California State University
MONTEREY BAY

Comprehensive Master Plan

DRAFT June 2017



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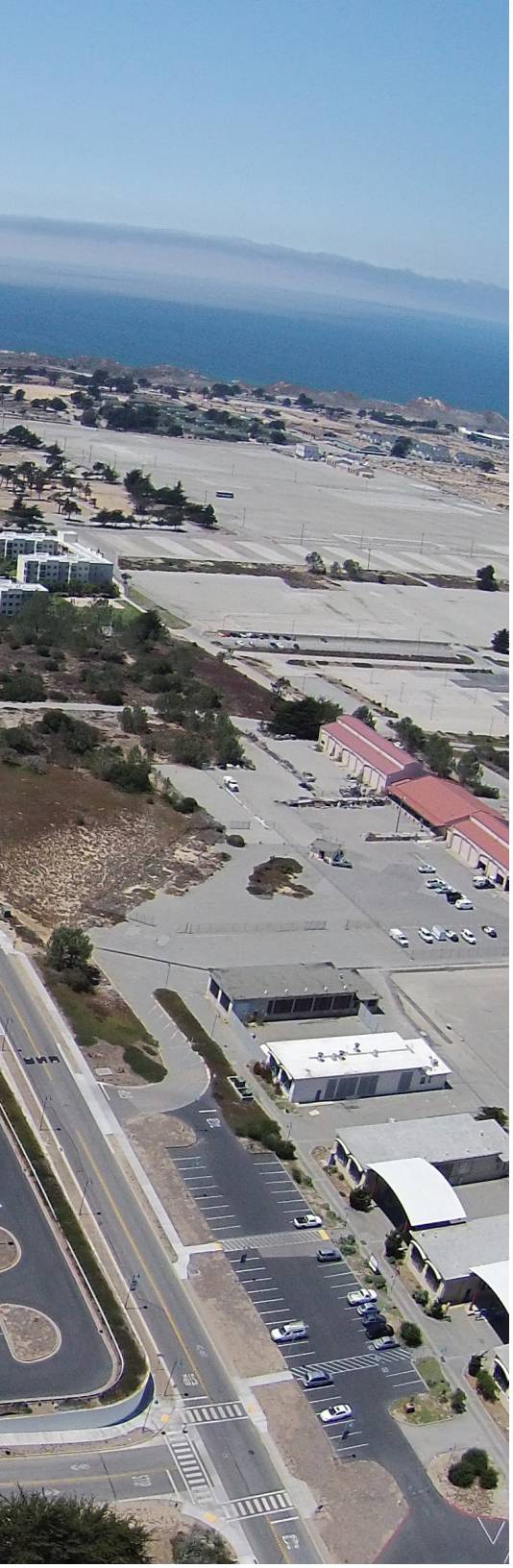
FIGURES AND TABLES



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INTRODUCTION

1 INTRODUCTION

A master plan guides the physical development of a campus, presenting long-range strategies for campus growth and transformation. As no single issue can be considered in isolation, the physical planning interrelates buildings, mobility infrastructure, open space, site ecology, and energy and stormwater management.

In 2015, the senior administration of California State University Monterey Bay (CSUMB) initiated a process to update the 2007 campus master plan. This initiative was driven by several factors: new leadership, a new academic plan, revised growth projections, university goals for carbon neutrality, regional traffic impact, and constrained water resources resulting from a historic drought, among other issues. It was evident that many of the assumptions and priorities underlying the master plan had evolved, and an update was needed. In addition, funding for three major capital projects had become available, and CSUMB's administration recognized it would be prudent to review and confirm sites for each of these projects before moving forward.

This master plan expresses a vision for a twenty-first-century learning environment that connects the university's mission and academic plan with the design, development, and sensitive stewardship of the campus. It creates a sustainable framework for building and site improvements, a framework that preserves and enhances the unique qualities of the Monterey Bay setting, while addressing program accommodation, land use, and open space, mobility, and infrastructure systems. It contains special area plans to guide the design of the most prominent campus spaces, and architectural and landscape design themes to ensure a cohesive CSUMB aesthetic. Finally, the master plan prioritizes immediate and long-term projects for implementation.

Sustainability was identified early in the master planning process as a key driver of the master plan. CSUMB defines sustainability as the simultaneous pursuit of human health and happiness, environmental quality, and economic well-being for current and future generations. The university established three core tenets to guide and measure each element of the Master Plan: placemaking (human health and happiness), stewardship (ecosystem respect), and partnership (economic well-being). See Chapter 4: Vision, for further elaboration.

This master plan is a vision for the future of the CSUMB campus and a flexible framework for development that can inform capital investment decisions as opportunities arise and priorities evolve.

At California State University Monterey Bay, we:

Understand that education for sustainability is a lifelong learning process that leads to an informed and involved citizenry having the creative problem-solving skills, scientific and social literacy, and commitment to engage in responsible individual and cooperative actions to support strong communities.

Strive to achieve excellence in all areas of operational sustainability.

Support individuals in their efforts to align their personal behaviors and practices to support campus sustainability goals.

Acknowledge the disproportionate impact environmental degradation has on low-income and/or minority populations and communities, negatively impacting their health, happiness and opportunity for economic well-being.

- The President's Sustainability Committee

ORGANIZATION OF THIS DOCUMENT

The master plan document is organized as follows:

Chapter 1: Introduction provides an overview of the purpose of the master plan and the planning process.

Chapter 2: Planning Context details the existing conditions, including campus facts, location, site context, and planning history, as well as current and planned development in the region. The campus's past and present sustainability initiatives are also documented here.

Chapter 3: Strategic Drivers describes the university's vision statement, mission statement, strategic plan, and pledge to the Second Nature Climate Commitment, which together form the foundation of the master plan vision, recommendations and plans.

Chapter 4: Vision states the six Master Plan Principles, and describes in detail the three tenets of sustainability.

Chapter 5: Program describes the land and building square footage required to support the university's functions with the projected enrollment growth.

Chapters 6–9: Land Use, Open Space, Mobility, Energy, and Water present the design goals, background information, recommendations and strategies for the physical plan elements of the master plan.

Chapter 10: Design Themes includes specific recommendations at the architectural and landscape scale to promote a unified campus identity.

Chapter 11: Special Area Plans define design principles for the landmark campus open spaces.

Chapter 12: Implementation details the strategies and phasing of the master plan recommendations.

Chapter 13: Master Plan Policies lists the actionable standards by which this master plan will be implemented.

Appendix: Additional background and technical information can be found in the Appendix. Appendices include:

- Energy and Sustainability Memorandum
- Utility and Infrastructure Memorandum
- Parking Supply Scenarios Memorandum
- Economic Benefits Study
- Public-Private Partnerships Overview and Implementation Memorandum

PROJECT TEAMS

CSUMB Team

The CSUMB master planning process was managed by senior Campus Planning and Development Department staff. The university's Master Plan Steering Committee (MPC), comprised of senior university staff, as well as faculty, student, and community representatives, provided guidance and direction to the consultant team at key milestones through the duration of the process. In addition, sustainability and transportation subcommittees provided input on specialized planning areas.

Consultant Team

The consultant team was led by Page Southerland Page, Inc. (Page), based in San Francisco. The Page team was supported by Fehr & Peers for transportation planning services; the Integral Group for mechanical and electrical engineering, and energy and sustainability services; Sherwood Design Engineers for civil engineering, water, and sustainability services; and Strategic Economics for economic impact analysis.

PLANNING PROCESS

The CSUMB campus master plan was developed through a collaborative planning process involving CSUMB leadership, along with campus and community stakeholders. The process involved the following three phases of work:

- Phase 1: Discovery
- Phase 2: Exploration
- Phase 3: Synthesis

Below is an overview of each of the three phases:

Phase I: Discovery

The discovery phase of work involved a review of current CSUMB academic and strategic plans, an analysis of program needs, an analysis of the campus and campus systems, and the beginning of a dialogue with the CSUMB community and surrounding community stakeholders to identify the priority issues to be considered in the plan. The program analysis examined the overall space needs for growth to 12,700 full-time equivalent (FTE) students, with housing for 60 percent of undergraduate students and 65 percent of staff and faculty. The systems analyses explored building and land use; open space; vehicular circulation and parking; bicycle and pedestrian circulation; transit and shuttle routes; water, stormwater and wastewater; and energy systems.

The master plan and consultant team led meetings during the discovery phase with key stakeholder groups, individuals, and campus community members. An event held in the Student Center allowed students to contribute to the plan development. A Master Plan Steering Committee (MSC) and two subcommittees—sustainability and transportation—were formed to guide the discussions and direction of the master plan. A presentation was made to the Fort Ord Reuse Authority (FORA) Board in June 2015 to further engage with local jurisdictions. The master plan engagement process is described in further detail starting on page 1.6.

The findings of the Discovery Phase were synthesized into goals, priority issues, and a planning and urban design framework that together formed the basis for alternative campus development options during the Exploration Phase of the planning process. An overarching theme that emerged through the Discovery Phase was the central role of sustainability as one of the key drivers of the plan.

Phase 2: Exploration

The exploration phase of the master planning process examined options for the near- and long-term development of the campus, based on the planning assessment, technical analyses, and planning and design framework defined in Phase I, as well as guidance from the stakeholder consultation process. During the exploration phase, the consultants conducted two public workshops on alternative master plan concepts as well as an open house forum which drew over one hundred staff, faculty, students and community attendees. Campus planning staff also developed an online engagement portal on their website to accept comments on the plan throughout most of the planning process. The exploration phase involved two rounds

of alternatives development, review, and refinement. The alternatives integrated a variety of planning considerations, such as program accommodation, achieving carbon neutrality by 2030, strengthening campus image and identity, enhancing student and faculty engagement, improving mobility systems with a particular focus on pedestrian and bicycle access, and integrating climate and regionally appropriate open-space enhancements.

The alternatives were presented to the MSC, subcommittees, and campus and community stakeholders at meetings in September and October, 2015. The comments received through these meetings provided direction for the development of the draft master plan during the synthesis phase of work.

Phase 3: Synthesis

The synthesis phase of the planning process focused on the detailed development and documentation of the CSUMB master plan.

The draft master plan was developed based on the preferred alternative selected during the exploration phase of the planning process. The draft plan documents the overall vision for the campus within a framework based on sustainability and the university's Vision Statement and Strategic Plan, as well as goals and recommendations for improvements to each of the functional campus systems: land and building use, open space, mobility, utility infrastructure, and energy. It also confirms sites for several priority capital projects for which funding has been approved.

Phase 3 began with the presentation of the May 2016 administrative draft plan. After staff review and edits, a public draft plan was made available for review in February and March, 2017. During this review period the campus received approximately 255 comments and conducted 26 meetings with on- and off-campus stakeholders, and held three committee meetings to gather further input. Off-campus stakeholder engagement included meetings with the cities of Marina and Seaside, Monterey County, and community partners such as the Transportation Agency of Monterey County (TAMC), Monterey-Salinas Transit (MST), LandWatch, and the Fort Ord Rec Trail and Greenway (FORTAG).

This final master plan reflects the input and direction from these various committees and stakeholder groups.

A student forum was held early on in the planning process to gather input from students about sustainability, student and campus life, campus quality and placemaking, academic environment, and transportation and parking.

Workshops were held with the Master Plan Steering Committee, various subcommittees, and the larger community.

CAMPUS AND COMMUNITY ENGAGEMENT

The planning process for the CSUMB master plan was informed by an inclusive and interactive stakeholder engagement process involving broad representation from the CSUMB community, as well as Monterey Bay community constituents. The engagement process involved several strategies:

Stakeholder Interviews

The Discovery Phase of the planning process included several days of interviews with key individuals and stakeholder groups to identify issues to be considered in the plan. These interviews included:

- CSUMB students
- CSUMB faculty and staff representatives
- President's Office
- Provost and Vice President Academic Affairs
- Vice President Administration and Finance
- Deans of each College
- Dean of Students/Associate Vice President for Student Affairs
- Vice President Student Affairs and Enrollment Services
- Vice President for University Development
- Associate Vice President University Affairs
- Associate Vice President University Personnel
- Associate Vice President of Inclusive Excellence
- Campus Planning and Development Department staff
- Facilities Services and Operations Department staff
- Chief Information Officer
- Chief of Police
- Athletics Director

The Campus Planning staff also received feedback on draft plan materials from several campuses offices and organizations, including:

- Associated Students
- Housing and Residence Life
- International Programs Office
- Native American Students United
- Otter Cross Cultural Center
- Parking Services
- Student Disabilities Resources

In addition, the consultant team met with representatives of local governments, government agencies, and other external stakeholders within the Monterey Bay area, including the following:

- Cities of Marina, Seaside, Del Rey Oaks, and Sand City
- FORA
- LandWatch
- Marina Coast Water District
- Monterey County
- Ohlone/Costanoan-Esselen Nation
- Panetta Institute
- Presidio Public Works
- TAMC
- United States Army
- Waksachi Indian Tribe

Master Plan Steering Committee and Subcommittee Work Sessions and Meetings

The consultant team held regular work sessions with the MPC and additional subcommittees (sustainability and transportation) at key milestones throughout the planning process. The work sessions involved presentations of the plan elements as they evolved, and discussions with MPC and subcommittee members regarding issues, concerns, ideas, and opportunities. The work sessions were instrumental in developing a shared understanding among participants of planning, design, and technical issues, navigating sometimes competing perspectives, and confirming direction for each subsequent phase of work.

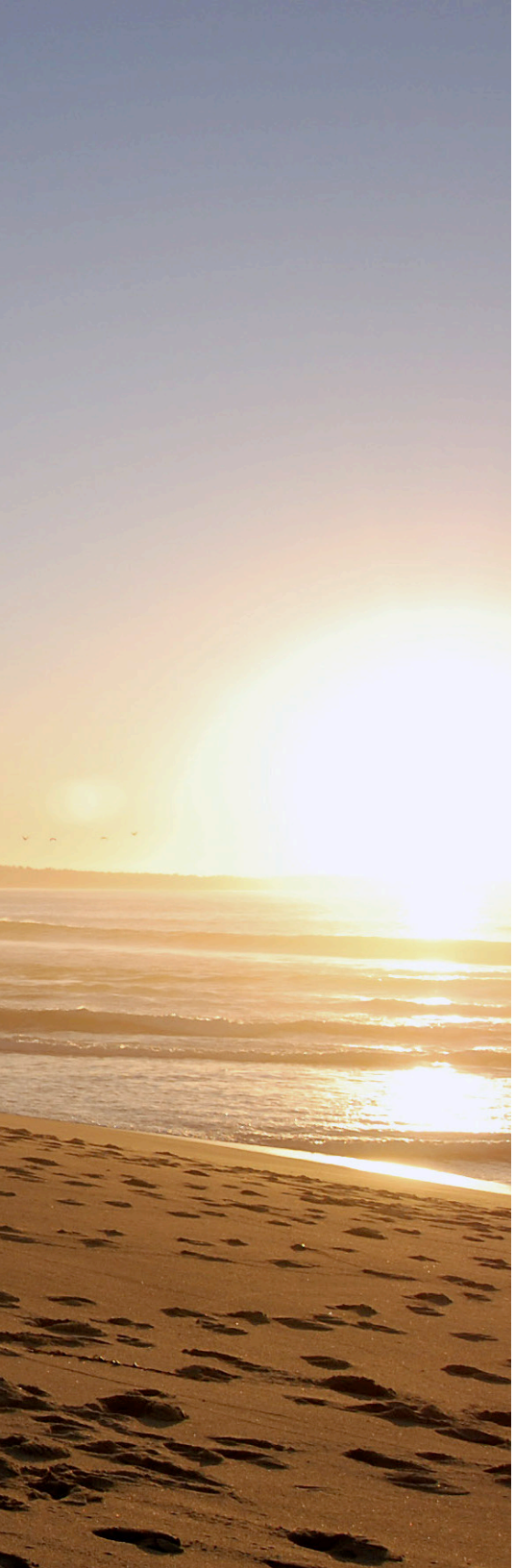
Additional subcommittee and stakeholder meetings focused on specialized planning issues, such as transportation and energy strategies, and were held between milestone work sessions. A draft of the plan was also presented to the Campus Art Committee during the synthesis phase.

Campus and Community Open Houses

Several open houses were held with members of the campus and surrounding communities, as well as regional agencies, with separate sessions for students, faculty and staff, and surrounding community constituents. The open houses involved presentations of works in progress, together with interactive workshops that explored a range of themes, such as student life, campus quality and placemaking, transportation, sustainability, and other issues. The open houses created the opportunity to present and test ideas, solicit input, and build support for the plan as it evolved.

Master Plan Website

CSUMB Campus Planning and Development Department staff created a master plan website to facilitate the distribution of interim products and information over the course of the planning process and to invite feedback on the plan.



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PLANNING CONTEXT

California State University Monterey Bay is one of twenty-three campuses in the California State University (CSU) System. In the fall of 2015, CSUMB had an enrollment of approximately 6,700 students (FTE). A third of CSUMB students come from the Monterey Bay tri-county area and approximately 45 percent stay in the region after graduation. Over half are first generation college students. Nearly 80 percent of students receive financial aid. CSUMB is one of few universities in the CSU system with a large residential student population, and currently has a bed count capacity sufficient for 50 percent of its student and 50 percent of staff and faculty populations.

CAMPUS LOCATION AND REGIONAL SETTING

As shown in Figure 2.1, the CSUMB campus is located along the central coast of California between the Monterey Bay National Marine Sanctuary and the Salinas Valley. The Monterey Peninsula is a major tourist destination featuring breathtaking scenery, cultural landmarks, and a historic downtown. The Salinas Valley is one of the nation's most productive agricultural areas. In its setting above the Monterey Bay, the campus has expansive views of the ocean to the west, the agricultural valley to the northeast, and the Gabilan mountain range to the east.

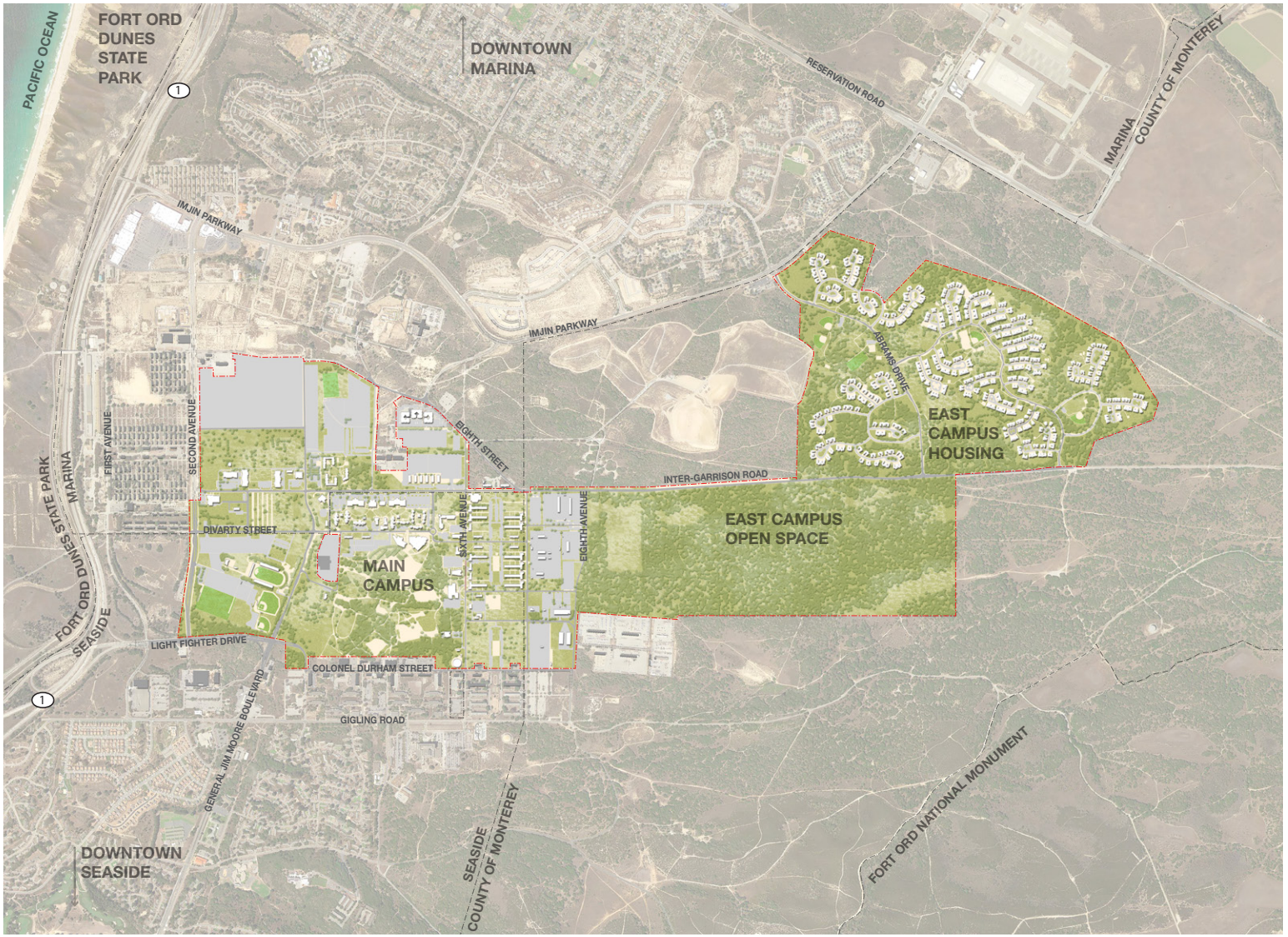
The campus is located in three separate governmental jurisdictions: the City of Marina to the north, the City of Seaside to the south, and unincorporated Monterey County to the east. As an agent of the State of California, CSU's redevelopment authority supersedes all local jurisdictions. However, the university acts as a good neighbor regarding the development regulations and policies of adjacent city and county governments and plays an active role on the FORA and TAMC committees. The university hosts regional forums to help create an informed community and works closely with the local jurisdictions, Monterey Salinas Transit (MST), Monterey Regional Waste Management District (MRWMD), Marina Coast Water District (MCWD) and others.

Figure 2.1: *Regional Context*

THE CSUMB CAMPUS

The CSUMB campus, illustrated in Figure 2.2, occupies 1,387 acres. All university facilities, with the exception of the East Campus Housing, are located west of Eighth Avenue in what is referred to as Main Campus. East Campus Open Space, a large, undeveloped natural open space, is bordered by Eighth Avenue on the west, Inter-Garrison Road to the north, and the campus boundary to the south and east. The East Campus Housing, north of Inter-Garrison Road, currently houses faculty, staff community members, and students. The majority of the master plan's analysis, goals, and recommendations focus on Main Campus.

Figure 2.2: *CSUMB Campus including East Campus*



REGIONAL HISTORY

This area was historically occupied by the Rumsen Indians. Belonging to a branch of the Costanoan (or Ohlone) language family, the Rumsen Indians lived in tribelets, each of which consisted of a primary village and several satellite settlements.

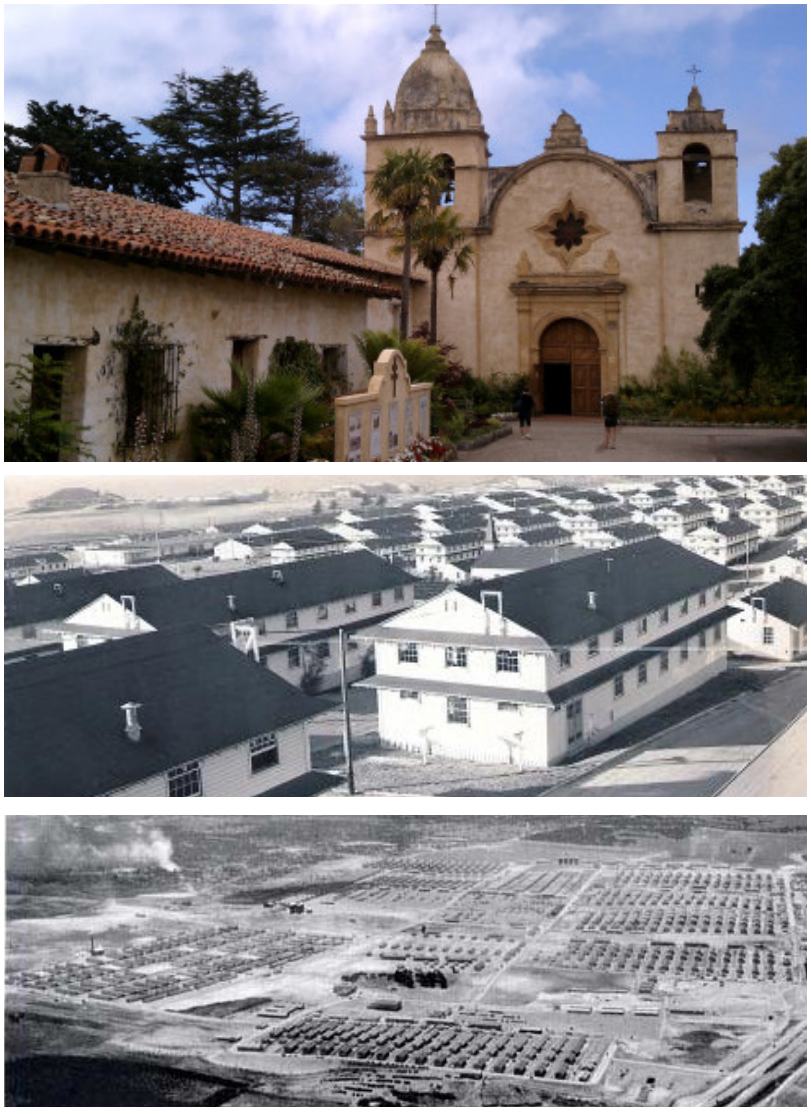
Spanish explorers first reached the area in the sixteenth century. It wasn't until 1770, however, that the Portola expedition arrived in Monterey Bay and established the first mission and Royal Presidio. In 1771, the mission was moved to the Carmel Valley. The founding of the mission began a period of intense Native American conversion to Catholicism. By 1778, most of the Rumsen and Esselen Indians in Carmel and Monterey were baptized and settled around the mission to farm church lands. This resettlement marked the beginning of the disintegration of Native American traditional life in this area.

The descendants of these Native Americans continue to live in the Monterey Bay region today. The Ohlone Costanoan Esselen Nation represents over six hundred enrolled tribal members of Esselen, Carmeleno, Monterey Band, Rumsen, Chalon, Soledad Mission, San Carlos Mission (Carmel) and Costanoan Mission Indian descent from at least nineteen villages from a contiguous region surrounding Monterey Bay. CSUMB students of Native American descent gather regularly at Native American Students United (NASU) meetings to share their rich cultural history. NASU also plans the annual Native American Gathering at CSUMB.

FORT ORD AND CSUMB HISTORY

CSUMB is located on the former United States Army post, Fort Ord. Fort Ord was initially developed in 1917 as a World War I maneuver area and field-artillery target range. During the World War II era it was officially designated a fort and became one of the largest bases on the West coast, housing as many as fifty thousand troops. At its peak Fort Ord encompassed twenty-eight thousand acres or forty-four square miles.

In 1991, the Base Realignment and Closure (BRAC) Commission recommended the closure of Fort Ord and its conversion from military to civilian use. The base was officially closed in 1994. Subsequently, the Ford Ord



Mission Carmel (upper), also called Mission San Carlos Borromeo de Carmelo, was founded in 1770 and moved to this site in Carmel in 1771. Historical photos (middle and lower) show the character and extent of Fort Ord during the World War II era.

Reuse Authority (FORA) was created to oversee the planning, financing and implementation of the reuse and recovery programs described in the 1997 Fort Ord Base Reuse Plan (BRP). A cornerstone of the BRP was to allocate a portion of the base for higher education use, and in the fall of 1994, CSUMB opened its doors on 400 of the 1,387 acres it would ultimately receive as part of the of the Fort Ord BRAC effort.

With an estimated loss of twenty thousand jobs, the closure of Fort Ord had a significant economic impact on the region, in particular on the cities of Seaside and Marina. The Fort Ord BRP identifies CSUMB and two other higher education institutions—the University of California Monterey Bay Education, Science, and Technology Center (UC MBEST) and Monterey Peninsula College—as catalysts for the economic revitalization of the region, and integral to the community-building strategy for the base.

CSUMB remains committed to supporting the local economy on Fort Ord. Staff and campus leadership play an active role in planning and community development efforts. The BRP's Design Principle 1 seeks to "Create a unique identity for the new community around the educational institutions. The centerpiece of the community at the former Fort Ord will be the education centers that have been integrated into the reuse of the former Fort Ord and which provide a central focus for the reintegration of the former military base into the regional economy" (BRP Vol I, p 9). This CSUMB master plan is an effort to further the goal of creating this community identity.

FORA has recently adopted Regional Urban Design Guidelines (RUDG) that govern the visual quality of Fort Ord. Fort Ord functions as a gateway to many attractions in the region, and the guidelines focus on enhancing the region making this area attractive and inviting to ensure the economic vitality of the entire Monterey Peninsula. The guidelines establish criteria for road design, setbacks, building height, landscaping, signage, and other matters of visual importance (BRP Vol 1, p. 61). Although CSUMB is not subject to the guidelines, the university played an active role in the development of the RUDG, realizing that high quality standards will help create a vibrant and livable community within and around the campus. The master plan has considered these guidelines in developing plans and strategies, and campus development will follow the guidelines as far as practicable, particularly where campus development adjoins neighboring public streets.

TRANSITIONING TO A UNIVERSITY CAMPUS

The transition from military use to that of a university has required significant effort. The university has been able to reuse sixty-six military buildings on the main campus. Innovative efforts have been undertaken to reuse the materials of the demolished buildings, as at the Alumni Visitor Center, where salvaged wood from a former army barracks became the Alumni Visitor Center ceiling. The university also fully renovated one of the most challenging "hammerhead" buildings, now the Student Services Building. To date, a substantial amount of time and resources have been spent removing approximately two hundred seventy-four derelict structures on campus, the last of which are currently being demolished. The university's building remediation and demolition experience is shared with FORA and Seaside, thus helping to save time and money for these communities and expedite further blight removal on Fort Ord.

Complementing the demolition of former military buildings, the university has added seven new buildings including the Joel and Dena Gambord Business and Information Technology Building, Tanimura & Antle Family Memorial Library, Chapman Science and Academic Center, North Quad Housing, and the Alumni & Visitors Center. In addition, the campus has added several recreational facilities, including the pool and baseball, softball, soccer and recreation fields. Infrastructure has been improved to include a heated hot water loop, state of the art fiber optic telecommunications system, 1-megawatt solar installation and several onsite stormwater percolation ponds and filtration sites.

The legacy of Fort Ord has shaped the physical layout and spatial organization of the campus. The military buildings were set within a rectilinear grid of roadways, with buildings dispersed across the site and minimal developed open space. While the university has successfully reused many of the buildings and created new open space and recreational areas, there are significant distances between facilities, and usable open space remains scarce.

Three properties within or adjoining campus are not part of the university's landholdings. The university has expressed interest in potentially acquiring these properties at some point in the future.

- The Monterey Veterans Administration (VA) Clinic. The clinic is located off of Engineer Lane near the campus core. It is anticipated that the existing clinic may be decommissioned when the new VA Clinic, currently under construction in nearby Marina, is completed.
- The City of Marina Corporation Yard. The corporation yard is located north of the Visual and Public Arts buildings on Fifth Avenue. This property could serve as an additional housing area and bring together Promontory and North Quad Housing.
- Golden Gate University Parcel. Two buildings on a triangular property formed by the Eighth Street Cut-Off, Inter-Garrison Road, and Sixth Avenue are currently being leased by the university for academic uses.

EXISTING BUILDINGS

1 Administration
2 Playa
3 Del Mar
4 Wave Hall
6 Surf Hall
8 Sand Hall
10 Dunes Hall
12 Student Center
13 Science Research Lab Annex
14 Otter Express
16 Dining Commons
18 Heron Hall
21 Beach Hall
23 Tide Hall
27 Cinematic Arts & Technology
28 World Theatre
29 University Center
30 Music Hall
35 Mail Room/Shipping & Receiving
36 University Storage
37 Facilities Services & Operations
41 Telecommunications
42 Watershed Institute
43 IT Services
44 Pacific Hall
45 Coast Hall
46 Harbor Hall
47 Student Services
48 World Languages & Cultures -South
49 World Languages & Cultures -North
50 Science Instructional Lab Annex
53 Chapman Science Academic Center
58 Green Hall
59 Reading Center
71 Visual & Public Art -East
72 Visual & Public Art -Center
73 Visual & Public Art -West
74 Central Plant
80 Health & Wellness Services
81 Black Box Cabaret
82 Valley Hall
84 Mountain Hall
86 Ocean Hall
91 Child Care Center
97 Alumni & Visitor Center
98 Meeting House
201 Gavilan Hall
490 Oaks Hall
491 Oaks Hall Annex
506 Joel and Dena Gambord Business and Information Technology Building
508 Tanimura & Antle Family Memorial Library

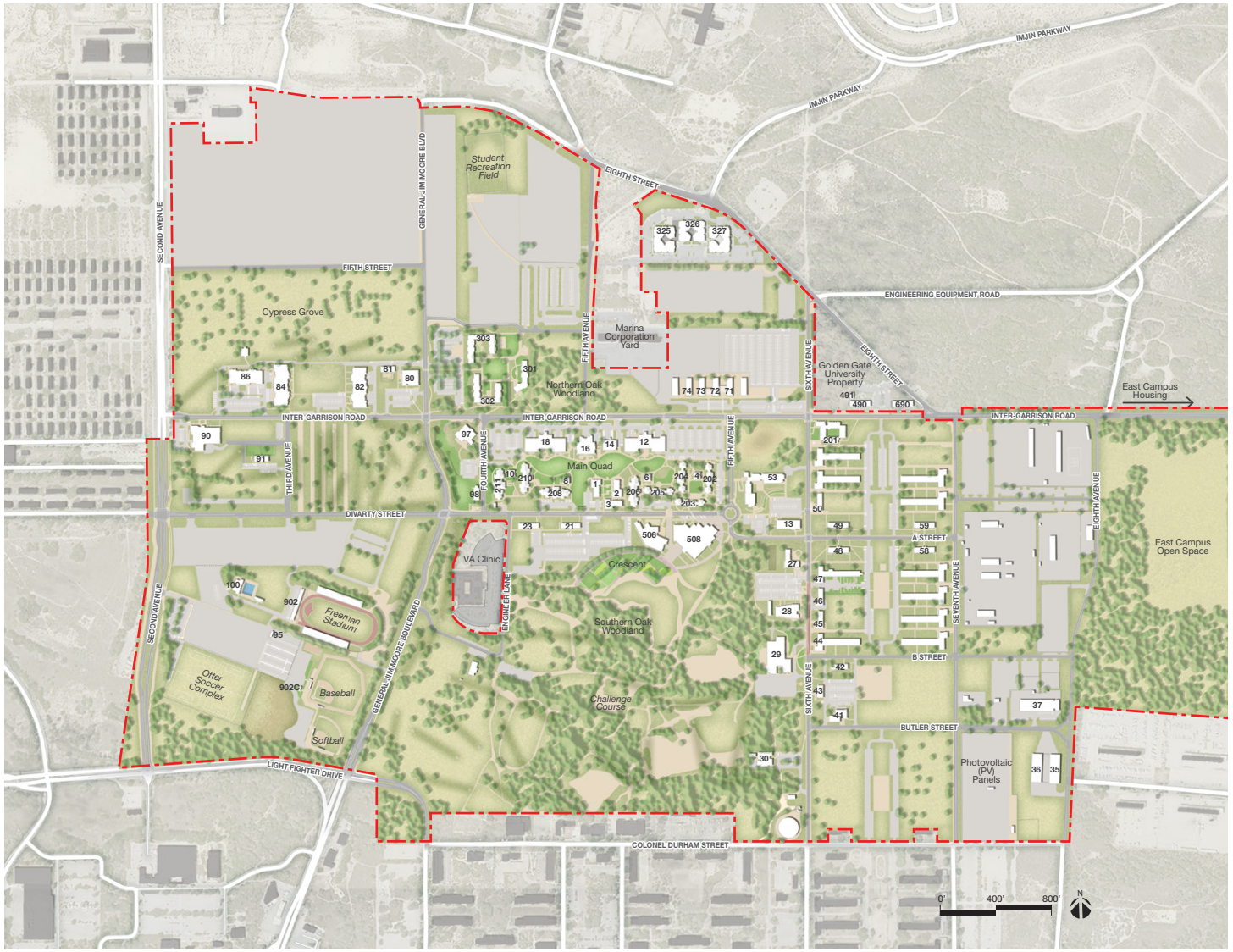
RESIDENCE HALLS

203 Asilomar Hall
202 Cypress Hall
204 Willet Hall
205 Manzanita Hall
206 Yarrow Hall
208 Avocet Hall
210 Tortuga Hall
211 Sanderling Hall
301 Strawberry Apartments
302 Pinnacles Suites
303 Vineyard Suites
325 Promontory -West
326 Promontory -Center
327 Promontory -East

SPORTS AND RECREATION

90 Otter Sports Center
95 Stadium Restrooms
100 Aquatic Center
902 Field House
902C Field Office

Figure 2.3: *CSUMB Main Campus*



REGIONAL DEVELOPMENT

After many years of weak economic growth, development in the vicinity of the campus is currently expanding. Several projects have been completed, others are under construction, and more are planned. As shown in Figure 2.4, existing and planned developments border the campus on the north, west and south. As the university plans for future growth of its campus, it will consider these surrounding developments to ensure that adjacencies are compatible, and that bike, pedestrian, and transit connectivity throughout the region is maximized. The newly built developments have already started to provide the first retail and entertainment opportunities near the campus community. In addition, dining, grocery store, and off-campus student housing projects are being considered for the campus periphery properties in both Marina and Seaside.

The Dunes

The Dunes is a 429-acre development located in the city of Marina, east of Second Avenue and south of Imjin Parkway, bordering the CSUMB campus to the north and west. The Dunes is envisioned as a mixed-use community that integrates housing, entertainment, destination and regional retail, hotel, office, a Veterans Affairs clinic, and open space. The plan is organized around a system of pedestrian and bicycle-friendly streets, open space elements, and transit corridors that connect to adjacent destinations, including CSUMB and the coastline.

A portion of the Dunes development is complete, including a regional shopping center with retail and dining establishments, a movie theater, and single-family and multi-family homes, providing amenities that serve the campus community. Additional retail and dining facilities are under construction and these have been designed to incorporate design elements of the Regional Urban Design Guidelines.

Main Gate

The City of Seaside has selected a developer for the Main Gate development located on fifty-six acres at the former main gate of the Fort Ord Army Base at the intersection of Lightfighter Drive and Second Avenue. The site acts as a gateway from the southwest to the CSUMB campus and the new development underway at the Dunes. The Main Gate Specific Plan was initially approved in 2010. The project is currently being re-envisioned by the City of Seaside to better reflect the changes in the economy that have since occurred. It is anticipated that the scale of the development will shrink and a significant portion of the envisioned 500,000 SF of retail will be reduced.

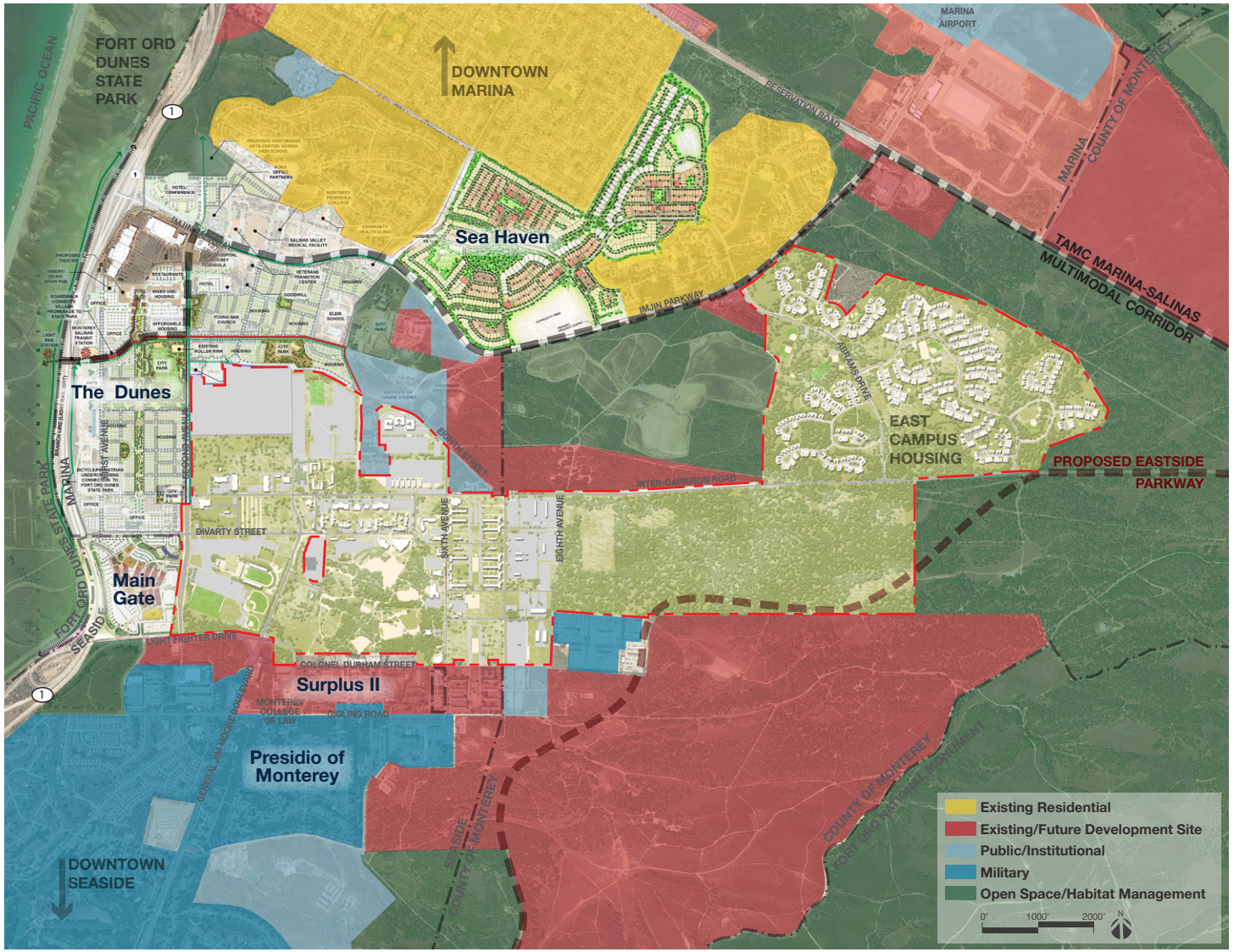
Surplus II Planning Area

The Surplus II planning area, also known as Seaside University Center, consists of seventy-six acres of vacant and underutilized parcels to the south of CSUMB on the south side of Lightfighter Drive and Colonel Durham Street. Current plans call for a mixed-use residential and commercial development project that includes a twenty-acre retail center, entertainment space, a business park, over 220 houses, and additional apartments. The City of Seaside has awarded an Exclusive Negotiating Agreement for this area to a developer.

Sea Haven

The Sea Haven (formerly Marina Heights) project is an approximately 248-acre site north of CSUMB and Imjin Parkway. This residential project will contain a combination of 1,050 townhouses, cottages, and single-family residences, all set within 35 acres of parks, green belts, and open spaces. Phase I was entitled in 2004, and site preparation is nearly complete. The first phase of housing is currently underway.

Figure 2.4: *Regional Development*



Sources: City of Marina General Plan, Land Use Plan; Monterey County Fort Ord Master Plan, Land Use Plan; City of Seaside General Plan, Land Use Policy Plan

HISTORY OF CAMPUS PLANNING AND DEVELOPMENT

1998 Campus Master Plan

CSUMB's original master plan was completed in 1998 and was the guide for the initial phases of campus development. Several of the 1998 master plan principles helped to guide the subsequent 2004 Master Plan effort and are relevant to the current master planning project. These include:

- Use open space as the significant organizing element in the creation of the campus character and structure
- Strategically locate residential uses to facilitate pedestrian, bicycle, and public transit access to the core of the campus
- Maximize the use of existing resources to minimize the impact on the undisturbed campus landscape
- Set an example of sustainable design in terms of natural resources, land utilization, and energy efficiency

2004 Master Plan and 2007 Campus Master Plan Update

The 2004 Master Plan significantly reduced the student population envisioned in 1998 from 25,000 FTE to 8,500 FTE. In 2007, a minor update and new environmental document addressed legal challenges regarding the State's obligation to pay for offsite mitigation. Thus, both plans organize land uses to increase the density within the campus core, create a pedestrian-friendly campus, reduce dependence on automobiles, and facilitate an implementation strategy.

The 2004 and 2007 master plans included four overarching considerations:

- Take advantage of previous investments in campus planning and development by incorporating them in current planning efforts
- Take advantage of the campus location, which links the Salinas Valley and the Monterey Peninsula
- Integrate and celebrate the unique natural environment that thrives on campus
- Create a strong campus core around which all campus systems interrelate

In addition, the following ten principles guided the 2004 master plan development framework:

1. Create a campus core that integrates the academic, social, and natural areas on campus
2. Create a distinct sense of place
3. Respect and strengthen ecological resources
4. Integrate natural and green spaces into the framework for development
5. Organize bicycle and transit networks
6. Organize campus uses and design building elements to support social interaction
7. Develop adaptable, flexible, and universally accessible learning environments
8. Strengthen campus and community connectivity
9. Support sustainable systems
10. Strengthen transportation and circulation connections

These plans were organized around several central ideas, as illustrated in Figure 2.5:

- The land use plan is organized around the road framework, as well as three open spaces: Freshman Quad (Main Quad), Divarty Mall, and the Meadow.

Figure 2.5: *2004 Campus Master Plan Illustrative Plan*

Figure 2.6: *2010/11 Campus Planning Study - Divarty Mall Concept*

- The plan for the central campus core is a semi-formal arrangement of buildings around a crescent-shaped walkway and an open meadow that showcases the natural landscape of the southern oak woodland within the fabric of the campus. The plan's organization of buildings around the crescent was an effort to create a unique identity and focus for the campus, and to move away from the street-oriented pattern established when the site was part of Fort Ord.

- The academic buildings that face the Meadow also face Divarty Mall, which is intended to be a primary campus gathering place and movement corridor. Divarty Street is shown as closed to vehicular traffic between the two new academic buildings just west of the library, with automobile drop-off and access continuing from Fifth Avenue to the east and Divarty Street and General Jim Moore Boulevard to the west.

Both the Crescent walkway and the meadow have been partially completed. Several buildings have been constructed according to the plan, including the Gambord Building, the Library, and the Science and Academic Center. This 2017 master plan builds upon the overarching goals and key principles of the 2004 and 2007 plans, which remain relevant.

2011 Campus Planning Study

A campus planning study was undertaken between 2010 and 2011. The study explored land use concepts for the growth of academic and residential space, as well as circulation options to minimize pedestrian and vehicular conflicts and improve accessibility.

The study also proposed detailed ideas for the transformation of Divarty Street into a pedestrian mall that would link campus facilities such as the Library, Science and Academic Center, a future student union, administration building, and additional academic buildings. The mall envisioned major gathering areas as well as smaller spaces for studying, and recreation. See Figure 2.6.

The 2017 campus master plan refines these ideas to incorporate current priorities and new development on campus.

Five-Year Capital Improvement Plan

The 2016-2017 Five-Year Capital Improvement Plan (CIP) outlines the short-term priority state-funded capital projects for the CSUMB campus. CIP projects address current needs and projects outlined in the 2007 Master Plan for 8,500 FTE.

For a complete list of CIP proposed projects, see Table 4.4.

Both the Joel and Dena Gambord Business and Information Technology Building (upper), and Promontory Student Housing facilities (lower) opened in the Fall of 2015. The Joel and Dena Gambord Business and Information Technology Building is LEED Platinum certified.

Recent Campus Development (2013-2017)

In the fall of 2015, the university completed the Gambord Building. This academic building is located adjacent to the Library on Divarty Street, and further concentrates academic functions within the campus core.

Also in the fall of 2015, the Promontory apartments opened to students, adding 569 of the 789 approved new student beds. For the first time, housing was built by a third-party developer and later purchased by the CSUMB Corporation and transferred to the campus. To connect the project—located along Eighth Street on the campus border—to the campus core, CSUMB constructed its first fully separated bike and pedestrian path.

Demolition of the remaining abandoned military structures on campus began in 2015, and is expected to be complete by 2018. This will significantly improve the visual character of the campus, given the structures' current state of disrepair.

Infrastructure projects on campus have improved bike and pedestrian safety, increased on-site stormwater percolation, and upgraded heating hot water connections.

Examples of recent infrastructure improvements include:

- Divarty Street Pedestrian Mall phase 1 implementation closed a portion of the road to through traffic
- Inter-Garrison Road pedestrian improvements include traffic calming measures, wayfinding improvements, and high visibility crosswalks
- Bicycle parking has been increased by 10%, and bicycle parking lots and facilities have been added
- Percolation basins have been installed south of Inter-Garrison Road between Fifth and Sixth Avenues, and west of Sixth Avenue and the University Center
- Both the Gambord Building and Library building improve stormwater management by percolating stormwater through underground cages within their project sites

SUSTAINABILITY AT CSUMB

CSU System-wide Sustainability Policies

The CSU system has identified sustainability as a system-wide priority, as is detailed in the CSU Sustainability Report (2014). The CSU system sustainability policies are listed in Table 2.1 by area of focus.

CSUMB Sustainability Initiatives

CSUMB has long held a commitment to sustainability and has responded to CSU system policies in planning the campus and through its operational procedures. The university has also been a leader in sustainability in the Monterey Bay region, demonstrated by several important sustainability initiatives and formal commitments.

In 2015, the university hired a Sustainability Director to coordinate the university's sustainability strategies and initiatives and to develop a Sustainability Office. The Sustainability Director's role requires collaboration with operations, academics and student life to support and build a culture of sustainability. The Sustainability Office supports student co-curricular learning opportunities and works closely with stakeholders throughout campus to meet sustainability policies and goals.

President's Sustainability Committee (PSC)

The President's Sustainability Committee (PSC) includes students, faculty and staff from a variety of disciplines and departments. The committee meets monthly to support and advocate for sustainability on campus. Targeted action groups are formed as needed to discuss and address specific sustainability issues.

President's Climate Commitment and Climate Action Plan

In 2007, the CSUMB president signed the American College and University Presidents' Climate Commitment, now known as the Second Nature Climate Commitment. This Commitment requires signatories to develop a climate action plan to achieve carbon neutrality by an established date. CSUMB's Climate Action Plan, completed in 2013, provides a road map to achieve this goal by 2030 for 8,500 FTE students. In addition to strategies related to achieving carbon neutrality, the Climate Action Plan also details the social and economic dimensions of sustainability.

Table 2.1: *CSU System-wide Sustainability Policies*

Academic Programs and Institutes
• Integrate sustainability into the curriculum
Climate Action Plan
• Reduce GHG emissions to 1990 levels by 2020, and 80% below 1990 levels by 2040
• Promote alternative transportation on campus
Renewable Generation and Energy Dependence
• Increase on-site self-generation capacity to 80MW
• Procure more than 1/3 of electricity purchased from renewable sources
Energy Conservation and Utility Management
• Identify and implement energy efficiency measures to reach GHG reduction goals
Water Conservation
• 10% reduction by 2016
• 20% reduction by 2020
Waste Management
• Reduce solid waste disposal by 50% by 2016
• Reduce solid waste disposal by 80% by 2020
• Move to zero waste
Sustainable Building Practices
• Design to LEED Silver equivalent, strive for Gold
• Consider energy use and life cycle cost in construction or renovation of any building
Transportation Demand Management
• Promote alternative transportation or fuels
Sustainable Procurement
• Promote use of environmentally-friendly business
• Work with vendors to reduce waste from packaging
Sustainable Food Service
• Purchase 20% sustainable food by 2020

CSUMB anticipates updating the Climate Action Plan in the next few years to reflect the changes to campus population and advances in campus sustainability.

STARS

In 2011, CSUMB completed the Sustainability Tracking, Assessment and Rating System (STARS) report v1.1 for the Association for the Advancement of Sustainability in Higher Education (AASHE). STARS is a self-reporting sustainability performance framework that allows colleges and universities to measure, track and share sustainability practices and performance. In 2011, CSUMB earned a STARS v1 Gold rating. In 2016, CSUMB received STARS v2 a Silver rating.

Sustainability Frameworks

In support of CSUMB's sustainability goals and the Second Nature Climate Commitment, the Master Plan sustainability subcommittee facilitated a discussion concerning the feasibility and utility of adopting a sustainability framework or third-party structure for measuring sustainability efforts. Several systems—LEED for Neighborhood Design (LEED ND), Living Community Challenge (LCC), Sustainable Sites Initiative, and One Planet Living—were evaluated to determine relative benefits, fit for CSUMB, and effort and complexity to implement. While the Committee recognized that achieving framework certification would be ambitious, it also recognized that certification could distinguish CSUMB nationally as a leader in sustainability.

After a deep review of the LCC and LEED ND frameworks, the campus determined that the LCC best supports the campus vision and mission and incorporate elements of social justice, beauty, and equity in a way that allows the campus to be more creative, flexible and visionary in its application of these elements. LEED ND remains an important design tool and includes principles foundational to this plan; for example, emphasizing a compact campus, with walkable, vibrant and mixed used neighborhoods connected to nearby communities. Although the university does not intend to apply for LEED ND certification, LEED ND principles and standards will continue to be employed as a basis for implementing good design principles.

The Living Community Challenge is an ambitious challenge that strives to create "socially just, culturally rich and ecologically restorative" communities. The LCC is designed around seven "petals":

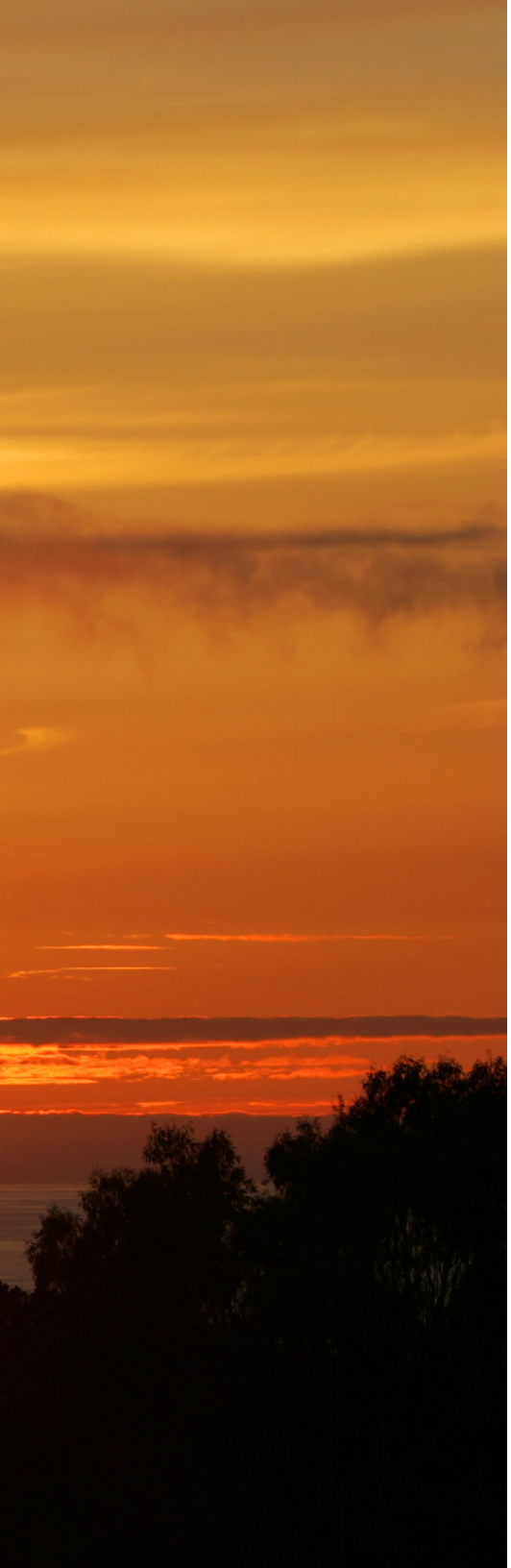
- Place
- Water
- Energy
- Health and Happiness
- Materials
- Equity
- Beauty

Each of these petals is addressed throughout the plan. Some petals align directly with chapters (e.g., energy and water); other petals, such as Health and Happiness, and Place, are integrated into multiple chapters.

The campus will maintain status as an "emerging living community" following the review of this document. As new projects come to fruition, there will be periodic reviews to maintain this designation. The LCC allows full certification or petal-level certification (which requires achievement of three petals, one of which must be energy, water, or materials). The campus can determine, as buildout occurs and petal imperatives are met, whether to choose full certification or petal certification.

Resiliency

CSUMB also recognizes the necessity to be resilient to natural disasters, weather disruption caused by climate change, and other community safety concerns. The campus maintains an emergency operations plan that address "all hazards" (including natural disasters and other health and safety disruptions). CSUMB is prepared to maintain community operations following an incident and to work with neighboring communities to provide mutual aid as necessary. In addition, CSUMB provides certified emergency responder training opportunities for community members. Campus staff and faculty also engage with the Central Coast Climate Collaborative and other regional stakeholders to better plan for resiliency and adaptation needs.



3

STRATEGIC DRIVERS & MASTER PLAN VISION

STRATEGIC DRIVERS

The strategic drivers of this master plan include the university's existing vision statement, mission, and strategic plan, as well as the Second Nature Climate Commitment. The master plan goals and recommendations reflect the objectives laid out in these documents.

Vision Statement

CSUMB's founding vision statement is a far-reaching and aspirational document that has served the university since its inception. Written in 1994, the statement is still highly relevant and speaks to many of the values that helped shape this master plan. The vision statement is located to the right. Key excerpts that are relevant to the master plan are highlighted.

Mission

CSUMB's mission is intended to guide the day-to-day operations of the university. Every faculty, staff, and administrator is encouraged:

> *"To build a multicultural learning community founded on academic excellence from which all partners in the educational process emerge prepared to contribute productively, responsibly, and ethically to California and the global community."*

California State University, Monterey Bay Vision Statement

California State University, Monterey Bay (CSUMB) is envisioned as a comprehensive state university which values service through high quality education. The campus will be distinctive in serving the diverse people of California, especially the working class and historically undereducated and low-income populations. It will feature an enriched living and learning environment and year-round operation. *The identity of the university will be framed by substantive commitment to multilingual, multicultural, gender-equitable learning.* ***The university will be a collaborative, intellectual community distinguished by partnerships with existing institutions both public and private, cooperative agreements which enable students, faculty, and staff to cross institutional boundaries for innovative instruction, broadly defined scholarly and creative activity, and coordinated community service.***

The university will invest in preparation for the future through integrated and experimental use of technologies as resources to people, catalysts for learning, and providers of increased access and enriched quality learning. The curriculum of CSUMB will be student and society centered and of sufficient breadth and depth to meet statewide and regional needs, specifically those involving both inner-city and isolated rural populations, and needs relevant to communities in the immediate Tri-County region (Monterey, Santa Cruz, and San Benito). The programs of instruction will strive for distinction, building on regional assets in developing specialty clusters in such areas as: the sciences (marine, atmospheric, and environmental); visual and performing arts and related humanities; languages, cultures, and international studies; education; business; studies of human behavior, information, and communication, within broad curricular areas; and professional study.

The university will develop a culture of innovation in its overall conceptual design and organization, and will utilize new and varied pedagogical and instructional approaches including distance learning. ***Institutional programs will value and cultivate creative and productive talents of students, faculty, and staff, and seek ways to contribute to the economy of the state, the wellbeing of our communities, and the quality of life and development of its students, faculty, and service areas.***

The education programs at CSUMB will:

- *Integrate the sciences, the arts and humanities, liberal studies, and professional training;*
- *Integrate modern learning technology and pedagogy to create liberal education adequate for the contemporary world;*
- *Integrate work and learning, service and reflection;*
- *Recognize the importance of global interdependence;*
- *Invest in languages and cross-cultural competence;*
- *Emphasize those topics most central to the local area's economy and ecology, and California's long-term needs;*
- *Offer a multicultural, gender-equitable, intergenerational, and accessible residential learning environment.*

The university will provide a new model of organizing, managing, and financing higher education:

- *The university will be integrated with other institutions, essentially collaborative in its orientation, and active in seeking partnerships across institutional boundaries. It will develop and implement various arrangements for sharing courses, curriculum, faculty, students, and facilities with other institutions.*
- *The organizational structure of the university will reflect a belief in the importance of each administrative staff and faculty member, working to integrate the university community across "staff" and "faculty" lines.*
- *The financial aid system will emphasize a fundamental commitment to equity and access.*
- *The budget and financial systems, including student fees, will provide for efficient and effective operation of the university.*
- *University governance will be exercised with a substantial amount of autonomy and independence within a very broad CSU systemwide policy context.*
- *Accountability will emphasize careful evaluation and assessment of results and outcomes.*

Our vision of the goals of California State University, Monterey Bay includes: a model pluralistic academic community where all learn and teach one another in an atmosphere of mutual respect and pursuit of excellence; a faculty and staff motivated to excel in their respective fields as well as to contribute to the broadly defined university environment. Our graduates will have an understanding of interdependence and global competence, distinctive technical and educational skills, the experience and abilities to contribute to California's high quality work force, the critical thinking abilities to be productive citizens, and the social responsibility and skills to be community builders. CSUMB will dynamically link the past, present, and future by responding to historical and changing conditions, experimenting with strategies which increase access, improve quality, and lower costs through education in a distinctive CSU environment. University students and personnel will attempt analytically and creatively to meet critical state and regional needs, and to provide California with responsible and creative leadership for the global 21st century.

~ September 27, 1994

Strategic Plan

Adopted in September 2008, the CSUMB 2008–2018 Strategic Plan identified goals and initiatives to support the long-term growth and success of the campus. At that time the goals were:

- Increase student success
- Continue to develop as a comprehensive state university
- Increase institutional capacity
- Attract, retain, and develop faculty, staff, and administrators

This strategic plan was updated in 2013. The goals were revised to the following themes:

- Student success
- Academic excellence
- Institutional capacity
- Regional stewardship

These strategic themes have informed the master plan vision, as well as the planning, design, and development strategies and recommendations embodied in this document. This master plan provides a physical framework to support these themes.

The campus has announced its intention to develop a new Strategic Plan for the coming 25th Anniversary in academic year 2019/20.

Student Success

Student success can be understood as meeting three goals: transitioning successfully into college, remaining enrolled and rising through a program of study, and graduating on time. These goals can be more readily realized if the campus is welcoming and accessible; if it creates an appropriate collegiate environment; and if it offers the range of facilities necessary for an institution of higher education. One strategy identified in the 2013 strategic plan is to "improve retention and graduation rates."

Placemaking, one of the core tenets of the master plan, will lead to a more welcoming, dynamic, and student-oriented campus that will support student success.

Academic Excellence

Academic excellence can be understood as the ability to perform and excel in scholastic activities. While academic excellence is associated with superior performance and high grades, it is more than this alone. Academic excellence strives to maximize each student's development, intellectual capacities, and contributions to society. Among several strategies, those most relevant to the master plan and the campus's built environment include:

- *"Develop academic centers of excellence"*
- *"Continue to support faculty, staff, and students (we note that 'faculty/staff working conditions are student learning conditions')"*
- *"Foster active and engaged learning with high-impact practices"*
- *"Increase utilization of our campus, including more support and opportunities for study abroad, as well as increased international student enrollment"*

This master plan recommends land use and planning strategies that will encourage the university to develop in ways that promote academic excellence.

Institutional Capacity

The strategic plan notes:

> *"CSUMB endeavors to build its institutional capacity by deliberately and carefully planning the judicious use of its human, technological, organizational, and resource assets and capabilities. Our goal is to maximize the number of people we serve and to meet the needs of the 21st century subject to our institutional constraints."*

Institutional capacity at CSUMB is currently stressed; space demands exceed the institutional resources. This insufficient capacity is reflected in high classroom utilization rates, waiting lists for residential halls, closed academic course sections, and myriad other factors.

The immediate needs are somewhat alleviated by recent and ongoing construction (Promontory housing, the Gambord Business and Information Technology Building, and both the Student Union and Academic III, which are currently in design), but this construction does not yet meet the needs of the university's current enrollment. In order to achieve the targeted enrollment growth to 12,700 FTE, the university will need to significantly expand its building inventory.

The strategic plan identifies strategies and sets goals that will be met through planning and development. These include:

- *"Ensure alignment of public and private resources with institutional priorities"*
- *"Continue improvement and construction of the physical campus"*
- *"Incorporate planning principles of sustainable design and operations, a strong campus core, valuing natural resources, efficient transportation and social interaction between the university and its environs"*
- *"Enhance use of academic space and academic week as enrollment grows"*

The master plan recommends land use and building strategies that will increase institutional capacity to accommodate 12,700 FTE, and will house 60 percent of students and 65 percent of faculty and staff on campus.

Regional Stewardship

CSUMB is dedicated to serving the diverse people of California, especially the working class and historically undereducated and low-income populations. The university's vision statement also charges the institution with economic stewardship of the region.

Since the university's founding in 1994, more than nine thousand students have graduated with bachelor's degrees and one thousand with graduate degrees, going on to careers in fields ranging from marine science to education to social work. Many of these graduates have stayed in Monterey County, contributing their skills and productivity to the region. As the only four-year public university in the county, CSUMB provides broadened access to high-quality higher education. While only 32 percent of enrolled undergraduates come from the tri-county area, 45 percent of CSUMB graduates remain in the tri-county area after graduation.

As envisioned in the Base Reuse Plan, CSUMB is also a major economic driver and a leader in the economic development of the region. The State of California established CSUMB as an economic development engine for Monterey County and the tri-county region. Indeed, CSUMB generates significant economic benefits that power the regional economy.

CSUMB's economic impacts begin with direct spending by the university itself, and its faculty, staff, and students, which then ripples through the economy, creating additional benefits through successive rounds of spending. On the whole, CSUMB contributes 2,900 jobs to Monterey County. This includes the university's employees residing in the county, as well as jobs resulting from spending by the university, faculty, staff, and students. University expenditures for wages and salaries, books and supplies, facilities operations, and other items related to ongoing operations and maintenance generate almost $230 million in total spending a year throughout the county. Student spending—on housing, transportation, retail, food and

drink—further bolsters the regional economy, resulting in annual economic impacts of $90 million in Monterey County (see the Appendix for additional economic impact information). Many CSUMB students also contribute to the workforce while enrolled, primarily working part-time in the service industries of the surrounding communities.

Beyond the economic benefits generated by university operations and student spending, CSUMB invests significant resources every year in major capital improvements. In fiscal year 2015/16, CSUMB budgeted $60 million for capital improvements, supporting local construction jobs and additional spending. The university's annual capital expenditures will increase as the university continues to grow.

CSUMB has a state-of-the-art fiber optic infrastructure that provides wireless and hardline high speed internet to the campus and some community partners, and supports regional cellular service. This infrastructure also allows for a number of commercial cellular providers to be located on Campus, serving both the Campus and the community at large. The network is both resilient in its redundancy and has a capacity well beyond the foreseeable future campus needs. The satellite CSUMB properties in Salinas and Ryan Ranch each have similar network capacity and network resource access. The university's network capacity and architecture allows CSUMB to maintain several agreements with adjacent agencies and municipalities enhancing community partnerships and resource sharing.

University administration and faculty have also had success in identifying community partners in order to align students' service and experiences with the needs and goals of the region, with the ultimate goal of impacting both student learning and institutional and community change. CSUMB is a winner of the President's Award for Higher Education Community Service and two CSUMB programs—CSin3 in collaboration with Hartnell College, and the Math Huge developmental programs—have won State of California awards for higher education innovation, receiving a total of $8 million in grants, more than any other state university.

Many centers and institutes complement academic programs and serve the local community, including:

- Bright Futures Education Partnership
- Center for Reading Diagnosis and Instruction
- Institute for Applied Marine Ecology
- Institute for Community Collaborative Studies
- Institute for Innovation and Economic Development
- Panetta Institute for Public Policy
- Service Learning Institute
- Small Business Development Center
- The Watershed Institute

CSUMB faculty have also contributed to regional projects and programs such as FORTAG, the Sustainable Hospitality program, and proposals for eco-tourism as a way to create more jobs in the region.

Second Nature Climate Commitment

The CSUMB president signed the American College and University Presidents' Climate Commitment, now known as the Second Nature Climate Commitment, in 2007. The university's ensuing CSUMB Climate Action Plan, completed in 2013, outlines policies and initiatives to achieve carbon neutrality by 2030, together with broader sustainability initiatives that address the following areas:

- Energy
- Water
- Transportation
- Waste
- Procurement
- Food
- People
- Communications
- Prosperity

The Climate Action Plan has provided background information and metrics, and served as a reference for establishing the sustainability goals and strategies considered in this master plan. The university will regularly update the Climate Action Plan to ensure that the campus is on track to meet carbon neutrality goals.

MASTER PLAN VISION

The vision for the master plan is one of sustainability. During the planning process, the larger master planning team identified nine sustainability priority elements, selected from a larger group of sixteen aspects of sustainability typically addressed on university campuses (see Figure 3.1). These were then distilled into three core sustainability tenets—placemaking, stewardship, and partnership—that guide the goals and recommendations of the master plan.

In conjunction, by drawing upon the existing CSUMB vision statement, mission, strategic plan, and input from an extensive community engagement process, several planning systems and key themes were developed to guide an updated vision of the master plan for the twenty-first century.

Figure 3.1: *Sustainability Priorities*

SOCIAL ELEMENTS

COMMUNITY

- Ensure that campus spaces are accessible to all, following a universal design standard
- Support a sense of belonging for all students
- Provide economic and social benefits to the local community

PLACE

- Design spaces that are responsive to the culture, history, traditions, and context of the campus and region

LEARNING

- Foster a culture of sustainability in students; facilitate more student engagement in sustainability to foster behavior change
- Make sustainability visible; utilize the campus environment as a learning laboratory

NATURAL ENVIRONMENT ELEMENTS

WATER

- Reduce reliance on potable water and design infrastructure for compatibility with future non-potable water goals

ENERGY

- Implement 2013 Climate Action Plan goal of carbon neutrality by 2030
- Create an infrastructure plan to achieve net zero energy

HABITAT/ BIODIVERSITY

- Conserve and enhance native and rare species on campus
- Connect with the larger Fort Ord region to create wildlife corridors

BUILT ENVIRONMENT ELEMENTS

BUILDINGS

- Design buildings to meet the highest standards, including net zero energy
- Educate building users and visitors in the benefits of energy-conscious design

MOBILITY

- Prioritize bicycles and pedestrians on campus
- Increase TDM measures to reduce vehicle trips to campus
- Improve the campus bicycle system
- Create a pedestrian-only campus core

ECONOMIC ELEMENTS

ECONOMIC DEVELOPMENT

- Promote partnerships that benefit CSUMB and the local community and region
- Support academic programs that address the needs of the region

These nine elements were selected from a larger group of sixteen aspects of sustainability typically addressed on university campuses. The master planning process at CSUMB included a prioritization exercise conducted with the Master Plan Sustainability Committee that resulted in nine sustainability elements chosen as priorities for the master plan. Those nine elements are displayed here and list their accompanying objectives.

Three Tenets of Sustainability

The three tenets guide the master plan components but also help express the interconnections among the elements. For example, the design of a new building achieves placemaking by creating community and learning spaces for people to gather and interact; it practices stewardship by reducing the consumption of resources and by connecting building occupants to the natural landscape through daylighting and landscaping; and it considers partnership options to complement regional development.

At its heart, the 2017 Master Plan provides a framework for the physical manifestation of sustainability. By fostering partnerships, honoring and respecting our natural resources, and creating a welcoming environment, CSUMB will continue to flourish long into the future.

Each chapter of the Master Plan integrates sustainability into the goals and recommendations using the three tenets, described as follows:

Placemaking - Create interesting, pleasurable and welcoming community spaces that attract people, encourage interaction, or allow movement at a comfortable pace, while promoting health, happiness, and well-being.

This tenet applies to the creation of a unique campus character and identity through the buildings, formal and informal outdoor spaces, and the pathways, bikeways, and roadways that connect those spaces. It produces a sense of community on campus and helps "form the nucleus of the future Fort Ord community envisioned to grow at this site" (Base Reuse Plan, page 8) for both the campus and the former Fort Ord.

Stewardship - Conserve our natural resources and ecosystem services; connect people to the natural environment.

While the Strategic Plan's Regional Stewardship theme focuses on the economic stewardship of the region, the sustainability tenet relates to environmental stewardship.

The natural environment is central to the campus identity at CSUMB. The CSUMB community connects with the natural environment directly when hiking through Fort Ord, surfing in the Monterey Bay, or walking through the oak woodlands on the way to class. In addition, they connect to the environment indirectly when turning on the faucet or the lights, or driving or bicycling to class. This master plan incorporates direct and indirect stewardship for the environment.

Partnership - Support the redevelopment of Fort Ord by actively fostering partnerships and supporting high-quality economic development opportunities.

As envisioned by the Base Reuse Plan, CSUMB serves as a catalyst for economic development in the region. As one of the largest employers in the region, CSUMB will expand its attractiveness as an economic partner and will work with others to develop mutually beneficial amenities and economic returns for the campus and Fort Ord community.

CAMPUS MASTER PLANNING SYSTEMS

The master plan is organized around several planning systems, which together form the physical elements of the campus. The strategies for each system are driven by the three tenets of sustainability: placemaking, stewardship, and partnership. These are generally organized by chapter and key themes, and include the following:

Land Use: Cluster and densify campus activity

Open Space: Connect and enhance campus open space

Mobility: Prioritize active transportation modes

Water: Respect scarcity and manage run-off

Energy: Adapt with technology at a district scale

Design Themes: Enhance campus identity

Land Use: Cluster and Densify Campus Activity

Figure 3.2: *Illustrative Plan*

Open Space: Connect and Enhance Campus Open Space

Figure 3.3: *Bicycle and Pedestrian Path Rendering*

Mobility: Create a Pedestrian Prioritized Campus

Figure 3.4: *Inter-Garrison Road at Fifth Avenue Rendering*

Water: Respect Scarcity and Manage Run-off & Energy: Adapt with Technology at a District Scale

Figure 3.5: *Residential Neighborhood Rendering*

Design Themes: Enhance Campus Identity

Figure 3.6: *Divarty Mall Rendering*

4

PROGRAM

INTRODUCTION

The master plan program outlines the space and facility needs for the university's academic, student life, administration, residential, athletics, recreation, and support functions. It includes the projects identified in the university's Five-Year Capital Improvement Program 2016/17 through 2020/21 (CIP), plus the additional space and facility needs to support planned growth to 12,700 FTE, with housing for 60 percent of students, and 65 percent of faculty and staff. The master plan program was developed with the assumption that current capital projects will address space deficiencies for current enrollment, and that additional space will be needed to support enrollment growth.

BACKGROUND

Methodology

Space needs for 12,700 FTE were projected by using the CSU System's State University Administrative Manual (SUAM) guidelines and Council of Education Facility Planners International (CEFPI) guidelines. The SUAM guidelines provide a methodology to project space needs for academic, administration, and support facilities based on enrollment and other factors. The CSU System determines state-allocated capital funding based upon SUAM's space needs methodology. The CEFPI guidelines are nationally recognized space planning metrics that were used to project space needs for spaces either not addressed by the SUAM guidelines, or for non-state funded capital projects, such as student life, recreation, and community space.

Assumptions

The master plan program was developed based on the student enrollment and supporting faculty and staff numbers summarized in the following tables. Data for current enrollment and faculty and staff cohorts was obtained from the 2014/15 University Factbook. For the planned enrollment target of 12,700 FTE, the proportion of undergraduate to graduate students was assumed to remain constant. Future faculty and staff FTE and headcount were assumed to grow proportionally relative to current student-to-faculty and student-to-staff ratios.

Table 4.1: *Student Enrollment (2014/15)*

Current (from Factbook)	Undergraduate	Post-Bac and Graduate	Total Students
Headcount	6,229	402	**6,631**
FTE	6,028	283	**6,311**
Future			
Headcount	6,306	407	**6,713**
FTE	6,103	286	**6,389**
Current + Future			
Headcount	12,535	809	**13,344**
FTE	12,131	569	**12,700**

Table 4.2: *Faculty and Staff Headcount and FTE (2014/15)*

Current (from Factbook)	Faculty	Staff	Total
Full-time	122	479	**601**
Part-time*	309	110	**419**
Headcount	431	589	**1,020**
FTE**	225	516	**741**
Future* **			
Headcount	436	596	**1,033**
FTE	228	522	**750**
Current + Future			
Headcount	867	1,185	**2,053**
FTE	453	1,038	**1,490**

*Part-time faculty assumes that coaches, lecturers, librarians and faculty support are part-time
**FTE faculty and staff calculated at ratio of 3 part-time faculty and staff per FTE student
***Future applies same ratio of headcount and FTE to enrollment as current

PROGRAM DEVELOPMENT

Existing Campus Space

The campus currently has approximately 1.27 million gross square feet (GSF) of academic, administration, student life, and recreation space. There are 3,320 student beds on the Main and East Campuses in facilities that include 460 residential units in the East Campus apartments. Occupancy of these apartments varies from two to four or more students per apartment. The newly constructed Promontory housing, located along Eighth Street, provides up to 789 student beds. East Campus also provides 742 residential units for faculty, staff, and community partners.

Planned Capital Projects

The CIP contains several projects, both state funded and non-state funded, that are needed to support current campus enrollment. State funded projects include two new academic buildings. Non-state funded projects include additional phases of student housing with a total of 600 beds. Approximately 460 units of East Campus housing will become available for faculty and staff when traditional undergraduate housing is relocated to the main campus. In addition, a student union, recreation center, a child care center, and two storage facilities are included in the CIP. Two institutional partnerships are in various stages of planning: the Panetta Institute for Public Policy, and the Monterey Bay Charter School.

The university has secured funding for one of the academic buildings—Academic III—and the student union. Collaborative design/build teams have been retained for both projects.

Table 4.4 summarizes the Five-Year Capital Improvement Program projects.

Table 4.3: *Existing Campus Academic and Residential Space*

EXISTING CAMPUS SPACE	Beds	GSF
MAIN CAMPUS ACADEMIC, ADMINISTRATIVE, STUDENT LIFE AND RECREATION FACILITIES		**1,270,000**
STUDENT HOUSING		
Main Campus	1,811	**220,000**
East Campus Frederick Park		**414,494**
260 units with 2 students each	520	
200 units with 1 student each	200	
Promontory	789	**227,600**
TOTAL STUDENT HOUSING	**3,320**	**895,081**
	Units	**GSF**
FACULTY AND STAFF HOUSING		
East Campus Schoonover Park 1 (Rental)	589	**730,395**
East Campus Schoonover Park 2		
Townhouses (Rental)	87	**Included***
Houses and Townhouses (For Sale)	66	**110,271**
TOTAL FACULTY AND STAFF HOUSING	**742**	**840,666**

*GSF for Schoonover Park 2 Townhouses is included in Schoonover Park 1 number.

Program for Growth

CSUMB has set a goal to approximately double current enrollment to 12,700 FTE. The university plans to provide housing for 60 percent of students (approximately 7,000 beds) and 65 percent of staff and faculty (approximately 950 units). CSUMB will also continue to work with the surrounding jurisdictions to encourage local housing development that best supports off-campus housing needs for students, faculty, and staff. It should be noted that some student housing demand is offset by students who remain at home while attending school.

The growth-related space and facility needs generated by the SUAM and CEFPI space planning guidelines were translated into a program of academic and administrative support, residential, campus life, recreation, and facilities (operations and maintenance) space. This includes accommodation of residence halls and classroom buildings, and also a rich mix of amenities such as museums, performing arts centers, ethnic centers, faculty lounges and work spaces, child care centers, and greenhouses. It also includes unique project ideas put forward by the campus community such as health and wellness zones, eco-recreation, and tiny house projects.

Existing and proposed campus spaces will support a diverse population of students, faculty, and staff, from a number of geographic origins, ethnicities, faiths, physical and mental abilities, and political views.

Outdoor facility program needs were generated using the SUAM guidelines and include athletics and recreation fields, as well as corporation yard space. The guidelines define the overall acreage for these land uses for a given enrollment, and do not contain a specific breakdown of fields by type. For CSUMB's planned enrollment, the guidelines recommend 34 acres of outdoor athletics and recreation field space, and one acre of corporation yard space.

CSUMB currently has allocated 70 acres for athletics and recreation facilities. It was concluded that there is more than sufficient space overall for planned growth enrollment. The program of athletics and recreation fields

Table 4.4: *Planned Capital Projects*

CAPITAL PROJECTS	ASF	GSF
Academic And Support Buildings		
Academic Building III	31,800	**50,800**
Academic Building IV	45,500	**72,200**
Subtotal	**77,300**	**123,000**
Student Life		
Student Union	58,600	**80,000**
Childcare Center	14,500	**23,000**
Subtotal	**73,100**	**103,000**
Recreation		
Recreation Center	51,800	**70,000**
Subtotal	**51,800**	**70,000**
Facilities		
Storage Facility	23,750	**25,000**
Storage Facility	23,750	**25,000**
Subtotal	**47,500**	**50,000**
Institutional Partnerships		
Panetta Institute for Public Policy	39,500	**64,000**
Monterey Bay Charter School	**N/A**	**60,000**
Subtotal	**N/A**	**124,000**
TOTAL NON-HOUSING CAPITAL PROJECTS	**N/A**	**470,000**
Student Housing		
Phase IIb (400 beds)	**104,000**	**160,000**
Phase III (600 beds)	**156,000**	**240,000**
TOTAL STUDENT HOUSING CAPITAL PROJECTS	**260,000**	**400,000**

ASF: Assignable Square Feet. GSF: Gross Square Feet.

by type was developed through evaluation of CSU standards, referencing comparable CSU schools, and conversations with the university's Director of Athletics concerning current and future needs. The outdoor facilities program for enrollment at 12,700 students is summarized in Table 4.7. Complementing these facilities are possible outdoor facilities developed through public-private partnerships. CSUMB has explored potential partnerships to develop additional athletics and recreation fields that could be shared with the broader Monterey Bay community or other institutions. The master plan identifies areas for potential athletics and recreation expansion if a partnership opportunity emerges.

The program assumptions, needs, and space planning guidelines were developed into programs outlining the amount of space required for each function. Academic scheduling should be optimized by working with campus stakeholders to ensure class schedules and work schedules efficiently use space to the maximum extent possible.

Land Needs

The master plan program was used to estimate overall land needs for planned growth. The land needs estimates were developed by applying a floor area ratio (FAR) of 1.0 to the aggregate non-residential program and 0.75 to the residential program with a maximum height of five stories. These ratios are consistent with other CSU and University of California campuses, and will support the creation of a more compact, walkable campus environment.

The land needs for planned growth are summarized in Table 4.8.

Table 4.5: *Academic Program for Growth*

ACADEMIC PROGRAM FOR GROWTH	Floors	ASF	GSF
Academic And Support Buildings			
Academic V	3.5	49,858	**76,704**
Academic VI	3.5	49,858	**76,704**
Academic VII	3.5	49,858	**76,704**
Academic VIII	3.5	49,858	**76,704**
Greenhouses	1	1,344	**1,344**
Subtotal		**200,776**	**308,160**
Administration Building	**3.5**	**50,345**	**77,454**
Student Life			
Student Life Space	2	94,557	**145,473**
Campus Arts and Auditorium	2	53,489	**82,291**
Subtotal		**148,046**	**227,764**
Recreation			
Recreation Center Addition	2	41,973	**64,574**
Wellness Center	2	20,000	**30,769**
Subtotal		**61,973**	**95,343**
Facilities Building	**1**	**15,334**	**23,590**
TOTAL ACADEMIC GROWTH		**476,474**	**732,311**

Table 4.6: *Student Housing Program for Growth*

STUDENT HOUSING PROGRAM FOR GROWTH	Floors	Beds	ASF	GSF
Student Housing IV	4	600	130,000	**200,000**
Student Housing V	4	600	130,000	**200,000**
Student Housing VI	4	600	130,000	**200,000**
Student Housing VII	4	600	130,000	**200,000**
Student Housing VIII	4	600	130,000	**200,000**
Student Housing IX	4	600	130,000	**200,000**
Student Housing X	4	600	130,000	**200,000**
TOTAL STUDENT HOUSING GROWTH		**4,200**	**910,000**	**1,400,000**

Table 4.7: *Outdoor Athletics and Recreation Program*

OUTDOOR ATHLETICS AND RECREATION PROGRAM FOR GROWTH	Facilities
Soccer Field*	**5**
Track and Field	**1**
Baseball Field	**1**
Softball Field	**1**
Tennis Courts	**10**
Swimming Pool	**1**
Olympic Pool	**2**
Field House	**1**

*Soccer fields are located in the Athletics and Recreation District, with the exception of one field located north of the campus core near Eighth Street.

Notes: Figures include existing facilities.

Additional basketball, sand volleyball and other recreational courts are provided in the residential neighborhoods.

Table 4.8: *Land Needs for Growth*

LAND NEEDS	GSF	FAR	Land Area
Planned Capital Projects			
Academic and Support Buildings	123,000	1	**2.8**
Student Life	103,000	1	**2.4**
Recreation	70,000	1	**1.6**
Facilities	50,000	1	**1.1**
Institutional Partnerships	124,000	1	**2.8**
Total Planned Capital Projects	**470,000**		**10.7**
Growth-related Program			
Academic and Support	308,160	1	**7.0**
Administration	77,454	1	**1.8**
Campus Life	227,764	1	**5.2**
Recreation	95,343	1	**2.2**
Facilities	23,590	1	**0.5**
Total Growth Program	**732,311**		**16.7**
Total Non-Residential Program	**1,202,311**		**27.4**
Student Housing			
Capital Plan	400,000	.75	**12.2**
Growth-related Housing	1,400,000	.75	**42.9**
Total Student Housing Program	**1,800,000**		**55.1**
Total Master Plan Program	**3,002,311**		**82.5**

Note: Future athletics and recreation land needs are accommodated in the existing 70-acre Athletics and Recreation District.


VII · VIII · IX

5

LAND USE

CLUSTER AND DENSIFY CAMPUS ACTIVITY

INTRODUCTION

The land use plan defines and locates the facilities required to accommodate growth from the current 6,631 students (fall 2015) to 12,700 students, and it reserves space for physical growth into the future. Land use planning defines the areas in which future development will take place to create an inviting community environment (placemaking). The density of development ensures the conservation of land and resources (stewardship) and defines the areas in which partnership opportunities may take place to benefit and connect the campus and regional communities (partnerships).

This chapter reviews the existing conditions of the campus, and details how the program informs land use decisions. The following goals were identified to support the three tenets of sustainability and the master plan.

GOALS

Accommodate growth to 12,700 students

Design the land use plan to accommodate CSUMB's anticipated enrollment growth to 12,700 students.

House 60% of FTE students and 65% of FTE staff and faculty

Provide a range of housing types for students, faculty, and staff to improve campus life, provide affordable housing options, decrease traffic, and reduce greenhouse gas emissions.

Create a compact campus with increased density in the campus core

Create a vibrant university campus that fosters interaction and collaboration by consolidating facilities, in particular academic facilities, in the campus core.

Support opportunities to develop partnerships

Seek partnership opportunities to develop facilities that serve both CSUMB and the local community.

Establish a long-term framework for growth beyond 12,700 students

Ensure that land is used efficiently and doesn't preclude future enrollment growth.

BACKGROUND

Campus Layout

The legacy of the former military use is apparent in the existing land use structure. Designed to accommodate a large military population and facilitate heavy vehicular movement, the buildings are spread out over wide distances on campus. The sprawling layout is a challenge for CSUMB, as students and faculty members try to cross these long distances between facilities during the ten-minute class change.

Many of the converted military buildings are not well suited to adaptive re-use and do not function well as academic or student life buildings. By contrast, the academic buildings constructed since the campus was established, such as the Chapman Science Academic Center, the Tanimura & Antle Family Memorial Library, and the Joel and Dena Gambord Business and Information Technology Building, are well designed to meet the academic needs of the programs they house and are concentrated within the campus core to create a critical building mass and a more cohesive campus environment.

Student housing is located in several areas, including the campus core, North Quad Housing (north of Inter-Garrison Road), Promontory (south of Eighth Street), and East Campus Housing. East Campus Housing is located about one and a half miles east of the campus core, north of Inter-Garrison Road. East Campus Housing primarily serves faculty, staff, and some local community partners. However, 460 units in East Campus currently house students. This population consists of traditional, graduate, and married students, and students with families. East Campus Housing and the Promontory are located beyond a quarter-mile walking distance, creating connectivity difficulties.

Existing athletics and recreation facilities are generally located on the west end of campus between Second Avenue and General Jim Moore Boulevard, south of Inter-Garrison Road. One additional student recreation field is located north of North Quad Housing. The Otter Sports Center and outdoor facilities (Otter Soccer Complex, Aquatic Center, and baseball and softball fields) are currently shared between athletics and recreation.

Figure 5.1: *Existing Building Use*

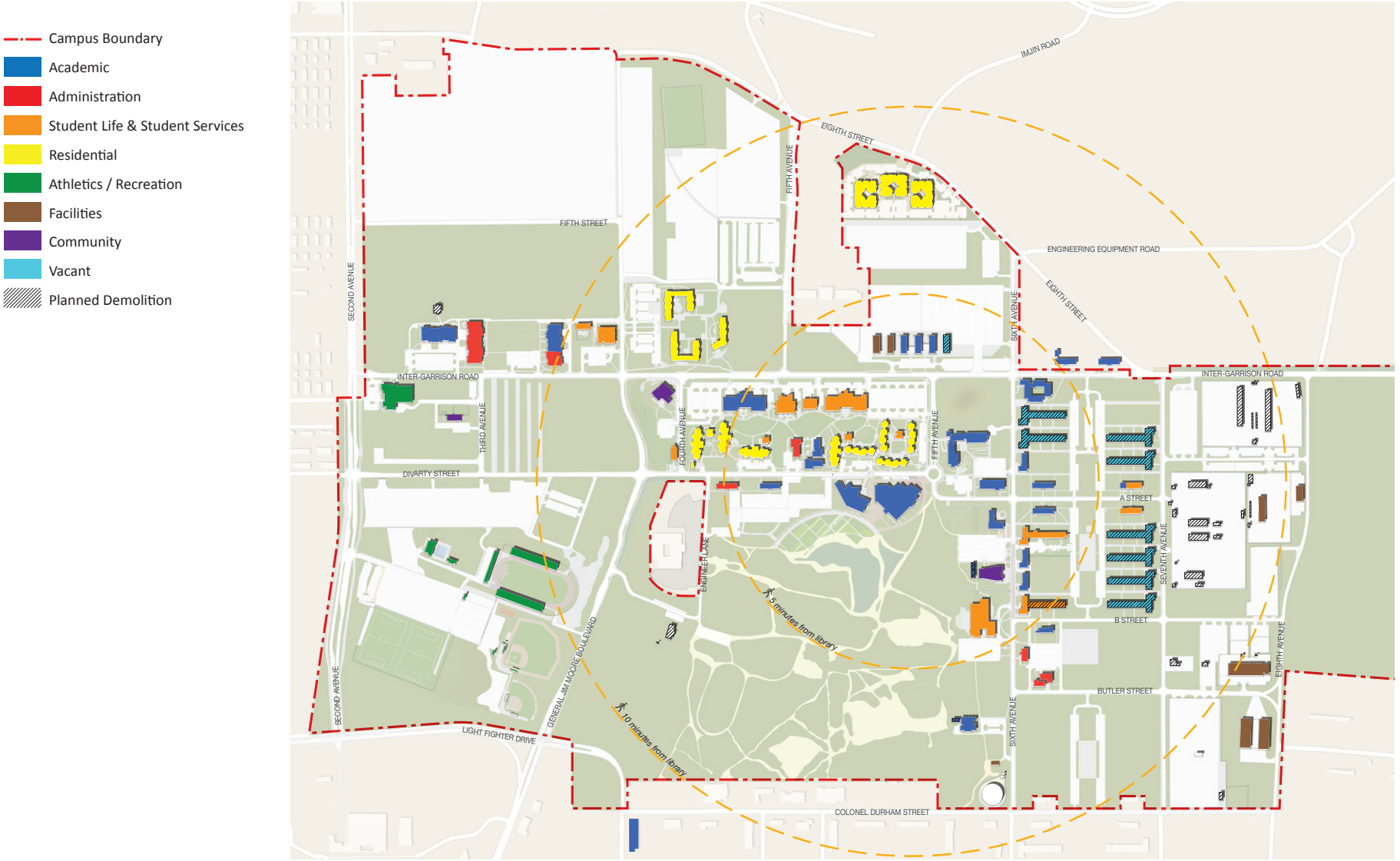


Figure 5.2: *Existing Building Condition*

Surface parking lots are located throughout the campus. Many paved lots outside of the campus core are closed because of limited enforcement and maintenance budgets. Within the campus core, small lots create a fragmented pattern of land uses and bring an undesirable and unsafe volume of traffic into contact with pedestrians and cyclists.

Large areas of land on the CSUMB campus are vacant or underutilized. Another legacy of the former military base, most of these areas are paved and falling into disrepair. While these areas provide space for future expansion, they also detract from the sense of place of the campus.

Three adjoining properties are not owned by the university, including the Monterey Veterans Administration (VA) Clinic, the City of Marina Corporation Yard, and the Golden Gate University parcel. The university may be interested in acquiring these parcels at some point in the future.

Building Condition

The majority of the 66 occupied army buildings are aged but, in general, serviceable. The university acquired the facilities when most were at least thirty years old, and in the intervening twenty years, many have seen large-scale renovations. Others need additional maintenance and repair. Several of the buildings will soon require significant renovations and do not meet the university's needs. These buildings are identified for eventual replacement. The university completed a comprehensive building conditions survey in 2015 that categorizes the existing buildings as follows: good condition, needs renovation, and eventual replacement. (See Figure 5.2)

The current stadium field is not appropriately sized to host intercollegiate soccer or track events. In addition, analyses have shown the stadium to require significant accessibility, exiting and hazardous material abatement improvements to make the space occupiable. Therefore, this plan recommends replacing the current stadium and field with facilities designed to specifically meet future athletic and student serving needs.

Planned Demolition

The final fifty of 324 derelict military buildings on campus are currently being demolished. Like the previous 274 buildings that have been removed

The Science and Academic Center (upper), and Library (lower) are two of the newer buildings on campus, and are well-suited to the needs of students..

Campus and Community Comments

The CSUMB campus and community constituents commented on the quality and character of the campus setting at open houses and workshops that were held during the master planning process. The following is a summary of the key themes that emerged from these meetings:

- CSUMB's location and environment make the campus unique
- The campus currently has no central "heart"
- It is difficult to travel between some classes within the ten-minute class change time
- Commuters need an indoor lounge space - a commuter "living room"
- Campus land uses should make connections to the surrounding community and take planned developments into consideration
- There is a desire for more on-campus activities, such as concerts and nightlife
- Students need more meeting and gathering spaces, both indoor and outdoor
- Additional dining options with greater variety are desired, including late night food options and a grocery store

over the last ten years, the last fifty are abandoned or being used as temporary storage. Renovations that meet campus and state codes were found to be cost-prohibitive. Removal of these buildings will be a significant visual improvement for the campus, and will open up the remaining property for future development.

RECOMMENDATIONS

Consolidate academic buildings within the campus core

Existing academic buildings are dispersed throughout campus. This creates a challenge for students to get to class within the ten-minute class change. Locating new facilities, in particular academic, in the campus core will alleviate the distance issue and will help create a more active and vibrant campus core.

Infill mixed uses within the campus core

A variety of building types exists in the core today, including academic, residential, and student life. This creates activity in the core throughout the day and night. Continuing to mix uses as new facilities are constructed will enhance vitality in the campus core.

Integrate Promontory housing with future student housing

Promontory housing is currently somewhat isolated from the campus core. Developing additional housing between the campus core and Promontory will help to integrate and connect Promontory to the main campus.

Embrace partnerships and local development of campus amenities

As the properties adjacent to the campus develop, they will provide amenities for students, faculty, and staff. Campus planning should connect to these new developments, and should embrace and reinforce community revitalization by applying the Regional Urban Design Guidelines (RUDG) to the campus edges.

Transform parking in the core into future development sites

Existing parking lots in the core will be transformed into future development sites to decrease walking times between classes and improve bike and pedestrian safety by eliminating vehicle parking destinations.

Preserve vacant and underutilized sites for future development

As the campus develops, care should be taken to use land efficiently and build in a compact manner so as not to preclude future enrollment growth.

LAND USE PLAN

The 2017 master plan builds on and densifies the existing pattern of land uses, while shifting the overall campus center of gravity towards the north to better integrate Promontory housing with the campus core. Cars and parking are separated from the pedestrian oriented campus core.

Academic and student life uses are further consolidated in the campus core to enhance vitality in this area by increasing the opportunity for student interactions. The existing and inherited student housing in the campus core remains for the foreseeable future as part of a mixed-use core where students live, study, and socialize 24/7.

The plan expands the existing student housing clusters at North Quad Housing and Promontory to create residential neighborhoods; a third residential neighborhood is sited east of Sixth Avenue. The athletics and recreation areas are expanded and reorganized. Future development sites beyond the scope of this master plan, as well as areas for future institutional partnership sites, are also identified.

Each land use identified in the Land Use Plan is shown in detail for the main campus in Figure 5.3 and is briefly described below, with a discussion on intended uses in each designation. Figure 5.4 shows the land uses for the entire campus, including East Campus Housing. Figure 5.5 indicates how each building is used.

Academic and Administration

The academic and administration land use includes academic uses, support services, the library, performing arts facilities, the Alumni and Visitor Center, and other administrative functions. They are concentrated within the campus core and along Sixth Avenue to facilitate a ten-minute class change and activate the campus core. They will continue to be housed in a combination of existing and new facilities for the foreseeable future. Existing academic uses that are currently outside the ten-minute walking radius will be relocated to the campus core as new space becomes available.

Student Life and Services

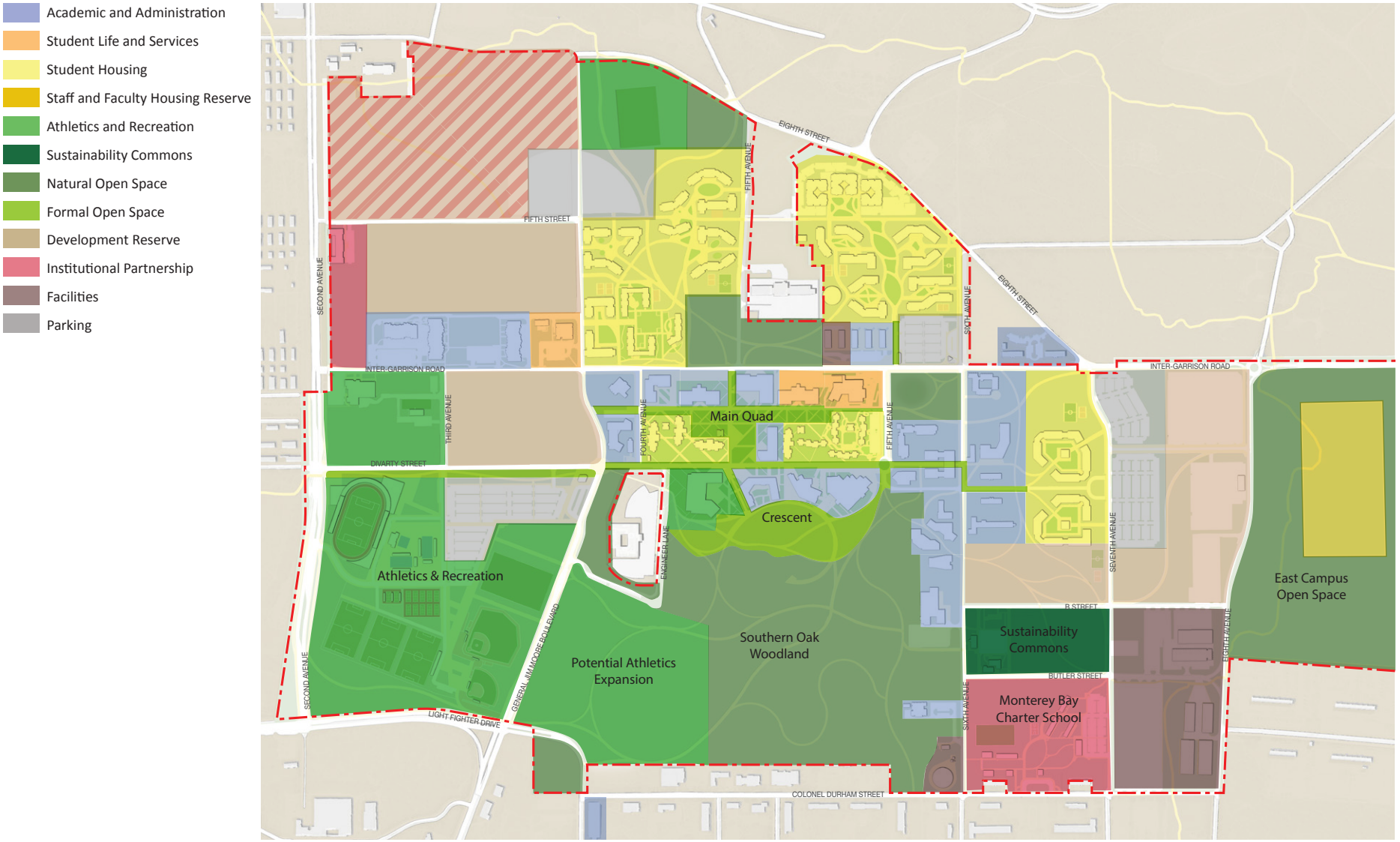
The master plan continues to concentrate student life and student services in the campus core. Student life functions include the new student union, dining facilities, student wellness, and other student-oriented facilities such as the Black Box Cabaret. Services that are currently located outside of the campus core will be relocated to the core over time. Specific dining services are not identified in this master plan; however, a Dining Services Plan is recommended as a follow up to this plan to identify future capacity and needs for dining options on campus.

The master plan preserves the site identified in the 2007 master plan for a new childcare center along Inter-Garrison Road, west of General Jim Moore Boulevard. Additional services, such as elder care and partnerships with after school care, will be considered with the construction of new facilities.

Student Housing

The plan concentrates student housing into four neighborhoods based upon existing housing locations. The existing housing in the campus core remains; the North Quad Housing neighborhood is expanded to the west and north; Promontory is integrated into the campus with additional housing on the vacant land to the south; and a new housing neighborhood is located east of Sixth Avenue. Each of these areas becomes a distinct neighborhood with a sense of community and outdoor amenities such as informal recreation fields and courts. East Campus Housing, which currently houses approximately 720 students, will be converted to exclusive use by faculty, staff, students with families, and if space permits, community partners.

Figure 5.3: *Main Campus Land Use Plan*



Staff and Faculty Housing

East Campus Housing is made up of 460 units in Fredericks I and II (currently student housing) and 742 units in Schoonover I and II (staff, faculty, and community partners housing). To house sixty-five percent of staff and faculty, the campus will need to dedicate an additional 230 units for staff and faculty use. This will be accomplished by moving 460 units of student housing to the Main Campus and providing this housing to staff and faculty, or by renting some units by the bed instead of by the unit for those who would enjoy communal living.

Athletics and Recreation

The Athletics and Recreation District consists of the area currently containing the majority of the university's existing athletics and recreation facilities, southwest of the campus core. This site is expanded and improved to become a more coherent sports complex that can accommodate a range of sports and campus events. One large recreation field is located outside the district on the northern edge of campus close to North Quad Housing and projected future residence hall development. The plan also identifies opportunities for potential future athletics and recreation expansion east of General Jim Moore Boulevard and north of Divarty Street.

Outdoor facilities within the athletics and recreation area will be shared between the athletics and recreation programs on campus. In addition, facilities could continue to be shared with the broader Monterey Bay community through public partnership arrangements.

Locating the new Student Recreation Center on the Divarty Mall will separate indoor athletics uses (at the Otter Sports Center) from recreation uses. The recreation center will be built in two phases, with an initial phase of approximately 30,000 GSF.

Sustainability Commons

The Sustainability Commons is located between Sixth and Seventh Avenues between Butler and B Streets. The Commons is proposed as an indoor-outdoor learning laboratory that creates opportunities for student study and research, with a focus on sustainability initiatives. The existing Watershed Institute programs and facilities may be housed in the Sustainability Commons.

A CSUMB student organization currently tends a small community garden; this garden is considering an aquaponics project that would provide food for the campus community. The amount of space dedicated to food production should be guided by best practices and ability of the campus and the university's food service provider to support production.

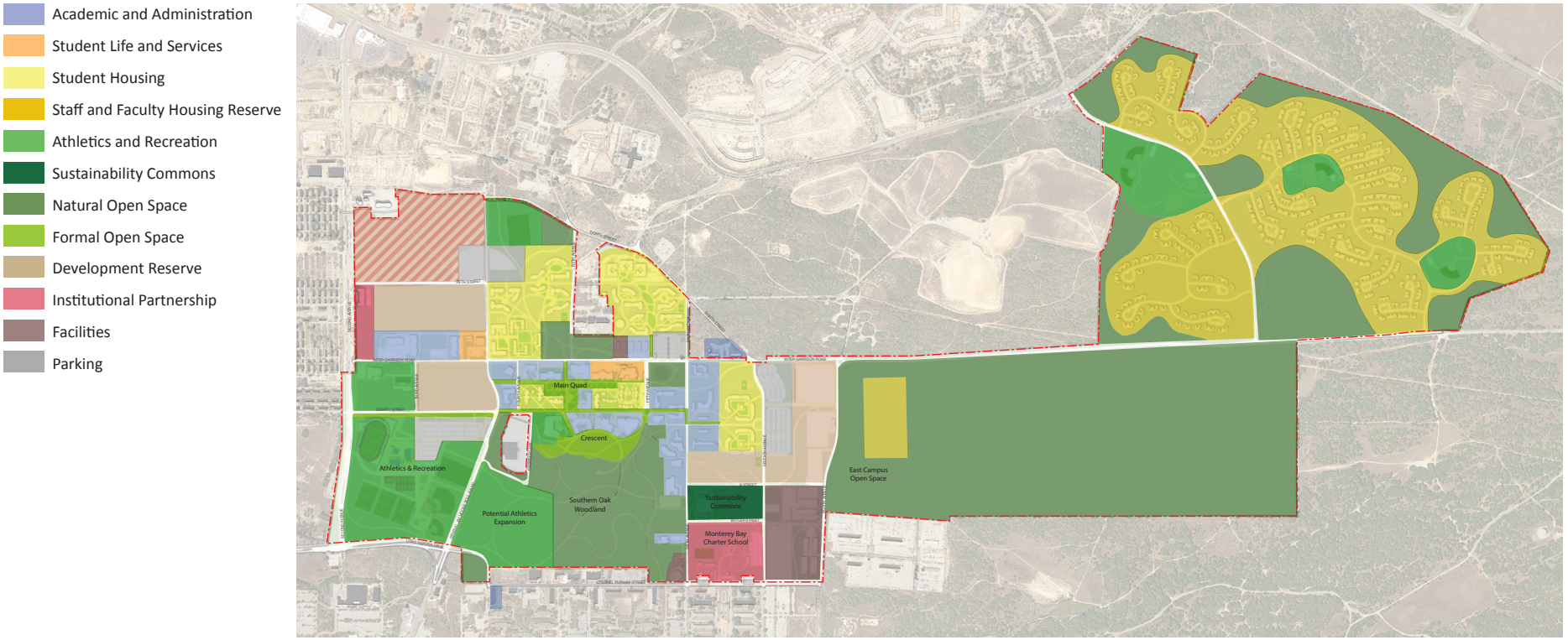
Natural Open Space

Several areas on campus are designated as natural open space. Existing uses include informal open space and natural areas, stormwater management, the regional trail network, and informal recreation such as disc golf and a rope challenge course. Significant development is not anticipated for these areas, although additional uses considered compatible with the natural open space character, such as recreation facilities, may be considered in the future. Chapter 6: Open Space provides further detail on how these areas fit in with the broader open space concept.

Formal Open Space

The formal campus open spaces are the more formally designed gathering spaces on campus. Generally located in the campus core, they accommodate a variety of uses such as large gatherings, student organization promotion, graduation, socializing, performances, and studying. The formal open space areas include the Main Quad, Divarty Mall and extension to Second Avenue, and the Crescent and Amphitheater.

Figure 5.4: *Overall Campus Land Use Plan*



Development Reserve

With the creation of a denser campus core there will be areas of campus available for future use. Generally located on the edges of campus, these areas are not needed to accommodate the 12,700-student enrollment goal, but could be used for institutional partnerships and may be needed for long-term growth beyond 12,700 students.

Institutional Partnerships

Several areas on campus have been identified as good locations for institutional partnerships. Institutional partnerships, as defined by CSU executive order, are projects involving public-private or public-public partnerships and long-term contractual relationships that use or develop CSU real property, or property to be acquired by CSU, to further the educational mission of the campus through the acquisition of physical assets, income, or educationally related opportunities for students and faculty. Often, these projects involve third-party development contracts working through a ground lease with an approved CSU auxiliary organization. Another version of institutional partnership involves development on private property, which will be affiliated with the campus and involve affiliation agreements with the campus or its auxiliaries. One partnership is already established: the Panetta Institute for Public Policy. The Institute has had a long-standing affiliation with the CSU and has been housed in an existing facility on campus. The Panetta Institute is planning to construct a new facility along Second Avenue.

The Monterey Bay Charter School has proposed a new campus for their school on the CSU Monterey campus block between Colonel Durham Street and Butler Street, and Sixth and Seventh Avenues. The school will include kindergarten through eighth grade, providing additional educational options for the children of CSUMB staff and faculty.

The CSU Board of Trustees has granted developers permission to investigate the expansion of the campus's existing sports and athletics complex. Currently in its earliest programming stages, the private firm is working with CSUMB to identify potential athletic and recreational facilities that will support the campus's mission as well as serve the growing need for athletic facilities among the tri-county communities and beyond.

CSUMB is actively seeking other beneficial public and private partnership opportunities that will serve both CSUMB and the local community. These institutional partnership land use locations are sited on the campus edges, in particular along Second Avenue, where they interface most effectively with the surrounding communities and support local community revitalization. Potential uses may include housing, performance venues, research centers, institutes, and not-for-profit organizations. See the appendix for additional information relating to public-private partnerships and the economic impact the campus has on the region.

Facilities

The facilities land use encompasses the facilities operations and support buildings and other campus infrastructure-related buildings. Facilities are appropriately located on the campus edge, primarily between Seventh and Eighth Avenues, and B Street and Colonel Durham Street. These facilities include several utility buildings, storage buildings, offices, shops, and the 1MW solar panel array.

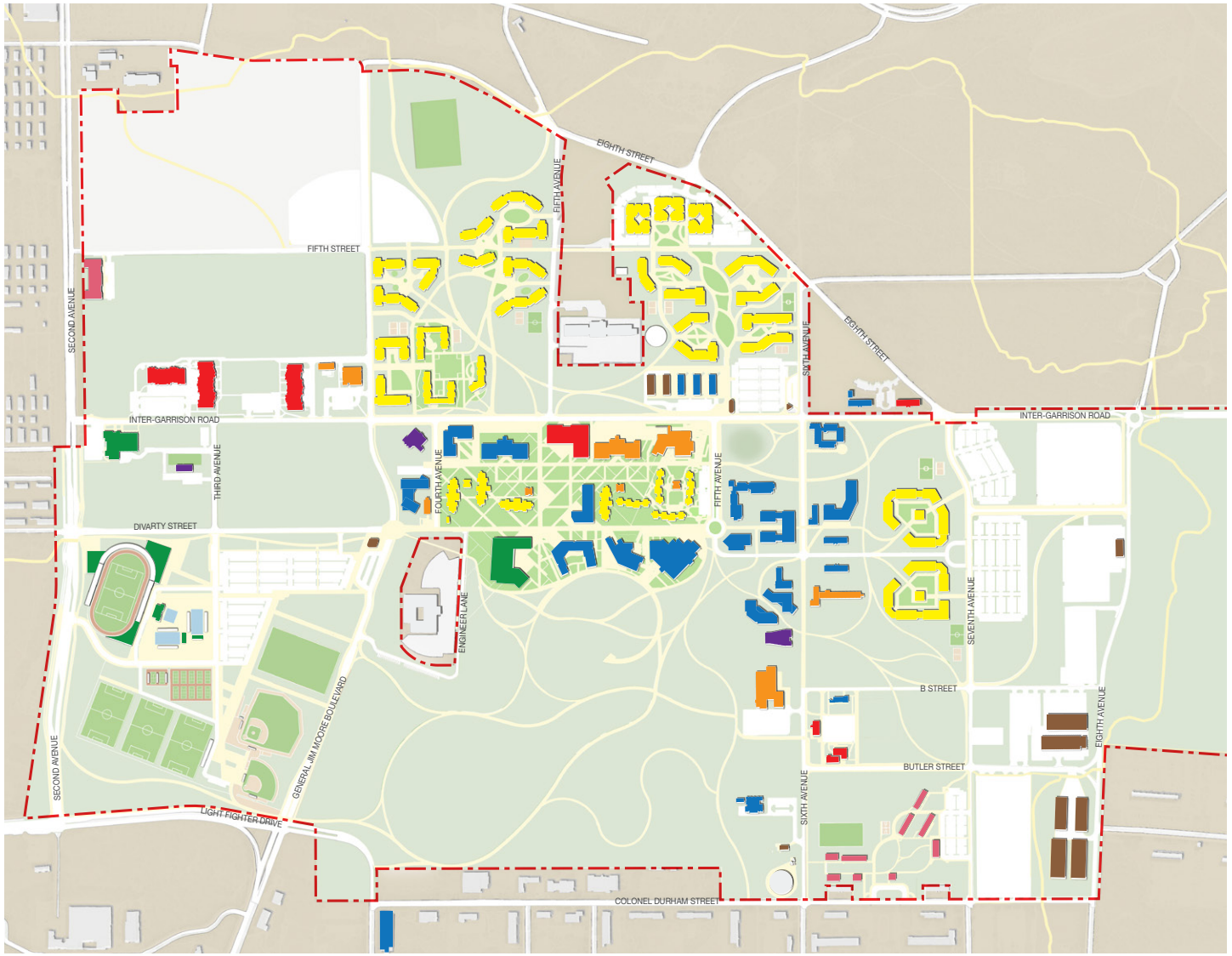
Parking

The plan removes parking from the campus core and creates two multimodal parking hubs on the east and west sides of campus to separate vehicles from pedestrians and cyclists. These locations will contribute to a safe pedestrian and bicycle-oriented campus core. The plan preserves some visitor and accessible parking within the campus core.

Figure 5.5: *Building Use Plan*

- Academic
- Administration
- Student Life and Student Services
- Residential
- Athletics and Recreation
- Facilities
- Community
- Institutional Partnership

Notes:
1. All spaces shown in removed buildings are accommodated in the new facilities.
2. Buildings are classified according to their predominant use.

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6

OPEN SPACE FRAMEWORK

CONNECT AND ENHANCE CAMPUS OPEN SPACE

INTRODUCTION

The university continues to value its connection to the natural environment, and accordingly, the master plan's open space framework preserves and enhances natural open space (stewardship). It defines and connects open spaces to facilitate activity and social interaction (placemaking), and furthers the campus as a learning laboratory through the development of collaborative learning spaces (partnership). This chapter examines the current conditions of the various types of open space and establishes a network of formal and natural outdoor spaces that seeks to implement the following goals..

GOALS

Protect, enhance, and connect the natural environment

Protect, enhance, and provide connections to and among the natural open space areas. Avoid development in areas with sensitive species, by instead redeveloping on previously disturbed land.

Create a strong sense of place

Intentionally create places, linkages, and opportunities for interaction between people and the natural environment.

Integrate learning opportunities into open spaces

Use open spaces as learning laboratories that contribute to the campus learning environment, and develop educational opportunities that expand the knowledge of local habitats and Fort Ord history.

"Open space. Open minds." represents the shared CSUMB value that celebrates the long-standing connection to the natural environment and the regional setting.

BACKGROUND

Existing Campus Open Spaces

Natural Open Spaces

The prominent natural open spaces on the campus include the Northern and Southern Oak Woodlands, Cypress Grove, East Campus Open Space, and natural areas around East Campus Housing, as well as the newer drought-tolerant landscape improvements in the campus core. These iconic, mostly native and natural Monterey Bay landscapes contribute to the beauty and unique character of the campus and provide habitat. They are used for educational purposes and passive recreation.

The plant communities found on campus include the coastal live oak woodland, maritime chaparral, and coastal scrub with groves of Monterey cypress and pine. Monterey cypress and Monterey pines are well-suited to the local climate and soils, and there are many mature specimens on campus, both growing in groves and planted as street trees. These distinctive trees contribute greatly to the campus landscape character.

Formal Campus Open Spaces

The Main Quad is the central open space in the campus core. It is a large space defined by a collection of three-story residential buildings to the south and one-story academic and support buildings to the north. A relaxed set of paths, undulating topography, and some plantings populate the space. There are few outdoor amenities such as seating, art, and dedicated areas for students. A redesign of the Main Quad to create more usable and comfortable spaces would contribute greatly to this important open space.

The 2007 campus master plan proposed a crescent-shaped walkway lined with academic buildings arcing around an adjoining meadow open space. A portion of the Crescent and Meadow has been realized and marks the beginning of an interesting feature fronting the Southern Oak Woodlands. This area is currently underutilized due to its location outside the campus core, the large scale of the space, lack of wind protection, and lack of seating options. As the campus grows and develops, additional buildings and amenities will enliven the Crescent and provide a unique outdoor space that connects to the Southern Oak Woodlands.

The university has implemented landscape improvements using native and drought-tolerant species in several high traffic areas, including at the Alumni & Visitors Center, the three administration buildings in the campus core, Chapman Science Academic Center, and along Fifth Street between Inter-Garrison Road and Divarty Street. These landscaped areas are good models for future planting, incorporating native and drought-tolerant plants, as well as stormwater management functions. Expanding this type of landscaping, and providing interpretive signage and displays, will help realize the goal of using the campus as a learning laboratory.

Academic and Residential Open Spaces

Smaller academic and residential courtyards and quads are found adjacent to several academic and student life buildings, providing more intimate outdoor gathering areas. The scale of these spaces makes for successful, inviting places for students, faculty and staff.

North Quad Housing's residential open spaces are defined by three four-story residence halls. These spaces incorporate outdoor recreation amenities such as sand volleyball, basketball, barbecues, and seating areas. If redesigned to better consider scale and climate, these spaces offer great potential to be more comfortable and attractive to residents.

Campus Entries

The campus has eleven points of entry from the neighboring communities, though there is no single clear entry or main gateway. This makes the point of arrival on campus unclear and confusing. The most prominent entry feature is the CSUMB monument sign on General Jim Moore Boulevard at Lightfighter Drive. Other major entries lack signage, including Second Avenue and Inter-Garrison Road from the west, Imjin Road and Eighth Street from the north, and Inter-Garrison Road and Sixth Avenue from the east. The campus would benefit from a stronger entry sequence and sense of arrival on campus.

Habitat Conservation

Since 2004, CSUMB staff and faculty have assisted in the development of the draft Fort Ord Habitat Conservation Plan (HCP) which provides the framework for ensuring conservation of nineteen special status plant and animal species and the natural communities that support them on former Fort Ord land. Although all campus property is considered Designated Development or Borderlands (there are no designated Habitat Management Areas on campus), the campus has designated its own natural open space areas in this plan.

The selection of development areas for this plan is based on the 2007 Master Plan Environmental Impact Report (EIR) biological resources analysis, as well as on graduate student research and faculty plant surveys that have identified several sensitive plant, wildlife, and habitat areas in the Southern Oak Woodland, the Northern Oak Woodland, East Campus Housing, and the East Campus Open Space. Development should avoid or minimize impact on rare plant and wildlife populations.

Since 2009, the Campus Planning and Development staff have worked with a former CSUMB graduate student and the Watershed institute on the restoration of 3.9 acres at the intersection of Lightfighter Drive and General Jim Moore Boulevard. This work, which is ongoing, provides a trail with signs detailing the community-based restoration efforts.

Table 6.1: *Sensitive Species on or Near Campus*

Scientific name Common name	Federal/State Status	CNPS Status	Location on Campus
Allium hickmanii **Hickman's onion**	None	List 1B	East Campus Open Space & East Campus Housing (suitable)
Arctostaphylos hookeri* ssp. *hookeri **Hooker's manzanita**	None	List 1B	East Campus Housing
Arctostaphylos pumila **Sandmat manzanita**	None	List 1B	East Campus Housing; Southern Oak Woodland
Ceanothus cuneatus* var. *ridigus **Monterey ceanothus**	None	List 4	East Campus Housing; Southern Oak Woodland
Chorizanthe pungens* var. *pungens **Monterey spineflower**	FT/--	List 1B	Southern Oak Woodland
Cordylanthus rigidus* ssp. *littoralis **Seaside bird's-beak**	--/SF	List 1B	East Campus Open Space & East Campus Housing (suitable)
Ericameria fasciculata **Eastwood's goldenbush**	None	List 1B	East Campus Housing
Erysimum ammophilum **Coast wallflower**	None	List 1B	East Campus Housing
Gilia tenuiflora* ssp. *arenaria **Sand gilia**	FE/ST	List 1B	East Campus Open Space & East Campus Housing; Southern Oak Woodland
Horkelia cuneata ssp. sericea **Kellogg's horkelia**	None	List 1B	East Campus Open Space & East Campus Housing (suitable)
Piperia yadonii **Yadon's rein orchid**	FE/--	List 1B	East Campus Open Space & East Campus Housing (suitable)

*** Bold type indicates the species is a Fort Ord HMP and HCP species.**

STATUS DEFINITIONS

Federal

FE = listed as Endangered under the Federal Endangered Species Act
FT = listed as Threatened under the Federal Endangered Species Act
-- = no listing

State

SE = listed as Endangered under the California Endangered Species Act
ST = listed as Threatened under the California Endangered Species Act
R = listed as Rare under the California Endangered Species Act
-- = no listing

California Native Plant Society

1B = List 1B Species; Rare, Threatened or Endangered in California and elsewhere
4 = List 4 Species; Plants of limited distribution

Table 6.1: *Sensitive Species on or Near Campus (cont.)*

Scientific name Common name	Federal/State Status	Location on Campus
AMPHIBIANS		
Ambystoma californiense **California tiger salamander**	FT/CSC	East Campus Open Space & East Campus Housing
REPTILES		
Anniella pulchra nigra **Black legless lizard**	--/CSC	East Campus Open Space (known to occur), North & Central Campus (suitable)
Phrynosoma coronatum frontale **Coast horned lizard**	--/CSC	East Campus Open Space & East Campus Housing (suitable)
BIRDS		
Accipiter cooperii **Cooper's hawk**	--/CSC	Potential to occur on campus
Aquila chrysaetos **Golden eagle**	--/CSC	Potential to occur on campus
Athene cunicularia **Burrowing owl**	--/CSC	Potential to occur on campus
Elanus leucurus **White-tailed kite**	--/FP	Potential to occur on campus
Eremophila alpestris actia **California horned lark**	--/CSC	Potential to occur on campus
Lanius ludovicianus **Loggerhead shrike**	--/CSC	Potential to occur on campus

*** Bold type indicates the species is a Fort Ord HMP and HCP species.**

STATUS DEFINITIONS
Federal
FE = listed as Endangered under the Federal Endangered Species Act
FT = listed as Threatened under the Federal Endangered Species Act
FTC = Federal species of concrn; species has no formal designation but is maintained on local USFWS office lists
-- = no listing

State
SE = listed as Endangered under the California Endangered Species Act
ST = listed as Threatened under the California Endangered Species Act
CSC = California species of special concern
FP = Fully protected species
-- = no listing

Table 6.1: *Sensitive Species on or Near Campus (cont.)*

Scientific name Common name	Federal/State Status	Location on Campus
MAMMALS		
Corynorhinus townsendii townsendii **Townsend's big eared bat**	--/CSC	
Eumops perotis californicus **California mastiff bat**	--/CSC	
Lasiurus cinereus **Hoary bat**	--/CSC	
Neotoma fuscipes luciana **Monterey dusky-footed woodrat**	--/CSC	East Campus Open Space & East Campus Housing (known to occur)
Sorex ornatus salaries **Monterey ornate shrew**	--/CSC	Potential
Taxidea taxus **American badger**	--/CSC	

*** Bold type indicates the species is a Fort Ord HMP and HCP species**.

STATUS DEFINITIONS

Federal

FE = listed as Endangered under the Federal Endangered Species Act
FT = listed as Threatened under the Federal Endangered Species Act
FTC = Federal species of concrn; species has no formal designation but is maintained on local USFWS office lists
-- = no listing

State

SE = listed as Endangered under the California Endangered Species Act
ST = listed as Threatened under the California Endangered Species Act
CSC = California species of special concern
FP = Fully protected species
-- = no listing

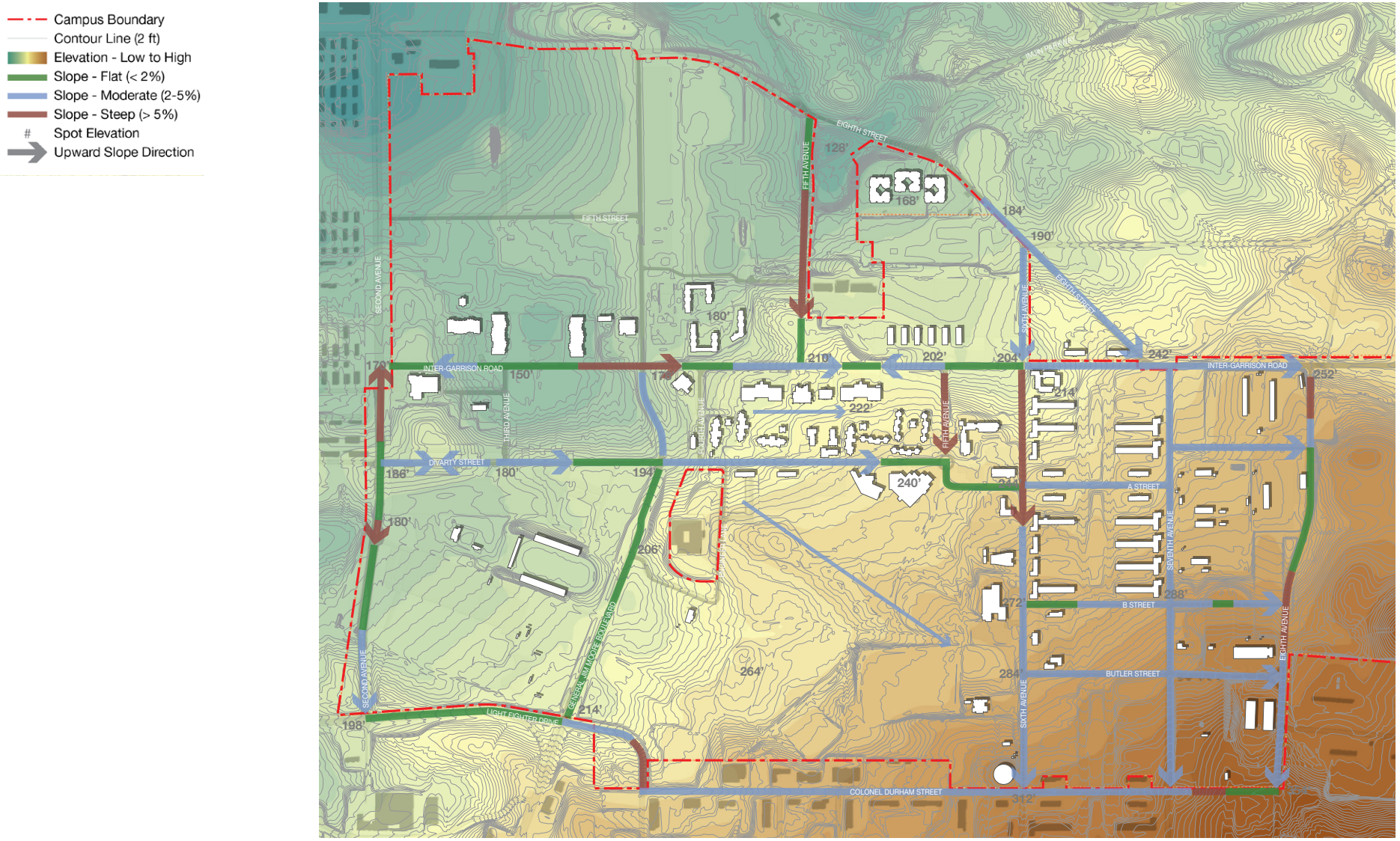
Topography and Climate

Much of the main campus topography slopes gently downward and northwest towards the bay, and is interspersed with low, undulating dune landforms. (See Figure 6.1.) Portions of the central campus core has been graded to be relatively flat; however, several adjoining roadways are steep in some areas, such as Fifth Avenue between Inter-Garrison Road and Divarty Street, and Sixth Avenue between Inter-Garrison Road and A Street. These can hinder access for individuals with special mobility needs. This condition also exists at the East Campus Open Space and East Campus Housing.

The Monterey Peninsula has a year-round temperate Mediterranean climate, with an average daily temperature of 56 degrees Fahrenheit. Seasonal rainfall comes mostly in the winter months, with half the year averaging less than one inch a month. Strong winds and fog come off the ocean from the northwest. The open, relatively flat areas of the campus provide little protection from these winds, which often create a cold, windy, and uncomfortable outdoor environment. Wind, salty air, and lack of rainfall inhibit the growth of tall deciduous canopy trees and ornamental flowering trees.

Given the mild but windy climate, protected sunny outdoor spaces are needed to accommodate year-round outdoor gathering. Buildings provide some wind protection, but existing landscape elements currently provide little to none.

Figure 6.1: *Existing Elevation Map*



Campus and Community Comments

The following is a summary of the key themes shared by members of the campus community concerning the campus open space setting:

- Celebrate the unique campus identity and sense of place, including the Monterey Bay landscape and natural environment
- Make the landscape setting more coherent
- Use the campus landscape as a teaching tool and learning laboratory, including elements such as natural open spaces, newly landscaped areas, and stormwater management areas
- Brand CSUMB as an outdoor campus with natural areas, access to miles of hiking and bicycle biking trails, and the ocean
- Provide clear entries with a sense of arrival to the campus
- Improve the wayfinding around campus and to destinations off campus, such as the FORTAG trail and the ocean
- Increase and improve outdoor gathering places, with additional seating options in both formal open spaces and natural areas
- Add more art to the campus
- Transform the Main Quad into the iconic center of campus, creating a more comfortable scale and providing places for students to sit and socialize

CSUMB should continue to brand itself as an outdoor campus, with access to beautiful natural areas (upper) and the Pacific Ocean (lower).

RECOMMENDATIONS

Existing open spaces will be improved and new spaces added to enhance campus community interaction and connection with the natural environment. Usable outdoor spaces take into account comfort from the elements, water conservation, stormwater management, habitat creation and restoration, sense of place, mobility, and entertainment. The open space framework and strategies detailed below define a coherent open space system that will both tie the campus together and create a stronger sense of place. The master plan open space recommendations follow.

Enhance Natural Open Spaces

The unique landscape heritage, including the natural open spaces and abundant mature native trees, are among the greatest assets of the campus. Protect and conserve special-status species and reduce the threat of invasive species. Develop low-impact recreation opportunities for campus and community users. Foster the learning laboratory concept by providing educational signage.

Create a Variety of Formal and Natural Outdoor Spaces

Develop an interwoven series of spaces that range from small, intimate gardens to expansive ceremonial spaces. Consider spaces for graduation, performances, outdoor classrooms, small meetings, study space, habitat restoration, sports, and relaxation.

Support Use of the Campus as a Learning Laboratory

Support land uses and interventions and that allow the campus to be utilized as a learning laboratory, incorporating opportunities for research and facilitation of a deeper understanding of systems, including ecological systems, food productions systems, and mobility systems.

Visually Unify the Campus

Use consistent plantings and a similar palette of materials and site furnishings to unify the campus. Specifying a regionally appropriate planting palette will also reinforce the campus image and identity.

Establish Strong Campus Entry Sequences

Well-defined gateways support a sense of arrival to the campus. Reduce the number of entry points onto campus, and provide signage and landscaping to create a clearer, more attractive and impressive arrival onto campus.

Link Stormwater Management Practices and Open Space Systems

Utilize low impact design and best management practices to infiltrate all stormwater runoff within the campus boundary. Locate these stormwater management areas within the campus open spaces to provide educational opportunities and to contribute to the character of the campus setting.

Establish Partnerships to Manage Open Space

Expand partnerships with academic programs, local agencies, nonprofits, and developers to effectively manage open space and regional pathways to and through the campus.

OPEN SPACE PLAN

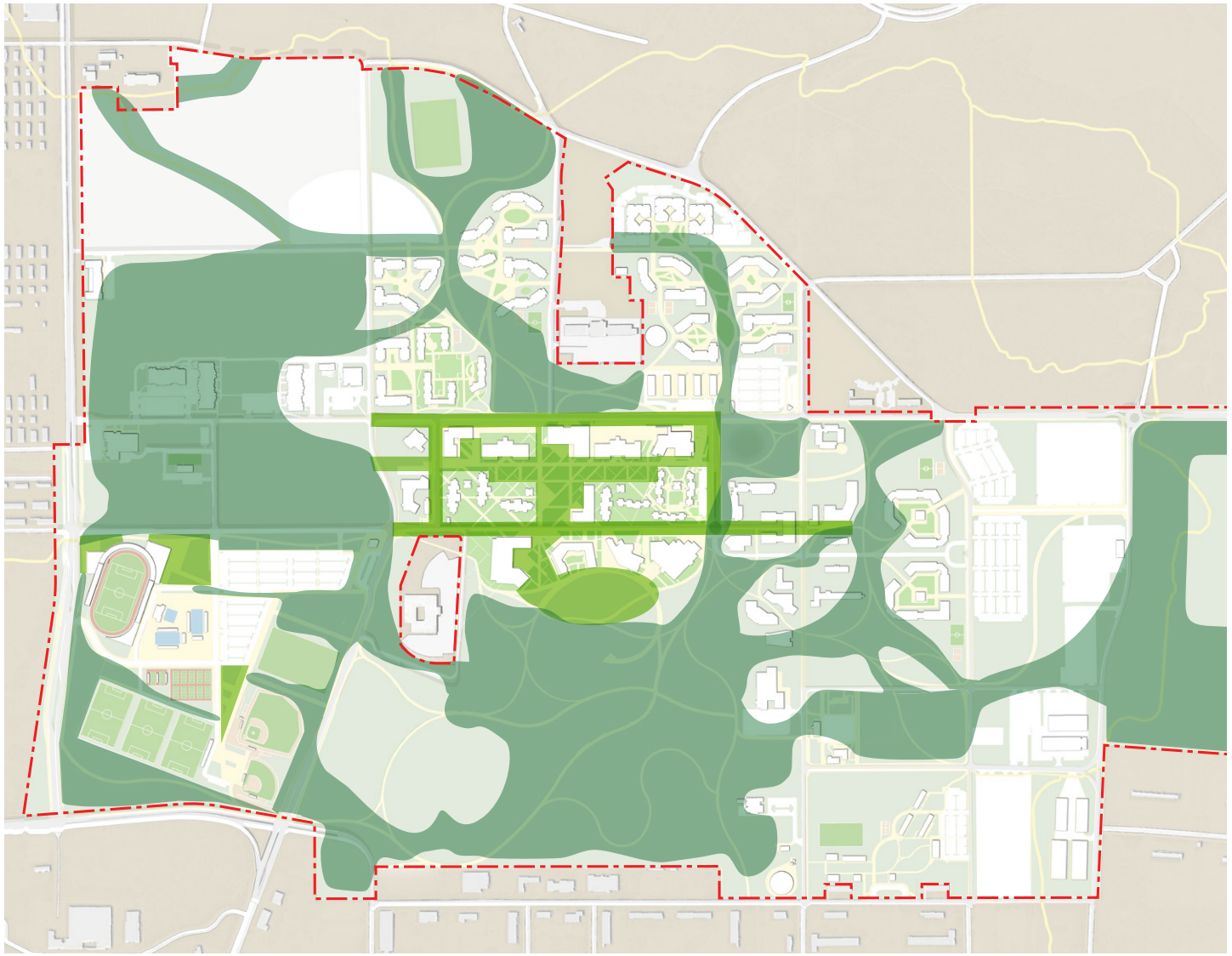
Open Space Framework

The open space framework, shown in Figure 6.2, defines a range of natural, formal, and connecting open space elements that together create a cohesive campus setting. It captures regional views and expands upon the dramatic setting to emphasize and enhance a sense of place around natural beauty. For the most part, the framework clusters the formal open spaces within the campus core. The framework consists of the open space types described below.

Figure 6.2: *Open Space Framework*

Developed Campus Landscape

Natural Landscape Fabric



Open Spaces Types

Figure 6.3 illustrates the variety of open spaces proposed for the CSUMB campus.

Natural Open Space

The Southern Oak Woodland consists of rugged windblown oak trees with long strands of lichen draped over their branches. This area functions well for passive recreation, such as walking, jogging, bicycling, and disc golf; it is also home to the campus' challenge course operated by outdoor recreation.

The Northern Oak Woodland is a smaller area north of Inter-Garrison Road and east of the North Quad Housing. Campus pedestrian circulation will extend through this area as it connects the campus core to existing and planned future residential neighborhoods.

The Cypress Grove is an open area between Inter-Garrison Road and Fifth Street, west of North Quad Housing. Until demolition in 2014, this area contained nine military dormitories and four auxiliary buildings. Care was taken to maintain the cypress trees during building removal. This site offers an opportunity for development that preserves these trees.

The East Campus Open Space consists of 322 acres of undeveloped open space east of Eighth Avenue. It is dominated by oak woodland and is currently off limits to the public until munitions cleanup work is complete and it is transferred from FORA to the campus. Fifty acres of this area has been remediated to residential standards, and is considered developable if needed in the future. Proposed bicycle facilities through the East Campus Open Space connect to existing and proposed trail networks throughout Fort Ord.

The natural areas within the East Campus Housing neighborhood (not shown in this plan) create an attractive setting for East Campus residents. Several pedestrian and bicycle trails have been implemented that connect to the Fort Ord trail network.

Connecting Landscape Open Space

The connecting landscapes are the interstitial landscapes that tie the campus together. These landscapes provide the connections among campus destinations and between the campus and surrounding community. Visually, the connecting landscapes reinforce areas between the campus core and other parts of campus. As CSUMB adopts the Monterey native landscape vocabulary throughout campus, these connecting landscapes will enhance the distinct character of the campus.

The campus pedestrian and bicycle circulation systems employ the connecting landscapes, providing linkages among campus locations and local and regional destinations.

Stormwater management areas are also located within the connecting landscapes. These areas utilize low-impact design best management practices that are effective at managing stormwater runoff, and also contribute to the character of the campus setting. Stormwater management areas also provide educational opportunities to learn first-hand about stormwater processes.

Further detail on the campus stormwater management system is provided in Chapter 08: Water Systems and in Chapter 10: Design Themes.

Formal Open Space

The formal open spaces are centrally located high-quality spaces that help to define and organize the campus. They are iconic and special places that serve as destinations for the campus community, as well as visitors to the campus. These spaces are ideal locations for public art installations. A general definition of these spaces is outlined below, and more detailed design strategies are provided in Chapter 10: Design Themes.

Main Quad

The Main Quad is in the core of the campus and is bounded by Inter-Garrison Road, Fourth Avenue, Divarty Mall, and Fifth Avenue. The Main Quad contains a mix of academic, residential, and student life buildings. The master plan proposes to redesign the Main Quad to build on this central

Figure 6.3: *Open Space Types*

location and mix of uses to create a space that is more welcoming, functional, and attractive. The redesign will focus on creating a series of spaces that accommodate both large and small gatherings. The Main Quad will continue to be the primary formal open space on campus, where student events are held and where students socialize and study.

Divarty Pedestrian Mall

Positioned between the academic uses along the south side of Divarty Street and the mix of uses within the Main Quad to the north, Divarty Mall from General Jim Moore Boulevard to Sixth Avenue becomes the central spine of the campus, a primary campus gathering place and movement corridor. The proposed Divarty Mall limits vehicular access to shuttle, service, and emergency vehicles, to create a safe and comfortable corridor for pedestrians and bicyclists. Divarty Mall extends past the Fifth Avenue traffic circle, transitioning to a pedestrian and bicycle-only mall, and terminating at a new academic building. All vehicular traffic (shuttle, service, and emergency only) is directed south at the Fifth Avenue traffic circle, where it curves east to connect to A Street and continues to Seventh Avenue.

Inter-Garrison Road

Inter-Garrison Road also becomes a pedestrian- and bicycle-oriented east-west corridor between General Jim Moore Boulevard and Fifth Avenue to improve the safety of students navigating the campus, and to prevent regional cut-through traffic. Vehicular access is limited to regional buses, campus shuttles, and service and emergency vehicles. Streetscape and landscape improvements will soften the corridor and contribute to a stronger sense of place. These improvements will help to integrate the residential neighborhoods to the north with the campus core.

Crescent and Amphitheater

The Crescent and Meadow form an open space between the academic buildings along Divarty Mall and the Southern Oak Woodland natural area. The Crescent consists of a paved walkway with pedestrian lighting and a row of trees on either side. The Meadow is enhanced with additional planting and seating options. A new amphitheater for outdoor perfor-

Divarty Mall will become a pedestrian mall, with some similar traits, such as special paving, as the closed portion of Sixth Avenue (upper). Academic open spaces (lower) should be comfortable, protected spaces with seating.

mances is added to the Meadow for performances, outdoor classrooms, student meetings, socializing and studying.

Athletics and Recreation District Event Space

The athletics and recreation facilities are organized around a central plaza, or event space. This new plaza is adjacent to the new stadium, providing a space for pre-game and other events. A multi-use space just south of the plaza is available for pick-up games or other events, and can be used in conjunction with the plaza for large events.

Academic Open Space

Academic open spaces typically consist of the entry plazas and courtyards adjacent to academic buildings. These are important campus spaces which create opportunities for student and faculty interaction, and where students can study, socialize, and rest between classes. These spaces are smaller, protected, and furnished with ample seating options. Opportunities for integrating outdoor classrooms, including interpretive signage and visible stormwater management infrastructure should be explored.

Residential Neighborhood Open Space

Residential open spaces contribute to the quality and character of the campus residential neighborhoods, and provide areas for socialization and the informal interactions for students. These vary in size from large spaces for recreation and events to more intimate spaces for small group gathering and studying.

Sustainability Commons

The Sustainability Commons is envisioned as an art, education, and community-building center focused on healthy living, nutrition, sustainable and ecological design, art, and community service. The Sustainability Commons landscape may include garden-based demonstration areas, community gardens, sustainable agriculture plots, watershed management demonstration areas, outdoor kitchen and dining areas, locations to conduct research, and places for gathering.

Student residential neighborhoods should have a variety of open spaces, including smaller, intimate spaces with seating (upper), and larger open spaces for informal recreation (lower).

Athletics and Recreation

The master plan builds on and expands the existing athletics and recreation district, located at the southwest quadrant of the campus. A new stadium is located at the campus gateway on Second Avenue at Divarty Street. An adjacent ceremonial plaza and space for potential retail abuts Second Avenue, activating both the gateway and the street edge. A stadium plaza on the east side of the stadium along Divarty Street provides space for pre-game and other events. An additional plaza west of the baseball field organizes the tennis, soccer and ball fields. A multi-use playing field south of the parking lot is available for pick-up games or other events. Pedestrian connections link the facilities with minimal road crossings. These facilities will serve both CSUMB and community partners.

The plan accommodates potential expansion of athletics and recreation fields on the east side of General Jim Moore Boulevard and identifies additional potential fields to the north. The plan is adaptable to accommodate future facilities, such as additional events venues, athletic, recreation and performance spaces, and other related uses. The plan also encourages a clear and inviting connection to the regional existing and proposed FORTAG trail network.

Recreation facilities are co-located with athletic facilities but are also interspersed throughout the campus. A student-funded recreation center is proposed on the Divarty Mall, and a recreation field currently exists to the north of the campus core on Eighth Street. Other spaces for sports and general recreation are located in a variety of strategic locations and in student residential neighborhoods.

Campus Entries

The master plan identifies four major entries which lead to two key arrival areas: Divarty Street and General Jim Moore Boulevard on the west side of campus, and Inter-Garrison Road and Sixth Avenue on the east side. These key arrival areas serve as multimodal hubs which contribute to a notable transition between surrounding communities and the campus. The plan proposes special signage and landscape treatment at these entries, which is further described in the Landscape Design Themes section of this report.

Certain elements of the campus environment contribute to the sense of arrival. For example, existing stone building foundations along Divarty Street create an interesting cultural resource on the north side of the street. Construction of the proposed FORTAG on the south side of Divarty Street provides an attractive landscaped edge, and will emphasize the campus's commitment to bicyclists and pedestrians. Entering from the south on General Jim Moore Boulevard, mature trees line the road, and future improvements to the athletics and recreation facilities create visual interest.

The Athletics and Recreation District will become a cohesive district, with upgrades to existing and additional new facilities for both the athletics and recreation programs.

7

MOBILITY

PRIORITIZE ACTIVE TRANSPORTATION MODES

INTRODUCTION

Mobility chapter refers to the system of infrastructure, amenities, and programs that allow people to arrive and move about the campus. Currently, some of the academic buildings are dispersed beyond a ten-minute walk, abundant parking is available at a low cost relative to other campuses, and numerous on-campus roads favor automobile travel over other modes. Envisioning the campus of the future through multiple planning sessions, the university chose an ambitious transportation scenario which develops campus infrastructure to prioritize resources for active transportation modes: pedestrians, bicycles, and transit.

The ambitious transportation scenario enhances the social and physical opportunities associated with walking, cycling, and transit, creating safer and more accessible mobility options for all users (placemaking). It provides connections among campus destinations, and to natural resource areas and regional activity centers. It more equitably allocates resources to achieve significant increases in active transportation modes. This scenario recognizes that providing additional on-campus housing further reduces vehicle travel. In combination, these strategies will reduce the campus' greenhouse gas emissions (stewardship).

This chapter first examines the regional transportation network and existing conditions to provide context. It then presents the features of the campus-wide circulation network that support an ambitious shift in travel activity on the campus. Finally, it presents recommendations for each mode of transportation as a component of the complete network.

GOALS

Create a transportation system that fosters health and wellness

Create a bicycle- and pedestrian-centric campus that encourages physical movement, connection to the outdoors, and community interaction.

Improve the safety of active transportation networks

Enhance the safety of active transportation networks for cyclists, pedestrians, and non-motorized vehicles.

Expand access within the campus and to neighboring communities

Expand the bicycle and pedestrian connections within the campus to neighboring communities and regional landmarks.

Reduce greenhouse gas emissions

Achieve a significant reduction in greenhouse gas emissions from campus travel.

Minimize vehicular traffic

Decrease vehicular traffic on external and internal campus roadways.

BACKGROUND

Regional Context

The efforts described below summarize the work of surrounding jurisdictions. These efforts provide the planning context necessary to organize the campus transportation networks and to expand network connections to the neighboring communities and regional landmarks.

Local Planning Efforts

The cities of Marina and Seaside have adopted plans which were considered in the development of the CSUMB Master Plan. Applicable planning documents relevant to the transportation and circulation around the campus include the General Plans and each city's Bicycle and Pedestrian Transportation Plans. The Bicycle and Pedestrian Transportation Plans have called for strengthened pedestrian and bicycle connections to the university campus. These plans are important for increasing the mobility and access of the campus by providing more attractive and safe routes to and from these communities.

City of Seaside General Plan

The City of Seaside General Plan (2004) calls for a collaborative approach to addressing transportation needs with neighboring cities and regional transportation agencies to encourage affordable transportation access to major destinations such as CSUMB. Additionally, transit-oriented development in the Gigling Specific Plan area (near CSUMB) and other appropriate areas is encouraged through the City's Circulation Element. The City also details a series of planned circulation improvements within the area, including on General Jim Moore Boulevard, Lightfighter Drive, First and Second Avenues, Gigling Road, and Eucalyptus Road.

City of Seaside Bicycle Transportation Plan

The City of Seaside Bicycle Transportation Plan (2007) calls for strengthened bicycle and pedestrian connections between Seaside and the CSUMB campus. These connections will be primarily located along General Jim Moore Boulevard, Second Avenue, First Street, and Third Street. Class I facilities, or bicycle paths, are planned for General Jim Moore Boulevard and portions of Second Avenue. Class II facilities, or bicycle lanes, are proposed for Gigling Road, Lightfighter Drive, Third Street, Monterey Road, and Seventh Avenue. These planned facilities are designed to provide better access to businesses and residential areas within Seaside.

City of Marina General Plan

The City of Marina General Plan has a goal to reduce dependency on the private automobile by providing other transportation alternatives. The design guidelines in the General Plan aim to achieve this by providing more space to pedestrians and bicyclists than is currently allotted on many of Marina's existing streets. The General Plan includes a Class I bicycle path on Eighth Street, a major east-west pedestrian and bicycle corridor that serves as the northern boundary for the CSUMB campus. The General Plan also calls for Class I bicycle facilities parallel to Inter-Garrison Road and Second Avenue.

City of Marina Pedestrian and Bicycle Master Plan

According to the City of Marina Pedestrian and Bicycle Master Plan, the main roadways linking the city to campus should be designed or improved to safely accommodate bicycles. These roads include Reservation Road, Imjin Parkway, General Jim Moore Boulevard, and Inter-Garrison Road. Of these primary access roadways, only Reservation Road and Inter-Garrison Road have striped bicycle lanes. Currently, there are six Class I bicycle paths within the City of Marina. The largest is the Monterey Bay Sanctuary Scenic Trail which spans the entire length of the city and parallels Del Monte Boulevard and Highway 1. There are limited additional Class II and III bicycle lanes and routes in other areas of the city.

Fort Ord Base Reuse Plan

CSUMB can draw much from work in the Fort Ord Base Reuse Plan (BRP), specifically the Highway 1 Design Corridor Guidelines and the Regional Urban Design Guidelines.

The BRP circulation goal is to create and maintain a balanced transportation system, including pedestrian ways, bicycle paths, transit, and streets, to provide for the safe and efficient movement of people and goods to and throughout the former Fort Ord. (BRP Vol 1, p. 17).

The Fort Ord Highway 1 Design Corridor Guidelines address the Highway 1 Scenic Corridor along Fort Ord and the Imjin Parkway and Lightfighter entrances. Although the campus is east of the area where the guidelines apply, the Master Plan has considered the following elements of the design guidelines:

> *(2) "There shall be ample bicycle links throughout the corridor and adjacent areas. As each project is considered, the main routes, links, and bicycle amenities should be accommodated to develop a logical network"*
>
> *(10) "Design efforts should encourage walkable streets with transit linkages"*

The BRP environmental analysis requires the completion of several roadway projects to mitigate traffic upon the plan's buildout. One of those roads is Eastside Parkway, which will link Inter-Garrison Road to Gigling and Eucalyptus Roads, supplementing the roadway capacity between the Salinas Valley and Monterey Peninsula. The Eastside Parkway is proposed to be a two- to four-lane roadway that would divert through traffic around the campus.

The BRP also calls for establishing "a pattern of landscaping of major and minor streets, including continuous street tree plantings to define gateways to the former Fort Ord and enhance the visual quality and environmental comfort within the community." (BRP Vol 1, p. 71) The BRP calls for a Gateway Regional Entertainment District that straddles both sides of the Main Gate interchange at Highway 1 and Lightfighter Drive. It is one of the primary entrances to CSUMB and the former Fort Ord. This district is identified as an entertainment-oriented regional retail center. Approximately twenty-eight acres have been set aside near the Main Gate interchange to enhance the visual gateway to this district along the Highway 1 Scenic Corridor. (BRP Vol 1, p. 162)

To achieve its community design vision around the campus, the BRP recommends that CSUMB and the City of Seaside do the following:

> *1. Coordinate to create a well-designed gateway at Lightfighter Drive. (BRP Vol 1, p. 162)*
>
> *2. Encourage the use of alternate transportation by providing convenient and direct transit access to campus activity centers. (BRP Vol 1, p. 161-162)*
>
> *3. Coordinate development within this district with the preparation of a Gateway Corridor Specific Plan that provides for an integrated gateway design concept to the former Fort Ord and CSUMB. (BRP Vol 1, p. 165)*

Regional Urban Design Guidelines

The Regional Urban Design Guidelines offer guidance for planning complete streets, road connectivity, trails, and transit facilities. The guidelines establish street characteristics that encourage development at the pedestrian scale, emphasizing minimal setbacks, appropriate height and massing on street frontages, and opportunities to create public places at intersections and other points of interest. The guidelines should specifically be considered for any development along campus boundaries.

Regional Networks

The campus is within close proximity to a number of trails useful for commuting and recreation. Trail connections include a network of unpaved trails that are located within Monterey County's Fort Ord Recreational Habitat Area and the Fort Ord National Monument properties administered by the Bureau of Land Management. The recently proposed FORTAG trail will provide a thirty-mile, twelve-foot-wide regional network of accessible paved trails and greenways that will connect communities and provide opportunities for recreation and access to open space. The FORTAG right-of-way is intended to have approximately 150 feet of open-space on each side of the paved trail. The northern loop is thirteen miles long, looping around the City of Marina. The southern loop circles around the City of Seaside and bisects Del Rey Oaks, creating fifteen miles of trails. Both loops connect to the existing Monterey Bay Sanctuary Scenic Trail. (See Figure 7.1.)

The Monterey Bay Sanctuary Scenic Trail is a partially constructed fifty-mile separated bicycle and pedestrian trail that will ultimately connect Santa Cruz and Monterey Counties along the Monterey Bay National Marine Sanctuary. In Monterey County, it currently runs between Pacific Grove and Marina, with access to the campus. It is a piece of the larger California Coastal Trail system and will coexist in some locations with planned light rail or bus rapid transit service.

In June 2015, TAMC adopted a conceptual Marina-Salinas Multimodal Corridor Plan (MMCP), which will create a multimodal connection between the cities of Marina and Salinas. The MMCP accommodates high-quality bus rapid transit as well as bicycles, while improving pedestrian and automobile safety. The design and alignment is along Reservation Road and Imjin Parkway just north of campus. (See Figure 7.2.)

Figure 7.1: *FORTAG Plan*

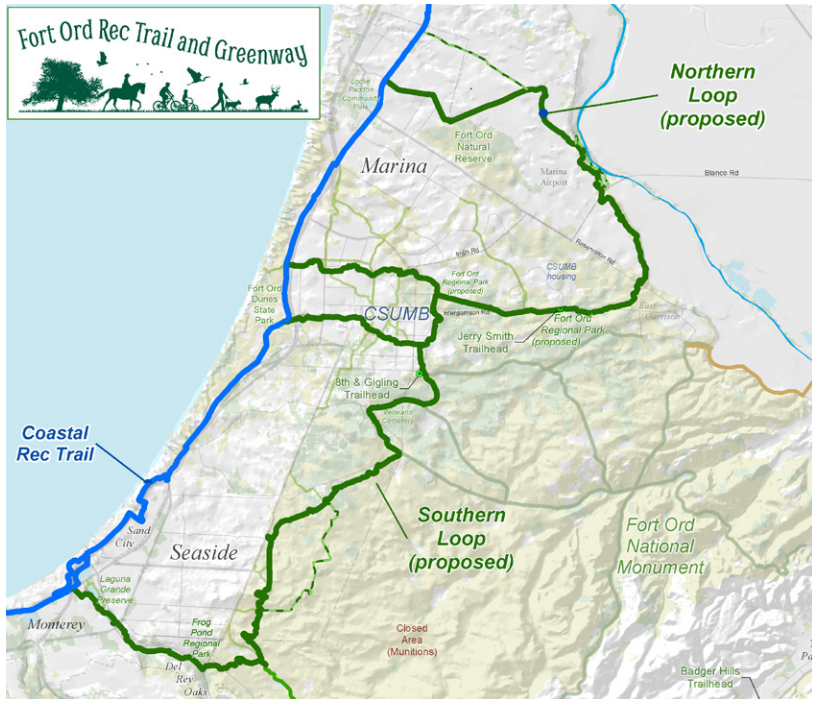
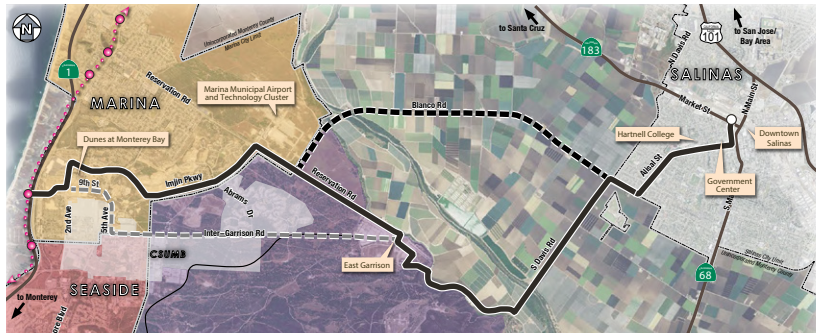


Figure 7.2: *TAMC Multimodal Transportation Corridor*



Existing Campus Access and Circulation

In 2014–15, only half of vehicle trips entering and exiting the campus were generated by the campus community. The volume of vehicles on campus roadways generated by both CSUMB and non-CSUMB drivers is a major safety concern for bicycles and pedestrians. Of the CSUMB-generated vehicles entering and exiting the academic core of the campus, 82 percent were single occupant vehicles.

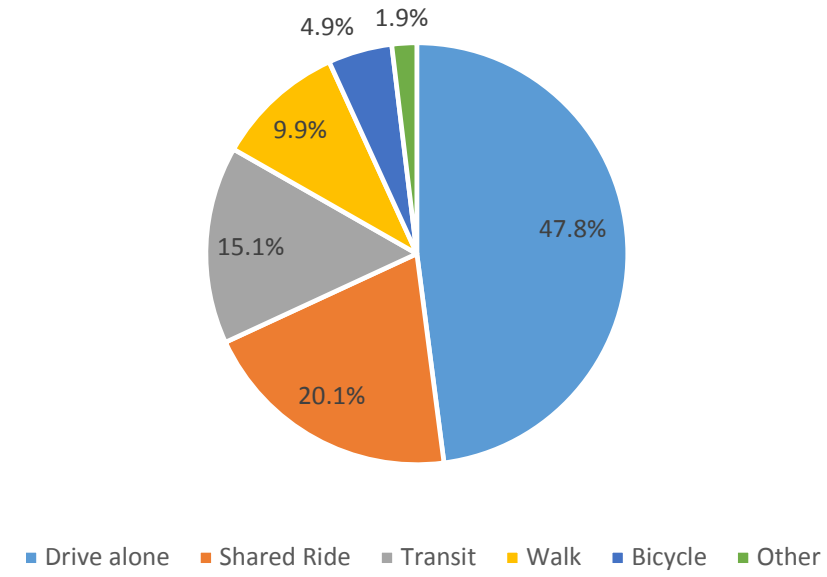
A campus commuter survey conducted in 2016, and shown in Figure 7.3, examined the mode split of staff, faculty, and students. It received over five hundred responses, and reflects similar trends in the traffic count study in relation to the percentage of vehicles that carpool. It supports the traffic count study to better understand the campus mode split as a whole and sets a baseline for future improvements.

Existing Vehicular Circulation

The campus currently has four major entrances: Imjin Road to the north, Inter-Garrison Road to the west and east, and General Jim Moore Boulevard to the south. The entrance at Lightfighter Drive and General Jim Moore Boulevard is marked by a gateway entrance sign. Most traffic from Seaside or the Monterey Peninsula accesses the campus from the General Jim Moore Boulevard entrance, while traffic from Salinas or Marina arrives through the Imjin Road or Inter-Garrison Road entrances, and traffic from Santa Cruz County arrives via the entrances at either Inter-Garrison Road and Second Avenue or Imjin Road.

Partial road closures to vehicles on General Jim Moore Boulevard, Fifth and Sixth Avenues, and Divarty Street, along with traffic calming measures have reduced driving on campus. However, a sufficient number of open roads and abundant low cost parking still encourage regional and campus traffic in the center of campus. This puts cyclists and pedestrians at risk and requires resources from the campus police department to provide traffic enforcement. There is a significant financial burden of managing streets that serve the entire region, including pavement, markings, and signage, without the financial resources afforded a local jurisdiction.

Figure 7.3: *Campus Commuter Survey Mode Split*



Visitor Access

Community engagement sessions revealed that the campus transportation network is difficult for campus visitors to navigate, likely as the result of inconsistent directional signage, lack of clear campus gateways, and dispersed parking lots throughout campus. Taken together, these factors create access challenges for visitors and guests.

Proposed Roadway Improvements

A project proposed for 2016-17 will install a roundabout at the Eighth Avenue and Inter-Garrison Road intersection and would also realign the Seventh Avenue, Eighth Street and Inter-Garrison Road intersection. The realignment would create a perpendicular all-way stop to improve safety for university-related vehicular, pedestrian, and bicycle traffic on the CSUMB campus. The proposed project would also improve on-campus circulation by aiding in calming traffic and by encouraging through traffic to use routes that bypass the core of campus.

Regional Through-traffic
In 2013, Inter-Garrison Road was linked to Reservation Road, providing a regional connection through CSUMB from the Marina-Salinas area to the Monterey Peninsula. After the connection was opened an additional one thousand daily vehicle trips were counted on Inter-Garrison Road. About 70 percent of the new vehicle trips used Eighth Avenue to bypass the campus.

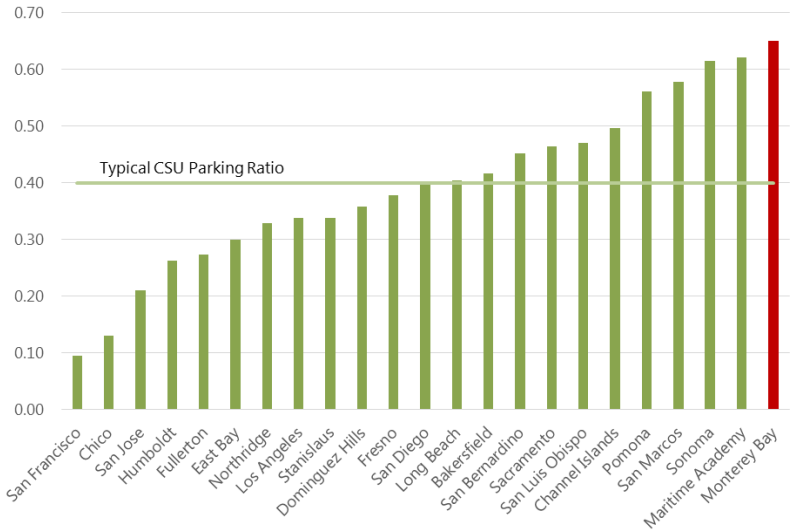
Safety
Deteriorating traffic signage, fading pavement markings, worn pavement, and insufficient lighting in parking lots are all issues that can make circulation confusing and may result in safety concerns for users.

Parking
Driving has traditionally been the primary element of CSUMB's transportation system. Low-cost parking permits and abundant spaces encourage the majority of faculty, staff, and visitors to arrive by private vehicle. Small lots interspersed between buildings force bicyclists and pedestrians to travel on indirect routes through parking lots and areas where there are few sidewalks or pathways.

In January 2012, CSUMB conducted a survey of available parking. This survey counted 4,000 parking spaces on campus, or 4,413, if special designation parking spaces such as disabled, service vehicle, and visitor parking facilities are included. This aggregate parking supply of 0.65 parking spaces per FTE student is much higher than the CSU average of 0.4 stalls per FTE (see Figure 7.4). Additionally, CSUMB's current annual parking fee of $168 is about half the CSU system average parking rate of $300 per year. The campus also charges visitors for short-term and daily parking permits. The relatively low cost of parking encourages driving; it is also a missed opportunity for revenue building that could be used to fund transportation measures for all campus users.

CSUMB increased the cost of parking in the 2015/16 academic year; this increase is expected to encourage alternative transportation choices. Fees are expected to continue to rise in the future. However, the cost of parking is still much lower than the CSU system average and will continue to be an important issue for the campus to address.

Figure 7.4: *California State University Parking Ratios*



Source: California State University Financing and Treasury Department (July 2013) and California State University Analytic Studies (2013-2014).

While there is no readily available parking utilization data, field observations suggest that most parking lots near the campus core are operating close to capacity and drivers may be circulating looking for close parking spaces. Lots just outside of the core area (such as Lot 508 on Divarty Street, or Lot 71 at Sixth Avenue and Inter-Garrison Road) can also reach capacity at certain times of day. The smaller peripheral parking lots are typically underutilized.

Lack of a cohesive parking management plan contribute to the challenge of reducing the demand for parking. There are also obstacles to raising parking fees. Many CSUMB students work, and their inability to pay higher fees could be a deterrent to working while attending university. Also, specific bargaining units have contracts with the CSU that severely restrict the campus's ability to charge higher parking fees.

Existing Transit Circulation

Transit Services

The public transit system that connects the campus to regional activity centers is operated by Monterey-Salinas Transit (MST) (see Figure 7.5). Currently all CSUMB ID holders receive free, unlimited access on all MST routes from King City to San Jose while enrolled or employed on campus.

There are six bus routes that serve three main bus stops on the campus: Lines Marina 16, Monterey 18, Monterey Late Night Weekend 19, Salinas 25, Campus Shuttle 26, and Presidio-Preston Park 74. Line 26 currently serves as the campus shuttle looping between main campus and east campus housing. All routes connect at the Alumni & Visitors Center Transit Exchange, centrally located west of the Main Quad on Fourth Avenue, adjacent to the university's Alumni & Visitors Center.

Lines 19, 25, and 26 operate only during the fall and spring semesters when classes are in session. Service schedules are adjusted periodically to adapt to ridership, fluctuations in funding, and negotiated costs with MST. There is no consistently dedicated funding source for university-funded transit services.

Data from MST for the 2015/16 academic year shows that ridership on campus-serving routes is highest in September at the beginning of the school year and drops off as the fall semester progresses. Ridership increases again at the beginning of the spring semester, though not at the same levels as September. Ridership is at its lowest in May, when the academic year is coming to a close.

Between August 2015 and May 2016, CSUMB ID holders took 280,953 trips on thirty-two of MST's bus lines. Top ridership was on campus serving lines. The highest ridership lines were Lines 16, 18, 26, and 25, followed by non-campus serving lines Monterey-Salinas (20), Jazz A Sand City-Hilby-Aquarium (901), and Jazz B Sand City-Broadway-Aquarium (902). (See Table 7.1)

Accessibility

Students, faculty, and staff with physical disabilities have access to the MST paratransit program MST RIDES. This service operates on a point-to-point basis. Appointments are required to guarantee service. Furthermore, the paratransit service accommodates both on- and off-campus scheduled stops. MST's on-call service may function as a secondary option for individuals with special mobility needs, but it experiences significant delays when K-12 school is in session. In addition, it provides services only to specific areas.

The campus offers an electric wheelchair accessible cart that is available only to university departments, group tours, campus-wide orientations, and major events such as commencement. Accessibility for those with mobility limitations continues to be problematic because of the lack of dedicated paratransit service on campus.

Infrastructure

There are eight transit stops in Main Campus, and ten in East Campus, but few stops have high quality amenities or bus shelters. Two shelters are located on campus at the Tanimura & Antle Family Memorial Library and the Alumni & Visitors Center Transit Exchange.

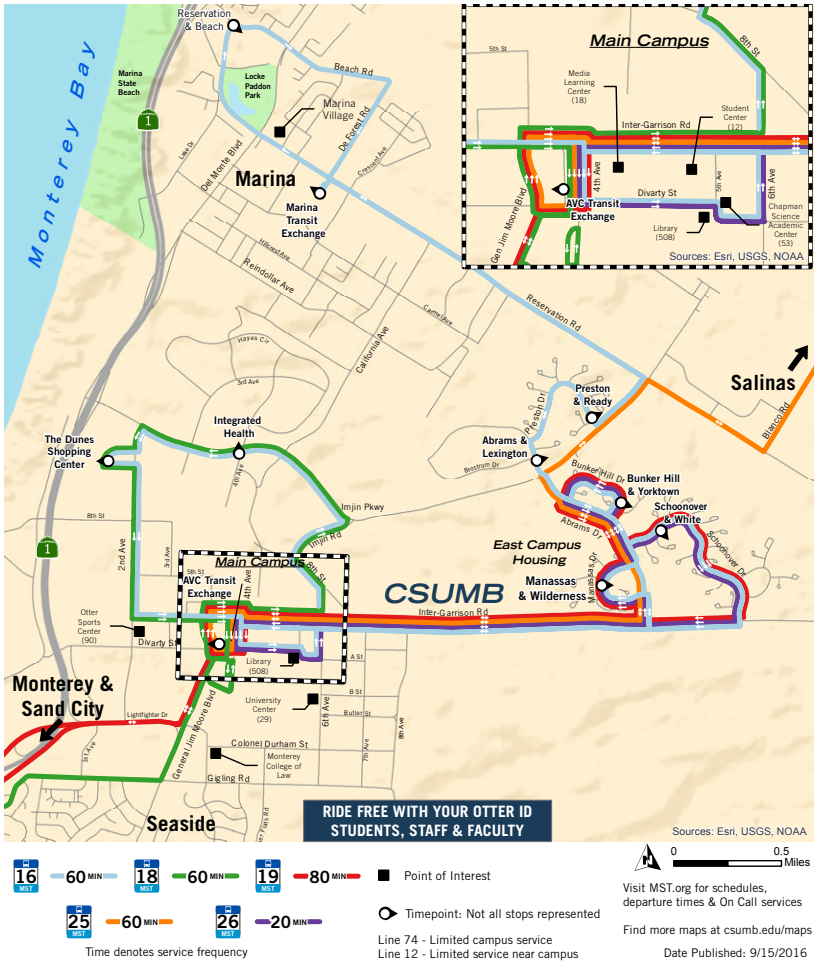
The Alumni & Visitors Center Transit Exchange is a hub for all connecting lines on campus and receives the highest volume of riders. The library stop receives the second highest volume of traffic and has a real-time bus arrival board. The other bus shelters are located in East Campus housing. One is on Manassas Drive north of Wilderness Court. The other four are located along Schoonover Drive. Some on-campus transit stops do not have benches; however, most of these are on-call pickup locations. Ridership data for the 2015 calendar year (Table 7.1) shows the top six highest on-campus ridership stops.

Table 7.1: *Top Six Highest On-campus Ridership Bus Stops (2015)*

Bus Stop	Riders
Fourth Avenue / Alumni & Visitor Center	65,700
Divarty / Library	19,500
Manassas / Wilderness Drive	17,700
Manassas / Antietam Court	10,700
Bunker Hill / Yorktown	10,400
Bunker Hill / Princeton Court	9,700

Monterey-Salinas Transit (MST) bus at the Alumni & Visitors Center Transit Exchange

Figure 7.5: *Existing Transit Serving the CSUMB Campus*



Existing Bicycle Circulation

Campus topography presents some challenges for bicycling (see Figure 6.1). The natural grade in some areas on campus are steep, and the connection between Main Campus and East Campus has a gradual but not insignificant gradient. In addition, steady winds from the west can make bicycling difficult and may discourage bicycle ridership.

The existing bicycle routes on the CSUMB campus and in surrounding areas are comprised of bicycle routes or boulevards, bicycle lanes, and separated bicycle paths or trails.

Bicycle Routes/Boulevards

On-campus bicycle routes, known as Class III facilities, include approximately 3.8 miles of bicycle boulevards: Divarty Street from Second Avenue to A Street, A Street from Divarty Street to Seventh Avenue, Seventh Avenue from Inter-Garrison Road to Colonel Durham Street, and Inter-Garrison Road from Seventh Avenue to Second Avenue. Bicycle boulevards give bicycles priority on campus roadways and allow them to use the whole lane. Bicycle boulevards use signs and pavement markings to inform motorists.

Bicycle Lanes

Bicycle lanes, known as Class II facilities, are provided on Second Avenue, General Jim Moore Boulevard from Lightfighter Drive to Inter-Garrison Road, Fifth Avenue from Divarty Street to Inter-Garrison Road, and Inter-Garrison Road from Seventh Avenue to Schoonover Drive.

Separated Bicycle Paths

The campus recently constructed its first separated bicycle path, or Class I facility—a pathway between the Promontory housing and Inter-Garrison Road. On the campus periphery, separated bicycle paths constructed by the City of Marina exist on the east side of Second Avenue between Lightfighter Drive to Imjin Parkway, and off campus along Imjin Parkway between Second Avenue and Imjin Road, at which point it transitions to a bicycle route.

Regional Bicycle Connections

The large areas of open space surrounding the campus create an opportunity to incorporate separated (Class I) facilities that take advantage of the campus's own Southern Oak Woodland area, the Fort Ord National Monument, Fort Ord State Dunes Park, and scenic vistas. The bicycle network also connects to destinations in Marina and Seaside.

To access the CSUMB campus from Marina, cyclists can use bicycle lanes on California Avenue to access the Imjin Parkway bicycle path and enter on Imjin Road and Eighth Street, or they can continue south on the bicycle route along California Avenue, which becomes Fifth Avenue on campus.

Access from Seaside is available via the separated path parallel to General Jim Moore Boulevard. This path transitions to a bicycle route at Normandy Road, at which point cyclists can continue or use local roads to access Parker Flat Cut Off Road and head north towards Colonel Durham Street and campus. Navigating this gap is challenging for most cyclists.

From the East Campus neighborhood, cyclists can use the Class II bicycle lanes provided on Inter-Garrison Road. Inter-Garrison Road is a 35-mph street with wide travel lanes and narrow bicycle lanes. There is no physical separation from traffic.

To connect to the Monterey Bay Sanctuary Scenic Trail, bicyclists must use Divarty Street, which is classified as a bicycle route between Second Avenue and the trail.

Bicycle Parking

The campus continues to install bicycle racks adjacent to academic and residential buildings. It currently has 912 outdoor, and 463 indoor bicycle parking spaces. Of the indoor spaces, 429 are located in Promontory and are only available to Promontory residents; 22 are located in the Student Center at the Otter Cycle Center; and 12 are in bicycle lockers.

Bicycle Amenities

Two outdoor fix-it stations are located at the library and next to the Bicycle Bunker. These stations provide repair tools and air pumps. The Otter Cycle Center also provides maintenance services, along with short-term or long-term bicycle rentals and sponsored group rides. Showers are located within the Otter Sports Center, Aquatic Center, and Joel and Dena Gambord Business and Information Technology buildings.

Bicycle Safety

Due to gaps in both the campus and regional networks, cyclists can be forced to use bicycle routes (Class III) that share space with vehicles in the roadway. Some of these roadways contain no shoulders, have poor pavement quality, collect debris in the bicycle lanes, or experience a combination of high traffic volume and travel speeds. Once riders are on main campus, traffic speed limits are reduced to 25 mph. This reduction provides only a marginal increase in bicyclist comfort, as the volume of traffic, lack of dedicated bicycle facilities, and stop signs introduce additional conflict points between cyclists and other travel modes. Bicycle boulevard symbols are painted on some roadways to increase driver awareness of the presence of cyclists.

Existing Pedestrian Circulation

The CSUMB campus has a broad variety of pedestrian accommodations. Some portions of the campus, such as the existing pedestrian malls on Divarty Street and Sixth Avenue, where automobile access is restricted, provide a high-quality walking environment, with many destinations within a close walking distance. However, other areas of campus lack sidewalks or other basic pedestrian amenities, and destinations are spaced further apart.

Accessibility

While the university has made improvements to the pedestrian network, many locations still lack direct, accessible pedestrian connections. In order to improve mobility for pedestrians and address major accessibility barriers for the mobility-impaired, accessibility issues have been cataloged as part

Figure 7.6: *CSUMB Community Bike Map*

of an ongoing effort of the campus American Disabilities Act (ADA) Transition Plan.

In many areas, such as along Fifth and Sixth Avenues and portions of Inter-Garrison Road, the natural topography is more than a 5 percent grade, making the construction of ADA-accessible pathways challenging.

Safety

Pedestrians face many opportunities on campus for pedestrian-vehicle conflicts. Flashing crosswalks and stop signs have been installed at high-traffic locations to increase pedestrian visibility.

Although there have been a number of lighting improvements along Inter-Garrison Road, pathways, and in parking lots, some areas continue to have inadequate lighting. The University Police Department offers a night walk service to personally escort anyone on campus at all hours, seven days a week.

Existing Transportation Demand Management Program

CSUMB's Transportation Demand Management (TDM) program provides services and resources that encourage cycling, public transit use, and ride-sharing. Various types of travel resources are available to students, faculty, and staff, including ridesharing, guaranteed ride home, bicycle support resources, and an unlimited MST ridership program. Information about these programs is provided on the CSUMB website.

Parking revenue is managed and collected by the University Police Department while transportation and TDM efforts are managed by Campus Planning & Development. There is currently no long-term planning strategy to link parking revenue with TDM strategies.

Campus and Community Comments

The following is a summary of the key themes shared by members of the campus community concerning CSUMB's transportation and mobility systems:

- The campus should provide more connected, convenient, and accessible bicycle and pedestrian facilities
- There is a need for a more efficient, reliable, and accessible transit and shuttle service
- Accessibility at existing and future facilities should be improved, going beyond ADA compliance to incorporate universal design principles
- Connections to developments near the campus and regional facilities (e.g., the Monterey Bay Sanctuary Scenic Trail and the proposed FORTAG trail) need improvement
- The campus should have clear gateways and wayfinding to promote a welcoming campus and reduce regional cut-through traffic
- Amenities to improve pedestrian and bicycle safety, such as lighting, are needed, and there is a need to improve areas where vehicle and pedestrian conflicts occur
- Additional bicycle parking locations are needed around campus
- The current oversupply of parking and its low cost make driving a relatively easy travel option and discourage travel by non-automobile modes

RECOMMENDATIONS

Three distinct transportation scenarios were developed to address current transportation challenges facing the campus. The scenarios were focused on TDM and mode-share goals to determine how to prioritize transportation infrastructure and what aspects of circulation and access were most important to the community. All scenarios and related mode-share goals assume that CSUMB will house 60 percent of students and 65 percent of staff and faculty on campus, and will substantially reorients its vision for the campus towards a sustainable transportation system. These assumptions were developed in conjunction with CSUMB staff, faculty, and students to reflect the University's increasing commitment to becoming a regional example for sustainability.

After consultation with the campus community, the ambitious transportation scenario was selected.

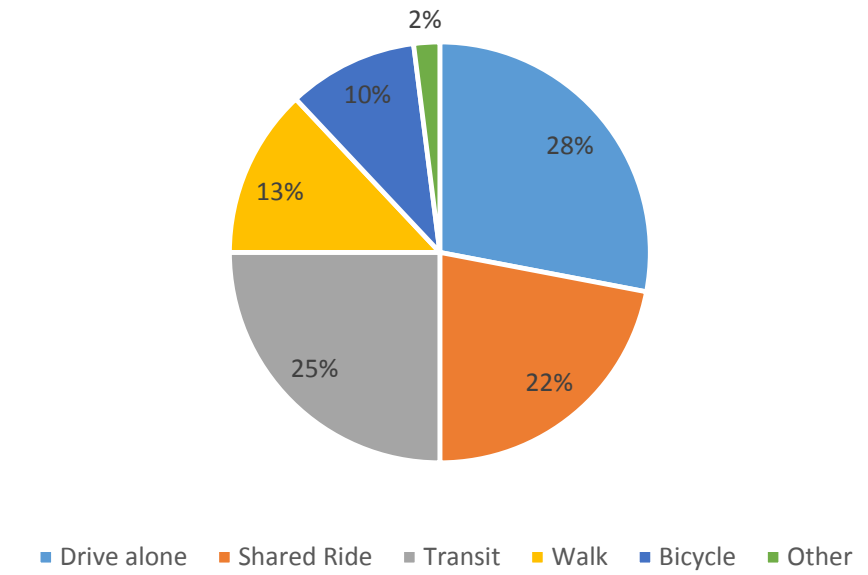
The following recommendations seek to improve campus travel options, prioritize pedestrian and bicycle movement, and reach the campus's desired mode split.

Pursue an Ambitious Transportation Scenario

This scenario will address the issues raised by campus and community stakeholders and will demonstrate regional leadership in sustainable transportation. The scenario's 2016–2026 goal is a mode split as follows: 28 percent drive alone, 22 percent shared ride, 25 percent transit, 13 percent walk, 10 percent bicycle, 2 percent other (see Figure 7.7). To reach this mode-split goal, many TDM strategies will need to be employed. Assumptions for the ambitions scenario were as follows:

- Pedestrian travel will be prioritized over other modes of travel
- The transit program will continue to offer unlimited free rides for CSUMB ID card holders
- CSUMB will house 60 percent of students and 65 percent of staff and faculty on campus

Figure 7.7: *2016-2026 Mode Share Goals*



- Parking will be limited and consolidated to the campus periphery
- Vehicle travel will be separated from bicycles and pedestrians where possible
- Academic buildings will be concentrated in the campus core within a quarter-mile walking distance
- Accessibility will be improved on existing streets and corridors, and will be a primary consideration on new facilities
- New TDM strategies will be introduced and funded

Expand Transportation Demand Management Program

Strengthening and expanding TDM offerings will increase rates of walking, cycling, transit use, and ridesharing. It will also reduce the amount of land needed for parking, and lessen traffic impacts on local and regional roads.

Table 7.2 outlines options for a more robust, comprehensive TDM program. The program should include a planning effort that establishes specific means of reaching the mode split objectives. Its success will require dedicated personnel and monitoring over time.

Expand campus trail network and connect to regional pathways and destinations

Improving the connections to regional pathways and destinations increases access to amenities and furthers regional economic development. Trail expansion should connect to Marina, Seaside, FORTAG, Presidio of Monterey and Monterey County.

Integrate universal design principles

Universal design principles should be applied to meet the mobility needs of the entire community. These principles recognize the changing diversity of needs important to all people regardless of their age, ability, or condition, during an entire lifespan, rather than focusing on addressing the unique special needs of a few people. They focus on the complicated interrelationships between the physical environment and the user, espousing barrier-free design, user-friendly architecture, and comfortable environments. CSUMB can create a universally accessible campus by utilizing these principles.

- Equitable use: design and build a network within the campus core that is accessible using the same means of use for all users—identical when possible, equivalent when not
- Flexibility in use: accommodate a wide range of individual preferences and abilities
- Simple and intuitive use: eliminate unnecessary complexity; be consistent with user expectations
- Perceptible information: communicate necessary information regardless of the ambient conditions or user's sensory abilities
- Tolerance for error: minimize hazards and adverse consequences of unintended actions
- Low physical effort: design for efficient and comfortable use
- Size and space for approach and use: provide adequate space and clear lines of sight
- Emerging technologies: stay ahead of accessibility regulations for emerging technologies where standards are not yet in place

Improve wayfinding

Clear wayfinding allows visitors and new students to easily navigate the campus. Updating the campus wayfinding plan to adapt to the new master plan layout and including bicycle, pedestrian, and accessibility signage with walking times and distances will contribute greatly to the ease of navigation. The campus wayfinding plan should incorporate off-campus signage placement and refer to regional standards for consistency.

Divert regional through-traffic

Diverting traffic around the periphery of campus will help to prioritize pedestrian and bicycle safety within the campus core. This recommendation recognizes that regional cut-through traffic is a campus-wide safety concern, and it detracts from the quality and character of the campus environment. The roundabout on Inter-garrison Road and Eighth Avenue will address this issue on the east side of campus; restoring the connection of Eighth Street to Second Avenue will do the same on the west side of campus, when it is completed.

Build multimodal hubs

The master plan introduces two multimodal hubs, which will serve as the main points of arrival to the campus and facilitate the transition to active modes of travel. The hubs contain amenities for regional transit, such as bus bays, shelters, pay stations, seating, and maps, and they will also serve the campus shuttle system. With these hubs, the master plan creates the opportunity to re-configure the circulation system, consolidate parking, facilitate a "park once" policy, and improve options for multimodal travel.

MOBILITY PLANS

Vehicular Circulation Plan

Access and Circulation Framework

The access and circulation framework has been designed to divert cut-through traffic by means of restricted access, signage, and road closures. The framework recommends several road network improvements and changes to create a campus more pedestrian- and cyclist-friendly. The changes require separating vehicles from other users to keep all users safe and create convenient bicycle and pedestrian routes. Service and emergency vehicles remain able to access all areas of campus.

Figure 7.8 illustrates the proposed vehicle circulation plan for the campus.

The City of Marina plans to complete Eighth Street between Third Avenue and General Jim Moore Boulevard. This will create a continuous roadway connecting Second Avenue to Inter-Garrison Road near Seventh Avenue, diverting regional traffic that would otherwise cut through the campus. In addition, Inter-Garrison Road at its intersections with both Eighth Street and Seventh Avenue will be redesigned to encourage east-west through traffic to use Eighth Street or Eighth Avenue and promote Inter-Garrison Road as a bicycle- and pedestrian-priority street.

Vehicle traffic is removed from the campus core to create a more bicycle- and pedestrian-oriented environment. To support these strategies, restricted access is proposed on Fourth and Fifth Avenues, and portions of Divarty Street, Inter-Garrison Road and Sixth Avenue.

A new extension of Fifth Street east toward Eighth Street is proposed on the north side of campus to provide improved access to north campus housing for service, emergency, and transit vehicles.

In addition to restricted access on the streets mentioned above, limited access for through traffic is recommended at the intersection of Eighth Street and General Jim Moore Boulevard. This entry point will be designed to discourage through traffic from using General Jim Moore Boulevard, remaining open for campus access to parking facilities, and emphasizing low-speed vehicle travel with high-quality bicycle, pedestrian, and transit facilities. Service and emergency vehicles are able to access all areas of campus, and drop-off and move-in access is available at all student housing locations.

Seventh Avenue between Colonel Durham Street and Butler Street will be designated one-way northbound to reduce vehicular traffic adjacent to the Charter School, and to create a safer crossing of the FORTAG trail.

The master plan also introduces two multimodal hubs, which serve as the main points of arrival to the campus, facilitate the transition to active modes of travel, and contain campus shuttle and regional transit facilities. The multimodal hubs also include pick-up and drop-off areas for taxi service. Amenities should include maps and wayfinding signage, bicycle services and resources, and preferential parking for rideshare, car share, electric, and low emission vehicles. Charging stations for electric vehicles should also be provided.

The western hub, serving Monterey Peninsula commuters and visitors, is located in the athletics and recreation area at General Jim Moore Boulevard and Divarty Street, not far from the Alumni & Visitors Center Transit Exchange. This hub will be regionally oriented to accommodate additional transit routes and parking. Transit will connect the campus to the multimodal corridor where future bus rapid transit service will link the campus to both Peninsula and Salinas Valley destinations.

The eastern hub is located on the northeastern edge of the campus at Sixth Avenue and Inter-Garrison Road. This hub may be smaller than the western multimodal hub and is likely to be used primarily by students, staff, and faculty living on campus and traveling to other destinations, as well as commuters from the Salinas Valley.

Both hubs are currently planned with surface parking lots. However, structured parking, which is the most efficient use of space, would serve the campus well if it grows beyond 12,700 students or begins hosting large events.

Table 7.2: *Transportation Demand Management (TDM) Strategies*

TDM Measure	Description
BICYCLE	
Bike Buddy Program	A bicycle buddy program helps connect new bicycle riders with others, thus providing a mutual encouragement and motivation. Group cycling also increases the visibility and safety of cyclists.
Bicycle Parking*, Showers and Lockers	Cyclists are reassured by guaranteed secure bicycle parking that their bicycles will not be stolen. Showers and changing rooms help promote bicycling (and walking) as an alternative commute option by providing a place to clean up after a ride (or walk).
Bicycle Riders Guide*	A guide showing bicycle routes, lanes, and paths to campus along with locations of on-campus bicycle parking makes it easier for people to bicycle and walk to work.
Bike Sharing	A bicycle-share program provides employees and students with campus bicycles and free bicycle helmets, helping to eliminate trips made by car during the day.
Bike-to-Work day	A regional event to introduce bicycle commuting can get people to start bicycling more frequently.
Electric Bicycle Charging Station	Electric bicycles can be used for longer trips than standard bicycles. Providing the infrastructure to support them facilitates more bicycling options.
CAMPUS DESIGN	
On-Campus Amenities and Services	Amenities help to reduce the number of trips people need to make off campus during the day. They may include the following: cafes or coffee shops, a general store, banking, dry cleaning, health and wellness, etc.
On-Site Bike Repair Facilities*	Bicycle repair stands offer an air pump and basic tools to keep your bicycle in good shape.
Wayfinding	Improved signage adds to the character of campus by using branding, and also makes it easier for bicyclists and pedestrians to navigate the campus.
FINANCIAL	
Parking Cash-Out	Paying employees the cash equivalent of employer-provided parking if they elect to forgo parking provides a financial incentive to use a mode other than driving alone to work.
Pre-Tax Commuter Benefits	Passing employer tax benefits to employees who use non-drive-alone modes provides a financial incentive to use alternative modes.
PARKING	
Priced Parking*	Introducing a tiered parking permit price structure helps educate drivers that parking is not included in formal employee benefits, but is a service with incurred costs.
Parking Supply	Managing parking supply to prevent over-parking a site reduces the convenience of driving.

Table 7.2: *Transportation Demand Management (TDM) Strategies (cont.)*

TDM Measure	Description
RIDESHARING	
Car sharing*	People who bicycle or walk or use transit, carpools, or vanpools can utilize a car-share vehicle located on campus for errands or meetings in order to reduce concerns and inconveniences of not having a vehicle.
Expanded Carpool Matching	Rideshare programs help to form carpools and vanpools by matching drivers and passengers. By going beyond using 511.org to customize matching services to the campus, CSUMB can potentially increase its success in forming new carpools and vanpools.
One-way Car share	One-way car sharing allows users to pick up a vehicle on one location and drop it off at another location. One-way car sharing provides an additional level of convenience beyond traditional car sharing.
TDM RESOURCES	
Commute Ambassadors	An ambassador/buddy program eases people into commuting alternatives, and it can provide incentives for new commuters referred by a friend.
Foster Competition and Engagement	Competitions can help engage people in a given TDM option. These competitions may include prize drawings, and may center on any mode (bike-to-work competition, pedometer/walking challenges). They may also include recognition programs (Commuter of the Month, etc.).
Guaranteed Ride Home Program*	Employees and students who use transit, carpools, or vanpools are guaranteed a ride home in case of emergency or if they need to work late. A guaranteed ride home program helps to reduce concerns about using alternative modes.
Marketing and Information*	Marketing the TDM program keeps alternative mode choices on the forefront of people's minds and helps encourage trip-reducing behavior. A marketing program can include the following:
	- "Welcome" packets that include resources
	- Website with information and links to relevant agencies, forms and services
	- Information boards or kiosks located in centralized places such as the quad
	- Regularly published electronic or printed newsletter
	- Informational email blasts
On-Site Transportation Coordinator*	Transportation coordinators are responsible for developing, marketing, implementing, and evaluating TDM programs. Having dedicated personnel that people can turn to for resources and information helps make using alternative modes easier.
Surveys*	Surveys conducted on an annual basis provide the transportation coordinator with the information necessary to understand the effectiveness of the TDM programs and the preferences of the people they serve.
Transportation Fairs	Transportation fairs provide alternative mode information in a fun event.

Note: An asterisk (*) indicates that the TDM measure has already been implemented to some degree.

Campus Gateways
Gateways declare the arrival on campus, define the campus edges, improve campus identity, and discourage cut-through traffic. The major vehicular entries to the campus from the west are located at Divarty Street and Second Avenue, and on General Jim Moore Boulevard at Lightfighter Drive. The major entry on the east is at Inter-Garrison Road and Sixth Avenue. These entries should be marked as gateways with monument signage and attractive landscaping that evokes the CSUMB character and identity.

Parking

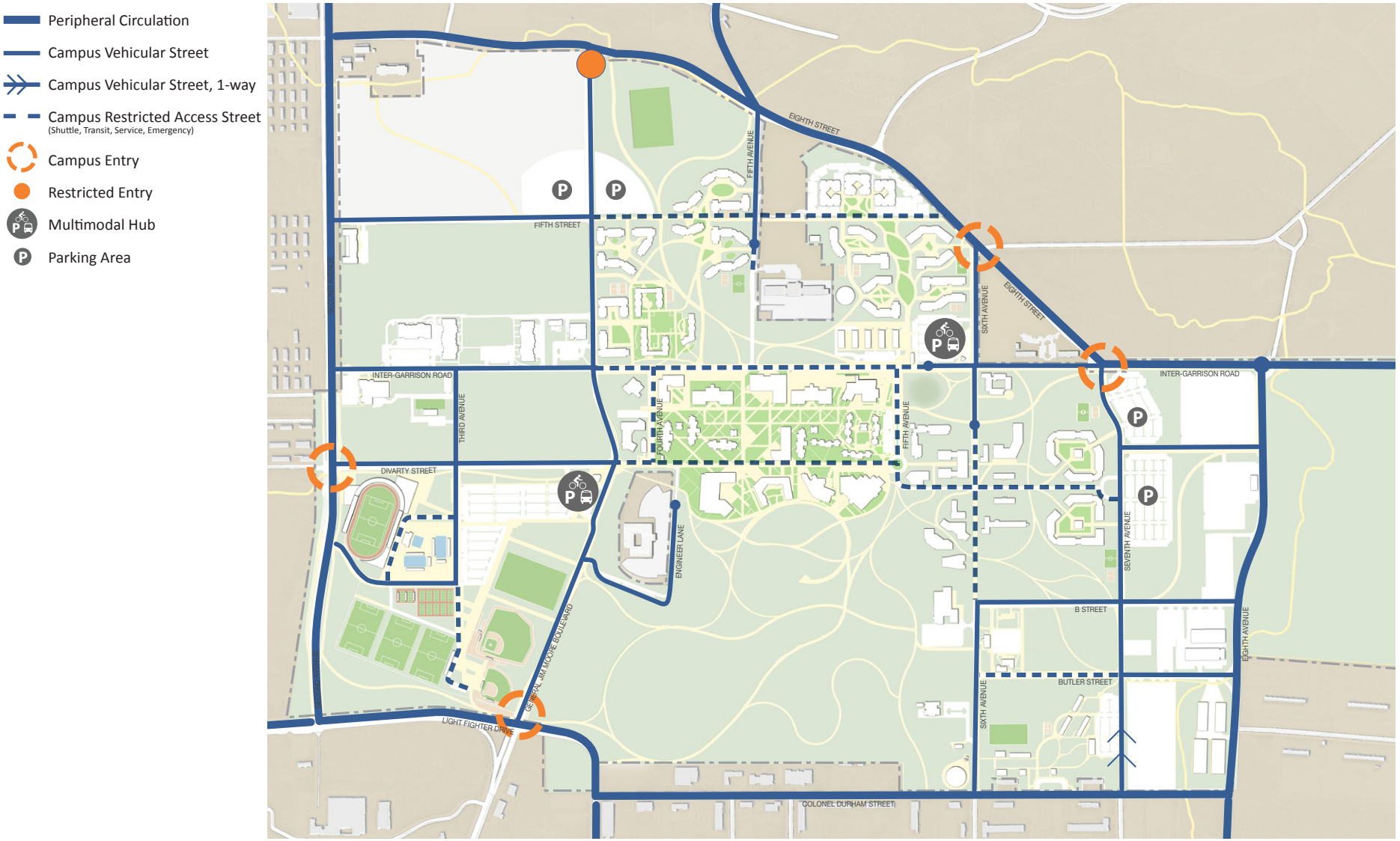
The master plan goals for parking are to proactively manage the parking supply, make parking more efficient, and remove non-essential lots from the campus core. These goals will be achieved by consolidating parking incrementally as new development occurs, and by implementing complementary TDM strategies.

There is currently an oversupply of parking, despite a perceived need for more. Many of the inefficient, dispersed surface parking lots can gradually be closed without impacting overall parking supply as the campus consolidates its parking supply into parking lots at the campus periphery.

Short-term lots will be located primarily at the multimodal hubs, where they will serve visitors and carpooling commuters. Long-term satellite lots will serve as residential parking areas and overflow lots. Special parking stalls will be provided to accommodate service vehicles, deliveries, loading and unloading activities, and trash pick-up. Appropriate numbers of accessible stalls will be allocated near campus buildings. Installation of solar panel canopies over surface parking lots should be evaluated for energy generation.

Parking Management Plan
CSUMB should develop a parking management plan that is aligned with the expansion of the TDM strategies. See Chapter 12: Implementation for further detail.

Figure 7.8: *Vehicular Circulation*



Transit Circulation Plan

Transit service provides affordable short- and long-distance access to campus for commuters, to off-campus recreation, service learning opportunities for campus residents, and critical regional mobility access for specific populations, such as International Students. A transit system paired with other modes of transportation can significantly reduce single-occupant vehicle trips and support the achievement of the mode split goal.

There are several opportunity areas to reach potential CSUMB transit riders, including providing live transit information through apps or digital sign boards, and utilizing every counter interaction with a staff office to inform students of transit services. The university should also address, during orientation and housing department programs, the cultural stigmas that have led to few students having much experience riding a bus before college.

The master plan proposes several improvements to transit and shuttle systems. The proposed routes are illustrated in Figure 7.9. In addition to the multimodal hubs with new transit amenities, increased frequency of shuttle service will be implemented throughout the campus. Expanded transit services and an analysis of unmet needs will be considered in concert with the proposed parking management plan and a bicycle and pedestrian plan.

Regional Transit

Regional transit services are provided by MST. Buses access the campus primarily via Inter-Garrison Road and Divarty Street. Some buses that provide service to Salinas or Marina will be more efficient if they use Inter-Garrison Road. These buses can help to supplement the shuttle service, increasing the overall frequency of service at the two multimodal hubs. Buses will be safely separated from bicycles and pedestrians where a high volume of students will be crossing the road from future housing areas to the Main Quad.

Transit will connect the campus to the proposed Marina-Salinas multimodal corridor where future bus rapid transit service will link the campus to both the Peninsula and Salinas Valley destinations.

Campus Shuttle Service

Shuttle service will continue to serve East Campus Housing, the campus core, and the parking lots east of Seventh Avenue. Once the Fifth Street extension and new housing are completed on the north side of campus, a second route will be added to supplement service. This new route will include a larger loop serving both East Campus and North Campus housing. The result will be frequent and continuous shuttle service circulating around the campus core, with peak shuttle service serving campus housing.

The university wishes to improve transit ridership. Increasing parking revenue and disallowing cars for lower classmen would help do so. Transportatin and parking revenue may be used to fund the campus-run operation of transit services. A feasibility study should be conducted to make this determination.

Transit shuttle size must also consider the accommodation of high levels of ridership during peak class times. Additional shuttles may be required to ensure reliably frequent service.

Paratransit Service

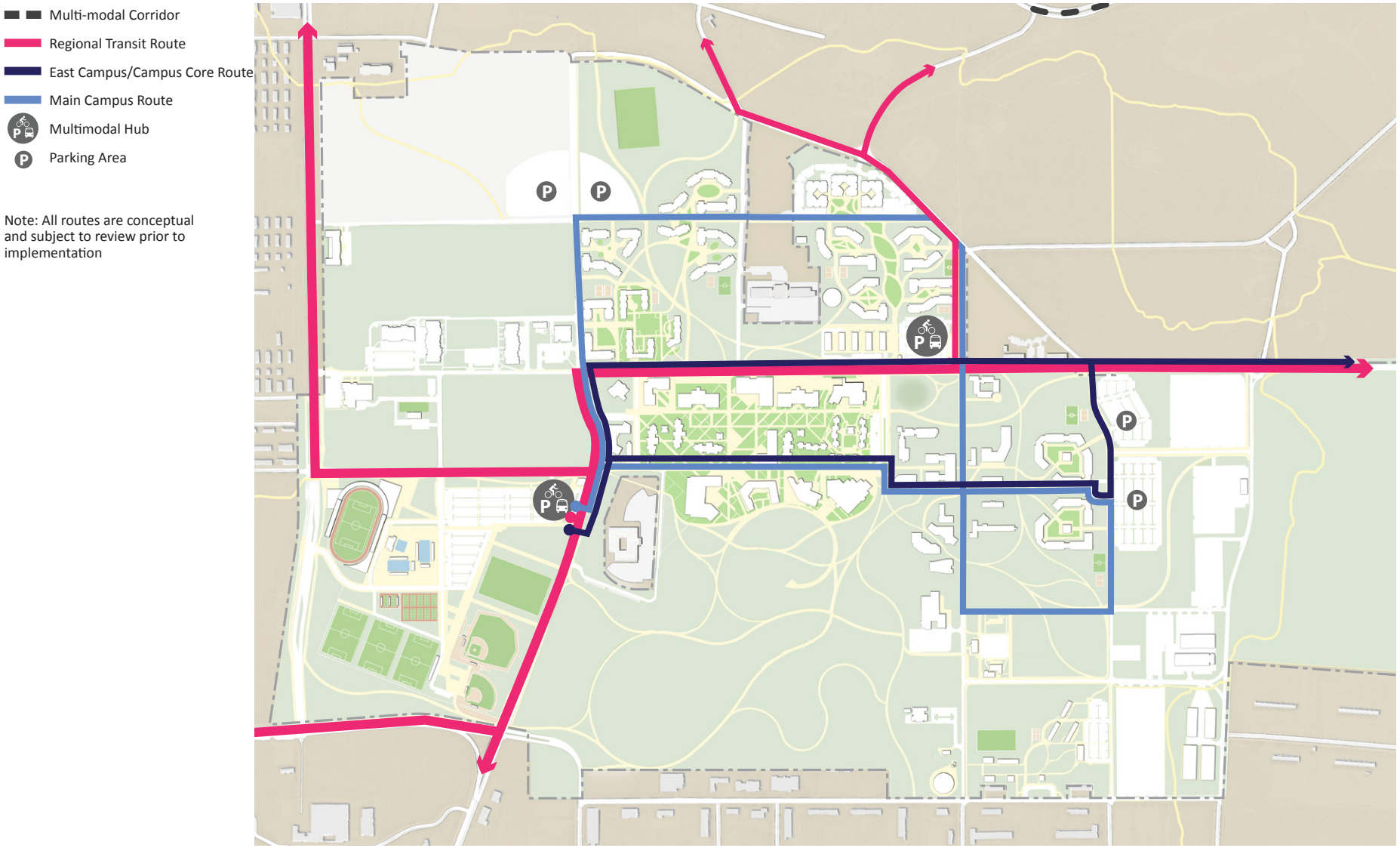
The campus will provide additional paratransit services to supplement MST RIDE and On Call services to better serve the campus. CSUMB will continue to work with external stakeholders to provide external paratransit services.

Transit infrastructure

Bus stop access should be safe and accessible. Stops must meet ADA standards and allow easy loading of wheelchair passengers. When possible, crossings should be located behind the bus. Adequate lighting should be provided at bus stops and along pathways linking stops with housing and academic buildings.

Shelters should be provided and prioritized based on boarding rates. Room for wheelchairs should be provided inside bus shelters, along with accessible paths of travel to shelters. Real-time arrival boards or additional route information may be installed at high ridership locations. High usage stops should accommodate ridership with larger-capacity bus shelters. Benches or standing rails should be provided at stops without bus shelters as an intermediary solution.

Figure 7.9: *Transit and Shuttle Circulation*



Bicycle Circulation Plan

Bicycling promotes health, happiness, and well-being; it also provides a convenient way to get to and around campus. Travel to and from CSUMB and nearby community destinations is beyond the acceptable walking distance for most pedestrians, but is within acceptable bicycling distances. Pedestrians tend not to walk distances of more than one-half mile, but bicyclists often ride three to five miles for trips.

The current dispersed nature of the facilities and destinations on the CSUMB campus makes bicycling an attractive alternative to walking and driving. The campus community has expressed a great deal of interest in increased bicycle infrastructure on campus, creating a significant opportunity for the university to support and promote bicycling for commutes and on-campus trips.

Centrally located between Seaside, Marina, the Pacific coast, and the Fort Ord National Monument, CSUMB is in an ideal location to connect with regional destinations. Safe, efficient, and attractive regional bicycle paths through the CSUMB campus should connect to regional trail networks, employment, and activity centers.

A shift from car culture to bicycle culture is necessary to double ridership in the first development horizon. The Bicycle Circulation Plan (Figure 7.10) and larger Regional Trail Connections (Figure 7.11) illustrate planned improvements to the bicycle networks.

Bicycle Network

Bicycle improvements include a system of separated (Class I) facilities that provide connections within campus and to nearby cities and regional trails. A majority of these planned facilities are greenways with native landscape planting that extend through campus open spaces and infiltrate stormwater runoff. Some of these paths are dual-use facilities that accommodate both pedestrian and bicycle traffic.

The master plan supports improved bicycle connections within the campus and to existing and planned regional networks. A number of connections and specific projects were identified during the planning process. Major connections include:

- Inter-Garrison Road Improvements: Improved east-west bicycle access via Inter-Garrison Road will be promoted as part of the master plan. Initially, Inter-Garrison Road should have Class II bicycle lanes, but a Class I path may be appropriate once automobile traffic is restricted.
- Divarty Street Class I Path: This project creates a multi-use bicycle and pedestrian pathway along the south side of Divarty Street west of General Jim Moore Boulevard to create a safe, separated connection to Second Avenue. West of Second Avenue (off campus), the project coordinates with Seaside to connect to the entrance of Fort Ord Dunes State Park and the Monterey Bay Sanctuary Scenic Trail, just west of First Avenue.
- Fort Ord Rec Trail and Greenway: The FORTAG is being developed in partnership with many regional agencies. Its proximity to CSUMB and the region's attractions make these connections invaluable to the campus community. Priority should be made to develop the FORTAG where it travels through the campus, and connect to it where it meets the campus edges.
- City of Seaside Connection: A potential bicycle connection from the campus core to the city of Seaside links the library through the Southern Oak Woodland to the city of Seaside. One possible connection runs along a PG&E corridor south of Gigling Road, eventually merging into General Jim Moore Boulevard.

Figure 7.10: *Bicycle Circulation*

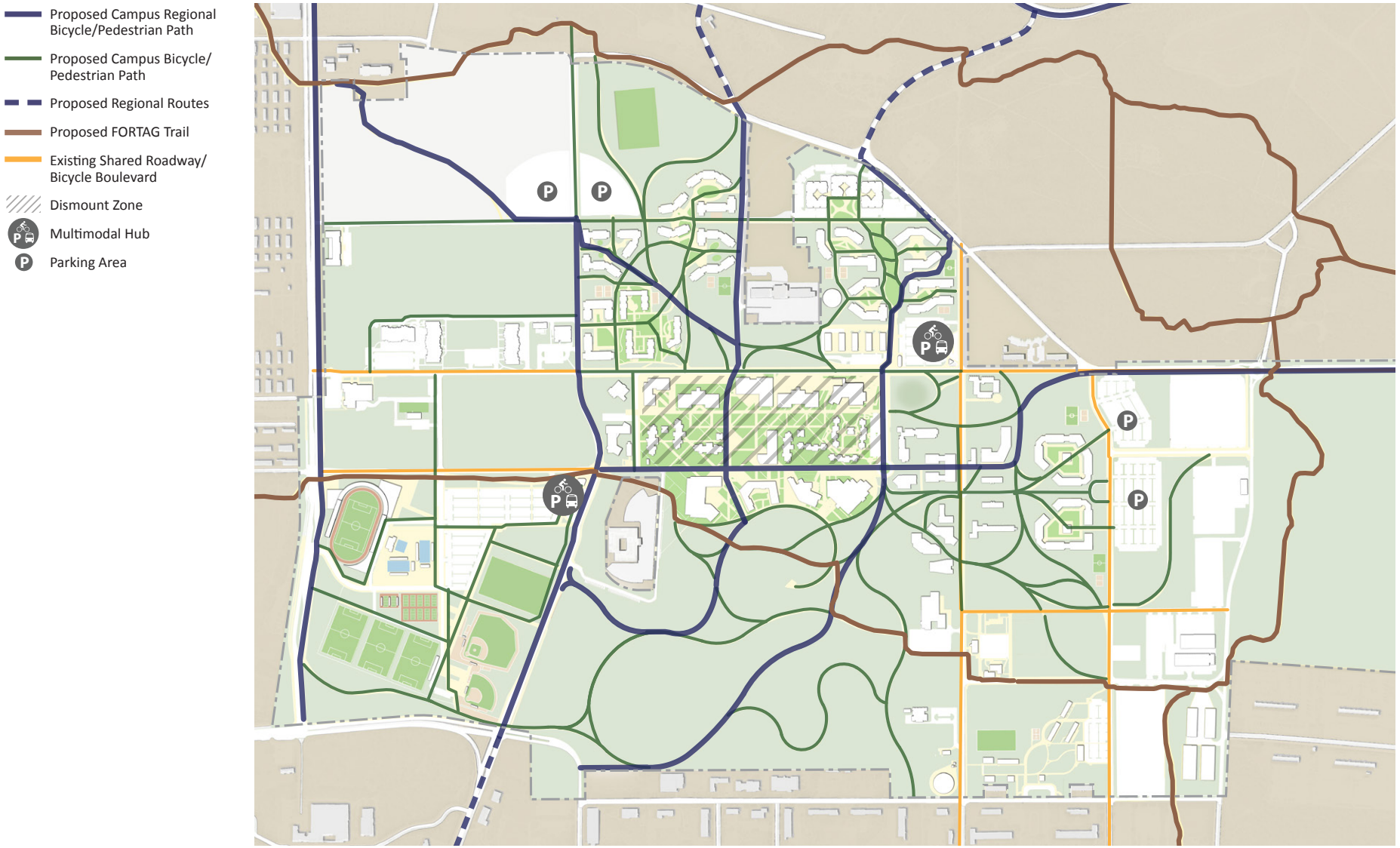
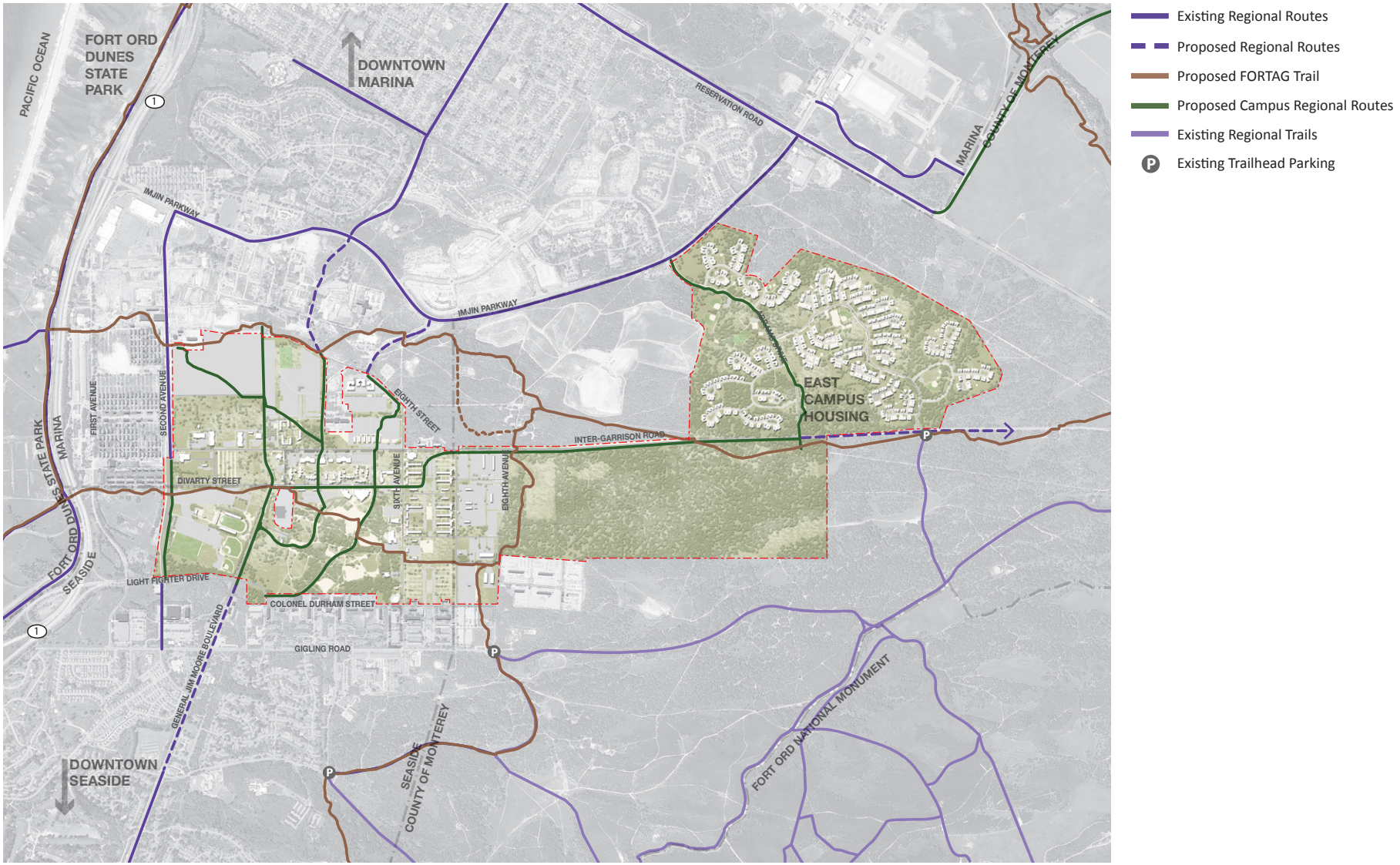


Figure 7.11: *Regional Trail Connections*



Bicycle Parking and Amenities

The salty coast air is harsh on uncovered bicycles, quickly corroding chains and other components. Providing long term covered bicycle parking for residential halls inside or adjacent to buildings will be necessary to protect bicycles. The campus should develop short- and long-term bicycle parking standards for all buildings and amenities. Also, additional Fix-it stations should be installed throughout campus, particularly near residential halls.

Bicycle Share Program

The implementation of campus bicycle sharing and greenways or separated paths, combined with less than twenty-minute shuttle service, can facilitate multimodal travel options. These improvements will be supported by a campus bicycle share system, which will allow people to plan for multimodal trips without committing to one particular mode.

Bicycle Safety

With the creation of the Divarty Mall and a bicycle- and pedestrian-oriented Inter-Garrison Street, and the addition of multimodal hubs, traffic volume flowing through campus will decrease. However, there will still be conflict points where proper safety measures will be required. The campus will separate bicycle travel from pedestrians where possible. The campus will also limit vehicular traffic speeds in high pedestrian or bicycle zones. Crossings should be at grade to increase bicycle visibility. Lighting should be installed along multi-use paths to increase visibility. Bicycle signage should also be installed to alert drivers and communicate traffic regulations.

Bicycle and Pedestrian Plan

The university should develop a bicycle and pedestrian plan to identify, prioritize, and design improvements. The plan should include a maintenance plan that creates a system for maintaining pavement quality, signage, bicycle racks, painted markings.

CSUMB should apply for and obtain a League of American Bicyclists bicycle-friendly university rating to ensure high bicycle safety standards and expand the bicycle culture on campus.

Students, faculty, staff and community members enjoy the safety of Sixth Avenue, which is closed to vehicular traffic (upper), as well as the nearby regional trail networks (lower).

Pedestrian Circulation Plan

The master plan prioritizes pedestrian travel as the primary mode of travel on campus. To ensure a comfortable pedestrian experience, the plan calls for safe, attractive, and inviting pathways and open spaces throughout campus.

The pedestrian circulation plan (Figure 7.12) proposes an expanded pathway network to enhance connectivity within the campus and to regional destinations. The plan includes a network of multi-use greenways and pedestrian pathways that create direct and efficient connections between destinations. The plan highlights pathways with less than 5 percent grade and outlines a dismount zone for bicyclists in the campus core.

Divarty Street will be further developed as a pedestrian mall that will strengthen connections through the campus, and serve as an inviting destination. The existing Sixth Avenue pedestrian mall will be expanded to A Street. Inter-Garrison Road will be converted from a regional vehicle way into a transit, bicycle, and pedestrian corridor.

The pedestrian circulation plan creates intentional linkages to the unpaved trails in the Southern Oak Woodland south of the Crescent. The future Student Recreation Building on Divarty Mall could expand exercise programs outdoors by providing a fitness trail with exercise stations along improved trails through the woodlands. Connections to the Athletics and Recreation District are also provided.

Separated bicycle and pedestrian paths have been identified for Inter-Garrison Road between Eighth Avenue and Abrams Drive, and paths have been partially built along Imjin Parkway. The campus will continue to work with local jurisdictions to implement and improve bicycle and pedestrian routes between the Main Campus and the East Campus Housing.

Joining to the larger regional trail network provides both commuter connectivity and major recreation benefits. One FORTAG route runs through campus, from Butler Street on the east, through the scenic Southern Oak Woodland, and along Divarty Street to the ocean. Additional campus connections link up with the northern FORTAG route in multiple locations.

Accessibility

The master plan recognizes that the term “pedestrian” includes disabled persons, including those assisted by wheelchairs, and sight-impaired users. The university will prioritize improving accessibility throughout the campus in both indoor and outdoor environments. The Campus ADA Transition Plan will provide useful guidance in identifying barriers and prioritizing improvements. Universal design principles will be applied and when campus topography does not allow direct access along a corridor, an alternative path will be provided.

Pedestrian Safety

The safety aspects described in the Bicycle Plan description above apply to pedestrian safety as well. Removing small parking lots and preventing vehicular circulation in the campus core will help eliminate vehicle, pedestrian, and bicycle conflicts. Pedestrian-scale lighting should be provided throughout campus, especially along the corridors connecting the main activity centers and housing.

Protection from Elements

The pedestrian network will attempt to provide maximum protection from inclement weather by providing trees planted as windrows to block wind heading east along the major pathways. The tree canopy should provide shelter but not interfere with bicyclists or create security concerns.

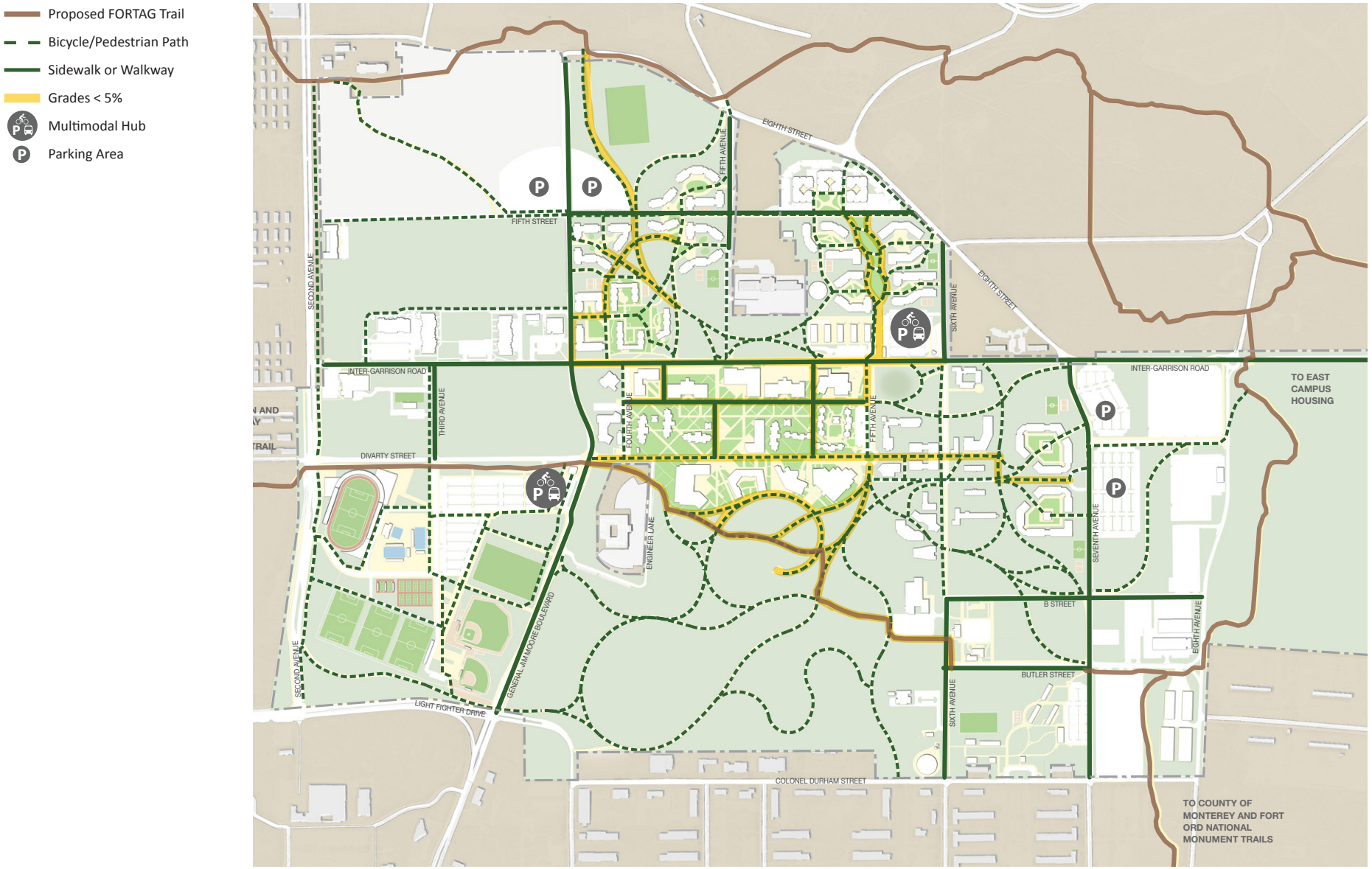
Educational Signage

Including informational signage about flora, fauna, stormwater management, or views along pedestrian pathways and multi-use greenways will add to the goal of creating a learning laboratory of the campus. Interpretative signage will also be important part of the culture shift moving people to walk instead of drive.

Equestrian Travel

Pathways should be considered for equestrian travel, and should be separated from bicycle and pedestrian facilities for safety where appropriate. In particular, on-campus equestrian activity should allow easy access to and from the Equestrian Center, as well as to regional trails to the east and south of campus.

Figure 7.12: *Pedestrian Circulation*



8

WATER SYSTEMS

RESPECT SCARCITY AND MANAGE RUN-OFF

INTRODUCTION

CSUMB was allocated 1,035 acre feet of water by the Fort Ord Re-Use Authority shortly after the closure of Fort Ord. It is located in a drought-prone area with nearby aquifers suffering from saltwater intrusion. As a custodian of this limited resource, the university proposes to educate users about conservation, and to demonstrate the use of innovative water-management strategies (stewardship). A range of innovative strategies will provide resiliency, should existing water supplies become limited, or should the campus decide to achieve net positive water—an ambitious goal that will first require achieving net zero water use. A wide range of strategies includes limiting the use of potable water for non-potable uses, capturing rainwater, using greywater from washing machines for irrigation, installing dual pipe plumbing in residence halls, and treating all campus wastewater for reuse on site.

Stormwater management will provide strategies to percolate stormwater within the campus footprint. Stormwater percolation systems will mimic native landscape features and will create attractive landscaped areas along an expanded proposed trail system (placemaking). Stormwater management will also continue to include the replacement of aging pipes still in use.

The campus will continue to support sustainable regional water projects that treat and distribute wastewater for reuse, supplementing water pumped from the Salinas Valley Groundwater Basin. In anticipation of receiving 87 acre-feet a year of regionally generated recycled water from FORA, the campus has installed recycled water irrigation piping for all newly created landscapes. As a purveyor of existing campus water supplies, the Marina Coast Water District (MCWD) will continue to be an important conservation and water management partner. The campus will also consider public-private partnerships as a way to fund and build campus water infrastructure (partnerships).

GOALS

Achieve net zero water (exempt)

Use non-potable water supply for all non-potable water demands in any new improvement on campus. Explore options for achieving net positive water (100 percent of water use sourced on site), creating a campus- generated potable water supply. This would require treatment of greywater and blackwater.

Promote resiliency

Strive to remain within the carrying capacity of the site and respect the natural hydrologic patterns, while identifying redundant systems that are resilient to natural disasters or unexpected service changes.

The goals of net zero water and resiliency are mutually supportive; they offer options for campus growth, while considering the limitations of natural resources.

Integrate low impact design into all landscaping and outdoor areas

The term low impact development (LID) refers to systems and practices that protect water quality and associated aquatic habitat by using or mimicking natural processes in the infiltration, evapotranspiration, or use of stormwater. The implementation of LID techniques can greatly improve the quality of stormwater runoff, restore the infiltration of water to the aquifer, eliminate costs associated with conventional drainage systems, and reduce development impacts such as erosion and flooding. LID strategies and techniques also support the university's goal to seek Monterey Bay Friendly Landscape certification for new development projects.

Percolate all stormwater within the campus footprint

The campus aspires to sustainably manage all stormwater on the campus through a combination of decentralized and centralized LID features that are integrated into both the open space and public realm. The Central Coast Regional Water Quality Control Board has prioritized infiltration in Monterey County as a means of protecting Monterey Bay water quality and inhibiting further saltwater intrusion. The campus's goal is to reduce reliance on off-site regional infrastructure by expanding their on-site stormwater management capabilities in an integrated fashion.

BACKGROUND

Guiding Policies

Executive Order 987 (2006)

Supports energy conservation, sustainable building practices, and physical plant management policy at CSU campuses. Specifically, systems should be designed for optimization of energy, water, and other natural resources. CSU campuses will take the necessary steps to conserve water resources, including installation of optimized irrigation controls, reduction of water use in restrooms, and promotion of the use of reclaimed water.

Second Nature Climate Commitment (2007, reaffirmed 2016)

This original commitment states that the campus will develop a comprehensive Climate Action Plan (CAP) and set a target date for achieving carbon neutrality. In 2016 the campus signed the updated commitment that incorporated adaptation to climate change and five specific measures to reduce water use and reliance on bottled water.

Climate Action Plan (2013)

The CAP was developed in response to the original climate commitment. It established a carbon neutrality target year of 2030. The 2013 CAP includes recommendations relevant to this water strategy.

MCWD Conservation Measures

The campus works closely with the MCWD to implement conservation measures as opportunities and funding sources are identified.

Existing Conditions

Potable and Recycled Water

CSUMB receives its potable water services from MCWD. MCWD in turn obtains 100 percent of its supply from the Salinas Valley Groundwater Basin, which extends from the Monterey Bay inland and is the source of all of the potable water supply for the former Fort Ord.

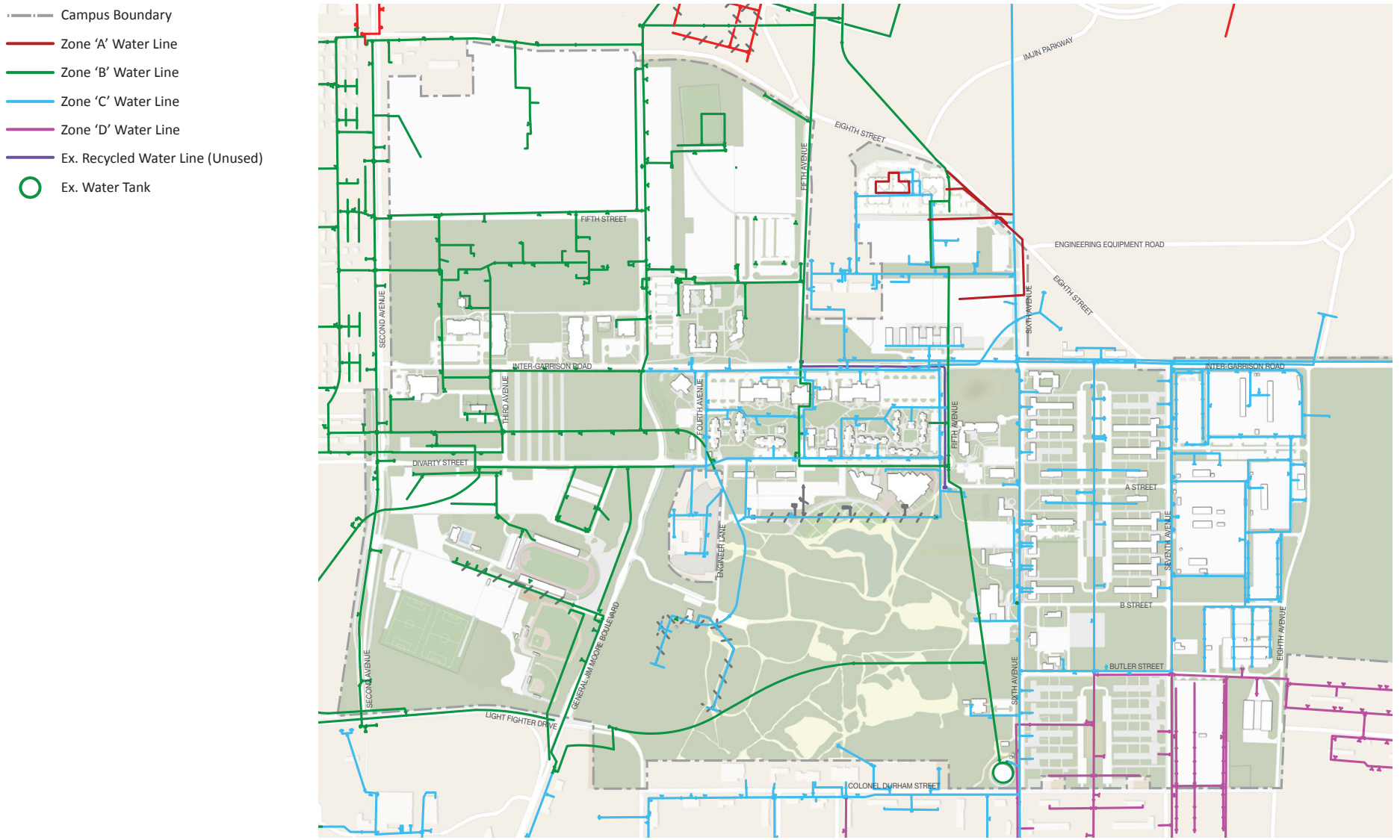
Potable Water Supply and Distribution

The MCWD serves the university through a campus-wide system separated into four interconnected pressure zones designated Zones A-D based on elevation range served. (See Figure 8.1.) The overall campus-wide system is connected to several existing trunk lines serving adjacent cities. According to discussions with MCWD, the system on the west side of Second Avenue was installed around World War II, the east side during the 1960s, and the center and south portions of campus in the 1980s. The existing system is primarily composed of asbestos cement water lines (standard pipe material until the 1980s) with cast iron fittings for smaller distribution pipes and cast iron or ductile iron for larger transmission lines. Any improvements to these systems will require special handling, removal and disposal of hazardous materials if overseen by CSUMB.

- Zone A serves a relatively small area located just off the northwest corner of campus.
- Zone B serves the north and west areas of the main campus. It also serves East Campus Housing.
- Zone C serves the central area of campus and the majority of the East Campus Open Space.
- Zone D primarily serves the area just south of the East Campus Open Space.

All four zones serving the campus are connected to several trunk mains, which connect in turn to adjacent cities as part of MCWD's overall system. These include 12", 14", 16", and 24" trunk lines connected to the City of Marina to the north, an 18" trunk line connected to the City of Salinas to the east, and 8" and 12" lines to the City of Seaside to the south. The main trunk line is the 24" line running along Sixth Street. Only the upper section of Zone B near the fieldhouse has exhibited pressure issues, which have been minor and related to fire flow. The district has plans in the near term that will remedy these issues by completing a loop within this upper section of Zone B. Increased storage capacity is a desire of the MCWD, in particular in Zone D, where MCWD wants to construct a one million gallon

Figure 8.1: *Existing Water System Map*



tank on campus. Additional storage capacity is needed in Zone B where MCWD wants to add a tank adjacent to the existing one. In this case, additional storage is needed to meet maximum daily demand and fire storage capacity.

MCWD currently holds a fifteen-foot-wide non-exclusive easement over all water distribution piping on campus. The change in ownership takes place at the meter. If there is no meter, change in ownership takes place where the meter would normally be, located adjacent to the back of curb. Backflow prevention is currently installed at all metered locations where required by the District. Water lines generally run under or adjacent to sidewalks.

Recycled Water

Over the past ten years MCWD has installed sections of purple pipe (recycled water ready pipe) on campus as part of a regional project to provide recycled water for irrigation. Purple pipe currently exists on Inter-Garrison Road for approximately the western half of the block between Fourth and Fifth Avenues, and on Fifth Avenue between Inter-Garrison Road and Divarty Street, as depicted in Figure 8.1. MCWD has recently partnered with the Pure Water Monterey project to provide even more advanced treated water than initially proposed to Fort Ord. The project anticipates that this water will be available by the end of 2018.

Fire Service Water

Fire suppression systems are fed by the domestic water distribution system. Fire hydrants are located throughout the campus at main roadways and corridors. Backflow prevention, including fire department connections and associated equipment is understood to be adequate for the campus.

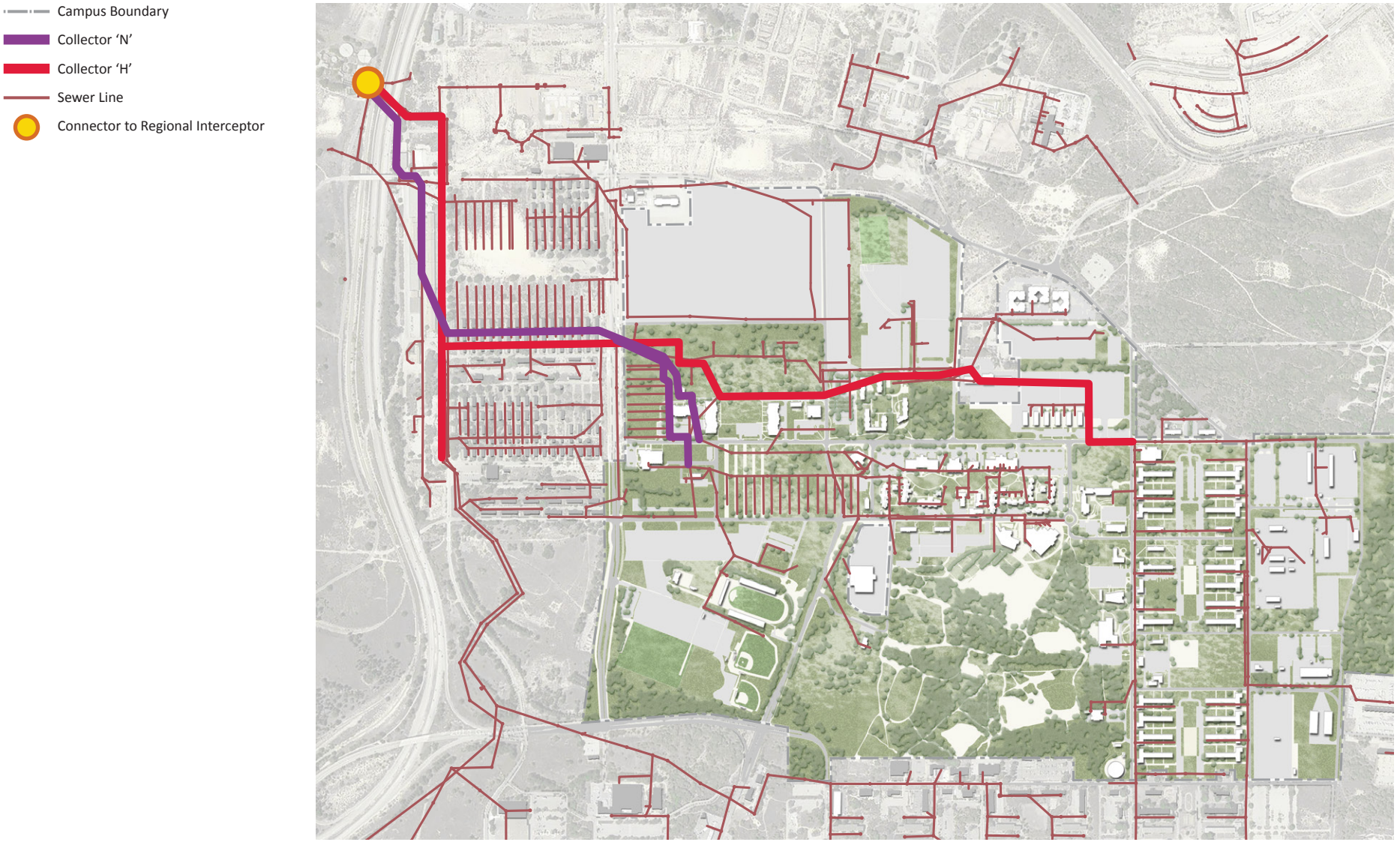
Wastewater Systems

CSUMB is currently serviced by an existing MCWD-owned and maintained sewer collection network. This network includes both off-site generated flows that are routed through the campus and on-site generated flows, both of which route through primary collectors before connecting into a regional interceptor sewer.

Sanitary Sewer Collection

Sewer mains on campus generally follow the site topography, collecting sewage throughout campus from east to west, and draining to two main collectors shown in Figure 8.2 as Collector “H” (15” in diameter) and Collector “N” (18” in diameter). Collector “N” transitions from a 15” to 18” diameter pipe before crossing State Highway 1. Collector “N” drains into Collector “J,” which is the intercepting sewer for most of the Fort Ord Community south of Eighth Street. Both Collector “N” and Collector “J” discharge to the Monterey Water Pollution Control Agency interceptor line across Highway 1. The age of sewer facilities on campus mirrors the ages previously described for the campus water system, and aging pipes potentially require near-term replacement. The existing system is primarily composed of asbestos cement pipes, and if overseen by CSUMB, will require special handling, removal, and disposal of hazardous materials when replacing. On campus, sewer piping is within a fifteen-foot non-exclusive easement, separate from the easement defined for the water utility infrastructure. Development outside of areas currently served by existing trunk mains could require extension of trunk mains at the university’s expense.

Figure 8.2: *Existing Sewer Collection and Transmission*



Source: "California State University Monterey Bay Master Plan Update Appendix D: Water Supply/Distribution, Sewer System, and Hydrologic and Drainage Impact Assessments," prepared by Shaaf and Wheeler, July 2004

Campus Hydrology and Stormwater Management

Storm drainage on the CSUMB campus is currently conveyed through pipes by gravity to infiltration facilities at various locations both on and off campus. Regionally, there are two main outfall systems identified as "System C" and "System D," also known as the 54" and 48" outfalls, respectively.

From a regulatory standpoint, CSUMB is located in the Central Coast Regional Water Quality Control Board (Region 3) of California. This region requires stormwater retention on site with infiltration as the preferred best management practice (BMP). The CSUMB Stormwater Master Plan specifies that redevelopment ultimately infiltrate on site 100 percent of runoff from a hundred-year storm. Recent development projects have included on-site infiltration facilities, which have employed LID approaches, as well as more conventional infiltration basins. Although drainage infrastructure inherited from the Army exists throughout the campus, its age has resulted in occasional pipe replacement and ongoing maintenance issues, such as flooding from pipes collapsing or filling with sand.

Existing Watershed Areas

The CSUMB campus is divided topographically into several watersheds as identified by the CSUMB Stormwater Master Plan and depicted in Figure 8.3. Many of these watersheds include expansive areas of impervious cover. A description of each follows along with their point of outfall.

Sub-area A (SWMP)

This area drains west through the proposed Seaside Main Gate project on the west of Second Avenue. The campus has had discussions with the City of Seaside about removal of the 48" pipe conveying water west to the temporary ponds west of Highway 1. Instead of requiring the developer to install a new pipe on the edge of the development to convey upstream runoff from CSUMB and Seaside properties, the campus proposes infiltrating CSUMB and upstream Seaside historic runoff on campus on the east side of Second Avenue.

Sub-area B (SWMP)

The Dunes developer may choose to provide stormwater infiltration facilities on CSUMB property east of Second Avenue or within the proposed park west of Second Avenue should they choose to remove the 54" pipe prior to campus development in this area.

Sub-area C3

This area is mostly covered by asphalt. It drains into an 18" storm drain with excess runoff flowing overland to a low spot behind the Monterey Institute for Research in Astronomy building (on the southeast corner of Second Avenue and Eighth Street) and across Second Avenue. This sub-watershed drains to System C at the regional level.

Sub-areas DA3, DA4, and DA5

These areas drain west across Second Avenue via the System D regional drain.

Sub-areas DC1 and DC2

These areas drain west across General Jim Moore Boulevard and ultimately discharge into regional System D.

Sub-areas DD1 and DD2

These areas drain to an existing City of Marina percolation pond that lies outside CSUMB property.

East of DA5 and DC2

These areas drain to County of Monterey open space on the north side of Inter-Garrison Road outside of CSUMB property.

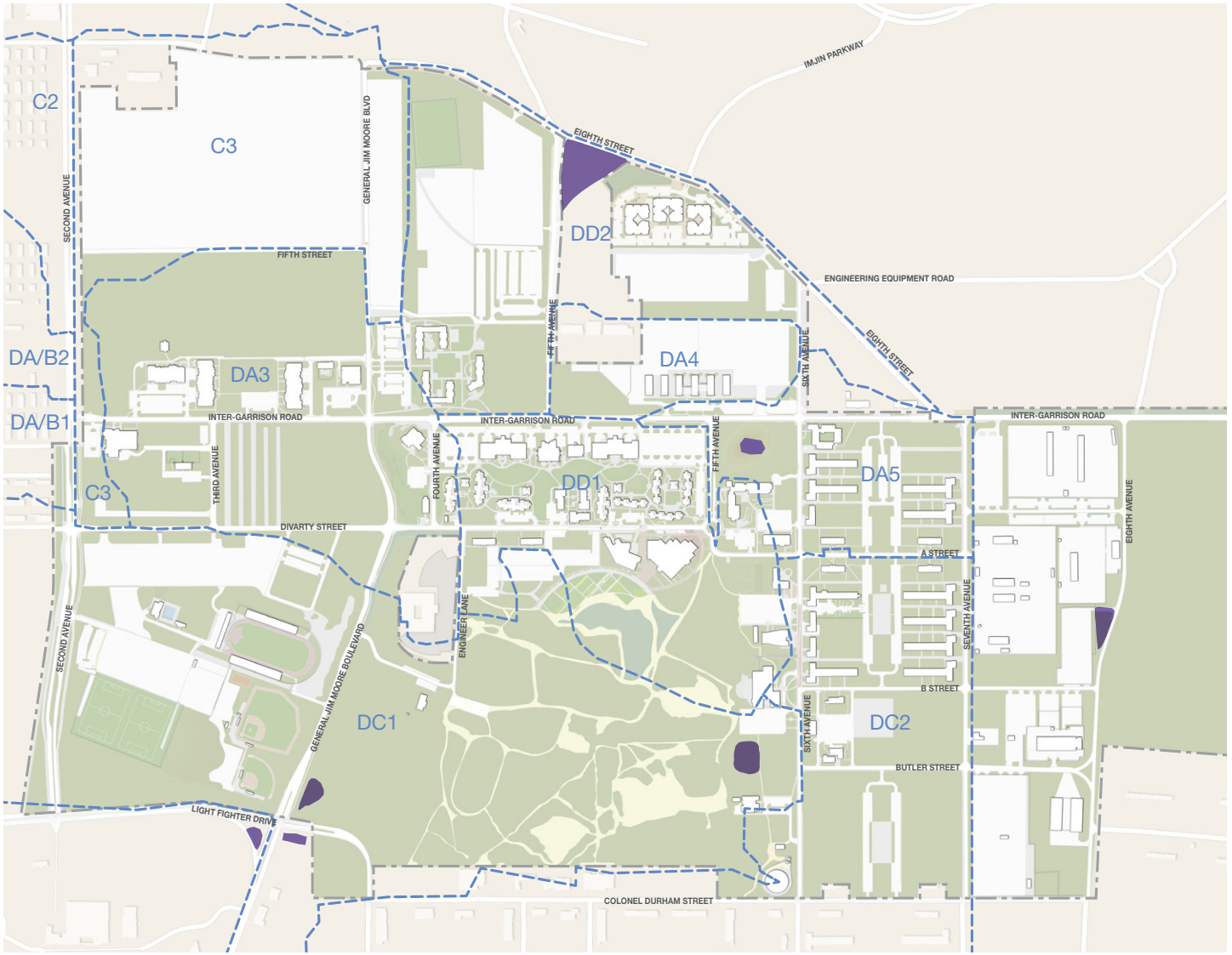
Figure 8.3: *Storm Drainage Watersheds*

Campus Boundary

Watershed Boundary

Existing Percolation Basin

Note: Sub-areas A & B are outside the campus boundary



Source: California State University Monterey Bay Master Plan Update Appendix D, prepared by Shaaf and Wheeler, July 2004

Water Demands

The water modeling approach developed for CSUMB aims to identify infrastructure strategies and approaches to reach net zero water exempt status on-site for new improvements. This goal requires that new improvements use non-potable water supplies for all non-potable water demands, but these improvements are exempted from using on-site supplies for potable demands (i.e., MCWD will continue to provide potable water to the campus). This target requires that water demands be met within the carrying capacity of the site, using scale-appropriate strategies that respect natural hydrologic patterns. This design approach incorporates ambitious indoor and outdoor water conservation practices; collection, treatment, and reuse of wastewater; and stormwater harvesting and reuse; while taking into account the local site context and prioritizing the implementation of closed-loop systems. The development of an on-site non-potable water supply system would further allow the university to achieve net zero water exempt status for the entire campus at a time beyond the current planning horizon by providing the infrastructure backbone that can be utilized during future capital improvement projects.

In an effort to reduce water usage, the campus is now metering all East Campus Housing units and new buildings, installing artificial turf, using evapotranspiration metering to reduce landscape water usage, and replacing existing urinals with waterless urinals and existing toilets with dual-flush toilets. These water-efficiency measures are accounted for in the demands described below.

To assess feasibility and evaluate strategies necessary to achieve these goals, a water model has been created in which all site water elements including supplies (potable, reclaimed wastewater, treated greywater, treated rainwater, and treated stormwater), and demands (interior non-potable, irrigation, and cooling) are evaluated within an overall framework of supply and demand. The overarching principles developed through the design process and the model's primary drivers include:

- Matching source water quality with end-use requirements and minimizing potable water use
- Aggressively conserving water in both buildings and site irrigation
- Reclaiming on-site wastewater to serve non-potable demands
- Incentivizing building-scale innovations for water conservation and reuse
- Providing the ability to incorporate future building renovations beyond the planning horizon

A description of model inputs, assumptions, and calculation methodologies are described in the following sections.

Demand Analysis

Interior Demands

Existing

Existing demands were provided by CSUMB in late 2015. The most recent twelve months of data is used for the existing baseline ending on June 30, 2015.

Proposed

CSUMB should strive to reduce potable water use to levels below CalGreen standards in all new construction projects. For purposes of the water model, unit demands are based on CalGreen standards. Percent potable/non-potable for new building demands varies based on program type. Overall averages are 87 percent potable and 13 percent non-potable. See Tables 8.1, 8.2, and 8.3.

Exterior Demands

Existing demands were provided by CSUMB in late 2015. The most recent twelve months of data is used for the existing baseline ending on June 30, 2015.

Ongoing efficiency programs and sustainable landscape projects consistent with the 2013 Climate Action Plan are expected to hold overall proposed

Table 8.1: *Internal Building Unit Demands*

Metric	Uses Per Day	CalGreen Scenario	Proposed Scenario
Occupancy Type	n/a	Student/Visitor	
Days of Operation	n/a	206 days per year	
Occupancy Density	n/a	30 SF/person	
Space Utilization Factor	n/a	80%	
Water Closet (Male)	0.1	1.28-GPF	1.1-GPF
Water Closet (Female)	0.5	1.28-GPF	1.1-GPF
Urinal (Male)	0.4	0.5-GPF	0.125-GPF
Lavatory	0.5, 15-sec per use	0.5-GPM	0.35-GPM
Shower	0, 300-sec per use	2.0-GPM	1.5-GPM
Kitchen Sink	0, 15-sec per use	1.8-GPM	1.5-GPM

Table 8.2: *Internal Building Unit Supply*

Lecture Category	CalGreen GPD/SF	Proposed GPD/SF
Supply		
Total Fixture Water Usage	0.016	0.011
Fraction that must be Potable Water	0.003	0.001
Fraction that can be Non-Potable Water	0.013	0.010
% Potable	17.0%	10.8%
% Non-Potable	83.0%	89.2%
% Process	0.0%	0.0%
Sum Check	100.0%	100.0%
Drain		
Total	0.014	0.010
Fraction that can be grey water	0.002	0.001
Fraction that must be black water	0.012	0.009
W% (hazardous not to be reused)	0.0%	0.0%
X% (hazardous, requires special treatment	0.0%	0.0%
Y% (non-hazardous, able to treat and reuse)	90.0%	90.0%
Z% (consumptive use)	10.0%	10.0%
Sum Check	100.0%	100.0%

Table 8.3: *Residential Unit Demands*

	Duration (Min.)	Uses/ Day	Watersense or LEED	Total LEED (gpd/cap)
Water Closet	-	5	1.28	6.4
Lav Faucet	1	5	1.5	7.5
Shower	8	1	2.5	2
Kitchen Sink	1	4	1.8	7.2
Residential Clothes Washer	1	0.2	15	3
Residential Dish Washer	1	0.3	4.25	1.275
Utility Sink (Assume same as kitchen)	1	4	1.8	7.2
TOTAL				**52.575**

irrigation demands on the main campus and east campus (East Campus Housing) constant, despite additional development.

Annual Demand Breakdown

For the full master plan program, the total annual water demands for CSUMB are estimated at 632 acre-feet. The breakdown between potable and non-potable by interior and exterior demand categories is shown in Figure 8.4.

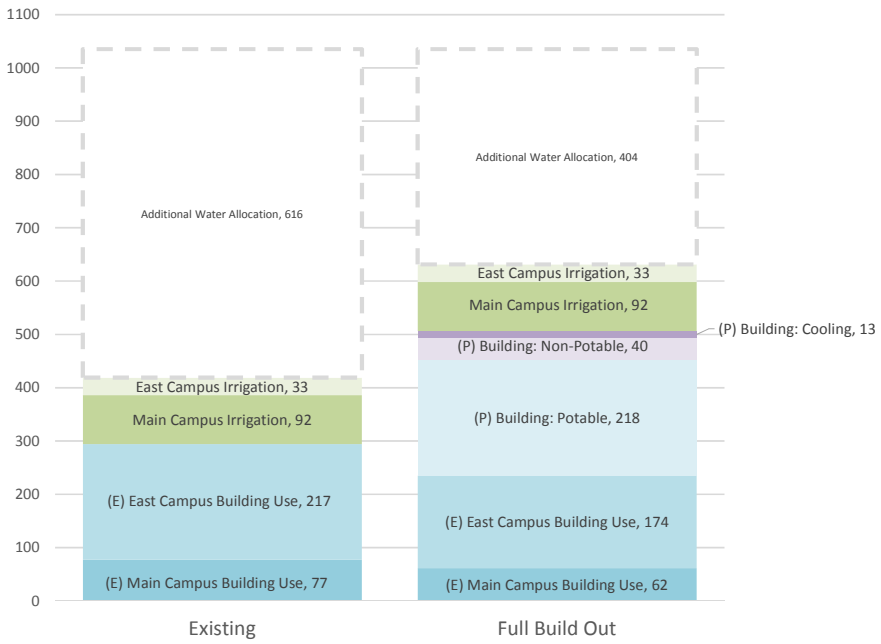
Seasonal Water Balance Model

The water model is driven by matching water uses with appropriate source quality. The projected on-site supply of reclaimed water and harvested rainwater and stormwater, in conjunction with prioritization of end uses, drive the use and distribution of the university's on-site water sources.

On-site water harvesting potential at CSUMB is highly seasonal since the vast majority of rainfall in northern California occurs during winter months. A hydrology model was created to determine on-site water harvesting supply potential for the campus. Figure 8.5 shows the harvesting potential by month, given the rainfall-runoff relationship. For this report, the fiftieth-percentile rain year is used, though supply varies significantly from year to year. While this figure represents maximum direct runoff volumes in such a year, the ability to harvest and reuse stormwater is mostly driven by other factors, including site topography, storage capacities, and the seasonal balance of supply and demand.

Site water demands are categorized into potable uses and non-potable uses, as defined by current jurisdictional requirements. Potable uses are strictly limited to locations where water may be consumed, or has the potential for human contact such as sink fixtures. Typical non-potable uses include—but are not necessarily limited to—cooling make-up water, toilet fixture flushing, and irrigation. Figure 8.5 illustrates the seasonal distribution of on-site water supplies and demands.

Figure 8.4: *Existing and Proposed Total Water Demands*

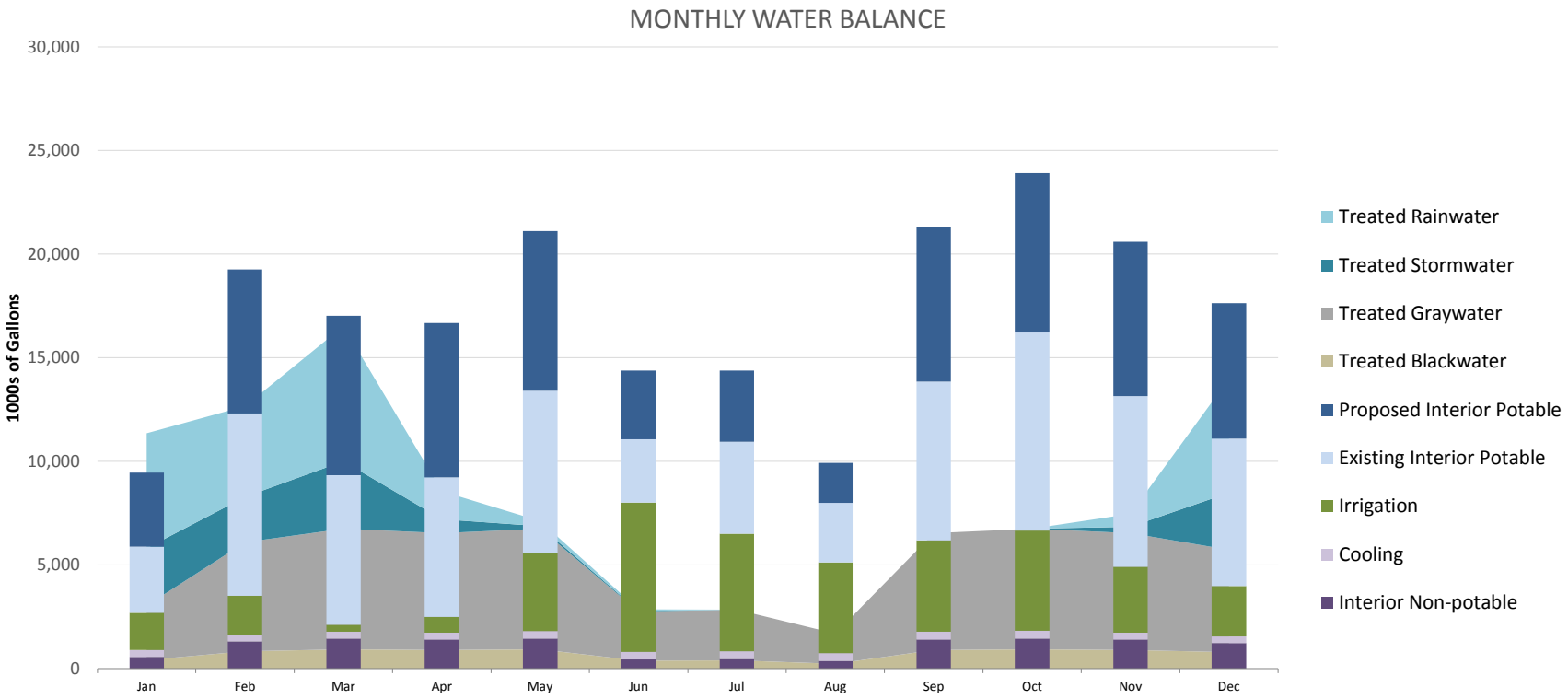


(E): Existing
(P): Proposed
All units in AC-FT

Model Adaptability

The water model should not be considered static. The scenario shown is based on building programming and site configuration assumptions, along with current regulations relating to water treatment and reuse. Adjustments should be made as campus programming evolves, and in response to the expectation for more stringent water conservation and reuse requirements across the state of California in the future.

Figure 8.5: *Water Model Output Indicating the Seasonal Distribution of On-site Water Supplies and Demands*



Notes:

1. Program: Existing + Capital Improvement Projects + Program for Growth
2. Rainfall: Average
3. This hydrology model employs the Soil Conservation Service (SCS) Curve Number Method
4. Direct runoff volumes were calculated based on site-specific rainfall data, anticipated site coverage and soil type.
5. Forty-six years of NOAA historic rainfall data (1969-2014) was imported from the nearest available station. (Monterey Peninsula Airport, CA Station GHCND: USW00023259).

RECOMMENDATIONS

To meet its sustainable water goals for the buildout of the campus, the university should develop a strategic water plan based on the following three recommendations. Recommendations included education and policy, as well as implementing building and campus-wide infrastructure and design features that will reduce potable water use and allow the campus to use or treat non-potable water.

Education and Policy to Drive Conservation

This approach involves educating users by sharing water meter data, holding creative competitions between users (this is often done between student housing buildings), and direct outreach. Making goals and information available to users and larger audiences improves water conservation results. At the policy level, establishing an outdoor water use policy for design and retrofit projects and reviewing landscaping and irrigation operation protocols can assist in lowering future potable water demands.

Emphasis on Building Scale Solutions

Utilizing water efficient fixtures in new and refurbished buildings can assist with the overall water savings strategy. Laundry-to-landscape systems, where greywater is diverted and treated at the building cluster scale to address that cluster's irrigation needs, can be implemented to reduce water use as well. An additional building-scale solution is dual plumbing in buildings to utilize greywater or future recycled water for toilet flushing.

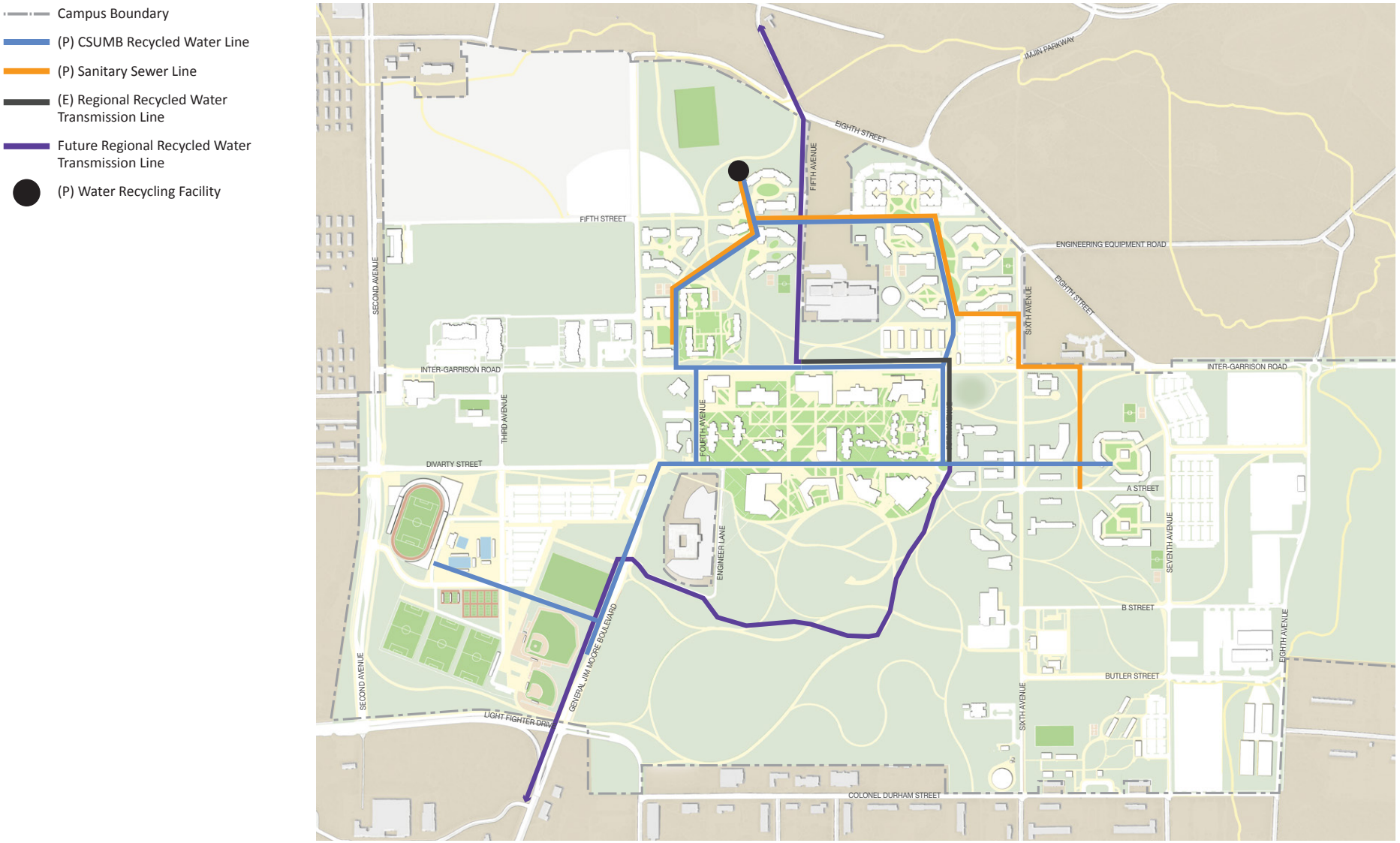
Future Ready for District Scale Water Infrastructure

Future water savings measures should target areas with particularly high water demands, such as residential housing and sports facilities. In addition, infrastructure should be designed for compatibility with future non-potable water supply, so that future-ready scenarios are feasible when economic analyses can justify the installation of such facilities.

Examples of future-ready scenarios include:

- Design collection and conveyance infrastructure in preparation for future MCWD delivery of recycled water to the campus
- Install future stormwater retention basins in close proximity to sports fields to capture runoff for irrigation of those high-demand campus facilities; install swales along campus roads, paths, and trails.
- Install sewer collection systems at new student residential housing so that reclaimed wastewater can eventually be routed to a water recycling facility on campus for treatment, providing a supply of recycled water for future uses

Figure 8.6: *District Non-potable Water System*



WATER STRATEGIES

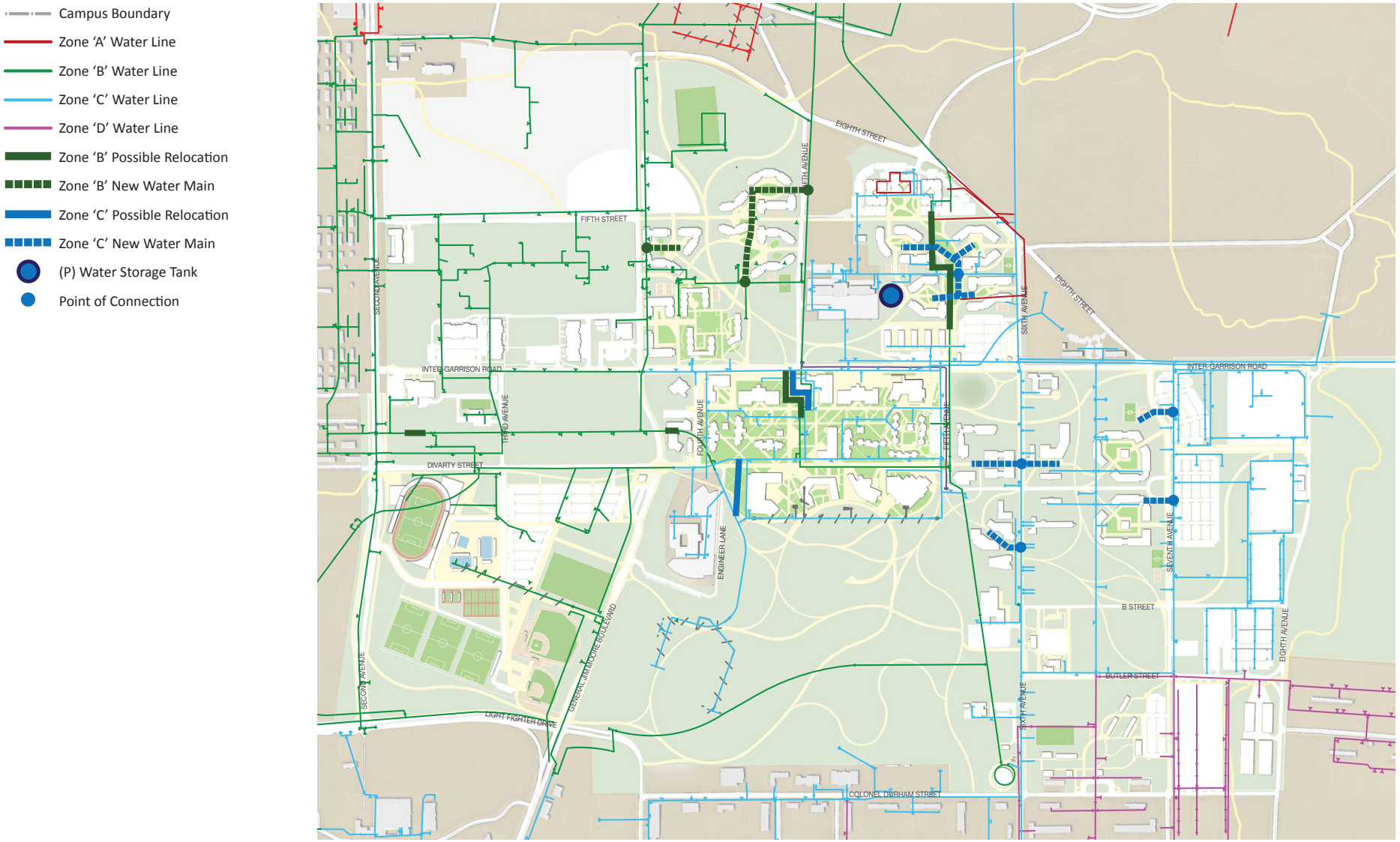
Potable Water

The Integrated District Water System approach developed for CSUMB seeks to minimize reliance on potable water use and maximize utilization of on-site water resources, including reclaimed wastewater and site-harvested rainwater. The potable water system described in this section and illustrated in Figure 8.7 is intended to provide reliable supply for required potable demands for the campus.

The existing water distribution infrastructure is generally adequate to service the proposed master plan improvements. The noted exceptions include the following:

- Water storage facility: to be coordinated with MCWD and located on CSUMB property, north of the Visual and Public Art buildings.
- Water services demolition: many existing services and smaller loops run through proposed development areas. These may require demolition or reconfiguration to meet the final development pattern.
- Water main relocation: a Zone B 8" water transmission line runs from the Visual and Public Art buildings north toward the Promontory housing project through a proposed development parcel. This line will require rerouting if it is impacted by final building layout.
- Water services: All new buildings will require water services to be constructed from the mains within the public right-of-way or from the existing service loops within the development areas.
- Closed loop water system: To maximize resilience and achieve net positive water, the campus could consider creating a closed loop water system where all stormwater, blackwater and greywater is reused on campus. Net positive water is defined by the Living Community Challenge version 1.1 as providing 100 percent of a community's water needs from precipitation or other closed loop water system, or recycling used site water that is purified without chemicals.

Figure 8.7: *Proposed Water Distribution System Map*



Sanitary Sewer

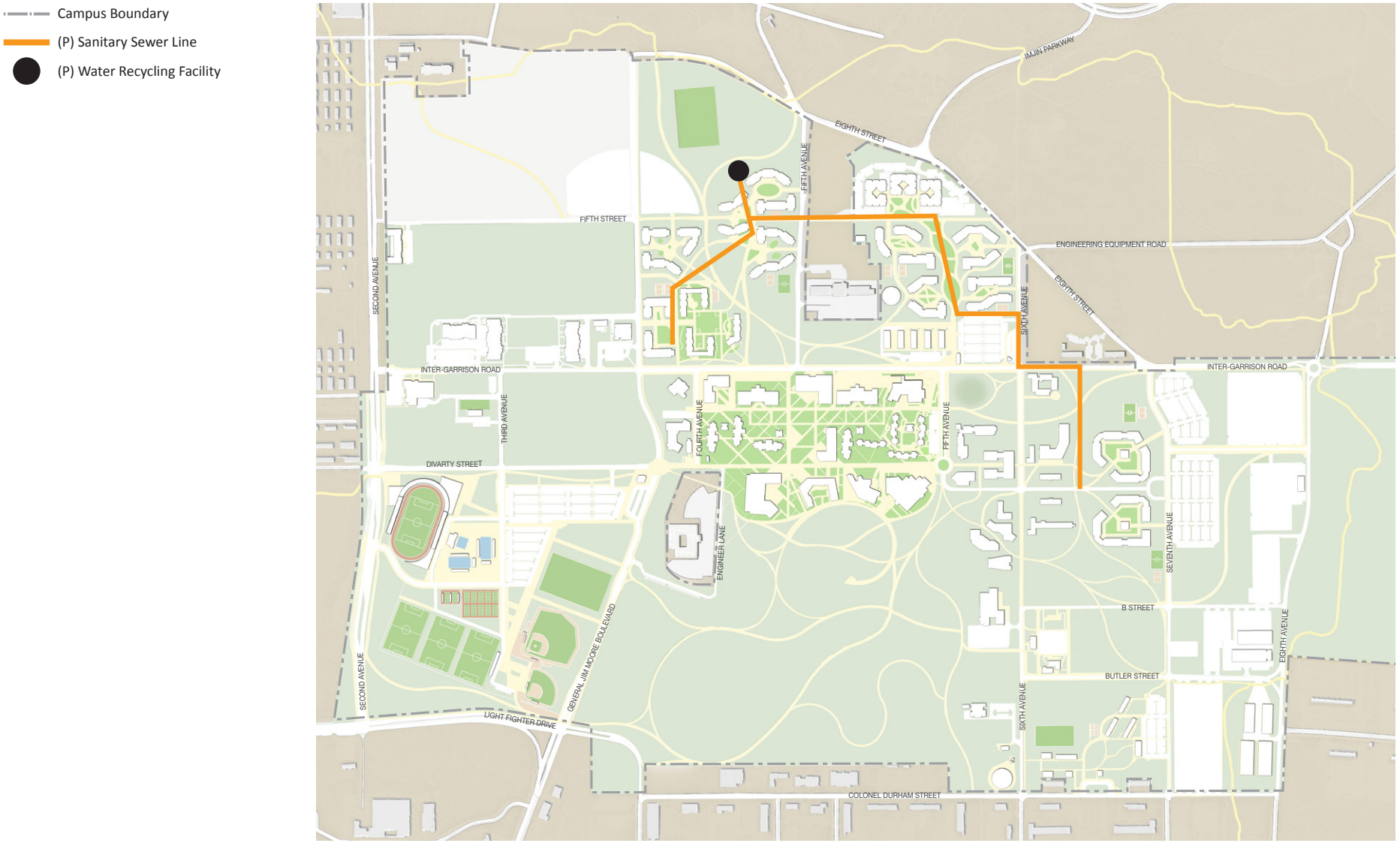
The existing sanitary sewer collection infrastructure is generally sufficient for the proposed master plan improvements, with a few exceptions (Figure 8.8):

- Sewer services demolition: many existing services and smaller laterals run through proposed development areas. These may require demolition or configuration to service the final building layouts. MCWD is responsible by deed to remove any sewer main that has been out of service for more than two years.

- Sewer main relocation: some of the existing sewer mains run through proposed development areas. These include Collector H and the upper reaches of Collector N. Although these lines may require rerouting if impacted by final building layout, it is anticipated that relocation of these lines can be avoided if considered during detailed site design.

- Sewer collection mains: an on-site water recycling facility will require construction of a CSUMB-owned sewer collection network This master plan proposes a collection network that prioritizes future housing as a way to minimize infrastructure costs while maximizing sewage collected. This network can be expanded, if required, to balance summertime irrigation demands with CSUMB-produced non-potable water.

Figure 8.8: *Proposed Sewer Collection System Map*



Stormwater

Stormwater Management

The stormwater approach for the CSUMB campus is designed to function at two complementary scales. One strategy is focused at the building cluster scale (Figure 8.9) and the other at the campus scale (Figure 8.10). By using this two-pronged approach, stormwater management can be managed as the campus exists today, and as it is developed over time. This approach meets the needs of the growing and changing campus in a sustainable manner, while at the same time adhering to regulatory requirements, aiding with the phasing strategy of new structures, ensuring a healthy ecology, and reducing operations and maintenance burdens. Strategies for on-site stormwater management will also address historic stormwater flow between surrounding jurisdictions and the CSUMB campus.

Fundamental in this approach is designing both the site-based and campus-based systems to retain stormwater for either infiltration or reuse. CSUMB is located on soils with high infiltration rates; these create a favorable environment for many LID systems.

Stormwater management infrastructure can contribute to the university's goal of using the campus as a learning laboratory. Making stormwater processes visible, and providing interpretive signage to explain those processes, will engage students, faculty, and staff by providing informal education opportunities.

Low Impact Development Overview

LID is a type of stormwater BMP that prioritizes natural systems. The EPA defines stormwater BMPs as "methods that have been determined to be the most effective, practical means of preventing or reducing pollution from non-point sources." Traditional methods of closed drainage collection and centralized detention areas act to remove stormwater runoff from the site in the quickest and most efficient manner possible. LID takes a different approach, one that looks at stormwater as an asset to be retained in an effort to mimic the natural hydrologic cycle. Decentralized stormwater collection networks may also be designed to retain stormwater for reuse as irrigation or other purposes. The implementation of LID techniques can include benefits such as greatly improving the quality of stormwater runoff, restoring the infiltration of water to the aquifer, eliminating costs associated with conventional drainage systems, and reducing development impacts such as erosion and flooding. An added benefit is the integration of BMPs to manage stormwater while at the same time improving the natural aesthetic of the campus. The following LID best practices should be followed for future development:

- Assess the site's topography, soils, vegetation, and natural drainage for integration of LID techniques to minimize future development footprint
- Assess native vegetation and soils for placement of LID facilities
- Assess primary BMP function: water quantity, quality, infiltration, and conveyance to meet Regional Water Quality Control Board Region 3 requirements and CSUMB's Stormwater Master Plan
- Minimize and manage stormwater at the source to promote infiltration across the campus and minimize the size of regional management facilities
- Minimize areas of impervious surfaces such as parking lots, driveways, courtyards and rooftops, using permeable pavements and green roofs to maximize evapotranspiration and allow infiltration of precipitation into the soils
- Manage runoff by disconnecting the impervious surfaces from one another and directing runoff to LID features such as vegetated swales, planters, rain gardens and pervious pavement
- Preserve existing trees and plant new trees in coordination with development
- Avoid compaction of soils in areas of the site that will not have structures

- Provide microdetention in landscaped areas (self-retaining areas)

Stormwater runoff should be collected throughout the site and transported, mostly through surface conveyance, to LID water quality treatment areas. These areas will act to evapotranspire, infiltrate, or treat the water. Overflow volumes will be released to a campus-scale storm drain network that leads to larger percolation landscapes.

Building and Site Scale LID

Localized treatment at the building or site scale utilizes a toolkit of LID BMPs that manage stormwater on a site-by-site basis (see Figure 8.9). LID strategies promote natural filtration of stormwater as close to the original location of rainfall as possible. By keeping treatment localized, the natural hydrological cycle can be more closely mimicked, and there is less complexity in the design, construction, and operation of the stormwater facilities.

Proposed BMPs include various bioretention devices, self-retaining areas, permeable paving systems or porous pavement, and surface conveyance channels, as well as infiltration trenches and other infiltration-based facilities. For CSUMB the following site design measures are proposed:

- Minimize impervious surfaces by designing narrow streets and driveways, and by constructing urban plazas with permeable pavers
- Minimize directly connecting impervious surfaces to the storm drain system; rather, route runoff to landscaped areas
- Route stormwater runoff in surface conveyances wherever possible to minimize piped infrastructure and to avoid deeper infiltration basins; such basins can diminish the site's aesthetics and create safety issues
- Integrate landscape features to provide both stormwater conveyance and stormwater treatment

Figure 8.9: *Building/Site Scale BMPs*

- (A) Proposed Percolation Landscape
- (B) New Development Flow Storm Drain Interceptor
- (C) Existing 'DD' Storm Drain System
- (D) Proposed Intercepting Structure
- (E) Existing 'C' Storm Drain System
- (F) Alternative Storm Drain Overflow Routing
- (G) Bioswale / Conveyance Swale
- (H) Raingarden / Bioretention
- (I) Roof Leaders To Raingarden / Rainwater Harvesting Node
- (J) Pervious Pavers At Courtyard
- (K) Underdrain If Stormwater Harvesting
- (L) Overflow To Existing Storm Drain

- Design self-retaining areas to reduce the stormwater runoff volume
- Cluster buildings and pavement to reduce the extent of new facilities needed; this can reduce cost as well as impact

Combinations of LID strategies for a site should be chosen based on density of development (Floor Area Ratio) and design stormwater volumes. For example, denser sites, or projects with more impervious surfaces, should utilize pervious paving to a larger extent than less densely developed areas. Development can be planned so that overflows from densely developed areas first flow to less developed parcels that have excess capacity before running over into the campus-scale stormwater management network.

Building and Site Scale LID Toolkit

Bioretention

Bioretention is the process by which contaminants and sedimentation are removed from stormwater runoff. This process involves the collection of stormwater, which is allowed to pond to slow down the runoff's velocity, thus increasing the contact time with the surface organic layer and amended soil blend. The treated runoff infiltrates over a period of time into the underlying soils. Any stormwater exceeding the bioretention's capacity is diverted away for larger storm conveyance.

Infiltration Trench

Infiltration trenches are subsurface facilities designed to provide on-site stormwater retention in areas of good infiltration by collecting and recharging stormwater runoff into the ground. Trenches filter pollutants to improve water quality and contribute to groundwater recharge. Infiltration trenches are relatively low maintenance and can be easily retrofitted into existing sidewalk areas and medians.

Green Roof

Green roofs are a way of managing stormwater in urban areas with limited space for more land-intensive BMPs. Green roofs are able to store stormwater in the soil medium during rain events, helping to detain runoff. Some of the stormwater will be taken up by the roots of the plants and some will be evaporated from the soil medium, reducing the amount of runoff from the roof. Early adoption of this practice would need to include gradual scaling up of projects to avoid common maintenance challenges and cost prohibitions.

Self-Retaining Areas

Self-retaining areas are landscape features that also provide stormwater runoff control and treatment. They only absorb as much water as soil and plants in the area can accommodate. Once the area is at capacity, water overflows via a storm drain. They are ideal for receiving roof runoff from downspouts and adjacent parking areas.

Pervious Paving

Pervious paving systems allow water to pass freely through interstitial space ingrained throughout the paving matrix, thereby transforming traditionally impervious surfaces. Several examples are pervious concrete and asphalt, interlocking pavers, and reinforced gravel and grass paving.

Vegetated Swales

Vegetated swales are shallow drainage ways that employ landscaping to stabilize the soil while providing water quality treatment through biofiltration. They are designed to remove silt- and sediment-associated pollutants before discharging to storm sewers, and to reduce the volume of discharge if soils allow for infiltration. The treatment area can be planted in a variety of grasses, sedges, and rushes, while the side slopes can be planted with shrubs or groundcover.

Campus-Scale LID

The localized building-scale drainage network should feed into a larger campus-scale drainage network to handle overflows from large storm events. If stormwater storage and reuse is implemented in the future, these facilities should be located near campus facilities that demand high volumes of irrigation water (namely, the athletic facilities). Stormwater management will also overlap with low lying areas within permanent open space as a way to integrate with the appropriate uses of these areas. Campus open-space percolation landscapes will be designed to maximize evapotranspiration and infiltration. Water ponding will occur over a large surface area to maximize the loss of water to the atmosphere by the combined processes of soil infiltration, evaporation (from soil and plant surfaces), and transpiration (from plant tissues). These areas should not be designed as deep basins but rather as broader, shallow areas, potentially valuable campus landscape amenities that support native vegetation and wildlife habitat. (See Figure 8.10)

Campus-Scale LID Toolkit

Integrated Percolation Landscapes

Percolation landscapes are large landscape areas filled with native vegetation that retain and infiltrate large volumes of stormwater. These areas do not need to be kept free of all activity; for example, trail networks can cross through them without adversely impacting their efficiency.

Green Streets

The addition of pockets or strips of vegetation within or adjacent to streetscapes provides a means for runoff to re-enter the soils through infiltration. These spaces also provide conveyance of both street runoff and flows from adjacent parcels to larger retention areas.

Recreation Fields

Recreation fields can retain and infiltrate infrequent storm events if designed to accept overflows from adjacent non-permeable areas, such as parking lots.

Community Swales

Community swales are planted water conveyance features that are linear in design to conform to the adjacent development zones (i.e., walkways, roadways, and buildings).

Road or Campus Walkway Swale

Road swales are shallow paved or stone-lined water courses integral with a vehicular or pedestrian circulation route. These conveyances often include intermittent inlets and are underlain by a collection pipe. The future trail network should be designed with stormwater infiltration swales to create a connected system on campus.

Naturalized Channel

A naturalized channel is a meandering, vegetated watercourse with natural banks. It is buffered from development zones by large uncultivated landscape.

Figure 8.10: *Campus Scale BMPs*

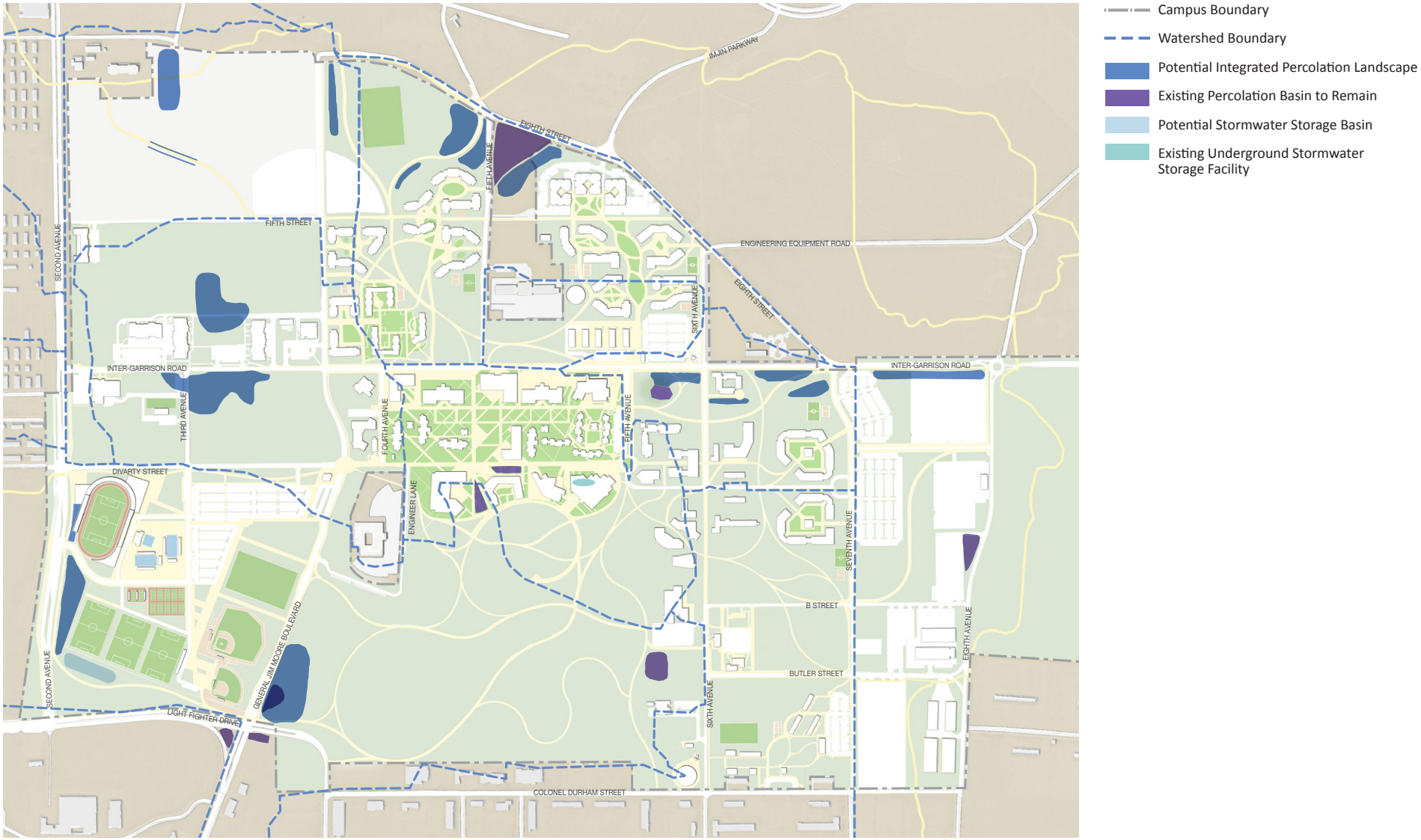
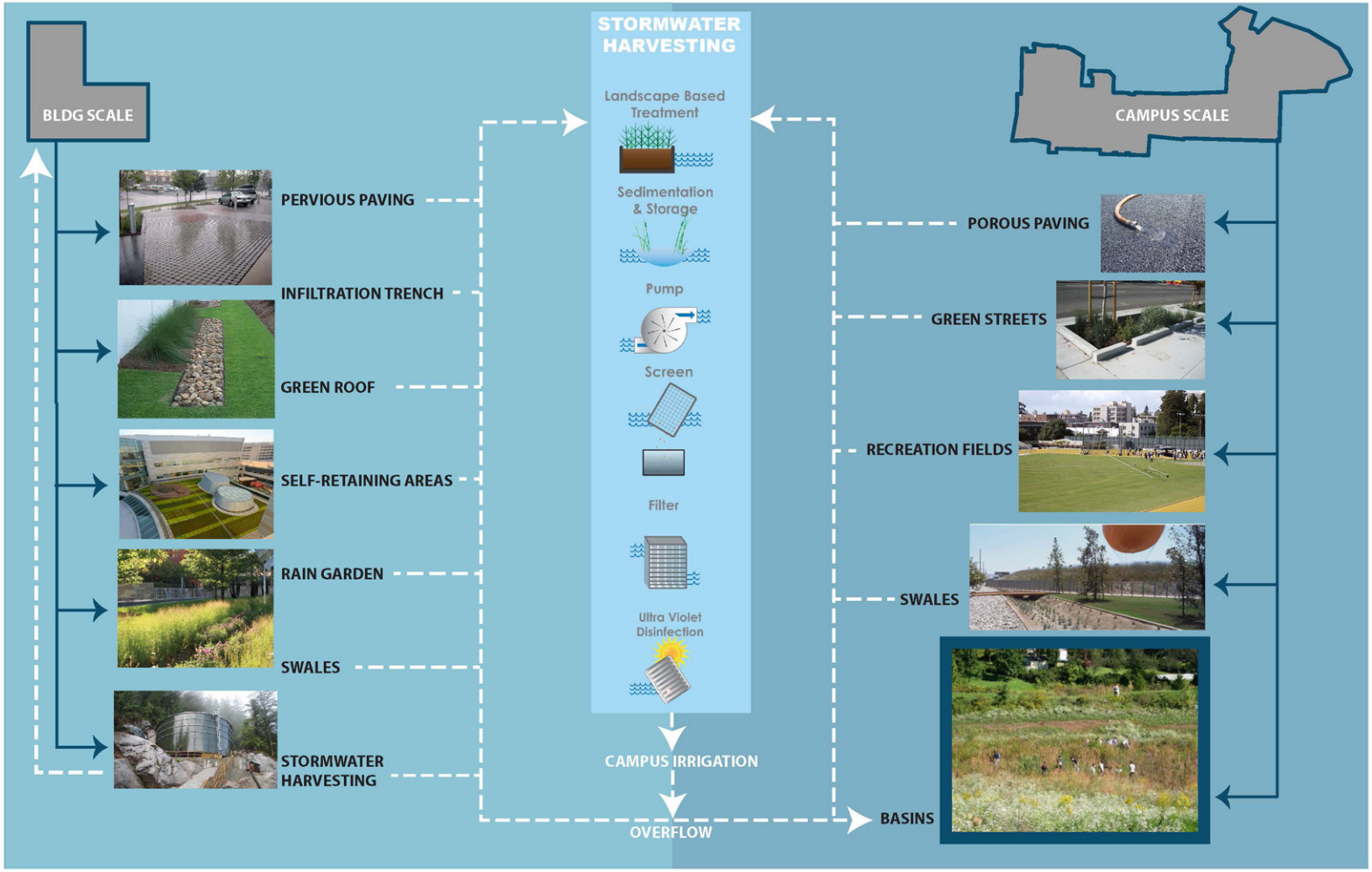


Figure 8.11: *Proposed BMP Framework*




PHOTOVOLTAIC ARRAY

9

ENERGY SYSTEMS

ADAPT WITH TECHNOLOGY AT A DISTRICT SCALE

INTRODUCTION

Energy is needed to support many aspects of a university campus--for example, lighting; heating, cooling, and ventilation; laboratory and classroom equipment; and all forms of technology. Energy can be distributed through the campus in the form of electricity, natural gas, heated hot water, or chilled water, depending on the need and infrastructure in each area of campus. Energy can be produced on site or procured from renewable sources that are by definition carbon neutral (sunlight, wind, and geothermal heat), from non-renewable non-carbon-neutral sources (natural gas, coal, petroleum), or from carbon neutral nuclear sources.

This chapter provides an outline for reducing demand for energy through energy efficient design and efficient technologies, and for developing campus energy supply and distribution systems that enable the campus to meet its carbon neutrality goals as the population and campus building square footage increase (stewardship). Treating the campus as a learning laboratory, CSUMB can provide educational signage about its commitment to renewable energy and carbon neutrality (placemaking). For information on creating potential public-private partnership strategies (partnerships) as a way to build district-scale energy systems, see the public-private partnership report in the appendix.

The campus seeks to meet its carbon neutrality goal by 2030 and strives for 105 percent net positive energy production, in alignment with the Living Community Challenge. Given the significant growth that will be experienced, the precise strategy, phasing, approach, and technology selection will need to be evaluated in greater depth. In order to develop the most cost-effective approach, a strategic energy plan should be developed to align growth, phasing, and infrastructure investment. As there are many options for achieving these overarching goals, this chapter aims to provide strategies, options, and guidelines for consideration toward these goals.

In addition, this master plan chapter focuses on the Main Campus and does not address the residential area in East Campus. Many energy-efficiency strategies for existing buildings have been applied to the East Campus, and additional strategies can be applied. As this area will not have significant growth, this master plan focuses efforts on the Main Campus.

GOALS

Achieve carbon neutrality and strive to achieve net positive energy

Achieve carbon neutrality for all energy used on campus (produced or purchased) by 2030; strive to achieve net positive energy as state regulations permit

Manage energy supply

Meet future demand for energy in a safe, reliable, and cost-effective manner

Design for energy efficiency

Design and retrofit infrastructure and buildings to minimize energy use

Promote resiliency

Design systems with the capacity to provide uninterrupted service, or to recover quickly, during extreme weather or natural disasters; aim to provide on-site energy generation and use the electrical grid as a backup source of energy

Utilize the campus as a living learning laboratory

Engage the campus community, particularly students, in living-learning opportunities regarding energy production and usage

BACKGROUND

Guiding Policies

Executive Order 987 (2006)

This policy statement on energy conservation, sustainable building practices, and physical plant management for CSU established priorities for energy conservation and sustainable buildings in June 2007.

Second Nature Climate Commitment (2007, reaffirmed 2016)

The original commitment asks that the campus develop a comprehensive climate action plan and set a target date for achieving carbon neutrality. In 2016 the campus signed the updated commitment, which incorporated adaptation to climate change.

Climate Action Plan (2013)

The Climate Action Plan was developed in response to the original Climate Commitment. It established a carbon neutrality target year of 2030 for a campus of 8,500 FTE. The 2013 Climate Action Plan includes the following strategies relevant to this energy strategy.

- Energy conservation in buildings and infrastructure
- Build a second 1MW grid-tied photovoltaic (PV) system
- Develop a green information-technology plan to assist with energy use monitoring
- Purchase and install a modular cogeneration plant
- Research thermal energy storage
- Buy green power or local carbon offsets to offset emissions
- Reduce natural gas usage

Green Building Standards

In addition, the CSU requires that new buildings aim for Gold and Platinum level LEED certification, and be designed to a minimum of a LEED Silver standard. CSUMB currently has three LEED Silver and one LEED Platinum certified building. LEED does not prescribe energy use benchmarks or generation targets, but is a strong support for meeting campus energy and carbon neutrality goals.

Existing Conditions

Current Energy Infrastructure

Central Plant and Hot Water

A gas-fired boiler plant supplies heating hot water to the campus core through underground piping. Approximately two-thirds of campus thermal demand is satisfied from this system; the balance is supplied by stand-alone gas-fired boilers and furnaces.

Chiller Plant and Chilled Water

An electric-powered chiller plant supplies chilled water to limited buildings along Divarty Street through underground piping.

Natural Gas

The campus owns a natural gas distribution system that extends to many building on campus. The natural gas is transported to campus via PG&E pipeline, metered to campus at a single location.

Electricity

The campus owns a medium-voltage electricity distribution system that extends to every building on campus. Electricity is procured both from a 1.0 MW solar tracking PV generation facility owned by SunEdison under a twenty-year contract, and from PG&E metered to campus at a single location.

Energy Use

The university has been tracking energy use for several years and thus has comprehensive data on energy use that can form a basis for projecting future demand. Using a benchmarking method, buildings were categorized into two major types: office/classroom and residential housing. Energy use for existing operations was calculated, and low energy use targets were set, informed by engineering and building design best practices. The current and projected energy usage by buildings on the CSUMB campus informs the master plan strategies.

Figure 9.1 *Historic Main Campus Annual Energy Use, Gas and Electricity*

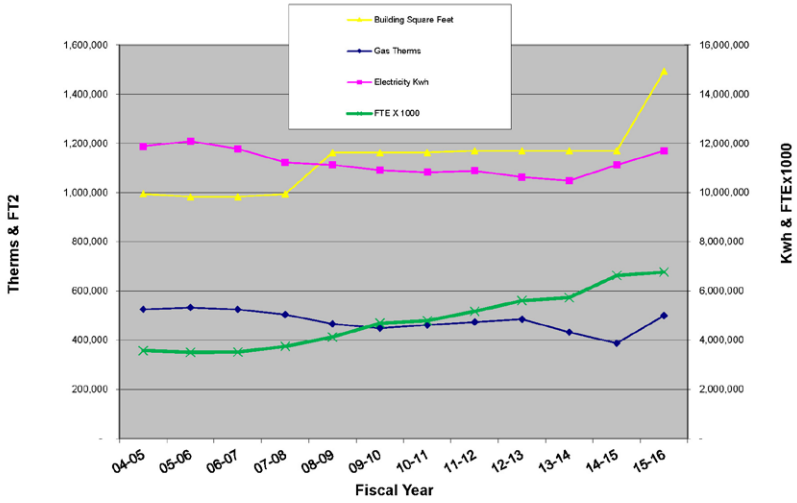


Figure 9.2 *Historic Campus Energy Use Intensity (EUI), Gas and Electricity*

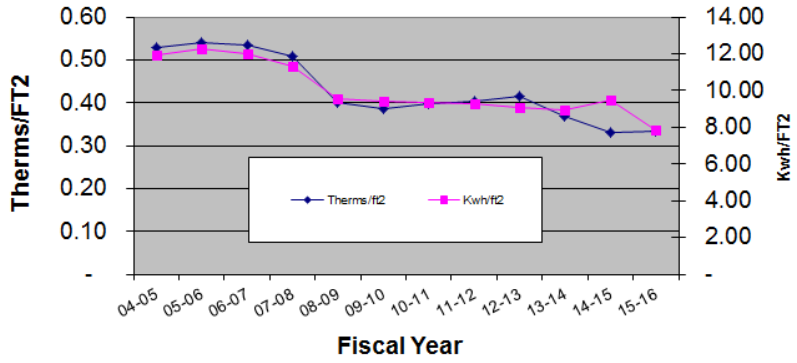


Figure 9.3 *Historic Main Campus GHG Emissions (Gas, Electricity, Total)*

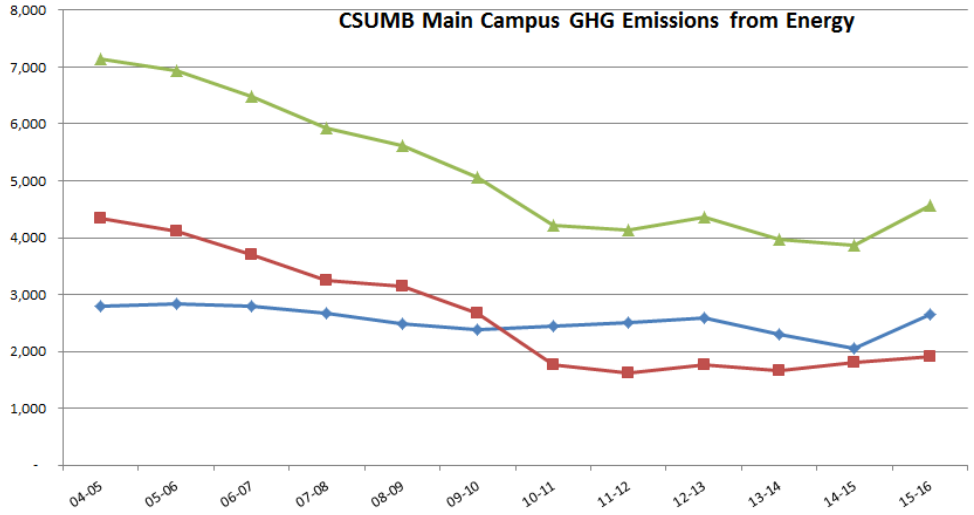


Table 9.1 *Historic and Projected Electricity and Gas Emission Factors*

California PG&E Emissions Factors (lbs CO2 per kBTU)

Year	Electricity	Natural Gas
2010	0.139	0.117
2011	0.115	0.117
2012	0.130	0.117
2013	0.125	0.117
2014	0.121	0.117
2015	0.115	0.117
2016*	0.108	0.117
2017*	0.102	0.117
2018*	0.096	0.117
2019*	0.090	0.117
2020*	0.085	0.117

*Projected

Current and Historic Energy Use and Emissions

Figure 9.1 shows the current annual energy use by fuel type as well as total building square footage and FTE students. As is evident, efficient building design practices have been utilized as the campus has added buildings (and students), noting particularly that from 2014–2016 building square footage increased by roughly 300,000 square feet but electric and natural gas usage have increased at a lower rate. Also noteworthy is that fiscal years 2013-14 and 2014-15 were atypically warm; 2015-16 reflects a return to a colder winter in addition to new construction.

Energy use intensity (EUI), measured in kBtu/square foot/year, shows that energy use has been stable while adding significant square footage, as shown in Figure 9.2.

There has been an increase in greenhouse gas (GHG) emissions in the 2014-2016 period, as seen in Figure 9.3, due to an increase in natural gas usage from the new construction. Though electricity usage has also increased, the relative increase in emissions is minimized due to two important factors:

- The campus installed the 1.0 MW PV system in 2010
- The emissions factor of the grid-supplied electricity has decreased over time from 0.139 lbs CO2/kBtu in 2010 to 0.115 lbs CO2/kBtu in 2015. In general, emissions from grid-supplied electricity are decreasing due to the steep increase in renewable energy that has occurred on the grid and will continue to occur as the energy utilities meet California State Renewable Portfolio Standard goals.

In comparison, the natural gas emissions factor is 0.117 lbs CO2/kBtu, and this value does not change. Starting in 2015, the electricity supplied by the grid produces less emissions than natural gas and is expected to continue to decline. (See Table 9.1.)

Completed Energy Efficiency Measures

The campus has aggressively pursued energy efficiency in existing buildings by implementing projects that resulted in a 28 percent reduction in electrical consumption and an 18 percent reduction in natural gas consumption between 2006 and 2016 (see Figure 9.4 and Table 9.2). These gains have occurred with a 100 percent increase in the student body, and a 50 percent increase in building square footage over the same time period, such that efficiency gains were partially offset by usage associated with new construction and campus growth.

Figure 9.4: *Completed Campus Energy Efficiency Projects*

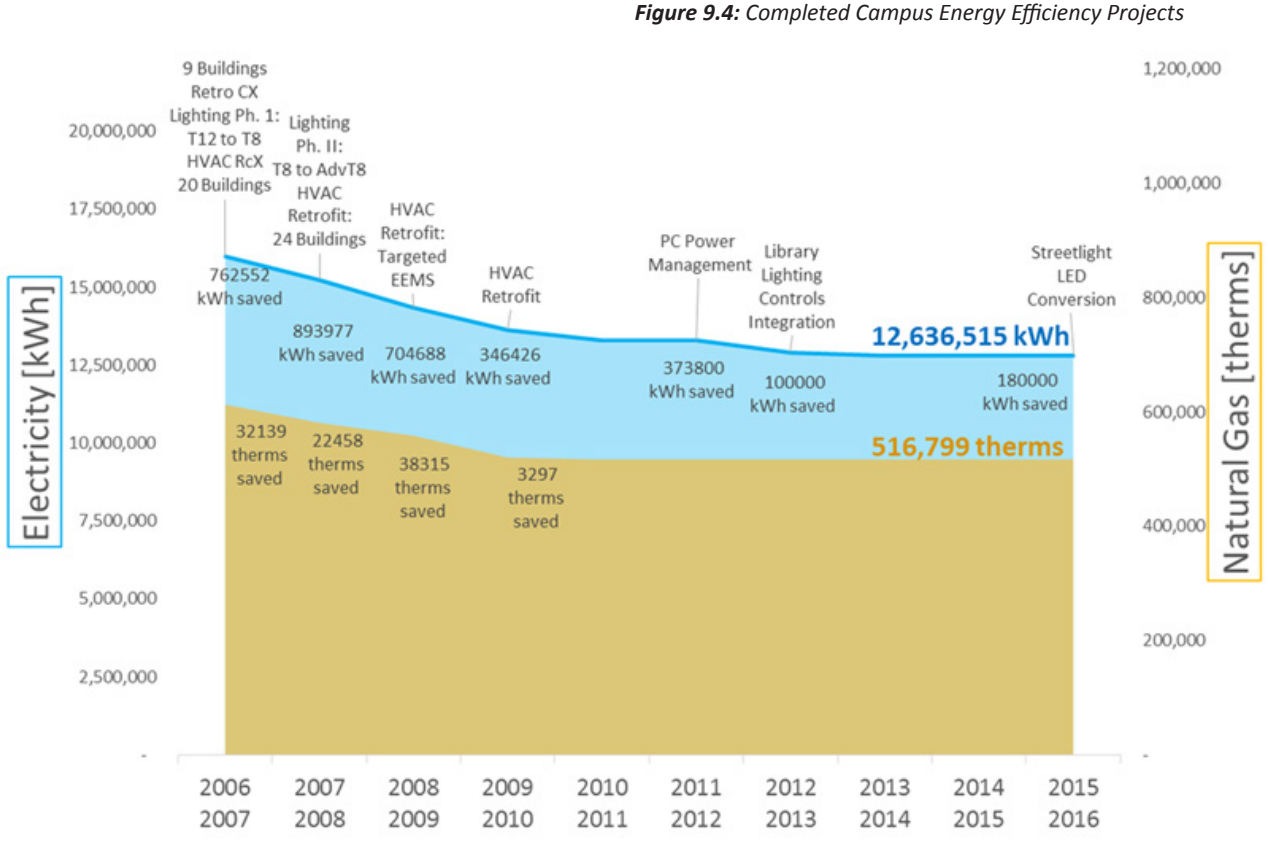


Table 9.2 *Completed Campus Energy Efficiency Projects*

Energy Efficiency Project Savings	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
Building Recommissioning, 9 Buildings										
kWh saved	250,000									
Therms saved	6,000									
Lighting Retrofit Ph. 1: T12 to T8										
kWh saved	173,272									
HVAC Retrofit, 20 Buildings										
kWh saved	339,280									
Therms saved	26,139									
Lighting Retrofit Ph. II: T8 to Advanced T8										
kWh saved		360,772								
HVAC Retrofit, 24 Buildings										
kWh saved		533,205								
Therms saved		22,458								
HVAC Retrofit, Targeted Measures										
kWh saved			704,688							
Therms saved			38,315							
HVAC Retrofit, 2009										
kWh saved				346,426						
Therms saved				3,297						
PC Power Management										
kWh saved						373,800				
Library Lighting Controls Integration										
kWh saved							100,000			
Streetlight LED Conversion										
kWh saved										180,000
Total										
kWh saved	762,552	893,977	704,688	346,426	0	373,800	100,000	0	0	180,000
Therms saved	32,139	22,458	38,315	3,297	0	0	0	0	0	0
Cumulative Savings										
kWh	0	1,656,529	2,361,217	2,707,643	2,707,643	3,081,443	3,181,443	3,181,443	3,181,443	3,361,443
Therms	0	54,597	92,912	96,209	96,209	96,209	96,209	96,209	96,209	96,209

Building Energy Use, Energy Efficiency Targets, and Energy Demand Forecast

This analysis utilized the amount of energy used by current campus buildings and the projected energy needs of future campus buildings at full build-out to generate an energy needs forecast and the resulting carbon emissions levels produced throughout the planning horizon. The planning horizon is assumed to be 2030, consistent with carbon neutrality planning goals. This forecast incorporated updated energy use targets for:

- Existing buildings: create energy efficiency measures to reduce energy usage by at least 5 percent
- Continuously increasing efficiency standard: assume that every future building will be designed to reflect a 2.5 – 3 percent improvement over each previous year
- Decreasing carbon content of grid-sourced electricity: recognize that PG&E-sourced electricity will be increasingly renewable due to state-mandated renewable portfolio standards.

The recommended EUI targets by building type and key design strategies was used to develop an EUI model that will enable the campus to achieve its reduced energy use between now and 2030. Table 9.3 shows the EUI target numbers that are recommended by building type. The resulting energy forecast was predicated on a "Business As Usual" (BAU) modelling approach (i.e., natural gas for heat, electricity for other needs), alternative energy supply sources, and the potential to switch between energy fuel sources. These were then modeled to identify approaches to improve emissions outcomes. Information on key technologies and strategies to achieve these targets is detailed below.

This master plan establishes targets for new construction for both 2020 and 2030. Residential new construction standards in California in 2020 will be net zero energy, and non-residential (commercial) construction will be net zero energy by 2030. Based on best practice, significant electrical savings can be achieved with high-efficiency lighting, better building envelopes, and improved HVAC equipment. For offices and classrooms, the study targets

Table 9.3: *Recommended Energy Use Intensity (EUI) Targets*

Building Type	US Average	Current CSUMB	EUI Target Existing Buildings	EUI Target, New Buildings 2020	EUI Target, New Buildings 2030
Offices/ Classrooms	100 kBTU/sf	64 kBTU/sf	53 kBTU/sf	49 kBTU/sf	22 kBTU/sf
Residence Halls	100 kBTU/sf	64 kBTU/sf	46 kBTU/sf	38 kBTU/sf	16 kBTU/sf

an EUI of 49 kBtu/sf, and this master plan recommends a stretch goal for new projects to target an EUI of 22 kBtu/sf by 2030. For residence halls, the study targets an EUI of 38 kBtu/sf and the master plan recommends a stretch goal for new projects to target an EUI of 16 kBtu/sf by 2030. While 2030 targets may seem aggressive, the market is trending quickly in this direction, and new technologies will become cost effective and will drive energy use downward sharply. Residential and non-residential buildings meeting these targets currently exist.

Key Energy Modeling Design Assumptions to achieve these EUI targets include:

- Building envelope strategies:
  - Increased insulation
  - High performance glazing of windows
  - Thermal break windows and wall assemblies
  - Utilization of energy efficiency envelope strategies in current energy code
- Integrated lighting technologies and strategies:
  - Daylighting design strategies to reduce use of electric lighting

- LED lighting for building and site lighting
- Lighting controls
- Daylight harvesting controls

- Energy efficient HVAC system technologies and strategies:
  - Radiant heating and cooling strategies using low temperature water (in-slab, panel, or supplied by central plant or distributed systems)
  - Variable Refrigerant Flow (VRF) systems (electric-fueled simultaneous heating/cooling, central condensing unit, fan coil units at each zone)
- Advanced HVAC system
  - Heat Pumps (electric fuel only providing both heating and cooling, or can be supplied by central plant or distributed systems)
  - Low temperature water system from central plant

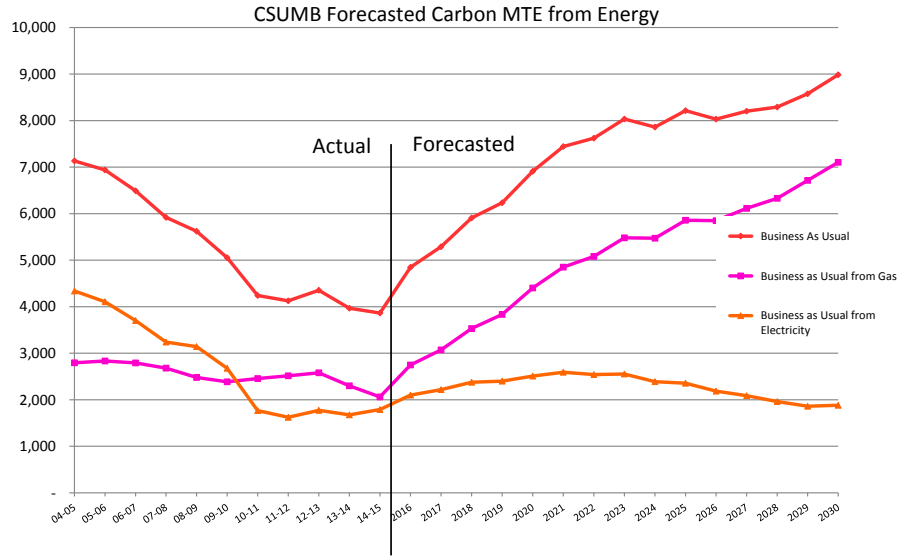
Detailed discussions of building technology systems are included in the Energy Use section of this chapter. Alternative supply methodologies and technologies aimed at reducing natural gas usage effectively shift the energy supply reliance between electricity and natural gas. Addressing natural gas usage tied to the heating demand will likely be more impactful than electricity demand in reaching the campus's sustainability goals. Alternative scenarios are modeled to identify different potential outcomes, which are discussed in the Energy Strategies and Technologies section of this chapter.

CSUMB Energy Use Modeling

Figure 9.5 shows the anticipated electricity, gas, and carbon emissions associated with pursuing the existing BAU energy strategy. This BAU strategy does not help the campus reach its carbon neutrality goal by 2030, and resulting emissions would need to be offset to meet the carbon neutrality goal.

Figure 9.5 shows the forecasted GHG emissions with the campus growing to 12,700 students between 2016 and 2030, using its current energy mix with new construction meeting Title 24 building code energy efficiency standards. The BAU case of current combined electricity and natural gas technologies results in the highest GHG emissions at roughly 9,000 MTE in 2030. The natural gas reliant technologies results in roughly 7,000 MTE by 2030, or a 22% reduction from BAU. The electric-reliant contribution results in 2,000 MTE by 2030, or a 77% reduction from BAU. Clearly, this is a wide range of outcomes and the decision of which path to take needs to be evaluated carefully through a strategic energy planning process.

Figure 9.5: *Business as Usual (BAU) Electricity, Natural Gas and GHG Emissions*



RECOMMENDATIONS

The California State University Executive Order 987, the 2007 and 2016 Second Nature Climate Commitments, and the resulting Climate Action Plan set ambitious goals for the university system and each individual campus. To achieve these goals CSUMB will need to develop an equally ambitious plan to reduce GHG emissions to the minimum possible, supply as much renewable energy from on-site resources as is economically feasible, and purchase offsets for any remaining GHG emissions. The options presented in this chapter provide a basis from which to develop a strategic energy plan that meets current and future needs in the most efficient, cost effective and environmentally sound manner possible.

Utilize a district scale approach to on-site energy production

To achieve its goals for carbon neutrality, the campus should approach on-site energy production projects on a campus-wide scale instead of building by building. A larger system is more efficient, easier to maintain, and takes advantage of available space and economies of scale. In addition, there is an existing hot and chilled water plant that still has years of life and is strategically located near the campus core.

Expand district scale chilled and hot water distribution

As on many UC and CSU campuses, district water loops can provide the most efficient, scalable, and low-carbon approach for long-term development that achieves carbon neutrality. A district scale, centralized system should be implemented to generate and distribute hot and chilled water to serve building heating and cooling needs. CSUMB's existing set of district heating and cooling piping loops in the main campus area should be expanded to serve future buildings.

Continue energy efficiency improvements in existing buildings

For existing buildings, design teams and the energy manager can research and adopt the best available technologies for high-performance building retrofits. Buildings can be retrofit with smart technology to quickly troubleshoot building system problems and to enable ongoing commissioning of the buildings. Buildings where lighting or HVAC commissioning has not been performed in the past five years should be recommissioned. For existing buildings, LED lighting retrofits may be cost effective and could be implementable with support of the UC CSU Energy Efficiency Partnership. Together these improvements alone should increase building efficiency beyond the 5 percent embedded in the BAU forecast.

Establish design standards for increasing energy performance for building level technologies

For new construction, building energy use should be targeted to a minimum of 15 percent better performance than current Title 24 code. Higher margins can be achieved in administrative buildings and some academic buildings. For existing buildings, building energy use should be targeted for a minimum of 5 percent improvement compared to existing usage, with higher goals for specific buildings that have greater opportunity for improvement. These increased opportunities would be best identified through a deep energy retrofit auditing process, which could be supported through the UC CSU Energy Efficiency Partnership.

Identify greenhouse gas emission offsets purchasing strategy

Depending on the strategies adopted and their combined success, achieving the university's carbon neutrality goal may require the purchase of carbon offsets to close any remaining gap at the end of the timeline, particularly if natural gas reliant strategies are adopted. If electricity reliant options are favored and a large proportion of on-site renewable energy is supplied, emissions will be much lower. Offsets could be procured in several ways:

- Participate in a local renewable energy offset or Community Choice Aggregation (CCA) program. Participation in a CCA may allow CSUMB to export surplus renewable electricity generated on campus on terms more favorable than those presently available. The campus will need to evaluate these benefits among other available options.
- Purchase renewable energy offsets from a certified green-e source in the quantity to offset remaining annual metric tons of carbon dioxide equivalent(MtCO2e) emissions associated with energy.

The related costs and benefits associated with CCA or offsets option should be considered when the Strategic Energy Plan is developed. Offsets can represent a significant added cost and should not be overlooked.

Participate in Programs That Provide Financial Incentives for Energy Efficiency

Savings by Design

Administered by California energy utilities, Savings By Design (SBD) encourages high-performance, non-residential building design and construction, and a variety of solutions to building owners and design teams. Incentives are available for owners and designers. Use of the Savings By Design program is a policy requirement for the CSU universities. This program can be accessed directly without participation in UC CSU Energy Efficiency Partnership, though incentive values will be lower.

UC CSU Energy Efficiency Partnership

The University of California and California State University systems have developed a joint program to offer energy efficiency programs to the UC and CSU campuses in partnership with the statewide energy utility programs. The new construction element of the program is based on the SBD program but is tailored for optimal uptake by the UC and CSU campuses. An incentive to participate of $0.10/kWh is added to the SBD incentive rates for energy savings in this program. Enhanced incentives are also available for energy efficiency retrofit projects. The program is administered by a single subcontractor statewide, direct to the UC and CSU systems, thereby improving program service and response. CSUMB has participated in the past and is eligible to participate in the current program.

Develop Plan for Financing Infrastructure and Building Improvements

Despite uncertainties regarding future construction budgets, advanced energy-saving systems should be incorporated in new construction, and attention should be paid to improving performance in existing buildings as well. Energy efficiency strategies have a well-established positive return on investment, and costs of renewable energy systems and storage continue to decline. Financing mechanisms such as group solar solicitations, power purchase agreements, and public-private partnerships could be beneficial financially. A capital financing plan should be developed along with and consistent with the strategic energy plan.

Table 9.4 includes a rough early estimate of the first cost of technologies described in this chapter. Figure 9.11 shows the rate of return on investment compared to business as usual (BAU).

ENERGY STRATEGIES AND TECHNOLOGIES

Campus-Wide System Strategies and Technologies

With a campus that inherited a number of disparate former military buildings, CSUMB must continue to standardize campus-wide systems and approaches over time. Because most of the increase in program area will be new construction, the university has an opportunity to apply high-performance building standards campus-wide. The strategies below include systems that should be considered, as they are cost effective and high performance, and they meet the campus goals stated above.

Upon initial analysis, pursuing the water-sourced heat pump strategy appears the most cost effective and feasible district-scale solution, one that would meet the university's goals to partner with local agencies, be a leader in innovative technologies, and produce on-site energy.

District scale heat pump-provided energy strategy

Two types of heat pump energy supply systems are available to the campus. The first, a solar-sourced heat pump, has a number of advantages and disadvantages. While this system would help meet the carbon neutrality target, the initial capital outlay, lack of affordable scalability, and project risk should be evaluated as the technology matures.

The second, a water-sourced heat pump utilizing reclaimed water in partnership with Marina Coast Water District, may be a cost effective and efficient option. It would allow the university to be a responsible steward of its natural resources, and it would provide an excellent opportunity to partner with the local water district on a mutually beneficial landmark project.

Heat pump generated energy supply

The heat pump strategy aligns best with on-site renewable energy production and carbon neutrality goals. It is also the most efficient way to provide heating and cooling for the campus. To prepare for either the solar or water heat-pump supply scenario, the campus should develop and expand its district-scale water distribution system and design building systems to circulate hot water at lower temperature. Plans for campus expansion need to take into account this infrastructure improvement.

Ultra-clean natural gas fired cogeneration as an interim step

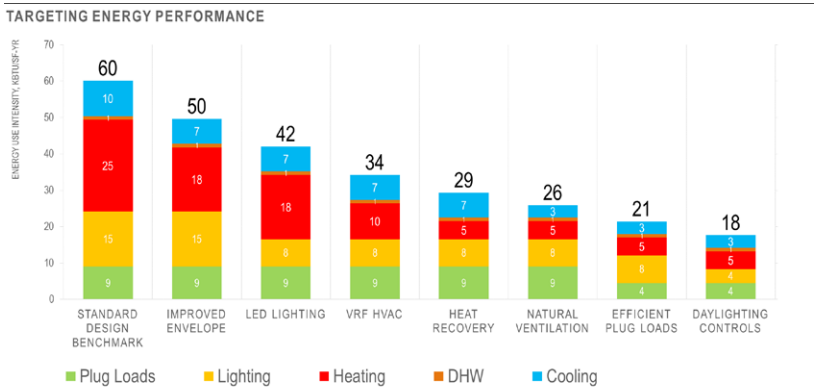
A cogeneration plant would use natural gas to produce both electricity and district-scale hot water for the campus. This technology is well established, and the economics are understood. The GHG impacts are, however, higher than other technologies available to the campus. Nevertheless, some form of natural gas generation will still be required, even in the long term, for stability of the California grid, even after the renewable mandates are met. As an interim step, therefore, the university may want to explore the feasibility of a natural gas-fired cogeneration plant.

Building System Strategies and Technologies

Because building energy use significantly affects both electricity and natural gas usage, reducing it is the key means of achieving net zero energy and carbon neutrality. CSUMB has implemented many energy efficiency measures and has already recognized a reduction in electricity and gas usage. Building energy use is rapidly changing as more data on existing operations becomes available, the price of energy increases, and the state of California moves toward achieving Zero Net Energy residential buildings by 2020 and commercial buildings by 2030. These targets are actively being met throughout the state on projects using market-ready technologies and strategies that can be replicated at CSUMB. High-performance building strategies for new construction are outlined below, as well as recommendations for building energy systems.

The pathway to a low-carbon campus requires high-performance buildings utilizing many energy efficiency strategies that together contribute to a low EUI. Shown below is a pathway to a low EUI target that buildings often undergo during a design process. Building envelope, lighting technologies and strategies, daylighting strategies, energy efficient HVAC systems, and plug loads are driven down through a rigorous design and modeling process. Currently, the CSUMB buildings use 60 EUI per year on average. This is not unusual for existing buildings constructed under previous energy codes. New construction in California is continually bringing this average down; new buildings built to code operate at an EUI of 42 or lower. Proven technologies and holistic design processes can reach an EUI in the mid-20s through passive and energy-efficient design approaches. As an example, in its first year of operation, the Joel and Dena Gambord Business and Information Technology Building had an EUI of 28. This same process and holistic approach were used to establish the low energy stretch goals for each building type. (Figure 9.6)

Figure 9.6: *Building Systems Energy Performance Targets*



Low Energy Heating Standards

Where there are HVAC related considerations, the most effective strategy is utilizing a decoupled ventilation, heating, and cooling system. These systems by design utilize lower temperature heating water and can directly tie into a campus-wide heating system in the future. Low energy and low carbon building technologies include radiant heating and cooling, Variable Refrigerant Flow (VRF) heating and cooling, and heat pumps. (Figures 9.7 and 9.8)

Cooling and Natural Ventilation

Cooling loads at CSUMB are significantly lower than heating loads because of the moderate climate. Regardless, cooling is needed in heavily occupied academic buildings and in residences in the early fall, when the cooling season spikes and students are back on campus. In building design, cooling loads should be determined through annual energy modeling. Natural ventilation strategies such as operable windows, cross ventilation, and stack ventilation are highly effective and should be prioritized. Remaining cooling loads that cannot be met by natural ventilation strategies can be met by mechanical ventilation such as DOAS (Dedicated Outdoor Air Supply) systems with partial cooling of just the required ventilation air, using effi-

Figure 9.7: *Low Energy Building HVAC Strategies - Variable Refrigerant Flow Heat Pumps*

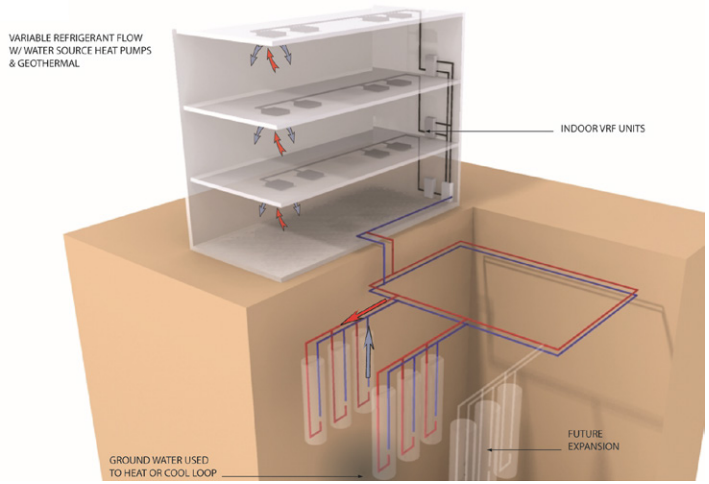
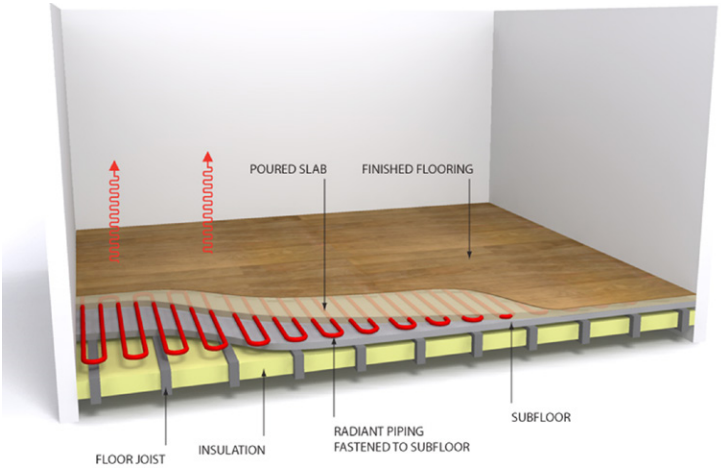


Figure 9.8: *Low Energy Building HVAC Strategies - Radiant Heating/Cooling*



These systems work on the principle of moving heat from the ground into a building or from the air into a building. Like a refrigerator running in reverse, heat pumps use electricity to move heat and are orders of magnitude more efficient than natural gas.

cient heat pump technology. This strategy is consistent with the decoupled ventilation strategy described in the Low Energy Heating Standards above.

Daylighting Strategies and Lighting Technologies

Natural daylight is a resource in academic, administrative, and residential buildings that should be optimized through design. Daylight is free, and it is the highest quality lighting available. The many daylighting strategies that are available include side lighting (windows), top lighting (skylights), light shelves, and light tubes. Design practice for new construction should include daylight strategies and daylight modeling. Once the daylight contribution is known, artificial lighting should be carefully designed to augment daylighting needs and fill gaps that daylight cannot provide, such as occupancy beyond daylight hours, non-daylit areas, egress and emergency lighting, task lighting, and specialty lighting. Daylight harvesting controls, including occupancy sensors and photo sensors, should be integrated into daylighting design.

LED lighting technologies have progressed rapidly in quality, color rendering, and cost effectiveness and are now embedded in California's Title 24 energy code. LEDs are therefore a requirement for new construction, and lighting loads as a fraction of total loads will decline. New buildings should take advantage of LED lighting technologies. Existing buildings can also be retrofit for LED technologies, and this might be considered for an additional energy efficiency project. The UC CSU Energy Efficiency Partnership provides incentives for LED retrofits.

Domestic Hot Water Systems

The mild climate in Monterey is ideal for a heat-pump-based domestic hot water heating storage system, with solar thermal backup for high-energy load spaces, such as residential, food preparation, and dining facilities. Offices and classroom buildings with distributed low-use fixtures and overall low hot water demand, such as hand washing lavatories in restrooms, would benefit from distributed point-of-use domestic hot water heaters. This strategy avoids excessive distribution losses associated with long runs and intermittent use, and it reduces overall system cost.

Plug Load Management

Hard-wired plug load controlling outlets tied to occupancy sensors should be installed to at least meet current code. Plug load controls help to reduce energy use by equipment such as computer monitors, desk lamps, TVs, and other accessories when dorm rooms, offices, conference rooms, and other spaces are unoccupied. Permanently on plugs will continue to provide power to devices which should not be turned off. In addition to the devices themselves, signage should be included to educate users on which outlets are appropriate for which types of devices.

Energy Supply Strategies and Technologies

To address the heating requirements of the campus, this master plan proposes several strategies which generally follow two themes:

- Natural Gas Reliant Technologies: BAU with gas boilers and cogeneration
- Electricity Reliant Technologies: air sourced heat pump, solar sourced heat pump, water sourced heat pump, with various levels of crossover and bridging potential between some of these technologies

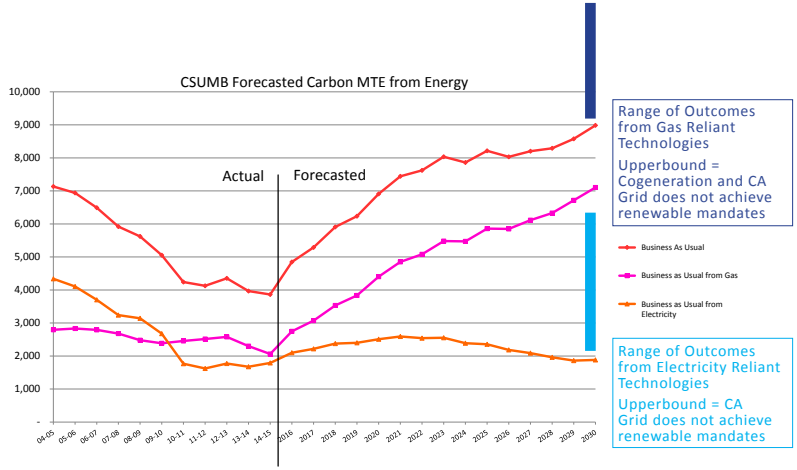
Each strategy and underlying technology has operational and financial advantages, as well as limitations and risks. If California is successful in achieving its mandates to reduce the carbon content of grid electricity by the year 2030, it appears that the electricity reliant strategies will be far more likely to position the campus to achieve its carbon neutrality objectives over the long term. (Figure 9.9) In fact, in 2015 the GHG emissions of the PG&E electricity utility grid was equal to the emissions of natural gas on a lbs/CO2 basis, with future electricity emissions projected to be far below natural gas by 2020. (Table 9.1)

Following is a discussion of the concepts of both the natural gas and electricity reliant Technologies, as well as probable advantages and disadvantages of each.

Natural Gas Reliant Technologies

The 2004 CSUMB master plan update, which predated the Campus Climate Commitment, anticipated supplying the campus energy needs for heat and electricity using a cogeneration energy supply strategy (further explained below) that was heavily reliant on natural gas. In pursuing this strategy the campus invested in a district hot water distribution system (operated at 170 degrees F) and a central boiler plant. The cogeneration component was deferred until the thermal load could justify the investment; a solicitation for this cogeneration component was attempted unsuccessfully in 2013. However, construction of additional buildings on campus and conversion of existing buildings to the district hot water system has continued through

Figure 9.9: *Forecasted GHG Emissions from Energy*



2016, and approximately two thirds of the campus annual heat loads is now being supplied by the district hot water system. This system is robust and has significant capacity to supply new buildings in the campus core from existing hot water piping.

Gas Fired Boilers

In the BAU case the university would continue to use its existing central plant boilers to supply heat to new buildings. These boilers burn natural gas in high performance, high efficiency burners to heat hot water, which is then circulated throughout the district heating system. Significant capacity exists in this plant to supply the campus build-out; the addition of new boilers would be driven more by a desire to maintain redundancy and reliability (versus rationing during a breakdown) than by a requirement to meet peak need. The boilers are reliable and low maintenance.

Advantages:

- The technology is commercially readily available and well understood
- The technology can be purchased incrementally

Disadvantages

- This approach results in higher GHG emissions than other alternatives

Cogeneration

Cogeneration for the campus would be the conversion of natural gas into two useable forms of energy: electricity and heating hot water. Installing a cogeneration plant would increase the amount of natural gas consumed on campus while reducing the amount of electricity purchased from the grid. The cogeneration plant uses natural gas to produce both electricity and hot water, reducing the natural gas burned in the central plant boilers. The plant would consist of one or more reciprocating engines driving electric generators tied to the campus electrical distribution system, with heat recovery to the campus district heating system on the engine exhaust.

This form of energy production is more efficient than procuring electricity from the grid and producing hot water in boilers because the cogeneration plant can make better use of its heat output than the average grid-tied, natural gas-fueled power plant.

Advantages:

- The technology is commercially readily available and well understood
- The upfront capital investment may be lower than other options
- The cogeneration can be scaled up as campus grows

Disadvantages

- Reciprocating engines require high levels of maintenance
- The GHG emissions associated with the combustion process are higher than other alternatives when viewed at a campus level
- Investment in cogeneration may become a sunk-cost

Electricity Reliant Technologies

Heat pump systems take energy from a heat source and store it in a "heat sink." Heat pumps are an electric technology that supplies both heating and cooling in one piece of equipment. They are advantageous in conditions with low-carbon or carbon-neutral goals because they supply heating and cooling without the use of natural gas, and the equipment uses only small amounts of electricity. Criteria for considering heat pump options for district scale energy supply scenarios include:

- Reliability and service life of technology
- Cost
- Maintenance

Heat sources considered include air, solar, and water. A general discussion of each source follows; however, the solar and water options are the most feasible for the CSUMB location and are evaluated in more detail.

Air-Sourced Heat Pump

An air-sourced heat pump system relies on extracting energy from the essentially infinite reservoir of outdoor ambient air, and using this electricity to heat indoor spaces.

Advantages:

- The technology is commercially readily available and well understood
- The technology can be purchased incrementally
- The technology provides both heating and cooling and does not require a large investment in interconnecting infrastructure

Disadvantages

- This approach is a distributed system, entailing many small units that must be maintained by certified technicians. Each

unit contains regulated refrigerants that could potentially leak, to the detriment of the environment.

- The system has an inherent inefficiency because it is needed most when the outdoor air is cold. As the amount of electricity required for heating is proportional to the temperature difference between the ambient and conditioned space the system must work harder to achieve its objective.
- CSUMB's close proximity to the Pacific Ocean, with its onshore winds and moisture, pose extreme corrosion challenges. The required contact and heat exchange with air can drastically shorten the service life of exposed equipment and make the sustainability of this strategy questionable.

Solar Sourced Heat Pump

A solar-sourced heat pump system would capture energy from sunlight through thermal solar panels that circulate hot water. Part of this energy would be distributed directly for use in buildings via a district hot water distribution system, and the other part of the captured energy would be stored for use in tanks during times when there is insufficient sunlight due to time of day, cloud cover, coastal fog, and seasonal variation. Times when energy would be withdrawn from storage would therefore include each morning, evening, and night; during prolonged overcast; and daily in winter when sunlight is limited and the heating need is greatest.

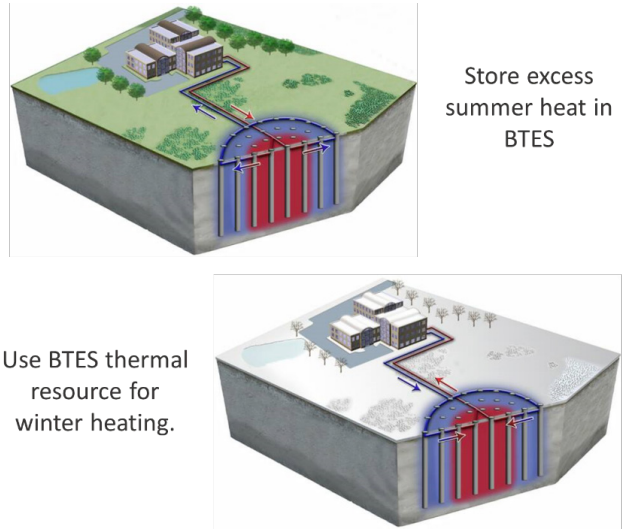
Solar energy technologies are prevalent and affordable in today's energy market. Solar PV systems, which directly translate solar radiation into electricity, are most prevalent. These are also the lowest-cost systems available today, but their efficiency, which tops out around 23 percent, is low.

Newer technologies couple solar electric creation with solar hot water (solar thermal) and are known as Photovoltaic Thermal (PVT) collectors. These systems are best utilized at locations where hot water can be readily utilized, such as the district scale HHW system at CSUMB.

The PVT panels are highly efficient and can harvest up to 90% of the solar energy on a clear day. They utilize evacuated tubes to make very high temperature water (up to 180 degrees F). This coupling of thermal heat in water boosts the electric PV panels as well, improving their output and extending their service life. Solar PV electric panels work best in cold, clear, climates like high deserts in the winter; however, given their high efficiency, PVT is still a highly viable energy source in locations such as the CSUMB campus.

This PVT system relies on significant infrastructure to store and reclaim the energy (heat) that is captured. One system which has widespread use is Borehole Thermal Energy Storage (BTES). BTES is the equivalent of a battery using the constant ambient temperature of the earth for heating and cooling. Similar to a geoexchange system, BTES can store excess heat in summer for low-carbon heating in winter, as shown in Figure 9.10. It can store heat from PVT and cogeneration if these systems are on site. This technology is used to balance heating resources for lowest cost and lowest carbon.

Figure 9.10: *Borehole Thermal Energy Storage (BTES)*



BTES can be located in open space or under parking lots as available. It comprises a series of vertical wells drilled in close proximity to create what is called a thermal field. When needed, energy is extracted from these wells in the ground by a heat pump, which supplies heat to the district hot water distribution system, thus cooling the ground and warming the district heating system. These systems are most efficient when all buildings linked to the system can operate with the lowest water supply temperature possible (130-140 degrees F).

Advantages:

- The heat pump is centralized and not in contact with air, thus improving maintainability
- Because it relies on district water distribution it can be backed up or peak-shaved by the campus's existing boiler plant.
- An opportunity exists to use PVT panels that would produce both heat and electricity thus offsetting some of the heat pump electrical consumption.
- BTES and heat pumps provide carbon-free heating and cooling

Disadvantages:

- The solar arrays and borehole will be large and capital intensive, and it will be challenging to size and finance these to match the campus energy demand. These demands will be a moving target, driven by incremental funding of buildings and development..

Water-Sourced Heat Pump

A third heat pump solution relies on another source of ambient heat—water. Similar to the air-sourced heat pump, this system extracts energy from a steady source of water. In an unusual coincidence, the Monterey Peninsula is seeing the development of a new water source, one which is planned to be pumped through the CSUMB campus on a steady basis. The Marina Coast Water District (MCWD) and the Monterey Regional Water Pollution Agency (MRWPCA) have teamed with FORA to assist in the development of the Monterey Pure Water Project. The proposed project will treat various community wastewater streams at the MRWPCA treatment plant north of the campus, and inject the resulting "product water" into the Seaside groundwater basin to the south of the campus for later extraction as potable water.

One version of this project uses an existing pipeline through campus to convey the 68 degree F product water at flow rates between 1,000 and 2,400 gallons per minute (depending on drought levels and month of the year) to the injection field. The opportunity for a water sourced heat pump arises from the potential to extract energy from this product water flow (lowering the water's temperature) as it is piped through campus. Calculations indicate that significant portions of current and future campus thermal demand could be supplied from this source by imposing nominal temperature changes on the order of 4 to 15 degrees F on the product water.

Advantages

- The technical design of the heat pump component would be essentially the same as that in the solar sourced alternative, but the water-sourced system would require heat exchange equipment in lieu of the solar panels and the borehole.
- The product water flows are forecast to be highest in winter, thus aligning the energy supply and demand, and minimizing the expenditure of capital on oversized equipment or storage.
- The heat exchange equipment would be less capital intensive than the solar panels and boreholes. By eliminating the need for solar thermal, it would also simplify the procurement of future solar PV.
- The heat exchange equipment could be installed incrementally as the campus grows.

- Lowering the temperature of the source water would extend the lifespan of the piping system.
- The system would be backed up by the district boiler plant, allowing for incremental build-out and peak load shifting. At the extreme, if the cost relationships between electricity and gas diverged, a fuel switching strategy could be implemented.
- Achieving multi-agency cooperation to add a greenhouse gas reducing energy component to a water project could garner best practice recognition on a statewide or national scale.

Disadvantages:

- The product water is not in the control of the university and the ability and extent to which the product water temperature can be changed would need to be negotiated with outside agencies.

Table 9.4: *Rough Cost Scenario Comparison of Technologies on an Annual Basis*

Energy Quantities	FY15-16 Estimated	2030 Business as Usual Boilers	2030 Cogeneration	2030 Bore Hole Solar Thermal	2030 Water Sourced Heat Pump	2030 Water Sourced Heat Pump w/PV
Heat Therms (as Gas)	516,799	1,333,000	1,768,944	-	-	-
Electricity Grid + 1MW Solar Kwh	12,636,515	26,000,000	16,470,000	29,000,000	33,200,000	29,060,000
HCF Water	68,232	136,464	136,464	136,464	136,464	136,464
Energy Costs						
$ Gas	$ 363,587	$ 937,815	$ 1,244,517	$ -	$ -	$ -
$ Electricity	$ 1,757,346	$ 3,615,791	$ 2,290,465	$ 4,032,998	$ 4,617,087	$ 4,041,342
$ Water & Sewer	$ 561,727	$ 1,123,454	$ 1,123,454	$ 1,123,454	$ 1,123,454	$ 1,123,454
Financed Capital Investment	$ 4,259,001	$ -	$ 3,500,000	$ 35,000,000	$ 8,000,000	$ 19,000,000
$ P&I Expense of Capital	$ 410,322	$ -	$ 337,198	$ 3,371,980	$ 770,738	$ 1,830,503
$ Salaries & Benefits	$ 241,230	$ 241,230	$ 241,230	$ 241,230	$ 241,230	$ 241,230
Total	$ 3,334,212	$ 5,918,290	$ 5,236,864	$ 8,769,662	$ 6,752,510	$ 7,236,530
Annual Cost Difference vs. Business as Usual			$ (681,426)	$ 2,851,372	$ 834,220	$ 1,318,240
Grid Kwh Carbon Content Forecast Lbs/MWI	427	167	167	167	167	167
Mte Carbon from Gas	2,749	7,090	9,409	-	-	-
Mte Carbon from Electricity	2,099	1,833	1,111	2,060	2,379	2,065
Total Carbon Mte	4,848	8,924	10,521	2,060	2,379	2,065
Cost to Offsett to Zero at $50/Mte	$ 242,391	$ 446,180	$ 526,027	$ 103,021	$ 118,929	$ 103,248
Total Carbon Neutral Cost	$ 3,576,603	$ 6,364,470	$ 5,762,891	$ 8,872,683	$ 6,871,438	$ 7,339,778
Annual Cost Difference vs. Business as Usual			$ (601,579)	$ 2,508,213	$ 1,108,547	$ 975,308

10

DESIGN THEMES

ENHANCE CAMPUS IDENTITY

INTRODUCTION

In order to support the diverse student body and create a successful learning and living environment, the campus must be designed to foster communication, collaboration, and a sense of community (placemaking). To truly embody sustainability, the campus must continue to work toward climate neutrality in its operations and physical context (stewardship), and to model sustainable practices to its own community as well as the region and state (partnership).

Two types of design themes are presented here: architectural design themes, and landscape design themes. These are then put into practice in the special area plans laid out in Chapter 11, providing detail for several key areas on campus.

In addition to the recommendations contained in this chapter, all future improvements on the campus edges should adhere to the recently adopted Fort Ord Regional Urban Design Guidelines (RUDG).

ARCHITECTURAL DESIGN THEMES

These architectural design themes articulate an architectural vocabulary that will result in a distinctive character for the CSUMB campus. The existing campus is a diverse mix of different building styles. While many of the former military buildings will remain for some time, the newly constructed buildings have embraced the opportunity to establish a design vocabulary more appropriate to a university campus - a vocabulary that reflects the three tenets of sustainability: placemaking, stewardship, and partnership. While there is a natural desire to promote consistency among campus buildings by providing a basic level of similarity among them, these architectural design themes allow greater freedom of architectural expression and visual distinction where it is appropriate, especially for special use or landmark buildings.

Design Precedents

There are no remaining buildings of historical style or significance on the campus site that could form the basis for developing an architectural theme. However, northern California and the Monterey Peninsula have a rich history of architectural development influenced by culture, climate, and local materials, and the newer buildings on campus have begun to create a distinctive architectural character for the CSUMB campus.

Regional Design Precedents

Mission San Juan Bautista

Beginning with the missions and the use of adobe and hand-hewn wood construction methods, the region showed its colonial inheritance from Mexico, the first true architectural style on the West Coast. Later, in the twentieth century, this heritage gradually developed into a more complex Spanish Colonial style.

Original examples like Mission San Juan Bautista were a functional juxtaposition of simple volumes, plastered and whitewashed. Overhanging eaves and deeply recessed windows created strong shadow lines. Continuous arcades sheltered outdoor circulation from sun and inclement weather, and became a comfortable outdoor extension of interior living spaces. The

cloisters developed a microclimate that supported lush interior working gardens, protected from winds and wildlife.

Monterey Vernacular

Out of the mission style, Monterey developed its own recognized vernacular style with the advent of sawn lumber, which was used for roof and floor framing, exterior balconies, and door and window trim. These simple, rectangular, adobe and plaster building masses had long, low-pitched overhanging eaves and second-floor balconies with wood or wrought iron handrails that provided additional outdoor living spaces. The materials were locally procured, and both wood shake and clay tile roofs were common.

Bay Area Rustic Style

The Arts and Crafts style was an international movement that was interpreted locally as a Bay Area Rustic Style. The movement was characterized by the use of hand-crafted natural materials. Typically these buildings have exposed structural framing, redwood shingle cladding, and rustic stonework. Facades tend to be complex compositions of simple elements. Local materials were used in rational and economical ways, and buildings were sited in relationship to their settings, integrated with the landscape.

Bay Area Modernism

Post World War II architecture in northern California had a distinctively unpretentious feeling that is very different from the glass and steel modernism practiced elsewhere. It used smooth surfaces of natural materials, simple details, and a careful juxtaposition of spartan shapes. Minimal forms integrated modern building processes with the traditional feeling for natural materials and the environment.

The starkly simple interior volumes are animated with light. A studied artlessness belies the sophistication of their designs.

The Bay Area Rustic Style (upper left) is exemplified by use of rugged, local materials, and a combination of themes arranged to form a cohesive composition. The Monterey Customs House (upper right) is an example of Monterey vernacular architecture, with its long gable red-tiled roof, cantilevered second floor porch, and whitewashed adobe walls. Bay Area Modernism (lower) features minimal forms, modern techniques and a traditional feeling for natural materials.

Architecture at CSUMB

The newer buildings on the CSUMB campus, in particular Chapman Science Academic Building, the Tanimura & Antle Family Memorial Library, and the Joel and Dena Gambord Business and Information Technology Building, form the basis of a new, distinct CSUMB architectural style.

Chapman Science Academic Center

The Chapman Science Academic Center, built in 2003, was the first new academic building built on the CSUMB campus. The 68,000-square-foot, three-story building embodies a strong commitment to sustainable design, reflecting the nature of the environmental science curriculum it supports. Sun shades, for example, are employed to reduce energy demand and provide a sustainability-oriented aesthetic. The exterior is a combination of wood, glass, and stonework, and uses color to add vibrancy and interest. Chapman's massing and finishes reflect the primary programmatic elements of laboratories, offices, and classrooms. The landscape surrounding the building utilizes a native, low-water-use plant palette.

Tanimura & Antle Family Memorial Library

The Tanimura & Antle Family Memorial Library serves as the centerpiece for the university. The building is located on Divarty Street at the Fifth Avenue circular roundabout. The main entry activates Divarty Street, and the secondary entry opens to the Crescent open space. The library features a sweeping three-story atrium that runs the length of the building, bringing daylight into the interior. The building is certified LEED Silver, and features a range of sustainable design strategies from daylighting and low-energy use, to water conservation and recycled content materials. An exterior sun shading system eliminates solar glare from the building's interior, and mitigates solar heat gain on the east and west façades. The sun shading system still allows for expansive exterior views, which include Monterey Bay and the Salinas Valley.

Joel and Dena Gambord Business and Information Technology Building

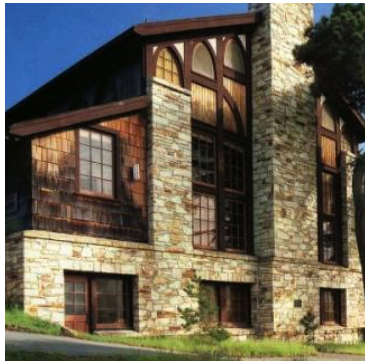
The Joel and Dena Gambord Business and Information Technology Building continues the tradition of building sustainably on campus. The addition of this building on Divarty Street adjacent to the library further enlivens Divarty Street as an active campus corridor. The closure of Divarty Street adjacent to the building creates a safe environment for students. Sustainability strategies for the building include provision of natural light, on-site stormwater management, water conservation, and energy use reductions through the use of exterior sun shades. The building is LEED Platinum certified, the highest green building rating awarded by the US Green Building Council.

Shared Architectural Characteristics

To varying degrees, these regional historic and existing campus building precedents share several characteristics:

- Integration with landscape
- Local and natural materials
- Indoor / outdoor connection
- Exterior circulation / solar shading
- Daylighting and attention to views
- Integral climatic response






Overall Architectural Design Concepts

Seek Design Authenticity

Seek design authenticity appropriate to the site context, purpose and building materials.

Authentic architectural character is not a style applied to buildings, but derives from climatic response strategies and sensitivity to the materials and forms that resonate with the site. Culture, climate, context, and available technology have always been the primary determinants of built form. What we now recognize as historical styles were most often vernacular ways of building using the materials and technology available at a specific time and place.

Building design today should be similarly direct and honest, using the appropriate modern materials and technology. The result may recall the elements of regional historical styles that responded to the same climatic conditions, but will do so in a way that is appropriate to contemporary purposes and available resources; and it will be inherently functional and economical.

Engage the Site

Use the natural character of the landscape to shape building form and design.

The almost contradictory essence of the campus landscape is conveyed by the combination of low vegetation in the foreground and gently folded landforms rolling into the distance. Up close, the environment is enveloping and intimate, while distant views and the ocean air lend a sense of breadth and openness where wind, land, and sky are the dominant forces. Building in this landscape requires engaging with both of these experiences.

Building forms, materials, and colors should exhibit integrity, directness and permanence; and they should be sensitive to the colors, materials, vegetation, and landforms that characterize the site. They should be durable to weathering forces unique to this climate.

Buildings should settle on the site and extend into the landscape to encourage direct user interaction with the landscape. Interior and exterior should be experienced as a continuous environment with as few barriers as possible.

Integrate Sustainability

Integrate sustainable design with building form.

Environmental quality has direct impacts on occupant satisfaction and productivity. As a deliberate and integral part of the design process, architects and engineers should consider alternative ways to provide human comfort, reduce dependence on artificial systems, and promote local and low-energy products.

The campus itself should be an active teaching tool to instill the concepts of foresight and stewardship of the environment in the student body. The sustainable college campus should be designed as a learning opportunity for everyday practices that will use resources responsibly and reduce waste. Users should be encouraged to participate directly in building operations and to understand their resource use choices. In addition, direct connection with nature should be incorporated into campus and building design, using biophilic design principles and strategies that incorporate nature through environmental features, light and space, natural shapes and forms, natural patterns and processes, evolved human-nature relationships, and cultural elements that create place-based relationships.

The new academic and library buildings on campus, including the Joel and Dena Gambord Business and Information Technology Building (upper left), Chapman Science Academic Center (lower left), and Tanimura & Antle Family Memorial Library (upper and lower right), the architectural design concepts.

Building Design Recommendations

This section outlines design strategies and criteria to inform the building design vocabulary at CSUMB.

Building Siting

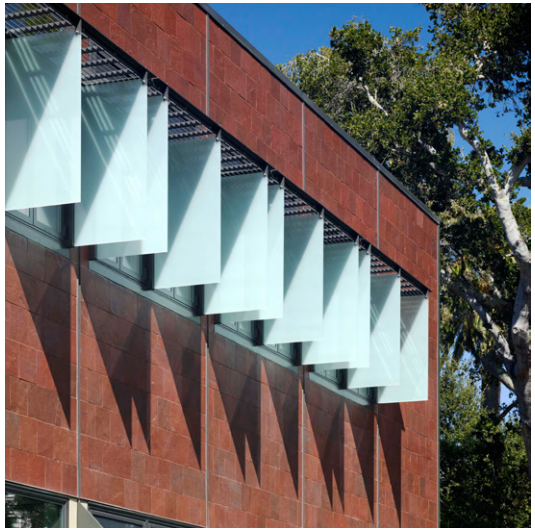
Building forms should be sensitive to the landforms that characterize the site, allowing building users direct interaction with the landscape. Building forms should respond to the gently rolling topography and broad horizons by accentuating horizontal massing and limiting vertical forms to place-making landmarks, similar to the effect of stands of cypress.

Interior and exterior spaces should be experienced as a continuous environment with as few interruptions or barriers as possible. The Monterey Bay area is a desirable environment for outdoor living, provided there is sufficient exposure to the sun and protection from the wind.

- Settle buildings into the site and extend building elements into the landscape
- Promote views of and interaction with the landscape
- Avoid building and landscape features that appear to separate the building from its site
- Group buildings to define spaces and courtyards between them, and create opportunities for social interaction
- Configure building groupings to protect from undesirable wind effects

Residential building clusters should be arranged around usable outdoor spaces of various sizes and configurations suitable for informal outdoor gatherings and activities. The traditional residential quadrangle should be used where appropriate to foster a sense of connectedness between residential buildings and to make places of special significance. Informal recreation, such as fields and courts, should be located in close proximity to student residences.

Building forms providing interaction with the environment (upper); building siting responsive to landform and landscape (lower).



South exposures should be articulated to control solar gain (upper). East and west-facing windows may require vertical solar shading (lower).

Orientation

Buildings should be oriented to provide comfort and facilitate solar and wind control. As a passive design strategy, the primary axis of academic buildings should be oriented east-west. This allows a reduction of wall areas on the east and west exposures, and greater north and south exposures that can be controlled with window opening sizes and horizontal solar shading devices.

Variations in height are encouraged within and among groupings of buildings, with taller buildings located on the north and west sides of outdoor spaces to permit more favorable and easily controlled morning and midday sun, while providing protection from afternoon winds.

- Primary axes of academic buildings should be oriented east-west
- Articulate south exposures to provide solar control
- Reduce west exposures and protect against solar gain and the steady ocean winds blowing from the northwest.
- Variations in height are encouraged, with taller elements on the north side and defining the edges of pedestrian malls
- Carefully study the orientation of glazing on landmark buildings with regard to the function of different interior spaces

Residential buildings have a more varied use profile than academic buildings, so orientation of building facades is less important than having adequate fixed or manually controlled solar shading devices. Orientation of landmark buildings and their glazed surfaces should be carefully considered according to their use patterns.

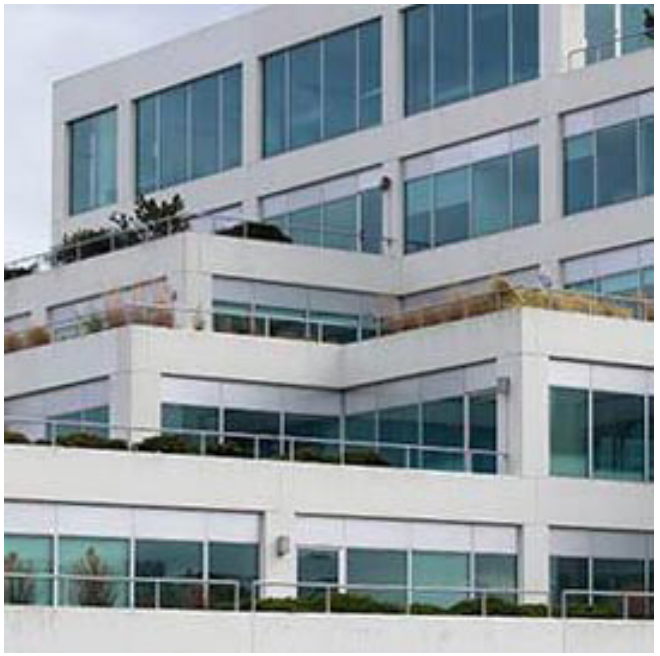
Massing

Massing will define the formal organization of the campus. Building mass should also be used strategically to provide indoor and outdoor comfort, promoting sun-lighting of adjacent walkways and courtyards, and protecting gathering spaces from strong winds. Simple building forms should be grouped together to define outdoor spaces.

Buildings in this sunny, mild climate with cool morning fog and afternoon breezes should be designed with relatively narrow floor plates, or with elements such as atria so they can take advantage of natural cross-ventilation and daylighting.

- Use predominantly horizontal massing
- Buildings should promote sunlight to adjacent open spaces and protect them from wind
- Building edges should be used to define open spaces and the core area circulation framework
- Massing of academic, landmark, and residential buildings should be differentiated to promote identity. Generally, landmark buildings, such as the library and student union, should be prominent and architecturally significant

The massing of residential buildings should be distinct from that of the other campus building types. The scale should be more intimate and inviting. Housing should be articulated with distinctive bays, arcades, and entryways. Ground level spaces should house shared student uses such as dining, common areas, and study rooms to activate both interior and exterior spaces, and glazing should be used for transparency and interest where appropriate.



Building facade treatments reflecting different interior uses (upper). Articulated facades facing open space (lower).

Materials

Colors and materials should exhibit integrity and directness and demonstrate responsiveness to the character and forces of the site. Materials should be durable against weathering forces unique to this climate, and the color palette should derive from and complement the landscape. In some cases, materials can take advantage of natural weathering processes to improve their character over time.

Buildings should use a consistent palette of primary and secondary materials. Higher quality and more visually interesting materials should be applied to the bases of buildings, to emphasize the importance of the pedestrian scale.

Materials should be justifiable on a life-cycle cost basis, rather than their initial cost. The selection of high-durability, low-maintenance materials will contribute to the longevity of buildings.

Materials fabricated using energy-intensive processes are discouraged. Material selection should favor locally and regionally available products to reduce transportation-related carbon impacts as well as supporting the local economy.

- Use a consistent palette of primary and secondary materials
- Encourage use of local, natural, and tactile materials
- Choose materials that are durable and easily maintained, express permanence, and weather gracefully
- Design buildings such that proportions and texture are appropriate to both human and building scale, with higher-quality materials at the pedestrian level
- Specify integral-color building materials
- Use the effects of light and shadow as design elements
- Select materials with high recycled content
- Specify materials that minimize waste, including planning for end-of-service-life adaptable reuse, deconstruction, or recycling
- Evaluate materials on a life-cycle cost basis
- Select materials that are non-toxic and socially equitable
- Incorporate aesthetic preferences for re-used materials on new building projects and renovations
- Explore options to account for total embodied carbon of building projects as much as feasible

Use of natural stone enhances building color and texture (above left and right).

Efficiency

Increasing energy, water, waste, and mobility efficiency within buildings is crucial to achieving sustainability goals. Creative solutions should be applied to maximize building potential for resource efficiency.

As CSU and state of California standards evolve, buildings at CSUMB should be designed to meet the highest standards and to educate buildings users and visitors about the benefits of energy-conscious design.

Energy

- Design buildings with relatively narrow floor plates to promote daylighting and natural ventilation
- Use vertical elements such as atriums or vent shafts that draw outside air through the building
- Draw in ventilation air at low levels (away from vehicles or equipment) and exhaust air at high levels to enhance thermal flow
- Consider glazing carefully to maximize daylighting and minimize solar gain to promote comfort
- Use external shading devices to protect clear glazing from excessive solar gain
- Utilize efficient technologies to minimize the amount of energy needed to meet heating or cooling loads not met through passive strategies
- Design roofs to accommodate photovoltaic or similar energy generation equipment
- Plan building for flexibility to accommodate foreseeable future technologies
- Use thermal mass to mitigate or offset heating and cooling demands
- Utilize occupancy sensors to automatically turn off equipment and lighting in order to lower demand and reduce peak equipment sizing
- Design buildings to meet lower-temperature heat distribution

Water

- Design buildings with high water use, such as residence halls, recreation centers, etc., to be ready for future greywater.
- Pursue aggressive water conservation goals for all buildings
- Design residential laundry facilities to allow for laundry-to-landscape projects; this would support the campus as a learning laboratory and allow greywater to be used on site

Waste

- Consider placement areas for recycling, landfill, and compost in common areas of all buildings as well as within offices and classrooms
- Incorporate signage with detailed information on where to place materials
- Ensure enough space is available for custodians to service the area
- Accommodate dishwashing facilities where appropriate to allow the use of reusable dishes in campus food service locations

Mobility

- Integrate accessibility into primary building circulation; avoid separate circulation elements for accessible and non-accessible routes, where possible
- Incorporate internal wayfinding to direct people to closest parking lots, transit stops, and bicycle storage
- Introduce technology to improve information sharing, such as passenger information display systems that provide real-time transit arrival and departure times

Service

Service spaces and loading areas need to be carefully planned to meet the demands of each building use. They are not desirable to be seen, heard, or encountered by most members of the campus community.

- Service bays should be located as far as possible from quads, courtyards, and major pedestrian walkways
- Wherever possible, service bays should be located within the building envelope and placed behind doors integrated with the façade design
- Noise-generating equipment at grade should be studied for acoustic impact, and appropriate mitigation measures should be used

Building envelope, including the use of sun shades, modulates ventilation and solar gain.

Design service docks and loading areas in keeping with building envelope (left). Screen service areas from view and isolate to mitigate noise with physical barriers including landscape (right).

LANDSCAPE DESIGN THEMES

Building upon its unique natural heritage, the landscape at CSUMB campus should be used to create a coherent and universally attractive campus by integrating the various spaces, places, circulation ways, and buildings of different styles and eras. The themes that follow express the overall landscape design concepts, respond to the various campus open space types. A discussion about appropriate plant selection and campus landscape maintenance is also included.

Overall Landscape Design Concepts

Connect and Enhance Open Space to Create a Vibrant Campus

Utilize the landscape vocabulary of the existing natural areas on campus to create a vibrant and attractive campus with a distinct sense of place

The landscape can be a key factor in creating a vibrant and attractive campus environment. By expanding upon the existing natural landscape resources on campus, in particular the native oak woodlands, and extending this vocabulary, the campus will evolve a distinct sense of place at CSUMB. A more densely and cohesively planted campus will contribute to the beauty and natural habitat of the campus, aiding student recruitment efforts and increasing satisfaction among continuing students. Campus pedestrian and bicycle circulation systems should be incorporated into the landscape, linking on-campus as well as regional destinations.

Create Usable Outdoor Places

Create comfortable outdoor spaces for socializing and studying

As the campus continues to grow, efforts should focus on creating spaces of multiple scales and types to accommodate various activities, from graduation ceremonies, to outdoor classes, student group meetings, socializing, and studying. These spaces should be human-scaled, protected from the wind, and wherever possible, sunny. Seating and other amenities should be provided.

Ensure Safety and Accessibility on Campus

Provide adequate pedestrian lighting on campus

Design open spaces to be universally accessible

Student safety on campus is imperative. Provide adequate lighting levels and emergency call boxes for pedestrians and bicyclists, particularly in the campus core and between the core and the student residential neighborhoods.

It is the intent of CSUMB to create a welcoming campus environment that accommodates the needs of all campus users. Major campus open spaces and pedestrian pathways should be universally accessible to meet the mobility needs of the entire community.

Minimize Water Use

Minimize potable water use for irrigation

Water use is a local and statewide concern due to ongoing drought conditions and limitations to the regional water supply. Irrigated areas should be concentrated in the most visible and utilized open spaces, and around building entries. While some irrigation is necessary to establish and maintain healthy and attractive plants, the use of potable water for irrigation should be minimized through selection of plants requiring little water, effective irrigation systems, and other strategies. Irrigation demand should utilize non-potable water when it becomes available.

Integrate Art

Integrate art into the campus to foster community, and to add beauty and interest to the campus open spaces

Public art is a great way to add interest to a space. It can direct views, promote gathering, and create photo opportunities. Art can also foster attachment to the campus and community. Integrating art into the campus landscape can be done on a temporary or permanent basis and can solicit the work of students, faculty, or outside artists. Art installations should be located throughout campus, prioritizing gathering spaces and areas with higher visibility.

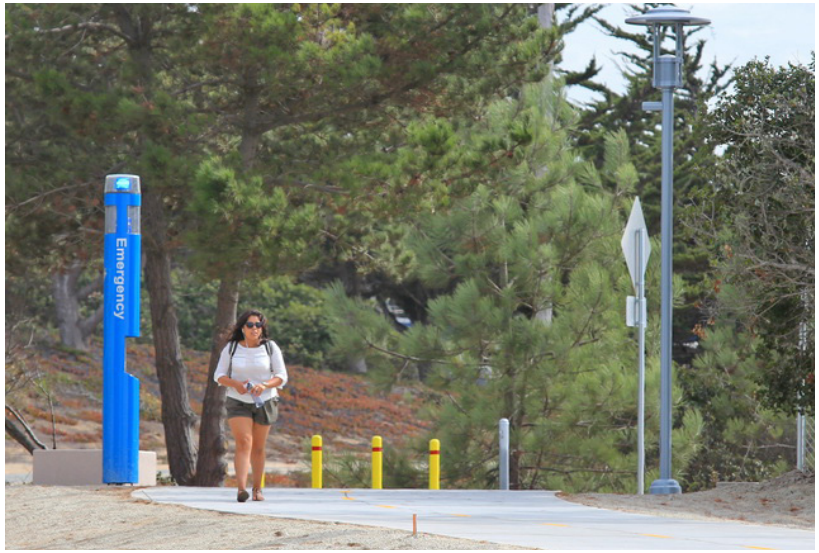
Landscape Themes by Open Space Types

The open space types are described in Chapter 6: Open Space. The design themes that follow relate to those designations, as each landscape type has its own characteristics and requirements.

Natural Open Space

The natural open spaces provide a distinguishing landscape backdrop to many areas of the campus. These natural areas are attractive, provide habitat, and can be used for educational purposes and passive recreation. Several rare species are found on campus, and others are suited to the area.

- Preserve and enhance the native coastal live oak stands. Protect federally- and state-listed rare plants. Support habitat through invasive plant removal and restoration with native species.
- Provide walking, jogging and bicycling trails, as well as quiet spaces for studying, gathering, and contemplation. Provide seating and trash receptacles.
- Allow limited more structured recreation, such as the ropes course and the disc golf course.
- Incorporate art to engage viewers and promote inspiration. Integrate art where it can highlight or interpret the site's natural features and educate viewers about the Monterey Bay region.
- Install interpretive signage to engage students and provide informal education opportunities.
- Provide legible connections and adequate wayfinding signage to the regional trail network.



Connecting Open Space

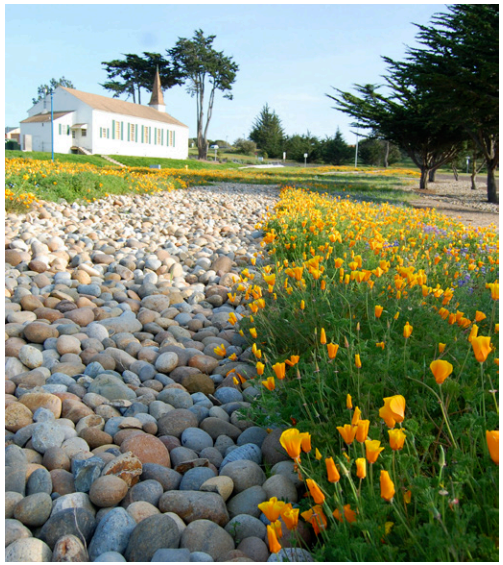
The connecting open spaces are naturalistic landscapes that link the more formal academic core with the residential and athletics and recreation areas. These are intended to celebrate the natural open space of the campus by extending it with similar materials and forms in an informal pattern. Pedestrian and bicycle facilities follow these linkages. Use of this planting palette, coupled with the natural areas, will give the campus the coherent identity it currently lacks.

- Utilize the Monterey area native landscape vocabulary to give the campus a coherent identity. Incorporate and feature the mature stands of Monterey pines, Monterey cypress, and coast live oaks.
- Support habitat through invasive plant removal and restoration with native species.
- Locate pedestrian and bicycle facilities in these areas.
- Depending on location and intensity of use, pedestrian pathways may be concrete or unit pavers; bicycle facilities may be concrete or a pervious material such as decomposed granite.
- Provide adequate pedestrian lighting and emergency call boxes.
- Provide wayfinding signage.

Stormwater Management Areas

In keeping with the sustainable vision for the CSUMB campus, stormwater management will feature visible, surface installations to the extent feasible. These should be attractive features, integrated into the landscape design of the connecting open spaces.

- Construct stormwater management areas to be attractive open spaces, integrated into the larger landscape design. Design stormwater infrastructure to be visible for educational purposes.
- Utilize a native or climate-appropriate planting palette; avoid use of invasive species. Utilize species that will be attractive in the dry season.
- Use permeable pathway materials to percolate water without hindering accessibility or emergency vehicle access.
- Install interpretive signage to engage students and provide informal education opportunities.



Formal Campus Open Spaces

The formal campus open spaces are the most visited and heavily utilized open spaces on campus. These are the visitor and community destinations, and the places where larger events and gatherings are held. They also provide a place for students to gather and socialize. Whereas the remainder of the campus retains a more naturalistic quality, the formal campus open spaces can be more formal in design. Specific concepts for these spaces are detailed in the Special Area Plans.

- Design spaces to accommodate large gatherings and small group interaction, anticipating use by both the campus population and members of the broader community.
- Spaces can be designed with a more formal design sensibility than the naturalistic areas.
- Provide ample seating and other furniture such as tables, trash receptacles, and bicycle racks. Seating areas should accommodate groups of varying sizes and different program needs.
- Use landform, walls, and plantings to create windbreaks where suitable.
- Integrate public art as a focal point of the space. Site public art to engage viewers and promote interaction.
- Incorporate plantings to soften the space, add comfort, and define distinct areas.

Academic Open Spaces

Academic open spaces are the entry plazas and courtyards adjoining the academic buildings. These spaces need to accommodate heavy pedestrian circulation as well as studying and socializing.

- Locate spaces adjacent to and between buildings at a variety of scales to support activities such as socializing and studying.
- Design spaces to prioritize sun access and wind-protection through location, and the use of landform, walls, and plantings.
- Provide a range of seating options to accommodate groups of varying sizes. Provide additional furniture such as tables, trash receptacles, and bicycle racks where appropriate.
- Provide plantings to soften the space and add comfort. Plantings can be more formal than in the naturalistic areas.

Residential Neighborhood Open Spaces

The residential open spaces play an important role in supporting student success on campus. A variety of activities and spaces are needed to support the different needs of students, including large spaces for gathering and smaller spaces for studying.

- Include a diversity of spaces ranging from large spaces for gathering to smaller spaces for quiet studying.
- Design spaces to prioritize sun access and wind-protection through location, and the use of landform, walls, and plantings.
- Provide a range of seating options to accommodate groups of varying sizes. Provide additional furniture such as tables, trash receptacles, and bicycle racks.
- Provide plantings to soften the space and add comfort. Plantings can be more formal than in the naturalistic areas.
- Spaces can be a combination of paved and planted.
- Provide formal and informal recreation opportunities, such as open fields and sand volleyball and basketball courts.
- Consider opportunities for art installations to add whimsy and interest to the residential neighborhoods.

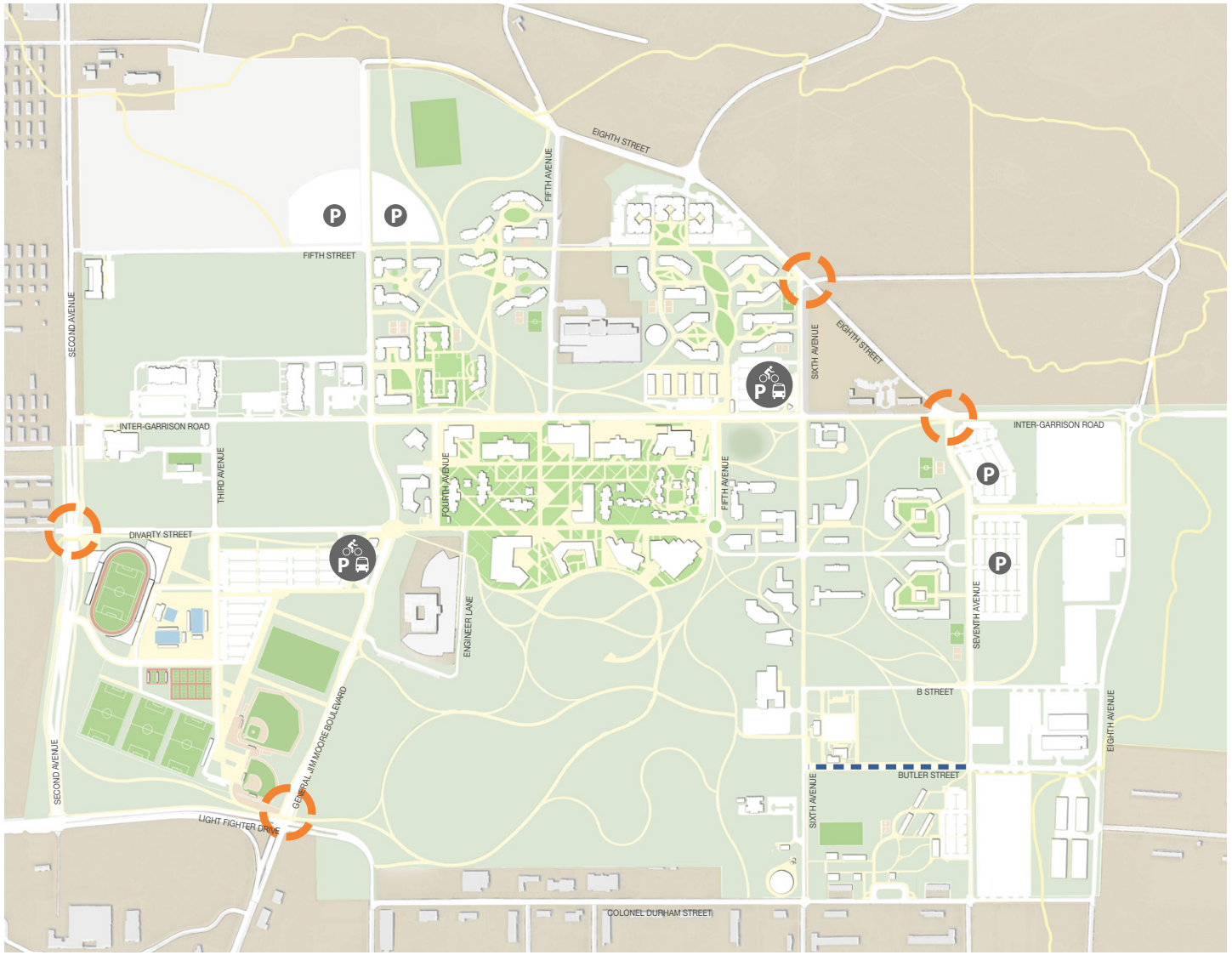
Entries and Arrival Sequence

The entries to CSUMB announce the arrival onto the campus. They should be visible and attractive, projecting the campus identity to visitors. The arrival sequence onto campus should be appealing and marked clearly for ease of wayfinding and should promote the sense of arrival on campus.

- Locate entries as noted in Figure 10.1.
- Provide monument signage and special landscaping that evokes the CSUMB identity to mark entries.
- Design entrances to be legible from a distance and to contribute to the high-quality public face and distinct identity of the campus. For example, the windrow vocabulary employed at the Main Quad could be repeated at the gateways to signal arrival on campus. A distinct tree type should be used for the entry/gateway windrows with a repeated palette of paving, site walls and signage to allow variable but recognizable vocabulary at each campus entry.
- Provide clearly marked wayfinding signage guiding visitors to parking facilities at the Alumni & Visitors Center, as well as to the Athletics District and other major campus destinations.
- Create an attractive arrival sequence using landscape and streetscape improvements.

Monument signage such at the CSUMB sign at General Jim Moore Boulevard and Lightfighter Drive announce the entrance to campus. Monument signage should be integrated into a gateway landscape at the four campus gateways.

Figure 10.1: *CSUMB Entries*

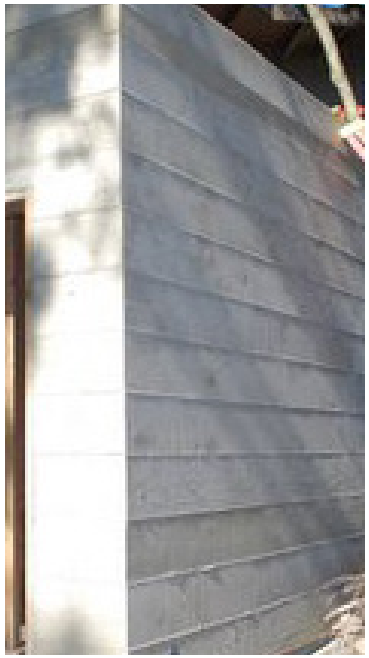


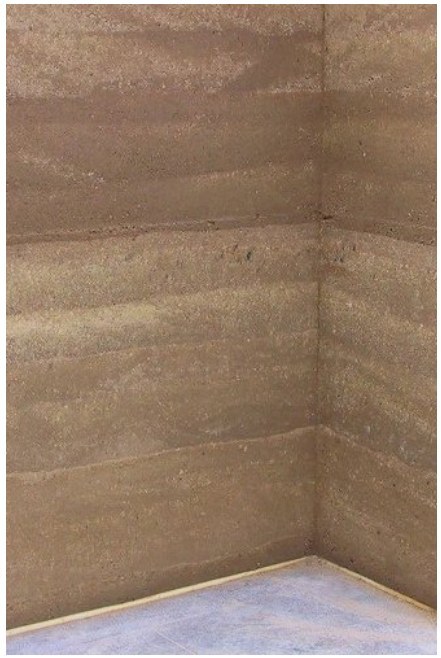
Planting and Materials

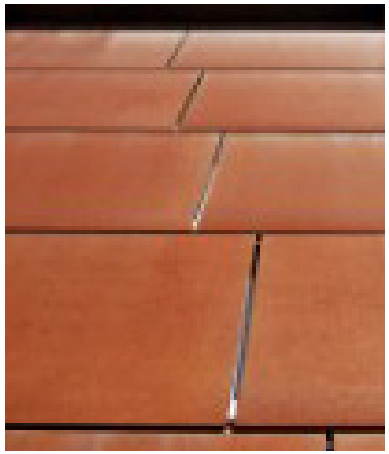
The Monterey Bay environmental conditions, including wind, salt, and sandy soils, significantly limit the available planting palette. Invasive species, such as the widespread ice plant, thrive in this environment, crowding out native species. Restoration projects should seek to remove the invasive species and replace with native ones. The 2008 Landscape Maintenance Plan contains a detailed planting palette that addresses these issues; it should continue to be referenced. Monterey Bay Friendly Landscaping, a program of Ecology Action, also provides helpful plant lists and other resources specific to the Monterey Bay region. General planting recommendations for the campus follow.

General Planting Recommendations

- Support sustainability goals by selecting climate-appropriate, drought-tolerant plants requiring limited resource input. Favor Monterey Bay natives. Avoid planting invasive species
- Restore native habitat by removing invasive species and replacing with native species
- Locate higher-maintenance plants only in visible, heavy-use areas and formal campus open spaces
- Utilize synthetic turf in lieu of turf grass on athletic and recreation fields, where feasible
- Relate planting design to campus buildings to strengthen the connection between architecture and landscape
- Utilize trees and landform to deflect wind and create sheltered spaces throughout campus







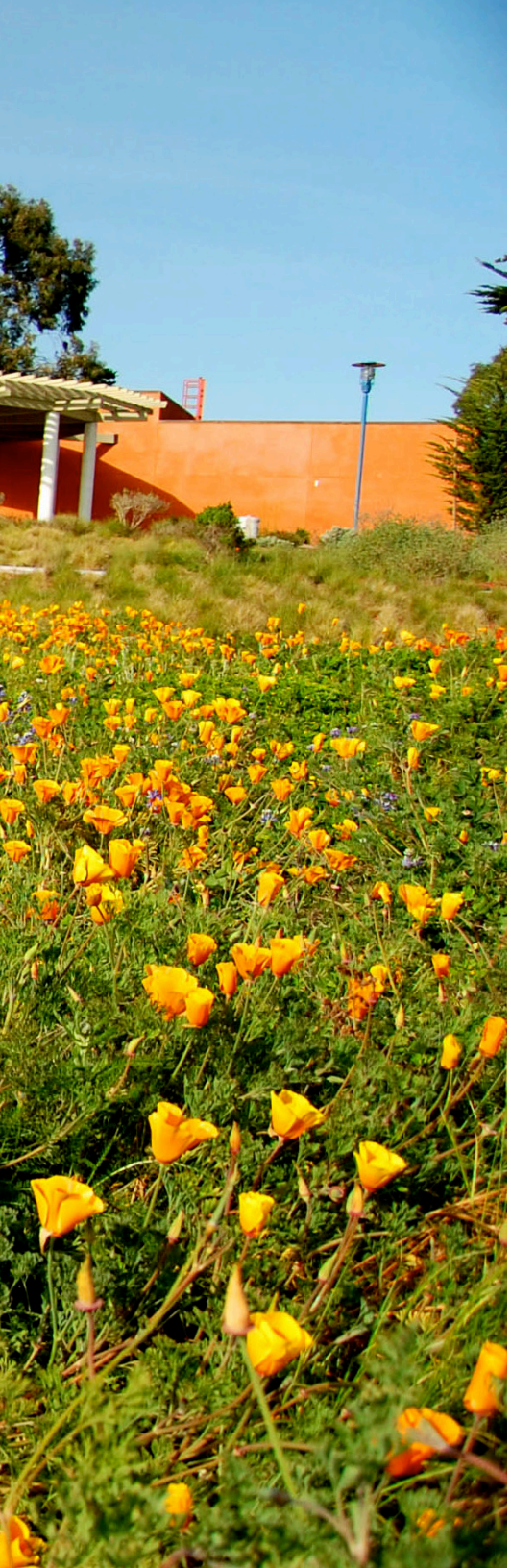
Landscape Materials

- Choose colors and materials to respond to and complement the existing physical setting and be in harmony with the architecture
- Specify local and regional materials whenever feasible
- Focus on natural materials that complement the site and surrounding landscape, including concrete, concrete pavers, special accent paving, and decomposed granite
- Specify site furnishings from the same family to provide continuity and identity throughout the campus
- Utilize permeable pavement wherever feasible to percolate water

Landscape Maintenance

The CSUMB Landscape Maintenance Plan (2008) provides a structure for landscape maintenance on campus. The landscape is divided into zones in order to focus campus resources where they are most needed. Each zone has particular maintenance requirements as well as plant selection recommendations.

This Landscape Maintenance Plan is a beneficial document; however, it should be updated to integrate the design goals and strategies found in this master plan. For example, the recent drought has fueled stronger goals on campus around water conservation. The master plan also introduces new approaches to stormwater management that will need to be incorporated into the maintenance plan.



11

SPECIAL AREA PLANS

INTRODUCTION

The special area plans that follow contain a detailed discussion of the planning and design concepts for specific areas on the CSUMB campus. Each area includes a description of the design intent and its accompanying design strategies.

MAIN QUAD

The Main Quad is the heart of the CSUMB campus. As the central gathering space on campus, the Main Quad should be an iconic space, one that reflects the identity of the university. The Main Quad will accommodate a variety of activities, including large events, small events, passive recreation, studying, and socializing. The Main Quad should be redesigned to better accommodate these various uses. The new Main Quad will be organized around two distinct spines; a north-south open space and an east-west corridor. (Figures 11.1, and 11.2)

1. The Main Quad as currently designed is an expansive area, too large to feel defined. To help alleviate this situation, the Main Quad should be designed to be a series of “rooms” rather than one large space. This can be achieved through planting, materials, and topography. The ground plane should be a combination of paving and planting areas. Landform can be utilized to create sloped areas for lounging, and seat walls integrated into the landscape can create rooms for studying and socializing. Turf areas should be selectively located to minimize maintenance and water use while maximizing opportunities for passive recreation and socializing.

2. Windrows of trees add to the character and help define the different areas of the Main Quad, and provide much-needed wind protection. This windrow vocabulary can be utilized throughout campus as a CSUMB identity-giving concept, but should be more legible as a distinct, repeated element of the Main Quad spaces.

3. The east-west spine builds around the major pedestrian promenade or mall. It creates a central corridor for efficient movement for students between facilities with minor pedestrian connectors organized along the windrow plantings to accommodate desired circulation routes. This corridor connects the facilities between Fourth Avenue and Fifth Avenue with identifiable entrances at each end.

4. South of the pedestrian promenade are a series of smaller garden rooms. These will have a more intimate scale and each will be designed to accommodate the adjacent uses. A

Figure 11.1: *Main Quad - Plan*

Existing Buildings

Proposed Buildings

Section Cut for Figure 11.2

1. Combination of paving and landscape
2. Windrows of trees
3. East-West Spine
4. Smaller-scaled garden rooms
5. North-south oriented “commons”
6. New buildings constructed on existing parking lots
7. New buildings frame Main Quad
8. North-south pedestrian connector

combination of permeable and hard paving, dense planting and windrow trees will be used. The repeated palette of materials will provide a consistent identity to the promenade and garden rooms.

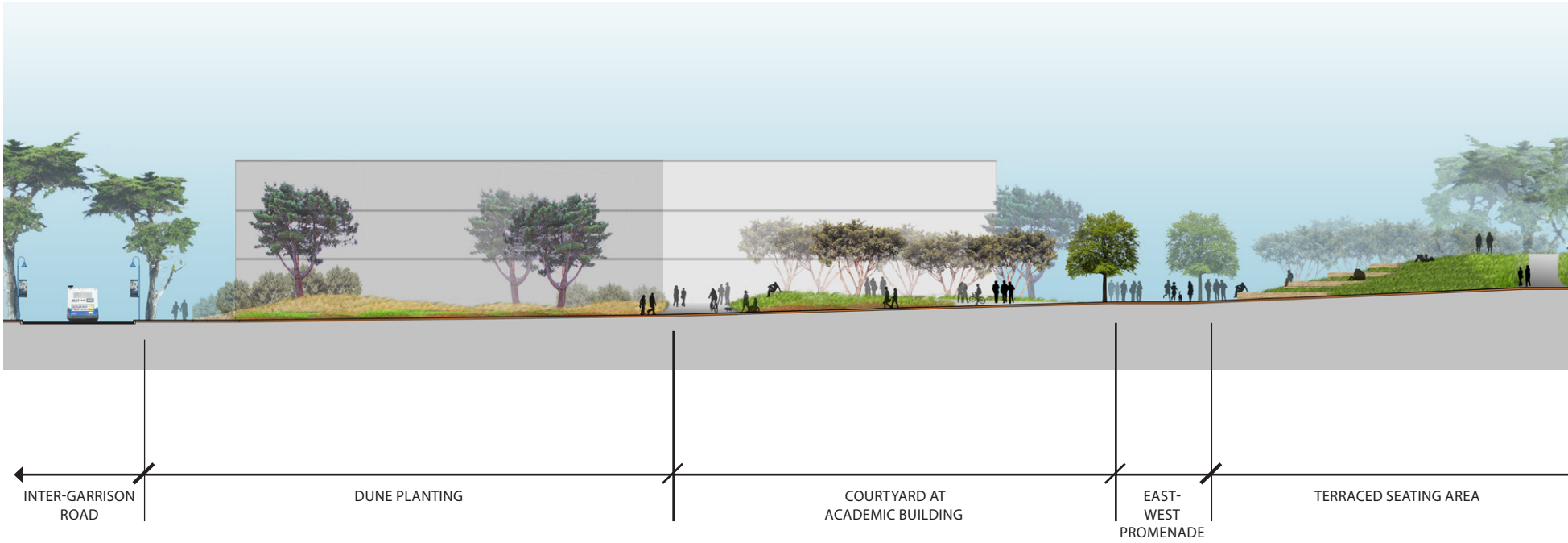
5. The north-south-oriented “commons” has a different character than the spine; it provides a large open space for gatherings and spontaneous recreation.

   This new Commons intersects the Promenade and Garden Rooms. It terminates at the north at the Northern Oak Woodland, and extends and invites pedestrians into the Crescent area to the south.

6. New buildings are constructed upon existing parking lots to increase density in the campus core.

7. New buildings are sited to frame the Main Quad spaces as well as create entry plazas and building courtyards. Building courtyards should be wind-protected and have sun access whenever feasible.

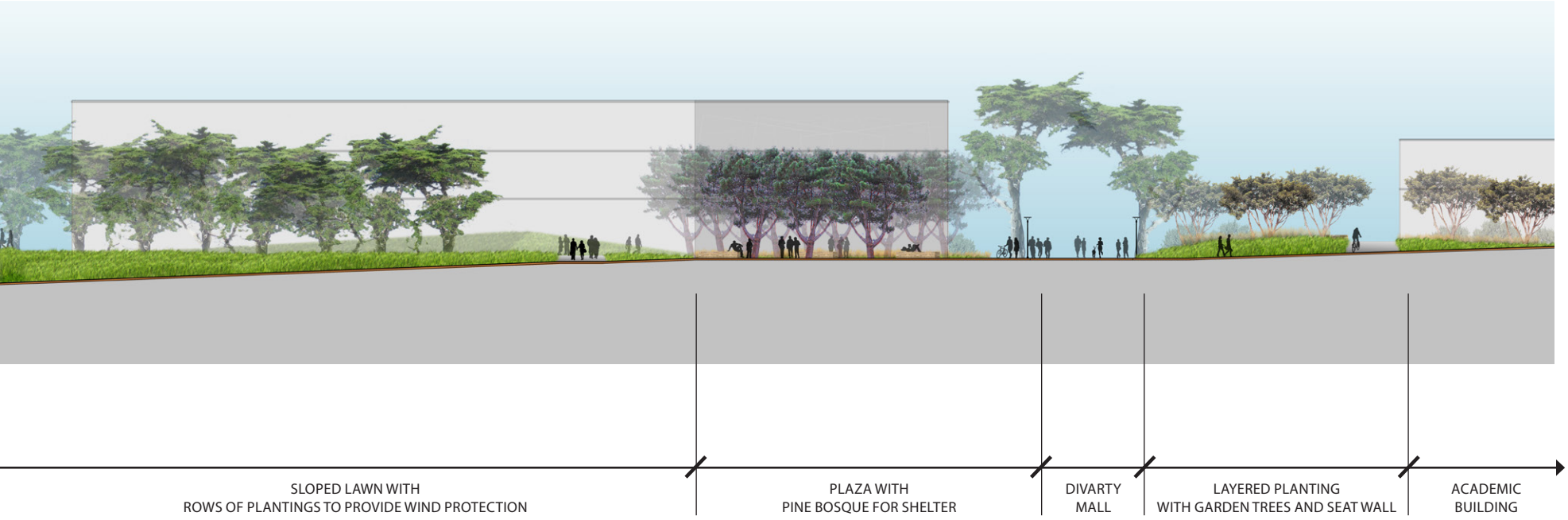
Figure 11.2: *North-South Section of Main Quad Looking East*



8. A north-south pedestrian connection between Inter-Garrison Road and Divarty Mall links student residences north of Inter-Garrison Road to the academic buildings south of Divarty Mall.

Additional general Divarty Mall guidelines include:

- Landform, walls, and plantings are utilized to create wind-breaks.
- Special paving is used along the main circulation routes to mark the Main Quad as an important space.
- Several areas of appropriate groundcover or drought-tolerant turf substitute are integrated into the Main Quad for lounging and passive recreation. The remainder of the quad is paved or planted with native species to minimize water use.
- Abundant seating options are provided to support recre-ation, outdoor classroom space, study areas, and gathering spaces.



DIVARTY MALL

Divarty Mall is designed as a linear open space providing a movement corridor and student gathering spaces. (Figures 11.3, 11.4, and 11.5)

1. New buildings along Divarty Mall are sited to frame the street by minimizing the setback from the mall. Where greater setbacks are required, use planting, topography, and windrows to create interesting, pleasant outdoor spaces for socializing.

2. Building entries face Divarty Mall. Buildings adjacent to the Crescent and Southern Oak Woodland should maintain a connection to those areas.

3. Building courtyards and entry plazas include planting, seating, and bicycle parking where appropriate. Courtyards respond to building facades, entries, and solar orientation. They are more intimate spaces, and are therefore appropriate locations for accent and ornamental planting. Courtyards can become extensions of the interior spaces.

4. Open spaces on the north side of Divarty Mall become gathering spaces that are extensions of the mall. These are improved to create smaller, more intimate outdoor rooms that connect the academic to the residential uses.

5. The terminus of the mall on the western end is at General Jim Moore Boulevard. This terminus should create a safe and visible street crossing to accommodate the pedestrians and bicyclists traveling to and from the multimodal hub. On the eastern end, Divarty Mall terminates at a new academic building.

6. Fifth Avenue continues through the roundabout to connect with A Street. A Street terminates at Seventh Avenue, between two student housing clusters.

Figure 11.3: *Divarty Mall - Plan*

Additional general Divarty Mall guidelines include:

- Vehicle access is limited to campus shuttle, service, and emergency vehicles between General Jim Moore Boulevard and Seventh Avenue.
- Divarty Mall has flush curbs and special paving to set it apart as a pedestrian mall and important space.
- Divarty Mall is not striped for separate lanes for bicycles, pedestrians, and shuttle; studies have shown that a lack of striping increases safety, as vehicles and bicycles tend to drive and ride more cautiously.
- Mall improvements, including consistent planting, pedestrian lighting, and seating, are included to create a safe, comfortable, and human-scaled corridor.
- Shelters and seating are provided at campus shuttle stops.

Figure 11.4: *Divarty Mall at Gambord Building Looking East*

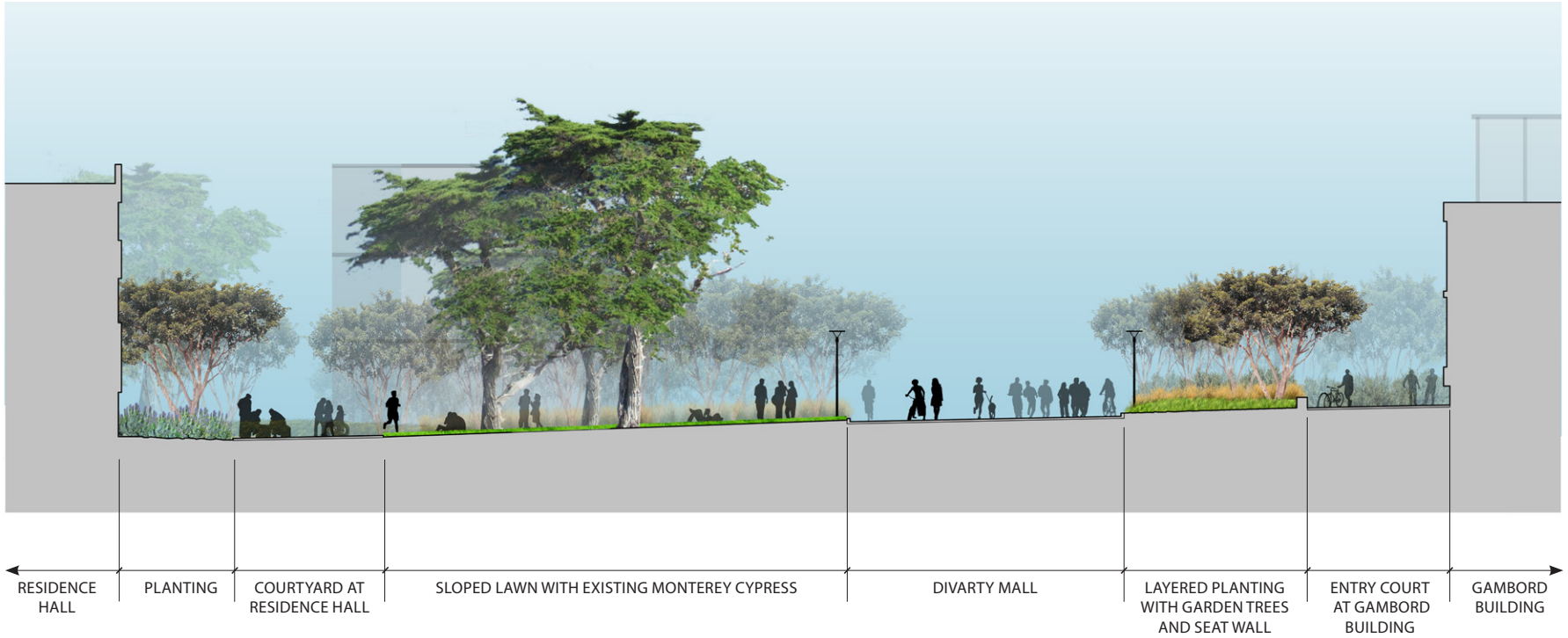


Figure 11.5: *Divarty Mall Rendering*

INTER-GARRISON ROAD

Inter-Garrison Road will transform into a pedestrian- and bicycle-oriented corridor with transit access that ties together the residential neighborhoods to the north, and the campus core to the south. (Figures 11.6, 11.7, 11.8, and 11.9)

1. New buildings along the south side of Inter-Garrison Road are designed to engage the street by building to the street edge.
2. Building entries front onto Inter-Garrison Road. Buildings located on the south side of Inter-Garrison Road should also provide entries onto the Main Quad.
3. Buildings should have transparent and welcoming ground floor uses with direct connections through to the Main Quad whenever feasible.
4. Buildings can be utilized to take up differences in grade through use of stairs, ramps, and elevators.
5. Buildings on street corners act as anchors, and should provide seating opportunities along the Inter-Garrison Road edge.
6. Clear signage on Inter-Garrison Road at the multi-modal hub is provided to direct drivers to parking facilities. Clear wayfinding signage is also provided for pedestrians and bicyclists to direct them to the transit facilities at the multimodal hub and from the multimodal hub to major destinations on campus.

Additional general Inter-Garrison Road guidelines follow:

- Vehicle access is limited to regional bus, campus shuttle, and service and emergency vehicles between General Jim Moore Boulevard and Fifth Avenue.
- Street improvements, such as wide sidewalks, street trees, pedestrian lighting, and crosswalks, are included to create a safe, comfortable, and human-scaled corridor.
- Shelters and seating are provided at regional bus and campus shuttle stops.

Figure 11.6: *Inter-Garrison Road - Plan*

Figure 11.7: *Inter-Garrison Road Rendering*

Figure 11.8: *Inter-Garrison Road at Fifth Avenue Looking East*

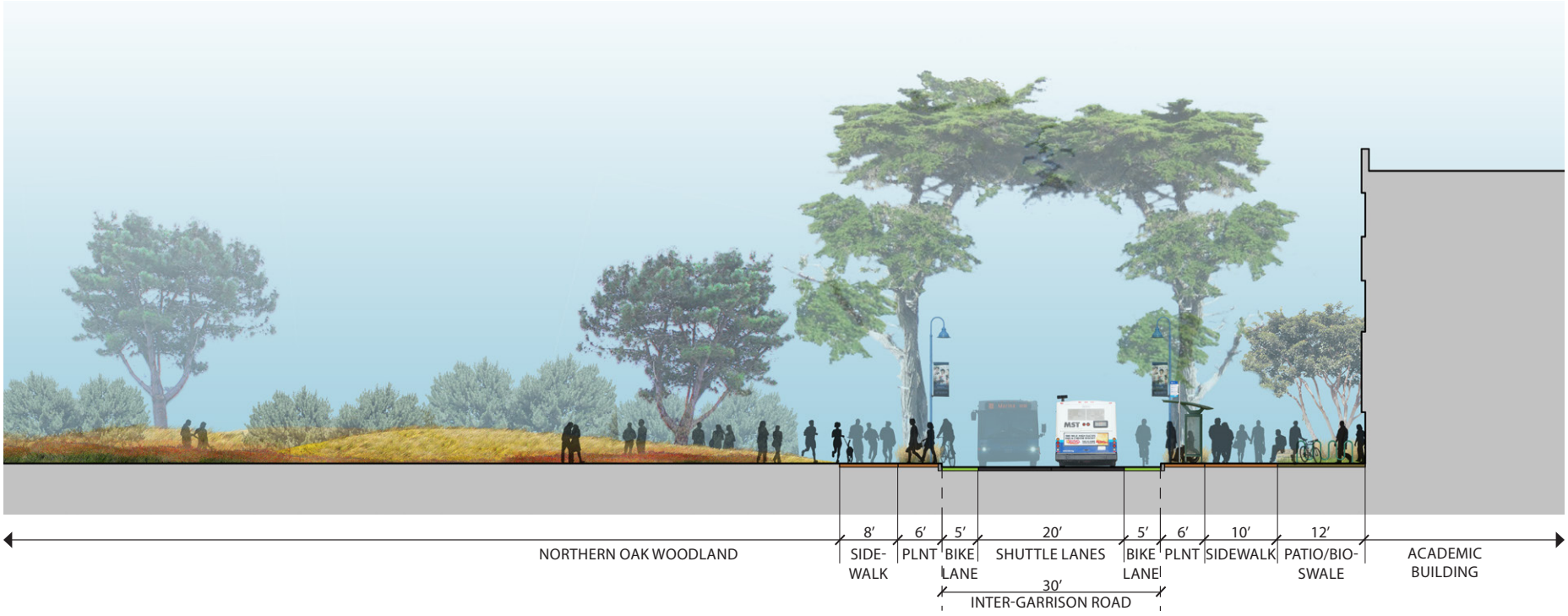
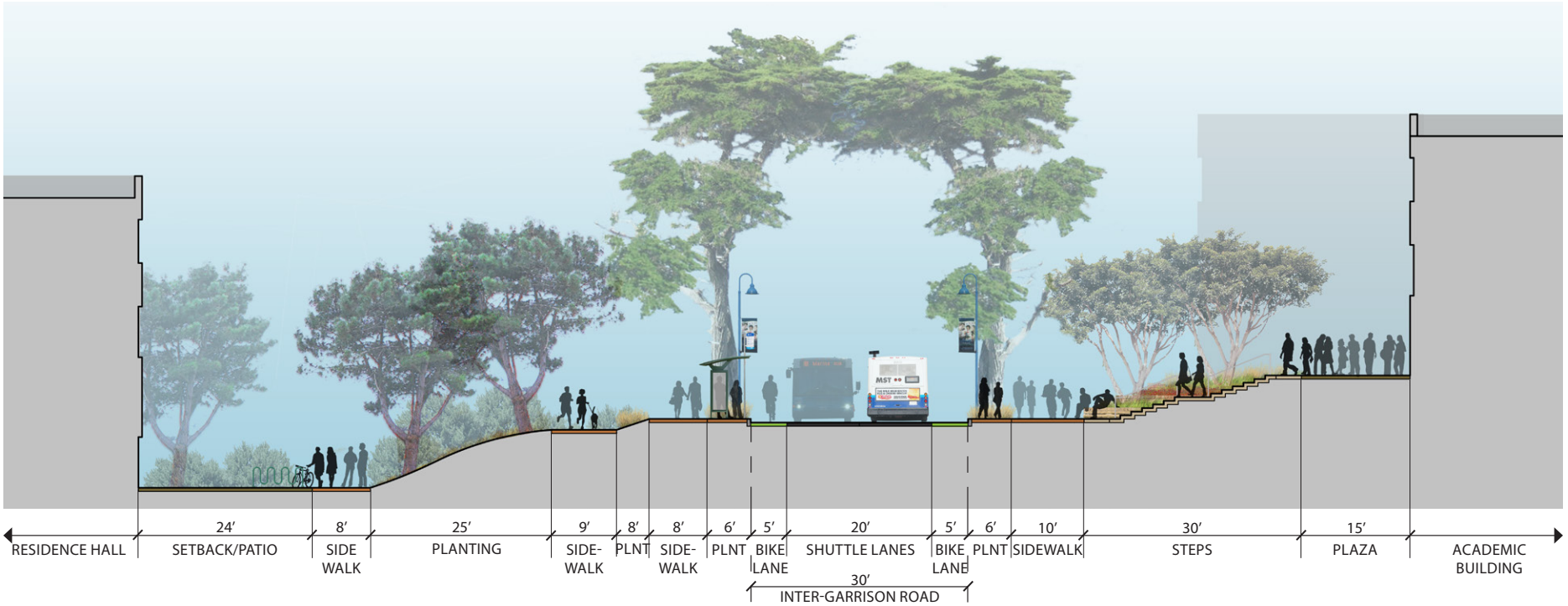


Figure 11.9: *Inter-Garrison Road at Fourth Avenue Looking East*



ATHLETICS AND RECREATION DISTRICT

The Athletics and Recreation District (Figure 11.10) will expand to accommodate a number of new athletic and recreation facilities, as well as a multimodal hub. This hub will provide shared commuter and athletics parking, and amenities for regional transit, the campus shuttle, and bicyclists. A stadium plaza provides pre-game event space; it can also accommodate various campus and community events. As the Athletics and Recreation District grows, it will present opportunities to host athletic conference tournaments, and it will be able to share facilities with the surrounding communities.

The campus edge along Second Avenue should read as distinctly CSUMB. Design of the campus edge along Second Avenue should adhere to RUDG recommendations to create a comfortable, safe, and attractive environment for pedestrians and bicyclists. With this in mind, CSUMB facilities located along the Second Avenue corridor should embrace the public street and create a welcoming edge for the community. The street-fronting facilities should be of a scale that is friendly to pedestrians and bicyclists, and they should maximize visual and physical connections to the future planned development across Second Avenue.

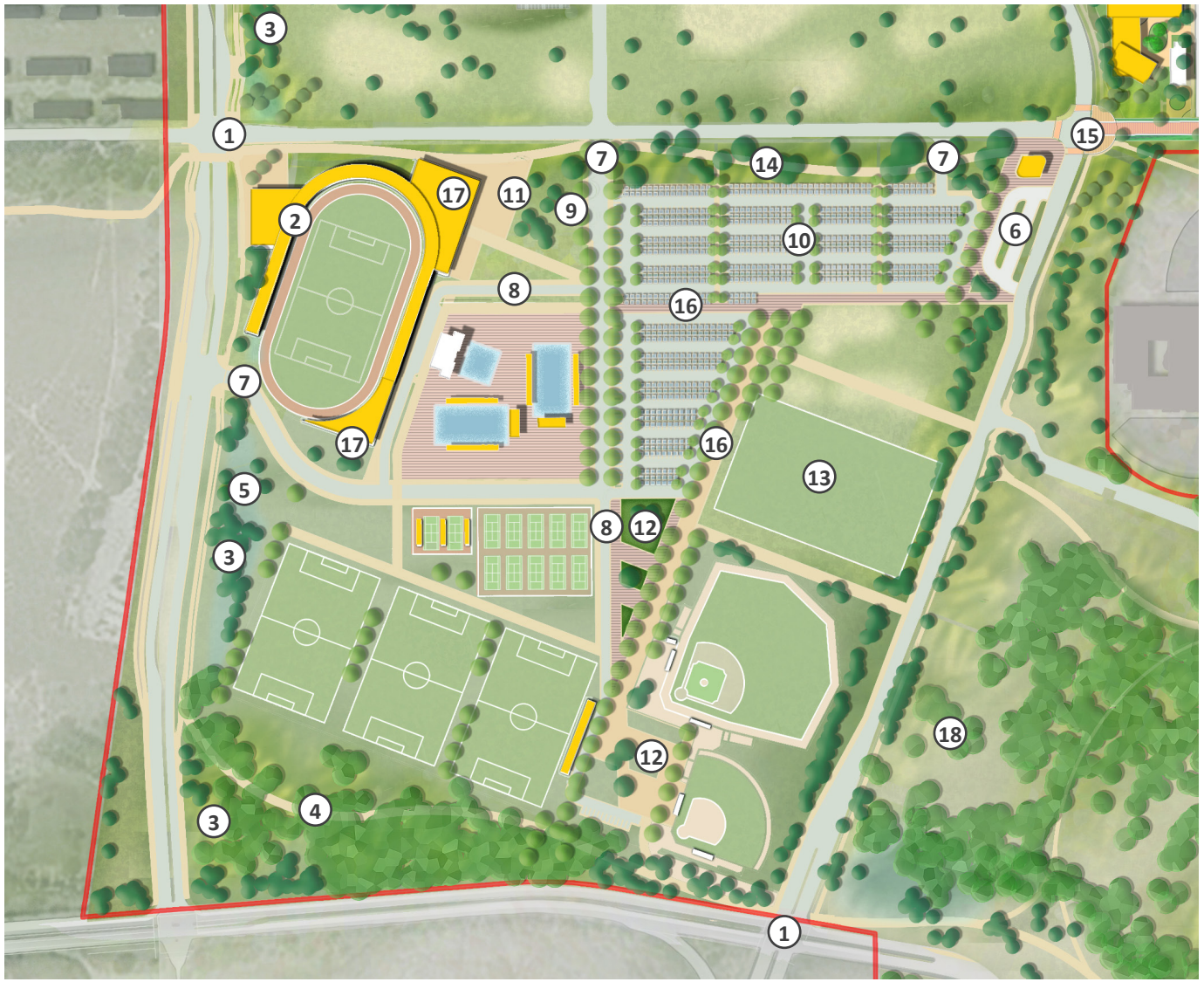
1. The major vehicular entries to the campus from the west are located at Second Avenue and Divarty Street, and on General Jim Moore Boulevard at Lightfighter Drive. These entries should be marked with gateway signage and attractive landscaping that evokes the CSUMB identity. The windrow vocabulary employed at the Main Quad could be repeated at the gateways to signal arrival on campus. A distinct tree type should be used for the entry/gateway windrows, with a repeated palette of paving, site walls and signage to allow a variable, but recognizable, vocabulary at each campus entry. The Second Avenue and Divarty Street intersection has been designated a “town and village center” in the Fort Ord Regional Urban Design Guidelines. The Regional Urban Design Guidelines are required at all Town and Village Center locations for 1997 BRP consistency. The stadium can help define the gateway at this location.
2. The new stadium creates a positive interface with the community, with a ceremonial plaza and potential retail along Second Avenue to activate the ground floor street edge.
3. Where there are no facilities along the street edge, an informal planting of Monterey cypress, Monterey pine and coast live oak should be clustered along the perimeter. The density and pattern of these trees should create a distinct edge and signal that this is the CSUMB campus boundary, while also allowing intermittent views into the campus Athletics and Recreation District. The separated multi-use trail along Second Avenue provides a safe and attractive off-street route for pedestrians and bicyclists. Parking lots are considered an undesirable use at the street edge; they should be located behind all buildings fronting Second Avenue. Planting should be utilized to screen views of existing parking areas from the street.
4. The southern edge of the campus along Lightfighter Drive continues the wooded edge vocabulary from Second Avenue; here, a forested area of mature trees provides a positive community edge. A multi-use trail connects the Southern Oak Woodland to Second Avenue.
5. Stormwater management areas are located along Second Avenue, surrounded by the wooded edge. Intended to be both functional and attractive, these clearings will add to the appealing wooded campus edge and provide views into and out of the campus. These will also showcase the university’s commitment to sustainability.
6. Regional buses and the CSUMB shuttle will service the multimodal hub with destinations on and off campus.
7. Vehicular traffic can enter the athletics district from Second Avenue or from Divarty Street.
8. Restricted-access streets are available for drop-off and servicing of the aquatic complex and athletic fields.

Figure 11.10: *Athletics and Recreation District - Plan*

Existing Buildings

Proposed Buildings

1. Campus gateways
2. Active street edge with retail and plaza
3. Wooded campus edge
4. Multi-use trail through wooded landscape
5. Stormwater management area
6. Bus and shuttle stops
7. Vehicular access points
8. Restricted-access streets
9. Drop-off area
10. Parking lots
11. Stadium plaza
12. Additional plazas/open spaces
13. Multi-purpose field
14. FORTAG alignment
15. Major pedestrian entry from campus core
16. East-west and north-south pedestrian connectors
17. Field house and administration offices
18. Potential athletics and recreation expansion location



9. A drop-off area is located adjacent to the stadium plaza. Automobiles can then continue on to the parking areas if necessary.

10. Commuters arriving by transit or car are dropped off, or they can park their vehicles at the parking lots at the multi-modal hub, before continuing by foot, bicycle, or shuttle to their destination on campus.

11. The stadium plaza along Divarty Street adjoins the new stadium and provides a space for pre-game activities and other campus or community events.

12. Additional plazas are located near the baseball, tennis, soccer, and softball fields for pre-game gathering and other events.

13. A multi-use field is available for informal athletics, pick-up games, or other events.

14. The FORTAG trail runs along the northern edge of the district along Divarty Street, providing bicycle and pedestrian access to the campus and larger region. This is the most direct route from campus to the Monterey Bay Sanctuary Scenic Trail and the beach.

15. Pedestrians arriving from the campus core follow Divarty Mall or other bicycle or pedestrian paths, and cross into the Athletics and Recreation District at General Jim Moore Boulevard.

16. An east-west pedestrian route connects to the aquatic complex and on to the stadium, while a north-south route leads to the ball and soccer fields. Pedestrians can navigate through the district to most destinations without having to cross vehicular traffic.

17. The athletics field house and administrative offices are located adjacent to the stadium.

18. As the athletics and recreation program grows, additional fields can be accommodated east of General Jim Moore Boulevard. More active and passive recreation can also be integrated into the Southern Oak Woodland in the form of trails, a fitness trail with exercise stations, disc golf, and the existing ropes course.

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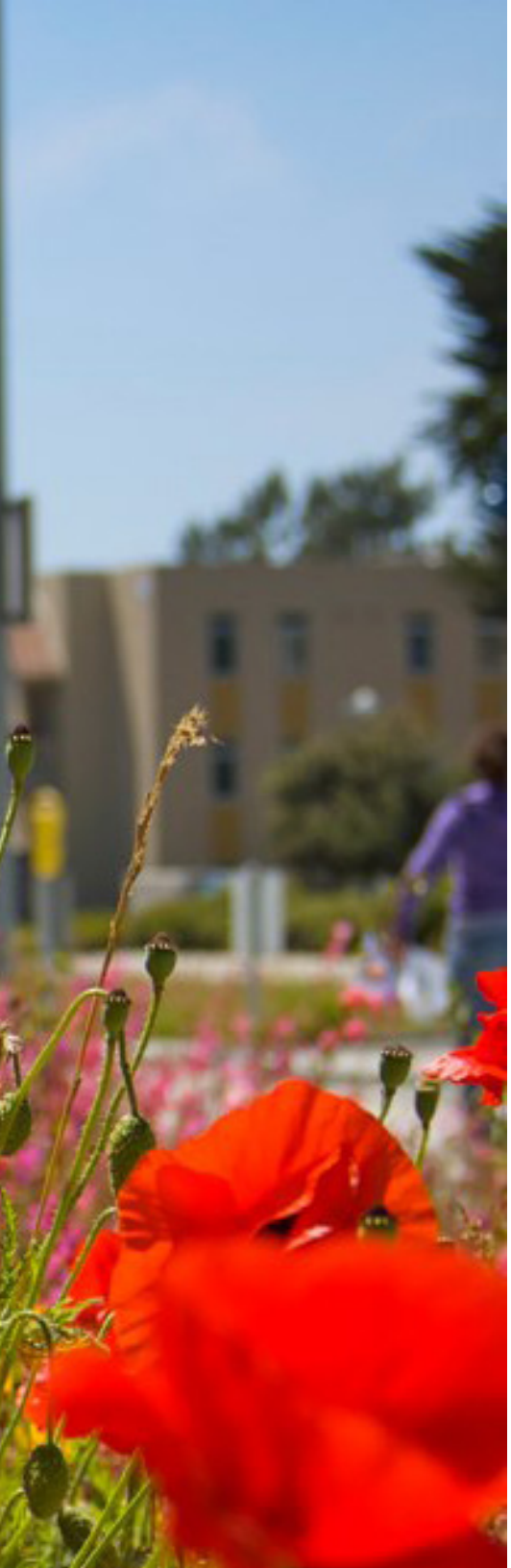


12

IMPLEMENTATION STRATEGY

INTRODUCTION

The master plan provides recommendations for sustainable campus facilities, open space, circulation routes, and water and energy infrastructure to accommodate future enrollment growth at CSUMB. Implementation of the plan recommendations will involve short-term (Horizon I) and long-term (Horizon II) steps, and will require further study in several areas, as highlighted below.

MASTER PLAN NEXT STEPS

California Environmental Quality Act (CEQA)

This master plan is subject to California Environmental Quality Act (CEQA), which requires production of an Environmental Impact Report. CSUMB will be initiating this process following the completion of the synthesis phase and final administrative draft document. This plan may be updated based on the findings of the Environmental Impact Report.

Sustainability Framework

The university is currently applying for International Living Future Institute's Living Community Challenge certification. The master plan will be submitted as the vision document for certification. Following review, the campus will be designated as an "Emerging Living Community," and will begin the process of implementing and documenting the elements necessary to meet desired imperatives and petals. CSUMB will be the first campus to become designated as an Emerging Living Community and following implementation could be the first campus designated as a Living Community.

CAPITAL IMPROVEMENT PROJECTS

Table 12.1 details the projects anticipated by year in Horizon I (2016-2025). Two university projects are currently underway: Academic III and a new student union. In addition, two institutional partnership projects are in the preliminary concept phase: the Monterey Bay Charter School and the Panetta Institute for Public Policy.

Horizon II (2026-2035) projects are listed in Table 12.2.

RECOMMENDED SUPPLEMENTAL PLANS

Parking Management Plan

- Align parking supply with expansion of campus TDM measures.
- Implement and expand upon the parking policies called for in the 2007 Master Plan, such as tiered pricing and charging more for parking closer to the campus core.
- Reexamine parking requirements periodically to reflect physical changes to the campus.
- Develop a variety of parking permits that meet the needs of visitors, staff, faculty, and residents.
- Link parking revenue to the university's long-term mode split goals.
- Explore discounted parking passes for occasional use for those who typically commute via rideshare, transit, or bicycling.
- Incentivize the transition to other modes of travel through promotions.

Bicycle and Pedestrian Plan

- Identify, prioritize, and design improvements to bicycle and pedestrian routes and infrastructure.
- Include a maintenance plan that creates a system for maintaining paths and bike lanes, signage, bicycle racks, and painted markings.
- Secure funding for improvements.

Strategic Energy Plan

- Based upon projected growth, demonstrate how 105 percent of the campus net annual energy needs could be supplied by renewable energy.
- Consider water and waste conveyance energy.

Table 12.1: *Horizon I Capital Projects*

Building	Completion	New GSF		Status/Notes
HORIZON 1 (2016-2025)				
Academic III	2019	48,138		In Design
Student Union (Phase I)	2019	70,360		In Design
Storage Facility	2019	50,000		Preliminary Concept
Monterey Bay Charter School	2019	N/A		Separate CEQA
Greenhouses	2019	1,344	TBD	Pending Grant
Student Housing Phase III (600 Beds)	2020	200,000		Pending non-State Funding
Panetta Institute for Public Policy	2020	63,695		In Design
Photovoltaic Expansion	2020		TBD	Pending Grant
Multimodal Hub	2020		Surface	Potential Future Structured / P3
Academic IV	2021	72,200		Preliminary Concept
Student Recreation Center	2021	70,000		In Programming
Student Life (Phase I)	2022	72,737		Expand with Enrollment Growth
Sports and Athletics Venues, (Phase I)	2022		Fields	P3
Sports and Athletics Support Facilities	2022		36,000	P3
Multimodal Hub II	2022		Surface	Pending non-State Funding
Student Housing (Phase IIb) (400 beds)	2022	160,000		Pending non-State Funding
Student Housing Phase IV (600 beds)	2023	200,000		Pending non-State Funding
Administration Building	2023	77,454		Pending non-State Funding
Childcare Center	2023	23,000		Pending non-State Funding
Academic V	2024	76,704		Pending State Funding
Wellness Center	2024	30,769		Pending non-State Funding
Sports and Athletics Venues, (Phase II)	2024		Fields	Pending non-State Funding
Sports and Athletics Support Facilities II	2024		60,000	Pending non-State Funding
Student Housing, (Phase V, VI) (1,200 beds)	2025	400,000		Pending non-State Funding
Student Life (Phase II)	2025	72,736		Pending non-State Funding
Facilities Building	2025	23,590		Pending non-State Funding
HORIZON I SUBTOTAL		1,712,727	96,000	

Table 12.2: *Horizon II Capital Projects*

Building	Completion	New GSF		Status/Notes
HORIZON II (2026-2035)				
Academic VI	2027	76,704		
Student Housing (Phase VII) (600 beds)	2026	200,000		
Campus Arts and Auditorium	2027	82,291		
Recreation Center Addition	2027	64,574		
Student Union (Phase II)	2027			
Sports and Athletics Venue, (Phase III)	2028		Fields	P3
Sports and Athletics Support Facilities III	2028		100,000	P3
Academic VII	2029	76,704		
Student Housing (Phase VIII) (600 beds)	2029	200,000		
Academic VIII	2032	76,704		
Student Housing (Phase IX) (600 beds)	2032	200,000		
Student Housing (Phase X) (600 beds)	2035	200,000		
HORIZON II SUBTOTAL		1,176,977	100,000	
COMBINED HORIZON I AND II TOTALS		**2,889,704**	**196,000**	

- Provide local energy storage for resiliency.
- To achieve carbon-neutrality goals, investigate technologies and develop transition strategies away from combustion-based energy sources.

Strategic Water Management Plan

- Pursue independent supply and management of water through district-scale water strategies.
- Release water into natural watersheds.
- Evaluate water recycling and treatment systems that purify water without the use of chemicals.

Campuswide Habitat Management Plan

- Continue participation in the formation of FORA's Habitat Conservation Plan.
- Expand upon habitat obligations outlined in the Fort Ord Habitat Management Plan.
- Work with other relevant local agencies to protect natural resources on CSUMB-owned land.
- Work with stakeholders to verify feasibility of land and habitat conservation on campus.
- Identify appropriate learning laboratory opportunities on campus as relates to habitat preservation and restoration.

Living Materials Plan (underway)

- Develop a strategy for evaluating materials that are Red-List compliant or meet exceptions allowed by the Living Building Challenge.
- Include process-flow diagrams to clarify how products will be evaluated by project teams.
- Create an efficient system for product research and data management.

Materials Conservation Management Plan

- Identify local businesses or organizations that provide composting, adaptable reuse, deconstruction, and recycling services.
- Express an aesthetic preference for re-used materials on new building projects and renovations.
- Articulate clear recycling and re-use requirements for building and renovation projects.

ADDITIONAL RECOMMENDED PLANS

- Resiliency and Mitigation Plan
- Network Development Plan (internet & fiber optics)
- Dining Services Plan
- Utility Management Plan (underway)
- Housing Plan

RECOMMENDED UPDATES TO EXISTING PLANS

- Wayfinding Plan
- Landscape Maintenance Plan
- Storm Water Master Plan (include in new Strategic Water Management Plan)
- Climate Action Plan

NON-RESIDENTIAL BUILDINGS

1 Administration
2 Playa
3 Del Mar
4 Wave Hall
6 Surf Hall
8 Sand Hall
10 Dunes Hall
12 Student Center
13 Science Research Lab Annex
14 Otter Express
16 Dining Commons
18 Heron Hall
21 Beach Hall
23 Tide Hall
27 Cinematic Arts & Technology
28 World Theatre
29 University Center
30 Music Hall
33 Storage Facility
34 Storage Facility
35 Mail Room/Shipping & Receiving
36 University Storage
37 Facilities Services & Operations
38 Facilities Services & Operations II
40 Monterey Bay Charter School
41 Telecommunications
42 Watershed Institute
43 IT Services
44 Pacific Hall
45 Coast Hall
46 Harbor Hall
47 Student Services
48 World Languages & Cultures -South
49 World Languages & Cultures -North
50 Science Instructional Lab Annex
51 Academic VII
52 Academic IV
53 Chapman Science Academic Center
54 Future Academic Building
58 Green Hall
59 Reading Center
71 Visual & Public Art -East
72 Visual & Public Art -Center
73 Visual & Public Art -West
74 Central Plant
80 Health & Wellness Services
81 Black Box Cabaret
82 Valley Hall
84 Mountain Hall
86 Ocean Hall
89 Panetta Institute for Public Policy
91 Child Care Center
97 Alumni & Visitor Center
98 Meeting House
99 Academic VIII
102 Multimodal Hub II
200 Multimodal Hub I
201 Gavilan Hall
490 Oaks Hall
491 Oaks Hall Annex
502 Recreation Center
504 Academic III
505 Academic V
506 Joel and Dena Gambord Business and Information Technology Building
508 Tanimura & Antle Family Memorial Library
512 Arts & Auditorium Building
513 Arts & Auditorium Building
552 Student Union
554 Administration
556 Academic VI
703 Emergency Operations Center

RESIDENCE HALLS

203 Asilomar Hall
202 Cypress Hall
204 Willet Hall
205 Manzanita Hall
206 Yarrow Hall
208 Avocet Hall
210 Tortuga Hall
211 Sanderling Hall
301 Strawberry Apartments
302 Pinnacles Suites
303 Vineyard Suites
304-305 Student Housing IV
306-308 Student Housing V
309-311 Student Housing VII
312-314 Student Housing VIII
325 Promontory -West
326 Promontory -Center
327 Promontory -East
328-330 Student Housing IIb
331-333 Student Housing III
334-336 Student Housing VI
350-352 Student Housing IX
353-355 Student Housing X

SPORTS AND RECREATION

90 Otter Sports Center
95 Stadium Restrooms
100 Aquatic Center
101 Aquatic Center Expansion
103 Multi-purpose Field
104 Potential Retail
105 Field House
106 Field House
107 Stadium
108 Baseball Field
109 Otter Soccer Complex
110 Otter Soccer Complex
111 Otter Soccer Complex
112 Softball Field
315 North Recreation Field
902 Field House
902C Field House

10X Existing Buildings Removed
10X Existing Buildings to Remain
10X Proposed Buildings

Figure 12.1: *CSUMB Existing and Proposed Buildings*

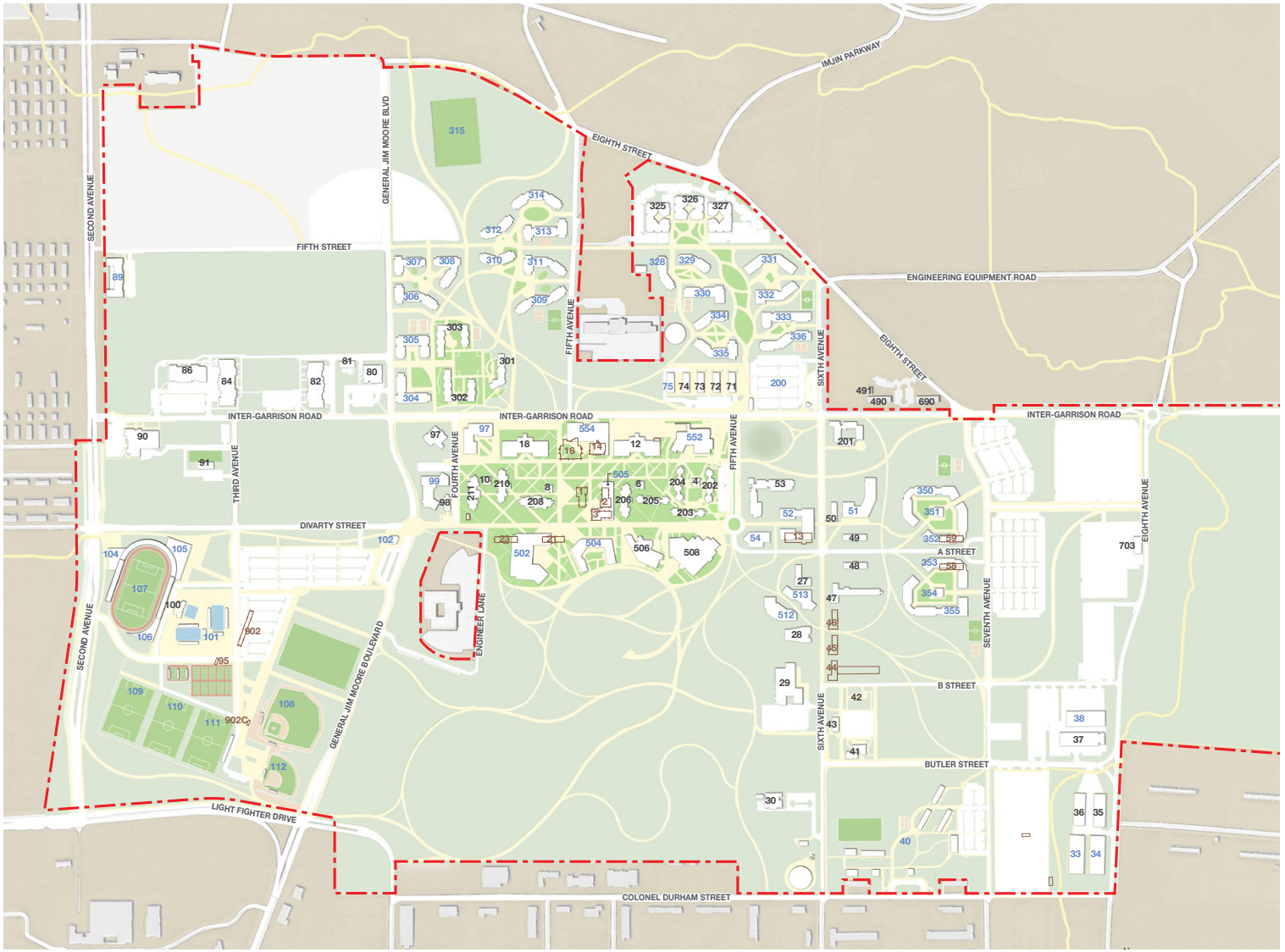
Numbers

10X Existing Buildings Removed

10X Existing Buildings to Remain

10X Proposed Buildings

Existing Buildings Removed

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13

MASTER PLAN POLICIES

MASTER PLAN POLICIES

This chapter summarizes the master plan's content and provides concrete guidance in the form of concise policies to achieve this plan's vision and goals. Policies form the actionable narrative that emerges from the tenets, goals, and recommendations outlined throughout this document. These policies are categorized by their content according to the appropriate chapter heading, and they are associated with the goals from each chapter. When approved by the CSU Board of Trustees, these comprehensive master plan policies become university directives.

The policies are drafted to serve a few roles: individual objectives specific to the timeframe in which this master plan was drafted, directives for new practices or regulations on campus, and high-level design guidelines that build a foundation for growth patterns unique to the Monterey Bay campus.

Living Community Challenge (LCC) Imperatives are noted on relevant policies by using the initials indicated below. Policies with language sourced, in part or in full, from the 2007 Master Plan are also indicated.

LCC Petal and Imperative Initials

PL = Place
- **I-1 = Limits to Growth**
- **I-2 = Urban Agriculture**
- **I-3 = Habitat Exchange**
- **I-4 = Human Powered Living**

WA = Water
- **I-5 = Net Positive Water**

EN = Energy
- **I-6 = Net Positive Energy**

HH = Health and Happiness
- **I-7 = Civilized Environment**
- **I-8 = Healthy Neighborhood Design**
- **I-9 = Biophilic Environment**
- **I-10 = Resilient Community Connections**

MT = Materials
- **I-11 = Living Materials Plan**
- **I-12 = Embodied Carbon Footprint**
- **I-13 = Net Positive Waste**

EQ = Equity
- **I-14 = Human Scale + Humane Places**
- **I-15 = Universal Access to Nature and Place**
- **I-16 = Universal Access to Community Services**
- **I-17 = Equitable Investment**
- **I-18 = JUST Organizations**

Beauty
- **I-19 = Beauty + Spirit**
- **I-20 = Inspiration + Education**

Land Use: Cluster and Densify Activity			
Policy Identifier	**Policy**	**LCC**	**2007 Master Plan**
Goal LU 1:	Accommodate growth to 12,700 students		No
LU 1.1	Infill development on previously disturbed sites, before building on greenfield sites.	I-1	
LU 1.2	Maintain a floor area ratio (FAR) of 1.0 for the aggregate non-residential program, typically three to five occupied stories tall, and .75 for the residential program, typically three to four occupied stories tall. This is consistent with other CSU and University of California campuses.	I-14	CD 4.4
LU 1.3	Cluster academic buildings within the campus core, according to program or college.		
LU 1.4	Develop the Athletics and Recreation District to meet future campus needs and host regional conference tournaments; and consider shared-use agreements with the surrounding community.		
Goal LU 2:	House 60 percent of FTE students and 65 percent of FTE staff and faculty.		
LU 2.1	Concentrate near-term student housing into neighborhoods that connect with existing housing locations. Avoid siting residence halls more than one-quarter mile from the edge of the Main Quad.	PL	
LU 2.2	Integrate a mix of uses into residence halls; in addition to housing, for example, include staff offices, gathering areas, convenience stores, dining halls, mail services, classrooms, and study spaces.	I-16	
LU 2.3	Integrate cultural, natural, and academic outdoor spaces within residential areas to encourage living-learning opportunities.	I-9	CD 4.6
LU 2.4	Provide a mixture of bedroom and suite types within new residence halls and in various neighborhoods to accommodate unique populations such as freshmen, returning, and non-traditional residents; this mixture could include, for example, traditional doubles, suites, family apartments, accessible rooms, and live-in staff and faculty apartments.		
LU 2.5	Relocate student housing in East Campus Housing onto the main campus as new housing becomes available.	I-1	
LU 2.6	Convert East Campus Housing to exclusive use by faculty, staff, students with families, and if space permits, community partners.		
LU 2.8	Create internal courtyards and recreational space between residences to support student activity.	I-8	CD 4.5
Goal LU 3:	Create a compact campus with increased density in the campus core		
LU 3.1	Consolidate existing academic and student life programs now located on the campus periphery, and relocate them within the campus core, excluding administrative, facilities, services, and operations.		
LU 3.2	Allow a mix of uses within academic buildings including non-academic support services and interdisciplinary programs.		

LU 3.3	Repurpose parking lots in the campus core for future development sites or formal open space.	I-1	
LU 3.4	Design landscapes and circulation to be shared by multiple adjacent buildings.	I-1, I-9	
Goal LU 4:	Support opportunities to develop partnerships		
LU 4.1	Embrace partnerships to help provide amenities that support the academic and research mission of the university.		
LU 4.2	Locate partnership land uses on the campus periphery, where they interface most effectively with the surrounding community.		
LU 4.3	Require institutional partnership facilities located on campus to adhere with the FORA RUDG and campus planning design guidelines.		
LU 4.4	Consider establishing a facilities use agreement within the Athletics and Recreation District between campus programs and the broader Monterey Bay community.		
LU 4.5	Establish partnerships with academic programs, local agencies, nonprofits, and developers to manage open space and regional pathways connecting to the campus.		
Goal LU 5:	Establish a long-term framework for growth beyond 12,700 students		
LU 5.1	Preserve contiguous blocks of vacant and underutilized sites outside the campus core for future development or conservation.	I-1	
LU 5.2	Maintain the natural state of the East Campus Open Space, while allowing for minimally intrusive trail development. The future development site for faculty and staff housing is an exception to this rule.	I-1	CF 1.6
LU 5.3	Locate support facilities, yards, and storage outside of the campus core.		

Open Space Framework: Connect and Enhance Open Space			
Policy Identifier	Policy	LCC	2007 Master Plan
Goal OS 1:	Protect, enhance, and connect the natural environment		
OS 1.1	Protect and preserve native habitats and trees. Development shall avoid or minimize impacts to native habitats and mature trees.	I-15	
OS 1.2	Protect special-status plant and animal species from development impacts, and design development around maintaining natural conditions for their conservation.		

OS 1.3	Document existing natural site conditions prior to the start of project not already documented by the CEQA process. Identify project reference habitats to support movement, mitigation or expansion of native habitat.	I-1	
OS 1.4	Expand construction-related best management practices for habitat protection.		
OS 1.5	Remove invasive species whenever possible, especially during new construction projects.	I-1	
OS 1.6	Plant two trees for every one tree that dies, is damaged, or is removed from the campus.		
OS 1.7	Eliminate the use of petrochemical fertilizers or pesticides used for the operations and maintenance of on-site landscaping.		
OS 1.8	Landscape with a native and drought-tolerant plant palette informed by the campus landscape maintenance plan and FORA RUDG palettes.		
OS 1.9	Limit the use of turf to select athletic and recreational fields.		
OS 1.10	Incorporate interpretive signage to inform the campus community about the variety of species present in the campus open spaces.	I-20	
OS 1.11	Align utility infrastructure and stormwater percolation areas with existing and future streets, trails, pedestrian malls, and formal open spaces where possible to protect sensitive habitat from destructive infrastructure intrusion.		CF 1.4
OS 1.12	Conserve large areas of natural open spaces, including the Northern and Southern Oak Woodlands, the East Campus Open Space, and the natural areas at East Campus Housing. Avoid further development in these areas with the exception of minimally intrusive trail development.	I-1	CF 1.7
OS 1.13	Maintain and reintroduce open space that respects the natural ecology prevalent in the region, and foster habitat connectivity across ecological corridors.	I-1	CF 1.8
OS 1.14	Coordinate with the County of Monterey and UC Natural Reserve System (UCNRS) to minimize impact to special-status species in the habitat conservation and corridor areas adjacent to CSUMB land. Consult with the County and UCNRS regarding pedestrian, bicycle, and vehicle access to adjacent habitat conservation and corridor areas, and develop methods for access control.	I-9	CF 1.10
OS 1.15	Continue participation in the development and implementation of the Fort Ord Habitat Conservation Plan, Monterey County Oak Woodland Stewardship Guidelines, and other regional conservation plans.	I-3	
OS 1.16	Implement Fort Ord Habitat Management Plan requirements as identified in campus deeds.	I-1	
Goal OS 2:	Create a strong sense of place.		
OS 2.1	Visually unify the campus through consistent landscaping strategies.		

OS 2.2	Design campus gateways to be clear and attractive arrival statements, with special monument signage and landscape treatments.		
OS 2.3	Use landscaping, trees, signage, and architectural landmarks to establish clear pathways and roads that connect to off-campus facilities.	HH, EQ	
OS 2.4	Link all student housing and the Main Quad with pathways and connecting open space.	I-8	
OS 2.5	Preserve and incorporate natural open spaces throughout residence hall areas.	HH	CD 5.3
OS 2.6	Use a consistent palette of materials and site furnishings across campus in accordance with campus design guidelines and biophilic design.	HH	
OS 2.7	Use context-sensitive design and visual linkages to create a symbiotic relationship between the natural habitats and the built environment.	HH	CF 1.5
OS 2.8	Integrate some edible vegetation within landscaping surrounding outdoor gathering spaces and seating areas.	I-2	
OS 2.9	Provide frequent seating and lounging options in open spaces.	I-15	
OS 2.10	Maintain views on campus to the Monterey Bay, Salinas Valley, Fort Ord National Monument, and surrounding Oak Woodlands.		
OS 2.11	Reinforce campus view corridors to and from key campus destinations such as the campus gateways, the library, and the student union.		CF 1.2
OS 2.12	Implement streetscape improvements on all campus roadways to increase safety while continuing the campus landscaping aesthetics.		
Goal OS 3:	Integrate learning opportunities into open spaces.		
OS 3.1	Develop the Sustainability Commons into a model space to support sustainability-related programs and learning opportunities.	I-20, HH, I-2	
OS 3.2	Integrate opportunities for urban agriculture appropriate to the scale and density of the community using floor area ratio (FAR) as a basis for calculation. Urban agriculture can be aggregated in a central area or dispersed throughout the community. Twelve to fifteen acres should be dedicated to food production for consistency with the Living Community Challenge guidelines.	I-2	
OS 3.3	Redesign existing formal open spaces to expand the mix of uses and create a functional, attractive, and engaging space for both large and small gatherings.	HH	
OS 3.4	Design open spaces in residential courtyards and along Inter-Garrison Road, the Divarty Mall, and Sixth Avenue Mall to accommodate small casual gatherings (two to ten people).	HH	
OS 3.5	Create a variety of formal and natural outdoor spaces within the campus core intended for events or informal gatherings. These spaces may range from small, intimate gardens to expansive ceremonial spaces. Consider spaces for graduation, performances, outdoor classrooms, small meetings, study space, sports, and relaxation.		
OS 3.6	Build an amphitheater in the Crescent for outdoor performances, outdoor classes, student meetings, socializing, and studying.	I-15	
OS 3.7	Maintain and expand space for passive recreation such as disc golf, across all open space types.	I-8	

Mobility: Prioritize Active Transportation Modes			
Policy Identifier	**Policy**	**LCC**	**2007 Master Plan**
Goal MO 1:	Create a transportation system that fosters health and wellness.		
MO 1.1	Prioritize pedestrian travel as the primary mode of travel on campus.	I-4	T-PB 1.1
MO 1.2	Reduce campus commuter dependency on single-occupancy vehicle travel.	I-4	
MO 1.3	Build a multi-modal campus transportation system linking all existing and proposed buildings and campus destinations.	I-4, PL	
MO 1.4	Develop and maintain a pedestrian-friendly campus core, and locate circulation for vehicles outside the campus core.	I-4	
MO 1.5	Follow the CSU Transportation Demand Management (TDM) Manual (2012) as a guide for program development. Adhere to its six goals: 1) encourage non-automobile modes; 2) maintain financial sustainability; 3) ensure equitable access; 4) preserve valuable land; 5) promote environmental sustainability; and 6) build partnerships. The manual identifies CSUMB as an 'Exurban' campus, for which it prioritizes TDM strategies as such: housing, carpool, ride-matching, parking pricing and shuttle services.	PL	
MO 1.6	Plan and manage transportation services in tandem with parking services.		
MO 1.7	Establish staff positions/duties such as a TDM Coordinator, to expand programs that support Master Plan goals.		
MO 1.8	Identify and secure annual funding for non-capital transportation facilities maintenance and upgrades, planning, and programming. Use parking revenue as one source of funding for transportation programs.		T-PT 1.4
MO 1.9	Coordinate with state and local officials to develop a comprehensive signage sequence to clarify and enhance the two primary campus approaches from the Monterey Peninsula and Salinas Valley, consistent with the wayfinding plan.		
MO 1.10	Design the four campus entries to campus to be intuitive and attractive, with special monument signage and landscape treatments. Campus entries are located at: Lightfigher Drive at General Jim Moore Boulevard, Inter-Garrison Road at Seventh Avenue, Divarty Street at Second Avenue, and Eighth Street at Sixth Avenue.		
MO 1.11	Build two multimodal hubs to provide a sense of arrival on campus from the four campus entries.		
MO 1.12	Provide transit service within one quarter mile of existing and new development.		

MO 1.13	Locate a campus shuttle stop at all campus periphery parking lots.		T-P 5.3
MO 1.14	Design restricted-access roadways and malls to be safely shared by pedestrians, bicyclists, transit, and the few service and emergency vehicles that require direct access to adjacent buildings.	I-4	T-PB 2.2
MO 1.15	Designate safe pathways for equestrian travel on regional trails connecting with campus.		
Goal MO 2:	Improve the safety of active transportation networks		
MO 2.1	Restrict automobile traffic and parking from the campus core to separate vehicles from pedestrians and bicyclists.	I-4	CD 1.7
MO 2.2	Design intersections and transportation routes to give pedestrians and bicyclists the right-of-way at conflict points.	I-4	T-PB 1.4
MO 2.3	Consider all roadway and path users in wayfinding improvements.		
MO 2.4	Provide accessible pedestrian pathways at every parking lot, bus stop, and bicycle storage facility, both internal to the lot or facility, as well as connecting to the closest appropriate building.	I-4	
MO 2.5	Incorporate bike lanes and shared use designations on streets where appropriate.	I-4	T-VTAC 1.5
MO 2.6	Separate bicycle lanes from travel lanes, with a buffer on roadways over 25 mph.	I-4	
MO 2.7	Limit permitted traffic speeds to 15 mph within the campus core, 25 mph on all other internal campus streets and within East Campus, and 35 mph on Inter-Garrison Road between Eighth Avenue and Abrams Drive; and work with local jurisdictions to develop periphery roadway speed limits.	I-4	T-VTAC 1.6
MO 2.8	Consolidate service and program support vehicle approach and access to each building, and include safety measures where these vehicles cross pedestrian pathways.		T-VTAC 1.7
MO 2.9	Provide adequate pedestrian-scale lighting along all bicycle and pedestrian pathways.		
MO 2.10	Provide a lighted shelter, or sheltered area with seating and posted service information, at or within 100 feet of all transit stops.	I-4	
MO 2.11	Adhere to the roadway design guidelines developed by Monterey Salinas Transit (MST) on roadways with existing or potential MST transit service.		
MO 2.12	Direct bicyclists and pedestrians to clearly signed crosswalks at the following locations: roadways with unrestricted vehicle use; transit-served malls with frequent transit and service vehicle traffic; and any locations with heavy pedestrian use.	I-4	
MO 2.13	Implement bicycle and skateboard dismount zones in areas experiencing significant bicycle-pedestrian conflict.		
MO 2.14	Indicate shared usage on pathways shared by bicycles and pedestrians.		
Goal MO 3:	Expand access within the campus and to neighboring communities		
MO 3.1	Design the campus core to be universally accessible and safely shared among non-motorized modes of travel.		T-PB 1.5
MO 3.2	Integrate wayfinding cues for sight-impaired pedestrians, such as braille/tactile maps and ground texture sequencing.	EQ	
MO 3.3	Extend the Divarty Street and Sixth Avenue malls with new campus core development.		

MO 3.4	Improve pedestrian and non-motorized linkages between the main campus and East Campus Housing.		CD 5.1
MO 3.5	Develop cleared, signed, and unpaved trails in the Southern Oak Woodland and other natural open space areas.		
MO 3.6	Expand campus trail and pathway networks to surrounding destinations, including Marina, Seaside, regional transportation hubs, FORTAG, Fort Ord Dunes State Park, Fort Ord National Monument, the Presidio of Monterey, and Monterey County lands. Provide informational and clear directional signage.	PL	
MO 3.7	Meet all local jurisdictional and regional on-street bicycle facilities connecting onto campus with similar or enhanced campus on-street bicycle facilities.		
MO 3.8	Improve bicycle facilities on Inter-Garrison Road as automobile traffic is restricted between General Jim Moore Boulevard and the Sixth Avenue multimodal hub.		
MO 3.9	Ensure bicycle and pedestrian connections to nearby commercial uses from residence halls near the campus periphery.		
MO 3.10	Provide secure or covered Class I and Class II bicycle parking at every occupied building, and Class II bicycle parking at every outdoor event space, athletic venue, bus stop, and parking lot. (refer to SF Planning Dept. for definitions)	I-4	
MO 3.11	Apply for and maintain a Bicycle Friendly University status from the League of American Bicyclists[SM].		
MO 3.12	Evaluate feasibility of implementing a campus bicycle sharing program.	I-7	
Goal MO 4:	Reduce greenhouse gas emissions		
MO 4.1	Prioritize campus development strategies to promote transit, bicycling, and walking.	I-4	
MO 4.2	Use data from regularly updated campus travel surveys to determine the transportation mode access and amenities necessary and appropriate for new development.	I-4	
MO 4.3	Ensure continued access to off-campus transit service to surrounding cities, as well as to the East Campus Housing.	I-4	
MO 4.4	Maintain unlimited free access to regional transit.	I-4	T-PT 1.2
MO 4.5	Develop a new campus shuttle route.	I-4	
MO 4.6	Upgrade campus service and program support vehicle fleets to low-emission or alternative fuel vehicles, when vehicle type allows, for used vehicles that are phased out, and new vehicles acquisitions.		
Goal MO 5:	Minimize vehicular traffic		
MO 5.1	Divert regional through traffic around the periphery of campus in coordination with local jurisdictions.		
MO 5.2	Enforce a 'Park Once' policy in coordination with the new multi-modal hubs.		

MO 5.3	Meet the Ambitious Transportation Scenario Horizon I (2016-2026) goal mode split: 28% drive alone, 22% shared ride, 25% transit, 13% walk, 10% bicycle, 2% other.	I-4	
MO 5.4	Remove small interior parking lots within the campus core; instead provide consolidated parking on the periphery of the campus.		T-P 1.2
MO 5.5	Incorporate enhanced alternative transportation options into new development before considering adding any new general parking.	I-4	
MO 5.6	Restrict through-traffic access at the intersection of Eighth Street and General Jim Moore Boulevard.	PL	
MO 5.7	Restrict through-traffic access on Inter-Garrison Road between General Jim Moore Boulevard and the Sixth Avenue multi-modal hub once Eighth Street is reopened and connected through to Second Avenue.	PL	
MO 5.8	Create a one-way northbound segment on Seventh Avenue between Colonel Durham Street and Butler Street to protect Monterey Bay Charter School drop-off traffic, and to prohibit regional traffic from taking Seventh Avenue southbound.		
MO 5.9	Restrict freshman main-campus residents from buying a campus parking permit.	I-4	
MO 5.10	Restrict all campus residents from buying a campus parking permit once sufficient alternatives are available, as indicated by a 70 percent combined alternative mode share split.	I-4	
MO 5.11	Restrict East Campus Housing parking permit holders from buying a main campus parking permit.	I-4	
MO 5.12	Consider restrictions on campus permit purchase to students, staff, and faculty residing within a one-mile radius of the main campus's borders. Expand this radius as regional travel options expand.	I-4	
MO 5.13	Create incentives to encourage students, faculty and staff commuters to take alternative modes of travel to campus.	I-4	
MO 5.14	Promote carpooling and low-emission vehicles by providing preferential parking stalls.	I-4	
MO 5.15	Host or encourage ride-sharing platforms for university community members to carpool and share rides.	I-7	
MO 5.16	Consider Level of Service D to be an acceptable standard for operating conditions on roadways, segments, and intersections within the CSUMB boundaries.	I-4	T-VTAC 1.15
MO 5.17	Provide a dedicated campus-only para-transportation service to provide point to point service for qualified riders.	EQ	

Water Systems: Develop Responsibly			
Policy Identifier	**Policy**	**LCC**	**2007 Master Plan**
Goal WS 1:	Pursue net zero water (exempt) status, defined as using non-potable water supply for all non-potable water demands. Explore options for achieving net positive water.		
WS 1.1	Pursue new development in conjunction with assigned water credits and supply.		
WS 1.2	Utilize a district-scale approach to water management for reducing the campus's water footprint while implementing sustainable growth.	WA	

WS 1.3	Establish outdoor water use thresholds for new development site water demands.	WA	
WS 1.4	Establish landscaping and irrigation operation protocols that assist in reducing future potable water use, and lowering level of total water demands.	WA	
WS 1.5	Prioritize areas with particularly high water demands, such as residential housing and sports facilities, for potable water conservation projects.	WA	
WS 1.6	Reduce potable water use to levels below CalGreen standards in all new construction projects.	WA	
WS 1.7	Develop an onsite non-potable water supply and distribution system that anticipates future growth and allows the university to achieve net zero water status for the entire campus at a time beyond the current planning horizon. Begin now by providing the infrastructure backbone that can be utilized during future capital improvement projects; for example, dual-plumb new buildings to accept recycled water for non-potable uses.	WA	
WS 1.8	Conduct an internal water audit for each capital project during the design phase, before construction commences.	WA	UI 4.9
WS 1.9	Use non-potable water supply for all non-potable water demands in any new improvement on campus, such as landscaping, toilet flushing, and industrial uses.		
WS 1.10	Pursue ambitious water conservation goals for all buildings.	WA	
WS 1.11	Avoid relocation of existing sewer mains, if possible, in new development.		
WS 1.12	Expand the campus greywater system with each new development.	WA	UI 4.2
WS 1.13	Minimize cooling demand or implement a district scale heat recovery chilling system to reduce the water needs of cooling towers.	WA	UI 4.6
WS 1.14	Remain an active partner in discussions and agreements regarding regional, domestic, and reclaimed water supply.	WA	UI 4.12
WS 1.15	Continue to work with partner agencies, such as MCWD, to achieve fiscally responsible water conservation measures.	WA	
WS 1.16	Match source water quality with end-use requirements.	WA	
WS 1.17	Identify and consolidate existing and aged infrastructure and smaller loops as areas are developed.		
WS 1.18	Ensure special handling, removal, and disposal of hazardous materials to an approved location during any improvements to water supply and distribution systems when undertaken by the University, or by others on University Property.	MA	
WS 1.19	Coordinate with MCWD to increase water storage capacity to meet maximum daily demand and fire storage capacity, especially in Zone D and Zone B.		
WS 1.20	If and when determined feasible, construct an on-site water recycling facility, with a corresponding CSUMB-owned sewer collection network.	WA	

Goal WS 2:	Integrate low impact design into all landscaping and outdoor areas		
WS 2.1	Use low-maintenance xeriscaping with native species to minimize or eliminate irrigation water demand.	WA	UI 4.7
WS 2.2	Irrigate with reclaimed water supplies, including greywater, stormwater, and recycled water.	WA	UI 4.8
WS 2.3	Design campus open space percolation landscapes to maximize evapotranspiration and infiltration.		
	Maximize infiltration at existing large swaths of impervious surfaces by removing pavement and returning to open space until development occurs.	WA	
WS 2.4	Incorporate campus-scale LID strategies, such as integrated percolation landscapes, green streets, recreation fields, stormwater swales, and naturalized channels.	WA	
WS 2.5	Incorporate site-scale landscaping LID strategies, such as native species selection, building within topography slopes, minimizing impervious surfaces, and avoiding soil compaction.	WA	
WS 2.6	Collect stormwater runoff throughout the site and transport, preferably through surface conveyance, to LID water-quality treatment areas.	WA	
WS 2.7	Integrate landscape features to serve not only as conveyance, but also as placemaking and stormwater treatment elements.	WA	
WS 2.8	Incorporate building-scale LID tools, such as bioretention infiltration trenches, green roofs, self-retaining areas, pervious paving, and vegetated swales.	WA	
Goal WS 3:	Percolate all stormwater within the campus footprint		
WS 3.1	Design both the site-based and campus-based systems to retain stormwater for infiltration or reuse.	WA	
WS 3.2	Minimize impervious surfaces by reducing excess surfacing on streets, driveways, sidewalks; and by using permeable paving and perforating landscaping wherever possible, such as in plazas.	WA	
WS 3.3	Integrate landscape and hardscape in order to funnel stormwater runoff into landscaped areas and minimize reliance on existing and future storm drain systems.	WA	
WS 3.4	Avoid unnatural looking, deep, or fenced infiltration basins that diminish the site's aesthetics and create safety issues.		
WS 3.5	Design all landscapes as self-retaining areas to reduce the volume of stormwater runoff.	WA	
OS 3.6	Consider using recreation and athletic fields for stormwater percolation.		
WS 3.7	Connect localized building-scale drainage networks into the larger campus-scale drainage network to handle overflows from larger storm events.	WA	
WS 3.8	Locate stormwater storage and reuse facilities near locations with high-irrigation water demand, such as athletic facilities.	WA	

Energy Systems: Develop Responsibly			
Policy Identifier	**Policy**	**LCC**	**2007 Master Plan**
Goal ES 1:	Achieve carbon neutrality and pursue net positive energy		
ES 1.1	Utilize a district-scale approach to on-site energy production, rather than building by building.	EN	
ES 1.2	Expand district-scale chilled and hot water distribution, and use this to serve building heating and cooling needs.	EN	
ES 1.3	Strive to limit natural gas usage to lab space and necessary food preparation areas, sourcing heating needs from renewable, electric sources.	EN	
Goal ES 2:	Meet future demand for energy in a safe, reliable, and cost effective manner.		
ES 2.1	Identify purchasing strategies for greenhouse gas emission offsets to close any remaining gaps at the end of the timeline to reach the 2030 carbon neutrality goal. Consider the following strategies: • Participate in a CSU/UC system or local Community Choice Aggregation (CCA) program • Purchase renewable energy offsets from a certified green-e source		
ES 2.2	Target a minimum 15 percent energy performance improvement over current Title 24 code in new construction.	EN	
ES 2.3	Target a minimum 5 percent energy performance improvement over current usage in existing facilities.		
ES 2.4	Invest in non-capital-intensive alternative energy sources that best meet the campus's needs.		UI 2.6
ES 2.5	Evaluate campus-scale systems for cost, performance, and the extent to which they can meet the campus goals within projected time horizons: • District scale heat-pump-provided heating energy strategy • Ultra-clean natural gas-fired cogeneration as an interim step	EN	
ES 2.6	Identify the embodied carbon footprint of new development at the project level during the design phase, and develop strategies for reducing this footprint.	I-12	
Goal ES 3:	Design and retrofit infrastructure and buildings to minimize energy use		
ES 3.1	Develop financing strategies for infrastructure and building improvements, such as: • Group solar solicitations • Power purchase agreements • Public-private partnerships		
ES 3.2	Regularly upgrade and maintain campus energy systems to ensure capacity and reliability.		UI 2.2
ES 3.3	Recommission existing buildings where lighting or HVAC commissioning has not been performed in the past five years.	EN	
ES 3.4	Implement lighting and other energy retrofits and other incentive programs as indicated by energy audits. To do this, obtain the assistance of the UC CSU Energy Efficiency Partnership and programs like Savings by Design.		
ES 3.5	Use photovoltaic panel arrays as shade structures over parking lots and walkways.	EN	UI 2.7

ES 3.6	Reduce building energy use through low-energy heating standards, natural ventilation, daylighting strategies and lighting technologies, domestic hot water systems, and plug load management.	EN	
Goal ES 4	Design systems to be resilient to extreme weather or natural disasters and provide undisrupted service		
ES 4.1	Move overhead power lines underground.		UI 2.1
ES 4.2	Develop additional loop systems to provide redundancy and reliability.		UI 2.8
ES 4.3	Replace or rehabilitate existing systems as they near the end of their usable life.		UI 3.2
Goal ES 5:	Engage the campus community, particularly students, in living-learning opportunities		
ES 5.1	Partner with classes and academic programs to perform energy audits, develop energy conservation programs, and explore scaling of new energy-supply technologies.		

Design Themes: Enhance Campus Identity			
Policy Identifier	**Policy**	**LCC-**	**2007 Master Plan**
Goal DT 1:	Enhance campus identity: campus scale		
DT 1.1	Adhere to campus planning and development design guidelines as they are developed, for new development guidance and specifications.		
DT 1.2	Develop a clear campus identity through consistent architectural style that integrates state-of-the-art technologies and design engaged with the natural environment.	I-9	CD 1.3
DT 1.3	Integrate distinct architectural landmark features into select buildings in order to support the unique campus aesthetic and provide orientation for pedestrian wayfinding.		WF 4.1
DT 1.4	Preserve the Fort Ord military history and regional Monterey Bay culture through new landmark art, architecture, and landscape features.	I-9	CD 1.4 / 1.5
DT 1.5	Follow the guiding principles and strategies identified in the special area plans to redesign the Main Quad, Divarty Street Mall, Inter-Garrison Road, and the Athletics and Recreation District.		

DT 1.6	Increase the quantity and distribution of public art throughout the campus by adding a major art installation (visible and relatable from sixty meters) for every five hundred residents, and a minor art installation (visible and relatable from ten meters) for every one hundred residents.	I-19	
DT 1.7	Cluster and orient buildings to define travel corridors, open spaces, and inviting gathering spaces that are protected from the prevailing winds while maximizing sun exposure.	HH, PL	
DT 1.8	Provide frequent pedestrian access between building clusters.		
DT 1.9	All future improvements on the campus periphery edges should aim to comply with the FORA RUDG.		
DT 1.10	Restrict large advertising signs on campus.	I-19	
DT 1.11	Maintain lines of sight along pathways and throughout landscaping features for ease of surveillance.		
DT 1.12	Develop a noise level threshold for mechanical equipment and facilities.	I-16	
DT 1.13	Utilize the Principles of Universal Design when developing all pedestrian pathways: • Equitable use: design and build a network within the campus core that is accessible for all users; implement identical means of use when possible and equivalent means when not • Flexibility in use: accommodate a wide range of individual preferences and abilities • Simple and intuitive use: eliminate unnecessary complexity; be consistent with user expectations • Perceptible information: communicate necessary information regardless of the ambient conditions or user's sensory abilities • Tolerance for error: minimize hazards and adverse consequences of unintended actions • Low physical effort: design for efficient and comfortable use • Size and space for approach and use: provide adequate space and clear lines of sight for any seated or standing user	EQ	
DT 1.14	Maintain a width of at least ten feet on all roadside sidewalks and primary pedestrian paths connecting buildings or sports fields.	I-14	
DT 1.15	Design primary regional trails through campus to be paved, twelve feet wide, and routed to limit roadway crossings.	PL	

DT 1.16	Develop pervious pavement standards as alternatives to concrete for pathways and outdoor gathering spaces.		
DT 1.17	Provide a landscape buffer separation between the sidewalk and roadway.	I-14	
DT 1.18	Formalize short-cut pedestrian pathways when appropriate.		
DT 1.19	Plant trees as windrows along major pathways and within campus open spaces to block prevailing winds.	I-14	P-PB 2.4
DT 1.20	Provide hydration stations near outdoor gathering spaces and outside popular campus destinations.		
Goal DT 2:	Enhance campus identity: site and building scale		
DT 2.1	Ensure that buildings on campus do not exceed five stories of occupied space.		CF 1.9
DT 2.2	Apply predominantly horizontal massing in building designs.		
DT 2.3	Ensure that building facades maintain a human scale at ground level through architectural or landscape transitions.		WF 5.1
DT 2.4	Massing and architectural style details of academic, support facilities, student life, landmark, and residential buildings should be differentiated by type to express their distinct identity and uses.		
DT 2.5	Incorporate the strategies listed in the “Shared Characteristics” section of the architectural design themes into building designs.		
DT 2.6	Orient all new buildings to take advantage of existing campus sightlines.		WF 4.2
DT 2.7	Orient and design new building entrances to be visible from a distance, intuitive to find from all pedestrian approaches, and located directly off popular pedestrian routes, plazas, and open spaces.		WF 3.1

DT 2.8	Avoid the creation of secluded alleys between buildings, and under-designed building side or rear facades.		
DT 2.9	Avoid large contiguous floor plate building designs that inhibit daylighting and natural ventilation.	I-9	
DT 2.10	Provide access to natural light in all occupiable spaces, with the exception of spaces where natural light conflicts with the program, such as auditoria.	I-9	
DT 2.11	Make visible all interior occupiable spaces from interior circulation routes.	EQ	
DT 2.12	Account for southern sun exposure in design of buildings and site layouts to provide solar control and opportunities for outdoor social spaces.	I-9	
DT 2.13	Design western building and site exposures to protect from prevailing winds while taking advantage of ocean views.	I-9	
DT 2.14	Prefer regional design themes for façade and interior building materials.		
DT 2.15	Use materials that weather well in the coastal climate, particularly considering wet conditions, strong winds, and salt intrusion.	I-9	
DT 2.16	Develop a list of prohibited construction materials specific to CSUMB, that achieves a level of scrutiny similar to the LCC's Red List.	I-11	
DT 2.17	Continue and increase the integration of recycled-content products into construction and finish materials.	I-13	
DT 2.18	Consider new technological applications in materials to enhance longevity, weathering, and flexible use.		
DT 2.19	Where appropriate, design for flexible floor plans, adjustable room configurations, and indoor-outdoor connections.	I-9	
DT 2.20	Provide multiple accessible entrances and routes through the ground floors of new buildings. Install automatic door opener push plates throughout academic, community, and student life buildings.	EQ	

DT 2.21	Design primary circulation corridors to have unobstructed air flow.		CD 2.2
DT 2.22	Minimize solar gain from windows and reflective surfaces.	EN	
DT 2.23	Implement passive heating and cooling strategies and thermal-mass building designs to reduce reliance on HVAC and ultimately to reduce required HVAC capacity.	EN	
DT 2.24	Minimize utility footprint on rooftops to accommodate other uses.	EN	
DT 2.25	Incorporate noise dampening measures to reduce the impact of noise-generating equipment at grade.	I-16	
DT 2.26	Incorporate acoustically sealed individual study rooms in student housing.		
DT 2.27	Design building infrastructure to respond to a lower acceptable temperature for heat distribution.	EN	
DT 2.28	Provide wayfinding and live information for transit services at buildings with high pedestrian volumes adjacent to transit stops.		
DT 2.29	Design buildings with high non-potable water use to be recycled-water ready.	WA	
DT 2.30	Design residential laundry facilities to be adjacent to an exterior wall, allowing laundry-to-landscape projects.	WA	
DT 2.31	Adhere to CSU policy to include gender-neutral restrooms in new development. Consider expansion of the policy based on campus community input.	EQ	
DT 2.32	Install low-flow industry-standard water fixtures and toilets in all new buildings.	WA	UI 4.3
DT 2.33	Install low-flow industry-standard urinals in all new buildings except residential.	WA	UI 4.5

DT 2.34	Design bicycle facilities and parking at all occupied building sites and field areas to meet LEED and LCC minimum standards. (Provide bicycle storage for at least 15 percent of campus occupants (LCC); LEED outlines 30 percent for residential, 10 percent for retail, and 10 percent for non-residential uses other than retail.)	I-4	
DT 2.35	Incorporate indoor and outdoor human-scale gathering spaces in student life buildings.		
DT 2.36	Outdoor event spaces should facilitate configurations suitable for gatherings of various sizes, include space for tables, as well as seating, lighting, and outlets integrated into the landscape.	I-15	
DT 2.37	Develop spaces around mature native trees.	I-14	WF 5.2
DT 2.38	Develop a strategy to centralize waste collection across several buildings, or a few large buildings, in order to reduce the accumulation of waste requiring on-site truck pick-up at each building.		
DT 2.39	Incorporate waste dumpsters into the building envelope, and out of sight and smell of non-service pedestrian entrances.	I-13	

Implementation Strategy			
Policy Identifier	**Policy**		**2007 Master Plan**
IS 1.1	Accept input on the master plan from campus and community stakeholders to refine the implementation of the plan as needed, and also to record lessons learned in preparation for the next master plan update.	ALL	I 2
IS 1.2	Prioritize and created a timeframe strategy for the follow-up plans listed in the Implementation Chapter.		
IS 1.3	Regularly review the master plan implementation efforts and progress made toward the master plan goals.	ALL	
IS 1.4	Determine the need for a master plan update when approaching the tenth year after this plan has been adopted.		
IS 1.5	Plan development in the sequence and within the timeframes outlined in this master plan.		I 4

IS 1.6	Develop a structured planning process to be followed by all projects; this process will include a comprehensive series of steps that ensure all procedures are exercised, plans checked for consistency, interested parties are included, and deliberate reviews performed before a project proceeds.	ALL	
IS 1.7	Form an Architecture Advisory Board (AAB). The board will initiate review of individual building, landscape, engineering, and infrastructure proposals at intervals during the design process for their architectural and stylistic consistency and contribution to the campus.	HH, MA	I 1
IS 1.8	Ensure compliance with design and construction standards of the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and Title 24 of the California Building Standards Code of Regulations.	EQ, EN	I 5
IS 1.9	Strengthen the capital programming process. Focus the capital programming process on CSUMB's long-term campus-wide goals of CSUMB rather than on short-term solutions and funds immediately available: · Use available funds to determine how much of the plan can be built in a given budget cycle and then prioritize projects to produce the short term (five year) capital improvement plan · Improve utilization of existing facilities through active management of space · Use sustainable practices to reduce a project's long-term lifecycle costs	ALL	I 6
IS 1.10	Provide transparent information regarding campus social justice and equity efforts.	I-18	
IS 1.11	Certify capital building projects at least to the LEED Gold level; aim for LEED Platinum certification from initial schematic designs.	ALL	
IS 1.12	Select one capital building project in the next five years to strive for compliance with Living Building Challenge certification. Evaluate this experience for establishing a future campus policy for achieving LBC certification for capital buildings projects.	ALL	
IS 1.13	Integrate biophilic design principles into the requests for proposals for all projects.	I-9	
IS 1.14	Conduct an eco-charrette that includes biophilic design principles during the initial scoping phase of new development.	I-9	
IS 1.15	Include in the Request for Proposal process transparency of social justice and equity practices and performances of campus contractors.	EQ, I-18	
IS 1.16	New building designs should incorporate the costs to construct associated open space, amenities, and supporting infrastructure identified in the master plan.	ALL	I 3


California State University
Monterey Bay