

# Solar Decommissioning Plan

## Ellis North and Ellis South

Prepared for the Town of Dryden  
By Dryden-Tompkins Solar I, LLC  
December 2018

### Introduction

Dryden-Tompkins Solar I, LLC (the "Applicant") is developing and constructing the Ellis North and Ellis South solar projects in the Town of Dryden (the "Town"). The Ellis projects are located North and South of Stevenson Road on approximately 125 acres of land. Ellis North and Ellis South are groups of independently interconnected projects that total 18 MWac and will interconnect within the New York State Electric and Gas distribution grid. The Applicant will invest capital, construct, and own the solar arrays, and supply the electricity generated from the projects to NYSEG customers through the Community Distributed Generation ("CDG") regulation enabled by the New York State Public Service Commission (the "PSC").

This Decommissioning Plan is presented to the Town to satisfy a condition of approval of the Special Use Permit for this project as outlined in Town of Dryden Resolution Number 111 of 2017. This Decommissioning Plan shall be construed in conjunction with the Decommissioning Agreement dated \_\_\_\_\_, December, 2018 among Town of Dryden, Dryden-Tompkins Solar I, LLC and Cornell University ("Decommissioning Agreement"). If there is any discrepancy between the contents of this Decommissioning Plan and the Decommissioning Agreement, the provisions of the Decommissioning Agreement shall supersede the terms of this Plan.

For design and technical specifications, please refer to the construction drawings submitted with the building permit application.

The Applicant proposes equipment presented in Table 1 for the arrays in the Town.

Item	Provider	Quantity	Useful Life
PV Panels	Hanwha Q-Cells America	77,910	35 years
Inverters	SMA America	Central: 8, String: 64	25 years
Racking	GameChange Solar	See Final Design	35 years
Wiring	Contractor	See Final Design	35 years
Concrete Pads	Contractor	See Final Design	35 years

Table 1 - Proposed Equipment for Solar Arrays

### Decommissioning & Reclamation Plan

The Applicant has entered into long-term lease agreements with Cornell University, the landowner, to host these projects. At the end of the lease terms, the Applicant will either (1) enter into mutual agreements to extend the lease, (2) remove the equipment at the Applicant's expense, or (3) sell the facility to the landowner at a price determined in the future between Applicant and landowner.

The Applicant shall complete the following activities in order to decommission the Systems:

- System will be safely de-energized from potential energy.

- AC and DC wiring will be safely disconnected from all equipment.
- PV Panels will be detached from the racking system and stacked for removal;
- Sections of the racking system will be and stacked for removal;
- Pile-driven racking systems, such as I-beams, will be pulled out of the ground using a pile rig;
- Inverters, transformers, and switchgear will be removed from the concrete pads, Combiner box assemblies will be removed from mounts.
- The concrete foundations for the inverters, transformers, and switchgear will be lifted, secured onto flat beds, and transported off-site for processing;
- Buried conduits will be removed from the ground, and all trenches will be backfilled with the native soils removed;
- On-site power poles for above-ground wiring at the collector substation will be removed;
- The utility electrical distribution lines and poles will be removed by the local utility; the Applicant does not propose any action for utility work;
- Applicant shall be responsible for all decommissioning costs;
- Applicant shall obtain any additional permits required for the decommissioning, removal and legal disposal of Project components prior to commencement of decommissioning activities;
- Applicant shall complete the decommissioning, including component removal and disposition, grading and re-vegetation in accordance with permits and in compliance with all applicable rules and regulations then in effect governing the disposal thereof;
- Solar facility construction does not employ hazardous materials. No hazardous materials are expected to be removed from site.
- Applicant will not alter the agricultural soils on the Sites.
- Applicant shall plow with a sub-soiler in the areas underneath any concrete blocks and the roadways where soils may have become compressed;
- Applicant shall reseed and mulch disturbed areas using a seed mix pre-approved by the USDA-WSG Guide entitled, *The Use of Native Warm Season Grasses for Critical Area Stabilization*.

The Systems shall be decommissioned by trained contractors and the Applicant will seek to repurpose materials, such as wiring, steel framing with shallow embedment, PV panels, and ancillary equipment. Upon decommissioning, the electrical equipment may either be sold back to the manufacturer or another party, transferred to a recycling facility, or transferred to the nearest Town approved disposal facility. The project contains large amounts of easily recyclable conductive metals, including copper and aluminum. All non-recyclable materials will be taken to the nearest Town approved disposal facility.

Over the 35+ year expected life of the Systems, the existing groundcover will be maintained as grass by attentive landscaping and native or seeded grass will be utilized for groundcover. The Applicant will mow the grass and may also use livestock grazing as a vegetation management tool. The soil stockpile, if any, is to be monitored for a maintained strong stand of vegetative growth and for erosion of soils. If additional vegetative cover is needed, the stockpile shall be reseeded and mulched. If erosion is noted, additional protective measures shall be implemented.

## Decommissioning Bond

Labor: The New York State Energy Research and Development Authority (NYSERDA) has estimated the cost of decommissioning a 2 MW solar site to be \$60,200 as described in Table 2. The attached Exhibit A contains the proposed schedule of Decommissioning Bond Values over the next 35 years for the Ellis North and Ellis South solar

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

projects.

Table 2: NYSERDA’s List of Decommissioning Tasks and Estimated Costs  
 Source: [www.nyseda.ny.gov/-/media/NYSun/files/Decommissioning-Solar-Systems.pdf](http://www.nyseda.ny.gov/-/media/NYSun/files/Decommissioning-Solar-Systems.pdf)

Value of Equipment: Two key system components to be considered in the decommissioning of a solar electric system are the salvage values of the solar panels and the steel from the racking system. The value of solar panels in the future can come from either the value of the energy they produce or the material components. The solar panels have a useful life of 35+ years and come with a manufacturer’s 25 year power warranty that notes production of 83% after 25 years in operation.

In terms of material components, panels can be recycled for their glass, aluminum, and silicone. It is expected that as the solar market grows and systems come offline in 35 years, there will be a substantial secondary market for panels along with highly advanced solutions for recycling solar panels in the United States.

Salvageable equipment may also include other electrical components such as copper and aluminum wiring, inverters, transformers, and switchgear, which may be most valuable if repaired, re-used, or re-purposed. The sale of used components could also be used in the future to offset system upgrades and support the future operations and maintenance activities of the systems.

Exhibit A  
Decommissioning Bond Value

Decommissioning Bond Value	
Timeframe (Year)	Amount (\$)
1	\$750,000
2	\$750,000
3	\$750,000
4	\$750,000
5	\$750,000
6	\$750,000
7	\$750,000
8	\$750,000
9	\$750,000
10	\$750,000
11	\$750,000
12	\$750,000
13	\$750,000
14	\$750,000
15	\$1,000,000
16	\$1,000,000
17	\$1,000,000
18	\$1,000,000
19	\$1,000,000
20	\$1,000,000
21	\$1,000,000
22	\$1,000,000
23	\$1,000,000
24	\$1,000,000
25	\$1,000,000
26	\$1,250,000
27	\$1,250,000
28	\$1,250,000
29	\$1,250,000
30	\$1,250,000
31	\$1,250,000
32	\$1,250,000
33	\$1,250,000
34	\$1,250,000
35	\$1,250,000

This Solar Decommissioning Plan for Ellis North and Ellis South was prepared by Dryden-Tompkins Solar I, LLC for the Town of Dryden.

Sincerely,

A handwritten signature in black ink, appearing to read 'BW', with a long horizontal line extending to the right.

Bruce Wiegand  
Dryden-Tompkins Solar I, LLC