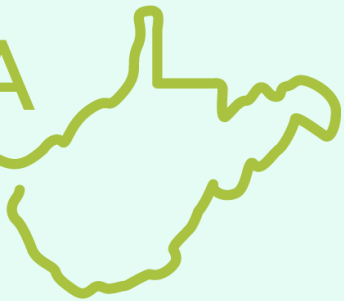




WEST VIRGINIA
 OFFICE OF
ENERGY




**2020
 ANNUAL
 REPORT**





In 2020 the WV Office of Energy (WVOE) kicked off the year with a goal to make itself more visible throughout the state, while striving to expand its opportunities and continuing to offer quality programs to its constituents.

WVOE works closely with organizations and agencies throughout West Virginia, providing up-to-date training and continuing education opportunities to various groups, individuals, and organizations throughout the multifaceted energy industry.

During the year, WVOE shifted to adapt to the changing times of COVID-19 with a transition to online trainings and conferences, while prioritizing the safety and health of our team and partners. Through these efforts WVOE was able to successfully complete work as normally as possible.

WVOE was able to successfully continue its many longstanding partnerships and projects, while also welcoming new ones, even during these challenging times. The WV Energy Efficiency Impact Grant for small businesses in partnership with Jackson County has been a major success, which USDOE is closely following as a success story. Also, a study on pump storage on underground mines in partnership with WV Geological and Economic Survey provided much needed, valuable data.





THE WEST VIRGINIA OFFICE OF ENERGY is responsible for the formulation and implementation of fossil, renewable and energy efficiency initiatives designed to advance energy resource development opportunities and provide energy services to businesses, communities, and homeowners in West Virginia.

The primary funding source for the office is the U.S. Department of Energy’s State Energy Program. The WV Office of Energy is the only state entity legally eligible to implement State Energy Program projects; therefore; its duties are prohibited from privatization.

Priority areas for the office include buildings and industry; policy, planning and energy security; energy education; transportation; electric power and renewable energy and energy resiliency and emergency response. Our role is to support and promote a variety of energy-related projects; provide education, training and technical assistance; host workshops and conferences, and collaborate with local governments, organizations and agencies.

2020 PARTNERSHIPS



ENERGY BENCHMARKING



In 2018, the WVOE, with an award from USDOE, began a 3-year initiative to inventory and benchmark all state owned building; as well as develop a ROADMAP energy performance benchmarking and disclosure policy requiring an annual review of all state buildings.

This is a highly collaborative effort, that is 60% completed. Over 30 county school systems have been benchmarked, and their average potential savings calculated. An example is Kanawha County, a potential \$1.8 million was identified, in possible annual savings with minimal effort.

Early finding from the project were presented to the 2020 legislative session, which led to the passing of HCR 128 to determine utility costs to the state, was passed. This study is looking to inventory and benchmark each building, catalog the deferred maintenance needs for state agencies, and provide recommendations on strategies to help ensure the state reduces costs. A report is to be submitted to the regular session of the legislature 2021 on its finding, conclusions & recommendations, together with drafts of any legislation necessary to effectuate any recommendations.

40%

of our energy consumption and greenhouse gas emissions comes from buildings

22%

of operating costs are spent on energy, in the commercial sector

\$2 per sq ft/year

HCR 128 will inform an *Energy Efficiency Technology Roadmap for WV Public Facilities* to help guide state efforts to improve the efficiency of public facilities and reduce energy bills, while building workforce capacities to provide related services and providing a pathway to increased energy savings in other facilities. This is the first such effort in the state. This effort will build market demand and capacities, increase participating market actor confidence and readiness to deliver these solutions across the state.

THE GOVERNOR'S **ENERGY** *summit*



CONNECTING
COMMUNITIES
— through —
ENERGY

With the challenges of social distancing, WVOE shifted their conferences to a virtual platform and combined both events into one this year. The 2020 West Virginia Governor's Energy Summit – Connecting Communities through Energy boasted approximately 200 virtual participants and brought together energy experts on a wide variety of topics. The event featured eighteen sponsors.

Featured speakers and topics included updates from the WVU Energy Institute, National Energy Technology Laboratory, and Shale Crescent USA. Discussion panels covered Community Energy Efficiency, and Energy Efficiency in cannabis growth. Other topics included coal, shale development, electric vehicles, bikeshare programs, recycling, benchmarking, and economic development.



ENERGY EFFICIENCY IMPACT GRANTS



The WV Energy Efficiency Impact Grants for small businesses, in partnership with Jackson County Development Authority, was born out of a response to the economic struggle of small businesses during the COVID19 closures. The WVOE sought a way to assist these businesses that also met our deliverables, which resulted in a micro-grant program for small businesses to make energy efficiency upgrades.

Per requirements from the U.S. Department of Energy, the allowable uses for the funds are: the installation of insulation, energy efficient lighting, weather sealing, HVAC upgrades and ENERGY STAR appliances. Businesses applying must be established before April 1, 2019, have 15 employees or less, be in good standing with the State of WV and generate under \$1million in revenue.

In our first round of funding in July we were able to award 12 businesses with grants and another 12 businesses were announced in October. Additional funding has been obtained and we are currently working to award an additional 15+ businesses before the end of 2020. We anticipate awarding another 30+ grants in 2021.



ENERGY EDUCATION



Through a partnership with the WVU Statler School of Engineering Office of Mechanical Engineering, WVOE provide no-cost technical assistance, special projects and / or energy audits to public buildings and eligible West Virginia businesses. Participating graduate and undergraduate engineering students are paired with clients needing help with an energy efficiency or productivity issue. Students receive class credit for a senior or graduate capstone course, as well as 40-60 hours of hands on field experience.

In 2020, 23 audits were conducted through the program year. Early response to participant surveys show 50% of audit recommendations are being considered for implementation in 2021. Seventy-five engineering students received field experience. Projects identified annual energy savings of over 8,800,000 kWh, and annual monetary savings of \$1,920,000.

2020 continued our partnership with the WV Community and Technical College system providing opportunities to advance energy efficiency workforce training through its established construction management program.

Classes provided in 2020 focused on high performance building, benchmarking and other areas of energy efficiency and conservation. Partners, and training have included:

- Home Builders Association of WV Foundation: Home Energy Rating System (HERS), Building Performance Institute (BPI), Train the Trainer the state's commercial energy code
- WV Code Officials Association: Complying with ASHRAE 90.1 - 2010
- WV ASHRAE: Energy Benchmarking in Public Buildings; Understanding ASHRAE 90.1 - 2010
- Energy Efficient WV: Green Realtor Training; Building Science Principles



ENERGY EDUCATION

WVOE continues to support the Home Builders of West Virginia Foundation’s energy code and Building Science Principles workshops statewide. Instructor, Xavier Walter, a subject matter expert with a great deal of passion for the work of transferring knowledge about building science and residential energy efficiency, led a Building Science Principles workshop 2/4/20. A RESnet HERS rate, he told the group of nearly 20 participants, “A certificate proves your competency in energy efficiency. If you take the time for learning or practical installations, you are working above your peers.” He made this convincing case for the benefits of attaining certification by stressing indoor air quality durability and the concept of the whole house approach, considering the house as a system.



RENEWABLE ENERGY



WIND

Clearway Energy announced an agreement with AEP Energy and Toyota for Clearway's 110MW Black Rock wind farm in Grant and Mineral counties. The American Wind Energy Association writes, "West Virginia now has 742MW of operating wind capacity after the Beech Ridge II project came online in May 2020. Project developers have invested \$1.5 billion on wind projects in the state."

SOLAR

West Virginia has 10.22 MW of installed solar, up 2.67 MW in 2019. The Solar Energy Industries Association projects 104.52 MW over the next five years. Favorable legislation passed in 2019 encourages utility-scale solar, with the first project approved by the WV Public Service Commission in October. Raleigh Solar proposes to construct a 90MW solar generating facility in Raleigh County including 250,000 individual panels.

<https://www.seia.org/state-solar-policy/west-virginia>

GEOHERMAL

In partnership with WVOE, the WV Geological and Economic Survey assessed the potential for using underground mines in the state for pumped storage and recommends a more viable use of West Virginia's water-filled underground mines: utility scale geothermal energy.

ENERGY CREATES JOBS

WV US Energy and Employment Data

West Virginia has a high concentration of energy employment, with 49,540 traditional energy workers statewide (representing 1.4 percent of all U.S. traditional energy jobs). Of these traditional energy work, 3,707 are in electric power generation; 27,343 are in fuels; and 18,489 are in transmission, distribution and storage. The traditional energy sector in West Virginia is 7.1 percent of total state employment (compared to 2.3 percent of national employment). West Virginia has an additional 7,144 jobs in energy efficiency and 8,968 jobs in motor vehicles.

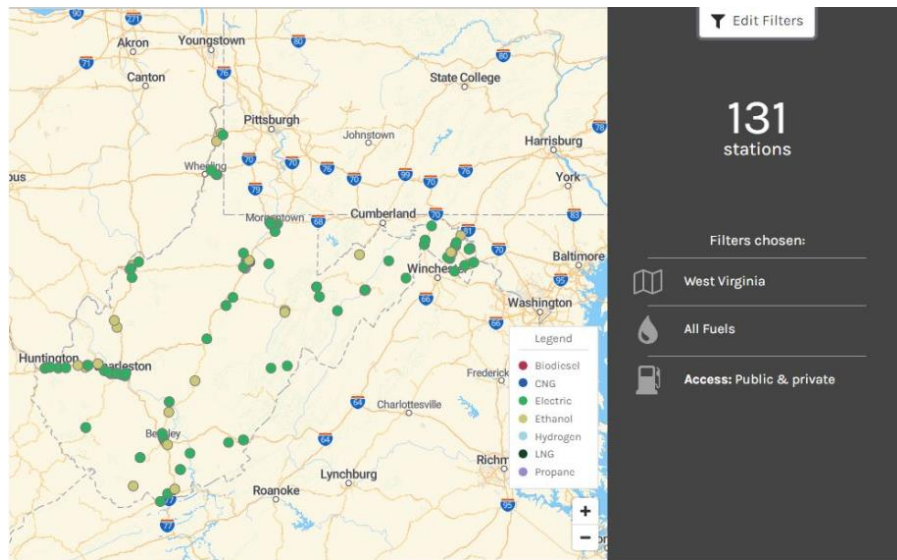
<https://www.usenergyjobs.org>





TRANSPORTATION

The WV Clean Cities program has been active for over 25 years, with a focus on the promotion of reduction of imported petroleum by advancing the use of alternative fuels and vehicles. In 2019, stakeholders reduced their petroleum consumption by 654,182 gasoline gallon equivalents through the use of electric and hybrid vehicles, propane, biodiesel, and compressed natural gas. From 2018 to 2019, West Virginia saw an increase of 21% in the number of alternative fuel vehicles registered in the state. At this time of this report, data has not been made available to calculate the 2020 statistics. Currently the state has 131 public and private alternative fuels stations: 3 compressed natural gas stations, 33 E85 stations, 189 electric vehicle charging outlets (comprised at 92 stations) and 3 propane stations.





ENERGY ICONS



COAL

More than three-fourths of West Virginia's mined coal is shipped out of state, mostly to about two dozen other states, but also to other countries.



NATURAL GAS

West Virginia is the seventh-largest natural gas-producing state in the nation, largely because of shale gas production.



OIL

Recent drilling in the Marcellus Shale in West Virginia has discovered liquid hydrocarbons, including crude oil and natural gas liquids.



WIND

There are almost 700 megawatts of installed wind capacity in West Virginia, and, recently, wind energy contributed slightly more than hydropower to the state's net electricity generation.



HYDRO

West Virginia's largest hydroelectric facility, with more than 100 megawatts of capacity, was built in the 1930s, and the newest, with a capacity of 80 megawatts, began operating in 2001.



SOLAR

There are 8.9 megawatts of net-metered solar in West Virginia with 973 net-metered solar arrays.



BIOMASS

West Virginia is the third most heavily forested state in the nation covering more than 12 million acres of forest land.



GEOTHERMAL

West Virginia University is pursuing local geothermal options to provide heating and cooling to the campus, estimating that geothermal could save up to \$1 million each year in heating and cooling costs.



ENERGY EFFICIENCY

In West Virginia, 430,949 customers are served by ENERGY STAR utility partners and 713 homes have earned the ENERGY STAR. More than 105 million square feet (1,790 buildings) have been benchmarked using EPA's ENERGY STAR Portfolio Manager, and 94 buildings have earned the ENERGY STAR for superior efficiency, including 41 schools, two hospitals, four office buildings, and one industrial plant.



ALTERNATIVE FUELS AND VEHICLES

West Virginia has three compressed natural gas fueling stations, 96 electric vehicle charging stations (219 outlets), 34 ethanol stations with 22 of those offering ethanol blends of E15 and E85, and 14 propane fueling stations.



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