

Financing Solar Energy for Affordable Housing Projects



May 2009



Overview

- **Photovoltaic Systems.** Installations of photovoltaic systems on the customer side (as opposed to the utility side) of the meter have increased at an annual growth rate of more than 50% in recent years.
- **Financing Structures.** Different financing structures and participant roles have developed for PV installations, including balance sheet financing, leases, and power purchase agreements (PPAs).
- **Integration with Affordable Housing.** Affordable housing developments may make use of lease financing or the PPA model to acquire, install and benefit from PV systems.
 - Lock in energy costs at competitive rates
 - Potential to earn developer fee as PPA Provider
- **Stimulus Bill.** The American Recovery and Reinvestment Act created a variety of tax-exempt and tax credit bond financing techniques that may be used for solar energy.

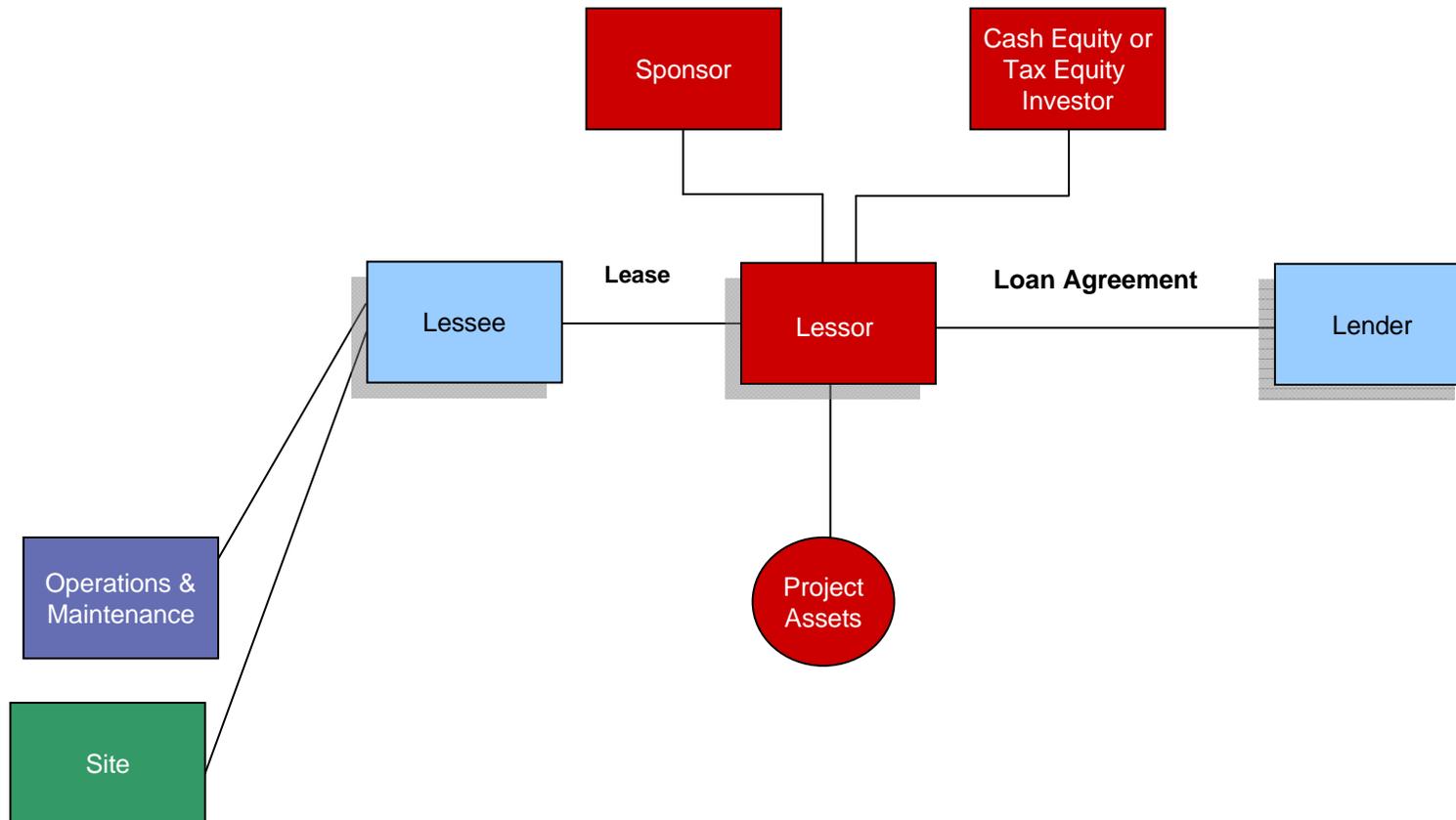
Financing Structures I

- **Balance Sheet Financing.** Host finances acquisition and installation of a PV system using its own equity and/or debt carried on its balance sheet.
 - High up-front cost
 - Steep learning curve for Host
 - Generally inapplicable in the affordable housing context
- **Operating or Capital Lease.** Host (lessee) rents a PV system under an operating lease or capital lease; host maintains the system.
 - Low up-front cost
 - Lessee retains maintenance responsibilities
 - Lessor arranges financing, takes tax benefits (operating leases only)
 - Lease payments determined based on lease term and residual value

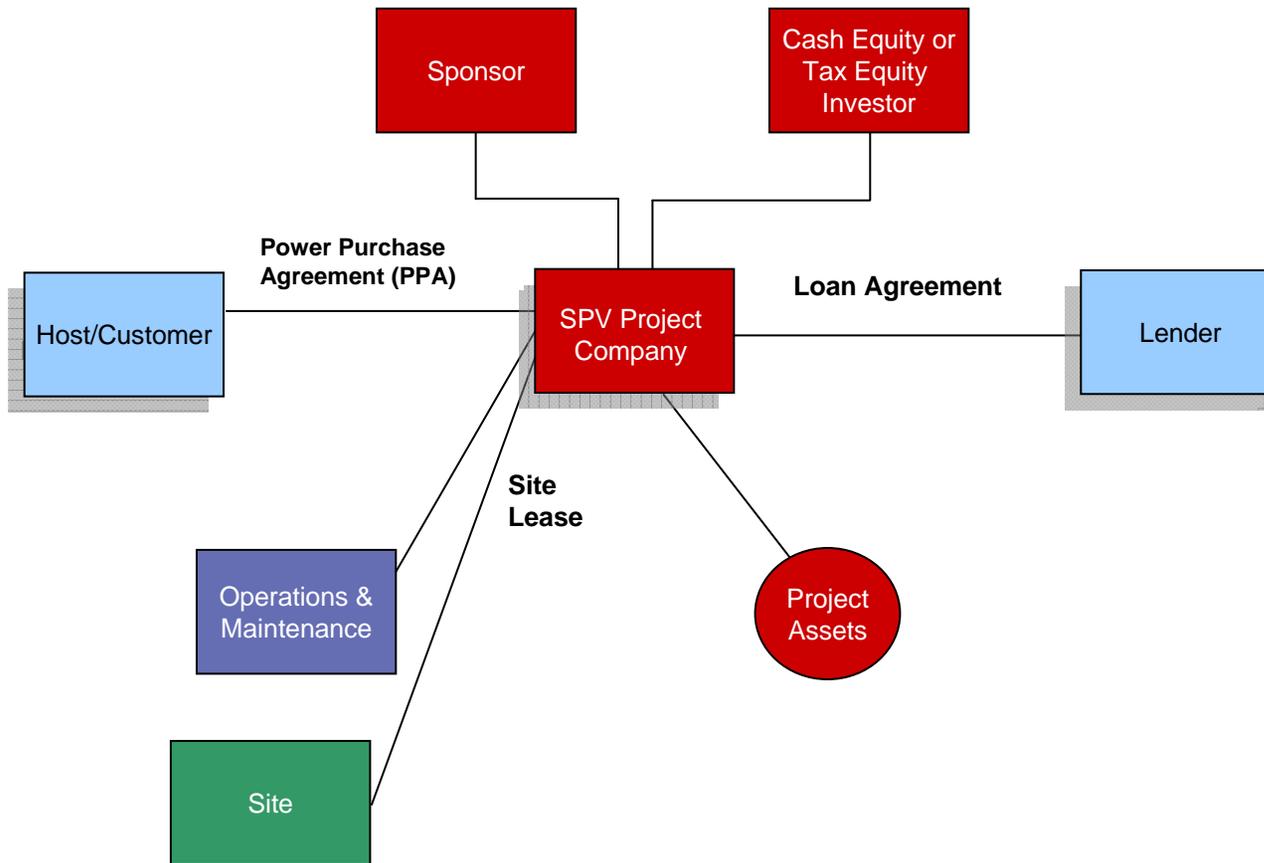
Financing Structures II

- **Power Purchase Agreement (PPA).** Host enters into a long-term power purchase agreement with a PPA Provider (project developer) that arranges financing through a partnership structure.
 - Site Lease from Host to PPA Provider.
 - PPA between project company and Host establishes fixed rate per kWhr for all electricity produced by the system. Typical term is 20 years.
 - Non-recourse, stand-alone project financing, similar to multifamily rental housing.
 - Single-purpose project company or partnership created by the PPA Provider as developer and sponsor.
 - PPA Provider arranges financing, acquires, installs and maintains the PV system.
 - Key project elements include site control, insurance, casualty and condemnation, host credit quality, construction, debt, tax incentives and other subsidies, and equity.

Lease Structure



PPA Structure



Tax Equity Funding and other Subsidies

- **Energy Tax Credit Market**

- 2005 Energy Policy Act increased the Investment Tax Credit (ITC) from 10% to 30% of qualified project cost.
- Institutional tax equity market has deteriorated, with a limited number of players still active. New sources of tax equity are being sought.
- Stimulus Bill generally allows projects that could claim the ITC to obtain a cash grant from the U.S. Treasury instead.
- ITC grant does not provide monetization of the significant tax benefits arising from accelerated depreciation, which favors bringing in tax equity investors at least on larger, and leveraged, projects.

- **State Subsidies**

- California Solar Initiative (CSI) provides solar incentives for projects in the territories of PG&E, SoCal Edison, and SDG&E. Other states have similar programs, as do some CA municipal utility districts.
- CSI can provide 25% or more of the cost of a project, although the subsidy is declining over time.
- Renewable Energy Certificates (RECs) may provide additional value.

Integration with Affordable Housing

- **Lease or PPA Structure Possible**
 - PPA offers turnkey solution with no ongoing maintenance obligation
 - Lease is generally more economical for smaller installations
 - Typical single-family residential rooftop system is 10-12 kW
 - 1 MW system installed costs roughly \$6-8 million
 - PPA transaction costs are typically \$500k plus
- **Owner may engage PPA Provider or act as PPA Provider/developer of the PV system**
 - Separate PV project company/partnership with own capital structure
 - Net metering allows sale of excess output
 - PPA Provider earns residual cash flow or developer fee
- **Credit issues**
 - Lender underwriting based on Project's credit as lessee or offtaker
 - Third-party credit enhancement may be needed

Stimulus Bill – New Bonds and Programs

- **Qualified Energy Conservation Bonds**

- QECBs are tax credit bonds that can be used to finance a broad array of “green” expenditures including renewable energy facilities. QECBs can also finance costs of issuing the bonds, obtaining credit enhancement and debt service reserves, if required.
- Total national allocation is \$3.2 billion, of which up to 30% may be used for private activity bonds. IRS Notice 2009-29 allocated \$381,329,000 to California.

- **Recovery Zone Facility Bonds**

- RZFBs are private activity bonds that may be used to finance the original use of almost any depreciable property within a “recovery zone”, defined as a qualifying city or county designated by the bond issuer as having significant poverty, unemployment, rate of home foreclosures, or general distress.
- Total national allocation is \$15 billion. IRS will allocate to states based on relative declines in employment in 2008, and states will reallocate among counties and municipalities with 100,000+ population in proportion to relative 2008 job loss.

- **DOE Loan Guarantees**

- Stimulus Bill extended existing Department of Energy Loan Guarantee program
- First loan guarantee conditionally approved (for Solyndra, a solar panel manufacturer) under the old DOE loan program after 3 years of effort and millions of dollars in expenses
- New (and improved?) program rules have not yet been issued