

# CLEAN ENERGY SYSTEMS

Using renewable sources to provide a reliable, efficient, and environmentally friendly supply



## Renewable Energy Potentials in the Valley

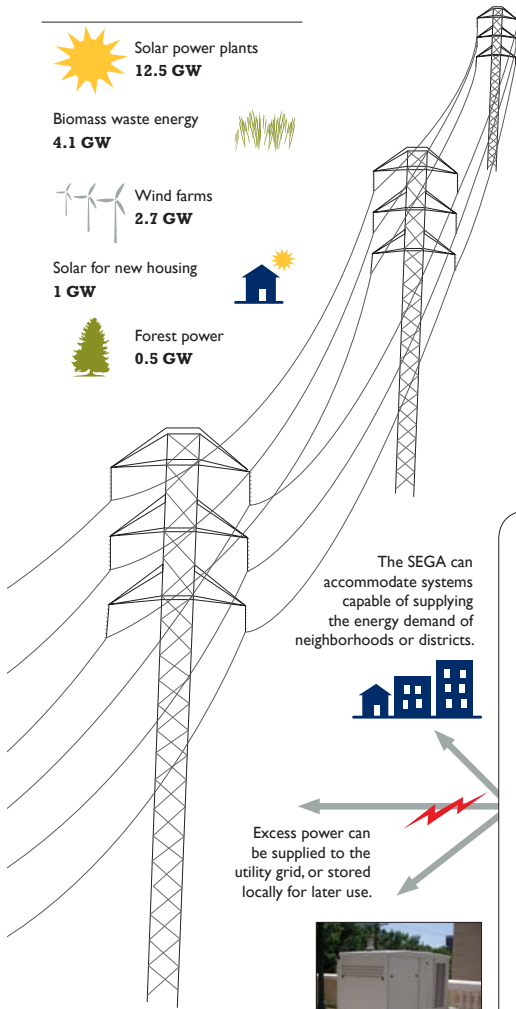
Solar power plants  
**12.5 GW**

Biomass waste energy  
**4.1 GW**

Wind farms  
**2.7 GW**

Solar for new housing  
**1 GW**

Forest power  
**0.5 GW**



The SEGA can accommodate systems capable of supplying the energy demand of neighborhoods or districts.



Excess power can be supplied to the utility grid, or stored locally for later use.



Fuel cells can store power generated by renewable energy technologies.



Small systems can supply or offset the energy needs of individual homes, businesses, or buildings. Systems are complemented by energy efficiency measures that reduce consumption.

Excess power can be supplied to the utility grid, or stored locally for later use.

## Distributed renewable energy systems, integrated at many scales

Renewable energy technologies can be developed at many scales, from large centralized systems to small systems for individual homes. Between these ends of the spectrum, district-scale systems can play a significant role in efficiently providing energy to localized areas.

The Valley's abundant solar, biomass, and biogas resources offer potential to implement a wide range of renewable energy systems and technologies, a few examples of which are presented here.

### LARGE-SCALE SYSTEMS



**SOLAR FARMS.** Solar technologies, including photovoltaics and solar thermal collectors, are being implemented at vast scales in California.



**BIOGAS.** Anaerobic digesters can produce biogas and/or electricity from animal waste or other organic matter.

### DISTRICT-SCALE SYSTEMS



**BUILDING-INTEGRATED PHOTOVOLTAICS.** Rooftop or integrated solar panels can effectively supply energy to groups of buildings, as with the 1.6-megawatt array at the Google headquarters in Mountain View, which is capable of serving 30 percent of peak demand.



**SOLAR ARRAYS.** Yuba City has entered a public-private partnership to build a 770-kilowatt solar photovoltaic array in a stormwater detention basins, sharing space efficiently and supplying energy at low cost to the city.



**BIOMASS GENERATION.** Biomass can be converted to energy using gasification, anaerobic digestion, or combustion technologies, making efficient use of abundant agricultural by-products.



**COGENERATION.** Combined heat and power technologies are used widely in institutional settings, such as college campuses. Cogeneration is also applied around the world in residential and mixed-use settings.

### HOME- AND BUILDING-SCALE SYSTEMS



**RESIDENTIAL and COMMERCIAL SYSTEMS.** Solar panels, roof tiles, and other integrated systems can supply energy efficiently and economically to homes and businesses.

