

Breakthrough: Software Defined Solar Systems CNS-1645952/July, 2017/David Irwin and Prashant Shenoy/UMass Amherst

Challenge:

- •"Grid-tied" solar growing at exponential rate
- •Balancing supply/demand becoming more challenging
- •Complicates grid operations

Solution:

- •Develop Helios platform for software-defined solar
- •Exposes solar control via API
- •Increase solar capacity by enabling anyone to connect
- •Rate limit solar to enforce policies



Stalling Solar



Helios Prototype

Scientific Impact:

- •Develops new mechanisms and policies for solar control
- •Enables controlling solar flows in grid similar to network flows
- Introduces notion of grid neutrality akin to net neutrality

Broader Impact:

- •Can enable significantly (3.5x) more grid solar
- •Critical to reducing grid carbon emissions
- •Provided summer tutorials for high school students
- •Engaged with policymakers at Mass DOER

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