

# SCE Workshop on MASH

How the financing can work for  
affordable rental housing

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# Financial Feasibility

- Financial feasibility is not a given
- Sources of subsidy are not by themselves sufficient to pay cost of purchase and installation
- Power generated won't be free

# Topics

- Component Costs of PV System
- Sources of Funds
- Illustrative Example
- Funding Options
- Considerations
  - Changed assumptions
  - System value over time
- Building Owner Approval Process

# Component Costs of PV System

- PV Panels
- Inverters
- Building Permits
- Engineering Design
- Construction Financing
- Overhead, Profit, and General Conditions
- Insurance

# Sources of Funds

- MASH incentive - \$4.00/watt of tenant area load
- MASH incentive- \$3.30/watt of common area load
- Investment Tax Credit
  - Federal Credit of 30% of system cost (PPA model)
  - Federal Tax Credit 30% of net system cost after rebate (non-PPA models)
- Depreciation
- Renewable Energy Credits
- Financing paid from savings on cost of utility electricity
- Other possible sources not tied to PV system:
  - Use of existing project resources (reserves)
  - Use of existing sponsor resources (corporate equity)

# MASH Incentive

- MASH incentive based on calculated system size.
- Subsidy can be directed to system owner, building owner or a designated third party.
- Funding 50 to 60 days after final SCE inspection, approved system interconnection to electrical utility grid, and Incentive Claim documents are complete.
- Tax treatment of MASH incentives:
  - PPA treat MASH incentives as income (no effect on Federal Investment Tax Credit)
  - Building owner generally treat MASH incentives as reduction in cost of PV system (reduces investment tax credit)
  - Please consult your tax advisor for advise.

# Federal Investment Tax Credit

- Amount of benefit: Tax credit of 30% of project cost (or net of MASH incentives under some circumstances)
- Timing: Eligible to system owner on day system is approved for utility interconnection
- Credit can be taken against federal tax liability or can be refunded from US Treasury if private owner.
  - Does not apply to either a nonprofit owner or an owner with nonprofit participant (Section 1603 of ARRA)
- Typical structure for nonprofit housing: Benefit achieved through Power Purchase Agreement. Private system owner (PPA provider) gets tax credit, generates energy and sells energy to building owner

# Depreciation

- Depreciation allows the reduction in taxable income. Available to the system owner.
- Photovoltaic systems are treated as personal property depreciable over 5 years using double declining balance (MACRS)
- Typical deduction schedule: 20%, 32%, 19.2%, 11.52%, 11.52%, 5.76%

# Renewable Energy Credit (REC)

- Marketable credit created for each megawatt hour of energy produced by a PV system.
- Renewable Energy Credit owned by the system owner.
- Value of the Renewable Energy Credit based on market conditions. California does not have a Renewable Energy market yet.
- RECs may have some future value to the system owner.

# Financing from Savings on Utility Bills

- In many cases electrical costs may be less than SCE charges
- Energy costs can be accurately estimated based on forecasted energy output and utility rate costs
- Lenders will finance system based on repayment from utility savings, if any

# Building Owner or Other Resources

(to pay for the system)

- Use project replacement or operating reserves
- Use sponsor resources
- Other local public programs (e.g. Palm Desert)
- Payback from utility savings
- Advantages of building owner financed system:
  - One fewer participant as no outside lender involved
  - Fewer transaction costs as a result
  - Quicker pay-back
  - Easier to get to construction start so less staff resources needed

# Cost of system after subsidies – PPA Model

Approximately 85% (tenant area load) of upfront project costs paid for by MASH incentives and tax benefits

- It's about 80% of upfront project costs if offsetting common area load

	Common Area Load	Tenant Area Load
Cost of System at \$7/watt	\$700,000	\$700,000
MASH Incentives	(\$265,683)	(\$322,040)
ITC	(\$210,000)	(\$210,000)
Depreciation	(\$164,260)	(\$164,260)
Tax on MASH @ 40% tax	\$106,273	\$128,816
Net cost/funding gap	\$166,331	\$132,517

# Sizing MASH Subsidy – PPA Model

• System Size in DC Watts (Nameplate DC Rating)	100KW
• Derate DC Factor	0.83
• Adjusted Watts (CEC-AC Rating)	83KW
• Design Factor	0.97
• MASH Watts (CSI Rating)	80.5KW
• MASH Common Area Load \$3.30	\$265,683
– Tax on MASH Subsidy @ 40%	\$106,273
– Net Benefit MASH Common Load	\$159,410
• MASH Tenant Area Load \$4.00	\$322,040
– Tax on MASH Subsidy @ 40%	\$128,816
– Net Benefit MASH Tenant Area	\$193,224

# Determining Tax Benefits – PPA Model

- DC Watt (Nameplate DC Rating) 100 kW
- Est. Annual kWh 141,054
- Cost /DC Watt \$7.00
- Total Cost \$700,000
- Investment Tax Credit @ 30% = \$210,000

# Depreciation Benefit – PPA Model

- Cost: \$700,000
- Basis = Total Cost less 50% of the PV Credit (\$105,000) for a net of \$595,000
- Depreciation Schedule
  - Year 1 - \$119,000
  - Year 2 - \$190,400
  - Year 3 - \$114,240
  - Year 4 - \$68,544
  - Year 5 - \$68,544
  - Year 6 - \$34,272

Discounted Depreciation @ 15% = \$410,648

Value assuming 40% Marginal Tax Bracket = \$164,260

# Financing from savings on cost of utility electricity

- Cost of utility energy projected
- Cost of energy from PV system projected
- Difference, if any, is savings that can support debt
- Who makes these loans
  - Community bank
  - Community credit union
  - Nonprofit loan fund
  - Commercial bank
- Typical loan terms
  - Five to ten years
  - Fully amortized

# Annual Cost - PPA Model

Cost of Capital	Cost/Yr. Common Area Load	Cost/Yr. Tenant Area Load
7% Cost of Capital	\$23,682	\$18,867
Less Renewable Energy Credit	?	?
Net Cost per Year	\$23,682	\$18,867
15% Cost of Capital	\$33,142	\$26,404
Less Renewable Energy Credit	?	?
Net Cost per Year	\$27,336.08	\$20,628.53
Cost per kWh (Before cost of Property Taxes and Insurance)		
7% Cost of Capital	\$0.178	\$0.141
15% Cost of Capital	\$0.248	\$0.198

# Components of System Cost – PPA Model

- Up front out-of-pocket cost
- Cost of power during PPA term
- Buyout cost, as anticipated
- Cost of power after PPA term through life of system
- To compare, discount stream of costs to Present Value

# Example of Life Cycle Costs – PPA Model

## Assumptions:

- System will produce energy for 40 years
- PPA term limited by tax concerns
- PPA energy cost expected to be less than utility cost
- Buyout option at year 6 and at end of PPA term
- System owner operating cost starting at approximately 1.5 cents/kWh and going up at 3% per year
  - Varies according to system size, equipment quality, etc.
- Used 7% cost of capital for analysis but building owner must choose what is appropriate for them
- No additional subsidy available to replace system at end of useful life or end of PPA term

# Important Considerations – PPA Model

- Fair Market Value of the system is the minimum purchase price because of tax considerations
- Changed assumptions will change results.
  - Flat cost of energy from PPA improves economics of transaction for building owner
  - Increase in rate of SCE energy costs over time makes buyout more desirable for building owner
  - Shorter term PPA makes building owner more vulnerable to increased life cycle costs

# Conclusion on buyout – PPA Model

- Consider buy-out costs when selecting PPA provider along with other economic factors:
  - Initial payment, loan term, O&M expenses, utility energy costs, etc.
- Make sure fact that MASH incentives, Federal ITC and other tax benefits are reflected in purchase price
- Every situation is different so obtain multiple bids
- Make sure you are comparing apples to apples
  - Amount of energy produced per year (not peak ratings) is important measure for comparison purposes
  - Consider cost of energy after PPA term

# Building Owner Approval Process

- Determine Financial Feasibility
  - Qualification for MASH incentive
  - Financial Feasibility
  - Roof Structure
  - If using Virtual Net Metering – check Service Delivery Points
- Determine who needs to approve
  - Owner entity including any partners in limited partnership
  - Lenders (as required)
  - Regulators (HUD, TCAC, local government, etc.)

# Q & A