افغانستان آزاد – آزاد افغانستان

AA-AA

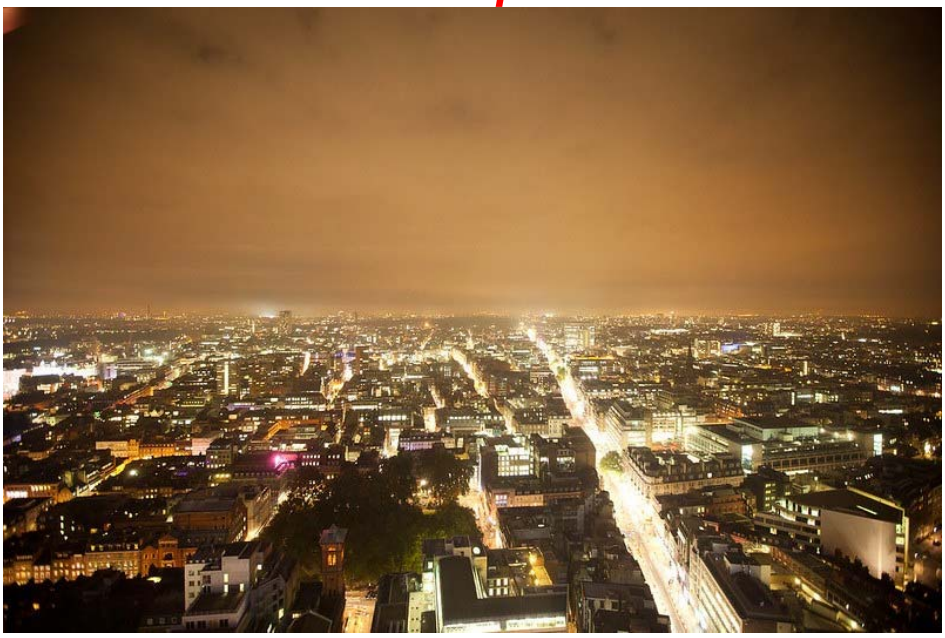
چو کشور نباشد تن من مبـــاد بدین بوم و بر زنده یک تن مــباد
همه سر به سر تن به کشتن دهیم از آن به که کشور به دشمن دهیم

www.afgazad.com afgazad@gmail.com

European Languages	زبانهای اروپائی

BY DAVID ROSEN
05.03.2021

Electricity vs. Broadband: Does History Repeat Itself?



Photograph Source: uSwitch.com – CC BY 2.0

In *The Eighteenth Brumaire of Louis Napoleon*, Marx famously observed, "Hegel remarks somewhere that all great, world-historical facts and personages occur, as it were, twice. He has forgotten to add: the first time as tragedy, the second as farce."

One can see something similar with regard to the introduction of revolutionary technologies like electricity and broadband.

Today, Americans take household electric for granted, but this was not always the case. Millions of U.S. households have access to electricity to power water heating, lighting, refrigeration, TV, telephone and other products. And yet, according to one estimate, about

15,000 families — 60,000 people – are not connected to the electric grid; many are located on Native American reservations. (In addition, about 18,000 families don't have running water in their house.)

The U.S. has come a long way since September 4, 1882, when Thomas Edison famously flipped a switch at his power station on Pearl Street in lower Manhattan and began offering DC (direct current) electricity to homes at a price comparable to gas. By the late-80s, Nikola Tesla's AC (alternating current) became dominant system with upper- and middle-class city residents and commercial customers gaining access to electricity. A host electrically powered inventions followed — washing machine (1907), vacuum cleaners (1908) and household refrigerators (1912). All of these inventions led to a greater demand and helped in the widescale adoption of electricity.

In 1900, steam provided 80 percent of the mechanical drive capacity in manufacturing, but, by 1920, electricity provided over 50 percent and, by 1929, it accounted for 78 percent used by Americans. The 1920 U.S. Census found that America, for the first time in history, had become a majority urban nation – that over 50 percent of its population lived in cities rather than rural communities. That year, 35 percent of American households had electricity; by 1929, nearly 68 percent of American homes were electrified. The Censuses of Manufactures found that by 1920 electricity was used for more than half the nation's manufacturing.

However, rural counties remained mostly without electricity until the 1930s. In 1910, only 6 percent of U.S. counties were urban and, of the roughly 6.3 million American farms in 1922, only about 3 percent had electricity.

At that time, farming was the most common male occupation, employing more than a third (36.7%) of the nation's working male population while manufacturing accounted for about one-sixth (15.8%) of the work force.

However, it was only the Great Depression that brought electrification to rural America. One report notes that, in 1935, "fewer than 11 of every 100 U.S. farms were receiving central station electric service." Power companies were unwilling and/or unable to string wires over long distances, across farmland and back country at an affordable price.

Pres. Franklin Roosevelt created the Rural Electrification Administration (REA) to bring electricity to America's rural areas. Key among REA policies were loans made available for both individual homes (e.g., wiring and appliances) and large construction projects (e.g., power plants and power lines.

Repayment could extend up to 25 years and the interest rate would be kept low by tying it to federal government borrowing rates. Perhaps most important, individuals would not be held personally liable for default on an REA loan.

Implicit to his thinking, Roosevelt in 1932, while running for president yet still New York governor, promoted a then-radical concept of public utility regulation:

I am firmly convinced that a proper system of public regulation wisely administered will not endanger prudent unimpaired investment in public utilities, provided the management is efficient and constructive. Indeed, investors ought to desire and work for efficient regulation."

This perception helped convince many local and state officials that with regard to essential services, which electricity had become, a regulated public utility offered the best option.

***

The modern era of electrically mediated communications began in 1843 with Samuel Morse's invention of the telegraph. Three decades later, in 1876, Alexander Graham Bell invented the telephone and, the following year, formed the Bell Telephone Company. In 1885, the American Telephone & Telegraph Company (AT&T) was incorporated as a subsidiary of Bell Tel to build and operate the first long-distance telephone network. In 1899, AT&T bought Bell's assets and became the parent company of the entire Bell system. By 1900, 1.5 million telephones were in use around the country.

AT&T operated as a monopoly offering long distance services and controlled 23 subsidiaries until 1984 when, following the settlement of a Justice Department civil antitrust suit, it was split into seven regional operating companied, dubbed "Baby Bells." AT&T kept Bell Labs, telephone equipment manufacturer Western Electric and long-distance service; the regional companies – Regional Bell Operating Companies, "RBOCs" — got the Yellow Pages and local service. In '95, it was formally restructured.

In the 1970s, a new telecommunications technology – coaxial cable – emerged offering subscribers in suburban and rural communities access to, initially, TV programs and, in time, a whole lot more offered by over-the-air broadcasting. Parallel to the maturation of cable, ARPANET — the Advanced Research Projects Agency Network – was developing what, by the mid-90s, became the commercial internet of CompuServe, The Source and the popular America Online (AOL).

Looking back from today's current fiber optic capabilities, the early internet was not unlike the old telegraph. It offered dial-up connection at speeds of 2,400 bits per second — just .0024 Mbps! The FCC's current asymmetric broadband baseline speeds are 25

Mbps/downstream and 3 Mbps/upstream. Today's many advanced – an expensive – broadband services offer 200 Mbps/downstream.

In 2019, it was estimated that in the U.S. only 30 percent of homes had access to fiber broadband services compared to Norway and South Korea with over 80 percent access, and Spain, Portugal and Japan that were above 90 percent.

The FCC estimated that, in 2019, 24.7 million Americans didn't have home access to broadband. John Kahan, Microsoft chief data analytics officer, warned that the FCC estimates were "vastly undercounts." He noted that Microsoft data indicate that almost 162.8 million people "are not using the internet at broadband speeds."

Others have raised similar concerns as those expressed by Microsoft's Kahan. Former FCC attorney Gigi Sohn estimated that some 141 million people in the U.S. lack access to fixed broadband at speeds of 25 Mbps, the FCC's broadband standard. Another report estimates that "42 million Americans, including a quarter of rural residents, lack access to broadband internet — and this doesn't even include the people who don't have broadband because they can't afford it."

Two academic researchers, Roberto Gallardo (Purdue) and Brian Whitacre (Oklahoma State), add an additional factor that needs to be considered, arguing that "quality of service is becoming more important than mere [broadband] access. … Therefore, it is important to shift the conversation from having access to internet to 'Is your internet technology giving you the quality of service you expect and need?'"

***

It seems that the U.S., faced with the ongoing Covid-19 pandemic and economic recession, is confronting a situation not unlike that experienced with electricity deployment during Great Depression. Then private companies provided electricity services – and make a hefty profit – in urban markets, but there were significant pockets in major cities, especially home to immigrants, African Americans and the poor, that could not afford the luxury of electricity. The situation was worse for rural America.

The FCC reports that, today, "there are too many parts of this country where broadband is unavailable." Going further it notes:

In urban areas, 97% of Americans have access to high-speed fixed service. In rural areas, that number falls to 65%. And on Tribal lands, barely 60% have access. All told, nearly 30 million Americans cannot reap the benefits of the digital age.

Most troubling, the pace of fiber deployments by the two leading "phone" companies has slowed significantly. AT&T finished its fiber buildout reaching 14 million homes in 2019;

Verizon is focused primarily on wireless ("5G") and its fiber deployment is determined by where it helps facilitate wireless traffic. The leading cable companies – e.g., Comcast and Charter/Spectrum — most often employ hybrid fiber-coaxial (HFC) networks. As a result, as one estimate suggests, fiber-to-the-home (FTTH) as a share of total homes passed has been "stalled at 23% over the past year."

With regard to fiber deployment, the U.S. today is in a situation similar to where electricity was as the Great Depression engulfed the nation. One can only hope that Congress and the FCC move more aggressively to fund the build-out of fiber networks to urban pockets of the poor and rural areas.

Equally critical, there are over more than 300 municipal broadband services operating throughout the country and its essential to encourage the expansion of such public utilities. It's time for fiber-delivered broadband telecommunications services to become an essential service like electricity was a century ago.

David Rosen *is the author of Sex, Sin & Subversion: The Transformation of 1950s New York's Forbidden into America's New Normal (Skyhorse, 2015). He can be reached at drosennyc@verizon.net; check out www.DavidRosenWrites.com.*

CounterPunch 04.03.2021