



## Career Pipelines for Energy Efficiency

Thursday, July 11, 2019  
9:00-10:30 AM



# Panelists

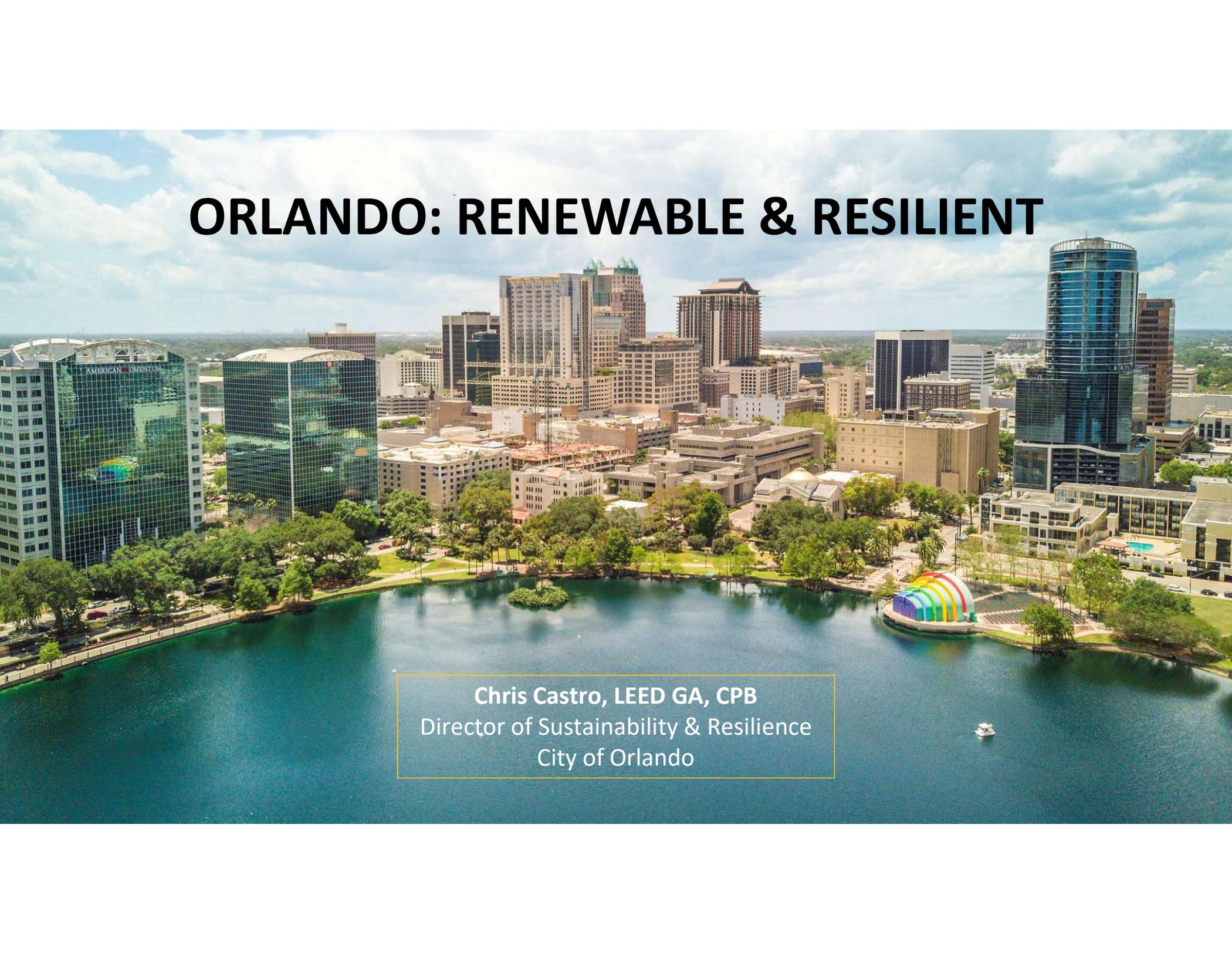
- Chris Castro, City of Orlando, FL
- Christos Chrysiliou, L.A. Unified School District
- Sarah Zaleski, U.S. Department of Energy

**Chris Castro**

City of Orlando

U.S. DEPARTMENT OF  
**ENERGY**

# ORLANDO: RENEWABLE & RESILIENT

An aerial photograph of the Orlando city skyline. In the foreground, a large, calm lake reflects the sky. A colorful, rainbow-striped dome structure is situated on the right side of the lake. The city is filled with various buildings, including several prominent glass skyscrapers. One building on the left has 'AMERICAN MENTUM' written on its facade. The sky is blue with scattered white clouds.

Chris Castro, LEED GA, CPB  
Director of Sustainability & Resilience  
City of Orlando



Environment

Resiliency

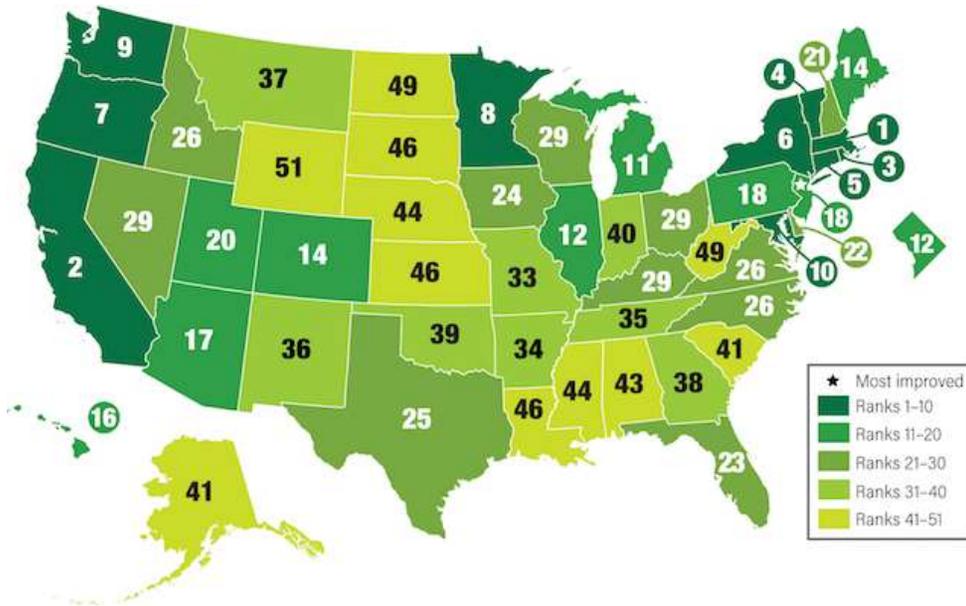


Economy

Equity



# Florida by the Numbers



## Florida

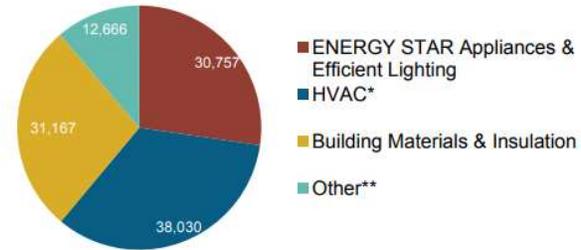
Energy Efficiency Jobs in America

112,620  
Total Jobs

### What are EE Jobs?

Delivery of goods and services that lower energy use by improving technologies, appliances, buildings, and energy systems.

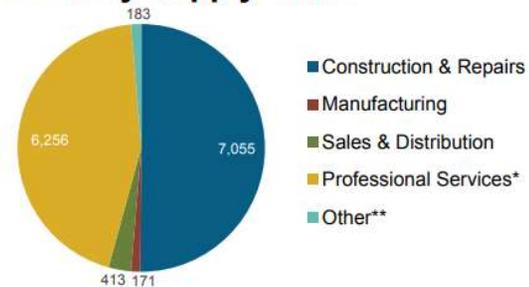
### Jobs by Sector



\*Heating, Ventilation, Air Conditioning of higher than standard efficiency/renewable heating & cooling

\*\*Other such as energy audits, building certifications, and software services

### Firms by Supply Chain



\*Professional services includes finance/accounting, architecture, engineering, R&D, etc.

\*\*Other such as maintenance, and business and nonprofit organizations

In Florida, EE Jobs Comprise:

17%  
of All Construction Jobs

35%  
of All Energy Sector Jobs

10%  
of Florida residents employed in EE are Veterans

Presented by:



Good for the Economy.  
Good for the Environment.





# Energy Specialist Training Program



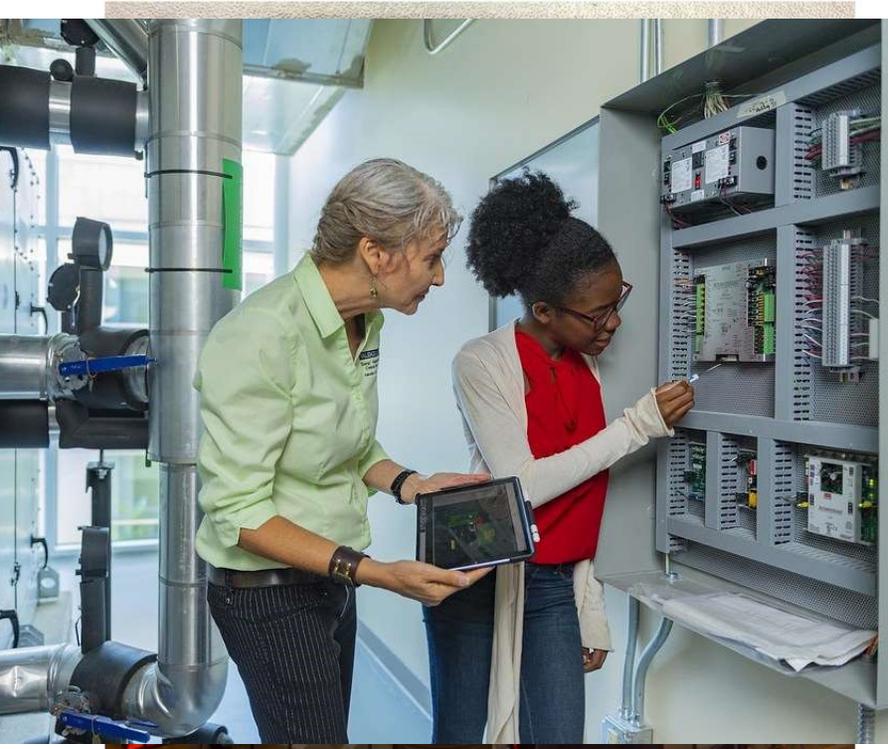
- Provided 4-week training for 30 students at the University of Central Florida
- Performed ESPM benchmarks for UCF buildings + 5 private buildings
- Students deployed as “Energy Specialist” for the participating buildings
- Students received education stipend following the BOTB

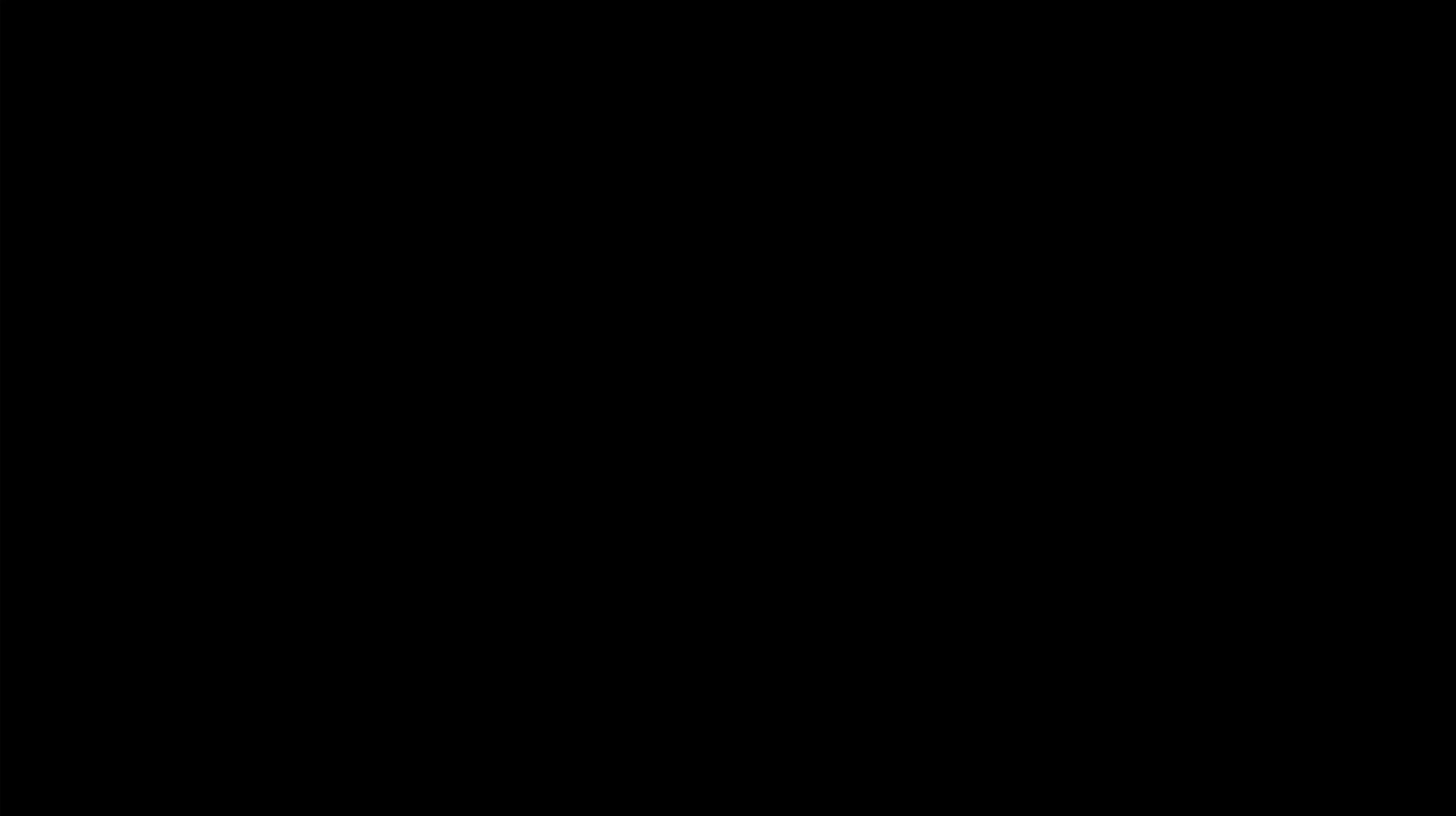


# Energy Management & Controls Technology (EMCT)

## New AS degree offered at Valencia College

- 60 credit hour degree
- Teaches students how to manage and control a building's electrical and mechanical systems efficiently, using a broad range of current and emerging technologies.
- Proficiency in building science and base building systems. Eg. HVAC/R commercial systems, control theory, logic and programming, as well as installation, system design and integration.
- Trained in building automation industry as skilled technicians capable of designing, installing, servicing, and troubleshooting commercial control systems
- Direct Connect to UCF Engineering School





# UCF Energy Programs



- **FSEC** (Florida Solar Energy Center)
- **RISES** (Resilient, Intelligent and Sustainable Energy Systems) cluster
- **FEEDER** (*Foundations for Engineering Education for Distributed Energy Resources*) center
- **FUTURE CITY Cluster**
- **Digital Grid Laboratory**



Christos Chrysiliou

Los Angeles Unified School District

# School Sustainability and STEAM Programs



## Career Pipelines for Energy Efficiency



**Christos Chrysiliou, AIA, CCM, LEED AP BD+C**  
**Director of Architecture and Engineering Services**  
LAUSD M&O Branch – Sustainability Initiatives Unit  
June 2019



## Overview



### Goals

- 20% Energy Intensity Reduction by 2024
- 20% Water Consumption Reduction by 2024
- Support High Performance Design
- Support Education and Awareness Programs
- Support Campus Ecology Programs
- Identify, Evaluate and Implement Emerging Technologies



### Partnerships / Sustainability Focus Areas

- Energy Conservation
- Water Stewardship
- Campus Ecology
- Emerging Technologies
- High Performance Schools
- Awareness & Outreach

### Mission

LAUSD's Sustainability Initiatives mission is to be the most sustainable school district in the nation.



### STEAM-Related Programs



- HEROES for Zero
- LAUSD emPowered
- Micro-Credentialing Program partnership
- Prop 39 SEAT Program
- SEEDS

### Motivation

- 660,000+ students (K-12)
- 60,000 employees
- 710 square miles of site boundaries
- 6,657 acres of land
- 13,500 buildings
- 1,200 schools and educational facilities

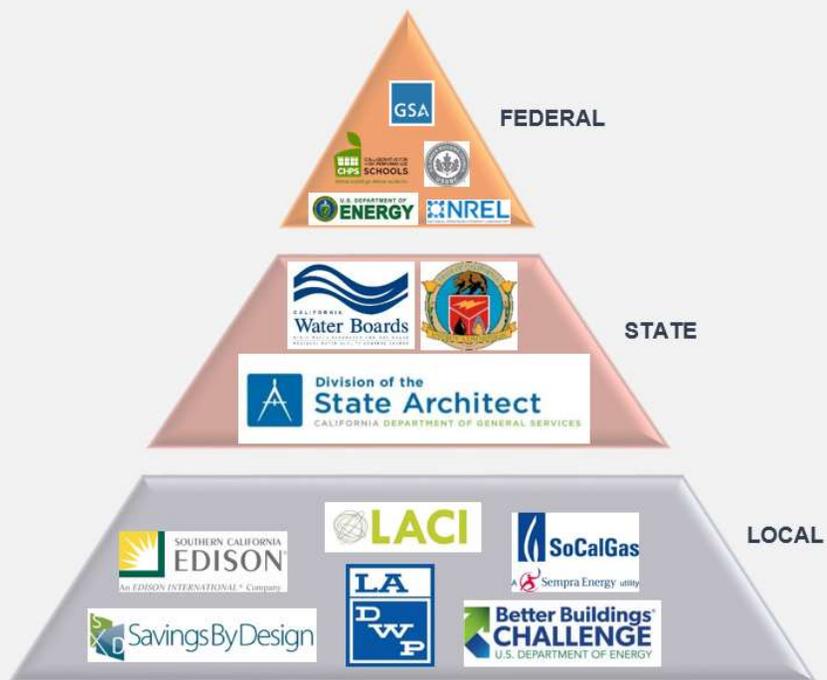


### Sustainability Career Pathways

- Architecture
- Engineering
- Energy
- Sustainability
- Education



## Partnerships / Sustainability Focus Areas



LAUSD Sustainability Initiatives



## STEAM-Related Programs

Complementing the District's core educational mission by **identifying opportunities for education, training, and community engagement** as we implement each of our initiatives.

- Raise awareness of environmental stewardship
- Develop partnerships
- Link projects with learning & workforce development
- Encourage and celebrate school-based sustainability efforts



Awareness & Outreach

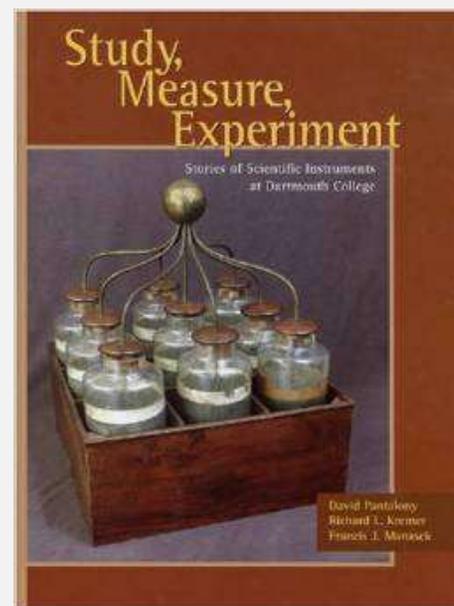
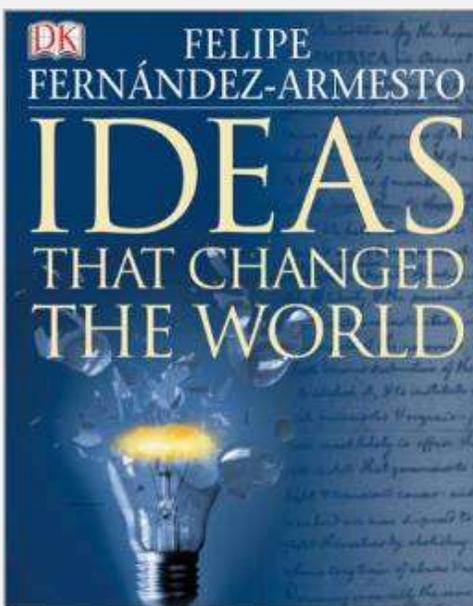
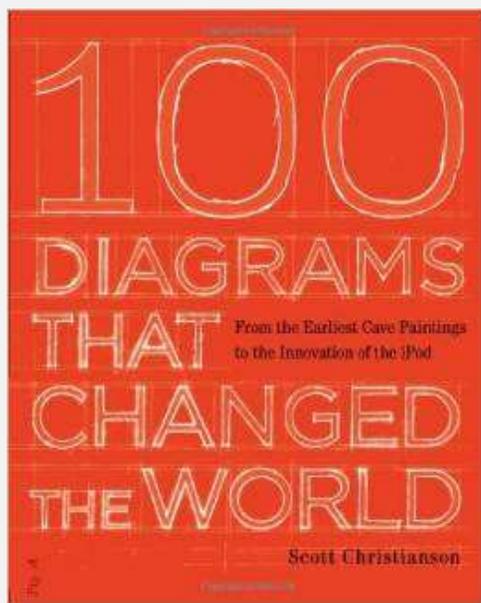
Website/Social Media  
DROPS  
Save the Drop  
Prop 39 SEAT Training  
Heroes for Zero  
LAUSD emPowered  
Eco-Garden

LAUSD Sustainability Initiatives





## Design and Engineering = Art



- All **ideas** begin with a vision/visual image (a mental picture → **drawing**).
- All **engineering** begins with a design (→ **diagram** is a graphic representation of the initial idea).



# HEROES FOR ZERO

**ZNE FORMULA:**

**EE** + **RE** = **ZE**

↓

 → **EE**

**OUR FOCUS:**

- Applying EE measures and avoiding waste
- Reducing waste through energy education & awareness
- Using technology to understand the facility
- Collaboration for greater efficiency

 +  = 

**EE** – SCHOOL FACILITY SYSTEMS AND CONSERVATION AWARENESS

**S**CIENCE  
**T**ECHNOLOGY  
**E**NGINEERING  
**A**RT  
**M**ATHEMATICS



Learn more about Heroes for Zero:  
<http://learninggreen.laschools.org/heroes-for-zero-contest.html>



## ELEMENTS:



- H** – Demonstrate how ZNE can also lead to a healthier space or community
- E** – Tie in Curriculum Module/Awareness Program
- R** – Work with Subject Matter Partner or Community-Based Organization
- O** – Conduct a school energy audit & develop an efficiency plan
- E** – Develop & implement a strategy to reduce consumption
- S** – Mentor another school, group, or neighborhood about ZNE



## STEAM-Related Programs

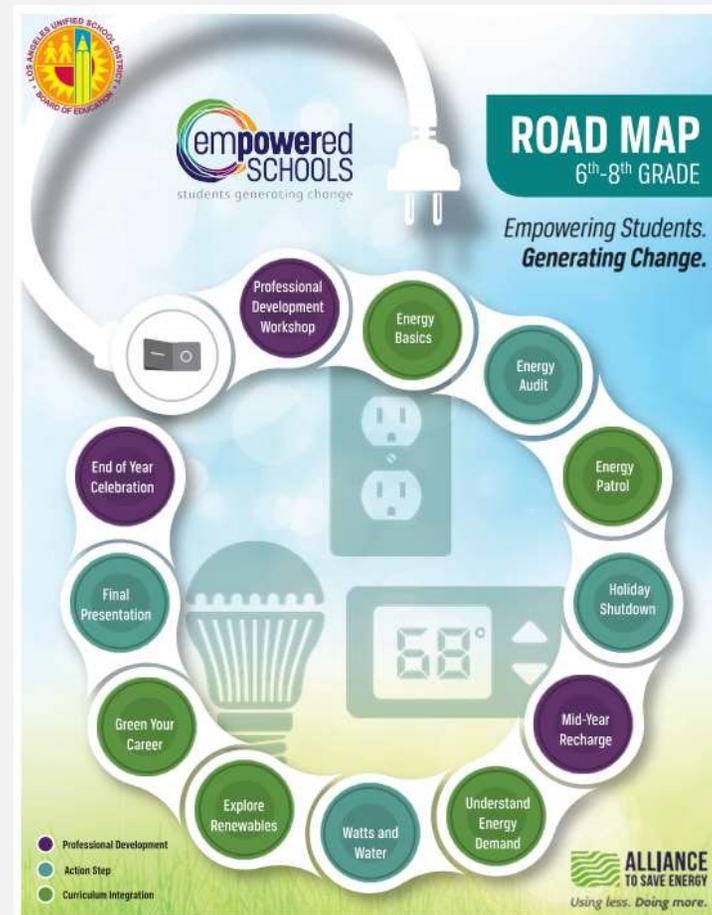


# LAUSD emPowered

- The District is collaborating with the Alliance to Save Energy to pilot an online team-based interactive energy education program called LAUSD emPowered.
- Integrate energy topics into STEAM using buildings as learning laboratories
- Engage students as advocates for energy efficiency in their homes and communities
- Build pathways to green jobs
- Save energy and lower school energy costs
  
- A total of 40 schools will participate in the pilot, which begins in the 2018/19 school year

Learn more about LAUSD emPowered:

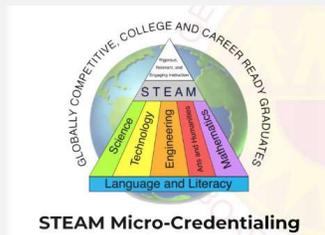
[http://learninggreen.laschools.org/uploads/8/0/0/0/8000811/lausd\\_empowered\\_flier.pdf](http://learninggreen.laschools.org/uploads/8/0/0/0/8000811/lausd_empowered_flier.pdf)





# Micro-Credentialing Program Partnership

- In collaboration with Sustainability Initiative Unit's STEAM-related programs to raise further sustainability awareness throughout the District
- Engaging students and working with the Division of Instruction
- Digital badges provide a practical means in supporting educator growth with the current tools needed to serve students and prepare them for successful futures.



Learn more about the Micro-Credentialing Program:  
<https://achieve.lausd.net/Page/15047>



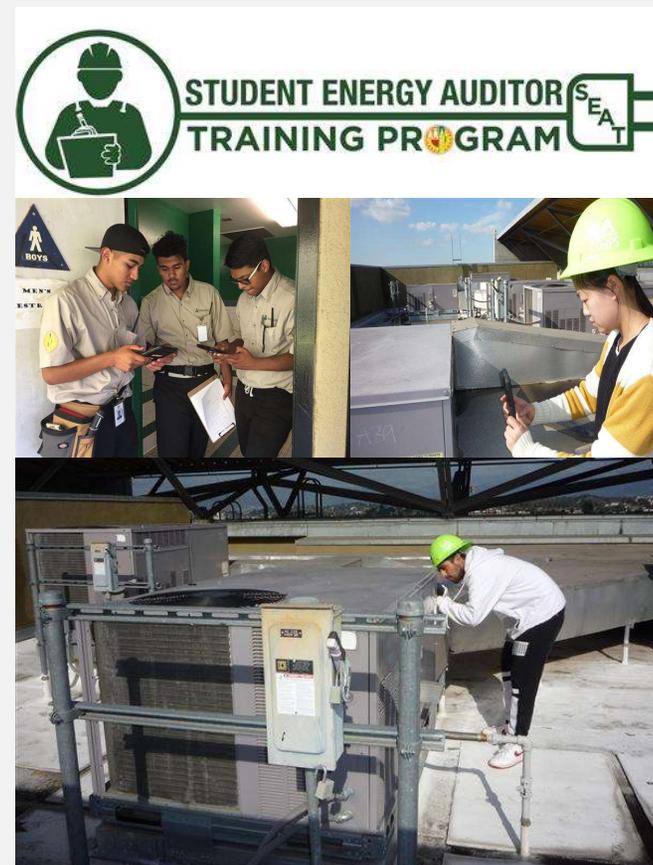
# Prop 39 SEAT Program

## *Student Energy Audit Training*

- Provide applied skills training that will familiarize and prepare youth to enter into the expanding energy management industry
- Students will learn and gain skills on:
  - inspecting and surveying building energy systems
  - evaluating appropriate energy conservation measures
  - the importance of conserving natural resources
  - resume writing
  - interviewing techniques
  - workplace etiquette
  - professionalism

*Learn more about the SEAT Program:*

<http://learninggreen.laschools.org/student-energy-audit-training-seat.html>



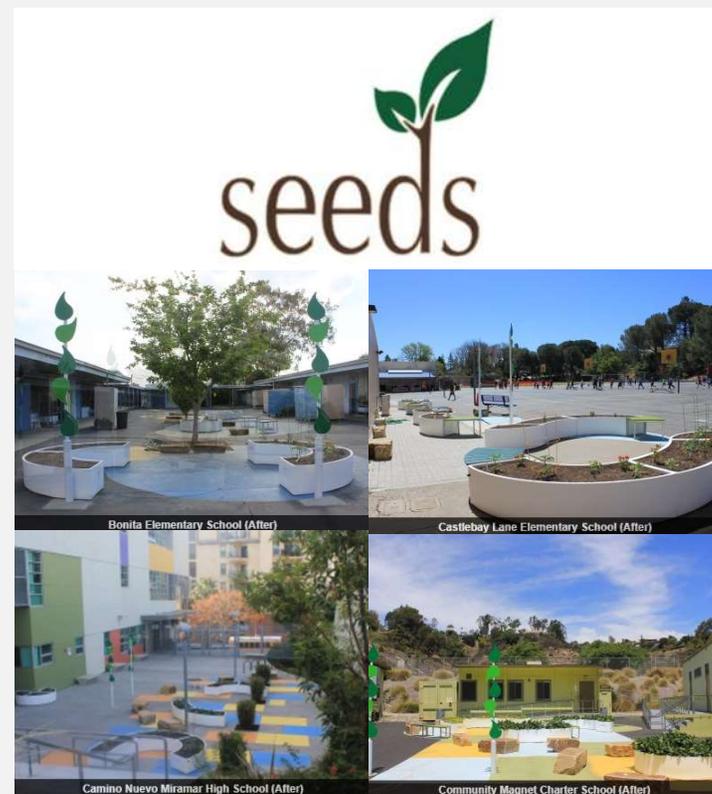


## SEEDS Program

### *Sustainable Environment Enhancement Development for Schools*

- Helps create or improve existing school greening projects that directly support school curriculum.
- Encourage outdoor learning, focusing on the role of gardens in providing not only education, but access to food while building resilience among students.
- Introduction to biomimicry

Learn more about the SEEDS Program:  
<https://www.laschools.org/new-site/seeds/>





## Sustainability Career Pathways



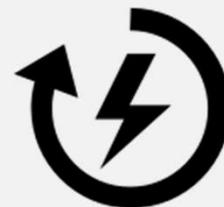
### Engineering

- Geophysical Engineer
- Nuclear Engineer
- Solar Engineer
- Water Resource Engineer
- Wind Energy Engineer
- Chemical Engineer
- Petroleum Engineer
- Environmental Engineer



### Energy

- Energy Manager
- Lighting Specialist
- Building Energy Auditor
- Commissioning Agent



### Career Pathways



### Sustainability

- Director of Sustainability
- Sustainability Program Coordinator
- Sustainability Consultant/Specialist
- Air Quality Forecaster
- Watershed Manager
- Environmental/Conservation Scientist
- Hydrologist
- Environmental Field Technician
- Climate Change Analyst



### Architecture

- Green Building Architect
- Landscape Architect
- Zoning
- Site Analysis and Conservation



- Awareness & Outreach Programs Coordinator
- Environmental Public Relations Specialist
- Ecotourism Guide
- Environmental Educator

### Education / Instruction

**“One planet. One ecosystem. Together, we can be ‘eco-stewards,’ as we continue to be inspired by our youth’s eagerness for a brighter, more sustainable future.”**



**Christos Chrysiliou,  
LAUSD Director of Architecture  
& Engineering Services  
2018 Best of Green Schools Ambassador**



# Thank You

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