



Commercial Solar PV System Ownership Structures and Financing

April, 2014

Key Points:

- The installed price of solar PV in the US has decreased by more than 50% from 2002 to 2013
- Many commercial and industrial property owners and tenants are considering the deployment of solar generation systems on their properties
- Ownership structure is one of the key considerations: who should own the PV system and who will use the solar electricity?
- Financing of the solar system is a critical and interrelated consideration

As the installed price of solar PV installations in the US has decreased by more than 50% from 2002 to 2013¹ and companies such as Walmart and Costco have together installed more than 100MW of solar PV capacity², many commercial and industrial (C&I) property owners and tenants (together or separately known as “Hosts” or “Host”) are also considering the deployment of solar generation systems on their properties. For these Hosts, one of the key considerations in deploying solar is the ownership and structure: who should own it and who will use the solar generated electricity? Regardless of the ownership structure, financing of the solar system is an interrelated consideration that is equally critical. This discussion focuses on how these considerations should factor into the planning of solar PV deployment for Hosts.

Hosts can choose among four basic ownership structures to deploy solar systems:

- Direct Ownership Via Cash Purchase
- Financed Via Debt
- Financed Via Operating Lease
- Power Purchase Agreement (PPA) With Third party Ownership (system hosted on the property)

Direct Ownership Via Cash Purchase

The Direct Ownership Via Cash Purchase (also referred to as a capital expenditure) is the simplest method for a Host who has the capital and the tax appetite and wants to capture all of the economic benefits of a solar system ownership by using its own balance sheet to fund the transaction.

¹“Tracking the Sun VI,” Lawrence Berkeley National Labs Report, July 2013.

²“Companies Unplug From the Electric Grid,” WSJ, Sept 17, 2013.

*“Direct Ownership
Via Cash Purchase
is ideal for Hosts
with strong balance
sheets and a
motivation to
maximize their
economics by
developing, owning,
and operating a
solar system”*

Advantages:

- Simplicity and control: It is a simple purchase with no third party in the transaction. The Host controls the project
- Transaction costs are also minimized since there are no third party fees and expenses of contracts to execute
- If the Host, as the system owner, is a tax-paying entity, it can fully utilize the Federal Investment Tax Credit (ITC) of 30% of the eligible system cost and the accelerated depreciation benefits³
- The Host also receives all of the state/local incentives/rebates and may receive any available state solar renewable energy credits (RECs)
- The Host can elect to either consume the solar generated electricity or potentially sell it directly to its tenants or local utility under a Feed-In-Tariff (FIT) program

Disadvantages:

- Direct Ownership Via Cash Purchase requires a significant upfront financial commitment
- Requires a commitment of resources to learn and become versed in solar system deployment, ownership that includes the responsibility for operations and maintenance (O&M) of the system over the life of the system (typically 20-25 years), and administration of benefits (solar RECs, tax benefits monitoring, etc.)

There are established service providers that can help property owners and tenants efficiently deploy, own, administer, and maintain solar systems. The Direct Ownership Via Cash Purchase is ideal for Hosts with strong balance sheets and a motivation to maximize their economics by developing, owning, and operating a solar system.

Financed Via Debt

Financing the purchase of a solar system is an alternative to an outright purchase, depending upon the Host's financial circumstances and cost of capital. The Financed Via Debt method uses debt to finance the purchase. An equipment loan (or the equivalent capital lease) from either a bank or financial institution is used to pay for the solar system.

³ It should be noted that real estate investment trusts (REITs) are limited in their ability to capture the ITC as this credit can only be claimed to the extent it does not distribute all of its taxable income.

“[Financing Via Debt] may be ideal for Hosts with high IRR hurdles and/or limited investment appetite.”

Advantages:

- Lower upfront cost than Direct Ownership Via Cash Purchase
- Improvement in IRR versus Direct Ownership Via Cash Purchase, assuming the cost of borrowing is less than the IRR of the solar system
- If the Host, as the system owner, is a tax-paying entity, it can fully utilize the Federal Investment Tax Credit (ITC) of 30% of the eligible system cost and the accelerated depreciation benefits
- The Host receives all of the state/local incentives/rebates and may receive any available state solar RECs
- The Host is able to either consume the solar generated electricity or potentially sell it directly to its tenants or local utility under a FIT program

Disadvantages:

- Financing the transaction with a lower upfront cost will likely lead to a higher deployment cost of the system. When compared to the Direct Ownership Via Cash Purchase alternative, financing the system will lead to a reduced absolute economic benefit due to the cost of securing the loan/lease and the associated interest expenses
- Availability and cost of financing is dependent upon credit worthiness of the Host
- Commitment of resources to learn and become versed in solar system deployment, ownership, and administration of benefits
- The Host is responsible for O&M of the system

This option may be ideal for Hosts with high IRR hurdles and/or limited investment appetite. However, changes in interest rates and in the cost of capital can significantly impact the economic viability of any given project for a Host.

Financed Via Operating Lease

A C&I property owner or tenant may also consider the Financed Via Operating Lease structure to eliminate the upfront capital costs as well as the headache of monetizing the tax benefits. An operating lease (also referred to as a “tax-oriented lease”) is structured for the Host (lessee) to lease the solar system from a bank or financial institution (lessor) and categorize the resulting payments as operating expenses of the business.

*“As with the
Financed Via Debt
structure, the
Financed Via
Operating Lease
option may be
ideal for Hosts with
high IRR hurdles
and/or limited
investment
appetite”*

Advantages:

- There is little or no upfront cost ⁴
- Since the resulting payment is for a lease rather than a loan, this payment is categorized as an operating expense. Thus, this financing structure is considered to be “off-balance sheet” and not required to be capitalized
- Lease payments can be lower than the comparable loan payments and may be lower than the current cost of energy offset by the system for the Host
- As with the Direct Ownership Via Cash Purchase and Financed Via Debt cases, the Host can either consume the solar generated electricity, sell it directly to its tenants, or if available, sell it to the local utility under a FIT program

Disadvantages:

- Since the bank or financial institution (lessor) is the system owner, the lessor takes the Federal ITC and accelerated depreciation benefits
- Depending upon the state, utility, or local program, state/local incentives/rebates go to the bank or financial institution (lessor) while only the solar RECs typically remain with the Host (lessee) as the generator of the electricity
- During the duration of the lease, the Host as lessee is responsible for O&M
- The Host bears system production risk since lease payment obligations exist independent of solar system production performance

The operating leases typically have a maximum term of 10 years reflecting a financial structure that represents only 40-50% of the useful life of the system. To effect the termination of the structure, operating leases often provide the Host the option to purchase the system at or prior to the termination date. If an early termination option is available, the Host will have the option to purchase the system prior to the end of the lease term at some fixed price - typically one or two years prior to the prescribed term. Without the early termination option, the lease usually terminates with the Host having the option to purchase the system at a “fair market value,” or to have it removed entirely. As with the Financed Via Debt structure, the Financed Via Operating Lease option may be ideal for Hosts with high IRR hurdles and/or limited investment appetite.

⁴ There are some transaction expenses. Possible initial capital contribution can lower the lease payments.

“The PPA with Third Party Ownership structure may be ideal for Hosts who desire access to solar generated electricity, little upfront cost, and visibility into energy costs for the term of the PPA”

PPA with Third Party Ownership

If the Host prefers not to own the solar system or is unable to monetize the tax benefits and incentives but is still interested in consuming the generated electricity, then the PPA With Third Party Ownership structure may be an attractive alternative. In this case, a PPA Provider or developer will own, design, install, and operate the solar system at the Host’s facilities - at no cost to the Host. In return, the Host (also referred to as the “Off-taker “ as the “taker” of the generated electricity) enters into a Power Purchase Agreement (PPA) with a PPA Provider or developer to purchase all of the generated electricity by the system on the premises over a period of 20-25 years at an agreed upon price (in \$/kWh) and agreed upon annual price increases, if applicable.

Advantages:

- As with the Financed cases, there is little or no upfront cost
- The PPA structure can be designed to yield an initial energy price that is less than the current cost of energy for the property owner. The annual escalator allows the property owner to have visibility into their energy costs, including a set price inflation rate, for the term of the PPA
- No burden of ownership or operations of the system
- The PPA Provider/developer is responsible for O&M and bears system production risk since the Host only pays for the generated energy

Disadvantages:

- The PPA Provider/developer, as the system owner, receives all of the Federal ITC, accelerated depreciation benefits, state/local incentives/rebates, and potentially solar RECs since the Host is only the Off-taker and buyer of the electricity
- Only Hosts with strong credit worthiness will be able to secure a PPA on favorable terms
- Potential for higher transaction costs in structuring PPAs compared to other solar system ownership structures
- Overall, the economic benefits (in this case the PPA price) will be less than other options as the PPA Provider/developer will be required to offset his/her cost of capital to support the PPA structure, which in most cases is higher than debt or lease finance costs

Under the PPA, the Host may be able to purchase the system at either specified times during the PPA term at agreed upon fixed prices, or at the end of the PPA term at a fair market value. If not purchased by the Host, the PPA terms will include provisions to have it removed entirely at the end of the PPA term. The PPA with Third Party Ownership structure may be ideal for Hosts who desire access to solar generated electricity, little upfront cost, and visibility into energy costs for the term of the PPA.

“If a property owner has no interest in owning, operating, or utilizing the energy produced from a solar system, or is unable to monetize the tax benefits and incentives, it may still be possible for such owner to enjoy economic benefits by deploying a solar system on his/her property.”

Roof Rent

If a property owner has no interest in owning, operating, or utilizing the energy produced from a solar system, or is unable to monetize the tax benefits and incentives, it may still be possible for such owner to enjoy economic benefits by deploying a solar system on his/her property. Under this model, the property owner will simply allow a developer of the system - whether it be a tenant for his/her own use or a PPA Provider that is interested in selling power to a tenant or a local utility - to build, install, and operate a solar system on the property. In exchange for the use of the property to host the system, the developer of the system will pay rent to the property owner. Under this scenario, the property owner would sign a site lease agreement with the system owner that describes, among other terms and conditions, the roof rent payments and the duration of the lease, which is typically 20-25 years to match the useful life of the solar system. There is little or no upfront cost to the property owner and all of the system development, operations, and performance is the responsibility of the system owner. In some cases, the system owner may sell the generated electricity to the local utility under a FIT program. Under certain conditions, the property owner may benefit by having the opportunity to market the “Green” characteristics of the building attributable to a high-visibility solar system hosted on the property.

“Alta Energy is a solar analytics and procurement company that enables commercial property owners to identify and complete cost-effective solar projects with confidence”

Ownership Structures

The ownership structures for solar systems for Hosts are summarized in the table below.

	Direct Ownership Via Cash Purchase	Financed Via Debt	Financed Via Operating Lease	PPA With Third Party Ownership	Roof Rent
System Owner	Host	Host	Lessor	PPA Provider / Developer	System Owner
Consume Generated Electricity	Yes	Yes	Yes	Yes	No
Federal Tax and Depreciation Benefits	Host	Host	Lessor	PPA Provider / Developer	System Owner
State/Local Incentives/ Rebates	Host	Host	Lessor	PPA Provider / Developer	System Owner
State Solar REC ^s ⁵	Host	Host	Host	PPA Provider / Developer	System Owner
O&M Responsibility	Host	Host	Host	PPA Provider / Developer	System Owner
Roof Rent Income	N/A	N/A	N/A	N/A ⁶	Host

About Alta Energy

Alta Energy is a solar analytics and procurement company that enables commercial property owners to identify and complete cost-effective solar projects with confidence. As an objective third party, Alta Energy helps owners of retail, industrial and office buildings evaluate the business case for solar using a consistent, comprehensive model, and then monitors market and policy conditions for the best solar deployment opportunities. Alta Energy’s multiple bid process ensures that property owners select the right solar vendors and the best terms for each project. Alta Energy’s proprietary solar analysis tools and auction-based procurement process are vendor-, technology-, and financing-neutral. As a result, property owners get an unbiased view of their solar options across all properties and all markets, and can choose the most cost-effective, timely installation for every property in their portfolio.

Learn more at www.altaenergyinc.com or call 650-345-2582 (ALTA)

⁵ Depending on the utility, the system owner may be required to turn in the solar REC^s to the utility in exchange for any state/local incentives/rebates.

⁶ Possible roof rent for Property Owner.

