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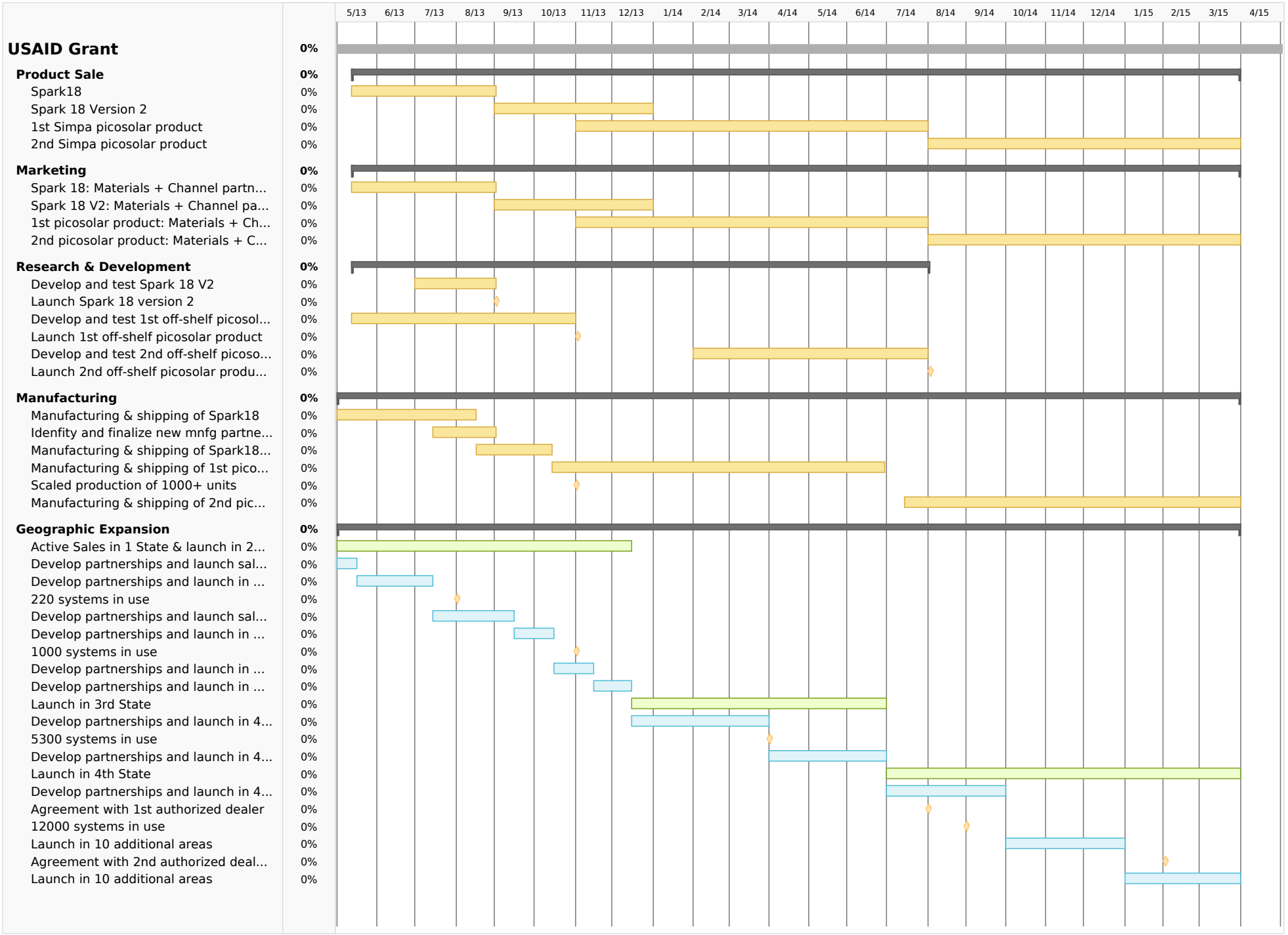

USAID Grant	**0%**
Product Sale	**0%**
Spark18	0%
Spark 18 Version 2	0%
1st Simpa picosolar product	0%
2nd Simpa picosolar product	0%
Marketing	**0%**
Spark 18: Materials + Channel partn...	0%
Spark 18 V2: Materials + Channel pa...	0%
1st picosolar product: Materials + Ch...	0%
2nd picosolar product: Materials + C...	0%
Research & Development	**0%**
Develop and test Spark 18 V2	0%
Launch Spark 18 version 2	0%
Develop and test 1st off-shelf picosol...	0%
Launch 1st off-shelf picosolar product	0%
Develop and test 2nd off-shelf picoso...	0%
Launch 2nd off-shelf picosolar produ...	0%
Manufacturing	**0%**
Manufacturing & shipping of Spark18	0%
Idenfity and finalize new mnfg partne...	0%
Manufacturing & shipping of Spark18...	0%
Manufacturing & shipping of 1st pico...	0%
Scaled production of 1000+ units	0%
Manufacturing & shipping of 2nd pic...	0%
Geographic Expansion	**0%**
Active Sales in 1 State & launch in 2...	0%
Develop partnerships and launch sal...	0%
Develop partnerships and launch in ...	0%
220 systems in use	0%
Develop partnerships and launch sal...	0%
Develop partnerships and launch in ...	0%
1000 systems in use	0%
Develop partnerships and launch in ...	0%
Develop partnerships and launch in ...	0%
Launch in 3rd State	0%
Develop partnerships and launch in 4...	0%
5300 systems in use	0%
Develop partnerships and launch in 4...	0%
Launch in 4th State	0%
Develop partnerships and launch in 4...	0%
Agreement with 1st authorized dealer	0%
12000 systems in use	0%
Launch in 10 additional areas	0%
Agreement with 2nd authorized deal...	0%
Launch in 10 additional areas	0%

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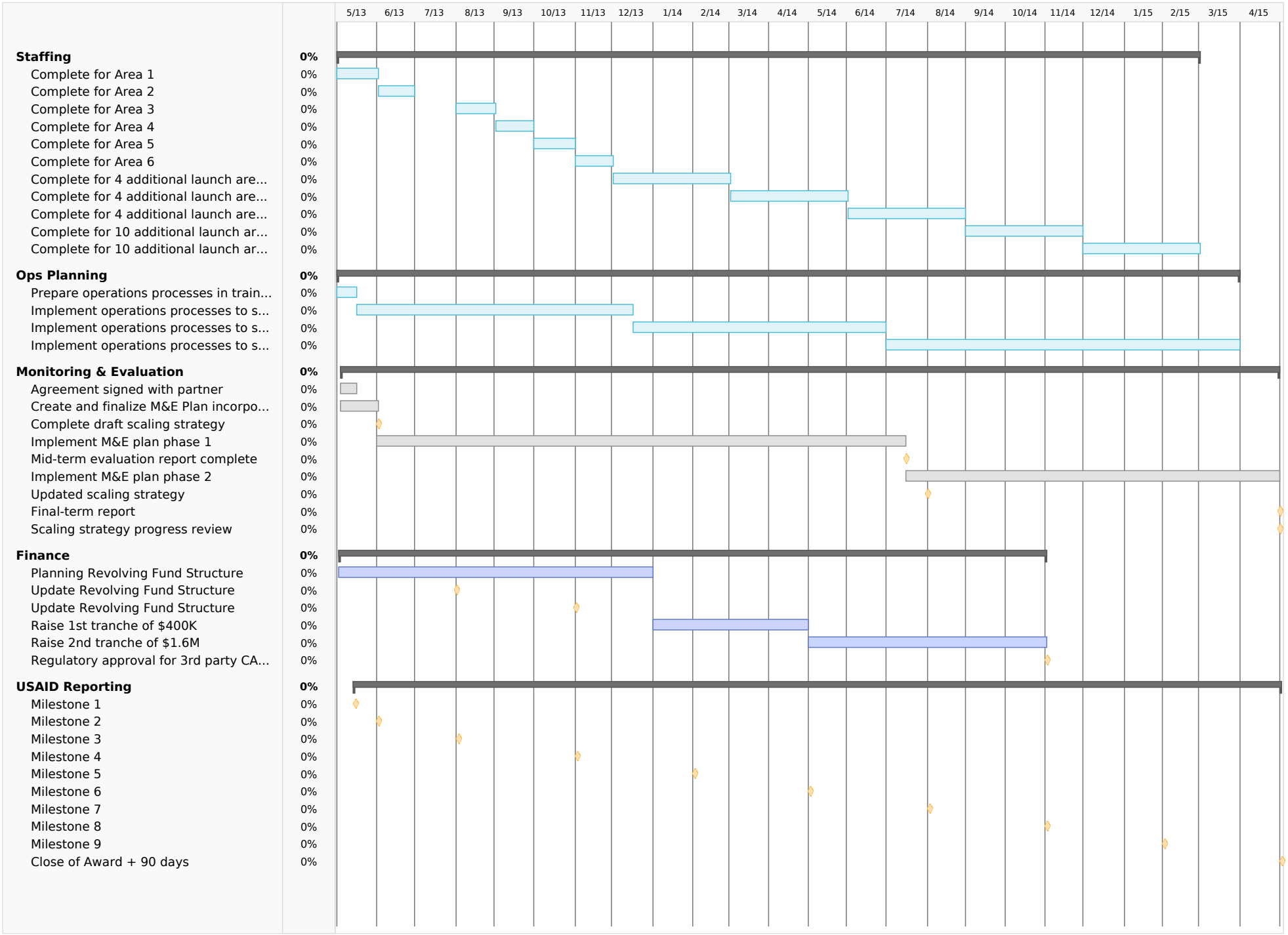

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July 9, 2012

Dear Wes,

In Simpa's Milestone 2 submission, we included a contract with MART, the consulting firm that we have hired. This contract contained a proposal and a budget for Rs. 16,16,861. The following changes to this proposal have been incorporated into this document:

1. The sample size of Simpa customer households to be surveyed has been increased to 370. Allowing for a 10% non-response rate, this should result in a statistically significant sample of the 12,000 households that Simpa will reach by the end of the grant period.

2. The baseline has been divided into phone and in-person surveys. All 370 customer households will be surveyed both over the phone and in-person. The phone survey will be conducted between the time a customer is approved and he/she has a system installed. The in-person survey will be conducted in November 2013. The phone survey was added so that customers can be asked about their usage of, and expenditure on, non-solar energy before they buy a Simpa system. This information may be difficult for them to recall later.

3. In addition to comparing Simpa customers with non-users of solar energy, we will also be surveying a group that uses another solar product, such as lanterns. The second group was included since the Schedule of Milestones states that we should, "draw comparisons to alternate ways of achieving these development objectives". The sample size of each group will be 160, to ensure statistical significance.

4. We are replacing one of our earlier evaluation questions, which was, "Do Simpa's partners scale more quickly with Simpa-enabled solar products than without?" The new question reads, "What motivates Authorized Sales Representatives (ASRs) to sell? What is the value proposition of Simpa for them?" In order to answer this question, we plan to survey ASRs in addition to Simpa customers and comparison groups of non-customers. We have assumed that there will be approximately 400 ASRs by the end of the grant period, and therefore a sample size of 100 will yield statistically significant results.

Due to these increases in the scope of the evaluation, the budget has been revised as well. However the modified budget will not exceed Rs.26,00,000. At today's exchange rate, this is still within the US$50,000 that comprises USAID's contribution to M&E for this project.

Regards,

Paul Needham

315 Fifth Avenue South, Suite 1000, Seattle WA 98104

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Simpa M&E Plan

Theory of Change

Any effective development project must ultimately be based on an adequate "theory of change" – a complete, coherent, and correct causal model from funding to inputs and activities to outputs to outcomes and impacts. The key question is *how* and *when* these needed theories of change are discovered. If rigorous evidence exists, then a known theory of change can form the basis of planning before the project. Where rigorous evidence does not exist, the project can nevertheless begin with a theory of change and working hypotheses, or assumptions.

In its application to USAID-DIV on August 31st, 2012, Simpa included its theory of change, or results chain, as below.

Inputs	Processes	Outputs	Outcomes	Impact
People Product – solar Capital	Product integration Product development Training Risk assessment Sales After-sales service Research	Systems installed	Systems used / energy paid for and consumed	Improvements in well-being of consumer households

There are two hypotheses behind its theory of change that Simpa seeks to refine. The first is its value hypothesis. This is a hypothesis of why people choose to "buy". For Simpa, "buying" refers not only to installing a system but also continuing to pay for and consume the energy it generates. The second is its growth hypothesis. This is a hypothesis of how to find new customers.

The evaluation of this project will be concerned with Simpa's value hypothesis. However, because the evaluation will track the same customers over the grant period, it will not be able to significantly test Simpa's growth hypothesis. The tool that will be used to test Simpa's growth hypothesis is structured experiential learning (SEL). The results of the evaluation and SEL will be used to improve Simpa's theory of change and implementation.

Key Questions

The table below lists the 4 key questions, and the tools that will be used to address them.

Question	Tool(s)
1. Who are Simpa's customers? What is the value proposition of Simpa's solar model and energy services for them?	Evaluation, SEL
2. What are the impacts of the program? To what extent are these impacts attributable to Simpa?	Evaluation
3. What motivates Authorized Sales Representatives (ASRs) to sell? What is	Evaluation, SEL

	the value proposition of Simpa for them?	
4.	How cost-effective are Simpa's solar model and energy services for customers?	Evaluation

The design parameters in Simpa's value proposition include customer needs, distribution channels, the pitch, the pricing, product features, the recharge process / payment channel and the Simpa technology. Some of these parameters are important to track over time for individual customers. For example, the ease with which customers can recharge will continue to be important for as long as they are paying off the system. An evaluation is an effective tool to measure these parameters.

However, there are other parameters that are likely to be important primarily before system installation. Examples include the pitch and the distribution channel. For these parameters, a comparison across customer types is more meaningful than of the same customer over time. SEL is a more effective tool with which to make comparisons across customer types.

Since the submission of the application in August 2012, the questions that have been added or modified are 3 and 4. In the application, Question 3 was, "Do Simpa's partners scale more quickly with Simpa-enabled solar products than without?" However, since its partners, or distribution channels, are one of the parameters in Simpa's value proposition, over the grant period this will be an area of significant experimentation for us. Therefore, the question has been broadened accordingly. Question 4 has been added to reflect what was agreed upon in the Schedule of Milestones with USAID.

Evaluation Design and Methodology

The Schedule of Milestones contains 2 observation events, namely a mid-term and end-line evaluation. We are proposing adding a baseline. This is because Simpa currently does not possess baseline values for the impact indicators agreed upon with USAID.

The sample size of Simpa customer households to be surveyed has been calculated as 370. Allowing for a 10% non-response rate, this should result in a statistically significant sample of the 12,000 households that Simpa will reach by the end of the grant period. The confidence level will be 95% and the confidence interval will be 5%. The baseline has been divided into phone and in-person surveys. All 370 customer households will be surveyed both over the phone and in-person.

The phone survey will be conducted between the time a customer is approved and he/she has a system installed. The in-person survey will be conducted in November 2013. The phone survey was added so that customers can be asked about their usage of, and expenditure on, non-solar energy before they buy a Simpa system. This information may be difficult for them to recall later.

In addition to comparing Simpa customers with non-users of solar energy, we will also be surveying a group that uses another solar product, such as lanterns. The second group was included since the Schedule of Milestones states that we should, "draw comparisons to alternate ways of achieving these development objectives". The sample size of each group will be 160, to ensure statistical significance.

The comparison groups will be drawn from districts in Uttar Pradesh where Simpa does not plan to sell until after 2015. The districts will be chosen based on how closely they resemble the districts where Simpa is selling, particularly with respect to the degree of electrification. Both male and female decision makers in the customer and non-customer households will be surveyed.

The evaluation design for customers and the comparison groups will consist of observation events of the following sample sizes:

	Baseline		Mid-term	End-line
	August-November 2013 (via phone)	**November 2013 (in person)**	**June 2014 (in person)**	**April 2015 (in person)**
Project participants (customers)	370	370	370	370
Comparison group (non-solar)		160		160
Comparison group (solar lanterns)		160		160

In addition, 100 ASRs will be surveyed in June 2014 and in April 2015 to answer the question, "What motivates Authorized Sales Representatives (ASRs) to sell? What is the value proposition of Simpa for them?" We have assumed that there will be approximately 400 ASRs by the end of the grant period, and therefore a sample size of 100 will yield statistically significant results. As Simpa is currently in the process of acquiring ASRs, we will not be able to reach a sample size of 100 before June 2014.

The evaluation will primarily be quantitative, but will be supplemented with qualitative methods. In particular, we plan to use anthropological methods such as participant-observation or energy diaries to better understand kerosene usage.

Threats to Validity

There are four threats to internal validity that we have identified. The first is selection bias. Since Simpa customers must choose to buy a solar connection, they cannot be selected randomly. In addition, because customers will be acquired gradually, we must survey the first 370 customers, rather than being able to select randomly within the universe of customers.

The second is mortality, or attrition. If customers who are dissatisfied with their Simpa system stop repaying, then it will be mostly those who are satisfied who are retained as customers after 2 years. This is likely to exaggerate the benefits of Simpa's systems. The third threat that is related, but will have the opposite effect, is if customers minimize their usage of the system. They may then report the Simpa system to not be of much benefit to them, when in fact they haven't used it enough.

The fourth threat is that there is a lack of variability in some of the indicators such as quality of health. If customers do not perceive poor health due to poor lighting and kerosene usage to be a problem, they may downplay its effects. This will lead to a result that suggests the benefits of solar lighting are less significant than they are.

The samples of customers and non-customers will be compared to the population on the basis of their socio-economic classification. The socio-economic classification is arrived at based on the respondent's education, occupation and asset ownership/consumption. Since this socio-economic classification has been applied across India, to a certain extent it provides a basis for comparison across the country. However, the risk here is that we are omitting all characteristics beyond education and economic status,

which may influence the extent to which the results can be generalized. In addition, as this socio-economic classification is specific to India, generalizing the results beyond India becomes even more difficult than nationally.

Structured Experiential Learning

Pritchett, Samji and Hammer describe SEL as:

> ...the process of disaggregating and analyzing data on inputs, activities and outputs chosen to be collected by the project to draw intermediate lessons that can be then fed back into project design during the course of the project cycle. The idea is to take the key insight about using randomization and other rigorous methods to identify impact and expand it dramatically – at lower cost – by using the development project itself as a learning device. Variations in alternatives within the design space *within the project* can be used to identify differentials in the efficacy of the project on the process of inputs to outputs, which can be measured at low incremental cost at high frequency intervals, for real-time feedback into implementation, at key decision junctures (30).

For Simpa, some of the key decisions that the SEL will inform are:

1. Through which channels can Simpa scale most rapidly? In Karnataka, should Simpa continue sales through solar system integrators, such as SELCO? In central Uttar Pradesh, what is the ideal channel for Simpa?
2. What product features do Simpa customers demand?
3. Which states and areas should Simpa expand into?

The table below includes the time frame in which these decisions will be made.

Decision	Time frame
In Karnataka, should Simpa continue sales through solar system integrators?	By December 2013
In central Uttar Pradesh, what is the ideal channel for Simpa?	By August 2013
What product features do Simpa customers demand?	Throughout the grant period

Which states and areas should Simpa expand into?	Throughout the grant period

Simpa will use the methodology described in *The Lean Start-Up* for SEL, through executing a Build-Measure-Learn process in cycles. Simpa will run experiments, and use the results from the experiments to validate our hypotheses. The term "experiment", as used in *The Lean Start-Up*, does not refer to the experimental method. Instead, the experiments will use primarily qualitative methods to validate hypotheses. These hypotheses can subsequently be verified using quantitative methods.

Dissemination of Results

The stakeholders to whom the results of the evaluation and SEL will be disseminated are rural households and SMEs, field partners, CAPEX investors and participants in "energy access" forums. The table below lists the stakeholders to which the results of each question will be directed.

Question	Stakeholders
1. Who are Simpa's customers? What is the value proposition of Simpa's solar model and energy services for them?	Rural households and SMEs, Field partners
2. What are the impacts of the program? To what extent are these impacts attributable to Simpa?	All
3. What motivates Authorized Sales Representatives (ASRs) to sell? What is the value proposition of Simpa for them?	Field partners
4. How cost-effective are Simpa's solar model and energy services for customers?	Field partners

The means of dissemination will vary depending on the stakeholder. Simpa's field partners, and rural households and SMEs, will be both recipients of the results, as well as respondents in the evaluation and SEL. Therefore, in the course of the evaluation and SEL, field partners and rural households and SMEs will be asked in what form they would like to receive the results. The means of dissemination to them will be tailored according to their preferences and needs.

However, in the absence of this information we propose to disseminate the results to field partners and rural households and SMEs orally. This will be the responsibility of channel leads and credit approval officers, who will receive a written and oral brief with the main messages. These messages will be transmitted orally to the field partners, and through them to rural households and SMEs.

Presentations will be made to participants in "energy access" forums to disseminate the results at least twice a year. These presentations will be accompanied by articles, which will be available to participants for further information. Upon the completion of the end-term evaluation, a webinar will be held for CAPEX investors.

While the SEL is taking place, the dissemination of its results will be monthly. The results of the end-term evaluation will be disseminated upon its completion.

Indicators

This section describes the indicators that will be measured through monitoring and evaluation. The indicators in the Schedule of Milestones that we propose to modify are as follows:

1. "number of applicants in low, medium and high income categories, respectively"

We would like to omit this indicator, as classifying the applicants approved by income is more important than just the applications received. As "number of applications approved" is already an indicator, we

propose modifying this indicator to "number of applications approved in low, medium and high income categories".

2. "% of approval decisions taken within 3 days of receiving an application"

At Simpa it is tacit knowledge that the "% of approval decisions taken within 3 days of receiving an application" is 100, although it is not measured at present. Since this percentage is not expected to change over time, it is not a very meaningful indicator. The average number of days from date of approval to installation is a more meaningful indicator. Therefore, we propose replacing "% of approval decisions taken within 3 days of receiving an application" with "average number of days from date of approval to installation".

3. "number of problems reported" and "number and types of problems resolved"

In order to make these indicators more accurate measures of after-sales service, we are proposing adding the word "technical" as a qualifier to problems. After-sales service is conducted in one of three ways. These are over the phone, by a local technician or by a Simpa technician. Because local technicians are often not Simpa employees, it is a challenge to collect data on problems resolved. While Simpa is piloting a ticketing sheet which will provide confirmation of problems resolved, it is uncertain whether accurate data can be collected on the type of problem. Therefore, we propose modifying the indicators of after-sales service to "number of technical problems reported" and "number of technical problems resolved".

4. "number of B2C solar home connections"

In our August 2012 application, we defined B2C as pay-as-you-go solar home systems sold to rural households and SMEs. However, the words B2C and home connote that this indicator only refers to rural households. Therefore, we have changed this indicator to "number of clients who have access to finance for clean energy", which also aligns with USAID's own indicators. We will also report on the breakdown of household and small business clients.

5. "average sales / month at a branch selling Simpa-enabled solar products" and "average sales / month at a branch selling solar products through other financing models alone"

The modification of evaluation question 3) also has implications for our choice of indicators. Before being modified, the question read, ""Do Simpa's partners scale more quickly with Simpa-enabled solar

products than without?" The indicators, ""average sales / month at a branch selling Simpa-enabled solar products" and "average sales / month at a branch selling solar products through other financing models alone" would have contributed to answering this question. However, now that the question has been broadened to, "What are the channels through which Simpa can scale most rapidly?" those indicators are no longer relevant.

6. Impact indicators

The impact indicators, which will be measured through the evaluation, have been made more specific. Indicators for health and kerosene consumption have also been added. The only impact indicator that has been omitted is "confidence in ability to seize opportunities provided by energy (gender disaggregated)". This is because, at the time of the end-line evaluation, Simpa expects that its customers would have already seized the opportunities provided by energy. Therefore, this indicator has been replaced with "average score for satisfaction with energy by purpose and situation (gender disaggregated)", which provides more information on the opportunities that energy has provided to customers, which they have seized.

Process, Output and Outcome Indicators

Results' Chain Level	**Indicator**	**Target**	**Method of Calculation**
Processes	No. of applications received		Applications received by channel lead / credit approval officer, entered weekly in Excel sheet that populates sales dashboard.
	Average number of days from date of approval to installation	13	Dates of approval and installation available from RMS
	No. of applications approved (in low, medium and high income categories respectively)		Customers will be classified based on data reported on the application form.
	No. of technical problems reported		Simpa ticketing system
	No. of technical problems resolved		Simpa ticketing system
Outputs	No. of clients who have access to finance for clean energy	12,000	Agents send SMSes which are automatically recorded in the RMS.

	No. of household clients who have access to finance for clean energy		Agents send SMSes which are automatically recorded in the RMS.
	No. of business clients who have access to finance for clean energy		Agents send SMSes which are automatically recorded in the RMS.
	No. of people provided access to solar home connections		RMS, from application form
	% female beneficiaries provided access to solar home connections		RMS, from application form
Outcomes	Average forecasted time to repayment (from first recharge)		See Milestone 1 submission, B2C Workplan Summary slide 19
	Average no. of days of energy purchased / month	25	Sum of customer days purchased / months active
	Cumulative number of days of energy sold		Sum of days purchased
	Portfolio At Risk (PAR) of clean energy portfolio		% of gross portfolio size at the end of the reporting period that is in arrears for greater than 30 days worth of energy credit
	Net, pre-tax margin per connection	17%	RMS (sales price) – (cost of system). Cost of system includes recharge and dealer commissions, component replacement, servicing, above-line marketing, transportation, installation and SMS.
	Personnel overhead costs per connection (Rs.)	2,503	RMS (salary expenses)/(systems sold)
	Production costs of Simpa components per connection (Rs.)	1,669	Manufacturing cost of Simpa component (meter), will change based on scale

Indicators for Evaluation

Question	Indicator	Method of Calculation
Who are Simpa's customers? What is the value proposition of Simpa's solar model and energy services for them?	Average score for satisfaction with energy by purpose and situation (gender disaggregated)	Survey
	Average score for satisfaction with customer service	Survey
What are the impacts of the program? To what extent are these impacts attributable to Simpa?	Total watt peaks installed	Sum of (customer x SHS panel size)
	Average quantity of kerosene purchased	Triangulation of energy diaries and survey
	Average score for quality of health	Survey
What motivates Authorized Sales Representatives (ASRs) to sell? What is the value proposition of Simpa for them?	Average commission paid to ASR	ASRs receive a flat free upfront, and an ongoing commission as a percentage of recharges.
	Benefit most valued by ASRs	Survey
How cost-effective are Simpa's solar model and energy services for customers?	Average total expenditure on product over 2 years	For Simpa: the average of (initial payment + total amount recharged) across customers For non-Simpa customers: survey data

Roles

Simpa has engaged both a consulting firm and an individual specialist for the monitoring and evaluation of this project. The particular strengths of the consulting firm (MART) are their thematic expertise in energy and rural marketing. The individual specialist (Devyani Srinivasan) has been selected for her functional expertise in M&E design and methodology, and its integration into the operations of social enterprises. Simpa's role is to ensure that the M&E system provides relevant, high-quality data that is used to inform decision-making.

More specifically, the responsibilities of each partner are as follows.

Devyani Srinivasan:

- Overall accountability for execution of the M&E plan
- M&E design

- Advising on tools and techniques for baseline and end-line field data collection
- Piloting innovative methods, such as energy diaries and SEL
- Analysis and synthesis of monitoring, SEL and evaluation data to formulate recommendations for operations
- Co-authoring the SEL and evaluation studies
- Creating knowledge products to disseminate the SEL and evaluation results
- Reporting to USAID

MART:

- Determining sample selection methods
- Formulating tools for baseline and end-line field data collection
- Responsible for quantitative data collection and interviews
- Analysis of evaluation results
- Co-authoring the evaluation study

Simpa:

- Approval of the M&E plan
- Ownership of the SEL
- Providing feedback to consultants
- Disseminating the SEL and evaluation results
- Sharing of data for monitoring and supporting the evaluation studies

Confidential Simpa Implementation Update for USAID-DIV

23 October 2013

Finance & Credit Team – Progress Report

	Aug	Sept	Oct
Team Strength	Finance : 2 Credit: 1	Finance: 2 Credit: 1	Finance: 2 Credit: 1
Milestones	Finance: 1) Performed analysis on structure to raise CAPEX and decided to raise CAPEX on Simpa India 's balance sheet. Accounting & Compliance: 1) Registered Simpa in UP Credit: 1) Initiated project to develop credit strategy for Simpa with input from Arc Finance.	Accounting & Compliance: 1) Completed Simpa India audit 2) Completed valuation for Simpa India in order to comply with DCF norms for equity infusions 3) Filed Simpa US tax returns 4) Initiated Simpa US audit	Finance: 1) Submit OPIC online application 2) Create financial model for CAPEX raise Accounting & Compliance: 1) Complete 30% of Simpa US audit Credit: 1) Prelim draft of credit manual 2) Start daily review of portfolio 3) Launch offer for usage based customers to pay off systems early

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Customer Experience Team – Progress Report

	Aug	Sept	Oct
Team size & make-up	Product Management (2); Design (2); Program Management (1); HW Eng & QA (3); SW Eng (2); Manufacturing Team (5); Supply Chain (2); Customer Service (2)		Add Marketing: 1
Spark 20 / 40 Product Line	• Sales still paused while we create a simplified "traditional" solar home system product based on our proven SHS design. • Ramped up manufacturing in own Bangalore workshop.	• Launched Simpa branded SHS kit, made in Bangalore workshop • Process to collect feedback from VLEs, customers, prospects, installations partners	• Identifying local assembly firm to take over manufacturing of next 2000 • Roadmap of product refreshes developed
New Product Line - based on segmenta-tion	• Ran several experiments with energy poor to understand needs • Began exploring China product partners	• Continued sales experiments with grid-connected energy poor, developed customer segmentation. • Developed new product specs using Lean-Start Up methods for specific target segments	• Finalized prod requirements and defined new SKUs to source from China • Narrowed list of China product partners. Reviewing each. Getting quotes.

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Sales & Operations Team – Progress Report

	Aug	Sept	Oct
Sales/Mo	29	66	100 (target)
# VLEs (cumulative)	12	27	57
# Sales staff (cumulative)	2	5	9
# Ops staff (cumulative)	4	5	9
Milestones	• Hire new VP Sales & Operations with 13+ years experience building rural sales orgs. • Continued focus on keeping existing customers and VLEs happy. • Northern sales paused because of quality problems. • Placed 15 demo units with potential VLEs and highly influential people • More sales planning and area planning, got ready for sales re-launch.	• Northern sales restart on Sept 11. • Continued in **1** UP district. • Ran **1** sales event • Hired **3** new sales staff • Hired **1** new field ops staff • Ran **1** VLE training and engagement event • VP built sales plan for 2014 while testing some assumptions in his model through live sales. • Hit VLE target of **27** (15 new).	• Hired **5** new sales staff • Hired **4** new field ops staff • Ran **2** sales events • Diwali van marketing campaign starts, covering **20** rural locations; touch **1000** potential customers • Run **2** VLE training/engagement events • Finalized 2014 work plans and priorities • De-emphasizing sales in south to focus efforts on northern VLE model. Focus on incentivizing first customers to pay early.


Toran Singh and
his granddaughter

December 25, 2013

Update of Evaluation Activities
Milestone 4

Purpose

There have been no changes to the evaluation purpose in the reporting period.

Methodology

The baseline survey was tested in the field. Once feedback was received both from the field and from Simpa, the final revisions to the survey were completed.

Initially, it was planned that MART would receive daily reports from Simpa that listed the customers who had been approved but whose systems had not been installed as yet. It was expected that the enumerators would then survey these customers before their systems were installed. However, this plan did not take into account the fact that the number of days from approval to installation is less than 5, compared to the 13 targeted in the M&E plan. Therefore, it was initially difficult for enumerators to survey all the customers who had been approved before their systems were installed. To resolve this issue, MART has decided to survey all customers who have applied, rather than only those who have been approved. To account for the fact that some customers who apply may not be approved, the sample size will be increased accordingly.

7 districts in Uttar Pradesh were compared before deciding where the comparison group surveys would be conducted. The parameters on which they were compared were their MAS India rank, rates of electrification, solar lantern sales and whether they are districts Simpa plans to expand to by 2015. Solar lantern sales were important because half of the comparison group surveys that will be conducted will be of solar lantern customers. These sales figures were obtained from solar lantern companies that operate in these districts. The MAS, or Market Attractiveness Score, is an index that sums scores for purchasing power, consumption, progressiveness and exposure and infrastructure and multiplies them by population size. The table below lists all the 7 districts that were compared with Mathura, where the treatment group surveys are being conducted. Both Mathura and Etah, the district that was ultimately chosen for the comparison group surveys, are highlighted.

District	MAS India rank	Rate of electrification	Solar lantern sales per month (in Rs.)	Simpa expansion planned?
Gorakhpur	50	27%	250,000	N
Bulandshahar	78	15%	100,000	N
Deoria	105	24%	200,000	N
Aligarh	117	18%	200,000	Y
Agra	128	28%	150,000	Y
Etah	**165**	**8%**	**450,000**	**N**
Lucknow	244	21%	75,000	N
Mathura	**176**	**35%**		

Etah was chosen because its MAS India rank is closest to Mathura's, its solar lantern sales are highest and Simpa does not plan to expand into this district by 2015. However, the rate of electrification is much lower in Etah than in Mathura. It is likely that solar lantern sales in Etah have been much higher than in other districts because the rate of electrification is much lower. Therefore, we felt that we had to make a trade-off between choosing a district with high solar lantern sales, and where rates of electrification were more similar to Mathura.

In order for our evaluation to be valid, our comparison group should not become customers of solar home systems before it is completed in 2015. We have mitigated this threat in three ways. The first is by choosing a district for the comparison group surveys where Simpa does not plan to expand by 2015. The second is that even within Etah district, we will choose villages where rural banks do not have a presence. This is because rural banks provide loans for solar home systems. Thirdly, we will try to select respondents for the comparison group who are unlikely to be able to afford solar home systems.

When MART visited Etah they observed that most solar lantern customers are in SEC categories C, D and E. In contrast, Simpa customers are mostly in SEC categories A and B. This means that Simpa customers are likely to be more educated and own/use more durable goods than solar lantern customers. If we assume that education and the ownership of durable goods are proxies for wealth, then solar lantern customers are unlikely to be able to afford the additional Rs.11,000 required to purchase a solar home system over the next 2 years.

However, the selection of the comparison group is complicated by 2 factors. On the one hand, solar lantern customers may not in fact be less wealthy than Simpa customers, but may just own fewer durable goods because they have poorer access to energy. On the other hand, if solar lantern customers are less wealthy than Simpa customers then they may not be comparable to them, which is a prerequisite for selection of our comparison group. Our solution to these issues has been to ask enumerators to apply quotas to ensure that 40% of solar lantern customers are in SEC A or B, and 60% are in SEC C, D or E. We will also ask all comparison group respondents for their income and landholdings, so that we have parameters other than the SEC to use to compare them.

Approximately 150 surveys of the treatment group have been completed to date. The surveys of the comparison group began on December 24th.

Results and Dissemination

While 86 surveys have been entered into Excel, the data has not been cleaned. Therefore it is not reliable enough to be reported on as yet.

USAID Metrics

	PROCESSES
1)	# of applications received
2)	Avg # of days between approval and installation*
3)	Number of applications approved by income tiers**
	Low income applicants
	Medium income applicants
	High income applicants
4)	# of technical problems reported
5)	# of technical problems resolved

	OUTPUTS
1)	# of clients who have access to finance for clean energy
2)	# of household clients who have access to finance for clean energy
3)	# of business clients who have access to finance for clean energy
4)	# of people provided access to solar home connections***
	% female beneficiaries provided with access to solar home
5)	connections****

	OUTCOMES
1)	Avg forecasted time to repayment*^
2)	Avg # of energy days purchased per month
3)	Cumulative # of days of energy sold
4)	PaR 30 (as % of customers)
	PaR 30 (as % of outstanding portfolio)
5)	Net pre-tax margin per connection*^^
6)	Personnel overhead costs per connection*^*
7)	Production costs of Simpa components per connection

	INDICATORS
1)	Total Installed Capacity
2)	Avg Commission paid to ASR*^^^
3)	Avg total expenditure on product over 2 years*^^^^

*Days between approval and installation only considers customers in Uttar P

**MART has recommended that the segments for household annual income

***Number of beneficiaries is calculated by multiplying household size as re

****Female beneficiaries only measures whether the Simpa applicant was a

*^Avg forecasted time to repayment excludes customers active for less than

*^^Net pre-tax margin is calculated as an average of product SKUs
*^*Personnel Expenses per connection are calculated as the previous month
*^^^Avg commission is based off Simpa VLEs average monthly commissions
*^^^^Avg total expenditure is forecasted based on current repayment rates

508	applications
4.4	days
27	applications
201	applications
210	applications
130	issues
118	issues

438	customers
428	customers
10	customers
2,390	individuals
9%	% female

17	months
27.3	days/month
41,176	days
5.3%	% customers
5.6%	% outstanding portfolio
(9,346)₹	Rs/connection
32,849 ₹	Rs/connection
1,920 ₹	Rs/connection

14.2	kW
1,986	Rs/month
10,425	Rs

Pradesh as SELCO handles the sales process in Karnataka.
e are: < Rs.90,000 is low-income : Rs. 90,0001 to Rs. 2,15,000 is middle-income : and, > Rs.2,15,(
ported by the customers on the customer application
female/male and not the gender ratio of the household
1 month as these customers skew the results by shortening the estimated repayment term

ɹ's personnel expenses divided by the number of systems sold in the previous month.
including upfront & ongoing commission from customers. (Commissions are pro-rated if Lead-ɡ

000 is high-income

gen is active for less than 1 month).

February 9th, 2014

Update of Evaluation Activities
Milestone 5

Purpose

There have been no changes to the evaluation purpose in the reporting period.

Methodology

The data collection for the baseline survey has been completed. However, there has been a deviation between how the sample of Simpa customers was constructed and what was proposed in the M&E plan. The reason for this is described in this section.

The number of Simpa customers as a percentage of applicants has been decreasing from the time of our milestone 3 submission to the current milestone (5). Therefore, the customer applications were no longer an appropriate sampling frame and the survey team decided to use the installation orders instead. However, due to a miscommunication on the installation orders, the survey was halted on December 26th and resumed on January 21st. As a result, Simpa customers who were acquired between December 26th and January 21st have not been included in the baseline survey.

We had planned to survey the first 370 Simpa customers acquired from the start of the baseline survey. While this sample would not have been representative of late adopters, and those in locations that Simpa expands to later in the project, we felt that it would be free of other sources of bias. However, because of the deviation from our planned methodology, there may be other sources of bias in excluding the customers acquired between December 26th and January 21st that we are unaware of.

Results and Dissemination

Beyond the 86 surveys initially received, cleaned responses to select questions in the baseline survey were available for an additional 115 customers at the time of writing this update. Some cleaned data was also available for all the comparison group respondents, and although this data is more comprehensive than for the treatment group, it still does not cover all the questions.

While our hypothesis that the economic status of solar lantern users is lower than that of Simpa customers seems to have been proved true, this could be because of the quotas that we applied in selecting respondents. While the occupation of a majority of all respondents was agriculture, for solar lantern users it was 89% while for Simpa customers and non-users of solar products it was 73% and 72% respectively. Amongst these respondents, the median income of solar lantern users was lower than of the other 2 groups. This is not surprising because 68% of solar lantern users had landholdings of 1 acre or less, while the corresponding figures for Simpa customers and non-users of solar products were 52% and 56%.

While the percentage of Simpa customers and solar lantern users whose homes were electrified were similar (86% and 80%), there was a fairly stark difference in the number of hours they received electricity for. 77% of solar lantern users received 7 hours of electricity per day or less in the summer, while the majority of Simpa customers as well as non-users of solar products received 8 to 12 hours. While we expected that the number of hours of power supply available would differ between the summer and winter, the variations do not seem significant. Most respondents (across groups) had not experienced a power failure for a week or more in the past year, but again more solar lantern users had experienced such a failure than in the other 2 groups. And finally, with the exception of fans and mobile phones (which almost all respondents owned), solar lantern users were less likely to possess electronic appliances than the other 2 groups.

For non-users of solar products, the most common alternative to electricity was kerosene. All 118 Simpa customers and 200 users of solar lanterns used kerosene as well. Rechargeable LED lights were the next most popular alternative. Eye irritation and difficulty breathing were the 2 problems caused by kerosene which respondents were most aware of and considered most severe. Simpa customers seem to spend less on kerosene than the other 2 groups, despite the fact that there are no clear differences in the number of hours they use kerosene for. This requires further investigation.

The survey also attempted to understand how respondents use different sources of fuel, how they would rate the quality of each and how satisfied they are with them. Both kerosene and solar lanterns are used mostly for cooking, but both men and women rate the quality of light, and their satisfaction with it, poorly. The survey results need to be analyzed further in order to understand how power cuts affect the other activities that respondents use electricity for. The main activities are for children to study, adults to read and write, to light the cattle shed and to milk the cattle.

USAID Metrics

	PROCESSES	
1)	# of applications received	1,169
2)	Avg # of days between approval and installation*	17.8
3)	Number of applications approved by income tiers**	
	Low income applicants	54
	Medium income applicants	358
	High income applicants	483
4)	# of technical problems reported	365
5)	# of technical problems resolved	310

	OUTPUTS	
1)	# of clients who have access to finance for clean energy	895
2)	# of household clients who have access to finance for clean energy	867
3)	# of business clients who have access to finance for clean energy	28
4)	# of people provided access to solar home connections***	5,067
5)	% female beneficiaries provided with access to solar home connections****	21%

	OUTCOMES	
1)	Avg forecasted time to repayment*^	18
2)	Avg # of energy days purchased per month	26.6
3)	Cumulative # of days of energy sold	76,942
4)	PaR 30 (as % of customers)	4.4%
	PaR 30 (as % of outstanding portfolio)	4.9%
5)	Net pre-tax margin per connection*^^	1,223 ₹
6)	Personnel overhead costs per connection	27,513 ₹
7)	Production costs of Simpa components per connection	1,920 ₹

	INDICATORS	
1)	Total Installed Capacity	32.5
2)	Avg Commission paid to ASR*^^^	2,344
3)	Avg total expenditure on product over 2 years*^^^^	10,230

*Days between approval and installation only considers customers in Uttar Pradesh as SE
**MART has recommended that the segments for household annual income are: < Rs.90,
***Number of beneficiaries is calculated by multiplying household size as reported by the c
****Female beneficiaries only measures whether the Simpa applicant was a female/male a
*^Avg forecasted time to repayment excludes customers active for less than 1 month as tl
*^^Net pre-tax margin is calculated as an average of product SKUs based on the latest pr
*^^^Avg commission is based off ***active*** Simpa VLEs average monthly commissions inclu
*^^^^Avg total expenditure is forecasted based on current repayment rates

applications
days
applications
applications
applications
issues
issues

customers
customers
customers
individuals
% female

months
days/month
days
% customers
% outstanding portfolio
Rs/connection
Rs/connection
Rs/connection

kW
Rs/month
Rs

ELCO handles the sales process in Karnataka.
,000 is low-income : Rs. 90,0001 to Rs. 2,15,000 is middle-income : and, > Rs.2,15,000 is high-income
customers on the customer application
and not the gender ratio of the household
hese customers skew the results by shortening the estimated repayment term
icing & costs projections
uding upfront & ongoing commission from customers. (Commissions are pro-rated if Lead-gen is active for

· less than 1 month). Active VLEs are defined as agents who have sold at least one SHS in the last m

ıonth

July 29, 2014

Update of Evaluation Activities
Milestone 6

Simpa's Milestone 5 evaluation update stated that the baseline data collection had been completed. However, because the firm hired for the baseline data collection did not have prior experience with quasi-experimental evaluations, they were not able to determine how closely the respondents in the treatment and comparison groups matched each other. Simpa has therefore decided to hire Probex Management Consulting (P) Ltd. for the midline and end-line evaluations instead.

Devyani Srinivasan from Probex will lead the midline and end-line evaluations. Probex is also currently managing the quasi-experimental evaluation of Babajob's "Empowering Informal Sector Job Seekers" Program, supported by USAID/DIV. In addition to with Simpa, Probex has worked on an Arc Finance project in the area of financing solar technologies, also supported by USAID.

Devyani's experience with quasi-experimental evaluations, social enterprises, and association with Simpa since 2012 makes her the appropriate choice. Devyani facilitated the articulation of Simpa's Theory of Change, designed the evaluation of the "Prepaid Energy" Program supported by USAID/DIV, and managed the baseline study. The preparation for the midline survey began in May 2014.

Purpose

The midline evaluation will have the following objectives:

A. To measure customers' current usage of and satisfaction with solar and non-solar energy sources, and well-being, after installing a Simpa system
B. To measure customers' satisfaction with Simpa's customer service
C. To validate the income levels of Simpa customers
D. To collect baseline data on ASRs (now known as Urja Mitras or UMs)

Through these objectives, the midline evaluation will contribute to addressing the key questions stated in the M&E Plan.

Methodology

Urja Mitras have been interviewed to understand the value that they derive from Simpa. The responses have been used to design close-ended questions for a statistically significant sample of Urja Mitras. The interviews were conducted with a purposive sample of Urja Mitras.

It was decided to compare a district Simpa had entered recently with one in which it had a longer presence. Hathras and Aligarh were chosen out of convenience because of their geographical proximity to each other. 5 Urja Mitras were initially selected in each district.

Urja Mitras were chosen from 2 categories. The first category was those who have sold 2 – 4 systems in a month. The second category was those who have sold 5 or more systems in a month. The 2 categories were almost equally represented in each district. An additional UM was interviewed in Aligarh.

Results and Dissemination

Once the midline survey has been completed, the results will be analyzed and disseminated.

USAID Metrics

	PROCESSES
1)	# of applications received
2)	Avg # of days between approval and installation*
3)	Number of applications approved by income tiers**
	Low income applicants
	Medium income applicants
	High income applicants
4)	# of technical problems reported
5)	# of technical problems resolved

	OUTPUTS
1)	# of clients who have access to finance for clean energy
2)	# of household clients who have access to finance for clean energy
3)	# of business clients who have access to finance for clean energy
4)	# of people provided access to solar home connections***
5)	% female beneficiaries provided with access to solar home connections****

	OUTCOMES
1)	Avg forecasted time to repayment*^
2)	Avg # of energy days purchased per month
3)	Cumulative # of days of energy sold
4)	PaR 30 (as % of customers)
	PaR 30 (as % of outstanding portfolio)
5)	Net pre-tax margin per connection*^^
6)	Personnel overhead costs per connection
7)	Production costs of Simpa components per connection

	INDICATORS
1)	Total Installed Capacity
2)	Avg Commission paid to ASR*^^^
3)	Avg total expenditure on product over 2 years*^^^^

*Days between approval and installation only considers customers in Uttar Pradesh as SELC
**MART has recommended that the segments for household annual income are: < Rs.90,0(
***Number of beneficiaries is calculated by multiplying household size by # of clients (hous
****Female beneficiaries only measures whether the Simpa applicant was a female/male a
*^Avg forecasted time to repayment excludes customers active for less than 1 month as th
*^^Net pre-tax margin is calculated as an average of product SKUs based on the latest prici

*^^^Avg commission is based off ***active*** Simpa VLEs average monthly commissions includin
Active VLEs are defined as agents who have sold more than one SHS in the last three r
*^^^^Avg total expenditure is forecasted based on current repayment rates

3,601	applications
4.1	days
845	applications
2,034	applications
250	applications
1,824	issues
1,507	issues

3,129	customers
2,901	customers
228	customers
14,706	individuals
17%	% female

24.3	months
27.8	days/month
336,929	days
5.9%	% customers
5.5%	% outstanding portfolio
(1,961)₹	Rs/connection
12,148 ₹	Rs/connection
2,120 ₹	Rs/connection

121.8	kW
1,128	Rs/month
15,889	Rs

CO handles the sales process in Karnataka.
00 is low-income : Rs. 90,0001 to Rs. 2,15,000 is middle-income : and, > Rs.2,15,000 is high-incc
sehold size source: http://mospi.gov.in/NSS_Press_note_531_25may10.pdf)
and not the gender ratio of the household
ese customers skew the results by shortening the estimated repayment term
ng & costs projections

g upfront & ongoing commission from customers.
nonths. Report taken as of 6.30.14 - i.e. last date commission paid to ASRs

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November 18, 2014

Simpa Report on Pico-Solar Testing and Prototyping

From August 2013 to October 2013, we conducted field research in Uttar Pradesh to fully understand our customer needs and, ultimately product requirements, for our new "Turbo" product line.

The Turbo products (in the following model variations: 50, 80, 120) were intended to replace the Spark 20 and Spark 30 products. The Turbo products have far better unit costs than the current Spark products, and include better quality tube lights; fans with improved air speed and size options; sealed batteries which are lighted and do not require maintenance. In addition, the system has a sleek enclosure design which allows it to be better looking and more portable.

In November 2013, we visited China and found 4 suppliers to build prototypes of the product (which was at the time called STAR). We then received a total of approximately 200 products from the 3 suppliers in February 2014. Our piloting exercises were conducted from March to June 2014 in the selected field areas of Aligarh and Sitapur districts, where we worked out the technical glitches and gained user feedback on the perception of a new, smaller system enclosure.

During our pilot, we also ran a series of lab and field feedback tests on different batteries, lights and fans selected these components for the Turbo system.

Laboratory testing consisted of:

1) **Light testing:** Solarland lights got better ratings from customers than Schneider by 22% for brightness and 8% for design / appearance. They were also cheaper.

2) **Fan testing:** Carro fans, small or large, fare better than Remi in customer perception and air speed testing. They are also cheaper.

3) **Enclosure size perception testing:** Simpa's village-level entrepreneurs and customers found portability of new enclosures appealing. As long as the system performs a smaller enclosure was not seen as a barrier.

4) **NXT Batteries and charge controllers:** These were lab-tested and 40+ systems are currently installed in Sitapur.

Based on our field and laboratory feedback, we chose one supplier and ordered the first (small) batch of the Turbo product between June and July 2014. We also brought on board an Indian supplier to build Turbo products in India as a backup supplier. Lastly, we set up our Quality Assurance process and cemented the relationship with a Chinese manufacturer.

The following measures are part of Simpa's Quality Assurance process:

- Minimize product infant deaths
- Identify steps in manufacturing process where failures occur
- Sampling of inputs and outputs of manufacturing process
- Manufacturer required to rework lot if out-of-spec products exceed allowed maximum

- Acceptance testing is conducted by Simpa (or Simpa contractors)

We also tested critical components of the Turbo system before they were accepted into the Manufacturer's warehouse: meter PCBs, displays, keypads, RTCs; solar panels; charge controller; lights; grid charger and assembled enclosures.

We initiated a new, increased pricing scale on our Turbo product line beginning in September 2014, which will remain in place through the end of this year. We anticipate that the contribution margin will increase over time, to a target of +3000 in December 2014. To reduce COGS, we aim to encourage higher volume orders from China; reduced meter costs and reduced prices on fans and lights.

We eventually introduced the Turbo product line across our entire sales and distribution channel on September 15, 2014.

November 18, 2014

Simpa Networks: Scaling Strategy

In 2015, the vision, mission, and strategy of Simpa Networks remain unchanged.

Vision	We envision a world in which everyone has access to clean, abundant energy. That's a world of opportunity.
Mission	To make clean energy simple, affordable, and accessible to everyone.
One-Line Strategy	Simpa sells solar-as-a-service to energy-poor households and micro-enterprises.
Strategy Statement	Simpa sells compelling, high-quality solar products, packaged with finance and credible service commitments that eliminate technology risk for our customers. We sell to the energy-poor in urban slums and rural areas, reached directly through trusted, Simpa-branded, local village level entrepreneurs. Multiple payment points make it very convenient to pay.
2015 Target	By the end of 2015 we will have over 30,000 happy customers in India.

2015: Four Strategic Priorities

We will build upon our achievements and learning to focus on a new set of Strategic Priorities, identified below.

In 2012 and 2013 we focused on proof of concept and defining the customer value proposition. In 2014 we focused on designing and building a new sales & distribution model.

In 2015 we will further refine the model, build a healthy, growing company that is ready to scale to reach millions.

In 2015 we will set the foundations for meaningful scale. We will build and test these four cornerstones: our strategic priorities for 2015.

Density, Digitization, Resilience, and Replicability

1. **Density:**

To scale, Simpa needs to dramatically increase customer density. Simpa currently reaches less than 1% of households in its target villages. We have not yet demonstrated that Simpa has a compelling value proposition for a significant portion of the energy-poor population. Density will prove that. If we cannot achieve density then we have not created a meaningful impact on expanding access to energy. Density is also critical for operational efficiency. Simpa is fundamentally a service provider and is in ongoing relationships with our customers. Density will help Simpa reduce the costs of service delivery which will help us reach even more customers.

2. **Digitization:**

To scale, Simpa needs to digitize. By digitizing the business Simpa will be able to optimize and standardize processes, make data-driven decisions, and learn faster. The entire customer experience from lead generation to application to installation to service tickets to payment collections to contract completion: the business processes must be digitized. Our business is logistics intensive and we must develop a geospatial understanding of our field operations. Applications will be processed on mobile devices. Customer details, including GPS coordinates, photos, copies of KYC documents, all will be captured first in digital form. We will use this data-driven understanding of our customers and our spatial territory to optimize field force , optimize deliveries and service calls, to plan territories and place resources.

3. **Resilience:**

To scale, Simpa needs to build resilience to shocks; we must become unbreakable. Survival is the precursor to success. We must anticipate the key sources of instability that create existential risk. And we must gird ourselves. How can we redesign our pricing and processes so we are indifferent to customer non-payment? How can we protect ourselves against financial shocks that could make it difficult to raise more CAPEX? How can we ensure we keep operating even if

we cannot raise more CAPEX for 12 months? How can we defend ourselves against tampering, politically motivated mass defaults, high employee turnover, loss of key personnel?

4. **Replicability:**

To scale, Simpa needs to demonstrate commercial viability at the branch level, and demonstrate that this success can be replicated. In 2014 we achieved unit level profitability. In 2015 we will demonstrate a clear path to profitability at the branch level. We will standardize and document all operating procedures. We will have a stable and scalable metering platform. We will have a stable and established supply chain, a settled product line up, established and stable pricing, and digitized business processes that can be replicated.

With these four cornerstones (Digitization, Density, Resilience and Replicability) set, Simpa will be able to reach for much faster growth in 2016 and beyond. The primary remaining limit to growth will be only capital, and that too will be easy to mobilize given what we will have demonstrated.

Detailed Operating Plan and Budget for 2015

At the time of writing (10 November 2014), company management is preparing a detailed operating plan for 2015. The board of directors is scheduled to meet in Delhi/Noida on 9 December 2014.

In advance of this board meeting, Simpa management is meeting 1:1 with each board member to review progress and challenges faced in 2014, to articulate the proposed strategic priorities for 2015, to capture and incorporate feedback from the board.

Based on this feedback, Simpa management will refine the priorities, and develop a more detailed operating plan for 2015 which will be presented at the December board meeting. A budget for 2015 will also be presented for board approval.

Strategic Priority	Examples of Priority Initiatives
Digitization	• Pay all technicians with Simpa currency • Pay all UMs with Simpa currency • Enable RSAs to take applications on smartphone. • Enable all technicians with smart phones • **ERP implementation of ticketing, CRM, automate key business processes**
Density	• Multi-prong strategy for customer density • **Invest in customer referral program** • More productivity per UM • More sustained productivity for UMs • Greater % of UMs are productive • More UMs per village • Fewer villages and better selection of villages • Introduce a mass market low end lighting solution for under rs 200 • Introduce a highly compelling TV solution • **Extend the CVP to broader range of customer segments.**
Resilience	• **De-risk the model** • **Lock down strategy for monetizing repossessed systems** • Introduce a perpetual rental model • Capture GPS coordinates for all customers • Get post dated cheques from customers • **Price so we are practically indifferent if customer stops** • Align branch and channel incentives for portfolio health • Diversify customer segments: sell to small businesses where risk is lower. More cash sales. Shorter payment term options. • **Financial partnerships tied up to finance all 2016 customers**. • **Stable meter technology** • Tamper-resistance
Replicablility	• Two to three proven SKUs • Proven and finalized pricing. In short: product-market fit • **Branch operating model.** • **Branch as profit center. Accountability for all key metrics** • Branch level P&L reporting and KPI reporting • Documented SOPs • Systems for branch audits and mentoring

USAID Metrics

	PROCESSES	
1)	# of applications received	5,301
2)	Avg # of days between approval and installation*	5.1
3)	Number of applications approved by income tiers**	
	Low income applicants	-
	Medium income applicants	-
	High income applicants	-
4)	# of technical problems reported	3,022
5)	# of technical problems resolved	2,779

	OUTPUTS	
1)	# of clients who have access to finance for clean energy	4,619
2)	# of household clients who have access to finance for clean energy	4,277
3)	# of business clients who have access to finance for clean energy	342
4)	# of people provided access to solar home connections***	21,709
5)	% female beneficiaries provided with access to solar home connections****	13%

	OUTCOMES	
1)	Avg forecasted time to repayment*^	23.2
2)	Avg # of energy days purchased per month	26.5
3)	Cumulative # of days of energy sold	599,362
4)	PaR 30 (as % of customers)	10.0%
	PaR 30 (as % of outstanding portfolio)	10.3%
5)	Net pre-tax margin per connection*^^	₹ -2,775
6)	Personnel overhead costs per connection	₹ 12,152
7)	Production costs of Simpa components per connection	₹ 1,730

	INDICATORS	
1)	Total Installed Capacity	181.3
2)	Avg Commission paid to ASR*^^^	861
3)	Avg total expenditure on product over 2 years*^^^^	15,641

*Days between approval and installation only considers customers in Uttar Pradesh as
**MART has recommended that the segments for household annual income are: < Rs.
***Number of beneficiaries is calculated by multiplying household size by # of clients (h
****Female beneficiaries only measures whether the Simpa applicant was a female/ma
*^Avg forecasted time to repayment excludes customers active for less than 1 month a
*^^Net pre-tax margin is calculated as an average of product SKUs based on the latest
*^^^Avg commission is based off ***active*** Simpa VLEs average monthly commissions in
*^^^^Avg total expenditure is forecasted based on current repayment rates

applications
days
applications
applications
applications
issues
issues

customers
customers
customers
individuals
% female

months
days/month
days
% customers
% outstanding portfolio
Rs/connection
Rs/connection
Rs/connection

kW
Rs/month
Rs

SELCO handles the sales process in Karnataka.
90,000 is low-income : Rs. 90,0001 to Rs. 2,15,000 is middle-income : and, > Rs.2,15,000 is high-income
ousehold size source: http://mospi.gov.in/NSS_Press_note_531_25may10.pdf)
le and not the gender ratio of the household
s these customers skew the results by shortening the estimated repayment term
pricing & costs projections
cluding upfront & ongoing commission from customers. (Commissions are pro-rated if Lead-gen is active for le

ss than 1 month). Active VLEs are defined as agents who have sold more than one SHS in the last three month

s. Report taken as of 6.30.14 - i.e. last date commission paid to ASRs

October 23, 2015

Update of Evaluation Activities
Milestone 8

Current Status

Since Milestone 7 the resurveys of customers and Urja Mitras have been completed and preliminary results have been presented to Simpa. The final sample size for the mid-line survey consists of 215 customers and 323 Urja Mitras. The resurvey process and outcomes are described in greater detail in the section titled "Methodology". The dissemination process is described in greater detail in the section titled, "Results and Dissemination".

The mid-line evaluation is currently in the final stages of analysis. Duplicates and outliers have been eliminated from the data, tables have been generated and tests of significance have been conducted.

Purpose

There has been no change to the evaluation purpose in the reporting period.

Methodology

The in-person surveys of both customers and Urja Mitras (UMs) have been completed. Resurveys of select questions were administered by phone to approximately 30% of customers and 20% of UMs. The evaluation firm listened to all the audio recordings of the phone surveys, and compared them to the in-person surveys. For 24% of the customer surveys compared and 37% of the UM surveys compared the level of discrepancy was high.

Our initial hypothesis was that the 24% of customer surveys and 37% of UM surveys represented "bad" data that had been falsified by enumerators, and that the remaining 76% of customer surveys and 63% of UM surveys represented "good" data. We reasoned that if 76% of the customer data and 63% of the UM data was "good", then if we resurveyed these respondents once more their answers would be consistent across the 3 surveys. We therefore asked select questions to 18 customers and 10 UMs for the 3rd time.

In the customer surveys there were a series of yes/no questions on whether respondents had used various lighting devices in the last 6 months, to which the answers to some were consistent across the 3 surveys and others were not. Therefore it seems likely that the questions within this series to which the responses were consistent were by chance. This left us only with "Does your household cultivate its own land?" as a question to which we had received consistent responses and could use to reliably assess whether any of the in-person surveys had been falsified. Using this question alone, the percentage of surveys that we think are false dropped to 11%.

In the UM surveys, we found that there were no questions that we could use to reliably assess whether any of the in-person surveys had been falsified. We concluded that the reasons that respondents gave varying responses to the same questions in different surveys were probably due to a combination of the nature of the questions and the attitudes of the respondents. While we cannot rule out the possibility that some data was falsified, since we do not have clear evidence of this we decided to continue with the cleaning and analysis of the midline data as is.

For the end-line we will modify some questions to make them easier to answer, pilot test both the in-person and phone surveys, and ask enumerators to provide the GPS co-ordinates of respondents and photograph the system IDs to make it very difficult to falsify data.

Results and Dissemination

Preliminary results have been presented to the Simpa teams in Bangalore and Noida. The audience included Simpa's CEO, as well as senior members of the finance, operations and sales teams. The presentation has been included for submission with this milestone.

The narrative report presenting the mid-line results will be submitted along with Milestone 9. We would like to postpone the execution of our dissemination plan (submitted with Milestone 7) until the end-line is completed.

October 23, 2015

Confidential Simpa Implementation Update for USAID-DIV

The text which follows provides a summary update on our progress from our last Milestone Update (18th November 2014) to the present (17thFebruary 2015). In an effort to explicitly address some of the key items in Milestone 8, we call out additional details here:

- We have attached an update on the Revolving Fund, recently bolstered by a debt raise of $4m from Overseas Private Investment Corporation (OPIC) and GDF Suez Rassambleurs d'Energies
- We have also attached approval documents indicating Simpa's ability to borrow debt funds from international sources, licensed by the Reserve Bank of India (RBI)
- We have attached an update on the prepaid meter – Firmware 2.0, along with a training document on the New Firmware 2.0 features

Below are a list of the major development, opportunities and challenges that we have faced in the last 2 months:

Major Developments:

- In December 2014, we officially closed a $4m commercial debt transaction with OPIC and GDF Suez Rassembleur d'Energies. This was a landmark transaction for the sector.
- We successfully launched a new "Flexi" pricing plan, which provides customers with more flexibility, lower monthly commitment, yet higher overall revenue to Simpa over the life of the contract. The new pricing was rolled out across all 9 branches, with training and supporting marketing materials. Customer response has been very positive, with 87% of new customers choosing the new pricing plan.
- Executed a massive customer outreach program using our field force of contract and payroll technicians. Objectives were to identify and resolve any unreported or outstanding technical issues, collect payments where possible, and build trust.
- We have increased the velocity of the ERP roll out with the help of an outsourced software partner. We are ready now to pilot test three important new modules, including the much needed digitization of our Service Ticketing and tracking system. We expect this will help us improve service ticket TAT, improve customer experience, and improve operating efficiencies.

Opportunities:

- We will improve our operating model by investing our branch office leaders (Area Managers) with accountability and control for a broader range of key business metrics. This has been happening progressively over the past several months, and now the Area Managers are feeling empowered to drive their businesses.

- We will expand our attractive new pricing plan to cover another SKU, namely the Turbo 80. This product has been a significant laggard so far so we hope this pricing innovation will improve demand for this SKU.

Challenges:

- After several months of development, we intended to launch version 2.0 of our meter Firmware, but suffered some implementation problems at the 11th hour, delaying the launch. Nevertheless, we quickly recovered our programs in 1 week and then re-launched the Firmware 2.0 on January 2, 2015.

- Our PAR15 metric crept back up to 12.5% from our target range of 10% which was achieved in November. However, we have now introduced a policy – the "Automation Overdue Policy" - to tackle overdue payments, where the customers' next recharge payment will be adjusted by the amount of the overdue payment.

- Fog conditions and cold temperatures in UP made travel difficult, putting downward pressure on sales velocity. However, we will strive to meet our sales targets in the upcoming summer months.

- A handful of customers got systems installed with partially drained batteries, as a result of our receiving bad batteries from our suppliers. Our technicians then visited these customers, replaced and tested fresh new batteries for these systems.

Evaluation 2013 – 2015: Baseline and Mid-term Results

For Simpa Energy India Private Limited, by Probex Management Consulting Private Limited

Evaluation Design

- Baseline survey conducted between November 2013 and February 2014
- Midterm survey conducted between September and November 2014
- End term survey scheduled between April and May 2015

Evaluation Questions

1. **Who are Simpa's customers? What is the value proposition of Simpa's solar model and energy services for them?**

2. What are the impacts of the program? To what extent are these impacts attributable to Simpa?

3. **What motivates Urja Mitras to sell? What is the value proposition of Simpa for them?**

4. How cost-effective are Simpa's solar model and energy services for customers?

Objectives of the Midterm Survey

1. To measure customers' current usage of and satisfaction with solar and non-solar energy sources, and well-being, after installing a Simpa system
2. To measure customers' satisfaction with Simpa's customer service
3. To validate the income levels of Simpa's customers
4. To collect baseline data on Urja Mitras

Respondents

Customers:

- Rolling baseline conducted between approval and installation
- All in Mathura

Urja Mitras:

- In Agra, Aligarh, Badaun, Hathras and Mathura
- All had made at least 1 sale in the 4 months prior to the survey

Sample Size

Respondents	November 2013 – February 2014	September – November 2014
Customers	378	215
Urja Mitras		323

Urja Mitras

Urja Mitras are:

- Not early adopters of technology
- Financially motivated
- Not mobile
- Optimistic about customer demand, but it is unclear what role they will play in generating it

Urja Mitras: Technology Adoption

- Given 6 statements on technology adoption
- Scores reflect degree of agreement with the statements
- Low scorers are early adopters

Urja Mitras: Technology Adoption

Total Adoption Score for UMs	Count	Percentage
1 - 5	4	1.2
6 - 10	49	15.2
11 - 15	58	18
16 - 20	65	20.1
21 - 25	121	37.5
> 25	26	8
Total	323	100

Urja Mitras: Direct Value

- Being an Urja Mitra is valued most for the commissions and prizes
- Social status (producing a good impression) is a related but distinct benefit
- Only 7% of respondents chose the opportunity for social development / service as the most important benefit, but for 42% (136) it was an additional one

Urja Mitras: Direct Value

- Being an Urja Mitra is viewed as a way to improve both income and relationships with existing customers, but not as a full-time activity
- “Increasing goodwill with existing customers” was chosen as the 2nd most important benefit
- That selling systems can be done alongside other activities was chosen as an additional benefit by 76% (245)

Urja Mitras: Direct Value

Most Important Direct Benefit	Count	Percentage
Rewards through commissions and prizes	85	27.6
Increase goodwill with additional product	52	16.9
Produce a good impression	40	13
More work = more rewards	29	9.4
Productive use of my time	28	9.1
Increase in village reputation	21	6.8
Serving the society	21	6.8
Sell Simpa with my other activities	19	6.2
New product to customers	9	2.9
Any other	2	0.6
No advantage	2	0.6
Total	308	100

Urja Mitras: Indirect Value

- The greatest number of Urja Mitras (75%) value their role in the company because they believe it is the 1st step towards other opportunities with Simpa (e.g. Seva Mitra, RSA)

- They do not value performance-based payment and some (27%) would prefer a fixed income

- But 78% (248) saw no disadvantages to being an Urja Mitra

Urja Mitras: Indirect Value

Advantages to associating with Simpa	Count
1st step towards other opportunities	240
Attend Simpa events	171
Receive visitors from Simpa	100
No advantages	38
Other	21
Recognition by Simpa's senior management for performance	8
Total Unique Count	318

Urja Mitras: Disadvantages

Disadvantages of being an UM	Count
No disadvantage	248
No fixed income	86
Dissatisfied customers affect my reputation	75
Due to some changes made by Simpa, I have not received the prizes that I believed that I would	40
Don’t receive my commissions and/ prizes on time	33
Financially not attractive	26
Others	1
Total Unique Count	320

Urja Mitras: Work Patterns

- 70% of Urja Mitras (209) spend most of their working hours in a fixed location

- Sales may depend on their existing customer base and marketing support

Urja Mitras: Customer Demand

- Data seems contradictory based on responses to different questions
- 75% of Urja Mitras (239) believe that the electricity situation will improve in the future, and 99% (282) believe that the biggest competitor to Simpa systems is the inverter
- But 82% of Urja Mitras (260) believe that demand will increase continuously over the next 6 months
- Also, only 2% of Urja Mitras (7) believe that their effort is critical in whether there is a demand to recharge systems or not

Urja Mitras: Customer Demand

Demand Prediction	Count	Percentage
Will increase continuously	260	82.3
Will increase initially and then reduce	48	15.2
Will decrease continuously	8	2.5
Total	316	100

Customers

Customers are:

- Heterogeneous in terms of technology adoption of energy products
- Most satisfied with Simpa's "affordable installments"
- Looking for a system that they can use to run other appliances

Customers

Customers' reports of:

- System performance don't raise any major issues. They are willing to recommend Simpa to others.

- Their customer service experience are less positive. Less than half of customers who have made a complaint are satisfied or fully satisfied.

Customers

Customers report that:

- Hours of electricity available have decreased since the baseline
- Average monthly expenditure on lighting (excluding payments to Simpa) has decreased by Rs. 100. However, expenditures have increased for 39% of customers. There are quality concerns about the data on lighting expenditure and solutions (see below).
- 50% of households who were using kerosene previously have stopped doing so. However, the change in usage per household is negligible.
- Health concerns have decreased
- Their satisfaction with and the quality of the Simpa system is on par with or lower to the inverter, but higher than most other solutions
- They don't use their Simpa systems for economic activities at home

Customers: Technology Adoption

- Given 6 statements on technology adoption
- Scores reflect degree of agreement with the statements
- Low scorers are early adopters

Customers: Technology Adoption

Total Adoption Score for Customers	Count	Percentage
1 - 5	0	0
6 - 10	42	21.5
11 - 15	61	31.3
16 - 20	60	30.8
> 20	32	16.4
Total	195	100

Customers: Value Proposition

- The greatest number of customers (67, or 32%) chose “affordable installments” as the aspect of the system that they were most satisfied with
- 102 customers also said they would recommend Simpa to others because it is affordable
- While only selected by 27 customers each (13%), both “not satisfied” and “no need to travel for purchase or service” ranked 2nd
- Free warranty and service ranked 3rd (24, or 11.3%)

Customers: Value Proposition

- 64% of customers (131) said that their systems run for 5 – 10 hours once the battery has been charged
- 79% of customers (168) said that the performance of the fan either meets or exceeds their expectations
- 60% of customers (127) are satisfied or fully satisfied with the position of the lights and the fan in their house
- 68% of customers (136) are willing to recommend Simpa to others

Customers: Value Proposition

- Customers want better service
- Only 44% of customers (52) who had made a complaint were satisfied or fully satisfied with Simpa's service
- Only 6% of customers (13) rated service as the aspect of Simpa that they are most satisfied with

Customers: Value Proposition

- Customers want a system that they can use to run other appliances, and this is more important to them than service

- 95, or 45% of customers said that the aspect of the Simpa system that they were least satisfied with is that it cannot be used to run other appliances

- Currently, 68 customers said they use the Simpa system to charge their mobiles and 24 said they used it for other appliances. However in most cases these were not specified.

Customers: Value Proposition

Aspect Most Satisfied With	Count	Percentage
Affordable installments	67	31.6
No need to travel for purchase or service	27	12.7
Not satisfied	27	12.7
Free warranty & service	24	11.3
Separate part purchase not required	23	10.8
Immediate recharge upon payment	17	8
Other	14	6.6
Quick resolution of customer complaints	13	6.1
Total	212	100

Customers: Value Proposition

Reason for Recommendation	Count
Affordable	102
Convenient to buy, recharge or use	84
Free warranty and servicing	74
Better quality than other solar companies	56
Other	1
Total Unique Count	199

Customers: Value Proposition

No. of Hours the System Runs	Count	Percentage
< 5 hours	31	15
5-10 hours	131	63.6
11-15 hours	44	21.4
> 15 hours	0	0
Total	206	100

Customers: Value Proposition

Fan Performance	Count	Percentage
Exceeds expectations	57	26.8
Meets expectations	111	52.1
Below expectations	45	21.1
Total	213	100

Customers: Value Proposition

Position of Lights and Fan	Count	Percentage
Satisfied / fully satisfied	52	44.1
Neither satisfied nor dissatisfied	32	27.1
Dissatisfied / fully dissatisfied	34	28.8
Total	118	100

Customers: Value Proposition

Customer Service Satisfaction	Count	Percentage
Satisfied / fully satisfied	52	44.1
Neither satisfied nor dissatisfied	32	27.1
Dissatisfied / fully dissatisfied	34	28.8
Total	118	100

Customers: Value Proposition

Aspect Least Satisfied With	Count	Percentage
Cannot be used to run other appliances	95	45.2
Not dissatisfied	39	18.6
Cannot buy the parts separately	24	11.4
Long time to recharge after payment	22	10.5
Customer service is not responsive	16	7.6
Too expensive	9	4.3
Other	5	2.4
Total	210	100

Customers: Energy Access

There are quality concerns about the data on lighting expenditure and solutions. However, based on the available data:

- 15 more customers reported having access to electricity in the midline than in the baseline. However, the number of hours of electricity available decreased for 58% of customers (110).
- 8 more customers reported using inverters.
- Use of candles / wax, rechargeable LED torches and kerosene lamps dropped by 50% or more. However, the change in usage per household of kerosene was only 0.15 litres per month.
- Based on the above, it is surprising that 39% of customers reported increases in expenditure on energy (excluding Simpa). However, the average expenditure per month decreased by approximately Rs.100.

Customers: Energy Access

Energy Solution	Count Baseline	Count Midline
Electricity	190	205
Inverter	15	23
Generator	3	3
Lead Acid Battery	2	0
Other solar product	1	1
Candles / wax	107	20
LPG / Petromax	10	2
Rechargeable LED torch	151	17
Kerosene lamp	168	82
Other fuel	0	4
Simpa solar system	0	199

Customers: Energy Access

	Baseline	Midline
Volume of kerosene used per household per month (in litres)	2.87	2.72

Customers: Energy Access

Change in expenditure on lighting	Count	Percentage
Increased	80	38.5
Decreased	126	60.6
No change	2	1
Total	208	100

Customers: Energy Access

	Baseline	Midline
Average expenditure on lighting per month (in Rs.)	380.7	277.9

Customers: Impact

- The quality of health score improved from 2.5 in the baseline to 5.3 in the midline.
- Customers rate their satisfaction with and the quality of the Simpa system as on par with or lower to the inverter, but higher than most other solutions
- Only 4 customers reported using their Simpa systems for any economic activities at home

Customers: Impact

- Overall, customers rated their satisfaction with and the quality of light from electricity and inverters as lower in the midline than baseline

- In relative terms, men and women's satisfaction and quality ratings did not differ from one another

Customers: Impact

Issues	Immediate Damage	Potential / Long Term Damage	Assigned Score
No problems	No	No	6
Others	Low	No	5
Eye irritation due to smoke	Moderate	No	4
Breathing problems	Moderate	Low	3
Fire	High	Low	2
Respiratory infection	High	High	1
Severe burn	Very high	High	0

Male Customers: Baseline Quality

Energy Solution	Cooking	Children's Studies	Reading / Writing by Adults	Eating Dinner
Electricity	3.5	3.3	4.5	4.2
Inverter	4.2	4.6	4	4.6
Candles / wax	2.8	2.2	2	3.3
Rechargeable LED torch	4.3	2.9	3.2	4.17
Kerosene lamp	2.3	2.5	2.3	3.9

Male Customers: Midline Quality

Energy Solution	Cooking	Children's Studies	Reading / Writing by Adults	Eating Dinner
Electricity	3.3	3.1	3.2	3.1
Inverter	4.3	3.8	3	3.7
Candles / wax	3.7	3.5	3	2.9
Rechargeable LED torch				
Kerosene lamp	3.1	2.8	3	2.9
Simpa solar system	4.3	4.1	4.5	4

Male Customers: Baseline Satisfaction

Energy Solution	Cooking	Children's Studies	Reading / Writing by Adults	Eating Dinner
Electricity	3.8	4	3.8	4
Inverter	4.2	4.3	4.2	4.4
Candles / wax	2.4	1.8	2.7	4
Rechargeable LED torch	3.9	3.2	3.7	3.5
Kerosene lamp	2.3	2.3	2.1	4

Male Customers: Midline Satisfaction

Energy Solution	Cooking	Children's Studies	Reading / Writing by Adults	Eating Dinner
Electricity	3.2	3.1	3	3.1
Inverter	4.1	4.2		3.9
Candles / wax	2.9	3.5	3	2.8
Rechargeable LED torch				
Kerosene lamp	2.9	2.8	2.6	2.6
Simpa solar system	4.2	4.1	4.5	3.9

Female Customers: Baseline Quality

Energy Solution	Cooking	Children's Studies	Reading / Writing by Adults	Eating Dinner
Electricity	3.3	3.5	3.9	4.2
Inverter	4.3	4.7	4	4.9
Candles / wax	2.3	2.2	2	2.3
Rechargeable LED torch	4.4	3.8	3.2	4
Kerosene lamp	2.5	2.8	2.7	4.6

Female Customers: Midline Quality

Energy Solution	Cooking	Children's Studies	Reading / Writing by Adults	Eating Dinner
Electricity	3.1	3.2	3.1	3.1
Inverter	4.3	3.8	3	3.7
Candles / wax	3.1	4.5	3	2.9
Rechargeable LED torch				
Kerosene lamp	2.9	2.9	2.8	2.9
Simpa solar system	4.1	4.1	4.4	3.9

Female Customers: Baseline Satisfaction

Energy Solution	Cooking	Children's Studies	Reading / Writing by Adults	Eating Dinner
Electricity	2.9	3.9	4.4	4.1
Inverter	4.3	4.3	5	4.5
Candles / wax	2.1		2	4.4
Rechargeable LED torch	3.9	3.5	3.3	3.5
Kerosene lamp	2.4	2.1	2.9	3.9

Female Customers: Midline Satisfaction

Energy Solution	Cooking	Children's Studies	Reading / Writing by Adults	Eating Dinner
Electricity	3.1	3.1	3	3
Inverter	4.3	4.1	4	3.9
Candles / wax	3.1	4	2	3
Rechargeable LED torch				
Kerosene lamp	2.9	2.8	2.5	2.8
Simpa solar system	4.1	4.1	4.5	4.1

Conclusions

- Customers are more likely to be early adopters of technology than Urja Mitras
- However, for both customers and Urja Mitras financial considerations come first. For customers it is the affordability of the system, and for Urja Mitras it is the rewards that they get
- The trade-off for customers is between affordability and a system that can run more appliances
- The trade-off for Urja Mitras is between rewards and the increased effort required to earn more
- Given that customers value “affordable installments” more than any other single aspect of the Simpa system, it is critical to make it easy for them to pay and to make recharge commissions attractive for Urja Mitras

Conclusions

- Customers report that the number of hours of electricity they receive has decreased since the baseline
- They rate their satisfaction with and quality of lighting run by electricity and inverters as lower than before
- Only a few customers have inverters, but they are more satisfied with them than with their Simpa systems
- Urja Mitras also agree that inverters are the main competitor to Simpa systems
- Therefore the cost comparison to inverters is another important part of the value proposition for customers, although not stated explicitly

Conclusions

- Based on the available data, customers' use of candles / wax and kerosene has dropped dramatically
- This is corroborated by the data on quality of health, and is positive for the environment as well
- However, it needs to be validated further in the end term evaluation

UM Survey: Questions

- Do the results resonate with your experience?
- Are there any changes you want to make to the content of the end term evaluation?

Customer Survey: Questions

- Do the results resonate with your experiences?
- Are there changes you want to make to the content of the end term evaluation?

Data Accuracy

- Margin of error for the baseline survey (customers) is 4.95%
- Margin of error for the midline survey (customers) is 6.62%
- Margin of error for the Urja Mitra survey is 5.07%
- 95% significance
- However, 14% of customer surveys checked had major discrepancies

USAID Metrics

	PROCESSES	
1)	# of applications received	7,148
2)	Avg # of days between approval and installation*	1.4
3)	Number of applications approved by income tiers**	
	Low income applicants	1,626
	Medium income applicants	3,974
	High income applicants	421
4)	# of technical problems reported	4,995
5)	# of technical problems resolved	4,877

	OUTPUTS	
1)	# of clients who have access to finance for clean energy	6,021
2)	# of household clients who have access to finance for clean energy	5,618
3)	# of business clients who have access to finance for clean energy	403
4)	# of people provided access to solar home connections***	28,299
5)	% female beneficiaries provided with access to solar home connections****	11%

	OUTCOMES	
1)	Avg forecasted time to repayment*^	26.2
2)	Avg # of energy days purchased per month	25.7
3)	Cumulative # of days of energy sold	1,036,426
4)	PaR 30 (as % of customers)	12.6%
	PaR 30 (as % of outstanding portfolio)	16.9%
5)	Net pre-tax margin per connection*^^	₹ 350
6)	Personnel overhead costs per connection	₹ 17,815
7)	Production costs of Simpa components per connection	₹ 1,730

	INDICATORS	
1)	Total Installed Capacity	237.4
2)	Avg Commission paid to ASR*^^^	1,021
3)	Avg total expenditure on product over 2 years*^^^^	15,943

*Days between approval and installation only considers customers in Uttar Pradesh as SE
**MART has recommended that the segments for household annual income are: < Rs.90,
***Number of beneficiaries is calculated by multiplying household size by # of clients (hous
****Female beneficiaries only measures whether the Simpa applicant was a female/male a
*^Avg forecasted time to repayment excludes customers active for less than 1 month as tl
*^^Net pre-tax margin is calculated as an average of product SKUs based on the latest pr
*^^^Avg commission is based off ***active*** Simpa ASRs average monthly commissions inclu
*^^^^Avg total expenditure is forecasted based on current repayment rates

applications
days
applications
applications
applications
issues
issues

By State:	
171	KA
5,850	UP

customers
customers
customers
individuals
% female

months
days/month
days
% customers
% outstanding portfolio
Rs/connection
Rs/connection
Rs/connection

kW
Rs/month
Rs

ELCO handles the sales process in Karnataka.
,000 is low-income : Rs. 90,0001 to Rs. 2,15,000 is middle-income : and, > Rs.2,15,000 is high-income
sehold size source: http://mospi.gov.in/NSS_Press_note_531_25may10.pdf)
and not the gender ratio of the household
hese customers skew the results by shortening the estimated repayment term
icing & costs projections
uding upfront & ongoing commission from customers. (Commissions are pro-rated if Lead-gen is active for less tha

ın 1 month). Active ASRs are defined as agents who have sold more than one SHS in the last three r

nonths. Report taken as of 12.31.14 - i.e. last date commission paid to ASRs

EVALUATION

Mid-term Evaluation of the Prepaid Solar Energy Project, a for-profit approach to the twin challenges of technology and financing in Uttar Pradesh, India

[March 2015]

This publication was produced at the request of the United States Agency for International Development. It was prepared independently by Devyani Srinivasan.

MID-TERM EVALUATION OF THE PREPAID SOLAR ENERGY PROJECT – A FOR-PROFIT APPROACH TO THE TWIN CHALLENGES OF TECHNOLOGY AND FINANCING IN UTTAR PRADESH, INDIA

A PREPAID METERING AND MOBILE PAYMENTS TECHNOLOGY PLATFORM THAT MAKES CLEAN ENERGY SIMPLE, AFFORDABLE AND INVESTIBLE

[March 10, 2015]

DISCLAIMER
The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

CONTENTS

ACRONYMS

LED	Light-emitting Diode
UPS	Uninterruptable Power Supply
USAID	U.S. Agency for International Development

EXECUTIVE SUMMARY

EVALUATION PURPOSE AND EVALUATION QUESTIONS

Simpa Networks is a for-profit enterprise with an innovative solar-as-a-service business model. After demonstrating its innovative business model with 200 customers, Simpa sought support from USAID's Development Innovation Ventures to scale up to 12,000 systems by the end of the program in May 2015. Both during the USAID-supported period and beyond, Simpa will monitor the number of people it provides access to clean energy. However, this program also provides the opportunity to evaluate its impact: of the effect of increased access to clean, reliable electricity on customers' well-being.

The main indicators of customers' well-being that Simpa has identified are their kerosene consumption, quality of health and satisfaction with energy. If after installing a Simpa system customers report that they have stopped or reduced their use of kerosene, and that they are consistently satisfied with their system, this would support Simpa's plan to scale up. However if customers continue to use kerosene alongside their Simpa system, it may be that there is a demand for more energy and therefore larger Simpa systems. If customers report that they are not satisfied with their Simpa system, their feedback is expected to be used by Simpa to improve their offering.

In addition to its impact, this evaluation is of Simpa's cost-effectiveness for customers, and its value proposition to its customers and UrjaMitras. UrjaMitras are "Energy Friends", local village level entrepreneurs who are independent sales agents for Simpa. The findings related to Simpa's value proposition to its customers and UrjaMitras are expected to be used in its sales and operations.

This evaluation was designed to be conducted between May 2013 and May 2015. Over this 2-year period, the evaluation questions are:

1. Who are Simpa's customers? What is the value proposition of Simpa's solar model and energy services for them?
2. What are the impacts of the program? To what extent are these impacts attributable to Simpa?
3. What motivates UrjaMitras to sell? What is the value proposition of Simpa for them?
4. How cost-effective are Simpa's solar model and energy services for customers?

The mid-term evaluation focuses to a greater extent on questions 1 and 3 than 2 and 4.

PROJECT BACKGROUND

In India at least 400 million people are without reliable access to electricity. Without access to electricity, consumers and small businesses rely on traditional fuels, kerosene, candles and batteries. It is estimated that the off-grid segment is already spending $50+ billion per year on these sub-optimal and highly unsustainable energy solutions.

There are many promising technical solutions available to customers today, ranging from small-scale solar lanterns, to pico-solar home systems, to larger installed solar home systems, to community scale solar or biomass electricity microgrids, to solar-hybrid UPS/inverter solutions for the home and business. The problem is that these clean energy technologies almost always involve significant up-front costs and therefore must be financed.Simpa Networks sets itself apart from competitors by providing in-house customer financing. Simpa's in-house financing mechanism helps avoid a lengthy, complicated loan

application process with financial institutions, for both Simpa and its customers, and, most important, makes its solutions affordable for a wider range of customers.

Simpa's Theory of Change is as follows:

Inputs	Processes	Outputs	Outcomes	Impact
People Product – solar Capital	Product integration Product development Training Risk assessment Sales After-sales service Research	Systems installed	Systems used / energy paid for and consumed	Improvements in well-being of consumer households

There are two hypotheses behind its theory of change that Simpa seeks to refine. The first is its value hypothesis. This is a hypothesis of why people choose to "buy". For Simpa, "buying" refers not only to installing a system but also continuing to pay for and consume the energy it generates. The second is its growth hypothesis. This is a hypothesis of how to find new customers. The evaluation of this project will be concerned with Simpa's value hypothesis. However, because the evaluation will track the same customers over the grant period, it will not be able to significantly test Simpa's growth hypothesis.

EVALUATION QUESTIONS, DESIGN, METHODS AND LIMITATIONS

In order to address the evaluation questions, the evaluation consists of two parts: an evaluation of Simpa's customers, and of its UrjaMitras. For the evaluation of Simpa's customers it was important to establish causality. Since random selection and assignment to customer and non-customer groups was not possible, a quasi-experimental design was chosen in which the two groups were matched. The evaluation of UrjaMitras is through a pretest-posttest design.

This report presents the results of the customer (midline) and UrjaMitra (baseline) surveys that began on the 13th of September, 2014. The evaluation was designed so that non-customers are included in the baseline and end-term evaluations, but not the midline evaluation. The chart below shows the relationship between the evaluation questions and methods used in the midline evaluation of Simpa customers, and baseline evaluation of UrjaMitras. It also includes the sample sizes for the treatment groups of customers and UrjaMitras.

Evaluation Question	Method	Data Source	Treatment Group Sample Size
Who are Simpa's customers? What is the value proposition of Simpa's solar model and energy services for them?	Quantitative	Survey	215
What are the impacts of the program? To what extent are these impacts attributable to Simpa?	Quantitative	Survey	215
What motivates UrjaMitras to sell? What is the value proposition of Simpa for them?	Qualitative and	Interview and	323

	Quantitative	Survey	
How cost-effective are Simpa's solar model and energy services for customers?	Quantitative	Survey	215

Based on these sample sizes, the margin of error for the customer survey is 6.62% and is 5.07% for the UrjaMitra survey (95% significance).

There are limitations to how conclusive the evidence from the midline survey is, due to the methods themselves, data quality issues and bias. It is suspected that inaccuracies in respondents' answers and data falsification made quality issues the most serious of the limitations of the midline evaluation. From a non-random sample of surveys, 11% of the midline data is estimated to be false (although not proven).

FINDINGS AND CONCLUSIONS

The questions that the midline evaluation addresses, that will improve Simpa's implementation, are on its value proposition for UrjaMitras and customers. The questions that this evaluation addresses that will improve Simpa's impact, are on customers' reports of their satisfaction with and the quality of light from solar and non-solar sources, and their quality of health. While the evaluation of UrjaMitras does not address impact directly, as Simpa's chosen distribution channel the ability to sell through UrjaMitras is a prerequisite in order for Simpa to create impact. The evaluation of UrjaMitras is of the value proposition of Simpa to them, and of their sales potential.

Being an UrjaMitra is valued most for the financial benefits, but these are insufficient for it to be seen as a full-time activity. Instead, selling Simpa systems is viewed as a way to improve income and relationships with existing customers. This is evident from the responses to the questions on the benefits of being an UrjaMitra. For 27.6% of UrjaMitras commissions and prizes were the most important benefit.

In addition to the benefits that they derive from being UrjaMitras, respondents' current work patterns and their perceptions of customer demand are factors that may influence sales performance in the future. The element of respondents' work patterns that Simpa was most interested in was the extent to which UrjaMitras are mobile. It was found that UrjaMitras are largely not mobile, as 70% of respondents spend most of their working hours at a fixed location. Given that 61.7% of respondents also identified "increasing the goodwill that they enjoy with existing customers" as a benefit of being an UrjaMitra, this suggests that the majority of UrjaMitras may spend their working hours at a shop or other place of business. Consequently, they may expect that they will sell Simpa systems largely to their existing customers. Sales to households who are not existing customers of UrjaMitras may therefore depend on either word of mouth or marketing support by Simpa. While the data on UrjaMitras' perceptions of customer demand seems contradictory, it may be that their responses capture a general sense of optimism on their part rather than specific market insights.

Approximately a year after they had had a system installed, the greatest number of customers (32%) chose "affordable installments" as the aspect that they were most satisfied with. 102 customers also said that they would recommend Simpa to others because it is affordable. The other aspects of the Simpa system that respondents said that they were most satisfied with were "no need to travel for purchase or service" and "free warranty and service". These were chosen by 13% and 11.3% of respondents respectively. However, 13% said that they were not satisfied with any aspect of their Simpa system. When customers were asked specifically about the product and its installation, no major issues emerged. Overall, 68% of customers are willing to recommend Simpa to others.

The two aspects of the Simpa offering that respondents were least satisfied with were customer service, and that the system cannot be used to run other appliances. However, overall, respondents were much more dissatisfied that the system cannot be used to run other appliances than they were with customer service. 45.2% of respondents said that the aspect of the Simpa offering that they were least satisfied with was that it cannot be used to run other appliances. (In contrast, only 7.6% of respondents chose, "customer service is not responsive" as the aspect of the Simpa offering that they were least satisfied with).

Customers continue to use other options for lighting alongside their Simpa systems, often for the same activities. However, the use of "unclean" options (specifically candles / wax and kerosene lamps) dropped substantially. Correspondingly, the overall quality of health score improved substantially. On a scale of 0 to 6, respondents' quality of health improved from 2.5 in the baseline survey to 5.3 in the midline. This difference is significant (T-test, $p < 0.001$). The score of 5.3 was also disaggregated for respondents who were classified as kerosene users (for lighting) at the time of the midline survey and those who were not. The quality of health score was 4.9 for kerosene users and 5.6 for non-users. This difference is also significant (T-test, $p < 0.001$).

The other benefits that customers report as a result of their Simpa systems are greater satisfaction with and better quality light. On average customers rated their satisfaction with and the quality of light from their Simpa systems as higher than for most other solutions, for the same activities. However the average scores for satisfaction with and the quality of light from the Simpa system were on par with or lower than that from the inverter (again for the same activities). Customers' preferences for their Simpa systems could also be because they were receiving fewer hours of electricity from the grid at the time of the midline survey than the baseline.

The main findings of the midline survey of customers relate to how they value the Simpa offering and benefit from it, both in isolation and in relation to their experiences with other energy options. The main findings of the survey of UrjaMitras relate to how they value the Simpa offering, although they also contribute to a better understanding of the comparison between Simpa systems and other energy options. While the end term survey will further investigate what makes the Simpa offering affordable to customers, as long as payment in installments is a contributing factor it will be critical to make it easy for them to recharge and to make these commissions attractive for UrjaMitras. Accommodating the demand for systems that can run more appliances may lead to a trade-off with affordability for customers in the future. Similarly UrjaMitras who want to earn greater rewards will have to increase their investments of time and effort proportionately, which may eventually lead to a trade-off with their existing activities.

The value customers' perceive from the Simpa offering, and therefore the ability of UrjaMitras to sell to them, is also shaped by other energy options. While UrjaMitras believe that inverters are the main competitors to Simpa systems it would seem that the former are still too expensive for many customers to own. However, in considering Simpa's value proposition to customers, the cost comparison to inverters would seem like an additional factor that it is important to include.

EVALUATION PURPOSE & EVALUATION QUESTIONS

EVALUATION PURPOSE

Simpa Networks is a for-profit enterprise with an innovative solar-as-a-service business model. Simpa customers take home a solar energy system by making a small initial down payment, then purchase prepaid energy credits using a mobile phone in amounts they choose – mimicking the highly successful pricing model for prepaid mobile airtime. Simpa's cloud-based software tracks and processes payments, delivering proof of payment to the customer via SMS.

After demonstrating its innovative business model with 200 customers, Simpa sought support from USAID's Development Innovation Ventures to scale up to 12,000 systems by the end of the program in May 2015. Both during the USAID-supported period and beyond, Simpa will monitor the number of people it provides access to clean energy. However, this program also provides the opportunity to evaluate its impact: of the effect of increased access to clean, reliable electricity on customers' well-being.

The main indicators of customers' well-being that Simpa has identified are their kerosene consumption, quality of health and satisfaction with energy. If after installing a Simpa system customers report that they have stopped or reduced their use of kerosene, and that they are consistently satisfied with their system, this would support Simpa's plan to scale up. However if customers continue to use kerosene alongside their Simpa system, it may be that there is a demand for more energy and therefore larger Simpa systems. If customers report that they are not satisfied with their Simpa system, their feedback is expected to be used by Simpato improve their offering.

In addition to its impact, this evaluation is of Simpa's cost-effectiveness for customers, and its value proposition to its customers and UrjaMitras. UrjaMitras are "Energy Friends", local village level entrepreneurs who are independent sales agents for Simpa. The findings related to Simpa's value proposition to its customers and UrjaMitras are expected to be used in its sales and operations. The specific decisions that the evaluation is directed towards informing are, "Which potential customers should we target? How should we sell to them? Who should we target to recruit as UrjaMitras? Once recruited, how do we retain them?"

The main audiences for this evaluation report are Simpa's leadership team, and USAID. However, once the end term evaluation is complete communication products based on the results will be disseminated to rural households and SMEs, UrjaMitras, and participants in "energy access" forums.

The means of dissemination will depend on the stakeholder. To UrjaMitras, there is an opportunity to disseminate the relevant evaluation results through Simpa's sales training, which is becoming increasingly more rigorous, and its active management of the field force. The evaluator will identify the main messages from the evaluation that are relevant to UrjaMitras, and engage in a discussion with Simpa on the potential for incorporating them into existing sales and operations processes. If this is not possible, the evaluator will create 2 dissemination products for UrjaMitras. The evaluation results will be disseminated through UrjaMitras to rural households and SMEs.

A presentation will be created shortly after the end term evaluation to disseminate the results to participants in "energy access" forums. This presentation will be accompanied by an executive summary of the evaluation report, to provide participants further information. In addition, two articles will be written that draw on both the baseline and mid-term evaluation data, and that can be published in relevant forums. One article will be for an audience familiar with energy access issues, and the other will be for a general audience.

EVALUATION QUESTIONS

This evaluation was designed to be conducted between May 2013 and May 2015. Over this 2-year period, the evaluation questions are:

1. Who are Simpa's customers? What is the value proposition of Simpa's solar model and energy services for them?
2. What are the impacts of the program? To what extent are these impacts attributable to Simpa?
3. What motivates UrjaMitras to sell? What is the value proposition of Simpa for them?
4. How cost-effective are Simpa's solar model and energy services for customers?

The mid-term evaluation focuses to a greater extent on questions 1 and 3 than 2 and 4.

PROJECT BACKGROUND

In India at least 400 million people are without reliable access to electricity. Without access to electricity, consumers and small businesses rely on traditional fuels, kerosene, candles and batteries. It is estimated that the off-grid segment is already spending $50+ billion per year on these sub-optimal and highly unsustainable energy solutions.

There are many promising technical solutions available to customers today, ranging from small-scale solar lanterns, to pico-solar home systems, to larger installed solar home systems, to community scale solar or biomass electricity micro-grids, to solar-hybrid UPS/inverter solutions for the home and business. The problem is that these clean energy technologies almost always involve significant up-front costs and therefore must be financed.

Simpa Networks sets itself apart from competitors by providing in-house customer financing. Payment can be spread out over a period of 28 months. Simpa's solar home systems incorporate proprietary prepaid metering technology, which regulates the amount of energy that is supplied to a customer based on whether he has purchased prepaid energy. In the payment process, customers make cash payments to Simpa branded agents in their home region. Then, the agent sends an SMS to Simpa's server informing it of the payment. A special code is then sent via SMS from the server to the customer, who enters the code into the meter. This code unlocks the meter for a certain amount of energy consumption. This process is repeated until the customer has paid for the system in full, at which point the system is permanently unlocked. Simpa's in-house financing mechanism helps avoid a lengthy, complicated loan application process with financial institutions, for both Simpa and its customers, and, most important, makes its solutions affordable for a wider range of customers.

During the 1st year after installation (or 1st 2 years if the payment period is 2 years), free doorstep maintenance is provided, including 1 routine visit and 2 unplanned visits. After that, customers have the option of purchasing a low-cost annual maintenance contract, with the same level of service. This after-sales service offer is extremely convenient for customers and also ensures that the systems are well-maintained, which, in turn, minimizes the risk of customer non-payment.

Simpa's results chain is as follows:

Inputs	**Processes**	**Outputs**	**Outcomes**	**Impact**
People Product – solar Capital	Product integration Product development Training Risk assessment Sales After-sales service Research	Systems installed	Systems used / energy paid for and consumed	Improvements in well-being of consumer households

EVALUATION METHODS & LIMITATIONS

In order to address the evaluation questions, the evaluation consists of two parts: an evaluation of Simpa's customers, and of its UrjaMitras. For the evaluation of Simpa's customers it was important to establish causality.BecauseSimpa is a for-profit social enterprise that sells solar systems, it was not possible to choose an experimental design in which customers and non-customers would be randomly assigned. A quasi-experimental design was chosen for the evaluation of Simpa's customers, in which they were matched with non-customers.

The baseline evaluation of customers was intended to measure their usage of, and satisfaction with, other energy solutions prior to installing a Simpa system. Simpa's installation process did not support the creation of a sampling frame of approved customers, from whom a random sample could be selected. A rolling baseline of customers was designed, with a sample that would consist of the first 400 customers acquired in Uttar Pradesh state.

The evaluation of UrjaMitras is through a pretest-posttest design. The comparisons that Simpa is most interested in drawing in this part of the evaluation are amongst UrjaMitras rather than with a group not associated with Simpa. Therefore, there is no comparison group against which UrjaMitras will be measured. Structured interviews were conducted with a purposive sample of UrjaMitrasto develop the baseline survey of UrjaMitras. A stratified sampling technique was chosen to identify the UrjaMitras to be surveyed.

This report presents the results of the customer (midline) and UrjaMitra (baseline) surveys that began on the 13th of September, 2014. The evaluation was designed so that non-customers are included in the baseline and end-term evaluations, but not the midline evaluation. The chart below shows the relationship between the evaluation questions and methods used in the midline evaluation of Simpa customers, and baseline evaluation of UrjaMitras. It also includes the sample sizes for the treatment groups of customers and UrjaMitras.

Evaluation Question	Method	Data Source	Treatment Group Sample Size	Comparison Group Sample Size
Who are Simpa's customers? What is the value proposition of Simpa's solar model and energy services for them?	Quantitative	Survey	215	N/A
What are the impacts of the program? To what extent are these impacts attributable to	Quantitative	Survey	215	N/A

Simpa?				
What motivates UrjaMitras to sell? What is the value proposition of Simpa for them?	Qualitative and Quantitative	Interview and Survey	323	N/A
How cost-effective are Simpa's solar model and energy services for customers?	Quantitative	Survey	215	N/A

Based on these sample sizes, the margin of error for the customer survey is 6.62% and is 5.07% for the UrjaMitra survey (95% significance).

There are limitations to how conclusive the evidence from the midline survey is, due to the methods themselves, data quality issues and bias. It is suspected that inaccuracies in respondents' answers and data falsification made quality issues the most serious of the limitations of the midline evaluation. From a non-random sample of surveys, 11% of the midline data is estimated to be false (although not proven).

FINDINGS, CONCLUSIONS & RECOMMENDATIONS

FINDINGS

The questions that this evaluation addresses, that will improve Simpa's implementation, are on its value proposition for UrjaMitras and customers. The questions that this evaluation addresses that will improve Simpa's impact, are on customers' reports of their satisfaction with and the quality of light from solar and non-solar sources, and their quality of health. While the evaluation of UrjaMitras does not address impact directly, as Simpa's chosen distribution channel the ability to sell through UrjaMitras is a prerequisite in order for Simpa to create impact. The evaluation of UrjaMitras is of the value proposition of Simpa to them, and of their sales potential.

The Value Proposition forUrjaMitras

The evaluation asked UrjaMitras about their propensity to adopt new energy products, as the hypothesis was that a substantial percentage of UrjaMitras would be innovators (the segment of the target market that will adopt because they want to be among the first to have a new product). One of the most frequently used Domain Specific Innovativeness-scales was included in the survey to categorize each respondent as an innovator, early adopter, the early majority, the late majority or a laggard. However, contrary to expectations the greatest number of UrjaMitras fell into the laggard category. 45.5% of UrjaMitras were found to be laggards, and the percentage in each category decreased continuously culminating in only 1.2% of UrjaMitras in the innovator category.

Table 1: Technology Adoption Scores for UrjaMitras

Adoption Category	Count	%
Innovator	4	1.2%
Early Adopter	49	15.2%
The Early Majority	58	18.0%
The Late Majority	65	20.1%
Laggard	147	45.5%
Total	323	100.0%

This finding on technology adoption may be corroborated by the fact that only 2.9% of respondents said that the statement, "I have brought something new to my customers" describes the most important benefit that they derive from being UrjaMitras. However, it is possible that the statement "I have brought something new to my customers" did not describe the most important benefit to UrjaMitras because solar technology is not new to their catchment areas. While the survey included questions on the extent to which solar technology was new for UrjaMitras and their customers, the responses were ambiguous.

For 27.6% of UrjaMitras commissions and prizes were the most important benefit. "Producing a good impression" was chosen by 13% of respondents as the most important benefit. It is related to commissions and prizes in that both are benefits that accrue to the individual, but are distinct in that they emphasize the financial and social aspects respectively. While only 7% of respondents chose the opportunity for social development or service as the most important benefit, for 42% it was an additional one. This suggests that UrjaMitras do recognize that selling Simpa systems results in benefits that accrue to the village community, but that they consider these secondary to the individual benefits that accrue to them.

Being an UrjaMitra is valued most for the financial benefits, but these are insufficient for it to be seen as a full-time activity. Instead, selling Simpa systems is viewed as a way to improve income and relationships with existing customers. This is evident from the responses to the questions on the benefits of being an UrjaMitra. 16.9% of respondents said that the statement, "When I provide my customers with an additional product it increases the goodwill they have for me" describes the most important benefit that they derive from being UrjaMitras. That selling systems can be done alongside other activities was chosen as an additional benefit by 76%.

Table 2: The Most Important Benefit for UrjaMitras

Most Important Direct Benefit	Count	Percentage
Rewards through commissions and prizes	85	27.6%
Increase goodwill with additional product	52	16.9%
Produce a good impression	40	13.0%
More work = more rewards	29	9.4%
Productive use of my time	28	9.1%
Increase in village reputation	21	6.8%
Serving the society	21	6.8%
Sell Simpa with my other activities	19	6.2%
New product to customers	9	2.9%
Any other	2	0.6%
No advantage	2	0.6%
Total	308	100.0%

Table 3: Benefits of Being an UrjaMitra

Benefits	Count
Sell Simpa with my other activities	245
Increase goodwill with additional product	198
Rewards through commissions and prizes	130
More work - more rewards	107
Serving the society	136
Produce good impression	138
Productive use of my time	94
Increase in village reputation	38
New product to customers	17
Any other	0
No Advantage	24
Total	1103

Note: Multi-choice multi response question

Respondents were asked about both the direct and indirect advantages of being UrjaMitras, as well as whether they felt that there were any disadvantages associated with the opportunity. 75% of UrjaMitras said that they valued their role in the company because they believe it is the first step towards other opportunities with Simpa. It is possible that the "other opportunities" that UrjaMitras are interested in are those that would provide a fixed income. This is suggested by the fact that only 9.4% of UrjaMitras said that they value performance based payment, and 27% saw the lack of a fixed income as a disadvantage. However, the majority of respondents (78%) saw no disadvantage to being an UrjaMitra.

Table 4: Benefits of Simpa

Advantages to Associating with Simpa	Count
1st step towards other opportunities	240
Attend Simpa events	171
Receive visitors from Simpa	100
No advantages	38
Other	21
Recognition by Simpa's senior management for performance	8
Total Unique Count	318

Note: Multi-choice multi response question

Table 5: Disadvantages of Being an UrjaMitra

Disadvantages of Being an UrjaMitra	Count
No disadvantage	248
No fixed income	86
Dissatisfied customers affect my reputation	75
Due to some changes made by Simpa, I have not received the prizes that I believed that I would	40
Don't receive my commissions and/ prizes on time	33
Financially not attractive	26
Others	1
Total Unique Count	320

Note: Multi-choice multi response question

The Sales Potential ofUrjaMitras

Respondents were surveyed soon after they became UrjaMitras to collect baseline data on how they perceive the opportunity, and on other factors that may affect sales performance in the future. While this baseline survey was not intended to predict sales performance, the responses merit consideration by Simpa as it recruits, trains and manages UrjaMitras. In addition to the benefits that they derive from being UrjaMitras, respondents' current work patterns and their perceptions of customer demand were identified as factors that may influence sales performance in the future.

The element of respondents' work patterns that Simpa was most interested in was the extent to which UrjaMitras are mobile. It was found that UrjaMitras are largely not mobile, as 70% of respondents spend most of their working hours at a fixed location. Given that 61.7% of respondents also identified "increasing the goodwill that they enjoy with existing customers" as a benefit of being an UrjaMitra, this suggests that the majority of UrjaMitras may spend their working hours at a shop or other place of business. Consequently, they may expect that they will sell Simpa systems largely to their existing customers. Sales to households who are not existing customers of UrjaMitras may therefore depend on either word of mouth or marketing support by Simpa.

While the data on UrjaMitras' perceptions of customer demand seems contradictory, it may be that their responses capture a general sense of optimism on their part rather than specific market insights. When asked if the supply of electricity from the grid in their catchment villages will improve in the future, 75% said yes. However, given that the question did not specify a time period for which UrjaMitras should make their predictions, their responses constitute weak evidence.

It is striking that 99% of UrjaMitras said that the biggest competitor to Simpa systems is the inverter. If the supply of electricity from the grid does improve, and if the biggest competitor to Simpa systems is the inverter, then this could affect Simpa's sales adversely. The results from the customer survey in this report also include further analysis of the comparison between Simpa systems and inverters.

When UrjaMitras were asked about demand for Simpa systems over the next 6 months, they did not predict the adverse effects that their other responses would suggest. 82% of UrjaMitras believed that demand would increase continuously. Although UrjaMitras were asked whether they believed they could earn commissions through selling systems, recharges, or both, this question may have been misunderstood and the responses were not clear. However, based on the responses to the other survey questions it seems that most UrjaMitras may not recruit new customers actively, especially beyond their existing customer base. In addition, only 2% of UrjaMitras believe that their effort is critical in whether there is a demand to recharge systems or not. Therefore, if Simpa expects UrjaMitras to drive new sales and recharges, this is an area that merits attention.

Table 6: UrjaMitras' Predictions of Demand for Simpa

Demand Prediction	Count	Percentage
Will increase continuously	260	82.3%
Will increase initially and then reduce	48	15.2%
Will decrease continuously	8	25.0%
Total	316	100.0%

The Value Proposition forCustomers

While UrjaMitras can play a role in ensuring that systems are recharged, customers' own desires and ability to do so are also critical factors. The customer survey asked respondents about the value they derive from their Simpa system, which will influence their recharge behavior. The survey also asked customers about how using their Simpa systems have affected their satisfaction with, and the quality of, lighting in their house and health. Beyond their influence on recharge behavior, this data on the effects of using solar systems can aid Simpa in its' efforts to improve customer satisfaction and well-being.

In order to better understand Simpa's value proposition for customers, the survey included both the Domain Specific Innovativeness-scale and questions on the aspects of the offering that respondents were most and least satisfied with. Customers were both asked specifically about the

product and its installation, and about other design parameters in Simpa's value proposition including the distribution channel, the pricing and the recharge process / payment channel. Customers were also asked if they would be willing to recommend Simpa to others and if so, for what reason. The responses to this question corroborated the data on the aspects of the Simpa offering that customers were most satisfied with.

The Domain Specific Innovativeness-scale was intended to measure whether a desire to adopt a solar system because it is a new kind of energy product was one of the reasons that respondents chose to buy. While again it was assumed that solar technology was new to respondents, in the case of customers we know at least that only 1person was using another solar product (at the time of both the baseline and midline). As the table below shows, the survey found that customers were heterogeneous in terms of their adoption of new energy products.

Table 7: Adoption Categories for Customers

Adoption Categories	Count	%
Innovator	0	0.0%
Early Adopter	42	21.5%
The Early Majority	61	31.3%
The Late Majority	60	30.8%
Laggard	32	16.4%
Total	195	100.0%

The remaining questions on Simpa's value proposition were intended to measure customers' perceptions 10 to 12 months after they had had a system installed. Approximately a year after they had had a system installed, the greatest number of customers (32%) chose "affordable installments" as the aspect that they were most satisfied with. 102 customers also said that they would recommend Simpa to others because it is affordable.

While these results make it clear that affordability is valued highly, it is difficult to use it to draw further conclusions on what affordability means to customers. More information is needed in order for Simpa to determine what to charge as a down payment and over time, and also to know whether customers would like the instalments to be more structured or more flexible. Given that only 15% of respondents said that any member of their household had held a salaried position in the last year, it is reasonable to hypothesize that customers would prefer more flexibility. However, these questions will be investigated further in the end-line evaluation.

The other aspects of the Simpa system that respondents said that they were most satisfied with were "no need to travel for purchase or service" and "free warranty and service". These were chosen by 13% and 11.3% of respondents respectively. However, 13% said that they were not satisfied with any aspect of their Simpa system.

When customers were asked specifically about the product and its installation, no major issues emerged.64% of customers said that their systems run for 5 – 10 hours once the battery is charged. 79% said that the performance of the fan either meets or exceeds their expectations. 60% were satisfied or fully satisfied with the position of the lights and fan in their house. Overall, 68% of customers are willing to recommend Simpa to others.

The two aspects of the Simpa offering that respondents were least satisfied with were customer service, and that the system cannot be used to run other appliances. Only 44% of respondents who had made a complaint were satisfied or fully satisfied with Simpa's customer service. This finding is corroborated by the fact that only 6% of respondents rated service as the aspect of the Simpa offering that they are most satisfied with.

However, overall, respondents were much more dissatisfied that the system cannot be used to run other appliances than they were with customer service. 45.2% of respondents said that the aspect of the Simpa offering that they were least satisfied with was that it cannot be used to run other appliances. (In contrast, only 7.6% of respondents chose, "customer service is not responsive" as the aspect of the Simpa offering that they were least satisfied with).

Currently, 68 customers said that they use the Simpa system to charge their mobiles and 24 said they used it for other appliances. In most cases what these appliances were was not specified. However, from the baseline survey there is evidence that their homes are one of the significant assets that respondents own. All respondents have homes that are built either only of *pucca*(durable) materials or homes that are semi-*pucca*. Most respondents also have homes with either 3 or 4 rooms. Customers' satisfaction with the affordability of their Simpa systems, and their desire to be able to use them to run more appliances, suggest that they may be willing to invest more in their homes.

Table 8: Aspect of the Simpa System Customers are Satisfied with

Aspect Most Satisfied With	Count	Percentage
Affordable installments	67	31.6%
No need to travel for purchase or service	27	12.7%
Not satisfied	27	12.7%
Free warranty & service	24	11.3%
Separate part purchase not required	23	10.8%
Immediate recharge upon payment	17	8.0%
Other	14	6.6%
Quick resolution of customer complaints	13	6.1%
Total	212	100.0%

Table 9: Customers' Reasons to Recommend Simpa

Reason for Recommendation	Count
Affordable	102
Convenient to buy, recharge or use	84
Free warranty and servicing	74
Better quality than other solar companies	56
Other	1
Total Unique Count	199
Exhibit 9:	

Note: Multi-choice multi response question

Table 10: Number of Hours the System Runs

No. of Hours the System Runs	Count	Percentage
< 5 hours	31	15.0%
5-10 hours	131	63.6%
11-15 hours	44	21.4%
> 15 hours	0	0.0%
Total	206	100.0%

Table 11: Fan Performance

Fan Performance	Count	Percentage
Exceeds expectations	57	26.8%
Meets expectations	111	52.1%
Below expectations	45	21.1%
Total	213	100.0%

Table 12: Satisfaction with Position of Lights and Fan

Position of Lights and Fan	Count	Percentage
Satisfied / fully satisfied	52	44.1%
Neither satisfied nor dissatisfied	32	27.1%
Dissatisfied / fully dissatisfied	34	28.8%
Total	118	100.0%

Table 13: Aspect Customers are Least Satisfied with

Aspect Least Satisfied With	Count	Percentage
Cannot be used to run other appliances	95	45.2%
Not dissatisfied	39	18.6%
Cannot buy the parts separately	24	11.4%
Long time to recharge after payment	22	10.5%
Customer service is not responsive	16	7.6%
Too expensive	9	4.3%
Other	5	2.4%
Total	210	100.0%

Comparisons with Other Options

Customers continue to use other options for lighting alongside their Simpa systems, often for the same activities.However, the use of "unclean" options (specifically candles / wax and kerosene lamps) dropped substantially. Correspondingly, the overall quality of health score improved substantially.

In order to understand why respondents continue to use other options, the midline survey asked them to rate their satisfaction with and the quality of light from all the devices that they use. In order to ensure that the comparison was as accurate as possible, customers were asked for separate scores for each activity that they used the lighting device for. These activities were cooking, children's studies, reading / writing by adults and eating dinner. In addition, customers were asked if they used their Simpa systems for any economic activities at home.

The main option that respondents have access to for lighting is electricity from the grid. At the time of the midline survey 205 respondents reported having access to electricity from the grid, slightly more than the number of customers who said that they had used their Simpa system in the past 6 months (199). 15 more customers reported having access to electricity from the grid in the midline survey than in the baseline. However, the number of hours of electricity available decreased for 58% of customers. Perhaps not surprisingly, 8 more customers reported using inverters.

There was an approximately 80% drop in the number of customers using candles / wax at the time of the midline compared to the baseline. There was an approximately 50% drop in the number of customers using kerosene for lighting. The average number of liters of kerosene used per month across all respondents was 5.5 at the time of the baseline survey and 2.62 at the time of the midline. This difference is significant (T-

test, $p < 0.001$). However, those customers who continued to use kerosene did not use much less of it.If only respondents who reported using keroseneat the time of the midline are considered, the reduction in usage was only 0.15 liters(from 2.87 to 2.72) and is not significant (T-test, $p > 0.6$).The hypothesis that larger families continue to use kerosene was explored, but no pattern emerged.

While not an "unclean" option, there was also an approximately 90% drop in customers using rechargeable LED torches (flashlights) from the time of the baseline survey to the midline. In addition, while at the time of the baseline customers were using LED torches for cooking, children's studies, reading / writing by adults and eating dinner, at the time of the midline they were not using LED torches for any of these activities. It is likely that they were only using LED torches for activities that require a portable light.

Given that the increases in the number of customers with access to electricity and inverters between the baseline survey and midline were only 15 and 8 respectively, and there are fewer customers using all of the other options, it is surprising thast 39% reported increases in expenditures on lighting (excluding payments for their Simpa system). Nevertheless, the average expenditure per month on lighting (excluding on the Simpa system) decreased by approximately INR 100 / USD 1.5, from the baseline figure of approximately INR 380 / USD 6. While analysis of the individual responses of the 39% of customers may reveal the sources of increased expenditure (and will be attempted to inform the end-line), it is also possible that the responses are inaccurate as expenditure data is difficult to collect.

Figure 1: Usage of Energy Options

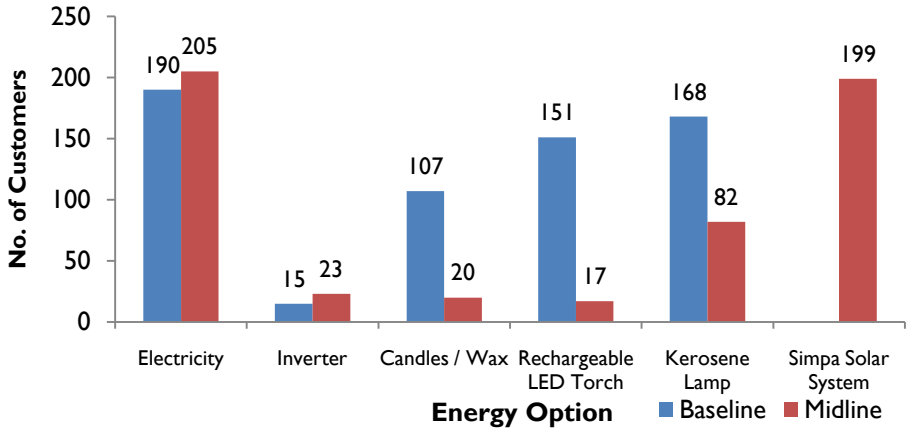


Table 14: Changes in Expenditure on Lighting

Change in Expenditure on Lighting	Count	Percentage
Increased	80	38.5%
Decreased	126	60.6%
No change	2	1.0%
Total	208	100.0%

While the survey attempted to estimate kerosene consumption from questions on the number and types of lamps used, their carrying capacities and how long they are lit for, it is difficult to collect accurate data on respondents' usage of and expenditure on energy options other than Simpa. For this reason, and because it was beyond the scope of the survey, respondents were not asked about their use of "unclean" options for cooking. While we therefore cannot conclude that respondents' overall usage of "unclean" options has reduced, a reduction in the use of "unclean" options for lighting does seem to correspond to improved health scores.

On a scale of 0 to 6, respondents' quality of health improved from 2.5 in the baseline survey to 5.3 in the midline. This difference is significant (T-test, $p < 0.001$). The score of 5.3 was also disaggregated for respondents who were classified as kerosene users at the time of the midline survey and those who were not. The quality of health score was 4.9 for kerosene users and 5.6 for non-users. This difference is also significant (T-test, $p < 0.001$).

The other benefits that customers report as a result of their Simpa systems are greater satisfaction with and better quality light. On average customers rated their satisfaction with and the quality of light from their Simpa systems as higher than for most other solutions, for the same activities. However the average scores for satisfaction with and the quality of light from the Simpa system were on par with or lower than that from the inverter (again for the same activities). These activities were cooking, children's studies, reading / writing by adults and eating dinner. While customers on average prefertheir Simpa systems for these activities, it does not seem that increased productivity is an additional benefit of the system (only 4 respondents said that they used their systems for economic activities at home).

Customers' preferences for their Simpa systems could also be because they were receiving fewer hours of electricity from the grid at the time of the midline survey than the baseline. This is corroborated by the fact that comparing the satisfaction and quality scores in the baseline and midline surveys reveals that customers' perceptions of light from the grid have worsened in this time period. These differences are significant for both men and women, as the bar graphs below illustrate.

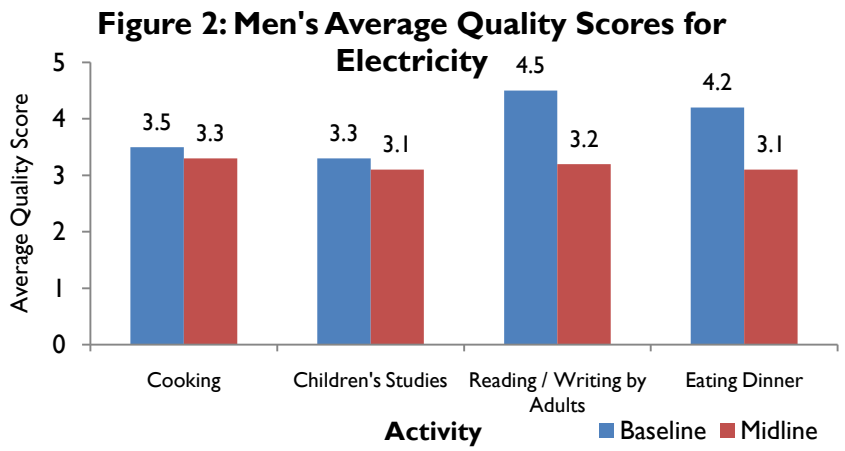


Figure 2: Men's Average Quality Scores for Electricity
Average Quality Score
5
4
3
2
1
0
3.5
3.3
3.3
3.1
4.5
3.2
4.2
3.1
Cooking
Children's Studies
Reading / Writing by Adults
Eating Dinner
Activity
Baseline
Midline

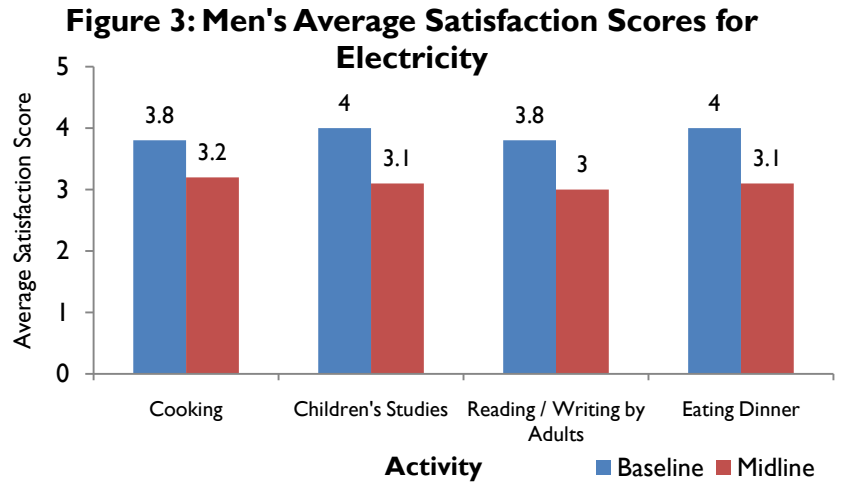
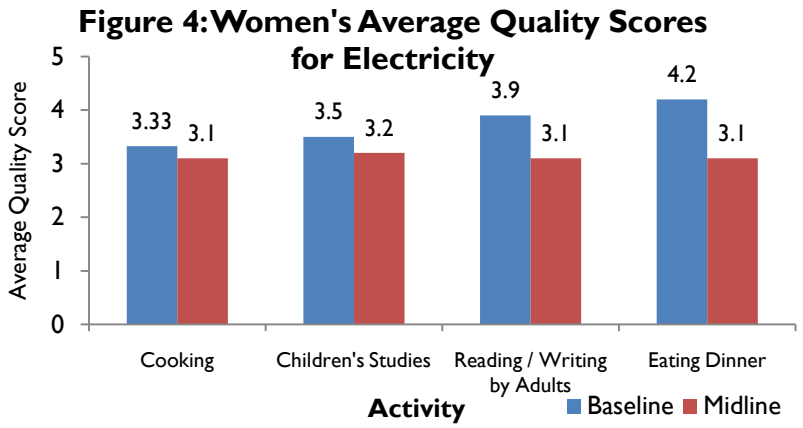
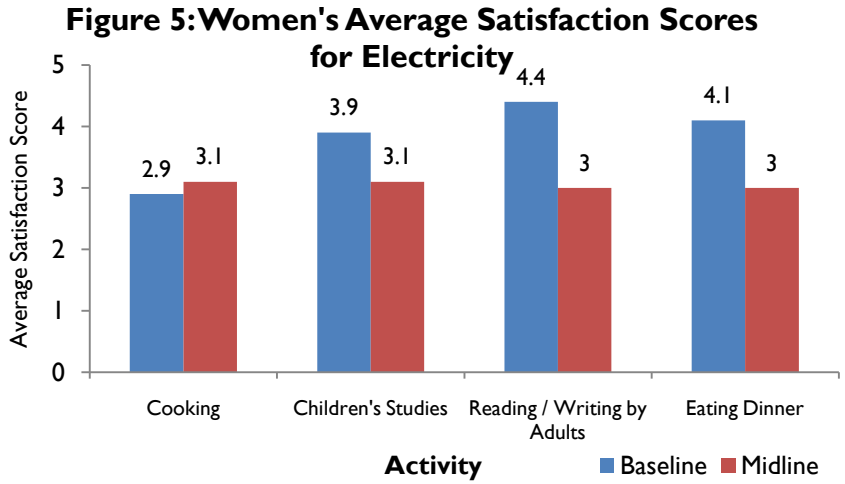


Figure 3: Men's Average Satisfaction Scores for Electricity
Average Satisfaction Score
5
4
3
2
1
0
3.8
3.2
4
3.1
3.8
3
4
3.1
Cooking
Children's Studies
Reading / Writing by Adults
Eating Dinner
Activity
Baseline
Midline





Impact Indicators

This section of the report summarizes the impact data that was gathered throughthe midline evaluation and has been discussed above. In addition, it compares the baseline and midline values where relevant. All of the indicators are presented in table form, with the exception of "average score for satisfaction with lighting by situation (gender disaggregated)". Bar graphs have been chosen to more effectively present the "average score for satisfaction with lighting by situation", and have been included following the table. Customers' experiences with using the Simpa system for cooling have been omitted from this table as it was expected that the values for this indicator would not be comparable due to

seasonal variations. However, customers' experiences with using the Simpa system for cooling were discussed earlier in this report.

Indicator	Year 1	Year 2
Average score for satisfaction with customer service	N/A	4*
Average quantity of kerosene purchased	5.5 liters	2.62 liters
Average score for quality of health	2.5	5.3
Benefit most valued by UrjaMitras	N/A	Commissions and prizes
Average expenditure on solar lanterns	INR 1,268 (approximately USD 20)**	N/A

* 8.98% margin of error

** This figure reflects the cost of purchasing a solar lantern, and includes travel costs. It does not include the costs of repairing the lantern, which will be accounted for in the end term evaluation.

Figure 6: Men's Average Satisfaction Scores for Electricity

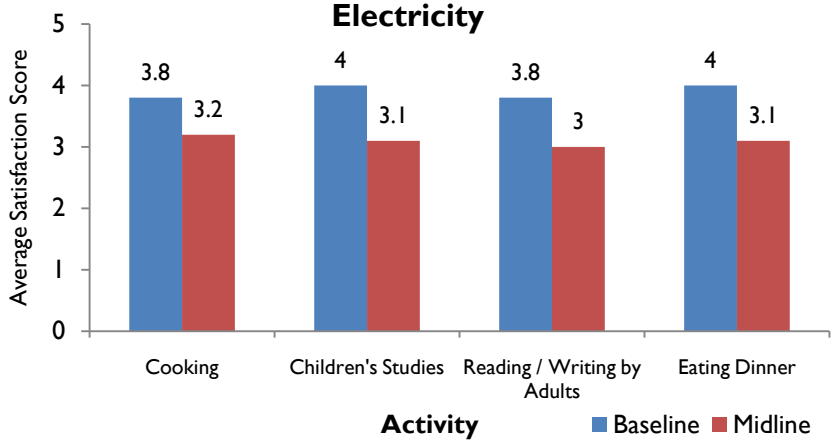


Figure 7: Men's Average Satisfaction Scores for Inverters

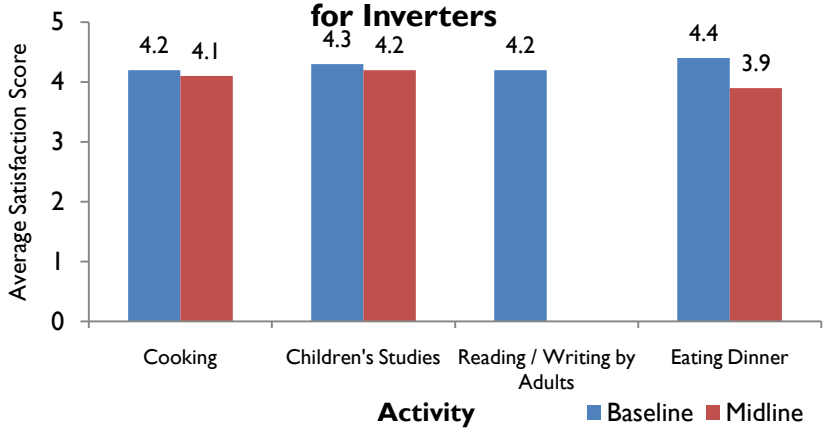


Figure 8: Men's Average Satisfaction Scores for Candles

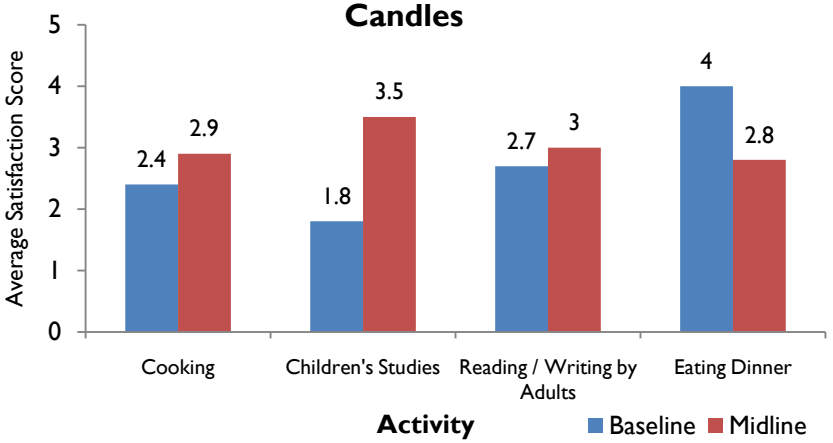


Figure 9: Men's Average Satisfaction Scores for Kerosene

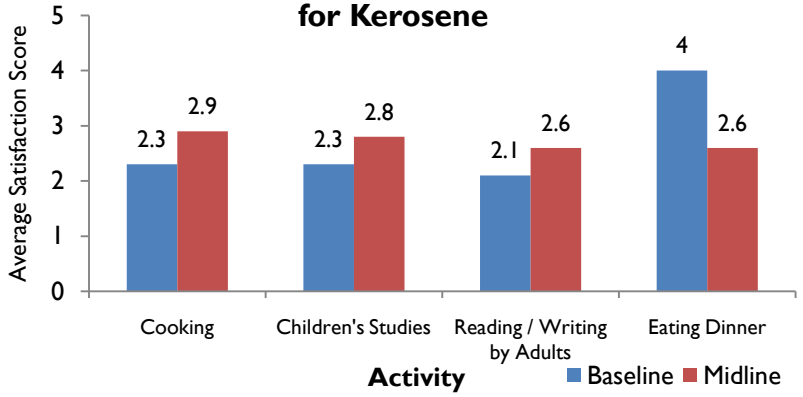


Figure 10: Men's Average Satisfaction Scores for Simpa Solar System

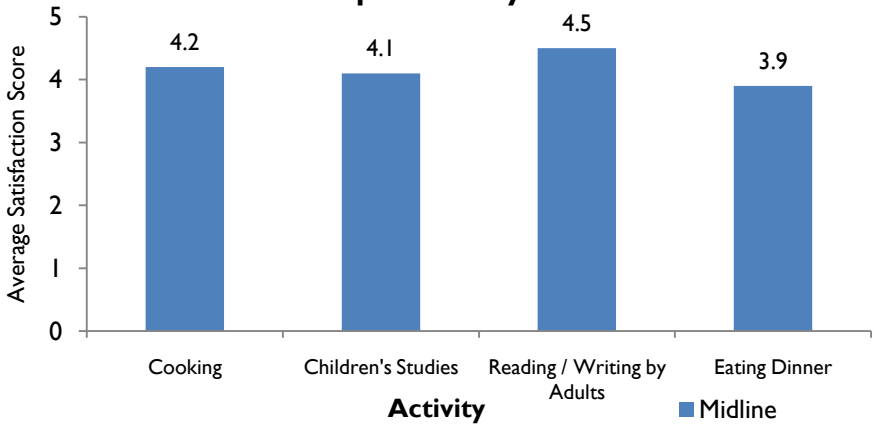


Figure 11: Men's Average Satisfaction Scores Across Activities

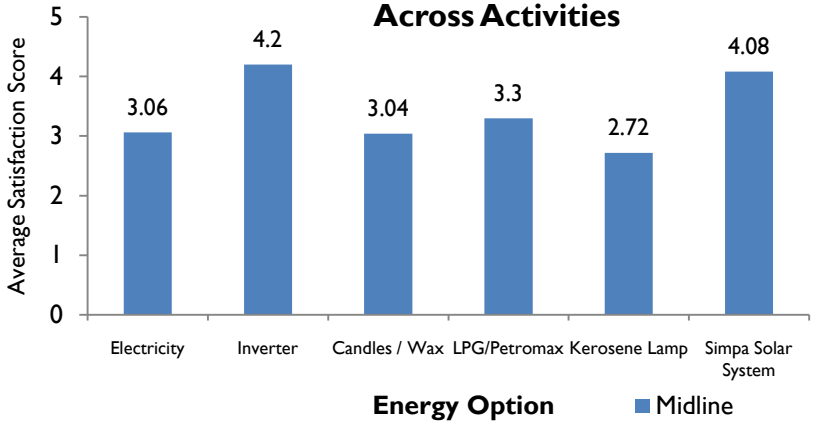


Figure 12: Women's Average Satisfaction Scores for Electricity

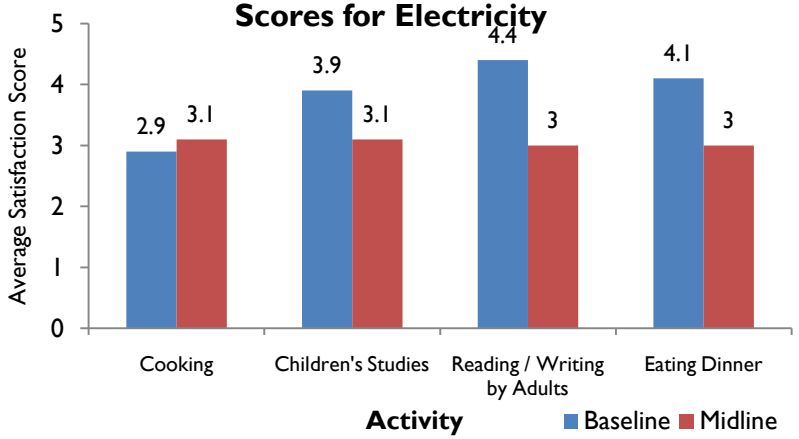


Figure 13: Women's Average Satisfaction Scores for Inverters

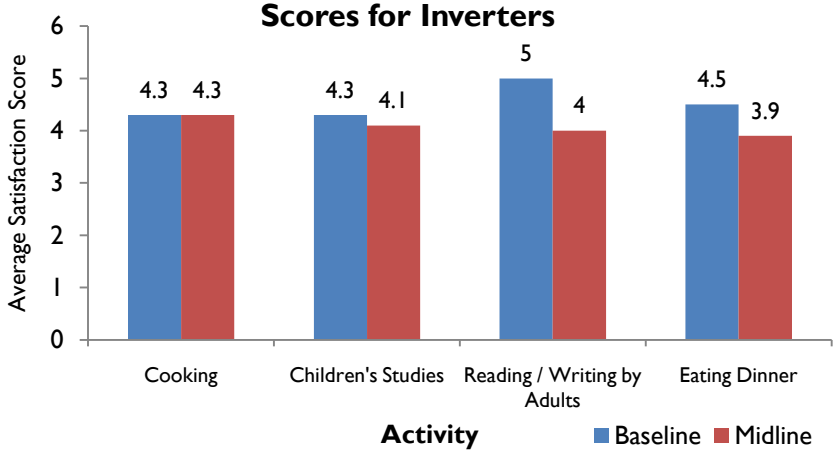


Figure 14: Women's Average Satisfaction Scores for Candles

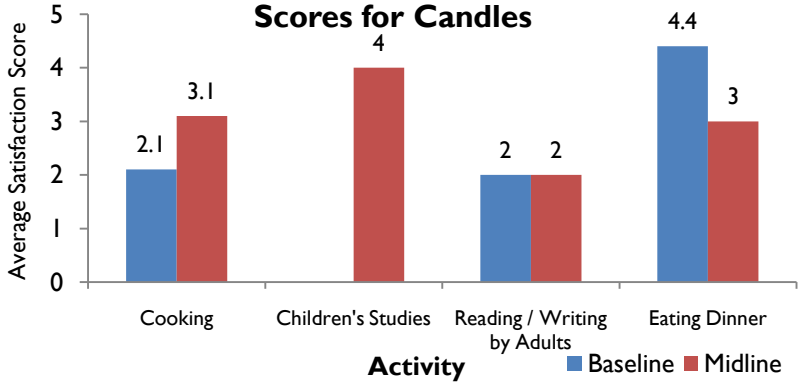


Figure 15: Women's Average Satisfaction Scores for Kerosene

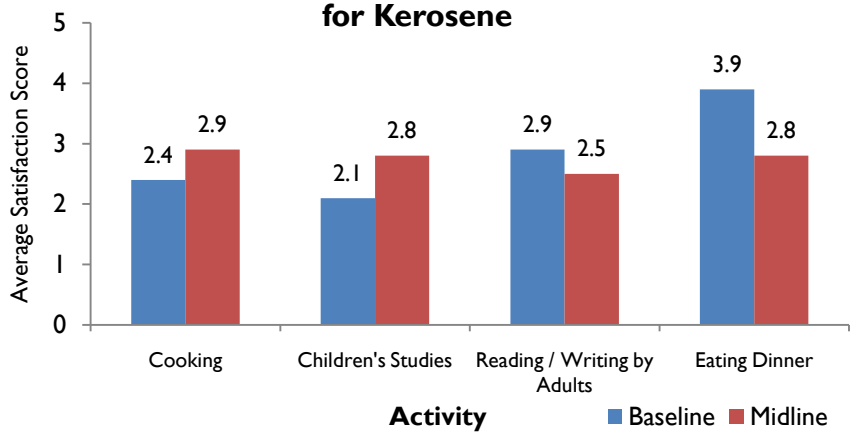
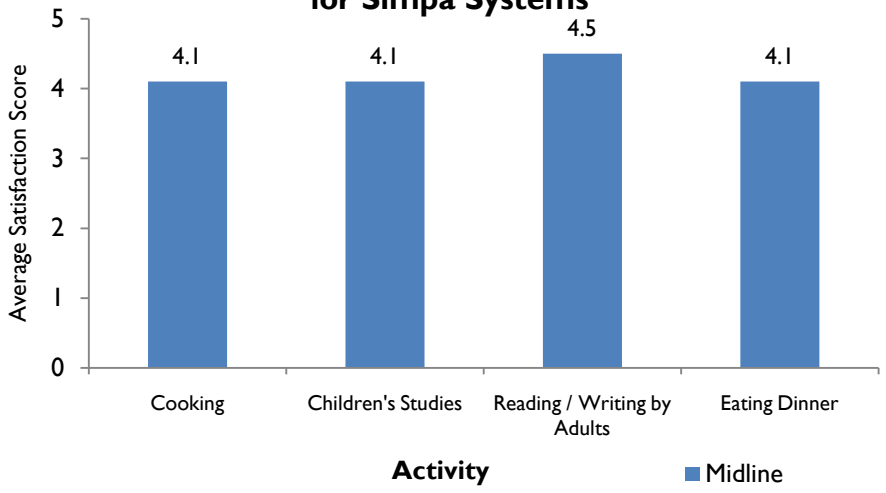
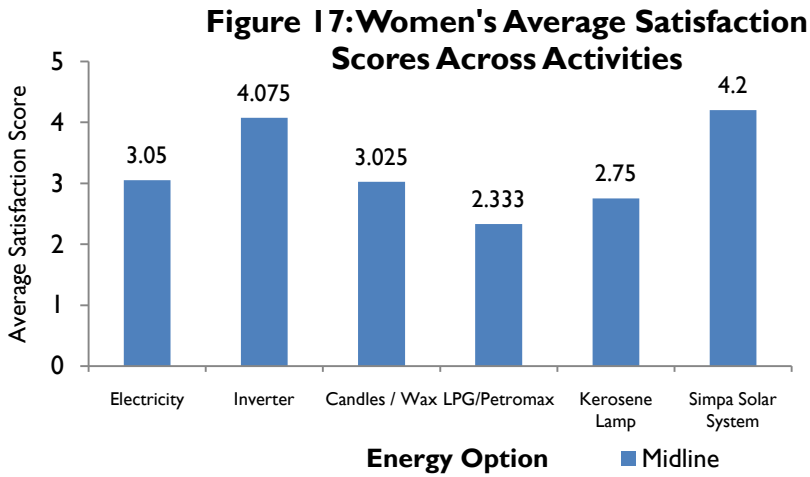


Figure 16: Women's Average Satisfaction Scores for Simpa Systems



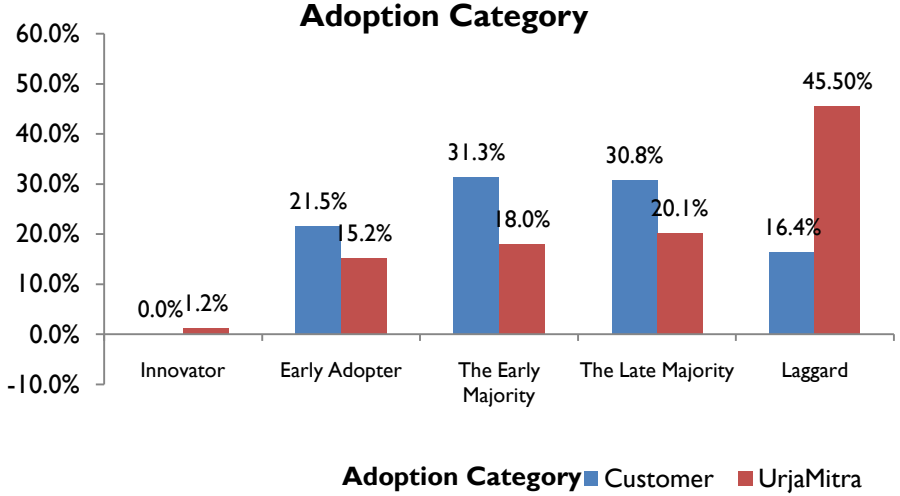


CONCLUSIONS

The main findings of the midline survey of customers relate to how they value the Simpa offering and benefit from it, both in isolation and in relation to their experiences with other energy options. The main findings of the survey of UrjaMitras relate to how they value the Simpa offering, although they also contribute to a better understanding of the comparison between Simpa systems and other energy options. In addition to the conclusions based on these findings, this section of the report also includes changes that will be made to the execution of the end term survey, to address the challenges that were faced in the midline.

The sample of customers was planned to consist of the first 370 acquired in Uttar Pradesh state. Since these were the first customers, it was expected that they would be more likely to be innovators in technology adoption than later customers. It was also expected that UrjaMitras would be likely to be innovators in technology adoption, who would then convince customers of the benefits of solar technology. The surveys found that the first customers in Mathura were more likely to be innovators in technology adoption than UrjaMitras in the 5 sampled districts. The bar graph below compares the data that was presented earlier on the percentages of customers and UrjaMitras in each of the adoption categories.

Figure 18: Customers and Urja Mitras by Adoption Category



However, the technology element of Simpa's value proposition is likely to be secondary to the financial for both customers and UrjaMitras. For customers it is the affordability of the system that is important, and for UrjaMitras it is the rewards that they receive. While the end term survey will further investigate what makes the Simpa offering affordable to customers, as long as payment in installments is a contributing factor it will be critical to make it easy for them to recharge and to make these commissions attractive for UrjaMitras.

Yet, customers also stated that they want systems that can run more appliances. Accommodating the demand for systems that can run more appliances may lead to a trade-off with affordability for customers in the future. Similarly UrjaMitras who want to earn greater rewards will have to increase their investments of time and effort proportionately, which may eventually lead to a trade-off with their existing activities.

The value customers' perceive from the Simpa offering, and therefore the ability of UrjaMitras to sell to them, is also shaped by other energy options. In particular, the midline survey revealed from customers' responses that there has been both a drop in the number of hours of electricity they receive and their satisfaction with this option. In the same time period, 8 customers have acquired inverters resulting in a total of 23 in the sample. For these 23 their average satisfaction scores with inverters were higher than the corresponding figures for all customers with Simpa systems. While UrjaMitras believe that inverters are the main competitors to Simpa systems it would seem that the former are still too expensive for many customers to own. However, in considering its value proposition to customers, the cost comparison to inverters would seem like an additional factor that it is important to include.

It was important for the midline survey to investigate customers' use of other energy options not only to understand how these influence Simpa's value proposition but also because the potential health and environmental benefits of solar systems can only be realized when the

consumption of "unclean" fuels is reduced or stopped. Based on the available data, customers' use of candles / wax and kerosene has dropped dramatically. This was corroborated by customers' quality of health scores. However, these findings will be validated further through the end term evaluation.

Improvements to Survey Implementation

Validation will be very important in the end term evaluation because of the issues that arose during the midline. The midline had been designed so that phone surveys could be used to monitor the in-person data collection. 30% of customers and 20% of UrjaMitras were asked some of the same questions over the phone as they had been in person. The intention was that any falsification of the data collected in-person would be detected if it did not match the responses to the phone surveys.

However through a detailed investigation process it emerged that the phone and in-person survey responses differed even when there was reliable evidence that the same person had been asked both sets of questions. The midline phone surveys were therefore not a reliable tool to detect whether the in-person data had been falsified. In order to address these issues, some of the questions in the end term evaluation will be modified to make them easier to answer. In addition, both the in-person and phone surveys are in the process of being pilot tested to check whether consistent answers can be expected from the same respondent. It is also planned to ask enumerators to provide the GPS co-ordinates of respondents and photograph the system IDs to make it very difficult to falsify data.

ANNEXES

ANNEX I: EVALUATION STATEMENT OF WORK

01/05/2013

Terms of Reference for Evaluation of "Prepaid Energy" Program

Intervention Background

In India at least 400 million people are without reliable access to electricity. Without access to electricity, consumers and small businesses rely on traditional fuels, kerosene, candles and batteries. It is estimated that the off-grid segment is already spending $50+ billion per year on these sub-optimal and highly unsustainable energy solutions.

There are many promising technical solutions available to customers today, ranging from small-scale solar lanterns, to pico-solar home systems, to larger installed solar home systems, to community scale solar or biomass electricity micro-grids, to solar-hybrid UPS/inverter solutions for the home and business. The problem is that these clean energy technologies almost always involve significant up-front costs and therefore must be financed.

Simpa Networks is a for-profit enterprise with an innovative solar-as-a-service business model. Simpa customers take home a solar energy system by making a small initial down payment, then purchase prepaid energy credits using a mobile phone in amounts they choose – mimicking the highly successful pricing model for prepaid mobile airtime. Simpa's cloud-based software tracks and processes payments, delivering proof of payment to the customer via SMS.

Simpa's results chain is as follows:

Inputs	Processes	Outputs	Outcomes	Impact
People Product – solar Capital	Product integration Product development Training Risk assessment Sales After-sales service Research	Systems installed	Systems used / energy paid for and consumed	Improvements in well-being of consumer households

Over the next two years Simpa plans to scale up sales of Solar Home Systems on a pay-as-you-go basis, and demonstrate the commercial viability of the model at sufficient scale to attract private market investment. Simpa plans to provide access to clean energy to 60,000 un-

electrified people, mostly in Uttar Pradesh, in the next 2 years, and nearly 4 million people in 5 years. It is expected that the results of the evaluation will be used by Simpa to refine their value proposition, particularly in terms of the solar product, and their expansion plans.

Evaluation Purpose and Indicators

The purpose of the evaluation is to answer the following question:

What are the impacts on customers, in terms of access to energy and its resulting benefits, which are attributable to Simpa?

In addition to measuring the indicators below, the evaluation should also address financial/economic benefits, and whether health and education impacts are relevant.

Indicator	Data Source	External Reporting Frequency
Availability and/ quality of energy services	Baseline and End-Term Evaluation	At end of project
Levels of access to energy services achieved	Baseline and End-Term Evaluation	At end of project
Confidence in ability to seize opportunities provided by energy (gender disaggregated)	Baseline and End-Term Evaluation	At end of project

Methodology

The evaluation design will be quasi-experimental. The comparison group will be chosen from the districts in which Simpa plans to launch after May 1st, 2015. They will be consumers of kerosene, candles and/ D-cell batteries, who live in un-electrified homes.

The evaluation design must include a mid-term and a final evaluation. The consulting firm is free to propose that a baseline study be conducted as well. However, it should keep in mind that unlike in the case of a non-profit organization, it is not possible for Simpa to select the treatment group. This is because as a for-profit, customers must choose Simpa (and not vice-versa). In addition, by 1st August, 2013, it is expected that only 220 Solar Home Systems will be sold in Uttar Pradesh.

The evaluation should use a mixed method approach (i.e. both qualitative and quantitative tools).

Collaboration and Communication

The consulting firm will be accountable to an M&E consultant hired by Simpa. She will be involved in the design of the evaluation tools, the analysis of the data and co-authoring the evaluation reports. She may also choose to engage as a participant-observer in certain portions of the data collection.

In addition to regular meetings with the M&E consultant, the consulting firm must also be willing to meet monthly with the Simpa team while the evaluations are being conducted. The purpose of these meetings will be to present progress and results, and receive feedback.

The key deliverables and dates are below:

Deliverable	**Date**
Evaluation Plan	27/05/13
Mid-term Evaluation	21/06/14
End-term Evaluation	20/04/15

However, if Simpa achieves its sales targets faster than planned, the dates for the mid-term and end-term evaluations will be brought forward. If this happens, the evaluation team will be given sufficient advance notice.

Evaluation Team

The ideal evaluation team would include thematic expertise in energy and social enterprise/market-based models, and functional expertise with both mixed method and integrated-cost approaches.

Applications

To be considered, please submit your proposed methodology, timeline and budget, as well as the qualifications of the evaluation team, to Devyani.oskarsson@gmail.com by the end of the day on Monday, May 6th.

ANNEX II: EVALUATION METHODS AND LIMITATIONS

A quasi-experimental design was chosen for the evaluation of Simpa's customers, in which they were matched with non-customers. Non-customers were asked to participate in an in-person survey if they resembled Simpa customers in terms of the education level of the chief earner, and either his / her occupation or the material used in the construction of the house. Once the surveys had been completed, customers and non-customers were matched using propensity score matching. Scores were generated using logistic regression. The qualifying variables considered for matching were age, gender, family members, education, earning members, marital status, school children, house type and rooms. The significant variables were age, family members, earning members and school children.

A rolling baseline of customers was designed, with a sample that would consist of the first 400 customers acquired in Uttar Pradesh state. However, because of communication and coordination issues related to surveying each customer between approval and installation, the baseline survey was halted for a month before it was resumed. Customers acquired by Simpa in this month are therefore not part of the sample, and this may be a source of bias.

The evaluation of UrjaMitras is through a pretest-posttest design. However, in this context in which UrjaMitras are acquired on an ongoing basis as Simpa expands into new districts, and will continue to sell once the grant period is over, the evaluation seeks to measure changes in motivations across time rather than before and after a discrete event. Therefore at the time of the baseline survey respondents had been UrjaMitras for varying lengths of time.

Structured interviews were conducted with a purposive sample of UrjaMitras to develop the baseline survey of UrjaMitras. In order to construct the purposive sample, it was decided to compare a district Simpa had entered recently with one in which it had a longer presence. Hathras and Aligarh were chosen out of convenience because of their geographical proximity to each other. 5 UrjaMitras were initially selected in each district.

UrjaMitras were chosen from 2 categories. The first category was those who have sold 2-4 systems in a month. The second category was those who have sold 5 or more systems in a month. The 2 categories were almost equally represented in each district. An additional UrjaMitra was interviewed in Aligarh.

A stratified sampling technique was chosen to identify the UrjaMitras to be surveyed. The sample was selected so as to be representative of UrjaMitras in different districts and performance categories at the time of the end-term evaluation. The sampling frame was the 420 UrjaMitras who had made at least one sale in the past 4 months.

This report presents the results of the customer and UrjaMitra surveys that began on the 13th of September, 2014. From an original sample size of 400 customers, 378 were matched and 215 were surveyed in the midline. The sample size of UrjaMitras was 323. Based on these sample sizes, the margin of error for the customer survey is 6.62% and is 5.07% for the UrjaMitra survey (95% significance). The drop from 378 at the time of the baseline to 215 at the time of the midline was because many customers were not easily reachable on the days on which the survey

was scheduled. For the end line attempts will be made to reach the original 378 customers and improve the scheduling of the surveys.

There are limitations to how conclusive the evidence from the midline survey is, due to the methods themselves, data quality issues and bias. For the evaluation of UrjaMitras a combination of qualitative and quantitative methods was the most appropriate as it would yield data on both the range of motivations for becoming an UrjaMitra, and the prevalence of each. For the evaluation of customers quantitative methods were considered the most appropriate as they would enable close-ended questions to be asked, and the gathering of quantitative data. Close-ended questions were used to ask about the specific parameters of the value proposition that Simpa had identified prior to the baseline and wanted feedback on. Quantitative data was required to compare customers' satisfaction levels with a range of energy options, and to estimate their usage of kerosene and expenditure on energy (in order to determine impact and cost-effectiveness). However, given that much of the quantitative data that the evaluation sought to gather is difficult to recall, observational methods may have provided better quality data (but for a purposive sample).

The midline had been designed so that phone surveys could be used to monitor the in-person data collection. 30% of customers and 20% of UrjaMitras were asked some of the same questions over the phone as they had been in person, after an interval of 2 months or less. The intention was that any falsification of the data collected in-person would be detected if it did not match the responses to the phone surveys.

It is suspected that inaccuracies in respondents' answers and data falsification made quality issues the most serious of the limitations of the midline evaluation.When through a detailed investigation process it emerged that the phone and in-person survey responses differed even when there was reliable evidence that the same person had been asked both sets of questions, the conclusion was reached that either the information being asked for was difficult to recall, or respondents did not appreciate the importance of answering accurately. This was the first issue that affected data quality. The second issue was falsification of the data. From a non-random sample of surveys, 11% of the midline data is estimated to be false (although not proven). This estimate is based on one common question in the in-person and phone customer surveys that provided consistent answers.

There are four threats to internal validity of the evaluation of customers that were identified at the time of its design. The first is selection bias. Since Simpa customers must choose to buy a solar connection, they cannot be selected randomly. In addition, because customers will be acquired gradually, the first 400 customers were surveyed, rather than a random sample from the universe of customers.

The second threat is mortality, or attrition. If customers who are dissatisfied with their Simpa system stop repaying, then it will be mostly those who are satisfied who are retained as customers after 2 years. This is likely to exaggerate the benefits of Simpa's systems. The third threat that is related, but will have the opposite effect, is if customers minimize their usage of the system. They may then report the Simpa system to not be of much benefit to them, when in fact they haven't used it enough.

The fourth threat is that there is a lack of variability in some of the indicators such as quality of health. If customers do not perceive poor health due to poor lighting and kerosene usage to be a problem, they may downplay its effects. This will lead to a result that suggests the benefits of solar lighting are less significant than they are.

ANNEX III: DATA COLLECTION INSTRUMENTS

Customer Survey

Good……..! I am…….. As you may recollect, we had surveyed you last winter on your experience with lighting solutions. This survey is being conducted across 2 years and we would like to speak to you again now. I would be grateful if you could spare some time to help us by answering a few questions. Please be assured that your name will not be associated in any way with the information you have provided, and that no one will contact you for selling anything to you based on this information. This is purely for our reference.

Respondent agrees to be interviewed ……→……**1** **CONTINUE**

Respondent does not agree to be interviewed……→……**2** **END**

Name of Simpa Customer											
Address											
Block Name											
Village Name											
Pincode											
Mobile No.	0										
State	Uttar Pradesh	1	District	Mathura	1						

Interview Details

Date of Interview			Interviewer's Name			
Duration of Interview (In Mins)			Starting Time of Interview			
Quality Check	Accompaniment		Back Checked		Scrutinized	
Supervisor	1		1		1	
Field Head	2		2		2	

Instructions to Interviewer

1) *The Head of Household (HoH) must be one of the participants.*
2) *For some questions responses from a male and female household member are required. These questions will be indicated with further instructions.*

Section 1: Lighting and Electricity				
No.	**Question**	**Code**	**Response**	**Instruction**
Q1.1	Is the site electrified?	Yes.....01		**CONTINUE**
		No.....02		**SKIP TO Q7.1**
Q1.2	On average, how many hours of electricity are you receiving in a day at present?			**RECORD RESPONSE**
Q1.3	In the last month, what was the total household expenditure on electricity?			**RECORD RESPONSE**
Q1.4	Do you use a stabilizer to control power fluctuation?	Yes.....01		**SKIP TO Q3**
		No.....02		**CONTINUE**

Instructions to Interviewer

1) *Ask the following questions to the male respondent.*

No.					***Ask the following questions to the female respondent***	
Question Q2	What are the activities that you do when you are using the grid supply / electricity / government supply for lighting?	Where do these activities take place?	How would you rate the quality of the grid supply / electricity / government supply to perform these activities?	How satisfied are you with the light from the grid supply / electricity / government supply to perform these activities?	How would you rate the quality of the grid supply / electricity / government supply to perform these activities?	How satisfied are you with the light from the grid supply / electricity / government supply to perform these activities?
Code	Cooking.....01 Children's studies.....02 Reading / writing by adults.....03 Eating dinner.....04	Kitchen.....01 Room.....02 In the open....03 Other.....04	Very good.....05 Good.....04 Fair.....03 Bad.....02 Very bad.....01	Extremely satisfied..05 Very satisfied.....04 Somewhat satisfied..03 Not very satisfied....02 Not at all satisfied....01	Very good.....05 Good.....04 Fair.....03 Bad.....02 Very bad.....01	Extremely satisfied..05 Very satisfied.....04 Somewhat satisfied..03 Not very satisfied..02

	Other (specify).....05										Not at all satisfied..01	
Response	2.1.1 Cooking		2.1.2		2.1.3		2.1.4		2.1.5		2.1.6	
	2.2.1 Children's studies		2.2.2		2.2.3		2.2.4		2.2.5		2.2.6	
	2.3.1 Reading / writing by adults		2.3.2		2.3.3		2.3.4		2.3.5		2.3.6	
	2.4.1 Eating dinner		2.4.2		2.4.3		2.4.4		2.4.5		2.4.6	
	2.5.1 Other -		2.5.2		2.5.3		2.5.4		2.5.5		2.5.6	

No.	Question	Code	Response	Instruction
Q3	In the past 6 months have you used an inverter for lighting?	Yes.....01		**CONTINUE**
		No.....02		**SKIP TO Q5.1**

Instructions to Interviewer

1) *Ask the following questions to the male respondent.*

No.					***Ask the following questions to the female respondent***	
Question Q4	What are the activities that you have done when you used the inverter for lighting?	Where do these activities take place?	How would you rate the quality of the inverter to perform these activities?	How would you rate the quality of the inverter to perform these activities?	How would you rate the quality of the inverter to perform these activities?	How satisfied are you with the light from the Inverter to perform these activities?

Code	Cooking.....01 Children's studies.....02 Reading / writing by adults.....03 Eating dinner.....04 Other (specify).....05	Kitchen.....01 Room.....02 In the open....03 Other.....04	Very good.....05 Good.....04 Fair.....03 Bad.....02 Very bad.....01	Extremely satisfied....05 Very satisfied.....04 Somewhat satisfied...03 Not very satisfied.....02 Not at all satisfied.....01	Very good.....05 Good.....04 Fair.....03 Bad.....02 Very bad.....01	Extremely satisfied.....05 Very satisfied...04 Somewhat satisfied..03 Not very satisfied..02 Not at all satisfied..01
Response	4.1.1 Cooking	4.1.2	4.1.3	4.1.4	4.1.5	4.1.6
	4.2.1 Children's studies	4.2.2	4.2.3	4.2.4	4.2.5	4.2.6
	4.3.1 Reading / writing by adults	4.3.2	4.3.3	4.3.4	4.3.5	4.3.6
	4.4.1 Eating dinner	4.4.2	4.4.3	4.4.4	4.4.5	4.4.6
	4.5.1 Other -	4.5.2	4.5.3	4.5.4	4.5.5	4.5.6

No.	**Question**	**Code**	**Response**	**Instruction**
Q5.1	In the past 6 months have you used a generator for lighting?	Yes.....01		**CONTINUE**
		No.....02		**SKIP TO Q7.1**
Q5.2	What is the fuel used for running the generator?	Only kerosene.....01		**SKIP TO Q6**
		Only diesel.....02		**CONTINUE**
		Both kerosene and diesel..03		**CONTINUE**
		Petrol.....04		**SKIP TO Q6**
Q5.3	In the last month, how much did you spend on diesel to run the generator?			**RECORD RESPONSE**

Instructions to Interviewer

1) *Ask the following questions to the male respondent.*

No.					***Ask the following questions to the female respondent***	
Question Q6	What are the activities that you have done when you used the generator for lighting?	Where do these activities take place?	How would you rate the quality of the generator to perform these activities?	How satisfied are you with the light from the generator to perform these activities?	How would you rate the quality of the generator to perform these activities?	How satisfied are you with the light from the generator to perform these activities?
Code	Cooking.....01 Children's studies.....02 Reading / writing by adults.....03 Eating dinner.....04 Other (specify).....05	Kitchen.....01 Room.....02 In the open....03 Other.....04	Very good.....05 Good.....04 Fair.....03 Bad.....02 Very bad.....01	Extremely satisfied.....05 Very satisfied.....04 Somewhat satisfied.....03 Not very satisfied.....02 Not at all satisfied.....01	Very good.....05 Good.....04 Fair.....03 Bad.....02 Very bad.....01	Extremely satisfied..05 Very satisfied.....04 Somewhat satisfied..03 Not very satisfied..02 Not at all satisfied..01
Response	6.1.1 Cooking	6.1.2	6.1.3	6.1.4	6.1.5	6.1.6
	6.2.1 Children's studies	6.2.2	6.2.3	6.2.4	6.2.5	6.2.6
	6.3.1 Reading / writing by adults	6.3.2	6.3.3	6.3.4	6.3.5	6.3.6
	6.4.1 Eating dinner	6.4.2	6.4.3	6.4.4	6.4.5	6.4.6
	6.5.1 Other -	6.5.2	6.5.3	6.5.4	6.5.5	6.5.6

No.	Question	Code	Response	Instruction
Q7.1	In the past 6 months have you used a lead acid battery for lighting?	Yes.....01		**CONTINUE**
		No.....02		**SKIP TO Q9**
Q7.2	In the past month, how much did your household spend on recharging your lead acid battery or batteries?			**RECORD RESPONSE**

Instructions to Interviewer

1) Ask the following questions to the male respondent.

No.					***Ask the following questions to the female respondent***	
Question Q8	What are the activities that you have done when you used a lead acid battery for lighting?	Where do these activities take place?	How would you rate the quality of the lead acid battery to perform these activities?	How satisfied are you with the light from the lead acid battery to perform these activities?	How would you rate the quality of the lead acid battery to perform these activities?	How satisfied are you with the light from the lead acid battery to perform these activities?
Code	Cooking.....01 Children's studies.....02 Reading / writing by adults.....03 Eating dinner.....04 Other (specify)..05	Kitchen.....01 Room.....02 In the open....03 Other.....04	Very good.....05 Good.....04 Fair.....03 Bad.....02 Very bad.....01	Extremely satisfied.....05 Very satisfied.....04 Somewhat satisfied.....03 Not very satisfied.....02 Not at all satisfied.....01	Very good.....05 Good.....04 Fair.....03 Bad.....02 Very bad.....01	Extremely satisfied.....05 Very satisfied.....04 Somewhat satisfied.....03 Not very satisfied.....02 Not at all satisfied.....01
Response	8.1.1 Cooking	8.1.2	8.1.3	8.1.4	8.1.5	8.1.6
	8.2.1 Children's studies	8.2.2	8.2.3	8.2.4	8.2.5	8.2.6
	8.3.1 Reading / writing by	8.3.2	8.3.3	8.3.4	8.3.5	8.3.6

	adults											
	8.4.1 Eating dinner		8.4.2		8.4.3		8.4.4		8.4.5		8.4.6	
	8.5.1 Other -		8.5.2		8.5.3		8.5.4		8.5.5		8.5.6	

No.	Question	Code	Response	Instruction
Q9	In the past 6 months have you used a Simpa solar system for lighting?	Yes.....01		**CONTINUE**
		No.....02		**SKIP TO Q11.1**

Instructions to Interviewer

1) Ask the following questions to the male respondent.

No.					***Ask the following questions to the female respondent***	
Question Q10	What are the activities that you have done when you used a Simpa solar system for lighting?	Where do these activities take place?	How would you rate the quality of the Simpa solar system to perform these activities?	How satisfied are you with the light from the Simpa solar system to perform these activities?	How would you rate the quality of the Simpa solar system to perform these activities?	How satisfied are you with the light from the Simpa solar system to perform these activities?
Code	Cooking.....01 Children's studies.....02 Reading / writing by adults.....03 Eating dinner.....04 Other (specify)...05	Kitchen.....01 Room.....02 In the open....03 Other.....04	Very good.....05 Good.....04 Fair.....03 Bad.....02 Very bad.....01	Extremely satisfied.....05 Very satisfied.....04 Somewhat satisfied.....03 Not very satisfied.....02 Not at all satisfied.....01	Very good.....05 Good.....04 Fair.....03 Bad.....02 Very bad.....01	Extremely satisfied.....05 Very satisfied.....04 Somewhat satisfied.....03 Not very satisfied.....02 Not at all satisfied.....01
Response	10.1.1 Cooking	10.1.2	10.1.3	10.1.4	10.1.5	10.1.6

	10.2.1 Children's studies		10.2.2		10.2.3		10.2.4		10.2.5		10.2.6	
	10.3.1 Reading / writing by adults		10.3.2		10.3.3		10.3.4		10.3.5		10.3.6	
	10.4.1 Eating dinner		10.4.2		10.4.3		10.4.4		10.4.5		10.4.6	
	10.5.1 Other -		10.5.2		10.5.3		10.5.4		10.5.5		10.5.6	

No.	Question	Code	Response	Instruction
Q11.1	In the past 6 months have you used any solar product (other than Simpa) for lighting?	Yes.....01		**CONTINUE**
		No.....02		**SKIP TO Q13.1**
Q11.2	How was this product bought?	Cash up front.....01		**CONTINUE**
		Loan from bank.....02		
		Loan from MFI.....03		

Instructions to Interviewer

1) Ask the following questions to the male respondent.

No.					***Ask the following questions to the female respondent***	
Question Q12	What are the activities that you have done when you used solar energy (other than a Simpa system) for lighting?	Where do these activities take place?	How would you rate the quality of solar energy to perform these activities?	How satisfied are you with the light from solar energy to perform these activities?	How would you rate the quality of the Simpa solar system to perform these activities?	How satisfied are you with the light from solar energy to perform these activities?

	Cooking.....01 Children's studies.....02 Reading / writing by adults.....03 Eating dinner.....04 Other (specify)...05		Kitchen.....01 Room.....02 In the open....03 Other.....04		Very good.....05 Good.....04 Fair.....03 Bad.....02 Very bad.....01		Extremely satisfied.....05 Very satisfied.....04 Somewhat satisfied.....03 Not very satisfied.....02 Not at all satisfied.....01		Very good.....05 Good.....04 Fair.....03 Bad.....02 Very bad.....01		Extremely satisfied.....05 Very satisfied.....04 Somewhat satisfied.....03 Not very satisfied.....02 Not at all satisfied.....01	
Response	12.1.1 Cooking		12.1.2		12.1.3		12.1.4		12.1.5		12.1.6	
	12.2.1 Children's studies		12.2.2		12.2.3		12.2.4		12.2.5		12.2.6	
	12.3.1 Reading / writing by adults		12.3.2		12.3.3		12.3.4		12.3.5		12.3.6	
	12.4.1 Eating dinner		12.4.2		12.4.3		12.4.4		12.4.5		12.4.6	
	12.5.1 Other -		12.5.2		12.5.3		12.5.4		12.5.5		12.5.6	

No.	Question	Code	Response	Instruction
Q13.1	In the past 6 months, have you used wax (candles) for lighting?	Yes.....01		**CONTINUE**
		No.....02		**SKIP TO Q15.1**
Q13.2	In the past month, how much did your household spend on candles?			**RECORD RESPONSE**

Instructions to Interviewer

1) *Ask the following questions to the male respondent.*

No.												***Ask the following questions to the female respondent***			
Question Q14	What are the activities that you have done when you used wax (candles) for lighting?		Where do these activities take place?		How would you rate the quality of wax (candles) to perform these activities?		How satisfied are you with the light from wax (candles) to perform these activities?		How would you rate the quality of wax (candles) to perform these activities?		How satisfied are you with the light from wax (candles) to perform these activities?	
	Cooking.....01 Children's studies.....02 Reading / writing by adults.....03 Eating dinner.....04 Other (specify)...05		Kitchen.....01 Room.....02 In the open....03 Other.....04		Very good.....05 Good.....04 Fair.....03 Bad.....02 Very bad.....01		Extremely satisfied.....05 Very satisfied.....04 Somewhat satisfied.....03 Not very satisfied.....02 Not at all satisfied.....01		Very good.....05 Good.....04 Fair.....03 Bad.....02 Very bad.....01		Extremely satisfied.....05 Very satisfied.....04 Somewhat satisfied.....03 Not very satisfied.....02 Not at all satisfied.....01	
Response	14.1.1 Cooking		14.1.2		14.1.3		14.1.4		14.1.5		14.1.6	
	14.2.1 Children's studies		14.2.2		14.2.3		14.2.4		14.2.5		14.2.6	
	14.3.1 Reading / writing by adults		14.3.2		14.3.3		14.3.4		14.3.5		14.3.6	
	14.4.1 Eating dinner		14.4.2		14.4.3		14.4.4		14.4.5		14.4.6	
	14.5.1 Other -		14.5.2		14.5.3		14.5.4		14.5.5		14.5.6	

No.	Question	Code	Response	Instruction
Q15.1	In the past 6 months have you used an LPG-based lamp (Petromax) for lighting?	Yes.....01		**CONTINUE**
		No.....02		**SKIP TO Q17**
Q15.2	How often do you fill gas in the lamp?			**RECORD RESPONSE**

Instructions to Interviewer

1) Ask the following questions to the male respondent.

No.					***Ask the following questions to the female respondent***	
Question Q16	What are the activities that you have done when you used an LPG-based lamp for lighting?	Where do these activities take place?	How would you rate the quality of an LPG-based lamp to perform these activities?	How satisfied are you with the light from an LPG-based lamp to perform these activities?	How would you rate the quality of an LPG-based lamp to perform these activities?	How satisfied are you with the light from an LPG-based lamp to perform these activities?
	Cooking.....01 Children's studies.....02 Reading / writing by adults.....03 Eating dinner.....04 Other (specify)...05	Kitchen.....01 Room.....02 In the open....03 Other.....04	Very good.....05 Good.....04 Fair.....03 Bad.....02 Very bad.....01	Extremely satisfied.....05 Very satisfied.....04 Somewhat satisfied.....03 Not very satisfied.....02 Not at all satisfied.....01	Very good.....05 Good.....04 Fair.....03 Bad.....02 Very bad.....01	Extremely satisfied.....05 Very satisfied.....04 Somewhat satisfied.....03 Not very satisfied.....02 Not at all satisfied.....01
Response	16.1.1 Cooking	16.1.2	16.1.3	16.1.4	16.1.5	16.1.6
	16.2.1 Children's	16.2.2	16.2.3	16.2.4	16.2.5	16.2.6

	studies											
	16.3.1 Reading / writing by adults		16.3.2		16.3.3		16.3.4		16.3.5		16.3.6	
	16.4.1 Eating dinner		16.4.2		16.4.3		16.4.4		16.4.5		16.4.6	
	16.5.1 Other -		16.5.2		16.5.3		16.5.4		16.5.5		16.5.6	

No.	Question	Code	Response	Instruction
Q17	In the past 6 months have you used a rechargeable LED torch / light for lighting?	Yes.....01		**CONTINUE**
		No.....02		**SKIP TO Q19**

Instructions to Interviewer

2) *Ask the following questions to the male respondent.*

No.					***Ask the following questions to the female respondent***	
Question Q18	What are the activities that you have done when you used a rechargeable LED torch / light for lighting?	Where do these activities take place?	How would you rate the quality of a rechargeable LED torch / light to perform these activities?	How satisfied are you with the light from a rechargeable LED torch / light to perform these activities?	How would you rate the quality of a rechargeable LED torch / light to perform these activities?	How satisfied are you with the light from a rechargeable LED torch / light to perform these activities?
	Cooking.....01 Children's studies.....02 Reading / writing by adults.....03 Eating dinner.....04 Other (specify).....05	Kitchen.....01 Room.....02 In the open....03 Other.....04	Very good.....05 Good.....04 Fair.....03 Bad.....02 Very bad.....01	Extremely satisfied.....05 Very satisfied.....04 Somewhat satisfied.....03 Not very satisfied.....02 Not at all satisfied.....01	Very good.....05 Good.....04 Fair.....03 Bad.....02 Very bad.....01	Extremely satisfied.....05 Very satisfied.....04 Somewhat satisfied.....03 Not very satisfied.....02 Not at all

											satisfied.....01	
Response	18.1.1 Cooking		18.1.2		18.1.3		18.1.4		18.1.5		18.1.6	
	18.2.1 Children's studies		18.2.2		18.2.3		18.2.4		18.2.5		18.2.6	
	18.3.1 Reading / writing by adults		18.3.2		18.3.3		18.3.4		18.3.5		18.3.6	
	18.4.1 Eating dinner		18.4.2		18.4.3		18.4.4		18.4.5		18.4.6	
	18.5.1 Other -		18.5.2		18.5.3		18.5.4		18.5.5		18.5.6	

No.	**Question**	**Code**	**Response**	**Instruction**
Q19	In the past 6 months have you used a kerosene lamp for lighting?	Yes.....01		**CONTINUE**
		No.....02		**SKIP TO Q22.1**

No.						
Question 20		Which type of kerosene lamps do you use?	What are the oil carrying capacities of your kerosene lamps?	Once filled, how many days do they last?	On average, how many kerosene lamps do your household light each day?	On average, how many hours per day do you light kerosene lamps for?
Code				5 days or less.....01 6-10 days.....02 11-15 days.....03		

						16-20 days.....04 21-30 days.....05 More than 30 days.....06					
Response	Wick	20.1.1		20.1.2		20.1.3		20.1.4		20.1.5	
	Hurricane	20.2.1		20.2.2		20.2.3		20.2.4		20.2.5	

Instructions to Interviewer

1) *Ask the following questions to the male respondent.*

No.					***Ask the following questions to the female respondent***	
Question Q21	What are the activities that you have done when you used a kerosene wick / lamp for lighting?	Where do these activities take place?	How would you rate the quality of a kerosene wick / lamp to perform these activities?	How satisfied are you with the light from a kerosene wick / lamp to perform these activities?	How would you rate the quality of a kerosene wick / lamp to perform these activities?	How satisfied are you with the light from a kerosene wick / lamp to perform these activities?
	Cooking.....01 Children's studies.....02 Reading / writing by adults.....03 Eating dinner.....04 Other (specify).....05	Kitchen.....01 Room.....02 In the open....03 Other.....04	Very good.....05 Good.....04 Fair.....03 Bad.....02 Very bad.....01	Extremely satisfied.....05 Very satisfied.....04 Somewhat satisfied.....03 Not very satisfied.....02 Not at all satisfied.....01	Very good.....05 Good.....04 Fair.....03 Bad.....02 Very bad.....01	Extremely satisfied.....05 Very satisfied.....04 Somewhat satisfied.....03 Not very satisfied.....02 Not at all satisfied.....01
Response	21.1.1 Cooking	21.1.2	21.1.3	21.1.4	21.1.5	21.1.6
	21.2.1	21.2.2	21.2.3	21.2.4	21.2.5	21.2.6

	Children's studies											
	21.3.1 Reading / writing by adults		21.3.2		21.3.3		21.3.4		21.3.5		21.3.6	
	21.4.1 Eating dinner		21.4.2		21.4.3		21.4.4		21.4.5		21.4.6	
	21.5.1 Other -		21.5.2		21.5.3		21.5.4		21.5.5		21.5.6	

No.	Question	Code	Response	Instruction
Q22.1	In the past 6 months have you used any other fuel for lighting?	Yes (please specify).....01		**CONTINUE**
		No.....02		**SKIP TO Q24.1**
Q22.2	In the past month, what was your expenditure on this fuel?			**RECORD RESPONSE**

Instructions to Interviewer

1) *Ask the following questions to the male respondent.*

No.					***Ask the following questions to the female respondent***	
Question Q23	What are the activities that you have done when you have used this fuel for lighting?	Where do these activities take place?	How would you rate the quality of this fuel to perform these activities?	How satisfied are you with the light from this fuel to perform these activities?	How would you rate the quality of this fuel to perform these activities?	How satisfied are you with the light from this fuel to perform these activities?
	Cooking.....01	Kitchen.....01	Very good.....05	Extremely satisfied.....05	Very good.....05	Extremely

	Children's studies.....02 Reading / writing by adults.....03 Eating dinner.....04 Other (specify)...05		Room.....02 In the open....03 Other.....04		Good.....04 Fair.....03 Bad.....02 Very bad.....01		Very satisfied.....04 Somewhat satisfied.....03 Not very satisfied.....02 Not at all satisfied.....01		Good.....04 Fair.....03 Bad.....02 Very bad.....01		satisfied.....05 Very satisfied..04 Somewhat satisfied.....03 Not very satisfied.....02 Not at all satisfied.....01	
Response	23.1.1 Cooking		23.1.2		23.1.3		23.1.4		23.1.5		23.1.6	
	23.2.1 Children's studies		23.2.2		23.2.3		23.2.4		23.2.5		23.2.6	
	23.3.1 Reading / writing by adults		23.3.2		23.3.3		23.3.4		23.3.5		23.3.6	
	23.4.1 Eating dinner		23.4.2		23.4.3		23.4.4		23.4.5		23.4.6	
	23.5.1 Other -		23.5.2		23.5.3		23.5.4		23.5.5		23.5.6	

No.	Question	Code	Response	Instruction
Q24.1	Have you used the lights powered by your Simpa system for any economic activity at home?	Yes.....01		**CONTINUE**

		No.....02		**SKIP TO Q24.3.1**
Q24.2	What is the activity?			**RECORD RESPONSE**
Q24.3.1 24.3.2 24.3.3 24.3.4 24.3.5 24.3.6	Which of the following appliances do you use your Simpa system for?	Mobile.....01 Other (specify)...02		**MULTIPLE CODES POSSIBLE**

No.Q25		
Question		To what extent do you agree with the statement that [STATEMENT]?
Code		Fully Agree……01 Agree.....……02 Neither Agree Nor Disagree……..03 Disagree….....……04 Fully Disagree……05
Statements Q25.1	In general, I am among the first in my circle of friends and relatives to buy a new type of energy product when it appears.	
Q25.2	If I heard that a new type of energy product was available in the store, I would be interested enough to buy it.	
Q25.3	Compared to my friends and relatives, I own many types of energy products.	
Q25.4	In general I am the first in my circle of friends and relatives to know the brands of the latest energy	

	technologies.	
Q25.5	I will buy a new energy product even if I haven't heard of or tried it before.	
Q25.6	I like to buy new energy products before other people do.	

SECTION 2:Health Concerns

No.	Question	Code	Response	Instruction
Q26.1.1 **26.1.2** **26.1.3** **26.1.4**	Which of the following problems have you experienced in the past 6 months? **(Record aided)**	Respiratory Infection....01 Eye irritation due to smoke.....02 Breathing problems.....03 None of them.....04		**MULTIPLE CODES POSSIBLE**
Q26.2	In the past 6 months have you experienced any accident caused by using lighting sources such as kerosene, candles or a generator?	Yes.....01		**CONTINUE**
		No.....02		**SKIP TO Q27.1**
Q26.3.1 **26.3.2** **26.3.3** **26.3.4**	What is the nature of these accidents?	Fire.....01 Severe burn.....02 Tripping over lighting device.....03 Other (specify).....04		**MULTIPLE CODES POSSIBLE**
Q26.4	Have any of these accidents happened more than once in the past 6 months?	If yes, record accident code and the number of times the accident		

		happened.		

SECTION 3:Household Information

No.	Question	Code	Response	Instruction
Q27.1	Have any members of your household worked as labourers in the past 12 months? (Include members not present at the time of the survey)	Yes.....01		**CONTINUE**
		No.....02		**SKIP TO Q29.1**
Q27.2	How many of your household members have worked as labourers in the past 12 months?			**RECORD RESPONSE**

No.												
Question Q28	For how many months was this person resident in this house in the past 12 months?			What is the type of labour this person performed?		How was this person paid?		How much was this person paid per day for this work?		How many days in a month did this person do this work?		How many months in a year did this person do this work?	
Code	Use 1 row for each household member. The total number of rows should be equal to the response to Q 27.2		According to the criteria, is this person a member of the household? Yes.....01 No.....02										
Response	28.1.1		28.1.2		28.1.3		28.1.4		28.1.5		28.1.6		28.1.7	
	28.2.1		28.2.2		28.2.3		28.2.4		28.2.5		28.2.6		28.2.7	
	28.3.1		28.3.2		28.3.3		28.3.4		28.3.5		28.3.6		28.3.7	
	28.4.1		28.4.2		28.4.3		28.4.4		28.4.5		28.4.6		28.4.7	
	28.5.1		28.5.2		28.5.3		28.5.4		28.5.5		28.5.6		28.5.7	

	28.6.1		28.6.2		28.6.3		28.6.4		28.6.5		28.6.6		28.6.7	
	28.7.1		28.7.2		28.7.3		28.7.4		28.7.5		28.7.6		28.7.7	
	28.8.1		28.8.2		28.8.3		28.8.4		28.8.5		28.8.6		28.8.7	

No.	Question	Code	Response	Instruction
Q29.1	Have any members of your household held a salaried position in the past 12 months? (Include members not present at the time of the survey)	Yes.....01		**CONTINUE**
		No.....02		**SKIP TO Q30**
Q29.2	How many of your household members have held salaried positions in the past 12 months?			**RECORD RESPONSE**

No.								
Question Q29	For how many months was this person resident in this house in the past 12 months?		According to the criteria, is this person a member of the household? Yes.....01 No.....02		What is this person's salary per month?		How long has this person been working for this employer?	
Code	Use 1 row for each household member. The total number of rows should be equal to the response to Q29.2							
Response	29.1.1		29.1.2		29.1.3		29.1.4	
	29.2.1		29.2.2		29.2.3		29.2.4	
	29.3.1		29.3.2		29.3.3		29.3.4	
	29.4.1		29.4.2		29.4.3		29.4.4	
	29.5.1		29.5.2		29.5.3		29.5.4	
	29.6.1		29.6.2		29.6.3		29.6.4	
	29.7.1		29.7.2		29.7.3		29.7.4	
	29.8.1		29.8.2		29.8.3		29.8.4	

No.	Question	Code	Response	Instruction

Q30	Does your household cultivate its own land?	Yes.....01		**CONTINUE**
		No.....02		**SKIP TO Q32.1**

No.										
Question Q31	What crops did you cultivate in the past 12 months?		How many times did you harvest this crop in the past 12 months?		What was the yield in quintals per harvest?		What price did you sell the crop at per quintal?		What were your expenditures per quintal?	
Code										
Response	31.1.1 Wheat		31.1.2		31.1.3		31.1.4		31.1.5	
	31.2.1 Rice		31.2.2		31.2.3		31.2.4		31.2.5	
	31.3.1 Pulses		31.3.2		31.3.3		31.3.4		31.3.5	
	31.4.1 Oil seeds		31.4.2		31.4.3		31.4.4		31.4.5	
	31.5.1 Potatoes		31.5.2		31.5.3		31.5.4		31.5.5	
	31.6.1 Sugarcane		31.6.2		31.6.3		31.6.4		31.6.5	
	31.7.1 Other		31.7.2		31.7.3		31.7.4		31.7.5	

No.	**Question**	**Code**	**Response**	**Instruction**
Q32.1	Have any members of your household worked in their own business in the past 12 months? (Include members not present at the time of the survey)	Yes.....01		**CONTINUE**
		No.....02		**SKIP TO Q34**
Q32.2	How many of your household members have worked in their own business in the past 12 months?			**RECORD RESPONSE**

No.										
Question Q33	For how many months was this person resident in this house in the past 12 months?									
Code	Use 1 row for each household member. The total number of rows should be equal to the response to Q32.2		According to the criteria, is this person a member of the household? Yes.....01 No.....02		What is the business that your household member(s) work in? (Response)		How much does the business earn per month (i.e. earnings net of expenses)? (Response)		When was this business started? (Response)	
Response	33.1.1		33.1.2		33.1.3		33.1.4		33.1.5	
	33.2.1		33.2.2		33.2.3		33.2.4		33.2.5	
	33.3.1		33.3.2		33.3.3		33.3.4		33.3.5	
	33.4.1		33.4.2		33.4.3		33.4.4		33.4.5	
	33.5.1		33.5.2		33.5.3		33.5.4		33.5.5	
	33.6.1		33.6.2		33.6.3		33.6.4		33.6.5	
	33.7.1		33.7.2		33.7.3		33.7.4		33.7.5	
	33.8.1		33.8.2		33.8.3		33.8.4		33.8.5	

No. Q34				
Question	In the last month, what were your 3 most important expenses?		What was the expenditure on each?	
Code				
Response	34.1.1		34.1.2	
	34.2.1		34.2.2	
	34.3.1		34.3.2	

No.	**Question**	**Code**	**Response**	**Instruction**
Q35.1	In the last month, to what extent were you able to meet the expenses that you mentioned?	Fully.....01 Partially.....02 Not at all.....03		**SINGLE CODE ONLY**

Q35.2	In the last month, what was your total household expenditure on kerosene?			**RECORD RESPONSE**
Q35.3	What were your household savings in the last month?			**RECORD RESPONSE**
Q35.4	Does anyone in your household have a bank account?	Yes.....01 No.....02		**SINGLE CODE ONLY**
Q35.5	Is anyone in your household currently repaying a loan?	Yes.....01		**CONTINUE**
		No.....02		**SKIP TO Q37.1**

No. Q36						
Question	What is the monthly repayment for each loan?		What is the source of each loan?		What is the purpose of each loan?	
Code						
Response	36.1.1		36.1.2		36.1.3	
	36.2.1		36.2.2		36.2.3	
	36.3.1		36.3.2		36.3.3	
	36.4.1		36.4.2		36.4.3	

SECTION 4:Feedback on Simpa

No.	Question	Code	Response	Instruction
Q37.1	Which of the following aspects of your Simpa system are you most satisfied with? **(Record aided)**	I am not satisfied with any aspect of my Simpa system.....01 I pay in instalments so it is affordable.....02 I don't have to buy all the parts separately.....03 I don't have to travel to buy the system, recharge or service it.....04 Once I pay, my system recharges		**SINGLE CODE ONLY**

		immediately....05 There is a warranty and servicing is free.....06 Customer service resolves my complaints quickly.....07 Other (specify).....08		
Q37.2	Which of the following aspects of your Simpa system are you least satisfied with? (Record aided)	I am not dissatisfied with any aspect of my Simpa system.....01 It is too expensive.....02 I cannot buy the parts separately.....03 I cannot use it to run other appliances (e.g. TV, fridge, another fan).....04 It takes a long time for my system to recharge after I pay.....05 Customer service is not responsive.....06 Other (specify).....07		**SINGLE CODE ONLY**
Q37.3	How many hours does your system run for?			**RECORD RESPONSE**
Q37.4	How does this compare to your expectations?	Exceeds expectations.....01 Meets expectations.....02 Below expectations.....03		**SINGLE CODE ONLY**
Q37.5	How does the performance of the fan compare to your expectations?	Exceeds expectations.....01 Meets expectations.....02 Below expectations.....03		**SINGLE CODE ONLY**
Q37.6	How satisfied are you with the position of the Simpa lights and fan in your house?	Fully satisfied.....05 Satisfied.....04 Neither satisfied nor dissatisfied.....03 Dissatisfied.....02 Fully dissatisfied.....01		**SINGLE CODE ONLY**
Q37.7	Have you ever made a complaint to customer service?	Yes.....01		**CONTINUE**
		No.....02		**SKIP TO Q37.9**
Q37.8	How satisfied are you with Simpa's customer service?	Fully satisfied.....05 Satisfied.....04		**SINGLE CODE**

		Neither satisfied nor dissatisfied.....03 Dissatisfied.....02 Fully dissatisfied.....01		**ONLY**
Q37.9	Would you recommend Simpa to others?	Yes.....01		**CONTINUE**
		No.....02		**TERMINATE**
Q38.1 **Q38.2** **Q38.3** **Q38.4** **Q38.5**	What would you tell others about Simpa? (Record aided)	The instalment / credit model makes it affordable.....01 It is convenient to buy, recharge and get serviced.....02 There is a warranty and servicing is free.....03 Simpa provides higher quality than other solar companies.....04 Other (specify).....05		**MULTIPLE CODES POSSIBLE**
	Is there anything else that you want to tell us?			**USE BACK OF THE PAGE IF YOU NEED MORE SPACE**

Definition of household: A group of people who normally live and eat their meals together. For the purposes of this survey, "normally" is taken to mean that the person concerned has lived in the household for at least three of the past twelve months.

1. The only exceptions to be made to this rule should be for: (i) persons who are the main provider for the household; and (ii) newlyweds.

2. Servants, lodgers, farm-workers, and other such individuals who live and take meals with the household are to be counted as household members, even though they may have no blood relation to the household head.

It is very important that you define the household membership strictly according to the criteria outlined above. These guidelines may not be the same as others you may be familiar with from other surveys, and at times they may not conform to the household's own notion of who should be considered to be a household member. Please discuss any questions that arise in the field with your supervisor.

UrjaMitra Survey

We are conducting a study to understand your experience as an UM. We would be grateful if you could spare us some time. There are no right or wrong answers, and we would just like your honest responses. While we will be sharing some of this information with Simpa, please be assured that your name will not be associated in any way with the information you have provided. No-one will contact you to sell you anything based on this information.

Respondent agrees to be interviewed .....→.....**1** **CONTINUE**

Respondent does not agree to be interviewed.....→.....**2** **END**

Name of UM											
Address											
Block Name											
Village Name											
Pincode											
Mobile No.	0										
State	Uttar Pradesh	1	District								

Interview Details

Date of Interview			Interviewer's Name			
Duration of Interview (In Mins)			Starting Time of Interview			
Quality Check	Accompaniment		Back Checked		Scrutinized	
Supervisor	1		1		1	
Field Head	2		2		2	

No.Q1		
Question		To what extent do you agree with the statement that [STATEMENT]?
Code		Fully Agree……01 Somewhat Agree……02

		Neither Agree Nor Disagree……03 Somewhat Disagree……04 Fully Disagree……05
Statements Q1.1	In general, I am among the first in my circle of friends and relatives to buy a new type of energy product when it appears.	
Q1.2	If I heard that a new type of energy product was available in the store, I would be interested enough to buy it.	
Q1.3	Compared to my friends and relatives, I own many types of energy products.	
Q1.4	In general I am the first in my circle of friends and relatives to know the brands of the latest energy technologies.	
Q1.5	I will buy a new energy product even if I haven't heard of or tried it before.	
Q1.6	I like to buy new energy products before other people do.	

No.	Question	Code	Response	Instruction
Q2	Before you first heard about Simpa, what was your exposure to solar energy?	I had not heard of solar……01 I had heard of solar but not seen any products…02 I had seen other solar products……03 I had used another solar product……04		**SINGLE CODE ONLY**
Q3	In how many villages have you tried to sell a Simpa system?			**RECORD RESPONSE**
Q4	On average, how many hours of electricity per day do those villages get?			**RECORD RESPONSE**

Q5	Do you think their electricity supply will improve in the future?	Yes……01 No……02		**SINGLE CODE ONLY**
Q6	In how many of those villages had they heard of solar energy before?			**RECORD RESPONSE**
Q7	In how many of those villages had they seen a solar product before?			**RECORD RESPONSE**
Q8.1 **Q8.2**	As an UM, how can you earn commissions from Simpa?	Through selling systems……01 Through recharges……02		**MULTIPLE CODES POSSIBLE**
Q9	Which of the following factors will most influence whether your customers recharge their systems in the future? **(Record Aided)**	How much money they have at the time……01 How well their system has been working……02 How convenient it is for them to recharge……03 Changes in the weather……04 How insistent Simpa and the UM are……05 Other (specify)……06		**SINGLE CODE ONLY**
Q10	What do you think is the biggest competitor to Simpa systems (solar or non-solar)?			**RECORD RESPONSE**
Q11 - **Q11.1** **Q11.2** **Q11.3** **Q11.4** **Q11.5** **Q11.6** **Q11.7** **Q11.8** **Q11.9** **Q11.10**	Which of the following are the advantages to you of being an UM? **(Record Aided)**	There are no advantages to being an UM……01 I can sell systems alongside my other activities…02 When I provide my customers with an additional product it increases the goodwill that they have for me……..03 The more I work, the more I am rewarded through commissions and prizes……04 I am rewarded in the form of commissions and prizes…..05 It makes me feel good to benefit my customers and serve society……06 More people in my village and neighboring villages have a good impression of me……07 I like making productive use of my time……08 The reputation of my village has increased because we have solar……09		**MULTIPLE CODES POSSIBLE**

Q11.11		I have brought something new to my customers…10 Other (specify)……11		
Q12	Of the advantages that you mentioned, which is most important to you?			**SINGLE CODE ONLY**
Q13 - **Q13.1** **Q13.2** **Q13.3** **Q13.4** **Q13.5** **Q13.6**	Which of the following are the advantages to you of being associated with the Simpa company? **(Record Aided)**	There are no advantages to being associated with the Simpa company……01 Being an UM is the first step towards other opportunities with Simpa (e.g. sevamitra, RSA)…02 I enjoy attending events Simpa organizes for its team…..03 I like receiving visitors from Simpa's offices in Bangalore and other places……04 I want to be known by Simpa's senior management for my performance……05 Other (specify)……06		**MULTIPLE CODES POSSIBLE**
Q14 - **Q14.1** **Q14.2** **Q14.3** **Q14.4** **Q14.5** **Q14.6** **Q14.7**	Which of the following are the disadvantages to you of being an UM? **(Record Aided)**	There are no disadvantages to being an UM……01 I do not receive a fixed income……02 Being a recharge agent is not attractive financially.03 When my customers are dissatisfied it affects my reputation……04 I don't receive my commissions and/ prizes on time……..05 Due to some changes made by Simpa, I have not received the prizes that I believed that I would…06 Other (specify)……07		**MULTIPLE CODES POSSIBLE**
Q14.8	If the Simpa offering remains as it is, what changes do you expect in demand over the next 6 months? **(Record Aided)**	It will increase continuously……01 It will increase initially and then reduce……02 It will decrease continuously……03		**SINGLE CODE ONLY**
Q15 - **Q15.1** **Q15.2** **Q15.3** **Q15.4**	Over the past 12 months, what are the types of work that you have done?	Casual labor (farm and non-farm)……01 Salaried employment (specify position)……02 Own farm activities……03 Own business (specify)……04		**MULTIPLE CODES POSSIBLE**
Q16	When you are working, do you spend	Travelling……01		**SINGLE**

	most of your time travelling or at a fixed location?	At a fixed location……02		**CODE ONLY**
Q17	Approximately what percentage of your working hours do you spend on Simpa?			**RECORD RESPONSE**
Q18	How much agricultural land does your household own?			**RECORD AMOUNT AND UNIT**
Q19	What is your level of education?	Illiterate……01 Literate but without formal schooling……02 Less than primary……03 Primary……04 Middle……05 Matriculate……06 Intermediate……07 B.A./B.Sc……08 M.A./M.Sc……09 Professional degree……10 Diploma……11		**SINGLE CODE ONLY**
Q20	What is your approximate age?			**RECORD RESPONSE**
Q21		Record gender of UrjaMitra. Male……01 Female……02		**SINGLE CODE ONLY**
Q22	Is there anything else that you want to tell us?			**USE REST OF THE PAGE IF YOU NEED MORE SPACE**

UrjaMitra Interview Guide

We are conducting a study to understand your experience as an UM. We would be grateful if you could spare us some time. There are no right or wrong answers, and we would just like your honest responses. While we will be sharing some of this information with Simpa, please be assured that your name will not be associated in any way with the information you have provided. No-one will contact you to sell you anything based on this information.

Can we talk to you?

Can we record our conversation?

1. How did you become an UM?

2. Why did you become an UM?

3. What are the ways in which you earn commissions from Simpa?

4. How has your experience compared to your initial expectations?

5. Has it been easy or difficult to earn commissions?

6. Do you think this will change in the future? Why or why not?

7. Are you interested in continuing to be an UM? If yes, why?

8. Other than being an UM, what is the other work you do?

9. Do you work from a fixed location, or do you travel?

10. Is there anything else you want to tell us about being an UM?

ANNEX IV: SOURCES OF INFORMATION

Persons interviewed

- 5 UrjaMitras in Hathras district, and 6 UrjaMitras in Aligarh district

Project documents

- 2012 Application for Prepaid Energy Project by Simpa Networks
- Milestone Reports (since 2013)
- Comparison Of Simpa To Other Products, Simpa Networks 2014

ANNEX VI: DISCLOSURE OF ANY CONFLICTS OF INTEREST

Name	Devyani Srinivasan
Title	Senior Consultant
Organization	Probex Management Consulting (P) Ltd.
Evaluation Position?	☒ Team Leader ☐ Team member
Evaluation Award Number *(contract or other instrument)*	
USAID Project(s) Evaluated *(Include project name(s), implementer name(s) and award number(s), if applicable)*	"Prepaid Energy – Pricing Electricity for India's 75 Million Un-Electrified Households", Simpa Networks, AID-OAA-F-13-00028
I have real or potential conflicts of interest to disclose.	☐ Yes ☒ No
If yes answered above, I disclose the following facts: *Real or potential conflicts of interest may include, but are not limited to:* 1. *Close family member who is an employee of the USAID operating unit managing the project(s) being evaluated or the implementing organization(s) whose project(s) are being evaluated.* 2. *Financial interest that is direct, or is significant though indirect, in the implementing organization(s) whose projects are being evaluated or in the outcome of the evaluation.* 3. *Current or previous direct or significant though indirect experience with the project(s) being evaluated, including involvement in the project design or previous iterations of the project.* 4. *Current or previous work experience or seeking employment with the USAID operating unit managing the evaluation or the implementing organization(s) whose project(s) are being evaluated.* 5. *Current or previous work experience with an organization that may be seen as an industry competitor with the implementing organization(s) whose project(s) are being evaluated.* 6. *Preconceived ideas toward individuals, groups, organizations, or objectives of the particular projects and organizations being evaluated that could bias the evaluation.*	

I certify (1) that I have completed this disclosure form fully and to the best of my ability and (2) that I will update this disclosure form promptly if relevant circumstances change. If I gain access to proprietary information of other companies, then I agree to protect their information from unauthorized use or disclosure for as long as it remains proprietary and refrain from using the information for any purpose other than that for which it was furnished.

Signature	Devyani Srinivasan
Date	23/10/14

U.S. Agency for International Development
1300 Pennsylvania Avenue, NW
Washington, DC 20523

End-term Evaluation of the Prepaid Solar Energy Project, a for-profit approach to the twin challenges of technology and financing in Uttar Pradesh, India

About Simpa Networks

- Simpa Networks sells solar-as-a-service to energy-poor rural households and micro-enterprises
- Provides solar home systems on a pay-as-you-go basis
- Systems are sold by Urja Mitras or “Energy Friends”, local village level entrepreneurs who are independent agents for Simpa

Purpose of the USAID-supported Evaluation

Simpa received support from USAID's Development Innovation Ventures to:

- Scale up to 12,000 systems by May 2015
- Conduct an evaluation to inform its product, service and scaling strategy in the future

Project Background

- In India at least 400 million people are without reliable access to electricity
- Instead, they rely on traditional fuels, kerosene, candles and batteries

Project Background

Clean energy technologies available to customers today:

- Small-scale solar lanterns
- Pico-solar home systems
- Larger installed solar home systems
- Community scale solar
- Biomass electricity micro-grids
- Solar-hybrid UPS/inverter solutions for homes and businesses

Project Background

- The problem is that most of these solutions involve significant up-front costs and therefore must be financed
- Simpa provides in-house customer financing
- Avoids a lengthy, complicated (for Simpa and its customers) loan application process with financial institutions
- Makes Simpa's systems affordable for a wider range of customers

Simpa's Logic Model

Inputs	Activities	Outputs	Outcomes	Impact
Product - solar	Product integration	Systems installed	Systems used / energy paid for and consumed	Improvements in well-being of consumer households
People	Product development			
Capital	Training			
	Risk assessment			
	Sales			
	After-sales service			
	Research			

Evaluation Questions

1. Who are Simpa's customers? What is the value proposition of Simpa's solar model and energy services for them?

2. What are the impacts of the program? To what extent are these impacts attributable to Simpa?

3. What motivates Urja Mitras to sell? What is the value proposition of Simpa for them?

4. How cost-effective are Simpa's solar model and energy services for customers?

Evaluation Design, Methods and Tools

- Evaluating cost-effectiveness and impact requires establishing causality, the value proposition does not
- Random selection and assignment not possible
- Customers: quasi-experimental design matching them to non-customers
- Urja Mitras: pretest-posttest design
- Qualitative methods: interviews of Urja Mitras
- Quantitative methods: surveys of customers, non-customers and Urja Mitras

Data Collection Time Period	Tools	Respondents
November 2013 – February 2014	Surveys	Customers and Non-customers
June – November 2014	Interviews and Surveys	Customers and Urja Mitras
May – June 2015 (end term)	Surveys	Customers, Non-customers and Urja Mitras

End Term Sample Sizes

Evaluation Question	Treatment Group (Customers) Sample Size	Comparison Group (Non-Customers) Sample Size
Who are Simpa's customers? What is the value proposition of Simpa's solar model and energy services for them?	321	407
What are the impacts of the program? To what extent are these impacts attributable to Simpa?	321	407
What motivates Urja Mitras to sell? What is the value proposition of Simpa for them?	258	N/A
How cost-effective are Simpa's solar model and energy services for customers?	321	407

Replacing And Matching The Comparison Group

- Only 40 solar lantern users and 30 non-solar users who were surveyed at the time of the baseline could be surveyed again
- Both solar lantern users and non-solar users were recruited for the end-line to match customers, using no. of family members and no. of rooms as the variables
- Additional criteria related to the purchase and use of the lantern were used to recruit solar lantern users
- However, the replacement samples for the comparison group do not resemble customers in terms of access to electricity

Other Limitations And Bias

External validity:

- The end-line includes replacement samples, and they have not been compared to the population using the SEC
- Generalizing results beyond India is even more difficult
- Margin of error for end-line UM survey is 5.8%
- Margin of error for end-line customer survey is 5.4%

Internal validity:

- Selection bias
- Lack of variability in some indicators

Choice of methods:

- Observational methods may have been better for data that is difficult to recall

What motivates Urja Mitras to sell? What is the value proposition of Simpa for them?

Changes in UM Performance

- Based on the experience of Simpa's management team across other industries it was expected that only 10%-20% of Urja Mitras that were recruited will remain productive after 1 year
- The performance of Urja Mitras has supported that expectation
- Simpa wants to improve performance on this metric because the company wants to have long term relationships with its customers and believes that Urja Mitras can play a key role in that

Changes in UM Motivations and Performance

- Most Urja Mitras whose 1st sale was between June 2013 and March 2015 have become inactive
- They now say that demand for Simpa will increase initially and then reduce
- Their reasoning seems to be that this will be due to dissatisfied customers, rather than market saturation
- Rewards through commissions and prizes is no longer the most important benefit
- Conversely, serving society has become more important

UM Performance

- 1485 Urja Mitras made their 1st sale between June 2013 and March 2015
- Of these, 996 (65%) had not made a sale between January and April 2015

Demand Predictions By Urja Mitras

Prediction	End-line		Midline		Difference
	No. Of Urja Mitras	%	No. Of Urja Mitras	%	End-line % - Midline %
Will increase continuously	84	33	260	82.3	-49
Will increase initially and then reduce	121	47	48	15.2	32
Will decrease continuously	50	20	8	2.5	17
Total	255	100	316	100	

Disadvantages Of Being An Urja Mitra

- 30% increase in Urja Mitras who say that, “dissatisfied customers affect my reputation” (single largest increase)
- 46% decrease in Urja Mitras who say that they face no disadvantages

Advantages Of Being An Urja Mitra

- 11% decrease in Urja Mitras who say that rewards through commissions and prizes are the most important benefit (from 1st to 2nd in rank)
- 28% increase in Urja Mitras who say that serving society is the most important benefit (from 5th to 1st in rank)
- 22% increase in Urja Mitras who listed serving society as a benefit at all (single largest increase)

Other Considerations For Urja Mitras

- 72.3% of Urja Mitras have at least one additional occupation
- Despite multiple attempts, it has been difficult to classify these occupations accurately
- However, less than 10% of Urja Mitras stated their additional occupation as farming

Who are Simpa's customers? What is the value proposition of Simpa's solar model and energy services for them?

Customers' Ability To Make Payments Over Time

- Most customers have not faced an issue with the balance available at the payment point, and this is not a reason that PAR customers don't pay
- Distance to the payment point may be 1 reason that PAR customers don't pay, but it is not the only one
- All PAR customers pass the payment point at least once every few weeks, but non-PAR customers are more likely to pass it every day
- However, accessibility of the payment point doesn't seem related to whether customers pay off their systems earlier
- For customers who have traveled to recharge their systems, the average distance is 5.7 km
- Motorbike is the most frequent mode of travel to the payment point

Flexibility In Payments

- A majority of customers say that they only earn income at certain times of year, and income changes significantly from one year to the next (typical of agriculture)
- Therefore flexibility in payment is likely to be important
- However, 38.7% of households earn some income throughout the year, and approximately half said that they set aside money every month to recharge

Distance Travelled To Recharge

Type Of Customer	Number Of Customers	Average Distance Travelled (km)
PAR	41	11.0
Paid-off	27	4.4
Non-PAR-In-Use	94	4.8
Total	162	5.7

Question: How far in km did you travel [to recharge your system]?

Frequency Of Passing The Payment Point

	PAR Customers		Non-PAR-In-Use Customers		Difference (in %)
	No. Of Customers	%	No. Of Customers	%	
Daily	16	40	54	57.4	-17.4
Weekly	12	30	20	21.3	8.7
Every few weeks	12	30	18	19.1	10.9
Never or almost never			2	2.1	-2.1
Total	40	100	94	100	0

Customer Satisfaction

- Most customers are satisfied with their Simpa systems overall
- However, PAR customers are less satisfied than on average
- In addition, customers were less satisfied with the performance of the fan at the time of the end-line than the midline (different seasons)
- Of the customers who said they would recommend Simpa to others, the most commonly chosen reason was because solar technology doesn't cause smoke or fires (option not available in midline)
- The 2nd most common reason was that Simpa provides better quality than other solar companies
- Other than quality, the specific value proposition of Simpa is not clear (especially when compared to the midline)
- It is clear that they are dissatisfied that it cannot be used to run other appliances

Customer Service

- In the end-line survey, customers were asked about Simpa's service on the phone and by the technician
- More customers were fully satisfied with the technician, but otherwise there were few discernible differences between the 2 scores

Overall Satisfaction

Type Of Customer	Number Of Customers	Average Satisfaction Rating
PAR	75	3.88
All	319	4.06

Questions:

How satisfied are you with the service you received on the phone?

How satisfied are you with the service you received from Simpa's technicians?

(Answer choices on a scale of 1-5, with 1 being fully dissatisfied and 5 being fully satisfied)

Comparison Of Fan Performance

	End-line		Midline		Difference
	No. Of Customers	%	No. Of Customers	%	End-line % - Midline %
Exceeds Expectations	13	4.6	57	26.8	-22.2
Meets Expectations	165	58.5	111	52.1	6.4
Below Expectations	104	36.9	45	21.1	15.8
Total	282	100	213	100	0

Reason To Recommend

Reason	Number Of Responses	Percentage Of Total
Affordable	8	2.7
Convenient to buy, recharge or use	116	39.9
Free warranty and servicing	141	48.5
Better quality than other solar companies	174	59.8
No smoke or fire	260	89.3
Helps children study longer	172	59.1
Other	1	0.3
Total Unique Count	291	

Aspects Least Satisfied With

Aspect	Number Of Responses	Percentage Of Total
Not dissatisfied	20	6.3
Too expensive	14	4.4
Cannot buy the parts separately	38	11.9
Cannot be used to run other appliances	268	84.3
Long time to recharge after repayment	28	8.8
Customer service is not responsive	54	17.0
Other	4	1.3
Total Unique Count	318	

Urja Mitras' Perceptions Of The Customer Value Proposition

- Surprisingly, what customers said that they would tell others about Simpa is quite different from what Urja Mitras say that they tell customers
- However, both customers and Urja Mitras say that the system should be able to run other appliances
- When asked what will influence customers to recharge, in the end-line Urja Mitras emphasized system performance
- But Urja Mitras' responses do not indicate any clear reason for low demand / customer dissatisfaction

Comparison Of Perceptions Of The Value Proposition

Rank	Statement Chosen By Customers	Statement Chosen By Urja Mitras
1	No smoke or fire	It will provide energy when there is no electricity (not available to customers as an answer choice)
2	Better quality than other solar companies	It is convenient to buy, recharge and get serviced
3	Helps children study longer	Better quality than other solar companies

Influence On Recharge

Influence On Recharge	End-line		Midline		Difference
	No. Of Urja Mitras	%	No. Of Urja Mitras	%	End-line % - Midline %
How much money they have at the time	21	8.4	86	29.4	-21.0
How well their system has been working	129	51.4	94	32.1	19.3
How convenient it is for them to recharge	75	29.9	94	32.1	-2.2
Changes in the weather	8	3.2	11	3.8	-0.6
How insistent Simpa and the UM are	18	7.2	7	2.4	4.8
Other			1	0.3	-0.3
Total	251	100.0	293	100.0	

Satisfaction With Customer Service

Level Of Satisfaction	On The Phone		By The Technician		Difference (in %)
	No. Of Customers	%	No. Of Customers	%	
Fully Satisfied	32	11.9	56	22.9	-11
Satisfied	152	56.5	121	49.4	7.1
Neither Satisfied Nor Dissatisfied	34	12.6	39	15.9	-3.3
Dissatisfied	42	15.6	25	10.2	5.4
Fully Dissatisfied	9	3.3	4	1.6	1.7
Total	269	100	245	100	0

Customers' Future Expectations

- 90.6% of customers are willing to buy new appliances that run only on their Simpa systems
- The average number of years that customers expect their systems to last is 13.5
- Very few customers are willing to recommend a system that costs more than Rs.15,000 in total

Expectations of System Longevity

Years From Installation	Number Of Customers	Percentage Of Total
Up to 4 years	11	3.5
5 – 7 years	39	12.4
8 – 10 years	124	39.5
11 – 15 years	87	27.7
More than 15 years	53	16.9
Total	314	100

System Price At Which Customers Will Recommend

Maximum Price Of Total System (in rupees)	Number Of Customers	Percentage of Total
Less than or equal to 5,000	5	1.7
5,001 – 7,000	6	2.1
7,001 – 10,000	140	48.4
10,001 – 15,000	127	43.9
> 15,000	11	3.8
Total	289	100

How has the installation of a Simpa system affected customers' perceptions and consumption of energy?

Use Of Simpa

- At the time of the end-line, more customers used Simpa than any other lighting solution for cooking, children's studies and for eating dinner
- At the time of the baseline, more customers used electricity than any other lighting solution for cooking, children's studies and for eating dinner
- Rechargeable LED torches seem to be the most used solution for activities that require a portable light
- 42 customers use their Simpa system for an economic activity, of which 35 use it for a shop

Customers' Ratings Of Solutions

- Both men and women rate the quality of light from their Simpa systems as higher than from any other solution for cooking, children's studies and eating dinner
- Men rate the quality of light from their Simpa systems slightly higher than women do (for the same activities)
- Both men and women rate their satisfaction with the light from their Simpa systems higher than from any other solution for cooking and children's studies
- Men rate their satisfaction with the light from their Simpa systems slightly higher than women do for children's studies, but the opposite is true for cooking
- Men are equally satisfied with the light from their Simpa systems and inverters for eating dinner, but women are more satisfied with their Simpa systems

Average Quality Ratings

Lighting Solution	Cooking		Children's Studies		Eating Dinner	
	Men	Women	Men	Women	Men	Women
Electricity	4.19	4.11	4.15	3.96	4.04	3.97
Inverter	4.31	4.05	4.32	4.05	4.21	4.03
Candle	3.15	3.05			3.17	2.98
Kerosene lamp	3.51	3.17	3.76	3.49	3.37	3.11
Simpa solar system	4.38	4.29	4.36	4.24	4.26	4.21

Question:

How would you rate the quality of [type of lighting solution] for [cooking, children's studies, eating dinner]?

(Answer choices from 1-5, with 1 being very bad and 5 being very good)

Average Satisfaction Ratings

	Cooking		Children's Studies		Eating Dinner	
	Men	Women	Men	Women	Men	Women
Electricity	4.1	4.06	4.02	3.93	3.97	3.95
Inverter	4.1	4.03	4.05	3.97	4.16	4.05
Candle	3.05	3			3.11	2.89
Kerosene lamp	3.38	3.07	3.61	3.56	3.25	3.08
Simpa solar system	4.25	4.27	4.27	4.19	4.15	4.21

Question:

How satisfied are you with the light from the [type of lighting solution] for [cooking, children's studies, eating dinner]?

(Answer choices from 1-5, with 1 being not at all satisfied and 5 being extremely satisfied)

How much do respondents spend on energy?

Expenditure On Lighting Excluding Simpa

- Simpa customers spend an average of Rs.314 per month on lighting solutions other than Simpa
- Both non-solar users and solar lantern users spend less than this, with solar lantern users spending the least
- This seems to correspond to levels of access to electricity among the 3 groups

Lighting Expenditure And Access To Electricity

Type Of Respondent	Average Expenditure Per Month On Lighting (in rupees)	Percentage Of Sample With Access To Electricity
Customers	314*	87
Non-solar users	210	30
Solar users	171	12

Question:

Approximately how much did you spend in total on lighting in the last month?

*Excludes expenditure on Simpa system

Who are Simpa’s competitors, and how do they compare to Simpa?

Competitors to Simpa

- Different types of data on competitors were collected from the customer survey, survey of solar lantern users and survey of Urja Mitras
- From the Urja Mitra survey: While in 2014 almost all Urja Mitras named inverters as the biggest competitor to Simpa, now (2015) more mentioned a solar product or company as the biggest competitor.
- From the customer survey: Among the original sample of customers electricity is the most commonly used lighting solution other than Simpa. The percentage of customers using inverters has increased from the baseline to the end-line.
- No clear trend is discernible in the number of hours of electricity available since the baseline survey. Either the availability of electricity is highly dynamic, or the data is incorrect.
- Almost no Simpa customers use any other solar product.
- The percentage of customers using kerosene and candles has dropped from the baseline to the end-line. Nevertheless, half of the customers at the time of the end-line still use kerosene and a quarter use candles.
- There does not seem to be a correlation between using kerosene and either the size of the family or the number of rooms in the house

Cost Comparison Of Solar Systems And Lanterns

- It was not possible to compare cost : satisfaction ratios for Simpa solar system customers and solar lantern users for multiple reasons
- We had planned to project costs over 5 years as we were interested in long-term impact
- However, as none of the Simpa customers in our sample have purchased annual maintenance contracts, we have no data on any expenditures that they incur for servicing or replacement of parts
- 70 solar lantern users said that they had their lanterns repaired (approximately 30% of the sample), and 66 of them said that they do it once a year. The average amount they spent on repairing their lantern was Rs.56.5.

Comparison Of Satisfaction Ratings

- A comparison of ratings for kerosene by customers and solar lantern users found that customers ratings are higher than solar lantern users
- Therefore, satisfaction with solar systems vs. lanterns is better compared through the relative differences compared to ratings of kerosene, rather than directly

Competitors To Simpa

- Within solar products and companies, the competitor mentioned most often by Urja Mitras was “local solar panel / brand”
- The other companies mentioned were BRIGHT Solar and Korti Solar System

Questions About Solutions Used Overall

For electricity:

- Is the site electrified? (baseline and end-line)

For other lighting solutions:

- What are the various types of fuels currently used for lighting in your house? (baseline)
- In the past 1 month have you used [type of lighting solution] for lighting? (end-line)

Changes In Solutions Used Overall

Solution	End-line (Percentage Of Total)	Baseline (Percentage Of Total)	Difference (End-line % - Baseline %)
Electricity	85.0	91.1	-6.1
Inverter	20.8	7.5	13.3
Rechargeable LED torch	63.7	72.5	-8.8
Candle	26.1	51.1	-25
Kerosene lamp	52.2	79.2	-27
Simpa	94.7	0.0	94.7

*Excludes replacement sample

Average Satisfaction Ratings For Solar Lantern Users

	Cooking		Children's Studies		Eating Dinner	
	Men	Women	Men	Women	Men	Women
Solar lantern	3.54	3.5	3.59	3.56	3.53	3.5
Kerosene lamp	2.94	3.5	2.89	3.56	2.93	3.5

Question:

How satisfied are you with the light from the [type of lighting solution] for [cooking, children's studies, eating dinner]?

(Answer choices from 1-5, with 1 being not at all satisfied and 5 being extremely satisfied)

Average Satisfaction Ratings For Solar System Users

	Cooking		Children's Studies		Eating Dinner	
	Men	Women	Men	Women	Men	Women
Simpa solar system	4.25	4.27	4.27	4.19	4.15	4.21
Kerosene lamp	3.38	3.07	3.61	3.56	3.25	3.08

Question:

How satisfied are you with the light from the [type of lighting solution] for [cooking, children's studies, eating dinner]?

(Answer choices from 1-5, with 1 being not at all satisfied and 5 being extremely satisfied)

Impact Indicators

Value Proposition And Health

Indicator	Value
Average score for satisfaction with customer service	3.65
Average quantity of kerosene purchased (in ml per month)	3.25
Average score for quality of health	5.77
Benefit most valued by Urja Mitras	Serving society

Quality of Health

- The average score for customers' quality of health was 5.77 out of 6 (see subsequent slides)
- However, the score for non-solar users was 5.94 and for solar lantern users was 5.82
- The limitation with self-reporting is that it is dependent on respondents' perception of the problem and ability to recall

Quality Of Health Calculation

Step 1. Respondents were asked:

- Which of the following problems has anyone in your household experienced in the past 6 months?

- Answer choices were respiratory infection, eye irritation due to smoke, breathing problems, accidents, none of them

Step 2. Responses were weighted according to the ability of the problem to cause immediate and long-term damage

Quality Of Health Calculation

Issues	Immediate Damage	Potential / Long Term Damage	Assigned Score
No problems	No	No	6
Others	Low	No	5
Eye irritation due to smoke	Moderate	No	4
Breathing problems	Moderate	Low	3
Fire	High	Low	2
Respiratory infection	High	High	1
Severe burn	Very high	High	0

Male Customers: Baseline Quality

Energy Solution	Cooking	Children's Studies	Reading / Writing by Adults	Eating Dinner
Electricity	3.5	3.3	4.5	4.2
Inverter	4.2	4.6	4	4.6
Candles / wax	2.8	2.2	2	3.3
Rechargeable LED torch	4.3	2.9	3.2	4.17
Kerosene lamp	2.3	2.5	2.3	3.9

Male Customers: Midline Quality

Energy Solution	Cooking	Children's Studies	Reading / Writing by Adults	Eating Dinner
Electricity	3.3	3.1	3.2	3.1
Inverter	4.3	3.8	3	3.7
Candles / wax	3.7	3.5	3	2.9
Rechargeable LED torch				
Kerosene lamp	3.1	2.8	3	2.9
Simpa solar system	4.3	4.1	4.5	4

Male Customers: End-line Quality

Energy Solution	Cooking	Children's Studies	Reading / Writing by Adults	Eating Dinner
Electricity	4.19	4.15	3.81	4.04
Inverter	4.31	4.32	4.29	4.21
Candles / wax	3.15	3.4	3.5	3.17
Rechargeable LED torch	4.33	3.75	3.75	4.11
Kerosene lamp	3.51	3.76	4.3	3.37
Simpa solar system	4.38	4.36	4.16	4.26

Male Customers: Baseline Satisfaction

Energy Solution	Cooking	Children's Studies	Reading / Writing by Adults	Eating Dinner
Electricity	3.8	4	3.8	4
Inverter	4.2	4.3	4.2	4.4
Candles / wax	2.4	1.8	2.7	4
Rechargeable LED torch	3.9	3.2	3.7	3.5
Kerosene lamp	2.3	2.3	2.1	4

Male Customers: Midline Satisfaction

Energy Solution	Cooking	Children's Studies	Reading / Writing by Adults	Eating Dinner
Electricity	3.2	3.1	3	3.1
Inverter	4.1	4.2		3.9
Candles / wax	2.9	3.5	3	2.8
Rechargeable LED torch				
Kerosene lamp	2.9	2.8	2.6	2.6
Simpa solar system	4.2	4.1	4.5	3.9

Male Customers: End-line Satisfaction

Energy Solution	Cooking	Children's Studies	Reading / Writing by Adults	Eating Dinner
Electricity	4.1	4.02	3.9	3.97
Inverter	4.1	4.05	4.07	4.16
Candles / wax	3.05	3.3	3.6	3.11
Rechargeable LED torch	4	3.25	3.75	3.89
Kerosene lamp	3.38	3.61	3.67	3.25
Simpa solar system	4.25	4.27	4.2	4.15

Female Customers: Baseline Quality

Energy Solution	Cooking	Children's Studies	Reading / Writing by Adults	Eating Dinner
Electricity	3.3	3.5	3.9	4.2
Inverter	4.3	4.7	4	4.9
Candles / wax	2.3	2.2	2	2.3
Rechargeable LED torch	4.4	3.8	3.2	4
Kerosene lamp	2.5	2.8	2.7	4.6

Female Customers: Midline Quality

Energy Solution	Cooking	Children's Studies	Reading / Writing by Adults	Eating Dinner
Electricity	3.1	3.2	3.1	3.1
Inverter	4.3	3.8	3	3.7
Candles / wax	3.1	4.5	3	2.9
Rechargeable LED torch				
Kerosene lamp	2.9	2.9	2.8	2.9
Simpa solar system	4.1	4.1	4.4	3.9

Female Customers: End-line Quality

Energy Solution	Cooking	Children's Studies	Reading / Writing by Adults	Eating Dinner
Electricity	4.11	3.96	4	3.97
Inverter	4.05	4.05	4.14	4.03
Candles / wax	3.05	3.22	3.6	2.98
Rechargeable LED torch	3.88	3.5	3.5	4
Kerosene lamp	3.17	3.49	4.3	3.11
Simpa solar system	4.29	4.24	4	4.21

Female Customers: Baseline Satisfaction

Energy Solution	Cooking	Children's Studies	Reading / Writing by Adults	Eating Dinner
Electricity	2.9	3.9	4.4	4.1
Inverter	4.3	4.3	5	4.5
Candles / wax	2.1		2	4.4
Rechargeable LED torch	3.9	3.5	3.3	3.5
Kerosene lamp	2.4	2.1	2.9	3.9

Female Customers: Midline Satisfaction

Energy Solution	Cooking	Children's Studies	Reading / Writing by Adults	Eating Dinner
Electricity	3.1	3.1	3	3
Inverter	4.3	4.1	4	3.9
Candles / wax	3.1	4	2	3
Rechargeable LED torch				
Kerosene lamp	2.9	2.8	2.5	2.8
Simpa solar system	4.1	4.1	4.5	4.1

Female Customers: End-line Satisfaction

Energy Solution	Cooking	Children's Studies	Reading / Writing by Adults	Eating Dinner
Electricity	4.06	3.93	4	3.95
Inverter	4.03	3.97	4.14	4.05
Candles / wax	3	3.11	4	2.89
Rechargeable LED torch	4	3.75	3.66	4
Kerosene lamp	3.07	3.56	4.3	3.08
Simpa solar system	4.27	4.19	3.93	4.21

Conclusions and Recommendations

Conclusions: Urja Mitras

- Most Urja Mitras whose 1st sale was between June 2013 and March 2015 have become inactive
- The main disadvantage that they seem to see in being an Urja Mitra was that dissatisfied customers would affect their reputation
- The evaluation was not able to determine why Urja Mitras think that customers are dissatisfied

Urja Mitras: Recommendations

- Conduct in-depth conversations with a purposive sample of these Urja Mitras to understand why they have become inactive, and why they believe customers are dissatisfied
- Determine and implement the steps to either make these Urja Mitras active again, or improve selection of Urja Mitras

Conclusions: Cost-Effectiveness

- At the time of the baseline survey, solar systems sold by other companies were not commonly available in Simpa's operational area. This has now changed, and these products are now potential competitors to Simpa.
- However, "better quality than other solar companies" was one of the elements of Simpa's value proposition chosen most often by customers
- It was not possible to compare cost : satisfaction ratios for Simpa solar system customers and solar lantern users
- One reason was because none of the Simpa customers in our sample have purchased annual maintenance contracts, we have no data on any expenditures that they incur for servicing or replacement of parts

Recommendations: Cost-Effectiveness

- Market Simpa as better quality than competitors' solar products available in its operational area
- Monitor customers' expenditures on parts replacement and service once they have paid off their systems
- Determine the most cost-effective method for customers to maintain their systems after they have been paid off (whether through an annual maintenance contract or not), and market this to customers

Conclusions: Customer Value Proposition

- 2 of the elements of Simpa's value proposition chosen most often by customers are that Simpa systems do not cause smoke or fire, and that they help their children study longer
- However, there is a discrepancy between the elements of Simpa's value proposition emphasized by customers and by Urja Mitras
- Customers say that the system should be able to run other appliances, but are also willing to buy new appliances that only run on their Simpa systems
- PAR customers are less satisfied with their systems than the average, and live further from the payment point

Recommendations: Customer Value Proposition

- Advise Urja Mitras to emphasize that Simpa systems do not cause smoke or fire, and that they help children study longer, when selling
- Assess whether it will be feasible and profitable to sell appliances that can only be run on Simpa systems and decide whether to do so
- Conduct in-depth conversations with PAR customers to understand their sources of dissatisfaction, and any barriers they face in paying

Conclusions: Impact On Health And Environment

- There has been a drop of 27% in customer households using kerosene from the baseline to the end-line
- However, 52.2% of customer households were still using kerosene at the time of the end-line
- This is despite the fact that customers are less satisfied with kerosene than with their Simpa systems
- Kerosene usage was not related to family size or the number of rooms in the house, so increasing the size of the Simpa system may not have an effect
- If customers are using kerosene because it is easily available through the Public Distribution System, Simpa is unlikely to be able to have an influence
- However, by ensuring that it is easy for customers to pay Simpa can prevent customers from using kerosene because they are not able to recharge their solar systems