

Three-Year Fleet Conversion Plan

Supporting CMAQ Application for Park and Ride Facility Construction

Overview

The City of McFarland is committed to reducing traffic congestion, improving air quality, and supporting California's transition to clean mobility. The proposed Park and Ride facility at Taylor Avenue and Mast Avenue—with 31 parking spaces, ADA stalls, EV charging stations for the public, and a transit stop—will reduce single-occupancy vehicle trips and encourage transit use. In alignment, the City will prioritize transit van replacement and conversion to strengthen its municipal fleet's sustainability and to directly complement the Park and Ride facility.

Year 1 (Assessment & Initial Transition)

- **Fleet Inventory & Policy Adoption:**
 - Complete an inventory of City and McFarland Transit vans.
 - Adopt a Green Fleet Policy prioritizing replacement of older gasoline-powered vans with hybrid or low-emission alternatives.
- **Initial Replacements:**
 - Replace 1 aging transit van with a hybrid or low-emission model to support McFarland Transit's dial-a-ride and commuter services.
- **CMAQ Link:**
 - Cleaner transit vans reduce emissions from community-serving trips, directly improving air quality.

Year 2 (Operational Expansion)

- **Fleet Replacement:**
 - Replace 1–2 additional transit vans (high-mileage dial-a-ride units) with hybrid or low-emission alternatives.
 - Introduce a clean-fuel van to service the Park and Ride connection, supporting first-mile/last-mile transit.
- **Transit Coordination:**

- Work with Kern Transit to promote integration of low-emission regional buses at the Park and Ride.
 - **Performance Monitoring:**
 - Begin tracking ridership and emissions reductions from upgraded vans.
 - **CMAQ Link:**
 - Expanding clean transit van service maximizes the congestion mitigation benefits of the Park and Ride.
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Year 3 (Full Integration & Community Visibility)

- **Fleet Replacement:**
 - Replace one additional medium-duty van or shuttle vehicle with a hybrid or clean-fuel model.
 - Explore feasibility of introducing an electric van pilot program if funding is available.
 - **Public Engagement:**
 - Publicly report the combined impacts of the Park and Ride facility and fleet conversion, including emissions reductions and increased clean transit ridership.
 - **CMAQ Link:**
 - Replacing multiple transit vans amplifies air quality benefits while improving mobility options for residents.
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Outcomes by End of Year 3

- 3–4 older transit vans replaced with low-emission alternatives.
- Documented reductions in fuel use and greenhouse gas emissions from McFarland Transit operations.
- **Direct support of CMAQ goals:**
 - Reduced congestion (via Park and Ride and transit van service).
 - Improved air quality (via van replacements with clean-fuel alternatives).
- Enhanced connectivity for McFarland residents, linking sustainable City fleet operations to new regional transportation infrastructure.

KERN COUNCIL OF GOVERNMENTS
Congestion Mitigation and Air Quality (CMAQ) Program
PROJECT APPLICATION – Due Thursday, July 17, 2025

*Please note this is a PDF fillable form so responses may be typed. Items 1, 2, 7, and 22 are drop downs. Totals in item 6 will automatically calculate.

- (1) Is the project included in a local agency-adopted resolution supporting the project? YES NO
- (2) Does the proposed project meet basic eligibility requirements? YES NO
- (3) Project background and justification: Explain the project in terms of the existing infrastructure, its impact for service, safety or any other issue that is relevant to the project (attach to application). If the project scope relates to fueling infrastructure please provide a 3-year fleet conversion plan.
- (4) Lead Agency: _____
- (5) Project description [(Location:) + (Limits) + (;) + (Improvement/Activity)]

(6)	Funding Type	PE	R/W	Const.	Total
	Local	\$ _____	\$ _____	\$ _____	\$ _____
	Local	\$ _____	\$ _____	\$ _____	\$ _____
	State	\$ _____	\$ _____	\$ _____	\$ _____
	Federal	\$ _____	\$ _____	\$ _____	\$ _____
	Total	\$ _____	\$ _____	\$ _____	\$ _____

- (7) Programming Year by Phase: PE: _____ R/W: _____ Const: _____
- (8) VMT Reduction (annual miles): _____
- (9) VOC Reduction (kg/day): _____ Additional documentation required. See instructions.
- (10) NOx Reduction (kg/day): _____ Additional documentation required. See instructions.
- (11) PM₁₀ Reduction (kg/day): _____ Additional documentation required. See instructions.
- (12) PM_{2.5} Reduction (Kg/day): _____ Additional documentation required. See instructions.
- (13) CO Reduction (kg/day): _____ Additional documentation required. See instructions.
- (14) Cost-Effectiveness (\$/lb): _____ Additional documentation required. See instructions.
- (15) Livability and Safety: Describe how project provides the six benefits; limit to half page per benefit.
- (16) Hwy Peak Period LOS Before Project (AM/PM average): _____
- (17) Hwy Peak period LOS After Project (AM/PM average): _____
- (18) Bikeway Peak Period LOS Before Project (AM/PM average): _____
- (19) Bikeway Peak period LOS After Project (AM/PM average): _____
- (20) Pedestrian Peak period LOS Before Project (AM/PM average): _____
- (21) Pedestrian Peak period LOS After Project (AM/PM average): _____
- (22) Is the project identified as a RACM/BACM? YES NO

Application completed by: _____	Date Completed: _____
E-mail: _____	Phone Number: _____
Agency: _____	
Address: _____	

Send completed application electronically on a flash drive with transmittal letter on agency letterhead to:

Attn: Ceasar Valle ❖ Kern Council of Governments, 1401 19th Street, Suite 300, Bakersfield, CA 93301

OR send Digitally via [Dropbox, click here.](#)

Project Description

McFarland: Intersection of Taylor Ave and Mast Ave; Construct Park and Ride facility with 31 parking spaces, ADA stalls, EV chargers, and transit stop accommodations

Inputs to Calculate Cost-Effectiveness:

Total Project Cost	3,086,000	
CMAQ Dollars	2,732,035	
Usefull Life (UL):	20 yrs	Years of project funding
Days of Use/year (D):	250 days	See page 21 of 2005 ARB Guidance
Parking Spaces	31	
Commute trips per day	2	
Ridership (R)	31	$R = (\text{Parking spaces}) \times (\text{Lot utilization}) \times (2 \text{ commute trips/day})$
%Park and Ride users who othetwise drive	0.5	Local service 50%
Auto Trip Length Saved (L)	10 miles	
Distance from home to the Lot (LL)	1	
Adjustment (A) on ADT:	0.0029	Table 3 of CARB Quantification Methodology January 26,2024

Emissions Factors (From Table 3A, for a 16- 20 year Projected Life): <== Use Emission factor Tables September 2024

	Auto Trip End Factor (grams/trip)	Auto VMT Factor (grams/mile)
ROG Factor	0.398	0.046
NOx Factor	0.246	0.045
PM10 Factor	0.0133	0.2267

Calculations:

$$\begin{aligned} \text{Annual Trips Reduced} &= \text{Users} \times 2 (\text{round trip}) \times \text{Trip Length Saved} \times \text{Days/year} \\ &= 155,000 \quad (\text{trips/year}) \end{aligned}$$

$$\begin{aligned} \text{Annual Auto VMT Reduced} &= D \times R \times A \times (L-LL) \\ &= 34,875 \quad (\text{miles/year}) \end{aligned}$$

Annual Emission Reductions (ROG, NOx and PM10) in pounds/year

$$[(\text{Annual Auto Trips Reduced}) \times (\text{Auto Trips End Factor}) + (\text{Annual Auto VMT Reduced}) \times (\text{Auto VMT Factor})] / 454$$

$$\text{ROG} = 139.4$$

$$\text{NOx} = 87.4$$

$$\text{PM10} = 22.0$$

$$\begin{aligned} \text{Annual Emission Reductions} &= \text{ROG} + \text{NOx} + \text{PM10} \\ &= 248.8 \quad (\text{lbs/yr}) \end{aligned}$$

	Kg/Day
ROG	= 0.174
NOx	= 0.109
PM10	= 0.027
PM2.5	= 0.006

Once emissions reductions have been calculated, add them together and convert pounds of emissions reductions per year to kg/day:

$$\frac{\text{Annual Emission Reductions (lbs/yr)}}{2.2 \text{ lbs/kg} \times 365 \text{ days/yr}}$$

Thus,

$$\text{Calculated Emissions Reductions} = 0.31 \text{ kg/day}$$

Capital Recovery Factor (CRF)

$$= \frac{(1+i)^n \times i}{(1+i)^n - 1} \quad \text{where } i = \text{Discount Rate (3\%)} \text{ and } n = \text{Project Life (20 years)}$$

$$\text{So, the capital recovery factor} = 0.07$$

Cost-Effectiveness of Funding Dollars

$$\begin{aligned} &= (\text{CRF} \times \text{Funding}) / (\text{ROG} + \text{NOx} + \text{PM10}) \\ &= 868.17 \end{aligned}$$

Thus,

$$\text{Calculated Cost - Effectiveness} = \$868.17 \text{ (dollars/lb.)}$$