Town of Lexington
Solar Installation Options

March 14, 2012

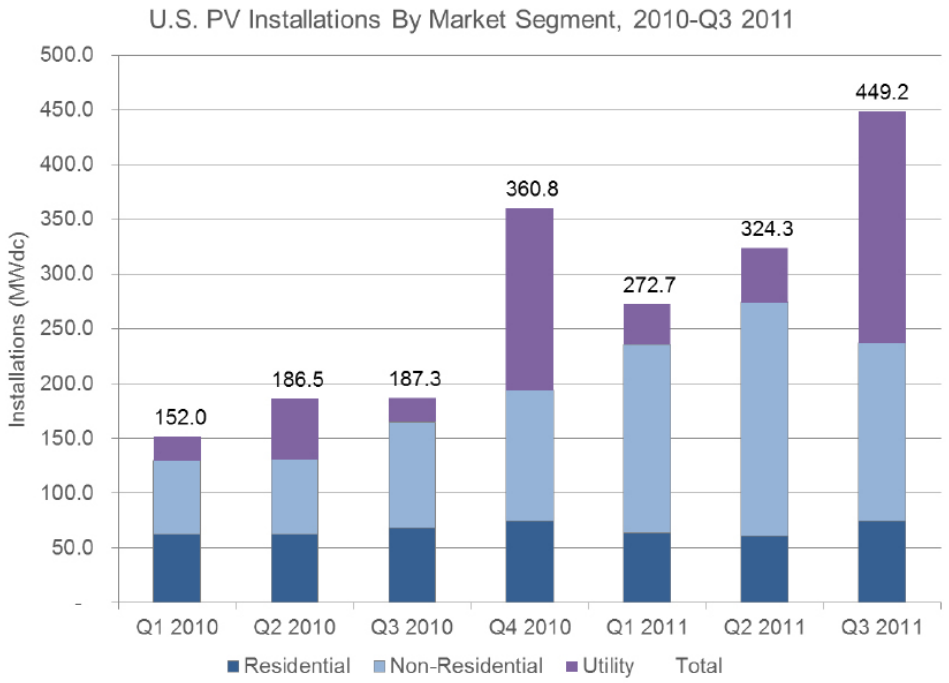
Agenda

- Solar Industry Update
  - Overview
  - Solar Incentives
  - Solar Energy Performance & Economics
- Town of Lexington Electricity Use & Budget
- Potential Solar Sites
- Cash Flow Models & Financial Analysis

Solar Industry Overview

- Rapid growth
- Lower costs
- Higher efficiency
- Higher reliability
- Longer life

Q3 2011: The Largest Quarter Ever in the U.S.



Source: GTM Research/SEIA® *U.S. Solar Market Insight™: Q3 2011*

Solar Incentives

- RPS Solar Carve Out Program
  - Solar Renewable Energy Certificates (SRECs)
  - 10 year production incentive
  - Most recent price closed at $530 / MWh
- Commonwealth Solar Rebates
  - Not available for systems over 10kW
- 30% Federal Tax Credit
- Accelerated & Bonus Depreciation
  - 6 year MACRS plus 50% bonus depreciation

SREC Overview

- Production-based incentive
  - 1 certificate for each MWh produced
  - First 10 years of operation
- SRECs sold at market price
- DOER operates clearinghouse auction @ $300 / MWh floor price
- Cap on SREC price set by 10 year ACP rate schedule
- Utilities purchase SRECs from system owners to avoid payment of ACP

Compliance Year	ACP Rate per MWh
2012	$550
2013	$550
2014	$523
2015	$496
2016	$472
2017	$448
2018	$426
2019	$404
2020	$384
2021	$365

PV Solar Energy Assumptions

- Total system cost dropping rapidly
  - $3.50 to $4.00 / watt for 100 kW systems
  - $3.00 to $3.75 / watt for MW size systems
- 30+ year expected lifespan
  - 25 year 80% performance warranty
  - 0.3% actual annual power decline
- Operations & Maintenance costs
  - Annual cost of $22 / kW
- Inverter reliability and costs improving
  - $0.25 / watt @ 15 years

Solar Energy Performance

- Ground mount system (no shade)
  - 250 kW system size / acre
  - 1 MW system generates 1,171 MWh / year
  - 180˚ solar azimuth, 15˚ fixed tilt angle

- Flat roof mounted system (no shade)
  - 7 kW system size / 1,000 square feet*
  - Generates ~8.2 MWh / year

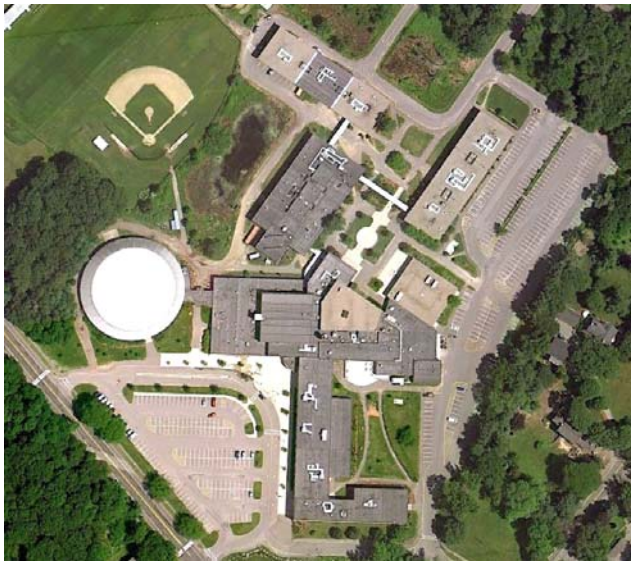
*Usable area

Town Electricity Usage

- Municipal Buildings
  - –2,500,000 kWh per year
  - –$480,000 budget for 2012
  - –2.2 MW solar needed to meet demand
- School Buildings
  - –6,700,000 kWh per year
  - –$1,280,000 budget for 2012
  - –5.7 MW solar needed to meet demand

Potential Solar Sites

- DPW Hadley Building & Garage
- Hartwell Avenue
- School Buildings



Hadley Building – Solar Potential

- Hadley is an outstanding solar site
  - Large white roof (56,000 ft^2 usable space)
  - 164˚ & 195˚ azimuth
  - 390 kW array
  - 455,000 kWh / yr
- Electricity demand
  - 403,000 kWh / yr

- Hadley could be our first net positive building!

PPA Solar Economics – Hadley

Year	Electric Bill Savings	SREC Revenue	Operations & Maintenance	G&A Costs	Bond Payments	Tax Equity Payments	Annual Cash Flow
0					($452,400)		$0
1	$42,593				$36,192		$6,401
2	$44,499				$36,192		$8,307
3	$46,491				$36,192		$10,299
4	$48,571				$36,192		$12,379
5	$50,745				$36,192		$14,553
6	$53,015				$36,192		$16,823
7	$55,388				$36,192		$19,196
8	$57,867				$36,192		$21,675
9	$60,456				$36,192		$24,264
10	$63,161				$36,192		$26,969
11	$65,988				$36,192		$29,796
12	$68,941				$36,192		$32,749
13	$72,026				$36,192		$35,834
14	$75,249				$36,192		$39,057
15	$78,617				$36,192		$42,425
16	$82,135				$36,192		$45,943
17	$85,810				$36,192		$49,618
18	$89,650				$36,192		$53,458
19	$93,662				$36,192		$57,470
20	$97,853				$36,192		$61,661
Total	$1,332,717	$0	$0	$0	$723,840		$608,877

Solar Economics – Hadley Town Financed

Year	Electric Bill Savings	SREC Revenue	Operations & Maintenance	G&A Costs	Bond Payments	Tax Equity Payments	Annual Cash Flow
0					($1,365,000)		$0
1	$41,487	$219,404	$8,580	$3,900	$150,150		$98,262
2	$43,344	$218,307	$8,837	$4,017	$150,150		$98,647
3	$45,284	$206,684	$9,103	$4,138	$150,150		$88,578
4	$47,310	$194,735	$9,376	$4,262	$150,150		$78,258
5	$49,427	$184,638	$9,657	$4,389	$150,150		$69,869
6	$51,639	$174,205	$9,947	$4,521	$150,150		$61,226
7	$53,950	$164,732	$10,245	$4,657	$150,150		$53,630
8	$56,364	$155,777	$10,552	$4,797	$150,150		$46,642
9	$58,886	$147,333	$10,869	$4,940	$150,150		$40,260
10	$61,522	$139,394	$11,195	$5,089	$150,150		$34,482
11	$64,275	$0	$11,531	$5,241	$0		$47,503
12	$67,151	$0	$11,877	$5,399	$0		$49,876
13	$70,156	$0	$12,233	$5,560	$0		$52,362
14	$73,295	$0	$12,600	$5,727	$0		$54,968
15	$76,575	$0	$110,478	$5,899	$0		($39,802)
16	$80,002	$0	$13,367	$6,076	$0		$60,559
17	$83,582	$0	$13,768	$6,258	$0		$63,555
18	$87,322	$0	$14,181	$6,446	$0		$66,695
19	$91,230	$0	$14,607	$6,639	$0		$69,984
20	$95,313	$0	$15,045	$6,839	$0		$73,429
Total	$1,298,114	$1,805,209	$328,048	$104,794	$1,501,500		$1,168,981

Hartwell Avenue Site

Excellent Solar Site

- 12 Solar Acres
- NSTAR Substation

- 3 MW Installation
- 3.5M kWh / Year

Year 1 Income

- $1.75M SRECs
- $330K Savings

Positive Cash Flow*

- $10,700,000

*20 Years

Hartwell Avenue PPA

Year	Electric Bill Savings	SREC Revenue	Operations & Maintenance	G&A Costs	Bond Payments	Tax Equity Payments	Annual Cash Flow
0					($3,000,000)		$0
1	$328,800				$330,000		($1,200)
2	$343,514				$330,000		$13,514
3	$358,886				$330,000		$28,886
4	$374,946				$330,000		$44,946
5	$391,725				$330,000		$61,725
6	$409,255				$330,000		$79,255
7	$427,569				$330,000		$97,569
8	$446,703				$330,000		$116,703
9	$466,692				$330,000		$136,692
10	$487,577				$330,000		$157,577
11	$509,396				$0		$509,396
12	$532,191				$0		$532,191
13	$556,007				$0		$556,007
14	$580,888				$0		$580,888
15	$606,883				$0		$606,883
16	$634,041				$0		$634,041
17	$662,414				$0		$662,414
18	$692,058				$0		$692,058
19	$723,027				$0		$723,027
20	$755,383				$0		$755,383
Total	$10,287,955	$0	$0	$0	$3,300,000		$6,987,955

Hartwell Ave Installation
Town Financed

Year	Electric Bill Savings	SREC Revenue	Operations & Maintenance	G&A Costs	Bond Payments	Tax Equity Payments	Annual Cash Flow
0					($9,750,000)		$0
1	$328,800	$1,738,846	$33,000	$30,000	$1,072,500		$932,146
2	$343,514	$1,730,152	$33,990	$30,900	$1,072,500		$936,275
3	$358,886	$1,638,034	$35,010	$31,827	$1,072,500		$857,583
4	$374,946	$1,543,334	$36,060	$32,782	$1,072,500		$776,939
5	$391,725	$1,463,313	$37,142	$33,765	$1,072,500		$711,631
6	$409,255	$1,380,627	$76,512	$34,778	$1,072,500		$606,091
7	$427,569	$1,305,549	$78,807	$35,822	$1,072,500		$545,989
8	$446,703	$1,234,579	$81,172	$36,896	$1,072,500		$490,714
9	$466,692	$1,167,661	$83,607	$38,003	$1,072,500		$440,243
10	$487,577	$1,104,739	$86,115	$39,143	$1,072,500		$394,557
11	$509,396	$0	$88,698	$40,317	$0		$380,380
12	$532,191	$0	$91,359	$41,527	$0		$399,305
13	$556,007	$0	$94,100	$42,773	$0		$419,134
14	$580,888	$0	$96,923	$44,056	$0		$439,909
15	$606,883	$0	$849,831	$45,378	$0		($288,325)
16	$634,041	$0	$102,826	$46,739	$0		$484,476
17	$662,414	$0	$105,911	$48,141	$0		$508,363
18	$692,058	$0	$109,088	$49,585	$0		$533,384
19	$723,027	$0	$112,361	$51,073	$0		$559,594
20	$755,383	$0	$115,731	$52,605	$0		$587,046
Total	$10,287,955	$14,306,833	$2,348,243	$806,111	$10,725,000		$10,715,433

3MW Environmental Benefits

Over the next 20 years a 3MW solar energy system will generate 67,017,243 kWh of clean electricity.

Your town's PV system will save a total of

4,289,103 lbs.

of CO_2 emissions each year

This is the equivalent of eliminating

5,252,333 miles

of driving each year

This is the equivalent of preserving

8,304 acres

of eastern mountain forests.

Municipal & School Buildings

	Roof Space (sq. ft.)	System Size (kW)	Estimated Production (kWh / Year)
Bowman	46,000	307	355,941
Bridge	37,022	260	303,415
Estabrook	34,580	238	276,304
Fiske	22,880	165	192,686
Harrington	18,190	118	133,387
Hastings	21,769	189	220,569
Clarke	35,230	252	294,609
Diamond	25,030	169	195,421
LHS	84,808	606	699,737
DPW Garage	37,551	265	309,250
DPW Hadley	18,262	125	145,806
Total	**381,322**	**2,694**	**3,127,125**

2.7 MW Total

47% of school's electricity

1st Year Income

$1.5M SRECs

$292K savings

Positive Cash Flow*

$8,500,000

*20 Years

Municipal Rooftops - PPA

Year	Electric Bill Savings	SREC Revenue	Operations & Maintenance	G&A Costs	Bond Payments	Tax Equity Payments	Annual Cash Flow
0					($3,367,500)		$0
1	$292,699				$202,050		$90,649
2	$305,797				$202,050		$103,747
3	$319,482				$202,050		$117,432
4	$333,778				$202,050		$131,728
5	$348,715				$202,050		$146,665
6	$364,320				$202,050		$162,270
7	$380,623				$202,050		$178,573
8	$397,656				$202,050		$195,606
9	$415,451				$202,050		$213,401
10	$434,043				$202,050		$231,993
11	$453,466				$202,050		$251,416
12	$473,759				$202,050		$271,709
13	$494,959				$202,050		$292,909
14	$517,109				$202,050		$315,059
15	$540,250				$202,050		$338,200
16	$564,426				$202,050		$362,376
17	$589,684				$202,050		$387,634
18	$616,072				$202,050		$414,022
19	$643,641				$202,050		$441,591
20	$672,444				$202,050		$470,394
Total	$9,158,375	$0	$0	$0	$4,041,000		$5,117,375

Municipal Rooftops – Town Financed

Year	Electric Bill Savings	SREC Revenue	Operations & Maintenance	G&A Costs	Bond Payments	Tax Equity Payments	Annual Cash Flow
0					($9,429,000)		$0
1	$292,699	$1,547,927	$59,268	$26,940	$1,037,190		$717,228
2	$305,797	$1,540,187	$61,046	$27,748	$1,037,190		$720,000
3	$319,482	$1,458,184	$62,877	$28,581	$1,037,190		$649,017
4	$333,778	$1,373,882	$64,764	$29,438	$1,037,190		$576,268
5	$348,715	$1,302,646	$66,707	$30,321	$1,037,190		$517,143
6	$364,320	$1,229,039	$68,708	$31,231	$1,037,190		$456,230
7	$380,623	$1,162,204	$70,769	$32,168	$1,037,190		$402,701
8	$397,656	$1,099,027	$72,892	$33,133	$1,037,190		$353,468
9	$415,451	$1,039,456	$75,079	$34,127	$1,037,190		$308,511
10	$434,043	$983,442	$77,331	$35,151	$1,037,190		$267,813
11	$453,466	$0	$79,651	$36,205	$0		$337,610
12	$473,759	$0	$82,041	$37,291	$0		$354,427
13	$494,959	$0	$84,502	$38,410	$0		$372,047
14	$517,109	$0	$87,037	$39,562	$0		$390,510
15	$540,250	$0	$763,148	$40,749	$0		($263,648)
16	$564,426	$0	$92,338	$41,972	$0		$430,116
17	$589,684	$0	$95,108	$43,231	$0		$451,345
18	$616,072	$0	$97,961	$44,528	$0		$473,583
19	$643,641	$0	$100,900	$45,864	$0		$496,878
20	$672,444	$0	$103,927	$47,239	$0		$521,278
Total	$9,158,375	$12,735,994	$2,266,053	$723,888	$10,371,900		$8,532,527

Solar Energy Conclusion

- Solar Power potential:
  - Can supply 67% of Town's electricity
  - Cash Flow Positive from day 1
  - Lock in electricity rates for 20+ years
  - Positive cash flow $19 million over 20 years
  - First net positive buildings
  - Huge environmental benefits
    - 160 million pounds of CO_2 over 20 years
    - Equivalent to taking 830 cars off the road