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## **APPENDIX 3.3-B: MEMORANDUM DESCRIBING CONSISTENCY WITH THE MERCED TO FRESNO GENERAL CONFORMITY DETERMINATION**



## Memorandum

**DATE:** 1/4/2017

**TO:** Stephanie Perez-Arrieta, Chris Van Nostrand, Kathryn Johnson (FRA)

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**SUBJECT:** General Conformity Determination for Merced to Fresno Project Section: Central Valley Wye

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### Introduction

The emissions associated with the construction of the Merced to Fresno section of the HST project were analyzed in the Merced to Fresno Section: Final General Conformity Determination (GCD) (Authority and FRA 2012). The purpose of this memo is to discuss changes to the project since issuance of the GCD, resulting changes in construction emission estimates due to these changes, as well as the current project's consistency within the framework of the approved GCD.

### Merced to Fresno Final EIR/EIS

The California High-Speed Rail Authority (Authority) prepared the Final Environmental Impact Report/Environmental Impact Statement (Final EIR/EIS) for the Merced to Fresno section of the High-Speed Train (HST) project. The Authority's Board of Directors certified the Final EIR/EIS under CEQA on May 3, 2012, and the Federal Railroad Administration (FRA) issued a Record of Decision (ROD) under NEPA on September 18, 2012.

The project, as approved in the Final EIR/EIS, evaluated three HST north-south alignment alternatives: the UPRR/SR 99 Alternative, the BNSF Alternative, and the Hybrid Alternative (the Hybrid Alternative is a combination of the UPRR/SR 99 Alternative and the BNSF Alternative). Each of these alternatives would extend between and include the proposed Downtown Merced Station and the Downtown Fresno Station, an approximate 65-mile long corridor.

Each of these three alternatives included two different east-west design options, the Ave 24 Wye and the Ave 21 Wye, resulting in a total of six different alternative design options

### Merced to Fresno Final GCD

The Merced to Fresno Section: Final GCD (Authority and FRA 2012) evaluated the annual construction emissions associated with the Hybrid Alternative, which was identified as the Preferred Alternative. Furthermore, the Preferred Alternative with the Avenue 21 Wye option was presented in the GCD, because that option had the highest estimated emissions. The annual construction emissions were compared with the general conformity applicability threshold values (**Table 1**).

**Table 1 Total Annual Construction-phase Emissions  
Merced to Fresno Section: Final GCD (2012)**

Pollutant	Emissions (Tons/Year)										Conformity Applicability Thresholds (tons/year)
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
NO <sub>x</sub>	<b>39.85</b>	<b>128.76</b>	<b>109.51</b>	<b>114.52</b>	<b>32.02</b>	<b>13.34</b>	<b>49.35</b>	<b>15.14</b>	7.36	3.96	10
VOCs	2.97	<b>12.14</b>	<b>11.07</b>	8.33	2.42	1.73	<b>10.83</b>	1.81	1.01	4.90	10
PM <sub>2.5</sub> *	1.71	6.33	5.84	4.29	1.72	0.57	2.94	0.97	0.46	1.98	100
CO	14.11	52.45	49.24	31.51	11.40	7.65	32.42	18.41	11.58	2.51	100

Note: **Bold** values exceed applicability thresholds

\* Includes sulfur dioxide emission rates as a partial precursor to PM<sub>2.5</sub> (i.e., it was conservatively assumed that 100% of SO<sub>2</sub> emissions becomes PM<sub>2.5</sub>)

As shown in Table 1, construction-phase emissions, compared to the General Conformity applicability rates, were as follows:

- Annual estimated NO<sub>x</sub> emissions were greater than the applicability rate of 10 tons per year in years 2013 through 2020;
- Annual estimated VOC emissions were greater than the applicability rate of 10 tons per year in years 2014, 2015, and 2019; and
- Annual estimated PM<sub>2.5</sub> and CO emissions were less than the applicability rate of 100 tons per year in all years.

As such, a General Conformity Determination was required for the project for NO<sub>x</sub> and VOCs for the years indicated. This determination, which was published coincident with the Record of Decision (ROD) for the Project, included a commitment from the FRA/Authority to reduce all NO<sub>x</sub> and VOC emissions through emissions offsets using a Voluntary Emissions Reduction Agreement (VERA) with the San Joaquin Valley Air Pollution Control District (SJVAPCD, explained below.

### **Voluntary Emissions Reduction Agreement (VERA)**

To support the General Conformity compliance determination, the FRA demonstrated in the GCD that the emissions of NO<sub>x</sub> and VOCs (a precursor to O<sub>3</sub>) caused by the construction of the proposed Project would not result in an increase in regional NO<sub>x</sub> and VOC emissions. This was achieved by off-setting the NO<sub>x</sub> and VOC emissions generated by the construction of the Project through a Voluntary Emissions Reduction Agreement (VERA) between the Authority, the project proponent, and the San Joaquin Valley Air Pollution Control District (SJVAPCD). The requirement for the VERA was imposed on the project through the following mitigation measure from the Final EIR/EIS:

**AQ-MM#4:** Offset Project Construction Emissions through a SJVAPCD Voluntary Emission Reduction Agreement (VERA). The Authority and SJVAPCD will enter into a contractual agreement to mitigate the project's emissions by providing funds for the district's Emission Reduction Incentive Program to fund grants for projects that achieve emission reductions, thus offsetting project-related impacts on air quality. The project will commit to reduce construction emissions for NO<sub>x</sub> and VOC through the VERA program.

A VERA is a mitigation measure by which the project proponent (the Authority, in this case, in partnership with the FRA) provides pound-for-pound offsets of emissions that exceed General Conformity thresholds through a process that develops, funds, and implements emissions reduction projects, with the SJVAPCD serving role of administrator of the emissions reduction projects and verifier of the successful mitigation effort.

In June 2014 the SJVAPCD and the Authority entered into a Memorandum of Understanding to establish the process to fully mitigate (by offsetting to net zero) emissions from construction of the HST San Joaquin Valley District Portion, through Voluntary Emission Reduction Agreements (VERA). As such, the Authority and the SJVAPCD entered into a contract to mitigate the project's emissions (NOx and VOCs, in this case) by providing funds for the SJVAPCD's Emission Reduction Incentive Program to fund grants for projects that achieve emission reductions, thus offsetting project-related impacts on air quality.

As part of the VERA agreements signed to date (including numbers HSR14-12 and HSR14-74 for Construction Package 1A, 1B and 1C) between the Authority and the District, the Authority must submit to the District a Construction Emission Report every three months. This report contains the calculated criteria pollutant emission burdens based on actual construction reporting information. In addition, the report contains the emissions calculations, associated assumptions, methodologies, and equipment information collected during the three month period. This final mitigation, in the form of emissions offsets, is based on the actual emissions in these reports.

Since construction commenced in 2014, the SJVAPCD has offset all construction emissions of NOx and VOCs, mainly by replacing old farm equipment (tractors) with new, cleaner, more efficient tractors. The SJVAPCD has verified, through quarterly reports, that the actual emission reductions have been achieved. As such, the District has certified to the Authority that these offsets have been achieved.

### **Central Valley Wye (CVY) Supplemental EIR/EIS**

Since issuance of the Merced to Fresno Final EIR/EIS, several changes in alignments in the vicinity of the Central Valley Wye have prompted the development of a supplemental environmental document.

Four HST alignment alternatives are currently proposed for the Central Valley Wye Section of the HST System: the SR 152 (North) to Road 13 Wye Alternative, SR 152 (North) to Road 19 Wye Alternative, the Avenue 21 to Road 13 Wye Alternative, and the SR 152 (North) to Road 11 Wye Alternative. Each of these alignment alternatives contain additional miles of track as compared to the Merced to Fresno Final EIR/EIS analyzed, as the current study area extends approximately 13 miles further west to Carlucci Road. In addition, there have been changes to the construction schedule, quantities, and emissions estimation methodologies since issuance of the Merced to Fresno Final EIR/EIS.

As such, the annual construction emissions presented in the Merced to Fresno GCD have been revised to reflect these changes. The Avenue 21 to Road 13 alternative, which shows the highest emissions of ROG and NOx, has been presented for this analysis. Emissions from regional building demolition and construction of the at-grade rail segments, elevated rail segments, retained-fill rail segments, and traction power substations were calculated using emission factors from CARB's OFFROAD 2011 and 2007 models. Mobile source emission burdens from worker trips and truck trips were calculated using VMT estimates and appropriate emission factors from EMFAC2014. Fugitive dust emissions from dirt and aggregate handling were calculated using emission factors derived from equations from USEPA's AP-42.

The revised emissions are based upon the emission estimates for the Central Valley Wye, as presented in the Draft Central Valley Wye Supplemental EIR/EIS. The additional emissions for the Merced to Fresno portions of the project, outside of the Central Valley Wye (north of Ranch Road and south of Avenue 19) were calculated as follows:

- **Additional Rail Mile Construction:** the emissions from the construction of additional rail miles for the Merced to Fresno Section (including hauling) were calculated by track mile, based upon the emissions estimates of the Central Valley Wye. The additional track associated with the Merced to Fresno Section includes 7.7 miles of additional track from Ranch Road north to Merced, and 26.1 miles of additional track from Avenue 19 south to Fresno. Since the portion of the project south of Avenue 19 is currently under construction, those emissions were distributed across the years 2014 to 2018. Since the portion of the project north of Ranch Road will be constructed at a later date, those emissions were distributed over the years 2023 and 2024.
- **Merced Station:** the emissions of the Merced Station were based upon station emissions calculated in the Fresno to Bakersfield Section: Final General Conformity Determination (Authority and FRA 2014), which used the same construction emission calculation methodologies as the Central Valley Wye analysis. Since the Fresno station was already included in the Fresno to Bakersfield Section: Final

General Conformity Determination, it has not been included in this analysis. The emissions for the Merced station were distributed across the years 2019 to 2023.

- **VERA emissions:** those emissions which have already been offset under the VERA agreement with the SJVAPCD since the start of construction in mid-2014 have been subtracted from the overall emissions estimates in the years 2014, 2015 and 2016.

**Table 2** presents the revised emissions estimates, representing the Merced to Fresno portion of the project in conjunction with the current Central Valley Wye portion of the project. As shown in **Table 2**, construction-phase emissions, compared to the General Conformity applicability rates, are as follows:

- Annual estimated NOx emissions are greater than the applicability rate of 10 tons per year in years 2019 through 2022;
- Annual estimated VOC emissions are greater than the applicability rate of 10 tons per year in the year 2020; and
- Annual estimated CO, PM<sub>10</sub> and PM<sub>2.5</sub> emissions are less than the applicability rate of 100 tons per year in all years.

**Table 2 Total Annual Construction-phase Emissions  
Merced to Fresno with Central Valley Wye**

Pollutant	Emissions (Tons/Year)											Conformity Applicability Thresholds (tons/year)
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	
NO <sub>x</sub>	0.64	1.79	9.72	<b>90.68</b>	<b>102.83</b>	<b>118.85</b>	<b>173.75</b>	<b>102.97</b>	<b>26.16</b>	<b>30.52</b>	<b>26.17</b>	10
VOCs	0.11	0.25	0.66	5.29	6.31	7.15	<b>10.99</b>	6.05	1.81	1.90	1.70	10
PM <sub>10</sub>	0.07	0.16	0.44	14.80	15.48	22.80	28.76	13.62	1.35	4.64	4.46	100
PM <sub>2.5</sub> *	0.00	0.00	0.00	4.41	4.41	5.19	7.46	4.43	0.99	1.32	1.20	100
CO (Fresno)**	0.00	0.00	0.00	7.19	7.19	7.83	12.90	6.92	1.87	2.17	1.99	100

Note: **Bold** values exceed applicability thresholds

\* Includes sulfur dioxide emission rates as a partial precursor to PM<sub>2.5</sub> (i.e., it was conservatively assumed that 100% of SO<sub>2</sub> emissions becomes PM<sub>2.5</sub>)

\*\* Fresno urbanized maintenance area only

## Conclusion

Upon comparing the emissions estimates of the revised project, with the current Central Valley Wye alignments, as opposed to those presented in the Merced to Fresno GCD, the following holds true for both analyses:

- Annual estimated NOx emissions are greater than the applicability rate of 10 tons per year in several construction years;
- Annual estimated VOC emissions are greater than the applicability rate of 10 tons per in several construction years; and
- Annual estimated CO, PM<sub>10</sub> and PM<sub>2.5</sub> emissions are less than the applicability rate of 100 tons per year in all construction years.

As such, the approved GCD for the Merced to Fresno Project Section covers all pollutants which have been estimated. Regardless of the years in which the emissions of NOx and VOCs may exceed applicability rates, the GCD included a commitment from the FRA/Authority to reduce all NOx and VOC emissions through emissions offsets using a Voluntary Emissions Reduction Agreement (VERA) with the San Joaquin Valley Air Pollution Control District (SJVAPCD). Furthermore, since the commencement of

construction in 2014, it has been verified that all actual reported construction emissions have been fully offset through VERA agreements.

In conclusion:

- All construction emissions of NO<sub>x</sub> and VOCs have been and will continue to be fully offset to zero, and
- The revised construction analysis indicates that no additional pollutants would exceed General Conformity applicability rates.

As such, the findings and recommendations contained with the Merced to Fresno GC hold true, and no further action is required.