

## **An Introduction to Solar Energy Law**

Renewable energy generation is a growth industry as the United States seeks its energy independence and its citizens demand a clean environment. The movement has resulted in the passage of both State and Federal laws to motivate and encourage both large scale development of renewable energy by public utilities as well as smaller “micro-energy” production by commercial building owners and residential homeowners.

The resulting projects inevitably intersect other laws relating to the use of real property, contracting for construction and entitlements to tax exemptions and energy credits.

This material will address some of the basic issues in the growing area of solar power law including system ownership, utilization of purchase power agreements, the choice of lease or easement rights, the tax advantages offered by both federal and state governments to install solar power, the keys to creating proper design and construction contracts and finally, the financial benefits of being an energy producer.

### **I - Opportunities for residential and commercial application of solar power technology**

Solar energy is simply the process of capturing the radiation from the sun and converting it into electricity. There are a number of different types of solar energy systems that are currently in use: Concentrating Solar Power, which is a system that uses mirrors to heat a fluid that is typically transferred to a steam turbine generator to produce electricity; Solar Thermal, which also uses a solar collector, but heats a fluid that is used to create hot water and heat; and Photovoltaics, which is a system that uses solar cells to convert light (photons) to electricity (voltage).

One of the initial hesitations to considering solar power is the assumption that in order to produce enough power, the generating person needs to be in a sunny climate, like Florida or California. However, just five solar sun hours each day is enough sun for solar to make a significant energy contribution. Germany is the world’s leading solar market and it averages only two solar sun hours each day. There are substantial benefits to creating and utilizing solar power, including the fact that sunlight is free, solar production requires no ongoing fuel purchases to maintain the energy and solar energy does not pollute, unlike other energy sources.

There are other drivers in the solar power market as well, including the recognition that there will be ongoing increases in electricity prices, the volatility of natural gas prices, the consumer appreciation of “green businesses” and now, more than ever, the growth of federal and state tax incentives. All of this has created a draw to solar power as a means of participating in the movement and demonstrating support for renewable energy.

Solar power can be utilized as a stand alone (or “off-grid”) energy source, providing power when needed. Any excess produced energy is then stored in batteries for later use. Solar power can also be utilized within a “grid-tied” system, where the solar energy system is connected to the utility grid. Under this approach, no batteries are used since excess produced energy is contributed to the grid for use by others. If extra power is needed, it can then later be drawn from the connected utility.

Residential solar development typically involves a homeowner who purchases its solar power system outright, arranges for the installation and commissioning of the system and obtains the direct benefits of the energy created. By purchasing less power from the local utility, the homeowner saves on its energy costs and recovers its cost of investment over the long term. The homeowner may also create revenue from the system depending on how much excess energy is produced and the “net-metering” rules for its state.

Commercial solar users have multiple options when it comes to the development of solar power systems located on their property. Certainly commercial owners, like residential homeowners, can be direct owners of the systems installed on their property. Those commercial owners can reap the direct energy savings they receive and also have the potential of monetizing their energy production by selling excess power to the local utility or through the sale of renewable energy credits (REC's). But commercial property owners also have the possibility of offering their property (raw land and rooftops) to third parties for the development of solar energy systems. These third party arrangements allow property owners to purchase the solar power that is generated, but they can transfer the ownership, maintenance and operation of the system to a separate entity through purchase power agreements (PPA's).

## **II- Federal and state energy programs, tax exemptions and credits for constructing solar power systems.**

To encourage private investment in renewable energy, federal and state laws have been passed to promote the installation and use of solar power systems. The legislative goal has been to create programs for the "distributed generation" of power. A "distributed generation" facility is a facility owned and operated by a customer of an electric service provider that produces electrical energy from a solar photovoltaic system, fuel cell or wind turbine and has a peak generating capacity of generally not more than 10 kilowatts for a residential application and 100 kilowatts for a commercial application. The power that is generated is typically used to offset the needs of the particular power customer.

Beginning with the **Federal Energy Policy Act of 2005**, the federal government established a tax reduction policy for all energy efficient commercial buildings placed in service. The law provided deductions of up to \$1.80 per square foot to owners of buildings that reduced the building's total energy and power cost by 50% or more in comparison to a building meeting minimum requirements set by ASHRAE standards.

Although there were earlier investment tax credits up to 10% available for renewable energy development, the Energy Policy Act of 2005 raised the credit to 30%, up to a total of \$2,000 for residential applications. That credit was set to expire in 2007. The credit was extended through 2008 by the **Tax Relief and Health Care Act of 2006**. The Federal Energy Policy Act of 2005 also established Clean Renewable Energy Bonds (CREBs) as a financing mechanism for public sector renewable energy projects. The **Energy Improvement and Extension Act of 2008** allocated eight hundred million dollars for new Clean Renewable Energy Bonds.

The **Emergency Economic Stabilization Act of 2008** continued the support for energy efficiency and renewable energy and provided for, among other things, an eight year extension of the commercial and residential solar investment tax credit and eliminated the \$2,000 monetary cap for residential solar electric installations. According to a study conducted by Navigant Consulting, the eight year extension provided by the law is expected to create over four hundred thousand permanent jobs in the solar industry and open up 325 billion dollars in private investment. Also, with those incentives, the expectation is that more than 28 gigawatts of electricity will be produced from solar energy by 2016, enough to power more than seven million homes.

A year later, the **American Recovery and Reinvestment Act of 2009** allocated an additional 1.6 billion dollars for CREBs. The bonds may be used by certain entities, primarily in the public sector, to finance renewable energy projects. CREBs are issued with a zero percent interest rate. The American Recovery and Reinvestment Act of 2009 also provided further

incentives for the development of renewable energy and further extended the tax benefits established under the prior law. The 2009 law further added renewable energy grants, whereby the government would provide cash grants equal to 30 % of the cost of solar property placed in service during 2009 and 2010. Pursuant to the American Recovery and Reinvestment Act of 2009, the cash grant may only be taken in lieu of the federal energy investment tax credit. Payment of the cash grant is to be made within 60 days of the grant application date or the date property is placed in service, whichever is later. Grant applications must be submitted by 10/1/2011. Under the 2009 Act, there is also a renewable energy production tax credit which is a per kilowatt hour tax credit for electricity generated by qualifying energy resources. The tax credit is between 1.0 and 1.5 cents/kilowatt hour.

Finally, the 2009 law addressed changes in the depreciation schedules for renewable energy development. Under the Federal Modified Accelerated Cost Recovery System (MACRS), businesses may recover investments in certain property through five year depreciation schedules, including additional bonus deductions of up to 50% if the projects meet certain criteria, such as when the project is placed in service.

Within the last few years there has been equal movement within the majority of the individual states to support the development of renewable energy in both residential and commercial applications. The state laws have addressed not just tax incentives, but other issues concerning the interconnection between the generator and public utilities, the requirements for net-metering to support energy sharing and even laws regarding solar easements. These are all legislative issues that are vital elements to an overall strategy of supporting the creation and use of renewable power.

For example, the **Georgia** Clean Energy Property Tax Credit provides a residential tax credit of 35% of the cost of the system or \$10,500 for the purchase of photovoltaic systems (\$2,500 for the purchase of solar water heating). Currently only \$2.5 million dollars is available in tax credits for each calendar year between 2008 and 2012. On the commercial side, a tax credit is provided with a maximum of \$100,000 per installation for solar water heating and a maximum of \$500,000 for installation for PV systems.

**South Carolina** provides a solar energy tax credit where taxpayers may claim a credit of 25% of the costs of purchasing and installing a solar energy system for heating water, space heating, air cooling or generating electricity in a building owned by the taxpayer. The maximum credit in any year is \$3,500 for each facility or 50% of the taxpayer's tax liability for that year, whichever is less. Corporate tax credits allow a similar credit for companies purchasing and installing a solar energy system.

There is a solar energy incentives program in **Florida** which provides financial incentives for the purchase and installation of solar energy systems. The program is administered by the Department of Environmental Protection (DEP) and provides rebates to Florida resident businesses that purchase and install new photovoltaic systems two kilowatt or larger in capacity and solar water heating systems that provide at least 50% of a building's hot water use. For photovoltaic systems on residential development, the credit is \$4/watt, up to \$20,000. For commercial, non-profit, multi-family and public facilities it is \$4/watt, up to \$100,000. On solar water heating systems, the residential credit is \$500 per installation and the commercial, non-profit multi-family and public facilities credit is \$15 per 1,000 BTU per day, up to \$5,000.

**California** has adopted a number of laws that promote solar energy technologies. For example, the property tax exemption for the purchase of solar energy equipment exempts from property taxes the value of the solar energy equipment installed. Under this plan, if a homeowner installs a photovoltaic system worth \$24,000 and the assessed property value is increased by that same amount, the homeowner does not have to pay property taxes on the incremental \$24,000 in value attributable to the photovoltaic system.

Many states provide for the "interconnection" between residential and commercial power generators and the local utilities. Interconnection generally involves renewable energy systems up

to 20 kilowatts in capacity for residential systems and up to 100 kilowatts in capacity for non-residential systems. The statutes for these states specifically address the responsibility of the utility to connect the energy producer to the “grid” and the “net-metering” requirements for the utility. Under most state laws, the utility is required to provide bi-directional metering to customer generators and is required to enter into a written agreement with the customer generator. Some states provide that any excess generation from the facility simply creates a credit for the purchaser (making the meter “run backward”) but does not allow the credit to be monetized. Under some laws, the local utility is required to buy the excess output from the facility at market rates.

Solar easements allow owners of solar energy systems to negotiate for the assurance of continued access to sunlight. These statutory easements grew out of a concern that future shading by buildings or vegetation would impact solar energy development. Accordingly, the states that have solar easement laws allow owners of solar energy devices to negotiate for continued access to sunlight. Solar easements provide for the description of the airspace and the terms and conditions under which the easement is granted and can be terminated.

**California** law provides for easements to ensure the right to receive sunlight for any solar energy system. Under the California statute, solar easement means the “right of receiving sunlight across the real property of another for any solar energy system.” According to the law, direct sunlight to a specified surface of a solar collector, device, or structural design feature may not be obstructed.

### **III- Introduction to the use of specific lease agreements and easements for solar projects.**

Unless the solar power generator is placing the power system on its own home or commercial building, the power developer or generator is going to be using another party’s property to install their power system. If the developer selects to use another party’s property for the construction and operation of its solar power system, that producer will be considering either a lease or an easement agreement for the use of the property. The range of issues that must be considered in putting together a solar PV site lease or easement agreement is different from those presented in standard commercial real estate agreements. These agreements must address long term rights, undisturbed access to the power system and unqualified exposure to sunlight. The leases or easements will also vary based on the type of system used and the type of installation required.

For example, the development of a concentrated solar power project, where the land to be used generally has no other use, would suggest the application of a land lease. Under such a lease the producer takes responsibility for the entire property for a single purpose and would not be impacted by other parties. This is in comparison to a solar rooftop PV project where the developer doesn’t need the responsibility for the entire building and is content to share the property with the landowner and other third parties. In such a case, a limited easement would be the appropriate approach.

Whether the power developer is entering into a lease or an easement, that developer must perform a significant amount of due diligence concerning the property before the agreement is finalized. That investigation would include an examination of the relevant state law which governs the development of solar energy projects since it would not be unusual to find specific provisions addressing visibility, height, design and setback requirements for solar projects. There might even be certain zoning restrictions which would preclude the project from being constructed.

As part of that due diligence it is important that a proper title examination of the property be conducted and, if necessary, the purchase of title insurance. The power developer must determine the person or entity who has vested title in the property to be used and whether the title is subject to mortgages. The title search would search for any defects or encumbrances that might

create risk for the project, including any easements for utilities, road right of ways and mineral/timber rights. For example, with existing mortgages on the property, a developer would need to look for subordination or non-disturbance agreements. A developer would also need to look for any prior easement holders to determine if there are any overlapping easements. Whereas such an investigation like this may not be typical in a standard commercial lease or easement, it is recommended when it comes to the installation of a solar power system. All of these issues become relevant before a developer spends a lot of money on a solar project that may later need to be removed due to the preceding rights of others.

### **Leases**

Many solar projects are land intensive, especially when developing concentrated power. Concentrated Solar Power (CSP) projects require five acres for every megawatt produced. As a comparison, a typical wind project uses on average one acre to produce one megawatt of energy. For large scale projects, a developer will want to seek out land with low alternative uses. Since water is an essential element of CSP projects, a developer must give consideration to potential sources of water. If no source is on site, a developer must consider what water laws and restrictions may affect the ability to obtain water for the project.

Once the land is selected and the preliminary investigations are completed, any lease that is drafted should include specific terms about installing the equipment and should clarify that related fixtures remain, at all times, the property of the developer, not the property owner. A CSP lease may provide for rent based on the acreage used or may establish a rent value depending if the energy produced by the project exceeds a minimum amount. Under this last approach, the owner gets the benefit of production but is not penalized if the system is not generating as expected.

### **Easements**

Easements give the developer the sole right to use specific property for a specific use. A proper easement includes a clear description of the property, a defined scope of use and an explanation of the specific responsibilities and rights of each party. Easements must also identify the term of use, which in the case of solar projects typically is at least twenty to thirty years. Easements, like the lease, should specify that the equipment and related fixtures remain, at all times, the property of the developer not the property owner. With roof top PV systems and small ground mounted systems, any easement agreement must provide a way to secure the right of access to the property that is otherwise occupied and used by others. The easement also needs to address how the overall property and the easement itself are maintained.

It is especially important with solar PV easements that they include a right of ongoing access to sunlight. The easement should reference the estimated amount of sunlight directed to the system, current shading provided and how the easement will be affected by any corresponding reduction in overall sunlight. The compensation to the grantor of the easement may, like a lease, be paid based on market rates or may be negotiated in accordance with the amount of energy produced.

Whether a developer is using a lease or an easement, all real estate agreements must contain certain standard terms and conditions, including remedies for breach and the termination rights of the parties. It is important that the parties seek to set out all aspects of their agreement for the use of the property to produce solar power, so as to avoid future disputes arising from document ambiguities or omissions.

## **IV- Issues relating to the design and construction contracts for solar power installations.**

If a solar developer (again, either a direct owner or third party producer) were to review a typical design and construction contract they would see many of the familiar provisions of any other contract, including price, scope, schedule and warranties. However, there are particular elements of design and construction contracts that uniquely apply to solar energy projects such as

the testing and commissioning of the system, the added construction of interconnection facilities, the importance of the schedule (to meet tax deadlines) and likely some guarantee of minimum yearly electrical output.

On the design side of the contract, the project owner must obligate the party responsible for the design to first verify compliance with any applicable laws relating to design sensitivities for solar installations. The design provisions of the contract should provide in detail the system's expected performance and should reference a specific set of plans and drawings which are being used for the construction of the power system.

Of more typical application, the construction contract should address the specific pricing for the project, either lump sum or cost plus and should outline the process for payment, preferably based on the percentage of work performed. As for scheduling, it is common for liquidated damages to be included in the contract to account for any delays that might affect the energy producer's ability to claim state or federal tax credits that are time sensitive. This issue is important since, once lost, most of these tax credits cannot be reclaimed and the loss of these tax credits will have a long term economic impact on the project. Liquidated damages are seen as an appropriate remedy for these types of project impacts although insurance coverage may be available for certain delay related risks, including the failure to qualify for tax credits.

One unique piece of design and construction elements of a solar project is the electrical engineering services needed to connect the system to the larger electrical utility and the testing and commissioning of the completed system pursuant to applicable laws. The construction agreement should specify that the final completion of the project is conditioned on the approval of the system by the local utility and receipt of all required electrical inspection certificates. The contract may also include the owner's right to have the commissioning of the system inspected by a third party in addition to the local utility.

The warranty elements of the design and construction contract are also specialized since the developer is investing in the system with the expectation that, if there is sunlight, the system will create an expected output as represented. Accordingly, warranties from the manufacturers of specific parts of the system should be provided that include a certain performance term. The contract can address the remedial measures or cure rights of the contractor and manufacturer which are permitted to be taken before damages are assessed for reduced output.

Performance and payment bonds are typically included in these construction contracts to secure the obligations of the contractor to complete their work on time and to protect against liens and claims from unpaid subcontractors and suppliers. Other credit alternatives include personal guarantees from the owners of the contracting company to stand behind their company's work and performance.

Finally, as with most construction contracts, there will need to be provisions to address indemnity rights of the owner for injury or death, for property damage, for liens and claims by subcontractors and suppliers and for violation of laws. There will also need to be provisions regarding the need for commercial general liability, builder's risk and worker's compensation insurance and how those costs are to be covered between the project owner and contractor.

#### **V- The monetizing elements of solar power with the use of net metering contracts and renewable energy credits.**

A solar developer has the ability, depending on applicable laws, to not only offset their energy costs but also benefit financially from the creation of their solar power. As discussed,

most state laws require interconnection with the local electric generating utility which allows producers the opportunity to “sell” their power back to the utility through “net-metering” programs. Power generators also have the opportunity to enter into Purchase Power Agreements (PPA’s) to sell their power to third parties. The power can also be “sold” in the form of Renewable Energy Credits (REC’s), which may be purchased by utilities as a means to satisfy certain “green power” governmental mandates.

Commonly, net metering programs allow electricity customers who generate more solar energy than they consume to sell the excess electricity back to their local utility. These programs can offset a customer’s own electricity usage and reduce the amount of power the customer must buy from its local utility. Essentially, net metering allows the generation owner’s meter to “run backward” when excess generation is supplied to the utility, offsetting the bill from the utility. Nearly forty states plus the District of Columbia feature some kind of net metering program and most limit their programs to systems that do not exceed 10 kilowatts for residential installations and 100 kilowatts for commercial installations. Under these programs, utility companies are typically obligated only to pay for excess customer generated power to a maximum of .2% of the utility’s annual peak demand for the previous year.

Customers are sometimes given a choice of metering arrangements. Systems can be bi-directional to measure flows in each direction or customers can send all of their power from the system directly to the grid. There is no national standard for inter-connection rules and the state rules vary. Since most of the solar power generators are based on intermittent production (sometimes its sunny and sometimes its not), interconnection with the grid is an important factor. Solar power distributed generation owners must have some way to obtain power if their project is not generating enough.

In addition to generating revenue from production, solar power purchase agreements (PPA’s) can also provide an alternative approach for a commercial owner to obtain a solar system. With PPA’s, a property owner can get a system installed on its property without paying upfront costs or dealing with the operation or maintenance of the system. With a PPA, a solar service’s provider arranges for the financing, design and construction of the project on the owner’s property (sometimes called a “host”). The consideration for these PPA’s is generally a long term deal where the property owner or host agrees to purchase the solar power from the provider based on pre-set electricity prices. Under this arrangement, the power provider also gets the benefit of all tax incentives, and the ability to sell the REC’s. Most distributed generation solar PV PPA’s provide that the buyer will buy all of the electricity generated by the installation at the price specified in the PPA and the electricity will be delivered at the point of interconnection with the buyer’s electric system. Some PPA’s specify a certain amount of money the purchaser is obligated to pay each year regardless of whether the installation actually produces that output. Other PPA’s base payment on the actual receipt of the power output at the specified point of delivery. Standard provisions of a negotiated PPA typically include an extended term (up to thirty years) since shorter terms allow the purchaser to re-price the PPA at certain intervals as a hedge against having to agree to a price for electricity that may be substantially above the future market price. Pricing can also be based on discounts with annual escalators.

Some PPA’s include output guarantees, requiring the solar provider to pay the power purchaser if the project’s output fails to meet a specified level. These guarantees represent a calculation of the amount of energy that the solar power technology is rated to produce under certain conditions. Purchasers may look for compensation if the system is down for an extended period of time. The contract may provide for certain liquidated damages if benchmarks of generated power are not met by the energy producer. Typical PPA’s contain an obligation on the power producer to maintain the solar power installation and cover all costs of repair and replacement.

Like most standard contracts, PPA’s generally include provisions that define defaults and provide specified remedies, including the right of the defaulting party to cure and the right of the

non-defaulting party to terminate. There should also be boilerplate language including other representations and warranties, the governing law, limits on consequential damages, dispute resolution procedures and the waiver of jury trial rights.

Many states require utilities to provide a certain amount of renewable power in their electricity mix which is known as a renewable portfolio standard (RPS) or “solar set-asides”. Some states allow utilities to meet this requirement through the purchase of renewable energy certificates. Renewable Energy Certificates (REC’s) are also known as green certificates or green tags and a REC typically represent the environmental attributes of one megawatt hour of electricity from a renewable energy source. The credit can be sold on the commodities market and the value of the credit varies depending on the location and pricing of market power.

In states that have passed laws that include a minimum amount of renewable energy in the portfolio of generating resources, there is a “compliance” market for the buying and selling of REC’s. The buyers of REC’s in such compliance markets are generally the utilities themselves that otherwise are unable to create the level of renewable energy production required. The “voluntary” market is where customers want to “green” their own power supply and purchase REC’s in order to claim that their energy supply is “produced” by renewable energy.

Marketers or brokers may also purchase and bundle REC’s into more useable products. By bundling together a number of smaller developer’s REC’s, a broker can satisfy a larger customer’s demand. To avoid double counting, REC’s require a tracking component that tracks each REC based on the energy produced. To accomplish that, each unit of generation is assigned a unique ID. To avoid any risk of duplicating REC’s, long term contracts for REC’s are recommended to enlist third party verification.

## **CONCLUSION**

Solar power takes advantage of the sun’s abundant energy and allows producers to reap an increase in financial savings while reducing the impact of pollutants. Solar power is a true, viable alternative to conventional energy sources. The renewable energy industry is growing at a rapid pace and the legislative support for clean and sustainable energy is growing with it. Whether it is cash grants, investment tax credits or depreciation deductions, homeowners and commercial property owners throughout the country are finding both financial incentives and environmental motivations to develop green energy like solar power.

There are already numerous successful projects on both a large and small scale basis where homeowners and commercial property owners have seen significant energy savings in operating solar energy systems. These distributed generation projects, when interconnected with local utilities, provide a direct reduction in energy costs while not sacrificing service and reliability. Solar power related laws will continue to evolve as the industry grows. Recognizing the legal elements of the industry will help to reduce owner, developer and contractor liability risks as these projects continue to emerge.

**Scott Zucker is a partner in the law firm of Weissmann Zucker Euster Morochnik P.C. in Atlanta, Georgia. Scott oversees the firm’s solar energy practice and assists clients concerning the installation of solar energy systems and the use of tax credits, net-metering advantages, renewable energy credits and regulatory permitting requirements. The firm also assists clients in corporate, construction and leasing issues that also affect solar energy development and implementation. Scott can be reached at (404)364-4626 or at Scott@WZlegal.com**