Central Plant Renovation

CALIFORNIA DEPARTMENT OF GENERAL SERVICES

CENTRAL PLANT

SUSTAINABILITY FEATURES

The Central Plant provides chilled water for cooling, steam for heating and compressed air for controls to 23 existing State-owned buildings in the Capitol area. The new plant will eliminate the water discharge into the Sacramento River by utilizing cooling towers.

The project includes a thermal energy storage tank that reduces the electrical costs and impact on the grid by reducing the chiller electrical load during peak conditions.

The heating and cooling capacity will be increased to match existing loads and future loads. This will allow for more reliable and efficient heating and cooling. In addition, steam-turbine distributed generation will be utilized to minimize the impact on the downtown electrical grid.

Sustainable Site

1. Cooling Tower uses environmentally friendly water treatment with no chemicals
2. Reclaimed cooling tower water for landscape irrigation
- White 'Cool' roof
3. Stepped-back facade for neighborhood scale
- Bicycle storage
- Staff shower and locker facilities
- Creating Magnolia Park for neighbors to enjoy
- Rain garden for runoff
- Permeable Paving on site

Energy and Atmosphere

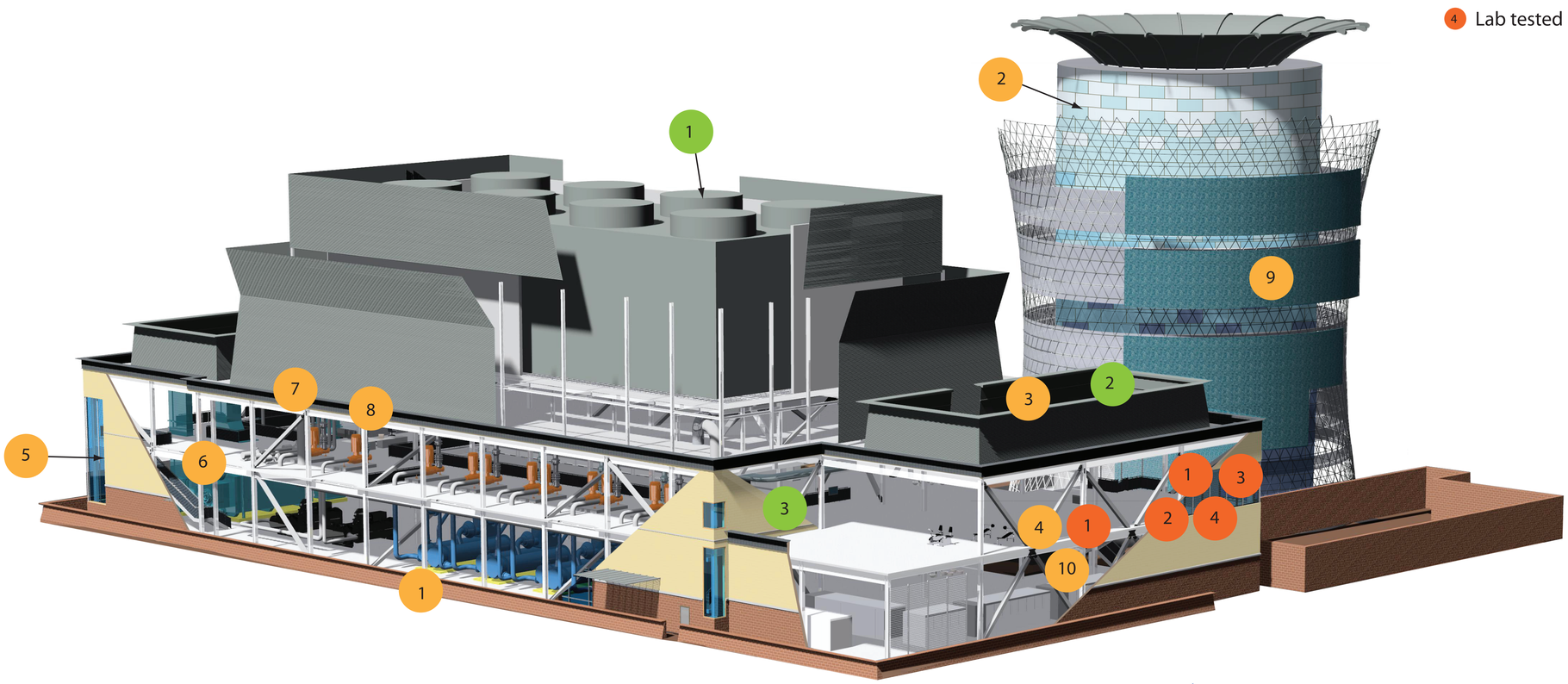
1. Ultra-high efficient all-variable speed chiller plant
2. Chilled water thermal storage system to provide cooling for State buildings during high electrical rate period
- Energy efficient evaporative cooling
- Steam powered electric generator to provide emergency cooling and load leveling during energy emergency conditions
3. Solar heating for domestic hot water
4. Advance M-Cycle evaporative air systems for office spaces to reduce energy use by effectively applying psychometric energy from the atmosphere
5. High-performance, low-E glass
6. New steam heating plant that will increase the overall heating system operating efficiency
7. Plant controls based on the engineering principle that provides energy optimization of all systems
8. Overall monitoring of system performance
9. Photovoltaic panels will provide electrical power for office support areas
10. Radiant heating and cooling system for thermal comfort in support areas
- Post occupancy monitoring of system performance
- City trees retained for shading

Materials and Resources

- Recycling of demolished materials
- Selection of materials with high-recycled content
- Mat slab foundation with 30% fly ash
- Lab tested no or low VOC finishes

Indoor Environmental Quality

- CO2 monitored throughout office area and demand based ventilation control will provide excellent Indoor Air Quality.
1. Energy efficient integrated occupancy control of lighting, conditioning and ventilation
2. Maximize the use of day lighting with automatic light fixture dimming control
3. Low energy direct-indirect lighting fixtures
4. Lab tested no or low VOC finishes



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