

Simulating Advanced Financial Structures in NREL's System Advisor Model (SAM)



Webinar Presentation

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Agenda

- Background
- Federal Tax Incentives and Tax Equity
- Project Financial Structures
 - Partnership Flips
 - Lease Structures
- Model Walk-Through
- Next Steps?

Background

Project History and Acknowledgements

- Project started late 2010
- Excel model initially developed by subcontractor team:
 - Matt Karcher, Deacon Harbor Financial
 - John Harper, BirchTree Capital
 - Adam Kobos, Stoel Rives, LLC
- Converted to SAM in January – May, 2011
- Beta release in April
- Public release 5/4/11, some updates since
- Also assisted to correct some modest flaws in SAM financial calculations:
 - Property tax treatment
 - Depreciation schedules

Differences to prior SAM Model

- Adv. financial structures for *utility* mkt., not tech-specific
- Prior “IPP” model in SAM still available (3 choices rolled to 1); closest to Single Owner under new structures
- May not match exactly. New models include:
 - Reserve accounts (debt service and working capital)
 - Sculpted debt (constant DSCR)
 - Different cost classification – from indirect to constr. finance
 - Developer fee
 - Model can solve for TI return or PPA price (not Dev. return)
- Similarly, some features in IPP model cannot be modeled in the new financial section:
 - Mortgage style debt
 - Optimization for debt fraction and PPA escalation
 - Mid-quarter depreciation class

Caveats

- SAM is a “feasibility screening” tool
- Not intended to replace “bank quality” analysis required for actual financing
- Limitations include:
 - Annual cash flows
 - Generalizations regarding allocations of tax and cash benefits
- Your project will likely require tax and financial counsel
- Project financial structure is more about risk allocation & investor comfort than return

Federal Tax Incentives & Tax Equity

Tax Incentives Designed to Spur RE Investment

- Two Primary Federal Incentives Available:
 1. Investment Tax Credit / Production Tax Credit
 - ITC traditionally available to solar – represents up to 30% of **eligible** capital expenses
 - Taking ITC reduces depreciable basis by 50% of ITC
 - PTC traditionally available to wind, geothermal, biomass - currently at 2.2 cents/kWh (1.1 cents/kWh for certain techs)
 - Economic stimulus of 2009 made ITC available to all RE technologies temporarily
 2. Accelerated Depreciation
 - 5 year MACRS (Modified Accelerated Cost Recovery System)
 - Bonus depreciation – generally 50% but 100% for all capital expenditures (across all industries) thru 12/31/11
- Together, ITC/PTC and accelerated depreciation count for approx. 50% of a project's capital investment

Tax Incentives: Only Good if You Can Use Them

- Renewable energy projects and their developers don't have sufficient taxable income (aka "tax appetite") to utilize fully
- Without sufficient tax appetite, the tax incentives have to be "carried forward"
 - *Greatly reduces the present value of the tax incentives, and thus their ability to induce investment*
- Credits and depreciation must be claimed by the owner
- Benefits are nonrefundable and non-transferable

Tax Equity a Critical Component to RE Financing

- To take advantage of tax incentives, often a separate investor with tax appetite is brought into the project
- Generally referred to as “tax equity”
- Currently very small pool of tax equity investors (investment banks, insurance companies known as institutional investors)
 - Continued tax appetite required (MACRS 6 year recovery period)
 - Complexity of the project structure
 - Wide array of risks perceived:
 - Technology
 - Developer
 - Off-taker (utility or commercial entity) credit rating and contract duration
 - Regulatory (e.g., can regulators alter the PPA contract?)
 - Site access

Cash Grant Impact on Need for Tax Appetite

- After financial crisis in 2009, tax equity mkt. dried up
- Through ARRA, Congress created 1603 Treasury “grant” program.
- Reduces but does not eliminate need for tax appetite.
Still need to:
 - Monetize depreciation benefits (MACRS)
 - Bridge cash flows until 30% cash grant received
- *SAM can simulate Grant as an Investment Based Incentive (IBI)*

Advanced Financial Structures

Commonly Used Financial Structures

1. Partnership Flip (PF) structures

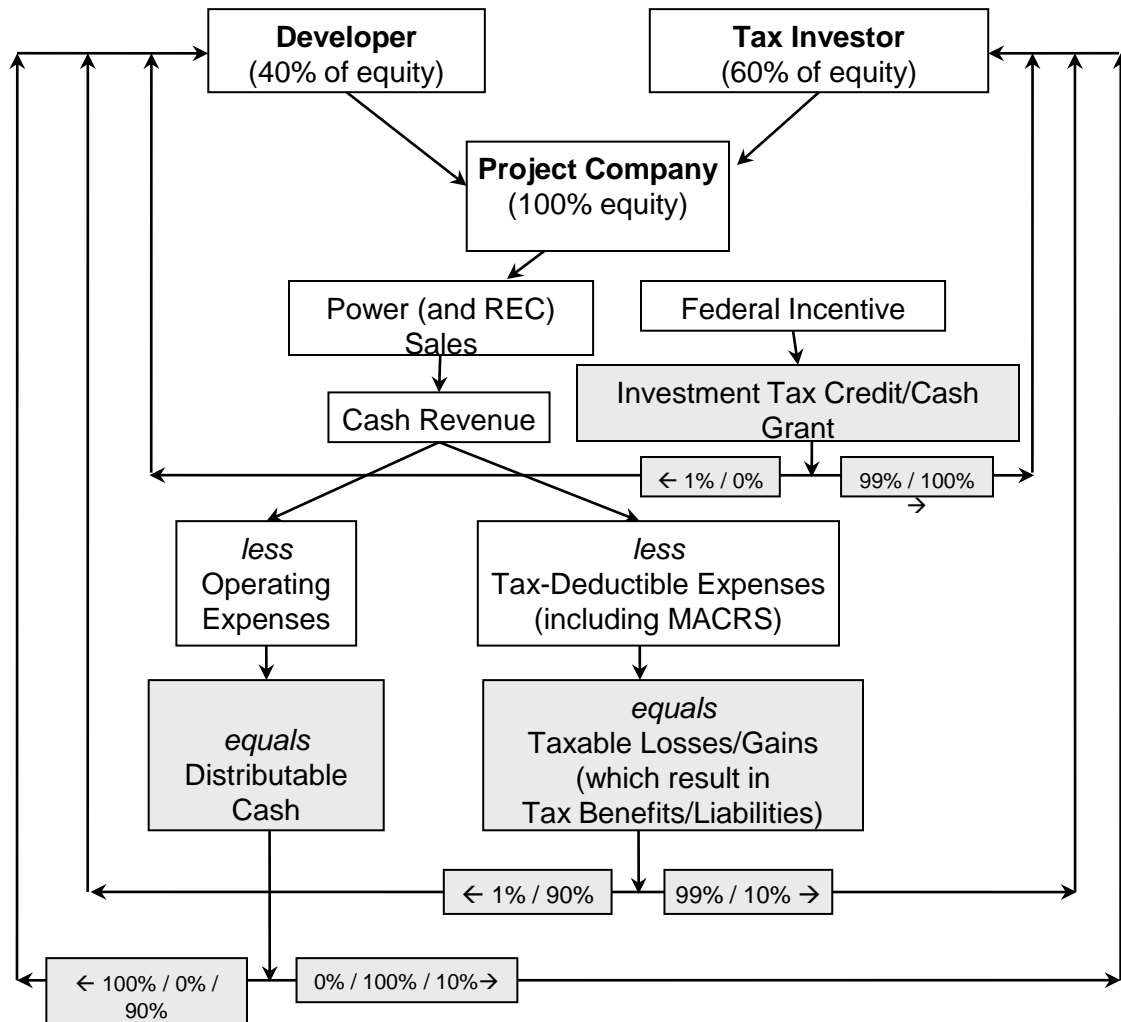
- All Equity PF
 - Cash and tax benefits allocated to tax investor (primarily) until TI receives pre-defined IRR (flip point). After, allocations flip from TI to developer
- Leveraged PF
 - Similar to AEPF but debt at project level increases required yield by tax investor by approx. 2%, often alters allocation schedule

2. Lease structures

- Sale Leaseback
 - Developer sells project to an entity (lessor) who then leases it back to the developer to operate and garner revenue
- Inverted lease (a.k.a. lease pass-through)
 - ITCs passed via Master Lease; Tenant operates equipment and makes lease payments to Owner (not simulated in SAM)

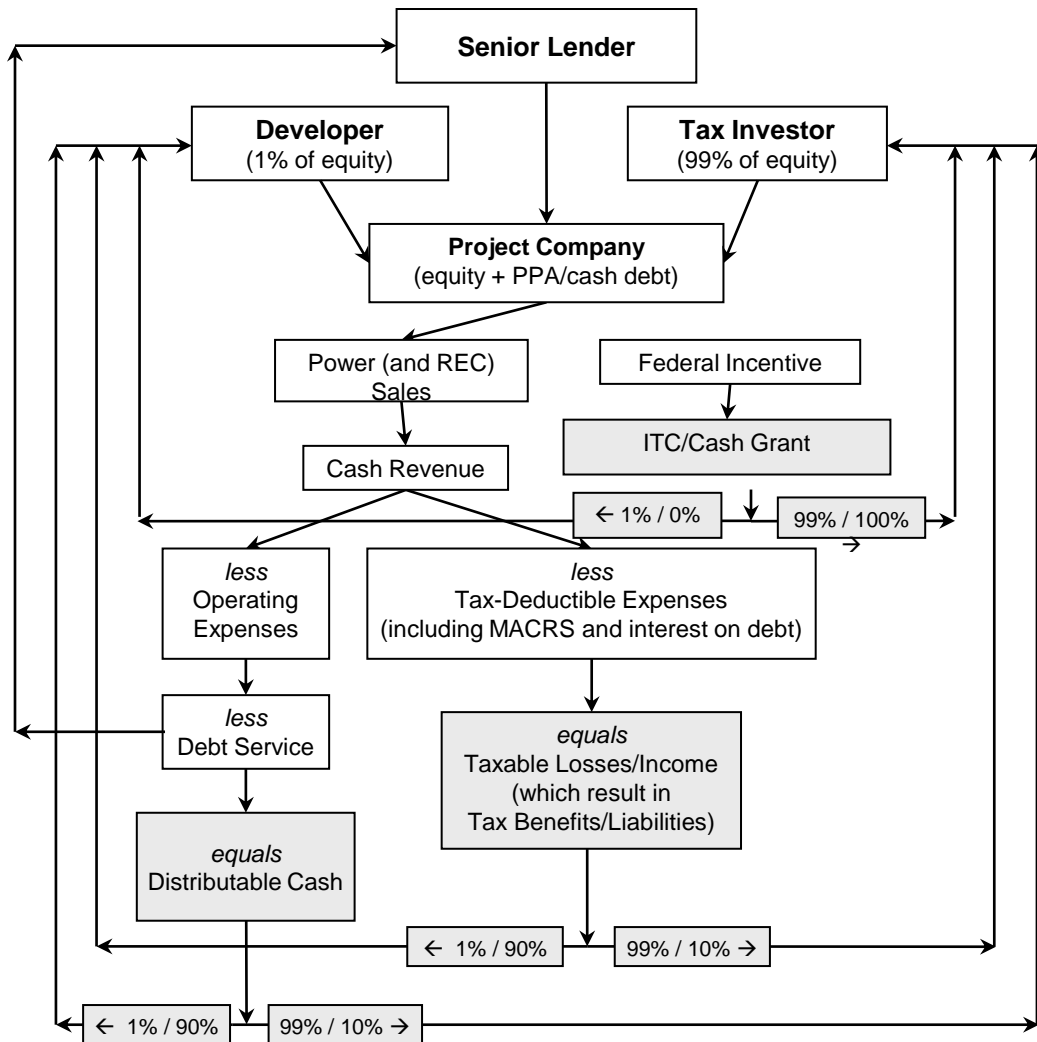
3. Single-owner (balance sheet)

All Equity Partnership Flip



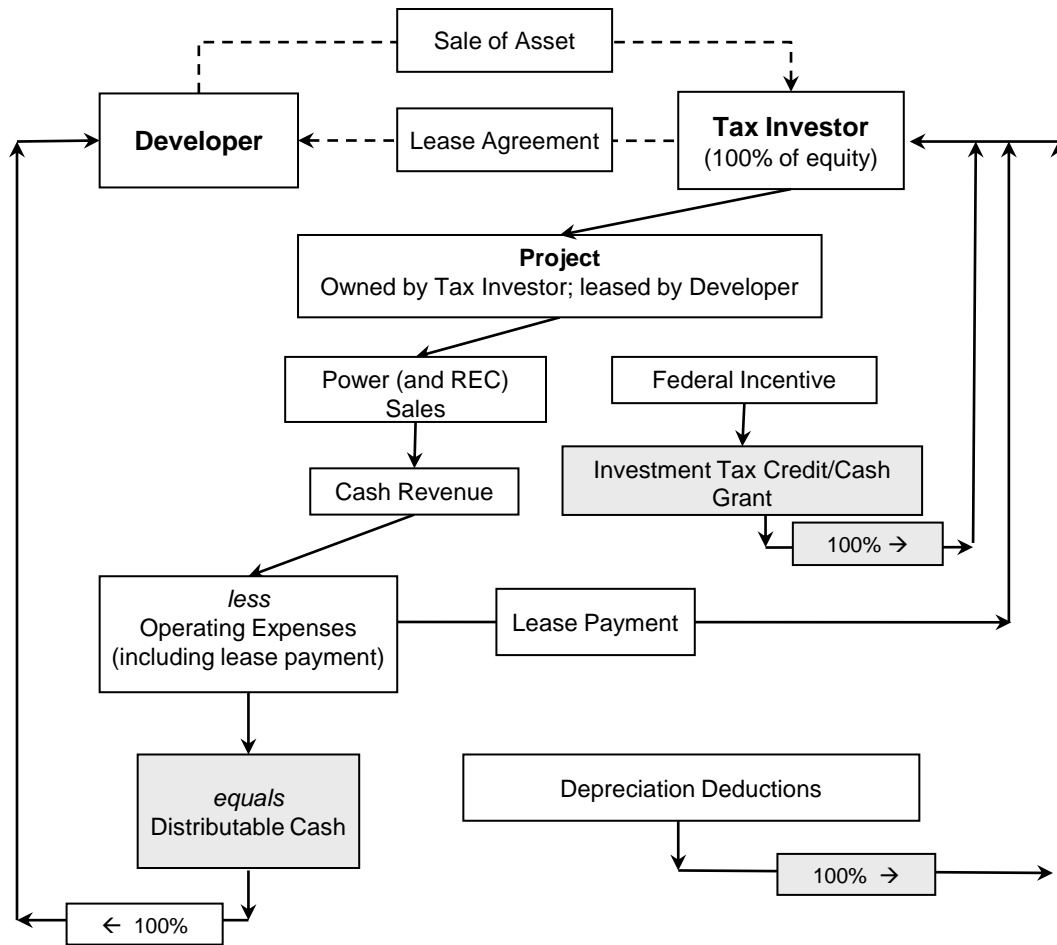
- Tax investor provides a majority (e.g., 60%) of equity. Specific allocations set for each project.
- Pre-Flip Point, there are bifurcated allocations:
 - Cash: initially 100% to developer (for either fixed duration or until return of investment); then 100% to TI until flip target reached
 - Tax Benefits: 99% to TI from COD until flip target reached
- After Flip Point is reached, virtually all allocations go to developer.

Leveraged Pro Rata Flip



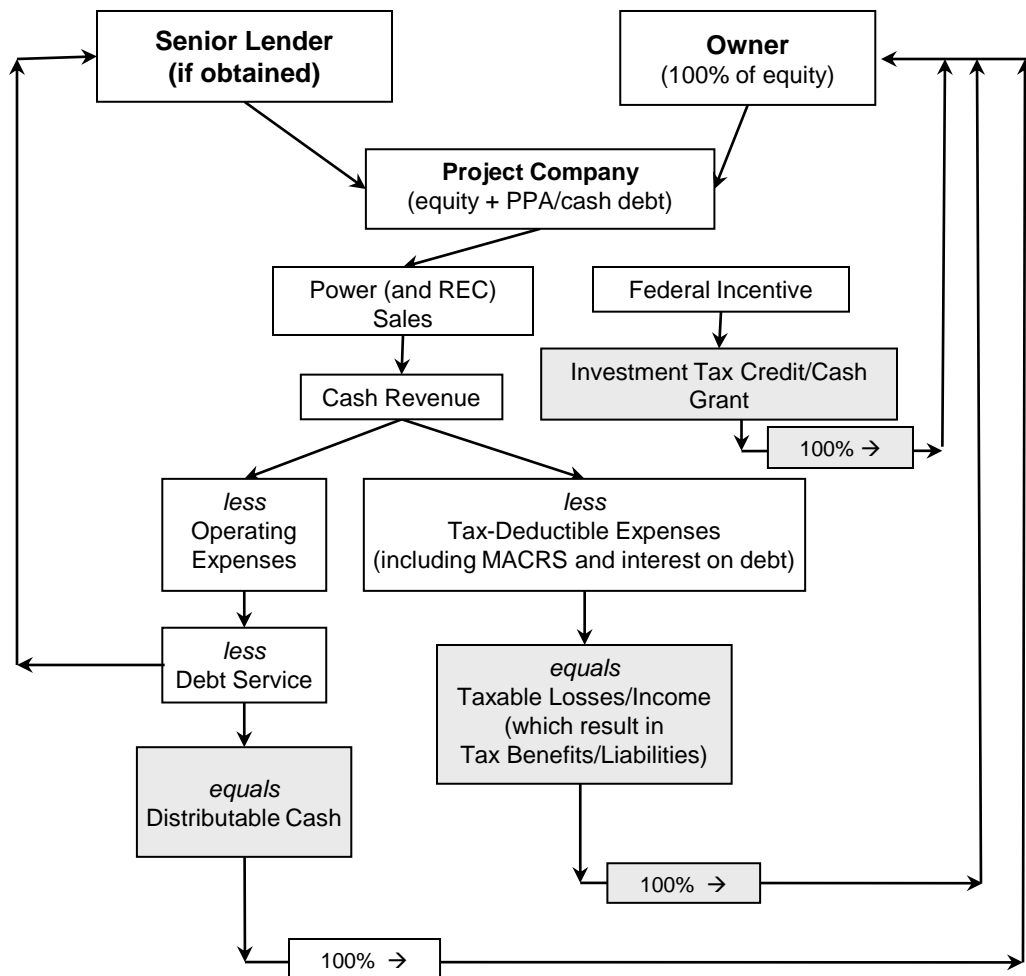
- Two equity owners: Developer and Tax Investor; and project-level debt based on cash generated.
- TI provides vast majority (e.g., 99%) of equity.
- Lender(s) have first lien on project assets. Raises required return on tax equity
- Each party receives a pro rata share of the cash (after debt service) and Tax Benefits until Flip Point.
- After Flip Point is reached, virtually all allocations go to developer.
- Note: interest payments are tax-deductible, thereby decreasing taxable income.

Sale Leaseback



- Developer constructs project and sells 100% to Tax Investor.
- Developer (Lessee) leases the project back from Tax Investor (Lessor).
- Lessee operates the project and pays Lessor an annual lease payment. Lease payment sized to provide Lessor with target return.
- Lessee retains free cash flow after lease payments and operating costs.
- Lessor receives annual lease payment from Lessee, and tax incentives and depreciation from ownership of project assets.
- Each party to the transaction has a separate taxable income (project taxable income is not shared as in the Partnership Flip Structures).

Single Owner



- One equity owner; project level debt (if obtained by owner).
- Owner funds 100% of the equity costs of the project as equity in the project company. The equity amount will vary if project level debt is obtained.
- 100% of each benefit stream flows to Owner:
 - Distributable cash
 - Tax Benefits: (a) taxable losses and gains, and (b) ITC/Cash Grant
- With just one Owner, there is no “flip” in the allocation of cash and Tax Benefits.

LCOE Drivers

- All Equity Partnership Flip
 - Tax investor target year / required return
 - Tax Investor required return
- Leveraged Partnership Flip
 - Tax investor target year / required return
 - Debt terms (tenor, interest rate, DSCR)
- Sale Leaseback
 - Lessor required return
- Single Owner
 - Developer required return
 - Debt terms (if applicable)

Advanced Tool: Financing Structures Included in System Advisor Model (SAM)

Partnership Type / Characteristics	All Equity Partnership Flip	Leveraged Partnership Flip	Sale Leaseback	Single Owner
Equity Owners	Tax Investor / Developer	Tax Investor / Developer	Tax Investor (Lessor)	Developer (Third party if sold)
Project Debt	None	Yes	None	Potential (Owner Choice)
Return Target	Tax Investor After-Tax IRR (Flip Target)	Tax Investor After-Tax IRR (Flip Target)	Lessor After-Tax IRR	Owner After-Tax IRR
Cash Sharing	Pre-Flip: Bifurcated Post-Flip: Primarily Developer	Pre-Flip: Pro Rata Post-Flip: Primarily Developer	Lessor: Lease Payment Lessee: Project Margin	Owner: 100% of project cash
Tax Benefit Sharing	Pre-Flip: Primarily Tax Investor Post-Flip: Primarily Developer	Pre-Flip: Primarily Tax Investor Post-Flip: Primarily Developer	Lessor and Lessee have different taxable incomes ITC and Depreciation goes to Lessor	Owner: 100% of project tax benefits

Model Walk-Through

Next Steps?

- Additional structures:
 - Inverted Lease
 - Leveraged Lease
- Default value refinement:
 - By technology
 - By project size
 - By developer credit rating, etc.
- Improving consistency w/ prior IPP model (currently underway)
- Feedback??

Thank you

Please contact me if you have questions on the financial structures

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