



# PERSPECTIVES



by **Rinaldo S. Brutoco**

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## “Grid” Lock

### *Freedom from Unreliable, Dangerous Wires*

Angelenos think of “Grid Lock” as what happens on the 405 freeway every day and many other freeways around town. In today’s Perspectives column we’re focusing on how the “grid” in California keeps starting forest fires (Governor Newsom says he sees it going on for more than a decade as the State currently has no plan to eliminate high power transmission lines from “sparking”); and, the way the Texas “grid” almost totally collapsed. What both “grids” have in common is they rely on a technology invented in the 1880s – an inherently flawed way to distribute electricity. Fortunately, as described below, there is a fully reliable, resilient, economically preferable, and localized solution to problems the grid creates.

Where did the grid come from and why was it invented? Turns out there was a big battle between two electrical geniuses: Thomas Edison and Nicola Tesla. Edison knew that Direct Current (“DC”) was dramatically more efficient, but that it couldn’t travel long distances over copper wires. Edison proposed that Manhattan be served by a series of micro-generating plants spaced every few miles apart which would drastically reduce the energy required to power Manhattan, thereby reducing costs, and providing greater resilience since no one plant would be required to supply more than a fraction of the city’s required energy.

Tesla had a different idea. He felt that city residents would not want to see their power plants, so he wanted to locate a massive one in the outlying borough of Brooklyn, convert it to Alternating Current (“AC”), and then transmit power back to Manhattan over large high-powered transmission lines. Tesla knew that AC could travel many miles over those high-powered lines. They would then be converted to lower voltages at substations and send AC electricity to individual homes and businesses where AC appliances would use the current to heat and illuminate city homes.

Tesla teamed up with an extremely capable businessman, George Westinghouse, who financed Tesla’s idea because Westinghouse wanted, among other things, to manufacture AC lightbulbs. Edison, by far the more prominent scientist then, actually lost in the head-to-head match-up when Tesla proved his system was more viable in bringing power to the outer boroughs and the countryside where homes were many miles apart.

We’ve been saddled with ugly, dangerous, unreliable, high-powered transmission lines ever since. Ironically, we all type on personal computers and cell phones that can only use DC. How does it get the DC? We plug them into AC outlets and run the power through an adapter to return the power, originally created as DC and then converted to AC, back into DC. Even more ironic, the digital world we live in can only use DC—whether it is creating electricity from solar panels on your roof, charging a laptop or cell phone, or charging your electric car (a Tesla perhaps?) in your garage. Such irony.

If the Edison-Tesla battle was fought today, I believe Edison would win for a variety of reasons. First off, Edison was correct that DC is much more efficient. It could provide all the power we need with less than a quarter of the total energy being created. Imagine being able to reduce our electric consumption by 75 percent if we just changed out our household appliances! Everyone reading this has probably already used a DC refrigerator and other DC appliances, if unwittingly. Where did you encounter them? On every recreational vehicle (“RV”) or boat you’ve ever been on. They all use DC. Why? Because the energy is created on the boat and used right there. No long-distance means no AC, and no transformer means higher efficiency. In a world literally dying from climate change, the ability to drastically reduce energy consumption would be a huge opportunity for addressing climate change without reducing Western lifestyles.

Secondly, since a DC system would avoid conventional high-powered transmission lines, we would eliminate the 70 percent of all forest fires that originate from “sparking” of high-powered transmission lines during high winds in the backcountry (some researchers envision new, DC towers moving massive amounts of DC energy to solve the energy crisis, but this scheme is impractical for many reasons).

Thirdly, and most important of all, the micro generating plants Edison envisioned were pre-cursors to the microgrid technology developed in the past two decades. Although the “wire” was necessary to get Tesla’s electricity from Brooklyn to Manhattan, today the grid “wires” are the problem. Evidence clearly demonstrates that the biggest problem with the creation, delivery, and distribution of AC electricity is that

it requires massive plants at a distance which are not usually adaptable for local energy creation, are not resilient, and are not really adaptable to “green” renewable energy. California and Texas have a common problem: they both need to get rid of all those high-power wires which have repeatedly failed and will repeatedly fail again in the future.

The World Business Academy, the think tank for which I am the founding President, has been working on this problem for the past several decades and has proposed eliminating the grid in California as a way to achieve 100 percent renewable energy in ten years or less, and at no additional cost to the ratepayers. In fact, the conversion will produce more economic benefits than it will cost.

History is proving Edison was right: for many sound business, environmental, and societal factors, the long-term future of massive centralized power plants in California is that they will never again be built here. The future is to create a series of interlocking renewable energy powered, hydrogen fuel cell assisted microgrids across the State. To visualize this honeycombed micro-grid energy network, I invite you to watch “Clean Energy Moonshot”, a video presentation (found on the World Business Academy’s website or YouTube) that tells the story of how to get to “green” by rethinking that basic Edison-Tesla conflict. That is the future of a resilient, efficient energy system.

In that future there will be zero forest fires started from high powered lines. In that same future, the residents of Texas would have had an economic, resilient, localized energy creation and distribution system which could not possibly “crash” across all of Texas. Best of all, we don’t have to wait for corrupt governments in Sacramento or Austin to get on board—we can start building those microgrids one home, one office building, one community at a time and just keep linking them together. Now that’s Power Progress with a capital “P”.

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