Solar University Network

Innovation in Solar Energy Finance & Development

midwest renewable energy association

MODULE 2: Overview of Legal and Regulatory Issues for Universities and Colleges Deploying Solar PV Systems

INTRODUCTION:

This Module will take a high-level look at some of the legal and regulatory issues that universities and colleges ("institutions") will face when they decide to deploy solar photovoltaic (PV) systems - or, in less formal terms, "go solar." In both this written report and in the teaching session that relates to it, we will briefly explore these topics:

- Ways institutions can deploy solar (ownership and third-party models);
- Possible goals and objectives for deploying solar and why institutions must focus on them;
- Sources of authority for institutions to act;
- Possible constraints on an institution's authority to act (organizational, statutory, and contractual);
- Local government procedures and constraints institutions will face (including utility issues, zoning, permitting, inspection, etc.);
- Ways that endowment funds could help with solar projects;
- Unique issues relating to agreements with utilities; and
- Unique issues relating to tax-exempt financing.

None of the subjects will be explored in depth. Why? Because this Module will cover a lot of territory in little time and space and because most of the students studying this Module will have backgrounds in engineering or sustainability, not business or law. To provide students, and their colleagues that are responsible for business and legal matters, an opportunity to dig deeper, each topic explored will contain links to additional resources.

State laws and regulations vary significantly, both as they relate to institutions and as they relate to solar PV issues. The facts and circumstances surrounding any particular solar PV project for any particular institution vary significantly. For that reason, **this Module is intended for informational purposes only and must not be considered as legal advice or a legal opinion relating to any set of facts or circumstances. Institutions should seek out and obtain competent legal counsel before undertaking any solar PV system deployment.**

GOING SOLAR: OWNERSHIP AND THIRD-PARTY STRUCTURES

Before looking at the legal and regulatory issues relating to deploying solar, we need to spend a little time understanding ways that institutions can deploy solar. The structure an institution chooses affects matters such as cost, control, credit for "being green," and more.

OWNERSHIP

An institution can choose to own a solar PV installation, just as it can own other facilities and buildings like classrooms, student centers, parking facilities, and so on. By owning the solar PV installation, the institution will have maximum control over it, will be entitled to the energy it generates (subject to utility agreements discussed below), and will be responsible for enforcing warranties relating to the installation and long-term maintenance of it (likely through some contractual relationship).

If it chooses to own a solar installation, an institution can pay for it in a number of ways including:

- It can pay cash from reserves, its capital budget, from restricted gifts for "green purposes" or otherwise;
- It can, if it is a public or 501(c)(3) nonprofit institution, borrow money through the issuance of tax-exempt bonds (perhaps part of a larger issue) publicly issued or sold to a bank;
- It can enter into a "lease purchase agreement" or "capital lease" with a developer, which looks like a lease but is really a way to finance the installation over time (this arrangement is different from a "true lease" because the institution owns the installation at the end of the lease term).

Unless an institution is a for-profit entity (and not a governmental entity or a 501(c)(3) nonprofit entity), a big disadvantage of ownership is that the institution cannot take advantage of the substantial (currently 30%) investment tax credit (ITC) available for solar projects nor can it take advantage of accelerated and bonus depreciation. Failure to monetize these tax incentives leaves a lot of money on the table, money that is only likely to be partly offset by being able to finance ownership with tax-exempt bonds. (It should be noted that under current law the ITC for solar drops to 26% in 2020, to 22% in 2021, and to the normal business ITC of 10% in 2022.)

THIRD-PARTY ARRANGEMENTS

There are two primary forms of third-party arrangements that an institution could pursue: (1) a power purchase agreement (PPA) with a third-party developer or (2) a lease with a third-party developer. Under the PPA structure, a third-party developer is responsible for the construction, operation, and maintenance of a solar installation (often on property owned by the institution) and then sells energy at a designated price (with or without escalators) to the institution for a term that is roughly equivalent to the expected life of the installation (25 to 30 years). This arrangement allows the developer to take advantage of the ITC and accelerated and bonus depreciation, which monetized tax incentives are passed through, at least in part, to the institution in the form of lower energy payments. In addition to a lower cost of energy, this structure also shifts the responsibility of maintenance away from the institution and generally requires no upfront cost to the institution. Unfortunately, PPAs are not allowed in every state - some states would regard the developer as a utility if it generates and sells electricity to an institution, a utility that is not authorized to conduct business.

Where PPA third-party arrangements are not allowed, and if an institution does not want to or cannot own its own system, the institution could enter into a “true lease” or “operating lease” (as opposed to a lease purchase agreement discussed above) for a solar PV installation. In this case, the third-party developer would own the installation but lease it to the institution and the institution would be entitled to the electricity it generates (subject to agreements with the utility discussed below). The disadvantage of this option for a public or nonprofit institution is that the developer would not be able to take advantage of the ITC or accelerated depreciation (as a PPA developer can) and would not therefore be able to monetize the tax benefits and pass them through to the institution. The cost of this option to the institution would, as a result, likely be higher. Warranty enforcement and maintenance could be the responsibility of either the institution or the developer, depending on the agreement between them.

Under a popular variation of the PPA structure, the parties may agree on a “buy back” option where the solar user has the right (but not the obligation) to buy the system from the developer at fair market value in six to eight years, after the developer has recovered and monetized tax incentives. This provides a bit of a hybrid between a PPA structure and an ownership structure, but would only be available in jurisdictions where PPAs are legally permissible. If available, the structure can benefit both the developer and the solar user: the developer can maximize tax incentives while the user can get ownership of the system and 100% of the energy production benefits in a relatively short time.

FURTHER RESOURCES

The National Renewable Energy Laboratory (NREL) offers a variety of resources relating to structural and tax issues including:

- Using PPAs for Solar Deployment at Universities - https://www.nrel.gov/docs/gen/fy16/65567.pdf
- Solar PV Project Financing: Regulatory and Legislative Challenges for Third-Party PPA System Owners - https://www.nrel.gov/docs/fy10osti/46723.pdf
- A widget that walks through and explains key provisions in a PPA - http://widgets.nrel.gov/financere/interactive-solar-ppa/

The Solar Energy Industries Association (SEIA) also offers various resources on this subject:

- Solar Investment Tax Credit (ITC) - https://www.seia.org/initiatives/solar-investment-tax-credit-itc
- Third-Party Solar Financing - https://www.seia.org/initiatives/third-party-solar-financing

Energy Sage, a service that helps consumers obtain quotes from pre-screened solar installers, also has some relevant resources:

- Should You Buy or Lease Your Solar Panels? - https://www.energysage.com/solar/financing/should-you-buy-or-lease-your-solar-panel-system/?rc=seia
- Solar Leases and PPAs - https://www.energysage.com/solar/financing/solar-leases-and-solar-ppas/

The Solar Outreach Partnership "Solar Powering Your Community" presentation series has a video lesson comparing ownership with third party arrangements:

- Introduction to Solar Project Finance - https://www.youtube.com/watch?v=fojwEO3zpH8

Amicus O&M Cooperative has information on operation and maintenance of institution-owned solar PV systems:

- Amicus O&M Home Page - https://www.amicusom.com/

GOING SOLAR: SETTING OBJECTIVES AND GOALS

The last section looked briefly at ownership and third-party options for deploying solar PV systems, including some of the benefits and drawbacks of each approach. Armed with this information, an institution must decide why it is going solar in the first place - what it hopes to accomplish. Knowing this helps an institution decide which structure fits best and helps it better define relevant legal and regulatory issues.

Among possible objectives and goals are the following (and of course actual objectives and goals may include two or more of these in some order of priority):

MAXIMIZE ENERGY SAVINGS

Perhaps the primary goal of the institution is to maximize savings on its energy costs as compared to the actual and projected net cost of deploying solar. Even with this broad goal an institution must make assumptions and further priorities. Does the institution want savings to be "front loaded," equally received annually over the life of the contract, or maximized on a "present value" or "return on investment" basis? What assumptions should be made about future increases in energy prices and the institution's future energy demands? What upfront contribution, if any, does the institution want to make? If an ownership structure is pursued, will funds be borrowed to finance the deployment or will the institution use some combination of funds on hand, including donor gifts restricted to "green" purposes or renewable energy? If a third-party structure is employed, how flexible is the developer with its financing; can it accommodate (at a reasonable cost) the structure the institution wants?

The institution is not alone in making these calculations and assumptions. NREL has publicly available tools that consider these assumptions and run economic and production models on solar and other types of renewable energy. The System Advisor Model (SAM) is user friendly and can estimate costs before bringing a developer on board. The Renewable Energy Optimization (REopt) Lite tool can currently be used to model solar and battery storage systems (with other renewable energy systems to be included in the future). There are other calculator widgets available, as well, and any number of advisors and developers willing and able to run alternate financing strategies with multiple sets of assumptions.

BUDGET CERTAINTY AND HEDGING

Perhaps the primary goal of an institution is to provide budget certainty for the cost of a certain amount of its energy needs, using its solar deployment as a hedge against future increases in energy. For instance, an institution might want to fix the cost of its energy at today's rates (or even slightly more) and secure those rates over the life of the contract, with or without an escalator on them, more or less giving the institution a hedge against rising energy costs. In order to achieve this goal for owned systems, the institution can finance the system and structure its loan repayments to achieve the goals, within limits acceptable to the lender. Similarly, an institution can work with a third-party developer to structure rates in such a way to achieve these goals.

In an ownership structure, the institution must be sure to account for maintenance obligations over the life of the system. And with both ownership and third-party structures, the institution must understand that the bottom line cost for solar can be affected by the type of interconnection agreement the institution (or developer) has with the utility and the basis on which the institution is compensated for net energy going back to the grid under that agreement. (See more on

this in “Agreements with Utilities” below.)

OFF BALANCE SHEET APPROACH

If an institution owns its own system, and finances it with a loan or bonds, it creates both an asset (the system) and a liability (the loan or bonds). For various reasons, including limits imposed by rating agencies on debt ratios, contractual covenants with other lenders, and so on, an institution may decide that it does not want to incur a new liability but does want the benefit of deploying solar. The theory is that a third-party PPA arrangement does not result in the acquisition by the institution of an asset and a liability. Rather, it creates a long-term contract for the purchase of energy. The institution does not own the system (so it does not show the asset) and it does not have debt (so it avoids a liability).

Accounting rules on this subject are complicated and evolving. An institution wanting to achieve an “off balance sheet” structure must keep in mind the following:

- The actual terms of the PPA are critical to the accounting treatment. Depending on these terms and the facts of the transaction, the PPA could be treated as a contract for the purchase of energy, a capital lease, a true lease, or a hedge that must be “marked to market.”
- To achieve these goals an institution must have the legal authority to enter into a long-term contract like a PPA without it constituting “debt.” If the institution pays only for the energy it uses from the system and does not enter into a “take or pay” arrangement (agreeing to pay for energy whether it is used or not) this is less likely to pose a problem.
- Even if a PPA does not create a “liability” in the classic sense, it is likely to be identified and described, at least as a note, in the institution’s audited financial statements and shared with rating agencies and lenders when they are doing their “due diligence.”

SOCIAL AND ENVIRONMENTAL REASONS/ VISIBLE “GREEN” IMPROVEMENTS

An institution can be a large user of energy and may very well have adopted sustainability goals encouraging energy efficiency and use of renewable energy, not just for cost savings or budgetary matters, but to help reduce its carbon footprint. An institution may want to deploy solar even if - due to the inability to take advantage of tax incentives through a third-party PPA arrangement and/or due to utility metering or tariff policies - the deployment does not result in net savings to the institution. An institution will still be concerned about the cost of the system and/or the terms of a PPA, but an analysis showing that there are no savings would not necessarily preclude a solar deployment.

Related to the satisfaction of social and environmental goals is the goal of letting key stakeholders (students, alumni, donors, legislators, etc.) see that the institution is interested in being “green.” To this end, a prominently displayed solar array can be useful in marketing materials, on websites, and as a visual to traffic passing by or through the campus.

LEARNING OPPORTUNITIES

An institution might want to create and maintain a solar PV project in part for educational purposes such as research or technical training and education. If a solar PV project is to be used for these purposes, the institution will most likely need to keep more control of the system than might be available under a third-party PPA arrangement, arguing in favor of an ownership structure or a true lease. On the other hand, it would be possible to create a third-party agreement that both provides energy through a PPA and provides educational opportunities; increased energy rates under the PPA and/or other forms of compensation to the developer would likely be necessary, though.

ENERGY RESILIENCY FOR CRITICAL FACILITIES

Institutions can be large, sophisticated organizations operating any number of critical facilities such as a hospital, an IT center, and recreation or other facilities designed to serve as shelters during natural disasters. As storage solutions (batteries) for generated solar energy become more reliable, efficient, and cost effective, an institution may choose to use solar PV deployments to provide resiliency for these facilities, many of which might currently have generator backups. Again, cost is certainly relevant to a decision to pursue this form of resiliency. But a system that does not generate energy cost savings may still be pursued for its non-energy benefits, such as improving campus health and safety, meeting its sustainability goals, “green marketing” purposes, and so on.

With the cost of batteries dropping rapidly, it would be wise for an institution to at least design and build its PV project as “resilient ready,” so that battery backup could be added at a later date. In many disasters, generators needing a fuel supply may not be as resilient as renewable energy backup.

FURTHER RESOURCES

NREL:

- System Advisor Model (SAM) - https://sam.nrel.gov
- REopt Lite Tool - https://reopt.nrel.gov/tool
- Renewable Electricity: How do you know you are using it? - https://www.nrel.gov/docs/fy15osti/64558.pdf

The National Association of College and University Business Officers (NACUBO) has these items that discuss "off balance sheet" financing (often used for housing on campus):

- Envision Debt Decisions (article from its Business Officer magazine) - http://www.nacubo.org/Business_Officer_Magazine/Magazine_Archives/December_2015/Envision_Debt_Decisions.html
- Off Balance Sheet But On Credit - a PowerPoint presentation from a 2015 panel discussion - http://www.nacubo.org/Documents/EventsandPrograms/2015/EDMF/OffBalance.pdf

The U.S. Department of Energy has information about some educational programs developed to help colleges and universities offer learning opportunities in solar:

- Basic information regarding the Grid Engineering for Accelerated Renewable Energy Deployment (GEARED) Program - Preparing Students for Our Nation's Changing Energy Portfolio - https://energy.gov/eere/articles/preparing-students-our-nation-s-changing-energy-portfolio
- More on GEARED Program - https://energy.gov/eere/solar/grid-engineering-accelerated-renewable-energy-deployment#Consortia%20Leaders

Meister Consultants Group, through a U.S. Department of Energy Solar Energy Technologies Office (SETO) initiative, prepared a white paper in 2013, Solar PV Emergency & Resiliency Planning:
https://www.solsmart.org/media/SolarOPs_Solar-PV-Emergency-Resilience-Planning_Final.pdf

SOURCES OF POWER TO ACT

CREATION

Universities and colleges are creations of law. One way or another the laws of a particular state govern the creation, operation, and permissible powers of these institutions. Virtually all colleges and universities fall into one of these three organizational categories:

- ***Governmental*** - the institution is a public institution authorized by a state constitution and/or statute, and often funded, in part, by appropriations from the state government. Such governmental institutions may be separately organized, each with its own governing body, its own facilities, its own finances, and so on, or they may be organized as separate components in a state-wide system under common control.
- ***Nonprofit*** - the institution is organized under a state statute providing for the creation, operation, and governance of nonprofit corporations. Such statutes provide for fairly broad permissible powers, but these powers are typically restrained in other organizational and operational documents. Most often such institutions are also qualified as 501(c)(3) nonprofit organizations for federal tax purposes, allowing them to operate without paying taxes on what otherwise would be considered "income" and allowing donors to claim contributions to such institutions as income tax deductions (subject to certain limitations). Operating as a 501(c)(3) organization adds another layer to constraints an institution must observe (as discussed further below).
- ***For-Profit*** - the institution is organized under a state statute providing for the creation, operation, and governance of for-profit corporations. Such statutes provide very broad permissible powers, giving for-profit institutions the right to pursue actions that nonprofit institutions cannot pursue. Such institutions are NOT organized as 501(c)(3) organizations and are not subject to same constraints.

ORGANIZATIONAL DOCUMENTS AFFECTING POWERS

There is a hierarchy comprised of laws and documents that affect an institution's general power to act. These laws and documents include the following:

- The constitutional or statutory framework allowing for its creation (as described above).
- A state charter (for some public institutions) or articles of incorporation (for nonprofit and for-profit corporations) affecting the creation of the institution and stating its purposes and powers, usually in fairly broad terms.
- Bylaws of the organization (or of its governing body) setting forth in more detail purposes and powers, establishing procedures for selection of board members and officers, stating in broad terms the powers and duties of board members and officers, sometimes establishing standing committees, and so on.
- Board adopted resolutions, ordinances, formal policies and so on, all of which "flesh out" the powers of the institution.

There is a basic rule to keep in mind for the hierarchy of laws and documents described above: A lower level in the hierarchy cannot authorize something that is prohibited or not authorized, at least in broad terms, in a higher level. Context is important, though. A college organized for educational purposes most likely could not build, own, and operate a hotel servicing the general public just for the fun of it or to make money. But if it did so to provide students with experience as part of an educational hospitality program offered by the institution, such actions would most likely be allowed.

FURTHER RESOURCES

Michigan constitutional provisions: Funding and control of Grand Valley State University and other public universities - https://www.gvsu.edu/policies/policy.htm?policyId=4A005F9F-04C0-E859-20B2D04FCC8C107E

Michigan statutory provisions: Grand Valley State University establishment and powers description - http://www.legislature.mi.gov/(S(5retqvbpuq4y2fcz0ioir0z2))/mileg.aspx?page=getObject&objectName=mcl-Act-120-of-1960

Michigan Nonprofit Corporation Act (Section 261 - Corporate powers) - http://www.legislature.mi.gov/(S(wdzhtcbcjcrdqmvepvdwbxsg))/mileg.aspx?page=getobject&objectname=mcl-450-2261&query=on

Michigan Business Corporation Act (Section 261 - Corporate powers) - http://www.legislature.mi.gov/(S(p3d0va40ojhukj2hvyojnhqc))/mileg.aspx?page=getobject&objectname=mcl-450-1261&query=on

Grand Valley State University: Board of Trustees' Bylaws - https://www.gvsu.edu/policies/policy.htm?policyId=73BFBA1D-C833-7080-6B6AE509E80EC793

CONSTRAINTS ON THE POWER TO ACT

IN GENERAL

Exploring the sources that enable an institution to act is only part of the inquiry. An institution must also look at what constrains its power to act. Constraints generally fall into one of three categories:

- ***Internal*** - an institution's articles, bylaws, resolutions, adopted policies and procedures, and so on, are the first place to look for its authority to act. But, they are also the first place to look for constraints on its (and its officers' and employees') authority to act. These adopted documents often prohibit self-dealing, private inurement, conflicts of interest, entering into certain transactions without special board authority, purchasing goods and services without competitive bidding, and more.
- ***Statutory*** - an institution must examine federal, state, and local laws, ordinances, resolutions, and so on to determine if and how it can deploy a solar PV system. This can be tricky because laws and regulations can differ greatly state by state and, within a state, locality by locality. (See "State and Local Laws and Regulations Affecting Solar Deployment" below for more on this.) Nonprofit institutions must also navigate various state and federal restrictions on such corporations. For instance, federal tax laws have restrictions on how much "unrelated business income" an institution can receive before it needs to pay taxes or is in jeopardy of losing its tax-exempt status altogether.
- ***Contractual*** - when an institution enters into a major agreement, it often agrees that it will do certain things and will not do certain other things in the future - these are known as "affirmative covenants" and "negative covenants" in legalese and are often identified as such in agreements. For this reason, an institution must examine major agreements - agreements relating to financings with banks or bond issues, labor agreements, agreements with suppliers or service providers, etc. - to determine if covenants exist.

SPECIAL FOCUS: PROCUREMENT AND COMPETITIVE BIDDING

Most public and nonprofit colleges and universities are subject to laws or have adopted procurement policies that require competitive bidding for goods and services over a certain dollar amount. Such policies may include exceptions for certain narrowly focused services, provisions for vetting and establishing a group of "preferred vendors," and so on. The policies will also set forth criteria by which an institution can select a vendor that does not quote the lowest price. This may not be all that important for the purchase of certain fungible items (printer and copier paper, for instance), but is critically important for selection of a developer/contractor for solar deployment.

Among the many criteria that an institution should consider while selecting a third-party to work with for a solar deployment are the following:

- ***Experience and track record in general*** - does the third-party have demonstrated ability to undertake a project of the nature and scope of that contemplated?
- ***Financial and organizational stability*** - particularly with a PPA structure, an institution will be working with the developer for many years to come and wants to be sure the developer will be able to meet its obligations, including warranty and maintenance obligations.
- ***Experience in the relevant jurisdiction*** - is the developer familiar with the laws of the state and the particular permitting, zoning, inspection, and utility interconnection requirements of the locality in question?
- ***Quality and efficiency of equipment*** - not all solar equipment has the same track record of reliability and efficiency. Within parameters established by the institution, how does the particular equipment being proposed stack up?
- ***Warranty and maintenance issues*** - what kind of warranty is offered (manufacturer and developer) and what are the terms of ongoing operation and maintenance (including the responsibilities of the institution in this regard)?
- ***Compliance with any state, local, or institutionally required labor standards.***
- ***Commitment and ability to provide ongoing monitoring*** - an institution may have a difficult time assuring compliance with the terms of a PPA without accurate ongoing information regarding usage and utility offsets.

All the foregoing items, and more, depending on an institution's goals, as well as the cost of a system or the energy it produces, are important to the crafting of a request for proposals and the selection process.

FURTHER RESOURCES

Law Insider's examples of affirmative and negative covenants in agreements: Sample Clauses - https://www.lawinsider.com/clause/affirmative-and-negative-covenants

Internal Revenue Service (IRS) Publication 4221, Compliance Guide for 501(c)(3) Public Charities, including various required policies and procedures for an institution to maintain its status: https://www.irs.gov/pub/irs-pdf/p4221pc.pdf

Northwestern University: Procurement policy - http://www.northwestern.edu/financial-operations/policies-procedures/policies/purchasing-payment-policy.pdf

University of Michigan: Procurement policy - http://spg.umich.edu/policy/507.01

NREL: Solar Requests for Proposals - https://www.nrel.gov/technical-assistance/basics-solar-rfps.html

The Solar Foundation: Steps to a Successful Solar Request for Proposal (RFP) - https://www.thesolarfoundation.org/steps-to-a-successful-solar-request-for-proposal/

STATE AND LOCAL LAWS AND REGULATIONS AFFECTING SOLAR DEPLOYMENT

UTILITY MATTERS

What is a "utility"? What territory does it cover? How does it establish electric rates? How is it required to interact with residents or businesses wishing to deploy solar? Can or must solar users connect to the grid? Is net metering offered? Is some other form of utility compensation offered for "distributed generation" like solar or wind? States, through statutes and bodies like "public utility commissions," are primarily responsible for answering these questions. Local units of government have less responsibility over these matters (unless they own and operate their own utilities). Some of these issues, especially as they relate to agreements between a college or university and a utility in connection with a solar deployment, will be discussed below under "Agreements with Utilities."

(Note: Some institutions run their own utilities. In such a case, an institution clearly must obtain the active participation of its utility/facilities staff in the planning, deployment, and operation and maintenance of any solar PV project, whether the project is to be owned or deployed through a third-party structure.)

LOCAL MATTERS - ZONING, PERMITTING, INSPECTION

Local municipalities have significant control over solar projects within their jurisdiction. Although solar contractors and developers are familiar with these issues and generally navigate through them on behalf of residents or institutions wanting to deploy solar, an institution should identify any significant local barriers before going too far down the road with a project.

Local laws and regulations generally fall into these categories:

- ***Land use or zoning*** - With the exception of some rural communities, municipalities are usually subject to a zoning resolution or ordinance that divides the municipality into districts or zones, each of which allows land to be used for certain purposes and prohibits its use for others. Zoning regulations also regulate matters like density, height restrictions, setback requirements, and so on, all of which can affect a solar PV project. It is very common for smaller solar projects (like residential rooftop systems) to be allowed as "accessory uses" - uses that support the primary use of a parcel of property in a zone. However, larger systems (like commercial systems), systems serving more than one structure or parcel, and "primary solar" (solar that generates electricity for others) may be prohibited in all or certain zones or may be allowed only upon receipt of a "special use permit" or other process requiring significant time and effort to achieve. An institution must know how its proposed project fits into this regulatory framework, because it is possible that zoning and land use regulations could add a lot of time, uncertainty, and expense to a project.
- ***Permitting*** - Municipalities generally require a building permit (and often an electrical permit) before a solar project can be installed. Required information often includes electrical diagrams, manufacturer's specifications, installation or site

plans, evidence of compliance with fire safety regulations, roof load calculations, and so on. In certain climates, where large snow loads or high winds are common, municipalities might require an engineer's certificate assessing roof load integrity. Permits must be paid for and the cost can sometimes be significant (although some states, like Colorado, have enacted laws limiting the total cost of solar permits). Permits for smaller standard projects are usually issued quickly. But for larger projects requiring more information, and possibly a zoning review and sign-off before issuance, the permitting process can take quite some time.

- ***Inspection*** - Many municipalities require two inspections - a preliminary inspection to assess wiring and grounding (and roof load compliance if applicable) and a final inspection after panels have been added and the system is basically ready to go online. In addition to these municipal inspections, systems to be connected to the grid are also inspected by the utility. Depending on the municipality's and utility's procedures, these inspections can also add time and expense to the process. Some municipalities, for instance, do not schedule narrow windows for inspections, which can result in crews needing to remain onsite waiting for an inspector. Some municipalities also require a master electrician to be available during the inspection.

Several SETO initiatives of the U.S. Department of Energy, including the SolSmart Program, are making municipalities aware of the cost impact of burdensome zoning, permitting, and inspection matters and providing them with "best practices" to streamline these processes. For the time being, however, these local regulations can be a bit of a maze. An institution wanting to deploy solar would do well to get early help to navigate them.

FURTHER RESOURCES

City of Brighton, CO: Solar permitting portal with links to requirements - https://co-brighton.civicplus.com/1020/Solar-Permitting-Process

Solar America Board for Codes and Standards (Solar ABCs): Expedited Permit Process for PV Systems (2012 Version) - http://www.solarabcs.org/about/publications/reports/expedited-permit/pdfs/Expermitprocess.pdf

U.S. Department of Energy Resources Massachusetts Executive Office of Energy and Environmental Affairs, December 2014: Model Zoning for the Regulation of Solar Energy Systems - http://www.mass.gov/eea/docs/doer/green-communities/grant-program/model-solar-zoning.pdf

SolSmart Program - https://www.solsmart.org

AGREEMENTS WITH UTILITIES

An institution uses electricity 24 hours a day, but a solar installation generates electricity only during the day while sunshine is available. An institution could handle this issue by sizing a solar deployment so that all electricity that is generated during the day is used during the day. Another solution might be for the institution to install a system with storage capabilities (batteries) so that excess daytime generation is stored for use at night. (See below for more about whether "off grid" options are permissible and economical.)

Generally, however, an institution (or the developer in a PPA arrangement) will enter into an "interconnection agreement" with the utility under which the utility will agree to take excess generation from the installation and compensate the institution or developer for it. This is accomplished in various ways, two of which are described below: "net energy metering" and "value of solar tariffs."

NET ENERGY METERING

NREL describes net energy metering as follows (see the first link below under "Further Resources" for the whole article):

> N*et energy metering (NEM), commonly referred to as net metering, is a metering and billing arrangement designed to compensate distributed energy generation (DG) system owners for any generation that is exported to the utility grid.*
>
> *NEM allows utility customers with on-site DG to offset the electricity they draw from the grid throughout the billing cycle (e.g., one month). The utility customer pays for the net energy consumed from the utility grid.*
>
> *NEM customers directly use the electricity generated on-site by their DG systems. If the amount of electricity the NEM customer's DG system produces exceeds the amount of electricity that customer can use, the excess amount is exported to the utility's electric grid. If the NEM customer uses more electricity than his or her DG system produces, the customer imports electricity from the grid, and pays the full retail rate for that electricity, just like a traditional utility customer.*

If a customer generates more electricity than it uses in any particular billing cycle, it is often given a rolling credit that can be applied against future billing cycles where the customer uses more energy than it generates, sometimes indefinitely and sometimes only for a limited number of future billing cycles.

Net energy metering, which is currently available to one extent or another in approximately 40 states, can give an institution a strong economic incentive to deploy solar and to size it to meet most, if not all, of its electrical demands. But an institution must pay close attention to whether net energy metering is available (whether required by law or available by discretion of the utility) and what limits might apply if it is. These limits include the following (adapted from the NREL article mentioned above and included in the first link below):

- Limits on the rate at which excess generation is compensated (which can be equal to or less than the rate the institution pays for energy from the utility, even as low as zero);
- Limits on the size of the system eligible for net energy metering;
- Limits on the type of customer using the system (residential versus commercial, for instance) eligible for net energy metering; and/or
- Limits on the overall program size (with caps measured in a number of ways).

Even if net energy metering is generally available, a utility may refuse to enter into an interconnection agreement with an institution if it determines that its distribution infrastructure (transformers, for instance) are not adequate to meet the increased load of the institution's proposed installation. In this case, the utility may require additional contractual concessions to help fund upgrades to its infrastructure.

VALUE OF SOLAR TARIFFS

Some analysts claim that net energy metering creates an unintended subsidy of customers with solar by those without. The argument is, essentially, that solar customers reduce demand from the utility resulting in increased rates to cover the fixed costs of the utilities, including its transmission and distribution network which solar uses. Compensating solar customers for excess generation at the retail rate will compensate them, in part, for a problem they are creating. In order to deal with this issue, some utilities have developed "value of solar tariffs." NREL describes these tariffs as follows (see the second link under "Further Resources" below for the full article):

> *Under the current implementation of VOS tariffs, of which there are two (Minnesota and Austin, Texas), customers continue to purchase all of their energy at the utility's retail rate, but are compensated for solar PV generation at a*

separate VOS rate in dollars per kilowatt hour ($/kWh). The VOS rate accounts for solar PV's benefits to stakeholders net its costs.

Factors that affect VOS rate may include:

- *Utility variable costs (fuel and purchased power)*
- *Utility fixed costs (generation capacity, transmission, and distribution)*
- *Distribution system and transmission line losses*
- *Ancillary services (to maintain grid reliability)*
- *Environmental impacts (carbon and criteria pollutant emissions)*

These factors and others may be included in VOS methodologies to calculate the VOS rate. Although analyses of distributed solar PV value share common trends, no standard methodology currently exists.

Regardless of the equitable benefits such an approach may offer, it presents a challenge to an institution wanting to deploy solar because yearly adjustments in the VOS tariff make cost/benefit calculations difficult to model.

COMMUNITY SOLAR PROJECTS

Many college and university campuses have an abundance of open space. This space might make an institution the perfect site for a "community solar" project, a shared solar PV system open to use by subscribers who buy or lease a portion of the system's generation capability. Such projects can be done with the cooperation or sponsorship of the utility or by developers working independently of the utility. In either case, the utility will be involved in processing credits that shared users receive through net energy metering, "virtual net metering," or some other method.

A community solar project located on campus grounds but offering subscriptions to residents and/or businesses not affiliated with the institution raise some interesting issues of "private inurement" and "unrelated business income" for public or nonprofit institutions. Certainly, such a project would meet an institution's goals of "visibility" reflecting its support of renewable energy. Likewise, as a subscriber to the project it would have a strong interest in obtaining a significant share of its electricity at favorable rates. But public and nonprofit institutions need to be concerned that what they are doing is within their powers and does not convey a big economic benefit to unrelated private parties (like a developer or other customers) or result in the generation of income (a lease to the developer, for instance) that is "unrelated" to its core purpose. Such concerns might be mitigated by (1) limiting subscribers to users providing faculty and student housing, (2) using the solar installation for instructional or research purposes as well as energy generation, (3) compensating the institution through lower rates for its contribution to the project (which might solve a private inurement issue but still generate unrelated business income) or (4) pursuing some other charitable purpose, such as making subscriptions available to low-income users at reduced rates (so long as this is within the institution's powers).

DEPLOYING AN OFF GRID SOLAR PV SYSTEM

If a utility does not offer net metering or other adequate compensation for excess solar generation, if it will not enter into an interconnection agreement due to concerns about the load of the proposed system in light of existing transmission and distribution infrastructure, or if an institution is installing solar to provide resiliency for critical facilities, an institution may want to deploy an "off grid" solar PV system. The institution will face two possible obstacles in doing so.

First, under the state or local laws an institution may be required to connect to the utility grid, may be prohibited from operating electrical generation and storage systems of the scope proposed because such systems would constitute a "utility," may face zoning and land use issues, may face public safety regulation issues, and so on. In this regard, a reasonably sized backup system for critical facility resiliency may be viewed differently than a campus-wide, self-sufficient generation and storage system.

Second, energy storage solutions are a developing technology. Given the current state of this technology, storage solutions may not be available at a cost, efficiency, size, and safety profile sufficient for an institution to go totally off grid.

This area, both as to legality and technology, is rapidly changing, however. What may be impractical or not allowed today may be both practical and legal in the future.

FURTHER RESOURCES

NREL:

- **Net Metering** - https://www.nrel.gov/technical-assistance/basics-net-metering.html
- **Value-of-Solar Tariffs** - https://www.nrel.gov/technical-assistance/basics-value-of-solar-tariffs.html
- **Unraveling How Distributed Generation is Compensated and Why It's Important** - https://www.nrel.gov/technical-assistance/blog/posts/back-to-basics-unraveling-how-distributed-generation-is-compensated-and-why-its-important.html
- **Community Solar** - https://www.nrel.gov/technical-assistance/community-solar.html
- **Utility Guidance for Solar (Established in 2013, Distributed Generation Interconnection Collaborative ("DGIC") provides a forum for the exchange of best practices for distributed PV interconnection between electric utilities, solar industry participants, and other stakeholders.)** - https://www.nrel.gov/dgic/

SEIA: Net Metering - https://www.seia.org/initiatives/net-metering

Freeing the Grid: Information on the availability of net metering - http://freeingthegrid.org

HOW ENDOWMENT FUNDS COULD HELP

Most colleges and universities maintain endowment funds, either as special restricted funds of the institution or as separate legal entities, to receive, invest, and disperse donations and gifts made to the institution. Another Module of this program will take a more detailed look at endowment funds, and how they might be involved in promoting energy efficiency and renewable energy projects (including solar) at colleges and universities and/or get involved with "value investing" by engaging in other green investments.

For this Module, we will briefly consider ways in which an institution's endowment fund could help support a solar deployment and then look at policy and other matters that might make that support more or less likely in fact. Here are some ways that an endowment fund might be able to help support an institution's proposed solar PV deployment:

- It could give the institution funds to buy and own the system outright (or advance funds in conjunction with a dedicated fundraising drive to pay for the project).
- It could loan the institution funds, at market or below-market rates or interest free, to buy and own a system. (This could be a stand-alone loan or part of a "green revolving fund" used to fund multiple green campus projects over time.)
- It could commit to fund all or a portion of an institution's obligations under a PPA.
- It could contribute an upfront payment to reduce and/or prevent increases in annual energy payments under a PPA.
- It could loan funds, as an investment, to the developer entering into a PPA at a rate lower than the developer could otherwise obtain in the capital markets resulting in a lower cost of energy for the institution.
- It could invest in the partnership created by the developer for the project (but most likely NOT as a tax equity partner entitled to claim ITC and accelerated depreciation benefits).

Depending on the powers that an endowment fund has in its organizational documents (if a separately created organization) or the powers granted it by the institution through resolution, ordinance, or trust agreement (if it is a restricted fund of the institution), the endowment fund could very well be authorized to take these actions. Assuming the endowment fund is holding onto donations that have been restricted to green uses or renewable energy, the endowment fund may be more likely to take one of these actions.

But many endowment funds are designed and operated to provide annual contributions to the institution's operations (for instance a distribution of 4% to 6% of the fund's value per year) while continuing to invest and grow over time. Especially for very large funds, the endowment fund selects a variety of investment managers to invest the fund's assets in a variety of investments in a variety of

investment categories (debt, equity, real estate, even venture capital). Operationally, a "one-off" transaction with the college or university tends not to be the business that the endowment fund is set up to do.

There has been a lot of press in recent years about the size of various endowment funds and the use of - or failure to use - such funds to keep tuition costs reasonable. Considering this increased scrutiny, it is possible, and maybe even likely, endowment funds will look for new ways to assist their related institutions in pursuing cost saving measures and green policies - like solar and other renewable energy systems.

FURTHER RESOURCES

Intentional Endowments Network: Investing in Clean Energy: Campuses and Endowments - http://www.intentionalendowments.org/clean_energy_white_paper

TAX-EXEMPT FINANCING ISSUES: PRIVATE USE AND OFFICIAL ACTION

Public and 501(c)(3) colleges and universities can borrow money at tax-exempt rates - public institutions through the issuance of bonds, notes, or some other form of debt and 501(c)(3) institutions by borrowing from "conduit" public entities that issue "qualified 501(c)(3) bonds" on their behalf. Because interest on this kind of debt is not included in the gross income of the lender (bondholder), tax-exempt rates are lower than rates on conventional financing, all other things being equal.

Tax-exempt financing, because of the lower rates, confers a significant benefit on the borrower - the federal government is, in essence, providing borrowers with a sort of subsidy. It should come as no surprise, then, that institutions wanting to use tax-exempt financing must leap through a lot of legal hoops, both to put the financing in place and to meet compliance requirements after it is in place. Links to certain IRS publications are included under "Further Resources" below, and students are encouraged to at least browse through them to get a sense of the morass of legal requirements surrounding tax-exempt financing.

For purposes of this Module we will focus only on two practical matters: "private use restrictions" and "official action requirements."

PRIVATE USE RESTRICTIONS

The Internal Revenue Code and the IRS limit the amount of "private use" (generally to 10%) that can be made of bond proceeds if the bonds also meet a "private security" test. The reason is simple, even if the rules are not: the substantial economic benefit of tax-exempt financing is meant to be enjoyed by public entities and/or 501(c)(3) entities, not private persons or businesses. The consequence of violating these restrictions is that the tax-exemption on the financing is lost. The issue is complicated by the fact that "private use" can take the form of certain "management contracts," contracts under which the borrower has a third-party manage all or part of its tax-exempt financed property.

Two examples might help illustrate the issues. Assume that an institution uses tax-exempt bonds to finance a student union containing a large cafeteria/food court, which was constructed and equipped with 25% of the proceeds of a tax-exempt bond issue. In Example 1, the institution leases the cafeteria to XYZ Foods, a for-profit corporation, under a long-term lease and XYZ operates the cafeteria/food court. This constitutes "private use." If the bonds are secured by (1) the facility itself (a mortgage, for instance) or lease payments from XYZ, this would be "private security" and the bond issue could be in trouble.

In Example 2, the bonds are secured by a mortgage on the facility ("private security") and, although the facility is owned by the institution, the institution enters a long-term "management contract" with XYZ to run the cafeteria/food court on its behalf ("private use"); again, the bond issue could be in trouble. The IRS has issued guidance and provided safe harbors for management contracts, offering a variety of options (with differing contract lengths, renewal options, and payment provisions) that will keep a management contract from being "private use."

How might these issues affect a solar deployment? There are two scenarios that could result in private use problems and should be evaluated by counsel:

- If an institution licenses a developer, as part of a PPA, to mount a solar array on the roof of a facility that was financed with tax-exempt financing, it would constitute "private use" of the facility to some extent. In this scenario, it might be difficult to find "private security" (unless the bonds are secured by a mortgage on the property) and the "private use" most likely wouldn't exceed the 10% threshold, but the issue should at least be considered.

- If an institution uses tax-exempt financing to finance the acquisition of a solar deployment that it owns and then enters a contract with a third-party for operation and maintenance of the system, the O&M contract must be examined to see if it constitutes "private use." If the contract is for maintenance only, and not really "operation" to any extent, it may not be a management contract at all for tax purposes. If it includes operation as well as maintenance, requiring regular and significant activity by the third-party, it should be crafted to meet one of the IRS safe harbor exemptions so as not to cause a private use problem.

OFFICIAL ACTION REQUIREMENT

Several years ago, clever financial types encouraged municipalities to issue tax-exempt bonds and "reimburse" themselves for the cost of facilities that may have been paid for with cash or a taxable financing in the past. The idea was that the municipalities could invest the bond proceeds at taxable rates, use the earnings to pay tax-exempt interest on their bonds, and pocket the difference. To curb this abuse, the IRS instituted "reimbursement regulations" saying that a municipality could only use bond proceeds to reimburse itself for project expenditures made no more than 60 days before "official action" was taken expressing an intent to issue tax-exempt bonds. Certain "preliminary expenditures" (like engineering and architectural services) are exempted from the 60-day requirement. Also, the 60-day requirement relates to actual expenditures made, not to the contractual obligation to make future expenditures.

How is "official action" taken? It differs depending on whether the borrower is a municipality or a 501(c)(3) nonprofit entity:

- For municipalities, official action is taken by the adoption of a "reimbursement resolution" expressing with some specificity the purpose of the bonds to be issued and the maximum amount expected to be reimbursed from bond proceeds. Official action could also be taken by an officer designated by resolution to take such action and by the officer putting an official declaration on record stating the purpose of the issue and the maximum amount to be reimbursed.
- For 501(c)(3) borrowers the process is more complex. Before bonds can be issued on behalf of such borrowers, the pass-through public issuer must publish a notice (called a "TEFRA notice") containing significant information about the project to be financed, the location of the project, the borrower, the maximum amount of bonds to be issued, and more. Once a "reasonable" amount of time has passed after publication of the notice, the public entity must hold a public hearing (a "TEFRA hearing") after which it can adopt a resolution preliminarily approving the project and constituting "official action" for reimbursement purposes.

An institution wanting to own its solar PV system and finance it with tax-exempt financing should be careful to pay attention to the "official action" requirements.

FURTHER RESOURCES

IRS:

- **Tax-Exempt Governmental Bonds (Publication 4079)** - https://www.irs.gov/pub/irs-pdf/p4079.pdf
- **Tax-Exempt Bonds for 510(c)(3) Charitable Organizations (Publication 4077)** - https://www.irs.gov/pub/irs-pdf/p4077.pdf
- **Bulletin 1997-5 relating to safe harbor for "management contracts" (and other matters)** - https://www.irs.gov/pub/irs-irbs/irb97-05.pdf
- **Reimbursement Regulations (26 CFR 150.2)** - https://www.gpo.gov/fdsys/pkg/CFR-2015-title26-vol3/pdf/CFR-2015-title26-vol3-sec1-150-2.pdf

CONCLUSION

This Module has highlighted, at a very high level, some of the many legal and regulatory issues an institution will face if it hopes to go solar. If nothing else it should have demonstrated how vitally important it is for an institution to engage legal counsel, accountants, financial, and technical experts sooner rather than later in the process. Thank you for taking the time to study this Module and to explore some of the further resources it contains.

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January 2018

For more information on how to get your campus to go solar, visit ***SolarEndowment.org*** or email ***janec@midwestrenew.org***

This work is based upon work supported by the U.S. Department of Energy Solar Energy Technologies Office, under Award Number DE-EE0006910.