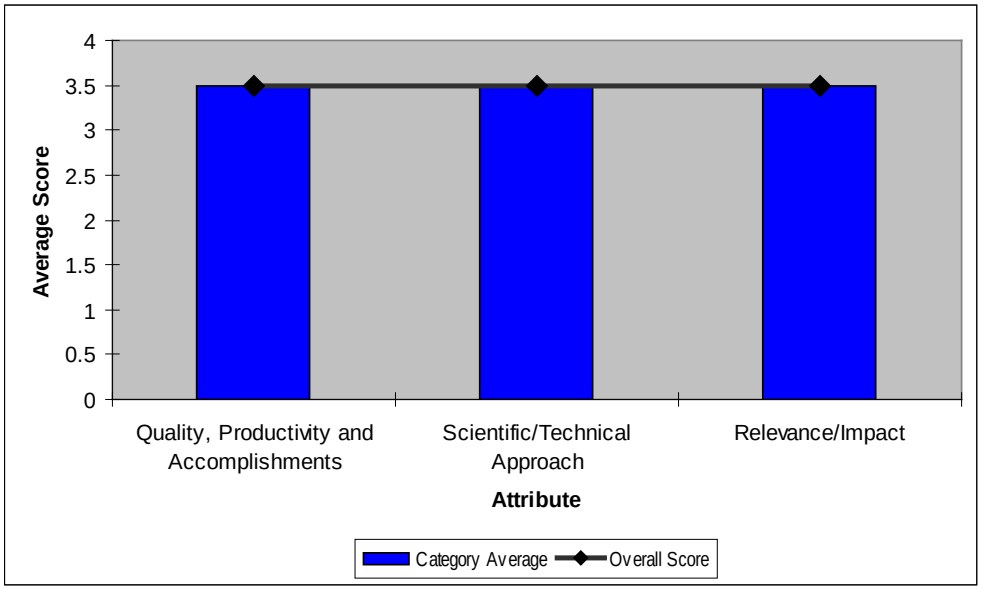
National Solar Thermal Test Facility (NSTTF) Plans

Principal Investigator: ***Tom Mancini, Sandia National Laboratories***



SNL's plan for upgrades to its National Solar Thermal Test Facility (NSTTF). Includes upgrades to molten salt test station and the addition of an optical methods test laboratory, mobile CSP test lab, dish bed concentrator. NSTTF supports SNL's goals to improve CSP performance testing, reduce LCOE and advance commercialization of CSP.

Quality, Productivity and Accomplishments (Average Rating 3.5)

Rating	Comments
3.0	The team qualifications are outstanding. However, the project funding seems short to cover the identified needs.
4.0	[none]
3.0	An appropriate number of people, with well recognized technical credentials, have been engaged in this project. The members of the team and collaborators clearly demonstrate their ability to contribute to the project. The facilities deployed on the project appear to be adequate, but limited, for the task at hand. The work under way is producing an appropriate level of accomplishment relative to the costs incurred. The project team appears to be on schedule, but the project is clearly still in progress and not yet complete. Tom Mancini, Chair Solar PACES CSP Industry roadmapping meeting in August, Reducing the levelized cost of energy (LCOE) Optical methods test laboratory – What is the motivation for the mobile CSP test laboratory – is this a transient need? Long range heliostat site – Couple the optimization codes, structural codes, etc. Concentrator drive test facility – one of the most expensive components of the concentrator systems in then azimuth drive – windsmith drive being used on many of the dishes and heliostats. How do you load it, fail it, optimize materials, etc. estimated 2million facility, quoted as only fy 2015 or later

Thermal Storage is the CSP differentiator

$800,000 standard O&M operating costs related to ES&H, etc.
Testing and evaluation of balance of plant issue – big topics – what are some of the BP testing needs that you anticipate?
30-40kw solar simulator quartz lamps
Valves, instrumentation in the presence of the molten salt, inline pumps, molten salt heat exchanger that failed, metal seals

4.0 National Solar Thermal Test Facility, Albuquerque, NM
Rotating Stirling engine testing
Roadmap meeting with industryBuild on the strengths of lab
Industry does not do long term R&D
Trough Alternate Working fluid test facility
Mobile CSP test facility
Long Range Heliostat test (described by Greg [Kolb])

Scientific/Technical Approach (Average Rating 3.5)

Rating	Comments
3.0	The approach used seems fine.
4.0	[none]
3.0	Facilities upgrades and renovation are appropriate, needed, and timely. In addition to rebuilding existing capability and re-furbishing, need to also begin to look to the future. Critical that NREL and SNL collaborate more, and avoid unnecessary duplication of infrastructure.
4.0	Solar Paces chair Concentrator is 50% of CSP cost Concentrator Drive is major part – need to revisit Moving from prototype to manufacturing and help in reducing cost Instrumentation for molten salt Criteria for Modifications and New Facilities • support multiple CSP companies/technologies • improve performance (test, evaluation, operation of prototype components and systems, and advanced R&D) • all with the goals of reducing the LCOE in support of CSP deployment commercialization

Relevance/Impact (Average Rating 3.5)

Rating	Comments
3.0	The goal of the project of modifying existing SNL facilities and create new ones to support the CSP industry is of high importance to the industry. The actions identified are relevant and will provide much needed support to the industry.
4.0	[none]
3.0	Clearly this is a time when the nation needs to reinvest in these facilities and infra-structure.
4.0	The current activities such as Stirling Energy Systems dishes, SkyFuel trough test are highly justifiable work because there is great demand for this work to overcome technical and market barriers. The heliostat and trough tests as indicated must be continued to leverage resources by

teaming with private companies and other organizations.

Overall (Average Rating)

Rating	Comments
3.0	Improving the existing SNL facilities and expand them to support the CSP industry is of high importance. Although, the project funding seems short to cover the identified needs, the team is well qualified to execute the project, and the approach used seems fine.
4.0	Extensive plan covering short (0-2 yrs), intermediate (2-5 yrs), and long (5-10 yrs) terms. Very well prepared budget and impact/benefit/users report. See overall comments in the previous project (Mehos) that apply to both facilities (NREL and SNL) plans.
3.0	[none]
4.0	Sandia National Labs is a highly regarded, world-class facility for CSP R&D and efficient testing of prototype-scale components and systems. These facilities are capable and helpful to the CSP industry. SNL more focused on outdoor facilities, dish Stirling, and power tower. It is recommended that work should be a lot more coordinated between the two national Labs (NREL and SNL). Facilities plans for both Labs were focused more on what they have now, not too much future thinking. Both labs are encouraged to think toward the future facility needs, not just rebuilding. In addition, each Lab must develop well-known themes. These themes are important for public to know which Lab to contact.