

MEMO

FROM: Joe Shanahan, Con Edison Clean Energy Businesses

TO: Richard Fon, Chairman, Planning Board, Town of Yorktown

SUBJECT: Proposed Solar Facility, 3849 Foothill Street - Decommissioning Plan and Cost Estimate

DATE: April 23, 2021

Con Edison Clean Energy Businesses (ConEd CEB) has submitted an Application package to the Planning Board for a Special Use Permit and Site Plan Approval to construct a 1.87 MW solar facility on an approximately 16-acre portion of the 34-acre property at 3849 Foothill Street, Yorktown, New York.

The Local Solar Law provides that all such "applications shall be accompanied by a decommissioning plan to be implemented upon abandonment, or cessation of activity, or in conjunction with removal of the facility, prior to issuance of a building permit. The Planning Board in its sole discretion may require the applicant to file a decommissioning Bond prior to the issuance of any permits."

ConEd CEB hereby submits its Decommissioning Plan and Cost Estimate in the amount of \$106,040 for executing the Decommissioning Plan as prepared by its consultant, Norman E. Dupuis, Professional Engineer.

In July, 2017, the New York Energy Research and Development Authority (NYSERDA) issued a publication to provide local governments and landowners information on the decommissioning of large-scale solar panel systems. A copy of that publication is attached.

In its publication, NYSERDA provided a sample list of decommissioning tasks and the estimated costs therefor and projected the total cost to decommission a 2 MW solar facility to be \$60,200. While those estimated costs are now outdated due to inflation, if the total cost to decommission is adjusted by the cumulative inflation rate of 7.83% between 2017 and 2021¹, under NYSERDA's model, the cost to decommission a 2 MW solar project today would be \$64,917. Con Ed CEB's cost estimate to decommission its smaller 1.87 MW solar project is \$106,040, approximately 65% higher than it would be using the NYSERDA guidance.

As the Planning Board may require ConEd CEB to file a decommissioning Bond under the Local Solar Law, attached is a template for the Bond it would submit in the amount of the Cost Estimate from TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA.

If the Planning Board, Director of Planning or Town Engineer have any questions, please do not hesitate to contact me.

¹ \$60,200 in 2017 has the same purchasing power as \$64,917.53 in 2021.

The total inflation rate from 2017 to 2021 is 7.83642%.

The average inflation rate from 2017 to 2021 is 1.90403%.

Norman E. Dupuis, P.E.
4301 University Boulevard, Dallas, TX 75205
Registration No: ME 40921

RE: Removal Cost Estimate
For a Proposed 1.875 MW (AC) Solar Facility
Owned by Yorktown NY 1, LLC
Located at 3849 Foothill Street, Yorktown, NY

22 April 2021

To Whom It May Concern:

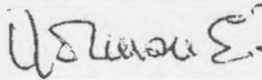
I have been requested by the management of Con Edison Clean Energy Businesses, 100 Summit Lake Drive, Valhalla, NY 10595, to estimate, at today's dollar rates, the overall future cost of removing the proposed 1.875 MW (AC) Solar Facility that Con Edison Clean Energy Businesses (ConEd) is planning to install at 3849 Foothill Street, Yorktown, NY.

My qualifications for making such an estimate include fifteen years of experience in the Solar Power Industry, beginning as a Project Manager in 2006, continuing as Regional Operations Manager, and, presently, as an Independent Solar Consultant. I have been a registered Professional Engineer (Mechanical) in California since 1975, and in Massachusetts since 1998.

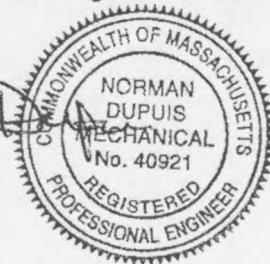
I have reviewed the Solar Facility design, and the equipment to be provided by ConEd, and worked with ConEd personnel to develop a coordinated plan for decommissioning and removing the Solar Facility at the end of the Solar Facility's effective life, when its use will be discontinued, expected to be approximately 20-25 years after installation. This "Decommissioning Plan" is attached hereto.

Our estimate for removing the Solar Facility following the attached Plan, in 2021 dollars, is \$106,040, and we have included a proposed Surety Bond and a mechanism for calculating removal cost increases due to inflation, as required by Bylaw §300-81.5. Tasks to be carried out and timing of the decommissioning are listed in the Plan.

Sincerely,



Norman E. Dupuis, P.E.



Attachment: DECOMMISSIONING PLAN FOR Yorktown NY 1, LLC
- "Yorktown A," 3849 Foothill Street, Yorktown, NY

DECOMMISSIONING PLAN FOR YORKTOWN NY 1, LLC

"Yorktown A" Solar Facility

Located at 3849 Foothill Street, Yorktown, NY

Use of the Solar Facility will be discontinued at the end of its effective life, expected to be approximately 20-25 years after installation. At that time the Owner, Yorktown NY 1, LLC, will physically remove the Solar Facility from the site. "Physically remove" will include, but not be limited to:

- a) Removal of the Solar Panel frames, supporting structures, foundations, electrical equipment and connections; all battery energy storage system components, structures and equipment; Owner-installed utility poles and overhead wiring; all other equipment and equipment shelters, aboveground and below-ground equipment, structures and foundations; security barriers and all other appurtenant structures from the Solar Facility site,
- b) Proper disposal of all solid or hazardous materials and wastes from the site in accordance with local and State solid-waste disposal regulations,
- c) Restoration of the location of the Solar Facility site to its natural condition, re-vegetating restored soil areas with native seed mixes, all in accordance with Landscape Notes on the ConEd 7 Feb 2021 Site Plan, drawing C007, including filling in the detention ponds and stormwater swale and removing the check dams, except that any landscaping consistent with the character of the site and neighborhood may remain.

We estimate that the decommissioning work will take 6-8 weeks to complete. Inverters, Transformers, Battery Modules and Switchgear will be removed from their concrete pads. The electrical equipment will be sold back to the manufacturers or to a recycling facility. The Facility contains copper, aluminum and other metals that will be recycled. Racking materials and fencing will be removed and folded for transport. The Owner will be responsible for all decommissioning costs and will obtain all permits or approvals required by the Town prior to commencing decommissioning work. The estimated cost of decommissioning the project is \$106,040 (2021 dollars, per the table below).

Removal Cost Estimate			
Item	Quantity	Rate/ea.	Amount
Remove Table Wiring	1 lot	\$2,750/lot	2,750
Remove Panels	5,994 panels	\$5/panel	30,000
Dismantle Tables (35 panels per table)	171 tables	\$80/table	13,680
Remove Solar Electrical Equipment	1 lot	\$2,210/lot	2,210
Remove Battery Energy Storage System	45 modules	\$110/each	4,950
Breakup and Remove Concrete Pads	1 lot	\$3,300/lot	3,300
Remove Tables	171 tables	\$52/table	9,000
Remove Cable	1 lot	\$7,170/lot	7,170
Remove Ground Pilings and Power Poles	1 lot	\$15,450/lot	15,450
Remove Perimeter Fence	1 lot	\$5,520/lot	5,520
Grading, including filling ponds and swale	1 lot	\$4,410/lot	4,410
Re-seed Disturbed Areas	16 ac	\$250/acre	4,000
Truck to Recycling Center	4 loads	\$900/load	3,600
Totals			\$106,040

In order to meet the bonding/security requirements of the Yorktown Zoning ByLaw #300-81.5, 2020, the Owner will post security in the amount of \$106,040 in the form of a Surety Bond from the Travelers Casualty and Surety Company of America. As the Solar Facility ages, the Owner will review the Removal Cost Estimate at five-year intervals and adjust the Estimate for actual inflation that may have occurred during the interval. If as a result of each re-calculation the Estimate increases, the Owner will increase the bond amount accordingly.

22 April 2021

DECOMMISSIONING SOLAR PANEL SYSTEMS



This fact sheet provides information to local governments and landowners on decommissioning of large-scale solar panel systems.

As local governments develop solar regulations and landowners negotiate land leases, it is important to understand the options for decommissioning solar panel systems and restoring project sites to their original status.

From a land use perspective, solar panel systems are generally considered large-scale when they constitute the primary use of the land, and can range from less than one acre in urban areas to 10 or more acres in rural areas. Depending on where they are sited, large-scale solar projects can have habitat, farmland, and aesthetic impacts. As a result, large-scale systems must often adhere to specific development standards.

Abandonment and decommissioning defined

Abandonment occurs when a solar array is inactive for a certain period of time.

- Abandonment requires that solar panel systems be removed after a specified period of time if they are no longer in use. Local governments establish timeframes for the removal of abandoned systems based on aesthetics, system size and complexity, and location. For example, the Town of Geneva, NY, defines a solar panel system as abandoned if construction has not started within 18 months of site plan approval, or if the completed system has been nonoperational for more than one year.¹
- Once a local government determines a solar panel system is abandoned, and has provided thirty (30) days prior written notice to the owner it can take enforcement actions, including imposing civil penalties/fines, and removing the system and imposing a lien on the property to recover associated costs.

Decommissioning is the process for removing an abandoned solar panel system and remediating the land.

- When describing requirements for decommissioning sites, it is possible to specifically require the removal of infrastructure, disposal of any components, and the stabilization and re-vegetation of the site.

Also - for removing a system at the end of its life, ie, not necessarily "abandoned." - just not generating enough energy to justify the operating costs.

What is a decommissioning plan?

Local governments may require to have a plan in place to remove solar panel systems at the end of their lifecycle, which is typically 20-40 years. A decommissioning plan outlines required steps to remove the system, dispose of or recycle its components, and restore the land to its original state. Plans may also include an estimated cost schedule and a form of decommissioning security (see Table 1).

What is the estimated cost of decommissioning?

Given the potential costs of decommissioning and land reclamation, it is reasonable for landowners and local governments to proactively consider system removal guarantees. A licensed professional engineer, preferably with solar development experience, can estimate decommissioning costs, which vary across the United States. Decommissioning costs will vary depending upon project size, location, and complexity. Table 1 provides an estimate of potential decommissioning costs for a ground-mounted 2-MW solar panel system. Figures are based on estimates from the Massachusetts solar market. Decommissioning costs for a New York solar installation may differ. Some materials from solar installations may be recycled, reused, or even sold resulting in no costs or compensation. Consider allowing a periodic reevaluation of decommissioning costs during the project's lifetime by a licensed professional engineer, as costs could decrease and the required payment should be reduced accordingly.

Table 1: Sample list of decommissioning tasks and estimated costs

Tasks	Estimated Cost (\$)
Remove Rack Wiring	\$2,459
Remove Panels	\$2,450
Dismantle Racks	\$12,350
Remove Electrical Equipment	\$1,850
Breakup and Remove Concrete Pads or Ballasts	\$1,500
Remove Racks	\$7,800
Remove Cable	\$6,500
Remove Ground Screws and Power Poles	\$13,850
Remove Fence	\$4,950
Grading	\$4,000
Seed Disturbed Areas	\$250
Truck to Recycling Center	\$2,250
Current Total	\$60,200
Total After 20 Years (2.5% inflation rate)	\$98,900

¹ Town of Geneva, N.Y. CODE § 130-4(D)(5) (2016):

How can decommissioning be ensured?

Landowners and local governments can ensure appropriate decommissioning and reclamation by using financial and regulatory mechanisms. However, these mechanisms come with tradeoffs. Including decommissioning costs in the upfront price of solar projects increases overall project costs, which could discourage solar development. As a result, solar developers are sometimes hesitant to provide or require financial surety for decommissioning costs.

It is also important to note that many local governments choose to require a financial mechanism for decommissioning. Although similar to telecommunications installations, there is no specific authority to do so as part of a land use approval for solar projects (see Table 2). Therefore, a local government should consult their municipal attorney when evaluating financial mechanisms.

The various financial and regulatory mechanisms to decommission projects are detailed below.

Table 2: Relevant Provisions of General City, Town, and Village Laws Relating to Municipal Authority to Require Conditions, Waivers, and Financial Mechanisms

Site Plan Review	General City Law	Town Law	Village
Conditions	27-a (4)	274-a (4)	7-725-a (4)
Waivers	27-a (5)	274-a (5)	7-725-a (5)
Performance bond or other security	27-a (7)	274-a (7)	7-725-a (7)
Subdivision	General City Law	Town Law	Village Law
Waivers	33 (7)	277 (7)	7-730 (7)
Performance bond or other security	33 (8)	277 (9)	7-730 (9)
Special	General City Law	Town Law	Village Law
Conditions	27-b (4)	274-b (4)	7-725-b (4)
Waivers	27-b (5)	274-b (5)	7-725-b (5)

Source: Referenced citations may be viewed using the NYS Laws of New York Online

Excerpts from these statutes are also contained within the "Guide to Planning and Zoning Laws of New York State," New York State Division of Local Governments Services, June 2011: www.dos.ny.gov/lg/publications/Guide_to_planning_and_zoning_laws.pdf

Financial mechanisms

Decommissioning Provisions in Land-Lease Agreements.

If a decommission plan is required, public or private landowners should make sure a decommissioning clause is included in the land-lease agreement. This clause may depend on the decommissioning preferences of the landowner and the developer. The clause could require the solar project developer to remove all equipment and restore the land to its original condition after the end of the contract, or after generation drops below a certain level, or it could offer an option for the landowner to buy-out and continue to use the equipment to generate electricity. The decommissioning clause should also address abandonment and the possible failure of the developer to comply with

the decommissioning plan. This clause could allow for the landowner to pay for removal of the system or pass the costs to the developer.

Decommissioning Trusts or Escrow Accounts. Solar developers can establish a cash account or trust fund for decommissioning purposes. The developer makes a series of payments during the project's lifecycle until the fund reaches the estimated cost of decommissioning. Landowners or third-party financial institutions can manage these accounts. Terms on individual payment amounts and frequency can be included in the land lease.

Removal or Surety Bonds. Solar developers can provide decommissioning security in the form of bonds to guarantee the availability of funds for system removal. The bond amount equals the decommissioning and reclamation costs for the entire system. The bond must remain valid until the decommissioning obligations have been met. Therefore, the bond must be renewed or replaced if necessary to account for any changes in the total decommissioning cost.

Letters of credit. A letter of credit is a document issued by a bank that assures landowners a payment up to a specified amount, given that certain conditions have been met. In the case that the project developer fails to remove the system, the landowner can claim the specified amount to cover decommissioning costs. A letter of credit should clearly state the conditions for payment, supporting documentation landowners must provide, and an expiration date. The document must be continuously renewed or replaced to remain effective until obligations under the decommissioning plan are met.²

Nonfinancial mechanisms

Local governments can establish nonfinancial decommissioning requirements as part of the law. Provisions for decommissioning large-scale solar panel systems are similar to those regulating telecommunications installations, such as cellular towers and antennas. The following options may be used separately or together.

- **Abandonment and Removal Clause.** Local governments can include in their zoning code an abandonment and removal clause for solar panel systems. These cases effectively become zoning enforcement matters where project owners can be mandated to remove the equipment via the imposition of civil penalties and fines, and/or by imposing a lien on the property to recover the associated costs. To be most effective, these regulations should be very specific about the length of time that constitutes abandonment. Establishing a timeframe for the removal of a solar panel system can be based on system aesthetics, size, location, and complexity. Local governments should include a high degree of specificity when defining "removal" to avoid ambiguity and potential conflicts.

² See a letter of credit submitted to the Vermont Public Service Board by NextSun Energy, LLC.

[http://psb.vermont.gov/sites/psb/files/docketsandprojects/Solar/Exhibit%20Petitioner%20JL-7%20\(Revised%20326.14\).pdf](http://psb.vermont.gov/sites/psb/files/docketsandprojects/Solar/Exhibit%20Petitioner%20JL-7%20(Revised%20326.14).pdf)

- **Special Permit Application.** A local government may also mandate through its zoning code that a decommissioning plan be submitted by the solar developer as part of a site plan or special permit application. Having such a plan in place allows the local government, in cases of noncompliance, to place a lien on the property to pay for the costs of removal and remediation.
- **Temporary Variance/Special Permit Process.** As an alternative to requiring a financial mechanism as part of a land use approval, local governments could employ a temporary variance/special permit process (effectively a re-licensing system). Under this system, the locality would issue a special permit or variance for the facility for a term of 20 or more years; once expired (and if not renewed), the site would no longer be in compliance with local zoning, and the locality could then use their regular zoning enforcement authority to require the removal of the facility.

What are some examples of abandonment and decommissioning provisions?

The New York State Model Solar Energy Law provides model language for abandonment and decommissioning provisions: www.cuny.edu/about/resources/sustainability/reports/NYS_Model_Solar_Energy_LawToolkit_FINAL_final.pdf

The following provide further examples that are intended to be illustrative and do not confer an endorsement of content:

- Town of Geneva, N.Y., § 130-4(D): ecode360.com/28823382
- Town of Olean, N.Y., § 10.25.5: www.cityfolean.org/council/minutes/ccmin2015-04-14.pdf

Is there a checklist for decommissioning plans?

The following items are often addressed in decommissioning plans requirements:³

- Defined conditions upon which decommissioning will be initiated (i.e., end of land lease, no operation for 12 months, prior written notice to facility owner, etc.).
- Removal of all nonutility owned equipment, conduit, structures, fencing, roads, and foundations.
- Restoration of property to condition prior to solar development.
- The timeframe for completion of decommissioning activities.
- Description of any agreement (e.g., lease) with landowner regarding decommissioning.
- The party responsible for decommissioning.
- Plans for updating the decommissioning plan.
- Before final electrical inspection, provide evidence that the decommissioning plan was recorded with the Register of Deeds.

³ North Carolina Solar Center, NC Sustainable Energy Center. December 2013. *Template Solar Energy Development Ordinance for North Carolina.* https://nccleantech.ncsu.edu/wp-content/uploads/Template-Solar-Ordinance_V1.0_12-18-13.pdf

Additional Resources

Template Solar Energy Development Ordinance for North Carolina (see Appendix G at pg. 21 for Sample Decommissioning Plan): nccleantech.ncsu.edu/wp-content/uploads/Template-Solar-Ordinance_V1.0_12-18-13.pdf

Land Use Planning for Solar: training.ny-sun.ny.gov/images/PDFs/Land_Use_Planning_for_Solar_Energy.pdf

Zoning Guide for Solar: training.ny-sun.ny.gov/images/PDFs/Zoning_for_Solar_Energy_Resource_Guide.pdf

Information on First Solar's recycling program for all of their modules: www.firstsolar.com/en/Technologies-and-Capabilities/Recycling-Services

PV Cycle: Europe's PV recycling program: www.pvcycle.org/

Solar Energy Industries Association (SEIA) information on solar panel recycling: www.seia.org/policy/environment/pv-recycling

Silicon Valley Toxics Coalition: svtc.org/

Silicon Valley Toxic Coalition Solar Scorecard: www.solarscorecard.com/2015/2015-SVTC-Solar-Scorecard.pdf

End-of-life PV: then what? - Recycling solar panels: www.renewableenergyfocus.com/view/3005/end-of-life-pv-then-what-recycling-solar-pv-panels/

NY-Sun, a dynamic public-private partnership, will drive growth in the solar industry and make solar technology more affordable for all New Yorkers. NY-Sun brings together and expands existing programs administered by the New York State Energy Research and Development Authority (NYSERDA), Long Island Power Authority (LIPA), PSEG Long Island, and the New York Power Authority (NYPA), to ensure a coordinated, well-supported solar energy expansion plan and a transition to a sustainable, self-sufficient solar industry.

**TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA
HOME OFFICE, HARTFORD, CONNECTICUT**

SITE RESTORATION BOND

Bond #

KNOW ALL BY THESE PRESENTS, that we, **Yorktown NY 1, LLC**, as principal, and Travelers Casualty and Surety Company of America of Hartford, Connecticut, a Connecticut corporation, authorized to do business in the State of **New York**, as Surety, are held and firmly bound unto **Town of Yorktown 1974 Commerce Street, Yorktown Heights, NY 10598**, as Obligee, in the penal sum of **One Hundred Six Thousand Forty Dollars (\$106,040.00)** lawful money of the United States of America, for the payment of which well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal is responsible for decommissioning the solar electric generating facility located at **3849 Foothill Street, Yorktown, NY** pursuant to a **Special Use Permit and Site Plan Approval granted by the Planning Board for the Town of Yorktown on** _____, **2021** and the **Decommissioning Plan and Cost Estimate** referenced therein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall restore the site as required, and shall save the Obligee harmless from any loss, cost or damage by reason of its failure to complete said site restoration work, then this obligation shall be null and void; otherwise to remain in full force and effect.

The bond is subject, however, to the following express conditions:

FIRST: That in the event of a default on the part of the Principal, its successors or assigns, a written statement of such default with full details thereof shall be given to Surety promptly, and in any event, within thirty (30) days after the Obligee shall learn of such default, such notice to be delivered to Surety at its Home Office in Hartford, Connecticut by registered or certified mail, with a copy to BSIClaims@travelers.com.

SECOND: That no claim, suit or action under this bond by reason of any such default shall be brought against Surety unless asserted or commenced within twelve (12) months after the effective date of any termination or cancellation of this bond.

THIRD: That this bond may be terminated or canceled by Surety by 90 days prior notice in writing to Principal and to Obligee, such notice to be given by certified mail. Such termination or cancellation shall not affect any liability incurred or accrued under this bond prior to the effective date of such termination or cancellation; provided, however that, if within 45 days after the date notice of termination or cancellation is received by the Obligee, the Principal provides alternate financial assurance and obtains the Obligee's written approval of such alternate financial assurance, then this obligation shall be null and void. The liability of the Surety shall be limited to the amount set forth above and is not cumulative. If the Principal fails to provide alternate financial assurance to the Obligee and obtain Obligee's written approval thereof during the 45 days following receipt by the Obligee of the notice of cancellation, the Obligee may declare the Principal in default of its obligation to maintain financial assurance.

FOURTH: That no right of action shall accrue under this bond to or for the use of any person other than the Oblige, and its successors and assigns.

Signed, sealed and dated this day of

[Principal Name] _____

Principal

By: _____

Travelers Casualty and Surety Company of America

By: _____

, Attorney-In-Fact