



via electronic and US mail

Cathy Bechtel,
Director of Transportation Planning and Policy Development
Riverside County Transportation Commission
4080 Lemon St. 8th Floor
Riverside, CA 92502-2208
Ph: (951) 787-7141
Fax: (951) 787-7920
CBECHTEL@rctc.org

U.S. Army Corps of Engineers
Regulatory Division
ATTN: Susan A. Meyer
Bldg. 230
Ft. Shafter, Hawaii 96858-5440
susan.a.meyer@usace.army.mil

January 8, 2009

RE: Draft Environmental Impact Report/Draft Environmental Impact Statement for the
Mid County Parkway, SCH # 2004111103

Dear Ms. Bechtel and Ms. Meyer:

These comments are submitted on behalf of the Center for Biological Diversity (“Center”) on the Draft Environmental Impact Report/Draft Environmental Impact Statement (“EIR/EIS”) for the Mid County Parkway, State Clearinghouse Number 2004111103 (“Project” or “MCP”). The Center opposes this wasteful and environmentally irresponsible project because of the significant and irreversible impacts that will result on sensitive wildlife species and important wildlife habitat. The MCP would also lead to a substantial increase in air quality violations, not the least of which is worsening the climate crisis through a large increase in greenhouse gas pollution.

While the Center appreciates the work of County staff during the environmental review process the EIR/EIS falls well short of the standards for adequacy under the California Environmental Quality Act (“CEQA”) and National Environmental Policy Act (“NEPA”). The County must revise and recirculate the EIR/EIS in order to meet the fundamental information disclosure and analysis requirements of both CEQA and NEPA. The EIR/EIS fails to address many issues raised below, as well as many of the comments previously provided by the Center during the environmental review process. (Appendix A: Supplemental Notice of Preparation for the EIS/EIR for the Mid-County Parkway Project, SCH #2004111103 from Jonathan Evans to

Cathy Bechtel, August 30, 2007).¹

The Mid County Parkway is a proposed six to eight lane freeway that would run for thirty two miles from the City of Corona to the City of San Jacinto through important wildlife conservation areas in Western Riverside County. Alternative 9 remains the “locally preferred” alternative despite upgrades to existing infrastructure improvements and public transit that could meet the project objectives that were not analyzed as alternatives. The MCP would result in the loss of valuable streams and riparian resources in an arid region that is known as a global biodiversity hotspot and would deal a potentially fatal blow to crucial habitat blocks that are key to the successful implementation of the various regional Habitat Conservation Plans. Furthermore, it demonstrates a 20th century mentality for infrastructure development that does not meet the needs of addressing the massive greenhouse gas emissions that will result from the Project, and required greenhouse gas emission reductions outlined in the Global Warming Solutions Act (Health & Safety Code § 38550 *et seq.*) and Executive Order S-03-05.

The Center for Biological Diversity is a non-profit environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center has over 60,000 members throughout California and the western United States, including in Riverside County.

I. Biological Resources

A Natural Environment Study (“NES”) was prepared for the project as part of the EIR/EIS. (LSA Associates, Inc., July 2008). We appreciate the survey information provided in the NES. However, the analysis of impacts in the NES leaves much to be desired as far as the actual on-the-ground land management issues and impacts from the locally preferred project and all alternatives. The NES concluded that the MCP Build Alternatives would result in direct and indirect impacts on biological resources as summarized generally below. Impacts to riparian habitats and jurisdictional areas at the bridged areas have been calculated as temporary and permanent impacts.

A. Failure to Evaluate Impacts to Listed Species and their Critical Habitat Areas.

The MCP Build Alternatives would impact final designated critical habitat areas for a several federally listed species including the coastal California gnatcatcher (“CAGN”), San Bernardino kangaroo rat (“SBKR”), and Quino checkerspot butterfly (“QCB”).

i. California Gnatcatcher

Potential impacts to CAGN, listed under the federal Endangered Species Act (“ESA”), and the final CAGN critical habitat (issued on 12/19/2007) would range from 0 ha for Alternative 6 and 7 to 13.6 ha (33.5 acres) for Alternatives 4 and 5 and up to 16.2 ha (40.1 acres) for Alternative 9. (NES at 2). However, these figures significantly underestimate the impact to

¹ Because these comments were not adequately addressed in the EIR/EIS they are again submitted to assure that the legal requirements of CEQA and NEPA are achieved.

habitat that is critical to the survival **and recovery** of the CAGN. Under the ESA, analysis of an action's affect on critical habitat must consider not only whether it diminishes the value of that habitat for the species' survival, but its recovery as well. *Gifford Pinchot Task Force v. U.S. Fish and Wildlife Service*, 378 F.3d 1059 (9th Cir. 2004).

Former Critical Habitat was deleted from the current (2007) Critical Habitat designation used in this analysis because the lands were included in existing habitat conservation plans – including the Western Riverside County Multiple Species Habitat Conservation Plan (“MSHCP” or “WRMSHCP”). Additionally the critical habitat areas for CAGN around Lake Mathews were never included in the formal designation because it was assumed that they would be conserved under the Lake Matthews Multiple Species Habitat Conservation Plan (“Lake Matthews MSHCP” or “LMMSHCP”). The most recent Critical Habitat designation envisioned conservation of these areas:

The northern core areas conserved by the MSHCP include Lake Mathews and Estelle Mountain totaling 23,710 acres within the MSHCP Conservation Area. These geographical regions include the habitats with the highest densities of gnatcatchers in the plan area. 72 FR 72053.

In other words, the Lake Mathews and Estelle Mountain areas are known to be crucial habitat for CAGN and have already been preserved as mitigation areas by previous development actions. No Critical Habitat was ever designated within those conservation areas because they were preserved already and the critical habitat designation for the CAGN relied upon the protection of these areas under designated HCPs. Now the MCP targets these areas for destruction. The Project jeopardizes the species themselves, but the critical habitat designation, and HCPs that rely on those core areas for species survival and recovery.

The Western Riverside MSHCP envisioned conservation of CAGN through existing core reserves that are now proposed for development for the MCP. The WRMSHCP states
Several large blocks of habitat supporting the coastal California gnatcatcher *will be conserved* as Criteria Area and Public/Quasi-Public Lands including the Core Areas at El Cerrito, Lake Mathews-Estelle Mountain Reserve... (WRMSHCP at B-128, emphasis added).

The WRMSHCP goes on to emphasize how these core areas are essential to the success of the plan to conserve CAGN:

Conservation of both Core Areas in the form of large blocks of habitat, as described above, as well as narrower linkages for movements between the core population areas *is essential for the MSHCP Conservation Area configuration and conservation strategy*. (WRMSHCP pg. B-129 emphasis added).

This Core area in the WRMSHCP still retains all of the Primary Constituent Elements (PCEs) that are required in order to designate Critical Habitat. The only reason it is not included in the critical habitat designation is because of the HCP overlays, so therefore it should be analyzed as Critical Habitat and relied upon as core habitat for the survival and recovery of the CAGN.

Instead of clearly outlining the project's grave impacts to CAGN the EIR/EIS improperly hides impacts by stating "[t]here will be minimal impacts to the listed CAGN..." (NES at 257). This type of unsupported conclusion violates the information disclosure requirements of the California Environmental Quality Act. This type of analysis obscures the fact that all of the alternatives target the highest density CAGN areas in western Riverside County.

The proposed impact avoidance in the EIR/EIS is woefully inadequate to conserve habitat for this threatened and declining species. Mitigation includes the requirement that "nesting habitat be removed prior to nesting season (March 1–August 15) within PQP lands and criteria area. Further, the project has incorporated engineering design measures, such as bridges and wildlife land crossings (refer to Section 5.6.5) that will facilitate movement of CAGN along the MSHCP Conservation Area." (NES at 256). The EIR/EIS also proposes that Impacts to CAGN and its critical habitat would be "off-set":

Impacts to these species from the project will be offset by implementing the agreements established in the MSHCP, which include the formation of the MSHCP Conservation Area, avoiding "take" of active nests as described in the Guidelines for the Siting and Design of Planned Roads Within the Criteria Area and Public/Quasi-Public Lands (MSHCP Section 7.5.1), MSHCP Construction Guidelines for covered projects (MSHCP Section 7.5.3), and MSHCP Standard Best Management Practices (MSHCP Appendix C), and reducing edge effects to preserved habitat (by following the Guidelines pertaining to the Urban/Wildlands Interface in MSHCP Section 6.1.4). (NES at 259)

The EIR/EIS cannot engage in this type of bait and switch. The mitigation relies on "the formation of the MSHCP Conservation Area" which is actually the area proposed to be developed, undermining the basis of mitigation in the MSHCP.

It is also unclear that any on-the-ground mitigation acquisition is actually being proposed for the impact to this essential Core area or federally designated Critical Habitat for the CAGN. While the EIR/EIS recognizes that both direct and indirect impacts will occur to CAGN critical habitat, no mitigation is proposed other than the paragraph found on pg. 259, which fails to address mitigation ratios for critical habitat impacts. Importantly, mitigation measures adopted by a public agency must be "fully enforceable through permit conditions, agreements, or other measures." *Federation of Hillside & Canyon Associations v. City of Los Angeles* (2000) 83 Cal.App.4th 1252, 1261 (quoting PRC § 21081.6(b)).

While indirect impacts are mentioned for this species, no meaningful assessment of those impacts is provided. The EIR/EIS and NES fail to fully analyze the impacts and propose meaningful avoidance, minimization or mitigation regarding indirect impacts.

ii. San Bernardino Kangaroo Rat

While the NES indicates that all of the Alternatives considered would impact approximately 1.2 ha (3.5 acres) of the federally listed San Bernardino Kangaroo Rat ("SBKR") critical habitat, FWS issued its final designation of Critical Habitat designation on October 17, 2008. In this newest designation, the project no longer impacts any Critical habitat for the SBKR. The NES also indicates that 0.4 ha (1 acre) of SBKR habitat suitable for long-term

conservation (NES at XI) will also be directly impacted, and that indirect impacts will also occur.

As with the CAGN, formerly designated Critical Habitat was removed from this most recent designation because of the Western Riverside MSHCP. (73 FR 61939). Therefore the impacts to habitat that is actually essential to the survival and recovery of this species is essentially underestimated. Much of this area lies within proposed Core 5 of the MSHCP and will be impacted by the project. While no SBKR were encountered during the trapping nights, the habitat still has potential to support SBKR. The WRMSHCP states that for the SBKR

In the San Jacinto River and Bautista Creek, conservation of occupied or suitable habitat for the San Bernardino kangaroo rat in the Plan Area would be close to 100 percent. (WRMSHCP at M-154)

This is exactly the area impacted by a range of alternatives. This proposed core area in the WRMSHCP still retains all of the Primary Constituent Elements (PCEs) that are required in order to designate Critical Habitat. The only reason it is not included in the CH designation is because of the HCP overlays, so therefore it should be analyzed as Critical Habitat and analyzed as such.

The NES indicates that a Determination of Biologically Equivalent or Superior Preservation (DBESP) must occur, yet that determination is not included in the EIR/EIS or NES. Therefore it is impossible to evaluate if the impact to this critical area for SBKR is in compliance with the MSHCP or if additional lands will be available to mitigate this impact. Deferring evaluation of environmental impacts until after project approval amounts to a post hoc rationalization and skirts the required procedure for public review and agency scrutiny of potential impacts. *Sundstrom v. County of Mendocino*, 202 Cal.App.3d 296, 308 (Cal. Ct. App. 1988). Analysis requiring formulation of mitigation measures at a future time violates the rule that members of the public and other agencies must be given an opportunity to review mitigation measures before project approval. *Id.*² Because the San Jacinto River area is critical to the survival of the SBKR in Western Riverside County (the species is not currently known from other locations, except the Bautista Creek which is a tributary to the San Jacinto River), the failure to actually evaluate the impacts to the species and provide meaningful mitigations fails to comply with CEQA and NEPA.

While indirect impacts are mentioned for this species, no meaningful assessment of those impacts is provided. The EIR/EIS and NES fail to fully analyze the impacts and propose meaningful avoidance, minimization or mitigation regarding indirect impacts.

iii. Quino Checkerspot Butterfly

Impacts to Quino Checkerspot butterfly (QCB) final critical habitat would range from 56.6 ha (140 acres) for Alternative 6 and 7 to 63.8 ha (157.6 acres) for Alternatives 4 and 5, while the preferred Alternative 9 impacts the greatest amount of critical habitat – 132.6 ha (327.6 acres).

² This type of deferral occurs for a broad array of impacts to species, habitats, and regional plans including HCPs discussed below.

Similar to other impacted listed species the mitigation for QCB relies upon “project consistency with the MSHCP. Specific measures, if any, required by the MSHCP for these species are discussed in Section 4.3.5.” However, none of the alternatives are consistent with the MSHCP because of the massive destruction of habitat relied upon by the MSHCP for core areas and reserve assemblages.

Specifically the Project violates many of the objectives of the WRMSHCP for protection of reserve areas and direct mortality from development. The first objective the WRMSHCP for QCB conservation is identified as:

Include within the MSHCP Conservation Area at least 67,493 acres of habitat mosaic (which may include chaparral, coastal sage scrub, desert scrubs, grasslands, peninsular juniper woodland and scrub, playas and vernal pools, and Riversidean alluvial fan sage scrub habitats) supporting the seven core populations in the southwest portion of the County, including 1) the Lake Mathews/Estelle Mountain/Harford Springs Core Area (17,989 acres),... (WRMSHCP pg. I-18).

The third objective of the WRMSHCP for QCB conservation is identified as:

In the Lake Mathews Core Area, the MSHCP Conservation Area configuration will maintain landscape connectivity through native habitat between Lake Mathews, Olsen Canyon, Monument Peak, Dawson Canyon, Estelle Mountain, Bull Canyon, Steele Valley, Gavilan Hills, and Harford Springs areas. (WRMSHCP pg. I-19)

This required conservation Core Area of 17,989 acres in the Mathews/Estelle Mountain/Harford Springs is exactly in the same area that all of the MCP alternatives propose to impact. The alternatives as proposed fundamentally do not comply with the MSHCP, and no offsets or other acquisitions can cure this fatal defect.

In addition, the WRMSHCP recognized that significant impacts to QCB from freeways: “Movement across large roads and freeways will cause potentially heavy mortality in Quino checkerspot.” (WRMSHCP pg. I-26). The Project would create exactly this type of activity that would result in heavy mortality of QCB. In order to address this, a potential requisite minimization measure in the WRMSHCP is proposed: “At a minimum, studies will need to be completed to verify that the only effective means to convey Quino checkerspot across busy roadways is to install large wildlife overcrossings as theorized.” (WRMSHCP at I-26). No studies on the effectiveness of large wildlife overcrossings and their ability to minimize impacts to QCB are included in the EIR/EIS.

The NES contends that the QCB have been extirpated from the Lake Mathews Reserve without reference or substantial evidence. (NES at 256). It also relies upon surveys that were required for QCB under the MSHCP, so none were implemented for this project. (NES at 255). An excellent way not to find QCB (or any other species) is to not survey for them. This type of

unsubstantiated opinion and deferred analysis runs contrary to the precepts of both CEQA and NEPA.

The QCB rely on metapopulation structures for survival. Local QCB population areas are known to persist for a number of years and then appear extirpated, only to be recolonized at a later date. (USFWS 67 FR 18357). In fact, the long-term survival of the QCB depends on maintaining temporarily unoccupied habitat patches and recolonization events that link patches within the metapopulation. (USFWS 67 FR 18357). The EIR/EIS improperly minimizes the importance of recolonization for survival and recovery of listed species.

The QCB has a Recovery Plan issued by U.S. Fish and Wildlife Service's in 2003, which is not even referenced in the EIR/EIS. The Northwest Recovery Unit identified in the USFWS Recovery Plan for the QCB will also be significantly impacted by all of the alternatives. This Recovery Unit is not even mentioned in the EIR/EIS much less the impacts to it analyzed and mitigated. USFWS 2003. While the Lake Mathews area has not had recent documentation of the QCB, it is still essential to the recovery of the QCB (USFWS 2003). The goals for the Northwest Recovery Unit for the QCB include the following:

Northwest Riverside Recovery Unit: Protect and manage as much as possible of the remaining undeveloped suitable and restorable habitat that is part of the known historic Gavilan Hills/Lake Mathews population distribution (including the Lake Mathews population site and the Harford Springs Occurrence Complex), in a configuration designed to support a resilient metapopulation. Develop an integrated, comprehensive Quino checkerspot butterfly management plan for the Lake Mathews/Estelle Mountain Preserve. (USFWS 2003 at 97).

In addition, the Northwest Recovery Unit is envisioned as a re-introduction area for recovery: Stock will probably also be needed for population augmentation and reintroduction, especially in the Northwest Riverside Recovery Unit. (USFWS 2003 at 103).

Clearly, none of the alternatives will support the goals of recovery because they directly impact QCB Critical Habitat, fragment the remaining habitat, and limit the ability to augment the species. Bridge construction may have no benefit to the QCB because of their tendency to seek out high elevation places on the landscape (USFWS 67 FR 18357). The bridges may lure QCB into danger from vehicle impacts.

As with the species discussed above, Critical Habitat was not designated within the Lake Mathews MSHCP simply because, under the HCP, sufficient special management for the butterfly had been relied upon. (USFWS 67 FR 18376). However, in the original proposal USFWS recognized that "The Lake Mathews MSHCP in Riverside County was included in proposed critical habitat for the Quino checkerspot butterfly because we believe the habitat is essential to the conservation of the butterfly. (USFWS 67 FR 18376). The habitat that is within the Lake Mathews reserve is a core area in the WRMSHCP and still retains all of the Primary Constituent Elements that are required in order to designate Critical Habitat. The only reason it

is not included in the CH designation is because of the HCP overlays, so therefore it should be analyzed as Critical Habitat.

While indirect impacts are mentioned for this species, no meaningful assessment of those impacts is provided. The EIR/EIS and NES fail to fully analyze the impacts and propose meaningful avoidance, minimization or mitigation regarding indirect impacts.

iv. Stephens' Kangaroo Rat

Significant impacts to the Stephens' Kangaroo Rat (SKR) reserves and habitat will be affected by all of the alternatives according to the NES. (NES at XVIII). Alternative 9 would impact the least amount at 68.3 ha (168.7 acres) while alternative 6 and 7 impact the greatest amount 218.7 ha (540.2 acres).

Impacts to even 168.7 acres can be severely detrimental to the SKR. Brock and Kelt (2004) found that roads present a significant impact to SKR by direct habitat destruction and barriers to movement. Already habitat fragmentation has affected the genetic diversity of SKR. (McCleneghan and Truesdale 2002). In other words, isolation of populations through fragmentation of habitat is causing inbreeding in SKR. Additional barriers to movement including all alternatives of the MCP will lead to additional inbreeding problems. The absence of any clearly identified "replacement lands" in the EIR/EIS or NES is in violation of CEQA and NEPA. It is not only the direct impact of SKR conservation lands that needs to be analyzed and mitigated, but the fragmentation of the habitat, in light of the genetic problems created by the fragmented reserve design. However the documents fail to do either.

Because SKR is a covered species under the WRMSHCP, one of its objectives states:

Include within the MSHCP Conservation Area a minimum of 15,000 acres of occupied habitat (as defined in the *Habitat Conservation Plan for the Stephens' Kangaroo Rat in Western Riverside County*, March 1996), as measured across any consecutive 8-year period (*i.e.*, the approximate length of the weather cycle), in a minimum of six Core Areas within the existing boundary of the *Habitat Conservation Plan for the Stephens' Kangaroo Rat in Western Riverside County*. This objective is consistent with the requirements of the Stephens' kangaroo rat HCP. Core areas, as identified in the HCP, include Lake Mathews-Estelle Mountain, Motte-Rimrock Reserve, Lake Skinner-Domenigoni Valley, San Jacinto Wildlife Area-Lake Perris, Sycamore Canyon-March Air Force (Reserve) Base, Steele Peak, and Potrero ACEC.

(WRMSHCP pg. M-198). All alternatives impact the Lake Mathews-Estelle Mountain core area (existing established reserve) for SKR. In fact this reserve has the greatest amount of occupied habitat for the SKR (4,264 acres), and the greatest ratio of occupied habitat to conserved habitat. (WRMSHCP pg. M-200).

The preferred alternative fails to comply with the WRMSCHP, because it impacts what is considered a Core area for SKR. A 1:1 replacement ratio of occupied habitat is proposed (NES

at 259), however, no details on where that occupied habitat is located, much less if it is available for acquisition, or how it fits into the reserve design to mitigate fragmentation resulting from the linear corridor through the existing reserve Lake Mathews-Estelle Mountain reserve.

While indirect impacts are mentioned for this species, no meaningful assessment of those impacts is provided. The EIR/EIS and NES fail to fully analyze the impacts and propose meaningful avoidance, minimization or mitigation regarding indirect impacts.

v. Least Bell's Vireo (LBV) and Southwestern Willow Flycatcher (SWWF).

Individuals and nesting pairs of LBV were detected in riparian scrub in the western half of the BSA. Alternatives 4, 5, 6, and 7 would each impact five nesting pairs/individual LBV and Alternative 9 would impact two nesting LBV pairs. Potential impacts to LBV suitable habitat for long-term conservation would range from 0.9 ha (2.2 acres) for Alternative 9 to 3.4 ha (8.5 acres) for Alternatives 6 and 7. Individual willow flycatchers were observed migrating through the project area. These migrants were likely a subspecies other than the SWWF. However, the EIR/EIS must provide substantial evidence of whether willow flycatchers were SWWF or other subspecies.

Impacts to both LBV and SWWF are proposed to be mitigated through compliance with the WRMSHCP. (NES at 243). Contrary to WRMSHCP requirements areas that are identified to be impacted by the MCP are essential conservation areas for the LBV under the WRMSHCP, including Temescal Canyon. (WRMSHCP at B-256). Instead of protecting these essential habitats for conservation the mitigation proposed for the LBV is a DBESP. As stated previously, the lack of the DBESP in this document is not in compliance with NEPA or CEQA because the mitigation measures must be fully described and analyzed to determine whether they will be effective or also result in significant environmental impacts. Many of the comments on mitigation proposals for the riverine/riparian resources also apply to LBV and SWWF impact and mitigations. (NES at 243)

While indirect impacts are mentioned for these species, no meaningful assessment of those impacts is provided. The EIR/EIS and NES fail to fully analyze the impacts and propose meaningful avoidance, minimization or mitigation regarding indirect impacts.

vi. Arroyo Toad

The EIR/EIS improperly dismisses impacts to the Arroyo Toad even where the project will impact recognized Arroyo Toad habitat. The EIR/EIS and the NES state that impacts to arroyo toad, a federally listed endangered species, will probably not occur. (NES at 257). However, no surveys were performed within the project area under the guise that the project does not occur within a survey area for the toad identified in the WRMSHCP. (NES at 257). This does not accurately characterize Arroyo Toad habitat and the occurrence of the Arroyo Toad. The eastern end of the project lies within proposed core 5 (WRMSHCP at 3-25), which is also identified as a conservation area for the arroyo toad (WRMSHCP pg A-6). Specifically

Modeled arroyo toad habitat is distributed throughout the MSHCP Conservation Area where described. These areas occur within the following Core Areas: Vail Lake (portion of Proposed Core 7; 1,017 acres), San Juan Creek (portion of Existing Core B; 1,414 acres), Los Alamos Creek (portion of Existing Core B; 7,898 acres), San Jacinto River (portions of Proposed Core 5 and Existing Core K; 3,096 acres)...

(WRMSHCP pg A-6). Therefore, the EIR/EIS and NES improperly dismiss impacts to the arroyo toad, even when all of the alternatives will impact a core area for the arroyo toad.

While indirect impacts are mentioned for this species, no meaningful assessment of those impacts is provided. The EIR/EIS and NES fail to fully analyze the impacts and propose meaningful avoidance, minimization or mitigation regarding indirect impacts.

vii. Riparian/Riverine Areas and Vernal Pools

Permanent impacts to riparian/riverine areas would range from 13.8 ha (33.2 acres) for Alternative 9 to 27.0 ha (66.1 acres) for Alternative 7. Potential temporary impacts to riparian/riverine areas would range from 3.6 ha (8.8 acres) for Alternative 9 to 5.7 ha (14.2 acres) for Alternative 6. Thus, the locally preferred alternative still has significant impacts to riparian/riverine areas.

The EIR/EIS fails to present the most rudimentary adequacy of mitigation analysis to these important ecological systems in arid southern California. It fails to acknowledge the plethora of ecosystem services that these important habitats provide regarding water quality and quantity and the effects of the alternatives on these important functions. It fails to clearly identify that this project will negatively affect most of the waterways in western Riverside County.

As Stein and Ambrose (2001) noted, “numerous small projects in close proximity have resulted in adverse impacts to entire stream reaches or have fragmented the aquatic resources to a point where overall functional capacity is impaired. Additionally, the ecological functions of unaffected areas have been diminished due to their proximity to degraded areas”. All of these impacts are not addressed in the cumulative impacts section of the EIR/EIS.

Another example of the EIR/EIS’s failure to address impacts associated with the MCP regards shading from bridges. This is not an indirect impact, but a direct one. Plants require sunlight in order to photosynthesize, and any reduction in sunlight available to the plant is a direct, not indirect impact and should be evaluated as such.

The EIR/EIS recognizes that impacts are to be mitigated, but fails to identify where/how the mitigation will occur. This failure to appropriately identify mitigation strategies does not comply with CEQA or NEPA’s information disclosure requirements.

“Restoration” as mitigation has a poor success rate in riparian systems (Sudol and Ambrose 2002, Ambrose and Lee 2004). Relying on this type of mitigation to riparian systems is misplaced and will likely result in a net loss of riparian habitat. The superficial language

included in the EIR/EIS regarding mitigation for these precious resources needs to be vastly improved. The impacts must be identified, analyzed, and addressed by geographic and ecological impact area. Where the proposed impacts are actually described by impact area, avoidance and minimization efforts should be clearly identified, and if there are still impacts, then a clear and concise mitigation plan should be included as apart of this EIR/EIS. This plan needs to include performance standards based on habitat functions.

While the Center supports the removal of exotic species to enhance riparian and other types of habitats, the use of *Arundo* removal as mitigation compensation is inappropriate in Riverside County at this time, because it is a never-ending source of mitigation that allows for cumulative habitat destruction. Until Riverside County commits to a systematic program of eliminating *Arundo* from the top of the watersheds first, *Arundo* will just continue to re-infest downstream sites – resulting in the need for eradication in perpetuity and unending mitigation “opportunities” for direct impacts of riparian habitats. Furthermore, this type of off-site mitigation allows the destruction of existing valuable habitat that cannot be adequately mitigated because of the difficulties associated with successful riparian restoration. In addition Riverside County must prohibit the sales of *Arundo* within the County to prevent on-going introductions.

The EIR/EIS and NES fail to evaluate the impacts from the construction of any of the alternatives where blasting of the landscape is required. Blasting has potential to impact the both the above and underground hydrology of the existing landscape. Many sensitive biological resources rely on these important water features, such as seeps, springs, perched water tables etc., yet no analysis of the potential for impacts is provided in the documents, contrary to both CEQA and NEPA.

viii. Wetlands and Floodplains

While the “Potential Impacts of Alternative Corridor Alignments to the Waters of the United States, Riparian Ecosystems and Threatened and Endangered Species: Mid County Parkway Project, Riverside County, California” (Smith 2008) provides some interesting analysis of the titled issues, it evaluates the impacts only between the alternatives, not within the regional context that the project is proposed. In other words, while Alternative 9 may have the least impacts of any of the proposed alternatives, it still has major significant impacts that have not been adequately analyzed. This provides an improper baseline for analysis. Instead of analyzing the existing conditions the EIR/EIS analyzes the relative impacts of the range of alternatives, which will all result in significant and unmitigable impacts to the existing environment as it exists during the time when the NOP was circulated.

Mitigation for these critical resources in most cases has been deferred to the HCP plan amendments and backroom negotiations outside of public oversight and input. This document does highlight the egregious impact to existing conservation areas that were preserved to off-set impacts from previous destructive projects. These conservation areas are in most instances, some of the highest quality habitat for rare species left in western Riverside County, and the EIR/EIS fails to make the case that the impacts can be mitigated below a level of significance.

ix. Other Natural Communities of Special Concern.

Other natural communities of concern in the biological study area (BSA) are Diegan coastal sage scrub (DCSS), Riversidean sage scrub (RSS), and peninsular juniper woodland. Impacts to natural communities of special concern would range from 158.5 ha (391.7 acres) for Alternative 5 to 185.3 ha (457.9 acres) for Alternative 6.

The EIR/EIS acknowledges these three natural communities of special concern, and maps of the locations of these community types are presented in the NES (NES at 99-103). These maps fail to show the regional context of the plant communities, so it is impossible to assess how much of these rare communities that the alternatives will impact. For example, over 400 acres of Riversidean Upland Scrub will be impacted by Alternative 9. The document fails to identify what percentage of that community type that impact represents. Peninsular Juniper woodland, while more common elsewhere in the state, is a relatively small relict stand on the Gavilan Plateau. The NES identifies that 26.8 acres of this rare community will be impacted but does not contextualize what percentage of this rare community that represents. Without such analysis it is impossible to determine whether the impact is significant and allows the EIR/EIS to avoid the substantive analysis that CEQA requires.

Additionally, Table 3-1 (NES at 113) identifies “land cover”, but does not use state or federally recognized systems of plant community identification, although it does “cross walk” to the California Native Plant Society’s vegetation alliances. This failure leaves questions as to how the Natural Communities of Special Concern were identified. While we agree that the sage scrubs and the Peninsular juniper woodlands are communities of special concern, other communities identified on site are also of special concern. For example, alkali grassland/playa, which generally reflects the alkali playa community recognized by the California Department of Fish and Game (2003), is also considered a rare plant community in California. (CDFG 2003). The alkali playa community in the project area is known to support federally and state listed endangered plant species as identified in the NES. (NES at 116). However this plant community was not included and impacts to it were not assessed or avoidance, minimization and mitigation proposed. Failure to identify the characteristics of the project area is one of the fundamental purposes of CEQA, without which it is impossible to determine impacts to the Project area.

x. MSHCP Narrow Endemic Plants

The MCP Build Alternatives would impact areas of long-term conservation value for smooth tarplant, many-stemmed dudleya, Coulter’s goldfields, and spreading navarretia. All of the MCP Build Alternatives would potentially impact 0.84 ha (2.08 acres) of smooth tarplant occupied habitat, 0.63 ha (1.55 acres) of Coulter’s goldfields occupied habitat and 0.31 ha (0.77 acres) of spreading navarretia occupied habitat. Alternatives 4, 5, and 9 would potentially impact 3.07 ha (7.58 acres) of many-stemmed dudleya habitat. Alternatives 6 and 7 would impact 0.01 ha (.02 acres) of many-stemmed dudleya habitat.

The EIR/EIS and the NES fail to comply with the WRMSHCP with regards to the narrow endemic plant species. The WRMSHCP states that:

For Narrow Endemic Plant Species populations identified as part of the survey process described above, impacts to 90% of those portions of the property that provide for long-term conservation value of the identified Narrow Endemic Plant Species shall be avoided until it is demonstrated that conservation goals for the particular species are met. (WRMSHCP pg. 6-38).

This requirement is not even mentioned in the EIR/EIS or the NES for any of the above mentioned species, nor is it demonstrated that the conservation goals have been met for narrow endemic plant species.

Instead the documents immediately propose a DBESP, but the EIR/EIS and NES fail to present a single DBESP and no proof is given in the documents that biologically equivalent or superior preservation is even possible. Analysis requiring formulation of mitigation measures at a future time violates the rule that members of the public and other agencies must be given an opportunity to review mitigation measures before project approval. *Sundstrom v. County of Mendocino*, 202 Cal.App.3d 296, 308 (Cal. Ct. App. 1988). This is particularly problematic for plant species that are endemic to specific soil types and hydrological regimes – these abiotic factors simply occur in a very limited area.

a. Smooth tarplant

The smooth tarplant is located in numerous areas including the San Jacinto River floodplain. However the EIR/EIS and NES fails to adequately identify the impacts to the smooth tarplant. Instead the NES identifies the need for a Determination of the Biologically Equivalent or Superior Preservation (DBESP). As discussed below, because the DBESP is not included for these plants, there is no way the public can evaluate the equivalency.

The EIR/EIS similarly fails to identify the conflict between the Project and the WRMSHCP. Objective 1 of the WRMSHCP for the conservation of smooth tarplant states:

Include within the MSHCP Conservation Area at least 6,900 acres of suitable habitat (grassland and playas and vernal pools within the San Jacinto River, Mystic Lake and Salt Creek portions of the MSHCP Conservation Area). (WRMSHCP pg. 410).

The EIR/EIS must analyze how the destruction of tarplant habitat will achieve the conservation acreage requirements of the WRMSHCP.

While indirect impacts are mentioned for this species, no meaningful assessment of those impacts is provided. The EIR/EIS and NES fail to fully analyze the impacts and propose meaningful avoidance, minimization or mitigation regarding indirect impacts.

b. Many-stemmed dudleya

The NES provides a conflicting and inconsistent analysis with regards to the impacts to many-stemmed dudleya. While Table 4-5 (NES at 209) indicates that impacts will be 7.58 acres, the NES also indicates that “A shared portion of Alternatives 4, 5 and 9 has been realigned in

order to avoid *all* known locations of many-stemmed dudleya” [emphasis added] (NES at 208). Considering the magnitude of the project and its effect on the environment direct and indirect impacts to many-stemmed dudleya will likely occur.

Furthermore, the Project impacts many of the known occurrence areas for the many-stemmed dudleya. Objective 2 of the WRMSHCP for the conservation of many-stemmed dudleya states:

Include within the MSHCP Conservation Area at least 26 of the known occurrences of many-stemmed dudleya, including the occurrences at Estelle Mountain, Temescal Canyon, the Santa Ana Mountains, Gavilan Hills, Alberhill Creek, and Prado Basin. (WRMSHCP pg. 184)

Project Alternatives impact many of these locations, but no analysis of the impacts are included other than the need for a DBESP, which is not included.

While indirect impacts are mentioned for this species, no meaningful assessment of those impacts is provided. The EIR/EIS and NES fail to fully analyze the impacts and propose meaningful avoidance, minimization or mitigation regarding indirect impacts.

c. Spreading Navarretia

The NES also states that “The project will impact all of the area suitable for long-term conservation for spreading navarretia.” (NES at 208). All alternatives will impact a core area as identified in the WRMSHCP for this federally listed threatened plant. Objective 2 in the MSHCP states

Include within the MSHCP Conservation Area at least 13 of the known locations of spreading navarretia at the Skunk Hollow, the Santa Rosa Plateau and core locations: the San Jacinto Wildlife Area, floodplains of the San Jacinto River from the Ramona Expressway south to Railroad Canyon, and upper Salt Creek west of Hemet. (WRMSHCP pg. P-418)

Objective 4 further emphasizes the importance of the San Jacinto floodplain downstream from Mystic Lake:

Include within the MSHCP Conservation Area the floodplain along the San Jacinto River consistent with Objective 1. Floodplain processes will be maintained along the river in order to provide for the distribution of the species to shift over time as hydrologic conditions and seed bank sources change. (WRMSHCP at P-418).

The Conservation Levels section of the WRMSHCP for spreading navarretia states:

Eleven of the 14 known populations comprise three Core Areas (the San Jacinto Wildlife Area, the floodplains of the San Jacinto River from Ramona Expressway south to Railroad Canyon and the upper Salt Creek drainage area west of Hemet). These three Core Areas will be conserved within the Criteria Area and existing Public/Quasi-Public Lands. (WRMSHCP pg. P-420)

Clearly all of the proposed alternatives directly impact an area identified in the WRMSHCP that is essential for long-term conservation of the federally threatened spreading navarretia. The EIR/EIS must clearly describe how the project will impact the Conservation and Core Areas of the WRMSHCP and the Project's failure to implement the objectives of the WRMSHCP.

Adequate habitat is essential for annual plants like the spreading navarretia, which germinate, grow, flower, and produce fruits with seeds over a few short months. Most of the year, the "plant" lies dormant as seed until the proper hydrologic/edaphic conditions occur, when its lifecycle repeats. As such, these species tend to move around on the landscape depending on where water, wind or animals move the seeds in the habitat. In order for the WRMSHCP to be successful in its mandate, the San Jacinto River floodplain must not be impacted especially in areas with long-term conservation value. Again the mitigation is to have an improperly deferred DBESP process.

While indirect impacts are mentioned for this species, no meaningful assessment of those impacts is provided. The EIR/EIS and NES fail to fully analyze the impacts and propose meaningful avoidance, minimization or mitigation regarding indirect impacts.

d. San Jacinto Valley Crownscale

The NES indicates that 4 individuals of the San Jacinto Valley crownscale (SJVC) were located 220 feet south of the project footprint. (NES at 207). This location is within the San Jacinto River floodplain. (NES at 181 and 183). However the EIR/EIS and the NES simply fails to discuss the impacts to this federally listed endangered plant and its habitat. Like the spreading navarretia above, this species is an annual plant (germinates, grows, flowers and produces fruit all within a few months). It is imperative that habitat remain available for the plants to move around from year to year.

All of the alternatives will impact this very important core area for the San Jacinto Valley crownscale, a species not only under federal Endangered Species Act protection, but that is only known from a very small range in the San Jacinto Valley and nearby alkali playas. In addition the EIR/EIS must fully disclose the Project's inconsistency with the implementing procedures of the WRMSHCP and the conservation objectives for species recovery listed in the WRMSCHP. Objective 2 of the WRMSHCP for conservation of the SJVC states:

Include within the MSHCP Conservation Area the Alberhill Creek locality as well as the three Core Areas, located along the San Jacinto River from the vicinity of Mystic Lake southwest to the vicinity of Perris and in the upper Salt Creek drainage west of Hemet. (WRMSHCP at 351)

Objective 4 of the WRMSHCP for conservation of the SJVC states:

Include within the MSHCP Conservation Area the floodplain along the San Jacinto River consistent with Objective 1. Floodplain processes will be maintained along the river in order to provide for the distribution of the species to shift over time as hydrologic conditions and seed bank sources change. (WRMSHCP at 351)

The WRMSHCP Conservation Level analysis goes on to state:

Eleven of the 12 populations constitute the three Core Areas (Mystic Lake, the San Jacinto River and the upper Salt Creek drainage), all of which will be conserved within the Criteria Area and Public/Quasi-Public Lands. (WRMSHCP at 353).

This strategies listed above include the area where the SJVC was located during surveys and where the Project would impact SJVC habitat.

No indirect impacts, including the effects on hydrology, soils, and other essential processes for these rare plants are analyzed much less proposed for mitigation. While indirect impacts are mentioned for this species, no meaningful assessment of those impacts is provided. The EIR/EIS and NES fail to fully analyze the impacts and propose meaningful avoidance, minimization or mitigation regarding indirect impacts.

xi. Impacts to other Special Status Species

The EIR/EIS fails to adequately analyze impacts to numerous other special status species that will be impacted by the MCP including, but not limited to, the following: burrowing owl, least Bell's vireo, southwestern willow flycatcher, Los Angeles pocket mouse, Stephen's kangaroo rat, arroyo toad, and Swainson's hawk.

a. Burrowing Owl

Suitable burrowing owl habitat was determined to be present within the MCP Biological Study Area (BSA). Burrowing owls were observed at three locations within the project footprint for Alternative 9. Twenty three birds were observed within the BSA for Alternative 9. No burrowing owls, burrowing owl burrows, or other burrowing owl sign have yet been observed within the BSA for Alternatives 4, 5, 6, and 7. Alternative 9 would impact 6.5 acres of foraging area (NES pg. IX) (although the table on that same page and Table 4-6 state only 3.9 acres of impact), one nest burrow and several (undetermined) additional burrows. Additional surveys will be done for the burrowing owl because they are a mobile species.

Mitigation for these impacts is stated to be achieved in compliance with the WRMSHCP (NES at 226) yet fails to explain the Project's impacts to Proposed Linkage 3 in the WRMSHCP. Several MSHCP criteria apply in this area, including:

- 1) If the site contains, or is part of an area supporting less than 35 acres of suitable habitat or the survey reveals that the site and the surrounding area supports fewer than 3 pairs of burrowing owls, then the on-site burrowing owls will be passively or actively relocated following accepted protocols.
- 2) If the site (including adjacent areas) supports three or more pairs of burrowing owls, supports greater than 35 acres of suitable habitat and is non-contiguous with MSHCP Conservation Area lands, at least 90 percent of the area with long-term conservation value and burrowing owl pairs will be conserved onsite.

(WRMSHCP at B-65). The EIR/EIS and NES fail to identify if the area greater than 35 acres supports more burrowing owls outside of the BSA and project footprint, in which case the area should be conserved on-site.

While indirect impacts are mentioned for this species, no meaningful assessment of those impacts is provided. The EIR/EIS and NES fail to fully analyze the impacts and propose meaningful avoidance, minimization or mitigation regarding indirect impacts.

b. Los Angeles Pocket Mouse (LAPM)

LAPM were captured within the BSA southwest of the San Jacinto River and Lake Perris, and northeast of the San Jacinto River and Sanderson Avenue. All of the MCP Build Alternatives will potentially impact at least 16.2 ha (40.0 acres) of LAPM-occupied habitat suitable for long-term conservation.

The WRMSHCP identifies the conservation requirements for LAPM to include:

Objective 1 ...Based on existing population distribution information, probable Core Areas include the following: 1) San Jacinto Wildlife Area-Lake Perris Reserve, 2) the Badlands, 3) *San Jacinto River* and Bautista Creek... [Emphasis added] WRMSHCP pg. M-87.

All of the alternatives fall within this important habitat for the LAPM in the San Jacinto River area (as well as the San Jacinto Wildlife Area – Lake Perris). Again, the mitigation proposed for this special status species is a DBESP. As stated previously, the lack of the DBESP in this document is not in compliance with NEPA or CEQA. It is impossible to find biologically equivalent Core Areas essential for the conservation of the species because of the severe impacts to the LAPM and other special status species.

While indirect impacts are mentioned for this species, no meaningful assessment of those impacts is provided. The DEIR/S and NES fail to fully analyze the impacts and propose meaningful avoidance, minimization or mitigation regarding indirect impacts.

Taken together, the conservation of the LAPM, SBKR, and many of the endemic plant species rely heavily on the San Jacinto River and its floodplain for existence, yet all of the alternatives will significantly, and perhaps unmitigably impact this essential habitat area.

c. Swainson's Hawk

According to the EIR/EIS and NES, foraging impacts to the Swainson's hawk will be minimal. (NES at 258). Species impacts are proposed to be mitigated by the WRMSHCP. (NES at 258).

However large blocks of potential conservation areas are within the footprint of the all of the alternatives. The WRMSHCP states the following for conservation objective for Swainson's hawk:

Include within the MSHCP Conservation Area at least 141,960 acres of grassland, cismontane alkali marsh, playa and vernal pool, Riversidean alluvial fan sage scrub, coastal sage scrub, agriculture (field crops) and forested areas containing potential perch and roost sites including peninsular juniper woodland and scrub, and riparian scrub, woodland and forest Habitats.

(WRMSHCP pg. B-496). The WRMSHCP goes on to call out specific areas:

These large blocks of potentially suitable Habitat for the Swainson's hawk include the ...Lake Mathews-Estelle Mountain, ... San Jacinto Wildlife Area/Mystic Lake and surrounding playa Habitat, San Jacinto River playa...

WRMSHCP pg. 497.

Once again, the EIR/EIS does not adequately discuss and analyze the impacts to wildlife and wildlife habitat. Furthermore, the Project alternatives impact the very areas that the EIR/EIS is relying upon for mitigation without any discussion of how the Project and proposed mitigation within the Project area are incompatible.

While indirect impacts are mentioned for this species, no meaningful assessment of those impacts is provided. The EIR/EIS and NES fail to fully analyze the impacts and propose meaningful avoidance, minimization or mitigation regarding indirect impacts.

d. Rare Species Not Covered by HCP's that Require Impact Analysis

A number of rare species have potential to occur within the project site, and are not covered by any of the HCP's. These species did not have impacts analyzed for them or any mitigation required. These species include:

- the American badger (*Taxidea taxus*),
- long-eared owl (*Asio otus*),
- pocketed free-tailed bat (*Nyctinomops femorosaccus*),
- southern grasshopper mouse (*Onychomys torridus ramona*), and
- the western mastiff bat (*Eumops perotis californicus*).

By failing to analyze these impacts, the EIR/EIS violates CEQA's requirement that significant impacts on the environment be disclosed

xii. Failure to Analyze Impacts from Invasive Species

Roads cause major ecological effects. (Foreman and Alexander 1998). The EIR/EIS or NES "analysis" is inadequate and fails to quantify the effects and to adequately demonstrate how the design features will minimize impacts. A prime example is the failure of the EIR/EIS or NES to identify and properly evaluate impacts to species and ecosystems from invasive exotics species. Many exotic plant species invade disturbed areas and then spread into wildlands, carried by wind, fire, vehicle tires, etc. (Bossard et al 2000, Gelbard and Belnap 2003). Invasive exotics have caused the decline of rare plant communities including Riverdean Sage Scrub in the project

area (Minnich and Dezzani 1998). A quantitative impact analysis with performance based mitigation measure is needed to perform a valid analysis.

xiii. Failure to Analyze Buffers

No buffers for any of the alternatives are discussed. Maintaining appropriate, fully protected buffer strips between streams and upland soil-disturbing activities is critical to sustaining aquatic and riparian ecosystems (Erman et al. 1996). Most of the current literature about estimating appropriate widths of riparian buffer strips takes into account the complexity of landscapes. The U.S. Forest Service and U.S. BLM (USFS and USBLM 1997) have provided a width-adjustment method based on measured distances of sediment plumes from roads and landings: for a 50 percent slope adjacent to an ephemeral channel, the riparian protection width distance would be about 550 feet from either side of the stream edge. Additional research conducted as part of the Sierra Nevada Ecosystem Project (Erman et al. 1996) provided guidance for designating riparian buffers that incorporate steepness of surrounding slopes and erodability of soils: this research concluded that if the average slope were 25 percent, the buffer width should be 524 feet on either side of the stream, and if the slope were 50 percent, the buffer should be 672 feet. The DEIR fails to cite any available scientific literature or substantial evidence about appropriate buffer widths or how these significant impacts to riparian resources will be mitigated..

xiv. Failure to Analyze Impacts from Fire and Fire-Suppression Activities

The impact of fire from roadside ignition is a significant threat to the habitats adjacent to all alternatives. The EIR/EIS and NES fail to discuss the potential impact to the native plant communities and those species that rely on them for existence. Too frequent fires (often exacerbated by invasive plants species discussed above) can effectively eliminate native plant communities and replace them with exotic communities that thrive under a frequent fire regime (Brooks et al. 2004). This “type-conversion” from one plant community to another occurs in the project area (Minnich and Dezzani 1998) and the introduction of new fire ignition sources through development of the Project or alternatives will have devastating effects on the environment.

The EIR/EIS and NES fail to evaluate the impact of fire and “fuel modification” on the adjacent areas. Of particular concern is the effects of fires and “fuel modification” on the existing reserves that all of the alternatives propose to impact. Compliance with the MCHCP would require:

In accordance with existing policies, new Development that is planned adjacent to the MSHCP Conservation Area or other undeveloped areas, brush management shall be incorporated in the Development boundaries and shall not encroach into the MSHCP Conservation Area.

(MSHCP pg. 6-72). The EIR/EIS and NES completely fail to analyze the impacts to the existing reserves, cores, proposed cores, and linkages of the alternatives throughout the project area. The failure to evaluate this potentially large and ecologically significant impact and to identify mitigation measures violates both CEQA and NEPA.

xv. Cumulative Impacts

The EIR/EIS and NES recognize that “Project construction will contribute to the incremental loss of potentially suitable” habitat for most all of the species that are discussed in the documents. Relying on the MSHCP as a solution to this cumulative impact does not comply with CEQA or NEPA, because none of the “compliance” issues are addressed within the EIR/EIS or NES. Instead most are deferred to the DBESP process or other “negotiated” processes that occur without public oversight in violation of CEQA and NEPA. The mitigation measures must be transparent, clearly defined, and enforceable for Project specific impacts.

xvi. Failure to Comply with Existing Multiple Species Habitat Conservation Plans

All of the build alternatives, including the preferred alternative, propose impacts to four existing Habitat Conservation plans (HCPs). These HCPs were put in place to offset the impacts to rare species from other developments that impacted rare species. The HCPs include the El Sobrante Landfill Multiple Species Habitat Conservation Plan (ESLMSHCP); the Stephen’s kangaroo rat Habitat Conservation Plan (SKRHCP); Metropolitan Water District’s Lake Matthews Multiple Species Habitat Conservation Plan (LMMSHCP); and the Western Riverside Multiple Species Habitat Conservation Plan (WRMSHCP).

The Project violates several existing HCPs. Violation of any permit issued under the Endangered Species Act constitutes a violation of the ESA, 16 USC § 1540(a), which can be enforced civilly through the citizen suit provision of the ESA. 16 USC 1540(1)(A). As discussed throughout these comments the Project violates several existing terms HCPs and constitute changes in anticipated Reserve Assembly, establishment of Core Areas and conservation of habitat.

The EIR/EIS and NES propose the following: “Mitigation would *likely* consist of purchase of land for conserving habitat with similar values for covered species that will be impacted.” [emphasis added] (NES at XIV, XVII, 266, 268, 299, 308). Several problems arise from this type of inadequate mitigation proposal, which violate CEQA. First, the mitigation is not clearly identified – it is only “likely” that additional lands would be purchased. Second, identification of lands with “similar values” does not occur in the document, making impossible the evaluation of the proposed mitigation’s adequacy – the location of mitigation sites must be included. Third, there may not be lands available with “similar values” for acquisition. Especially in the western part of the project area which has had more development pressure, little undisturbed open-space areas remain outside of the current conservation plan reserves. The document needs to include an analysis as to whether adequate mitigation lands are actually available to “purchase...for conserving habitat with similar values for covered species”. Fourth, if adequate lands are not available to purchase, what is the proposed mitigation? The document fails to identify any alternative mitigation strategies. At its heart this type of mitigation fails to provide the firm assurances for implementation required by CEQA. *Federation of Hillside & Canyon Ass’ns v. City of Los Angeles*, 83 Cal.App.4th 1252, 1261 (2000).

All alternatives appear to directly target previously conserved areas established by these four habitat conservation plans, and fail to propose even a single alternative that simply avoids impacts to conservation areas. This failure to provide an environmentally preferred alternative is a violation of CEQA. An environmentally superior alternative to provide for most of the project objectives that avoids impacts to these conservation lands should be included. It is within the rule of reason to include an alternative that relies upon existing or slight modifications to existing infrastructure, and the advancement of public transit, that would avoid these conservation areas. The fact remains that many of the rare habitats and the species that rely on them have already reached critical threshold on the path the extinction – protection under both State and Federal Endangered Species Acts. Significant investments have already been made by prior projects to protect and enhance habitat for species persistence. Impacts to these habitats and species have not been clearly analyzed with regards to minimization and mitigation.

The Mid-County Parkway Project will violate Section 10 of the Federal Endangered Species Act by causing the take of federally listed threatened and endangered species without ensuring that the harmful effects resulting from that take will be mitigated or minimized because the project applicant fails to ensure that adequate funding will be provided to fully implement the required mitigation measures. Section 10 of the Federal Endangered Species Act requires the Secretary of the Interior to issue permits authorizing the incidental take of federally listed species resulting from an applicant’s activities. Prior to issuing an Incidental Take Permit the Secretary of the Interior must receive from the applicant a conservation plan listing steps it will take to insure the mitigation and minimization of impacts to endangered and threatened species resulting from the applicant’s activities. 16 U. S. C. §1539(a)(2)(B). The Secretary of the Interior must examine the conservation plan and find that, inter alia, “the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking;” and “ensure that adequate funding for the plan will be provided.” Id.

The EIR/EIS has failed to ensure that adequate funding will be provided for the purchase of conservation lands required to mitigate impacts to endangered and threatened species and HCPs resulting from construction of the Mid-County Parkway, in violation of the Federal and State Endangered Species Acts, WRMSHCP, LMMSHCP, ESLHCP, SKRHCP, CEQA, and NEPA. The EIR/EIS must demonstrate clear and definite funding sources.

a. Failure to Comply with the Western Riverside County MSHCP

Alternatives 4 and 5 would result in the fewest impacts to the MSHCP Criteria Area at approximately 155 ha (382 acres) and 165 ha (408 acres), respectively. Substantially greater impacts to the MSHCP Criteria Area would occur under Alternatives 6, 7, and 9 (261.3 ha [645.7 ac], 269.7 ha [666.4 ac], and 258.4 ha [638.5 ac], respectively.

The EIR/EIS inaccurately characterizes the project as complying with the WRMSHCP. CEQA Appendix G requires the disclosure of impacts resulting from a proposed project that will “[c]onflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.” CEQA Guidelines Appendix G § IV. In fact as described above all of the alternatives have very

detrimental effects on the assembly of the reserve and linkage design of the WRMSHCP. While the table presented in the NES (NES at XV-XVI) does include a calculation of the amount of acreage that would be affected in each of the WRMSHCP core and linkage areas, it does not provide an analysis of what impacts would actually occur on the long term implementation and success of the WRMSHCP. For example, while the impact to proposed constrained linkage is only 11-12 acres, all of the alternatives would sever Core H from non-contiguous habitat block 5, possibly eliminating the functionality of habitat block. A similar situation will occur for existing constrained linkage C – while only 2-3 acres will be impacted, this linkage will cease to function if any of the alternatives including the preferred project are implemented.

Core C will be severed in half by all of the alternatives including the preferred project and proposed linkage 3, which could have reconnected it, will also be severed. What little redundancy for wildlife movement, linkages and connectivity was designed into the WRMSHCP in the proposed project area is restricted or eliminated by the MCP.

None of the above issues were analyzed for their direct impact on the conservation cores, linkages, constrained linkages and additions to core areas of the WRMSHCP. No indirect impacts were analyzed on the cores, linkages, constrained linkages and additions to core areas.

As with the other HCP's, because that the EIR/EIS fails to identify potential mitigation sites, no opportunity to evaluate the effectiveness of the proposed mitigations exists in the public domain. This runs contrary to the information disclosure requirements of both CEQA and NEPA. Core areas were identified in the WRMSHCP as existing conservation areas. The EIR/EIS fails to identify what other core areas are available for acquisition for the same suite of species that are currently being conserved as mitigation for the MCP. The EIR/EIS fails to even evaluate if this mitigation is possible. If it is not possible, the EIR/EIS fails to identify alternative mitigation strategies that would be adequate to off-set the impacts to these core areas. The failure to analyze or determine whether mitigation lands exist prevents decision makers and the public from determining whether mitigation will actually occur.

The EIR/EIS states that “An MSHCP Equivalency Analysis will be prepared, in accordance with MSHCP Section 7.2.3 in support that the MCP project would be considered to be biologically equivalent or superior to the regional transportation corridor from Hemet to Corona, which was originally identified in the MSHCP as a Covered Activity.” (NES at XIII). We note that the locally preferred project and all of the alternatives are not covered projects under the WRMSHCP. Any and all Equivalency Analysis needs to be included as part of this EIR/EIS at this stage so that it is available for public review. The Equivalency Analysis must include:

1. Effects on habitats
2. Effects on covered species
3. Effects on core areas (as identified on the MSHCP Core and Linkage map)
4. Effects on linkages and constrained linkages (as identified on the MSHCP Core and Linkage map)

5. Effects on MSHCP Conservation Area configuration and management (such as increases or decreases in edge)
6. Effects on ecotones (defined as areas of adjoining Vegetation Communities, generally characterized by greater biological diversity) and other conditions affecting species diversity (such as invasion by exotics)
7. Effects on and consistency with existing HCP's and/or NCCP's.

(WRMSCHP Final MSCHP Vol.1, Section 7, pg 7-12). Failing to provide the Equivalency Analysis fails to inform a skeptical public of the impacts of the project. Furthermore development of DBEST at a later time defers analysis and mitigation of the Project's impacts, and potential impacts that could be caused by the mitigation measures themselves.

b. Failure to Comply with the Lake Mathews MSHCP

All alternatives, except Alternative 9, would impact the Lake Mathews MSHCP area. The conserved lands within the Lake Mathews MSHCP were originally set aside as a result of the development of Lake Mathews by the Metropolitan Water District of Southern California. Currently, there is no process in place for amending the Lake Mathews MSHCP to allow future development on its lands, including the proposed MCP.

The LMMSHCP was permitted in 1995, for 50 years. It covers 45 species for incidental take for activities associated with the installation and maintenance of the Lake Mathews reservoir. The conservation lands have therefore been set aside to mitigate impacts to rare species. Only the preferred alternative does not directly impact the conservation areas of the Lake Mathews preserve. As the NES recognizes the LMMSHCP does not have a mechanism to amend the LMMSHCP. (NES at XIV). Furthermore despite years of negotiations with the County, the permittee, the Metropolitan Water District of Southern California, is not willing to "re-open" the MSHCP to amend it. This issue renders the other "alternatives" simple "straw" proposals which could never be implemented, and therefore do not represent adequate "alternatives" under CEQA, which requires that adequate and reasonable number of alternatives be analyzed, including an environmentally preferred alternative.

As with the above examples, the EIR/EIS fails to analyze where "habitat with similar values for covered species" would be found, or if it is even available. The failure to analyze or determine whether mitigation lands exist prevents decision makers and the public from determining whether mitigation will actually occur. No analyses are presented on how the impacts would fragment the conservation areas, and if that fragmentation is even mitigable.

c. Estelle Mountain Stephens' Kangaroo Rat (SKR) Reserve

All the MCP Build Alternatives would impact the Estelle Mountain Reserve for SKR. Alternative 9 would impact the least amount of SKR habitat at 55.3 ha (136.6 acres). Alternatives 4 and 5 would each impact 155.5 ha (84.3 acres), and Alternatives 6 and 7 would each impact 217.9 ha (538.5 acres) of SKR habitat.

In 1996, the Long-term SKRHCP was permitted and seven “core” reserves were set up specifically to conserve the endangered Stephen’s kangaroo rat (SKR), which had been under Endangered Species Act protection since 1988. The SKRHCP is slated to persist for 30 years. By 2003, over \$50 million dollars have been spent on SKR conservation. All of the alternatives including the preferred alternative will directly impact the Estelle Mountain Reserve. (NES at XVII). All alternatives will indirectly impact the San Jacinto-Lake Perris Reserve, and the preferred alternative will also indirectly impact the Motte-Rimrock Reserve. These reserves were established to provide mitigation for ongoing activities that affect the SKR and its habitat. As above, the EIR/EIS fails to analyze where “habitat with similar values for covered species” would be found, or if it is even available. Additionally, no analyses are presented on how the impacts would fragment the conservation areas, and if that fragmentation is even mitigable. SKR are vulnerable to habitat fragmentation and isolation by gravel roads (Brock and Kelt 2004), much less by multi-lane freeways. In fact habitat fragmentation has already influenced population genetic structure in SKR (McClenaghan and Truesdale 2002), “Genetic drift and restricted gene flow stemming from the fragmentation of once contiguous populations into isolated populations are suggested as contributing factors” to low levels of genetic diversity. In other words, genetic inbreeding is already affecting this species from habitat fragmentation. Additional fragmentation will only exacerbate this potentially lethal problem.

One of the problems with the existing SKRHCP is that no land is available at “fair market value” resulting in minimal on-the-ground habitat acquisition for this species, despite the availability of funding. If mitigation lands were even available, they may not be able to be purchased. It is also important to note that the SKRHCP is not superseded by the WRMSHCP discussed above.

d. El Sobrante Landfill MSHCP Area

The preferred alternative (Alternative 9) would impact 8.9 acres of conservation lands within the conservation area of the El Sobrante Landfill MSHCP. (NES at pg. XVII). In 2001, a 1,300 acre conservation area was established to mitigate impacts from expansion of the landfill to thirty-one rare species for 80 years. The El Sobrante Landfill not only receives trash from Riverside County residents, but accepts trash from other areas as well. This regional landfill’s mitigation strategy and integrity, and the species that rely upon it, is directly threatened by the preferred alternative. Unfortunately, no analyses of where “habitat with similar values for covered species” would be found, and if it is even available. Because these habitat types are so highly constrained and tend to be found only as habitat fragments, a thorough analysis must be presented that looks at the feasibility of mitigation, and if it is feasible, where the “replacement” mitigation site will be.

The EIR/EIS also fails to provide analyses on how the direct impacts would fragment the existing conservation area, and if that fragmentation is even mitigable or how it would be mitigated. No mention is made of the effects of indirect impacts on the conservation area, including noise, lighting, increased fire potential and others.

II. The EIR/EIS Fails to Adequately Disclose, Analyze, and Mitigate the Project's Cumulative Impacts to Climate Change

A. Global Warming Poses Grave Risks to California That Can Only Be Avoided Through Deep Cuts in Atmospheric Concentrations of Greenhouse Gas Emissions

“The harms associated with climate change are serious and well recognized.” *Massachusetts v. EPA*, 127 S. Ct. 1438, 1455 (2007). In enacting Assembly Bill 32 (“AB 32”), the California Global Warming Solutions Act of 2006, the State of California confirmed that “[g]lobal warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California.” Health & Safety Code § 38501(a). Concentrations of greenhouse gases are increasing in the earth’s atmosphere, primarily from society’s burning of fossil fuels for energy and destruction of forests. These gases, including but not limited to carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), absorb solar radiation that would otherwise be radiated back into space. This phenomenon is referred to as global warming or climate change and is leading to profound changes in the earth’s and California’s environment. (*See, e.g.,* Cayan, et al. 2007).

The world’s leading authority on climate change—the Intergovernmental Panel on Climate Change—now states with “very high confidence” that most of the warming observed over the past 50 years is the result of human generation of greenhouse gases, including carbon dioxide, methane, and nitrous oxide³ (IPCC 2007a). Some of the types of impacts to California and estimated ranges of severity – in large part dependent on the extent to which emissions are reduced – are summarized as follows:

- A 30 to 90 percent reduction of the Sierra snowpack during the next 100 years, including earlier melting and runoff.
- An increase in water temperatures at least commensurate with the increase in air temperatures.
- A 6 to 30 inch rise in sea level, before increased melt rates from the dynamical properties of ice-sheet melting are taken into account.
- An increase in the intensity of storms, the amount of precipitation and the proportion of precipitation as rain versus snow.
- Profound impacts to ecosystem and species, including changes in the timing of life events, shifts in range, and community abundance shifts. Depending on the timing and interaction of these impacts, they can be catastrophic.
- A 200 to 400 percent increase in the number of heat wave days in major urban centers.
- An increase in the number of days meteorologically conducive to ozone (O₃) formation.
- A 55 percent increase in the expected risk of wildfires (Cayan et al. 2007).

³ IPCC, 2007: *Summary for Policymakers*, in CLIMATE CHANGE 2007: THE PHYSICAL SCIENCE BASIS, CONTRIBUTION OF WORKING GROUP I TO THE FOURTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE at 4 (Susan Solomon et al. eds., Cambridge Univ. Press 2007) at 2-3. “Very high confidence” is defined at “at least a 9 out of 10 chance of being correct.” *Id.* at 3 n.7.

The extent of future warming depends on if and how rapidly California and the rest of the world reduce greenhouse gas emissions. (Cayan, et al. 2007). Even under a low emissions scenario, which presumes a rapid shift from fossil fuels toward renewable energy, California is projected to experience a host of impacts by the end of this century, including 30 – 60 % loss of the Sierra snowpack, a 10 – 35% increase in the risk of wildfire, 1.5 times more critically dry years, and an increase in ozone formation, smog, and air quality related fatalities in the south coast air basin. (Cayan, et al. 2007). Under a higher emissions scenario, which assumes a business-as-usual approach, projected impacts to California are staggering, and include a 90% loss of the Sierra snowpack, 22-30 inches in sea level rise, and 4-6 times as many heat-related deaths. (*Id.*) Moreover, continued business-as-usual emissions may commit us to accelerated and uncontrollable climate feedbacks and impacts. (Hansen 2007). As noted by the California Climate Change Center, a collaborative of researchers assembled by the California Energy Commission, “[b]ecause most global warming emissions remain in the atmosphere for decades or centuries, the choices we make today greatly influence the climate our children and grandchildren inherit.” (Cayan et al 2007).

California has set greenhouse gas emission reduction targets in an effort to avoid the catastrophic impacts projected with higher emissions scenarios. AB 32 requires California to return to 1990 levels of greenhouse gas emissions by the year 2020. Health & Safety Code § 38550. Looking beyond 2020, Executive Order S-3-05 sets an emissions reduction target of 80 percent below 1990 levels by 2050. Exec. Order S-3-05. The emission reduction targets set by AB 32 and Executive Order S-3-05 are consistent with a trajectory that aims to stabilize atmospheric concentrations of greenhouse gases at approximately 450 ppm, a level at which climatologists estimate would provide a 50-50 chance of limiting global average temperature increases to 2°C from pre-industrial levels. (UNDP 2007, CARB 2008). A 2°C temperature increase is commonly identified “as a potential ‘tipping point’ for long-run catastrophic outcomes.” (*Id.*; Hansen 2008). Accordingly, “remaining within the 2°C threshold should be seen as a reasonable and prudent long term objective for avoiding dangerous climate change.” (UNDP 2007). However, based in part on recent rapid on-going climate changes and the realization that the Earth is already out of energy balance, scientists have now concluded that “[i]f humanity wishes to preserve a planet similar to that on which civilization developed, paleoclimate evidence and ongoing climate change suggest that CO₂ will need to be reduced from its current 385 ppm to at most 350 ppm.” (Hansen 2008).

B. Analyzing Global Warming Impacts Under CEQA

The State of California has further recognized CEQA’s role in addressing impacts from the greenhouse gas emissions generated by proposed projects. In August 2007, the State enacted Senate Bill 97, which requires the Governor’s Office of Planning and Research⁴ (“OPR”) to prepare guidelines “for the mitigation of greenhouse gas emissions or the effects of greenhouse

4 Through its State Clearinghouse Unit, OPR is charged with providing regulatory guidelines and technical assistance on land use planning and CEQA matters. See e.g. Pub. Res. Code § 21083, 21159.9.

gas emissions *as required by* [CEQA], including, but not limited to, effects associated with transportation or energy consumption.” SB 97 (2007), codified as Pub. Res. Code § 21083.05 (emphasis added.) SB 97 “confirm[s] that GHG emissions are a significant adverse effect under” CEQA.

To facilitate the analysis of global warming impacts under CEQA, OPR issued a Technical Advisory calling for lead agencies to first “make a good-faith effort, based on available information, to calculate, model, or estimate the amount of CO₂ and other GHG emissions from a project.” (OPR 2008). In order to perform the good faith analysis under CEQA the lead agency must include “emissions associated with vehicular traffic, energy consumption, water usage and construction activities.” (OPR 2008). Once the total emissions have been calculated the lead agency must determine whether these emissions constitute a significant impact. (OPR 2008). Consistent with the CEQA Guidelines, the Technical Advisory also noted that “climate change is ultimately a cumulative impact.”

Climate change is the classic example of a cumulative effects problem; emissions from numerous sources combine to create the most pressing environmental and societal problem of our time. *Ctr. for Biological Diversity v. Nat’l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1217 (9th Cir. 2008); (“the impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct.”); *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 720 (“Perhaps the best example [of a cumulative impact] is air pollution, where thousands of relatively small sources of pollution cause serious a serious environmental health problem.”); *Los Angeles Unified School Dist. v. City of Los Angeles* (1997) 58 Cal.App.4th 1019, 1025 (impact sources may “appear insignificant when considered individually, but assume threatening dimensions when considered collectively with other sources with which they interact”).

The California Air Pollution Control Officers Association has also issued a “CEQA & Climate Change” white paper intended to serve as a resource to assist lead agencies in analyzing greenhouse gas impacts under CEQA. (CAPCOA 2008). CAPCOA is an association of air pollution control officers representing all thirty-five local air quality agencies and air districts throughout California. Its CEQA & Climate Change document was reviewed by air quality specialists from numerous air districts as well at the Air Resources Board. Noting that “the absence of an adopted threshold does not relieve the agency from the obligation to determine significance”, CAPCOA explored various potential approaches to determining significance and then evaluated the effectiveness of each of these approaches. (CAPCOA 2008). In evaluating the effectiveness of its proposed approaches, CAPCOA determined that only a threshold of zero or a threshold of 900 tons of CO₂ equivalent (“CO₂ eq.”)⁵ emissions had a “high” GHG emission reduction effectiveness and “high” consistency with the emission reduction targets set

5 Carbon dioxide equivalents (CO₂ eq.) provide a universal standard of measurement against which the impacts of releasing different greenhouse gases can be evaluated because different greenhouse gases have different Global Warming Potential (GWP), the relative impact on global warming per volume of gas. As the base unit, carbon dioxide’s numeric value is 1.0 while other more potent greenhouse gases have a higher numeric GWP value.

forth in AB 32 and Executive Order S-3-05. (CAPCOA 2008). Other methods, such as a 28-33% reduction from project business-as-usual emissions, had “low” GHG emission reduction effectiveness and consistency with emission reduction targets. (CAPCOA 2008).

In developing interim significance thresholds to determine the significance of greenhouse gases the California Air Resources Board has also acknowledged that lead agencies are “obligated to determine whether a project’s climate change-related effects may be significant [] and to impose feasible mitigation to substantially lessen any significant effects.” (CARB 2008). CARB recognized that it is critical to estimate and minimize emissions from all CEQA projects because “the collective greenhouse gas emissions from the industrial, residential and commercial sectors, together with the transportation sector, represent approximately 80% of the statewide greenhouse gas emissions inventory in 2004.” (CARB 2008). Because of the cumulative impacts of greenhouse gas emissions a threshold trending towards zero is most appropriate. However, any “non-zero threshold must be sufficiently stringent to make substantial contributions to reducing the State’s GHG emissions peak, to causing that peak to occur sooner, and to putting California on track to meet its interim (2020) and long-term (2050) emissions reduction targets.” (CARB 2008). Furthermore, CARB emphasized the need for a rigorous performance based measures to determine significance. (CARB 2008).

C. The EIR/EIS Must Include a Full Inventory and Analysis of the Project’s Projected Global Warming Pollution

The first step in determining a project’s global warming pollution impact is to complete a full inventory of all emissions sources that contribute to global warming. In conducting such an inventory, all phases of the proposed project must be considered. *See* 14 Cal. Code Regs. § 15126. The greenhouse gas inventory for a project must include a complete analysis of all of a project’s substantial sources of greenhouse gas emissions, from building materials and construction emissions to operational energy use, vehicle trips, water supply and waste disposal. Importantly, the California Office of Planning and Research—the state agency charged with oversight of CEQA documents and development of CEQA guidelines—has also stated that “lead agencies should make a good-faith effort, based on available information, to calculate, model, or estimate the amount of CO₂ and other GHG emissions from a project, including the emissions associated with vehicular traffic, energy consumption, water usage and construction activities.” (OPR 2008). Contrary to OPR Guidance, the EIR fails to quantify emissions from many of these sources.

A greenhouse gas inventory for the project must include the project’s direct and indirect greenhouse gas emissions. *See* 14 Cal. Code Regs § 15358(a)(1) (Indirect or secondary effects may include effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems.). Consequently, a complete inventory of a project’s emissions should include, at minimum, an estimate of emissions from the following:

- Fugitive emissions of greenhouses gases, such as methane, from the proposed project;

- Emissions during construction from vehicles and machinery;
- Manufacturing and transport of building materials;
- Electricity generation and transmission for the heating, cooling, lighting, and other energy demands of the project;
- Water supply and transportation to the project;
- Vehicle trips and transportation emissions generated by the project;
- Black carbon emissions resulting from the Project;
- Wastewater and solid waste storage or disposal, including transport where applicable; and
- Outsourced activities and contracting.

Methodologies are readily available to inventory the emissions from the proposed project. In its white paper, CEQA & Climate Change, Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act (Jan. 2008), the California Air Pollution Control Officers Association (CAPCOA) sets forth methodologies for analyzing greenhouse gas pollution (CAPCOA 2008) (See Table 1. CEQA and Greenhouse Gas Emissions Methodologies). In its Guidance, OPR also provides references to methodologies to quantify greenhouse gas emissions. In addition to the methodologies set forth by CAPCOA and OPR, ICLEI's Clean Air/Climate Protection (CACP) software allows cities to calculate emissions reductions, track and quantify emission outputs, and develop emissions scenarios to inform the planning process.⁶ As noted in the ICLEI Climate Action Handbook, "Expertise in climate science is not necessary" to conduct an emissions inventory and compare this inventory against a forecast year (ICLEI).⁷ "A wide range of government staff members, from public works to environment and facilities departments, can conduct an inventory" (ICLEI). ICLEI provides technical assistance and training to local government using the CACP software.

6 ICLEI's Clean Air/Climate Protection software is available at <http://www.cacpsoftware.org/> ICLEI-Local Governments for Sustainability is an international association of more than 650 local governments. Cities, counties, towns and villages around the world are members of ICLEI. Since 1993, ICLEI has grown from a handful of local governments participating in a pilot project to more than 300 who are providing national leadership on climate protection and sustainable development. ICLEI's mission is to improve the global environment through local action. On the issue of global warming, for example, ICLEI provides resources, tools, peer networking, best practices, and technical assistance to help local governments measure and reduce greenhouse gas emissions in their communities.

7 Indeed, the amount from sources such as vehicle trips, electricity, and natural gas use can be readily calculated using standard emissions factors. For example, burning one gallon of gasoline in a car produces 8.87 kg CO₂. Each cubic meter of natural gas burned for heat produces 1.93 kg CO₂. And the average kWh of electricity purchased in California required .61 lbs of CO₂ to produce. These and other emissions factors are available online at http://www.wri.org/climate/pubs_description.cfm?pid=3756.

D. As Part of its Inventory of Global Warming Pollution, the EIR Must Also Analyze Black Carbon Emissions Resulting from the Project

(1) Background: Black Carbon Has a Significant Impact on Global Warming and as a Short-Lived Pollutant, Mitigation Can Provide Immediate Significant Climate and Health Benefits

As part of its analysis of global warming impacts, the EIR/EIS must also address black carbon, an important short-lived pollutant that contributes to global and regional warming. Black carbon is produced by incomplete combustion and is the black component of soot. Although combustion produces a mixture of black carbon and organic carbon, the proportion of black carbon produced by burning fossil fuels, such as diesel, is much greater than that produced by burning biomass.

Black carbon heats the atmosphere through a variety of mechanisms. First, it is highly efficient at absorbing solar radiation and in turn heating the surrounding atmosphere. Second, atmospheric black carbon absorbs reflected radiation from the surface. Third, when black carbon lands on snow and ice, it reduces the reflectivity of the white surface which causes increased atmospheric warming as well as accelerates the rate of snow and ice melt. Fourth, it evaporates low clouds. Notably, black carbon is often complexed with other aerosols such as sulfates, which greatly increases its heating potential. (Ramanathan & Carmichael 2008; Jacobson 2001).

Due to black carbon's short atmospheric life span and high global warming potential, decreasing black carbon emissions offers an opportunity to mitigate the effects of global warming trends in the short term. (Ramanathan & Carmichael 2008). Black carbon is considered a 'short-lived pollutant' (SLP) because it remains in the atmosphere for only about a week in contrast to carbon dioxide, which remains in the atmosphere for over 100 years. Furthermore, the global warming potential of black carbon is approximately 760 times greater than that of carbon dioxide over 100 years (Reddy & Boucher 2007) and approximately 2200 times greater over 20 years. (Bond & Sun 2005). It is estimated that black carbon is the second greatest contributor to global warming behind carbon dioxide. (Ramanathan & Carmichael 2008).

Unlike traditional greenhouse gases, which become relatively uniformly distributed and mixed throughout the Earth's atmosphere, black carbon exerts a regional influence. The impacts of black carbon on a regional level include both atmospheric heating, as discussed above, and hydrological changes. Hydrological changes occur due to alterations in cloud formation and heat gradients. (Id.). For instance, aerosol pollution has been linked to decreases in the summer monsoon season in tropical areas as well as the drought in the Sahel region of Africa. (Id.). California is an area of particular concern because of the drought-fire cycle. The more drought conditions prevail, the more forest fires burn, and the forest fires in turn emit massive quantities of black and organic carbon. The release of these aerosols intensifies the drought effect.

Another impact of black carbon is accelerated snowmelt; for instance, black carbon is likely contributing to the retreat of Himalayan glaciers and the resulting water shortage in areas

of Asia. (Id.). When black carbon settles on snow, it makes the snow darker so that it absorbs more solar radiation. This directly leads to snow melt. In addition, local atmospheric heating due to black carbon increases the melting rate. These same effects may well be operating on the Sierra Nevada, which would reduce water availability throughout California at crucial times of the year. These localized impacts could also be contributing to a decreased snow pack and earlier snow melt for the San Gabriel, San Bernardino, and San Jacinto mountains.

Black carbon is also detrimental to human health. Black carbon has been linked to a variety of circulatory diseases. One study found an increased mortality rate was correlated with exposure to black carbon. (Maynard 2007). The same is true for heart attacks. (Tonne 2007). Another study found that residential black carbon exposure was associated with increased rates of infant mortality due to pneumonia, increased chronic bronchitis, and increased blood pressure. (Schwartz 2007).

In developed countries, diesel burning is the main source of black carbon. Diesel emissions include a number of compounds such as sulfur oxides, nitrogen oxides, hydrocarbons, carbon monoxide, and particulate matter. Diesel particulate matter is approximately 75% elemental carbon. (EPA 2002 Diesel Health Assessment). The proposed project will require the use of diesel-powered heavy duty trucks, construction equipment, and yard/warehouse equipment. Thus, it is crucial that black carbon be addressed as part of the environmental review for the Project.

(2) Analyzing Particulate Matter is Insufficient to Address Black Carbon

Particulate matter (PM) refers to the particles that make up atmospheric aerosols. The primary constituents of PM are sulfates, nitrates, and carbon compounds. Sulfates and nitrates form in the atmosphere from the chemical reaction of sulfur and nitrogen dioxides. These may often be present as ammonium sulfate or nitrate salts. Carbon compounds may be directly emitted, e.g. black carbon emitted from combustion, or may form in the atmosphere from other organic vapors, e.g. oxidation of volatile organic compounds.

Because PM can be reduced through mitigation of other constituents of PM than black carbon, it is essential that black carbon emission reduction strategies be considered independently from PM reductions. The proportions of the constituents of PM vary over time and by location. According to a recent series of surveys conducted at various U.S. cities under the EPA's "Supersite" program, black carbon was often only about 10% of total measured PM_{2.5}.⁸

In contrast to total PM_{2.5}, diesel PM is composed largely of black carbon. Nonetheless, some diesel PM reduction strategies do not affect black carbon. For instance, diesel oxidation catalysts can reduce diesel PM emissions as a whole by approximately 20 to 40%, yet they do not decrease black carbon emissions. (Walker 2004). In addition, while low-sulfur fuel will reduce sulfate emissions, in and of itself low-sulfur fuel will not reduce black carbon. Low-sulfur fuel is important because it *allows* for better technology to reduce black carbon. (See, e.g.

⁸ For an overview of the program and initial results see <http://www.epa.gov/ttn/amtic/supersites.html>

69 Fed. Reg. 38957, 38995 (June 29, 2004)). Yet those reductions can only occur once the technology has been implemented.

(3) Methods Are Available to Specifically Quantify Black Carbon Emissions from the Project

Like greenhouse gases, black carbon emissions from various types of engines and activities can be estimated through numerical calculations. (Bond 2004). Thus, there is no reason why black carbon can reasonably be omitted from these estimates.

The estimated black carbon emissions from the project can be inventoried similarly to other greenhouse gas emissions:

- Estimate the mass of diesel fuel consumed by each type of diesel engine, e.g. ship, machinery, truck, construction equipment, and locomotive.
- Calculate a black carbon emission factor (EF) using reference values available in the literature. For instance, Bond and colleagues provide an equation for “EF_{BC}” from various types of diesel engines that takes into account 4 different factors.⁹
- Multiply the emission factor times the mass of diesel (in kilograms) used for each engine type. This will provide the grams of black carbon emitted by that engine type.
- Sum all black carbon emissions from each engine category to obtain total black carbon emissions from the project.

After obtaining the total black carbon emissions from the project, the relative global warming impact of the emissions can be compared to other global warming pollutants. Carbon dioxide-equivalent values can be obtained by multiplying total black carbon emissions (in kilograms) from the project by the global warming potential (GWP) for black carbon. Although there is some variation in estimated GWP values, representative black carbon GWP values are: 760 over 100 years¹⁰ or 2200 over 20 years (Bond & Sun 2005).

The EIR/EIS fails to properly calculate the total greenhouse gas pollution resulting from the Project by omitting emissions related to construction, black carbon, manufacturing and transport of building materials, water use, and total vehicle trips. The EIR/EIS makes the ridiculous assertion that “it is not possible to estimate GHG emissions that would be generated by the materials and equipment” needed to complete the project. EIR/EIS at 4-46. This is patently false. As discussed above there are a wide array of models and methodologies to determine the emissions generated from construction machinery such as URBEMIS and EMFAC. (OPR 2008). The EIR/EIS is not permitted to exclude a crucial component of the project in such a fashion, failing to disclosure such information to the public or disclosing construction impacts and emissions at another phase in a piecemeal fashion. The EIR/EIS also fails to analyze the impacts of black carbon emissions during both the construction and operation phase of the project. The Project will result in a large increase in diesel exhaust from the

⁹ See Bond et al. 2004 at 4 and Table 7.

¹⁰ The combined global average direct (480) and indirect (281) GWP for black carbon as reported in Reddy & Boucher (2007).

existing conditions, which is a major source of black carbon. The locally preferred alternative will require the cut and fill of millions of cubic yards of earth material that will require thousands of hours of operation of heavy duty construction equipment. Nowhere in the EIR/EIS is any quantified analysis performed to determine how these significant impacts could be avoided, reduced, or mitigated.

The EIR/EIS also fails to account for the emissions associated with manufacturing and transport of building materials for the project. The lifecycle emissions of the products used to produce the project should be analyzed in order to determine the full carbon footprint. For example, construction of a 32 mile six to eight lane freeway will take thousands of cubic yards of construction material including concrete. Cement and concrete manufacture is extremely energy intensive producing a large amount of greenhouse gas emissions. The manufacture of concrete accounts for roughly 3% of California's greenhouse gas emissions. (Masanet 2005). In order to determine ways to reduce greenhouse gas emissions from concrete the Lawrence Berkeley National Laboratory and others have developed methods for analyzing the lifecycle emissions of concrete manufacture. (Manaset 2005, Flower 2007). These numbers must be integrated into the greenhouse gas emissions significance determination in order to perform the good faith analysis required under CEQA.

The EIR/EIS also fails to conduct any analysis or quantification of the greenhouse gas emissions associated with water use related to the project. In order to mitigate the PM pollution from the Project during construction the contractors are required to dampen the graded and exposed material to reduce dust that worsens the existing air quality violations. (MCP Air Quality Analysis at 78). Transport of water throughout the state is extremely energy intensive. The water sector is the largest consumer of energy in California, estimated to account for 19 percent of total electricity and 32 percent of total natural gas consumed in the state. (CEC 2005). In the present case energy will be used to transport water needed for the project via pumps, to move water to southern California from the San Francisco Delta and Colorado River, and tanker trucks to transport and spray water on the project area.

Finally, the EIR/EIS neglects project related trips for the transportation of workers and materials to the construction phase of the project. Even the improperly inflated Project baseline does not take into account trips to and from the project site for the over four years that the project will be under construction.

It is incumbent on the City "disclose all it can" about project impacts and educate itself on methodologies that are available to measure project emissions. *Berkeley Keep Jets Over the Bay Comm. v. Board of Port Comm'rs* ("Berkeley Jets"), 91 Cal. App. 4th 1344, 1370 (2001). Without a complete inventory, the EIR/EIS cannot adequately inform the public and decision-makers about the Project's impacts. Similarly, without a complete inventory and analysis of greenhouse gas emissions that will result from the project, there is simply no way that the EIR/EIS can then adequately discuss avoidance and mitigation measures to reduce those impacts.

E. The EIR/EIS Relies Upon an Improper Baseline to Downplay Significant Environmental Impacts.

As a general matter when analyzing impacts to air quality, greenhouse gas emissions, traffic, biological resources, and other environmental categories the EIR's analysis of potentially significant environmental impacts is flawed because the EIR/EIS relies on an improper baseline. Failure to use a proper baseline results in the oversimplification and unjustified dismissal of significant impacts.

It is well established that the purpose of an EIR is to provide public agency decision-makers and members of the public with an informational document that explains potentially significant environmental impacts and feasible mitigation measures. Pub. Res. Code § 21002.1; Guidelines § 15121; *Carmel Valley View, Ltd. v. Board of Supervisors* (1976) 58 Cal.App.3d 817, 821-822. In order to be useful, however, the EIR must accurately identify what significant impacts exist. “[T]he significance of a project’s impacts can be ascertained only if the agency first establishes the physical conditions against which those impacts are to be measured.” Michael H. Remy et al., *Guide to CEQA California Environmental Quality Act*, 198 (11th ed., Solano Press 2007). The idea is to compare “what will happen if the project is built with what will happen if the site is left alone.” *Woodward Park Homeowners Assn, Inc. v. City of Fresno* (2007) 58 Cal.Rptr.3d 102, 119 (“*Woodward Park*”).

The rule for what constitutes an environmental baseline is set forth in Guidelines section 15125(a), which provides that:

An EIR must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, from both a local and regional perspective. This environmental setting will normally constitute the baseline physical conditions by which a Lead Agency determines whether an impact is significant.

Even when an EIR relies upon an adopted plan the EIR must still analyze the existing physical conditions as they exist at the time the Notice of Preparation is published. Guidelines 15125(a).

Applying this rule to projects involving the development of raw land or expansion of existing facilities it follows that significant impacts are determined by comparing the status of the land with the project against the status of the land as it is. An environmental impact report is inadequate as an informational document if it fails to analyze consistently and coherently the impacts of a project relative to leaving the land in its existing undeveloped physical condition. *Woodward Park*, 58 Cal.Rptr.3d at 122. Comparing a proposed project to the build out of an existing plan leads to an EIR never presenting a clear or complete description of the project’s impacts. *Id.* at 121-122. “CEQA nowhere calls for evaluation of [environmental] impacts of a proposed project on an existing general plan; it concerns itself with the impacts of the project on the environment, defined as the existing physical conditions in the affected area.” *Environmental Planning and Information Council v. County of El Dorado* (1982) 131

The EIR/EIS for the MCP is fundamentally flawed because it relies upon a comparison of the “2035 No build conditions” in determining whether global warming impacts and energy consumption are significant. MCP DEIR/EIS at 4-44, 3.16-4, 3-16-11. This improperly masks the massive increase in emissions that would result from a comparison with the existing conditions on the ground. The EIR/EIS is not permitted to choose a date 27 years into the future in order to fish for a transportation calculation that improperly masks the significant increase in emissions that would result from the construction of a new six to eight lane freeway. One example of the inflated and contradictory determination that fuel consumption will increase in the MCP study area, but remains equivalent for the SCAG study area. (EIR/EIS at 3.16-4). This improper conclusion demonstrates the fundamental problem of relying upon the future conditions of the completed Project as a baseline. Additionally, construction will cause a significant spike in fuel usage and emissions during the construction phase that is not addressed in the EIR. The EIR/EIS must determine significance in relation to an analysis of the physical conditions in the project area as they exist at the time of the notice of preparation. Guidelines 15125(a) & (e). The EIR/EIS’s improper baseline dooms the environmental review throughout the document.

The EIR/EIS only makes a cursory reference to the induced traffic that would result from the Project. (EIR/EIS at 4-44). The effects of induced travel on traffic increases throughout the United States particularly impact southern California. Southern California, including San Bernardino and Riverside counties, has continually attempted to build its way out of highway congestion. San Bernardino and Riverside County were estimated to have induced travel increases between 14-62%. (Noland 2000). Other studies from California have supported the concept that an increase in available lanes will induce additional miles traveled by vehicles. (Hansen 1997). These factors were not addressed within the EIR/EIS, and should be properly analyzed. The project will result in both types of induced traffic resulting in a significant increase in traffic related to the project and should be fully addressed in an EIREIS.

It is also unclear to what degree the EIR/EIS’s inflated baseline relies upon the MCP itself. The traffic data relied upon in employing the baseline relies upon traffic data from the Southern California Association of Governments (SCAG) region. The EIR/EIS must fully disclose to what degree the SCAG traffic forecasts anticipate the construction of additional traffic infrastructure including the MCP. The EIR/EIS cannot create a self fulfilling prophecy that employs a baseline that actually incorporates the project itself to mask project impacts.

F. The EIR Must Analyze and Adopt All Feasible Mitigation Measures and Alternatives to Reduce the Project’s Significant Adverse Impacts including Global Warming

The EIR must analyze and adopt all feasible mitigation measures and alternatives to reduce this cumulatively significant impact of greenhouse gas emissions. CEQA requires agencies to adopt feasible mitigation measures or feasible environmentally superior alternatives in order to substantially lessen or avoid the otherwise significant environmental impacts of a

proposed project. Pub. Res. Code §§21002, 21081(a); CEQA Guidelines §§ 15002(a)(3), 15021(a)(2), 15091(a)(1). The EIR's cursory analysis of mitigation and alternatives violates CEQA.

CEQA requires that agencies “mitigate or avoid the significant effects on the environment of projects that it carries out or approves whenever it is feasible to do so.” Pub. Res. Code § 21002.1(b). Mitigation of a project's significant impacts is one of the “most important” functions of CEQA. *Sierra Club v. Gilroy City Council*, 222 Cal.App.3d 30, 41 (1990). Therefore, it is the “policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures which will avoid or substantially lessen the significant environmental effects of such projects.” Pub. Res. Code § 21002. Importantly, mitigation measures must be “fully enforceable through permit conditions, agreements, or other measures” so “that feasible mitigation measures will actually be implemented as a condition of development.” *Federation of Hillside & Canyon Ass'ns v. City of Los Angeles*, 83 Cal.App.4th 1252, 1261 (2000).

To the extent that the project moves forward as planned, there are many mitigation measures the City can consider as described in Appendix B: CAPCOA 2008. California Air Pollution Control Officers Association, CEQA & Climate Change, Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act, January 2008. Appendix B Mitigation Measure Summary, and Appendix C: California Office of the Attorney General, The California Environmental Quality Act Addressing Global Warming Impacts at the Local Agency Level, Updated 12/9/08. This is not an exhaustive list and the EIR/EIS should explore these and all other feasible mitigation measures that will reduce the project's greenhouse gas emissions.

II. The EIR/EIS Should be Recirculated for Review and Public Comment

A lead agency must recirculate an EIR for further public comment under any of four circumstances:

- (1) When the new information shows a new, substantial environmental impact resulting either from the project or from a mitigation measure;
- (2) When the new information shows a substantial increase in the severity of an environmental impact, except that recirculation would not be required if mitigation that reduces the impact to insignificance is adopted;
- (3) When the new information shows a feasible alternative or mitigation measure that clearly would lessen the environmental impacts of a project and the project proponent declines to adopt the mitigation measure; or
- (4) When the draft EIR was “so fundamentally and basically inadequate and conclusory in nature” that public comment on the draft EIR was essentially meaningless.

CEQA Guidelines §15088.5.

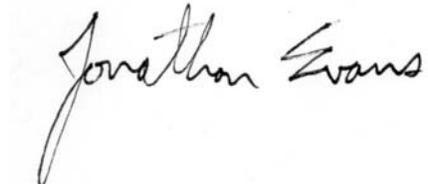
Based on the comments above, it is clear that the EIR must be re-drafted and recirculated. Conditions (1-3) above will be met by meaningful and adequate discussion of the project's

impacts to the following: biological resources which were excluded from review, new information on impacts to air quality and greenhouse gases, and an environmentally superior alternative that was ignored. Failure to address these impacts is inadequate and requires further analysis and recirculation. The combined effect of these omissions makes it clear that the fourth condition has also been met.

III. Conclusion

The Center encourages the County to deny the proposed project and adopt the no action alternative. Thank you for the opportunity to submit comments on the Mid County Parkway. Please do not hesitate to contact the Center with any questions at the number listed above. We look forward to reviewing any further environmental documentation on this project. Please place us on the notice list for all future project meetings and notices.

Sincerely,



Jonathan Evans, Staff Attorney, Center for Biological Diversity



Ilene Anderson, Biologist and Public Lands Deserts Director, Center for Biological Diversity

cc (without appendices & references):

Riverside County Supervisor Bob Buster
Central Administration Center
4080 Lemon Street
5th Floor
Riverside, CA 92502-1527
district1@rcbos.org

Supervisor John F. Tavaglione
County Administrative Center
4080 Lemon Street - 5th Floor
Riverside, California 92501
(951) 955-1020
district2@rcbos.org

Supervisor Jeff Stone
County Administrative Center
4080 Lemon Street - 5th Floor
Riverside, California 92501
district3@rcbos.org

Supervisor Marion Ashley
County Administrative Center
4080 Lemon Street - 5th Floor
Riverside, California 92501
district5@rcbos.org

Mr. Tay Dam
Federal Highway Administration
650 Capital Mall, Suite 4-100
Sacramento, CA. 95814

Doreen Stadtlander
Wildlife Biologist
U.S. Fish and Wildlife Service
Carlsbad Office
6010 Hidden Valley Road
Carlsbad, CA 92011

Leslie MacNair
Wildlife Biologist
California Department of Fish and Game
4775 Bird Farm Road
Chino Hills, CA 91709

Nassim Elias
Project Manager
Caltrans, District 8
464 West 4th St., 6th floor,
San Bernardino, CA 92401

APPENDICES

- Appendix A: Supplemental Notice of Preparation for the EIS/EIR for the Mid-County Parkway Project, SCH #2004111103 from Jonathan Evans to Cathy Bechtel, August 30, 2007.
- Appendix B: CAPCOA 2008. California Air Pollution Control Officers Association, CEQA & Climate Change, Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act, January 2008. Appendix B Mitigation Measure Summary.
- Appendix C: California Office of the Attorney General, The California Environmental Quality Act Addressing Global Warming Impacts at the Local Agency Level, Updated 12/9/08.

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APPENDIX A



*protecting and restoring natural ecosystems and imperiled species through
science, education, policy, and environmental law*

VIA ELECTRONIC MAIL, FAX, AND US MAIL

August 30, 2007

Cathy Bechtel
Director of Transportation Planning and Policy Development
Riverside County Transportation Commission
4080 Lemon St. 8th Floor
Riverside, CA 92502-2208
Ph: (951) 787-7141
Fax: (951) 787-7920
CBECHTEL@rctc.org

Re: Supplemental Notice of Preparation for the EIS/EIR for the Mid-County Parkway Project, SCH #2004111103

Dear Ms. Bechtel,

These comments are submitted on behalf of the Center for Biological Diversity (“Center”) on the Supplemental Notice of Preparation (“NOP”) of an Environmental Impact Statement and Environmental Impact Report (“EIS/EIR”) for the Mid-County Parkway Project. The EIS/EIR for the Mid-County Parkway must ensure that rigorous environmental review occurs prior to the project approval. The Draft EIR/EIS must fully analyze the project’s impacts to sensitive species, local and regional habitat conservation plans, greenhouse gas emissions and global warming, and fully analyze all reasonable and prudent alternatives for adoption.

The Center for Biological Diversity (“the Center”) is a non-profit, public interest environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center has over 35,000 members throughout California and the United States, including Riverside County. The Center’s members and staff seek to protect the native species and habitats of western Riverside County.

The Center is extremely concerned about Riverside County’s plans to expand the existing Ramona Expressway and Cajalco Road into a six to eight-lane freeway. The location of the parkway through recognized Core Reserves and linkages under the Western Riverside Multiple Species Habitat Conservation Plan (“WRCMSHCP”) must be fully analyzed within the Draft EIR and jeopardizes the long term success of the WRCMSHCP and other local HCPs. The parkway jeopardizes reserves that were established as mitigation for take of sensitive species in other areas of the WRCMSHCP area. Compromising the biotic integrity of these reserves would violate the stipulations of prior plans.

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The Project's consistency with and impacts to a host of local habitat conservation plans must be discussed in the Draft EIR/EIS. The WRC MSHCP Consistency Determination, Concurrence on the Determination of Biologically Equivalent or Superior Preservation, amendment to the El Sobrante Landfill Multiple Species Habitat Conservation Plan, and Consistency Determination with the Stephens' Kangaroo Rat Reserve HCP must occur early within the process before the Draft EIR is circulated to adequately inform the public and decision makers of the full environmental costs associated with this Project. Waiting until after the Draft EIR/EIS has been circulated to determine these environmental impacts and consistency with regional plans will not provide the public or decision makers with adequate notice to respond to these multiple decisions as it relates to this project. The consistency determinations referenced above in this paragraph must be discussed in the Draft EIR/EIS both as individual analyses and as cumulative impacts resulting from this Project.

The environmental impacts of the Mid-County Parkway Project will be severe. The major impacts include but are not limited to: direct and indirect impacts to native species and to adjacent biological reserves in the region; impacts to air quality; and the project's contribution to population growth in the region. Following are specific issues the Center believes must be addressed in the EIS/EIR under the California Environmental Quality Act ("CEQA") and the National Environmental Policy Act ("NEPA").

National Environmental Policy Act

NEPA's fundamental purposes are to guarantee that: (1) agencies take a "hard look" at the environmental consequences of their actions before these actions occur; and (2) agencies make the relevant information available to the public so that it may also play a role in both the decision-making process and the implementation of that decision. *See, e.g.* 40 C.F.R. § 1500.1. To assure transparency and thoroughness, agencies also must "to the fullest extent possible...[e]ncourage and facilitate public involvement" in decision-making. 40 C.F.R. § 1500.2(d). The EIS must also "[r]igorously explore and objectively evaluate all reasonable alternatives" to a proposed action. 40 C.F.R. § 1502.14(a). Specifically, NEPA requires that the preparing agency "[r]igorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated...[and d]evote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits." 40 C.F.R. § 1502.14.

California Environmental Quality Act

An EIR is a detailed statement, prepared under CEQA, describing and analyzing the significant environmental effects of a project and discussing ways to mitigate or avoid those effects. 14 Cal Code regs § 15362. The purposes of an EIR are to provide decision-making bodies and the public with detailed information about the effect a proposed project is likely to have on the environment, to list ways in which the significant effects of a project might be minimized, and to indicate alternatives to the project. Pub. Res. Code § 21061. The following

purposes have also been enumerated by California Courts: an EIR should provide disclosure of all relevant facts, should provide a balancing mechanism whereby decision makers and the public can weigh the costs and benefits of a project, should provide a means for public participation, should provide increased public awareness of environmental issues, should provide for agency accountability, and should provide substantive environmental protection.

A. The EIS/EIR Must Consider Direct and Cumulative Impacts to Threatened, Endangered, and Sensitive Species and Movement

The EIS/EIR must address the direct and cumulative impacts from both construction and operation of the proposed Mid-County Parkway Project to threatened, endangered, and sensitive species within the project site and in the surrounding areas (including ecological reserves). Enclosed are exhibits from the California Natural Diversity Database that detail the protected species found within the Project area (See attached). Impacts to the protected species that are known to exist within the project area must be analyzed. The EIS/EIR must fully disclose and analyze impacts to any listed, candidate, or sensitive species, and discuss alternatives and enforceable mitigation measures to avoid, reduce, and mitigate impacts to the species. The parkway threatens important populations of Stephen's kangaroo rats, California gnatcatchers, and other federally and state protected species, which must be analyzed. The EIS/EIR must also fully disclose and analyze impacts to sensitive vegetation types including Riversidean coastal sage scrub, vernal pools, riparian or riverine habitat, and woodlands.

The EIS/EIR must include an analysis of the direct impacts of lighting, roads, pollution, noise, and other edge effects from the enlarged road on biological resources within, adjacent to, and in the vicinity of the project site. The EIS/EIR must also analyze the effects of the project on wildlife movement between core reserves and other habitat areas. In addition, the EIR must include a detailed analysis of the cumulative impacts of this project together with other completed, current, and reasonably foreseeable development projects in the area including, but not limited to, the Villages at Lakeview, Gavilan Hills, Toscana, Orange-Riverside Intercounty Tunnel. If the direct and indirect impacts of the project on biological diversity cannot be reduced to less than significant, the Center urges the County to deny the project and adopt Alternative 1B.

1. Western Riverside County Multiple Species Habitat Conservation Plan

The Project's impacts on the WRCMSHCP must be fully disclosed and analyzed in the Draft EIR/EIS. The Project has the potential to directly and indirectly impact a broad range of important conservation areas under the WRCMSHCP including, but not limited to, the following: Proposed Constrained linkage 4, 20, 21; Existing Constrained Linkage C; Linkage 3, 11; Proposed Extension of Existing Core 2, 4; Proposed Noncontiguous Habitat Block 4, 5, 6; Proposed Core 3; and Existing Core C, H. The direct, indirect and cumulative impacts to these conservation areas, how the Project's impacts to these areas will impact species covered under the plan, and the long term viability of the WRCMSHCP after severe impacts to these conservation areas must be fully addressed.

Of particular concern is the Project's impacts on at least four constrained linkages because of the tenuous nature of these linkages.

Notably, 60 percent of the linkages are described as "constrained linkages" indicating that their design may be particularly narrow, encounter a road or highway crossing(s), incorporate disturbed, developed or agricultural land uses, involve the use of culverts or be restricted to a modified stream channel, and/or are adjoined by land uses that will likely impair their suitability for supporting movement of some or all of the target species. Given the narrowness of many of the linkages, their high edge to interior ratios, and the constraints that many of them face such as developed land uses and roads, functional connectivity between habitat areas will necessitate using the high end of the conservation Criteria ranges targeted for cells or cell groupings (e.g., Proposed Constrained Linkages 1, 2, 14 and 19). Additionally, large linkage distances between several core areas (e.g., Alberhill to Antelope Valley, Lake Mathews to Lake Perris, Santa Rosa Ecological Preserve to Santa Margarita Ecological Preserve) will necessitate conservation of suitable and diverse live-in habitat within the linkages in order to preserve functional connectivity among core areas for a number of target species.

(USFWS 2004 at 130). The long term impacts to these linkages must be addressed and whether at least 60% of the constrained linkages will be available for conservation if there are direct and indirect impacts resulting from this Project.

The Project also threatens to impact Public-Quasi Public land relied upon under the WRCMSHCP for conservation. Whether these Public-Quasi Public lands can effectively serve their conservation function to provide core areas or connectivity for species if the project is built must be discussed and analyzed. Further, the Draft EIR/EIS must disclose how the Project will facilitate migration and dispersal of species across six to eight lanes of traffic. The direct mortality, fragmentation of habitat, and edge effects of such disturbance will be severe.

2. Stephens' Kangaroo Rat and Stephens' Kangaroo Rat HCP

The Project threatens to impact core populations for the Stephens' Kangaroo Rat. The Lake Mathews-Estelle Mountain core reserve (approximately 4,264 occupied acres) population for the Stephens' Kangaroo Rat will be directly impacted by the Project. Over the last 20 years, permanent loss and severe fragmentation of habitat to urban development has emerged as a serious threat to the species (Price and Endo 1989; USFWS 1997). This Project will result in a recognized serious threat to the long term viability of the Stephens' kangaroo rat.

The Draft EIR/EIS must also fully disclose the Project's impacts on the role of the area as a core reserve for the Stephens' Kangaroo Rat Habitat Conservation Plan (SKRHCP). The cumulative impacts resulting from the Project and other impacts to the SKRHCP must be fully disclosed. Whether this will prohibit the Riverside County Habitat Conservation Authority from fully implementing the terms of the SKRHCP including full acquisition of habitat necessary to complete the requirements of the SKRHCP and connectivity between core reserves to fully preserve species viability must be addressed.

3. Motte Rimrock Reserve

The Project threatens to impact the Motte Rimrock Reserve, one of seven core reserves that harbor populations of the Stephens' kangaroo rat (SKR). The Motte Rimrock Reserve also plays an important role in protection of a host of other rare, threatened and endangered species as a component of the University of California Natural Reserve System. Direct, indirect, and cumulative impacts to the Motte Rimrock Reserve must be fully disclosed and analyzed.

B. The EIS/EIR Must Consider Direct and Cumulative Impacts to Air Quality

The southern California region (including the Los Angeles-Riverside-San Bernardino-Orange counties metropolitan area) ranks the worst in ozone pollution in the nation, largely due to vehicle exhaust. Recent scientific studies have found that children in the Inland Empire suffer high rates of permanent lung damage from vehicle pollutants. These potentially significant impacts must be discussed in the EIS/EIR, and avoidance measures and mitigations must be proposed to reduce this impact to less than significant. If this impact cannot be reduced to less than significant, the Center urges the County to deny this project.

C. The EIS/EIR Must Consider the Project's Cumulative and Growth-Inducing Impacts

The proposed project is located in a rural area that is of great importance to threatened, endangered, and sensitive plants and wildlife. The region already suffers from severe traffic and air quality problems. The project will contribute significantly to all these problems. The EIS/EIR must fully disclose and analyze the growth-inducing impacts of this project, and discuss alternatives and effective mitigation measures to avoid, reduce, and mitigate these impacts. The Draft EIR/EIS must also disclose the cumulative impacts of the Project in relation to foreseeable future transportation projects such as the Riverside-Orange Intercounty tunnel (See exhibits attached). The project serves to facilitate the future development of an expanded freeway system between Orange and Riverside County through the Cleveland National Forest. These impacts were not mentioned in the NOP for the project.

D. The EIR/EIS Must Address Feasible and Prudent Alternatives to the MCP

Alternatives to the Project must be fully explored and the RCTC must demonstrate there are no feasible and prudent alternatives to the Project. The Supplemental NOP improperly drops reasonable and prudent alternatives to the Project without demonstrating the necessary findings under the Department of Transportation Act and Federal-Aid Highway Act. Additionally, the Draft EIR/EIS must objectively analyze a reasonable range of alternatives. The NOP improperly narrows the range of alternatives contrary to the requirements of NEPA and CEQA.

1. Reasonable and Prudent Alternatives to the MCP Must be Addressed

The Supplemental NOP improperly omits reasonable and prudent alternatives from the environmental review process. Both the Department of Transportation Act and the Federal-Aid

Highway Act provide that federally funded programs or projects cannot be approved that require the use of any public parkland unless (1) there is no feasible and prudent alternative to the use of such land, and (2) such program includes all possible planning to minimize harm to such park. 49 U.S.C.S. § 1653 (f); 23 U.S.C.S. § 138. *Citizens to Preserve Overton Park, Inc. v. Volpe*, 401 U.S. 402 (U.S. 1971). The language is a plain and explicit bar to the use of federal funds for construction of highways through parks--only the most unusual situations are exempted. *Id.*

The Project alternatives pass through regionally significant wildlife conservation areas south of Lake Matthews that are owned by public entities as parkland of regional significance. These areas are recognized as public-quasi public lands under the WRCMSHCP and are critical to the implementation of conservation under the WRCMSHCP. The RCTC and Federal Highway Administration must demonstrate there are no reasonable and prudent alternatives to the freeway alignment south of Lake Matthews through parkland. The Supplemental NOP improperly drops alternative alignments north of Lake Matthews without the necessary finding required under the Department of Transportation Act and the Federal-Aid Highway Act.

2. The EIR/EIS Must Analyze a Reasonable Range of Alternatives

The NOP for the project outlines seven potential Project Alternatives. The DEIS/EIR must objectively analyze all reasonable alternatives, not simply minor realignments of the same Project. NEPA stipulates that agencies "rigorously explore and objectively evaluate all reasonable alternatives" to the proposed project. NEPA documents must discuss alternatives to the proposed action and "provid[e] a clear basis for choice among options by the decisionmaker and the public." 40 C.F.R. 1502.14; see also 42 U.S.C. § 4332(2)(E); 40 C.F.R. 1507.2(d), 1508.9(b). The Council on Environmental Quality, which wrote the NEPA regulations, describes the alternatives requirement as the "heart" of the environmental impact statement. 40 C.F.R. 1502.14. The purpose of this requirement is to insist that no major federal project should be undertaken without intense consideration of other more ecologically sound courses of action, including the no action alternative or alternatives to the development of a six to eight lane freeway. "The existence of a viable but unexamined alternative renders an environmental impact statement inadequate." *Alaska Wilderness Recreation & Tourism v. Morrison*, 67 F.3d 723, 729 (9th Cir. 1995).

Furthermore, an EIR is required to describe a range of reasonable alternatives to the project, which would feasibly attain most of its basic objectives but would avoid or substantially lessen its significant effects. Cal Code Regs § 15126.6(a). The County has a substantive duty to adopt feasible, environmentally superior alternatives. Pub. Res. Code § 21002, Cal Code Regs §§ 15002(a)(3), 15021(a)(2). A lead agency cannot abdicate this duty unless substantial evidence supports a finding that the alternative is infeasible. *See, e.g., Citizens of Goleta Valley v. Board of Supervisors* (1988) 197 Cal.App.3d 1167, 1181.

The EIS/EIR must analyze and adopt environmentally superior project alternatives. Alternatives such as dedicated bus lanes and car pool lanes along the freeway alignments, alignments north of Lake Matthews to avoid environmentally sensitive areas, improving traffic and circulation along existing roadways such as Cajalco Road, and improving public

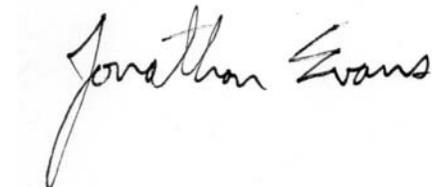
transportation between the communities of Perris, Hemet, and Corona must be rigorously explored and objectively analyzed. Analysis of the project alternatives mentioned in this paragraph will better inform the public and decision makers whether there are alternatives to a costly and environmentally destructive freeway alignment through parkland, and whether the Project meets the demands of improved circulation in Riverside County. Alternative mechanisms to move residents besides single occupancy vehicles along a six to eight lane freeway must be rigorously explored and analyzed.

E. The Draft EIR Must Analyze the Project's Greenhouse Gas Emissions

The Draft EIS/EIR must analyze the Project's greenhouse gas emissions and contribution to global warming. Curbing greenhouse gas emissions to limit the effects of climate change is one of the most urgent challenges of our time. Fortunately, CEQA sets forth a clear and mandatory process for the City to deal with the Project's greenhouse gas and global warming impacts. The Draft EIR/EIS must include a complete and adequate inventory of the Project's greenhouse gas emissions, a full discussion of the impacts from those emissions, a significance determination regarding these impacts, and a thorough and quantitative analysis of alternatives and avoidance and mitigation measures to reduce those impacts. The good news is that there are numerous feasible measures that can greatly reduce the Project's greenhouse gas emissions (CBD 2007).

Thank you for the opportunity to submit comments on the DEIS/EIR for the Mid-County Parkway Project. Please do not hesitate to contact the Center with any questions at the number listed above. We look forward to reviewing any further environmental documentation on this project.

Sincerely,

A handwritten signature in black ink that reads "Jonathan Evans". The signature is written in a cursive style with a large, sweeping initial 'J'.

enclosures

cc (without enclosures):

Fhay Dam
Federal Highway Administration
888 South Figueroa, Suite 1850
Los Angeles, CA 90017

Marion Ashley
County Supervisor, District 5
County Administrative Center
4080 Lemon Street - 5th Floor
Riverside, California 92501

Tom Mullen
Director
Western Riverside County
Regional Conservation Authority
4080 Lemon Street, Twelfth floor
Riverside, CA 92501

Doreen Stadtlander
Wildlife Biologist
U.S. Fish and Wildlife Service
Carlsbad Office
6010 Hidden Valley Road
Carlsbad, CA 92011

Leslie MacNair
Wildlife Biologist
California Department of Fish and Game
4775 Bird Farm Road
Chino Hills, CA 91709

Mark Durham
Chief, South Coast Section
US Army Corps of Engineers
Los Angeles District
P.O. Box 532711
Los Angeles, CA 90053-2325

Nassim Elias
Project Manager
Caltrans, District 8
464 West 4th St., 6th floor,
San Bernardino, CA 92401

Exhibits (enclosed)

California Department of Fish and Game, California Natural Diversity Database: Lake Matthews Quad, printed 8-30-07.

California Department of Fish and Game, California Natural Diversity Database: Lakeview Quad, printed 8-30-07.

California Department of Fish and Game, California Natural Diversity Database: Perris Quad, printed 8-30-07.

California Department of Fish and Game, California Natural Diversity Database: San Jacinto Quad, printed 8-30-07.

California Department of Fish and Game, California Natural Diversity Database: Steele Peak Quad, printed 8-30-07.

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Appendix B

Mitigation Measure Summary

**Table 16
Mitigation Measure Summary**

Mitigation Measure	Applicable Project/Source Type ¹	Effective	Feasible (Yes/No)		Secondary Effects (Yes/No)	Agency/Organization/Other ⁶	Description/Comments	
		Emissions Reduction/Score ²	Cost (Yes/No) ³	Technical ⁴				Logistical ⁵
Transportation								
<i>Bicycle/Pedestrian/Transit Measures</i>								
MM T-1: Bike Parking	LD (C, M), I, SP, TP, AQP, RR, P/Mobile	1%-5%/High: CCAP presents combined % reductions for a range of mitigation measures (Dierkers et al. 2007). SMAQMD allocates combined reductions among individual measures (e.g., 2.5% reduction for all bicycle-related measures and one-quarter of 2.5% for each individual measure) (TIAX 2005, EDAW 2006, SMAQMD 2007). VTPI presents % reductions for showers and combined measures in the TDM encyclopedia (VTPI	Yes: Lockers (\$1,200-\$2,950, \$700/bike on average), Racks (\$70-\$2,000, \$70/bike on average).	Yes (Caltrans 2005, Dierkers et al. 2007, VTPI 2007)	Yes (Caltrans 2005, Dierkers et al. 2007, VTPI 2007)	Adverse: No Beneficial: CAPs, TACs	Caltrans, Portland Bicycle Master Plan (City of Portland 1998), CCAP Transportation Emissions Guidebook (Dierkers et al. 2007), SMAQMD Recommended Guidance for Land Use Emission Reductions (SMAQMD 2007), VTPI, CA air quality management and control districts, and cities/counties.	Nonresidential projects provide plentiful short- and long-term bicycle parking facilities to meet peak season maximum demand (e.g., one bike rack space per 20 vehicle/employee parking spaces).
MM T-2: End of Trip Facilities	LD (C, M), I, SP, TP, AQP, RR, P/Mobile	reductions for all bicycle-related measures and one-quarter of 2.5% for each individual measure) (TIAX 2005, EDAW 2006, SMAQMD 2007). VTPI presents % reductions for showers and combined measures in the TDM encyclopedia (VTPI	Yes	Yes (Caltrans 2005, Dierkers et al. 2007, VTPI 2007)	Yes (Caltrans 2005, Dierkers et al. 2007, VTPI 2007)	Adverse: No Beneficial: CAPs, TACs	Caltrans, Portland Bicycle Master Plan (City of Portland 1998), CCAP Transportation Emissions Guidebook (Dierkers et al. 2007), SMAQMD Recommended Guidance for Land Use Emission Reductions (SMAQMD 2007), VTPI, CA air quality management and control districts, and cities/counties.	Nonresidential projects provide “end-of-trip” facilities including showers, lockers, and changing space (e.g., four clothes lockers and one shower provided for every 80 employee parking spaces, separate facilities for each gender for projects with 160 or more employee parking spaces).
MM T-3: Bike-Parking at Multi-	LD (R, M), SP, AQP, RR,	measures in the TDM encyclopedia (VTPI	Yes: Lockers (\$1,200-	Yes (Caltrans 2005,	Yes (Caltrans	Adverse: No Beneficial:		Long-term bicycle parking is provided at apartment

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Mitigation Measure	Applicable Project/Source Type ¹	Effective	Feasible (Yes/No)		Secondary Effects (Yes/No)	Agency/Organization/Other ⁶	Description/Comments
		Emissions Reduction/Score ²	Cost (Yes/No) ³	Technical ⁴			
Unit Residential	P/Mobile	2007). JSA bases estimates on CCAP information (JSA 2004).	\$2,950, \$700/bike on average), Racks (\$70-\$2,000, \$70/bike on average).	Dierkers et al. 2007, VTPI 2007)	2005, Dierkers et al. 2007, VTPI 2007)	CAPs, TACs	complexes or condominiums without garages (e.g., one long-term bicycle parking space for each unit without a garage). Long-term facilities shall consist of one of the following: a bicycle locker, a locked room with standard racks and access limited to bicyclists only, or a standard rack in a location that is staffed and/or monitored by video surveillance 24 hours per day.
MM T-4: Proximity to Bike Path/Bike Lanes	LD (R, C, M), I, SP, TP, AQP, RR, P/Mobile		Yes	Yes (Caltrans 2005, Dierkers et al. 2007, VTPI 2007)	Yes (Caltrans 2005, Dierkers et al. 2007, VTPI 2007)	Adverse: No Beneficial: CAPs, TACs	Entire project is located within one-half mile of an existing/planned Class I or Class II bike lane and project design includes a comparable network that connects the project uses to the existing offsite facility. Project design includes a designated bicycle route connecting all units, on-site bicycle parking facilities, offsite bicycle facilities, site entrances, and primary building entrances to existing Class I or Class II bike lane(s) within one-half mile. Bicycle route connects to all streets contiguous with project site. Bicycle route has minimum conflicts with automobile parking and circulation

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							facilities. All streets internal to the project wider than 75 feet have Class II bicycle lanes on both sides.

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MM T-5: Pedestrian Network	LD (R, C, M), I, SP, TP, AQP, RR, P/Mobile	1%-10%/High: CCAP presents combined % reductions for a range of mitigation measures (Dierkers et al. 2007). SMAQMD allocates 1% for each individual measure (TIAX 2005, EDAW 2006, SMAQMD 2007).	Yes	Yes (Dierkers et al. 2007, VTPI 2007)	Yes (Dierkers et al. 2007, VTPI 2007)	Adverse: No Beneficial: CAPs, TACs	CCAP Transportation Emissions Guidebook (Dierkers et al. 2007), SMAQMD Recommended Guidance for Land Use Emission Reductions (SMAQMD 2007), VTPI, CA air quality management and control districts, and cities/counties.	The project provides a pedestrian access network that internally links all uses and connects to all existing/planned external streets and pedestrian facilities contiguous with the project site. Project design includes a designated pedestrian route interconnecting all internal uses, site entrances, primary building entrances, public facilities, and adjacent uses to existing external pedestrian facilities and streets. Route has minimal conflict with parking and automobile circulation facilities. Streets (with the exception of alleys) within the project have sidewalks on both sides. All sidewalks internal and adjacent to project site are minimum of five feet wide. All sidewalks feature vertical curbs. Pedestrian facilities and improvements such as grade separation, wider sidewalks, and traffic calming are implemented wherever feasible to minimize pedestrian barriers. All site entrances provide pedestrian access.
MM T-6: Pedestrian	LD (R, C, M), I, SP, TP,		Yes	Yes (Dierkers et al. 2007,	Yes (Dierkers et	Adverse: No Beneficial:	Site design and building placement minimize barriers to	

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		Emissions Reduction/Score ²	Cost (Yes/No) ³	Technical ⁴	Logistical ⁵			
Barriers Minimized	AQP, RR, P/Mobile			VTPI 2007)	al. 2007, VTPI 2007)	CAPs, TACs		pedestrian access and interconnectivity. Physical barriers such as walls, berms, landscaping, and slopes between residential and nonresidential uses that impede bicycle or pedestrian circulation are eliminated.
MM T-7: Bus Shelter for Existing/Planned Transit Service	LD (R, C, M), I, SP, TP, AQP, RR, P/Mobile	1%-2%/High: CCAP presents these % reductions (Dierkers et al., 2007). SMAQMD assigns from .25%-1%, depending on headway frequency (TIAX 2005, EDAW 2006, SMAQMD 2007).	Yes: \$15,000-\$70,000.	Yes (Dierkers et al. 2007, VTPI 2007)	Yes (Dierkers et al. 2007, VTPI 2007)	Adverse: No Beneficial: CAPs, TACs	CCAP Transportation Emissions Guidebook (Dierkers et al. 2007), SMAQMD Recommended Guidance for Land Use Emission Reductions (SMAQMD 2007), VTPI, City of Calgary (City of Calgary 2004), CA air quality management and control districts, and cities/counties.	Bus or streetcar service provides headways of one hour or less for stops within one-quarter mile; project provides safe and convenient bicycle/pedestrian access to transit stop(s) and provides essential transit stop improvements (i.e., shelters, route information, benches, and lighting).

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				Technical ⁴	Logistical ⁵			
MM T-8: Traffic Calming	LD (R, C, M), I, SP, TP, AQP, RR, P/Mobile	1%-10%/High: CCAP presents combined % reductions for a range of mitigation measures (Dierkers et al. 2007). SMAQMD allocates .25%-1.0% for each individual measure depending on percent of intersections and streets with improvements (TIAX 2005, EDAW 2006, SMAQMD 2007).	Yes	Yes (Dierkers et al. 2007, VTPI 2007)	Yes (Dierkers et al. 2007, VTPI 2007)	Adverse: No Beneficial: CAPs, TACs	CCAP Transportation Emissions Guidebook (Dierkers et al. 2007), SMAQMD Recommended Guidance for Land Use Emission Reductions (SMAQMD 2007), VTPI, CA air quality management and control districts, and cities/counties.	Project design includes pedestrian/bicycle safety and traffic calming measures in excess of jurisdiction requirements. Roadways are designed to reduce motor vehicle speeds and encourage pedestrian and bicycle trips by featuring traffic calming features. All sidewalks internal and adjacent to project site are minimum of five feet wide. All sidewalks feature vertical curbs. Roadways that converge internally within the project are routed in such a way as to avoid "skewed intersections;" which are intersections that meet at acute, rather than right, angles. Intersections internal and adjacent to the project feature one or more of the following pedestrian safety/traffic calming design techniques: marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, and roundabouts or mini-circles. Streets internal and adjacent to the project feature pedestrian safety/traffic calming measures such as on-street parking, planter strips with street trees,

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							and chicanes/chokers (variations in road width to discourage high-speed travel).	
Parking Measures								
MM T-9: Paid Parking (Parking Cash Out)	LD (C, M), I, SP, TP, AQP, RR, P/Mobile	1%-30%/High: CCAP presents a range of 15%-30% reduction for parking programs (Dierkers et al. 2007). SMAQMD presents a range of 1.0%-7.2%, depending on cost/day and distance to transit (TIAX 2005, EDAW 2006, SMAQMD 2007). Shoupe presents a 21% reduction [\$5/day for commuters to downtown LA, with elasticity of -0.18 (e.g., if price increases 10%, then solo driving goes down by 1.8% more)] (Shoupe 2005). Urban Transit Institute	Yes: Vary by location and project size.	Yes (Dierkers et al. 2007, VTPI 2007)	Yes (Dierkers et al. 2007, VTPI 2007)	Adverse: No Beneficial: CAPs, TACs	CCAP Transportation Emissions Guidebook (Dierkers et al. 2007), SMAQMD Recommended Guidance for Land Use Emission Reductions (SMAQMD 2007), VTPI, CA air quality management and control districts, and cities/counties.	Project provides employee and/or customer paid parking system. Project must have a permanent and enforceable method of maintaining user fees for all parking facilities. The facility may not provide customer or employee validations. Daily charge for parking must be equal to or greater than the cost of a transit day/monthly pass plus 20%.

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		Emissions Reduction/Score ²	Cost (Yes/No) ³	Technical ⁴				Logistical ⁵
		presents a range of 1%-10% reduction in trips to central city sites, and 2%-4% in suburban sites (VTPI 2007).						
MM T-10: Minimum Parking	LD (R, C, M), I, SP, TP, AQP, RR, P/Mobile	1%-30%/High: CCAP presents a range of 15%-30% reduction for parking programs (Dierkers et al. 2007). SMAQMD presents a maximum of 6% (Nelson/Nygaard Consulting Associates, 2005, TIAX 2005, EDAW 2006).	Yes	Yes (Dierkers et al. 2007, VTPI 2007)	Yes (Dierkers et al. 2007, VTPI 2007), Note that in certain areas of the state, the minimum parking required by code is greater than the peak period parking demand for most land uses. Simply meeting minimum code requirements in these areas would not result in an emissions reduction.	Adverse: No Beneficial: CAPs, TACs	CCAP Transportation Emissions Guidebook (Dierkers et al. 2007), SMAQMD Recommended Guidance for Land Use Emission Reductions (SMAQMD 2007), VTPI, Governor's Office of Smart Growth (Annapolis, Maryland) (Zimbler), CA air quality management and control districts, and cities/counties.	Provide minimum amount of parking required. Once land uses are determined, the trip reduction factor associated with this measure can be determined by utilizing the ITE parking generation publication. The reduction in trips can be computed as shown below by the ratio of the difference of minimum parking required by code and ITE peak parking demand to ITE peak parking demand for the land uses multiplied by 50%. Percent Trip Reduction = 50 * [(min parking required by code – ITE peak parking demand)/ (ITE peak parking demand)]

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MM T-11: Parking Reduction Beyond Code/Shared Parking	LD (R, C, M), I, SP, TP, AQP, RR, P/Mobile	1%-30%/High: CCAP presents a range of 15%-30% reduction for parking programs (Dierkers et al. 2007). SMAQMD presents a maximum of 12% (Nelson/Nygaard, 2005, TIAX 2005, EDAW 2006).	Yes	Yes (Dierkers et al. 2007, VTPI 2007)	Yes (Dierkers et al. 2007, VTPI 2007)	Adverse: No Beneficial: CAPs, TACs	Provide parking reduction less than code. This measure can be readily implemented through a shared parking strategy, wherein parking is utilized jointly among different land uses, buildings, and facilities in an area that experience peak parking needs at different times of day and day of the week.
MM T-12: Pedestrian Pathway Through Parking	LD (R, C, M), I, SP, TP, AQP, RR, P/Mobile	1%-4%/Moderate: CCAP presents combined % reductions for a range of mitigation measures (Dierkers et al. 2007). SMAQMD allocates 0.5% reduction for this measure (TIAX 2005, EDAW 2006, SMAQMD 2007).	Yes	Yes (Dierkers et al. 2007, VTPI 2007)	Yes (Dierkers et al. 2007, VTPI 2007)	Adverse: No Beneficial: CAPs, TACs	Provide a parking lot design that includes clearly marked and shaded pedestrian pathways between transit facilities and building entrances.

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MM T-13: Off-Street Parking	LD (R, C, M), I, SP, TP, AQP, RR, P/Mobile	1%-4%/Moderate: CCAP presents combined % reductions for a range of mitigation measures (Dierkers et al. 2007). SMAQMD allocates a range of 0.1%-1.5% for this measure (TIAX 2005, EDAW 2006, SMAQMD 2007).	Yes	Yes (Dierkers et al. 2007, VTPI 2007)	Yes (Dierkers et al. 2007, VTPI 2007)	Adverse: No Beneficial: CAPs, TACs	Parking facilities are not adjacent to street frontage.
MM T-14: Parking Area Tree Cover	LD (R, C, M), I, SP, TP, AQP, RR, P/Mobile	Annual net CO ₂ reduction of 3.1 kg/m ² canopy cover/Moderate (McPherson 2001).	Yes: \$19 per new tree for CA, cost varies for maintenance, removal and replacement (McPherson 2001).	Yes	Yes	Adverse: VOCs Beneficial: CAPs, TACs	AG, State of CA Department of Justice (Goldberg 2007) and cities/counties (e.g., parking lot ordinances in Sacramento, Davis, and Los Angeles, CA). Provide parking lot areas with 50% tree cover within 10 years of construction, in particular low emitting, low maintenance, native drought resistant trees. Reduces urban heat island effect and requirement for air conditioning, effective when combined with other measures (e.g., electrical maintenance equipment and reflective paving material).
MM T-15: Valet Bicycle Parking	LD (C, M), SP, AQP, TP, RR, P/Mobile	NA/Low	Yes	Yes	Yes: Raley Field (Sacramento, CA)	Adverse: No Beneficial: CAPs, TACs	Raley Field (Sacramento, CA). Provide spaces for the operation of valet bicycle parking at community event “centers” such as amphitheatres, theaters, and stadiums.
MM T-16: Garage Bicycle Storage	LD (R, M), SP, AQP, TP, RR, P/Mobile	NA/Low	Yes: Less than \$200/multiple bike rack.	Yes	Yes	Adverse: No Beneficial: CAPs, TACs	City of Fairview, OR Provide storage space in one-car garages for bicycles and bicycle trailers.

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MM T-17: Preferential Parking for EVs/CNG Vehicles	LD (C, M), I, SP, TP, AQP, RR, P/Mobile	NA/Low	Yes	Yes	Yes	Adverse: No Beneficial: CAPs, TACs	USGBC, CA air quality management and control districts and cities/counties (e.g., BAAQMD).	Provide preferential parking space locations for EVs/CNG vehicles.
MM T-18: Reduced/No Parking Fee for EVs/CNG Vehicles	LD (C, M), I, SP, TP, AQP, RR, P/Mobile	NA/Low	Yes	Yes	Yes	Adverse: No Beneficial: CAPs, TACs	Hotels (e.g., Argonaut in San Francisco, CA)	Provide a reduced/no parking fee for EVs/CNG vehicles.

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		Emissions Reduction/Score ²	Cost (Yes/No) ³	Technical ⁴				Logistical ⁵
<i>Miscellaneous Measure</i>								
MM T-19: TMA Membership	LD (R, C, M), I, SP, TP, AQP, RR, P/Mobile	1%-28%/High: CCAP presents a range of 3%-25% for TDMs with complementary transit and land use measures (Dierkers et al. 2007). VTPI presents a range of 6%-7% in the TDM encyclopedia (VTPI 2007). URBEMIS offers a 2%-10% range in reductions for a TDM that has 5 elements that are pedestrian and transit friendly and 1%-5% for 3 elements. SMAQMD presents a reduction of 5% (TIAX 2005, EDAW 2006, SMAQMD 2007).	Yes	Yes (Dierkers et al. 2007, VTPI 2007)	Yes (Dierkers et al. 2007, VTPI 2007)	Adverse: No Beneficial: CAPs, TACs	CA air quality management and control districts and cities/counties (e.g., SMAQMD).	Include permanent TMA membership and funding requirement. Funding to be provided by Community Facilities District or County Service Area or other nonrevocable funding mechanism. TDMs have been shown to reduce employee vehicle trips up to 28% with the largest reductions achieved through parking pricing and transit passes. The impact depends on the travel alternatives.
MM T-20: ULEV	LD (R, C, M), I, SP, TP, AQP, RR, P/Mobile	NA/Low	Yes: Higher than corresponding gasoline models.	Yes	Yes: Fueling stations might not be readily available depending on location. More than 900 E85 fueling	Adverse: No Beneficial: CAPs, TACs	DGS, CA air quality management and control districts and cities/counties (e.g., SMAQMD).	Use of and/or provide ULEV that are 50% cleaner than average new model cars (e.g., natural gas, ethanol, electric).

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Mitigation Measure Summary**

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		Emissions Reduction/Score ²	Cost (Yes/No) ³	Technical ⁴				Logistical ⁵
					stations in the U.S., 5 in CA. Vehicles available in select regions only			
MM T-21: Flex Fuel Vehicles	LD (R, C, M), I, SP, TP, AQP, RR, P/Mobile	5466.97 lb GHG/year/Low (DOE Fuel Economy)	Yes: E85 costs less than gasoline per gallon, but results in lower fuel economy.	Yes	Yes: More than 900 E85 fueling stations in the U.S., 5 in CA. Vehicles available in select regions only	Adverse: Yes Issues with the energy intensive ethanol production process (e.g., wastewater treatment requirements). Beneficial: CAPs, TACs	DGS, CA air quality management and control districts and cities/counties (e.g., SJVAPCD).	Use of and/or provide vehicles that utilize gasoline/ethanol blends (e.g., E85).
Design								
Commercial & Residential Building Design Measures								
MM D-1: Office/Mixed Use Density	LD (C, M), SP, TP, AQP, RR, P/Mobile	0.05%-2%/Moderate: This range is from SMAQMD, depending	Yes	Yes (VTPI 2007)	Yes (VTPI 2007)	Adverse: No Beneficial: CAPs, TACs	CA air quality management and control districts and cities/counties	Project provides high density office or mixed-use proximate to transit. Project must provide

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		on FAR and headway frequencies (Nelson/Nygaard Consulting Associates 2005, EDAW 2006, SMAQMD 2007).				(e.g., SMAQMD).	safe and convenient pedestrian and bicycle access to all transit stops within one-quarter mile.	
MM D-2: Orientation to Existing/Planned Transit, Bikeway, or Pedestrian Corridor	LD (R, C, M), I, SP, TP, AQP, RR, P/Mobile	0.4%-1%/Moderate: CCAP attributes a 0.5% reduction per 1% improvement in transit frequency (Dierkers et al. 2007). SMAQMD presents a range of 0.25%-5% (JSA 2005, EDAW 2006, SMAQMD 2007).	Yes	Yes (Dierkers et al. 2007)	Yes (Dierkers et al. 2007)	Adverse: No Beneficial: CAPs, TACs	CA air quality management and control districts and cities/counties (e.g., SMAQMD).	Project is oriented towards existing transit, bicycle, or pedestrian corridor. Setback distance between project and existing or planned adjacent uses is minimized or nonexistent. Setback distance between different buildings on project site is minimized. Setbacks between project buildings and planned or existing sidewalks are minimized. Buildings are oriented towards existing or planned street frontage. Primary entrances to buildings are located along planned or existing public street frontage. Project provides bicycle access to any planned bicycle corridor(s). Project provides pedestrian access to any planned pedestrian corridor(s).
MM D-3: Services Operational	LD (R, C, M), I, SP, TP, AQP, RR, P/Mobile	0.5%-5%/Moderate	Yes	Yes	Yes	Adverse: No Beneficial: CAPs, TACs	CA air quality management and control districts and cities/counties (e.g., SMAQMD).	Project provides on-site shops and services for employees.

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				Technical ⁴	Logistical ⁵			
MM D-4: Residential Density (Employ Sufficient Density for New Residential Development to Support the Use of Public Transit)	LD (R, M), SP, TP, AQP, RR, P/Mobile	1%-40%/High: #7, EPA presents a range of 32%-40% (EPA 2006). SMAQMD presents a range of 1%-12% depending on density and headway frequencies (Nelson/Nygaard Consulting Associates 2005, JSA 2005, EDAW 2006, SMAQMD 2007). Nelson/Nygaard presents a trip reduction formula: Trip Reduction = $0.6 * (1 - (19749 * ((4.814 + \text{households per residential acre}) / (4.814 + 7.14))) ^ -06.39) / 25914$.	Yes	Yes (VTPI 2007, Holtzclaw 2007)	Yes (VTPI 2007, Holtzclaw 2007)	Adverse: No Beneficial: CAPs, TACs	CA air quality management and control districts and cities/counties (e.g., SMAQMD).	Project provides high-density residential development. Transit facilities must be within one-quarter mile of project border. Project provides safe and convenient bicycle/pedestrian access to all transit stop(s) within one-quarter mile of project border.
MM D-5: Street Grid	LD (R, C, M), I, SP, TP, AQP, RR,	1%/Moderate: SMAQMD presents this % reduction (JSA	Yes	Yes (Dierkers et al. 2007, VTPI 2007)	Yes (Dierkers et al. 2007,	Adverse: No Beneficial: CAPs, TACs	CA air quality management and control districts and cities/counties	Multiple and direct street routing (grid style). This measure only applies to projects

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Mitigation Measure	Applicable Project/Source Type ¹	Effective	Feasible (Yes/No)		Secondary Effects (Yes/No)	Agency/Organization/Other ⁶	Description/Comments
		Emissions Reduction/Score ²	Cost (Yes/No) ³	Technical ⁴			
	P/Mobile	2005, EDAW 2006, SMAQMD 2007).				(e.g., SMAQMD).	with an internal CF ≥ 0.80 , and average of one-quarter mile or less between external connections along perimeter of project. [CF= # of intersections / (# of cul-de-sacs + intersections)]. Cul-de-sacs with bicycle/pedestrian through access may be considered “complete intersections” when calculating the project’s internal connectivity factor. External connections are bike/pedestrian pathways and access points, or streets with safe and convenient bicycle and pedestrian access that connect the project to adjacent streets, sidewalks, and uses. If project site is adjacent to undeveloped land; streets, pathways, access points, and right-of-ways that provide for future access to adjacent uses may count for up to 50% of the external connections. Block perimeter (the sum of the measurement of the length of all block sides) is limited to no more than 1,350 feet. Streets internal to the project should connect to streets external to the project whenever possible.

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		Emissions Reduction/Score ²	Cost (Yes/No) ³	Technical ⁴				Logistical ⁵
MM D-6: NEV Access	LD (R, C, M), SP, TP, AQP, RR, P/Mobile	0.5%-1.5%/Low: SMAQMD presents this % reduction (EDAW 2006, SMAQMD 2007).	Yes	Yes (Litman 1999, Sperling 1994)	Yes (Litman 1999, Sperling 1994)	Adverse: No Beneficial: CAPs, TACs	CA air quality management and control districts and cities/counties (e.g., SMAQMD).	Make physical development consistent with requirements for neighborhood electric vehicles. Current studies show that for most trips, NEVs do not replace gas-fueled vehicles as the primary vehicle.
MM D-7: Affordable Housing Component	LD (R, M), SP, TP, AQP, RR, P/Mobile	0.4%-6%/Moderate: SMAQMD presents this % reduction (Nelson/Nygaard Consulting Associates 2005, EDAW 2006, SMAQMD 2007).	Yes	Yes	Yes	Adverse: No Beneficial: CAPs, TACs	CA air quality management and control districts and cities/counties (e.g., SMAQMD).	Residential development projects of five or more dwelling units provide a deed-restricted low-income housing component on-site (or as defined in the code). Developers who pay into In-Lieu Fee Programs are not considered eligible to receive credit for this measure. The award of emission reduction credit shall be based only on the proportion of affordable housing developed on-site because in-lieu programs simply induce a net increase in development. Percentage reduction shall be calculated according to the following formula:

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		Emissions Reduction/Score ²	Cost (Yes/No) ³	Technical ⁴			
							% reduction = % units deed-restricted below market rate housing * 0.04
MM D-8: Recharging Area	LD (R, M), SP, TP, AQP, RR, P/Mobile	NA/Low	Yes	Yes	Yes	Adverse: No Beneficial: CAPs, TACs	Provide residential buildings with a “utility” room or space for recharging batteries, whether for use in a car, electric lawnmower, other electric landscaping equipment, or even batteries for small items such as flashlights.
Mixed-Use Development Measures							
MM D-9: Urban Mixed-Use	LD (M), SP, TP, AQP, RR, P/Mobile	3%-9%/Moderate: SMAQMD presents this % reduction (TIAX 2005, EDAW 2006, SMAQMD 2007).	Yes	Yes (EPA 2006)	Yes (EPA 2006)	Adverse: No Beneficial: CAPs, TACs	CA air quality management and control districts and cities/counties (e.g., SMAQMD). Development of projects predominantly characterized by properties on which various uses, such as office, commercial, institutional, and residential, are combined in a single building or on a single site in an integrated development project with functional interrelationships and a coherent physical design.
MM D-10: Suburban Mixed-Use	LD (R, C, M), I, SP, TP, AQP, RR, P/Mobile	3%/Moderate: SMAQMD presents this % reduction (TIAX 2005, EDAW 2006, SMAQMD 2007).	Yes	Yes (EPA 2006)	Yes (EPA 2006)	Adverse: No Beneficial: CAPs, TACs	CA air quality management and control districts and cities/counties (e.g., SMAQMD). Have at least three of the following on site and/or offsite within one-quarter mile: Residential Development, Retail Development, Park, Open Space, or Office.
MM D-11: Other Mixed-Use	LD (R, M), SP, TP, AQP, RR, P/Mobile	1%/Moderate: SMAQMD presents this % reduction (TIAX 2005, EDAW	Yes	Yes (EPA 2006)	Yes (EPA 2006)	Adverse: No Beneficial: CAPs, TACs	CA air quality management and control districts and cities/counties (e.g., SMAQMD). All residential units are within one-quarter mile of parks, schools or other civic uses.

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		2006, SMAQMD 2007).						
MM D-12: Infill Development	LD (R, C, M), I, SP, TP, AQP, RR, P/Mobile	3%-30%/High: Infill development reduces vehicle trips and VMT by 3% and 20%, respectively (Fehr & Peers 2007). CCAP identifies a site level VMT reduction range of 20%-30% (Dierkers et al. 2007).	Yes	Yes (Dierkers et al. 2007)	Yes (Dierkers et al. 2007)	Adverse: No Beneficial: CAPs, TACs	CA air quality management and control districts and cities/counties (e.g., SMAQMD).	Project site is on a vacant infill site, redevelopment area, or brownfield or greyfield lot that is highly accessible to regional destinations, where the destinations rating of the development site (measured as the weighted average travel time to all other regional destinations) is improved by 100% when compared to an alternate greenfield site.
Miscellaneous Measures								
MM D-13: Electric Lawnmower	LD (R, M), SP, AQP, RR, P/Area	1%/Low: SMAQMD presents this % reduction (EDAW 2006, SMAQMD 2007).	Yes	Yes	Yes	Adverse: No Beneficial: CAPs, TACs	CA air quality management and control districts and cities/counties (e.g., SMAQMD).	Provide a complimentary electric lawnmower to each residential buyer.

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MM D-14: Enhanced Recycling/Waste Reduction, Reuse, Composting	LD (R, C, M), I, SP, AQP, RR, P/Stationary & Area	NA/Low	Yes	Yes	Yes: Association with social awareness.	Adverse: No Beneficial: CAPs, TACs	CIWMB	Provide infrastructure/education that promotes the avoidance of products with excessive packaging, recycle, buying of refills, separating of food and yard waste for composting, and using rechargeable batteries.
MM D-15: LEED Certification	LD (R, C, M), I, SP, AQP, RR, P/Stationary & Area	NA/Moderate	Yes: Receive tax rebates, incentives (e.g., EDAAW San Diego office interior remodel cost \$1,700,000 for 32,500 square feet) (USGBC 2007)	Yes	Yes: More than 700 buildings of different certifications in CA (USGBC 2007).	Adverse: No Beneficial: CAPs, TACs	USGBC, CA air quality management and control districts and cities/counties (e.g., BAAQMD).	LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality.
MM D-16: Retro-Commissioning	LD (C, M), I, SP, AQP, RR, P/Stationary & Area	8%-10% reduction in energy usage/Moderate: (Mills et al. 2004)	Yes: Average \$0.28/square feet, varies with building size (Haasl and Sharp 1999).	Yes	Yes: 27 projects underway in CA, 21 more to be completed in 2007, mostly state buildings owned by DGS (DGS 2007).	Adverse: No Beneficial: CAPs, TACs	DGS, CA air quality management and control districts and cities/counties (e.g., BAAQMD).	The process ensures that all building systems perform interactively according to the contract documents, the design intent and the owner's operational needs to optimize energy performance.
MM D-17 Landscaping	LD (R, C, M), I, SP, AQP, RR,	NA/Low	Yes	Yes	Yes	Adverse: No Beneficial: CAPs, TACs	Alliance for the Chesapeake Bay, EPA Green Landscaping	Project shall use drought resistant native trees, trees with low emissions and high carbon

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	P/Stationary & Area						Resources	sequestration potential. Evergreen trees on the north and west sides afford the best protection from the setting summer sun and cold winter winds. Additional considerations include the use of deciduous trees on the south side of the house that will admit summer sun; evergreen plantings on the north side will slow cold winter winds; constructing a natural planted channel to funnel summer cooling breezes into the house. Neighborhood CCR's not requiring that front and side yards of single family homes be planted with turf grass. Vegetable gardens, bunch grass, and low-water landscaping shall also be permitted, or even encouraged.
MM D-18: Local Farmers' Market	LD (M), SP/Mobile, Stationary, &	NA/Low	Yes	Yes	Yes: Associated with social	Adverse: No Beneficial: CAPs, TACs	Cities/counties (e.g., Davis, Sacramento)	Project shall dedicate space in a centralized, accessible location for a weekly farmers' market.

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	Area							choice and public awareness.
MM D-19: Community Gardens	LD (M), SP/Mobile, Stationary, & Area	NA/Low	Yes	Yes	Yes: Associated with social choice and public awareness.	Adverse: No Beneficial: CAPs, TACs	Cities/counties (e.g., Davis)	Project shall dedicate space for community gardens.
Energy Efficiency/Building Component								
MM E-1: High-Efficiency Pumps	LD (R, C, M), SP, AQP, RR, P/Stationary & Area	NA/Low	Yes	Yes	Yes	Adverse: No Beneficial: CAPs, TACs	CA air quality management and control districts and cities/counties (e.g., BAAQMD).	Project shall use high-efficiency pumps.
MM E-2: Wood Burning Fireplaces/Stoves	LD (R, M), SP, AQP, RR, P/Stationary & Area	NA/Low: EDAW 2006	Yes	Yes	Yes	Adverse: No Beneficial: CAPs, TACs	CA air quality management and control districts and cities/counties (e.g., SMAQMD).	Project does not feature fireplaces or wood burning stoves.
MM E-3: Natural Gas Stove	LD (R, M), SP, AQP, RR, P/Stationary & Area	NA/Low: EDAW 2006	Yes: Cost of stove—\$350 (gas) and \$360 (electric) same brand, total yearly cost of \$42.17 as opposed to \$56.65 for electric (Saving Electricity 2006).	Yes	Yes	Adverse: No Beneficial: CAPs, TACs	CA air quality management and control districts and cities/counties (e.g., SMAQMD).	Project features only natural gas or electric stoves in residences.

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				Technical ⁴	Logistical ⁵			
MM E-4: Energy Star Roof	LD (R, C, M), I, SP, AQP, RR, P/Stationary & Area	0.5%-1%/Low: SMAQMD presents this % reduction (EDAW 2006, SMAQMD 2007).	Yes	Yes	Yes: 866 Energy Star labeled buildings in California (Energy Star 2007)	Adverse: No Beneficial: CAPs, TACs	CA air quality management and control districts and cities/counties (e.g., SMAQMD).	Project installs Energy Star labeled roof materials.
MM E-5: On-site Renewable Energy System	LD (R, C, M), I, SP, AQP, RR, P/Stationary & Area	1%-3%/Moderate: SMAQMD presents this % reduction (USGBC 2002 and 2005, EDAW 2006, SMAQMD 2007).	Yes	Yes (USGBC 2002 and 2005)	Yes (USGBC 2002 and 2005)	Adverse: No Beneficial: CAPs, TACs	CA air quality management and control districts and cities/counties (e.g., SMAQMD).	Project provides onsite renewable energy system(s). Nonpolluting and renewable energy potential includes solar, wind, geothermal, low-impact hydro, biomass and bio-gas strategies. When applying these strategies, projects may take advantage of net metering with the local utility.

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Mitigation Measure Summary**

Mitigation Measure	Applicable Project/Source Type ¹	Effective	Feasible (Yes/No)		Secondary Effects (Yes/No)	Agency/Organization/Other ⁶	Description/Comments	
		Emissions Reduction/Score ²	Cost (Yes/No) ³	Technical ⁴				Logistical ⁵
MM E-6: Exceed Title 24	LD (R, C, M), I, GSP, AQP, RR, P/Stationary & Area	1%/Moderate: SMAQMD presents this % reduction (EDAW 2006, SMAQMD 2007).	Yes	Yes (PG&E 2002, SMUD 2006)	Yes (PG&E 2002, SMUD 2006)	Adverse: No Beneficial: CAPs, TACs	PG&E, SMUD, CA air quality management and control districts and cities/counties (e.g., SMAQMD).	Project exceeds title 24 requirements by 20%.
MM E-7: Solar Orientation	LD (R, C, M), I, SP, AQP, RR, P/Stationary & Area	0.5%/Low: SMAQMD presents this % reduction (EDAW 2006, SMAQMD 2007).	Yes	Yes	Yes	Adverse: No Beneficial: CAPs, TACs	CA air quality management and control districts and cities/counties (e.g., SMAQMD).	Project orients 75% or more of homes and/or buildings to face either north or south (within 30° of N/S). Building design includes roof overhangs that are sufficient to block the high summer sun, but not the lower winter sun, from penetrating south facing windows. Trees, other landscaping features and other buildings are sited in such a way as to maximize shade in the summer and maximize solar access to walls and windows in the winter.
MM E-8: Nonroof Surfaces	LD (R, C, M), I, GSP, AQP, RR, P/Stationary & Area	1.0%/Low: SMAQMD presents this % reduction (EDAW 2006, SMAQMD 2007).	Yes	Yes (USGBC 2002 and 2005)	Yes (USGBC 2002 and 2005)	Adverse: No Beneficial: CAPs, TACs	CA air quality management and control districts and cities/counties (e.g., SMAQMD).	Provide shade (within 5 years) and/or use light-colored/high- albedo materials (reflectance of at least 0.3) and/or open grid pavement for at least 30% of the site's nonroof impervious surfaces, including parking lots, walkways, plazas, etc.; OR place a minimum of 50% of parking spaces underground or covered by structured parking; OR use an open-grid pavement system (less than 50% impervious) for a minimum of

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								50% of the parking lot area. The mitigation measure reduces heat islands (thermal gradient differences between developed and undeveloped areas to minimize impact on microclimate and human and wildlife habitats. This measure requires the use of patented or copyright protected methodologies created by the ASTM. The SRI is a measure of the constructed surface's ability to reflect solar heat, as shown by a small rise in temperature. It is defined so that a standard black (reflectance 0.05, emittance 0.90) is "0" and a standard white (reflectance 0.80, emittance 0.90) is 100. To calculate SRI for a given material, obtain the reflectance value and emittance value for the material. SRI is calculated according to ASTM E 1980-01. Reflectance is measured

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								according to ASTM E 903, ASTM E 1918, or ASTM C 1549. Emittance is measured according to ASTM E 408 or ASTM C 1371. Default values for some materials will be available in the LEED-NC v2.2 Reference Guide.
MM E-9: Low-Energy Cooling	LD (C, M), I, SP, AQP, RR, P/Stationary & Area	1%-10%/Low: EDAW presents this percent reduction range (EDAW 2006).	Yes	Yes (USGBC 2002 and 2005)	Yes (USGBC 2002 and 2005)	Adverse: No Beneficial: CAPs, TACs	CA air quality management and control districts and cities/counties (e.g., SMAQMD).	Project optimizes building's thermal distribution by separating ventilation and thermal conditioning systems.
MM E-10: Green Roof	LD (R, C, M), I, SP, AQP, RR, P/Stationary & Area	1.0%/Moderate: SMAQMD presents this % reduction (EDAW 2006, SMAQMD 2007).	Yes	Yes (USGBC 2002 and 2005)	Yes (USGBC 2002 and 2005)	Adverse: Increased Water Consumption Beneficial: CAPs, TACs	CA air quality management and control districts and cities/counties (e.g., SMAQMD).	Install a vegetated roof that covers at least 50% of roof area. The reduction assumes that a vegetated roof is installed on a least 50% of the roof area or that a combination high albedo and vegetated roof surface is installed that meets the following standard: (Area of SRI Roof/0.75)+(Area of vegetated roof/0.5) >= Total Roof Area. Water consumption reduction measures shall be considered in the design of the green roof.
MM E-11: EV Charging Facilities	LD (C, M), SP, AQP, RR, P/Stationary & Area	NA/Low	Yes: \$500-\$5000/vehicle site (PG&E 1999)	Yes	Yes: 381 facilities in CA (Clean Air Maps 2007).	Adverse: No Beneficial: CAPs, TACs	DOE, EERE, CA air quality management and control districts and cities/counties (e.g., BAAQMD).	Project installs EV charging facilities.
MM E-12:	LD (R, C, M),	NA/Low: Increasing	Yes: Light	Yes	Yes: Apply	Adverse: No		Project provides light-colored

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Light-Colored Paving	I, SP, AQP, RR, P/Stationary & Area	the albedo of 1,250 km of pavement by 0.25 would save cooling energy worth \$15M per year.	colored aggregates and white cement are more expensive than gray cement. Certain blended cements are very light in color and may reflect similarly to white cement at an equivalent cost to normal gray cement.	Yes	natural sand or gravel colored single surface treatments to asphalt (EOE 2007).	CEC	paving (e.g., increased albedo pavement).
MM E-13: Cool Roofs	LD (R, C, M), I, SP, AQP, RR, P/Stationary & Area	NA/Low	Yes: 0.75–1.5/square feet coating (EPA 2007a)	Yes	Yes: Over 90% of the roofs in the United States are dark colored	CEC	Project provides cool roofs. Highly reflective, highly emissive roofing materials that stay 50-60°F cooler than a normal roof under a hot summer sun. CA's Cool Savings

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					(EPA 2007a).			Program provided rebates to building owners for installing roofing materials with high solar reflectance and thermal emittance. The highest rebate went to roofs on air conditioned buildings, while buildings with rooftop ducts and other nonresidential buildings were eligible for slightly less. The program aimed to reduce peak summer electricity demand and was administered by the CEC.
MM E-14: Solar Water Heaters	LD (R, M), SP, AQP, RR, P/Stationary & Area	20%–70% reduction in cooling energy needs/Moderate	Yes: \$1675/20 square feet, requires a 50 gallon tank, annual operating cost of \$176 (DOE 2007).	Yes	Yes: Based on solar orientation, building codes, zoning ordinances.	Adverse: No Beneficial: CAPs, TACs	Europe	Project provides solar water heaters.
MM E-15: Electric Yard Equipment Compatibility	LD (R, M), SP, AQP, RR, P/Stationary & Area	NA/Low	Yes: \$75–\$250/outlet from existing circuit (Cost Helper 2007).	Yes	Yes	Adverse: No Beneficial: CAPs, TACs		Project provides electrical outlets at building exterior areas.
MM E-16: Energy Efficient Appliance Standards	LD (R, C, M), SP, AQP, RR, P/Stationary & Area	NA/Low	Yes: Varies for each appliance—higher capital costs, lower operating costs (Energy	Yes	Yes: Major retail stores.	Adverse: No Beneficial: CAPs, TACs		Project uses energy efficient appliances (e.g., Energy Star).

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			Star 2007).				
MM E-17: Green Building Materials	LD (R, C, M), SP, AQP, RR, P/Stationary & Area	NA/Low: 25-30% more efficient on average.	Yes	Yes: BEES software allows users to balance the environmental and economic performance of building products; developed by NIST (NIST 2007).	Yes	Adverse: No Beneficial: CAPs, TACs	Project uses materials which are resource efficient, recycled, with long life cycles and manufactured in an environmentally friendly way.
MM E-18: Shading Mechanisms	LD (R, C, M), I, SP, AQP, RR, P/Stationary, & Area	NA/Low: Up to \$450 annual energy savings (Energy Star 2007).	Yes: Higher capital costs, lower operating and maintenance costs (Energy Star 2007).	Yes	Yes: Major retail stores.	Adverse: No Beneficial: CAPs, TACs	Install energy-reducing shading mechanisms for windows, porch, patio and walkway overhangs.

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MM E-19: Ceiling/Whole-House Fans	LD (R, C, M), I, SP, AQP, RR, P/Stationary, & Area	NA/Low: 50% more efficient than conventional fans (Energy Star 2007).	Yes: \$45-\$200/fan, installation extra (Lowe's 2007).	Yes	Yes: Major retail stores.	Adverse: No Beneficial: CAPs, TACs	Install energy-reducing ceiling/whole-house fans.
MM E-20: Programmable Thermostats	LD (R, C, M), I, SP, AQP, RR, P/Stationary, & Area	NA/Low: \$100 annual savings in energy costs (Energy Star 2007).	Yes: \$60/LCD display and 4 settings for typical residential use (Lowe's 2007).	Yes	Yes: Major retail stores.	Adverse: Yes, Mercury Beneficial: CAPs, TACs	Install energy-reducing programmable thermostats that automatically adjust temperature settings.
MM E-21: Passive Heating and Cooling Systems	LD (R, C, M), I, SP, AQP, RR, P/Stationary, & Area	NA/Low	Yes: \$800 (wall heaters) to \$4,000+ (central systems)	Yes	Yes	Adverse: No Beneficial: CAPs, TACs	Install energy-reducing passive heating and cooling systems (e.g., insulation and ventilation).
MM E-22: Day Lighting Systems	LD (R, C, M), I, SP, AQP, RR, P/Stationary, & Area	NA/Low	Yes: \$1,300 to \$1,500 depending upon the kind of roof (Barrier 1995), installation extra.	Yes	Yes: Work well only for space near the roof of the building, little benefit in multi-floor buildings.	Adverse: No Beneficial: CAPs, TACs	Install energy-reducing day lighting systems (e.g., skylights, light shelves and interior transom windows).
MM E-23: Low-Water Use Appliances	LD (R, C, M), I, SP, AQP, RR, P/Stationary, & Area	NA/Low: Avoided water agency cost for using water-efficient kitchen pre-rinse spray valves of \$65.18 per acre-foot.	Yes: Can return their cost through reduction in water consumption,	Yes	Yes	Adverse: No Beneficial: CAPs, TACs	Require the installation of low-water use appliances.

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							pumping, and treatment.
MM E-24: Goods Transport by Rail	LD (C, M), I, SP, AQP, RR, P/Mobile	NA/Moderate	Yes	Yes	Yes	Adverse: No Beneficial: CAPs, TACs	ARB Goods Movement Plan (ARB 2007) Provide a spur at nonresidential projects to use nearby rail for goods movement.
Social Awareness/Education							
MM S-1: GHG Emissions Reductions Education	LD (R, C, M), I, SP, TP, AQP, RR, P/Mobile, Stationary, & Mobile	NA/Low	Yes	Yes	Yes: Similar programs currently exist in CA.	Adverse: No Beneficial: CAPs, TACs	Provide local governments, businesses, and residents with guidance/protocols/information on how to reduce GHG emissions (e.g., energy saving, food miles).
MM S-2: School Curriculum	LD (R, C, M), I, SP, TP, AQP, RR, P/Mobile, Stationary, & Mobile	NA/Low	Yes	Yes	Yes: Similar programs currently exist in CA.	Adverse: No Beneficial: CAPs, TACs	Include how to reduce GHG emissions (e.g., energy saving, food miles) in the school curriculum.
Construction							
MM C-1: ARB-Certified Diesel Construction Equipment	LD (R, C, M), I, SP, TP, AQP, RR, P/Mobile	NA/Low	Yes: Oxidation Catalysts, \$1,000-	Yes	Yes	Adverse: Yes, NO _x Beneficial: CAPs, TACs	AG, EPA, ARB, and CA air quality management and pollution control districts. Use ARB-certified diesel construction equipment. Increases CO ₂ emissions when trapped CO and carbon particles

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			\$2,000. DPF, \$5000-\$10,000; installation extra (EPA 2007b).				are oxidized (Catalyst Products 2007, ETC 2007).
MM C-2: Alternative Fuel Construction Equipment	LD (R, C, M), NA/Low I, SP, TP, AQP, RR, P/Mobile	Yes	Yes	Yes	Adverse: Yes, THC, NO _x Beneficial: CO, PM, SO _x	AG, EPA, ARB, and CA air quality management and pollution control districts.	Use alternative fuel types for construction equipment. At the tailpipe biodiesel emits 10% more CO ₂ than petroleum diesel. Overall lifecycle emissions of CO ₂ from 100% biodiesel are 78% lower than those of petroleum diesel (NREL 1998, EPA 2007b).
MM C-3: Local Building Materials	LD (R, C, M), NA/Low I, SP, TP, AQP, RR, P/Mobile	Yes	Yes	Yes: Depends on location of building material manufacture sites.	Adverse: No Beneficial: CAPs, TACs		Use locally made building materials for construction of the project and associated infrastructure.
MM C-4: Recycle Demolished Construction Material	LD (R, C, M), NA/Low I, SP, TP, AQP, RR, P/Mobile	Yes	Yes	Yes	Adverse: No Beneficial: CAPs, TACs		Recycle/Reuse demolished construction material. Use locally made building materials for construction of the project and associated infrastructure.

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Miscellaneous							
MM M-1: Off-Site Mitigation Fee Program	LD (R, C, M), I, SP, TP, AQP, RR, P/Mobile & Area	NA/Moderate-High: Though there is currently no program in place, the potential for real and quantifiable reductions of GHG emissions could be high if a defensible fee program were designed.	Yes	Yes	No: Program does not exist in CA, but similar programs currently exist (e.g., Carl Moyer Program, SJVAPCD Rule 9510, SMAQMD Off-Site Construction Mitigation Fee Program).	Adverse: No Beneficial: CAPs, TACs	Provide/Pay into an off-site mitigation fee program, which focuses primarily on reducing emissions from existing development and buildings through retro-fit (e.g., increased insulation).
MM M-2: Offset Purchase	LD (R, C, M), I, SP, TP, AQP, RR, P/Mobile, Stationary, & Area	NA/Low	Yes	Yes	No: ARB has not adopted official program, but similar programs	No	Provide/purchase offsets for additional emissions by acquiring carbon credits or engaging in other market “cap and trade” systems.

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					currently exist.		
Regional Transportation Plan Measures							
MM RTP-1: Dedicate High Occupancy Vehicle (HOV) lanes prior to adding capacity to existing highways.	RTP	Yes	Yes	Yes	Adverse: possible local CO Beneficial: regional CAPs, TACs	Caltrans, local government	Evaluate the trip reduction (and GHG reduction) potential of adding HOV lanes prior to adding standard lanes.
MM RTP-2: Implement toll/user fee programs prior to adding capacity to existing highways.	RTP	Yes	Yes	Yes	Adverse: possible local CO. Beneficial: regional CAPs, TACs	Caltrans	Evaluate price elasticity and associated trip reduction (and GHG reduction) potential with adding or increasing tolls prior to adding capacity to existing highways.
<p>Note: ¹ Where LD (R, C, M) =Land Development (Residential, Commercial, Mixed-Use), I=Industrial, GP=General Plan, SP=Specific Plan, TP=Transportation Plans, AQP=Air Quality Plans, RR=Rules/Regulations, and P=Policy. It is important to note that listed project types may not be directly specific to the mitigation measure (e.g., TP, AQP, RR, and P) as such could apply to a variety of source types, especially RR and P. ² This score system entails ratings of high, moderate, and low that refer to the level of the measure to provide a substantive, reasonably certain (e.g., documented emission reductions with proven technologies), and long-term reduction of GHG emissions. ³ Refers to whether the measure would provide a cost-effective reduction of GHG emissions based on available documentation. ⁴ Refers to whether the measure is based on currently, readily available technology based on available documentation. ⁵ Refers to whether the measure could be implemented without extraordinary effort based on available documentation. ⁶ List is not meant to be all inclusive. Source: Data compiled by EDAW in 2007</p>							

**Table 17
General Planning Level Mitigation Strategies Summary**

Strategy	Source Type ¹	Agency/Organization ²	Description/Comments
MS G-1: Adopt a GHG reduction plan	GP/ Mobile, Stationary, & Area	City of San Bernardino	<p>- Adopt GHG reduction targets for the planning area, based on the current legislation providing direction for state-wide targets, and update the plan as necessary.</p> <p>-The local government agency should serve as a model by inventorying its GHG emissions from agency operations, and implementing those reduction goals.</p>
Circulation			
MS G-2: Provide for convenient and safe local travel	GP/ Mobile	Cities/Counties (e.g., Aliso Viejo, Claremont)	<p>- Create a gridded street pattern with small block sizes. This promotes walkability through direct routing and ease of navigation.</p> <p>-Maintain a high level of connectivity of the roadway network. Minimize cul-de-sacs and incomplete roadway segments.</p> <p>-Plan and maintain an integrated, hierarchical and multi-modal system of roadways, pedestrian walks, and bicycle paths throughout the area.</p> <p>-Apply creative traffic management approaches to address congestion in areas with unique problems, particularly on roadways and intersections in the vicinity of schools in the morning and afternoon peak hours, and near churches, parks and community centers.</p> <p>-Work with adjacent jurisdictions to address the impacts of regional development patterns (e.g. residential development in surrounding communities, regional universities, employment centers, and commercial developments) on the circulation system.</p> <p>-Actively promote walking as a safe mode of local travel, particularly for children attending local schools. -Employ traffic calming methods such as median landscaping and provision of bike or transit lanes to slow traffic, improve roadway capacity, and address safety issues.</p>
MS G-3: Enhance the regional transportation network and maintain effectiveness	GP/ Mobile	Cities/Counties (e.g., Aliso Viejo, Claremont)	<p>-Encourage the transportation authority to reduce fees for short distance trips.</p> <p>-Ensure that improvements to the traffic corridors do not negatively impact the operation of local roadways and land uses.</p>

Table 17
General Planning Level Mitigation Strategies Summary

Strategy	Source Type ¹	Agency/Organization ²	Description/Comments
			<ul style="list-style-type: none"> -Cooperate with adjacent jurisdictions to maintain adequate service levels at shared intersections and to provide adequate capacity on regional routes for through traffic. -Support initiatives to provide better public transportation. Work actively to ensure that public transportation is part of every regional transportation corridor. - Coordinate the different modes of travel to enable users to transfer easily from one mode to another. -Work to provide a strong paratransit system that promotes the mobility of all residents and educate residents about local mobility choices. - Promote transit-oriented development to facilitate the use of the community’s transit services.
<p>MS G-4: Promote and support an efficient public transportation network connecting activity centers in the area to each other and the region.</p>	GP/ Mobile	<p>Cities/Counties (e.g., Aliso Viejo, Claremont)</p>	<ul style="list-style-type: none"> -Promote increased use of public transportation and support efforts to increase bus service range and frequency within the area as appropriate. -Enhance and encourage provision of attractive and appropriate transit amenities, including shaded bus stops, to encourage use of public transportation. -Encourage the school districts, private schools and other operators to coordinate local bussing and to expand ride-sharing programs. All bussing options should be fully considered before substantial roadway improvements are made in the vicinity of schools to ease congestion.
<p>MS G-5: Establish and maintain a comprehensive system, which is safe and convenient, of pedestrian ways and bicycle routes that provide viable options to travel by automobile.</p>	GP/ Mobile	<p>Cities/Counties (e.g., Aliso Viejo, Claremont)</p>	<ul style="list-style-type: none"> -Improve area sidewalks and rights-of-way to make them efficient and appealing for walking and bicycling safely. Coordinate with adjacent jurisdictions and regional agencies to improve pedestrian and bicycle trails, facilities, signage, and amenities. -Provide safe and convenient pedestrian and bicycle connections to and from town centers, other commercial districts, office complexes, neighborhoods, schools, other major activity centers, and surrounding communities. -Work with neighboring jurisdictions to provide well-designed pedestrian and bicycle crossings of major roadways. -Promote walking throughout the community. Install sidewalks where missing and make improvements

**Table 17
General Planning Level Mitigation Strategies Summary**

Strategy	Source Type ¹	Agency/Organization ²	Description/Comments
			<p>to existing sidewalks for accessibility purposes. Particular attention should be given to needed sidewalk improvement near schools and activity centers.</p> <ul style="list-style-type: none"> -Encourage businesses or residents to sponsor street furniture and landscaped areas. - Strive to provide pedestrian pathways that are well shaded and pleasantly landscaped to encourage use. - Attract bicyclists from neighboring communities to ride their bicycles or to bring their bicycles on the train to enjoy bicycling around the community and to support local businesses. - Meet guidelines to become nationally recognized as a Bicycle-Friendly community. - Provide for an education program and stepped up code enforcement to address and minimize vegetation that degrades access along public rights-of-way. -Engage in discussions with transit providers to increase the number of bicycles that can be accommodated on buses
<p>MS G-6: Achieve optimum use of regional rail transit.</p>	<p>GP/ Mobile</p>	<p>Cities/Counties (e.g., Aliso Viejo, Claremont)</p>	<ul style="list-style-type: none"> -Support regional rail and work with rail authority to expand services. - Achieve better integration of all transit options. -Work with regional transportation planning agencies to finance and provide incentives for multimodal transportation systems. - Promote activity centers and transit-oriented development projects around the transit station.
<p>MS G-7: Expand and optimize use of local and regional bus and transit systems.</p>	<p>GP/ Mobile</p>	<p>Cities/Counties (e.g., Aliso Viejo, Claremont)</p>	<ul style="list-style-type: none"> -Encourage convenient public transit service between area and airports. -Support the establishment of a local shuttle to serve commercial centers. -Promote convenient, clean, efficient, and accessible public transit that serves transit-dependent riders and attracts discretionary riders as an alternative to reliance on single-occupant automobiles.

**Table 17
General Planning Level Mitigation Strategies Summary**

Strategy	Source Type ¹	Agency/Organization ²	Description/Comments
			<ul style="list-style-type: none"> - Empower seniors and those with physical disabilities who desire maximum personal freedom and independence of lifestyle with unimpeded access to public transportation. -Integrate transit service and amenities with surrounding land uses and buildings.
Conservation, Open Space			
<p>MS G-8: Emphasize the importance of water conservation and maximizing the use of native, low-water landscaping.</p>	<p>GP/Stationary & Area</p>	<p>Cities/Counties (e.g., Aliso Viejo, Claremont)</p>	<ul style="list-style-type: none"> -Reduce the amount of water used for landscaping and increase use of native and low water plants. Maximize use of native, low-water plants for landscaping of areas adjacent to sidewalks or other impermeable surfaces. -Encourage the production, distribution and use of recycled and reclaimed water for landscaping projects throughout the community, while maintaining urban runoff water quality objectives. -Promote water conservation measures, reduce urban runoff, and prevent groundwater pollution within development projects, property maintenance, area operations and all activities requiring approval. -Educate the public about the importance of water conservation and avoiding wasteful water habits. -Work with water provider in exploring water conservation programs, and encourage the water provider to offer incentives for water conservation.
<p>MS G-9: Improve air quality within the region.</p>	<p>GP/ Mobile, Stationary, & Area</p>	<p>Cities/Counties (e.g., Aliso Viejo, Claremont)</p>	<ul style="list-style-type: none"> -Integrate air quality planning with area land use, economic development and transportation planning efforts. -Support programs that reduce air quality emissions related to vehicular travel. -Support alternative transportation modes and technologies, and develop bike- and pedestrian-friendly neighborhoods to reduce emissions associated with automobile use. -Encourage the use of clean fuel vehicles. -Promote the use of fuel-efficient heating and cooling equipment and other appliances, such as water

Table 17
General Planning Level Mitigation Strategies Summary

Strategy	Source Type ¹	Agency/Organization ²	Description/Comments
			<p>heaters, swimming pool heaters, cooking equipment, refrigerators, furnaces, and boiler units.</p> <ul style="list-style-type: none"> - Promote the use of clean air technologies such as fuel cell technologies, renewable energy sources, UV coatings, and alternative, non-fossil fuels. -Require the planting of street trees along streets and inclusion of trees and landscaping for all development projects to help improve airshed and minimize urban heat island effects. - Encourage small businesses to utilize clean, innovative technologies to reduce air pollution. - Implement principles of green building. - Support jobs/housing balance within the community so more people can both live and work within the community. To reduce vehicle trips, encourage people to telecommute or work out of home or in local satellite offices.
<p>MS G-10: Encourage and maximize energy conservation and identification of alternative energy sources.</p>	<p>GP/ Stationary & Area</p>	<p>Cities/Counties (e.g., Aliso Viejo, Claremont)</p>	<ul style="list-style-type: none"> -Encourage green building designs for new construction and renovation projects within the area. -Coordinate with regional and local energy suppliers to ensure adequate supplies of energy to meet community needs, implement energy conservation and public education programs, and identify alternative energy sources where appropriate. -Encourage building orientations and landscaping that enhance natural lighting and sun exposure. -Encourage expansion of neighborhood-level products and services and public transit opportunities throughout the area to reduce automobile use. - Incorporate the use of energy conservation strategies in area projects. - Promote energy-efficient design features, including appropriate site orientation, use of light color roofing and building materials, and use of evergreen trees and wind-break trees to reduce fuel consumption for heating and cooling.

Table 17
General Planning Level Mitigation Strategies Summary

Strategy	Source Type ¹	Agency/Organization ²	Description/Comments
			<ul style="list-style-type: none"> -Explore and consider the cost/benefits of alternative fuel vehicles including hybrid, natural gas, and hydrogen powered vehicles when purchasing new vehicles. -Continue to promote the use of solar power and other energy conservation measures. - Encourage residents to consider the cost/benefits of alternative fuel vehicles. - Promote the use of different technologies that reduce use of non-renewable energy resources. -Facilitate the use of green building standards and LEED in both private and public projects. -Promote sustainable building practices that go beyond the requirements of Title 24 of the California Administrative Code, and encourage energy-efficient design elements, as appropriate. -Support sustainable building practices that integrate building materials and methods that promote environmental quality, economic vitality, and social benefit through the design, construction, and operation of the built environment. - Investigate the feasibility of using solar (photovoltaic) street lights instead of conventional street lights that are powered by electricity in an effort to conserve energy. - Encourage cooperation between neighboring development to facilitate on-site renewable energy supplies or combined heat and power co-generation facilities that can serve the energy demand of contiguous development.

Table 17
General Planning Level Mitigation Strategies Summary

Strategy	Source Type ¹	Agency/Organization ²	Description/Comments
<p>MS G-11: Preserve unique community forests, and provide for sustainable increase and maintenance of this valuable resource.</p>	<p>GP/Stationary & Area</p>	<p>Cities/Counties (e.g., Aliso Viejo, Claremont)</p>	<ul style="list-style-type: none"> - Develop a tree planting policy that strives to accomplish specific % shading of constructed paved and concrete surfaces within five years of construction. -Provide adequate funding to manage and maintain the existing forest, including sufficient funds for tree planting, pest control, scheduled pruning, and removal and replacement of dead trees. -Coordinate with local and regional plant experts in selecting tree species that respect the natural region in which Claremont is located, to help create a healthier, more sustainable urban forest. - Continue to plant new trees (in particular native tree species where appropriate), and work to preserve mature native trees. -Increase the awareness of the benefits of street trees and the community forest through a area wide education effort. -Encourage residents to properly care for and preserve large and beautiful trees on their own private property.
Housing			
<p>MS G-12: Provide affordability levels to meet the needs of community residents.</p>	<p>GP/ Mobile</p>	<p>Cities/Counties (e.g., Aliso Viejo, Claremont)</p>	<ul style="list-style-type: none"> -Encourage development of affordable housing opportunities throughout the community, as well as development of housing for elderly and low and moderate income households near public transportation services. -Ensure a portion of future residential development is affordable to low and very low income households.
Land Use			
<p>MS G-13: Promote a visually-cohesive urban form and establish connections between the urban core and outlying portions of the</p>	<p>GP/ Mobile, Stationary, & Area</p>	<p>Cities/Counties (e.g., Aliso Viejo, Claremont)</p>	<ul style="list-style-type: none"> -Preserve the current pattern of development that encourages more intense and higher density development at the core of the community and less intense uses radiating from the central core. -Create and enhance landscaped greenway, trail and sidewalk connections between neighborhoods and to commercial areas, town centers, and parks.

**Table 17
General Planning Level Mitigation Strategies Summary**

Strategy	Source Type ¹	Agency/Organization ²	Description/Comments
community.			<p>-Identify ways to visually identify and physically connect all portions of the community, focusing on enhanced gateways and unifying isolated and/or outlying areas with the rest of the area.</p> <p>-Study and create a diverse plant identity with emphasis on drought-resistant native species.</p>
<p>MS G-14: Provide a diverse mix of land uses to meet the future needs of all residents and the business community.</p>	GP/ Mobile	<p>Cities/Counties (e.g., Aliso Viejo, Claremont)</p>	<p>-Attract a broad range of additional retail, medical, and office uses providing employment at all income levels.</p> <p>-Support efforts to provide beneficial civic, religious, recreational, cultural and educational opportunities and public services to the entire community.</p> <p>-Coordinate with public and private organizations to maximize the availability and use of parks and recreational facilities in the community.</p> <p>-Support development of hotel and recreational commercial land uses to provide these amenities to local residents and businesses.</p>
<p>MS G-15: Collaborate with providers of solid waste collection, disposal and recycling services to ensure a level of service that promotes a clean community and environment.</p>	GP/ Stationary, & Area	<p>Cities/Counties (e.g., Aliso Viejo, Claremont)</p>	<p>-Require recycling, composting, source reduction and education efforts throughout the community, including residential, businesses, industries, and institutions, within the construction industry, and in all sponsored activities.</p>
<p>MS G-16: Promote construction, maintenance and active use of publicly- and privately-operated parks, recreation programs, and a community center.</p>	GP/ Mobile	<p>Cities/Counties (e.g., Aliso Viejo, Claremont)</p>	<p>-Work to expand and improve community recreation amenities including parks, pedestrian trails and connections to regional trail facilities.</p> <p>-As a condition upon new development, require payment of park fees and/or dedication and provision of parkland, recreation facilities and/or multi-use trails that improve the public and private recreation system.</p> <p>-Research options or opportunities to provide necessary or desired community facilities.</p>

**Table 17
General Planning Level Mitigation Strategies Summary**

Strategy	Source Type ¹	Agency/Organization ²	Description/Comments
MS G-17: Promote the application of sustainable development practices.	GP/ Mobile, Stationary, & Area	Cities/Counties (e.g., Aliso Viejo, Claremont)	<ul style="list-style-type: none"> - Encourage sustainable development that incorporates green building best practices and involves the reuse of previously developed property and/or vacant sites within a built-up area. - Encourage the conservation, maintenance, and rehabilitation of the existing housing stock. -Encourage development that incorporates green building practices to conserve natural resources as part of sustainable development practices. -Avoid development of isolated residential areas in the hillsides or other areas where such development would require significant infrastructure investment, adversely impact biotic resources. - Provide land area zoned for commercial and industrial uses to support a mix of retail, office, professional, service, and manufacturing businesses.
MS G-18: Create activity nodes as important destination areas, with an emphasis on public life within the community.	GP/ Mobile	Cities/Counties (e.g., Aliso Viejo, Claremont)	<ul style="list-style-type: none"> -Provide pedestrian amenities, traffic-calming features, plazas and public areas, attractive streetscapes, shade trees, lighting, and retail stores at activity nodes. -Provide for a mixture of complementary retail uses to be located together to create activity nodes to serve adjacent neighborhoods and to draw visitors from other neighborhoods and from outside the area.
MS G-19: Make roads comfortable, safe, accessible, and attractive for use day and night.	GP/ Mobile	Cities/Counties (e.g., Aliso Viejo, Claremont)	<ul style="list-style-type: none"> -Provide crosswalks and sidewalks along streets that are accessible for people with disabilities and people who are physically challenged. -Provide lighting for walking and nighttime activities, where appropriate. -Provide transit shelters that are comfortable, attractive, and accommodate transit riders.
MS G-20: Maintain and expand where possible the system of neighborhood connections that attach neighborhoods to larger roadways.	GP/ Mobile	Cities/Counties (e.g., Aliso Viejo, Claremont)	<ul style="list-style-type: none"> - Provide sidewalks where they are missing, and provide wide sidewalks where appropriate with buffers and shade so that people can walk comfortably. -Make walking comfortable at intersections through traffic-calming, landscaping, and designated crosswalks.

**Table 17
General Planning Level Mitigation Strategies Summary**

Strategy	Source Type ¹	Agency/Organization ²	Description/Comments
MS G-21: Create distinctive places throughout the area.	GP/ Mobile	Cities/Counties (e.g., Aliso Viejo, Claremont)	<ul style="list-style-type: none"> -Look for opportunities for connections along easements & other areas where vehicles not permitted. -Provide benches, streetlights, public art, and other amenities in public areas to attract pedestrian activities. -Encourage new developments to incorporate drought tolerant and native landscaping that is pedestrian friendly, attractive, and consistent with the landscaped character of area. -Encourage all new development to preserve existing mature trees. -Encourage streetscape design programs for commercial frontages that create vibrant places which support walking, bicycling, transit, and sustainable economic development. -Encourage the design and placement of buildings on lots to provide opportunities for natural systems such as solar heating and passive cooling. - Ensure that all new industrial development projects are positive additions to the community setting, provide amenities for the comfort of the employees such as outdoor seating area for breaks or lunch, and have adequate landscape buffers.
MS G-22: Reinvest in existing neighborhoods and promote infill development as a preference over new, greenfield development	GP/ Mobile, Stationary, & Area	Cities/Counties (e.g., Aliso Viejo, Claremont)	<ul style="list-style-type: none"> - Identify all underused properties in the plan area and focus development in these opportunity sites prior to designating new growth areas for development. - Implement programs to retro-fit existing structures to make them more energy-efficient. -Encourage compact development, by placing the desired activity areas in smaller spaces.

Table 17
General Planning Level Mitigation Strategies Summary

Strategy	Source Type ¹	Agency/Organization ²	Description/Comments
Public Safety			
MS G-23: Promote a safe community in which residents can live, work, shop, and play.	GP/ Mobile	Cities/Counties (e.g., Aliso Viejo, Claremont)	<ul style="list-style-type: none"> - Foster an environment of trust by ensuring non-biased policing, and by adopting policies and encouraging collaboration that creates transparency. - Facilitate traffic safety for motorists and pedestrians through proper street design and traffic monitoring.
<p>Note: ¹ Where GP=General Plan. ² List is not meant to be all inclusive. Source: Data compiled by EDAW in 2007</p>			

APPENDIX C



The California Environmental Quality Act
Addressing Global Warming Impacts at the Local Agency Level

Under the California Environmental Quality Act (CEQA), local agencies have a very important role to play in California's fight against global warming – one of the most serious environmental effects facing the State today. Where local agencies undertake projects directly, they can and should design sustainable projects from the start, incorporating global warming related considerations into their projects at the earliest stages. Further, local agencies can encourage well-designed, sustainable private projects by analyzing and disclosing to the public the environmental benefits of such projects in any required environmental documents. And where projects as proposed will have significant global warming related effects, local agencies can require feasible changes or alternatives, and impose enforceable, verifiable, feasible mitigation to substantially lessen those effects. By the sum of their decisions, local agencies will help to move the State away from “business as usual” and toward a low-carbon future.

This document provides information that may be helpful to local agencies in carrying out their duties under CEQA as they relate to global warming. Included in this document are various measures that may reduce the global warming related impacts of a project. As appropriate, the measures can be included as design features of a project, required as changes to the project, or imposed as mitigation (whether undertaken directly by the project proponent or funded by mitigation fees). The measures set forth in this package are examples; the list is not intended to be exhaustive. Moreover, the measures cited may not be appropriate for every project. The decision of whether to approve a project – as proposed or with required changes or mitigation – is for the local agency, exercising its informed judgment in compliance with the law and balancing a variety of public objectives.

The first section of this document lists examples of measures that could be applied to a diverse range of projects where the lead agency determines that the project under consideration will have significant global warming related effects. In general, a given measure should not be considered in isolation, but as part of a larger set of measures that, working together, will reduce greenhouse gas emissions and the effects of global warming.

The second section of this document lists examples of potential greenhouse gas reduction measures in the general plan context. This section is included both to suggest how the measures set forth in the first section could be incorporated into a general plan, as well as to identify measures that are general plan specific. The measures in the second section may also be appropriate for inclusion in larger scale plans, including regional plans (*e.g.*, blueprint plans) and in specific plans. Including these types of measures at the larger planning level, as appropriate, will help to ensure more sustainable project-specific development.

The third section provides links to sources of information on global warming impacts and emission reduction measures. The list is not complete, but may be a helpful start for local agencies seeking more information to carry out their CEQA obligations as they relate to global warming.

The endnotes set forth just some of the many examples of exemplary emission reduction measures already being implemented by local governments and agencies, utilities, private industry, and others. As these examples evidence, California at every level of government is taking up the challenge, devising new and innovative solutions, and leading the charge in the fight against global warming.

(1) Generally Applicable Measures

Energy Efficiency¹

- Design buildings to be energy efficient.²
- Install efficient lighting and lighting control systems. Site and design building to take advantage of daylight.
- Use trees, landscaping and sun screens on west and south exterior building walls to reduce energy use.
- Install light colored “cool” roofs and cool pavements.³
- Provide information on energy management services for large energy users.⁴
- Install energy efficient heating and cooling systems, appliances and equipment, and control systems.⁵
- Install light emitting diodes (LEDs) for traffic, street and other outdoor lighting.⁶
- Limit the hours of operation of outdoor lighting.
- Use solar heating, automatic covers, and efficient pumps and motors for pools and spas.⁷
- Provide education on energy efficiency.⁸

Renewable Energy

- Install solar, wind, and geothermal power systems and solar hot water heaters. Educate consumers about existing incentives.⁹
- Install solar panels on carports and over parking areas.¹⁰
- Use on-site generated biogas, including methane, in appropriate applications.***
- Use combined heat and power in appropriate applications.¹¹

Water Conservation and Efficiency¹²

- Create water-efficient landscapes.¹³
- Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls.
- Use reclaimed water for landscape irrigation in new developments and on public property. Install the infrastructure to deliver and use reclaimed water.
- Design buildings to be water-efficient. Install water-efficient fixtures and appliances.
- Use graywater. (Graywater is untreated household waste water from bathtubs, showers, bathroom wash basins, and water from clothes washing machines.) For example, install dual plumbing in all new development allowing graywater to be used for landscape irrigation.¹⁴
- Restrict watering methods (*e.g.*, prohibit systems that apply water to non-vegetated surfaces) and control runoff.
- Restrict the use of water for cleaning outdoor surfaces and vehicles.

- Implement low-impact development practices that maintain the existing hydrologic character of the site to manage storm water and protect the environment. (Retaining storm water runoff on-site can drastically reduce the need for energy-intensive imported water at the site.)¹⁵
- Devise a comprehensive water conservation strategy appropriate for the project and location. The strategy may include many of the specific items listed above, plus other innovative measures that are appropriate to the specific project.
- Provide education about water conservation and available programs and incentives.¹⁶

Solid Waste Measures

- Reuse and recycle construction and demolition waste (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard).
- Provide interior and exterior storage areas for recyclables and green waste and adequate recycling containers located in public areas.
- Recover by-product methane to generate electricity.¹⁷
- Provide education and publicity about reducing waste and available recycling services.¹⁸

Land Use Measures

- Include mixed-use, infill, and higher density in development projects to support the reduction of vehicle trips, promote alternatives to individual vehicle travel, and promote efficient delivery of services and goods.¹⁹
- Educate the public about the benefits of well-designed, higher density development.²⁰
- Incorporate public transit into project design.
- Preserve and create open space and parks. Preserve existing trees, and plant replacement trees at a set ratio.
- Develop “brownfields” and other underused or defunct properties near existing public transportation and jobs.
- Include pedestrian and bicycle-only streets and plazas within developments. Create travel routes that ensure that destinations may be reached conveniently by public transportation, bicycling or walking.²¹

Transportation and Motor Vehicles

- Limit idling time for commercial vehicles, including delivery and construction vehicles.
- Use low or zero-emission vehicles, including construction vehicles.
- Promote ride sharing programs *e.g.*, by designating a certain percentage of parking spaces for ride sharing vehicles, designating adequate passenger loading and unloading and waiting areas for ride sharing vehicles, and providing a web site or message board for coordinating rides.
- Create car sharing programs. Accommodations for such programs include providing parking spaces for the car share vehicles at convenient locations accessible by public transportation.²²
- Create local “light vehicle” networks, such as neighborhood electric vehicle (NEV) systems.²³

- Provide the necessary facilities and infrastructure to encourage the use of low or zero-emission vehicles (*e.g.*, electric vehicle charging facilities and conveniently located alternative fueling stations).
- Increase the cost of driving and parking private vehicles by, *e.g.*, imposing tolls and parking fees.
- Institute a low-carbon fuel vehicle incentive program.²⁴
- Build or fund a transportation center where various public transportation modes intersect.
- Provide shuttle service to public transit.
- Provide public transit incentives such as free or low-cost monthly transit passes.
- Promote “least polluting” ways to connect people and goods to their destinations.²⁵
- Incorporate bicycle lanes and routes into street systems, new subdivisions, and large developments.
- Incorporate bicycle-friendly intersections into street design.
- For commercial projects, provide adequate bicycle parking near building entrances to promote cyclist safety, security, and convenience. For large employers, provide facilities that encourage bicycle commuting, including, *e.g.*, locked bicycle storage or covered or indoor bicycle parking.
- Create bicycle lanes and walking paths directed to the location of schools, parks and other destination points.²⁶
- Work with the school district to restore or expand school bus services.
- Institute a telecommute and/or flexible work hours program.²⁷ Provide information, training, and incentives to encourage participation. Provide incentives for equipment purchases to allow high-quality teleconferences.
- Provide information on all options for individuals and businesses to reduce transportation-related emissions. Provide education and information about public transportation.

Off-Site Mitigation

If, after analyzing and requiring all reasonable and feasible on-site mitigation measures for avoiding or reducing greenhouse gas-related impacts, the lead agency determines that additional mitigation is required, the agency may consider additional off-site mitigation. The project proponent could, for example, fund off-site mitigation projects (*e.g.*, alternative energy projects, or energy or water audits for existing projects) that will reduce carbon emissions, conduct an audit of its other existing operations and agree to retrofit, or purchase carbon “credits” from another entity that will undertake mitigation.

The topic of offsets can be complicated, and a full discussion is outside the scope of this summary document. Issues that the lead agency should consider include:

- The location of the off-site mitigation. (If the off-site mitigation is far from the project, any additional, non-climate related benefits of the mitigation will be lost to the local community.)
- Whether the emissions reductions from off-site mitigation can be quantified and verified.
- Whether the mitigation ratio should be greater than 1:1 to reflect any uncertainty about the effectiveness of the offset.

(2) **General Plan Measures**²⁸

Global warming measures may be reflected in a general plan as goals, policies, or programs; in land use designations; or as additional mitigation measures identified during the CEQA review process. Many of the measures listed above may be appropriate for inclusion in a general plan. In addition, a non-exhaustive list of measures specific to the general plan context follows. The examples are listed under required general plan elements. A given example may, however, be appropriate for inclusion in more than one element, or in a different element than listed. Global warming measures may, alternatively, be included in an optional Climate Change or Energy element.

Conservation Element²⁹

- **Climate Action Plan or Policy**: Include a comprehensive climate change action plan that includes: a baseline inventory of greenhouse gas emissions from all sources; greenhouse gas emissions reduction targets and deadlines; and enforceable greenhouse gas emissions reduction measures.³⁰ (Note: If the Climate Action Plan complies with the requirements of Section 15064(h)(3) of the CEQA Guidelines, it may allow for the streamlining of individual projects that comply with the plan's requirements.)
- **Climate Action Plan Implementation Program**: Include mechanisms to ensure regular review of progress toward the emission reduction targets established by the Climate Action Plan, report progress to the public and responsible officials, and revise the plan as appropriate, using principles of adaptive management. Allocate funding to implement the plan. Fund staff to oversee implementation of the plan.
- Strengthen local building codes for new construction and renovation to require a higher level of energy efficiency.³¹
- Require that all new government buildings, and all major renovations and additions, meet identified green building standards.³²
- Ensure availability of funds to support enforcement of code and permitting requirements.
- Adopt a "Green Building Program" to require or encourage green building practices and materials.³³ The program could be implemented through, *e.g.*, a set of green building ordinances.
- Require orientation of buildings to maximize passive solar heating during cool seasons, avoid solar heat gain during hot periods, enhance natural ventilation, and promote effective use of daylight. Building orientation, wiring, and plumbing should optimize and facilitate opportunities for on-site solar generation and heating.
- Provide permitting-related and other incentives for energy efficient building projects, *e.g.*, by giving green projects priority in plan review, processing and field inspection services.³⁴
- Conduct energy efficiency audits of existing buildings by checking, repairing, and readjusting heating, ventilation, air conditioning, lighting, water heating equipment, insulation and weatherization.³⁵ Offer financial incentives for adoption of identified efficiency measures.³⁶
- Partner with community services agencies to fund energy efficiency projects, including heating, ventilation, air conditioning, lighting, water heating equipment, insulation and weatherization, for low income residents.
- Target local funds, including redevelopment and Community Development Block Grant

resources, to assist affordable housing developers in incorporating energy efficient designs and features.

- Provide innovative, low-interest financing for energy efficiency and alternative energy projects. For example, allow property owners to pay for energy efficiency improvements and solar system installation through long-term assessments on individual property tax bills.³⁷
- Fund incentives to encourage the use of energy efficient vehicles, equipment and lighting.³⁸ Provide financial incentives for adoption of identified efficiency measures.
- Require environmentally responsible government purchasing.³⁹ Require or give preference to products that reduce or eliminate indirect greenhouse gas emissions, *e.g.*, by giving preference to recycled products over those made from virgin materials.⁴⁰
- Require that government contractors take action to minimize greenhouse gas emissions, *e.g.*, by using low or zero-emission vehicles and equipment.
- Adopt a “heat island” mitigation plan that requires cool roofs, cool pavements, and strategically placed shade trees.⁴¹ (Darker colored roofs, pavement, and lack of trees may cause temperatures in urban environments to increase by as much as 6-8 degrees Fahrenheit as compared to surrounding areas.⁴²) Adopt a program of building permit enforcement for re-roofing to ensure compliance with existing state building requirements for cool roofs on non-residential buildings.
- Adopt a comprehensive water conservation strategy. The strategy may include, but not be limited to, imposing restrictions on the time of watering, requiring water-efficient irrigation equipment, and requiring new construction to offset demand so that there is no net increase in water use.⁴³ Include enforcement strategies, such as citations for wasting water.⁴⁴
- Adopt water conservation pricing, *e.g.*, tiered rate structures, to encourage efficient water use.⁴⁵
- Adopt fees structures that reflect higher costs of services for outlying areas.⁴⁶
- Adopt water-efficient landscape ordinances.⁴⁷
- Strengthen local building codes for new construction and implement a program to renovate existing buildings to require a higher level of water efficiency.
- Adopt ordinances requiring energy and water efficiency upgrades as a condition of issuing permits for renovations or additions, and on the sale of residences and buildings.⁴⁸
- Provide individualized water audits to identify conservation opportunities.⁴⁹ Provide financial incentives for adopting identified efficiency measures.
- Provide water audits for large landscape accounts. Provide financial incentives for efficient irrigation controls and other efficiency measures.
- Require water efficiency training and certification for irrigation designers and installers, and property managers.⁵⁰
- Implement or expand city or county-wide recycling and composting programs for residents and businesses. Require commercial and industrial recycling.
- Extend the types of recycling services offered (*e.g.*, to include food and green waste recycling).
- Establish methane recovery in local landfills and wastewater treatment plants to generate

electricity.⁵¹

- Implement Community Choice Aggregation (CCA) for renewable electricity generation. (CCA allows cities and counties, or groups of them, to aggregate the electric loads of customers within their jurisdictions for purposes of procuring electrical services. CCA allows the community to choose what resources will serve their loads and can significantly increase renewable energy.)⁵²
- Preserve existing conservation areas (*e.g.*, forested areas, agricultural lands, wildlife habitat and corridors, wetlands, watersheds, and groundwater recharge areas) that provide carbon sequestration benefits.
- Establish a mitigation program for development of conservation areas. Impose mitigation fees on development of such lands and use funds generated to protect existing, or create replacement, conservation areas.
- Provide public education and information about options for reducing greenhouse gas emissions through responsible purchasing, conservation, and recycling.

Land Use Element⁵³

- Adopt land use designations to carry out policies designed to reduce greenhouse gas emissions, *e.g.*, policies to minimize or reduce vehicle miles traveled, expand development near existing public transportation corridors, encourage alternative modes of transportation, and increase infill, mixed use, and higher density development.
- Identify and facilitate the development of land uses not already present in local districts – such as supermarkets, parks and recreation fields, and schools in neighborhoods; or residential uses in business districts – to reduce vehicle miles traveled and allow bicycling and walking to these destinations.
- Create neighborhood commercial districts.
- Require bike lanes and bicycle/pedestrian paths.
- Prohibit projects that impede bicycle and walking access, *e.g.*, large parking areas that cannot be crossed by non-motorized vehicles, and new residential communities that block through access on existing or potential bicycle and pedestrian routes.
- Site schools to increase the potential for students to walk and bike to school.⁵⁴
- Enact policies to limit or discourage low density development that segregates employment, services, and residential areas.⁵⁵
- Where there are growth boundaries, adopt policies providing certainty for infill development.⁵⁶
- Require best management practices in agriculture and animal operations to reduce emissions, conserve energy and water, and utilize alternative energy sources, including biogas, wind and solar.

Circulation Element⁵⁷

- In conjunction with measures that encourage public transit, ride sharing, bicycling and walking, implement circulation improvements that reduce vehicle idling. For example, coordinate controlled intersections so that traffic passes more efficiently through congested areas.⁵⁸
- Create an interconnected transportation system that allows a shift in travel from private passenger vehicles to alternative modes, including public transit, ride sharing, car sharing, bicycling and walking. Before funding transportation improvements that increase vehicle miles traveled, consider alternatives such as increasing public transit or improving bicycle or pedestrian travel routes.
- Give funding preference to investment in public transit over investment in infrastructure for private automobile traffic.⁵⁹
- Include safe and convenient bicycle and pedestrian access in all transportation improvement projects.
- Ensure that non-motorized transportation systems are complete, connected and not interrupted by impassable barriers, such as freeways.⁶⁰
- Require amenities for non-motorized transportation, such as secure and convenient bicycle parking.⁶¹
- Provide adequate and affordable public transportation choices including expanded bus routes and service and other transit choices such as shuttles, light rail, and rail where feasible.
- Assess transportation impact fees on new development in order to maintain and increase public transit service.⁶²
- Provide public transit incentives, including free and reduced fare areas.⁶³
- Adopt a comprehensive parking policy that discourages private vehicle use and encourages the use of alternative transportation.⁶⁴ For example, reduce parking for private vehicles while increasing options for alternative transportation; eliminate minimum parking requirements for new buildings; “unbundle” parking (require that parking is paid for separately and is not included in rent for residential or commercial space); and set appropriate pricing for parking.
- Develop school transit plans to substantially reduce automobile trips to, and congestion surrounding, schools. (According to some estimates, parents driving their children to school account for 20-25% of the morning commute.) Plans may address, *e.g.*, necessary infrastructure improvements and potential funding sources; replacing older diesel buses with low or zero-emission vehicles; mitigation fees to expand school bus service; and Safe Routes to School programs⁶⁵ and other formal efforts to increase walking and biking by students.
- Create financing programs for the purchase or lease of vehicles used in employer ride sharing programs.
- Enter into partnerships to create and expand polluting vehicle buy-back programs to include vehicles with high greenhouse gas emissions.
- Provide public education and information about options for reducing motor vehicle-related greenhouse gas emissions. Include information on trip reduction; trip linking; public transit;

biking and walking; vehicle performance and efficiency (*e.g.*, keeping tires inflated); low or zero-emission vehicles; and car and ride sharing.

Housing Element⁶⁶

- Improve the jobs-housing balance and promote a range of affordable housing choices near jobs, services and transit.
- Concentrate mixed use, and medium to higher density residential development in areas near jobs, transit routes, schools, shopping areas and recreation.
- Increase density in single family residential areas located near transit routes or commercial areas. For example, promote duplexes in residential areas and increased height limits of multi-unit buildings on main arterial streets, under specified conditions.
- Encourage transit-oriented developments.⁶⁷
- Impose minimum residential densities in areas designated for transit-oriented, mixed use development to ensure higher density in these areas.
- Designate mixed use areas where housing is one of the required uses.
- In areas designated for mixed use, adopt incentives for the concurrent development of different land uses (*e.g.*, retail with residential).
- Promote infill, mixed use, and higher density development by, for example, reducing developer fees;⁶⁸ providing fast-track permit processing; reducing processing fees; funding infrastructure loans; and giving preference for infrastructure improvements in these areas.

Open Space Element⁶⁹

- Preserve forested areas, agricultural lands, wildlife habitat and corridors, wetlands, watersheds, groundwater recharge areas and other open space that provide carbon sequestration benefits.
- Establish a mitigation program for development of those types of open space that provide carbon sequestration benefits. Require like-kind replacement for, or impose mitigation fees on development of such lands. Use funds generated to protect existing, or create replacement, open space.
- Allow alternative energy projects in areas zoned for open space where consistent with other uses and values.
- Protect existing trees and encourage the planting of new trees. Adopt a tree protection and replacement ordinance, *e.g.*, requiring that trees larger than a specified diameter that are removed to accommodate development must be replaced at a set ratio.
- Connect parks and publicly accessible open space through shared pedestrian/bike paths and trails to encourage walking and bicycling.

Safety Element⁷⁰

- Address expected effects of climate change that may impact public safety, including increased risk of wildfires, flooding and sea level rise, salt water intrusion; and health effects of increased heat and ozone, through appropriate policies and programs.
- Adopt programs for the purchase, transfer or extinguishment of development rights in high risk areas.
- Monitor the impacts of climate change. Use adaptive management to develop new strategies, and modify existing strategies, to respond to the impacts of climate change.

Energy Element

Many of the goals, policies, or programs set forth above may be contained in an optional energy element. The resources set forth below may be useful to local agencies in developing an energy element or an energy conservation plan.

- The California Public Utilities Commission issued a report entitled California Long Term Energy Efficiency Strategic Plan in September 2008. The report serves as a road map for achieving maximum energy savings across all major groups and sectors in California. Section 12 of the report focuses on the role of local governments as leaders in using energy efficiency to reduce energy use and greenhouse gas emissions. The section includes numerous specific suggestions for local government policies designed to reduce energy use. The report is available at <http://www.californiaenergyefficiency.com/index.shtml>.
- The Local Government Commission produced a detailed report in 2002 entitled General Plan Policy Options for Energy Efficiency in New and Existing Development. The document sets forth energy saving policies suitable for inclusion in general plans. Policies range from exceeding State minimum building efficiency standards, to retrofitting buildings to reduce energy consumption, to implementing energy conservation strategies for roofs, pavement and landscaping. The report also contains suggested general plan language. The report is available here: http://www.redwoodenergy.org/uploads/Energy_Element_Report.pdf.
- The California Energy Commission summarizes the energy-related efforts of Humboldt County, City of Pleasanton, City of Pasadena, City and County of San Francisco, the Los Angeles area, City of Chula Vista, the San Diego region, City of San Diego, City and County of San Luis Obispo, and City of Santa Monica, in the 2006 Integrated Energy Policy Report at pp. 82-87, available here: <http://www.energy.ca.gov/2006publications/CEC-100-2006-001/CEC-100-2006-001-CMF.PDF>.
- In 2006, the Association of Monterey Bay Area Governments published a regional energy plan, available here: http://www.ambag.org/programs/EnergyWatch/regional_plan.html. Part 1 describes the plan's goals and course of action. Part 2 describes actions that local agencies already have taken and identifies the most cost-effective measures in each sector. The appendices list existing energy programs that may provide support and funding for energy efficiency projects, suggest language for energy-related provisions to be included in general plans, and list and give brief explanations of more than one hundred energy-saving measures.
- The California Local Energy Efficiency Program (CALeep) has available on its website, <http://www.caleep.com/default.htm>, various resources and documents, including an energy

“Workbook.” The Workbook lays out a process for instituting local energy efficiency programs based in part on information developed in six California pilot projects (Inland Empire Utilities Agency, City of Oakland, San Joaquin Valley, Sonoma County, South Bay Cities Council of Governments, and Ventura County Regional Energy Alliance). The Workbook is designed to be used by local officials to initiate, plan, organize, implement, and assess energy efficiency activities at the local and regional level.

(3) **Resources About Global Warming and Local Action**

The following web sites and organizations provide general information about mitigating global warming impacts at the local level. These sites represent only a small fraction of the available resources. Local agencies are encouraged to conduct their own research in order to obtain the most current and relevant materials.

- The U.S. Conference of Mayors’ Climate Protection Agreement contains valuable information for the many local agencies that are joining the fight against global warming. The Agreement is available here: http://www.coolcities.us/resources/bestPracticeGuides/USM_ClimateActionHB.pdf. Over one hundred and twenty California cities have joined the “Cool Cities” campaign, which means they have signed the U.S. Mayor’s Climate Protection Agreement and are taking concrete steps toward addressing global warming. These steps include preparing a city-wide greenhouse gas emissions inventory and creating and implementing a local Climate Action Plan. Additional resources, including various cities’ Climate Action Plans, are located at the Cool Cities website: <http://www.coolcities.us/resources.php>.
- In July 2007, Alameda County became one of twelve charter members of the “Cool Counties” initiative. Participating counties sign a Climate Stabilization Declaration, which is available at the website for King County (Washington State): <http://www.metrokc.gov/exec/news/2007/0716dec.aspx>. Participating counties agree to work with local, state, and federal governments and other leaders to reduce county geographical greenhouse gas emissions to 80% below current levels by 2050 by developing a greenhouse gas emissions inventory and regional reduction plan. Current member counties are recruiting new members and are committed to sharing information. Cool Counties contact information is available at: <http://www.kingcounty.gov/exec/coolcounties>.
- Local Governments for Sustainability, a program of International Cities for Local Environmental Initiatives (ICLEI), has initiated a campaign called Cities for Climate Protection (CCP). The membership program is designed to empower local governments worldwide to take action on climate change. Many California cities have joined ICLEI. More information is available at the organization’s website: <http://www.iclei.org/>.
- The Institute for Local Government (ILG), an affiliate of the California State Association of Counties and the League of California Cities, has instituted a program called the California Climate Action Network (CaliforniaCAN!). The program provides information about the latest climate action resources and case studies. More information is available at the CaliforniaCAN! website: <http://www.cacities.org/index.jsp?displaytype=§ion=climate&zone=ilsg>.

ILG’s detailed list of climate change “best practices” for local agencies is available at http://www.cacities.org/index.jsp?displaytype=§ion=climate&zone=ilsg&sub_sec=climate_local.

ILG maintains a list of local agencies that have adopted Climate Action Plans. The list is available here: <http://www.cacities.org/index.jsp?zone=ilsg&previewStory=27035>. According to ILG, the list includes Marin County and the cities of Arcata, Berkeley, Los Angeles, Palo Alto, San Diego, and San Francisco. Many additional local governments are in the process of conducting greenhouse gas inventories.

- The non-profit group Natural Capitalism Solutions (NCS) has developed an on-line Climate Protection Manual for Cities. NCS states that its mission is “to educate senior decision-makers in business, government and civil society about the principles of sustainability.” The manual is available at <http://www.climatemanual.org/Cities/index.htm>.
- The Local Government Commission provides many planning-related resources for local agencies at its website: <http://www.lgc.org/>.

In cooperation with U.S. EPA, LGC has produced a booklet discussing the benefits of density and providing case studies of well-designed, higher density projects throughout the nation. *Creating Great Neighborhoods: Density in Your Community* (2003) is available here: http://www.lgc.org/freepub/PDF/Land_Use/reports/density_manual.pdf.

- The Pew Center on Global Climate Change was established in 1998 as a non-profit, non-partisan and independent organization. The Center’s mission is to provide credible information, straight answers, and innovative solutions in the effort to address global climate change. See <http://www.pewclimate.org>. The Pew Center has published a series of reports called Climate Change 101. These reports provide a reliable and understandable introduction to climate change. They cover climate science and impacts, technological solutions, business solutions, international action, recent action in the U.S. states, and action taken by local governments. The Climate Change 101 reports are available at http://www.pewclimate.org/global-warming-basics/climate_change_101.
- The Climate Group, www.theclimategroup.org, is a non-profit organization founded by a group of companies, governments and activists to “accelerate international action on global warming with a new, strong focus on practical solutions.” Its website contains a searchable database of about fifty case studies of actions that private companies, local and state governments, and the United Kingdom, have taken to reduce GHG emissions. Case studies include examples from California. The database, which can be searched by topic, is available at http://theclimategroup.org/index.php/reducing_emissions/case_studies.
- The Bay Area Climate Solutions Database features over 130 climate-related projects, programs and policies in the San Francisco Bay Area that are being undertaken by businesses, public agencies, non-government organizations, and concerned individuals. The database is available at <http://www.bayareaclimate.org/services.html>.
- U.S. EPA maintains a list of examples of codes that support “smart growth” development, available here: <http://www.epa.gov/piedpage/codeexamples.htm>. Examples include transit-oriented development in Pleasant Hill and Palo Alto, rowhouse design guidelines from Mountain View, and street design standards from San Diego.
- In November 2007, U.S. EPA issued a report entitled “Measuring the Air Quality and Transportation Impacts of Infill Development.” This report summarizes three regional infill development scenarios in Denver, Colorado; Boston, Massachusetts; and Charlotte, North

Carolina. The analysis shows how standard transportation forecasting models currently used by metropolitan planning organizations can be modified to capture at least some of the transportation and air quality benefits of brownfield and infill development. In all scenarios, more compact and transit oriented development was projected to substantially reduce vehicle miles traveled. As the agency found, “The results of this analysis suggest that strong support for infill development can be one of the most effective transportation and emission-reduction investments a region can pursue.” The report is available at http://www.epa.gov/smartgrowth/impacts_infill.htm.

- The Urban Land Institute (ULI) is a nonprofit research and education organization providing leadership in responsible land use and sustainability. In 2007, ULI produced a report entitled, “Growing Cooler: The Evidence on Urban Development and Climate Change,” which reviews existing research on the relationship between urban development, travel, and greenhouse gases emitted by motor vehicles. It further discusses the emissions reductions that can be expected from compact development and how to make compact development happen. “Growing Cooler” is available at <http://www.smartgrowthamerica.org/gcindex.html>.
- The California Department of Housing and Community Development, <http://www.hcd.ca.gov/>, has many useful resources on its website related to housing policy and housing elements and specific recommendations for creating higher density and affordable communities. See <http://www.hcd.ca.gov/hpd/hrc/plan/he/>.
- The California Transportation Commission (CTC) recently made recommendations for changes to regional transportation guidelines to address climate change issues. Among other things, the CTC recommends various policies, strategies and performance standards that a regional transportation agency should consider including in a greenhouse reduction plan. These or analogous measures could be included in other types of planning documents or local climate action plans. The recommendation document, and Attachment A, entitled Smart Growth/Land Use Regional Transportation Plan Guidelines Amendments, are located at http://www.dot.ca.gov/hq/transprog/ctcbooks/2008/0108/12_4.4.pdf.
- The California Energy Commission’s Research Development and Demonstration (RD&D) Division supports energy research, development and demonstration projects designed to bring environmentally safe, affordable and reliable energy services and products to the marketplace. On its website, http://www.energy.ca.gov/research/reports_pubs.html, RD&D makes available a number of reports and papers related to energy efficiency, alternative energy, and climate change.
- The Governor’s Office of Planning and Research (OPR) provides valuable resources for lead agencies related to CEQA and global warming at <http://opr.ca.gov/index.php?a=ceqa/index.html>. Among the materials available are a list of environmental documents addressing climate change and greenhouse gas emissions and a list of local plans and policies addressing climate change. In addition, OPR’s The California Planners’ Book of Lists 2008, which includes the results of surveys of local agencies on matters related to global warming, is available at <http://www.opr.ca.gov/index.php?a=planning/publications.html#pubs-C>.
- The California Air Pollution Control Officers Association has prepared a white paper entitled “CEQA and Climate Change” (January 2008). The document includes a list of mitigation measures and information about their relative efficacy and cost. The document is available at

<http://www.capcoa.org/ceqa/?docID=ceqa>.

- The Attorney General’s global warming website includes a section on CEQA. See <http://ag.ca.gov/globalwarming/ceqa.php>. The site includes all of the Attorney General’s public comment letters that address CEQA and global warming.

(4) Endnotes

1. Energy efficiency leads the mitigation list because it promises significant greenhouse gas reductions through measures that are cost-effective for the individual residential and commercial energy consumer.
2. Leadership in Energy and Environmental Design (LEED) administers a Green Building Ratings program that provides benchmarks for the design, construction, and operation of high-performance green buildings. More information about the LEED ratings system is available at <http://www.usgbc.org/DisplayPage.aspx?CategoryID=19>. Build it Green is a non-profit, membership organization that promotes green building practices in California. The organization offers a point-based, green building rating system for various types of projects. See <http://www.builditgreen.org/guidelines-rating-systems>. Lawrence Berkeley National Laboratories’ Building Technologies Department is working to develop coherent and innovative building construction and design techniques. Information and publications on energy efficient buildings are available at the Department’s website at <http://btech.lbl.gov>. The California Department of Housing and Community Development has created an extensive Green Building & Sustainability Resources handbook with links to green building resources, available at http://www.hcd.ca.gov/hpd/green_build.pdf.
3. For more information, see Lawrence Berkeley National Laboratories, Heat Island Group at <http://eetd.lbl.gov/HeatIsland/>.
4. See California Energy Commission, “How to Hire an Energy Services Company” (2000) at http://www.energy.ca.gov/reports/efficiency_handbooks/400-00-001D.PDF.
5. Energy Star is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy that certifies energy efficient products and provides guidelines for energy efficient practices for homes and businesses. More information about Energy Star-certified products is available at <http://www.energystar.gov/>. The Electronic Product Environmental Assessment Tool (EPEAT) is a system that ranks computer products based on their conformance to a set of environmental criteria, including energy efficiency. More information about EPEAT is available at <http://www.epeat.net/AboutEPEAT.aspx>.
6. LED lighting is substantially more energy efficient than conventional lighting and can save money. See http://www.energy.ca.gov/efficiency/partnership/case_studies/TechAsstCity.pdf (noting that installing LED traffic signals saved the City of Westlake about \$34,000 per year). As of 2005, only about a quarter of California’s cities and counties were using 100% LEDs in traffic signals. See California Energy Commission (CEC), Light Emitting Diode Traffic Signal Survey (2005) at p. 15, available at <http://www.energy.ca.gov/2005publications/CEC-400-2005-003/CEC-400-2005-003.PDF>. The CEC’s Energy Partnership Program can help local governments take advantage of energy saving technology, including, but not limited to, LED traffic signals. See <http://www.energy.ca.gov/efficiency/partnership/>.
7. See Palm Desert Energy Partnership at <http://www.sce.com/rebatesandsavings/palmdesert>. The City, in partnership with Southern California Edison, provides incentives and rebates for efficient equipment.

See Southern California Edison, Pool Pump and Motor Replacement Rebate Program at <http://www.sce.com/RebatesandSavings/Residential/pool/pump-motor>.

8. Many cities and counties provide energy efficiency education. See, for example, the City of Stockton's Energy Efficiency website at <http://www.stocktongov.com/energysaving/index.cfm>. See also "Green County San Bernardino," <http://www.greencountysb.com/> at pp. 4-6. Private projects may also provide education. For example, a homeowners' association could provide information and energy audits to its members on a regular basis.
9. See <http://www.gosolarcalifornia.ca.gov/documents/CEC-300-2007-008-CMF.PDF>. At the direction of Governor Schwarzenegger, the California Public Utilities Commission (CPUC) approved the California Solar Initiative on January 12, 2006. The initiative creates a \$3.3 billion, ten-year program to install solar panels on one million roofs in the State. See <http://www.gosolarcalifornia.ca.gov/nshp/index.html>.
10. For example, Alameda County has installed two solar tracking carports, each generating 250 kilowatts. By 2005, the County had installed eight photovoltaic systems totaling over 2.3 megawatts. The County is able to meet 6 percent of its electricity needs through solar power. See <http://www.acgov.org/gsa/Alameda%20County%20-%20Solar%20Case%20Study.pdf>.
11. Many commercial, industrial, and campus-type facilities (such as hospitals, universities and prisons) use fuel to produce steam and heat for their own operations and processes. Unless captured, much of this heat is wasted. Combined heat and power (CHP) captures waste heat and re-uses it, *e.g.*, for residential or commercial space heating or to generate electricity. See U.S. EPA, Catalog of CHP Technologies at http://www.epa.gov/chp/documents/catalog_of_%20chp_tech_entire.pdf. The average efficiency of fossil-fueled power plants in the United States is 33 percent. By using waste heat recovery technology, CHP systems typically achieve total system efficiencies of 60 to 80 percent. CHP can also substantially reduce emissions of carbon dioxide. <http://www.epa.gov/chp/basic/efficiency.html>. Currently, CHP in California has a capacity of over 9 million kilowatts. See list of California CHP facilities at <http://www.eea-inc.com/chpdata/States/CA.html>.
12. The California Energy Commission has found that the State's water-related energy use – which includes the conveyance, storage, treatment, distribution, wastewater collection, treatment, and discharge – consumes about 19 percent of the State's electricity, 30 percent of its natural gas, and 88 billion gallons of diesel fuel every year. See <http://www.energy.ca.gov/2007publications/CEC-999-2007-008/CEC-999-2007-008.PDF>. Accordingly, reducing water use and improving water efficiency can help reduce energy use and associated greenhouse gas emissions.
13. The Water Conservation in Landscaping Act of 2006 (AB 1881) requires the Department of Water Resources (DWR), not later than January 1, 2009, to update the Model Water Efficient Landscape Ordinance. The draft of the entire updated Model Water Efficient Landscape Ordinance will be made available to the public. See <http://www.owue.water.ca.gov/landscape/ord/updatedOrd.cfm>.
14. See Graywater Guide, Department of Water Resources, Office of Water Use Efficiency and Transfers at http://www.owue.water.ca.gov/docs/graywater_guide_book.pdf. See also The Ahwahnee Water Principles, Principle 6, at http://www.lgc.org/ahwahnee/h2o_principles.html. The Ahwahnee Water Principles have been adopted by City of Willits, Town of Windsor, Menlo Park, Morgan Hill, Palo Alto,

Petaluma, Port Hueneme, Richmond, Rohnert Park, Rolling Hills Estates, San Luis Obispo, Santa Paula, Santa Rosa, City of Sunnyvale, City of Ukiah, Ventura, Marin County, Marin Municipal Water District, and Ventura County.

15. See Office of Environmental Health Hazard Assessment and the California Water and Land Use Partnership, Low Impact Development, at <http://www.coastal.ca.gov/nps/lid-factsheet.pdf>.
16. See, for example, the City of Santa Cruz, Water Conservation Office at <http://www.ci.santa-cruz.ca.us/wt/conservation>; Santa Clara Valley Water District, Water Conservation at <http://www.valleywater.org/conservation/index.shtml>; and Metropolitan Water District and the Family of Southern California Water Agencies, Be Water Wise at <http://www.bewaterwise.com>. Private projects may provide or fund similar education.
17. See Public Interest Energy Research Program, Dairy Power Production Program, Dairy Methane Digester System, 90-Day Evaluation Report, Eden Vale Dairy (Dec. 2006) at <http://www.energy.ca.gov/2006publications/CEC-500-2006-083/CEC-500-2006-083.PDF>. See also discussion in the general plan section, below, relating to wastewater treatment plants and landfills.
18. Many cities and counties provide information on waste reduction and recycling. See, for example, the Butte County Guide to Recycling at <http://www.recyclebutte.net>. The California Integrated Waste Management Board's website contains numerous publications on recycling and waste reduction that may be helpful in devising an education project. See <http://www.ciwmb.ca.gov/Publications/default.asp?cat=13>. Private projects may also provide education directly, or fund education.
19. See U.S. EPA, Our Built and Natural Environments, A Technical Review of the Interactions between Land Use, Transportation, and Environmental Quality (Jan. 2001) at pp. 46-48 <http://www.epa.gov/dced/pdf/built.pdf>.
20. See California Department of Housing and Community Development, Myths and Facts About Affordable and High Density Housing (2002), available at <http://www.hcd.ca.gov/hpd/mythsnfacts.pdf>.
21. Palo Alto's Green Ribbon Task Force Report on Climate Protection recommends pedestrian and bicycle-only streets under its proposed actions. See <http://www.city.palo-alto.ca.us/civica/filebank/blobdload.asp?BlobID=7478>.
22. There are a number of car sharing programs operating in California, including City CarShare <http://www.citycarshare.org/> and Zip Car <http://www.zipcar.com/>.
23. The City of Lincoln has a NEV program. See <http://www.lincolnev.com/index.html>.
24. The County of Los Angeles has instituted an alternative fuel vehicle purchasing program open to County employees, retirees, family members, and contractors and subcontractors. See <http://www.lacounty.gov/VPSP.htm>.
25. Promoting "least polluting" methods of moving people and goods is part of a larger, integrated "sustainable streets" strategy now being explored at U.C. Davis's Sustainable Transportation Center. Resources and links are available at the Center's website. See <http://stc.ucdavis.edu/outreach/ssp.php>.

26. See, for example, Marin County's Safe Routes to Schools program at <http://www.saferoutestoschools.org> ; see also California Center for Physical Activity's California Walk to School website at <http://www.cawalktoschool.com>.
27. Through a continuing FlexWork Implementation Program, the Traffic Solutions division of the Santa Barbara County Association of Governments (SBCAG) is sponsoring flexwork consulting, training and implementation services to a limited number of Santa Barbara County organizations that want to create or expand flexwork programs for the benefit of their organizations, employees and the community. See http://www.flexworks.com/read_more_about_the_fSBp.html.
28. For information on the general plan process, see Governor's Office of Planning and Research, General Plan Guidelines (1998), available at <http://ceres.ca.gov/planning/genplan/gpg.pdf>.
29. The Conservation Element addresses the conservation, development, and use of natural resources including water, forests, soils, rivers, and mineral deposits. Measures proposed for the Conservation Element may alternatively be appropriate for other elements. In practice, there may be substantial overlap in the global warming mitigation measures appropriate for the Conservation and Open Space Elements.
30. See the Attorney General's settlement agreement with the County of San Bernardino, available at http://ag.ca.gov/cms_pdfs/press/2007-08-21_San_Bernardino_settlement_agreement.pdf; Attorney General's settlement agreement with the City of Stockton, available at http://ag.ca.gov/cms_attachments/press/pdfs/n1608_stocktonagreement.pdf . See also Marin County Greenhouse Gas Reduction Plan (Oct. 2006) at http://www.co.marin.ca.us/depts/CD/main/pdf/final_ghg_red_plan.pdf; Marin Countywide Plan (Nov. 6, 2007) at http://www.co.marin.ca.us/depts/CD/main/fm/cwpdocs/CWP_CD2.pdf; Draft Conservation Element, General Plan, City of San Diego at <http://www.sandiego.gov/planning/genplan/pdf/generalplan/ce070918.pdf>.
31. Public Resources Code Section 25402.1(h)2 and Section 10-106 of the Building Energy Efficiency Standards establish a process that allows local adoption of energy standards that are more stringent than the statewide Standards. More information is available at the California Energy Commission's website. See http://www.energy.ca.gov/title24/2005standards/ordinances_exceeding_2005_building_standards.html; see also California Public Utilities Commission, California Long Term Energy Efficiency Strategic Plan (Sept. 2008) at p. 92, available at <http://www.californiaenergyefficiency.com/docs/EEStrategicPlan.pdf>.
32. See, e.g., LEED at <http://www.usgbc.org/DisplayPage.aspx?CategoryID=19>; see also Build it Green at <http://www.builditgreen.org/guidelines-rating-systems>.
33. During 2007 and 2008, an unprecedented number of communities across the State adopted green building requirements in order to increase energy efficiency and decrease greenhouse gas emissions and other environmental impacts within their jurisdictions. The California Attorney General's office has prepared a document that identifies common features of recent green building ordinances and various approaches that cities and counties have taken. The document is available at <http://ag.ca.gov/globalwarming/greenbuilding.php>.

34. See, e.g., “Green County San Bernardino,” <http://www.greencountysb.com/>. As part of its program, the County is waiving permit fees for alternative energy systems and efficient heating and air conditioning systems. See <http://www.greencountysb.com/> at p. 3. For a representative list of incentives for green building offered in California and throughout the nation, see U.S. Green Building Council, Summary of Government LEED Incentives (updated quarterly) at <https://www.usgbc.org/ShowFile.aspx?DocumentID=2021>.
35. For example, Riverside Public Utilities offers free comprehensive energy audits to its business customers. See <http://www.riversideca.gov/utilities/busi-technicalassistance.asp>.
36. Under Southern California Gas Company’s Energy Efficiency Program for Commercial/Industrial Large Business Customers, participants are eligible to receive an incentive based on 50% of the equipment cost, or \$0.50 per therm saved, whichever is lower, up to a maximum amount of \$1,000,000 per customer, per year. Eligible projects require an energy savings of at least 200,000 therms per year. See <http://www.socalgas.com/business/rebates>.
37. The City of Berkeley is in the process of instituting a “Sustainable Energy Financing District.” According to the City, “The financing mechanism is loosely based on existing ‘underground utility districts’ where the City serves as the financing agent for a neighborhood when they move utility poles and wires underground. In this case, individual property owners would contract directly with qualified private solar installers and contractors for energy efficiency and solar projects on their building. The City provides the funding for the project from a bond or loan fund that it repays through assessments on participating property owners’ tax bills for 20 years.” See <http://www.cityofberkeley.info/Mayor/PR/pressrelease2007-1023.htm>.

The California Energy Commission’s Public Interest Energy Research Program estimates that the technical potential for rooftop applications of photovoltaic systems in the State is about 40 gigawatts in 2006, rising to 68 gigawatts in 2016. See Public Interest Energy Research Program, California Rooftop Photovoltaic (PV) Resource Assessment and Growth Potential by County (2007), available at <http://www.energy.ca.gov/publications/displayOneReport.php?pubNum=CEC-500-2007-048>.
38. As described in its Climate Action Plan, the City of San Francisco uses a combination of incentives and technical assistance to reduce lighting energy use in small businesses such as grocery stores, small retail outlets, and restaurants. The program offers free energy audits and coordinated lighting retrofit installation. In addition, the City offers residents the opportunity to turn in their incandescent lamps for coupons to buy fluorescent units. See San Francisco’s Climate Action Plan, available at <http://www.sfenvironment.org/downloads/library/climateactionplan.pdf>.
39. Among other strategies for reducing its greenhouse gas emissions, Yolo County is considering a purchasing policy that mandates all purchases of electrical equipment meet or exceed the PG&E Energy Star rating. This would require departments to purchase improved efficiency refrigerators, microwaves and related appliances that have greater power efficiencies and less GHG impacts. See <http://www.yolocounty.org/Index.aspx?page=878>.
40. See, for example, Los Angeles County Green Purchasing Policy, June 2007 at <http://www.responsiblepurchasing.org/UserFiles/File/General/Los%20Angeles%20County,%20Green%20Purchasing%20Policy,%20June%202007.pdf>. The policy requires County agencies to purchase

products that minimize environmental impacts, including greenhouse gas emissions. See also California Energy Commission, Existing Green Procurement Initiatives, available at http://www.cec.org/files/pdf/ECONOMY/Green-Procurement_Initiatives_en.pdf.

41. Some local agencies have implemented a cool surfaces programs in conjunction with measures to address storm water runoff and water quality. See, for example, The City of Irvine’s Sustainable Travelways/Green Streets program at http://www.cityofirvine.org/depts/redevelopment/sustainable_travelways.asp; The City of Los Angeles’s Green Streets LA program at http://water.lgc.org/water-workshops/la-workshop/Green_Streets_Daniels.pdf/view; see also The Chicago Green Alley Handbook at http://egov.cityofchicago.org/webportal/COCWebPortal/COC_EDITORIAL/GreenAlleyHandbook_Jan.pdf.
42. See the website for Lawrence Berkeley National Laboratory’s Urban Heat Island Group at <http://eetd.lbl.gov/HeatIsland/LEARN/> and U.S. EPA’s Heat Island website at www.epa.gov/heatisland/. To learn about the effectiveness of various heat island mitigation strategies, see the Mitigation Impact Screening Tool, available at <http://www.epa.gov/heatisld/resources/tools.html>.
43. For example, the City of Lompoc has a policy to “require new development to offset new water demand with savings from existing water users, as long as savings are available.” See <http://www.ci.lompoc.ca.us/departments/comdev/pdf07/RESRCMGMT.pdf>.
44. The Eastern Municipal Water District imposes fines on all customers, including residential customers, for excessive runoff. See Water Use Efficiency Ordinance 72.23, available at <http://www.emwd.org/usewaterwisely>.
45. The Irvine Ranch Water District in Southern California, for example, uses a five-tiered rate structure that rewards conservation. The water district has a baseline charge for necessary water use. Water use that exceeds the baseline amount costs incrementally more money. While “low volume” water use costs \$.082 per hundred cubic feet (ccf), “wasteful” water use costs \$7.84 per ccf. See http://www.irwd.com/AboutIRWD/rates_residential.php. Marin County has included tiered billing rates as part of its general plan program to conserve water. See Marin County Countywide Plan, page 3-204, PFS-2.q, available at http://www.co.marin.ca.us/depts/CD/main/fm/cwpdocs/CWP_CD2.pdf.
46. The Sacramento Regional Sanitation District has adopted a tiered sewer impact fee ordinance that charges less for connections to identified “infill communities” as compared to identified “new communities.” See <http://www.srcsd.com/pdf/ord-0106.pdf>.
47. See the City of Fresno’s Watering Regulations and Ordinances at <http://www.fresno.gov/Government/DepartmentDirectory/PublicUtilities/Watermanagement/Conservation/WaterRegulation/WateringRegulationsandRestrictions.htm>.
48. See, e.g., the City of San Diego’s plumbing retrofit ordinance at <http://www.sandiego.gov/water/conservation/selling.shtml>; City of San Francisco’s residential energy conservation ordinance (fact sheet) at http://www.sfgov.org/site/uploadedfiles/dbi/Key_Information/19_ResidEnergyConsBk1107v5.pdf.

49. The City of Roseville offers free water conservation audits through house calls and on-line surveys. See http://www.roseville.ca.us/eu/water_utility/water_conservation/for_home/programs_n_rebates.asp.
50. See Landscape Performance Certification Program, Municipal Water District of Orange County at http://waterprograms.com/wb/30_Landscapers/LC_01.htm.
51. For example, San Diego's Metropolitan Wastewater Department (SDMWD) installed eight digesters at one of its wastewater treatment plants. Digesters use heat and bacteria to break down the organic solids removed from the wastewater to create methane, which can be captured and used for energy. The methane generated by SDMWD's digesters runs two engines that supply enough energy for all of the plant's needs, and the plant sells the extra energy to the local grid. See <http://www.sandiego.gov/mwwd/facilities/ptloma.shtml>. In addition, the California Air Resources Board approved the Landfill Methane Capture Strategy as an early action measure. <http://www.arb.ca.gov/cc/landfills/landfills.htm>. Numerous landfills in California, such as the Puente Hills Landfill in Los Angeles County (http://www.lacsd.org/about/solid_waste_facilities/puente_hills/clean_fuels_program.asp), the Scholl Canyon Landfill in the City of Glendale (http://www.glendalewaterandpower.com/the_environment/renewable_energy_development.aspx), and the Yolo Landfill in Yolo County, are using captured methane to generate power and reduce the need for other more carbon-intensive energy sources.
52. On April 30, 2007, the Public Utilities Commission authorized a CCA application by the Kings River Conservation District on behalf of San Joaquin Valley Power Authority (SJVPA). SJVPA's Implementation Plan and general CCA program information are available at www.communitychoice.info. See also <http://www.co.marin.ca.us/depts/CD/main/comdev/advance/Sustainability/Energy/cca/CCA.cfm>. (County of Marin); and http://sfwater.org/mto_main.cfm/MC_ID/12/MSC_ID/138/MTO_ID/237 (San Francisco Public Utilities Commission). See also Public Interest Energy Research, Community Choice Aggregation (fact sheet) (2007), available at <http://www.energy.ca.gov/publications/displayOneReport.php?pubNum=CEC-500-2006-082>.
53. The Land Use Element designates the type, intensity, and general distribution of uses of land for housing, business, industry, open-space, education, public buildings and grounds, waste disposal facilities, and other categories of public and private uses.
54. The Center for Physical Activity within the California Department of Public Health supports school siting and joint use policies and practices that encourage kids to walk and bike to school; discourage car trips that cause air pollution and damage the environment; and position schools as neighborhood centers that offer residents recreational, civic, social, and health services easily accessible by walking or biking. The Center offers school siting resources on its website at http://www.caphysicalactivity.org/school_siting.html#resources.
55. Samples of local legislation to reduce sprawl are set forth in the U.S. Conference of Mayors' Climate Action Handbook. See http://www.iclei.org/documents/USA/documents/CCP/Climate_Action_Handbook-0906.pdf.

56. For a list and maps related to urban growth boundaries in California, see Urban Growth Boundaries and Urban Line Limits, Association of Bay Area Governments (2006) at <http://www.abag.ca.gov/jointpolicy/Urban%20Growth%20Boundaries%20and%20Urban%20Limit%20Lines.pdf>.
57. The Circulation Element works with the Land Use element and identifies the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals, and other local public utilities and facilities.
58. See Orange County Transportation Authority, Signal Synchronization at <http://www.octa.net/signals.aspx>. Measures such as signal synchronization that improve traffic flow must be paired with other measures that encourage public transit, bicycling and walking so that improved flow does not merely encourage additional use of private vehicles.
59. San Francisco's "Transit First" Policy is listed in its Climate Action Plan, available at <http://www.sfenvironment.org/downloads/library/climateactionplan.pdf>. The City's policy gives priority to public transit investments and provides public transit street capacity and discourages increases in automobile traffic. This policy has resulted in increased transit service to meet the needs generated by new development.
60. The City of La Mesa has a Sidewalk Master Plan and an associated map that the City uses to prioritize funding. See <http://www.ci.la-mesa.ca.us/index.asp?NID=699>; see also Toolkit for Improving Walkability in Alameda County, available at http://www.acta2002.com/ped-toolkit/ped_toolkit_print.pdf; and U.S. EPA's list of transit-related "smart growth" publications at <http://www.epa.gov/dced/publications.htm#air>, including Pedestrian and Transit-Friendly Design: A Primer for Smart Growth (1999), available at www.epa.gov/dced/pdf/ptfd_primer.pdf. Pursuant to the California Complete Streets Act of 2008 (AB 1358, Gov. Code, §§ 65040.2 and 65302), commencing January 1, 2011, upon any substantive revision of the circulation element of the general plan, a city or county will be required to modify the circulation element to plan for a balanced, multimodal transportation network that meets the needs of all users.
61. See the City of Oakland's Bicycle Parking Requirements ordinance, available at www.oaklandpw.com/assetfactory.aspx?did=3337.
62. San Francisco assesses a Downtown Transportation Impact Fee on new office construction and commercial office space renovation within a designated district. The fee is discussed in the City's Climate Action plan, available at <http://www.sfenvironment.org/downloads/library/climateactionplan.pdf>.
63. For example, Seattle, Washington maintains a public transportation "ride free" zone in its downtown from 6:00 a.m. to 7:00 p.m. daily. See http://transit.metrokc.gov/tops/accessible/paccessible_map.html#fare.
64. See, for example, Reforming Parking Policies to Support Smart Growth, Metropolitan Transportation Commission (June 2007) at http://www.mtc.ca.gov/planning/smart_growth/parking_seminar/Toolbox-Handbook.pdf; see also the City of Ventura's Downtown Parking and Mobility Plan, available at

http://www.cityofventura.net/community_development/resources/mobility_parking_plan.pdf, and its Downtown Parking Management Program, available at http://www.ci.ventura.ca.us/depts/comm_dev/downtownplan/chapters.asp.

65. See Safe Routes to School Toolkit, National Highway Traffic Safety Administration (2002) at www.nhtsa.dot.gov/people/injury/pedbimot/bike/Safe-Routes-2002; see also www.saferoutestoschools.org (Marin County).
66. The Housing Element assesses current and projected housing needs. In addition, it sets policies for providing adequate housing and includes action programs for that purpose.
67. The U.S. Conference of Mayors cites Sacramento's Transit Village Redevelopment as a model of transit-oriented development. More information about this project is available at <http://www.cityofsacramento.org/planning/projects/65th-street-village/>. The Metropolitan Transportation Commission (MTC) has developed policies and funding programs to foster transit-oriented development. More information is available at MTC's website: http://www.mtc.ca.gov/planning/smart_growth/#tod. The California Department of Transportation maintains a searchable database of 21 transit-oriented developments at <http://transitorienteddevelopment.dot.ca.gov/miscellaneous/NewHome.jsp>.
68. The City of Berkeley has endorsed the strategy of reducing developer fees or granting property tax credits for mixed-use developments in its Resource Conservation and Global Warming Abatement Plan. City of Berkeley's Resource Conservation and Global Warming Abatement Plan p. 25 at <http://www.baaqmd.gov/pln/GlobalWarming/BerkeleyClimateActionPlan.pdf>.
69. The Open Space Element details plans and measures for preserving open space for natural resources, the managed production of resources, outdoor recreation, public health and safety, and the identification of agricultural land. As discussed previously in these Endnotes, there may be substantial overlap in the measures appropriate for the Conservation and Open Space Elements.
70. The Safety Element establishes policies and programs to protect the community from risks associated with seismic, geologic, flood, and wildfire hazards.