Distributed Energy Resources: How Do We Meet Consumers’ Needs?

1:00 p.m. – 2:00 p.m.
Moderator

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Consumers and the Future of Energy
Distributed Energy Resources

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Consumers and the Future of Energy
GOAL: To provide deep insights to industry stakeholders on consumer knowledge, motivations, barriers and experiences with DER technologies and programs.
Defining DERs

Any resource on the distribution system that produces electricity and is not otherwise included in the bulk electric system. Demand-side management is also considered a DER in the context of this research.

DERs were introduced in the survey to consumers as:

- Solar panel(s) on a home or property
- Small wind turbines on a home
- A home energy management system
- Demand response programs
- Battery storage
- Community microgrids
- Community solar panels
- Small wind turbines in a community
- Energy storage in a community

How are DERs defined?
Methodology

A blend of qualitative and quantitative research was conducted with consumers across the US and Canada:

- Seven in-depth interviews with consumers who have DERs
- \(n=1,500\) U.S. consumers survey fielded online
- Oversample of those who ever had one or more DER technologies (\(n=613\))
- Separate sample of \(n=543\) Canadian consumers
To grow awareness of DERs, providers must build a bridge between technologies, people and possibilities
Home Solar is the DER flagship across all demos, segments and regions

<table>
<thead>
<tr>
<th>Solar panels</th>
<th>Home energy management system</th>
<th>Home wind turbines</th>
</tr>
</thead>
<tbody>
<tr>
<td>84%</td>
<td>59%</td>
<td>54%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Demand response programs</th>
<th>Electric Vehicle battery-to-grid storage</th>
<th>Battery storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>53%</td>
<td>51%</td>
<td>49%</td>
</tr>
</tbody>
</table>
Sources of info about Home Solar differ by generation

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Unlike Home Solar, there are demographic differences in awareness of Home Energy Management.

% Aware of Home Energy Management

<table>
<thead>
<tr>
<th>Income</th>
<th>Flat Rate</th>
<th>TOU</th>
<th>Critical Peak</th>
<th>Flat</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;$50K</td>
<td>54%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$50-$99K</td>
<td>62%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$100K+</td>
<td>65%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The same pattern holds for DR programs. These differences represent great opportunities for targeting communications.
Barriers to Demand Response vary by age, further reinforcing the opportunity for targeted outreach

<table>
<thead>
<tr>
<th>Reason</th>
<th>18-34</th>
<th>35-54</th>
<th>55+</th>
</tr>
</thead>
<tbody>
<tr>
<td>I don’t trust that the estimated savings are going to save me money</td>
<td>29%</td>
<td>24%</td>
<td>29%</td>
</tr>
<tr>
<td>I do not think it will result in net savings for my investment</td>
<td>13%</td>
<td>15%</td>
<td>22%</td>
</tr>
<tr>
<td>My community does not have access to this</td>
<td>8%</td>
<td>15%</td>
<td>9%</td>
</tr>
<tr>
<td>I don’t know what the payback period is for my investment</td>
<td>8%</td>
<td>12%</td>
<td>11%</td>
</tr>
<tr>
<td>I am not sure who to contact</td>
<td>10%</td>
<td>11%</td>
<td>4%</td>
</tr>
<tr>
<td>The process is too long/complicated</td>
<td>13%</td>
<td>6%</td>
<td>4%</td>
</tr>
<tr>
<td>I do not want to spend money upfront/could not find a lease option</td>
<td>10%</td>
<td>7%</td>
<td>5%</td>
</tr>
<tr>
<td>It would take too long for this investment to payback</td>
<td>5%</td>
<td>5%</td>
<td>8%</td>
</tr>
<tr>
<td>Other</td>
<td>15%</td>
<td>22%</td>
<td>20%</td>
</tr>
</tbody>
</table>

Clearly emphasizing the financial return on DR will resonate across age groups. For young people, it is important to break down perceptions of ease of registration.
Finding #2

The two most addressable target segments perceive different benefits and have different information needs.
# About the Segmentation

Data for the U.S. general population weighted to the consumer segments from SECC’s *Consumer Pulse and Market Segmentation – Wave 7 report*

<table>
<thead>
<tr>
<th>SEGMENT NAME</th>
<th>PERSPECTIVE ON ENERGY</th>
<th>IMPORTANCE OF EE IN THE HOME</th>
<th>% OF CONSUMER MARKET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Innovators</td>
<td>Strongly value sustainability and lead the way in saving energy with technology</td>
<td>High</td>
<td>20%</td>
</tr>
<tr>
<td>Tech-savvy Proteges</td>
<td>Receptive to changing energy habits and using technology to do so, but need to be shown how to do it without sacrificing comfort</td>
<td>Med/High</td>
<td>25%</td>
</tr>
<tr>
<td>Movable Middle</td>
<td>Not complete rejectors of saving energy and face few barriers; lack interest in technology</td>
<td>Med</td>
<td>29%</td>
</tr>
<tr>
<td>Energy Indifferent</td>
<td>Rejectors of environmental concern and saving energy; keep their energy needs simple and want to be left alone</td>
<td>Low</td>
<td>26%</td>
</tr>
</tbody>
</table>
By leveraging SECC’s segmentation to isolate rejectors, awareness building efforts can be streamlined.

### Summary of DER Rejectors

(have not heard of and would not consider using / purchasing)

<table>
<thead>
<tr>
<th></th>
<th>Green Innovators</th>
<th>Tech-savvy Proteges</th>
<th>Energy Indifferent</th>
<th>Movable Middle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small wind turbines on your home</td>
<td>25%</td>
<td>21%</td>
<td>39%</td>
<td>30%</td>
</tr>
<tr>
<td>Demand response programs</td>
<td>19%</td>
<td>21%</td>
<td>35%</td>
<td>36%</td>
</tr>
<tr>
<td>A home energy management system</td>
<td>15%</td>
<td>14%</td>
<td>26%</td>
<td>27%</td>
</tr>
</tbody>
</table>

The segmentation works!
Green Innovators and Tech-Savvy Proteges perceive differential benefits in DERs

The value DERs bring to the home

Benefits Expected of DERs

- Saving money
- Incentives to participate
- Help the environment / reduce energy
- Minimized outages / reliability of the grid
- Understanding of how renewable energy works
- Increase the value of my home
- Understanding my electricity usage
- Access to more electricity
- Access to professional help
- The option to shop for the equipment
- Other

Environment as a key benefit.

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Green Innovators want info on environmental benefits, but also the financial return

- How much money I would save
- A clear understanding of how the process works
- How much electricity I would save
- Knowing what happens if equipment breaks
- To see the exact product in person or a demo of the...
- Knowledge of what support staff I have access to
- The ability to buy the product
- What impact this has on my home or HOA
- Knowing I have access to an online portal at any time
- The ability to lease the product

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Finding #3

Consumers expect electricity providers to be involved in the DER journey
Most consumers feel that their electricity provider should provide DER services.

**Who should provide DER programs?**

- **My electricity provider**: 69% in US, 64% in Canada.
- **Contractor partner with my electricity provider**: 32% in US, 31% in Canada.
- **Contractor that I select**: 22% in US, 24% in Canada.
- **Other**: 4% in US, 6% in Canada.

**If not “my electricity provider”, then would you want provider involved in… ?**

- **Recommending contractors**: 52% in US, 48% in Canada.
- **Ratings / reviews of contractors**: 48% in US, 42% in Canada.
- **Communicating with contractors**: 39% in US, 32% in Canada.
- **Other**: 13% in US, 23% in Canada.
Although providers’ involvement is expected, word of mouth plays a key role.

"someone my husband worked with found out about the rebate and had them installed. He got a $200 referral for doing it. And we went ahead and got about it. Her and her husband have referred 4 or 5 people now."
- Solar Adopter, Qualitative Interview

“My son-in-law is knowledgeable about this type of stuff, he helps us on what to do and how to think about it.”
- Solar Adopter, Qualitative Interview

Empowering DER users as advocates makes good sense as an awareness building strategy.
Quality and trust are key reasons that consumers want energy providers involved.

Most consumers in the US and Canada feel that no involvement from providers is a deal breaker.

Are private providers a deal breaker?

- Yes (NET): 51% US, 60% Canada
- Yes, worry about the quality: 21% US, 30% Canada
- Yes, would not trust them: 14% US, 19% Canada
- Yes, unclear of information provided: 14% US, 17% Canada
- Yes, don't want to coordinate: 13% US, 21% Canada
- Yes, another reason: 3% US, 5% Canada
- No: 40% US, 49% Canada
Finding #4

When experiences and expectations do not match, consumers cancel their DER programs
Nearly half of those with DERs currently see them as working out ‘very well’

Opportunity to empower consumers as advocates.

Perceptions of Current DER Products

<table>
<thead>
<tr>
<th>Service</th>
<th>Very poorly</th>
<th>Poorly</th>
<th>Well</th>
<th>Very well</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Solar</td>
<td>45%</td>
<td>53%</td>
<td>50%</td>
<td>36%</td>
</tr>
<tr>
<td>Small Wind Turbines</td>
<td>36%</td>
<td>50%</td>
<td>41%</td>
<td>45%</td>
</tr>
<tr>
<td>Home Energy Management</td>
<td>41%</td>
<td>36%</td>
<td>50%</td>
<td>44%</td>
</tr>
<tr>
<td>Demand Response</td>
<td>50%</td>
<td>44%</td>
<td>37%</td>
<td>42%</td>
</tr>
<tr>
<td>Battery Storage</td>
<td>44%</td>
<td>49%</td>
<td>45%</td>
<td>39%</td>
</tr>
<tr>
<td>Community Microgrids</td>
<td>37%</td>
<td>42%</td>
<td>45%</td>
<td>48%</td>
</tr>
<tr>
<td>Community Solar Panels</td>
<td>42%</td>
<td>39%</td>
<td>39%</td>
<td>51%</td>
</tr>
<tr>
<td>Community Small Wind Turbines</td>
<td>39%</td>
<td>39%</td>
<td>48%</td>
<td>51%</td>
</tr>
<tr>
<td>Community Energy Storage</td>
<td>45%</td>
<td>48%</td>
<td>48%</td>
<td>51%</td>
</tr>
</tbody>
</table>

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Incentives are key

Home Solar DER Users: The role of incentives

- Yes, I used incentives and I would NOT purchase/participate without it, 37%
- Yes I used incentives but I WOULD purchase/participate without it, 36%
- No, I did not use incentives, 27%

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The same reasons that motivates consumers also drive them to leave DERs...cost.

Setting expectations about costs both for installation, and long term will help to mitigate negative customer experiences with DERs.

Financing or pay-as-you-go programs can also help address consumer needs short and long term.

### Reason for No Longer Using DERs (Open End)

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expensive/high cost of material/installation/maintenance</td>
<td>18%</td>
</tr>
<tr>
<td>Lack of interest</td>
<td>13%</td>
</tr>
<tr>
<td>Already using it/considering it</td>
<td>11%</td>
</tr>
<tr>
<td>Can’t install it/not available where I live/program was cancelled/they stopped offering it</td>
<td>9%</td>
</tr>
<tr>
<td>Have chosen better options/alternatives</td>
<td>8%</td>
</tr>
<tr>
<td>Moved to another place/state</td>
<td>6%</td>
</tr>
<tr>
<td>Inconvenient/no advantage to using them</td>
<td>6%</td>
</tr>
<tr>
<td>Not familiar with them/need more information</td>
<td>4%</td>
</tr>
<tr>
<td>Not convinced it is a good money saver</td>
<td>3%</td>
</tr>
<tr>
<td>They malfunction/don’t work well</td>
<td>3%</td>
</tr>
<tr>
<td>Poor durability/quality/easily damaged</td>
<td>1%</td>
</tr>
<tr>
<td>Don’t like them/had them removed</td>
<td>1%</td>
</tr>
<tr>
<td>No time/hassle of installing it/too much work require</td>
<td>1%</td>
</tr>
<tr>
<td>Other</td>
<td>4%</td>
</tr>
<tr>
<td>Nothing</td>
<td>4%</td>
</tr>
<tr>
<td>Don’t know/NA</td>
<td>11%</td>
</tr>
</tbody>
</table>
The environment plays a slightly larger role for Canadians whereas Americans are more price sensitive.

### Top Information Needs
- **How much money I would save**: USA 67%, Canada 63%
- **Understanding how the process works**: USA 62%, Canada 63%
- **How much electricity I would save**: USA 54%, Canada 53%
- **Knowing what happens if equipment breaks**: USA 50%, Canada 49%

### Top Expected Benefits
- **Saving money**: USA 73%, Canada 68%
- **Incentives to participate**: USA 49%, Canada 48%
- **Help the environment / reduce energy**: USA 44%, Canada 48%
- **Less outages and improved reliability**: USA 37%, Canada 38%

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Recap of Key Findings

1. Awareness building is best accomplished by filling-in information gaps along the purchase journey

2. The two most addressable target segments perceive different benefits and have different information needs

3. The electricity provider is a linchpin of DER adoption

4. Properly setting expectations upfront, especially around cost, will help mitigate DER turnover

5. Engagement in US and Canada is more similar than not, but with nuances in the environment and price