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- San Bernardino County Transportation Commission
 - San Bernardino County Transportation Authority
 - San Bernardino County Congestion Management Agency
 - Service Authority for Freeway Emergencies
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January 21, 2015

Mr. Hasan Ikhata
Executive Director
Southern California Association of Governments
818 W. 7th Street, 12th Floor
Los Angeles CA 90017

Dear Mr. Ikhata:

The dissolution of redevelopment agencies in California has significantly impacted the ability of the local agencies within San Bernardino County to construct new projects. Both the City of Upland and the City of Rialto have transportation control measure (TCM) projects in the current Federal Transportation Improvement Program (FTIP) that have been impacted by revenue loss. The Upland Metrolink Station Park and Ride Lot Expansion Project (ID 20040825) has been delayed due to lack of funding, and the Rialto Metrolink Station Park and Ride Lot Expansion Project (ID200450) has been down scoped.

SANBAG recognizes that substitute projects are required by air quality regulations if a TCM project is delayed, down scoped, or removed from the FTIP. SANBAG requests that the parking spaces reduction from both projects be substituted with SANBAG's Regional Vanpool Program. As indicated in the attached report describing the specifics of the request, the air quality analysis, and its benefit, the Regional Vanpool Program offers air quality benefits that are estimated to exceed those of the two Metrolink Station Park and Ride Lot Expansion projects. SANBAG has committed \$4 million of Congestion Mitigation and Air Quality funds toward establishment of the Regional Vanpool Program, which is expected to generate additional Federal Transit Administration Section 5307 funds that will sustain the program on an on-going basis.

SANBAG would like to proceed with the substitution process at your earliest convenience. We understand the substitution process starts with the Southern California Association of Governments' recommendation to the Transportation Conformity Working Group (TCWG). We would greatly appreciate your assistance in preparing for and working through the substitution process with our State and Federal partners on the TCWG.

Please contact Philip Chu, Management Analyst III, at (909)884-8276 for the next steps in the substitution process and follow-up on the attachment. Thank you for your assistance in this important matter.

Sincerely,



Andrea Zureick
Director of Fund Administration and Programming

Attachments

Replacement of Planned Park and Ride Lot Parking Space Expansions with Implementation of Regional Vanpool Program

1.0 Introduction

The dissolution of redevelopment agencies in California has significantly impacted the ability of the local agencies within San Bernardino County to construct new projects. Both the City of Upland and the City of Rialto have Transportation Control Measure (TCM) projects in the current Federal Transportation Improvement Program (FTIP) that have been impacted by revenue loss. The Upland Metrolink Station Park and Ride Lot Expansion Project (ID 20040825) has been delayed due to lack of funding and the Rialto Metrolink Station Park and Ride Lot Expansion Project (ID200450) has been down scoped. For air quality conformity purposes, SANBAG is proposing to implement a Regional Vanpool Program as a single replacement TCM project to offset the emissions reduction shortfall anticipated for the reduced parking space expansion at each park and ride facility in the FTIP. The project description and air quality modeling results are discussed below.

2.0 Project Description

The SANBAG Regional Vanpool Program TCM project consists of the formation of no fewer than 128 new commuter vanpools in Fiscal Year 2015/2016. These vanpools will originate in San Bernardino County but have destinations in San Bernardino, Riverside, Orange, and Los Angeles Counties. Based on the success of similar programs in Southern California, the number of vanpools originating in San Bernardino County is projected to increase over the program life. Estimated vanpool formation by year 2023 is 1,219 total operating vanpools. Estimated vanpool formation by year 2035 is 1,459 vanpools. As shown in the following air quality analysis, the air quality benefits attributable to the vanpool program more than offset the air quality benefits anticipated from the Metrolink Station Park and Ride Lot Expansion projects over the respective project lifetime of 2015 through 2035.

3.0 Compliance with Substitution Requirements

- **Equivalent Emissions Reduction:** SANBAG has analyzed the countywide emissions impacts of the regional vanpool program, which is the proposed substitute TCM project, and concludes that it provides greater emissions reduction than the combined emissions reduction of the original TCM projects. See the Air Quality Analysis Methodology in Section 4.
- **Similar Geographic Area:** Both the Metrolink Park and Ride Lot Expansion TCM projects and the regional vanpool program TCM project are located in the San Bernardino portion of the South Coast Air Basin. The regional vanpool program will operate throughout San Bernardino County, excluding Victor Valley where there is an existing vanpool program.
- **Full Funding:** SANBAG has current funding from Congestion Mitigation Air Quality funds in the amount of \$4 million for the regional vanpool program TCM project. The program is

expected to generate additional Federal Transit Administration Section 5307 funds, which will sustain the program on an on-going basis.

- **Similar Time Frame:** The proposed regional vanpool program TCM project will be operational in 2015, equivalent to the Metrolink Park and Ride Lot Expansion TCM project schedules.
- **Timely Implementation:** The proposed substitution is the means by which the obstacle to implementation of the Metrolink Park and Ride Lot Expansion TCM projects is being overcome.
- **Legal Authority:** SANBAG has legal authority and personnel to implement and operate the substitute regional vanpool program TCM project.

4.0 Air Quality Analysis Methodology

The air quality impacts of the projects were calculated using California Air Resources Board (CARB) and Caltrans-approved methodologies for the evaluation of park and ride facilities and vanpool implementation programs. These methodologies are documented in the CARB/Caltrans document *"Methods to Find the Cost-Effectiveness of Funding Air Quality Projects"*.¹ The emission factors used in the evaluations are those published by CARB in May 2013 and are the most current factors available.

4.1 Park and Ride Parking Spaces - Air Quality Benefits not Realized due to Project Down-scoping: Park and Ride Lot Expansion Projects located at the Upland and Rialto Metrolink Stations have been down-scoped, reducing the number of available spaces for Metrolink commuters or other higher-occupancy commute modes. The Upland Metrolink Station Park and Ride Lot Expansion Project has been reduced in scope by a total of 300 parking spaces. The Rialto Metrolink Station Park and Ride Lot Expansion Project has been reduced in scope by a total of 429 parking spaces. The total loss in parking spaces is 729. The assumed net decrease in total daily Metrolink ridership resulting from this reduction in scope is shown below in Table 1:

¹ Methods to Find the Cost-Effectiveness of Funding Air Quality Projects, California Air Resources Board/California Department of Transportation, May 2013 Update.
(<http://www.arb.ca.gov/planning/tsaq/eval/eval.htm>)

Table 1: Metrolink Ridership Decrease from Scope Reduction of Park and Ride Lot Expansion Projects

		Spaces Reduced	Utilization Factor	Effective Spaces	Trip Length One-Way (mi.)	Daily One-Way Trips
2015	Upland	300	75%	225	35	450
2023	Upland	300	85%	255	35	510
2035	Upland	300	100%	300	35	600
2015	Rialto	429	75%	322	55	644
2023	Rialto	429	85%	365	55	729
2035	Rialto	429	100%	429	55	858

The average trip distance is 35 miles for commuters originating at the Upland Metrolink station and 55 miles for commuters originating at the Rialto Metrolink station. It is probable that the majority of commuters will utilize Metrolink to access Union Station in downtown Los Angeles; thus, the distances used in the analysis reflect this majority of commuters. (Note: Since there is no reliable data to determine the final destination of Metrolink users, the additional net air quality benefit from the Vanpool program will make up for trips that are taken beyond Union Station.)

As noted in Table 1, the CARB default factor of 0.75 was used to determine parking space utilization, i.e., 75% of the total of 729 spaces were assumed to generate new Metrolink riders. For analysis year 2023, it is assumed that the lost utilization factor will increase to 0.85, or that 85% of the 729 spaces will be occupied. For year 2035, it is assumed that commuters would occupy 100% of the 729 parking spaces.

4.2 SANBAG Regional Vanpool Program: The Regional Vanpool Program will begin operation in 2015 and is expected to implement no fewer than 128 new commuter vanpools at program commencement. First year daily ridership is targeting 1,664 daily riders. It is assumed that 83% of these riders are not vanpool dependent, and in lieu of vanpool participation would have commuted via single occupant automobile. This value is based on CARB guidelines. Further, it is assumed that 75% of all vanpool participants will drive a single occupant automobile to access their vanpool, with a one-way average vanpool access trip distance of five (5) miles. This is also consistent with CARB guidelines. Finally, emissions associated with the van miles traveled are factored into the air quality analysis.

Vanpool participation is expected to grow significantly between years 2015 and 2023, with continued operation and growth beyond year 2035. Table 2, below, shows the number of vanpools, vanpool riders, and single occupant automobile trips eliminated as a function of year:

Table 2: SANBAG Regional Vanpool Program Participation

	Riders Per Van	# Vanpools	Average Trip Length (mi.)	Daily One Way Trips
2015	6.5	128	45	1,664
2023	6.5	1,219	45	15,847
2035	6.5	1,459	45	18,967

As shown in Table 2, the average number of participants per vanpool is estimated to be 6.5. Average one-way trip length is estimated to be 45 miles one-way – this value is based on data compiled for other commuter-oriented vanpools that originate in the Inland Empire. The majority of these vanpools have destinations in the Los Angeles County and Orange County metropolitan areas. It is important to note that the trip lengths associated with the park and ride lot projects and vanpool projects are, when viewed as averages, comparable.

Vanpool participation is expected to steadily increase. In year 2023, it is projected that 1,219 vanpools will be operating with a point of origin in San Bernardino County. This equates to approximately 15,847 daily one-way trips that will be accomplished via high occupancy vanpool as opposed to automobile. For 2035, this is expected to grow to 1,459 vanpools, accounting for 18,967 daily one-way commute trips.

The CARB/Caltrans-approved methodology for analyzing the air quality benefits of park and ride and vanpool projects is discussed in Section 4.3.

4.3 Formulas & Input Values and Assumptions for Park and Ride Lot and Vanpool Projects
(Table II-1 Input Values for Park and Ride Lot and Vanpool Projects (CARB - May 2013))

The emissions reduction benefits from park and ride lots and vanpool projects can be calculated using the Vanpools and Shuttles methodology.

Park and Ride Lots & Vanpools			
Days (D)	250	Effective days per year	
Ridership (R)		Total trips (riders)/day	One-way trips by riders (or number of boardings) per day. Refer to "Daily One Way Trips" in Tables 1 and 2 for Ridership values.
<i>For Auto Travel Reduced</i>			
Adjustment (A) on Auto Trips	0.83		This factor equals the portion of riders who did NOT previously use transit, vanpools, or carpools. The default (0.83) is the adjustment for long-distance, commuter vanpool

			service.
Auto Trip Length (L)	35 Upland 55 Rialto 45 Vanpool	Miles one direction/trip	This is the assumed trip length on Metrolink or in the vanpool.

For Auto Travel Added to Access Vanpool/Shuttle			
Adjustment (AA) for Auto Access to and from vanpool/shuttle	0.9 0.75	Park and Ride Lots Vanpools	The percentage of riders who drive to the park and ride lots or vanpool/shuttle service.
Trip Length (LL) for Auto Access to and from vanpool/shuttle	5	Miles one direction/trip	The default (5 mi) is for long-distance vanpools.

Formulas:

Annual Auto Trip Reduced = $[(D) * (R) * (A)] * [1 - (AA)]$ trips/year

Annual Auto VMT Reduced = $[(D) * (R) * (A)] * [(L) - (AA) * (LL)]$ miles/year

Annual Emission Reductions (ROG, NOx, and PM10) = lbs/year $[(Annual\ Auto\ Trips\ Reduced) * (Auto\ Trip\ End\ Factor) + (Annual\ Auto\ VMT\ Reduced) * (Auto\ VMT\ Factor) - (Van\ VMT) * (Van\ VMT\ Factor)] / 454$

Park and Ride Ridership (R) = (Parking Spaces) * (Lot Utilization) * (2 commute trips/day) (Per Table 1)

Vanpool Ridership (R) = #Passengers * #Vanpools * 2 commute trips/day (Per Table 2)

Van VMT = (#Vanpools) * (D) * (L) * (2 commute trips/day) (Per Table 2)

Where

- Parking spaces is the number of parking spaces added to an existing lot.
- Lot Utilization is the estimated lot utilization rate from monitored data OR use 0.75 as a default. The default value was used for 2015; a factor of 0.85 was used for year 2023.
- The default for Adjustment (AA) for Auto Access to and from vanpool/shuttle is 0.9 for park and ride and 0.75 for vanpools.

4.4 Emissions Factors: Automobile emissions factors for year 2015 and 2023 are provided by CARB/Caltrans in the referenced Guidelines document, as shown below in Table 3.

Table 3: CARB/Caltrans Automobile Emissions Factors

Analysis Period or Project Life	1-5 Years (2011-2015)	6-10 Years (2011-2020)	11-15 Years (2011-2025)	16-20 Years (2011-2030)
ROG				
VMT (g/mile)	0.191	0.153	0.132	0.119
commute trip ends (g/trip end)	0.764	0.614	0.521	0.462
average trip ends (g/trip end)	0.584	0.470	0.399	0.353
NO_x				
VMT (g/mile)	0.217	0.172	0.146	0.130
commute trip ends (g/trip end)	0.303	0.233	0.189	0.162
average trip ends (g/trip end)	0.298	0.231	0.189	0.162
PM_{2.5}				
VMT (g/mile)	0.087	0.087	0.087	0.087
running exhaust only (g/mile)	0.002	0.002	0.002	0.002
tire and brake wear (g/mile)	0.018	0.018	0.018	0.018
road dust (g/mile)	0.022	0.022	0.022	0.022
commute trip ends (g/trip end)	0.006	0.004	0.004	0.004
average trip ends (g/trip end)	0.003	0.003	0.003	0.004
CO				
VMT (g/mile)	2.239	1.783	1.518	1.356
commute trip ends (g/trip end)	6.046	4.847	4.083	3.593
average trip ends (g/trip end)	4.248	3.396	2.853	2.504

Emissions factors for the period ending in year 2035 were derived from EMFAC 2011 and are as follows (Table 4):

Table 4: Automobile Emissions Factors – 2011-2035

2011-2035 Emissions Factors	ROG	NO _x	PM ₁₀	PM _{2.5}	CO
VMT (g/mile)	0.113	0.124	0.096	0.087	1.288
Trips (g/trip end)	0.353	0.162	0.004	0.004	2.504

Emissions factors for vanpool vehicles are based on “Light and Medium Duty Trucks” (between 8501-10,000 lbs) on Table 2 (page 5) of the referenced Guidelines document assuming new cleaner vehicles will be purchased for the vanpool program and are as follows (Table 5):

Table 5: Vanpool Vehicle Emissions Factors

Emissions Factors	ROG	NO _x	PM ₁₀	PM _{2.5}	CO
VMT (mg/mile)	143	200	122	112	6,400

5.0 Air Quality Benefits Equivalency – Findings of the Technical Assessment

The methodologies discussed above in Sections 4.3 and 4.4 were used along with the project input data discussed in Sections 4.1 and 4.2. The forecast emissions reductions for the Metrolink Station Park and Ride Lot Expansion Projects were then compared with those of the Regional Vanpool Program. The results are shown in the following tables.

5.1 Park and Ride Lot Expansion Projects Air Quality Benefits – The incremental air quality benefits that were anticipated for the two Metrolink Station Park and Ride Lot Expansion projects, assuming the original project scopes, are shown below in Table 6:

Table 6: Park and Ride Lot Estimated Emissions Reductions, kg per day

	ROG	NOx	PM10	PM2.5	CO/7
Upland 2015	1.572	1.771	0.768	0.707	2.622
Rialto 2015	3.706	4.189	1.821	1.675	6.191
Total	5.278	5.960	2.589	2.382	8.812

	ROG	NOx	PM10	PM2.5	CO/7
Upland 2023	1.231	1.350	0.871	0.801	2.014
Rialto 2023	2.899	3.190	2.061	1.896	4.751
Total	4.130	4.540	2.932	2.697	6.765

	ROG	NOx	PM10	PM2.5	CO/7
Upland 2035	1.237	1.349	1.025	0.943	2.006
Rialto 2035	2.916	3.189	2.426	2.232	4.737
Total	4.153	4.538	3.450	3.174	6.743

The above Table shows the air quality benefits, in units of “kg per day” associated with the 729 total park and ride spaces at the two Metrolink stations for three horizon years: 2015; 2023; and 2035.

5.2 Regional Vanpool Program Air Quality Benefits - The following Table illustrates the air quality benefits attributable to the SANBAG Regional Vanpool Program for the years 2015, 2023, and 2035:

Table 7: SANBAG Regional Vanpool Program Emissions Reductions, kg per day

Vanpools 2015				
ROG	NOx	PM10	PM2.5	CO/7
6.513	6.970	2.734	2.516	9.089
Vanpools 2023				
ROG	NOx	PM10	PM2.5	CO/7
42.764	47.224	26.035	23.952	47.607
Vanpools 2035				
ROG	NOx	PM10	PM2.5	CO/7
42.269	46.652	31.161	28.668	41.752

5.3 Summary: The results clearly indicate that the proposed SANBAG Regional Vanpool Program TCM project will have equivalent – and likely substantially greater - air quality benefits as compared to the Park and Ride Lot Expansion TCM Projects in San Bernardino County and the region. The air quality benefits as a function of year, above and beyond those attributable to the two Metrolink Park and Ride Lot Expansion Projects, are shown below in Table 8.

Table 8: Net Air Quality Benefits of Proposed SANBAG Regional Vanpool Program TCM Substitution Project as Compared to Park and Ride Lot Expansion TCM Projects, kg per day

	ROG	NOx	PM10	PM2.5	CO/7
2015	1.235	1.009	0.145	0.134	0.277
2023	38.634	42.684	23.103	21.255	40.842
2035	38.116	42.114	27.711	25.494	35.009

As shown above, net positive air quality benefits should be realized from SANBAG Regional Vanpool Program inception through year 2035.