

SLIDE 1

My name is William (Bill) Ball. Thank you members and Chair for allowing me to be here today and for you all being here. I am here today to review past developments in renewable energy policy and driving factors, as well as, examine where we are and might be going. You may agree or disagree with elements of my remarks. My goal is to provide useful information for future discussions. If it pleases the committee, I will take questions or comments at the end of my thirty minute presentation.

I have been using this cover slide for various presentations I have given over the last 20 plus years. I like it because it addresses the major reasons individuals, business and governments have been interested in renewable energy and solar power in particular. Through the years the order of importance of these reasons has changed.

I started my company in Little Rock in 1976 a few years after the 1973 OPEC oil embargo. Overnight, the US had lost 30% of the oil that we consumed. Our national security was at risk and then President Jimmy Carter declared that we would develop our renewable energy resources to offset the deficit. Although I was a bio-science major, I found my calling in renewable energy and I began to install solar water heating systems. Security was at the top of the list.

In 1999 with the Y2k scare, Reliability rose to the top of the list. I began installing solar with storage to power key loads in the event of the grid crashing as some predicted.

SLIDE 2 & 3

Before net metering, Economics sometimes was sometimes a driver in the case of solar for remote loads that were less expensive than the cost of a line extension from the utility.

SLIDE 4

Then, in 2001, after net metering was adopted, one could offset utility energy costs without the need for battery storage, the economics steadily improved as solar costs fell and technology improved. I installed the first net metering facility in Arkansas, the first in Entergy's and several Coop's territories and the first in Memphis on MLGW's distribution system.

SLIDE 5, 6 & 7

Today, with individuals, corporations and utilities investing in solar facilities, one could argue that Energy is at the top of the list and with increasing concerns about climate change, surly Environment is near the top. (7) This is a picture of a 5MW roof top facility I designed for a Tractor Supply distribution center in Ohio. I have evaluated all of their distribution centers for solar potential. A couple of years ago I told them about the progressive net metering rules in Arkansas. That information became a part of their decision to build their 10th US distribution center in Maumelle, AR. The center with it's 5.5MW solar facility will be commissioned very soon, bringing 450 to 550 permanent jobs paying \$18.00 or more per hour.

SLIDE 8 & 9

I used to tell people that I was self-unemployed in the solar industry with my day job being residential remodeling and custom home construction. However, I would take on renewable energy projects any chance I got. In 1982 I was commissioned by Dogpatch USA to rebuild a three story waterwheel first constructed in 1830. I used a reconditioned steam powered sawmill from the 1800's up in Stone County, a solar kiln to dry the white oak, and 19th century construction techniques to restore what turned out to be the largest known wooden waterwheel in the world at the time.

Slide 10 & 11

In 2006, even though net metering in Arkansas had been in place for several years, growth was slow. I realized I might have to move mountains to get builders to start putting solar on new homes they were building. I used 20,000 pounds of high explosives and put in a subdivision with assurances that required any home built there would need to be Energy Star rated and have a solar net metering system that would produce at least 50% of the home's energy requirements.

SLIDE 12

My wife and I designed and built the first two homes in the development. The first was the most efficient ever rated by Energy Star in the state until we built the second one.

I would now like to briefly review Arkansas' legislative and regulatory history of utility competition and net metering.

I first intervened in an Arkansas PSC docket in 1993. It had to do with utility Integrated Resource Planning. I was looking for ways to include solar power in our energy mix. An attorney representing the utilities told me that if I really wanted to get something done, I needed to go to the legislature.

Not having much of an idea of what I was doing, in 1999 I first came up to Capitol and found myself involved in discussions regarding utility deregulation. Utility deregulation held the promise of competition and customer choice in a world of monopoly utilities. I saw an opportunity for solar power to become part of the solution. I had drafted a five point energy plan, with net metering being one of those points. I didn't get much traction but I was successful in getting a couple of amendments to the deregulation Bill which was passed after an extended and contentious session. I also secured legislative sponsors that allowed me to work with legislative research to develop a Bill that would become the Arkansas Renewable Energy Development Act of 2001. I provided testimony on several occasions before this very Committee during the interim between sessions and garnered further support.

It is fair to say that the ink was barely dry on the deregulation Bill before serious doubts began to arise. Some states that had adopted deregulation were experiencing rolling brownouts, price gouging and other issues. Arkansas' deregulation Bill was first delayed and eventually repealed. Legislators, realized that deregulation, as crafted, was not a good fit for Arkansas, They began to ask me about net metering early in the 2001 session. Net metering was seen as a way to provide for customer choice and competition in place of full deregulation. The Arkansas Renewable Energy Development Act of 2001 pass without a single no vote in Committees or before the full House and Senate.

SLIDE 13

The Act has been improved by amendments several times since it was first passed but I realized there were Arkansans that perhaps did not have good solar access on their homes or businesses because of shading or limited space.

SLIDE 14

in 2011, I petitioned the APSC to open a docket to address meter aggregation and Arkansans' ability to own a net metering facility off-site with production credited to their home or business, became a reality. Then in 2019, Act 264 was passed that allowed third party developers, power purchase agreements and leasing. It appeared that the future of customer generation was secure although there were clearly some utility concerns that needed to be addressed.

The APSC had opened docket 16-027-R in 2016 in an attempt to address a number of issues including cost shifting and compensation for net excess generation. In general, the utilities refused to acknowledge that there were any system benefits to the grid, any economic benefit to the state or any environmental value to renewable energy generation and the pro renewable Parties refused to acknowledge any cost shift potential due to net metering.

Much to the dismay of the pro-solar Parties, I suggested a grid charge, with provisos, but at the end of the day no solution was developed. The Docket went on (and on) for five years and all Parties were discouraged at the slow progress. The APSC finally issued a 300 page Order that kept the 1 for 1 kWh credit for net excess generation, however did not directly address concerns about cost shifting.

SLIDE 15

Then last year the APSC opened Docket 22-061-U specifically to deal with cost shift concerns. I was a Party and filed testimony that received utility support for implementing a grid charge. I believe we were making progress, although all were concerned about yet another lengthy Docket. By the beginning of this year, partially due to understandable frustration on the part of the utilities, Act 278 was pushed through the 2023 legislative session. Unfortunately with testimony limited to five minutes during some of the Committee hearings, certain elements and implications of the legislation, were not fully discussed.

SLIDE 16 & 17

There is no question that reducing compensation for net excess generation (kWh put back on the grid) is a great business model for regulated utilities. They pay avoided cost to not have to generate the kWh, the customer generated resource can reduce strain on their infrastructure and the energy flows from the customer generator to his next door neighbor for which the utility is paid the retail rate. We need a mechanism that recognizes the real benefits of renewable energy development and energy production in Arkansas. This slide shows 2022 historical avoided costs. This costs varies depending on the location, time of day and time of year that the demand exists. (17) I believe the level of compensation should be open for further discussion. It is important to recognize the system benefits, the economic benefits and the environmental benefits of renewable energy while being sensitive to the needs of low income customers. Many utilities charge a higher rate for the first 500kWh and reduced rate for anything above that usage. Those first 500kWh are the most essential to low income customers.

SLIDE 18

There are other provisions that serve no value in reducing cost shifting, are punitive in nature and detrimental to future renewable energy development. Limiting the number of customers that can be co-located is like telling the construction industry no more multifamily projects, you can now only build duplexes on one piece of property.

Arkansas does not have a community solar statute or regulation whereby a solar developer can acquire an interconnection from a utility without knowing who the individual customers might be. I would compare it to an apartment complex or planned development not needing to know who the individual tenants might be before building the development.

Meter aggregation is the closest opportunity for community solar that Arkansas has. The difference being that the solar developer must first submit a list of customers and their historical kWh usage before hopefully receiving preliminary approval to interconnect the facility with the grid.

Just as this rule went into effect, I submitted a Preliminary Interconnection Site Review request for a site that had eleven customers with a mix of commercial and residential. It was denied because of the new no more than two customer co-location rule. I had the exact same piece of property surveyed and platted into separate addresses and limited two customers per address to meet the new requirement. All this requirement does is drive up costs for solar customers.

Utilities have long argued that customer owned assets do not benefit from the economies of scale that utility facilities do when they install hundreds of MW. I would argue that co-locating numerous customers at one site allows customers to achieve those economies of scale and this provision is designed solely to increase the cost of customer generation.

SLIDE 19

Net metering customers are allowed to generate part or all of their kWh consumption. This strike through and change severely limits many residential customers the ability to do so. It is the equivalent of telling a home owner or builder you can no longer build a home in excess of 2500 square feet. I know of a patriarch that wanted to aggregate his children's residential electrical into meters into one account. To off set the usage of all of the accounts, the solar facility needs to be 70kW, less than 25kW for any one of the four individual residential accounts. The utility refused to approve the request because they now treat the aggregated accounts as one account with a limit of 25kW.

SLIDE 20

This provision limiting DC/AC ratio is absurd, serves no purpose and at best adds yet another punitive element to Act 278. Think of the inverter as the generator, limited by it's maximum output capacity and the basis for the size of the AC utility interconnection. Think of the solar array as the fuel. The more fuel you have, the longer you can run the generator at it's current-limited capacity. Accepted software programs that project kWh production such as PV Watts, have an input for the DC/AC ratio and the energy production projection is based on that ratio. In other words, the projected kWh production changes with the ratio, not the maximum AC output or size of the interconnection.

SLIDE 21

A few years ago, I had a customer that needed a 3MW AC interconnection. The utility informed me that they could only handle 2MW on the distribution feeder. With "part or all" of the customer's usage in mind, I used a 1.56 DC/AC ratio in the design. In other words, I provided a lot of fuel for the generator. When the DC size of the array and DC/AC ratio are entered into NREL PV Watts, the projected kWh projection is forecast. That forecast is used to verify against the customer's historical usage and it, along with the size of the AC interconnection are the limiting factors. It is like telling the utility they are limited to the amount of fuel they can use at one of their generating facilities. From an engineering perspective, higher DC ratios result in a much more stable output less affected by a passing cloud, higher afternoon output semi-coincident with peak loads and easier voltage regulation on the utility feeder. This provision is dictating how engineers must design a solar facility, yes absurd. This graph shows a typical days generation over a day. I'm making 2MW all day long because there is enough fuel even early in the morning or late in the day.

SLIDE 22

My mom took this family picture in 1958. The lady on the right is my grandmother who was born in 1896, the dawn of the industrial age fueled largely by coal. There was about one billion people on the planet. The man wearing the cowboy hat is my father and he was born in 1924. He was a young boy during the national crisis known as the dust bowl days which inspired him into a career with USDA's Soil Conservation Service. There world population was two billion at that time. The hansom young lad in the middle born in 1951 is me. I was later inspired into a career in renewable energy spurred on by the national security crisis we remember as the OPEC oil embargo. There was 3 billion human beings on the planet when I was born. My first child was born in 1981 and by then the population was five billion.

Today there are eight billion people on the planet. Our quality of life and the technologies we have today could not have even been imagined by my grandmother, yet I learned from her the benefits of being self reliant and prepared.

SLIDE 23

Today, we are largely not prepared for the challenges that face us over just the next decade or two. It is unfortunate that many among us can not, or refuse to read the writing on the wall, and many don't even see the wall.

SLIDE 24

I would like to close with a story about two little rocks.....this is coal. Before moving to Arkansas in 1973, I made a living in the coal industry working for a geologist in Wyoming. We took core samples that located the low sulfur coal that now comes to Arkansas at the rate of many train car loads a day.

This is the little rock that this country was built on. This rock enabled the industrial revolution, growth in population, a phenomenal improvement in the quality of the human condition, and indeed, the survival of the United States.

On December 14th, 1941, just four days after Pearl Harbor was attacked, the first regional transmission operator was established. The Southwest Power Pool, with current headquarters located in Little Rock, was formed to coordinate generation, predominantly from separately owned coal fired generating plants located around the region. This happened because of the need to bring power to key manufacturing facilities supporting the war effort. (Think aluminum from Boxite, Arkansas). Being united and working together, the United States emerged from the war as a world leader.

I am immensely grateful for this little rock and to those, past and present, who mine, process, or otherwise are involved with our use of this little rock. We need this little rock to transition to other forms of energy.

.....but now, we have another little rock. This is silicone. This is the little rock upon which we will build our future. Yes, we are able to be here because of where we have been. However, we can rely on this little rock. We can afford this little rock. We need this little rock.. It is not “us and them” it is us and more of us.....thank you