

Seminole Tribe of Florida

Rural Reservation Resiliency Initiative

Big Cypress & Brighton Projects

PRESENTED BY:

CHERYL GIACOBBE

HARVEY RAMBARATH



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. 90,030 acre land base

- Big Cypress 52,338 acres
- Brighton 35,805 acres
- Fort Pierce 60 acres
- Hollywood 497 acres
- Immokalee 600 acres
- Lakeland 692 acres
- Tampa 39 acres



Seminole Tribe of Florida

- Exercised sovereign authority over territories in Southeast US from time immemorial
- Resisted US political and military removal efforts throughout 19th Century
- Organized under Indian Reorganization Act in 1957
 - IRA Section 16: Tribal Council governs Seminole Tribe of Florida
 - IRA Section 17: Board of Directors manages business arm, Seminole Tribe of Florida, Inc. ("STOF, Inc.")
- Recognized for leadership in advancing sovereignty
 - First Smoke Shops (1976)
 - First High-Stakes Bingo (1979)





The Dependence Problem

- Tribe depends on outsiders for energy for governmental operations and economic development.
- Tribe has no authority over state-regulated utilities and are subject to rate increases and supply interruptions.
- Tribe's ability to plan long-term is impaired because of unknown future energy costs.



The Cost Problem

- Retail prices that utilities charge tribes are high and generally increasing.
- Even though natural gas has been cheaper, electric rates have generally continued to rise.
- Costs may rise as users leave utility system.



Impact of Hurricane Irma

- Hurricane Irma made landfall in August 2017 and impacted the entire State of Florida
- Hurricane Irma was extremely powerful and catastrophic
- Most of the Tribe's reservation communities, businesses and government operations were affected
- Several facilities across the Tribe's reservations sustained severe damage



Impact of Hurricane Irma (continued)

- The Tribe had to close and discontinue its government operations for several weeks and in some cases months until recovery
- There are approximately 680 residents living in the BC Reservation, which were particularly impacted by grid resiliency issues and outages
- In the aftermath of Hurricane Irma the Tribe was the largest purchaser of propane and diesel for generators in Florida
- Even commercial generators are not designed to run for weeks non stop



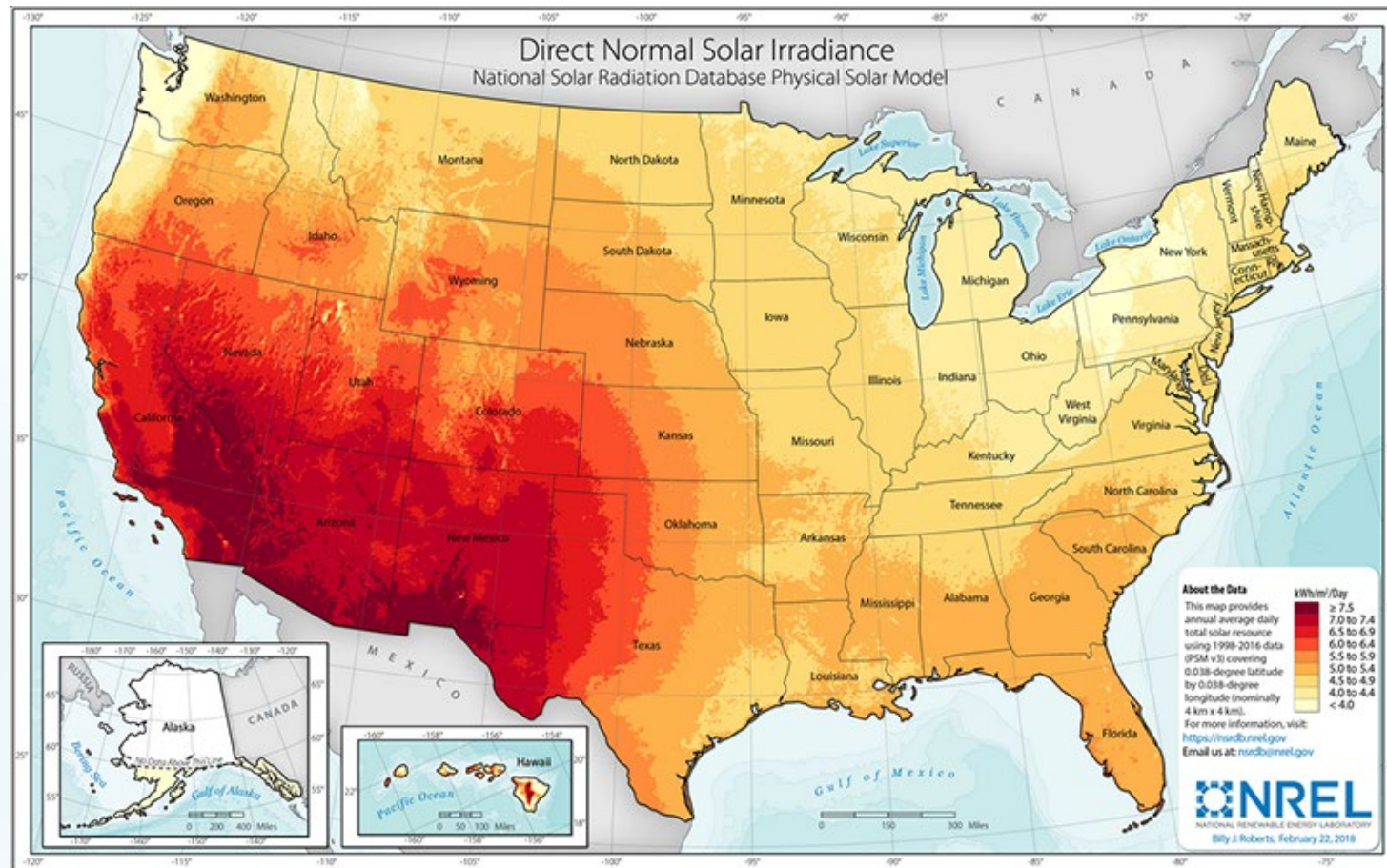
Seminole Tribe of Florida Renewable Energy Committee

- In January 2018 the Chairman and the Tribal Council formed the Renewable Energy Committee with key people across the Tribe including a representative from the Chairman's office
- The Committee was charged with:
 - Ensuring power continuity across critical Tribal operations to the extent possible during and after a storm
 - Identifying solutions to mitigate and limit power outages as a result of a storm
 - Identifying opportunities that would allow the Tribe to be as self sufficient as possible in meeting its energy demands

Potential for Solar Energy Generation

The map displays the potential for solar energy generation across the United States based on Direct Normal Solar Irradiance (DNI). The color scale indicates the annual average daily total solar resource in kWh/m²/day, ranging from less than 4.0 (yellow) to greater than or equal to 7.5 (dark red). The highest potential is found in the southwestern United States, particularly in California, where values reach above 7.5 kWh/m²/day. Other regions with high potential include Nevada, Arizona, and parts of New Mexico and Texas. The potential decreases significantly towards the northern and eastern parts of the country, with values below 4.0 kWh/m²/day found in states like Washington, Oregon, Idaho, Montana, North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, Arkansas, Louisiana, Mississippi, Alabama, Georgia, Florida, and most of the Northeast and Midwest.

- This map shows U.S. average annual solar radiation in kilowatthours (kWh) per square meter per day (kWh/m²/d) for direct normal irradiance (DNI).
- Florida is the Sunshine State and has great potential for harnessing energy from the sun



- This map shows U.S. average annual solar radiation in kilowatthours (kWh) per square meter per day (kWh/m²/d) for direct normal irradiance (DNI).
- Florida is the Sunshine State and has great potential for harnessing energy from the sun



BC Solar Project Overview

- The Seminole Tribe of Florida will design and build approximately 445 kW of solar facilities and 1,510 kWh battery energy storage system (BESS), transfer switches and control systems that will serve 4 essential facilities in the Big Cypress Reservation.
- The systems will be interconnected to the grid and the backup generators
- During outage BESS will be able to run the facilities for approx. 3 hours before generator kicks in
- Generator runs facility and recharges BESS then cuts off and switches over to BESS during extended outages



Project Participants

- DOE Office of Indian Energy
- Chairman & Tribal Council
- Executive & Senior Management Staff
- Consultants (Baker Tilly, Sandia Labs)
- Glades Electric
- Tribal Members



Project Status & Past Accomplishments

➤ Status:

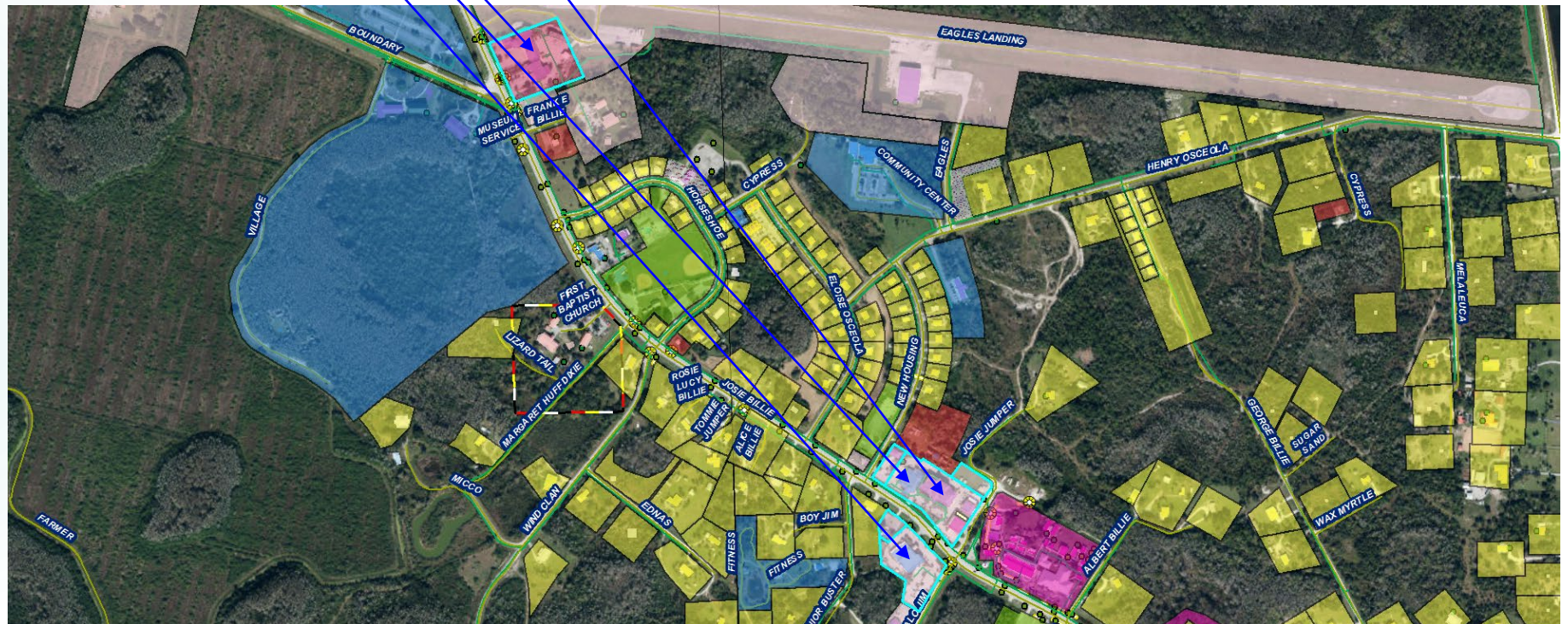
- Design Build contract executed and NTP issued 9/30/2021
- Schematic Design received 10/22/2021 and being reviewed by STOF, Baker Tilly and Sandia

➤ Past Accomplishments:

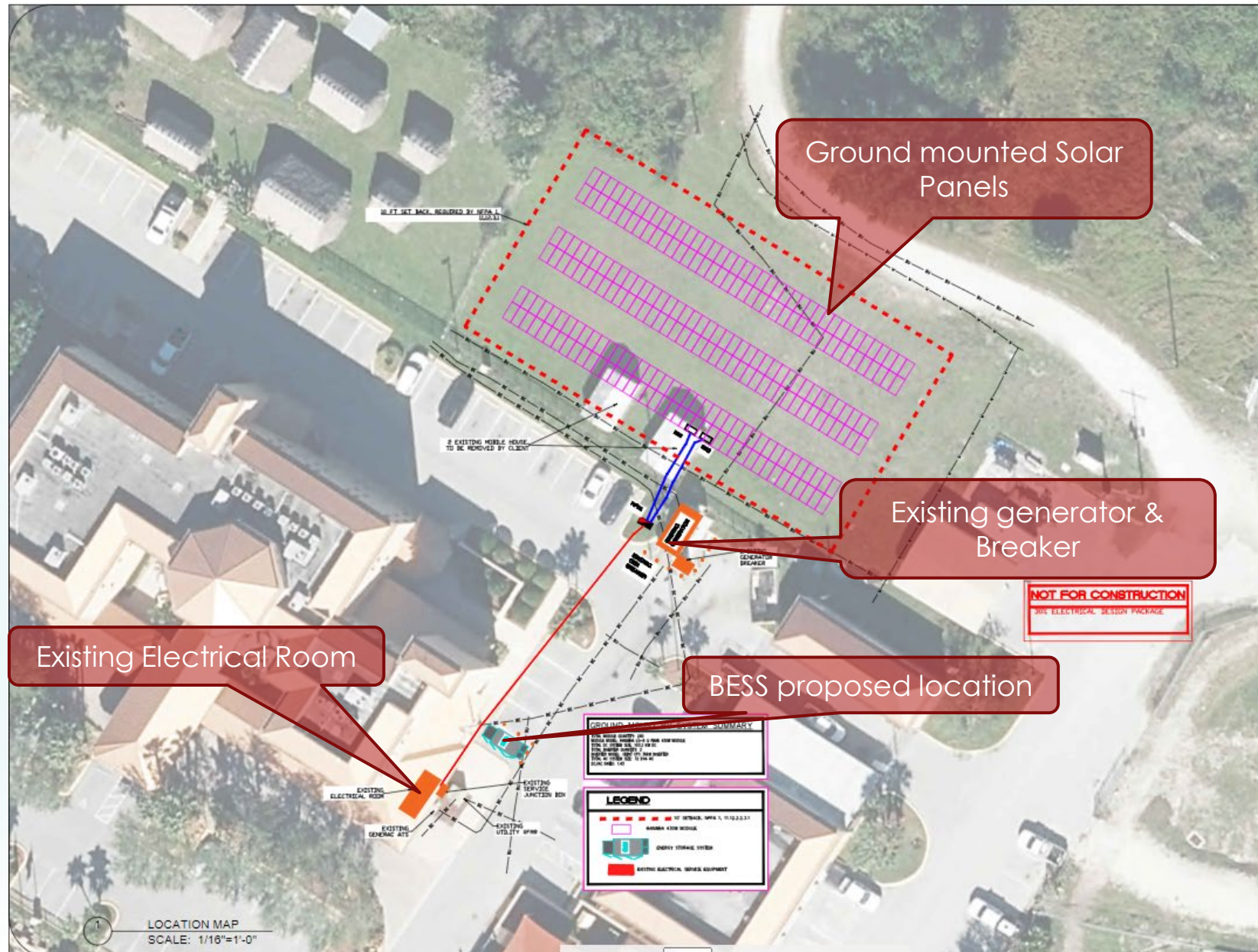
- Tribe awarded DOE Grant 2018
- Reevaluated needs for each facility and modified scope of project with approval from DOE
- Developed RFP and Design Build Contract Template for this project
- Advertised RFP 2020 and selected contractor 2021

Project Locations and Needs

<u>Big Cypress</u>	<u>kW Peak Demand</u>	<u>Battery Peak Power, kW</u>	<u>Battery Capacity, kWh</u>	<u>Type of Solar Mount</u>	<u>Solar Capacity, kW dc</u>	<u>Solar kWh, year 1 estimate</u>	<u>Percent of Building's annual kWh from Solar</u>
Big Cypress Frank Billie Field Office	138.9	180.0	320	Carport	100	159,600	32%
Big Cypress Senior Center	83.9	110.0	150	Carport	40	63,840	28%
Big Cypress Health Clinic	201.9	260.0	640	Roof	170	271,320	22%
Big Cypress Public Safety Complex	140.3	180.0	400	Ground & Carport	135	215,460	32%
TOTALS	564.9 kW	730.0 kW	1510 kWh		445 kW	710,220 kWh	



BC Frank Billie Field Office: Schematic Design



**FRANK BILLIE
ADMINISTRATION**

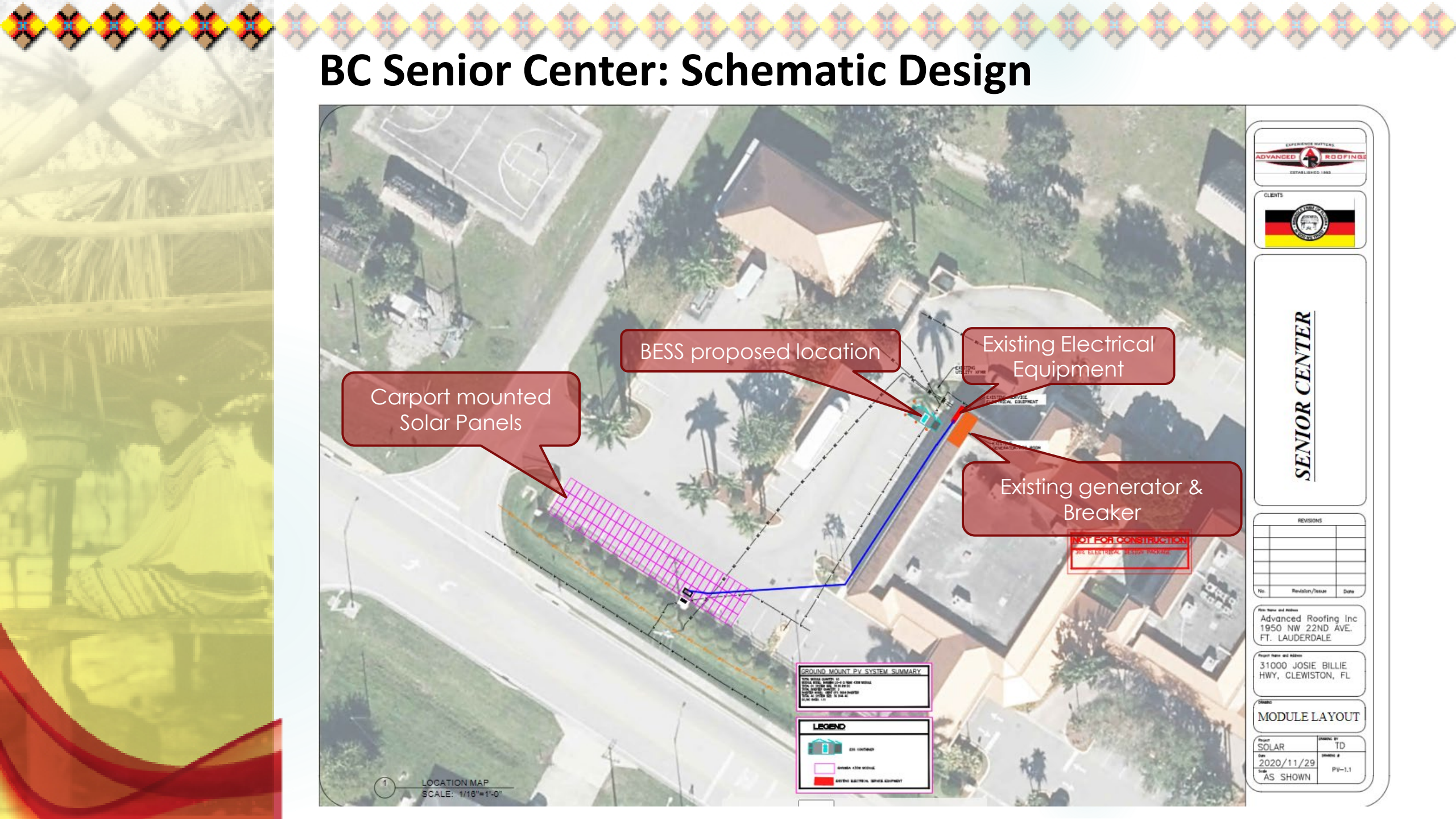
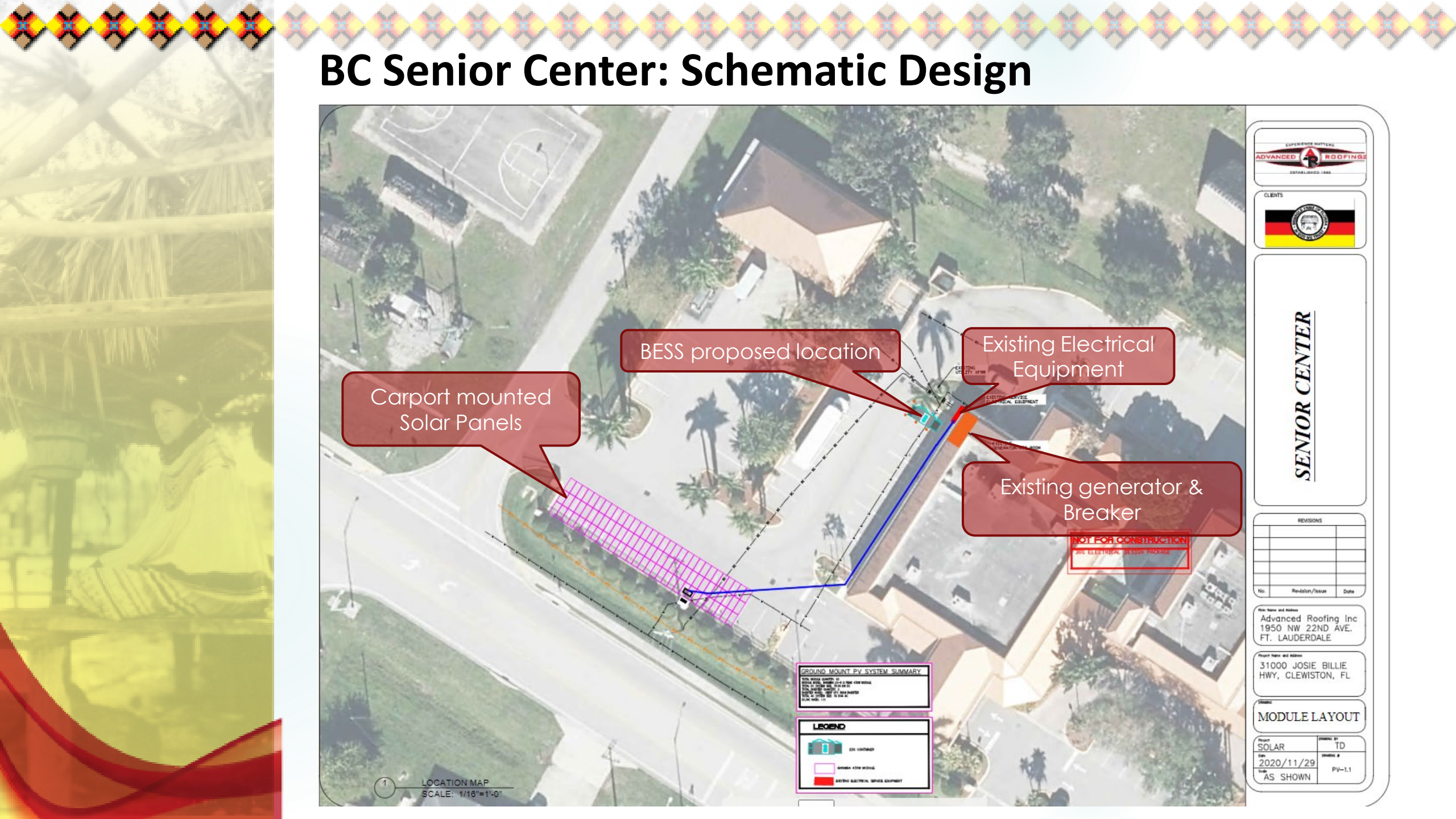
REVISIONS		
No.	Revision/Issue	Date

Plan Name and Address
Advanced Roofing Inc
1950 NW 22ND AVE.
FT. LAUDERDALE

Project Name and Address
31277 JOSIE BILLIE
HWY. CLEWISTON,
FL 33440

MODULE LAYOUT

Project SOLAR	Drawn by TD
Date 2021/10/22	Issued by PV-1.1
Scale AS SHOWN	

[illegible]

BC Senior Center: Schematic Design

Carport mounted Solar Panels

BESS proposed location

Existing Electrical Equipment

Existing generator & Breaker

NOT FOR CONSTRUCTION
SEE ELECTRICAL DESIGN PACKAGE

GROUND MOUNT PV SYSTEM SUMMARY

Item	Description	Quantity
1	Carport Mounted Solar Panels	1,000
2	BESS Proposed Location	1
3	Existing Electrical Equipment	1
4	Existing generator & Breaker	1

LEGEND

- Carport
- Solar Module
- Existing Electrical Equipment

REVISIONS

No.	Revision/Issue	Date

Project Name and Address:
Advanced Roofing Inc
1950 NW 22ND AVE.
FT. LAUDERDALE

Project Name and Address:
31000 JOSIE BILLIE HWY, CLEWISTON, FL

Module Layout

Project	Drawing ID
SOLAR	TD

Date: 2020/11/29
By: AS SHOWN
Sheet #: PV-1.1

BC Senior Center: Schematic Design

BC Senior Center: Schematic Design

Carport mounted Solar Panels

BESS proposed location

Existing Electrical Equipment

Existing generator & Breaker

NOT FOR CONSTRUCTION
SEE ELECTRICAL DESIGN PACKAGE

GROUND MOUNT PV SYSTEM SUMMARY

Item	Description	Quantity
1	1000W MONO PV MODULE	1000
2	1000W MONO PV MODULE	1000
3	1000W MONO PV MODULE	1000
4	1000W MONO PV MODULE	1000
5	1000W MONO PV MODULE	1000
6	1000W MONO PV MODULE	1000
7	1000W MONO PV MODULE	1000
8	1000W MONO PV MODULE	1000
9	1000W MONO PV MODULE	1000
10	1000W MONO PV MODULE	1000

LEGEND

- EXIST. EQUIPMENT
- BATTERY ARRAY MODULE
- EXISTING ELECTRICAL SERVICE EQUIPMENT

LOCATION MAP
SCALE: 1/16"=1'-0"

REVISIONS

No.	Revision/Issue	Date

SENIOR CENTER

Advanced Roofing Inc
1950 NW 22ND AVE.
FT. LAUDERDALE

31000 JOSIE BILLIE HWY, CLEWISTON, FL

MODULE LAYOUT

Project	Drawn By
SOLAR	TD

Date	Sheet #
2020/11/29	PV-1.1

As Shown
AS SHOWN

BC Senior Center: Schematic Design

BC Senior Center: Schematic Design

Carport mounted Solar Panels

BESS proposed location

Existing Electrical Equipment

Existing generator & Breaker

NOT FOR CONSTRUCTION
SEE ELECTRICAL DESIGN PACKAGE

GROUND MOUNT PV SYSTEM SUMMARY

LEGEND

- EXIST. OUTLETS
- BATTERY ARRAY MODULE
- EXISTING ELECTRICAL SERVICE EQUIPMENT

1 LOCATION MAP
SCALE: 1/16"=1'-0"

REVISIONS		
No.	Revision/Issue	Date

File Name and Address:
Advanced Roofing Inc
1950 NW 22ND AVE.
FT. LAUDERDALE

Project Name and Address:
31000 JOSIE BILLIE
HWY, CLEWISTON, FL

Drawn:
MODULE LAYOUT

Project	Drawn By
SOLAR	TD

Date:
2020/11/29

Drawn By:
AS SHOWN

Sheet #:
PV-1.1

BC Senior Center: Schematic Design

BC Senior Center: Schematic Design

Carport mounted Solar Panels

BESS proposed location

Existing Electrical Equipment

Existing generator & Breaker

NOT FOR CONSTRUCTION
ALL ELECTRICAL DESIGN PACKAGE

GROUND MOUNT PV SYSTEM SUMMARY

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LEGEND

- Carport
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LOCATION MAP
SCALE: 1/16"=1'-0"

REVISIONS

No.	Revision/Issue	Date

SENIOR CENTER

Advanced Roofing Inc.
1950 NW 22ND AVE.
FT. LAUDERDALE

Project Name and Address:
31000 JOSIE BILLIE HWY, CLEWISTON, FL

Module Layout

Project	Drawing #
SOLAR	TD

Date: 2020/11/29
By: AS SHOWN
Sheet #: PV-1.1

BC Senior Center: Schematic Design

BC Senior Center: Schematic Design

Carport mounted Solar Panels

BESS proposed location

Existing Electrical Equipment

Existing generator & Breaker

NOT FOR CONSTRUCTION
ALL ELECTRICAL DESIGN PACKAGE

GROUND MOUNT PV SYSTEM SUMMARY

LEGEND

- EXIST. OUTLETS
- BATTERY ARRAY MODULE
- EXISTING ELECTRICAL SERVICE EQUIPMENT

1 LOCATION MAP
SCALE: 1/16"=1'-0"

SENIOR CENTER

REVISIONS

No.	Revision/Issue	Date

Prep Name and Address:
Advanced Roofing Inc
1950 NW 22ND AVE.
FT. LAUDERDALE

Project Name and Address:
31000 JOSIE BILLIE
HWY, CLEWISTON, FL

MODULE LAYOUT

Project	Drawing By
SOLAR	TD

Date: 2020/11/29
Sheet: AS SHOWN

Sheet: PV-1.1

BC Senior Center: Schematic Design

BC Senior Center: Schematic Design

Carport mounted Solar Panels

BESS proposed location

Existing Electrical Equipment

Existing generator & Breaker

NOT FOR CONSTRUCTION
ALL ELECTRICAL DESIGN PACKAGE

GROUND MOUNT PV SYSTEM SUMMARY

LEGEND

- BESS
- SOLAR ARRAY MODULE
- EXISTING ELECTRICAL SERVICE EQUIPMENT

SENIOR CENTER

REVISIONS

No.	Revision/Issue	Date

Advanced Roofing Inc.
1950 NW 22ND AVE.
FT. LAUDERDALE

Project Name and Address:
31000 JOSIE BILLIE HWY, CLEWISTON, FL

Module Layout

Project	Drawn By
SOLAR	TD

Date: 2020/11/29
Drawn By: AS SHOWN

Sheet #: PV-1.1

BC Senior Center: Schematic Design

BC Senior Center: Schematic Design

Carport mounted Solar Panels

BESS proposed location

Existing Electrical Equipment

Existing generator & Breaker

NOT FOR CONSTRUCTION
ALL ELECTRICAL DESIGN PACKAGE

GROUND MOUNT PV SYSTEM SUMMARY

Item	Description	Quantity
1	Carport Mounted Solar Panels	1,000
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LEGEND

- Carport
- Solar Module
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REVISIONS

No.	Revision/Issue	Date

Project Name and Address:
Advanced Roofing Inc
1950 NW 22ND AVE.
FT. LAUDERDALE

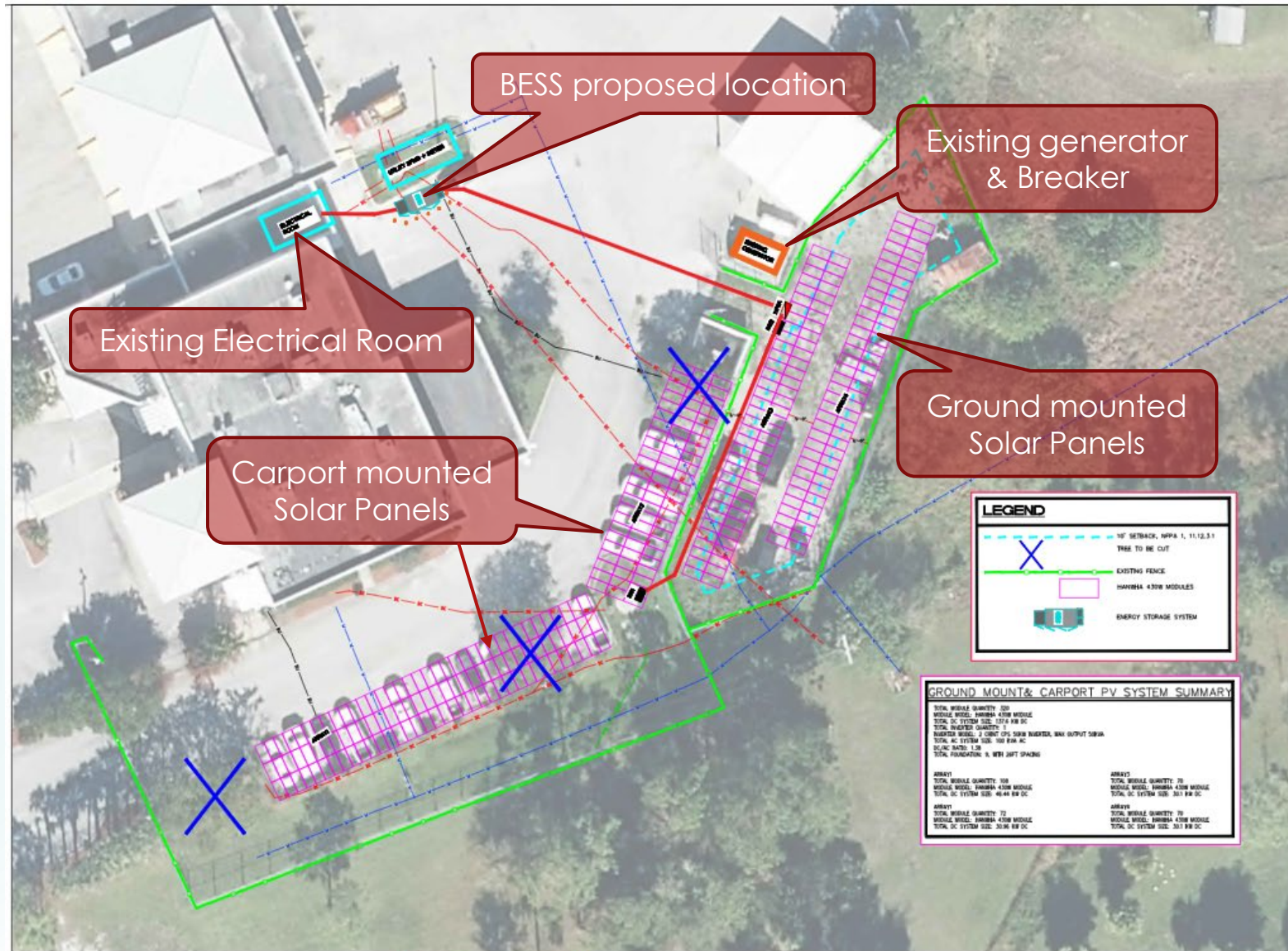
Project Name and Address:
31000 JOSIE BILLIE HWY, CLEWISTON, FL

Module Layout

Project	Drawing ID
SOLAR	TD

Date: 2020/11/29
By: AS SHOWN
Sheet #: PV-1.1

BC Public Safety Building: Schematic Design



BC Health Clinic: Schematic Design



1 SITE PLAN
SCALE: 1/16"=1'-0"

NOT FOR CONSTRUCTION
SOLAR ELECTRICAL DESIGN PACKAGE

ADVANCED ROOFING
ESTABLISHED 1988

CLIENTS

GORDON W. MYERS, P.E. # 36852
ADVANCED ROOFING CA NUMBER: 34376

BIG CYPRESS HEALTH CLINIC

REVISIONS

No.	Revision/Issue	Date

Site Name and Address
Advanced Roofing Inc
1950 NW 22ND AVE.
FT. LAUDERDALE

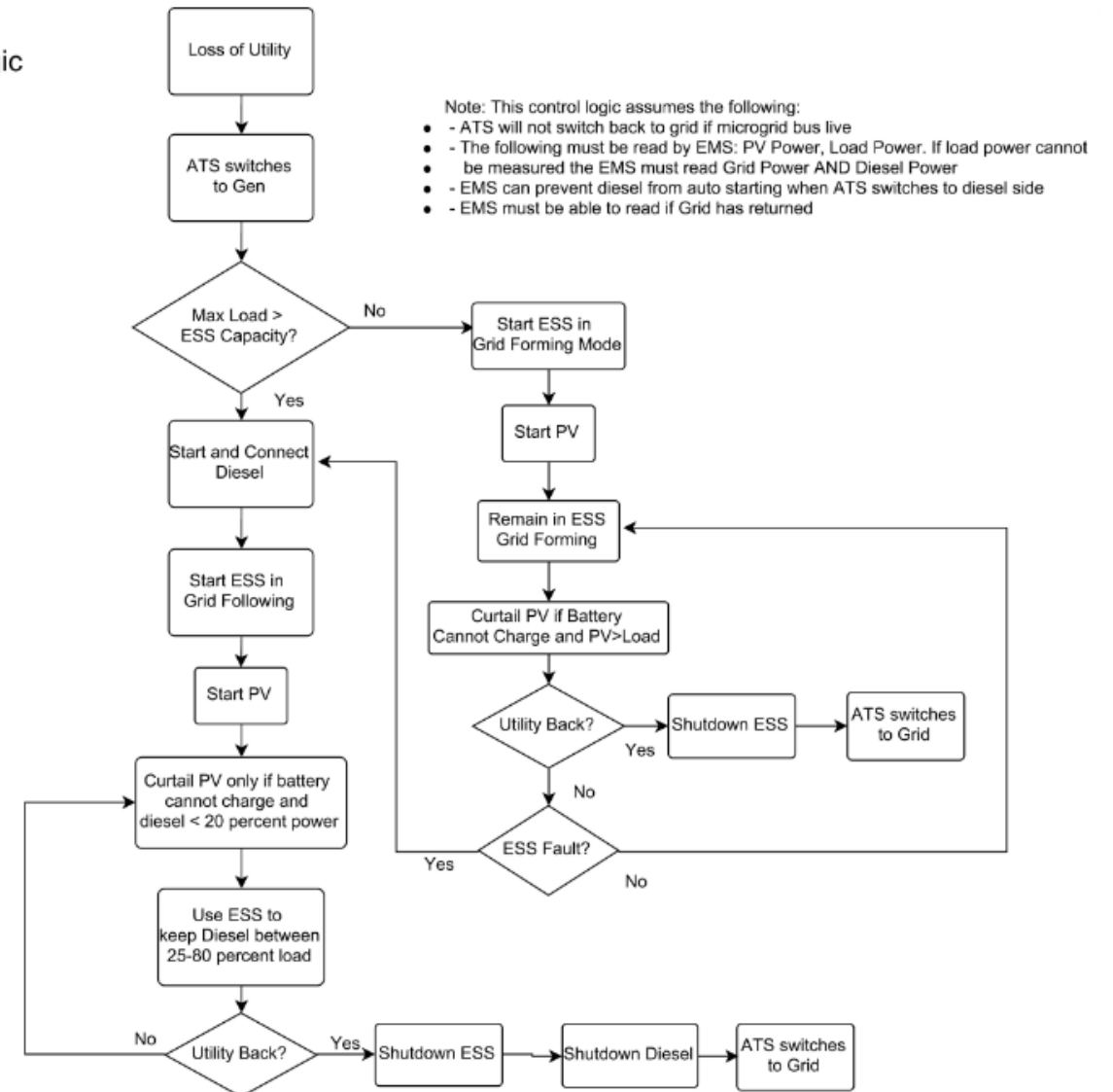
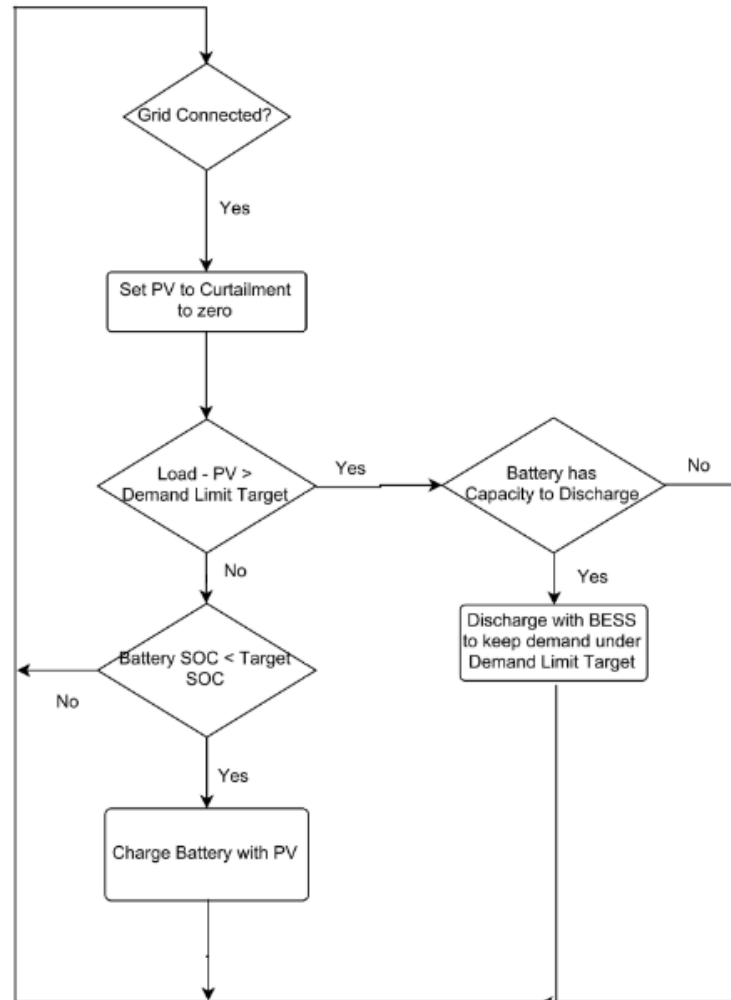
Project Name and Address
31055 JOSIE BILLIE HWY, CLEWISTON, FL

PROJECT
PV MODULE LAYOUT

Project SOLAR	DESIGNED BY TD
Date 2021/10/15	Revision # PV-1.1
Scale AS SHOWN	

Design Logic

ATG Big Cypress Control Logic





Activities Yet to be Completed

- Completion of design
- Executed Interconnect Agreements
- Issuance of Building Permits
- Construction
- Commissioning
- Closeout



Lessons Learned

- Double check PV and BESS Storage needs to provide desired resilience
- Balance sizing of BESS to allow for desired duration of battery only energy without oversizing
- Developing new Design Build Contract template can be very time consuming
- Expect delays due to unforeseen circumstances and be flexible
- Keep DOE informed

Current Schedule

Task Number Per Statement of Work	Title or Brief Task Description	Task Completion Date				Progress Notes
		Original Planned	Revised Planned	Actual	Percent Complete	
1	Re-Issuance of request for proposals and selection of preferred installer	03/17/2019	10/14/2020		100	RFP Issued and Bids three bids received.
2	Tribe negotiates D-B contract with Installer and contract is executed.	07/30/2019	08/28/2021		100	Contract executed 8/9/21 and NTP issued for 9/30/21
3	Approval of Detailed Site Drawings	09/15/2019	1/14/2022			
4	Environmental/ Cultural Review	08/14/2019	12/30/2021		100%	NEPA review for sites completed.
5	Building/Electrical Permitting	09/13/2019	1/14/2022			
7	Interconnection Approval	10/13/2019	12/30/2021			
8	Construction Start	07/10/2020	03/21/2022			
9	Commissioning	08/17/2020	08/01/2022			
10	Verification	09/01/2020	08/22/2022			
11	Reporting to DOE regarding PV production and battery cycling	10/20/2020	11/20/2022			
12	First Annual Reporting in Denver, Colorado	12/17/2019	11/20/2020			
13	Second Annual Reporting in Denver, Colorado	12/16/2020	11/20/2021			
14	Third Annual Reporting in Denver, Colorado		11/20/2022			
15	Fourth Annual Reporting in Denver, Colorado		11/20/2023			First Full Year of Production Reporting



Brighton 4 Project Overview

- The Seminole Tribe of Florida will design and build approximately 475 kW of solar facilities and 1,810 kWh battery energy storage system (BESS), transfer switches and control systems that will serve 4 essential facilities in the Brighton Reservation.
- The systems will be interconnected to the grid and the backup generators
- During outage BESS will be able to run the facilities for approx. 3 hours before generator kicks in
- Generator runs facility and recharges BESS then cuts off and switches over to BESS during extended outages



Project Participants

- DOE Office of Indian Energy
- Chairman & Tribal Council
- Executive & Senior Management Staff
- Consultants (Baker Tilly, Sandia Labs)
- Glades Electric
- Tribal Members



Project Status & Past Accomplishments

➤ Status:

- RFP Development
- Requested Proposal from Baker Tilly

➤ Past Accomplishments:

- Tribe awarded DOE Grant 2021

Project Locations and Needs

- ▶ Project will add Photovoltaic Solar Panels (**PV**) and Battery Energy Storage Systems (**BESS**) to 4 facilities on Brighton Reservation:
 - Administration Building
 - Public Safety Building
 - Veterans Building
 - Health Clinic
- ▶ Will reduce energy needs by approx. 26%



Project Summary

- ▶ PV will be mainly Carport Mounted or Roof Mounted except for Health Clinic where it will be ground mounted
- ▶ Will be interconnected to Grid, BESS, and Generator
- ▶ When Grid is out, BESS will run buildings for approx. 3 hours before generator starts
- ▶ Generator will run building and recharge BESS until BESS can take over during extended outages

<u>Brighton</u>	<u>kW Peak Demand</u>	<u>Battery Peak Power, kW</u>	<u>Battery Capacity, kWh</u>	<u>Type of Mount</u>	<u>Solar Capacity, kW dc</u>	<u>Solar kWh, year 1 estimate</u>	<u>Percent of Building's annual kWh from Solar</u>
Brighton Health Clinic	70.8	90.0	150	Ground	100	159,600	73%
Brighton Administration Building	179.6	230.0	570	Carport / Roof	125	199,500	29%
Brighton Public Safety Building	286.7	360.0	740	Carport / Roof	125	199,500	15%
Brighton Veterans Building	140.2	180.0	350	Carport	125	199,500	34%
TOTALS	677 kW	860 kW	1810 kWh		475 kW	758,100 kWh	26%

Solar Sites Details

Brighton Public Safety and Administration Sites

600 and 650 Harney Pond Rd

Public Safety

(goal dc)

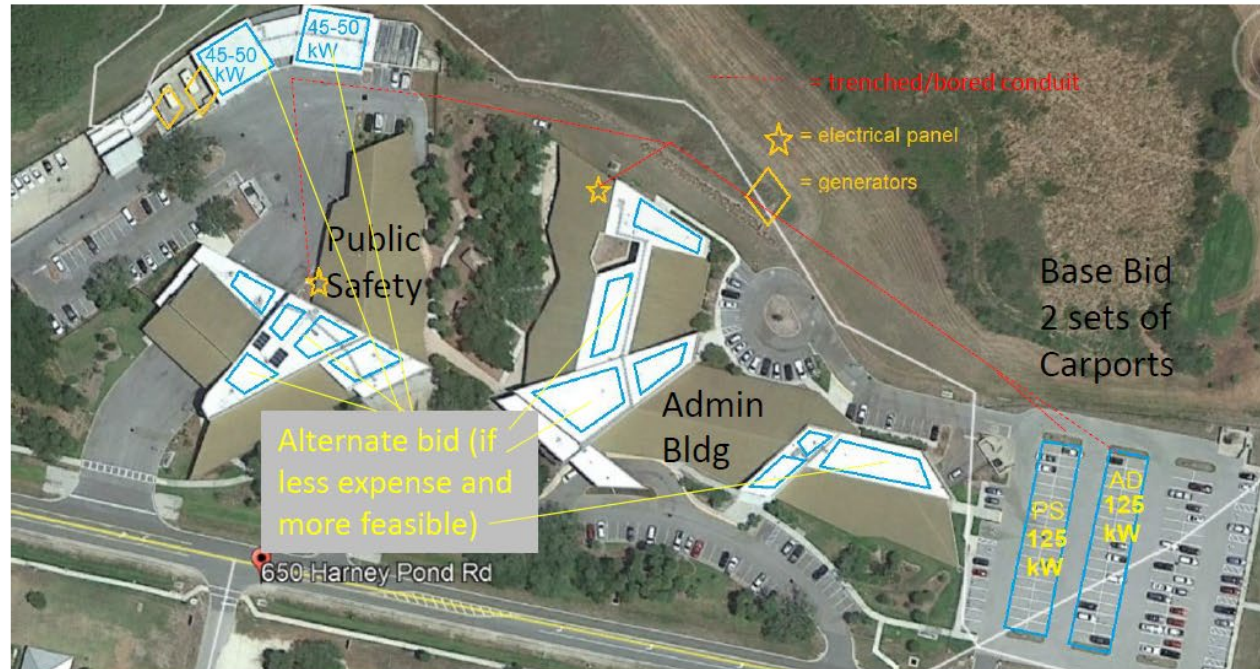
125 kW minimum
200 kW maximum

(estimated ac)

740 kWh Battery
Capacity
360 kW Power Supply

Note:

Carport Solar is
Base Bid
Rooftop Solar is
Alternate Bid



Brighton Administration

(goal dc)

125 kW Minimum
150 kW Maximum

(estimated ac)

570 kWh Battery Capacity
230 kW Power Supply

Note:

Carport Solar is
Base Bid
Rooftop Solar is
Alternate Bid

Solar Sites Details

Brighton Veterans Center

800 Harney Rd

BR Veterans Center

(goal dc)

100 kW minimum

150 kW maximum

(estimated ac)

350 kWh Battery Capacity

180 kW Power Supply



Note:

Walk site to verify best layout. Gets wet the more north you go from parking lot.

Solar Sites Details

Brighton Health Clinic

17202 Civic St

BR Health Clinic

(goal dc)

100 kW max PV

(estimated ac)

150 kWh Battery Capacity

90 kW Power Supply

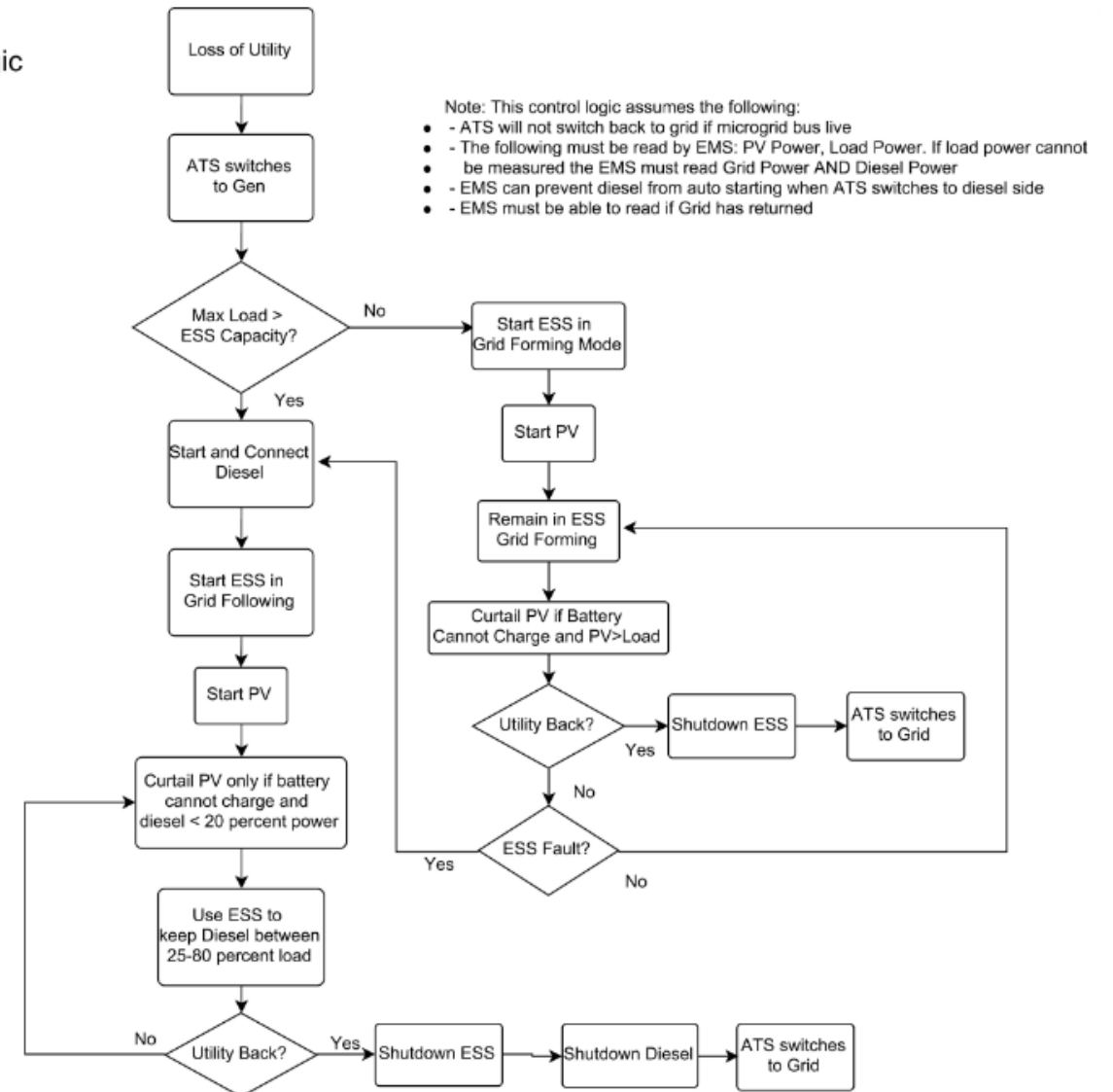
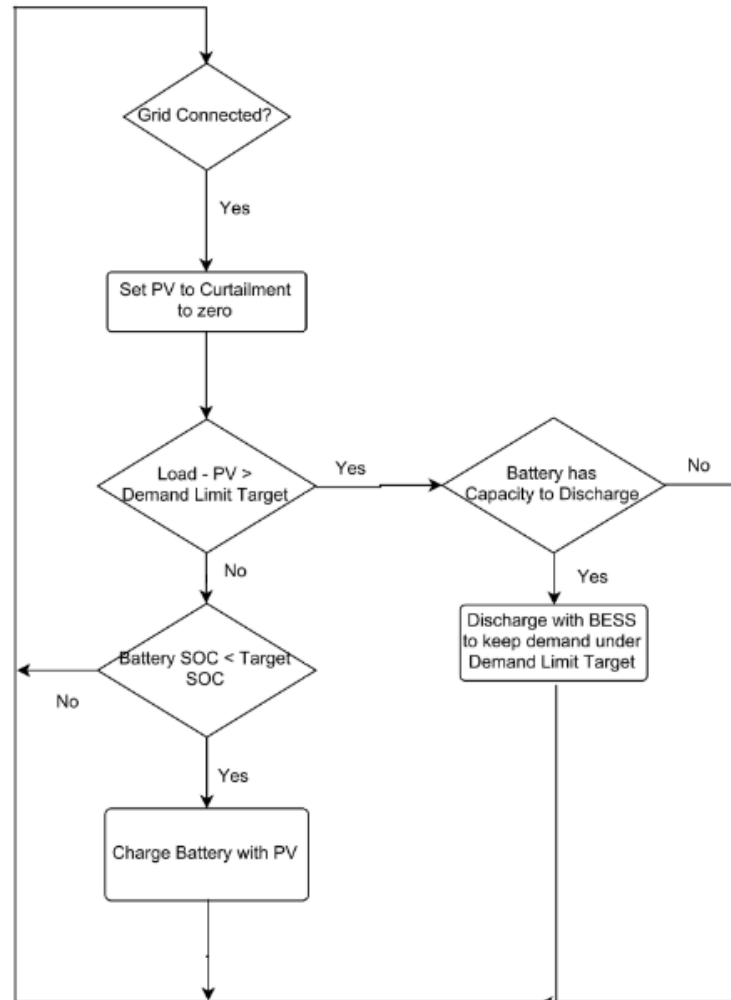


Note:

Walk site to verify best layout. Indicate what trees (if any) need removing

Design Logic

ATG Big Cypress Control Logic





Activities Yet to be Completed

- Develop RFP for Design Build project
- Selection of contractor and award of contract
- Execution of contract and issue NTP
- Completion of design
- Executed Interconnect Agreements
- Issuance of Building Permits
- Construction
- Commissioning
- Closeout



Lessons Learned from BC Project

- Double check PV and BESS Storage needs to provide desired resilience
- Balance sizing of BESS to allow for desired duration of battery only energy without oversizing
- Developing new Design Build Contract template can be very time consuming
- Expect delays due to unforeseen circumstances and be flexible
- Keep DOE informed

Revised Schedule

Milestone Summary Table						
Recipient Name:		Seminole Tribe of Florida				
Project Title		The Brighton 4				
Task No.	Task	Milestone Number	Milestone Description	Anticipated Months from Start	Anticipated Quarter from Start	Target Task Delivery Date
1	Request for Proposals for Contractor and Investor	M1	Issuance of request for proposals and selection of preferred installer.	3	1	3/17/2022
2	Execute Design-Build ("D/B") Contract	M2	Tribe negotiates D-B contract with Installer and contract is executed.	4	2	4/16/2022
3	Approval of Detailed Site Drawings	M3	Installer will prepare the site layouts and drawings of solar facilities for the Tribe to review and approve, and the Tribe will review and approve.	5	2	5/16/2022
3.1	Preparation of Site Drawings	M3.1	Installer prepares detailed system drawings and layouts.	6	2	6/15/2022
3.2	Approval of Detailed Site Drawings	M3.2	Installer submits drawings and layouts to Tribe for review and approval and, once all Tribal concerns have been addressed, the drawings and layouts are approved.	7	3	7/15/2022
4	Environmental/ Cultural Review	M4	The Tribe conducts environmental and cultural (E/C) review and issues E/C approval.	8	3	8/14/2022
5	Building/Electrical Permitting	M5	Installer submits documents for building/electrical permits and receives such permits.	9	3	9/13/2022
6	Interconnection Approval	M6	Installer applies for, and Project receives, interconnection approval.	10	4	10/13/2022
7	Construction Start	M7	Installer mobilizes construction personnel, coordinates material delivery, and installs the Project.	10	4	10/13/2022
7.1	Material Delivery	M7.1	Installer completes all shipping and delivery of materials and equipment.	13	5	1/13/2023
7.2	Construct Project	M7.2	Construction personnel install integrated solar PV/battery storage Project.	16	6	4/13/2023
8	Commissioning	M8	Utility on-site inspection.	17	6	5/13/2023
9	Verification/ Closeout	M9	Monitoring of PV production and battery cycling.	18	6	6/13/2023
10	Reporting	M10	Reporting to DOE regarding PV production and battery cycling	19	7	7/6/2023
10.1	Reporting of First Quarter Production/Cycling	M11.1	Reporting of first quarter PV production and battery cycling.	22	8	10/6/2023
10.2	Reporting of Second Quarter Production/Cycling	M11.2	Reporting of second quarter PV production and battery cycling.	25	9	1/6/2024
10.3	Reporting of Third Quarter Production/Cycling	M11.3	Reporting of third quarter PV production and battery cycling.	28	10	4/6/2024
10.4	Reporting of Fourth Quarter Production/Cycling	M11.4	Reporting of fourth quarter PV production and battery cycling.	31	11	7/6/2024
11	Annual Reporting in Denver, Colorado	M12.0	Annual reporting at DOE Program Review in Denver, Colorado.	11	4	11/15/2021
11.1	First Annual Reporting in Denver, Colorado	M12.1	First Annual reporting at DOE Program Review in Denver, Colorado.	23	8	11/15/2022
11.2	Second Annual Reporting in Denver, Colorado	M12.2	Second Annual reporting at DOE Program Review in Denver, Colorado.	35	12	11/16/2023



We do NOT inherit the
Earth from our
ancestors, we borrow it

from our Children

- Native American Proverb

PROJECTAWARE.ORG



TRIBAL COMMUNITY DEVELOPMENT



Thank You

CHERYL GIACOBBE
HARVEY RAMBARATH