



**TRIBAL COMMUNITY
DEVELOPMENT**

Seminole Tribe of Florida, Big Cypress & Brighton Reservations

**RURAL RESERVATION
RESILIENCY INITIATIVE**

**BY:
HARRY E. "SKIP" EDMONDSON**

Seminole Tribe of Florida Reservations

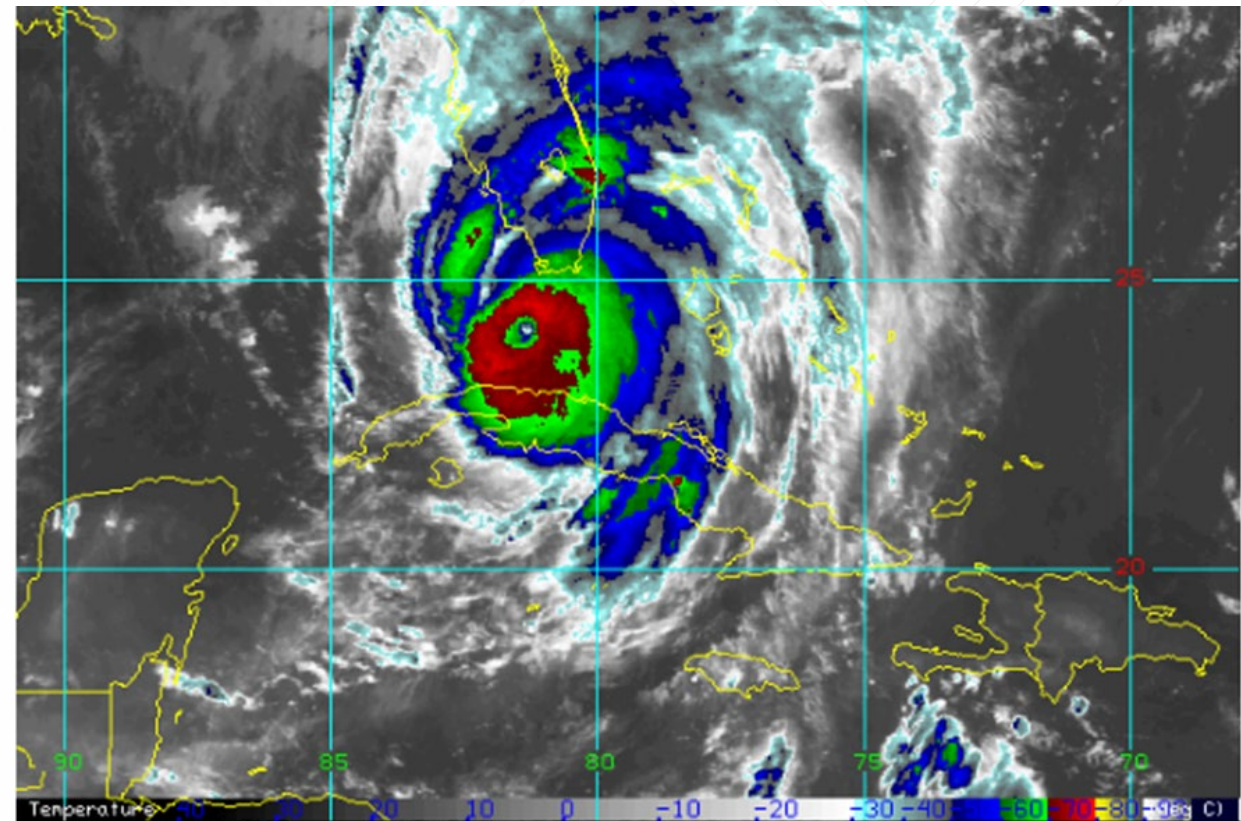
Seminole Tribe of Florida is a Federally Recognized Indian Tribe and is the only Tribe in America that never signed a peace treaty.

- **Approx. 4,240 Tribal members**
- **Approx. 94,555 acres land base**
- **Seven Reservations across Central and South Florida**
 - Big Cypress 56,752 acres
 - Brighton 35,805 acres
 - Fort Pierce 60 acres
 - Hollywood 497 acres
 - Immokalee 600 acres
 - Lakeland 802 acres
 - Tampa 39 acres



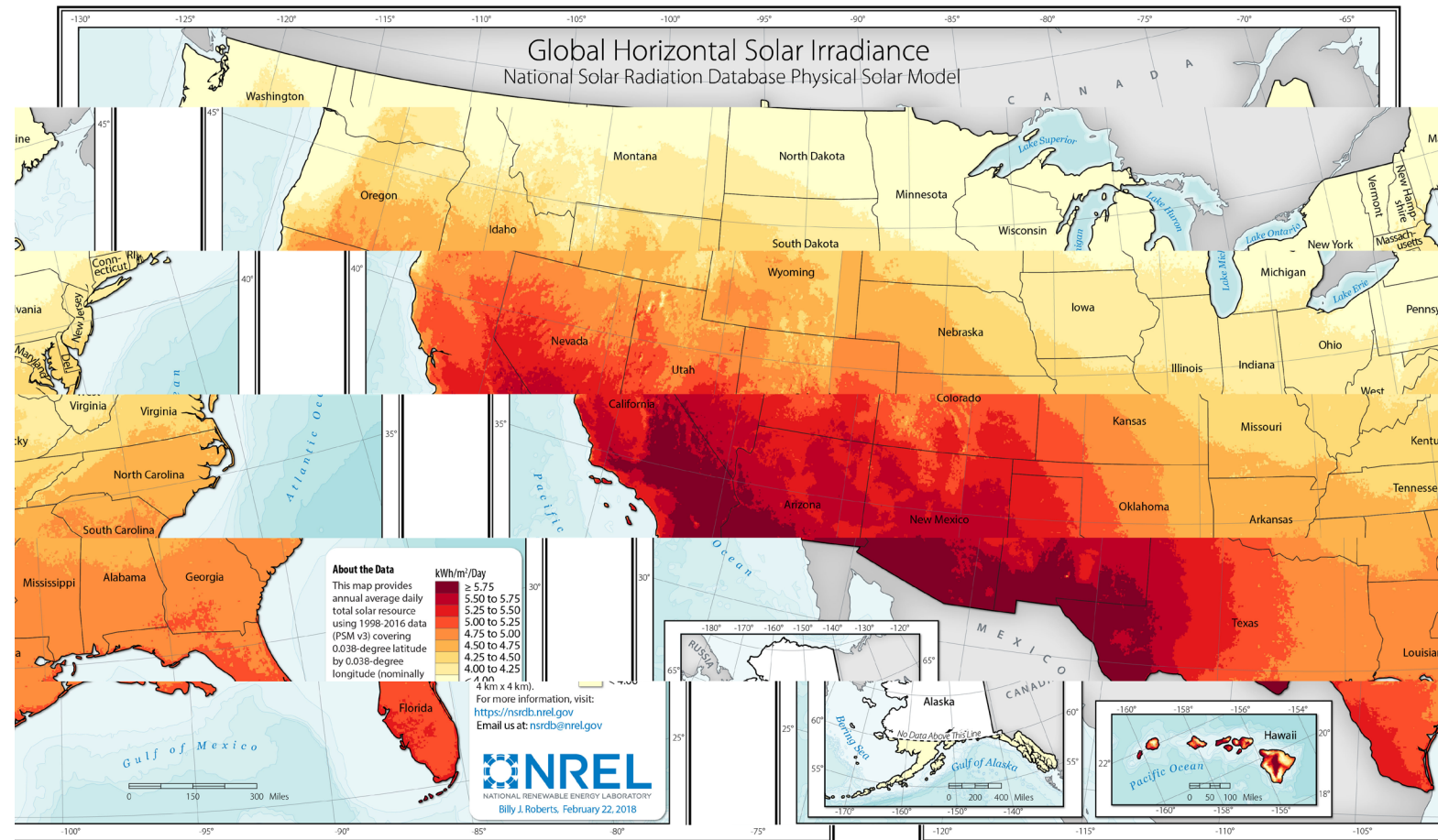
ISSUES – DEPENDENCY & WEATHER

- Hurricanes are large format, powerful forces of Nature that impact enormous Areas
- Electrical Grids are often knocked offline for Weeks
- Our Task, is to provide Resiliency for the Tribe



Source: [Hurricane Irma Local Report/Summary \(weather.gov\)](https://www.weather.gov)

WHY SOLAR!?!



Florida has great potential for harnessing energy from the sun

BIG CYPRESS ADMINISTRATION BUILDING:

- DC SYSTEM SIZE – 103 kW
- WIND SPEED DESIGN – 139 mph
- GROUND MOUNTED SYSTEM
- NUMBER OF PANELS - 240
- BESS SIZE – 500 kWh



BIG CYPRESS SENIOR CENTER:

- DC SYSTEM SIZE – 40 kW
- WIND SPEED DESIGN – 139 mph
- CARPORT ARRAY
- NUMBER OF PANELS - 93
- BESS SIZE – 250 kWh



BC HEALTH CLINIC:

- DC SYSTEM SIZE – 170 kW
- WIND SPEED DESIGN – 147 mph
- ROOF MOUNTED AND CARPORT ARRAYS
- NUMBER OF PANELS - 396
- BESS SIZE – 500 kWh



BC PUBLIC SAFETY BUILDING:

- DC SYSTEM SIZE – 135 kW
- WIND SPEED DESIGN – 139 mph
- GROUND MOUNTED ARRAY
- NUMBER OF PANELS - 314
- BESS SIZE – 500 kWh



Project Challenges: Material Costs Escalation & Delays

PANDEMIC RELATED ISSUES:

- Project started in the midst of the pandemic and at the height of the Supply Chain disruptions
- Motorized Breakers 12+ Month Lead Time

- Total Contract Time: 771 days
- Total Contract Amount – \$3,529,811.00

NON-PANDEMIC RELATED ISSUES

- Redundant generators were required at Public Safety and Health Clinic facilities to reduce the chance of power interruptions
- Control Modifications on outdated, incompatible generators caused protracted Generator Rental Periods
- Operating Software modifications to synchronize sine waves between Utility, BESS, and Generators

Unforeseen Circumstances



Motorized Breaker missing UPS backup



External Antenna

Lessons Learned

- Ensure System Design will full fill the Needs of the End User
- Plan for the Time it takes for AHJ's to review the Plans
- Expect delays due to unforeseen circumstances and be flexible
 - Supply Chain Issues
- Keep DOE informed of Any Changes
- Underground locates are never 100% accurate
- Dry retention areas can be used for installation of Solar Panel Arrays
 - Try to time work outside the rainy season
- Have alternative plan in place in case of pile refusals

- Watch for Damages to any Roofing Systems during Installation
- Third party torque testing of connections is very important, especially with carports
- Start working on interconnection agreement early
- Expect resistance to service interruption for interconnection from facility users



Lessons Learned

- Existing Equipment, ie. Generators may not be compatible with the new Equipment
- Cellular modems are not very reliable when placed inside cabinets. Antennae are required
- Commissioning can take much longer than anticipated
- Motorized breakers were missing the UPS module from the Factory

- Punch list items can take longer than anticipated to get completed
- Getting real time access to monitoring system can take longer than anticipated



SOLAR WORKS!



Energy Usage Comparison: Before and after - Public Safety Building

NNNN

Page 1 of 1

GLADES
Electric Cooperative, Inc.

PO Box 519
Moore Haven FL 33471-0519

"Neighbors Working for Neighbors"

Pay By Phone: 1-844-201-7203
Office Hours: Monday-Thursday 7am - 6pm
Phone: 863-946-6200 (24/7 Outage Reporting)
Fax: 1-866-233-2117 www.gladeselectric.com

SEMINOLE TRIBE OF FLORIDA
BUILDING & GROUNDS
6300 STIRLING ROAD
HOLLYWOOD FL 33024-2153

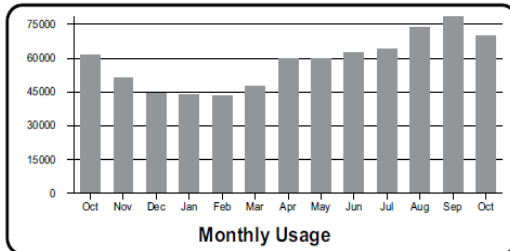
Account Number 108000016	
Statement Date 10/28/2022	Due Date 11/20/2022

Billing Summary	
Balance From Last Billing	11,357.75
Payment Received 10/20/22	11,357.75 CR
Balance Forward	0.00
Current Charges	10,247.37
Account Balance	10,247.37

Messages	
Enroll in paperless billing to enter our quarterly drawing for a \$100 bill credit. Call us at 863-946-6200 or sign up in SmartHub.	

\$10,247.37

Serv Add: 30300 JOSIE BILLIE HWY				Rate Class: 80		Rate: Large Power Service Demand		
Meter	Type	From	To	Days	Prev Rdg	Pres Rdg	Usage	Multiplier
60861334	kWh	09/23/22	10/23/22	30	71804	72676	69760	80
	KW					1.79	143	80



Details of Electric Charges

kWh Charge	69,760 kWh @ 0.10400	7,255.04
Power Cost Adjustment	69,760 kWh @ 0.00935	652.26
TIER Tracker	69,760 kWh @ 0.01130	788.29
Demand Charge	143.20 kW @ 8.00	1,145.60
Base Charge		150.00
Florida Gross Receipts		256.18
Total This Service		10,247.37

To Be Paid by Draft

Current Month Average kWh Per Day: 2325
Current Average Cost Per Day: \$341.58

Average Temperature: 78 F

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gladeselectric.com | 863-946-6200

SEMINOLE TRIBE OF FLORIDA
BUILDING & GROUNDS
6300 STIRLING ROAD
HOLLYWOOD FL 33024-2153
ACCOUNT NUMBER: 108000016

See back of bill for account summary and payment options

Message Center

- The SmartHub website is getting a new look on December 12. Log on with your computer to gladeselectric.smarthub.coop to check out the simplified design.
- Shorter days and longer nights are coming, but we have outdoor lighting solutions to help. Call us at 863-946-6200 for details or to report maintenance needs for existing lighting.
- Enroll in paperless billing to enter our quarterly drawing for a \$100 bill credit. Call us at 863-946-6200, sign up in the SmartHub app, or use the contact form on our website.
- High-speed fiber internet is coming to all GEC members. For details, visit www.conexonconnect.com or call 844-542-6663.

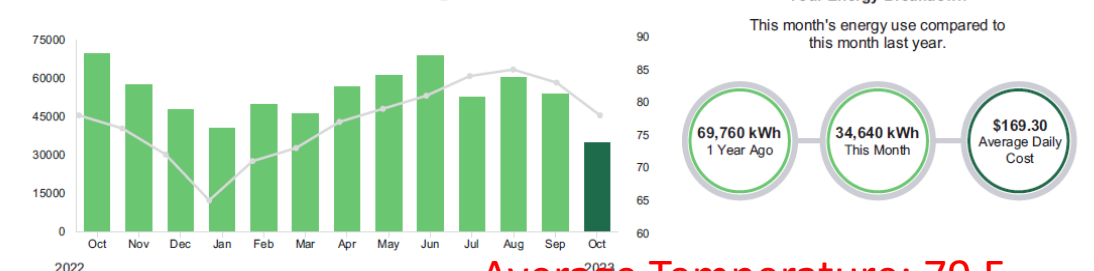


\$5,079.08

Your Energy Snapshot

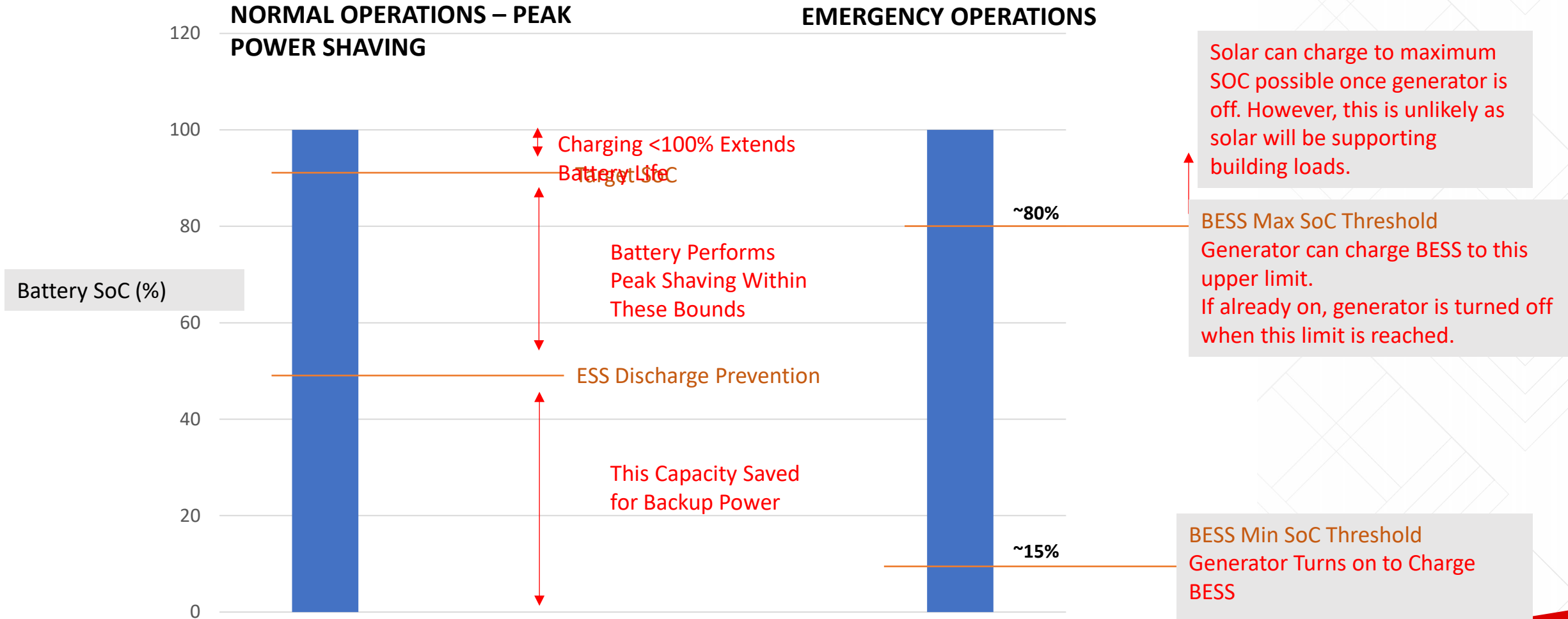
Learn more at gladeselectric.smarthub.coop or download the SmartHub app.

KILOWATT HOURS Average Outdoor Temperature (°F) TEMPERATURE



Average Temperature: 79 F

Battery State of Charge (SoC) Thresholds



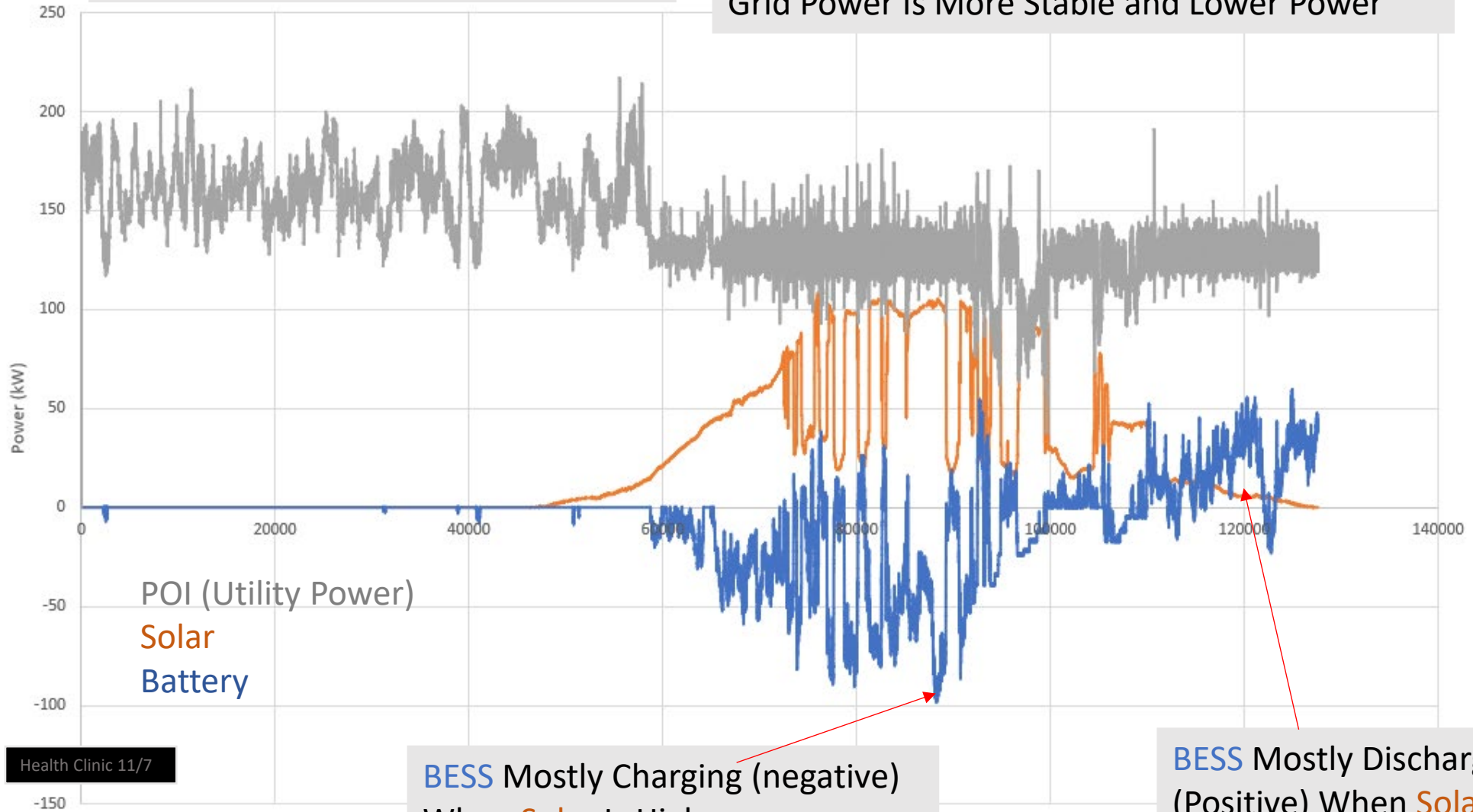
*Values on graph are for reference.



SECONDARY BENEFITS – GRID STABILIZATION!

Grid Power - Notice High Power Peaks When Solar/BESS OFF

When Solar and BESS Online, Grid Power Is More Stable and Lower Power



BESS Mostly Charging (negative) When Solar Is High

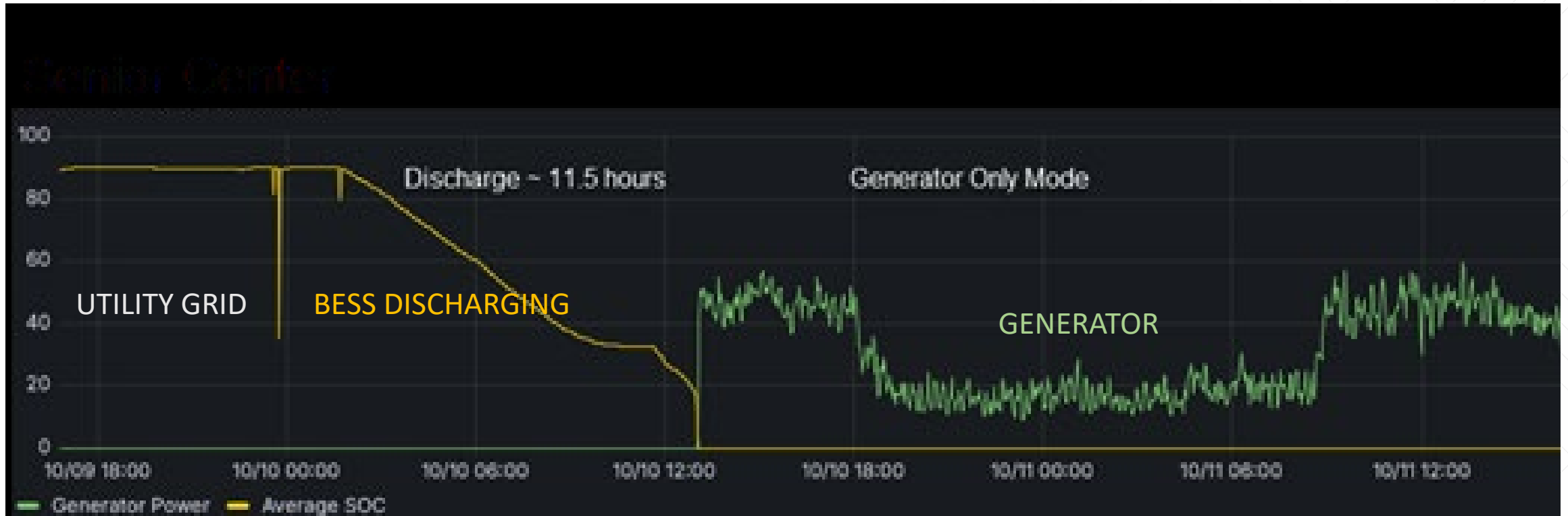
BESS Mostly Discharging (Positive) When Solar Is Low

Case Study: Hurricane Milton

- Hurricane Milton 09 Oct 24
- The System was Tested
- BC was without Grid power for 4 days
- System Operationally, Exceeded expectations

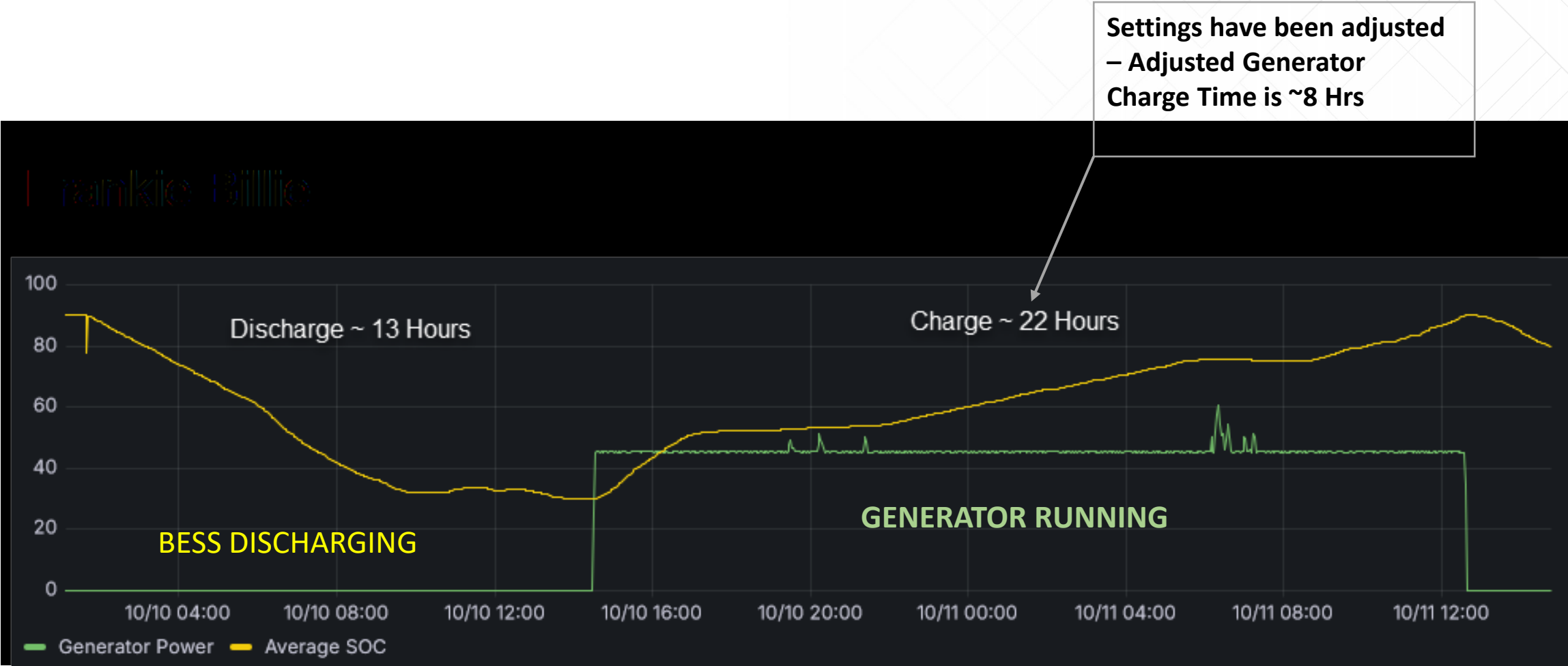


Performance During and After Hurricane Milton



Senior Center 10Oct24

Performance During and After Hurricane Milton



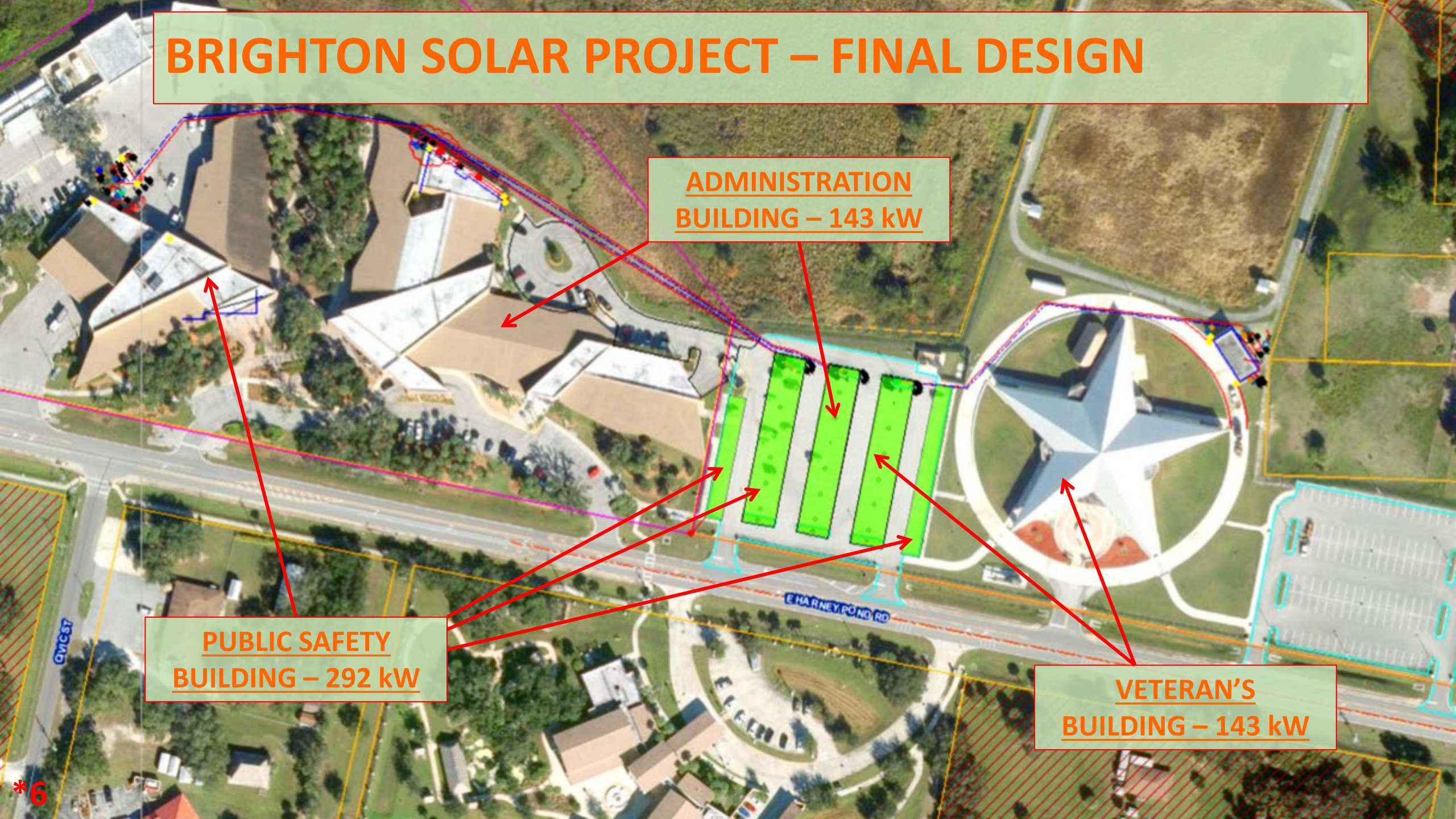
ADMINISTRATION BUILDING 10Oct24

BRIGHTON SOLAR PROJECT – FINAL DESIGN

ADMINISTRATION
BUILDING – 143 kW

PUBLIC SAFETY
BUILDING – 292 kW

VETERAN'S
BUILDING – 143 kW





Construction Photos

Construction Photos



Project Partners

- Seminole Tribe of Florida
- DOE Office of Indian Energy
- Consultants (Baker Tilly, Sandia Labs, Jacobs Engineering Group)
- Contractor (Advanced Green Technologies)
- Glades Electric



Closing Thoughts

GOING SOLAR

What you need to know about Solar Energy

Every second, our sun produces enough energy to sustain Earth's needs for 500,000 years.

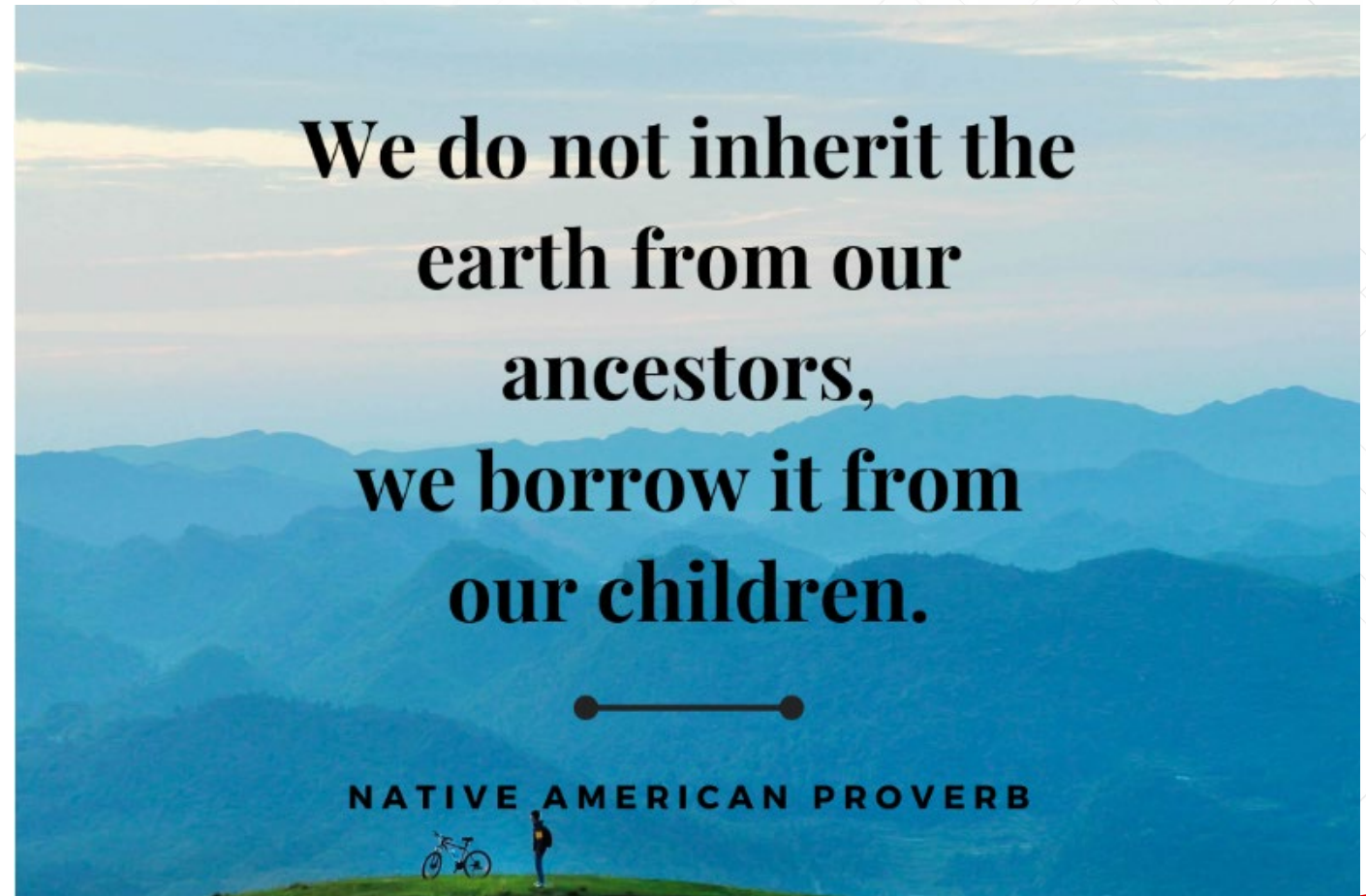
How do we harness this power?

SOLARIZE IT

100 square miles of solar panels can supply enough energy to fuel the entire United States.



Charles Fritts invented the first solar cell. **1883** The first solar heated office building. **1955**



Source: <https://brandongaille.com/41-excellent-solar-energy-slogans-and-taglines/>

Source: <https://thedailyquotes.com/we-do-not-inherit-the-earth-from-our-ancestors-we-borrow-it-from-our-children/>



**TRIBAL COMMUNITY
DEVELOPMENT**

Thank You

ANY QUESTIONS?

ONE OF THE GREAT STRESSORS IN LIFE CAN BE DEALING WITH THE UNKNOWN.

- For the People living outside the metropolitan area, Energy can be one of those unknowns.
- External entities provide electricity to us, on less than reliable grids and raise their rates on their own volition.
- Another factor, at least in Florida, contributing to the Grid's reliability issues are Hurricanes

ONE OF LIFE'S GREATEST STRESSORS CAN BE DEALING WITH THE UNKNOWN.

- And with the Utility companies providing power on less than reliable grids.
- For People living outside the metropolitan area, Energy can be one of those unknowns.
- Another factor, at least in Florida, contributing to the Grid's reliability issues are Hurricanes

**FLORIDA IS THE
SUNSHINE STATE
AND IS IDEAL FOR
SOLAR!!!**

**To help Improve the Resiliency of
the Grid on our Big Cypress
Reservation, the Seminole Tribe
has installed Solar Systems on
Four of our Facilities**

- Initially, the Systems were supposed to use the existing Communications Network but over time this was seen as a potential Security Risk by our IT Department.
- So Cellular Modems had to be installed. The Cellular Modem could not Transmit from within the Steel Enclosure – An External Antenna was installed.

- **STATE OF CHARGE**

- **NORMAL OPERATION – PEAK POWER SHAVING**

- Peak Power Shaving performed between 50% & ~90%
- 50% of the BESS is Reserved in case of Outage

- **Emergency Backup**

- In the Event of an Outage the Batteries will discharge to ~15%. Then the Generator will turn on
- Generator will charge Batteries to the ~80% Upper Limit

**DUE TO THE SUCCESS OF THE BIG CYPRESS
SYSTEMS AND THE OPPORTUNITIES GIVEN TO
US BY THE DOE, THE SEMINOLE TRIBE IS
INSTALLING THREE MORE SYSTEMS IN THE
BRIGHTON RESERVATION**

- **EMPLOYEES AND TRIBAL MEMBERS WILL PARK UNDER THESE STRUCTURES**
- **WHILE THESE STRUCTURES MAY NOT BE WATERTIGHT, IT MAKES A BIG DIFFERENCE PARKING IN THE SHADE**

BIG CYPRESS NOTES

- PANEL BRAND/MODEL – HANWA 430W
- SYSTEM SIZES – 40kW TO 170kW

BRIGHTON NOTES

- PANEL BRAND/MODEL – TALESUN BIPRO 550W
- SYSTEM SIZES – 142kW & 292kW