Parabolic Trough Solar Thermal and Photovoltaic Solar Comparison

Parabolic Trough Solar Thermal	Photovoltaic
Requires direct irradiance - clouds or haze inhibit heat generation so that steam turbine will not function	Works under any sun conditions, although clear skies produce optimal generation
Must be kept clean (double reflective surface susceptible to soiling) Humidity can also lead to reflective surface corrosion and soiling	Occasional rain provides sufficient cleaning for single surface
Multiple acreage field required to generate sufficient steam for turbine operation (bigger is better) area should be flat and level. System not amenable to rooftops due to weight	Modular, multiple size configurations, for most terrain, and buildings
Large (10 to 50 MW) output – site should be located close to large substation	Modular design can be connected to most any grid voltage
Cooling water frequently required - usually treated, no salt water	No water needed aside from limited amount for semi-annual washing
Energy Storage possible, but more space needed to store heat	No storage possible - savings is diesel fuel
High winds can disrupt tracking and output, large surface may be difficult to protect	Winds cool cells, improving marginal electricity generation
Must be horizontal as system employs one axis tracking	Can be fixed, one-axis, or two axis tracked
Slightly higher solar to electric efficiency than PV, but requires large minimum footprint	Modular from kW to MW
Usually employs a steam turbine that can fueled with diesel to generate during non-solar times	No moving parts
High O&M cost	Very low O&M costs
Some technology risk	Well proven technology

CARIBBEAN SOLAR ALLIANCE