



Green Campus &  
Sustainability  
Program

Los Rios Community College  
District

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# Green Campus & Sustainability Program

The District's Strategic Plan includes the following strategy:

*Sustainable Development Practices and Programs – Create a district-wide vision for sustainability and integrate this vision into courses of instruction as well as District business practices and operations.*

# Agenda

- CCC Guidelines for Sustainability
- Goals
- Program
- On-going and Past Initiatives
  - Facilities Program
  - Photovoltaics
  - Electric Vehicle Charging Stations
  - Maintenance and Operations
  - Lucid
  - UTP
  - Campus Programs
  - Water
- Accomplishments
- Future Efforts



# California Community Colleges Sustainability Guidelines

- Los Rios uses these to guide our efforts
  - Policy and Regulatory Drivers
  - Campus-based Sustainability
  - Goals, Objective and Desired Outcomes
  - Economics of Sustainability
  - Implementation Programs and Projects
  - Measure and Report Performance

# Sustainability Program Goals

- Energy and Resource Conservation & Efficiencies
- Responsible Stewards of Natural Resources
- Community Education and Awareness
- Reduction in Operational Cost
- Increased Lifespan of Major Equipment

## What is our Program?

- To **DESIGN, BUILD** and **SUSTAIN** high-quality educational and support facilities that use environmentally responsible methods, material and practices.
- CCC Sustainability Guidelines - development of goals, objectives, timelines, and criteria for success

# What is our Program?

- Energy Efficient Design & Building Systems
- Recycling Programs
- Recycled Products & Materials
- Renewable/Green Energy Sources
- Informed and Responsible Use of Resources and Facilities

# Energy Efficient Design & Building Systems

## Facilities Program

- LEED Standards
- Title 24 – California Building Code Requirements
  - 2013 Changes - Electrical
  - Subsequent years
    - Net-zero energy consumption
    - Reduce greenhouse gas emissions
    - Reduce overall water use
    - Reduce grid-based energy purchases and other non-building, grid-based retail energy
  - Provide electric vehicle charging stations by 2025



# Energy Efficient Design & Building Systems

## Major Projects

### Energy Service Company (ESCO) Project

- District-wide Re-lamping, \$2.5 million

### CCC-IOU Projects

- CO<sub>2</sub> Sensors, Control System and Hot/Cold Water Improvements, Off-hour Ventilation Control, \$2 million

### SMSR Projects

- EMS, Boiler Plant, HVAC Equipment Improvements, \$5.3 million

# Energy Efficient Design & Building Systems

SmartGrid - \$10 million - \$5M from Federal Grant partnering with SMUD; \$5M District Match

- Resource Conservation
- Customer Load Management
- System Integration
- Automated Demand Response
- Building Occupant Participation & Education

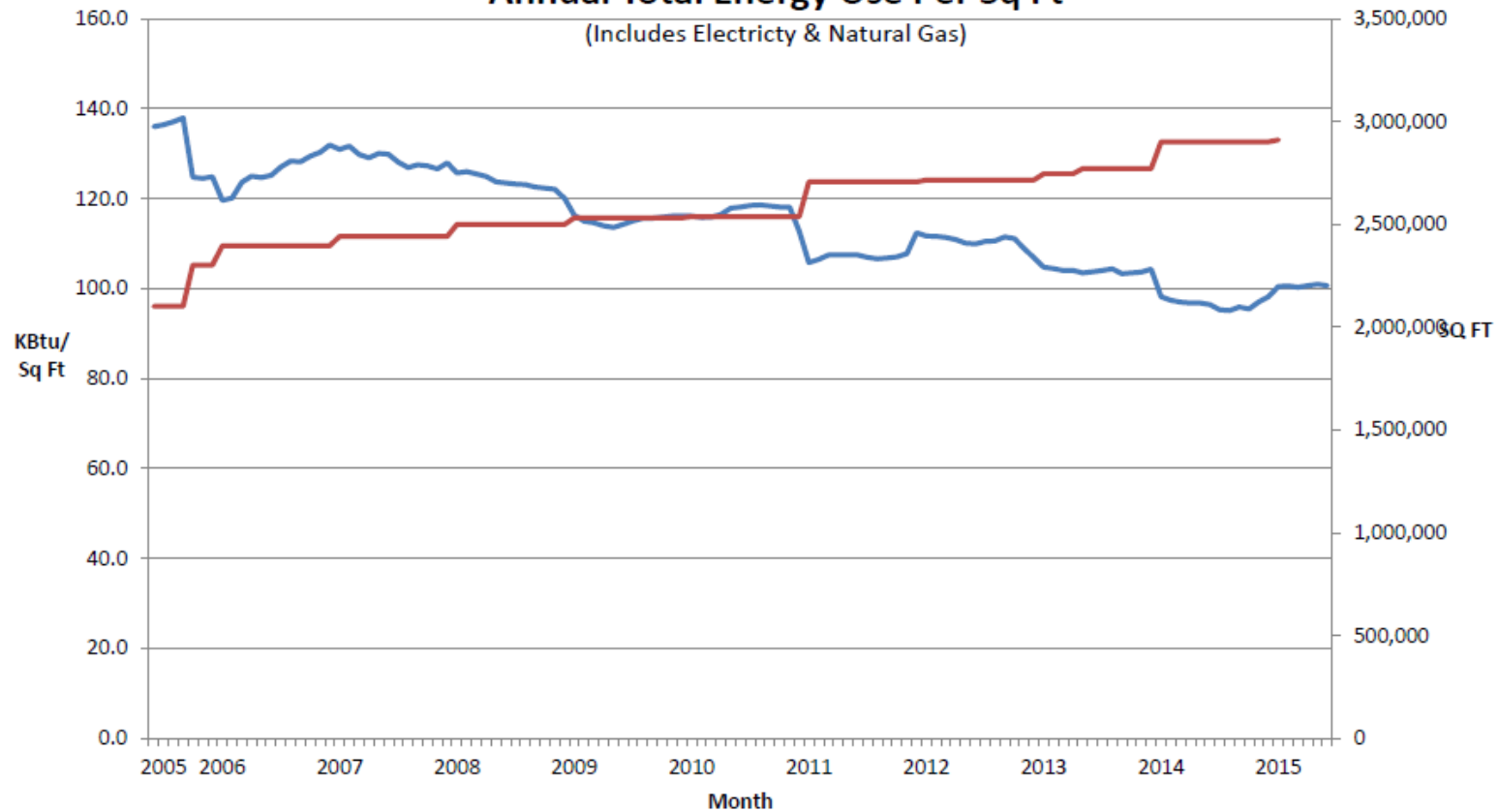
# Energy Efficient Design & Building Systems

## Proposition 39

- Proposition 39: Clean Energy Jobs Act of 2012
- Five-year Program – Approx. \$40 million annually for CCDS
- Review by the Legislature annually
- Allows public institutions to create energy conservation projects within their respective institutions and create jobs
- Aligns with CCCCCO Sustainability
- Los Rios CCD Projects - \$4.6 million to date
  - Total number of projects to date = 17
  - Year 4 projects = 18 more

## Annual Total Energy Use Per Sq Ft

(Includes Electricity & Natural Gas)



Ten years starting 7/2005 thru 6/20152

— Energy — Sq Foot\*

\* Note: Includes 5% of Parking Structure Area

# Other Initiatives

## Photo-voltaic System (Solar Panels)

- CRC Winn Center (40kW), CRC Parking Structure (290kW) -  
Crunching the numbers:

Photovoltaic Assessment						
System Type	Installed Cost (\$/watt)		Present Value (Cents Per KWH)		Simple Payback (Years)	
	Low	High	Low	High	Low	High
Parking Canopy	\$ 5.00	\$ 6.00	12	15	27.5	33.1
Rooftop	\$ 4.00	\$ 5.00	9	11	22.0	27.5
Greenfield	\$ 3.00	\$ 4.00	7	8	16.5	22.0

**Assumptions:**

- 1) Each installed KW generates 1,650 KWH/yr for fixed south facing collector in Sacramento
- 2) Rolled up cost for SMUD electricity is \$0.11/KWH
- 3) Life expectancy of PV system is 20 to 25 years.
- 4) Installed cost does not includes soft costs such as legal, engineering, inspections, DSA etc.

## Other Initiatives

### Electric Vehicle Charging Stations

- 31 Stations District-wide, 4 in design
- Future Stations
  - Compliance with State Regulations
  - One quick-charge station shared by two spaces

### Maintenance & Operations Practices

- Web-based Maintenance Work Order System
- Remote Equipment Monitoring
- Preventative and Predictive Maintenance
- Chemical-free Water Treatment
- Green products for custodial

# Other Initiatives

## Lucid

- Web-based Energy Tracking by Campus & Building
- Tracking 200 meters
  - Electricity, Natural gas, & Chilled water
- Use to track energy, water & other sustainability information
- Automated utility bill data collection of SMUD & PG&E bills
- Readily accessible by each campus
- Facilitates “informed participation”

# Lucid (cont'd)

The screenshot displays the 'buildingdashboard.net' website interface. The browser address bar shows the URL 'http://buildingdashboard.net/crc/#/crc/arts'. The page title is 'VPAC (Fine Arts) - B...'. The website header includes the 'buildingdashboard' logo and a 'Connect' button. The main content area is divided into several sections:

- Navigation:** 'Campus CRC' and 'Academic VPAC (Fine Arts)' tabs, along with a 'Find buildings' search bar.
- Electricity Usage:** A line graph showing electricity use (kW) over a 24-hour period. The y-axis ranges from 15.0 to 75.0 kW. A callout box indicates a peak of 45 Kilowatts. A summary box shows '364 Kilowatt-hours so far today' with options for 'kWh', 'CO2', and '\$'.
- Summary Cards:** 'Electricity 14 buildings' and 'Cooling 9 buildings'.
- Comparisons:** A horizontal bar chart titled '1,444,959 Kilowatt-hours from May 21 to Aug 21' comparing energy usage across various buildings. Each bar includes an 'ADD TO GRAPH' checkbox.

Building	Energy Usage (kWh)
LIBRARY	289,860
COLLEGE CENTER / COLLEGE STORE	226,271
SCIENCE	196,062
BUSINESS / SOCIAL SCIENCE	146,795
LEARNING RESOURCES CENTER	137,630
COMMUNITY & ATHLETIC CENTER	108,188
SWIMMING POOL	85,265
VPAC (FINE ARTS)	63,776

The Windows taskbar at the bottom shows the system clock as 12:12 PM on 8/21/2015, with a zoom level of 65%.



# Other Initiatives

## Universal Transit Pass Program

- Started in 2004
- Ridership growth from approximately 3 million trips in 2006 to 4 million trips in 2013
- Program extended in 2015 for another 5 years

## College Programs

- Waste Reduction Programs
- Re-cycling
- E-Waste
- Composting
- Green & Sustainability Classes
- Sustainability Committees
- Earth Week Events
- Sustainability Handbooks



# Sustainability Program

**American River College**  
**Earth Day 2016**

**Celebrating... Earth Day 2016**  
Wed. April 20th  
Library Quad & Student Center  
(8am-3pm)

**Tues. April 19th**  
**ARC Earth Day**  
Student Center  
Time: 10am - 3pm  
Bring your family to ARC's interactive and child friendly Earth Day celebration. See what ARC is doing around campus to UpCycle for sustainability.

**Wed. April 20th**  
**ARC Community Earth Day**  
Library/Student Center Quad and the North entrance of the Student Center  
Time: 8:00am - 3:00pm

**Thurs. April 21st**  
**College Hour Guest Speaker**  
World-renown expert climate change scientist, Dr. Steven Running. Time: Noon

**Join Us... April 19<sup>th</sup> - 21<sup>st</sup>**  
**UPCYCLE**  
There will be a variety of fun interactive activities each day, informational demonstrations, educational awareness, and guest organizations and partners.

**Free Event**  
**Earth Day 2016**

**American River College**  
4700 College Oak Drive  
Sacramento, CA 95841-4286

**We hope to see you there!**  
Call x8475 to request a copy of this flyer.

Presented by the Center for Leadership & Development and The ARC Green Office Program.

<https://green.arc.losrios.edu/>



# Sustainability Program

- Recycling
  - 14 Max-R Recycle Stations
  - 12 BigBelly Recycle Stations
  - Can-puncture Station
  - Up-Cycled Recycle Bin Project
- 10-12 New Bottle-filling Hydration Stations
- Drought Tolerant Landscaping
- Coming Next Projects:
  - 20+/- Solar-Powered Light Trailers
  - Additional Car Charging Stations
  - Light Towers
  - Work Picnic Style Table/Benches with Outlets



# Sustainability Program

## Celebrate EARTH WEEK 2016

**EARTH WEEK FILMS**

**Monday, April 18**  
**"A FIERCE GREEN FIRE:  
 The Battle For a Living Planet"**  
**2:00 – 3:45 pm, Winn Center Community Room**  
 Big-picture exploration of the environmental movement grassroots and global activism - spanning fifty years from conservation to climate change. From halting dams in the Grand Canyon to battling 20,000 tons of toxic waste at Love Canal; from Greenpeace saving the whales to Chico Mendes and the rubber tappers saving the Amazon; from climate change to the promise of transforming our civilization... the film tells vivid stories about people fighting and succeeding - against enormous odds.  
**Hosted by Andi Salmi**

**Tuesday, April 19**  
**"This Changes Everything"**  
**3:00 - 4:45 pm, SCI 106**  
 Based on Naomi Klein's book by the same name, the film presents seven powerful portraits of communities from Montana's Powder River Basin to the Alberta Tar Sands, from the coast of South India to Beijing and beyond, connecting the carbon in the air with the economic system that put it there. Can we seize the existential crisis of climate change to transform our failed economic system into something radically better?  
**Hosted by Students for a Sustainable Future Club**

**Thursday, April 21**  
**"Just Eat It"**  
**10:30 – 11:30 am, BS-119**  
**1:30 – 2:30 pm, CAC 201**  
 We all love food. As a society, we devour countless cooking shows, culinary magazines and foodie blogs. So how could we possibly be throwing nearly 50% of it in the trash? Filmmakers and food lovers Jen and Grant dive into the issue of waste from farm, through retail, all the way to the back of their own fridge.  
**Hosted by Cath Hooper**

**All events are free and open to the public.**

**Wednesday, April 20**  
**"The Future of Biodiversity Conservation"**  
**9:00 - 10:20 am, SCI 308**  
 Human actions, including climate change, threaten biodiversity worldwide. What actions can we take to protect and restore biodiversity?  
**Hosted by Christy Bowles**

**Displays on the Quad**  
**10:00 am - 1:00 pm**

- 11am - noon Earth Day Storytelling
- Check out the electric and hybrid cars!
- Come see the CRC Tiny House for the SMUD competition!
- Meet members of Students for a Sustainable Future Club
- Enjoy fun displays with the Solar Club and Construction Program students
- What is your "ecological footprint"? Find out!
- Learn about Environmental Economics
- How much paper do we use at CRC? See the display!
- Learn about Green Architecture
- Want to quit smoking? Help is here!
- Learn from the display of green products
- Enjoy music with CRC students and staff at noon
- California Native Plant Society and Master Gardeners will answer your questions!
- The Food Literacy Center and TOP Club want you to eat your vegetables! Learn more!
- Learn about community development with Alchemist CDC

**Chef Keith Breedlove and The Culinary Cruiser** food-truck will be joining CRC on the quad, serving seasonal and sustainable products from local businesses.

Bring your used AA, AAA, C, D, 9V and Lithium cell batteries, and drop them off at CRC Earth Day for responsible disposal.  
*Please NO car batteries.*

**Keynote Address**  
**"Living la Vida Locavore: Health, Economic & Environmental Impacts of Eating Local"**  
**1:30 – 3:00 pm Recital Hall**  
 Only 14% of Americans are actively engaged in the local food movement. This lack of food literacy leads to apathy. Our broken food system has negative implications on our health, economy and environment.

**Amber Stott**, founding Executive Director and chief food genius of the successful startup nonprofit, Food Literacy Center, will share tales from the region's grassroots food movement that will improve your own food literacy and leave you ready to take action.

**COSUMNES RIVER COLLEGE**

Sign language interpreters available

<http://crc.losrios.edu/facstaff/sharedgov/sub/sustainability>



COSUMNES  
RIVER COLLEGE

# Sustainability Program

- Zero Waste Events
  - 2012 Spring Convocation
  - 2014 Innovation Conference
  - 2016 Fall Convocation – education
- Strategies
  - Communication
  - Reduce
  - Reuse
  - Recycle
  - Audit
- Outcomes
- Next Step





# Sustainability Program

## Life Sciences/Earth Week 2016 Schedule

### Conversations with the Pros: Where Faculty Meets Industry

A speaker panel with faculty and professionals speaking on Careers in Biology.

**Tuesday, April 19th, from 12:00pm - 12:50pm in FL1-08**



### Dance Club: MOSAIC performance

MOSAIC Dance Club performs a MOSAIC of dance styles, and our student population is reflective of the college life experience! A diverse cast of dancers, MOSAIC cultivates a culture on inclusiveness, welcoming dancers of all backgrounds, shapes, sizes, colors and lifeways. Our mission is to: Discover Yourself in dance!

Come dance with us at FLC! Help bridge cultures and life experiences through Dance at FLC!

**Wednesday, April 20th from 12:30pm - 12:50pm, in front of the Falcons Roost**

### Financial Aid Awareness/Literacy Fair

Enjoy valuable Financial Aid information, Free Food, Games, and Prizes!

**Wednesday, April 20, 2016 from 11am-2pm at FLC.**

**Thursday, April 21, 2016 from 10am-1pm at EDC**

### Literature of the Wild

Please join Dr. Tim McHargue and Tom Goff for the annual "Literature of the Wild" poetry reading in honor of Earth Week. At each of these poetry readings, you can hear the work of **well-known guest poets and writers** celebrating nature and its place in our lives.

**Guest poet Taylor Graham** is known throughout California and across the nation for her beautifully crafted poems, some of them related to her work as a search-and-rescue dog handler, other poems based on her keen observations of nature, and on her close study of Elihu Burritt, the "Learned Blacksmith" of Connecticut who taught himself fifty languages, worked tirelessly for universal peace and freedom, and served as a consular agent under President Abraham Lincoln.

Also, whether you are a student, staff, or faculty Falcon, there's an **open mic**. You can share a poem or other piece of your own writing or by a favorite writer. Other guest poets to be announced. Remember, Falcons are wild creatures—so come join us!

**Thursday, April 21<sup>st</sup> 12-1:30 pm at FLC in FL3-173 (Large Lecture Hall)**

### No Impact Man

This documentary tells the story of author Colin Beavan, who went completely "green," giving up virtually all of the comforts of modern living -- electricity, gas-powered transportation, shipped food and public waste disposal -- in a drastic effort to curb his environmental impact. The cameras capture the toll this well-intentioned, year-long project takes on Beavan's wife and baby daughter, as well as the ways it brings this family closer together.

**Friday, April 22 from 4:00pm-5:50pm in FL1-20 (FLC Community Room)**

### FLC Earth Week Hike

Join FLC students, staff and faculty for an early morning hike at Magnolia Ranch on Saturday, April 23, 2016. Enjoy the wooded trail, views of the river, and good company. This is a beginner level hike, with moderate elevation change. Approximately 2 hours. Hike is limited to 25 people, so please RSVP at <http://bit.ly/FLCHikes>.

Questions? Contact Amy Brinkley at [amy.brinkley@flc.losrios.edu](mailto:amy.brinkley@flc.losrios.edu).

**Saturday, April 23rd 7:30am – 10:30am. Meet next to the drop off circle (in front of building B) at EDC at 7:30am**





## Sustainability Program

- Green Cleaning Technology
- PaperCut Print management Software implemented – all three sites
- Recycling/composting Contract – food/dining services waste
- Cardboard, Wood recycling
- “Green Course” Offerings - Environmental Biology, Water//Waste Water Management
- Development of the wetland “Interpretive Trail” to enhance cross-curricular learning opportunities
- Smoke, Tobacco, Vape Free August 1, 2016
- EV stations to be installed in 2016-17



# Sustainability Program

Sacramento City College  
**EARTH WEEK**  
April 19th & 20th.  
10 am - 3 pm

- Conservation Information
- Electric Cars
- Vendors
- Games

**Location: SCC Quad**

PHI THETA KAPPA  
HONOR SOCIETY

SACRAMENTO CITY COLLEGE

developed by freepik.com

<http://www.scc.losrios.edu/sustainability-planning-committee/>





# Sustainability Program

- Eco-friendly activities planned
- Displays and Exhibits
- Student Club participation
- 5 to 8 Electric Vehicles on Display
- Great time for all....

please come and join us  
on April 19<sup>th</sup> and 20<sup>th</sup>



# Campus Sustainability Handbook

- Handbook tailored for each college
- Provide specific information on all aspects of sustainability efforts for that college
- Operational procedures to maintain
- Also serves as a checklist to ensure all areas identified in the CCC Guidebooks are being addressed

# Water Sustainability

## Where does our water come from?

- Municipalities
- Water District
- Campus Wells

## Where does our water go?

- >65% goes to irrigation
- <35% sinks, toilets, drinking fountains, showers  
pools and fountains

# Water Sustainability

## Conservation Efforts

- Installation of Weather-Based Irrigation Timers
- Planting of Native and Drought Tolerant species
- Installation of Dual flush and low flow toilets
- Installation of lavatory low-flow faucets
- Installation of Artificial Turf

**70% reduction**



# Water Sustainability

## Conservation Efforts (cont'd)

- Irrigation Strategies
  - Reduced Irrigation Times at all campuses
    - 2 days/week (match local jurisdictions)
  - Browning of campus perimeters
  - Light watering of interior areas
  - Near full watering of instructional and competitive athletic fields areas (student safety)
- Identified key locations for metering devices
- Identified key strategies for further reductions
  - Cover Pools Regularly
  - Shut down Fountains
  - Sub-metering
    - Buildings
    - Irrigated areas

# Water Sustainability

## Conservation Efforts (cont'd)

- Increase outreach and communication efforts
- Periodic Irrigation Audits
- Hydronic heating and cooling systems
  - Annual reduction - 4.6 million gallons to 1.6 million gallons
- Design for future drought conditions
  - Irrigations systems
  - Plant types
  - Domestic water systems

# Sustainability Accomplishments

## Major Incentives

- CCC/IOU (2010) - \$565,000
- SmartGrid (2013) - \$916,000
- CRC Parking Structure PV (2013) - \$157,000
  
- **TOTAL = \$1,638,000**

## Awards and Recognitions

- Sacramento Regional Transit District – Transit Oriented Development of the Year Award (2016)
- Sacramento County Board of Supervisors Resolutions (2004, 2006 and 2009)
- SMUD Community Energy Award (2006 and 2009)
- UC/CSU/CCC Conference – Sustainable Operations Best Practices Award Sustainability (2008)
- Sacramento County Business Environmental Resource Center (BERC) Award (2004 and 2006)
- US Congress Certificate of Special Recognition (2004 and 2006)



# Into the Future...

- Green/Sustainable Building Design & Construction
  - Title 24
  - LEED and LEED Equivalency
- Continued Strong Recycling & Sustainability Programs
  - Operations
  - Maintenance
  - Curriculum
  - Space Scheduling
- Proposition 39
  - Five-year program
  - Wide-range of Projects
- Emerging Technologies
  - Partnerships with SMUD and PG&E



Questions?