



EXPLORE NEW TECHNOLOGIES THAT COULD MINIMIZE WATER USE AT SOLAR FACILITIES

Much less water is used in solar and wind energy generation than in other types of power generation, but for water poor regions, such as Nevada, minimizing water use in cleaning mirrors and panels for cooling is critical.

Water Needed in Solar Energy Generation

Concentrated Solar Power (CSP) has a cooling tower to condense steam. Wet cooling evaporates water into the environment, while dry cooling does not. Photovoltaics (PV) and CSP have solar surfaces that may need washing.

Water needed for CSP	VS	Water to wash PV panels
800-1000 gal/MWhr - wet cooling and washing mirrors		<1 gal/MWhr
105 gal/MWhr - dry cooling for washing mirrors		

RESEARCH TOPICS

1. Minimize cooling and cleaning water use through thermal cycles and power plant dry-cooling improvements
2. Develop high temperature durable solar absorbing coatings
3. Dust deposition and removal from panels and mirrors
4. Use nanotechnology to mitigate dust accumulation
5. Use remote sensing to detect particle deposition on panels and mirrors

RESULTS OR ANTICIPATED RESULTS

Ongoing research is being conducted at several test sites throughout the state. Nevada scientists are developing new technology that could greatly increase the amount of solar energy systems installed without increasing the water required or rendering major impacts on the environment.

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