



## Modern Solar System Design

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**This session is eligible for  
1 Contact Hour.**

For these hours to appear on your certificate, you must:

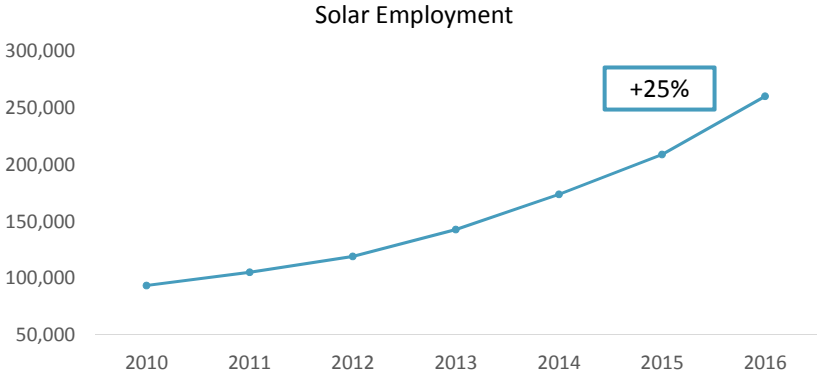
- Have your badge scanned at the door
- Attend 90% of this presentation
- Fill out the online evaluation for this session: [www.necanet.org/2017Seattle](http://www.necanet.org/2017Seattle)

# Agenda

- Solar industry overview
- What do we mean by modern solar system design?
  - Remote Shading Analysis
  - Computer Vision
  - Automatic NEC Validation
- What do these technologies mean for you?



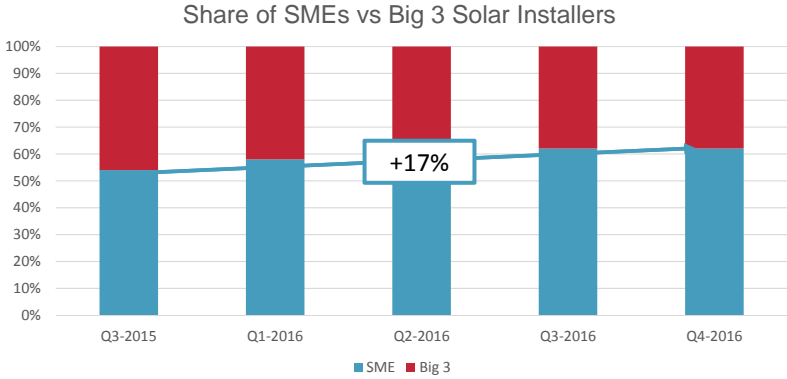
# The Industry is Growing Fast



• Source: The Solar Foundation



# The Industry is Changing



- Source: Renewable Energy World
- Big 3: Tesla (SolarCity), Sunrun, Vivint

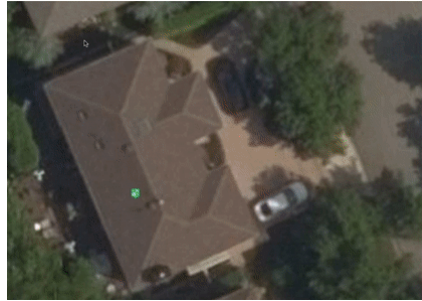


# How Are Local Installers Competing?

- Lower customer acquisition costs
- Modern system design practices



## What is (Modern) System Design?

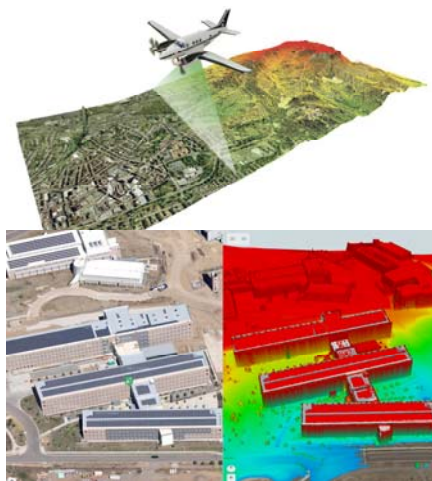


- Do from your computer what you would have previously done on the job site
- Estimate, then verify.

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## Remote Site Analysis



- LIDAR technology allows for unprecedented ease and accuracy in remote site modeling.
- Not universally available in the US.

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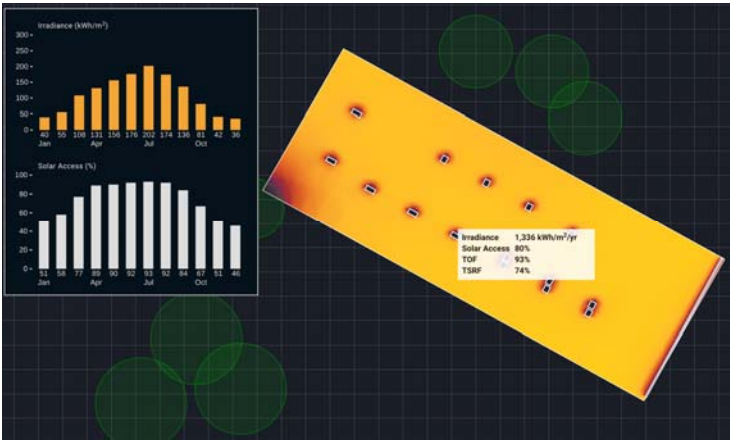
# Remote Shading Analysis



- Statistically equivalent of on-site measurement.
- Savings of ~\$850 per site (DOE: Evaluation of the Aurora Application Shade Measurement Accuracy).



# Computer Vision



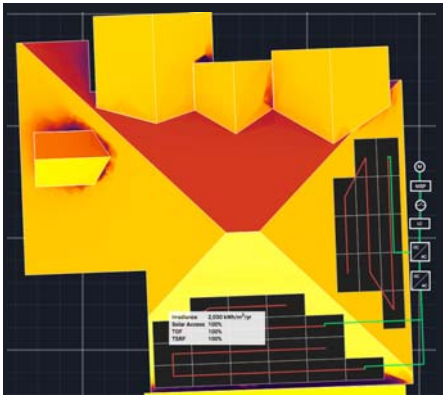
# NEC Validation

Component	Test Description	Result
Rosslyn Main Service Panel x 1	Max. possible NEC-adjusted PV backfeed through breaker connection is less than allowable PV backfeed	Failed
Rosslyn Main Service Panel x 1	Max. possible input current is less than service panel's bus rating	Failed
Rosslyn Main Service Panel x 1	Main breaker rating is less than or equal to service panel's bus rating	Failed
Rosslyn Sub Service Panel x 1	Max. possible NEC-adjusted PV backfeed through breaker connection is less than allowable PV backfeed	Failed
Rosslyn Sub Service Panel x 1	Max. possible NEC-adjusted input current is less than service panel's main breaker rating	Failed
RSHJ938P x 1	Max. possible NEC-adjusted input current is less than disconnect's max. input current	Failed
RSHJ938P x 1	Max. possible NEC-adjusted input current is less than disconnect's fuse rating	Failed
TN120011 x 1	Max. possible NEC-adjusted input current is less than meter's max. input current	Failed

Category	Tests Performed	Result
DC	643 tests performed	
String Sizing		all passed
Inverter Power		all passed
AC	16 tests performed	
Overcurrent Protection Device Sizing		6 failed
Inverter Voltage		all passed



# Layout Rules



- Performance estimates are highly system design dependent!
- BOS components optimization is an often overlooked aspect of system design



## What Does This Mean For You?

- Level playing field
- Advantage in customer acquisition?
- Advantage on technical installation?
- Disadvantage on solar knowledge?

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## More Resources



**aurora** Blog

Solar design tips, sales advice, and industry insights from the premiere solar design software platform

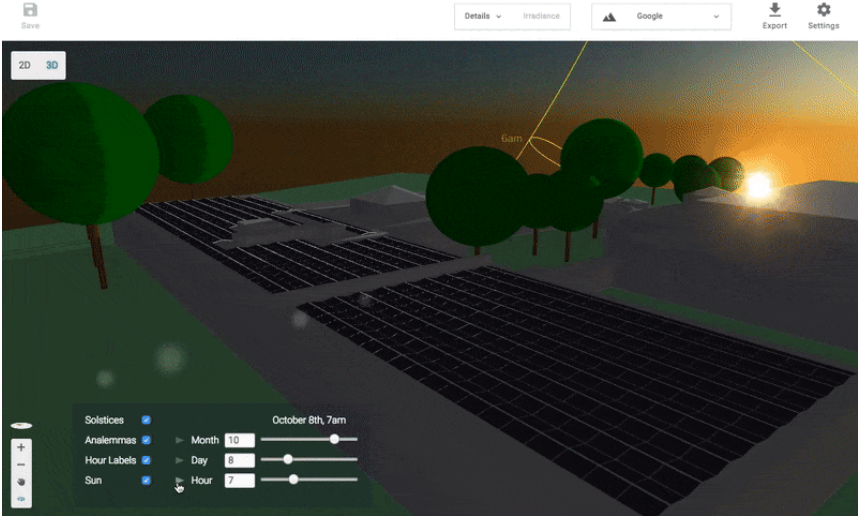
- Email us for more educational resources:
  - Samuel Adeyemo ([sadeyemo@aurorasolar.com](mailto:sadeyemo@aurorasolar.com))
  - Christopher Hopper ([chopper@aurorasolar.com](mailto:chopper@aurorasolar.com))

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# Questions?



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