

Solar Ground Leases: Key Considerations for Landowners

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A Practice Note addressing key issues for private landowners to consider when negotiating a ground lease with a solar developer for a large-scale, ground mounted solar project. This Note provides guidance on material solar lease provisions, including financial terms, lease term and extensions, security deposits, project development and entitlement issues, decommissioning obligations, and environmental compliance. This Note also discusses preliminary considerations for the landowner before agreeing to a solar lease.

When developing a large-scale solar energy project, a developer must secure sufficient real property rights to build, operate, and maintain the project on a long-term basis. A solar developer (developer or tenant) often enters into a ground lease with the owner of vacant or agricultural land (landowner or landlord) to secure the rights they need. While solar developers may be sophisticated parties with counsel experienced in negotiating solar ground leases, landowners are often less knowledgeable in this area and may need guidance to adequately protect their interests.

This Practice Note focuses on key issues for private landowners and their counsel to consider when negotiating a solar ground lease with a solar project developer. This Note focuses on issues specific to solar ground leases. Negotiating a solar ground lease also involves considerations applicable to ground leases generally, including provisions regarding financeability. For general guidance on ground leases, see [Practice Note, Financeable Ground Leases: Key Considerations](#) and [Ground Leasing Toolkit \(National and Select States\)](#).

Developers usually present the landowner with a form of lease that favors the developer. This Note:

- Suggests some important protections a landowner may negotiate.
- Explains important concepts relevant to solar development projects and solar leases.

This Note does not discuss:

- **Developments on public lands.** Property owned by the federal government is subject to government rules and regulations that are beyond the scope of this Note (see [Practice Note, Solar Energy Project Development Issues: Preliminary Considerations: Federally Managed Land](#)).
- **Rooftop solar development.** There are different issues to consider when negotiating the terms of a rooftop solar lease that are not covered in this Note.
- **Battery storage.** This Note also does not address separate considerations if the project incorporates battery storage use.
- **Agrivoltaics.** Solar developments can be planned and built to permit agriculture or livestock grazing around the solar structures. This involves additional considerations that are beyond the scope of this Note.

For guidance on solar energy, see [Practice Notes, Understanding Renewable Energy: Solar and Solar Energy Project Development Issues: Preliminary Considerations](#).

Preliminary Matters

There are some preliminary matters a landowner should consider before entering into a solar lease.

Lease Advantages and Disadvantages

Solar leases can allow landowners with underutilized land to monetize that property ownership for years into the future, providing a steady income stream.

The landowner should be aware, however, that it is ceding control over the property for a significant period, typically decades. Solar leases typically give the tenant broad rights to develop, construct, and operate its solar project on the leased property in accordance with the lease terms and applicable laws and regulations. This limits or even prevents the landowner's use of the property for other purposes.

Third-Party Interests

The landowner and the tenant should conduct a thorough review of any third-party rights to use or occupy the landowner's property that could affect the granting of the lease or the construction and operation of the solar project. This includes determining if any third-party consents are required and to identify potential conflicts under the terms of any:

- **Mortgages.** Most mortgages require the lender's consent before the property can be leased. Failing to obtain lender consent can be a default under the mortgage.
- **Conservation easements.** Conservation easements typically restrict the surface uses of the real property they encumber. These restrictions may be incompatible with the proposed solar project uses. For guidance on conservation easements, see [Practice Note, Conservation Easements: Overview](#).
- **Utility or access easements.** Easements granted to third parties for utility lines, access roads, or other purposes across the property may interfere with the solar project. It may be necessary to amend or terminate the easement to make the project viable, which the easement holder may not agree to.
- **Mineral and water rights.** Rights granted to third parties to extract minerals, oil, gas, or water from the property may impede the solar project. Although these are typically subsurface rights, rights to access the surface for extraction purposes may also exist. The tenant may require the landowner to obtain a cooperation agreement or accommodation agreement with any subsurface rights owner. For a discussion of surface and mineral rights issues in Texas, see [Practice Note, Conflict and Accommodation Between Surface and Mineral Estates \(TX\)](#).

- **Existing leases.** Leases to tenants for grazing or other agricultural uses may grant exclusive rights to the tenants to occupy the property or otherwise interfere with the solar project. Even if there is no written lease or occupancy agreement, a farm tenant may have rights under common law or by statute to remain on the property for a specific period. The landowner should consult with local counsel on the law applicable to removing farm tenants.
- **Preemptive rights.** The landowner should confirm that there are no existing rights of first offer or refusal to lease or purchase the property that the solar lease may trigger or violate.

While the landowner has the burden of securing the consent of any mortgage holder, the solar developer has the primary responsibility to evaluate and address regulatory or other third-party restrictions that affect the property. The landowner should negotiate tenant representations in the lease that the tenant has:

- Had sufficient opportunity to review all matters relating to the property and is satisfied with its due diligence.
- Not relied on any statements or representations from the landowner.

Options Versus Leases

Solar developers sometimes enter into an option agreement before finalizing a lease. An option to lease is advantageous to the developer because the option secures rights in the land without committing to a long-term lease while the developer conducts its investigations and secures the necessary permits and approvals.

An option benefits the landowner by providing nonrefundable consideration for the option. An option may also avoid or delay any potential tax consequences of a long-term ground lease (see Taxes). The drawback for the landowner, however, is that an option typically restricts the landowner from marketing the property or accepting other offers during the option term.

If there is no separate option agreement, developers typically seek to incorporate due diligence rights and option features directly into the lease.

For a sample form of lease option agreement, including negotiating guidance, see [Standard Document, Solar Lease Option Agreement](#).

Other Land Rights

Although this Note focuses on ground leases for solar projects, there are alternative methods that solar developers can use to acquire rights in the real property. Landowners should understand these alternatives to ensure they consider all relevant options and choose the best one for their circumstances.

Depending on the type and scale of the solar project, in lieu of a ground lease a solar developer may seek to obtain:

- **An easement.** An easement is a non-possessory interest in real property that provides the holder with the right to use another party's real property for a specific purpose. Legal title to the real property encumbered by the easement is retained by the landowner for all other purposes. Easements are more common with rooftop and smaller-scale solar projects. For guidance on easements, see [Real Estate Easements and Restrictive Covenants Toolkit \(National and Select States\)](#).
- **Fee simple title.** By selling its fee interest, the landowner receives the entire purchase price at closing and avoids the risk of an ongoing relationship with the tenant and the tenant breaching its lease obligations. However, the landowner may not want to permanently relinquish its entire interest in the property, and developers usually want to avoid the capital outlay of purchasing property.

Tenant Creditworthiness

The landowner should analyze the financial wherewithal of the developer (including parent entities or principals) and its operating history with renewable energy projects to ensure the developer has a track record of successful projects and can satisfy its lease obligations. A failed project can cause significant difficulties for the landowner. If the developer defaults under the ground lease, the landowner may have to pursue costly and drawn-out litigation to enforce the lease and restore the property.

Lease Provisions

Financial Terms

The rental terms for solar leases vary based on negotiated terms and the corporate practices of the tenant. The tenant typically pays:

- **Fixed annual payments.** Most often, the rents payable under a lease are based on the acreage leased or on the expected or required generating capacity of the solar project. The rents payable under a lease are typically lower during any development or diligence period under the lease and increase when either construction or commercial operation of the solar project begins. The landlord should negotiate to limit the length of any construction period and require the tenant to start paying full rent on the earlier of:
 - the start of commercial operations; or
 - a set date, whether or not the solar project is operational.

This shifts the risk of permitting and construction delays onto the tenant, who has more control over these issues.

- **Rent escalations tied to inflation.** Rents usually escalate over the lease term. Rents usually increase annually but some negotiated leases increase rents only each third or fifth year of the lease term. Occasionally, rents escalate based on an objective metric, such as the consumer price index.
- **Revenue-sharing arrangements.** The landowner may negotiate to receive a percentage of the revenue generated by the solar facility; however, this arrangement is more common in wind leases.

The tenant should also pay all property taxes (see [Taxes](#)).

Lease Term

The term of a solar lease is typically limited to no more than 30 to 40 years, including any extensions.

Lease agreements often include a required construction commencement period, following which the lease terminates (or is terminable by the landowner) if the tenant does not commence construction of the solar project within the stated period.

Tenants often have one or more lease extension rights. Extensions of the lease term are usually subject to certain conditions, which may include:

- Compliance with all initial lease terms.
- Payment of a renewal fee or adjusted rent for the extension period.
- Obtaining necessary regulatory approvals or permits for continued operation of the solar project beyond the initial term.

Solar Ground Leases: Key Considerations for Landowners

The landlord should negotiate for adequate advance notice (typically between 6 and 18 months) of the tenant's exercise of any renewal rights.

If the duration of a solar ground lease exceeds a specific length, entering into the lease may trigger payment of documentary transfer tax or impact real property taxes and assessments for the leased property. Landowners should consult with local counsel regarding what is considered a transfer under state law. For state-specific information on transfer taxes imposed on leases, see Real Estate Leasing: State Q&A Tool: Question 10.

Tenants often reserve a right to terminate the lease for any reason or no reason, typically on no less than 30 days' written notice to the landlord. The landlord should ensure that the lease includes language that any payments made by the tenant under the lease before the termination date are nonrefundable to the tenant.

Premises

The lease must describe the leased premises accurately. Depending on the size of the project, the tenant may need to confirm the exact acreage used for the solar project on completion. This may require that the lease include a mechanism to confirm the exact premises during the term. For example, the tenant may need to submit a final site plan or survey of the project after completion, with the lease deemed amended to conform to the final measurements. If the rent is based on acreage, the lease should specify how rent is adjusted between the parties when the acreage is confirmed.

The landlord may want to specify any additional property rights granted to the tenant in the lease itself or in separate site control documents, such as:

- **Access easements.** The tenant often requests one or more access easements to allow access to the project from the nearest roadway, and potentially from other adjacent properties on which the tenant may have developed (or intends to later develop) other projects.
- **Construction easements.** For large projects, the tenant may negotiate for the right to:
 - build paved roads across the landlord's property. All roadway construction should be at the tenant's sole costs and expense; and
 - install fences around the project.

- **Solar easements.** The tenant usually wants to ensure that the landlord will not construct any improvements on the property that may interfere with exposure of the solar project to the sun. For large properties, the tenant may require that any new improvements be a minimum distance (such as 500 or 1,000 feet) from the nearest solar panel. Tenants also usually want the right to trim or cut down trees or other vegetation on the property. The landlord should ensure that its existing buildings and improvements may remain in place and that the tenant must take them into account in siting the project. For a sample form, see [Standard Document, Solar Easement](#).

- **Transmission easements.** The tenant usually must construct transmission lines and related equipment to distribute the electricity generated by the project.

The landlord should avoid granting blanket easements but should specifically describe the areas burdened by any easements. The landlord should also ensure that easements only benefit the tenant and that the tenant cannot extend the easement rights to other parties without the landlord's prior written approval, though it is common for tenant to be able to partially assign the easement rights to affiliates or collaterally assign the easement rights to its financing parties without the prior consent of the landlord. The lease (or separate site control document, if applicable) should state that easements terminate on the expiration or earlier termination of the lease (or after any decommissioning period after lease expiration).

The landlord should expect the tenant to request to record either a memorandum of lease or a separate easement agreement (or both), to give third parties constructive notice of the tenant's rights.

Improvements

The lease must describe the rights of the tenant to install the solar project. A tenant typically wants rights to:

- Install any necessary or appropriate solar generating equipment for converting solar energy into electrical energy and collecting and transmitting this energy and all related activities.
- Replace, refurbish, relocate, or remove equipment as it deems advisable without landlord approval.

The landlord should require that the improvements be lien free on completion and the property is restored to a good condition after completion of the construction.

Solar Ground Leases: Key Considerations for Landowners

The tenant usually retains ownership of the solar project equipment. The tenant should be solely responsible for maintaining the project and equipment in good condition.

Guaranty and Credit Support

The tenant is usually a newly formed special purpose entity (SPE) with limited capital and no source of revenue until the project begins operating and selling electricity. For this reason, landowners should consider requesting a security deposit, guaranty, or other credit support to ensure the tenant makes all payments under the lease, at least through the commencement of commercial operation of the project. For guidance on SPEs, see [Practice Note, Bankruptcy Remote Entities in Commercial Real Estate Transactions](#).

The tenant also typically must deliver security for its decommissioning obligations (see Decommissioning, Surrender, and Restoration).

Taxes

The grant of a solar ground lease and installation of solar equipment can have tax consequences for the landowner. Depending on the jurisdiction, a solar ground lease can trigger:

- Transfer tax. For state-specific information on transfer taxes imposed on leases, see [Real Estate Leasing: State Q&A Tool: Question 10](#).
- Reassessment of the property for property tax purposes due to:
 - a change in use of the land. Changing the use can also result in rollback taxes (plus interest) for the applicable year and a specific number of prior years;
 - a long-term ground lease; or
 - improvements made on the land. Solar energy systems may be considered real property under applicable law once they are permanently attached to the land.

The tenant should have an obligation under the lease to pay all:

- Taxes and assessments on the tenant's personal property and equipment.
- Real property taxes and assessments of the leased property during the lease term.

- Any rollback taxes and conversion penalties imposed due to any change in use from agricultural or open space to solar project use.
- Transfer taxes.

Landowner Role in Project Development and Operation

Landowners under solar leases are typically passive. The tenant is free to develop, construct, and operate its solar project on the leased property in accordance with the lease terms and applicable laws and regulations. However, if a landowner wants greater oversight to ensure the tenant fulfills its rent payment and other obligations under the lease, the lease can include provisions such as:

- Project development milestones, such as outside dates for the start of construction and commercial operation of the solar project.
- Landowner approval rights over:
 - the location of the project equipment on the property; and
 - specifications for the type of equipment to be installed.

The project may require infrastructure improvements, such as installation of utility connections, access roads, or drainage (see Premises). The landowner should ensure that:

- The tenant is responsible for installing and paying for all infrastructure improvements.
- The landowner has approval rights for any improvements that may affect the landowner's use of its remaining or adjoining property.

Siting, Permitting, and Project Easements

The lease should grant the landowner reasonable approval rights over any land use approvals, permits, covenants, easements, or other agreements for the project that may encumber the property. This includes agreements that may:

- Be binding on the property following lease expiration.
- Impact the landowner's use of its remaining property during the lease term.

The tenant may also negotiate for the landowner to cooperate with the tenant in obtaining land use and other entitlements for the project, which should be at the tenant's expense.

In some states, a subdivision approval may be required to lease less than an entire legally subdivided parcel. The landowner's involvement is necessary to approve and execute subdivision applications and maps. This process is typically completed at the tenant's expense.

Crop Damages, Timbering, and Grazing on Property

The lease should address potential impacts of the solar project on agricultural activities on the leased property such as crop damages, timbering, and grazing. If construction of the solar project commences before the landowner or its agricultural lessees have completed harvesting or timbering on the leased property, the landowner should reserve express rights under the lease to:

- Access the property (subject to reasonable safety or security controls).
- Harvest any crops on the property.
- Receive reimbursement for costs incurred before the lease is effective in planting and maintaining the crops on the property, in which case the tenant is entitled to dispose of the crops without further liability to the landowner.

Water Access

A solar lease should include specific provisions regarding the tenant's access to water, such as limiting the tenant's access to only the necessary water for its project. If the landowner desires access to a water source on the leased property for adjacent property uses, it should consider adding a tenant well installation provision to the lease. The tenant's installation of the well and the landowner's use of the well are considered additional consideration from the tenant to the landlord for the lease or easement rights. The tenant should be responsible for the costs of the well and agree to leave the well in place at the end of the lease term, unless the landowner requests that the tenant decommission the well.

Restrictions on Landowner's Adjacent Properties

A tenant may request that the lease address potential impacts on the solar project by activities on the landowner's adjacent property. The landowner should endeavor to limit any restrictions on the landowner's adjacent property to only those activities or uses that could reasonably have a material adverse impact on the solar project.

If there are any specific uses that the landowner wants to ensure can continue uninterrupted, including ingress and egress, the landowner should consider explicitly acknowledging those uses and impose a requirement that the project not materially and adversely interfere with them.

The tenant may also request that the landowner grant it a solar easement over the landowner's adjacent properties. A solar easement restricts the landowner from obstructing the tenant's access to sunlight for operation of the solar project (see Premises). For a sample form of solar easement, see [Standard Document, Solar Easement](#).

Assignment and Subletting

A solar lease should limit the tenant's assignment of the lease to creditworthy entities with experience owning and operating similar solar projects (or engaging a qualified operator with such experience). Typically, provided the proposed assignee meets the requirements of a qualified operator under the lease, tenant has the right to assign, encumber, or transfer all or any part of its rights and interests under the lease without the prior written consent of the landlord. A solar lease should require the tenant to provide the landlord with notice of any assignment permitted under the lease, along with an executed copy of any assignment document, even if such assignment does not require the landlord's consent.

The lease should also provide that no assignment or transfer of the lease relieves the existing tenant of its obligations under the lease. Tenants may negotiate for a release where the tenant assigns, and the assignee assumes, the tenant's entire interest under the lease. In that case, the tenant has no continuing liability under the lease from and after the effective date of the assignment and assumption.

Solar Ground Leases: Key Considerations for Landowners

A solar lease typically does not permit a tenant to sublet its rights under the lease without the landlord's prior consent, except perhaps to an affiliate of the tenant.

Indemnification

Because a solar lease grants the tenant full control over the activities on the leased property, it typically includes a broad tenant indemnity and defense obligation concerning any claims or losses arising on or relating to the leased property during the lease term, except those caused by the landowner's gross negligence or willful misconduct.

Any landowner indemnity is typically limited to the landowner's gross negligence or willful misconduct, unless the landowner provides a hazardous materials indemnity (see Environmental Compliance).

Environmental Compliance

The landowner should be aware of the potential for environmental claims arising from operation of the solar project and negotiate protections in the lease. Solar equipment contains hazardous materials that can cause an environmental condition on the property if not properly handled and maintained.

The tenant's environmental responsibilities and liabilities during its due diligence period and ongoing operations should include:

- Conducting all its activities on the leased property in accordance with applicable laws and requirements.
- Indemnifying the landowner from any claims or damages arising from a breach of this obligation and any release or suspected release of hazardous materials on or about the leased property during the lease term.

The lease should require the tenant to assume liability for and indemnify the landowner from any existing environmental conditions at the property, except those caused by the landowner's gross negligence, recklessness, or intentional misconduct.

Environmental conditions on the premises may result in enforcement actions against both the landowner and the tenant. The landowner should:

- Obtain a baseline environmental study before the lease commences.
- Require the tenant to document all hazardous materials used in the solar project.

For more information about environmental matters, see [Practice Notes, Key Considerations in Warehouse and Industrial Leasing: Environmental](#) and [Solar Energy Project Development Issues: Preliminary Considerations: Environmental Review](#).

Insurance

Landowners should require tenants to maintain appropriate insurance coverage, including:

- Commercial general liability insurance.
- Business interruption insurance (or comparable coverage) to ensure rent payments during project downtime.
- Casualty insurance for the tenant's project improvements.
- Automobile liability insurance.
- Workers' compensation.
- Umbrella insurance.

The landowner should be an additional insured on any liability insurance policies maintained by the tenant. A solar lease typically does not require the landowner to carry specific insurance.

For guidance on insurance for real estate transactions, see [Practice Note, Property and Liability Insurance in Real Estate Transactions](#).

Condemnation Award

If a condemnation of all or substantially all the leased property occurs, the landowner should receive the condemnation award. The tenant may be entitled to a separate condemnation award for its leasehold interest, relocation costs, and other losses, but only if the separate award does not reduce the landowner's award. If there is a partial condemnation affecting the premises, the parties may agree that the tenant may relocate its equipment as appropriate and that the parties will amend the lease accordingly.

Most Favored Nation Clause

For solar projects involving multiple leases with different landowners, most favored nation (MFN) clauses can be an important tool for a landowner to ensure equitable treatment across similar landowners. Landowners should consider including a MFN clause in the lease to ensure the lease includes (or is deemed to include) any favorable financial terms extended to similar landowners with property

involved in the solar project. The landowner should negotiate to have any modified financial terms relate back to lease commencement. The landlord and the tenant memorialize the modified payment terms in a lease amendment.

The landlord should also include a covenant in the lease that the tenant must affirmatively provide the landlord with notice if the tenant agrees to any financial terms with any other landowner in the project that trigger the landlord's rights under the MFN clause.

Leasehold and Fee Mortgage Protections

The tenant is likely to finance the project by granting a security interest over its ground leasehold interest. The tenant wants the ground lease to be financeable, meaning it includes provisions that:

- Allow the tenant to mortgage its leasehold interest without the landowner's consent.
- Protect the leasehold lender by preserving the leasehold if the tenant defaults under the ground lease.

These leasehold lender protections generally require the landowner to agree to take or refrain from taking certain actions that would impair or wipe out the leasehold lender's collateral. They also may permit the tenant to take certain actions without the landowner's or its lender's consent.

Leasehold lenders also generally try to prohibit the landowner from encumbering its fee title interest in the property during the ground lease term. Leasehold lenders do not want a fee lender to have the right to wipe out the leasehold lender's collateral. Landowners often do not agree to this restriction, but the outcome depends on the parties' negotiating strength.

If the landowner insists on the right to encumber its fee title interest with a mortgage, the leasehold lender may agree if the fee mortgage is made subject and subordinate to the lien of the leasehold mortgage. This prevents the leasehold collateral (the ground lease) from being wiped out if the property owner defaults under its fee mortgage.

For additional guidance on financeable ground leases, see [Practice Note, Financeable Ground Leases: Key Considerations](#).

Decommissioning, Surrender, and Restoration

At the end of the lease term, the tenant should be responsible for:

- Decommissioning and removing the solar equipment.
- Restoring the property substantially to its original condition.

The landlord should negotiate that the tenant must remove (rather than bury) all parts of its equipment, including foundations or other aspects of the facility, that are installed below ground level.

Tenants usually have 6 to 12 months after the lease terminates or expires to complete the removal and restoration work. The landlord should try to structure this post-lease occupancy as a license or an easement. The tenant should be required to continue paying for the use of the property during the decommissioning and restoration period.

The landlord should also negotiate in the lease that if the tenant's equipment is not removed within the agreed time, it is deemed abandoned and the landlord may dispose of the equipment at the tenant's cost without any liability to the tenant.

Decommissioning Security

Tenants under solar ground leases are almost always SPEs that are (or are close to) judgment proof at the end of the lease term, particularly if the project facilities left on the property have little salvage value. At the end of the lease term, the tenant has little motivation to spend any money to remove its equipment or restore the property. In the past, tenants walked away from the land at the end of the term without performing any removal or restoration work, resulting in the landowner having to perform this work itself at its expense.

To incentivize the tenant to properly complete the removal and restoration obligations under the lease, the tenant should be required to deliver a decommissioning bond or letter of credit for the benefit of the landowner, which is only returned to the tenant on completion of the required work. This decommissioning security is now customary and required by law in some states. The amount of the bond or letter of credit should be equal to the

Solar Ground Leases: Key Considerations for Landowners

estimated future cost of the decommissioning and restoration work, less the estimated salvage value (if any) of the tenant's equipment located on the leased property. The lease should include a dispute resolution mechanism in case the parties do not agree on this calculation.

The obligation to provide a bond or letter of credit can be satisfied if the tenant delivers decommissioning security to a government agency that can:

- Enforce the tenant's decommissioning obligations.
- Use the proceeds of the decommissioning security to complete the tenant's obligations if the tenant fails to do so.

Most leases require the tenant to deliver the decommissioning security sometime during the last

10 to 15 years of the lease term, as the end of the expected useful life of the solar project facilities and lease expiration date approach. The landlord should negotiate that the tenant must recalculate the amount of the bond and post an increased amount if the tenant extends the lease term.

Several states (such as Texas) have statutory requirements for the timing and scope of a solar tenant's decommissioning and restoration obligations and the amount and timing of delivery of the decommissioning security, though the parties are free to negotiate more restrictive provisions (such as earlier delivery of the decommissioning security).

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