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Put It Where the Sun *Does* Shine: A Comparison of Wind and Solar Lease Provisions and Issues (Updated)

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There exists very little doubt that Texas is the leader in wind energy. The state boasts the highest installed capacity of wind generation in the United States, and as is often cited, would rank fifth in the world in installed wind energy capacity if it were an independent country. Texas has already exceeded its Renewable Portfolio Standard ("RPS") set for 2025 (10,000 MW); in fact, in 2011 Texas *wind* generation capacity exceeded the RPS on its own. However, solar development in Texas lags far behind other states that have fewer resources for utility-scale solar installations. While currently solar energy generation may not be as technically and/or economically feasible as its renewable brethren, a push for more widespread development in the form of utility-scale solar projects will certainly occur as the Texas population continues to grow and energy needs continue to increase.

This paper will first put the Texas solar discussion into context by discussing the different types of solar power. A brief history of solar power (nationally and internationally) will follow, and the paper will then briefly drill down to provide a more local perspective of solar power generation in Texas. The paper will next conduct a comparison of lease provisions common to wind and solar development, then provide some issues and provisions specific only to solar development leasing. Finally, a discussion involving transmission will round out the article. It is imperative that Texas become more engaged in the solar development process, since the state has outstanding resources for solar development, combined with a friendly regulatory environment and willing electric customers.

I. BACKGROUND

Humans have been utilizing energy from the sun for thousands of years. As technology has expanded, varying uses have evolved for harnessing the energy of the sun. Over time, two major processes have moved to the forefront and represent the technologies that supply the majority of solar-generated electricity worldwide: photovoltaic ("PV") and concentrated solar power ("CSP"). PV systems are based upon the principles of the photoelectric effect. In its simplest terms, the photoelectric effect describes the release of electrons from objects in varying states of matter as a result of the matter's interaction with short wavelength electromagnetic radiation (sunlight). PV installations are the most prevalent form of solar power generation, and have significantly decreased the capital outlay required for such a project as related technology has evolved and manufacturing has simplified.

CSP installations rely on mirrors to reflect the sun into a concentrated beam, which in turn is used as the heat source for a conventional turbine (i.e., the light is directed towards a fluid, which creates steam that spins a turbine, thereby creating electricity). There are several different technologies that use CSP, with the most prevalent being a parabolic trough method, which is designed to track the sun across the sky during daylight hours. CSP technologies currently are capable of producing greater amounts of electricity than PV methods, with some CSP solar projects rated over 150 MW, including the 354 MW Solar Energy Generating Systems project in the Mojave Desert in California.

In contrast, the largest PV project currently operating is rated at 200 MW at peak output (located in China), with the next largest capacity installation at 100 MW (Ukraine). Despite this current "lag" in large utility-scale installations, PV is the most common method of solar power generation. This represents an interesting point, since in the context of a solar project in the southwestern United States, CSP has an overall lower cost of energy per kilowatt hour than PV, and has a better capacity for storage, thereby more effectively withstanding any intermittency of the solar source.[1] However, due to resources (or the relative lack thereof) in the other parts of the United States, PV is the only option.[2] In addition, PV likely also tends to be easier to install and is capable of being sited in smaller places, which explains the prevalence of rooftop and other building-located facilities.

On a worldwide scale, approximately 67 GW of PV solar systems have been installed.[3] Europe remains the leader in PV installed capacity. Germany boasts a cumulative installed PV power of nearly 24,700 MW at the end of 2011.[4] Italy also reports greater than 12 GW of solar PV installed, with the final tally for total installed capacity in the European Union at over 50 GW.[5] Closer to home, California is the United States leader in installed PV capacity (and CSP capacity as well) with 1,022 MW installed at the end of 2010.[6] The top ten list is below:

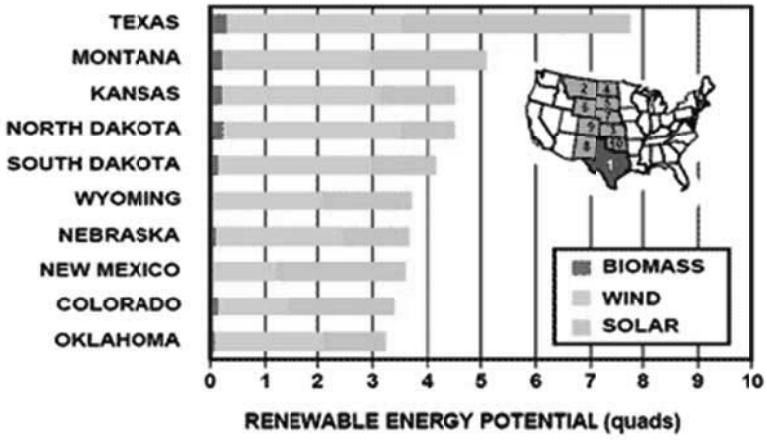
	MW_{DC}	Market Share
1. California	1,022	48%
2. New Jersey	260	12%
3. Colorado	121	6%
4. Arizona	110	5%
5. Nevada	105	5%
6. Florida	73	3%
7. New York	56	3%
8. Pennsylvania	55	2%
9. Hawaii	45	2%
10. New Mexico	43	2%
All Other States	264	12%
Total	2,153	--

Table 3: TOP TEN STATES
Ranked by Grid-Connected PV Cumulative Installed Capacity through 2010

[1] Taylor, Mike, *The Cost of Utility-Scale Solar: PV vs. CST*, Renewable Energy World, http://www.renewableenergyworld.com/rea/news/article/2008/05/the-cost-of-utility-scale-solar-pv-vs-cst-52436 (last visited February 20, 2011).
[2] *Id*.
[3] http://www.epia.org/index.php?id=18 (last visited January 29, 2012).
[4] *Id*.
[5] *Id*.
[6] Sherwood, Larry; Interstate Renewable Energy Council, *2011 Updates and Trends*, October 17, 2011, p. 21 – 22.

Conspicuously absent from that list (for at least the third year in a row) is Texas. In fact, at the end of 2010, Texas had installed just under 26 MW.[7] Current information suggests that Texas finally exceeded 50 MW of installed capacity in 2012.[8]

As demonstrated by the foregoing recitation of the current PV markets and the apparent downward trend the closer it gets to "home", solar energy is an available technology that has sustained widespread growth over the last decade, but has simply not generated sufficient interest in Texas. This is, frankly, surprising, since Texas ranks first in the central United States in solar resource potential, certainly suitable to support large-scale solar power plants.[9]



Of course, the uncertainty of the electricity market, the economy, and the vacillating nature of natural gas prices and other variable fuel sources that produce electricity, causes developers some trepidation in the initiation of widespread solar projects. However, as technologies evolve and demand for renewable forms of energy rise, regardless of ultimate cost, the foregoing trend will not continue into the future. Therefore, it is of benefit for landowners, developers, and legal counsel to be prepared for the inevitable increase in interest. It should be noted that due to the relatively new area of solar development (at least in Texas), resources by which to base an analysis on the contents and policies involved in solar project leasing and development are reasonably scarce. Nonetheless, in the lessons learned from the grand amounts of wind development in the state, some basic particulars can be extrapolated from those forms and applied to a solar leasing context. What follows is an analysis of those particulars.

II. WHERE THE TWO TYPES ARE SIMILAR

In many respects, a typical solar lease shares several important concepts and provisions with those contained in a typical wind lease. It is understandable that such is the case due to the relatively similar objectives involved in both: namely, to secure a certain amount of land for the

[7] *Id.*
[8] https://www.texasrenewables.com/publicReports/rpt5.asp (last visited January 29, 2012).
[9] Texas State Energy Conservation Office, *Texas Solar Energy*, http://www.seco.cpa.state.tx.us/re_solar.htm (last visited January 29, 2012).

exclusive use of the developer (most often for a definite time). Thus, it is not a surprise that a typical analysis of the provisions of a solar lease uncover similar, if not nearly exact, provisions from a wind lease. The following are a few examples of these provisions.

A. Granting Clause

The solar lease will provide certain rights to the lessee for development of the surface for use in a solar project. Thus, the granting clause will contain language specifying the exclusive nature of the agreement and the rights provided to the lessee/developer. These rights will include authority to utilize the land to convert sunlight into electricity, install the necessary equipment to do so, and to provide for transmission in order to collect and export the power generated from such facilities. While some leases may be written in general terms, the more prudent approach is to specify the various abilities the parties possess to utilize the land. For instance, as is advisable for a wind lease instrument, the solar lease ought to include language addressing: (1) the types of equipment that will be installed; (2) specifications of the types of activities the lessee will have the right to perform, including site and transmission analyses, access to transmission facilities and existing natural and man-made features of the land (water, roadways) for the purpose of assessing feasibility of installation and operation of a project; and (3) preservation of the rights of the developer to operate, replace, upgrade, renew, relocate, and remove any facilities or improvements placed on the property. Finally, the grant may also contain a provision reserving easements for roadways to be constructed, transmission lines to be erected, and any other rights-of-way necessary to conduct or support the project.

Additionally, the granting clause of the lease may need to also address that a landowner that possesses mineral rights to the property is expressly and specifically reserving those rights Unless such a reservation is specifically within the four corners of the document, it is an invitation to a declaratory judgment action to determine whether the lease conveyed rights to the mineral estate along with the surface grant. An improperly drafted lease that fails to address this issue may be considered to do just that. Under Texas law, a conveyance is construed to confer upon the grantee the greatest estate that the terms of the instrument will permit.[10] The conveyance will pass whatever interest the grantor has in the land, unless it contains language showing an intention to grant a lesser estate.[11] Thus, a provision in the lease is clearly advisable, and that provision must specifically reserve all mineral interests (if that is the landowner's intent) to be effective.

In sum, the granting clause of a solar lease does not likely differ in any major respect from the granting clause in a wind lease. Both attempt to reserve the most possible rights to the lessee to develop the subject lands in a manner most beneficial to that party, and the landowner will attempt to be as specific as possible in order to avoid "giving away the farm." Moreover, in both contexts, the granting clause represents an important reflection of the breadth of the rights being exchanged between the parties, and therefore is eminently important to properly draft.

[10] *Lott v. Lott*, 370 S.W.2d 463, 465 (Tex. 1963).
[11] *Sharp v. Fowler*, 151 Tex. 490, 252 S.W.2d 153, 154 (1952).

B. Term Provisions

As with a wind lease, a solar lease is likely to be split into terms or periods of development. The first stage consists of a development or assessment phase. This part of the relationship between the developer and landowner can take a few different forms, depending on the expectations and general practices of the developer. The relationship can be governed by an access agreement (as an independent document or as part of an easement/lease), an option to lease, or may be found in a lease as a development term. While these different mechanisms exist, they all ultimately cover the same period and do so for the same reasons: the agreement spans a certain time frame following lease execution (and prior to any construction or installation of equipment), during which the developer has the exclusive right to assess the subject property, including the right to conduct surveys and title reviews, environmental and transmission assessments, and evaluate the property's solar resource. In an instance where the defined development period is within the parameters of a lease (whether an option or a specified development term), the length of the term may be cut short by the inclusion of a provision in the lease document that automatically begins the initial term (which includes the construction period) upon the commencement of construction on the property. In other words, when dirt is first moved on the property in furtherance of constructing the facilities, the lease moves into its next phase, generally without any action required on the part of the landowner or developer to so indicate this change.

A topic that must be discussed and considered at this stage is the payments to be made by the developer to the landowner. The bases for such payments are (1) access to the property to conduct surveying and studies, and (2) the right to install and maintain solar resource analysis equipment. It should be noted that if the land is such that a solar resource measurement facility is located on or near to the property, a negative easement against the landowner is likely included. Specifically, the developer may include in the terms of this early agreement that the landowner may not perform any activities or make any use of the property that would restrict or redirect the sunlight away from the resource assessment tools. Therefore, the payments to the landowner ought to be on a per acre basis, since although it is possible that the installation of the assessment equipment will utilize a relatively small amount of land, the related negative easement also places a burden on the property, and the compensation for that right to the developer should be recognized.

If preferred, the landowner may also require that existing roadways be utilized for access and travel on or across the property. In the event existing roadways are not available, a payment for the construction of a roadway is also common, with consequent duties of the developer in the agreement to maintain the roadway. It is incumbent upon the landowner to ensure that language covering these points be included in the agreement, especially where the contract is not an option or a development term arrangement. Moreover, if the arrangement is in the form of an independent agreement, further issues must be addressed in the document, including indemnity, default, removal procedures and standards, and other relevant provisions, many of which are generally found within the language of the easement/lease portion of a larger agreement.

The last item specific to the opening stage of a solar project and the developer's activities on the landowner's property is the gathered data. As previously mentioned, the developer uses this initial period to assess the property to determine the feasibility of the installation and

operation of a solar facility at this location. The feasibility decision is usually based upon (1) what the collected data "tells" the developer, (2) whether any environmental concerns are present on the land, (3) the ownership and extent of the property that is discovered as a result of title review and surveying, and (4) what options exist related to transmission. The owner ought to ensure that the agreement requires the developer to turn over the data from the resource assessments, the results of the survey and title review, and any findings from the environmental assessments. This disclosure of information is often tied to the cancellation or expiration of the development period (i.e., the developer determines a project is not feasible, whether as a result of the aforementioned studies and analyses, or simply because the project will not be economically viable). It is imperative that the landowner have this information following the departure of the developer as the results and data will provide a good starting point for another developer that wishes to pursue a project in the area, and may also assist the landowner in "shopping" the property.

The construction and operations phases of a project often revolve around the same operative facts as far as a comparison of solar and wind lease language is concerned. During the construction phase of a wind project, the developer will install roadways, turbines, substations, operations and maintenance ("O&M") buildings, and transmission lines (including collection, telephone, and other communication lines). This stage can last from six to twelve months. While the project is not yet satisfying its ultimate goal (producing electricity), this stage commences the commitments between the parties that will last for the term of the lease, anywhere from 30 to 50 years or more total. For a solar lease, the construction phase often entails many of the same or similar installations, and depending upon the size of the project, can require a similar amount of time to complete.

The lease provisions addressing the operations phase of a project can also be strikingly similar between resources. Leases are broken down into separate operations terms, sometimes referred to as an "initial term" and one or more "extended terms." The initial term is usually effective upon the commencement of construction, and can last for a set number of years. In the event the lease agreement makes provision for extended or additional periods, how leases deal with the transition from initial to additional terms can vary. Like wind leases, it would seem preferential to solar developers for the term to automatically extend into the additional periods with the only requirement consisting of notice to the landowner that the lease is continuing. Conversely, some agreements may state that upon the approach of the expiration of the initial term, the developer, should it have interest in continuing to utilize the project to generate electricity, will approach the landowner to discuss continuing the relationship between the parties. From the landowner's perspective, this latter scenario remains the preferable one. However, the provisions of this potential extension period must, logically, be negotiated and agreed to many years prior to the actual occurrence. Therefore, specifying in the lease the standards to adhere to during that period, including timing and payments, must be performed at this stage of the negotiation.

In the event the solar lease provides for the payment of royalties, it, too, can mirror the provisions of a wind lease.[12] Generally, a wind developer calculates payments to the landowner

[12] It should be noted that Texas appears (at least at this time) to be one of the few states, if not the only state, that utilizes a percentage royalty payment to the landowner for participating in a solar project. The clear majority of the solar development leases (at least as far as the author is aware) are premised upon payment on a per acre basis.

based upon a formula that considers the amounts received by the operator from the sale of electricity. At the heart of the royalty calculation is gross revenues, which are generally defined as the proceeds received by the developer for (1) the sale of electricity generated on the land, and (2) the sale of credits related to the production of energy on the property. These credits can include renewable energy credits, greenhouse credits, or pollution credits, but usually does not include revenues from the federal investment tax credits. The actual royalty rates may vary from company to company, area to area, and may depend upon the type of arrangement to sell the power (power purchase agreement vs. merchant market). Since these payments can vary, many leases may also contain a minimum royalty provision, which provides for a certain floor amount that a landowner will receive on an annual basis. The minimum royalty is generally reflective of the megawattage installed on the property, or may be based upon a per acre amount. The minimum royalty payment is usually calculated by totaling the amount of royalties a landowner received over the course of a year (or shorter period if the developer so desires), and in the event the total is less than the amount specified in the lease as the minimum royalty, the operator agrees to pay the difference.

In addition to royalties or per acre payments, a solar lease (and a wind lease) will also often address payments for additional infrastructure, including roadways/access routes and collection/transmission easements. Overall, the term provisions in both renewable energy generation spheres largely parallel, and therefore navigating one can, for the most part, involve the same procedures and considerations as the other.

C. Removal

Following the termination of a lease, whether by default, release, or the expiration of the term, the equipment installed on the property will need to be removed. Consequently, the lease often contains a clause addressing the timing and standards of removal. Typical removal standards address returning the land back to the original condition it was in upon execution of the lease, or as close thereto as possible. In this vein, the clause may cover the depth of removal of any underground equipment (array foundations, roadways, and underground power lines), grading requirements, reseeding, options to remove roadways, and other items. These removal standards are typical, and equally as important, in a wind lease. While the remnants of a solar lease may not be as visibly onerous as those left from a wind project, the landowner's desire to have it removed remains the same. Therefore, neither party should be surprised by the existence of these types of provision in either type of development agreement.

An additional post-operations issue that may be addressed is an instance in which the operator encounters financial problems and is unable to fund removal, or simply "walks away" from the project with no successor. To ease concerns on the part of the landowner in this situation, the lease can include a removal bond. The removal bond serves the purpose of providing money for the removal of the equipment utilized for the operation of the project (arrays, roadways, electricity lines and other cables). While the specifics of the removal bond are negotiable, the landowner often ensures that (1) the bond is sufficiently funded to be able to pay for the removal of all equipment and (2) the amount of the bond is either reassessed every few years or, in the event the clause provides a fixed amount, increased on a regular basis to reflect the current costs of removal. Additionally, following cessation of operations, the lease document often specifies that a release will be executed and filed with the deed records where

the Memorandum of Lease is filed so as to "clear the title." The landowner will likely ask that the costs associated with this execution and filing be borne by the developer/lessee.

This foregoing discussion certainly does not cover all of the topics and provisions that are shared across solar and wind project leases, but provides sufficient examples to show that the two legal documents are quite similar. The same concepts and negotiating strategies may be applicable to both contexts, to a limited degree. However, as described below, the differences between the two renewable energy resources, and the consequential variances between the provisions of the leases, can be dramatic.

III. WHERE THE TWO TYPES DIFFER

As stated above, many terms contained in a typical solar lease will not vary in any great respect from a wind leasing situation. While the specific terms (i.e., payments, utilization of the property, easement requirements) will not exactly match between energy types due to differences in the technology utilized to harness the renewable energy source, as well as the market sizes and economics involved in both transactions, a clear pattern can be seen between the two land control instruments. However, significant differences do exist.

A. Existing and Future Uses

The most significant difference between the two types of leases is the existing use aspect. For a wind lease, most existing uses of the surface can continue due to the fact that the project installations are widely spaced out over a significant amount of acreage (anywhere from 20,000 to 150,000 acres, for instance). Usually a wind lease will provide for continued use of the leased property for farming, ranching, hunting, grazing, and any other use that does not interfere with the collection of wind or the operations of the project. The lease will generally provide for the reimbursement of any loss of income due to the construction or ongoing operations of the wind project. Reimbursements are often provided for any temporary (or in some cases, permanent) loss of income from: (1) hunting lessees' inability to access the property or hunt on certain parts of the land; (2) usage of farming lands no longer available for farming (or for payments for CRP tracts); and (3) grazing interruptions. However, in most of these instances, the nature of a wind development allows the lessor to "work around" the activities and development. This is an unlikely possibility in a solar lease.

A solar lease is a much more compact and dense project development. As a general matter, a solar lease utilizes approximately one acre per megawatt generated. Since a typical utility-scale solar project can range from 25 to 150 MW installed capacity, total land usage could utilize no more than 150 acres. (This is applicable to those parcels that have the solar array installed upon them. For those parcels that house only easements for roadways or collection/transmission facilities, treatment is much like that for a wind project, with temporary and permanent reimbursements available for disruption in existing uses). Moreover, because of the density with which a solar project is constructed (with the majority of each acre utilized, save a few strips of unused land to serve as access points to the panel array), existing uses are practically all but precluded. Obviously, grazing and hunting are out of the question on those parcels. There are some low-light crops that can be planted and harvested underneath the solar array in some instances, but the type of solar technology will determine whether such a plan is reasonable. As an example, for solar arrays that sit higher above the ground, such farming activities may not unreasonably interfere with the project. However, any co-existence between

the two parties will have to be determined on a case-by-case basis. Since the utilization of the land is more complete, temporary reimbursements are not an option unless the payment is related to a laydown area or construction of an easement for roadways or transmission systems.

The foregoing discussion left out one major aspect of the interaction between existing land uses and the installation of these two types of renewable energy projects: mineral estate development. This facet of land usage is a much more complex issue, considering the undisputed dominance of the mineral estate in Texas. As a general proposition, in an instance where the mineral estate is severed from the surface estate of a tract of land, the mineral estate is dominant to the interests of the surface, and the dominant estate is entitled to utilize as much of the surface as is reasonably necessary to exploit the minerals.[13] Thus, use of the surface where an existing oil and gas or other mineral lease is in effect is clearly subject to those existing facilities. In an instance where a mineral lease is in effect, but no use of the surface is currently ongoing, it is imperative that the renewable project lessee and lessor are aware of the existence of the mineral lease and understand that any surface lease entered into is subject to the rights of the mineral estate to use the surface as is reasonably necessary.

The situation is further complicated by an instance where the renewable energy development project has utilized a portion of the surface for its facilities, and afterward the mineral lessee desires to begin exploitation of the minerals below. The accommodation doctrine may then apply. In its simplest terms, the accommodation doctrine declares that while the mineral lessee retains the dominant estate and is entitled to utilize as much of the surface as is reasonably necessary, the mineral lessee in some instances must accommodate existing surface uses where reasonable alternatives are available. The Texas Supreme Court has stated:

> The due regard concept defines more fully what is to be considered in the determination of whether a surface use by the lessee is reasonably necessary. There may be only one manner of use of the surface whereby the minerals can be produced. The lessee has the right to pursue this use, regardless of surface damage. Kenny v. Texas Gulf Sulphur Co., 351 S.W.2d 612 (Tex.Civ.App.-Waco 1961, writ ref'd). And there may be necessitous temporary use governed by the same principle. But under the circumstances indicated here; i.e., where there is an existing use by the surface owner which would otherwise be precluded or impaired, and where under the established practices in the industry there are alternatives available to the lessee whereby the minerals can be recovered, the rules of reasonable usage of the surface may require the adoption of an alternative by the lessee.[14]

In this context, a surface owner must demonstrate that the mineral owner has available other reasonable means of production that will not interfere with the surface owner's existing use, and that any alternative uses of the surface, other than the existing use, are impracticable and unreasonable under all circumstances.[15] Part of this analysis can involve the technical and

[13] *Getty Oil Co. v. Jones*, 470 S.W.2d 618, 621 (Tex. 1971); *Humble Oil & Refining Co. v. Williams*, 420 S.W.2d 133, 134 (Tex. 1967).
[14] *Getty Oil Co.* at 622.
[15] *Id*., *Haupt, Inc. v. Tarrant County Water Control and Imp. Dist. No. One*, 870 S.W.2d 350, 353 (Tex. App. – Waco 1994 (no writ).

economic feasibility of the alternate use. As a practical matter, directional drilling is usually the main alternative suggested to accommodate an existing surface use. Directional drilling is a relatively common (and therefore reasonable) manner in which to drill that is utilized by mineral developers even in instances where attempting to avoid surface uses is unnecessary (i.e., surface location problems, cost considerations, etc.). However, a directional drill can add a significant amount of cost to the bottom line of a drilling plan, and economics is often an important factor in the analysis.

The doctrine can impact a wind project in several ways, but the interaction between the mineral estate and the surface estate specific to the solar project is of greater concern and complexity. With a wind project, developing an alternative drilling location or additional routes to place pipelines, tank batteries, or other surface facilities is relatively easy. However, for a solar project, which takes up almost the entirety of the property that is under lease or easement, finding a nearby alternative location is most difficult, if not impossible. The accommodation doctrine, which at least provides a "fighting chance" to an existing surface land use, may be of little assistance depending on the proposed location for the drilling activity. In other words, where an oil and gas operator may have to shift a manner of *feet* in order to find a reasonable location to spud a directional well in order to accommodate an existing wind turbine, an oil and gas operator would be forced to possibly shift nearly 40 *acres* in order to find a location that is not currently utilized by part of a solar project. The questions of technical feasibility and economic affect on the oil and gas operator represent a greater hurdle for a surface user in its attempt to protect itself pursuant to the accommodation doctrine. The consequence of this situation is obvious: despite locating property that possesses exceptional solar resources, a solar developer may be loathe to plan a project in an area where oil and gas development is ongoing, pending, or even possible in the future because of the relative unhelpfulness of the accommodation doctrine.

There exists the possibility that the two sides (surface and mineral owners/lessees) could agree on respective development sites, and render any discussion under the accommodation doctrine moot, but this is often untenable (or at the very least much more difficult) as it relates to the future drilling activities of a mineral lessee. Without knowing where the next productive reservoir lies, much less where technology will take the industry and unlock the next mineral resource that we are not capable of comprehending or producing today (think the Barnett Shale 20 years ago), an oil and gas company will hesitate to agree to concede surface positions. Solar developers are rightly concerned with how this will affect their development plans.

1. <u>Land Sale?</u>

All of the foregoing existing use considerations, and the fact that a solar lease utilizes nearly all of the property that is subject to a solar array installation, may create the desire for a different type of grant than that provided for in a wind lease. Generally, a true lease is the typical option for a wind project: an agreement for a term of years for the use of the subject property. This is a reasonable option because, as explained above, the use of the land is not total and leaves the landowner with the ability to continue using the property for other purposes. However, because the use of the surface is nearly complete for a solar project, another consideration (by either the lessee or lessor) may be a land sale.

Obviously, this alters the negotiating position of both parties and requires additional research. On one hand, the upfront difficulty of a land sale may be viewed as quickly outweighed by the long-term surety of (1) no longer owning the property on the part of the landowner, and (2) no real time table to meet to get the project operational for the developer. On the other hand, the landowner may lose a long-term regular income stream if a sale is all that is performed. Of course, the landowner can attempt to draft and execute a "solar severance" or some other instrument to retain the rights to receive royalties generated from any solar project installed on the property. However, this is a risky proposition, since Texas has yet to recognize a wind or solar severance, meaning the landowners' work may be for naught. Additionally, a developer may not be willing to accept such a severance, and likely would become concerned not only with the legality and effect of such a proposition, but also that it will not be able to get the requisite title insurance and/or financing because of this attempted reservation by the landowner.

Moreover, a straight land sale may also be unpalatable for the parties due to the tax implications of such a transaction. Federal taxes are due from the sale of a piece of land, and no exception for renewable energy developments exist. While it is true that tax implications on the sale are not also taxed on a state basis in Texas, this may not be enough to satisfy the parties to move forward on a land sale. After all, the property remains subject to ad valorem taxes. In a typical lease arrangement, the developer is generally responsible for the difference between the taxes on the increased value of the land due to the improvements installed on the property as a result of the solar project, if any. A land sale leaves the entirety of the ad valorem tax liability in the hands of the developer, which may affect the bottom line and may create uncertainties with financing. Nonetheless, the potential pitfalls may all be trumped by the ease of administration that results from owning the subject property rather than leasing it.

2. Fee-Simple Determinable?

A consideration that has yet to receive much attention and usage in the context of a solar (and wind) project is the fee-simple determinable. As the basis of most, if not all, oil, gas and mineral leases in Texas, the fee-simple determinable (in its simplest form) sets up an agreement by which the lessee/developer agrees to begin a project in a set amount of time, referred to as the primary term. The primary term is generally one or two years in length, and requires the lessee to meet a standard for commencing the production of minerals upon the leased lands. In most cases, this requires either a producing well, or operations undertaken in good faith towards obtaining a producing well. The details of what constitutes a producing well or which operations are considered satisfactory to continue the lease are outside the scope of this paper, but it creates a simple premise: either the developer is operating or working towards operating, or the lease expires. Following the securing of a producing well, the lease enters a secondary term, which lasts for so long as the mineral operator is producing hydrocarbons in "paying quantities." If during the secondary term the production ceases, and no remedial actions are taken to return the well to producing status, or drill an additional well to "hold the acreage," the lease expires under its own terms, and the rights of use and domain return to the lessor.

The benefits of selecting this method of securing project property include little concern regarding the expiration of a lease in the secondary term. If a project is operating and generating power in sufficient quantities (which must be reasonably determined based upon the resource data the developer possesses), the plant could operate for a multitude of years, and considerations regarding attempting to extend the final term of the lease would be non-existent. The only real

threat at that point would be that the project no longer is viable due to a lack of sufficient production of electricity, and it seems logical that even in a standard lease or easement agreement, if a project is not performing up to expectations, the developer would walk away anyway. From the perspective of the landowner, permitting the installation of a solar project upon your property has already guaranteed that no further use of that land is feasible (or permitted, for that matter), and so there is no real anticipation on his or her part of the termination of the project in 50 or 60 years. The fee-simple determinable would provide a steady stream of income for so long as electricity is produced thereon, and if the stream begins to decrease and the lease expires, the landowner's land is automatically returned to her or him and can be repackaged and marketed for further development (or returned to the former existing uses of the property).

Yet, there is another side to this topic. The oil and gas industry (and the common law) developed the fee-simple determinable in large part because the resource that was attempting to be harnessed (hydrocarbons) is finite in nature. The concept provides an opportunity for the oil and gas beneath the surface to be exploited until it is completely captured, at which time the property is no longer useful to the mineral developer and the property interest returned to the landowner. A renewable energy project, however, has the potential to continue in perpetuity, so long as the lease arrangement provides for replacement and repowering of project equipment. Renewable energy by its very nature (and one of its many attractive qualities) is that it is conceptually infinite. If the world ceases turning, or the sun ceases to shine, larger problems are at hand than whether electricity is able to be generated. Consequently, a landowner in particular may be disinclined to enter into an agreement which could conceivably last *forever*. However, this is realistically not any different than a land sale, which are sometimes considered and executed by landowners. Moreover, in the fee-simple determinable context, the possibility (at the very least) exists that the land could return to the landowner (or his or her heirs, assigns, successors, etc.) at some point in the future.

Regardless of the form of interest utilized to transfer the surface rights from the landowner to the developer, a solar project raises additional and more difficult issues than a wind project. Due to the relative infancy of solar development in Texas, no definite or usual method to address these issues has developed to date. This can be viewed in one of two ways. First, since there is no real "precedent," it makes the transactions a bit uncertain and leads to acting conservatively. Second, though, is that since there is no real "precedent," creativity is at a premium and a "box" within which to work has not yet been defined.[16]

B. Water

An additional factor not generally addressed in a wind lease is water. It is the rare case that a wind developer has any real interest in securing the right from the landowner to utilize any water found running on top of or percolating below the surface. However, for CSP solar projects in particular, securing water rights is imperative. CSP projects' processes require water,

[16] For additional discussion on this topic, please see *Mineral Issues' Impact on Solar Energy Development in Texas and Other States*, by Alison Gardner, David Sewell, and Brent Stahl, presented at the 2011 Wind, Solar and Renewables Institute, sponsored by the University of Texas at Austin, February 23, 2011.

generally in an amount similar to or less than the amounts needed for irrigated agriculture.[17] Therefore, the lease document must sufficiently address securing the right to water access.

In particular, where the subject property has surface water rights to a stream, lake, or other body of water on the property, the lease document must address:

(1) the specific right of the solar developer to access and divert the water for use in the project;
(2) whether the developer may divert the water to another parcel under the landowner's control or another landowners' property in the event the second landowner has no water availability or rights; and
(3) how much water will be available for use on the project (all or a specified quantity measured in acre/feet/year or some other standard).

For properties without surface water, but with access to underground water, the lease gets a little more complicated. If the landowner is already producing groundwater from existing wells on the property, some relevant aspects to address in the lease, in addition to those general areas delineated above that relate to surface water usage, are:

(1) whether the developer may utilize existing wells on the property;
(2) what ramifications exist for detrimental effects on the well as a result of the developer's additional use;
(3) if the well goes dry, who will be responsible (or in what portions) for replacing the well; and
(4) if the well is part of an underground water conservation district or area, must the additional use by the developer of the solar project be registered at the district, or do the district's rules prevent such a use for the groundwater.

Where the landowner is not currently producing and utilizing groundwater, but groundwater exists beneath the subject property, the lease should further address:

(1) what steps the developer must take in the event they are interested in drilling water wells, including the permitting responsibilities and liability for usage;
(2) whether there is a set number of wells or acre/feet/year that the developer may apply for; and
(3) what rights the landowner will have to access that water and use it for personal or other non-project related activities.

All of the foregoing should be considered and addressed in a solar CSP lease, where such considerations are generally an afterthought in a wind leasing context. This water issue may also be a deciding factor in whether the developer wishes to lease the property, or to simply purchase the fee simple estate, which would include the existing and future water rights for the property.

C. Additional Minor Provisions

The following topics and provisions also differ or would not exist within the context of the solar lease:

[17] *Texas Solar Power*, http://www.seco.cpa.state.tx.us/re_solar.htm (last visited February 20, 2011).

1. **Payments Generally.** This is not to suggest that the determinations regarding payments are "minor," but the fact that the payments could differ between wind and solar developments is not always the case. In particular, a wind lease generally provides for per acre payments during the initial and construction phases of a project (along with reimbursements for existing uses and installation of MET towers), but then begins to offer a royalty rate based on the amount of electricity generated from the land and sold to a purchaser. A solar lease will contain many of these same concepts and payments, but because of the dense nature of the solar installation (as described above), some developers have considered (and implemented) purely per acre payments to the landowner for the ongoing utilization of the surface estate. Obviously, because of the lack of royalties, the per acre payment sometimes is greater than one would find for a per acre payment in a wind lease (and possibly the value of the royalties in the initial stages of the lease).

2. **Overhang issues and payments.** While this provision can be a thorny and well-discussed provision in a wind lease, it obviously is of no effect in the context of solar leasing.

3. **Flicker/shadow/noise consideration.** Most wind leases will have provisions to address the affects of the flicker, shadow, and noise aspects related to wind developments. Solar property agreements have no real need to do so.

4. **Laydown areas.** A solar project will obviously have a staging area for construction of the project, but the likelihood that acreage that will not otherwise have project facilities upon it, or have fewer facilities than other, is relatively low. In a wind leasing scenario, the parcel sometimes designated for a substation or operations and maintenance building site is also used as a staging area for the remainder of the project, and therefore a landowner is interested in maximizing the payments made to them since a turbine installation on that same area is unlikely. Wind developers often agree to this laydown area payment. Solar project leases are doubtful to address the same topics unless it is a very large project.

The differences between solar and wind development leases are not significant in quantity, but for the parties involved, the differences are significant in quality and effect. To ensure that both sides are adequately protected in the leasing context, due consideration must be given to the topics discussed above, and as solar technology and its availability changes in Texas, additional differences will inevitably arise.

IV. TRANSMISSION ISSUES

As with any electric generating facility, renewable generators are faced with transmission issues. Without a proper transmission outlet (along with a willing purchaser or reasonable market), a proposed project will be hard-pressed to come to fruition. In Texas, the "chicken-and-egg" conundrum was the undisputed impetus for the Competitive Renewable Energy Zones ("CREZ") docket that occurred at the Public Utility Commission of Texas ("PUCT"). The CREZ process resulted in a mandate to construct over 18,000 MW worth of transmission capacity throughout the state. Although participation in the docket was dominated by wind

developers and transmission service providers, solar development also stands to benefit from the increased capacity of the ERCOT grid. Further, solar projects also stand to be additionally benefitted because of their relatively low amount of generation capacity that must be transmitted.

The PUCT adopted Section 25.174 of its Substantive Rules (16 TAC § 25.174), also referred to as the "CREZ Rule," to specify the manner by which Senate Bill 20 would be enacted. In December 2006, ERCOT presented to the PUCT its *Analysis of Transmission Alternatives for Competitive Renewable Energy Zones in Texas*, which outlined areas determined to possess the best wind resources in Texas, and proposed initial transmission grid modifications that would assist in transmitting the renewable power to load.[18] In January 2007, the PUCT opened Docket No. 33672 ("CREZ Docket"). Many parties intervened into the docket and requested party status, ranging from developers to transmission service providers to utilities. After two years, the PUCT issued an Interim Order in the CREZ Docket, and designated five CREZs: McCamey, Central West, Central, Panhandle A, and Panhandle B. Following an assessment by ERCOT of transmission alternatives to provide power from these regions to customers, the PUCT issued a final Order on Rehearing delineating the CREZ Transmission Plan, which ordered 18,456 MW of transmission capacity constructed.[19] Following the completion of the CREZ Docket, the PUCT assigned responsibilities for constructing and operating the various lines making up the CREZ Transmission Plan.[20] This process is well underway, with the bulk of the new transmission to be energized in 2013.

It should be noted, however, that the language of the relevant statutes and regulations do not specify that only wind is to be considered. In fact, the language of the relevant legislation directs the PUC to "designate competitive renewable energy zones throughout the state in areas in which *renewable* energy resources and suitable land areas are sufficient to develop generating capacity from *renewable* energy technologies."[21] Consequently, there is an argument that wind is not the exclusive rights-holder to use the newly-constructed transmission, and therefore the benefits are conceivably extended to solar projects as well. Realistically, though, solar projects will likely have to simply benefit from the decreased congestion from the West Zone (and ultimately the nodes in west Texas) to load, as the CREZ lines' capacities are already significantly, if not fully, subscribed.

An additional aspect of solar generation and its interaction with the electricity grid is governed by the solar project's relative size. Specifically, the range of installed capacity for a utility-scale wind project can vary from 50 MW to over 700 MW. On the higher end of this range, dispatching the entirety of that generated power can be difficult. While some capacity can be split to different purchasers, a project will usually not dispatch several packets of 20 or 30 MW. Since utility-scale solar projects (especially PV) rarely delve into the upper regions of the aforementioned installed capacity ratings, the amount of transmission capacity that is necessary to fully dispatch a project is much smaller, and therefore the chances for doing so (because the required amount of available transmission capacity is less) are greater. As contrasted from the

[18] ERCOT System Planning, *Analysis of Transmission Alternatives for Competitive Renewable Energy Zones in Texas* (December 2006).
[19] *Order on Rehearing*, P.U.C. Docket No. 33672, p. 2.
[20] *Order on Rehearing*, P.U.C. Docket No. 35665, Attachments A and B.
[21] PURA, §39.904(g)(2).

unending concerns encountered by large utility-scale wind projects, solar developments can be in a more favorable position regarding the transmission of its output.

V. CONCLUSION

It is undisputed that wind energy development in Texas is progressing at a slower pace than seen five years ago, due in large part to the economic downturn and lack of reliable transmission. However, these limitations on wind development do not necessarily extend to the development of solar generation facilities. Texas has relatively little installed solar capacity at present, but that trend seems to be shifting. The same favorable regulatory environment, available land, and quickly-expanding electricity market that spawned the incredible growth of the wind industry remains, and solar power is primed to take advantage of those same benefits. The world has seen impressive increases in the amounts of solar generation installed, and, based on the currently untapped solar power potential, it is likely that same growth will visit Texas.

Any conceptual transition from wind to solar leasing issues should not prove to be a difficult task, since the two types of property agreements cover the same issues. The exception to this rule is best exemplified by the existing use and water factors described above. Solar projects present unique challenges in the power generation sphere in general, but also specifically as compared to other renewable resource projects. There exists little doubt that solar development will one day supply a relatively significant portion of the power dispatched in Texas. The only question is when.