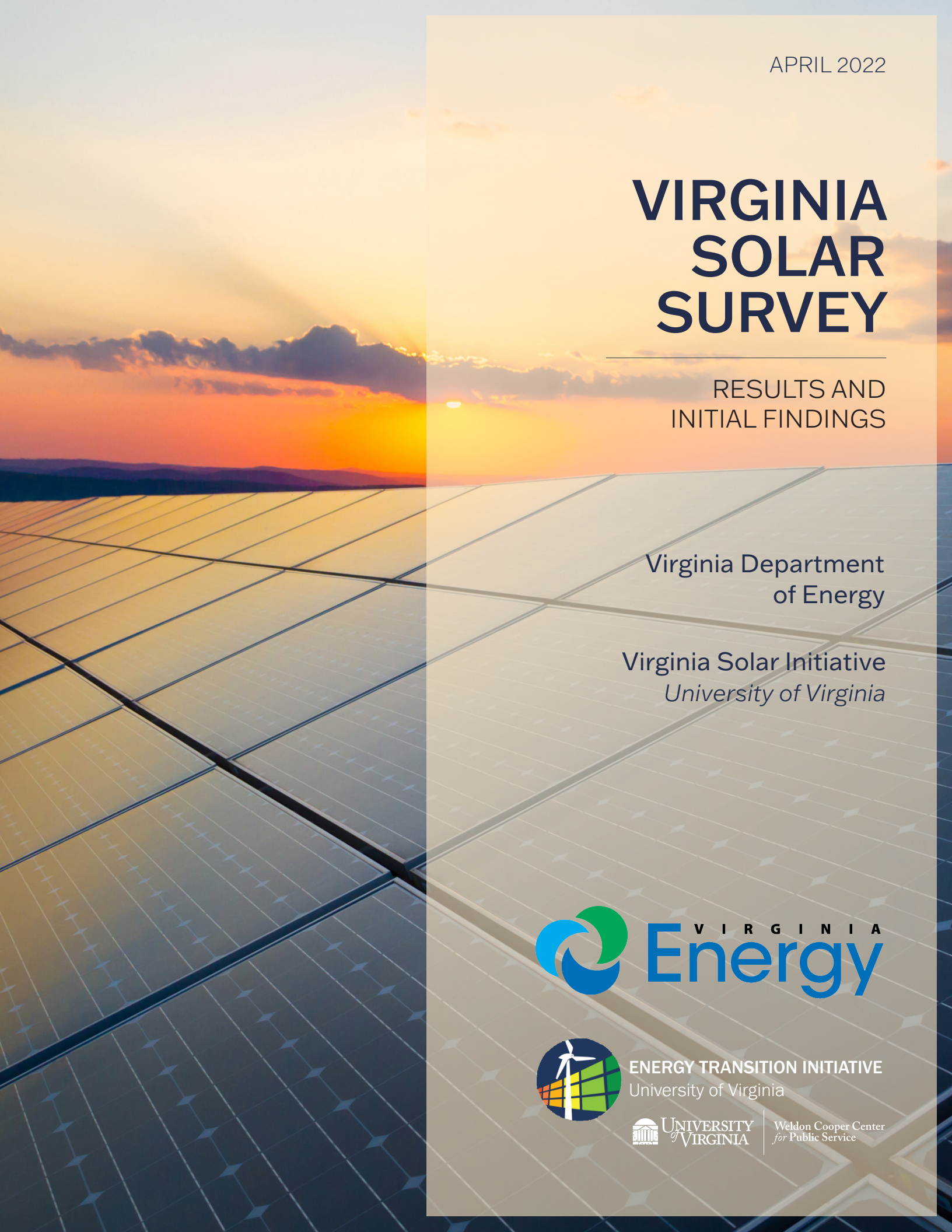


APRIL 2022

VIRGINIA SOLAR SURVEY

RESULTS AND INITIAL FINDINGS

Virginia Department of Energy

Virginia Solar Initiative
University of Virginia

VIRGINIA Energy

ENERGY TRANSITION INITIATIVE
University of Virginia

UNIVERSITY of VIRGINIA | Weldon Cooper Center for Public Service

HOW READY IS VIRGINIA FOR SOLAR DEVELOPMENT?

On July 13, 2021, the Virginia Department of Energy and the Virginia Solar Initiative at the Weldon Cooper Center for Public Service at UVA invited the Planning Director (or equivalent manager role) of every Virginia county and independent city to participate in the Virginia Solar Survey.

The first of its kind in Virginia, the Virginia Solar Survey aimed to collect data and information related to each county and city's experience, readiness, efforts and needs related to solar development.

This report contains a summary of results and preliminary analysis of key findings.

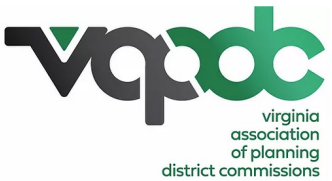
ACKNOWLEDGEMENTS

- This survey and report was developed and conducted by Carrie Hearne and Aaron Berryhill, Virginia Department of Energy and Elizabeth Marshall, the Virginia Solar Initiative at the Weldon Cooper Center for Public Service—University of Virginia.

- Many thanks to Kara Fitzgibbon, Director of the Center for Survey Research at the Weldon Cooper Center for Public Service at University of Virginia, and to her team for their expertise and guidance in ensuring the survey, results and analysis adhered to the highest professional standards.

- The questionnaire was developed with input and guidance from a stakeholder group. Many thanks to our questionnaire development team for their time and willingness to contribute to this effort:

  - David Blount, Virginia Association of Planning District Commissions
  - Darren Coffey, The Berkley Group
  - Judy Dunscomb, The Nature Conservancy
  - Nick Kasza, SolSmart
  - Joe Lerch, Virginia Association of Counties
  - Mary Beth Major, Virginia Department of Environmental Quality



We gratefully acknowledge the localities who beta tested the survey instrument and provided thoughtful feedback and suggestions. Their input was indispensable in producing a relevant, unbiased, and meaningful survey.

- City of Charlottesville
- Caroline County
- Albemarle County
- City of Danville
- King and Queen County
- City of Chesapeake
- Clarke County
- Madison County

This survey would not have been possible without the dedication, creativity, and initiative displayed by University of Virginia student researchers.

- Bezawit Mesfin Bogale
- Bryce Joseph Forys
- Levi Joseph- Bartek Davis

CONTRIBUTING ORGANIZATIONS

THE VIRGINIA DEPARTMENT OF ENERGY (VIRGINIA ENERGY)

Virginia Energy is leading the Commonwealth to a reliable and responsible energy future. Responsible for deploying and promoting renewable energy, Virginia Energy also works to improve energy efficiency among public entities. The agency regulates the mining and natural gas industries by ensuring worker safety and protects and improves the environment through enforcement and reclamation. Virginia Energy has a special focus on economic development in coal-impacted communities. The agency is also host to the state's Geologic Survey.

THE VIRGINIA SOLAR INITIATIVE (VSI)

THE UNIVERSITY OF VIRGINIA, WELDON COOPER CENTER FOR PUBLIC SERVICE

VSI is a program within the Energy Transition Initiative (ETI) at the University of Virginia Weldon Cooper Center. ETI is dedicated to helping policy makers and other stakeholders navigate the challenges that come with shifting Virginia's energy systems away from fossil fuels and towards renewables and other zero-carbon sources. Specifically, VSI aims to leverage the world-class research, expertise, and resources of the University of Virginia and deliver strategic and technical assistance to localities in order to reduce policy uncertainty related to the siting of solar energy generation and energy storage facilities. We do this by convening stakeholders, facilitating critical conversations, and developing key research initiatives and tools to inform public discourse and policies related to Virginia's clean energy future.

VSI is housed within the Weldon Cooper Center which draws on eighty years of expertise to serve organizations, governmental bodies, and communities seeking to serve the public good. The Center conducts advanced and applied research to make a difference in governance and community life.They offer training programs and expert assistance to public leaders and skill development for political leaders who seek to work cooperatively with others.

VIRGINIA Energy

ENERGY TRANSITION INITIATIVE AT UVA

UNIVERSITY of VIRGINIA | Weldon Cooper Center for Public Service

TABLE OF CONTENTS

For additional data and resources, visit the Virginia Solar Survey website:
https://solar.coopercenter.org/solar-survey

ABOUT THE SURVEY

INTRODUCTION

In Virginia, the permitting and siting of solar energy and energy storage facilities is heavily informed by local governments. Therefore, to realize the full potential of solar energy development in Virginia, it is important to understand and support the solar experience, concerns and priorities of local governments. To date, there has not been a single, centralized source of this information. The Virginia Solar Survey was designed to address this need: to collect and reveal comprehensive regional and statewide solar development trends, to understand the perspective of local governments and to gather information to better support research, programming and resources for localities, the solar industry and others impacted by the growth of this sector.

The first of its kind in Virginia, the Virginia Solar Survey is a comprehensive questionnaire that collects important data from local government officials on solar readiness, policy and solar energy and energy storage development. The survey was distributed online to all 95 counties and all 38 independent cities in Virginia between the dates of July 13 and August 13, 2021. With 109 out of 133 localities completing the survey and all geographic regions of the Commonwealth represented in the data set, the high response rate of 82% gives confidence that the results reflect statewide trends and patterns.

Upon completion, the Virginia Department of Energy, the Virginia Solar Initiative at the University of Virginia's Weldon Cooper Center for Public Service, and the Center for Survey Research at the University of Virginia's Weldon Cooper Center for Public Service, collected and analyzed the survey data.[1]

Initial findings and insights in this report explore how Virginia local governments are responding and adapting to the growth of solar energy generation and energy storage. Additional detailed reports, each drawing upon survey data and anchored in a major topic of interest, will be released in the near future.

[1] At the time the survey was administered, Virginia Department of Energy was named Virginia Department of Mines, Minerals and Energy (DMME). References to DMME should be considered references to Virginia Department of Energy.

VIRGINIA POLICY LANDSCAPE

Virginia is on a path of clean energy transition, which includes increased energy efficiency, electrification of energy services, continued nuclear energy generation and deployment of various renewable energy sources such as offshore wind, energy storage and solar energy technology. Solar development will play an increasing role in delivering low-cost reliable energy, reducing reliance on fossil fuels and meeting increased demand for renewable energy.[2] Market forces, demand for renewable energy and policy will continue to drive solar development.[3]

> "With the solar field rapidly changing, it's hard to feel totally ready and hard to know at what point to review/update policy/regulations."
>
> *Locality representative, Virginia Solar Survey Respondent*

Over the past five years, Virginia has seen rapid growth in solar energy development due to a variety of global, national and regional factors. Fortune 500 companies and major cities alike are rapidly shifting their energy procurement strategies to prefer renewable energy as they make public commitments to reduce greenhouse gas emissions and shift their carbon footprint to low or zero-carbon goals. Global costs of solar energy have also dropped dramatically as demand increases worldwide.

In 2020, Virginia lawmakers passed the Virginia Clean Economy Act (VCEA) which set forth a variety of clean energy mandates primarily affecting Virginia's energy sector. Included in the VCEA is a renewable portfolio standard (RPS) that mandates Virginia's two largest investor-owned utilities (IOUs) to generate 100 percent carbon-free electricity by mid-century. In addition to a variety of renewable energy targets for generation technology such as offshore wind, the VCEA also deems 16,100 megawatts (MW) of solar and onshore wind to be in the public interest, greatly reducing the barriers for project approval with the State Corporation Commission. Given Virginia's low level of wind resources onshore, it is widely expected that most of the 16 gigawatts will be made up of solar projects, namely large-scale solar.

In addition to large-scale solar, various scales and models of solar will be included in Virginia's clean energy transition. These include customer-owned "distributed" generation solar on residential or commercial properties (mostly rooftops); community or "shared" solar; third-party owned solar arrays hosted on schools, government buildings and low-income organizations or households, to name a few. That said, large-scale solar projects offer the lowest cost, since these developments maximize economies of scale.

[2] *Achieving Clean Electricity Generation at Least Cost to Ratepayers by 2045, Weldon Cooper Center*
[3] *Modeling Decarbonization: Report Summary and Policy Brief for Virginia Governor's Office Administration and Policymakers (Chapter 1194, 2020)*

EXAMINING THE NEED

Existing publicly available data sources do not succinctly summarize the state of solar in local communities across Virginia and how ongoing changes have been managed at the local government level. The purpose of the Virginia Solar Survey is to gain insights into local solar planning, zoning, permitting and locality readiness. Specifically, the Virginia Solar Survey is intended to add to existing public knowledge by revealing insights into complex local permitting factors, emerging local positions or concerns related to solar development, and the likely trajectory of solar policies.

Currently, some data on large-scale solar project applications and policy proposals is available in various forms at the regional, state and local level. Collectively, they provide a very broad snapshot of potential proposed solar projects. However, these data sources are not all reconciled with one another and can often be misleading.

In addition to large-scale solar, there is a need in Virginia to collect and consolidate more comprehensive information about how local governments are preparing to support an increase in the development of distributed solar generation and energy storage. Reflective of their unique individual attributes and authority, each local government adopts its own permitting and inspection policies and processes. Moreover, local governments often have varying approaches to energy procurement and the use of solar for public buildings and facilities. This appears to be an area where organizations and agencies at the local, state and federal levels can coordinate to present transparent data, share best practices and work together to overcome barriers and gain mutual benefits.

Regional Data

PJM regional transmission organization's New Services Queue provides a summary of all interconnection requests for large-scale solar projects filed in PJM territory.[4] The PJM queue is an indicator of the universe of possible large-scale solar projects that may be proposed to a locality, but because projects that are abandoned or infeasible stay in the queue, it does not accurately indicate which projects will ultimately be constructed.

State Data

Virginia Department of Environmental Quality's (DEQ) Notice of Intent (NOI), Permit by Rule (PBR) and Section 130 permit datasets provide a summary of solar projects greater than 500 kW and up to 150 MW for which developers have submitted an NOI or applied for state permits from DEQ.[5] DEQ datasets provide a strong an indication of projects likely to move forward, but because "local certification" is a prerequisite for a PBR, DEQ datasets are not a list of all projects being reviewed at the local level.

[4] *PJM - New Services Queue*
[5] *Renewable Energy Project Status | Virginia DEQ*

The State Corporation Commission (SCC) maintains public records for solar projects above 150 MW and any other sized project that are applying for a certificate of public convenience and necessity (CPCN) from the SCC.[6] Additionally, the SCC provides Virginia Energy with quarterly data for all net-metered (distributed) solar installations in the state. This data provides a very high-level summary of the total number and capacity of all net-metered solar installations in Virginia.

Local Government Data

Since localities maintain their own zoning and public hearing records, there is not one central source that provides an accurate statewide roundup of project applications or policies being proposed and reviewed. Generally, adopted land use policies and ordinances can be found on locality websites or online ordinance-hosting platforms such as Municode.[7] Virginia Tech's Renewable Energy Facility Siting (VT-REFS) program has collected links to local ordinances on a map on their website.[8]

Public hearing notices and agendas reveal where projects or policy updates are scheduled for public review, and meeting minutes provide records of public hearings and actions. However, meeting minutes and resolutions are not always readily available immediately following a public meeting. Local media outlets will often cover large-scale solar project hearings, or major shifts in local policy, but this is also not a comprehensive source of information.

Each locality has its own process for issuing building permits and conducting inspections, and not all localities publicly report their issued permits or require a public hearing. Therefore, it can be challenging to track small, distributed energy generation project activity, as well as the adoption of related policies and procedures. Similarly, local decision-making processes to procure solar energy for public buildings and facilities often varies. Thus, this survey asks questions to gain better insights into local government procurement, policies and decision-making processes. These insights will help inform programs, policies and best practices to support local government officials in their day-to-day functions and alleviate challenges related to the permitting and development of solar energy projects at all scales.

[6] *Search by Case Information | SCC Docket Search (virginia.gov)*
[7] Virginia Municode Library: *https://library.municode.com/va*
[8] *Maps: Local regulation of renewable energy facility siting in Virginia – VT-REFS*

METHODOLOGY

In response to the need for centralized, comprehensive information regarding solar development, the Virginia Solar Survey was designed to give "point in time" comprehensive insights into what localities are experiencing and what policy questions are being contemplated and pursued. In addition, the questionnaire was designed to reveal the varying levels of solar readiness of localities and their emerging positions on solar-related topics. The survey also allowed the respondents to provide additional insight into specific solar-related experiences or concerns across a range of scales, applications and policy or regulatory tools.

This survey was developed to be taken by the planning director (or equivalent role) of every Virginia county and independent city. Virginia towns were not included because the sometimes complex interrelationship between town and county policies creates unique considerations that may warrant their own survey in the future.

Additionally, confidential data collection protocol was followed, with reported results aggregated to the regional and/or state level. Protecting the confidentiality of individual localities encourages honest responses while still allowing for tracking of participation to facilitate targeted reminders and improve overall response.

UVA's Center for Survey Research (CSR) served as a consultant on this project and provided support in questionnaire development and data analysis. Using industry best practices and standards, CSR ensured question structure and wording were unbiased, and they produced the quantitative datasets used to support the discussions featured in the reports.

Questionnaire Development

Survey questions were developed by the survey team in consultation with the Questionnaire Development Team (QDT). Members of the QDT included representatives from The Nature Conservancy (TNC), Virginia Association of Planning District Commissions (VAPDC), SolSmart, the Berkley Group, the Virginia Department of Environmental Quality (DEQ) and the Virginia Association of Counties (VACo). To minimize possible bias in survey questionnaires, it was critical to have input from diverse stakeholder perspectives. The QDT helped formulate the survey outline and scope, as well as vet questions to ensure they would be relevant and helpful to their respective sectors. For example, consultation with TNC resulted in the inclusion of various questions on environmental awareness, conservation and low impact development topics. The sectors represented by the QDT not only helped generate useful and relevant questions but also helped in phrasing questions to limit non-response and other biases. Based on QDT input, the survey questions were divided into nine sections, with questions grouped by similar and related topics.

Beta Testing

Before administering the survey statewide, the survey team conducted beta-testing with six localities representing various regions, sizes and experiences with solar. The survey questions were

compiled into a single online survey using the Qualtrics survey platform. Survey logic (gating questions) was employed so that to the greatest extent possible, only relevant questions were asked of each respondent. The test respondents completed the survey online and provided qualitative feedback in writing and verbally to ensure the questions were non-leading and relevant, and survey logistics ran smoothly. The test respondents also offered general feedback to improve the survey and the quality of the resulting data. With this feedback incorporated, the survey questionnaire took its final form. Ultimately, it was reviewed and approved by the QDT and CSR and prepared for distribution.

OUTLINE OF SURVEY QUESTIONNAIRE:

Section 1: *Solar Readiness*
Section 2: *Renewable Energy Procurement*
Section 3: *Distributed Generation*
Section 4: *Utility-Scale Solar*
Section 5: *Comprehensive Plan*
Section 6: *Zoning*
Section 7: *Economic Considerations*
Section 8: *Energy Storage*
Section 9: *General Questions*

Survey Logic

Consistent with the beta testing, the official survey questionnaire was administered via Qualtrics, an online survey administration platform. In doing so, the survey employed survey logic (sometimes called survey flow rules), which is a system of using gating questions to ensure the follow-up questions are relevant to the participant and consistent with their previous responses. For example, if a locality stated they had not yet received an application for a large-scale solar project they would not receive the questions relating to their experience permitting large-scale solar projects. Survey logic rules are not indicated on the PDF of the full survey questionnaire, but flow charts in Appendix B indicate how survey logic rules were applied.

Distribution

The survey was administered in July and August of 2021 to all 133 counties and independent cities in Virginia. The survey was distributed via email directly through the Qualtrics online survey platform. For each locality, the Planning Director or equivalent role was identified as the primary contact; secondary contacts who could likely assist in survey completion were identified for each locality. Every locality's primary and secondary contact received an introductory advance email alerting them to the forthcoming survey and confirming the appropriate primary contact's information.

A survey invitation letter was then emailed via Qualtrics, providing each primary contact with a unique link to the survey, instructions and a PDF of the questionnaire to allow a preview before completing online. The unique link allowed the survey team to track progress and appropriately follow up to encourage completion, while still maintaining the confidentiality of individual responses. Within two weeks of the initial survey invitation email, non-responding localities received reminder emails encouraging participation, and if necessary, a phone call.

Results and Analysis

Upon completion of the survey on August 13, 2021, the frequency of responses was calculated for each question and is included in this report in graphic formats in Appendix B. A total of 109 localities participated in the survey, equaling 82% of all counties and independent cities.

- 78 out of 95 Virginia counties (82%) participated in the survey
- 31 out of 38 Virginia independent cities (82%) participated in the survey
- The Central and Valley regions had the highest rate of participation, with only one locality in each of these regions not participating.

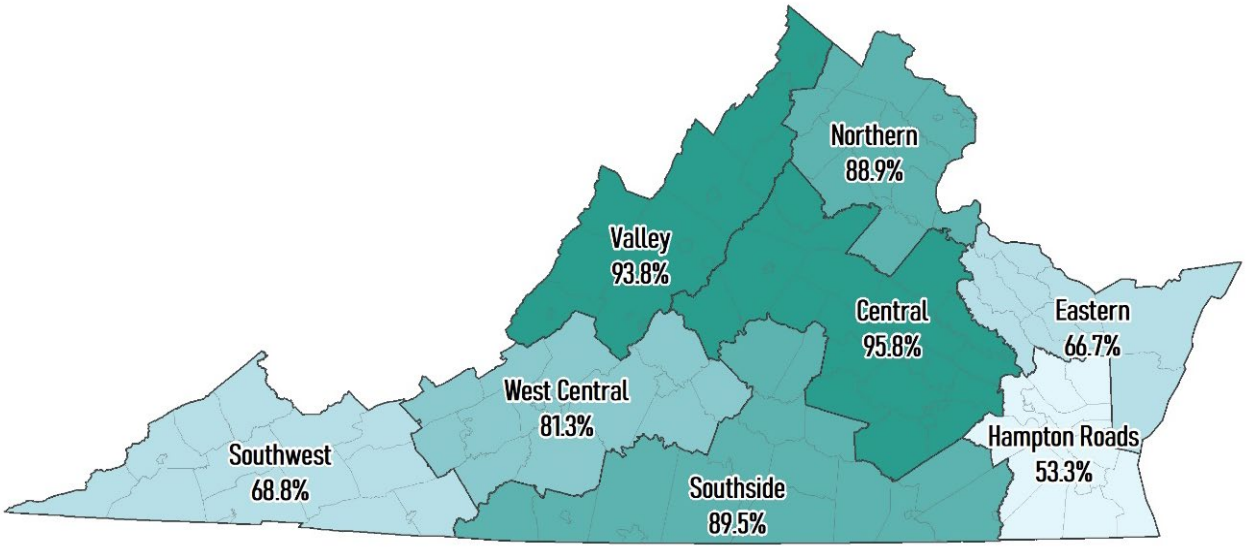


Figure 1. Locality Solar Survey Participation Rate by Region: 109 of 133 localities participated (82%)

In addition to evaluating the overall frequency of responses, comparative analyses were run for specific subgroups for each survey question. Due to the overall volume and length of these comparative analyses, only the relevant findings and graphics are presented within this report. Data tables for the comparative analysis for each question is located in the Virginia Solar Survey Results: Additional Data and Analysis.[9]

[9] The Virginia Solar Survey Results: Additional Data and Analysis can be found on the Virginia Solar Survey site under Additional Resources: *https://solar.coopercenter.org/solar-survey*

For this survey, the following independent variables were used in the comparative analysis:

- ## VIRGINIA REGIONS

  Regions are defined using the Weldon Cooper Center Demographics Research Group's eight regions for the Commonwealth of Virginia.[10] These regions have been developed based on communities' shared demographic, social, economic and geographic characteristics. These regions were discreet enough to reveal meaningful trends, while also large enough that individual locality responses could remain confidential.

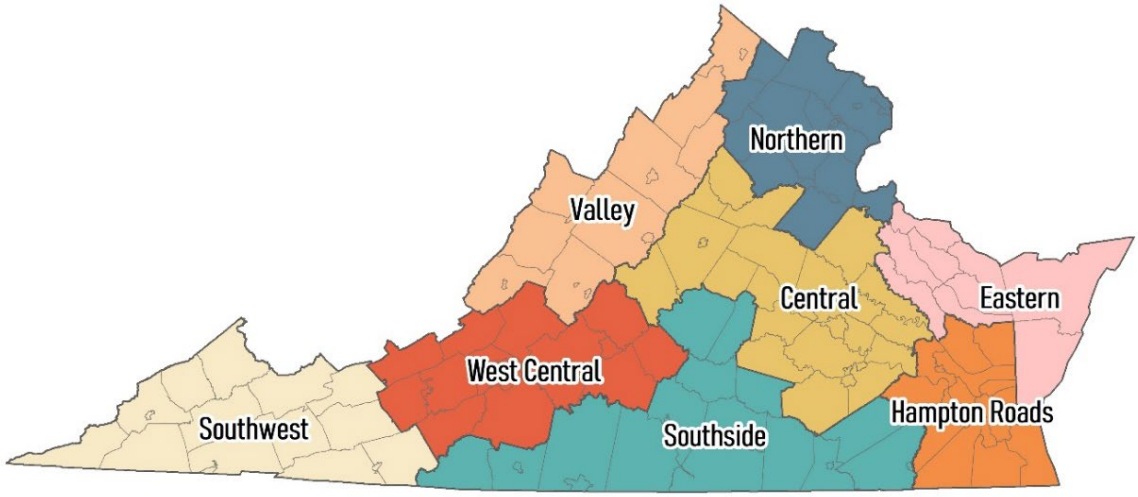


Figure 2. Virginia Regions from Weldon Cooper Center Demographics Research Group

- ## ELECTRIC SERVICE PROVIDER

  Using publicly available information on utility service territories, each locality was classified as having electric service from Dominion Energy, Appalachian Power Company, both or neither. These utilities were identified in the comparative analysis due to the policies from the VCEA which impact them uniquely and separately from Kentucky Utilities (know as Old Dominion Power Company in Virginia), rural electric cooperatives or municipal utilities.

- ## EXPERIENCE WITH SOLAR

  The solar experience variable is an index based on eight component items, those components being eight questions from the survey that together indicated the extent to which a locality had "experience" with solar development. A detailed definition of the "experience" variable is provided in the Virginia Solar Survey Results: Additional Data and Analysis.[11]

[10] To learn more about how these regions were defined, please visit the Cooper Center website: *https://demographics.coopercenter.org/virginia-regions*

[11] The Virginia Solar Survey Results: Additional Data and Analysis can be found on the Virginia Solar Survey site under Additional Resources: *https://solar.coopercenter.org/solar-survey*

- ## COMMUNITY CLASSIFICATION

  In the survey, the respondents were asked to self-define their locality as *rural, urban, suburban, combination* or *other*. An open text box was provided for a respondent to explain their *combination* or *other* choice. More than half of localities that chose *combination* described themselves as a combination of rural and suburban. See Appendix C for summary of the quote responses.

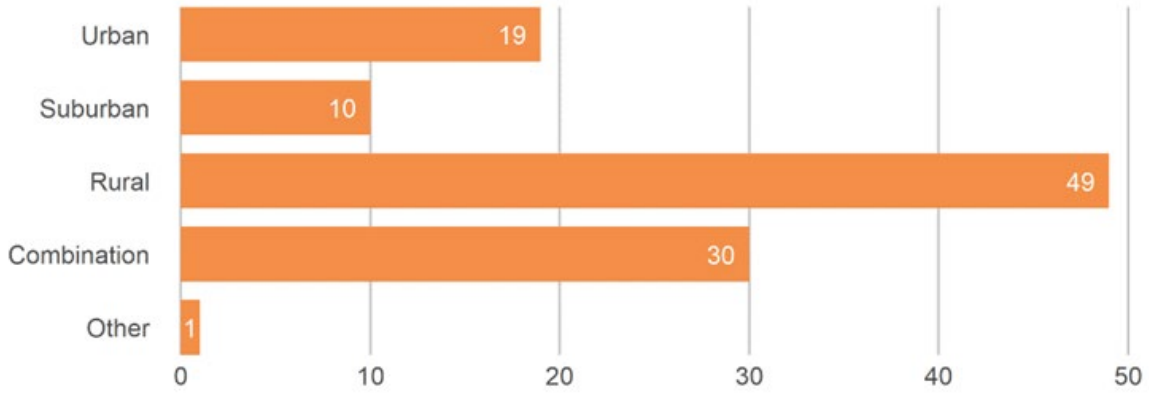


Figure 3. Total Survey Respondents, by Community Classification (Q9.3)

Based on these subgroup variables, contingency tables (or cross-tabulations) were created to conduct the comparative analysis for each variable and every question in the survey. These contingency tables facilitated the comparison of responses between different groups by showing the count of responses across multiple variables simultaneously.

Ultimately, given the size of this survey's sample (109 respondents) and despite a high rate of response rate of 82%, many observed relationships throughout the comparative analyses were not statistically significant (alpha level of 0.05, or 5%, significance). Nevertheless, given the high response rate, this data still provides a high-confidence overview of statewide patterns and trends related to local solar development and policies.

ABOUT THE REPORT

This report covers a broad analysis of the survey results overall, as analyzed by Virginia Energy and the UVA Virginia Solar Initiative. It provides explanations of many of the key topics and explores general trends that emerged from the survey. It also presents how local governments are responding to increased local solar development and how they are choosing to update or implement local policies and processes.

The survey data presented in this report represents a point in time in local solar development as of August 2021. This data represents the responses of most but not all Virginia localities. As a result, this document provides a broad overview of the status of local solar development in Virginia but is not a fully comprehensive and exhaustive report of all local solar activity in Virginia.

Following the release of this initial report, the survey team will continue to produce more detailed analyses relating to specific elements of solar and storage development in localities as it relates to the survey results. These more detailed reports on large-scale solar, distributed solar, local government energy procurement and energy storage will be released at a future date.

Key Terms and Concepts

To better understand and contextualize the findings detailed in this report, the information below explains and clarifies relevant terms and concepts. These concepts, as used in this report, are consistent with definitions in the Code of Virginia and established national and state resources about local solar development.

LARGE-SCALE SOLAR

Large-scale solar can take many forms as ground-mounted installations.[12] For this report, large-scale solar encompasses both utility-scale solar and community-scale solar projects using photovoltaic (PV) technology. Large-scale solar projects are connected directly to the grid and are unlikely to be providing electricity solely to an on-site user.

- *Community-Scale Solar:* Community-scale solar projects are typically ground-mounted. These projects are more often connected to the distribution network and have a rated capacity of between 500 kW (kilowatts) and 5 MW (megawatts). In Virginia, these projects are eligible for an expedited Section 130 review through the DEQ. Furthermore, this scale may include subscriber-based projects that are regulated as "community solar" and/or "shared solar" projects within electric cooperative utility or investor-owned utility territory. Many potential projects on brownfields and landfills would be in this size range.
- *Utility-Scale Solar:* Utility-scale solar projects are typically ground-mounted and are the principal land use of an area of land. They connect to the transmission network and have a rated capacity greater than 5 MW and can be upwards of a hundred megawatts or more. In

[12] *Large-Scale Solar Development: A Playbook for Southwest Virginia*

Virginia, these projects are permitted through the DEQ's PBR process or the SCC's CPCN process.

DISTRIBUTED GENERATION SOLAR

Distributed generation refers to solar installations that generate electricity at or near where it will be used. These are smaller PV systems that can be rooftop, building-integrated, small ground-mounted or even pole-mounted installations. Most distributed generation solar installations are net-metered and interconnected with a customer's electrical wiring to a utility's distribution network under provisions in the Code of Virginia.[13]

- *Residential*: Residential distributed generation solar installations are specifically located on property owned or leased by residential customers and the installation is connected to the customer's electrical wiring. In Virginia, under net-metering provisions, residential customers can have an installed capacity of no more than 25 kW.
- *Nonresidential (Commercial, Industrial and Public):* Nonresidential distributed generation solar installations are specifically located on property owned or leased by nonresidential customers, which includes local governments as well commercial and industrial uses. In Virginia, under net-metering provisions, nonresidential customers can have an installed capacity of no more than 3 MW.

LOCAL GOVERNMENT RENEWABLE ENERGY PROCUREMENT

The operations of local governments, including buildings and facilities, requires the purchase and use of electricity that may come from renewable sources such as solar. Renewable energy purchases made by local governments may include on-site solar installations, community solar projects and off-site power purchase agreements.

ENERGY STORAGE

Energy storage technology can be used to balance the flow of intermittent renewable energy sources. Accordingly, energy storage projects may be installed along with either distributed generation or large-scale solar projects. Energy storage may be from a variety of technologies, but recently has most often been lithium-ion technology. Similar to solar, Virginia has an energy storage target for utilities to build or procure additional energy storage capacity, supporting the transition to 100 percent clean electricity by mid-century, per the VCEA.

- *Utility-Scale Energy Storage:* Utility-scale energy storage refers to storage projects with a capacity greater than 5 MW that are connected to the transmission network. Like solar, these projects are permitted through the DEQ's PBR process.

[13] Code of Virginia *§ 56-594*

SURVEY FINDINGS

KEY FINDINGS

Virginia has experienced rapid growth in various forms of solar over the past five years, and local governments play a critical role in the initial review of solar applications, permitting new installations and incorporating solar into local operations. This report summarizes the broad, primary findings of the Virginia Solar Survey. It includes a discussion of a variety of topics covered throughout the survey but does not explore every survey question in detail. Generally, the findings explore how local governments are responding to the growth of both distributed generation and large-scale solar in Virginia. The key findings noted below are supported by the data in the ensuing report:

- The widespread increase in distributed generation solar development is reflected in the fact that local governments are actively reviewing and updating their local distributed generation solar policies and permitting processes.
- The growth of large-scale solar has become an important consideration for many Virginia localities, but rural communities in the Central and Southside regions have been the most likely to have experience with large-scale solar and to have updated their solar policies.
- For large-scale solar, localities collectively had the most interest in the local economic benefits and the physical development impacts on features such as agricultural land, cultural resources and soil.
- Statewide, if localities have updated their local solar policies, they have been more likely to directly address large-scale solar than distributed generation solar.
- Local governments have been more likely to address large-scale solar using conditional use permits/special use permits and the zoning ordinance, and are not as likely to specifically address large-scale solar in the comprehensive plan.
- Localities have been most likely to turn to other local governments for assistance and information gathering.
- Some local governments have taken action to install solar on public property, but it remains an opportunity for additional growth.
- Regional differences help to inform local governments' experiences with solar and their interests for future assistance and guidance.

STATEWIDE SOLAR ACTIVITY

In recent years, various forms of solar energy have grown rapidly in Virginia. Declining costs for solar photovoltaic panels combined with federal and state policy incentives and goals have supported the rapid growth in solar development. As a result, Virginia has seen significant growth in the total electricity generated annually from solar—from 30 gigawatt-hours in 2015 to 3,675 gigawatt-hours in 2021. This generation includes solar from both distributed and utility-scale solar installations.[14] Accordingly, the total number of distributed and large-scale solar installations has grown quickly in communities across the state. At the end of 2015, Virginia had zero active utility-scale solar installations and only around 3,000 distributed solar installations. By the end of 2021, there were 51 active utility-scale solar facilities (five MW or greater) with a total capacity of 2,657 MW (*See Figure 6*). Also by 2021, there were approximately 26,000 distributed solar installations with a total capacity of 248 MW (*See Figure 5*).

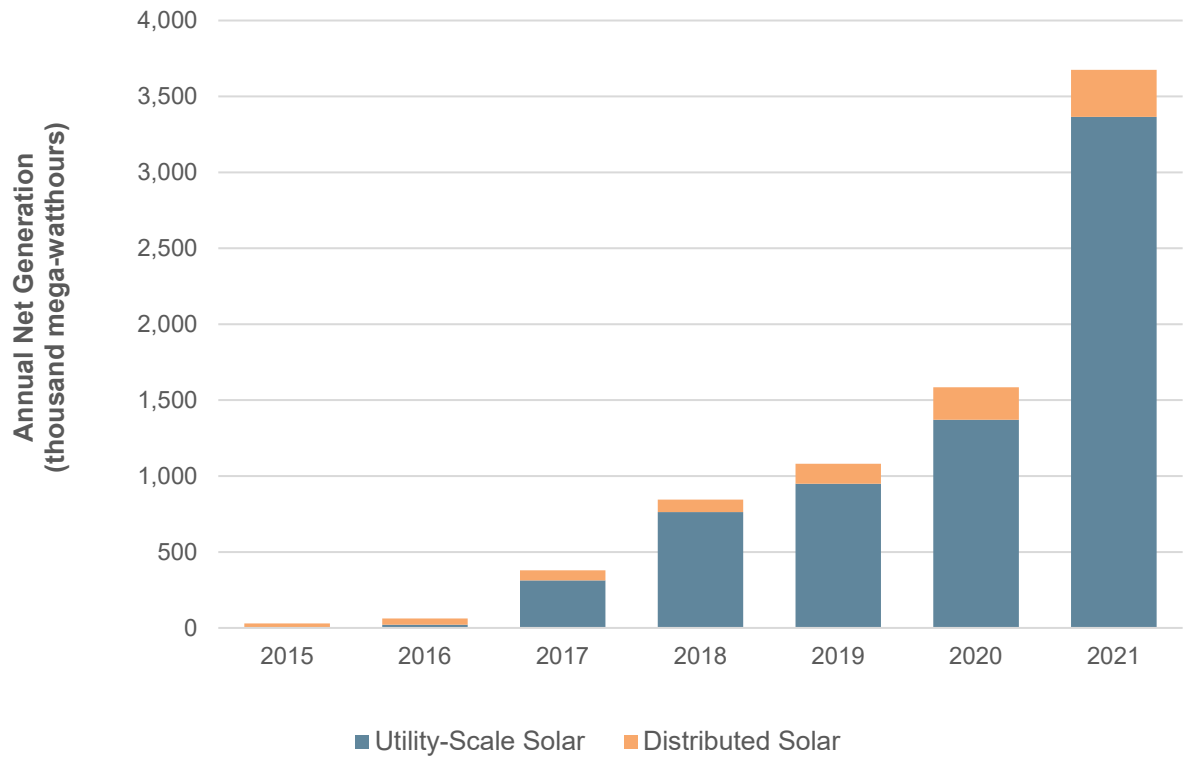


Figure 4. Annual Net Generation from Solar in Virginia
Source: U.S. EIA

[14] *U.S. Energy Information Administration (EIA)*

LOCAL GOVERNMENT RESPONSE

With the rapid growth in solar energy in recent years, localities throughout Virginia are considering how solar energy can be properly sited in their respective communities. Local governments are spending extra time and resources reviewing, permitting and inspecting local solar installations at a variety of scales. Depending on the various characteristics of a locality, their recent experience and approach to local solar development may be very different, with some localities more familiar with small distributed solar and others more familiar with large-scale solar.

For distributed solar, the local permitting and inspection process is the main action taken by local governments to oversee the local development of distributed solar. Accordingly, many localities (54%) have published their permitting and inspection processes online.

However, for large-scale solar facilities with additional complex development considerations, local governments have an increased responsibility to review expansive development applications and issue permits for development. In the survey, 51 localities responded that they had reviewed a large-scale solar application, and 44 localities have ultimately approved an application for a large-scale solar facility.

Distributed Solar

Currently, most residential and commercial electricity customers in Virginia are eligible to install and benefit from small distributed solar installations through net-metering. With over 26,000 small net-metered solar installations in Virginia as of Q4 2021, many property owners throughout Virginia have considered or already installed solar on their rooftops or adjacent property.[15] In response, localities are taking action to update their permitting processes to accommodate and prepare for the increased local interest in distributed solar.

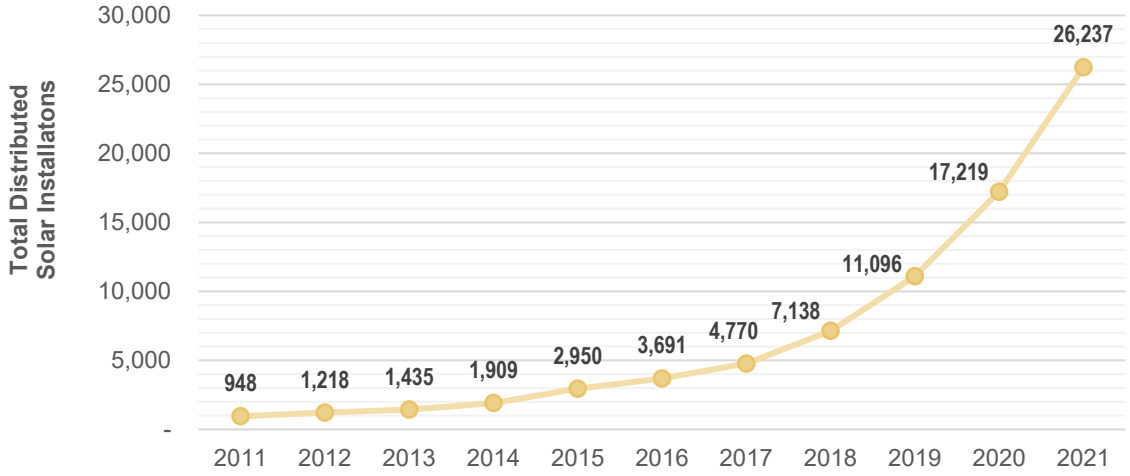


Figure 5. Total Distributed Solar (Net-Metering) Installations in Virginia

[15] Virginia State Corporation Commission, Q4 2021

Posting an online summary of local permitting processes for small distributed solar installations is an established best practice to simplify development considerations, reduce costs for property owners and also make local government operations more efficient.[16] This action signals that many localities in Virginia are preparing or responding to increased local demand to install distributed solar. According to survey respondents:

- 54% of localities (59 out of 109) indicated that they already have posted an online summary of the local permitting process for residential and commercial distributed solar installations.
- 63% of *urban* localities, 63% of *combination* localities, 55% of *suburban* localities and 45% of *rural* localities have posted an online summary of the local permitting process for distributed solar installations.
- Regionally, localities in *Eastern* (83%), *Northern* (75%) and *Southwest* (64%) Virginia were most likely to have summarized a permitting process for distributed solar while localities in *Southside* (24%) were least likely to have summarized a permitting process for distributed solar.

QUESTION 3.1

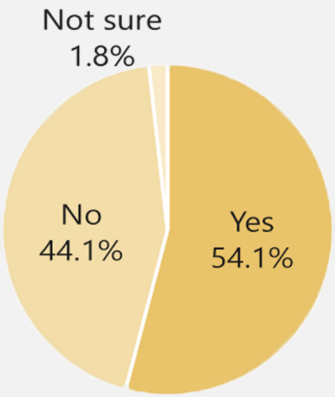


Figure 6. Localities with a Summary of the Permitting Process for Distributed Solar (n=109)

Table 1. Percentage of Localities with a Summary of the Permitting Process for Distributed Solar, by Community Classification

Community Classification	Permitting Process Summarized, Count	Permitting Process Summarized, Percent
Combination	19	63%
Urban	12	63%
Suburban	6	55%
Rural	22	45%
Total	**59**	**54%**

16 *SolSmart Toolkit for Local Governments*

Large-Scale Solar

Compared to distributed generation solar, the growth of large, ground-mounted solar facilities in Virginia has been more concentrated in the rural localities of Virginia where large land areas are available to support development. At the end of 2021, there were 51 operational utility-scale solar facilities (greater than 5 MW in capacity) in 35 different localities in Virginia.[17] In addition, a total of 81 localities (74.3%) responded in the survey that their community would theoretically have the land area sufficient to support a utility-scale solar facility (Q. 4.1).

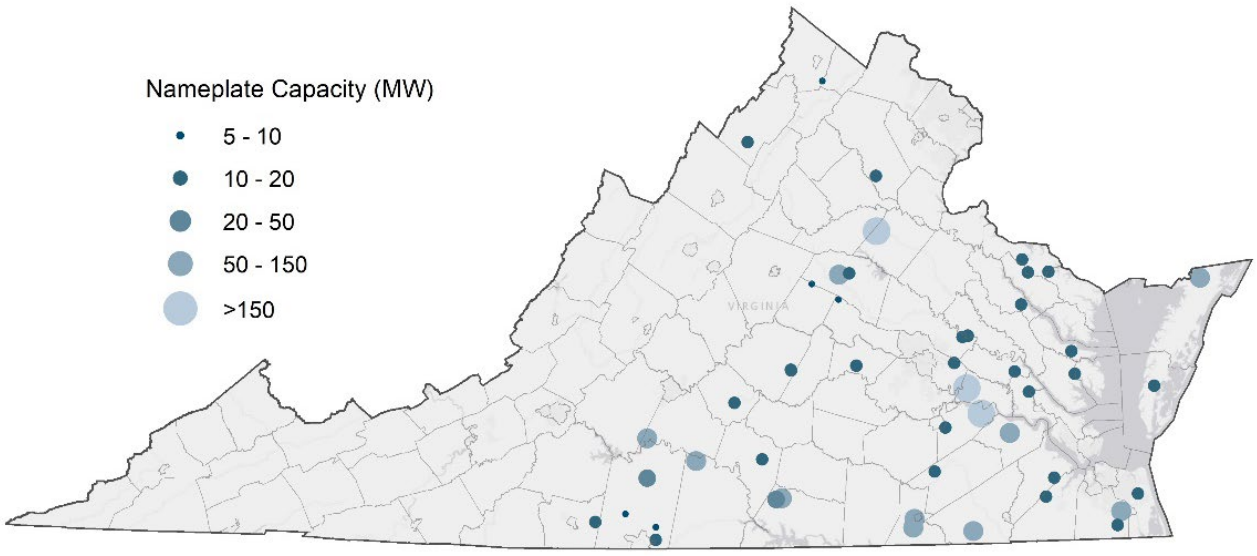


Figure 7. Active Utility-Scale Solar Facilities (>5 MW) in Virginia as of Dec. 31, 2021

A total of 51 different localities in the survey indicated that they have already reviewed at least one local land use application for a new large-scale solar facility (Q. 4.2). This means that 47% of all localities that participated in the survey have reviewed an application for a large-scale solar facility. And nearly two-thirds (63%) of the localities that theoretically have sufficient land for large-scale solar have reviewed an application for a solar facility.

17 Based on data compiled by Virginia Energy from PJM and EIA

Table 2. Total Localities to Have Reviewed One or More Applications for a Large-Scale Solar Facility, by Community Classification (Q4.2)

Community Classification	Reviewed Large-Scale Solar Application, Count	Reviewed Large-Scale Solar Application, Percent
Combination	20	67%
Rural	28	57%
Suburban	2	20%
Urban	1	5%
Total	**51**	**47%**

Rural and *combination* localities, especially the localities situated in the regions in the eastern and central parts of Virginia, were the most likely to have reviewed at least one application for a solar facility. Given land use constraints, it is not surprising that relatively few *urban* and *suburban* localities responded that they have ever reviewed an application for a large-scale solar facility. Localities in the *Southwest* and *West Central* regions were the least likely to have ever reviewed an application for a large-scale solar facility despite the rural nature of the regions. The lack of applications in this part of the state likely speaks to a variety of factors, presumably the more mountainous topography, the accessibility of transmission lines and the proximity to off-takers/energy buyers. It could also speak to the make-up of the utility and utility customers, and the overall population of the region.

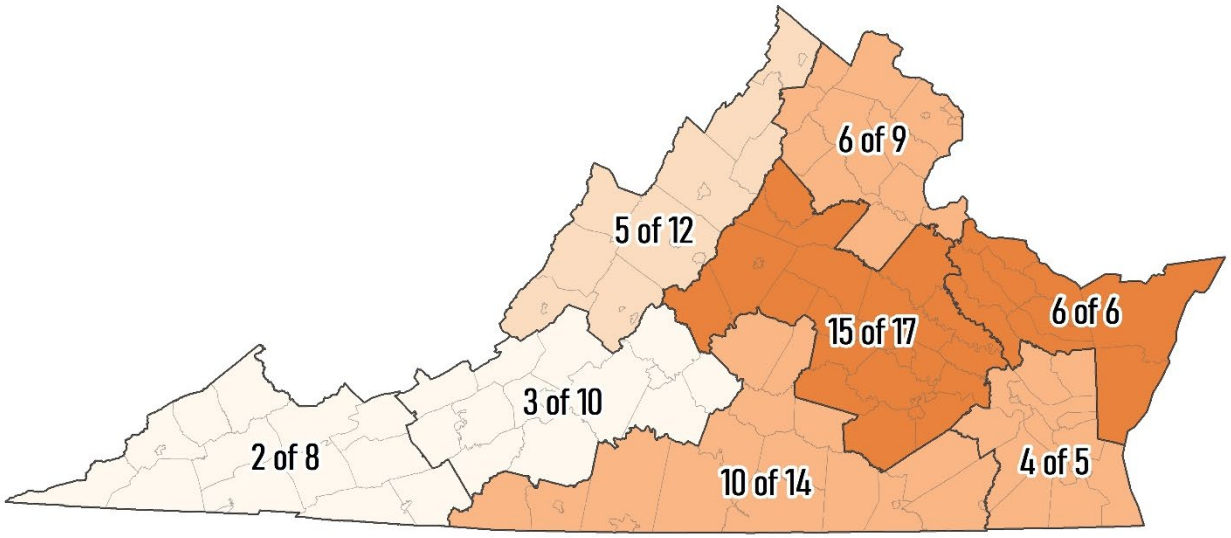


Figure 8. Total Localities* to Have Reviewed One or More Applications for a Large-Scale Solar Facility, by Region (Q4.2)

**Note: Only includes localities with sufficient land area for large-scale solar based on responses to Q4.1*

Based on self-reported data from the 51 localities that indicated that they had reviewed at least one application, most localities (44) have approved a large-scale solar application. Of those 44 localities, 40 have approved at least one utility-scale solar facility that is 5 MW or larger in capacity.

- Collectively, the responding localities have reviewed a total of 279 applications for large-scale solar facilities (community-scale and utility-scale).
    - 148 applications for utility-scale solar facilities and 131 applications for community-scale solar facilities have been reviewed by localities.
- Responding localities have approved a majority (80%) of the applications for large-scale solar facilities that they have completed reviewing.
    - 106 utility-scale solar applications (80%) and 76 community-scale solar applications (79%) have been approved by localities.

Table 3. Statewide Large-Scale Solar Facility Applications by Size Capacity and Status (Q4.3-4.6)

Solar Facility Size		Reviewed	Approved	Denied	Withdrawn	Under Review
Community-Scale	500 kW – 5 MW	**131**	76	13	12	35
Utility-Scale	5-79 MW	**94**	74	6	8	9
	80-149 MW	**36**	22	3	8	3
	150+ MW	**18**	10	1	3	4

While many localities have experience reviewing at least one application for large-scale solar, certain localities have reviewed and ultimately approved a greater number of applications for solar facilities. Generally, the regions in the southern and eastern parts of Virginia have reviewed far more applications for large-scale solar. Localities in *Southside* and *Central* Virginia specifically have reviewed the most local applications for new solar facilities. Conversely, the *Southwest* region has received considerably fewer applications for new solar facilities. However, there are many efforts underway to maximize the opportunities for renewable energy in *Southwest* Virginia, including the Southwest Virginia Energy Research and Development Authority, the Virginia Brownfield and Coal Mine Renewable Program, the Solar Workgroup of Southwest Virginia, and Virginia Energy's recent "Reenergize Southwest" report.[18]

- Over half (61%) of all the large-scale solar applications reported in the survey (169 of 279) were located within localities in the *Southside* or *Central* regions.

[18] Code of Virginia *§ 45.2-1718*, Code of Virginia *§ 45.2-1725, Solar Workgroup of SW VA, Reenergize Southwest Final Report*

- The *Southwest*, *West Central*, *Valley* and *Northern* regions have collectively reviewed 52 large-scale solar applications, representing 19% of all large-scale solar applications.

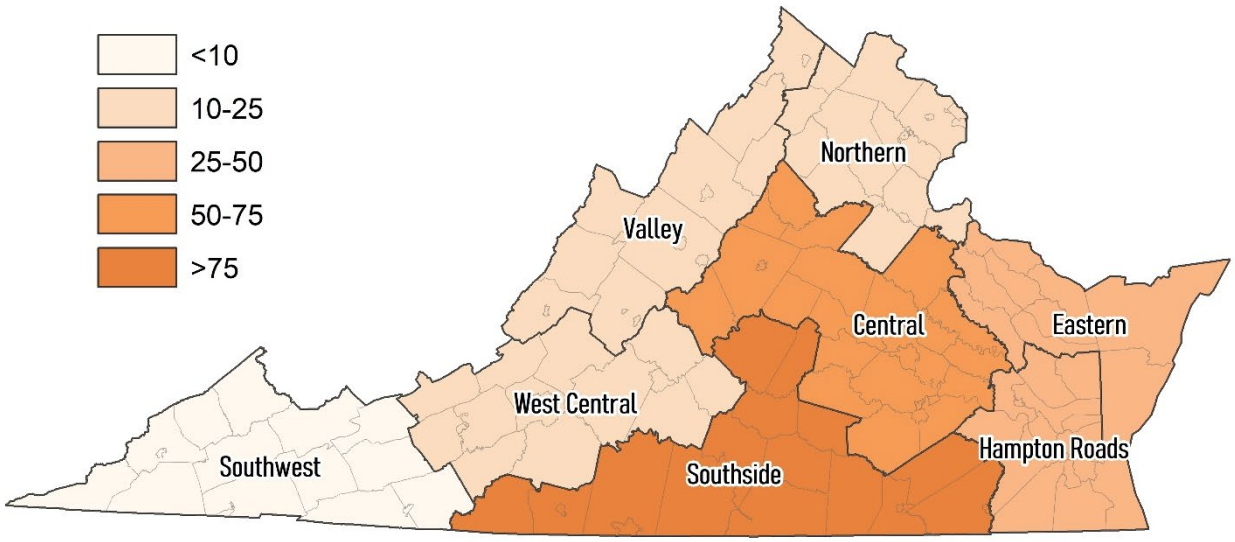


Figure 9. Total Large-Scale Solar Facility Applications Reviewed, by Region (Q4.3-4.6)

LOCAL SOLAR POLICIES

In response to the increased development of solar installations and facilities of all sizes, many localities are updating their local regulations, policies, and permitting processes to adequately address solar. Local solar policies, including the zoning ordinance, may address the permitting and installation of distributed solar on residential, commercial, industrial and agricultural properties. Specific policies on shared or community solar may also be a local consideration.

As localities continue to process more applications for large-scale solar facilities, the local comprehensive plan and the zoning ordinance along with conditions for special use/conditional use permits (SUP/CUP), will become increasingly important in guiding the type and character of development in a community. Recent state legislation enables localities to negotiate siting agreements and adopt revenue sharing ordinances for large-scale solar facilities, which may require localities to update local policies to take advantage of these tools.[19]

Of the 109 localities that participated in the survey, 18 localities indicated that they had not previously updated their local policies in regards to solar and were not considering updating their policies in the future (Q1.1).

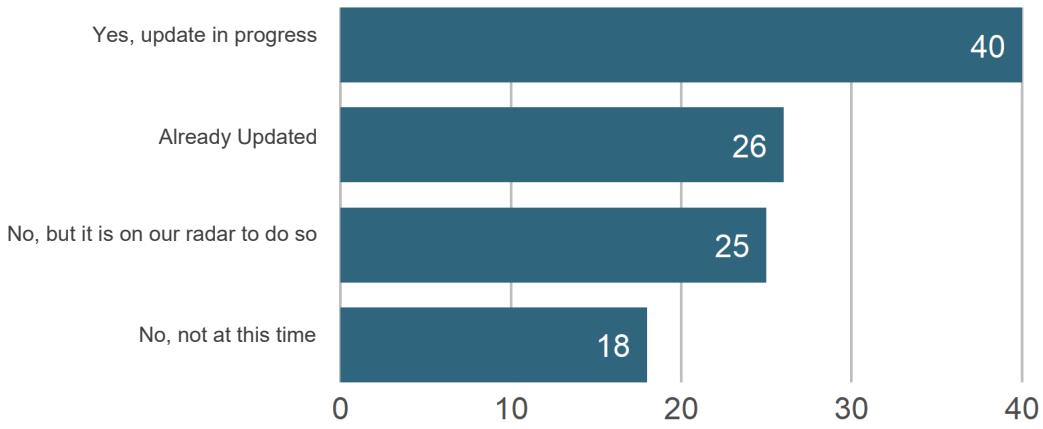


Figure 10. Localities with Updated Solar Policies (Q1.1)

Localities that identified as *rural* or *combination* were more likely to have updated their local policies for solar, while urban and suburban localities were less likely to have updated their solar policies. Many of the same localities that indicated that they have reviewed an application for a large-scale solar facility also responded that they have updated or are currently updating their local solar policies.

[19] Code of Virginia *§ 58.1-2636* and Code of Virginia *§ 15.2-2316.7*

- 40 localities (37% of all survey respondents) indicated that they were currently updating their solar policies while 26 localities (24% of all survey respondents) have already updated their solar policies.
- 70% of *combination* localities and 69% of *rural* localities indicated that they have or are currently updating their solar policies, compared to 37% of *urban* localities and 36% of *suburban* localities.

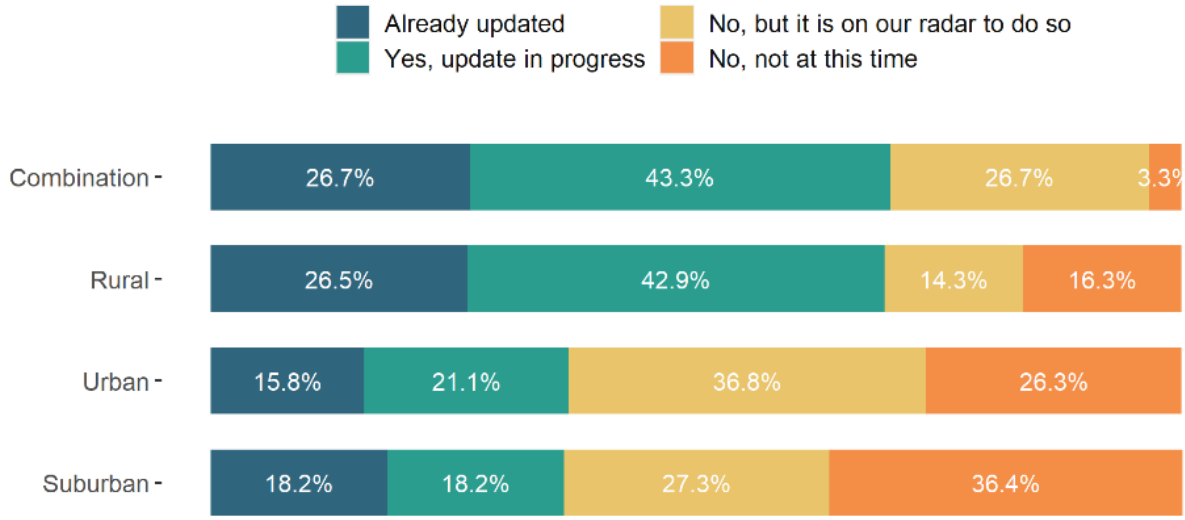


Figure 11. Localities with Updated Local Solar Policies, by Community Classification (Q1.1; n=109)

Many of the *rural* localities in the *Southside* and *Central* regions that have already reviewed the most applications for new solar facilities (*see Figure 9*) have also been most active in updating their local solar policies. *Northern* Virginia is a unique example of a region that has been more active in updating its local solar policies, despite not having reviewed as many applications for large-scale solar facilities.

- 77% of localities in *Southside* and 74% of localities in *Central* Virginia indicated that they have or are currently updating their solar policies.
- Localities in the *Valley* are currently the most active (53%) in updating their solar policies.

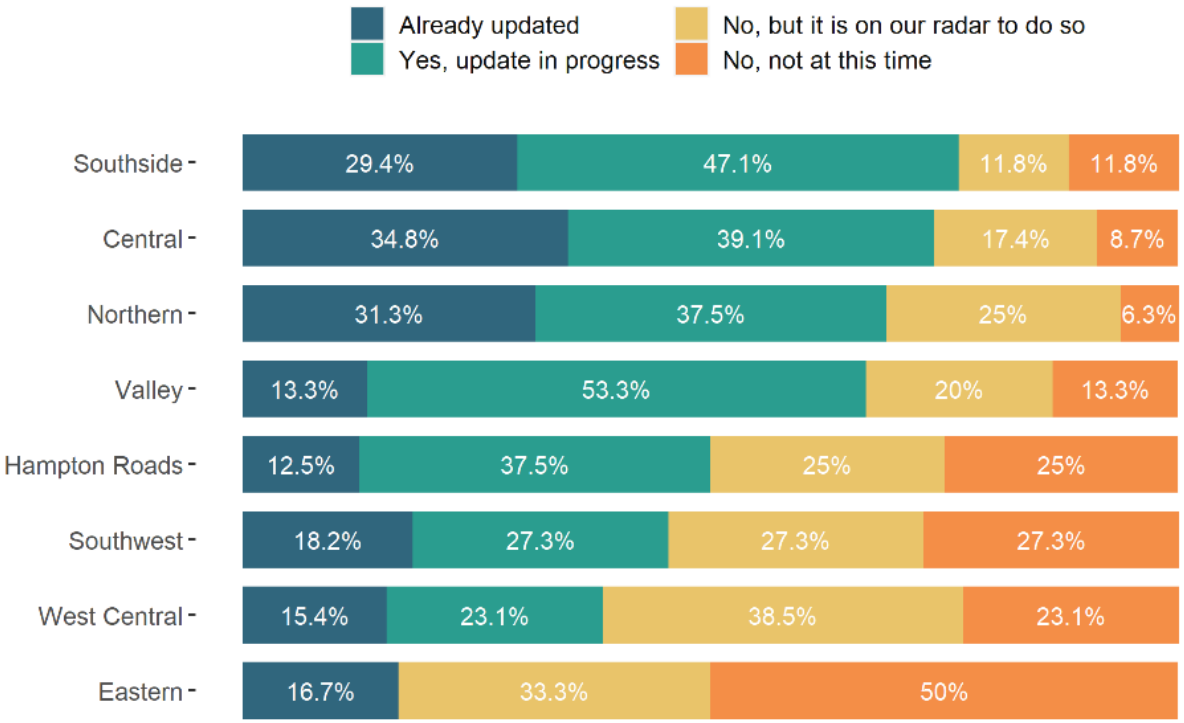


Figure 12. Localities with Updated Local Solar Policies, by Region (Q1.1; n=109)

Comprehensive Plan

An important policy tool that localities can use to guide the development of solar is the comprehensive plan, which establishes a community's long-range vision, goals and objectives and ultimately informs the future physical development of an area. The Code of Virginia instructs local planning commissions to review the local comprehensive plan every five years to ensure it properly governs the general location, character and extent of development in a community.[20] Important local decisions about development, including solar, should be weighed against the comprehensive plan. Code of Virginia Section 15.2-2232 directs localities to review developments, including large-scale solar

> "Our Comprehensive Plan includes general goals/actions such as reducing GHG emissions 80% by 2050, achieving 100% renewable electricity by 2050, and minimizing energy demand, but it doesn't include specific strategies for how to achieve those goals."

[20] Code of Virginia *§ 15.2-2230*

facilities, to ensure they are substantially in accord with the adopted comprehensive plan apart from some exceptions such as siting agreements.[21]

Broadly, a comprehensive plan may include goals and objectives that guide renewable energy development in a community. Currently, 30 localities (28%) responded that their comprehensive plan specifically addresses renewable energy, while 14 other localities were in the process of adding content about renewable energy. Notably, 31 localities (28%) responded that they have no plans to address renewable energy in their local comprehensive plan.

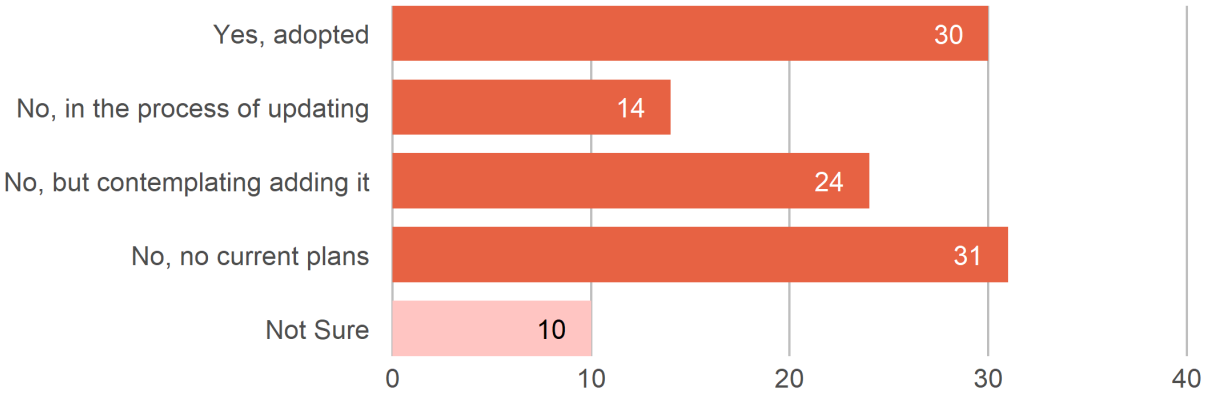


Figure 13. Goals or Policies in the Comprehensive Plan about Renewable/Clean Energy (Q5.1)

More specifically, a comprehensive plan may recommend land use strategies to guide the sustainable development of future solar facilities in a community. For example, localities may identify landfills, brownfields or other preferred lands that are suitable for solar within their comprehensive plan. Only 16.5% of respondents (18 localities) indicated that their comprehensive plan already identifies specific types of land that are suitable for large-scale solar. Some of the localities that answered 'Other' indicated with write-in text responses that they plan to address it in the future or that their comprehensive plan more generally directs all types of large service and utility projects not specific to solar.

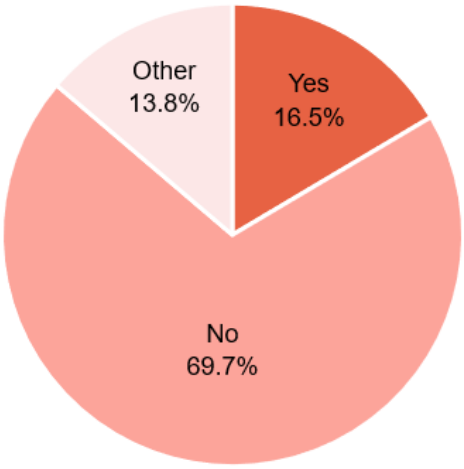


Figure 14. Local Comprehensive Plan identifies Types of Land to Site Large-Scale Solar (Q5.2; n=109)

For the 18 localities that do identify types of land for utility-scale solar, agricultural land and land adjacent to existing transmission lines was the most common response. These land use strategies are reflective of many existing large-scale solar

[21] Code of Virginia *§ 15.2-2232 and* Code of Virginia *§ 15.2-2316.9*

development trends. However, a comprehensive plan can also be proactive in identifying previously disturbed lands such as landfills, brownfields or parking lots as areas most viable for future large-scale solar development.

> "Our comprehensive plan discusses rural character and the community feels that utility scale solar is not consistent with the rural character."
>
> *Locality representative, Virginia Solar Survey Respondent*

Currently, seven localities responded that their comprehensive plan has land use strategies that recommend solar on previously disturbed lands. These responses indicate there are significant opportunities to provide resources to localities to assist them in prioritizing solar on previously disturbed lands, and adding references in the comprehensive plan is an important first step.

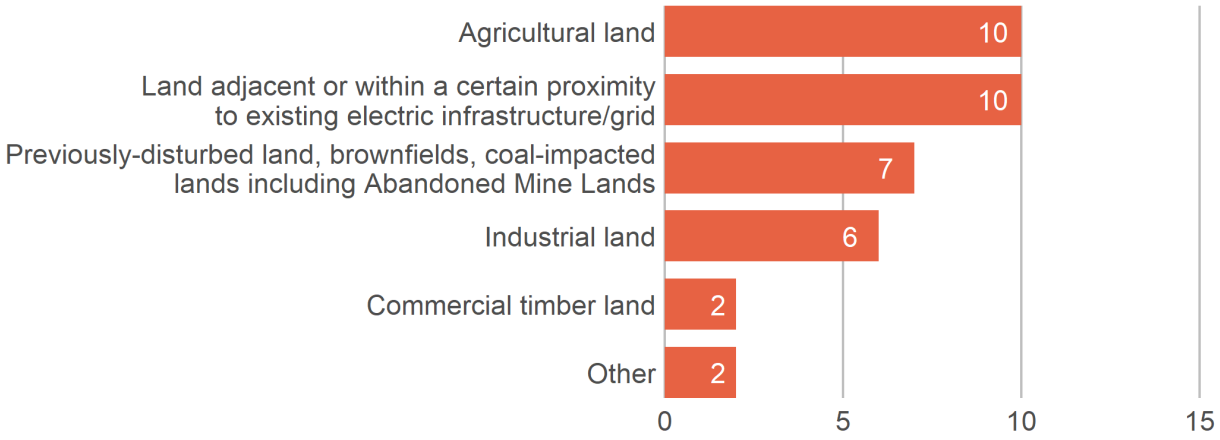


Figure 15. Lands Recommended for Large-Scale Solar in Local Comprehensive Plans (Q5.3)

Zoning Ordinance

The zoning ordinance is particularly relevant to local solar development since it regulates the development and approval process of both distributed and large-scale solar. It is important to note that some localities in Virginia do not have a zoning ordinance or unified development code. Roughly half of all survey respondents with an adopted ordinance responded that their ordinance provides a clear regulatory pathway for distributed generation solar and large-scale solar. Even with 14% of localities reporting that large-scale solar is not applicable in their ordinance, more total localities indicated that they have a clear regulatory pathway for large-scale solar in their ordinance than they do for distributed generation solar.

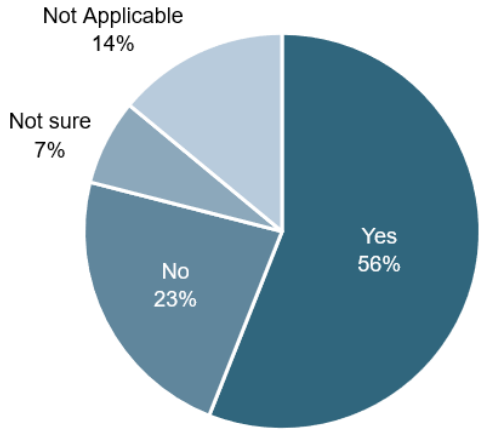


Figure 16. Locality's Ordinance Provides a Clear Regulatory Pathway for Approval of Large-Scale Solar Facilities (Q6.4; n=100)

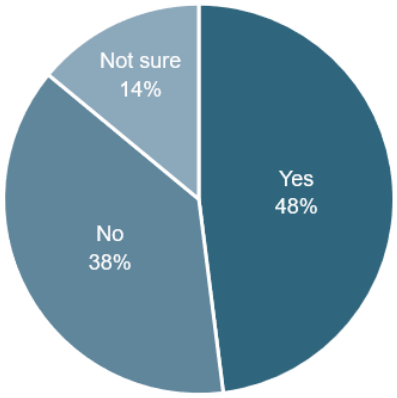


Figure 17. Locality's Ordinance Provides a Clear Regulatory Pathway for Approval of Distributed Generation Projects (Q6.2; n=100)

For large-scale solar specifically, localities indicated a significant reliance on conditional/special use permits as the primary policy tool to approve projects. Survey respondents with a regulatory pathway for large-scale solar in their ordinance indicated the widespread use of CUP/SUPs. Ninety-five percent of localities with a regulatory pathway for large-scale solar answered that the regulatory approval pathway is with CUP/SUPs. In some cases, survey respondents also suggested in their text responses that the language and conditions in their CUP/SUPs are more stringent than the requirements in their zoning ordinance for the development of large-scale solar facilities.

Table 4. Regulatory Pathway(s) Used for Approval of Large-Scale Solar Projects (6.5)

Regulatory Pathway	Number of Responses
With a conditional use permit, special use permit, special exception permit	53
By-right in certain districts	11
In an overlay district	1
In a floating district	2
Other	2

The following is a list of quotes from the survey responses that provide more detail about some locality's use of conditional/special use permits:

- *"All utility-scale generating facilities require a Conditional Use Permit regardless of the Energy Source."*
- *"Projects are presented and reviewed/approved through a Conditional Use Permit."*
- *"We recommended standing conditions for use permits that we tell every applicant to expect as part of their application."*
- *"Our community prefers to retain consideration of public utility land uses through special permitting with a mix of standard conditions and conditions unique to the project."*
- *"Our position is that the governing body can impose any reasonable conditions to mitigate development impacts."*
- *"The language of the ordinance defers to the terms of a SUP (Special Use Permit)."*

Although some localities have regulations integrated into other land uses chapters in their zoning ordinance that apply to solar development, many localities choose to adopt zoning regulations pertaining to solar in a specific section of their ordinance; this specific collection of zoning regulations is often called a "solar ordinance." The Code of Virginia instructs local governments that when developing any local ordinance addressing the siting of renewable energy facilities (solar or wind), they are to be consistent with the provisions of the Commonwealth Clean Energy Policy, which support reducing greenhouse gas emissions and strive for net-zero emissions. A local ordinance for the siting of any renewable energy facility should include criteria that supports the goals of the Commonwealth but also protects the locality. This includes establishing reasonable requirements on siting, such as limiting noise, requiring buffer areas and setbacks and addressing facility decommissioning.[22]

> "We do not have a solar ordinance, and have not considered one. I'd like to learn about the possible benefits of having one."
>
> *Virginia Solar Survey Respondent*

In the survey, a total of 45 localities (41%) indicated that they have adopted a solar ordinance, while 10 other localities answered that they were in the process of adopting a solar ordinance. Similar to the previous section on solar policies, more *rural* and *combination* localities are most likely to have adopted a solar ordinance. Localities in the *Southside* and *Central* regions that have reviewed the most large-scale solar applications were most likely to have already adopted a solar ordinance.

[22] Code of Virginia *§ 45.2-1708*

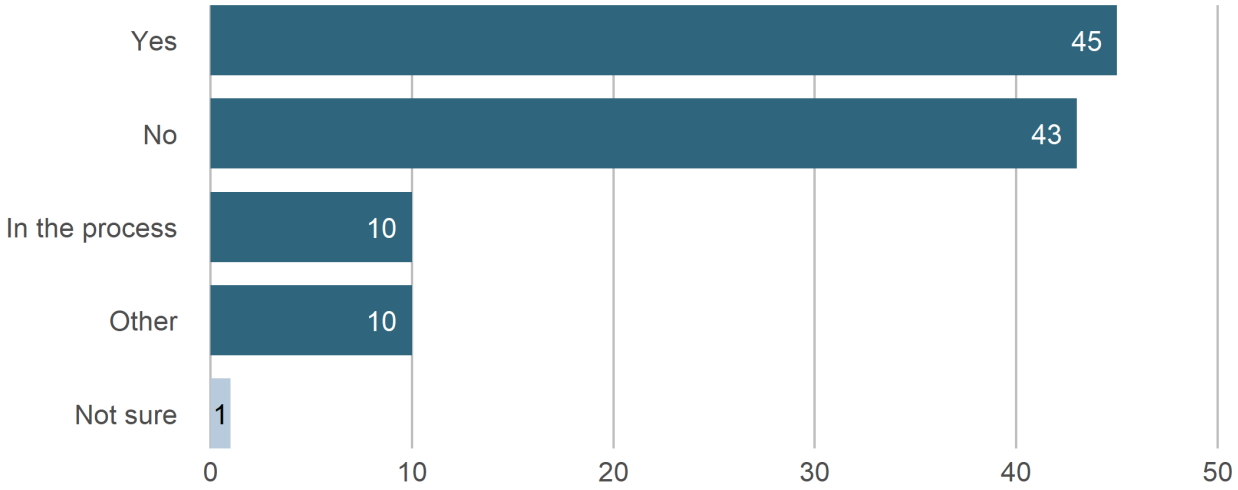


Figure 18. Localities with an Adopted Solar Ordinance (Q6.10)

Table 5. Localities with an Adopted Solar Ordinance, by Community Classification (Q6.10)

Community Classification	Adopted Ordinance	Updating Ordinance
Rural	27	5
Combination	13	3
Suburban	3	1
Urban	2	1
Total	**45**	**10**

Utility-scale solar was most often cited as the type of solar that has been specifically addressed in a local solar ordinance. Of the 45 localities that have already adopted a solar ordinance, and the ten localities that are in the process of adopting a solar ordinance, 93% (51 of 55 localities) responded that their ordinance addresses utility-scale solar.

- The four localities that did not address utility-scale solar in their ordinance all identified as *urban* or *suburban* localities.
- 100% of the *rural* and *combination* localities with a solar ordinance did specifically address utility-scale solar.
- A majority of solar ordinances also addressed *residential* (65%) and *commercial* (60%) solar installations in their solar ordinance.

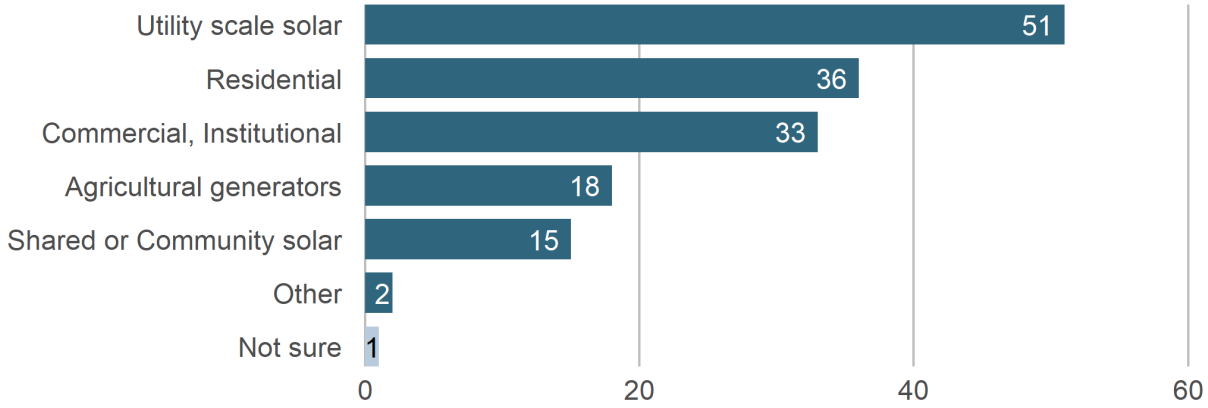


Figure 19. Types of Solar Addressed (or will be addressed) in Local Solar Ordinance (Q6.11)

In the local solar ordinances that have been adopted or are being updated (55 total), almost all address *property line setbacks* (52), *vegetated buffers and screening* (49) and *erosion and sediment control* (46). This is reflective of similar requirements for many other forms of local development. *Decommissioning* is a topic that is specific to solar development, and 45 localities (82% of localities with a solar ordinance) address this in their adopted solar ordinances. There are also significant opportunities for localities to continue to update their solar ordinances to more specifically address topics such as *dual-use* (e.g. agrivoltaics) and *energy storage*.

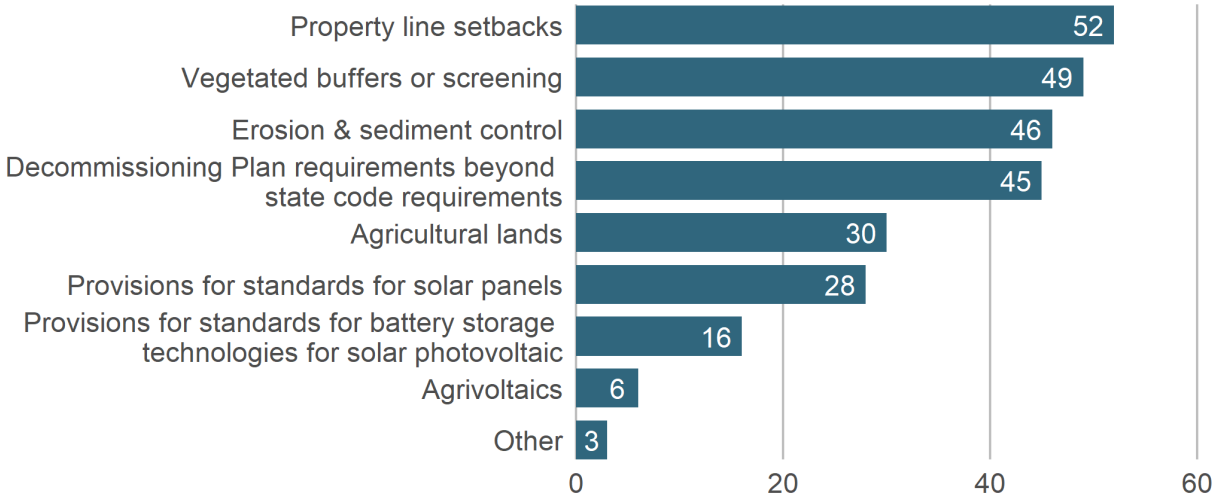


Figure 20. Topics Addressed in Local Solar Ordinance (Q6.12)

RESOURCES FOR LOCAL GOVERNMENTS

As localities experience more interest in the local development of solar, they rely on a variety of resources to help develop new policies and processes focused on solar. Specifically, localities in Virginia have been most likely to turn to one another to learn about solar and local solar policies. *Membership associations*, which might include groups such as VACo and the Virginia Municipal League (VML), as well as *solar industry professionals,* have also been important sources of information for localities. Unsurprisingly, localities also responded that *locality best practices* was the topic that they were most interested in learning more about.

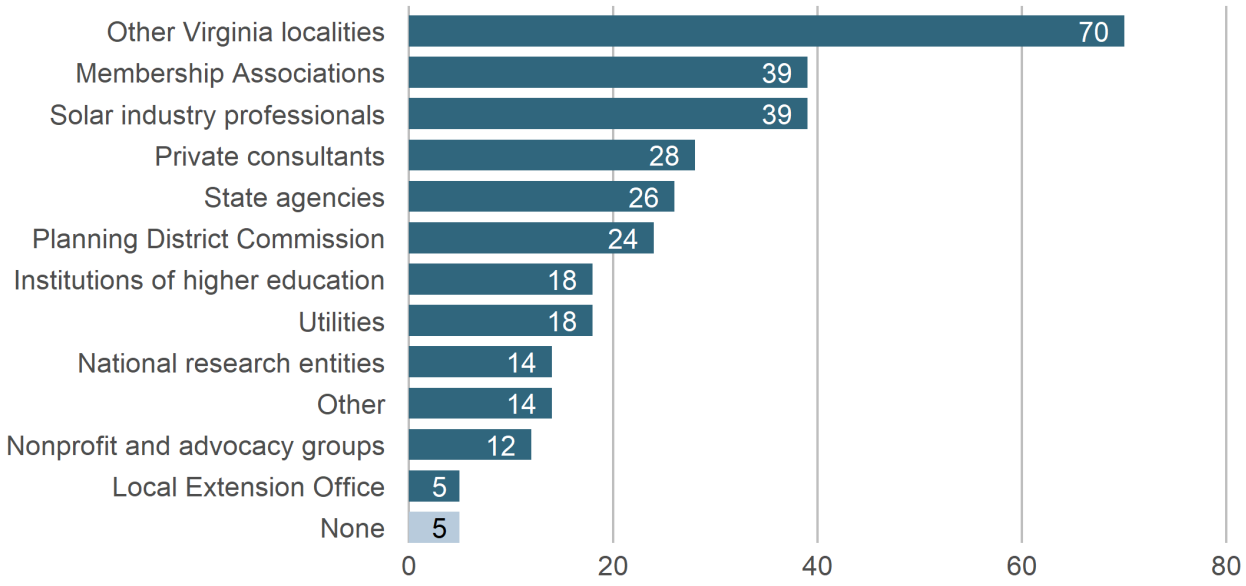


Figure 21. Resources Used by Localities to Understand and Develop New Solar Policies (Q1.2)

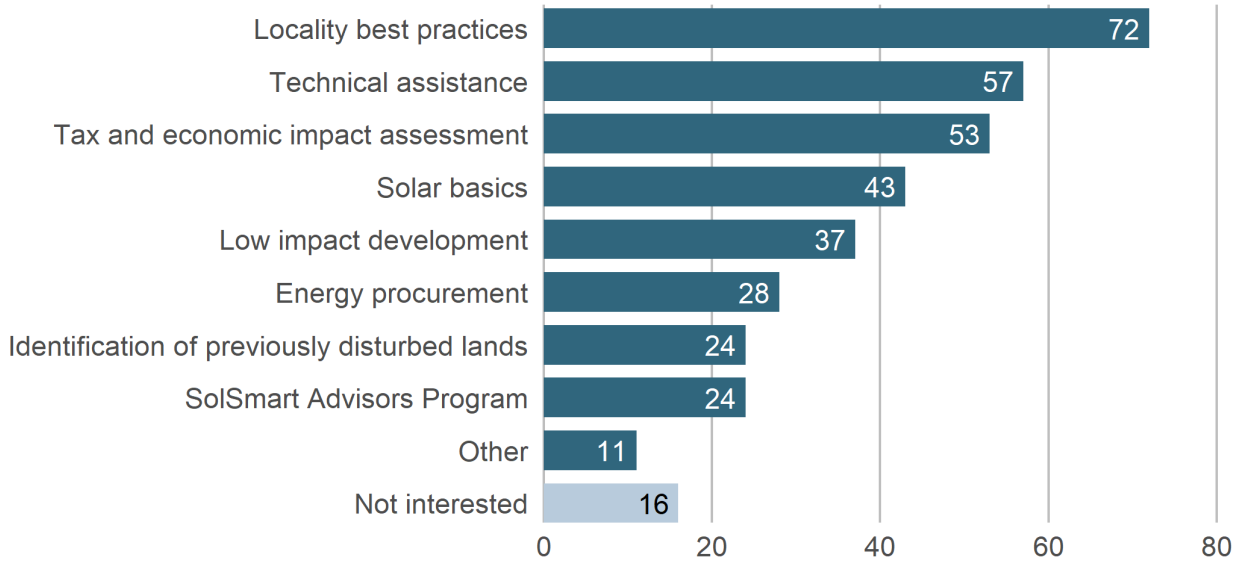


Figure 22. Areas of Interest for Localities to Receive Future Training or Assistance (Q1.3)

LOCAL GOVERNMENT PROCUREMENT OF SOLAR

In addition to permitting and regulating the private development of solar in a community, some localities have also been active in installing solar on public property or purchasing power from offsite solar installations to offset the cost and energy usage of local government facilities and operations.

Local governments currently have a variety of options to invest in solar, including self-financing, financing with an on-site power purchase agreement (PPA) or through an off-site PPA. Not only does solar offer significant opportunities for savings on government operations, but it also allows local governments to lead by example to encourage the use of solar and other renewables as a long-term sustainability goal. The increased use of solar energy in localities further supports stated goals within the state's Commonwealth Energy Policy as well as federal renewable energy goals.

Based on the survey responses, 32 localities currently, or within the next two years, are planning to procure a share of their energy load from solar. Of those 32 localities, 22 localities (68.7%) confirmed that the solar energy would come from on-site solar installations. Two localities indicated they are procuring solar energy from an off-site installation. Additionally, more localities procured solar through a PPA (11) than localities that had purchased their own solar installation (4). These survey questions also received a high number of *Not Sure* responses which indicates that the respondents (Planning Director and/or equivalent manager) may be less directly involved in local energy procurement.

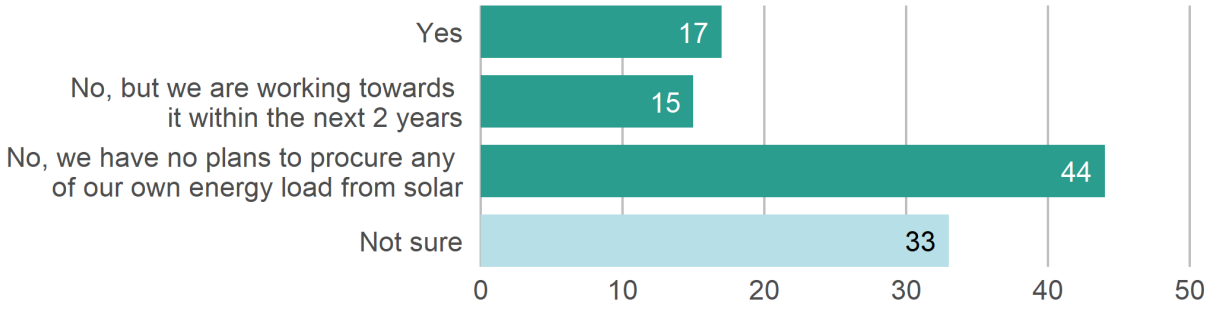


Figure 23. Localities that Procure Electricity from Solar (Q2.5)

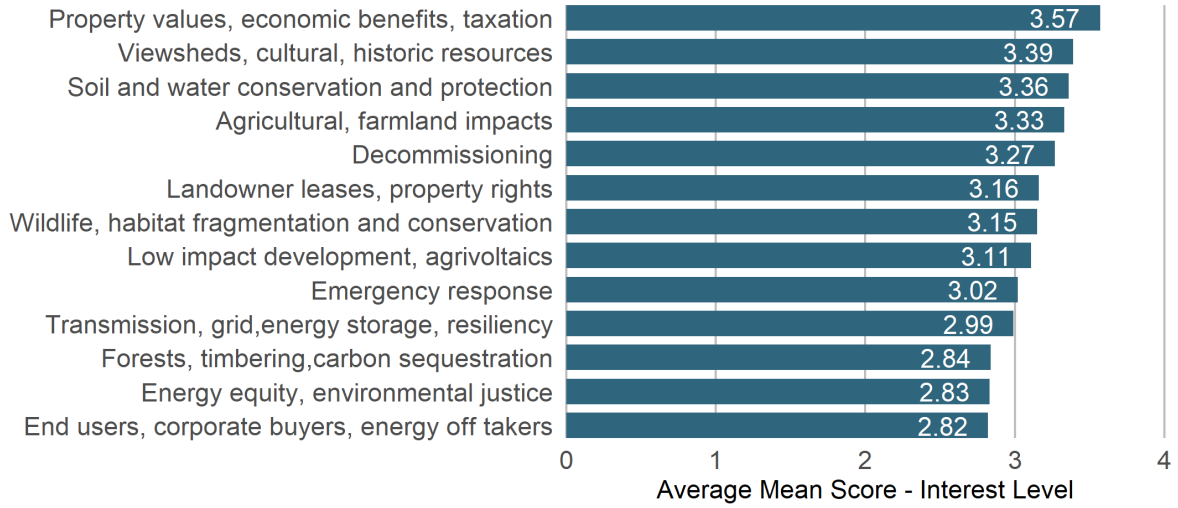
Table 6. Financing Mechanism Used for Local Government Solar Installations (Q2.7)

	Number of Localities
Owned	2
PPA	9
Both: Owned project(s) procured through PPA	2
Not sure	19
Total	**32**

ADDITIONAL CONSIDERATIONS

This survey also explored specific topic areas and issues related to solar. Many of these topics will be discussed in more detail in subsequent reports. For large-scale solar, localities identified their level of interest in a variety of relevant topic areas. Based on these findings, the economic impacts of solar development emerged as the topic area that received the most level of interest across rural and urban localities alike. This includes topics such as taxation, property values and direct and indirect economic impacts on a community.

Localities also demonstrated a significant level of interest in the relationship between large-scale solar and topics such as cultural resources, soil and agricultural lands, and decommissioning. Unsurprisingly, these interests were most commonly expressed in rural localities where farming is a significant contributor to revenue, jobs and lifestyle. These topics have been central to recent state legislation and have become important considerations for a variety of state agencies and local governments.



*Level of Interest: ***1***-No Interest, ***2***-Minimal Interest, ***3***-Some Interest, ***4***-A lot of Interest, ***5***-The Most Interest*

Figure 24. Locality Level of Interest by Large-Scale Solar Topic Area* (Q1.4)

Economic Considerations

Based on the results of Question 1.4, the economic impacts of large-scale solar development including local taxation, property values and other economic benefits to local governments, appear to be a particularly important consideration for most survey respondents. In the survey, 61% of localities had *a lot of interest* or *the most interest* in this topic. Specifically, 20 localities responded that they had the *most interest* in this topic area, and 46 localities indicated that they had *a lot of interest* in this topic. Further discussion on the economic considerations of solar development will be provided in a secondary report on large-scale solar to be released in the near future.

> "Economic benefits previously were considered more important, but as we received more requests for solar facilities, rural and community character became more important to the Board and the community."
>
> *Virginia Solar Survey Respondent*

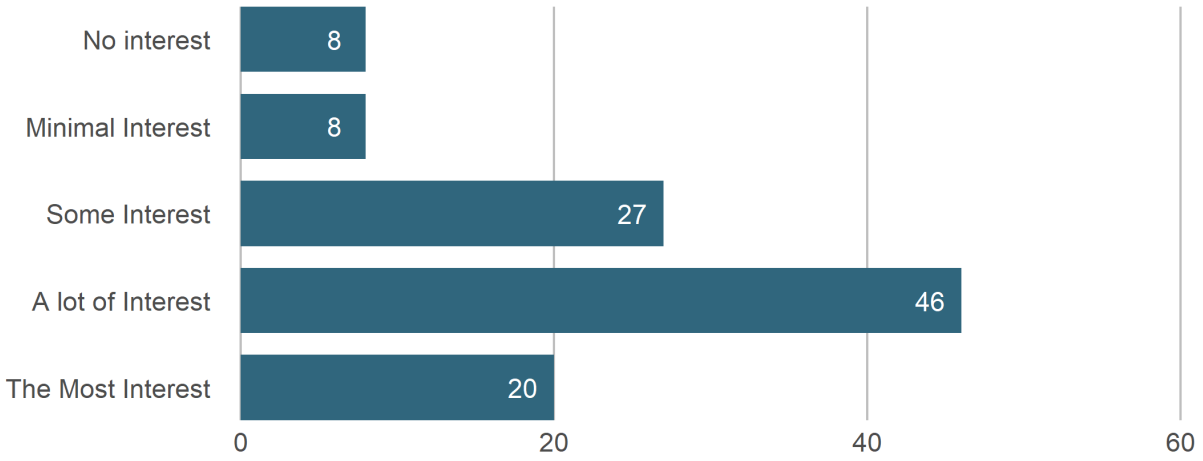


Figure 25. Level of Interest in Economic Considerations of Large-Scale Solar (Q1.4)

Development Considerations of Large-Scale Solar

The relationship between large-scale solar development and cultural resources, soil and agricultural lands also received significant interest in the survey. The only topic area that received more responses with *the most interest* was agricultural and farmland impacts. A total of 22 localities (mostly rural) indicated that this was a topic area that was of *the most interest* to them. Many urban localities indicated that this was a topic area of *no interest* to them. Some of this discussion will continue in a detailed report on large-scale solar to be released in the future.

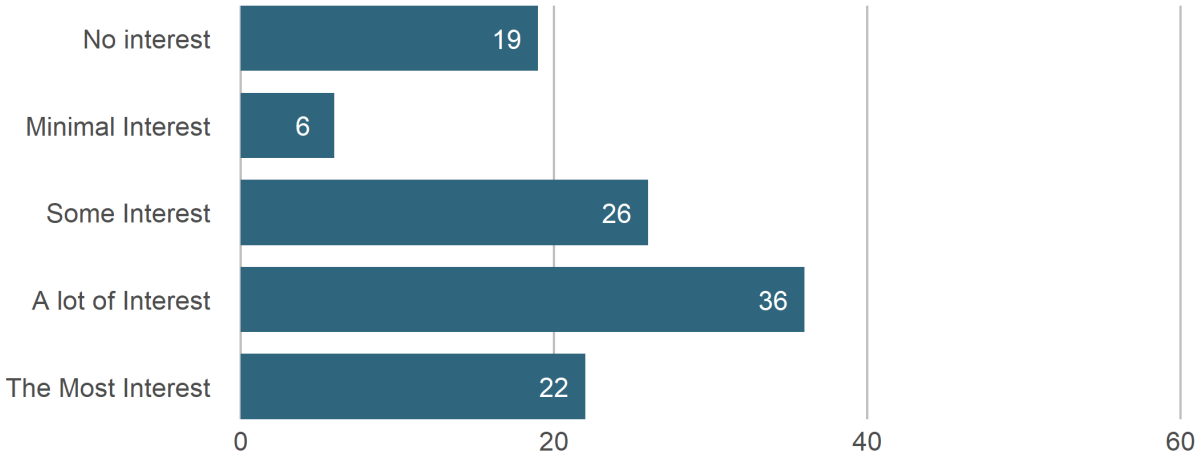


Figure 26. Level of Interest in Agricultural/Farmland Considerations of Large-Scale Solar (Q1.4)

Energy Storage

Energy storage is increasingly becoming an important consideration for local governments. Although energy storage did not rank as highly in terms of topics with the most amount of interest (Question 1.4), energy storage continues to expand in Virginia and to be proposed both alongside and independently of large-scale solar projects. In the survey, 28 localities (25.7%) responded that they have had an energy storage project proposed or planned in their locality. Additional trends and details on energy storage will be discussed in a separate report section specifically on energy storage.

> "We will be considering an ordinance permitting energy storage as that appears to be inevitable."
>
> *Virginia Solar Survey Respondent*

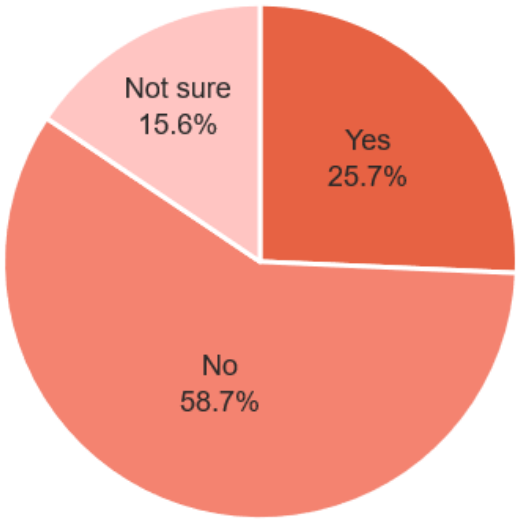


Figure 27. Share of Localities that Have Had an Energy Storage Project Proposed or Planned (Q8.5; n=109)

CONCLUSION AND NEXT STEPS

With the increasing demand for renewable energy and the new Renewable Portfolio Standards (RPS) of the Virginia Clean Economy Act quickly influencing the development of solar in Virginia, local governments have a critical role informing the development of renewable energy infrastructure in the coming years. The results of the Virginia Solar Survey provide a broad overview of the state of solar energy planning, permitting and local policies in Virginia from the perspective of local governments. The patterns and trends that emerged from this survey affirm existing anecdotal and piecemeal information specific to Virginia, and in many ways reflect similar nationwide conversations about the unique opportunities and challenges that a shift to renewable energy represents for local communities.

Statewide trends observed in the survey, as well as differences across regions in Virginia, reflect both shared and differing interests and experience with solar energy. Communities throughout Virginia are responding to increased demand for solar in their communities. Many local governments revealed they have learned a significant amount about solar and have taken numerous policy actions related to solar in a short amount of time. The results also indicate that there is still significant need to continue to provide research, guidance, education and opportunities for information sharing to localities.

As solar development expands, local and regional factors will continue to be reflected in localities' approaches to renewable energy policy. For example, capitalizing on the legacy of coal mining presents opportunities for innovative renewable energy policies in Southwest Virginia. In Northern Virginia and elsewhere, satisfying the demand for renewable energy to power one of the world's largest concentrations of data centers represents an important regional consideration. Maintaining the viability of local agricultural and forestry industries, protecting water quality in the Chesapeake Bay watershed, and protecting cultural and natural resources are other relevant considerations that will continue to be examined by localities and regions across the Commonwealth.

Ultimately, the general findings of this survey demonstrate that if Virginia is to make the most of its energy transition, attention needs to be paid to supporting localities, both regarding distributed generation and large-scale solar. Additional research, support and resources can assist localities in continuing to prepare for the increased development of solar. Moreover, support for localities should be informed by factors, such as regional interests, experience with solar and overall preferences for receiving support. Outreach and education on specific topics, such as local and regional long-range energy planning, economic development, low-impact development practices, decommissioning, soil and water conservation and land use can support Virginia's energy transition. As indicated by localities' expressed interests and areas of concern in the survey, increased research and technical support are needed to facilitate continued growth in solar and energy storage deployment at all scales across the state.

LIST OF TABLES AND FIGURES

APPENDIX A

VIRGINIA SOLAR SURVEY QUESTIONNAIRE

2021 Virginia Statewide Solar Survey

ABOUT

The Energy Transition Initiative at the Weldon Cooper Center for Public Service at the University of Virginia and the Virginia Department of Mines, Minerals and Energy are administering this survey to all Virginia counties and independent cities in order to collect information related to each locality's experience, readiness and needs related to solar development.

Your individual survey responses will be kept confidential, and the data will be presented to reveal regional and statewide trends, gain comprehensive insights in Virginia's preparedness for a clean energy transition and inform the future development of research, resources and technical assistance.

SURVEY FORMAT

This survey was designed using survey logic; this means that gating questions are asked and the follow-up questions presented to you depend on how you answered the gating questions. We have made every effort to employ gating questions so that you are not asked questions that do not pertain to you. Due to survey logic, you may notice question numbers appear out of sequence or you are not asked questions that appear on the pdf.

This survey is designed to take 25-30 minutes to complete. It is intentionally comprehensive and while most questions can be answered in seconds, some may take more time or require you to consult with others from within your organization.

Particularly, questions in Section 2 related to energy procurement and questions in Section 7 related to the economic considerations of solar policy may be outside of your scope of expertise. Additionally, questions in Section 4 ask about numbers and specifics related to utility scale solar projects proposed in your locality; answering those questions may require you to consult project documents and/or past solar applications.

The survey consists of the following sections:
Section 1: Solar Readiness
Section 2: Renewable Energy Procurement
Section 3: Distributed Generation
Section 4: Utility Scale Solar
Section 5: Comprehensive Plan
Section 6: Zoning
Section 7: Economic Considerations
Section 8: Energy Storage
Section 9: General Questions

SURVEY NAVIGATION

If you want to download a PDF of the full questionnaire before starting the survey, please see the email where you received this survey link.

Each survey web page features forward and backward arrows; **your progress is automatically saved**. Do not use the forward and back buttons on your browser's navigation bar.

You cannot skip questions, but if you exit before completing the survey you can return and continue from where you stopped. You can also navigate backwards and change answers.

You can download a summary of your responses by clicking the "Download pdf" box that appears after you have submitted your responses.

If you need technical assistance, please email Elizabeth Marshall: emm2t@virginia.edu.

ACKNOWLEDGEMENTS

This survey was created with significant input from representatives of the following stakeholder organizations. In addition, several Virginia localities participated in a beta-test to ensure the relevancy and quality of the survey. Many thanks to all for sharing their time and expertise.

Section 1: SOLAR READINESS

The 2020 and 2021 Virginia legislative sessions set the stage for increased demand for solar development at all scales. The questions in this section are intended to reveal how localities are preparing for solar development and what resources should be prioritized to support them.

Q1.1. Is your locality preparing to update or is actively updating its solar policies, regulations, and/or application and permitting processes?

Yes, update is in progress

No, but it is on our radar to do so

No, we have already updated our solar policies, regulations, and/or application and permitting processes

No, not at this time

Q1.2. What resources are your locality turning to (or did your locality turn to) for support and assistance in developing new policies and ordinances? Choose all that apply.

Other Virginia localities

Planning District Commission

Membership associations (Virginia Association of Counties, Virginia Municipal League, American Planning Association, etc.)

Local Extension Office and/or Soil & Water Conservation District

State agencies (Departments of Environmental Quality, Historic Resources, Wildlife Resources, Conservation Resources, etc.)

Institutions of higher education (University of Virginia, Virginia Tech, Virginia Commonwealth University, etc.)

Private consultants (attorneys, engineers, architects, planners, etc.)

Solar industry professionals (developers, trade associations, installers, etc.)

Nonprofits and advocacy groups (The Nature Conservancy, Alliance for Shenandoah Valley, Appalachian Voices, etc.)

National research entities and agencies (National Renewable Energy Laboratory, Department of Energy, etc.)

Utilities (Dominion, Appalachian Power, electric cooperative, etc.)

None

Other _____(please list)

Q1.3. State agencies such as Virginia Department of Mines, Minerals and Energy (DMME) and UVA offer technical assistance related to solar energy. With respect to solar development, would you be interested in training or technical assistance in any of the following areas for your locality? Choose all that apply.

Solar basics (foundational information about solar and solar+storage technology)

Technical assistance (tools and resources to assist with policy and process development)

Identification of previously disturbed land, brownfields or coal-impacted lands (DMME, DEQ assistance)

SolSmart Advisors Program (no-cost technical support and designation program to enhance solar readiness)

Energy procurement (solar leases, power purchase agreement, solar financing)

Tax and economic impact assessment (revenue share decision analysis)

Low impact development (pollinators, livestock grazing)

Locality best practices (Tips and Tricks from other localities)

No, not interested

Other:

Q1.4. To help DMME and UVA understand your priorities related to the siting and development of **utility scale solar**, please **indicate your level of interest** in the following topics**:**

	No interest	Minimal interest	Some interest	A lot of interest	The most interest
Agricultural, farmland impacts	○	○	○	○	○
Decommissioning	○	○	○	○	○
Emergency response	○	○	○	○	○
End users, corporate buyers, energy off-takers	○	○	○	○	○
Energy equity, environmental justice	○	○	○	○	○
Forests, timbering, carbon sequestration	○	○	○	○	○
Low impact development, agrivoltaics (e.g., pollinator-friendly ground cover, dual-use solar + agriculture)	○	○	○	○	○

	No interest	Minimal interest	Some interest	A lot of interest	The most interest
Property values, economic benefits, taxation	○	○	○	○	○
Soil and water conservation and protection	○	○	○	○	○
Transmission, grid, energy storage, resiliency	○	○	○	○	○
Viewsheds, cultural, historic resources	○	○	○	○	○
Wildlife, habitat fragmentation and conservation	○	○	○	○	○
Landowner leases, property rights	○	○	○	○	○

Q1.5. Comments related to solar readiness (optional)

SECTION 2: RENEWABLE ENERGY PROCUREMENT

The questions in this section are intended to capture what efforts, if any, your local government is undertaking to incorporate solar energy into your own public buildings and business operations.

Q2.1. Does your locality have a formalized process for making decisions regarding electricity procurement for your own public buildings? (i.e., necessary channels to go through to introduce a new fuel type into your energy mix)

Yes

No

Not sure

Q2.2. What buildings and entities are covered by your locality's electricity procurement? Check all that apply.

Administrative Offices

Fire & Rescue

Police Station

Courthouse

Schools (even if their procurement is managed by your locality's School Board)

Parks & Recreational Facilities

Public Works/ General Services/Transportation & Fleet Services

Not sure

Other (Please describe)

Q2.3.
The 2019 General Assembly passed legislation that states: "*It is the intent of the General Assembly that new public-school buildings and facilities and improvements and renovations to existing public school buildings and facilities be designed, constructed, maintained, and operated to generate more electricity than consumed*". This is known as "*energy positive* building design".

What is your locality's experience with using "*energy-positive building design*" for new public-school buildings?

No experience
Some experience
Extensive experience
Not sure

Q2.4. Does your locality have a policy requiring solar photovoltaics be considered in the design of new public buildings?

Yes
No
Not sure
Other

Q2.5. Does your locality procure any of its own energy load from solar?

Yes

No, not at this time but we are working towards it within the next 2 years

No, we have no plans to procure any of our own energy load from solar

Not sure

Q2.6. Is (or will) any of the solar energy be procured from on-site solar installations such as rooftop or ground-mounted systems on public property?

Yes

No

Not sure

Q2.7. Are (or will) your solar installation(s) be owned or procured through a power purchase agreement (PPA)?

Owned

PPA

Both: we have project(s) that are owned and project(s) that are procured though a PPA

Not sure

Q2.8. Optional: Please describe public solar project details such as whether they are they on-site, rooftop or ground mounted, total size, and percentage of total usage, if known.

Q2.9. Has your locality considered incorporating solar in its generation mix?

Yes

No

Not sure

Q2.10. Is your locality actively pursuing the installation of solar systems on public buildings or public land?

Yes

No

Not sure

Q2.11. Has your locality encountered barriers which have prevented solar from being incorporated into its energy generation mix?

Yes

No

Not sure

Not applicable

Q2.12. Please allocate 100 points between the choices below, giving the most points to the topics that pose the biggest barriers (total must add up to 100.) If you wish to elaborate, please use comment box at the bottom of Section 2.

Site not suitable for solar (e.g., structural capacity of roof, lack of solar exposure)	0
Upfront costs, financing	0
Lack of staff time, capacity, bandwidth	0
Lack of support or direction from leadership	0
Complication in the process	0
Other:	0
Total	0

Q2.13. Some localities can use cooperative contracts or riders on power purchase agreement contracts to allow another locality to use the existing terms as a way to reduce the time and negotiation required and to reduce barriers to entry.

Has your locality joined a PPA through a rider arrangement?

Yes

No

Not sure

Q2.14. Are you interested in learning more about cooperative procurement models and examples?

Yes

No

Not sure

Q2.15. In the box below, please describe your biggest concerns and/or questions about incorporating solar into your locality's own energy generation mix, or select "No concerns" if you have none.

Concerns/Questions (Please describe)

No concerns

Not sure

Q2.16. Rate how familiar you are with each solar policy mechanism: (Note: You must move the slider off of the default position for each item.)

	No response	Not at all familiar	Slightly familiar	Somewhat familiar	Moderately familiar	Extremely familiar
Federal Investment Tax Credit (ITC)						
Net-metering						
Virtual net-metering (meter aggregation)						
Power Purchase						

Agreements (including Virtual PPAs)	
Shared, Community Solar	

Q2.17. Comments related to renewable energy procurement (optional)

SECTION 3: DISTRIBUTED GENERATION

The Virginia Clean Economy Act mandates investor-owned utilities provide one hundred percent of their electricity from clean or renewable energy sources by mid-century. Meeting this goal will require increased energy efficiency and growth in solar distributed generation (DG), as well as increased solar electric production at the utility scale. The questions in this section are intended to capture a snapshot of what your locality's policies and processes are regarding solar DG.

Q3.1. **Regarding residential and commercial solar permitting and inspections**, does your locality provide any of the following **online**?

	Yes	No	Not sure
Summary of the permitting process (permitting checklist)	○	○	○

Examples of typical building plans	○	○	○
Fee schedule	○	○	○
Local design criteria for building permits	○	○	○
Incentives (summary of policy and/or forms)	○	○	○

Q3.2. **Regarding residential and commercial solar permitting and inspections**, can an applicant in your locality do any of the following **online?**

	Yes	No	Not sure
Apply for a building permit	○	○	○
Submit construction plans/ drawings	○	○	○
Schedule an inspection	○	○	○

neighboring localities lowers the cost of solar installation. To what extent are you

Q3.4. Research shows that **online permitting** lowers the cost of solar installation. To what extent are you interested in your locality adopting an **online permit review procedure**, such as the SolarAPP tool offered through the National Renewable Energy Laboratory?

Not at all interested

Somewhat interested

Very interested

Our locality already offers online permitting

Not sure

Q3.5. If your locality operates an electric utility, does it allow customers generating solar energy to “net meter” any excess solar generation?

Yes

No

Not sure

Not applicable

Q3.6. Has your locality **adopted by ordinance** a policy to exempt or partially exempt solar equipment from property taxes, as permitted by Virginia Code Section 58.1-3661? (This is different than the mandatory Machinery and Tools tax exemption per 58.1-3660.)

Yes

No

Not sure

Q3.7. To the best of your knowledge, why does your locality not exempt or partially exempt solar equipment from property taxes? Choose all that apply.

Unaware tax exemption was allowed

Because of potential fiscal impacts/revenue loss

Citizens have not expressed interest

Not sure

Other:

Q3.8. Comments related to distributed generation (optional)

SECTION 4: UTILITY SCALE SOLAR

Land use decisions regarding the siting and approval of solar facilities largely fall within the purview of the locality, and solar land use policies and permitting procedures vary across the state. The following questions are intended to capture you locality's experience and plans regarding large scale and utility scale solar development.

For the purposes of this survey, utility scale solar refers to solar generation facilities 5 MW and greater.

Q4.1. Is your locality large enough to accomodate a large or utility scale solar facility?

Yes

No

Q4.2. Has your locality ever reviewed an application (e.g., conditional use permit, special use permit, special exception, or Code of Virginia section 15.2-2232 compliance review) for a large or utility scale solar facility?

Yes

No

Not sure

Q4.3. **Per 9VAC15-60-130, for projects with capacity of 500 KW up to 5 MW**, please indicate:

(Please write the appropriate number in the boxes below.)

How many applications reviewed total? (Include those currently under review)	
How many applications currently under review?	
How many applications approved?	
How many applications withdrawn (and not resubmitted)?	
How many applications denied?	

Q4.4. **For projects with a capacity of 5-79 MW**, please indicate:

(Please write the appropriate number in the boxes below.)

How many applications reviewed total? (Include those currently under review)	
How many applications currently under review?	
How many applications approved?	
How many applications withdrawn (and not resubmitted)?	
How many applications denied?	

Q4.5. **For projects with capacity of 80-149 MW**, please indicate:

(Please write the appropriate number in the boxes below.)

How many applications reviewed total? (Include those currently under review)	
How many applications currently under review?	
How many applications approved?	
How many applications withdrawn (and not resubmitted)?	
How many applications denied?	

Q4.6. **For projects with capacity of 150 MW and above**, please indicate:

(Please write the appropriate number in the boxes below.)

How many applications reviewed total? (Include those currently under review)	
How many applications currently under review?	
How many applications approved?	
How many applications withdrawn (and not resubmitted)?	
How many applications denied?	

Q4.7.

Optional: For applications that have been withdrawn or denied, please describe the reasons:

Q4.8.
Regarding siting agreements, as passed in 2020 and updated in the 2021 legislative session, Virginia code section 15.2-2316.7 states:
"*Any applicant for a solar project or energy storage project shall give to the host locality written notice of the applicant's intent to locate a solar in such locality and request a meeting. Such applicant shall meet, discuss, and negotiate a siting agreement with such locality.*"

Are you aware of this section of the code?

Yes

No

Not sure

Q4.9. Has your locality ever entered into a siting agreement negotiation process for a solar project?

Yes, at least one agreement was negotiated

Negotiations are in progress, but not yet finalized

No

Q4.10. Would your locality be interested in participating in a case study project to help develop Virginia-based best practice guidance related to utility scale solar development?

Yes

No

Q4.11. Virginia has rich land and water resources, ecological corridors, agriculture, forests, and waterways. It is important to protect natural resources while transitioning to clean energy. The next two questions address if or how your locality considers conservation of natural resources when reviewing utility scale solar development applications.

Do your local regulations specify criteria for the evaluation of the following topics when reviewing a utility-scale solar facility application?

	Yes	No	Not Sure
Avoidance of invasive species	○	○	○
Conservation easements, in Land Use Assessment Program	○	○	○
Erosion and sediment control	○	○	○
Habitat fragmentation, wildlife-friendly design elements (e.g., fencing)	○	○	○
Historic, cultural resources	○	○	○
Redevelopment of brownfields or previously-developed sites for solar	○	○	○
Pollinator-friendly species (Virginia Pollinator Smart)	○	○	○

Scenic rivers	○	○	○
State Wildlife Action Plan	○	○	○

Q4.12. To what extent do your local regulations enable the following low impact development practices for utility scale solar facilities?

	Not allowed	Allowed, but not recommended or required	Recommended, but not required	Required to be satisfied	Silent, No Position
Pollinator-friendly planting	○	○	○	○	○
Vegetative ground cover (native or otherwise)	○	○	○	○	○
Animal grazing as a means of ground maintenance	○	○	○	○	○
Apiary/Beekeeping	○	○	○	○	○
Dual-use of agriculture and solar photovoltaics (agrivoltaics)	○	○	○	○	○
Soil health management (e.g., topsoil preservation)	○	○	○	○	○

Q4.13. Comments related to large and utility scale solar (optional)

SECTION 5: COMPREHENSIVE PLAN

Virginia code does not explicitly require that comprehensive plan policies address climate change or energy. The questions in this section are intended to reveal the extent to which localities have included or are planning to include policies that address climate change and clean energy.

Q5.1. Does your comprehensive plan or policies adopted by reference speak to any of the following topics? Please choose the option that most closely matches your locality's status with respect to the topics below.

	Yes, adopted	No, but we are in the process of updating to include	No, but we are contemplating adding it in next revision cycle	No, no current plans to include	Not Sure
Sustainability goals	○	○	○	○	○
Renewable/Clean Energy (e.g., development, procurement)	○	○	○	○	○
Greenhouse gas emissions, carbon reduction strategies					

(e.g., tracking, goals, carbon sequestration)	○	○	○	○	○
Community disaster preparedness and energy resiliency (e.g., microgrid, solar+storage, resilience hubs)	○	○	○	○	○

Q5.2. Does your comprehensive plan prioritize general areas or types of lands that are preferred for utility scale solar energy generation facilities?

Yes

No

Other (Please explain)

Q5.3. What are the characteristics of the land identified? Choose all that apply.

Previously-disturbed land, brownfields, coal-impacted lands including Abandoned Mine Lands

Industrial land

Agricultural land

Land adjacent or within a certain proximity to existing electric infrastructure/grid

Commercial timber land

Other- Please describe:

Q5.4. Comments related to comprehensive planning (optional)

SECTION 6: ZONING

The questions in this section are intended to capture how your locality currently uses or plans to use zoning to regulate and guide solar development.

Q6.1. Does your locality have a zoning ordinance or UDO (unified development ordinance)?

Yes

No

Q6.2. Does your locality's ordinance provide a clear regulatory pathway for approval of **distributed generation** solar projects?

Yes

No

Not Sure

Q6.3. Is the regulatory pathway for approval of **distributed generation** solar projects an administrative approval process?

Yes

No

Not Sure

Other (Please explain)

Q6.4. Does your locality's ordinance provide a clear regulatory pathway for approval of **utility scale** solar facilities?

Yes

No

Not sure

Not applicable because our locality is too small or developed to accomodate any utility scale solar projects

Q6.5. What regulatory pathway(s) are used for approval of **utility scale** solar projects? Check all that apply:

With a conditional use permit, special use permit, special exception permit

By-right in certain districts

In an overlay district

In a floating district

Other (Please describe)

Q6.6. In which types of districts is a conditional use permit/special use permit/special exception an approval pathway for **utility scale** solar? Choose all that apply:

Agricultural/Rural

Residential

Civic/Institutional

Commercial

Manufacturing/Industrial

Floating Zone or Overlay District

Other (Please describe)

Q6.7. Is the dual-use of agriculture and solar photovoltaics (agrivoltaics) allowed in non-agricultural districts?

Yes

No

Not sure

Q6.8. Is your locality actively working towards adding a clear regulatory pathway for utility scale solar facilities to the ordinance?

Yes

No

Not sure

Q6.9. What regulatory pathways is/are your locality adding for utility scale solar? Choose all that apply:

By-right in certain districts

With a conditional use permit/special use permit/special exception in specific districts

In a floating zone

In an overlay district

Other

Q6.10. Has your locality adopted a solar ordinance?

Yes

No

We are in the process of adopting a solar ordinance

Not sure

Other (Please explain)

Q6.11. Which of the following solar applications does/will your solar ordinance address? Choose all that apply:

Residential

Commercial, Institutional

Agricultural generators

Shared or Community solar

Utility scale solar

Not sure

Other

Q6.12. Does it, or will it, address any of the following? Check all that apply:

Provisions for generally accepted national standards for solar panels

Provisions for generally accepted national standards for battery storage technologies for solar photovoltaic

Property line setbacks

Vegetated buffers or screening

Erosion & sediment control

Agricultural lands

Decommissioning Plan requirements above and beyond state code requirements

Agrivoltaics (dual-use solar and agriculture, i.e., grazing, apiary, agriculture)

Other:

Q6.13. Comments related to zoning (optional)

SECTION 7: ECONOMIC CONSIDERATIONS

Solar project development has the power to add economic value to businesses, the workforce, and public funds (budgets and revenue). This section addresses how your locality evaluates and promotes the economic considerations of utility scale solar development.

Q7.1. Has your locality considered or reviewed one or more economic impact analyses relating to solar development? (This includes economic impact analyses created internally by your locality.)

Yes

No

Not sure

Q7.2. How important are **DIRECT economic impacts** (e.g., tax revenue, revenue share or siting agreement proceeds) in your recommendation to approve or deny a utility scale solar application? (Note: You must move the slider off of the default position.)

	No response	Not Sure	Not at all important	Slightly important	Moderately important	Very important
Importance of direct economic impacts						

Q7.3. How important are each of the **INDIRECT economic impacts** listed below in your recommendation to approve or deny a utility scale solar application? (Note: You must move the slider off of the default position for each item.)

	No response	Not Sure	Not at all imporant	Slightly important	Moderately important	Very important
Generation of local construction jobs						
Increased revenue and demand for local businesses and services during construction and decommissioning						
Increased revenue and demand for local businesses and services once facility is operational						
Financial benefits to the property owner leasing their land to the solar developer						

Q7.4. How familiar are you with new legislation which makes changes to the current Machinery and Tools (M&T) tax exemption for solar projects and introduces a revenue share option for projects over 5MW? (VA Code 58.1-2636)

	No response	Not at all familiar	Slightly familiar	Moderatly familiar	Very familiar
Familiarity with tax model options					

Q7.5. Has your locality evaluated the potential economic impacts of adopting a revenue share assessment ordinance as opposed to using the default M&T/real estate tax rate?

Yes

No

Not sure

Q7.6. Has your locality used SolTax, a free, online computational tool to help localities analyze potential revenues under both the M&T/real estate tax rate and revenue share assessment models?

Yes

No

Not sure

Q7.7. Has your locality adopted or is in the process of adoping a revenue share ordinance?

Yes, adopted

Yes, in the process of adopting

No

Not sure

Q7.8. Effective July 1, 2021, Virginia localities are authorized by HB1919 (§ 15.2-958.3:1) to establish, by ordinance, a green bank to promote investment in solar and other clean energy technologies in that locality. To what extent is your locality considering establishing a green bank?

Not at all: we did not know about the authorizing legislation and/or are unfamiliar with what a green bank is.

Not actively: we are aware of green banks and the authorizing legislation, but we are not actively pursuing establishing one.

Actively: we have had/are having discussions about potentially establishing a green bank.

Not sure if this is being considered at this time.

Q7.9. Comments related to economic considerations (optional)

SECTION 8: ENERGY STORAGE

Energy storage technology balances the flow of intermittent renewable energy sources and is an important part of Virginia's path to a clean economy. Virginia has an energy storage mandate for the largest utilities to build or procure over 3.1 Gigawatts of energy storage capacity. This section addresses if and how your locality is considering the development of utility-scale energy storage technology.

For the purposes of this survey, "utility scale energy storage" refers to storage projects typically greater than 5MW, "in front of the meter," owned by a private company or utility, and feeding one-way into the grid (not for virtual net metering or net metering).

Q8.1. Does your locality have policies or codes that address large or utility scale (front of the meter) energy storage as an allowable use?

Yes

No

Not sure

Q8.2. Does your locality require emergency preparedness plans for utility scale battery storage projects?

Yes

No

Not sure

Q8.3. Does your locality have any actively permitted large or utility scale energy storage projects?

Yes

No

Not sure

Q8.4. What type(s) of actively permitted large scale energy storage projects does your locality have? Choose all that apply.

Pumped Hydroelectric

Flywheel Energy Storage

Lead Acid Batteries

Lithium Ion Batteries

Sodium Sulphur Batteries

Sodium Nickel Chloride

Flow Batteries (Vanadium Redox, Zinc Bromine)

Not sure

Other (Please describe)

Q8.5. Are there any large or utility scale energy storage projects proposed or planned in your locality?

Yes

No

Not sure

Q8.6. Are the proposed project(s) standalone energy storage or tied in with a solar project (solar+storage)?

Standalone energy storage

Solar + storage

Not Sure

Other (Please describe)

Q8.7. What type of energy storage projects are proposed or planned? Choose all that apply, if known.

Pumped Hydroelectric

Flywheel Energy Storage

Lead Acid Batteries

Lithium Ion Batteries

Sodium Sulphur Batteries

Sodium Nickel Chloride

Flow Batteries (Vanadium Redox, Zinc Bromine)

Not sure

Other (Please describe)

Q8.8. Community planning for resiliency is important, and climate change has created greater urgency to plan response measures for events such as flooding, heat waves, and extreme storm events that may have energy outage impacts. The pairing of distributed generation solar and energy storage can serve as a community resilience "microgrid."

To what extent has your locality considered solar + storage as a resiliency tool?

Our locality has not considered microgrids as a resiliency tool

Our locality is considering policies to allow and/or promote microgrids as a resiliency tool

Our locality has already adopted policies that allow and/or promote microgrids as a resiliency tool

Not sure

Q8.9. Comments related to energy storage (optional)

SECTION 9: GENERAL QUESTIONS

Locality: Select Locality from pull-down menu

Accomack County
Albemarle County
Alexandria
Alleghany County
Amelia County
Amherst County
Appomattox County
Arlington County
Augusta County

Planning District: Select Planning District from pull-down menu. For localities with more than one Planning District, select just one.

Region 1: LENOWISCO PDC
Region 2: Mount Rogers PDC
Region 3: Cumberland Plateau PDC
Region 4: New River Valley RC
Region 5: Roanoke Valley-Alleghany RC
Region 6: Central Shenandoah PDC
Region 7: Northern Shenandoah Valley RC
Region 8: Northern Virginia RC
Region 9: Rappahannock-Rapidan RC
Region 10: Thomas Jefferson PDC

Of the following choices, how would you characterize your locality? Pick one:

Urban

Suburban

Rural

Combination (Please describe)

Other (Please describe)

Name

Position or Title

Email

Phone Number

Are you willing to be contacted for follow-up information?

Yes

No

THANK YOU!

Thank you for participating in the first ever Virginia Solar Survey! The information you have provided will shed light on the state of solar across the Commonwealth and help inform and drive the development of technical support and resources.

The Virginia Solar Initiative at the Weldon Cooper Center for Public Service at UVA and The Virginia Department of Mines, Minerals and Energy are committed to supporting Virginia localities as they develop policies, regulations and processes as they relate to solar and storage development. If you want to learn more about our work and how we can help, or you wish to request a SolSmart consultation, please contact us.

Elizabeth Marshall
Senior Project Coordinator, Virginia Solar Initiative
Weldon Cooper Center for Public Service at UVA
emm2t@virginia.edu

Carrie Hearne
Associate Director, Energy Equity Programs
Virginia Department of Mines, Minerals and Energy
carrie.hearne@dmme.virginia.gov

A special thank you to the Center for Survey Research at the Weldon Cooper Center for Public Service at UVA for their expertise and guidance. In addition, we would like to extend our sincere gratitude to the representatives from Virginia Department of Environmental Quality, Virginia Association of Counties, Virginia Association of Planning District Commissions, The Nature Conservancy, SolSmart, The Berkley Group, and the many localities who shared their time and knowledge to ensure the relevance and quality of the questionnaire.

Resources. Links to information and resources mentioned in this survey questionnaire can be found below.

SolTax tool for evaluating possible revenues under M&T or Revenue Share tax models

SolSmart Program for no-cost technical assistance and designation program for localities to help make it easier, faster and more affordable to go solar.

APPENDIX B

SURVEY RESULTS AND SURVEY LOGIC RULES

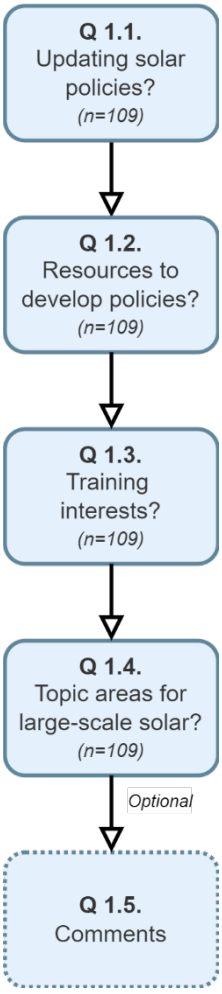
This Appendix contains a graphic visualization for the results of each question in the survey. For some questions, multiple graphic visualizations are provided. The source of data for the graphic visualizations, as well as a more comprehensive summary of responses, is available on the *Virginia Solar Survey website* under Additional Resources.

This survey was organized into eight sections. Survey logic (system of gating questions) was used to determine which follow up questions were asked of each respondent. The survey logic rules that were applied are presented as flowcharts at the beginning of each section of survey results in this Appendix.

Text responses to open-ended and free response survey questions are provided in Appendix C; identifying information has been redacted.

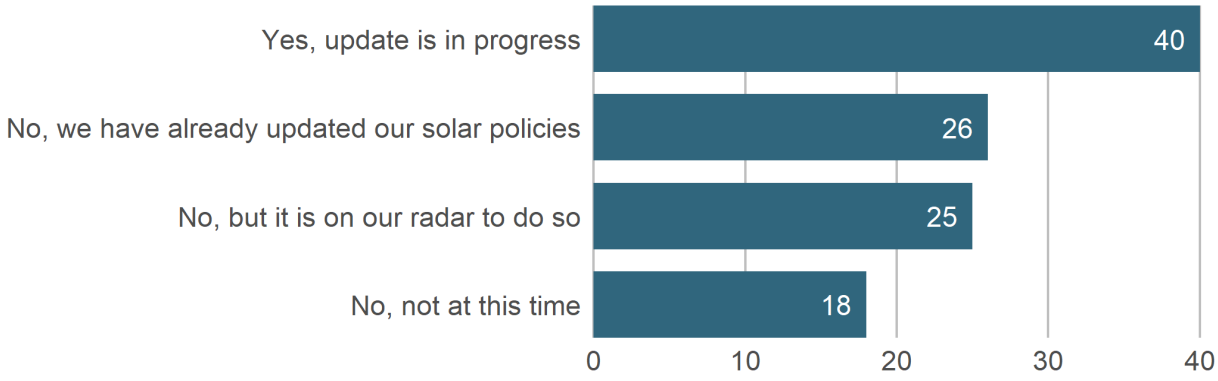
SECTION 1: SOLAR READINESS

Survey Logic



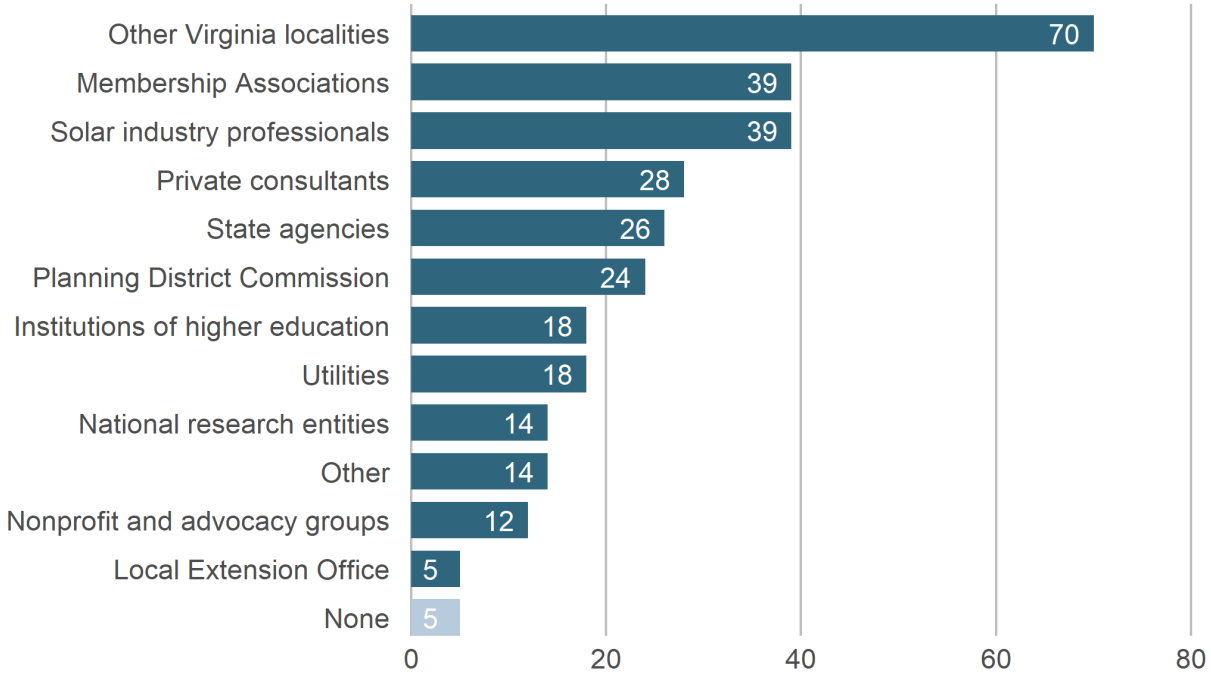
Question 1.1

Is your locality preparing to update or is actively updating its solar policies, regulations and/or application and permitting processes? *(n=109)*



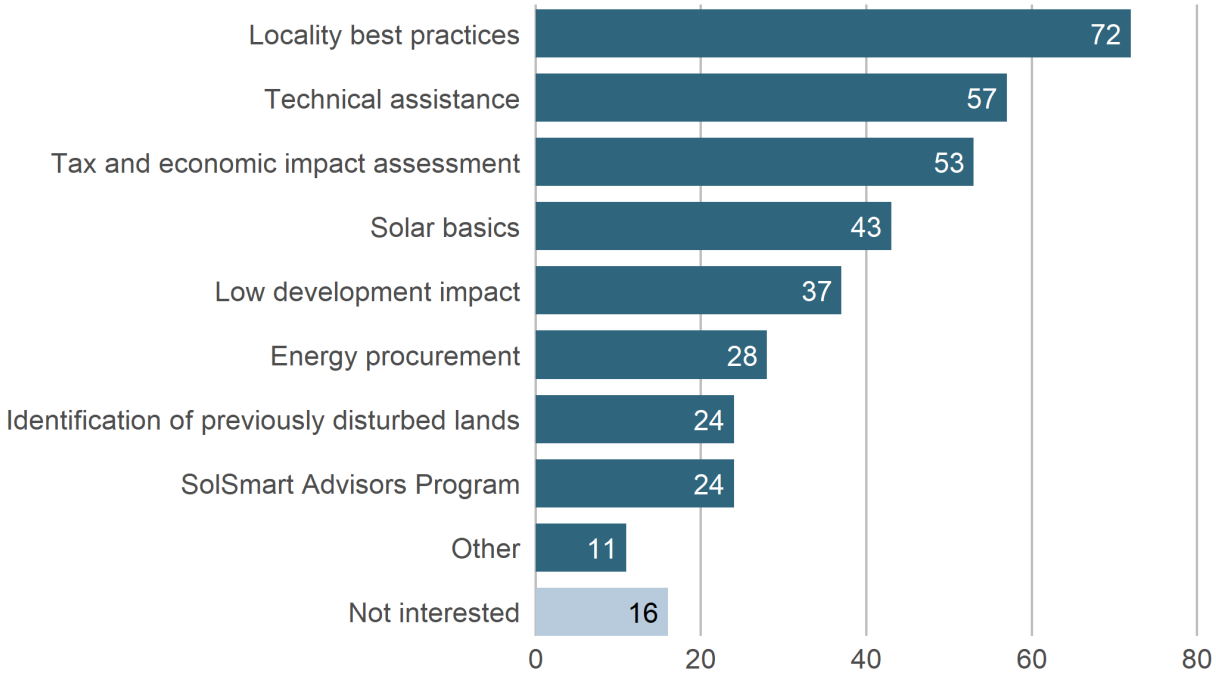
Question 1.2

What resources are your locality turning to (or did your locality turn to) for support and assistance in developing new policies and ordinances? *(Choose all that apply, n=109)*



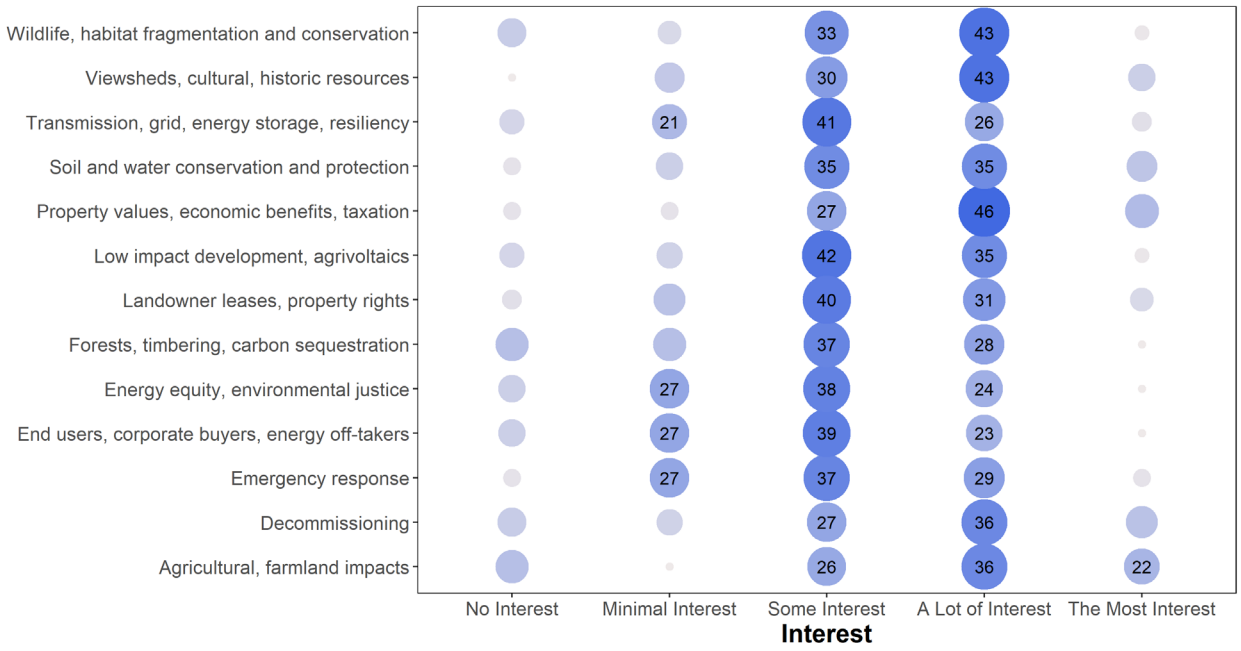
Question 1.3

With respect to solar development, would you be interested in training or technical assistance in any of the following areas for your locality? *(Choose all that apply, n=109)*



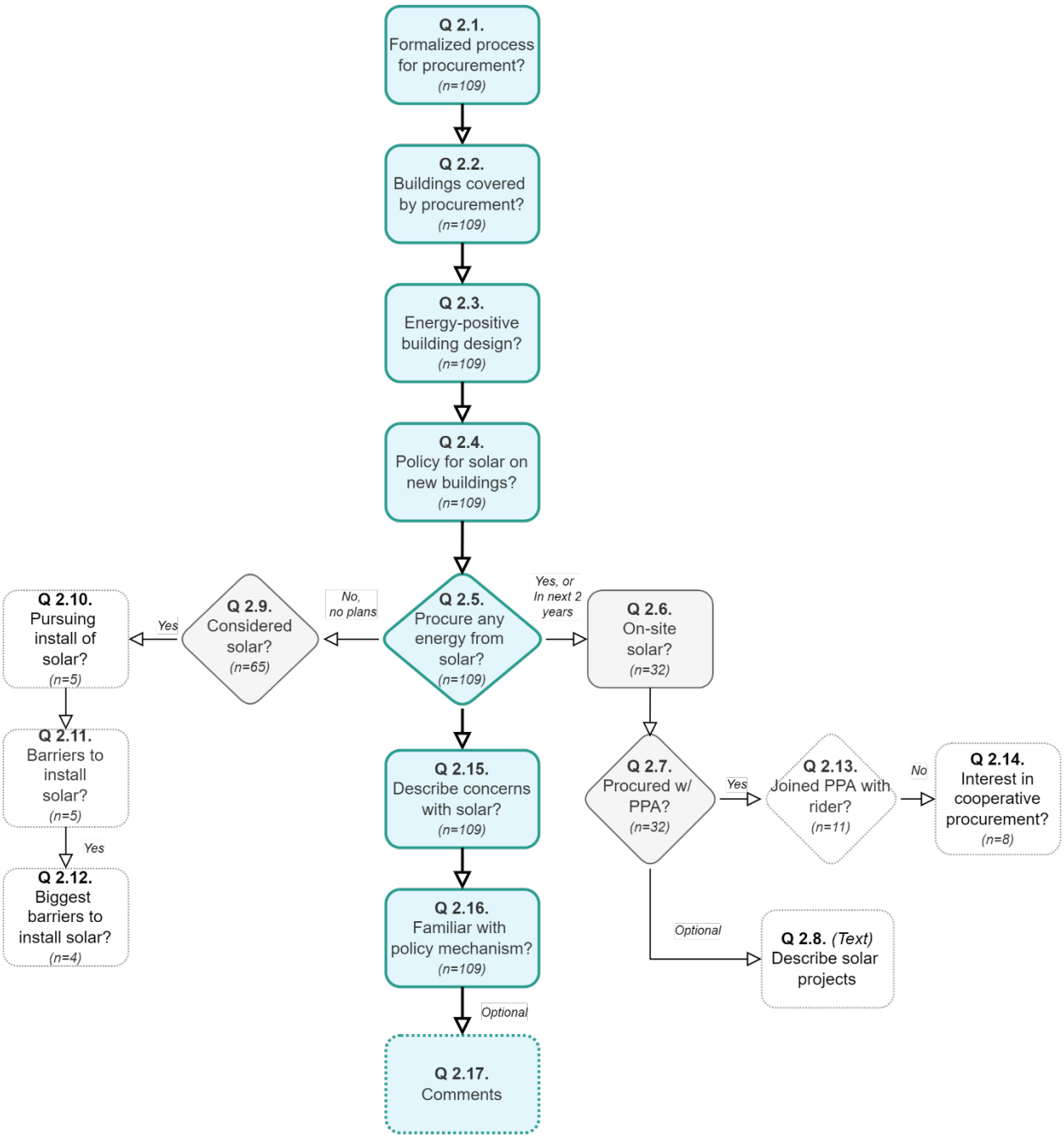
Question 1.4

To help DMME and UVA understand your priorities related to the siting and development of utility scale solar, please indicate your level of interest in the following topics:



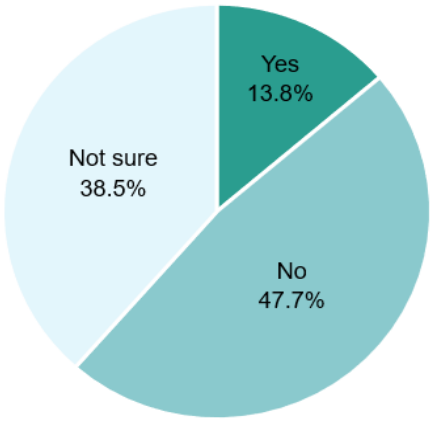
SECTION 2: RENEWABLE ENERGY PROCUREMENT

Survey Logic



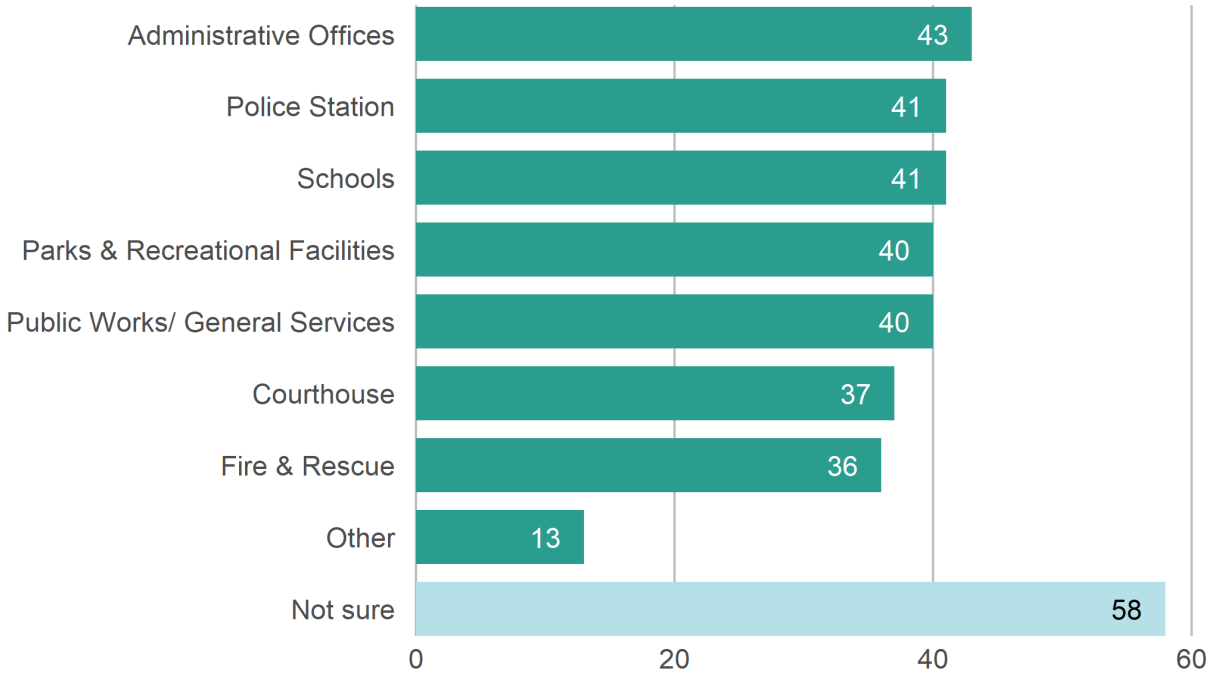
Question 2.1

Does your locality have a formalized process for making decisions regarding electricity procurement for your own public buildings? (i.e., necessary channels to go through to introduce a new fuel type into your energy mix) *(n=109)*



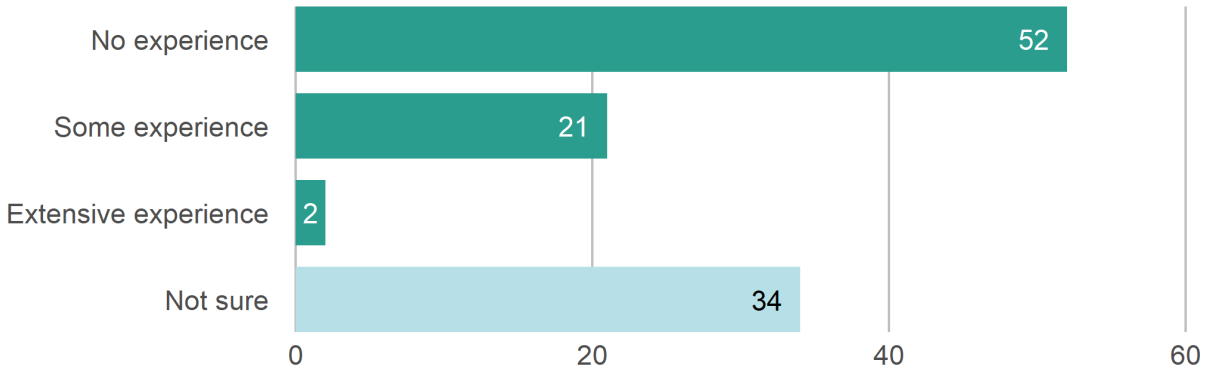
Question 2.2

What buildings and entities are covered by your locality's electricity procurement? *(Choose all that apply, n=109)*



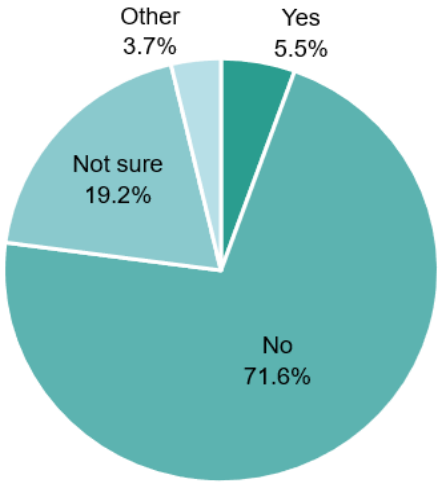
Question 2.3

What is your locality's experience with using "energy-positive building design" for new public-school buildings? *(n=109)*



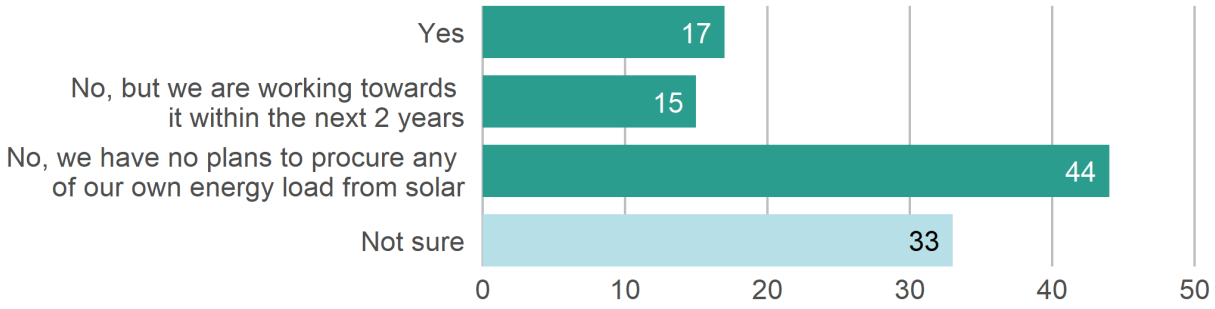
Question 2.4

Does your locality have a policy requiring solar photovoltaics be considered in the design of new public buildings? *(n=109)*



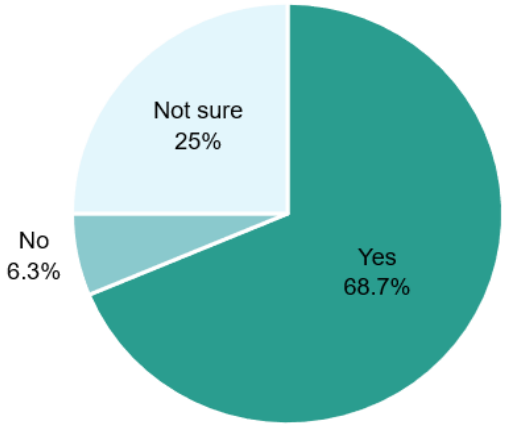
Question 2.5

Does your locality procure any of its own energy load from solar? *(n=109)*



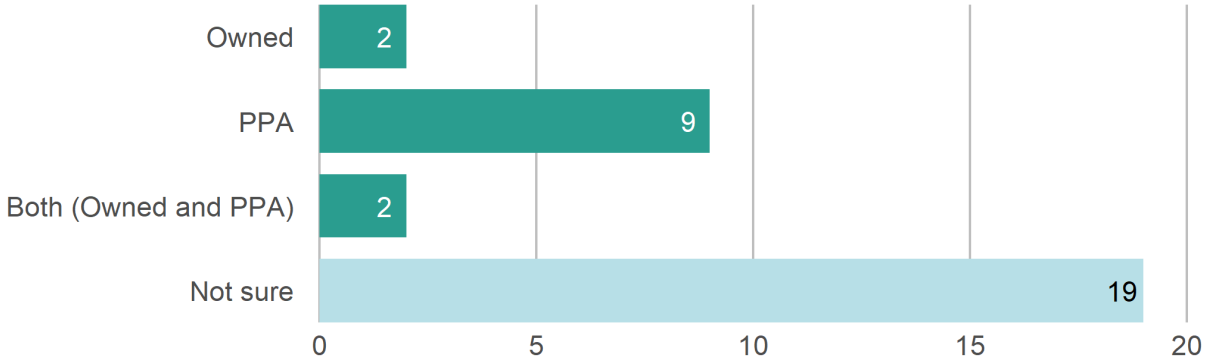
Question 2.6

Is (or will) any of the solar energy be procured from on-site solar installations such as rooftop or ground-mounted systems on public property? *(n=32)*



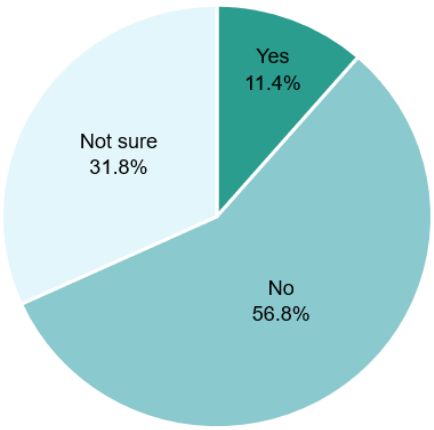
Question 2.7

Are (or will) your solar installation(s) be owned or procured through a power purchase agreement (PPA)? *(n=32)*



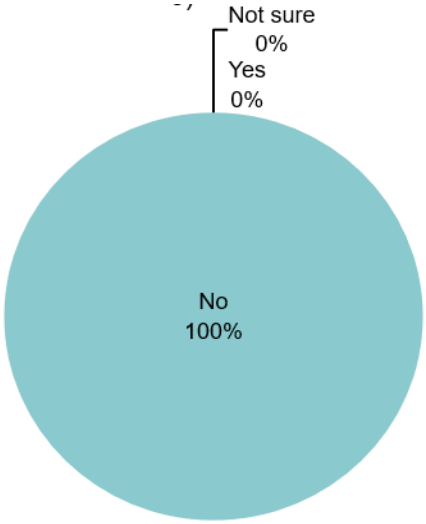
Question 2.9

Has your locality considered incorporating solar in its generation mix? *(n=44)*



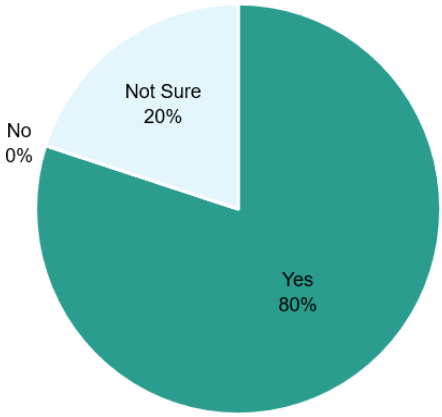
Question 2.10

Is your locality actively pursuing the installation of solar systems on public buildings or public land? *(n=5)*



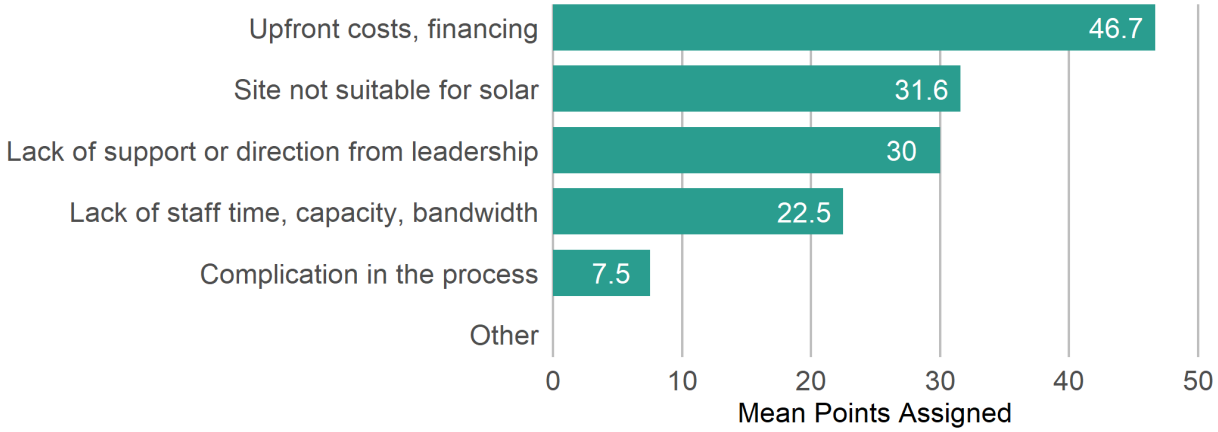
Question 2.11

Has your locality encountered barriers which have prevented solar from being incorporated into its energy generation mix? *(n=5)*



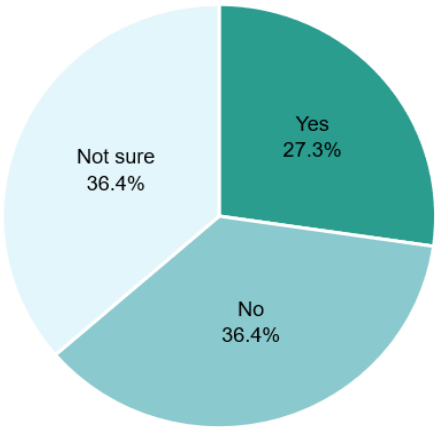
Question 2.12

Please allocate 100 points between the choices below, giving the most points to the topics that pose the biggest barriers (total must add up to 100.) *(n=4)*



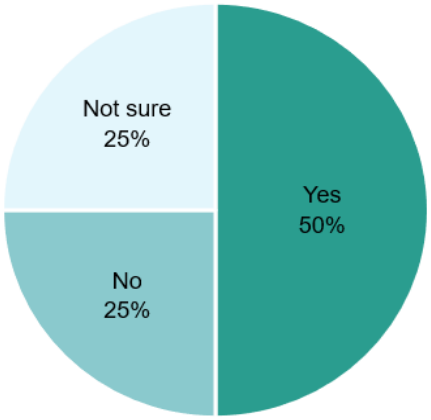
Question 2.13

Has your locality joined a PPA through a rider arrangement? *(n=11)*



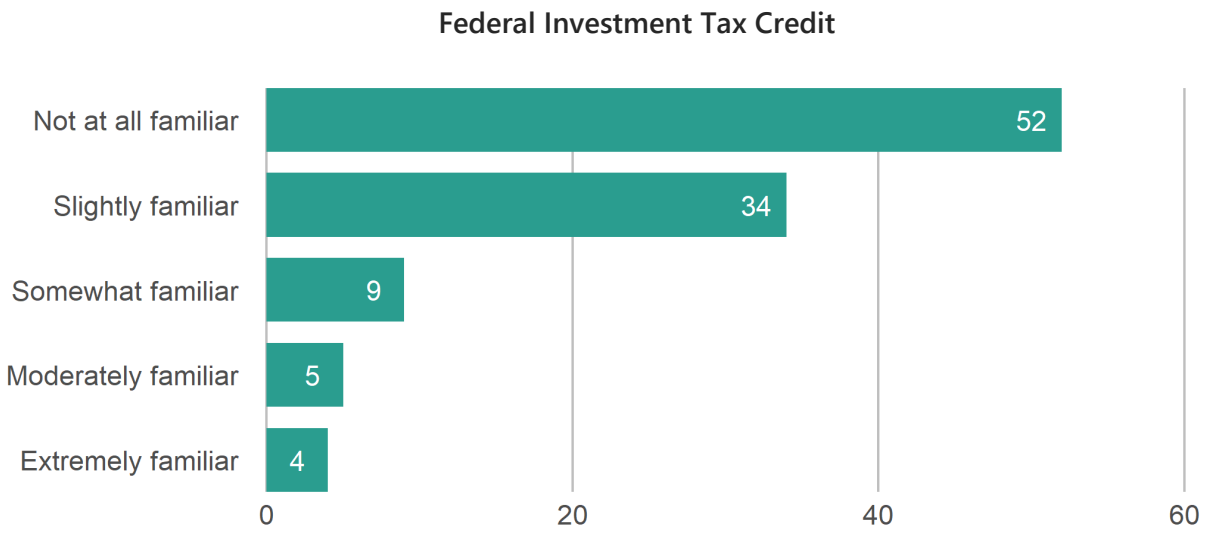
Question 2.14

Are you interested in learning more about cooperative procurement models and examples? *(n=8)*



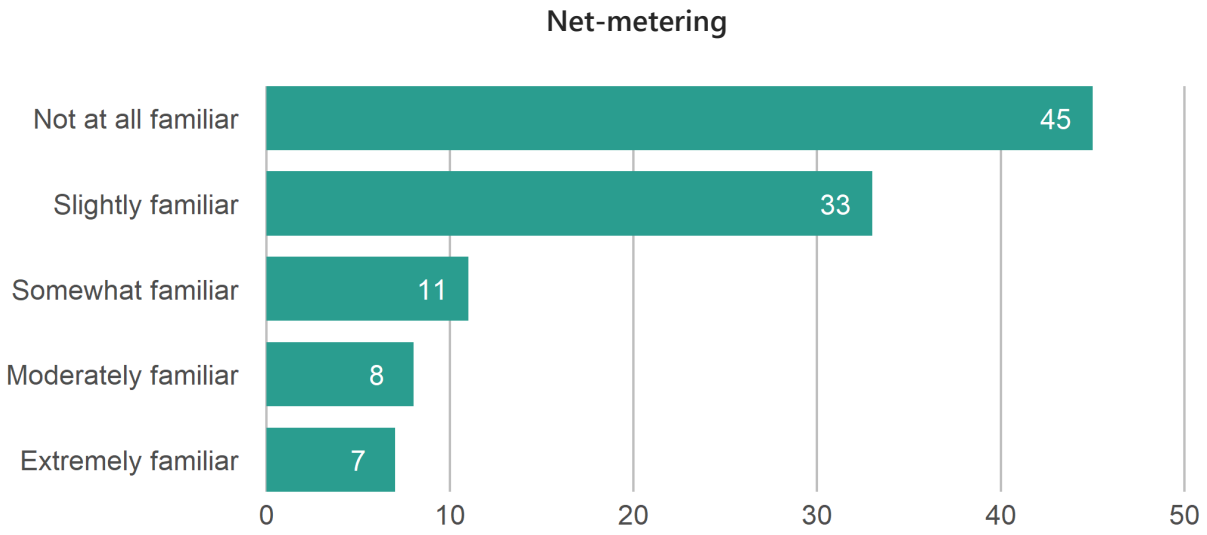
Question 2.16.1

Rate how familiar you are with each solar policy mechanism: *(n=104)*



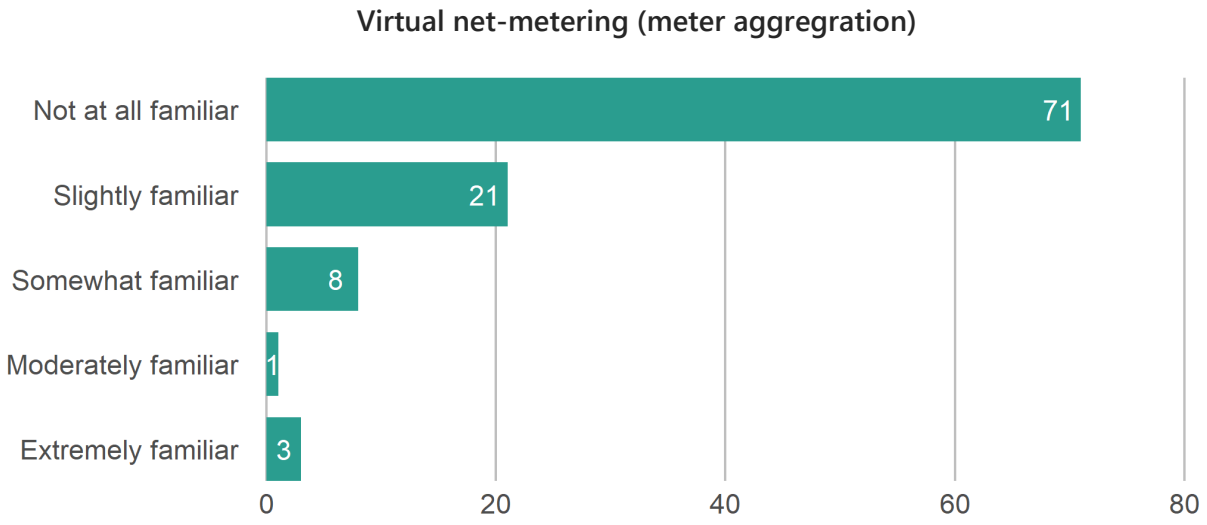
Question 2.16.2

Rate how familiar you are with each solar policy mechanism: *(n=104)*



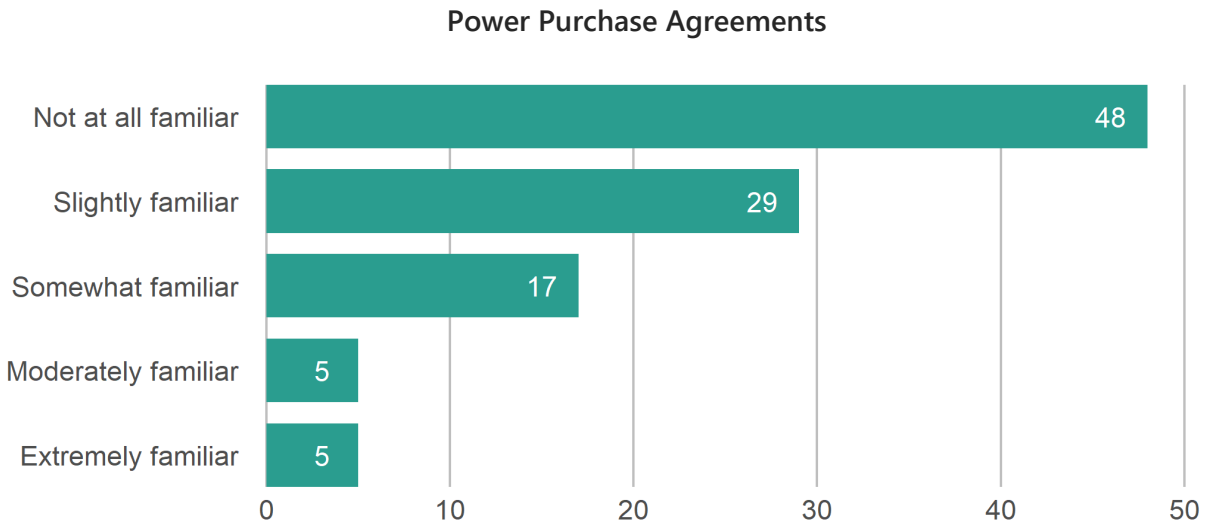
Question 2.16.3

Rate how familiar you are with each solar policy mechanism: *(n=104)*



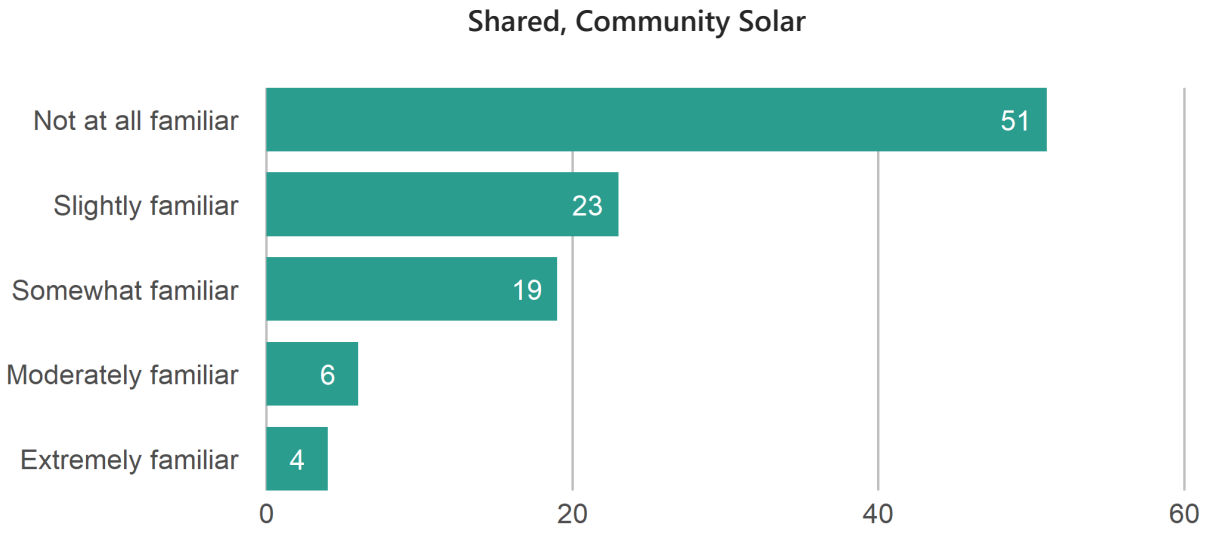
Question 2.16.4

Rate how familiar you are with each solar policy mechanism: *(n=104)*



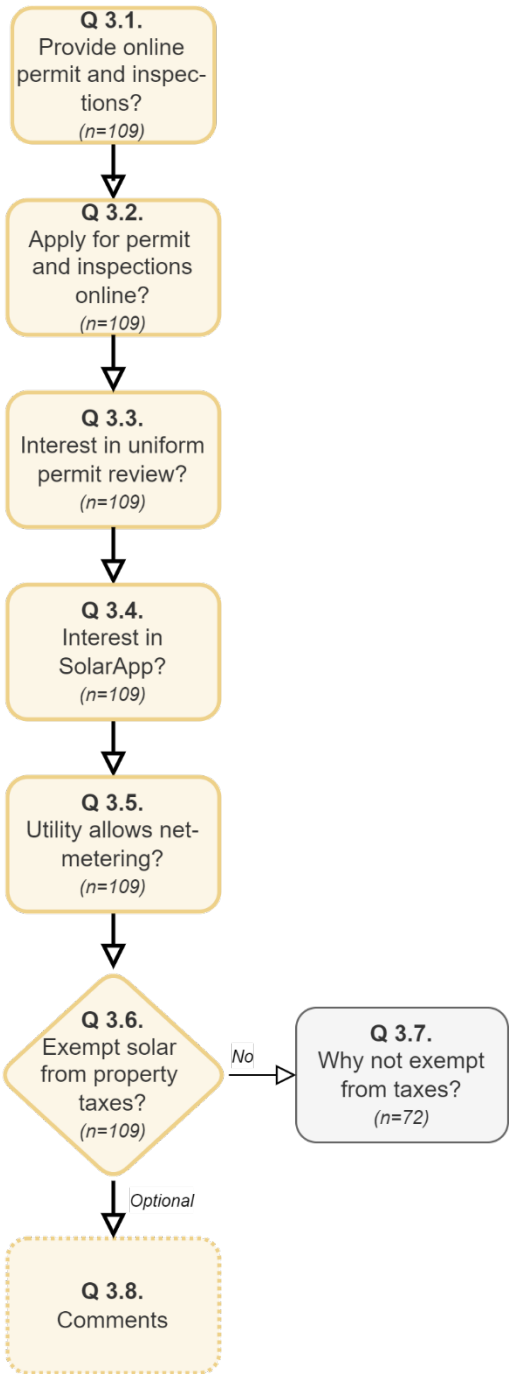
Question 2.16.5

Rate how familiar you are with each solar policy mechanism: *(n=103)*



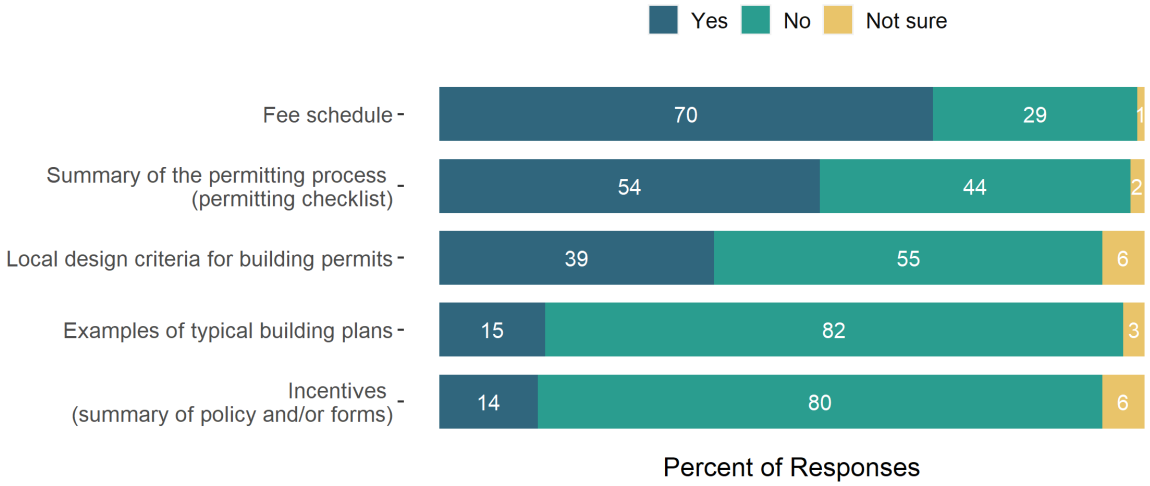
SECTION 3: DISTRIBUTED GENERATION

Survey Logic



Question 3.1

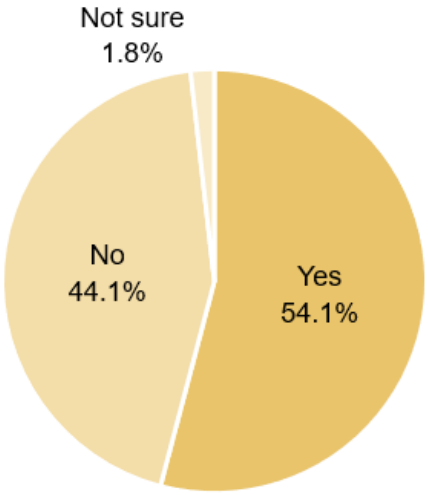
Regarding residential and commercial solar permitting and inspections, does your locality provide any of the following online? *(n=109)*



Question 3.1.1

Regarding residential and commercial solar permitting and inspections, does your locality provide any of the following online? *(n=109)*

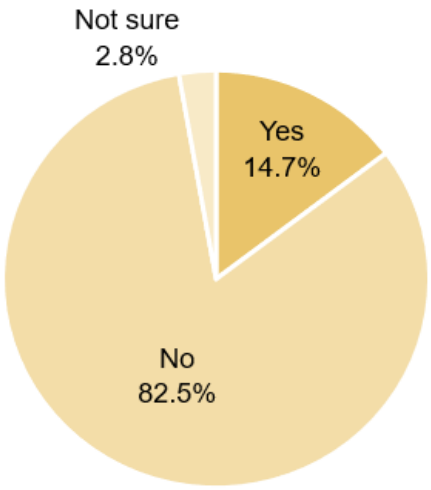
Summary of the permitting process (permitting checklist)



Question 3.1.2

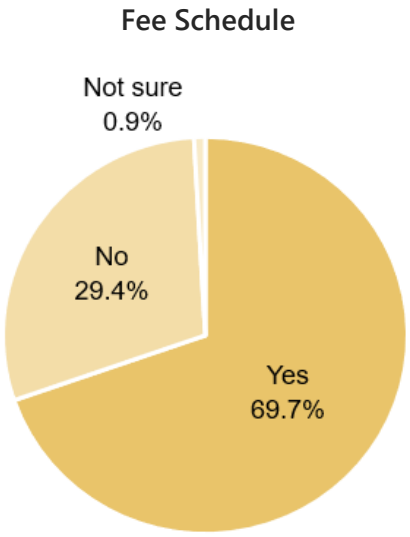
Regarding residential and commercial solar permitting and inspections, does your locality provide any of the following online? *(n=109)*

Examples of typical building plans



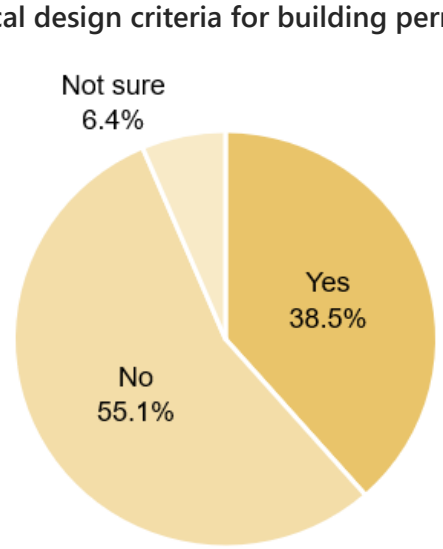
Question 3.1.3

Regarding residential and commercial solar permitting and inspections, does your locality provide any of the following online? *(n=109)*



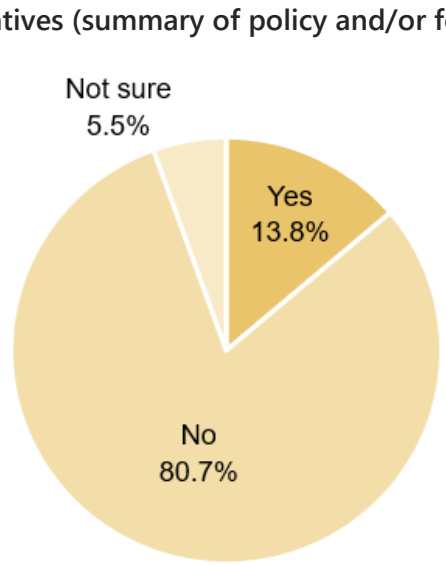
Question 3.1.4

Regarding residential and commercial solar permitting and inspections, does your locality provide any of the following online? *(n=109)*



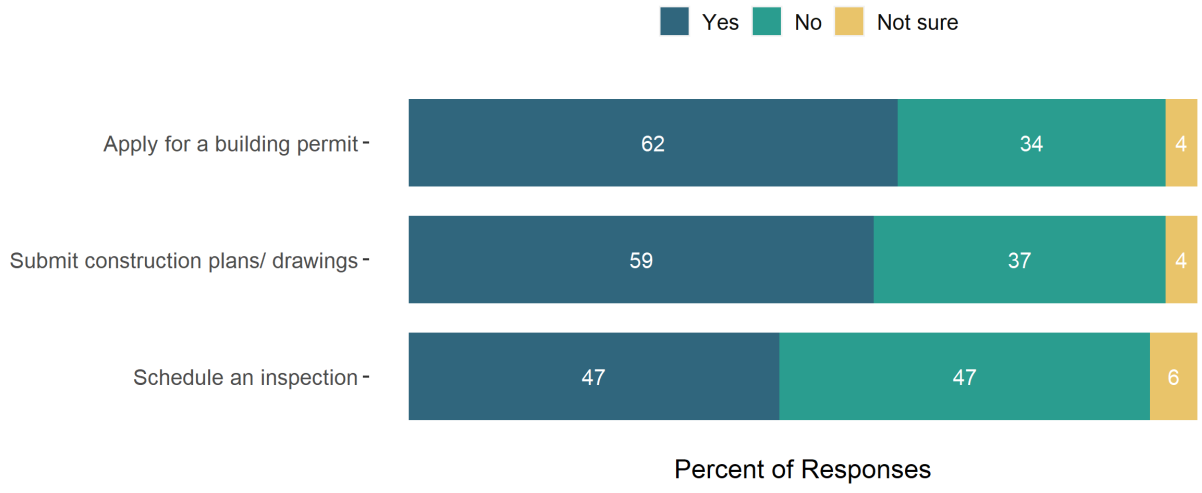
Question 3.1.5

Regarding residential and commercial solar permitting and inspections, does your locality provide any of the following online? *(n=109)*



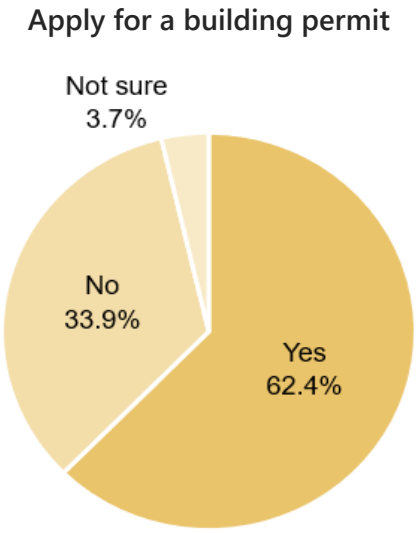
Question 3.2

Regarding residential and commercial solar permitting and inspections, can an applicant in your locality do any of the following online? *(n=109)*



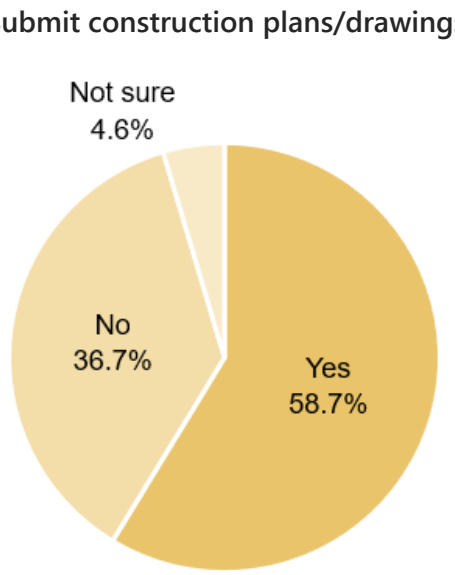
Question 3.2.1

Regarding residential and commercial solar permitting and inspections, can an applicant in your locality do any of the following online? *(n=109)*



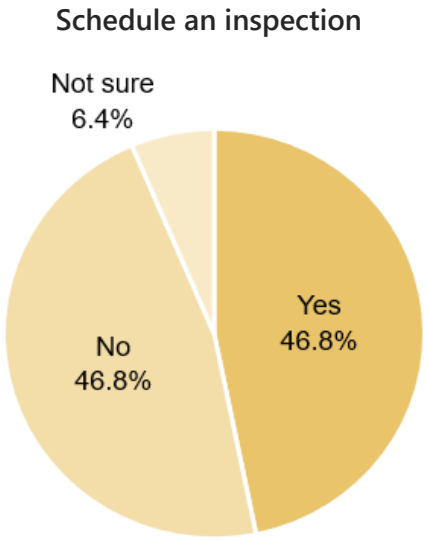
Question 3.2.2

Regarding residential and commercial solar permitting and inspections, can an applicant in your locality do any of the following online? *(n=109)*



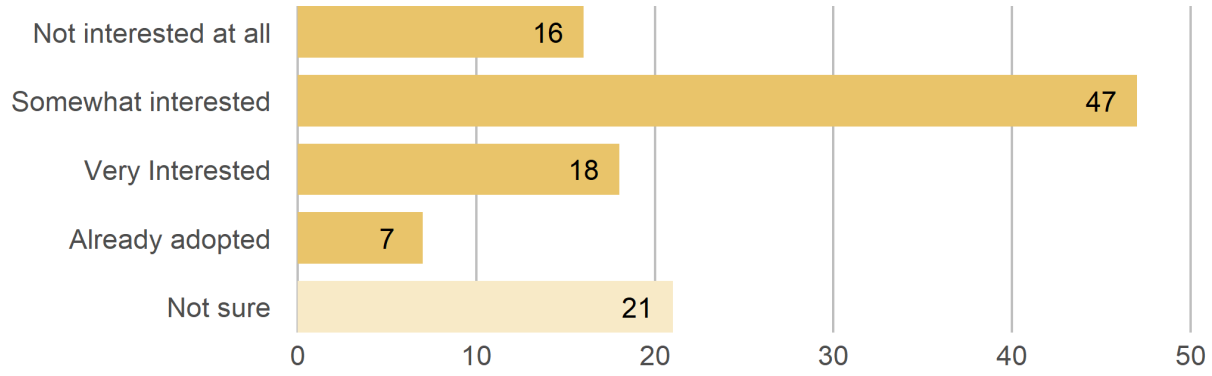
Question 3.2.3

Regarding residential and commercial solar permitting and inspections, can an applicant in your locality do any of the following online? *(n=109)*



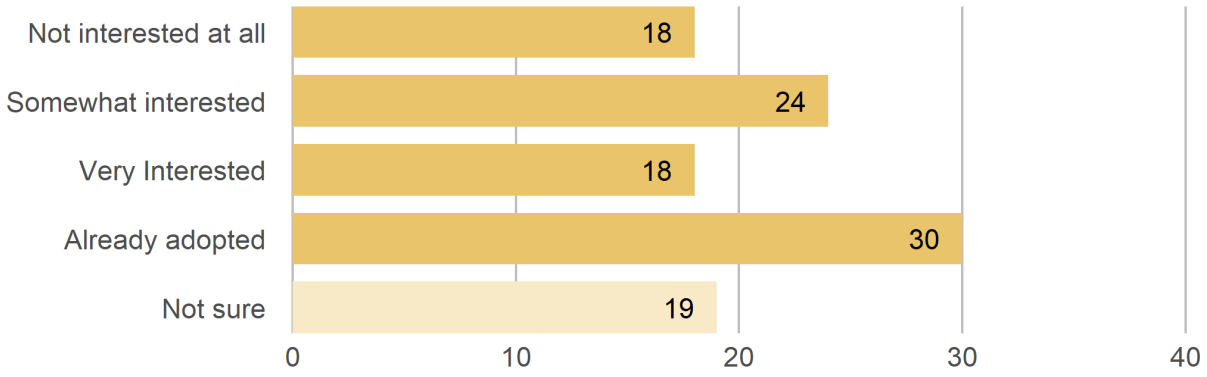
Question 3.3

To what extent are you interested in your locality adopting a uniform permit review procedure? *(n=109)*



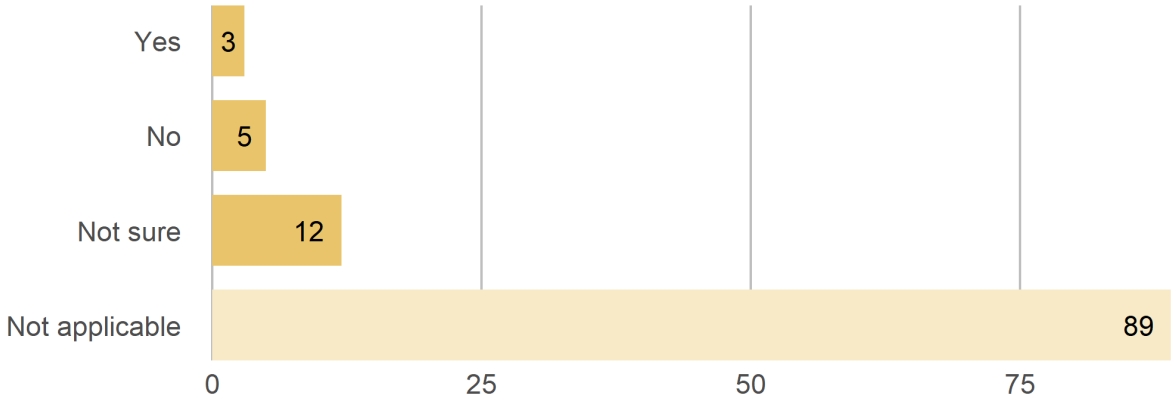
Question 3.4

To what extent are you interested in your locality adopting an online permit review procedure, such as the SolarAPP tool offered through the National Renewable Energy Laboratory? *(n=109)*



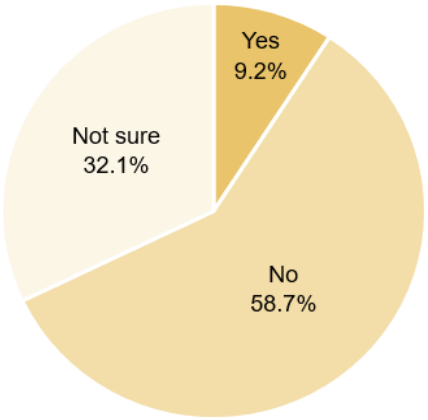
Question 3.5

If your locality operates an electric utility, does it allow customers generating solar energy to "net meter" any excess solar generation? *(n=109)*



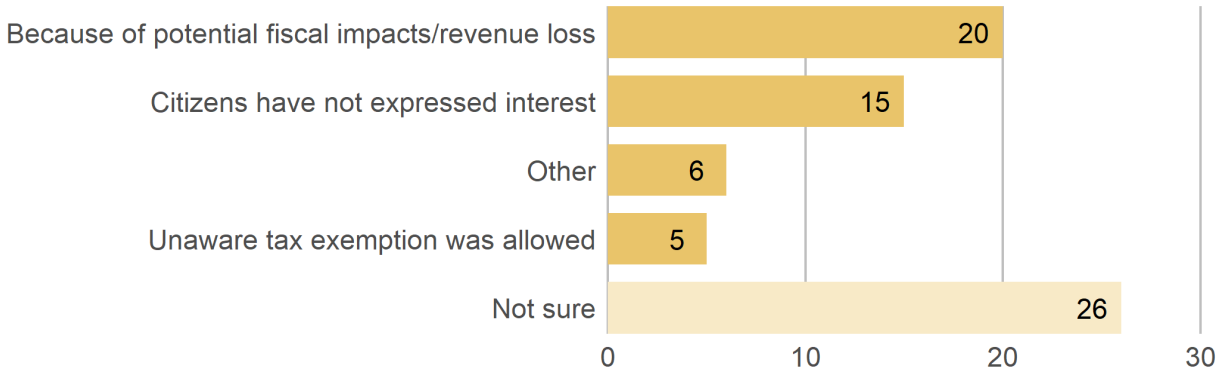
Question 3.6

Has your locality adopted by ordinance a policy to exempt or partially exempt solar equipment from property taxes, as permitted by Virginia Code Section58.1-3661? *(n=109)*



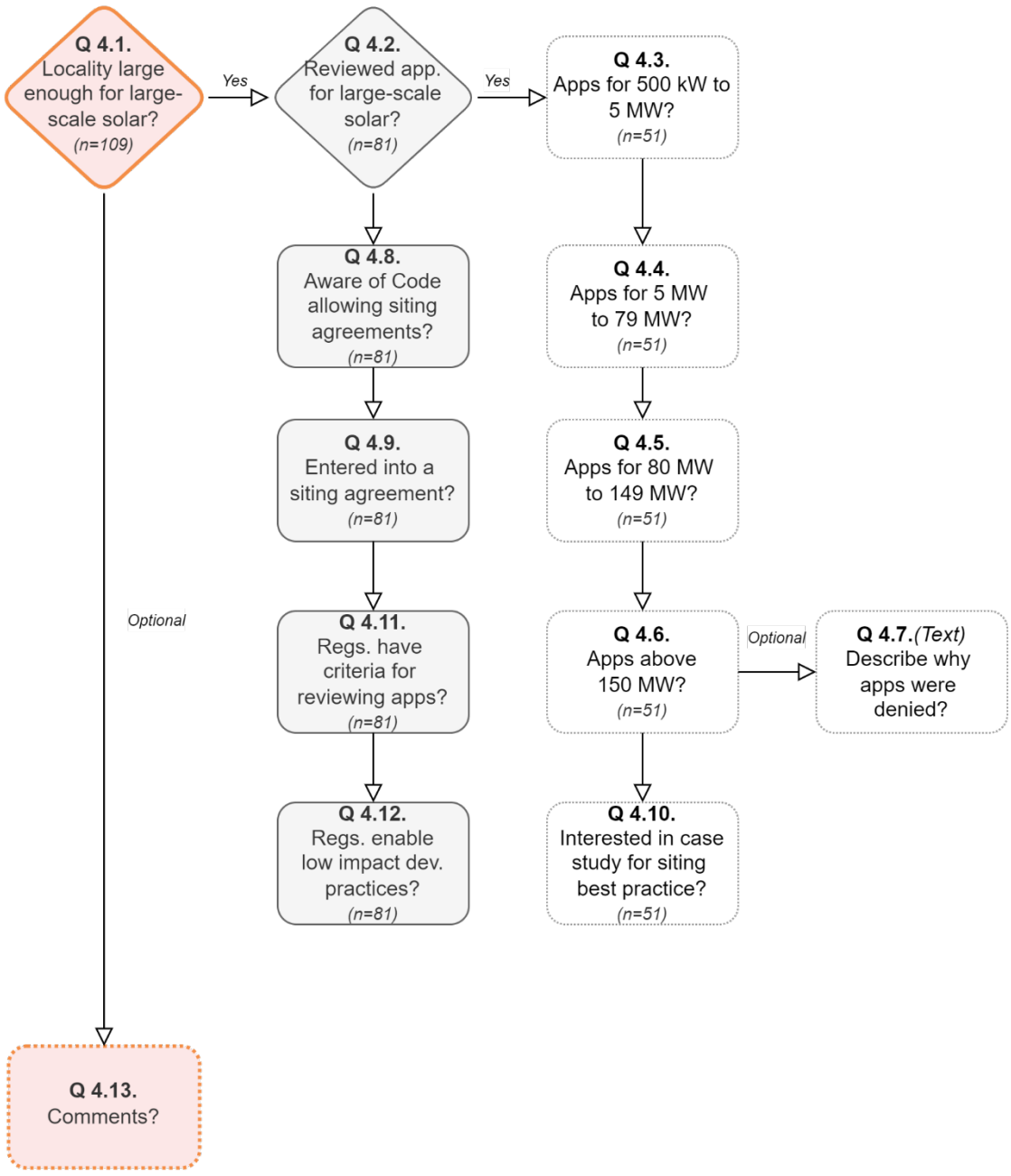
Question 3.7

To the best of your knowledge, why does your locality not exempt or partially exempt solar equipment from property taxes? *(Choose all that apply, n=64)*



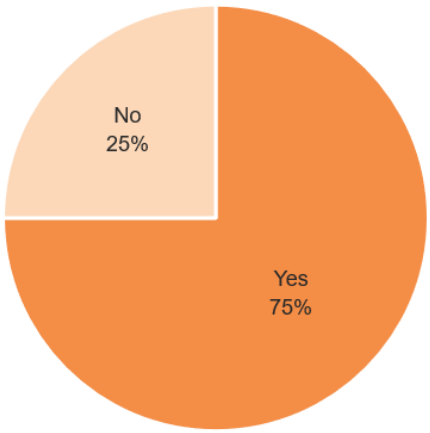
SECTION 4: UTILITY SCALE SOLAR

Survey Logic



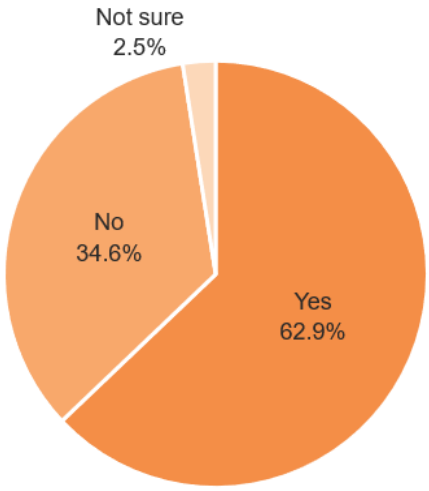
Question 4.1

Is your locality large enough to accommodate a large or utility scale solar facility? *(n=108)*



Question 4.2

Has your locality ever reviewed an application (e.g., conditional use permit, special use permit, special exception, or Code of Virginia section 15.2-2232 compliance review) for a large or utility scale solar facility? *(n=81)*



Question 4.3.1

How many projects from 500 KW to 5 MW has your locality reviewed in total? *(n=51)*

Number of Applications Reviewed	Frequency
0	13
1	11
2	6
3	12
4	3
5	1
7	1
8	1
10	1
15	2
Total	**51**

Question 4.3.2

How many projects from 500 KW to 5 MW does your locality have applications under review? *(n=51)*

Number of Applications Under Review	Frequency
0	33
1	10
2	3
3	2
4	2
5	1
Total	**51**

Question 4.3.3

How many projects from 500 KW to 5 MW has your locality approved? *(n=51)*

Number of Applications Approved	Frequency
0	24
1	12
2	6
3	5
5	1
6	1
12	1
14	1
Total	**51**

Question 4.3.4

How many applications from 500 KW to 5 MW have been withdrawn from your locality's approval process? *(n=51)*

Number of Applications Withdrawn	Frequency
0	42
1	7
2	1
3	1
Total	**51**

Question 4.3.5

How many applications from 500 KW to 5 MW has your locality denied? *(n=51)*

Number of Applications Denied	Frequency
0	44
1	3
2	3
3	1
Total	**51**

Question 4.4.1

How many projects from 5 MW to 79 MW has your locality reviewed in total? *(n=51)*

Number of Applications Reviewed	Frequency
0	16
1	11
2	6
3	11
5	4
6	1
9	1
30*	1
Total	**51**

**Public data sources indicate the one response of 30 may be a typo. The survey team interprets this as 3 for the purposes of interpretation and discussion.*

Question 4.4.2

How many projects from 5 MW to 79 MW does your locality have applications under review? *(n=51)*

Number of Applications Under Review	Frequency
0	44
1	6
3	1
Total	**51**

Question 4.4.3

How many projects from 5 MW to 79 MW has your locality approved? *(n=51)*

Number of Applications Approved	Frequency
0	22
1	11
2	4
3	10
5	2
6	1
9	1
Total	**51**

Question 4.4.4

How many applications from 5 MW to 79 MW have been withdrawn from your locality's approval process? *(n=51)*

Number of Applications Withdrawn	Frequency
0	45
1	4
2	2
Total	**51**

Question 4.4.5

How many applications from 5 MW to 79 MW has your locality denied? *(n=51)*

Number of Applications Denied	Frequency
0	46
1	4
2	1
Total	**51**

Question 4.5.1

How many projects from 80 MW to 149 MW has your locality reviewed in total? *(n=51)*

Number of Applications Reviewed	Frequency
0	34
1	10
2	2
3	1
4	1
5	3
Total	**51**

Question 4.5.2

How many projects from 80 MW to 149 MW does your locality have applications under review? *(n=51)*

Number of Applications Under Review	Frequency
0	48
1	3
Total	**51**

Question 4.5.3

How many projects from 80 MW to 149 MW has your locality approved? *(n=51)*

Number of Applications Approved	Frequency
0	39
1	7
2	2
3	1
4	2
Total	**51**

Question 4.5.4

How many applications from 80 MW to 149 MW have been withdrawn from your locality's approval process? *(n=51)*

Number of Applications Withdrawn	Frequency
0	45
1	4
2	2
Total	**51**

Question 4.5.5

How many applications from 80 MW to 149 MW has your locality denied? *(n=51)*

Number of Applications Denied	Frequency
0	48
1	3
Total	**51**

Question 4.6.1

How many projects 150 MW or greater has your locality reviewed in total? *(n=51)*

Number of Applications Reviewed	Frequency
0	38
1	10
2	1
3	2
Total	**51**

Question 4.6.2

How many projects 150 MW or greater does your locality have applications under review? *(n=51)*

Number of Applications Under Review	Frequency
0	48
1	2
2	1
Total	**51**

Question 4.6.3

How many projects 150 MW or greater has your locality approved? *(n=51)*

Number of Applications Approved	Frequency
0	42
1	8
2	1
Total	**51**

Question 4.6.4

How many applications 150 MW or greater have been withdrawn from your locality's approval process? *(n=51)*

Number of Applications Withdrawn	Frequency
0	49
1	1
2	1
Total	**51**

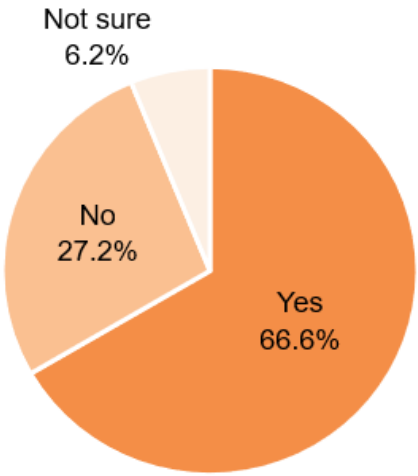
Question 4.6.5

How many applications 150 MW or greater has your locality denied? *(n=51)*

Number of Applications Denied	Frequency
0	50
1	1
Total	**51**

Question 4.8

Regarding siting agreements, as passed in 2020 and updated in the 2021 legislative session, Virginia code section 15.2-2316.7 states:" Any applicant for a solar project or energy storage project shall give to the host locality written notice of the applicant's intent to locate a solar in such locality and request a meeting. Such applicant shall meet, discuss, and negotiate a siting agreement with such locality." Are you aware of this section of the code? *(n=81)*



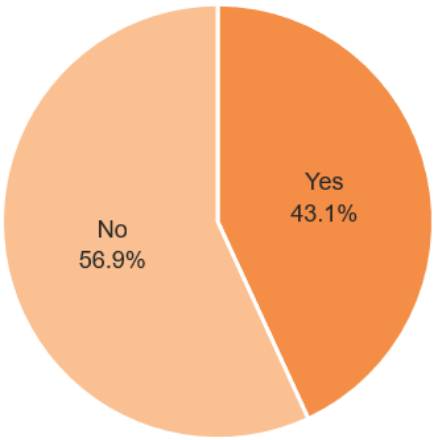
Question 4.9

Has your locality ever entered into a siting agreement negotiation process fora solar project? *(n=81)*

	Responses	Percent
Yes, at least one was negotiated	8	9.9
Negotiations are in progress but not yet finalized	10	12.3
No	63	77.8
Total	**81**	**100**

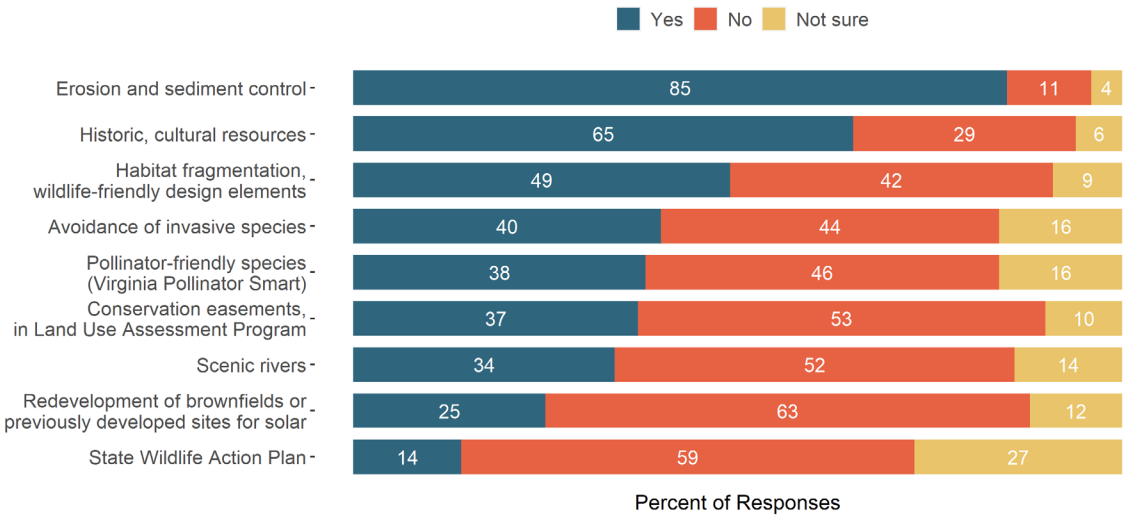
Question 4.10

Would your locality be interested in participating in a case study project to help develop Virginia-based best practice guidance related to utility scale solar development? *(n=51)*



Question 4.11

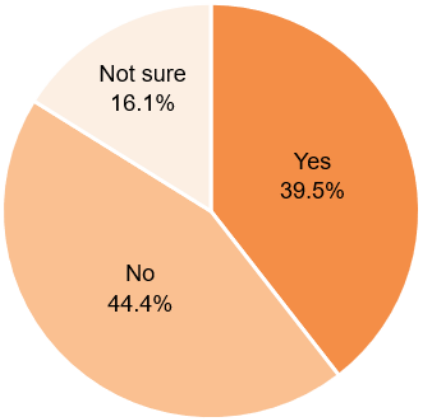
Do your local regulations specify criteria for the evaluation of the following topics when reviewing a utility-scale solar facility application?



Question 4.11.1

Do your local regulations specify criteria for the evaluation of the following topics when reviewing a utility-scale solar facility application? *(n=81)*

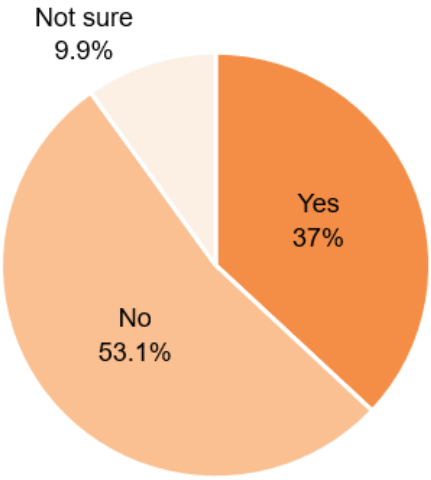
Avoidance of invasive species



Question 4.11.2

Do your local regulations specify criteria for the evaluation of the following topics when reviewing a utility-scale solar facility application? *(n=81)*

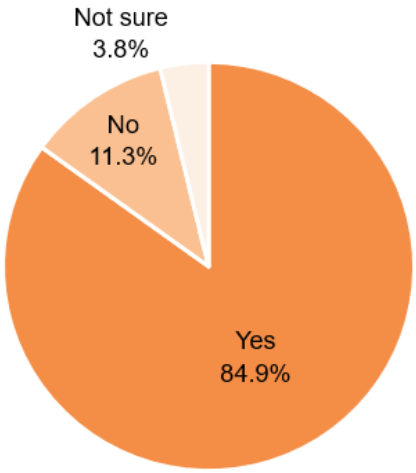
Conservation easements, in Land Use Assessment Program



Question 4.11.3

Do your local regulations specify criteria for the evaluation of the following topics when reviewing a utility-scale solar facility application? *(n=80)*

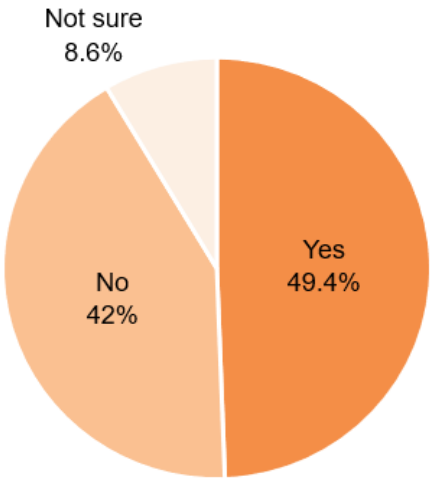
Erosion and sediment control



Question 4.11.4

Do your local regulations specify criteria for the evaluation of the following topics when reviewing a utility-scale solar facility application? *(n=81)*

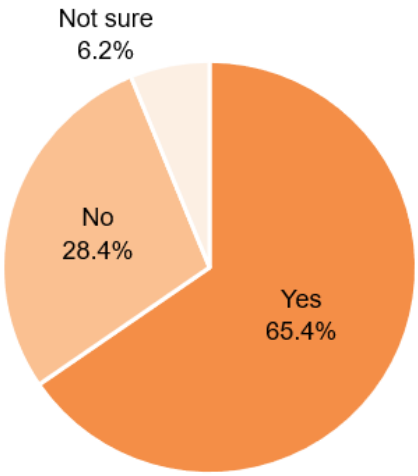
Habitat fragmentation, wildlife-friendly design elements



Question 4.11.5

Do your local regulations specify criteria for the evaluation of the following topics when reviewing a utility-scale solar facility application? *(n=81)*

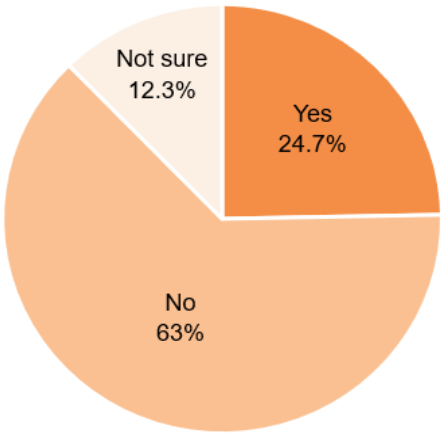
Historic, cultural resources



Question 4.11.6

Do your local regulations specify criteria for the evaluation of the following topics when reviewing a utility-scale solar facility application? *(n=81)*

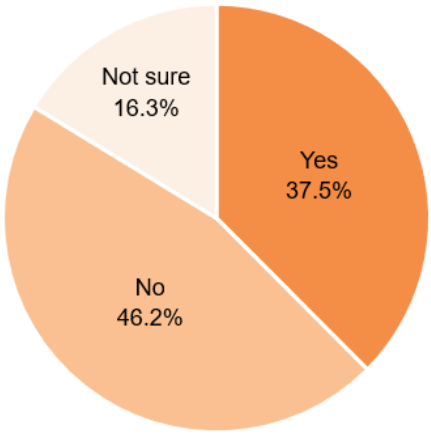
Redevelopment of brownfields or previously developed sites for solar



Question 4.11.7

Do your local regulations specify criteria for the evaluation of the following topics when reviewing a utility-scale solar facility application? *(n=80)*

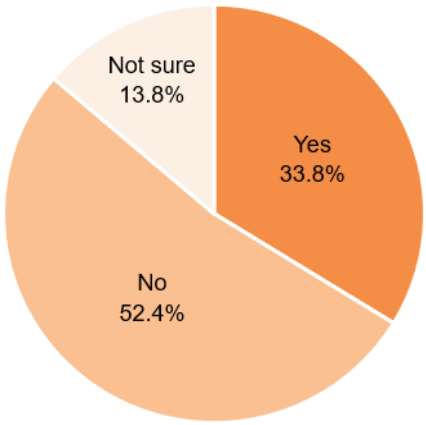
Pollinator-friendly species (Virginia Pollinator Smart)



Question 4.11.8

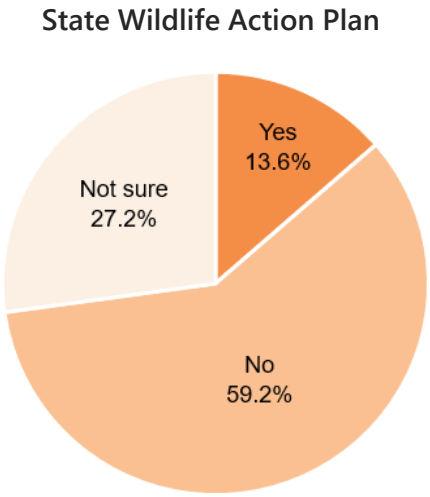
Do your local regulations specify criteria for the evaluation of the following topics when reviewing a utility-scale solar facility application? *(n=80)*

Scenic rivers



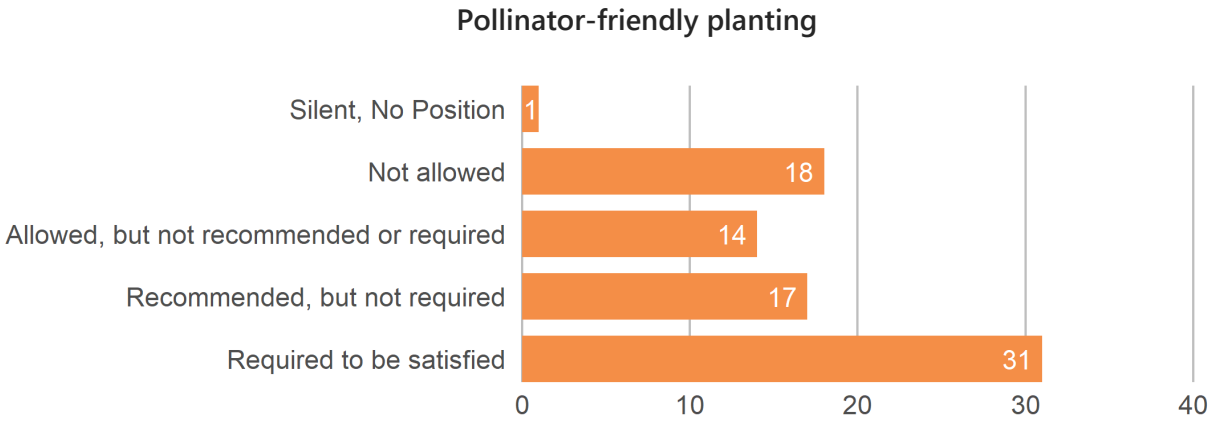
Question 4.11.9

Do your local regulations specify criteria for the evaluation of the following topics when reviewing a utility-scale solar facility application? *(n=81)*



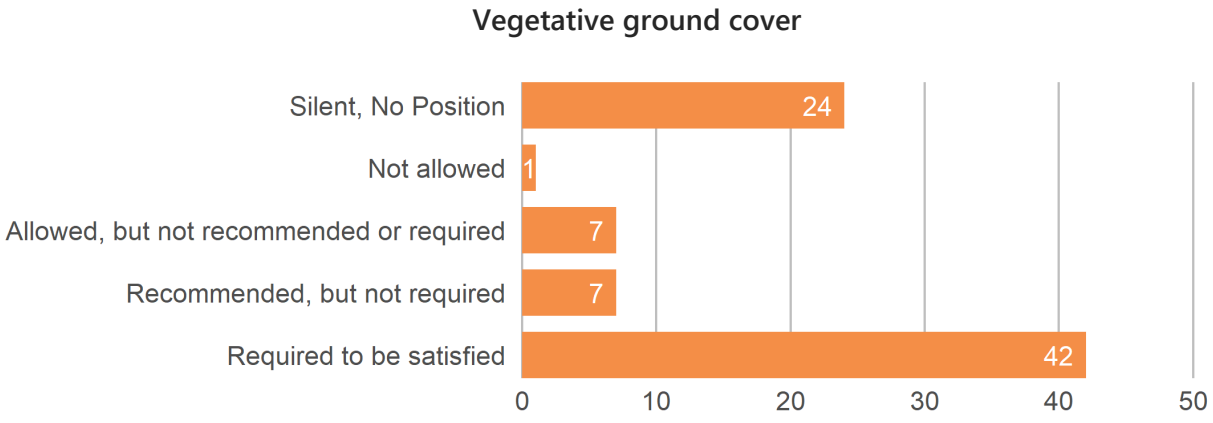
Question 4.12.1

To what extent do your local regulations enable the following low impact development practices for utility scale solar facilities? *(n=81)*



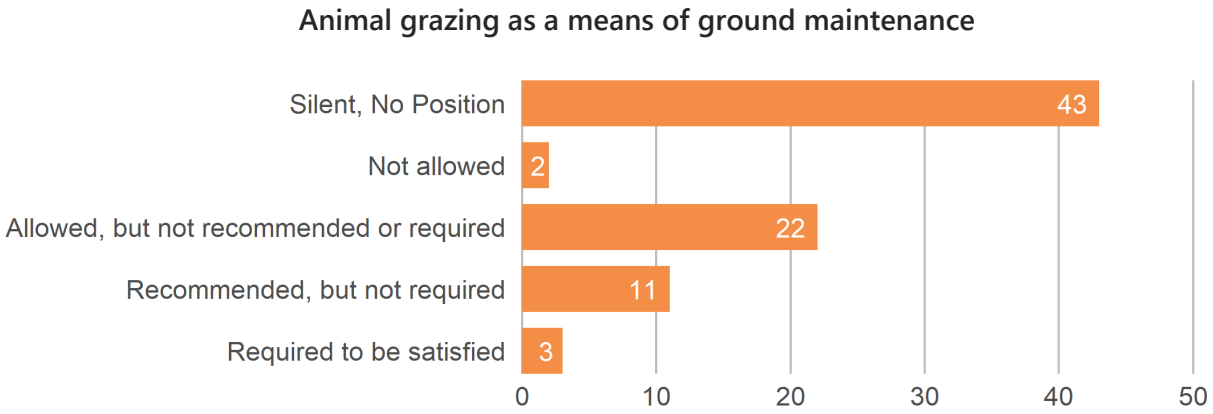
Question 4.12.2

To what extent do your local regulations enable the following low impact development practices for utility scale solar facilities? *(n=81)*



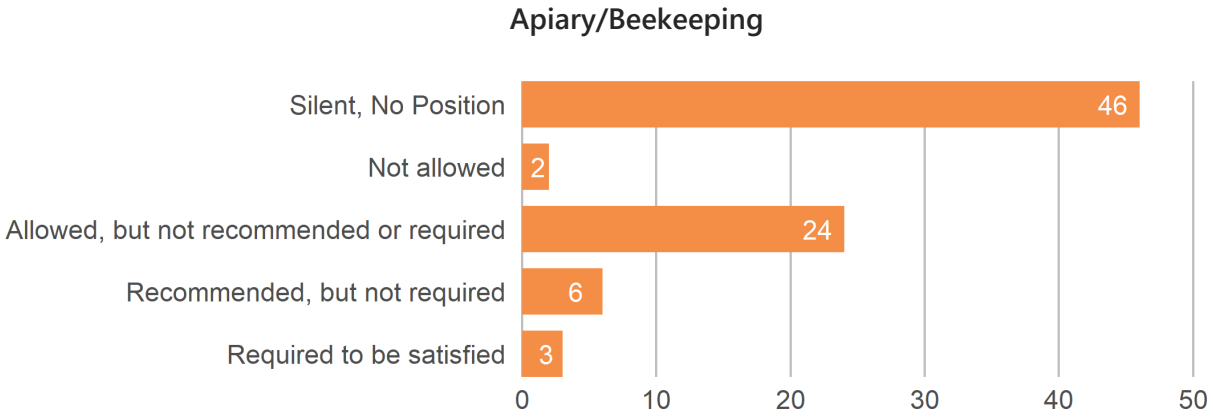
Question 4.12.3

To what extent do your local regulations enable the following low impact development practices for utility scale solar facilities? *(n=81)*



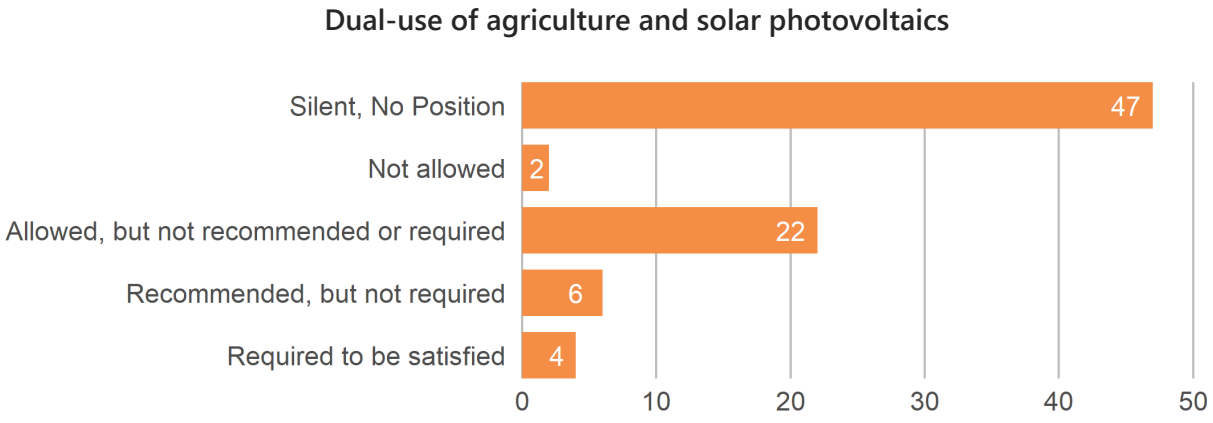
Question 4.12.4

To what extent do your local regulations enable the following low impact development practices for utility scale solar facilities? *(n=81)*



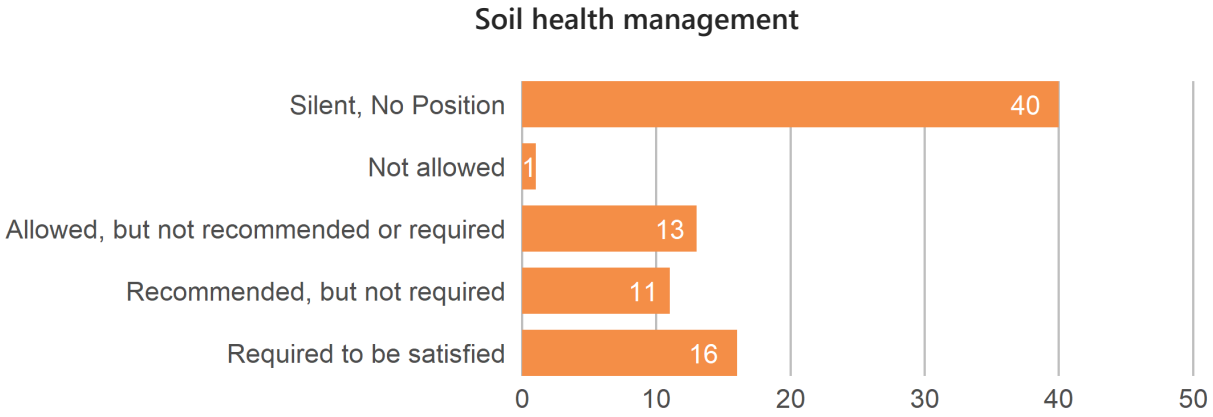
Question 4.12.5

To what extent do your local regulations enable the following low impact development practices for utility scale solar facilities? *(n=81)*



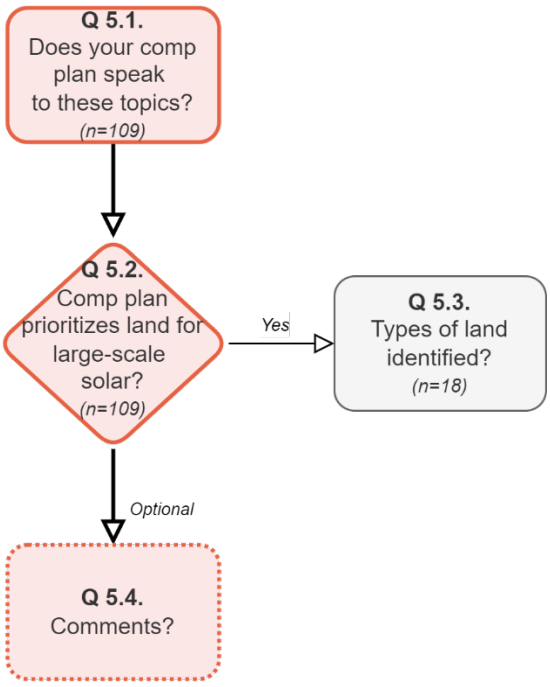
Question 4.12.6

To what extent do your local regulations enable the following low impact development practices for utility scale solar facilities? *(n=81)*



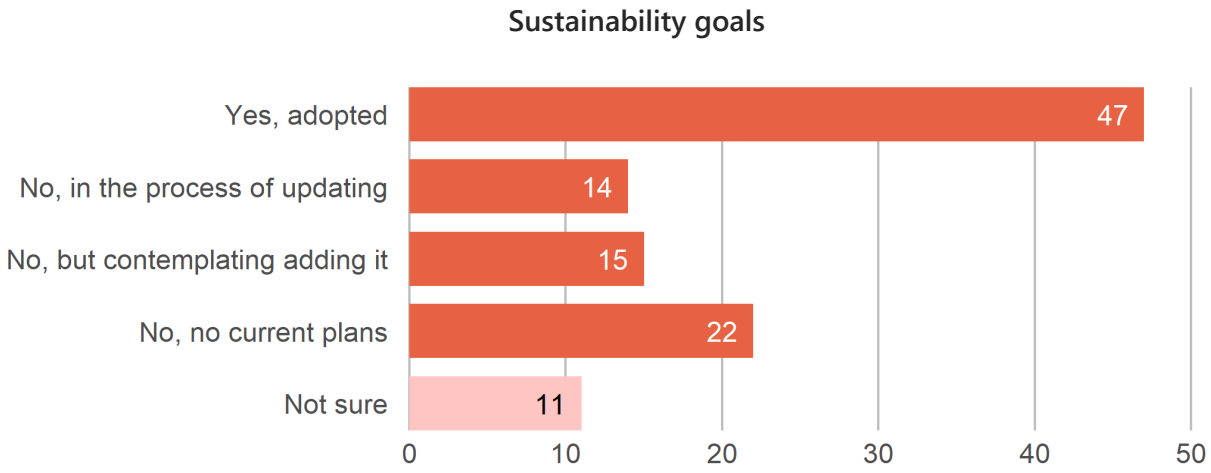
SECTION 5: COMPREHENSIVE PLAN

Survey Logic



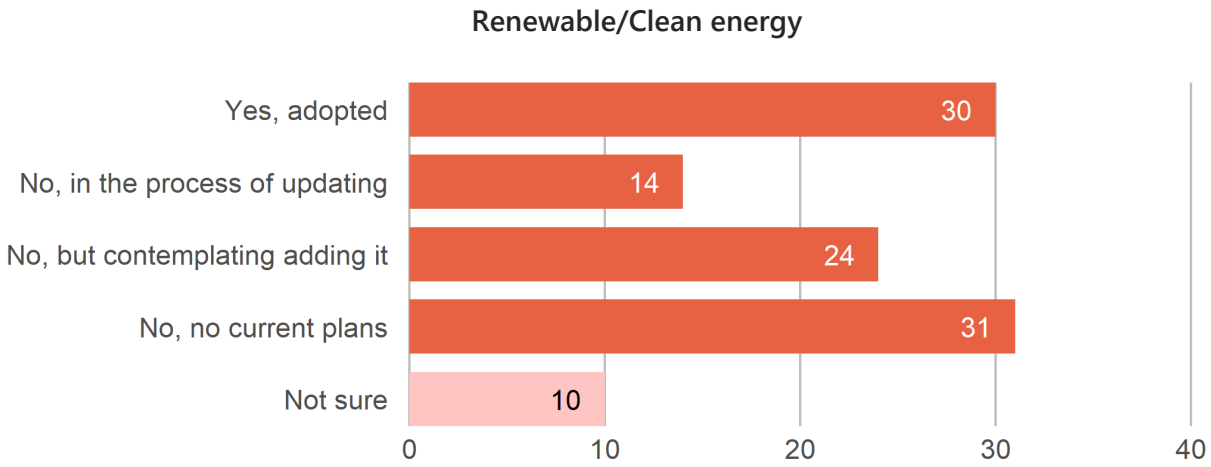
Question 5.1.1

Does your comprehensive plan or policies adopted by reference speak to any of the following topics? Please choose the option that most closely matches your locality's status with respect to the topics below: *(n=109)*



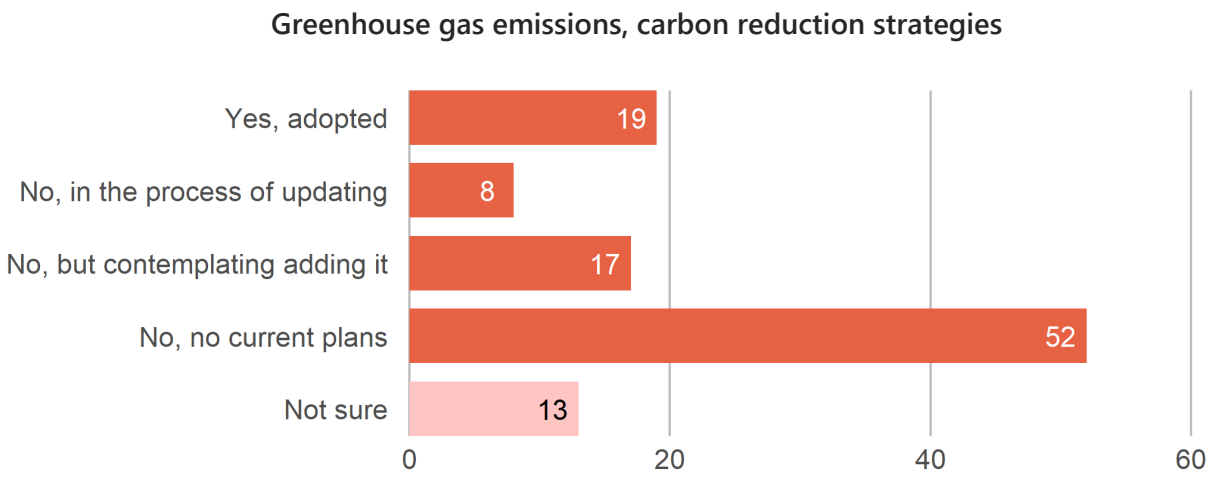
Question 5.1.2

Does your comprehensive plan or policies adopted by reference speak to any of the following topics? Please choose the option that most closely matches your locality's status with respect to the topics below. *(n=109)*



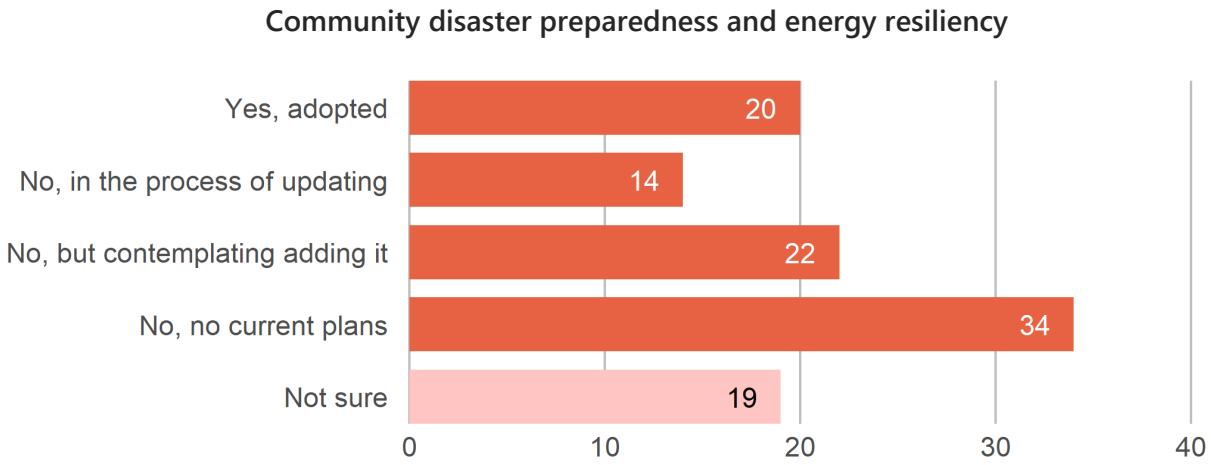
Question 5.1.3

Does your comprehensive plan or policies adopted by reference speak to any of the following topics? Please choose the option that most closely matches your locality's status with respect to the topics below. *(n=109)*



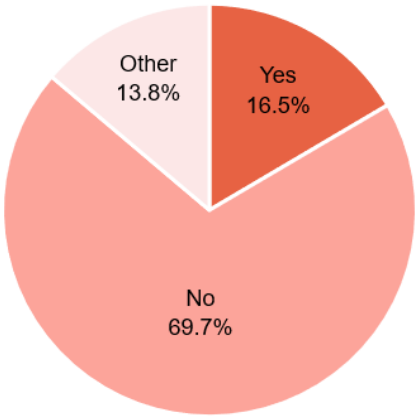
Question 5.1.4

Does your comprehensive plan or policies adopted by reference speak to any of the following topics? Please choose the option that most closely matches your locality's status with respect to the topics below. *(n=109)*



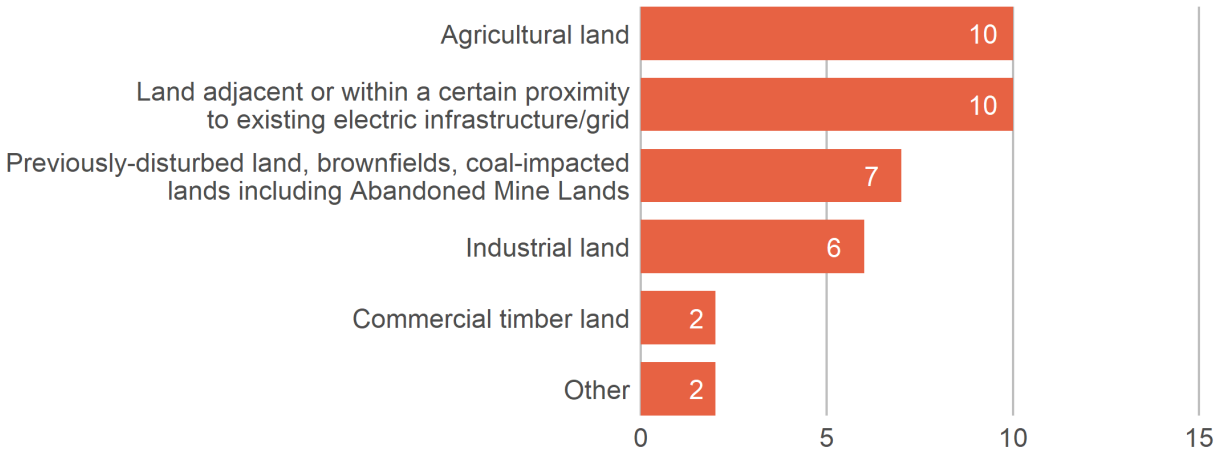
Question 5.2

Does your comprehensive plan prioritize general areas or types of lands that are preferred for utility scale solar energy generation facilities? *(n=109)*



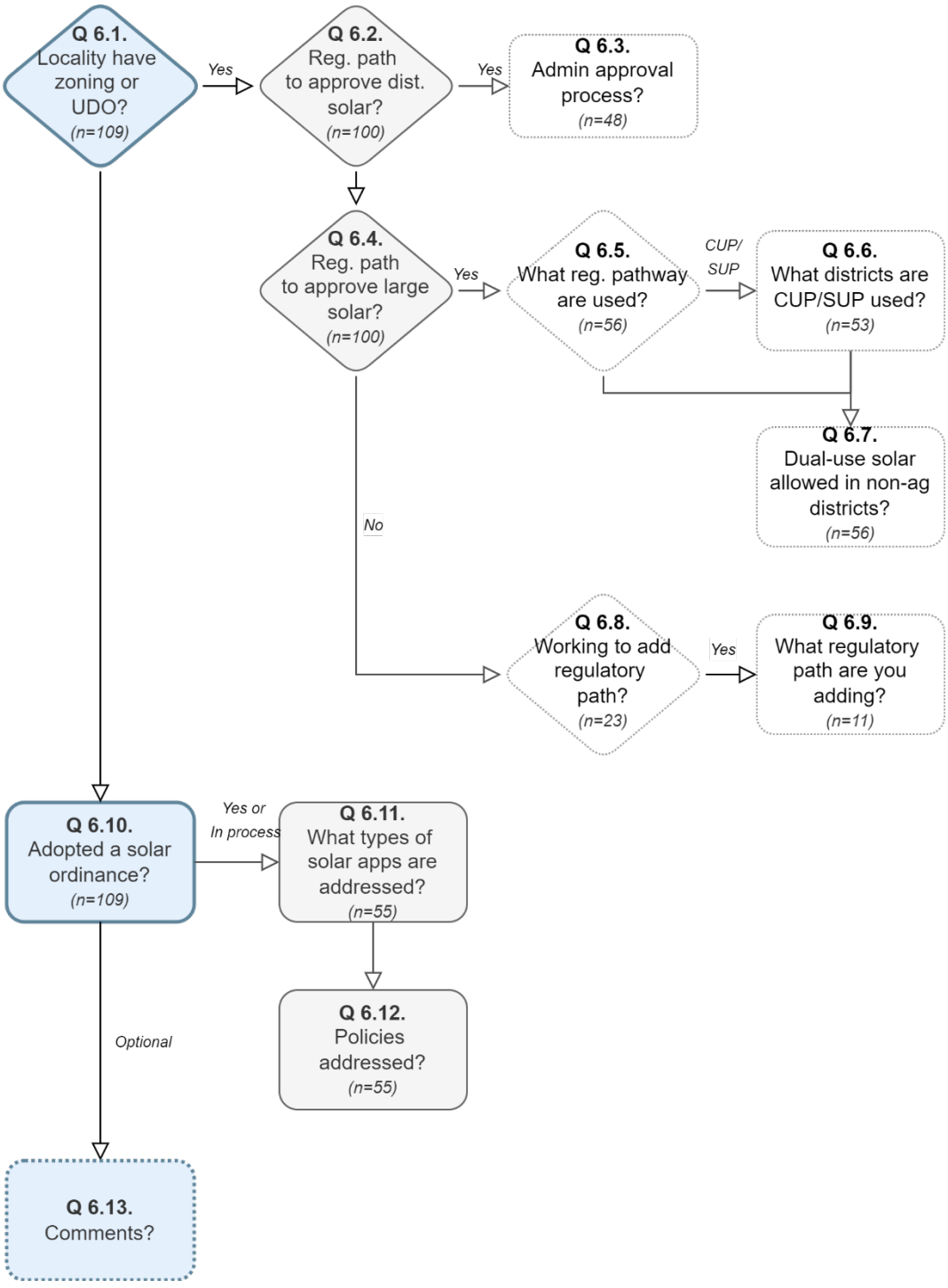
Question 5.3

What are the characteristics of the land identified (referring to characteristics of the general areas of types of land prioritized for utility scale solar energy generation in your comprehensive plan, per Question 5.2)? *(Choose all that apply, n=18)*



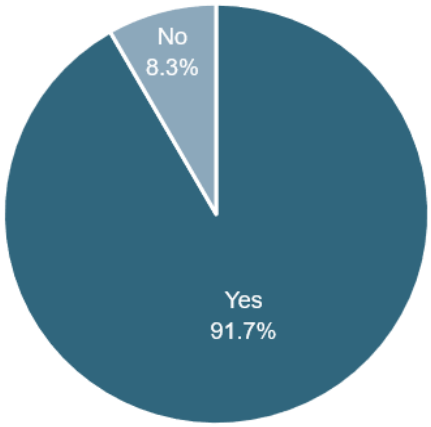
SECTION 6: ZONING

Survey Logic



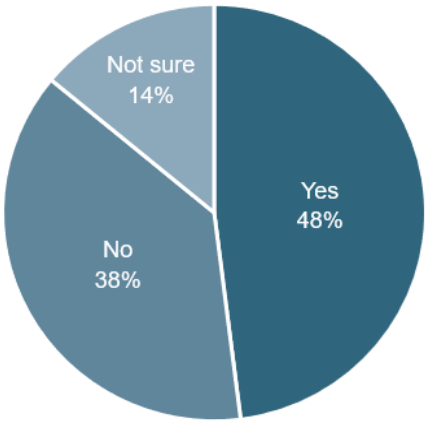
Question 6.1

Does your locality have a zoning ordinance or UDO (unified development ordinance)? *(n=109)*



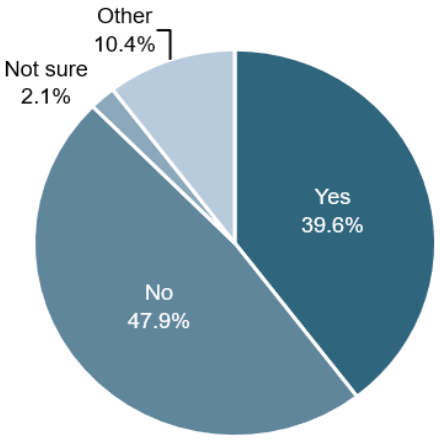
Question 6.2

Does your locality's ordinance provide a clear regulatory pathway for approval of distributed generation solar projects? *(n=100)*



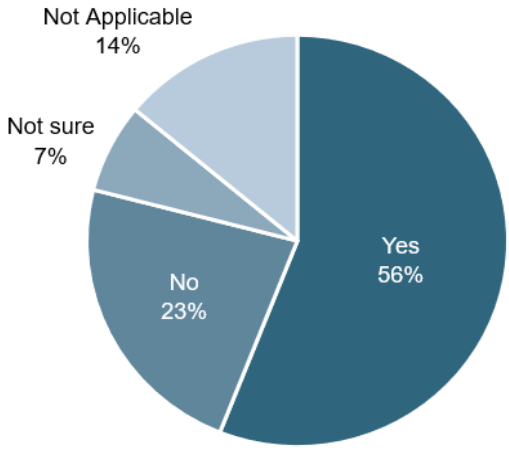
Question 6.3

Is the regulatory pathway for approval of distributed generation solar projects an administrative approval process? *(n=48)*



Question 6.4

Does your locality's ordinance provide a clear regulatory pathway for approval of utility scale solar facilities? *(n=100)*



Question 6.5

What regulatory pathway(s) are used for approval of utility scale solar projects? *(Choose all that apply, n=56)*

	Number of Responses
With a conditional use permit, special use permit, special exception permit	53
By-right in districts	11
In an overlay district	1
In a floating district	2
Other	2

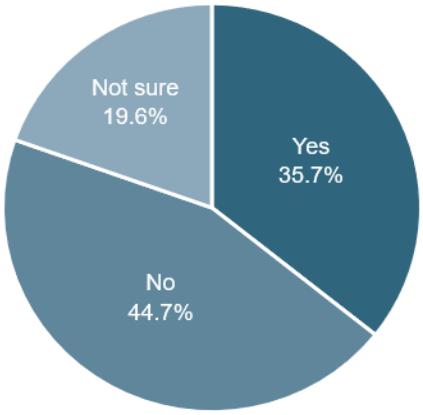
Question 6.6

In which types of districts is a conditional use permit/special use permit/special exception an approval pathway for utility scale solar? *(Choose all that apply, n=53)*

	Number of Responses
Agriculture/Rural	47
Residential	10
Civic/Institutional	5
Commercial	19
Manufacturing/Industrial	26
Floating Zone or Overlay District	5
Other	5

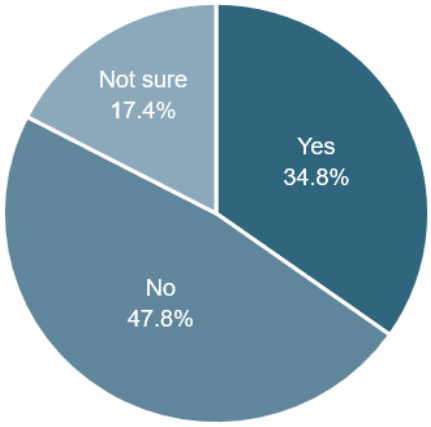
Question 6.7

Is the dual-use of agriculture and solar photovoltaics (agrivoltaics) allowed in non-agricultural districts? *(n=56)*



Question 6.8

Is your locality actively working towards adding a clear regulatory pathway for utility scale solar facilities to the ordinance? *(n=23)*



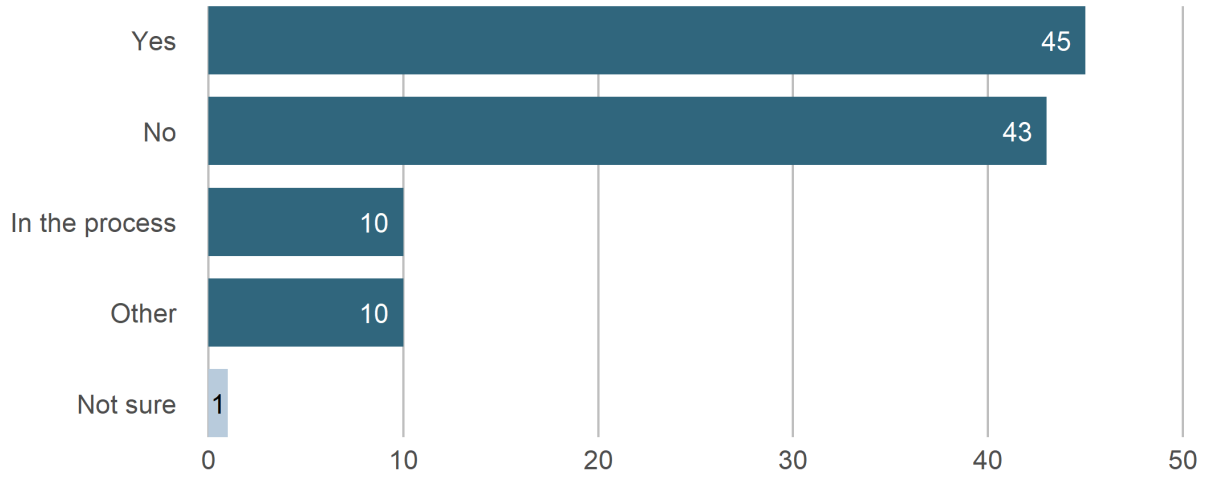
Question 6.9

What regulatory pathways is/are your locality adding for utility scale solar? *(Choose all that apply, n=8)*

	Number of Selections
By-right in certain districts	3
With a conditional use permit/special use permit/special exception permit in specific districts	7
In a floating zone	0
In an overlay district	1

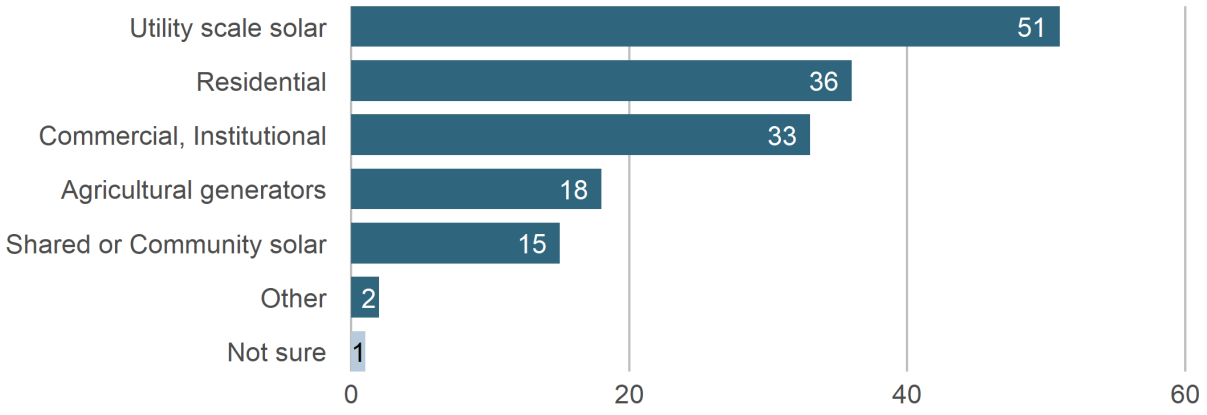
Question 6.10

Has your locality adopted a solar ordinance? *(n=109)*



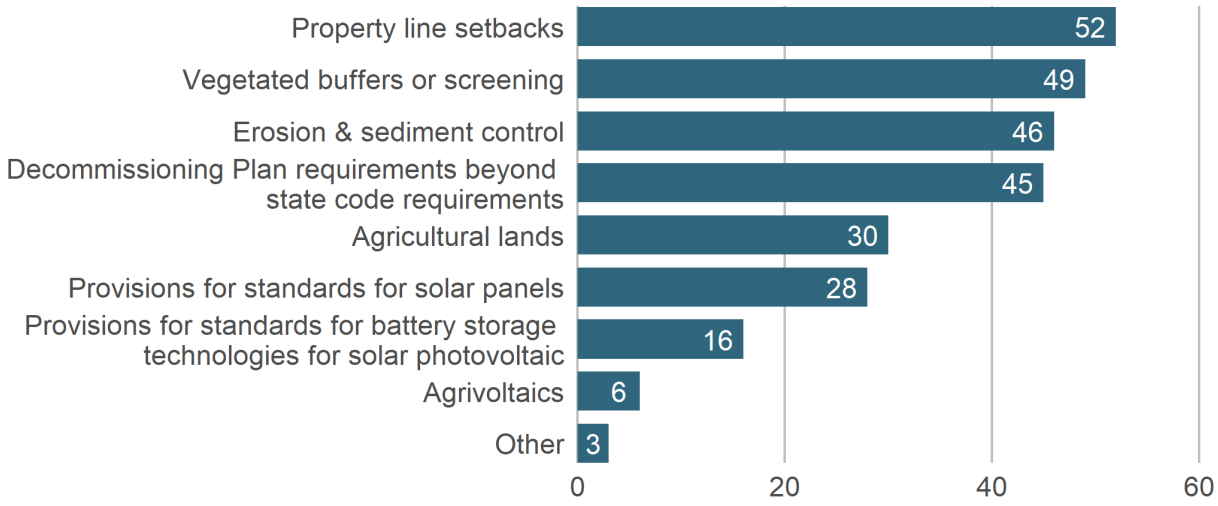
Question 6.11

Which of the following solar applications does/will your solar ordinance address? *(Choose all that apply, n=55)*



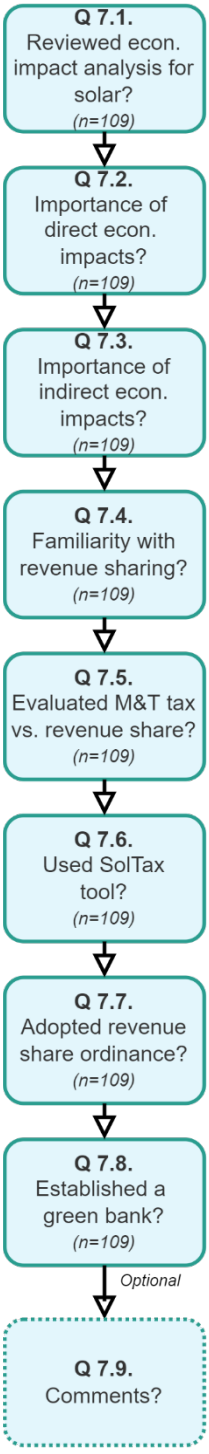
Question 6.12

Does it (solar ordinance), or will it, address any of the following? *(Choose all that apply, n=55)*



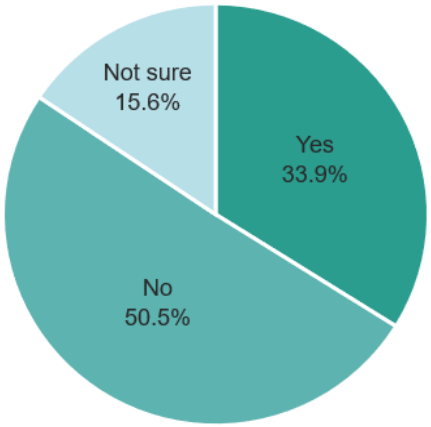
SECTION 7: ECONOMIC CONSIDERATIONS

Survey Logic



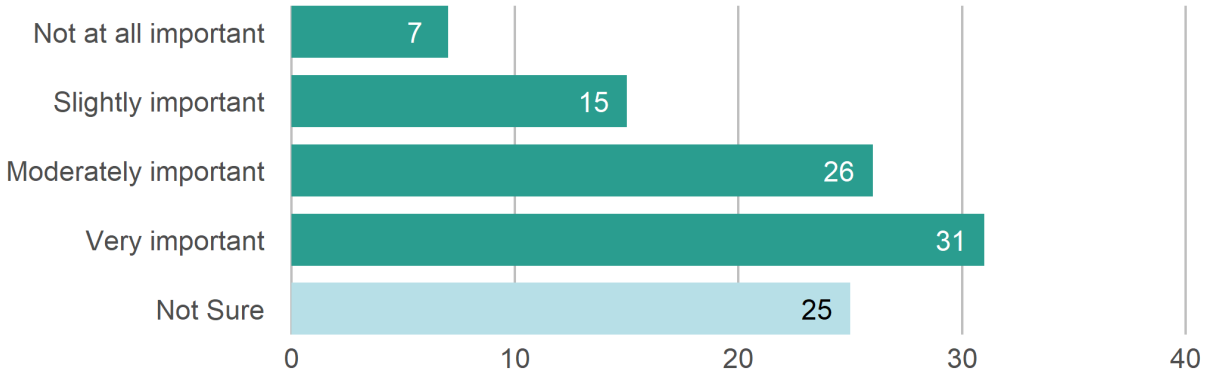
Question 7.1

Has your locality considered or reviewed one or more economic impact analyses relating to solar development? (This includes economic impact analyses created internally by your locality.) *(n=109)*



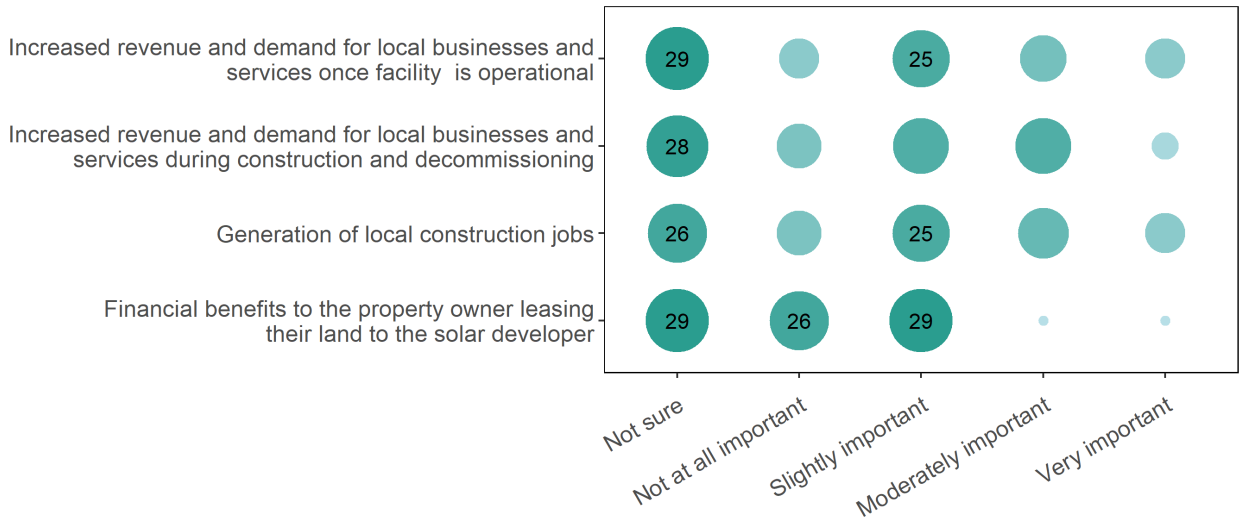
Question 7.2

How important are DIRECT economic impacts (e.g., tax revenue, revenue share or siting agreement proceeds) in your recommendation to approve or deny a utility scale solar application? *(n=104)*



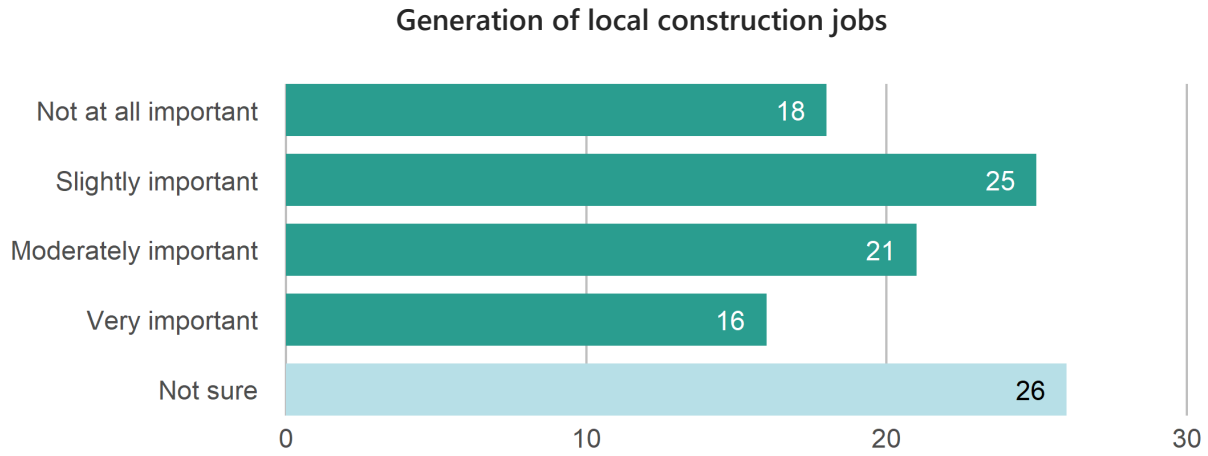
Question 7.3

How important are each of the INDIRECT economic impacts listed below in your recommendation to approve or deny a utility scale solar application? *(n=109)*



Question 7.3.1

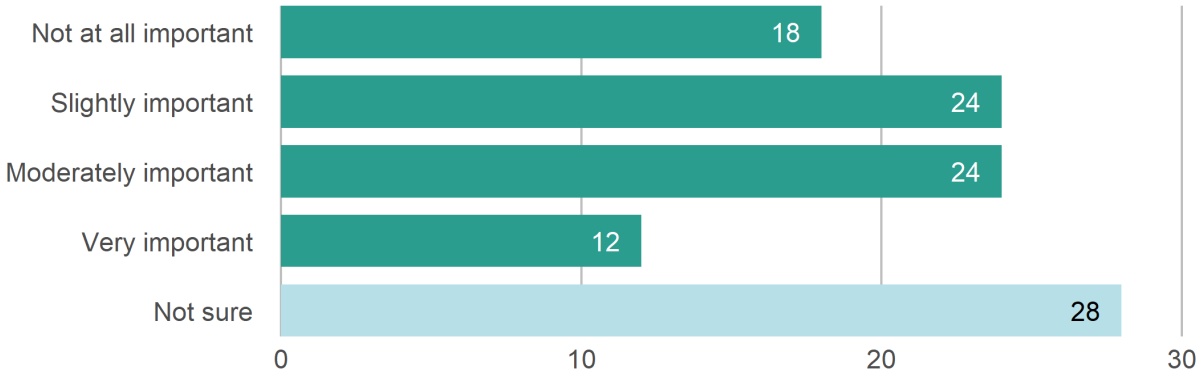
How important are each of the INDIRECT economic impacts listed below in your recommendation to approve or deny a utility scale solar application? *(n=109)*



Question 7.3.2

How important are each of the INDIRECT economic impacts listed below in your recommendation to approve or deny a utility scale solar application? *(n=109)*

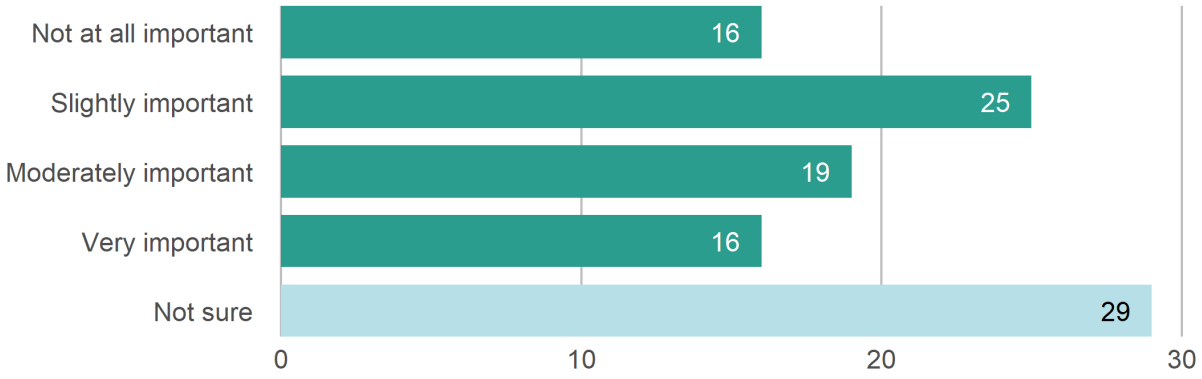
Increased revenue and demand for local businesses and services during construction and decommissioning



Question 7.3.3

How important are each of the INDIRECT economic impacts listed below in your recommendation to approve or deny a utility scale solar application? *(n=109)*

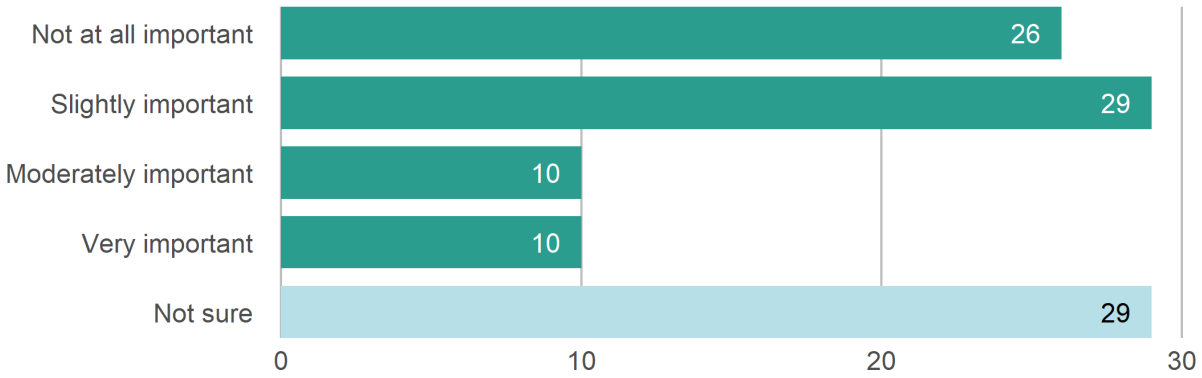
Increased revenue and demand for local businesses and services once facility is operational



Question 7.3.4

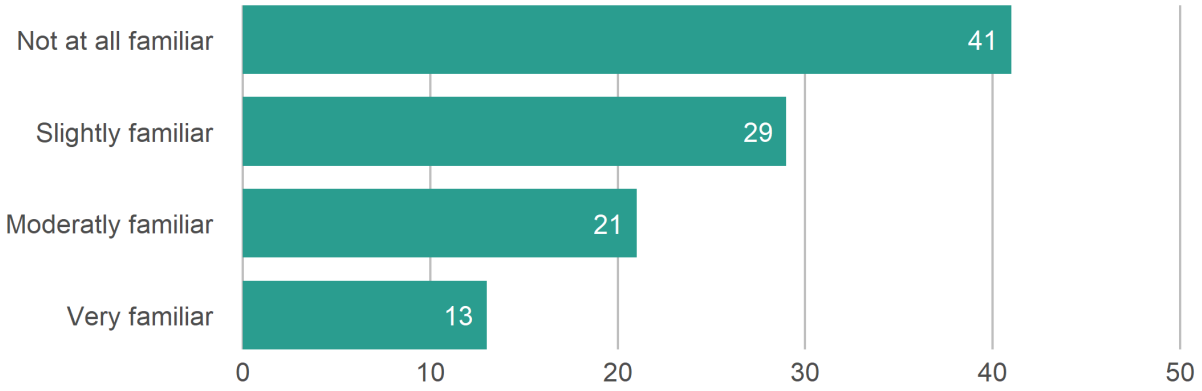
How important are each of the INDIRECT economic impacts listed below in your recommendation to approve or deny a utility scale solar application? *(n=109)*

Financial benefits to the property owner leasing their land to the solar developer



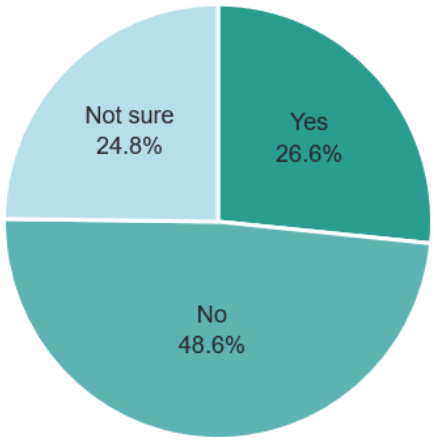
Question 7.4

How familiar are you with new legislation which makes changes to the current Machinery and Tools (M&T) tax exemption for solar projects and introduces are venue share option for projects over 5MW? (VA Code 58.1-2636) *(n=104)*



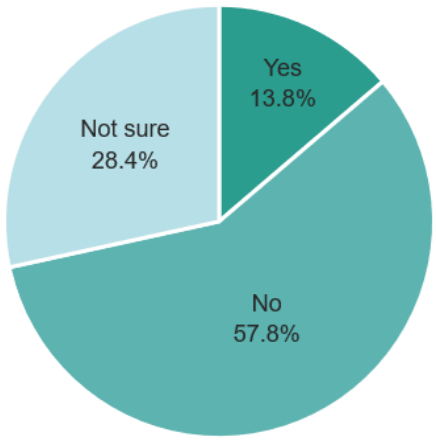
Question 7.5

Has your locality evaluated the potential economic impacts of adopting are venue share assessment ordinance as opposed to using the default M&T/real estate tax rate? *(n=109)*



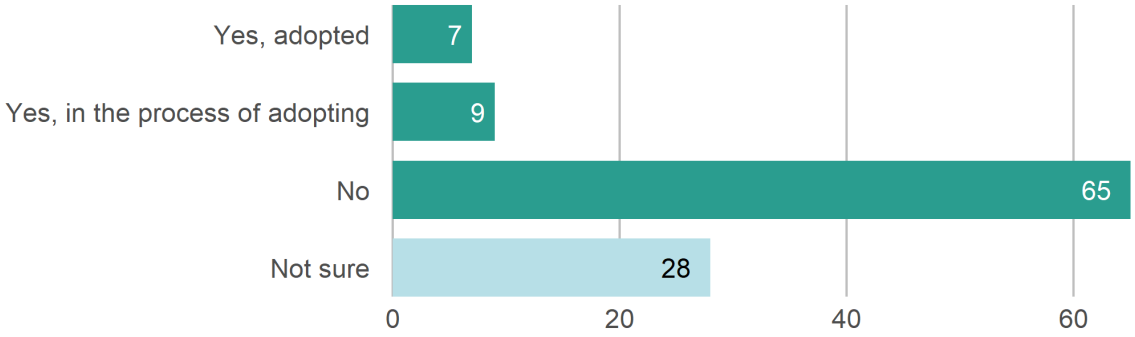
Question 7.6

Has your locality used SolTax, a free, online computational tool to help localities analyze potential revenues under both the M&T/real estate tax rate and revenue share assessment models? *(n=109)*



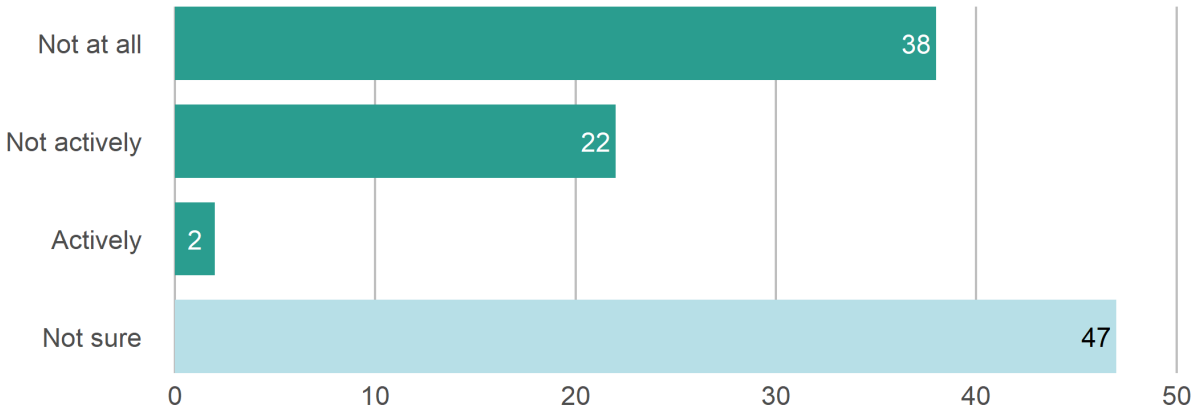
Question 7.7

Has your locality adopted or is in the process of adopting a revenue share ordinance? *(n=109)*



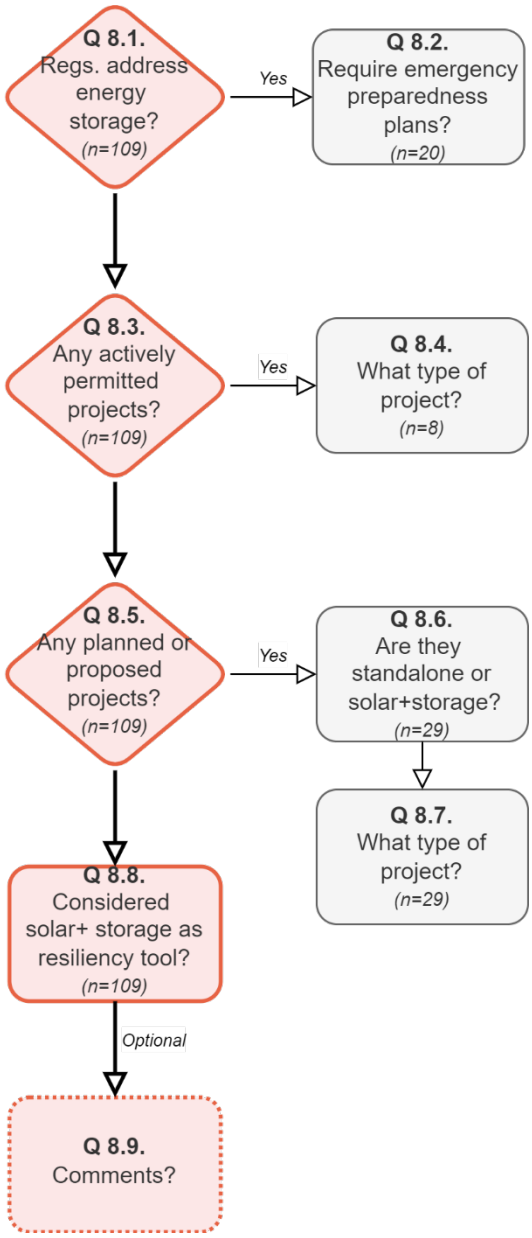
Question 7.8

To what extent is your locality considering establishing a green bank? *(n=109)*



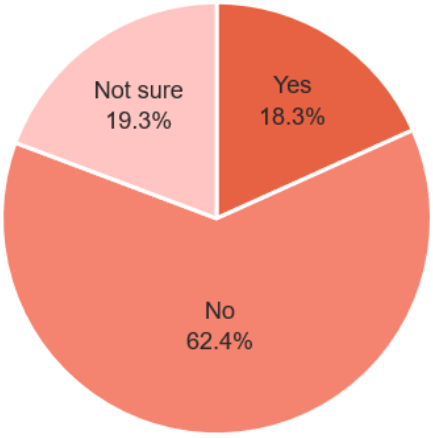
SECTION 8: ENERGY STORAGE

Survey Logic



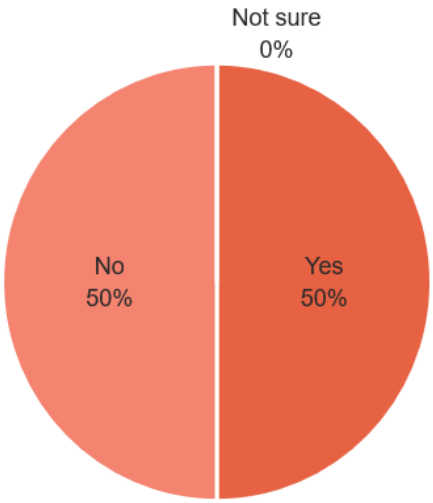
Question 8.1

Does your locality have policies or codes that address large or utility scale (front of the meter) energy storage as an allowable use? *(n=109)*



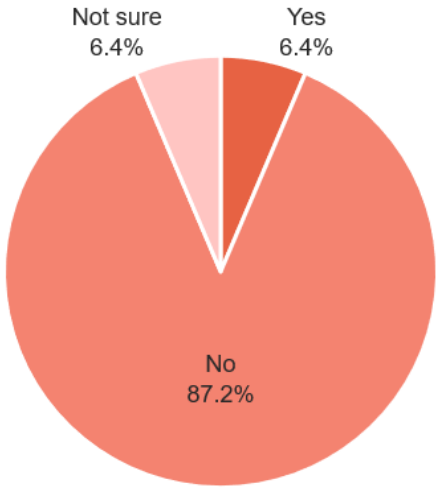
Question 8.2

Does your locality require emergency preparedness plans for utility scale battery storage projects? *(n=20)*



Question 8.3

Does your locality have any actively permitted large or utility scale energy storage projects?
(n=109)



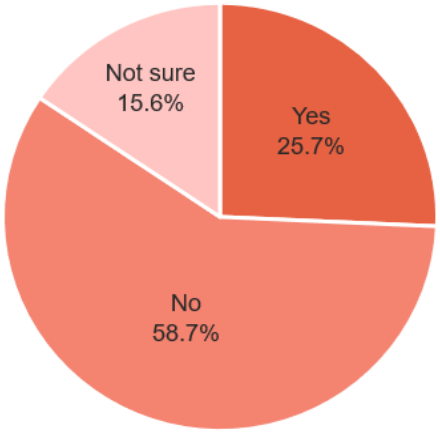
Question 8.4

What type(s) of actively permitted large scale energy storage projects does your locality have? *(Choose all that apply, n=29)*

Project Types	Frequency
Pumped Hydroelectric	0
Flywheel Energy Storage	0
Lead Acid Batteries	0
Lithium Ion Batteries	5
Sodium Sulphur Batteries	0
Sodium Nickel Chloride	0
Flow Batteries (Vanadium, Redox, Zinc Bromine)	5
Not sure	2
Other	1

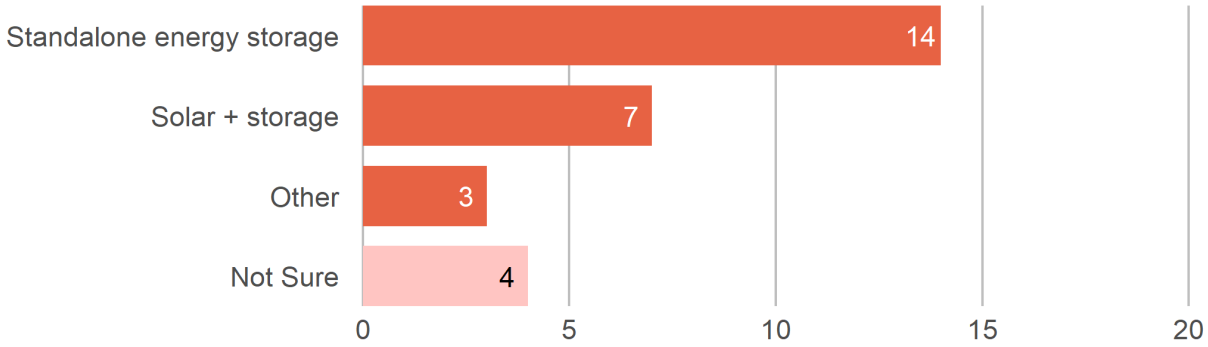
Question 8.5

Are there any large or utility scale energy storage projects proposed or planned in your locality? *(n=109)*



Question 8.6

Are the proposed project(s) standalone energy storage or tied in with a solar project (solar+storage)? *(n=28)*



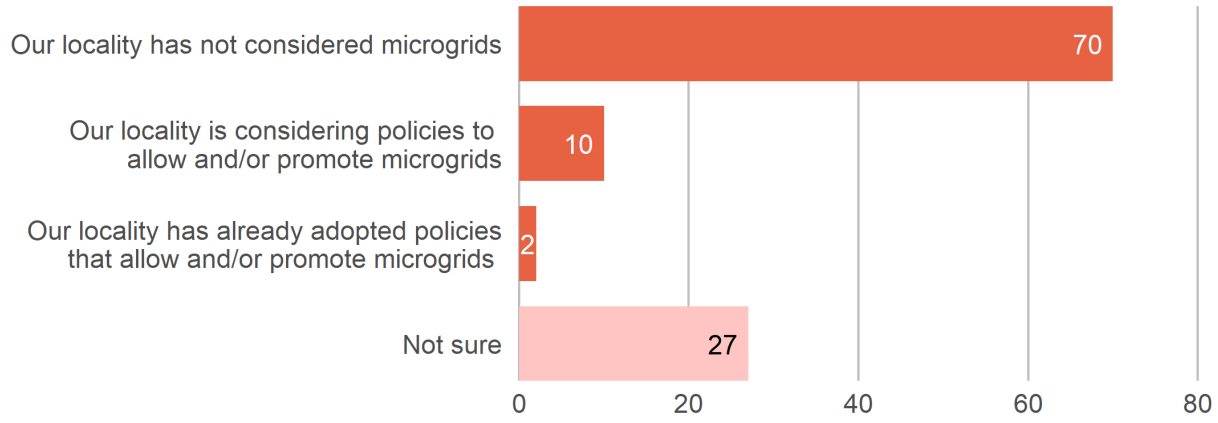
Question 8.7

What type of energy storage projects are proposed or planned? *(Choose all that apply, n=28)*

Project Types	Frequency
Pumped Hydroelectric	0
Flywheel Energy Storage	0
Lead Acid Batteries	0
Lithium Ion Batteries	12
Sodium Sulphur Batteries	0
Sodium Nickel Chloride	0
Flow Batteries (Vanadium, Redox, Zinc Bromine)	0
Not sure	16
Other	1

Question 8.8

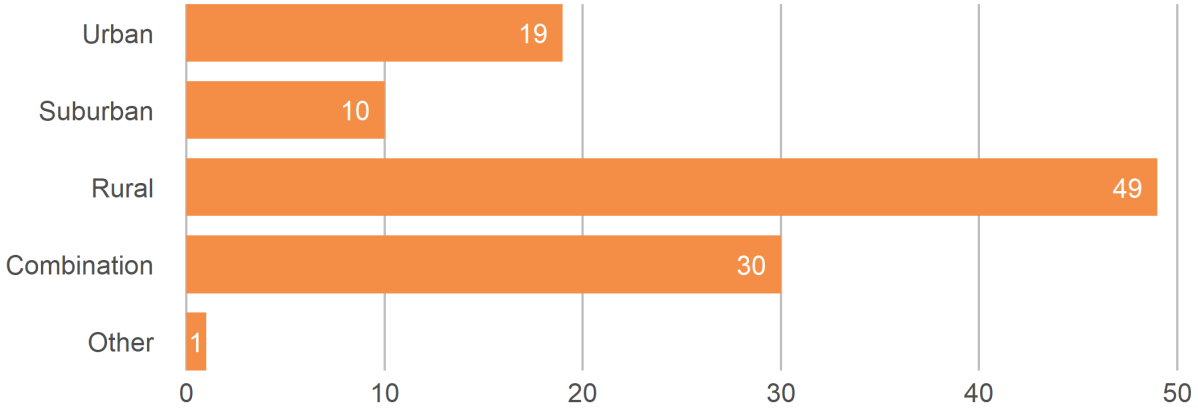
To what extent has your locality considered solar + storage as a resiliency tool? *(n=109)*



SECTION 9: URBANICITY (GENERAL QUESTIONS)

Question 9

Of the following choices, how would you characterize your locality? *(n=109)*



APPENDIX C

SURVEY RESULTS: QUOTE RESPONSES

The quotes appear exactly as they were recorded in the survey response; however, locality-identifying information has been redacted in accordance with our commitment to protect confidentiality.

Question 1.2

What resources are your locality turning to (or did your locality turn to) for support and assistance in developing new policies and ordinances?

Question 1.2 Comments
• Study committee comprised of attorney, electric cooperative engineer, conservation advocacy group rep, elected official, active farmer, planning commissioner, former elected official. Regular input from VACo, solar industry reps, land use attorneys, and county staff (engineer, planners, zoning administrator).
• Out of state examples/regulations
• We follow the State Building Code for regulations for activities in our 10 sq. miles of urbanized area. We have modified our Historic District Guidelines to accommodate solar facilities.
• ICMA/DOE Solsmart Program
• Our Energy Transition Subcommittee, part of the Environmental Sustainability Council advisory board to City Council, includes volunteers with engineering and commercial development expertise who are assisting with data analysis to support policy development.
• We are comprehensively updating the City's Zoning and Subdivision Ordinances and solar use abilities will be included.
• State model ordinance.
• We have spoken to NREL about their solar app, but are in the process of updating our permitting software, so can't pivot to that change yet
• We performed our own research and then carefully consulted industry experts. State and Federal agencies had paltry help to offer.
• DOE SolSmart Program
• Webinars from the various agencies; input from citizens
• Rural Solar Development Coalition
• Solsmart

Question 1.3

State agencies such as Virginia Department of Mines, Minerals and Energy (DMME) and UVA offer technical assistance related to solar energy. With respect to solar development, would you be interested in training or technical assistance in any of the following areas for your locality? Choose all that apply.

Question 1.3 Comments
• In August, fourteen employees of [locality redacted] attended the Best Practices for Solar PV Permitting and Inspection hosted by the Virginia SolSmart Initiative.
• We have already had technical assistance from a SolSmart advisor to achieve our SolSmart Silver designation.
• Solar training or technical assistance from Sol smart is only offered if we agree to obtain bronze, silver or gold, participate in their program. They said they will not offer training or technical assistance otherwise.
• Have already worked with SolSmart on improving information on Solar permitting on our website.
• That help would have been useful in 2018 or 2019 but is now too late. The next few months will determine the will of the county through her elected leaders and what we will do about solar, thenceforth.
• We have explored using DMME in the past but do not feel they have been helpful beyond what we are already doing - primarily focused on permitting; not large scale solar, which is easy. Our concern was with how much solar and where it could go in the county and not was not something that they would assist with.
• DMME/UVA doesn't seem to present a balanced view of the issues.
• Already involved with SolSmart

Question 1.5

Comments related to solar readiness (general comments pertaining to Section 1)

Question 1.5 Comments
• We have updated our zoning code to allow solar farms by right in industrial districts and by Conditional Use Permit elsewhere. While we have not had any serious inquiries, our Council is reasonably supportive of solar projects.
• Zoning Ordinance has been recently updated for solar and energy storage facilities.
• [Locality redacted] is a 97% developed 400-year-old city with few opportunities for utility scale solar.
• From a land use and zoning perspective, commercial-grade solar farms are permitted by right in the M-1, General Industrial District.
• Our community does not have space for utility scale solar, but my responses to Q1.4 indicate issues we would be most interested in if we were to consider investing in an offsite solar facility.
• [Locality redacted] has already partnered with Dominion Energy and Amazon on a new solar farm/VPPA. [Locality redacted] has also partnered with Solar United Neighbors for the past 6 years on residential solar co-ops that have been very successful.
• This initiative was rolled out way too late. Much of the momentum behind these sites being developed in rural areas is already moving at a rapid clip and many localities are stuck with mediocre projects with almost no revenue and no protection for the future clean up of these sites. One imagines that there are some localities not yet ready with ordinances and procedures but these counties may also see what is happening politically and decide to sit it out, anyway. Time will tell.
• Assistance related to revenue sharing and solar siting agreement development.
• There are a variety of stakeholders involved with solar and utility scale solar has become a big issue in the county based on the number of applications we have received. The county is revising its ordinance to be more restrictive than current regulations related to where solar can be applied for by CUP. Small scale solar (home based) is permitted by right in all districts.
• The County established an ordinance prior to considering solar and the ordinance is a work in progress and changes as the state changes it's code and new information becomes available. Guidance is needed to establish a threshold for how much solar is enough within a county/region.
• DEQ regulations for SWM permitting and photovoltaics considered impervious

Question 1.5 Comments
• [Locality redacted] is not suitible for alot of utility scale solar.
• Our office has taken training on permitting and inspections for solar installations
• Recycling of all solar-related infrastructure is critically important. It behooves the solar industry to be as environmentally responsible at the back end of a project as they purport to be on the front end.
• With the solar field rapidly changing, it's hard to feel totally ready and hard to know at what point to review/update policy/regulations.
• Our experience is with solar power for a house or residence. We do not have an arena for a Solar Farm.
• Unclear if this entire survey is focused on utility scale solar only. There are no sizeable parcels available in [locality redacted] for utility scale solar and we are therefore not interested in learning more about the above listed topics.

Question 2.2

What buildings and entities are covered by your locality's electricity procurement? Check all that apply.

Question 2.2 Comments
• Streetlights and traffic signals, library, homeless shelter, residential counseling center. Schools procurement is managed by the schools administration.
• The [locality redacted] Electric Commission is a municipally owned utility that serves all uses in the City.
• Libraries, mental health clinic
• All [Locality redacted] Government and School buildings are under energy conservation policies with HVAC, Lighting, Generators, etc. that look to reduce our energy usage.
• N/A: don't currently have an electricity procurement policy
• [Locality redacted] operates its own Electric Utility.
• [Locality redacted] supplies electricity to all sites located within the City.
• Libraries, Convenience Centers, Rental properties, DSS, VDH, Head Start

Question 2.4

Does your locality have a policy requiring solar photovoltaics be considered in the design of new public buildings?

Question 2.4 Comments
• our new high school has geothermal heating and cooling and solar photovoltaics, and is aiming to be net zero. Q2.4: The City (by a 2012 Council Resolution) seeks LEED Silver certification of public facility rehabilitation, renovation and new construction, including credits for renewable energy, so solar is always considered, though it is not required to be installed.
• No policy, but are evaluated on a case by case basis with key factors of age of roof, size of facility, building orientation and energy consumption
• Sun Tribe Solar has installed PPE solar panel array systems at all of [locality redacted] Schools with HS roof mounted and the other four schools having the ground mounted arrays screened view.

Question 2.8

Optional: Please describe public solar project details such as whether they are they on-site, rooftop or ground mounted, total size, and percentage of total usage, if known.

Question 2.8 Comments
• On-site rooftop, 42.2 kW (~3% of total usage) and 10 kW (~10% of total usage)
• Our new high school signed a rider contract on the [locality redacted] PPA for both rooftop solar and solar PV canopy, for a 500kW system. Both rooftop and canopy systems are planned for installation before August 31, 2021, the school's substantial completion date.
• Ground mounted.
• All Schools have PPE solar arrays and we have some plans for future [locality redacted] Government complex buildings to have PPE solar arrays. The [locality redacted] Library operates a geothermal building system now next to the future Administration Building.
• The [locality redacted] Middle School has rooftop mounted solar panels
• Ground mounted 3 acres to power regional governor's school and trade school.
• As noted previously, [locality redacted] has partnered with Dominion Energy and Amazon to create a solar farm/VPPA that should come on line sometime in 2022. This new solar project plus the on-site solar we have on libraries and schools, will bring us up to 84% government energy supplied by solar. We also buy SRECs to supplement usage.
• ground-mounted solar at elementary school
• Ground mounted. Existing County jail facility does have solar installed to assist with potable water heating.
• There are two roof top solar arrays for water heating purposes only > I believe they are approximately 30 kw systems

Question 2.15

In the box below, please describe your biggest concerns and/or questions about incorporating solar into your locality's own energy generation mix, or select No concerns if you have none.

Question 2.15 Comments
• Reliability, public perception and education, long term cost-benefits
• Everything comes down to cost. We have older buildings and no plans to build new.
• System management
• Costs and lease arrangement option with no assurances regarding savings.
• Maintenance
• [Locality redacted] is keenly aware that solar energy production is highly land-consumptive and that solar energy providers want the lower cost farm land with no development improvements. The industry is incentivized to produce solar power. The industry should be incentivized, to a greater degree, to install solar panels over impervious surfaces at industrial sites, big box parking lots, shopping malls, etc. And what a great way to create micro-climates for employee and customer parking and distribution center truck parking areas. The structural logistics can be resolved when the incentives make it worth it.
• Consumption of areas intended for suburbanization and consumption of prime agricultural lands.
• Process, Cost, Zoning, Energy Company involvement
• We are hiring a Sustainability Officer, who will pursue these concepts.
• We have very few facilities. Most are small and/or have rooftops that are not suitable for solar installation.
• Supporting infrastructure costs compared to the other needs and demands for local government operations.
• For buildings located in historic settings, near the airport and potentially affecting downtown streetscapes, construction of glass and steel materials and some potential glare are concerns
• location of solar panels
• Cost/benefit analysis Life cycle cost analysis
• Community mixed feelings regarding renewable energy generation at all

Question 2.15 Comments
• Will the installation of solar panels on a metal roof void the roof's warranty? This reason has been provided to keep solar panels off of other rooftops in [locality redacted].
• Upfront cost v long term benefit and explaining it to public officials.
• [Locality redacted] recently signed onto a rider contract for our first public facility PPA and expect to do many more. Our only concern at the moment is figuring out the best path to meeting the last 15% of our energy use in the next few years. We have a goal of offsetting 100% of the County government's energy by 2025.
• Maybe initial funding
• Lack of solar expertise internally to evaluate potential projects effectively. Lack of funding. Due to energy market fluctuations, we can't guarantee cost savings.
• Cost vs. tradition systems with limited budgeting
• environmental impacts while under construction
• Cost/benefit Public Support / Education Process
• We don't have the staff to explore the possibility; we have entertained solar on public lands but decided against it due to both siting issues and leadership opposition to solar siting.
• Solar facilities need state-wide statutes.
• The biggest concern is the environmental impact as we live in a rural county that is primarily comprised of agriculture and hunting land.
• Cost and political will
• Cost for implementation Roof load concerns with very old buildings
• Does the investment pay for itself and what additional maintenance costs are incurred that wouldn't have been realized except for the installation of solar (ex. roof replacement)
• I heard that APCO/American Electric was not supporting PPA for government structures in our service region. Is this true?
• Management and Cost of infrastructure.
• Upfront costs, selling it to the public, political support from our governing body, etc.
• Higher priorities for facility rehab/construction than adding solar--we have so much critical deferred maintenance. Also, will they be cost effective at our small scale?

Question 2.17

Comments related to renewable energy procurement (general comments pertaining to Section 2)

Question 2.17 Comments
• We are an EPA green power partner, buying 25% of our energy through DEVs Green Power program. We cannot control the mix, so sometimes it's solar, sometimes not. We would like to buy more green power to reduce our operations GHG emissions, but as a very small jurisdiction, we typically try to join regional contracts, rather than negotiate alone. There was some discussion of a multi-jurisdictional purchase of LSRE (redacted) recently, but it did not develop very far.
• The State needs to establish means for citizens to sell excess solar energy generated in their homes back to energy companies like in Germany.
• What can local jurisdictions do with community solar? I didn't think there was a mechanism to do that in Virginia due state restrictions.
• Something our county might be interested in if it was easy to implement.
• More information on how local governments can participate would be helpful.
• I am not involved with the County's energy procurement process.

Question 3.7

To the best of your knowledge, why does your locality not exempt or partially exempt solar equipment from property taxes? Choose all that apply.

Question 3.7 Comments
• We are working on it. We are scheduled to conduct a work session on this topic in Sept 2021.
• BOS discussed green incentives several years ago (2012) and were not interested in providing incentives for green development.
• We do not allow solar farms in the city,
• Are you talking utility scale or for personal use?
• Have not done so for farm or logging industries.
• We have no ordinance on solar

Question 3.8

Comments related to distributed generation (general comments pertaining to Section 3)

Question 3.8 Comments
• These questions cannot be given thorough answers because [locality redacted] is in the process of transitioning from its existing permitting software to a more robust software that will enable the County to have online submittals, etc.
• The Building Permit process will be fully on-line Spring 2022 using EnerGov.
• Q3.6 The [locality redacted] solar tax exemption ordinance was first passed when it was enabled by legislation passed by the Commonwealth of Virginia in the late 1970s. Its intention was to avoid a potential increase in property tax that would reflect an increase in the value of a home that had solar power installed. In other words, it was created to keep the addition of solar power net neutral with respect to property tax. Our assessor does not revalue houses when solar installations are added, so the exemption is not required to maintain that intended balance. We are aware that other local jurisdictions have used the legislation that enabled this ordinance to create what is effectively a discount on property tax. The City has not amended the original ordinance or created the administrative procedures to enable us to do the same. Resident interest in this option has been minimal.
• We support distributed generation and consumption in favor of transmitting local energy production to the grid
• We currently allow for Building Permits and Inspections to be conducted mainly by e-mail with the Permit Clerks and still only have manual payments by check in a drop box or in person during our office hours. IT is working on creating online payment portal with the Finance Department in 2021.
• Electric Utility does not net meter, we net bill at an avoided cost rate.
• Q 3.6. This issue has caused a lot of confusion for us and some solar companies. [Locality redacted] does not assess or tax solar equipment, but it does not offer a tax rebate to people who install solar above and beyond not assessing the equipment. Apparently some other jurisdictions do offer some type of rebate. We have gotten many questions about this over the past 5-10 years.
• Again, due to our small staff and limited resources we haven't explored a lot of these options. We allow the free market and public interest to help develop policies for the county and currently low taxes and limited government is what are community seems to want.

Question 4.7

Optional: For applications that have been withdrawn or denied, please describe the reasons:

Question 4.7 Comments
• Various reasons, but community opposition seemed to be the largest reason based on too big and too large for the area.
• Not in conformance with the Comprehensive Plan
• concerns related to viewshed, decom., scale, etc.
• We have not had any withdrawn or denied but we are working with utility scale solar providers now who may have 75 - 125 MW solar energy facilities filed with us in 2021.
• Impact on surrounding properties; visibility; lack of clear benefit to community
• not enough line capacity to support the project - applicant withdrew application on own accord
• Applicant's agreement with solar company was discontinued and is pursuing a new solar company to work with.
• Neighbor objections to impact to viewshed, battery storage and site access during construction
• Neighborhood opposition; too much solar in the county
• The answers given are for Conditional Use Permits, not site plan total
• Planning Commission recommended that the project was not in substantial accord with the Comprehensive Plan. Denied application - 150 MW project was fragmented and proposed within areas of the County designated for residential, commercial and industrial development on public utilities.
• The applications were withdrawn because the developers did not have all the information required and were not prepared to proceed with the application process.
• Applicant choice
• Failure to respond to deficiency notices.
• citizen opposition
• Conflicting data in the application. Interconnection cost over budget.
• The site was not in a good location and removing prime farm land from production.

Question 4.13

Comments related to large and utility scale solar (general comments pertaining to Section 4)

Question 4.13 Comments
• Language is the ordinance would defer to the terms of a SUP
• Other than the former landfill, the most promising application of utility scale solar would be the top level of parking garages in the city.
• Our position is that the governing body can impose any reasonable conditions to mitigate development impacts.
• Pollinator -friendly plantings required to extent practical.
• Urban area
• We might be interested in purchasing power from large scale solar generated in other jurisdictions to fulfill our green power needs.
• we dont permit them currently, so these questions are not applicable.
• We are urban and do not have the land area necessary to devote to such a facility.
• Topography, land use ownership patterns, and locations of electric utility transmission lines limit potential locations for utility scale solar.
• The policies have changed over time and with each submittal - the Board has added more requirements over time.
• Negotiations began for a siting agreement but the application was withdrawn.
• I am unclear as to the difference between a siting agreement negotiation process in the new State code section and the typical process involved with reviewing a special use permit application. We require a special use permit and site plan approval for utility-scale solar farms and can impose conditions to mitigate impacts caused by the facility. I would not consider this to be a negotiation (as you might have with a proffer negotiation in a rezoning case). Our position is that the governing body can impose any reasonable conditions to mitigate development impacts.
• Large scale utility solar sites remove the people who were experts at managing the land- Farmers and Foresters and replace them with engineers and business people, who are not experts at managing land. The problems that have arisen are the result of this error and the solution has been to reinvent the wheel with new programs that were not needed had the original expertise been retained, in fact. Proof of this is the state of most vegetative buffers (poor and piteous). Foresters and Farmers should be used to stabilize these lands and re-plant vegetative buffering, no new training required.

Question 4.13 Comments
• Our recommended, but not required are not included in the zoning ordinance, but are standing conditions for use permits that staff tells every applicant to expect as part of their application.

Question 5.2

Does your comprehensive plan prioritize general areas or types of lands that are preferred for utility scale solar energy generation facilities?

Question 5.2 Comments
• not sure
• In our next update, staff anticipates that the types of land preferred for solar would be included. Currently, a draft policy statement is being considered by the Board.
• Zoning Ordinance prioritizes land areas/types.
• We are not large enough/are too densely developed for utility scale solar.
• Not specifically for solar, but the Plan does contemplate areas for large scale service/utility projects.
• Not currently, but Plan update in process and will consider.
• The 2040 Comprehensive Plan is being updated right now in conjunction with our 2021 Zoning Ordinance Text Amendment for Utility-scale Solar energy facilities...
• Not currently, but comp plan rewrite is ongoing, which will address.
• No acreage is available in [locality redacted] for utility scale solar.
• Staff attempted to add this but it became a point of contention that staff generally avoid.
• We plan to include them in the next update
• Land not available for solar farms in the city.
• Considering in the update of the Comp Plan that will occur next year.
• Our zoning ordinance only allows solar farms to be located adjacent to an existing qualifying electric substation and all parts of the facility have to be within a 1 mile radius of that substation. This essentially limits solar farms to only two areas within the County.

Question 5.3

What are the characteristics of the land identified? Choose all that apply.

Question 5.3 Comments
• Land not designated for compact, interconnected, pedestrian oriented development on water and sewer.
• Outside the development service districts

Question 5.4

Comments related to comprehensive planning (general comments pertaining to Section 5)

Question 5.4 Comments
• As part of the adopted Resilience Quotient, solar and other renewable energy generation is encouraged, but there are other ways to meet the requirements that don't include renewables and those are the ones most often chosen by developers.
• Initiating major overhaul this fiscal year
• We are in the middle of having our Comprehensive Plan updated. It is severely outdated.
• Community not large enough to consider land use for utility scale solar energy generation facilities.
• Our comprehensive plan discusses solar facilities; however, it does not go into depth as to the specifications for solar projects.
• Plan update in process and will consider solar siting
• 2040 Comprehensive Plan is incorporating these elements as adopted 2015 Comp Plan generally addresses green energy practices and low impact development techniques as recommendations.
• Our comprehensive plan discusses rural character and the community feels that utility scale solar is not consistent with the rural character.
• Our Comprehensive Plan includes general goals/actions such as reducing GHG emissions 80% by 2050, achieving 100% renewable electricity by 2050, and minimizing energy demand (with multiple targets), but it doesn't include specific strategies for how to achieve those goals.
• The county is currently working on climate mitigation and resiliency and adaptation plans that could lead to future Comprehensive Plan updates. Additionally, in August 2019 we are a Gold SolSmart Designated Community.
• Utility scale solar projects are in no way farming or forestry but have been moved along through a channel that lumps them in with these uses. This has posed huge points of argument and contention between pro and anti solar interests and finding proper language and planning for the future is difficult.
• The Environment chapter of our Comprehensive Plan was recently updated and adopted in February 2020. It includes goals, strategies and actions for Climate, Air and Energy, including GHG emissions reductions goals of 20 percent below 2005 levels by 2020, and 80 percent below 2005 levels by 2050. We are currently developing a Community Energy Plan to support achievement of those goals.

Question 6.3

Is the regulatory pathway for approval of distributed generation solar projects an administrative approval process?

Question 6.3 Comments
• Administrative in Industrial zones, by Conditional Use Permit (discretionary) in other zones.
• Routine (administrative) building and electrical permits are required for all solar projects. Solar is an allowed ('by right) accessory use in low-density residential zones, and gives increased lot coverage allowance for cottage housing , under a special exception process (which requires Planning Commission/City Council approval). Solar for commercial buildings is also by right, requiring only administrative approval. On new mixed use developments processed as Special Exceptions, solar, or provision for its future installation, is actively encouraged, and would be part of the Planning Commission/City Council review of the complete project.
• Depends on the size of the project.
• by-right with the appropriate permits
• Only for Industrial Zoning. Ag land requires a Special Exception.

Question 6.5

What regulatory pathway(s) are used for approval of utility scale solar projects? Other (Please describe)

Question 6.5 Comments
• Conformance with Comprehensive Plan
• Was previously by-right in our Ag District and one project was approved through site plan process only, but that has changed to CUP

Question 6.6

In which types of districts is a conditional use permit/special use permit/special exception an approval pathway for utility scale solar? Other (Please describe)

Question 6.6 Comments
• Not all Commercial districts allow.
• allowed as a use in certain industrial areas with the applicable trade permits, special exception in all other zoning districts
• PUD commercial
• Was previously by-right in our Ag District and one project was approved through site plan process only, but that has changed to CUP

Question 6.10

Has your locality adopted a solar ordinance? Other (Please explain)

Question 6.10 Comments
• We have adopted performance standards for solar installations, but not utility scale.
• Yes, but we are also in the process of amending it.
• [Locality redacted] has an adopted solar ordinance but it is for the exemption of solar equipment from taxation.
• Zoning ordinance identifies solar as by-right.
• Not a separate solar ordinance - addressed in zoning ordinance
• Our solar requirements are part of our Zoning Ordinance.
• For electric utility only
• We are planning to propose amendments to the zoning ordinance, based on recommendations from our SolSmart Advisor within the next year.
• In the process of updating the existing ordinance for the 4th time.
• Not sure what is meant by a solar ordinance. Our zoning ordinance contains regulations for the development of solar farms.

Question 6.11

Which of the following solar applications does/will your solar ordinance address? Other

Question 6.11 Comments
• Ordinance addresses as roof-mounted and ground-mounted as opposed to residential or commercial
• Biophotovoltaics and mobile photovoltaic systems.

Question 6.12

Does it, or will it, address any of the following? Check all that apply:

Question 6.12 Comments
• We're in the early stages of crafting this and would appreciate assistance on all of these topics
• All of this would be considered site specific based on the location, size and scope of project
• Height

Question 6.13

Comments related to zoning (general comments pertaining to Section 6)

Question 6.13 Comments
• Biggest concern is related to construction phase of project (mainly E&S issues and how department can handle those with a smaller staff given the size of the project).
• Would love for the General Assembly to enable us to require solar/wind/renewables but absent that, we can only allow/encourage.
• Most standards for utility solar are located in policy vs. ordinance.
• All utility scale electricity generating facilities require a Conditional Use Permit regardless of the energy source.
• We do not have a solar ordinance, and have not considered one. I'd like to learn about the possible benefits of having one.
• Our community prefers to retain consideration of public utility land uses through special use permitting, with standard considerations that may result of a mix of standard conditions and conditions unique to the proposal/project
• In process of updating the ordinance - going to public hearing with the Planning Commission on August 5.
• Projects are presented and reviewed/approved thru a Conditional Use Permit process
• We are adopting in September 2021 a Solar Ordinance Amendment and then in early 2022 we plan to adopt a Solar Siting Requirements section similar to our Communications Tower siting requirements.
• Our Solar Ordinance is based on size not type which means all would be eligible if the size is in conformance. There's a question about Ag and solar dual use in non Ag Zoning, the first question i have is why do you have Ag in Non Ag zoning so that question should be irrelevant,
• We have small private PV systems in or ordinances now and are working to add large scale systems into it also
• Our solar ordinance was presented to the Planning Commission at the July 2021; however, it was sent back to the Solar Facilities Committee for further review and amendments. It will have to go before the Planning Commission at the August meeting.
• CUP is required

Question 6.13 Comments
• Currently, the City is comprehensively rewriting the Zoning and Subdivision Ordinances. Solar use abilities will be more clearly stated and included. Within the current Zoning Ordinance, commercial-grade solar farms are permitted by right in the M-1, General Industrial District.
• [Locality redacted] recently rewrote our Zoning Ordinance, which was adopted by the Board on March 23, 2021, and became effective on July 1, 2021. This new Ordinance includes provisions that specifically relate to two new uses, solar power facilities (utility-scale) and solar collection systems (accessory solar). We worked with a consultant, Clarion Consultants, as well as SolSmart when drafting the new provisions to ensure they were solar-friendly. Specifically, utility-scale solar is permitted by right with no entitlement requirements in the I-3 through I-6 Districts (Light Intensity Industrial through our Heavy Industrial districts), and it is allowed with special exception approval in all other conventional zoning districts and if shown on approved plans for most planned districts (other than the Planned Continuing Care District). With accessory solar, we allow roof-mounted panels to exceed maximum building height limitations by up to five feet in height to allow for retrofitting existing buildings. The use-specific standards on both utility-scale and accessory solar are relatively minimal, requiring standard setback and height limitations applicable to other accessory structures (when ground-mounted), a decommissioning plan with utility-scale facilities, and the requirement for utility solar to co-locate with agriculture when located in the Residential – Agriculture District. We are happy to discuss the recent Zoning Ordinance changes with you if you have any further questions.

Question 7.9

Comments related to economic considerations (general comments pertaining to Section 7)

Question 7.9 Comments
• The questions related to this section and the section before it cannot be adequately answered because we have no large-scale facilities at this time. A 300-acre site was tabled by the Board last fall and, since that time, the County has been developing a revised solar ordinance. Most of the solar projects that have been submitted since last fall are considerably smaller than your definition of utility solar and could not be considered when answering the questions.
• Green bank considerations and discussions taking place at regional level (NoVA)
• We do not have room for utility scale solar, so most of the above questions are not relevant. If a regional or statewide green bank were to be established, we would seriously consider participation.
• Is Q7.7 only asking about revenue sharing for solar projects? [Locality redacted] does have a revenue sharing agreement with [locality redacted] that is decades old and likely does not involve solar. Q7.7 could be more clear.
• So far, most utility scale solar projects bring in outside contractors and provide very little economic push aside from a few consumables that may be purchased locally. No long term jobs are expected from these developments, either, nor are they being promised.
• Q 7.2 and 7.3 are not applicable to our city because we are not large enough for utility scale projects, so we won't be approving utility scale projects in the future, so this question is not applicable. Please disregard my answers to those questions because they don't apply to the city, but I was required to choose an answer.
• we've started conversations about revenue sharing agreements and host site agreements for solar but have not gone beyond those at this time. We also coordinated with VACO and obtained ones used by other localities as examples.
• Economic benefits previously were considered more important, but as we received more requests for solar facilities, rural and community character became more important than economic benefits to the Board and the community.
• Your questions are biased and are leading. Is this really supposed to be an objective survey or a marketing tool?
• With the SCC depreciation schedule for solar, the M&T option will be considered by my Board.

Question 7.9 Comments
• I am a Building Official, Zoning Admin., and E&S combined administrator, so the questions about how important for approval were answered based on the fact that I have to be impartial. The impacts listed are of great importance to me and hopefully the elected officials.

Question 8.4

What type(s) of actively permitted large scale energy storage projects does your locality have? Choose all that apply.

Question 8.4 Comments
• A 9 megawatt BTMG is being built now, plan to be online 12/15/21. This is not a battery storage project but will be used for peak shaving and PJM frequency regulation. Will lower our transmission/capacity costs in a revenue sharing agreement with IOU.

Question 8.6

Are the proposed project(s) standalone energy storage or tied in with a solar project (solar+storage)?

Question 8.6 Comments
• We are very interested in learning more about the energy storage components.
• Only solar and storage is permitted. Stand alone is not permitted.
• The Planning Commission and Board of Supervisors are not in favor of the use of storage on site as the potential risks that they carry and the lack of training and understanding that our First Responders have in the incident of a problem with the storage.

Question 8.7

What type of energy storage projects are proposed or planned? Choose all that apply, if known.

Question 8.7 Comments
• Salt water

Question 8.9

Comments related to energy storage (general comments pertaining to Section 8)

Question 8.9 Comments
• Our ordinance allows both, either on the same or separate sites, but we're not referring to this pairing as a resiliency tool.
• We have discussed the concept of microgrids, and will probably include them as an option in the Energy Plan currently under development.
• Arlington is currently working on the adoption of a RAMP resiliency assessment plan.
• When staff tried to address the possibility of Solar as being a possible resiliency measure, during Planning Commission development of the Solar Ordinance, the Industry experts spoke against it as being too much of a promise. Staff have not and will not bring this issue back up again.
• the energy storage language in state code is brand new and will likely take time to consider at the local level. huge batteries storing energy is much different than PV systems harnessing the power of the sun and sending it to the established grid
• we rely on Dominion to provide for energy generation and storage.
• The governing bodies for our area are not in favor of battery/energy storage in our County. With this opposition, it has lead to controversy as to allow a solar industry to propose a site with the storage.
• We will be considering an ordinance permitting energy storage as that appears to be inevitable.

Section 9

Of the following choices, how would you characterize your locality? Combination and Other (please describe)

Locality Type Description (Combination)
• 53% of the County is Rural, the remainder is largely suburban
• Rural for the County, suburban around Town edges.
• Rural/Suburban
• mainly rural with a few areas that are suburban.
• Rural and Suburban
• Suburban & Rural
• Primarily rural but, more accurately, agricultural, with suburban and/or urbanizing areas around the seven towns and city.
• Mix of Suburban and Rural
• Rural with suburban areas
• [Locality redacted] is both urban and suburban with a population of 51,814.
• Largely rural population with two small towns
• Combination: Urban for one-third of northern portion of the County and rest is rural with some suburban/village areas.
• Urban, Suburban, and Rural areas within county
• Rural / Suburban
• Suburban and Rural
• Suburban/Rural
• Small city in rural Virginia
• Rural with six urban towns.
• Waterfront zones are heavily developed to a suburban density while the inland areas are semi-rural to rural
• Small town in rural setting
• Suburban & Rural

Locality Type Description (Combination)
• low density, suburban, and mixed-use urban centers
• Small parts are urban (5%), good portion is suburban (20 - 25%), and other parts are rural (70-75%)
• Mostly urban with a strong rural community on the outskirts. A city much smaller in scale
• we have VERY rural portions of the county but also two of the largest towns in Virginia and a huge university within our boundary. we are quite the combination!
• Suburban in the south and rural in the north
• Mainly rural with several developed areas.
• We have development service districts (urban) as well as agricultural conservation areas (rural).
• Rural and Suburban

Locality Type Description (Other)
• We describe ourselves as having small town character in an urban setting.

VIRGINIA Energy

ENERGY TRANSITION INITIATIVE AT UVA

UNIVERSITY of VIRGINIA | Weldon Cooper Center for Public Service

Photo: Sun Tribe Cople Elementary Solar Project, Westmoreland County, Virginia taken by Rene Hypes

In March of 2020, the Sun Tribe Cople Elementary Solar Project was designated as the first Pollinator-Smart Solar Site in Virginia. The project achieved the highest Pollinator-Smart designation, and the school expects to save $3.6 million in energy costs over the lifespan of the project. For more information, please visit the *Virginia Pollinator Smart Program webpage*.