

Lewes BPW Battery Energy Storage Request for Proposal

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Electrical Associate

Electric Grid Infrastructure Services

- Battery Energy Storage Systems
 - Applications
 - BESS Technologies & Vendors
- Proposed Project Site
 - Old Power Plant Building
 - Schley Avenue Substation Interconnection to Lewes Grid
- Request for Proposal Document
 - Benefits/Interests for Lewes BPW
 - Role of Battery Contractor (EPP)
 - Role of Sargent & Lundy

Battery Energy Storage Systems (BESS)

- Grid Scale Batteries used for numerous applications:
 - Load Shedding
 - Ancillary Support
 - Frequency Response
 - Black Start Capabilities
 - Solar + Storage
 - Capacity
 - Energy Arbitrage



Battery Energy Storage Systems (BESS)

BESS Technologies

Batteries:

- TESLA
- LG Chem
- Samsung
- BMW Active I3
- CATL
- BYD

Inverters:

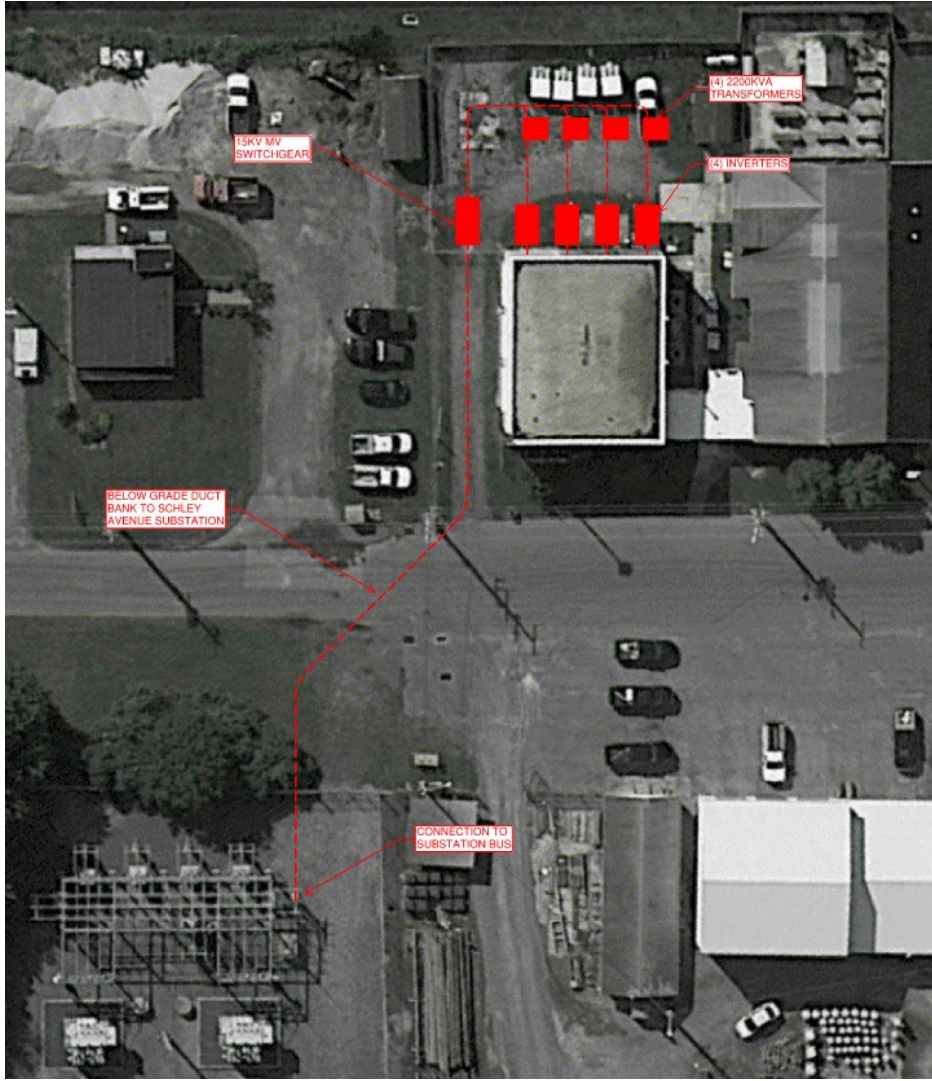
- Parker
- Dynapower
- SMA
- Princeton
- Eaton
- Power Electronics
- SunGrow

Padmount

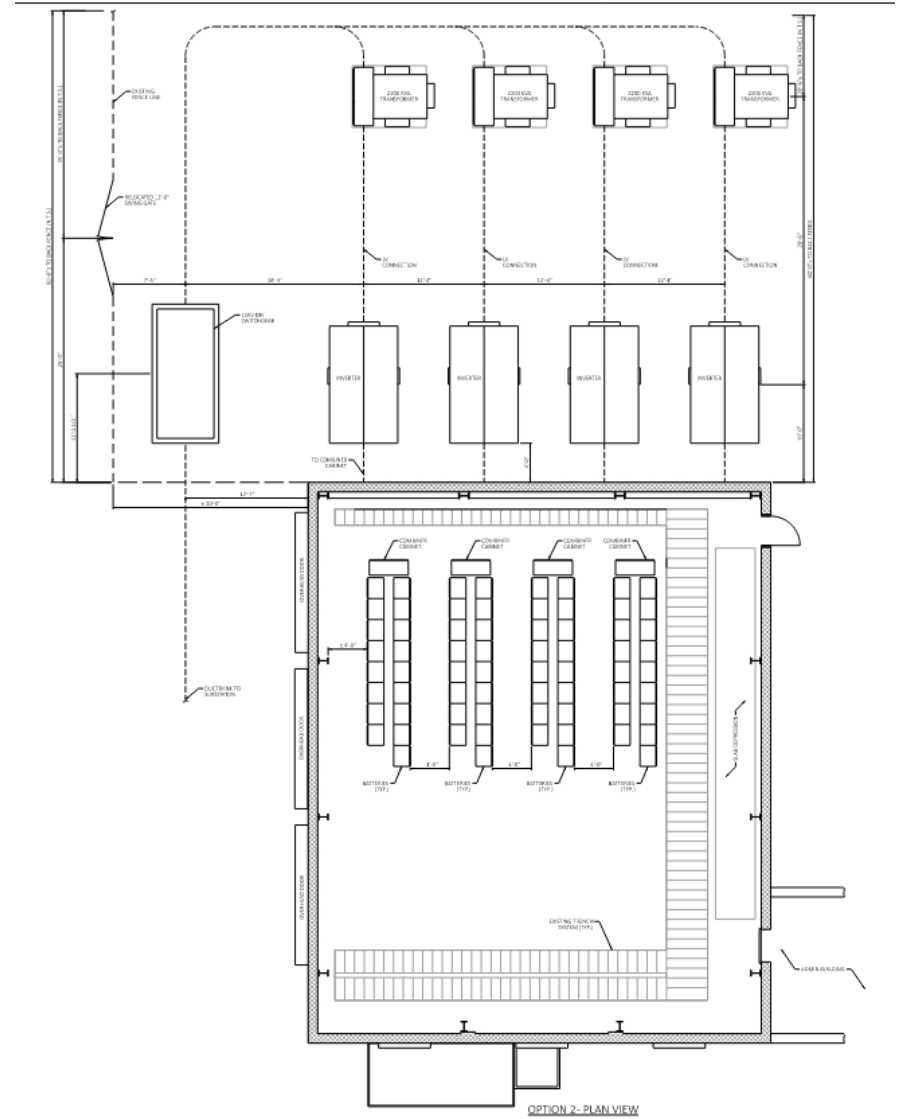
Transformers:

- Howard Industries
- Eaton
- ABB

Proposed Project Site



Old Power Plant Building



Proposed Project Site

Schley Avenue Substation Interconnection Location

- Located close to Old Power Plant for easy interconnection to the Lewes' electric grid.
- Nearby Lewes BPW storage facilities for use during construction.



Request for Proposal Document



- Outlines intended roles and responsibilities of any potential Bidder.
- Outlines design requirements to be followed by Battery Contractor (EPP).
- Specifies industry codes to be followed by Battery Contractor (EPP).

Benefits/Interests for Lewes



- Revenue Generation
 - Rent paid by contractor
 - Reduced Capacity Charges
 - Reduced Transmission Costs
 - Shared Profits from participating in Utility markets
- Islanding Ability
 - Provides backup source of power for critical circuits (hospital, school, etc.)
- Increased ability to incorporate Distributed Energy Resources i.e. Wind & Solar
- Primary Interests for Lewes
 - Battery Contractor to bear all design, installation, maintenance, and end-of-life costs for the duration of the agreement
 - Battery Contractor will pay a lease to owner for hosting the facility
 - A shared revenue agreement between Battery Contractor and Lewes will be in place for duration of agreement
 - A contract penalty will be paid by the Battery Contractor in the event the battery is unavailable during a Peak Load day, to compensate Lewes higher capacity charges and transmission costs

Role of the Battery Contractor (EPP)



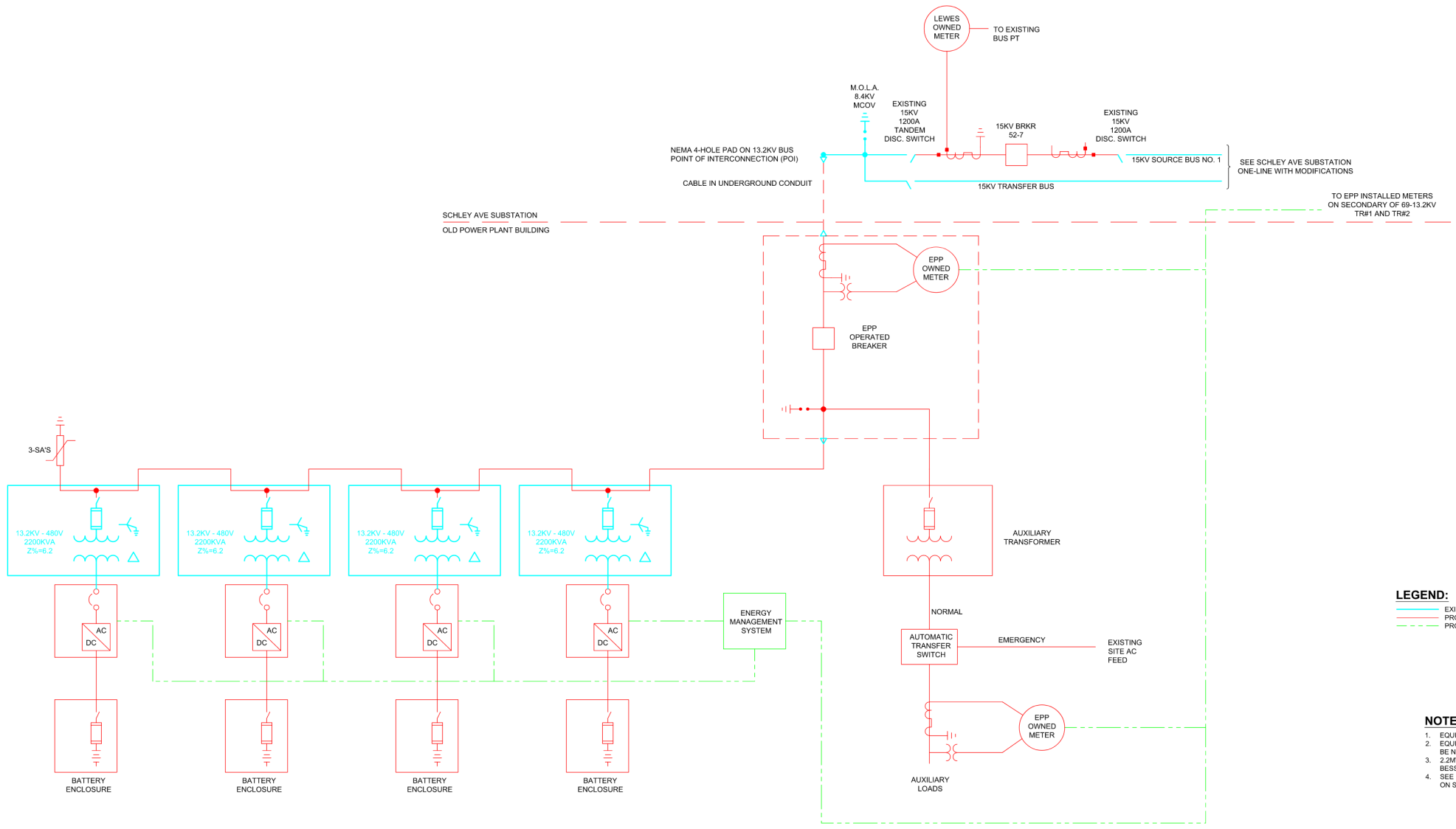
- Design, Build, Own, Operate, and Maintain the BESS Equipment.
- Responsible for all upgrades to Old Power Plant Building, and Schley Avenue Substation.
- Provide Training to Lewes BPW and local Fire department.
- Dispatch the battery to meet Lewes BPW and DEMEC load shedding needs.
- Coordinate execution of the Islanding Scheme with Lewes BPW in the event of a power outage.
- Respond to any Emergent Maintenance needs.

Role of Sargent & Lundy



- S&L is contracted to perform the Bid Event for Lewes BPW.
- RFP will be sent to a pool of Battery Contractors.
- S&L will evaluate the bids according to a matrix
 - S&L to provide recommendations using a scorecard system.
 - Lewes BPW to review and provide final approval
- S&L to potentially provide Owner's Engineer and/or Construction Management services during implementation.

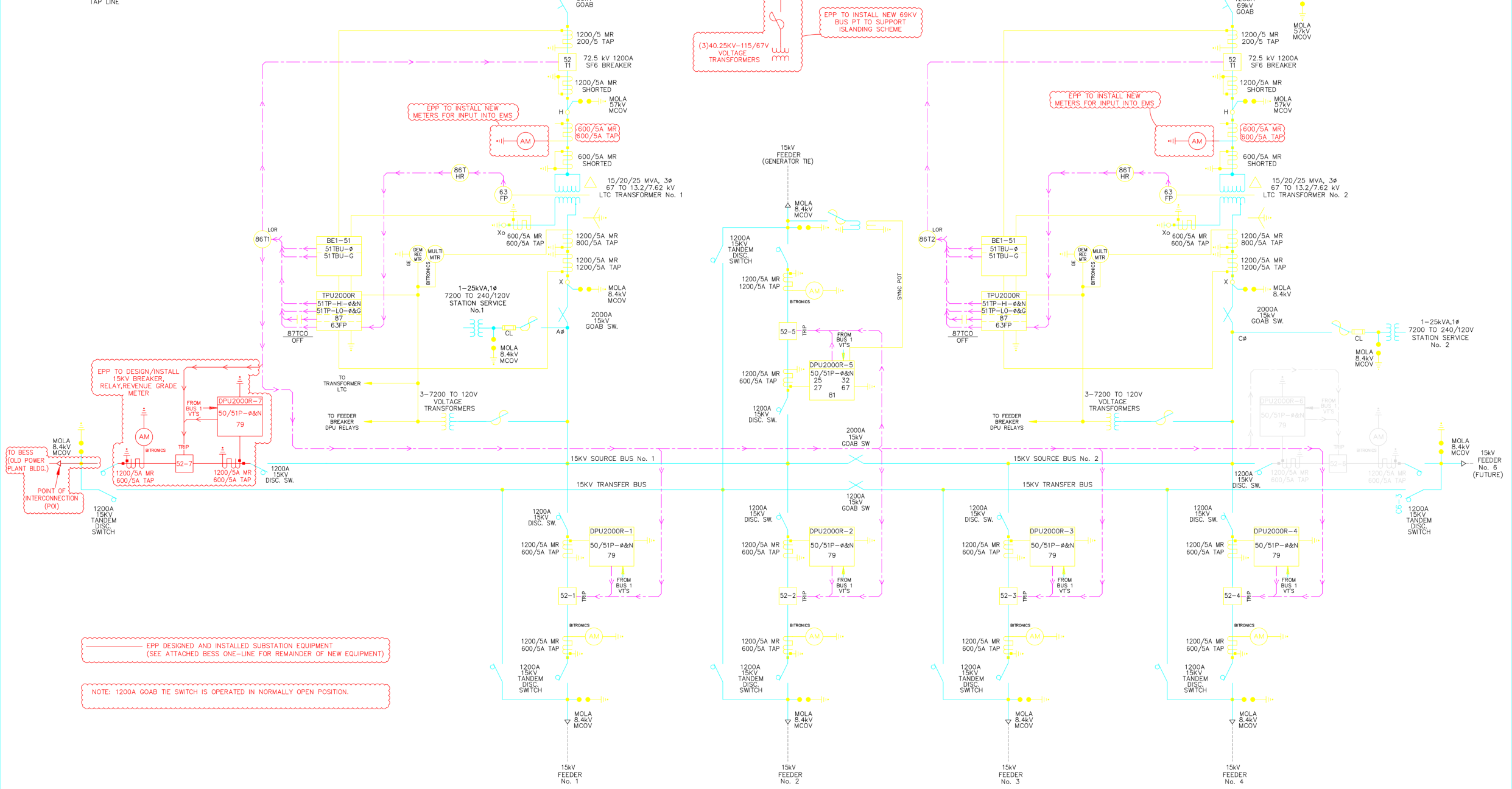
Thank You



LEGEND:
 ——— EXISTING EQUIPMENT
 ——— PROPOSED NEW EQUIPMENT
 - - - - PROPOSED ENERGY MANAGEMENT CABLES

NOTES:
 1. EQUIPMENT SIZING IS PRELIMINARY AND SUBJECT TO CHANGE.
 2. EQUIPMENT SHOWN IN BLUE IS EXISTING, EQUIPMENT IN RED WILL BE NEW EQUIPMENT.
 3. 2.2MVA TRANSFORMERS ARE SPARES ON SITE AND CAN BE USED IN BESS DESIGN.
 4. SEE LEWES BPW DWG. 107-5080 E1 OF 16 FOR MORE INFORMATION ON SCHLEY AVE SUBSTATION.

		LEWES BPW PROPOSED BESS ONE-LINE DIAGRAM		DRAWN SKL	CHECKED SKL	APPROVED
		DATE	SCALE NONE	D-LOG #		
SUBSTATION #		DRAWING #				



(3) 40.25KV-115/67V VOLTAGE TRANSFORMERS

EPP TO INSTALL NEW 69KV BUS PT TO SUPPORT ISLANDING SCHEME

EPP TO INSTALL NEW METERS FOR INPUT INTO EMS

EPP TO INSTALL NEW METERS FOR INPUT INTO EMS

EPP TO DESIGN/INSTALL 15KV BREAKER, RELAY, REVENUE GRADE METER

EPP DESIGNED AND INSTALLED SUBSTATION EQUIPMENT (SEE ATTACHED BESS ONE-LINE FOR REMAINDER OF NEW EQUIPMENT)

NOTE: 1200A GOAB TIE SWITCH IS OPERATED IN NORMALLY OPEN POSITION.

REVISION No. 3 COMPLETED ON PROJECT No. 03-5788

LEGEND

- HIGH VOLTAGE BUS AND EQUIPMENT (46kV AND 15kV)
- UNDERGROUND FEEDER EXIT
- OVERHEAD FEEDER EXIT
- LOW VOLTAGE CONNECTIONS (CTS, VTS, TRANSDUCER OUTPUTS)
- DIRECTION OF RELAY ACTION

SUFFIXES

SUFFIXES	DIRECT CURRENT	FAULT PRESSURE	GROUND	NEUTRAL	TRANSFORMER	AUXILIARY RELAY	PHASE
DC	FP	G	N	T	X	φ	

DEVICE DESIGNATIONS

DEVICE FUNCTION NUMBERS	DEVICES
27	UNDERVOLTAGE RELAY
43	MANUAL TRANSFER OR SELECTOR DEVICE
50	INSTANTANEOUS OVERCURRENT RELAY
51	AC TIME OVERCURRENT RELAY
52	AC CIRCUIT BREAKER
63	PRESSURE SWITCH
79	AC RECLOSING RELAY

LETTER CODES

LETTER CODES	DEVICES
AM	AMMETER
DEM	DEMAND
REC	RECORDING
LTC	LOAD TAP CHANGER
MTR	METER
VM	VOLTMETER
W/V	WATT/VAR

ELECTRICAL DRAWING CERTIFICATION NOTES

NO.	REVISIONS	DATE
1	ADD POINT TO BESS (OLD POWER PLANT BLDG.)	3/20/01
2	UPDATE EQUIPMENT AND SWITCH NUMBERS	6/30/01
3	ADDED 52T2 & T2	4/1/03
4	ADDED SWITCH NUMBERS	4/1/03

BOARD OF PUBLIC WORKS
LEWES, DELAWARE

SCHLEY AVENUE
69 TO 15kV SUBSTATION
ONE-LINE DIAGRAM

BOOTH & ASSOCIATES, INC.