



TOWN OF DEERING

Board of Selectmen

762 Deering Center Road
Deering, NH 03244

Meeting Minutes

March 6, 2018

Selectmen present: Aaron Gill, Allen Belouin, John Shaw
The hearing was called to order at 1900.

MEETING MINUTES:

Meeting Minutes – February 20th.

Mr. Gill made the motion to approve the public and non-public meeting minutes of February 20th. Mr. Belouin seconded the motion. The vote was unanimous and so moved. Given that two members of the Board will be leaving and therefore not in attendance at the next meeting the March 6th minutes will be completed at the end of the meeting and approved while there remains a quorum.

New Business

Dan Goddu – Solar Ordinance

Mr. Goddu was unavailable for the meeting. It was noted that solar arrays are installed in various residences. See attached NHMA training for planning board members concerning solar ordinances

TO BE REVIEWED AND/OR SIGNED:

- Employee Payroll	<u>February 27th</u> \$13,093.29
- Employee Payroll	<u>March 6th</u> \$13,172.91
- AP ACH XFER	<u>March 6th</u> \$174.70
- AP Manifest	<u>March 6th</u> \$332.04
- AP Manifest	<u>March 6th</u> \$360,862.52
- Intent to Cut	242-001/002
- Yield Tax 237-030-000	\$1,684.95
- Elderly Exemption	231-014-000

Non-Public Session – RSA 91-A:3 II(a)

Mr. Gill made the motion to enter non-public session under RSA 91-A:3 II (a) to conclude the TA's performance review. Mr. Shaw seconded the motion. The vote was unanimous and so moved.

The Board entered non-public session at approximately 1920.

The Board reconvened their public session at 1935.

Given the TA's successful performance review Mr. Belouin made the motion to increase the TA's rate of annual remuneration from \$75,000 per annum to \$77,500 effective January 1st 2019. Mr. Shaw seconded the motion. The vote was unanimous and so moved.

MEETING MINUTES:

Meeting Minutes – March 6th.

The TA printed out the minutes for the Board to review. Mr. Belouin made the motion to approve the public and non-public meeting minutes of March 6th. Mr. Shaw seconded the motion. The vote was unanimous and so moved.

The TA thanked the Messieurs Shaw and Gill for their service to Deering and wished them well in their future endeavors.

There being no further business to come before the Board Mr. Gill made the motion to adjourn. Mr. Belouin seconded the motion. The vote was unanimous and so moved. The meeting adjourned at 1940.

Respectfully Submitted,

\s\ Russell McAllister
Town Administrator

New Hampshire Municipal Association
2018 Municipal Law Lecture Series
Saturday, October 20, 2018

8:30 – 9:00

Registration and Continental Breakfast

9:00 – 10:55

How to Read a Survey Plan and the Professionals Involved

Stephan Nix, Esquire

Licensed Land Surveyor

Nate Miller, AICP, Deputy Director

Southern NH Planning Commission

10:55 – 11:05

Break

11:05 – 12:05

Planning Board Fundamentals

C. Christine Fillmore, Esquire

Gardner Fulton & Waugh PLLC

Diane M. Gorrow

Soule, Leslie, Kidder, Sayward & Loughman, PLLC

12:05 – 12:50

Lunch

12:50 – 1:45

Planning Board Fundamentals (Continued)

1:45 – 1:55

Break

1:55 – 3:55

Model Solar Zoning Ordinance and Guidance

Clayton R. Mitchell, Ph.D, Esquire

University of New Hampshire

John T. Ratigan, Esquire

Donahue, Tucker & Ciandella, PLLC



CELEBRATING OVER 30 YEARS OF SERVICE TO OUR CLIENTS

SOLAR LEASES OF MUNICIPAL PROPERTY:

THE GOOD, THE BAD AND THE UGLY

September, 2018

ROBERT D. CIANDELLA
LIZABETH M. MACDONALD
JOHN J. RATIGAN
DENISE A. POULOS
ROBERT M. DEROSIER
CHRISTOPHER L. BOLDT
SHARON CUDDY SOMERS
DOUGLAS M. MANSFIELD
KATHERINE B. MILLER
CHRISTOPHER T. HILSON
HEIDI J. BARRETT-KITCHEN
JUSTIN L. PASAY
ERIC A. MAHER
AMELIA G. SRETER
AUSTIN M. MIKOLAITIES
BRENDAN A. O'DONNELL

SENIOR COUNSEL
MICHAEL J. DONAHUE

RETIRED
CHARLES F. TUCKER
NICHOLAS R. AESCHLIMAN

Ordinarily, when a large solar array developer comes to a New Hampshire municipality with a proposal to install a solar array on municipal property, discussions between the solar developer and the municipality will lead to the developer presenting to the municipality two documents: the proposed lease for the municipal property in question on which the large solar array will be installed and a purchase power agreement (PPA), that addresses the terms, price and other elements of the agreement between the solar developer and municipality concerning the solar power that the municipality will be purchasing from the solar array developer/owner, and any surplus power that will be sold by the developer owner onto the power generation market.

Smaller solar installations that one often sees at the municipal public works site, the fire station, or other municipal buildings will not trigger many of the concerns discussed below.

That said, the review of these large solar array documents present a multitude of challenges to the municipality, including:

- the large solar array developer/owner is often from out of state, and its proposed draft lease and PPA will reflect significant unfamiliarity with New Hampshire law.

- many of the issues arising from the particular proposed solar array site are site specific-- drainage, grading, access, et cetera. Building a solar array on a hillside presents different considerations than installing the array on a flat, abandoned parcel of land such as, for instance, the site of a former municipal waste water treatment lagoon.

- what does the municipality have to offer in this large solar array development proposal? A cheap if not free land lease; a customer for some if not all of the solar power output; low property taxes (taxes are a zero sum game); a customer who will always pay its bills; and, likely for projects that expect to sell a good portion of the power production onto the marketplace, the

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chosen municipal site for a large solar array will likely have close proximity to a high voltage transmission line/site station.

1. Lease term/Town Meeting Approval. Unless your municipality is a City or Town with a certain type of charter form of government, or the Town has authorized the Selectmen under RSA 41:14-a, III, to lease Town property for a term of up to 5 years, a vote of Town Meeting is required to ratify a lease of Town property for a term of more than 1 year. See, RSA 41:14-a, II. No large solar array developer will be proposing a 5 year lease; most lease terms are 20 years, and often contain renewal/extension clauses having 5 year extension intervals. So, when you are considering leasing Town property for a large solar array development, build into your timeline calculus the need to go to Town Meeting for approval of the lease term.

2. The Leased Property. You'll need to define the dimensions of the leased property clearly, and how the solar array tenant will have access to the leased property. Access is a big issue. The solar array tenant will want 24/7 access. This is reasonable. The right of access to the site should end when the use ends and the site has been decommissioned. But the solar array tenant may also seek to have you to construct the access, to provide maintenance of the access (winter plowing, et cetera), to provide utility service (telecommunications most often) and possibly to provide security (fencing, possibly security lighting). These are all undertakings that you likely will not want to be involved with, as these undertakings cost money and create liabilities for the Town. Now, there may be some sites where it is reasonable for the Town to assume maintenance of the access way, including winter maintenance. For instance, if the proposed solar array site is out beyond the Town's public works facility or its septic treatment plant, and the Town is already maintaining that access way and plows it regularly in the winter, it might be reasonable for the Town to assume responsibility for the access way up to the end of where the Town currently maintains the access way, and then it would be the responsibility of the solar array tenant to build out and maintain the access way beyond where the Town's use of the access way currently terminates. Security should always be the responsibility of the solar array tenant, not the Town.

3. The lease should specify that the use of the property should be for installing and maintaining the solar array, and not for any other purpose.

4. The lease and the Purchase Power Agreement should have the same term (e.g., 20 years), and extensions should be co-terminus as well. If the site is no longer being used to generate power, the lease should terminate.

5. Lease Rent. This is another site specific question. Many leases will have low or nominal rents, because the property being leased has little or no value in the marketplace (the abandoned, decommissioned municipal wastewater treatment lagoon site, for instance) and the

municipality is trying not only to encourage the development of the site for solar array purposes, but is buying a portion or all of the power from the site. It may make sense to have a nominal (\$1.00 per year) rent while the municipality is receiving as a customer all or most of the power from the site, and then, in the future, if the municipality is no longer a customer, more than a nominal rent is charged. Also, rent, like taxes, is a zero sum game if the municipality is a customer for the power. If rent or taxes are very low, then the municipality can get a better price on the cost of power from the project.

6. Property taxes. RSA 72:23, I (b) requires that municipal property occupied by others shall pay duly assessed property taxes. RSA 72:23, I (b) 4 requires that all such leases shall insert language to the effect that if the duly assessed property taxes are not paid when due, such failure to pay shall be cause for the Lessor to terminate the lease.

7. Solar Insolation. This is the term that means the amount of sunlight energy that falls upon the site. Most leases will have standard language that places an obligation on the municipal Lessor to prevent use of the property or site in such a way that the existing solar insolation is reduced. Interpreting this as applied to a restriction on nearby building development on the municipality's property, such a requirement is understandable and easy to manage. But think about tree growth. Twenty, thirty, forty years is a long time. If there are immature white pine stands on the property and adjacent to the proposed solar array installation area, other than on the north side, those trees could grow from 15' to well over 100' in that time frame, and such growth could well effect the solar insolation over time. Some leases may be drafted to require the Lessor to grant a solar easement to the Lessee. Any such easement would need to be co-terminus with the term of the lease, so that when the lease ends, the solar easement ends. No such solar easement or commitment to protect against a reduction of solar insolation should apply to adjacent property not owned by the Town.

8. Site Decommissioning. Someday, the solar use of the leased property will end. The solar panels and relating energy generating infrastructure will wear out over time and the then economics of energy generation may not support panel replacement or further reinvestment in the solar generating capacity of the site. The lease needs to address site decommissioning, and the obligation of the solar array tenant to remove the equipment and related infrastructure. The lease needs to address removing not only the panels, but foundations, and underground conduit, unless the Landlord determines the underground conduit can be left in place because removal would damage the leased property. The obligation should be that the Lessee restore the site to its pre-existing condition, graded, loamed and seeded.

How do you guarantee this decommissioning result, and ensure that the solar array owner just won't walk away from the site? You can have the solar developer provide you with an estimated cost of removal and site closure, adjusted for inflation and have your engineer check

that sum. Then you can look at the generating capacity of the site, now and in the future. Then look at the value at the back end of the lease, how the annual value of the energy generated compares to the cost of removal, and then put a provision in the lease that requires the solar array developer/Lessee to post a removal performance guarantee in an amount and format (letter of credit is better than an insurance bond, much easier to collect) acceptable to the Town to be posted not later than operating year ____ (which might be year 17 or 18 of the lease). That way, the applicant doesn't have to keep the bond in place for most of the life of the project.

The lease can also require that in order to give notice of termination of the lease, or to extend the term of the lease, the notice must be accompanied by the posting of a removal performance guarantee in an amount and format acceptable to the municipality. Or, you can simply require that a removal/site decommissioning performance guarantee be in place in an amount and form acceptable to the municipality during the entire term of the lease.

9. Applicable law. Many of these proposed lease agreements will provide that the applicable law is the state where the solar array developer is located. The contract should instead have language that the Lease Agreement will be subject to and interpreted under the laws of the State of New Hampshire. It is also useful for the contract to have language that provides that the diversity jurisdiction of the federal court system is expressly waived by the parties, and the _____ County (your county) Superior Court and the state courts of New Hampshire shall have exclusive jurisdiction over any disputes arising from this Lease (and put this language in the Purchase Power Agreement too).

10. Confidentiality. Municipalities in New Hampshire are subject to RSA 91-A, the New Hampshire Right-to-Know law. Government is mostly open to the public. While certainly the terms of the lease and the Power Purchase Agreement can be negotiated in private between the parties, before any final contract is signed, its elements should be the subject of public discussion and preferably a public hearing by the governing body. The final lease and Power Purchase Agreement will be public documents. Often these contracts have a confidentiality clause that might be applicable to the business negotiations of private parties, but which is totally inapplicable to how government operates in public in New Hampshire. Confidentiality clauses should be stricken. A brief explanation to the other side almost always works to make this clause go away.

A few words about Purchase Power Agreements:

11. This is the document that defines what amount of power the municipality is purchasing, at what price and over what term of years.

12. It should provide for extensions of the term, and any extension should be co-terminus with the lease.

13. The PPA may provide for the Option of the municipality to buy the solar array facilities at a certain point in time (often at year 20, or earlier as a buyout option). This buyout MUST be at the municipality's sole discretion, it cannot be a requirement. One contract I reviewed referenced the purchase of the solar facilities being at Fair Market Value. Step 1 was the municipality exercised its option to purchase; Step 2 was the solar array owner established the Fair Market Value, if it was disputed by the municipality, the parties selected an independent, nationally recognized appraiser with experience in valuing solar array; Step 3, the value set by the appraiser is binding on the parties and the sale proceeds to closing. Talk about buying a pig in a poke! You cannot be required to exercise your option to purchase before you know the final purchase price, and the price must be the product of a negotiation, not someone else's opinion.

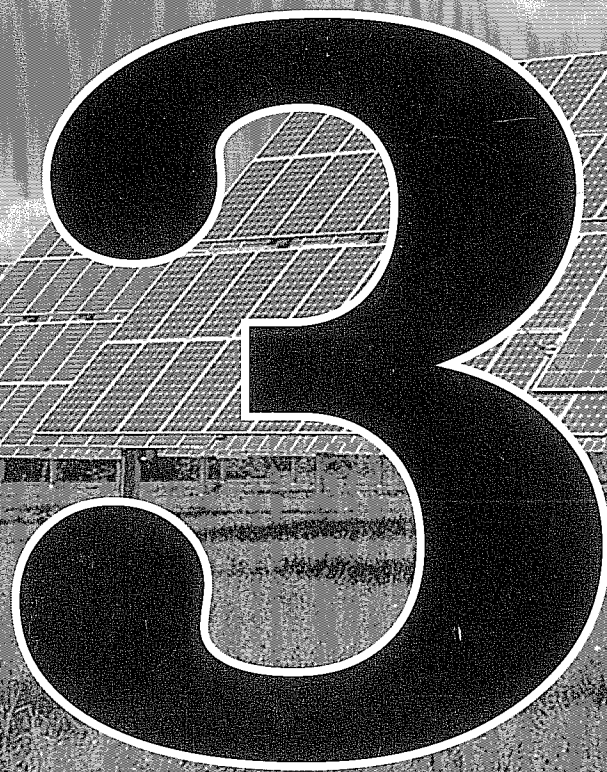
14. PPA Confidentiality. Same comments set forth above in the leases discussion apply.

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2018 MUNICIPAL LAW LECTURE SERIES

Model Solar Zoning Ordinance and Guidance



3

NEW HAMPSHIRE MUNICIPAL ASSOCIATION

2018 Municipal Law Lecture Series

Lecture 3

Model Solar Zoning Ordinance and Guidance

Presenters:

Clayton R. Mitchell, Ph.D., Esq.
University of NH

John T. Ratigan, Esq.
Donahue, Tucker & Ciandella, PLLC

NHMA thanks the New Hampshire Sustainable Energy Association (www.nhsea.org) for making this model solar ordinance and guidance available to our members.

ABOUT THIS PUBLICATION

This publication contains a model solar ordinance and guidance prepared by Attorney Clayton R. Mitchell and Mark Fougere for the New Hampshire Sustainable Energy Association (NHSEA; www.nhsea.org.) It is reprinted here with their permission. This publication is intended to be used in conjunction with the New Hampshire Municipal Association's (NHMA) 2018 Municipal Law Lecture Series. We hope that you will find it useful both now and as reference material in the future. The information presented cannot and does not cover all issues that may arise, and is not intended as legal advice. The opinions expressed are those of the authors and do not necessarily reflect those of NHMA. The New Hampshire Legislature may enact statutes or the New Hampshire Supreme Court may issue decisions that change the law or its interpretation.

Before making any decisions in land use matters, it is always best to consult your municipal attorney or contact the attorneys in NHMA's Legal Services and Government Affairs Department. NHMA's Legal Services attorneys are available to answer inquiries and provide general legal assistance to elected and appointed officials from New Hampshire Municipal Association-member towns, cities and village districts. Attorneys are available Monday through Friday from 8:30 a.m. to 4:30 p.m. and can be reached by phone at 800.852.3358, ext. 3408, or by email at legalinquiries@nhmunicipal.org.

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Green Mountain Power and the City of Rutland have installed the Stafford Hill plant (Left). This is a solar and battery system that can disconnect from the grid and supply critical power to an emergency shelter during long outages.

Introduction

Many NH communities are considering land use regulations for solar arrays. The expansion of solar power development has been a rapid and promising answer to a number of energy issues. Distributed solar systems provide clean energy and promote local jobs for installation. As part of the greater energy system (the grid) they can be a keystone for resiliency goals by forming the foundation of micro-grids. Solar energy can provide an inflation resistant long term source of electricity, particularly in conjunction with the rapidly expanding options for electricity storage. Innovations in regulation allow for municipalities, neighbors, and other parties to invest in solar energy through group net metering even if the array is not located on the site of the participant. Finally, commercial scale solar systems may provide additional benefits such as tax revenue and technological development to host communities.

The market, technological and regulatory advances as well as the steep decline in costs means an acceleration in development of these facilities. Given the legitimate questions of host communities, this Model Solar Zoning Ordinance provides municipal leaders with a framework to consider the land use impacts of solar development in conjunction with other community goals to help develop a coherent strategy for regulating solar land uses. As a relatively new technology, there are many questions and concerns and it is critical to insure that regulations for solar installations are balanced against a municipality's legitimate concerns and adhere to statutory requirements. A community that fails to educate itself and over reacts out of fear or a lack of knowledge, may unnecessarily limit taking advantage of the opportunities in this expanding energy field.

This Model document builds on existing work in the state of New Hampshire. The effort herein provides a framework for communities to permit and regulate a wide range of systems to complete the picture for regulating solar in NH. The approach for the Model provides basic education about the scale of arrays and suggests a step-by-step approach to developing reasonable ordinances and regulations based on traditional regulatory methods.

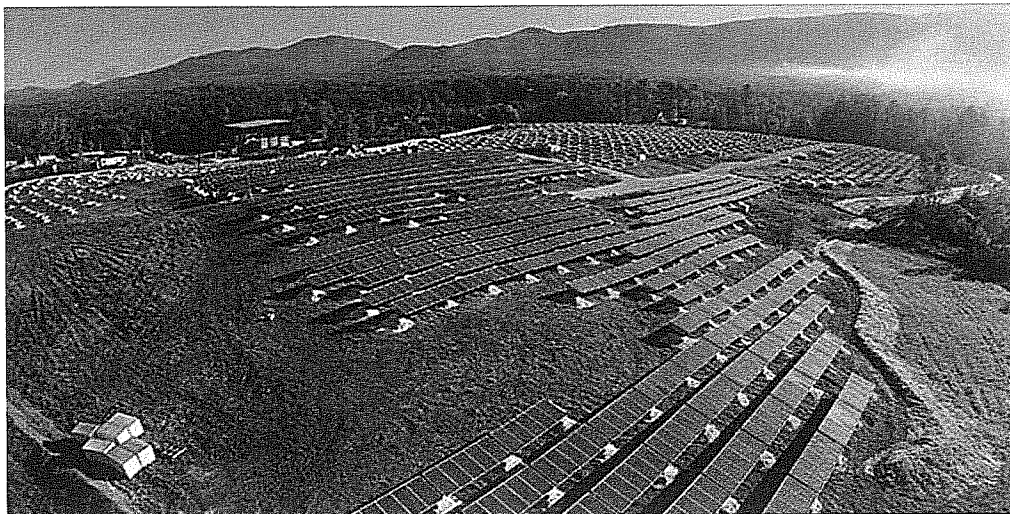
Solar Siting Policy at the Municipal Level

Concerns about solar installations are generally related to natural resource and visual impacts. Accordingly, we have presented an approach to zoning that is unique to these solar specific concerns. This approach is based on NH law and meant to be part of a comprehensive community policy regarding solar.

There are benefits for allowing solar installations in your community. All systems are part of a comprehensive state and national policy to provide clean domestic energy to support lower emissions and local economic development. Small residential systems provide citizens with energy independence and cost savings. Permissive siting regulations are part of a greater community commitment to environmental and economic development objectives.

Tax agreements allowed under NH law allowing for payments in lieu of taxation ("PILOTs") may be part of larger systems installations. For these systems, the benefit to cost calculation clearly falls on the side of substantial benefits to the community - there are very few impacts on municipal services, as there is no need for water, sewer, minimal risk of emergency response, etc.

As communities continue to explore resilience planning and emergency management, the role of renewable energy and micro-grids cannot be understated. Initial site planning may not be able to accommodate micro-grid development, but large arrays are the basic foundation for future opportunities to provide long-term stable electricity to the community. Having larger arrays present in the community can lay the ground work for the development of a power supply for critical municipal infrastructure in the future. The Stafford Hill project (below) is an example of this.



As with any project where professionals try to provide a wide range of options and considerations we note that not all situations can be anticipated or prognosticated. Further, in order to insure professionals can continue to educate and generate thought on the part of people seeking to be educated, we must differentiate between education and professional advice. As such we offer a wide ranging caution:

Disclaimer: This product is not intended to be legal, financial or medical advice. It is solely meant to be helpful information and examples of issues and ideas about the subjects discussed. For issues related to specific legal, financing, and/or medical issues you may have, please consult with your licensed professional in your jurisdiction. No person associated with this project be she funder, author or commentator intends to make any opinion about specific occurrences or events no matter how coincidentally similar to the specific items in the educational product (herein a model planning and zoning ordinance). No one, in this known universe, is making any guarantee about the applicability of this document and its suitability for anyone in this known and any unknown universe or dimension.

Developing a Coherent Approach to Reasonable Regulating Solar Land Uses

To begin, the community should determine which solar applications will be regulated. In most cases, roof mounted installations should be allowed by right, unless located within an historic district where some level of review may be required. Ground mounted systems come in a number of different sizes, from solar trackers (which can reach up to 25 – 30 feet tall) to ground panels which may be shorter, but can range in size from a few hundred square feet of area to thousands of square feet for utility scale developments. Every community has its own priorities and developing clear definitions is critical as this will drive where each category of use is permitted, what level of regulations will be applied, and enable solar development to be in step with the municipality's overall goals and objectives.

For the purposes of this model ordinance and to the extent possible, we have assumed a community in NH with diverse zones that include low-density residential agricultural to high density village zoning. We have added commercial and industrial zones to round out the zoning and potential locations. Every town and city in NH is unique and the any regulatory scheme must be tailored to your community's existing land uses, master plan goals and land availability. Naturally, we must all consider political realities but these are beyond the scope of this Model Solar Zoning Ordinance.

- Planning Considerations: Develop a policy strategy for permitting and regulating large-scale solar.
 - This plan should consider the impacts and benefits of siting solar in the community.
 - Community-based issues to consider relate to community goals for job creation, participation in the clean energy economy and community prestige.
 - Traditional land use issues to consider relate to parcel size, zones and abutting land uses, existing electrical infrastructure and impacts to natural and visual resources.
 - Direct economic issues relate to tax revenues vs cost of services, participation by the municipality in group net metering projects and highest and best use for larger undeveloped and underdeveloped parcels.

Solar Basics

Basic information to consider when approaching solar regulations:

- The average home in NH uses approximately 7,400 kilowatt hours ("kwh") per year.
- To supply this average home, a solar array would have to be approximately 6,000 watts or 6 kilowatts ("kW") in size.
- Most existing solar panels average about 300 watts per panel and are average 3.2 x 5.4 feet in dimension.
- Using these averages, a 6 kW array would consist of 20 panels and have dimensions of 26.5 x 13 or approximately 350 square feet. (An average parking space is 180 sq. ft.)
- A roof mounted system adds about 3-4 lbs. per square foot when including mounting hardware.
- Ground mounted arrays are racked in rows with separation between the rows to allow for sunlight to reach all rows.
- Racking systems provide for spaces between panels that allows snow and rainwater to fall between panels. These gaps vary based on the racking. (See the appendix for images of this).
- The number of panels in a row will affect the distance between rows. The more panels, the higher the array, the wider the distance between rows to accommodate the all-season sun angle.
- Mounting components generally have a very small footprint on or in the soil, and the gaps allow for snow and rain to drain between panels and rows. As such, the bulk of solar systems are not generally considered to be impervious in the same manner as a traditional structure.
- For large ground mounted arrays, the rule of thumb for standard technology systems (fixed mount with crystal silicon-based PV panels) mounted on relatively flat land is about 4-5 acres for 1 megawatt (mw) of capacity.
 - Using our standard panel size from above, this represents approximately 3,333 panels.
- Mounting systems are developing fast and improving rapidly. "In ground" mounting systems can be screwed into the ground, pile driven, set in concrete. (See appendix for images of ground mount technology).
- "On ground" mounting systems include ballasted systems (often used on brownfields or capped landfills to protect the integrity of the cap). (See appendix).

Statutory Authority and Limitations

New Hampshire permits the regulation of solar energy systems but provides a unique context for this use. Local governments can enact ordinances that permit solar systems but should be careful to consider the favorable treatment such uses have under NH law and insure that their approach does not conflict with these statutes.¹

- **NH RSA 477** allows municipalities to enact planning and zoning regulations that protect access to energy sources and that encourage the use of solar skyspace easements.
- **NH RSA 477:51** contains model language for solar easements that can be used in the case a property owner wants to pursue the option.
- **NH RSA 672:1, I and III-a** recognize that planning and zoning regulation is the responsibility of local government, but declares a statewide interest in regulations to encourage energy efficient development patterns, including adequate access to direct sunlight for solar energy uses, and declare that installation of solar and other renewable energy systems **shall not be unreasonably limited by the use of municipal zoning power or by the “unreasonable interpretation” of such powers except where necessary to protect the public health, safety, and welfare.**
- **NH RSA 672:1, III-d** clarifies that “unreasonable interpretation” of municipal zoning ordinances includes failure of municipal authorities to recognize that renewable energy systems are accessory uses and **that prohibition of such accessory uses cannot be inferred from an ordinance that does not specifically address such uses.**
- **NH RSA 674:17** enables municipalities to adopt zoning ordinances designed to, among other purposes, encourage installation of solar and other renewable energy systems and to protect access to energy sources by the regulation of orientation of streets, lots and buildings, establishment of height and setback requirements, limitation on height and setback of vegetation, and encouragement of the use of solar skyspace easements.
- **NH RSA 674:36, II-k** enables municipalities to regulate the subdivision of land to encourage the installation and use of solar and other renewable energy systems and to protect access to energy sources by the regulation of orientation of streets, lots and buildings, establishment of height and setback requirements, limitation on height and setback of vegetation, and encouragement of the use of solar skyspace easements.
- **NH RSA 674:2, III-n** enables municipalities to include an energy section in their master plans.

¹ New Hampshire Residential Rooftop Solar PV Permitting, Zoning and Interconnection Guide, January 2015, NHOEP and others.

Solar Collection Systems and Historic Districts

If your community has adopted a Historic District(s), it is possible to provide for regulations that allow for solar collection systems in certain circumstances and still preserve the intent of these regulations. See NH 674:45-50. There are several helpful guides for communities confronting this issue including work from the National Renewable Energy Lab.²

Some considerations for allowing solar collection systems within NH Historic Districts:

- Ground mounted systems:
 - Allow for ground mounted systems that respect the building's historic setting.
 - Systems should be mounted in inconspicuous locations, such as side and rear yards, low to the ground and screened to limit visibility.
- For new construction and additions:
 - Allow for placement where the location is compatible with the historic building and its setting and where such installations are integrated into the building materials and design such that they are minimally visible.
- Other considerations:
 - Locate solar collection systems on non-historic buildings and additions on the site.
 - Require, to the maximum extent practical, that systems are not visible from public ways. Installations on building surfaces that face public ways should be limited. Locations behind dormers or on rear facing roof planes should be permitted.
 - Require materials and colors that blend into the building design and colors to minimize conflict with the historic character of the building and the district.
 - Avoid multi-roof systems and disjointed installations.
 - Installations on flat roof locations should be screened in keeping with the character of the building or setback from the edge of the roofline.
 - Building integrated systems, such as tiles and other materials that mimic building components should be permitted.

Considering these provisions will allow a community to balance solar installations with the goals and objectives of historic resources.

² Implementing Solar PV Projects on Historic Buildings and in Historic Districts: <https://www.nrel.gov/docs/fy11osti/51297.pdf>

NH Model Solar Zoning Ordinance

Introduction: The text of this model reflects a comprehensive approach to systems of all sizes from residential to large power generation systems. The model divides uses based on their land use size. Your municipality may use all or some of these proposed definitions to regulate solar systems based on the impacts and land uses within specific zones in the community as appropriate.

The sizes and capacities used in this model are meant to be a balanced approach based on the “average community” and the industry standard sizes for arrays. The sizes we choose are based on a number of factors, such as the array capacity and incentives, regulatory and engineering requirements and specific technologies. They are meant to be a balanced and “average” approach for the different sized arrays we expect to see in New Hampshire. We are providing regulations based on the nature of the land use impacts which, in turn, is based on the size and location of the system within most communities.

No community should adopt this ordinance “as is” for a number of reasons but primarily because it attempts to provide the broadest treatment of a large range of solar land uses – from 10,000 square feet to 150 acres in size. This ordinance applies to all arrays but is mostly intended to provide regulation for larger arrays. A community using this model will need to carefully review each size in the definitions and decide what sizes to permit and where to permit these systems. A careful review will consider the impact, size and available land for development. Additional criteria could be the location of electric utility infrastructure and brownfields or similar sites that can co-locate arrays.

The ordinance must be adapted to your ordinance structure for a table of permitted uses or a list of permitted uses. Both are presented here to provide some guidance. The large number of definitions are meant to reflect the challenge of balancing approaches to regulating a wide range of solar systems. At first glance, the number of definitions may seem complex but we have tried to provide a template that includes all possible uses regulated by impact and

size. Some communities may not be appropriate for the largest sized systems or may want to consider combining definitions to simplify the ordinance. In general, the goal is to allow large-scale solar in areas where appropriate in accordance with a community’s objectives.

Size Considerations

Solar Collection System Size:

In general, a 250 kW array that is ground mounted takes up about 1 acres of flat ground. A 250 kW array would be comprised of 833 panels with a capacity of 300 watts each.

For larger arrays – the minimal areas – not considering restrictive features is as follows:

- 1 mw = 4 acres.
- 5 mw = 20 acres.
- 10 mw = 40 acres.
- 30 mw = 120 acres.

Authority and Purpose

- This solar collection system ordinance is enacted in accordance with RSA 674:17(I)(j) and the purposes outlined in RSA 672:1-III-a as amended. The purpose of this ordinance is to accommodate solar energy collection systems and distributed generation resources in appropriate locations, while protecting the public's health, safety and welfare. The Town intends to facilitate the State and National goals of developing clean, safe, renewable energy resources in accordance with the enumerated polices of NH RSA 374-G and 362-F that include national security and economic and environmental sustainability.

Definitions:

- **Rated Nameplate Capacity** – Maximum rated alternating current (“AC”) output of solar collection system based on the design output of the solar system.³
- **Solar Land Coverage** – is defined exclusively for the purposes of calculating the footprint of the land area occupied by the components of a solar array. The Solar Land Coverage is the land area that encompasses all components of the solar collection system including but not limited to mounting equipment, panels and ancillary components of the system. This definition does not include access roads or fencing and is not to be interpreted as a measurement of impervious surface as it may be defined in this ordinance.⁴
- **Solar Collection System** - Includes all equipment required to harvest solar energy to generate electricity. The Solar Collection System includes storage devices, power conditioning equipment, transfer equipment, and parts related to the functioning of those items. Solar Collection Systems include only equipment up to (but not including) the stage that connection is made to the utility grid or site service point.
- **Roof Mount** – A solar collection system that is structurally mounted to the roof of a building or other permitted structure, including limited accessory equipment associated with system which may be ground mounted. For purposes of calculating array sizes or solar land coverage under the solar definitions in this section, roof mounted portions shall not be included if the system is made up of both roof and ground mounted systems, the roof mounted portions shall also be excluded.

3 While the sum of the DC output of the modules may be more directly related to the physical size of the system and number of panels used, we have elected to use the AC output as the benchmark. AC capacity is used for system sizing with respect to incentives and regulatory requirements. This conclusion balances the nature of the array's purpose (residential, commercial etc) and provides a consistent use of terms across other regulations that apply to solar systems. This connection (AC capacity to zoning definitions) allows the community to communicate and regulate with a consistent and familiar set of system sizes and categorize them as a land use appropriately.

4 This is an important distinction since the nature of the coverage is not consistent with other lot coverage approaches. While panels and other accessory components may be impervious themselves, they are either of limited area or not affixed directly to the ground. In addition, the nature of the installation hardware always includes gaps and slopes to facilitate water and snow filtration to ground cover that is dispersed evenly throughout the site.

- **Ground Mount** – A solar collection system and associated mounting hardware that is affixed to or placed upon (such as ballasted systems) the ground including but not limited to fixed, passive or active tracking racking systems.
- **Carport Mount** – Any solar collection system of any size that is installed on the roof structure of a carport over a parking area.

Use definitions:⁵

- **Residential Solar:** Any ground mounted or roof mounted solar collection system primarily for on-site residential use, and consisting of one or more free-standing, ground or roof mounted, solar arrays or modules, or solar related equipment, intended to primarily reduce on-site consumption of utility power and with a rated nameplate capacity of 10 kW AC or less and that is less than 500 square feet solar land coverage.
- **Community Solar:** A use of land that consists of one or more free-standing, ground mounted solar collection systems regardless of nameplate capacity that is up to 100 kW AC and that is less than 1 acre of solar land coverage.
- **Accessory Agriculture Solar:** Any ground mounted or roof mounted solar collection system designed to primarily reduce on-site consumption of utility power and without a limit to the rated nameplate capacity or solar land coverage provided the existing agricultural use is preserved at the time of installation.⁶
- **Primary Agriculture Solar:** Any ground mounted solar collection system that is partially used to reduce on-site consumption of utility power and with a rated nameplate capacity up to 1 MW AC in size or has a solar land coverage in excess of 5 acres provided the existing agricultural use is preserved at the time of installation.
- **Commercial Solar:** A use of land that consists of one or more free-standing, ground mounted solar collection systems with a rated nameplate capacity of up to 1 MW AC and that is less than 5 acres in solar land coverage.

⁵ Note on Definitions and Terms: We have attempted to find names that reflect our traditional land uses and typical ordinance parlance. From the smallest systems (residential) through medium (community and commercial) to the larger (industrial) and largest (utility) we have tried to tie these names to our understanding of the scope and size of typical uses and how/where we permit such uses.

⁶ Specific Definitions for Agriculture: This approach is meant to permit some freedom for existing agricultural uses to have their own systems with minimal regulation and larger systems with a balanced approach. It is tied to the preservation of the existing agricultural use to minimize conversion. There is no limit to future conversion of the property. This approach supports agriculture without promoting the conversion of agriculture to solar.

- **Large Commercial Solar:** A use of land that consists of one or more free-standing, ground mounted solar collection systems with a rated nameplate capacity of between 1 MW and 5 MW that is between 5 and 25 acres in solar land coverage.
- **Industrial Solar:** A use of land that consists of one or more free-standing, ground mounted solar collection systems regardless of nameplate capacity that is between 25 acres and 50 acres in solar land coverage.
- **Utility Solar:** A use of land that consists of one or more free-standing, ground mounted solar collection systems regardless of nameplate capacity that is over 50 acres in solar land coverage and less than 30 MW in rated nameplate capacity.
- **Solar Power Generation Station:** Any solar collection system that is over 30 MW in nameplate capacity. In no case shall a Solar Power Generation Station exceed 150 acres.

Table of Uses Permitted:

Consider permitting solar uses based on the existing zoning within the community. Some communities may be comfortable with large-scale solar in many zones and some may choose to limit solar installations within commercial and industrial districts. By defining the uses above, communities can decide where different sized arrays should be allowed. The ordinance should also note that a solar installation may be a primary or an accessory use to the property.

Here is an example of how a community might address these different scales of solar arrays within a standard table of uses:

	Zoning District					
	Village /High Density	Residential	Rural Residential	Residential Agricultural	Commercial	Industrial
Accessory Residential Solar	P	P	P	P	P	P
Community Solar	X	P	P	P	P	P
Accessory Agricultural Solar	X	P	P	P	P	P
Primary Agricultural Solar	X	X	CUP	P	P	P
Commercial Solar	X	X	CUP	CUP	P	P
Large Commercial Solar	X	X	X	CUP	CUP	CUP
Industrial Solar	X	X	X	X	CUP	CUP
Utility Solar	X	X	X	X	CUP	CUP
Solar Power Generation Station	X	X	X	X	X	CUP

- P = Use permitted by right with building and electrical permit.
- CUP = Use permitted by Conditional Use Permit.⁷

⁷ Some towns may be accustomed to Special Exceptions for specific land uses. We respect this tradition but feel that the Planning Board Conditional Use Process provides more flexibility and streamlines the by requiring review by only one local land use board.

- X = Use prohibited.

Specific Solar System Requirements and Exemptions:

- A ground-mounted Accessory Residential Solar system over 15 feet in height at any point shall be located in rear yard between the primary structure and rear lot line. All other ground mounted systems located in the front yard shall be reasonably screened from abutting residential properties.
- Non-residential Carport Mounted solar collection systems over parking areas are permitted in all zones without a Conditional Use Permit – site plan review may be required in accordance with the Town Regulations.
- Roof Mounted solar collection systems of any size are permitted in all zones without a conditional use permit except within a Historic District. District regulations should be amended to appropriately allow solar installations.
- Municipal Systems: All solar collection systems for municipal use are exempt from land use regulations pursuant to NH RSA 674:54.

Additional Provisions Regarding Solar Collection Systems:

- Building Height: Roof mounted solar collection systems shall be exempt from building height limitations.
- Lot Coverage: Ground-mounted solar collection systems shall/shall not⁸ be considered as part of the maximum required lot coverage limitations but shall not be considered impervious surface. Impervious surface limitations as related to stormwater management for solar collection systems shall be addressed in accordance with this ordinance.

Additional Permitted Sites:

The Town should consider adding a section that permits privately owned and operated solar collection systems on town properties that have excess land and may be a part of a town policy to realize the benefits of participating in a solar development. Here is an example of sites that may be considered if present in the community. Although governmental land uses are usually exempt, these locations are listed to permit the siting of privately owned or operated solar collection systems under a lease arrangement.

Solar Collection Systems of any size shall be permitted on the following sites:

- Water Treatment Plant: Map xx Lot xx.
- Wastewater Treatment Plant: Map xx Lot xx.
- Transfer Station / Capped Landfill: Map xx Lot xx.
- School Facilities: Map xx Lot xx.
- Active Recreation Field: Map xx Lot xx.

⁸ This issue is a challenging factor in these ordinances. The town must consider the underlying purposes of lot coverage or usage requirements. To the extent they relate to stormwater management, such a restriction would be overly burdensome. To the extent they relate to aesthetics, neighboring land uses and other impacts there may be a reasonable justification for limitations on area used but careful consideration should be given to the unique nature of solar.

Solar Collection System Conditional Use Permit:

Note: The level of detail required for a proposed solar installation should be thought through carefully. Engineers and surveyors are very expensive and such costs could needlessly create a barrier to installation. In most cases, the use of tax maps, GIS, USGS, Google Earth and other resources provide enough detail to create a hand drawn or computer generated site plan for local land use board review. The hiring of professionals should be limited to larger projects or when critical environmental areas are present. Landscape architects or professional landscapers can be engaged at reasonable rates to address aesthetic concerns.

Requirements for Granting a Conditional Use Permit (CUP):

- CUP Criteria

Standards of Review: Following a fully noticed public hearing on the proposed use, the Planning Board may issue a Conditional Use Permit, if it finds, based on the information and testimony submitted with respect to the application, that:

- a. The use is specifically authorized by Section X as a conditional use;
- b. The development in its proposed location will comply with all applicable requirements of the Site Plan Regulations not otherwise covered in this section, as well as specific conditions established by the Planning Board.
- c. The use will not materially endanger the public health or safety;
- d. Required screening shall be maintained during the operative lifetime of the Solar Collection System Conditional Use Permit.
- e. In granting a conditional use permit pursuant to this section, the Planning Board may impose any reasonable conditions or restrictions deemed necessary to carry out the intended purpose of this ordinance.

- Site Plan Review Regulations Applicable

- The specific requirements for a Conditional Use Permit shall pre-empt any similar requirement in the Site Plan Review Regulations.

- System Layout

- A detailed sketch or plan showing the installation area of the site.
- A detailed sketch of any land clearing or grading required for the installation and operation of the system.
- The location of all equipment to be installed on site including utility connection point(s) and equipment. To the maximum extent practical all wiring associated with the utility connection shall be underground.
- All equipment locations, except for utility connections, shall comply with required setbacks.

- Equipment Specification
 - All proposed equipment or specifications must be included with the application.
 - Such information can be supplied via manufacturer's specifications or through detailed description.

- Emergency Response
 - Access to the site for emergency response shall be provided and detailed on the plan.
 - A narrative or manual for municipal Fire Department detailing response guidance and disconnection locations necessary for fire response.
 - Additional industry guidance documents that provide information about safety procedures for specific equipment on site shall be provided as needed to insure adequate public safety.
 - Contact information for the solar collection system owner/operator shall be posted on site at the access way and provided and updated to the municipality.

- Natural Resource Impacts and Buffers
 - Solar collection systems shall be visually screened through the preservation of existing vegetation or through a landscaped buffer in accordance with the following.
 - Plan: The buffering plan shall indicate the location, height and spacing of existing vegetation to be preserved and areas where new planting will be required.
 - All solar systems shall have a reasonable visual buffer as required in the site plan review regulations from public ways and neighboring commercial/residential uses based on the viewsheds, contours of the land and abutting land uses.
 - Areas that are within the viewshed of significant value as identified in the Master Plan⁹ shall include additional reasonable mechanisms to mitigate from a continuous and uninterrupted view of the system.
 - Fencing shall be installed, if required, by the electric code or the utility. Additional security or fencing may be required if the location of the system presents a safety concern for abutting land uses.
 - Primary Agriculture Solar should minimize impacts to farmland activities and Prime Farmland Soils (as defined and delineated by soil survey and definition of NH NRCS). Dual use arrangements (solar and farming activities are encourage where practical).
 - Land Clearing
 - Land clearing shall be limited to what is necessary for the installation and

9 Towns should consider identifying these viewsheds as part of the Master Plan to provide the legal basis for such considerations and to alert developers about these areas of the community.

operation of the system and to insure sufficient all-season access to the solar resource given the topography of the land.

- Following construction, cleared land areas must be restored with native species that are consistent with the use of the site as a solar collection system (such as slow growth or low ground cover).
- Erosion control measures during construction shall be detailed as required.
- Additional Requirements for Large Commercial, Industrial and Utility (LC/I/U) Solar:
 - A detailed pre-construction and post-construction plan identifying existing vegetation and areas to be cleared with specific identification of locations of buffer areas adjacent to neighboring uses and public ways.
 - LC/I/U systems that disturb more than 10 acres of previously undisturbed land shall provide a natural resource inventory that details site conditions and habitat and mitigation efforts to reduce impacts to important species and habitat.
 - Efforts and practices that can provide for a dual use of the site should be explored if feasible and encouraged where appropriate.
 - The applicant shall demonstrate effective stormwater infiltration along with erosion control measures and soil stabilization.
- Electrical Requirements.
 - All systems not connected to the grid shall be approved by the electrical inspector or Building Inspector, as required.
 - Grid-tied systems shall file a copy of a final approved interconnection shall be filed with the municipality prior to operation of the system.
- Glare
 - A statement detailing potential significant glare onto abutting structures and roadways estimating the interaction of sun to panel angle, time of year and visibility locations.

Based on the above information, the Planning Board may require reasonable mitigation. Mitigation may include angle of panels, details on the anti-reflective nature of the panel coating or any additional specific screening to minimize resulting impacts.

- Mitigation through anti-reflective coatings shall have an index of refraction equal to or less than 1.30.
- Noise
 - Estimates of any equipment noise on the site based on equipment specification materials (such as inverters).
 - Noise levels at the property line shall be in accordance with the municipal noise ordinance or at reasonable levels given the location of the facility with due consideration to the surrounding land uses and zone.

- Setbacks

- Solar collection systems shall be considered structures and shall comply with building setback requirements from lot lines for the entire system – including the panels. Tracking systems shall have the setback measured from the point and time where the array is closest to the lot line. No portion of a system may cross into the setback.

- Stormwater

- Ground mounted systems that are required to secure a New Hampshire Department of Environmental Services Alteration of Terrain (AoT) Permit in accordance with NH RSA 485:17 shall secure such permit accordingly.
 - The final Permit issued by NH DES shall be incorporated by reference into the final Town approval and shall be enforceable by the Town in accordance with this zoning ordinance.
 - No further local review of stormwater and erosion control shall be required where a project is required to secure the NH DES AoT Permit.
- Ground mounted systems not requiring NH DES AoT Permit. Where a ground mounted system does not require an AoT permit the following shall apply:
 - Ground mounted systems that require land clearing and grubbing of mature forested cover to accommodate more than 30% of the solar land coverage area, provided such area of clearing and grubbing is also larger than 1 acre, the proposed system shall include a management plan for stormwater that is directly related to the impact of the solar collection system.
 - Ground mounted systems where the solar land coverage area is larger than 1 acre and located on slopes of greater than 5% shall include a management plan for stormwater.
- The stormwater management plan shall include the following.
 - The stormwater study shall take into account the nature of the solar panel installation and how the spacing, slope and row separate can enhance infiltration of stormwater. Percolation tests or site specific soil information may be provided to demonstrate recharge can be achieved without engineered solutions.
 - Additional information, if required, shall calculate potential for concentrated flows of runoff due to the panels, slope, soil type and the impacts of other true impervious areas (such as equipment pads and roadways).
- Required for all systems:
 - All ground mounted systems shall be constructed in accordance with Best Management Practices for erosion and sedimentation control during the pre-construction, construction and post-construction restoration period.
 - Post construction: For purposes of enhancing natural stormwater management, site conditions and plantings post-construction shall include insure that areas of soil compaction have been restored to more natural conditions. Plantings shall be native species and are recommended to beneficial habitat to song birds, pollinators and/or foraging species in order to maintain a healthy surface and subsurface habitat that can attenuate stormwater on the site.

Lighting

- On site lighting shall be minimal and limited to access and safety requirements only. All lighting shall be downcast and shielded from abutting properties.

- Buffer Plan

- As deemed appropriate, all applications shall submit a detailed buffering plan demonstrating how the proposed ground mounted solar installation will be incorporated into the local landscape so that effective screening is provided along public ways and from abutting views. The use of evergreens are recommended. The use of existing or created topography is encouraged to reduce visual impacts.

Note: Examples of buffered systems:

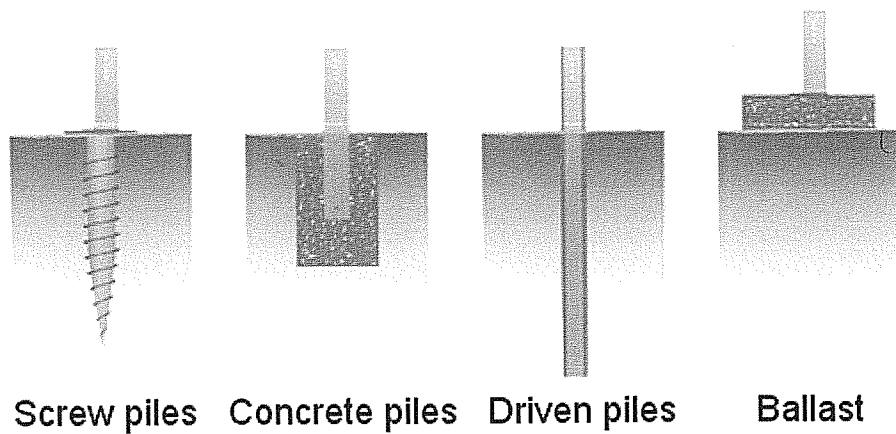


- Abandonment and Decommissioning
 - Solar Collection Systems shall be deemed to be abandoned if operations have discontinued for more than 6 months without written consent of the municipality (such as for reasons beyond the control of the owner/operator). An abandoned system shall be removed and the site restored within 6 months of abandonment.

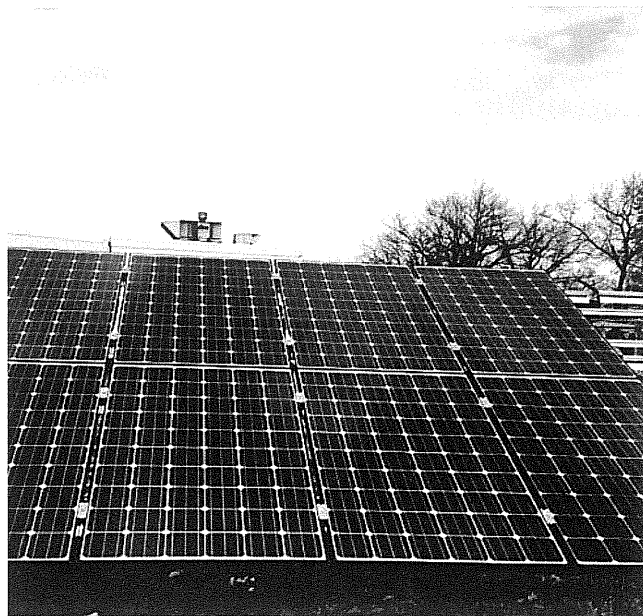
Appendix:

This appendix includes images and information about several types of solar installations and equipment.

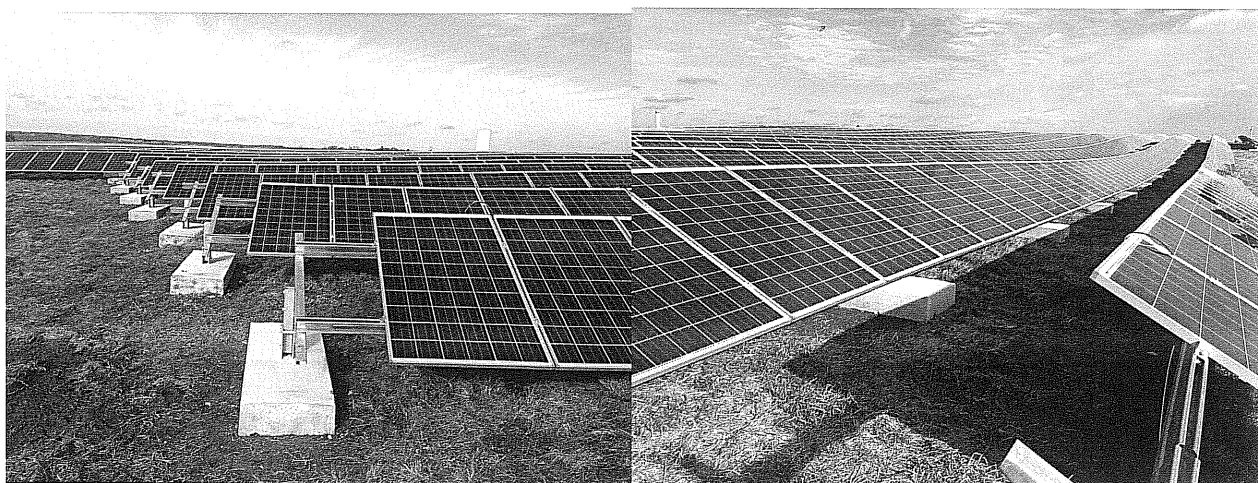
Mounting Hardware:



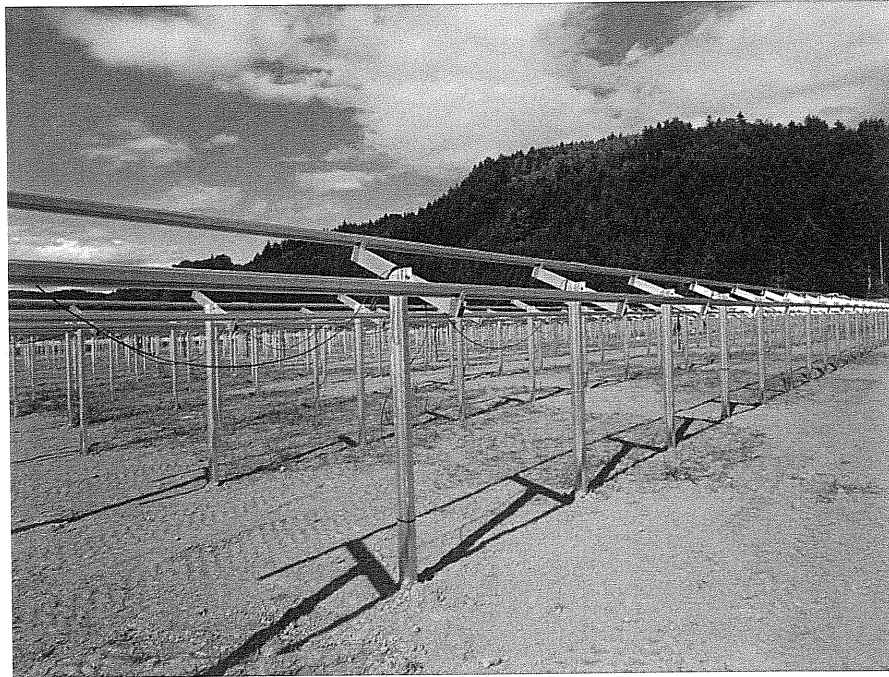
Source: Ionvia Technologies: Different types of mounting hardware and ground impacts.



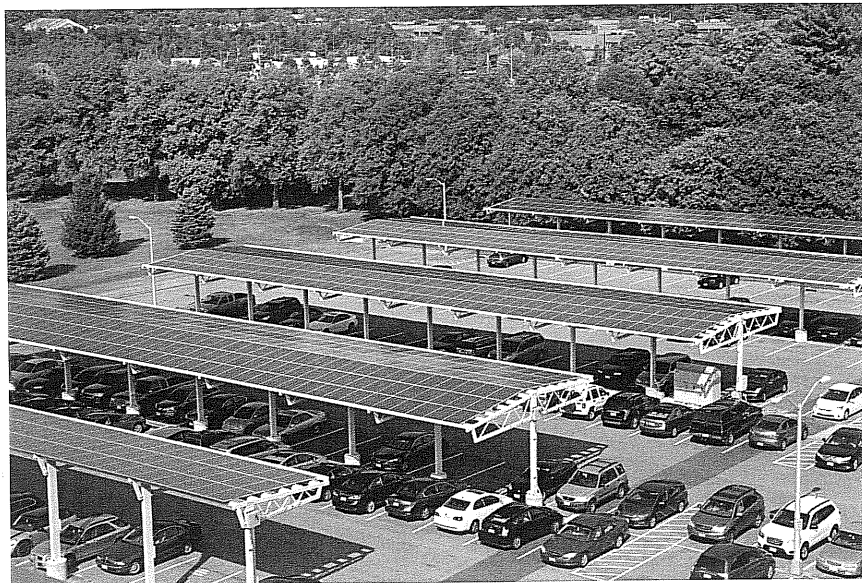
Completed installation showing gaps between panels



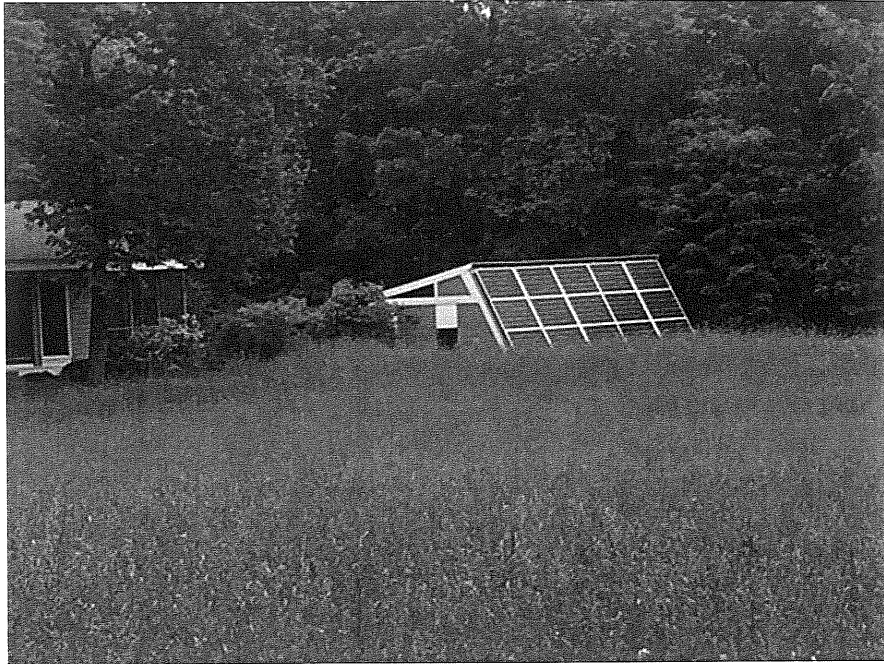
Ballasted system, showing distance between rows and the ballast blocks.



Racking equipment – prior to panel installation.



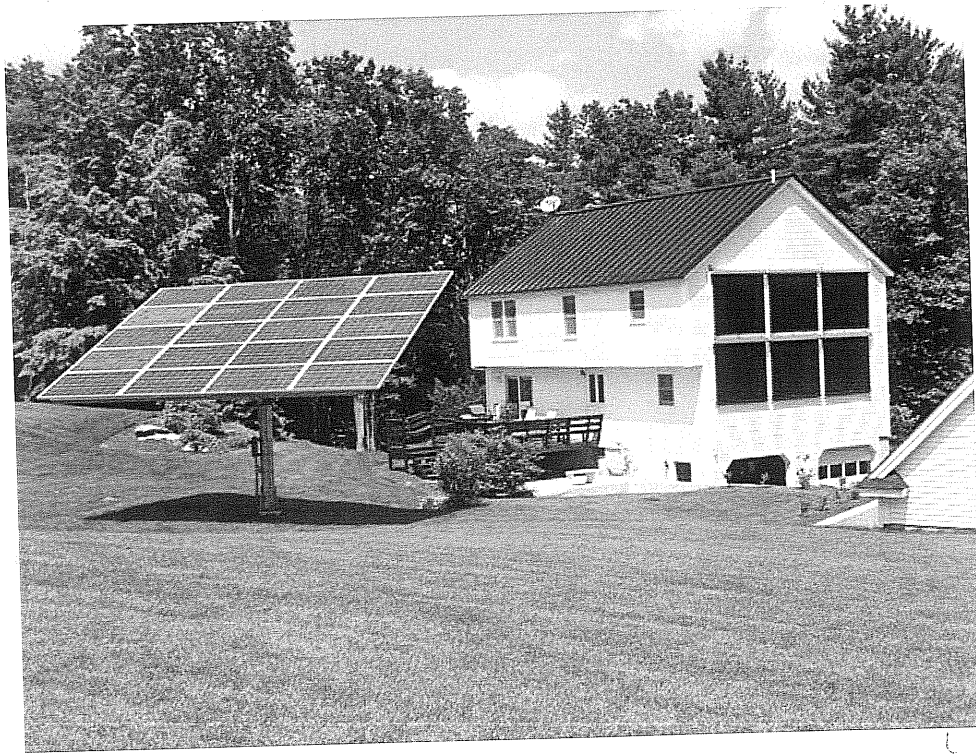
Commercial Carport Mounting



Residential Ground mounted system.



Pole mounted system – agricultural site.



Tracker Mounted Residential System: Courtesy Revision Energy

Please Sign IN

Sharon Simpson

Bill Whisman

Gale Zalmon

Rory Zalmon

Gary Samuels