

MPUA PUBLIC OUTREACH RESOURCES

JUNE 2016

“SUMMER ROAD TRIP” on The Electrical Grid – (FACTSHEET or STORY, adaptable to other use)

SUMMER ‘ROAD TRIP’ – electrons on the move, from the generator to your outlet

Summer has come, with its long days of sun and fun. For many, it means long lazy weekends, every kind of outdoor recreation, gardening, backyard cookouts, and of course, that classic American adventure, the summer road trip.

When you flip on a fan or air conditioner, or reach into the fridge or cooler for a cold drink, do you ever think about the epic “road trip” traveled by the electricity you are using in [CITY], and how it reached you?

The whole system that makes, carries, and delivers your electricity is called the **electrical grid**. This grid is an interconnected network for taking electricity from many suppliers to many users. It consists of generation stations that produce electrical power, transmission lines that carry power from distant sources to places where it is used, and distribution lines that connect the power to each individual customer.

GENERATION

- Electricity is made by many different kinds of generating facilities. The power used by our [CITY] homes and businesses comes from power plants that burn either coal, natural gas, or gas from landfills to generate electricity. It also comes from facilities that produce power using the power of the wind or the sun, and from dams that generate hydroelectric power.
- Power plants are often located away from areas with large populations. Some may be located near a fuel source, or to take advantage of renewable energy sources. Many facilities are very large, built to generate a large amount of power, so it can be less expensive to the final users.
- Inside a generating station that uses coal as a fuel, the coal is burned to generate steam that drives huge turbines. Generating stations that burn gas sometimes run massive engines, or turbines that are similar to jet engines. At wind farms, turbines at the top of tall towers are driven by the wind. At solar farms, solar panels convert sunlight into electricity. All these generation methods set electrons in motion, and generate a strong electric current. Then the electricity’s “road trip” begins.

TRANSMISSION

- The long “road” that carries the electricity to your home or business starts with a “highway” of transmission lines, carrying large amounts of energy from the generator to distant users. The “on-ramp” to these lines involves converting electricity to a higher voltage, by sending it through transformers, which makes it more efficient and less expensive to move the

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power long distances. The high-voltage electrical charge is then connected to the transmission network that stretches across the country.

- Once in the transmission system, electricity from each generating station is combined with electricity produced elsewhere. The electricity travels through the transmission lines until it reaches a wholesale customer, such as [CITY'S] electric utility.

DISTRIBUTION

- On a road trip, the highway channels fast moving traffic onto smaller local roads when you get near to your final destination. It's much the same with electricity. When the power arrives [in/near] (YOUR CITY), the high-voltage power reaches a substation, where the voltage is stepped down to a lower voltage so it can be sent through smaller power lines. {AS DESIRED: include any local info about how many substations your local city/utility has, or where they are located}.
- Leaving the substation, the power travels through [overhead and/or underground] distribution lines to your neighborhood. Smaller transformers nearby reduce the voltage again to make the power safe to use in your home, and the power goes through a smaller line to reach your home. [CITY's] workers build, maintain and repair the local lines, other distribution system equipment and the local substation(s), to keep our community's electric system running smoothly.
- Once the power reaches your home, it passes through a meter that measures how much electricity your home uses. [CITY/UTILITY name] uses your meter's measurements to determine how much you should pay for the energy you use.
- The electricity goes to a service panel in your home, where breakers or fuses protect the wires inside your house from being overloaded. The electricity travels through wires inside the walls to outlets and switches all over your house.

The electrical grid is an amazing and complex system, that some have called the world's "largest machine". And yet, it's easy to take the power we use every day for granted. When you touch an "on" button or plug something in this summer, don't forget to appreciate and value the "road trip" that your electricity traveled, perhaps for hundreds of miles, before it made your life brighter or easier.