Emission Reduction Clean Air Measures

This document contains a list of clean air measures to assist land use agencies and developers to identify ways to reduce air quality impacts associated with development projects occurring in the San Joaquin Valley. The clean air measures listed below can be incorporated into the design of development projects to reduce air quality emissions impacts under District rules and regulations (e.g. District Rule 9510 - ISR) or state or federal law (e.g. California Environmental Quality Act, National Environmental Policy Act). Please note that this is not an exhaustive list, and both land use agencies and developers are encouraged to suggest new clean air measures including supporting documentation that are not listed below for inclusion into the design of development projects.

Clean Air Measure	Description
Clean Construction Equipment	Utilize the cleanest available off-road construction equipment, including the latest Tier diesel or electric equipment (e.g. scrapers, graders, trenchers, tractors, loaders, backhoes, etc.).
Zero-Emission On-Road Vehicles	Utilize electric on-road vehicles, such as: • Electric heavy-duty trucks • Electric medium-duty last-mile delivery vehicles • Electric buses • Electric municipal waste transport trucks • Electric light-duty delivery vans • Electric light-duty pick-up trucks and personal vehicles
Near-Zero On-Road Vehicles	Utilize alternative fueled clean vehicles such as compressed/liquid natural gas with exhaust control systems, including heavy-duty trucks that meet the California Air Resources Board's (CARB) established emission standard of 0.02 g/bhp-hr NOx.
On-Site Zero-Emission Off-Road Vehicles and Equipment	Utilize electric off-road vehicles and equipment (e.g., forklifts, yard trucks, and aerial lifts).
Electric Vehicle Charging Infrastructure	Install and utilize electric vehicle (EV) charger(s) at the project site to promote the use of low or zero-emission vehicles.
Alternative Fuels Infrastructure	Installation of fueling infrastructure for compressed or liquid natural gas, or hydrogen fuel cell stations to promote the use of near-zero emission vehicles.

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Clean Lawn and Garden Equipment	Installation of fueling infrastructure for compressed or liquid natural gas, or hydrogen fuel cell stations to promote the use of near-zero emission vehicles.
Solar Panels	Install and utilize solar panels as a renewable energy source.
Clean Residential Heating Devices	Install clean residential heating devices such as certified wood burning residential fireplaces and wood stoves, natural gas fireplace inserts, or electric heat pumps.
Warehouse/Distribution Center Clean Air Design Measures	The following project designs for warehouse development projects can be incorporated as additional emission reduction strategies: • Ensure HHD vehicles minimize idling time (e.g., 3 minute maximum) • Ensure solid screen buffering trees, solid decorative walls, and/or other natural ground landscaping techniques are implemented along the property line of adjacent sensitive receptors • Ensure all landscaping be drought tolerant • Orient loading docks away from sensitive receptors, unless physically impossible • Locate loading docks a minimum of 300 feet away from the property line of sensitive receptor unless dock is exclusively used for electric trucks • Incorporate signage and pavement markings to clearly identify on-site circulation patterns to minimize unnecessary on-site vehicle travel • Locate truck entries on streets of a higher commercial classification • Ensure all building roofs are solar-ready • Ensure all portions of roof tops that are not covered with solar panels are constructed to have light colored roofing material with a solar reflective index of greater than 78 • Ensure rooftop solar panels are installed and operated to supply 100% of the power needed to operate all non-refrigerated portions of the development project • Ensure power sources at loading docks for all refrigerated trucks have “plugin” capacity, which will eliminate prolonged idling while loading and unloading goods • Incorporate bicycle racks and electric bike plug-ins • Require the use of low volatile organic compounds (VOC) architectural and industrial maintenance coatings
Electrical Outlets	This measure utilizes electrical outlets on the exterior of project buildings as necessary for sufficient powering of electric landscaping equipment.

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Increase Density of Land-Uses	This measure encourages the siting of development projects with increased densities in order to reduce vehicle miles traveled (VMT) emissions and improve walkability and transit ridership in the area. Density is usually measured in terms of persons, jobs, or dwellings per unit area. Increased densities affect the distance people travel and provide greater options for the mode of travel they choose.
Increase Diversity of Surrounding Land-Use Types	This measure encourages the siting of development projects near various land-use types such as retail, mixed-use, etc. in order to reduce vehicle miles traveled (VMT) emissions and improve walkability and transit ridership in the area.
Improve Walkability Design	This measure implements design elements into a development project that enhance walkability and connectivity. Improved street network characteristics within a neighborhood could include street accessibility, usually measured in terms of average block size, proportion of four-way intersections, or number of intersections per square mile. Examples of design implementation are sidewalk coverage, building setbacks, street widths, pedestrian crossings, presence of street trees, and a host of other physical variables that differentiate pedestrian-oriented environments from auto-oriented environments.
Improve Destination Accessibility	This measure locates development projects in an area with high accessibility to destinations. Destination accessibility is measured in terms of the number of jobs or other attractions reachable within a given travel time, which tends to be highest at central locations and lowest at peripheral locations, where the number of people and attractions are less dense. The location of the project could also increase the potential for pedestrians to walk and bike to these destinations, therefore reducing the VMT in the project area.
Increase Transit Accessibility	This measure locates development projects with high density near transit, which could promote the use of transit by people traveling to or from the project site. The use of transit could result in a mode shift and therefore could reduce VMT. The project should, at a minimum, include the following design features: • A transit station/stop with high-quality, high-frequency bus service located within a 5-10 minute walk (or roughly ¼ mile from stop to edge of development), and/or • A rail station located within a 20 minute walk (or roughly ½ mile from station to edge of development) • Fast, frequent, and reliable transit service connecting to a high percentage of regional destinations • Neighborhood designed for walking and cycling

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Affordable and Below Market Rate Housing	Income has a statistically significant effect on the probability that a commuter will take transit or walk to work. Below Market Rate Housing provides greater opportunity for lower income families to live closer to jobs centers and achieve jobs/housing match near transit. It also addresses to some degree the risk that new transit oriented development would displace lower income families. This measure encourages development projects to incorporate a greater percentage of smaller units into the design to allow a greater number of families to be accommodated on infill and transit-oriented development sites within a given building footprint and height limit.
Improve Pedestrian Network	This measure provides a pedestrian access network to link areas of the project site to encourage people to walk instead of drive. This mode shift could result in people driving less and thus could result in a reduction in VMT. The project could provide a pedestrian access network that internally links all uses and connects to all existing or planned external streets and pedestrian facilities contiguous with the project site. The project could minimize barriers to pedestrian access and interconnectivity. Physical barriers such as walls, landscaping, and slopes that impede pedestrian circulation could be eliminated.
Provide Traffic Calming Measures	This measure is to provide traffic calming measures, which could encourage people to walk or bike instead of using a vehicle. This mode shift could result in a decrease in VMT. Project design could include pedestrian/bicycle safety and traffic calming measures in excess of jurisdiction requirements. Roadways could be designed to reduce motor vehicle speeds and encourage pedestrian and bicycle trips with traffic calming features. Traffic calming features may include: marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, roundabouts or mini-circles, on-street parking, planter strips with street trees, chicanes/chokers, and others.
Neighborhood Electric Vehicle (NEV) Network	This measure creates local "light" vehicle networks, such as NEV networks. NEVs are classified in the California Vehicle Code as a “low speed vehicle”. They are electric powered and must conform to applicable federal automobile safety standards. NEVs offer an alternative to traditional vehicle trips and can legally be used on roadways with speed limits of 35 MPH or less (unless specifically restricted). They are ideal for short trips up to 30 miles in length. To create an NEV network, the project will implement the necessary infrastructure, including NEV parking, charging facilities, striping, signage, and educational tools. NEV routes can be implemented throughout the project and can double as bicycle routes.

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Limit Parking Supply	This measure implements a change in parking requirements and the types of supply within a project site to encourage alternative transportation choices by project residents and employees. This could be accomplished using the following strategies: • Elimination (or reduction) of minimum parking requirements • Creation of maximum parking allowed • Provision of shared parking
Unbundle Parking Costs	This measure unbundles parking costs from property costs. Unbundling separates parking from property costs, requiring those who wish to purchase parking spaces to do so at an additional cost from the property cost. This could remove the burden from those who do not wish to utilize a parking space. Parking could be priced separately from home rents/purchase prices or office leases.
Implement Market Price On-Street Public Parking	This measure implements a pricing strategy for parking by pricing all central business district/employment center/retail center on-street parking. As a result, it deters parking spillover from project supplied parking to other public parking nearby.
Transit Subsidy	This measure promotes the use of subsidized/discounted daily or monthly public transit passes. The project may also provide free transfers between all shuttles and transit to participants. These passes can be partially or wholly subsidized by the employer, school, or development. Many entities use revenue from parking to offset the cost of such project.
Employee Parking “Cash-Out”	This measure implements an employee parking “cash-out.” The term “cash-out” is used to describe the employer providing employees with a choice of forgoing their current subsidized/free parking for a cash payment equivalent to the cost of the parking space to the employer.
Workplace Parking Charges	This measure implements workplace parking charges at its employment centers. This may include: explicitly charging for parking for its employees, implementing above market rate pricing, validating parking only for invited guests, not provided employee parking and transportation allowances, and educating employees about available alternatives. This strategy focuses on implementing market rate and above market rate pricing to provide a price signal for employees to consider alternative modes for their work commute.
School Bus Program	This measure works with school districts to restore or expand school bus services in the project area and local community.

Clean Air Measure	Description
Telecommuting and Alternative Work Schedule	This measure encourages telecommuting and alternative work schedules, which could reduce the number of commute trips. Alternative work schedules could take in the form of staggered starting times, flexible schedules, or compressed work weeks (e.g., 4/40, 9/80).
Market Commute Trip Reduction Option	This measure implements marketing strategies that contribute to reductions in commute trips. Information sharing and marketing are important components to successful commute trip reduction strategies. Marketing strategies may include: • New employee orientation of trip reduction and alternative mode options • Event promotions • Publications
Employee Vanpool/Shuttle	This measure implements employer-sponsored vanpools and/or shuttles to reduce employees VMT to and from work. A vanpool will usually service employees' commute to work while a shuttle will service nearby transit stations and surrounding commercial centers. Employer-sponsored vanpool programs entail an employer purchasing or leasing vans for employee use, and often subsidizing the cost of at least program administration, if not more. The driver usually receives personal use of the van, often for a mileage fee. Scheduling is within the employer's purview, and rider charges are normally set on the basis of vehicle and operating cost.
Provide Ride Sharing Program	This measure implements a ride-sharing program as well as a permanent transportation management association membership and funding requirement. Increasing the vehicle occupancy by ride sharing could result in fewer cars driving the same trip. The project could promote ride-sharing programs through a multi-faceted approach such as: • Designating a certain percentage of parking spaces for ride sharing vehicles • Designating adequate passenger loading and unloading and waiting areas for ride-sharing vehicles • Providing a web site or message board for coordinating rides
Exceed Title 24 Building Code Standards	This measure recommends that the design of new buildings meet the building energy efficiency standards of Title 24, also known as the California Building Standards Code. Title 24 Part 6 regulates energy uses including space heating and cooling, hot water heating, and ventilation. By committing to a percent improvement over Title 24, a development could reduce its energy use.

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Voluntary Emissions Reduction Agreement	A Voluntary Emissions Reduction Agreement (VERA) is a clean air measure by which the project proponent provides pound-for-pound mitigation of emissions increases through a process that develops, funds, and implements emission reduction projects. To implement a VERA, the project proponent and the District enter into a contractual agreement in which the project proponent agrees to mitigate project specific emissions by providing funds for the District's incentives programs. Types of emission reduction projects that have been funded in the past include electrification of stationary internal combustion engines (such as agricultural irrigation pumps), replacing old Heavy Heavy-Duty (HHD) trucks with new, cleaner, more efficient HHD trucks, and replacement of old farm tractors.
Bus Rapid Transit System	This measure incorporates a Bus Rapid Transit (BRT) System to provide high quality and cost effective transit services in the project area.
Park, Ride Lots, and/or Satellite Telecommuting Centers	This measure utilizes park, ride, and/or satellite telecommuting centers to reduce the degree of congestion on routes and the total VMT in the area.
Bicycle Enhancing Infrastructure	This measure utilizes various bicycle enhancing infrastructures to reduce VMT in the project area. Some of the infrastructure design elements used include: bikeways paths connecting to a bikeway system, secure bicycle parking, provides Class I and Class II bicycle parking/storage facilities on-site and/or employee lockers and showers. Bicycle parking facilities should be near destination points and easy to find. At least one bicycle parking space for every 20 vehicle parking spaces. It also provides Class I bicycle parking at apartment complexes or condos without garages and Class I or II bike lanes on arterial/collector streets, or where a suitable route exists.
On-Site Shops and Services for Employees	This measure utilizes on-site shop and services for employees such as cafeteria, bank/ATM, dry cleaners, convenience markets, etc. to reduce the number of commute trips to and from the workplace.
On-Site Child Care and Off-site Child Care within Walking Distance	This measure implements on-site childcare or provides off-site childcare within walking distance of the project to reduce the number of commute trips to and from the workplace.
Mid-Day Shuttle Services for Employees	This measure establishes mid-day shuttle services for employees, who commute from the work-site to food service establishments and other commercial areas during peak commute periods (e.g. schedule service during lunch hours) in order to reduce the number of commute trips.
Shuttle Services to Transit Stations/Multimodal Centers	This measure establishes shuttle services to transit stations and multimodal centers for employees to reduce the number of commute trips to and from the workplace.

Clean Air Measure	Description
Preferential Parking for Carpool and Vanpool Vehicles	This measure implements preferential parking areas for carpool and vanpool vehicles. It is most effective if parking supply is limited and/or located far from the building entrance.
Parking Fees for Single Occupancy Vehicle Commuters	This measure implements preferential parking areas for carpool and vanpool vehicles. It is most effective if parking supply is limited and/or located far from the building entrance.
Speed Limit Signs and Erosion Control	This measure ensures speed limit signs are posted on unpaved roads limiting traffic to no more than 15 mph and ensures sandbags or other erosion control measures are installed to public roadways from sites with a slope greater than one percent. This measure should be implemented to reduce construction related PM_{10} impacts.
Clean-Air Vehicle Parking	Labeling or signage limiting parking stalls for clean-air or electric vehicles only.
Pedestrian Access and Connectivity	This measure utilize the following design elements to increase pedestrian access and connectivity: • Provide continuous sidewalks separated from the roadway by landscaping and on-street parking. • Provide on and off-site pedestrian facility improvements such as trails linking them to designated pedestrian commuting routes and/or on-site overpasses and wider sidewalks. • Link cul-de-sacs and dead-end streets to encourage pedestrian and bicycle travel. • Provide traffic reduction modifications to project roads, such as: narrower streets, speed platforms, bulb-outs and intersection modifications designed to reduce vehicle speeds and to encourage pedestrian and bicycle travel. • Provide a parking lot design that includes clearly marked and shaded pedestrian pathways between transit facilities and building entrances. • Provide pedestrian access between bus service and major transportation points and to destination points within the project.
Windblown Dust Reduction Strategies	These measures utilize the following design elements to minimize emissions from windblown dust during construction-related activities: • On-site water sprays or other dust suppression materials • Construct and maintain wind barriers sufficient to limit visible dust to 20% opacity on the construction site. • Suspend excavation and grading activity when winds exceed 20 mph on the construction site.

Clean Air Measure	Description
Vehicle Idling Policy	This measure implements a Vehicle Idling Policy that requires all vehicles under company control to adhere to a 5-minute idling policy and/or to minimize the idling time (e.g., 5-minute maximum) for construction-related vehicles.
Curtail Construction Periods and Implement Activity Management	This measure can help reduce the short-term construction-related impacts from a development project, by implementing the following design elements: • Curtail construction during periods of high ambient pollutant concentrations; this may include ceasing of construction activity during the peak-hour of vehicular traffic on adjacent roadways. • Implement activity management (e.g. rescheduling activities to reduce short-term impacts) during construction.
Transportation Mode Display	This measure provides a display case or kiosk displaying transportation information (e.g., Bike Route Maps, Bus Schedules, carpooling, car sharing) in a prominent area accessible to employees, residents, or visitors.
Gas Outlets	This measure ensures gas outlets are installed so outdoor cooking appliances, and any proposed fireplaces, including outdoor recreational fireplaces or pits, can be used.
HEPA Filters/Ventilation Systems	The following measures can be implemented into the project's design to reduce impacts from air-borne emissions: • Install HEPA (High Efficiency Particulate Air) filters. • Install "whole-house" or "fresh-air" ventilation systems.
Retrofit Existing Equipment	This measure retrofits existing equipment to reduce emissions using methods such as particulate filters, oxidation catalysts, or other approved technologies.