

## METHODOLOGY FOR DETERMINING IF CREATE PASSENGER RAIL PROJECTS ARE “PROJECTS OF AIR QUALITY CONCERN” IN PM<sub>2.5</sub> AND PM<sub>10</sub> NONATTAINMENT AND MAINTENANCE AREAS”

The March 10, 2006 Particulate Matter Hot-Spot Analysis rule (71 FR 12491), provided examples of what would be considered “projects of air quality concern” in Particulate Matter (PM<sub>2.5</sub> and PM<sub>10</sub>) Nonattainment and Maintenance Areas. One example of a highway project showed an increase of 10,000 trucks per day. While this increase in diesel trucks was not described as a threshold, it could be used as the foundation of determining if a project is one of air quality concern. The 10,000 diesel trucks per day data point could be utilized for establishing a train volume data point to assist in determining if a CREATE Passenger Rail Project (which is subject to Transportation Conformity) is a “project of air quality concern.” FHWA and IDOT are proposing the following process be used to help make this determination:

### TRUCK/TRAIN ANALYSIS

1. Determine if the project is located within the PM<sub>2.5</sub> Nonattainment Area only or if it is located in the Lyons Township or the Lake Calumet PM<sub>10</sub> Maintenance Areas.
2. Total PM emissions (grams/mile) - for the design year based on PM<sub>2.5</sub> and PM<sub>10</sub> average emission factors for diesel powered combination single unit short and long haul trucks obtained from the MOVES model with the specific Cook County Illinois inputs will be generated and used.
3. Using #2 above, multiply total emissions for 10,000 trucks (grams/mile) by 1 mi to calculate the total emissions for 10,000 trucks in grams/day. (Note: this is a constant for a given design year.)
4. Obtain the PM emission factor for the fleet average (all locomotives) in grams/gallon (for the design year). Source: USEPA Publication *Emission Factors for Locomotives*, EPA-420-F-09-025, April 2009, unless more recently developed information is available.
5. Determine the number of passenger rail locomotives associated with the design year no-build case and with the proposed design year build case. Subtract the no-build number from the build number to obtain the increase in passenger rail locomotive traffic associated with the project. (Note: this will vary from one project to another.)
6. Obtain fuel consumption rate of the passenger rail locomotives (miles/gallon). (Note: this will be provided by the RRs and is a constant.)
7. Using #3, #4, and #5 above, multiply delta number of trains (TRN/day) by inverted train fuel consumption rate (gallons/mile), the train emission factor (grams/gallon) and 1 mile to calculate the total emissions of the increase in train traffic (grams/day). (Note: this will vary from one project to another.)
8. Compare total emissions of the increase in train traffic, #6 above, to total emissions of 10,000 trucks calculated in #2 above. If emissions from the increase in train traffic closely approaches or exceeds that of 10,000 trucks, it is an indication that the project is of air quality concern.

Since the total truck emissions for 10,000 trucks is a constant, and since the train fuel consumption rate and emission factor will be constants, we can multiply the total truck emissions for 10,000 trucks by the train fuel consumption rate and then divide by the

train emissions factor to determine how many trains would be needed to be equivalent to 10,000 trucks. Once we have calculated this number, we would then compare the increase in train traffic number to this number. If the implementation of a CREATE passenger rail project approaches or exceeds this number, it is an indication the project is of air quality concern.

Since passenger rail projects are transit projects, it was determined that the CREATE passenger rail projects should also be looked at as transit type projects when applying the PM Hot-Spot rules. Because FTA is more familiar with transit type projects, FHWA sought and utilized their advice when developing this process of applying the PM Hot-Spot rules and determining if CREATE passenger rail projects should be considered “projects of air quality concern.”

In § 93.123(b)(1) of the PM Hot-Spot regulations, transit projects that are considered “projects of air quality concern” are described as:

(iii) New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location

(iv) Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location

In addition, the March 10, 2006 PM Hot-Spot rules provide transit type examples of “projects of air quality concern” such as “An existing bus or intermodal terminal that has a **large vehicle fleet** where the number of diesel buses increases by 50% or more, as measured by bus arrivals.” The final rule also gives the example of what **would not** be considered a project of air quality concern as: “A 50% increase in daily arrivals at a **small terminal (e.g., a facility with 10 buses in the peak hour).**”

No “new” bus or rail terminals and transfer points are currently proposed under the CREATE program. As such, this analysis will focus on “expanded” bus and rail terminals and transfer points. Also, while the CREATE program does not involve any projects which will physically “expand” any existing bus or rail terminals and transfer points, it is possible that a CREATE project may cause an increased use of a facility, that is, implementation of a CREATE project may cause an existing rail terminal(s) to service additional passenger rail lines which they currently do not service. Although the PM Hot-Spot rules do not specifically mention this situation, based on advice from FTA, this does not preclude us from investigating the effects of this increase in train arrivals on the facility. FTA has indicated that, for transit projects in general, these types of projects would rarely increase use of a facility to a level that would approach or exceed the 50% increase indicated by the PM Hot-Spot rules. With this in mind, the following analysis was developed to assist in determining if a CREATE passenger rail project is one of air quality concern:

## **TRAIN ARRIVAL ANALYSIS**

1) Determine if each terminal (station) along the involved line has a “**large vehicle fleet**” or is a “**small terminal (e.g., a facility with 10 buses in the peak hour).**” If

it is determined that all terminals (stations) along the involved line are small terminals, the project is not one of air quality concern. This determination will be included in the NEPA document for the project. If it is determined that one or more terminals (stations) along the involved line has a large vehicle fleet, proceed to #2.

- 2) Calculate the percent increase in daily passenger train arrivals at each terminal (station) that has a large vehicle fleet (percent difference between design year train arrivals and existing train arrivals at the facility). If this closely approaches or exceeds 50% for any terminal evaluated, it is an indication that the project is one of air quality concern.

The above analyses would be completed for each CREATE Passenger Rail Project to determine if it is a “project of air quality concern.”

Documentation:

If it is determined that the CREATE Passenger Rail Project is not a “project of air quality concern”, the following will be included in the NEPA document:

“This project does not meet the definition of a project of air quality concern as defined in 40 CFR 93.123(b)(1). Due to {state reason(s)}, it has been determined that the project will not cause or contribute to any new localized PM<sub>2.5</sub> or PM<sub>10</sub> violations or increase the frequency or severity of any PM<sub>2.5</sub> or PM<sub>10</sub> violations. EPA has determined that such projects meet the Clean Air Act’s requirements without any further Hot-Spot analysis.”

If a CREATE Passenger Rail Project is determined to be a project of air quality concern, a qualitative Hot-Spot analysis will be required to be completed for the project.

**TABLE 1: PM2.5 EFs Results**

|  |                |
|--|----------------|
| <b>Average PM2.5 (g/mi) - typical day (average of weekday and weekend)</b> | <b>0.06854</b> |
|--|----------------|

PM2.5 Emissions Factor for Cook County  
Generated using USEPA's MOVES model  
Factor to be used in Step 2 of the Truck/Train analysis.