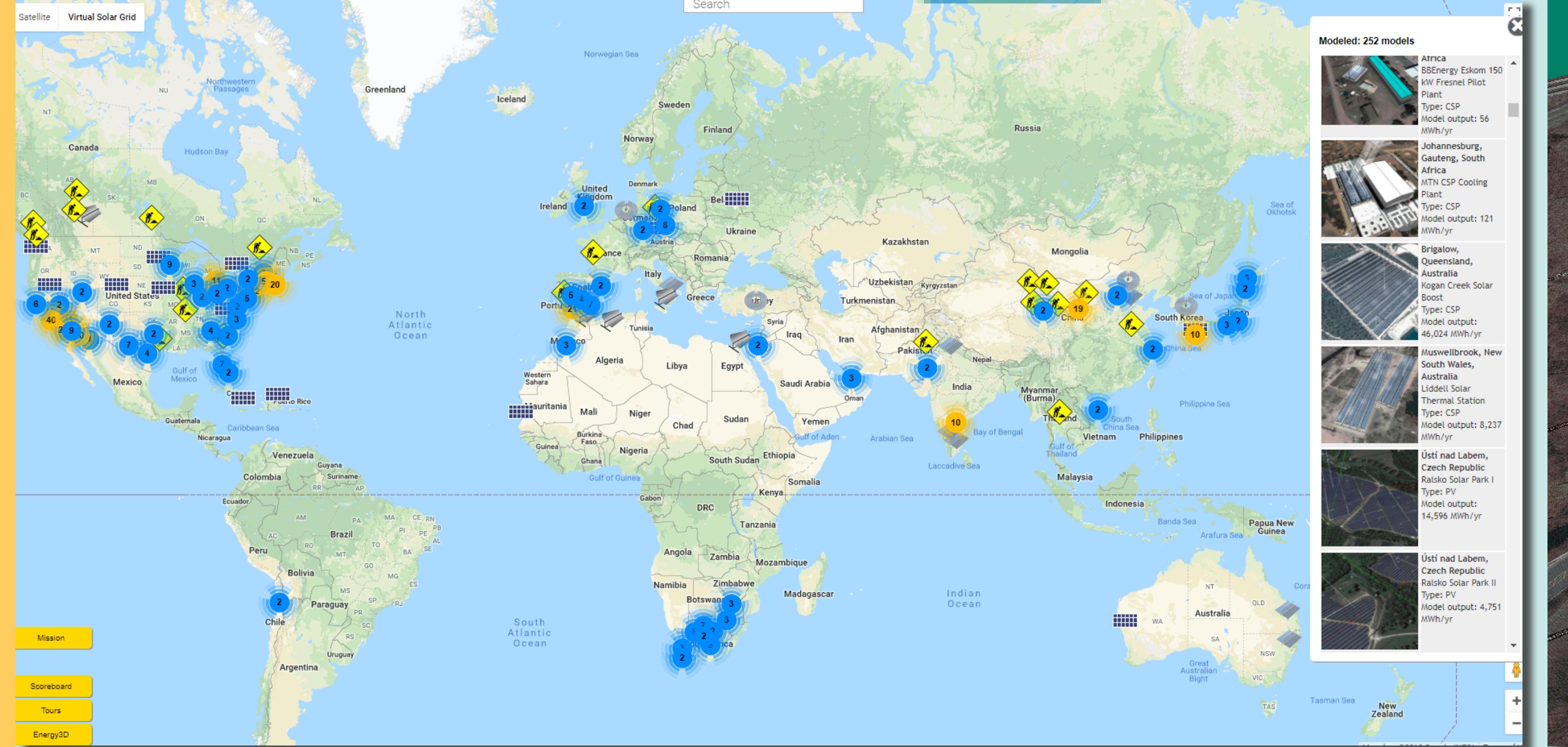


Global Lab 2.0: The Virtual Solar Grid

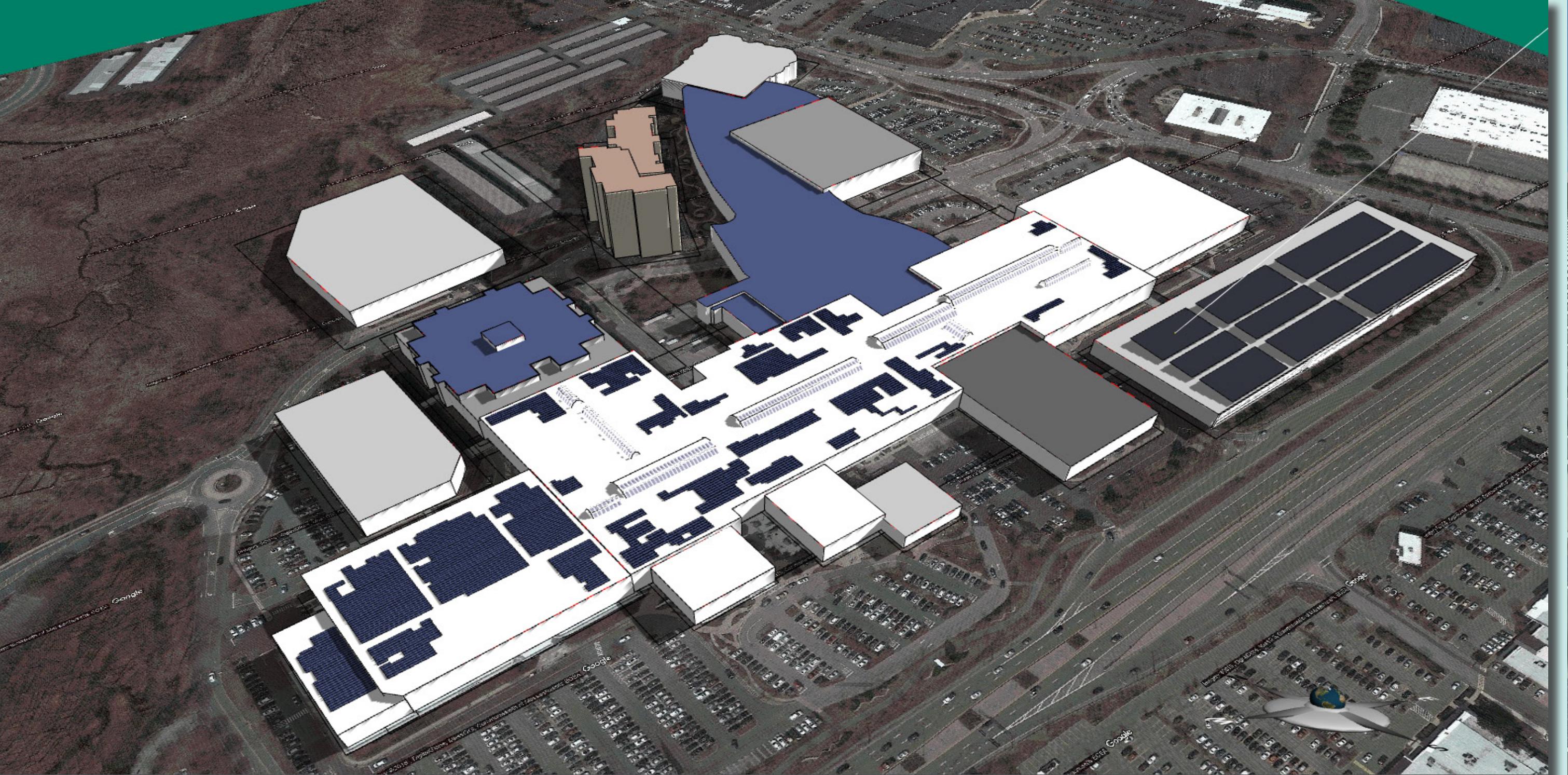
Charles Xie, Jie Chao, Xudong Huang, Joyce Massicotte, Corey Schimpf
The Concord Consortium, Concord, MA 01742, USA

In memory of Dr. Robert F. Tinker (1941-2017)

The Engineering Computation Laboratory



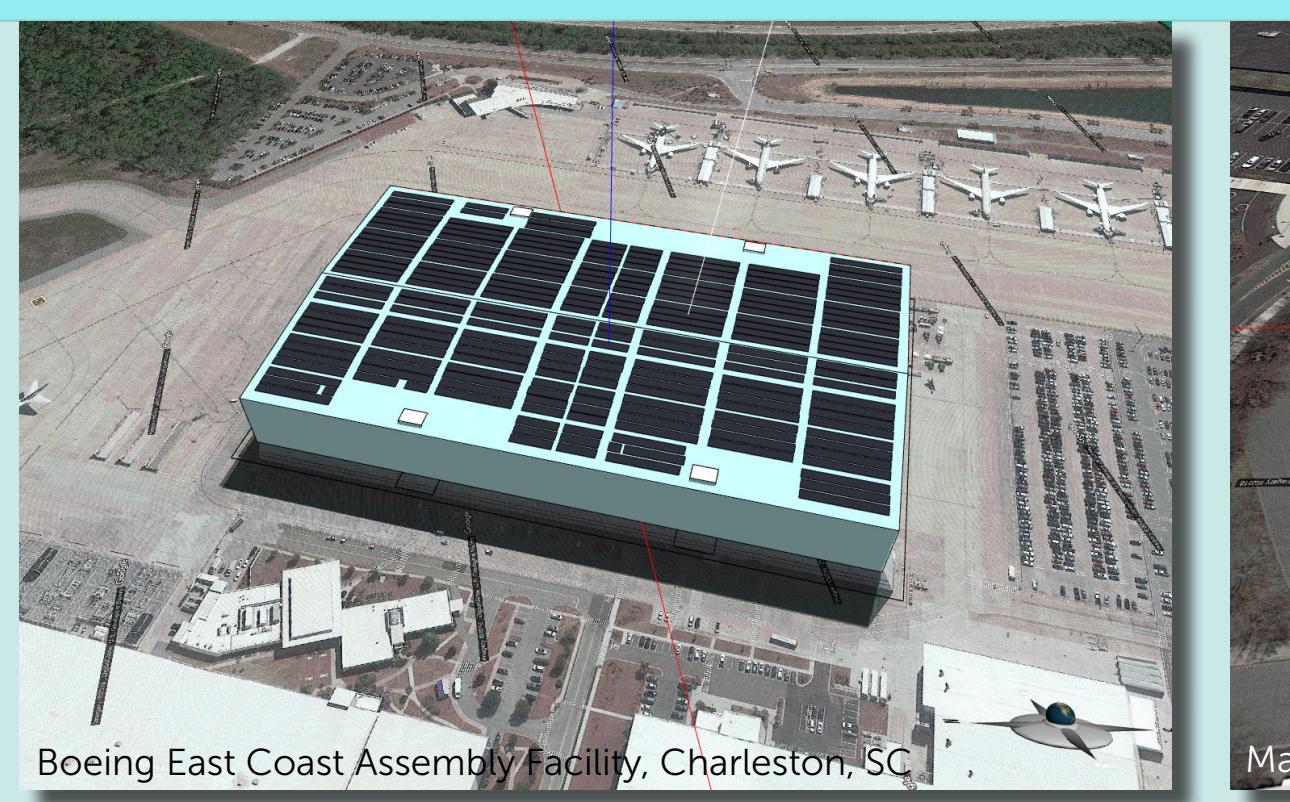
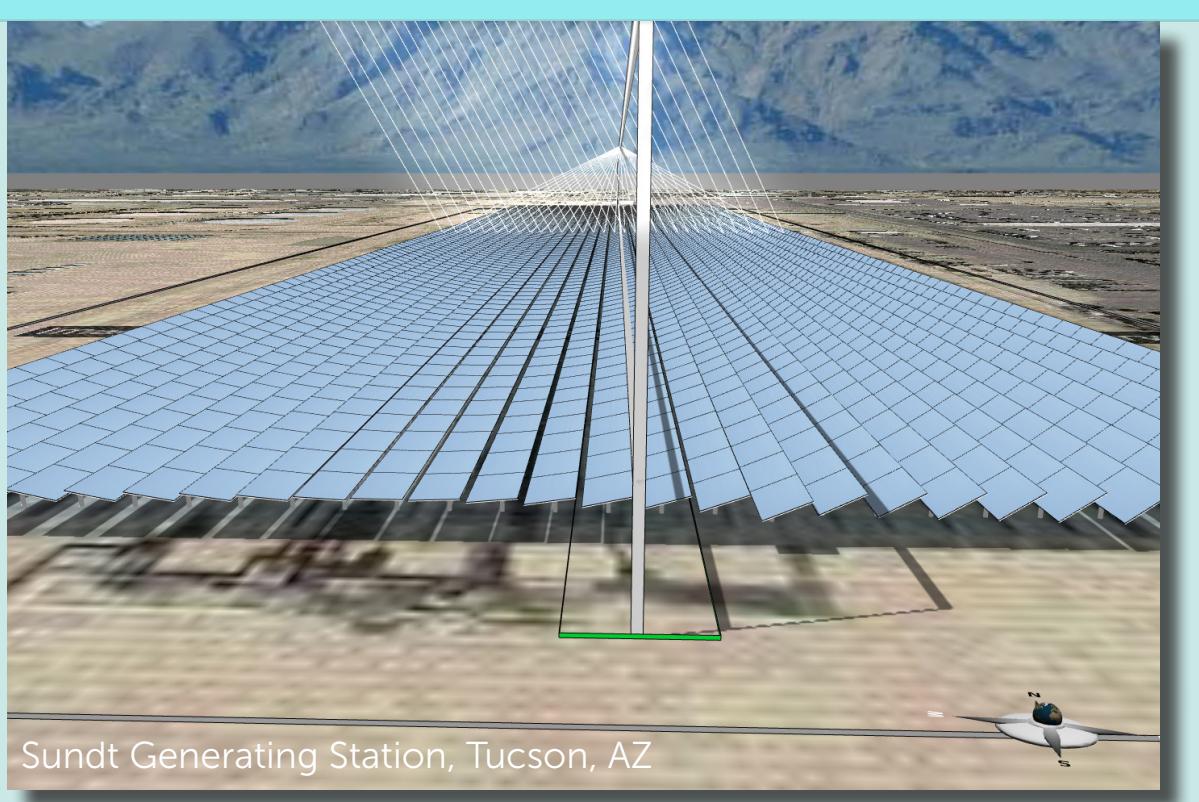
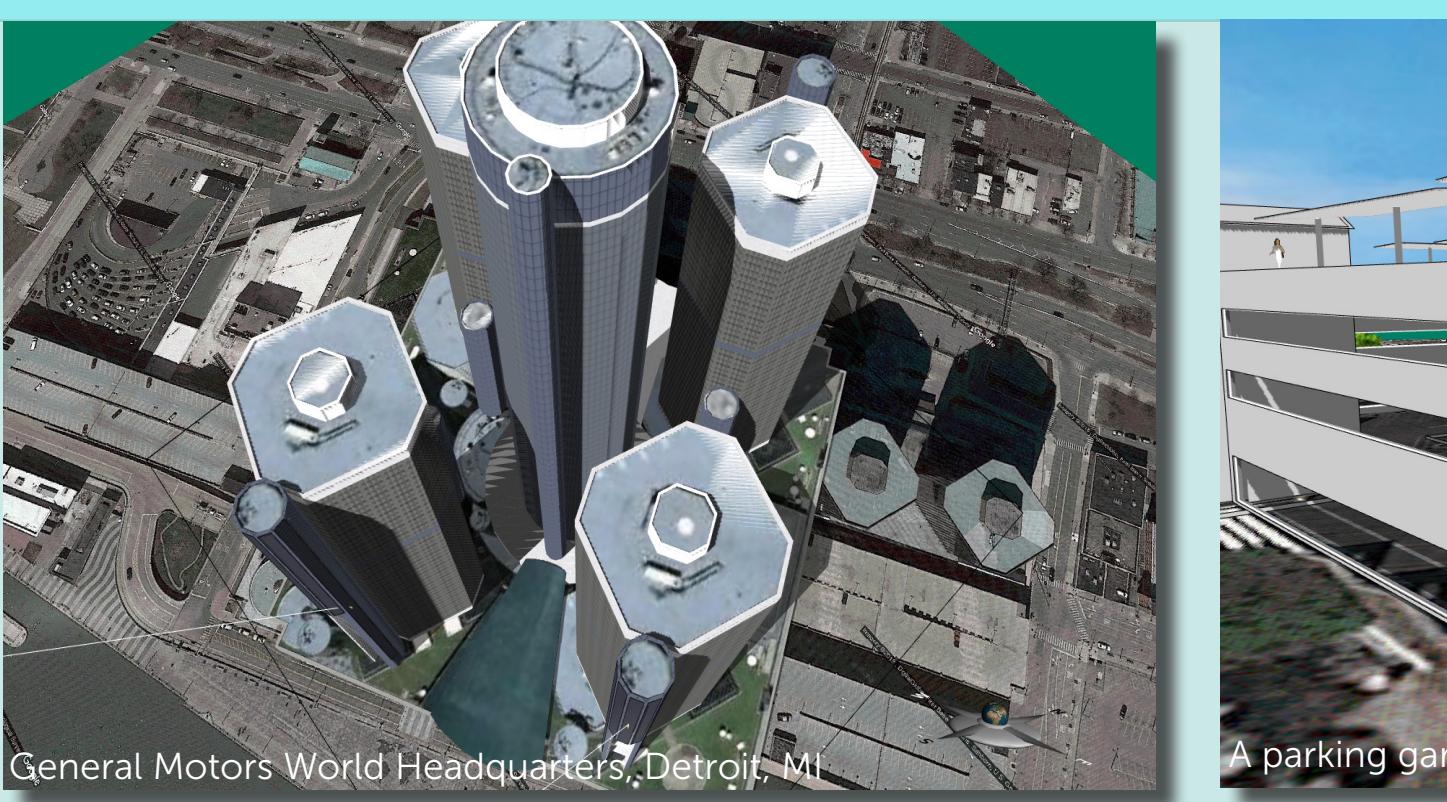
250+ modeled projects from 36 countries generating 20,000,000,000 kWh per year (enough to power 8 million people); 250+ more projects under construction.



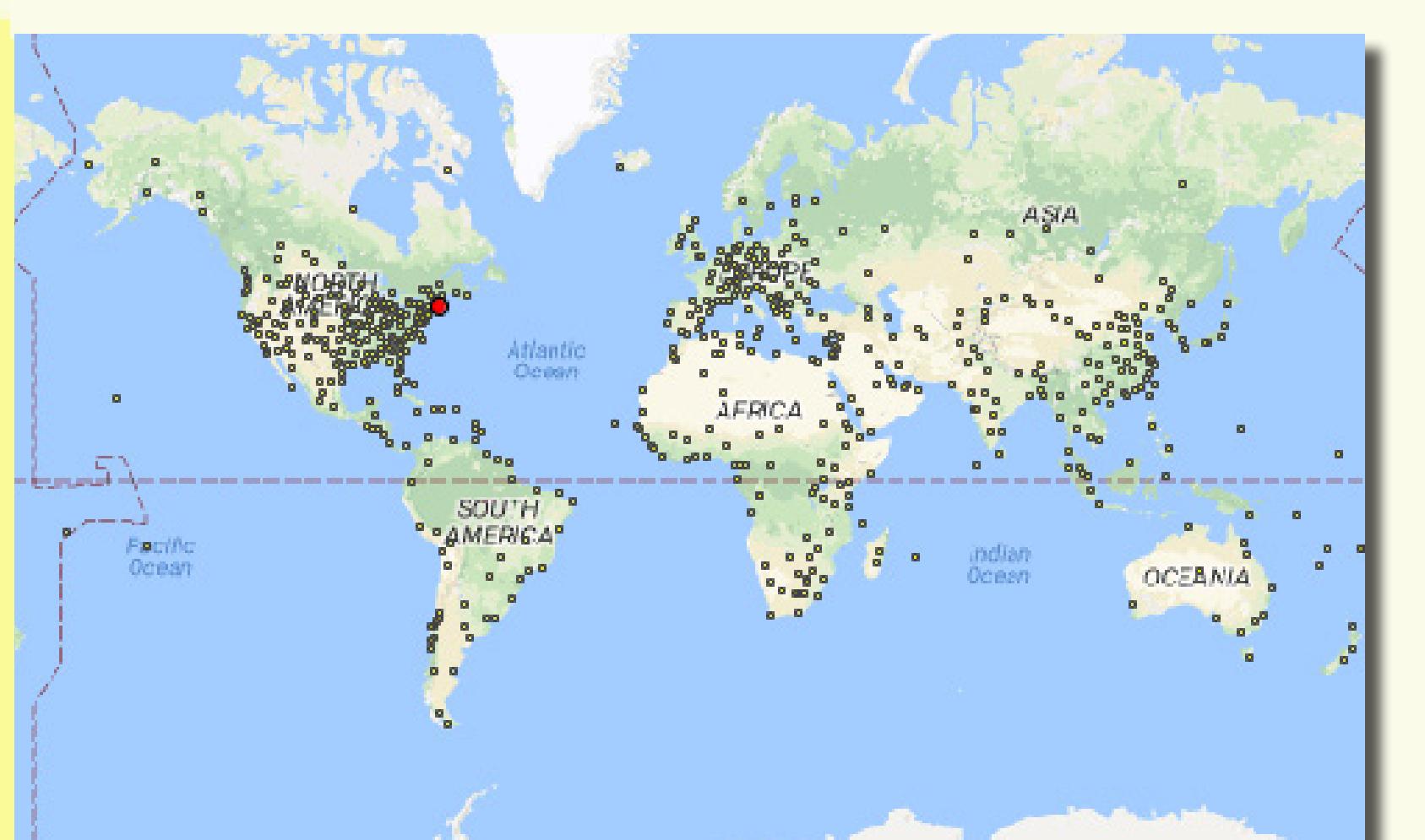
The big question: Can humanity be powered 100% by renewable energy?

The science challenge:

Among the existing computational methods for large-scale solar potential assessment, site-by-site manual evaluation has the finest resolution and highest accuracy but is too time-consuming to be scalable. (Gagnon, et al., The National Renewable Energy Laboratory, 2016)



Our solution: Solarize Your World Curriculum for Crowdsourced Science



- Students learn the knowledge and skills needed to tackle engineering challenges in the classroom.
- Students practice engineering design through open-ended, real-world projects.
- Students explore independently and collaboratively and contribute to the Virtual Solar Grid.

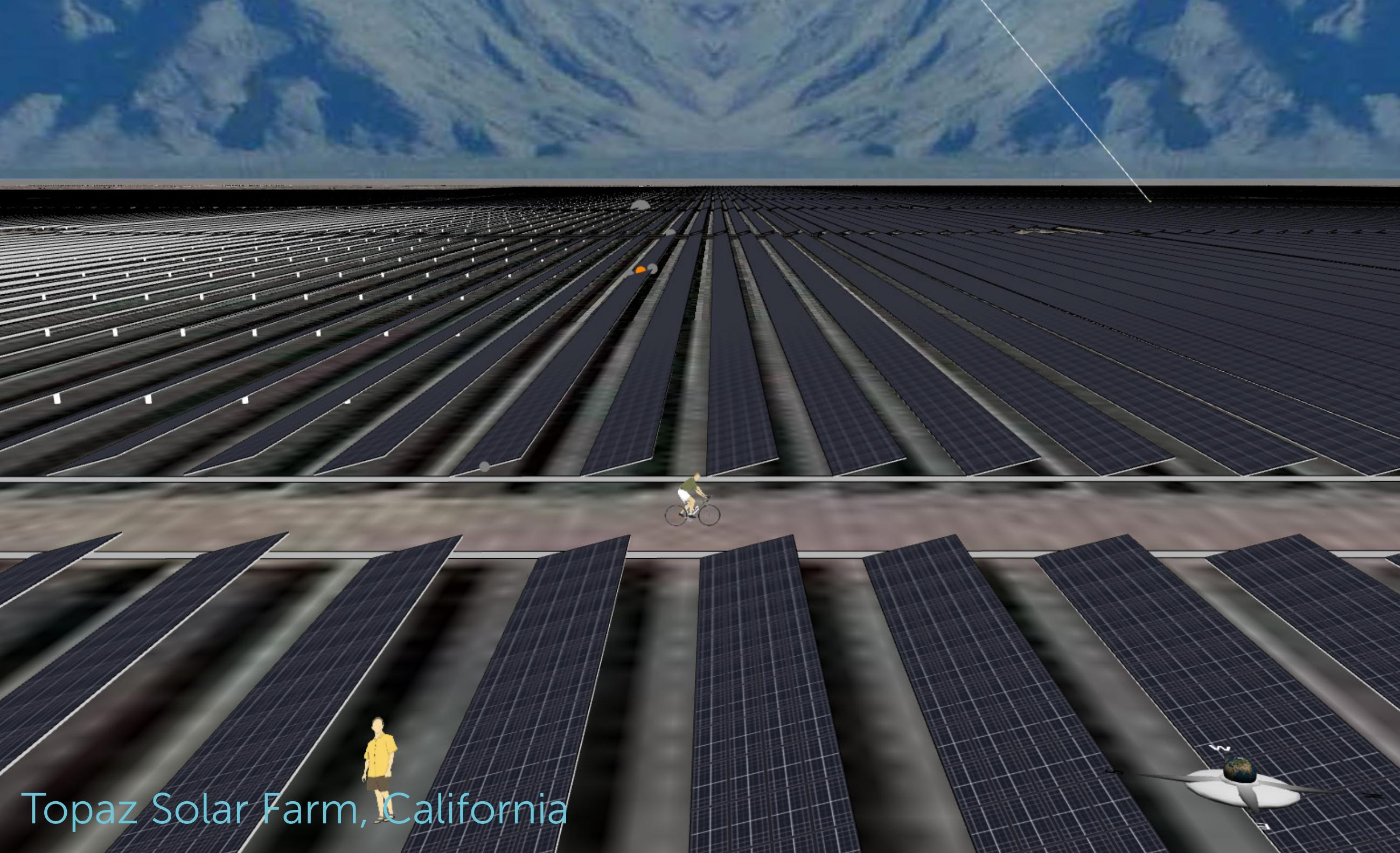
Weather data cover 700 regions worldwide

Innovations

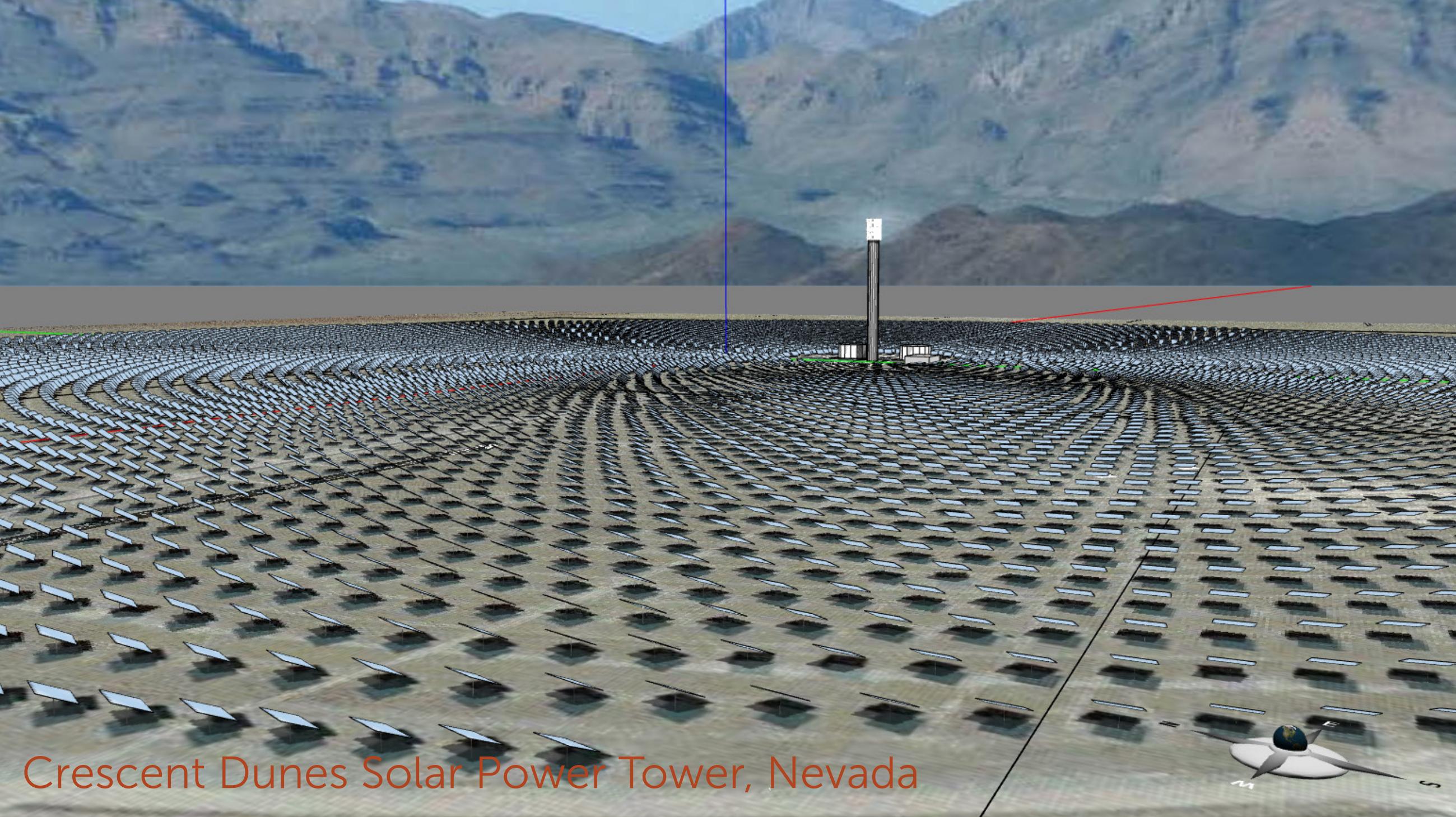
A "Powercraft" that empowers anyone to design and simulate any type and size of photovoltaic and concentrated solar power systems anywhere in the world



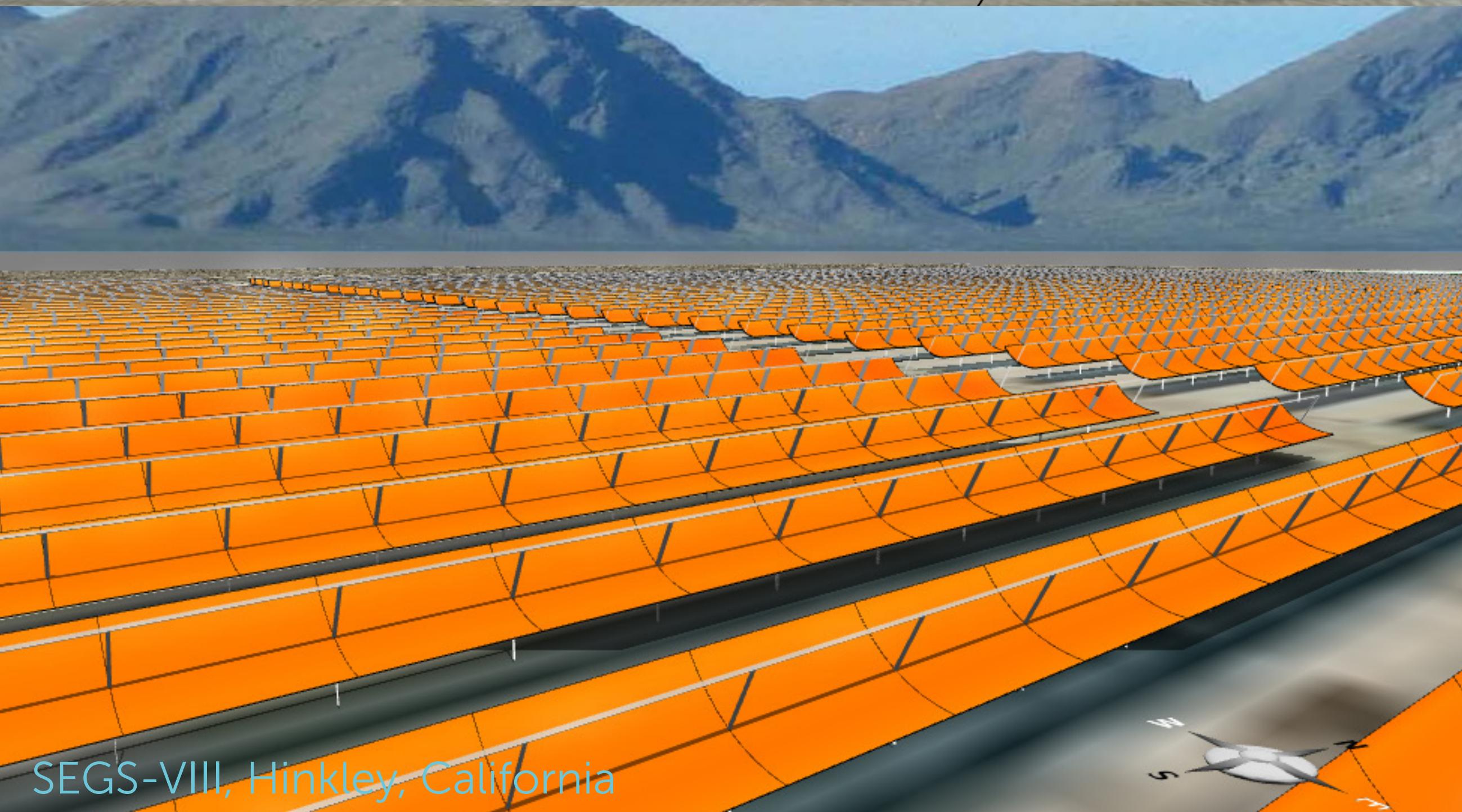
Featuring powerful 3D engineering simulation of realistic-looking built environments



Topaz Solar Farm, California



Crescent Dunes Solar Power Tower, Nevada



SEGS-VIII, Hinkley, California

<http://energy3d.concord.org>

