

**ZONING BOARD OF ADJUSTMENT
PLANNING BOARD
PLAINFIELD, NEW HAMPSHIRE**

NOTICE IS HEREBY GIVEN that the Board of Adjustment and the Planning Board will hold public hearings on the following application on **Monday June 12 2017 at 7:00pm at the Meriden Town Hall:**

Case 2017-04: Plainfield Elementary School/Barrington Power: A request for special exception #34 Approved Solar Project along with any other necessary approvals to locate a 137kw ground mounted solar array on the Plainfield Elementary School Campus. The School Board has approved the use for the district land; however, the project cannot go forward without local land use board review and approval.

The Zoning Board/Planning Boards will visit the site at 6:30pm the night of the hearing. The public is welcome to attend this visit. If time allows and the ZBA concludes its work on the application a site plan review by the Planning Board will be conducted. **The full project file is available for public inspection at the town office. An electronic version of the application plans is available online at www.plainfieldnh.org/zba.htm**

While not required to attend, abutters and interested parties are encouraged to attend either in person or by counsel and state reasons why the application should or should not be granted.

Notice prepared by Stephen Halleran on behalf of the
ZONING BOARD OF ADJUSTMENT/PLANNING BOARD
May 24th 2017.

PLAINFIELD ZONING BOARD OF ADJUSTMENT
APPLICATION FOR APPEAL

PLEASE READ: This form should be completed after discussions with the town's zoning administrator about the proposal. If you have not already done so, please contact the zoning administrator (469-3201).

Applicant's name: Plainfield School District
Mailing address: 97 Bonner Rd, Plainfield, NH

Property Street address: 97 Bonner Rd
Tax Map / Lot Number: 105-11
Zoning district: VR
Property owner of record: SAU: #32

Type of appeal (check one):

variance
 special exception # 24
 administrative decision

Applicants signature: T. Doyle, Norwich Technologies For PES

Required Attachments: a) applicant signed description of the proposal.
b) site map(s) exterior/interior.
c) abutter list with mailing addresses.

Fee: application \$
notification \$ Total \$ 135.00

Hearing Date: 6/12/17

In order to be on the meeting agenda for the above date, your paid application must be received at the town office no later than Monday 6/12/17 (ZBA rule 9.3).

Office Use

date filed:
case number:
attachments: y/n
fee paid: y/n



Application for Special Exception

Ground-mounted Solar System

Plainfield Elementary School is proposing the installation of a ground-mounted solar energy system in the Village Residential Zone (VR) that will be connected to a commercial metering system. Therefore, the system requires a special exception and/or site plan review under Section 3.8 Solar Energy Systems of the Town of Plainfield Zoning Ordinance.

Project Description: The proposed solar energy system will be approximately 100 x 200 feet in area and consist of 396 panels. The panels will be mounted on steel frames less than 14 ft tall when connected to the ground using ground screws. The system is designed to generate approximately 134.64 kW-DC/99.9 kW-AC power. The system will be connected by underground conduit to a commercial meter that is located off the south-east corner of the school parking lot. The panels will be located in the northeast corner of the school parcel with tree clearing on about 2 acres to minimize shading of the array

Location: The size and location of the system was chosen to take advantage of a minimally used and minimally visible portion of the parcel. Surrounding neighbors and travelers on Bonner Rd would have very little to no visual with the possible exception of the 94 Bonner Rd residence. (see attached visual analysis) As large a buffer of existing wooded area and hills will be left in place between the system and Bonner Rd houses. (see attached site plan)

Fencing: A square knot deer fence or small split-rail fence will also encompass the entire solar area as a perimeter setback. With the latter, a code-approved protective mesh (scrim) to cover and will conceal all electrical cabling. The system will also be used for educational purposes such as tours, Environmental Studies and STEM curricula as well as the generation of electricity. Students will gain a first-hand familiarity with the system and proper safety precautions to be exercised around it.



Plainfield Zoning Board of Adjustment and Planning Board

June 12, 2017

134kW Array



- Power Purchase Agreement (PPA) with BP Plainfield, LLC
- Would supply ~100% of electrical power for school
- Construction would occur this year

Environmental



- Estimated 25-year system generation:
~4,000,000 kWh
- Estimated CO2 avoided over 25-years of system operation: 3,400,000 lbs. CO2
- Equivalent to carbon emissions from burning 175,000 gallons of gasoline

3.8 Solar Energy Systems (SES)



- Application for Building permit for 134kW/AC (>7kW requiring ZBA special exemption hearing) ground mounted solar photovoltaic array on PES grounds.
- All ground mounted SES connected to commercial meter require site plan review by the Planning Board



- Names and addresses of the owners of the property where SES is proposed
- Abutter list
- Written description of the project
- Site map of the property and proposed facility design
- Visual analysis
- Decommissioning plan

Standards to be met



- **Location:** Minimize visual impact
- **Fencing:** Not required but may be deemed necessary by Town's boards
- **Utilities:** distribution lines should be underground if possible
- **Approved solar components**
- **Utility Company Approval:** Liberty Interconnection Application
- **Decommissioning:** Must provide provisions acceptable to the town that insure that the facility will be removed when no longer in use.

Names



- Applicant:
Plainfield Elementary School (SAU #32)

BLANCHARD, ERIC J.
PO BOX 252
LEBANON, NH 03766

CORDIMA, SEBASTINO M
& GRACE A
PO BOX 151
MERIDEN, NH 03770

SONNENBURG, REINHART &
MCKIM, MARIANNA
PO BOX 66
MERIDEN, NH 03770

PLAINFIELD SCHOOL DISTRICT
92 BONNER RD
MERIDEN, NH 03770

SWARTS, JOHANNES &
PERRY, HEATHER J
PO BOX 36
PLAINFIELD, NH 03781

MERIDEN VILLAGE WATER DISTRICT
C/O DONALD GARFIELD
PO BOX 84
MERIDEN, NH 03770

CASS, SHERRY J REV TRUST
CASS, SHERRY J TRUSTEE
PO BOX 13
CORNISH FLAT, NH 03746

6 STAGE ROAD TRUST
O'REILLY, KEVIN TRUSTEE
6 STAGE ROAD
MERIDEN, NH 03770

KIMBALL UNION ACADEMY, TEES OF
PO BOX 188
MERIDEN, NH 03770

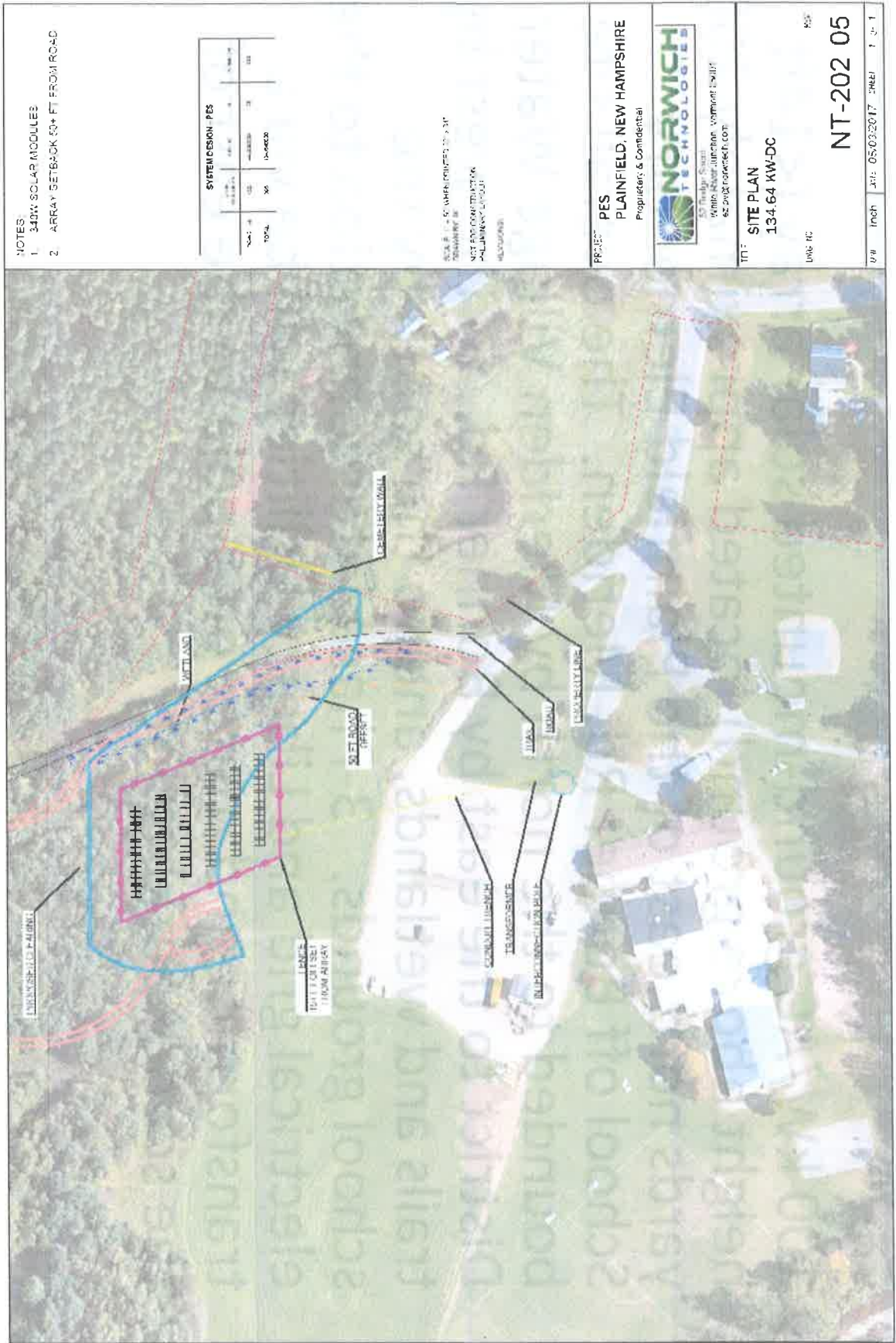
Description of Project



- 100 kW/AC ground-mounted solar array (<14ft height above ground) located approximately 200 yards northeast of the Plainfield Elementary School off Bonner Rd, Meriden. The overall site is bounded to the north by Meriden Village Water District to the east by Bonner Rd., to the west by trails and wetlands, and to the south by the school grounds. 3-Phase interconnection to the electrical grid and Liberty Utilities will be via a transformer and meter on a pole to the east of the school parking lot.



Site Plan



NOTES

- 340W SOLAR MODULES
- ARRAY SETBACK 50+ FT FROM ROAD

SYSTEMS/SECTION		PES	
Module	Area	Area	PES
1	100	100	100
TOTAL	300	100	100

SCALE 1" = 20' UNLESS OTHERWISE NOTED
 DRAWN BY: [Name]
 CHECKED BY: [Name]
 DATE: 05/03/2017

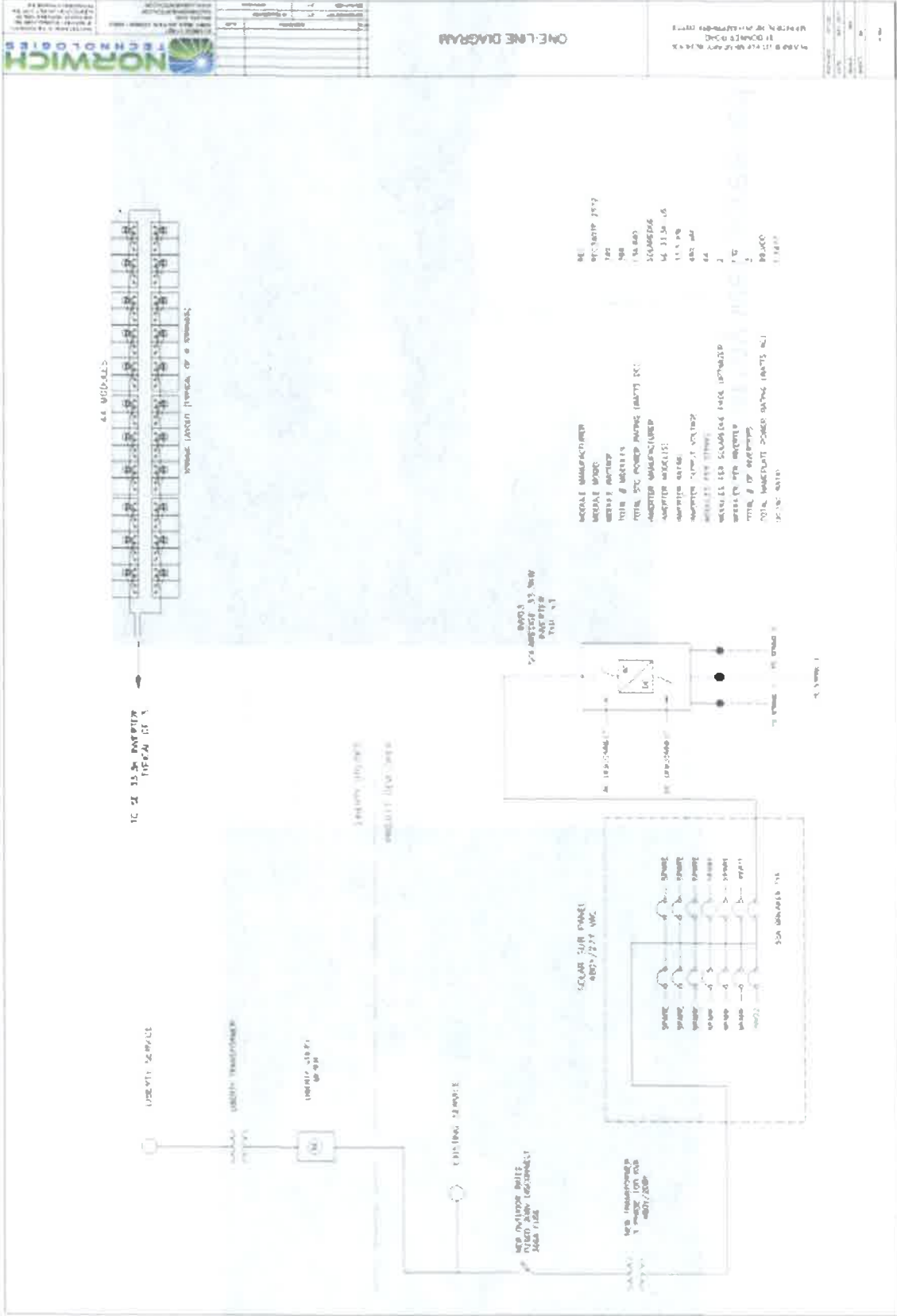
PROJECT:
 PES
 PLAINFIELD, NEW HAMPSHIRE
 Proprietary & Confidential



TITLE:
 SITE PLAN
 134.64 KW-DC

DATE: 05/03/2017
 SCALE: 1" = 20'
 SHEET: 1 OF 1

Electrical Diagram



Visual Analysis



Solar array well screened



Visual Analysis



Solar array well screened



Visual Analysis



Solar array visible





A few articles of interest on the fencing:

We have used "SolarScrim" for the protection of the DC wiring. It was specifically created for aesthetics. (see article at: <http://www.solarpowerworldonline.com/2013/12/company-finds-new-way-improve-solar-aesthetics/>).

SolarScrim, which offers a solution for circuitry protection for ground-mounted solar arrays, now offers a new product. The solution, called Under the Array, provides an efficient and affordable way to install a beautiful circuitry barrier across an entire solar panel deployment as a substitute to chain-link fencing. SolarScrim meets National Electric Code (NEC) 2011 Section 690.31(A) which requires that panel circuitry not be readily accessible."

National Electric Code (quoted from HomePower): Many of the new sections in Article 690, Part IV, "Wiring Methods," were moved from other locations. There also are some new requirements. Previously, DC conductors had to be installed in raceways on arrays with a maximum voltage greater than 30 V that were installed in "readily accessible locations" (e.g., ground mounts). Now, Section 690.31(A) allows them to be guarded—**"covered, shielded, fenced, enclosed, or otherwise protected...[which] removes the likelihood of approach or contact by persons or objects to a point of danger."** This means that screening, some wire-management systems, or even lattice-wrapping the exposed sides and back of an array may be acceptable, rather than having to use a raceway or render the array inaccessible (such as with a fence, or by making it high enough to require a ladder). The authority having jurisdiction (AHJ) will have the final word on acceptability of individual strategies.

Vermont fire safety suggests protecting each individual solar module with protective screening, which is what we suggest. They also go on to suggest a 7 ft fence if you don't protect each module DC

wiring. (<http://firesafety.vermont.gov/sites/firesafety/files/pdf/Misc%20Forms/Solar%20Panel%20Memorandum.pdf>) "The NEC Handbook makes the following comment at this code opening: "Most PV modules do not have provisions for attaching raceways. These circuits may have to be made **"not readily accessible' by use of physical barriers such as wire screening"** While this may suggest a solution, it is not always practical to install physical barriers on each individual module because of the number of modules involved...."

Alternatively, in lieu of protecting each individual module, the Division will also accept protective arrangements complying with the National Electric Safety Code Section 11, 110 (a) which provides that electric supply stations may be guarded by a grounded metal fence with a height that satisfies any one of the following: a. Fence fabric, 2.13 m (7ft) or more in height. b. A combination of 1.8 m (6') or more of fence fabric and an extension utilizing three (3) or more strands of barbed wire to achieve overall height of the fence. c. Other types of construction, such as nonmetallic material that present equivalent barriers to climbing or other unauthorized entry...."

Approximate Price for Fencing:

8' vinyl coated chain link fence 600', with 14ft gates (with w/2 7ft swinging gates coming together in the middle) installed. Corners and gates posts in 4 ft concrete, other posts driven to 3 ft. Approx \$20/ft or \$12k"

Split Rail



& Scrim



Deer Fence

Decommissioning Plan



- Remove modules
- Disassemble rack/cut aluminum
- Pull posts
- Remove electrical equipment and underground wires
- Recycle/dispose of materials
- Grade and seed areas of disturbance

• Greenhouses

THE END



- Questions?

- Can we speed success of disruptive technologies?
- Budgeting and mismanagement
- Disruptive technologies and budget cuts
- Disruptive technologies and budget cuts
- Disruptive technologies and budget cuts

APPENDIX



APPENDIX 1: 2017

- *What the public might expect of the 2017 Report* (www.blackburnrovers.com/system/uploads/attachment_data/file/100611/AC%20Home%20Pages%20Appendix%201%2017)
- *Reducing the carbon over 32 per cent*
- *Reducing the number of reasonable guests*
- *100% of the Home Pages Addressed (100%)*

Summary of PPA



- 100kW/AC Power Purchase Agreement (PPA)
- Defines fixed purchase price of renewable energy generated by the system over 25-year period
- Option to purchase entire system in years 6&10 at depreciated cost and large potential return (PES owns all the power system produces)
- Must be built within 9 months of NH PUC Rebate award. It will be built in 2017.

Steve Halleran

From: Steve Halleran [plainfield.ta@plainfieldnh.org]
Sent: Tuesday, May 23, 2017 1:14 PM
To: 'Terry Donoghue'; 'Chris Forman - Appcast'; 'Frank Perotti'; 'Bill Knight'; 'Joel Stettenheim'
Subject: PES Solar

PES Solar Group

The town's land use boards have agreed to a joint meeting on Monday June 12th for the PES solar project. The meeting will start at 6:30pm with a site visit followed by the necessary public hearings to be held up at the Meriden Town Hall.

I am sure the ZBA/PB will have some questions for the school administration; please make sure that Frank, Bill and/or a SB member or two can attend as well as the Norwich Technology team.

Notices to abutters will go out this week. The School District will get a notice as well.

Stephen Halleran
Town Administrator
Serving since 1989
(603) 469-3201

Steve Halleran

From: Frank Perotti [fperotti@plainfieldschool.org]
Sent: Tuesday, May 16, 2017 1:35 PM
To: Steve Halleran
Cc: Chris Forman - Appcast
Subject: Re: PES Solar

Dear Stephen,

Please accept this email to indicate that the Plainfield School District is in full support of the Norwich Technology applications to build the Solar Array that is being funded through a PPA with Barrington Energy.

Frank S. Perotti, Jr.

Frank S. Perotti Jr., Ed.D.
Superintendent of Schools, Director of Special Education
Plainfield School District, SAU 32
92 Bonner Road
Plainfield, NH 03781

603-469-3442 SAU
802-299-5966 Cell

On Tue, May 16, 2017 at 11:20 AM, Steve Halleran <plainfield.ta@plainfieldnh.org> wrote:

Frank

For our file, could you please send me an e-mail confirming that the Plainfield School District is on board with Norwich technology applying for land use approval for the PES solar array? I think the answer is yes, but I need something in the file that the landowner has agreed to the application process.

I am in hopes that the ZBA/PB approval process will begin on June 12th. Applications have been filed on your behalf, but I need to cover all the bases.

Stephen Halleran

5/16/2017