American-Made Solar Prize

SUBMISSION FOR SET!

TrackerSled

Solar-assisted Drawdown

http://trackersled.com

TEAM

Lawrence P. Kearns, FAIA
Founder, TrackerSled
330 S. Lombard Avenue, Oak Park, Illinois
larry@trackersled.com
larry@wkarch.com
Mobile: 773-960-4441

PARTNERS AND AMERICAN-MADE NETWORK

Brown's Ranch, Gabe Brown https://brownsranch.us/
Solar Inventions, Dr. Ben Damiani http://solarinventions.com
NexTracker, www.nextracker.com
Mortenson Construction, http://www.mortenson.com
John Deere Inc, http://www.deere.com

TrackerSled Intro Video

TECHNICAL ASSISTANCE REQUEST

The TrackerSled team seeks assistance with two tasks involving the Electrical Balance of System, commonly known as eBOS. Since the TrackerSled is mobile, current technology will not suffice.

Task One – Connectors, Grounding, and Harness

First, devise a connector for each 1,500vdc string of modules to connect to the central DC infrastructure spine. A typical column of 5 TrackerSleds will require four connectors at the beginning and end of each column, so regardless of which field they are deployed on, they can make connections at the spine.

Second, each column of sleds requires grounding, which presumably could be also located at the central spine.

Third, develop a DC harness to aggregate the strings in parallel as arrays connected to a central smart inverter.

Task Two - Model Grid Supportive Functions of Battery Ballast

When the cost of batteries allow them to provide the ballast for a single TrackerSled, determine the optimum storage for a first generation 12-acre system to provide time shifting of energy use and grid-supportive functions like voltage and frequency regulation.

If possible, develop a dynamic model in a Matlab Simulink environment to determine the feasibility of providing voltage and frequency support assuming readily available commercial smart central inverters that are IEEE 1547-2018 compliant.

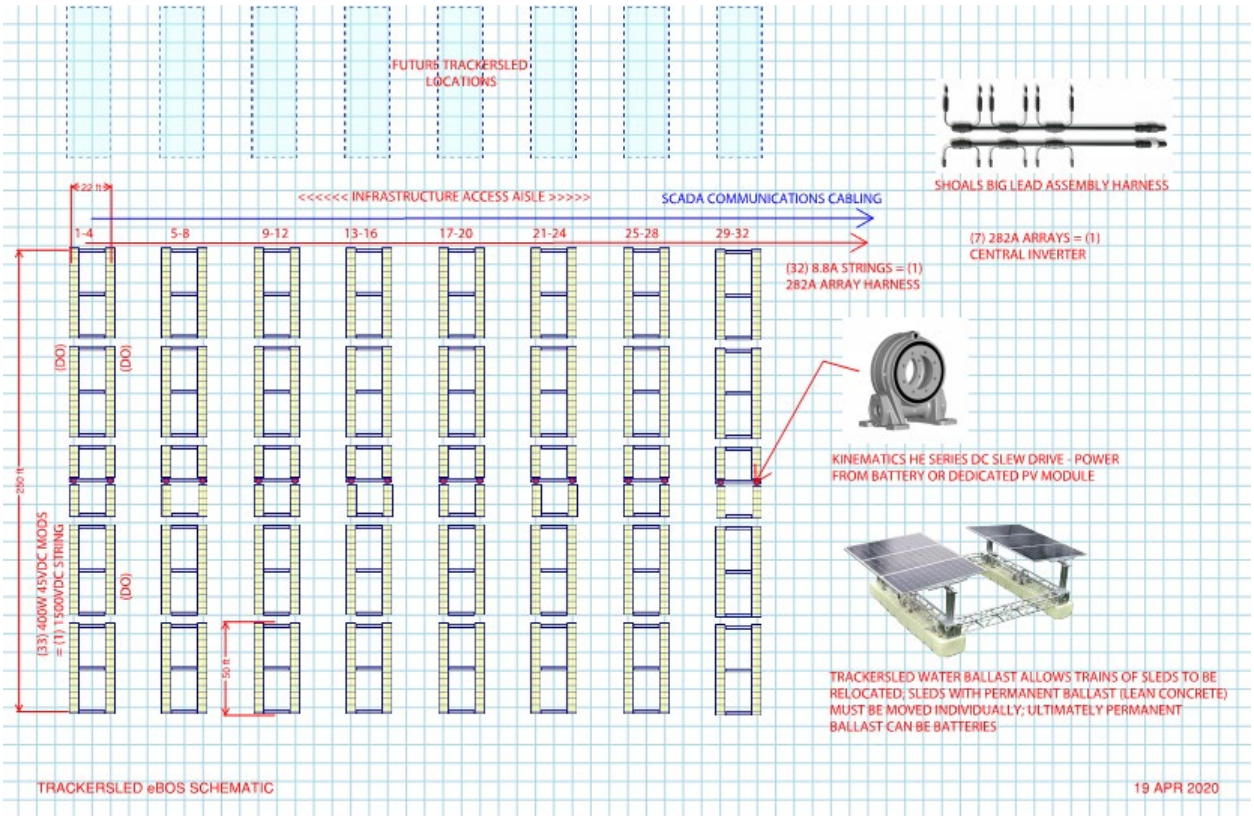

Figure 1 - A schematic of a portion of the TrackerSled eBOS