



SMART Solar

How to Succeed in the New Massachusetts
Solar Market



Disclaimers

First 100 MW RFP Pricing

Changes to the program before final passage

Reduced pricing for procurement by 2018

Final language defining program elements

One size does not fit all



Pricing Tables

Capacity Based Compensation Rates (kW AC)			
Generation Unit Capacity	Capacity Based Rate Factor (% of Clearing Price)	Capacity Based Rate (\$/kWh)	Term Length
Low income less than or equal to 25 kW AC	230%	\$0.3450	10-year
Less than or equal to 25 kW AC	200%	\$0.3000	10-year
Greater than 25 kW AC to 250 kW AC	150%	\$0.2250	20-year
Greater than 250 kW AC to 500 kW AC	125%	\$0.1875	20-year
Greater than 500 kW AC to 1,000 kW AC	110%	\$0.1650	20-year
Greater than 1,000 kW AC to 2,000 kW AC	100%	\$0.1500	20-year
Greater than 2,000 kW AC to 5,000 kW AC	TBD	<=\$0.1400	20-year

Notes

- Low Income remains undefined (assume Mass Solar Loan guidelines)
- Incentive window on residential converts to Net Metering post SMART
- Sweet spot between 25 kW and 500 kW
- Understand the difference between remote and behind the meter



Pricing Tables

Ownership Models (ITC Qualified)

- Note that pricing works better at the upper end of any category than at the lower end.
- Pricing does not account for adders or subtractors
- Even at \$3.45 the residential projects are tight from a banking perspective - need better loans at lower rates
- All 20 year categories are strong

Size in Watts	Green
5,000	\$3.45
7,500	\$3.45
10,000	\$3.45
25,000	\$3.00
251,000	\$2.75
501,000	\$2.40
1,000,001	\$2.20
2,000,001	\$2.05



Pricing Tables

Ownership Models (Non ITC Qualified)

- Residential Pricing does not take into account a continuing MASS Solar Loan program
- Pricing does not account for adders or subtractors
- Commercial pricing assumes limited to zero ability to monetize tax equity and assumes availability of 15-20 year terms. Pricing does include tax impact of incentive over net metering value

Size in Watts	Green
5,000	\$3.20
7,500	\$3.20
10,000	\$3.20
25,000	\$2.70
251,000	\$2.40
501,000	\$2.05
1,000,001	\$1.95
2,000,001	\$1.80



Pricing Tables

Ownership Model (Non-Profit/Muni)

- Pricing does not account for adders or subtractors
- Commercial-size Pricing assumes no tax appetite and no tax liabilities for non-profits or municipalities

Size in Watts	Green
5,000	\$3.20
7,500	\$3.20
10,000	\$3.20
25,000	\$2.95
251,000	\$2.70
501,000	\$2.35
1,000,001	\$2.15
2,000,001	\$2.00



Pricing Tables

Operating Lease

- Pricing does not account for adders or subtractors
- Systems under 50 kW hard to get leasing for unless a strong entity or well underwritten portfolio
- Assumes a 10 year lease with a 10 - 15% FMV payment at month 121. Lessee paying for O&M and Lessor giving around a 20% reduction for tax credits

Size in Watts	Green
5,000	\$0.00
7,500	\$0.00
10,000	\$0.00
25,000	\$2.80
251,000	\$2.40
501,000	\$2.15
1,000,001	\$1.95
2,000,001	\$1.80



Pricing Tables

PPA - Behind the Meter

- Pricing does not account for adders or subtractors
- Systems under 250 kW hard to get PPA's for unless a strong entity or well underwritten portfolio
- Assumes a behind the meter system with no lease and a \$.02 cost of energy discount to the offtaker.

Size in Watts	Green
5,000	\$0.00
7,500	\$0.00
10,000	\$0.00
25,000	\$0.00
251,000	\$2.30
501,000	\$1.97
1,000,001	\$1.75
2,000,001	\$1.60



Pricing Tables

PPA - Remote

- Pricing does not account for adders or subtractors
- Systems under 500 kW hard to get Remote PPA's for unless a strong entity or well underwritten portfolio
- Assumes a Remote PPA with a lease, property tax or PILOT and \$.02 per kWh benefit to the Off-taker

Size in Watts	Green
5,000	\$0.00
7,500	\$0.00
10,000	\$0.00
25,000	\$0.00
251,000	\$0.00
501,000	\$1.82
1,000,001	\$1.60
2,000,001	\$1.45



Pricing Tables

Location Based Adders	
Type	Adder Value (\$/kWh)
Building Mounted	\$0.02
Brownfield	\$0.03
Landfill	\$0.04
Solar Canopy	\$0.06

Off-taker Based Adders	
Type	Adder Value (\$/kWh)
Public Entity	\$0.02
Community Shared Solar (CSS)	\$0.05
Low Income Property Owner	\$0.03
Low Income CSS ¹	\$0.06

Solar + Energy Storage	
Type	Adder Value (\$/kWh)
Storage + PV	Variable

Location Adders

Watch Ground Mounts
Get Rooftops
Canopies Work
Brownfield and Landfills -
break even

Off-taker Adders

Public Entity Opportunities
CSS Opportunities
Low Income - Great but market
may be taken

Storage Adders

See next Page



Pricing Tables

Storage kW as % of Solar	Storage Hours @ Rated Capacity								
	Minimum					Maximum			
	2	2.5	3	3.5	4	4.5	5	5.5	6
25%	\$0.0247	\$0.0271	\$0.0291	\$0.0307	\$0.0321	\$0.0334	\$0.0345	\$0.0356	\$0.0365
30%	\$0.0321	\$0.0352	\$0.0377	\$0.0399	\$0.0418	\$0.0434	\$0.0449	\$0.0462	\$0.0474
35%	\$0.0382	\$0.0419	\$0.0450	\$0.0476	\$0.0498	\$0.0517	\$0.0535	\$0.0551	\$0.0565
40%	\$0.0428	\$0.0470	\$0.0504	\$0.0533	\$0.0558	\$0.0579	\$0.0599	\$0.0617	\$0.0633
45%	\$0.0460	\$0.0504	\$0.0541	\$0.0572	\$0.0599	\$0.0622	\$0.0643	\$0.0663	\$0.0680
50%	\$0.0481	\$0.0527	\$0.0565	\$0.0598	\$0.0626	\$0.0650	\$0.0673	\$0.0692	\$0.0711
55%	\$0.0494	\$0.0542	\$0.0581	\$0.0614	\$0.0643	\$0.0668	\$0.0691	\$0.0712	\$0.0730
60%	\$0.0502	\$0.0551	\$0.0591	\$0.0625	\$0.0654	\$0.0680	\$0.0703	\$0.0724	\$0.0743
65%	\$0.0507	\$0.0557	\$0.0597	\$0.0631	\$0.0661	\$0.0687	\$0.0710	\$0.0731	\$0.0750
70%	\$0.0511	\$0.0560	\$0.0601	\$0.0635	\$0.0665	\$0.0691	\$0.0715	\$0.0736	\$0.0755
75%	\$0.0513	\$0.0562	\$0.0603	\$0.0638	\$0.0667	\$0.0694	\$0.0717	\$0.0739	\$0.0758
80%	\$0.0514	\$0.0564	\$0.0605	\$0.0639	\$0.0669	\$0.0696	\$0.0719	\$0.0740	\$0.0760
85%	\$0.0515	\$0.0565	\$0.0606	\$0.0640	\$0.0670	\$0.0697	\$0.0720	\$0.0742	\$0.0761
90%	\$0.0515	\$0.0565	\$0.0606	\$0.0641	\$0.0671	\$0.0697	\$0.0721	\$0.0742	\$0.0762
95%	\$0.0515	\$0.0566	\$0.0607	\$0.0641	\$0.0671	\$0.0698	\$0.0721	\$0.0743	\$0.0762
100%	\$0.0516	\$0.0566	\$0.0607	\$0.0641	\$0.0671	\$0.0698	\$0.0722	\$0.0743	\$0.0763

Storage Adders

Pricing

Accounting for a \$14 cent per \$.01 cent in adder differential means that storage will be covered to only about 50% of it's cost in most residential applications assuming current pricing. Commercial backup may fare better.

Some Pricing Examples

PPA Behind Meter													
	Adder Differential			14	Location Adders				Off-taker Adders				Storage
Size in Watts	Green	Price High	Adder Adjuster	BM	BR	LNDFL	CANOPY	PE	CSS	LIPO	LICSS	ESS	
1,000,001	\$1.75	\$3.43	\$0.12	\$0.00	\$0.00	\$0.00	\$0.06	\$0.00	\$0.00	\$0.00	\$0.06	\$0.00	

Ownership Range w/ITC													
	Adder Differential			14	Location Adders				Off-taker Adders				Storage
Size in Watts	Green	Price High	Adder Adjuster	BM	BR	LNDFL	CANOPY	PE	CSS	LIPO	LICSS	ESS	
25,000	\$3.00	\$3.28	\$0.02	\$0.02	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
251,000	\$2.75	\$2.75	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
501,000	\$2.40	\$2.40	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
1,000,001	\$2.20	\$3.88	\$0.12	\$0.00	\$0.00	\$0.00	\$0.06	\$0.00	\$0.00	\$0.00	\$0.06	\$0.00	

Ownership Range Non-Profit													
	Adder Differential			14	Location Adders				Off-taker Adders				Storage
Size in Watts	Green	Price High	Adder Adjuster	BM	BR	LNDFL	CANOPY	PE	CSS	LIPO	LICSS	ESS	
251,000	\$2.70	\$3.26	\$0.04	\$0.02	\$0.00	\$0.00	\$0.00	\$0.02	\$0.00	\$0.00	\$0.00	\$0.00	



Winners and Losers

Winners

Non-Profits, Municipalities, Low Income

Ownership Models & Operating Leases

25 kW to 500 kW Systems

Behind the Meter with Adders

Developed Sites / Brownfields

Community Solar



Winners and Losers

Tighten the Belt

Large Systems w/out adders

Offsite Units on undeveloped property

PPA models w/out adders



Winning in the New Residential Realty

- Pricing of \leq \$3.40 per watt for ITC Qualifiers
- Pricing of \leq \$3.20 per watt for Low Income (If without Mass Solar Loan)
- Better procurement
- Traditional Finance Options at lower rates
- Lower customer acquisition costs (strategy)
- Process, Process, Process



Winning in the New Commercial Reality

- Pricing on Large Systems
- Non-profits and Small to Medium Business
- Better Procurement
- Get to know your Lease
- Pre-develop bank finance based on 15-20 year notes
- Know your adders
- Battery Pitch as a Security / Demand Measure
- Consider Pre-emptive Solar Zoning

SMART Strategies

What You Can Do Now

Sign Up for Intelligen Connect Beta

Simplify Offers

Reduce Pricing through
Procurement and Process

Re-format Messaging for
Mainstreaming

Work on your Referral Network

Solar Zoning

Pre-train your Sales Team





Resources

<https://www.planning.org/knowledgebase/solar/>

[Downloadable Sheet with Price Manipulator](#)

www.CommercialSolarFinance.com

<http://www.commercialsolarfinance.com/intelligenconnect.html> - BETA Sign Up