Appendix V

Distributed Generation Survey and Scalar Analysis

Appendix V-1

Survey of Other States Distributed Generation Programs

Prepared for the Illinois Power Agency by NERA

Several states have programs by which the utility or the state enters into contracts for the purchase of renewable energy certificates issued for generation from distributed generation systems.[1] Some of these states, like Illinois, have a carve-out for solar photovoltaic resources and/or for Distributed Generation resources in their Renewable Portfolio Standards. The table below provides the list by state of programs examined that fall into this category.

Table 1. List of Distributed Generation Programs By State

Program #	Program Name	State
1	Xcel Energy - Solar*Rewards Program	Colorado
2	Connecticut Light & Power and United Illuminating Company ZREC and LREC Long Term Contracts Program	Connecticut
3	SREC Pilot Procurement Program	Delaware
4	Orlando Utilities Commission - Solar Program	Florida
5	Community Based Renewable Energy Production Incentive (Pilot Program)	Maine
6	Ameren Missouri - Solar Renewable Energy Credits	Missouri
7	El Paso Electric Company - Small and Medium System REC Purchase Program	New Mexico
8	PNM - Performance-Based Solar PV Program	New Mexico
9	Xcel Energy - Solar*Rewards Program	New Mexico
10	SREC-Based Financing Program	New Jersey
11	Duke Energy - Standard Purchase Offer for RECs	North Carolina
12	AEP Ohio - REC Purchase Program	Ohio
13	Duke Energy - Solar REC Program	Ohio
14	Duke Energy - Standard Purchase Offer for RECs	South Carolina

The main features of each of these programs, including the resources and project size targeted, the contract duration, and other key terms of the contract are provided in the next table and are discussed further below.

[1] In some of these programs, the utility, agency, or state also purchases energy and/or capacity from the system.

Table 2. Summary of Program Terms

#	Resource	Size/Segment	Term (Years)	Compensation	Key Contract Requirements
1	Photovoltaic	0.5-10 kW (small)	20	Rebate of $2/Watt. Standard offer starts at $0.15/kWh if project is customer-owned or $0.10/kWh if developer-owned and steps down over time (to $0 after 10 years if customer-owned)	Refundable application fees (small: $250, medium $1500) Security of $5000 for large systems also refundable PV meter and net metering required.
		10-500 kW (medium)	20	Standard Offer: $0.09/kWh, which steps down over time	
		> 500 KW (large)	20	Competitive Bid	
2	LREC: e.g., Fuel Cells, Fuel Cells using Renewable Fuels	< 2000 kW	15	Competitive Bid (Cap: $200)	Security for systems in development set as percent of maximum annual quantity Separate REC meter required RECs to be transferred to Utility NEPOOL-GIS account
	ZREC: e.g., Photovoltaics, Hydroelectric, Wind	< 100 kW (small)	15	Weighted Average of the medium ZREC price + 10% up to $350/REC	
		100-250 kW (medium)	15	Competitive Bid (Cap: $350)	
		250-1000 kW (large)	15	Competitive Bid (Cap: $350)	
3	Photovoltaics	T1: <50 kW	20	Standard Offer: $260 first 10 years ($235 if received GEP grants); $50 next 10 years	Security required: T1-T2: $100/kW refundable T3: 5% of Year 1 SREC value for first 10 years, then 10% of Year 11 SREC value Revenue grade meter required (or utility grade meter for T1) RECs to be transferred to Utility PJM GATS account
		T2a: 50-250 kW	20	Standard Offer: $240 first 10 years ($175 if received GEP grants); $50 next 10 years	
		T2b: 250-500 kW	20	Competitive Bid value in first 10 years; standard offer of $50 next 10 years	
		T3: 500-2000 kW	20	Competitive Bid value in first 10 years; standard offer of $50 next 10 years	

#	Resource	Size/Segment	Term (Years)	Compensation	Key Contract Requirements
4	Photovoltaics	< 2 MW	5	Standard Offer: $0.05/kWh	Electric meter for PV system required
5	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Fuel Cells, Anaerobic Digestion, Tidal Energy, Fuel Cells using Renewable Fuels	< 1 MW (20% reserved for projects less than 100 kW)	up to 20	Either: REC multiplier (where REC is 150% of amount of produced electricity), or: contract (< 1 MW): $0.10/kWh for energy generated from wind, photovoltaic, and hydroelectric and anaerobic digestion installations. contract (>1MW): Competitive Bid with a cap	Proponent can choose to receive a separate payment for RECs in addition to compensation for energy. Capacity may also be included
		1-10 MW	up to 20		
6	Photovoltaics	< 10 kW	10	Standard Offer: up-front payment of $50/SREC based on estimated production for 10 years based on PV Watts	n/a
		10-100 kW	5	Standard Offer: $50/SREC based on meter reading	generator meter and net metering required
7	Photovoltaics	< 10 kW	8	$0.10/kWh declining over time	REC meter required
		10-100 kW	8	$0.12/kWh declining over time	
	Wind	< 10kW	8	$0.06/kWh declining over time	
		10-100 kW	8	$0.024/kWh declining over time	
8	Solar Thermal, Photovoltaics	< 10 kW	8	First-come first-served Standard Offer; $0.12/kWh (early) and $0.05/kWh (late)	Standard kWh meter required
		10-100 kW	8	First-come first-served Standard Offer; $0.14/kWh (early) and $0.05/kWh (late)	
		100 kW - 1 MW	8	Competitive Bid	
9	Photovoltaics	0.5-10 kW	12	Standard Offer: $0.10/kWh, which steps down over time	security: $5000 required for 100kW-2000kW systems refundable upon

#	Resource	Size/Segment	Term (Years)	Compensation	Key Contract Requirements
		10-100 kW	10	Standard Offer: $0.08/kWh, which steps down over time	project completion Production meter and net metering required
		100-2,000 kW	10-20	Competitive Bid	
10	Photovoltaics	Small: < 50 kW	10-15	Competitive Bid (Evaluation: NPV basis with competitiveness assessment and 25% aspirational goal for small segment)	security: $75/kW refundable upon project completion SREC meter and net metering required RECs transferred to utility PJM-GATS account
		50-500 kW			
		500-2,000 kW			
11	Solar Thermal, Photovoltaics, Landfill Gas, Wind, Biomass, Geothermal, CHP/Cogeneration, Hydrogen, Anaerobic Digestion, Small Hydroelectric, Tidal Energy, Wave Energy	Only for systems that produce between 35 - 10,000 RECs annually	15	Standard Offer: $5/MWh (subject to change)	RECs to be transferred to utility NC-RETS account
12	Photovoltaics	< 100 kW	5	2008-2011: $300/SREC 2012-2013: $262.50/SREC	Utility grade meter required for projects >6 kW. RECs to be transferred to Utility PJM GATS account
	Wind	< 100 kW	5	$34/REC	
13	Photovoltaics, Solar Thermal	None specified	15	Standard Offer: $300/SREC in 2010, to be updated annually to reflect market	Utility grade meter required RECs to be transferred to utility M-RETS or PJM GATS account

#	Resource	Size/Segment	Term (Years)	Compensation	Key Contract Requirements
14	Solar Thermal, Photovoltaics, Landfill Gas, Wind, Biomass, Geothermal Electric, CHP/Cogeneration, Hydrogen, Anaerobic Digestion, Small Hydroelectric, Tidal Energy, Wave Energy	Only for systems that produce between 35 - 10,000 RECs annually.	15	Standard Offer: $5/MWh (subject to change)	RECs to be transferred to Utility NC-RETS account

Most programs aim at establishing a "long-term" contract for the purchase of RECs, with a duration between eight (8) and twenty (20) years. There are a few exceptions, all of which are programs that have selected a shorter contract duration of five (5) years: AEP Ohio's REC Purchase Program (#12), the Orlando Utilities Commission's Solar program (#4), and the Ameren Missouri's Solar Renewable Energy Credits program in the larger 10-100 kW segment (#6). Only one (1) of these programs (the Delaware SREC Pilot Procurement Program, #3) requires performance assurance to be maintained throughout the duration of the contract and what is more this requirement only applies to larger systems. Four (4) other programs require some deposit, security or fee upon application or award that is then returned once the system is operational. Such fees can be nominal ($250 for the small segment in Xcel Energy's Solar*Rewards Program in Colorado, #1) or can be more substantial and directly tied to system size ($75/kW up to $20,000 for New Jersey's SREC-Based Financing Program, #10). The other programs do not appear to require any form of performance assurance.

There is a mix of approaches to the selection of projects participating in the programs with some states proceeding strictly through a competitive tender, some states providing a standard offer to qualified applicants up to a program maximum, and other states adopting a mix of both approaches depending on system size. Standard offers can be fixed throughout the contract duration (as in Ameren Missouri's program, #6) or can feature a rate is set annually or that declines over time (e.g., El Paso's New Mexico program, #7). Programs that adopt a competitive bidding process typically impose a cap on allowable bids and select the lower cost systems.[2] States that adopt a mix of approaches typically solicit competitive bids for larger systems and use the results of the competitive solicitation to set a (higher) standard offer price for smaller systems (e.g., Connecticut ZREC and LREC program, #2). None of the programs discussed

[2] This sometimes requires a Net Present Value Analysis if multiple contract durations are possible.

here require the use of an aggregator although several programs specifically envision the participation of developers who may participate on behalf of several customers.[3] While precise qualification requirements for participation in these programs vary, almost all of the programs require the installation of a separate meter to record the generation output of the system. In some cases, payment under the contract is tied directly to the meter readings. Many programs also specify the registry that must be used for the transfer of RECs to the purchaser (including PJM-EIS GATS, M-RETS and NC-RETS).

NOTE: This brief survey focuses on programs that involve the purchase of RECs issued for generation from distributed generation systems but is not a comprehensive list of all solar initiatives, which include rebates, grants, loans for system installation, and various tax incentives.

[3] Further, PPL Electric Utilities in Pennsylvania has an approved set-aside for purchases specifically from systems of 15 kW and this program requires project owners to contract with an aggregator in order to participate.

Appendix V-2

Scalar for Pricing of Systems Under 25 kW (ComEd Territory)

Prepared for the Illinois Power Agency by NERA for Purposes of Recommending an Appropriate Scalar for Pricing Renewable Resources Procured Through a Standard Offer to Small (<25 kw) Distributed Generation Systems

The IPA's plan for procuring Distributed Generation ("DG") calls for a competitive procurement of RECs from installations between 25 kW and 2,000 kW. Aggregators will bid in response to a DG RFP and offer RECs from a minimum of one MW of facilities in the 25 kW to 2,000 kW range. The average price from this procurement for RECs would then be adjusted by a scalar and the adjusted price would be available to aggregators offering DG RECs from DG projects under 25 kW. In this way aggregators will be able to market DG systems to smaller customers without the uncertainty of submitting a bid that may or not be accepted and will be able to provide such customers an assured transaction at a known price. This should facilitate marketing smaller DG systems. The scalar will account for the cost differences between systems in the 25 kW to 2 MW range and systems under 25 kW. The Act expresses a preference that half of the DG procured by the IPA come from facilities under 25 kW.

NERA developed the DG scalar based on the following principles:

- The scalar should be based on data that contains a sufficient number of observations and is not unduly influenced by a small sample size;
- The scalar should be based on data that is as objective as possible; and
- To the extent that the scalar is based on data from other locations, uncertainty allowances should be made in translating the scalar to the ComEd service territory.

NERA conducted a literature review and found a comprehensive dataset containing installed Solar DG system costs by state, by system size, and by year installed. As discussed below, it is anticipated that most under 25 kW DG installations will be solar. The data set was assembled by the OpenPV Project of the National Renewable Energy Laboratory ("NREL"). This dataset contains a compilation of installed Solar DG system costs from a multitude of sources including but not limited to government organizations, Photovoltaic ("PV") installers, utilities, and the general public. Given the multitude of available data sources contained within the aggregated dataset, it does not appear likely that the data could be manipulated by a third-party with a policy agenda and thus should be considered objective. The installed costs contained in the dataset do not take into account tax incentives or cash rebates that could be available to recent PV installations and should thus be considered in absolute terms to be on the high side. In any case, only relative costs by size are used to develop the scalar. As of July 30, 2012, sample sizes varied significantly by state, with California containing the highest number of installations with documented cost information at 86,518 and with Arkansas containing the lowest number at 101. The total number of observations containing documented cost data across all states was 125,950.

NERA performed the following analyses for all states with over 1,000 cost-documented installations:

- Calculated the installed cost ratio between systems at or under 25 kW and systems in the 25 kW to 2 MW range by state using the average installed cost by state over each size category. The percentage of systems at or under 25kW ranged from a low of 70.68% in Nevada to a high of 100% in Arkansas and New Mexico. In an effort to provide average costs reflective of the current economic climate and technological development, only data beginning in 2007 was used. The table below presents the average installed costs and derived scalars by state.

Table X. Average Installed Costs and Scalars by State

	Number of Observations	<25kW Average Installed Cost ($/kW)	25kW-2MW Average Cost ($/kW)	Scalar
AZ	8,433	$7.47	$8.11	0.922
CA	86,518	$7.56	$6.27	1.205
CT	1,898	$7.51	$7.26	1.034
MA	3,079	$7.52	$6.35	1.183
MD	3,802	$7.23	$5.04	1.436
NJ	4,753	$7.61	$6.89	1.103
NV	1,050	$7.59	$6.46	1.175
NY	3,881	$8.26	$7.14	1.157
PA	3,332	$6.83	$5.74	1.190
TX	2,795	$6.36	$5.85	1.087

- We calculated the average scalar and standard deviation using scalars calculated by state. The average scalar calculated from the derived scalars by state is 1.15 and the standard deviation is 0.13.

- We examined the average ratios by state by year to determine whether a possible time trend existed. The table below shows the average scalar by state and year. The overall average by year is also shown as an indicator to a possible time trend.

Table Y. Average Scalars by State and Year

	CA	AZ	NJ	CT	MA	MD	NV	NY	PA	TX	Average
2007	1.107	1.007	1.047	1.145	0.887	-	-	1.294	0.884	0.503	0.984
2008	1.071	1.065	1.072	1.090	0.929	0.903	0.985	1.117	1.264	1.126	1.062
2009	1.163	0.980	1.036	1.064	1.046	1.664	1.169	1.080	1.145	1.111	1.146
2010	1.291	0.979	1.154	1.073	1.143	1.351	1.054	0.973	1.141	1.104	1.126
2011	1.222	0.966	-	1.122	1.153	1.225	1.024	1.011	1.228	0.980	1.104

NERA recommends the use of a scalar of 1.25, which is a round number that is within the mean scalar by state plus one standard deviation (that exact value would be 1.28). Absent significant experience in the ComEd DG market[4], it is prudent to allow for the potential that the scalar applicable to

[4] DG systems are required to be located in Illinois. They need not be on the ComEd distribution system but interconnected at the distribution system level of either an electric utility as defined in the Act, an alternative retail electric supplier as defined in Section 16-102 of the Public Utilities Act, a municipal utility as defined in Section 3-

the ComEd area may be above the mean. Additionally, for 50% of the distributed generation resources to come from systems under 25 kW, there will need to be large inroads to that segment of the market. As such it seems prudent to tilt the scalar toward the higher end of the range. The data on state scalars over time did not show any clear trend and as such it was not used to formulate the scalar recommendation. We also recommend that the scalar developed from solar data also be applicable to other DG types. Most small (under 25 kW) DG systems are expected to be solar. There is not enough experience with renewable DG systems of other types to develop scalars that would be supported by robust data. We would however expect that other technologies also have economies of scale and given the relatively modest size of the solar scalar, a scalar of 1.25 for other technologies cannot significantly err in offering too high a payment for these facilities. Note that the scalars, while the same for all technologies, would be applied to technology specific averages of winning bid prices for the 25 kW to 2,000 kW group. Hence, the price available to under 25 kW solar projects would be the scalar times the weighted average solar bid price for winners in the 25 kW to 2,000 kW group. The price available to under 25 kW wind projects would be the scalar times the weighted average wind bid price for winners in the 25 kW to 2,000 kW group. While for technologies other than solar there may be very few winners in the 25 kW to 2,000 kW group, those winners will have passed a benchmark.

In addition to the recommendation, we offer the following observations in support of the recommendation and /or as a guide to the future.

- We use installed cost as the basis for the scalar, which implicitly assumes that other costs including items such as cost of financing, permitting, marketing, rebates and tax incentives O&M and contracting are proportional to installed costs. While we have no documented evidence that this is the case, it seems reasonable as these are factors that go in both directions. For example, while building small systems may be disproportionally expensive, the nature of the IPA program relieves the under 25 kW category from the cost of participating in a formal procurement and permitting may be easier for some small systems.

- While limited in volume, data from the last solar RFP conducted in New Jersey shows an average SREC price of $233 for under 50 kW winning bidders, $222 or just under 5% less for winning bidders between 50 kW and 500 kW and $214 or almost ten percent less for systems between 500 kW and 2,000 kW. As the IPA program is targeting systems under 25 kW, the 25% scalar of 1.25 seems generally consistent with the New Jersey data.

- The scalar has been selected to err, if at all, on the high side given the legislative target that half of DG resources come from the under 25 kW segment. If the under 25 kW category develops very rapidly, it may indicate that the scalar is too high and would be in need of future adjustment downward. However, it would appear unlikely that development could be so rapid as to exceed the one half target. Additionally, the scalar acts as a standard offer and has some properties in common with a feed-in tariff. Experience with feed-in tariffs is that the levels are

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105 of the Public Utilities Act, or a rural electric cooperative as defined in Section 3-119 of the Public Utilities Act. Hence, DG RECs offered to ComEd could be interconnected to various distribution systems in Illinois.

often reduced over time as the market requires less stimulation as experience is gained. This is referred to as degression. The scalar could be adjusted down in the next IPA plan if it is over-stimulating the market.

- The scalar is not specific to the ComEd service territory. This is the case as there is not sufficient development to calculate an objective scalar and because the economies of scale should be transferable even if absolute costs differ. Further, the Act does not limit DG RECs that the IPA purchases for ComEd to facilities located in the ComEd territory.

Appendix V-3

LEVITAN & ASSOCIATES, INC.

To: Arlene Juracek
From: Boris Shapiro, John Bitler
Re: Ameren Service Area Scalar Factor for Standard Offer of Small DG (25 kW or Less)
Date: August 8, 2012

Background

Public Act 097-0616 established the targets for procurement of distributed renewable energy resources with a specific portion that is expected to be met by photovoltaics (PV) installations sized up to 2 MW each. At least half of the target amount should come from smaller units of 25 kW or less. Larger units from 25 kW to 2 MW are expected to be procured through a competitive solicitation process, while smaller units below 25 kW will be procured under a standard offer. The standard offer benchmark should be reflective of the installed cost difference between the larger and smaller units, assuming installation of a smaller unit is likely to be more expensive on a per kW basis than installation of a larger unit. LAI has been engaged by the IPA to establish the multiplier for scaling the 25 kW – 2 MW bids to create the standard offer benchmark for the small (< 25 kW) generators. The scalar factor should be area-specific and unique to the Ameren service area, taking into account any geographical cost differences in installing these facilities.

Approach

LAI conducted research regarding similar programs nationwide and reviewed relevant publications to determine if any analytical methodology has been developed that could be applied to arrive at some reasonable scalar factor based on the size of the installed facility. Based on our research, we found that although no formal analytical tools have been developed for scaling installation costs based on the size of the unit, the industry has accumulated significant actual historical data that can be used to perform statistical analysis and to determine the scalar factors empirically and discretely for a defined range of the unit sizes, if not for any particular size of the unit.

As a next step LAI conducted an independent research of the residential and commercial construction costs to determine if any area-specific cost differentials exist between the ComEd and Ameren service territories that would justify any further adjustment of the standard offers in one area versus another.[5] LAI assumed that the installation cost differentials might be common in various types of installations, be it rooftop solar panels, or any other new structure.

[5] Adjustment of the scalar based on the geographical differentials of the construction costs may be not necessary if larger units are procured separately in the ComEd and the Ameren service territories, and the average successful bid as a base for the small unit standard offer calculation is determined for each area independently. However, LAI believes that this information may be useful for the verification purposes, e.g., to verify if the larger units' bids located in specific areas are in fact competitive.

CT PURA Procurement of ZREC

Under Sec. 108 of P.A. 11-80, Connecticut utilities, CL&P and UI, were required by the Public Utilities Regulatory Authority (PURA) to propose a procurement plan for zero emissions RECs (ZRECs) from distributed PV installations of various sizes: small (100 kW and below); medium (more than 100 kW but less than 250 kW); and large (250 kW to 1 MW). Section 108(b) prescribed that small systems up to 100 kW in size were eligible to receive a REC offer price equivalent to the weighted average accepted bid price in the most recent solicitation for medium sized systems (i.e., greater than 100 kW but less than 250 kW), plus an additional incentive of 10%.

While recognizing the fact that the kW ranges in Connecticut differ from the kW ranges set in Illinois, LAI believes that the 1.1 scalar accepted in Connecticut could be used as a starting point in our analysis, with further adjustment upwards. In fact, the small unit range in Connecticut (0 – 100 kW) is 4 times wider compared to Illinois (0 – 25 kW) and includes units sized from 25 kW to 100 kW; in Illinois, these units would be part of the larger installations. LAI believes that on average, installation of units up to 25 kW would be more expensive on a per kW basis than installation of units sized from 25 kW to 100 kW. Moreover, the average base (or a denominator) in Connecticut is established as an average of the medium sized units (100 kW – 250 kW), while the base in Illinois is a much wider group that includes installations up to 2 MW. LAI believes that although the cost/size dependency is nearly flat in the range beyond 100 kW, the larger installations might still be somewhat less expensive on a per kW basis than medium sized installations. This is an additional factor that makes the denominator in Illinois smaller than in Connecticut, which further supports our conclusion that the scalar factor in Illinois should be higher than 1.1.

EERE Report

In January 2006, the Office of Energy Efficiency and Renewable Energy (EERE) published a report for the U.S. Department of Energy (DOE) entitled "Solar Energy Technologies Multi-Year Program Plan, 2007-2011."[6] The EERE report summarized the world experience with various PV technologies and presented cost projections. The year 2011 values were based on projections of current trends in each technology area and verified through expert consensus. Below is a compilation of the 2011 data derived from the EERE report, which would indicate a scalar factor on the order of 1.25:

	Units	Residential	Commercial
Average System Size	kW	4.56	178.00
Module Price	$/W	2.20	2.20
Inverter Price	$/W	0.69	0.51
Other BOS*	$/W	0.40	0.36
Installation	$/W	0.57	0.17
Other/Indirect**	$/W	1.14	0.76
Installed System Price	$/W	**5.00**	**4.00**

[6] The EERE Report can be found at http://www1.eere.energy.gov/solar/pdfs/set_myp_2007-2011_proof_1.pdf

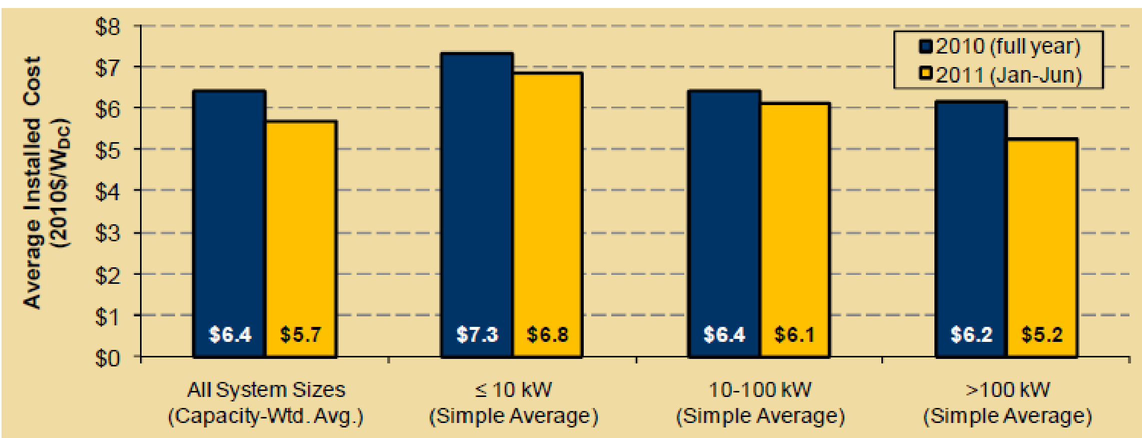
Notes:

* Other balance of systems (BOS) category includes: mounting hardware, wiring and cable housing, disconnects, fuses, and all other non-module or inverter parts of the PV system.

** Other/Indirect category includes: design, engineering, site-related costs, permitting, and profit.

LBNL Report

In September 2011, DOE's Lawrence Berkeley National Laboratory (LBNL) published a report entitled "Tracking the Sun IV, An Historical Summary of the Installed Cost of Photovoltaics in the United States from 1998 to 2010."[7] According to the LBNL report, the installed cost of solar photovoltaic (PV) power systems in the United States fell substantially in 2010 and into the first half of 2011. The chart below derived from the LBNL report shows the average installation costs for the California Solar Initiative (CSI) in 2010 and in the first half of 2011.



These data show that the small PV system (<10 kW) costs represent 6.8/6.1 = 111 % of the medium PV system (10 – 100 kW) costs, and 6.8/5.2 = 131 % of the large PV system (>100 kW) costs.

Determination of the Scalar

Based on the above data derived from the EERE report LAI concludes that the average Installed System Price for a small (4 - 5 kW) unit is $5.00/W, which is 25% higher than the Installed System Price of $4.00/W for a 178 kW unit.

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[7] The LBNL report can be found at http://eetd.lbl.gov/ea/emp/reports/lbnl-5047e.pdf

The EERE report also suggests that larger installations, e.g., 10 MW utility grade PV systems are just slightly less expensive compared to the commercial installations sized at 150 kW. Thus, according to the report, the projections for 2011 Installed System Price for an 11.85 MW PV system is $3.90/W, which is just 2.5% less expensive than the $4.00/W price for the 178 kW PV system. This confirms our preliminary assessment that the installed system price on a per kW basis is pretty flat starting from the medium sized installations (i.e., 150-200 kW). Therefore, LAI concludes that small units, on average, should be about 25% more expensive on a per kW basis of not just medium sized units, but also larger units up to 2 MW.

Analysis of the LBNL data suggests that the average cost of a group comprised of PV installations up to 25 kW can be around $6.5/W, while the average cost of a group comprised of PV installations larger than 25 kW can be equal to or very close to the average cost of larger (>100 kW) units – $5.2/W, and the scalar is 6.5/5.2 = 125 %. Of course the scalar depends on the number of units from 25 to 100 kW compared to the number of units larger than 100 kW. LAI assumes that the weight of the units >100 kW in the mix would be much larger compared to the weight of the 25-100 kW units. However, if this assumption is not accurate, the scalar should be recalculated to reflect the larger weight of the medium units in the group with units from 25 kW to 2 MW. For example, if the share of the smaller units (25-100 kW) represents 50% of the total capacity of units procured under the competitive solicitation, the average cost would most likely be a simple average of $6.1/W and $5.2/W, which is $5.65/W. Accordingly, the scalar would be reduced to 6.5/5.65 = 115 % (a factor of 1.15).

Based on our preliminary analysis, LAI recommends setting the small PV scalar factor at or around 1.25. Our recommendation is based on certain assumptions regarding the mix or composition of the resources that will be procured. A more accurate determination of the scalar will be possible at a later stage after the competitive solicitation of the larger PV resources is completed and the average costs and the composition of the selected group is known.

Construction Cost Differentials in Various Parts of Illinois

LAI performed research and analysis of the construction costs differences in order to factor in, if needed, the unique characteristics of ComEd vs. Ameren service territories. LAI used an online analytical tool available at
http://www.buildingjournal.com/residential-estimating.html

This fully interactive program allows setting identical parameters of the new building and comparing the construction costs for the same house (e.g., a 2-story house, 2,500 sq ft with unfinished basement) in many different localities of the US, including Illinois-Chicago and Illinois-Springfield. In addition, the same type of analysis can be performed for a commercial structure (e.g., a department store, 10,000 sq ft). We conducted a number of runs of the program, both for residential and commercial construction sites, and found that the estimated construction costs in the Illinois-Chicago (ComEd) area are about 15% higher than the costs in the Illinois-Springfield (Ameren) area.

We believe that the installation component of the PV costs would most likely be the primary component affected by the geographical uniqueness. Other cost components (inverter and module costs) are less likely to be influenced by the geographical price differential. We note that the installation component represents not more, and in many cases, significantly less than 50% of the total system costs. Hence, the overall effect of the geographical factor on the bids and the derivative standard offer is likely to be less than 15%.

We expect that the geographical price differential would be already reflected in the competitive bids from the proponents of the larger units, so the scalar factor of 1.25 can be applied to the average bid in the ComEd group to calculate the standard offer benchmark in the ComEd service territory. Likewise, the same 1.25 scalar factor can be applied to the average bid in the Ameren group to calculate the Ameren standard offer benchmark. Alternatively, if the averages of the competitive bids in the two areas do not differ much, a single standard offer benchmark for both service territories can be established.