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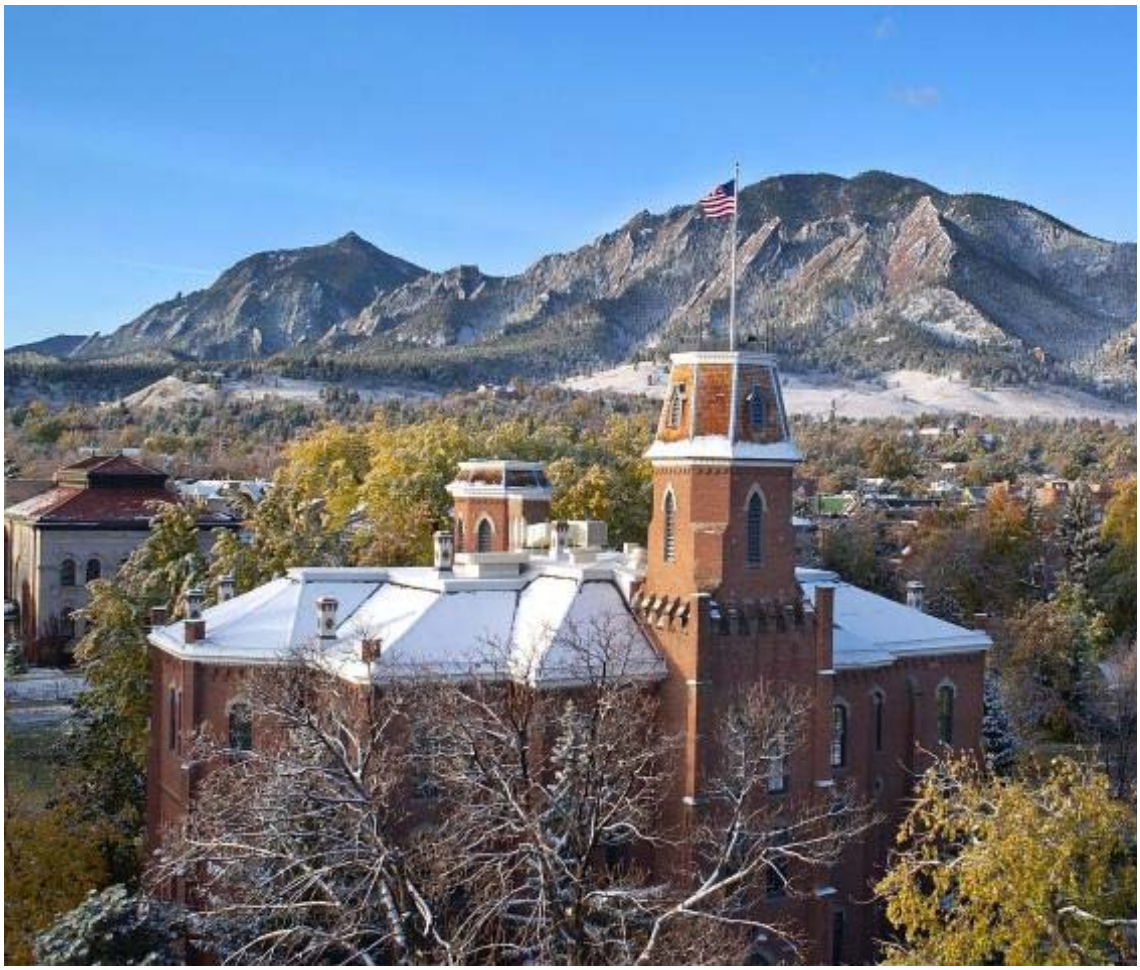
TASK FORCE REPORTS

CAMPUS MASTER PLAN



Colorado
University of Colorado at Boulder ™

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REPORT OF THE MASTER PLAN TASK FORCE ON

EAST CAMPUS VISION

"The architectural effect aimed at is a group effect—the effect of the whole rather than of its parts."

—Architect Charles Z. Klauder, originator of CU-Boulder's Tuscan vernacular style

Campus Master Plan: The East Campus Vision Subcommittee Findings

1. Introduction

The time for an East Campus at CU-Boulder has come. Our Main Campus is almost entirely built out, enrollment is rising rapidly, research facilities are cramped and often outdated, classrooms are full, residence halls are full, and campus amenities such as recreation facilities are reaching capacity. The East Campus is 197 acres of developable land, with a potential for over 4 million square feet of new building space. Fully developed it will expand CU-Boulder's campus by roughly 60% in area and building capacity. It is equidistant from Mathematics to Hale, and from Mathematics to the East Campus. While adapting to the idea of a West and East Campus will not be easy, it is necessary if CU is to grow and meet the needs of the people of Colorado. This report outlines the findings of the East Campus Vision Committee. Our task was to envision how this new campus will look and function, and how it will meet campus needs for the coming decade, and beyond.

The East Campus is a beautiful, raw, unpainted canvas. Its natural beauty is impressive, with Boulder Creek, lined with mature trees, running through largely undeveloped land. Its potential as a home for higher education is equally impressive. Physical spaces help to create intellectual synergies; in the East Campus we have an opportunity to create spaces that will build upon CU's considerable strengths in cross-disciplinary and interdisciplinary teaching and research, providing a new infrastructure for a new future, and a CU-Boulder ready for the challenges of its next 150 years.

2. Physical Setting

The East Campus is located two blocks east of the Main Campus. The East Campus is generally bordered by 30th Street on the west, Arapahoe Avenue on the north, Foothills Parkway (which links to Denver via U.S. Highway 36) on the east, and Colorado Avenue on the south.

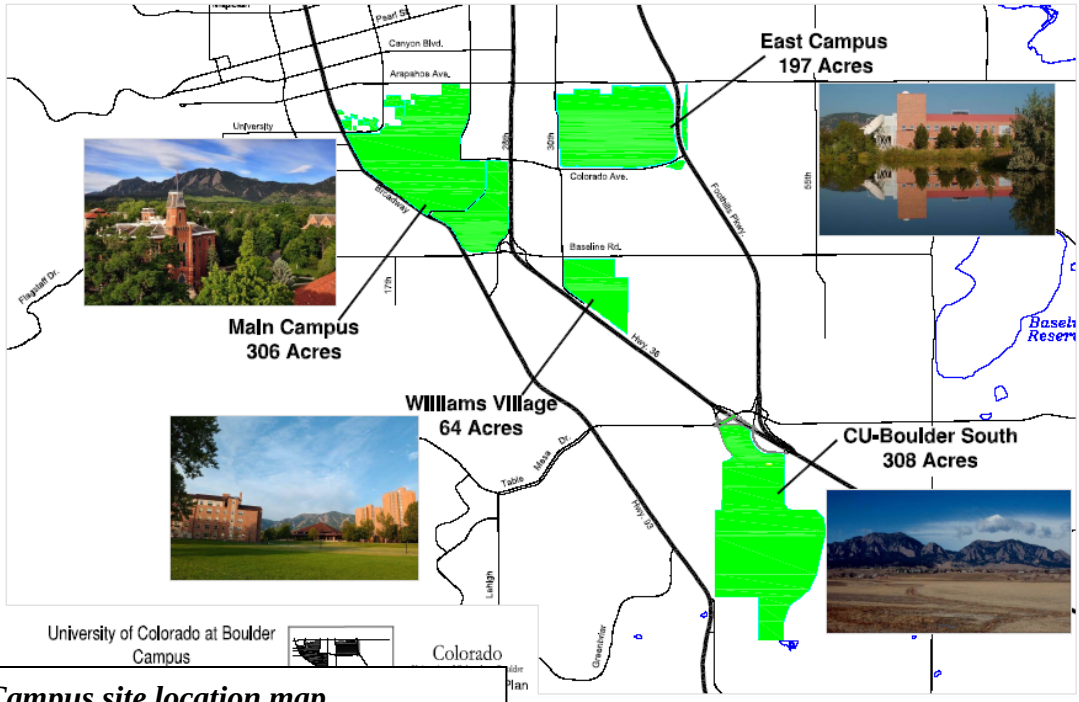


Figure 2.1: Campus site location map.

The East Campus was purchased in 1955. It has been reduced in size from the original 220 acres when it was acquired to 197 acres today, with conveyances of rights-of-way used to construct city streets and Foothills Parkway. All of the East Campus east of Foothills Parkway, 4.3 acres, was allocated by the university to the Boulder Open Space Program as a preserve; however, CU-Boulder still owns this land.

Boulder Creek flows diagonally across the northern third of the site. The property to the south of the creek was significantly modified during the development of the Research Park and is largely out of the 500 year flood plain. The area north of the creek is heavily impacted by flows running down Arapahoe Avenue that return back to the creek channel in this area. The City of Boulder is restudying the creek using new mapping and provided the committee an initial draft of the new flood plain maps. This new mapping indicates that more water is flowing back to the creek through the East Campus and less is moving down Arapahoe east of 30th Street. Figure 2.2 indicates the extent of flooding.

Some CU research activities are conducted on the East Campus, at the Laboratory for Atmospheric and Space Physics (LASP), the Center for Astrophysics and Space Astronomy (CASA), the EPO Biology Greenhouse and soon at the Systems Biotechnology Building now under construction. Wetlands near Boulder Creek provide nature study opportunities.

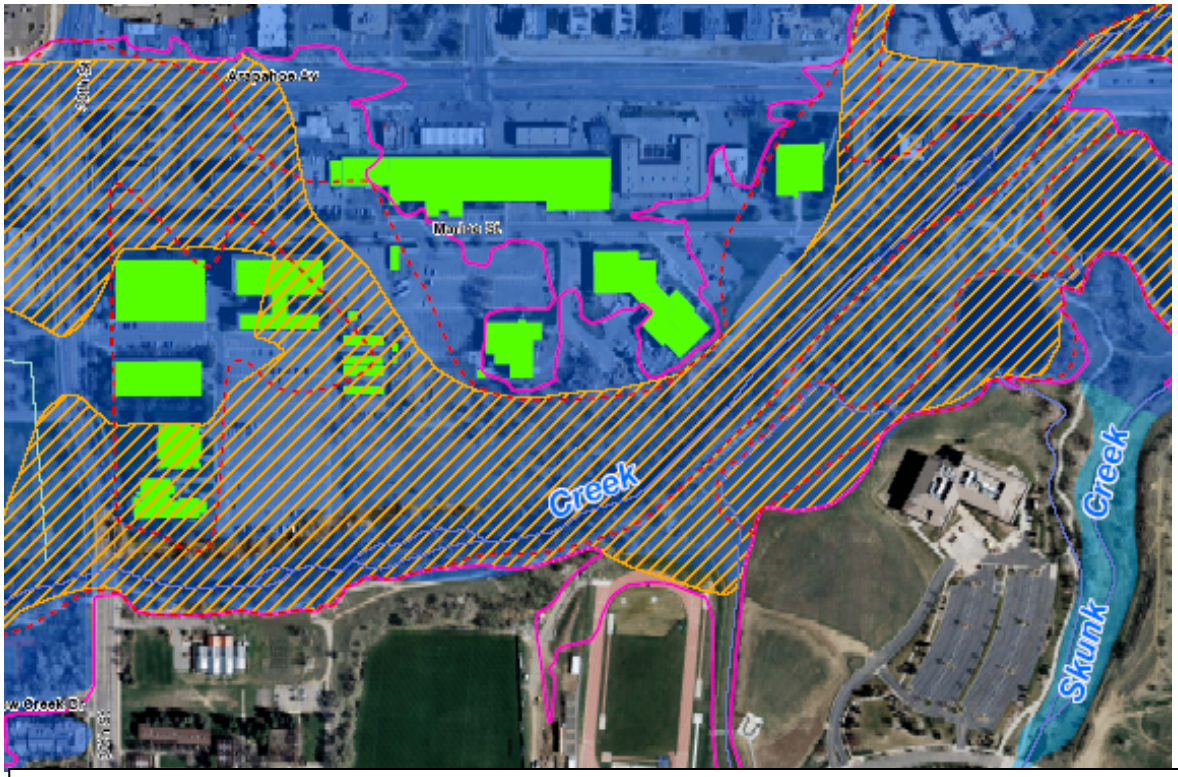


Figure 2.3: The flood plain mapping for a portion of Boulder Creek through the East Campus. The blue shaded area is the existing flood plain. The solid pink line is the proposed flood plain and the hatched area is the flood conveyance zone where structures should be avoided.

About 27 acres remain undeveloped in the East Campus and some developed parcels can be increased. The original development plans called for 1.6 million GSF to be to be built in the East Campus. With the completion of the Systems Biotechnology Building, the square footage will be just over the half-way mark.

In addition to the East Campus, Smiley Court is approximately 13.3 acres with 230,000 GSF of apartment space. Potts Field is approximately 6.5 acres and has 6,400 GSF in miscellaneous support buildings.[1] North of Boulder Creek on the East Campus, the university has 564,000 GSF in 17 buildings ranging from the six-story ARCE to several storage sheds.

Prior to the work of the East Campus Vision Task Force, Facilities Planning analyzed the development potential of the East Campus and determined that 2.5 million GSF could be built south of Boulder Creek without significant infrastructure improvements and 3.2 million GSF could be constructed if one sanitary sewer line was improved. North of the creek, the ultimate capacity is 800,000 GSF, thus the total East Campus carrying capacity is approximately 4 million GSF.

Subsequent to this and as a part of the planning of the Systems Biotechnology Building, Robert A.M. Stern was hired to provide a conceptual illustration of what 4 million GSF might look like if constructed using planning principles of the Main Campus. The resulting plan, shown in Figure 2.3, illustrates a campus of buildings surrounding quadrangles and green spaces. The curvilinear street system from the 1987 plan is abandoned in favor of extending the urban grid through the campus.

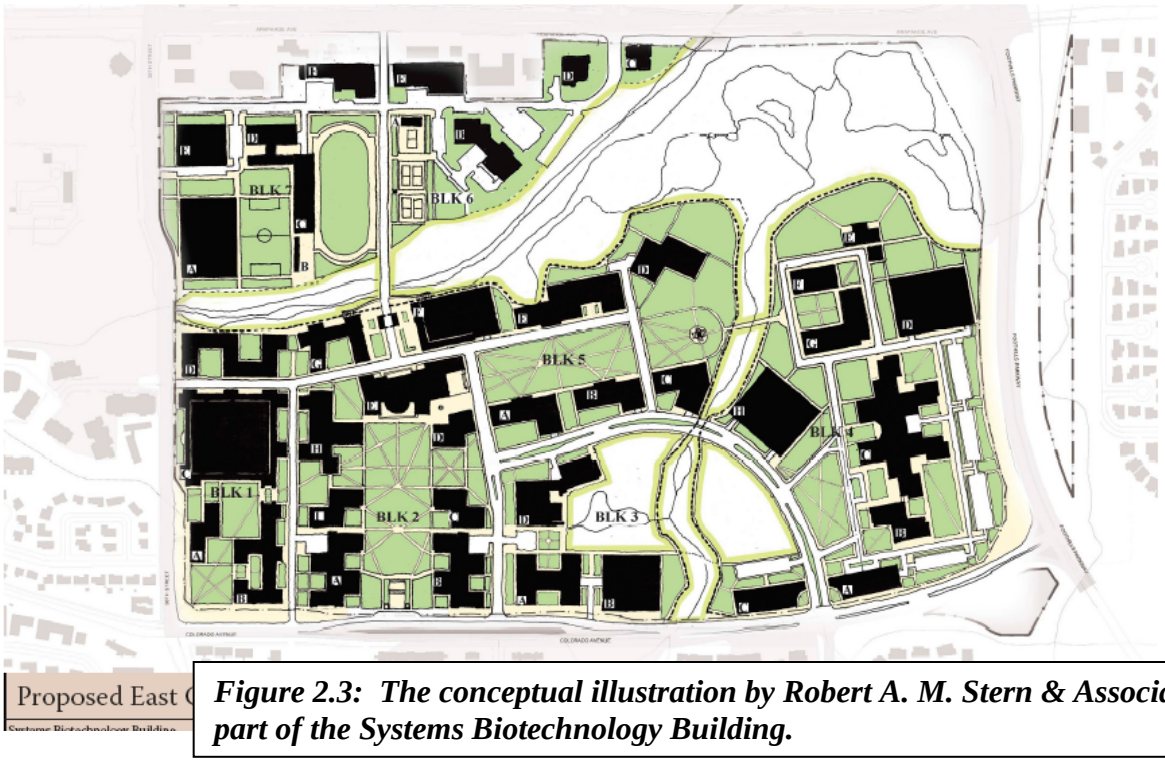


Figure 2.3: The conceptual illustration by Robert A. M. Stern & Associates done as a part of the Systems Biotechnology Building.

[1] Prentup Field is considered Pod B of the Research Park.

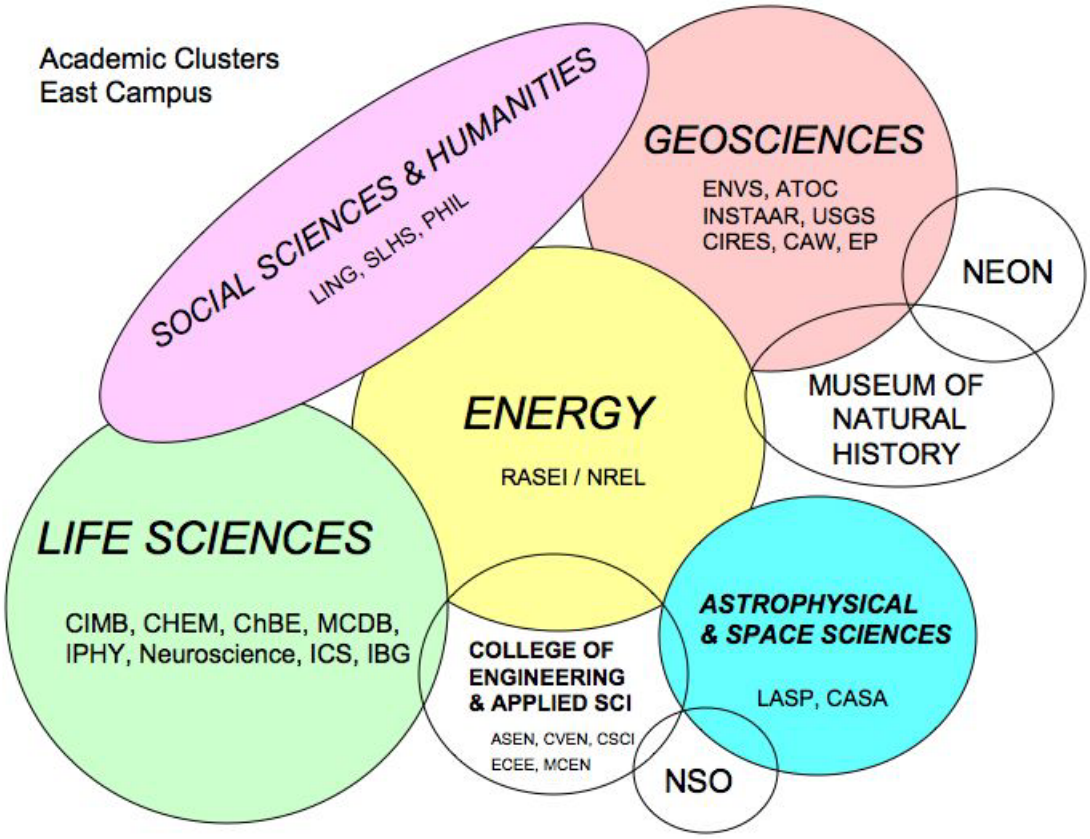
3. Guiding principles:
The East Campus Vision Subcommittee met as a whole several times over the Fall and Spring of 2009-10. Subgroups, tasked with specific questions, held additional meetings. Numerous meetings were held with various campus stakeholder groups, and meetings were held with all of the Deans or their representatives. Every effort was made to give all who wanted to contribute a chance to do so, and to carefully consider all opinions.

Based on the information, opinions, and data collected, the East Campus Vision Subcommittee makes the following recommendations.

3.1 Overall Vision
We envision the East Campus as physically resembling the Main Campus, with buildings organized in grids around green spaces. The physical beauty of Colorado should be on display, and buildings should not be so tall, nor too densely positioned, as to cut off views. We envision shared buildings that promote cross-disciplinary interactions, and clusters of academic units that physically represent the academic strengths of the University. We envision an efficient campus that models sustainability, helping to generate its energy needs, and recycling its waste. We envision an environment where students learn and live. We envision a campus that complements Main Campus, while growing and evolving into its own, unique identity.

3.2 Academic Clusters
Research clusters of similar interests should drive groupings of units on East Campus. This will help maintain existing, and build new, cross-disciplinary research and teaching. There are several existing units located on East Campus that can serve as nuclei for developing clusters of research and academic areas, as well as new groups that would benefit from interactions with the other clusters. The suggestions about possible units to be included in these clusters are not indications that a particular unit currently has plans to move, but that the inclusion of the unit would make programmatic sense in developing collaborative research and teaching efforts in the future. In reality, not all units will be interested in or able to move, but rather than make those decisions in this proposal, we simply present a theoretical model for consideration.

The following model proposes five main clusters (highlighted) with an estimated 1 million new ASF, plus some additional units that represent possible opportunities or moves (open circles).



- **Life Sciences** (estimated 3 buildings; ca. 400K ASF)
  - Caruthers Biotech building as nucleus (houses *Biochemistry Division*, Department of *Chemical and Biological Engineering* [ChBE], and the *Colorado Initiative in Molecular Biotechnology* [CIMB])
  - Proposed Chemistry and Life Sciences Building [CLS] adjacent to Biotech (to house Department of *Chemistry and Biochemistry [CHEM]*, Department of *Integrative Physiology*, possibly faculty in *Neuroscience* from the Department of Psychology and Neuroscience).
  - Companion wings or buildings could house combinations of the following units that would interact with those in Biotech and CLS: Department of *Molecular, Cellular and Developmental Biology* [MCDB], *Institute of Cognitive Science* [ICS], *Institute of Behavioral Genetics* [IBG]. Housing for these units may be planned as wings added to the CLS or biotech buildings, or perhaps an additional stand-alone building.
- **Geosciences/Environmental** (estimated 2 new buildings totaling about 200K ASF, plus 200K existing space in MacAllister or Sybase)
  - Proposed Geosciences building and adjacent MacAllister building (collectively housing *Institute of Arctic and Alpine Research* [INSTAAR], *US*

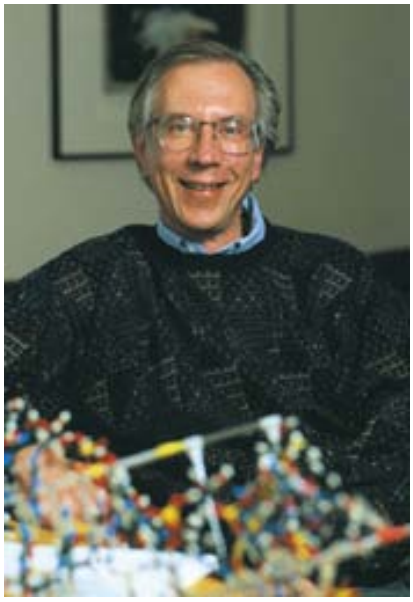
Geological Survey [USGS], Program in *Environmental Studies* [ENVS], Department of *Atmospheric and Oceanic Sciences* [ATOC], *Center for the American West* [CAW], the *Environmental Program*, and the *Center for Science and Technology Policy Research* [CSTPR] which is part of the Cooperative Institute for Research in Environmental Sciences [CIRES])
    - possible additional building or wing to house CIRES as a whole, including CSTPR.
- **Energy** (estimated 1 new building, ca. 125 ASF)
    - new building to house the *National Renewable Energy Laboratory* [NREL], and the *Renewable and Sustainable Energy Institute* [RASEI].
    - Note: some of RASEI is proposed in the current program plan for Geosciences, but we recommend that the institute be housed in its entirety in an Energy/NREL building.
- **Astrophysical and Space Sciences** (estimated 1 new building, ca. 125K ASF)
    - existing buildings now house the *Laboratory for Atmospheric and Space Physics* [LASP], and the *Center for Astrophysics and Space Astronomy* [CASA] which is part of the Department of Astrophysical and Planetary Sciences [APS]. It is anticipated that these units may wish to add an additional building, or a wing onto existing buildings.
    - Note: we are not proposing to locate the department of APS, Physics or Aerospace to East Campus, mainly because of equally strong ties these units have to units that will remain on main campus, such as the Joint Institute for Laboratory Astrophysics [JILA] which is a joint institute with the National Institute for Standards and Technology [NIST].
- **Social science and humanities** (estimated 1 new building, ca 100K ASF)
    - Proposed building to house Department of *Speech, Language, and Hearing Sciences* [SLHS], Department of *Linguistics*, Department of *Philosophy*. SLHS does collaborative research with the cognitive and neuroscience disciplines in the Life Sciences cluster, as well as with Linguistics. Philosophy has interactions with those in several areas, such as bio- and environmental ethics, which would promote connections with faculty in the Geoscience, Energy, and Life Science clusters.

In addition to the 5 clusters, we would like to make note of other possible buildings that might be considered for East Campus.

- *Museum of Natural History*. Although there are strong ties to the Departments of Anthropology, Geological Sciences, and Ecology and Evolutionary Biology [EBIO], all of whom will remain on main campus, the Museum also projects needing a new facility that has better access for the public and occupies a larger footprint than it currently has. Therefore it may be a candidate for East Campus. The Museum could foster additional ties with the Life Sciences, Energy, and Geosciences clusters on East Campus.
- *College of Engineering and Applied Science*. This was not specifically proposed by the college, but as space continues to be a challenge, there may be a time when the entire college wishes to consider relocating to East Campus. This would bring the Department of ChBE (in Biotech building) back in proximity to its cognate engineering disciplines.

- *Teaching building.* As new buildings develop on East Campus, it is unlikely that they will be able to provide enough classroom space to meet the demands if all units move all of their teaching to East Campus. In addition we heard suggestions from other colleges and schools remaining on main campus to have centrally scheduled space in which to teach on East Campus. This building may be a combination of laboratory and lecture room space, including at least one very large lecture hall (ca. 500 student capacity).
- *National Solar Observatory* [NSO]. If an opportunistic building for this comes our way, it would be a logical companion to the Astrophysical and Space Sciences cluster.
- *National Ecological Observatory Network* [NEON]. If an opportunistic building for this comes our way, or if space was available in existing buildings, it would be a logical companion to the Geosciences cluster.

Finally we envision multi-purpose buildings, shared by many groups and units. These are preferred over single discipline buildings, as these promote cross-disciplinary interactions.



3.3 Teaching on East Campus

A fundamental principle of the University is that research and teaching are inextricably linked. This, plus the fact that academic units will be housed on East Campus, means that teaching should be part of the East Campus Vision.

The key issue is the extent of teaching that should take place on East Campus, in particular, the extent to which large lecture classes should be taught on the East Campus. Based on the issue of the challenges of intra-campus transportation, one can argue that the main campus should be viewed as the primary site for classroom instruction, particularly for large classes taught in lecture halls, and that the East Campus should be used for this purpose only if such classes cannot be reasonably accommodated on the main campus. On the other hand, one can also argue that the teaching on East Campus should evolve over time to include all sizes and levels of classes. This argument is based on the facts that CU has a strong tradition of both research and teaching and that academic units see these as inseparable parts of their mission, that it is vital to the functioning of departments to have their teaching and research co-located where students can move between classrooms, research labs, and faculty offices, and that since the East Campus will have both research and academic units, having a mixture

of teaching and research is important to creating a sense of community on the East Campus for faculty, staff, and students.

Resolving this debate will not be simple.

One clear factor in this debate, and clear challenge as well, is transportation. The following example illustrates the challenge. CU offers about 200 courses per hour on the MWF schedule. If 20 small, upper level and/or graduate classes are offered on East Campus, this means, at 20 students per class, that about 400 students would move between East and Main campus at class change time. Large buses can hold 100 people. It will be a challenge to move four, fully loaded, large buses along Colorado Avenue during class change time. This challenge is magnified if large lecture classes are taught on East Campus. Such classes hold about 200 students, so just two of these taught on East Campus yields the same challenge as 20 small classes. These examples use only a small fraction of the total classes taught per hour, and one can see that as more classes are taught on East Campus, the transportation challenge becomes significant.

One way to frame the question is as follows: should we do whatever we can to overcome the transportation challenge and move the number of students and faculty required, or should we mitigate the problem to the extent possible by focusing teaching on Main Campus, particularly the large lecture classes? The East Campus Vision Committee cannot answer this question by itself, such an answer requires the vision of the full campus master planning process.

Regardless of how the campus addresses the transportation issue, given the challenges of transporting large numbers of students between campuses, we recommend that teaching on East Campus evolve over time, so that transportation solutions can do the same. Teaching should be focused first on graduate courses and upper level undergraduate courses. We note that as the number of students on campus increases over time towards, and perhaps beyond, the 2030 goal of over 35,000, the pressure to build and teach in large lecture classes on East Campus will increase as well (the new Systems Biotech Building already includes shell space for a large lecture hall, for example).

We recommend that the following principles guide decision making on the issue of teaching large lecture classes on East Campus.

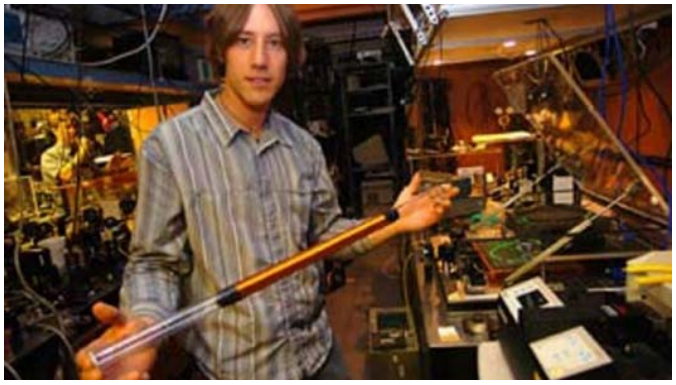
- Particularly if enrollment reaches the higher levels projected in the 2030 plan and large lecture classes cannot be accommodated on the main campus, the East Campus should remain a potential location for large lecture classes (>200 seats).

- Given the challenge of transporting students between three campuses (Main, East and Williams Village), building additional large lecture halls on East Campus is not recommended until the transportation issues are addressed and solved.

3.4 Aesthetics of East Campus

A high density of buildings with multiple floors is desirable to maximize use of East Campus land and provide approximately 4 million square feet of space, but we should guard against too tall buildings that block views and give a "city campus" feel. The campus should showcase Colorado's natural beauty as much as possible.

Boulder Creek and the land adjacent to the Creek have tremendous potential to be a beautiful amenity and striking visual focal point for East Campus. We recommend that the land along the Creek be developed to create a welcoming and inviting park setting. East Campus land in the flood plain, generally north of Boulder Creek, should be developed in keeping with the threat of floods in Boulder. Examples of appropriate uses include grass fields suitable for recreation, and perhaps parking. As buildings currently in the flood plain on East Campus reach the limit of their useful lifetime, they should be removed.



3.5 Community linkages

Portals to the outside community that would better link CU-Boulder to local, national, and global intellectual resources should be established. Community partnerships could be integrally woven into the institution's development plans. Spaces intended to promote interaction with the community would include a wide array of physical and technologically rich facilities supporting "outreach programming (2030 Core Initiative) and building a global crossroads (2030 Flagship Initiative)" that would help better link CU-Boulder to local, national, and global intellectual resources.

Partnering for facilities, infrastructure, and programs could include:

- Research/business/business-development incubator space
- Collaborative research facilities involving interdisciplinary CU, governmental and private research organizations
- Outreach instructional activities (i.e., Continuing Education, Executive Education, etc.)
- Science education and demonstration facilities focused towards K-12 students and the public

These types of development would best help serve the students, faculty, and staff as well as the community of Boulder and citizens of Colorado, with specific focus on leveraging the university's intellectual capital to support economic development, sustainability, and

technology transfer both locally and globally. These types of facilities and services could also be developed with modest investments of land and other resources.

The subcommittee is concerned with the concept of using the scarce land that is available at the East Campus for other ancillary uses that have been suggested (i.e., welcome centers, cultural facilities, etc.) which might have potential to engage the broader community since those uses could occupy significant land resources for purposes which are inconsistent with the primary needs of the institution.

The subcommittee feels that many retail and service venues are already located within walking distance on Arapahoe Avenue and at 29th Street. Adding such venues is not recommended. Finally, given the limitation of land available for development on East Campus, we do not recommend that East Campus land be used for hotels or public retail operations.

3.6 Utilities

In order to comply with the Governor's mandates and University goals to be environmentally sustainable, the campus must plan in advance for future growth on the East Campus. Buildings will need to be built with conservation in mind. This will reduce the utility consumption and peak demands; however there will still be a need to provide some level of utility service to the East Campus facilities. With appropriate planning the University should consider installing a centralized district heating and cooling system for the East Campus. With an overall life cycle perspective, central systems have numerous advantages over distributed systems including reduced capital expenditures, reduced energy usage, reduced operating costs, reduced emissions, and provide numerous opportunities for sustainable options that are not present or more difficult to implement in distributed utility systems. Options that are easier to implement in a central system include combined heating and power (CHP), also known as cogeneration, geothermal and heat pump technology, consolidated fuel purchases, more advantageous tariff rates, and renewable fuels such as biodiesel or biomass.

A central system does not have to be installed all at once and can be effectively phased in over time as the campus building density increases. This can be accomplished by installing oversized mechanical rooms in the initial buildings, with the intent of adding additional heating and cooling equipment in a single building to feed multiple buildings, essentially creating small neighborhood plants. As the campus density increases, these small neighborhood systems can be tied together with a central distribution system. Then, as the existing build systems age and need replacement, or as the critical mass is created with new construction, funds should be pooled in order to build a central plant. The central plant can also be designed to expand as the campus grows.

Other infrastructure systems such as electricity, telecommunications and civil utilities should also be planned so that they too can be shared and coordinated in order to take advantage of economies of scale and to maximize efficiency. In order to effectively implement this plan, building HVAC, electrical, plumbing and telecommunication systems and mechanical room placement should be designed to take advantage of this opportunity. In turn, the campus must plan for the future utility infrastructure by identifying utility corridors or utility easements. Re-gridding East Campus from its current, park-like setting with curved roads to

one that is more in line with the Main Campus grid will require examining current utility infrastructure and determining how that fits with the new grid.

Consideration should be given to building solar arrays that can provide some of the peak electricity load for the East Campus. We should take advantage of Federal and State funding that could provide much of the cost for such a system. Large solar arrays take space, and should not take space away for buildings. Arrays could be used as sun shields for surface parking, and arranged at the edges of buildable spaces, for example along Boulder Creek.

A campus utility master plan, closely coordinated with the overall campus master plan, provides the campus with the planning information, including costs, needed to ensure that the necessary funds will be available when capacity and operational requirements are demanded. With effective planning the University has the opportunity to create a "zero-energy-district" for the East Campus that can continue to keep the University of Colorado at Boulder as a national leader in environmental stewardship.

3.6 Amenities and support facilities

Consideration should be given to adding some support facilities and units to East Campus as it grows in buildings and numbers of University employees. Examples include annexes for police, health services, library services, graduate student housing, food services, faculty-staff-student related child care, modest fitness center, shared conference and teleconferencing rooms. These amenities and services can help to keep people on or very near the site throughout their workday, and thus not requiring them to seek those amenities and services off-site.

The same, shared infrastructure approach that applies to academic buildings should also be applied to these facilities and amenities.

Historically, the East Campus has served as a location for campus support units such as Payroll and Benefits, Facilities Management, campus motor pool, etc. As the East Campus transitions to an academic campus, this role should be re-evaluated and other locations considered for such campus support units.

3.7 Athletic Fields

Currently, the East Campus is home to Potts Field, our track and field facility, and the women's soccer field. Both are located on land outside of the floodplain. As East Campus buildings emerge, we recommend that these fields be eventually re-located. While athletic fields can be placed in a flood plain, these fields need permanent structures nearby to house amenities such as toilets, concessions and locker rooms. Until a final decision is made where to place these athletic fields, we recommend that investments in the current facilities should be limited and developed in such a way that the facilities can be reused at a new site.

3.9 Housing on East Campus

As the number of students on campus increases over time towards the 2030 goal of 35,000 or more, there will be a need for additional residence halls. We recommend that the following principles guide decision making on the issue of building student housing on the East Campus.

- The East Campus should remain a location for graduate housing and undergraduate residence halls, particularly if enrollment reaches the higher levels projected in the 2030 plan.
- The potential amount and location of space needed for housing and other support services needs to be identified and marked as such. A test fit was completed to see if the projected amount of housing needed could be accommodated on the East Campus, it proved there is enough space for both academic, research and housing needs on the developable land.
- We recommend that all campuses, Main (or West), Williams Village, and East, be considered together when addressing the need for residence halls.

3.9.1 Undergraduate Housing at East Campus

The current number projected for freshmen students for FY2011 is 5,500 students. This projected growth for the number of freshmen, the addition of new international students recruits, the expanding need for increasing the number of upperclassmen in the residence halls to at least 20% of the total occupancy (Residential Campus 2020 required up to 30% of the residents be upperclassmen), and the number of student staff (RA's) in the residence halls, leads to a deficit in the number of beds to house all of the incoming and returning students in the next 10 years of approximately 1,500 beds.

Developing an undergraduate housing community for 1,500 students in the East Campus would provide an opportunity to house the students in a new campus community, that unlike Williams Village is connected to the academic buildings, supported by classrooms and offices for the instructors. Residential Colleges in these communities should flourish. A

rough projection of the space needed for the undergraduate Housing at East Campus includes:

- Three 500 bed Residence Halls the size of Williams Village IIA; 133,000 gsf each, a total of roughly 400,000 gsf
- One Dining Facility with 750 seats capacity; 60,000 gsf
- A recreational field similar in size to Farrand Field; 128,000 gsf
- 250 Graduate/Family Housing Units; 130,000 gsf

3.9.2 Graduate Housing at East Campus

Housing & Dining Services (HDS) currently has approximately 800 apartments for graduate students and students with family. The average occupancy for these apartments in the past 10 years has been over 95%. The graduate and family housing community at CU-Boulder is the largest international community at Boulder and international students occupy 67% of the apartments. The rent for these apartments is set to be at about 80% of the market price. These communities are located at the North of the Boulder Creek, Newton Court, and Smiley Court. The current condition of these facilities is poor as they lack such common amenities as air conditioning, dishwashers and self-cleaning ovens. The current projection by Housing and Dining Services (HDS) is for approximately 850 graduate and family apartments at CU-Boulder in the coming decade.

The East Campus should remain be a possible location for the replacement and potentially the expansion of graduate and family student housing. All three campuses should be part of the plan, however. HDS believes that building graduate & family housing facilities at Williams Village (to introduce a 'calming' affect to that community and utilize available space), East Campus (to support the research component of the east campus by providing housing to the graduate and research assistants near their work environment), and North of the Boulder Creek (for easy access to the main campus) will cover the needs of various graduate and family students at CU-Boulder. We endorse that plan.

3.10 Funding the building of East Campus

Given the current economic restrictions in the State, the funding model for East Campus buildings for the immediate future is not likely to include State of Colorado funds. This situation has consequences for buildings built or purchased on East Campus in the immediate future.

It is likely that buildings on the East Campus will be built and maintained under the Research Building System (RBS) model. As the number of RBS buildings grows, the administration of RBS will be challenged. We recommend that a careful review of the RBS be conducted. An RBS advisory group, made up in part of representatives from the various units that occupy RBS buildings, is recommended.

3.11 Opportunities

We should not view the east Campus footprint as fixed, but be opportunistic in acquiring land in the East Campus area, as well as the corridor between the Main Campus and East Campus.

Finally, as always, we should be opportunistic in constructing buildings, and take advantage of private, Federal and State funding whenever possible, but we recommend doing so within the general vision and plan for East Campus. We should avoid compromising our long-term vision for short-term gain. This includes the grouping of units on East Campus and the moving of units between Main and East Campuses. In order to provide faculty input as the East Campus develops, we recommend that the current Ad Hoc East Campus Committee chaired by Interim Vice Chancellor Moore be formalized and tasked with overseeing the movement of units between campuses and the clustering of units on both campuses, as well as with advising the Chancellor and Provost on these matters.

4. Buildings Identified for East Campus

The following table includes the buildings identified in this report that we anticipate will be located on East Campus. They include existing space, and the new Systems Biotech Building. The total building space is about half the anticipate total for East Campus.
Table 1:

Proposed East Campus Buildings

	Approx ASF	Approx GSF
Life Sciences cluster	400000	520000
Geosciences cluster	400000	520000
Energy cluster	125000	162500
Space sciences cluster	125000	162500
Social sciences cluster	100000	130000
Graduate/Family Housing	120000	130000
Residence halls	307692	400000
Dining facility	46154	60000
Support building (day care, police, food services, etc.)	57692	75000
Central Heating and Cooling	15385	20000
Classroom building	76923	100000
Total	1681538	2280000

Notes:
Used 1.3 as GSF/ASF conversion factor
Life Science cluster includes building currently under construction