Economic Benefit & Rate Impact Analysis of the New York Solar Industry Development and Jobs Act of 2010

Prepared by the Vote Solar Initiative
June 2010

Across the country and around the world, the race is on to build renewable energy markets - vibrant new hubs of green job creation, renewed investment and economic opportunity. Despite tremendous in-state growth potential and increasingly competitive policies in neighboring states, solar energy represents less than 0.01% of New York's electricity generation today. If all of the electricity generated in New York was equivalent to the distance from Albany to Manhattan, the solar portion wouldn't make it much further than the Capitol steps. That leaves a tremendous economic and energy development opportunity untapped.

The New York state legislature is poised to increase the state's commitment to renewable energy through the *Solar Industry Development and Jobs Act of 2010* (Solar Jobs Act). The Act establishes a policy framework to achieve over 5,000 megawatts (MW) of solar power capacity by the year 2025 with interim targets of 500 MW by 2015 and 1,500 MW by 2020. The legislation is also designed to enable diverse market participation though provisions for residential, commercial and utility market growth.

Vote Solar examined the economic impacts New York can expect from the proposed legislation. Findings show that the Solar Jobs Act would deliver strong benefits to the state across three key economic factors.

NY Solar Jobs Act Cumulative Economic Impacts (through 2025)	
New Jobs	**22,198**
Economic Output	**$20 billion**
Average Residential Rate Impact	**39¢ per month**

Methodology

Economic impact: In assessing the size of New York's solar economic opportunity, Vote Solar employed an economic model developed by the Department of Energy's National Renewable Energy Laboratory (NREL). The Jobs and Economic Impacts (JEDI) model uses the IMPLAN input-output economic impact software system to show the effects of a series of expenditures throughout the economy in a given region[1]. In this instance, the model shows the approximate magnitude of the job creation, earnings and economic output created by the installation and operation of photovoltaic solar projects in New York. Vote Solar ran the model with inputs and assumptions specific to the New York Solar Job Act for each year of the proposed program (2012 through 2025).

Rate impact: In order to quantify the potential rate impacts of the Solar Jobs Act, Vote Solar engaged an independent consultant, Crossborder Energy, to provide detailed cost analysis across New York's residential, commercial and industrial ratepayer classes[2]. This analysis used historical Public Service Commission (PSC) rate data from across all New York utilities and customer classes to extrapolate expected rate trends through the lifetime of the proposed solar legislation. It then calculated the expected cost of solar deployed annually under the Solar Jobs Act based on a number of factors, including: solar energy system size/output, federal and state tax credits, and the economic parameters that apply to a typical residential or commercial customer (e.g. customer's after-tax target IRR, typical cost of financing, and tax and depreciation rates). That cost was then spread across the New York energy customers in various service territories according to the annual solar deployment targets set in the Solar Jobs Act and assuming no alternative compliance payments on the part of utilities.

Job Creation Opportunities

Solar creates more jobs per megawatt-hour produced than any other energy technology.[3] These are high quality jobs across a broad range of education requirements, salary levels and fields. The majority (approximately 75%) are related to construction and installation, representing local jobs that are by their nature non-outsourceable. The remainder (25%) are related to manufacturing. While the solar industry has a global manufacturing base, proximity to market is one significant factor in siting new plants. Establishing a robust and long-term solar market can enhance New York's prospects in attracting manufacturing jobs and establishing R&D partnership with local universities.

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[1] http://www.nrel.gov/analysis/jedi/about_jedi.html

[2] Crossborder Energy is a consulting group that provides expert testimony, strategic advice, market intelligence, and economic consulting services on market and regulatory issues in the natural gas and electric industries. Tom Beach, who prepared the analysis, has served as an expert witness before utility regulatory commissions on over 50 occasions.

[3] *Testimony before the US Senate Hearing on Environment and Public Works*, Prof. Dan Kammen, University of California - Berkeley (Sept. 25 2007).

Analysis indicates that New York can expect impressive job creation under the Solar Job Act's energy goals. Specifically, the state may realize over 22,000 high quality clean energy jobs. The job categories run from those directly associated with solar energy deployment (e.g., installers, electricians, design and engineering support) to induced impacts (e.g., those in supporting industries such as lawyers and financiers). Additionally, the program would create nearly 4,000 jobs that would last for at least 25 years (the average lifespan of an installed system) in maintenance and operations work.

JOB CREATION			
	Direct & Induced	Supported 25 Years	Program Total
Residential – ALL	2,311	432	2,743
Small Commercial	2,077	441	2,518
Large Commercial	5,468	1,158	6,626
Commercial – ALL	7,545	1,599	9,144
Utility	8,471	1,841	10,311
Program Totals	18,326	3,872	22,198

Note that the estimates above represent a relatively conservative outlook as they do not include any manufacturing jobs. If successful in building a new energy economy, the state stands to gain additional jobs associated with the manufacturing of solar system components, from silicon to glass, from racking systems to wiring.

The Legislation is designed to drive expanded business opportunities for local New York businesses up and down the supply chain as well as national and international solar enterprises that are poised to establish new operations in the state and hire additional local contractors. Such businesses will drive rapid and sustained job growth.

Economic Earnings and Output

The total economic impact of developing a local solar industry goes beyond direct new employment opportunities; wages and salaries are reinvested back into the state economy, creating a significant new economic engine for New York State.

WAGES & SALARIES				
Avg. through 2025	Avg. through 2047	Totals through 2025	Totals through 2047	Maximum Year
$552,017,955	$379,099,325	$7,728,251.365	$13,647,575,696	$1,339,297,436

In terms of earnings (i.e.: wages and salaries), the Act can expect to generate, on average, over $550 million per year through 2025, for a program total of over $7.7 billion. The policy would drive additional earnings averaging almost $380 million per year through 2047.

ECONOMIC OUTPUT				
Avg. through 2025	Avg. through 2047	Totals through 2025	Totals through 2047	Maximum Year
$1,480,130,704	$1,001,250,746	$20,721,829,856	$36,045,026,867	$3,584,701,198

In terms of pure economic output, the Solar Jobs Act has the ability to generate at least $20 billion dollars in economic activity through 2025, averaging nearly $1.5 billion per year. Again, because the policy sets a self-sustaining solar market in place, New York can expect an additional $1 billion in annual economic output through 2047. A robust, diverse solar market provides a tremendous opportunity to lift the economy for New Yorkers of all kinds.

Again, we note that in an effort to be conservative in our assumptions, these benefits are calculated without taking into account any potential new manufacturing. Precedent shows that states that make a clear commitment to clean energy see reciprocal investment on behalf of manufacturing companies. For example, in both Arizona and California, the states' strong and transparent policies were fundamental to the decisions of two major global solar manufacturers (China's Suntech Corporation and U.S.-based SunPower Corporation, respectively) to locate their first domestic manufacturing operations in those states. In New York's case, developing tech centers in the state (e.g. Tech City in Kingston, NY) and manufacturing strongholds (e.g. Corning, NY) have already started taking advantage of the nation's growing clean energy economy, and may expect to grow further with a strong state solar policy in place. A report by the Workforce Development Institute of NY[4] shows that approximately 800 manufacturing jobs will result from 100 MW of solar in New York. We would expect numbers greater than that for a 5,000 MW program.

Rate Impacts for NY Solar Jobs Act

Given the Solar Job Act's elegant ramp-up design, New York can benefit from the economic impacts outlined above at minimal impacts to New Yorkers.

Using the set of inputs, assumptions and parameters described in the methodology above, analysis shows that, over the 14-year program period, the average cost for a residential customer is $0.39 per month.

The specific cost to residential customers will vary by service territory, but it is worth noting that the program never exceeds a dollar of monthly investment. Further, these costs do not account for the benefits of adding solar generation to the local distribution

[4] *The Economic Impact of Generating 100 MW of Electricity via PV Investments in New York State.* Workforce Development Institute, September 10, 2008.

grid when it's needed most. These additional peaking resource additions to the grid will increase grid reliability and will likely reduce the need for additional transmission investment in some critical networks (e.g. New York City metropolitan area).

Res. Rate Impact All NYS IOUs (AVG)		
Year	**$/kWh**	**Monthly**
2012	$0.000188	$0.11
2013	$0.000239	$0.14
2014	$0.000282	$0.17
2015	$0.000337	$0.20
2016	$0.000391	$0.23
2017	$0.000444	$0.26
2018	$0.000505	$0.30
2019	$0.000591	$0.35
2020	$0.000691	$0.41
2021	$0.000802	$0.47
2022	$0.000918	$0.54
2023	$0.001079	$0.64
2024	$0.001284	$0.76
2025	$0.001552	$0.92

Conclusion

The economic benefits of solar energy are indisputable. Even during the recent global economic crisis, solar has proven to be a bright spot of job creation and business opportunity in states that have aggressive solar goals in place. National lab studies show that those same state-level policies help drive down the installed cost of solar, in turn driving further demand in a virtuous cycle of market expansion.[5]

The Solar Jobs Act would effectively move New York's solar industry beyond one-off projects and start-stop growth by building a robust new energy economy. The Act provides the clear long-term goals and diverse structure that form the foundations of a stable, self-sustaining market. By allowing the economic pie to be shared across many participants, New Yorkers from Coney Island to Niagara Falls and from Long Island to Buffalo stand to benefit.

[5] *Tracking the Sun II: The Installed Cost of Photovoltaics in the U.S. from 1998-2008.* Wiser, R., G. Barbose, C. Peterman, and N. Darghouth. LBNL-2674E. October 2009.

This is a critical time for New York's solar industry and the policies that support it. Solar module costs have decreased more than 50 percent in the past year alone, and other states are racing ahead with programs that take full advantage of solar's increasingly favorable cost-benefit equation. New York is already losing solar trainees and economic output to neighboring New Jersey, which installs nearly five times as much solar annually. Additionally, the Empire State has a finite window of opportunity to leverage Federal support in the form of stimulus funds and clean energy incentives that are available now.

In short, there has never been a better time for New York to invest in a brighter energy future. The Solar Jobs Act provides a comprehensive solar policy framework that will deliver economic benefits immediately and for generations to come.

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New York League of Conservation Voters
New York Solar Energies Industry Association (NYSEIA)
PACE Energy and Climate Center
Solar Alliance
Workforce Development Institute of New York

About Vote Solar:
The Vote Solar Initiative is a non-profit, grassroots organization working to fight climate change and foster economic opportunity by bringing solar energy into the mainstream. Since 2002 Vote Solar has engaged in state, local and federal advocacy campaigns to remove regulatory barriers and implement the key policies needed to bring solar to scale. A project of the Tides Center, Vote Solar's work is funded through foundation grants and charitable donations.

APPENDIX A: Market Segmentation Assumptions

5 GW Solar Program - Hypothetical Market Segmentatio	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Allocation (% of Prog. Target Installed/Yr)	0.6%	1.3%	1.3%	1.9%	2.3%	2.7%	3.5%	5.5%	7.0%	8.5%	9.0%	13.0%	17.0%	23.0%
Total kW Installed / Yr.	30,000	65,000	65,000	95,000	115,000	135,000	175,000	275,000	350,000	425,000	450,000	650,000	850,000	1,150,000
Total kW Installed Cum	200,000	265,000	330,000	425,000	540,000	675,000	850,000	1,125,000	1,475,000	1,900,000	2,350,000	3,000,000	3,850,000	5,000,000
Residential - Retro kW Target	12150	5850	5850.00	8550	17100	5400	15750	24750	31500	38250	40500	58500	76500	103500
Avg Sys Size (kW_{DC})	5.5	5.7	6.0	6.2	6.5	6.7	7.0	7.3	7.5	7.9	8.2	8.5	8.8	9.2
% Change in System Size	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Number of Systems Installed	2,203	1,020	981	1,378	2,650	805	2,257	3,410	4,173	4,872	4,960	6,889	8,662	11,269
Allocation (% of Total kW_{DC} Installed)	6.1%	2.2%	1.8%	2.0%	3.2%	0.8%	1.9%	2.2%	2.1%	2.0%	1.7%	2.0%	2.0%	2.1%
Avg Installed Cost ($/$W_{DC}$)	$ 7.00	$ 6.17	$ 5.63380	$ 5.1047	$ 4.4536	$ 4.3076	$ 3.9717	$ 3.6056	$ 3.2892	$ 3.0217	$ 2.8157	$ 2.5977	$ 2.3935	$ 2.1976
Learning Rate	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Constant	144.6	144.6	144.6	144.6	144.6	144.6	144.6	144.6	144.6	144.6	144.6	144.6	144.6	144.6
Total Capacity (MW)	12,150.0	18,000.0	23,850.0	32,400.0	49,500.0	54,900.0	70,650.0	95,400.0	126,900.0	165,150.0	205,650.0	264,150.0	340,650.0	444,150.0
% Change in Installed Cost	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Annual Direct O&M Costs ($/$kW_{DC}$)	$ 9.03	$ 8.57	$ 8.15	$ 7.74	$ 7.35	$ 6.98	$ 6.63	$ 6.30	$ 5.99	$ 5.69	$ 5.40	$ 5.13	$ 4.88	$ 4.63
% Change in Direct O&M Cost	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Residential - New kW Target	1350.0	650.0	650.0	950.0	1900.0	600.0	1750.0	2750.0	3500.0	4250.0	4500.0	6500.0	8500.0	11500.0
Avg Sys Size (kW_{DC})	5.8	6.2	6.6	7.0	7.4	7.8	8.3	8.8	9.3	9.9	10.5	11.1	11.7	12.5
% Change in System Size	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Number of Systems Installed	231	105	99	137	258	77	211	313	376	431	430	586	724	923
Allocation (% of Total kW_{DC} Installed)	0.7%	0.2%	0.2%	0.2%	0.4%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Avg Installed Cost ($/$kW_{DC}$)	$6.50000	$5.72745	$ 5.23139	$ 4.74004	$ 4.13550	$ 3.99992	$ 3.68737	$ 3.34809	$ 3.05426	$ 2.80590	$ 2.61462	$ 2.41217	$ 2.22253	$ 2.04059
Learning Rate	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Constant	66.2	66.2	66.2	66.2	66.2	66.2	66.2	66.2	66.2	66.2	66.2	66.2	66.2	66.2
Total Capacity (MW)	1350.0	2000.0	2650.0	3600.0	5500.0	6100.0	7850.0	10600.0	14100.0	18350.0	22850.0	29350.0	37850.0	49350.0
% Change in Installed Cost	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Annual Direct O&M Costs ($/$kW_{DC}$)	$ 9.03	$ 8.57	$ 8.15	$ 7.74	$ 7.35	$ 6.98	$ 6.63	$ 6.30	$ 5.99	$ 5.69	$ 5.40	$ 5.13	$ 4.88	$ 4.63
% Change in Direct O&M Cost	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Small Commercial kW Target	13500.0	6500.0	6500.0	9500.0	19000.0	6000.0	17500.0	27500.0	35000.0	42500.0	45000.0	65000.0	85000.0	115000.0
Avg Sys Size (kW_{DC})	24.5	25.7	27.0	28.3	29.8	31.3	32.8	34.5	36.2	38.0	39.9	41.9	44.0	46.2
% Change in System Size	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Number of Systems Installed	551	253	241	335.1	638.4	192.0	533.3	798.2	967.5	1,118.8	1,128.2	1,552.1	1,933.0	2,490.7
Allocation (% of Total kW_{DC} Installed)	6.8%	2.5%	2.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Avg Installed Cost ($/$kW_{DC}$)	$ 7.5000	$ 6.6086	$ 6.0362	$ 5.4633	$ 4.7717	$ 4.6153	$ 4.2554	$ 3.8632	$ 3.5241	$ 3.2376	$ 3.0169	$ 2.7833	$ 2.5645	$ 2.3545
Learning Rate	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Constant	160.2	160.2	160.2	160.2	160.2	160.2	160.2	160.2	160.2	160.2	160.2	160.2	160.2	160.2
Total Capacity (MW)	13,500.0	20,000.0	26,500.0	36,000.0	55,000.0	61,000.0	78,500.0	106,000.0	141,000.0	183,500.0	228,500.0	293,500.0	378,500.0	493,500.0
% Change in Installed Cost	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Annual Direct O&M Costs ($/$kW_{DC}$)	$ 10.83	$ 10.29	$ 9.77	$ 9.29	$ 8.82	$ 8.38	$ 7.96	$ 7.56	$ 7.18	$ 6.83	$ 6.48	$ 6.16	$ 5.85	$ 5.56
% Change in Direct O&M Cost	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Large Commercial MW Target	40500.0	19500.0	19500.0	28500.0	34500.0	40500.0	52500.0	82500.0	105000.0	127500.0	135000.0	195000.0	255000.0	345000.0
Avg Sys Size (kW_{DC})	567.0	595.4	625.1	656.4	689.2	723.7	759.8	797.8	837.7	879.6	923.6	969.8	1,018.3	1,069.2
% Change in System Size	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Number of Systems Installed	71	33	31	43	50	56	69	103	125	145	146	201	250	323
Allocation (% of Total kW_{DC} Installed)	20.3%	7.4%	5.9%	6.7%	6.4%	6.0%	6.2%	7.3%	7.1%	6.7%	5.7%	6.5%	6.6%	6.9%
Avg Installed Cost ($/$kW_{DC}$)	$6.00000	$5.28688	$ 4.82897	$ 4.37542	$ 4.00187	$ 3.69224	$ 3.40428	$ 3.09054	$ 2.81931	$ 2.59006	$ 2.41349	$ 2.22661	$ 2.05157	$ 1.88362
Learning Rate	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Constant	182.6	182.6	182.6	182.6	182.6	182.6	182.6	182.6	182.6	182.6	182.6	182.6	182.6	182.6
Total Capacity (MW)	40,500.0	60,000.0	79,500.0	108,000.0	142,500.0	183,000.0	235,500.0	318,000.0	423,000.0	550,500.0	685,500.0	880,500.0	1,135,500.0	1,480,500.0
% Change in Installed Cost	8%	8%	8%	8%	8%	8%	8%	8%	8%	108%	208%	308%	408%	508%
Annual Direct O&M Costs ($/$kW_{DC}$)	$ 10.83	$ 10.29	$ 9.77	$ 9.29	$ 8.82	$ 8.38	$ 7.96	$ 7.56	$ 7.18	$ 6.83	$ 6.48	$ 6.16	$ 5.85	$ 5.56
% Change in Direct O&M Cost	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Utility MW Target	67000	32500	32500	47500	57500	67500	87500	137500	175000	212500	225000	325000	425000	575000
Avg Sys Size (kW_{DC})	1,210.0	1,331.0	1,464.1	1,610.5	1,771.6	1,948.7	2,143.6	2,357.9	2,593.7	2,853.1	3,138.4	3,452.3	3,797.5	4,177.2
% Change in System Size	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Number of Systems Installed	55.4	24.4	22.2	29.5	32.5	34.6	40.8	58.3	67.5	74.5	71.7	94.1	111.9	137.7
Allocation (% of Total kW_{DC} Installed)	33.5%	12.3%	9.8%	11.2%	10.6%	10.0%	10.3%	12.2%	11.9%	11.2%	9.6%	10.8%	11.0%	11.5%
Avg Installed Cost ($/$kW_{DC}$)	$ 5.7500	$ 5.0626	$ 4.6223	$ 4.1868	$ 3.8286	$ 3.5318	$ 3.2560	$ 2.9556	$ 2.6960	$ 2.4766	$ 2.3077	$ 2.1290	$ 1.9616	$ 1.8009
Learning Rate	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Constant	205.7	205.7	205.7	205.7	205.7	205.7	205.7	205.7	205.7	205.7	205.7	205.7	205.7	205.7
Total Capacity (MW)	67,000.0	99,500.0	132,000.0	179,500.0	237,000.0	304,500.0	392,000.0	529,500.0	704,500.0	917,000.0	1,142,000.0	1,467,000.0	1,892,000.0	2,467,000.0
% Change in Installed Cost	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Annual Direct O&M Costs ($/$kW_{DC}$)	$ 10.83	$ 10.29	$ 9.77	$ 9.29	$ 8.82	$ 8.38	$ 7.96	$ 7.56	$ 7.18	$ 6.83	$ 6.48	$ 6.16	$ 5.85	$ 5.56
% Change in Direct O&M Cost	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%

APPENDIX B: Methodology - JEDI Model Description

The model used in this analysis is the Job and Economic Development Impact (JEDI) model developed by the National Renewable Energy Laboratory (NREL) for distributed generation solar projects. This model uses the IMPLAN Professional input-output economic model. This type of economic model shows the effects of a series of expenditures throughout the economy in a given region. In this instance, the model shows the jobs, earnings and total economic output in the state created by the construction and operation of a solar project.

This analysis was performed for 5000 MWs of solar. The JEDI model was run for each year in each market segment (existing residential, new construction residential, small commercial, large commercial, and utility-scale), and the results for the runs were tallied together. All financial results are in present value dollars.

APPENDIX C: Crossborder Energy Rate Analysis

Rate impact analysis was using a model developed by Tom Beach and Patrick Maguire at Crossborder Energy. Crossborder Energy provides expert testimony, strategic advice, market intelligence, and economic consulting services on market and regulatory issues in the natural gas and electric industries.

Crossborder ran detailed analysis for the largest investor owned utilities, NYPA, and LIPA, and is available upon request. We provide the utility average here:

Utility Average														
Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
New Installations (MW)														
Residential	12.0	3.9	3.9	5.7	6.9	8.1	10.5	16.5	21.0	25.5	27.0	39.0	51.0	69.0
Small Commercial	12.0	3.9	3.9	5.7	6.9	8.1	10.5	16.5	21.0	25.5	27.0	39.0	51.0	69.0
Large Commercial	36.0	11.7	11.7	17.1	20.7	24.3	31.5	49.5	63.0	76.5	81.0	117.0	153.0	207.0
Utility-scale	60.0	19.5	19.5	28.5	34.5	40.5	52.5	82.5	105.0	127.5	135.0	195.0	255.0	345.0
Program Total	120.0	39.0	39.0	57.0	69.0	81.0	105.0	165.0	210.0	255.0	270.0	390.0	510.0	690.0
Cumulative Installations (MW) (with degradation over time)														
Residential	12.0	15.8	19.7	25.3	32.0	40.0	50.3	66.5	87.2	112.3	138.7	177.0	227.1	295.0
Small Commercial	12.0	15.8	19.7	25.3	32.0	40.0	50.3	66.5	87.2	112.3	138.7	177.0	227.1	295.0
Large Commercial	36.0	47.5	59.0	75.8	96.1	119.9	150.8	199.6	261.6	336.8	416.1	531.0	681.3	884.9
Utility-scale	60.0	79.2	98.3	126.3	160.2	199.9	251.4	332.6	436.0	561.3	693.5	885.0	1,135.6	1,474.9
Program Total	120.0	158.4	196.6	252.6	320.4	399.8	502.8	665.2	871.9	1,122.6	1,386.9	1,770.0	2,271.2	2,949.8
State REC Incentives ($/kWh)														
Residential	$ 0.2057	$ 0.1756	$ 0.1459	$ 0.1165	$ 0.0873	$ 0.0584	$ 0.0297	$ 0.0011	$ -	$ -	$ -	$ -	$ -	$ -
Small Commercial	$ 0.1162	$ 0.0900	$ 0.0640	$ 0.0382	$ 0.0126	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Large Commercial	$ 0.1142	$ 0.0903	$ 0.0665	$ 0.0429	$ 0.0195	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Wholesale Contract / FIT ($/kWh)														
Utility	$ 0.2509	$ 0.2414	$ 0.2322	$ 0.2234	$ 0.2149	$ 0.2068	$ 0.1990	$ 0.1915	$ 0.1843	$ 0.1774	$ 0.1774	$ 0.1774	$ 0.1774	$ 0.1774
Utility Rates ($/kWh)														
Residential	$ 0.1803	$ 0.1869	$ 0.1938	$ 0.2010	$ 0.2085	$ 0.2162	$ 0.2242	$ 0.2325	$ 0.2411	$ 0.2500	$ 0.2592	$ 0.2688	$ 0.2788	$ 0.2891
Small Commercial	$ 0.1776	$ 0.1842	$ 0.1910	$ 0.1981	$ 0.2054	$ 0.2130	$ 0.2209	$ 0.2291	$ 0.2376	$ 0.2463	$ 0.2555	$ 0.2649	$ 0.2747	$ 0.2849
Large Commercial	$ 0.1606	$ 0.1666	$ 0.1728	$ 0.1791	$ 0.1858	$ 0.1926	$ 0.1998	$ 0.2072	$ 0.2148	$ 0.2228	$ 0.2310	$ 0.2396	$ 0.2484	$ 0.2576
Avoided Cost ($/kWh)														
Residential/Commercial	$ 0.1162	$ 0.1204	$ 0.1246	$ 0.1287	$ 0.1328	$ 0.1371	$ 0.1414	$ 0.1458	$ 0.1503	$ 0.1551	$ 0.1599	$ 0.1653	$ 0.1709	$ 0.1767
Utility	$ 0.1162	$ 0.1204	$ 0.1246	$ 0.1287	$ 0.1328	$ 0.1371	$ 0.1414	$ 0.1458	$ 0.1503	$ 0.1551	$ 0.1599	$ 0.1653	$ 0.1709	$ 0.1767
Load Forecast (MWh)	130,424,507	132,159,112	133,580,155	135,107,742	136,652,797	138,215,522	139,796,117	141,394,788	143,011,741	144,647,184	146,301,330	147,974,393	149,666,588	151,378,135
State REC Incentive Costs														
Residential	$ 2,949,523	$ 3,753,128	$ 4,414,172	$ 5,185,353	$ 5,879,448	$ 6,415,505	$ 6,756,063	$ 6,744,378	$ 6,710,656	$ 6,677,103	$ 6,643,718	$ 6,610,499	$ 6,577,446	$ 6,544,559
Small Commercial	$ 1,665,278	$ 2,076,159	$ 2,364,004	$ 2,612,465	$ 2,703,092	$ 2,689,576	$ 2,676,128	$ 2,662,748	$ 2,649,434	$ 2,636,187	$ 2,623,006	$ 2,609,891	$ 2,596,842	$ 2,583,857
Large Commercial	$ 4,913,180	$ 6,150,342	$ 7,049,208	$ 7,890,808	$ 8,332,967	$ 8,291,302	$ 8,249,846	$ 8,208,596	$ 8,167,553	$ 8,126,716	$ 8,086,082	$ 8,045,652	$ 8,005,423	$ 7,965,396
Utility	$ 11,242,844	$ 14,467,477	$ 17,313,047	$ 20,979,334	$ 24,813,990	$ 28,618,077	$ 32,684,575	$ 37,767,510	$ 42,542,842	$ 46,295,541	$ 49,345,129	$ 52,374,189	$ 54,417,626	$ 54,497,515
Utility Cost Impact														
Residential	$ 917,873	$ 1,258,545	$ 1,625,988	$ 2,182,170	$ 2,894,648	$ 3,777,944	$ 4,974,432	$ 6,888,480	$ 9,451,531	$ 12,730,445	$ 16,451,655	$ 21,882,775	$ 29,263,936	$ 39,611,281
Small Commercial	$ 880,247	$ 1,207,041	$ 1,559,696	$ 2,093,839	$ 2,778,488	$ 3,627,632	$ 4,778,396	$ 6,619,491	$ 9,085,930	$ 12,242,333	$ 15,826,268	$ 21,055,131	$ 28,162,665	$ 38,128,018
Large Commercial	$ 1,910,034	$ 2,620,901	$ 3,391,665	$ 4,566,079	$ 6,079,569	$ 7,963,750	$ 10,528,064	$ 14,634,543	$ 20,157,597	$ 27,247,579	$ 35,333,435	$ 47,092,063	$ 63,100,676	$ 85,578,224
Utility	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Average Rate Impact ($/kWh)														
Total	$ 0.000188	$ 0.000239	$ 0.000282	$ 0.000337	$ 0.000391	$ 0.000444	$ 0.000505	$ 0.000591	$ 0.000691	$ 0.000802	$ 0.000918	$ 0.001079	$ 0.001284	$ 0.001552