



MAY 17, 2016

# PHYSICAL MASTER PLAN STUDY

UNIVERSITY OF CALIFORNIA  
**UCRIVERSIDE**





## A Message from the Chancellor



This is an exciting time at UC Riverside. Guided by the vision and goals set forth in our strategic plan, “UCR 2020: The Path to Preeminence,” we stand as an institution defined by academic excellence, student access, campus diversity and engagement with our community and the world. We have experienced phenomenal growth over the last decade and continue on that trajectory with plans to enroll over 25,000 students and grow our faculty by 300 by 2020. Sustaining this growth requires a thorough alignment of campus resources, with a particular emphasis on our physical environment.

This Physical Master Plan Study represents a comprehensive vision for UC Riverside’s physical campus. Envisioning a campus environment that is functional, attractive and committed to environmental stewardship, this study defines a methodology and physical structure consistent with our needs, values and aspirations as a world-class university. In so doing, this plan holds the potential of transformative change at UC Riverside.

I deeply appreciate the creativity, commitment and collaboration that has characterized this planning process. As students, faculty, staff, community members and civic leaders, you have all made valuable contributions. I look forward to working with you as we build a legacy for future generations.

A handwritten signature in black ink, appearing to read "Kim A. Wilcox".

Kim A. Wilcox

# Planning Team

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# Glossary of Terms

**Air Changes per Hour (ACH)** - the number of times the air in a space is completely replaced by infiltrated or ventilated air, per hour

**Air Handling Unit (AHU)** - a device that regulates and circulates air as part of a heating, cooling and air conditioning system

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

**ASHRAE** - the American Society of Heating, Refrigerating and Air-Conditioning Engineers

**Arroyo** - a drainage gully, often steep-sided, carved by ephemeral running water

**Average Vehicle Ridership (AVR)** - the average number of occupants in a vehicle

**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

**Belltower** - a landmark element at the center of Carillon Mall

**Box Springs Mountains** - the dominant range of mountains to the east and south of the UC Riverside campus

**Capital Finance Plan (CFP)** - UC Riverside's multi-year program of proposed capital construction and renovation, submitted annually for acceptance by the Board of Regents

**Carbon Neutrality 2025** - the University of California's initiative for all its campuses to become carbon neutral by 2025

**Carillon Mall** - the primary open space in the heart of the campus

**Constant Air Volume (CAV)** - a mechanical system that provides forced air to building spaces for heating, cooling and ventilation, at a constant rate

**Core Campus** - the region within the East Campus that contains nearly all of the academic buildings, as well as most of the University's older buildings

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

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

**Critical Alignments** - guiding alignments from one building to another, to frame open spaces and views

**Degree-Day (Heating / Cooling)** - a measurement of heating or cooling load relative to a base temperature. It is the product of the number of days during the year and the degrees above (cooling) or below (heating) the base temperature each day

**Demand Control Ventilation (DCV)** - A control method that modulates the volume of fresh air supplied to a space based on the current air quality

**Direct Digital Control (DDC)** - a centralized computer-based control system, as opposed to separate control and actuation points operating on the same system

**East Campus** - the portion of campus east of the Interstate 215 /SR-60 freeway

**Energy Efficiency Measure (EEM)** - A modification made to a building's systems or operation that is intended to reduce annual energy consumption

**Emissions Factor** - a value expressing the relationship between a pollutant released into the atmosphere and the activity associated with that release

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

**Energy Use Intensity (EUI)** - A building's annual energy use, as consumed on-site, measured in kBtu/ft<sup>2</sup>/year

**Essential Elements** - the four fundamental guiding principles of the Physical Master Plan Study that are derived from UC Riverside's Values, Beliefs and Principles—"Identity, Community, Stewardship, and Density"

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

**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"

**Floor Area Ratio (FAR)** - the total built space on a given site, divided by the area of the site itself. It is an absolute measure of the built density of an area of land

**Full Storage Operation** - a mode of operation for a cooling system with thermal energy storage in which thermal stores are fully charged during the off-peak tariff period (night time) and fully discharged, with chillers off, during the peak tariff period (daytime)

**Gateways** - points of arrival on campus that identify the institution

**Greenhouse Gas (GHG)** - any of the gases whose absorption of solar radiation is responsible for the greenhouse effect, including carbon dioxide, methane, ozone, and fluorocarbons

**Interstitial Space** - an area at the intersection of different types of spaces; e.g., the area between the inside and outside of a building

**kBtu/sf/yr** - one thousand British Thermal Units per square foot, per year

**Leadership in Energy & Environmental Design (LEED)** - a third-party certification program and nationally accepted organization for the design, operation and construction of high-performance green buildings and districts

**Legacy Buildings and Landscapes** - prominent cultural elements / buildings and open spaces on campus

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

**Living Building Challenge** - a building certification program and advocacy tool that defines the most advanced measure of sustainability in the built environment possible today

**Load-levelling (Otherwise known as peak-opping)** - A mode of operation for a cooling system with thermal storage in which chillers are run constantly with the thermal stores being charged during low load periods and discharged in peak load periods

**Long Range Development Plan (LRDP)** - UC Riverside’s plan and the accompanying Environmental Impact Report, the two guiding documents for the physical growth of the campus, approved and certified in 2005

**Low Impact Development Best Management Practices (LID BMP)** - Design Handbook of methodologies developed by the Riverside County Flood Control and Water Conservation District

**Mobility Hub** - the multi-modal transportation center proposed as part of the future gateway on University Avenue.

**MtCO<sub>2</sub>e** - metric tonnes of carbon dioxide equivalents

**North District** - northern portion of campus projected for new student residential, retail and recreation and the Campus Events Center.

**Open Space Framework** - the network of open spaces, malls and walks on campus, including pedestrian / bicycle paths

**Opportunity Site** - a discrete area found to be underserving the campus relative to its potential

**Perimeter Loop Road** - The loop encircling the Core Campus consisting of University Avenue, North Campus Drive, East Campus Drive, South Campus Drive and West Campus Drive

**Permeable Building** - a building that facilitates pedestrian movement through its ground floor

**Phase Change Materials (PCM)** - lightweight material with a high capacity to absorb or release heat when melting or freezing over a narrow temperature range. Commonly used a replacement to thermal mass.

**Photovoltaic (PV)** - generation of electric current at the junction of two substances exposed to light. A process typically supported by commonly known electricity generating solar panels

**Physical Master Plan Study (or Master Plan Study)** - the overall subject of this document resulting from the planning process, including the Planning Framework

**Planning Framework** - guidance regarding the future growth of the campus, intended to be adaptable and flexible over time.

**Plant Palette** - a combination of plants selected for a landscape area

**Public Realm** - pathways, open spaces, courtyards, and other public and pedestrian-oriented areas

**Public Realm Opportunity Site** - includes broader improvements to campus circulation, open space systems and associated infrastructure, not just buildings

**Riverside Transit Agency (RTA)** - the main bus and public transit agency for western Riverside County, providing both local and regional services, including to the UC Riverside campus

**Solar Fraction** - the ratio of solar energy input to total energy input (normally including natural gas) in a solar powered system

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

**Solar Heat Gain Coefficient (SHGC)** - the fraction of incident solar radiation admitted through a window, both directly transmitted and absorbed and subsequently released inward

**Solar Reflectance Index (SRI)** - the fraction of the incident solar energy which is reflected by a surface

**Stormwater** - precipitation that infiltrates into the soil, evaporates, or drains to nearby water bodies

**Strategic Priorities** - high-level recommendations which support achievement of the study’s Essential Elements

**Structural Landscape** - landscape areas that define circulation and interstitial spaces around buildings

**Swale** - a low, planted basin that receives and filters runoff from its surrounding area

**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

**Thermal Mass** - high thermal capacity building constructions, such as brick or concrete, that can reduce internal temperature fluctuations by usefully absorbing and releasing heat over time

**Transportation Demand Management (TDM)** - the application of strategies and policies to reduce travel demand (specifically that of single-occupancy private vehicles), or to redistribute this demand in space or in time.

**Transportation & Parking Services (TAPS)** - the University department that manages parking, enforcement, shuttles and alternative transportation

**U-Pass Program** - public transportation program which provides free rides on local buses to any member of the UC Riverside community

**Variable Air Volume (VAV)** - a mechanical system that provides forced air to building spaces for heating, cooling and ventilation, at a variable rate. These systems have lower annual fan energy than CAV systems

**Variable Frequency Drive (VFD)** - a type of motor controller that controls motor speed by varying frequency and voltage. This allows motor driven systems, such as fans and pumps, to operate at variable rates for potential energy savings

**Variable Refrigerant Flow (VRF)** - a type of heating and cooling system that uses refrigerant, as opposed to water or air, to deliver heating or cooling to a space

**Vehicle Miles of Travel (VMT)** - a metric calculated to measure the amount of daily vehicular traffic for a selected area. The vehicular traffic amounts are either estimates (current or past data) or they are projections (future data)

**West Campus** - the portion of campus west of the I-215/SR-60 freeway, currently utilized primarily for agricultural research

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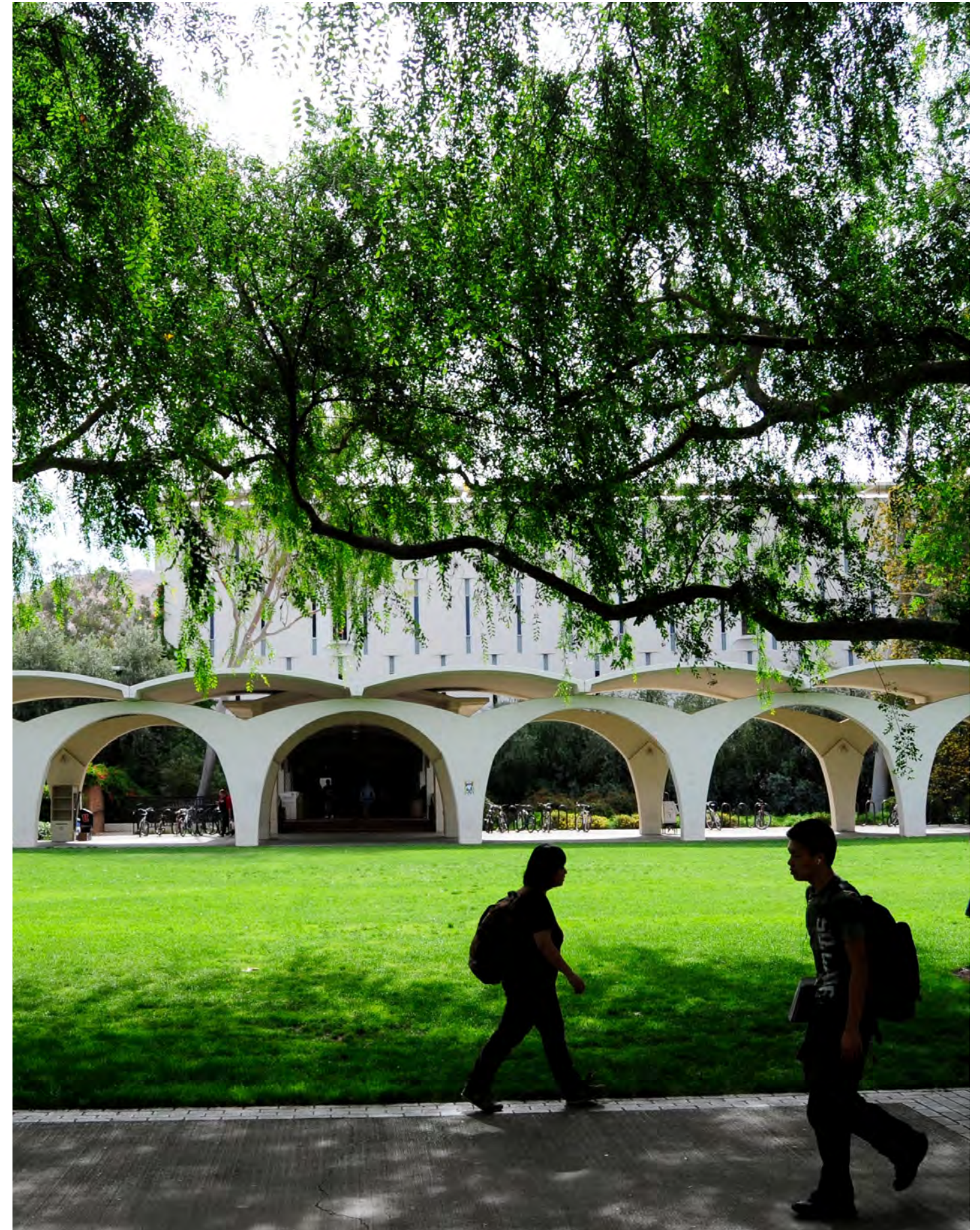
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The arcade at Library Mall

