

# **APPENDIX B**

## **Aesthetics Visual Resource Methodology**

# B

## THE VISUAL MODIFICATION CLASS APPROACH TO ASSESSING IMPACTS ON AESTHETICS/VISUAL RESOURCES

### 1.0 Compliance with NEPA and CEQA

The technical approach to the Aesthetics and Visual Resource Impact Assessment has been developed by Lawrence Headley & Associates (LH&A) to conform to the documentation requirements of the National Environmental Policy Act of 1969 (NEPA; United States, 1969, as amended) and California Environmental Quality Act of 1970 (CEQA; State of California, 1970, as amended). NEPA did not directly establish specific guidance for conducting environmental analyses in conformance with that Act. Instead, it set forth national environmental policy and goals for the protection, maintenance, and enhancement of the environment, and provided a process for implementing these goals within federal agencies. NEPA, however, also established the Council on Environmental Quality (CEQ), which promulgated regulations implementing NEPA that are binding on all federal agencies. The regulations address the procedural provisions of NEPA and the administration of the NEPA process, including preparation of EISs. Most federal agencies have set forth their own NEPA regulations and guidance which generally follow the CEQ procedures but are tailored to the specific mission and activities of each agency.

Those federal agencies that have not created their own regulations and guidance for visual resource management and analyses must rely on methodologies promulgated by other federal agencies. The best known of these include the analytical frameworks developed by the U.S. Department of Agriculture, Forest Service (USDA-FS, 1974, 1995); U.S. Department of Interior, Bureau of Land Management (USDI-BLM, 1978); and U.S. Department of Transportation, Federal Highway Administration (USDOT-FHWA, 1981).

The USFS was the first of these agencies to develop and document a comprehensive system for addressing visual resources as part of this agency's land management process. Its handbook, *The Visual Management System* (USDA-FS, 1974), was followed by the BLM's and FHWA's handbooks in 1978 and 1981, respectively. The USFS has since revised its visual resource management system (*Landscape Aesthetics. A Handbook for Scenery Management*, USDA-FS, 1995), but the principles have remained the same.

The methodology for the Visual Resources assessment reflects the concepts and principles of the Visual Resource Management methodologies in use by the federal

agencies noted. However, while providing much of the conceptual framework for the technical approach developed by LH&A, these analytical systems are not directly compliant with NEPA, as discussed below:

- USFS and BLM Methodologies. The USFS and BLM approaches to visual resource assessment are closely similar. Both are frameworks for visual resource management planning, each aimed at establishing Visual Management Objectives (USFS) or Visual Management Classes (BLM) for the lands under their jurisdiction. These Objectives/Classes commit lands to specific levels of visual quality and become part of the overall land management plans adopted for the areas under agency jurisdiction. The adoption of these plans is a federal action requiring the preparation of a NEPA/CEQ-compliant EIS.

It is important to emphasize that the USFS and BLM systems were designed to: (1) inventory visual resources and provide the basis for ascribing visual resource management objectives to lands under agency management, and (2) to determine whether a proposed action or its alternatives would meet those management objectives. They do not offer a NEPA-compliant framework for identifying the intensity of impacts on visual resources or the significance of those impacts. Specifically, that which constitutes a significant impact is not defined and no thresholds (criteria or standards) for significance are offered.

- FHWA Methodology. The FHWA methodology differs substantially from the USFS and BLM approaches in that this agency manages no land and, therefore, is not concerned with visual management objectives. Instead, it focuses on guiding the design of highway projects occurring on lands subject to various jurisdictions by identifying and mitigating adverse visual effects. However, like the other agencies, the FHWA neither defines what constitutes a significant impact nor identifies thresholds for significance. The system goes only as far as defining what a visual impact is: "...the degree of change in visual resources and viewer response to those resources caused by a development project (USDOT-FHWA, 1981, Appendix E: Glossary). Given the limits of the framework, as well as the type of projects addressed, it cannot serve to guide the preparation of a visual impact assessment meeting the requirements of an EIS.

Regarding compliance with CEQA, as is the case with the NEPA EIS process, an EIR focuses on a proposed Project's potential to cause significant visual impacts. For the reasons that the USFS, BLM and FHWA methodologies are not compliant with the requirements of NEPA, they are also not compliant with those of CEQA: the systems do not serve to identify levels of impact intensity or criteria or standards for significance of impacts.

Unlike NEPA, CEQA provides some, albeit abbreviated, guidance in identifying the thresholds for significance, as discussed in 3.3. The federal systems, however, do not offer the vocabulary to address those issues since they are directed toward adopting—and determining compliance with—agency visual management objectives. To adjust for this, the technical approach used in the accompanying assessment builds on CEQA guidance, addressing the specific issues of concern listed in Appendix G of CEQA (Environmental Checklist).

To summarize, all of the major federal methodologies present challenges in their application to EISs and EIRs. Therefore, the concepts of the federal methodologies noted have been adapted by LH&A in developing an analytical framework which efficiently addresses the core emphasis of NEPA and CEQA: identifying the nature, intensity and

significance of visual impacts. The efficiency of the approach is effected by limiting the inventory of baseline visual conditions (Section 7.2.3) to the most critically important public views, those which are both “sensitive” and which would be substantially exposed to the project being evaluated (Section 7.2.2).

The approach has been applied by LH&A to numerous NEPA- and CEQA-compliant visual impact assessments over the last 18 years (Headley, 1988 – 2005). In the following sequence, the technical approach:

- Identifies those views potentially affected by a proposed Project over which the public is most likely to express concern (critical public views);
- Describes the existing visual conditions (character and quality) of those potentially affected critically sensitive views;
- Estimates the intensity of possible adverse visual impacts on those views;
- Evaluates the significance of the possible impacts; and
- As applicable, considers possible mitigation measures that could lessen the impacts to a level of intensity that is less than significant.

## **2.0 Environmental Setting**

### **2.1 Definition of the Resource**

The visual resources of an area include the features of its landforms, vegetation, water surfaces and cultural modifications (physical changes caused by human activities) that give the landscape its visually aesthetic qualities. Landscape features, natural appearing or otherwise, form the overall impression of an area. This impression is referred to as “visual character.” Visual character is studied as a point of reference to assess whether a given project would appear compatible with the established features of the setting or would contrast noticeably and unfavorably with them.

Visual resources have a social setting, which includes public expectations, values, goals, awareness and concern regarding visual quality. This social setting is addressed as “visual sensitivity,” the relative degree of public interest in visual resources and concern over adverse changes in the quality of that resource. As applied to visual impact analyses, sensitivity refers to public attitudes about specific views, or interrelated views, and is key to identifying critical public views, assessing how important a visual impact may be, and whether or not it represents a significant impact.

### **2.2 Critical Public Views**

Critical views are defined as being those sensitive public views that would be most affected by the subject action (e.g., the greatest intensity of impact due to viewer proximity to the project and project visibility, duration of the affected view, etc.).

The approach to identifying critical public views starts with an inventory of sensitive viewing positions in the project vicinity. Public surveys may be conducted to uncover attitudes toward the potentially affected visual resources which may indicate potential sensitivity to adverse changes in those resources. It is unusual for surveys to be held, due to constraints on the budget for the assessment and the time to complete the analyses. In the absence of public surveys, most often indicators of public concern are used to rate

potential public sensitivity. A list of commonly used indicators is presented in Table 1. This list reflects the concepts and methods of the USFS, BLM, and FHWA, which treat sensitivity as a function of viewer expectations, activity, awareness, values, and goals. Certain activities tend to heighten viewer awareness of scenic resources (recreational pursuits, for instance), while others tend to focus attention on other aspects of the environment (i.e., commuting to work). Viewer awareness may also be heightened where areas are formally classified or otherwise designated as being of special interest, such as national historic monuments or national and state parks and forests.

High visual sensitivity is assumed to exist where landscapes, particular views, or the visual characteristics of certain features are protected through policies, goals, objectives, and design controls in public planning documents.

A key assumption of the technical approach is that public sensitivity is not always related to obvious aesthetic appeal. The public may confer visual significance on landscape components and areas that would otherwise appear unexceptional (USDOT-FHWA, 1981). Other areas may have regional or national cultural significance, but not be especially scenic. Nonetheless, their visual character may be considered important to their cultural value (USDOT-FHWA, 1981). Consequently, the methodology for describing the baseline for the visual impact analyses does not measure the aesthetic appeal, per se. Instead, the importance of the affected landscape is inferred from the indicators of sensitivity.

The degree of visual sensitivity is treated as occurring at one of four levels as follows:

- High Sensitivity. High sensitivity suggests that there is great potential for the public to react strongly to any lessening of visual quality. Concern is expected to be great because the affected views are rare, unique, or in other ways are special to the region or locale. A highly concerned public is assumed to be more aware of any given level of adverse change and less tolerant than a public that has little concern. A small modification of the existing landscape may be visually distracting to a highly sensitive public and represent a substantial reduction in visual quality.
- Moderate Sensitivity. Moderate sensitivity suggests that there is substantial potential for the public to voice some concern over visual impacts of moderate to high intensity. Often the affected views are secondary in importance or are similar to others commonly available to the public. Noticeably adverse changes would probably be tolerated if the essential character of the views remains dominant.
- Low Sensitivity. A small minority of the public may have a concern over scenic/visual resource impacts on the affected area. Only the greatest intensity of adverse change in the condition of aesthetics/visual resources would have the potential to register with the public as a substantial (significant) reduction in visual quality.
- No Sensitivity. There is no sensitivity where the potentially affected views are not “public” (not accessible to the general public) or because there are no indications that the affected views are valued by the public.

A review of literature and maps, an inspection of the project site and the potentially affected environs, and a review of public scoping comments typically serve to identify indicators of public sensitivity. The range of sensitive views is then considered and

**TABLE 1**  
**INDICATORS OF VISUAL SENSITIVITY**

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**HIGH SENSITIVITY**

- Views of and from areas the aesthetic values of which are protected in laws, public regulations and policies, and public planning documents.
- Views of and from designated areas of aesthetic, recreational, cultural, or scientific interest, including national, state, county, and community parks, reserves, memorials, scenic roads and trails, interpretive sites of scientific value, scenic overlooks, recreation areas, designated open space, and historic structures, sites, and districts.
- Views of and from areas or sites of cultural/religious importance to Native Americans.
- Views from national or state-designated scenic highways or roads, or designated scenic highways or roads of regional importance.
- Views from resort areas.
- Views from urban residential subdivisions and segments of roads near them that serve as their primary access route.
- Views from segments of travel routes, such as roads, rail lines, pedestrian and equestrian trails, and bicycle paths, that are near, and are the primary access to, designated areas of aesthetic, recreational, cultural, or scientific interest and which lead directly to them. Views seen while approaching an area of interest may be closely related to the appreciation of the aesthetic, cultural, scientific, or recreational significance of that destination.

**MODERATE SENSITIVITY**

- Views from segments of travel routes near highly sensitive use areas of interest serving as a secondary access route to those areas.
- Views from highways or roads locally designated as scenic routes and of importance only to the local population, or informally designated as such in literature, road maps and road atlases.
- Views from a major aggregation of rural residences and the proximate stretch of the roadway serving as their primary access route (within one mile of the homes).
- Views of, and from, undesignated but protected or popularly used or appreciated areas of aesthetic, recreational, cultural, or scientific significance at the local, county, or state level.
- Views from segments of travel routes, such as roads, trails, bicycle paths, and equestrian trails, that are near, and are the primary access to, protected or popularly used undesignated areas important for their aesthetic, recreational, cultural, or scientific interest, and which lead directly to them.
- Views of and from religious facilities and cemeteries.

**LOW SENSITIVITY**

- Views from travel routes serving as secondary access to moderately sensitive areas.
- Views from a minor aggregation of rural residences (a group of at least four homes) and the proximate stretch of the roadway serving as their primary access route (within one mile of the homes).
- A small minority of the public demonstrably has an interest in the quality of scenic/visual resources within potentially affected views and a concern over adverse impacts on those resources.

**NO SENSITIVITY**

- The views are not public.
  - There are no identifiable indications of public interest in the quality of scenic/visual resources within potentially affected views or concern over adverse impacts to those scenic/visual resources. For example, such views would occur along travel routes serving solely commercial, industrial, or agricultural traffic, business parks, research, development and manufacturing sites.
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several representative views in which the proposed facilities would be most noticeable are selected for detailed analysis. This decision is based primarily on proximity and degree and duration of project exposure. Consideration is also given to having the views be representative of the public experience; i.e., that they be from viewing positions frequently used by the public and readily located, based on the description and photographs presented in the visual impact assessment.

## 2.3 Existing Visual Condition

The existing visual condition of the landscape is the baseline against which the visual impacts of a proposed action or its alternatives is measured, and it is assessed only relative to critical public views, as defined in Section 2.2. This baseline is expressed in terms of the prevailing character of the affected setting and the degree to which past actions have adversely affected that character and its quality. Both the existing daytime visual conditions of the project vicinity and the existing night lighting conditions are considered. Specifically, the existing visual condition is influenced by the following:

### 2.3.1 Existing Visual Condition: Landscape Character

- Visual Character: Features, Their Pattern of Distribution, and Viewing Conditions. A key attribute of the existing visual condition is visual character, which is defined in terms of the physical features inherent to the potentially affected area. As noted, such features may be considered to be “visual resources” yet have no demonstrable aesthetic appeal. For instance, local laws, regulations, plans and policies may protect certain views, indicating high sensitivity, even though the features individually or in aggregate may possess no obvious signs of “beauty” in any conventional sense.

Features are treated as inherent—e.g. an established part of the setting—if they reflect how the landscape was formed (e.g., ecological processes versus human activities), how it functions (e.g., serving land uses or ecological relationships), and how it is structured (“patterns” of features, such as the broad rectilinear mosaic of irrigated croplands, a natural and irregular mosaic of grasslands and woodlands, or development according to how urban lands are zoned).

- Congruence (Intactness): A second attribute of the existing visual condition of the landscape is the degree to which past actions have noticeably and unfavorably changed landscape features, or introduced incompatible features, such that the results appear incongruent with the inherent character of the area. Such changes would appear incongruent with the inherent character of the area. What is being measured is the landscape’s current state of “intactness,” the integrity of the character type in terms of the degree to which “encroaching elements” may be present. (FHWA, 1981).
- Coherence (Unity). The third attribute of existing visual condition is the current internal consistency and harmony of landscape features that has resulted from past actions. A landscape may be “intact” relative to the type of features within view, yet past actions may have resulted in there being little to no discernible pattern, composition and/or harmony associated with those features. For instance, a residential area may comprise single family homes mixed with apartments and condominiums in an incoherent mosaic. Or, the scale, form, line, color and texture of features that otherwise are of a “type” may be divergent to the point of distraction.



- Visual Access. Apart from its physical features, the affected landscape is also described in terms of the physical conditions under which it is viewed. Such conditions include public access to views, the breadth of available views (panoramic or narrowly focal), their duration and timing, and the viewing angle. Past actions may have limited physical access to formerly available viewing positions or partially or totally blocked visual resources from public view, shortened view duration, or altered when the views are available (i.e., entry limited to certain hours of the day or times of the year).

### 2.3.2 Existing Visual Condition: Sources of Light and Glare

Regarding night lighting conditions, “light” refers to artificial light emissions, or the degree of brightness, generated by a given source. The Illuminating Engineering Society of North America (IES) defines glare as “the sensation produced by luminance in the visual field that is sufficiently greater than the luminance to which the eye has adapted to cause annoyance, discomfort, or loss of visual performance and visibility” (IES 1993).

The existing condition of light and glare is defined by the following characteristics:

- Lighting Character: Light Sources and Their Pattern of Distribution. The character of lighting is defined in terms of the types of lighting present and their pattern of illumination. Illumination may be described in terms of: 1) *Ambient Lighting*, the general overall level of lighting in a given area due to the various light sources present; 2) *Corona*, which is the diffuse halo of light that exists above a lit area, usually against a dark background and discerned only at substantial distances; and 3) *Glare*, as defined above: focused, intense, point-source or reflected light. Being a negative occurrence of direct or reflected light, glare is not described as part of the inherent character of lighting in an area. It would be an adverse effect of past actions.
- Congruence (Intactness). As with daytime visual conditions, this attribute is the degree to which past actions have noticeably and unfavorably changed the type and/or intensity of lighting in an area such that the result appears incongruent with the inherent character of lighting there.
- Coherence (Unity). This attribute, as it pertains to lighting, is the internal consistency of scale, pattern and organization of the sources and effect of lighting relative to the potentially affected area.

### 2.3.3 Visual Modification Classes

Visual Conditions are expressed in terms of four Visual Modification Classes (VMCs), defined in Table 2. The highest quality landscapes are those that are Visual Modification Class 1, in which all features and their distribution, as well as sources of lighting, appear to be characteristic of the established setting, and past actions have not introduced incongruous changes or altered viewing conditions, nor have such actions adversely affected the coherence (scale, pattern, organization, composition) of the landscape and its lighting.

Visual Modification Class 2 conditions occur where adverse changes in the landscape and/or lighting are noticeable but subordinate to the features characteristic of the area; these changes may attract some attention, but they do not compete for it with



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**TABLE 2**

**VISUAL MODIFICATION CLASS DEFINITIONS<sup>1</sup>**

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- VM Class 1 -** Not noticeable: changes in the congruence and/or coherence of the landscape that have occurred in the past, or may potentially occur in the future due to a proposed Project, generally would be overlooked by all but the most concerned and interested viewers; they generally would not be noticed unless pointed out (inconspicuous because of such factors as distance, screening, low contrast with context, or other features in view, including the adverse impacts of past activities). Historically available and important views remain unencumbered and are accessible.
- VM Class 2 -** Noticeable, visually subordinate: changes in the congruence and/or coherence of the landscape that have occurred in the past, or may potentially occur in the future due to a proposed Project would not be overlooked (noticeable to most without being pointed out). They may attract some attention but do not compete for it with other features in the field of view, including the adverse impacts of past activities. Such changes often are perceived as being in the background. And/Or: historically available scenic views have become partially blocked and/or the vantage points have become physically inaccessible.
- VM Class 3 -** Distracting, visually co-dominant: changes in the congruence and coherence of the landscape that have occurred in the past, or may potentially occur in the future due to a proposed Project, would compete for attention with other features in view (attention is drawn to the change about as frequently as to other features in the landscape). And/Or: historically available and scenic views have become substantially blocked and/or the vantage points have become inaccessible.
- VM Class 4 -** Visually dominant, demands attention: changes in the congruence and/or coherence of the landscape that have occurred in the past, or may potentially occur in the future due to a proposed Project, would be the focus of attention and tend to become the subject of the view. Such changes often cause a lasting impression of the affected landscape. And/Or: historically available scenic views have become totally blocked and/or the vantage points have become inaccessible.

1) The Visual Modification Class definitions apply to the description of existing visual conditions of critical public views, as well as to the potential future visual conditions resulting from the Project under consideration.

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other features in the field of view; and/or historically available scenic views may have become partly blocked or less inaccessible.

Visual Modification Class 3 conditions occur where adverse changes in the landscape and/or lighting are distracting to the point they compete for attention with other features in view; and/or historically available and scenic views have become substantially blocked and/or inaccessible.

Visual Modification Class 4 conditions are of the lowest quality. Incongruous features introduced by past actions dominate attention, or patterns natural to the area have been altered to the point of incoherence; historically available scenic views have been totally blocked or made inaccessible; and/or lighting has been altered to the point of dominating attention or causing glare.

## **3.0 Visual Impact Assessment**

### **3.1 Definitions**

Under NEPA, the terms “effect” and “impact” are used interchangeably. Effects include ecological, aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect would be beneficial. Direct and indirect effects are defined as follows:

- Direct effects are those caused by the action and occurring at the same time and place.
- Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.

Under CEQA, an effect is considered to be a change in any of the physical conditions within the area affected by the project (State of California, 1970).

NEPA offers no criteria or thresholds for the significance of impacts but does afford general guidance, as follows. In determining the significance of effects/impacts, NEPA/CEQ requires consideration of both context and intensity in judging whether or not an impact is significant (Sec. 1508.27, CEQ: Regulations for Implementing NEPA, Index and terminology). The context of an action includes the social context and the physical context. Intensity refers to the severity of the impact. Ten factors (types of issues) are listed, including the potential to affect health and safety, the unique character of the affected resource, the potential for controversy and precedent, the contribution to cumulative impacts, the effect on recognized, or potentially recognized historic, scientific, cultural resources, the impact on endangered or threatened species, and the potential to violate laws and regulations. Neither NEPA nor any federal agency provides specific impact criteria to apply to the consideration of the ten types of issues. CEQA, on the other hand, offers some guidance. A significant impact would be “...a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including...objects of...aesthetic significance.” (Section 15382, Article 20). Four specific areas of concern over substantial/significant visual impacts are listed in Appendix G of CEQA (Environmental Checklist) as follows:

- Substantial, adverse effects on a scenic vista.

- Substantial damage to scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within [view from] a state scenic highway [insertion added for clarity by author].
- Substantial degradation of existing visual character or quality of a site and its surroundings.
- Creation of a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

No further guidance is provided, and it is at the discretion of the investigator, or the lead agency responsible for the EIR, to determine criteria for what constitutes a “substantial” effect, damage, degradation, or new source of light or glare.

In the absence of specific guidance from NEPA and CEQA, LH&A has developed an approach to assessing visual impacts and their significance which draws upon the principles common to the three primary federal systems for visual resource management referenced (USDA-USFS, USDI-BLM and USDOT-FHWA). This approach has been applied by over an 18-year period to numerous CEQA- and NEPA-compliant documents (Headley, 1988-2005).

Accordingly, the following definition of “visual impact” is used for the purposes of this report:

- **Visual Impact:** a change in aesthetics and visual resources which occurs when, relative to a public view:
  - Features are altered, introduced, made less visible, or are removed, such that the resultant effect on public views is perceptibly incongruous with the inherent, established character of the landscape. Changes that seem incongruous are those that appear out of place, discordant, or distracting.
  - Access to public views is substantially diminished or eliminated by screening or blocking of the affected view; and/or physical access to public viewing positions is substantially restricted or eliminated.

Visual impacts are further defined as follows:

- **Visual Impact Intensity.** The terms “intensity” and “magnitude” are used interchangeably. The intensity of a visual impact depends upon how noticeable the adverse change may be. It is indicated by the degree to which existing visual conditions (the baseline for the analyses) would change as a result of features of project construction and operation. Three levels of visual impact intensity may occur. Level 1 is a reduction in Visual Conditions by one Visual Modification Class (VMC) rating; Level 2 is a reduction by two VMC ratings; and Level 3 is a reduction by three VMC ratings.
- **Significant Visual Impact:** The following definition paraphrases and augments the CEQA definition of impact significance stated earlier:
  - Substantial Adverse Change An adverse change in visual resources would be substantial when:
    - “A significant visual impact is one that would cause a substantial, or potentially substantial, adverse change in the visual resources of the affected environment.”

- Visual quality has been noticeably reduced. Whether changes in visual quality are noticeable is a function of public sensitivity to adverse visual impacts, the intensity of the impacts, and their duration, as qualified by the temporal viewing context (discussed below). One indication of the significance of an impact is its potential for controversy. A highly sensitive public is expected to be more reactive to the potential for impacts of lesser intensity than a less sensitive public. Table 3 summarizes the relationship of impact intensity and sensitivity to the perception that a substantial reduction in visual quality would occur;

And/or:

- The impact would result in an inconsistency with laws, ordinances, regulations, and standards (LORS) applicable to the protection of visual resources; and
  - The impact would endure for an appreciable period of time—usually one year or longer—(as opposed to being ephemeral or brief). However, visual impacts enduring for less than one year may also be significant, depending on the temporal context (assuming criteria for impact intensity and viewer sensitivity have been met). In general, the consideration of impact duration may be scaled to the availability of a view in the experience of the observer and/or the observer's sensitivity to the potential for adverse effects upon a visual resource. For instance, views that are seasonally critical and highly sensitive (e.g., views characterizing the one-time summer experience of a visitor to a recreation resource or tourist destination) would have a lower impact duration threshold of significance, measured in terms of three months or less.
- **Temporary Visual Impacts:** Those lasting for one year or less.
  - **Short-Term Impacts:** Those lasting for more than one year but fewer than five years.
  - **Long-Term Impacts:** Those lasting for five years or more.

## **3.2 Visual Impact Intensity (Magnitude)**

The magnitude (noticeability) of the potential visual impacts is described in terms of the degree to which the Visual Modification Class of the affected view is predicted to change. This degree of change is the intensity of the impact. Several factors affecting the context of views are considered: viewer activity; primary viewing direction(s); viewing distance; project exposure; duration of viewing; relationship of the subject view to the sequence available; the presence of existing features of competing visual interest; and established features tending to draw attention toward the project facilities (focal point sensitivity).

To determine the magnitude of visual impacts, visual simulations (also termed “photo-simulations”) are prepared. These are realistic computer-generated three-dimensional images of a proposed project that simulate project features in their context as they would be seen in critical views and under specific viewing conditions matching baseline photographs of the same views. These conditions include angle of view, distance, time of day, and ambient lighting and atmospheric perspective (the attenuation of details due to particulates or moisture). The computer imaging is generally restricted to features of the

**TABLE 3**  
**RELATIONSHIP OF IMPACT INTENSITY AND VISUAL SENSITIVITY**  
**TO AN EFFECT'S BEING PERCEIVED AS A SUBSTANTIAL**  
**REDUCTION IN VISUAL QUALITY (SIGNIFICANT IMPACT)<sup>3</sup>**

		Visual Sensitivity <sup>1</sup>			
		High	Moderate	Low	None
Intensity of Impacts <sup>2</sup>	Level 1	<b>S<sup>3</sup></b>	<b>N</b>	<b>N</b>	<b>N</b>
	Level 2	<b>S</b>	<b>S</b>	<b>N</b>	<b>N</b>
	Level 3	<b>S</b>	<b>S</b>	<b>S</b>	<b>N</b>

**1) High Sensitivity (H):** The potential for public concern over adverse change in scenic/visual quality is great. Affected views are rare, unique, or in other ways are special and highly valued in the region or locale. Even the smallest perceptible change in visual conditions (Impact Intensity Level 1 [see below]) would be considered to be a substantial (significant) lessening of visual quality.

**Moderate Sensitivity (M):** The potential for public concern over adverse change in scenic/visual quality is appreciable. Affected views are secondary in importance or similar to views commonly found in the region or locale. A moderately to highly intense visual impact (Impact Intensity Levels 2 or 3) would be perceived as a significant lessening of visual quality.

**Low Sensitivity (L):** Generally, there may be some indication that a small minority of the public has a concern over scenic/ visual resource impacts on the affected area. Only the greatest intensity of adverse change in the condition of aesthetics/visual resources (Impact Intensity Level 3) would have the potential to register with the public as a substantial (significant) reduction in visual quality.

**No Sensitivity (None):** The views are not public, or there are no indications of public concern over, or interest in, scenic/visual resource impacts on the affected area.

**2) Intensity of Impact:**

- (Level 1)** A reduction in Visual Condition by one Visual Modification Class rating (Table 2).
- (Level 2)** A reduction in Visual Condition by two Visual Modification Class ratings.
- (Level 3)** A reduction in Visual Condition by three Visual Modification Class ratings.

**3) Significance:** **This Table pertains to Impacts AES-1 – AES-4.**

**S:** Significant Impact, if the effect persists for an appreciable duration, generally one year or more. Note that the temporal viewing context may indicate that impacts lasting less than one year may represent a substantial (significant) impact.

**N:** Less-than-Significant-Impact (no substantial reduction in visual quality), regardless of duration.

project, with the context being represented by a photograph. The image and photograph are then blended to realistically portray the project in its context.

Details about the camera used for the base photograph are recorded and later emulated by the computer program used for the simulation. Key information about the camera includes its location, tilt, bearing, lens focal length, time of the photograph, and exposure information. A Global Positioning System may be used to identify the location and elevation of the camera lens in order to correlate the computer image with the base photograph.

The camera data collected in the field are input into a computer program (such as 3d Studio Max, an Autodesk product widely used for architectural visualization) that digitally replicates the three dimensional world at full scale. The computer simulation can vary in detail from a highly detailed architectural model of the project to a simple massing study lacking detail but representing the volume and dimensions of the project. Projects seen at a moderate distance, for instance, can be successfully simulated using a massing study because details cannot be discerned at a substantial distance. A closer view would justify a more detailed simulation. Confirmation of scale and position of the computer rendering is often accomplished by installing marker poles on site at points correlating with the project plan to provide registration points. The preliminary computer image will simulate the project and poles, and the image will be positioned and scaled until the simulated poles overlay exactly those appearing in the underlying base photograph. Aerial photographs and USGS maps are typically used to confirm locations and angles of view

The impression of the project can be represented under specific lighting and atmospheric conditions. For instance, the computer can simulate the effect of haze and backlighting (where the sun is behind the project) on color. The amount of haze is estimated by sampling shadow tones in the foreground and background, comparing the two, and arriving at a color and density for the atmospheric haze. Shadows and sun angle are derived from the latitude and time of day so they match what appears in the photograph.

### **3.3 Significance**

The intensity of the impact (the degree of change in Visual Modification Class ratings) is compared to the sensitivity of the affected view to determine whether a substantial (significant) reduction in visual quality is likely to occur. Table 3 presents the correlation of intensity and sensitivity to a substantial reduction in visual quality. As noted, the perception of lowered visual quality is one of three criteria for significance; the other two are duration of the impact and its consistency with laws, ordinances, regulations, and standards (LORS) applicable to the protection of visual resources. Note that a perceptible reduction in visual quality is not treated in this methodology as significant unless it is estimated to persist for more than one year. Also, an adverse visual impact may be significant if it is inconsistent with LORS, whether or not it meets the criteria in Table 3; the impact, however, must be estimated to last more than one year.

#### **3.3.1 CEQA Thresholds of Significance**

The following stated thresholds of significance address the CEQA-listed issues of concern in Appendix G of CEQA (State of California, 2004; Environmental Checklist).

Key to these thresholds is the determination of whether “substantial” impacts would occur. Table 3 serves to help in assessing whether an impact passes over the threshold to become a “substantial”—and therefore a significant—adverse effect.

One additional threshold of significance has been added to augment the CEQA issues of concern: consistency with the regulatory environment (see AES-5, below). Whether or not a visual impact is significant partly depends on whether it is consistent with regulations supporting planning policies and objectives applicable to the protection of visual resources.

- **AES-1: Would the proposed Project or its alternatives cause substantial, adverse effects on a scenic vista?**

This CEQA issue of concern, as interpreted here, addresses the degree to which Project-related features interfere with a scenic vista, either by physically screening the vista from view, or by blocking access to a formerly available public viewing position. A broader interpretation would also include adverse effects on the visual resources within view, in addition to the obstruction of the view or access to it.

- **AES-2: Would the proposed Project or its alternatives cause substantial damage to scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings, within [view from] a state scenic highway?**

The editorial inclusion of “view from” corrects an assumed typographical error. Although the emphasis here is damage to scenic resources within view from a scenic highway, also considered is Project-related blocking of views from such a road. However, this latter impact is addressed under AES-1. Also, reference to “scenic highways” is interpreted to also include locally designated scenic byways, drives, corridors, or parkways.

- **AES-3: Would the proposed Project or its alternatives cause a substantial degradation of existing visual character or quality of a site and its surroundings?**

Here the issue is Project-related incongruity with the character of the lands within critical public views and adverse effects on the coherence (unity) of the established patterns of landscape features.

- **AES-4: Would the proposed Project or alternatives result in a new source of substantial light or glare that would adversely affect day or nighttime views in the area?**

Issues of concern are:

- The change in ambient nighttime illumination levels as a result of project sources;
  - The extent to which project lighting would spill off the project site and affect adjacent light-sensitive areas; and
  - The incidence of daytime reflective solar glare from reflective surfaces.
- **AES-5: Would the proposed Project or alternatives result in impacts not consistent with regulations established to protect Aesthetic/Visual Resources?**

Whether or not a visual impact is significant partly depends on whether it is consistent with regulations supporting planning policies and objectives applicable



to the protection of visual resources. The issue addressed is whether the impact specifically violates laws, ordinances and regulations, fails to meet specific standards, or is otherwise substantially inconsistent with overarching policies and objectives.

### **3.3.2 NEPA Thresholds of Significance**

As noted, there are no standards for determining the significance of visual/aesthetic resources impacts under NEPA or under CEQ regulations, nor are such standards stated in any of the federal agency visual resource analysis or management systems. However, of the ten types of issues listed in NEPA as being important to consider, three appear relevant to visual resource impact assessments: the unique character of the affected resource, the potential for controversy, and the potential to violate laws and regulations (Sec. 1508.27, CEQ: Regulations for Implementing NEPA, Index and terminology).

CEQA thresholds for significance address two of these three NEPA issues. First, the character of the affected resource is addressed by threshold **AES-3** (“...existing visual character or quality of a site....”). Second, the potential to violate laws and regulations is addressed by threshold **AES-5**, which assesses the Project’s consistency with the regulatory setting. Finally, the potential for controversy is assessed by identifying the sensitive public views potentially affected by a proposed action or its alternatives (critical public views). To summarize, the relevant thresholds for significance applied to the NEPA components of the Project are the same as CEQA thresholds **AES-3** and **AES-5**, coupled with the emphasis on critical public views.

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