8

CAPITAL INVESTMENTS AND PRIORITIES

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The objective of developing a decision-making framework for capital asset investments is to ensure that the planning, prioritization, and decision-making for investments in capital projects at UC Riverside is comprehensive, rational, and fiscally responsible. This objective is consistent with UC Riverside's commitment to strong financial stewardship of campus assets in order to support the ambitious research, academic, and cultural leadership objectives presented in *UCR 2020: The Path to Preeminence*.

Glossary of Terms

Alignment - the proper positioning of priorities and criteria for decisions with agreement among responsible parties

Cost Drivers - those characteristics of the physical context of the institution or facility type that disproportionately influence cost

Endogenous - conditions that are tied directly to the campus, such as geology, topography and site development

Exogenous - conditions that are beyond the campus such as evolving pedagogy, codes/regulations, and energy costs

Leverage - the deployment of relatively small additional "investments" in existing capital assets to achieve significant "returns" for purposes of advancing a new project

Synergy - the ability of a combination of capital asset investments to generate greater benefits as a group than the sum of the benefits accrued to each project individually

Flexibility - the ability of a capital asset to adapt to its uses – presently and over time – to accommodate a variety of anticipated needs. Also referred to as "Long Life/ Loose Fit"

Basic Gross Area - building area measured from outside faces of exterior walls, disregarding projections (cornices, pilasters, buttresses) which extend beyond the wall faces. Overhangs for sunshades and similar features are not included.

Covered Unenclosed Area - includes covered or roofed areas of a building located outside of the enclosed structure for all stories which have floor surfaces.

Site Development Area - area outside of the building footprint within the construction limit of work, including all areas that will be redeveloped.

STRATEGIC PRIORITIES

- Identify potential capital asset investments to address campus needs and evaluate them based on both programmatic and financial measures of anticipated returns on investment.
- Seek low-investment, high-impact campus interventions to remediate legacy challenges that have hindered achieving UC Riverside's strategic objectives.
- Consider relative costs and benefits of alternate strategies, not just absolute cost levels.
- Utilize best-in-class economic and financial modeling tools to objectively quantify the estimated costs and benefits of selected real asset investment strategies. Evaluate trade-offs among alternatives and monitor returns on investment over time.

8.1
Establish Guiding Principles for Decision-Making

Capital assets support UC Riverside's research, academic, and community leadership mission. The following five Guiding Principles form the framework for the capital asset investment decision-making process developed as an integral part of the Master Plan Study.

- Leverage
- Synergy
- Flexibility
- Achieving Alignment
- Commitment to Best Management Practices

LEVERAGE EXISTING ASSETS

To "leverage" is to deploy relatively small additional "investments" in existing capital assets to achieve significant "returns" for purposes of advancing a new project. The returns include benefits accrued to new projects by the use, re-use, or more effective use of existing campus assets (e.g., heating and cooling capacity), and the avoidance of major capital costs associated with the creation of wholly new assets in order to provide the desired service or function (e.g. the construction of a new central plant while the existing central plant has unused capacity or expansion capability).

With this in mind, UC Riverside's prior investments in its capital assets should be considered valuable existing resources that may be utilized both to limit the size of up-front investment needed for new facilities and to capture the full value of the prior investment. This is especially applicable if an existing real property or capital asset has surplus capacity that can be accessed or expanded upon at a relatively low incremental cost. Leveraging existing assets is a low-investment and high-impact strategy. Following are several examples.

Existing Infrastructure

The UC Riverside Core Campus has a central plant that produces chilled water and steam. The central plant has both spare capacity and the ability to expand. The central plant is connected to a distribution network that can also be expanded to serve new, enlarged, and/or repurposed and renovated facilities.

Existing Facilities

UC Riverside's Core Campus comprises building stock that can be repurposed, renovated, and/or expanded provided these facilities and their intended future uses meet pre-determined criteria for redevelopment. These criteria may include the following:

- Significance of the facility to campus
- Condition, whereby the costs to renovate, repurpose, or expand are not prohibitively high
- Whether the intended future use is relatively compatible with the original design and performance characteristics of the existing building

Opportunity Sites

The Planning Team identified Opportunity Sites across campus that appear to be developable. While these are an asset that can and should be leveraged, careful consideration must be given to each site to understand its unique cost profile. Costs for preparing a site within a campus for development or redevelopment frequently include but are not limited to soil remediation, site utility relocation, hazardous material abatement, working within constrained conditions, adhering to the design and material palate of the existing campus context, and remediating legacy challenges with existing facilities.

Example

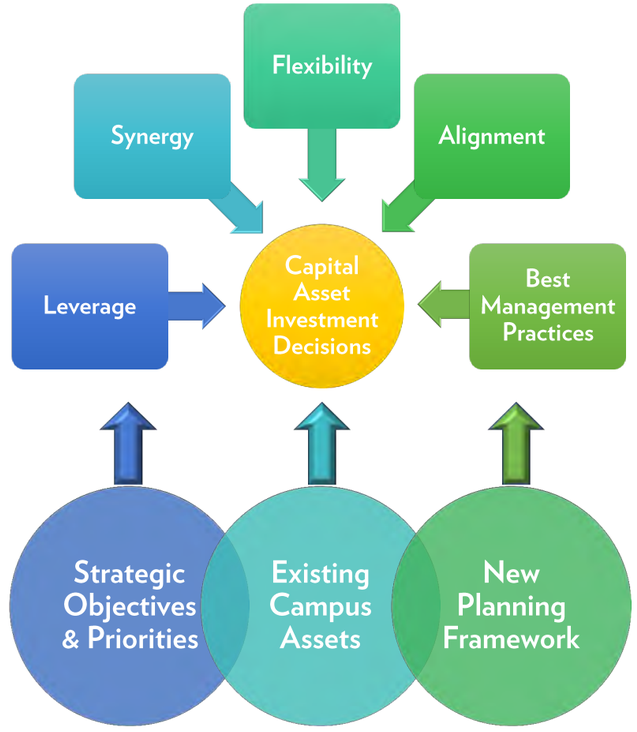
The campus undertook a study to determine the best path forward for the relocation of its Plant Growth Environments and support facilities. Two locations were considered – Core Campus and West Campus. The preliminary study took into account the following cost considerations:

- Existing site conditions
- Access to utility infrastructure
- Access to central plant capacity
- Costs to relocate existing facilities

It was determined that relocating the Plant Growth Environments and support facilities to the West Campus would have carried with it a premium of between 5% - 15%.

Figure 8.1 UC RIVERSIDE APPROACH TO INTEGRATED PLANNING

Figure 8.2 CAPITAL ASSET INVESTMENT DECISIONS



CREATE SYNERGY AMONG ASSETS

"Synergy" is the ability of a set or combination of capital asset investments to generate greater benefits as a group than the sum of the benefits accrued to each project individually. This is possible through the advantageous relationships developed with surrounding new and existing facilities and site development. As logical as it would seem, synergy is an often undervalued benefit of new construction or renovation within an existing campus.

This principle specifies that any investment in a capital project opportunity should be judged not solely on the benefits accrued to its designed use, but also on the benefits that arise out of its relationship to other existing and future assets on the campus. The elements considered may include program mixes within buildings, facility mixes within neighborhoods, and the connections of neighborhoods across districts with the adjacent public realm. For example, relatively small investments in campus open spaces can result in significant programmatic and/or connectivity benefits to multiple facilities in close proximity. While such benefits may be difficult to quantify, it is very important that these investments are given priority. Criteria for this type of decision-making exercise may include the following, among others.

- Explore existing and potential programmatic adjacencies that may be further strengthened by the investment being considered.
- Identify current challenges in the area that may be addressed by the new capital investment with relatively small incremental costs.
- Determine whether the value of the benefits accruing to one or more facilities or programs exceeds the incremental costs of the improvements.

Example

Using the Plant Growth Environments and support facilities example, a synergistic benefit of redeveloping these facilities on the Core Campus is their proximity to existing research facilities within the campus and access to existing campus amenities and infrastructure.

INVEST IN FLEXIBILITY FOR THE LONG TERM

"Flexibility" is the ability of a capital asset to adapt to alternate or additional uses – presently and over time – to accommodate a variety of anticipated needs and to mitigate uncertainty about future campus conditions and needs.

This principle specifies that any investment in a capital project opportunity should be judged not solely according to the benefits accrued to a single intended use at a given point in time, but also according to its multiple concurrent and sequential possible uses over its entire life. At the heart of this idea is the concept that our exposure to future uncertainty presents not only risks (which must be mitigated) but also opportunities (which should be seized).

Although near-term facility needs, funding cycles, and funding sources, among other factors, will frequently drive capital investment decisions, attention must be paid to opportunities for incremental investment that can accommodate future unknown conditions and facility needs more effectively and economically, and ultimately with higher returns on investment. Potential criteria for this type of decision-making exercise may include the following.

Within buildings

- Plan facilities to receive solar panels and convert the solar energy into usable electricity for the building or to be sent back into the electrical grid.
- Design facilities to accommodate different uses over time. Among other features, this may include higher floor-to-floor heights, stiffer structure, larger bay sizes, robust MEP systems, flexible interior construction such as modular walls, and building orientations that mitigate heat gain and glare while supporting daylighting and views.

Site selection

- Carefully evaluate the suitability, benefits and challenges of available building sites.
- Place buildings on sites in a manner that is the highest and best use and, when feasible, allows for expansion over time.
- Extend site utilities to developable sites and expand distribution capacity in anticipation of future loads.
- Make the best use of available building sites by right-sizing buildings for their sites. Meet pre-determined budgets for projects by deferring full fit out until future users are identified and their needs and fiscal capacity are better understood.

Example

The School of Medicine Research Building is an example of the power of flexibility. Although it is a relatively small facility, it was built to accommodate future uses of an uncertain nature. As such, the structural frame and building proportions can satisfy laboratory uses along with many others requiring less stringent performance and technical criteria. It was built with two-third of the facility shelled, with the knowledge that future users would be accommodated and the fit-out of those spaces tailored to their specific requirements. It was understood that building a larger building with extra shell space could be constructed more economically as one phase than to attempt to expand the building at a later time.

Workshop activity on program and desired adjacency within East Campus

ACHIEVE ALIGNMENT

"Alignment" is the proper positioning of priorities and criteria for decisions, with agreement among responsible parties as to that positioning and its consistency with their organizational mission and strategic objectives. Alignment ensures that facilities and programs work together effectively, in pursuit of the University's key objectives, and not redundantly or at cross-purposes.

This principle specifies that in all capital planning the right balance should be struck among oftentimes competing priorities, including those described below.

- Budget factors could take into account both capital and operating costs, as well as potential revenue opportunities.
- Scope factors could take into account programmatic functions, size, technology and other features of the asset.
- Expectations could include performance objectives, such as energy efficiency, design aesthetics, and prioritization of discretionary spending across facility systems.
- Likewise, the drivers for campus development – academic expansion; campus setting and identity; and environmental priorities – will all shape future decision-making.
- UC Riverside's primary strategic objectives – namely academic and research excellence; access and opportunity; diversity and inclusion; and engagement and impact in shaping our world – all are equally important, even though they may not have equal focus in making each capital investment decision.

Example

The upcoming Multidisciplinary Research Building #1 (MRB 1) is an example of the importance of alignment. This project became a high priority for near-term development because of its "mission critical" role in meeting the objectives of the UC Riverside Strategic Plan. Specifically, in order to achieve the growth in research faculty and graduate students targeted by campus leadership, it was vital to advance the development of this project and demonstrate the ability to deliver the needed research space quickly.

Expediting the project required an accelerated and collaborative review of alternative sites to identify relative advantages and trade-offs. For instance, key considerations included access to infrastructure and site availability. The selected site also enabled the University to defer relocating existing research greenhouse facilities. Future capacity for additional research facilities near MRB 1 was also a factor that weighed on campus decision-makers committed to a near-term decision that would also be prudent in the long-term.

The selection of a design-build delivery method also took into account the principle of alignment, as it reflected the need to meet complex technical specifications and to achieve greater certainty of on-time and on-budget completion.

COMMIT TO BEST MANAGEMENT PRACTICES

The meaning of "best management practices" in the context of UC Riverside's capital program is to build on campus-wide organizational excellence initiatives, with particular focus on providing decision makers at all levels of UC Riverside with accurate, concise, clear and well-structured information in order to align capital project decision-making with the University's goals and objectives.

This principle specifies that UC Riverside will establish best management practices (BMPs) for capital investment planning and execution. These BMPs will be consistent with current and future campus-wide organizational excellence initiatives. Current efforts are aimed at establishing internal standards and processes that engage and motivate campus employees to deliver products and services that fulfill UC Riverside's mission. Key themes of the current organizational excellence initiatives are to:

- Streamline business processes
- Instill a culture of collaboration and innovation
- Support professional and leadership development
- Encourage process standardization
- Promote a culture of continuous improvement
- Drive organization simplification
- Empower bottom-up change
- Recognize specialization of services

Examples

Several BMPs that affect the area of capital investment planning and execution are already in practice or underway at UC Riverside. These include:

- Preparing long-range capital planning forecasts
- Evaluating multiple alternatives in project planning
- Matching project type and University objectives with appropriate delivery strategies
- Redesigning the UC Riverside budget process to provide a more transparent view of the institution's resource use
- Establishing a new management reporting platform to offer the critical data needed for leadership decisions in a format tailored to the specific needs and interests of individual campus leaders
- Redefining the use of space to achieve increased efficiency and utilization in light of anticipated growth in the campus population

8.2

Emphasize Data-Driven Analysis

Strategic decisions about capital projects must be supported by rigorous analysis based on solid data. These efforts must be standardized through a replicable approach known to yield positive outcomes. Among the key factors discussed below are the need to understand the University's capital investment cost drivers, the importance of analyzing probable costs under a range of scenarios, and applying robust tools to quantify trade-offs to support informed capital investment decision-making.

UNDERSTAND COST DRIVERS

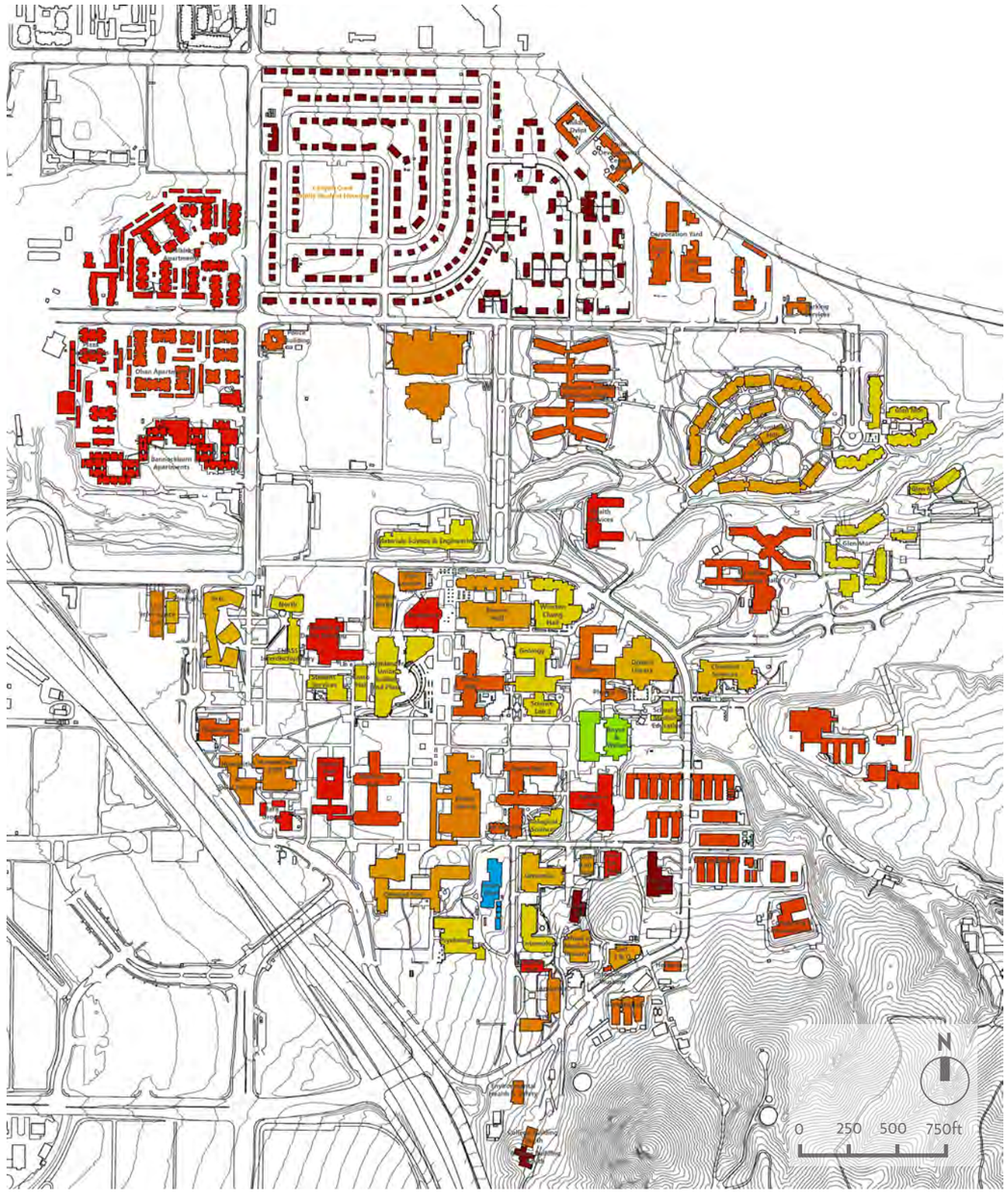
Cost drivers are those characteristics of the physical context of an institution that disproportionately influence cost. Each campus has a unique set of capital-cost and operation-cost drivers. Some of these cost drivers stem from the nature of the campus itself, while others arise out of extraneous circumstances either beyond the control of the institution or resulting from its pursuit of its specific strategic goals. Cost drivers can be endogenous – those tied directly to the campus; or exogenous – those arising from conditions beyond the campus, as listed below.

Endogenous Cost Drivers

- Geology
- Topography
- Utility plant capacity, distribution network, utility relocation burden
- Site development
- Nature of the existing facility stock
- Requirement for enabling projects
- Phasing requirements and timing
- Construction access and staging
- Campus context, quality and performance expectations

Example of an endogenous cost driver are the energy efficiency performance of the existing building stock, and the campus topography, both shown in Fig. 8.3.

Figure 8.3 ENERGY PERFORMANCE OF EXISTING BUILDINGS



Exogenous Cost Drivers

- Evolving pedagogy
- Building codes and regulations
- Local and regional construction market conditions
- Global commodity prices
- Energy prices

Effective means of taking into account these and other exogenous cost drivers are discussed below.

ANALYZE PROBABLE COSTS

In order to develop models of probable costs of potential future capital investments that are valid across multiple scenarios, specific data relating to endogenous and exogenous conditions must be collected, analyzed, and evaluated. The different types of inputs that would form the basis for developing a complete understanding of a development cost profile of the UC Riverside campus include:

Existing campus conditions

- Built and natural environment
- Infrastructure
- Geology and topography
- Existing facilities condition

Construction market / economics indices

- California Construction Cost Index

View over campus looking northwest

8.3

Application of Guiding Principles to the Physical Master Plan Study

The preceding sections lay out a set of principles to be referenced and an approach to be followed when evaluating capital project investment alternatives and opportunities across all projects. This section provides insight into how these principles are applied in the Master Plan Study.

INVESTMENTS IN CAMPUS OPEN SPACE

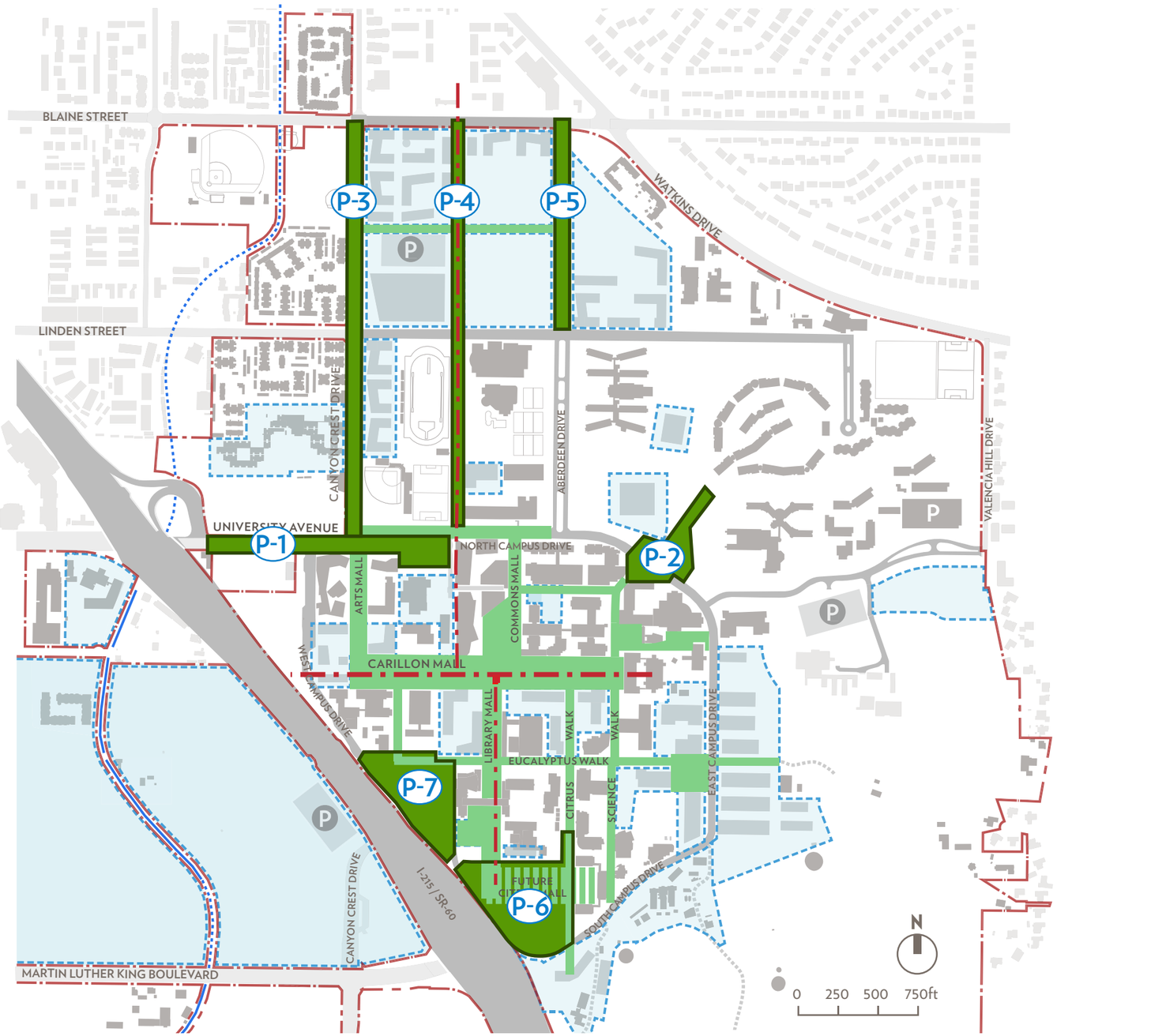
Investments in the open space fabric of the campus represent a cost-effective means of enhancing the value of new and existing facilities within campus neighborhoods and, more broadly, knitting together the entire campus.

The role of building-specific site development, which is primarily intended to extend the use of the building beyond its enclosed area, may be expanded to promote connection among groups of buildings leading to improved alignment and unlocking the latent value of synergies between different areas of the campus.

Specific but relatively small investments in open space can serve to enhance the user experience across the entire campus, adding value both to that area of the campus and the adjacent facility. Examples of recent and proposed enhancements illustrate these multiple benefits.

- The proposed improvement of the Lower Plaza at the Bookstore Building is a nominal investment in a high traffic area of the campus to add a smaller and special place within the larger plaza. It will serve as a forecourt to the renovated lower floor of the Bookstore Building and provide additional seating options the area is presently lacking in.
- The proposed University Gateway, shown as P-1 in Fig. 8.4, would create a primary campus gateway experience and integrate the proposed Mobility Hub and its associated program elements, as well as upgraded amenities for pedestrians and bicycle riders.

Figure 8.4 OPPORTUNITY SITES



- Future improvements to the streetscape at Canyon Crest Drive, shown as P-3, would create a safe and pedestrian-friendly mixed-use street adjacent to planned new student housing and a proposed Campus Event Center.
- A new Recreation Mall, shown as P-4, would create a vital link between Core Campus and the North District, with shaded walkways for pedestrians and bicycle riders, alongside scattered seating and structured garden landscapes that also will capture campus stormwater.

Details and additional examples can be found in chapters 3 and 4.

STRATEGIC INFRASTRUCTURE INVESTMENTS

Infrastructure investment strategies should seek to address unique and evolving conditions across campus. In the near-term and medium-term, it will be advantageous to leverage the existing campus heating and cooling infrastructure and expand whenever it is cost-effective to do so. In the North District, this approach advocates for embarking on an incremental and decentralized approach to energy generation plants until a critical mass is achieved, at which point it may be financially feasible to build a central utility plant (Refer to Chapter 6 for additional detail). On West Campus, incremental and decentralized approaches to facility energy generation plants will be needed until a critical mass is achieved, which is significantly beyond the planning horizon of this study.

EXISTING FACILITIES INVESTMENT STRATEGIES

Existing facilities that may be re-purposed through rehabilitation, renovation, or retrofit should be evaluated on a case-by-case basis to determine whether they can be suitable for the University's current and future needs. Through a rigorous and replicable approach to evaluating the viability of existing facilities to meet evolving needs, the campus can validate whether additional investment in an existing facility is the best course of action. Such an evaluation should consider the following:

- Facility condition assessment - to determine the condition of the existing building generally and its systems specifically
- Evaluate the role the repurposed building will play in the evolving campus fabric
- Determine fitness for intended new use
- Develop a space-program project cost estimate
- Compare cost of renovation to new construction

ANALYSIS OF DEVELOPMENT COSTS AND OPPORTUNITIES ACROSS CAMPUS

A key objective of the Master Plan Study is to guide the location of future development. As such, it is important to understand the costs and benefits of developing new facilities on various sites or in different sections of the campus. Applying the guiding principles, it was possible to determine the relative cost premiums and discounts. This particular cost-benefit analysis took into account several principles, including Leverage, Synergy, and Alignment. (Flexibility and Best Management Practices don't weigh into this particular analysis because they are not specific to any one site.)

The results of the study yielded the following premiums and discounts relative to a Core Campus baseline of 0% [that assumes limited renovation of existing facilities].

North District (3% - 8% Cost Premium)

- High campus utility infrastructure first-costs
- Enabling / offsite projects
- Relatively large up-front investments

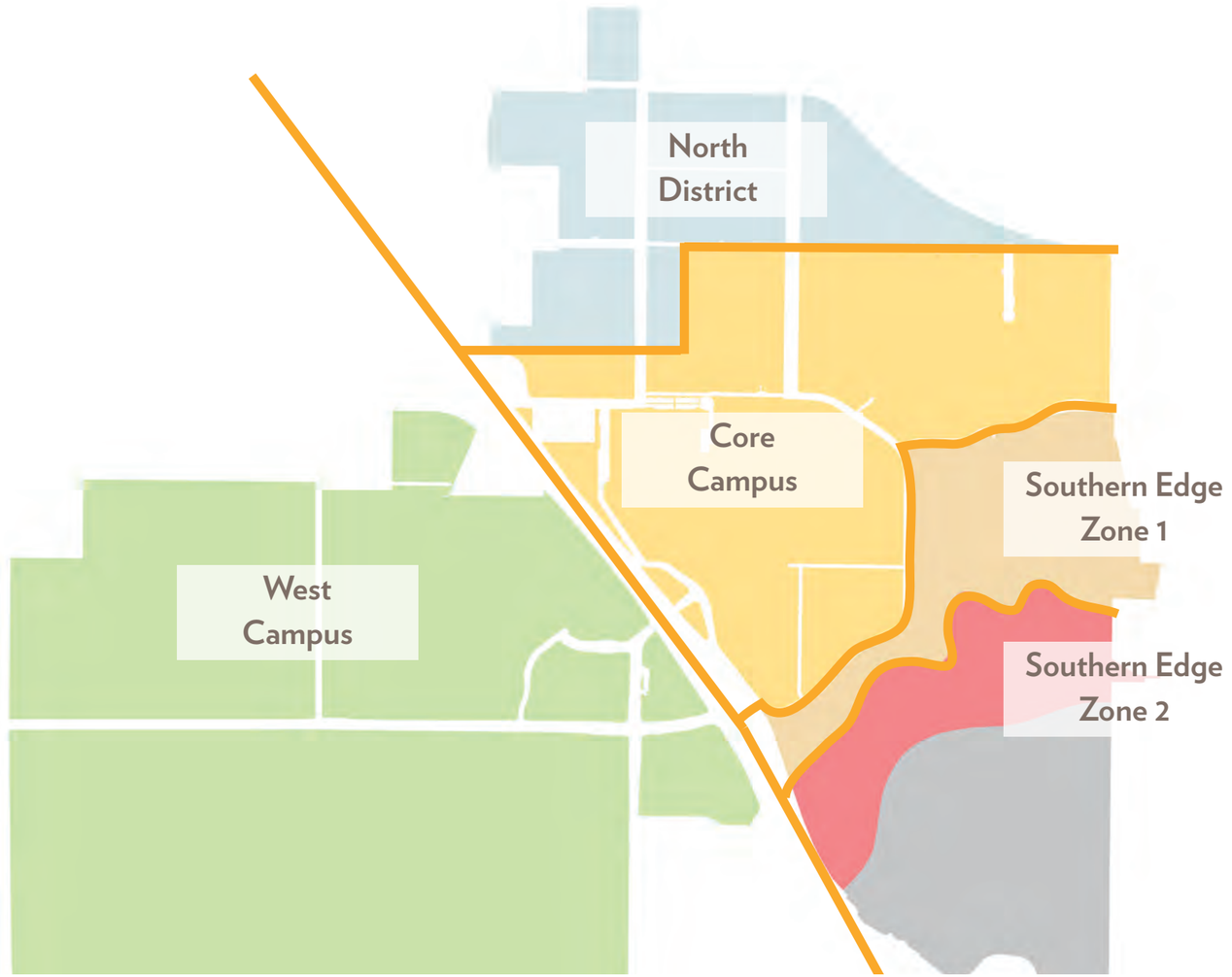
The North District is relatively undeveloped. It does not have viable infrastructure and would require large-scale site enabling and improvement projects. As such, it has limited resources (other than relatively open land) to leverage, and few synergies and alignment opportunities on which to capitalize for academic activities. Those opportunities do exist for student housing, recreation, retail and the Event Center. Site development areas as a proportion of building area are higher and the benefits of site development are relatively less far-reaching.

Core Campus (0% - 5% Cost Discount)

- Low campus utility costs
- Opportunities to leverage existing facilities
- Expected synergies among facility uses

The Core Campus benefits from significant investments in utility infrastructure, which can be expanded to deliver services to new and renovated buildings at minimal costs. Site development areas as a

Figure 8.5 UC RIVERSIDE CAMPUS REGIONS



proportion of building areas are lower and the benefits are farther reaching. Moreover, UC Riverside can accommodate additional development within the Core Campus through both renovation and repurposing of existing facilities as a means of achieving even greater cost efficiencies.

Core Campus Southern Edge (Zone 1 - 5%-10% Cost Premium)

- Moderate grading, excavation, retention, rock costs
- Moderate campus utility costs

This area is the lightly-developed section at the toe of the hill that is proximate to existing utility infrastructure that can be expanded upon to deliver services to new and renovated buildings. However, the costs for these extensions will be significant. Given the more challenging topography and geology, it is anticipated that development will come with higher costs for foundations and basement construction. Site development areas as a proportion of building area are lower and the benefits of site development are farther reaching. Overall there is less opportunity to leverage existing facilities and infrastructure. Future opportunities exist to create synergies, and develop better alignment with University objectives such as campus identity and visibility.

Core Campus Southern Edge (Zone 2 - 10%-20% Cost Premium)

- High grading, excavation, retention, rock costs
- High campus utility costs

The area is the lightly-developed section at the toe of the hill further south of Zone 1 and into the steeper slopes, farther from existing utility infrastructure. Extending existing infrastructure to deliver services to new buildings in this area would come at a significant cost premium. Topography and geology in this area will pose a challenge for construction. It is anticipated that development within this district would come with higher costs for foundations, basement construction, and overall constructability. While site development scope as a proportion of building areas might still be low, this area is at a distinct disadvantage given the reasons cited.

West Campus (5%-10% cost Premium)

- Very high campus utility costs
- Enabling / offsite projects

The West Campus is the lightly-developed portion of campus west of and across the I-215 / SR-60 freeway from the Core Campus. It lacks the infrastructure to support significant development and would require site enabling, site improvements, and site development as an initial investment. Site development areas as a proportion of building areas would also be higher and the benefits of site development would be less far reaching.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RIVERSIDE