










New York State
NYSolar Smart Survey

January 2014

NYSolar Smart Survey Final Report

January 2014

Conducted by the
City University of New York
in partnership with
New York State Energy Research and Development Authority
New York Power Authority

INTRODUCTION

The City University of New York (CUNY) launched the NYSolar Smart program as part of a collaborative NYS effort designed to lower the non-hardware soft costs of installing solar throughout NYS and reduce stratification. Since 2007, Sustainable CUNY has led comprehensive federal solar initiatives designed to support solar energy market growth in New York. Sustainable CUNY works in collaboration with the U.S. Department of Energy, the National Renewable Energy Laboratory (NREL), New York State Energy Research and Development Authority (NYSERDA), the New York Power Authority (NYPA), the Mayor's Office of New York City, NYC Economic Development Corporation, Con Edison, and over 30 partners to strategically remove barriers to large scale solar deployment. Further, as climate change continues to dramatically impact New York, Sustainable CUNY is working with its partners to incorporate solar power into emergency and resiliency planning.

NYSolar Smart is supported in part by NYSERDA and NYPA under the NY-Sun Initiative. The first action of the NYSolar Smart program was to conduct a survey of policies and processes related to solar in municipalities across New York State. Over the past several years, the importance of reducing balance of system (BOS) soft costs has become evident. The NYSolar Smart Survey collected information on the policies and processes that affect BOS costs, particularly those under the purview of local governments. By establishing a baseline for these policies, it is possible to identify the biggest barriers to solar market development and the greatest opportunities to reduce barriers by implementing policies and programs that reduce BOS costs. This report details the findings of the survey, and provides recommendations to address barriers to solar market development found in municipalities across the state.

Sustainable CUNY is leading CUNY's efforts through three key pillars: the CUNY Sustainability Project & CUNY Conserves, State-wide Sustainable Energy projects and CUNY SustainableWorks; a commercialization program for sustainable and clean technology. As this nation's largest urban university, CUNY plays a transformational role in New York's sustainable future with an educational footprint that spans 24 academic institutions and over half a million students, faculty and staff. CUNY is dedicated to integrating sustainability into the university and throughout New York through its curriculum, policy work, research, retrofitting, capital projects, workforce development and economic development activities.

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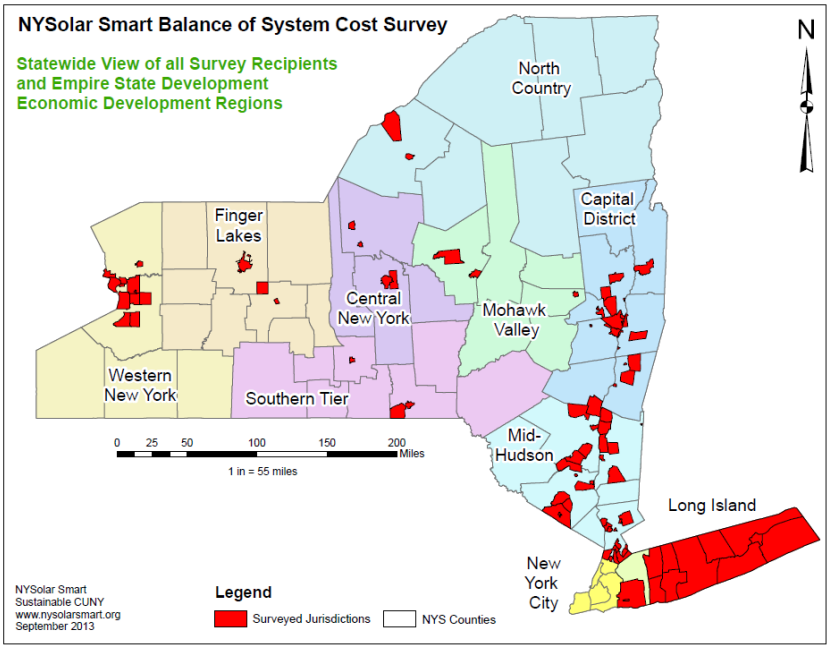
EXECUTIVE SUMMARY

New York State is projected to rate fifth in residential solar installations in the United States for 2013, with approximately 300 solar companies and more than 4,200 solar jobs. The cumulative solar capacity installed from 2007 through October 2013 is at least 265 megawatts, adding **$1.57 billion to the New York State economy**. This megawatt count was culled from NYSERDA, LIPA Incentive data, the Long Island Solar farm, NYPA as well as Con Edison. Additional kilowatts and perhaps even megawatts are being generated within New York State (NYS) from other solar farms as well as from citizens who install solar off-grid and without incentives. Through Governor Cuomo's **NY-Sun Initiative,** NYS has committed $1.5 billion over the next 10 years to quadrupling the amount of new solar installed over 2011 levels, in part by reducing the costs of installing solar for residents. In particular, NYS aims to reduce the soft costs of installing solar, known as the balance-of-system (BOS) soft costs, which typically add up to 40% or more of the cost of installation. These costs include: permitting, planning & zoning, net metering & interconnection, financing options, and customer acquisition and retention. NYS is composed of approximately 1550 municipalities, and most have a different permitting process and a wide range of jurisdictional staff that may have limited resources and time, adding uncertainty, time and costs to solar photovoltaic (PV) projects. For example, average PV costs in NYS were $5.79/W in 2012; however, county averages differ from the state average price by up to forty percent.

The NYSolar Smart Survey collected data on permitting, interconnection and net metering, planning and zoning, and financing options. The survey also asked general questions related to jurisdictional interest in solar. In total, 93 jurisdictions around NYS were invited to participate in the survey, and 61 responded to one or more sections of the survey. The jurisdictions invited to participate in the survey can be found below and in **Map 1** of **Appendix 1**. Eight utilities across the state also responded to the survey.

Map 1: Surveyed Jurisdictions



Results from the survey show that there is significant variation among municipal policies and processes that impact solar installations. On a statewide level, no two surveyed jurisdictions in NYS were identical; even jurisdictions that are located adjacent to one another have slight variations in policies. While some similar policies and processes exist, there are still differences that act as a barrier to solar market growth across New York.

The survey also found that a number of jurisdictions have limited policies or processes in place that directly address solar systems. By not having any established solar policies or process, navigating installation requirements becomes extremely difficult for installers and adds to BOS costs. When comparing policies and processes across NYS to national best practices, the survey found redundant requirements, potentially restrictive requirements, and major differences between jurisdictions. In particular, the NYSolar Smart Survey found:

- **A wide range of interest in, and awareness of, solar permitting best practices**
- **Limited availability of online solar permitting information**
- **Inconsistency and lack of a defined solar permitting process in many jurisdictions**
- **Inconsistent and unclear zoning requirements**
- **Solar is not addressed in many zoning codes and comprehensive plans**
- **Jurisdictions require multiple and often redundant inspections**
- **Lack of coordination between utility and municipal inspections**
- **Solar financing programs are rare**

These results indicate a need for a holistic approach to encourage consistency and transparency in the NYS solar market. As explained in more detail in the full report, the following recommended actions would support a reduction in BOS costs for solar in NYS.

Permitting
Key Recommendations

- ✓ Learn Best Practices
- ✓ Create Dedicated Online Solar Permitting Webpage
- ✓ Adopt Unified Solar Permit

Zoning
Key Recommendations

- ✓ Review Best Practices
- ✓ Educate Decision Makers on the Many Values of Solar
- ✓ Update Comprehensive Plans to Include Solar

Financing
Key Recommendations

- ✓ Educate Leaders
- ✓ Convene Conversations with Lenders
- ✓ Explore New Loan Instruments

Inspection
Key Recommendations

- ✓ Improve Training for Inspectors
- ✓ Remove Unnecessary Inspections
- ✓ Narrow Inspection Windows
- ✓ Coordinate With Utilities

Survey Objective

New York State is diverse and the policies and processes for installing solar systems vary widely from municipality to municipality. Many installation companies face challenges due to the lack of uniformity, layers of paperwork and different permitting processes across the many jurisdictions in which they do business, which contributes to higher costs. In turn, local agencies and utilities struggle to accommodate a growing industry while dealing with a lack of staff and often limited coordination between agencies and utilities. CUNY, in collaboration with NYSERDA and NYPA, conducted a statewide survey of existing policies and permitting processes related to solar. The results of the survey establish a benchmark for each participating local government and the State. This benchmark can assist in guiding policy improvements both in the near term as well as with longer range planning. Specifically, this survey gathered information regarding policies and processes that affect the balance of system soft costs.

The objective of the NYSolar Smart Survey was to collect data on permitting, interconnection and net metering, planning and zoning, and financing options for residential and commercial solar photovoltaic installations. In order to achieve the desired results, the survey design and deployment was designed to meet the following goals:

- Capture a broad sample of local governments across New York State
- Develop a better understanding of balance of system costs across the State
- Lay a roadmap for NYSolar Smart work going forward

Survey Methodology

In January 2013, CUNY and the NYSolar Smart Core Team members (**Appendix 2**) held a project kick-off meeting to discuss survey questions, design, and participants. Leading up to the meeting, Sustainable CUNY conducted background research on utilities, counties, and municipalities across the state in order to narrow down the list of jurisdictions to survey. Generally, jurisdictions that had the highest levels of installed solar capacity were included, and efforts were made to include jurisdictions in all regions around the state. Efforts were also made to include jurisdictions of different sizes and levels of solar market maturity. The survey was released on February 13, 2013. The survey recipients were asked to complete an electronic survey and all results were compiled by CUNY's Baruch College Survey Research Team. In total there were 67 questions on solar policies and processes, with an additional seven questions in a general section to gather information on the municipality responding to the survey (**Appendix 3**). The survey was divided into four sections:

- Permitting (31 questions)
- Interconnection & Net Metering (25 questions)
- Planning & Zoning (7 questions)
- Financing Options (4 questions)

A total of 93 jurisdictions received three separate survey sections for three different municipal departments:

- Buildings and Permitting
- Planning and Zoning
- Mayor/Supervisor, Supervisor of Sustainability

The data collection was conducted over a one-month period of time. To encourage survey participation, recipients who had yet to return the survey were sent weekly email reminders. The survey was sent out to 207 individuals from the 93 municipalities with eight utilities invited to participate as well. Some individuals within a jurisdiction have multiple roles and were able to answer multiple sections of the survey.

Jurisdiction Response

Of the 93 municipalities surveyed, 61 responded to at least one section of the survey. At the close of the survey, the individual response rate was 44%, with a jurisdictional response rate of 65%. Data on interconnection and net metering was collected from all investor-owned utilities, the Long Island Power Authority, and the New York Power Authority.

- 14 of 61 jurisdictions responded to all three sections
- 19 of 61 responded to two of the three
- 28 of 61 responded to one of the three
- Eight utilities responded to the net metering and interconnection sections

The higher than normal response rate allowed for adequate amount of information to be collected, enabling a comprehensive understanding of the solar PV policies and processes throughout NYS. All regions of NYS were represented with the exception of New York City, which was intentionally left out of the survey, as CUNY's existing work has led to an in-depth understanding of the NYC solar market. Map 1 in Appendix 3 shows the regional spread of jurisdictions invited to participate in the survey, survey respondents, and sections of the survey these respondents completed.

SOLAR PERMITTING KEY FINDINGS

Wide Range of Interest & Awareness in Solar Permitting Best Practices

The survey results indicate that there is a wide range of awareness and interest in solar permitting best practices, from both building department and local leadership officials. While all of the local leadership had some level of interest in a streamlined permitting process for their jurisdiction, 21% of the building department officials did not want to explore streamlined permitting. *Providing education and awareness to jurisdictions, particularly to building code officials, on the benefits of standardized solar PV installations and streamlined permitting could lead to improved overall understanding and adoption of best practices.*

Limited Online Solar Permitting Information

While many of the jurisdictions surveyed had some solar permitting information online, most did not have a dedicated page and a quarter of the jurisdictions had no online information. Clear, online information regarding local permitting procedures, technical requirements, document locations and other expectations is beneficial for both jurisdictions and installers. Making technical requirements available online, for example, allows installers working in multiple jurisdictions to tailor system design submittals to meet local codes, leading to less time and cost spent on revisions, re-submittals and inspection corrections. These benefits are important to all involved parties as jurisdictions and installers see a growing numbers of solar applications. *Creating a single webpage with clear and organized solar permitting information will increase transparency and clarity of permitting requirements, lower costs, and encourage economic development.*

Inconsistency and Lack of a Defined Solar Permitting Process

The survey found that no two responding jurisdictions have matching requirements, policies and procedures for installing solar. In addition, 64% indicated that their jurisdiction has no defined solar permitting process, and more than half reported having no solar specific permit application. Of the jurisdictions that do have a process or specific permit implemented, the majority are located on Long Island where many local governments have participated in the Long Island Unified Solar Permitting Initiative. Having a defined permitting process and a uniform solar-specific permit application based on national best practices are two actions jurisdictions can take to make the permitting process quicker, easier, and less costly which can lead to growth in local solar economic development. With a defined process, fewer individuals will contact jurisdiction staff with questions, and those filling out the applications complete the process more efficiently. A solar specific permit application form also alleviates the need to locate and then fill out multiple forms. *Adopting and implementing the NYS Unified Solar Permit or the Long Island Unified Solar Permit will encourage local economic development and support the growth of solar energy on a statewide level.*

Key Recommendations

- ✓ Learn Best Practices
- ✓ Create Dedicated Online Solar Permitting Webpage
- ✓ Adopt Unified Solar Permit

Solar Permitting Responses

Permitting is an important step in the solar installation process, ensuring that PV systems are installed safely and to code. Permitting can vary significantly from jurisdiction to jurisdiction, as it is a process that is under a local municipality's purview. Consequently, each of the nearly 1600 municipalities in New York State could have a different permitting process. The survey asked questions to develop a greater understanding of the variation in permitting requirements, timelines, fees, and information availability.

Approximately 25 municipalities in Long Island participated in the Long Island Unified Solar Permitting Initiative, an effort to increase clarity and transparency in the permitting process across jurisdictional boundaries. With that in mind, the survey also gathered information on jurisdictional interest in implementing undergoing a similar effort statewide.

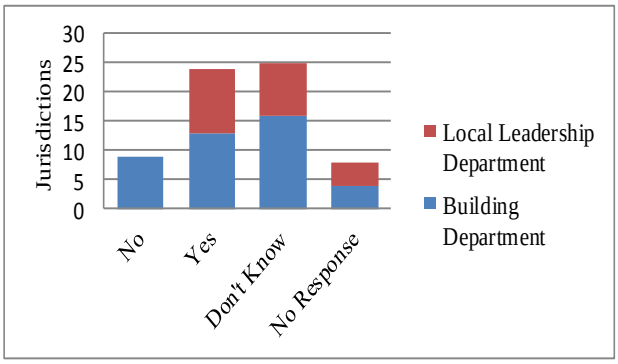
Q. "Would your municipality be willing to consider implementing an expedited permitting process for small solar PV systems?"

Respondents: Local Leadership
Building Department

The responses, seen in Figure 1, indicate there is a wide range of interest in, and awareness of, solar permitting best practices such as adopting a standard small-scale residential permit. The responses also demonstrate that local elected leadership and sustainability officials show a greater willingness to explore best practices, where building code officials show more resistance to the concept.

While the survey did not gather information on the respondents' rationale for their answers, the divergence between the building officials and local leadership is indicative of how a strategy for outreach and education regarding best practices could be designed. Building officials may be more apprehensive about an expedited permitting process than local leadership due to concerns around safety or available resources for implementing a new type of permit.

Figure 1: Interest in Permitting Best Practices



One purpose of this survey is to gain insight into current understanding of, and attitudes towards, permitting policies in NYS in order to encourage adoption of the New York State Unified Solar Permit across the state. By asking the same questions of different individuals within a municipality, the survey identifies departmental trends and interest levels in permit adoption. When beginning to work with jurisdictions to adopt this permit, it is important to understand that not every jurisdictional department has the same mindset regarding solar PV permitting. Education and awareness campaigns for jurisdictions should be crafted carefully to explain the benefits of streamlined permitting to each stakeholder group.

For example, clear, streamlined and standardized permitting will improve applications and make them more consistent, leading to less time needed for reviews by building departments. Any outreach should also focus on the technical expertise that has gone into the development of these standard permits to ensure installation of high-quality

systems. In addition, adopting best practices indicates that a local solar market is "open for business," making it more attractive to installers. A growing and healthy PV market is not just good for the environment but has a significant economic development impact. Educating local officials and building departments on the myriad benefits of standardized and streamlined solar PV permitting will lead to improved overall understanding and adoption of best practices.

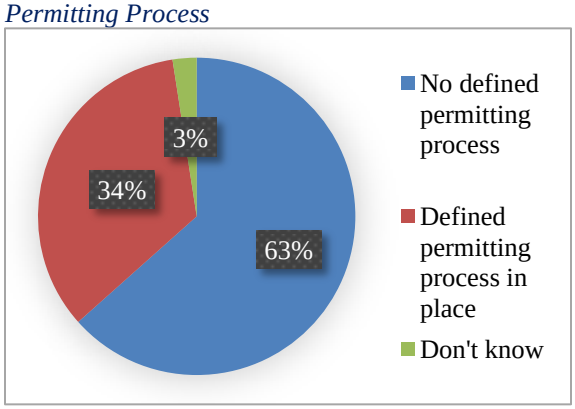
Half of jurisdictions had inconsistency in responses from different departments within a single jurisdiction. This illustrates that there are differing opinions toward solar policies and processes within jurisdictions.

Q. "Is there a defined solar permitting process governed by project size that explains all steps necessary for an applicant to gain permit approval?"

Respondents: Building Department

The survey results show that a majority of responding jurisdictions do not have a defined process. Of the 34% that do have a defined process, six jurisdictions, are located in Long Island, where many local governments have participated in the Long Island Unified Solar Permitting Initiative.

Figure 2: % of Jurisdictions with a Defined Solar Permitting Process

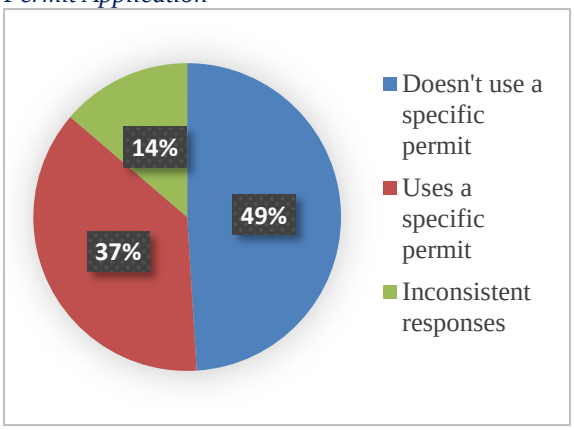


Q. "Is there a specific permit application for solar projects?"

Respondents: Local Leadership
Building Department

As shown in Figure 3, responses from both entities indicate that the majority of jurisdictions do not have a specific permit application.

Figure 3: % of Jurisdictions Using a Solar-Specific Permit Application



An important point to note is that seven of 52 jurisdictions had inconsistent answers between departments. Three of the local leadership responses indicated they do not know if their jurisdiction uses a solar specific permit application, but the building department responses do list a yes or no answer. Other disagreement was simply yes versus no.

Survey responses regarding the use of an expedited permit show that the vast majority of jurisdictions are not using streamlined or expedited solar PV permitting process: only 21% indicate an expedited process is in place. This indicates that there is significant opportunity to create improved permitting consistency across the state.

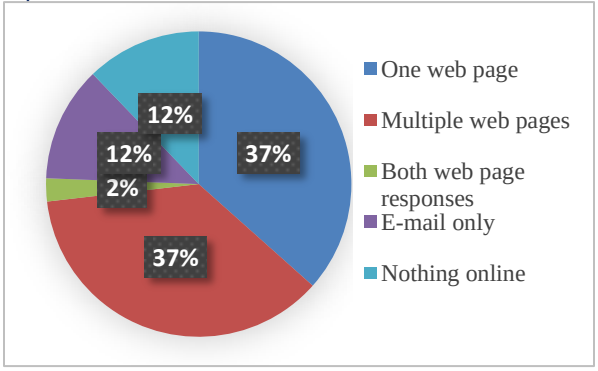
In order to reduce balance of system costs for solar PV in NYS, a goal for jurisdictions could be to have a clear and transparent

solar-specific permitting process, with an expedited review option for small-scale, standard PV systems. Currently, only seven out of 42 jurisdictions responded to having all of these components, which indicates that the solar market in 83% of surveyed jurisdictions can benefit from participating in the New York Unified Solar Permit Initiative.

Q. "How is information describing the permitting process accessible?"

The survey contained different questions related to how information about permitting is made available to the public. The availability of clear information regarding solar policies and procedures, for both solar installers and end users, is a key element in encouraging solar adoption and reducing costs. Having available and knowledgeable staff that can answer questions and concerns of interested parties can decrease the local government and installer time and money spent on solar installations, as well as reduce the amount of errors and improper installations by providing clear and accurate information. Figures 4 and 5 show the results from each of the 41 responding jurisdictions. Figure 4 shows which jurisdictions have permitting information available online while Figure 5 shows the overall methodology for accessing permitting information.

Figure 4: Availability of Online Permitting Information



While the survey results show that 76% of jurisdictions do have information online, approximately half of those jurisdictions require users to navigate across multiple web pages to receive all of the available information. Almost a quarter of responding jurisdictions have no information available online.

An interesting result to note is that a vast majority (12 out of 14) of the jurisdictions offering a defined solar process also have solar permitting information online. This suggests that jurisdictions that have taken steps to improve solar permitting have done so in a holistic manner.

Figure 5: Overall Permitting Information

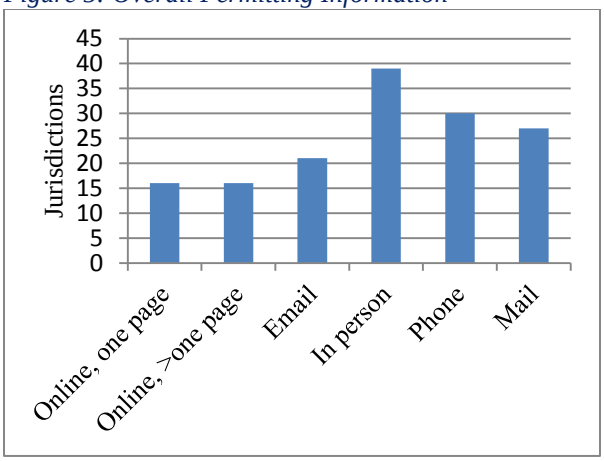
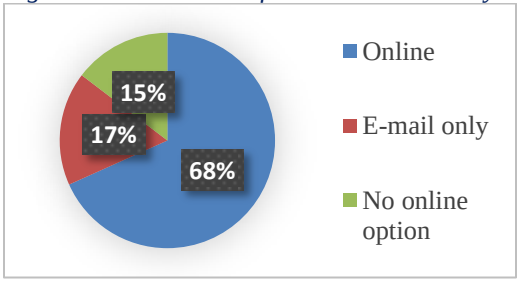


Figure 5 demonstrates the variety of methods overall that jurisdictions use to make permitting information available. The most common offline and traditional methods (mail, phone, and in-person) can offer benefits such as in-person conversations and faster answers to more nuanced questions, but all three of these methods require more time commitment for municipalities and installers than online information, can lead to inconsistent information distribution, and can occupy jurisdictional staff time for extended periods.

Q. "How is information on permit fees made available?"

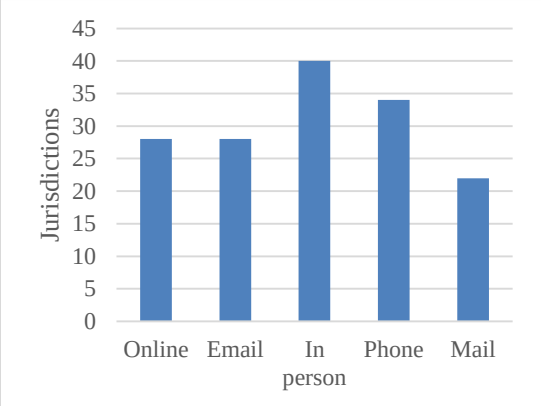
As seen in Figure 6, 68% of respondents indicated that their jurisdiction makes information on permit fees available online, a smaller percentage of jurisdictions than those who provided general information on the permitting process online.

Figure 6: Permit Fee Information Availability



Other methods used are traditional methods that require jurisdictional resources of time and staff.

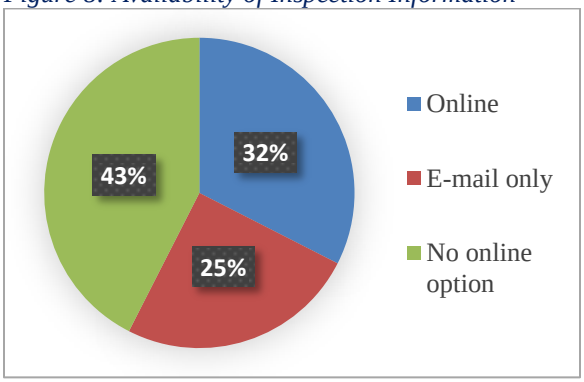
Figure 7: Overall Permitting Fee Information



Q. "How is information on inspection requirements made available?"

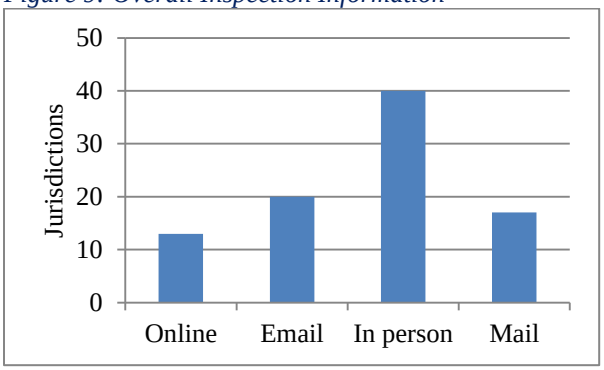
A comparison between Figures 8 and 9 shows that information about inspections is typically harder to find than information about permitting and fees. Further analysis shows that 13 of 40 jurisdictions indicate that the only method of receiving information is in-person. While this method can be beneficial by allowing all of an installer's questions to be answered, it requires a trip to the jurisdiction's office, and occupies both jurisdictional staff and installer time.

Figure 8: Availability of Inspection Information



As shown by the responses to these questions, there is wide variation in how jurisdictions make permitting process, fee and inspection information available. The lack of consistently available information creates additional time (and related cost) for PV projects, as installers have to dedicate staff resources to research and verify processes in multiple jurisdictions. In addition, this causes more demands on jurisdictional staff time and resources as installers may have no option but phone calls to answer questions, or may prepare incomplete or inaccurate permit applications.

Figure 9: Overall Inspection Information



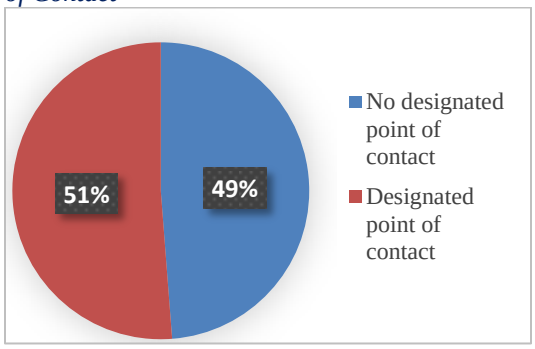
While having information online will alleviate the need for many in-person

questions, having a knowledgeable and dedicated point of contact for solar PV related questions, when needed, can reduce uncertainty about the pre-application process.

Q. "Is there an accessible designated point of contact, with contact information available online, for questions about the PV permitting process?"

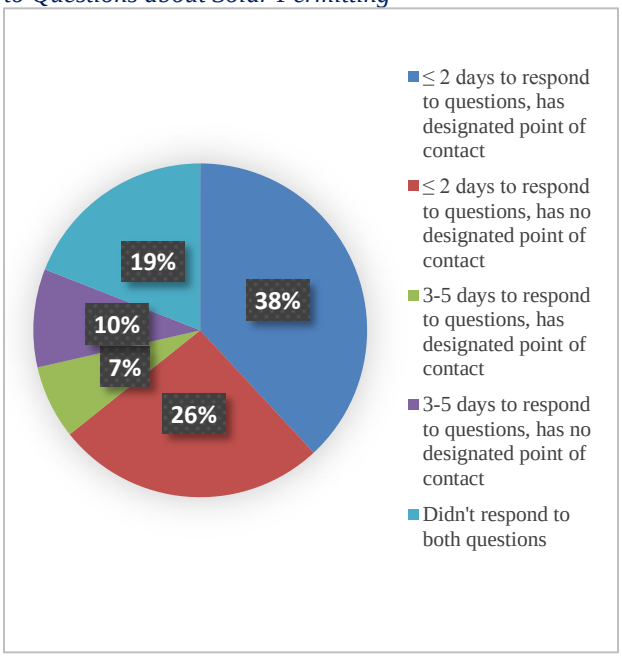
An additional question on this topic addressed the amount of time it takes jurisdictions to respond to questions about solar PV.

Figure 10: % of Jurisdictions with a Dedicated Point of Contact



Of the jurisdictions that do not have a designated point of contact, 11 indicated they respond to questions in fewer than two days, which was the fastest response time option on the survey.

Figure 11: Average Response Times by Jurisdictions to Questions about Solar Permitting



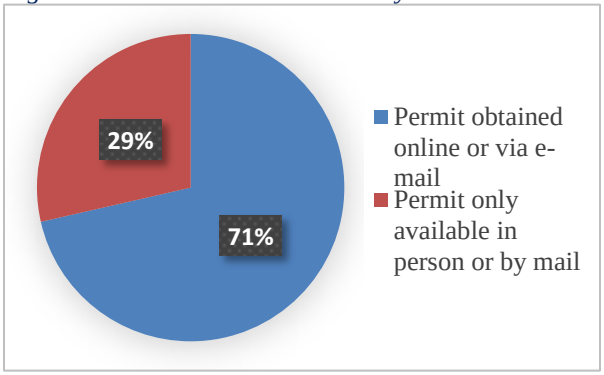
As information is required to ensure that installers can safely and efficiently install solar PV, jurisdictional creation of clear, one-stop, online information regarding permits, fees, and inspections would go a long way towards reducing BOS costs in NYS.

Hudson Solar

Q. "What are the options for obtaining an application?"

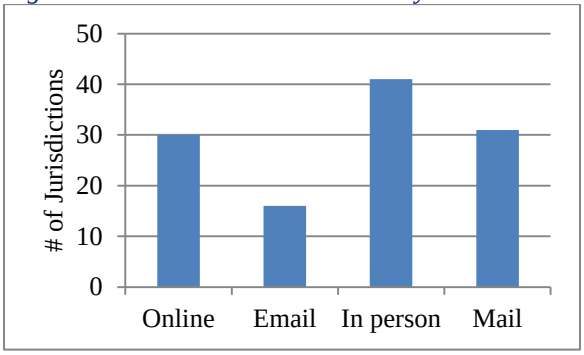
This section of survey questions were meant to determine how the actual permit applications are made available, as well as the options for submitting completed permit applications.

Figure 12: Online Permit Availability



The survey results indicate a wide range of current practices and areas of opportunity for improving local permitting processes.

Figure 13: Overall Permit Accessibility

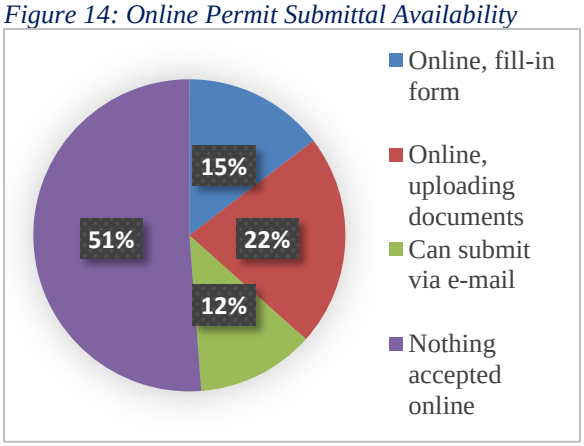


As seen in Figure 12, a majority of jurisdictions allow permits to be obtained online, alleviating the need for in-person trips to municipal offices. But, while obtaining a permit online eliminates one trip, the survey found that almost half of respondents do not allow applications to be submitted online, so installers still have to make at least one trip to the municipal center to deliver the completed application.

Q. "What are the options for submitting an application?"

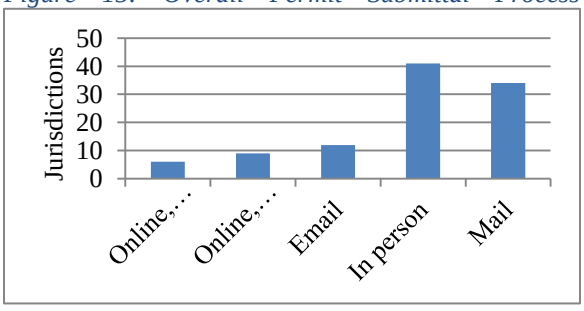
Many jurisdictions provide multiple options for submitting applications. Of the permit submission options available, online submission is the fastest and adds the least expense to the permitting process. Figure 14 displays that, of those that do allow online submittal, 15% have web-enabled permits where information can be directly entered into an online form, 22% allow upload to a website, and 12% allow e-mail of applications. A web-enabled permit application is the most technically advanced method available.

Figure 14: Online Permit Submittal Availability



However, this typically requires jurisdictions to purchase software and all parties to have access to high-speed internet, which is not consistently available across NYS. Other options such as website upload and e-mail are alternatives that can add efficiency to the PV permitting process.

Figure 15: Overall Permit Submittal Process

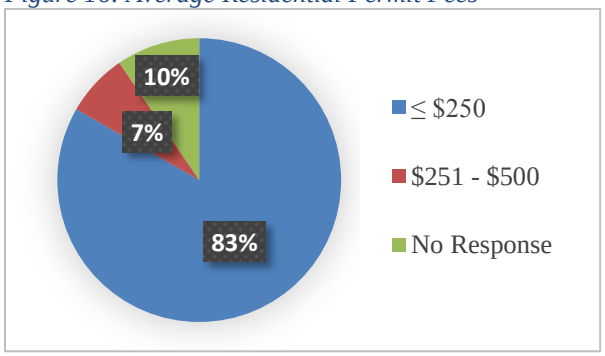


As shown from Figure 15, the most prevalent options for permit submittal shared across the state are the traditional options that require time from jurisdictional staff, time and expenses for installers to travel to the municipal office. Figure 14 shows that, 51% of jurisdictions have no web-based options, meaning they only allow mail or in person delivery. It is worth noting that five of the responding jurisdictions only allow for in person application submission. This can add even more time to PV projects in jurisdictions that require multiple trips to first obtain a permit and again to submit it. Fewer in-person trips to the jurisdiction's office will ensure that the permitting process is as quick and inexpensive as possible.

Q. "How is/are the permit fee(s) structured?"

This question was designed to evaluate whether or not jurisdictions followed best practices when establishing permit fees. Jurisdictions were first asked to estimate the average fee for a typical system (commercial and residential) and were given ranges to select from for residential systems. Figure 16 illustrates the number of jurisdictions that responded to each option. Map 2 in Appendix 3 also shows this distribution across NYS.

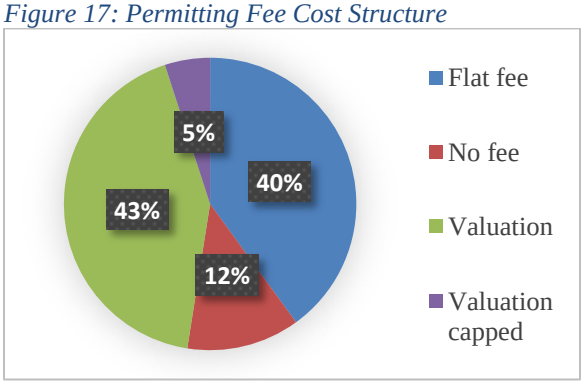
Figure 16: Average Residential Permit Fees



The responses to this question indicate that permitting fees for residential systems are low across the state with 83% selecting the lowest cost option. National best practices for permitting developed by IREC and Vote Solar recommend that permit fees for residential systems be set no higher than $250. Although the majority of residential permit fees across the state are modest, fees could be standardized and lowered, and adjusting the cost structure of permitting fees could result in lower permitting costs across the state as the industry grows and larger systems are installed.

In addition to average fee amounts, jurisdictions were asked about how permit fees are structured. Other than a flat fee option, there are three other options: a valuation based fee with a cap, a valuation based fee without a cap, and a cost recovery based fee. Valuation based fees mean that as the cost of the project increases, the cost of permitting also increases. Jurisdictions can either cap these costs or not. Figure 17 displays the cost structures for the 37 responding jurisdictions. Referring back to Figure 16, of the three jurisdictions that indicated their fees are between $251 and $500 for residential systems, two of three had valuation-based fee structures and one jurisdiction did not respond.

Figure 17: Permitting Fee Cost Structure



For residential systems, it may be easier to minimize permitting costs by using a flat permit fee. Ideally, the permit fee should be set to cover the cost incurred by the jurisdiction to review and issue a permit;

however, no jurisdictions indicated the use of cost recovery fees.

The distribution of the different cost structures across NYS can be seen in Map 3 in Appendix 3. Looking at the map, the cost structures vary significantly even in areas of close proximity. Specifically focusing on the Western NY region, it can be seen that all fee structures except for No Fee is found in a cluster of neighboring jurisdictions. The map also shows that all jurisdictions with no permit fee are located on Long Island. Here a streamlined permitting program has already been instituted, and fees are either fixed at $50 or waived altogether to encourage solar market development.

The survey results show that permitting fees and permitting fee structures vary throughout NYS. While each jurisdiction allocates resources differently for processing permits, more consistent fees and fee structures, especially for small-scale, standard systems, would bring more transparency to permitting costs. Maintaining a balance between low costs and compensating jurisdictions for the work performed by permit application reviewers is a critical component of reducing BOS soft costs. For many small standard residential systems, a flat fee is the most efficient fee structure, provided that the fee is set to cover costs incurred by plan examiners and other permitting staff. These systems are often very simple in design and require simple reviews. For larger systems, total project costs can vary for many reasons, and are not always an accurate indicator of the complexity of a system or the time it will take to review permit applications. Flat fees, if appropriately selected to cover costs of reviewing applications, provide a more consistent and efficient way to structure permitting costs.

Q. "How many departments does an installer have to submit separate applications to for a typical installation?"

Respondents: Local Officials
Building Department

Once permit applications have been submitted, jurisdictions typically perform one or more plan reviews to ensure that systems have been designed to code. The survey contained two questions, asked of both building department representatives and local leadership officials, to determine how jurisdictions conduct reviews of submitted applications.

Building department and local leadership responses were combined, resulting in 52 sets of jurisdictional responses. The majority, 83%, of jurisdictions responded that they require installers to submit an application to one department, 10% require applications to be submitted to two departments, and 7% of jurisdictions had inconsistent responses between departments and cannot be considered conclusive.

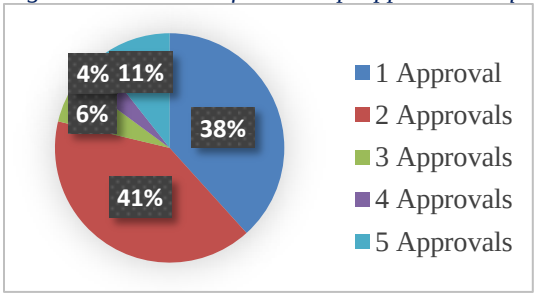
Requiring the filing of a single permit application reduces the jurisdictional resources needed for each application and reduces turnaround time for installers. After jurisdictions listed the number of departments with which installers must file separate applications, they were then asked to list the individual departmental reviews required. One data trend that was evident is that 50 of 52 jurisdictions require a review by the Building/Structural department. One jurisdiction does not require this departmental review, but does require a Planning and Zoning department review. The next most common reviews were required by Electrical Departments, followed by Zoning, Planning, Fire, and Architectural Review Boards.

Q. "What approvals require a stamp/sign-off from a PE as part of the permit package for a typical installation?"

Respondents: Local Officials
Building Department

Another element of the permitting process is the requirement of Professional Engineer (PE) stamps for submittal of drawings with PV permit applications. As is the case in the Departmental reviews section, responses from the building department and the local leadership were combined, resulting in 47 sets of jurisdictional responses. Two figures are developed to illustrate the responses from this question. Figure 18 shows the number of different approvals required by various jurisdictions. As shown, the majority of jurisdictions require one or more approvals.

Figure 18: Number of PE Stamp/Approvals Required



All of the jurisdictions require at least one PE stamp/approval, and this is most frequent for the structural portion of the application. Of the respondents, 40% require only one stamp, while a total of 60% require two or more. Figure 19 shows the frequency of the actual department/profession that is required in the various jurisdictions. Combinations of structural and electrical stamps/approvals are the most frequent, followed by a single structural stamp/approval.

The distribution of both Figure 18 and 19 across NYS can be found on Map 4. Looking at Map 4, it is clear that there is significant variation across the state and in neighboring jurisdictions. In total, there are 10 different arrangements of individual department review requirements, and when viewed on the map, NYS has a "quilt-like" appearance.

Figure 19: Frequency of Individual Department/profession stamp/approval required

Number of Jurisdictions	Individual Department Stamp/Approvals
15	Structural
1	Electrical
2	Civil
17	Structural, Electrical
1	Structural, Civil
1	Electrical, Civil
2	Structural, Electrical, Civil
1	Structural, Fire, Environmental
2	Structural, Fire, Environmental, Civil
5	Structural, Fire, Environmental, Electrical, Civil

Having fewer PE stamp requirements can reduce the time needed for the permitting process and can also reduce costs.

While large solar PV systems or ground mounted systems are typically required to have environmental, civil and/or fire protection reviews and PE sign-offs due to their complexity and diversity of design, small residential systems require fewer reviews.

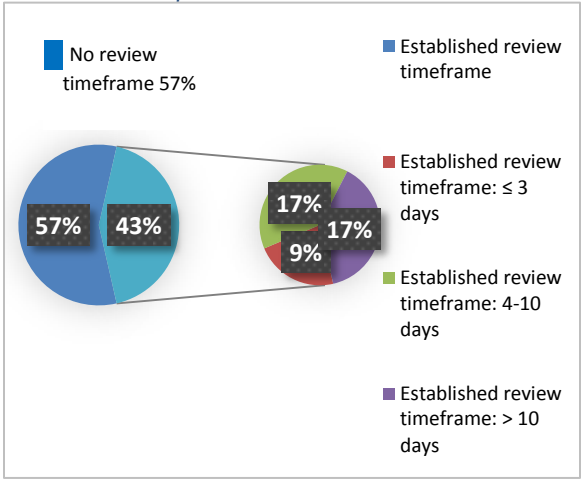
While PE stamps on site plans and electrical diagrams are required by NYS law, standard and simplified small residential solar PV systems that follow a prescribed set of guidelines, such as those outlined in the NYS Unified Solar Permit, will have minimal impacts, making PE sign-offs on permit applications redundant in most cases.

Q. "Is there a policy to issue/deny PV permits within a specified number of business days from submission of application?"

Having a policy in place for permit review timelines helps jurisdictions maintain expectations of how to manage permit applications, as well as providing a clear signal to installers about how long the local permit process will take.

Figure 20 shows that over half of jurisdictions do not have a policy in place that sets the timeframe for issuance or denial. For the jurisdictions that do, their established timeframes are also indicated.

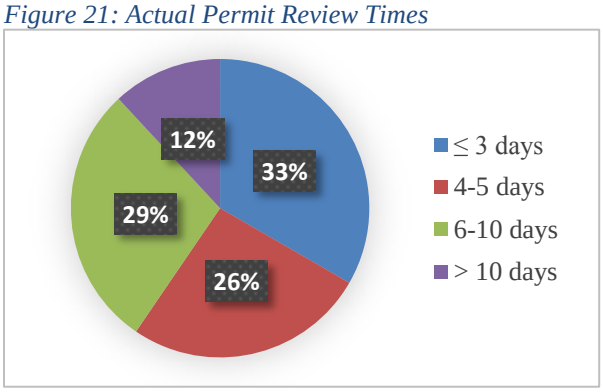
Figure 20: Jurisdictions with a review policy and established timeframes



Q. "Once a complete application is submitted, what is the average number of business days between application submission and decision (issuance or denial) regarding the permit?"

Results from the 42 responding jurisdictions are displayed in Figure 21. Most jurisdictions indicate they take fewer than ten days to review applications and issue a decision.

Figure 21: Actual Permit Review Times



Results from Figure 21 show the majority of jurisdictions do review permits in a time frame that benefits both the installer and the customer. Approximately 88% of jurisdictions achieve review times of 10 days or fewer, while only 12% have a review time of 10 or more days.

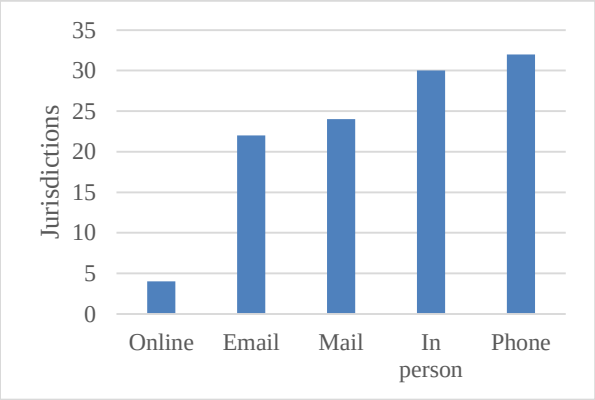
Staff resources and constraints are the most likely factor in longer permit processing times. However, as the NYS solar market grows, the number of permit applications will only increase. Adoption of permitting best practices, such as a clear, streamlined permitting process or acceptance of standard plans would improve permit application quality and reduce time needed for internal review of each project. Of the 17 jurisdictions that have the longest review times for permits, eight do not have a permitting process in place. Taking a first step towards defining a permit process would be a start towards reducing review times.

Reviewing the responses to these questions as a whole, it is interesting to note that there are some jurisdictions that do not have a policy in place for mandated review times, but do track the number of days. In addition, in these jurisdictions, average review times are all under 10 days. This indicates that while a policy for review times can be helpful, it is not always the driving factor in how quickly jurisdictions process applications.

Q. "How is information regarding the status of permit issuance or denial made available?"

Most jurisdictions offer multiple methods of communication, with online (not e-mail) being the least used. Online notification is typically only a possibility in jurisdictions with a web-enabled permit application. In these jurisdictions, installers can login to the same website used to submit an application to check on the status of the permit.

Figure 22: Issuance/denial Notification Methods



While online or e-mail may be the preferred method because most individuals have access to a computer on a constant basis, any notification method that results in an instant notification such as a phone call reduces time for a PV project. Results from this question show only two jurisdictions that do not offer instant notification. Although this can save time and money for installation crews and customers, online or email notification can be automated, reducing time and resources needed for jurisdictional staff.

Q. "How many permit applications for solar PV has your jurisdiction processed in the past year?"

The survey gathered this information to gain a sense of the size of the PV market, experience with processing PV applications, and to start to understand any correlation between transparency of permitting information and quality of applications.

Survey results show that that 22 of 36 of responding jurisdictions have processed at least one permit in the past year. These responding jurisdictions also listed the number of permits processed, as shown in Figure 23.

Figure 23: List of Jurisdictions and number of permits processed as of 3/14/2013

Jurisdictions	Number of Permits Processed
Ballston Spa	5
Chatham	4
Rensselaer	4
Sand Lake	5
DeWitt	2
Oswego	2
Victor	3 or less
Brookhaven	24
East Hampton	38
Hempstead	Unknown
Long Beach	12
Shelter Island	4
Chester	5
East Fishkill	8
Gardiner	14
Mount Kisco	2
New Paltz	15
New Rochelle	2
Newburgh	1
Amherst	18
Grand Island	3

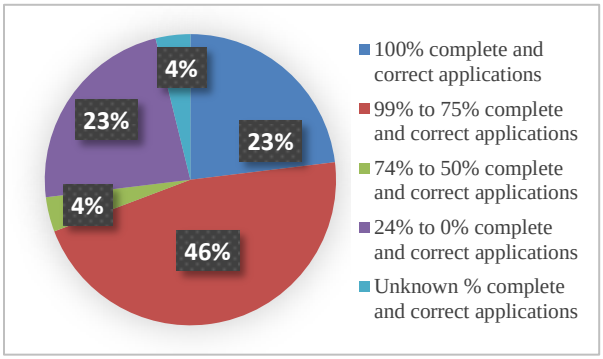
14 of 36 responded with zero permits processed. It is possible that a lack of permit tracking also contributes to these low numbers of permits processed. While it is hard to decipher any regional trends due to the greater number of Long Island and Mid-Hudson jurisdictions surveyed, results do show that Long Island has the most permits processed. One driver of this trend could be

Long Island's adoption of a standard solar permit in 2011. The Mid-Hudson region had the second highest number of permit applications, followed by Western New York and the Capital region. Not as many jurisdictions from the various regions responded to this survey question so it is difficult to draw definite conclusions from these numbers.

Q. "Approximately what percentage of solar permit applications are correct and complete when first submitted?"

This question was designed to gain an understanding of the quality of the permit applications received by jurisdictions and only includes the results for jurisdictions that had processed at least one permit to date.

Figure 24: Quality of Permits Received by Responding Jurisdictions



While a majority of jurisdictions receive over three-quarters of applications in a complete and accurate manner, there is still opportunity to improve the quality of permit applications. As the solar market grows, multiple reviews will lead to more resource commitments as permit applications are re-submitted, increasing time and cost for both jurisdictions and installers. While this could be attributed to many causes, including installer inexperience, one area for improvement could be improving the clarity, transparency, and consistency of permitting requirements across multiple jurisdictions.

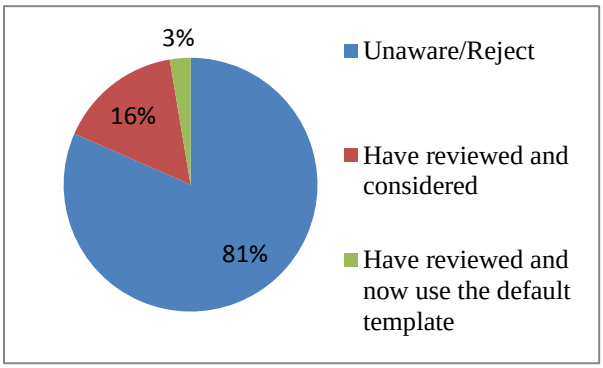
Under the NY-Sun Initiative, a streamlined permit process for small-scale solar PV systems was released in July 2013. The New York State Unified Solar Permit form can be adopted by jurisdictions across the state in an effort to increase the clarity and transparency of the permitting process statewide. Adoption of this form offers benefits to multiple parties: this form will eliminate unnecessarily complex and inconsistent permitting practices, increase consistency and transparency in permitting across New York State, lower installed costs by eliminating redundancy in plans and diagrams, demonstrate that a community is open for solar business, and save limited municipality staff resources by utilizing a form that provides all information needed to assess solar installations. Adoption of the NYS Unified Solar Permit will help reduce the balance of system soft costs around the state and will allow for further solar market development

Q. "To what degree do you use the Solar ABCs expedited permitting process template for typical installations?"

Reducing the BOS costs for small solar PV installations is a nationally recognized effort. The Solar American Board of Code and Standards (Solar ABCs), funded by the United States Department of Energy developed a list of best practices and recommendations for jurisdictions to identity barriers to solar PV and then update ordinances in an effort to reduce the BOS costs. Suggestions included using a standard permitting template, establishing permit review times, and many more.

Overall it was found that 81% of jurisdictions are unaware or reject the Solar ABCs. 16% indicated that they have reviewed and considered it and only one surveyed jurisdiction uses the default template.

Figure 25: Jurisdictional Awareness of Solar ABCs



Responses to the question show that the vast majority of NYS likely has limited knowledge of solar-friendly policies and processes. If the jurisdictions do have knowledge of the Solar ABCs, but rejected them, then that is an indication that jurisdictions are not aware of the benefits of adopting such best practices and policies for local economies.

It is worth noting is that five of the seven jurisdictions that reviewed and considered the Solar ABCs are located on Long Island and Mid-Hudson region, while the other two are located in the Capital Region.

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Solar Liberty

SOLAR PLANNING & ZONING KEY FINDINGS

Inconsistent and Unclear Zoning Requirements

Zoning boards in NYS are designed to regulate the use of land within local jurisdictions. This is an important aspect of local government that maintains community standards and aids in economic growth.

Survey results indicate that many zoning regulations in NYS jurisdictions are restrictive to solar installations, causing multiple barriers and difficulties for installers. These difficulties are caused by additional reviews such as: zoning variances, planning board, architectural or homeowner association reviews. These reviews are often in addition to building code reviews. For example, 42% of responding jurisdictions require a zoning review while also requiring building code reviews.

Further, survey results indicate that there is significant variation among jurisdictional zoning codes, even between neighboring jurisdictions, throughout the state. *A comprehensive review of zoning and planning best practices, development of model zoning ordinances, and support for jurisdictional adoption would help to remove these barriers. Educating decision makers on the value of solar in a community, as well as on standard solar installations, may ease the adoption of solar friendly zoning ordinances.*

Solar Not Addressed in Many Zoning Codes and Comprehensive Plans

Local comprehensive plans set the long-term vision for communities by outlining priorities and identifying policy measures to achieve community goals. Comprehensive plans that include solar are important to local economic development as they recognize the value of a community's solar resources and encourage policies that allow for the utilization of these resources.

The survey results demonstrate that there is a significant opportunity across the state to proactively enable market development through comprehensive planning and then enacting ordinances to incorporating policies specified in comprehensive plans. Typically, comprehensive plans can enable the creation of solar access and rights laws, recommend the creation of solar-friendly zoning policies, and create guidelines for new developments and construction projects such as east-west street and building orientation or solar-ready construction requirements. Comprehensive plans may also identify solar empowerment zones, or areas with the best solar resources, where solar development can be prioritized for maximum community and grid benefits.

Only 17% of participating municipalities that have a comprehensive plan indicated that solar is included. *Integrating solar and other renewable technologies when updating comprehensive plans can ease the way for future adoption of solar-friendly zoning codes while maintaining overall community zoning guidelines. Additionally, municipalities can recognize local solar resources and include policies that will help build a local solar market when updating subarea, functional or comprehensive plans.*

Key Recommendations

- ✓ Review Best Practices
- ✓ Educate Decision Makers on the Many Values of Solar
- ✓ Update Comprehensive Plans to Include Solar

Solar Planning & Zoning Responses

Planning and zoning regulations, while not always explicitly intended to address solar systems, often present barriers or additional review requirements for solar PV installations. The zoning questions were designed to gain an understanding of the range and type of planning and zoning regulations that can impact solar in NYS.

Q. "Is there a local law that protects property owner rights to install solar systems on their property?"

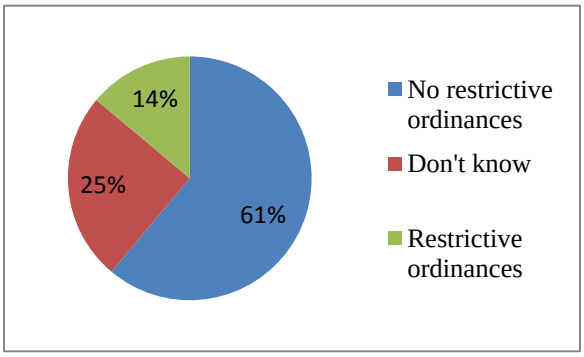
In New York State, the NYS General City, Town, and Village codes allow local zoning districts to create regulations regarding solar access that provide for installation of solar systems and access to sunlight, commonly referred to as solar rights or solar laws. Residents who want to install small solar PV arrays in zoning districts that do not have solar laws implemented are forced to seek special reviews for their systems, where those with solar laws can follow a less timely and costly process.

The survey showed that 71% of responding jurisdictions do not have a local law that protects owner rights to install solar systems on their property. Of the 11 jurisdictions that do have a solar access law, two jurisdictions indicated that they still require a zoning review. While zoning regulations are intended to facilitate the development of a local jurisdiction, zoning reviews, which are typically required when a new or abnormal project is proposed in certain areas, extend the time of the solar installation process, as solar PV installations may be considered new or abnormal. The survey found that zoning reviews for small solar PV systems impact solar installations in nearly half of responding jurisdictions: 42% of jurisdictions require solar installations to be reviewed by the zoning department. Survey results also indicate wide variation in zoning requirements and designations, and the existence of restrictive special review requirements by zoning departments. With most small residential PV systems being of a simple and aesthetically similar design, many of the zoning reviews and restrictions could be reconsidered to reduce installation timelines.

Q. "Are there any restrictive zoning ordinances related to solar?"

Over half of respondents indicated that they do not have restrictive ordinances related to solar and 25% percent indicated they do not know. These results are shown in Figure 26.

Figure 26: % of Jurisdictions with Restrictive Zoning Ordinances



Those that do have a restrictive ordinance were asked to list the specific ordinance; the five responding ordinances are shown in Figure 27.

Figure 27: Examples of restrictive zoning ordinances

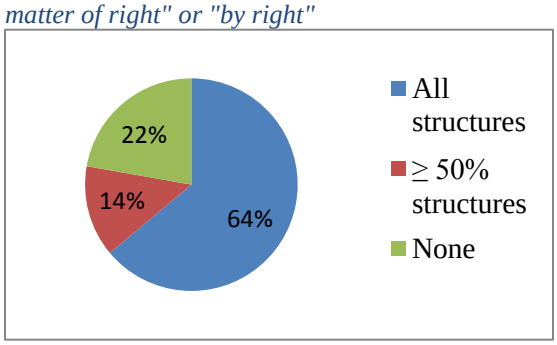
Restrictive Zoning Ordinances from Various Jurisdictions
Setbacks from property lines
Height above roofline
Building permit required for roof mounted devices, variance for ground mounted
Need to obtain a site plan approval from the Planning Board
Height above roofline

Of the responses in Figure 27, only three are relevant to rooftop installations, and one of the three is a building code requirement. The other two apply to ground mounted solar installations. A common zoning objection to roof-mounted solar systems is the height of the system above the roof. In order to address this, local governments could specify a maximum acceptable height above the roof and exempt systems that are installed below the maximum height from zoning review or needing to apply for a zoning variance. This measure would limit time that a zoning board needs to spend on solar installations and would also reduce the overall installation time.

Q. "Approximately what percent of structures in your jurisdiction are zoned to allow rooftop solar facilities automatically 'as a matter of right' or 'by right'?"

Two separate questions asked about zoning for rooftop solar installations: the first question asked if rooftop solar installations were allowed automatically, and the second asked if installations were allowed only after a public hearing and the issuance of a special permit

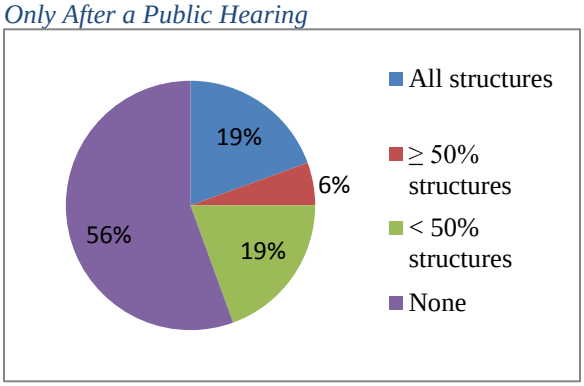
Figure 28: Percentage of Structures Allowed By Zoning to Install rooftop PV Automatically "as a matter of right" or "by right"



Q. "**Approximately what percent of structures in your jurisdiction are zoned to allow rooftop solar facilities only after a public hearing and the issuance of a special or conditional use permit?"**

There were some inconsistencies in the answers to these questions which are shown in Figure 30.

Figure 29: Structures Zoned to Allow Rooftop PV Only After a Public Hearing

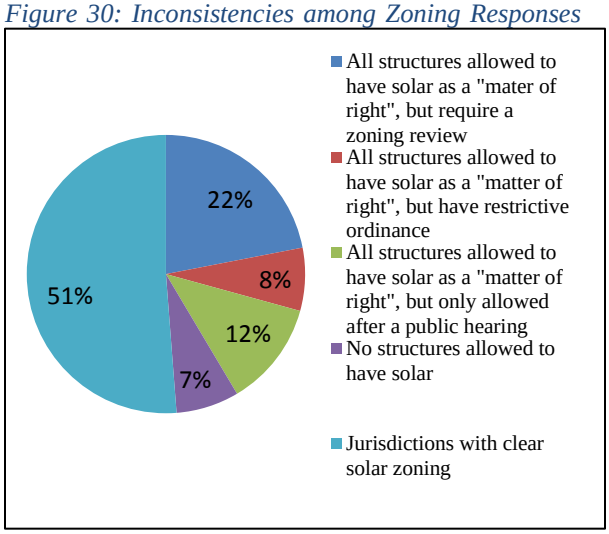


Logically, if solar installations are allowed "as a matter of right" or "by right", a public hearing and special permit would not be necessary.

However, some survey respondents provided contradictory responses. By comparing Figure 28 and Figure 29, one can see inconsistent and contradictory responses.

While 64% of jurisdictions have all structures zoned to allow rooftop solar installations (Figure 28), 22% of these jurisdictions indicated that they still require a public hearing and a special use permit (Figure 29). This would not be required in a true "by right" situation. The jurisdictions that require a zoning review are depicted in Map 5 in Appendix 3.

Figure 30: Inconsistencies among Zoning Responses



It remains unclear whether the answering officials did not understand the questions, or if there are in fact contradicting zoning designations.

In either case, contradictory messages about zoning ordinances related to solar present a barrier to solar PV installations. A more in-depth review of local zoning designations by each jurisdiction would help to remove inconsistencies and lay out a path towards reducing obstacles.

As many jurisdictions do not automatically allow rooftop solar PV installations and may have contradictory zoning ordinances, there is a large opportunity for improvements to be made across the state with regards to solar zoning. Jurisdiction officials may not be fully educated regarding solar technology or the benefits of a growing solar market. In addition, they may be unaware of how solar installations are affected by zoning designations and ordinances.

Proper education and awareness of solar PV installations and BOS best practices, followed by a review of current zoning ordinances could prove very beneficial to the solar PV industry and local economies by opening up areas that have been previously restricted from rooftop solar PV installations.

In addition to or instead of zoning board review, certain jurisdictions require an architectural review board to ensure structures maintain a certain aesthetic quality. In some jurisdictions, this review is only required in historic districts. Ten jurisdictions responding to the survey require this review. A similar review by a historical review board was only required by one jurisdiction.

While these reviews may be important to maintain the visual and historical value of many buildings, they can also delay the installation process.

An option for municipalities to consider implementing is the use of standard designs and guidelines placed on system location and visibility from public right-of-ways.

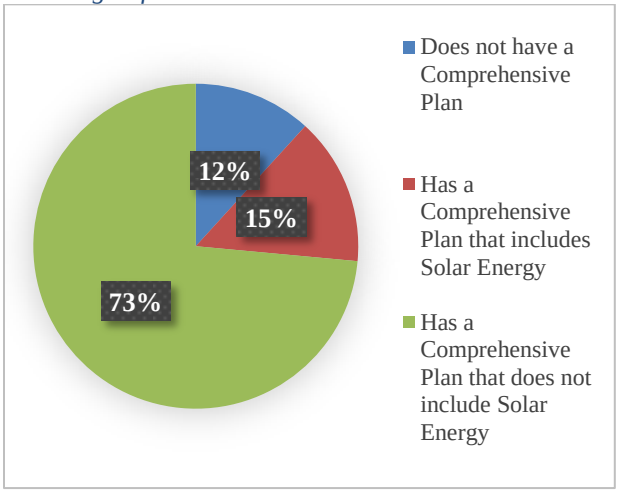
Q. "Does your municipality have a comprehensive plan?" If yes, does your comprehensive plan address planning for solar energy systems?

Comprehensive planning guides the long-term development of a community by acting as a blueprint from which zoning and other land use laws are based.

By adding solar specific clauses or plans to a comprehensive plan, the framework for solar market development and incorporation of solar considerations into long-term planning can be established.

Figure 31 describes the variety of answers received from the two comprehensive planning questions. The survey found that a total of 88% of jurisdictions have a comprehensive plan. However, of those jurisdictions, only 15% of the 88% address solar PV installations within the plan.

Figure 31: Percentage of Comprehensive Plans Including References to Solar



Of the 15% that do address solar PV installations within their plan, only one jurisdiction has updated zoning regulations to implement the solar provisions laid out in the comprehensive plan.

altPOWER

SOLAR INSPECTIONS KEY FINDINGS

Multiple & Redundant Inspections

Inspections are an important step in the solar PV installation process as they ensure that systems are installed safely and comply with existing building and electrical codes. Inspections are typically required by municipalities and utilities. An additional third-party inspection may be required in certain instances to receive a state financial incentive.

Responding jurisdictions indicated a wide range of inspection requirements for solar PV, with almost half of those responding requiring three or more inspections for solar. Multiple and/or redundant inspections increase time and cost commitments for both installers and municipalities. *Improved training for inspectors, use of standardized inspection checklists, and consistent inspection requirements across the state would reduce inconsistency and cost. As part of the implementation of the New York State Unified Solar Permit form, it is recommended that jurisdictions limit inspections to a single, comprehensive inspection. Whenever feasible, providing installers with a specific time for the inspection, or a narrow window (2 hours or less) for the inspection will reduce installer time and costs. Municipalities will also enjoy cost savings from a single, comprehensive inspection.*

Lack of Coordination between Utility and Municipal Inspections

During the permitting and interconnection process, inspections are conducted by municipal and utility staff. Similar system components are inspected by both parties, creating the possibility of some cost and time savings if these inspections are coordinated.

100% of municipalities responded that they do not coordinate with the utility on permitting and interconnection inspections. *Communications regarding timing and coverage of inspections could reduce wait times and actual time needed for installers to be on site. In certain areas, it may be possible for a single, comprehensive inspection to be used for both permitting and interconnection approvals. In areas where this is not possible, coordinating inspection times will reduce the amount of time that an installer must be on-site.*

Key Recommendations

- ✓ Improve Training for Inspectors
- ✓ Remove Unnecessary
- ✓ Narrow Inspection Windows
- ✓ Coordinate With Utilities

Solar City

Energy By Choice

SOLAR INSPECTION RESPONSES

The inspection process is typically the final stage of the solar installation process. When a system has been built, municipalities and utilities will inspect the PV system to ensure safety and adherence to submitted plans and local and national codes. The survey asked both jurisdictions and utilities about inspection procedures; the responses indicate that there are opportunities across NYS to make the inspection process faster, less expensive, and more efficient and practical.

Q. "How many separate inspection trips are required for a typical installation?"

Many jurisdictions require multiple inspection trips for a single installation, which adds to the time and cost of installing a system.

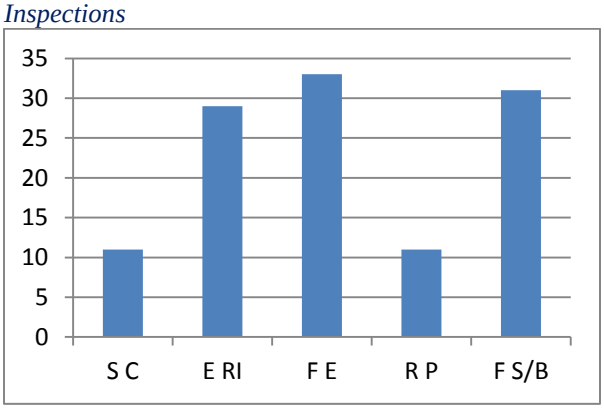
Figure 32: Combinations of different inspections required by various jurisdictions

Number of Jurisdictions	Combination of Individual Inspections Required
5	Single Comprehensive
1	Final Structural/Building
3	Electrical Rough-in, Final Electrical
4	Final Structural/Building, Final Electrical
1	Final Structural/Building, Roof Penetrations
12	Final Structural/Building, Final Electrical, Electrical Rough-in
1	Single Comprehensive, Final Electrical, Electrical Rough-in
3	Single Comprehensive, Final Structural/Building, Final Electrical, Electrical Rough-in
8	Final Structural/Building, Final Electrical, Electrical Rough-in, Roof Penetrations
2	Single Comprehensive, Final Structural/Building, Final Electrical, Electrical Rough-in, Roof Penetrations

Figure 33 shows the total amount of times a certain type of inspection is required among the 40 responding jurisdictions.

A solar PV BOS best practice for inspections is a single comprehensive inspection. This form of inspection covers all aspects of solar PV systems, and requires only one inspection coordination between jurisdictions and installers. As shown in Figure 32, eleven jurisdictions indicated that they require a single comprehensive inspection. Further examination however shows that six of those eleven require other forms of separate inspections, which is contradictory to a true single comprehensive inspection. These contradictory responses are either evident of a lack of understanding of current requirements, or a contradicting policy. If either is true within the answering jurisdictions, then an opportunity exists for improvement of inspection policy, clarification of inspection requirements, or both.

Figure 33: Frequency of Different Types of Inspections



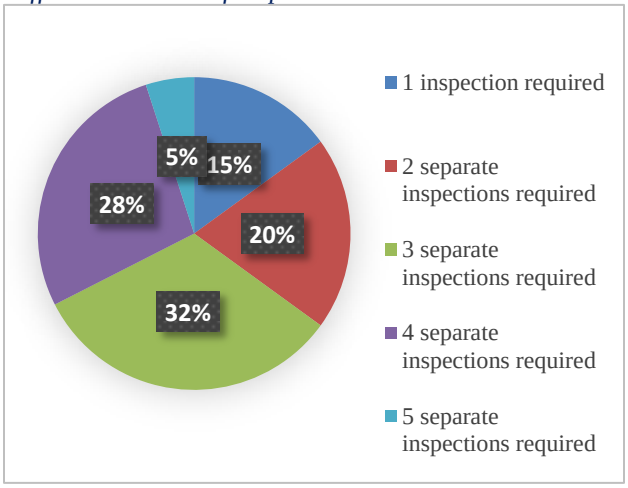
**S C = Single Comprehensive, E RI = Electrical Rough-in, F E = Final Electrical, R P = Roof Penetrations, F S/B = Final Structural Inspection

Examining results from Figure 33, the inspection most frequently required is a final electrical inspection, followed closely by a final building/structural inspection, and then an electrical rough-in inspection. The roof

penetration section inspection is an inspection that occurs prior to the solar modules being installed to ensure proper structural integration. Typical small PV solar installation mounting systems can be examined with relative ease after the modules have been fixed to the surface, which presents an opportunity to combine the roof penetration inspections with a final structural inspection, or a single comprehensive inspection.

Figure 34 below is a combination of Figure 32 and 33, illustrating the approximate percentages of jurisdictions that require different numbers of separate inspections.

Figure 34: Percentage of Jurisdictions Requiring Different Numbers of Inspections.

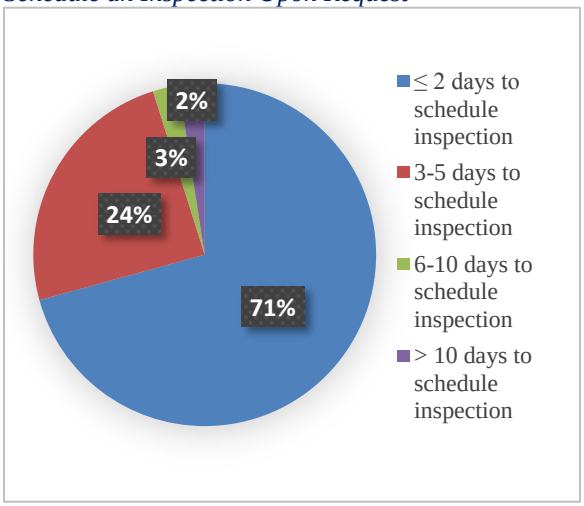


The fact that only 15% of surveyed jurisdictions require one inspection indicates a key area of opportunity for streamlining inspection standards and requirements in NYS. Offering training to inspectors about all components of solar system may allow jurisdictions to conduct a single comprehensive inspection, as opposed to two, or even three, four and five in some cases. Ensuring that installed systems are built to plans and follow all codes is an important safety consideration, but inspections can be combined in order toreduce cost and time investments by both installers and municipalities.

Q. "What is the average number of business days from inspection request to actual inspection?"

This question was designed to understand the typical timeframe for the inspection process across NYS. A majority of jurisdictions selected the shortest time range offered by the survey.

Figure 35: Average Time for Jurisdictions to Schedule an Inspection Upon Request

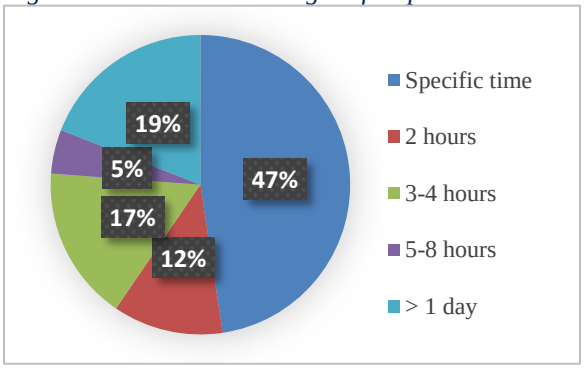


Of the jurisdictions surveyed, the longest time between inspection request and actual inspection was found in Long Island and the Mid-Hudson Region, with the rest of the state typically taking less time between request and inspection.

Q. "What is the typical window of time given to the installer for final onsite inspection?"

Many times installers are left with down time as they wait for an inspection, so the shorter the time range, the lower the cost incurred by the installer and passed along to the customer.

Figure 36: Time Frame Ranges of Inspections

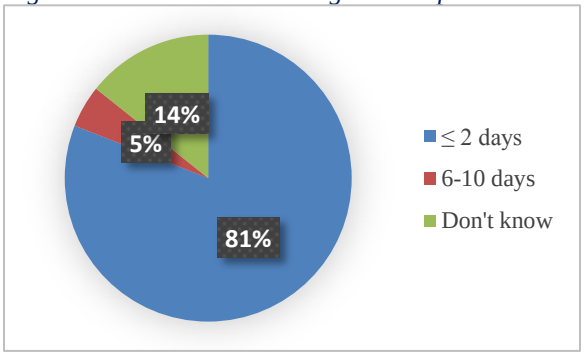


The option that leaves installers with the least amount of waiting time is to set a specific time for the inspector and installer to meet, but as shown in Figure 36, less than half of the jurisdictions use this method. Understandably, this may not always be possible in rural areas where an inspector may have to travel long distances between inspections; in these cases setting a two hour window may be more appropriate to allow for delays and travel. 41% of jurisdictions offer time frames greater than two hours, which adds more uncertainty, time and cost to inspections.

Q. "How long after an inspection is a pass/fail issued?"

Once the inspection is completed, the jurisdiction will notify the installer and the resident if the inspection has passed or failed.

Figure 37: Pass/Fail time Ranges to Respond

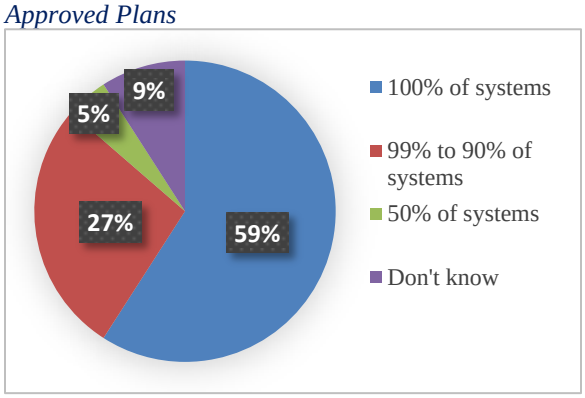


Short response times allow installers to either move forward quickly with system connection or remedy an issue if necessary.

Q. "What percentage of solar systems are installed per their approved plans?"

Only the 22 jurisdictions that indicated they have processed permit applications in the past year were used for this analysis. Of those who did respond, a vast majority indicated that over 90% of systems are installed according to plans, as shown in Figure 38.

Figure 38: % of Solar Systems Installed Per Approved Plans



While inspections are important to ensure proper installation and safety, results from this question show that in surveyed jurisdictions, most PV systems are installed as designed. There could be an opportunity for jurisdictions to explore ways to reduce inspection requirements, perhaps by system size, or installer experience.

At a minimum, implementation of a single comprehensive inspection would go a long way towards reducing time and cost of installations. For policymakers, providing additional resources for jurisdictional staff training would support this initiative.

Q. "Do the utility and local jurisdiction coordinate regarding inspection requirements and on-site inspection times for the permit inspection and interconnection inspection?"

Although separate from jurisdictional requirements, utility inspection for interconnection is a related step in the installation process. Prior to allowing a system to connect to the grid, a utility company must approve the electrical connections of a PV system, or an installer must self-certify the installation. Even though this is a separate component, municipalities and utility companies could schedule inspections at the same time, or allow for a single, comprehensive inspection to speed up this process and reduce installation costs.

However, the survey results indicate that there is minimal coordination between utilities and jurisdictions on inspections currently. Of the 36 jurisdictions that responded to the question regarding notification to the local utility of final permit approval, 8% of jurisdiction responded that they do coordinate, and 86% indicated they do not.

A follow-up question asked if the local utility and the local jurisdiction coordinate regarding inspection requirements and on-site inspection times. All 38 jurisdictions that responded to question indicated that they do not coordinate.

Five jurisdictions notify utilities that an inspection has passed, however there is still a significant gap in coordination on inspection requirements and inspection times. Significant time could be saved for the solar system owners if the two entities coordinated.

Solar Energy Systems

SOLAR FINANCING KEY FINDINGS

Solar Financing Programs Rare

One of the major barriers to widespread adoption of solar photovoltaics is the upfront cost of solar installations. Currently, third-party PPAs and leases are the only financing mechanism widely available across the state. New York State has specifically exempted alternative energy production from regulation as an electric corporation, when the electricity is "distributed solely from one or more such facilities to users located at or near a project site" (NY CLS Public Service §2.13). This regulation, along with strong financial incentives, opened up the New York State market for third-party solar power purchase agreements (PPAs) starting in 2011. Third-party solar PPAs and leases remove the upfront cost barrier by spreading the cost of a solar system over time. As such, PPAs and leases contribute to the growth of solar markets by reducing the need for traditional financing mechanisms. However, these ownership structures rely on the availability of incentives, so other financing mechanisms are also important for a stable solar market.

Other financing mechanisms available but not widely utilized in NYS include competitive loan or financing programs, Property Assessed Clean Energy (PACE) financing, community solar programs enabled by virtual or remote net metering, group purchasing programs, and interest rate buy-downs. In the NYSolar Smart Survey, only two jurisdictions responded with information on financing programs for solar in their communities. This demonstrates a gap in options for homeowners and businesses seeking financing for solar projects. Financing and customer acquisition costs make up nearly half of balance of system soft costs. The survey illustrates that solar financing options, and innovative programs that reduce customer acquisition costs, are virtually absent at the local level across New York State. *By increasing the availability of financing options, jurisdictions can remove a significant cost barrier for solar installations. Educating jurisdictional leaders on available mechanisms as well as convening conversations between entities active in solar financing, lenders, and the NYS Green Bank can generate new ideas for loan instruments or other tools.*

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Key Recommendations

- ✓ Educate Leaders
- ✓ Convene Conversations with Lenders
- ✓ Explore New Loan Instruments

SOLAR FINANCING RESPONSES

One of the major barriers to widespread adoption of solar PV is the upfront cost of solar installations. NYS has specifically exempted alternative energy production from regulation as an electric corporation, when the electricity is "distributed solely from one or more such facilities to users located at or near a project site" (NY CLS Public Service §2.13). This regulation, along with strong financial incentives, opened up the New York State market for third-party solar power purchase agreements (PPAs) starting in 2011.

Third-party solar PPAs and leases remove the upfront cost barrier by spreading the cost of a solar system over time. As such, PPAs and leases contribute to the growth of solar markets by reducing the need for traditional financing mechanisms. Currently, third-party PPAs and leases are the only financing mechanism widely available across the state. These ownership structures rely on the availability of incentives, so other financing mechanisms are also important for a stable solar market.

Other financing mechanisms include competitive loan or financing programs, Property Assessed Clean Energy (PACE) financing, community solar programs enabled by virtual or remote net metering, group purchasing programs, and interest rate buy-downs. In the survey, only two jurisdictions responded with information on financing programs for solar in their communities. This demonstrates a gap in options for homeowners and businesses seeking financing for solar projects.

Financing and customer acquisition costs make up nearly half of balance of system soft costs. The NYSolar Smart Survey illustrates that solar financing options and innovative programs that reduce customer acquisition costs are virtually absent at the local level across NYS. By increasing the availability of financing options, jurisdictions can remove a significant cost barrier for solar installations. Moreover, the recently-formed NYS Green Bank is exploring mechanisms to assist with solar financing. It will be important for the Green Bank and others active in solar financing to hold conversations with lenders to educate them on solar financing and generate new ideas for loan instruments or other tools.

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UTILITY INTERCONNECTION RESPONSES

The vast majority of solar PV systems in New York are connected to the grid, making the utility interconnection process a critical step in PV system installation. Utilities subject to New York State Public Service Commission regulation must follow the Standard Interconnection Requirements (SIR). The SIR lays out review timelines, costs, and methods of information availability, among other things.

All investor-owned utilities are subject to statewide net metering and interconnection standards, and the largest municipal utility – the Long Island Power Authority – has adopted standards that closely follow statewide standards. Sustainable CUNY received responses from all investor-owned utilities and one municipal utility to the net metering and interconnection portions of the NYSolar Smart Survey. Responses to the net metering portion of the survey were consistent with the statewide standard. The responses to survey questions related to interconnection were fairly consistent, as utilities must meet certain review timelines. Nonetheless, there was some variation in utility processes related to application status, decision timeline, and scheduling of inspections.

Q. "What mechanism, if any, is available for a contractor/homeowner to check the status of an application?"

Three questions highlighted important aspects of the interconnection process where utilities can exercise discretion, and where variation between utilities can exist. The SIR requires utilities to offer a web-based system to provide status updates on interconnection applications to contractors and customers.

Utility responses to this question reflected compliance with this requirement; all utilities responded that they provide application status online. In addition, 80% of respondents provide application status updates via email; 60% of respondents provide status updates in person or by mail; and 20% of respondents provide status updates over the phone. Providing application status online not only conforms to state requirements, but also represents best practices in information availability. This provides installers a way to track the interconnection application so that they can accurately convey information about the status of the application to the customer.

Q. "What is the average number of business days between application submission and utility decision (approval/denial) for installation to proceed?"

Review timelines are specified in the SIR and are supposed to be 10 days or less for small-scale, inverter based systems that are 25 kW or less. Review timelines vary for larger and more complex systems. As such, survey responses indicated variation in average review timelines by utility. The time between application submission and utility decision is represented in Figure 39.

Figure 39: Average number of business days for interconnection review and decision

Utility	Residential	Commercial
LIPA	> 10 days	> 30 days
NYSEG/ Rochester Gas & Electric	6-10 days	11-30 days
National Grid	> 10 days	11-30 days
Con Edison/Orange & Rockland	4-5 days	11-30 days
Central Hudson	≤ 3 days	≤ 5 days

In some cases, the timeframe for review and decision is shorter than what is required by the SIR; in other cases, the mandated timeframe for review is exceeded. By reviewing and providing a decision for interconnection in a timely fashion that meets or beats the timeframe in the SIR, utilities can provide clarity and transparency in the interconnection process.

Q. "What is the typical window of time given to the installer for final on-site inspection?"

In many cases, the utility distributed generation contact was unsure of the answer to this question, so the answer had to be verified with solar installers. In the service territory of NYSEG/Rochester Gas & Electric, National Grid, and Con Edison/Orange & Rockland, the inspection is waived for residential installations, and installers can self-certify an installation. The interconnection inspection time window provided by all utilities is in Figure 40.

Figure 40: Interconnection inspection time window

Utility	Residential	Commercial
LIPA	2 hours	2 hours
NYSEG/ Rochester Gas & Electric	No inspection	Specific time
National Grid	No inspection	3-8 hours
Con Edison/Orange & Rockland	No inspection	Specific time
Central Hudson	Specific time	Specific time

As with municipal inspections, the inspection time window that is the least costly and time-consuming for PV systems is providing a specific time for an inspection. While this is not possible in all cases, when used, it can minimize the time an installer has to spend on-site waiting for a utility inspector and reduce the overall installed cost.

Q. "Is there a process in place to notify the utility when a project is granted final permit approval?"

Although separate from jurisdictional requirements, utility inspection for interconnection is a related step in the installation process. Prior to allowing a system to connect to the grid, a utility company must approve the electrical connections of a PV system, or an installer must self-certify the installation. Even though this is a separate component, municipalities and utility companies could schedule inspections at the same time, or allow for a single, comprehensive inspection to speed up this process and reduce installation costs.

However, as described in the permitting section of this report, the survey results indicate that there is no coordination between utilities and jurisdictions on inspections currently. Of the 36 jurisdictions that responded to the question regarding notification to the local utility of final permit approval, 8% responded that they do coordinate, and 86% indicated they do not.

Q. "Do the utility and local jurisdiction coordinate regarding inspection requirements and on-site inspection times for the permit inspection and interconnection inspection?"

Of the 39 jurisdictions that responded to the question, 38 indicated that they do not, and one did not respond to the question.

Although five jurisdictions notify utilities that an inspection has passed, there is still a significant gap in coordination on inspection requirements and inspection times. Significant time could be saved for the solar installers if the two entities coordinated.

CONCLUSIONS

The NYSolar Smart Survey collected data on permitting, interconnection and net metering, planning and zoning, and financing options. The survey had an individual response rate of 44% and a collective jurisdiction response rate of 65%. The survey identified substantial areas for improvement in financing options, as well as planning and zoning. In addition to implementing policy improvements, education and outreach related to solar technology and policy best practices would likely benefit local staff. The survey identified significant variation in local policies, processes, and interest in solar. The NYSolar Smart Survey gathered information regarding solar-specific permit applications, the clarity and transparency of processes, the use of expedited reviews, the availability of permitting information, dedicated staff resources, methods to obtain and submit applications, permitting timelines and costs, inspection timelines, zoning requirements and designations, financing options, and utility and jurisdiction coordination.

To address some of the issues identified by the survey, jurisdictions could be provided with education in order to raise awareness about solar. In particular, building code officials could benefit by learning about the benefits of standardized solar PV installations and streamlined permitting. This education and outreach could lead to improved overall understanding and adoption of best practices. Other ways that jurisdictions can reduce barriers associated with permitting are by creating a single webpage with clear and organized solar permitting information, and adopting and implementing the NYS Unified Solar Permit or the Long Island Unified Solar Permit.

A comprehensive review of zoning and planning best practices, development of model zoning ordinances, and support for jurisdictional adoption of model zoning ordinances would help to remove barriers associated with zoning. Educating decision-makers on the value of solar in a community, as well as on standard solar installations, would ease the adoption of solar friendly zoning ordinances. Integrating solar and other renewable technologies when updating comprehensive plans could ease the way for future adoption of solar-friendly zoning codes while maintaining overall community zoning guidelines. Additionally, municipalities could recognize local solar resources and include policies that would help build a local solar market when updating subarea, functional or comprehensive plans.

Currently, many jurisdictions require multiple, often redundant, inspections. Improved training for inspectors, use of standardized inspection checklists, and consistent inspection requirements across the state would reduce inconsistency and cost. As part of the implementation of the New York State Unified Solar Permit Initiative, it is recommended that jurisdictions limit inspections to a single, comprehensive inspection. Whenever feasible, providing installers with a specific time for the inspection, or a narrow window (2 hours or less) for the inspection would reduce installer time and costs. Municipalities would also enjoy cost savings from a single, comprehensive inspection. Communications regarding timing and coverage of inspections could reduce wait times and actual time needed for installers to be on site. In certain areas, it may be possible for a single, comprehensive inspection to be used for both permitting and

interconnection approvals. In areas where this is not possible, coordinating inspection times would reduce the amount of time that an installer must be on-site.

One of the most significant gaps in solar policy was identified by the financing options section of the NYSolar Smart Survey. Financing options, aside from those offered by installers, are virtually absent across the state. There are only a handful of communities that have offered group purchasing programs in the past, although quite a few communities are now considering these programs. By increasing the availability of financing options, jurisdictions can remove a significant cost barrier for solar installations. Educating jurisdictional leaders on available mechanisms as well as convening conversations between entities active in solar financing, lending institutions and the New York State Green Bank can generate new ideas for loan instruments or other tools.

Finally, opportunities exist for coordination between municipalities, utilities, and NYSERDA on permitting, interconnection, and incentive applications. The New York Unified Solar Permit represents a first step in streamlining these requirements and reducing balance of system soft costs. By allowing the same plans and diagrams to be used for all three, installers can save time and money on plans and diagrams; these cost savings are passed along to the end-user. As solar continues to grow exponentially across New York State, the value of implementing clear and transparent policies for solar becomes more evident. The NYSolar Smart Survey has established a baseline for local solar policy statewide, identifying numerous opportunities for policy improvements in the near- and long-term to facilitate strong and sustainable solar market growth.

Monolith Solar

ACKNOWLEDGEMENTS

The survey and report were supported by the New York State Energy Research & Development Agency (NYSERDA) and the New York Power Authority (NYPA) under the NY-Sun Initiative.

CUNY would like to thank the following individuals whose time and effort were integral to the completion of this report and the work that preceded it:

Tria Case, University Director of Sustainability, CUNY
Laurie Reilly, Sustainable CUNY Communications, CUNY
Alison Kling, NYC Solar Coordinator, CUNY
Amy Heinemann, NYS Solar Ombudsman, CUNY
Nick Pasco, NYS Solar Ombudsman, CUNY
Micheline Blum, Director, Baruch College Survey Research
Senem Acet-Coskum, Research Associate/Data Manager, Baruch College Survey Research
Jacqueline Fortin, Business Manager, Baruch College Survey Research

The City University of New York would also like to recognize all of the municipalities and organizations who contributed to the successful completion of this survey. In particular, the NYSolar Smart Core Team provided valuable feedback on the survey questions and methodology. The NYSolar Smart Core Team is composed of: NYSERDA, NYPA, Con Edison, Central Hudson Gas & Electric, Long Island Power Authority, NYSEG, National Grid, Rochester Gas & Electric, Orange & Rockland Utilities, Empire State Development, Natural Resources Defense Council, New York Conference of Mayors and Municipal Officials, Association of Towns of the State of New York, The Solar Energy Consortium, Vote Solar Initiative, The Business Council of New York State, Mercury Solar, the State University of New York, and the NYC Mayor's Office of Long-term Planning & Sustainability.

Cover and Report Photos:
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AltPower, pg 27
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Energy by Choice, pg 29
Hudson Solar, pg 14
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Monolith Solar, pg 38
OnForce Solar, pg 39
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Solar Liberty, pg 22
SUNation, pg 41

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APPENDIX 1: Jurisdictions Surveyed

1. Albany, City
2. Altamont, Village
3. Amherst, Town
4. Amsterdam, City
5. Babylon, Town
6. Ballston, Town
7. Bedford, Town
8. Binghamton, City
9. Briarcliff Manor, Village
10. Brookhaven, Town
11. Buffalo, City
12. Canandaigua, City
13. Castleton on Hudson, Village
14. Chatham, Town
15. Cheektowaga, Town
16. Chester, Town
17. Clayton, Town
18. Clifton Park, Town
19. Cohoes, City
20. Colonie, Town
21. Croton on Hudson, Village
22. DeWitt, Town
23. East Fishkill, Town
24. East Hampton, Town
25. Fulton, City
26. Gardiner, Town
27. Ghent, Town
28. Goshen, Town
29. Grand Island, Town
30. Greenwich, Town
31. Hamburg, Town
32. Hempstead, Town
33. Hudson, City
34. Huntington, Town
35. Hyde Park, Town
36. Islip, Town
37. Ithaca, City
38. Kingston, City
39. Lancaster, Town
40. Lockport, City
41. Long Beach, City
42. Mamaroneck, Town
43. Mechanicville, City
44. Millerton, Village
45. Mount Kisco, Town
46. Mount Vernon, City
47. New Paltz, Town
48. New Rochelle, City
49. New Windsor, Town
50. Newburgh, City
51. Niagara Falls, City
52. North Tonawanda, City
53. Orchard Park, Town
54. Ossining, Town
55. Oswego, City
56. Pleasant Valley, Town
57. Pleasantville, Village
58. Port Chester, Village
59. Poughkeepsie, City
60. Red Hook, Town
61. Rensselaer, City
62. Rhinebeck, Town
63. Riverhead, Town
64. Rochester, City
65. Rome, City
66. Rye, Town
67. Sand Lake, Town
68. Saratoga Springs, City
69. Saugerties, Town
70. Scarsdale, Village
71. Schenectady, City
72. Scotia, Village
73. Shawangunk, Town
74. Shelter Island, Town
75. Smithtown, Town
76. Southampton, Town
77. Southold, Town
78. Syracuse, City
79. Tonawanda, City
80. Troy, City
81. Utica, City
82. Valatie, Village
83. Vestal, Town
84. Victor, Town
85. Walden, Village
86. Warwick, Town
87. Warwick, Village
88. Watertown, City
89. Watervliet, City
90. White Plains, City
91. Williamsville, Village
92. Woodstock, Town
93. Yonkers, City

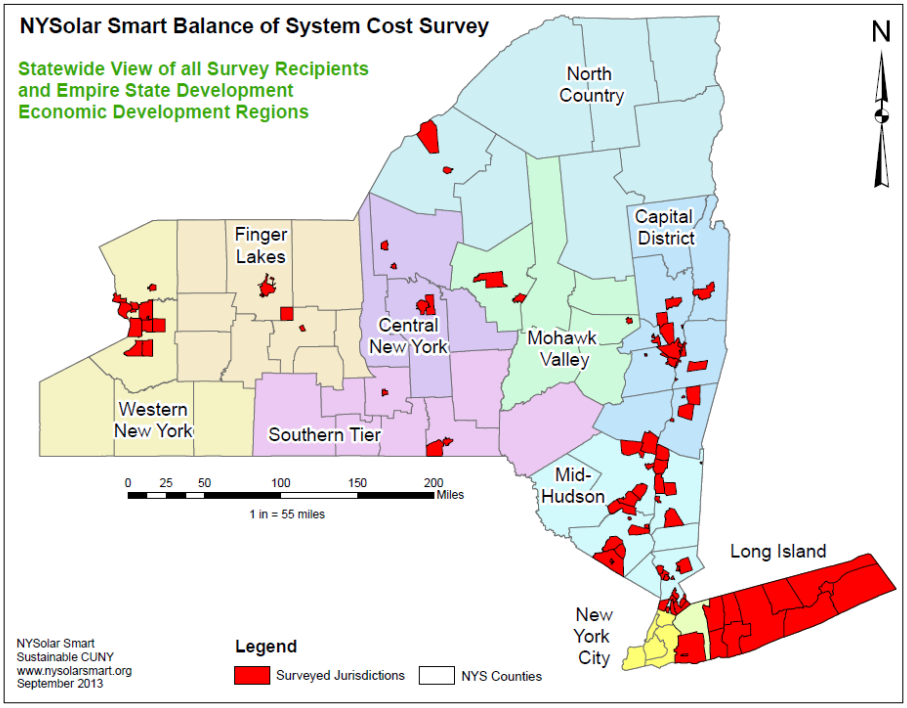
APPENDIX 2: NYSolar Smart Advisory Board 2013

New York State Energy Research and Development Authority
New York Power Authority
Consolidated Edison
Central Hudson Gas & Electric
Long Island Power Authority
NYSEG
National Grid
Rochester Gas & Electric
Orange & Rockland Utilities
Empire State Development
Natural Resources Defense Council
New York Conference of Mayors and Municipal Officials
Association of Towns of the State of New York
The Solar Energy Consortium
Vote Solar Initiative
The Business Council of New York State
Mercury Solar
State University of New York
NYC Mayor's Office of Long-term Planning & Sustainability

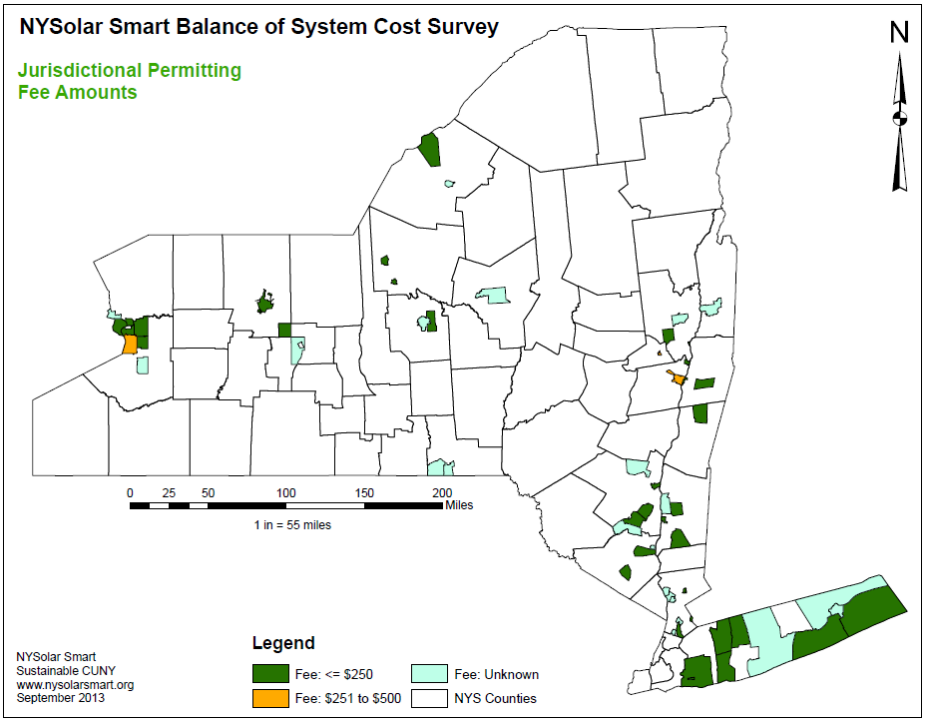
SUNation Solar Systems

APPENDIX 3: Maps NYSolar Smart Survey

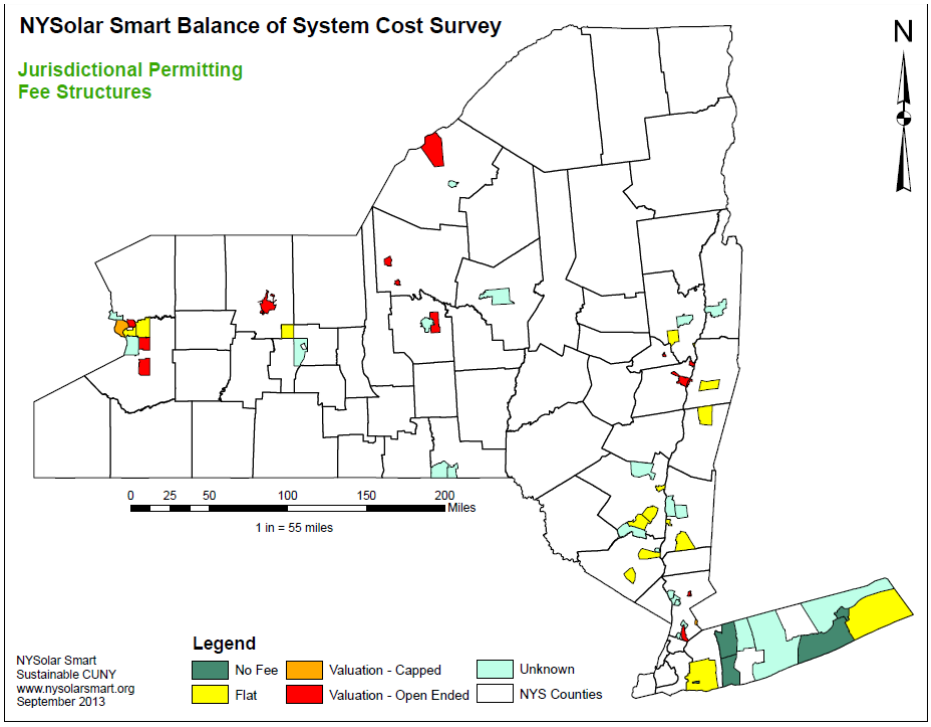
Map 1: Surveyed Jurisdictions



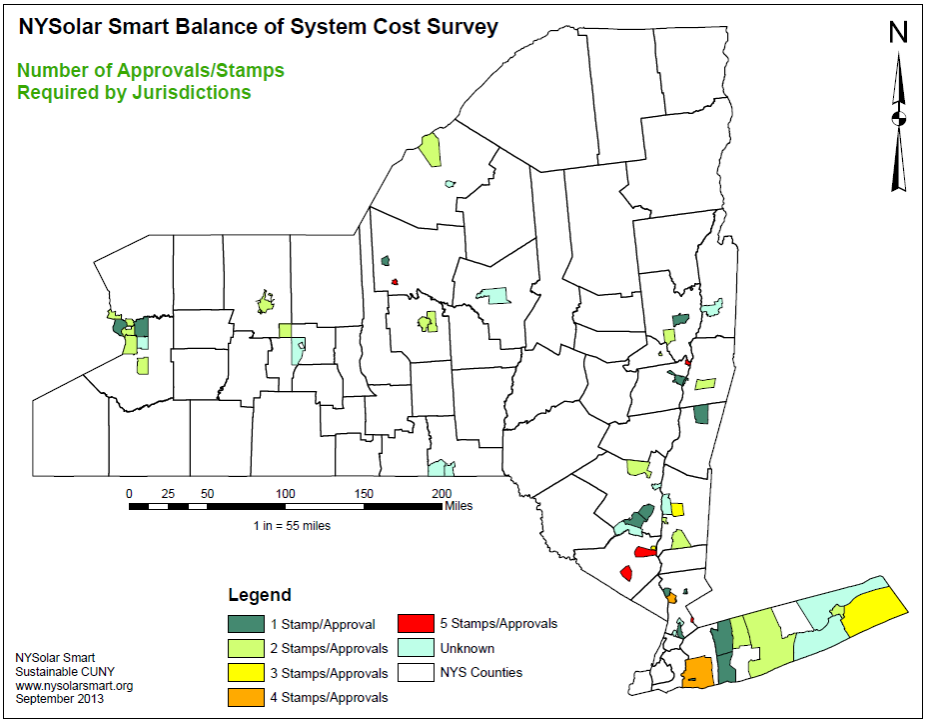
Map 2: Permitting Fees



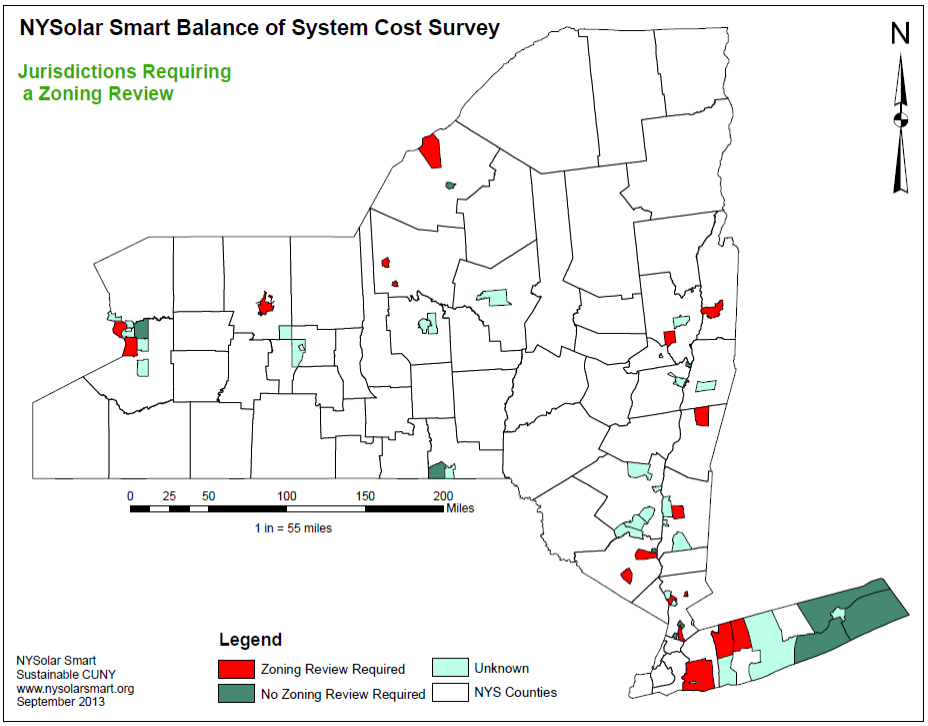
Map 3: Permitting Fee Structures



Map 4: Number of PE/RA Approvals/Stamps Required by Jurisdiction for Permit Application



Map 5: Jurisdictions Requiring a Zoning Review



APPENDIX 4: NYSolar Smart Survey Questions