Larger Community Solar Installations and Smarter Neighborhood Power Circuits

Southern California Edison (SCE) is building one of the largest networks of commercial solar photovoltaic power stations in the nation. The solar generating stations will eventually have a combined peak generating capacity rivaling utility-scale power plants – 500 megawatts of power – enough electricity to serve 325,000 average homes at a point in time.

Renewable Generation and Power Delivery Game Changer

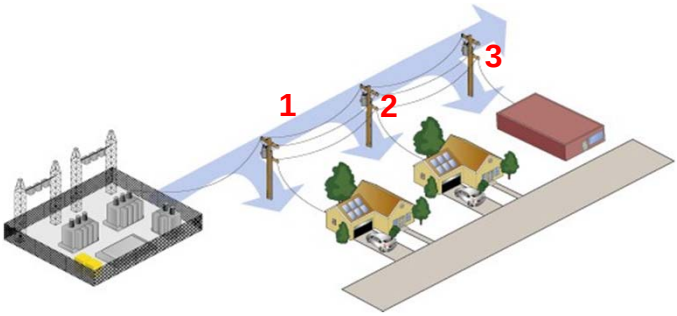
To integrate these one-to-10-megawatt solar stations into neighborhood power circuits, SCE engineers have begun re-engineering the traditional utility distribution circuit, developing the neighborhood circuit of the future.

A Key Goal

SCE is collaborating with the industry to develop new circuit designs and smart grid technologies. What SCE learns will be shared with the industry to help speed the nation's deployment of distributed solar generation resources.

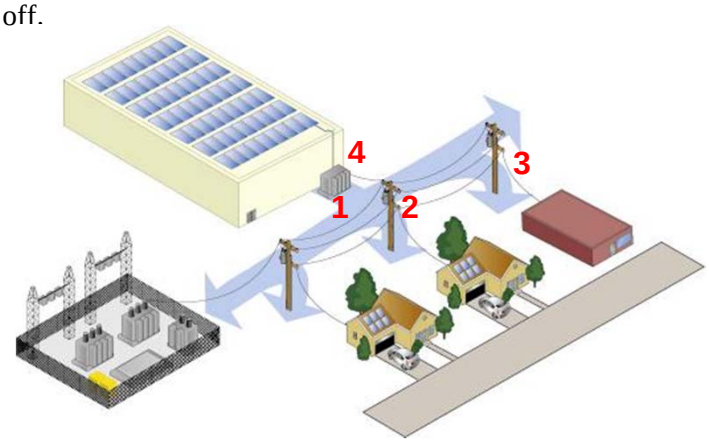
The Past

1. One-way power paths (circuits) each connecting neighborhood substations with approximately 1,200 homes and businesses.
2. On/off capacitors that compensate for normal voltage loss along the route.
3. Switches that require de-energizing the entire circuit before restoring power when faults occur.



The Future

1. Two-way power paths ("looped circuits") that can send power from large solar PV installations, connected to the middle of the circuit, to customers in either direction.
2. Smart, variable capacitors that work continuously like dimmer switches instead of on/off switches.
3. Smart sensors that can isolate faults faster and limit outages to fewer customers.
4. Smart inverters (convert DC from solar panels to AC used by customers) that can adapt solar installation output to changing circuit conditions, rather than turning on and off.



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