IV. Facilities Needs

A. Space Needs Analysis

1. Introduction

a. Process
Paulien & Associates was provided with facilities, course, and staffing data from fall 2009. The facilities inventory provides building, square footage, room use, and departmental information on a room-by-room basis. The course data contains the course number and description, student enrollments, course capacity, start and stop times, and meeting locations. The staffing data contains the departmental code, major employee category, and number of employees. This data provided a snapshot of the activities for the fall 2009 term, which is used as the analysis’ base year.

In addition to these main datasets, other information was collected to assist in the analysis. The additional data included: historical and projected student enrollments; research expenditure information for fiscal year 2009; library collections and reader station counts; and program plans for buildings under construction or recently approved and funded. The university’s strategic plan, Flagship 2030, and all of the supporting task force reports were used in creating the analysis.

The course data is used to study the present utilization of classrooms (room use code 110) and teaching laboratories (room use code 210) and to project space needs for both of these facility types. It is a reliable measure of how these instructional needs for both of these facility types. It is a reliable measure of how these instructional facilities are used or how much instructional space is currently being used. The facilities inventory was spot checked for accuracy of space use codes and departmental assignment at the time of the tour. Some changes were made to the inventory records so that it would reflect current usage and occupancy.

2. Guideline Assumptions and Application

This section summarizes the space needs by functional space category. The Colorado Commission on Higher Education (CCHE) rescinded their space guidelines for master planning a few years ago. Therefore, the consultant team relied upon their experience at determining appropriate space guidelines for this analysis. The consultant also received guidance from CU-Boulder’s Planning Office to understand the internal guidelines used for new construction. Besides the consultants’ experience, the basis for some of the analysis rested upon benchmarking, review of design and/or program plans completed for prior projects, and empirical data to project space needs. For some space categories, the guidelines employed in this study are more detailed and appropriate for this level of analysis.

The operating assumption in applying these different methods was to provide CU-Boulder with enough space to conduct its current and future activities. The sections below specify the guidelines applied to each space category and provide an explanation of the guideline application. In order to apply the various guidelines and conduct the space needs analysis, several assumptions were made in this report. Assumptions applied to the specific space categories are listed in this section.

3. Overview of Findings

• The analysis reflects a snapshot in time for fall 2009. The 2020 and 2030 planning horizons reflect the projections set forth in CU-Boulder’s Flagship 2030 and its various task force reports for enrollments, faculty growth, research growth, and additional housing.
• CU-Boulder averages 160 ASF per student FTE (non-annualized, fall term). This is 39 percent lower than the 225 ASF the peer universities average.
• Classroom utilization is very high for centrally scheduled classrooms averaging 42 weekly room hours at 72 percent student station occupancy. When departmentally controlled classrooms are included, the average drops to 37 weekly room hours at 69 percent student station occupancy. This average is still good for an institution of CU-Boulder’s caliber.
• Teaching laboratories average 20 hours per week of scheduled use. This average is good relative to other institutions similar to CU-Boulder.

4. Space Needs by Use Category

a. Land Use Objectives

The Main Campus of CU-Boulder is a compact academic village, which has facilitated communication. Most academic facilities are located within a reasonable walking distance of each other. Arts and humanities are concentrated on the west part of the Main Campus. Teaching and research activities benefit from the physical proximity of related disciplines. Proximity increases opportunities for the desirable interchange of students and faculty between related disciplines, and has contributed to the creation of many interdisciplinary centers and institutes, thus furthering the institution’s prominence in research. Interdisciplinary centers and institutes are often located literally between their related disciplines. Undergraduate classes are concentrated geographically, most within a 10-minute walk, allowing for as many class periods during the day as possible. The principle factor in locating new academic buildings should be to continue this combination of efficiency and synergistic interaction. This plan endorses retaining the 10-minute class change period for the 10-year planning period. This means that space for undergraduate classes needs to be given priority within the 10-minute walking area shown in Exhibit IV-A-3. However, greater flexibility in scheduling policy may be needed in the future. This is an example of the indentured quote paragraph style. The university’s most important functions (teaching and research) are best focused on the Main Campus even though it is largely built out. In order to manage the facilities growth that is necessitated by the expected growth in demand, more efficient and appropriate use of the Main Campus is necessary, giving priority to academic uses in the campus core. In addition, plans made for academic use expansion in the adjoining Granview area will need to be implemented. Research activities with fewer student contacts can find greater space available on the East Campus, where several of the life sciences and space sciences have located.

b. Existing Space Compared to Guideline Need

- The 2020 and 2030 planning horizons reflect the projections set forth in CU-Boulder’s Flagship 2030 and its various task force reports for enrollments, faculty growth, research growth, and additional housing.
- The actual use of research laboratory space need will be split between research laboratories and office space to house the research professionals.
- Residential space shows a large space need of between 612,500 ASF and 2,850,000 ASF when 1,700 and 4,300 beds are the projected need.
- Because of the need for more research space, the natural sciences (College of Arts and Sciences), College of Engineering and Applied Science, and the vice chancellor for research areas show the greatest need for space. However, the Colleges of Music and Architecture and Planning also have significant needs for space.

- Space deficits exist in every space category.
- The largest deficit of space is in research, instructional space (classrooms, teaching laboratories, and open laboratories combined), recreation/athletics, and office.
- The actual use of research laboratory space need will be split between research laboratories and office space to house the research professionals.
- Residential space shows a large space need of between 612,500 ASF and 2,850,000 ASF when 1,700 and 4,300 beds are the projected need.
- Because of the need for more research space, the natural sciences (College of Arts and Sciences), College of Engineering and Applied Science, and the vice chancellor for research areas show the greatest need for space. However, the Colleges of Music and Architecture and Planning also have significant needs for space.

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Classrooms and Classroom Service Space

Classrooms are defined as any room generally used for scheduled instruction requiring no special equipment and referred to as a "general purpose" classroom, seminar room, or lecture hall. Classroom service space directly supports one or more classrooms as an extension of the classroom activities, providing media space, preparation areas, or storage. The classroom station size includes the classroom service area space. However, additional service space can be justified on a program or classroom basis.

There are many spaces classified as classrooms in the facilities inventory, such as the classrooms in the residence halls. Many of these spaces do not show any of the facilities inventory, such as the classrooms in the residence halls. Many of these spaces do not show any service space.

Prior to 2000, many guidelines for classroom space were developed at a time when tablet armchair classrooms were the predominant seating preference. These guidelines called for approximately 15 ASF per student station, which is significantly lower than what today’s active learning-centered classrooms require. Classroom space requirements are determined by a course so that the departmental classroom needs can then be calculated; however, the majority (70 percent) of the classrooms are viewed as a campus-wide resource, are centrally scheduled, and are under the purview of the university registrar. A department may have some departmental classrooms, more than likely it will need to use general purpose classrooms to meet its needs.

For fall 2009, there is a university-wide need for approximately 123,400 ASF in additional classroom space. While there is 15,000 ASF classroom space being built, an additional 124,500 ASF is needed for 2020 and 146,000 ASF is needed for 2030.

The new space at the Visual Arts Complex was still under construction during fall 2009. Therefore the target year analysis shows the Visual Arts Complex as being completed and the art program giving up the space in Fleming and the Housing System Service Center, which results in a net decrease of space. Additionally the new Visual Arts Complex is expected to chart on page 9. The College of Engineering and Applied Science and the College of Arts and Sciences, collectively generate over 75 percent of this deficit. In particular, the chemistry and biochemistry program in the natural sciences division shows a strong need for space as does the College of Architecture and Planning and the College of Music.

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d. Open Laboratories

The space classified as Open Laboratories includes rooms that are open for student use and that are not used on a regularly scheduled basis (space use codes 220, 225, 230, and 235). These rooms may provide equipment to serve the needs of particular disciplines for group instruction in informally or irregularly scheduled classes. Alternatively, these rooms are used for individual student experimentation, observation, or practice in a particular field of study. The size of these laboratories is based on equipment size, the station size, and student count desired, and therefore should be determined on an individual basis. Types of rooms included in this category include computer laboratories, language laboratories, learning labs, tutoring and testing facilities, and music practice rooms and studios. For purposes of this analysis, senior capstone space is also considered open laboratory space as well as collaborative learning spaces.

Open laboratories are not specifically addressed by most guideline systems. In recent benchmarking and consulting work with several statewide systems, the consultant found between five and ten ASF per student FTE allocated for space in this category. The consultants note that the amount of space that CU-Boulder has classified in this category is 3.5 ASF per student FTE, at the lower end of what the consultants expect to find.

The consultants believe that a reasonable guideline for CU-Boulder in open laboratory space is 5.5 ASF per student FTE. This guideline is sufficient to provide the CU-Boulder programs with space lacking in this category such as studios and music practice rooms, as well as some senior capstone space and collaborative learning spaces. The guideline produced a deficit of about 54,000 ASF or 58 percent of existing open laboratory space for fall 2009. After the addition of the studio spaces in the Visual Arts Complex and the computing labs in the Caruthers Systems Biotechnology Building (about 20,000 ASF total), the deficit decreases to about 53,000 ASF for the planning horizon.

The guideline was portioned out among the existing programs based upon needs expressed during the on-site work sessions, existing building programs, the Master Plan Task Force Report on Academic Needs and Space Utilization, and current and projected student FTE enrollments. A specific allotment of open laboratory space was provided to the provost and executive vice chancellor for future collaborative learning and capstone spaces and other open laboratories that have yet to be determined for CU-Boulder.

The guideline was then allocated to each department based upon needs expressed during the on-site work sessions, existing building programs, the Master Plan Task Force Report on Academic Needs and Space Utilization, and current and projected student FTE enrollments. A specific allotment of open laboratory space was provided to the provost and executive vice chancellor for future collaborative learning and capstone spaces and other open laboratories that have yet to be determined for CU-Boulder.

For some units, such as architecture and planning, it is best to review the needs in the open laboratory in conjunction with the needs shown in the teaching and research laboratory space categories as activities conducted in each of these spaces often overlap.
e. Research Laboratories

Research laboratories (250s) are rooms used for unscheduled laboratory experimentation or training in research methods and observation. The research may be conducted by either faculty or students for both funded and non-funded research. This room type does not have utilization expectations.

The computation of research space is a complex issue. Different approaches could be used at this level of planning—a space factor per $100,000 in research expenditures; a space factor per research team; or a space factor per tenured/tenure-track faculty. Officials at CU-Boulder provided the research expenditures for fiscal year 2010. The consultants reviewed a variety of the university’s research performance indicators to assist in developing the best approach for determining research space needs. The following table indicates each major unit space per $100,000 in research expenditures, square footage per tenure/tenure-track faculty, and expenditures per tenure/tenure-track faculty. Appendix D shows detailed expenditures by program.

When reviewing the existing square footage per $100,000, the consultants found that many programs did not have a direct correlation between existing space allocations, faculty home departments, and research expenditures. In other words, there are units at CU-Boulder with large amounts of sponsored research dollars that do not have substantial amounts of research space and vice versa. This is not uncommon at institutions that have a large number of interdisciplinary and transdisciplinary research programs.

There are three areas where most of the research space is allocated: the vice chancellor for research and dean of the Graduate School, the natural sciences in the College of Arts and Sciences, and the College of Engineering and Applied Science. The social sciences also have some research space, as does the Leeds School of Business. The vice chancellor for research is the reporting unit for all of the institutes where research space is allocated, but the faculty are dispersed among their home departments.

As a result of this disconnect, the consultants decided to use a space factor per $100,000 in research expenditures. These space factors are appropriate and were applied to those units with existing research space or where non-office-based research space is required. The Research Laboratory Guidelines table shows the guidelines applied to those units that had research expenditures for fiscal year 2010 as well as existing space or a demonstrated need for research space. For those units that require small computational labs, resource rooms, or a collaboration room, very low square footages were applied, such as the case for business, humanities, and education.

Growth in research expenditures was projected at 5 percent compounded annually and adjusted for inflation. The inflation factor was set at 2.41 percent, resulting in a net growth of 2.59 percent compounded annually. The fiscal year 2010 research expenditures were $330,945,670. For the 2020 target year, the projection is $427,372,921 (2010 dollars) and $551,886,068 (2010 dollars) for the 2030 planning horizon.

The Research Laboratories and Service Analysis table below shows the result of the guideline application. The guidelines produced an 84 percent deficit of approximately $50,000 ASF for fall 2009. All units show a need for additional research space. For the College of Arts and Sciences, 79 percent of the need is in the natural sciences and 21 percent in the social sciences. The research space under the vice chancellor for research is attributed to CIRES, CLAS, IBG, IBS, ICS, INSTAAR, JILA, and LASP.

In the 2030 planning horizon, existing space reflects over 100,000 ASF in research space gains by the additions of the new IBS building, JILA expansion, and the Caruthers Systems Biotechnology Building. Even after the addition of this funded construction, the research deficit increases to 603,000 ASF for the 2020 target year and 966,000 ASF, a 152 percent shortage, at the 2030 horizon. This shortage is reflective of the projected growth in research activity.

It should be noted that a portion of this space may actually be developed as research office space. Many of the institutes have non-CU staff requiring offices. Some of this space is now housed in leased property. It is anticipated that the units of NOAA, NEON, NREL, USGS, and NSO will need space, expansion room, or will move from existing space to CU-owned facilities.
f. Office Space (Academic and Administrative)

The guideline application for office space needs is based upon major categories of staff types and the ad-
dditional application of space amounts for office space and conference space needs. The university provided summary staffing information with IPEDS code, title, and department. The consultant then organized each into major categories as shown in the Office Space Guidelines table. Guidance from the Office of Planning, Design, and Construction was used to establish the office space guidelines based on their internal planning standards.

Academic Office Space Analysis

The analysis shows a space deficit for fall 2009 in academic office space totaling about 97,500 ASF. The largest deficit is in the arts and sciences although some of this deficit may be offset by the surplus under the vice chancellor for research as some individuals have office space at the institutes. The College of Music also shows a strong need for additional studio office space. At the 2020 planning horizon, the deficit increases to about 140,600 ASF, and the 2030 planning target also increases to 190,000 ASF. The College of Engineering and Applied Science increases its existing office space by about 26,000 ASF and then shows a surplus of space. About half of this surplus is in conference room space.

When it comes to office space analysis, it is important to keep in mind that while there may be a surplus of space, there may not be enough doors or rooms. Therefore, the overall deficit may actually be more than what is being portrayed in the analysis due to inventory issues and existing structural constraints.

The average faculty office size is 158 ASF. The sizes range from a low of 108 ASF to a high of 261 ASF. To be expected, the College of Music has a greater average (180 ASF) due to the need for studio offices. The analysis uses 150 ASF as a general size for full-time faculty offices. Some offices are located in legacy buildings where the offices were built to greater square footage standards than the one utilized in this study. For example, Diane Physics averages 159 ASF per faculty office. Economics and Hellman average 164 ASF. Offices in the engineering, electrical, and mechanical wings average 190 ASF. Conversely, there are buildings where the averages are considerably lower, such as Koelbel Business, which averages 124 ASF.

Average Faculty Office Size by College/School/Unit

<table>
<thead>
<tr>
<th>College/Administrative Unit</th>
<th>Room Use Code</th>
<th>No. of Offices</th>
<th>Average Assignable Square Feet</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>College of Architecture and Planning</td>
<td>312</td>
<td>Faculty Office</td>
<td>21</td>
<td>143</td>
<td>89</td>
</tr>
<tr>
<td>College of Arts and Sciences</td>
<td>312</td>
<td>Faculty Office</td>
<td>924</td>
<td>159</td>
<td>61</td>
</tr>
<tr>
<td>College of Engineering and Applied Science</td>
<td>312</td>
<td>Faculty Office</td>
<td>216</td>
<td>158</td>
<td>66</td>
</tr>
<tr>
<td>College of Music</td>
<td>312</td>
<td>Faculty Office</td>
<td>75</td>
<td>180</td>
<td>77</td>
</tr>
<tr>
<td>Continuing Education and Professional Studies</td>
<td>312</td>
<td>Faculty Office</td>
<td>1</td>
<td>261</td>
<td>261</td>
</tr>
<tr>
<td>Leeds School of Business</td>
<td>312</td>
<td>Faculty Office</td>
<td>98</td>
<td>124</td>
<td>53</td>
</tr>
<tr>
<td>Provost &amp; Exec. Vice Chancellor, Academic Affairs</td>
<td>312</td>
<td>Faculty Office</td>
<td>21</td>
<td>162</td>
<td>59</td>
</tr>
<tr>
<td>School of Education</td>
<td>312</td>
<td>Faculty Office</td>
<td>52</td>
<td>156</td>
<td>81</td>
</tr>
<tr>
<td>School of Journalism and Mass Communication</td>
<td>312</td>
<td>Faculty Office</td>
<td>34</td>
<td>163</td>
<td>87</td>
</tr>
<tr>
<td>School of Law</td>
<td>312</td>
<td>Faculty Office</td>
<td>63</td>
<td>162</td>
<td>141</td>
</tr>
<tr>
<td>Vice Chancellor, Diversity, Equity, &amp; Community Eng</td>
<td>312</td>
<td>Faculty Office</td>
<td>1</td>
<td>108</td>
<td>108</td>
</tr>
<tr>
<td>Vice Chancellor, Research &amp; Dean, Graduate School</td>
<td>312</td>
<td>Faculty Office</td>
<td>126</td>
<td>169</td>
<td>68</td>
</tr>
</tbody>
</table>

INSTITUTION COUNT AND AVERAGE

1,652 | 158 | 53 | 347

NOTE: Only offices that have between 50 ASF and 350 ASF have been included.

Administrative Offices & Service Analysis

The fall 2009 Administrative Office Analysis shows a deficit of office space of approximately 7,000 ASF. Student affairs has the greatest deficit at about 12,500 ASF. At the 2030 planning horizon, the surpluses become deficits totaling to about 16,500 ASF for 2030.

g. Library Space

The consultant acknowledges the changing trends in modern-day libraries. The reference collection, many periodicals, and some of the up-to-date collections are being digitized and are available electronically. Stack space is being converted to study stations. Learning commons and cyber cafes are now part of the fabric of the library. Even with these transformations, the best way to predict the space needs of the library is by understanding the amount of print collections, number of students, and amount and types of technical services and staffing the library needs.

Most of the guideline systems for library space utilize one set of factors for collections, another for users, and a third for service space. The consultants reviewed different guidelines that have been used in recent years. For library collections, the consultants recommend a sliding scale guideline starting with 0.10 ASF per volume to 0.07 ASF per volume for collection space. If compact shelving is being used, then 0.004 ASF per volume should be used for that portion of the collection that will be stored on compact units.

Study space calculations for this analysis were based upon the current study space ratios to student head-
The following table illustrates how the library guidelines were applied and the amount of space needed for the university libraries. For fall 2009, the university libraries needed approximately 32,000 ASF in space. This need increases to 43,400 ASF for 2020 and 54,000 ASF for the 2030 planning horizon. It should be noted that the guidelines applied to this analysis are conservative. In a programming exercise it may be determined that more space is needed. Currently, the library has unmet space needs. For example, a large set of special collections is being housed in the basement of Norlin Library, where there is no climate or moisture control. Given the current build-out on the Main Campus, the additional need for space may be accommodated on the East Campus.

Library Guideline Analysis - Law Library
Following is library analysis for the William A. Wise Law Library. The analysis indicates a surplus of space in the library for fall 2009 clear through the 2030 planning horizon. General observation concurs with this finding, as the library has the ability to convert existing stack space to compact shelving on the lower level. Then freed stack space can be converted to study stations or group study areas.

Library Analysis
For fall 2009, the analysis shows that the libraries have a 7 percent shortage of space or a need for approximately 23,800 additional ASF. For the target year, a 12 percent space deficit is shown resulting in a need for 38,900 ASF of additional space for 2020. The 2030 horizon shows an increase in the deficit to 53,600 ASF. The majority of the projected deficits can be attributed to student enrollment growth.
h. Assembly and Exhibit Space
Assembly and exhibit space is defined as any room designated and equipped for the assembly of large numbers of people. This includes theaters, auditoriums, concert halls, and arenas. Exhibit spaces are used for exhibition of materials, works of art, or artifacts intended for general use by students and the public.

In recent years Paulien & Associates has been using a guideline originally promulgated by the Council of Educational Facility Planners International. This guideline has a core allowance of 22,450 ASF for institutions with a minimum of 5,000 student FTE and an active fine arts program. It then allows for an additional six ASF per FTE over the 5,000 FTE minimum. The guideline is intended to support the academic programs of an institution. In cases where there are additional facilities of this type that support not only the academic program but have a significant outreach/community component, additional allocations of space are added to this guideline.

An additional allotment of 40,000 ASF for CU-Boulder at the base year and 50,000 ASF for both planning horizons has been added. The reason for this addition is that the guideline is not large enough to cover the needs of the CU Museum of Natural History.

The guideline application produced a deficit of 93,500 ASF for fall 2009 of assembly and exhibit space at CU-Boulder. This deficit decreases to 81,700 ASF for the 2020 target and 91,100 ASF for the 2030 horizon. The consultants portioned the guideline among the departments requiring this space type. The increase in existing space at the 2020 target year includes the addition of the auditorium and the auditorium pre-function space, and the gallery (about 8,700 ASF) in the Biotechnology Building and the art museum space and exhibition areas in the Visual Arts Complex (19,000 ASF).

The College of Music has the greatest need for this space type as it needs additional rehearsal facilities and a stated need for a 1,000-seat performance venue. About half of the need is met for the College of Arts and Sciences at the target years, which reflects the new gallery space for the CU Museum of Art in the Visual Arts Complex. The need for museum space under the vice chancellor for research reflects the need for an expansion of the CU Museum of Natural History and the need for a science museum. The Task Force on Space Needs and Utilization suggested both of these museums be moved to the East Campus. The Leeds Schools of Business, the School of Education, and the Law School all have need for some exhibition space. Without programming the particular, 2,000 ASF has been allocated to each of these schools, recognizing this space need.

i. Other Department Space (Academic and Administrative)

The space classified as Other Department Space includes all other space assigned to a department that has not been included in the other classifications of classrooms, teaching laboratories, open laboratories, research, or office. These areas consist of a variety of spaces including:
- Animal quarters
- Armories
- Clinics
- Computer rooms
- Demonstration rooms
- Food facilities
- Greenhouses
- Learning center space
- Lounges
- Media production
- Meeting rooms
- Shop space

Due to the diversity of these spaces and the different ways various campuses might classify these spaces, they are not always addressed by recognized guideline systems.

Other Academic Department Space

There is about 262,000 ASF assigned to this space category. The following lists the major amounts of space and users of each space type included under this category.

- Approximately 21,200 ASF is animal facilities, the majority of which belongs to molecular, cellular, and developmental biology; psychology; IBBL, ecology and evolutionary biology; and integrative physiology. New animal facilities are being built in the Caruthers Laboratory for Integrative Biology;
- About 6,500 ASF in clinic spaces belonging to speech, hearing and language sciences (4,000 ASF) and psychology (2,500 ASF).
- About 16,500 in computing spaces (server rooms, mainframes, system areas), half is assigned to ITS administration with LASAP (1,800 ASF) and CIRES (1,500 ASF) each having about 10 percent of the total space. Another 25 units have some space ranging from 25 ASF to 800 ASF each.
- Nearly 23,000 ASF in these space use categories under 39 different units: meeting rooms, miscellaneous food service facilities, media production spaces, hazardous materials, demonstration rooms, merchandising space, and vehicle storage. Other academic space at CU-Boulder averages 10 ASF

<table>
<thead>
<tr>
<th>College / School / Unit</th>
<th>Fall 2009</th>
<th>Fall 2020</th>
<th>Fall 2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>College of Architecture and Planning</td>
<td>7,268</td>
<td>9,000</td>
<td>(1,732)</td>
</tr>
<tr>
<td>College of Arts and Sciences</td>
<td>101,055</td>
<td>100,052</td>
<td>103.000</td>
</tr>
<tr>
<td>School of Business</td>
<td>5,417</td>
<td>7,016</td>
<td>(549)</td>
</tr>
<tr>
<td>School of Education</td>
<td>6,169</td>
<td>6,025</td>
<td>(471)</td>
</tr>
<tr>
<td>College of Engineering and Applied Science</td>
<td>19,589</td>
<td>31,604</td>
<td>(12,205)</td>
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<td>School of Journalism and Mass Communication</td>
<td>2,300</td>
<td>2,470</td>
<td>(170)</td>
</tr>
<tr>
<td>College of Law</td>
<td>6,880</td>
<td>8,760</td>
<td>(1,880)</td>
</tr>
<tr>
<td>College of Music</td>
<td>19,357</td>
<td>20,666</td>
<td>(1,309)</td>
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<td>Provost &amp; Exec. Vice Chancellor, Academic Affairs</td>
<td>48,454</td>
<td>53,141</td>
<td>(4,687)</td>
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<td>Continuing Education and Professional Studies</td>
<td>2,649</td>
<td>2,845</td>
<td>(196)</td>
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<td>Vice Chancellor, Diversity, Equity, &amp; Community Engagement</td>
<td>0</td>
<td>3,500</td>
<td>(3,500)</td>
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<td>Vice Chancellor, Research &amp; Dean, Graduate School</td>
<td>41,173</td>
<td>47,292</td>
<td>(6,119)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>262,317</td>
<td>264,938</td>
<td>(2,621)</td>
</tr>
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ASF = Assignable Square Feet
Analysis by Paulien & Associates

<table>
<thead>
<tr>
<th>College / School / Unit</th>
<th>Existing ASF</th>
<th>Guideline ASF</th>
<th>Surplus/ (Deficit)</th>
<th>Projected Existing ASF</th>
<th>Guideline ASF</th>
<th>Surplus/ (Deficit)</th>
<th>Existing ASF</th>
<th>Guideline ASF</th>
<th>Surplus/ (Deficit)</th>
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</thead>
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<tr>
<td>College of Architecture and Planning</td>
<td>3,000</td>
<td>6,000</td>
<td>(3,000)</td>
<td>3,000</td>
<td>6,000</td>
<td>(3,000)</td>
<td>6,000</td>
<td>6,000</td>
<td>0</td>
</tr>
<tr>
<td>College of Arts and Sciences</td>
<td>18,222</td>
<td>51,400</td>
<td>(33,178)</td>
<td>19,629</td>
<td>56,300</td>
<td>(36,671)</td>
<td>58,000</td>
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<td>0</td>
</tr>
<tr>
<td>School of Business</td>
<td>7,427</td>
<td>7,016</td>
<td>(411)</td>
<td>7,427</td>
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<td>(411)</td>
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<td>School of Education</td>
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<td>6,025</td>
<td>(144)</td>
<td>6,169</td>
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<td>(144)</td>
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<tr>
<td>College of Engineering and Applied Science</td>
<td>19,589</td>
<td>31,604</td>
<td>(12,205)</td>
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<td>31,604</td>
<td>(12,205)</td>
<td>19,589</td>
<td>31,604</td>
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<tr>
<td>School of Journalism and Mass Communication</td>
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<td>TOTAL</td>
<td>198,322</td>
<td>262,317</td>
<td>(64,005)</td>
<td>214,126</td>
<td>262,317</td>
<td>(48,191)</td>
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ASF = Assignable Square Feet
Analysis by Paulien & Associates
per student FTE. The consultants believe that a reason-
able guideline to apply in this category is 11 ASF per
student FTE. This factor reflects the needs of all the
CU-Boulder programs for fall 2009 plus the space
that is currently under construction, and additional spaces of
this type that are being planned for the near future. The
guideline application shows a space deficit of around
32,600 ASF in this category for fall 2009, an increase in
the deficit to 37,500 ASF for 2020, and a 54,700 ASF
deficit for the 2030 horizon.

As with the open laboratory category, the guideline was
portrayed out among the existing programs.

Other Administrative Department Space

Other administrative space averaged slightly more than
one ASF per student FTE, which is significantly less
than the what consultant would expect. Part of this may be
due to the fact that certain administrative functions are
done by University of Colorado System offices, which
are not included in this study. About 30,000 ASF is in-
cluded in this space category. The space types included
are very similar to the Other Academic Department
Space. The following lists the space types included and
the major occupants of the space.

• Central storage is about 8,700 ASF of the total allo-
cated in 12 different administrative units. The majority
of the space is split between Public Safety, Registrat-
ion Services, and RPS-Research Building Systems.
• About 5,000 ASF of central service space belongs to
Imaging Services.
• The Alumni Association has about 4,700 of exhibition
space for its museum collection.
• About 4,600 ASF of meeting room space is dispersed
among five units: Admissions; Planning, Budget, and
Analysis; Career Services; RPS-Research Building
Systems; and Housing & Dining Services.
• Media production space for University Communica-
tions accounts for 2,400 ASF.
• The remaining 4,600 ASF is in physical training
rooms, non-physical plant shop space, lounges, and
computer rooms.
• The guideline used for the analysis is two ASF per
student FTE. The guideline application shows a
space deficit of about 23,600 ASF at the base year.
For the target year deficits increase to 25,500 ASF for
2020 and 28,600 for 2030.

j. Student Recreation and Athletics

Student Recreation

This category includes rooms that have space use codes
of 520, 523, 525, 670, 675, and 730, which are
used for student recreation. The facilities are located in
the Student Recreation Center, Carlson Gymnasium,
and Bear Creek Commons, as well as the Clare Small
Arts and Sciences natatorium. For the student recreation
analysis, the consultants are using a guideline devel-
oped by Bareither & Schiller in their book University
Space Planning. Application of the guideline includes
12.1 ASF for each undergraduate student, 25 percent of
the graduate students, and 15 percent of non-student
staff.

Application of this guideline for fall 2009 shows a cur-
nent need for approximately 144,800 ASF of additional
space in this category. As the university grows to 35,000
students, the need for additional space in this category
increases to 161,100 ASF for 2020 and 174,300 ASF
for the 2030 horizon. This need is for indoor recreation
space only. Outdoor playing fields would be in addi-
tion to this finding. The office need for the Recreation
Center-Special Operations is about 7,000 ASF, which
brings the total 2030 space need for this unit to just
under 350,000 ASF.

Athletics

The need for athletics space is based on the number,
type, and level of competitive sports played. CU-Boul-
der is joining the Pac-10 Conference NCAA Division I
in 2011 when it becomes the PAC-12. CU-Boulder has 16
varsity sports. Due to the varied space requirements of
indoor athletics program space, there is no one guide-
line that addresses this space category. The consultants
conducted a comparative analysis of athletics space
as part of the benchmarking for this analysis. Based on
the consultant’s knowledge of indoor athletics facilities,
400,000 ASF for athletics space is a reasonable amount
of square footage to use as a guideline for this master
planning exercise. The amount of space generated for
this space type does not include offices for the staff.
It includes only the 520 range of room use codes plus
space for concessions, training facilities, locker/shower
rooms, and meeting/viewing/conference facilities re-
quired to support intercollegiate athletics. Space needs
calculated in this report are for indoor space only and do
not include the needs for outdoor athletics facilities.

There is approximately 266,600 ASF of existing space
located in the Carlson Gymnasium, Dal Ward Athletic
Center, Coors Events Center, Balch Fieldhouse Com-
plex, Soccer Locker Room, the Stadium building, and
a variety of temporary buildings. The guideline applica-
tion shows a total deficit of about 134,000 ASF for the
base year. For the planning horizons, the existing ASF
increases by 22,000 ASF, reflecting the completion of the
new Basketball/Volleyball Practice Facility. As a result of
the new facility, the deficit increases to 111,400 ASF for
both the 2020 and 2030 planning targets.

The total space need for the athletics program includes
400,000 ASF of indoor space plus approximately 25,000
ASF of office facilities for a total of 425,000 ASF.
k. Student Union / Center Space (including Dining and Bookstore Space)

Widely used formulas recommend nine to ten ASF per student for generating space. These guidelines for space application provide space for various functions and the space use code designations that are typically found in a comprehensive student center including: food service (630s), bookstore (660s), lounge (650s), recreation space (670s), meeting space (680s), student government / club space (305s and 685s), and other student service type space categories. Existing facilities in this category include space in the University Memorial Center (vice chancellor, student affairs), the CU Book Store (vice chancellor, administration), and food services in the Koelbel Business building and the Wall Low Buildings.

The existing facilities counted in this category average 5.3 ASF per student FTE. The guideline applied by the consultants is nine ASF per student FTE for student service type space at CU-Boulder. At Fall 2009 enrollment levels, the application of this space guideline shows a deficit of about 135,000 ASF. At the target years, the deficit decreases to approximately 96,200 ASF for 2020 and 115,600 ASF for the 2030 planning year. This is due to the additional dining facilities in the Canthers Biotech

I. Student Health Care Facilities

The variety of services offered by student health care programs varies from institution to institution. The space included as student health care at CU-Boulder is the non-office space in the Wardenburg Health Center and Counseling and Psychological Services (CAPS). The office space needed for both of these units is calculated Counseling and Psychological Services (CAPS). The office space needed for both of these units is calculated by the physical plant guidelines. At the base year, the guideline is calculated against existing ASF minus residence space, but for future projections, it is calculated against the projected guideline minus residence space. In the base year, the guideline generated about 40,360 ASF deficit. For the 2020 planning horizon, a 110,000 ASF deficit, which is shown, increases to 135,000 ASF for 2030.

It should be noted that this analysis does not reflect the duplication of physical plant space that might be needed to support multiple campuses. Existing operations are currently hampered by the lack of space on the East Campus for outdoor maintenance equipment and yards. Additional study is needed to determine whether consolidation of physical plant operation in one site (likely to be remote from all campuses) and then transporting equipment to each work location is more cost effective than duplicating service centers on each campus and avoiding transportation costs or if some combination of these is most beneficial.

l. Residence Life Space

Undergraduate Housing

Across the nation, there are changes in student demands for housing. These changes result in more housing space per student in most recently constructed facilities. A guideline widely used in higher education is 275 ASF per bed. A 275 ASF per bed guideline provides sufficient space for a variety of housing types ranging from traditional double-loaded corridor layouts to suite and apartment-style housing. This guideline uses 275 ASF per bed as the guideline to address undergraduate housing needs. The consultant recognizes that CU-Boulder has been able to obtain a much more efficient space footprint (less than 150 ASF per bed) for its traditional double-loaded corridor layout. However, for future housing the 275 ASF will give the institution some flexibility as to the types of housing it offers and the implementation of additional living-learning concepts which require more community space in each building.

According to the Task Force Report on Living-Learning Environments, CU-Boulder needs to increase its residence capacity by 1,500 beds minimum in order to accommodate first-year students and a residential population of 20 percent returning students for a successful Residential Academic Program (RAP). For a more realistic percentage (30 percent) of returning students and a successful Residential College, 2,000 beds are needed.

This analysis uses 1,500 as the additional number of beds that are needed beyond the current housing stock for the fall 2009 analysis. For the 2030 analysis, 2,000 beds are used as the additional number of beds needed. Multiplying the 275 ASF per additional bed generates a need for about 412,500 ASF more residence life space at the base year. At the 2030 planning horizon, using 2,000 beds as the number of additional beds needed, a need for an additional 550,000 ASF is calculated.

Graduate / Family-Style Housing

The majority of the family-style housing is located on Boulder Creek. It includes Athens Court, Athens North Court, Family/Staff Court, Marine Court, and Newton Court. These communities contain a total of 650 units. There are approximately 200 units at Smiley Court, which is located just south of Boulder Creek on the East Campus. In total, there are about 850 existing units.

The units just north of Boulder Creek are 40 to 70 years old without any substantial renovation. Their life expectancy has expired and they need to be replaced. The desire is to replace this housing with about 1,300 units at a minimum. At maximum density, this area could support up to 1,900 units. The 200 units at Smiley Court also need to be replaced.

Currently there are 200 family-style units planned at Will

There are approximately 200 units at Smiley Court, which is located just south of Boulder Creek on the East Campus. In total, there are about 850 existing units. The units just north of Boulder Creek are 40 to 70 years old without any substantial renovation. Their life expectancy has expired and they need to be replaced. The desire is to replace this housing with about 1,300 units at a minimum. At maximum density, this area could support up to 1,900 units. The 200 units at Smiley Court also need to be replaced.

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B. Academic Facilities Needs

Academic facilities needs are those most integral to the mission of the university. Academic facilities include classrooms, instructional and research labs, academic offices, assembly and exhibit spaces, libraries, and academic support spaces. Academic programs in residence halls are addressed in the residential section (IV/F) of this plan.

Academic uses occupy 168 acres (29 percent) of the three-campus area, as shown in Exhibit IV-B-1. Academic spaces account for almost half (46 percent) of all building space, about 2,398,000 assignable square feet.

1. Academic Land Use and Facilities Objectives

The campus planning goals that are most important for academic land use and facilities planning are as follows (except where noted):

- Provide high-quality facilities to meet institutional needs. This includes the need to renovate or replace obsolete facilities, facilitate improved ways of teaching and learning, and develop new facilities that meet the growing and changing mission of the institution.
- Accommodate a projected enrollment growth of 9 to 11 percent (through 2020–2021).
- Facilitate increased graduate student enrollment to meet the demands of the research enterprise.
- Retain the 10-minute class change period for most undergraduate courses.
- The coming 10-year planning period will be one of transition for academic and research units on the Boulder campus. Previously, teaching and research functions were concentrated in the Main Campus, within the core. As the population has grown, the campus has become denser, to the point where many of those involved in the master planning process have reported that the campus is too crowded and overdeveloped.

In achieving these goals, it is important to recognize that trends identified in the last master plan will continue to affect academic land use and facilities planning are as follows (except where noted):

- The coming 10-year planning period will be one of transition for academic and research units on the Boulder campus. Previously, teaching and research functions were concentrated in the Main Campus, within the core. As the population has grown, the campus has become denser, to the point where many of those involved in the master planning process have reported that the campus is too crowded and overdeveloped.
- The East Campus is planned to foster and expand the interdisciplinary centers and institutes, thus furthering interchange of students and faculty between related academic interests, such as women’s studies, Native American studies, ethnic and foreign cultures, and studies of people with various physical limitations.
- The coming 10-year planning period will be one of transition for academic and research units on the Boulder campus. Previously, teaching and research functions were concentrated in the Main Campus, within the core. As the population has grown, the campus has become denser, to the point where many of those involved in the master planning process have reported that the campus is too crowded and overdeveloped.
- The East Campus is planned to foster and expand the interdisciplinary research found on the Main Campus. Five academic and research clusters are planned. Programs relocating from the Main Campus will be located in one of the clusters with similar focus so as to encourage cross-discipline dialog. For more information about the vision for the East Campus, refer to Section V.B.1.

b. Facilities Objectives

The University of Colorado Boulder needs to address both the quantity and quality of the academic facilities. The quantified facilities needs are described in the preceding space needs analysis (Section IV/A) based on projected enrollment and research growth. Financ-

1. Land Use Objectives

The Main Campus of CU-Boulder has traditionally been a compact academic village, which has facilitated communication between academic units and students. Most existing academic facilities are located within reasonable walking distance of each other. Arts and humanities programs are concentrated in the center of the Main Campus. Laboratories are concentrated on the east part of Main Campus. Teaching and research activities benefit from close proximity of related disciplines. Proximity increases opportunities for the desirable interchange of students and faculty between related disciplines, and enhances the creation of many interdisciplinary centers and institutes, thus furthering the institution’s prominence in research.

On the Main Campus, undergraduate classes are con-

2. Classroom and Instructional Lab Space

About 806,000 assignable square feet are devoted to classrooms, instructional labs, and related instructional facilities at CU-Boulder. The space needs analysis (IV-A) indicated that there is a shortage of classrooms even after buildings now under construction are completed.

Additional buildings planned or proposed (enumerated as academic capital improvements later in this section) will provide instructional space that will meet much of the need. At issue is the distribution and type of classroom space, particularly as the East Campus grows and the Main Campus facilities at CU-Boulder are re-examined.

2.1. Classroom and Instructional Lab Space

The space needs analysis (IV-A) indicated that there is a shortage of classrooms even after buildings now under construction are completed. Additional buildings planned or proposed (enumerated as academic capital improvements later in this section) will provide instructional space that will meet much of the need. At issue is the distribution and type of classroom space, particularly as the East Campus grows and the Main Campus facilities are re-examined.

The coming 10-year planning period will be one of transition for academic and research units on the Boulder campus. Previously, teaching and research functions were concentrated in the Main Campus, within the core. As the population has grown, the campus has become denser, to the point where many of those involved in the master planning process have reported that the campus is too crowded and overdeveloped.

In achieving these goals, it is important to recognize that trends identified in the last master plan will continue to affect academic land use and facilities planning are as follows (except where noted):

- The coming 10-year planning period will be one of transition for academic and research units on the Boulder campus. Previously, teaching and research functions were concentrated in the Main Campus, within the core. As the population has grown, the campus has become denser, to the point where many of those involved in the master planning process have reported that the campus is too crowded and overdeveloped.
- The East Campus is planned to foster and expand the interdisciplinary research found on the Main Campus. Five academic and research clusters are planned. Programs relocating from the Main Campus will be located in one of the clusters with similar focus so as to encourage cross-discipline dialog. For more information about the vision for the East Campus, refer to Section V.B.1.

b. Facilities Objectives

The University of Colorado Boulder needs to address both the quantity and quality of the academic facilities. The quantified facilities needs are described in the preceding space needs analysis (Section IV/A) based on projected enrollment and research growth.
needed to keep pace with growing enrollment even if the calculated number indicates that we have sufficient small classroom spaces.

The university has 164 centrally scheduled classrooms. There are 71 additional specialized classrooms, teaching labs, and seminar rooms that are departmentally controlled. The total number of classroom seats provided is 12,991. Classroom utilization is very high, suggesting that additional improvements in utilization will be difficult.

Throughout the master planning process, there was discussion about the need for larger classrooms. The number of classrooms with capacities over 200 has remained constant with only 8 classrooms this size and only 4 classrooms over 257 seats. At least one more auditorium of 250 seats or more is needed for academic purposes and consideration has been given to the need for large classroom spaces. Classroom utilization remains very high, with 12,391. Classroom utilization remains very high, with 90 percent of the recommended space occupied, and the magnitude of the shortage is substantial: 97,500 square feet, projected for the year 2020 if enrollment grows as projected. It is already very difficult to find office space for new faculty and staff.

Office and service space shortages have implications for research as well as teaching.

New office space in the Jennie Smoly Caruthers Bio-technology Building will help, but much more is needed. The capital projects listed at the end of this section include a substantial amount of office space included in academic projects.

Space for graduate students is frequently compromised when demand for faculty offices is not met. It is important to allocate doctoral student space within departmental limits to the extent possible. As new buildings come on line, backfill space will be sought for more graduate student space for GTPs and TAs (Graduate Teacher Program Instructorships and Teaching Assistants). Ideally, there will be study spaces for doctoral students at 0.5 spaces per doctoral student. Locked carrels may be provided at the library as the transition to an information age unfolds.

4. Research Laboratories

The campus has 534,000 assignable square feet of research labs and related research facilities which is inadequate. A considerable amount of additional space would be needed for the campus to reach its full research potential (see Table I). Additional space for house research being conducted on campus is essential in order to attract and retain faculty at a research university. The amount of research is not related to enrollment, but rather to the productivity of the faculty and research associates. The University of Colorado Boulder has less research space per research dollar than comparable institutions (See Sections I.C.1 and V.A.S).

Several problems have been identified with much of the research space on campus. First, laboratories in many buildings were built 40 or more years ago and have reached the end of their intended lives as effective laboratory sites. Utilities needed to service these labs are sometimes outdated and inadequate. Building structures often do not have the space for upgraded building systems that would be found in a modern laboratory. Second, there are not enough laboratories in several units to manage anticipated faculty growth. As noted in the Section IV.A, substantial deficits exist in the natural sciences, engineering, and research institutes—all areas expected to grow the most during the planning period.

The research space shortage has several causes. First, existing research needs more space on an ongoing basis as, for instance, new equipment is added to existing space or new computational stations and data storage facilities are added. Second, more research is being undertaken on campus than ever before. Third, while the relative growth of demand for research space varies considerably from unit to unit, most research space is allocated at the unit level, making for large differences in the relative intensity of the space shortage between units. Fourth, renovations to increase research space in existing buildings are difficult to accomplish since the cutting-edge nature of many programs cannot afford disruption, thus new research space is often “shoe-horned” into suboptimal space.

The movement of several programs to the East Campus offers the opportunity to address some of these issues. Constructing new research laboratories that are flexible and adaptable creates research space that can be modified economically over time as new procedures or equipment is needed. New facilities can be sized to accommodate some level of growth, anticipating the demand in growing disciplines. Making the buildings in- tentional will allow units to expand and contract as research dollars vary. The construction of new facilities allows existing laboratories to proceed without disruption as the new buildings are built, thereby minimizing downtime. The Caruthers Biotechnology Building is the prototype for this new generation of research buildings.

Research integrated with undergraduate education identifies federal and other research institutions as providers of quality undergraduate education. For this reason, academic classes will be relocated to the East Campus. On the East Campus, more research space will need to be constructed, perhaps at Grandview Terrace.

Research is increasingly interdisciplinary and technologically sophisticated. New building program plans should incorporate more flexibility by considering multiple research needs rather than single programmatic focuses.

5. Assembly and Exhibit Space

Certain academic spaces are cultural resources for the community and state populations. These include major performance halls, such as Macky Auditorium and the Downtown Auditorium for the Performing Arts. But it also reflects a true shortage of space in which to perform and exhibit. For example, potential audiences for the excellent music and musical theatre programs at CU-Boulder often exceed the 500-seat Grusin Music Hall or the 250-seat Lyric Theatre, both of which severely limit performance revenues. On the other hand, the 2,000-seat Macey Auditorium is too large for most theater or student voices. A performing arts facility of roughly 1,000 seats, without support facilities, would greatly strengthen the university’s programs and revenue. Because the City of Boulder also needs such a facility, the university program, at various times, considered joint or cooperative cultural resources planning. Renewed collaborative efforts in the future are a recommendation of this master plan.

During the previous planning period, substantial improvements have been made in the university’s museum facilities. Some of the natural history collection was moved into a climate-controlled facility in the Bruce Curtis Building for Museum Collections. A new arts museum and storage facility was constructed as a part of the Visual Arts Complex. Further changes in campus libraries. Alternatives to print media are proliferating into digital resources planning. Renewed collaborative efforts in the future are a recommendation of this master plan.

6. Libraries

In the Jeffersonian tradition, a university’s library is at the heart of the campus. Libraries have served as the central repository of knowledge, where the scholarly community engages in the creation, preservation, and dissemination of knowledge. Libraries offer the opportunity to access and retrieve information. Large numbers of people use libraries for research and study. But changes in technology mean a shift from print media to digital media for libraries. The Internet increases the need for qualitative changes in campus libraries. Alternatives to print media now abound. Users need more sophisticated media, technology, and information. The library is the place on campus where students can go to learn how to evaluate and reliably access appropriate resources for research and scholarship.

The University Libraries on the Boulder campus includes the Norlin Library and its five branch libraries. The University of Colorado Law Library is administered separately. In addition, there is a number of departmental reading
rooms and specialized collections. The rapidly changing technological environment for research and publishing impacts the libraries of the Boulder campus. According to the space needs analysis (Section IV.b), for fall 2010, the analysis shows that the University Libraries have a 7 percent shortage of space or a need for approximately 23,800 additional ASF. For the target year, a 12 percent space deficit is shown resulting in a need for 38,900 ASF of additional space by 2020.

a. Norlin Library

Norlin Library is a major resource not only for CU-Boulder but also for the state of Colorado. With specialized collections and electronic networks, an increasing number of scholars are served. The extensive Norlin collections and services range from historical archives to multimedia. Norlin is approximately 330,000 gross square feet (210,000 assignable square feet). Campus wide, there are approximately 327,000 total assignable square feet in all library facilities. The plan is to convert Norlin Library to an information concourse, where all who visit can access and “shop” the world of information. The retrofitting will:

- Create the learning library of the future, with new collaborative learning spaces;
- Provide for the demands of current and evolving information technology;
- Create a space to facilitate access and preservation of special collections and archives that represent the most unique and valuable of the university’s collections;
- Make the building a more inviting home for its many users;
- Create a better-organized, more efficient library;
- Improve ease of use and clarify how to circulate and use resources.

b. Branch Libraries

The branch libraries outside Norlin (and proposed plans for them) are:

- Leonard H. Gemmill Engineering Library. Design work is completed and a proposal to renovate the 1st floor of the library into Learning Commons was submitted to Academic Affairs as a fiscal year 2011 Academic Infrastructure Improvement Request.
- William M. White Business Library. No change is proposed since it was recently reconstructed.
- Oliver C. Lester Library of Mathematics and Physics. This library is slated to close in summer 2011.
- Jerry Crail Johnson Earth Sciences Library. No change is proposed.
- Howard B. Waltz Music Library. The library is inadequately sized, so additional space will need to be found, but no specific proposal has been set forth yet.

1. The Law Library

The William A. Wise Law Library is a unique resource within the University of Colorado system and the state of Colorado. It is the largest law library, public or private, in the state and the region, and provides legal information resources to the university community and the state. The Wise Law Library presently occupies approximately 52,000 assignable square feet, plus a reference collection for the faculty known as the Lasky Library, both in the Wolf Law Building.

This new law library is an efficiently organized and technologically sophisticated facility. It includes space for instruction in book and computer-based resources, extensive computer facilities, and group and individual study spaces. Staff spaces record the dramatic impact technology has brought to library operations. The entire facility features flexible spaces and is designed to accommodate technological tools as they evolve.

2. Remote Storage Facility

Due to insufficient space and/or weight-loading conditions in Norlin, a large number of volumes have been moved to the Preservation and Access Service Center for Colorado Academic Libraries (PASCAL), a high-density, environmentally sound preservation facility. Rather than occupy valuable real estate and limited library space on the Boulder campus, infrequently used information resources will continue to be housed in this facility located on the Anschutz Medical Campus. On-campus facilities will be devoted to housing user services and frequently accessed general collections, specialized collections (i.e., special collections and archives), which have unique usage, security, and housing requirements.

3. Departmental Reading Rooms and Specialized Collections

The following are among the largest departmental reading rooms and specialized collections that are administratively separate from the University of Colorado Boulder Libraries (with proposals for changes indicated):

- Woodruff Women’s Studies Cottage Reading Room. No change proposed.
- Visual Resource Center (VRC) Slide Collection. No change is proposed since it is in a new facility.
- Anthropology Reading Room. No change since it is relatively new.
- Morris Reading Room, a philosophy library with an extensive collection of ethics, philosophy, and social policy literature. No change is proposed since it is relatively new.
- Roger G. Barry Resource Office for Cryospheric Studies (ROCS), ROCS offers a unique set of collections focused on both science and history in the Earth’s frozen regions, including the Arctic, Antarc-

fica, the Poles, glaciers, ice sheets, sea ice, frozen ground, and more. No changes are anticipated.
- MCD Biology Reading Room. No change is proposed to be made to this facility.
- Institute for Behavioral Sciences Library: No changes are proposed as it is in a new facility.

1. Space Planning Principles

The following space planning principles are set forth for libraries on the Boulder campus:

- A robust campus information technology network and infrastructure will be in place.
- Libraries will continue to provide a core of basic services, e.g., research assistance, information literacy instruction, and information resource development services; however, the media through which information is carried, packaged, and transmitted will change.
- Electronic publishing is becoming more commonplace but is not yet a substitute for local collection, development, and physical storage; the design of new library space should, however, project growth of paper-based collections at lower rates than in the recent past.
- Dependence on the printed word will decrease, but will not disappear. Many print resources will not be available in electronic format, at least in the foreseeable future. Libraries will continue to preserve and provide access to the plethora of print materials that are needed for research and instruction at a research university.
- The library’s responsibility to teach students to be continuous learners will not decrease with new facilities. New or renovated construction should house instructional facilities designed specifically for access to, and retrieval of, the scholarly record.
- Library users require a range of diverse learning environments, so dedicated areas for quiet study, group study, group instruction, individual instruction, videoconferencing, and use of electronic information resources and technology are implied.
- Seating capacity guidelines as recognized by library planning standards will be used in all library designs so as to accommodate the populations being served.

- Almost all library space will be designed to be flexible, so that when a space use change is needed, it can be met with as little modification and expense as possible.
- Space planning will take into account furniture and workstations to support increasing use of portable technology applications.
- Building and renovation plans will include noise and environmental controls.
- The increase in technology will require a corresponding increase in information technology budgeting, support staff, and space for this staff. Technology has also radically changed how support staff performs their jobs so workspaces must be redesigned accordingly.
- Many materials will be stored off site with on-campus user access services provided. New on-campus storage designs will accommodate movable compact storage wherever possible.
7. Academic Capital Improvements

Based on the preceding analysis, the space deficits identified in Section IV.A, and the need for up-to-date facilities, many academic capital projects are needed. The following lists include projects over $2 million proposed for this planning period (through 2019-20). Location, timing, square footage, and cost estimates for these projects are detailed in the Building Plan (Section V.A). Most projects address both the need to upgrade existing facilities and the need to accommodate the projected growth. The list includes projects that have come on line since the space analysis was begun in 2009.

a. Major Projects Underway (in alphabetical order):
   - Skiley Science East Wing Renovation: This renovation has completed design and is awaiting funding from the state.
   - Information Technology Infrastructure: In December 2010 the campus completed a new technology backbone that provides high-speed wiring to desktops in buildings, new equipment in General Fund buildings, and wireless access to most areas of campus.
   - Institute for Behavioral Sciences: This 75,000 GSF office building was completed in fall 2010.
   - Jennie Smoly Caruthers Biotechnology Building: A 330,000 GSF interdisciplinary research and academic building is being built on the East Campus for Biochemistry, Chemical, and Biological Engineering and for the Colorado Initiative in Molecular Biology and will open in March 2012.
   - JILA Addition: A 46,000 GSF addition to the south end of the Duane Physical Sciences Complex will add research laboratories to the existing program. The project is under construction and will come on line in the fall 2012.
   - Visual Arts Complex: This building, completed in March 2010, replaced the Sibell Wolfe Fine Arts building with a new state-of-the-art studio building and fine arts museum. The new building is 187,000 GSF, increasing the space for the department by more than 35 percent.

b. Proposed Renovations

The Boulder campus is relatively old for a Colorado higher education institution; thus renovations are a greater need than on newer campuses. As discussed in Section I.A.6, 85 percent of the campus buildings are 25 years or older and over 50 percent of the buildings will be 50 years or older. There are many older academic buildings in need of renovation work to last each individually. The extent of such renovations varies considerably. Renovations may occur when:
   - Buildings are approaching 100 years old or, as a result of a major change of use, require complete reorganization of space and replacement of building systems such as electrical, plumbing, and heating/cooling.
   - Programs in older science buildings have a deficiency of suitable space.
   - Science buildings built across the country in the early 1970s change their scientific techniques.
   - Academic buildings are retrofit for informational technology equipment in light of technology’s short cycles.
   - Existing programs vacate space to a new building or space.
   - Deferred maintenance, controlled maintenance, or capital renewal projects are slated to address one or more systems in a building.

Major renovations fall into two broad categories: those due to capital renewal projects that address infrastructure with only limited change to the programs, and those that are due to programmatic changes anticipated in the planning period.

Capital renewal projects are those that may occur in the planning period (in alphabetical order):
   - Clare Small Arts and Sciences
   - Education
   - Guggenheim Geography
   - Hellens Arts and Sciences
   - Henderson Museum
   - Ketchum Arts and Sciences (design is complete and awaiting funding)
   - McKenna Languages

Major renovation projects that may come forward (in alphabetical order) include:
   - Carlisle Gymnasium: The completion of the Basketball/Volleyball Practice Facility represents the opportunity for conversion of this facility into an educational or recreational use.
   - Cristol Chemistry and Biochemistry Renovation: The completion of the Jennie Smoly Caruthers Biotechnology building will free up space in several buildings, the largest of which will be Cristol. New programs supporting research and teaching will go into the core campus building.
   - Fleming Building Renovation: With the completion of the Wolf Law Building, Fleming has been used as surge space during the renovation of Business and the construction of the Visual Arts Complex and will likely be used as surge space during some of the capital renewal projects. In the future, it would be appropriate for other teaching and select library collections uses that do not need core campus locations.
   - Geosciences: Plans are to acquire and renovate a building for academic and research programs that investigate environmental and earth science issues. The project will also involve a new laboratory building described below.
   - Norlin Library Renovation: The main library has begun a multi-phase renovation program that will last over the entire planning period to modernize the facility as described above.

This list is not comprehensive. During interviews with deans and institute directors, numerous renovation projects were discussed of various sizes and scopes. Not all of the renovations could be listed here and only the major projects where some scope definition has been investigated were included. More academic and research renovation projects will come forward in the planning period as need and funding sources are identified.

c. Additions and New Buildings:

Major additions proposed for academic (including research uses) are in alphabetical order:
   - Aerospace and Energy Systems Addition: A major addition to the Engineering Center, this project would add a research and teaching building between the Discovery Learning Center and the Aerospace Engineering wing.
   - Auditorium Addition to an Academic Building: At least one more auditorium in the range of 250 seats is needed to support the teaching mission. The Leeds School of Business conducts introductory classes of this size and must hold them in a 400-seat auditorium in the Mathematics Building. Teaching in a more appropriate sized space would free the larger classroom for appropriately sized teaching.
   - Chemistry and Life Sciences Building: The move to the East Campus of Biochemistry divides the Department of Chemistry and Biochemistry. This project would move all but the beginning teaching functions to a new building. Integrated Physiology, located in inadequate space in Carlson Gymnasium, would likely move as well, given its affiliations with the other biosciences to be located in the biotechnology building.
   - Duane Physical Laboratories “H” Wing Addition and Renovation: A substantial addition, planned since the construction of Duane in 1971, could accommodate the physicists now located in an obsolete and remote building on the East Campus, and help the meet the needs of physicists and astrophysicists for academic/research space.
   - Geosciences Laboratory Building: A wet laboratory building will be built with the office and dry lab space once a site has been identified and acquired. This will hold the analytical chemistry research and teaching labs in the energy and environmental programs.
   - Grandview Research/Academic Buildings: New research space in Grandview may be required if programs that are not being considered for the East Campus need to expand.
   - Imig Music Building: As the College of Music outgrows the Imig Music Building, more intensive use of the site should be considered in place of one-story portions of the building. Planning for this might start in the 10-year period but it is unlikely to be completed in that time, and so will not appear on the capital projects list.

- LASP Space Technology Research Center: CU-Boulder’s space science research continues to grow. Funding for LASP continues to increase and many of the programs last more than 10 years. An addition would allow an increase in the production facilities for experiments.

- Norlin Library Addition: Special Collections and Archives are housed in spaces in Norlin where they are at risk of damage or subject to deterioration. The addition would provide a climate-controlled, high-density storage facility for easy retrieval. Because of the nature of the materials, they are not suitable for PASCAL.

- Performing Arts Center: A 1,000-seat performance facility for the College of Music would fill a gap in the performance venues between Macky Auditorium and Grusin Music Hall. This would greatly improve the opera program and the ensemble program over current facilities.

- Research Property System (RPS) Office Building: To address the demand for space, new offices and shallow storage in the Research Park would accommodate many disciplines, centers, and institutes.

This master plan also identifies several locations for academic and research buildings on the Main Campus and East Campus that are unspecifed. Given the demand for space, these sites and space allocations are for the later stages of the master planning period to allow for potential projects to be proposed that are not yet known.

Location, scheduling, square footage, and estimates for these proposed capital improvements are detailed in the Building Plan (Section V.A).
C. Service and Administrative Needs

Administrative units of the university provide essential support to the students, faculty, and staff. With more than 36,000 people at the University of Colorado Boulder during a semester, the university is, in essence, a “city within a city.”

Services and administrative uses occupy 75 acres, 12 percent of the developed three-campus area in Boulder. See Exhibit IV-C-1. These spaces account for 9.8 percent of all building space, about 562,700 assignable square feet.

1. Services and Administration Objectives

For the 10-year planning period, the University of Colorado Boulder is projecting an enrollment growth of 9 percent. This increase will drive the need for additional faculty and staff in order to maintain an appropriate level of support services. The university must continue to restructure its existing service delivery system if it is to meet current and future demands to provide services in a convenient and efficient manner. Particularly, the campus must improve the processes of:

- Conducting student transactions (registration, financial aid, etc.) in a seamless, integrated, efficient and effective way.
- Improving existing facilities, and planning new facilities, to accommodate the space needs of administrative and student services staff.
- Developing new services to support international students and preparing American students to study abroad, due to the globalization of the university.
- Meeting needs for a variety of student and employee services, reporting requirements, and the types of infrastructure and administrative support that are located in the Regent Administrative Center and the Administrative and Research Center–East Campus (ARCE)
- Incorporating new technologies into the service delivery systems in order to support the intellectual, personal, social, cultural, and physical well-being of students, faculty, and staff.
- Improving transportation, communication, and the communication systems linking the campus properties in Boulder.

Improved service delivery supports the following principles of the 2030 strategic plan outlined in Section I of this plan, namely supporting customized learning and making enterprise work.

2. Office Services for Students, Faculty, and Staff

Office space constitutes the largest block of non-residential space on campus at 30.8 percent. It is composed of offices and support space for the administration of the campus, faculty, researchers, and related support staff, student support services, student organizations and graduate students. Office space on campus in its present form is highly utilized, yielding the perception that there is a lack of suitable space on campus.

Over the past 10 years, much of the administrative and student service office space has been consolidated into four locations:

- **Regent Administrative Center** houses the front door services such as admissions, registrar, bursar, administrative services, and the provost, vice chancellor for administration, and vice chancellor for diversity, equity, and community engagement.
- **The Center for Community** houses many of the student development and service offices.
- **The University-Administrative and Research Center-East Campus (ARCE)** houses the “back of house” functions of the administrative units.
- **C. Service and Administrative Needs**

There are also a few administrative offices directly associated with individual colleges that they support. For example, both the Colorado Law and the Leeds School of Business have their own admissions offices. Consolidation of administrative functions will continue to provide better service to students and increase efficiency.

According to the space needs analysis (Section IV-A), there is a 36 percent deficit of office space for services and administration, compared to the guideline. This is expected to grow to 38 percent at the end of the planning period.

Campus services are organized in the following manner:

a. **Office of the Chancellor**

The Office of the Chancellor provides executive oversight and administration for the Boulder campus. The provost and executive vice chancellor for academic affairs, senior vice chancellor and chief financial officer, and the athletic director report to the chancellor. The chancellor’s office is housed in the University Administrative Office.

b. **Division of Academic Affairs**

The Division of Academic Affairs is responsible for administering the academic programs and policies of the Boulder campus, and for providing intellectual leadership for excellence in teaching, scholarship, and creative work. The division recruits faculty, deans, and other academic leaders, and allocates resources to ensure high-quality teaching, research and creative work, and service. Units reporting to Academic Affairs include:

- All of the Boulder campus institutes, colleges, schools, and departments conducting research.
- The Office of Contracts and Grants.
- Student Research.

C. Service and Administrative Needs

Most of the academic units not associated with a school or college are located in the Regent Administrative Center for Community, or Administrative and Research Center–East Campus. The exceptions are student affairs that is located in the Center for Community and continuing education and outreach and engagement that are located in Grandview. There is a constant pressure to grow these departments due to ever increasing state and federal regulation, and increasing demand as the student population grows.

c. **Division of Student Affairs**

The primary focus of the Division of Student Affairs is to create a positive learning environment that fosters successful learning and personal development, both inside and outside of the traditional classroom. Student learning and success is enhanced when the academic community and environment support students’ full development as individuals—not just as isolated intellectuals—and when students are seen as important partners in the learning experience.

A wide variety of office service units report to the vice chancellor for student affairs (VCSA), including:

- **Wardenburg Health Center**.
- **Counseling and Psychological Services**.
- **Recruitment Administration**.
- **Victims Assistance**.
- **Dean of Students**.
- **Housing and Dining Services**.
- **Career Services**.
- **University Memorial Center**.
- **Orientation**.
- **Veteran Affairs**.
- **Environmental Services**.
- **Office of Student Conduct/Honor Code**.
- **Student Outreach Retention Center for Equity (SORCE)**.
- **Women’s Resource Center**.
- **Gay, Lesbian, Bisexual, and Transgender Resource Center**.
- **Interactive Theater Project**.
- **Jewish Affairs**.
- **Center for Multicultural Affairs**.
- **Student Organization Finance Office**.
- **Volunteer Resource Center**.
- **OH-Campus Student Services**.
- **Student Legal Services**.

The VCSA is also the reporting link with the student government, which has an autonomy agreement with the Board of Regents. Services in the list above denoted with an asterisk (*) are programs that are jointly managed with CUS Student Government (CUGS).

Jointly managed programs are largely located in one of the three CUSG cost centers: the Student Recreation Center, UMC, or Wardenburg Health Center. The remainder of student services are located in either the Center for Community or Regent Administrative Center. This represents a significant consolidation of these services that has taken place over the past 10 years to create nearly a one-stop experience for students seeking services. Additional consolidation will be sought where feasible.

d. **Office of the Vice Chancellor for Research**

The Office of the Vice Chancellor for Research serves as a focal point for departmental research, scholarship, and creative works, and strives to provide the types of infrastructure and administrative support that is necessary to promote and sustain our world-class faculty and research programs. The units reporting to the VCR include:

- All of the Boulder campus institutes, colleges, schools, and departments conducting research.
- Office of Contracts and Grants.
- Student Research.
- Conflicts of Interest.
- Animal Resources.

All of the offices associated with the VCR are located within the Regent Administrative Center and the Administrative and Research Center–East Campus. The need for additional office space continues to grow as more sponsored research grants are awarded to CU-Boulder and research requirements expand.

e. **Office of Diversity, Equity, and Community Engagement (ODECE)**

Led by the vice chancellor for diversity, equity, and community engagement, ODECE provides dedicated leadership to CU-Boulder’s campus diversity efforts. The office fosters CU-Boulder’s vision for a diverse campus climate and works with students, faculty, and staff to implement the campus diversity plan. The units that report through ODECE include:

- Disability Services.
- Pre-College Services.
- Student Success.
- Campus Climate and Community Engagement.
- Faculty Success/Associate.

Four campus-wide standing committees also report to ODECE:

- Chancellor’s Standing Committee on Gay, Lesbian, Bisexual, and Transgender issues.
- Chancellor’s Committee for Women.
- Chancellor’s Advisory Committee on Minority Affairs.
- Chancellor’s Committee on Program Accessibility.
1. Office of the Senior Vice Chancellor and Chief Financial Officer

The senior vice chancellor and chief financial officer provides leadership in the financial management, operational, and planning activities of the campus. The office is responsible for all business operations of the institution, ensuring sound financial management.

A variety of business operations report to the senior vice chancellor including:

- Vice Chancellor for Administration (VCA)
- Enrollment Management
- University Communications
- Budget and Finance
- Real Estate Acquisitions
- Chief Information Officer/Information Technology Services (ITS)

Operational units of the VCA have office space mostly in the Administrative and Research Center–East Campus or associated with their individual departments and are detailed below. Information Technology Services is located in the Telecommunications Building on the Main Campus and the Computing Center on the East Campus and its office needs are discussed in Section V.B.1.

The remaining units have high-touch offices located in the Regent Administrative Center and low-touch offices located in ARCE.

Space for campus business services have been greatly improved over the past planning period as technology has improved work process and funding cuts have not been as large as expected the past 10 years but the demand for more space is not expected to exceed that which is available in ARCE.

3. Student Center, Dining, and Health Services

The University of Colorado Boulder provides the campus community with essential support services at the University Memorial Center (student center), the War- denburg Health Center, and a variety of dining services. These facilities are conveniently located on the Main Campus. In the future, some or all of these services may need to be located or duplicated on the East Campus; however, during the planning period it is unlikely that this will occur with the exception of dining services.

a. Student Center

The student center was constructed in 1983 and dedicated as the University Memorial Center (UMC) to Colorado citizens who died during World Wars I and II. The UMC serves the campus community by providing space for student organizations and programs, meeting/conference rooms, the Book Store, catering services, recreational activities (bowling, billiards, game rooms, etc.), study areas, dining services, a credit union, and miscellaneous retail shops and kiosks. Major capacity additions to the building occurred in 1989 and in 2011.

Renovations of the building occurred in 1986, 2001, and in 2010 that have upgraded the appearance of the building without increasing capacity.

Student enrollment has increased from 25,000 to 30,000 in the past 10 years and the addition completed in 2001 was sized to catch up with campus growth from the 1960s. Thus, the UMC is now scheduled to accommodate the student groups and to space office space. The lack of meeting space appears in individual programs and with interviews conducted with some alumni in areas where requests for halls, conference space, and large and small-floor meeting rooms were made. The space needs analysis indicates that there is a demand today of more than 134,000 assignable square feet that will remain fairly constant through the planning period. This suggests that another addition to the UMC may be warranted—or perhaps a new satellite facility should be considered. A future expansion over the east wing is shown on the Long-Term Potential Development Areas map (Exhibit V-A-1), if and when additional growth of this facility is warranted.

Renovations to the UMC will also be needed in the planning period. The most recent renovation provided a cosmetic upgrade to the food servery but did not address the back-of-house functions in the kitchen. Much of that area dates to the 1964 addition and cannot support the current cooking practices. Renovation of this area is planned for future planning periods.

Renovation of the Glenn Miller Ballroom is also needed. It has not had any significant renovation since it was built in 1953. It is an important university and community asset as the largest meeting space in the City of Boulder and its history is filled with many important events. Modernizing it will enhance its capability while preserving it as a part of the campus heritage.

b. Dining

Dining facilities serve an important function in the academic community beyond providing a necessary place to purchase or eat a meal during the day. Dining facilities should serve as vital points of contact between students, faculty, and staff. They should also encourage the exchange of views, opinions, and ideas, serving as places where students of diverse backgrounds can gather and interact together. This is the essence of a university. Dining services are available on and around campus in several forms. Large-scale dining facilities exist in the UMC, Center for Community, and several residence halls. Smaller “satellite” cafes and dining areas are available in some buildings around campus.

The UMC is the major retail dining facility on campus. It offers several campus-run and private-vendor dining options. The UMC also has a catering kitchen that provides services for the many meetings, conferences, and miscellaneous events around campus. As noted above, the food service facilities were partially renovated in 2011 and 2010 but additional work is needed in the production kitchen.

The Department of Housing & Dining Services (HDS) operates dining centers for the residence halls and also operates the catering service for university events.

Dining Centers are located in the Center for Community, Farrand Hall, Sewall Hall, Libby Hall, and Darley Commons. They are focused on providing a residential dining experience, rather than the retail experience of the UMC and other vendors on campus.

All the dining centers except Darley Commons are brand new and have received substantial renovation within the last 10 years. Go are the traditional cafeteria lines, which are now replaced with ‘Marché’ style cooking stations where fresh food is prepared in front of the patron. This greatly improves the perception of quality, increasing student satisfaction. Darley Commons will be renovated or replaced during the planning period.

HDS also operates several “Grab-and-Go” facilities on campus. Grab-and-Go facilities offer carry out food service that can be purchased while a student is walking to class or while planning a meal plan or using Campus Cash, a declining-balance card systems that is available to anyone on campus. The Grab-and-Go facilities help to reduce the amount of time students spend on campus. There are no longer financial vi- sible.

New private vendors have stepped in to provide food service operations in several new and renovated buildings. Private vendors operate in Wolf Law, Koelbel Business, the ATLAS Center, the Engineering Center, Norlin Library, McAllister Center, and Porter Biosciences. Another is planned for the Jennie Smoly Caruthers Biotechnology Building. HDS operates two fully retail operations in the Center for Community—a bakery and a late night food service that offers pizza and sandwiches. There is constant demand for these convenient venues and it is likely that more will be added in future buildings, assuming that there is market support.

Recently, a new form of dining has begun to appear on campus—mobile street vendors. These vendors do not have permanent space on campus but rather bring a service to campus in the form of a trailer. Their operation may park on campus a few days per week for limited hours. The advantage to the university is it provides another venue that can have peak-off demand without dedicating valuable permanent space on campus. There are management issues that will have to be addressed so that this type of vending does not saturate campus and logistical problems with finding a suitable location for the vendor. Land planning will need to recognize this form of dining and provide appropriate, planned loca- tions for this service.

Off-campus dining options exist, although not close enough for most of the campus community to use, given limited time during the day. The Hill commercial area. The Hill offers the campus community an eclectic mix of coffeehouses, casual dining, and ethnic restaurants. Limited food service options are available elsewhere on the campus perimeter as well.

c. Health Center

The Wardenburg Health Center is a fully accredited, comprehensive, outpatient, health-care facility. Service- ers are available to the campus constituent base of students, faculty, staff, retirees, and their families. The 56,000 gross-square-foot facility was built in 1959 and renovated in the early 1980s and in 2006.

Outpatient care is offered in general and internal medicine, minor surgery, psychological health, sports medicine, women’s health, and peer health education. The center also includes a psychiatry clinic that offers individual and group therapy; stress management; bio- feedback training; and drug, alcohol, and sexual health
counseling. Additionally, the center conducts health education programs on acquaintance rape awareness, sexual health peer education, nutritional counseling, stress management, and stop smoking programs.

Wardenburg also houses the Clinical Translational Research Center (CTRC), which is the human research center for the merger of four similar facilities at the University of Colorado Hospital, Children’s Hospital, National Jewish Health, and CU-Boulder. These centers provide services in bioscience, core laboratory services, IT and statistical support, medical support, subject safety, and pharmacy. These services require that they are located in an accredited facility for human research and Wardenburg is the only facility on the Boulder campus at the present time.

During the planning period, the demand for space in Wardenburg is expected to grow. Medical services for the expanding student population will need more space and human research will grow as more grants are acquired in this field. During the past planning period, several concepts for expanding Wardenburg to the east have been proposed but not implemented. It is likely that some form of expansion will be needed, either at the current site or perhaps in a new location, depending on financial models.

### 4. Physical Plant Space

The Physical Plant Space is needed for operational services of the university. The three main elements of physical plant space are:
- Facilities Management, including Distribution Services and Mailing Services.
- Environmental Health and Safety.
- Public Safety.

It does not include maintenance shops of the Department of Housing & Dining Services.

Facilities Management is the largest of the physical plant departments. It is responsible for the planning, design, construction, maintenance, and operation of all building and grounds on campus as well as the distribution of materials to departments and the removal of waste and recyclables. The mission of the department is to provide a safe physical environment that promotes the advancement and transfer of knowledge.

Facilities Management has its primary facilities in the Stadium Building (for shops and the Service Desk), Research Laboratory No. 2 (for Business Services and Planning, Design, and Construction), 3300 Walnut Street (for Distribution and Mailing Services, and the Stores facility for materials), and the Grounds Building (for grounds, fire alarm shop, and recycling processing). Satellite offices exist around campus to support custodial operations in several academic buildings.

Facility Management’s shop functions are not an optimal utilization of valuable space in the core campus. Most facilities of Facility Management should be moved off the Main Campus to a consolidated facility. Such a facility would provide certain efficiencies because loading docks, equipment, and shop and repair space would be shared. The vacated space in the Stadium Building could be converted either for academic use or Intercollegiate Athletics.

The Grounds Building is located in the expansion area for the Dall-Ward Athletic Center or for a new parking structure and fieldhouse. In order to accomplish either, it is likely that the operations in the Grounds Building would have to be moved. This work is not currently in the planning period; however, the need for this or expanded Facilities Management space is likely and may be accelerated by the other projects and campus sustainability efforts. So, if the evaluation of which services should be moved will need to take place.

The Distribution Center and Mailing Services is located in a leased industrial facility located at 3300 W. 30th Street that is owned by the CU Real Estate Foundation. The entire building is quite large, with only about 40 percent of the building occupied by university operations. This affords some flexibility in meeting the department’s storage needs since more space can be leased when growth is desired. This building should be considered when relocation of some or all of the shops, grounds, or environmental management operation is evaluated.

b. Environmental Health and Safety (EH&S)

The Environmental Health and Safety department at the University of Colorado Boulder provides comprehensive environmental, health, and safety services to minimize health and safety impacts to the campus and the greater Boulder community. EH&S accomplishes this through training, emergency planning, and consultation and partnership with members of the campus community as well as with local, state, and federal agencies. EH&S is responsible for emergency management, business continuity during emergencies, hazardous materials and waste management, radiation safety, and asbestos and lead removal and monitoring.

The Main Campus is served by the Environmental Health and Safety Center where hazardous materials are processed before disposal. The existence of this facility is of adequate size for the Main Campus and has an expansion capability should the demand on the Main Campus grow. Buildings on the East Campus cannot now be served by the Main Campus facility because untreated waste cannot be transported over the city streets. This means that as more waste producing programs are moved to the East Campus, there will be a need to build a satellite facility to process waste. This is not currently anticipated in the planning period.

c. Public Safety

The Department of Public Safety is comprised of the Police Department and Parking and Transportation Services. The police enforce state laws, municipal ordinances, and university rules and regulations. Parking and Transportation Services is responsible for managing and maintaining much of the parking on campus.

The Department of Public Safety is located in the Police and Parking Services Center adjacent to the Regent Drive AutoPark. The building was constructed in 1991 and was expanded in 2009. The building is adequate for existing demand but will be undersized as the campus grows.

The Police Department also maintains a branch station on the Williams Village Campus in the Bear Creek Commons Building. Another branch station will be needed on the East Campus as it develops. A dedicated branch is not included in this plan, however if one is needed, it could be incorporated into one of the buildings that are planned or will be acquired.

### 5. Services and Administration Capital Improvements

Based on the needs analysis, the space deficits identified in Section IV.A, and the need for up-to-date facilities, several projects to accommodate various services and administration are needed. The following lists includes projects over $2 million proposed for this planning period (through 2020–21), Location, timing, square footage of each project, estimated costs, and projects are detailed in the Building Plan (Section V.A). All projects address both the need to upgrade existing facilities and the need to accommodate the projected growth.

a. Projects Underway

At the time of this writing, a new utility plant and a renovation of the existing plant is being planned. The existing power house would be renamed the West District Utility Facility. The new plant will be constructed near the Coors Events Center. These plants would provide more steam and chilled water capacity for the Main Campus and reduce the carbon footprint, helping to achieve the campus’s sustainability goals.

b. Proposed Renovations, Additions, and New Construction

Several projects are proposed in order to provide needed services (listed alphabetically):

- Facilities Management Building. A consolidated service center housing all Facilities Management and Distribution Services functions is planned. The proposed Athletics Fieldhouse will facilitate moving Facilities Management functions in and around the Grounds Building (which is to be demolished). Ideally, this would be located proximate to the Distribution Center.

- Koenig Alumni Center Addition. The Alumni Center is out of space to accommodate services to alumni, and could be expanded if resources (perhaps a donor) become available.

- Miscellaneous renovations for service and administrative functions. As noted above, there are pressing needs for renovations within many of the service and administration areas. There will likely be additional renovations in Regent Administrative Center as student services are consolidated. The UMC needs additional renovation of the food service area, particularly the back-of-house functions and the Glenn Miller Ballroom. One of the former IBS buildings will be remodeled for Outreach and Community Engagement. Also, the renovation of the Wardenburg Health Center may be needed to improve services.

- Service projects on the East Campus. Projects and services needed to support the expanding research and academic mission of the East Campus will be considered during the planning period. These may be included in individual projects or aggregated together into a stand-alone facility.

- Transportation Projects. Transportation projects are considered in the Transportation Plan (V.E) and may include additional structured parking and transit center improvements. Improvements to the 19th Street Trail will likely occur in the planning period.

- Utility Infrastructure Projects. Utility services are considered in the Utilities Plan (V.F) and may include improvements to the civil utilities (water, sewer, etc), communications infrastructure, utility generation capacity, and initial utilities or flood control improvements with other governmental agencies at CU-Boulder South.

- Welcome Center. Creating a positive first impression is important in attracting the best and brightest students to CU-Boulder. A Welcome Center that provides a one-stop location for prospective students and their parents to obtain information about the university would be ideal. Such a center might be possible in the former University Club, or as a part of a new academic building.
D. Intercollegiate Athletics Facilities Needs

Organized sports activities at CU-Boulder occur within either Intercollegiate Athletics or Recreation Services programs. Both offer students training and competition in a variety of sports. There are also relationships with a variety of academic adjacencies, most notably integrative physiology (formerly kinesiology). Sports activities provide an important image of the campus to the community and beyond. Athletics and recreation activities occupy 81 acres, which is 13 percent of the three-campus area. See Exhibit IV-D-1. Within campus buildings, Intercollegiate Athletics occupies about 286,600 assignable square feet, 4.7 percent of the building area for all CU-Boulder uses. When compared to peer institutions, CU-Boulder has about 30 percent less space than the average of indoor space typically devoted to athletics.

1. Athletics Objectives

The University of Colorado enters a new era as a member of the prestigious Pac-12 Athletic Conference beginning with the 2011 academic year. As a member of NCAA Division I, Intercollegiate Athletics is required to support 16 sports programs. The department intends to offer 17–18 sport programs. The Pac-10 sponsors 11 men's sports and 11 women's sports. Additionally, the conference is a member of the Mountain Pacific Sports Federation (MPSF) in four men's sports and three women's sports. The Colorado Buffaloes have won 23 NCAA championships, including 17 in skiing, three in men's cross-country, two in men's soccer, and one in football. The Buffaloes had at least 10 teams nationally ranked in each of the last 12 years. Men's varsity sports are football, basketball, volleyball, wrestling, soccer, and baseball. Women's sports are basketball, cross-country, skiing, tennis, golf, soccer, indoor and outdoor track and field, and volleyball.

The Intercollegiate Athletics Department’s mission statement is to “provide student athletes a rewarding academic and athletic opportunity while embracing the principles of equity and diversity. The department represents the university with distinction, serves as a rallying point for its constituents, and instills pride in the institution.” The department promotes a total person concept for student athletes, stressing students’ abilities to excel in both athletic competition and academic achievement while developing positive character traits that will be of sustaining value to them and to society.

2. Athletics Facilities

Facilities for athletics events include the stadium complex with 1,750 seats for Folsom Field (for football), the 11,200-seat Coors Events Center (for basketball and volleyball), plus indoor and outdoor track and field facilities. Tennis teams practice on the CU-Boulder South tennis courts and also have the use of a local indoor facility. Golf team members use the Colorado National Golf Club courses in Erie for practice and competition. The ski team practices at Eldora Mountain Resort, which is about 40 minutes west of Boulder. Locker and changing areas for the ski team are located in a temporary building adjacent to Potts Field. The volleyball team uses the Coors Events Center for practice and games, while the women’s volleyball team relies on off-campus facilities controlled by others. Fan expectation for amenities at sport venues has increased greatly over the years and improvements are required to maintain booster support. Furthermore, compliance with federal Title IX standards will likely require the addition of women's sport teams and associated facilities. Consequently, this Campus Master Plan includes major capital investments for athletics.

a. Stadium Complex

Folsom Field was originally constructed in 1924. Upper seating sections were added with the Stadium Building in 1956, and partial renovations occurred in 1968 and 1976. Stadium Skybox facilities were completed in 2003. The field itself is approximately 1.8 acres. The playing surface was replaced in 1999 with a combination natural and synthetic turf system, to meet the needs for both track programs as well as a recreational amenity. The stadium serves as the primary competition and secondary practice facility for the football program, and it also hosts other campus and community events. The university intends to keep the existing Folsom Field as the premier venue for collegiate football in the Rocky Mountain region.

Concerns have been raised over the years about how much land the stadium complex takes up in close proximity to the academic core of the campus. But there are synergies keeping the stadium on campus: stadium event parking uses existing on-campus and off-campus parking and recreational fields; alumni revisit the campus while attending games; and campus events reunite groups and promote other university activities. With no plans to relocate the stadium, it makes sense to program the facility for a variety of events, make needed stadium improvements, and help ensure access to the stadium by all transportation modes.

The Stadium Building and Balch Fieldhouse contain support facilities for events held in the stadium. The Stadium Building was greatly improved on the east side of the stadium with the addition of the club seats and suites, the football coaches' locker rooms, and related support facilities. Balch Fieldhouse Pressbox, constructed in 1968, has six levels of club, box, and press facilities overlooking the field that are in need of significant improvements and may be considered for replacement within the latter part of the planning period. Updated video boards and improved sound are needed to enhance the fan experience and to match those of comparable venues. Balch Fieldhouse, a 65,662-square-foot multipurpose facility, opened in 1936. In addition to providing needed access, concessions, and restrooms for football games, it is the primary practice and competition facility for the men's and women's track programs. It also serves as a venue for small concerts and recreation activities. Structural issues with the Balch facility and outdated support facilities may require renovations to the facility prior to the development of a new fieldhouse. With renovation of the Balch facility, the west side of the stadium complex should be studied to increase general and box seating, improve circulation around the stadium for campus, improve event egress for spectators, and improve support facilities (restrooms, concessions, media support facilities, food service areas). Optimal use of existing office space in this centrally located property needs additional study, recognizing the need for additional academic space. Not just the relationship to Folsom Field should be considered, but also the relationship to surrounding campus development.

The 145,340-square-foot Dal Ward Athletic Center, which overlooks the north end of Folsom Field, was built in 1991. This facility houses sports medicine and locker facilities for several intercollegiate sports teams, a restroom, media support facilities, and the academic offices, football coaches’ offices, and a strength and conditioning facility. Dal Ward is used primarily by the Department of Intercollegiate Athletics but also hosts other campus and community events. It accommodates campus special events in its large training room and auditorium.

b. Other Indoor Facilities

The Coors Events Center, constructed in 1979, has a 152,071-square-foot facility with an arena that accommodates approximately 11,000 people with the basketball operations center and a court sports weight and fitness room. New video boards and ribbon boards, a permanent sports floor, and fly-in practice baskets have also been added. The 42,762-square-foot space is being used primarily as a practice and competition facility for men's basketball, volleyball, and women's basketball and women's volleyball. This facility and outdated support facilities may require renovation to the facility prior to the expansion of academic uses. The College of Arts and Sciences is considering using this facility for additional academic space.

c. Other Outdoor Facilities

Ponds Field on the East Campus was constructed in 1968. It includes a 400-meter running track, a throw area, long jump pits, a storage building, restroom facilities, and temporary seating for approximately 2,000 spectators. Potts Field and Prentup Field are located to the west of Ponds Field and serve as a practice and competition facility for the men’s and women’s outdoor track programs as well as a recreational amenity for the East Campus.

Prentup Field was constructed in 1968 on the East Campus as CU-Boulder’s only baseball field. In 2006 Prentup Field became home to the Women's Soccer Program. Locker rooms and a permanent scoreboard were added along with temporary seating for approximately 2,000 fans. Both Potts Field and Prentup Field may ultimately be developed for academic research uses. These may be relocated during the planning period with functions at Prentup Field moving to the area north of Boulder Creek and Potts Field relocated to CU-Boulder South.

Built in 2005, 12 tennis courts at CU-Boulder South serve as the primary practice and competition facility for the women’s tennis team. A tennis facility has been approved to accommodate approximately 400 spectators. Limited facilities are provided to support these outdoor courts.

3. Athletics Capital Improvements

The space needs analysis (SNA) identified a shortage of at least 134,000 assignable square feet of indoor space...
for athletics programs. The primary project to address this shortage is a new fieldhouse, and a number of other projects are proposed to upgrade or add facilities.

- **Balch Fieldhouse Renovation:** Renovations of the existing Balch Fieldhouse would include upgrades or replacement of the pressbox, gates and plazas, and concession facilities.
- **Dal Ward Athletic Center Expansion for Women’s Sports:** An expansion of the Dal Ward complex would provide additional administrative office, and student athlete support areas at the northeast corner of the stadium. Also planned are additional stadium seats in this area to replace those that were removed due to unstable soil.
- **Fieldhouse and Parking Structure:** An indoor practice facility, primarily for football, is envisioned north of Franklin Field, adjoining the stadium complex. About 400 to 600 structured parking spaces are planned to be added now in Carlson Gymnasium and Balch Fieldhouse may be relocated to the new fieldhouse. Relocation of Facilities Management grounds and recycling operations on the new fieldhouse site will be necessary as part of the project. An alternative site for the fieldhouse could be north of Boulder Creek, near the football practice fields.
- **Performance Facility for Soccer and Lacrosse:** This is seen as a replacement facility for the current uses at Prentup Field. Replacement of this site is likely as the East Campus is developed for academic uses over the next 10 years. Replacement fields could be developed north of Boulder Creek or at CU-Boulder South.
- **Track and Field Facility:** This is planned as a replacement facility. Relocation and replacement of existing track and field facilities is likely as the East Campus is developed for academic uses over the next 10 years. Replacement facilities could be developed north of Boulder Creek or at CU-Boulder South.
- **Other Outdoor Fields and Courts:** Substantial improvements to existing outdoor facilities, and some new construction, will be necessary in order to remain competitive in the Pac-12 Conference and the NCAA as a whole. Depending upon which sports are added, additional facilities and land will be required. CU-Boulder is exploring the options in this area.
- **Dal Ward Fieldhouse:** This site is under consideration for future use with the potential to add additional room for future students.
- **Indoor Tennis Facility:** This may be developed in conjunction with the proposed new fieldhouse.
- **Softball Field Renovation:** The limited size of the softball field at Vargas Field, which is less than half the size of most neighboring fields, will require improvements to enhance the athletic and social experience.
- **II. Recreation Services Objectives**

The mission of Recreation Services (RS) is to promote overall student wellness through engagement of body and mind. The facilities and space programs designed for fun, fitness, social interaction, competitive sports experiences, and skill acquisition. Recreation Services contributes to campus life by providing opportunities for students to develop meaningful connections to others while becoming part of a healthy student body— one that is focused, self-assured, and academically successful.

At a flagship institution that is competing nationally and internationally for the best students, faculty, and partners, a strong, healthy campus recreation program will complement the university’s academic and research strengths, providing balance and a desirable quality of life that allows people to excel at the highest levels. Stress mitigation, recruiting, community building, and lifelong healthy decisions are the direct benefits of a strong Recreation Services program. To maximize its potential to the campus community, Recreation Services must have the proper resources and support. Flexible, appropriately sized, state-of-the-art facilities (both indoor and outdoor) are the keystone to successful recreation programming.

CU-Boulder has always been known for “educating the whole person.” Recreation Services programs support the university’s mission by providing opportunities for improving health and wellness, developing leadership skills, and building community capacity.

III. Recreation Facilities

The Student Recreation Center draws a wide variety of students for fun, fitness, and organized sport-specific activities. Facilities are open 119 hours per week serving 880,000 student visits annually. Informal and organized recreation programs create a rich and wonderful environment for students to enhance their educational and social experience outside of the academic classroom. Student recreation has six primary types of programs that use the facilities:

- **Drop-in Services.** Those programs, services, and facilities are available for informal use and do not require an additional fee or service charge beyond the mandatory student fee. Spaces and programs supported by the drop-in program include strength and conditioning areas; the ice rink; swimming pools; and the racquetball, basketball, volleyball, and tennis courts.
- **Sport Clubs.** Organized competitive sports teams compete with other universities across the region and nation. Students can participate in 34 competitive sports that include hockey, swimming, rugby, lacrosse, and many other offerings.
- **Fitness and Wellness Programs.** A schedule of more than 150 class sessions per week in a diverse range of fitness and activities (classes are noncredit) are offered for students and members who want to learn a new skill, fine-tune an old one, or simply keep in shape.
- **Intramurals.** Students, faculty, and staff have the opportunity to participate in a variety of competitive men’s, women’s, and coed recreational sports on campus in a safe environment.
- **Outdoor Program and the Challenge Ropes Course.** Programs provides a gateway for students to enjoy the great Colorado outdoors, emphasizing adventure, environmental awareness, education, safety, and a sense of community through single and multi-day trips, tailor-made programs, and events.
- **Event Scheduling.** This office provides services to student clubs and organizations and coordinates with CU Extension Services to provide facilities, staff, and equipment to facilitate successful events and activities.

Within the past five years, base standards for indoor and outdoor recreation have been established by the National Intramural-Recreational Sports Association. Based on current student enrollment, standards indicate that CU-Boulder provides about two thirds of the space suggested for both indoor and outdoor recreation facilities.

### a. Indoor Facilities

The Student Recreation Center is a 235,579-square-foot facility (5,511 square meters), built in 1973 and enlarged in 1990, which includes a wide range of sports, conditioning, and meeting facilities. This facility was state of the art and expanded the construction; it is now outdated and undersized for current campus enrollment and industry standards.

Recreation Services uses additional indoor facilities when available to administer its programs. These facilities include:

- **Carlson Gymnasium (8,609 ASF).** The gym, swimming pool, and exercise room are shared among Intercollegiate Athletics, Recreation Services, and the Department of Integrative Physiology.
- **Clare Small Arts and Sciences Building** and **swimming pool** (4,139 ASF). This facility serves as the background connection between the Student Recreation Center and the Clare Small pool, making access convenient.
- **Bear Creek Commons Recreation Center (4,139 ASF).** This satellite center offers drop-in hours and instructional programs in a weight and cardiovascular area and multipurpose studio.

### b. Outdoor Facilities

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Recreation fields overseen by Recreation Services on campus (totaling 18.8 acres) are:

- **Business Field** (4.1 acres).
- **Farrand Field** (0.5 acres).
- **Williams Village Soccer Fields** (1.9 acres).
- **Kittredge Field** (6.9 acres).
- **Franklin Field** (3.4 acres).
- **Additional outdoor areas** (totaling 3.6 acres) assigned to Recreation Services include:
  - Recreation Tennis Courts (0.5 acres).
  - Coors Event Center Basketball Courts (0.5 acres).
  - Williams Village Tennis Courts (0.9 acres).
  - Williams Village Challenge Ropes Course (1.7 acres).

Outdoor recreation fields require ongoing maintenance. Two days per week are, or should be, reserved for maintenance and rejuvenation of the natural turf. During these days, any scheduled use of the fields is prohibited because overuse will have a negative impact on the surface.

The Department of Housing and Dining Services provides additional outdoor recreation amenities within the Kittredge, Williams Village, and Family Housing complexes. Housing facilities are intended for the use of the adjacent residents to help build community and are not part of Recreation Services.

3. **Recreation Capital Improvements**

Recreation Services will emphasize upgrading and expanding indoor recreation programs through a combination of renovations and additions to existing facilities. Space needs analysis indicates an indoor recreation space shortage of at least 130,000 assignable square feet. Recreation Services will continue to look for opportunities to address the 10-acre deficit in outdoor courts and field space. Future club and intramural sports fields are preferred to be artificial turf to limit schedule impacts due to weather and the need to allow natural turf to rest for proper health. Where possible, lighted courts and fields are desired to allow student participation during evenings when academic commitments are limited. Projects proposed to upgrade or add facilities include:

- **Recreation Center Addition and Renovation.** Renovations to the existing Student Recreation Center would include major upgrades to the existing facility and building expansion to double the strength and fitness areas, install new indoor turf, add multi-activity gymnasium space, and develop an outdoor aquatics/social pool.
- **Sports Fields.** New outdoor club and intramural sports fields would be developed for practice and completion events. Fields could be developed north of Boulder Creek or other location yet to be determined.
- **Tennis Court Replacement.** This project is intended to replace tennis courts that would be displaced with the expansion of the Student Recreation Center. Courts could be developed north of Boulder Creek or other location yet to be determined.

The location, timing, square footage and cost of these proposed capital improvements are detailed in the building plan (V.A). The scope of these improvements is closely related to the size of student enrollment.
Introduction
On-campus housing at the University of Colorado Boulder is provided in residence halls, apartments at Bear Creek for single students, family housing, and graduate housing apartments, all operated by the Department of Housing & Dining Services (HDS). Approximately 7,250 students are housed in these facilities.

At the start of 2010–11 academic year, residence halls accommodated most of the freshman class and some additional students, for a total of 6,044 beds. Bear Creek apartments have capacity of 977 student beds. There are 808 family housing units; approximately 525 students are married, or reside with parents or guardians in the local area.

There are 808 family housing units; approximately 525 students are married, or reside with parents or guardians in the local area.

In addition to sleeping rooms and apartments, space and facilities are provided in housing areas for class-rooms, dining, studying, meetings, recreation, and other student activities. With an additional 1,000 student beds due to be in place in 2011, the surge space of 395 beds in Athens North Court and at College Inn could be used for family housing programs or decommissioned. Out of the total 29,718 students (fall 2009), 24 percent are married, or reside with parents or guardians in the local area.

The Flagship 2030 vision put the creation of residential colleges (Flagship Initiative 1) at the very foundation of its strategy to transform the undergraduate educational environment at the University of Colorado Boulder. This is the logical extension of the creation of Residential Academic Programs, in which students attend classes in the residence halls. These programs are especially effective for first-year students as they navigate the transition from high school and home to the challenges of university life.

With the growth in the number of incoming students in recent years steadily increasing in housing capacity at CU-Boulder, the residential population has become dominated by first-year students, peaking at 94 percent near the end of their first semester. This has become a critical issue for non-first-year students (academics, leadership training, and integration of lifestyle choices with life ambi-
tions), far beyond simply addressing concerns about behavior. The clear vision of developing the residential college system is creating a holistic culture centered on the academic mission.

CU-Boulder housing campus is generally full, due to the high cost of off-campus Boulder housing and the freshman residency requirement which mandates that freshmen live in the residence halls. Students may petition the HDS for an exception to this requirement if they are married, or reside with parents or guardians in the local area.

Through the master planning process, CU-Boulder solicited input from various campus groups on residential life, HDS recommended the following goals that are to be achieved by 2020:

• Provide housing that promotes the residential colleges initiative of Flagship 2030 with emphasis on developing living and learning communities in the residence halls. This goal will require that the physical, intellectual, and social environments of residences be structured to become centers of learning and providing services that help students become successful in the university. There are currently approximately 250 student residents, and a goal for the next decade is 500.

• Provide facilities for student activities that promote personal growth and social interests as defined in Residential Campus 2020. Renovations of existing facilities and development of new residence halls need to include program elements to address the social needs of the residents. Elements include informal interior spaces for student use near where they live. Common community spaces enhance the housing experience. Common community spaces enhance the housing experience. Common community spaces enhance the housing experience.

• Provide open space, recreational, and childcare opportunities that enhance the experience of students during their academic career on campus. Merely warehouse-style student housing is not sufficient. Students need passive and active recreation spaces near where they live. Common community spaces enhance the housing experience. Common community spaces enhance the housing experience. Common community spaces enhance the housing experience. Common community spaces enhance the housing experience.

• Develop and maintain undergraduate housing capacity in the residence halls that is no less than the current percentage of freshman plus 20 percent for returning upper-division students (revised percentage from Residential Campus 2020). During the past 10 years, CU-Boulder housing capacity has at times been barely adequate to meet the current housing needs. In order to achieve the goal of housing freshman students as well as 20 percent of additional upper-class students, CU-Boulder will need to add a minimum of 900 beds over the next 10 years. Due to steady enrollment growth patterns and the cost of constructing new housing units, there are times that housing capacity may be below the capacity goals. Additional beds capacity will need to be added in balance to minimize the extremes of significant under or overcapacity situations.

• Replace outdated graduate and family housing facilities and maintain a capacity that provides housing for up to 20 percent of the graduate student population (and increasing student populations). Due to the age and condition of existing family housing facilities this is becoming a high priority for HDS. The cost of maintaining these facilities is rapidly reaching a point that it could exceed the income generated. Due to high cost and large scope of replacing the entire existing housing on campus. Public/private partnerships need to be considered to meet this need.

• Provide facilities for student activities that promote personal growth and social interests as defined in Residential Campus 2020. Renovations of existing facilities and development of new residence halls need to include program elements to address the social needs of the residents. Elements include informal interior spaces for student use near where they live.

• Address the high cost of housing in the Boulder community for faculty, staff, and graduate stu-
dents through the redevelopment of the existing and family housing facilities.
The intent is to more fully engage students as active opportunity to have a Faculty-in-Residence (FIR) apart-
family who have offices within the hall, and an array of life. The RAPs are academic programs located within help first-year students make the transitions to university re-creating a culture that is attractive to non-first-year students. It is essential that amenities be added to rooms in and also capture underutilized space in the residence halls. This will require adding amenities for social activities and study spaces to make these facilities more attractive to returning students.

The second driver is the broad campus initiative toward a residential campus model, including development of residential colleges and the expansion of the current RAPs as discussed above. These programs have been shown to increase the involvement, academic performance, and satisfaction of undergraduate students, and transform the student culture. The university is committed to providing this opportunity to all incoming stu-
dents. Key to a successful residential campus strategy is attracting sophomores, juniors, and seniors to live on campus in the residence halls. This will require adding amenities for social activities and study spaces to make these facilities more attractive to returning students.

Current bed inventory needs to have amenities added and also capture underutilized space in the residence halls. It is essential that amenities be added to rooms in order to attract students to continue to live on campus. Features that would attract students to remain or return to the halls include: semi-suites for much of the area depending on the final building layout and density of the redevelopment. Redevelopment of the area north of Boulder Creek will require significant infrastructure work. New heat-
and cooling systems for the district will need to be provided. A significant area of redevelopment of the area is the need for flood mitigation that requires overbank excavation and fill of development areas. New utility infrastructure will be required for much of the area

3. Graduate/Family Housing

Private sector development has historically provided a significant number of apartments for CU-Boulder students, faculty, and staff. It is possible that the demand for non-freshmen single student, faculty, and staff apartments could be handled through private sec-
tor development in Boulder County and the surround-
ing communities. A significant concern is the limited availability of land close to campus for private sector residential development and the impact that private development may have on transportation infrastructure and community sustainability goals.

The draft Residential Campus 2020 Facilities Renovation and Renewal Plan for Housing & Dining Services iden-
tified the Kittredge Complex as the first area designated for renovation. HDS will complete the renovation of the first four residence halls in this area by August 2011, including the addition of a new wing on Smith Hall. Planning for renovation of the final buildings in the area, Kittredge West and Kittredge Commons, was started in late 2010.

c. New Residence Halls

The current projected freshmen student enrollment for fiscal year 2011 is 5,130 students with growth projected to 5,611 freshmen by 2020. The projected growth in the number of freshmen, the addition of new international student recruits, the strong desire for increasing the number of learning experiences in the residence halls to at least 20 percent of the total occupancy, and the number of student staff (RAPs) in the residence halls indicate a deficit of approximately 228 beds to house all of the incom-
ing and returning students in the next 10 years by approximately 800 to 1,000 beds.

The added bed capacity is proposed to be provided primarily by the construction of residence hall type housing. HDS prefers to focus on this type of housing with the Residence Life components that build student community and style housing for undergraduate students is not anticipated to be expanded beyond the current capacity of the Bear Creek Apartments.

d. Infrastructure Improvements

To support the residential growth and renovation of resi-
dential facilities, utility infrastructure will need develop-
ment. The existing Power House does not have chilled water capacity to serve residence halls in the central campus area as they are renovated or new buildings added with cooling. Development of a new chilled water supply and distribution will be required to service the Kittredge facilities and the residence halls in the area of Farrand Field.

The Williams Village Heating Plant has capacity to serve additional growth but equipment is aging and may require replacement within the 10-year planning period. Development of housing east of Bear Creek will require development of roadways and utility services to support the new housing.

Rewind: The area along Boulder Creek is commonly referred to as “family housing,” current programs designed to support unique cultural needs of students. It is to provide an environment that will foster social and academic growth of students during their academic careers. Developing communities in the range of 200-300 apartments, each with unique identity, will allow for developing a sense of security for the residents.

a. Existing Graduate/Family Housing

The area along Boulder Creek is the core of the univer-
sity’s Apartment Life and Child Services programs. This housing program serves graduate and undergraduate students, faculty, staff, part-time doctoral candidates, and visiting scholars/faculty. Along Boulder Creek between 17th and Folsom Streets (about nine blocks), 595 units are available through public-private partnerships. Housing stock in this area is 40-70 years old and needs to be replaced during the planning period. An additional 228 apartment units are available at Simley Court, in the East Campus area. Of the 810 total family housing units, 50 (6 percent) are studio, 299 (37 percent) are one-bedroom, 433 (54 percent) are two-
b edroom, 27 (3 percent) are three bedroom and, 1 (less than one percent) has four bedrooms. While this housing is commonly referred to as “family housing,” current records indicate 34 percent of the units contain single student occupants, 25 percent family houses without children, and 24 percent have families with children. Rental rates are targeted to be around 80 percent of the typical market rate for the Boulder area. Residents of the units appreciate the low rents, and accept the somewhat sub-standard quality units because of the convenience to campus and a strong sense of community. The current graduate/family housing community at
CU-Boulder is the largest multicultural community not only on campus, but in Boulder County. Desire to develop the East Campus may place pressure to relocate the Smiley Court students near the end of the current planning period. Built in the mid-1960s, Smiley Court facilities are considered to be the better of the current planning period. Smiley Court—while maintaining a minimum of 400 units in the area during redevelopment.

In the Williams Village area, the Master Site Development with some of the units being priced at market rates. A similar density and is priced based on unit type, with no price variation for location, site amenities, etc. The current projections of graduate enrollment by the end of the planning period would result in 20 percent of graduate students would indicate a need to provide graduate housing for 1,500 to 1,200 graduate students. Following an historic average of graduate students per unit, this would indicate a need for 1,000 to 1,090 apartments required for graduate student housing. Currently all of the family housing stock is developed at a similar density and is priced based on location. The market has some flexibility to accept more price variation with some of the units containing lower market amenities. Also, the market might accept a portion of the gradu-ate housing that could be developed at much higher densities to provide more affordable units. Developing graduate housing at much higher densities could be successful if close access to complimentary services and support facilities is available to the population and would not require dependence on personal vehicles. HDS would like to develop communities ranging from 200 to 300 apartment units, each with differing character and amenities. Offering a range of housing densities and locations provides options and choices that currently do not exist on campus for such a diverse market.

With an increase in recruitment of international students, some consideration should be given to the cultural needs of these students as new housing is developed. In addition to offering programs to acculturate new students to the local culture, varying housing types could provide attractive amenities. Developing physical spaces that facilitate and enhance interaction along with providing a range of spaces to facilitate community building and other educational activities will have a positive impact on all residents (students, partners and spouses, children, faculty, and staff) coming from throughout the United States and from across the world. Also, those who may be reduced as international students often stay in Boulder year round, rather than return home for holidays and academic breaks. The current projection for the graduate student growth demonstrates a need for approximately 1,000 graduate and family apartments at CU-Boulder. HDS plans to address the need to replace its aging buildings by the following suggested 20 to 30 year development sequence for graduate and family apartments:

- Construct new graduate and family housing facilities at Williams Village or underdeveloped areas north of Boulder Creek: approximately 200 units.
- Construct new graduate and family housing facilities on the East Campus: approximately 200 units.
- Redevelopment of the area north of Boulder Creek has potential to create partnerships within the university community as well as with the city of Boulder Valley School District (BVSD), Nanopa University, the private development community, and other affordable housing providers. Within the university, HDS development of new housing units could include academic spaces for faculty offices and classrooms, particularly on the ground level of new residential facilities. Student recreation spaces along changes to the intercollegiate athletics area should be considered for the development of the floodways. Partnerships with the city of Boulder, urban drainage, and flood control should be used to coordinate floodway improvements and improvements to pedestrian and vehicular corridors. There continues to be an expressed need for the region to have a conference center that serves the city of Boulder and the university. Partnerships between the city, university, and the private development community, and other affordable housing providers need to be explored. Development of alumni housing could be an additional private partnerships opportunity to help subsidize affordable housing for student, faculty, and staff.

5. Dining Facilities

All students in residence halls can purchase meal plans that allow them to eat in any of the housing dining centers on campus. Significant improvements have been made to the dining centers on the Main Campus over the past 10 years. The most significant was the opening of the Center for Community (C4C) dining center in the fall of 2010. The C4C project was designed to provide student-athletes at facilities 33.4 miles away from Smiley Court. The C4C project was designed to provide student-athletes at facilities 33.4 miles away from Smiley Court. The C4C project was designed to provide student-athletes at facilities 33.4 miles away from Smiley Court. The C4C project was designed to provide student-athletes at facilities 33.4 miles away from Smiley Court. The C4C project was designed to provide student-athletes at facilities 33.4 miles away from Smiley Court. The C4C project was designed to provide student-athletes at facilities 33.4 miles away from Smiley Court. The C4C project was designed to provide student-athletes at facilities 33.4 miles away from Smiley Court. The C4C project was designed to provide student-athletes at facilities 33.4 miles away from Smiley Court.
ity is nearly 50 years old and the building configuration would make it difficult to convert to a food court system, the current alternative. The opening of the new Williams Village North residence hall in 2011 will place Darley Commons at capacity. If more residence hall beds are added to Williams Village, an expanded dining center may be required.

Development of undergraduate housing on the East Campus or north of Boulder Creek would require new dining facilities. Should expansion of undergraduate housing be done through infill and redevelopment of the Main Campus area, it is likely that modifications will be required to increase capacity of existing dining facilities to accommodate the increase in housing.

6. Conference Services

a. Lodging

CU Conference Services (CUCS) utilizes student housing and classroom spaces in residence halls and academic buildings during the summer months. Currently, CUCS hosts approximately 120 conferences per year. Revenues generated through these conferences help to lower room and board rates for students the rest of the year. Improved housing facilities offer the opportunity to bring new conference groups to campus. Critical considerations in site selections for conference organizers include air-conditioning, availability of some private baths, and meeting spaces that are close to housing locations. The development of semi-suites in renovation projects to attract upper division students will also support the needs of conference groups. Air-conditioned buildings in the Kittredge and Williams Village complexes will support conference needs as well.

Chief among those improvements is the addition of individual room temperature controls with air-conditioning, which is highly desirable to study IVA, and has the benefit of allowing the buildings to be used for summer conference activities. Renovated bed space by itself is insufficient to significantly increase conference revenue; the key is additional and appropriate meeting space.

b. Multi-Purpose Spaces

Adequate meeting space is a critical component to attracting new conference business. Williams Village is currently the only housing area to offer air-conditioned rooms. In a complex with 1,100 beds, there are six meeting rooms. One has a capacity of 40, four have a capacity of 40, and one has a capacity of 20. Conferences are not willing to incur the extra expense of using the Housing Center. The opening of new Williams Village North residence hall space. Additional facilities are not anticipated for the office and administrative functions of this group. The development of additional multi-purpose spaces for Residence Life use, consideration of CUCS should be made including providing storage space for equipment and materials related to the conference needs.

c. Operations and Maintenance

Maintenance and service centers are located in two structures on the East Campus, most of it (31,500 assignable square feet) in the Housing System Maintenance Center (HSMC). The Housing Systems Service Center (HSSC) is 36,609 assignable square feet that are currently underutilized. Consideration should be given to relocating HDS maintenance activities from this facility and make it available for use by other campus entities. Several other service buildings are located in housing areas to provide grounds and maintenance support. Since the HSMC is relatively new, maintenance facilities for the Department of Housing & Dining Services are adequate, but some may need to relocate or add space as additional housing is developed and the service center area develops north of Boulder Creek on East Campus. Growth needs could either be met thought new construction on the east side of Boulder Creek. The new building development should consider office and staff break rooms, storage and support spaces for operations, and maintenance services dedicated to each community.

d. Housing-Information Technology

HDS operates and maintains its own computer network and servers to support student residents and the administration and operations staff. The operations and server facilities are currently located in the Kittredge Commons facility and will require relocation to accommodate the planned replacement of Kittredge Commons. Server needs could be combined with other campus IT needs and offices relocated to East Campus, in close proximity to HSMC. This computer network data center of servers and distribution cabling requires a stable environment and an ongoing program of improvements to maintain current with technology and meet the capacity demands of the growing HDS business needs and overall IT systems.

7. Housing Support Facilities

a. Administrative

HDS central administration offices have recently been relocated to the new Center for Community. With this move, no significant additional administrative needs are projected. The redevelopment of family housing should consider providing office space for administration of the graduate/family housing programs. Renovations of existing residence halls and development of new residence halls should consider administrative needs of Residence Life programs in each community including the addition of a 24/7 front desk and office space areas for counseling of students.

b. Conference Services

New administrative offices for CUCS will be provided with the opening of the new Williams Village North residence hall. Additional facilities are not anticipated for the office and administrative functions of this group. The development of additional multi-purpose spaces for Residence Life use, consideration of CUCS should be made including providing storage space for equipment and materials related to the conference needs.

c. Operations and Maintenance

Maintenance and service centers are located in two structures on the East Campus, most of it (31,500 assignable square feet) in the Housing System Maintenance Center (HSMC). The Housing Systems Service Center (HSSC) is 36,609 assignable square feet that are currently underutilized. Consideration should be given to relocating HDS maintenance activities from this facility and make it available for use by other campus entities. Several other service buildings are located in housing areas to provide grounds and maintenance support. Since the HSMC is relatively new, maintenance facilities for the Department of Housing & Dining Services are adequate, but some may need to relocate or add space as additional housing is developed and the service center area develops north of Boulder Creek on East Campus. Growth needs could either be met thought new construction on the east side of Boulder Creek. The new building development should consider office and staff break rooms, storage and support spaces for operations, and maintenance services dedicated to each community.

8. Residential Capital Improvements

The Department of Housing & Dining Services (HDS) completed a comprehensive review of current facilities and outlined priority for renovations in order to support the development of the Residential Campus 2020 concept. Additional bed spaces will need to be added during the next 15 years to accommodate the increase in non-freshman students, particularly sophomores who choose to participate in these programs. The current renovation plans include improving residential, community, faculty office, classroom, seminar, and tutoring spaces, as well as group and private study spaces. These improvements will result in an integration of academics and Residence Life within the residential living space.

Based on the preceding analysis, the space deficits identified in IVA, and the need for up-to-date facilities, many residential capital projects are needed in the next 10 years. The following list includes projects over $2 million, square footage, and cost estimates for these projects are detailed in Exhibits V-A-1 and V-A-3 later in this plan. Since this is a 10-year list, several of these projects have not yet been authorized to proceed with a program plan. Some of the new buildings may be done as private developments rather than as public projects.

• Central Campus Complex Renovation. Repair and replacement of deteriorating equipment and systems. This will occur in multiple residence halls in the central campus area, starting with Baker Hall.

• Children’s Center (Childcare) New Facility. Development of a replacement facility for the Family Housing Child Care programs.

• Darley Commons Renovation and Replacement. Repair and replacement of deteriorating equipment and systems, redevelopment of kitchens and dining areas, and development of multi-purpose spaces in support of academic programs and conferences housed at Williams Village.

• Dining/Community Center. Creation of a new 750- seat dining center to support additional undergraduate student beds.

• Family Housing north of Boulder Creek. Development of a yet-to-be-determined number of apartment style housing units for families, graduate students, faculty, and/or staff. Development will include roadway and utility infrastructure to support development north of the Boulder Creek. In addition to housing, it is anticipated that development of athletic, recreation, academic, and other community facilities could occur in the area.

• Kittredge Complex Renovations. Repair and replacement of deteriorating equipment and systems. This will occur in Kittredge Commons and Kittredge West residence halls. Program plans have been started for both of these facilities.

• Undergraduate Housing. Development of new residence halls to accommodate up to 1,500 additional undergraduate student beds.

• Williams Village III—East of Bear Creek. Development of 200 apartment/townhome style housing units for families, graduate students, faculty, and/or staff. Development will include roadway and utility infrastructure to support construction on the east side of the creek.
G. Other Land Use Areas

Two other land use areas exist within the Boulder Campus—natural areas and undeveloped areas. This section briefly describes how these areas will be used and developed.

1. Natural Areas

Natural areas are portions of the campus that are preserved from development because they are unsuitable for development; are a part of a floodway mitigation plan; provide significant habitat or riparian protection; provide a buffer from undesirable noise, traffic, or use; or are a significant part of the historic heritage of the university. These spaces range from the park-like settings of Norlin Quadrangle and Varsity Lake to the constructed wetlands of the East Campus and Williams Village.

Natural areas constitute approximately 94 acres, which is 17 percent of the developed three-campus area. Exhibit IV-G-1 indicates the defined natural land use areas. Natural areas presently exist on significant portions of CU-Boulder South and the Mountain Research Station; however the land use planning has not occurred to define them.

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Open space development guidelines are covered in Section V-C, Outdoor Areas Plan, which describes guidelines and standards for preserving open space as well as how new open space will be developed in areas like the East Campus and north of Boulder Creek.

2. Undeveloped Areas

Undeveloped areas are portions of the campus that are reserved for development through this plan and previous planning efforts. These areas have been established to meet any of the growth needs of the institution as defined in the previous sections.

Undeveloped areas constitute a total of 47 acres on the three developed campuses. Of these, only one acre is considered undeveloped on the Main Campus and that is a parking lot west of Broadway in the University Hill district. This lot is developed as a parking lot but has no associated use attached to it.

The bulk of the undeveloped property on the Boulder campus is located on the East Campus (36 acres) and at Williams Village (11 acres). Exhibit IV-G-2 indicates the areas of campus considered to be undeveloped. By definition, once development occurs in these areas, they would no longer be undeveloped and would move into one of the other land use categories; thus there are no projects associated with this land use.

CU-Boulder South is not considered an undeveloped land use because the entire property is being reserved as a land bank for future generations. A conceptual land use assessment conducted in 2002 indicates that up to 212 acres might be suitable for some form of development but without planning such as has been done for the three developed campuses, land use areas as used in this Master Plan cannot be assigned.

Temporary uses may occur on undeveloped land. For example, the Department of Intercollegiate Athletics has a field throwing area for shot put and hammer tosses adjacent to Potts Field. Prior to the construction of the Jennie Smoly Caruthers Biotechnology Building, there was also a running area south of the parking lot for the running track. These are considered interim uses and agreements for their placement include provisions for vacating any improvements when a higher and better use is found. Any interim use may be placed in undeveloped areas without amending this master plan.