# 4 CUMULATIVE IMPACTS

## 4.1 REQUIREMENTS FOR CUMULATIVE IMPACT ANALYSIS

This section of the EIS identifies and assesses the potential cumulative impacts related to the Regional Plan Update alternatives. For purposes of this analysis, a cumulative impact is "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative effects can result from individually minor, but collectively significant actions over a period of time" (CEQ NEPA Regulations, 40 CFR 1508.7). This section describes those cumulative impacts to which the Regional Plan Update alternatives would contribute, and whether that contribution would be considerable in the context of past, present, and reasonably foreseeable future projects.

## 4.2 CUMULATIVE ANALYSIS APPROACH

The Regional Plan is a single, enforceable set of Region-wide goals, policies, and implementation measures that serve as the blueprint for the Region's sustainable future. Among other things, the Regional Plan Update alternatives make adjustments to these goals, policies, and implementation measures to support achievement and maintenance of environmental thresholds. As described in Chapter 1, the Tahoe Regional Planning Compact charged TRPA with identifying environmental threshold carrying capacities: targets or standards necessary to achieve and maintain significant scenic, recreational, educational, scientific, or natural values of the Region. Threshold standards set environment quality targets to protect the unique natural values of the Tahoe Region while still providing for orderly development consistent with those standards.

Functionally, the goals, policies, and implementation measures of the Regional Plan establish the necessary precedents for actions that guide the Region toward attainment of environmental thresholds and other important environmental qualities. They are applied on a Regional scale over a long-term (i.e., 20-year) period and address the ways in which communities evolve, how ecosystems function, whether the transportation network is efficient and effective, and the pace at which the Region as a whole is restored and economically sustainable actions are taken over the long-term. Because the goals, policies, and implementation measures are applicable to all programs and projects in the Region over an extended timeframe, they are inherently cumulative in nature, i.e., they apply to the multiple projects and actions that would reasonably be expected to occur in accordance with the Regional Plan. In addition, because development projects in the Tahoe Region are required to receive allocations from a limited pool of CFA, residential allocations, residential bonus units, and TAUs, and because development in accordance with those allocations (as yet unused and newly authorized under each alternative) is assumed to be fully built out over the planning period of the Regional Plan, the analysis in Chapter 3 is cumulative because it assesses the build-out condition of each alternative.

For purposes of disclosure and broad consideration of the potential cumulative environmental impacts of actions in the Lake Tahoe Region over the planning period of the Regional Plan Update, a list of plans, projects, and programs is described herein, which includes known and reasonably foreseeable actions that are most relevant to consider in combination with the effects of the Regional Plan Update alternatives: environmental enhancement projects and programs, land management plans, Tahoe Transportation District (TTD)/Tahoe Metropolitan Planning Organization (TMPO) projects and programs, and major known developments (residential, commercial, tourist, and recreation) in various stages of planning and approval. Many of the programs and projects are restorative in nature and are intended to achieve environmental improvements (such as the EIP and CEP). There are also a variety of projects and activities, some known and others as-yet unknown,

that would not require development allocations (e.g., EIP projects, fuels management projects, infrastructure upgrades). Nonetheless, all of the programs and projects listed below may involve environmental impacts such as temporary construction impacts (related to air quality, greenhouse gas emissions, noise, and water quality) or operational impacts (such as coverage or scenic quality impacts). Such impacts could contribute to cumulative impacts in the Lake Tahoe Region, which is the geographic area of concern for purposes of cumulative analysis.

Section 4.3 contains a discussion of the cumulative effects anticipated from implementation of the Regional Plan Update alternatives, together with related plans, programs, and projects described below. Because each of the Regional Plan Update alternatives would accommodate some level of new development, many of the fundamental principles, policies, and Code provisions of the Regional Plan would not change; and because of the qualitative approach to the cumulative analysis, each of the Regional Plan Update alternatives would result in similar environmental impacts, so their contribution to cumulative impacts would also be similar. For those cumulative impacts that vary substantially between alternatives, the cumulative impacts of each alternative are described. Because the Regional Plan Update is a policy-level undertaking, and the precise locations, magnitudes, and character of most projects implementing the Plan cannot yet be known, descriptions of cumulative effects below are qualitative and do not include quantification of specific effects associated with cumulative impacts.

## 4.2.1 ENVIRONMENTAL ENHANCEMENT PROJECTS AND PROGRAMS

As described throughout this document, the standards set forth under the Region's environmental thresholds are the foundation for much of the decision making that occurs in the Tahoe Region. The environmental thresholds are used, in part, to guide preparation of findings, which are required prior to approval of certain actions. The following programs focus on environmental improvement, including those specifically designed to address environmental thresholds: the Environmental Improvement Program (EIP), the Community Enhancement Program (CEP), the Water Quality Management Plan for the Lake Tahoe Region (208 Plan), and the Lake Tahoe Total Maximum Daily Load (TMDL).

### ENVIRONMENTAL IMPROVEMENT PROGRAM

Launched in 1997, the Environmental Improvement Program (EIP) is implemented through a partnership of federal, state, and local agencies, private interests, and the Washoe Tribe, and was created to protect the extraordinary natural and recreational resources of the Lake Tahoe Basin (TRPA Code of Ordinances Chapter 15). The major EIP partners in local government include the counties of Washoe, Carson City, Douglas, El Dorado, and Placer, the city of South Lake Tahoe, and local utility and fire protection districts. Private partners include a broad spectrum of interests, including the Heavenly Mountain Resort and Homewood ski area, the Chambers of Commerce on the north and south shores, the North Lake Tahoe Resort Association, the League to Save Lake Tahoe, and the Lake Tahoe Transportation and Water Quality Coalition.

The EIP contains a master list of threshold-related projects, programs, and studies that addresses the following program areas: watershed, habitat, and water quality; forest management; air quality and transportation; recreation and scenic resources; and, applied science. The purpose of the EIP, consistent with the Implementation Element of the 1987 Regional Plan and this update, is to attain, maintain, or surpass multiple environmental thresholds through prioritization of a master list of threshold-related projects, programs, and studies. The priority list is evaluated and amended every five years to reflect progress toward thresholds attainment, funding availability, and feasibility of implementation.

## COMMUNITY ENHANCEMENT PROGRAM

The focus of the CEP is to implement projects that demonstrate substantial environmental, as well as, social and economic benefits through mixed-use development projects on existing disturbed and/or underutilized sites. The competitive program was designed to encourage the "best" projects that would demonstrate the desires of the community captured in the regional vision and outlined in the Special Projects code section. The CEP requires substantial up front coordination to shape projects early in the design stages to ensure they meet the criteria, rather than react to projects that are completely designed before submittal. Projects under the CEP are intended to provide clear public benefits, feature public-private partnerships, and help inform possible improvements to local/regional codes and regulations. Specific CEP projects are described individually, below.

## WATER QUALITY MANAGEMENT PLAN FOR THE LAKE TAHOE REGION

The Water Quality Management Plan for the Lake Tahoe Region (208 Plan) was prepared by TRPA in compliance with Section 208 of the CWA. The 208 plan contains overlapping elements with the TRPA Regional Plan, including, the Handbook of Best Management Practices, the Stream Environment Zone Protection and Restoration Program, and the Capital Improvement Program for Erosion and Runoff Control. The 208 Plan identifies pollution sources, control needs, and management practices to improve water quality.

The 208 Plan management programs pertain to: urban runoff and erosion, airborne nutrients, waste management, natural area management, and water quality issues in Lake Tahoe and the shorezone. Programs are implemented through designated management agencies, including TRPA, USFS, and local governments. To determine if water quality goals are attained and maintained, water quality programs require continuous scientific monitoring of environmental conditions related to the thresholds for pelagic Lake Tahoe, littoral Lake Tahoe, tributary streams, surface runoff, groundwater, land coverage, and SEZs. TRPA must publish annual or semi-annual reports on monitoring program implementation and must evaluate the results at least every five years (TRPA 1986: p. VII-23).

## LAKE TAHOE TOTAL MAXIMUM DAILY LOAD

Section 303(d) of the Federal Clean Water Act (CWA) requires water quality restoration planning for surface water bodies that are determined to be impaired (i.e., contain a high concentration of at least one pollutant). A Total Maximum Daily Load (TMDL) is used to describe the maximum amount of a pollutant that a body of water can receive while still meeting water quality standards, targeted to protect or restore beneficial uses of a waterway and protect human health. The Lake Tahoe TMDL is a scientific effort, involving research conducted by scientists and engineers in collaboration with Lahontan (RWQCB), Nevada Division of Environmental Protection (NDEP), local governments, and the public.

The Lake Tahoe TMDL addresses the continuous decline in deep water transparency and sets the desired condition to attain an annual average Secchi depth measurement of 97.4 feet. Lahontan RWQCB and NDEP cooperatively developed the Lake Tahoe TMDL to set standards for fine sediment particles, total nitrogen, and total phosphorus load allocations. The TMDL was adopted as an amendment to the Basin Plan on November 16, 2010 by Lahontan RWQCB and April 19, 2011 by SWRCB (Lahontan RWQCB 2011). It was approved by the U.S. Environmental Protection Agency (EPA) in August 2011.

## TAHOE BASIN PARTNERSHIP FOR SUSTAINABLE COMMUNITIES

The Tahoe Regional Sustainability Plan is a regional collaboration grant funded by the Strategic Growth Council, established by SB 375. The Lake Tahoe Sustainability Collaborative, a public-private partnership, will develop coordinated sustainability tools for regional and local agencies in the Tahoe Region. The overarching goals of this

project are to 1) ensure that the best available science informs regional and local planning and implementation efforts; 2) develop policies that support investments in environmental redevelopment to create more livable communities; 3) adapt and be more resilient to climate change; 4) actively reduce greenhouse gas (GHG) emissions; and 5) revitalize the economy.

### UPPER TRUCKEE RIVER WATERSHED RESTORATION PROJECTS

The Upper Truckee River drains the largest watershed in the Lake Tahoe Basin. The watershed however, has been substantially altered by land practices during the past 150 years. Multiple restoration projects in different reaches would restore those portions of the river and floodplain through actions including: reactivating historic channels; constructing new sinuous channels; narrowing and aggrading the existing channel; creating inset floodplains; correcting erosion problems. Implementation of the project would benefit water quality and multiple special status species.

### REGIONAL CREEK RESTORATION PROJECTS

Stream restoration projects are being planned and implemented to restore geomorphic and ecological functions including retention of fine sediments and providing habitat for plants and animals. These restoration efforts are underway in the watersheds of the Upper Truckee River, Blackwood Creek, Ward Creek, Trout Creek, and other streams within the Region. Research projects are synthesizing the results from past stream restoration projects as well as conducting in-depth field, modeling and laboratory studies to improve understanding of how stream channels erode and sediments deposit in floodplains. The findings will help design projects that more effectively reduce pollution and enhance habitat.

## 4.2.2 LAND MANAGEMENT PLANS

### LAKE TAHOE BASIN MANAGEMENT UNIT FOREST PLAN

The U.S. Forest Service (USFS), Lake Tahoe Basin Management Unit (LTBMU) manages over 75 percent of lands within the Tahoe Region. Land management is guided by the LTBMU Forest Plan (USFS 1988), as amended by the Sierra Nevada Forest Plan Amendment (USFS 2004). The Forest Plan sets the groundwork for how the resources of the national forest are managed. The Plan translates national laws, policies, and regulations into guidance for activities that occur on the National Forest System Lands. On March 19, 2010, a Notice of Intent to revise the LTBMU Forest Plan was published in the Federal Register, and the Draft EIS on the revised plan is expected in spring 2012. The LTBMU Forest Plan revision will be guided by the 2000 National Forest Management Act Planning Rule principals, which include:

- Conducting restoration and conservation to address ecosystem resilience
- Proactively addressing climate change
- Maintaining and restoring watershed health and protecting and enhancing water resources
- Providing for diversity of species and wildlife habitat
- Fostering sustainable National Forest Service lands and their contribution to vibrant rural economies
- Conducting effective and pro-active collaboration with the public
- Considering the relationship between National Forest Service land and neighboring lands
- Using the latest planning science and principles to achieve the best decision possible (USFS 2010)

## LAKE TAHOE NEVADA STATE PARK GENERAL MANAGEMENT PLAN

The Lake Tahoe Nevada State Park is located along the east shore of the Lake. The Nevada Division of State Parks is currently updating its general management plan (GMP) for the park. One of the primary goals of this effort is to bring the plan up to date to address current operational issues, recreation needs, desired facility development, and resources stewardship requirements. The GMP update will provide development and operational guidance for the park's four management areas: Sand Harbor/SR 28, Cave Rock, Spooner Lake/Backcountry, and Van Sickle.

# 4.2.3 TAHOE TRANSPORTATION DISTRICT/TAHOE METROPOLITAN PLANNING ORGANIZATION PROJECTS AND PROGRAMS

Article IX of the Compact established the Tahoe Transportation District (TTD), which is responsible for facilitating and implementing safe, environmentally positive, multi-modal transit plans, programs and projects. TRPA is the federally designated Metropolitan Planning Organization (TMPO) for the Lake Tahoe Region. The core mission of the TMPO is to establish a safe, efficient and integrated transportation system that reduces reliance on the private automobile, provides for alternative modes of transportation, serves the basic transportation needs of the citizens of the Tahoe Region, supports the economic base of the region in the movement of goods and people, and minimizes adverse impacts on humans and the environment.

As described in Chapter 1, Introduction, planning processes for the Regional Transportation Plan/Sustainable Communities Strategy and Regional Plan Update are underway concurrently. The RTP/SCS consists of both transportation policies and transportation improvement projects, as described below.

## REGIONAL TRANSPORTATION PLAN/SUSTAINABLE COMMUNITIES STRATEGY

The Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) includes policies, project implementation plans, and funding strategies to improve and shape the transportation network in the Region in a way that reduces reliance on the automobile, reduces mobile sources of air pollution, and achieves other environmental goals. The RTP/SCS provides for mitigation of adverse transportation conditions in the Lake Tahoe Region and helps achieve applicable environmental threshold carrying capacities, analogous to the function of the Lake Tahoe Environmental Improvement Program as it relates to other environmental conditions and thresholds. The RTP/SCS, in conjunction with the Lake Tahoe Regional Plan, sets the vision, policies, and objectives for the transportation program and Capital Improvement Program (CIP) projects that implement the RTP/SCS. The CIP is implemented by the Tahoe Transportation District (TTD). Environmental review of adoption of these plans and their implementation through the CIP is being coordinated to support a comprehensive and efficient planning and implementation approach for these critical transportation projects. The RTP/SCS EIR/EIS addresses the cumulative benefits and impacts of the overall program and lays the groundwork for streamlined, environmental compliance for CIP projects.

## LAKE TAHOE WATERBORNE TRANSIT PROJECT

The Lake Tahoe Waterborne Transit Project would include a cross-Lake ferry and water taxis, piers, and landside terminals at up to three locations throughout the Region, i.e., potentially at South Lake Tahoe, Tahoe City, and Kings Beach. Waterborne transit services would be coordinated with other public and private transportation systems to create an alternative transit option to the automobile.

## US 50/SOUTH SHORE COMMUNITY REVITALIZATION PROJECT

The US 50 project proposes upgrades to existing highway facilities to improve traffic flow through the Stateline area, as well as improve conditions along the US 50 corridor for bicycles and pedestrians. The goal of this project is to reduce dependency on the automobile by creating ways in which the general public can more effectively use the existing transportation modes. Action alternatives being considered would relocate US 50 to the mountainside of Lake Parkway and establish the casino corridor as a local roadway. One of the alternatives being considered includes a roundabout at US 50 and Lake Parkway.

## STATE ROUTE 89 FANNY BRIDGE COMMUNITY REVITALIZATION PROJECT

The State Route 89/Fanny Bridge Community Revitalization Project would include construction of a new bridge over the Truckee River, repair or replacement of Fanny Bridge, and various other improvements. The project addresses traffic congestion from excess roadway capacity during the summer months, the structural deficiencies requiring seismic retrofit within the next ten years, and the planned transit and parking facility south of Fanny Bridge. Fanny Bridge would be upgraded to provide improved pedestrian and bicycle safety and access.

## STATELINE-TO-STATELINE BIKEWAY PROJECT

The Nevada Stateline-to-Stateline Bikeway Project is a joint proposal of local, state, and federal agencies with responsibilities on the Nevada side of the Lake Tahoe Region. The primary purpose of the Nevada Stateline-to-Stateline Bikeway Project is to provide non-auto transportation opportunities that link recreation areas, community centers, transportation facilities, and neighborhoods in the bikeway corridor to expand recreational access and transportation choices for residents and visitors to the Tahoe Region. The sponsoring agencies are Carson City, Douglas County, Incline Village General Improvement District, Nevada Division of State Parks, Nevada Division of State Lands, Tahoe Regional Planning Agency, Tahoe Transportation District, USDA Forest Service, and Washoe County. The Nevada Department of Transportation and the Washoe Tribe are partnering entities.

## LAKE TAHOE REGIONAL MULTIMODAL PEDESTRIAN AND SAFETY IMPROVEMENT PROJECT (FORMERLY "KINGS BEACH COMMERCIAL CORE IMPROVEMENTS")

The Kings Beach community, located on the California North Shore of Lake Tahoe, has developed without consistent frontage improvements along SR 28. It is the largest urban/commercially developed area on the North Shore of Lake Tahoe and is the major community thoroughfare connecting North Shore California with North Shore Nevada. The Lake Tahoe Regional Multimodal Pedestrian and Safety Improvement Project would improve upon and construct water quality treatment facilities, dedicated bike lanes, sidewalks, streetscape elements, and pedestrian crossings. Placer County recently approved spending $2.5 million by the North Lake Tahoe Resort Association for the project.

## 2010 LAKE TAHOE REGION BICYCLE AND PEDESTRIAN PLAN

The 2010 Lake Tahoe Region Bicycle and Pedestrian Plan guides the long-term planning of bicycle and pedestrian facilities in Lake Tahoe. The plan is intended to provide implementing agencies with the ability to apply for funding for new bicycle paths, lanes, routes, and sidewalks, to provide the public with an understanding of which corridors are designated for future facility construction, and to provide the Tahoe Regional Planning Agency (TRPA) and local jurisdictions with the ability to coordinate bicycle and pedestrian facilities with other development, such as road work or commercial projects.

## 4.2.4 CEP AND OTHER DEVELOPMENT PROJECTS

Adoption of the 1987 Regional Plan included approval of residential, tourist, and commercial allocations, and adoption of the existing Goals and Policies and Code of Ordinances, which were intended to help bring the Region into conformance with the threshold standards. As described above, because the environmental analysis in Chapter 3 of this EIS addresses the impacts of build-out of development allocations from the 1987 Regional Plan that are yet unbuilt, and the projects below draw from those allocations or from transfers of existing development, the environmental impacts of these cumulative development projects are included in the analysis of the Regional Plan Update alternatives in Chapter 3 of this EIS. Additionally, projects, or portions of projects, that may generate environmental impacts not directly related to allocations (such as temporary construction impacts), would be analyzed and mitigated through the TRPA review and approval process, requiring consistency with Regional Plan Update policies intended to support attainment and maintenance of environmental thresholds. Nonetheless, the potential for these projects, in addition to the Regional Plan Update and other programs and land management plans, to result in cumulative impacts in the Lake Tahoe Region is addressed in Section 4.3.

### BEACH CLUB ON LAKE TAHOE

The Beach Club on Lake Tahoe Project includes redevelopment of the existing mobile home park off of Kahle Drive in Stateline. The project includes 124 market rate condominiums, 19 moderate-income condominiums, and 35 off-site deed-restricted moderate income housing. Construction would result in approximately 358,907 square feet (sf) of coverage, a reduction of approximately 99,052 sf from the existing TRPA-verified coverage (457,959 sf). Environmental benefits of the project include temporary and permanent BMPs to improve site drainage and water quality and would involve the restoration of 2 acres of stream environment zone (SEZ) habitat associated with Burke Creek Meadow, along the northern boundary of the project site.

### BOULDER BAY COMMUNITY ENHANCEMENT PROGRAM PROJECT

The proposed Boulder Bay Community Enhancement Program Project is a mixed-use, redevelopment project that is a participant in the CEP. The Boulder Bay Project is located in Crystal Bay, NV adjacent to the California/Nevada state line. Project implementation includes 300 tourist accommodation units (hotel); 59 whole ownership condominiums; 14 affordable housing units (10 three-bedroom and 4 two-bedroom units); 20,715 square feet of commercial floor area (CFA); 89,187 square feet of hotel and gaming accessory uses; 10,000 square feet of casino (reduced from 29,744 square feet of NTRPA certified gaming area); 540 total parking spaces (530 in underground structures); and 5.7 acres of open space with 1.87 acres designated for two public parks to be built and maintained by Boulder Bay and 1.20 acres for passive hiking trails and scenic overlook. Environmental enhancement features include a network of interrelated stormwater conveyance and TMDL treatment strategies:

- Pollutant Source Control (PSC): 15.8 percent reduction in impervious coverage, improved roadways, stabilized eroding slopes and snow melted roadways
- Hydrologic Source Control (HSC): underground storm water infiltration, pervious pavement, roof storm water catchment systems and planted roofs
- Storm water Treatment (SWT): planted bio-retention systems in-line with storm water conveyance
- Airborne Source Control (ASC): regenerative air street sweeper, underground parking and alternative and public transportation program

## KINGS BEACH HOUSING NOW PROJECT

The Kings Beach Housing Now Project (also referred to as the Domus Development Kings Beach Housing Project) consists of five sites in Kings Beach in North Lake Tahoe. The project consists of 79 affordable workforce housing units (studio to 3-bedroom units) and 8,175 sf of commercial floor area. In addition, project elements include pedestrian/bike trail, underground utilities, removal of impervious coverage, improvements to eroded areas, and roadway stormwater treatment. Environmental improvement components associated with the Kings Beach Housing Now Project include 60 percent more energy efficient units, reduction of seven tons of sediments runoff into Lake Tahoe each year, and area-wide storm water treatment using retention basins.

## KINGS BEACH TOWN CENTER PROJECT

The proposed Kings Beach Town Center project is located in downtown Kings Beach between Coon and Fox streets. It would redevelop the existing commercial/residential site into a pedestrian-friendly, mixed-use development, which would include a combination of residential, tourist accommodation, commercial, medical and professional offices, and potentially public facilities. The proposed project would include approximately 66,068 square feet of commercial floor area, 28,000 square feet of public services, 71 residential units and a parking structure. Environmental benefits of the proposed project include: funding provided to EIP Water Quality projects; a mini-transit center (air quality improvements); reduction of land coverage; SEZ restoration; and improved recreation facilities.

## SIERRA COLINA VILLAGE

The Sierra Colina Village Project site is located east of US 50 and south of Lake Village Drive in Stateline. The approved project includes construction of 50 residential units (42 residential units in 21 townhouse-style duplexes, plus eight single-family homes, for a total of 29 building footprints), roadway improvements, undergrounding of utility infrastructure lines, establishment of 10 acres of land for use as public open space/recreation and conservation lands, and four linear public facilities (public access facilities, recreation paths). The project would include nine moderate-income housing units. Water quality improvements include: temporary and permanent best management practices (BMPs) to improve site drainage and water quality; a storm water management plan that exceeds TRPA Code requirements; off-site features to correct runoff and erosion problems from Echo Drive; removal and restoration of an unpaved utility road in SEZ; decommissioning unauthorized trails through and across Burke Creek. Water quality features are estimated to result in annual pollutant load reductions of 56 pounds of fine sediment particle loading (52 percent reduction), 56 pounds of total suspended solids loading (70 percent reduction), 2.4 pounds of total nitrogen loading (43 percent reduction), 0.6 pound of dissolved nitrogen loading (28 percent reduction), 0.4 pound of total phosphorus loading (45 percent reduction), and 0.1 pound of dissolved phosphorus loading (49 percent reduction).

## TAHOE VISTA PARTNERS, LLC AFFORDABLE HOUSING AND INTERVAL OWNERSHIP DEVELOPMENT PROJECT

The Tahoe Vista Partners, LLC Affordable Housing and Interval Ownership Development Project site is located within the unincorporated portion of Placer County, California. The project would replace the existing seasonal Sandy Beach Campground with a year-round tourist destination development, provide affordable housing to the north Lake Tahoe area, and install permanent best management practices at the site. The project would include construction of 39 interval ownership tourist accommodation units (TAUs), a clubhouse/administration building, 6 deed-restricted affordable/employee housing units, improvements to the existing main 2-story commercial building, and SR 28 frontage improvements. Environmental benefits include several recreational elements (e.g., kayak/bicycle concessionaire's facility), a public pedestrian footpath, and a recreation area.

## THE HOMEWOOD MOUNTAIN RESORT SKI AREA MASTER PLAN

The Homewood Mountain Resort Ski Area Master Plan would redevelop Homewood Mountain into a mixed-use base area in the north of the resort. The 17-acre North Base area will include six new mixed-use buildings and eight new townhouse buildings to provide 36 residential condominiums, 16 townhouses, 20 fractional ownership units, 75 traditional hotel rooms, 40 two-bedroom for sale condominium/hotel units, 30 penthouse condominium units, 25,000 square feet of CFA, 13 affordable housing units (adjoined to a 4- story 272 space day skier parking structure), and a 30,000 square foot skier services lodge. The 6-acre South Base area will be converted to a 99-unit neighborhood condominium complex. Environmental benefits include: erosion control to prevent over 80,000 pounds of sediments from entering Lake Tahoe each year, forest fire prevention through 1,000 acres of fuels management, improved energy efficiency, and various alternative transportation options.

## THE EDGEWOOD LODGE AND GOLF COURSE IMPROVEMENT PROJECT

The proposed Edgewood Lodge and Golf Course Improvement Project, which is currently (as of April 2012) in environmental review, consists of a new tourist accommodation complex and a series of environmental improvements. The proposal includes: a tourist accommodation complex of 11 buildings with a total of 194 new TAUs; a wellness center, restaurant/bar, and banquet/conference space; improvements in water and energy efficiency; relocation of two existing lakefront single-family lots to higher capability lands on the property; and a new public beach area. The proposed project would include five environmental enhancement projects intended to contribute to attainment of TRPA environmental threshold carrying capacities: 1) Edgewood Lodge Stormwater Approach – best management practices for the lodge complex; 2) Water Quality Improvements to the Stateline Stormwater Association Pond System; 3) Edgewood Creek Improvements; 4) Friday's Station Dam Rehabilitation; and 5) Edgewood Tahoe Golf Course Fertilizer Management Plan. The goals of these threshold improvement projects, among others, are to: meet and exceed existing TRPA stormwater infiltration and treatment requirements; reduce the overall pollutant load of sediment, fine sediment, phosphorus and nitrogen; increase the area and improve the function of the Golf Course Creek and Edgewood Creek SEZ; and dredge and remove accumulated material in site ponds to reestablish pollutant capture capacity.

## THE CHATEAU VILLAGE AT HEAVENLY VILLAGE (FORMERLY "PROJECT 3")

The Chateau Village at Heavenly Village (formerly known as "Project 3") is a redevelopment project approved by the South Lake Tahoe City Council in 1997. The project site is located on 11.5 acres and was proposed to include two condominium-hotels, a 16,000-square-foot spa, 50,000-square-foot convention center with 21,000 square-foot pre-function area, 1.5 acre park, and a collection of shops and restaurants (Business Wire 2007). The Chateau at Heavenly Village site is located at the California state line across from Heavenly Village and the Heavenly Gondola, adjacent to Harvey's Lake Tahoe Casino and Resort. The project design includes improvements to pedestrian facilities, fire safety, drainage and aesthetics. Construction commenced on the project in 2007 and was expected to be completed in winter 2009. Construction ceased when the project developer filed for bankruptcy protection in October 2009; the project emerged from bankruptcy in February 2012.

## NORTH TAHOE BIKE TRAIL

The proposed North Tahoe Bike Trail concept route for the trail is approximately an 8 to 9-mile bicycle path (proposed in phases) connecting Dollar Hill, just east of Tahoe City, and the North Tahoe Regional Park in Tahoe Vista, Placer County, California. Generally, the trail would leave the North Tahoe Regional Park, located at the northerly terminus of National Avenue in Tahoe Vista, and traverse along the perimeter of the urban interface with the unincorporated communities of Agate Bay, Carnelian Bay and Cedar Flat and on to Dollar Hill and would allow for various trail nodes to connect the residents of those communities to the main bike trail route.

### 64 ACRES PARK PROJECT

The 64 Acres Park is U.S. Forest Service land that is developed, operated and maintained by the Tahoe City Public Utility District. Located just south of the "Y" in Tahoe City, this 64 Acres Park hosts parking, picnicking and provides access to the bike trail system and to the Truckee River itself through a rafting ramp.

### LAKEVIEW COMMONS RECREATION IMPROVEMENTS PROJECT

The Lakeview Commons Recreation Improvements Project, a cooperative effort among the City of South Lake Tahoe, El Dorado County, and CTC, consists of 56 acres on the South Shore where US 50 meets the Lake. The project, which is under construction and to be completed in 2012, was designed to facilitate sustainability, public accessibility, and cultural activity while providing a gathering place for the local community and tourists. As part of the project, the City completed the El Dorado Beach at Lakeview Commons site improvement project in 2008, which included installation of stepped terraces for seating and planting, a restroom and concession building, non-motorized watercraft public storage and potential concessionaire, an aquatic invasive species inspection station at the existing boat ramp, Americas with Disabilities Act (ADA)compliant access from street level to the Lake edge, a replacement retaining wall between US 50 and the Lake and day-use amenities within a plaza overlooking the Lake. Native vegetation was planted throughout the site and BMPs were installed to advance water quality objectives.

### CALPECO 625 AND 650 ELECTRICAL LINE UPGRADE PROJECT

The proposed 625 and 650 Electrical Line Upgrade Project includes electrical line upgrades and substation/switching station improvements to Calpeco's North Tahoe Transmission System, which includes a looped system of four electrical lines (the 132 Line, 625 Line, 629 Line, and 650 Line) connecting the Town of Truckee, Kings Beach, and Tahoe City. Most of the existing loop currently operates at 60 kV and would operate at 120 kV after project completion. Elements of the project are within and outside of the Lake Tahoe Basin, and only a portion of the improvements are under the jurisdiction of TRPA. Within the Basin, the proposed improvements include: (1) an updgrade and rebuild of the 650 Line, extending between Kings Beach and Truckee, primarily within the existing alignment east and parallel to SR 267; (2) removal of the existing 625 Line between Kings Beach and Tahoe City, and realignment and construction of an upgraded replacement line with more than half of which would extend along Mount Watson Road; (3) decommissioning of the Brockway Substation and removal of the section of the 650 Line connection between the Brockway Substation and the Kings Beach Switching Station; (4) upgrade of the Kings Beach Switching Station to a substation; (5) reconstruction of the Tahoe City substation to accommodate 120 kV lines; and (6) construction of a 625/659 double-circuit line in Tahoe City.

## 4.3 CUMULATIVE ANALYSES

This section addresses the potential cumulative impacts for each resource topic. As described above, the broad geography, long time frame, and cumulative nature of the Regional Plan Update (e.g., assessment of total development allocations over the period of the Regional Plan) renders many of the analyses included in Sections 3.2 through 3.15 of this EIS inherently cumulative. Those issues are identified and summarized below. For others, the analysis describes the existing state of the resource and the geographic scope under consideration, whether an existing adverse cumulative condition exists (e.g., whether the air basin is already out of attainment for a given constituent), and whether implementation of the Regional Plan Update alternatives in the context of past, present, and reasonably foreseeable plans, programs and projects, would result in a considerable contribution to an existing cumulative impact. In the case where no existing significant cumulative condition is identified, the analysis addresses whether the incremental contribution of the Regional Plan Update

alternatives, combined with those of related Region-wide plans, programs, and projects, would create a significant cumulative impact.

The geographic scope of each portion of the cumulative impact analysis is identified in Table 4-1. Topics that are localized, or that do not aggregate to create a cumulative impact (e.g., construction noise, seismic hazards) are identified herein, but not assessed further.

Table 4-1. Geographic Scope of the Cumulative Impact Analysis by Topic

| Topic | Geographic Scope |
|---|---|
| Land Use | Lake Tahoe Region |
| Transportation | Lake Tahoe Region (cumulative analysis included in Section 3.3) |
| Air Quality | Lake Tahoe Air Basin (cumulative analysis included in Section 3.4) |
| Greenhouse Gas Emissions/Climate Change | Global (cumulative analysis included in Section 3.5) |
| Noise | Localized (based on audibility and sensitive receptors) but may aggregate throughout the Lake Tahoe Region |
| Geology, Soils, Land Capability, and Coverage | Geologic hazards – localized<br>Coverage and soil erosion – Lake Tahoe Region |
| Hydrology and Water Quality | Lake Tahoe Region |
| Scenic Resources | Localized (based on view shed and visibility) but may aggregate throughout the Lake Tahoe Region |
| Biological Resources | Lake Tahoe Region |
| Recreation | Recreation facilities – Localized<br>Demand for recreation – Lake Tahoe Region |
| Population, Employment, and Housing | Lake Tahoe Region |
| Public Services and Utilities | Lake Tahoe Region |
| Natural Hazards and Public Safety | Lake Tahoe Region |
| Cultural Resources | Lake Tahoe Region |

## LAND USE

Prior to adoption of the 1987 Regional Plan and adoption of environmental threshold carrying capacities, development in the Region included many damaging land development practices, including failure to recognize hydrologic and topographic limitations, unnecessary and widespread destruction of vegetation, realignment and pollution of streams, encroachment on flood plains, and disruption of natural drainages. These actions led to indirect impacts to various resources including water quality, air quality, biological resources, and recreation. The 1987 Regional Plan recognized the adverse cumulative condition resulting from such development and adopted land use policies and regulations to improve the environmental conditions in the Region. The growth management system, limiting the number of development rights and allocations, concentrating development on high capability lands, and implementing the land use map, Community Plans, and Plan Area Statements have facilitated environmental improvements over the planning period of the 1987 Regional Plan. As such, there is no existing adverse cumulative land use condition in the Region.

New development and redevelopment that would occur under the Regional Plan Update alternatives would be limited to the established allocation limits and land use designations described in Section 3.2, Land Use. As presented in Impact 3.2-1, Development Pattern and Land Use Compatibility, all Regional Plan Update alternatives would retain the established growth management system (i.e., authorization of limited numbers of

allocations); generally continue the existing land use pattern (concentration of development in defined urban centers); and allow for or encourage transfer of existing and potential development to appropriate areas (higher capability lands within urban centers). Although the alternatives vary with regard to levels of development and the number and nature of identified community centers in which the development is proposed to be focused, any new development or redevelopment would be required to secure residential, commercial, and tourist accommodation allocations. The system of limited allocations and concentrated development in community centers, in all of the Regional Plan Update alternatives, is designed to continue and accelerate improvements to the environmental conditions in the Region through attainment and maintenance of environmental threshold standards.

Cumulative programs, land management plans, and development projects, including known, and as-yet unknown residential, commercial, tourist, transit/ transportation, and recreational development (including those projects described above), would individually and collectively contribute to the land use and development pattern that would evolve over the Regional Plan Update planning period. However, as under the current Regional Plan, all cumulative development projects would be required to be consistent with each Regional Plan Update alternative's land use designations, as applicable, and would be limited by the available allocations and the land capability system (analyzed in Impact 3.2-1). Those projects that do not require allocations (such as EIP projects, infrastructure upgrades, and fuels management) would also be held to the established lands use designations, the maximum allowable coverage per the Bailey system, as well as TRPA requirements to support attainment and maintenance of the environmental threshold carrying capacities (i.e., avoidance and mitigation of environmental impacts). Furthermore, the U.S. Forest Service, Lake Tahoe Basin Management Unit, which manages more than 75 percent of the lands within the Region, as well as California Department of Parks and Recreation and Nevada Division of State Parks maintain land management plans that guide the use of resources, as well as activities that occur, within their jurisdictions. These land management plans are prepared and updated in coordination with TRPA to be consistent with the Regional Plan and to support environmental improvements. Therefore, related plans, programs, and projects, in combination with the Regional Plan Update alternatives, would not result in cumulative land use impacts or conflicting land uses in the Region.

## TRANSPORTATION

Cumulative projects, including known, and as-yet unknown residential, commercial, tourist, transit/ transportation, and recreational development in the Tahoe Region, including those projects described above, would generate traffic trips that contribute to the cumulative intersection and roadway operations of the Region. Because development projects in the Tahoe Region are required to receive allocations from a limited pool of CFA, residential allocations, residential bonus units, and TAUs, as applicable, and because development in accordance with those allocations (as yet unused and newly authorized under each alternative) is assumed to be fully built out over the planning period of the Regional Plan), Section 3.3, Transportation, addresses reasonably foreseeable cumulative future traffic conditions. Modeling of traffic conditions was conducted for the years 2020 and 2035, assuming build-out of each Regional Plan Update alternative, generation of vehicle trips from the respective authorized allocations, and construction and operation of reasonably foreseeable transportation projects and programs proposed as part of the Regional Transportation Plan. As such, the transportation analysis in Section 3.3 is reflective of cumulative transportation conditions in the Tahoe Region.

## AIR QUALITY

The California-portion of the Lake Tahoe Air Basin (LTAB) is designated nonattainment-transitional for ozone and nonattainment for particulate matter less than 10 microns in diameter ($PM_{10}$) for the California Ambient Air Quality Standards (ARB 2011a). The LTAB is considered "At or somewhat worse than target" for 8-hour ozone and 24-hour $PM_{10}$ threshold indicators, but "At or somewhat better than target" for overall ozone and $PM_{10}$ trends (TRPA 2012). Therefore, an adverse cumulative condition exists for regional ozone and $PM_{10}$. This

condition results from cumulative vehicle and truck travel in the Region, use of heavy equipment, stationary source emissions (e.g., HVAC systems), and energy use. Fuels management activities in the Basin also contribute to cumulative, adverse air quality conditions. Mechanical harvest, understory burning, open pile burning, and other fuel management practices result in the use of hand-held equipment and machinery, which produce air pollutant emissions, and in direct burning of materials, which generate high levels of particulates. Such activities are under the jurisdiction of the US Forest Service, the Nevada Division of Forestry, CAL FIRE, and the local fire districts, which consider wind speed, soil moisture, topography, ambient air quality, and other conditions prior to engaging in fuels management activities.

The LTAB is designated "Considerably better than target" for carbon monoxide (CO) threshold indicators and trends, and attains the CAAQS and national ambient air quality standards (NAAQS) for CO. Because the California portion of the LTAB is a "maintenance area" for CO NAAQS, the CO Maintenance Plan applies, which demonstrates how the region intends to continue maintenance of the CO NAAQS. None of the Regional Plan Update alternatives would conflict with or obstruct implementation of the CO Maintenance Plan (as discussed in Impact 3.4-1). In addition, the analysis presented in Impact 3.4-4 is a cumulative analysis of localized CO impacts representing the plan buildout condition in 2035 for each alternative. Impact 3.4-4 is less than significant for Alternatives 1 through 5. Implementation of any Regional Plan Update alternative would not result in or contribute to local CO concentrations that exceed the TRPA 8-hour AAQS of 6 ppm, or Nevada 1-hour and 8-hour CO standards of 35 ppm or 6 ppm, respectively. This cumulative impact would be less than significant.

As discussed under Impact 3.4-2, emissions of pollutants generated during construction are temporary in nature. Emissions are primarily associated with heavy-duty construction equipment and fugitive emissions from ground disturbance and earth-moving activities. Unmitigated emissions associated with cumulative construction projects in the LTAB that would occur under the Regional Plan Update alternatives would contribute on a cumulative basis to nonattainment conditions for ozone and $PM_{10}$. In addition, when taken together, construction-generated emissions would have the potential to result in violations of, or considerable contributions to violations of, ambient air quality standards. However, all Regional Plan Update alternatives would implement Mitigation Measure 3.4-2, whereby TRPA would develop a Construction Best Practices policy to reduce construction-generated emissions of ROG, $NO_X$, $PM_{10}$, and $PM_{2.5}$. Implementation of Mitigation Measure 3.4-2 would reduce fugitive $PM_{10}$ and $PM_{2.5}$ dust emissions a minimum of approximately 50 percent for each project and prevent dispersion, thereof, beyond a given property boundary (SMAQMD 2009a). Implementation of Mitigation Measure 3.4-2 would also reduce diesel equipment exhaust emissions of $NO_X$ and $PM_{10}$ by a minimum of 20 percent and 45 percent, respectively. This mitigation would minimize construction-generated emissions and an individual project's contribution to cumulative impacts for ozone and $PM_{10}$.

The Regional Plan Update alternatives would, therefore, not result in a considerable contribution to this potentially significant cumulative air impact. Furthermore, all cumulative development and other projects in the Region would be required to implement construction best practices and mitigation to reduce their emissions, consistent with the Regional Plan Update alternatives' policies, through the TRPA approval process. With implementation of Mitigation Measure 3.4-2, the Regional Plan Update alternatives' contribution to this cumulative impact would be less than considerable.

Implementation of development and redevelopment projects in accordance with the Regional Plan Update alternatives would result in air pollutant emissions from project-generated traffic, energy use, and area sources. Because reasonably foreseeable development projects (including those listed above) and currently unknown projects are required to receive allocations from a limited pool of CFA, residential allocations, residential bonus units, and TAUs, as applicable, and because development in accordance with those allocations (as yet unused and newly authorized under each alternative) is assumed to be fully built out over the planning period of the Regional Plan), Section 3.4, Air Quality addresses reasonably foreseeable future conditions, in the year 2035. As described under Impacts 3.4-1 and 3.4-3 in Chapter 3, mobile-source emissions associated with the operation of

projects approved under the Regional Plan Update alternatives would decrease over the plan implementation period. Total operational emissions associated with Alternatives 2 through 5 would increase slightly over the plan implementation period, primarily associated with the increased number of fireplaces that would be allowed in the Region with the increased number of residential development allocations. These emissions estimates were based on the total growth in development in the Region, and represent the cumulative (2035) condition. Implementation of Alternatives 2 through 5 would not conflict with air quality attainment maintenance efforts and would contribute to TRPA's attainment and maintenance of air quality standards and threshold standards. This cumulative impact would be less than significant.

Construction of development accommodated under Regional Plan Update Alternatives 2 through 5, as well as reasonably foreseeable development projects (including those listed above) and currently unknown projects, could result in temporary emissions that contribute to cumulative exposure of sensitive receptors to TAC emissions. However, all Regional Plan Update alternatives would require implementation of Mitigation Measure 3.4-2 and 3.4-5, which would reduce fugitive $PM_{10}$ and $PM_{2.5}$ dust emissions and reduce diesel equipment exhaust emissions. This mitigation would ensure that all construction activities in the Region over the life of the Regional Plan Update would be mitigated to less-than-significant levels and would not contribute to cumulative air quality impacts.

The Regional Plan Update alternatives would have less-than-significant project-level odor impacts and, for the same reasons identified in Impact 3.4-6, would result in less-than-significant contributions to cumulative odor impacts.

The analysis in Impact 3.4-7 is cumulative in nature; it represents the buildout condition for each Regional Plan Update alternative in year 2035, including reasonably foreseeable development projects (including those listed above) and currently unknown projects. Mobile-source emissions of $NO_X$ would decrease substantially in the Region as a whole between 2010 and 2035. Because mobile-source $NO_X$ is an important contributor to atmospheric nitrogen loading, it is reasonable to conclude that atmospheric nitrogen deposition to the lake would be substantially reduced associated with implementation of Alternatives 1 through 5. Alternatives 1 through 5 as well as cumulative plans and projects would support achievement and maintenance of the threshold standards for atmospheric nitrogen and the TMDL. This cumulative impact would be less than significant.

The Regional Plan Update alternatives include continuation of existing programs and additional programs and policies that would address cumulative air quality impacts, such as the traffic and air quality mitigation program, wood-burning appliances retrofit program, and transportation strategies proposed under the Regional Transportation Plan. Such programs are contained in the Air Quality Subelement of the Land Use Element of the TRPA Goals and Policies document and Chapter 65 of the Code of Ordinances. Such programs would apply to all cumulative plans and projects, including reasonably foreseeable development projects (including those listed above) and currently unknown projects, and would reduce Regional emissions of ozone precursors and PM over the Regional Plan implementation period.

## GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE

Greenhouse gas (GHG) emissions have the potential to adversely affect the environment because they contribute, on a cumulative basis, to global climate change. Because the nature of this issue is inherently cumulative, Section 3.5, Greenhouse Gas Emissions and Climate Change, is the cumulative impact analysis related to GHGs and climate change. As described in Impact 3.5-1, all Regional Plan Update alternatives, including reasonably foreseeable development projects (including those listed above) and currently unknown projects, would result in an increase in GHG emissions and that increase would be cumulatively considerable. Although Mitigation Measure 3.5-1 would require adoption of a sustainability plan and interim sustainability

measures, reducing GHG emissions from project-specific construction and operational activities to the maximum extent feasible, all alternatives would contribute to a significant and unavoidable cumulative GHG emissions impact.

## NOISE

Implementation of development and redevelopment projects in accordance with the Regional Plan Update alternatives would result in increases in project-generated noise from vehicle trips, stationary sources (e.g., HVAC systems), and human activity. Because reasonably foreseeable development projects (including those listed above) and currently unknown projects are required to receive allocations from a limited pool of CFA, residential allocations, residential bonus units, and TAUs, as applicable, and because development in accordance with those allocations (as yet unused and newly authorized under each alternative) is assumed to be fully built out over the planning period of the Regional Plan Update), Section 3.6, Noise constitutes the cumulative analysis for mobile source noise.

Impacts related to short-term project-related construction noise levels (Impact 3.6-2) and ground vibration (Impact 3.6-3) are localized in nature, based on audibility and sensitive receptors. Therefore, these noises do not accumulate to cause broader environmental impacts, so by their nature, cumulative impacts would not occur.

Many parts of the Tahoe Region are currently nonattainment with respect to TRPA-established noise standards. According to the 2011 Threshold Evaluation, single noise events from aircraft and motorized watercraft are somewhat worse than target; single noise events from other sources, including motor vehicles, motorcycles, off-road vehicles, and over-snow vehicles, are considerably worse than target; and cumulative noise levels are somewhat worse than target (TRPA 2012). Therefore, ambient noise in the Tahoe Region is an existing adverse cumulative condition.

The noise analysis in Section 3.6 is in large part based on the traffic analysis, which considers cumulative development in the Region. By definition, the CNEL is the combined, or cumulative, long-term noise level experienced at a particular location and highway traffic is the predominant noise source in the Region. Therefore, Impact 3.6-1, Long-Term Traffic Noise Levels, is an inherently cumulative analysis of the combined level of noise from existing traffic noise sources in combination with new or increased traffic that may result from implementation of the Regional Plan alternatives. This analysis determined that noise from additional traffic associated with development under all five Regional Plan Update alternatives, including reasonably foreseeable development projects (including those listed above) and currently unknown projects, would be cumulatively considerable because it would cause highway traffic noise levels to exceed TRPA-established CNEL standards for highway corridors, as well as CNEL standards designated for nearby land uses, and/or result in increases to traffic noise levels where these applicable CNEL standards are already exceeded. However, Implementation of Mitigation Measure 3.6-1 would reduce the contribution of the Regional Plan Update alternatives to a level that is less than cumulatively considerable by establishing and implementing a Region-wide traffic noise mitigation program. Furthermore, all cumulative projects in the Region would be required to be consistent with the Regional Plan Update policies and would therefore be required to implement the traffic noise mitigation program, thereby reducing the cumulative contribution to a less than considerable level as well.

## GEOLOGY, SOILS, LAND CAPABILITY, AND COVERAGE

Impacts related to seismic and other geologic hazards (Impacts 3.7-3 and 3.7-4) are localized in nature; they do not accumulate to cause broader environmental consequences and cumulative impacts would not occur. Therefore, these issues are not discussed further.

## Cumulative Effects of Coverage

The Bailey (1974) land classification system (described in Section 3.7.1) provides the basic concept of land development in the Lake Tahoe Region, emphasizing prevention of water resource and ecosystem damage while planning and executing development in the Region. Development prior to TRPA's adoption of the land capability system included many damaging land development procedures, including failure to recognize hydrologic and topographic limitations, unnecessary and widespread destruction of vegetation, realignment and pollution of streams, encroachment on flood plains, and disruption of natural drainages. These actions led to indirect impacts to various resources including water quality, air quality, biological resources, and recreation. The 1987 Regional Plan recognized the adverse cumulative condition resulting from such development and adopted policies and regulations related to land capability and coverage, as well as environmental threshold carrying capacities, aimed to improve the environmental conditions in the Region. Improvement of the cumulative adverse condition in the Region has been the focus of TRPA since.

The Bailey land capability system establishes a maximum limit on the amount of allowable coverage in the Region. As shown in Tables 3.7-5 and 3.7-6, while the Region as a whole has coverage "capacity" (i.e., has less coverage than could be allowed) of up to 12,721 acres (per the NRCS 2007 soil survey), the most sensitive land capability district (LCD 1b, SEZ) is estimated to be over-covered by between 657 and 1,225 acres. Other sensitive LCDs are shown to be over-covered based on the Bailey map, but not when using the higher resolution NRCS 2007 soil survey: LCD 1a is over covered by 102 acres and LCD 2 is over-covered by 159 acres. The Bailey map also shows that LCD 7 is over-covered by 17 acres; however, significant capacity remains in LCDs 3 through 6 and LCD 7 is the highest land capability district and is the most appropriate location for development. Tables 3.7-5 and 3.7-6 identify the relative amounts of existing coverage by LCD, but likely underestimate the total amount of existing coverage because the remote-sensing data does not include all soft coverage. Thus, soil coverage in LCD 1a, 1b, 2, and 7 comprises an existing adverse cumulative effect. Furthermore, the 2011 Threshold Evaluation identified coverage in SEZ, and the progress made toward the restoration and enhancement of SEZ, as considerably worse than the threshold standard targets.

After accounting for anticipated coverage transfers, all proposed Regional Plan Update alternatives would result in future development, which would increase coverage within the Region based on development rights and allocations for residential, TAUs, and CFA (see Tables 3.7-8 and 3.7-9 and Impact 3.7-1). Furthermore, it is reasonable to assume that exempted coverage allowed in public, outdoor recreation, and water quality control facilities, as well as new coverage exemptions proposed under Alternatives 3 and 4, would contribute to an increase in coverage over the planning period. However, all alternatives would reduce coverage within LCD 1b (SEZ) (ranging from an estimated reduction of 5 acres under Alternative 1 to 15 acres under to Alternative 3). Coverage reductions in sensitive lands would result from coverage transfers related to new development allocations (Alternatives 2 through 5) as well as transfers of existing development not associated with new allocations, which intensify development within community centers and incentivizes removal of coverage from sensitive lands, particularly SEZ. Several alternatives also include targeted proposals to provide additional incentives to remove coverage, and some alternatives incentivize the placement of water quality BMPs on existing coverage, or the replacement of impervious coverage with pervious surfaces (see Section 3.7). Consistent with the purpose of the Regional Plan Update to move the Region toward attainment and maintenance of environmental threshold standards, the coverage policies of the proposed Regional Plan Update alternatives would ensure coverage in the Region does not exceed the allowable limit; that it is reduced in the most sensitive lands; and that new coverage is concentrated on high capability lands in identified community centers. Therefore, the Regional Plan Update alternatives would not contribute to adverse cumulative coverage conditions; rather, the proposed policies would result in beneficial effects related to cumulative coverage.

Many of the cumulative projects listed above involve reductions in coverage on sensitive lands: EIP projects, CTC and NDSL land acquisition/restoration projects, USFS restoration projects, the excess coverage mitigation program, existing coverage transfer requirements, as well as certain development projects (such as Beach Club

on Lake Tahoe, Boulder Bay CEP, Kings Beach Housing Now, and Kings Beach Town Center). In addition, as required by the 1987 Regional Plan, cumulative development projects in the Region must be consistent with the land capability coverage limits and transfer ratios as well as requirements for BMPs. Therefore, cumulative projects in the Region would not contribute to the adverse cumulative coverage conditions. In combination with existing programs that support coverage reduction and removal, all future development projects would be limited such that the allowable coverage limits are not exceeded at the project scale. Through reducing coverage in SEZ and focusing development into community centers on high capability lands, the Regional Plan Update alternatives would move the Region toward attainment and maintenance of the soil conservation threshold standards. In addition, limitations on coverage and concentration of development into the community centers would contribute to beneficial effects on indirect impacts of coverage, including effects to water quality, air quality, and biological resources, as discussed in this chapter and Chapter 3. Therefore, the Regional Plan Update alternatives and cumulative projects would not result in a considerable contribution to the existing cumulative effect of coverage in the Region.

### Cumulative Effects Related to Soil Erosion

All of the Regional Plan Update alternatives allow for future development, which could result in soil disturbances that could cause erosion (Impact 3.7-2). The cumulative plans and projects listed above could also result in soil disturbances that cause erosion. However, all construction projects in the Tahoe Region must meet multiple requirements and regulations of the TRPA, Lahontan Regional Water Quality Control Board (LRWQCB), Nevada Department of Environmental Protection (NDEP), federal, and local agencies. In addition, all construction projects located in California with greater than one acre of disturbance are required, by Lahontan RWQCB, to prepare a stormwater pollution prevention plan (SWPPP) that includes a site-specific Construction Site Monitoring and Reporting Plan (CSMRP) pursuant to the National Pollution Discharge Elimination System (NPDES) 2011 Tahoe Construction Stormwater permit. In Nevada, projects are required to comply with NDEP's Stormwater General Permit, which also includes a requirement for the preparation and implementation of a SWPPP. Project SWPPPs are required to describe the site, construction activities, proposed erosion and sediment controls, means of waste disposal, maintenance requirements for temporary BMPs, and management controls unrelated to stormwater. Temporary BMPs to protect water quality would be required during all site development activities. Water quality controls outlined in a SWPPP would be required to be consistent with TRPA requirements, and would be required to ensure that runoff quality meets or surpasses TRPA water quality objectives and the federal and state antidegradation policies, remains within the TRPA and LRWQCB discharge limits to surface and groundwater sources, and maintains beneficial uses of Lake Tahoe. Stormwater quality sampling and reporting requirements outlined as a CSMRP are also part of the SWPPP under the California permit and may also be a requirement in Nevada on a project-specific basis. In addition, Total Maximum Daily Load (TMDL)-achievement strategies and site-specific projects designed to improve erosion control and water quality via advanced stormwater infrastructure, retention and biofilter installations, restoration of stream channels and floodplain functions, and other water quality protection elements within the context of planned transportation facilities would continue under all Regional Plan Update alternatives.

The robust regulatory requirements of TRPA and other federal, state, and local agencies ensure that all development that would occur in the Region over the life of the Regional Plan Update would implement erosion and sediment controls such that individual projects would not contribute to soil erosion impacts. Therefore, the Regional Plan Update alternatives and cumulative development would not result in considerable contributions to the cumulative adverse condition of soil erosion.

## HYDROLOGY AND WATER QUALITY

As described in Impact 3.8-1 and Impact 3.7-2, soil erosion and/or release of pollutants to water bodies from construction activities is highly regulated by TRPA, LRWQCB, NDEP, and federal and local agencies. Because all development that would occur in the Region over the life of the Regional Plan Update would be required to

conform with all applicable state, federal, local, and TRPA regulations pertaining to protection of water quality from construction-related discharges, and erosion and transport of sediment and other pollutants from a project site would be minimized to the extent feasible, individual projects would not contribute to soil erosion impacts during construction. Therefore, the Regional Plan Update alternatives and cumulative development would not result in considerable contributions to the cumulative adverse condition of soil erosion and/or release of pollutants.

### Cumulative Effects of Stormwater Runoff and Pollutant Loading

A primary water quality concern in Lake Tahoe is the decline in the Lake's deep water transparency, due to light scatter from fine sediment particles and light absorption by phytoplankton. Fine sediment particles (FSP) are the most dominant pollutant contributing to the impairment of Lake Tahoe's deep water transparency, accounting for roughly two thirds of the Lake's impairment. The addition of nitrogen and phosphorus to Lake Tahoe contributes to phytoplankton growth.

As discussed in Section 3.8, Hydrology and Water Quality, the Lake Clarity Model was used to develop the Lake Tahoe TMDL for fine sediment particles and nutrient loads (i.e., nitrogen and phosphorus). Pollutant loading estimates included in the TMDL indicate that atmospheric deposition contributes the greatest amount of nitrogen to the Lake each year, followed by urban and non-urban upland sources, and groundwater. Shoreline and stream channel erosion also contribute a small amount of nitrogen to the Lake (i.e., less than 1 percent). Phosphorus enters Lake Tahoe primarily through urban upland sources, followed by non-urban upland sources, atmospheric deposition and groundwater, and minimally by shoreline erosion (LRWQCB and NDEP 2009).

Cumulative development, through increased coverage, has the potential to increase the volume of stormwater runoff, thereby increasing the concentrations of FSP, nitrogen, and phosphorus in surface water tributaries, groundwater, and the Lake. More than two-thirds of FSPs are generated in the developed areas around the Lake, primarily from roads. The remainder comes from locally generated air pollution that is deposited onto the Lake surface (16 percent), runoff from forested lands – specifically dirt roads and trails (10 percent), and from stream channel erosion (4 percent) (see Section 3.3, Air Quality for a discussion of air deposition; and Section 3.7, Geology, Soils, Land Capability, and Coverage for a discussion of erosion). For nitrogen, atmospheric deposition is the major source (55 percent). Phosphorus is primarily introduced by the urban (39 percent) and non-urban (26 percent) watersheds (UC Davis, 2011). Rates and volumes of runoff are affected by development through multiple mechanisms, but the most important of these are: (1) the conversion of vegetated or pervious surfaces to impervious surfaces such as roofs and pavement; and (2) the development of drainage systems that connect these impervious surfaces to streams and other water bodies, thus increasing the rate of runoff and eliminating storage and infiltration that would otherwise occur along natural drainage paths. As water runs off of the land surface, it collects and carries material that accumulates on that surface. If the entrained material has potentially harmful effects on receiving waters downstream (e.g., fine sediment particles in Lake Tahoe), the material is defined as a stormwater pollutant. Runoff from impervious surfaces can become concentrated, causing land surface erosion and subsequent sediment transport into streams and Lake Tahoe.

As discussed in Section 3.8, Hydrology and Water Quality, while the rate at which clarity is decreasing in Lake Tahoe has slowed, the pertinent threshold standards are not in attainment. Thus, there is an existing adverse cumulative water quality impact associated with nutrient loading, sediment loading, and stormwater flows.

Water Quality BMPs are the first line of defense to reduce stormwater runoff from developed properties. They include vegetating bare soils, building infiltration trenches, paving dirt roads and driveways, and other improvements that capture and reduce runoff to adjacent roads or properties. TRPA's Stormwater Management Program implements BMP requirements in the TRPA Code of Ordinances and represents the private sector contribution to the EIP. Since its inception in 1998, this program has focused on public education and outreach and continues to provide free technical assistance, informational materials, and permitting to property owners

to facilitate voluntary BMP implementation. However, limited success of voluntary, Region-wide compliance over time required a new approach to accelerate BMP implementation. In 2007, TRPA developed the Accelerated BMP Implementation Program to direct compliance efforts and accelerate BMP implementation in areas with the greatest potential for water quality improvement. Target areas include:

- Drainage catchments with large areas of impervious surfaces (pavement and other non-porous areas).
- Areas in which an EIP water quality improvement project has previously been implemented, or is currently being implemented.
- Locations where opportunities exist to explore area-wide water quality solutions that integrate private and public BMPs.
- Areas in proximity to Lake Tahoe, stream environment zones, and other sensitive lands.

As of December 2011, the TRPA Stormwater Management Program has initiated accelerated implementation for nearly 350 commercial and large multi-family properties and 1,000 single-family properties within the Tahoe Region. Overall, this enforcement program has been successful in increasing BMP compliance rates, with approximately 30 percent of targeted properties achieving BMP compliance, typically within one to three years after receiving an official notice from TRPA. In addition, 40 percent of targeted single-family properties and 63 percent of commercial and multi-family parcels are actively working with TRPA and Resource Conservation Districts to achieve BMP compliance (TRPA 2011a). To date, 14,714 of 43,470 parcels in the Tahoe Region have obtained a BMP Certificate by installing BMPs that meet TRPA requirements. This equates to 56 percent compliance in Nevada and 25 percent compliance in California with total compliance in the Tahoe Region at 34 percent (TRPA 2011b).

In addition to the BMP program, EIP partners have retrofitted approximately 325 miles of county and city roads and approximately 25 miles of State Highways with stormwater quality improvements. In addition, approximately 40 percent of roadways owned by USFS have been decommissioned, and approximately 80 miles of the remaining 240 miles have been retrofitted with BMPs (TRPA 2011b).

EIP projects have also included restoration of sensitive lands in the Upper Truckee River, Blackwood Creek, Ward Creek, Meeks Creek, Cold Creek, Second Creek, Rosewood Creek, and Incline Creek watersheds, among others. In addition more than 3,000 acres of land have been acquired by state and federal agencies, including approximately 1,800 acres of High Meadow, 600 acres in the Upper Truckee Marsh, and approximately 750 acres surrounding Incline Lake in Nevada. EIP goals for the 2008-2018 decade include the following watershed, habitat and water quality improvements:

- Installing rock-lined roadside channels, replacing culverts at stream crossings, building infiltration basins and other treatment facilities, vegetating hillsides, and other stormwater improvements
- Decommissioning roads which no longer serve important recreational or forest management uses
- Curbs, gutters, rock-lined channels, bioswales, infiltration basins and other improvements that capture runoff from developed neighborhoods
- Pump and treatment facilities, where necessary, may be implemented to address area-wide runoff
- Acquisitions of property and easements beyond the right-of- way to more effectively reduce or treat runoff
- Monitoring and assessment programs to evaluate the effectiveness of control measures
- Operations and maintenance activities to maintain performance of facilities.
- Enhance or restore stream environment zones (wetlands) in priority watersheds
- Treat 400 terrestrial and aquatic invasive species sites annually
- Retrofit 300 miles of roadways with water quality improvements to reduce fine sediment loading
- Improve and protect 346 acres of wildlife habitat

- Cut fine sediment and nutrient loading as part of the "Clarity Challenge" target of 78 feet of clarity by 2028 (TMDL goal)
- Continue to acquire and restore priority environmentally sensitive lands to protect and conserve the natural environment

While some development projects have increased coverage in the Region, which can increase stormwater runoff, others have or are projected to result in substantial coverage reduction (e.g., Beach Club, Boulder Bay, Kings Beach Housing Now, and Kings Beach Town Center), and EIP and CEP projects include components that result in substantial improvements in water quality. As described in Section 4.2.4, CEP and Other Development Projects, substantial environmental enhancements are included in recent project proposals (e.g., Sierra Colina, Kings Beach Town Center, and Beach Club), including installation of BMPs; FSP and nutrient load reduction; SEZ restoration; and installation of area-wide stormwater treatment facilities. As required by the Compact, these projects were designed to help bring the Region into conformance with threshold standards, including water quality thresholds.

In combination with improvements associated with BMP installation, EIP and CEP projects, and in compliance with 303(d) of the Clean Water Act, LRWQCB and the NDEP drafted the TMDL for sediment, nitrogen and phosphorus to reduce fine sediment, nitrogen and phosphorus transport into Lake Tahoe. The TMDL incorporates current efforts to reduce the amount of nutrients (nitrogen and phosphorus) reaching the lake while placing additional emphasis on reducing fine sediment generated from the developed areas (local and state roads and developed commercial and residential parcels). In compliance with the Clean Water Act, the Lake Tahoe TMDL sets forth a plan to restore Lake Tahoe's historic deep water transparency to 29.7 meters annual average Secchi depth (LRWQCB and NDEP 2010).

To achieve the goals set forth in the TMDL, implementation actions, by source category have been proposed. Many of the practices are already in use by responsible parties. The TMDL acknowledges that technological advances will likely be added to action lists, and that implementation agencies may select other actions to achieve required load reductions. Actions to meet water quality goals, as outlined in the TMDL, include practices and treatment options for urban uplands, forest land, atmospheric deposition, and stream channel erosion. A partial list of these actions to be implemented, as appropriate, is compiled as follows.

- Stabilize and re-vegetate road shoulders and ski runs
- Vacuum-sweep streets (in heavily sanded areas)
- Upgrade/enhance fertilizer / turf management practices to reduce nutrient application
- Remove impervious coverage (increase infiltration)
- Redirect runoff for additional treatment
- Install and maintain infiltration trenches
- Install and maintain prefabricated infiltration systems
- Install and maintain detention basins
- Install and maintain sand filters
- Apply advanced deicing strategies (to reduce or eliminate abrasive application)
- Upgrade/increase/enhance infrastructure operation and maintenance
- Control retail fertilizer sales within the Region
- Recommend landscaping practices that reduce nutrient mobilization
- Install and maintain wet basins / infiltration basins
- Install and maintain constructed wetlands
- Install and maintain media filters in stormwater vaults

- Pump stormwater to more suitable treatment locations
- Install and maintain advanced BMP measures to increase infiltration and reduce runoff from landings, ski runs, trails and paved and unpaved roads in forested area
- Reduce residential wood burning emissions
- Reduce Vehicle Miles Traveled (VMT) through incentives/disincentives
- Lower stream channel banks and reduce angle to accommodate more frequent over-bank flow and reduce bank erosion/slumping Increase channel length and sinuosity (which over time would decrease channel bed slope) by constructing new channel segments
- Restore riparian vegetation
- Remove infrastructure (e.g., bridges) that fragments floodplains or restricts channel flow

Furthermore, TRPA maintains and revises water quality mitigation fees to offset potential water quality impacts of new development, which, based on a worst case scenario in the Lake Tahoe TMDL analysis, is estimated to be a 2 percent increase in fine sediment loading to Lake Tahoe. Alternatives 1 and 5 propose different levels of development, which would ultimately result in different amounts of coverage, and therefore, stormwater flows in the Region. Nevertheless, policy implementation under these alternatives would reduce coverage impacts in low capability lands (such as SEZ) by transferring coverage that meets BMP requirements to high capability lands; continuing to implement opportunities to retrofit existing development with BMPs through existing or revised policies; and restoring off-highway vehicle (OHV) trails. As discussed in Impact 3.8-3, fine sediment particles generated from roadways in the Tahoe Region have been identified as the biggest source of loading of this pollutant to Lake Tahoe and the biggest threat to Lake clarity (LRWQCB and NDEP 2009), as a result, continuation of existing winter road practices under Alternatives 1 and 5 would continue to affect sediment loading. However, implementation of Mitigation Measure 3.8-3 would facilitate improved roadway operation and maintenance practices that protect water quality by establishing a series of regulations that would serve to reduce sediment and FPS loading in to waterways in the Region. As discussed in Impact 3.8-2, continuation of the existing policies is not expected to increase nutrient loading into Regional waterways. Thus, while existing policies may not be facilitating substantial improvement to Lake clarity (as described in the 2011 threshold evaluation), the water quality of tributaries is improving. Because the existing policies would remain in place; BMPs, EIP projects, and CEP projects would continue to implement water quality improving components; and the TMDL recommendations would be implemented, Alternatives 1 and 5 would not make a considerable contribution to the existing cumulative effect of sediment and nutrient loading in surface water, groundwater, and stormwater flows in the Region.

Under Alternative 2, the existing policies related to nutrient loading would be modified to allow the use of treated municipal wastewater for wildfire suppression and prohibit the use of most nitrogen- and phosphorus-introducing fertilizer in the Region (see Impact 3.8-2). In addition, by improving roadway operation and maintenance practices, which currently generate high pollutant loads of sediment and fine sediment, fine sediment loading would decrease (see Impact 3.8-3). While Alternative 2 would allow for additional development and impervious coverage, coverage transfers would continue to be allowed to reduce sensitive land coverage and reduce sediment loading, BMPs would continue to be installed, various EIP and CEP projects that improve water quality would be developed, and the TMDL recommendations would be implemented. Thus, under Alternative 2, the impacts of stormwater runoff and pollutant loading (Impact 3.8-4) would not considerably contribute to the existing cumulative effect of sediment and nutrient loading in surface water, groundwater, and stormwater flows in the Region.

Similar to Alternative 2, Alternatives 3 and 4 would allow for treated wastewater to be used for wildfire suppression and would limit fertilizer use in the Region (Impact 3.8-2). In addition, policies would be revised to reduce sediment loading from road operations (Impact 3.8-3). While coverage transfers would be further incentivized under Alternatives 3 and 4, exemptions of specific uses from coverage requirements have the

potential to result in adverse water quality impacts. These impacts would be reduced to a less-than-significant level with implementation of Mitigation Measure 3.8-4, which would implement a series of Code amendments that would link coverage exemptions to BMP requirements, design guidelines, and the Bailey land capability system. When considered in combination with existing programs (e.g., BMPs, EIP, CEP, TMDL), Alternatives 3 and 4 would implement policies and programs to reduce pollutant loading in surface water, groundwater, and stormwater runoff and would not contribute to significant cumulative impacts to water quality.

## SCENIC RESOURCES

The scenic resource issues relevant to cumulative impacts are scenic quality (Impact 3.9-1), visual character (Impact 3.9-2), and affects on nighttime views in the Region (Impact 3.9-3). These issues are discussed below.

### Cumulative Effects to Scenic Quality

The visual landscape of the Tahoe Region possesses a striking combination of rugged mountain peaks, a vast lake surface, and densely forested slopes. These landscape elements work in concert to produce a visual impression that makes the Lake Tahoe Region one of the truly unique places in the world. Despite development and alteration of the landscape for over a century, the Tahoe Region continues to attract visitors due to its powerful and stunning inherent landscape character.

To maintain scenic values in the Region, as mandated by the Compact, the environmental thresholds include targets for roadways, the shoreline, and public recreation areas and bike trails. There are 209 roadway scenic resources that are viewed from main roads within the Region. Of these, 4 had ratings in 2011 that were below the original rating and therefore considered out of attainment of the threshold standard. On the other hand there were 17 scenic resources with ratings higher than their original rating, which represents improvement in the quality of these scenic resources. There are 184 shoreline scenic resources that are viewed from the lake. As of 2011, 16 had ratings that were below the original rating and therefore considered out of attainment of the threshold standard. At the same time there were 23 shoreline scenic resources with ratings higher than their original rating. In addition, there are 242 scenic resources that are viewed from public recreation areas and bike trails. As of 2011, 4 had ratings that were below their originally assigned rating and therefore considered out of attainment of the threshold standard. At the same time, there were 13 scenic resources with ratings higher than their original rating.

As described in Section 3.9, Scenic Resources, scenic thresholds have improved in the past 5 years, indicating improvement in the cumulative scenic environment. The threshold standard for Scenic Quality is a non-degradation standard, meaning that a scenic resource is considered in attainment of the threshold standard so long as its scenic quality rating remains equal to or higher than the rating it was originally assigned. Thus, there is not an existing adverse cumulative effect associated with scenic quality in the Tahoe Region.

The Regional Plan Update alternatives would allow for changes in the built environment through the use of remaining allocations, use of newly authorized allocations, and through implementation of existing and revised policies that ultimately affect the form of new development and redevelopment. The visual environment is subject to change from the cumulative projects listed above, new development and redevelopment, and also from the removal and transfer of existing development and restoration of sending sites. Changes in the built environment could have undesirable consequences on scenic quality if they adversely affect views or vistas, damage or remove scenic resources, or result in development that is incompatible with the scenic values of the Region. Potential scenic impacts from development and redevelopment activities in the Tahoe Region are currently mitigated through environmental review and compliance with existing TRPA thresholds, goals and policies, the Code, design review guidelines, and the Scenic Quality Improvement Program (SQIP). The requirements of these various regulations address site design, building heights, bulk and scale, landscaping, lighting, and signage. Because the threshold standard for Scenic Quality is a non-degradation standard, projects

approved in the Region, including reasonably foreseeable development projects (such as those listed above) and currently unknown projects, may not be approved if they degrade the scenic quality of the Region. Therefore, through compliance with existing regulations, new development and redevelopment in the Region over the life of the Regional Plan Update, including cumulative development (such as that listed above), would not contribute to or result in a cumulative impact related to scenic quality.

Regional Plan Update Alternatives 3 and 4 would result in modified design guidelines and new regulations on buildings height as well as redistribution of development within identified target areas, which could result in potentially significant contributions to cumulative scenic quality impacts (Impact 3.9-1). To mitigate for potentially significant scenic impacts resulting from three- or four-story buildings in the 10 Town Centers (Alternative 3) and 12 PTODs (Alternative 4), and from three- to six-story buildings in the Regional Center (Alternative 3), Mitigation Measure 3.9-1a requires compliance with specific findings and performance standards for additional building height (TRPA Code of Ordinances, Chapter 37, Height Standards; Section 37.7). To mitigate for potentially significant scenic impacts resulting from buildings up to 197 feet in the High Density Tourist District (Alternative 3) and redevelopment of the existing high-rise buildings in the South Stateline Casino Core Tourist District (Alternative 4), Mitigation Measure 3.9-1b requires achievement of performance standards for any proposed development in the High Density Tourist District (Alternative 3) or the South Stateline Casino Core Tourist District (Alternative 4). Furthermore, for Alternative 3, Mitigation Measure 3.9-1c requires amendment of the Code (Chapter 37, Height Standards) to require that the maximum height of the ground floor segment not exceed 28 feet for stepped buildings on slopes. Implementation of these mitigation measures would ensure that buildings with additional height would be constructed so as to minimize visibility, visual magnitude, and interference of views, and those in the High Density Tourist District (Alternative 3) would be redeveloped within the height and visual mass of existing buildings. Therefore, proposed development projects under Regional Plan Update Alternatives 3 and 4 would make a less-than-significant contribution to cumulative scenic quality impacts.

### Cumulative Effects to Visual Character

The threshold standard for Community Design is a policy statement that calls for implementation of design standards and guidelines found in the Code of Ordinances, the Scenic Quality Improvement Program, and in the adopted Community Plans. Overall, the contributions from the built environment toward attainment of travel route and scenic quality ratings have increased over time beginning with the first evaluation in 1986 and accelerating over the past ten years. Specifically, the visual quality of the built environment is improving in most areas of the Region due to implementation of design standards and guidelines. This is true within the urban/commercial centers along the roadway travel units and within the shoreland of the shoreline travel units where redevelopment has taken place.

As discussed in Impact 3.9-2, the Regional Plan Update alternatives would allow for new development and redevelopment resulting in changes in the built environment. In addition, cumulative development projects (such as those listed above) would result in changes in the built environment. Such changes could adversely affect visual character if it results in development that is somehow undesirable in its appearance. Potential impacts from development and redevelopment on visual character in the Tahoe Region are currently avoided or mitigated through environmental review and existing TRPA regulations that address site design, building heights, bulk and scale, landscaping, lighting, and signage. Proposed development projects under Regional Plan Update Alternatives 1 and 5 would make a less-than-significant contribution to cumulative impacts related to visual character because existing design standards and guidelines and limits on building height would be maintained. Proposed development projects under Alternatives 2, 3, and 4 would also result in a less-than-significant contribution because local planning instruments would be updated or developed to include design guidelines and development standards that represent the vision and desire of the local community for visual character.

### Cumulative Effects to Nighttime Views and Dark Skies In the Region

Stargazing in the Tahoe Region is a tourist attraction, as is evident through tours of the night sky offered by various companies and organizations in the Region (e.g., Tahoe Star Tours, Northstar at Tahoe, USFS). Outdoor lighting in developed areas is necessary for public safety and security; however, if not properly controlled it has the potential illuminate the night sky and adversely affect nighttime views. Although concern related to light pollutant affecting dark skies in the Region was addressed as part of Pathway 2007, star visibility on clear nights in the Region remains extremely high (Packard, pers. comm. 2012). Nighttime views in the Region have not been cumulatively affected by light pollution.

Cumulative development projects listed above and new development and redevelopment allowed under Regional Plan Update Alternatives 1 and 5 would include outdoor lighting necessary for public safety and security. All such lighting would be required to comply with the existing outdoor lighting standards in Chapter 36.8 of the Code (directing lights downward to minimize off-site spillage and, to the extent feasible, reduce light pollution) (Impact 3.9-3). Therefore, cumulative development projects and development under Alternatives 1 and 5 would result in a less-than-significant cumulative impact to nighttime views and dark skies.

Regional Plan Update Alternatives 2, 3 and 4 would include adoption of new lighting standards that minimize stray or unnecessary lighting, including the use of low-intensity lights and/or cutoff shields, to minimize light pollution and stray light. Therefore, Alternatives 2, 3 and 4 would result in a beneficial cumulative impact related to nighttime views and dark skies (Impact 3.9-3).

It should also be disclosed that some light pollution and stray light is coming from outside the Region, notably from night skiing lights at Squaw Valley Resort; however, control of these light sources is outside of the authority of TRPA and the scope of this EIS. Furthermore, star visibility on clear nights in the Region remains extremely high.

## BIOLOGICAL RESOURCES

The biological resources issues relevant to cumulative impacts are effects on sensitive habitats (Impact 3.10-1), tree removal (Impact 3.10-2), effects on fish and aquatic habitats (Impact 3.10-3), effects on common and special-status species (Impact 3.10-4), and introduction and spread of invasive weeds and aquatic invasive species (Impact 3.10-5). These issues are discussed below.

### Cumulative Effects on Sensitive Habitats

Sensitive habitats in the Tahoe Region include a variety of wetland/riparian communities such as wet meadows, riparian zones along streams, marshes, seasonal wetlands, drainages, springs, fens, bogs, and deep water plant communities of Lake Tahoe. Most riparian and wetland communities are also designated by TRPA as SEZ and habitats of special significance, which are TRPA threshold resources for which nondegradation standards apply. The attainment status for the habitats of special significance threshold indicator is “implemented/attainment;” the attainment status for relative abundance of deciduous riparian vegetation is “somewhat worse than target” (TRPA 2012). Thus, there is an existing cumulative effect associated with sensitive habitat in the Tahoe Region.

Depending on their specific locations, construction of cumulative projects would result in removal or disturbance of sensitive habitats, including SEZs and potential jurisdictional wetlands (Impact 3.10-1). Most ground disturbances resulting from the construction of facilities would occur within urban areas, existing transportation corridors, and existing subdivisions. Because ground disturbances would be limited mostly to these existing disturbed areas, potential impacts to sensitive habitats could be relatively minor. However, construction-related disturbances could occasionally occur in, or otherwise directly or indirectly affect, areas that may support sensitive habitats, particularly SEZs, outside of existing disturbed areas. For example, the bike and pedestrian projects proposed in the RTP/SCS could result approximately 2 to 7 acres of coverage in SEZ

lands, depending on alternative, and new disturbance of SEZ from corridor revitalization projects is estimated at approximately 4 to 5 acres.

Many of the cumulative projects listed above involve reductions in coverage on sensitive lands: EIP projects, CTC and NDSL land acquisition/restoration projects, USFS restoration projects, the excess coverage mitigation program, existing coverage transfer requirements, as well as certain development projects (such as Beach Club, Boulder Bay CEP, Kings Beach Housing Now, and Kings Beach Town Center). In addition, as required by the 1987 Regional Plan, development projects in the Region must be consistent with the land capability coverage limits and transfer ratios as well as requirements for BMPs.

Implementation of projects under all Regional Plan Update alternatives would be required to comply with existing TRPA, federal, and state regulations and permitting requirements, and environmental review procedures that protect SEZs, wetlands, and other sensitive habitats. As described in detail in Section 3.10, Biological Resources, these regulations and procedures address potential impacts to SEZs and other sensitive habitats through site-specific environmental review and requiring development and implementation of project-specific measures to minimize or avoid impacts through the design and permitting process, and providing compensatory or other mitigation for any significant effects as a condition of project approval and permitting. Specifically, the TRPA Goals and Polices and Code of Ordinances require protecting riparian habitats and SEZs through establishment of setbacks, BMPs, or other measures, and protection of late seral/old growth forests and other sensitive habitats; and TRPA's Rules of Procedure require mitigation for any significant impact as a condition of project approval. Additionally, most of the SEZ and riparian habitats that could be affected by new development under the Regional Plan Update alternatives would likely be considered jurisdictional by USACE and, in California, LRWQCB under CWA Section 404 and the Porter-Cologne Act. Existing federal and state regulations would provide habitat compensation for the loss of riparian, wetland, and other SEZ habitats through the permitting processes required by CWA Section 404, CWA Section 401 (in California), California Fish and Game Code Section 1600 *et seq.* (in California), and CEQA review (in California). Therefore, approved projects pursuant to the Regional Plan Update alternatives would not contribute to a cumulatively significant impact to SEZs and other sensitive habitats in the Region.

Depending on the specific locations, types, and objectives of water quality and SEZ improvements under all Regional Plan Update alternatives, long-term impacts to stream and lake habitats are considered potentially beneficial, although the long-term certainty or magnitude of some of the potential benefits are difficult to predict under the current level of design. As discussed for cumulative effects on geology, soils, land capability, and coverage, the Regional Plan Update alternatives would reduce coverage within SEZ lands (ranging from a reduction of 5 acres due to Alternative 1 to a reduction of 15 acres due to Alternative 3), thereby decreasing the existing cumulative effect of coverage in SEZ. Furthermore, Alternatives 3 and 4 include policy changes that consider the land capability of sending parcels in the transfer of coverage and development rights, and would require and/or incentivize coverage transfer from sensitive lands, including SEZs and wetland habitats. These changes are expected to benefit SEZs and sensitive habitats. In addition, programs of the CTC, NDSL, U.S. Forest Service–Lake Tahoe Basin Management Unit (LTBMU), and the multi-agency Environmental EIP are focused on environmental improvement and restoration activities that lead to beneficial cumulative effects on sensitive habitats. Specific planned or ongoing projects in the Region that would benefit sensitive habitats include the Burke Creek Restoration Project, Van Sickle CA/NV Bi-State Park, Beach Club on Lake Tahoe, Upper Truckee River and Marsh Restoration, and Lower Blackwood Creek Restoration. When considered in combination with other planned or ongoing projects that would improve sensitive habitats, the Regional Plan Update alternatives could provide a long-term beneficial impact and would not contribute to a cumulative impact on sensitive habitats in the Region.

## Cumulative Tree Removal

As discussed in Section 3.10, Biological Resources, logging, fire suppression activities, insect infestation, and drought have contributed to a relatively new stock of trees in the Tahoe Region. As a result, most of the forestlands are even-aged and densely stocked. Based on the most current data on the distribution on vegetation, the Region is not in attainment with management targets adopted for "other than mature," small diameter (<10.9 inches in diameter at breast height [dbh]) for both red fir and yellow pine. The current percentage of small diameter yellow pine cover within this vegetation type is 3.6 percent (or 24 percent of target), an estimated additional 11,570 acres of small diameter yellow pine dominated stands is needed to achieve the lower limits of this management standard. The current percentage of small diameter red fir cover with this vegetation type is 10.9 percent (or 72 percent of target) – an estimated additional 1,380 acres of small diameter dominated stands is needed to achieve the lower limits of this management target. Because the Region is currently out of attainment for goals related to the diversity of tree diameters, tree removal is an existing cumulative effect in the Region.

Depending on the location of new development and redevelopment, individual projects may require tree removal to clear for construction and/or to promote the establishment of defensible space and reduction of hazardous fuels. However, tree removal proposed for cumulative projects would require assessment and mitigation, including any tree removal with the potential to affect breeding productivity or population viability of any common or special-status species, or cause a change in species diversity locally or regionally. Also, TRPA Code designates tree species of limited occurrence (Section 71.4.A[4] of the TRPA Code) that receive special consideration. TRPA's existing policies and Code provisions address tree removal through site specific environmental review and requiring development and implementation of project-specific measures to minimize or avoid impacts through the design and permitting process, and providing compensatory or other mitigation for any significant effects as a condition of project approval. Specifically, the TRPA Goals and Polices and Code of Ordinances includes provisions for limiting tree removal and protecting late seral/old growth forests; and TRPA's Rules of Procedure require mitigation for any significant impact as a condition of project approval. Additionally, TRPA cannot approve projects that would cause a significant adverse effect on the late seral/old growth ecosystem threshold without appropriate compensatory mitigation.

Although most cumulative projects are expected to be developed in community centers and would remove relatively few trees, bike trail projects, fuels reduction projects, and infrastructure improvement projects that would traverse more remote areas (e.g., Nevada Stateline to Stateline Bikeway) could result in substantial tree removal. However, tree removal for trails and other projects in remote areas is not expected to result in any forest conversion, substantial overstory/canopy reduction, or changes in the distribution or amount of forest stand types. For example, trails in remote forested areas would be sited in the understory to minimize tree removal; and the distribution of these narrow and linear projects would not require the creation of substantial gaps in the forest overstory.

The Regional Plan Update alternatives would allow for new development and redevelopment, the construction of which would likely require the removal of native trees. Although the details of individual development projects cannot be known at this time, Alternative 1 would require the least amount of tree removal by virtue of its very low levels of authorized allocations, and Alternative 5 would require the most over the planning period (Impact 3.10-2). Development of tourist and commercial uses would be primarily concentrated in existing urban centers and, because these areas are largely developed or previously disturbed, would likely require less tree removal than new residential uses outside of urban areas. Alternatives 2, 3, and 4 include proposed policies to allow the removal or pruning of large trees for projects that would promote the establishment of defensible space and reduction of hazardous fuels or projects that would benefit other thresholds. In cases where old growth trees would be affected by defensible space projects, the proposed policy and implementation measures under Alternatives 2, 3, and 4 would allow limb removal as an alternative to tree removal.

Because the magnitude of tree removal is expected to be low relative to the distribution and availability of forest land in the Region, most tree removal would be limited to common vegetation types, and project-level minimization and mitigation measures would be implemented, tree removal as a result of projects under Regional Plan Update alternatives is not expected to contribute to changes in the composition, abundance, or regional patterns of forest resources in the Region. Therefore, tree removal as a result of development approved under the Regional Plan Update alternatives would not contribute to a cumulatively significant impact to trees and forest resources in the Region.

### Cumulative Effects on Fish and Aquatic Habitats

Lakes and streams are the two primary aquatic habitats that support fish in the Lake Tahoe Region. TRPA has designated different types and qualities of fish habitat in Lake Tahoe. "Prime" fish habitat includes spawning habitat and feed and cover habitat, and is one of TRPA's threshold indicators for fisheries. The most recent attainment status for TRPA thresholds related to fisheries indicate that the Region is somewhat worse than the target for Lake Habitat, implemented/attainment for instream flow and Lahontan Cutthroat Trout, and unknown for stream habitat (TRPA 2012). Thus, there is an existing adverse cumulative effect on fish and aquatic habitats in the Region.

TRPA maintains a nondegradation standard for prime fish habitat in Lake Tahoe. In addition, programs of the CTC, NDSL, U.S. Forest Service–Lake Tahoe Basin Management Unit (LTBMU), and the multi-agency EIP are focused on environmental improvement and restoration activities that lead to beneficial cumulative effects on sensitive habitats. Specific planned or ongoing projects in the Region that would benefit sensitive habitats include the Burke Creek Restoration Project, Van Sickle CA/NV Bi-State Park, Beach Club on Lake Tahoe, Upper Truckee River and Marsh Restoration, and Lower Blackwood Creek Restoration.

Because all Regional Plan Update alternatives would allow some level of new development, aquatic habitats could be affected by individual project construction activities associated with development and redevelopment adjacent to or near aquatic habitats. Construction could result in temporary increases in turbidity and downstream sedimentation, small amounts of fill placed in aquatic habitats, and the release and exposure of construction-related contaminants. However, aquatic habitats would be protected during construction, and construction of any facilities within prime fish habitat would not be allowed without compensatory mitigation to ensure a net improvement of prime fish habitat. For example, construction of the proposed Lake Tahoe Waterborne Transit Project facilities within prime fish habitat would not be allowed without avoidance and/or compensatory actions to ensure a net improvement of prime fish habitat. TRPA's existing policies and Code provisions address potential impacts to fisheries and aquatic habitats through site-specific environmental review, require development and implementation of project-specific measures to minimize or avoid those impacts through the design process, and require compensatory or other mitigation for any significant effects on fish habitat as a condition of project approval. Specifically, provisions of the TRPA Code require protecting prime and other fish habitat and require mitigation to avoid significant impacts to fisheries if needed; TRPA's Rules of Procedure require mitigation for any significant impact as a condition of project approval.

Because no new goals or policies and no policy revisions related to fish or aquatic habitat are proposed under any of the Regional Plan Update alternatives, and because project-level planning and environmental analysis would identify potentially significant effects, minimize or avoid those impacts through the design process, and require mitigation for any significant effects as a condition of project approval, construction-related impacts to stream and lake habitats (including prime fish habitat) as a result of implementing the Regional Plan would not contribute to a cumulatively significant impact to fish and aquatic habitats in the Region. Additionally, reduction of coverage in SEZ due to the Regional Plan Update alternatives and other ongoing or planned projects to improve SEZs would also enhance aquatic habitats in the Region.

## Cumulative Effects on Common and Special-Status Species

The most recent attainment status for TRPA thresholds indicates that the Region is somewhat worse than the target for common vegetation, at or somewhat better than the target for uncommon plan communities, considerably better than the target for sensitive plants, considerably worse than the target for late seral/old-growth ecosystems, and at or somewhat better than the target for special interest species (TRPA 2012). Thus, there is an existing cumulative effect associated with common vegetation and late seral/old-growth ecosystems. There is not an existing cumulative effect associated with sensitive plants or special interest species.

Under all Regional Plan Update alternatives (Alternatives 1, 2, 3, 4, and 5), construction could affect special-status plant or animal species, depending on the specific locations, presence of suitable habitat, and the type, timing, and specific nature of the project actions. During project-level planning and evaluation, impacts on species with potential to be affected would be determined based on the species' distribution and known occurrences relative to the project area, the presence of suitable habitat for the species in or near the project area, and preconstruction surveys. TRPA's existing policies and Code provisions address potential impacts to special-status species through site-specific environmental review, require development and implementation of project-specific measures to minimize or avoid impacts through the design process, and require compensatory or other mitigation for any significant effects on special-status species as a condition of project approval. For any TRPA special-interest wildlife species that could be affected, compliance with the TRPA Code of Ordinances requires that projects or land uses within TRPA nondegradation zones would not significantly affect the habitat or cause the displacement or extirpation of the population; and TRPA will not permit a project that would degrade habitat without compensatory mitigation to avoid a significant effect. For other special-status species, project-level planning and environmental analysis would identify potentially significant effects, minimize or avoid those impacts through the design process, and require mitigation for any significant effects as a condition of project approval. Therefore, implementing any Regional Plan Update alternative would not contribute to a cumulatively significant impact to special-status species in the Region.

Common plant and wildlife species are relatively abundant locally and regionally and are not considered limited by the availability of habitat in the Region. New development under Alternatives 1, 2, 3, 4, and 5 is not expected to substantially affect breeding productivity or population viability of any common species, or cause a change in species diversity locally or regionally. Additionally, the overall land use pattern and amount of new development would not create new barriers to wildlife movement locally or regionally because all Regional Plan Update alternatives focus new development and redevelopment within community centers on high capability lands. Therefore, implementing the Regional Plan Update alternatives would not contribute to a cumulatively significant impact to common plant and animal species, or wildlife movement, in the Region.

## Cumulative Effects Related to Invasive Weeds and Aquatic Invasive Species

Non-native terrestrial and aquatic invasive species compete with native plant and animal species; their introduction and proliferation in ecosystems can substantially alter the dynamics of native aquatic and terrestrial communities. This conversion can indirectly affect wildlife and fish species by changing and often reducing food sources and habitat structure and can lead to competition between native plant species and the weeds, often resulting in loss of native vegetation. In particular, non-native aquatic invasive species have become a priority for education, prevention, and control in the Tahoe Region. The draft Lake Tahoe Region Aquatic Invasive Species Management Plan (USACE 2009) was released in 2009; this document details past introductions of aquatic non-native and invasive species, their current status, priority threats, and future management strategies to avoid additional introductions and spread of current nonnative invasive populations (USACE 2009). Two invasive aquatic mussels, quagga mussel and zebra mussel, and one invasive aquatic snail, New Zealand mudsnail, are of particular concern due to their expanding range, highly invasive nature, and potential to disrupt ecosystem function. Non-native invasive terrestrial weeds in the Tahoe Region include bull thistle (*Cirsium vulgare*), moth mullein (*Verbascum blattaria*), oxeye daisy (*Leucanthemum vulgare*), cheatgrass (*Bromus tectorum*), Canada thistle (*Cirsium arvense*), and spotted knapweed (*Centaurea maculosa*). Aquatic

invasive plant and animal species in the Tahoe Region include Eurasian watermilfoil, curly leaf pondweed, Asian clam, bluegill, largemouth bass, smallmouth bass, and brown bullhead catfish. Because invasive species are known to exist in the Region and can adversely alter native aquatic and terrestrial communities, there is an existing cumulative effect.

The Lake Tahoe EIP includes the Aquatic Invasive Species Watercraft Inspection Program, which prohibits launching of any watercraft or landing of any seaplane contaminated with aquatic invasive species from entering the water of the Tahoe Region. In addition, invasive weeds and aquatic invasive species removal projects have been implemented throughout the Region, including: the Asian clam removal project near Lakeside Marina and in Marla Bay; aquatic weed removal in Emerald Bay and Elks Point Marina; and veligers (i.e., larval stage of bivalve mollusks which includes Quagga and Zebra mussels) monitoring in Elks Point, the Tahoe Keys, Emerald Bay, Meeks Bay, North Tahoe Marina, Sand Harbor, Obexers Marina, and Cave Rock. In general, these projects are managed by the Tahoe Resource Conservation District, in collaboration with state and federal agencies, including UNR, UC Davis, U.S. Fish and Wildlife, Tahoe Regional Planning Agency, CA State Parks, Nevada Department of Environmental Protection, Lahontan WQCB, and Lake Tahoe Water Purveyors.

Construction resulting from development and redevelopment projects under the Regional Plan Update alternatives would involve temporary ground-disturbing activities in disturbed and native vegetation types. These activities would temporarily create areas of open ground that could be colonized by nonnative, invasive weed species from inside or outside of the Tahoe Region. Invasive weeds and other species could inadvertently be introduced or spread during grading and construction activities, if nearby source populations passively colonize disturbed ground, or if construction and personnel equipment is transported to the site from an infested area. Project-specific BMPs would reduce the potential for introducing or spreading weed populations in the project area by reducing the amount of open ground during construction; however, the potential for this effect would still exist. None of the Regional Plan Update alternatives propose new or revised goals, policies, or implementation measures that would affect the Shorezone, Shorezone structures, or boating activities. Therefore, watercraft use on Lake Tahoe could facilitate the spread of aquatic invasive species into Lake Tahoe, if boats were exposed to those species in another water body and are not sufficiently cleaned and sanitized before entering the Lake. Also, any construction within a lake or stream (e.g., for stream restoration, dredging, bridge construction) could facilitate the spread of aquatic invasive species into water bodies.

Implementation of any project under the Regional Plan Update alternatives would be required to comply with the TRPA Code and Goals and Policies, which prohibit the release of nonnative species in the Tahoe Region. Under all alternatives, for each development or other project, project-level planning and environmental analysis would analyze the risk of terrestrial invasive weeds or aquatic invasive species introductions and spread, based on the type and location of the project; minimize or avoid those impacts through the design process (e.g., including BMPs and other measures to minimize or avoid invasive species introductions); and provide mitigation for any significant effects as a condition of project approval (e.g., implementing weed and aquatic invasive species management practices during construction). Efforts to prevent, control, and remove aquatic invasive species in the Region would be accelerated under Alternatives 2, 3, 4, and 5, as a result of adopting a new threshold management standard that would direct TRPA to prevent the introduction of new aquatic invasive species, control the abundance and distribution of known aquatic invasive species, and abate the adverse impacts of them. Additionally, Alternative 2 would amend the TRPA Code to specifically require that projects in areas with infestations of aquatic invasive species reduce and remove aquatic invasive species and prepare annual monitoring reports. Therefore, the Regional Plan Update alternatives would not contribute to a cumulatively significant impact related to introduction and spread of invasive species in the Region.

Additionally, Alternatives 2, 3, 4, and 5 include the proposed adoption of a new threshold management standard that supports the control and reduction of existing populations of invasive species and efforts to prevent new introductions of aquatic invasive species into the waters of the Region. Specifically, the proposal would create a

new management standard that would direct TRPA to prevent the introduction of new aquatic invasive species, control the abundance and distribution of known aquatic invasive species, and abate the adverse impacts of them. This management standard would guide management actions, policy, and project review to prevent the establishment of new aquatic invasive species, and control the abundance, distribution, and adverse effects of aquatic invasive species. Adoption of this threshold management standard under Alternative 2, 3, 4, or 5 would be cumulatively beneficial with regard to control of invasive species.

## RECREATION

The recreation issues relevant to cumulative impacts are limited to the demand for recreation facilities and availability of outdoor recreation capacity.

Impacts related to compatibility with existing or currently proposed recreation uses (Impact 3.11-2) are localized, do not accumulate to cause broader environmental consequences, and cumulative impacts would not occur. Therefore, these issues are not discussed further.

### Cumulative Demand for Recreation Facilities and Availability of Outdoor Recreation Capacity

The Tahoe Region is considered a tourist destination for its recreational opportunities. Recreation services and facilities are located throughout the Region, within urban centers, forested land, and on waterways. The Quality of Recreation Experience and Access to Recreational Opportunities recreation threshold is in attainment. Recreational user surveys show the majority of recreational users (89.8 percent) are very satisfied with their recreational experience (USDA 2010). The Region has seen a consistent increase in the amount of public land available for low-density recreational use and the number of amenities that provide access to that land (TRPA 2009). In addition, evaluation of the Fair Share of Recreation Capacity standard indicates an increase in recreational development that is consistent with the policy statement's direction that a "fair share" of resource capacity be available for public recreation (TRPA 2012). Accounts of people-at-one-time (PAOT) allocations show a slower increase in recreation capacity for eligible projects than in previous threshold evaluations. However, there has been a steady increase in the number of recreation facilities that do not require PAOT allocations, and the Region has experienced an increase in the amount of public land available to support recreational purposes (TRPA 2012). Because the threshold indicators demonstrate a reasonable level of recreational opportunities, experiences, and capacity, there is no existing adverse cumulative condition related to demand for recreation facilities and availability of outdoor recreation capacity.

Development of new residential units, tourist accommodations, and commercial facilities, including cumulative development projects such as those listed above, could increase the permanent and temporary demand for recreation facilities by increasing the Regional population. If demand increases substantially at a particular recreation facility, it could deteriorate that facility and cause it to no longer be available for use. Quality recreation facilities that provide a fair share of recreation capacity and offer reasonable levels of access and recreational opportunities are important for the economic vitality of the Region and maintenance of the environment in which the respective types of services and facilities are located (e.g., urban centers, forested land, and waterways).

Public agencies such as the California Tahoe Conservancy (CTC), Nevada Department of State Lands (NDSL), and the United State Forest Service (USFS) have active acquisition programs that purchase land and make it available to the public for dispersed recreation. This has been made possible largely through commencement of EIP, which has facilitated purchase of more than 3,000 acres of land and 2,579 acres of shoreline since 1996. In recent years, the rate of public land acquisition has slowed, but acquisitions are still occurring to increase land availability for low-density recreation (TRPA 2012). Public agencies and non-profit organizations have been actively increasing the number and quality of access amenities, such as trails and trailheads.

Recent examples of newly developed recreation resources include:

- 13 miles of new trail added to the Tahoe Rim Trail (Tahoe Rim Trail Association and USFS)
- new trailhead at the Van Sickle Bi-State Park (CTC and NSP)
- numerous trail construction and improvement projects, including the Lam Watah trail and trailhead near Nevada Beach and a new trail connecting High Meadows to Starr Lake (USFS)
- new trails at the Ward Creek property (in process, DRP)
- river access improvements along the Upper Truckee River (CTC) (TRPA 2012)

The EIP program maintains a list of priority projects related to public access, trail projects, day and overnight use, education programs, and interpretive facilities. This list is updated every five years. The following list is from the 2010 EIP Update (TRPA 2010):

Public Access:

- increasing land and beachfront acquisitions in Kings Beach and the City of South Lake Tahoe, where existing public facilities cannot meet demand
- linking Lake access facilities with public transportation
- increasing support services and facilities where appropriate for kayakers along the Lake Tahoe Water Trail's Shoreline

Trail Projects:

- Trail improvements, including loops, connectors, and crossings; day use support facilities; scenic overlooks and vista points; and infrastructure facilities such as restrooms, parking, transit, and directional signage
- Trail connections to areas outside the Region
- Other projects consistent with USFS Road and Trail Access and Travel Management Plans
- Bridges or other well-designed crossings over waterways or stream environment zones

Day and Overnight Use:

- Replacing outdated recreation infrastructure and expanding overcrowded facilities while meeting accessibility requirements
- Increasing the supply of affordable overnight campground facilities
- Developing Burton Creek State Park and Van Sickle Bi-State Park to provide new day-use opportunities

Educational Programs and Interpretive Facilities:

- Establishing major visitor information centers at key entry points into the Tahoe Region to orient and inform visitors
- Developing a Region-wide interpretive plan to identify interpretive needs for residents and visitors
- Creating a comprehensive, Region-wide educational program for schools and other target audiences

In addition to projects planned under the EIP, 73 percent of the persons at one time (PAOTs) from the 1987 Regional Plan remain. Although this does not indicate site usage or future recreational capacity levels of the Region, it does provide assurance that resource capacity (e.g., water and sewer service) is available for outdoor recreation areas and can be allocated to projects that would result in an increase in the carrying capacity of recreation sites.

As discussed throughout this EIS, the RTP/SCS is undergoing simultaneous review with the Regional Plan Update. Under each alternative of the RTP/SCS, bike and pedestrian facilities would be implemented. These facilities would provide additional recreation facilities to the Region and improved access to existing recreation facilities for pedestrians, bicyclist, transit riders, and drivers.

Because recreation opportunities are consistently increasing due to a variety of programs in the Region, there are no significant cumulative impacts associated with recreation demand. The Regional Plan Update alternatives would authorize different levels of new residential, tourist, and commercial land uses that could increase the use and demand of existing recreation facilities or create demand for new recreation opportunities. However, none of the Regional Plan Update alternatives would alter the existing Recreation Element, which contains goals and policies that encourage a variety of high-quality recreation opportunities in the Region (Impact 3.11-1). Because various public agencies are currently planning acquisitions and improved recreation facilities, and the Regional Plan Update alternatives would not change the existing goals and policies of the Recreation Element, the Regional Plan alternatives would not result in a cumulative recreation impact.

## POPULATION, EMPLOYMENT, AND HOUSING

The population, employment, and housing issues relevant to cumulative impacts are: location and distribution of employment, population, and housing in the region (Impact 3.12-1), and affordable and moderate-income housing (Impact 3.12-2).

### Location and Distribution of Employment, Population, and Housing in the Region

The location, distribution, and density of population, employment, and housing within the Region relates to community character and function. To address this issue, the 1987 Regional Plan land use strategy concentrates growth in compact walkable urban centers (Community Plan areas) that are served by alternative transportation options. This type of land use facilitates a balanced jobs-to-housing ratio, reduced automobile reliance, and overall decreased environmental impacts (e.g., reduced air emissions). As explained in Section 3.12, the existing jobs-to-occupied-housing ratio is approximately 1, which is considered balanced. In general, because the land use system (see Section 3.2, Land Use) concentrates development in Community Plan areas, jobs in the Region are located within close proximity to housing within urban nodes. Thus, there is not an existing cumulative effect.

Region-wide population projections and increases in employment opportunities (primarily commercial uses) under each alternative are relatively modest; and the jobs-to-population ratio would remain relatively constant over the course of the planning period (Impact 3.12-1) for all alternatives. Nonetheless, construction of residential units, tourist accommodation units, and commercial floor area, including cumulative development projects such as those listed above, could change the existing location and distribution of employment, population, and housing, which could result in secondary effects such as increased VMT, decreased LOS, destruction of sensitive habitats, decreased jobs to housing ratios, and other impacts that are discussed throughout Chapter 3. However, all Regional Plan Update alternatives would enforce land use patterns that further concentrate growth in community centers that are well-served by alternative transportation options. The allocations and transfer policies under each Regional Plan Update alternative (discussed in detail in Section 3.2, Land Use) would also encourage the movement of residences and businesses into community centers. Furthermore, the policies under each Regional Plan Update alternative would guide the location of development types, heights, densities, and other factors that affect the location and distribution of employment, population, and housing in the Region. Because increases of population, employment, and housing in the Region under each alternative would be relatively low, regulated through the allocation system, and largely concentrated within existing urban areas, their location and distribution would remain very similar to the existing conditions (Impact 3.12-1). Therefore, none of the alternatives would result in a considerable contribution such that significant

cumulative impacts associated with the distribution and location of population, housing, and employment in the Region would occur.

### Affordable and Moderate-Income Housing

Land use planning and policies can be used to address affordable housing. While the recent market downturn that began in 2008 has reduced the cost of housing in some areas, the level of job loss and other economic distress indicators create ongoing challenges of housing affordability. The discrepancy between average income and the ability to purchase a home indicates an existing significant cumulative impact (Impact 3.12-2).

Under the 1987 Regional Plan, the lack of affordable and moderate-income housing was addressed through the bonus unit incentive program and a residential allocation exemption for affordable housing. These programs have been used for projects including: Boulder Bay CEP, Kings Beach Housing Now, Tahoe Vista Partners, LLC Affordable Housing and Interval Ownership Development, and the Homewood Mountain Resort Ski Area Master Plan, all of which constructed some affordable and/or moderate-income housing units.

Development of new housing units in the Region, as allowed by existing or new residential allocations in each Regional Plan Update alternative, would not necessarily affect the availability of affordable and moderate-income housing. Construction of market-rate housing would not be available to many people who work in the Region because the majority of employment opportunities are in the service industry, which generally does not offer salaries that allow for the purchase of market-income housing (Western Nevada Development District 2010). By allowing for increased CFA in the Region, job opportunities would grow and increase the demand on affordable and moderate-rate housing.

Alternative 3 would increase the supply of residential bonus units that could be developed through the affordable and moderate-income housing programs. Alternative 3 would also increase housing density in community centers and implement a Region-wide housing needs program, which would result in a beneficial effect on affordable housing in the Region. Because Alternative 4 would retain an ongoing supply of residential allocations increase housing density in community centers, and would implement a Region-wide housing needs program, the existing conditions are not likely to substantially change and this alternative would result in a less-than-significant contribution to the cumulative affordable housing impact. Alternatives 1, 2 and 5 would severely constrain the supply of residential allocations, which would promote the replacement of existing affordable and moderate income housing units with more expensive redeveloped or expanded housing units. Additionally, these alternatives do not modify affordable and moderate income housing programs and would therefore contribute to the significant affordable housing impact. However, implementation of Mitigation Measure 3.12-2, would involve evaluation of progress towards the adopted housing goals and recommendations for policy and ordinance changes necessary to achieve housing goals. Changes may include, but are not limited to, the conversion of residential allocations to bonus units that would be available only for the construction of affordable and/or moderate-income housing, the creation of new bonus units for affordable housing and modification of development standards to promote housing affordability. Implementation of Mitigation Measure 3.12-2 under Alternative 1, 2 and 5 would reduce the contribution to the cumulative affordable housing impact to a less-than-significant level.

## PUBLIC SERVICES AND UTILITIES

Under the existing conditions, the Tahoe Region is served by multiple public utility districts (PUDs) and general improvement districts (GIDs), water suppliers, and solid waste collection services. Electric and gas services are provided by Nevada Energy and Southwest Gas Corporation, respectively. Public services, including fire stations, police stations, and schools are provided by multiple federal, state, and local agencies. All public service and utility providers are currently able to meet the needs of residents, workers, and visitors year-round. Therefore, no significant cumulative public services and utilities impacts currently exist.

As discussed in Section 3.13, Public Services and Utilities, the existing service providers are expected to be able to meet the projected demands of build out conditions of each Regional Plan Update alternative. In addition, Chapter 32 of the Code requires that applicants for new development acquire will-serve letters for construction or reconstruction of building intended for human occupancy.

In general, public services are not provided by TRPA, and the increased need of fire, law enforcement, and educational services would be met by the relevant local jurisdiction. In addition, population increases under all Alternatives are relatively modest and would occur over 20 years, allowing for substantial time for planning and consideration of local and Regional public services and utilities requirements. Implementation of any of the Regional Plan Update alternatives would result in some new development that could increase the demand for fire protection, law enforcement, and school services that, in turn, could require new or improved facilities, the construction of which could result in adverse effects to the environment. However, as with other project development, environmental review of specific public facility projects would be required to ensure that impacts are identified and mitigated. Thus, impacts associated with the demand for public services are project-specific, and not cumulative in nature. Therefore, these issues are not discussed further.

## NATURAL HAZARDS AND PUBLIC SAFETY

The natural hazards and public safety issues relevant to cumulative impacts are wildland fire hazard (Impact 3.14-1) and flood hazards (Impact 3.14-2).These issues are discussed below.

Health hazards from vector-borne diseases (Impact 3.14-3) are monitored and addressed by four vector control districts in the Region, which employ all feasible methods to control mosquito populations and protect public health, including BMPs, source surveillance, source control and reduction, and public education. Therefore, cumulative impacts would not occur and this impact is not discussed further.

### Wildland Fire Hazard

While wildfire events occur naturally, plans, policies, and other regulations are used to control the rate at which people become exposed to the associated hazards (see Section 3.14.2, Regulatory Background). Fire has been a natural part of Tahoe's environment for thousands of years. These historic fires were frequent, of low intensity, and a major influence on the appearance of Tahoe's forests. Beginning in the 1870s, Tahoe's forests and the occurrence of fire experienced some dramatic changes. Much of the Lake Tahoe Basin is considered a "fire environment." It contains flammable vegetation and a climate to support fire. Fire is a natural process in the Lake Tahoe Basin and many of the plants growing here evolved in the presence of frequent fires. In fact, it is unnatural for fire to be absent for very long in many areas of the Lake Tahoe Region. Because fire suppression measures (described in Section 3.14, Natural Hazards and Public Safety) have substantially reduced the risk of wildfire exposure on residents, visitors, and workers in the Region, there is no existing adverse cumulative effect.

Development allowed under the Regional Plan Update alternatives would increase population levels in the Region and potentially bring people closer to wildlands, thereby increasing the chances of exposure of people to fires. In the Tahoe Region, however, several programs, including the Lake Tahoe Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy, the Fuel Reduction and Forest Restoration Plan for the Lake Tahoe Basin Wildland Urban Interface, and Living with Fire Program guide the region toward reduced risk of catastrophic fires through fuel reduction and defensible space guidance. Furthermore, fuel management strategies on private lots, such as clearing adequate levels of defensible space allows for reduced opportunities for wildland fires to come in contact with structures and people.

As discussed in Impact 3.14-1, Alternative 1 would not implement new goals or policies that would address wildland fire. However, because numerous existing federal, state, and local programs decrease the risk of fire

hazards on residents, visitors, and workers in the Region, Alternative 1 would result in cumulative fire hazard impact.

Also addressed in Impact 3.14-1, Alternatives 2 through 5 propose different levels of population growth and development; however, these increases would not substantially increase risks of exposure to wildland fire hazards because existing policies would continue to be implemented that increase or improve defensible space, reduce fuel loads, and allow greater flexibility in the manner in which adequate fire protection is achieved within the Region. These regulations would reduce the risk of exposure to wildland fire for the increased population under Alternatives 2 through 5; therefore, these alternatives would not result in a cumulative fire hazard impact.

### Flood Hazards

The potential for flooding to occur within the Region is generally limited to the 100-year flood plain and areas subject to wave run-up. The 1987 Regional Plan prohibits construction, grading, and filling of lands within the 100-year flood plain and in the area of wave run-up (Natural Hazards, Goal 1, Policy 2). This policy also requires all public utilities, transportation facilities, and other necessary public uses located in the 100-year flood plain and wave run-up areas to be constructed and maintained to prevent damage from flooding and to not cause flooding. Therefore, with continued implementation of these policies, no significant cumulative flood hazard impacts exist.

All Regional Plan Update alternatives would allow for some amount of new development, redevelopment, and/or restoration activities. New development could place people at risk for exposure to flood hazards if structures are located within areas subject to flooding. However, Natural Hazards, Goal 1, Policy 2, described above, would be preserved in the Regional Plan under all proposed alternatives. Consistency with this policy would ensure that all cumulative development under Regional Plan Update Alternatives 1 through 5 would not result in new flooding issues or the exacerbation of existing flooding issues that would expose occupants and/or structures to flood hazards (Impact 3.14-2). Therefore, none of the alternatives would result in a cumulative flood hazard impact.

## CULTURAL RESOURCES

The cultural resource issues relevant to cumulative Regional Plan Update impacts are historical and archaeological resources, including ethnic and cultural values (Impacts 3.15-1 through 3.15-3). These issues are discussed below.

Historic and archaeological resources, including sacred and religious sites, are unique and non-renewable. For this reason, all detrimental effects to these resources erode a dwindling resource base. Destruction of any single cultural site or resource affects all others in the Region because as a group they make up the context of the cultural setting. Cultural resources are represented by the total inventory of all sites and other cultural remains.

Development that could occur under all Regional Plan Update alternatives, including reasonably foreseeable development projects (including those listed above) and currently unknown projects, have the potential to result in a cumulative impact to historic and archaeological resources in the Region. The intensity of future development would be the least for Alternative 1, with sequentially increasing development for Alternatives 2, 3, 4, and 5, respectively. As intensity of development increases, potential impacts to historical and archaeological resources may increase as more sites are developed. However, as described in Section 3.15, impacts to known and unknown historic and archaeological resources would be avoided and minimized through compliance with the TRPA Code of Ordinances as well as other state and federal regulations. These requirements protect cultural resources by capturing and preserving knowledge of such resources to provide opportunities for increasing our understanding of the past environmental conditions and cultures. Therefore, the Regional Plan Update alternatives, including cumulative development projects in the Region, do not result in

an adverse effect, nor contribute to a cumulatively significant impact, related to the detriment of cultural resources in the Region.