West Valley Campus Master Plan
An Affordable, Realistic and Practical Approach to Planning a Highly Sustainable Campus

Green Council February 15, 2012

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COLLEGE OF THE DESERT
WEST VALLEY CAMPUS
111
10
Palm Springs
N Palm Canyon Dr
N Indian Canyon Dr
N Avenida Caballeros
N Farrell Dr
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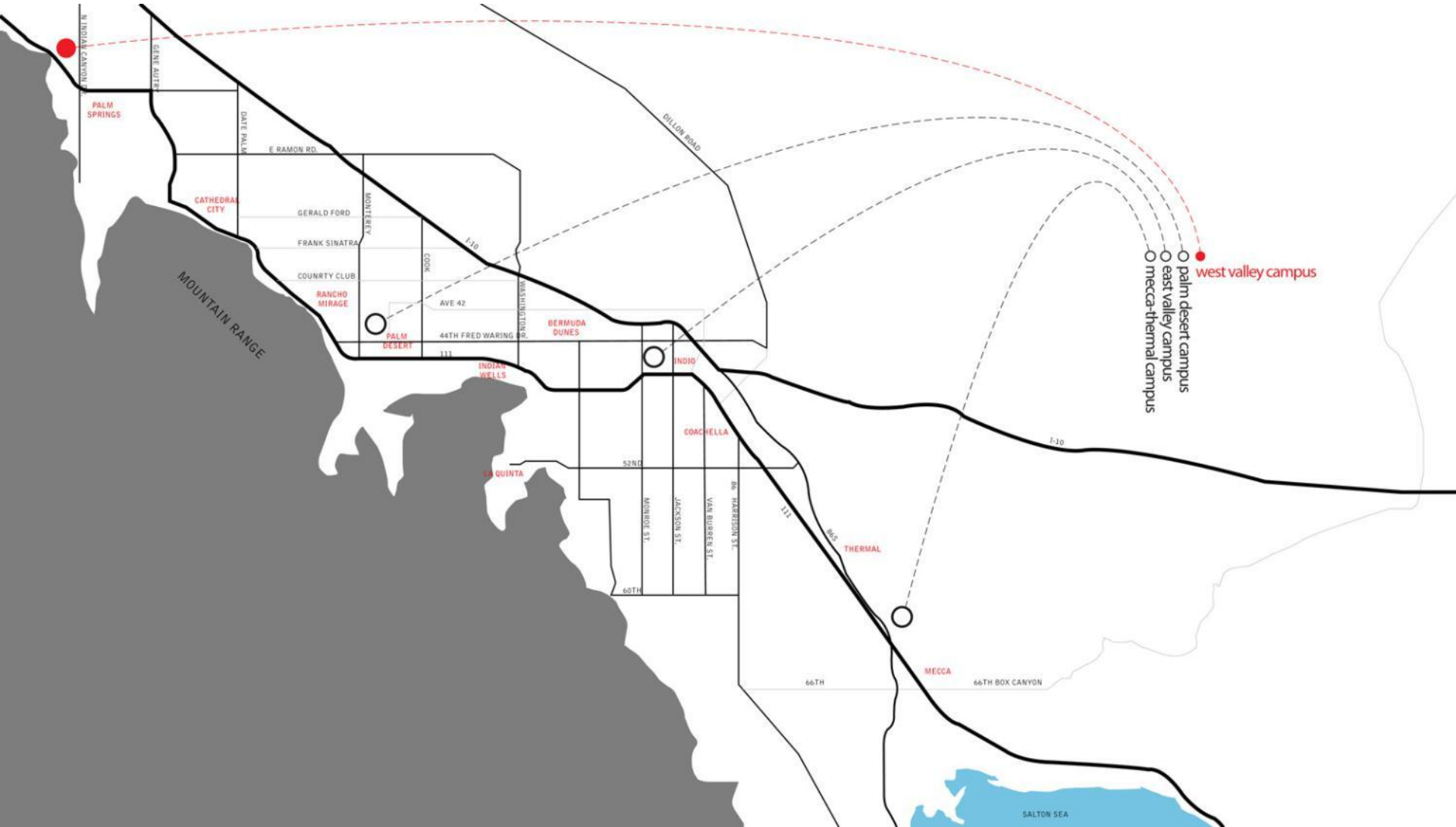
Image County of San Bernardino


N INDIAN CANYON
GENE AUTRY
DATE PALM
PALM SPRINGS
E RAMON RD.
CATHEDRAL CITY
GERALD FORD
FRANK SINATRA
COUNRTY CLUB
RANCHO MIRAGE
MONTEREY
COOK
I-10
WASHINGTON ST.
AVE 42
PALM DESERT
44TH FRED WARING DR.
111
INDIAN WELLS
BERMUDA DUNES
INDIO
DILLON ROAD
COACHELLA
52ND
LA QUINTA
MONROE ST.
JACKSON ST.
VAN BUREN ST.
HARRISON ST.
111
86S
THERMAL
60TH
MECCA
66TH
66TH BOX CANYON
MOUNTAIN RANGE
SALTON SEA
I-10
mecca-thermal campus
east valley campus
palm desert campus
west valley campus

Site acquisition

PARTNERING

EDUCATIONAL INSTITUTIONS
CITY OF PALM SPRINGS
NEIGHBORHOOD GROUPS
PUBLIC PRIVATE VENTURES
SOUTHERN CALIFORNIA EDISON
DESERT WATER AGENCY

Collaboration with City

City of Palm Springs Objectives

- Center for sustainable technology, economic and business development
- Workforce training for new jobs
- Alternate transportation hub
- New gateway to city

Partnership Inducements

- Donation of 119 acres
- $5-9 million in redevelopment and other funds
- Tax increment allocation, ongoing

Partnership Agreement

- Definition of the futuristic campus

GreenPark Solar Facility

Southern California Edison
60 acre photovoltaic field
Up to 10 MW of power
Revenue generator—land lease
Training facility

Four Pillars

Hospitality and Culinary Arts

Green Energy and Technology

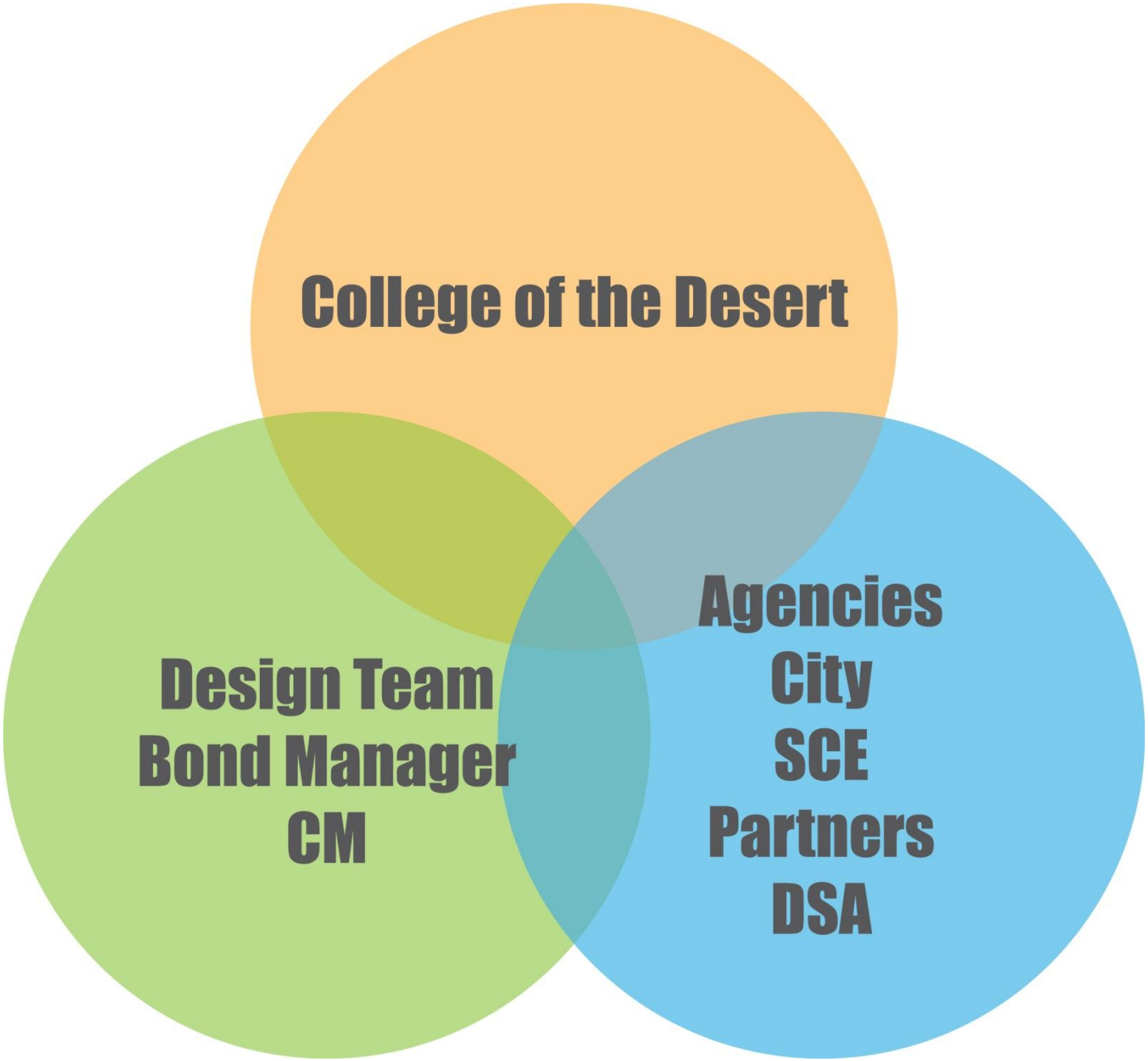
Basic Skills Education

Allied Health

Media and Arts

TEAM APPROACH

Integrated Design Team


College of the Desert
Design Team
Bond Manager
CM
Agencies
City
SCE
Partners
DSA


Bars - straight
Organic Bars
Compact
energy
Sustainability
Integrated
campus
Performance
community
waste
water

Guiding Principles

Performance Targets

SELF-SUSTAINABILITY

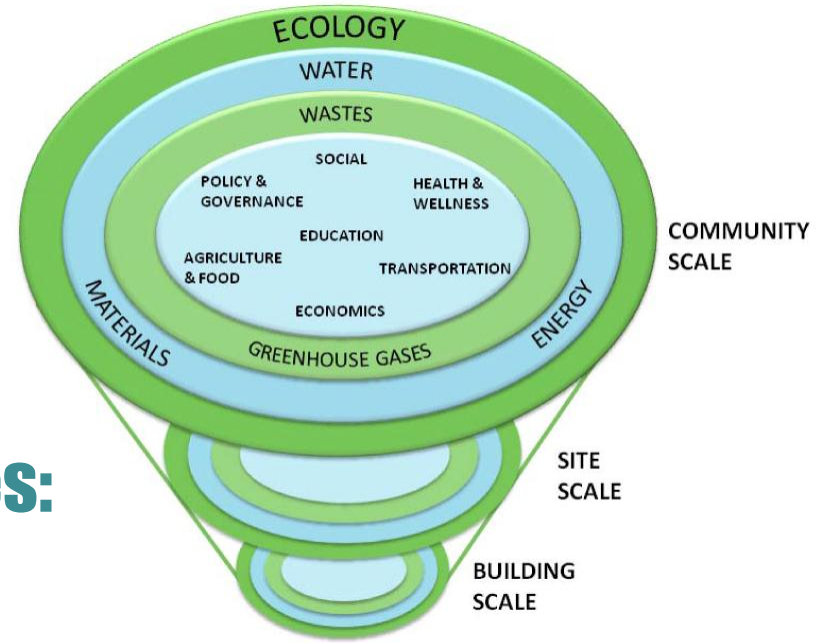
A HOLISTIC APPROACH

Educational
Social
Environmental
Economical
Physical

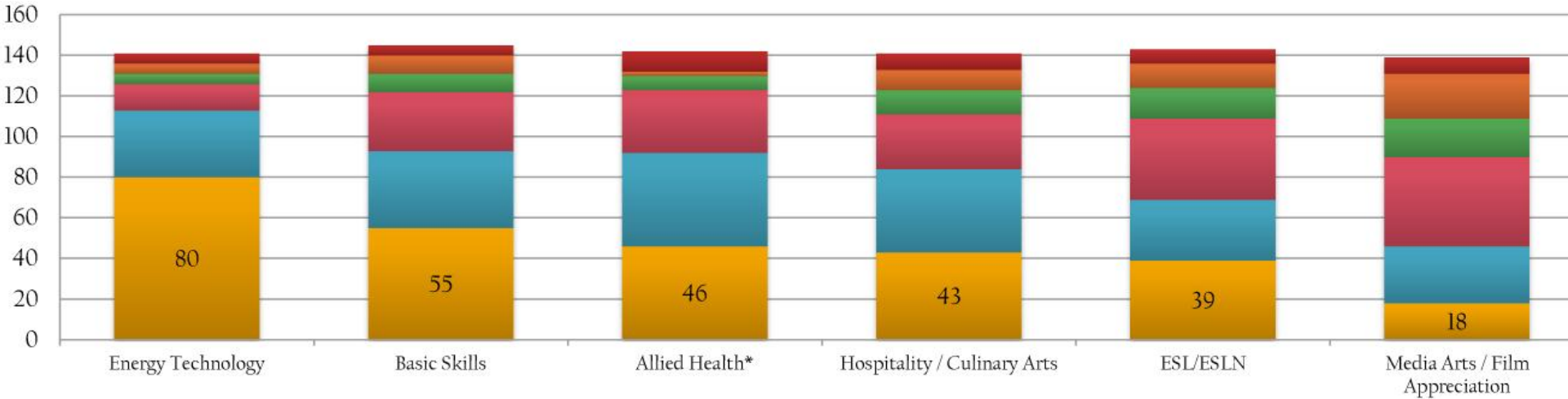
Integrated Sustainability Guidelines

1. Zero Waste
2. Sustainable Hydrology
3. Net-Zero Energy Utilization
4. Carbon Neutral
5. Ecological Regeneration

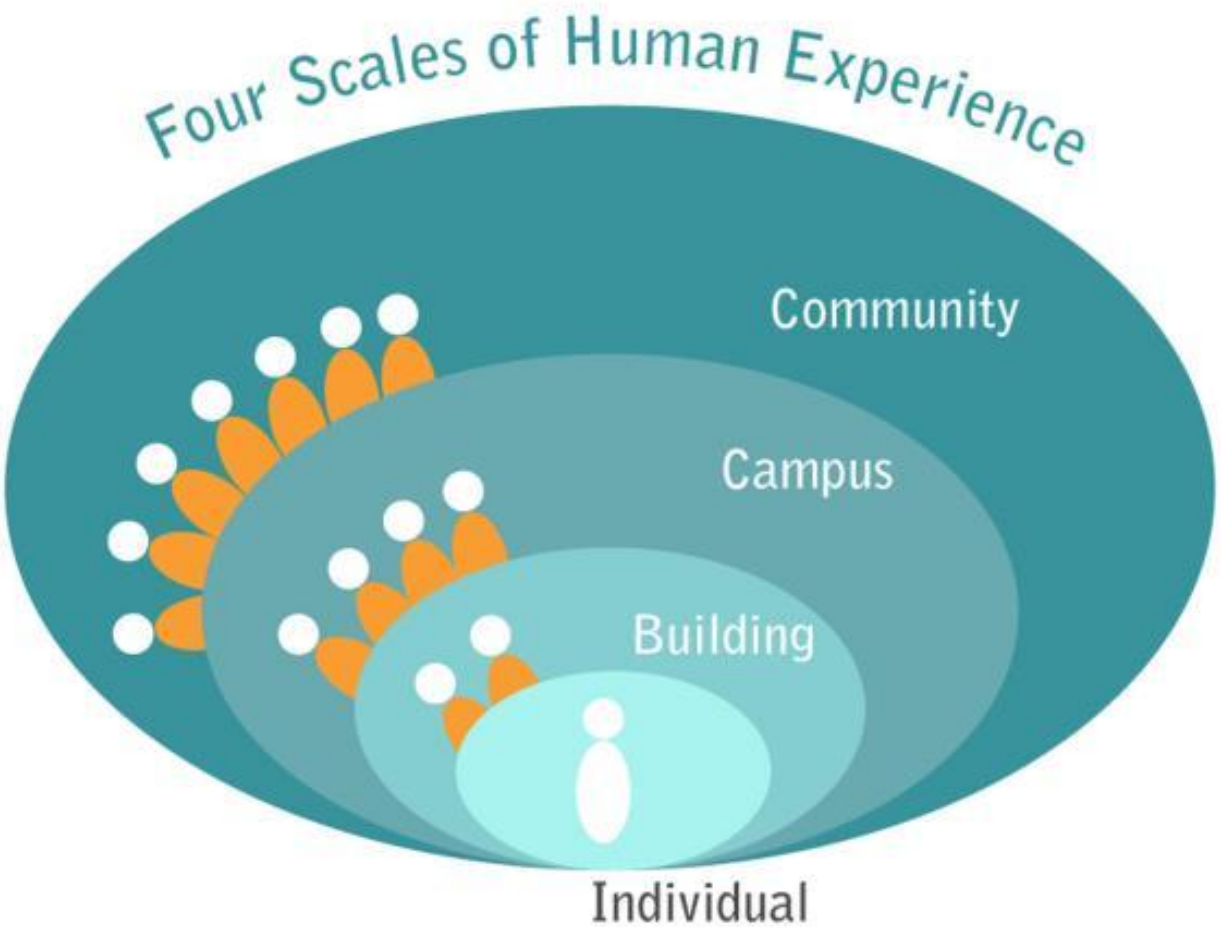
Scales:



Strategic Educational Master Plan



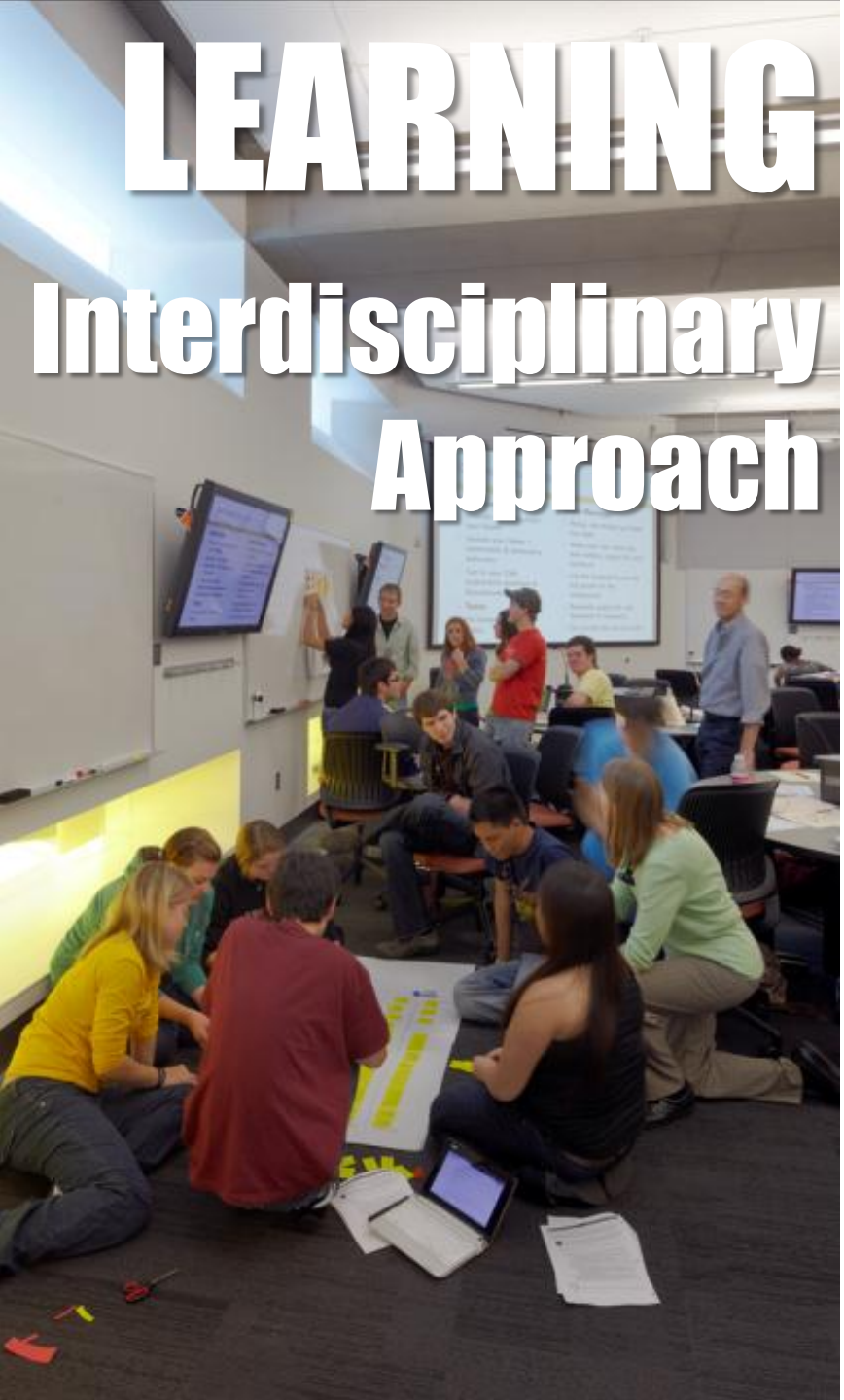
Four Scales


Four Scales of Human Experience
Community
Campus
Building
Individual

GOALS & VISION

Self-Sustaining Campus

- Feed the Academic & Professional Needs of the Region
- Act as Catalyst for Region
- Community Connection
- Gateway, Landmark & Identity
- Design Excellence

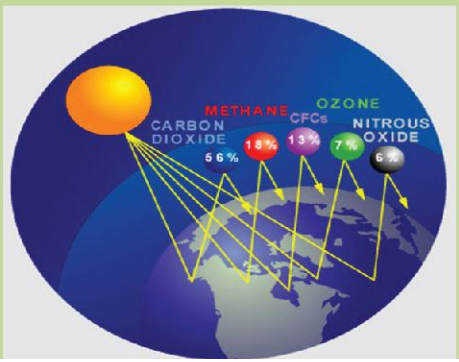


LEARNING EXPERIENCE

Interdisciplinary Approach

- Interactive student learning with Instructor as coach
- Improved problem solving
- Increased conceptual understanding
- Improved attitudes
- Increased success rate - failure rates drastically reduced

Building Performance: Five-Zero Plan

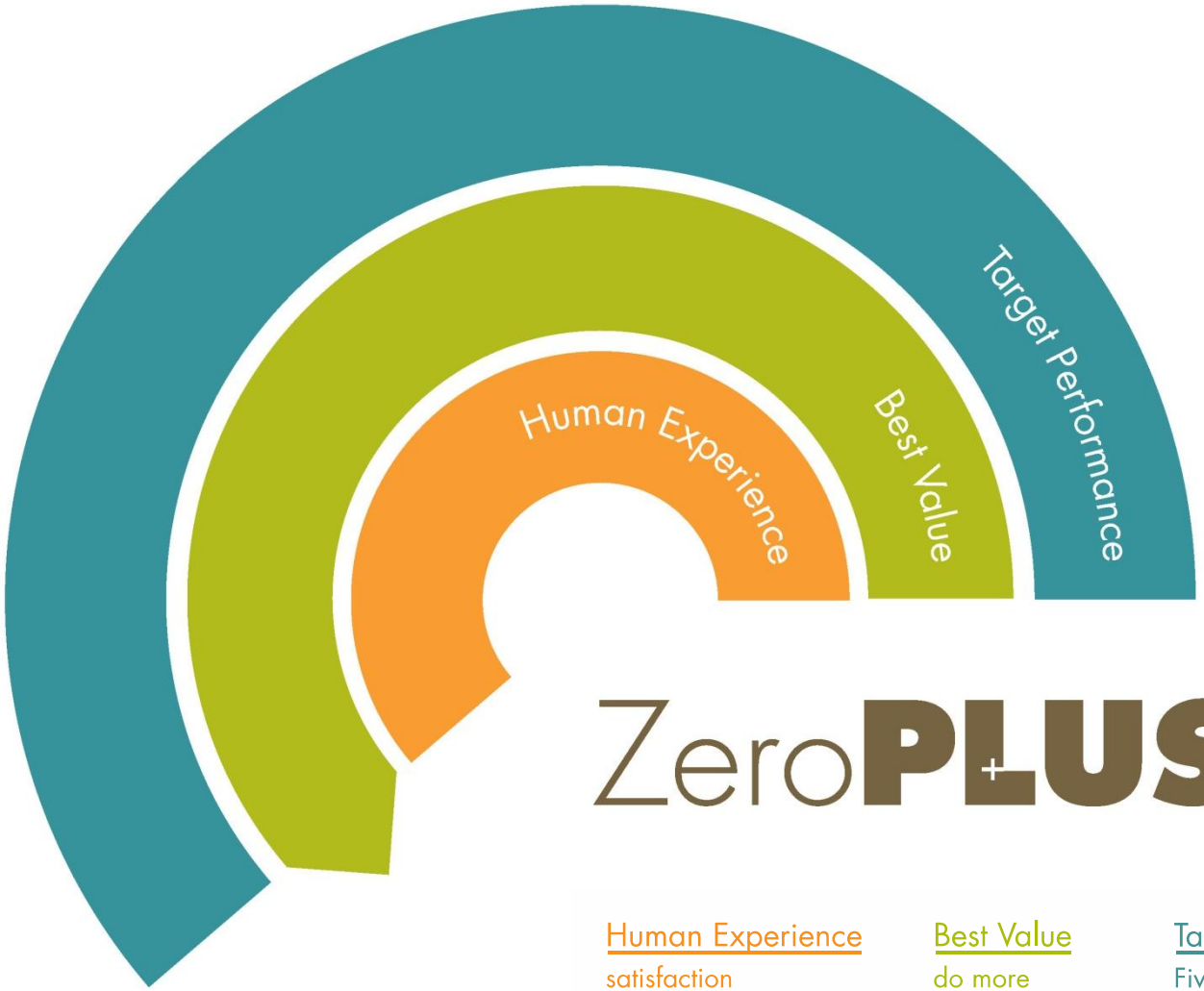
Building Performance: Five Zero Plan		SCALE			
		Community	**Campus**	**Building**	**Individual**
5 Energy					
   	**Intent**	Reduce fossil energy dependency; increase energy autonomy	Produce more electricity that is consumed.	Be energy efficient	Educate users about energy production and conservation and how inidvidual choices affect building performance and ecology
	Action	Understand micro climate, sun wind	Master Plan that provides design guidelines to address micro climate, sun and wind	Start at "Zero Energy" and establish aggressive energy performance targets and plan for making more electricity that what is consumed on campus	Change consumption behavior
	Action	City and state carbon neutral goals. California Global Warming Soltions Act of 2006, 25% reduction by 2020, 80% reduction by 2050	Develop renewable energy plan that has diversity and includes: solar, wind, fuel cell, waste-to-energy, etc.	Use roof surfaces for solar panels which provides shading to help reduce cooling load and provides a surface for electricity production.	
	Action		Produce more than consumed. Share outside boundaries. Produce, reduce, offset. Use "free energy" first. Sun, wind, land. Renewable energy	Passive and active system. Envelope optimization: glazing, termal mass, night flushing, mixed mode, natural ventiallation, daylighting controls, solar hot water, solar absorption cooling	Expand comfort range to reduce energy consumption.
	Action		Establish EUI targets for campus master plan that align with Architecture 2030 (GHG goals) EUI 40 to 50	Establish Building EUI targets consistent with campus master plan. EUI 40 to 50	
	Action		Study balance between most efficient cooling systems and water use.	Solar thermal, wind, absorption cooling, combined heat and power, geo exchange, efficient systems	
	Action		Economically self sustainable. Revenue positive regargless of ROI period		
	Action		energy Infrastructure adaptable to future changes	Orientation and massing	
6 Green House Gas (GHG)					
	**Intent**	Reduce community GHGs	Generate net zero GHGs	Target low GHG emissions	Use mass transit and adjust life style to be more pedestrian and bike oriented.
	Action	Use renewable resources	Provide 100% renewable energy for campus.	Building designed to reduce energy consumption with EUI targets.	Change consumption behavior
	Action	California Global Warming Solutions Act of 2006, City of Palm Springs Carbon Neutral Goal	Create climate action plan for the campus that aligns with Coachella Valley plan and partner with community for GHG reductions.	Respond to climate action plan	Respond to climate action plan
	Action	GHG reduction of 25% (1990 levels) by 2020, 80% reduction by 2050	ISO 14064 Part 1 Spec...for quatification and reporting GHG include Stage 1, Stage 2 and Stage 3	ISO 14064 Part 1 Spec...for quatification and reporting GHG include Stage 1, Stage 2 and Stage 3	
	Action	Source materials from suppliers with climate action plans	Aligns with waste and energy	Aligns with waste and energy	
	Action	Alternative transportation	Report CO2 per GWh of electricity	Report CO2e per GWh of electricity	
	Action	Climate action plan	Better utilize Amtrak commuter station		
	Action	Local sourcing of products	Master plan to include local materials	Buildings design to use local materials	Buy local
	Action	Convert food waste to biogas and develop	Host biogas plant on campus	Design to buildings accept biogas,	

Comprehensive Sustainability SETLOG

THE SITE CHALLENGES


WATER
WIND
The ELEMENTS
SUN|HEAT


ALTA CRESTA SUMMIT DR.
ALTA RIDGE
MIRA GRANDE
TIERRA LN.
VENTANA RIDGE
LAS VEGAS RD.
W. SUNVIEW AVE
W. VISTA DR.
CORAZON AVE.
E AVE CERCA
RADIO RD.
OASIS RD.
SAN RAFAEL RD.
SAN RAFAEL DRIVE
1952 ft



ZeroPLUS℠

Human Experience
satisfaction
well-being
performance

Best Value
do more
use less
build less
life-cycle value

Target Performance
Five-Zero℠ Plan
- energy
- carbon
- water
- waste
- materials

SUSTAINABLE METRICS AND REPORTING SYSTEMS

Zero-Plus Approach embodies these metrics and goes beyond.

Registered Master Plan

The Living Building Challenge

PETALS

SITE
Limits to Growth
Urban Agriculture
Habitat Exchange
Car Free Living

WATER
Net Zero Water
Ecological Water Flow

ENERGY
Net Zero Energy

HEALTH
Civilized Environment
Healthy Air
Biophilia

MATERIALS
Red List
Embodied Carbon Footprint
Responsible Industry
Appropriate Sourcing
Conservation + Reuse

EQUITY
Human Scale + Humane Places
Democracy + Social Justice
Rights to Nature

BEAUTY
Beauty + Spirit
Inspiration + Education

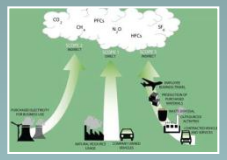
THE SUSTAINABLE SITES INITIATIVE™

Accelerating Campus Climate Initiatives

Zero-Plus℠ Approach

Five-Zero℠ Plan:

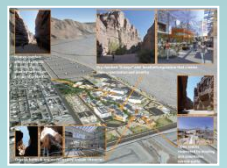
Zero-Plus Energy:
Makes more energy than it consumes.



Zero-Plus Carbon:
Cleans the air.

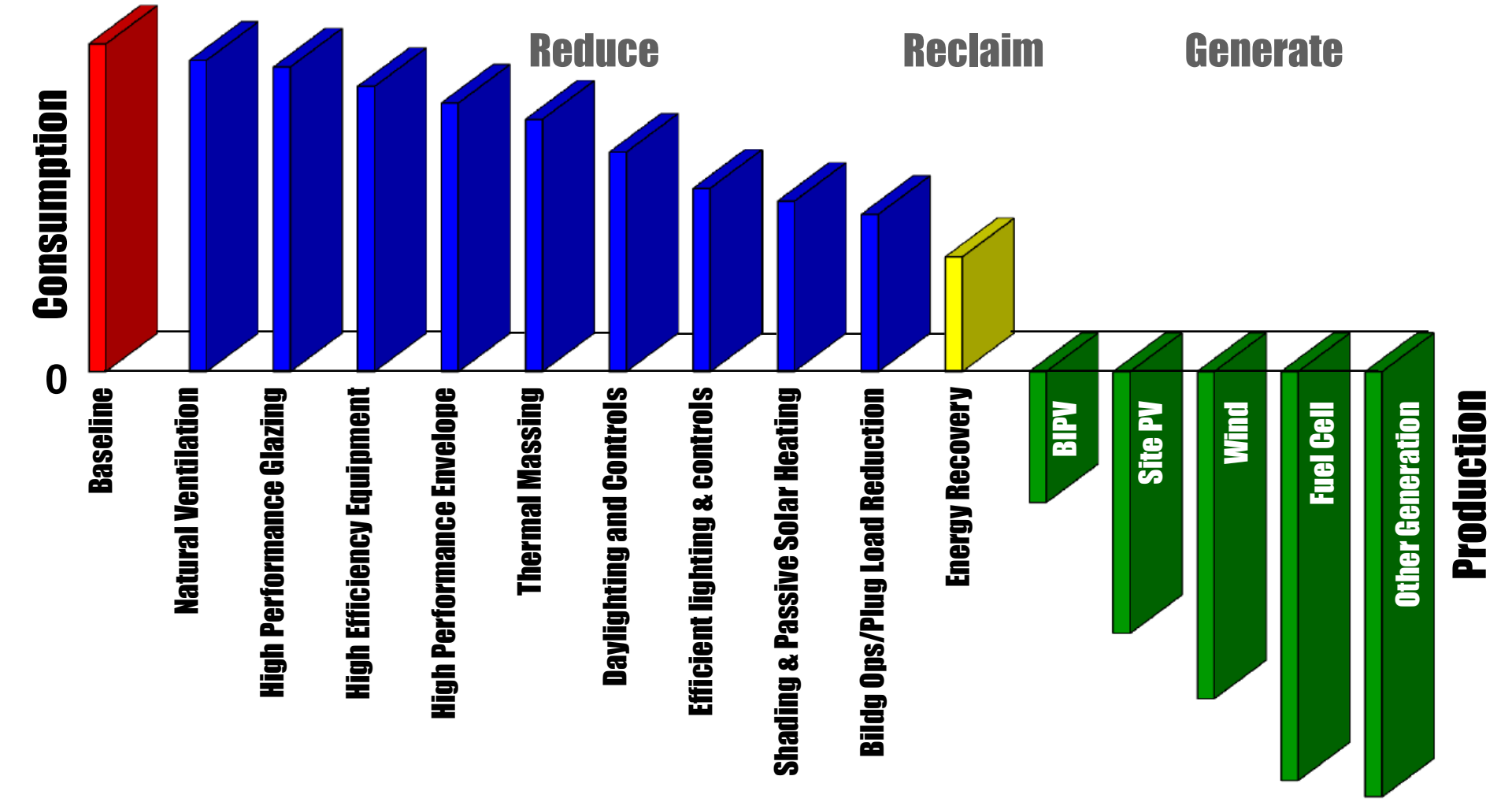
Zero-Plus Water:
Renews water resources.

Zero-Plus Waste:
Produces resources not waste.



Zero-Plus Material:
Mimics nature, eliminates toxins.

Zero-Plus℠ Energy Plan



Efficiency Toward Zero

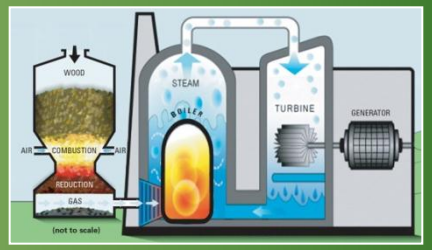
Energy Targets Zero-Plus

Community Scale Wind

Solar Opaque

Micro Turbine

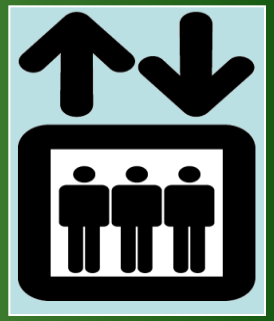
Fuel Cell



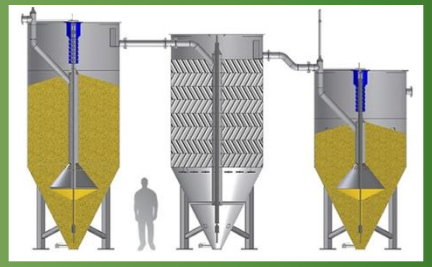
Biomass Gasification

Solar-See-Thru Micro-Scale

Bio-Gas Digester



Motion & Integrated Systems



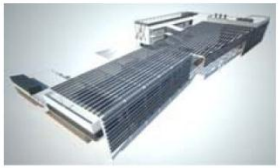
Waste to Energy

Wind Innovations

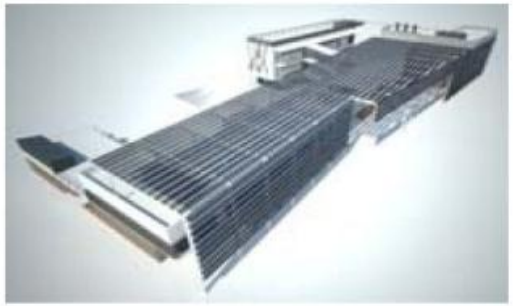
Today

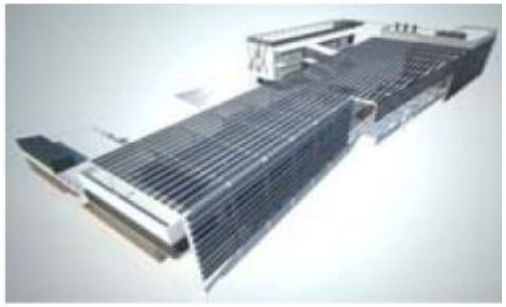
Emerging

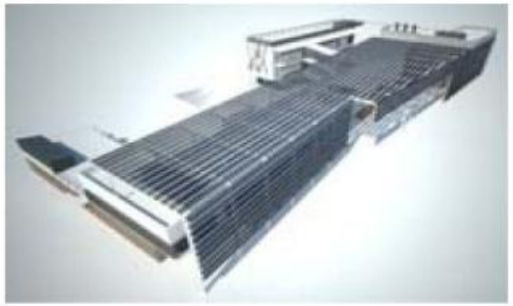
Future

ID	Description	Recommended Phase 1	Recommended Full Campus	Ranking (Weighted)	Ranking (Unweighted)	5 Zeroes: Energy	Water	Carbon	Waste	Materials	Evaluation Criteria: First Cost	Utility Cost	Staff Costs	Replacement Costs	Total Life Cycle	Teaching Integration	System Synergies	Innovative/ Leadership	Life Expectancy	Minimize Service	Flexibility/ Churn	Response Time	Other Criteria: Aligns with MasterPlan	Space Needed	Regulatory Issues	Site & Climate	Comfort	Acoustics
Weighting (1 is lowest, 10 is highest)						10	10	10	10	10	10	10	8	6	9	8	9	5	6	8	7	7	8	6	8	9	PR	PR
R E	**Renewable Energy**																											
RE 1.1	Photovoltaic Covered Parking 	Recommended	Recommended	100	12	1	-1	1	0	0	1	1	0	0	1	1	1	1	1	1	0	0	1	0	1	1		
RE 1.2	Building Integrated Photovoltaics 	Recommended	Recommended	100	12	1	-1	1	0	0	1	1	0	0	1	1	1	1	1	1	0	0	1	0	1	1		
RE 1.3	Solar Tracking Photovoltaics 		Recommended	94	11	1	-1	1	0	0	1	1	0	0	1	1	1	1	1	1	0	0	1	-1	1	1		
RE 2.1	Utility-Scale Wind Turbines 		Needs Investigation	50	6	1	0	1	0	0	-2	1	-1	0	1	1	1	1	1	1	0	0	1	-1	-1	1		
EG 4	Fuel Cells 	Needs Investigation	Needs Investigation	98	12	1	-1	1	0	0	1	1	-1	0	1	1	1	1	1	1	0	0	1	1	1	1		

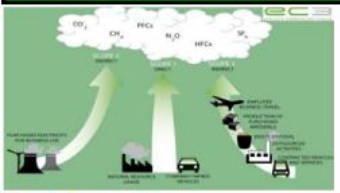
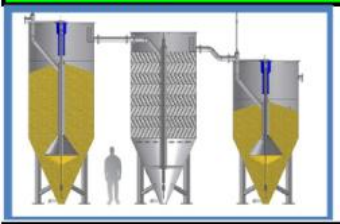
Renewable Energy SETLOG

ID	Description	Recommended Phase 1	Recommended Full Campus	Ranking (Weighted)	Ranking (Unweighted)	5 Zeroes: Energy	Water	Carbon	Waste	Materials
Weighting						10	10	10	10	10
R E	**Renewable Energy**									
RE 1.1	**Photovoltaic Covered Parking** 	Recommended	Recommended	**100**	12	1	-1	1	0	0
RE 1.2	**Building Integrated Photovoltaics** 	Recommended	Recommended	**100**	12	1	-1	1	0	0

ID	Description	Evaluation Criteria: First Cost	Utility Cost	Staff Costs	Replacement Costs	Total Life Cycle	Teaching Integration	System Synergies	Innovative/ Leadership	Life Expectancy	Minimize Service	Flexibility/ Churn	Response Time
Weighting		10	10	8	6	9	8	9	5	6	8	7	7
R E	**Renewable Energy**												
RE 1.1	**Photovoltaic Covered Parking** 	1	1	0	0	1	1	1	1	1	1	0	0
RE 1.2	**Building Integrated Photovoltaics** 	1	1	0	0	1	1	1	1	1	1	0	0

ID	Description	Recommended Phase 1	Recommended Full Campus	Ranking (Weighted)	Ranking (Unweighted)	Other Criteria: Aligns with MasterPlan	Space Needed	Regulatory Issues	Site & Climate	Comfort	Acoustics
Weighting						8	6	8	9	PR	PR
R E	**Renewable Energy**										
RE 1.1	**Photovoltaic Covered Parking** 	Recommended	Recommended	100	12	1	0	1	1		
RE 1.2	**Building Integrated Photovoltaics** 	Recommended	Recommended	100	12	1	0	1	1		

Zero-Plus, Five-Zero Plan with Phasing

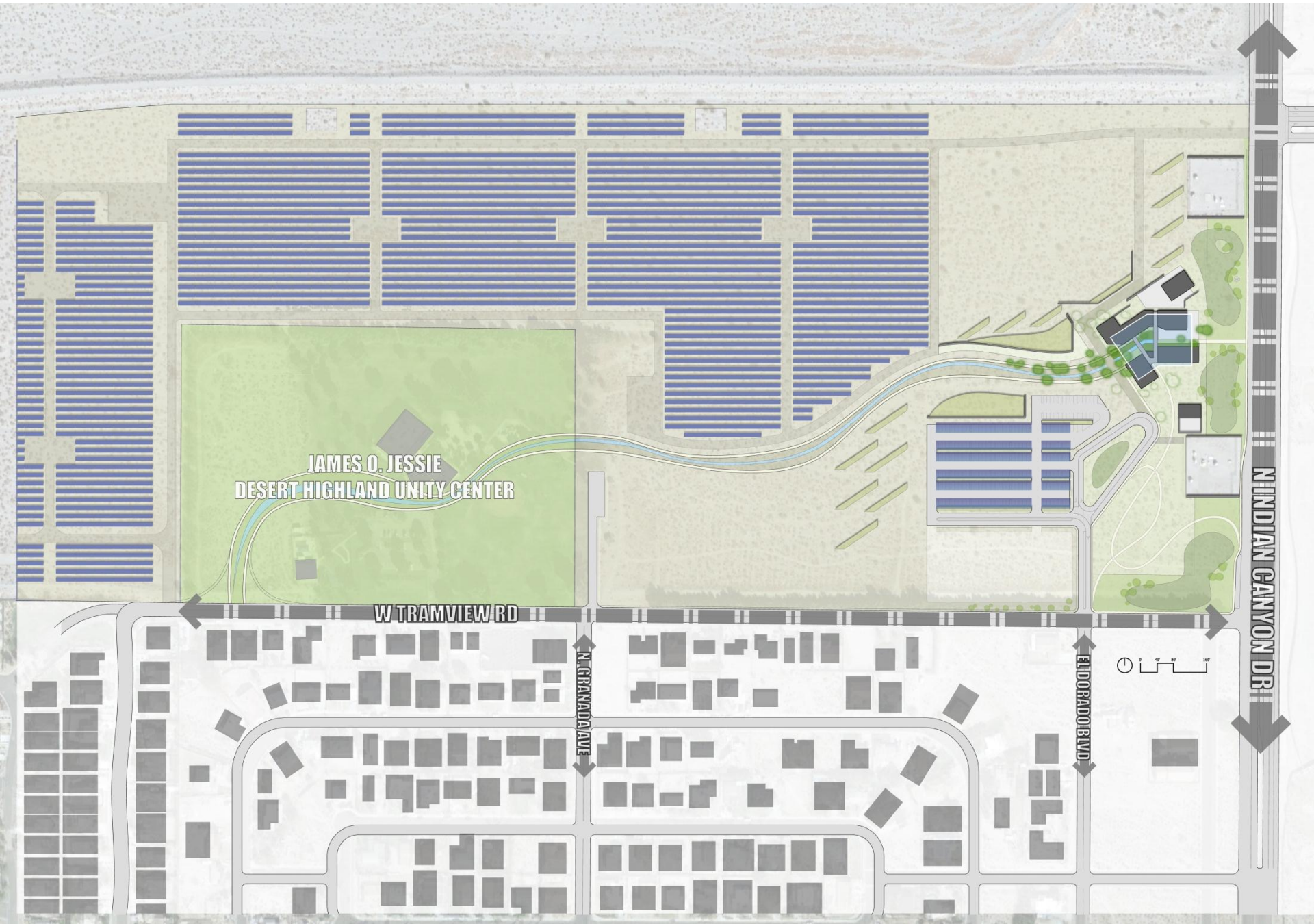
		Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Full Build-out
Zero-Plus Energy	**Makes more energy than it consumes**						
	PV on parking canopies (3rd Party PPA)	Recommend	Increased	Increased	Increased	Increased	Increased
	PV on building roof/structure (3rd party PPA)	Recommend	Increased	Increased	Increased	Increased	Increased
	PV Farm (vacant area (by 3rd party) 3 MW +/-	Recommend	Continue	Reduced	Reduced	Continue	Continue
	Solar Hot Water	Recommend	Recommend	Recommend	Recommend	Recommend	Recommend
	Fuel Cells (Bloom Box)	If 3rd Party funds	Consider	Consider	Consider	Consider	Consider
	Bio Mass (M2 Renewable)	NR - Volume	If sewage volume	If sewage volume	Recommend	Recommend	Recommend
	Water Cooled Chiller w/ TES	Recommend	Recommend	Recommend			
	Full Central Plant	Not Recomnd	Not Recomnd	Not Recomnd	Recommend	Recommend	Recommend
	Low EUI	40 to 50	40 to 50	40 to 50	40 to 50	40 to 50	40 to 50
Zero-Plus Carbon	**Cleans the air**						
	Climate Action Plan (Existing Campus proposal)	Consider	Recommend	Recommend	Recommend	Recommend	Recommend
	Carbon Footprint Audit (Energy Audit)	Consider	Recommend	Recommend	Recommend	Recommend	Recommend
	Embodied carbon and energy of materials	Recommend	Recommend	Recommend	Recommend	Recommend	Recommend
	Architecture 2030 Compliance	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
	Renewable Energy (see Zero Energy)	Recommend	Recommend	Recommend	Recommend	Recommend	Recommend
	Alternative Transportation	Recommend	Recommend	Recommend	Recommend	Recommend	Recommend
Zero-Plus Water	**Renews water resources**						
	Water balance planning (community scale)	Cooling vs. water. More water needed for zero.			If sewage volume is sufficient for onsite water treatment		
	Storm water/Grey water caputure and re-use	Limited	Limited	Limited	Limited	Limited	Limited
	Well blowdown water	Recommend	Recommend	Recommend	Recommend	Recommend	Recommend
	Water use budgets	Recommend	Recommend	Recommend	Recommend	Recommend	Recommend
	Onsite wastewater treatment (M2/Living Machine)	NR - Volume	If sewage volume	If sewage volume	Recommend	Recommend	Recommend
	Sustainable Site Initiative	Recommend	Recommend	Recommend	Recommend	Recommend	Recommend
	Vacuum Toilets (versus piping for reclaimed water)	Recommend	Recommend	Recommend	Recommend	Recommend	Recommend
	Low water landscape	Recommend	Recommend	Recommend	Recommend	Recommend	Recommend
	Building piped for use of reclaimed water	Not Recomnd	Not Recomnd	Not Recomnd	Not Recomnd	Not Recomnd	Not Recomnd
Zero-Plus Waste	**Produces resources not waste**						
	Sewage waste to energy (M2)	NR - Volume	If sewage volume	If sewage volume	Recommend	Recommend	Recommend
	Solid waste to energy	NR - Volume	Scale?	Scale?	Scale?	Scale?	Scale?
	Food waste (Culinary arts)	When Built	When Built	When Built	When Built	When Built	When Built
	Construction Waste	Recommend	Recommend	Recommend	Recommend	Recommend	Recommend
	Operations Solid Waste Management Plan	Recommend	Recommend	Recommend	Recommend	Recommend	Recommend
	Aggressive Recycle	Recommend	Recommend	Recommend	Recommend	Recommend	Recommend
	Vacuum Trash	NR - Budget	If solid waste volume is sufficient and if funding is available				
Zero-Plus Materials	**Mimics nature, eliminates toxins**						
	Closed loop materials use	Limited	Incremental	Incremental	Incremental	Incremental	Incremental
	Material cleans air (ie. absorb carbon, 02 prod.)	Limited	Incremental	Incremental	Incremental	Incremental	Incremental
	VOC's Management	Recommend	Recommend	Recommend	Recommend	Recommend	Recommend
	Chemical "Red List"	Recommend	Recommend	Recommend	Recommend	Recommend	Recommend
	Natural materials and biomimcry	Recommend	Recommend	Recommend	Recommend	Recommend	Recommend
	Passive Building Strategies	Recommend	Recommend	Recommend	Recommend	Recommend	Recommend


Human comfort affects of canyon: thermal mass, shading protection and wind protection
Dry riverbed “Arroyo” and localized vegetation that creates place organization and identity
Organic forms & spaces defined by unique character
Open spaces connected by winding and sometimes narrow paths

FULL BUILD-OUT 650,000SF


COLLEGE of the DESERT

PHASE 1 50,000SF

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