



IS OUR POWER GRID VULNERABLE?

**PRESENTATION TO WESTWOOD NEIGHBORHOOD COUNCIL
ON A MOTION BY CONNIE BOUKIDIS**

Charles R. Edelson
Professional Engineer
14 January, 2015

IS THE LA POWER GRID VULNERABLE?

LADWP, and all power grids in the US are vulnerable. Primary dangers:

Giant Solar Flares – One hits the earth about every 150 years. (Same as San Andreas Fault.) Charged particles from the sun create an Electro-Magnetic Pulse (EMP) which destroys large transformers and electronics. The last giant one hit us in 1859. A year ago one missed by a week. A small one shut down the Quebec Grid and the Northeast Corridor in 1989.

Nuclear or non-Nuclear EMP Weapons – Non-lethal nukes. They create the same destructive EMP as a flare but kill no one.

Physical or Cyber Attacks on Power Stations – Riflemen shot out transformers at the Metcalfe power station two years ago. That almost brought down Northern California power. A Federal report shows that hitting nine stations across the country would bring down the whole grid.

Failures and Overloads – A power line falling on brush, plus a software error, brought down the Northeast Grid in 2003.

WHAT WOULD HAPPEN?

What would happen if all our electricity and electronics went out?

It would be 1910 again, except for our survival skills.

All houses, businesses, and street lights would go dark.

Air conditioners and most furnaces would stop working.

Water, gas supplies, and gasoline stations would stop.

Telephones, cell phones, computers and the internet would stop

Banks, stock exchanges, ATMs, and cash registers would stop.

Most trucks and automobiles would not run.

Airlines, trains, and buses would not run..

Groceries would run out of food, even without rioting.

Most police, fire, and ambulance services would stop.

Most military vehicles, computers, and communications would still work.

For how long? - It takes a year to build a big power transformer.

Government estimates say it would take years to restore the nation and,

60 to 90% of us would die. One in ten to one in three would survive.

IS ANYONE DOING ANYTHING?

There are bills in Congress (HR-2417) (HR-688) mandating that every public utility study the problem and take action. Congress asked the Federal Electric Regulatory Commission (FERC) and the National Electrical Reliability Council (NERC) to provide guidelines.

It is stalled in Congress largely because public utility companies want to proceed slowly, they control the NERC, and the public is unaware.

It would cost about two billion dollars to protect the entire US grid.

We have convinced Paul Koretz and Environmental Deputy, Andy Shrader, not to wait for Congress. We helped them prepare a Motion for City Council, for DWP to study the problem, including:

1. The threats, costs and impacts on the City.
2. Protections, their costs and feasibilities.
3. Individual and neighborhood preparedness.

The motion is now before the Environment Committee and a WWNC motion of support will help.

CAN WE DO ANYTHING FOR OURSELVES?

Individual Power Generators – Each household could install a power generator. Each would require a fuel tank but the fuel would last only a few weeks.

Buy a Prius – It is possible to connect the main battery of any hybrid automobile to a power inverter to supply household electricity. Kits are available. Japanese manufacturers are working on cars with this capability built in.

Neighborhood Power Centers – There are companies (Capstone for example) that sell small gas turbine generators that could power a neighborhood.

The City Council Motion includes study of these possibilities.

As a practical matter, none of these ideas will work for very long without fuel. Our best chance is to speed up government and utility company action.