CSU The California State University
WORKING FOR CALIFORNIA

Working for California's Clean and Sustainable Energy California State University

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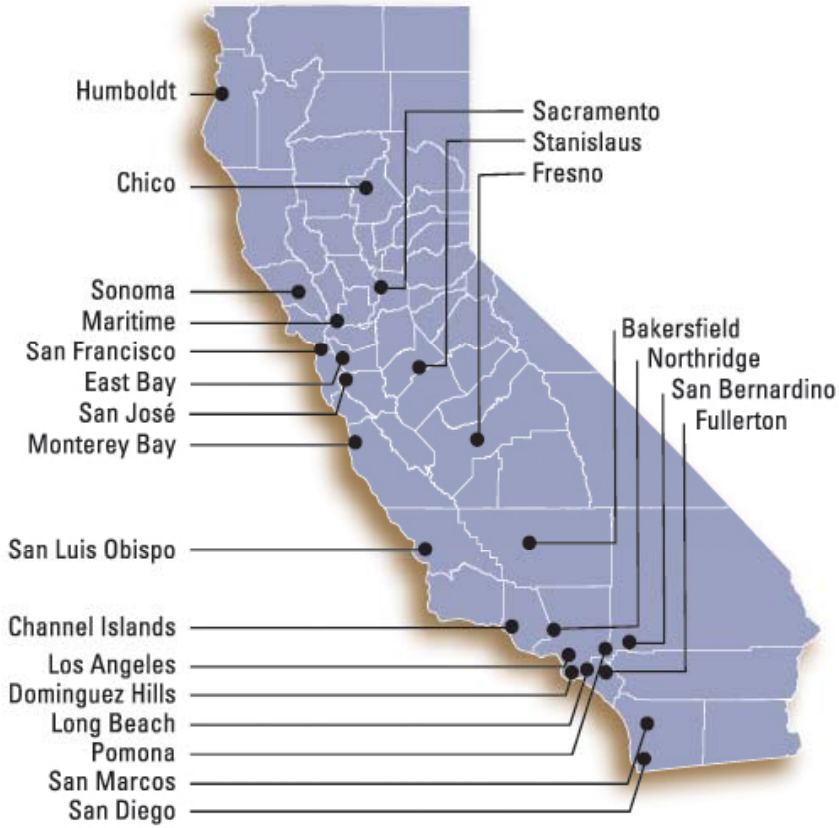
CSU's Size and Diversity Mean *Large* Contributions to California's Workforce

- CSU is the largest, most diverse, senior degree-granting public higher education system in the United States; it serves more than ***430,000*** students yearly
- CSU graduates more than ***90,000*** students per year
- Over 2.5 Million Alumnae
- CSU graduates more African American, Hispanic, and American Indian students than ***all other*** California universities combined
- More than 70% of CCC transfers are to CSU



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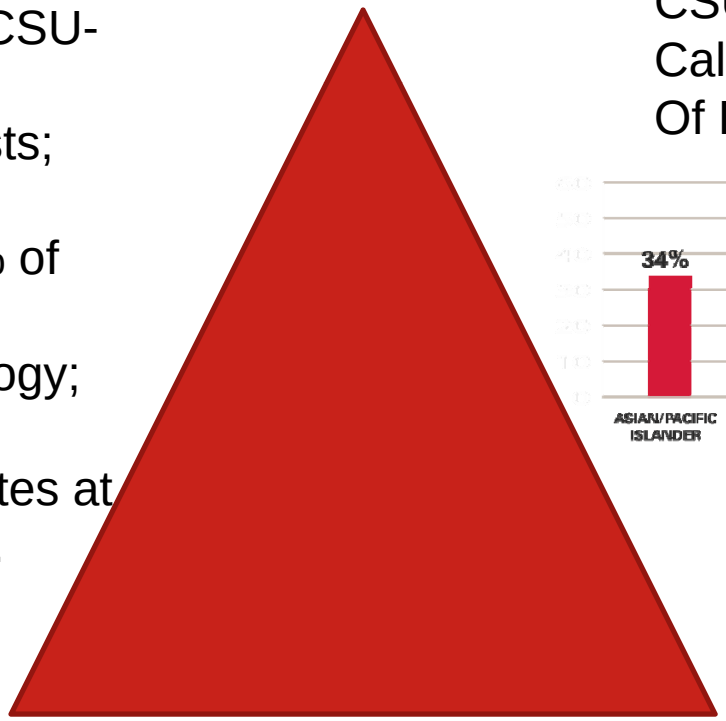
CSU Role in the NCCEW: Applied Research and Workforce Development

A Clean Energy Workforce is often CSU-Educated: 62% of agriculture specialists; 54% of business administrators; 44% of life sciences, which includes biotechnology; and 45% of all engineering graduates at the bachelors' level.

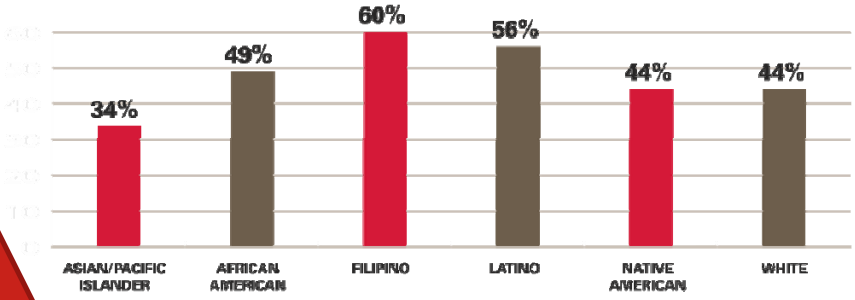
Renewable Energy



Energy Efficiency

Clean Energy Vehicles

CSU Graduates Mirror California's Diversity: Percentages Of Bachelor's Degrees Statewide



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CSU's Role in California's Clean Energy Economy

- **Educates the clean energy baccalaureate and Master's workforce**
  - Education Programs: Degree offerings in sustainability, alternate energy, transportation and Green Business Certificate programs
  - Applied Research and Innovation: Environmental Research and Clean-Tech Innovation Centers; partnership with SBDC's
  - Career Ladders: CCC to CSU and apprenticeship programs; connection with workforce investment as it relates to veterans, unemployed workers, career changers.
- **CSU's Commitment to Sustainability Creates Green Facilities and a Clean Energy "Culture"**
  - Energy: In April 2009, The U.S. Environmental Protection Agency recognized CSU in the Top 20 list of the largest national green power purchasers.
  - Sustainable Design: The CSU currently has 36 LEED™ certified/to-be-certified projects across 16 campuses
  - Alternate Fuels: Hydrogen fueling stations at Humboldt State and Los Angeles

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CSU and Sustainability: **Helping to educate the clean energy workforce leaders of tomorrow**

- – Increased course offerings in sustainability and Green Business Certificate programs

  Examples: CSU Sacramento's Smart Grid research and educational programs

  – Environmental Research and Clean-Tech Innovation Centers

  Example: CSU Chico's Oroville Clean-Tech Innovation Center ; wind energy

  -- The CSU "Green Campus" program

  Example: CSU staff work with faculty and students to monitor campus energy usage and improve efficiency; campus is a "living laboratory" of best practice

  -- CSU's commitment to CCC/CSU seamless transfer and Veterans programs

  Example: Butte College to CSU Chico – Environmental Studies - Associate to Bachelor's to Professional Science Master's

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CSU Los Angeles

- Center for Energy and Sustainability
  - NSF funded, 5 years
  - 14 faculty, 7 departments
  - Photovoltaic materials, direct methanol fuel cells, biofuels and combustion, carbon sequestration
- Hydrogen Research and Fueling Facility
  - Operation in 1/ 2011

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California State University, East Bay

- Collaborates with research partners in biofuels, solar technologies, fuel cells, and environmental remediation
- East Bay Green Corridor Partnership focused on expanding the supply of biofuels
- Site for PG&E Fuel Cell
- Interdisciplinary faculty team will evaluate performance and use of bio-fuel derived from campus wastes
- Sustainable Energy Management Certificate

San Francisco State University

- Industrial Assessment Center funded by US Department of Energy since 1992; students are supported by Center projects
- Audits local manufacturing companies for energy usage, waste management and increased productivity
- Enhances writing, communication, and technical skills
- Students become Energy Engineers even before graduation!

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CSU Program for Education and Research in Biotechnology (CSUPERB) – Biofuels Taskforce

- 45 faculty researchers and students working on biofuels research and development at 14 CSU campuses
- Partnerships for Next Generation Biofuels Production Places students in biofuel production settings - supported by industry and national laboratories
- *Example project*: CSUPERB funded a joint venture between Sonoma State and the City of Santa Rosa to build two digesters to transform harvested biomass into methane-rich biogas (picture on left).

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SMUD
SACRAMENTO MUNICIPAL UTILITY DISTRICT
The Power To Do More.℠

PG&E Pacific Gas and Electric Company®

CITY OF BURBANK Water and Power Since 1913

SOUTHERN CALIFORNIA EDISON®
An EDISON INTERNATIONAL® Company

CSU
Partners with major Utilities in California

City of Glendale Water & Power
GWP
Your Trusted Community Utility

SDGE
A Sempra Energy utility™

LA DWP Los Angeles Department of Water & Power

California Smart Grid Center

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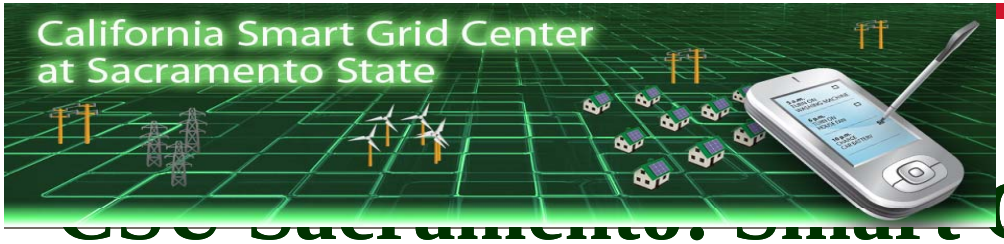
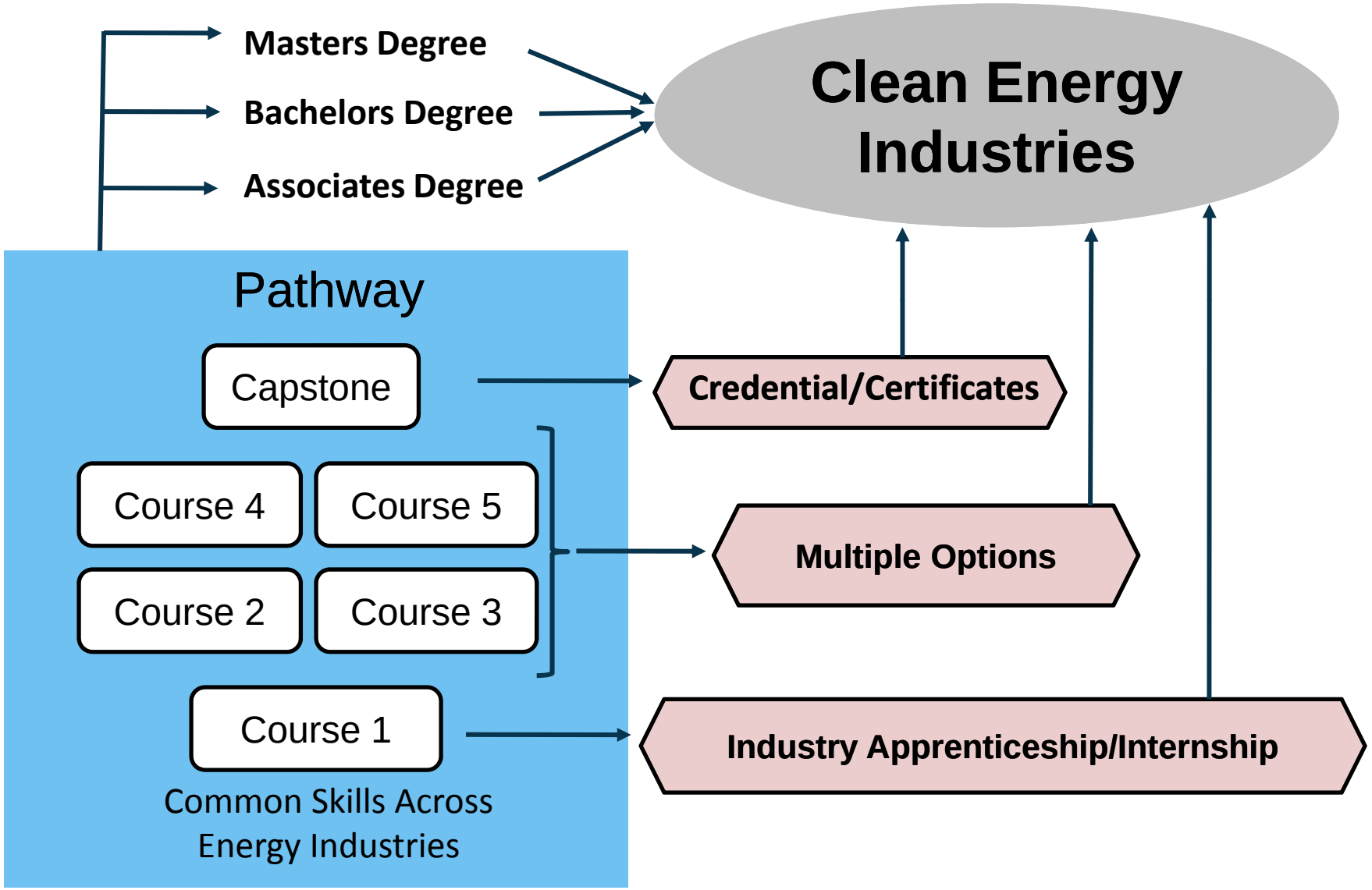


CSC Sacramento: Smart Grid Certificate Courses

EEE 141 Power System Analysis	CSC 114 Digital Evidence & Computer Crime
EEE 142 Energy Systems Control and Optimization	CSC 115 Internet Security and Law
EEE 144 Electric Power Distribution	CSC 138 Computer Networks
EEE 131 Electromechanical Laboratory	CSC 153 Computer Forensics Principles and Practices
EEE 135 Renewable Electrical Energy Sources and Grid Integration	CSC 154 Computer Attacks & Countermeasures
EEE 136 Smart Electric Power Grid	CSC 250 Computer Security & Privacy
EEE 143 Power System Laboratory	CSC 252 Cryptography
EEE 192 Electrical Power Design Project	CSC 253 Computer Forensics
EEE 255 Introduction to Future Power Systems and Smart Grids	CSC 254 Network Security
ME 156 Heating and Air Conditioning Systems	ME 159 High Efficiency HVAC
ME 157 Solar Energy Engineering	ME 154 Alternative Energy Systems

Online Education for ALL Californians



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Hands-on Education in support of California's Economic Development

Developing a Diverse and Talented Green Engineering Workforce

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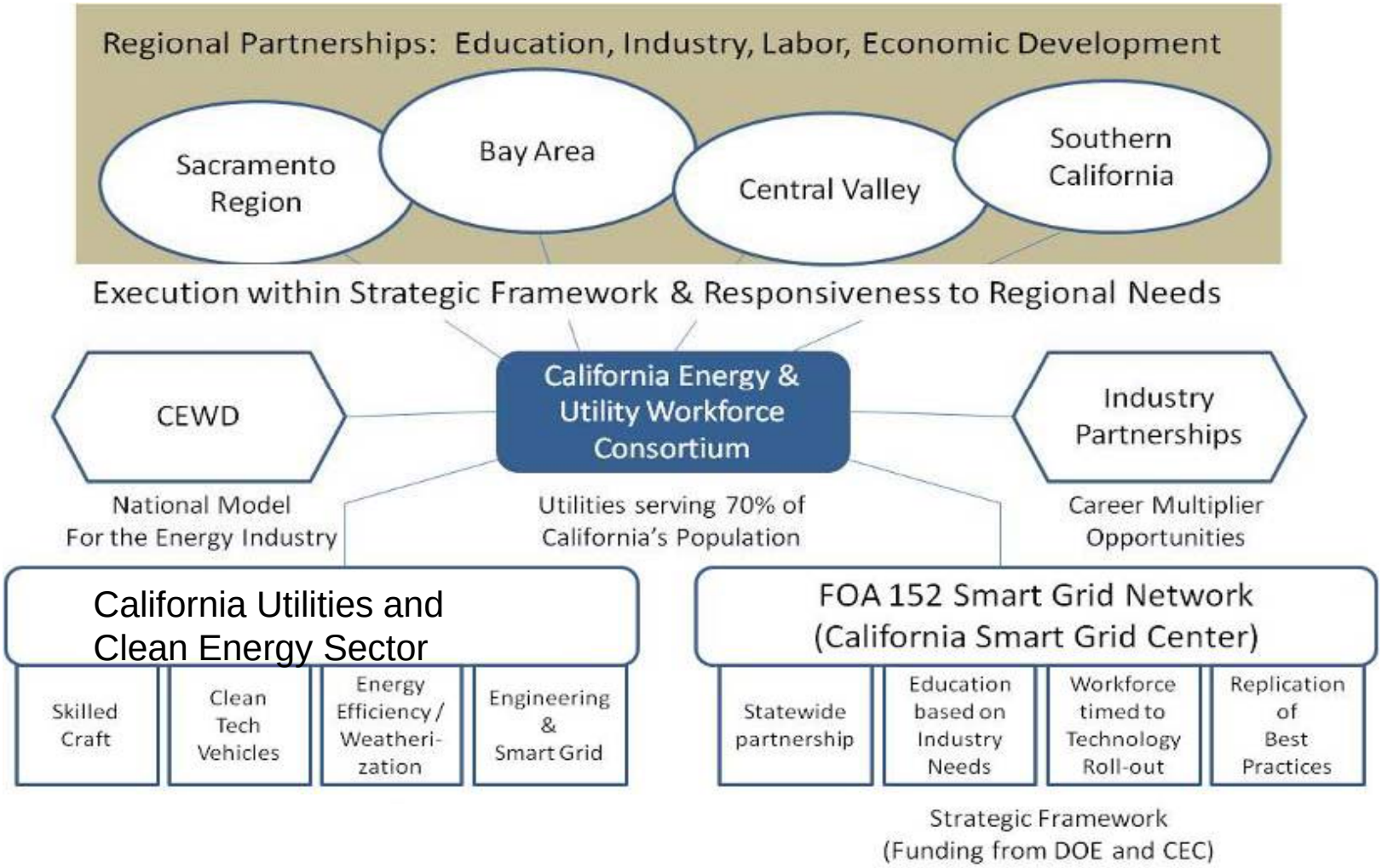
California Workforce Development Center



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Thank you!

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