February 2016

ACCELERATING ADOPTION OF COMMUNITY SOLAR

Demonstration of a survey-based forecasting technique to optimize program design and marketing of community solar

In partnership with:

PCG
fast forward to customer success

SEPA™

NOTE FROM SEPA

The Solar Electric Power Association (SEPA) has actively researched community solar since the first utility programs were implemented in the mid-2000s. Initial research efforts largely focused on community solar program design and tracking programs.

Most of the first community solar programs were targeted at niche markets—the most solar-friendly customers. However, declining participation costs and increasing program availability mean that the business model is rapidly transitioning into one attractive to the mass market. SEPA sees this transition as beneficial as more consumers can participate in solar ownership. To aid this transition, SEPA has expanded our research efforts to include how mass market subscribers and potential subscribers respond to different community solar designs.

The Pacific Consulting Group (PCG), a SEPA member and innovative customer research firm, conducted a consumer choice modeling survey in late 2015. Almost 900 individuals across the country participated in the survey and conveyed insights that can help utilities and third-party groups ensure that their community solar programs, as PCG puts it, "get it right the first time."

PCG's work complements SEPA's research trajectory, and helps to uncover some of the key issues with community solar subscriber preferences. For example, SEPA was interested to see the geographic variation of survey responses. Different geographies had very different interest levels in the same community solar program—for the same model the likely market penetration in Michigan was 49% while in California it was only 26%. Confirming this and other PCG findings, and identifying the fundamental reasons behind them, will be explored in future SEPA market research.

SEPA is proud to partner with PCG and present their research to our membership.

Sincerely,

Julia Hamm

Select SEPA Community Solar Research

Program Design Research

Community Solar Program Design Models and Expanding Solar Access Through Utility-Led Community Solar, among others, examine the community solar market and program design processes and trends.

Case Studies

SEPA has produced case studies on Delaware Municipal Electric Corporation, Grand Valley Power, and BARC Electric Cooperative's programs, among others, to document existing programs, including program designs and results.

Customer Research

SEPA is currently conducting community solar focus groups and a national survey with potential subscribers through our Solar Market Pathways grant, awarded through the U.S. Department of Energy. This work will be completed in spring of 2016.

These and other SEPA community solar resources can be found at:
http://www.solarelectricpower.org/discover-resources/sepa-research.aspx

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INTRODUCTION

Community Solar's Potential

Both energy customers and the utilities that serve them are seeking to increase the proportion of electricity that comes from renewable sources. Community solar[1] is emerging as an attractive option for the 85% of energy consumers who either do not own their homes, have roofs that are shaded or not appropriately oriented, or simply do not want to invest in a solar system on their property. Utilities, in response to customer demand for more solar options and to state and federal mandates and incentives, are finding that community solar is a potentially attractive way to satisfy and retain customers while complying with various mandates. Community solar programs also offer a way for these companies to gain experience in the distributed solar marketplace. According to SEPA's recently released report, Community Solar: Program Design Models, there were 68 active programs in 23 states in the summer of 2015, with many more programs being planned. Thirteen states plus the District of Columbia have adopted legislation encouraging community solar. It appears that community solar is poised to grow dramatically over the next few years.

Utility Challenges in Designing and Marketing Community Solar Programs

Despite the significant potential and recent progress for community solar, utilities across the country face significant challenges in increasing market penetration of their programs. Because community solar programs are relatively new and different from straightforward and familiar usage-based energy pricing models, they are not well understood by the general public, even in the 13 states that have legislation enabling community solar. This makes them potentially difficult to sell and may significantly lengthen time needed to generate awareness and understanding required to penetrate a given market. Furthermore, though costs for all renewables, including solar, are close to parity with fossil fuels, community solar programs in most cases require an up-front investment on the part of the subscriber. This means that in most situations utilities cannot offer customers immediate cost savings with community solar programs, nor can they absolutely guarantee future savings. The requirement for an up-front investment poses the risk that any program that a utility designs may be undersubscribed and/or may attract mainly those customers willing to pay a premium for renewable energy. Cost conscious and low-income customers may be left out. Finally, as utilities strive to return value to all ratepayers in an equitable manner, community solar programs that do not at least recoup their costs pose a risk of cross-subsidy among customer groups—or lower profits for the company. These challenges and uncertainties have led many utilities and their regulators to be more cautious in considering community solar in the first place, very deliberate in the design of their programs if they do decide to go ahead, and less aggressive than they might otherwise be in marshaling needed marketing resources to scale up or expand programs.

1 Community solar refers to a specific business model in which 1) a group of participants voluntarily pay for a portion of a community solar garden that is located off-site; 2) the electricity produced by the garden flows directly into the grid; and 3) participants receive an agreed-upon compensation for the electric production of their portion of the community solar garden.

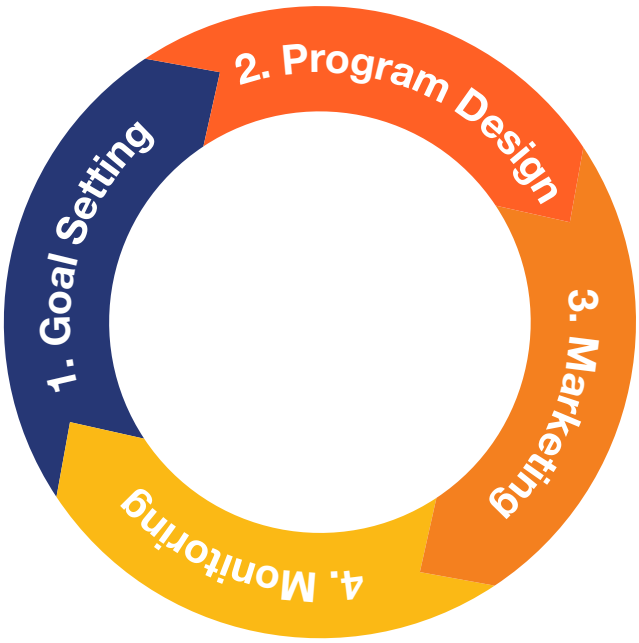
Utility Experience to Date with Community Solar

Experience with design and promotion of community solar programs has been uneven: some programs are fully subscribed and thriving, while others are underachieving. To date it has been difficult to specify a core set of program design and promotional strategies that will be most effective across the board. Part of the problem is that experience is limited to the 68 programs that are up and running. The task of gleaning best practices from these 68 programs is complicated by the fact that each of them varies in terms of how long it has been operating, and what strategies have been employed with what effects over time. The utilities themselves vary significantly in terms of their operating characteristics and the regulatory environments they face. But perhaps the biggest challenge is variability among markets served: within any utility's service territory there will be a plethora of specific geographic markets, each with different customer demographics, and potentially different needs and preferences. So even though some general rules of thumb may eventually surface, it seems unlikely that a single, scalable "one size fits all" community solar solution will emerge.

In light of the limited experience to date and the significant variability in community solar situations utilities will face, SEPA has recommended a logical, systematic, 4-step process to maximize success in designing, promoting and eventually evaluating a community solar program.[2]

Embedded within these 4 steps are 12 key program design decisions covering both the community solar market offering and various operational factors. This 4-step process will enable companies considering community solar to take into account their unique characteristics, markets and operating environments as they work through the 12 program design decisions. As a program is implemented and progresses, ongoing monitoring will provide the management information needed to improve financial performance and increase customer satisfaction and retention.

FIGURE 1: SEPA 4-STEP COMMUNITY SOLAR PLANNING PROCESS



2 See SEPA's report: Community Solar: Program Design Models

This Report

This report introduces a market research technique called survey-based consumer choice modeling[3] and reports the results of a recently-completed nationwide survey. Market forecasts generated through consumer choice modeling provide utilities with the ability to know in advance which program features and prices will be preferred—both for the overall community solar target market selected, and for various segments within it. The insight into market preferences will take much of the guesswork out of community solar planning, provide quantitative analyses that can be used in presentations to various stakeholder groups and generally ensure that utilities "get it right the first time" as opposed to iterating on an initial untested and unproven program design concept. The likely result is accelerated program design efforts, better market acceptance and faster overall adoption of community solar programs.

As shown in the report, consumer choice modeling analyses specify which program design elements are most important and how consumers trade off various program design features in deciding whether or not to participate. The same consumer choice modeling approach forecasts which marketing strategies will be most effective. Thus the market research directly feeds the work done in Steps 2 and 3 of the SEPA program design process.

In the report that follows:

Section 2 Introduces consumer choice modeling and explains how it is different from and complements customary qualitative and quantitative new product introduction research. This section also presents the program design and communications frameworks developed for this study.

Section 3 Presents representative findings from a survey of 884 potential adopters of community solar. It covers program design preferences and trade-offs, and shows which messages and media will be most effective in convincing prospects to consider community solar.

Section 4 Discusses how consumer choice modeling can be integrated into community solar planning and evaluation processes.

Appendices cover the survey questionnaire and report survey respondent profiles.

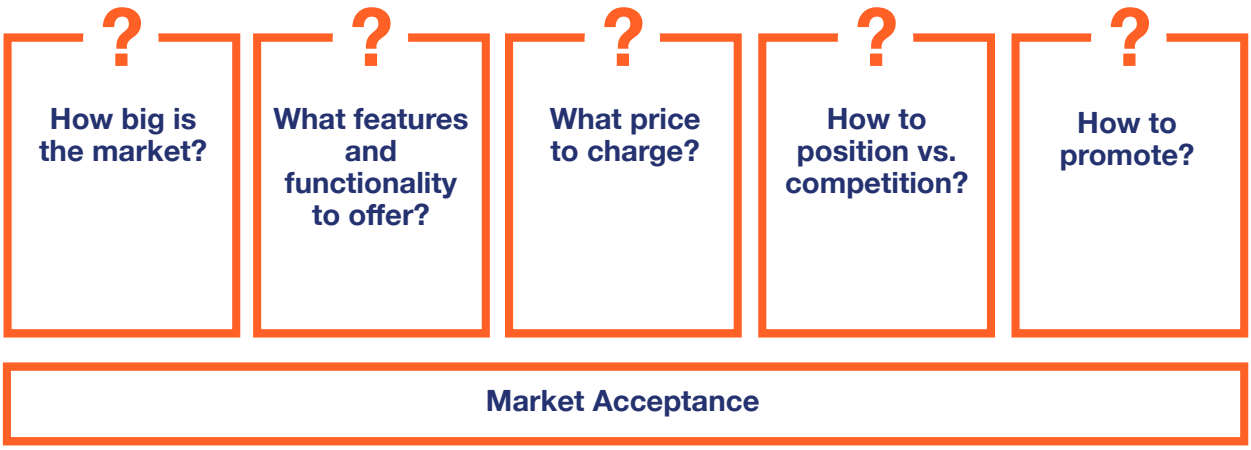
3 Consumer choice modeling, alternatively referred to as trade-off analysis or conjoint measurement, is a survey-based technique for forecasting market reaction to alternative product/service designs. It has been used successfully for over 40 years, primarily in the private sector, to design, price and promote products and services in competitive markets.

CONSUMER CHOICE MODELING APPLIED TO COMMUNITY SOLAR

What is Consumer Choice Modeling and How is it Different?

Consumer choice modeling, also referred to as conjoint measurement, is a survey-based technique used to forecast market preference for alternative product and service designs. It has been used for over 40 years, primarily in the private sector, to introduce new products and services in competitive situations. As illustrated in Figure 2, consumer choice modeling provides answers to key design and marketing questions:

FIGURE 2: FACTORS INFLUENCING MARKET ACCEPTANCE OF PRODUCTS, SERVICES OR PROGRAMS



In a consumer choice modeling survey, optional products or services are presented to respondents in terms of their attributes, such as the price charged, program features, incentives, brand and so forth. Fictional products called scenarios are constructed from combinations of different levels of the the attributes and respondents are asked to choose which option they prefer from among a number of scenarios, just as they would in any competitive market situation. In making their choices among fictional scenarios each respondent reveals how important the various attributes are to them, how they trade off different levels of these attributes, and what program designs (combinations of all attributes) are most desirable. The next section shows the attributes used in both the program design and communications portions of the survey.

The consumer choice modeling approach offers several advantages over more common research approaches for testing optional product/service/program strategies such as:

- The survey results deliver a more accurate report of consumer preferences than simple rating questions because they induce respondents to think more deeply about what they prefer. The choice format contained in the survey is realistic and similar to what consumers do every day when they decide what to buy.
- The research and analyses quantify the relative importance of program attributes included in the study. Program planners will know which way to steer optional designs.
- Because the survey captures respondents' underlying values and trade-offs, rather than reactions to a single specific idea, the research can be used to forecast market acceptance of thousands of optional designs representing different combinations of levels of the attributes contained in the survey. No new surveys or focus groups need to be conducted.
- The approach can be used to estimate the diffusion rate of a given program design over time.
- As with any survey, the analyses can explore segment differences.

Once the survey is completed, market simulator software based on the survey database is developed. Users input "what-if"scenarios comprised of different levels for each attribute and the software calculates likely market penetration of the option being tested. Multiple runs of the model software compare different program designs in terms of market acceptance and revenue potential.

PCG's Community Solar Survey Design

PCG designed, administered and analyzed a nationwide survey of 884 respondents who were potential candidates for a community solar program. The sampling plan was designed to obtain at least 100 responses in 8 states and to make sure that lower income households were well-represented. All respondents were screened to insure that they were involved in energy decision-making for their household, that they did not currently own or lease a solar system and that they had some basic level of knowledge about different sources of energy. Table 1 shows the final tally by state. 62% of respondents lived in households with under $60,000 annual income compared to a U.S. Census total of 54%. An online panel was used to solicit the respondents and administer the survey. Appendices provide more details on the response to the survey.

TABLE 1: SURVEY RESPONSES BY STATE

State	Frequency	Percent
California	116	13.1
Colorado	106	12.0
Florida	116	13.1
Massachusetts	110	12.4
Michigan	108	12.2
Minnesota	107	12.1
Texas	113	12.8
Washington	108	12.2
Total	884	100.0

Program Design and Communications Frameworks

As shown in Figure 3, two consumer choice modeling frameworks and questions sets were incorporated in the survey to address the following questions:

1. **Program Design:** What optional community solar program designs are most likely to be adopted?
2. **Communications:** What strategies will be most effective in persuading customers to try community solar?

Naturally the program design and communications strategies need to be closely coordinated to maximize market acceptance.

FIGURE 3: PROGRAM DESIGN AND COMMUNICATIONS INFLUENCE MARKET ACCEPTANCE OF COMMUNITY SOLAR

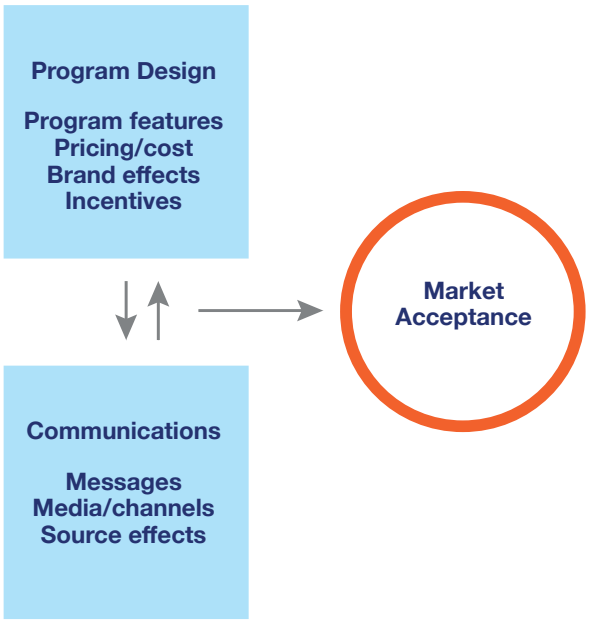


Table 2 shows the attributes and levels within the attributes that were selected to construct program design scenarios in the community solar survey. Literature reviews and discussions with community solar practitioners were used to ensure that the items included in the survey were realistic and representative of the types of program features customers are known to consider important. A further goal in coming up with this framework was to demonstrate novel types of attributes that might be explored in subsequent studies. For example, the incentives shown here could be changed or expanded to include local ideas that might be effective in generating interest in community solar. In general, within each attribute the levels were selected to cover the full range of what might be considered possible in a given utility setting.

Table 3 shows that a three-factor marketing communications model was used in the survey. The message component covers a range of optional messages that might be used to promote community solar to a given market. Similarly, the media and source options included were chosen to represent the types of options available to a utility. As with the program design survey task, survey respondents were asked to choose from among fictional promotional scenarios which one would be most likely to persuade them to consider community solar.

While most testing of communications strategies focuses on the messaging alone, PCG has found that media and source effects can also be powerful in influencing opinion. Furthermore, there may well be synergies between the three communications components that could be capitalized on in any given marketing campaign. Finally, regardless of what message is used, the media and source components will have to be addressed so it made sense to include them in the model.

Additional Survey Questions

In addition to the consumer choice modeling questions, the survey contained a number of additional screening, respondent profile, attitude and opinion, and demographic questions. Appendix 1 describes the types of additional questions included.

TABLE 2: COMMUNITY SOLAR PROGRAM DESIGN SURVEY FRAMEWORK

Decision factors	*Levels*
Initial payment	• No initial payment • $500 • $2,000 (financing available) • $5,000 (financing available) • $25 monthly charge • $50 monthly charge
Percent of current bill covered	• 25% • 50% • 75% • 100% • 125%
Net monthly impact on bill 5 years out	• 8% decrease • 3% decrease • No change • 3% increase • 8% increase
Incentive	• Receive $100 worth of LED lightbulbs • Name on solar panel to recognize participation • Cash rebate if coverage goal not met • Late fee forgiveness two times per year • No additional incentive

Decision factors	*Levels*
What you lease or own	• Nothing • Solar panels • KWH increments • Fixed rate for solar portion of power
Initial net monthly impact on bill	• 8% decrease • 3% decrease • No change • 3% increase • 8% increase
Duration of contract at initial sign-up	• Month to month • 1 year • 2 years • 5 years • 10 years

TABLE 3: COMMUNITY SOLAR COMMUNICATIONS SURVEY FRAMEWORK

Communications Attributes and Levels

Media	Source	Message
• Newspaper • Mailer • Utility bill stuffer • Social Media • E-mail • Message on utility bill • Radio spot • TV spot • Web	• Well-known personality • Neighbor • Local community spokesperson • State Govenor • Solar organization • Utility • Non-profit organization	• Saves you $ • No maintenance • Grows the solar industry • Avoids use of fossil fuels • No start-up costs or investment • Promotes renewable energy • Solar panels are not on your roof • If you move you can take with you or cancel • Every homeowner or renter eligible to participate • Hedge against rising utility costs • Growing demand for community solar • Buying or leasing too costly • Community solar is local • Get started right away, cancel anytime • Conserve natural resources

SURVEY FINDINGS

This section presents findings from the 884 respondents who completed the survey. These aggregate findings are representative of the attitudes, opinions and preferences of respondents in the eight states included in the study. Comparisons to U.S. Census data show that the survey response is roughly comparable to Census figures regarding home ownership (63% survey vs. 67% Census). Table 4 shows that the type of dwelling inhabited reported in the survey is very close to national Census figures. As mentioned previously, the survey purposely oversampled households earning less than $60K (62% survey vs. 54% Census).

TABLE 4: RESPONDENT HOME TYPE COMPARED TO 2010 CENSUS DATA

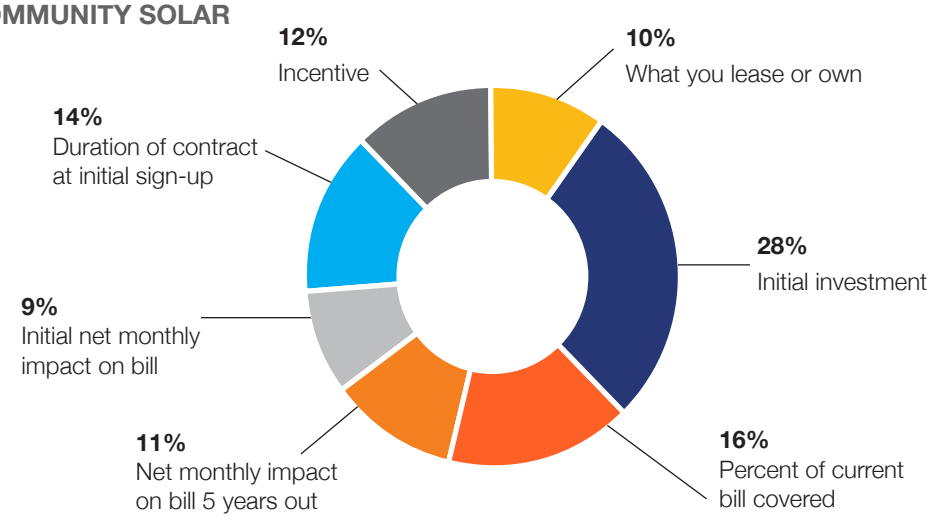
Type of Home	Survey	Census
Single-family detached house	61%	60%
Single-family attached house (such as townhouse)	6%	6%
Duplex, triplex, or fourplex	7%	9%
Apartment or condominium with 5 units or more	20%	17%
Manufactured or mobile home	6%	8%
Other	1%	0%

So in interpreting the results that follow, readers can assume that the findings are close to what various types of homeowners might report nationally if the study had been designed to reflect a nationwide, representative sample of homeowners.

Program Design Findings

Figure 4 shows the relative importance of the 7 attributes included in the study on the decisions to adopt community solar.[4] Consistent with other research, initial investment is the most important factor. Potential customers are also very interesting in the % of bill covered. Together the two cost-saving attributes (immediate and 5 years out) account for 20% of total importance. It is interesting to note that savings 5 years out is slightly more important than immediate savings, suggesting that potential customers are thinking of community solar as a long-term investment. Duration of contract at sign-up and the incentives tested in the survey make some difference. Potential customers appear relatively indifferent to what they lease or own with a community solar contract, again suggesting that they are focused more on the investment and payback than the mechanics of how that comes about.

FIGURE 4: RELATIVE IMPORTANCE OF SEVEN PROGRAM ATTRIBUTES ON THE DECISION TO ADOPT COMMUNITY SOLAR



4 Relative importance of the attributes refers to how much difference they make in the customer's evaluation of alternative community solar designs. Relative importance is calculated by measuring the difference in value between the lowest and highest levels of each of the attributes. For example, the difference between the value the customer places on zero upfront payment compared to to a $5,000 payment is greater than the difference between month-to-month contract duration and 10 years. Changing the upfront payment attribute will make more difference in terms of the market's overall evaluation of a given design than changing the duration of the contract.

Table 5 shows detailed results for three example program design scenarios. The columns in the table depict the level of the attribute included in each scenario and the respective attribute level's customer value[5].

TABLE 5: COMPARISON OF THREE EXAMPLE PROGRAM DESIGN SCENARIOS

	Scenario 1		Scenario 2		Scenario 3	
	Level	Value	Level	Value	Level	Value
Initial investment	$500	13.96	$50 monthly	17.56	None	78.6
What you lease or own	Solar panels	21.13	Fixed rate for solar portion of bill	-1.74	Fixed rate for solar portion of bill	-1.74
Percent of current bill covered	25%	-49.06	75%	-2.62	25%	-49.06
Initial net monthly impact on bill	8% increase	-29.16	3% decrease	16.24	3% decrease	16.24
Net monthly impact on bill 5 years out	No change	-9.14	8% decrease	39.54	8% decrease	39.54
Duration of contract at initial sign-up	10 years	-34.67	5 years	-3.2	Month to month	25.81
Incentive	None	-15.12	Late fee forgiveness 2X	-8.05	None	-15.12
Total Utility		-102.06		57.73		78.6
Market Acceptance		9%		21%		36%

So, for example, the initial investment for scenario 1 is $500, for scenario 2 is $50 monthly, and for scenario 3 is $0. Values are shown beside the attribute level.

Here are some general comments on the attributes and levels:

- **Initial investment:** No initial investment is highly valued and is much greater than a $500 initial investment.
- **What you own/lease:** Slight preference for solar panels but not much difference from the fixed rate on the bill.
- **Percent of current bill covered:** Lower percentage is less preferred and detracts from overall value of an option.
- **Impact on bill (initial and 5 years out):** Increases are negative and decreases positive, as would be expected.
- **Length of contract:** The longer the commitment, the less the value.
- **Incentives:** Not much difference between none and late fee forgiveness two times per year. Overall the incentives tested do not carry much influence.

Summing values across attributes provides a relative value comparison for each scenario. So in this example, scenario 3 is much preferred, driven by the absence of an initial investment and decreases in bill amounts both immediately and over time.

5 Respondent values, alternatively referred to as utilities, are the relative measure common to all of the attributes included in a consumer choice modeling survey. The numbers themselves do not refer to any specific scale and there is no 0 anchoring point. They can be used to compare across levels in a given attribute and to show how attributes and levels trade off against each other since everything is measured on the same scale. Values can be added to produce an overall rating of a specific alternative program design. In the table shown, the higher the value number the more it is worth to the respondent. In consumer choice modeling values are calculated at the respondent level and aggregated across the entire data set to forecast preference for the entire market or by segment to analyze segment differences.

TABLE 6: SCENARIO 3 MARKET ACCEPTANCE BY STATE

State	Market Acceptance
Michigan	49%
Washington	40%
Texas	39%
Total	36%
Florida	35%
Minnesota	35%
Colorado	34%
Massachusetts	28%
California	26%

The market acceptance measure is an estimate of the percentage of respondents who would choose this option if it were offered to them. We asked each respondent in the survey if they would subscribe to each of the three program designs shown in the table. The percentages shown are the fraction that indicated they would accept the scenario. By asking explicitly about each scenario we are able to calculate how a given value corresponds to market penetration, even for scenarios that are not explicitly shown to respondents. With the program design attributes and levels included in this study, there are over 375,000 possible alternative program designs. The methodology employed enables us to calculate the relative market value and likely market penetration of all of these combinations – both for the market overall and for segments of interest.

Overall the research showed that the likely market penetration of Scenario 3 ($0 initial investment, fixed rate for solar portion of bill, 25% of bill covered, 3% immediate decrease in monthly bill, 8% decrease in 5 years, month to month contract and no incentive) was 36%. Table 6 shows that the market penetration for this scenario varied widely by state, with California and Massachusetts having the lowest penetration and Michigan, Washington and Texas the highest. Though the state designation is likely a “catch all” for a multitude of underlying factors, the finding below underscores the limitations of a generalized approach to program design.

Communications Findings

Three separate communications components drive the effectiveness of community solar marketing communications.[6] Figure 5 shows all three components are important in influencing customer opinion, and that messaging is the most important factor. Messages emphasizing ownership and economic considerations for the subscriber will have more influence on potential adoption than messages emphasizing conservation or “green” considerations (Figure 6).[7] Utilities and other organizations in the solar space appear to have more influence on potential customer opinion than well-known figures without expertise (Figure 7). Messages that are targeted to individual customers are more effective than mass media (Figure 8).

6 The communications analyses in this section reflect what respondents think is most likely to influence their behavior and not what has actually influenced them.

7 Indexes scaled from 1 to 10 are used to depict the relative influences of various messages, sources and channels of communications on respondents.

FIGURE 5: RELATIVE INFLUENCE OF THREE COMMUNICATIONS FACTORS ON MARKET ACCEPTANCE OF COMMUNITY SOLAR

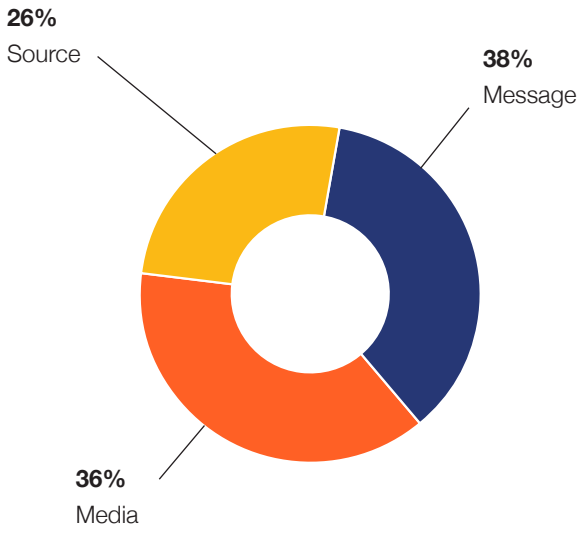


FIGURE 6: MESSAGES THAT EMPHASIZE FINANCIAL FACTORS APPEAR MORE PERSUASIVE

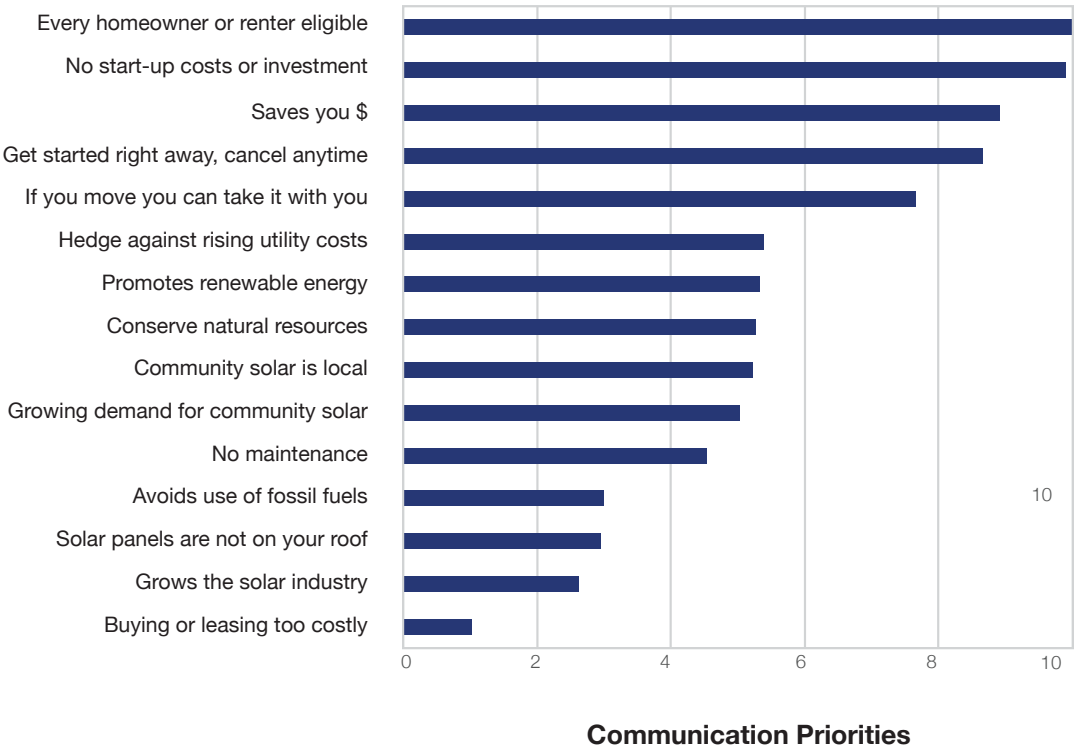


FIGURE 7: ORGANIZATIONS IN THE SOLAR BUSINESS ARE MORE INFLUENTIAL

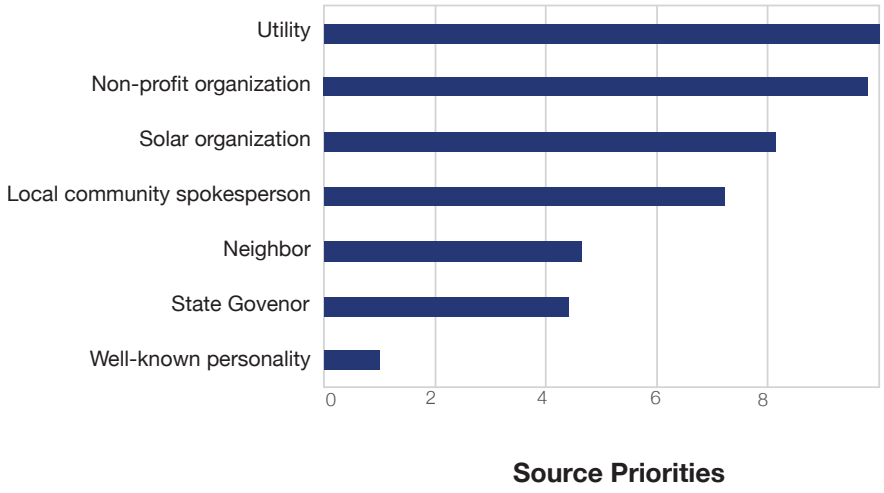
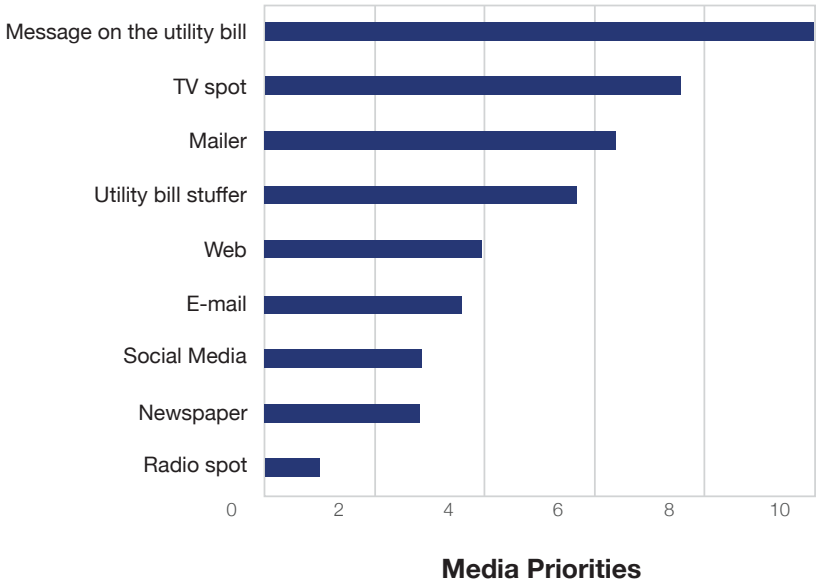


FIGURE 8: MEDIA TARGETING INDIVIDUAL CUSTOMERS ARE HIGHER PRIORITY



While these communications findings apply to the 884 respondents overall, there may well be differences by segment that could be explored in designing a promotional campaign. Also there could be synergies among the three communications elements that could be particularly effective for the market overall or for a particular segment. Finally, it is important to keep in mind that these findings reflect relative influence if the message reaches the intended target and do not take into account the costs of using a particular channel. Some messages, like one emphasizing eligibility for a $-saving community solar opportunity next to the monthly charge on a utility bill, could be very effective because it is high impact, low cost and likely to be seen by the customer.

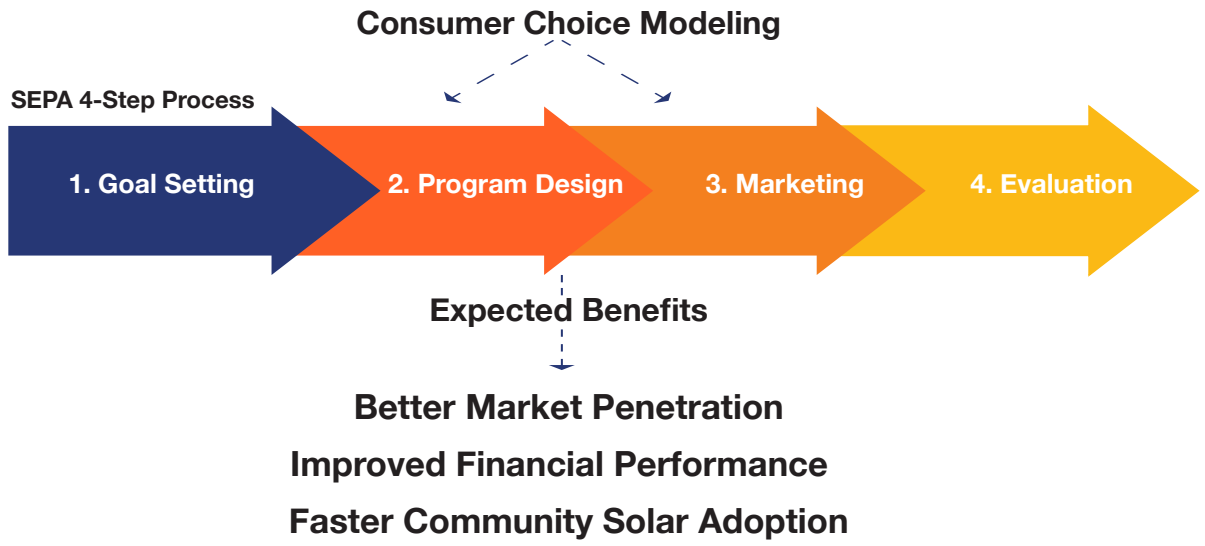
INTEGRATING CUSTOMER INSIGHTS INTO COMMUNITY SOLAR PLANNING AND EVALUATION

How Consumer Choice Modeling Supports SEPA's 4-Step Process

Figure 9 shows how the consumer choice modeling methodology described in this report provides utilities with a powerful tool for exploring alternative community solar program design options and for developing the most effective communications strategies.

The approach delivers quantitative market forecasts of a wider range of program and communication options than is possible with conventional concept or message testing. These forecasts can be used to narrow the options being considered and/or fine tune candidate alternatives so that they maximize market penetration and revenue return. The information generated can be used to support discussions with stakeholder and oversight groups. The expected outcome is expedited planning—saving time and money—and ultimately better program performance. Combined with effective evaluation, PCG believes the approach will help utilities increase market acceptance of community solar across their customer base.

FIGURE 9: CONSUMER CHOICE MODELING SUPPORTS THE SEPA 4-STEP COMMUNITY SOLAR PROGRAM DESIGN PROCESS



Two Ways a Utility Can Use Consumer Choice Modeling in Community Solar Planning

Utilities exploring community solar or planning a program can utilize consumer choice modeling in two ways. The first is to mine the data from this survey. The overall findings show relative preferences for different program design attributes, and these findings may apply to a local utility. Furthermore, the survey database could be weighted to reflect a given utility's target service territory and subsequent analyses would more closely fit the market under consideration. Finally, the highlights included in this report could be supplemented by more in depth segmentation analyses that may pertain to a local utility's situation.

The second approach would be to design and conduct a customized market study focused on a utility's local market(s). Table 7 lists the 12 SEPA program design decision options[8] combined with three additional customer attributes from the PCG study. The rows in darker gray were covered in the PCG study. A customized study could include any of the 15 program design decision factors listed in the table, or perhaps others not covered here that could be important to a utility's customers. Furthermore the levels within each of the decision factors selected for investigation can be tailored to fit the utility's operational and market environment. So, for example, within the incentives factor several ideas could be tested for their relative impact on market acceptance in the local market(s) being considered for community solar.

The communications framework components for the customized survey (messages-media-source items) can also be selected to coordinate or piggyback on ongoing marketing efforts or to test ideas that various local stakeholders suggest. Finally the customized study's sampling plan, supplemental questions and demographics can be coordinated with the utility's specific objectives for their community solar program.

TABLE 7. CANDIDATE PROGRAM DECISION FACTORS FOR A CUSTOMIZED MARKET STUDY

Program Design Decisions and Options		
	Program Decision Factors	Options
SEPA Typical Design Decisions	1. Customer Offer	Upfront vs. Ongoing Payment
	2. Economic Proposition	Bill Credit or Line Item Payment
	3. Sign-up Fee	None or Down Payment
	4. REC Treatment	Retired, transferred to customer or sold
	5. Siting and Scale	Varies
	6. Participation Usage Limit	% of average consumption
	7. Participation Capacity Limit	% of CSG Capcity
	8. Production Guarantee	Fixed vs. Variable Output
	9. Minimum Contract Term	Months or years
	10. Program Length	Months or years
	11. Subscription Transfers	Transferable or not
	12. Unsubscribed Energy	Socialized, remarketed or below the line
Additional Program Attributes Included in PCG Study	13. Initial Net Monthly Impact on Bill	Percentage savings
	14. Net impact on Bill 5 Years Out	Percentage savings
	15. Incentives to Participate	Various

*Rows in darker gray were addressed in PCG Study

8 See SEPA's report: Community Solar: Program Design Models

APPENDIX 1

Survey Questionnaire Topics

Screener topics: state of residence, responsibility for energy decisions, currently own or lease a solar system, knowledge of energy sources, household income.

Respondent profile topics: type of home, year home built, square footage, length of residence in current home, plans for living in current home, steps to save energy, energy sources for heating and hot water.

Respondent attitudes: importance of energy management, worries about energy management, potential reasons to consider solar, political leanings, perceived reliability and environmental impact of different energy sources, preferences for running a community solar program.

Program Design choice tasks: introduction and instructions, 10-15 choice tasks covering different combinations of initial investment, what you lease or own, % of current bill covered, initial impact on bill, impact on bill 5 years out, duration of contract at sign-up, incentives, 3 holdback choice scenarios.

Communications choice tasks: introduction and instructions, 10-15 choice tasks covering different combinations of message, media and sources of communications.

Demographics: marital status, children, area where you live, education, ethnicity, employment status.

APPENDIX 2

Survey Respondent Profiles

TABLE 8: SURVEY RESPONDENT PROFILES

Profile Question	Survey %
Principal decision-maker on energy use	63%
Own home	63%
Know a fair amount or a lot about sources	52%
Household income < $60K	65%
Live in single family detached home	62%
Taken steps in last 12 months to reduce energy use	75%
Lived in current home 5 years or less	43%
Electricity used for space heating	51%
Consider energy management important	68%
Politically liberal or moderate	63%
Live in urban or suburban setting	77%
Education above high school level	79%
Minority (non-Caucasian) ethnic background	19%
Employed full or part time	47%
Consider energy management important	26%

ABOUT THE AUTHORS

This project was designed and executed by Pacific Consulting Group (PCG) with input from those listed in the acknowledgements. Jonathan Honiball, PCG's Market Research Director, was the overall project manager and principal designer of the consumer choice modeling questionnaire. Dr. Peter Webb supervised development of the program design and communications frameworks used in the survey. Ms. Wei Tang was responsible for online survey administration and analysis. Tom Cooper coordinated with SEPA and authored this report.

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