WORLD BUSINESS ACADEMY
Sharing the Vision... Building the Network... Healing the Planet

PERSPECTIVES

by Rinaldo S. Brutoco

Rinaldo S. Brutoco is the Founding President and CEO of the Santa Barbara-based World Business Academy and co-founder of JUST Capital. He's a serial entrepreneur, executive, author, radio host, and futurist who's published on the role of business in relation to pressing moral, environmental, and social concerns for over 35 years.

Wind, Wires, and Fire

The devastating Paradise fire was caused by sparking from Pacific Gas and Electric's (PG&E's) high-voltage transmission lines that run through all sorts of back country and forests in Northern California. Unfortunately, that tragedy is but one of dozens of fires started from high-voltage transmission lines which, by definition, often run through forests and remote back country terrain. According to Cal Fire, in recent years electrical lines were responsible for 40 percent of all acreage destroyed. They also calculated that over 2,000 electrically caused fires were started between 2015 and 2019. Every informed government official knows there is literally no way to stop these fires from emerging as long as we cling to a statewide grid as our means of providing electricity to California's 40 million residents.

We can't stop lightning strikes, although they would be less frequent and less severe if and when we get climate change reversed but knowing that high powered transmission lines crisscrossing the state will cause many more fires in the future is simply unacceptable. Fires occur when the wind blows and lines bang into each other, or when spontaneous combustion of line transformers and various other components occurs. Having high-voltage transmission lines means we will inevitably be plagued with continuing fires forest fires every year. That's unacceptable.

On top of those incredible liabilities, California is now suffering through a series of rolling black outs called Public Safety Power Shutoffs (PSPS) which are unilaterally ordered by PG&E and Southern California Edison (Edison) whenever the temperature rises high enough, an increasingly frequent event in this climate change era. Governor Newsom says we can expect these PSPS events to continue for nine years or longer. Is that acceptable on any level? Are we willing to suffer all that social and economic disruption? Look also at the billions in damages we have to pay to all the unfortunate residents who sustain the loss of life and property from these constant fires.

Finally, we learned the hard way in 2003 that a single squirrel could bring the power down for 50,000,000 people in the Northeast and Midwest by triggering a spontaneous circuit overload condition that "trips" circuit breakers up and down the line.

Enough is enough. We need a new system that: 1) won't catch fire, 2) is not subject to terrorist acts, 3) can't ever be hacked, 4) won't require us to ever have a PSPS event, and 5) can't fail even if a squirrel goes crazy again! This new system has an additional hidden benefit: the new system will cost less to create and maintain than merely maintaining the existing system! What is this miracle solution called? It's called an interconnected microgrid network. It requires no transmission lines to operate.

Looking back to the 1880s in Manhattan, Alexander Graham Bell famously made the world's first telephone call over a single copper wire. Universally "accepted wisdom" was that you had to connect telephones by wire. In 1970 only 25 percent of the global population had telephone service. That jumped to 98 percent global telephone coverage today because we discovered a new system called cell phones. Cell phone technology has revolutionized communications and human civilization itself. We just had to realize that the copper wire that started it all had to be replaced by electromagnetic radiation passing through the air. You see, that original copper wire that was essential for the first phone call to occur became the enemy of widespread telephone service.

Also, in the 1880s in the same city of Manhattan, there was a vigorous dispute between Thomas Edison and Nikola Tesla. Edison wanted to power the emerging electrical market using direct current with small power plants located close together within urban areas. Tesla wanted to build a massive power plant in Brooklyn where he assumed no one would ever see it and bring the power to Manhattan with high voltage alternating transmission lines. Tesla won the battle and centralized power with high voltage lines was created. Just like Bell's copper telephone wire, the wire Tesla created became the limiting factor in getting electrical energy widely disbursed around the globe. The Indian farmer still waiting to get an electrical wire to his village never will. It makes no practical, engineering or economic sense to bring that wire to every place of human habitation. The transmission wire has become the limiting. The high-voltage transmission line is the enemy. Particularly because continued reliance on distant massive power generating units is so uneconomical, and is the biggest single factor slowing our transition to a 100 percent "green" economy.

Interconnected microgrids are like a honeycomb where each side is attached to a neighbor comb. Think of each of those local combs are self-sufficient Direct Energy Resource ("DER") generators and users of electricity. My home is a specially designed solar-driven, free standing household microgrid which is able to indefinitely "island" itself off grid power. My monthly energy bill for a property with multiple structures and extensive gardens is only 39¢ per month! The World Business Academy also designed a microgrid that would span from Ventura to Goleta, California, a significant population area that requires up to 300 megawatts. The system it presented to the California Public Utilities Commission identified every single solar cell we would use and the precise location of each of those cells to collectively create a microgrid of 350-megawatt capacity. More recently, we designed a smaller one that would connect the fire and water departments of Montecito, California, a local school, and as many homes as Edison would allow. Unfortunately, Edison is doing everything it can to stop that microgrid from being built even though it would have dramatically

reduced the death and destruction of the infamous Montecito mudslide of 2018.

You often hear the question: “What do you do when the sun doesn’t shine, and the wind doesn’t blow?” The answer is you electrolyze cheap “green” energy into hydrogen, with on-site storage, and run it through fuel cells as needed to create supplemental power for the microgrids. And, in those rare instances where one microgrid goes down, neighbor microgrids would be able to “port” power from one microgrid to another. With rural microgrids where there are no contiguous microgrids to draw power from, plenty of hydrogen will be available from on-site storage and be supplemented by centrally stored hydrogen.

Microgrids are the answer to electrical resilience. They are the way to stop forest fires and free ourselves of the PG&E and Edison monopolies that keep our prices high and our forests on fire, and block the full deployment of green energy sources even as we mothball one fossil fuel plant after another

Published in the Montecito Journal Sept. 10, 2020 edition