



## **Carl Moyer Program Advisory: 06-001**

### **Minimum Specifications for Electronic Monitoring Units**

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This advisory provides guidance on the minimum required specifications for electronic monitoring units (EMU) required to be installed on fleet modernization, locomotive, and marine projects funded using the 2005 revised Carl Moyer Program Guidelines.

With the recent revisions to the Carl Moyer Guidelines, marine<sup>\*</sup>, locomotive and fleet modernization projects require the installation of an EMU. Although not required by the Carl Moyer Program Guidelines, districts may choose to require the installation of an EMU system with each new engine for other source categories. The full purchase of the EMU (including warranty, data retrieval, compilation, and transmission to the district, and the installation cost) is eligible for Carl Moyer Program funding, and may be included when calculating project cost-effectiveness. The following are minimum specifications for the districts to follow. Districts may allow projects with EMUs installed that meet these minimum specifications to complete all reporting through the electronic data system. A district may require additional specifications and/or more stringent specifications at its discretion.

#### Minimum Specifications

##### **When is the EMU required to operate?**

The EMU must be powered at all times during vehicle/equipment operation. If the EMU is battery powered, the battery life must be long enough to ensure the EMU is charged and functional each time the vehicle/equipment is operated.

##### **What will the EMU track?**

The EMU must track the geographic position and either the operated hours or the mileage traveled, or both, of the vehicle/equipment.

All data must be recorded while the vehicle/equipment is in operation. The vehicle/equipment position must be updated upon startup and at least once every 30 minutes during vehicle/equipment operation. The time-to-first-fix should be no longer than five minutes.

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<sup>\*</sup> Installation of an EMU is not required for Year 8 funded marine projects. South Coast Air Quality Management District (AQMD) has agreed to conduct a pilot for year 8 funds that would require EMUs compliant with the minimum specifications listed here be installed on South Coast AQMD marine projects. ARB will use the information gained from South Coast AQMD's experience procuring EMUs for Year 8 funded marine projects to update the minimum EMU specifications listed here with regard to marine projects for Year 9 projects.

## **How must the EMU store and transmit collected data?**

The collected data must be provided to the district on a periodic basis, or, at the discretion of the district, the data may be transmitted directly to the district in real-time. The EMU must include either the capability to automatically transmit the stored data from the vehicle/equipment, or enable downloading of the stored data through a port in the device. If the storage method is used, the EMU must have the capacity to store as much data as is necessary to ensure that data is not over-written prior to any scheduled data retrieval. At the discretion of the district, the stored data may be encrypted, or otherwise protected, and require a password distributed only to the district and ARB.

## **What data must be recorded?**

The EMU must store the time, date, position, elapsed time since last recorded position, elapsed operated hours since last recorded position, and accrued mileage since last recorded position (required for fleet modernization projects). The positional data stored and transmitted must either be accompanied by software which will code raw positional data using the following codes, or directly transmit the positional data pre-coded into these zones;

1. Whether or not the position is in the district boundary (including district coastal boundary for marine projects).
2. Whether or not the position is in California (including its coastal waters).
3. Whether or not the position is outside California (including its coastal waters).
4. Other zones within the district, or other districts in California, may be specified at the discretion of the district.

## **How often must the collected data be provided to the district?**

Periodically (preferably on a monthly basis, but at least quarterly for fleet modernization projects and annually for all other projects), the data must be downloaded and transmitted to the district in an electronic format specified by the district.

## **What information must be provided to the district?**

For each vehicle/equipment the submitted data shall include at least:

- Grant ID number. (*Optional*)
- Vehicle ID, Equipment ID, or Vessel ID.
- Date of download.
- Total accumulated miles and/or hours operated by coded zone described above. All data collected must be reported regardless of whether hours or miles or both were recorded.
- Date and time that any failure or malfunction of the EMU occurred.
- Time periods, if any, that the EMU was not operational.
- Fuel consumption. This is optional, and is not required to be monitored by the EMU. However, liquefied natural gas-diesel and other dual fuel locomotive projects, marine projects, and other fuel based projects are required to monitor and report fuel consumption in their annual reports, as specified in the revised Carl Moyer Guidelines.

### **How long must the collected data be submitted to the district?**

Data collected must be submitted to the district for the lesser of five years or the project life. As noted above, districts may allow projects with EMUs installed to complete all reporting through the electronic data system. For the remainder of the projects life, if any, reporting may continue to be completed through the electronic system, although this is not required. However, reporting must continue to be completed as required in the revised Carl Moyer Guidelines.

### **How rugged must the EMU be?**

The EMU must be tamperproof and be rugged enough to withstand the operating environment of the vehicle/equipment for the expected life of the project, if installed per the manufacturer's instructions.

### **What are the warranty requirements?**

The EMU must have a full repair or equivalent replacement warranty for 5 years. If the project life is less than five years, the warranty may equal the project life. If the project life is longer than 5 years the contract may also contain an option for the participant to extend the warranty beyond the minimum amount (with district approval). This extended warranty may be included when calculating cost-effectiveness for Carl Moyer funding eligibility. The reporting must continue to be completed through the electronic system for the extent of the warranty.

### **What data must be provided in the event the EMU fails?**

The EMU must accurately track vehicle/equipment position and activity during the operation of the vehicle/equipment. If the unit fails to record as described above for a period exceeding five (5) percent of the annual reporting period the participant is required to submit as part of the annual report documentation of the vehicle/equipment activity during the missing time period.

### **Can these minimum specifications be modified by the district?**

It will be the responsibility of the district to assure that participants install, operate and report data using the EMU in accordance with these specifications and the requirements contained in the revised Carl Moyer Guidelines. On a case-by-case basis, and with ARB's approval, for projects in which an EMU meeting these specifications is either not available for the vehicle/equipment, or results in additional costs exceeding ten (10) percent of the project cost (excluding the cost of the EMU), some of these specifications may be modified or deleted, or monitoring and reporting may be allowed using prior ARB approved methods. The district must justify the request for such an exemption, including a demonstration that a reasonable effort (such as an RFP or other means) was made to contract with a supplier for an EMU meeting the minimum specifications.

**What about projects in which an EMU is already installed on the vehicle/equipment?**

On a case-by-case basis, for projects in which an EMU is already in place on the vehicle/equipment, at the option of the participant and the district, that EMU may be utilized and some of these specifications may be modified or deleted, as approved by ARB. In such cases, it will be the responsibility of the participant to provide information on the specifications of the EMU system and to maintain the EMU system in working condition for the lesser of five years or the project life.