



Florida Advisory Council on Climate and Energy (FACCE)
Virtual Meeting Agenda
Tuesday, August 25, 2020
10:00 a.m. – 12:00 p.m.

Welcome and Roll Call

Kelley Smith Burk, FDACS Office of Energy



FACCE Virtual Meeting, Tuesday, August 25, 2020

Overview of Chapter 7. Research, Development, Demonstration, and Deployment from the Florida Energy and Climate Plan

April Groover Combs, FDACS Office of Energy



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Presentation on Research, Development, Demonstration, and Deployment

Dr. David Norton, Director of Florida Energy
Systems Consortium and Vice President of
Research, University of Florida



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Florida Energy Systems Consortium

Research, Development, Demonstration and Deployment

Dr. David Norton
University of Florida Vice President for Research
Director of Florida Energy Systems Consortium

Florida Energy Systems Consortium Members



Florida Energy Systems Consortium (FESC)

- FESC was created by Florida Statute in 2008 with \$38 million in funding from the state
- Purpose: To unite Florida energy experts, including Florida's 12 universities, so that the state leads in energy research and develops innovative energy systems
- To promote improved energy efficiency, innovative energy technologies, and expanded economic development



FESC – Collaborative Research Project

Southeast Partnership for Advanced Renewables from Carinata (SPARC)

- PI: David Wright, University of Florida
- Total Funding: \$14.8 million
- Partners: USF, FAMU, U of Georgia, NC State, MS State U, CO State U, Auburn U, NuSeed, Applied Research Associates
- Sponsor: USDA
- Goal: Establish a *Brassica Carinata*-based resilient and sustainable advanced jet fuel and bioproducts supply chain in the Southeast United States
- Link: <http://www.sparc-cap.org/>





Carinata



FESC – Collaborative Research Project

Foundations for Engineering Education for Distributed Energy Resources (FEEDER) Consortium

- PI: Dr. Zhihua Qu, UCF
- Total Funding: \$3.2 million in 2013 and \$1M in 2016
- Partners: FSU, UF, UC San Diego, U of SC, U of Pittsburgh, U of Hawaii, UT at Dallas, and more
- Sponsor: US DOE
- Goal: To develop the engineering capability to accelerate the deployment of distributed renewable energy technologies onto the electric utility grid
- Link: <http://www.feeder-center.org/index.php>

Foundations for Engineering Education for Distributed Energy Resources (FEEDER) Consortium

12 Universities



AUBURN
UNIVERSITY



THE
FLORIDA STATE
UNIVERSITY



University of
Pittsburgh



SAN DIEGO STATE
UNIVERSITY

UC San Diego



UNIVERSITY OF
SOUTH CAROLINA



UCF

UF | UNIVERSITY of
FLORIDA

18 Utility Partners

2 National Labs (NREL and Los Alamos)

10 Supporting Industry Partners

FESC – Collaborative Research Project

Evaluation of Energycane for Bioenergy and Sustainable Agricultural Systems (EC-BioSALTS)

- PI: Hardev Sandhu, UF
- Total Funding: \$4 million
- Partners: Argon National Lab, Lanza Tech, Commercial Aviation Alternative Fuels Initiative (CAAFI); Collaborators: USDA-ARS, Tifton, GA, FL Office of Energy, FESC
- Sponsor: US DOE
- Goal: To develop a bioenergy feedstock production system using an advanced energycane cultivar in marginal agricultural lands of the Southeast coastal plains

FESC – Collaborative Research Projects

Enhanced Resistance Pines for Improved Renewable Biofuel and Chemical Production

- PI: Gary Peter, UF
- Total Funding: \$992,000
- Sponsor: US DOE
- Goal: To develop slash pine germplasm that contains increased wood terpene content and oleoresin flow to improve resistance to insect pathogens and increases terpene supply



A row of parabolic trough solar collectors

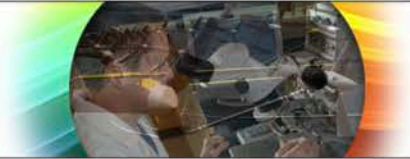
Solar Thermal Power Plant at USF — Dr. Yogi Goswami

Technology Commercialization FESC Spin off Companies

#	University	Name of Business	Year Formed	Specialty
1	UCF	Garmor, Inc.	2012	Edge-Functionalized Graphene Oxide
2	UCF	HybridaSol, LLC	2012	PV-Thermo Electric Hybrid
3	UCF	Helicon Chemical Co, LLC	2012	Self-cleaning Coating Chemicals
4	UCF	Capacitech Energy, LLC	2016	Energy Storage in Cables
5	UCF	Advanced Power Electronic Corp.	2016	Solar Energy Conversion and Integration
6	UCF	HySense Technology, LLC Acquired by Nitto Denko	2012	H ₂ Sensing Tape
7	UF	Florida FGT, LLC	2010	Energy Crops
8	UF	NanoPhotonica, Inc.	2010	Next Generation Optoelectronic Devices
9	UF	RedOx Power Systems, LLC	2010	Solid Oxide Fuel Cells
10	UF	Innovative Space Tech., LLC	2014	Solar
11	UF	SensorComm Technologies, Inc.	2014	Sensors to monitor NOx emissions
12	UF	Molekule Inc.	2015	Energy Efficient Air Purification
13	USF	T2C-Energy	2012	Landfill Gas to Liquid Fuel
14	USF	SunBorne Energy, LLC	2010	Solar Installations in India

Content-Rich Web Site

<http://floridaenergy.ufl.edu/>



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[FESC Brochure](#)[Brochure Insert](#)

FESC Bringing Energy Solutions to Florida, the Nation and the World

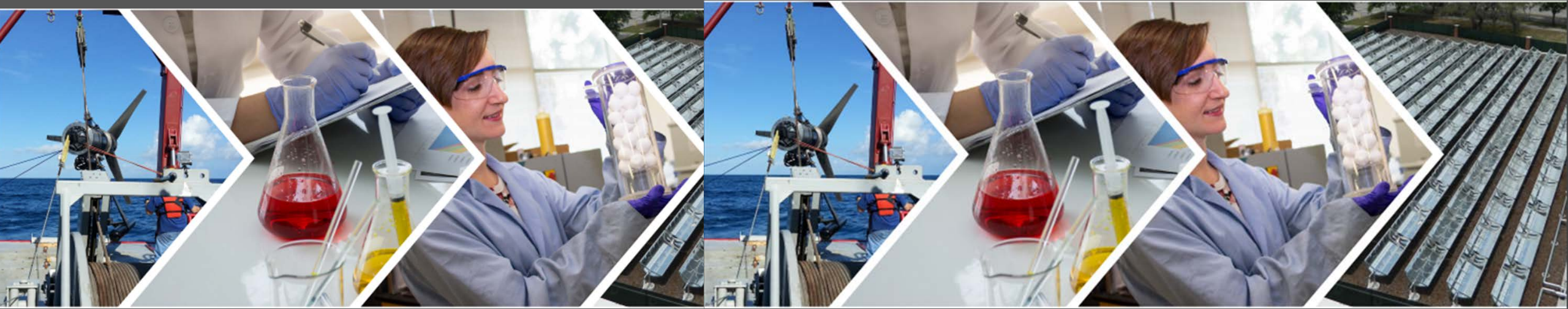
The Florida Energy Systems Consortium (FESC) was created by the Florida State government to promote collaboration among the energy experts at its 12 supported universities to share energy-related expertise. The consortium assists the state in the development and implementation of an environmentally compatible, sustainable, and efficient energy strategic plan. The Consortium was charged to **'perform research and development on innovative energy systems that lead to alternative energy strategies, improved energy efficiencies, and expanded economic development for the state'**. The legislature appropriated funding for research at five of the universities as well as support for education, outreach, and technology commercialization. The Consortium reports to and provides guidance on an as needed basis to the Florida Legislature, Executive Office of the Governor, and the Florida's Office of Energy housed in the Florida Department of Agriculture and Consumer Services.

Overarching to the Consortium's research strategy is an energy systems approach to identify innovation opportunities, prepare an energy workforce, and guide economic development.

Through collaborative research and development across the State University System and the industry, the goal of the consortium is to become a world leader in energy research, education, technology, and energy systems analysis. In so doing, the consortium shall:

- Coordinate and initiate increased collaborative interdisciplinary energy research among the universities and the energy industry.
- Assist in the creation and development of a Florida-based energy technology industry through efforts that would expedite commercialization of innovative energy technologies by taking advantage of the energy expertise within the State University System, high-technology incubators, industrial parks, and industry-driven research centers.
- Provide a state resource for objective energy systems analysis.
- Develop education and outreach programs to prepare a qualified energy workforce and informed public.

Facilitated Discussion on Research, Development, Demonstration, and Deployment



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Overview of Chapter 6. Expand Energy Education, Vocational Training, and Workforce Development from the Florida Energy and Climate Plan

Tony Morgan, FDACS Office of Energy



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Presentation on Energy Education, Vocational Training, and Workforce Development

Dr. Amy Albee-Levine, Dean of
Workplace Development, Lake-Sumter
State College



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TRENDS IN WORKFORCE DEVELOPMENT IN HIGHER EDUCATION

August 25, 2020

Dr. Amy Albee-Levine

Dean, Workforce Development

Lake-Sumter State College



Lake Sumter
State College

Lake-Sumter State College

- Part of the 28 member Florida College System
- Serves Lake and Sumter Counties in Central Florida
- Average enrollment of 6,000 students in 18-19 and 19-20 academic years
- Approximately 15% of enrollment in workforce programs during the 18-19 and 19-20 academic years



Lake Sumter
State College

Programs Offered

- 7 Associate in Science Degree programs
 - Business Administration
 - Computer Information Technology
 - Criminal Justice Technology
 - Engineering Technology
 - Health Information Technology
 - Management Technology
 - Nursing
- 1 Associate in Applied Science Degree program
 - Electrical Distribution Technology



Lake Sumter
State College

Programs Offered Con't

- College Credit Certificates
 - 15 Certificates offered in various disciplines
 - Business Administration
 - Computer Information Technology
 - Health Information Technology
 - Engineering Technology
 - Electrical Distribution Technology



Lake Sumter
State College

COVID-19 Impact

- Pre-COVID
 - 70% of Instruction offered remotely
 - Clinical/Practicum/Internship experiences face-to-face
 - 60% of workforce students eligible for financial aid
 - Average program length 18 months



Lake Sumter
State College

COVID-19 Impact

- COVID-19 Impact
 - 90% of instruction offered remotely
 - Increased demand for short term programs (12 weeks or less)
 - Continuing Education Articulation/Alignment
 - Software for remote clinical/practicum experiences
 - “Essential” worker programs become prevalent
 - Enrollment remains steady



Lake Sumter
State College

COVID-19 Impact

- How is LSSC addressing changing landscape?
 - Rapid Credentialing Funding
 - New programming
 - Industry partner feedback
 - Articulation Agreements



Lake Sumter
State College

Contact Information

Amy Albee-Levine, Ph.D

Dean of Workforce Development

Lake-Sumter State College

352-435-6331

albeelea@lssc.edu



Lake Sumter
State College

Presentation on Energy Education, Vocational Training, and Workforce Development

Jennifer Szaro, President and CEO,
Association of Energy Services
Professionals



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TRENDS IN CLEAN ENERGY WORKFORCE DEVELOPMENT

JEN SZARO, PRESIDENT AND CEO, ASSOCIATION OF ENERGY SERVICES
PROFESSIONALS

About the association of energy services professionals

Nearly 2,400
Members in
the U.S. and
Canada



A non-profit network of clean energy professionals



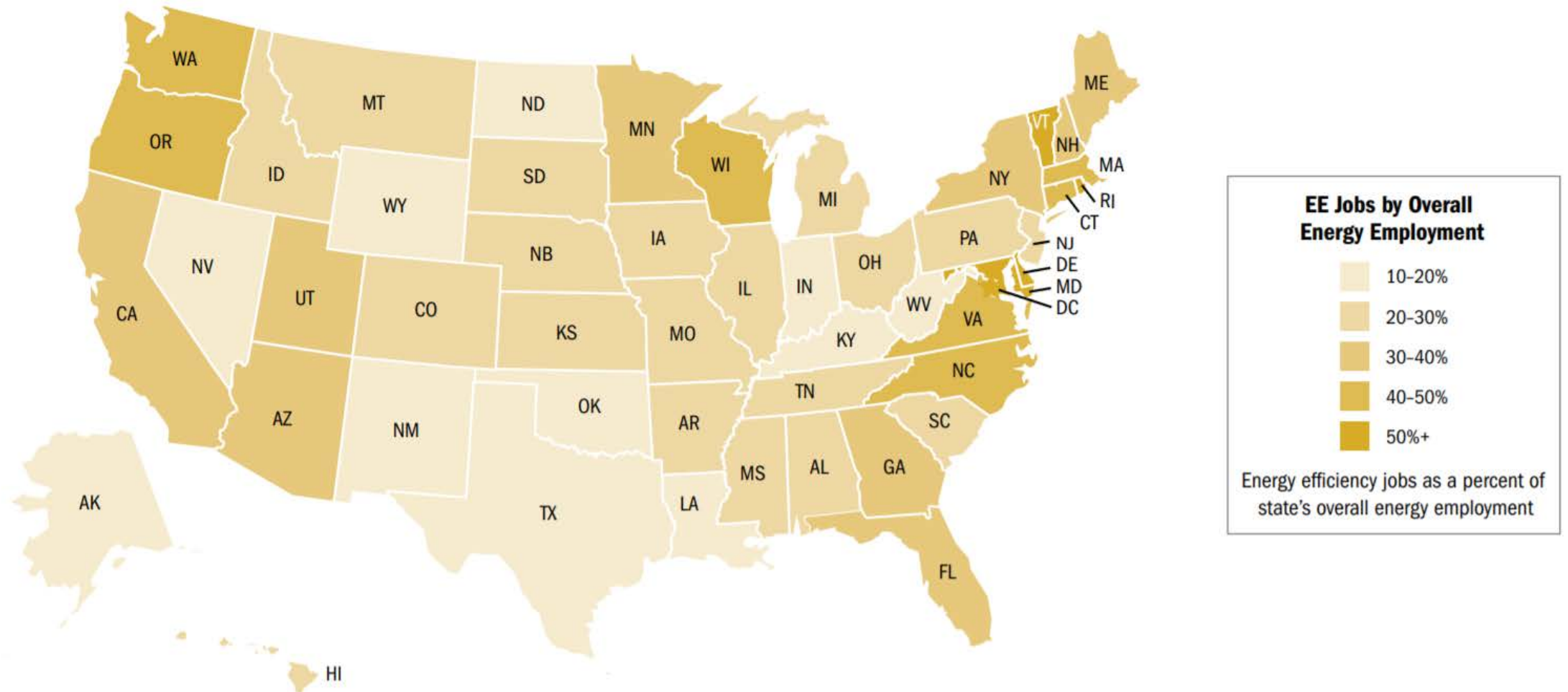
Accredited clean energy education and training



Focused on energy efficiency, demand response and distributed energy resources

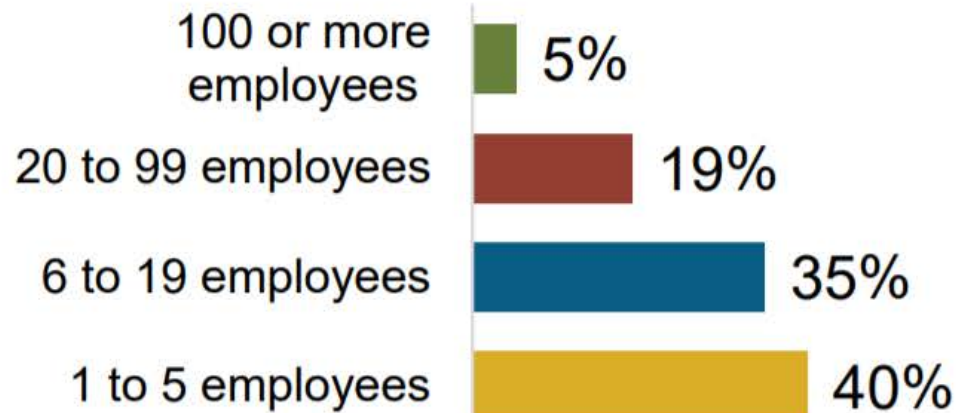
www.aesp.org

ENERGY EFFICIENCY NOW EMPLOYS MORE WORKERS THAN THE FOSSIL FUEL INDUSTRY IN 41 STATES AND THE DISTRICT OF COLUMBIA³

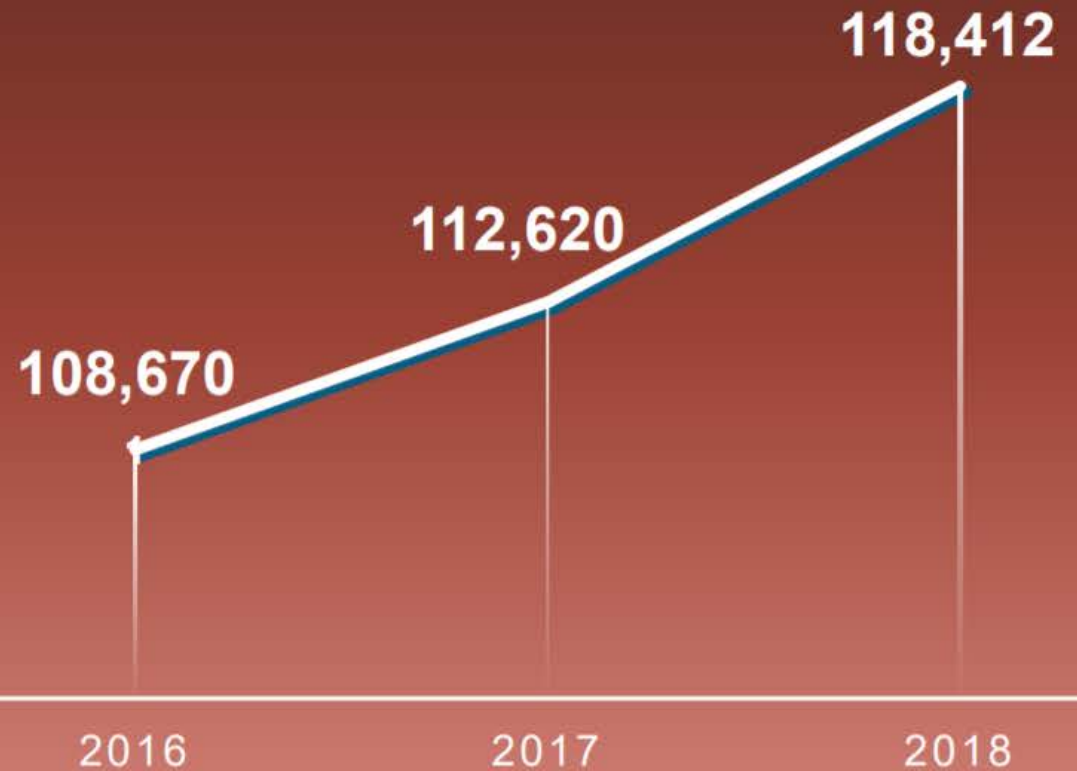


14,802 Energy Efficiency Businesses

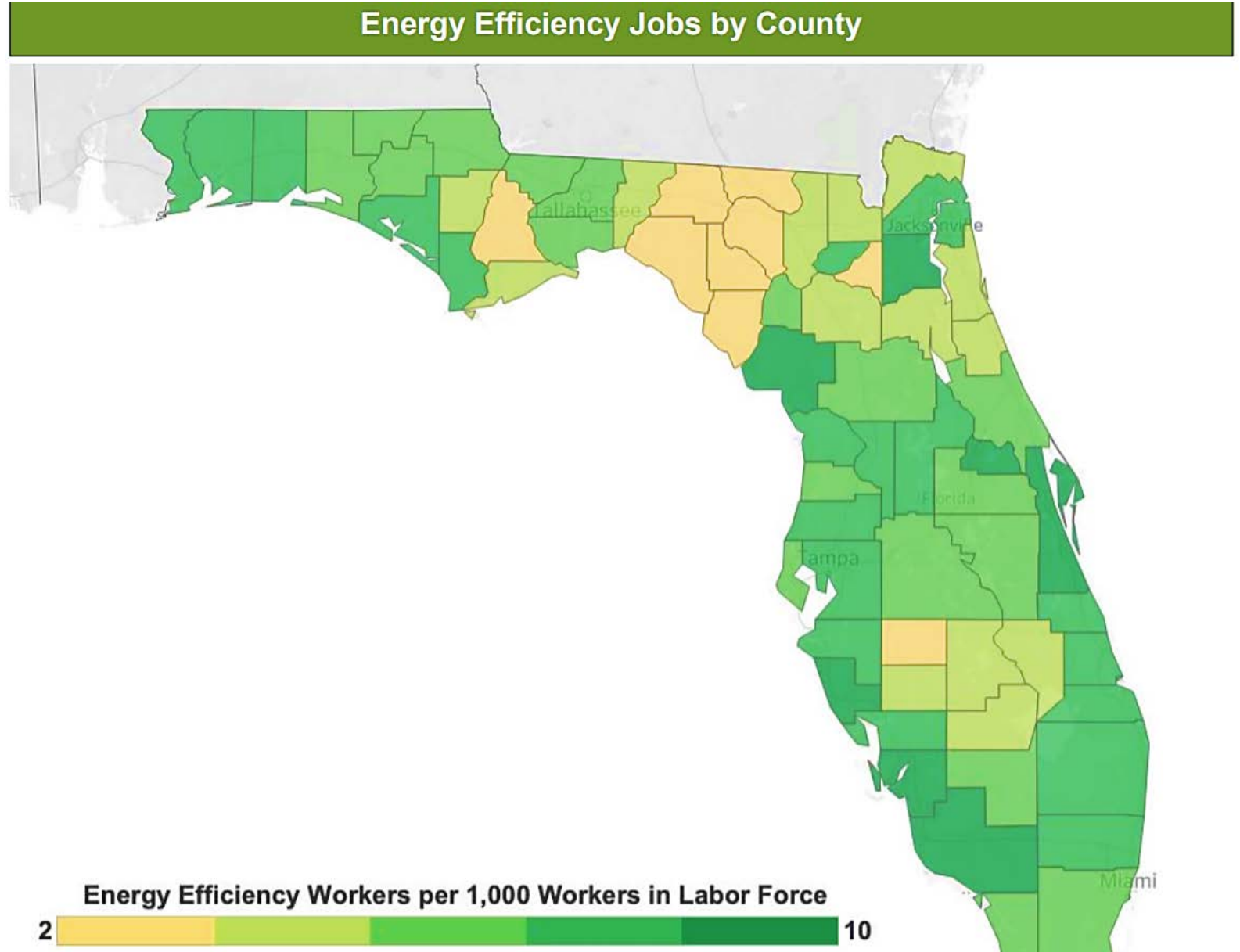
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WORKERS EMPLOYED



Metropolitan Areas	
Area	Jobs
Cape Coral-Fort Myers	4,909
Deltona-Daytona Beach-Ormond Beach	2,446
Fort Walton Beach-Crestview-Destin	1,254
Gainesville	1,500
Jacksonville	8,326
Lakeland	2,051
Miami-Fort Lauderdale-Pompano Beach	42,375
Naples-Marco Island	2,686
Ocala	1,546
Orlando-Kissimmee	12,015
Palm Bay-Melbourne-Titusville	3,145
Palm Coast	352
Panama City-Lynn Haven	1,021
Pensacola-Ferry Pass-Brent	2,416
Port St. Lucie	2,905
Punta Gorda	949
Sarasota-Bradenton-Venice	4,877
Sebastian-Vero Beach	1,004
Tallahassee	2,440
Tampa-St. Petersburg-Rural	15,286
Rural	4,910

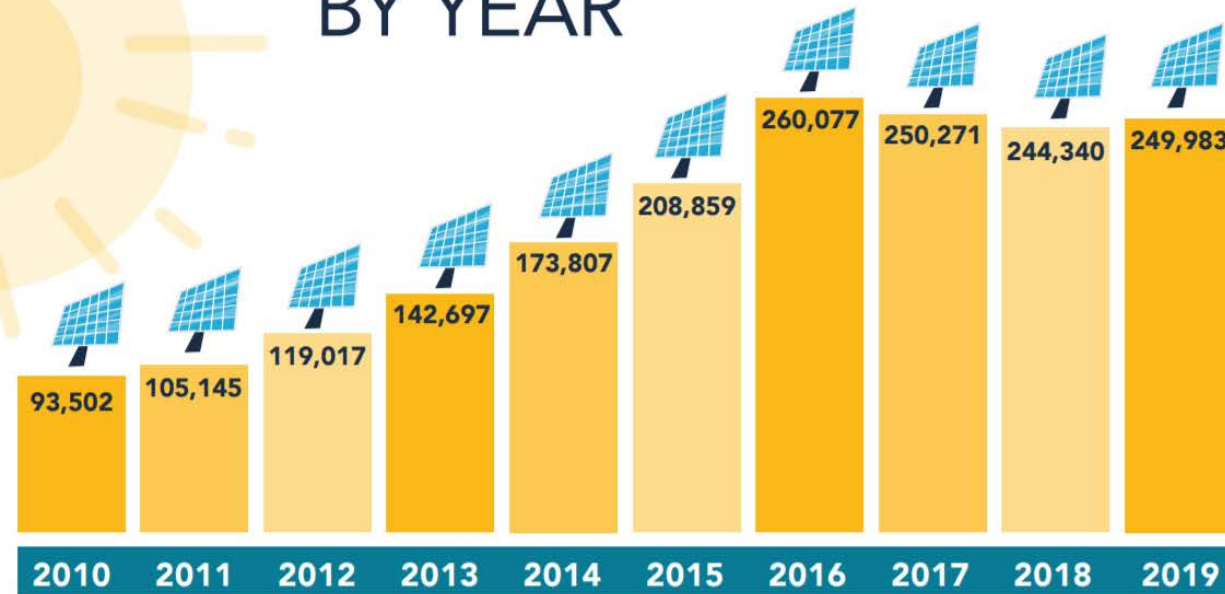
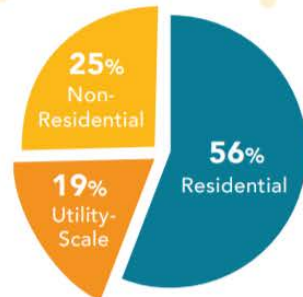


PRE-COVID Solar photovoltaic job trends

Average Annual Growth Rate: 104.42%
Median Annual Wage: \$39,490

U.S. SOLAR JOBS BY YEAR

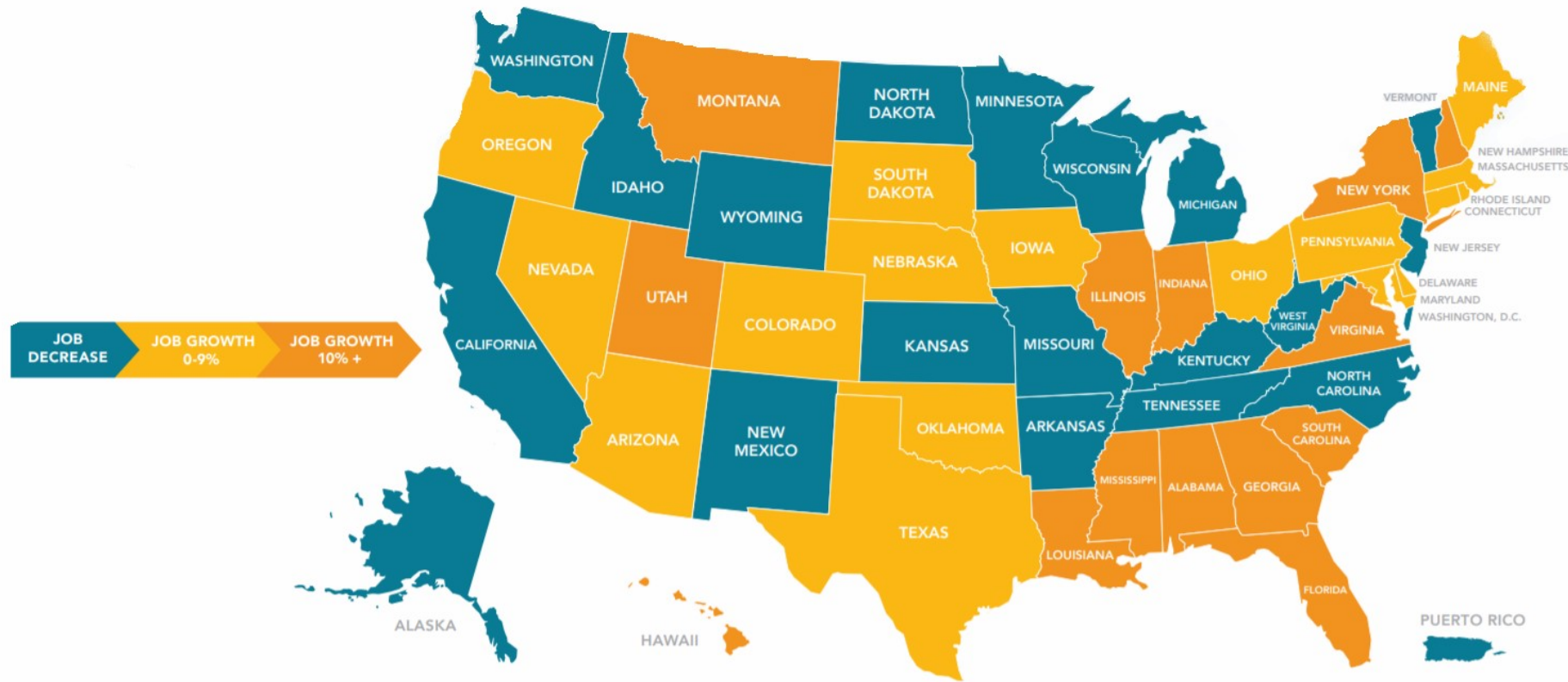
BY MARKET
SEGMENT, 2019



2018 and 2019 jobs numbers include Puerto Rico.

Sources: The Solar Foundation and U.S. Bureau of Labor Statistics

Pre-Covid Solar job growth trends and challenges



CHALLENGES TO GROWTH

Top challenges companies named as "very significant."



Clean energy job losses by industry as of July 2020

SECTOR	MARCH	APRIL	MAY	JUNE	JULY	TOTAL
Energy Efficiency	-103,298	-309,584	-18,880	71,786	2,105	-357,871
Renewables	-23,739	-71,705	-4,272	17,287	591	-81,840
Clean Vehicles	-11,399	-35,070	-2,059	10,335	276	-37,917
Grid & Storage	-6,517	-19,666	-1,166	4,561	132	-22,656
Clean Fuels	-2,186	-10,390	-657	2,351	91	-10,791
INDUSTRY TOTAL	-147,139	-446,416	-27,035	106,320	3,195	-511,075

Source: BW Research Partnership (E2, E4TheFuture, ACORE) August 12, 2020

Clean job losses due to covid-19 by state

	March	April	May	June	July	Total
Florida	3,963	25,949	2,563	-5,832	-122	26,521

STATE	TOTAL CLAIMS	Percent of Pre-COVID19 Workforce Unemployed
California	89,158	16.60%
Georgia	27,316	32.60%
Florida	26,521	16.00%
Texas	24,659	10.20%
Michigan	24,525	19.60%
North Carolina	21,214	18.80%
Pennsylvania	18,866	20.10%
Washington	18,444	21.70%
New York	17,239	10.80%

Source: BW Research Partnership (E2, E4TheFuture, ACORE) August 12, 2020

Regional Florida impacts

REGION	TOTAL CE JOBS LOST	% DECLINE
Miami/FTL/Palm Beach	13,509	22.2%
Tampa/St. Pete/Clearwater	5,288	24.0%
Orlando/Kissimmee	3,680	21.8%
Jacksonville	2,691	24.2%

Source: BW Research Partnership (E2, E4TheFuture, ACORE) August 12, 2020

Workforce education needs are evolving

Growing need for IOT-based technology skills (smart lighting, water heaters, HVAC, virtual load management)

Smarter refrigerators require smarter technicians



Consistent need for traditional EE, Solar and “Soft Skill” training

Demand for photovoltaics, building envelope, windows, heat pump water heaters, chillers, HVAC remains constant



Greater focus on cloud-based customer engagement

New technical skills required for load analysis, active load management and remote performance diagnostics



Technologies like energy storage, microgrids and electric vehicles/EVSE are rapidly changing workforce demands

New skills required to complete site assessments, installations and O&M required for both energy storage and EVSE (charging infrastructure)



Utility training needs are evolving to better handle Distributed Energy Resources and the Digital Grid

New planning and operational practices require training

Utilities need to adapt to the evolving needs of engaged “prosumers”

Facilitated Discussion on Energy Education, Vocational Training, and Workforce Development



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Next Steps

Kelley Smith Burk, FDACS Office of Energy



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Public Comment



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Adjourn Meeting

Kelley Smith Burk, FDACS Office of Energy



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