

Annexure 1: Demand aggregation experiences in USA and India

Box 1 – Performance of Solarise Campaigns in the USA					
Targeted Location	Implementing Agency	Number of Campaigns	Installed Capacity	Number of Installations	Reference
New York	NYSERDA	93	19.9 MW	N/A	(NYSERDA 2020)
Oregon	Solar Oregon	25	4 MW	600 Systems	(Solar Oregon 2021)
Rhode Island	Rhode Island - Office of Energy Resources	22	5 MW	733 (Over 5 years)	(Rhode Island -Office of Energy Resources 2021)
Connecticut	SmartPower	10 Rounds	2.98 MW	450+ (Over 3 years)	(Yao and Shim 2019)
Philadelphia	Philadelphia Energy Authority (PEA)	N/A	2.8 MW	654 Contracts	(Philadelphia Energy Authority 2021)

Source: Authors' compilation

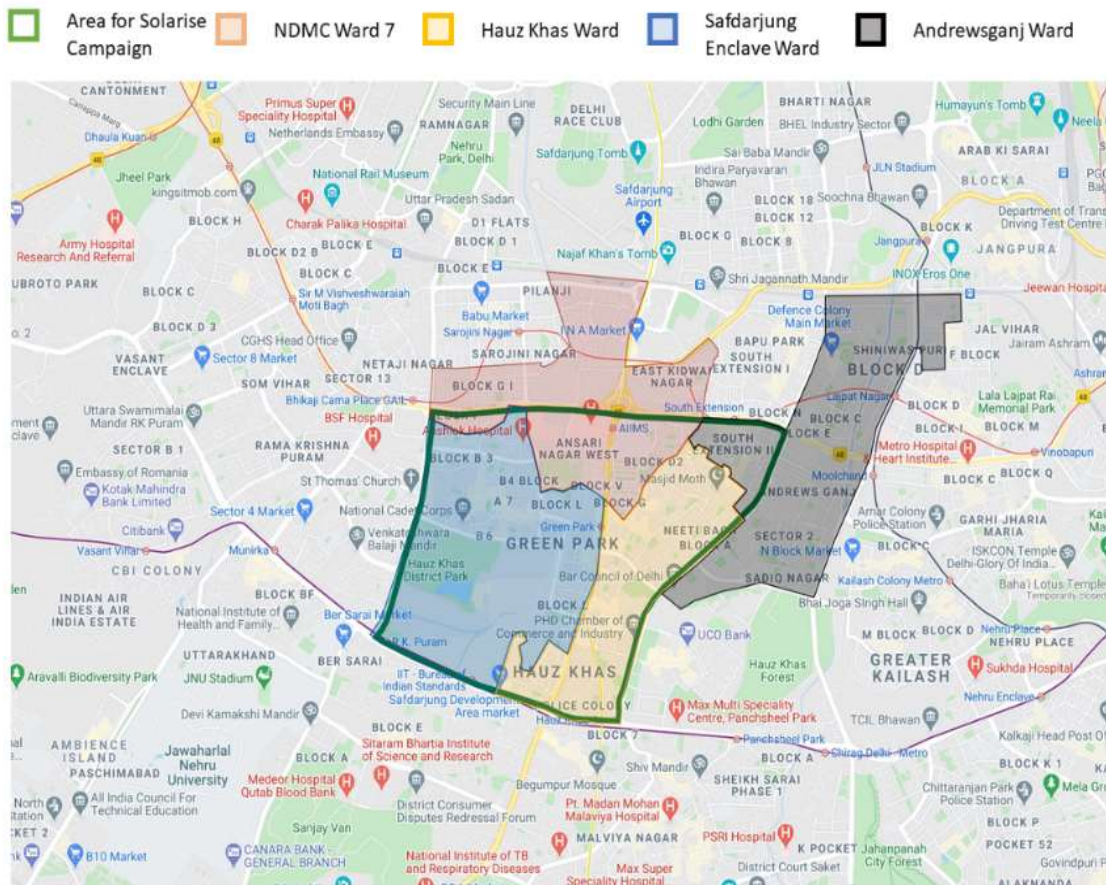
Box 2 – RTS demand aggregation campaigns in India				
Implementing Agency	Targeted Location	Year	Impact	Reference
Surat Municipal Corporation & TERI	Surat	2016	118.9 MW of installed capacity	(TERI 2019)
Greenpeace Delhi	Delhi	2018	Rooftop evaluation requested by 1043 residents	(ETEnergyWorld 2018)
BSES Rajdhani Power Limited (BRPL)	Delhi	2018	1 MW of installed capacity	(Times of India 2018; TERI 2019)

Source: Authors' compilation

Annexure 2 – Designing the Solarise Delhi campaigns

The design, implementation, and management of the Solarise Delhi campaigns was a complex and extensive exercise. Over 14 researchers from CEEW and teams from SmartPower and WeeGreen were constantly involved in launching this campaign, especially under the challenging pandemic circumstances. In this annexure, we try and document some of the behind-the-scene working of the campaigns, and detail out thoughts and processes required to make the Solarise campaigns a success.

Figure A-1 - Map showing the campaign area for Solarise Safdarjung



Source: Authors' analysis

Stakeholders

The Solarise campaigns had extensive support from stakeholders across the rooftop solar ecosystem. Table A-1 briefly captures the roles and responsibilities that each stakeholder served during the campaign.

Table A-1 - Stakeholders were mapped according to their responsibilities

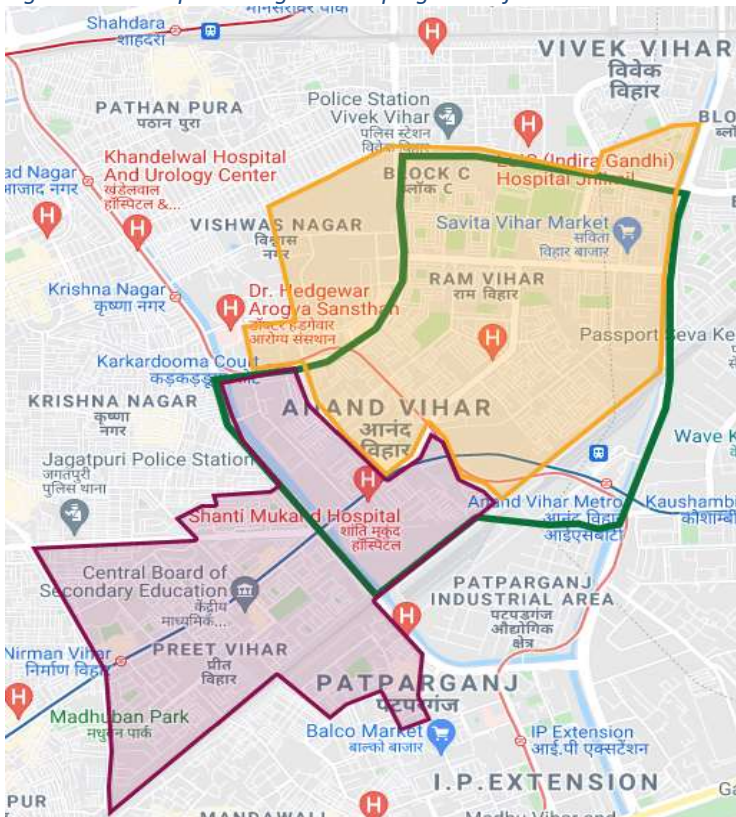
Stakeholder	Responsibility Matrix (RACI)				Roles and Responsibilities
	R	A	C	I	
USICEF		A		I	<ul style="list-style-type: none"> Drive the renewable energy transition in India through technology and knowledge transfer
MNRE				I	<ul style="list-style-type: none"> Provide the overall guidelines for deployment of grid-connected RTS systems
BRPL and BYPL	R		C		<ul style="list-style-type: none"> Responsible for publicising and supporting the campaign

				<ul style="list-style-type: none"> Actively participate in activities and deploy interventions
SmartPower and WeeGreen			C	<ul style="list-style-type: none"> Provide the WeeGreen platform for the creation of websites Facilitate the designing of WeeGreen pages for Solarise, and the overall campaign design to maximise the impact
CEEW	R	A		<ul style="list-style-type: none"> Responsible for the overall design, implementation, monitoring, and evaluation of the Solarise campaign pilots
Solar Vendors	R		C	<ul style="list-style-type: none"> Deliver quality rooftop solar installations and value-added services to the target communities Ensure a smooth purchase experience for potential consumers
Solar Ambassadors and RWAs	R		C	<ul style="list-style-type: none"> Act as nodes to disseminate information about the campaign and initiate community dialogue about RTS Provide insights into consumer behaviour and feedback during the campaign

Source: Authors' analysis.

Note: RACI stands for Responsible, Accountable, Consult, Inform

Figure A-2 - Map showing the campaign area for Solarise Karkardooma



Source: Authors' analysis

Messaging and content

The tone of the messages is critical to ensure that it catches the consumers' attention and keeps them engaged with the campaign over the long run. The key message has to articulate the context and deliver the campaign's key objective, i.e. adoption of rooftop solar in our case (MSKTC 2021). With 'Solarise Safdarjung' and 'Solarise Karkardooma' as the campaign names,

we created a call-to-action and a memorable message with a simple phrase (figure A-4). The key messages were built around the economic, social, and environmental benefits of adopting rooftop solar and consistently reiterated during each event.

Using the locality names also generates a greater sense of familiarity and trust about the campaign. The key message of economic benefits was highlighted across content to capture the attention of price-sensitive consumers.

Figure A-3 - Compelling catchphrases were essential to capture consumer attention



Source: Advertisement created by Solarise Delhi team for circulation with electricity bills

All events were accompanied by several content pieces that reinforced the key message of RTS adoption. All content pieces such as event invitations, reminders, awareness booklets, infographics, posters, flyers etc., used consistent messaging and design language to build further recognition in the consumers’ minds. The content used strong, actionable headlines to capture attention and easy call-to-action procedures to let consumers conveniently engage with the information provided in the content. Phrases such as ‘Save 90% or more’, ‘Do you want to reduce your electricity bill and be a partner in saving the environment?’, were the centrepiece of the advertisements capturing the attention of curious consumers (example shown in figure A-3). All the messaging and content were designed keeping in mind the online nature of interaction with consumers.

Figure A-4 - The WeeGreen websites provided a one-stop information and action platform to consumers



Source: Screenshot from the Solarise Safdarjung WeeGreen website
Communication channels

The Solarise campaigns tested effectiveness of several communication channels in capturing consumer interest and raising awareness as shown in Figure 6. The WeeGreen websites were the primary information repository and hosted various valuable resources for consumers and regular updates on campaign activities. The social media pages on Facebook were useful for reaching a wider audience and creating an online presence beyond the websites. With the discoms’ help, a print advertisement was released with the consumer electricity bills and mass SMS blasts were sent out to inform consumers about the campaign and its economic benefits. These channels were supported by a special hotline for the Solarise campaigns handled by the CEEW team. Several consumers utilised the hotline to gain more information about the campaign and RTS and register their interest in rooftop evaluations. The effectiveness of different channels is discussed in more detail in chapter 3.

Promotional messages sent by the discoms

“Do you want a ZERO electricity bill? BSES brings Solarise for a hassle-free rooftop solar purchase! Sign up at bit.ly/solarSFD for a free roof evaluation”

“Do you want to reduce your electricity bill and be a partner in saving the environment? BSES brings Solarise Karkardooma campaign for a hassle-free rooftop solar purchase! Sign up at bit.ly/solarKKD for a free roof evaluation”

Campaign activities

- **Campaign launches:** With representation from all the stakeholders – MNRE, US Embassy, Govt. of Delhi, BRPL, BYPL, SmartPower, CEEW, and the community leaders – the launches’ marked the beginning of exciting and dynamic virtual campaigns.
- **Solar masters:** The ‘solar masters’ series of four e-workshops providing consumers the opportunity to learn, interact, clarify doubts and misconceptions, and become more aware of the various nuances of RTS.

Virtual awareness activities

- 12-week engagement to support residents through the whole decision-making process
- Virtual events planned over the weekends to facilitate easy participation in the events
- Events included e-workshops, virtual rooftop tours of existing RTS owners, engagement with local schools, youth competitions, and town hall events with all stakeholders

- **Shine some light:** The virtual open house events brought together representatives from all the stakeholders - CEEW, discoms, solar vendors - so that consumers could find all the information and discuss issues on a single platform.
- **Welcome to my roof:** virtual rooftop tours were organised by solar vendors to showcase their products, explain the real-world considerations of owning an RTS system and allow consumers to have a glimpse of a real system from the safety and comfort of their homes. The tours were arranged with vendor representatives present on consumer sites with all necessary safety precautions.
- **Starting young:** Another primary objective of the campaign was to engage with the youth in the target areas and empower them to act as young solar ambassadors and encourage their families to adopt RTS (figures A-5 and A-6). Two interactive youth workshops were supplemented by a competition to further engage and assess childrens’ learning from the events about rooftop solar.

All the events were held using the Zoom platform to facilitate easy participation during lockdown periods. To have greater engagement and consumer participation, the events were held on

Sundays (table A-2). Ample opportunities were created for the consumers to understand specific aspects of RTS and pick and choose which events interested them more. The events were also recorded and uploaded on the WeeGreen websites to benefit consumers who may not have attended the webinars.

Table A- 2 - The campaign activity calendar was carefully designed to deliver helpful information to consumers through engaging events

S. No.	Event Name	Event Brief	Event Type	Date
1	Launch Event	Campaign launch and introduction to the WeeGreen portal	Individual	1 November 20
2	Webinar 1	Ambassadors introduce the program to the community Webinar on 'Introduction to Solar PV'	Combined	8 November 20
3	Webinar 2	Introduction to the solar developers	Combined	22 November 20
4	School Workshop 1	Engaging the youth in the campaign, mobilising them to encourage parents/relatives/neighbors to implement solar	Individual	9 December 20
5	School Workshop 2	Workshop for high school	Individual	10 December 20
6	RTS Demo	Virtual demo tour of a rooftop solar system	Combined	13 December 20
7	Webinar 3	Know about rooftop components and comparison between the products	Combined	10 January 21
8	Webinar 4	Workshop to get zero bills from solar	Combined	17 January 21
9	RTS Town Hall	Open discussion to get all the queries answered	Combined	24 January 21
10	Campaign conclusion	Solarise campaign closure. Introduction to the solar handbook.	Combined	31 January 21

Source: Authors' Analysis

Figure A- 5 - Children from youth activities showed great interest in the competition



Source: One of the entries from 'Here comes the Sun' youth competition organised during Solarise Safdarjung

Engaging with the community

WhatsApp was used as a fast, effective, and accessible platform for close coordination and communication. Separate WhatsApp groups were created for both the campaigns with RWA leaders, discom and partner vendor representatives, and the CEEW organising team. All event invitations, reminders, infographics, and campaign updates were first shared in the Solarise WhatsApp groups. Subsequently, the RWA leaders would forward them to their respective RWA WhatsApp groups for the consumers in those communities. All informational content and updates were also shared on social media channels and the WeeGreen websites.

Figure A- 6 - Event announcements were shared on social media and WhatsApp networks before each virtual event



Source: Graphic prepared by Solarise Delhi team for school competitions

The Solarise team created festive greetings for Diwali, Christmas, and New Years and circulated the greetings to all consumers and stakeholders to add a personal touch to the campaign (figure A-7). During the last month of the campaign, an exclusive discount offer was also launched for the communities to incentivise consumers further to take advantage of the campaign.

Figure A- 7 - Seasonal greetings for festivals helped make the campaign more organic and connect better with the communities



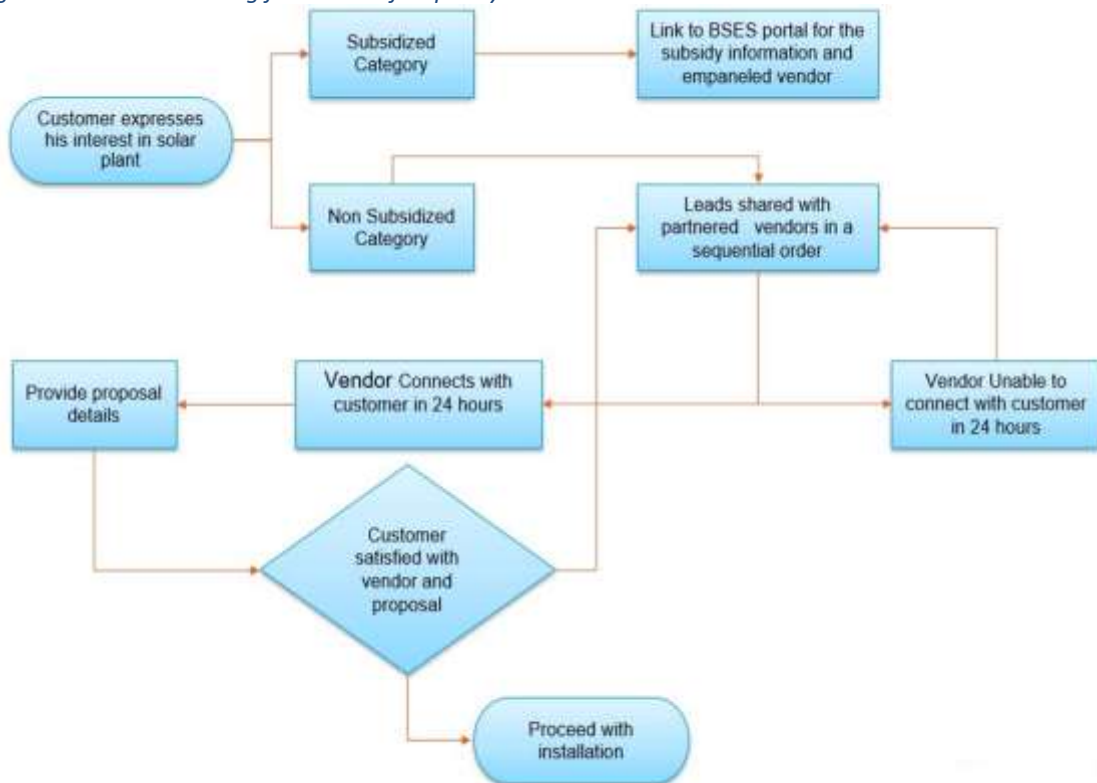
Source: Seasons greetings shared by Solarise Delhi team on WhatsApp

Managing consumer interest

In all the campaign communications, the call-to-action was to ‘sign up for a free rooftop solar evaluation’. It was intended to nudge consumers towards taking the first step in their solar journey. Several methods for signing up were available to the consumers - signing up on the WeeGreen websites, calling a dedicated Solarise phone number, or expressing their interest through WhatsApp. This ensured that no consumers were left out due to a lack of communication channels.

Comprehensive worksheets were maintained to track the leads and assign them to vendors. The worksheets served as data repositories as well as live tracking sheets. All the details for every lead, such as date, time and platform of lead generation, name and address of the consumer, date and time of passing the lead to the vendor, time of contact, site feasibility status, and other key data points were recorded in the worksheets. The leads were assigned to the vendors sequentially, with each vendor getting the next lead once the other two had received a lead each. This ensured the equitable sharing of leads between the vendors. The vendors would then contact the interested consumers and move ahead with the site evaluations, sharing the proposal and other activities. Figure A-8 shows a schematic representation of the lead management process.

Figure A- 8 - Lead tracking framework for quality service to interested consumers



Source: Authors’ depiction of lead-tracking system for Solarise Delhi

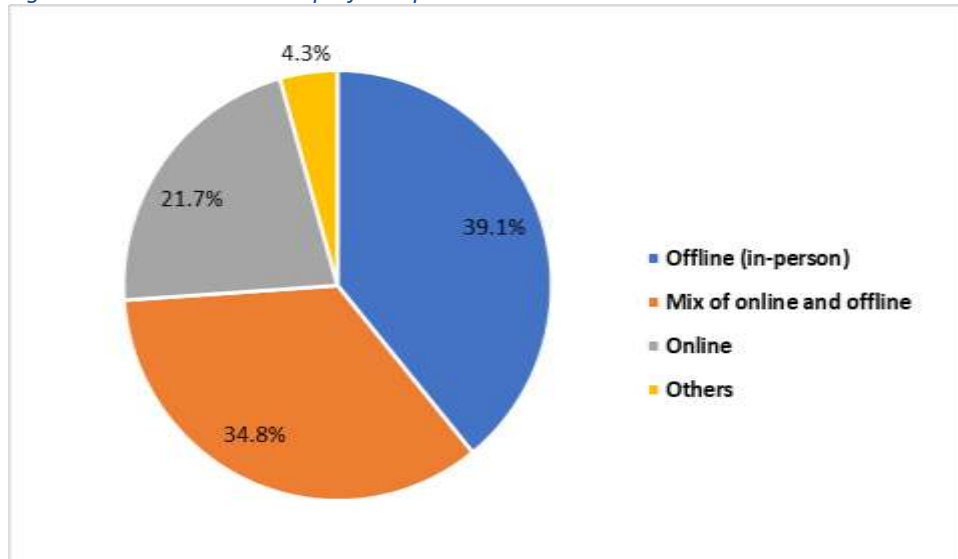
The vendors were responsible for continually updating the sheets with relevant status updates and keeping the team in the loop with all potential consumers. If the vendor could not contact them within two days of sharing the lead or could not cater to the consumer within ten days of contacting them, the lead was then passed on to the next vendor with due notice to the previous vendor.

Annexure 3 – Consumer preferences for the Solarise campaigns

Consumers prefer a combination of offline and online activities

Based on the survey responses received, the consumers in our target communities showed a strong preference for offline activities and campaigns. A total of 74 per cent of consumers preferred an offline or a mixed (online and offline) campaign (figure A-9). The offline campaigns continue to dominate as expected because it's easier for the consumers to communicate and clarify their doubts on the spot. However, with the changing situation and the Covid pandemic, people are getting familiar with online mode – shown from the preference to have both online and offline activities.

Figure A-9 - Consumers still prefer in-person interactions when it comes to awareness campaigns



A combination of offline and online activities can provide trust and flexibility

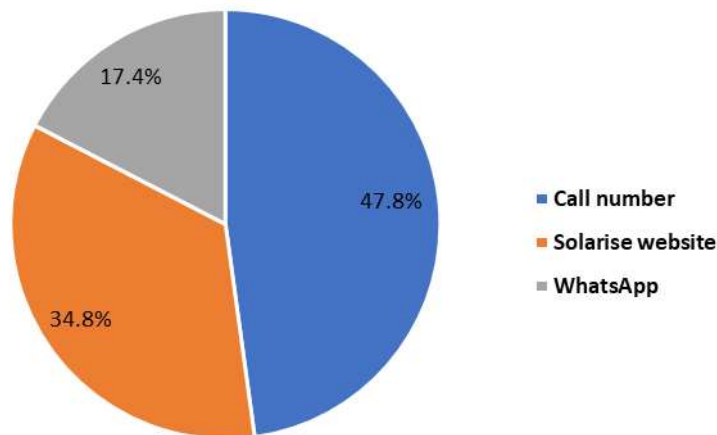
Source: Authors' analysis based on responses to post-campaign feedback survey

It will be helpful for other campaigns to capitalise on both channels by providing quality information and activities through offline interventions and providing value-added services, additional resources, and a more holistic consumer experience throughout their solar journey with the help of online tools. One such example was the virtual demo tour which saw good participation from the consumers.

Multiple channels to register interest will ease the process

The Solarise campaigns allowed consumers to sign up for the roof evaluations through the Solarise WeeGreen websites, by calling the hotline number, or by messaging on WhatsApp. 47.8 per cent of respondents used the call number to sign up for the roof evaluation, followed by registration through Solarise website (34.8 per cent). People continue to favour the traditional method of registration, i.e. through calls (figure A-10).

Figure A- 10 - Consumers still prefer traditional methods of registering their interest in the campaign

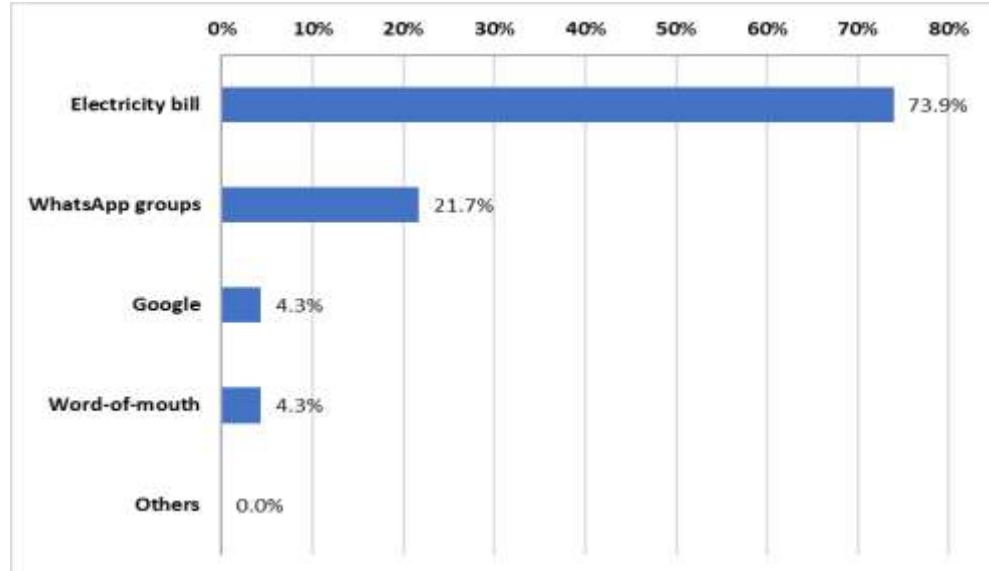


Multiple channels to register interest provide ease of access and simplify the process
 Source: Authors' analysis based on responses to post-campaign feedback survey

However, there is a favourable change towards online mode, primarily towards website-based registration. It also supports the evidence of changing consumer preference towards both offline and online modes. With the wide prevalence of telemarketing in India, the hotline number is a convenient yet effective method for consumers to express their interest. There is value in carrying forward multiple channels for registration in future campaigns to have better outreach and cater to both types of consumers.

Electricity bills are most effective in reaching to consumers

Figure A- 11 - Interested consumers discovered about Solarise primarily through their electricity bills



Electricity bills have the potential for broader outreach compared to other methods to engage with consumers. Source: Authors' analysis based on responses to post-campaign feedback survey

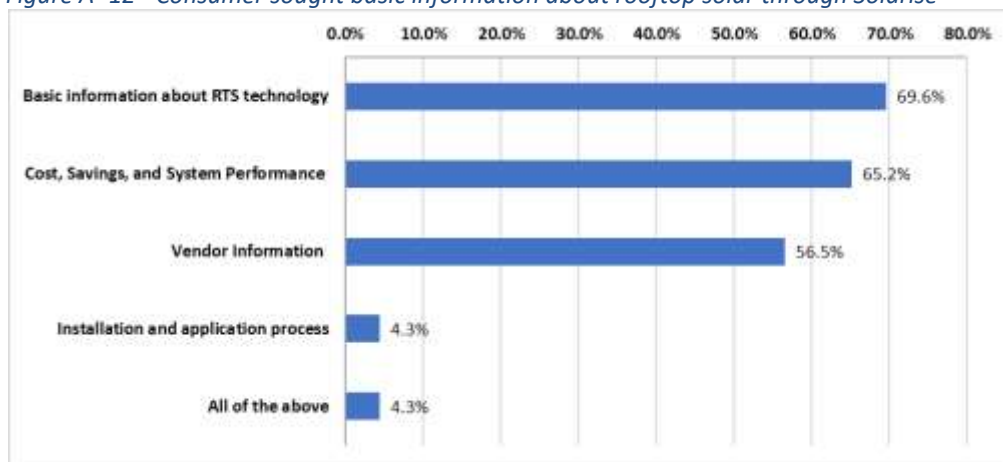
Looking at the effectiveness of channels through which consumers discovered the Solarise campaigns, almost 74 per cent of the consumers heard about the campaigns through advertisements on their electricity bills, and 21.7 per cent of consumers heard about it

from WhatsApp groups (figure A-11). While community social networks such as WhatsApp groups effectively disseminate information, consumers tend to interact more with information coming from sources they trust and find credible, i.e. the discoms and their electricity bills. Electricity bills also have the potential for broader outreach compared to other methods to engage with consumers.

The flow of information through word-of-mouth interactions suffered as expected due to the pandemic and proved less effective in spreading the message about the campaigns. We, however, believe that word-of-mouth recommendations continue to have a high trust factor and will play a key role in future community-based campaigns. Solar ambassadors have the ability to rally support for the campaigns and garner attention in their communities through these recommendations and dialogues. At the same time, the discoms’ communication networks are also highly effective in engaging consumers with information about RTS.

Consumer perception on RTS and the Solarise campaigns

Figure A- 12 - Consumer sought basic information about rooftop solar through Solarise



Source: Authors’ analysis based on responses to post-campaign feedback survey

Note: Information on cost, savings, and system performance include annual generation, tariffs, O&M requirements, system life, etc.

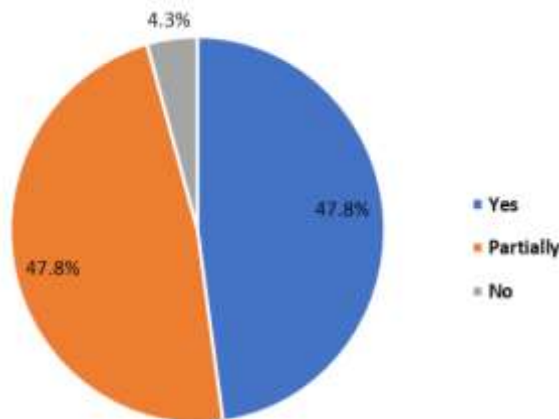
The information shared during the campaigns through the webinars, activities, websites, and social media content was designed to raise awareness while keeping the consumers’ requirements in mind. In terms of priority, most of the respondents stated that they were looking for information on the basics of rooftop solar (70 per cent respondents); followed by key technical and economic parameters such as generation, system costs, and savings potential (65 per cent); and information on solar vendors (56 per cent) (figure A-12). The results are in line with the results of another study by CEEW, which found that consumers ranked lack of knowledge about RTS and lack of trusted solar companies as the top two barriers for adopting RTS (Saji, Kuldeep, and Chawla 2019). Further, 95 per cent of the respondents stated that they found the information shared during Solarise to be at least partially valuable for them (figure A-13). It is apparent that the messaging, content, and structure of the information shared by the campaign catered to the needs of the consumers.

The campaign also tried to share more advanced information about installation procedures, net-metering application procedures, maintenance and best practices. However, only a few consumers sought out such advanced details, indicating that most

consumers were still beginning to understand rooftop solar and would need more time before they engage with more in-depth information.

It is, thus, essential to examine the existing awareness levels of the target consumers, their current perceptions about the technology, and their information requirements upfront and tailor the campaign content accordingly.

Figure A- 13 - Most consumers found information shared in the Solarise campaigns to be useful



Source: Authors' analysis based on responses to post-campaign feedback survey

Drivers and barriers in RTS adoption

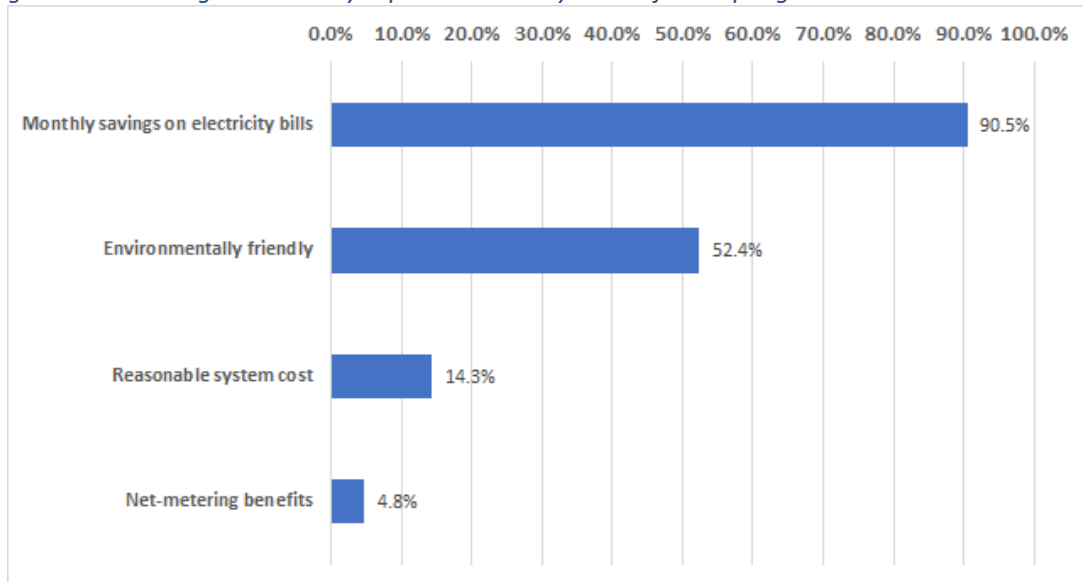
The feedback survey also included questions on the drivers and barriers to RTS adoption most relevant to interested consumers. Identifying the key drivers and barriers can help develop informed campaign strategies to address these issues and provide value to the consumers effectively.

More than 90 per cent of respondents cited monthly savings on electricity bills as a key driving factor for RTS adoption, followed by environmental benefits (52 per cent). It is worth noting that the consumers are slowly recognising the environmental benefits of RTS, and greater awareness about these may be able to improve the perception of RTS. Only a small fraction of respondents were attracted to RTS because of the falling costs and net-metering benefits. In fact, both of these factors will ultimately lead to better savings for consumers. More holistic information about the multi-faceted benefits of RTS may further increase the willingness to buy. There is also pre-pandemic evidence that economic benefits would primarily drive even non-interested consumers to adopt RTS, indicating that the market drivers are standard for all consumers and have remained constant even during the pandemic (Saji, Kuldeep, and Chawla 2019). Figure A-14 depicts these results.

In terms of barriers to RTS adoption, most respondents (61 per cent) pointed towards the high initial investment as the primary barrier. It is not surprising as respondents also highlighted that lower system prices would convince them to think about RTS more favourably. Other barriers included low electricity consumption (28 per cent), which lowers the savings potential for a consumer; lack of information about specific benefits and vendors (11 per cent), unsuitable roof areas, and personal factors such as low perceived savings and high maintenance requirements (22 per cent). While only 11 per cent of respondents mentioned the need for financing options, it is related to the overall perceived high investment for RTS. The results for barriers are depicted in figure A-15.

Most consumers who reported a high likelihood to buy RTS also stated that the primary barrier is the high upfront cost of RTS. Suitable financing options for the residential RTS are currently missing from the sector due to high perceived risks and low loan amounts. However, innovative business models and demand aggregation may reduce the risk perception for financial institutions and provide the much-needed solution to the high upfront cost.

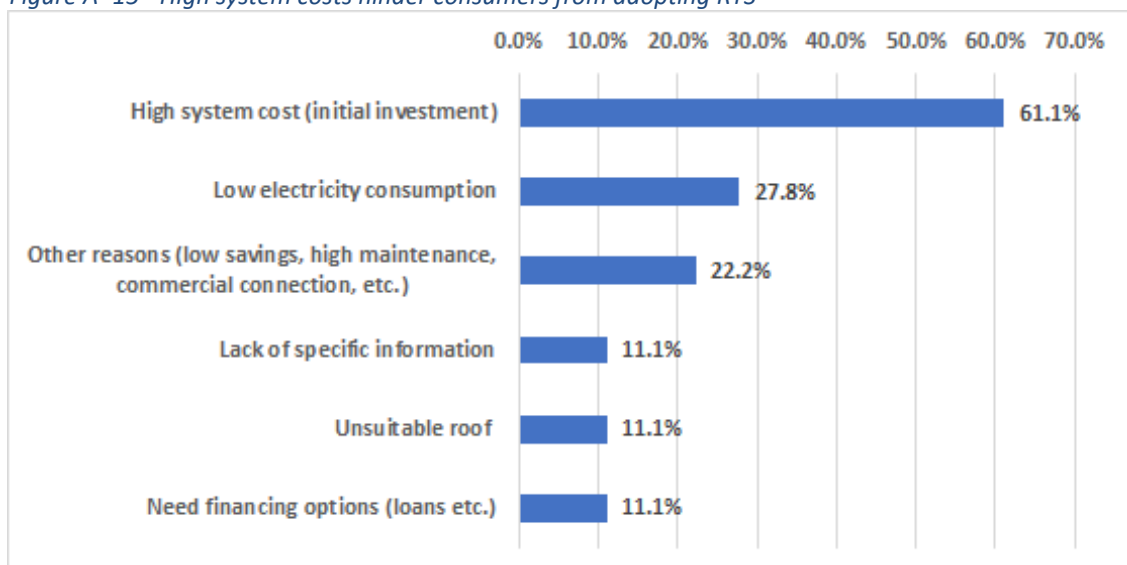
Figure A- 14 - Savings in electricity expenses is the key drivers for adopting RTS



Source: Authors' analysis based on responses to post-campaign feedback survey

The results from the drivers and barriers corroborate the fact that RTS is still a considerable expense for a majority of Indian residential consumers and needs careful planning and financial support. These drivers and barriers are also reflected in the information that consumers were looking for in the campaign - about costs, performance, savings, and vendors.

Figure A- 15 - High system costs hinder consumers from adopting RTS



Source: Authors' analysis based on responses to post-campaign feedback survey

