

N. SUSTAINABILITY AND ENERGY

Sustainability and energy issues have only recently become topics of considerable interest in CEQA documents. Although sustainable development guidelines have been adopted by cities, counties, and State agencies throughout California, the State CEQA Guidelines have not been revised to specifically require a substantive analysis of how development projects affect the long-term uses of resources (although CEQA Guidelines Section 15126.2(c) requires a brief analysis of significant irreversible changes that would result from a development project, including changes in land use that would commit future generations, irreversible changes from environmental actions, and the consumption of non-renewable resources).

By default, issues relating broadly to sustainability have typically been discussed in Environmental Impact Reports (EIRs) in the various topical sections (most notably Transportation and Circulation, in discussions of alternative transportation; Population and Housing, which often includes an evaluation of the regional or sub-regional jobs/housing balance; Public Services/Utilities, which evaluates the ability of utility providers to meet short- and long-term energy needs; and Biological Resources, which analyzes the effects of projects on habitat continuity and ecological health). Energy, while nominally required to be addressed, was often focused-out through the use of the Initial Study Checklist. While the topic-oriented framework of CEQA analysis is effective at identifying and mitigating resource-specific impacts connected to both these topics (e.g., a project's effects on road congestion or wetlands), it is less effective at addressing interactions between resource use (e.g., how storm water management affects wetlands), the regional benefits (and impacts) of development, or identifying ecological approaches to site planning and design so as to avoid environmental impacts.

This section of the EIR discusses the effects of the Draft Specific Plan from a multi-disciplinary perspective, with a focus on sustainability and energy. The purpose of this analysis is not to identify additional environmental impacts of the project, but to provide a more complete understanding of the project's environmental implications as they relate to long-term resource use. This section thus focuses on the physical aspects of sustainability and energy use as identified by the State of California, various cities, and planning organizations, and does not directly address equitable development and community justice (as issues that are distinct from general environmental protection). This analysis is not an exhaustive survey of the project's effects on sustainability, but a way of understanding the project's impacts from a multi-resource perspective. Recommendations are provided for ways to enhance the Draft Specific Plan's sustainability and energy efficiency.

1. Sustainability

The following discussion summarizes concepts of sustainability from three sources: 1) the City of Benicia General Plan; 2) the State of California General Plan Guidelines; and 3) the American Planning Association Policy Guide on Planning for Sustainability.

a. City of Benicia General Plan. The City of Benicia designates creating a sustainable community as "a primary goal and objective of the General Plan." The General Plan notes that sustainability "conveys long-term interdependent economic and environmental goals that promote efficient land use. It is a way of thinking and acting responsibly with respect to environmental, social, and economic issues at ever-widening levels of awareness or "integration." That is, what is done at the project or local level can affect all levels of the environment, including the local community, neighboring regions, the country, and the world."

The following characteristics or end results of sustainable planning are listed in the General Plan:

- Urban areas that reflect a long-term economic horizon;
- Efficient land patterns that are not overly energy-intensive;
- Places with sufficient linkages to the local and regional economy to assure long-term job creation and economic vitality;
- Support of ecologically-sensitive design features; and
- Placing value in the public realm.

b. State of California General Plan Guidelines. The State General Plan Guidelines address issues of sustainability in the context of encouraging communities to incorporate environmental justice considerations (i.e., the fair treatment of people of all races, cultures and incomes with respect to environmental laws) into their long-term plans. In doing so, the General Plan Guidelines seek to translate the overarching goals of sustainability to community development by answering the question: What does sustainable development look like on the ground? The General Plan Guidelines note: “In a community that is developing sustainably, the neighborhood is the basic building block of urban design and is characterized by walkability, mixed-use development, and mixed-income housing.”

The General Plan Guidelines list the following sustainable development goals and policies (which include energy conservation):

- **Decrease urban sprawl** through: the promotion of compact, mixed-use, transit-oriented infill development; the restoration of urban centers; and limiting non-contiguous development.
- **Protect open space and working landscapes** through: conservation of agricultural lands and lands of scenic/recreational value; and using open space to define urban communities.
- **Protect environmentally sensitive lands** by conserving habitat lands and habitat connectivity; minimizing impacts to watershed functions; and avoiding natural hazards.
- **Create strong local and regional economies** by: encouraging a jobs/housing balance; providing adequate multi-income housing; encouraging the expansion of telecommunications infrastructure; and providing a fair and predictable land use planning process.
- **Promote energy and resources efficiency** through: supporting efficient industries and waste reduction programs; promoting alternative forms of transportation; and promoting energy- and resource-efficient buildings.
- **Promote equitable development** through: fair treatment under development policies and regulations; promoting mixed-income housing development; increasing access; promoting economic opportunity across the community; and protecting culturally significant sites.

c. American Planning Association Policy Guide on Planning for Sustainability. The American Planning Association (APA) is the primary professional organization for those in the fields of metropolitan and regional development, community development, urban design, and environmental planning. APA’s Policy Guide on Planning for Sustainability is one of the most comprehensive policy-oriented approaches to sustainable development and was adopted by the APA Board of Directors in 2000. The APA Policy Guide links global un-sustainability indicators (e.g., global warming, declining fisheries, soil degradation, species extinction, and economic inequity) and un-

sustainability indicators in the United States (e.g., suburban sprawl, segregation, loss of agricultural land and open space, traffic congestion, and loss of wetlands and degradation of water resources) to general policy objectives intended to promote sustainability. The intent of the APA Policy Plan is that these general objectives (listed below) be used to create and implement sustainability policies in a diversity of planning environments:

- Reduce dependence on fossil fuels, extracted underground metals and minerals.
- Reduce dependence on chemicals and other manufactured substances that can accumulate in nature.
- Reduce dependence on activities that harm life-sustaining ecosystems.
- Meet the hierarchy of present and future human needs fairly and efficiently.

The following 13 policy positions were developed on the basis of the general objectives:

1. Encourage alternatives to the use of gas-powered vehicles through public transit, alternatively-fueled vehicles, and bicycle and pedestrian-oriented design.
2. Encourage all types of development to use alternative energy sources and meaningful energy conservation measures.
3. Encourage development, agriculture, and other land uses that minimize the use of extracted underground minerals.
4. Encourage development and businesses to reduce the use of chemicals and synthetic compounds.
5. Encourage methods of landscape design, landscape and park maintenance, and agriculture that eliminate use of synthetic fertilizers and pest control and encourage the use of compost and water conservation.
6. Support compact and mixed-use development that minimizes the need to drive, and the reclamation of brownfield sites.
7. Conserve undeveloped land, open space, and agricultural land; consciously restore ecosystems and avoid disruptions to natural ecosystems and floodplains.
8. Encourage forms of development, business, and agriculture that reduce the use of water and employ innovative wastewater treatment.
9. Equitably protect public health, safety, and welfare.
10. Encourage businesses, communities, institutions, and development that pursue reduction and re-use of by-products and waste.
11. Encourage participatory and partnership approaches to planning that involve the local community.
12. Support partnerships and initiatives with other organizations that: support development of technologies that promote sustainability; and provide best available data for making informed decisions about development.
13. Support policies, programs, and legislation that improve sustainability.

2. Project's Consistency with Sustainability and Energy Conservation Concepts

Table IV.N-1 includes a summarized evaluation of the Draft Specific Plan's consistency with selected sustainability principles. The bulk of these principles derive from the policy positions outlined in the APA Policy Guide on Planning for Sustainability (because these policy positions are both comprehensive and generally relate to physical planning); however, the matrix also draws on the concepts of the Benicia General Plan, State General Plan Guidelines, local/regional planning documents, and other sources (including specific themes expressed in the City of Davis General Plan).

3. Conclusion

As shown in Table IV.N-1, the Draft Specific Plan scores a relatively high sustainability rating. Specifically, the Draft Specific Plan would result in a land use pattern and circulation system that would promote alternative transportation, including walking and bicycling. The viability of alternative transportation is one of the foundations of sustainability in that it has the potential to substantially reduce the use of non-renewable energy sources. The use of alternative transportation would be supported by a land use pattern of moderately dense mixed-use development, with identifiable neighborhoods, interesting historic buildings, and safe pedestrian paths. The Draft Specific Plan would encourage the development of multiple kinds of housing, ranging from live/work units for artists, to apartments over ground-floor retail spaces, to townhomes and condominiums. A diverse range of housing types would increase habitation options for Benicia residents and should accommodate a broad range of income groups.

The Draft Specific Plan would support the characteristics of sustainable planning outlined in the Benicia General Plan:

- *Urban areas that reflect a long-term economic horizon.* The Draft Specific Plan would allow for economic change (through flexible building space and adaptable transportation patterns) while preserving key historic and biological resources.
- *Efficient land patterns that are not overly energy-intensive.* Proposed land use patterns emphasize mixed uses and support alternative transportation. The reuse of the Plan Area, where urban development has existed for approximately 150 years, is more efficient than planning for such uses on undeveloped properties.
- *Places with sufficient linkages to the local and regional economy to assure long-term job creation and economic vitality.* Development in the Plan Area would create an important and sustainable source of local jobs in close proximity to Downtown.
- *Support of ecologically-sensitive design features.* Heritage trees and key areas of open space would be preserved. Landscape-style storm water management features would be incorporated into the design of new development.
- *Placing value in the public realm.* Well-designed public spaces – including Officers' Square and numerous smaller parks, plazas, and streetscapes – are central components of the Draft Specific Plan.

The recommendations detailed in Table IV.N-1 would enhance the sustainable aspects of the Draft Specific Plan; however, the Draft Specific Plan, in its current form, substantially realizes key sustainability precepts.

Table IV.N-1: Sustainability and Energy Conservation Matrix

Sustainability Principle	Consistency of Draft Specific Plan	Discussion/Recommendation to Enhance Sustainability
Encourage the use of alternative transportation .	Yes	<p>Although the Plan Area is already an eminently walkable area (with interesting buildings, outdoor spaces, mixed uses, and scenic views), pedestrian circulation in the area is diminished by the lack of sidewalks on certain streets, a shortage of pedestrian pathways that connect the upper part of the site to the lower part of the site, and a complicated street system with inadequate signage. No bike paths or lanes are located in the project site, and Benicia Breeze does not serve the Lower Arsenal.</p> <p>The use of alternative transportation modes in the Plan Area would be substantially enhanced by the Draft Specific Plan through: 1) completion of missing sidewalk segments along Grant Street, Adams Street, Park Road, and Polk Street; 2) the development of new off-street paths through the Jefferson Ridge open space from Adams Street south to Grant Street, and from Grant Street to Polk Street; 3) the improvement of existing stairs throughout the Plan Area; 4) the development of 5-foot bike lanes on Park Road and Military East; 5) the development of new north/south and east/west streets that would break up larger blocks and encourage pedestrian/bike access; 6) support of new bike routes to connect the Plan Area to Downtown Benicia and extend the Bay Trail south of the Plan Area; and 7) support of improved transit connections between the Plan Area and Downtown. However, it should be noted that the development of new pedestrian and bike paths in the Plan Area may require the acquisition of easements or property; new circulation facilities would also be required to comply with Americans with Disabilities Act (ADA) requirements.</p> <p>In addition, the Draft Plan requires that parking be provided within a district-wide solution, which would further encourage visitors to the Plan Area to park once, and then walk to multiple destinations – further reducing automobile reliance. The Draft Specific Plan scores very well on this sustainability principle; no further recommendations are needed.</p>
Encourage the use of alternative energy sources and energy conservation .	Mostly	<p>Energy use for transportation accounts for approximately 28 percent of total energy use in the United States, according to the US Energy Information Administration. Therefore, the Draft Specific Plan, which would promote the use of alternative transportation (including bike/pedestrian access and transit), would promote energy conservation. In addition, rehabilitating existing buildings is far more energy efficient than constructing new ones – even “green buildings” (which still require the extraction, processing, and assembly of raw materials). Action 4.8.1 of the Draft Specific Plan, which would provide financial incentives for the adaptive re-use of buildings, would also reduce energy usage. Action 1.1.8 would establish a green building program in the Plan Area, to encourage construction of environmentally-friendly buildings (which would also be energy-efficient). This action would also likely conserve energy in the long-term.</p>

Table IV.N-1 *Continued*

Sustainability Principle	Consistency of Draft Specific Plan	Discussion/Recommendation to Enhance Sustainability
		<p>However, the Draft Specific Plan would not directly promote the use of alternative energy sources. The following recommended Action would encourage use of alternative energy:</p> <p><u>Recommended Action 6.2.11: Use subsidies, expedited permit processing, density bonuses or other incentives to support the installation and use of photovoltaic cells and other renewable energy technologies to provide a portion of the Plan Area’s energy needs.</u></p>
<p>Encourage development and land uses that minimize the use of extracted underground minerals and synthetic chemicals.</p>	<p>Mostly</p>	<p>As noted in the energy conservation discussion, above, the rehabilitation of existing buildings (which would be promoted by numerous goals, policies, and actions in the Draft Specific Plan) would save energy by re-using and recycling building materials. Re-using and recycling building materials would also reduce the demand for mined materials, including aggregate (used to make concrete) and metals. The promotion of alternative transportation would also reduce demand for gasoline, which is derived from extracted underground minerals. Therefore, the Draft Specific Plan would meet this sustainability principle.</p> <p>However, no goals, policies, or actions directly pertain to using organic methods to maintain open space within the project site. In the absence of such policies, fertilizers, pesticides, and herbicides may be applied within the Plan Area. Many fertilizers are made with petroleum inputs; pesticides and herbicides all rely on synthetic chemicals. The following recommended Action would reduce the use of mined and synthetic materials in landscaped areas:</p> <p><u>Recommended Action 6.2.12: Develop and implement a beyond-organic landscape maintenance plan for the Plan Area. The landscape maintenance plan shall include the following components:</u></p> <ul style="list-style-type: none"> • An Integrated Pest Management Plan (IPM), which will include methods of pest prevention that specify the use of pesticides only as a last resort in pest control. • Creation of a locally-available source of compost that is replenished by local yard waste and food scraps. Locally-made compost shall be applied on open space in the Plan Area. • The promotion of landscape plant species that are naturally resistant to drought and pests.

Table IV.N-1 *Continued*

Sustainability Principle	Consistency of Draft Specific Plan	Discussion/Recommendation to Enhance Sustainability
Support the reclamation of brownfield sites.	Yes	<p>Although portions of the Plan Area have been subject to relatively minor levels of soil and groundwater contamination associated with historic land uses, none of the sites in the Plan Area are officially characterized as “brownfields” (a term referring to areas with high levels of contamination that would require significant remediation). Although some site-specific asbestos and lead remediation may be required when individual sites in the Plan Area are redeveloped, no large-scale remediation plans would be required (all remediation would be covered by existing federal, State, and local hazardous materials regulations).</p> <p>However, the Draft Specific Plan would result in new development on infill parcels, which – like the reclamation of brownfields – could reduce development pressures on greenfield sites. The minor remediation that would occur in the Plan Area would improve environmental quality in the area and enable the development of dense, mixed-use neighborhoods.</p>
Conserve undeveloped land and reduce disruptions to natural ecosystems.	Mostly	<p>Important areas of open space in the Plan Area – most notably the sloping hillside with the heritage cork oaks south of Jefferson Street, and Officers’ Square – would be preserved as part of the Draft Specific Plan. In general, the Draft Specific Plan is protective of existing biological resources: important groves of trees (and individual trees) would be preserved and grading would be minimized through the preservation of large areas of steep slopes and the construction of relatively small-footprint buildings.</p> <p>The site contains approximately 0.18 acres of seasonal wetlands, which are likely associated with remnant drainages or historic cut/fill operations. Some of these wetlands could be affected by construction in the Jefferson Ridge/Officers’ Row Zone. Although these wetlands are not expected to be suitable for use by protected amphibians like California red-legged frog, they are likely used by a variety of local wildlife. The Draft Specific Plan designates four “Potential Stormwater Quality Areas,” three of which would be located on Jefferson Ridge. Although the location of these storm water treatment areas on Jefferson Ridge does not exactly coincide with the location of the existing seasonal wetlands, the wetlands could be preserved and incorporated into the storm water quality areas. The preservation of the wetlands would avoid disruption to natural ecosystems. The costs for protection and maintenance of these wetlands should be provided by individual development projects.</p> <p>The following recommended action would preserve the existing wetlands:</p> <p><u>Recommended Action 6.2.13:</u> Incorporate the existing seasonal wetlands in the Plan Area into an area-wide storm water management plan. Consider enhancing the ecological function of the remnant wetlands through removal of exotic plant species and replacement of removed plants with natives.</p>

Table IV.N-1 *Continued*

Sustainability Principle	Consistency of Draft Specific Plan	Discussion/Recommendation to Enhance Sustainability
Encourage development and land uses that reduce the use of water and employ innovative wastewater management .	Mostly	<p>The land uses that would be encouraged by the Draft Specific Plan – a moderately-dense mix of residential, retail, and industrial uses – are inherently water-efficient. The urban neighborhoods envisioned around Adams Street, Grant Street, and south of Grant Street do not include large areas of turf or other landscaping that requires large amounts of irrigation. Open space throughout the Plan Area would be largely provided by public parks and squares that would be shared by the occupants of the Plan Area. In general, these open spaces would be landscaped with species that are generally tolerant of Benicia’s Mediterranean climate, such as coastal live oak (<i>Quercus agrifolia</i>), California cottonwood (<i>Populus fremontii</i>), and fruitless olive (<i>Olea</i>). Therefore, the Draft Specific Plan would support the principle of reducing water use. The project site and surrounding areas could employ innovative wastewater management: they are located near an existing wastewater treatment plant, which itself is located near the Carquinez Strait shoreline. Wastewater could be routed to a series of restored wetlands, where it could be naturally treated by wetland vegetation and then released, similar to the ecological wastewater treatment program employed by Arcata, California (see the Arcata Marsh and Wildlife Sanctuary website: http://www.humboldt.edu/~ere_dept/marsh/). However, such a program is a complex, expensive, and land-intensive undertaking, and would likely need to be undertaken on a City-wide basis. In addition, the use of wetlands for wastewater treatment in Benicia is not legally authorized. Therefore, no recommendation is made for Plan-wide innovative wastewater management to be implemented, although small-scale gray water programs should be encouraged.</p> <p><u>Recommended Action 6.2.14:</u> Encourage the incorporation of low-cost gray water reuse features in residential, commercial, and industrial development. Appropriate features could include dual waste collection plumbing (to use sink water to flush the toilet), outdoor gray water irrigation systems, and rainfall catch basins/cisterns. Localized gray water recycling could be encouraged via building/development incentives, providing free technical assistance, or refining the local building code.</p>

Table IV.N-1 *Continued*

Sustainability Principle	Consistency of Draft Specific Plan	Discussion/Recommendation to Enhance Sustainability
Promote the production and consumption of local food .	No	<p>While eating locally has become somewhat of a buzzword recently, it is an important component of sustainability. Consuming food grown locally has several environmental benefits, including: keeping local farms economically viable, which preserves rural landscapes; and substantially reducing energy costs associated with food transport. In addition, local farms can often be held more accountable for their negative externalities (because the environmental impacts of fertilizer, herbicide, and pesticide use are experienced locally by those purchasing food). Many aspects of local food production and consumption are beyond the reach of the Draft Specific Plan. These aspects include consumer preference, the ongoing conversion of agricultural land in Solano County, and the global economics of food production. However, there are actions that could be incorporated into the Draft Specific Plan to support local food:</p> <p><u>Recommended Action 6.2.15:</u> Undertake the following actions to promote the production and consumption of local food:</p> <ul style="list-style-type: none"> • Consider allocating a portion of existing open space in the Plan Area to community fruit/vegetable gardens, as long as these gardens maintain the integrity of historic spaces. • Residential developments should allocate space for gardening by residents. • When feasible (e.g., when the population of the Lower Arsenal reaches critical mass), consider bringing a weekly farmer’s market to the Plan Area.
Encourage businesses and development that pursue re-use of waste products .	Mostly	<p>The Draft Specific Plan is generally consistent with this principle, namely because it strongly promotes the rehabilitation of existing buildings. Demolition and construction are wasteful enterprises, from both a materials and energy point of view. The re-use of old buildings is an important way to reuse existing materials. In addition, the Draft General Plan would encourage recycling through Action 6.1.6, would promote the use of recycling programs to meet State waste-reduction strategies. Allied Waste, Benicia’s waste and recycling provider, provides yard waste recycling, but not recycling of food scraps. However, food waste may account for a relatively large proportion of waste generated by residents, restaurants, and other businesses in the Plan Area. Creating a local site for composting food waste would represent a relatively inexpensive, space-efficient way to reduce waste in the Plan Area. In addition, as indicated in Recommended Action 6.2.12 (which includes a provision for recycling food waste), compost generated by the operation could be used to fertilize on-site open spaces.</p>

Table IV.N-1 *Continued*

Sustainability Principle	Consistency of Draft Specific Plan	Discussion/Recommendation to Enhance Sustainability
Equitably protect public health, safety, and welfare.	Yes	The Draft Specific Plan would generally bring compatible and beneficial development to the Plan Area. Parks and open space would be located in all zones, and additional roadways and paths would be built throughout the area that would better connect the live-work lofts in the South of Grant Zone to the mansions on Jefferson Ridge. Key natural amenities in the Plan Area – such as the cork oaks on Jefferson Ridge – would be preserved and accessible to all residents and employees of the Plan Area and Benicia. The Draft Specific Plan also includes special policies to attract and support artists, a group that is ill-accommodated by conventional, market-rate housing. Housing types permitted in the Plan Area would range from live/work units to apartments over retail units, to townhomes, and would expand the range of housing choices available in Benicia. The Draft Specific Plan, which would generally protect environmental resources, promote sustainable development, and offer a wide range of housing opportunities, would equitably protect public health, safety, and welfare.