

Every time we have a severe weather event that causes lots of power outages, we hear only a murmur of talk about undergrounding the utility lines. But after a few weeks pass, you don't hear any of that talk going on. The August (2020) storm Isaias caused nearly a million customers to lose power in CT. Even after that event, there wasn't much public talk about undergrounding. The storms of 10 years ago and subsequent weather events heightened the public awareness of the vulnerability of the electric, telephone, and television utility systems hanging overhead on wooden poles. The response by the utilities and state legislature was to create the Vegetation Management Legislation that enabled the utilities to increase our monthly electric bills to pay for tree trimming and tree removal on our public streets. This cost is not itemized on our electric bills.

A tornado, a few weeks after storm Isaias, again left thousands of customers in several towns without power. **Although hundreds of millions of our dollars had been spent in CT for Vegetation Management since the program began, it had not created the necessary resilience in the electric grid, and it never will.** Trimmed branches grow back in 5 or 10 years, and there will always be bigger trees nearby that the utility companies cannot touch, but can fall on the power lines. Removing trees and branches in the UPZ (utility protection zone) exposes adjacent trees to the wind force more directly. The Vegetation Management activity has had the environmental negative effect that removing trees can cause. Not only do trees contribute to air quality, storm water management, and public space beauty, but they also help to reduce electrical consumption for cooling in adjacent buildings, and make our streets more walkable in the heat of summer.

We live with an inferior and backward electrical infrastructure that is not up to contemporary standards found in other developed countries of the world. One can travel from one border to another in some European countries and not see any overhead utilities on the streets. When Edison developed an electric light bulb in 1879 that not only worked, but could be produced commercially, the demand for electricity in our cities was immediate. Edison's early distributions systems at the end of the nineteenth century in Manhattan were all underground, because he believed that overhead power lines on streets were a public danger. As power grids were developed in most other places at the beginning of the 20th century, the cheapest and quickest way to get electricity everywhere in a hurry, was to stick poles in the ground and hang the wires from pole to pole, and to the buildings on the street. As motors were developed, electricity became important for industrial development. As populations grew, cities expanded, density increased, and industry proliferated everywhere. The power grid was easily expanded and altered to accommodate those rapid and continuing changes in that era. We are now in an era of much more stable settlement patterns and established townscapes. As city streets were rebuilt and expanded out from the center of town, electric lines should have been put underground from that early time. We were already putting water supply infrastructure and gas infrastructure below our streets, so it should have been that same process for electric and telephone wires to go under also. The great growth of suburbs after WWII should have been done with underground utilities, but most are not. Most people, having grown up in this blighted environment, are blind to the ugliness, vulnerability, and cost of this inferior outdated infrastructure. We are not aware of the high cost of constant replacement of equipment due to normal weathering, storm event damage, wind, ice, snow, lightning, and vehicular crashes. There are about 1 million power poles in Connecticut and often several hundred are damaged and have to be replaced after extreme weather events like Sandy, Irene, and Isaias.

In this era of climate change, not only do we need electrical infrastructure that is more resilient, but we also need more trees on our streets, and streets that are safer and less ugly. When storms bring down trees with the wires, the branches cannot be cleared from the streets until the utility removes the wires. This creates an immediate public safety danger, because first responders cannot get to fires and medical emergencies. Immediately after these intense storm events, the utility companies push back on the undergrounding talk. They, along with legislators, come up with other costly ideas that won't ever solve this problem in the best and most permanent way. Ideas like: More tree trimming, removal, tougher wires and poles, fines for the outages,

and payments to customers for food losses. These ideas will not provide the resiliency that we, the public, should be requiring. We, the ratepayers are paying hundreds of millions of dollars for the tree work, and many millions for maintenance and repairs whenever the wind gets strong. Many of these millions often go to out-of-state tree services and linesmen from other states. It is also dangerous to repair these systems when the wind is still blowing, or rain, snow, or ice is falling. A few years ago, a linesman in CT (Middletown 2019) was killed by a falling tree while trying to make repairs caused by the storm event.

How did we end up with this antiquated, sub-standard, vulnerable, ugly, and continuously expensive infrastructure? People like to blame the utility companies, but we have to remember that they are not public entities, they are for profit companies. And now, they are owned by companies that are either not Connecticut companies, or not American Companies (Iberdrola of Spain owns UI). Billions of our dollars go to their shareholders and to these other places, supporting these plutocratic monopolies. The CEO of Eversource is paid 20 million dollars a year. And we have electric customers who can't afford their electricity. No wonder why we have some of the highest electric rates in the country? We live in one of the wealthiest states in one of the wealthiest countries in the world. We live in an economic environment that has rivers of wealth, but who controls where those rivers go? Those who hold the power, and the wealth! Where does the wealth come from? State and local budgets, come from us, the taxpayers. Utility companies get all of their income from us, the ratepayers, who suffer when the power goes out, and have to live every day with the desecration of our public space by overhead wire blight, and anti-environmental tree removal.

The blame lies with our political system, and with us, the voting citizens who are the owners of the public streets. The failure of political leadership that has gone on regarding the utilities for the last 130 years, and is continuing now, is responsible for the increasing ugliness of our public space and vulnerability of the grid. As more CATV, Tel, and Electric wires have been added to the poles, more trees have been massacred and removed, exposing this visual blight now in many places for all four seasons. The electric utility companies have a well-practiced playbook to push back any talk from citizens or politicians about making our streets free of overhead poles and wires. To their credit, they will brag about hundreds of miles of underground wiring in their systems. Those miles are mostly the higher voltage transmission lines to the local substations, and it is great that they are out of sight and safely underground. But most of those miles also have overhead poles and wires for the local distribution.

Although the cost of undergrounding all the stuff that's on the poles is high, the long term costs of maintaining underground lines is much less. Depending on the specifics of the location (the complexity of what is overhead, and what is already under the street), it can cost anywhere from a few hundred thousand/mile to \$5 million/mile to put the mess under the street. Then we will be able to have beautiful tree-lined streets, and design the streetlighting as part of a comprehensive streetscape design. Lighting from lampposts is more efficient and economical because the light source is closer to the plane of utilization, and not blocked by tree branches like is the case on many streets now. These improvements are consistent with the "Complete Streets" principles, now being adopted by several towns.

When we talk to our elected officials to advocate for some kind of initiative to actively start a long term program of undergrounding, we usually get lip service and nothing happens. What is needed to get this started? It needs unrelenting pressure from us, the citizens, since we are the owners of the streets, to evoke leadership on this issue from the governor, something Connecticut has never had regarding undergrounding. Local municipalities do not have the resources to fund undergrounding projects of any significant scale. Most town professional staffs already have more to do than they can handle. State Legislators have so many pressing concerns, that once the lights are on again after an outage event, they don't have time to develop a statewide plan for this. Changing this defective and dangerous paradigm would have to start with a **GOVERNOR'S TASK FORCE FOR UNDERGROUNDING, which would assemble a team of players from: utilities, legislators, PURA, ConnDOT, DEEP, Regional Councils of Gov't members, consulting engineers, and**

contractors. The task force would study how this has been done in other states, and develop a structure to fund undergrounding efforts statewide that would have no huge, immediate, and unreasonable financial impact on ratepayers, municipal, or state budgets. It would provide technical, political, legal, and planning expertise to enable this effort to start, and continue for 50 to 100 years or more. Once it becomes possible to do, at a rate that is manageable, why should it ever stop? A positive social and economic result of such a program would be to create hundreds of jobs in construction and engineering, if one of the conditions of the program were to require use of local suppliers, contractors, and professionals.

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Another positive result of streets without poles and wires is to lower the cost of maintenance and alterations to buildings adjacent to the utility lines. I have seen places where the poles in the street are only 6' away from the building front. Because of safety regulations, no work can take place within 10' of the electric lines, and that complicates and increases the cost, or stops a project.

A survey in 2014 (New Haven Independent) revealed that 80% of the population supports the idea of undergrounding the utilities. Many places around the country have developed manageable ways to do this. In 1967 California passed legislation (Rule 20) that enables any locality to plan and engage in undergrounding. San Diego started their program in 1970, and has about 400 plus miles of streets, including most major arteries, already free of poles and wires. They plan to continue doing it for the next 50 years to get the remaining 1000 miles done. They want no streets with overhead utilities. Many other places in California have been doing this also, including San Francisco, Anaheim, San Jose, Los Angeles, and many others. Our threats are wild weather events, now their threats increasingly are wild fires.

Closer to us, Concorde MA started undergrounding in 1990, and is about half done, financed by a 1.5% surcharge on their electric bills. We in CT could take a percentage of our Vegetation Management surcharge and apply it to undergrounding. Concorde has coordinated their undergrounding work with other infrastructure work in the street to reduce costs. In 2014 Connecticut began expansion of the gas service and since then 151 miles of new gas lines have been installed. If undergrounding the overhead utilities was coordinated with that program, it would have greatly reduced the cost to have those 151 miles of streets free of overhead utilities. Concorde says there is no problem fixing any underground electrical problem, most can be fixed in 6 hours. **In the long run, we would be spending less on repairing storm damage and all overhead maintenance if we start and continue to underground everything.** Many technical developments in the recent decades make the undergrounding less difficult, safer, and slightly cheaper. "Trenchless Technology", ground penetrating radar (GPR), and many new materials and methods.

Having our power, telephone, CATV, and internet cut off during storms contributes to the danger, and disruptive impacts of storm damage to the overhead services. No traffic signals, walk lights, or street lights, increases the danger of trying to get around after one of these events. **In an era when: many will be relying on microgrids for a town's essential services during extreme events, renewables and storage systems that will be utilizing the grid for distributed generation, and the charging required for electric vehicles, we need to have the local distribution grid to be 100% resilient and reliable.** It is high time, long overdo, to stop listening to the utilities, and political leaders, who say this cannot be done, and instead, they spend our money trimming and removing trees, repairing storm damage, and replacing poles. It is up to us, the owners of the public streets, to stop pushing off this problem from generation to generation. Many of the places in other states doing undergrounding have municipally owned utilities. Maybe that's what we need in Connecticut, not hundreds of millions of our dollars going into the utilities top manager's pockets, and shareholders around the world. We would prefer to have our millions going under the street. **This is not a partisan issue, but a universal public safety and common sense issue.** All of us must select our politicians based on their willingness to move forward on this issue. Governor Lamont, do you hear this? Your leadership on this issue is required immediately. Break ranks with your predecessors, and enter the 21st century.

Looking at the broader scope of this problem, it is really a national problem, since every day we see on the news, during all four seasons, the occurrence of extreme weather and fire events that leave millions of people without power (and CATV, internet, etc.). We periodically see news events about an airplane in failure mode trying to land on a roadway. When there are no wires, it happens without any death or injury to the occupants, but when there are wires, the attempt to land becomes a crash, with death and injury. In addition to programs developed at the highest level of state governments, **we really need a federal program to help all 50 states to start to get rid of the 180 million power poles nationwide that the extreme weather events keep ripping down. Congressmen, Senators, and President Biden, please do something about this,** just like President Eisenhower who orchestrated the design and construction of the Interstate Highway system.