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**Via Electronic Mail and Facsimile**

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RE: Comments on Draft Environmental Impact Report for Coyote Valley Specific Plan  
SCH# 2005062017

Dear Messrs. Hart and Boyd:

The Attorney General submits these comments on the Draft Environmental Impact Report (DEIR) for the Coyote Valley Specific Plan (CVSP or Project) pursuant to the California Environmental Quality Act (CEQA).<sup>1</sup> The Project proposes the development of a new community of up to 80,000 people in an existing rural area south of the City of San José (City). By the City's own calculation, once built, the Project will emit over 500,000 metric tons of greenhouse gases each year.

We commend the City for creating an accessible environmental document that discusses the problem of global warming in a clear, succinct manner and for making an effort to quantify at least some of the Project's substantial greenhouse gas (GHG) emissions. As discussed below, we are, however, concerned that the City has not undertaken a more thorough accounting of the emissions during all phases of the Project. More importantly, we note that the City has avoided its fundamental responsibility under CEQA to determine whether this Project's contribution to

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<sup>1</sup>The Attorney General provides these comments pursuant to his independent power and duty to protect the natural resources of the State from pollution, impairment, or destruction in furtherance of the public interest. (See Cal. Const., art. V, § 13; Cal. Gov. Code, §§ 12511, 12600-12; *D'Amico v. Board of Medical Examiners*, 11 Cal.3d 1, 14-15 (1974)). These comments are made on behalf of the Attorney General and not on behalf of any other California agency or office.

the quintessentially cumulative problem of global warming is significant and, if so, to require changes or mitigation that will avoid or reduce these impacts.

Given the City's responsibilities as a lead agency under CEQA, the fact that we are reaching a climate change "tipping point" caused by incremental contributions of GHGs, and that prompt and dramatic emissions reductions are required to avoid the most catastrophic environmental outcomes, it is inappropriate for the City to find, as it did in the DEIR, that it is excused from making a significance determination under CEQA.

### **Emissions Reductions: Avoiding the Tipping Point**

Emissions of GHG on the Earth's surface accumulate in the atmosphere: the increased atmospheric concentration of these same gases in turn adversely affects the climate.<sup>2</sup> The atmospheric concentration of carbon dioxide (CO<sub>2</sub>), the leading GHG, is now 379 parts per million (ppm), higher than any time in the preceding 650,000 years.<sup>3</sup> According to some experts, an atmospheric concentration of CO<sub>2</sub> "exceeding 450 ppm is almost surely dangerous" because of the climate changes it will effect, "and the ceiling may be even lower."<sup>4</sup>

Currently, atmospheric GHG concentrations are far from stable. "The recent rate of change is dramatic and unprecedented[.]"<sup>5</sup> Over just the last 17 years, atmospheric concentrations of CO<sub>2</sub> have risen 30 ppm, a rate of change that, in pre-industrial times, would have taken 1,000 years.<sup>6</sup> Experts are clear that if we continue our "business as usual" emissions trend, atmospheric concentrations of CO<sub>2</sub> will likely exceed 650 ppm by the end of the century.<sup>7</sup>

In short, our past and current GHG emissions have pushed us to a climatic "tipping point." If we

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<sup>2</sup>(Intergovernmental Panel on Climate Change, Fourth Assessment Report (IPCC 4<sup>th</sup>) (2007), Working Group (WG) I, Frequently Asked Question 2.1, *How do Human Activities Contribute to Climate Change and How do They Compare with Natural Influences?* [http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1\\_Pub\\_FAQs.pdf](http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1_Pub_FAQs.pdf).)

<sup>3</sup>(IPCC 4<sup>th</sup>, WG I, Frequently Asked Question 7.1, *Are the Increases in Atmospheric Carbon Dioxide and Other Greenhouse Gases During the Industrial Era Caused by Human Activities?* [http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1\\_Pub\\_FAQs.pdf](http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1_Pub_FAQs.pdf).)

<sup>4</sup>([http://www.nasa.gov/centers/goddard/news/topstory/2007/danger\\_point.html](http://www.nasa.gov/centers/goddard/news/topstory/2007/danger_point.html).)

<sup>5</sup>(IPCC 4<sup>th</sup>, WG I, Frequently Asked Question 7.1, *Are the Increases in Atmospheric Carbon Dioxide and Other Greenhouse Gases During the Industrial Era Caused by Human Activities?* [http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1\\_Pub\\_FAQs.pdf](http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1_Pub_FAQs.pdf).)

<sup>6</sup>(*Id.*)

<sup>7</sup>(<http://www.epa.gov/climatechange/science/futureac.html>.)

continue our business-as-usual emissions trajectory, dangerous climate change will become unavoidable. According to NASA's James Hansen, proceeding at the emissions rate of the past decade will result in "disastrous effects, including increasingly rapid sea level rise, increased frequency of droughts and floods, and increased stress on wildlife and plants due to rapidly shifting climate zones."<sup>8</sup> And, the experts tell us, we have less than a decade to take decisive action.<sup>9</sup>

The need to make substantial cuts in emissions drives the global targets embodied in the Kyoto Protocol and the State's targets established by Governor Schwarzenegger's Executive Order S-3-05, and AB 32, California's Global Warming Solution Act of 2006. In California, by these authorities, we are committed to reducing emissions to 1990 levels by 2020, and 80% below 1990 levels by 2050. To achieve the 2020 target, California must reduce its current emissions by 25%.<sup>10</sup>

### **Summary of the CVSP Project and DEIR**

The CVSP will govern development of a new community in southern San José, approximately 12 miles from the City's downtown. The community may house up to 70,000 to 80,000 people and create up to 50,000 new jobs on 3,700 acres. The City proposes to build the Project over a 25- to 50-year period, depending on economic and market conditions.

The new community will include residential, retail, commercial, and mixed-use development. It will require new transportation infrastructure, including new roadways, and will include an internal Bus Rapid Transit system with a connection to a proposed Caltrain station. The Project also includes schools, a library, a community center, parks and a greenbelt, trails, recreational areas, and all necessary services and utilities

Lead agency City of San José states that the Project is a reflection of the "City's desire to create a model community based on innovative planning and design ...." (DEIR, Sec. 2 at p. 14). According to the City, "the CVSP is based on a new approach, which involves a shift from a land planning driven process to one that evolves from the existing natural environment or Environmental Footprint." (*Id.*)

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<sup>8</sup>(<http://www.giss.nasa.gov/research/news/20070530/>; see also *Hansen et al., Dangerous Human-Made Interference with Climate* (2007) 7 *Atmos. Chem. Phys.* 2287-2312 [http://pubs.giss.nasa.gov/docs/2007/2007\\_Hansen\\_etal\\_1.pdf](http://pubs.giss.nasa.gov/docs/2007/2007_Hansen_etal_1.pdf).)

<sup>9</sup>(*Id.*) For further discussion of dangerous climate change, see IPCC 4<sup>th</sup>, WG III, Ch. 1 at pp. 6-7 [http://www.mnp.nl/ipcc/pages\\_media/FAR4docs/chapters/CH1\\_Introduction.pdf](http://www.mnp.nl/ipcc/pages_media/FAR4docs/chapters/CH1_Introduction.pdf).

<sup>10</sup>(Office of the Governor, *Gov. Schwarzenegger Signs Landmark Legislation to Reduce Greenhouse Gas Emissions*, Press Release (Sept. 27, 2006) <http://gov.ca.gov/index.php?/press-release/4111/>.)

The City describes the Project, alternatives to the Project, and potential impacts of and mitigation for the Project, in a three-volume DEIR. The City clearly has made every effort to make the environmental document easy to use and accessible to the public, providing all parts of the document at its website, including numerous maps and all technical appendices.

In recognition of the serious nature of global warming, the City has also taken the wholly appropriate and responsible step of creating a special section focused on this potentially catastrophic environmental impact. (DEIR, Sec. 4.15.) In a nutshell, the DEIR succinctly defines climate change, notes the scientific consensus that global climate change is real, underway and very likely caused by humans. The DEIR also summarizes some of the impacts that California should expect, including a diminishing Sierra snowpack, coastal erosion, saltwater intrusion into the Delta, and rising temperatures, and summarizes the existing legal and regulatory framework, including AB 32.

The DEIR states that "the primary sources of CVSP greenhouse gas emissions are anticipated to be combustion of fossil fuels from grid-delivered electricity use and from vehicles." (DEIR at p. 417.) According to the DEIR, the approximate total CO<sub>2</sub>-equivalent emissions (including methane and nitrous oxide) from electricity use is 183,292 metric tons per year, and from vehicle use, approximately 324,690 metric tons per year. (*Id.*) The combined total for these two sources is approximately 507,982 metric tons per year, which the DEIR states is "roughly 0.001% of California's total 2004 emissions ...." (*Id.*)<sup>11</sup> The DEIR also states that "[a]dditional unknown quantities of greenhouse gases would be emitted as part of the CVSP construction process from the manufacture and transport of building materials and the operation of construction equipment." (*Id.* at p. 418.)

After the preceding discussion, the climate change section of the DEIR states that the CVSP will not have an individually discernable effect on global climate change, reasoning that "it is more appropriate to conclude the substantial CVSP greenhouse gas emissions will combine with emissions across California, the U.S., and the globe to cumulatively contribute to global climate change." (*Id.* at p. 420.) The section then summarily ends, the City concluding that because there is no existing numerical, regulatory threshold against which to gauge the cumulative significance of global warming impacts, making a determination of significance for the CVSP project "would be speculative." (*Id.*)

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<sup>11</sup>The City summarily states elsewhere in the Global Climate Change section that "the greenhouse gases generated [by CVSP] are related to growth that will occur elsewhere in the region, if not in the Coyote Valley." (DEIR at p. 418.) It is not clear how this statement, addressing hypothetical, alternative development, fits into the DEIR's emissions discussion or whether the City believes it is relevant under CEQA. In any event, such conclusory statements, unsupported by facts or analysis, are insufficient under CEQA. (See *Laurel Heights Improvement Assn. v. Regents of Univ. of Cal.* (1988) 47 Cal.3d 376, 403-405.)

### **The City as Lead Agency is Required to Determine Significance**

CEQA assigns to a lead agency the responsibility to determine whether an impact is significant. This is a fundamental and essential task: the finding triggers the lead agency's obligation to analyze and require feasible mitigation.<sup>12</sup>

"For each significant effect identified in the EIR, the agency must make one or more of the following findings: (1) that changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen the effect; (2) that the lead agency lacks jurisdiction to make the change, but that another agency does have such authority; and/or (3) that specific economic, social, or other considerations make infeasible the mitigation measures or project alternatives identified in the final EIR."<sup>13</sup> The agency must ensure that measures to mitigate or avoid significant effects on the environment are fully enforceable and must adopt a monitoring program to ensure that the mitigation measures are implemented.<sup>14</sup>

The City notes in the DEIR that AB 32's implementing regulations are forthcoming, but not yet promulgated. (DEIR at p. 415.) The City then uses this fact to excuse itself from the obligation to determine significance under CEQA, stating:

To determine whether the proposed CVSP project would have a significant impact associated with global climate change, in light of the fact that there exists no numerical threshold for such an impact, would be speculative. For this reason, a determination of significance cannot be made.

(DEIR at p. 420.)

While the City is correct that there are currently no regulatory thresholds for significance relating to global warming impacts, this does not relieve a lead agency of its statutory obligation under CEQA to determine whether or not a project's impacts are significant. As the CEQA Guidelines note, "[a]n ironclad definition of significant effect is not always possible ...."<sup>15</sup> In the future, there may well be "an approved plan or mitigation program which provides specific requirements that will avoid or substantially lessen the cumulative problem" of GHG emissions and global

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<sup>12</sup>(Pub. Res. Code, § 21002.1, subd. (b).)

<sup>13</sup>(*Sacramento Old City Assn. v. City Council* (1991) 229 Cal.App.3d 1011, 1034 [citing Pub. Res. Code, § 21081]; see also *County of San Diego v. Grossmont-Cuyamaca Community College Dist.* (2006) 141 Cal.App.4th 86, 100. )

<sup>14</sup>(*Federation of Hillside and Canyon Assns. v. City of Los Angeles* (2000) 83 Cal.App.4th 1252, 1261 [citing Pub. Res. Code, § 21081.6].)

<sup>15</sup>(Cal. Code Regs., tit. 14, § 15064, subd. (b).)

warming impacts,<sup>16</sup> but until that time, lead agencies must rely only on their own "careful judgment ... based to the extent possible on scientific and factual data"<sup>17</sup> in determining whether a project's global warming-related impacts are significant.

To comply with CEQA, the City must revise the DEIR to make a determination of whether CVSP's contribution to the problem of global warming is cumulatively considerable.

**California's Requirements for Reduction of GHG Emissions set a Reasonable Benchmark for Determining the Cumulative Significance Global Warming Impacts**

CEQA and its implementing regulations require that an EIR address the cumulative impacts of a project when its incremental effect is cumulatively considerable. "[C]umulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects."<sup>18</sup>

Courts have rejected the argument that a project has no cumulatively considerable impacts simply because it is contributing only a relatively small percentage to a larger environmental problem.<sup>19</sup> To take an example, in the seminal case of *Kings County Farm Bureau v. City of Hanford*, the Fifth Appellate District Court of Appeal court rejected the conclusion in a DEIR that a project's contributions to ozone levels in the area would be insignificant because they would be "relatively minor ... compared to the total volume of [ozone] precursors emitted in Kings County."<sup>20</sup> The court noted that the DEIR impermissibly used "the magnitude of the current ozone problem in the air basin in order to trivialize the project's impact."<sup>21</sup> In the court's words:

The point is not that, in terms of ozone levels, the proposed Hanford project will result in

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<sup>16</sup>(See Cal. Code Regs., tit. 14, § 15064, subd. (h)(3).) Even with such a program in place, a lead agency must determine whether a project's effects may still be cumulatively considerable. (*Id.*)

<sup>17</sup>(Cal. Code Regs., tit. 14, § 15064, subd. (b).)

<sup>18</sup>(Cal. Code Regs., tit. 14, § 15130, subd. (a).)

<sup>19</sup>(*Communities for a Better Environment v. Cal. Resources Agency* (2002) 103 Cal.App.4th 98, 119-120.) This does not mean, however that contributing "one molecule" to an existing environmental problem necessarily creates a significant cumulative impact. (*Id.*)

<sup>20</sup>(*Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 718.)

<sup>21</sup>(*Id.*)

the ultimate collapse of the environment into which it is placed. The significance of an activity depends on the setting.... The relevant question to be addressed in the EIR is not the relative amount of precursors emitted by the project when compared to preexisting emissions, but whether any additional amount of precursor emissions should be considered significant in light of the serious nature of the ozone problems ....<sup>22</sup>

Global warming is a quintessentially cumulative impact, caused by the added effects of countless individual projects at the local, regional, state, national and international level.<sup>23</sup> As discussed, we must expect potentially catastrophic consequences unless decision makers take specific action to change our current "business as usual" emissions trajectory. The relevant question is whether any additional contribution to the problem should be considered significant in light of these serious consequences.

Executive Order S-3-05 and the passage of AB 32, the Global Warming Solutions Act of 2006, which set State targets to reduce emissions to 1990 levels by 2020, and to 80% below 1990 levels by 2050, provide a relevant benchmark for determining significance. Where a project's direct and indirect GHG-related effects, considered in the context of the existing and projected cumulative effects, may interfere with California's ability to achieve its GHG reduction requirements, the project's global warming-related impacts must be considered cumulatively significant.

The City should in its revised document evaluate whether the global warming impacts of the CVSP will be significant. We acknowledge that the determination is for the City, as lead agency, to make in the first instance. We note, however, that by any objective standard, 500,000 metric tons per year would appear to be a considerable contribution. By comparison, many of the "early action measures" for reducing greenhouse gases identified by the California Air Resources Board are in the range of, or substantially less than, 500,000 metric tons.<sup>24</sup> Moreover, the City's estimate may understate the Project's emissions, as it excludes other potentially important

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<sup>22</sup>(*Id.* [citation omitted].)

<sup>23</sup>The City asserts that "the ultimate solution is a national policy addressing greenhouse gas emissions and global climate change, rather than piecemeal state-by-state or city-by-city approaches. (DEIR at p. 419.) While a national GHG emissions policy is certainly overdue, the fact that there is inaction at the federal level does not excuse a lead agency from its obligation under State law to address cumulative impacts related to global warming. And, as the U.S. Supreme Court has noted, "massive problems" generally are not resolved in "one fell regulatory swoop." (*Mass. v. EPA* (2007) \_\_ U.S. \_\_, 127 S.Ct. 1438, 1457.)

<sup>24</sup>(See [http://www.climatechange.ca.gov/climate\\_action\\_team/reports/2007-04-20\\_ARB\\_early\\_action\\_report.pdf](http://www.climatechange.ca.gov/climate_action_team/reports/2007-04-20_ARB_early_action_report.pdf).)

sources of emissions, *e.g.*, emissions during the construction phase related to equipment operation and building and road materials. In determining whether the incremental effects of the Project are cumulatively considerable, the City should not limit its consideration only to vehicle emissions and electricity at build-out.<sup>25</sup> We attach to this letter a chart setting forth publicly available modeling tools that may be useful in estimating a project's emissions.

**If the Global Warming-Related Impacts of the CVSP Project are Cumulatively Significant, the City Must Impose Feasible Mitigation Measures**

If the City of San José determines that the global warming-related impacts of the CVSP are cumulatively significant, it must discuss those impacts in the DEIR and "examine reasonable, feasible options for mitigating or avoiding the project's contribution" to the problem.<sup>26</sup> A lead agency must "mitigate or avoid the significant effects on the environment of projects that it carries out or approves *whenever it is feasible to do so.*"<sup>27</sup> The agency must ensure that "measures to mitigate or avoid significant effects on the environment are fully enforceable through permit conditions, agreements, and other measures."<sup>28</sup>

Assuming that the global warming-related impacts of the Project are significant, the DEIR, as written, does not satisfy CEQA. While the DEIR contains a one-page section entitled "Strategies to Reduce Greenhouse Gas Emissions" (DEIR at p. 419), it states in very general terms only what *could* be done – "the City could prepare a Global Warming Mitigation Program for the CVSP project describing required efforts to reduce energy consumption" – rather than what *will* be done. The DEIR notes a few non-enforceable conservation measures, stating, for example, that the Project "encourages" solar energy and other non-fossil fuel energy sources. It also states summarily that the Project has been designed to promote non-auto modes of transportation, but does not discuss in any detail whether and how the new community will help California move away from a "business as usual" emissions trajectory and toward the State's 25% emissions reduction requirement by 2020.

Clearly, there are a number of practical and feasible mitigation measures that could reduce this Project's contribution to the problem of global warming. As the City suggests (see DEIR at p.

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<sup>25</sup>(Cal. Code Regs., tit. 14, § 15126 ["All phases of a project must be considered when evaluating its impact on the environment: planning, acquisition, development, and operation."])

<sup>26</sup>(Cal. Code Regs., tit. 14, § 15130, subd. (b)(5).)

<sup>27</sup>(*City of Marina Board of Trustees* (2006) 39 Cal.4th 341, 360 [emphasis added]; see also Pub. Res. Code § 21002.1, subd. (b).)

<sup>28</sup>(Pub. Res. Code, § 21081.6; *Federation of Hillside and Canyon Associations, supra*, 83 Cal.App.4th at p. 1261.)

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419), it may be that some of the mitigation measures imposed for other impacts, for example, those discussed for transportation and traffic, could also serve to mitigate in part the Project's global warming-related impacts. If that is the case, the City should identify those measures and specifically discuss how and to what extent they mitigate greenhouse gas emissions. We attach to this letter a non-exhaustive list of measures that local agencies may take or require to reduce GHG emission, and of some of the many publically available resources that may assist local agencies in the fight against global warming.

### **Conclusion**

The City has noted that "this is truly a situation where San José can 'think globally, and act locally' and lead by example in adopting policies and programs to limit the production of greenhouse gases associated with the CVSP." (DEIR at p. 419.) We agree and believe that the CVSP, through design and mitigation, could be a bellwether community, setting an example for California and the nation.

We appreciate the opportunity to comment on the document and would be happy to meet with City staff to discuss these comments.

Sincerely,



JANILL L. RICHARDS  
Deputy Attorney General

For EDMUND G. BROWN JR.  
Attorney General

Attachments:

Modeling Tools to Estimate Climate Change Emissions Impacts of Projects/Plans  
Mitigation Measures and Global Warming Resources

## Modeling Tools to Estimate Climate Change Emissions Impacts of Projects/Plans

<b>Tool</b>	<b>Availability</b>	<b>Scope Local/Regional</b>	<b>Scope Transp/Buildings</b>	<b>Data Input Requirements</b>	<b>Data Output</b>
<b>URBEMIS</b>	<ul style="list-style-type: none"> <li>Download</li> <li>Public domain (free)</li> </ul>	<ul style="list-style-type: none"> <li>Local project level</li> </ul>	<ul style="list-style-type: none"> <li>Transportation</li> <li>Some building (area source) outputs</li> <li>Construction</li> </ul>	<ul style="list-style-type: none"> <li>Land use information</li> <li>Construction, area source, and transportation assumptions</li> </ul>	<ul style="list-style-type: none"> <li>VMT per day (convert to CO2 and methane)</li> <li>Mitigation impacts</li> </ul>
<b>Clean Air and Climate Protection (CACP) Software</b>	<ul style="list-style-type: none"> <li>Download</li> <li>Available to public agencies (free)</li> </ul>	<ul style="list-style-type: none"> <li>Local project level</li> </ul>	<ul style="list-style-type: none"> <li>Buildings</li> <li>Communities</li> <li>Governments</li> </ul>	<ul style="list-style-type: none"> <li>Energy usage</li> <li>Waste generation and disposal</li> <li>Transportation usage</li> </ul>	<ul style="list-style-type: none"> <li>eCO2 (tons per year)</li> </ul>
<b>Sustainable Communities Model (SCM)</b>	<ul style="list-style-type: none"> <li>Custom model</li> </ul>	<ul style="list-style-type: none"> <li>Regional, scalable</li> </ul>	<ul style="list-style-type: none"> <li>Transportation</li> <li>Master planned communities</li> </ul>	<ul style="list-style-type: none"> <li>Location and site specific information</li> <li>Transportation assumptions</li> <li>On-site energy usage</li> </ul>	<ul style="list-style-type: none"> <li>eCO2 (tons per year)</li> </ul>
<b>I-PLACE<sup>3</sup>S</b>	<ul style="list-style-type: none"> <li>Web-based</li> <li>Small access fee</li> <li>Full model now available in eight CA counties</li> </ul>	<ul style="list-style-type: none"> <li>Regional, scalable to site level</li> </ul>	<ul style="list-style-type: none"> <li>Transportation</li> <li>Buildings</li> <li>Infrastructure (wastewater, street lights, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>Parcel level land use data (can work with less data)</li> <li>Project-level data for alternative comparisons</li> </ul>	<ul style="list-style-type: none"> <li>CO2 (any quantity over any time)</li> <li>Provides for immediate comparison of alternatives</li> </ul>
<b>EMFAC</b>	<ul style="list-style-type: none"> <li>Download</li> <li>Public domain (free)</li> </ul>	<ul style="list-style-type: none"> <li>Statewide</li> <li>Regional (air basin level)</li> </ul>	<ul style="list-style-type: none"> <li>Transportation emission factors</li> </ul>	<ul style="list-style-type: none"> <li>Used with travel demand and other models to calculate CO2 impacts of projects.</li> </ul>	<ul style="list-style-type: none"> <li>CO2 and methane (grams per mile) emission factors</li> </ul>
<b>Climate Action Registry Reporting On-Line Tool (CARROT)</b>	<ul style="list-style-type: none"> <li>Web-based</li> <li>Available to Registry members</li> </ul>	<ul style="list-style-type: none"> <li>Regional, scalable to entity and facility level</li> </ul>	<ul style="list-style-type: none"> <li>General</li> <li>Specific protocols for some sectors</li> </ul>	<ul style="list-style-type: none"> <li>Uses inputs such as fuel and electricity use, VMT to estimate emissions of each GHG</li> </ul>	<ul style="list-style-type: none"> <li>Each GHG and eCO2 (tons per year)</li> </ul>

VMT = Vehicle miles traveled.

Criteria pollutants = Nitrogen oxides (NOx), reactive organic gases (ROG), carbon dioxide (CO), sulfur dioxide (SO2), particulate matter (PM)

eCO2 = Carbon dioxide equivalent emissions

*Note: This is not meant to be a definitive list of modeling tools to estimate climate change emissions impacts. Other tools may be available.*

## Descriptions of Modeling Tools

**URBEMIS.** The Urban Emissions Model (URBEMIS) is currently being used extensively during the CEQA process by local air districts and consultants to determine criteria pollutant impacts of local projects. URBEMIS uses the ITE Trip Generation Rate Manual and the Air Resources Board's (ARB) motor vehicle emissions model (EMFAC) for transportation calculations. Area source outputs include natural gas use, landscaping equipment, and fireplaces. It also estimates construction impacts and impacts of mitigation options. An updated version with CO2 outputs may be available soon. In the interim, CO2 factors (pounds per mile) provided by ARB could be used to convert VMT per day into CO2 per day. Web site: <http://www.urbemis.com>.

**Clean Air and Climate Protection (CACP) Software.** This tool is available to state and local governments and members of ICLEI, NACAA, NASEO and NARUC to determine greenhouse gas and criteria pollutant emissions from government operations and communities as a whole. The user must input aggregate information about energy (usage), waste (quantity and type generated, disposal method, and methane recovery rate) and transportation (VMT) for community analyses. More detailed, site-specific information is necessary to calculate emissions from governmental operations. CACP uses emission factors from EPA, DOE, and DOT to translate the energy, waste and transportation inputs into greenhouse gas (in carbon dioxide equivalents) and criteria air pollutant emissions. If associated energy, waste and transportation reduction are provided, the model can also calculate emission reductions and money saved from policy alternatives. Web site: <http://cacpsoftware.org>.

**Sustainable Communities Model (SCM).** This model quantifies total eCO2 emissions allowing communities the ability to optimize planning decisions that result in the greatest environmental benefit for the least cost. SCM has been used by a number of master planned communities, but it could also be used for neighborhoods and smaller developments. Total eCO2 emissions are based on emissions from energy usage, water consumption and transportation. SCM uses published data sets for data input such as ARB's EMFAC for transportation calculations. The model provides a comparison of various scenarios to provide environmental performance, economic performance, and cost benefit analysis. Web site: [http://www.ctg-net.com/energetics/News/News\\_SCM.html](http://www.ctg-net.com/energetics/News/News_SCM.html)

**I-PLACE<sup>3</sup>S** is an internet-accessed land use and transportation model designed specifically for regional and local governments to help understand how their growth and development decisions can contribute to improved sustainability. It estimates CO2, criteria pollutant and energy impacts on a neighborhood or regional level for existing, long-term baseline and alternative land use plans. I-PLACE3S is currently being used in San Diego, San Luis Obispo, and the six-county Sacramento region to assist both the public participation process and technical analyses efforts for regional planning. The data input requirements are extensive and require a fiscal commitment from local government. The benefits include a tool that can provide immediate outputs to compare various alternatives during public meetings, as well as provide access for local development project CEQA analyses. Possible future modifications could include a stand-alone tool that would allow project-level analyses of land uses (buildings) without extensive regional data input requirements. Web site: <http://www.energy.ca.gov/places/> ; <http://places.energy.ca.gov/places>

**EMFAC.** The Air Resources Board's Emission FACtors (EMFAC) model is used to calculate emission rates from all motor vehicles (passenger cars to heavy-duty trucks) in California. The model includes emission factors for CO2, methane, and criteria pollutants. The emission factors are combined with data on vehicle activity (miles traveled and average speeds) to assess emission impacts. California local governments use EMFAC in concert with their travel demand models to assess impacts of transportation plans. The URBEMIS model described above uses EMFAC to calculate the transportation emission impacts of local projects. Web site: <http://www.arb.ca.gov/msei/onroad/onroad.htm>

**Climate Action Registry Reporting On-Line Tool (CARROT).** The California Climate Action Registry uses the Climate Action Registry Reporting On-Line Tool (CARROT) for registry members to report their greenhouse gas emissions. It calculates GHG emissions from energy, fuel use, and travel estimates made by the user. While use of the tool is only available to members, the Registry makes its protocols available to the public. The general reporting protocol is available at <http://www.climateregistry.org/docs/PROTOCOLS/GRP%20V2.1.pdf>. Specific reporting protocols are also available for reporting by the cement, forestry, and power/utility sectors and are being developed for additional sectors. Website: <http://www.climateregistry.org/CARROT/>

## Mitigation Measures and Global Warming Resources

### (1) Global Warming Mitigation Measures

The following are some examples of the types mitigation that local agencies may consider under the California Environmental Quality Act (CEQA) to offset or reduce global warming impacts. The list, which is by no means exhaustive or obligatory, includes measures and policies that could be undertaken directly by the local agency, incorporated into the agency's own "Climate Action Plan," or funded by "fair share" mitigation fees; measures that could be incorporated as a condition of approval of an individual project; and measures that may be outside the jurisdiction of the local agency to impose or require but still appropriate for consideration in an agency's environmental document.

While the lead agency must determine which particular mitigation measures, or suite of measures, is appropriate and feasible for a particular project, proponents of individual private projects are encouraged to take an active role in developing and presenting to lead agencies new and innovative ways to address the impacts of global warming.

#### **Transportation**

- Coordinate controlled intersections so that traffic passes more efficiently through congested areas. Where signals are installed, require the use of Light Emitting Diode (LED) traffic lights.<sup>1</sup>
- Set specific limits on idling time for commercial vehicles, including delivery and construction vehicles.
- Require construction vehicles to use retrofit emission control devices, such as diesel oxidation catalysts and diesel particulate filters verified by the California Air Resources Board (CARB).<sup>2</sup>
- Promote ride sharing programs *e.g.*, by designating a certain percentage of parking spaces for high-occupancy vehicles, providing larger parking spaces to accommodate vans used for ride-sharing, and designating adequate passenger loading and unloading and waiting areas.
- Create car-sharing programs. Accommodations for such programs include providing parking spaces for the car-share vehicles at convenient locations accessible by public transportation.<sup>3</sup>
- Require clean alternative fuels and electric vehicles.
- Develop the necessary infrastructure to encourage the use of alternative fuel vehicles (*e.g.*, electric vehicle charging facilities and conveniently located alternative fueling stations).<sup>4</sup>
- Increase the cost of driving and parking private vehicles by imposing tolls, parking fees, and residential parking permit limits.

- Develop transportation policies that give funding preference to public transit.<sup>5</sup>
- Design a regional transportation center where public transportation of various modes intersects.
- Encourage the use of public transit systems by enhancing safety and cleanliness on vehicles and in and around stations.
- Assess transportation impact fees on new development in order to facilitate and increase public transit service.<sup>6</sup>
- Provide shuttle service to public transit.
- Offer public transit incentives.
- Incorporate bicycle lanes into street systems in regional transportation plans, new subdivisions, and large developments.
- Create bicycle lanes and walking paths directed to the location of schools and other logical points of destination and provide adequate bicycle parking.<sup>7</sup>
- Require commercial projects to include facilities on-site to encourage employees to bicycle or walk to work.
- Provide public education and publicity about public transportation services.<sup>8</sup>

### **Energy Efficiency and Renewable Energy**

- Require energy efficient design for buildings.<sup>9</sup> This may include strengthening local building codes for new construction and renovation to require a higher level of energy efficiency.
- Adopt a “Green Building Program” to promote green building standards.<sup>10</sup>
- Fund and schedule energy efficiency “tune-ups” of existing buildings by checking, repairing, and readjusting heating, ventilation, air conditioning, lighting, hot water equipment, insulation and weatherization. (Facilitating or funding the improvement of energy efficiency in existing buildings could offset in part the global warming impacts of new development.)
- Provide individualized energy management services for large energy users.
- Require the use of energy efficient appliances and office equipment.<sup>11</sup>
- Fund incentives and technical assistance for lighting efficiency.<sup>12</sup>
- Require that projects use efficient lighting. (Fluorescent lighting uses approximately 75% less energy than incandescent lighting to deliver the same amount of light.)
- Require measures that reduce the amount of water sent to the sewer system. (Reduction in water volume sent to the sewer system means less water has to be treated and pumped to the end user, thereby saving energy.)<sup>13</sup>
- Incorporate on-site renewable energy production (through, *e.g.*, participation in the California Energy Commission’s New Solar Homes Partnership). Require project proponents to install solar panels, water reuse systems, and/or other systems to capture energy sources that would otherwise be wasted.<sup>14</sup>

- Streamline permitting and provide public information to facilitate accelerated construction of solar and wind power.
- Fund incentives to encourage the use of energy efficient equipment and vehicles.<sup>15</sup>
- Provide public education and publicity about energy efficiency programs and incentives.

### **Land Use Measures**

- Encourage mixed-use and high-density development to reduce vehicle trips, promote alternatives to vehicle travel and promote efficient delivery of services and goods. (A city or county could promote “smart” development by reducing developer fees or granting property tax credits for qualifying projects.<sup>16</sup>)
- Discourage “leapfrog” development. Enact ordinances and programs to limit sprawl.<sup>17</sup>
- Incorporate public transit into project design.<sup>18</sup>
- Require measures that take advantage of shade, prevailing winds, landscaping and sun screens to reduce energy use.
- Preserve and create open space and parks. Preserve existing trees and require the planting of replacement trees for those removed in construction.
- Impose measures to address the “urban heat island” effect by, *e.g.*, requiring light-colored and reflective roofing materials and paint; light-colored roads and parking lots; shade trees in parking lots; and shade trees on the south and west sides of new or renovated buildings.<sup>19</sup>
- Facilitate “brownfield” development. (Brownfields are more likely to be located near existing public transportation and jobs.)
- Require pedestrian-only streets and plazas within developments, and destinations that may be reached conveniently by public transportation, walking, or bicycling.<sup>20</sup>

### **Solid Waste Measures**

- Require projects to reuse and recycle construction and demolition waste.
- Implement or expand city or county-wide recycling and composting programs for residents and businesses.
- Increase areas served by recycling programs
- 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.<sup>21</sup>
- Provide public education and publicity about recycling services.

## (2) General Resources

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 Action Handbook contains valuable information for the many local agencies that are joining the fight against global warming. The Handbook is available at the City of Seattle's Climate Action Plan website: <http://www.cityofseattle.net/climate/docs/ClimateActionHandbook.pdf>.
- 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/>.

## (3) Notes

1. For a discussion of the use of LED traffic lights, see the City of Berkeley's Resource Conservation and Global Warming Abatement Plan at <http://www.baaqmd.gov/pln/GlobalWarming/BerkeleyClimateActionPlan.pdf>.
2. See [www.arb.ca.gov/diesel/verdev/verdev.htm](http://www.arb.ca.gov/diesel/verdev/verdev.htm) and [www.epa.gov/ispd/pdf/emission\\_0307.pdf](http://www.epa.gov/ispd/pdf/emission_0307.pdf).
3. There are a number of car sharing programs operating in California, including City CarShare <http://www.citycarshare.org/>, Zip Car <http://www.zipcar.com/> and Flexcar <http://www.flexcar.com/>.
4. See the City of Santa Monica's Green Building Program at <http://www.greenbuildings.santa-monica.org/transportation/parkingcharging.html>.
5. San Francisco's "Transit First" Policy is listed in its Climate Action Plan, available at <http://www.sfenvironment.com/aboutus/energy/cap.htm>.
6. 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. See Note 5.
7. See Marin County's Safe Routes to Schools program at <http://www.saferoutestoschools.org/>.

8. The U.S. Conference of Mayors' Climate Action Handbook, cited above, lists education and outreach as key components to taking action against global warming.
9. 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>.
10. The City of Santa Monica has instituted a Green Building Program. See <http://www.greenbuildings.santa-monica.org/>.
11. 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/>.
12. 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 Note 5.
13. The City of Berkeley's Resource Conservation and Global Warming Abatement Plan includes information about strategies for promoting the use of low flush toilets and shower heads. See Note 1.
14. 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>.
15. In March 2007, the League of California Cities (LOCC) Climate Change Working Group drafted proposed Climate Change Policies and Guiding Principles for the League. The draft principles (March 30, 2007) can be found on the LOCC website at [http://www.cacities.org/resource\\_files/25656.EQ%20high3-07%20REVISED.pdf](http://www.cacities.org/resource_files/25656.EQ%20high3-07%20REVISED.pdf)
16. The City of Berkeley has endorsed this strategy in its Resource Conservation and Global Warming Abatement Plan. See Note 1.
17. Samples of local legislation to reduce sprawl are set forth in the U.S. Conference of Mayors' Climate Action Handbook, cited above.

18. 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/>.
19. See Lawrence Berkeley National Laboratory's "Cool Roofing Materials Database" prepared by the Laboratory's Heat Island Project at <http://eetd.lbl.gov/coolroof/> and U.S. EPA's Heat Island site at [www.epa.gov/heatisland/](http://www.epa.gov/heatisland/).
20. Palo Alto's Green Ribbon Task Force Report on Climate Protection recommends pedestrian streets under its proposed actions. See <http://www.city.palo-alto.ca.us/greenribbon/index.html>.
21. San Diego's Metropolitan Wastewater Department 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. See <http://www.sandiego.gov/mwwd/facilities/ptloma.shtml>.