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# Macallan Construction

## LUNCH AND LEARN

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February 6<sup>th</sup>, 2019



Largest Solar and EV Integrater in Southeast

Utility, Commercial, and Residential Scale Installer

Design, Engineering, Permitting, Installation,  
Commissioning, and Service.

Electrical Contractor Licensed in GA, NC, SC, AL,  
MS



BE A SOLAR  
POWERHOUSE

(404) 609 - 7005  
HannahSolar.com  
1311 Collier Road Atlanta, GA

# WHY HANNAH SOLAR?

Hannah is a leading solar installer for the Southeast

**Largest:** Connecting more solar systems than any other installer based in the Southeast.

**Experienced:** Years of experience designing and installing rooftop solar arrays equate to rapid field deployment and efficient designs.



**Focused:** Delivering favorable economic return, environmental benefits and positive experiences for our clients – always and without exception.

**Exceptional Quality:** Multiple NABCEP certifications, in-house licensed electricians, solar engineers and design technicians design and deliver the highest quality projects.

**Cost Effective:** Exceptional delivery of services combined with customer-focused integration and follow up.

# WHEN SOLAR MAKES SENSE

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- A solid financial investment for profitable businesses
  - 30% Federal tax credit
  - 5-year MACRS accelerated depreciation
    - ...with first year bonus depreciation
  - Favorable cost recapture time frame
  - A hedge against continually rising utility rates
- Adds to property value
- Reliable, low maintenance and long term
- Demonstrates environmental responsibility and progressive thinking



# COMMERCIAL SOLAR

One of Georgia's largest solar PV installers.

Over 80 Megawatts (MW) of installed solar capacity  
and 25 MW currently under design and/or construction.



**480 kW (DC)**  
Canopy Array, Mercedes-Benz Stadium  
Atlanta, GA



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# Mercedes Benz Stadium





 **blum**<sup>®</sup>

**1.84 MW (DC)**  
Ballasted Roof Mount Array  
Stanley, NC

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**500 kW (DC)**  
Fixed Ground Mount Array  
Rome, Georgia



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## VALDOSTA STATE UNIVERSITY

12 kW Canopy

Valdosta, Georgia

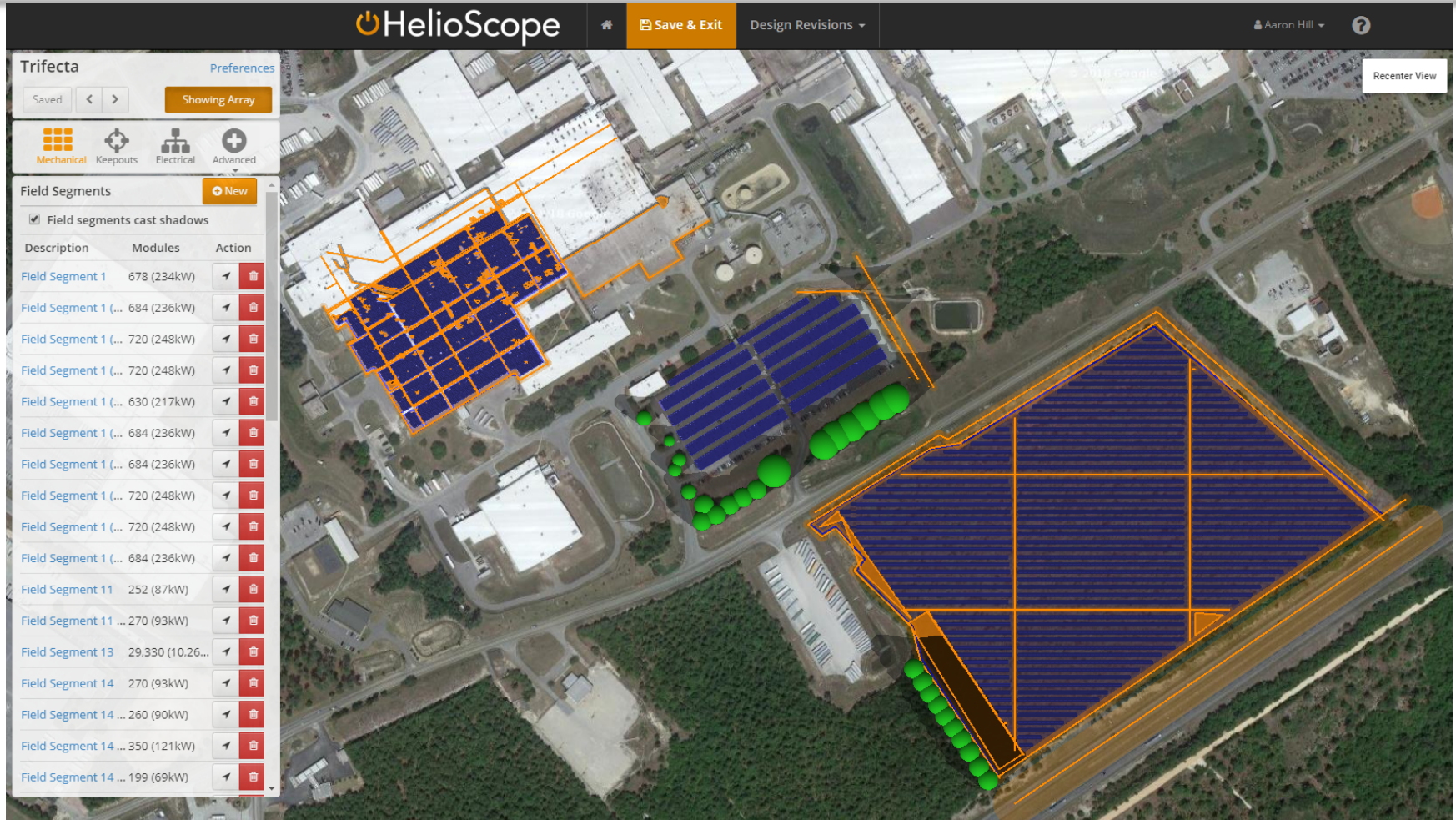


## ATHENS CLARKE-COUNTY TRANSIT

17 kW Thin Film Canopy

Athens, Georgia





**Trifecta** Preferences

Saved < > Showing Array

Mechanical Keepouts Electrical Advanced

**Field Segments** New

Field segments cast shadows

Description	Modules	Action
Field Segment 1	678 (234kW)	↔ 🗑
Field Segment 1 (...)	684 (236kW)	↔ 🗑
Field Segment 1 (...)	720 (248kW)	↔ 🗑
Field Segment 1 (...)	720 (248kW)	↔ 🗑
Field Segment 1 (...)	630 (217kW)	↔ 🗑
Field Segment 1 (...)	684 (236kW)	↔ 🗑
Field Segment 1 (...)	684 (236kW)	↔ 🗑
Field Segment 1 (...)	720 (248kW)	↔ 🗑
Field Segment 1 (...)	720 (248kW)	↔ 🗑
Field Segment 1 (...)	684 (236kW)	↔ 🗑
Field Segment 11	252 (87kW)	↔ 🗑
Field Segment 11 (...)	270 (93kW)	↔ 🗑
Field Segment 13	29,330 (10.26...)	↔ 🗑
Field Segment 14	270 (93kW)	↔ 🗑
Field Segment 14 (...)	260 (90kW)	↔ 🗑
Field Segment 14 (...)	350 (121kW)	↔ 🗑
Field Segment 14 (...)	199 (69kW)	↔ 🗑

Recent View



# RESIDENTIAL SOLAR

One of Georgia's largest solar PV installers.

Over 40 Megawatts (MW) of installed solar capacity and 49 MW currently under design and/or construction.

# RESIDENTIAL SOLAR:



# RESIDENTIAL SOLAR:



**Solarize Tybee and Chatham County:** first Solarize program in the State

City promotes program through media, **grass roots community** events and gov't/ business channels (with installer participation)

**Limited** time to participate.

Price goes **down** as participation goes **up**.



# RESIDENTIAL SOLAR:



Hannah Solar was contracted as **exclusive** installer for **Solarize Tybee & Chatham County**

**600 Applicants**, 300 of which were determined to be good candidates

**62 home owners signed contracts** to install solar on their home

**340 kW total capacity** installed for homeowners through this program



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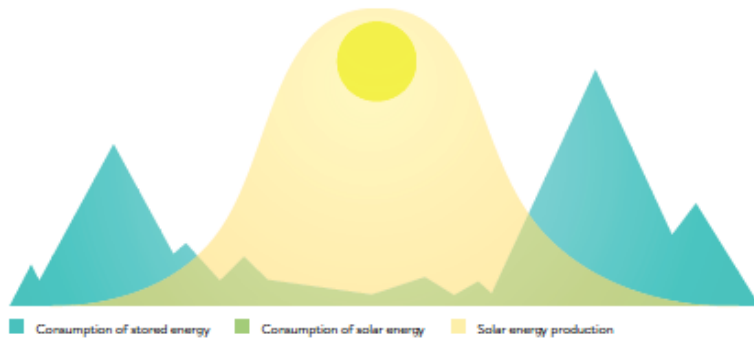
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# STORAGE

Installers of battery backup storage systems  
for commercial and residential PV Solar.

## Exclusive Partner with Sonnen batterie for back up Storage Solutions



Certified installer of TESLA  
Energy back up Storage  
Solutions

13.5 kWh capacity

Up to 135KWh and 50KW of  
Output.

Tesla commercial and utility  
scale Powerpacks also now  
available.



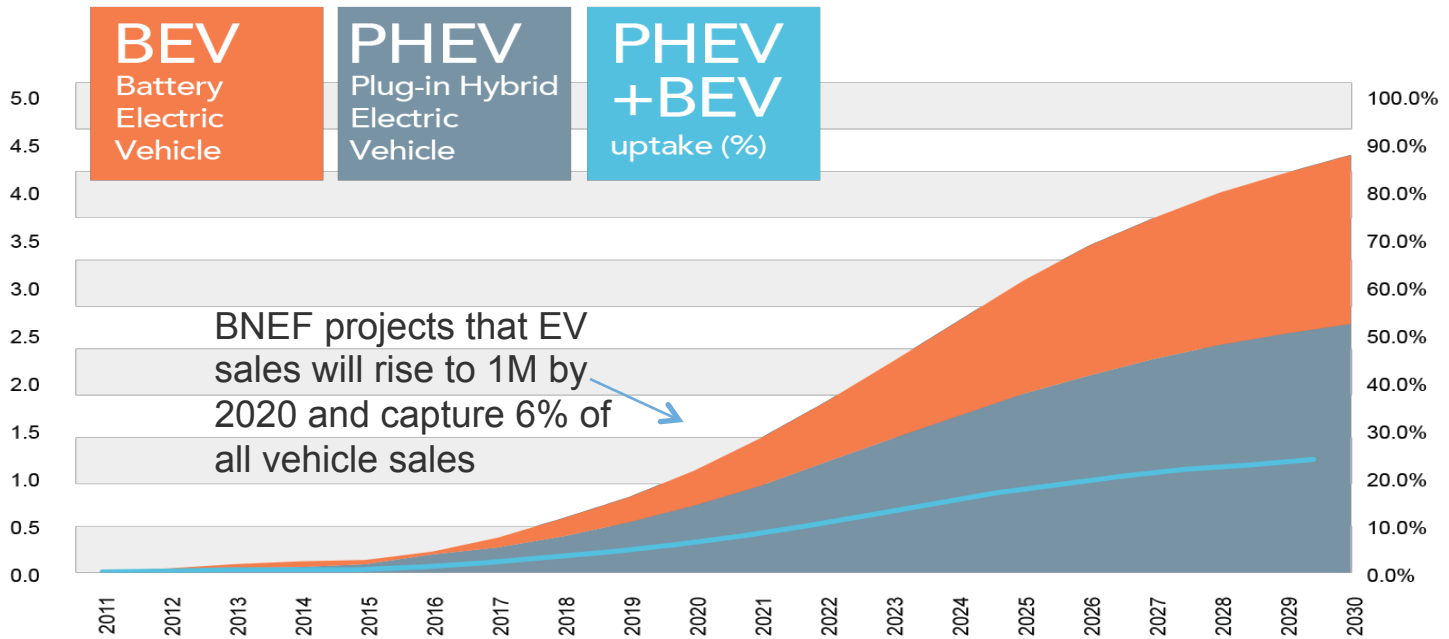


**EV**

**Largest EV charger installer in Georgia.  
Certified Resellers & Installers of ChargePoint Stations.**

**Serving: Workplace, Retail, Higher Ed, Property Mgmt. & Municipalities**

## US EV Sales Forecast, 2015-2030







# PV-4-EV

Combines solar and EV charging.



EV Charging Drives New Customers

Contemporary Appeal

Shaded Parking

Clean Electricity Production

Custom Application

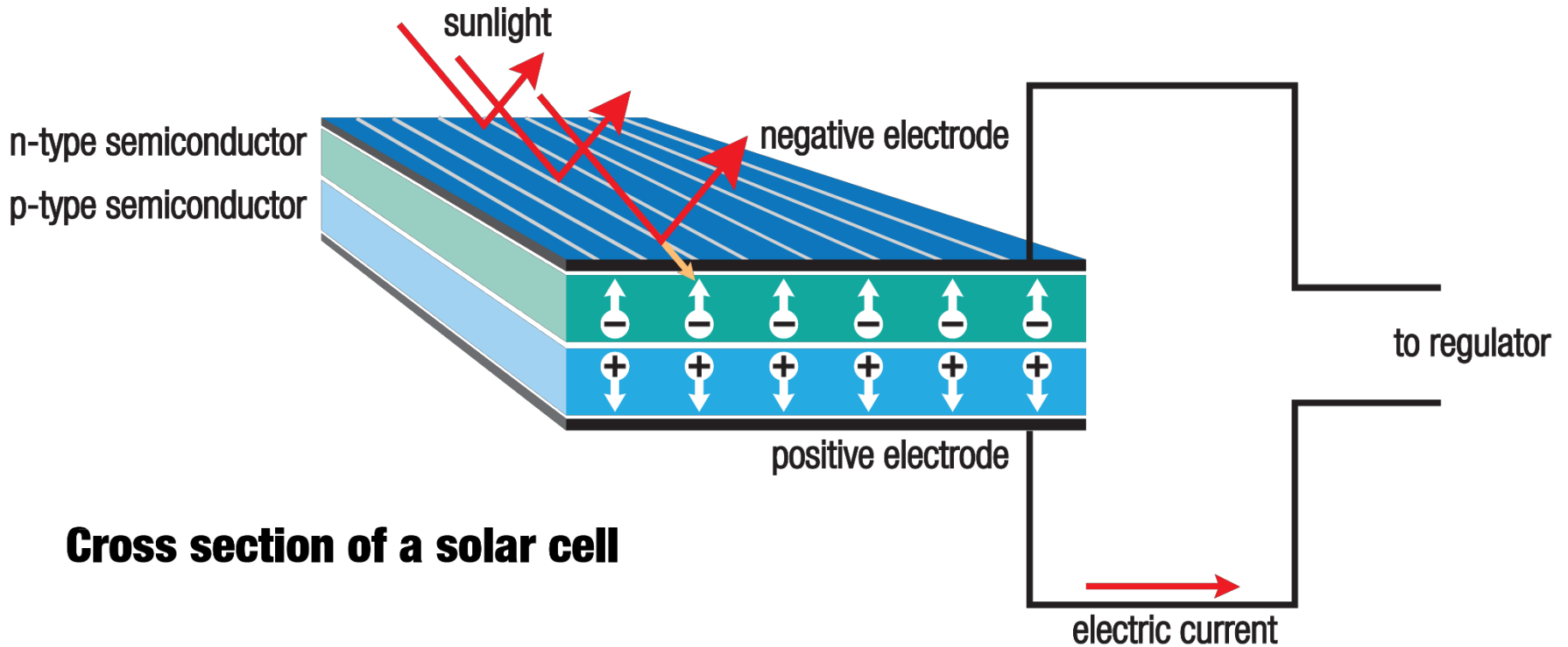
Increased Site Value



2 DCFC, 20 Level 2 ports, & 445kW PV Array.

# Solar 101: How Solar Works

# SOLAR 101: HOW SOLAR WORKS?



**Cross section of a solar cell**

# SOLAR 101: How Solar Works?



1

Solar PV Panels transform solar radiation into DC

2

Inverter converts the DC power into stable 240V AC

3

Electricity smart meter measures electricity imported / exported to and from the grid

4

Solar power used for household appliances

5

Monitoring System records energy consumption

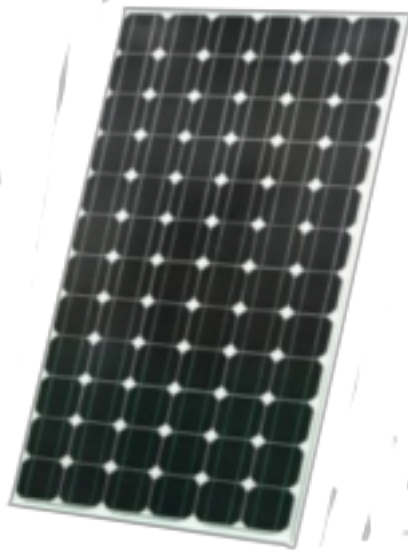
6

Surplus energy exported to the grid

# PV Solar: Primary Components



Polycrystalline



Monocrystalline



Hybrid



AllBlack

# PV Solar: Primary Components

## Racking



# PV Solar: Primary Components

## Inverters

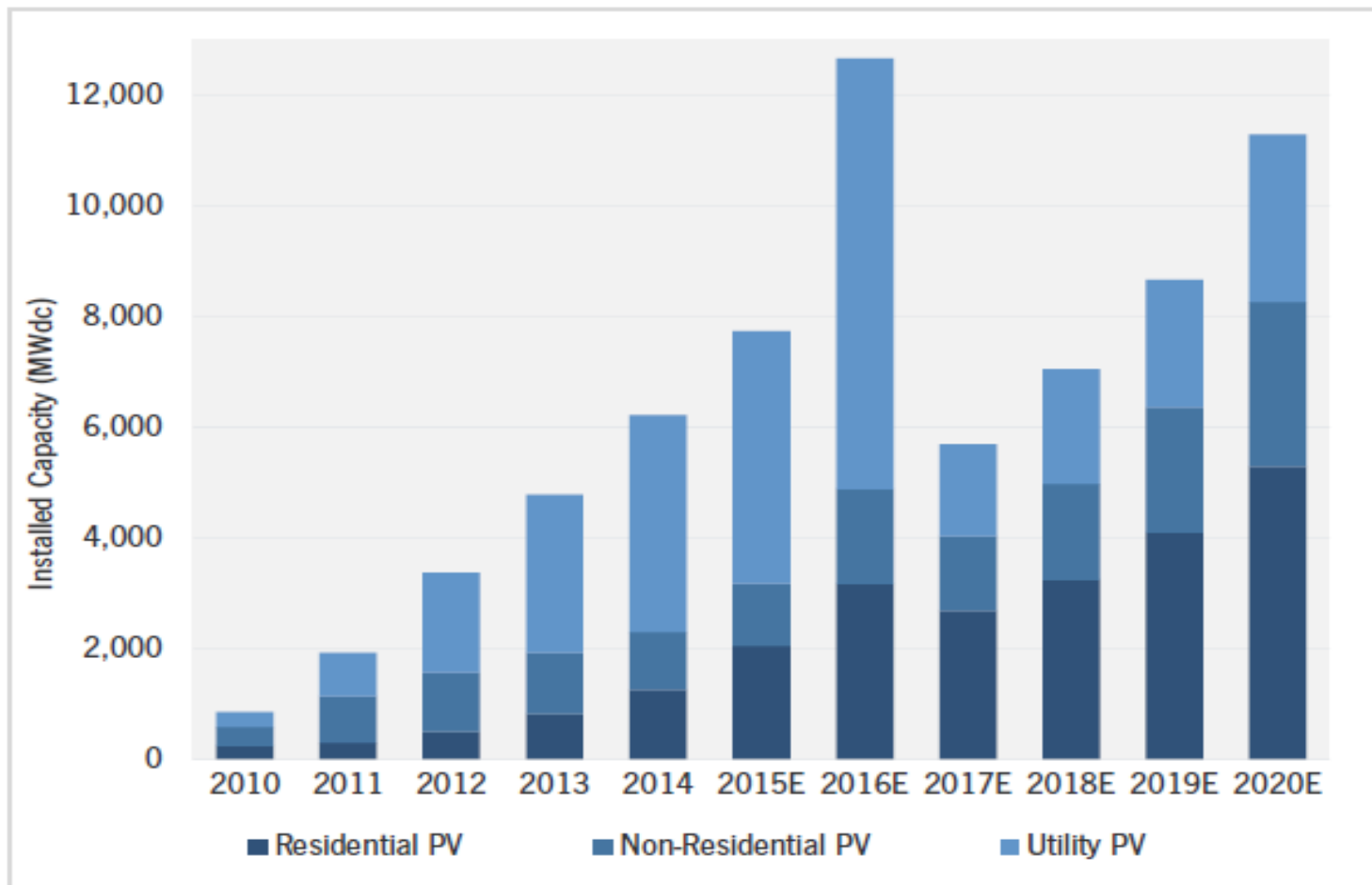




# Solar 101: PV Solar Market

# SOLAR 101: US PV Growth Forecast

Figure 2.9 U.S. PV Installation Forecast, 2010-2020E

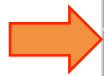


Source: GTM Research

# SOLAR 101: Where Georgia Stands?

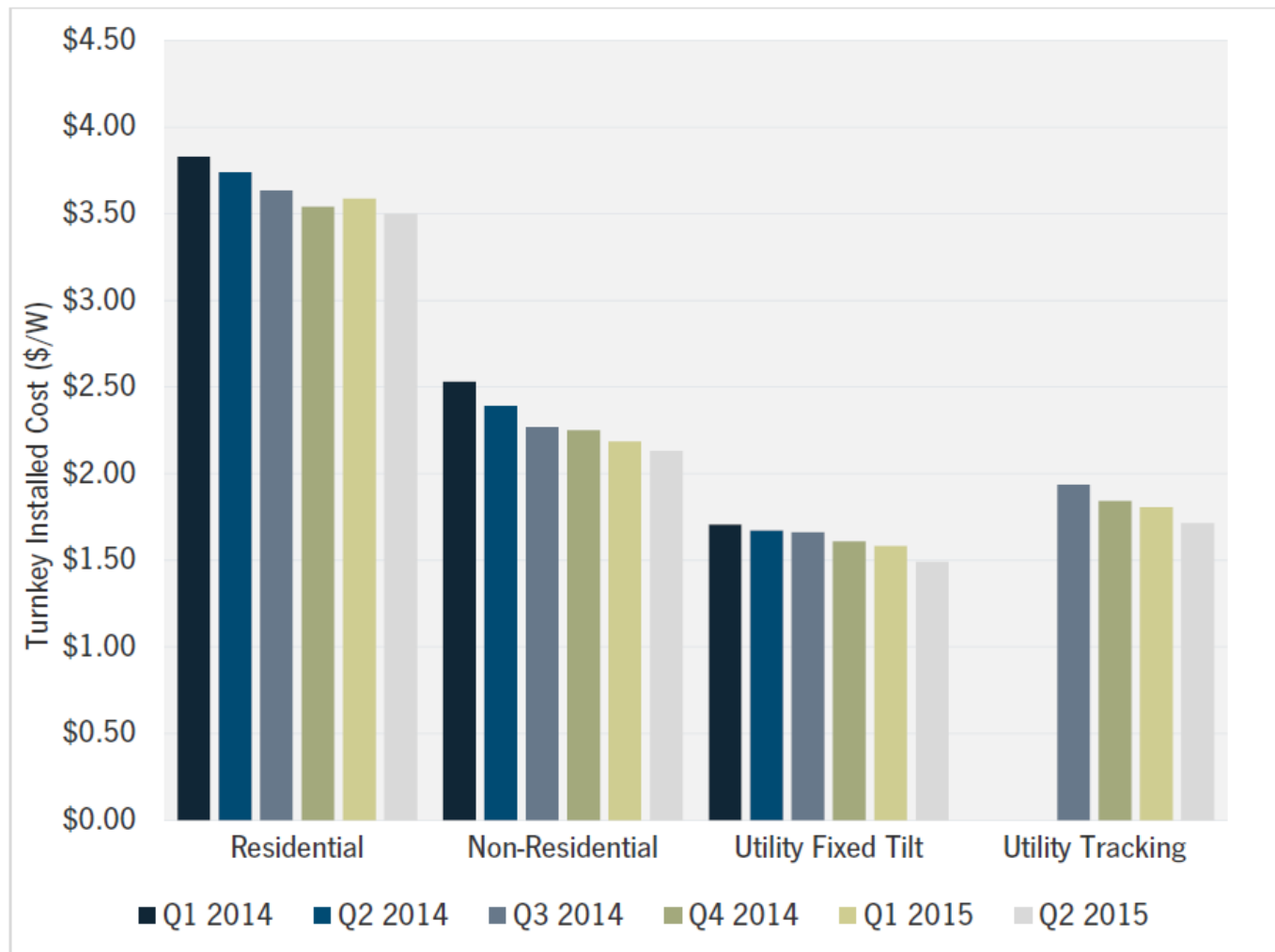
State	Rank			Installations (MW <sub>ac</sub> )		
	Cumulative	2014	Q2 2015	Cumulative	2014	Q2 2015
California	1	1	1	10,279	3,549	840
North Carolina	4	2	2	1,088	397	76
Nevada	5	3	3	910	349	73
New York	7	7	4			
Massachusetts	6	4	5			
Arizona	2	5	6			
New Jersey	3	6	7			
Maryland	12	12	8			
Hawaii	8	9	9			
Georgia	14	16	10			
Colorado	9	13	11			
Connecticut	16	15	12			
Oregon	21	26	13			
Florida	15	20	14			
Texas	10	8	15			

Source: GTM/SEIA



# SOLAR 101: Installation Costs

Figure 2.3 Modeled U.S. National Average System Costs by Market Segment Source: GTM



# WHY CHOOSE SOLAR?

25 year systems =  
25 years worth of savings

Hedge Against Rising Utility Costs

Not Susceptible to Spikes in Demand

Increased Property Value

Low Maintenance



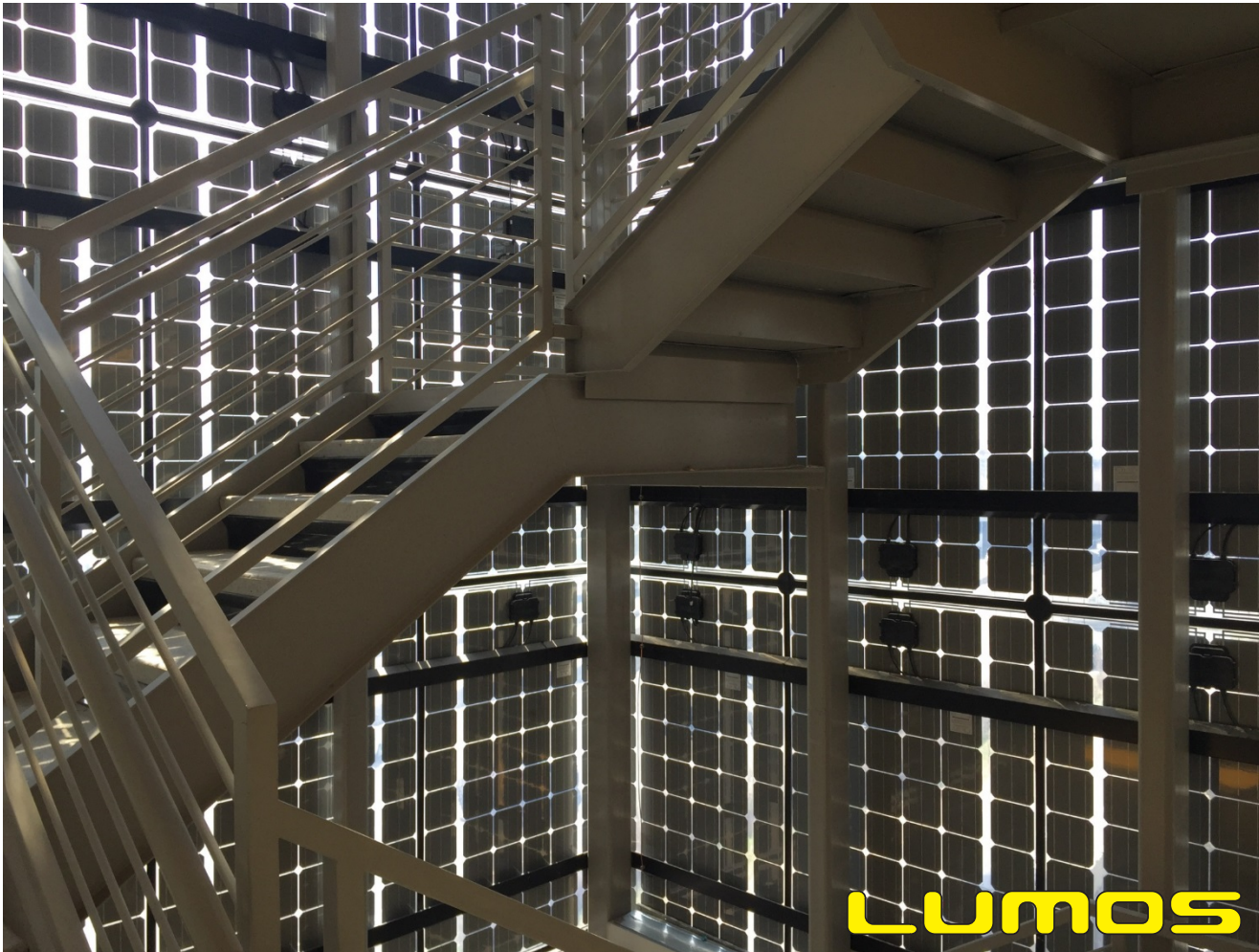
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# Designing with Solar

- Consider building shape, roof planes, & orientation.
  - East/West is a viable option
- Shading and/ or surrounding obstructions
- Electrical routing and load assessment
- Optimize roof tilt
  - optimal roof tilt varies depending on latitude
  - typical tilt for best production is between 10 and 20
- Consider vent placement
- Strong Roofing!
  - a typical array only adds \_\_\_ lbs/ sq. foot
  - Consider the weight of the installers
- Keep basic sizing guidelines in mind
  - 300-400 square feet per 5kW solar array
- Consider Roof type
- Penetrating and non-penetrating options
- Decorative design options

# Solar Works. And it can be beautiful.



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# Solar Works. And it can be beautiful.





**HANNAH  
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*Be A Solar Powerhouse.™*

**Thank you for this opportunity.**

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