

71st Street/CSX grade separation; and 01-05-0012 for the East-West Corridor, including Belt Junction.

On October 25, 2010¹, the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) determined that the 2010 regional transportation plan conforms with the State Implementation Plan (SIP) and the transportation-related requirements of the 1990 Clean Air Act Amendments. On August 7, 2013², the FHWA and the FTA determined that the updated TIP also conforms with the SIP and the Clean Air Act Amendments. These findings were in accordance with 40 CFR Part 93, “Determining Conformity of Federal Actions to State or Federal Implementation Plans.”

The scope of the project has not changed significantly from what was reflected in the TIP. Therefore, this project conforms to the existing SIP and the transportation-related requirements of the 1990 Clean Air Act Amendments.

1.3 PM Hot-Spot Analysis

A Hot-Spot Analysis is required only if the passenger rail portion of the project is deemed to be a project of air quality concern (with regards to PM₁₀ and PM_{2.5}). The *Transportation Conformity Guidance for Qualitative Hot-spot Analysis in PM_{2.5} and PM₁₀ Non-Attainment and Maintenance Areas* (EPA 420-B-06-902) document has been released to assist with determining projects of air quality concern (Cook County is in a PM_{2.5} non-attainment area). The CREATE team then developed the “Methodology for Determining if CREATE Passenger Rail Projects are “Projects of Air Quality Concern” in PM_{2.5} and PM₁₀ Nonattainment and Maintenance Areas” for use with CREATE rail projects. The CREATE methodology identifies two conditions which are applicable to this type of project that would allow determination of whether this project is a “project of air quality concern”:

- An increase of emissions similar to that of 10,000 trucks, referred to below as a “truck/train analysis”.
- The new construction of a large terminal or station, referred to below as a “train arrival analysis”.

1.3.1 Truck/Train Analysis

The 2029 PM_{2.5} emission rate for heavy-duty diesel vehicles is 0.06854 grams/vehicle-mile.³ Total PM_{2.5} emissions for 10,000 trucks per day for one mile would be 685.4 grams.

The 2029 PM_{2.5} emission rate for locomotives is 1.26 grams/gallon.⁴ The increase in passenger locomotives between the No-Build and Build Alternatives is 6 per day (refer to Table 1-6). At a fuel consumption rate of 2.8 gallons/mile⁵, the emissions per day for one mile would be 21.2 grams.

**Table 1-6: Passenger Train Locomotive Volumes within 75th Street CIP**

Passenger Service	Existing	No-Build	Build
Metra Southwest Service (1 locomotive per train)	30	32	34
Metra Rock Island District (1 locomotive per train)	78	78	78
Amtrak (2 locomotives per train)	4	8	12
<i>Total</i>	<i>112</i>	<i>118</i>	<i>124</i>

Source: CTCO, 2011

The net increase in emissions of PM_{2.5} from CREATE 75th Street CIP trains (21.2 grams/day) does not closely approach or exceed the PM_{2.5} emissions for 10,000 trucks (685.4 grams/day) during the Build year of 2029. Under this criterion the 75th Street CIP would not be a “project of air quality concern.”

1.3.2 Train Arrival Analysis

The only potential change affecting the number of passenger train arrivals would result from shifting the terminus of the Southwest Service from Union Station to LaSalle Street Station by connecting the Metra Southwest Service (SWS) Line to the Rock Island District (RID) Line. Although this would not be a new bus or rail terminal, the project would cause increase use of a terminal, thus possibly expanding it to be considered a large terminal. A small terminal is considered a facility with 10 buses in the peak hour. From the CTCO data, the peak number of trains during the peak hour would be 11 in the build year (2029). To ensure a worst-case analysis of potential impacts, LaSalle Street Station is assumed not to be small terminal for the purposes of this analysis.

The rules then consider the increase in service at the terminal. If the increase closely approaches or exceeds 50%, it is an indication that the project is one of air quality concern. This shift would cause the passenger trains at LaSalle Street Station to increase from 78 in the existing conditions (2009) to 112 in the build conditions (2029). The net increase would be 34 trains, which is a 44% increase (Refer to Table 1-7). As this increase does not closely approach or exceed 50%, under this criterion, the 75th Street CIP would not be a “project of air quality concern.”

Table 1-7: Train Arrival Analysis at LaSalle Street Station

Daily Passenger Trains Arrivals at LaSalle Street Station	Rock Island District	SWS	Total
Existing	78	0	78
Build	78	34	112
Increase	0	34	34
<i>% increase of Build over Existing</i>			<i>44%</i>

Source: CTCO, 2011

1.3.3 Conclusion

The project does not meet the definition of a project of air quality concern as defined in 40 CFR 93.123(b)(1). Because 75th Street CIP would not exceed the particulate-emission equivalent of 10,000 trucks and would not increase passenger trains by 50% or more, it has been determined that the project will not cause or contribute to any new localized PM_{2.5} and PM₁₀ violations or increase the frequency or severity of any PM_{2.5} and PM₁₀ violations. USEPA has determined that such projects meet the Clean Air Act's requirements without any further Hot-Spot analysis.

1.4 Locomotive Analysis

For the locomotive emissions analysis, the fuel consumption data from the CTCO Train Model were multiplied by the emission factors for HC, NO_x, PM₁₀, PM_{2.5}, and SO₂ (refer to Table 1-8) to estimate the annual emissions associated with each alternative (refer to Table 1-9). Table 1-9 compares the No-Build and Build emission levels with existing emission levels. While the number of train movements in 2029 with either the Build or No-Build Alternatives would increase substantially over existing conditions, improvements in fuel composition and engine emission controls will substantially reduce future total emissions below current levels for all criteria pollutants except CO, a benefit of the project. While total annual emissions of CO increase over the 2009 Existing Conditions, the emissions of CO would be lower for the Build Alternative than for the No-Build Alternative. The elimination of most train delays and locomotive idling with the Build Alternative are the principal reason for this improvement. Additionally, current and future USEPA locomotive regulations, as well as improvements in fuel composition, will continue to perpetuate better emissions performance.

Table 1-8: EPA Emission Factors for Locomotives

Year	HC (grams/gallon)	CO (grams/gallon)	NO _x (grams/gallon)	PM ₁₀ (grams/gallon)	SO ₂ (lbs/gallon)
2009	9.1	26.6	172	4.9	0.0360
2029	2.4	26.6	64	1.3	0.000216*

* SO₂ fuel content assumed to be 15 ppm, as required by EPA regulations for locomotives by 2012.

Source: USEPA, April 2009, *Technical Highlights, Emission Factors for Locomotives*, EPA Office of Transportation and Air Quality, EPA-420-F-09-025 and USEPA, December 1992, *Procedures for Emission Inventory Preparation, Volume IV: Mobile Sources*. EPA-420-R-92-009.

Endnotes:

¹ CMAP Annual Report, Fiscal Year 2012-13, <http://www.cmap.illinois.gov/annual-reports>, accessed 11/5/13.

² Donovan, John M. "Transportation Improvement Program Amendment Chicago Metropolitan Area." Letter to Charles Ingersoll. 7 April. 2013. *TIP Schedule and Approvals*. CMAP, http://www.cmap.illinois.gov/documents/20583/1307820/08-02-13_TIP_Approval.pdf/ab713ab3-1a59-4182-9987-56a26e958637, accessed 11/5/13..

³ Emission factor generated by IDOT using EPA's MOVES model, transmitted in email from Adin McCann, HNTB to Kim Glinkin, Jacobs, November 20, 2012.

⁴ USEPA, 2009. *Emission Factors for Locomotives*. EPA Office of Transportation and Air Quality, April, 2009, EPA-420-F-09-025. Per this guidance, the emission rate of 1.3 grams/gallon for PM10 was multiplied by 97% to estimate the emission rate for PM2.5.

⁵ Metra, 2004. *CREATE Project P1 Data Request Responses*. Letter from W.K. Tupper, Metra Chief Engineering Officer, to Charles J. Stenzel, TranSystems. Dated December 14, 2004. Transmitted in TranSystems memo to Larry Wilson/Walt Zyznieuski, IDOT, subject: CREATE Project P1 Preliminary Air Quality Hot Spot Analysis, dated February 19, 2008. Confirmed by CTCO on 11/22/11 to continue to use this rate as Metra's fleet has remained unchanged.

⁶ FHWA, Air Quality, Transportation & Toxic Air Pollutants, http://www.fhwa.dot.gov/environment/air_quality/air_toxics/, accessed 11/5/13.