Barriers and Opportunities for Solar Energy Development: Insights from Long Island Solar Roadmap Consortium Member Interviews

Prepared by Chelsea Schelly, Associate Professor of Sociology, Department of Social Sciences, Michigan Technological University on behalf of the Long Island Solar Roadmap project, led by The Nature Conservancy and Defenders of Wildlife.

Date: December 10, 2018

INTRODUCTION

The Long Island Solar Roadmap project Consortium includes 34 individuals representing local government, community leaders and landowners, local environmental advocates, land conservation organizations, solar industry professionals, state agencies, and utilities. The Consortium serves as an advisory body to the project, providing input on project goals, process, and deliverables including recommendations for policies and strategies to lower barriers to solar development. Members of the consortium have diverse knowledge and experiences with renewable energy on Long Island. To better understand their perspectives and to inform the development of the project, the Leadership Team conducted structured interviews aiming to collect information about their perceptions of the barriers and opportunities for solar development on Long Island as well as their visions and goals for the project.

METHODS

Twenty-one individuals participated in structured interviews between August and October 2018. Interview questions are included in Appendix A. Importantly, the project and these questions focus on mid- to large-scale solar installations (500kW and larger) rather than residential solar. Interviews were audio-recorded with permission from the participants. Responses to interview questions were entered into a notes template (included as Appendix B), used for both taking notes during the interview and for initial coding after review of the audio recording. These interview notes have been analyzed to examine the main themes emerging from these conversations.

RESULTS

On the role of solar technology in meeting New York state's goal that 50% of electricity come from renewable sources by 2030: Of the 21 participants who were asked this question, 17 interviewees see solar playing a *big role* in reaching New York's renewable goals, while 10 of these also noted that other renewables, such as offshore wind, will also be important. Only 1 interviewee sees solar having a *small role*.

In discussing the *challenges* to meeting this goal, the most common themes were:

- *Economic* (n=11), including concerns about upfront expense of solar installations and the lack of available funding; lack of clarity in financial incentives available: lack of incentives for necessary

investment in grid infrastructure; and the complexities of navigating financial, technical, and legal systems to determine who pays and who benefits

- *Policy* (n=11), including "red tape" and "complex bureaucracy" in municipal permitting processes; lack of municipal knowledge of or experience with permitting; lack of transparency and consistency regarding policies, codes, and regulations at both state and local levels; and the challenges presented by the transition to the Value of Distributed Energy Resources (VDER) policy, which has changed how energy sold to the grid is valued

- *Public perception and attitudes* (n=9), including negative public perceptions of aesthetics, concerns about impacts on property values, and limited outreach and education on the benefits of solar

- Technical challenges (n=8), including the difficulty for utilities to transition to solar and to handle large-scale renewable energy as well as the technical complexities associated with interconnection

- Other mentioned challenges include the perception that solar requires a lot of space, the perception that there is a lack of available space for solar development, particularly on Long Island, and "green vs. green" issues or, in other words, the perception that solar development may require sacrificing other environmental amenities such as forested land

When asked about specific experiences with solar development, 13 interviewees said they have experience with the process of siting, permitting, developing, or decommissioning a solar energy generation project. These participants discussed:

- *Policy challenges* (n=10), including lack of transparency at both state and local levels regarding both regulation and incentives, lack of consistent state-level regulatory support, and policy complexity that hinders solar investment (eg, VDER)

- *Public perception and attitudes as challenges* (n=8), most referred to local opposition to siting and the perceived effects on local land cover, particularly the loss of forested land, individual human health, and perceptions of maintenance costs associated with solar installations

- E*conomic challenges* (n=8), specifically that those who can afford to invest in solar (wealthy individuals or companies) do not think the return on investment is worthwhile; the cost of permitting; the tax, policy, and economic barriers that disincentivize municipalities' accumulation of debt to acquire project financing; the lack of knowledge and transparency about economic and other incentives; the general challenges associated with the upfront costs; and the split incentives between building owners and occupants or developers

- *Technical challenges* (n=6), including the expensive and lengthy process of interconnection, grid constraints, and issues of solar installation on old rooftops

- When asked what went well in their experience with solar projects, interviewees (n=4) noted that *leadership and group dynamics* helped projects by establishing relationships and clarifying goals and values of different groups; these interviewees also said that having a trusted champion for a project helps. Others noted that the high price of electricity is an incentive to invest in solar development, that the price of solar technology is decreasing rapidly, and that local policies can be modified to lower barriers to solar development. No other theme regarding dynamics of project success was mentioned by more than one interviewee.

Among those without direct experience in solar development (8 out of 21 interviewees), perceived challenges to solar development included:

- *Policy* (n=7), such as restrictive town codes, lack of transparency or consistency in permitting processes, and challenges associated with predicting economic returns under VDER
- *Public perception and attitudes* (n=6), especially with siting-specific concerns, specifically that sites that are most acceptable to the public may not be the most technically or economically feasible
- *Economic challenges* (n=4), especially with decommissioning costs and lack of investment incentive for solar developers and companies that may have the available rooftop space
- 5 interviewees also noted that Long Island has limited land available for ground-mounted solar installations

When asked to describe the reasons people support or oppose solar development on Long Island, economic and environmental reasons were most often cited as reasons people support solar, while reasons for opposition focused on people's negative perceptions of and misconceptions about solar.

- 16 interviewees stated *environmental* reasons to support solar development, such as less reliance on fossil fuels, combating climate change, and cleaner air and water
- 14 interviewees noted that people support solar development for *economic* reasons, such as reduced energy costs for consumers, increased jobs, and improved energy independence
- *Public perception and attitude* factors were described as the major reason why people oppose solar by 16 interviewees. The main reasons for opposition included a lack of knowledge, misconceptions, and false reporting on solar projects; perceived human health and environmental risks; "green vs. green" tradeoffs; and attitudes about neighborhood aesthetics and property values.

When asked about challenges this project should seek to address, interviewees identified the following themes:

- 10 interviewees noted that the project should address *policy* challenges, and suggested areas of focus included issues with parking lot canopies; an analysis of permitting, interconnection,

codes, and net metering policies to develop policy best practices as well as streamlined permitting or preapproval process; convening a consortium that can speak with one voice to influence policy; and creating scenarios of solar development that policies can address, such as potential zoning issues

- 10 interviewees noted that the project should address *public perceptions and attitudes*, such as increasing education and outreach about the benefits of solar
- 7 interviewees suggested that the project should address *economic* issues, including project financing and possible models for innovative financing arrangements as well as addressing perceptions of the economic value and demonstrating that solar is a worthwhile economic investment
- 6 interviewees noted that the project should address *technical* challenges by providing a better understanding of interconnection issues and the baseline for solar development's potential for small, mid-, and large-scale projects
- 4 interviewees noted that the project should address *space limitations* and *siting* on Long Island, some noting the importance of GIS and mapping locations where solar installations can be sited

When asked specifically about opportunities for solar technology development that the project should explore:

- 13 interviewees noted commercial solar (business roofs, parking lots) as an opportunity to increase solar deployment on Long Island
- 8 noted residential solar as providing small-scale yet still important opportunities, as a lot of distributed solar can lead to major gains
- 7 noted community solar
- 7 interviewees noted an opportunity for policy support in adjusting codes and policies to promote solar development in areas or settings with the greatest potential, considered in terms of a combination of complex factors including technical, economic, and social feasibility
- Other opportunities included solar energy generation on farms, distributed energy via microgrids, energy storage, job creation, and the improved resilience provided by distributed energy generation and storage.

Overall, interviewees mentioned the following themes when discussing both issues impacting solar development and issues the project should address:

1. Siting, space, and land use issues (101 mentions) – this category cuts across economic, technical, policy, and public perception issues
2. Economic issues (85 mentions)

3. Policy issues (84 mentions)
4. Public perceptions and atttidues (82 mentions)

SUMMARY

Overall, the project's goals and work plan seem to align with the needs for the project as expressed by these interviewees, as the project is taking a multi-disciplinary approach to integrate social science, economic, and spatial considerations to collaboratively develop recommended strategies and actions to lower barriers to solar energy development on low-impact sites and reduce siting conflicts. The emphasis on technical and economic issues related to siting feasibilitysuggests a need for the leadership team to fully incorporate technical and economic concerns regarding site selection into the project's work plan.

The prominence of discussion regarding public perceptions and attitude as barriers to solar development indicates the importance of examining these factors more directly. The social science research associated with this project will involve a survey of residential electric utility customers on Long Island to understand the specific perceptual factors that may promote or hinder solar development. These factors include perceptions of environmental, economic, aesthetic, and health impacts of solar development as well as perceptions of social values (including beliefs about climate change, emphasis placed on attitudes among peers, trust in providers, etc.) to prioritize in energy development and planning on Long Island.

These interviews indicate the importance of policy in shaping solar development. However, it is important to note that while the project may involve policy review and the development of recommendations, the project team is not in a position to create, implement, or enforce policy. Furthermore, the policy environment is changing, and it is difficult to evaluate policy via a cross-sectional approach when the policy landscape is ever-evolving.

These interviews indicate the importance and complexities of scale, siting, and land use for solar development on Long Island, and the project team may benefit from working to initially identify and explore low-conflict siting options. These siting options may require innovative financing, permitting, and ownership structures as well as requiring additional technical assessments to determine feasibility. The work plan and process will likely benefit from attention to these complexities.

Appendix A. Stakeholder Interview Protocol – 20 August 2018

PURPOSE

The goals of the steering committee interviews are 1) to learn baseline information about knowledge and perceptions of solar energy technology development on Long Island; 2) to inform project development with steering committee input.

INTRODUCTORY SCRIPT FOR PHONE INTERVIEWS

Hello, my name is __ and I am ___.

Thank you for **agreeing to talk with me as part of the Long Island Solar Roadmap project**. The aim of the project is to build a shared understanding among a group of LI energy decision makers –solar developers, county and town governments, communities, and utilities.

As we begin to shape the project, we are reaching out to several individuals to learn more about their knowledge and perception of solar energy development on Long Island. This conversation is not for attribution. We will use your input to help us in the design of the project, but we will not attribute specific statements to you.

Do you have any questions before we get started?

If YES, answer that question(s) before proceeding with the interview.

If NO, proceed with the interview.

Ask permission to record the interview

What you say is important to us, so we'd like to take notes. To make sure our notes correctly represent what you say, we would also like to record the conversation. As I stated, this conversation is not for attribution and the recording will not be shared. Is that okay?

Before beginning the interview, remind participants:

Thanks again for your time and willingness to participate. Before we begin, I'd like to remind you that your participation is completely voluntary, you may choose not to answer any of my questions, and your responses will remain completely voluntary.

INTERVIEW QUESTIONS

1) Can you tell me about yourself and how your present work relates to current or potential renewable energy development on Long Island?

2) As you may know, NY State has a goal of getting 50% of its electricity from renewable sources by 2030, keeping in mind that this goal includes all renewable energy sources. From your perspective, what are some of the challenges or barriers to meeting the 2030 goal?

3) Now I'd like to ask you specifically about solar, and what role do you think solar technology can play in meeting this goal?

4) What do you see as some of the greatest opportunities for using solar technology to meet this policy goal?

Now we're going to move from thinking broadly about state policy to think specifically about **the Long Island Solar Roadmap project.** Before we get started with these questions, please keep in mind that the project and these questions focus on mid- to large-scale solar installations (500kW and larger) rather than residential solar.

5) Do you have any experience engaging with the process of siting, permitting, developing, or decommissioning a project for solar energy generation?

   If YES – Can you tell me about that experience? What kinds of challenges or barriers were involved? What worked well?

   If NO – What do you imagine are some of the challenges or barriers to siting solar energy generation on Long Island?

6) Are there **particular challenges or barriers** to solar energy development on Long Island that you hope this project will be able to address?

7) What the **biggest opportunities** for solar energy development on Long Island that you hope this project will address?

8) You likely work with or know groups of people who support and groups of people who oppose solar energy development on Long Island.

   a. How would you describe the reasons some groups support it?

   b. What are the reasons some groups oppose?

9) **From your own perspective**– what do you see as the benefits of solar development on Long Island? What do you see as the drawbacks?

10) Is there anything else you'd like to tell me about solar energy development on Long Island that we haven't already discussed?

11) Can you think of other projects happening around solar development on Long Island? If so, can you tell me about those projects?

12) Who else do you think we should talk to about perspectives on solar energy development on Long Island? We're really interested in including a range of perspectives - could you recommend people who have perspectives that differ from your own?

Thanks so much for sharing your perspectives with us.

CONSORTIUM INQUIRY

As the project moves forward. We are forming a consortium of diverse partners to identify policies and strategies that can help reduce siting conflicts and lower the barriers to installations in low-impact sites. We anticipate that the consortium will meet in person four to five times over the course of the project, which ends in December 2020.

1. Would you be interested in participating in the consortium?

   If YES – What level of engagement do you desire? (Attend consortium meetings, available for one-on-one follow ups, would like to only receive project updates via email)

   If NO – may I ask why?

   If MAYBE –Is there a day and time that I can follow-up with you?

2. Who else would be interested in participating in this project?
3. Are you interested in attending a one-hour webinar summarizing renewable energy goals and trends in New York State and Long Island, with a special focus on solar energy?

CLOSING

Thank you so much for your time today! A member of the project leadership team will be in touch to provide additional information and check in to see if you have additional questions or comments.

Appendix B. Interview Notes Template – 20 August 2018

INSTRUCTIONS FOR NOTE TAKERS

- Keep notes organized by question.
- **Questions 2-9 are coded.** In the **LEFT** column, place a 1 next to a theme if it is mentioned and a 0 next to the them if it is not mentioned. In the **RIGHT column and under all non-coded questions**, please take general notes. Try to keep thematic information organized across left and right columns.
- In addition to noting the presence or absence of the theme codes provided below note the time in the recording where each is mentioned (easily done as you re-listen to the interview).
- Throughout the interview, please be attentive for and note any misperceptions, inaccuracies, or deficiencies in knowledge that are mentioned.
- **Please re-listen to the recording and add to your notes**. These notes must be comprehensive and well-organized enough to allow for comprehensive thematic coding, so that the interviews can accurately inform project development.
- Try to avoid ambiguous language that insert your perceptions into your notes (i.e. what does it mean to "sound excited"?).
- Note the time in the recording that each question is asked and include it in the notes to enable easy reference.

The thematic codes suggested below are not meant to be exhaustive, meaning you should try to note any time they come up, but there will likely be a lot of other important information, which should also be noted.

NOTES TEMPLATE

Interview Identifier Code: **Date:**

Interviewer: **Note taker:**

1. Can you tell me about yourself and how your present work relates to current or potential solar energy development on Long Island?	
CODING **1 = present**	**2. As you may know, NY State has a goal of getting 50% of its electricity from renewable sources by 2030, keeping in mind**

0 = absent	**that this goal includes all renewable energy sources. From your perspective, what are some of the challenges or barriers to meeting the 2030 goal?**
Technical Challenges: Social/perceptual challenges: Economic challenges: Policy challenges: Scale challenges: Space challenges:	
CODING **1 = present** **0 = absent**	**3. Now I'd like to ask you specifically about solar, and what role do you think solar technology can play in meeting this goal?**
Small role: Big role: All renewables needed:	
CODING **1 = present** **0 = absent**	**4. What do you see as some of the greatest opportunities for using solar technology to meet this policy goal?**
Commercial solar: Community solar:	

Residential solar: Mixed use: Policy support: Issues of scale/size: Issues of timing/roof replacement/development: Economic opportunities: Technical opportunities:	
5. Do you have any experience engaging with the process of siting, permitting, developing, or decommissioning a project for solar energy generation?	
CODING **1 = present** **0 = absent**	**If YES – Can you tell me about that experience? What kinds of challenges or barriers were involved?**
Technical Challenges: Social/perceptual challenges: Economic challenges: Policy challenges: Scale/system size challenges: Space limitation challenges: Siting as challenge: Permitting as challenge:	
CODING **1 = present** **0 = absent**	**What worked well?**

Technical: Economic: Political/policy: Social/perceptual: Leadership/group dynamics: Space/siting:	
CODING **1 = present** **0 = absent**	**If NO – What do you imagine are some of the challenges or barriers to developing solar energy generation on Long Island?**
Technical Challenges: Social/perceptual challenges: Economic challenges: Policy challenges: Scale/system size challenges: Space limitation challenges: Siting as challenge: Permitting as challenge:	
CODING **1 = present** **0 = absent**	**6. Are there particular challenges or barriers to solar energy development on Long Island that you hope this project will be able to address?**
Technical Challenges: Social/perceptual challenges: Economic challenges: Policy challenges:	

Scale/system size challenges: Space limitation challenges: Siting as challenge: Permitting as challenge:	
CODING **1 = present** **0 = absent**	**7. What are the biggest opportunities for solar energy development on Long Island that you hope this project will address?**
Commercial: Community solar: Residential solar: Mixed use: Policy support: Social/perceptual issues: Issues of scale/size: Issues of timing/roof replacement/development:	
8. You likely work with or know groups of people who support and groups of people who oppose solar energy development on Long Island.	
CODING **1 = present** **0 = absent**	**a. How would you describe the reasons some groups <u>support</u> it?**
Economic: Environment: Technical: Political/policy:	

Social/perceptual: Scale/size: Mixed use:	
CODING **1 = present** **0 = absent**	**b. What are the reasons some groups <u>oppose</u>?**
Economic: Siting/project specific: Technical: Political/policy: Social/perceptual: Scale/size: Mixed use: Also note: optimism/pessimism (perception of identification with issues) and any points of conflict that are mentioned	
CODING **1 = present** **0 = absent**	**9. From your own perspective– what do you see as the benefits of solar development on Long Island? What do you see as the drawbacks?**
<u>Benefits</u> Economic: Environment: Technical:	

Political/policy: Social/perceptual: Scale/size: Mixed use: **<u>Drawbacks</u>** Economic: Siting/project specific: Technical: Political/policy: Social/perceptual: Scale/size: Mixed use:	
10. Is there anything else you'd like to tell me about solar energy development on Long Island that we haven't already discussed?	
11. Can you think of other projects happening around solar development on Long Island? If so, can you tell me about those projects?	
12. Who else do you think we should talk to about perspectives on solar energy development on Long Island? We're really interested in including a range of perspectives - could you recommend people who have perspectives that differ from your own?	

CONSORTIUM INQUIRY

1. Would you be interested in participating in the consortium? What level of engagement do you desire?
2. Who else would be interested in participating in this project?
3. Are you interested in attending a one-hour webinar summarizing renewable energy goals and trends in New York State and Long Island, with a special focus on solar energy?