Energy, Environment, and Utilities

These resources are designed to help you adapt your course to support students in a Covid-19 impacted school year, in a distance learning, blended learning or socially distanced environment. This is a crowd sourced document - feel free to add resources and lesson plan ideas that have been helpful to you.

Course By Course Resources

Educators collaborated to curate resources in each of the following pathways. Each page is dependent on the collaboration in each group, so the amount and quality of resources may vary. SDCOE does not endorse any vendor, product or service listed. Take a look and feel free to add resources that have been helpful in your own practice!

- **Energy and Power Technology**
- Free Curriculum on the Blue Economy (Middle School Focus)
- Innovation launch page (Moersch)

Work-Based Learning Resources: https://cte.innovatesd.org/EEU.html

Model Curriculum Standards: Energy, Environment, and Utilities (PDF; 3MB)

Content Area	Grade Span	Resource Description	Organization, Website and Cost
		LinkedIn **Global Green Skills Report 2022** "The Global Green Skills Report 2022 provides new data on green skills and jobs from all across the world, to empower policymakers, governments and business leaders with actionable insights to help them transition the global workforce to a green economy future." **Read More**	
		Funded by the Lumina Foundation, the Constructing Green Jobs Training Project (CGJTP) project proposal will strengthen the role of community colleges in responding to proposed federal infrastructure funding and the workforce needs to support the emerging green economy. With an eye on equity and economic justice, NCWE will develop and facilitate the processes and technical assistance necessary to build a skilled and inclusive green infrastructure workforce. NCWE is seeking 15 community colleges and their industry partners to participate in a National Green Jobs Advisory Council. This is an opportunity to participate at the national level and to get faculty involved in developing curriculum modules in four industry sectors: Transportation, Construction, Energy, and Building Performance/HVAC. **To Learn More**	
CTE Online		CTE Curriculum Repository covering all sectors. Includes curated distance learning resources by sector. Funded by the California Department of Education - you will need to register for your free teacher account to access the resources. Many can be downloaded and used to provide	https://www.cteonline.org/

		distance learning to your students. CTEonline has Lesson Plans, Projects, Resources, Course Outlines and More!	
		Contact: Emily Usaha, emilyusaha@seiinc.org Green Careers Webinar Series No-cost curriculum: Ignore the cost! It's free for high school teachers!	Energize Schools (SEI)
	10-14	**CACT- Centers for Applied Competitive Technologies:** This is a compendium of online resources for CTE faculty and professionals for online teaching and training. This site also includes many sources that offer free trials.	http://www.cact.org/cte_online.php
	10-14	**CTE Coalition** - This is a collection of industry partners who have made online resources and proprietary software available for various CTE fields. This site is designed to be a "one-stop shop for educators seeking online resources for curriculum and online training delivery.	https://ctecoalition.com/
Energy, Construction and Utilities	9-14	Community College resource for Energy Construction and Utilities	https://www.ecusector.com/
Energy, Environment and Utilities	7-12	Curriculum and resources for modules and full courses. This curriculum is already funded for most schools in california.	SEI - Energize Schools https://www.energizeschools.org/ Distance Learning: https://www.energizeschools.org/distancelearning.html
Energy, Environment & Utilities; Construction Trades; Business and Entrepreneurship;	9-12	Free energy education classes are offered by SDG&E and many have gone to webinar format! Consider attending a class for your professional learning or have your students take a class. Upcoming virtual classes include: HVAC/R classes Sustainable Strategies for Business Innovations Energy Codes & Standards Smart Building Technologies for Energy Efficiency Don't Touch That Thermostat IHACI Electrical	**SDG&E Energy Innovation Center** https://www.sdge.com/energy-innovation-center/education-training
Energy, Environment & Utilities; Construction Trades	9-12	The Lighting Controls Association offers free, online courses about lighting technology and application. Upon completion the student gets a Certificate of Completion that can be shared with the professor.	**Lighting Controls Association Education Express** http://aboutlightingcontrols.org/EducationExpress/

Energy, Environment & Utilities; Construction Trades		Interplay-SkillMill is a website that is focused on providing online tools, courses and even VR modules for various trades and technical fields including HVAC, Solar, Plumbing, Electrical, Multi-Family Facility Maintenance and Safety (OSHA/State-OCHA compliance). Certain DE tools provided by Interplay may be able to be integrated into community college CTE courses in order to meet "hands-on" requirements (via VR). There are interactive desktop/laptop/tablet/smartphone applications and specialized VR equipment (headsets and consoles) for a large percentage of the courses offered, especially the more advanced or capstone-type courses.	http://www.interplaylearning.com/
			Energy Articles https://www.conserve-energy-future.com/sustainableenergy.php
		Online/web based software - no download needed!	**TinkerCad and Sketchup**
		MillerWelds-Openbook Openbook provides welding instructors with an easy tool to assign and deliver welding content, create quizzes, download welding labs, monitor student participation, assess and report student progress and performance.	**https://openbook.millerwelds.com/**
		OnShape Web based 3D Modeling Software that can be run off a Chromebook (chromebook functionality per PLTW user forum - not verified.) Free education version. Online training tutorials.	https://www.onshape.com/products/free

Suggested Distance Learning Activity	Resource Links or Notes
Energy Consulting 101 Curriculum This is a distance learning resource you can use remotely with your students. Our Energy Consulting 101 student-facing NGSS-aligned packet includes readers on climate change, energy use, and auditing so students can become an energy consultant remotely and identify ways to save money and energy. This packet is a student-facing resource and does not require internet or devices.	https://docs.google.com/forms/d/19epM3QZ5lXOZU57DjrP3fbnA6KNQUQjdUc4FjUGdOV4/edit https://www.energizeschools.org/distancelearning.html
Solar USB/Solar Car Using tinkercad and sketchup to do the design and the structural component even though they may not build their own.	

Sizing a solar system and solar modeling with sketchup	
Green building design challenge Students can use recycled materials at home to create their design Or students can submit a digital design	
Recycle/Upcycle Challenge Give students a challenge to create something from what they have at home	Example: City of oceanside earth month art contest
Environmental impacts of Covid-19 We have seen significant improvement in Air Quality, Beaches, other green spaces. How has our carbon footprint changed and what is the impact?	
Energy, Waste and Water Usage Evaluation at the household level.	Use this form to access all of SEI's distance learning packets that include an energy, water, and waste assessment Contact info: Emily Usaha emilyusaha@seiinc.org (858)500-4161
Use the Earth Challenge 2020 app to gather critical environmental data near you Earth Challenge 2020 is the app fueling the world's largest citizen science effort, available on Android and iOS devices.Earth Challenge lets you gather important scientific data near you. It has two elements for you to measure — air quality and plastic pollution — with more on the way.	https://www.earthday.org/take-action-now/#challenge
This trade union is receptive of community college students in the trades, particularly the trades represented by this organization; trade work is primarily done at petroleum refineries and nuclear/hydro power plants.. Classroom training, virtual or simulated training is still suitable for preparation to enter apprenticeship, which usually ranges from 4-5 years and up to 6000 hours, depending on the skill set/craft pursued. College-level courses can significantly help students with placement assessment for apprenticeship consideration. This union is actively seeking apprenticeship candidates due to high demand in these trades, and a foreseeable increase in job demand.	https://boilermakers.org/