Conclusions

Many people have struggled with the issues of damages and restitution, corporate profit and political influence without finding any satisfactory solutions. Unfortunately, force, large scale damages and a lack of restitution appear inevitable. From our perspective, each side has a defensible objective; however it was immediately obvious to us that a technological solution could completely resolve the dilemma. Apparently, there were 2 technological solutions readily available: 1) local roof top solar and regional wind turbines, and 2) high capacity underground DC power lines connected to 1,000's of enormous wind turbines up to 500 feet tall, photovoltaic arrays and geothermal wells. Further, no one approach precludes the other and both approaches are demonstrably functional.

If I wanted to charge an electric car, obviously I would get some mounting hardware and put the solar panels on the roof and pay about ½ cent per kilowatt hour. However, that's not how America's largest energy company operates, so I wouldn't risk an inevitable environmental disaster betting that Sempra doesn't want a power line. They are in the power line business. However, I have mentioned throughout this documentation that the power line doesn't have to be damaging, even if there is little concern. Apparently, with over $12 billion per year income, there may be no penalty that couldn't be passed on to the people of Southern California.

However, the people, above all else, have asked that their communities, homes, businesses, property, parks, viewshed and wilderness, not be devastated or scarred, and of course that they not be exposed to the cancer promotion effects of EMF, nor the ionization of pollutants that can result in lung cancer, which unfortunately is responded to with plausible deniability statements. Fortunately, underground DC power lines happen to solve all these issues, and based on European construction data at a considerably lower cost than the old pylon strategy which requires bulldozing 700 new roads. Underground DC power lines can offer a solution with no environmental destruction, with greater reliability, far lower maintenance, higher efficiency transmission, vastly better safety, considering over $4 billion in local power line initiated fires and home losses during 2007, and with far better transmission capacity.

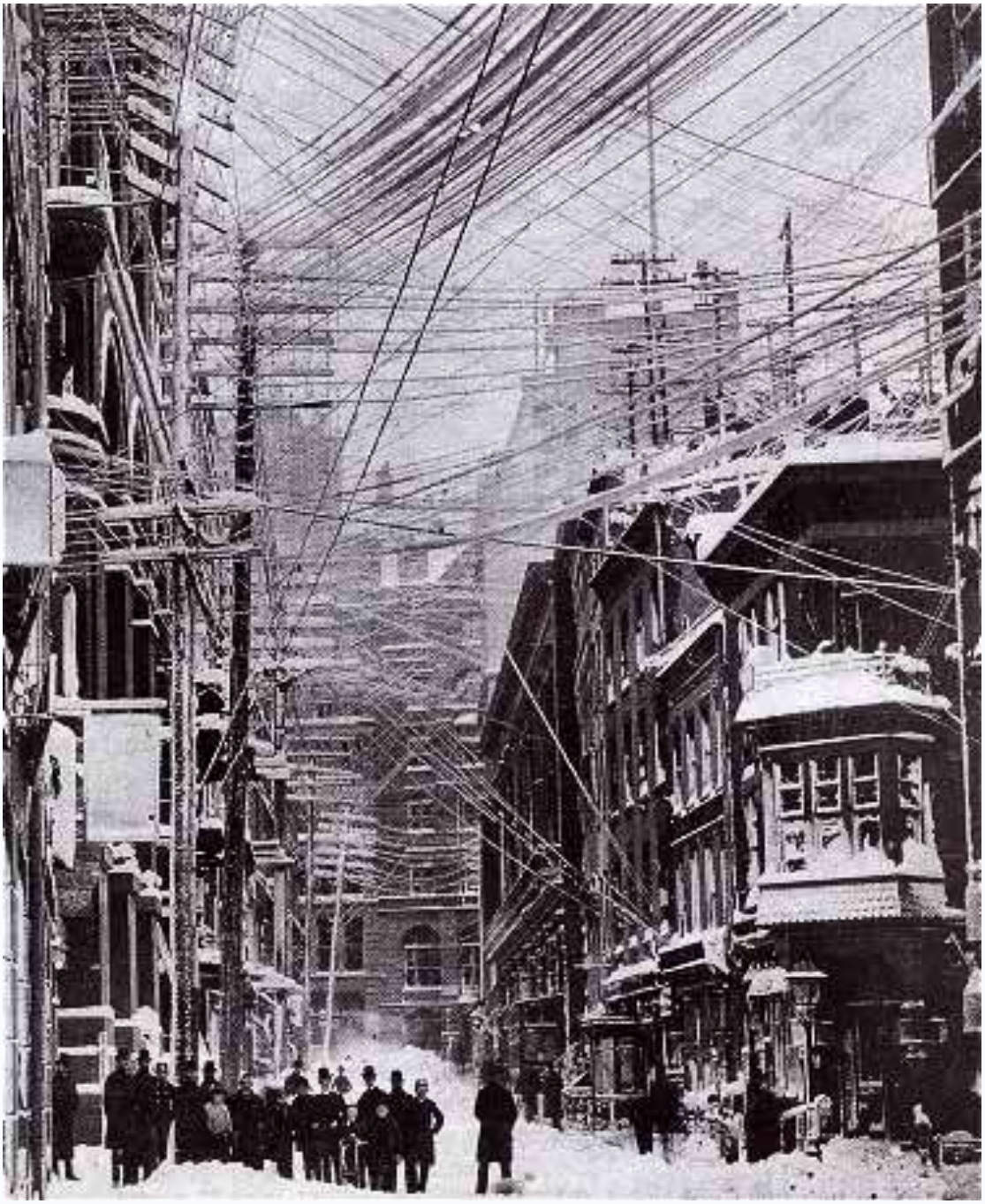
Currently, generation companies are interested in sending over 8,000 megawatts over the 1,000 megawatt Powerlink. So where would the other 8 new high power lines go, and 10 more after that? Fortunately, underground DC can utilize cables with far greater capacity than overhead power lines. Two 6 inch underground lines can be placed in one comparatively small trench 5 feet in depth and 1 foot in width, which can be rapidly and continuously installed, delivering between 1,000 and 10,000 megawatts, under a county highway.

At public hearings, the people have asked for this option, to protect their environment, their homes and their lives, and the

power industry has publicly opposed and rejected the overwhelming interests of the people, perhaps because they haven't sent someone to study this 130 year old technology, that has been extraordinarily advanced during the past 50 years, in over 50 large scale underground power line projects. After all it's the people who are ultimately paying the bill, and it's their environment, their homes and their lives that are at stake. Further, in this case the people are correct; this is the technologically advanced and proven transmission system that can deliver enough power to displace our long term dependency on oil. China is now in the process of installing 30 such 800 kV DC power lines capable of delivering up to 6,400 megawatts each, on 2 cables, to deliver hydroelectric from their southwest. Sempra Energy could save billions of dollars by considering this technology.

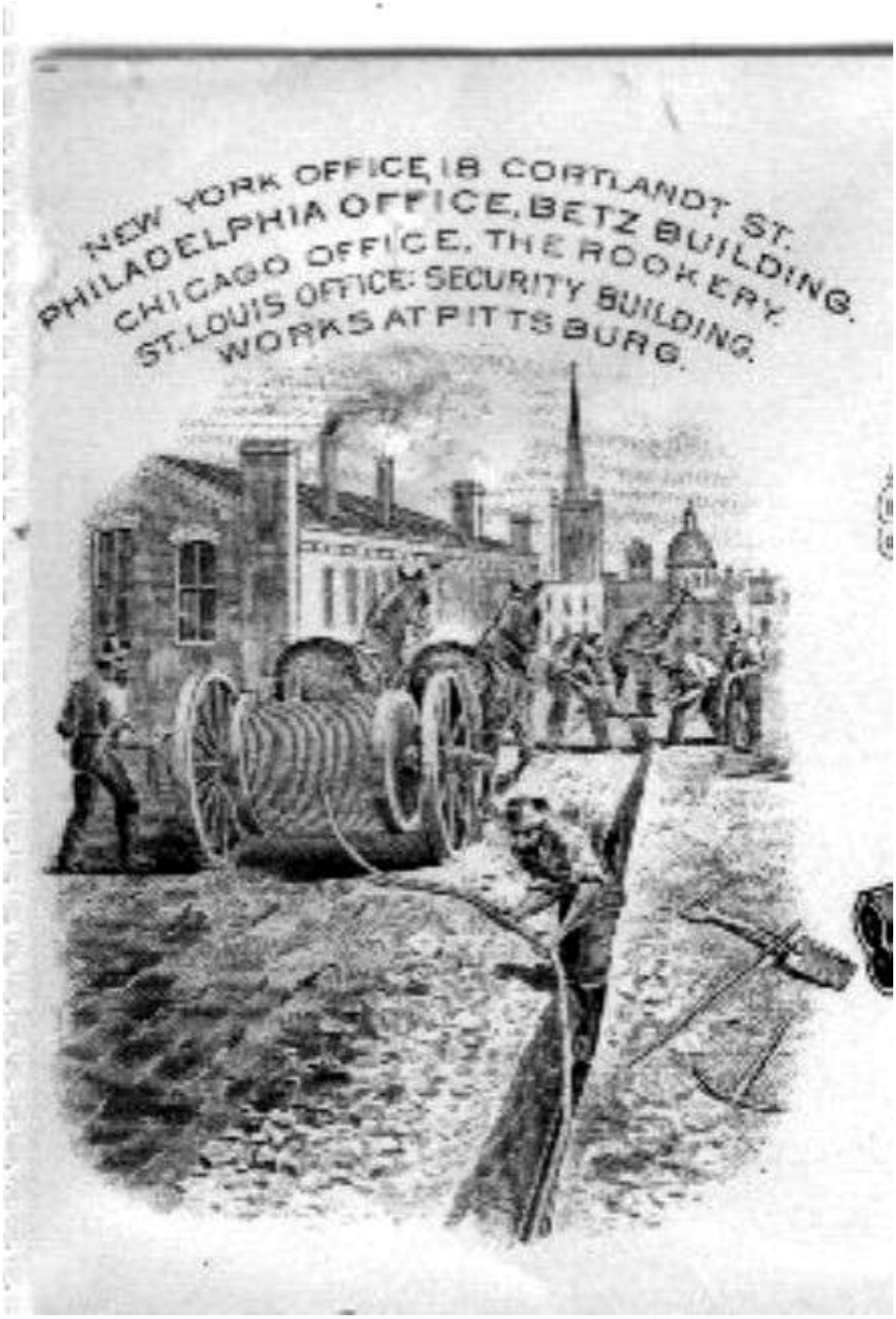
We are asking that the CPUC seriously consider these details as a possible solution. We have spent over 54 hundred hours, researching, reviewing and documenting numerous aspects of this technology from an environmental, economic and engineering perspective, and can offer any assistance as needed to rapidly expand efforts as required to address any issue.

During October 2007 winds in Southern California exceeded 110 miles per hour



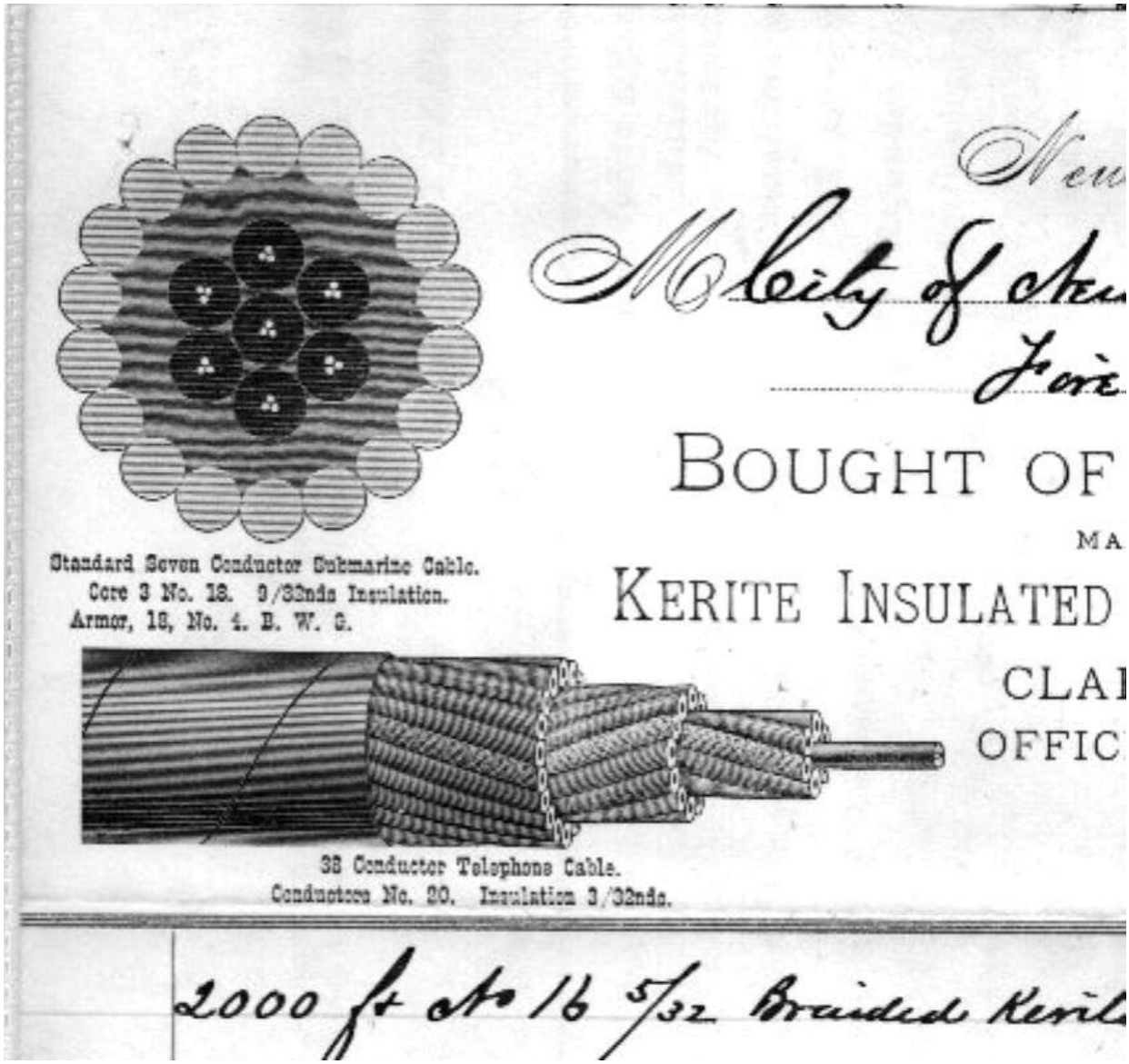
After the blizzard of March 11-14, 1888 New York City placed all telephone lines underground since the overhead lines were severely damaged. Thomas Edison had already placed all power lines underground beginning in the spring of 1881 at the first commercial power plant on Pearl Street, since Edison considered the risks of overhead power lines to be obvious and more economically avoided through underground DC. While Edison began by fabricating his own cables, within one year there were two companies producing reliable underground and underwater high power line cables in high volumes. It wasn't until the 1950's that solid state high powered voltage conversion components became available to fully integrate DC, since serious capacitance problems occur as underground AC approaches 20 miles in length. However, managers focused on business and legal issues have been slow to notice engineering solutions to problems that can save many billions, as well as improve the systems overall reliability and safety.

Underground power cable 1930's design, still in use in New York (Smithsonian)



Installation of a direct burial underground DC power line under a road during the 1880's

Image from a Standard Underground Cable Company receipt. At the 1891 National Electric Light Association Convention in Montreal Canada a Standard Underground ad mentions that a 50 mile underground power cable was provided for the Buffalo Railway Company after a 20 mile segment had been installed two years earlier by the railway, which was manufactured about 1888. Founded in 1882 Standard Underground Cable was merged into General Cable in 1927 and now has approximately 9,000 employees with 38 manufacturing facilities in 12 countries.



Construction detail of a 7 conductor submarine power cable and a 38 conductor telephone cable during the 1880's

Image from an A.G. Day Company receipt which was dated October 29, 1887. Founded in 1854, developed the first extruded rubber insulated cables with DeWolfe circa 1870 for insulated telegraph cables, later renamed the Kerite Company, after the insulation material used. The company continues at the same location in Seymour Connecticut to supply underground and submarine high voltage cables. The first underground cables utilized cotton and wax insulation and have been located intact at Edison's first DC generation facilities in New York City. The 1st AC power plant was built in 1893, in Redlands California by Redlands Electric Light and Power (250 kilowatts, 3 phase, 2400 volts) which allowed for longer distance transmission at higher voltages with transformers for household and business uses. In 1950, William Shockley at Bell Labs proposed the Thyristor, a solid state device which was developed at General Electric in 1956 and later utilized to convert power from AC to DC (rectification) and DC to AC (inversion), which allowed for the integration of AC and DC systems, without length restrictions on underground power lines and with increased efficiency, reliability & safety, at lower cost than AC only systems.

Continuous trenching equipment can slice though decomposed granite soils of Imperial and eastern San Diego County

Continuous trenching with underground DC cable installation

Underground High Voltage DC videos

http://www.abb.com/cawp/gad02181/0ca04adc1b0b9c76c12570f3002eb4c7.aspx? **(Index of HVDC videos, which are available in high or low resolution for faster buffering)**

1. http://library.abb.com/GLOBAL/SCOT/scot221.nsf/VerityDisplay/28D9D5CEEC51A0B3C12572520029ED45/$File/Estlink%20Large.wmv **(3.5 minutes, 29.5 MB high hesolution, "Digging the Future")**

2. http://library.abb.com/GLOBAL/SCOT/scot221.nsf/VerityDisplay/DC7A21C94EBE6BD0C12570F30031AA83/$File/Touching%20Tomorrow512K.wmv **(4.4 minutes, 13.3 MB, "Touching Tomorrow")**

3. http://library.abb.com/GLOBAL/SCOT/scot221.nsf/VerityDisplay/C1E4771D75B8F199C1256FDA003B4D37/$File/ABB%20-%20Maps_Stor.mpg **(10 minutes, 27 MB, "Maps", Murraylink HVDC project in Australia, New York Cross-Sound, etc.)**

4. http://library.abb.com/GLOBAL/SCOT/scot221.nsf/VerityDisplay/938D96A8B12BC99DC1256FDA004F7785/$File/TheSilverThread-(2).mpg **(5.4 minutes, 15.1 MB, "The Silver Thread", The history of HVDC)**

Please protect the environment and the future of San Diego County by utilizing underground cables at considerably lower costs with greater reliability capacity and safety.

We have no connection with the power industry.
This is a survival issue for the region.
Please continue doing your best to be informed and advise us of any shortcomings in this brief introduction.

Southeastern Communities

Anza Borrego Desert State Park
Bankhead Springs
Boulevard
Bureau of Land Management
Campo
Campo Reservation
Cleveland National Forest
Ewiiaapaayp
Jacumba
La Posta
Lake Morena
Live Oak Springs
Manzanita
Pine Valley
San Diego County
State of California
Tierra Del Sol