WELCOME TO OUR WEBINAR
Solar Projects and the Role of the Power Purchase Agreement

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Speakers

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US Energy Sector - Experience and Service

Sector experience includes:
• Solar
• Wind
• Biofuels
• Clean Technology
• Climate Change
• Emissions Trading
• Green Energy
• Liquefied Natural Gas
• Oil & Gas
• Nuclear
• Power Generation
• Smart Grid

Energy sector services include:
• Government/Regulatory
• Bidding and RFPs
• Commercial and Construction Documents
• Corporate Structuring and Tax Advice
• Financing
• Intellectual Property
• Licensing and Technology Transfer
• Litigation and International Arbitration
• Mergers and Acquisitions
Solar Commercialization – The End Game

Solar - many different commercialization opportunities

• Typical Silicon Valley
  • Venture funding (65% venture deals)
  • technology development and licensing

• Despite “reset mode” for industry in 2008 still undying commitment

• End game is solar power generation and sale
  • California also well suited to technology development and solar projects
  • Good state and local incentives
  • Sunlight
  • Mindset

• Need to turn megawords into megawatts!
  • Credit crisis
  • Environmental issues
  • Continuation of incentives (cash grant)

• Solar is inevitable
Business Model - Solar as a Service

Procuring solar power supply

• **Outright purchase** – capital intensive
• **Power Purchase Agreement - SOLAR AS A SERVICE**
  • ***Long term, predictable revenue stream because
    • Equipment reliable and product warranties long (25 years for panels)
    • Sunshine predictable (esp. CA)
  • Affordability with no capital outlay
  • No operations and maintenance costs
  • Very little performance risk – only pay for what is delivered
  • Price hedging
    • Long term fixed rates (15 – 20 years)
    • Carbon scheme will make pricing more competitive
  • Chance to shed peak load
  • Driving force behind solar uptake (75% of all solar generated via PPA)

• **Solar Lease (residential)**
  • Minimize risk for Seller; potential upside (and downside) for Buyer
  • Comply with leasing laws
Overview of Economics of Solar Projects

• High capital costs ($4-$12/watt installed)

• Lenders and tax investors cautious about construction phase (although relatively short)
  • Expensive; usually recourse

• Project complexity (PPA, Lease, EPC, O&M, permitting, interconnection, transmission, loan (construction and take out/term), tax equity (partnership agreements, master sale/master lease etc) development services
  • Significant lender and investor due diligence
  • Irrespective of size of deal

• Despite apparent plethora of incentives, all available revenue and tax incentives must be optimized to make money
  • Power sale revenue
  • Sale of RECs (value will increase if carbon priced)
  • Federal ITC/Grant in Lieu
  • MACRS depreciation
  • State and local rebates (CSI, San Francisco Solar Incentive)
Solar Project Economics

- More than 50% cost covered by incentives in California
- Project modeling needs to be done very carefully
- Despite certain cost of having crashed
  - Entire solar sector went into supply-side overdrive
  - Silicon, module prices crash
- Feed-in-tariffs in Europe make solar projects there much more attractive
  - GC SV

Breakthroughs needed

- Breakthroughs in design, manufacturing, supply chain, installation and financing/incentives
  - Maxed out other than incentives (FIT)
- Big breakthrough needed is in the fundamental cell technology
  - 30 or 40% efficiency would **revolutionize life on earth**
    - Energy free and boundless
    - Significantly but not proportionately advanced over last time (‘70s)
Incentives - Overview

§ 1603 Federal Cash Grant in Lieu of ITC

• Hugely significant in most deals
• How much and when: 30% of cost basis within 60 days of PIS
• What is included in the cost basis of the solar property?
  • no crystal-clear guidelines – must be allocable to solar system
  • panels and other equipment
  • construction and installation costs
  • developer fee
  • legal fees related to acquisition of solar system, maybe land rights
    • Not: fees related to PPA negotiation, tax equity investment negotiations/documentation; SPE set up costs
  • Not cost of land or roof repairs; mounting system
  • Not transmission installations or upgrades
• NREL diligence band (anecdotal) – maximum $8/watt and decreasing
  • It is what it is?
  • >500K requires accountant certification of cost basis
Incentives - Overview

• **How likely?**
  • Several rejected; process not totally clear
  • process of back and forth with Cash Grant Adjustment, and possibility of outright rejection
  • List of successful applications - http://www.ustreas.gov/recovery/1603.shtml

• **100% audit risk – all applications reviewed**

• **Not available to**
  • Tax exempt organization
  • US Federal, state or local governmental bodies
  • Clean energy bond lender
  • Co-operative electric company
  • Pass thru entity with any of above as partner

• **Recapture if**
  • Change in use
  • Permanent closure
  • Sale/transfer to disqualified owner (see above)
  • Foreclosure by lender does NOT result in recapture.

• **Not taxable as income by Federal Govt; taxable in California**
Incentives - Overview

• Key issue is timing: projects placed in service in 2009 or 2010, or by 1/1/17 but only if break ground in 2010
  • Time running out
  • too late for large scale?
  • Hopefully will be extended
  • Last date for applications 10/1/11

• Reduces depreciable basis of system by 50% of grant or 15%
Incentives - Overview

§48 Federal Investment Tax Credit (alternative to Cash Grant)
• Alternative to cash grant; 30% tax credit (reduces tax bill)
• Can use for 1 year prior and 20 years post
• Low audit risk (regular tax audit risk)
• Extended until December 31, 2016

Federal Loan Guarantee Program
• Up to 80% of project cost
• Applications costly and time consuming
• Subject to and critical and qualitative/competitive evaluation by DOE
  • Unlike cash grant which goes to everyone
• not viable for fast track or small projects
• Very few grants for solar projects
  • BrightSource – $1.4 billion for ~400MW solar thermal Ivanpah project in Mohave Desert
  • Solyndra – $535 million (for manufacturing plant; not projects)
Incentives - Overview

Depreciation

- MACRS depreciation of system over 5 years (very short considering life of the system (25+ years))
- stimulus legislation allowed one time 50% bonus depreciation in years 2008 and 2009 (i.e. 50% could be depreciated in 2008 and 2009)
  - Will it be extended to cover 2010?

State and Local Incentives

- Example: California Solar Initiative
  - Performance Based Incentive (PBI) for > 50kW
  - Based on actual output
  - Paid monthly over 5 years
    - Currently at 15c per kWh for commercial
  - Taxable at Federal level, not state

For updated information on all federal, state, local and utility incentives – www.dsireusa.org
**RECs**

- **Extra dimension to clean power which represents significant additional value**
  - 1 REC for 1 MWh green power
  - Unbundled from the actual power (attribute of power but separate)
- **PPA needs to specify ownership because RECs have real value**
  - Usually retained by project owner and factored in as speculative component of revenue stream
  - Utilities may need for RPS (Compulsory Market)
  - Price for RECs depends on many factors (compulsory vs. voluntary market, solar carve out, etc)
  - Prices highly volatile and bank and investors may not value in revenue stream
  - Expected to increase in value significantly when carbon priced under carbon trading scheme
- **Include “Reporting Rights”**
  - Ability to publish use of green power – E.g. “This factory is powered by the sun”.
  - If no RECs, then buyer of solar power cannot publicly state that the power generated is green power
  - Can say “hosting renewable energy site” but not that “powered by”
Common Tax Structures: Partnership Flip

- Developer (Sponsor, (Manager))
  - Operating Agreement
  - Tax Equity (Investor, (Investor Member))
    - 1%
    - 99%
  - Post flip – 5%/95%

- SPE LLC (Project Company)
  - Development Fee; Development Services Agreement; Management Fees
  - PPAs
  - Lender (Debt)

- Power Purchasers
  - EPC Contracts; Contractor fees; O&M Fees
  - Installer (EPC Contractor)
Common Tax Structures: Sale-Leaseback

- **Developer (Sponsor)**
  - Sale; lease payments; incentives
  - PPAs

- **SPE (Project Company Lessee)**
  - Lease-back; sale proceeds; Development Fee; Management Fees
  - 100%

- **Power Purchasers**
  - EPC Contracts; Contractor fees; O&M Fees

- **Investor (Project Owner/Lessor)**
  - Lender (Debt)

- **Installer (EPC Contractor)**
Common Tax Structures

• Both popular

• Partnership Flip
  • Tax equity and developer are partners – bear risks together
  • Less complex? – just operating (p’ship) agreement
  • Usually requires investment by developer
  • Must be in place by PIS
  • Buyout only 5%

• Sale-Leaseback (Inverted lease is variation)
  • Tax equity gets fixed rent payments (technically less risk)
  • Fixed payment commitments => Developer keeps upside (optimization?) and downside
    • Greater risk of breach?
  • Need not be in place until 90 days after PIS
  • “Sale” sets tax basis
  • Buyout more expensive – must be not less than 20% of original cost
**PPAs – Key Issues and Considerations – Chronological Order**

**Type of deal - scale of project and parties**
- **Residential**
  - Cover page
- **Commercial**
- **Utility**
  - Standard docs; standard protocol; RFP usually

**Creditworthiness**
- **Buyer** - needs to sustain long term purchase cash flow
  - Must be financeable PPA
  - Need predictable, reliable revenue stream for debt service
- **Seller** - larger scale, to stand behind output guarantees, curtailments, liquidated damages
- Needs to be monitored (downgrades)
PPAs – Key Issues and Considerations

Off-Ramps and Conditions Precedent

• The first thing to do when getting into something is to work out how to get out of it!

• Usually PPA executed first, with other key contracts following later and as conditions precedent to effectiveness of PPA
  • Board approval, firm financing commitment (debt and tax equity)
  • Satisfactory creditworthiness of Buyer, provision of security for performance
  • Ability to receive cash grant (must break ground by end 2010)
  • Land control (ownership, lease, easement, license)
  • Site inspection and acceptance
  • execution of the EPC and O&M contracts at a total cost that is supportable by project revenues and financing costs;
  • permits and approvals for construction and operation of the solar system (land use, zoning);
  • PUC approval of PPA (utility CP);
  • interconnection agreement; transmission agreement
PPAs – Key Issues and Considerations

• Must be met by “Condition Deadline”
• Waiver rights (beneficiary of CP)
• If not, termination without liability (i.e. walk-away right)
  • Break fee? => utilities want security deposit up front - forfeited
• “Notice to Proceed” to EPC contractor

Construction - EPC Contract (not usually part of PPA, but can be)
• Turnkey design, procurement, installation/construction, testing, permitting and commissioning, usually O&M
• Need to back to back many EPC provisions with PPA
• Fixed price – affects PPA pricing
  • Avoid scope creep – e.g. absolute site acceptance in advance
    • Especially for roof mounted – significant support, reinforcement, waterproofing membrane of roof may be necessary and may make economics unworkable
PPAs – Key Issues and Considerations

• Guaranteed “Final Completion” date and liquidated damages
  • Tied to COD of PPA and liquidated damages to Buyer
    • Even if no LDs in PPA, revenue delays so LDs in EPC necessary
  • Construction milestones and payment schedule stacked to “Final Completion” and COD

• Guaranteed output/capacity and liquidated damages
  • Availability or manufacturer warranty pass-through

• Guarantees of performance
  • Performance Bond – bank guarantee or similar to allow project owner to collect damages and/or complete construction in case of contractor default
  • Labor bond – guarantees payment of subcontractors if contractor defaults (allows discharge of labor-related liens)

• Contractor wants
  • Assurance of payment (parent guaranty, letter of credit etc)
  • Grant of O&M contract (~10-15% of power revenues)
PPAs – Key Issues and Considerations

Pricing – Contract Rate (usually tied to current or expected utility rate)

- Fixed with escalator (usually between 3 and 4%)
  - discount to current utility rate and escalator
- Fixed without escalator
  - rate initially exceeding utility which will eventually be less than utility rate
- Assumes power prices will continue to rise
  - (California about 5% per year but many expect energy prices to flatten, especially due to decreased demand)
  - Energy efficiency technology could further reduce demand significantly, putting downward pressure on prices and solar project viability
  - Carbon pricing
- REC}s
PPAs – Key Issues and Considerations

Prepayment of power

• Long term revenue stream not enough alone in current market
• Used as deposit for financing in return for power price discount
• Municipality or utility may raise through bond issue which is tax exempt and therefore low interest or using Build America Bonds (interest payable partly (35%) covered by US Gov or tax exempt in hands of bond holder)
• may be taxable as income upon receipt so much less useful at deposit
• Alternative: Up-front Option Fee for option to purchase system
  • not taxable until option exercised or option lapses/terminates
PPAs – Key Issues and Considerations

Evaluating Price - Buyer

- **Need to understand how local utility charges for electricity**
  - Tariff is basic cost per kWh - may vary depending on “Time of Use”
  - May also include Demand Charges – additional cost based on peak demand average
  - Also different tariffs

- **Conduct evaluation of customer energy use patterns, system output and available tariff structures**
  - → what components of utility rates offset by solar energy

- **Pricing based on net metering expectations**
  - most utilities (nearly all in California), but terms vary greatly
  - Need to understand
    - credit rate (may be very low price) – best if at least retail equivalent
    - caps: may be a maximum: CA is 2.5% peak demand
  - **Cost of additional capacity exceeds benefits, so generally best to have system which does not exceed output requirements of host
  - In Europe FITs make systems profit centers; not in the US
PPAs – Key Issues and Considerations

Output Purchase

• **Standard “Take and Pay”**
  • Seller sells and Buyer buys all output from system

• **Must be delivered to “Delivery point” to get paid**
  • Title and risk pass to Buyer
  • Distributed – delivered to point of interconnection of solar system and Buyers electric system “Behind the meter”
  • Utility or large scale**
    • Seller wants Delivery Point to be point of interconnection of system with transmission lines (like FOB)
    • Buyer wants guaranteed delivery across transmission lines to point at which transmission connects to Buyer system
    • Significant cost and risk of curtailment from congestion
“As Available” or Output Guaranty?

- Seller argue “as available” since motivated by revenues
  - Specify output schedule as “targets only”
- If power price below utility rate, Buyer may insist on Output Guaranty
- Often required in utility scale because power requirements of utility more complex and sourcing from multiple supply sources (and may be load serving)
- Utility may be relying on RECs for RPS too
- Utility may even specify reduced rate for excess supply
  - E.g. 75% price for anything over 120% expected output
PPAs – Key Issues and Considerations

• Output Guaranty – Big risk item - Seller protections
  • Need ramp up and rolling average overlay to make up losses
    • Seek one or 2 years of performance to be able to fix problems before output guaranty imposed
    • Annual target subject to 3 year rolling average and “true up”
  • Try to set low bar and build in annual degradation => reduction of guaranty over time
    • Seller to include acknowledgement (based on manufacturer warranties) that output will degenerate by approx 1% p.a. (in line with manufacturer warranty)
  • Exclude “scheduled outages” or permitted curtailments and force majeure events
  • Exclude unscheduled buyer curtailments and force majeure losses
  • Offer “Availability Warranty”
    • The panels will be available (i.e. ready and able) to produce solar power for a certain percentage of time (excludes maintenance etc) – weak guaranty.
Output Guaranty - Seller protections cont’d

- Seek “back to back” output guaranty from EPC
- Seek to rely solely on pass thru of manufacturers warranties
  - Standard warranties
  - Understand scope – often limited to “repair or replace” – no damages
  - Seek special warranty from manufacturers (e.g. power curve)
    - Manufacturer warranty that panels capable of producing specified level of output under specified levels of insolation.
- Try to underwrite risk with commitments from EPC and manufacturers and pray for sunshine!

Consequences of breach of Output Guaranty

- Liquidated Damages formula
  - supply shortfall x cost per kWh (usually based on incremental cost of alternative procurement)
  - may include lost value of RECs if going to off taker
- Seller wants cap on LDs
- Persistent failure to meet output guarantees => right of termination
Curtailments

- Reduction or suspension of delivery or acceptance of energy
- Lost output reduces revenues and reduces benefits (PBI under CSI, RECs)
- Seller wants to treat curtailed output as if generated => Buyer to pay price plus after-tax value of lost benefits
- Treatment should be based on underlying cause or allocation of risk
  - Transmission congestion – negotiated due to inherent risk
  - Inability or unwillingness of Buyer to accept delivery
    - Unscheduled repair and maintenance (e.g. roof)
    - Scheduled outages or “downtime” cap agreed as exclusions
  - Emergency
  - Force Majeure
- Other compromises
  - Seller basket, after which Buyer responsible
    - 10% day, 5% of week, 2% of month
  - Parties share risk, but curtailed energy applied towards output guarantees
  - Seller to mitigate loss - bypass Buyer and deliver to third party or onto grid
Force Majeure (Superior Force)

- Excused performance (COD, output guaranty, curtailment)
  - Scope negotiated in large scale
  - Back to back with EPC contract too
- obligation to report and repair/remedy
- Significant because usually no damages, just right of termination if force majeure continues beyond reasonable period
  - Usually 12-18 months

Change of law - Who bears risk?

- Changes to regulatory framework (need to be licensed power provider)
- ITC/Cash Grant revocation
Force Majeure for the New Millennium (meteorites)

"Either party's non-performance of this Agreement shall be excused to the extent that it is caused by any of the following events:

(i) Alien abduction, invasion, possession or interference. As used herein, "alien" means a life form, whether or not carbon-based, from any other time, world, galaxy, universe, or dimension, and includes angels, Lucifer and his minions, Yeti (a/k/a Bigfoot), Mothman, Chupacabra, Gozer, Pukwudgies and the so-called "Grays." For avoidance of doubt, "alien" does not mean a foreign national without a work visa.

(ii) A pandemic or plague, whether or not caused by an unknown virus released during an alien autopsy at Area 51.

(iii) Seas boiling (whether or not the result of global warming), the rising of the dead (whether or not the dead appear as so-called zombies), mountains falling (but not earthquakes), the re-emergence of Atlantis, and dogs and cats living together.

(iv) Destructive power unleashed by any of the following: the finding of the remaining crystal skulls, the reverse engineering of alien technology, or the discovery of the Ark of the Covenant.

(v) The end of the world on December 21, 2012, according to the Mayan calendar."

http://contractualmusings.blogspot.com/2008/05/force-majeure-clause-for-new-millennium.html
PPAs – Key Issues and Considerations

Term

• PPA binding from Effective Date (subject to conditions precedent)
• Commencement of Term: “Commercial Operation Date” (COD)
  • system fully completed, tested, commissioned and authorized to operate and supply power
  • Seller wants “target” COD (whereas wants fixed “Date of Final Completion” in EPC contract)
  • Buyer usually wants fixed COD (especially if utility that needs (green) power) with liquidated damages if delay.
  • Buyer may even want milestone schedule for individual components of project (financing, module purchasing, completion of permitting etc)
    • See PG&E PPA
• **Not to be confused with “Placed in Service” (PIS) date
  • Must be careful for tax equity investor
  • Not defined in Tax Code, but basically the point at which system is “operational”
  • requires EPC contractor to conduct “pre-operation testing” and make sure system works within expected parameters and probably pull final permission to operate (PTO) permit
  • PIS usually predates COD and does not require actual operation or sale of power
PPAs – Key Issues and Considerations

Term of PPA

• **Usually 15, 20 or 25 years, but can be less**
  - non-recourse financing (since SPE owner) so term needs to be long enough to amortize the significant debt component
    - LCs or guarantees may be required
  - **May be renewals (usually debt paid off so price should drop)**
    - Seller beware continuing obligations re output or may have to replace modules without charge
• **End of term Seller usually required to remove system**
  - In practice?
  - Just cells swapped out and systems remain in place

Buyer Option to purchase

• To mitigate risk of being locked in to long contract terms (esp. pricing), Buyer usually has option to purchase after year 5 when tax benefits have been exhausted (cash grant/ITC, MACRS, CSI – all 5 years)
  - Cannot be before 5 years
  - May be options every year after yr 6, or every 5 years thereafter, at end of term only or no option at all – no standard.
Option Pricing

• IRS requires that price must be no less than “Fair Market Value”
  • Option to buy for less than FMV raises question of who is real owner and entitle to tax benefits?
  • E.g. If option priced @ $1 – Off taker is true owner

• Usually greater of FMV and scheduled “Buyout Value”
  • BV includes amounts necessary to ensure tax equity gets its return and developer gets its expected lifetime return

• Setting FMV in advance?
  • 2009 changes to Revenue Procedure 2007-65 wind safe harbor ruling (Announcement 2009-69)
  • As long as the parties reasonably believe the agreed price will not be less than future FMV, based on current facts/circumstances
  • Off-takers want to know the buyout price in advance (if possible)
Termination

- Drastic remedy, so significant opportunities to cure and real time liquidated damages
- Lenders and Tax Equity rights
  - Step in rights to cure
  - Notice and extended cure periods
- Uncured breach by Buyer
  - Termination and remove system
  - Payment of “Termination Amount” - pre-agreed or formula-driven liquidated damages
- Uncured breach by Seller
  - Liquidated damages
    - Failure to meet COD
    - Failure to meet Guaranteed Output
  - Termination for uncured material breach or chronic breaches (death by a 1000 cuts)
- Walk away
  - Condition Precedent – walk away, maybe break fee (or forfeited down payment to utility)
PPAs – Key Issues and Considerations

• **Utility Right of First Offer (ROFO)**
  • Termination for failure of condition precedent or extended Force Majeure
  • Utility will usually require right of first offer over any power generated by “defunct” facility to ensure Seller not trying to cut better deal

Assignment

• PPA will usually permit assignment of PPA by Seller to lender or tax equity as collateral for project debt or investment
Thank You