

## Our Crucial Need for Independence from the Power Grid – Part One By Dave Kent



*We seem to live every day oblivious to the danger posed by catastrophic failure of our power grid. It's not a question of if it will go down, but when. We've seen rumblings of it in the past decade, when entire sections of our country were without power for extended periods of time. Can we afford to have this happen in an even more widespread area? A revamped power grid would preclude regional or national failure. But in the meantime, it's up to us to protect ourselves as a nationwide power failure scenario looms closer by the day.*

**P**ower outages are a regular occurrence in many countries around the globe. I recently completed an engineering paper involving hours of interviews with industry experts in electrical motor control technology and operational controls protection. The project highlighted in my paper is located within a series of natural gas fields in Algeria, and it so happens that the region is prone to repeated power outages—even though it's home to some of the most advanced hydrocarbon processing technologies in the world.

Sound familiar? It should...we have it here as well. But why do we tolerate that kind of track record here in the United States?

Look around you. Your life is filled with advanced technology. It's in your appliances at home, the car you drive, your computer, your cell phone and a multitude of other devices you use daily. Advancements in design, manufacture and other core technologies are all around us, at work and in the home. Devices are smaller, quicker, smarter, more versatile, better-looking and even less expensive.

Yet, the very foundational structure responsible for making all this work in the home and business—our nation's power grid—lags far behind the technology and good science used to

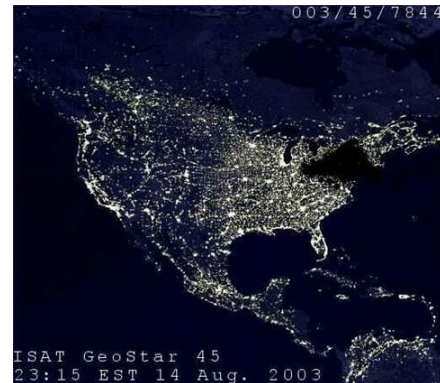
provide the myriad of devices it powers. For the most part, the power system here is still using century-old technology and as a result, is more prone to failure than it should be. It also presents significant risk to hospitals, police stations...everywhere critical operations need to be maintained without interruption. Many facilities have emergency backup power systems but they are prone to failure.

The power situation reached a point of critical mass decades ago. In addition, this ridiculous reliance that our nation has on our antiquated, bureaucratically-run, power grid isn't sinful—it's just foolish. I say this mainly because we're not moving ahead on rebuilding the infrastructure quickly enough. Without being alarmist, I believe we're relying on something that could fail, in large part, at any time.

On November 9, 1965, a massive power failure hit the Northeast. Less than 38 years later, New York and parts of the Northeast were stricken once again, as the grid went down on the afternoon of August 14, 2003. Miami and the Florida Gold Coast suffered the same on April 4, 1973. The Gulf Coast struggled for weeks with no power following Hurricane Katrina in 2005; less than 2 months later, Hurricane Wilma slammed into Florida and schools were out for two weeks due to resulting, widespread power outages.

### **Satellite photo of the U.S. shows the extent of the massive power blackout of 2003**

Small areas hit by floods, storms and other natural disasters are one thing, and major regions are another one altogether. When the 2003 blackout occurred, word began to leak out that experts have been anticipating "a big one" for quite some time, in a fashion similar to how seismologists discuss the coming "mother of all earthquakes" in Yellowstone and California.



But power outages can be prevented with a new, redesigned system. Yes, it's costly and it will have some bugs, but it's got to be started. Ask the people in the Northeast if they would like a more reliable and modern power system. Some pundits might argue that the relatively few major outages are an acceptable number; I say no; there shouldn't be outages of this size or duration anywhere in this country, ever. We have the technology to build a new, reliable system. Millions of people were left stranded in New York City after it was crippled by the power loss. Business halted. People died. What's acceptable about any of that? We are long overdue for a national overhaul of the existing power grid.

There's nothing wrong with relying on a nationwide power network; we do already. But one that proves safe, clean, simple to run and is maintained with smart technologies that provide safeguards against critical equipment failure within the grid, is absolutely necessary. As it now stands, we're totally at the mercy of terrorists, hackers, bureaucracies and monopolies, while the old system's infrastructure is trying valiantly to keep up with increased power demands.

### **Supply and (Increased) Demand**

On a much smaller but still unacceptable scale, power outages seem to be a normal way of life around the country. The grid is being overtaxed—primarily because it is aging and unable to keep up with the growth in power consumption being demanded of it. Within the last 25 years, substantial increases in power consumption have been noted due to explosions in new housing and burgeoning commercial areas in, and near, centers of concentrated population. Older, existing

housing has also added to the increases. As an example, my home is located in an area built primarily in the 1950s. The original homes were built with 100-amp service. Since that time over 90 percent of residents have upgraded to 200-amp service to take on increased electrical loads and use. Of course, this is only one case out of the entire Chicago Metropolitan area, but it's a representative microcosm. Multiply it by the number of major American cities, then add recent expansion figures in Arizona, New Mexico, Colorado, Montana, Oregon, Washington, Wyoming and nearly every other state in the continental U.S.—and you have an idea of how large the power grid is—and how much more electricity it has to supply, without interruption. We use a lot more power than we ever have before, and the demand for it continues without letup, our nation's recessed economy notwithstanding.

Ships have lifeboats, automobiles have air bags, some newer light aircraft are being built with recovery parachutes, and our electrical appliances have fail-safe mechanisms such as power surge protection and circuit breakers as a normal part of their design architecture. How come we don't have that degree of safety in our power grid?



Another personal view: Since moving from one southwest suburb of Chicago to another, my family has been plagued with at least two dozen power outages. We moved in February 2004 and less than three weeks later, in the middle of a calm winter night, the power went out. It stayed out for seven hours. This was the first of over 24 outages in my area. Others near us have, at times, been left without power for days. And for various other reasons, that scenario has played out unabated. Equally annoying is the fact that invariably, a power outage will occur on one side of the street, while businesses and homes on the other remain with power. At other times, power will out on a beautiful, sunlit day, most often in the winter months—and stay out for 2 to 8 hours. That's an entire work day for this writer.

And that's not the main point, only a major aggravation. The main point—and one far more serious than any other—is age and a lack of operational redundancy, grid-wide, combined with an increasing interdependence on one portion of the North American power grid with other sections. This is a prescription for danger, and worse. In a terror scenario, major regions could be disabled. (Please don't write saying that I've just given terrorists a great, new idea...they thought this one up long before I did.) We just need to be alert, educated and boldly move forward with solutions. Hopefully this article is that clarion call.

Back in March 2002, eight years ago, it occurred to me that we in the United States needed to develop independence from our local power grid. At the same time I considered how integral companies like IBM and Microsoft had become in the formation of a vast, global industry—personal computing. Bill Gates and Paul Allen had initially teamed with IBM to handle their MS-DOS software and later, Windows software. Soon after that point, scores of other computer manufacturers such as Hewlett-Packard, Dell, Packard-Bell, Acer, Compaq and others, contracted with Microsoft to market Windows software with their machines as well. A dynasty was born of an effective marketing idea and business arrangement. In the years since this fledgling industry first took off, the personal computer has permeated cultures, borders, entire populations and every segment of society. It has transformed the way we do business around the world and the way we provide healthcare, guidance systems for transportation and the monitoring of electromechanical operations the world over. Today it is unthinkable that we wouldn't use computers in important way in everyday life. From home to hospital, school to police station, airport to bus station, trading exchange to manufacturing facility—and far beyond—the personal computer has changed

the way we all live. And a good part of that was initiated through the Gates-Allen business model. The combination of the two systems—hardware and software—became virtually unbeatable, and all because of an idea that matched buyers to needs and existing technologies.

A similar business model has been practiced for decades in Detroit with the automobile. Planned updates in appointments and improvements in performance are incorporated in timely fashion, making room for newer technologies and emerging models aimed at various, specific segments of the marketplace. And in both cases, the consumer and the commercial client are equally at the heart of the user profile.

An additional industry-building benefit is that businesses consisting of subcontractors have sprung up around the mother ship companies in these examples, and in other major industries catering to the masses. Satellite businesses help with subassemblies and specific technologies that together, form finished products. So why not supply the nation's consumers with components to meet their power supply needs in a similar fashion? The idea works, we know that. Actionable ideas result in technological advancement, improvements and a workable solution to basic American needs, such as transportation and computing. Going back to my epiphany of 2002, what originally had gotten me thinking about this with regard to supplying our own power is that I saw how Bill Gates had, with others' hardware, supplied everyman with the choice to buy a computer and enhance his or her life. Mr. Edison supplied power to everyone who purchased it, but he didn't empower as did Gates and the manufacturers. Our computers are reusable every day, but purchased electricity disappears with its use; it's totally un-renewable. Ever since Edison began selling electricity, we as Americans have been beholden to him, his power monopoly, and of course the vagaries and vicissitudes of aging power supply equipment.

As for the Detroit model, it's true that Planned Obsolescence has been built-in just as it has with Mr. Gates's Microsoft. But a good thing about Detroit has been the competition between companies producing the cars and trucks. And those satellite businesses are a part of this as well. Others have been allowed to participate in developing the technology and selling products to buyers who want and need transportation. The same is true for the computer manufacturers—but what's regrettable is the Gates juggernaut business model...reminiscent of Edison's business model and the Planned Obsolescence part of Detroit's model. What I see with solar and wind power generation tends more toward the Detroit model, but upgrades are technology-centric, not profit-oriented. You buy the equipment and it provides years of power; and you have power in case the grid fails or a storm takes out the substation down the street.

Many companies manufacture solar panels and wind-driven generators, and some offer complete package solutions. Still others recommend doing it yourself. For the purpose of discussion here, my point has been to illustrate my ideas, what's worked for mass buying and mass use, and take the best attributes from each of the models. What works well and what's not so great, business-wise, about the models presented, and applying them to a hypothetical mass, off-grid power generation scenario, inspires me to look at total independence wherever it can be had. Many companies, not just a few, should market solar and wind power products and services to consumers and businesses, with the understanding that homeowners and businesspeople will upgrade or replace down the road, just as they would do with their other durable goods. My fervent hope is that we would begin moving assertively in this direction in a focused way, and soon.



## **Bold, New Ideas and Major Revolutions**

Mass distribution and implementation of solar and wind power generation by the individual homeowner will no doubt elicit massive change within the nation and in every life. First electric light, the telephone, then cars, radios, TVs, personal computers, cell phones—so why not individual power plants? They will have to integrate technologies and product that consistently works well without failure. And they will be designed and run for the purpose of reducing or eliminating our dependence on external power. Then conceivably, we won't have to rely on a massive overhaul of the North American power grid or its component stations and substations.

## **The Present**

Right now, we are all paying through the nose for supplied power. We are also up against the prospect that if the grid were to go down, it could be far more widespread than just regional. A nationwide power failure—which is a probability in our future—will cause the country to grind to a stop in critical areas over time, if not instantly. Air traffic control, banks, hospitals, schools, millions of businesses, transportation and distribution centers, law enforcement, government, the military, our homes—would suddenly or in a short amount of time become disabled without electricity. Can you imagine the state of chaos and peril that would exist if the entire country lost power for even one week?

## **Solutions**

We live in a time of unprecedented advancements in technology, design and manufacturing. Emphasis is now correctly being aimed at viable, Renewable Energy solutions that make use of alternative power sources. We are on the threshold of a new revolution in power generation, but we're not moving as fast as we could toward a broadly actionable solution.

On the other hand, it's an exciting time to be alive. We have at our disposal more knowledge, innovations and brainpower than ever before in the history of mankind, and we could turn the world of traditional electricity production around in just a few years if we got serious.



The quickest way to do this is to do it by ourselves, working on solutions one person at a time. After it's been implemented en masse, news will eventually reach the street that America wants to go with solar and wind power. Major corporations will catch the trend and join the game, developing their own versions of effective power systems, and America will progress with practical new solar and wind power plants. This will allow us to distance ourselves from total dependence on an overworked, failure-prone power grid.

My 2002 vision was originally to borrow the best technology, learn how to adapt it for every conceivable home or business—then find the most optimal, effective installation methods for long-term viability and efficiency of operation. With continued purchasing power in vast quantities, equipment costs would go down. The main question is: what's taking me (and us) so long to get started? Gates and Allen did it. Jobs and Wozniak did as well. Edison and Ford did their respective thing. And whereas these men were all inventors, we already have the products and technology. We just need to tinker with it to get it working across the broad scope of the homeowner, and get the word out. The rest will come together with teamwork.

Think of it: cheap power from the sun and wind, conveyed by devices developed by advanced technologies and available for a fraction of the price that they once were. A family in San Diego,

Chicago, Milwaukee or New York—anywhere—can have its own, relatively inexpensive, independent solar and wind power system...and be insured against complete power failure. Likewise, the hospitals and schools in those same neighborhoods can have their own, custom-configured solar and wind power systems. In many cases, such systems could keep the facilities operating for days in the event of an extended power outage.

The residual effect of mass, individual power generation on the nation's existing grid would be beneficial. Loads imposed on the existing grid would go down substantially, keeping maintenance costs and projects to a minimum (except in instances of equipment failures and regular upgrades, which are part of all industries). Additionally, power companies credit back customers who generate their own power. Some even buy individually generated power. Numerous states have programs for equipment purchase subsidies and power credits. And each succeeding year, solar and wind power gains in advances. Overall, credibility is growing for solar and wind power.

The bottom line? The eventual certainty of any power outage of any size or duration is reason enough to act now and take practical systems to the street that can be configured, installed and implemented in very large numbers.

### **A New Power Picture**

You get up and shower with water heated by either natural gas (controlled electrically) or directly from new technology that electrically heats just the right amount of water for you when you want it. You listen to the radio or turn on the TV, make tea or coffee, and toast. You microwave your breakfast and put the leftovers in the refrigerator when you're through. You dry your hair with your favorite hair dryer and take your cell phone off of its charger. And finally, before you jump into your car for the morning drive, you might spend a couple of minutes at your computer, checking and answering e-mails. And oh yes...before you leave, you are good about turning off the lights; no use wasting electricity, right?



All the while you were making breakfast, getting ready and recreating, your outside electric meter was running...*backwards!*

Welcome to your own, independent power grid.

What do you think? That it's ridiculous—or that it could never happen? Think again.

The movement toward solar and wind power generation is slowly growing on behalf of independent homeowners and businesses sick and tired of losing power, then waiting for it to come back on. The system is not changing for the better and they know it.

The existing power grid needs to be totally revamped. Please don't look to government to do it, though. If government becomes involved, it will do little more than become a large part of the problem, spending your money and giving excuses for lack of progress. In the meantime, enterprising individuals are working on solutions for you and me. And if we are to be a nation free from the specter of a regional or nationwide power failure, the answer will have to come from grass roots efforts and enterprising individuals.

Part Two of this series will explore the advancements in power generation using alternative energy sources, and what we are doing here in the United States to further our own technologies on a large scale. I'll also introduce my idea for 21<sup>st</sup> Century power generation, along with a model for Modular Distribution within a nationwide grid.

Our solutions don't have to remain dimly in the distance; we can each take action now. There are workable ways for individuals to generate power independent of the power grid, at will. E-mail me your thoughts or questions at: [david@dkcmarketing.com](mailto:david@dkcmarketing.com)