

# **EDC Solar Long-term Contracting Program Analysis**

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Center for Energy, Economic and Environmental Policy  
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## **I. Introduction**

### *Purpose of the Report*

In September 2011, the New Jersey Board of Public Utilities (BPU) requested that the Center for Energy, Economic and Environmental Policy (CEEPP) review the New Jersey Electric Distribution Company (EDC) Solar Long-term Contracting Programs to determine the net exposure of ratepayers. The review undertaken by CEEPP is not a review of New Jersey solar programs in general or a review of the New Jersey Solar Renewable Energy Certificate<sup>1</sup> (SREC) program in particular, but a review of the EDC Solar Long-term Contracting Program specifically.

To do this, CEEPP determined the specific costs and revenues associated with the solar contracting program for each EDC and then calculated the total combined program costs per SREC. Then using four SREC proceeds scenarios, CEEPP calculated the total ratepayer exposure over the full-term of the contracts. This review does not include the environmental benefits of solar energy, the impacts on the transmission and distribution system, or any other costs or benefits of solar other than those directly related to the EDC Solar Long-term Contracting Program.

### *Program Description: ACE, JCP&L and Rockland Electric*

ACE, JCP&L and Rockland Electric operate a joint solar project solicitation program which is administrated through NERA Economic Consulting (NERA). The solicitation takes the form of an RFP process within which the solar projects offer SRECs for sale at a certain price over the life of the contract (10-15 years). The offers are anonymously ranked based on net present value by the solicitation manager. The most-competitively priced projects are awarded up to the program size for each utility. Once the projects are installed and operational they begin producing SRECs which are transferred to the EDC for the agreed-upon price. The EDC sells the SRECs through a semi-quarterly auction managed by NERA in conjunction with PSE&G. Any net revenue from the auctions is used to reduce the ratepayer impact.

### *Program Description: PSE&G*

PSE&G's first solar financing program (Solar Loan I) was filed with the BPU in April 2008, before the official order requiring them to develop such a program. However, PSE&G updated their solar loan program (Solar Loan II) in November of 2009 to make the program more market-based. The Solar Loan II program awards long-term loan contracts covering 40-60% of the cost of qualifying projects with loan repayment in the form of either cash or SRECs, at the borrower's discretion. PSE&G then auctions the SRECs through a semi-quarterly auction managed by NERA in conjunction with the other three EDCs. Any net revenue from the auctions is used to reduce the ratepayer impact. The program will promote market-based solar generation through establishing a floor SREC price, or a guaranteed minimum value that PSE&G will apply to SRECs submitted as loan payment.<sup>2</sup>

PSE&G also manages a solar financing program called "Solar 4 All" where they have committed to building approximately 40 MW of centralized solar capacity in solar systems 500 kW or larger and 40

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<sup>1</sup> An SREC is defined by the 2011 Solar Energy Advancement and Fair Competition Act (SEAFCA) as "the environmental benefits or attributes of one megawatt-hour (MWh) of solar electric generation."

<sup>2</sup> The SREC price for the purpose of loan repayment will be the SREC Floor Price or the SREC market value, whichever value is greater.

MW of neighborhood solar by installing solar units on utility and street light poles in their service territory. All solar systems installed through this program will be grid-connected to the PSE&G distribution system and will be owned by PSE&G. SRECs produced through the PSE&G-owned solar systems are auctioned similarly to the Solar Loan I and II programs.

### *Structure of the Report*

The report begins with a summary comparison of the findings across all four EDCs and proceeds with detailed reports and calculations for each EDC individually. Appendix A provides a more detailed description of the process used in this analysis and Appendix B lists the resources used. Appendix C lists the Solar Alternative Compliance Payment (SACP) schedule<sup>3</sup> for years 2010-2026 that was used in the analysis.

Within each section that details the program analysis for each individual EDC the information is split into three parts. First the data collected from each EDC is summarized including the results of each solicitation and auction period and the associated costs and revenues. Second the solicitation- and auction-related costs are calculated per SREC for each EDC. Lastly, the ratepayer exposure related to each EDC's solar long-term contracting program is calculated and summarized.

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<sup>3</sup> See Appendix C for the full SACP schedule (Source: NJ BPU)

## II. Comparison of Analysis Inputs and Results

The tables below each present the inputs and results for the analysis of the Solar Long-term Contracting Program for three New Jersey EDCs: Atlantic City Electric (ACE), Jersey Central Power & Light (JCP&L), and Rockland Electric Company (RE). Table 1a shows the results of each solicitation, including the awarded capacity in MW, the number of projects awarded, the contracted capacity in MW and the weighted average SREC purchase cost for ACE, JCP&L and RE. Table 1b shows the solicitation results for PSE&G in terms of MW awarded, MW contracted, and MW installed in each applicable energy year.<sup>4</sup> The weighted average bid price per SREC for ACE, JCP&L and RE combined is \$374.40/SREC with a relatively small range across EDCs of \$14.00/SREC.

**Table 1a: Solicitation Results for ACE, JCP&L and RE**

| Solicitation        | MW Awarded       |             |            | Number of Projects Awarded |            |           | MW Contracted |             |            | Weighted Average Bid Price <sup>5</sup> (\$/SREC) |                 |                     |
|---------------------|------------------|-------------|------------|----------------------------|------------|-----------|---------------|-------------|------------|---|-----------------|---------------------|
|                     | ACE              | JCP&L       | RE         | ACE                        | JCP&L      | RE        | ACE           | JCP&L       | RE         | ACE   | JCP&L           | RE                  |
| #1 (August 2009)    | 0.0              | 1.6         | 0.0        | 0                          | 7          | 0         | 0.0           | 1.6         | 0.0        | N/A   | \$383.99        | N/A                 |
| #2 (December 2009)  | 2.2              | 4.2         | 0.2        | 10                         | 27         | 2         | 2.0           | 2.9         | 0.1        | \$372.11  | \$382.03        | \$460.00            |
| #3 (March 2010)     | 0.1              | 9.2         | 0.0        | 1                          | 58         | 0         | 0.1           | 6.5         | 0.0        | ██████ <sup>6</sup>                               | \$421.63        | N/A                 |
| #4 (June 2010)      | 0.4              | 3.5         | 0.0        | 5                          | 15         | 0         | 0.4           | 3.4         | 0.0        | \$431.36  | \$449.17        | N/A                 |
| #5 (October 2010)   | 0.4              | 8.6         | 0.5        | 2                          | 49         | 4         | 0.4           | 8.1         | 0.5        | \$463.37  | \$452.33        | \$456.37            |
| #6 (February 2011)  | 10.5             | 6.8         | 0.8        | 60                         | 41         | 5         | 7.6           | 4.6         | 0.8        | \$423.94  | \$378.63        | \$453.75            |
| #7 (June 2011)      | 3.5 <sup>7</sup> | 6.0         | 2.3        | 17                         | 35         | 11        | 3.0           | 6.0         | 2.2        | \$321.66  | \$264.14        | \$334.87            |
| #8 (September 2011) | 6.0              | 11.0        | 0.3        | 19                         | 60         | 1         | 6.0           | 6.8         | 0.3        | \$212.62  | \$215.17        | ██████ <sup>8</sup> |
| <b>Total</b>        | <b>23.1</b>      | <b>50.9</b> | <b>4.1</b> | <b>114</b>                 | <b>292</b> | <b>23</b> | <b>19.5</b>   | <b>40.0</b> | <b>3.9</b> | <b>\$372.40</b>                                   | <b>\$368.40</b> | <b>\$382.40</b>     |

**Table 1b: PSE&G Solicitation Results 2008-2012**

| Energy Year <sup>9</sup> | Solar Loan I (SLI) |               |              | Solar Loan II (SLII) |               |              | Solar 4 All |               |              |
|--------------------------|--------------------|---------------|--------------|----------------------|---------------|--------------|-------------|---------------|--------------|
|                          | MW Awarded         | MW Contracted | MW Installed | MW Awarded           | MW Contracted | MW Installed | MW Awarded  | MW Contracted | MW Installed |
| <b>2008</b>              | 3.9                |               |              |                      |               |              |             |               |              |
| <b>2009</b>              | 13.4               | 2.8           | 2.8          |                      |               |              |             |               |              |
| <b>2010</b>              | 4.9                | 11.2          | 11.2         | 1.4                  | 0.0           | 0.0          | 29.9        | 5.6           | 5.6          |
| <b>2011</b>              |                    | 6.1           | 6.1          | 28.0                 | 4.6           | 4.6          | 16.9        | 35.3          | 35.3         |
| <b>2012</b>              |                    | 1.3           | 1.3          | 2.6                  | 3.6           | 3.6          | 4.0         | 5.1           | 5.1          |
| <b>Total</b>             | <b>22.2</b>        | <b>21.4</b>   | <b>21.4</b>  | <b>32.0</b>          | <b>8.3</b>    | <b>8.3</b>   | <b>50.8</b> | <b>46.0</b>   | <b>46.0</b>  |

<sup>4</sup> PSE&G's loans are done internally on a rolling basis, so the MW awarded and contracted cannot be compared to the solicitation periods detailed in Table 1a. The average bid price value also does not apply to PSE&G.

<sup>5</sup> Weighted average of all awarded projects

<sup>6</sup> Note: some data not provided due to confidentiality.

<sup>7</sup> The ACE reported awarded capacity was 3.916 MW for solicitation #7 (June 2011), but NERA records show the capacity as 3.516 MW. The NERA value is used for these calculations.

<sup>8</sup> Note: some data not provided due to confidentiality.

<sup>9</sup> As defined in the New Jersey Solar Energy Advancement and Fair Competition Act: "The 12-month period from June 1st through May 31st and shall be numbered according to the calendar year in which it ends."

Table 2 shows the results of each auction as reported by all four EDCs including the number of SRECs auctioned and the auction price. Again the overall number of SRECs auctioned cannot be compared across utilities because the goal capacity for each utility is set by the BPU. The auction price is the clearing price that applies to all SRECs sold during that auction period. The weighted average SREC auction price<sup>10</sup> for all seven auction periods is reported for each utility as well.

**Table 2: Auction Results 2009-2012**

| Auction            | SRECs Auctioned |              |            |               | SREC Auction Price |
|--------------------|-----------------|--------------|------------|---------------|--------------------|
|                    | ACE             | JCP&L        | RE         | PSE&G         |                    |
| #1 (August 2009)   | N/A             | N/A          | N/A        | 1,352         | \$688.52           |
| #2 (February 2010) | N/A             | N/A          | N/A        | 2,800         | \$685.06           |
| #3 (July 2010)     | N/A             | N/A          | N/A        | 5,750         | \$688.03           |
| #4 (October 2010)  | N/A             | N/A          | N/A        | 5,850         | \$665.12           |
| #5 (April 2011)    | 189             | 580          | 15         | 6,766         | \$669.69           |
| #6 (July 2011)     | 404             | 1,528        | 23         | 19,261        | \$475.00           |
| #7 (August 2011)   | 331             | 791          | 8          | 10,970        | \$479.75           |
| #8 (October 2011)  | 915             | 3,140        | 102        | 28,796        | \$227.03           |
| <b>Total</b>       | <b>1,839</b>    | <b>6,039</b> | <b>148</b> | <b>81,545</b> |                    |

|   | ACE      | JCP&L    | RE       | PSE&G    |
|---|----------|----------|----------|----------|
| <b>Overall Weighted Average Auction Price</b> | \$372.48 | \$366.17 | \$324.09 | \$451.12 |

Table 3 shows the various program administration costs compared across EDCs. The categories of cost reported include NERA<sup>11</sup> solicitation management costs, NERA auction management costs, and administrative costs internal to each utility. NERA solicitation management costs do not apply to the PSE&G solar loan programs because the loan processing is done internally by the utility.

**Table 3: Program Administration Costs<sup>12</sup>**

| Energy Year  | NERA Solicitation Manager Costs |                    |                  |            | NERA Auction Manager Costs <sup>13</sup> |                  | Internal Utility Admin Costs |                  |                 |                    |
|--------------|---------------------------------|--------------------|------------------|------------|--|------------------|------------------------------|------------------|-----------------|--------------------|
|              | ACE                             | JCP&L              | RE               | PSE&G      | ACE, JCP&L, RE Combined                  | PSE&G            | ACE                          | JCP&L            | RE              | PSE&G              |
| 2009         |                                 |                    |                  | N/A        |  | \$0              |                              |                  |                 | \$1,087,816        |
| 2010         | \$237,220                       | \$584,014          | \$47,642         | N/A        | \$0                                      | \$190,051        | \$31,356                     | \$65,954         | \$393           | \$1,229,777        |
| 2011         | \$164,680                       | \$542,345          | \$46,134         | N/A        | \$13,751                                 | \$365,180        | \$55,120                     | \$82,995         | \$12,886        | \$1,416,399        |
| 2012         | \$222,226                       | \$390,863          | \$35,078         | N/A        | \$37,102                                 | \$255,398        | \$24,881                     | \$58,063         | \$9,631         | \$831,268          |
| <b>Total</b> | <b>\$624,126</b>                | <b>\$1,517,222</b> | <b>\$128,854</b> | <b>N/A</b> | <b>\$50,853</b>                          | <b>\$810,629</b> | <b>\$111,357</b>             | <b>\$207,012</b> | <b>\$22,910</b> | <b>\$4,565,260</b> |

<sup>10</sup> The weighted average bid price is based on the SREC auction price for all applicable auction periods.

<sup>11</sup> NERA Economic Consulting (NERA) is the company hired as solicitation and auction manager for all four EDCs (if applicable).

<sup>12</sup> All cost data is as of October 2011 except for PSE&G whose data was updated more recently in January 2012.

<sup>13</sup> NERA auction manager costs are reported as ACE, JCP&L, RE combined and PSE&G separately because the NERA invoices were reported in this manner.

Table 4 shows the total combined program costs per SREC compared across EDCs including solicitation cost, auction cost, and “SREC Transaction Fee”. It is important to note that the solicitation cost, internal utility admin cost and total combined program costs are calculated as the cost per contracted SREC while the auction cost is calculated as the cost per auctioned SREC. These three cost categories were summed to determine the total combined program cost per SREC for each EDC. Overall, the “SREC Transaction Fee” accounts for around 90% of the total program cost per SREC contracted for ACE, JCP&L, and RE.

**Table 4: Total Program Administration Costs per SREC**

| Energy Year    | Total Solicitation Cost (\$/SREC) |               |               |                     | Total Auction Cost (\$/SREC) |               |               |               |               |               |
|----------------|-----------------------------------|---------------|---------------|---------------------|------------------------------|---------------|---------------|---------------|---------------|---------------|
|                | ACE                               | JCP&L         | RE            | PSE&G <sup>14</sup> | ACE                          | JCP&L         | RE            | PSE&G         |               |               |
|                |                                   |               |               |                     |                              |               |               | SLI           | SLII          | Total         |
| 2009           |                                   |               |               | N/A                 |                              |               |               | \$9.62        |               | \$9.62        |
| 2010           | \$9.17                            | \$4.37        | \$42.77       | N/A                 | \$9.62                       | \$9.62        | \$9.62        | \$9.62        | \$9.62        | \$9.62        |
| 2011           | \$1.60                            | \$2.73        | \$2.80        | N/A                 | \$9.62                       | \$9.62        | \$9.62        | \$9.62        | \$9.62        | \$9.62        |
| 2012           | \$2.01                            | \$2.47        | \$1.16        | N/A                 | \$9.62                       | \$9.62        | \$9.62        | \$9.62        | \$9.62        | \$9.62        |
| <b>Average</b> | <b>\$2.61</b>                     | <b>\$3.09</b> | <b>\$2.70</b> | <b>N/A</b>          | <b>\$9.62</b>                | <b>\$9.62</b> | <b>\$9.62</b> | <b>\$9.62</b> | <b>\$9.62</b> | <b>\$9.62</b> |

**Table 4 Continued: Total Program Administration Costs per SREC**

| Energy Year    | Internal Utility Admin Costs (\$/SREC) |               |               |               |                |               | SREC Transaction Fee (\$/SREC) |                |                |            |
|----------------|--|---------------|---------------|---------------|----------------|---------------|--------------------------------|----------------|----------------|------------|
|                | ACE                                    | JCP&L         | RE            | PSE&G         |                |               | ACE                            | JCP&L          | RE             | PSE&G      |
|                |  |               |               | SLI           | SLII           | Total         |                                |                |                |            |
| 2009           |  |               |               | \$21.37       |                | \$21.37       |                                |                |                | N/A        |
| 2010           | \$1.21                                 | \$0.49        | \$0.35        | \$4.15        | \$3,095.59     | \$6.01        | \$22.59                        | \$31.21        | \$39.11        | N/A        |
| 2011           | \$0.54                                 | \$0.42        | \$0.78        | \$2.68        | \$14.12        | \$7.52        | \$22.59                        | \$31.21        | \$39.11        | N/A        |
| 2012           | \$0.22                                 | \$0.37        | \$0.32        | \$4.87        | \$11.34        | \$9.55        | \$22.59                        | \$31.21        | \$39.11        | N/A        |
| <b>Average</b> | <b>\$0.47</b>                          | <b>\$0.42</b> | <b>\$0.48</b> | <b>\$6.04</b> | <b>\$15.55</b> | <b>\$8.60</b> | <b>\$22.59</b>                 | <b>\$31.21</b> | <b>\$39.11</b> | <b>N/A</b> |

**Table 4 Continued: Total Program Administration Costs per SREC**

| Energy Year  | Total Combined Program Costs (\$/SREC) |                |                |                |                |                |
|--------------|--|----------------|----------------|----------------|----------------|----------------|
|              | ACE                                    | JCP&L          | RE             | PSE&G          |                |                |
|              |  |                |                | SLI            | SLII           | Total          |
| 2009         |  |                |                | \$30.99        |                | \$30.99        |
| 2010         | \$42.59                                | \$45.69        | \$91.85        | \$13.77        | \$3,105.20     | \$15.63        |
| 2011         | \$34.35                                | \$43.98        | \$52.31        | \$12.30        | \$23.74        | \$17.14        |
| 2012         | \$34.44                                | \$43.67        | \$50.21        | \$14.48        | \$20.96        | \$19.16        |
| <b>Total</b> | <b>\$35.28</b>                         | <b>\$44.34</b> | <b>\$51.91</b> | <b>\$15.66</b> | <b>\$25.17</b> | <b>\$18.22</b> |

<sup>14</sup> PSE&G does not report a solicitation cost for NERA services because loan processing for the Solar Loan I and Solar Loan II programs are handled internally.



Table 5a shows the weighted average solicitation price per SREC awarded in the solicitation process for each utility<sup>15</sup>. This value represents the average amount per SREC that the utility has committed to pay the winning bidder for the SRECs produced by their project over a certain amount of time, on behalf of the ratepayers. Table 5b shows the floor price schedule PSE&G uses as a minimum value for SRECs created by solar programs in their Solar Loan I and Solar Loan II programs.

**Table 5a: Weighted Average Awarded Bid Prices**

| Energy Year | Weighted Average Awarded Bid Price (\$/MWh) |       |       |
|-------------|---|-------|-------|
|             | ACE   | JCP&L | RE    |
| 2010        | \$373                                       | \$407 | \$460 |
| 2011        | \$425                                       | \$423 | \$384 |
| 2012        | \$253                                       | \$232 | \$380 |

**Table 5b: PSE&G Solar Loan Programs Floor Price Schedule<sup>16</sup>**

| Energy Year | Solar Loan I | Solar Loan II |                                  |                                       |                                       |
|-------------|--------------|---------------|----------------------------------|---------------------------------------|---------------------------------------|
|             |              | Residential   | Small Non-Residential (≤ 150 kW) | Medium Non-Residential (150 - 500 kW) | Large Non-Residential (500 kW - 2 MW) |
| 2008        | \$475        | N/A           | N/A                              | N/A                                   | N/A                                   |
| 2009        | \$475        | N/A           | N/A                              | N/A                                   | N/A                                   |
| 2010        | \$475        | \$450         | \$410                            | \$380                                 | N/A                                   |
| 2011        | \$475        | \$428         | \$388                            | \$358                                 | \$345                                 |
| 2012        | \$475        | \$400         | \$360                            | \$330                                 | \$325                                 |

Table 6 shows the total number of SRECs contracted through each utility's program over the 10-year contract period. For ACE, JCP&L and RE, the total solicitation obligations were estimated by multiplying the incremental SRECs contracted each year by the weighted average awarded solicitation price for that year and summing them up. For PSE&G the solicitation obligations were estimated by taking the total number of SRECs contracted in the energy year and multiplying it by the appropriate floor price from Table 5b and summing them up. These values are *not* net present values.

<sup>15</sup> The analysis in this report was performed on awarded contracts within the EDC Programs. The calculated values, such as solicitation obligations, program costs, and ratepayer exposure, based on SREC purchases will be reduced in the future based on the number of awarded projects that are actually installed and the resulting price and quantity of SRECs actually purchased. At the time of this report the final installed capacity for all the EDC programs was not fully available. CEEEP and BPU staff may true up this report in the future when the full installed capacity of the awarded projects is finalized.

<sup>16</sup> Source for PSE&G's Solar Loan II Floor Price Schedule: [http://www.pseg.com/home/save/solar/srec\\_prices.jsp](http://www.pseg.com/home/save/solar/srec_prices.jsp). The EY 2011 floor price values for the Solar Loan II Program are averages of the two floor price values established for projects accepted during that energy year.

**Table 6: Program Obligations**

| Energy Year               | Total SRECs    |                |               |                | Solicitation Obligations <sup>17</sup> |                      |                     |                      |
|---------------------------|----------------|----------------|---------------|----------------|--|----------------------|---------------------|----------------------|
|                           | ACE            | JCP&L          | RE            | PSE&G          | ACE                                    | JCP&L                | RE                  | PSE&G                |
|                           |                |                |               | SL I + SL II   |  |                      |                     | SL I + SL II         |
| 2009                      | N/A            | N/A            | N/A           | 3,397          | N/A                                    | N/A                  | N/A                 | \$1,613,636          |
| 2010                      | 2,588          | 13,368         | 111           | 17,194         | \$964,176                              | \$5,435,400          | \$51,224            | \$8,166,904          |
| 2011                      | 12,865         | 33,235         | 1,759         | 30,304         | \$5,336,812                            | \$13,832,566         | \$678,423           | \$13,777,224         |
| 2012                      | 23,939         | 49,056         | 4,770         | 36,387         | \$8,138,521                            | \$17,498,063         | \$1,822,641         | \$16,078,993         |
| 2013                      | 23,939         | 49,056         | 4,770         | 36,387         | \$8,138,521                            | \$17,498,063         | \$1,822,641         | \$16,078,993         |
| 2014                      | 23,939         | 49,056         | 4,770         | 36,387         | \$8,138,521                            | \$17,498,063         | \$1,822,641         | \$16,078,993         |
| 2015                      | 23,939         | 49,056         | 4,770         | 36,387         | \$8,138,521                            | \$17,498,063         | \$1,822,641         | \$16,078,993         |
| 2016                      | 23,939         | 49,056         | 4,770         | 36,387         | \$8,138,521                            | \$17,498,063         | \$1,822,641         | \$16,078,993         |
| 2017                      | 23,939         | 49,056         | 4,770         | 36,387         | \$8,138,521                            | \$17,498,063         | \$1,822,641         | \$16,078,993         |
| 2018                      | 23,939         | 49,056         | 4,770         | 36,387         | \$8,138,521                            | \$17,498,063         | \$1,822,641         | \$16,078,993         |
| 2019                      | 23,939         | 49,056         | 4,770         | 36,375         | \$8,138,521                            | \$17,498,063         | \$1,822,641         | \$16,073,168         |
| 2020                      | 21,352         | 35,688         | 4,659         | 35,884         | \$7,174,345                            | \$12,062,663         | \$1,771,417         | \$15,840,458         |
| 2021                      | 11,074         | 15,821         | 3,011         | 34,204         | \$2,801,709                            | \$3,665,498          | \$1,144,218         | \$15,094,225         |
| 2022                      | N/A            | N/A            | N/A           | 33,370         | N/A                                    | N/A                  | N/A                 | \$14,758,804         |
| 2023                      | N/A            | N/A            | N/A           | 33,370         | N/A                                    | N/A                  | N/A                 | \$14,758,804         |
| 2024                      | N/A            | N/A            | N/A           | 29,985         | N/A                                    | N/A                  | N/A                 | \$13,150,994         |
| 2025                      | N/A            | N/A            | N/A           | 16,679         | N/A                                    | N/A                  | N/A                 | \$6,830,435          |
| 2026                      | N/A            | N/A            | N/A           | 5,249          | N/A                                    | N/A                  | N/A                 | \$1,966,348          |
| <b>Total<sup>18</sup></b> | <b>239,393</b> | <b>490,560</b> | <b>47,704</b> | <b>530,725</b> | <b>\$81,385,210</b>                    | <b>\$174,980,634</b> | <b>\$18,226,408</b> | <b>\$234,583,952</b> |

Table 7 shows the net ratepayer refunds or payments<sup>19</sup> as a result of the Solar Long-term Contracting Program under four different SREC price scenarios. At a steady SREC price of \$200, the program will have a combined deficit of over \$115 million. However, if all remaining SRECs are valued based on the assumed schedule of the Solar Alternative Compliance Payment (SACP), the programs will show a combined surplus of almost \$177 million. This shows that the type and amount of ratepayer impact from the Solar Long-term Contracting Program depends almost exclusively on the SREC price that is assumed over the term of the program. This analysis is only one small part of how SREC prices affect ratepayers and is not meant to suggest that SREC prices should be higher.

<sup>17</sup> These values represent program obligations before applicable auction proceeds.

<sup>18</sup> Note: Total values are not net present valued.

<sup>19</sup> See Figure 1 in Appendix A for a graphic visualization of the ratepayer impact scenarios.

**Table 7: Net Ratepayer Refund or Payment under Various SREC Price Scenarios**

| Energy Year  | Scenario 1: SREC Price = \$0 |                        |                       |                        | Scenario 2: SREC Price = \$200 |                       |                      |                        |
|--------------|------------------------------|------------------------|-----------------------|------------------------|--------------------------------|-----------------------|----------------------|------------------------|
|              | ACE                          | JCP&L                  | RE                    | PSE&G                  | ACE                            | JCP&L                 | RE                   | PSE&G                  |
| 2009         | N/A                          | N/A                    | N/A                   | (\$1,613,636)          | N/A                            | N/A                   | N/A                  | (\$934,210)            |
| 2010         | (\$964,176)                  | (\$5,435,400)          | (\$51,224)            | (\$5,317,856)          | (\$446,635)                    | (\$2,761,848)         | (\$28,953)           | (\$2,709,431)          |
| 2011         | (\$5,463,384)                | (\$14,220,986)         | (\$668,468)           | (\$1,398,977)          | (\$2,928,197)                  | (\$7,689,898)         | (\$339,615)          | \$988,692              |
| 2012         | (\$8,696,951)                | (\$19,320,953)         | (\$1,860,561)         | \$4,881,925            | (\$4,239,085)                  | (\$10,601,553)        | (\$933,088)          | \$353,982              |
| 2013         | (\$8,138,521)                | (\$17,498,063)         | (\$1,822,641)         | (\$16,078,993)         | (\$3,350,655)                  | (\$7,686,863)         | (\$868,568)          | (\$8,801,536)          |
| 2014         | (\$8,138,521)                | (\$17,498,063)         | (\$1,822,641)         | (\$16,078,993)         | (\$3,350,655)                  | (\$7,686,863)         | (\$868,568)          | (\$8,801,536)          |
| 2015         | (\$8,138,521)                | (\$17,498,063)         | (\$1,822,641)         | (\$16,078,993)         | (\$3,350,655)                  | (\$7,686,863)         | (\$868,568)          | (\$8,801,536)          |
| 2016         | (\$8,138,521)                | (\$17,498,063)         | (\$1,822,641)         | (\$16,078,993)         | (\$3,350,655)                  | (\$7,686,863)         | (\$868,568)          | (\$8,801,536)          |
| 2017         | (\$8,138,521)                | (\$17,498,063)         | (\$1,822,641)         | (\$16,078,993)         | (\$3,350,655)                  | (\$7,686,863)         | (\$868,568)          | (\$8,801,536)          |
| 2018         | (\$8,138,521)                | (\$17,498,063)         | (\$1,822,641)         | (\$16,078,993)         | (\$3,350,655)                  | (\$7,686,863)         | (\$868,568)          | (\$8,801,536)          |
| 2019         | (\$8,138,521)                | (\$17,498,063)         | (\$1,822,641)         | (\$16,073,168)         | (\$3,350,655)                  | (\$7,686,863)         | (\$868,568)          | (\$8,798,163)          |
| 2020         | (\$7,174,345)                | (\$12,062,663)         | (\$1,771,417)         | (\$15,840,458)         | (\$2,904,020)                  | (\$4,925,015)         | (\$839,615)          | (\$8,663,566)          |
| 2021         | (\$2,801,709)                | (\$3,665,498)          | (\$1,144,218)         | (\$15,094,225)         | (\$586,830)                    | (\$501,386)           | (\$541,998)          | (\$8,253,365)          |
| 2022         | N/A                          | N/A                    | N/A                   | (\$14,758,804)         | N/A                            | N/A                   | N/A                  | (\$8,084,735)          |
| 2023         | N/A                          | N/A                    | N/A                   | (\$14,758,804)         | N/A                            | N/A                   | N/A                  | (\$8,084,735)          |
| 2024         | N/A                          | N/A                    | N/A                   | (\$13,150,994)         | N/A                            | N/A                   | N/A                  | (\$7,153,898)          |
| 2025         | N/A                          | N/A                    | N/A                   | (\$6,830,435)          | N/A                            | N/A                   | N/A                  | (\$3,494,627)          |
| 2026         | N/A                          | N/A                    | N/A                   | (\$1,966,348)          | N/A                            | N/A                   | N/A                  | (\$916,550)            |
| <b>Total</b> | <b>(\$82,070,211)</b>        | <b>(\$177,191,944)</b> | <b>(\$18,274,374)</b> | <b>(\$198,395,739)</b> | <b>(\$34,559,355)</b>          | <b>(\$80,287,744)</b> | <b>(\$8,763,244)</b> | <b>(\$108,559,819)</b> |

**Table 7 Cont.: Net Ratepayer Refund or Payment under Various SREC Price Scenarios**

| Energy Year  | Scenario 3: SREC Price = \$400 |                     |                  |                       | Scenario 4: SREC Price = SACP <sup>20</sup> |                     |                    |                     |
|--------------|--------------------------------|---------------------|------------------|-----------------------|---|---------------------|--------------------|---------------------|
|              | ACE                            | JCP&L               | RE               | PSE&G                 | ACE   | JCP&L               | RE                 | PSE&G               |
| 2009         | N/A                            | N/A                 | N/A              | (\$254,785)           | N/A   | N/A                 | N/A                | \$801,722           |
| 2010         | \$70,906                       | (\$88,296)          | (\$6,681)        | (\$101,005)           | \$829,103                                   | \$3,828,457         | \$25,946           | \$3,720,339         |
| 2011         | (\$393,009)                    | (\$1,158,810)       | \$9,238          | \$3,376,360           | \$3,092,873                                 | \$7,821,436         | \$448,911          | \$6,659,405         |
| 2012         | \$218,780                      | (\$1,882,153)       | (\$5,515)        | (\$4,173,960)         | \$5,969,427                                 | \$9,365,873         | \$1,190,825        | (\$10,015,006)      |
| 2013         | \$1,437,210                    | \$2,124,337         | \$85,505         | (\$1,524,078)         | \$7,206,588                                 | \$13,946,833        | \$1,235,163        | \$7,245,258         |
| 2014         | \$1,437,210                    | \$2,124,337         | \$85,505         | (\$1,524,078)         | \$6,823,559                                 | \$13,161,937        | \$1,158,837        | \$6,663,062         |
| 2015         | \$1,437,210                    | \$2,124,337         | \$85,505         | (\$1,524,078)         | \$6,440,530                                 | \$12,377,041        | \$1,082,511        | \$6,080,865         |
| 2016         | \$1,437,210                    | \$2,124,337         | \$85,505         | (\$1,524,078)         | \$6,081,440                                 | \$11,641,201        | \$1,010,956        | \$5,535,056         |
| 2017         | \$1,437,210                    | \$2,124,337         | \$85,505         | (\$1,524,078)         | \$3,232,660                                 | \$5,803,537         | \$443,282          | \$1,204,969         |
| 2018         | \$1,437,210                    | \$2,124,337         | \$85,505         | (\$1,524,078)         | \$2,945,388                                 | \$5,214,865         | \$386,038          | \$768,321           |
| 2019         | \$1,437,210                    | \$2,124,337         | \$85,505         | (\$1,523,158)         | \$2,658,116                                 | \$4,626,193         | \$328,794          | \$331,968           |
| 2020         | \$1,366,305                    | \$2,212,633         | \$92,187         | (\$1,486,673)         | \$2,220,370                                 | \$3,640,163         | \$278,547          | (\$51,294)          |
| 2021         | \$1,628,048                    | \$2,662,726         | \$60,222         | (\$1,412,506)         | \$1,949,206                                 | \$3,121,522         | \$147,544          | (\$420,582)         |
| 2022         | N/A                            | N/A                 | N/A              | (\$1,410,667)         | N/A   | N/A                 | N/A                | (\$810,000)         |
| 2023         | N/A                            | N/A                 | N/A              | (\$1,410,667)         | N/A   | N/A                 | N/A                | (\$1,177,074)       |
| 2024         | N/A                            | N/A                 | N/A              | (\$1,156,802)         | N/A   | N/A                 | N/A                | (\$1,246,758)       |
| 2025         | N/A                            | N/A                 | N/A              | (\$158,819)           | N/A   | N/A                 | N/A                | (\$375,646)         |
| 2026         | N/A                            | N/A                 | N/A              | \$133,248             | N/A   | N/A                 | N/A                | \$12,522            |
| <b>Total</b> | <b>\$12,951,501</b>            | <b>\$16,616,456</b> | <b>\$747,886</b> | <b>(\$18,723,899)</b> | <b>\$49,449,258</b>                         | <b>\$94,549,056</b> | <b>\$7,777,355</b> | <b>\$24,927,126</b> |

Table 8a and Table 8b compare the “break-even” SREC price for each utility. This is the SREC auction price at which the solicitation obligations for that utility will be equal to the SREC and auction proceeds. At the SREC “break-even” price, there is no net impact on the ratepayer from these financing programs. The break-even SREC prices range from \$345/SREC for ACE and \$475/SREC for PSE&G’s Solar Loan I program.

**Table 8a: Breakeven SREC Prices for ACE, JCP&L, and RE**

| Utility | Break-even Price (\$/SREC) |       |
|---------|----------------------------|-------|
| ACE     | \$345                      |       |
| JCP&L   | \$366                      |       |
| RE      | \$383                      |       |
| PSE&G   | SL I                       | \$475 |
|         | SL II                      | \$356 |

<sup>20</sup> See Appendix C for the full SACP schedule. Source: NJ BPU.

**Table 8b: Breakeven SREC Prices for PSE&G**

| Utility |       | Break-even Price (\$/SREC) |
|---------|-------|----------------------------|
| PSE&G   | SL I  | \$475                      |
|         | SL II | \$356                      |

**III. Atlantic City Electric (ACE) Program Analysis***Data Collected*

The tables below present the data submitted to CEEEP by Atlantic City Electric (ACE) in November 2011 with regards to their Solar Long-term Contracting Program. Table 9 shows the results of each solicitation as reported by ACE, including the awarded capacity in MW, the number of projects awarded, the contracted capacity in MW, the installed capacity in MW and the weighted average SREC purchase cost. In total, ACE has awarded 23.1 MW and contracted 19.5 MW of solar capacity under the program between August 2009 and September 2011<sup>21</sup>. The overall weighted average bid price under the solicitation was \$372.40 per SREC.

**Table 9: ACE Solicitation Round Results**

| Solicitation | Date           | MW Awarded        | Number of Projects Awarded | MW Contracted | MW Installed | Weighted Average SREC Awarded Bid Price |
|--------------|----------------|-------------------|----------------------------|---------------|--------------|---|
| #1           | August 2009    | 0.0               | 0                          | 0.0           | 0.0          | N/A                                     |
| #2           | December 2009  | 2.2               | 10                         | 2.0           | 1.7          | \$372.11                                |
| #3           | March 2010     | 0.1               | 1                          | 0.1           | 0.1          | ██████ <sup>22</sup>                    |
| #4           | June 2010      | 0.4               | 5                          | 0.4           | 0.4          | \$431.36                                |
| #5           | October 2010   | 0.4               | 2                          | 0.4           | 0.4          | \$463.37                                |
| #6           | February 2011  | 10.5              | 60                         | 7.6           | 0.0          | \$423.94                                |
| #7           | June 2011      | 3.5 <sup>23</sup> | 17                         | 3.0           | 0.0          | \$321.66                                |
| #8           | September 2011 | 6.0               | 19                         | 6.0           | 0.0          | \$212.62                                |
| <b>Total</b> |                | <b>23.1</b>       | <b>114</b>                 | <b>19.5</b>   | <b>2.6</b>   | <b>\$372.40</b>                         |

Table 10 shows the results of each auction as reported by ACE, including the number of SRECs auctioned and the auction price. The auction price is the clearing price that applies to all SRECs sold during that auction period. Overall, ACE has auctioned a total of 1,839 SRECs with auction prices ranging from \$227.03 to \$688.52.

<sup>21</sup> In some cases, projects that are awarded do not become contracted because the winning parties do not pay the required deposits or do not sign the required contracts within the specified time-period. For this reason, the number of MW contracted is sometimes less than the number of MW awarded in each solicitation period.

<sup>22</sup> Note: some data not provided due to confidentiality

<sup>23</sup> The ACE reported awarded capacity was 3.916 MW for solicitation #7 (June 2011), but NERA records show the capacity as 3.516 MW. The NERA value is used for these calculations.

**Table 10: ACE Auction Results**

| <b>Auction</b>                  | <b>Date</b>   | <b>SRECs Auctioned</b> | <b>SREC Auction Price</b> |
|---------------------------------|---------------|------------------------|---------------------------|
| #1                              | August 2009   | N/A                    | \$688.52                  |
| #2                              | February 2010 | N/A                    | \$685.06                  |
| #3                              | July 2010     | N/A                    | \$688.03                  |
| #4                              | October 2010  | N/A                    | \$665.12                  |
| #5                              | April 2011    | 189                    | \$669.69                  |
| #6                              | July 2011     | 404                    | \$475.00                  |
| #7                              | August 2011   | 331                    | \$479.75                  |
| #8                              | October 2011  | 915                    | \$227.03                  |
| <b>Overall Weighted Average</b> |               |                        | <b>\$372.48</b>           |

Table 11 shows the program administration costs by category as reported by ACE. The categories of costs reported include NERA solicitation management costs, NERA auction management costs, internal utility administrative costs, “SREC Transaction Fees.”<sup>24</sup> A total of \$780,160 has been spent for ACE to administer the solar financing program since the program began in energy year 2010.

**Table 11: ACE Program Administration Costs**

| <b>Energy Year</b> | <b>NERA Solicitation Manager Costs</b> | <b>NERA Auction Manager Costs<sup>25</sup></b> | <b>Internal Utility Administrative Costs</b> | <b>“Transaction Fees”</b> |
|--------------------|--|--|--|---------------------------|
| 2010               | \$237,220                              | \$0  | \$31,356                                     | \$17,250                  |
| 2011               | \$164,680                              | \$4,038  | \$55,120                                     | \$21,252                  |
| 2012               | \$222,226                              | \$2,138  | \$24,881                                     | \$0                       |
| <b>Total</b>       | <b>\$624,126</b>                       | <b>\$6,176</b>                                 | <b>\$111,357</b>                             | <b>\$38,502</b>           |

### *Solicitation- and Auction-Related Costs per SREC*

In order to fully understand the costs associated with the EDC Solar Long-term Contracting Program, CEEEP estimated the solicitation and auction related costs per SREC contracted to create a standard means of comparison across the multiple EDC programs. Table 12 shows ACE’s solicitation-related costs. This is NERA’s costs to run the solicitations. The total solicitation costs ((B), Table 12) were divided by the total SRECs contracted over the term of the awarded contracts ((A), Table 12) to estimate the total solicitation cost per SREC contracted. The total SRECs contracted over the term was used because costs incurred in the solicitation will yield SRECs over a 10 - 15 year period<sup>26</sup>. It is assumed here, and throughout this analysis, that the capacity contracted in any given year is installed in that same year and 100% of the SRECs are created<sup>27</sup>. A capacity factor of 14% was used throughout the analysis in order

<sup>24</sup> ACE Stipulation of Settlement, BPU Docket Number EO09020097: “ACE will collect a fee, referred to as an “SREC Transaction Fee”, for each SREC that is procured and subsequently sold pursuant to the Program.” This value is set at \$22.59 per SREC for ACE.

<sup>25</sup> These are the NERA auction manager costs reported to CEEEP by ACE as of October 31, 2011.

<sup>26</sup> In the case of ACE, most awarded projects had 10-year terms, except for 2 projects that had 15-year terms.

<sup>27</sup> This assumption will overestimate the number of SRECs and will also result in a slightly lower estimate of the costs associated with the EDC Solar Long-term Contracting Program. See Figures 1 and 2 in Appendix A for a more detailed description of the full process and the reasons why these assumptions are necessary.

to consistently convert MWs contracted to total SRECs. The total solicitation cost for ACE across energy years 2010-2012 has been \$2.61 per SREC. The cost per SREC in 2010 was much larger due to the relatively small amount of capacity contracted during those years.

**Table 12: ACE Solicitation-Related Costs**

| Energy Year  | MW Contracted | Total SRECs over Term | NERA Solicitation Cost | Total Solicitation Cost (\$/SREC) |
|--------------|---------------|-----------------------|------------------------|-----------------------------------|
|              |               | (A)                   | (B)                    | $\frac{(B)}{(A)}$                 |
| 2010         | 2.1           | 25,877                | \$237,220              | \$9.17                            |
| 2011         | 8.4           | 102,772               | \$164,680              | \$1.60                            |
| 2012         | 9.0           | 110,744               | \$222,226              | \$2.01                            |
| <b>Total</b> | <b>19.5</b>   | <b>239,393</b>        | <b>\$624,126</b>       | <b>\$2.61</b>                     |

Table 13 shows the total auction-related costs over all four EDCs. NERA’s total reported cost to run the auctions is approximately \$861,482. The total number of SRECs auctioned by all of the EDCs combined in each energy year was used to calculate that the total cost to auction SRECs is \$9.62 per SREC per year<sup>28</sup>.

**Table 13: EDC Auction-Related Costs**

| Energy Year  | Total SRECs Auctioned by All EDCs in Energy Year | NERA Auction Cost (\$/SREC) <sup>29</sup> |
|--------------|--|---|
| 2010         | 4,152  | \$9.62                                    |
| 2011         | 19,150   | \$9.62                                    |
| 2012         | 66,269   | \$9.62                                    |
| <b>Total</b> | <b>89,571</b>                                    | <b>\$9.62</b>                             |

Table 14 shows ACE’s internal utility administration costs related to the Solar Long-term Contracting Program for energy years 2010-2012. The total internal administration cost is on average \$0.47 per SREC per year.

<sup>28</sup> SRECs from the same projects can be produced and auctioned for ten years, or the length of the contract.

<sup>29</sup> Although each EDC reported NERA auction costs individually, the per SREC auction cost was calculated by dividing the total invoiced NERA auction manager costs by the total number of SRECs auctioned by all four EDCs in the program as of October 31, 2011.

**Table 14: ACE Internal Utility Administration Costs**

| Energy Year  | MW Contracted | Total SRECs over Term | Internal Administration Cost | Total Internal Administration Cost (\$/SREC) |
|--------------|---------------|-----------------------|------------------------------|--|
|              |               | (A)                   | (B)                          | $\frac{(B)}{(A)}$                            |
| 2010         | 2.1           | 25,877                | \$31,356                     | \$1.21                                       |
| 2011         | 8.4           | 102,772               | \$55,120                     | \$0.54                                       |
| 2012         | 9.0           | 110,744               | \$24,881                     | \$0.22                                       |
| <b>Total</b> | <b>19.5</b>   | <b>239,393</b>        | <b>\$111,357</b>             | <b>\$0.47</b>                                |

Table 15 shows ACE’s total combined solicitation- and auction-related costs. The total solicitation-related costs from Table 12, total auction-related costs from Table 13, total internal administration cost from Table 14 and ACE’s “SREC Transaction Fees” of \$22.59 per SREC were summed up to determine that the combined total average program cost for ACE is \$35.28 per SREC.

**Table 15: ACE Total Combined Program Administration Costs per SREC**

| Energy Year  | MW Contracted | Total SRECs Awarded over Project Term | Total Solicitation Cost (\$/SREC) | Auction Cost (\$/SREC) | Internal Utility Administration Costs (\$/SREC) | “SREC Transaction Fee” (\$/SREC) | Total Combined Program Cost (\$/SREC) |
|--------------|---------------|---------------------------------------|-----------------------------------|------------------------|---|----------------------------------|---------------------------------------|
|              |               |                                       | (A)                               | (B)                    | (C)   | (D)                              | (A)+(B)+(C)+(D)                       |
| 2010         | 2.1           | 25,877                                | \$9.17                            | \$9.62                 | \$1.21  | \$22.59                          | \$42.59                               |
| 2011         | 8.4           | 102,772                               | \$1.60                            | \$9.62                 | \$0.54  | \$22.59                          | \$34.35                               |
| 2012         | 9.0           | 110,744                               | \$2.01                            | \$9.62                 | \$0.22  | \$22.59                          | \$34.44                               |
| <b>Total</b> | <b>19.5</b>   | <b>239,393</b>                        | <b>\$2.61</b>                     | <b>\$9.62</b>          | <b>\$0.47</b>                                   | <b>\$22.59</b>                   | <b>\$35.28</b>                        |

### *EDC Solar Long-term Contracting Program Ratepayer Exposure*

In addition to the total solicitation- and auction-related costs, CEEEP also estimated the net ratepayer refund or payment related to the EDC Solar Long-term Contracting Programs<sup>30</sup>. If the solicitation obligations and program costs exceed the auction proceeds then the ratepayer will make a payment. If the solicitation obligations and program costs are less than the auction proceeds then the ratepayer will receive a refund.

To calculate the cost of the SREC solicitation, the weighted average awarded solicitation SREC price was used and is shown for ACE for each energy year in Table 16.

<sup>30</sup> See Figure 1 in Appendix A for a full description of how the solar program affects ratepayers through the various costs and revenues associated with the program.



**Table 16: ACE Weighted Average Awarded Solicitation Bid Prices (\$/MWh)**

| Energy Year | Weighted Average Awarded Bid Price |
|-------------|------------------------------------|
| 2010        | \$373                              |
| 2011        | \$425                              |
| 2012        | \$253                              |

Table 17 shows the incremental contracted SRECs for energy years 2010, 2011, and 2012. Over a 10-year contract period, it is estimated that ACE has contracted a total of 239,393 SRECs. Table 16 shows the total solicitation obligations, which are estimated by multiplying the incremental SRECs for each year by the weighted average awarded solicitation price for that year (Table 16) and summing them up. For example, in EY 2012 the solicitation obligations were calculated using the equation  $[(2,588)*(\$373) + (10,277)*(\$425) + (11,074)*(\$253)]^{31}$ . Overall, the total obligation of all SRECs contracted under ACE's Solar Long-term Contracting Program solicitations is \$81,385,210 for the full, ten-year contract period.

**Table 17: ACE Annual Solicitation Contracted SRECs and Total SREC Obligation**

| Energy Year  | Incremental 2010 Solicitation | Incremental 2011 Solicitation | Incremental 2012 Solicitation | Total SRECs    | Solicitation Obligations |
|--------------|-------------------------------|-------------------------------|-------------------------------|----------------|--------------------------|
| 2010         | 2,588                         |                               |                               | 2,588          | \$964,176                |
| 2011         | 2,588                         | 10,277                        |                               | 12,865         | \$5,336,812              |
| 2012         | 2,588                         | 10,277                        | 11,074                        | 23,939         | \$8,138,521              |
| 2013         | 2,588                         | 10,277                        | 11,074                        | 23,939         | \$8,138,521              |
| 2014         | 2,588                         | 10,277                        | 11,074                        | 23,939         | \$8,138,521              |
| 2015         | 2,588                         | 10,277                        | 11,074                        | 23,939         | \$8,138,521              |
| 2016         | 2,588                         | 10,277                        | 11,074                        | 23,939         | \$8,138,521              |
| 2017         | 2,588                         | 10,277                        | 11,074                        | 23,939         | \$8,138,521              |
| 2018         | 2,588                         | 10,277                        | 11,074                        | 23,939         | \$8,138,521              |
| 2019         | 2,588                         | 10,277                        | 11,074                        | 23,939         | \$8,138,521              |
| 2020         |                               | 10,277                        | 11,074                        | 21,352         | \$7,174,345              |
| 2021         |                               |                               | 11,074                        | 11,074         | \$2,801,709              |
| <b>Total</b> | <b>25,877</b>                 | <b>102,772</b>                | <b>110,744</b>                | <b>239,393</b> | <b>\$81,385,210</b>      |

<sup>31</sup> Due to rounding in the weighted average solicitation prices in Table 14, the solicitation obligations will be slightly different in Table 15 than when using this equation.

Table 18 shows the auctioned SRECs for energy years 2010, 2011, and 2012 as well as the total annual proceeds received from auctions by ACE so far. ACE has received approximately \$685,000 in auction proceeds over the past two years. In addition, CEEEP estimated the value of remaining SRECs by subtracting the number of SRECs auctioned in Table 18 from the Total SRECs in Table 17 and multiplying by an SREC value of \$0, \$200, \$400, or the SACP. Table 18 shows that, depending on the price of SRECs over the next 10 years, the remaining proceeds of the SRECs ACE solicited will range from \$0 to \$132 million.

**Table 18: ACE Annual Auctioned SRECs, Total Auction Proceeds, and Remaining SREC Proceeds Scenarios**

| Energy Year  | Number of SRECs Auctioned | Annual Auction Proceeds | Proceeds of Remaining SREC Scenarios |                     |                     |                      |
|--------------|---------------------------|-------------------------|--------------------------------------|---------------------|---------------------|----------------------|
|              |                           |                         | \$0 SREC                             | \$200 SREC          | \$400 SREC          | SACP                 |
|              |                           |                         | (A)                                  | (B)                 | (C)                 | (D)                  |
| 2010         | 0                         | \$0                     | \$0                                  | \$517,541           | \$1,035,082         | \$1,793,279          |
| 2011         | 189                       | \$126,571               | \$0                                  | \$2,535,187         | \$5,070,374         | \$8,556,257          |
| 2012         | 1,650                     | \$558,430               | \$0                                  | \$4,457,866         | \$8,915,731         | \$14,666,378         |
| 2013         |                           |                         | \$0                                  | \$4,787,866         | \$9,575,731         | \$15,345,109         |
| 2014         |                           |                         | \$0                                  | \$4,787,866         | \$9,575,731         | \$14,962,080         |
| 2015         |                           |                         | \$0                                  | \$4,787,866         | \$9,575,731         | \$14,579,051         |
| 2016         |                           |                         | \$0                                  | \$4,787,866         | \$9,575,731         | \$14,219,961         |
| 2017         |                           |                         | \$0                                  | \$4,787,866         | \$9,575,731         | \$11,371,181         |
| 2018         |                           |                         | \$0                                  | \$4,787,866         | \$9,575,731         | \$11,083,909         |
| 2019         |                           |                         | \$0                                  | \$4,787,866         | \$9,575,731         | \$10,796,637         |
| 2020         |                           |                         | \$0                                  | \$4,270,325         | \$8,540,650         | \$9,394,715          |
| 2021         |                           |                         | \$0                                  | \$2,214,878         | \$4,429,757         | \$4,750,914          |
| <b>Total</b> | <b>1,839</b>              | <b>\$685,001</b>        | <b>\$0</b>                           | <b>\$47,510,859</b> | <b>\$95,021,711</b> | <b>\$131,519,470</b> |

Finally, Table 19 shows the net ratepayer refunds or payments as a result of ACE's Solar Long-term Contracting Program under the four different SREC price scenarios shown in Table 18. To determine whether the net ratepayer impact would be positive or negative, CEEEP used the equation [(Proceeds of Remaining SRECs)-(Auction Proceeds)-(Solicitation Obligations)]. At an SREC price equal to the SACP over the next 10 years, the program will show a surplus (or positive net ratepayer impact) of over \$49 million. At a \$200 SREC price, the program will have a deficit (or negative ratepayer impact) of over \$82 million. In addition, CEEEP has calculated that the breakeven SREC price, or the price where the solicitation obligations will be equal to the SREC and auction proceeds (and therefore have no impact on the ratepayers whatsoever), is \$345.48 per SREC.

**Table 19: Net Ratepayer Refund or Payment under Various SREC Price Scenarios**

| Energy Year  | Annual Solicitation Obligation | Annual Auction Proceeds | \$0 SREC                  | \$200 SREC                | \$400 SREC                | SACP                      |
|--------------|--------------------------------|-------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
|              |                                |                         | (A, Table 18) - (F) - (E) | (B, Table 18) - (F) - (E) | (C, Table 18) - (F) - (E) | (D, Table 18) - (F) - (E) |
|              | (E)                            | (F)                     |                           |                           |                           |                           |
| 2010         | \$964,176                      | \$0                     | (\$964,176)               | (\$446,635)               | \$70,906                  | \$829,103                 |
| 2011         | \$5,336,812                    | \$126,571               | (\$5,463,384)             | (\$2,928,197)             | (\$393,009)               | \$3,092,873               |
| 2012         | \$8,138,521                    | \$558,430               | (\$8,696,951)             | (\$4,239,085)             | \$218,780                 | \$5,969,427               |
| 2013         | \$8,138,521                    |                         | (\$8,138,521)             | (\$3,350,655)             | \$1,437,210               | \$7,206,588               |
| 2014         | \$8,138,521                    |                         | (\$8,138,521)             | (\$3,350,655)             | \$1,437,210               | \$6,823,559               |
| 2015         | \$8,138,521                    |                         | (\$8,138,521)             | (\$3,350,655)             | \$1,437,210               | \$6,440,530               |
| 2016         | \$8,138,521                    |                         | (\$8,138,521)             | (\$3,350,655)             | \$1,437,210               | \$6,081,440               |
| 2017         | \$8,138,521                    |                         | (\$8,138,521)             | (\$3,350,655)             | \$1,437,210               | \$3,232,660               |
| 2018         | \$8,138,521                    |                         | (\$8,138,521)             | (\$3,350,655)             | \$1,437,210               | \$2,945,388               |
| 2019         | \$8,138,521                    |                         | (\$8,138,521)             | (\$3,350,655)             | \$1,437,210               | \$2,658,116               |
| 2020         | \$7,174,345                    |                         | (\$7,174,345)             | (\$2,904,020)             | \$1,366,305               | \$2,220,370               |
| 2021         | \$2,801,709                    |                         | (\$2,801,709)             | (\$586,830)               | \$1,628,048               | \$1,949,206               |
| <b>Total</b> | <b>\$81,385,210</b>            | <b>\$685,001</b>        | <b>(\$82,070,211)</b>     | <b>(\$34,559,355)</b>     | <b>\$12,951,501</b>       | <b>\$49,449,258</b>       |

## IV. Jersey Central Power & Light (JCP&L) Program Analysis

### *Data Collected*

The tables below present the data submitted to CEEEP by Jersey Central Power and Light (JCP&L) in November 2011 with regards to their Solar Long-term Contracting Program. Table 20 shows the results of each solicitation as reported by JCP&L, including the awarded capacity in MW, the number of projects awarded, the contracted capacity in MW, the installed capacity in MW and the weighted average SREC purchase cost. Please note that JCP&L did not solicit bids in every round that has occurred under the program between August 2009 and September 2011. In total, JCP&L has awarded approximately 50.9 MW and contracted 40.0 MW of solar capacity under the program<sup>32</sup>. The overall weighted average bid price under the solicitation was \$368.40 per SREC.

**Table 20: JCP&L Solicitation Round Results**

| <b>Solicitation</b> | <b>Date</b>    | <b>MW Awarded</b> | <b>Number of Projects Awarded</b> | <b>MW Contracted</b> | <b>MW Installed</b> | <b>Weighted Average SREC Awarded Bid Price</b> |
|---------------------|----------------|-------------------|-----------------------------------|----------------------|---------------------|--|
| #1                  | August 2009    | 1.6               | 7                                 | 1.6                  | 1.1                 | \$383.99                                       |
| #2                  | December 2009  | 4.2               | 27                                | 2.9                  | 2.9                 | \$382.03                                       |
| #3                  | March 2010     | 9.2               | 58                                | 6.5                  | 5.4                 | \$421.63                                       |
| #4                  | June 2010      | 3.5               | 15                                | 3.4                  | 2.3                 | \$449.17                                       |
| #5                  | October 2010   | 8.6               | 49                                | 8.1                  | 6.5                 | \$452.33                                       |
| #6                  | February 2011  | 6.8               | 41                                | 4.6                  | 2.7                 | \$378.63                                       |
| #7                  | June 2011      | 6.0               | 35                                | 6.0                  | 0.9                 | \$264.14                                       |
| #8                  | September 2011 | 11.0              | 60                                | 6.8                  | 0.0                 | \$215.17                                       |
| <b>Total</b>        |                | <b>50.9</b>       | <b>292</b>                        | <b>40.0</b>          | <b>21.9</b>         | <b>\$368.40</b>                                |

Table 21 shows the results of each auction as reported by JCP&L, including the number of SRECs auctioned and the auction price. The auction price is the clearing price that applies to all SRECs sold during that auction period. Overall JCP&L has auctioned a total of 6,039 SRECs with auction prices ranging from \$227.03 to \$688.52.

<sup>32</sup> In some cases, projects that are awarded do not become contracted because the winning parties do not pay the required deposits or do not sign the required contracts within the specified time-period. For this reason, the number of MW contracted is sometimes less than the number of MW awarded in each solicitation period.

**Table 21: JCP&L Auction Results**

| <b>Auction</b>                  | <b>Date</b>   | <b>SRECs Auctioned</b> | <b>SREC Auction Price</b> |
|---------------------------------|---------------|------------------------|---------------------------|
| #1                              | August 2009   | N/A                    | \$688.52                  |
| #2                              | February 2010 | N/A                    | \$685.06                  |
| #3                              | July 2010     | N/A                    | \$688.03                  |
| #4                              | October 2010  | N/A                    | \$665.12                  |
| #5                              | April 2011    | 580                    | \$669.69                  |
| #6                              | July 2011     | 1,528                  | \$475.00                  |
| #7                              | August 2011   | 791                    | \$479.75                  |
| #8                              | October 2011  | 3,140                  | \$227.03                  |
| <b>Overall Weighted Average</b> |               |                        | <b>\$366.17</b>           |

Table 22 shows the various program administration costs by category as reported by JCP&L. The categories of cost reported include NERA solicitation management costs, NERA auction management costs, internal utility administrative costs, “SREC Transaction Fees.”<sup>33</sup> A total of \$1,932,041 has been spent by JCP&L to administer the solar financing program since the program began in energy year 2010.

**Table 22: JCP&L Program Administration Costs**

| <b>Energy Year</b> | <b>NERA Solicitation Manager Costs</b> | <b>NERA Auction Manager Costs<sup>34</sup></b> | <b>Internal Utility Administrative Costs</b> | <b>“Transaction Fees”</b> |
|--------------------|--|--|--|---------------------------|
| 2010               | \$584,014                              | \$0  | \$65,954                                     | \$0                       |
| 2011               | \$542,345                              | \$3,302  | \$82,995                                     | \$18,102                  |
| 2012               | \$390,863                              | \$16,037                                       | \$58,063                                     | \$170,366                 |
| <b>Total</b>       | <b>\$1,517,222</b>                     | <b>\$19,339</b>                                | <b>\$207,012</b>                             | <b>\$188,468</b>          |

#### *Solicitation- and Auction-Related Costs per SREC*

In order to fully understand the costs associated with the EDC Solar Long-term Contracting Program, CEEEP first estimated the solicitation- and auction-related costs per SREC contracted to create a standard means of comparison across the multiple EDC programs. Table 23 shows JCP&L’s solicitation-related costs. This is NERA’s costs to run the solicitations. The total solicitation costs ((B), Table 23) were divided by the total SRECs contracted over the term of the awarded contracts ((A), Table 23) to estimate the total solicitation cost per SREC. The total SRECs contracted over the term was used because costs incurred in the solicitation will yield SRECs over a 10 - 15 year period<sup>35</sup>. It is assumed here, and throughout this analysis, that the capacity contracted in any given year is installed in that same year and 100% of the SRECs are created<sup>36</sup>. A capacity factor of 14% was used throughout the analysis to convert MWs to SRECs. The total solicitation cost, across energy years 2010-2012, has been \$3.09 per SREC.

<sup>33</sup> JCP&L Stipulation of Settlement, BPU Docket Number EO09020097: “JCP&L will collect a fee, referred to as an “SREC Transaction Fee”, for each SREC that is procured and subsequently sold pursuant to the Program.” This value is set at \$31.21 per SREC for JCP&L.

<sup>34</sup> These are the NERA auction manager costs reported to CEEEP by JCP&L as of October 31, 2011.

<sup>35</sup> In the case of JCP&L, most awarded projects had 10-year terms, except for 4 projects that had 15-year terms.

<sup>36</sup> This assumption will overestimate the number of SRECs, but will also result in a slightly lower estimate of the costs associated with the EDC Solar Long-term Contracting Program. See Figures 1 and 2 in Appendix A for a more detailed description of the full process and the reasons why these assumptions are necessary.

**Table 23: JCP&L Solicitation-Related Costs**

| Energy Year  | MW Contracted | Total SRECs over Term | NERA Solicitation Cost | Total Solicitation Cost (\$/SREC) |
|--------------|---------------|-----------------------|------------------------|-----------------------------------|
|              |               | (A)                   | (B)                    | $\frac{(B)}{(A)}$                 |
| 2010         | 10.9          | 133,678               | \$584,014              | \$4.37                            |
| 2011         | 16.2          | 198,677               | \$542,345              | \$2.73                            |
| 2012         | 12.9          | 158,206               | \$390,863              | \$2.47                            |
| <b>Total</b> | <b>40.0</b>   | <b>490,560</b>        | <b>\$1,517,222</b>     | <b>\$3.09</b>                     |

Table 24 shows the total auction-related costs over all four EDCs. NERA's total reported cost to run the auctions is approximately \$861,482. The total number of SRECs auctioned by all of the EDCs combined in each energy year was used to calculate that the total cost to auction SRECs is \$9.62 per SREC per year.

**Table 24: EDC Auction-Related Costs**

| Energy Year  | Total SRECs Auctioned by All EDCs in Energy Year | NERA Auction Cost (\$/SREC) <sup>37</sup> |
|--------------|--|---|
| 2010         | 4,152  | \$9.62                                    |
| 2011         | 19,150   | \$9.62                                    |
| 2012         | 66,269   | \$9.62                                    |
| <b>Total</b> | <b>89,571</b>                                    | <b>\$9.62</b>                             |

Table 25 shows JCP&L's internal utility administration costs related to the Solar Long-term Contracting Program for energy years 2010-2012. The total internal utility administration cost is on average \$0.42 per SREC per year.

**Table 25: JCP&L Internal Utility Administration Costs**

| Energy Year  | MW Contracted | Total SRECs over Term | Internal Administration Cost | Total Internal Administration Cost (\$/SREC) |
|--------------|---------------|-----------------------|------------------------------|--|
|              |               | (A)                   | (B)                          | $\frac{(B)}{(A)}$                            |
| 2010         | 10.9          | 133,678               | \$64,954                     | \$0.49                                       |
| 2011         | 16.2          | 198,677               | \$82,995                     | \$0.42                                       |
| 2012         | 12.9          | 158,206               | \$58,063                     | \$0.37                                       |
| <b>Total</b> | <b>40.0</b>   | <b>490,560</b>        | <b>\$207,012</b>             | <b>\$0.42</b>                                |

Table 26 shows JCP&L's total combined program costs. The total solicitation-related costs from Table 23, total auction-related costs from Table 24, total internal utility administration costs from Table 25, and

<sup>37</sup> Although each EDC reported NERA auction costs individually, the per SREC auction cost was calculated by dividing the total invoiced NERA auction manager costs by the total number of SRECs auctioned by all four EDCs in the program as of October 31, 2011.

JCP&L’s “SREC Transaction Fees” of \$31.21 per SREC were summed up to determine that the combined total program cost for JCP&L is \$44.34 per SREC.

**Table 26: JCP&L Total Combined Program Administration Costs per SREC**

| Energy Year  | MW Contracted | Total SRECs Awarded over Project Term | Total Solicitation Cost (\$/SREC) | Auction Cost (\$/SREC) | Internal Utility Administration Costs (\$/SREC) | “SREC Transaction Fee” (\$/SREC) | Total Combined Program Cost (\$ /SREC) |
|--------------|---------------|---------------------------------------|-----------------------------------|------------------------|---|----------------------------------|--|
|              |               |                                       | (A)                               | (B)                    | (C)   | (D)                              | (A)+(B)+(C)+(D)                        |
| 2010         | 10.9          | 133,678                               | \$4.37                            | \$9.62                 | \$0.49  | \$31.21                          | \$45.69                                |
| 2011         | 16.2          | 198,677                               | \$2.73                            | \$9.62                 | \$0.42  | \$31.21                          | \$43.98                                |
| 2012         | 12.9          | 158,206                               | \$2.47                            | \$9.62                 | \$0.37  | \$31.21                          | \$43.67                                |
| <b>Total</b> | <b>40.0</b>   | <b>490,560</b>                        | <b>\$3.09</b>                     | <b>\$9.62</b>          | <b>\$0.42</b>                                   | <b>\$31.21</b>                   | <b>\$44.34</b>                         |

*EDC Solar Long-term Contracting Program Ratepayer Exposure*

In addition to the total combined program costs, CEEEP also estimated the net ratepayer refund or payment related to the EDC Solar Long-term Contracting Programs<sup>38</sup>. If the solicitation obligations and program costs exceed the auction proceeds then the ratepayer will make a payment. If the solicitation obligations and program costs are less than the auction proceeds then the ratepayer will receive a refund.

To calculate the cost of the SREC solicitation, the weighted average awarded solicitation SREC price was used and is shown for JCP&L for each energy year in Table 27.

**Table 27: JCP&L Weighted Average Awarded Solicitation Bid Prices (\$/MWh)**

| Energy Year | Weighted Awarded Average Bid Price |
|-------------|------------------------------------|
| 2010        | \$407                              |
| 2011        | \$423                              |
| 2012        | \$232                              |

Table 28 shows the incremental contracted SRECs for energy years 2010, 2011, and 2012. It is estimated that JCP&L has contracted a total of 490,560 SRECs over the 10-year contract period. Table 28 shows the total solicitation obligations, which are estimated by multiplying the incremental SRECs for each year by the weighted average awarded solicitation price for that year (Table 27) and summing them up. For example, in EY 2012 the solicitation obligations were calculated using the equation  $[(13,368)*(\$407) + (19,868)*(\$423) + (15,821)*(\$232)]$ <sup>39</sup>. Overall, the total obligation of all SRECs awarded under JCP&L’s Solar Long-term Contracting Program solicitations is \$174,980,634 for the full, ten-year contract period.

<sup>38</sup> See Figure 1 in Appendix A for a full description of how the solar program affects ratepayers through the various costs and revenues associated with the program.

<sup>39</sup> Due to rounding in the weighted average solicitation prices in Table 24, the solicitation obligations will be slightly different in Table 25 than when using this equation.

**Table 28: JCP&L Annual Solicitation Contracted SRECs and Total SREC Obligation**

| <b>Energy Year</b> | <b>Incremental 2010 Solicitation</b> | <b>Incremental 2011 Solicitation</b> | <b>Incremental 2012 Solicitation</b> | <b>Total SRECs</b> | <b>Solicitation Obligations</b> |
|--------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------|---------------------------------|
| 2010               | 13,368                               |                                      |                                      | 13,368             | \$5,435,400                     |
| 2011               | 13,368                               | 19,868                               |                                      | 33,235             | \$13,832,566                    |
| 2012               | 13,368                               | 19,868                               | 15,821                               | 49,056             | \$17,498,063                    |
| 2013               | 13,368                               | 19,868                               | 15,821                               | 49,056             | \$17,498,063                    |
| 2014               | 13,368                               | 19,868                               | 15,821                               | 49,056             | \$17,498,063                    |
| 2015               | 13,368                               | 19,868                               | 15,821                               | 49,056             | \$17,498,063                    |
| 2016               | 13,368                               | 19,868                               | 15,821                               | 49,056             | \$17,498,063                    |
| 2017               | 13,368                               | 19,868                               | 15,821                               | 49,056             | \$17,498,063                    |
| 2018               | 13,368                               | 19,868                               | 15,821                               | 49,056             | \$17,498,063                    |
| 2019               | 13,368                               | 19,868                               | 15,821                               | 49,056             | \$17,498,063                    |
| 2020               |                                      | 19,868                               | 15,821                               | 35,688             | \$12,062,663                    |
| 2021               |                                      |                                      | 15,821                               | 15,821             | \$3,665,498                     |
| <b>TOTAL</b>       | <b>133,678</b>                       | <b>198,677</b>                       | <b>158,206</b>                       | <b>490,560</b>     | <b>\$174,980,634</b>            |

Table 29 shows the auctioned SRECs for energy years 2010, 2011, and 2012 as well as the total annual proceeds received from auctions by JCP&L so far. JCP&L has received approximately \$2 million in auction proceeds over the past two years. In addition, CEEEP estimated the value of remaining SRECs by subtracting the number of SRECs auctioned in Table 29 from the Total SRECs in Table 28 and multiplying by an SREC value of \$0, \$200, \$400, or the SACP. Table 29 shows that, depending on the price of SRECs over the next 10 years, the remaining proceeds of the SRECs JCP&L solicited will range from \$0 to \$272 million.



**Table 29: JCP&L Annual Auctioned SRECs, Total Auction Proceeds, and Remaining SREC Proceeds Scenarios**

| Energy Year  | Number of SRECs Auctioned | Annual Auction Proceeds | Proceeds Scenarios of Remaining SRECs |                     |                      |                      |
|--------------|---------------------------|-------------------------|---------------------------------------|---------------------|----------------------|----------------------|
|              |                           |                         | \$0 SREC                              | \$200 SREC          | \$400 SREC           | SACP                 |
|              |                           |                         | (A)                                   | (B)                 | (C)                  | (D)                  |
| 2010         | 0                         | \$0                     | \$0                                   | \$2,673,552         | \$5,347,104          | \$9,263,858          |
| 2011         | 580                       | \$388,420               | \$0                                   | \$6,531,088         | \$13,062,176         | \$22,042,422         |
| 2012         | 5,459                     | \$1,822,889             | \$0                                   | \$8,719,400         | \$17,438,800         | \$28,686,826         |
| 2013         |                           |                         | \$0                                   | \$9,811,200         | \$19,622,400         | \$31,444,896         |
| 2014         |                           |                         | \$0                                   | \$9,811,200         | \$19,622,400         | \$30,660,000         |
| 2015         |                           |                         | \$0                                   | \$9,811,200         | \$19,622,400         | \$29,875,104         |
| 2016         |                           |                         | \$0                                   | \$9,811,200         | \$19,622,400         | \$29,139,264         |
| 2017         |                           |                         | \$0                                   | \$9,811,200         | \$19,622,400         | \$23,301,600         |
| 2018         |                           |                         | \$0                                   | \$9,811,200         | \$19,622,400         | \$22,712,928         |
| 2019         |                           |                         | \$0                                   | \$9,811,200         | \$19,622,400         | \$22,124,256         |
| 2020         |                           |                         | \$0                                   | \$7,137,648         | \$14,275,296         | \$15,702,826         |
| 2021         |                           |                         | \$0                                   | \$3,164,112         | \$6,328,224          | \$6,787,020          |
| <b>TOTAL</b> | <b>6,039</b>              | <b>\$2,211,309</b>      | <b>\$0</b>                            | <b>\$96,904,200</b> | <b>\$193,808,400</b> | <b>\$271,741,000</b> |

Finally, Table 30 shows the net ratepayer refunds or payments as a result of JCP&L's Solar Long term Contracting Program under the four different SREC price scenarios shown in Table 29. To estimate this, CEEEP used the equation [(Proceeds of Remaining SRECs)-(Auction Proceeds)-(Solicitation Obligations)]. At an SREC price equal to the SACP over the next 10 years, the program will show a surplus of over \$94 million. At a \$200 SREC price, the program will have a deficit of over \$80 million. In addition, CEEEP has calculated that the breakeven SREC price, or the price where the solicitation obligations will be equal to the SREC and auction proceeds, is \$366.

**Table 30: Net Ratepayer Refund or Payment under Various SREC Price Scenarios**

| Energy Year  | Annual Solicitation Obligations | Annual Auction Proceeds | \$0 SREC               | \$200 SREC            | \$400 SREC            | SACP                  |
|--------------|---------------------------------|-------------------------|------------------------|-----------------------|-----------------------|-----------------------|
|              | (E)                             | (F)                     | (A, Table 27)-(F)-(E)  | (B, Table 27)-(F)-(E) | (C, Table 27)-(F)-(E) | (D, Table 27)-(F)-(E) |
| 2010         | \$5,435,400                     | \$0                     | (\$5,435,400)          | (\$2,761,848)         | (\$88,296)            | \$3,828,457           |
| 2011         | \$13,832,566                    | \$388,420               | (\$14,220,986)         | (\$7,689,898)         | (\$1,158,810)         | \$7,821,436           |
| 2012         | \$17,498,063                    | \$1,822,889             | (\$19,320,953)         | (\$10,601,553)        | (\$1,882,153)         | \$9,365,873           |
| 2013         | \$17,498,063                    |                         | (\$17,498,063)         | (\$7,686,863)         | \$2,124,337           | \$13,946,833          |
| 2014         | \$17,498,063                    |                         | (\$17,498,063)         | (\$7,686,863)         | \$2,124,337           | \$13,161,937          |
| 2015         | \$17,498,063                    |                         | (\$17,498,063)         | (\$7,686,863)         | \$2,124,337           | \$12,377,041          |
| 2016         | \$17,498,063                    |                         | (\$17,498,063)         | (\$7,686,863)         | \$2,124,337           | \$11,641,201          |
| 2017         | \$17,498,063                    |                         | (\$17,498,063)         | (\$7,686,863)         | \$2,124,337           | \$5,803,537           |
| 2018         | \$17,498,063                    |                         | (\$17,498,063)         | (\$7,686,863)         | \$2,124,337           | \$5,214,865           |
| 2019         | \$17,498,063                    |                         | (\$17,498,063)         | (\$7,686,863)         | \$2,124,337           | \$4,626,193           |
| 2020         | \$12,062,663                    |                         | (\$12,062,663)         | (\$4,925,015)         | \$2,212,633           | \$3,640,163           |
| 2021         | \$3,665,498                     |                         | (\$3,665,498)          | (\$501,386)           | \$2,662,726           | \$3,121,522           |
| <b>TOTAL</b> | <b>\$174,980,634</b>            | <b>\$2,211,309</b>      | <b>(\$177,191,944)</b> | <b>(\$80,287,744)</b> | <b>\$16,616,456</b>   | <b>\$94,549,056</b>   |

## V. Rockland Electric Company (RE) Program Analysis

### Data Collected

The tables below present the data submitted to CEEEP by Rockland Electric Company (RE) in November 2011 with regards to their Solar Long-term Contracting Program. Table 31 shows the results of each solicitation as reported by RE, including the awarded capacity in MW, the number of projects awarded, the contracted capacity in MW, the installed capacity in MW, and the weighted average SREC purchase cost. Please note that RE did not solicit bids in every round that has occurred under the program. In total, RE has awarded 4.1 MW and contracted 3.9 MW of solar capacity under the program between August 2009 and September 2011.<sup>40</sup> The overall weighted average bid price under the solicitation was \$382.40 per SREC.

**Table 31: Rockland Electric Solicitation Round Results**

| <b>Solicitation</b> | <b>Date</b>    | <b>MW Awarded</b> | <b>Number of Projects Awarded</b> | <b>MW Contracted</b> | <b>MW Installed</b> | <b>Weighted Average SREC Awarded Bid Price</b> |
|---------------------|----------------|-------------------|-----------------------------------|----------------------|---------------------|--|
| #1                  | August 2009    | 0.0               | 0                                 | 0.0                  | 0.0                 | N/A  |
| #2                  | December 2009  | 0.2               | 2                                 | 0.1                  | 0.1                 | \$460.00                                       |
| #3                  | March 2010     | 0.0               | 0                                 | 0.0                  | 0.0                 | N/A  |
| #4                  | June 2010      | 0.0               | 0                                 | 0.0                  | 0.0                 | N/A  |
| #5                  | October 2010   | 0.5               | 4                                 | 0.5                  | 0.2                 | \$456.37                                       |
| #6                  | February 2011  | 0.8               | 5                                 | 0.8                  | 0.3                 | \$453.75                                       |
| #7                  | June 2011      | 2.3               | 11                                | 2.2                  | 0.0                 | \$334.87                                       |
| #8                  | September 2011 | 0.3               | 1                                 | 0.3                  | 0.0                 | ████████ <sup>41</sup>                         |
| <b>Total</b>        |                | <b>4.1</b>        | <b>23</b>                         | <b>3.9</b>           | <b>0.6</b>          | <b>\$382.40</b>                                |

Table 32 shows the results of each auction as reported by RE, including the number of SRECs auctioned and the auction price. The auction price is the clearing price that applies to all SRECs sold during that auction period. Overall, RE has auctioned 148 SRECs with auction prices ranging from \$227.03 to \$688.52.

<sup>40</sup> In some cases, projects that are awarded do not become contracted because the winning parties do not pay the required deposits or do not sign the required contracts within the specified time-period. For this reason, the number of MW contracted is sometimes less than the number or MW awarded in each solicitation period.

<sup>41</sup> Note: some data not provided due to confidentiality

**Table 32: Rockland Electric Auction Results**

| <b>Auction</b>                  | <b>Date</b>   | <b>SRECs Auctioned</b> | <b>SREC Auction Price</b> |
|---------------------------------|---------------|------------------------|---------------------------|
| #1                              | August 2009   | N/A                    | \$688.52                  |
| #2                              | February 2010 | N/A                    | \$685.06                  |
| #3                              | July 2010     | N/A                    | \$688.03                  |
| #4                              | October 2010  | N/A                    | \$665.12                  |
| #5                              | April 2011    | 15                     | \$669.69                  |
| #6                              | July 2011     | 23                     | \$475.00                  |
| #7                              | August 2011   | 8                      | \$479.75                  |
| #8                              | October 2011  | 102                    | \$227.03                  |
| <b>Overall Weighted Average</b> |               |                        | <b>\$324.09</b>           |

Table 33 shows the program administration costs by category as reported by RE. The categories of cost reported include NERA solicitation management costs, NERA auction management costs, internal utility administrative costs, “SREC Transaction Fees.”<sup>42</sup> A total of \$164,481 has been spent for RE to administer the solar financing program since the program began in energy year 2010.

**Table 33: Rockland Electric Program Administration Costs**

| <b>Energy Year</b> | <b>NERA Solicitation Manager Costs</b> | <b>NERA Auction Manager Costs<sup>43</sup></b> | <b>Internal Utility Administrative Costs</b> | <b>“Transaction Fees”</b> |
|--------------------|--|--|--|---------------------------|
| 2010               | \$47,642                               | \$0  | \$393  | \$0                       |
| 2011               | \$46,134                               | \$2,075  | \$12,886                                     | \$587                     |
| 2012               | \$35,078                               | \$4,854  | \$9,631                                      | \$5,202                   |
| <b>Total</b>       | <b>\$128,854</b>                       | <b>\$6,929</b>                                 | <b>\$22,910</b>                              | <b>\$5,788</b>            |

*Solicitation- and Auction-Related Costs per SREC*

In order to fully understand the costs associated with the EDC Solar Long-term Contracting Program, CEEEP estimated the solicitation and auction-related costs per SREC contracted to create a standard means of comparison across the multiple EDC programs. Table 34 shows RE’s solicitation-related costs. This is NERA’s costs to run the solicitations. The total solicitation costs ((B), Table 34) were divided by the total SRECs contracted over the term of the awarded contracts ((A), Table 34) to estimate the total solicitation cost per SREC contracted. The total SRECs contracted over the term was used because costs incurred in the solicitation will yield SRECs over a 10-year period.<sup>44</sup> It is assumed here, and throughout this analysis, that the capacity contracted in any given year is installed in that same year and 100% of the

<sup>42</sup> RE Stipulation of Settlement, BPU Docket Number EO09020097: “RE will collect a fee, referred to as an “SREC Transaction Fee”, for each SREC that is procured and subsequently sold pursuant to the Program.” This value is set at \$39.11 per SREC for RE.

<sup>43</sup> These are the NERA auction manager costs reported to CEEEP by RE as of October 31, 2011.

<sup>44</sup> In the case of Rockland Electric, all awarded projects had 10-year terms. The other EDC’s may have longer contract terms which will be accounted for in future analyses.

SRECs are created<sup>45</sup>. A capacity factor of 14% was used throughout the analysis in order to consistently convert MWs contracted to total SRECs. The total solicitation cost for RE across energy years 2010-2012 has been \$2.70 per SREC. The cost per SREC in 2010 and 2012 were much larger due to the relatively small amount of capacity awarded during those years.

**Table 34: Rockland Electric Solicitation-Related Costs**

| Energy Year  | MW Contracted | Total SRECs over Term | NERA Solicitation Cost | Total Solicitation Cost (\$/SREC) |
|--------------|---------------|-----------------------|------------------------|-----------------------------------|
|              |               | (A)                   | (B)                    | $\frac{(B)}{(A)}$                 |
| 2010         | 0.1           | 1,114                 | \$47,642               | \$42.77                           |
| 2011         | 1.3           | 16,479                | \$46,134               | \$2.80                            |
| 2012         | 2.2           | 30,111                | \$35,078               | \$1.16                            |
| <b>Total</b> | <b>3.6</b>    | <b>47,704</b>         | <b>\$128,855</b>       | <b>\$2.70</b>                     |

Table 35 shows the total auction-related costs over all four EDCs. NERA's total reported cost to run the auctions is approximately \$861,482. The total number of SRECs auctioned by all of the EDCs combined in each energy year was used to calculate that the total cost to auction SRECs is \$9.62 per SREC per year<sup>46</sup>.

**Table 35: EDC Auction-Related Costs**

| Energy Year  | Total SRECs Auctioned by All EDCs in Energy Year | NERA Auction Cost (\$/SREC) <sup>47</sup> |
|--------------|--|---|
| 2010         | 4,152  | \$9.62                                    |
| 2011         | 19,150   | \$9.62                                    |
| 2012         | 66,269   | \$9.62                                    |
| <b>Total</b> | <b>89,571</b>                                    | <b>\$9.62</b>                             |

Table 36 shows Rockland Electric's internal utility administration costs related to the Solar Long-term Contracting Program for energy years 2010-2012. The total internal administration cost is on average \$0.48 per SREC per year.

<sup>45</sup> This assumption will overestimate the number of SRECs, but will also result in a slightly lower estimate of the costs associated with the EDC Solar Long-term Contracting Program. See Figures 1 and 2 in Appendix A for a more detailed description of the full process and the reasons why these assumptions are necessary.

<sup>46</sup> SRECs from the same projects can be produced and auctioned for ten years, or the length of the contract.

<sup>47</sup> Although each EDC reported NERA auction costs individually, the per SREC auction cost was calculated by dividing the total invoiced NERA auction manager costs by the total number of SRECs auctioned by all four EDCs in the program as of October 31, 2011.

**Table 36: Rockland Electric Internal Utility Administration Costs**

| Energy Year  | MW Contracted | Total SRECs over Term | Internal Administration Cost | Total Internal Administration Cost (\$/SREC) |
|--------------|---------------|-----------------------|------------------------------|--|
|              |               | (A)                   | (B)                          | $\frac{(B)}{(A)}$                            |
| 2010         | 0.1           | 1,114                 | \$393                        | \$0.35                                       |
| 2011         | 1.3           | 16,479                | \$12,886                     | \$0.78                                       |
| 2012         | 2.2           | 30,111                | \$9,631                      | \$0.32                                       |
| <b>Total</b> | <b>3.6</b>    | <b>47,704</b>         | <b>\$22,910</b>              | <b>\$0.48</b>                                |

Table 37 shows RE’s total combined program costs. The total solicitation-related costs from Table 34, total auction-related costs from Table 35, total internal utility administration costs from Table 36, and RE’s “SREC Transaction Fees” of \$39.11 per SREC were summed up to determine that the total combined program costs for RE are \$51.91 per SREC.

**Table 37: Rockland Electric Total Combined Program Administration Costs per SREC**

| Energy Year  | MW Contracted | Total SRECs over Term | Total Solicitation Cost (\$/SREC) | Auction Cost (\$/SREC) | Internal Utility Administration Cost (\$/SREC) | “SREC Transaction Fee” (\$/SREC) | Total Combined Program Cost (\$/SREC) |
|--------------|---------------|-----------------------|-----------------------------------|------------------------|--|----------------------------------|---------------------------------------|
|              |               |                       | (A)                               | (B)                    | (C)  | (D)                              | (A)+(B)+(C)+(D)                       |
| 2010         | 0.1           | 1,114                 | \$42.77                           | \$9.62                 | \$0.35   | \$39.11                          | \$91.85                               |
| 2011         | 1.3           | 16,479                | \$2.80                            | \$9.62                 | \$0.78   | \$39.11                          | \$52.31                               |
| 2012         | 2.2           | 30,111                | \$1.16                            | \$9.62                 | \$0.32   | \$39.11                          | \$50.21                               |
| <b>Total</b> | <b>3.6</b>    | <b>47,704</b>         | <b>\$2.70</b>                     | <b>\$9.62</b>          | <b>\$0.48</b>                                  | <b>\$39.11</b>                   | <b>\$51.91</b>                        |

#### *EDC Solar Long-term Contracting Program Ratepayer Exposure*

In addition to the total combined program costs, CEEEP also estimated the net ratepayer refund or payment related to the EDC Solar Long-term Contracting Programs<sup>48</sup>. If the solicitation obligations and program costs are less than the auction proceeds then the ratepayer will receive a refund.

To calculate the cost of the SREC solicitation, the weighted average awarded solicitation SREC price was used and is shown for RE for each energy year in Table 38.

**Table 38: Rockland Electric Weighted Average Awarded Solicitation Bid Prices (\$/MWh)**

| Energy Year | Weighted Awarded Average Bid Price |
|-------------|------------------------------------|
| 2010        | \$460                              |
| 2011        | \$384                              |
| 2012        | \$380                              |

<sup>48</sup> See Figure 1 in Appendix A for a full description of how the solar program affects ratepayers through the various costs and revenues associated with the program.

Table 39 shows the incremental contracted SRECs for energy years 2010, 2011, and 2012. Over a 10-year contract period, it is estimated that RE has contracted a total of 47,704 SRECs. Table 39 shows the total solicitation obligations, which are estimated by multiplying the incremental SRECs for each year by the weighted average awarded solicitation price for that year (Table 38) and summing them up. For example, in EY 2012 the solicitation obligations were calculated using the equation  $[(111)*(\$460) + (4,322)*(\$384) + (337)*(\$380)]^{49}$ . Overall, the total obligation of all SRECs contracted under RE's Solar Long-term Contracting Program solicitations amounts to \$18,226,408 for the full, ten-year contract period.

**Table 39: Rockland Electric Annual Solicitation Contracted SRECs and Total SREC Obligation**

| Energy Year  | Incremental 2010 Solicitation | Incremental 2011 Solicitation | Incremental 2012 Solicitation | Total SRECs   | Solicitation Obligations |
|--------------|-------------------------------|-------------------------------|-------------------------------|---------------|--------------------------|
| 2010         | 111                           |                               |                               | 111           | \$51,224                 |
| 2011         | 111                           | 1,648                         |                               | 1,759         | \$678,423                |
| 2012         | 111                           | 1,648                         | 3,011                         | 4,770         | \$1,822,641              |
| 2013         | 111                           | 1,648                         | 3,011                         | 4,770         | \$1,822,641              |
| 2014         | 111                           | 1,648                         | 3,011                         | 4,770         | \$1,822,641              |
| 2015         | 111                           | 1,648                         | 3,011                         | 4,770         | \$1,822,641              |
| 2016         | 111                           | 1,648                         | 3,011                         | 4,770         | \$1,822,641              |
| 2017         | 111                           | 1,648                         | 3,011                         | 4,770         | \$1,822,641              |
| 2018         | 111                           | 1,648                         | 3,011                         | 4,770         | \$1,822,641              |
| 2019         | 111                           | 1,648                         | 3,011                         | 4,770         | \$1,822,641              |
| 2020         |                               | 1,648                         | 3,011                         | 4,659         | \$1,771,417              |
| 2021         |                               |                               | 3,011                         | 3,011         | \$1,144,218              |
| <b>Total</b> | <b>1,114</b>                  | <b>16,479</b>                 | <b>30,111</b>                 | <b>47,704</b> | <b>\$18,226,408</b>      |

Table 40 shows the auctioned SRECs for energy years 2010, 2011, and 2012 as well as the total annual proceeds received from auctions by RE so far. RE has received approximately \$48,000 in auction proceeds over the past two years. In addition, CEEEP estimated the value of remaining SRECs by subtracting the number of SRECs auctioned in Table 40 from the Total SRECs in Table 39 and multiplying by an SREC value of \$0, \$200, \$400, or the SACP. Table 40 shows that, depending on the price of SRECs over the next 10 years, the remaining proceeds of the SRECs RE solicited will range from \$0 to \$26 million.

<sup>49</sup> Due to rounding in the weighted average solicitation prices in Table 34, the solicitation obligations will be slightly different in Table 39 then when using this equation.

**Table 40: Rockland Electric Annual Auctioned SRECs, Total Auction Proceeds, and Remaining SREC Proceeds Scenarios**

| Energy Year  | Number of Auctioned SRECs | Annual Auction Proceeds | Proceeds of Remaining SREC Scenarios |                    |                     |                     |
|--------------|---------------------------|-------------------------|--------------------------------------|--------------------|---------------------|---------------------|
|              |                           |                         | \$0 SREC                             | \$200 SREC         | \$400 SREC          | SACP                |
|              |                           |                         | (A)                                  | (B)                | (C)                 | (D)                 |
| 2010         | 0                         | \$0                     | \$0                                  | \$22,271           | \$44,543            | \$77,170            |
| 2011         | 15                        | \$10,045                | \$0                                  | \$348,853          | \$697,706           | \$1,177,379         |
| 2012         | 133                       | \$37,920                | \$0                                  | \$927,473          | \$1,854,946         | \$3,051,386         |
| 2013         |                           |                         | \$0                                  | \$954,073          | \$1,908,146         | \$3,057,804         |
| 2014         |                           |                         | \$0                                  | \$954,073          | \$1,908,146         | \$2,981,478         |
| 2015         |                           |                         | \$0                                  | \$954,073          | \$1,908,146         | \$2,905,152         |
| 2016         |                           |                         | \$0                                  | \$954,073          | \$1,908,146         | \$2,833,597         |
| 2017         |                           |                         | \$0                                  | \$954,073          | \$1,908,146         | \$2,265,923         |
| 2018         |                           |                         | \$0                                  | \$954,073          | \$1,908,146         | \$2,208,679         |
| 2019         |                           |                         | \$0                                  | \$954,073          | \$1,908,146         | \$2,151,435         |
| 2020         |                           |                         | \$0                                  | \$931,802          | \$1,863,603         | \$2,049,963         |
| 2021         |                           |                         | \$0                                  | \$602,220          | \$1,204,440         | \$1,291,762         |
| <b>Total</b> | <b>148</b>                | <b>\$47,965</b>         | <b>\$0</b>                           | <b>\$9,511,130</b> | <b>\$19,022,259</b> | <b>\$26,051,728</b> |

Finally, Table 41 shows the net ratepayer refunds or payments as a result of RE’s Solar Long-term Contracting Program under the four different SREC price scenarios shown in Table 40. To determine whether the net ratepayer impact would be positive or negative, CEEEP used the equation [(Proceeds of Remaining SRECs)-(Auction Proceeds)-(Solicitation Obligations)]. At an SREC price equal to the SACP over the next 10 years, the program will show a surplus (or positive net ratepayer impact) of almost \$8 million. At a \$200 SREC price, the program will have a deficit (or negative net ratepayer impact) of almost \$9 million. In addition, CEEEP has calculated that the breakeven SREC price, or the price where the solicitation obligations will be equal to the SREC and auction proceeds, is \$382.60 per SREC.



**Table 41: Net Ratepayer Refund or Payment under Various SREC Price Scenarios**

| Energy Year  | Annual Solicitation Obligations | Annual Auction Proceeds | \$0 SREC                  | \$200 SREC                | \$400 SREC                | SACP                      |
|--------------|---------------------------------|-------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
|              | (E)                             | (F)                     | (A, Table 37)-<br>(F)-(E) | (B, Table 37)-<br>(F)-(E) | (C, Table 37)-<br>(F)-(E) | (D, Table 37)-<br>(F)-(E) |
| 2010         | \$51,224                        | \$0                     | (\$51,224)                | (\$28,953)                | (\$6,681)                 | \$25,946                  |
| 2011         | \$678,423                       | \$10,045                | (\$668,468)               | (\$339,615)               | \$9,238                   | \$488,911                 |
| 2012         | \$1,822,641                     | \$37,920                | (\$1,860,561)             | (\$933,088)               | (\$5,515)                 | \$1,190,825               |
| 2013         | \$1,822,641                     |                         | (\$1,822,641)             | (\$868,568)               | \$85,505                  | \$1,235,163               |
| 2014         | \$1,822,641                     |                         | (\$1,822,641)             | (\$868,568)               | \$85,505                  | \$1,158,837               |
| 2015         | \$1,822,641                     |                         | (\$1,822,641)             | (\$868,568)               | \$85,505                  | \$1,082,511               |
| 2016         | \$1,822,641                     |                         | (\$1,822,641)             | (\$868,568)               | \$85,505                  | \$1,010,956               |
| 2017         | \$1,822,641                     |                         | (\$1,822,641)             | (\$868,568)               | \$85,505                  | \$443,282                 |
| 2018         | \$1,822,641                     |                         | (\$1,822,641)             | (\$868,568)               | \$85,505                  | \$386,038                 |
| 2019         | \$1,822,641                     |                         | (\$1,822,641)             | (\$868,568)               | \$85,505                  | \$328,794                 |
| 2020         | \$1,771,417                     |                         | (\$1,771,417)             | (\$839,615)               | \$92,187                  | \$278,547                 |
| 2021         | \$1,144,218                     |                         | (\$1,144,218)             | (\$541,998)               | \$60,222                  | \$147,544                 |
| <b>Total</b> | <b>\$18,226,408</b>             | <b>\$47,965</b>         | <b>(\$18,274,374)</b>     | <b>(\$8,763,244)</b>      | <b>\$747,886</b>          | <b>\$7,777,355</b>        |

## VI. Public Service Electric & Gas (PSE&G) Program Analysis

### Data Collected

The tables below present the data submitted to CEEEP by Public Service Electric & Gas (PSE&G) in November of 2011 and January of 2012 with regards to their Solar Loan I and II programs. Solicitation for solar projects under the Solar Loan programs is handled internally by PSE&G. Table 42 shows the awarded, contracted and installed solar capacity in MW for energy years 2008 through 2012. In total, PSE&G has awarded 54.2 MW and contracted 29.7 MW of solar capacity under these programs between 2008 and 2012.<sup>50</sup>

**Table 42: PSE&G Awarded, Contracted, and Installed Capacity**

| Energy Year  | Solar Loan I |               |              | Solar Loan II |               |              |
|--------------|--------------|---------------|--------------|---------------|---------------|--------------|
|              | MW Awarded   | MW Contracted | MW Installed | MW Awarded    | MW Contracted | MW Installed |
| 2008         | 3.9          |               |              |               |               |              |
| 2009         | 13.4         | 2.8           | 2.8          |               |               |              |
| 2010         | 4.9          | 11.2          | 11.2         | 1.4           | 0.0           | 0.0          |
| 2011         |              | 6.1           | 6.1          | 28.0          | 4.6           | 4.6          |
| 2012         |              | 1.3           | 1.3          | 2.6           | 3.6           | 3.6          |
| <b>Total</b> | <b>22.2</b>  | <b>21.4</b>   | <b>21.4</b>  | <b>32.0</b>   | <b>8.3</b>    | <b>8.3</b>   |

Table 43 shows the results of each auction as reported by PSE&G, including the number of SRECs auctioned and the auction price. The auction price is the clearing price that applies to all SRECs sold during that auction period. Overall, PSE&G has auctioned a total of 81,545 SRECs at auction prices ranging from \$227.03 to \$688.52 per SREC.

**Table 43: PSE&G Auction Results**

| Auction                         | Date          | SRECs Auctioned | SREC Auction Price |
|---------------------------------|---------------|-----------------|--------------------|
| #1                              | August 2009   | 1,352           | \$688.52           |
| #2                              | February 2010 | 2,800           | \$685.06           |
| #3                              | July 2010     | 5,750           | \$688.03           |
| #4                              | October 2010  | 5,850           | \$665.12           |
| #5                              | April 2011    | 6,766           | \$669.69           |
| #6                              | July 2011     | 19,261          | \$475.00           |
| #7                              | August 2011   | 10,970          | \$479.75           |
| #8                              | October 2011  | 28,796          | \$227.03           |
| <b>Overall Weighted Average</b> |               |                 | <b>\$451.12</b>    |

<sup>50</sup> In some cases, projects that are awarded do not become contracted because the winning parties do not pay the required deposits or do not sign the required contracts within the specified time-period. For this reason, the number of MW contracted is sometimes less than the number or MW awarded in each solicitation period.

Table 44 shows the program costs by category as reported by PSE&G. As mentioned above, the NERA solicitation manager costs do not apply to PSE&G as they manage the loans for their solar projects internally. Also, PSE&G solar loan programs do not have an “SREC Transaction Fee<sup>51</sup>.” A total of \$5,375,889 has been spent for PSE&G to administer the Solar Loan programs since 2009.

**Table 44: PSE&G Solar Program Costs**

| Energy Year  | NERA Solicitation Manager Costs | NERA Auction Manager Costs | Internal Utility Administrative Costs |                    |
|--------------|---------------------------------|----------------------------|---------------------------------------|--------------------|
|              |                                 |                            | Solar Loan I                          | Solar Loan II      |
| 2009         | N/A                             | \$0                        | \$1,087,816                           | N/A                |
| 2010         | N/A                             | \$190,051                  | \$849,020                             | \$380,757          |
| 2011         | N/A                             | \$365,180                  | \$290,794                             | \$1,125,605        |
| 2012         | N/A                             | \$255,398                  | \$117,558                             | \$713,710          |
| <b>Total</b> | <b>N/A</b>                      | <b>\$810,629</b>           | <b>\$2,345,188</b>                    | <b>\$2,220,072</b> |

*Solicitation- and Auction-Related Costs per SREC*

In order to fully understand the costs associated with the EDC Solar Long-term Contracting Program, CEEEP estimated the total program costs per SREC contracted to create a standard means of comparison across the multiple EDC programs. The total SRECs contracted over the 10-15 year loan term was used<sup>52</sup>. A capacity factor of 14% was used throughout the analysis in order to consistently convert MWs contracted to total SRECs. Table 45 shows the total auction-related costs over all four EDCs. NERA’s total reported cost to run the auctions is approximately \$861,482. The total number of SRECs auctioned by all of the EDCs combined in each energy year was used to calculate that the total cost to auction SRECs is \$9.62 per SREC per year<sup>53</sup>.

**Table 45: EDC Auction-Related Costs**

| Energy Year  | Total SRECs Auctioned by All EDCs in Energy Year | NERA Auction Cost (\$/SREC) <sup>54</sup> |
|--------------|--|---|
| 2010         | 4,152  | \$9.62                                    |
| 2011         | 19,150   | \$9.62                                    |
| 2012         | 66,269   | \$9.62                                    |
| <b>Total</b> | <b>89,571</b>                                    | <b>\$9.62</b>                             |

<sup>51</sup> While ACE, RE and JCP&L have an “SREC Transaction Fee,” the PSE&G internal utility administrative costs include a “return on equity” component instead.

<sup>52</sup> Residential projects in PSEG’s solar programs have a 10-year loan term while non-residential projects have a 15-year loan term.

<sup>53</sup> SRECs from the same projects can be produced and auctioned for ten years, or the length of the contract.

<sup>54</sup> Although each EDC reported NERA auction costs individually, a more consistent value for the per SREC auction cost was calculated by dividing the total invoiced NERA auction manager costs by the total number of SRECs auctioned by all four EDCs in the program as of October 31, 2011.

Table 46 shows PSE&G’s internal administration costs per SREC for both the Solar Loan I and Solar Loan II programs. On average the internal administration cost per SREC for the Solar Loan I program between 2009 and 2012 is \$6.04. The average internal administration cost per SREC for the Solar Loan II program between 2010 and 2012 is \$15.55.

**Table 46: PSE&G Internal Utility Administration Costs**

| Energy Year  | MW Contracted |               | Total SRECs over Term |                | Internal Administration Costs |                    | Total Internal Administration Cost (\$/SREC) |                     |
|--------------|---------------|---------------|-----------------------|----------------|-------------------------------|--------------------|--|---------------------|
|              | Solar Loan I  | Solar Loan II | Solar Loan I          | Solar Loan II  | Solar Loan I                  | Solar Loan II      | Solar Loan I                                 | Solar Loan II       |
|              |               |               | (A1)                  | (A2)           | (B1)                          | (B2)               | $\frac{(B1)}{(A1)}$                          | $\frac{(B2)}{(A2)}$ |
| 2009         | 2.8           | N/A           | 50,896                | N/A            | \$1,087,816                   | N/A                | \$21.37                                      | N/A                 |
| 2010         | 11.2          | 0.0           | 204,380               | 123            | \$849,020                     | \$380,757          | \$4.15                                       | \$3,095.59          |
| 2011         | 6.1           | 4.6           | 108,536               | 79,716         | \$290,794                     | \$1,125,605        | \$2.68                                       | \$14.12             |
| 2012         | 1.3           | 3.6           | 24,160                | 62,914         | \$117,558                     | \$713,710          | \$4.87                                       | \$11.34             |
| <b>Total</b> | <b>21.4</b>   | <b>8.3</b>    | <b>387,972</b>        | <b>142,753</b> | <b>\$2,345,188</b>            | <b>\$2,220,072</b> | <b>\$6.04</b>                                | <b>\$15.55</b>      |

Table 47 shows PSE&G’s total combined program costs per SREC. This includes PSE&G’s auction-related costs and internal administration costs for both the Solar Loan I and Solar Loan II programs. The combined total average cost for PSE&G’s solar loan programs combined is \$18.22 per SREC.

**Table 47: PSE&G Total Combined Program Administration Costs per SREC**

| Energy Year  | MW Contracted |               | Total SRECs over Term |                | Auction Cost (\$/SREC) |               | Internal Utility Administration Cost (\$/SREC) |                          | Total Combined Program Cost (\$/SREC) |                          |
|--------------|---------------|---------------|-----------------------|----------------|------------------------|---------------|--|--------------------------|---------------------------------------|--------------------------|
|              | Solar Loan I  | Solar Loan II | Solar Loan I          | Solar Loan II  | Solar Loan I           | Solar Loan II | Solar Loan I                                   | Solar Loan II            | Solar Loan I                          | Solar Loan II            |
|              |               |               |                       |                | (A1)                   | (A2)          | (B1)   | (B2)                     | (A1)+(B1)                             | (A2)+(B2)                |
| 2009         | 2.8           | N/A           | 50,896                | N/A            | \$9.62                 | N/A           | \$21.37  | N/A                      | \$30.99                               | N/A                      |
| 2010         | 11.2          | 0.0           | 204,380               | 123            | \$9.62                 | \$9.62        | \$4.15   | \$3,095.59 <sup>55</sup> | \$13.77                               | \$3,105.21 <sup>56</sup> |
| 2011         | 6.1           | 4.6           | 108,536               | 79,716         | \$9.62                 | \$9.62        | \$2.68   | \$14.12                  | \$12.30                               | \$23.74                  |
| 2012         | 1.3           | 3.6           | 24,160                | 62,914         | \$9.62                 | \$9.62        | \$4.87   | \$11.34                  | \$14.49                               | \$20.96                  |
| <b>Total</b> | <b>21.4</b>   | <b>8.3</b>    | <b>387,972</b>        | <b>142,753</b> | <b>\$9.62</b>          | <b>\$9.62</b> | <b>\$6.04</b>                                  | <b>\$15.55</b>           | <b>\$15.66</b>                        | <b>\$25.17</b>           |

*EDC Solar Long-term Contracting Program Ratepayer Exposure*

In addition to the total combined program costs, CEEEP also estimated the net ratepayer refund or payment related to the EDC Solar Long-term Contracting Programs<sup>57</sup>. If the solicitation obligations and program costs are less than the auction proceeds then the ratepayer will receive a refund.

<sup>55</sup> Note: relatively high internal utility administration cost per SREC is due to high upfront costs and relatively low SRECs produced.

<sup>56</sup> Note: relatively high total combined program cost per SREC is due to high upfront costs and relatively low SRECs produced.

To calculate the cost of the SREC solicitation, the SREC floor price was used and is shown for PSE&G in Table 48 for both solar programs by segment size and energy year.

**Table 48: PSE&G Solar Programs Floor Price Schedule<sup>58</sup>**

| Energy Year | Solar Loan I | Solar Loan II |                                  |                                       |                                       |
|-------------|--------------|---------------|----------------------------------|---------------------------------------|---------------------------------------|
|             |              | Residential   | Small Non-Residential (≤ 150 kW) | Medium Non-Residential (150 - 500 kW) | Large Non-Residential (500 kW - 2 MW) |
| 2008        | \$475        | N/A           | N/A                              | N/A                                   | N/A                                   |
| 2009        | \$475        | N/A           | N/A                              | N/A                                   | N/A                                   |
| 2010        | \$475        | \$450         | \$410                            | \$380                                 | N/A                                   |
| 2011        | \$475        | \$428         | \$388                            | \$358                                 | \$345                                 |
| 2012        | \$475        | \$400         | \$360                            | \$330                                 | \$325                                 |

Table 49 shows the incremental contracted SRECs for energy years 2009, 2010, 2011, and 2012. Over a 15-year contract period, it is estimated that PSE&G has contracted a total of 530,725 SRECs. Table 49 shows the total solicitation obligations, which are estimated by multiplying the incremental SRECs for each year by the appropriate SREC floor price for that year and segment (Table 48) and summing them up. Overall, the total obligation of all SRECs contracted under PSE&G’s Solar Loan I and II programs solicitations amounts to \$234,583,952 for the full, ten-year contract period.

<sup>57</sup> See Figure 1 in Appendix A for a full description of how the solar program affects ratepayers through the various costs and revenues associated with the program.

<sup>58</sup> Source for PSE&G’s Solar Loan II Floor Price Schedule: [http://www.pseg.com/home/save/solar/srec\\_prices.jsp](http://www.pseg.com/home/save/solar/srec_prices.jsp). The EY 2011 floor price values for the Solar Loan II Program are averages of the two possible floor price values established for projects accepted during that energy year.

**Table 49: PSE&G Annual Solicitation Contracted SRECs and Total SREC Obligation**

| <b>Energy Year</b> | <b>Incremental 2009 Solicitation</b> | <b>Incremental 2010 Solicitation</b> | <b>Incremental 2011 Solicitation</b> | <b>Incremental 2012 Solicitation</b> | <b>Total SRECs</b> | <b>Total Solicitation Obligations</b> |
|--------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------|---------------------------------------|
| 2009               | 3,397                                |                                      |                                      |                                      | 3,397              | \$1,613,636                           |
| 2010               | 3,397                                | 13,797                               |                                      |                                      | 17,194             | \$8,166,904                           |
| 2011               | 3,397                                | 13,797                               | 13,110                               |                                      | 30,304             | \$13,777,224                          |
| 2012               | 3,397                                | 13,797                               | 13,110                               | 6,083                                | 36,387             | \$16,078,993                          |
| 2013               | 3,397                                | 13,797                               | 13,110                               | 6,083                                | 36,387             | \$16,078,993                          |
| 2014               | 3,397                                | 13,797                               | 13,110                               | 6,083                                | 36,387             | \$16,078,993                          |
| 2015               | 3,397                                | 13,797                               | 13,110                               | 6,083                                | 36,387             | \$16,078,993                          |
| 2016               | 3,397                                | 13,797                               | 13,110                               | 6,083                                | 36,387             | \$16,078,993                          |
| 2017               | 3,397                                | 13,797                               | 13,110                               | 6,083                                | 36,387             | \$16,078,993                          |
| 2018               | 3,397                                | 13,797                               | 13,110                               | 6,083                                | 36,387             | \$16,078,993                          |
| 2019               | 3,385                                | 13,797                               | 13,110                               | 6,083                                | 36,375             | \$16,073,168                          |
| 2020               | 3,385                                | 13,306                               | 13,110                               | 6,083                                | 35,884             | \$15,840,458                          |
| 2021               | 3,385                                | 13,306                               | 11,430                               | 6,083                                | 34,204             | \$15,094,225                          |
| 2022               | 3,385                                | 13,306                               | 11,430                               | 5,249                                | 33,370             | \$14,758,804                          |
| 2023               | 3,385                                | 13,306                               | 11,430                               | 5,249                                | 33,370             | \$14,758,804                          |
| 2024               |                                      | 13,306                               | 11,430                               | 5,249                                | 29,985             | \$13,150,994                          |
| 2025               |                                      |                                      | 11,430                               | 5,249                                | 16,679             | \$6,830,435                           |
| 2026               |                                      |                                      |                                      | 5,249                                | 5,249              | \$1,966,348                           |
| <b>Total</b>       | <b>50,896</b>                        | <b>204,502</b>                       | <b>188,252</b>                       | <b>87,074</b>                        | <b>530,725</b>     | <b>\$234,583,952</b>                  |

Table 50 shows the auctioned SRECs for energy years 2009, 2010, 2011, and 2012 as well as the total annual proceeds received from auctions by PSE&G so far. PSE&G has received approximately \$36 million in auction proceeds over the past three years. In addition, CEEEP estimated the value of remaining SRECs by subtracting the number of SRECs auctioned in Table 48 from the Total SRECs in Table 47 and multiplying by an SREC value of \$0, \$200, \$400, or the SACP. Table 48 shows that, depending on the price of SRECs over the next 10 years, the remaining proceeds of the SRECs RE solicited will range from \$0 to \$223 million.

**Table 50: PSE&G Annual Auctioned SRECs, Total Auction Proceeds, and Remaining SREC Proceeds Scenarios**

| Energy Year  | Number of Auctioned SRECs | Annual Auction Proceeds | Proceeds of Remaining SREC Scenarios |                     |                      |                      |
|--------------|---------------------------|-------------------------|--------------------------------------|---------------------|----------------------|----------------------|
|              |                           |                         | \$0 SREC                             | \$200 SREC          | \$400 SREC           | SACP                 |
|              |                           |                         | (A)                                  | (B)                 | (C)                  | (D)                  |
| 2009         | 0                         | \$0                     | \$0                                  | \$679,426           | \$1,358,851          | \$2,415,358          |
| 2010         | 4,152                     | \$2,849,048             | \$0                                  | \$2,608,426         | \$5,216,851          | \$9,038,195          |
| 2011         | 18,366                    | \$12,378,247            | \$0                                  | \$2,387,669         | \$4,775,338          | \$8,058,382          |
| 2012         | 59,027                    | \$20,960,918            | \$0                                  | \$4,527,942         | \$9,055,885          | \$14,896,930         |
| 2013         |                           |                         | \$0                                  | \$7,277,458         | \$14,554,915         | \$23,324,252         |
| 2014         |                           |                         | \$0                                  | \$7,277,458         | \$14,554,915         | \$22,742,055         |
| 2015         |                           |                         | \$0                                  | \$7,277,458         | \$14,554,915         | \$22,159,858         |
| 2016         |                           |                         | \$0                                  | \$7,277,458         | \$14,554,915         | \$21,614,049         |
| 2017         |                           |                         | \$0                                  | \$7,277,458         | \$14,554,915         | \$17,283,962         |
| 2018         |                           |                         | \$0                                  | \$7,277,458         | \$14,554,915         | \$16,847,314         |
| 2019         |                           |                         | \$0                                  | \$7,275,005         | \$14,550,010         | \$16,405,136         |
| 2020         |                           |                         | \$0                                  | \$7,176,893         | \$14,353,786         | \$15,789,164         |
| 2021         |                           |                         | \$0                                  | \$6,840,859         | \$13,681,718         | \$14,673,643         |
| 2022         |                           |                         | \$0                                  | \$6,674,069         | \$13,348,138         | \$13,948,804         |
| 2023         |                           |                         | \$0                                  | \$6,674,069         | \$13,348,138         | \$13,581,730         |
| 2024         |                           |                         | \$0                                  | \$5,997,096         | \$11,994,192         | \$11,904,236         |
| 2025         |                           |                         | \$0                                  | \$3,335,808         | \$6,671,616          | \$6,454,788          |
| 2026         |                           |                         | \$0                                  | \$1,049,798         | \$2,099,597          | \$1,978,870          |
| <b>TOTAL</b> | <b>81,545</b>             | <b>\$36,188,213</b>     | <b>\$0</b>                           | <b>\$89,835,924</b> | <b>\$179,671,840</b> | <b>\$223,322,866</b> |

Finally, Table 51 shows the net ratepayer refunds or payments as a result of RE’s Solar Long-term Contracting Program under the four different SREC price scenarios shown in Table 49. To determine whether the net ratepayer impact would be positive or negative, CEEEP used the equation [(Proceeds of Remaining SRECs)-(Auction Proceeds)-(Solicitation Obligations)]. At an SREC price equal to the SACP over the next 10 years, the program will show a ratepayer benefit of almost \$25 million. At a \$200 SREC price, the program will have a ratepayer deficit (or a negative ratepayer impact) of over \$108 million. In addition, CEEEP has calculated that the breakeven SREC price, or the price where the solicitation obligations will be equal to the SREC and auction proceeds, is \$475 per SREC for the Solar Loan I Program and \$356 per SREC for the Solar Loan II Program.

**Table 51: Net Ratepayer Refund or Payment under Various SREC Price Scenarios**

| Energy Year  | Annual Solicitation Obligations | Annual Auction Proceeds | \$0 SREC               | \$200 SREC             | \$400 SREC            | SACP                  |
|--------------|---------------------------------|-------------------------|------------------------|------------------------|-----------------------|-----------------------|
|              | (E)                             | (F)                     | (A, Table 45)-(F)-(E)  | (B, Table 45)-(F)-(E)  | (C, Table 45)-(F)-(E) | (D, Table 45)-(F)-(E) |
| 2009         | \$1,613,636                     | \$0                     | (\$1,613,636)          | (\$934,210)            | (\$254,785)           | \$801,722             |
| 2010         | \$8,166,904                     | \$2,849,048             | (\$5,317,856)          | (\$2,709,431)          | (\$101,005)           | \$3,720,339           |
| 2011         | \$13,777,224                    | \$12,378,247            | (\$1,398,977)          | \$988,692              | \$3,376,360           | \$6,659,405           |
| 2012         | \$16,078,993                    | \$20,960,918            | \$4,881,925            | \$353,982              | (\$4,173,960)         | (\$10,015,006)        |
| 2013         | \$16,078,993                    |                         | (\$16,078,993)         | (\$8,801,536)          | (\$1,524,078)         | \$7,245,258           |
| 2014         | \$16,078,993                    |                         | (\$16,078,993)         | (\$8,801,536)          | (\$1,524,078)         | \$6,663,062           |
| 2015         | \$16,078,993                    |                         | (\$16,078,993)         | (\$8,801,536)          | (\$1,524,078)         | \$6,080,865           |
| 2016         | \$16,078,993                    |                         | (\$16,078,993)         | (\$8,801,536)          | (\$1,524,078)         | \$5,535,056           |
| 2017         | \$16,078,993                    |                         | (\$16,078,993)         | (\$8,801,536)          | (\$1,524,078)         | \$1,204,969           |
| 2018         | \$16,078,993                    |                         | (\$16,078,993)         | (\$8,801,536)          | (\$1,524,078)         | \$768,321             |
| 2019         | \$16,073,168                    |                         | (\$16,073,168)         | (\$8,798,163)          | (\$1,523,158)         | \$331,968             |
| 2020         | \$15,840,458                    |                         | (\$15,840,458)         | (\$8,663,566)          | (\$1,486,673)         | (\$51,294)            |
| 2021         | \$15,094,225                    |                         | (\$15,094,225)         | (\$8,253,365)          | (\$1,412,506)         | (\$420,582)           |
| 2022         | \$14,758,804                    |                         | (\$14,758,804)         | (\$8,084,735)          | (\$1,410,667)         | (\$810,000)           |
| 2023         | \$14,758,804                    |                         | (\$14,758,804)         | (\$8,084,735)          | (\$1,410,667)         | (\$1,177,074)         |
| 2024         | \$13,150,994                    |                         | (\$13,150,994)         | (\$7,153,898)          | (\$1,156,802)         | (\$1,246,758)         |
| 2025         | \$6,830,435                     |                         | (\$6,830,435)          | (\$3,494,627)          | (\$158,819)           | (\$375,646)           |
| 2026         | \$1,966,348                     |                         | (\$1,966,348)          | (\$916,550)            | \$133,248             | \$12,522              |
| <b>TOTAL</b> | <b>\$234,583,952</b>            | <b>\$36,188,213</b>     | <b>(\$198,395,739)</b> | <b>(\$108,559,819)</b> | <b>(\$18,723,899)</b> | <b>\$24,927,126</b>   |



## VII. PSE&G: Solar 4 All Program Analysis

PSE&G’s Solar 4 All is divided into two main initiatives – 40 MW of “neighborhood” solar and 40 MW of “centralized” solar. The “neighborhood” portion of the Solar 4 All program consists of smart solar units on utility poles in the more than 300 towns and cities that PSE&G serves. The “centralized” portion consists of large-scale solar installations on PSE&G property and negotiated lease arrangements to install solar systems on third party sites. Table 52 shows the total installed MWs for the various segments of the Solar 4 All program to date.

**Table 52: Solar 4 All Installed MWs by Segment**

| Segment Name | Description                           | Total MWs Installed |
|--------------|---------------------------------------|---------------------|
| 1a           | “Centralized” PSE&G owned sites       |                     |
| 1b           | “Centralized” Third party owned sites | 34.56               |
| 1c           | “Centralized” Urban Enterprise Zones  | 5.4                 |
| 2            | “Neighborhood” Pole Top               | 40                  |

In order to estimate the ratepayer exposure for Solar 4 All CEEEP determined the various costs and revenues associated with the program. The Solar 4 All program generates revenue from the sale of wholesale energy, wholesale capacity, and SRECs. The costs associated with the Solar 4 All program include capital costs, operation and maintenance costs, lease payments (if applicable), and the PSE&G cost of capital (11.8%).

First, CEEEP calculated the Levelized Revenue Cost of Electricity (LRCOE) for each segment of the program. The LRCOE was based on PSE&G’s revenue requirement model, which shows the revenue stream needed to recover all costs associated with the program, including the cost of capital. There were two cost scenarios provided by PSE&G: low and high. Table 53 shows the calculated LRCOE for each segment under the low cost scenario, high cost scenario, and the average. Under the Low Cost scenario, the LRCOE ranges from \$425/MWh to \$563/MWh. Under the High Cost scenario, the LRCOE ranges from \$479/MWh to \$699/MWh. Note that the LRCOE in Table 53 does not include revenues from the sale of wholesale energy, capacity, and SRECs.

**Table 53: Levelized Revenue Cost of Energy (LRCOE) under Low and High Cost Scenarios (\$/MWh)**

| Segment Name | Description                           | Low Cost | High Cost | Average  |
|--------------|---------------------------------------|----------|-----------|----------|
| 1a + 1b      | PSE&G and 3 <sup>rd</sup> Party Sites | \$424.90 | \$478.65  | \$451.77 |
| 1c           | Urban Enterprise Zones                | \$549.51 | \$620.11  | \$584.81 |
| 2            | Pole Top                              | \$563.41 | \$699.27  | \$631.34 |

Table 54 shows the LRCOE when the wholesale energy, wholesale capacity and SREC revenues from 2008 to 2011 are subtracted. Depending on the segment size, the revenues account for between \$14.80/MWh and \$34.37/MWh of the LRCOE. The values in Table 54 can be considered the breakeven price. As stated earlier, if revenues exceed the breakeven prices, then ratepayers will receive a refund. Conversely, if revenues are below the breakeven prices, ratepayers pay the difference.

**Table 54: LRCOE Net of 2008-2011 Energy, Capacity, and SRECs**

| <b>Segment Name</b> | <b>Description</b>                    | <b>Low Cost</b> | <b>High Cost</b> | <b>Average</b> | <b>Decrease</b> |
|---------------------|---------------------------------------|-----------------|------------------|----------------|-----------------|
| 1a + 1b             | PSE&G and 3 <sup>rd</sup> Party Sites | \$410.10        | \$463.86         | \$436.98       | \$14.80         |
| 1c                  | Urban Enterprise Zones                | \$515.14        | \$585.74         | \$550.44       | \$34.37         |
| 2                   | Pole Top                              | \$530.91        | \$666.77         | \$598.84       | \$32.50         |

Table 55 shows some stylized examples (i.e. not actual values) of revenues and costs associated with the Solar for All program revenue stream. As is apparent in Table 55, the overall cost effectiveness of the Solar for All program is highly dependent on the prices of SRECs, energy and capacity.

**Table 55: Stylized Scenarios of Revenues-Costs (\$/MWh)**

| <b>\$/MWh</b>                 | <b>Scenario 1: Current Prices</b> | <b>Scenario 2: Historically High Prices</b> | <b>Scenario 3: High Wholesale/Low SRECs</b> |
|-------------------------------|-----------------------------------|---|---|
| <b>Wholesale Energy Price</b> | <b>\$100</b>                      | <b>\$150</b>                                | <b>\$150</b>                                |
| <b>Capacity</b>               | <b>\$20</b>                       | <b>\$50</b>                                 | <b>\$50</b>                                 |
| <b>SREC Value</b>             | <b>\$200</b>                      | <b>\$400</b>                                | <b>\$200</b>                                |
| <b>LRCOE</b>                  | <b>\$500</b>                      | <b>\$500</b>                                | <b>\$500</b>                                |
| <b>Residual</b>               | <b>(\$180)</b>                    | <b>\$100</b>                                | <b>(\$100)</b>                              |

## **Appendix A: Description of Process**

This paper reviewed the various components of costs and revenues associated with the EDC Solar Long-term Contracting Program in a step-by-step manner to determine the ratepayer exposure associated with each program. This section details the process used to produce the information detailed in the sections above.

### *Data Collection*

In September 2011 CEEEP staff began by reviewing a “Solar Review Matrix” (matrix) developed by the BPU and completed by the EDCs. The matrix gave a summary of New Jersey’s utility-supported solar programs in terms of program goals; number of megawatts of solar solicited, awarded, contracted and installed; the number of SRECs produced and auctioned and the revenues generated by that auction; and the various costs of each utility’s program.

After an initial review of the data provided in the BPU matrix, CEEEP met individually with staff from each utility and received more detailed information about each solicitation and auction from NERA Economic Consulting (NERA), the solicitation and auction manager. Through these individual consultations, CEEEP found that there were significant differences in how each utility completed the matrix and also that there were updates to the data that were needed given the amount of time that had elapsed since the matrix had originally been completed.

As a result, CEEEP drafted an updated matrix for the utilities to complete based on the information collected in the first matrix and the information needed for a complete analysis. After the BPU reviewed the updated matrix, it was distributed to each utility with detailed instructions.

### *Data Analysis*

CEEEP separated the program costs into solicitation costs, auction costs, internal utility administrative costs and the SREC “Transaction Fee.”<sup>59</sup> In order to determine a total combined program cost per SREC that can be compared across EDCs, the solicitation costs, auction costs, and internal utility administrative costs were divided by the total SRECs contracted over the term of the awarded contracts for energy years 2010, 2011 and 2012. The number of contracted SRECs was used because it represents projects that are further down the project cycle (see Figure 2) and therefore represents a more realistic value for the EDC’s overall solicitation obligation.

The total SRECs contracted over the project term in energy years 2010-2012 was multiplied by the weighted average awarded solicitation bid price for that energy year based on the reported solicitation data to determine the total SRECs solicited in each energy year of the program. The incremental SREC solicitation was summed to determine the total SRECs produced and total solicitation obligations (the money the EDC is obligated to pay the solar producer for their SRECs over the term of the contract) over the project term (assumed to be ten years for all projects). CEEEP then estimated the value of remaining SRECs by subtracting the number of SRECs auctioned so far (auction data is only available for years 2010-2012 at this time) and multiplying by an SREC value of \$0, \$200, \$400 or the Solar Alternative

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<sup>59</sup> The amount of the SREC Transaction fee is a set per SREC amount that is defined by the BPU in each EDC’s settlement.

Compliance Payment<sup>60</sup> (SACP). When these estimated proceeds are compared to the solicitation obligations under the different pricing scenarios, the ratepayer exposure is determined and a break-even price can be calculated. The break-even price is the SREC auction price at which the solicitation obligations for that EDC will be equal to the SREC and auction proceeds. At this price, there is no impact (neither positive nor negative) on the ratepayer.

#### *Determining Ratepayer Exposure*

In addition to the total solicitation- and auction-related costs, CEEEP also estimated the net ratepayer refunds or payments related to the EDC Solar Long-term Contracting Programs. Figure 1 displays the various components used to calculate ratepayer exposure graphically.

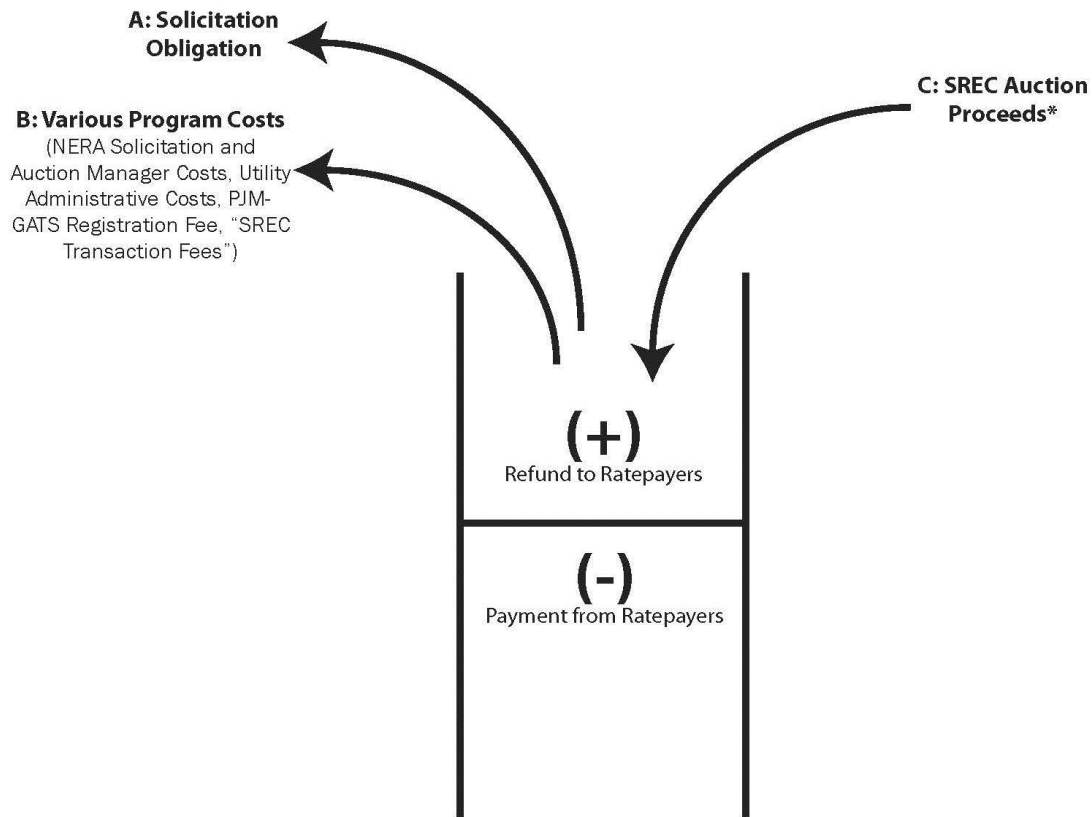
First, there are costs due to the solicitation (A). These “Solicitation Obligations” are the summation of total SRECs contracted over the contract term multiplied by the SREC price awarded. Second, there are the various program costs (B) including NERA’s solicitation and auction management costs, internal utility administrative costs, and “SREC Transaction Fees.” Finally, there are SREC auction proceeds (C). These auction proceeds are difficult to estimate into the future because of the uncertainty of SREC costs in the future.

If the solicitation obligations and program costs exceed the auction proceeds then the ratepayer will make a payment. If the solicitation obligations and program costs are less than the auction proceeds then the ratepayer will receive a refund. In the corresponding calculations of ratepayer exposure above, ratepayer refunds are shown in black, positive numbers while ratepayer payments are shown in red, negative numbers. Figure 1 does not include any environmental benefits of solar, the impacts on the transmission and distribution system, or any other costs or benefits of solar other than those directly related to the EDC Solar Long-term Contract Program.

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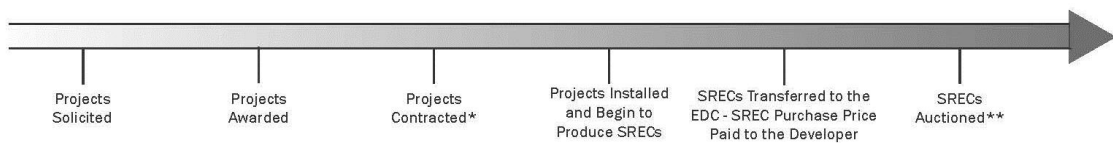
<sup>60</sup> See Appendix C for the full SACP schedule. Source: NJBPU.

**Figure 1: Ratepayer Refunds or Payments Due to the EDC Solar Long-term Contracting Program**



When considering this analysis, it is also important to note that there is a lag time between the solicitation and auction periods so that, in some cases, costs are expended before proceeds are received. There is also a lag time between when the projects are solicited and when SRECs are produced and auctioned. Figure 2 depicts graphically a timeline of the solicitation and auction process.

**Figure 2: Typical Project Cycle Timeline**



\* Not all projects proceed to contracting or installation. A project may be disqualified for failing to follow proper procedures, failing to provide the required deposit or due to changes in the project.  
 \*\* Proceeds from SRECs auctioned offset the ratepayer impact

### *Stakeholder Outreach*

CEEEP shared the results of this analysis with important stakeholders, including the New Jersey Board of Public Utilities (BPU), the New Jersey Rate Counsel, all four of the EDCs analyzed, and the Solar Working Group during the months of January and February 2012. The meeting dates and participants are listed below.

| <b>Meeting Date</b> | <b>Meeting Participants</b> |
|---------------------|-----------------------------|
| January 5, 2012     | NJ BPU, Rate Counsel, EDCs  |
| January 12, 2012    | Solar Working Group         |
| February 16, 2012   | Solar Working Group         |

## **Appendix B: List of Sources**

### *NERA SREC Auction Results*

NERA Economic Consulting. "Previous Results." *Sale of Solar Renewable Energy Certificates (SRECs)*. <<http://solarrec-auction.com/index.cfm?s=background&p=previousResults>>.

### *NERA SREC Solicitation Results (Confidential Reports)*

NERA Economic Consulting. "Recommendations from the Solicitation Manager: ACE and JCP&L SREC-Based Financing Program." September 23, 2009.

NERA Economic Consulting. "Recommendations of the Solicitation Manager: SREC-Based Financing Program, December 2009 Solicitation." January 14, 2010 (Corrected).

NERA Economic Consulting. "Recommendations of the Solicitation Manager: SREC-Based Financing Program, March 2010 Solicitation." April 9, 2010.

NERA Economic Consulting. "Recommendations of the Solicitation Manager: SREC-Based Financing Program, June 2010 Solicitation." July 19, 2010.

NERA Economic Consulting. "Recommendations of the Solicitation Manager: SREC-Based Financing Program, October 2010 Solicitation." November 15, 2010.

NERA Economic Consulting. "Recommendations of the Solicitation Manager: SREC-Based Financing Program, February 2011 Solicitation." March 18, 2011 (Corrected).

NERA Economic Consulting. "Recommendations of the Solicitation Manager: SREC-Based Financing Program, June 2011 Solicitation." July 1, 2011.

NERA Economic Consulting. "Recommendations of the Solicitation Manager: SREC-Based Financing Program, September 2011 Solicitation." October 3, 2011.

### *NJ BPU Board Orders Approving Results from Solicitations*

"Board Order Approving Results of the First Solicitation." 30 September 2009. *SREC-Based Financing Program*. <[http://njedcsolar.com/assets/files/ACE-JCP&L\\_Board\\_Press\\_Release\\_Approving\\_Results\\_20090930b.pdf](http://njedcsolar.com/assets/files/ACE-JCP&L_Board_Press_Release_Approving_Results_20090930b.pdf)>.

"Board Order Approving Results from the Second Solicitation." *SREC-Based Financing Program*. January 21, 2010. <[http://njedcsolar.com/assets/files/NJEDCSolar\\_Board\\_Order\\_Approving\\_Results\\_1-20-10-2I.pdf](http://njedcsolar.com/assets/files/NJEDCSolar_Board_Order_Approving_Results_1-20-10-2I.pdf)>.

"Board Order Approving Results of the Third Solicitation." *SREC-Based Financing Program*. April 28, 2010. <[http://njedcsolar.com/assets/files/NJEDCSolar\\_Board\\_Order\\_Approving\\_Results\\_4-28-10-2B.pdf](http://njedcsolar.com/assets/files/NJEDCSolar_Board_Order_Approving_Results_4-28-10-2B.pdf)>.

"Board Order Approving Results of the Fourth Solicitation." *SREC-Based Financing Program*. August 12, 2010. <[http://njedcsolar.com/assets/files/NJEDCSolar\\_Board\\_Order\\_Approving\\_Results\\_8-12-10-2C.pdf](http://njedcsolar.com/assets/files/NJEDCSolar_Board_Order_Approving_Results_8-12-10-2C.pdf)>.

"Board Order Approving Results of the Fifth Solicitation." *SREC-Based Financing Program*. January 3, 2011. <[http://njedcsolar.com/assets/files/NJEDCSolar\\_Board\\_Order\\_Approving\\_Results\\_12-16-10-2A.pdf](http://njedcsolar.com/assets/files/NJEDCSolar_Board_Order_Approving_Results_12-16-10-2A.pdf)>.

"Board Order Approving Results of the Sixth Solicitation." *SREC-Based Financing Program*. March 30, 2011. <[http://njedcsolar.com/assets/files/NJEDCSolar\\_Board\\_Order\\_Approving\\_Results\\_3-30-11-2J.pdf](http://njedcsolar.com/assets/files/NJEDCSolar_Board_Order_Approving_Results_3-30-11-2J.pdf)>.

"Board Order Approving Results of the Seventh Solicitation." *SREC-Based Financing Program*. July 14, 2011. <[http://njedcsolar.com/assets/files/NJEDCSolar\\_Board\\_Order\\_Approving\\_Results\\_7-14-11-2C.pdf](http://njedcsolar.com/assets/files/NJEDCSolar_Board_Order_Approving_Results_7-14-11-2C.pdf)>.

"Board Order Approving Results of the Eighth Solicitation." *SREC-Based Financing Program*. November 9, 2011. <[http://njedcsolar.com/assets/files/ACE-JCP&L\\_Board\\_Order\\_Approving\\_Results\\_11-9-11-2C.pdf](http://njedcsolar.com/assets/files/ACE-JCP&L_Board_Order_Approving_Results_11-9-11-2C.pdf)>.

#### *NJ BPU Board Orders Related to the SREC-Based Financing Program*

"I/M/O the Renewable Energy Portfolio Standard: Amendments to the Minimum Filing Requirements for Energy Efficiency, Renewable Energy, and Conservation Programs, and for Electric Distribution Company Submittals of Filings in Connections with Solar Financing." *New Jersey Board of Public Utilities*. July 30, 2008. <<http://www.state.nj.us/bpu/pdf/boardorders/2008/7-30-08-8E.pdf>>.

"I/M/O the Renewable Energy Portfolio Standards - Alternative Compliance Payments and Solar Alternative Compliance Payments (Docket No. EO06100744)." *New Jersey Board of Public Utilities*. December 9, 2007. <<http://www.state.nj.us/bpu/pdf/boardorders/9-12-07-8E.pdf>>.



*NJ BPU Board Orders Related to RE's SREC-Based Financing Program*

RE Board Order: "I/M/O the Verified Petition of the Rockland Electric Company Concerning a Proposal for an SREC-Based Financing Program Under N.J.S.A. 48:3-98.1 (Docket No. EO09020097)." *SREC-Based Financing Program*. July 29, 2009. <[http://njedcsolar.com/assets/files/RE Board Order 7-29-09-2K.pdf](http://njedcsolar.com/assets/files/RE_Board_Order_7-29-09-2K.pdf)>.

RE Final Stipulation: "I/M/O the Verified Petition of the Rockland Electric Company Concerning a Proposal for an SREC-Based Financing Program Under N.J.S.A. 48:3-98.1 (Docket No. EO09020097)." *SREC-Based Financing Program*. July 24, 2009. <[http://njedcsolar.com/assets/files/RE Stipulation Final 07-24-2009.pdf](http://njedcsolar.com/assets/files/RE_Stipulation_Final_07-24-2009.pdf)>.

*NJ BPU Board Orders Related to ACE and JCP&L's SREC-Based Financing Program*

"I/M/O Atlantic City Electric Company Renewable Energy Portfolio Standard - Amendments to the Minimum Filing Requirements for Energy Efficiency, Renewable Energy, and Conservation Programs, and for Electric Distribution Company Submittals of Filings in Connections with Solar Financing (Docket No. EO08100875)." *New Jersey Board of Public Utilities*. March 27, 2009. <<http://www.nj.gov/bpu/pdf/boardorders/2009/3-27-09-8A.pdf>>.

"I/M/O the Verified Petition of Jersey Central Power and Light Company Concerning a Proposal for an SREC-Based Financing Program under N.J.S.A. 48:3-98.1." (Docket No. EO08090840)." *New Jersey Board of Public Utilities*. March 27, 2009. <<http://www.nj.gov/bpu/pdf/boardorders/2009/3-27-09-8A.pdf>>.

*NJ BPU Board Orders Related to PSE&G's Solar Financing Programs*

Solar Loan I: "I/M/O the Petition of Public Service Electric and Gas Company for approval of a Solar Energy Program and an Associated Cost Recovery Mechanism (Docket No. EO07040278)." *New Jersey Board of Public Utilities*. November 7, 2008. <<http://www.state.nj.us/bpu/pdf/boardorders/11-7-08-2D.pdf>>.

Solar Loan II: "I/M/O Petition of Public Service Electric and Gas Company for Approval of a Solar Loan II Program and an Associated Cost Recovery Mechanism (Docket No. EO09030249)." *New Jersey Board of Public Utilities*. November 10, 2009. <<http://www.nj.gov/bpu/pdf/boardorders/2009/11-10-09-2D.pdf>>.

Solar 4 All: "I/M/O Petition of Public Service Electric and Gas Company for Approval of a Solar Generation Investment Program and an Associated Cost Recovery Mechanism (Docket No. EO09020125)." *New Jersey Board of Public Utilities*. July 29, 2009. <<http://www.nj.gov/bpu/pdf/boardorders/2009/7-29-09-2M.pdf>>.

## Appendix C: Solar Alternative Compliance Payment (SACP) Schedule

| Energy Year | SACP (\$/MWh) |
|-------------|---------------|
| 2010        | \$693         |
| 2011        | \$675         |
| 2012        | \$658         |
| 2013        | \$641         |
| 2014        | \$625         |
| 2015        | \$609         |
| 2016        | \$594         |
| 2017        | \$475         |
| 2018        | \$463         |
| 2019        | \$451         |
| 2020        | \$440         |
| 2021        | \$429         |
| 2022        | \$418         |
| 2023        | \$407         |
| 2024        | \$397         |
| 2025        | \$387         |
| 2026        | \$377         |

Source for 2010-2016 SACP Schedule: “I/M/O the Renewable Energy Portfolio Standards – Alternative Compliance Payments and Solar Alternative Compliance Payments (Docket No. EO06100744).” *New Jersey Board of Public Utilities*. September 12, 2007.

Source for Proposed 2017-2026 SACP Schedule: “I/M/O the Fifteen Year Solar Alternative Compliance Payment Schedule in the New Jersey Renewable Portfolio Standard (Docket No. EO11090527V).” *New Jersey Board of Public Utilities*. September 21, 2011.