Mississippi Renewable Energy and Energy Efficiency Update

Mississippi Issues

Piney Woods School Solar Installation Nearing Completion

Piney Woods School in southern Ranking County is installing a 100 kW fixed-tilt solar array consisting of 300 solar panels. Solar Alternatives is performing the installation. I had the pleasure to visit with Solar Alternatives on-site as they were completing some of the final tasks to prepare for project interconnection. It is estimated that the solar array will provide nearly 25% of the campus' need over the course of a year. Solar Alternatives also installed an electric vehicle charger near the campus entrance. Piney Woods School has also indicated that they will pursue an energy use benchmarking program for each building on campus. Congrats to Piney Woods School for pursuing a more sustainable energy infrastructure that can also serve as a learning lab for students.

Review of MPSC Regular Meeting – June 11

On June 11, the MPSC held its regular docket meeting. The Commission took action on the following:

MS Power Co. System Restoration Rider, Docket No. 2006-UN-511: MS Power Co. will have more than $58 million in their Property Damage Reserve Fund at the end of 2019. $4.6 million was charged in 2018. MS Power Co. proposes a zero ($0) dollar rate for the System Restoration Rider Rate.

Entergy MS LLC CPCN for Infrastructure Improvements in Rankin and Simpson, Docket No. 2019-UA-32: Entergy MS will be rebuilding transmission lines in 2 areas (Star-Mendenhall-Magee) to improve resiliency and reliability. MISO has approved the projects which will cost $27 million. The typical customer will see an increase of 27 cents on the monthly bill. The MPSC approved the Petition for CPCN.

Rule Implementing Mississippi Telephone Solicitation Act, Docket No. 2018-AD-170: During the 2019 legislative session the Mississippi legislature passed, and the governor signed into law, Senate Bill No. 28216 (Amended No-Call Law) and Senate Bill No. 27447 (Amended Anti-Spoofing Law). The new laws will take effect on July 1. MPSC Rule 28 must be amended to conform to the new laws and is seeking public comments within 45 days of this Order to Amend Rule 28.

Aggregators of Retail Customers, Omnibus Docket No. 2018-AD-141: The MPSC issued an Order extending the temporary prohibition of third-party ARCs from registering said customers or from participating in wholesale markets on such retail customers' behalves until September 30, 2019.

Development and Implementation of Integrated Resource Planning Rule, Docket No. 2018-AD-64: The Commission has requested and received two sets of comments from multiple intervenors regarding the potential framework of an Integrated Resource Planning process. The Commission has reviewed all comments filed to-date. The Commission finds it is in the best interest of Mississippi ratepayers and utilities to proceed with the development of a comprehensive Integrated Resource Planning Rule, and to establish reporting requirements both for long term electric planning and for annual energy delivery planning by regulated gas and electric utilities. The Commission now seeks comments from all persons concerning a new Proposed Rule 29. **All written comments or submissions pertaining to the propose rule shall be filed with the Commission on or before August 1, 2019**. E&E News wrote an article about the MPSC action on the Integrated Resource Plan proposal.

Orders Implementing Recommendations of Auditors, Docket No. 2014-AD-42 (Entergy MS LLC) and 2014-AD-43 (MS Power Co.): The Commission ordered audits of each company's fuel adjustment clause. The final reports each contained a number of recommendations to the Commission. The Commissioned issued an Order for Entergy to file an Action Plan and an Order for MS Power Co. to file an Action Plan within 30 days of the Orders.

Net Metering Programs and Standards, Docket No. 2011-AD-2: The current Net Metering Rule requires a study to be conducted three years following the effective date of the Rule to evaluate the value of the "benefits adder." Acadian Consulting Group ("Acadian") performed the actual benefits study and recommended significantly lower values for the benefits adder. Because the level of net metering participation in Mississippi to-date is low, the Commission does not wish to take any action at this point that could interfere with or otherwise limit the potential growth of distributed generation options in Mississippi. With this Order, the Commission delays any changes to the Benefits Adder until January 2021 and maintains the Benefits Adders at the 2.5 cents/kWh until otherwise ordered by the Commission.

The Commission recognized the life and accomplishments of Senator Thad Cochran via a resolution. Finally, the Chairman Brandon Presley was congratulated for being elected as President of NARUC.

The next meeting of the MPSC will take place on July 2, 2019, at 10 am in the Woolfolk Building.

Other Recent Docket Actions at the MPSC

Entergy MS, LLC Sunflower Solar Facility, Docket No. 2018-UA-267: The MPSC has established a procedural schedule for intervenors to submit data requests (June 13) and file testimony (July 10) in regards to the proposed solar project. A project hearing is set for the September Open Meeting. On June 13, I submitted a list of questions for Entergy MS regarding the ownership model of this project.

Entergy MS, LLC Notice of Intent to Modernize Rates to Support Economic Development, Power Procurement, and Continued Investment, Docket No. 2014-UN-132 and Depreciation Study Results, Docket No. 2019-UN-33: In a June 26 hearing, the Commission found that the Entergy Mississippi Formula Rate Plan Rider Schedule FRP-6 required a change in FRP revenues of $36,419,759. The Commission also found that the Staff's adjustments and stipulations provide for an interim change in FRP revenues of ($11,011,746) for the 2018 Look-back Evaluation Period. The net result of these rate

adjustments is an increase of FRP revenues of $21,784,789 effective for bills rendered on and after June 30, 2019.

Residential Electricity Usage and Expenditures by State

The most recent data available from the U.S. Energy Information Administration ranks states nation-wide on annual electricity usage per customer and annual electricity expenditures per household. The chart below breaks out the Southeast states in each category:

	Annual Usage Rank (Highest = #1)	Annual Expenditure Rank (Highest = #1)
North Carolina	12	25
South Carolina	7	3
Georgia	10	9
Florida	6	8
Tennessee	2	12
Alabama	3	2
Mississippi	**4**	**10**
Louisiana	1	18
Arkansas	15	30
Kentucky	11	23
Virginia	8	11

Highlights:

- LA is the #1 state in the nation for annual electricity usage per customer, though overall 18th in expenditures indicating low rates.
- TN is #2 for most usage per customer, though 12th on expenditures.
- AL is #3 for most usage per customer and 2nd in the nation on annual expenditures, indicating high rates.
- SC is #7 for most usage per customer and 3rd in the nation on annual expenditures, indicating high rates.
- MS is #4 for most usage per customer and 10th in the nation on annual expenditures, indicating average rates.
- Eight of the top 10 states for highest annual electricity usage per customer are in the Southeast.
- Five of the top 10 states for highest annual electricity expenditures per household are in the Southeast.

Grants and Low-Cost Financing for Energy Efficiency and Renewable Energy Projects

A recording of the "**Grants and Low-Cost Financing for Energy Efficiency and Renewable Energy Projects**" webinar presented jointly by the Mississippi Development Authority - Energy & Natural Resources and the United States Department of Agriculture - Rural Development: Business & Cooperative Services is available at the following link: www.anymeeting.com/956-642-904/E959DF88874D3A. The webinar was held on January 28.

Regional Issues

Alabama Power has Highest Solar Fees

Customers wanting to install solar panels on their homes in Alabama will have to wait a while before the panels begin offering a net positive return on investment. That is because Alabama Power currently has the highest backup fee based on the size of the residential solar system of any regulated utility in the U.S. That's according to data from the North Carolina Clean Energy Technology Center, which produces the 50 States of Solar report, as well as the National Regulatory Research Institute. Alabama Power charges customers a monthly $5-per-kilowatt solar fee for the "priviledge" to invest in solar for one's own home.

Auburn University and Tyson Foods Open Solar Powered Poultry House

Auburn University's National Poultry Technology Center (NPTC) and Tyson Foods announced the opening of the largest off-grid solar-powered poultry house. The 54-ft by 500-ft poultry house is located in Cullman County, Alabama, and capable of housing 36,000 broilers. The poultry house will be one of two identical houses on Tim and Selena Butts' farm where 5.5-lb broilers will be grown. One house will be the control house while the other will be operated exclusively by solar power.

Beer Giant Anheuser-Busch Will Achieve Clean Energy Goals Ahead of Schedule

In 2017, Anheuser-Busch committed to purchasing 100 percent renewable electricity by 2025. However, the signing of a 15-year virtual power-purchase agreement with Recurrent Energy for a 222-megawatt (AC) solar project in West Texas means A-B will achieve its 2025 target several years early. The Texas project is slated to come online in 2021.

Entergy AR Creates Solar Tariff Program

Entergy Arkansas has started to offer a solar tariff that will allow customers to subscribe to blocks of solar energy generated by a solar facility near Stuttgart and from others as they become operational. Subscriptions are on a first-come, first-served basis. Customers who subscribe are required to have a one-year agreement. Residential customers can subscribe to up to 5 kilowatts of capacity.

Arkansas PSC Approves 2020-2022 Comprehensive Energy Efficiency Program

The Arkansas PSC has issued a new Order on June 17 approving the Third Version of 3-year Comprehensive Energy Efficiency Program plans from the state's electric and natural gas utilities. The new program expands EE programs for low-income- and age-qualified customers, allows utilities to continue to add or remove measures within a program as more information becomes available, and allows the utilities the continued ability to shift dollars among the various programs within the EE portfolio without notice to the Commission. The APSC also ordered stakeholders to convene and make recommendations to address Plan/Program inconsistencies across the utilities.

Arkansas PSC Orders More Consideration of Net Metering Rules

The Commission has issued a new order **in the pending net metering proceeding** (Docket No. 16-027-R). In response to passage of the Solar Access Act (Senate Bill 145/Act 464) enacted during this past legislative session, the Commission is opening a "Phase 3" of this proceeding and calling on the Net Metering Working Group to reconvene. A procedural schedule, culminating in a Dec. 5, 2019 hearing date, is detailed in the 6-page order.

From the order: “Act 464 of 2019 made fundamental changes to net-metering law in Arkansas; thus the positions, arguments, and legal analyses of the Parties underpinning the alternatives to the existing net-metering rate structure that had been under consideration by the Commission in Phase 2 during the previous two years may also have changed or been mooted by the passage of Act 464. Accordingly, the Commission has determined that it is necessary and appropriate to open Phase 3 of this Docket to consider and implement changes to the Commission's Net Metering Rules, including the rate structure that will be adopted pursuant to the requirements of and authorization granted in Act 464.”

Arkansas School District to Get All Its Energy Needs from Solar

Guy-Perkins School District is expected to become the first school district in Arkansas to receive all its power from renewable energy. A 1,400 solar panels, fixed-tilt, 585-kilowatt (kW) solar power plant will meet all the district’s electricity demand. Scenic Hill Solar will build, own and operate the solar power plant on land leased from the school district, and the school district will purchase power from the plant, according to terms of a 30-year solar power agreement. Cost savings to the district over the 30-year agreement will be roughly $500,000. Not only does the project reduce energy costs, but it will create exception educational opportunities for students.

Another Arkansas Local Government to go Solar

Camden and Ouachita County have set their sites on becoming the first city-and-county combination in Arkansas to utilize solar energy for all their government operations. The partnership will install 16,000 photovoltaic solar panels to produce 6.5 megawatts of current, enough sun power to supply both the city and county, as well as Camden Water Utilities and the Ouachita County Medical Center. The water utility and Camden, a city of 11,600, expect to save $115,000 on electricity in the first full year of the solar plants' operation.

Chattanooga, TN Airport First in Nation to Supply its Own Energy Needs

Chattanooga Metropolitan Airport officials recently marked completion of a solar farm on airport property making it the nation's first airport to produce enough energy for its daily power needs. The energy from the $10 million, 2.64-megawatt solar farm is sold to TVA and then taken off of the airport's power bill. The revenue generated by the solar farm helps the airport to keep other fees lower.

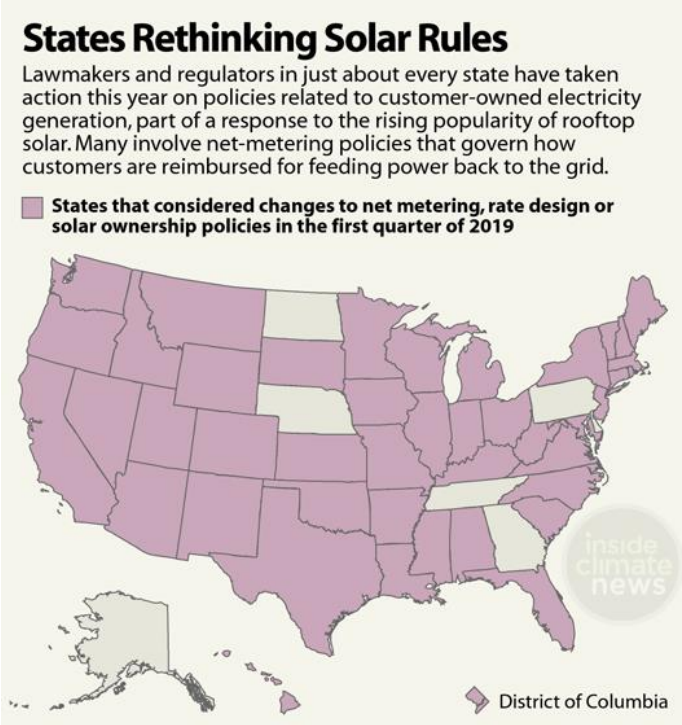
TVA Releases Final 2019 Integrated Resource Plan (IRP)

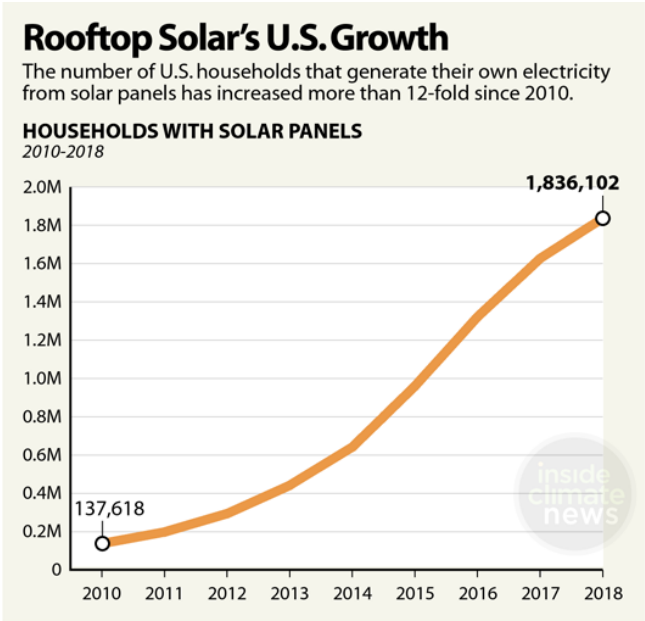
TVA has released its Final 2019 Integrated Resource Plan (IRP) and Environmental Impact Statement (EIS). The new 20-year power plan calls for TVA to add up to 14 gigawatts of solar generation, up to 5 gigawatts of of battery storage and between 2 to 17 gigawatts of additional natural gas-generated power over the next two decades to replace more of TVA's coal power plants being shut down. TVA has already shut down more than half of the 59 coal-fired units it once operated. The IRP also appears to scale back energy efficiency incentives.

States Weigh Changes to Net Metering Laws

Almost every state has been weighing changes to how homes with solar are compensated for electricity they send to the grid. The changes are part of a flurry of activity across the country as regulators and legislatures in almost every state referee a showdown between powerful utilities and a rooftop solar industry offering options that are more affordable and popular than ever. While solar is maturing, customer-owned systems remain a miniscule share of electricity generation. The debate about net

metering is just part of a much larger one about how the energy system and economy will adapt to rapid changes.





National Issues

EPA Finalizes E15 Rule; Allow for Year-Round Sales

The U.S. EPA released its final E15/RIN market reform rule May 31, just one day before the summertime ban on E15 was to go into effect. The Trump Administration last year promised farmers and ethanol producers that the EPA would finalize a rule to extend the 1-pound-per-square-inch Reid vapor pressure (RVP) waiver to E15. Because ethanol is cheaper per gallon, helps fuel combustion and reduces lifecycle GHG and tailpipe emissions, BIO estimates year-round availability of E15 could save U.S. drivers approximately $9.5 billion per year and that summer use of E15 could eliminate between 7 million and 10.4 million metric tons of CO2 equivalent GHG emissions.

EPA Finalizes Affordable Clean Energy Rule

The U.S. EPA released its final rule for its Affordable Clean Energy (ACE) program on June 19. The ACE program replaces the Clean Power Plan and establishes emissions guidelines for states to use when developing plans to limit carbon dioxide at coal-fired power plants. The ACE rule was finalized in conjunction with two related, but separate and distinct rulemakings. One repeals the CPP. The other contains new implementing regulations for ACE and future existing-source rules under Clean Air Act Section 111(d). The agency said these guidelines will inform states as they set unit-specific standards of performance. Additional information, including a full copy of the final rule, is available on the EPA website.

DOE-FERC Office of Energy Projects' Energy Infrastructure Update – April 2019

FERC's latest Energy Infrastructure Update revealed that the total capacity online of renewable electricity sources - hydro, wind, solar, biomass and geothermal - exceeded coal capacity for the first time in April. Renewable energy - including solar, wind, water, biomass and geothermal steam - narrowly overtook coal by climbing to 257.53 gigawatts of installed capacity. The total available installed generating capacity of coal stood at 257.48 gigawatts. Natural gas overtook coal in 2016 and now sits at 531.08 gigawatts of capacity.

Total Available Installed Generating Capacity

	Installed Capacity (GW)	% of Total Capacity
Coal	257.48	21.55%
Natural Gas	531.08	44.44%
Nuclear	106.99	8.95%
Oil	39.77	3.33%
Water	100.44	8.41%
Wind	98.62	8.25%
Biomass	16.10	1.35%
Geothermal Steam	3.83	0.32%
Solar	38.54	3.23%
Waste Heat	1.32	0.11%
Other*	0.78	0.07%
Total	1,194.95	100.00%

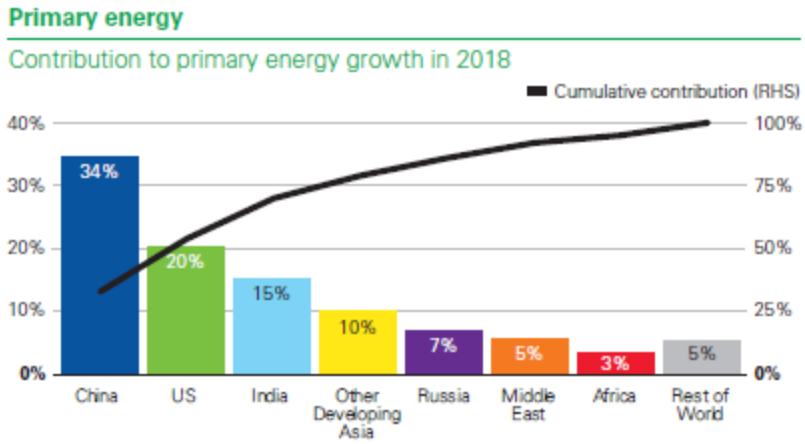
Sources: Data derived from Velocity Suite, ABB Inc. and The C Three Group LLC.

BP Releases it 68th *Statistical Review of World Energy*

The *BP Statistical Review of World Energy* records the energy-related events of 2018. The data compiled in this year's Review finds that in 2018, global energy demand and carbon emissions from energy use grew at their fastest rate since 2010/11. Global primary energy consumption's growth was led by natural gas and renewables. Renewable power grew by 14.5%, close to the record-breaking increase of 2017. China was the largest contributor to renewable energy growth (32 mtoe), surpassing growth of all the countries who are members of the Organization for Economic Co-operation and Development (26 mtoe).

As for the other energy resources:

- Global oil consumption and production grew. China led in consumption. The U.S. led in production.
- Global natural gas consumption and production grew. Each led by the U.S.
- Global coal consumption and production grew. India led in consumption. Chine led in incremental production.
- Global hydroelectric generation increased.
- Global nuclear generation increased, with China leading in growth.
- Global electricity generation rose. China accounted for more than half the growth. Coal still accounted for the largest share of electricity generation at 38%.



2019 Utility Solar Market Snapshot Report

The 2019 Utility Solar Market Snapshot results are based on data reported from participating utilities. In 2018, the solar market added 7.3 GW of interconnection capacity, a 20.1% growth in total capacity over 2017 bringing the cumulative solar total to 49.7 GW. The report also up's its 2019 solar adoption forecast to more than 13 GW, a growth of 25% over 2018 levels and an increase of 1.2 GW. The report finds that solar has established itself as a mainstream generation technology, and grid operators are beginning to tap into expanded capabilities.

Mississippi ranked 41st in the nation for solar capacity installed in 2018, according to the Solar Market Insight Report 2018 Year In Review.

Farmers for a Sustainable Future Infographic Released

Farmers for a Sustainable Future (FFASF) is a coalition of the nation's largest farm organizations and associations. FFASF represents U.S. farmers and ranchers committed to sustainably producing the world's food, feed and fiber supply. The infographic demonstrates how farmers and ranchers continue to be stewards of the land by promoting soil health, conserving water, producing clean energy, enhancing wildlife, efficiently using nutrients and caring for their animals.

Path for a Sustainable Bioeconomy

The Food and Agriculture Organization has released a new study looking at the sustainability of the bioeconomy, which is says it not intrinsically inherent, by looking at lessons learned from 26 case studies to understand how to ensure the bioeconomy of the future is developed in the best way possible considering that there is no blueprint to develop it. The study looks at six major issues related to the risks and opportunities of the bioeconomy: food security, natural resources management, climate change, responsible consumption and production, economic growth, and good governance.