permit the source may temporarily replace engines in accordance with the condition requirements and limitations.

X. Temporary Engine Replacements. Any reciprocating internal combustion engine subject to this permit may be replaced temporarily only if the requirements (a-f) listed herein are satisfied.

- a. The permitted engine is in need of routine repair or maintenance.
- b. The permitted engine that is undergoing routine repair or maintenance is returned to its original service within 60 days of placement of the temporary engine. For good cause, and with advance written APCD approval, this time period may be extended.
- c. The temporary replacement engine has the same or lower manufacture, or orifice plate, rated horsepower and same or lower potential to emit of each pollutant as the permitted engine that is being temporarily replaced.
- d. The temporary replacement engine shall comply with all rules and permit requirements that apply to the permitted engine that is undergoing routine repair or maintenance.
- e. For each permitted engine to be temporarily replaced, the permittee shall submit a completed *Temporary IC Engine replacement Notification* form (Form ENF-94) within 14 days of the temporary engine being installed. This form shall be sent electronically to: temp-engine@sbcapcd.org.
- f. Within 14 days upon return of the original permitted engine to service, the permittee shall submit a completed *Temporary IC Engine Replacement Report* form (Form ENF-95). This form shall be sent electronically to: temp-engine@sbcapcd.org.

Any engine in temporary replacement service shall be immediately shut down if the APCD determines that the requirements of this condition have not been met. This condition does not apply to engines that have experienced a cracked block (unless under manufacturer's warranty), to engines for which replacement parts are no longer available, or new engine replacements. Such engines are subject to the provisions of New Source Review.

- P) An operator uses leased ICEs to operate their facility. The operator replaces a permitted leased ICE with an exact make and model number leased unit. The replacement of the ICE is not routine because it extends the life of the "emission unit" and needs to go through NSR.
- Q) A source decides to replace, instead of repair, a process oven that no longer operates with an equivalent oven. The replacement is not considered routine since it would extend the useful life of the "emission unit." The replacement oven must go through NSR. If the PTE of the replacement oven is less than or equal to the ACTUAL emissions of each pollutant, there is no increase in the NEI.