

Study of Campus Decarbonization UC Riverside

Kick-Off Meeting

February 21, 2024

Agenda

- 01** Introductions
- 02** Project Overview
- 03** Approach
- 04** Schedule
- 05** Stakeholder Engagement
- 06** Next Steps

Meet Our Team



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Deputy Project
Manager



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Lead



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Project Overview

Campus Goals

Statewide UC Locations

By 2025, campuses are expected to set interim Scope 1 reduction targets for 2030, 2035, and 2040.

By Summer 2024, decarbonization studies will be completed for all campuses.

By January 2026, reduction plans to meet targets are implemented.

By 2045, carbon emissions will be reduced by 90% from 2019 baselines. Residual emissions will be negated through carbon removal projects.

UC Riverside

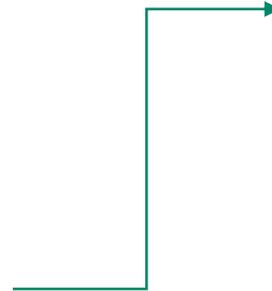
Create a plan focused on options for reducing Scope 1 emissions.

- Central Utility Plant / Steam
- Decentralized gas-fired boilers

Identify climate justice and equity considerations

Identify gaps for Net Zero Planning

Identify opportunities for a living laboratory



Scope of Services

Phase 1: Pre-Design

1. Produce a strategy for a 90 percent or greater reduction in scope 1 emissions from fossil gas use in campus energy systems from a 2019 baseline, which is defined to be full direct decarbonization for this study effort. The strategy will provide decision support for campus and health system leadership to commit to the earliest possible target date for full direct decarbonization, to be no later than 2045, and interim targets for the years 2030, 2035, and 2040 for the campus/health system central energy system, while maintaining resilience, electrical reliability, and regulatory compliance. Multiple scenarios (reflective of timing, fuel switching, etc.) are encouraged to provide richer decision support to leadership and to allow for flexibility.

Scenarios should include evaluation of what would be required to achieve electrification of main campus energy systems at the location. Additionally, scenarios may consider the role of biogas and/or green hydrogen for remaining systems that are not fully electrified. To align with proposed policy goals, the strategy must include interim scope 1 energy system greenhouse gas reduction targets for the years 2030, 2035, and 2040 if full direct decarbonization is not expected to be achieved before 2040.

2. Provide high level estimates of total capital and operational costs and savings, by phase if relevant, in sufficient detail to support funding requests to government and donors as well as inclusion in the campus or health system's capital financial plan. This cost-benefit analysis should include high level estimates of avoided maintenance, renewal, biogas, carbon offsets, water, and the social cost of carbon.

3. Identify climate justice and equity considerations related to the transition of campus/ health system energy systems to fossil fuel free and propose solutions or next steps to identify solutions. These considerations reference the [UC Framework for Incorporating Environmental and Climate Justice into Climate Action](#) and should:
 - a. Assess vulnerability of labor and surrounding community to transition to fossil free
 - b. Develop and evaluate equity indicators on transition impacts and opportunities
 - c. Incorporate four major climate and environmental justice concepts:
 - i. Procedural: fairness of the decision-making process
 - ii. Recognition: respecting different values, cultures, opinions and structures within communities
 - iii. Distributive: just allocation of resources, benefits, and burdens
 - iv. Restorative: responsive to those impacted by the transition
4. Document knowledge gaps, and subsequent studies and analyses needed to conduct climate action planning that addresses the following.
 - a. Interim reduction targets for years 2030, 2035, and 2040, if full direct decarbonization is not expected to be achieved before 2040, covering all applicable scope 1, 2, and 3 emissions, as defined in the Climate Action section of the UC Policy on Sustainable Practices
 - b. All fossil fuel uses
 - c. A comprehensive institutional boundary
 - d. Climate and environmental justice
 - e. Equity-centered climate resilience (people, assets, and services)
 - f. Risk minimization (financial, operational, and reputational)

Note: This deliverable should list key components needed to conduct climate action planning. It is not intended to be a full Climate Action Plan.
5. Identify research, education, and other opportunities for collaborative involvement of students, faculty, and staff in campus fossil-free pathways that can contribute to UC's core mission of research, teaching, and public service. The focus is on applied learning and the campus as a "living laboratory" for climate action and sustainability.

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Approach

Decarbonization Planning Framework



Decarbonization Planning Framework

Where Are You?

- Kick-off meeting
- Data collection
- Facility interviews
- Decarbonization audit
- Infrastructure assessment
- Load mapping & modeling

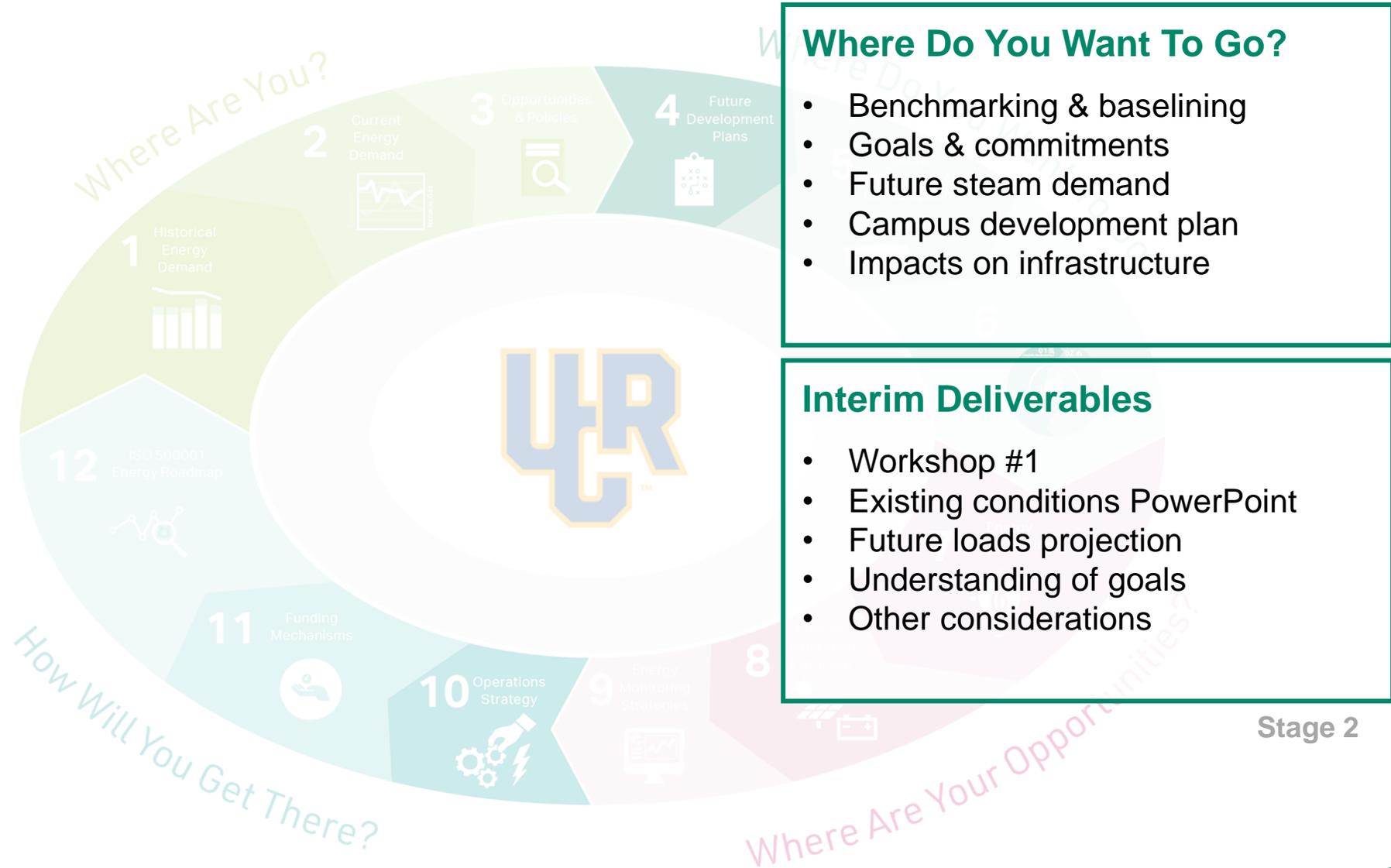
Stage 1



Decarbonization Planning Framework



Decarbonization Planning Framework



Decarbonization Planning Framework



Where Are Your Opportunities?

- Non-connected buildings
- Central utility plant
- Heat distribution alternatives
- Building interface improvements
- Costing analysis (Deliverable #2)

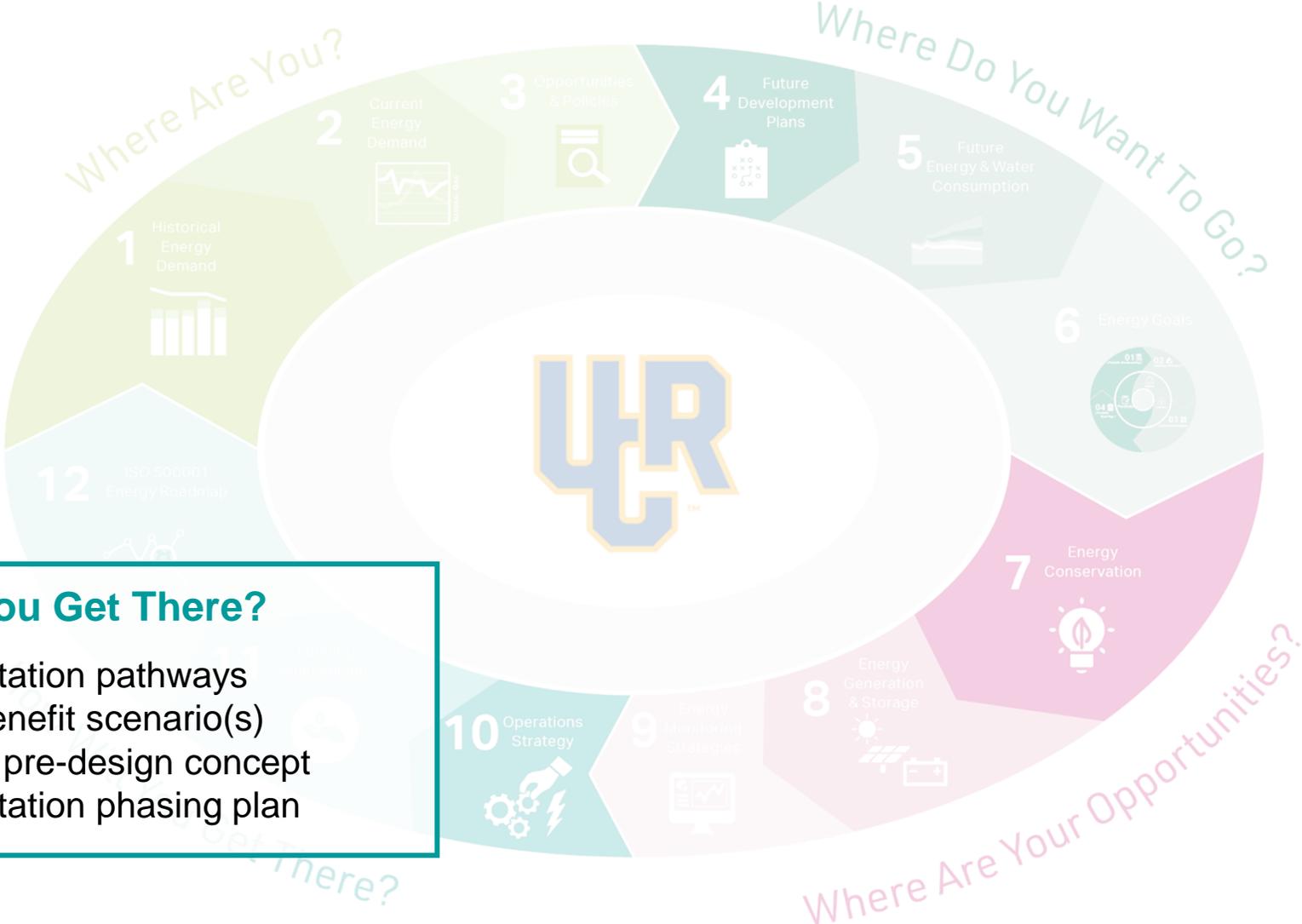
Decarbonization Planning Framework



- ### Interim Deliverables
- Workshop #2
 - Summary of opps. PowerPoint
 - Equity analysis (Deliverable #3)

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Decarbonization Planning Framework

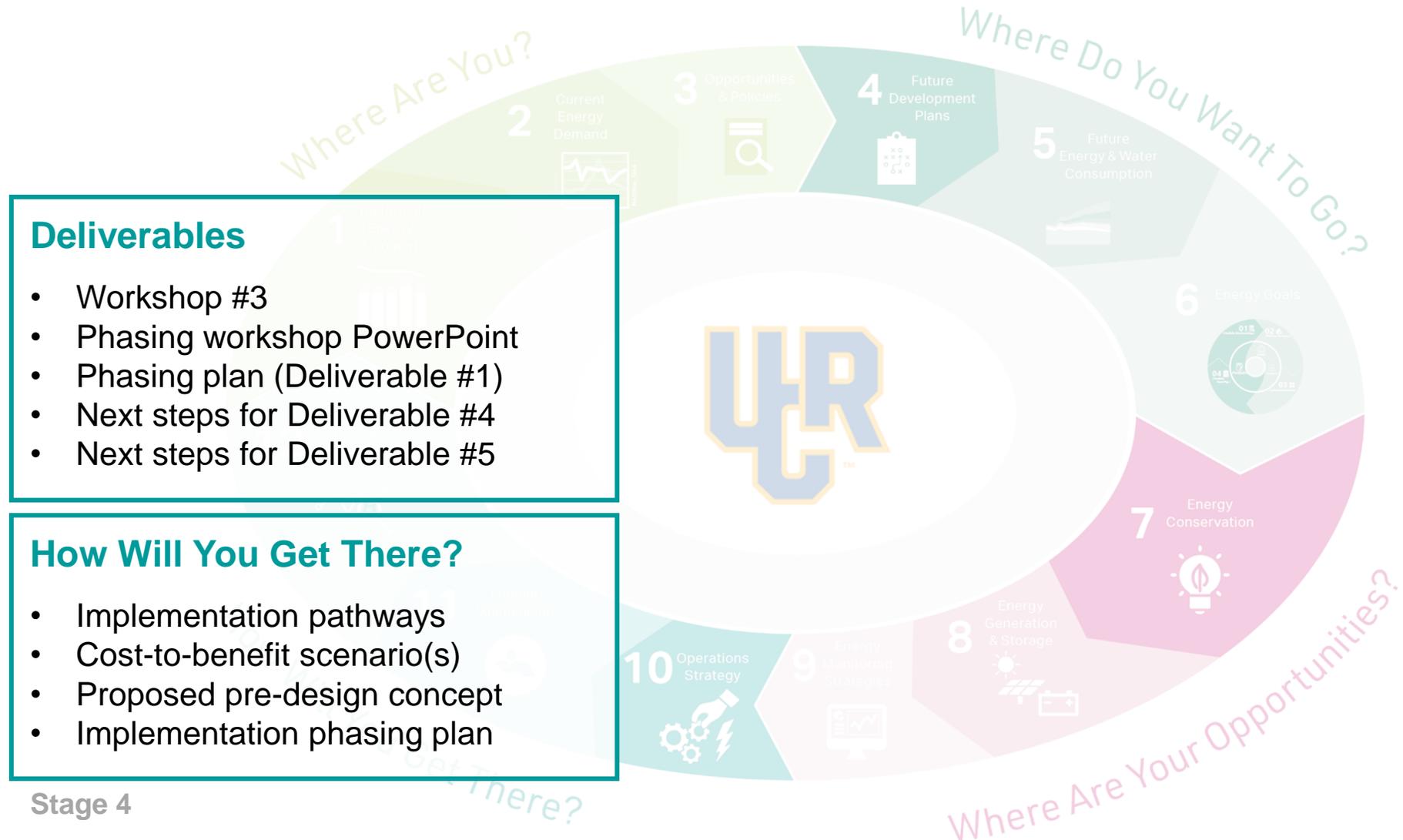


How Will You Get There?

- Implementation pathways
- Cost-to-benefit scenario(s)
- Proposed pre-design concept
- Implementation phasing plan

Stage 4

Decarbonization Planning Framework



Climate Justice, Equity, Climate Action Planning, Collaborative Involvement

Deliverables #3, 4, 5

	Tasks	Deliverables	Assumptions
3	<ul style="list-style-type: none">Review of UC framework, and applications to UCR climate planning process and outcomesLabor Vulnerability AssessmentDefine Equity Indicators	<ul style="list-style-type: none">Memo summarizing application of UC's EJ&CJ framework for UCR 's climate action planning activities, a labor vulnerability assessment and equity indicators.	<ul style="list-style-type: none">Deliverable #3 informs approach and methodology for Deliverable #4.Need to discuss what the indicators will be used to measure (success of Deliverables # 1, 2, 4, or 5)
4	<ul style="list-style-type: none">Review of state, regional, local and campus plans & GHG emissions inventory that inform climate action planning for UCR for scope 1,2,3 emissionsGap analysis that identifies further studies / actions required to support decarbonization by 2040 and community resilience and environmental justiceRecommendations for implementation process that will foster equitable outcomes	<ul style="list-style-type: none">Memo summarizing GHG emissions targets, primary contributors and sectors subsequent studies, assessments and research areas to focus on.	<ul style="list-style-type: none">Deliverables #4, 5 run in parallelSurvey undertaken in Deliverable #5 informs this deliverable
5	<ul style="list-style-type: none">Survey Design, dissemination and analysisWorkshop design, facilitation and integration	<ul style="list-style-type: none">Survey – Baseline of student and faculty research, capabilities and areas of interestStakeholder Workshop – Integrating deliverable 4 into campus curriculums and activitiesMemo summarizing potential research, education and other opportunities aligned with climate action planning.	<ul style="list-style-type: none">Stakeholder Identification would occur in Deliverables #1, 2 and be leveraged for this task

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Stakeholder Engagement

Key Stakeholders

Project Team
Facilities Services
Planning, Budget, & Administration
Planning, Design, & Construction
Real Estate Services
Transportation & Parking Services

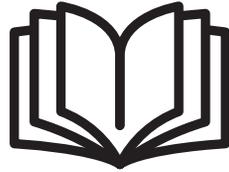
Faculty
Student Organizations
Center for Environmental Research & Technology
Center for Healthy Communities at UCR
Office of Diversity, Equity, & Inclusion
Office of the President, University of California
Environmental Health & Safety
Employee and Labor Relations
Office of Governmental & Community Relations
Risk Management
Dining Services
JLL

Riverside Public Utilities
Southern California Gas
Shell Energy
City of Riverside
Workforce Development Agency

WS

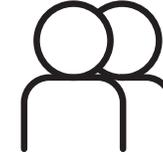
Workshop #1

Where Are You? Where Do You Want To Go? (3-Hour Hybrid)



Content

- Review existing conditions
- Review future growth plans
- Finalize goals and commitments
- Discuss other considerations



Attendees

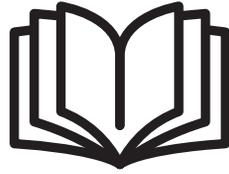
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Dining Services
JLL



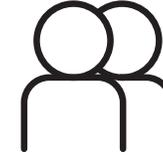
Workshop #2

What Are Your Opportunities? (2-Hour Hybrid)



Content

- Discuss Central Utility Plant load
- Review preliminary opportunities for decentralized buildings, Central Utility Plant & heating alternatives
- Present costing options
- Prepare for equity analysis



Attendees

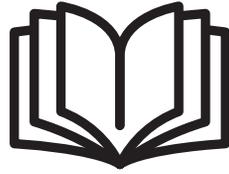
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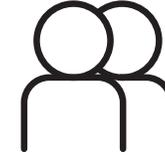
Workshop #3

How Will You Get There? (2-Hour Hybrid)



Content

- Review implementation pathways
- Define scenario parameters
- Discuss considerations for pre-design concept
- Discuss next steps for Net Zero Gap Analysis & Engagement Strategies



Attendees

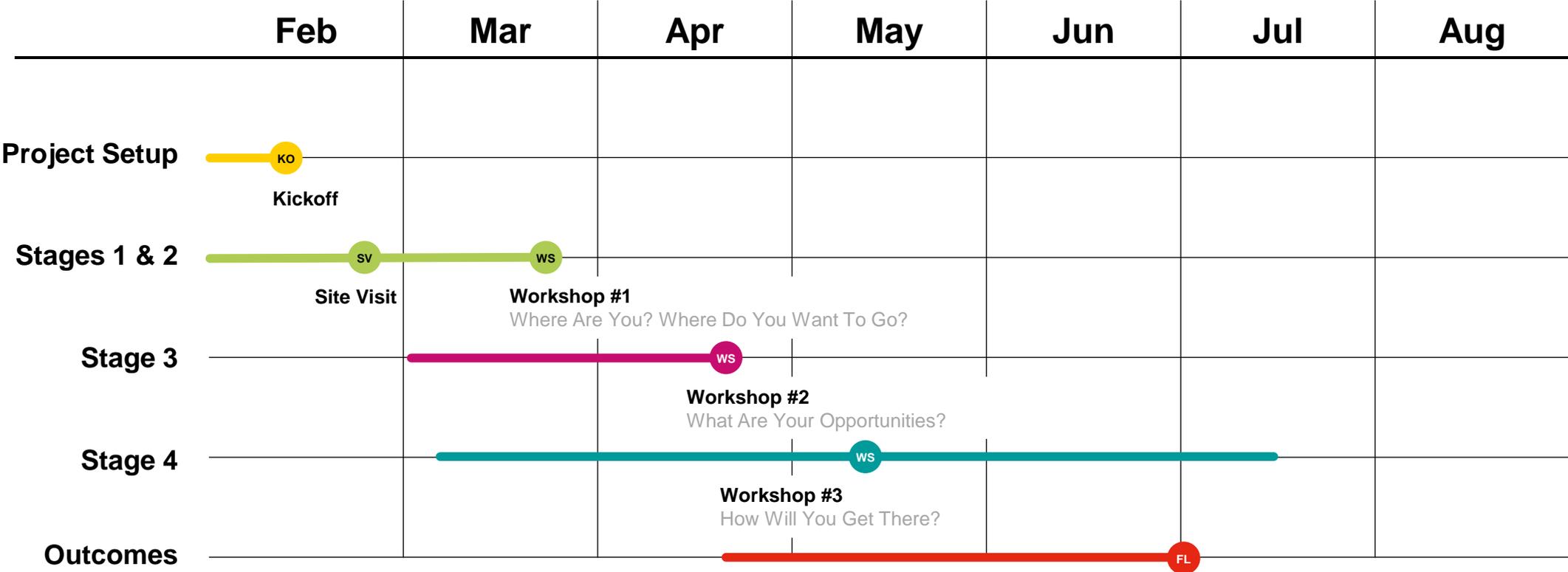
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Schedule

Schedule Details



- Final Deliverables**
- #1 – Phasing Plan
 - #2 – Cost-Benefit Analysis
 - #3 – Climate Justice / Equity Analysis
 - #4 – Next Steps: Climate Action Planning
 - #5 – Next Steps: Collaborative Involvement

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Next Steps

Pre- Site Visit Interviews

TBD

Amid conducting analysis of available data, AECOM will interview select points of contact:

- Facilities Services
- Planning, Design, & Construction

To best inform:

- Understanding of existing conditions
- Central Utility Plant



Site Visit

February 26 – March 1

Following analysis of available data, AECOM will conduct ground truthing of buildings on campus.

- 2 x Concurrent Field Teams
- Central Utility Plant and campus buildings

Outputs of the site visit include:

- Operational model of the Central Utility Plant
- List of existing heating interface by building
- Heating/cooling interfaces by building
- Infrastructure condition summaries
- Network steam/heat flow mapping
- Campus heat maps
- Site spatial and operational limitations

