



## The Planning Commissioner Handbook

### Chapter 7

# CEQA and Environmental Issues

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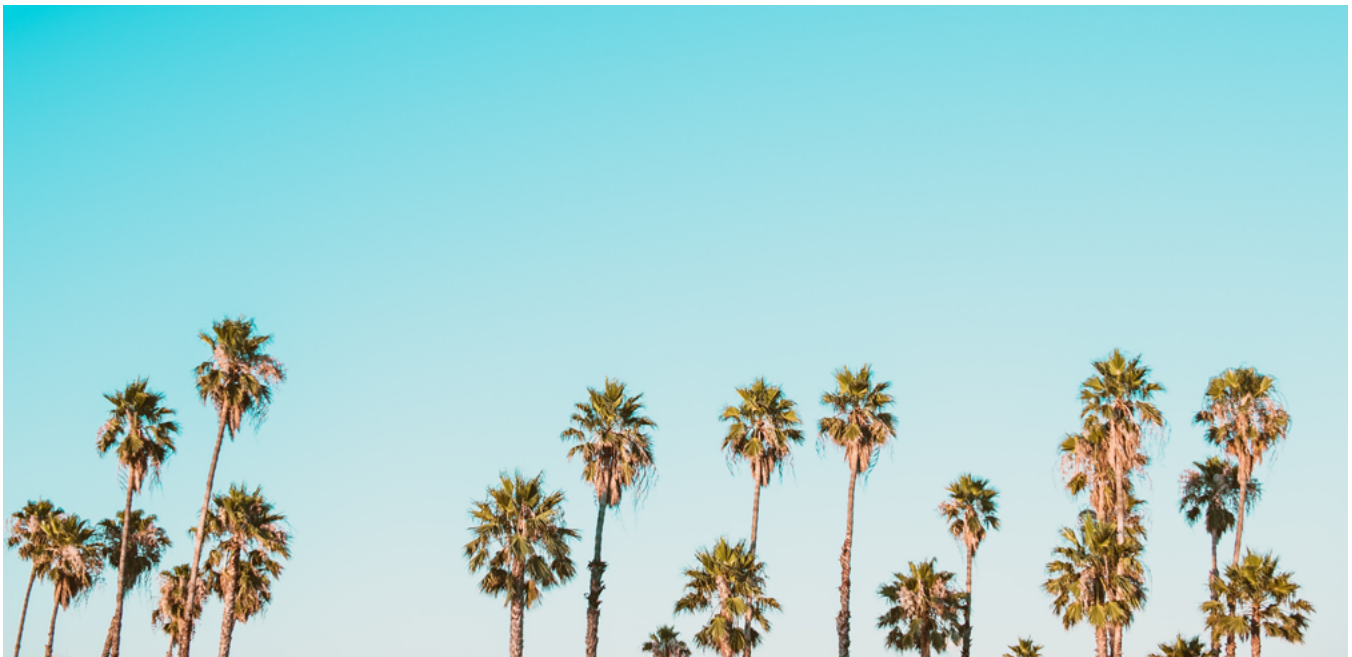
# Introduction

Environmental issues in planning can be addressed during the formation and implementation of long-range plans (e.g., general plans, community plans, specific plans, or other specific forms of environmental planning such as open space or conservation planning), the design of specific projects, and during the environmental review process for proposed plans or projects as governed by the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). This section of this Handbook focuses primarily on CEQA, however as noted in other sections of the Handbook, long-range plans and how projects are designed also play important roles in addressing environmental issues and the long-term health and sustainability of a community.

The California Environmental Quality Act (CEQA) is a formal process to publicly report on the possible environmental impacts of a proposed agency decision. While the results of technical studies used for CEQA compliance can be used to inform land planning, CEQA compliance is limited in its usefulness as a planning tool. The following addresses key CEQA terms, procedures and topics, but is far from a comprehensive study of the CEQA process. Instead, the following is provided from a commissioner's perspective of the information needed to understand the often-lengthy CEQA document that accompanies a development request on the agenda.

## Background

CEQA was signed by Governor Ronald Reagan in 1970 and is based on the National Environmental Policy Act (NEPA). While there are similarities between the two, CEQA is typically more comprehensive in scope. While the CEQA guidelines are the most often used procedures for environmental compliance, the guidelines recommend that each agency adopt their own procedures and many agencies have done so. Your agency may have adopted their own guidelines and may have the same topics, different topics or fewer topics. Be sure to check with your agency to understand which CEQA guidelines apply.



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# Environmental Issues in Long-Range Planning

All land planning has an environmental component. It is impractical to separate physical impacts on the environment from the land planning process. To be effective, land plans are intended to change circumstances, and CEQA is specifically intended to evaluate the potential impacts of that change. There are several emerging planning issues that are not part of the CEQA guidelines or supporting laws but nevertheless are part of the broader planning discussion and warrant mentioning here.

- **Growth Guidance.** Knowledge of the potential environmental impacts can affect the conversation about the direction, intensity and timing of future growth. The environmental aspect can include historic buildings and cultural resources, services and utilities, equity and environmental justice. These are issues that each community will address and may have policies in their general plan or other guidance documents that would affect the environmental analysis.
- **Environmental Justice and Equity.** California Government Code Section 65040.12(e)(1) defines environmental justice as “the fair treatment and meaningful involvement of people of all races, cultures, incomes, and national origins, with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies. Environmental justice includes, but is not limited to, all of the following:
  - The availability of a healthy environment for all people.
  - The deterrence, reduction and elimination of pollution burdens for populations and communities experiencing the adverse effects of that pollution, so that the effects of the pollution are not disproportionately borne by those populations and communities.
  - Governmental entities engaging and providing technical assistance to populations and communities most impacted by pollution to promote their meaningful participation in all phases of the environmental and land use decision-making process.
  - At a minimum, the meaningful consideration of recommendations from populations and communities most impacted by pollution into environmental and land use decisions.”<sup>1</sup>

The federal Environmental Protection Agency (EPA) defines environmental justice as “...the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. This goal will be achieved when everyone enjoys:

- The same degree of protection from environmental and health hazards, and
- Equal access to the decision-making process to have a healthy environment in which to live, learn and work.”<sup>2</sup>

The first bullet speaks to the unequal impact from industrial, and transportation hazards that affect lower income and disadvantaged communities. The second is addressed in the public participation section of the handbook. While NEPA has always included a requirement to consider environmental justice, CEQA currently does not. However, as the general plan is now required to consider environmental justice lead agencies may address environmental justice concerns in CEQA, although it is not explicitly required by law. The impacts of projects are quantified in the environmental analysis but there is often cursory analysis of indirect impacts that occur to communities along transportation routes, for example. Many communities are using the development agreement process to establish community benefit programs intended to offset direct and indirect

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<sup>1</sup> Government Code 65040.12

<sup>2</sup> <https://www.epa.gov/environmentaljustice>

impacts associated with industrial or other large-scale projects.

- **Green Building, LEED, etc.,** Green buildings focus on the sustainability of the materials, use of the land and consumption of energy and water through all phases of a project. While “green building” is often a generic term for this type of building, and some green building projects are certified through a voluntary green building rating system known as the Leadership in Energy and Environmental Design (LEED), there are several methods of improving the sustainability of a project. The California Building Code (CBC) regulates all building in California and is adopted by each agency. It is the CBC that requires solar panels and other energy saving features of new construction. The CBC also includes the California Green Building Standards Code (CALGreen), which includes both mandatory and voluntary measures related to water efficiency, waste reduction, low-VOC materials, EV charging and other measures. CALGreen is similar to but not equivalent to LEED. LEED certifications are often only possible after completion of a project and the certifications are not made by the agency; however, compliance with CALGreen is enforced by the permitting agency. As such, it may be difficult to require a LEED certification and follow through with the requirement. In these instances, it is common to see “...or equivalent” used as part of the condition. Compliance with the CBC and CALGreen is required and can be determined by the agency.
- **Community Benefit Plans.** A community benefit plan (also sometimes referred to as a community benefits agreement) or similar program is often part of a development agreement or condition of approval for a large project that will have direct or indirect impacts to the community, and in particular disadvantaged communities. The plans can require on or off-site improvements such as noise walls, air filtration, tree planting, trails, sidewalks, or other physical improvements intended to offset the impact(s) of the project. Until recently, development was considered its own reward, however some communities experience more impact from some types of development than others. A community benefit plan is one way an agency can help offset those impacts. If the community benefit plan will result in physical impacts those impacts must be part of the environmental analysis.
- **Wildfire/Evacuations/Rebuilding California.** The California weather pattern can deliver drought, high winds and wildfire danger. Over the past decade, the wildfire season has largely become a year-round concern. As a commissioner it can be difficult to address wildfire and safety issues with communities as part of the environmental process. There are often no easy answers. Fuel management can only do so much to reduce risk in areas where wildfires are prevalent because steep terrain, limited access and topography all factor into the ability to fight wildfire. It is also important to note that fuel modification must be repeated as underbrush and trees grow back. Wildfire has always been a CEQA topic, and fire safe plans and more collaborative approaches with fire planning through state and federal agencies will provide more tools for communities to use in addressing this issue.

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# How an Environmental Analysis is Conducted

It often takes a year or more to complete an environmental analysis and many project features are evaluated in the process. The reason it takes this long is that many studies can only be conducted at certain times, such as when school is session, or during the growing season for biological resources.

## Determining the Required Level of Review

The CEQA process involves four possible levels of environmental review: an exemption, a “negative declaration,” a “mitigated negative declaration” and an “environmental impact report” (EIR). The following is a summary of the main steps in determining the required level of inquiry:

- **Is the Action a “Project?”** Only “projects” are subject to environmental review. A project is any discretionary governmental action that could directly or indirectly result in a physical change in the environment. Examples include the adoption and amendment of general plans, specific plans, zoning ordinances and development agreements; public works projects; building improvements; and many permits for development.
- **Does an Exemption Apply?** A project may be exempt from CEQA under state law or regulations for policy reasons. For example, infill housing projects meeting certain conditions do not require environmental review. Usually, staff will determine whether an exemption applies.
- **Initial Review.** For projects that are not exempt, an initial study is prepared to determine whether the project may have a significant effect on the environment.
- **Negative Declaration.** If the initial study shows that the project will not have a significant effect on the environment, a negative declaration is prepared. A negative declaration briefly describes why a project will not have a significant impact.
- **Mitigated Negative Declaration.** If the initial study shows an environmental effect, a mitigated negative declaration may be prepared if revisions in project plans made or agreed to by the applicant before the proposed mitigated negative declaration is released for public review would clearly avoid or mitigate the effects.
- **Environmental Impact Report.** If the initial study identifies potential significant environmental effects that cannot be eliminated through redesign, then the lead agency (the agency that has ultimate approval over the project) must prepare an environmental impact report.

In many cases, it will be a close call whether a mitigated negative declaration or a full EIR is required. If there is “fair argument” that a project will have a significant environmental effect, the safest course is to prepare an EIR (even when there is an equal amount of evidence suggesting that an EIR is not necessary). This is called the fair argument standard. This approach will maximize public involvement and ensure that all possible impacts have been analyzed. It will also minimize the delays and expense associated with litigation over whether an EIR should have been prepared.

## The Environmental Impact Report

After deciding to do an EIR, the lead agency must solicit the views of responsible agencies (other agencies with some level of authority over the project) regarding the scope of the environmental analysis.<sup>3</sup> The lead agency should also consult with

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<sup>3</sup> 14 Cal. Code Regs. §§ 15082, 15083.

individuals and organizations that have an interest in the project. This early consultation is called scoping.

The lead agency then drafts an EIR based on this information and other data it has collected in connection with the report. When the draft EIR is completed, the lead agency files a notice of completion with the State Clearinghouse at the Office of Planning and Research. The draft EIR is then noticed for a 30- to 45-day public review and comment period.<sup>4</sup> The lead agency must evaluate and respond in writing to all comments it receives during this time. If the lead agency adds significant new information to the draft EIR after it has been released for public review, the draft EIR must be re-noticed and circulated again for public review.

Public hearings on a draft EIR are not required. If the lead agency chooses to hold hearings, they can either be conducted in conjunction with other proceedings or in a separate proceeding. Once the public review period ends, the lead agency prepares a final EIR, usually consisting of the draft EIR together with responses to public comments received during the review period. The lead agency then reviews the project in light of the EIR and other applicable standards.<sup>5</sup>

There are several basic elements to the environmental impact report:<sup>6</sup>

- **Table of Contents & Summary.** Required elements that assist in making EIRs—which are sometimes hundreds of pages long—more accessible to the public.
- **Project Description.** An accurate description of the project, including any reasonably foreseeable future phases of the project.<sup>7</sup>
- **Environmental Setting.** A description of the environment on the project site and in the vicinity of the project.
- **Evaluation of Impacts.** An identification and analysis of each significant impact expected to result from the project. Any potential significant effect—such as incompatible land uses, air pollution, water quality, traffic congestion, etc.—will have its own discussion.
- **Mitigation Measures.** A detailed description of all feasible measures that could minimize significant adverse impacts. Any potential environmental consequences of the mitigation measures must also be addressed.
- **Cumulative Impacts.** An evaluation of the incremental effects of the proposed project in connection with other past, current and probable future projects.
- **Alternatives.** A proposed range of reasonable project alternatives that could reduce or avoid significant impacts, including a “no project” alternative. This often involves reviewing the location or the intensity of the development, or both. The alternatives need not be exhaustive and should not be speculative.
- **Growth-Inducing Impacts.** A description of the relationship of the project to the region’s growth and whether the project removes obstacles to growth.
- **Organizations and Persons Consulted.** A list of groups and individuals contacted during the process, including during the scoping and public hearing phases.
- **Inconsistencies.** A discussion of any inconsistencies between the proposed project and applicable general plans and regional plans.

Remember that one of the fundamental goals of CEQA is information-sharing. It also works to make sure that you are making the most informed decisions possible regarding environmental impacts. Thus, the adequacy of an EIR is usually not judged on perfection, but rather on completeness and a good-faith effort at disclosure. The EIR must provide enough information to

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4 Cal. Pub. Res. Code § 21091.

5 14 Cal. Code Regs. § 15132; Cal. Pub. Res. Code § 21092.5.

6 See 14 Cal. Code Regs. §§ 15022-15029.

7 Laurel Heights Improvement Association of San Francisco v. Regents of the University of California, 47 Cal. 3d 376 (1988).



allow decision-makers to analyze the environmental consequences of a project.

While timing of the technical analysis may differ, every environmental analysis follows a similar process. First the entirety of the project is explained, then the conditions as they exist at the time the analysis is started. Anticipated project impacts are compared against existing conditions to determine if the result exceeds the adopted threshold of significance. The reports and analysis are used to form the substantial evidence that is the foundation of the environmental document. Key sections or terms in the impact discussion are project specific, and most follow a similar pattern:

- **Existing Condition or Baseline.** At the basic level the existing condition is the baseline against which the proposed project is evaluated. Most of the time this existing condition is what exists on the ground at the project site such as building(s), or natural features like wetlands and trees. A baseline can also be historic such as a previously active use, or future such as in after a project or improvement is completed. Note that the use of a baseline other than current conditions is rare and while allowed by the CEQA Guidelines, the lead agency must support the use of alternative baselines with substantial evidence in the record. The important part of the baseline is that it sets one edge of the measurement against which the impacts are evaluated. The other edge is set by the adopted threshold of significance adopted by the agency. Generally, an impact that is greater than the baseline but below the threshold of significance is considered less than significant and not subject to mitigation. Baselines and thresholds are agency-dependent and apply to all projects considered by the agency, while environmental impacts are unique to each project.
- **Project Description.** This is the whole of the action that is requested by the agency, regardless of whether it is a staff, commission or council level of approval. The project often extends beyond the property line of the application and includes any work that is essential to support of the project. This might include water or sewer line extensions, storm drainage improvements, widened roadways or intersections and even new buildings, such as a school or fire station.
- **Thresholds of Significance.** CEQA recommends that each agency adopt their own threshold of significance or identify the threshold as part of the environmental analysis. The threshold of significance is the point at which the agency considers a project impact significant enough to warrant mitigation to change the project and reduce the impact or make special findings if the decision is to proceed even if the impacts cannot be reduced below the threshold. Even though the CEQA Guidelines specifically state that the Appendix G checklist questions should not be considered thresholds, many agencies default to the questions in the checklist. Be sure to check to see if your agency has adopted thresholds of significance.
- **Impact Discussion.** This is where the document shows the work of comparing the results of any technical studies and overall analysis and discussion of the impacts in relationship to the adopted threshold. Ideally the impact discussion is clear and focused on addressing any impact that exceeds the threshold of significance. If an impact does not exceed the threshold, there is no authority to require mitigation to change the project. The impact discussion can have one of the following outcomes: No Impact, Less than Significant Impact, Less than Significant Impact with Mitigation Measures Incorporated, Significant and Unavoidable Impact. Only Significant Impact with Mitigation Measures Incorporated and Significant and Unavoidable Impact provide the agency with the authority to mitigate under CEQA.
- **Mitigation Measures.** Mitigation measures are agency-required changes to the project that are in direct relation to the impact discussion finding that some portion of the project will exceed the threshold of significance. While the mitigation measure is a condition of approval, it can only be applied to a project in response to a finding of significance. It is important to note that mitigation measures must be specific to the impact, implementable by the applicant or the agency, and objectively measurable to be effective. The impact analysis may also indicate a timing for when the measure must be complete. Usually, timing falls into one of the following periods: prior to ground disturbance, during construction and during operation. In rare circumstances a mitigation measure may extend past completion of the project, but these are difficult to enforce and should be accompanied by methods of ensuring compliance.

While others may assist with the mitigation, ultimately the lead agency is responsible for ensuring the mitigation is completed and must prepare a mitigation monitoring report, which is part of the record and available to the public. Ensure that the measure(s) adopted for the project are within the authority of your agency to implement. Measures that require improvements outside your jurisdiction (i.e. Caltrans, adjacent agency) that cannot be guaranteed should

be reviewed carefully as many consider these measures infeasible. There may be regional measures that ensure the improvement will be completed, but without assurances the mitigation may not be adequate.

Finally, CEQA does not give the lead agency any powers that they do not already possess. This means that the ability to mitigate can be limited.

- **Conclusion.** This section closes the impact discussion by explaining the level of significance after application of the mitigation measures. The conclusion is either less than significant with application of mitigation measure(s) or significant and unavoidable.

Impacts to services are not generally a CEQA issue even though this may be a planning concern. For example, the number of police officers needed to serve a project is not a CEQA issue, however if a new police station is needed for additional officers, the physical impacts of the new station would need to be evaluated in the CEQA document.

## Certifying the CEQA Document

The first step in approving a project that has undergone environmental review is to certify the negative declaration or the EIR. The project may then be approved in a manner that acknowledges any environmental consequences. The local agency can also change the project, select an alternative project, impose conditions or take other actions (often called “mitigation measures”) to avoid or minimize the environmental impacts of the project. When mitigation measures are adopted, the agency must also adopt a program to monitor the implementation of those measures.<sup>8</sup>

In many cases, the environmental impacts of a project cannot be avoided. For example, a community that is surrounded by prime farmland will probably need to use some of that land for housing at some point. In these cases, the agency can make a finding that explains why changes to the project are not feasible or why social or economic considerations override environmental concerns.<sup>9</sup> While these findings may seem contrary to environmental protection, they are consistent with CEQA’s fundamental purpose of publicly acknowledging and considering possible environmental effects.

## Tiering, Master EIRs and Program EIRs

CEQA includes a number of provisions intended to streamline environmental review. These include tiering, program EIRs and master EIRs. Generally, all of these provisions are designed to allow public agencies to consider planning-level environmental concerns in a single EIR that may be adopted for a general plan or other planning or policy action. Subsequent environmental documents on specific projects—such as focused EIRs or negative declarations—are then used to focus on project-specific impacts.

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<sup>8</sup> Cal. Pub. Res. Code § 21081.6.

<sup>9</sup> Cal. Pub. Res. Code § 21081; 14 Cal. Code Regs. § 15093.

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# Types of Environmental Compliance

The CEQA guidelines contain many different methods of compliance ranging from an exemption to an EIR. The process is different for each, however, all compliance methods have the same fundamental requirements:

1. All conclusions are based on fact, which constitutes “substantial evidence.”
2. The information used to consider a project such as the technical studies, staff report, model runs, etc., are part of the record, and must be available to the public for review. CEQA does not require a public hearing in most cases, however if a hearing is required for the project, the environmental determination must be presented.
3. The environmental determination must be made before action can be taken to approve a project. (No environmental compliance is necessary for denial.)

The timelines and level of analysis vary by project, agency and topic, however for all discretionary projects brought before the commission there should be an environmental determination.



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# CEQA Environmental Topics

This section includes general information about specific environmental issues or topics that must be covered in environmental documents. They are organized alphabetically here, similar to the Appendix G Initial Study Checklist in the CEQA Guidelines. This is not a discussion of how to complete an environmental analysis in CEQA, or when something may be considered significant, but rather a quick reference guide to the topic matter and when possible, a link to where more information can be found.

## 1. Aesthetics

The appearance of a development is an important consideration in the planning process. Aesthetics are essential to a neighborhood and helps to define communities. From an environmental perspective, whether a building is attractive usually fails to be a significant impact. Whether the building or development would degrade the surrounding community can be an environmental impact, however the basis for this would need to be set in the general plan or other documents that provide a means of comparing the existing characteristics to those of the proposed project. Usually, this portion of the environmental analysis focuses on blocking view of some sort (mountains, canyons, ocean, lake, etc.) or removal of a significant geological (hill, rock) or biological (lake, tree) feature.

## 2. Agriculture and Forestry Resources

CEQA requires that a commission consider the conversion of agricultural land to non-agricultural uses. Conservation of farmland is a policy of the state. There are several methods used to consider conservation including:

- **Agricultural Element in the General Plan.** Some communities have adopted an agricultural element in their general plan to provide support for local agriculture. By doing so they require the other elements of the plan to be consistent with local agricultural policies. The agricultural element may also establish a threshold of significance or perhaps place a cap on the conversion of agricultural land.
- **Agricultural Zoning.** Some communities use large-lot zoning to protect agriculture. When using this strategy, it is important to assure that the minimum lot size is sufficient to sustain a viable agricultural operation. The ideal lot size will vary depending on soil type, climate and farming practice. In many areas of the state, minimum parcel size may need to be 50 to 80 acres. In ranching communities, the required acreage might be much higher. If the minimum lot size is set too low, commercial agriculture may become infeasible leading to requests for urban development.
- **Buffers & Right-to-Farm Ordinances.** Residential and agricultural uses of property are often incompatible. Agriculture is noisy and smelly and more akin to industrial uses than residential or park land uses. In addition, farms near urban areas suffer increased trespassing, theft and vandalism. Keeping large buffers—sometimes 1,000 to 2,000 feet—between farms and residential areas can limit conflicts but may also lead to other issues such as maintenance costs. Many counties and several cities have adopted “right-to-farm” ordinances that either attempt to limit the extent that residents can seek to stop typical farm activities that they might perceive as nuisances or provide notice and complaint procedures when such activities occur.
- **Conservation Easements.** In a conservation easement, a farmer sells the right to develop the land to a conservation group, or other entity that guarantees that the land will not be developed (and presumably will stay in agriculture). While a conservation easement is a form of mitigation, it may not mitigate to less than significant because existing farmland is still being taken out of production.



- **Williamson Act and Farm Security Zones.** The state's Williamson Act and Farm Security Zone programs provide farmers tax breaks for keeping their land in productive agriculture for periods of 10 and 20 years. In return, the land is valued for tax purposes at its agricultural value instead of its market value. An active Williamson Act contract prevents most types of development for a period of ten years, with a contract that renews annually. The Act establishes a payment plan to allow a property to exit the act early, otherwise it is ten years from the point of notice of non-renewal until development can occur. Most, but not all, Williamson Act lands are in unincorporated areas of the state.
- **Timberland Production Zones (TPZ).** Similar to the Williamson Act, a county board of supervisors may designate areas of timberland as timberland preserves. The zoning designation is known as a Timberland Production Zone (TPZ). Land in a TPZ is restricted in use to the production of timber for an initial 10-year term and is considered "enforceably restricted," which can lower land value and consequently property taxes.

### 3. Air Quality

Although vehicles run much more cleanly today than they did in the past, their sheer number, coupled with increases in miles driven, make cleaning the air a difficult challenge. Air quality is regulated through a complex system of federal, state and local laws. The federal Clean Air Act requires the U.S. Environmental Protection Agency to set minimum air quality standards that all state and local programs must meet (called National Ambient Air Quality Standards or "NAAQS") for carbon monoxide, ozone, fine particulate matter (PM<sub>10</sub>), nitrogen dioxide, sulfur dioxide and lead, among others.<sup>10</sup>

At the state level, responsibility for regulating air pollution is divided between the California Air Resources Board (ARB), local and regional air pollution control districts (APCDs) and air quality management districts (AQMDs). The ARB prepares the State Implementation Plan (SIP) that describes the control measures the state will use to attain national standards. The state plan consists of emission standards for motor vehicles and consumer products. In addition, the ARB is responsible for oversight of state and local air pollution control programs, which are developed and implemented by 35 local air districts throughout the state. In metropolitan areas, the district board is usually made up of appointed local officials from around the region. In smaller areas, the county board of supervisors often serves as the air quality district board.

One of the primary responsibilities of local air districts is to adopt a local air quality plan, which forms the blueprint for how national air quality standards will be attained in the area. The goal of each plan is to achieve a five percent annual reduction in pollutants over each three-year attainment period. In addition, the local district must prepare attainment plans for each pollutant in the area that exceeds federal standards. Failure to meet these goals may result in loss of federal transportation funding.

Local air districts also implement plans to reduce emissions from a variety of mobile, stationary and area-wide sources in a region. For mobile sources, this may include the number of vehicle trips and vehicle miles traveled (VMT). Examples of programs or mitigation measures can include ridesharing and parking buy-back programs. Attainment plans for areas designated as moderate, serious, severe or extreme non-attainment areas must make provisions for the regulation of emissions from "indirect sources."<sup>11</sup> These include any facility or road that attracts or may attract vehicles.<sup>12</sup> Each district's attainment plan, once adopted by the governing board, is transmitted to the Air Resources Board for approval and then included in the State Implementation Plan.

The air quality analysis will likely be based on outputs from the California Emissions Estimator Model (CALEEMOD). The model quantifies direct emissions from construction and operation activities (including vehicle use), as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal and water use. Further, the model identifies mitigation measures to reduce criteria pollutant and GHG emissions along with calculating the benefits achieved from measures chosen by the agency.

<sup>10</sup> See 42 U.S.C. §§ 7401 and following.

<sup>11</sup> Cal. Health & Safety Code §§ 40716(a), 40918-40920.5.

<sup>12</sup> 42 U.S.C. § 7410(a)(5)(c).

Both federal government (National Ambient Air Quality Standards<sup>13</sup>) and California (California Ambient Air Quality Standards)<sup>14</sup> have established health-based AAQS for seven air pollutants. These pollutants are ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), coarse inhalable particulate matter (PM<sub>10</sub>), fine inhalable particulate matter (PM<sub>2.5</sub>) and lead (Pb). In addition, the state has set standards for sulfates, hydrogen sulfide, vinyl chloride and visibility-reducing particles.

## Criteria Air Pollutants

The pollutants emitted into the ambient air by stationary and mobile sources are categorized as primary and/or secondary pollutants. Primary air pollutants are emitted directly from sources. Carbon monoxide (CO), volatile organic compounds (VOC), nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), coarse inhalable particulate matter (PM<sub>10</sub>), fine inhalable particulate matter (PM<sub>2.5</sub>) and lead (Pb) are primary air pollutants. Of these, CO, SO<sub>2</sub>, NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> are “criteria air pollutants,” which means that AAQS have been established for them. VOC and NO are criteria pollutant precursors that form secondary criteria air pollutants through chemical and photochemical reactions in the atmosphere. Ozone (O<sub>3</sub>) and nitrogen dioxide (NO<sub>2</sub>) are the principal secondary pollutants. Each of the primary and secondary criteria air pollutants and its known health effects are described in the following table.

Pollutant	Health Effects	Example of Sources
Carbon Monoxide (CO)	<ul style="list-style-type: none"> <li>Chest pain in heart patients</li> <li>Headaches, nausea</li> <li>Reduced mental alertness</li> <li>Death at very high levels</li> </ul>	Any source that burns fuel such as cars, trucks, construction and farming equipment and residential heaters and stoves
Ozone (O <sub>3</sub> )	<ul style="list-style-type: none"> <li>Cough, chest tightness</li> <li>Difficulty taking a deep breath</li> <li>Worsened asthma symptoms</li> <li>Lung inflammation</li> </ul>	Atmospheric reaction of organic gases with nitrogen oxides in sunlight
Nitrogen Dioxide (NO <sub>2</sub> )	<ul style="list-style-type: none"> <li>Increased response to allergens</li> <li>Aggravation of respiratory illness</li> </ul>	Same as carbon monoxide sources
Particulate Matter (PM <sub>10</sub> & PM <sub>2.5</sub> )	<ul style="list-style-type: none"> <li>Hospitalizations for worsened heart diseases</li> <li>Emergency room visits for asthma</li> <li>Premature death</li> </ul>	<ul style="list-style-type: none"> <li>Cars and trucks (particularly diesels)</li> <li>Fireplaces and woodstoves</li> <li>Windblown dust from overlays, agriculture and construction</li> </ul>
Sulfur Dioxide (SO <sub>2</sub> )	<ul style="list-style-type: none"> <li>Aggravation of respiratory disease (e.g., asthma and emphysema)</li> <li>Reduced lung function</li> </ul>	Combustion of sulfur-containing fossil fuels, smelting of sulfur-bearing metal ores and industrial processes

<sup>13</sup> <https://www.epa.gov/criteria-air-pollutants/naaqs-table>

<sup>14</sup> <https://ww2.arb.ca.gov/resources/california-ambient-air-quality-standards>

Pollutant	Health Effects	Example of Sources
Lead (Pb)	<ul style="list-style-type: none"> <li>Behavioral and learning disabilities in children</li> <li>Nervous system impairment</li> </ul>	Contaminated soil

Source: CARB 2009, South Coast AQMD 2005

Because many of the criteria pollutants are related to transportation, busy roads near homes can result in health impacts for people who may be far from an industrial project. The health hazards associated with air quality impacts are a driving force behind the consideration of environmental justice in the general plan and may be brought up during planning meetings. Many communities are looking to offset air quality and health impacts through use of community benefit plans.

## 4. Biological Resources

Two laws govern the protection of endangered species, one federal (the federal Endangered Species Act, or “ESA”) and one state (the California Endangered Species Act, or “CESA”)<sup>15</sup> The two laws are not necessarily congruous. A species protected under state law may or may not be protected under federal law.

The key element of both the state and federal laws is the listing of species as either protected or endangered. Once listed, a species is entitled to certain protections, the most significant of which is the prohibition against any “take” (killing) or “harm” (injuring animals or disturbing habitat) without a permit from either the National Fish and Wildlife Service (federally-listed species) or the state Department of Fish and Game (state-listed species). In the case of salmon or other ocean-dwelling fish that spawn in rivers, permission is necessary from the National Oceanic and Atmospheric Administration (NOAA).

“Take” permits may be issued subject to a habitat conservation plan (HCP) under federal law or a Section 2081 permit under state law. Since the habitats of many species overlap, it has become standard practice to develop Multiple Species Habitat Plans (MSHCP)—also called Natural Communities Conservation Plans (NCCP) under state law—that address multiple species at once.

Local agencies play a key role in the development of habitat conservation plans. Without local agency involvement, individual landowners seeking to develop their land would have to file individual protection plans. This would require each landowner to hire a biologist and undergo the scrutiny of government regulators. Local agency involvement streamlines this process by developing plans covering a large area or region. Large-scale plans are better able to preserve sensitive habitat and channel development to less-sensitive areas.

The HCP will have a listing of species that it covers, areas that are prohibited from development – typically called criteria cells – and a development review process. Most all of this will either be complete, or nearly complete, by the time the environmental document is circulated for review. Note that species not covered by the HCP will need to be evaluated individually, and that most HCPs still require some form of biological resource assessment to accompany a development proposal. Finally, all HCPs have a fee paid at building permitting to implement the HCP, purchase property in criteria cells and maintain the property.

### Wetlands

The Clean Water Act prohibits the filling and dredging of wetlands without a permit issued by the Army Corps of Engineers.<sup>16</sup>

<sup>15</sup> See 16 U.S.C. §§ 1531 and following (federal Endangered Species Act), Cal. Fish & Game Code §§ 2050 and following (California Endangered Species Act).

<sup>16</sup> 33 U.S.C. § 1344, 33 C.F.R. 323.4(c).

The filling of a wetland is a common issue encountered by many planning commissioners. Fill comprises any material used to replace an aquatic area with dry land or raise the bottom elevation of a water body. This means that the scope of wetland protections extends to mechanized land-clearing activities—like grading—that result in a redeposit of soil in wetland areas.

The Clean Water Act grants the U.S. Environmental Protection Agency (EPA) authority over wetlands that are designated as “special aquatic sites.” The EPA has developed a set of special standards that must be applied by the Corps of Engineers before it can approve a permit. The most significant of these is that the project cannot be approved when a practical and less environmentally adverse alternative exists (like changing the location of the project or the type of fill material). To the extent that damage cannot be avoided, the applicant must compensate for lost wetlands (often by restoring or upgrading degraded wetlands onsite or elsewhere).

Whether the Corps of Engineers grants such a permit will not be a direct concern of yours as a planning commissioner. To the extent that an individual project seeks to fill or dredge a wetland area, local agencies usually require the developer to obtain all the necessary permits from the Corps of Engineers (which may even involve compliance with the National Environmental Policy Act) before the application can be deemed complete. However, you do not have to approve a project just because a landowner has received such a permit.

## 5. Cultural Resources

Cultural resources address impacts to the buildings, landscape or places in a community that were important to local, national or worldwide events. While tribal consultation has its own checklist section, not all agencies separate tribal and cultural resources. CEQA does not mandate a specific format for the analysis and, provided all the environmental issues are addressed, this is an acceptable combination. Paleontology is the study of fossils and fossilized remains and is in the geology and soils portion of the analysis.

## 6. Energy

How far people have to travel between home, work and daily errands, how homes are sited, and how buildings are designed have a tremendous impact on the consumption of electricity, natural gas and motor fuels. Lowering a community’s energy consumption can save money, protect the environment and improve air quality. Two areas where these issues arise during your service as a planning commissioner are transportation and community design:

- **Transportation.** Transportation is responsible for approximately 46 percent of all energy used in California, much higher than the national average. Strategies aimed at lowering automobile usage can thus be extremely effective at reducing a community’s energy consumption. Policies that are bicycle- and pedestrian-friendly and that support mixed-use development, transit-oriented development and more compact development will all have energy payoffs.
- **Community Design.** Community design is another area in which there are numerous opportunities for energy conservation. The Solar Rights Act of 1978 already requires that new subdivisions provide, to the extent feasible, future opportunities for natural heating and cooling and directs local agencies to deny permits to applicants that do not meet this requirement.<sup>17</sup> Local agencies can take advantage of natural heating and cooling by considering solar access issues early during subdivision review. Staff should review existing regulations, like setback or height limits, to ensure that they do not interfere with solar access opportunities. In addition, the amount of pavement, the number and types of trees, street widths and numerous other design features also impact overall community energy consumption. Small changes in these areas can have tremendous energy payoffs.

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17 Cal. Civ. Code § 714.



## Connecting Land Use Planning and Energy Conservation

**Encourage Efficient Building Construction.** How homes, offices and other buildings are constructed can have a major impact on energy use. California already has minimum energy performance standards for new residential and commercial construction. Local planners and building inspectors enforce these standards at the local level. However, local agencies may choose to impose stricter standards than the state minimums.

**Point Out Alternatives During the Design Review Process.** Communities can help developers comply with and exceed local and state requirements by providing assistance during various phases of the development process. For example, staff can suggest simple techniques to increase solar access, like moving garages, modifying street or home orientation and staggering building placement on lots. Or, they may suggest the use of daylight as a means to reduce electricity use in new commercial buildings.

**Adopt an Energy Policy or an Energy Element in the General Plan.** To promote energy efficiency, some agencies have adopted an energy element in their general plan. Individual ordinances implement the policies. An energy element ensures conformity between energy issues and other plan elements. Another option is to adopt a local energy policy to direct each agency department to implement in-house energy management programs or to evaluate the potential of alternative energy sources.

**Promote Conservation.** Communities may wish to adopt regulations promoting energy conservation. Before passing a new regulation, however, it is important to evaluate the cost effectiveness and to renew existing ordinances and building codes to make them consistent with energy objectives. For example, requiring solar heating for all new swimming pools is not always the most cost-effective approach since in some areas swimming pool covers are equally effective.

**Provide Incentives.** Voluntary incentives designed to encourage energy conservation can be effective. For example, some jurisdictions waive or reduce building permit fees or give density bonuses for exceeding state building standards.

## 7. Geology and Soils

Often there is a geotechnical report that accompanies the CEQA document and makes recommendation based on the soil type. Some soils shrink or swell when wet, which can damage foundations and improvements. If these exist, there will be recommendations by the soils engineer in the report to address the impacts. Recommendations that require over excavation or import of new material can often lead to additional truck trips for construction that will need to be addressed in the air quality, greenhouse gas and possibly noise sections. Soils can also be too sandy to support on-site sewer treatment which can lead to engineered systems or similar specialized design. The soils report may also indicate a depth to groundwater that is a factor in subsidence (sinking of the ground) or liquefaction (seismically-induced sinking) Finally, because fossils are considered part of the geologic history of a property, this section of the analysis will also address paleontology. Mitigation for an area that may uncover paleontological resources will include monitoring during construction and often a plan for the repository of any resources uncovered.

## 8. Greenhouse Gas Emissions

The environmental analysis will focus on the reduction of greenhouse gases attributed to the project. Greenhouse gases (GHG) are gases that trap heat in the atmosphere and include the following:

- **Carbon dioxide (CO<sub>2</sub>):** Carbon dioxide enters the atmosphere through burning fossil fuels (gasoline, coal, natural gas and oil), solid waste, trees and other biological materials, and because of certain chemical reactions (e.g., manufacture of cement). Carbon dioxide is removed from the atmosphere (or “sequestered”) when it is absorbed by plants as part of the biological carbon cycle.
- **Methane (CH<sub>4</sub>):** Methane is emitted during the production and transport of coal, natural gas and oil. Methane emissions also result from livestock and other agricultural practices, land use and by the decay of organic waste, such as in solid waste landfills.
- **Nitrous oxide (N<sub>2</sub>O):** Nitrous oxide is emitted during agricultural, land use, industrial activities, combustion of fossil fuels and solid waste, as well as during treatment of wastewater.
- **Fluorinated gases:** Hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride and nitrogen trifluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for stratospheric ozone-depleting substances (e.g., chlorofluorocarbons, hydrochlorofluorocarbons and halons). These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases, they are sometimes referred to as high global warming potential gases (“High GWP gases”).

Not all greenhouse gases have the same effect on the environment. As shown in the following table, carbon dioxide CO<sub>2</sub> is considered the base with all other gases considered as a multiple of CO<sub>2</sub>.

Greenhouse gas	Chemical Formula	Global Warming Potential, 100-year Time Horizon	Atmospheric Lifetime (years)
Carbon Dioxide	CO <sub>2</sub>	1	100*
Methane	CH <sub>4</sub>	25	12
Nitrous Oxide	N <sub>2</sub> O	265	121
Chlorofluorocarbon-12	CCl <sub>2</sub> F <sub>2</sub>	10,200	100

Greenhouse gas	Chemical Formula	Global Warming Potential, 100-year Time Horizon	Atmospheric Lifetime (years)
Hydrofluorocarbon-23 (HFC-23)	CHF <sub>3</sub>	12,400	222
Sulfur Hexafluoride	SF <sub>6</sub>	23,500	3,200
Nitrogen Trifluoride	NF <sub>3</sub>	16,100	500

*\*No single lifetime can be given for carbon dioxide because it moves throughout the earth system at differing rates. Some carbon dioxide will be absorbed very quickly, while some will remain in the atmosphere for thousands of years.*

The passage of Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, set the stage for California's long-term approach to addressing climate change, and does so in a way that aims to improve the environment, protect public health and safety and conserve natural resources while maintaining a robust economy. Since the adoption of AB 32 in 2006, the state has expanded its GHG reduction goals, regulations, programs and policies, some of which apply directly to local governments while others apply directly to state agencies. In 2016, the state passed Senate Bill (SB) 32, which sets a statewide goal of reducing emissions 40 percent below 1990 emission levels by the year 2030. The state has also set long-term goals for an 80 percent reduction by the year 2050, and recently, Executive Order B-55-18 set a steeper goal for the state to achieve economy-wide carbon neutrality by 2045. The goal of carbon neutrality by 2045 is in addition to other statewide goals, meaning not only should emissions be reduced to 80 percent below 1990 levels by 2050, but that, by no later than 2045, the remaining emissions should be offset by equivalent net removals of CO<sub>2</sub>e (carbon dioxide equivalent) from the atmosphere, including through sequestration in forests, soils and other natural landscapes.

## 9. Hazards and Hazardous Materials

The use and transportation of hazardous materials can raise safety concerns. Many commercial, agricultural and industrial operations engage in the transportation, storage, generation or disposal of hazardous materials. Some facilities may have the potential for leaking hazardous materials into the local groundwater. Others may impact a local wastewater treatment system or the capacity of local law enforcement and fire departments to respond to hazardous materials spills or incidents. What qualifies as a hazardous material is defined by various state and federal agencies and should be explained in the analysis. As a rough guideline, a material is hazardous if it is corrosive, explosive, oxidic, flammable or poisonous. Careful planning can reduce the risk these materials pose to the community.

The California Environmental Protection Agency (CalEPA) maintains a list of hazardous materials sites known as the Cortese List. The list shows properties that either have current hazardous materials issues or have had a clean up plan to address hazardous materials on the property. The list is specific to parcel number and agency. If property is on this list, it must be disclosed in both the analysis and in the public notice(s) for the project.

Hazards may also include physical or natural hazards such as wildfire, or landslide. These issues are usually discussed at length in other sections of the analysis specific to those issues.

## 10. Hydrology and Water Quality

Water quality regulations protect local wetlands, streams, rivers, drinking water and the overall health of the community. The most basic goal of these regulations is to prevent runoff—such as from rain—from picking up silt, oils, toxic metals, road grime, animal waste, lawn fertilizers, farm chemicals and other pollutants before draining into natural watercourses.

As a planning commissioner, you will be considering water quality issues in terms of whether a specific project includes all possible actions to minimize polluted runoff. For example, since construction sites are a major source of water sediments that upset stream and river environments, developers are often required to place sod barriers around storm drains to limit sediment discharge.

The federal Clean Water Act prohibits the discharge of any pollutant—anything that alters natural water quality—into any surface water without a permit.<sup>18</sup> The Act establishes two strategies to this end. The first requires the use of “best available technologies” (BATs) and “best management practices” (BMPs) to minimize the amount of pollution that flows away from any one site. These approaches can be used to either prevent the discharge of a pollutant into a water system or require treatment of a pollutant before it reaches the system.

Prevention is usually preferred because it costs less than treatment. The second strategy relies on determining the amount of pollution that can be released into surface waters without adversely affecting their beneficial uses.

The Clean Water Act also distinguishes “point sources” and “nonpoint sources” of pollution. A point source is a confined or discrete conveyance, like a drainage pipe. A nonpoint source is anything else that discharges into surface water. Examples include runoff from agricultural operations or roads. As you might suspect, it is generally easier to identify and regulate point sources of pollution than nonpoint sources—and the law has recognized that fact by setting separate planning standards for each.

In California, the Clean Water Act is enforced by the State Water Resources Control Board (SWRCB), which in turn divides the state into nine geographic areas governed by Regional Water Quality Control Boards (RWQCBs). Each regional board serves a specific watershed and must develop a Basin Plan and a Watershed Management Initiative to guide regional watershed priorities. There are several mechanisms that these agencies use to control the discharge of pollutants:

- **National Pollutant Discharge Elimination System (NPDES).** The NPDES system prohibits all point source discharges into any body of water (which in California includes groundwater) without a permit.<sup>19</sup> The permit system allows for the imposition of best practices to minimize pollution discharge and assure that the discharge will not violate state water quality standards. These standards may change to reflect improvements in technology and management practices.
- **Stormwater Drainage Systems.** Storm runoff usually begins as a nonpoint source, but flows into point sources as storm drainage systems collect it. Accordingly, storm systems (except those in very rural areas) require NPDES permits. To obtain a permit, local agencies must reduce pollutants to the maximum extent practicable<sup>20</sup> by implementing a stormwater management plan. The management plan must specify what best management practices (BMPs) will be used to address certain program areas. The program areas include public education and outreach, illicit discharge detection and elimination, construction and post-construction and good housekeeping for municipal operations. In general, municipalities with a population over 100,000 are required to conduct chemical monitoring, but smaller municipalities are not.
- **Publicly Owned Treatment Works (POTWs).** There is a separate set of standards for publicly owned water treatment works. One of the reasons for the separate standards is to assure that direct discharge requirements are not compromised by industry's use of a publicly owned sewage treatment works. Often, contaminants must be pretreated by businesses before they can enter a public water treatment system.
- **Nonpoint Source Management Plans.** The state must develop a nonpoint source management plan, which serves a particularly important role in many coastal areas where nonpoint sources have been identified as a major source of degradation in coastal waters. The State Water Resources Control Board and the Coastal Commission have identified approximately 60 nonpoint source pollution management measures, many of which address nonpoint source pollution resulting from development.

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18 33 U.S.C. §§ 1342, 1344.

19 33 U.S.C. § 1344.

20 This is the performance standard specified in Section 402(p) of the Clean Water Act, 33 U.S.C. 1342(p).



In addition, the state sets a total maximum daily load (TMDL) pollutant standard for certain bodies of water. The state first identifies how each body of water will be used—such as for drinking water, recreation or supporting aquatic life—and sets appropriate quality standards. Lakes, rivers and streams that are too polluted to serve their designated use even with technology-based effluent limitations<sup>21</sup> are defined as “impaired.” For each of these water bodies, the state calculates a TMDL, which is the total amount of pollutant the water body can tolerate, plus a margin of safety, and still meet water quality standards.<sup>22</sup>

The TMDL accounts for all sources of pollutant (point and nonpoint) and sets numeric targets that will ensure recovery of the impaired body. Once TMDLs are set, the state must allocate the TMDL among all the sources contributing that pollutant to the watershed, including municipal wastewater, stormwater discharges, industrial sources and nonpoint sources like agricultural runoff. The TMDL strategy in California relies on an adaptive process that matches management capabilities with scientific understanding. It also relies heavily on engaging the public and cultivating an understanding of watershed issues. Once established, TMDLs must be incorporated into the water quality plans (basin plans) formulated by the regional boards and the NPDES permits issued in the watershed.

## Balancing Growth and Water Supply

Local agencies must take into account the extent to which long term water supplies can keep pace with new growth. State law requires agencies to conduct a water assessment when certain types of developments are proposed, including:

- 500 new housing units,
- 500,000 square feet of retail,
- 250,000 square feet of office space and/or
- 650,000 square feet of business park use or a mixed-use project with any combination equal to the scale noted above.

This assessment should be included in the environmental review (CEQA) process. If there is not adequate water to reliably supply the project (meaning that water will be available even during multiple dry years after accounting for all future demands), new water sources need to be identified. In some instances (such as subdivisions of 500 or more units or where total connections increase by at least 10 percent), local agencies must obtain written verification from a water provider that a reliable water supply is available. There are some exceptions for certain infill and affordable housing projects.

# 11. Land Use and Planning

For CEQA, the land use and planning analysis is based on two factors: division of an existing community; and potential conflict with a land use plan, policy or regulation adopted for the purpose of avoiding or mitigating an environmental impact. A new rail line, or large project, that would physically separate an existing neighborhood would likely be an issue needing to be discussed in the analysis. The courts have determined that compliance with a general plan is not an environmental impact unless the project conflicts with policy as mentioned. Determination of whether a project is consistent with the general plan and/or ordinances is important and considered in the Planning Framework chapter of this handbook but is usually not an environmental impact.

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<sup>21</sup> 33 U.S.C. § 1313(d).

<sup>22</sup> 33 U.S.C. § 1313(d)(1)(c).

## 12. Mineral Resources

The California Department of Conservation maintains maps of mineral resources<sup>23</sup> and also provides oversight for reclamation of mines and quarries as part of the Surface Mining and Reclamation Act (SMARA). While all minerals are studied and reviewed in the state, primary focus is often on essential construction materials such as sand and aggregate. These materials are heavy and expensive to move making local sources better from a cost and environmental impact perspective. From a CEQA perspective, the focus is on whether a project will reduce the availability of a local, regional or even statewide important mineral. Placing homes on top of a significant aggregate site for example, would likely preclude mining of the materials at a future date. The general plan will also include a map of important mineral resources that must be considered as part of the environmental analysis.

## 13. Noise and Vibration

Noise is most often defined as unwanted sound - whether it is loud, unpleasant, unexpected or otherwise undesirable. Although sound can be easily measured, the perception of noise and the physical response to sound complicate the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as “noisiness” or “loudness.”

Noise Descriptors. The following are brief definitions of terminology used in analysis:

- **Sound.** A disturbance created by a vibrating object, which, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism, such as the human ear or a microphone.
- **Noise.** Sound that is loud, unpleasant, unexpected or otherwise undesirable.
- **Decibel (dB).** A unitless measure of sound, expressed on a logarithmic scale and with respect to a defined reference sound pressure. The standard reference pressure is 20 micropascals (20  $\mu$ Pa).
- **Vibration Decibel (VdB).** A unitless measure of vibration, expressed on a logarithmic scale and with respect to a defined reference vibration velocity. In the U.S., the standard reference velocity is 1 micro-inch per second ( $1 \times 10^{-6}$  in/sec).
- **A-Weighted Decibel (dBA).** An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
- **Equivalent Continuous Noise Level (Leq); also called the Energy-Equivalent Noise Level.** The value of an equivalent, steady sound level which, in a stated time period (often over an hour) and at a stated location, has the same A-weighted sound energy as the time-varying sound. Thus, the Leq metric is a single numerical value that represents the equivalent amount of variable sound energy received by a receptor over the specified duration.
- **Statistical Sound Level (Ln).** The sound level that is exceeded “n” percent of time during a given sample period. For example, the L50 level is the statistical indicator of the time-varying noise signal that is exceeded 50 percent of the time (during each sampling period); that is, half of the sampling time, the changing noise levels are above this value and half of the time they are below it. This is called the “median sound level.” The L10 level, likewise, is the value that is exceeded 10 percent of the time (i.e., near the maximum) and this is often known as the “intrusive sound level.” The L90 is the sound level exceeded 90 percent of the time and is often considered the “effective background level” or “residual noise level.”
- **Maximum Sound Level (Lmax).** The highest RMS sound level measured during the measurement period.
- **Root Mean Square Sound Level (RMS).** The square root of the average of the square of the sound pressure over the measurement period.

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<sup>23</sup> [www.conservation.ca.gov/cgs/mrp](http://www.conservation.ca.gov/cgs/mrp)

- **Day-Night Sound Level (Ldn or DNL).** The energy-average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the sound levels occurring during the period from 10:00 PM to 7:00 AM.
- **Community Noise Equivalent Level (CNEL).** The energy average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added from 7:00 PM to 10:00 PM and 10 dB from 10:00 PM to 7:00 AM. NOTE: For general community/environmental noise, CNEL and Ldn values rarely differ by more than 1 dB (with the CNEL being only slightly more restrictive – that is, higher than the Ldn value). As a matter of practice, Ldn and CNEL values are interchangeable and are treated as equivalent in this assessment.
- **Peak Particle Velocity (PPV).** The peak rate of speed at which soil particles move (e.g., inches per second) due to ground vibration.
- **Sensitive Receptor.** Noise- and vibration-sensitive receptors include land uses where quiet environments are necessary for enjoyment and public health and safety. Residences, schools, motels and hotels, libraries, religious institutions, hospitals and nursing homes are examples.

## Amplitude

Unlike linear units such as inches or pounds, decibels are measured on a logarithmic scale. Because of the physical characteristics of noise transmission and perception, the relative loudness of sound does not closely match the actual amounts of sound energy. The table presents the subjective effect of changes in sound pressure levels. Ambient sounds generally range from 30 dBA (very quiet) to 100 dBA (very loud). Changes of 1 to 3 dB are detectable by most people under quiet, controlled conditions, and changes of less than 1 dB are usually not discernible (even under ideal conditions). A 3 dB change in noise levels is considered the minimum change that is detectable with human hearing in outside environments. A change of 5 dB is readily discernible to most people in an exterior environment, and a 10 dB change is perceived as a doubling (or halving) of the sound.

### Noise Perceptibility

Change in dB	Noise Level
± 3 dB	Barely perceptible increase
± 5 dB	Readily perceptible increase
± 10 dB	Twice or half as loud
± 20 dB	Four times or one-quarter as loud

Source: California Department of Transportation (Caltrans). 2013, September. *Technical Noise Supplement* (“TeNS”).

Because people are more sensitive to unwanted noise intrusion during the evening and at night, state law and many local jurisdictions use an adjusted 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL) or Day-Night Noise Level (Ldn). The CNEL descriptor requires that an artificial increment (or “penalty”) of 5 dBA be added to the actual noise level for the hours from 7:00 PM to 10:00 PM and 10 dBA for the hours from 10:00 PM to 7:00 AM. The Ldn descriptor uses the same methodology except that there is no artificial increment added to the hours between 7:00 PM and 10:00 PM. Both descriptors give roughly the same 24-hour level, with the CNEL being only slightly more restrictive (i.e., higher). The CNEL or Ldn metrics are commonly applied to the assessment of roadway and airport-related noise sources.

## Vibration Fundamentals

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity or acceleration. Vibration is normally associated with activities stemming from operations of railroads or vibration-intensive stationary sources but can also be associated with construction equipment such as jackhammers, pile drivers and hydraulic hammers. As with noise, vibration can be described by both its amplitude and frequency. Vibration displacement is the distance that a point on a surface moves away from its original static position; velocity is the instantaneous speed that a point on a surface moves; and acceleration is the rate of change of the speed. Each of these descriptors can be used to correlate vibration to human response, building damage and acceptable equipment vibration levels. During construction, the operation of construction equipment can cause groundborne vibration. During the operational phase of a project, receptors may be subject to levels of vibration that can cause annoyance due to noise generated from vibration of a structure or items within a structure.

Vibration amplitudes are usually described in terms of either the peak particle velocity (PPV) or the root mean square (RMS) velocity. PPV is the maximum instantaneous peak of the vibration signal and RMS is the square root of the average of the squared amplitude of the signal. PPV is more appropriate for evaluating potential building damage and RMS is typically more suitable for evaluating human response.

As with airborne sound, annoyance with vibrational energy is a subjective measure, depending on the level of activity and the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Persons accustomed to elevated ambient vibration levels, such as in an urban environment, may tolerate higher vibration levels. The table below displays the human response and the effects on buildings resulting from continuous vibration (in terms of various levels of PPV).

**Human Reaction to Typical Vibration Levels**

Vibration Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.006–0.019	Threshold of perception, possibility of intrusion	Vibrations unlikely to cause damage of any type
0.08	Vibrations readily perceptible	Recommended upper level of vibration to which ruins and ancient monuments should be subjected
0.10	Level at which continuous vibration begins to annoy people	Virtually no risk of “architectural” (i.e. not structural) damage to normal buildings
0.20	Vibrations annoying to people in buildings	Threshold at which there is a risk to “architectural” damage to normal dwelling – houses with plastered walls and ceilings
0.4–0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause “architectural” damage and possibly minor structural damage

Source: California Department of Transportation (Caltrans). 2013, September. *Transportation and Construction Vibration Guidance Manual*.



## 14. Population, Housing and Employment

Most agencies monitor whether a project will increase the number of residents or jobs within their jurisdiction. From a CEQA perspective, the primary issue is whether the population or employment increase would lead to a need for more homes, or businesses to serve the increase. Usually, if a project is consistent with the agency general plan, the analysis need only demonstrate that the anticipated population and/or employment is consistent with the general plan assumptions. The population estimates contained in the analysis are usually from the California Department of Finance Demographic Research Unit reports that are used by the state for subventions and become the official population of the agency. Other information can come from the Economic Development Department (EDD), or the U.S. Census American Community Survey (ACD) data. Most important in the analysis is whether the assumed persons per unit or jobs per square foot are consistent with the assumptions made in the traffic analysis.

Many state and local agencies estimate population and provide job statistics for a variety of reasons. From a CEQA perspective, the emphasis will be on verifying consistency with projections made for regional planning, and possibly the agency general plan. If the estimates are outside of the regional projections, the analysis should both explain why the projections are different, and what the environmental impacts might be.

## 15. Public Services

Police, fire, library, city hall and schools are all part of public services. The environmental analysis focuses on the physical needs of any service expansion. This means that the need to add police or fire services to keep within a response time or meet a specified ratio is likely not an environmental issue (though it certainly may be a planning issue). If the expansion of personnel requires new construction such as a fire station or substation, then the impact of those improvements must be addressed.

Schools are independent public agencies and are often exempt from local regulations. As independent agencies, schools are also required to comply with CEQA. From an agency perspective, school impacts are fully addressed through payment of impact fees<sup>24</sup> and an agency may not deny approval of a project based on the adequacies of school facilities<sup>25</sup>. Agencies must, however, evaluate the indirect impacts associated with needing a school such as traffic, air quality, noise, etc.

## 16. Recreation

Impacts to recreation used to be limited to an increase in population from a project. Now, recreation can include trails used to connect homes to parks, schools, employment and shopping. Further, many communities require parks in their office and heavy employment areas to improve aesthetics and improve opportunities for health. The amount of park land is often set in the general plan as a ratio of population to acreage. Large projects can be expected to include public or private opportunities for recreation consistent with the general plan, while smaller projects often pay an in-lieu fee to meet their park obligation. The environmental analysis should identify parks that would serve a project site, and whether any improvements would be needed. If improvements are necessary, then the impact of those improvements must be included in the analysis. Many agencies have adopted fees to allow smaller projects to meet their obligation. Occasionally, the fees refer to the Quimby Act<sup>26</sup> that is part of the Subdivision Map Act. Under the Quimby Act, an agency may require dedication of parkland for subdivisions above a certain size. As the Quimby Act only applies to subdivisions, agencies may adopt park fees as part of their overall developer impact fee program.

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24 Government Code Section 65996

25 Government Code Section 65997

26 Government Code Section 66477

## 17. Transportation (VMT)

Transportation evaluates the various methods of mobility available to a community. The initial evaluation is usually personal vehicle travel, however the environmental analysis may also include walking, bicycling, busses and rail. Level of service (LOS) is a metric that measures automobile delay. As of July 1, 2020, pursuant to the requirements of SB 743, LOS can no longer serve as a basis for a significant transportation impact in CEQA. By focusing on how much vehicle miles travelled (VMT) is generated by a proposed project, this shift in CEQA aligns transportation impact analysis with the reduction of greenhouse gas emissions from projects, reductions in air pollution, and other adverse environmental and health impacts associated with ongoing use of LOS.

Land use and project siting decisions, along with the presence of transportation infrastructure or services to support the use of other modes such as transit, walking, biking, ridesharing, etc., will affect how much VMT is generated by a proposed project. There are various methods of reducing individual vehicle miles travelled and the analysis may include several examples such as connecting trails, mixed use, new transit connections, etc. Note too that existing roadway(s) may be narrowed to accommodate other forms of mobility such as bicycle lanes, dedicated transit and trails consistent with the complete streets provisions of an agency's adopted circulation element. While the physical improvements associated with the road change may not constitute an environmental impact for purposes of CEQA, any reduction in LOS is generally not considered an impact under CEQA.

Many general plans still contain LOS standards as a policy. From an environmental analysis perspective, if complying with the LOS standard of the general plan requires a roadway expansion or other physical change to the circulation system, the impacts of the improvements must be evaluated. Note that an inconsistency with an LOS policy in a general plan is not an impact under CEQA, as auto delay is not an environmental impact and CEQA only requires analysis of planning inconsistencies that lead to environmental impacts.

The analysis of a project's impact on transportation in CEQA may be completed using a local or regional transportation or travel demand model. In some cases, these models may be based on the adopted general plan. The model may also be used to generate a list of improvements that could be used to support a development impact fee to help reduce VMT or address specific transportation improvements required by local plans. The environmental analysis will often demonstrate whether a project is consistent with the model assumptions, or if different, whether new improvements will be needed to support the project. It is common for a project to be responsible for property edge (frontage) roadway or other transportation improvements that support other modes, but pay fees for larger local or regional improvements.

## 18. Tribal Cultural Resources

Tribal consultation is a government-to-government process and is required for all general plan amendments (SB-18) and most environmental documents. For general plan amendments, the consultation must be completed before the amendment can be approved. Tribal consultation as part of the CEQA process is similar but involves contacting tribes who have previously requested consultation. The tribal consultation process is usually a meeting that can result in project specific mitigation concerning issues such as construction monitoring and the disposition of any resources discovered. The consultation process may also identify previously unknown resources that may require modification of the project and/or additional study. Unlike other technical studies that support the environmental analysis, the studies for this issue are kept confidential by the agency per state law to protect the resources.<sup>27</sup>

## 19. Utilities and Service Systems

Water, sewer, storm drainage, power and more recently, internet access are all examples of utilities and service systems. The environmental analysis will focus on whether the project will require the expansion of one or more services. If expansion

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27 Public Resources Code Section 21082.3(c)(1) (ref [OPR Technical Advisory AB52 and SB18 June 2017](#))

is required then the impacts of the expansion must be evaluated. Most agencies have a series of master plans that specify capacities and increment(s) of expansion linked to growth. The master plans are often used as the basis for the development impact fee used to fund the incremental expansion. The environmental analysis will identify whether the proposed project is within the planned services as shown in the master plan, or if there is no master plan within the design capabilities of the service system. The environmental impacts of any service extension to serve a site must also be part of the analysis.

## 20. Wildfire

The California Department of Forestry and Fire Protection (CAL FIRE) maps areas of significant fire hazards based on fuels, terrain, weather and other relevant factors. These zones, referred to as Fire Hazard Severity Zones (FHSZ)<sup>28</sup>, influence how people construct buildings and protect property to reduce risk associated with wildland fires. The environmental analysis will evaluate the consistency with the provisions of the safety element, and whether the project falls into one or more of the following wildfire zones.

## 21. Mandatory Findings of Significance

The mandatory findings of significance bring the analysis in the preceding checklist to a conclusion. Often the section is used to specifically address the cumulative impact of the project or summarize the impacts in the previous analysis to help support the conclusion. From the mandatory findings of significance, an agency can determine whether a negative declaration, mitigated negative declaration or environmental impact report is warranted.

Note that the checklist is often a convenient method of supporting an addendum or an exemption even though it may not be required in either instance. Like most checklists, the point is to not forget some part of the analysis before acting. Agencies are welcome to devise their own checklist provided all the environmental issues are covered. Many agencies eliminate some of the questions in the Appendix G checklist that simply don't apply to their agency.

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28 [CALFIRE Maps](#)



