STANDARDIZING RENEWABLE ENERGY PROPERTY TAX APPROACHES IN NY STATE: ECONOMIC BENEFITS TO HOST COMMUNITIES

Prepared for
Alliance for Clean Energy New York
and
New York Solar Energy Industries Association

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1 Introduction

In July 2019 New York State established and codified in law an ambitious target of 70% renewable electricity by 2030 ("70 by 30") with the passage of the Climate Leadership and Community Protection Act (CLCPA). The CLCPA goals will be met in large part through key aspects of the State's Clean Energy Standard (CES). A cornerstone of the CES is procurements by New York State Energy Research and Development Authority (NYSERDA) of renewable energy credits (RECs) via long-term contracts from large-scale renewable energy generators under Tier 1 Renewable Energy Standard (RES) procurements in support of financing projects to meet the Tier 1 RES obligation. In addition, the CLCPA established another cornerstone of the CES targets as a goal for 6 gigawatts (GW_{DC}) of distributed solar energy deployment.[1] Currently, New York generates approximately 26% of its electricity from renewable resources, with approximately 3 GW coming from distributed sources.[2] Ground-mounted community solar is a key segment within the distributed solar market that is driving growth towards the State goals, as reflected by the distribution of NYSERDA's NY-Sun incentives.[3] Therefore, the 70 by 30 target will require substantial development of land-based wind and solar resources, of both the large-scale (20 MW and above) and distributed (<5 MW) varieties.

This development of renewable energy projects is expected to bring significant economic benefits to New York municipalities. According to the *Renewable Energy Standard Program Impact Evaluation and Clean Energy Standard Triennial Review,* projects that were awarded contracts in the State's annual Tier 1 RES procurements from 2017-19 are expected to generate approximately $2.21 billion in *direct* benefits to New York State. Approximately 30 % (approximately $700 million) of these are short-term benefits - such as design and construction jobs – are expected to accrue either before or shortly after the respective project's commercial operation dates. The remaining 70% of benefits are long-term, such as operation and maintenance jobs, payments to landowners and municipalities, and local sourcing of goods and services, and are expected to be realized over the lifetimes of the projects.[4]

While New York's RES procurement process for large-scale renewables has produced highly competitive project bids resulting in contracts, projects are taking significantly longer to develop than expected, some have been abandoned, and almost none have reached commercial operation to date.[5] Meanwhile, at the

[1] New York State Assembly/Senate. (2019, June 8). State of New York A. 8429/S. 6599, *Climate Leadership and Community Protection Act*. Albany, NY, USA. Retrieved from https://legislation.nysenate.gov/pdf/bills/2019/S6599
[2] New York Independent System Operator. (2019). *Power Trends 2019*. Retrieved from https://www.nyiso.com/documents/20142/2223020/2019-Power-Trends-Report.pdf/0e8d65ee-820c-a718-452c-6c59b2d4818b?t=1556800999122
[3] New York State Energy Research and Development Authority. (2020). *NY Sun 2020-2025 Operating Plan*. Retrieved from: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7B4F3CB5E3-BA5A-4182-AA44-94C3C24C2441%7D#:~:text=The%202020%20Operating%20Plan%20replaces,from%203%2C000%20MWdc%20by%202023.
[4] New York State Energy Research and Development Authority. (2020). *Renewable Energy Standard Program Impact Evaluation and Clean Energy Standard Triennial Review*. Retrieved from: https://www.nyserda.ny.gov/-/media/Files/Programs/Clean-Energy-Standard/2020-06-01-RES-Program-Impact-Evaluation.pdf
[5] Ibid.

distributed level, rooftop and smaller ground-mount solar projects have been experiencing swift development, while larger ground-mounted community projects critical to meeting the State's 6 GW goal increasingly face uncertainty and delays in development.

Renewable energy project development faces a range of challenges, including interconnection, lengthy siting and permitting processes, and inconsistent local taxation methods. These challenges facing both large-scale and distributed projects have the potential to delay the benefits of clean energy projects, or lead projects to halt development altogether, and therefore must be addressed to meet the State's 70 by 30 goal. Also, a disruption in the community solar market, which serves renters and those who are not able to install solar at their own homes, will hinder the State's objectives of providing equitable access to clean energy and benefits to disadvantaged communities.

One approach to address these challenges in the large-scale renewables segment has been the recent passage of the Accelerated Renewable Energy Growth and Community Benefit Act (the "Act"), enacted April 2020. The Act is designed to streamline lengthy and expensive permitting processes, create greater certainty in permitting timelines and outcomes, and provide for additional transmission system planning and investment. It directs a new Office of Renewable Energy Siting (ORES) to establish uniform standards and conditions for construction and operation that will apply to wind and solar projects over 25 MW and their associated transmission facilities.[6]

While the Act addresses reform to the State permitting processes for renewable energy projects, and recent and planned reforms to the New York State Independent System Operator (NYISO) interconnection process are mitigating interconnection challenges, another significant hurdle to project development remains uncertainty in establishing property tax obligations and the length of time it takes to negotiate tax agreements for the projects. Property tax approaches – including assessment methodologies, tax rates, and approaches to negotiating payments in lieu of taxes (PILOT) agreements– vary across jurisdiction, and multiple, overlapping taxing jurisdictions make discussions and negotiations complex and time-consuming. Together, these circumstances make the topic of property taxation a primary risk facing the development of renewable energy facilities in New York State. For this reason, the Alliance for Clean Energy New York (ACE NY) and the New York Solar Energy Industries Association (NYSEIA) have studied the issue of property taxation and PILOTs in New York and have supported legislation to standardize these practices.

ACE NY and NYSEIA commissioned Sustainable Energy Advantage, LLC (SEA) to perform an independent analysis to quantify the economic benefits accruing to taxing jurisdictions (towns, counties, and school districts) that would be expected to result from a standardization of property tax assessment methodology for renewable energy projects in New York State. SEA's analysis estimates taxing jurisdiction revenue from PILOTs or property tax payments from renewable energy projects under two approaches:

[6] New York State Assembly/Senate. (2020, January 22). State of New York A. 9508/S. 7508 *Accelerated Renewable Energy Growth and Community Benefit Act*. Retrieved from https://nyassembly.gov/2020budget/2020budget/A9508b.pdf

1) no tax assessment standardization case (the "status quo"), and

2) a tax assessment standardization case.

With support of subcontractor EBP, the analysis also estimates regional economic benefits under these two approaches, including jobs, business sales and GDP by industry, household income, and broader effects on state and local government revenues that are driven by renewable energy deployment.

1.1 Context

New York State's goal to achieve 70% renewable energy by 2030, along with 6 GW of distributed solar by 2025, is lofty but achievable. These ambitions require addressing the known obstacles to successful renewable energy development. With the many concurrent processes required for the successful development of renewable energy projects, changes that are designed to accelerate the development of renewable energy may not have the intended effect without subsequent changes to concurrent processes.

Many of the policies impacting renewable energy development have recently been modified or improved, with the intent of accelerating the pace of renewable energy deployment in New York State. These program changes include, but are not limited to:

- revamping the permitting process for large-scale renewables from the prolonged Article 10 process to the newly established 94-c permitting regime, providing developers with defined, shortened permitting timelines and consistent requirements, allowing for local input on projects, and providing clarity on the process for both developers and host communities;[7]
- establishing a "build-ready" program designed to accelerate development on previously underused or overlooked properties;[8]
- authorizing an optional Index Renewable Energy Credit (REC) structure for NYSERDA procurements, which provides a hedge against changes in a project's other commodity revenue streams;[9]
- streamlining the New York Independent System Operator (NYISO) interconnection process, including the Class Year Study requirements;[10]
- prioritizing transmission investments and upgrades to ensure renewable energy can be delivered to load.[11]

[7] New York State Assembly/Senate. (2020, January 22). State of New York A. 9508/S. 7508 *Accelerated Renewable Energy Growth and Community Benefit Act*. Retrieved from https://nyassembly.gov/2020budget/2020budget/A9508b.pdf

[8] New York State Energy Research and Development Authority. (2021). *Clean Energy Resources Development and Incentives "Build-Ready" Program*. Retrieved from: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={277A546B-8DD7-4D19-8532-E4049B1141E1}

[9] State of New York Public Service Commission. (2020). *Order Authorizing Voluntary Modification of Certain Tier 1 Agreements*. Retrieved from: https://www.nyserda.ny.gov/-/media/Files/Programs/Clean-Energy-Standard/2020-11-20-Order-Approving-Fixed-to-Index-REC-Conversion.pdf

[10] New York Independent System Operator. (2021). *Buyer Side Mitigation (BSM) Process Improvements*. Retrieved From: https://www.nyiso.com/documents/20142/18358703/BSM_Process_Improvements_vFINAL.pdf/e1b4b046-f5d9-f626-b973-2163fb1f1e1c

[11] New York State Assembly/Senate. (2020). State of New York A. 9508/S. 7508 *Accelerated Renewable Energy Growth and Community Benefit Act*. Retrieved from https://nyassembly.gov/2020budget/2020budget/A9508b.pdf

Though these changes address several key obstacles to development, none are designed to address the uncertainties and inconsistencies surrounding the taxation of renewable energy projects in New York State, be they solar or wind, distributed or large-scale. In fact, with the above changes, the need to address taxation policies is more and more pertinent - as concurrent processes become more efficient, taxation policies have an increased likelihood of being the limiting factor in a project development timeline in the absence of supplemental changes. At the same time, taxation of renewable energy projects and the use of PILOTs creates an opportunity for host communities to attract projects that will create jobs, spur economic activity, and provide stable, long-term revenues to host communities. Renewable energy PILOTs are often at a significant premium above payments the municipalities will receive under alternative uses of the land.

Current state law provides a 15-year exemption from Real Property Taxes (RPT) for wind and solar projects in all New York State jurisdictions ("RPTL 487 exemption"), except Special Districts.[12] The law specifically provides an exemption from any increase in the assessed value of real property attributable to the installation of a renewable energy system. Taxing jurisdictions may opt out of the exemption, resulting in ad valorem property taxes for all projects built thereafter based upon the assessment established by the local assessor(s). Each taxing jurisdiction is left to determine its own ad hoc approach to valuing and taxing these projects with no standard assessment methodology in New York State. As of year-end 2020, approximately twenty percent (20%) of taxing jurisdictions statewide have opted out of the RPTL 487 exemption.[13]

If a jurisdiction has *not* opted out of RPTL 487, and the taxing exemption remains, the jurisdiction may require a project developer to enter into a PILOT for an amount up to but not exceeding the amount that would be paid without the exemption. These PILOTs are currently negotiated on case-by-case basis between the developer and the three taxing jurisdictions (School, County, Town). For several reasons, including the taxing jurisdictions opting out of RPTL 487, a developer may pursue a PILOT with the local industrial development agency (IDA) to obtain a real property tax exemption for the project. Since there is no standard assessment methodology to form a basis for the full ad valorem taxation value, there is no standard methodology which would serve to set upper and lower limits on PILOT values.[14] PILOT values and negotiations therefore vary across jurisdictions, and can even be drastically impacted within jurisdictions during the project development period by a change in elected or appointed officials who may have a different stance on the project and PILOTs.

This lack of standardization and predictability in tax assessment and PILOT methodology for renewable energy projects can severely threaten and disrupt project development (further discussion in Section

[12] Department of Taxation and Finance. (2020). *Real Property Tax Law (RPTL) Section 487—Exemption for certain energy systems*. Retrieved from: https://www.tax.ny.gov/research/property/legal/localop/487opt.htm

[13] New York Solar Energy Industries Association (2020, March). *Opportunity and Need to Improve Property Tax Approach for Solar and Storage in New York*.

[14] There is some guidance via the NYSERDA PILOT calculator, but jurisdictions are not obligated to follow this guidance, and it only applies to distributed solar. See https://www.nyserda.ny.gov/-/media/Files/Programs/NYSun/PILOT-Calculator.xlsm

3.1.2). The risk and time expenditure for every project in this process also results in significant additional costs, needlessly increasing energy costs to all New York State customers. Taxation based upon a substandard assessment methodology or high PILOT amounts also limit what a developer is able to provide in more targeted Host Community Agreements (HCAs) that can benefit local residents and ratepayers directly and tangibly. Furthermore, this process can create unnecessary friction between developers and local communities.

In addition to the risks of slowing or halting development, increasing costs, decreasing Host Community Agreements, and increasing tensions between developers and community, the lack of tax standardization burdens local jurisdictions who host renewable energy projects. The difficulties experienced by local jurisdictions include:

- Time/Administrative Burden on Local Staff for Assessment, Negotiation, and Large Number of Appeals: Lengthy negotiations with affected jurisdictions and/or each town/county assessor's work on how to deal with these projects is a poor use of time and resources for taxing jurisdiction staff, as is dealing with large number of resulting appeals.
- Internal Political Conflicts and Pressure: Property tax discussions also can become bogged down in local political conflicts between towns, schools, counties, and IDAs. Local politicians also bear significant burden in justifying to constituents an assessment approach, PILOT amount, or not opting out.
- Legal Cost Risk from Appeals and Possible Litigation: Towns are exposed to the legal cost of resulting appeals, and as they cannot selectively opt-out, jurisdictions that opt out and selectively assess rooftop versus ground-mounted solar may invite litigation resulting from not equitably assessing property.
- Threat to Local Revenue from Court Findings of Personal Property: A recent decision from the State's appellate court and upholding of appeals of its decision ruling in favor of the town threatens to significantly reduce or eliminate the tax revenue to local jurisdictions from these projects going forward.[15]
- 60-Day Notice Creates Unfairness to Taxing Jurisdictions: Various taxing jurisdictions often do not respond to the required 60-day "Notice of Intent to Construct" letters from solar developers due to administrative errors and a lack of awareness of the RPTL 487 process, which leads to unwittingly being bound to a full exemption for 15 years, while also raising an additional area for risk of litigation.

1.1.1 Proposed standardized tax assessment legislation

ACE NY and NYSEIA are supporting policy reform to direct the State to publish a standardized method to determine the assessed value of a renewable energy project for taxation purposes. The reform would require that statewide, the assessed value of solar or wind energy systems over 1 MW would be determined by a discounted cash flow approach that uses a model published by the Department of

[15] Appellate Division of the Supreme Court of New York, Fourth Department. *Cornell Univ. v. Bd. of Assessment Review and Shana Jo Hilton, as Assessor of the Town of Seneca, New York, 186 A.D.3d 990*. (2020, November 13) Retrieved from: https://www.leagle.com/decision/innyco20201116847

Taxation and Finance. The reform would provide transparency and consistency for how local assessors appraise a renewable energy project, thereby defining the level of taxation a project would face at full ad valorem rates and providing an upper bound for PILOTs. The clarity in the assessed value will set parameters for PILOT levels, removing the primary obstacle in reaching a PILOT agreement and thereby facilitating more efficient and expeditious PILOT negotiations, and provide more certainty for developers that taxation will not be an impediment to clean energy projects.

The intent of the policy change is to:

- Improve renewable energy project timelines and success rates by creating predictability and standardization in taxation rates and streamlining PILOT negotiations. The policy is not intended to reduce the value of actual PILOTs made, relative to past agreed upon amounts, but to standardize the process.
- Clarify for stakeholders and the public how tax assessment for renewable energy projects works.
- *Not* impede a community's ability to negotiate a PILOT up to the value of the project if there was no exemption.
- Reduce the risk of costly litigation.
- Reduce administrative burden on taxing jurisdictions by clearly outlining the methodology to derive the assessed value of a renewable energy project (as is done for oil and gas economic units).
- Provide parity to renewable energy on property tax treatment, as other development industries have standardized tax assessment, including oil and gas.
- Provide payments to local communities and economic benefits that result from the investment in renewable energy projects.

1.2 Purpose of the study

The purpose of this study is to quantify the likely impacts of property tax standardization on renewable energy deployment, as well as to estimate the property tax-based revenues to local jurisdictions and the overall economic impacts resulting from that deployment.

1.3 Overview of this report

This report describes the analysis undertaken to estimate the impacts of proposed property tax standardization:

- Section 2 describes the methodology and approach to the analysis;
- Section 3 provides a summary of the data collected from renewable energy developers, and how the information provided is used to inform the analysis; and
- Section 4 presents the results of the analysis and preliminary conclusions. It also discusses the study limitations and potential areas for refinement or further investigation.

2 Methodology and Approach

This analysis estimated the expected annual capacity of renewable energy projects deployed with and without property tax assessment standardization. We then used the modeled deployment to estimate the total value of PILOTs to local taxing jurisdictions by region, and the total economic impacts resulting from the initial investment in the projects and ongoing operations and maintenance.

To develop a projection of the volume of renewable energy capacity that is likely to come online with and without tax policy change, we collected and utilized data from a number of different sources. Based on the data collected and market experience, we developed several simplifying assumptions to form the basis of the deployment model, resulting PILOTs, and economic impacts.

We utilized different approaches for distributed solar and large-scale renewables, given that the two market segments have different development timelines, drivers, typical tax and PILOT levels, and public perception. Further, the data available, and the nature of that data (i.e., that there are many more distributed solar projects built and in development in New York than large-scale projects), vary between the two segments, necessitating a different modeling approach for each.

2.1 Data collection

To collect information on developers' experiences with PILOT negotiations and how those impact project timelines and success, we issued a data request and survey to developers. The data request and survey asked developers to share specific information on PILOT negotiations for projects currently in operation or development, as well as their expectations of how PILOT negotiations would impact early-stage pipeline or future projects without tax standardization. We also reviewed and analyzed data on historic PILOT agreements gathered by and provided to us by ACE NY, NYSEIA and member developers.

We received survey responses from a total of ten renewable energy development companies. Five companies provided information on large-scale renewables (LSR) projects, and seven provided information from the distributed solar perspective. The resulting data available is informative, but the sample size is too small and variable to provide statistical significance. Nonetheless, it depicts consistent experiences across developers, projects, and regions, and provides compelling evidence that property tax policy can have a meaningful impact on renewable energy projects. We therefore used the collected data to make observations, shape assumptions and draw conclusions that inform our analysis.

2.2 Comparing cases with and without policy reform

To quantify the impacts of the proposed property tax standardization policy, we developed projections of renewable energy deployment under the status quo and under assumed policy reform. We refer to the two trajectories as a "Status Quo" case and a "Standardized Taxation" case, incorporating the following definitions and assumptions:

1) Status Quo Case
    - This case reflects the current state of affairs in which the variability of property tax policy across local jurisdictions, and the difficulty of negotiating a feasible PILOTs, creates an obstacle to renewable energy development. Projects face extended development timelines and a material risk of attrition or cancellation due to PILOT negotiations, relative to the assumptions made by the State in setting LSR procurement targets and NY-Sun solar incentives. Under these assumptions, the pace of development falls short of meeting New York's 70 by 30 and 6 GW by 2025 State goals.

2) Standardized Taxation Case
    - Adoption of property tax assessment standardization removes the major barrier to successful and timely PILOT negotiations. Renewable energy projects therefore move forward at a pace and degree of success consistent with the State's expectations absent this barrier. In this case, New York achieves the 70 by 30 goal and 6 GW by 2025 distributed solar goal.

2.3 Analytical approach

Because the market conditions and drivers of investment in renewable energy projects in New York differ materially for distributed solar projects, which are deployed in response to standing access to known open incentives, and large-scale renewables, which must compete primarily on price in periodic competitive procurements, a different analytical approach is applied to each segment. For distributed renewables, solar dominates the project inventory. Large-scale renewables are dominated by solar and wind; other Tier 1-eligible technologies such as incremental hydroelectric supply, whose contributions have been and are expected to be minimal, were not considered in this analysis.

2.3.1 Estimating annual renewable energy deployment

2.3.1.1 Distributed solar

To project the annual capacity of distributed solar installed by utility territory, we utilized the data included in the utility interconnection queues, known as the Standardized Interconnection Requirements (SIR) inventories. In both cases, we modeled the near-term pipeline (through 2023) by projecting the commercial operation date for projects in the queue. To estimate annual deployments from 2024-2030, we modeled market growth by utilizing an S-shape growth curve through 2026 and thereafter a steady annual growth to an assumed 2030 target.

SIR inventory analysis (2022-2023 deployments): To estimate annual deployments through 2023 in both the Status Quo and Tax Standardization cases, we used a bottom-up analysis of projects in the SIR inventories. We included projects with a metering type of "RNM" (remote net metered) and "CDG" (community distributed generation) and excluded net metering projects, as a proxy for ground-mounted solar projects. We estimated a commercial operation date (COD) for each project based on its application start date and the observed range of timelines from application to approval for completed projects in that utility's SIR inventory. We then applied an attrition rate (percent of projects that have entered the queue

and fail to reach commercial operation) to projects of the same metering type that is informed by observed attrition between archived, older versions of the SIR inventories and the most recent inventory. Table 1 shows the attrition rates and timelines applied in each utility territory:

Table 1: Assumed Distributed Solar Attrition and Timelines in Utility Interconnection Queues[16]

	Assumed Attrition	Months from application to approval
Con Edison	29%	16
Central Hudson	56%	36
National Grid	65%	27
NYSEG	46%	34
Rochester Gas & Electric	46%	34
Orange & Rockland	27%	47
LIPA	40%	30

S-Curve Market Growth (2024-2026): Given the assumed timelines noted above, the bottom-up approach of projecting the projects in the SIR interconnection queue as of the end of 2020 results in projections through 2023. For the next several years, we modeled annual deployments assuming that distributed solar market growth takes an "S-curve" shape, a common trajectory of technology deployment reflecting a slow start, a rapid increase, and an eventual saturation. We utilize the 6 GW State goal as a benchmark to shape the S-curve, assuming that the market "matures" and growth flattens out shortly after reaching this goal.

1) Standardized Taxation Case: In the tax standardization case, we shape the S-curve by assuming that the State reaches the 6 GW goal on the target 2025 timeline.

2) Status Quo Case: We assume that PILOT negotiations create a drag on project development and cumulative market growth, and push back the point in time when the State reaches the 6 GW goal, as discussed further in Section 3.

Long term annual growth (2027-2030): Based on market and policy trends, we assume that the flattened market growth does not persist beyond a short time period, and that policy makers will instead face pressure to ensure maintenance of a successful job-creating industry at a fairly steady-state (post-growth) rate of deployment. We therefore assume steady growth in the latter years of the analysis time period through 2030. We assume annual installations of 400 MW_{DC} per year in the Status Quo case, and annual installations of 800 MW_{DC} per year in the Standardized Taxation case.

[16] Actual attrition and timelines varied by cohort (application start year) and metering type. The values presented in Table 1 represent the attrition and timelines for CDG projects that entered the queue in 2018 or later, as those projects make up the majority of the capacity included in the analysis.

2.3.1.2 Large-Scale Renewables

To project the annual capacity of large-scale renewables built by NYISO load zone, we utilized the data included in the *Large-scale Renewable Projects Reported by NYSERDA: Beginning 2004* dataset,[17] tailored with assumptions from SEA's Renewable Energy Market Outlook market fundamentals analyses; NYSERDA[18] and New York Power Authority (NYPA) [19] 2020 procurement award announcements; and the NYSERDA/Department of Public Service *White Paper on Clean Energy Standard* released June 18, 2020.[20]

Contracted projects growth (2017-2020 procurements): In both cases, we modeled the current pipeline (through 2020 procurement awards) by projecting the commercial operation date for projects that have received a contract award from NYSERDA or NYPA, based on the latter of: (i) projected operational dates based upon case-specific lag assumptions from contracting to operation; or (ii) SEA's proprietary analysis of project-specific timing.

Uncontracted projects growth (2021-2026 procurements): To estimate annual deployments from 2021-2026 procurements, we assumed a procurement schedule in compliance with the schedule set by New York's Public Service Commission's (PSC) in its October 2020 *Order Adopting Modifications to the Clean Energy Standard*.[21] The Standardized Taxation Case holds true to NYSERDA's 2020 CES White Paper[22] assumptions for project development lag (4 years from contracting) and attrition rate (20%), while the Status Quo case applies additional attrition and lag assumptions informed by observations in the data and reasonable approximations based on knowledge of how tax negotiations are increasingly becoming barriers to project success, as described further in Section 3.1.2.

2.3.2 PILOTs to Local Jurisdictions

2.3.2.1 Recommended PILOTs used in the analysis

Based upon the projections of annual renewable energy project deployment capacity, we estimated the total value of PILOTs that will be paid to local jurisdictions. We assumed a representative range of PILOTs specific to region (load zone or utility) and technology consistent with the results of our research, and present results for low, base, and high PILOT value assumptions. We applied the PILOT values (in nominal

[17] New York State Energy Research and Development Authority. (2020). *Large-Scale Renewable Projects Reported by NYSERDA: Beginning 2004*. Retrieved from: https://catalog.data.gov/dataset/large-scale-renewable-projects-reported-by-nyserda-beginning-2004

[18] New York State Energy Research and Development Authority. (2020). Solicitations for Large-Scale Renewables. Retrieved from: https://www.nyserda.ny.gov/all-programs/programs/clean-energy-standard/renewable-generators-and-developers/res-tier-one-eligibility/solicitations-for-long-term-contracts

[19] New York Power Authority. (2020). Procurement Award Announcements. Retrieved from: https://www.nypa.gov/procurement

[20] New York State Energy Research and Development Authority, New York Department of Public Service. (2020). White Paper on Clean Energy Standard Procurements to Implement New York's Climate Leadership and Community Protection Act. Retrieved from: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={E6A3B524-6617-4506-A076-62526F8EC4CB}

[21] State of New York Public Service Commission. (2020, October 15). *Order Adopting Modifications to the Clean Energy Standard*. Retrieved: https://www.nyserda.ny.gov/-/media/Files/Programs/Clean-Energy-Standard/2020/October-15-Order-Adopting-Modifications-to-the-Clean-Energy-Standard.pdf

[22] New York State Energy Research and Development Authority, New York Department of Public Service. (2020). *White Paper on Clean Energy Standard Procurements to Implement New York's Climate Leadership and Community Protection Act*. Retrieved from: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={E6A3B524-6617-4506-A076-62526F8EC4CB}

dollars per MW per year) to their respective capacity buildouts (in MW) to summarize the total value of PILOTs by load zone or utility.

For distributed solar, we used nominal dollars per MW_{AC} per year values as presented in NYSERDA's Solar PILOT Toolkit, shown in Figure 1.[23] These values are based on estimated revenues for a 2 MW community solar project in 2017 in each of the investor-owned utility service territories. The low estimates reflect a dollars per MW_{AC} payment that equates to 1% of the revenues a project owner would receive, and the high end reflects 3% of project revenues. We interpolated a base value reflecting 2% of project revenues. As changes to the Value Stack methodology since 2017 have increased total revenues for community solar projects in most cases, these PILOTs are likely to be conservative compared to the actual values that would be derived under the proposed standardized assessment approach.

Figure 1: Assumed PILOT Values from NYSERDA PILOT Toolkit

	Low ($/MW AC)	High ($/MW AC)
Central Hudson	$2,600	$7,600
Orange & Rockland	$3,200	$9,500
National Grid	$1,700	$5,100
NYSEG	$1,700	$5,000
Con Edison	$3,700	$11,100
Rochester Gas & Electric	$1,700	$5,000

For large-scale solar, there are many contracted projects under development, but very few currently built and in operation. Therefore, we utilize a 2019 memo from ACE NY to NYSERDA that provides recommended PILOT values by NYISO load zone for use in a guidance document to municipalities for large-scale solar projects.[24] The memo presents different values by project size (20 MW and under, 20-100 MW, over 100 MW). Given uncertainties of the projects selected under future procurements, we applied these values as the low, base, and high PILOT assumptions, rather than by project size. These PILOT payment assumptions are likely to be conservative when compared to historic values, as described in Section 3.1.1.

For large-scale wind, we use the average PILOTs for operational and in-development projects as provided by ACE NY and member developers. We used a variance of plus or minus $2,000/MW to establish high and low scenarios as this is consistent with the range of developer experience, as described in Section 3.1.1.

[23] New York State Energy Research and Development Authority. *Solar Payment-In-Lieu Of-Taxes (PILOT): Assisting New York State municipalities considering PILOT agreements for community solar projects larger than one megawatt*. Retrieved: https://www.nyserda.ny.gov/-/media/Files/Programs/NYSun/Solar-PILOT-Toolkit.pdf.

[24] See Appendix A. We note that NYSERDA never did issue this guidance document, which is another motivation for legislation directing NYS Tax and Finance to publish a standard assessment methodology.

For both distributed solar and large-scale renewables, we applied a 2% escalation rate to the assumed base PILOT dollars per MW annual values. Though the ACE NY memo recommends that the proposed values are not escalated over time, we applied the escalation (i) to account for how base PILOT $/MW will change over time given inflation and (ii) to be consistent with the distributed solar assumptions.

Finally, we estimate the net present value of the stream of PILOTs over time using the 6.14% nominal discount rate used in NYSERDA's original Clean Energy Standard Cost Study.[25]

2.4 Economic Impact Analysis

Additional renewable energy capacity will grow New York State's economy as developers and their suppliers spend money on goods, services, and employee wages. This growth will come from direct impacts, indirect impacts, and induced impacts. Direct impacts stem from developer spending that occurs *within* New York State. This activity generates indirect impacts from suppliers and other in-state companies that benefit from the additional spending. An example would be a New York State company that manufactures electrical cables used to connect wind turbines to the grid. Lastly, induced impacts stem from spending by employees who work for developers and at supplier companies. These employees spend a portion of their wages on goods and services in New York State, thereby supporting companies in a range of industries (e.g., retail trade, childcare services).

We estimate these "multiplier" or "spin-off" impacts with the widely used IMPLAN economic impact model. IMPLAN measures economic impacts using input-output analysis, a complex macroeconomic method that captures how spending in one industry impacts the activities of other industries. The model measures economic impacts in four ways: employment, labor income, value added (gross domestic or state product), and output (business sales).[26]

Employment represents a combination of full-time, part-time, and temporary job creation. Labor income is the sum of wages, the value of employee benefits, and proprietor income (i.e., payments that self-employed individuals and business owners receive). Value added is equivalent to gross domestic product (GDP), or, for the purpose of this analysis, gross state product (GSP). GSP represents the value of all final goods and services New York State's economy produces. Lastly, output represents total business sales or revenue. Importantly, labor income is a subset of value added and value added is a subset of output. It is therefore incorrect to sum them.

For our analysis, we use an IMPLAN model that is specific to New York State's economy and its solar and wind energy industries. This approach provides the most accuracy because it ensures that economic impacts occurring in New York State are reflective of in-state purchases only. For example, this means

[25] New York State Department of Public Service. (2018, April 8). *Clean Energy Standard White Paper – Cost Study*. Retrieved: https://www.nyserda.ny.gov/-/media/Files/Programs/Clean-Energy-Standard/Clean-Energy-Standard-White-Paper-Cost-Study-Report.pdf

[26] For more detail on economic impact measures, see https://blog.implan.com/understanding-implan-multipliers.

that solar panels imported from China or nacelles imported from Europe would not generate economic impacts within New York.

This analysis considers the impact of developer spending. It does not include the impact of PILOTs because these are considered wealth transfers from an economic modeling standpoint rather than new economic activity. The analysis also does not include the impact of bill credits distributed as part of the recently approved Host Community Benefits program for similar reasons (i.e., credits effectively represent a transfer from business ratepayers to households). Finally, we did not model the impact of potential energy bill savings because we assume that unmet energy supply will be fulfilled by out-of-state generation, implying that bill savings will be nonexistent or negligible.

3 Observations from the collected data

3.1.1 Historic PILOTs

We collected data on the value of PILOTs as finalized or expected to be finalized by projects in operation or development. In total, we accumulated data on 89 distributed solar projects, 24 large-scale solar projects, and 24 wind projects. The provided PILOT values vary materially not just in the base value of a per-MW annual payment, but also in the duration of the PILOT and the amount of escalation, if any, applied.

We compare the actual and anticipated PILOT payment data we received to the PILOT levels recommended by NYSERDA guidance or the ACE NY memo. In the case of distributed solar projects, the range of PILOTs realized in actual experience is wider than the NYSERDA recommended range, with the average actual PILOT payment falling just over the high end of the NYSERDA recommended range in all utility territories except Orange & Rockland:

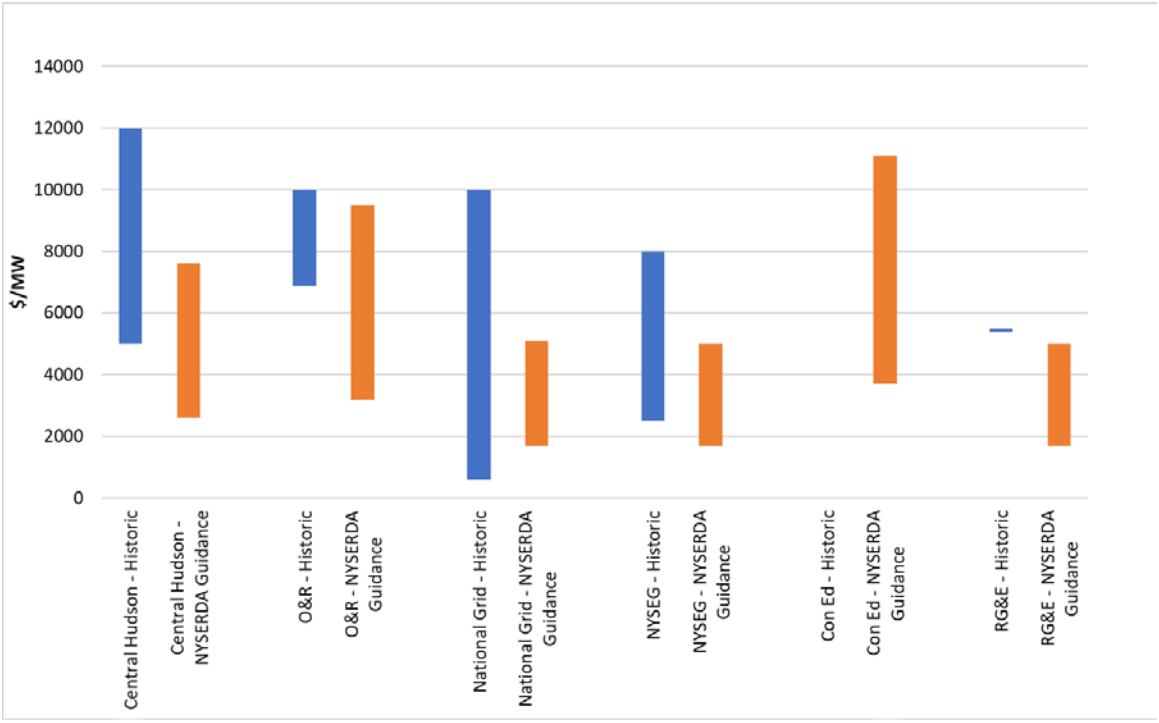
Table 2: Average Actual Distributed Solar PILOTs vs. NYSERDA PILOT Guidance

	Average of Actual PILOTs ($/MW)	NYSERDA High End range ($/MW)
Central Hudson	$7,800	$7,600
Con Edison	N/A	$9,500
National Grid	$5,700	$5,100
NYSEG	$5,300	$5,000
Orange & Rockland	$9,200	$11,100
Rochester Gas & Electric	$5,500	$5,000

Project data on actual and anticipated solar PILOTs indicates a wide range of values that are either reached by negotiation between the developer and the taxing jurisdictions, or set in local law. The values presented in the table above reflect Year 1 per MW payments. The data collected is not consistent as to whether the value escalates over time, and if so, by how much. In most cases the data also does not specify whether the PILOT agreement is inclusive of a Host Community Agreement.

In Figure 2, the range of historic experience of distributed solar projects is compared to the range between the low rate and high rate recommendations in NYSERDA's guidance, representing an approximation of 1% and 3% of project revenues, respectively.

Figure 2: Comparison of Historic Distributed Solar PILOT Values to NYSERDA Guidelines



The observed data of distributed solar PILOTs forms a larger range than what is included in the NYSERDA guidance, and trends to the high end of NYSERDA's recommended ranges. Given the large variance in the collected observations, the small sample size of data points, and the lack of uniformity in how the PILOTs are structured, we do not incorporate the actual project observations into the estimated collections of PILOTs in our analysis. The comparison does emphasize, however, that the assumed values in our analysis are conservative, and local taxing jurisdictions may see even higher revenues than we have modeled.

Observations of specific project PILOTs in the large-scale renewables segment are similar, though we have even fewer data points to analyze. For large-scale solar projects, we received a total of thirteen data points of expected PILOT values currently under negotiation. These values varied in the base annual per MW payment ($2,000 - $7,000), escalation rate (none to 2%), and term length (15 years – 30 years). All values were higher or significantly higher than the values modeled in this analysis, which are based on the ACE NY recommendations memo to NYSERDA by project size and zone.

We also received a small number of data points on PILOTs for wind projects under development (7) or in operation (17). The PILOTs included in the responses are all set for 15-30 years, with escalation rates varying from none to 3%. The average of the actual or anticipated PILOT values for these projects is $6,100/MW. In the case of wind projects, developers often - but not always - negotiate both a PILOT payment (which covers the relevant towns, counties, and school districts) and a Host Community Agreement (which usually covers just the hosting towns). We received data on 18 projects with executed or expected Host Community Agreements that averaged $4,000/MW. This brings the range of average payments between $6,100-10,100 depending on the inclusion of a Host Community Agreement. Given the uncertainties related to the inclusion of a Host Community Agreement with specific projects, we assumed a base value of $8,000/MW with a $2,000/MW high/low variance across all zones that encapsulates the average developer experience to date.

3.1.2 Experience to date with PILOT negotiations and impacts to project development

Below, we summarize feedback collected from developers on how PILOT negotiations have impacted projects they are developing, and/or how they expect PILOT negotiations to impact future projects.

3.1.2.1 Experience from Distributed Solar Developers

Respondents were consistent in noting that in the distributed generation (DG) space, PILOT negotiations do not necessarily directly result in a project's cancellation. PILOT negotiations typically do not commence until other local approvals are obtained, at which point the developers are highly invested in the project and its success. If a jurisdiction is known to be opposed to solar and likely to withhold PILOTs to obstruct a project, the developer typically learns this early on and does not pursue the project to the point of starting PILOT negotiations.

However, the developer time, legal costs, and resources to negotiate PILOTs – especially with multiple taxing jurisdictions – is substantial. Standardizing tax payments would significantly reduce this expenditure of resources, which would allow developers to build more projects, faster.

- "Negotiations take resources away from new development. This sometimes can be a full-time activity working with all stakeholders…. Standardization would allow us to increase resource and capital investments in more jurisdictions."
- "However, even though project attrition isn't significant, there are significant opportunity costs associated with the delays imposed by current assessment processes and PILOT negotiations. Developer X estimates that standardizing tax assessments and eliminating the 3 to 6 month delay due to PILOT negotiations would enable [us] to develop 10% more MWs per year."

It is very common for projects to experience challenges in negotiating PILOT or tax payments, and the issues occur throughout the State – they are not specific to any particular region. When asked how many of their projects have experienced difficulty in negotiating PILOT agreements, developers responded with a range of 40% to 100%, with a mean response of 60%. However, the experience is not uniform, and there are complicating factors.

- The tax issue and appropriate PILOT amount can become politicized, meaning local officials become entrenched in a stance, friction develops between negotiating parties, and the process leads to negative press attention for the project. Tensions can develop both within a single taxing jurisdiction and between multiple obligated taxing jurisdictions.
- Prolonged PILOT negotiations, or an especially high tax or PILOT amount, may introduce additional costs in the sale of a project from one developer to another developer or long-term asset owner/operator, which can impair the project's ultimate or timely completion.

Timelines and delay

- Respondents gave fairly consistent responses estimating that standardizing tax payments could reduce project development timeframes by 3-6 months.
    - The impact on project timelines is complicated by sale of projects – early-stage developers are not able to comment on the impact of PILOT negotiations on time to commercial operation, only on impact to Notice to Proceed (NTP).
- See Figure 3 for a representation of timelines under the status quo, and Figure 4 for a representation of how timelines may compact under tax standardization.

Figure 3: Illustrative Distributed Solar Development Timeline, Status Quo

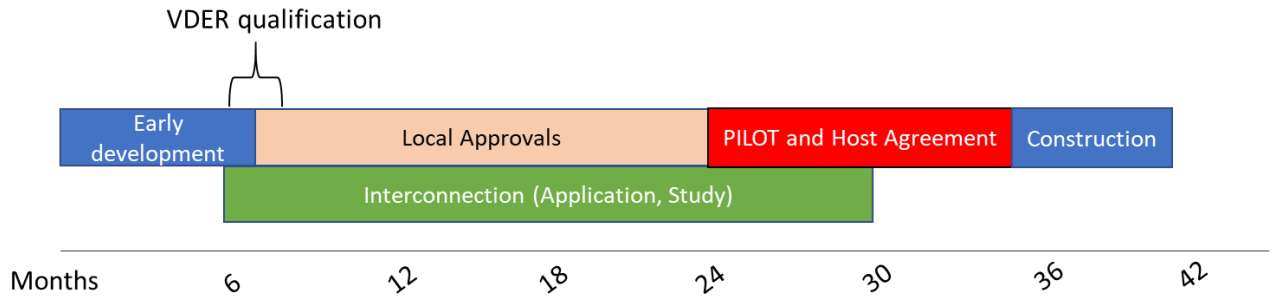
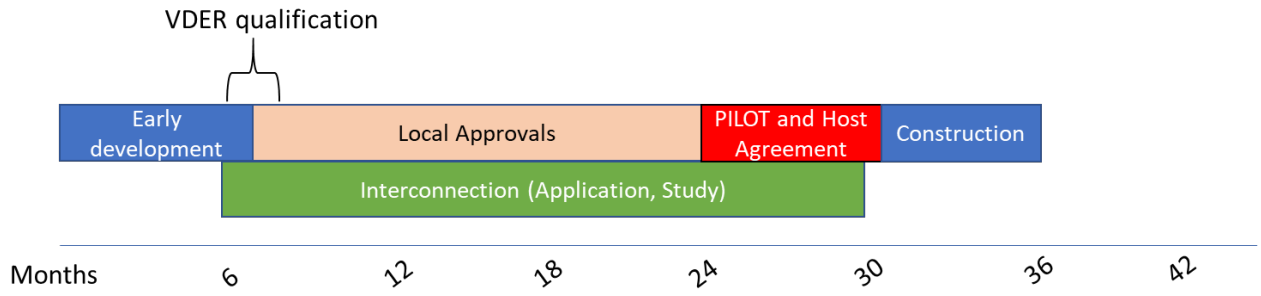


Figure 4: Illustrative Distributed Solar Development Timeline, Tax Standardization



Impacts to project success

- As noted above, developers are not able to quantify *attrition* due to PILOT negotiations, but they are able to think about how they could use resources that are freed up through tax

standardization, and how that impacts the pace of individual project development and the number of projects they are able to successfully develop.

- Developers indicated that standardization could increase their success rate by 10-15%. (By success rate, we mean the percentage of MW in development that are ultimately able to come online.) One developer framed the response as an expectation to be able to successfully develop 10% more MW a year.

Modeling Implications

• Developer responses indicate that shortened timelines go hand-in-hand with being able to complete more MW of projects.

• For the near-term (years 2022-2023), we assumed 10% more MW come online over each year in the Tax Standardization case than in the Status Quo case.

• We assumed the State goal of 6 GW is met 6 months earlier in the Tax Standardization case (end of 2025) than the Status Quo case (mid-way through 2026).

• We assumed long term growth (past the State's 6 GW goal) of 800 MW of installations/year in the Tax Standardization case, and long-term growth of 400 MW of installations/year in the Status Quo case.

3.1.2.2 Experience from LSR Developers

Experience in the LSR space varies between projects and developers, but all those that responded to the survey and data request noted that PILOT negotiations have impeded, or are likely to impede, their projects in some way. Developers expressed that reaching a feasible PILOT agreement is critical to the success of a project. As with any type of large-scale development, some sort of mutual taxation or tax agreement is necessary to prevent attrition. And as with distributed solar developers, respondents building LSR projects note that with the current lack of tax standardization that is afforded to other types of development, PILOT negotiations for renewable energy projects can readily lead to project delays, and require additional time, effort, and resources to work through the ad-hoc process.

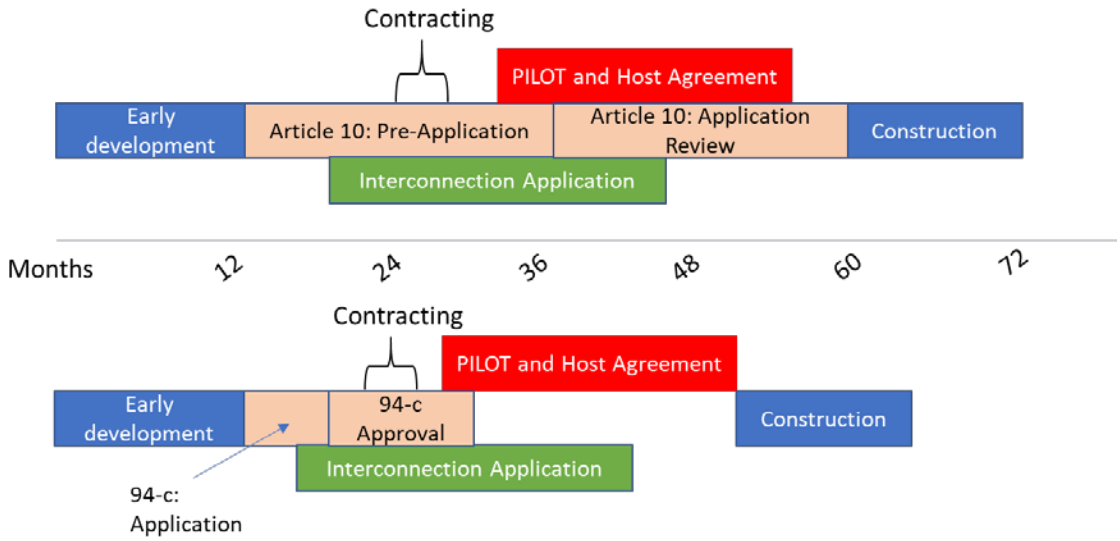
Timelines and additional lag

- Developers expect additional project delays due to PILOT negotiations for 58% of their projects that have not yet finalized a PILOT agreement. Where developers did not quantify an expected delay, it is because:
    - projects are not experiencing or expecting difficulties with PILOT negotiations;
    - the projects are too early in the process to have clear expectations; and/or
    - the developers are expecting to undergo PILOT negotiations in parallel to other development efforts that are expected to take more time than PILOT negotiations.
- Where estimates of delays were provided for projects currently undergoing PILOT negotiations, developers noted expected or realized delays of 3 months to one year for existing projects, with a *median of 6 months* for projects that are impacted.
- For future or very early-stage projects that have not yet begun PILOT negotiations, two developers anticipate that tax standardization could reduce project timelines by *6-8 months*. One respondent did not anticipate much of a change in project timelines as PILOT negotiations could

occur simultaneously with other development efforts. One other respondent expects the PILOT negotiation timeframes to decrease significantly from 18-24 months to 6 months with standardization, but did not note how shortening the PILOT negotiation timeframe might impact the overall project development timeframe.

These responses emphasize that PILOT negotiations cause a direct delay in project timelines when they are the activity "on the margin," with negotiations ongoing beyond when efforts on financing, contracting, permitting, and interconnecting are completed. Therefore, if the timeline for those marginal activities shortens, PILOT negotiations are more likely to become the critical-path development activity that holds up projects from reaching the construction phase. In recent history, permitting under the Article 10 regime has been one of the most time-consuming pieces of the development process. However, the statutory timelines under the newly enacted 94-c permitting process are significantly shorter than historical experience under Article 10, and therefore under some situations the acceleration in permitting may be partially offset by a lag in PILOT negotiations (see Figure 5).

Figure 5: Hypothetical Status Quo Project Timelines under Article 10 and 94-c



Project attrition

- Project attrition due to PILOT negotiations is more difficult to pinpoint. Developers provided estimates of the likely probability of project attrition due to failure to reach a feasible PILOT ranging from 10% to 100% for projects currently in PILOT negotiations. Most estimates were in the range of 10-30%. We interpret the estimates of 100% to mean that if the developer and taxing jurisdiction are unable to reach an agreement, that the project will not be able to move forward, rather than an estimate of the likelihood of not being able to reach an agreement.
    - Estimates of likely project failure for LSR projects currently in PILOT negotiations range from 0-25%. For projects where negotiations have already stalled developers estimated attrition probabilities ranging from 30-75%.

- Project delay can also cause attrition when it causes a project to miss key milestones, such as tax credit qualification, locking in prices for capital equipment, securing financing, or extending past NYSERDA's maximum contract COD extension.
- In addition, in the course of large-scale renewables development, projects often have to price bids into NYSERDA Tier 1 RES procurements based on an estimated PILOT or property tax obligations. Under the Status Quo, it is difficult for developers to forecast with accuracy this obligation. For example, should PILOT or property tax certainty not be resolved before an accepted project must produce contract security, a developer or its investors may lack sufficient certainty that its required returns will be met, and may be unable to proceed with the project. More generally, the potential variance between an expected and finalized property tax payment obligation, or the inability to reach certainty on a project with slim financial margins, can contribute to a developer ceasing activities or being unable to attract financing.

Modeling Implications

• As there are fewer data points to assess from the LSR segment, and larger projects have more project-specific factors and less uniformity in the development process than distributed solar, we evaluated a range of timeline and attrition inputs to explore the impacts of current tax policy under the Status Quo case subject to these uncertainties.

• *Project timelines*: We assumed a shorter lag from contracting to COD in the Standardized Taxation case than in the Status Quo case. While the directionality of impact is obvious, the magnitude is subject to uncertainty overall and to project-specific variance. To bracket the expected impact in light of this uncertainty, we assumed a lag of 3 months in a low impact scenario, 6 months in a base scenario (reflecting survey feedback), and 9 months in the high impact scenario.

• *Attrition*: We assumed a reduced attrition rate in the Standardized Taxation case compared to the Status Quo case. While the causality and directionality are transparent – greater certainty should remove potential causes of attrition – the percentage impact is speculative (cannot be known in advance). Experience to date does not allow a firm estimate of project attrition under the Status Quo (as noted earlier, since RES Tier 1 projects have not reached operation there is no historical basis for expected attrition). To estimate the impact of property tax standardization, we have applied the 20% attrition assumed in the CES White Paper[27] analysis as representative of the State's idealized estimate of project attrition with the State having taken actions to remove or mitigate major barriers to development. To explore the likely range of impacts of property tax standardization under this uncertainty, the assumed higher rate of attrition in the absence of property tax standardization in the Status Quo case was assumed to be 30% in the low impact scenario, 35% in the base scenario, and 40% in the high impact scenario.

[27] New York State Energy Research and Development Authority, New York Department of Public Service. (2020). *White Paper on Clean Energy Standard Procurements to Implement New York's Climate Leadership and Community Protection Act*. Retrieved from: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={E6A3B524-6617-4506-A076-62526F8EC4CB}

3.2 Simplifying Assumptions

As in all modeling exercises, we must make some simplifying assumptions to translate real world experience, which is unique to each project and jurisdiction, and uncertainties of what will happen in the future, into a comprehensible view of the overall renewable energy landscape. In addition to the modeling implications described above, to address uncertainties, unknowns, and variability in past experience, we made the following simplifying assumptions in the model.

Renewable Energy Deployment

1) We assumed a useful life of 35 years for solar (for both distributed and large-scale projects) and 30 years for wind. While these estimates are longer than offered incentive or contract durations, per our survey, they are consistent with values used by developers in their financial pro formas.
2) Distributed Solar:
    - We assumed that the set of distributed solar projects subject to PILOTs is generally ground mount projects 1 MW and above, and will comprise 73% of the 6 GW state target based on the proportion of NY-Sun incentives allocated to commercial and industrial or non-residential sectors.
    - We assumed that each utility territory hosts a share of the State's 6 GW goal and long-term growth target roughly proportionate to its allocated share of CDG and NY-Sun incentives.
    - We assume an average AC:DC ratio of 1.25.
3) Large-Scale Renewables:
    - We assumed identical lag from contracting to operation for all mature projects expected to come online by 2022.
    - As we are not privy to the actual contracting dates for already contracted projects, we assumed the projects were contracted 2 months prior to the award announcements.[28]
    - For future procurements, we assumed similar timing to past years for award announcements and deduced associated contracting dates.
    - We applied an attrition rate across total MW by reducing the assumed capacity of projects reaching commercial operation, rather than selecting specific projects not reaching fruition.

PILOTs

4) As the purpose of the proposed policy change is not to reduce payments but to increase certainty, we held the value of PILOTs constant between the Status Quo and Standardized Taxation cases, as we assumed that the assessment standardization proposal impacts the process of the negotiations but does not have a material impact on the ultimately agreed upon $/MW

[28] We understand, but have not confirmed, that the 2020 NYSERDA REC award announcements and contracts followed a different sequence and timeline compared to previous years. Because we are not able to confirm when the contracts were finalized, we hold this assumption for the 2020 RFP selections as well.

PILOT payment. While it is possible that average PILOT amounts could continue to rise under the Status Quo, there is too much uncertainty to try to quantify such future payment amounts.

5) We assumed levelized $/MW annual payments that increase by 2% annually over the entire useful project life. Our data collection indicates that PILOTs are often negotiated for a 15- or 20-year duration, and our analysis assumes a 35-year useful life for solar projects and a 30-year useful life for wind projects. In practice, when a PILOT term is shorter than the useful life, the PILOT may be extended at a reassessed level; however, given the variation in the extension rates and PILOT terms, we held the annual payments at a constant base value, and did not assume that the project value and resulting PILOT payment is reassessed over the duration of the project life.
6) We assumed that the base PILOT payment values used in the analysis are reflective of 2020 values, and would increase slightly on par with inflation over time. We assumed the same rate for inflation (which would impact the base PILOTs for projects starting operation in future years) as the annual escalation rate for agreed upon PILOTs.
7) PILOTs are assumed to be inclusive of Host Community Agreements. We did not account for any additional host community payments, including payments derived from the newly established Host Community Benefit Program, or special tax district payments on top of the estimated PILOT collections. ACE NY's 2019 memo noted specifically that the recommended values should be considered inclusive of Host Community Agreements. The NYSERDA guidance does not address the issue of Host Community Agreements, but we assumed that as the values are based upon a viable portion of project revenues, an additional payment on top of those recommended amounts would impair the project's viability.
    - The New York State Public Service Commission recently established a Host Community Benefit Program (distinct from Host Community Agreements) that will require wind and solar projects to fund electric bill discounts for residents in the towns that host projects.[29] This new payment is considered to be separate from either the Status Quo and Standardized Taxation case and is not included in either analysis.

4 Analysis Results

In this section we present the findings of our renewable energy deployment analyses and the resulting value and timing of PILOT or property tax payments that will result from that deployment in this section. Renewable energy deployment and PILOT payment results are provided by market segment (distributed and large-scale), by utility territory for distributed solar and by NYISO load zone for large-scale renewables. Total economic impacts are estimated by New York State's ten economic development regions.

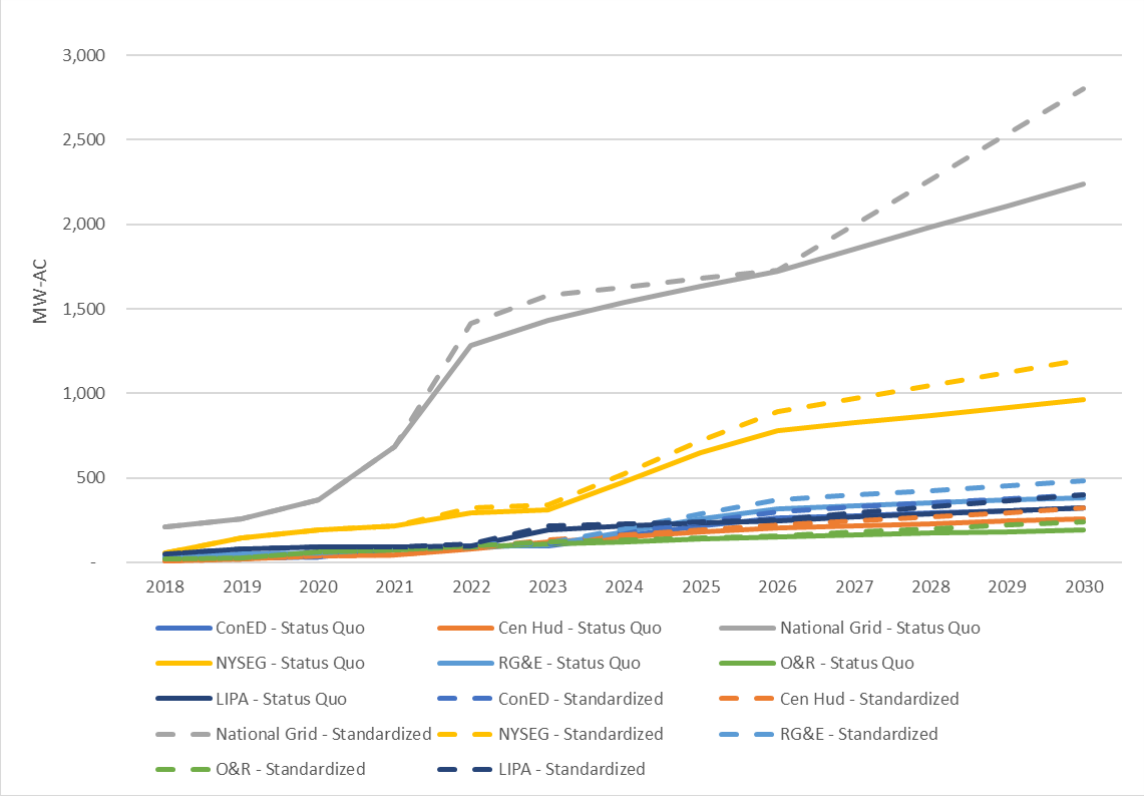
[29] State of New York Public Service Commission. (2021, February 11). *Order Adopting a Host Community Benefit Program*. Retrieved: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7bDFD69D2F-A16F-404F-9A7C-283F0C79D1DB%7d

4.1.1 Renewable energy deployment

4.1.1.1 Distributed Solar

Figure 6 depicts the modeling results of cumulative capacity of distributed solar through 2030. Under the Status Quo case, statewide cumulative capacity of ground mount, 1 to 5 MW distributed solar projects reaches 4,672 MW_{AC} by 2030. Under the Standardized Taxation case, the 2030 statewide deployment of the same solar market segment reaches 5,840 MW_{AC}.[30] Under both cases, annual growth flattens out in the National Grid service territory in the period over 2024-2026, as the SIR inventory indicates that there is enough capacity in the utility's pipeline to come close to its share of the State 6 GW_{DC} goal by 2023. Growth in the National Grid pipeline picks up again in 2027 when the longer-term annual growth assumptions are applied, at which point the Status Quo and Standardized Taxation cases diverge again. Note that because the deployment in these early years is helpful to understand the trend in growth over time, results are shown from 2018-2030, even though 2018-2021 are outside the scope of the analysis.

Figure 6: Cumulative Operating MW by Utility, Standardized Taxation vs Status Quo Case



[30] We assume ground-mounted, 1-5 MW solar projects represent 73% of the state's 6 GW_{DC} goal.

Figure 7 provides a summary view of the total distributed solar (ground mount, 1-5 MW) under each case. Figure 8 highlights the additional capacity of distributed solar operating each year under the Tax Standardization Case, relative to the Status Quo case. In 2030, we project an additional 1,168 MW of distributed solar online across the state. National Grid has the largest share of overall distributed solar deployment, as well as additional policy-driven deployment, with 560 MW more capacity in the Tax Standardization Case as under the Status Quo Case.

Figure 7: Total Statewide Distributed Solar, Tax Standardization vs Status Quo Cases

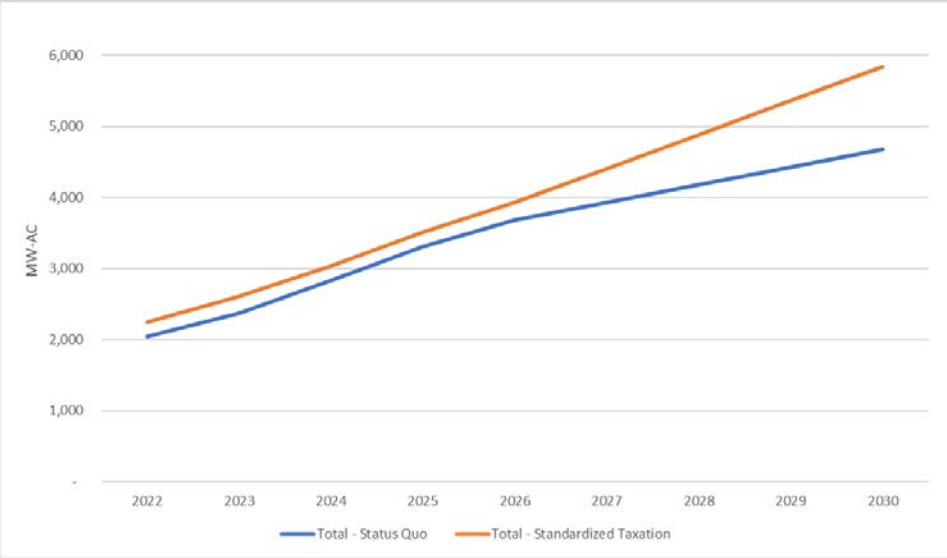
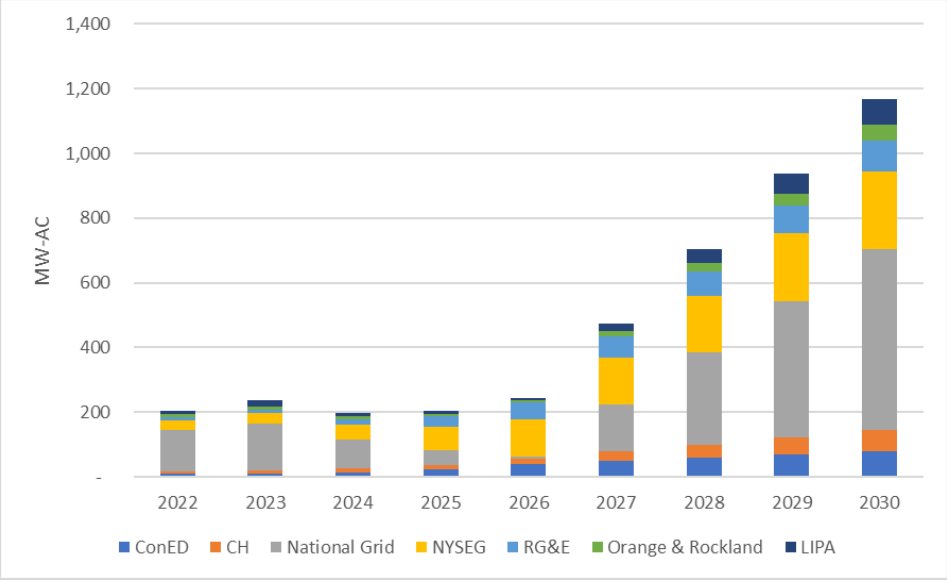


Figure 8: Difference in Total Installed MW of Distributed Solar between Tax Standardization and Status Quo



4.1.1.2 Large-Scale Renewables

This section summarizes the modeling results of cumulative capacity of large-scale renewables reaching commercial operation between 2022- 2030. Figure 9 and Figure 10 depict statewide cumulative capacity, by NYISO Load Zone and technology, under the Tax Standardization and Status Quo cases, respectively. Under the Status Quo Base case, statewide cumulative capacity reaches 11,620 MW by 2030. Under the Standardized Taxation case, the 2030 statewide deployment reaches 15,301 MW, an increase of 3,681 MW.

Figure 9: Cumulative Operating LSR MW, Standardized Taxation Case

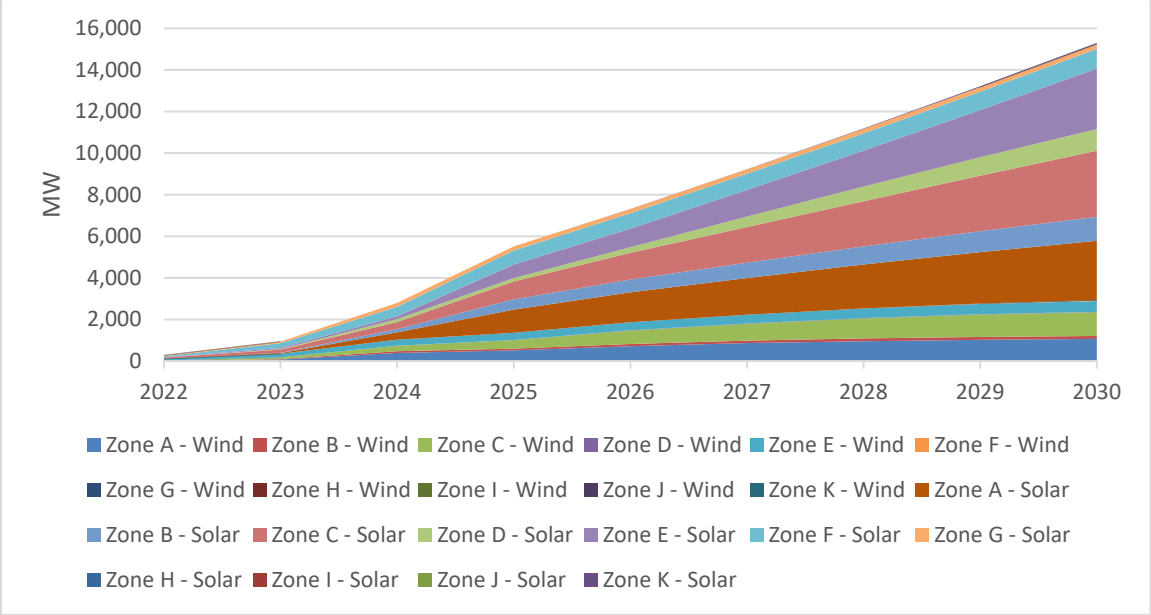


Figure 10: Cumulative Operating LSR MW, Status Quo Base Scenario Case

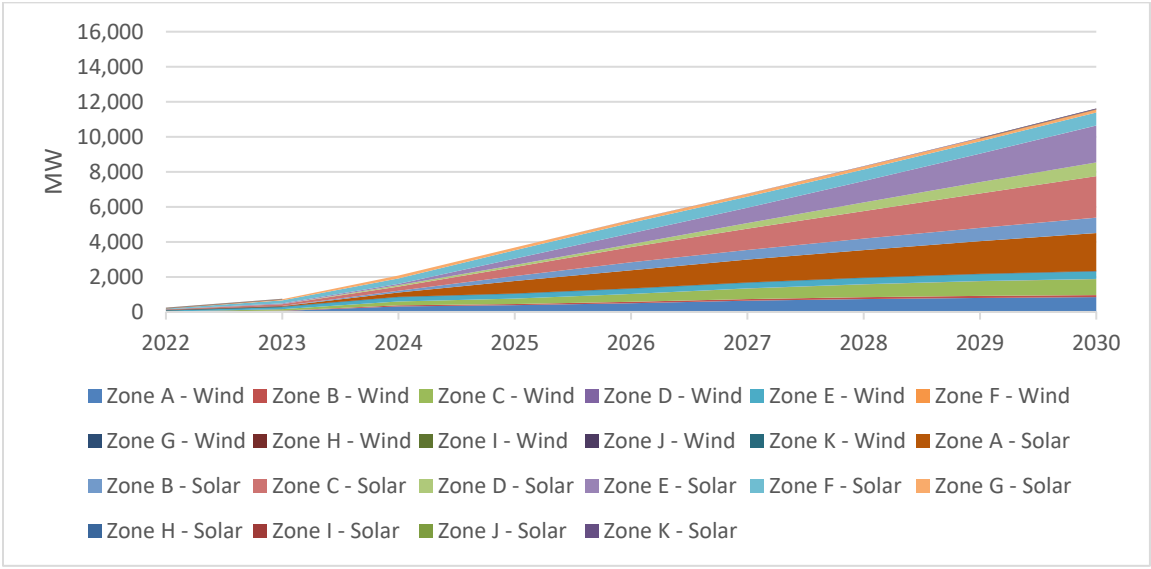


Figure 11 depicts the modeling results of cumulative capacity of large-scale renewables reaching commercial operation between 2022-2030 by technology, statewide. Under the Status Quo Base case, statewide cumulative capacity of new wind energy reaches 2,342 MW wind and 9,278 MW solar by 2030. Under the Standardized Taxation case, the 2030 statewide deployment reaches 2,938 MW of wind and 12,364 MW of solar.

Figure 11: Cumulative Operating LSR MW by Technology, Tax Standardization Case vs. Status Quo Base Scenario Case

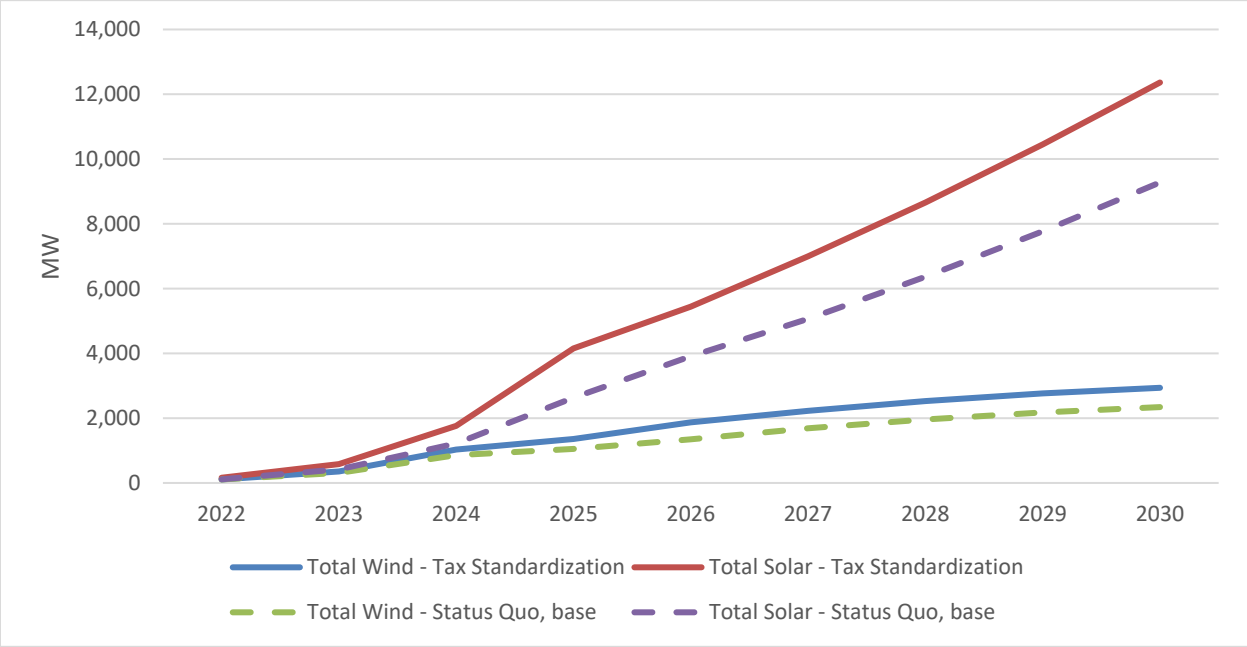
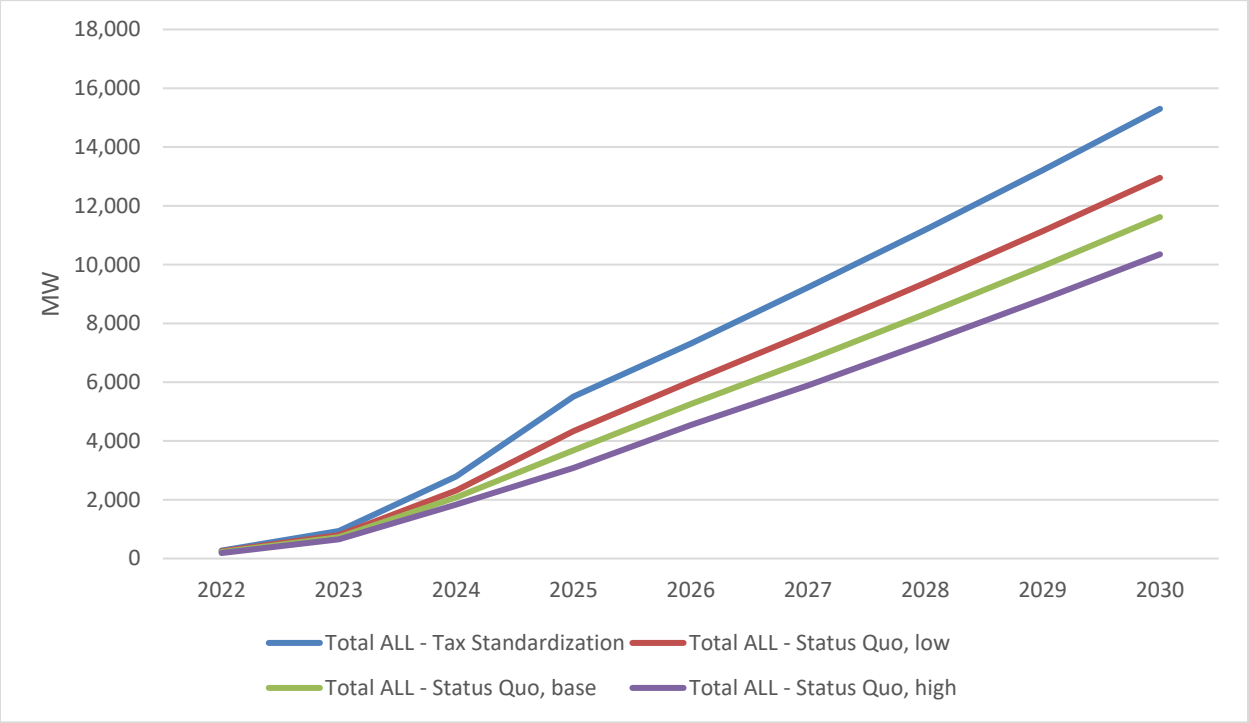


Figure 12 compares the results of the sensitivity analysis conducted for the Status Quo case, showing differing levels of renewable energy deployment assuming high, base, or low impact scenarios to projects resulting from PILOT negotiations. Under the Status Quo high, base, and low impact scenarios, statewide 2030 cumulative capacity reaches 10,351 MW, 11,620 MW, and 12,952 MW, respectively. Under the Tax Standardization case, the 2030 statewide deployment reaches 15,301 MW.

Figure 12: Cumulative Operating MW of Large-Scale Renewables, Tax Standardization Case vs. Status Quo Case Scenarios



4.1.2 PILOT Revenues to local communities

4.1.2.1 Distributed Solar

Figure 13 presents the total net present value (NPV) of PILOTs made over the lifetime of distributed solar projects that come online between 2022-2030, shown by each utility territory. The results are presented across low, base, and high PILOT value assumptions, under the Status Quo case and under the Tax Standardization Case.

Figure 13: NPV of Total PILOTs from Distributed Solar

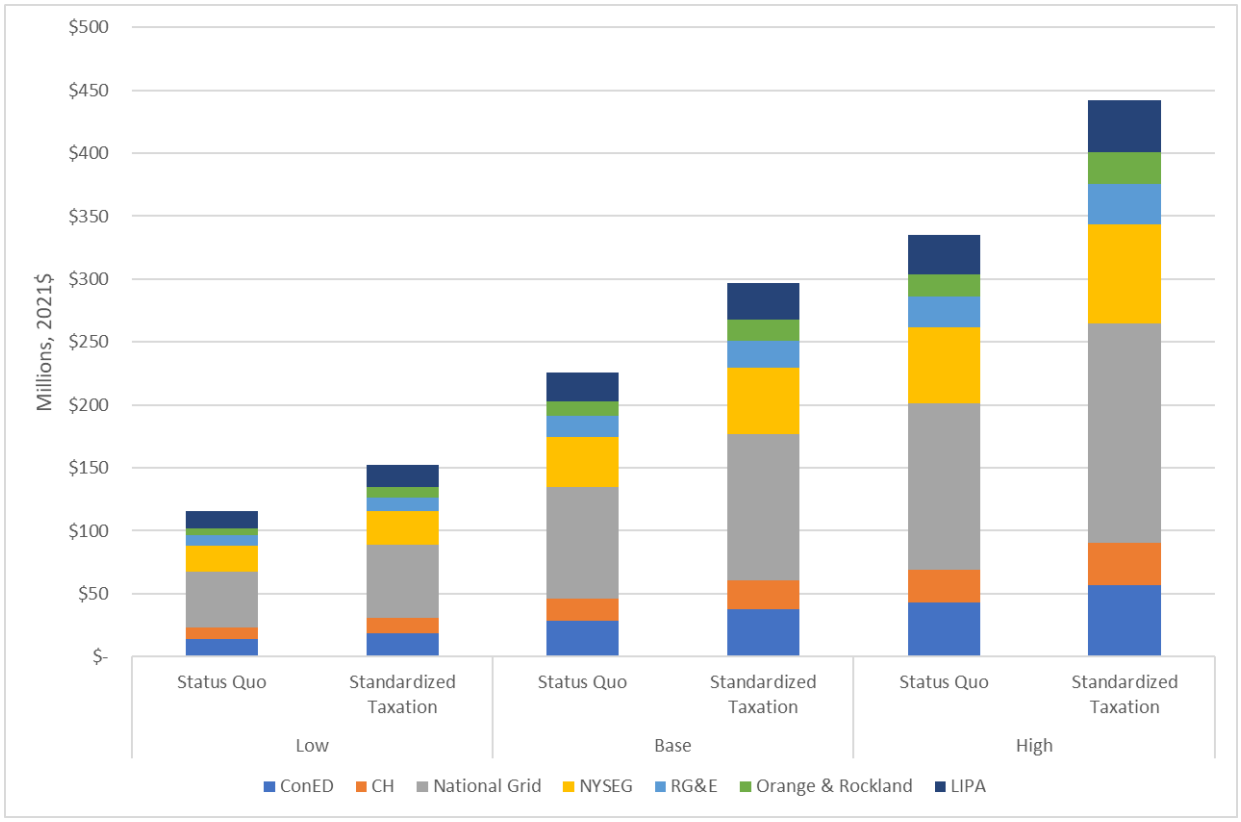
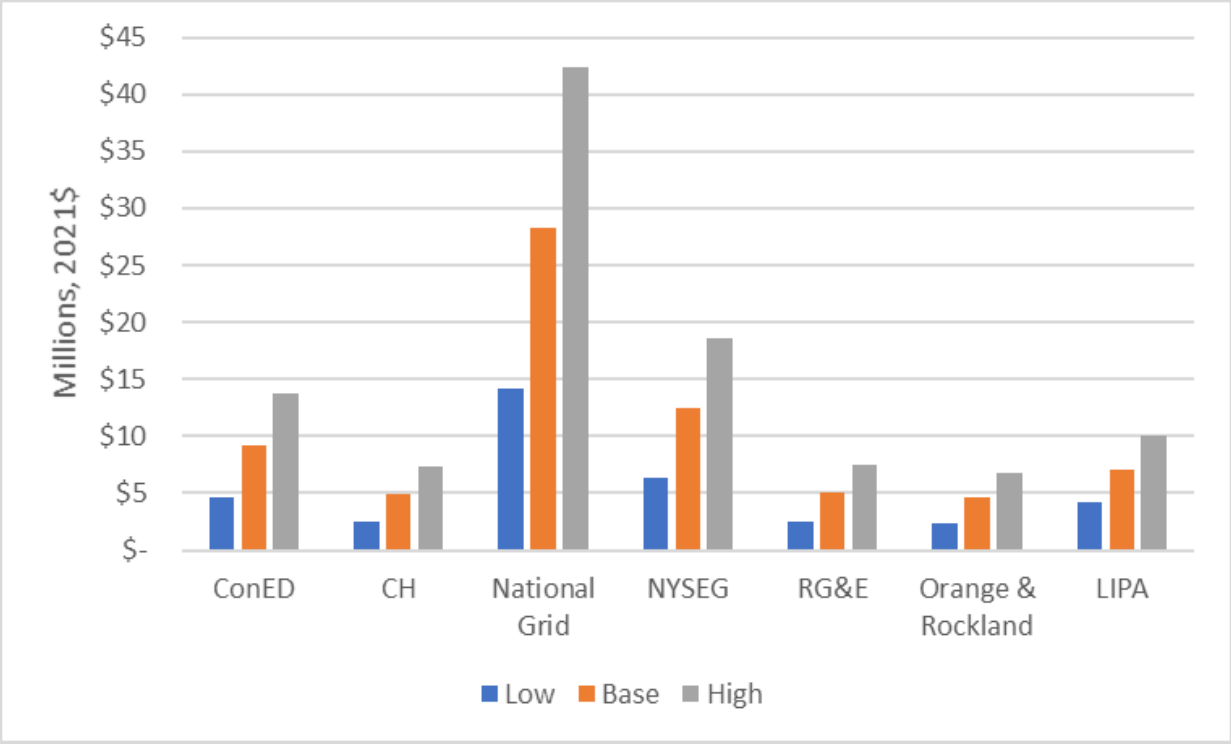


Figure 14 shows the incremental difference in NPV of PILOTs by utility between the Tax Standardization and Status Quo case. Under tax standardization, local jurisdictions can expect an additional $71.6 million in PILOTs statewide under the base assumptions for PILOT payment levels.

Figure 14: Additional NPV of PILOTs from Distributed Solar in Tax Standardization Case, Relative to Status Quo Case



4.1.2.2 Large-Scale Renewables

Figure 15 presents the total NPV of PILOTs made by large-scale solar projects in each load zone. Total PILOT NPV is based upon the total payments that projects coming online between 2022-2030 make over their lifetime. The results are presented across low, base, and high PILOT value assumptions, under the Status Quo base scenario case and under the Tax Standardization Case. Total NPV of PILOTs from large scale projects is significantly higher under tax standardization compared to the status quo base scenario; New York can expect $615.8-$928.6 million in PILOTs if tax standardization is adopted. In some cases, tax standardization with assumed base PILOT values would result in *higher* PILOTs than the status quo with assumed high PILOT values, as illustrated below. No large-scale development is expected in Zones I-J.

Figure 15: NPV of Total PILOTs from Large-Scale Renewables, Tax Standardization Case vs. Status Quo Base Scenario Case

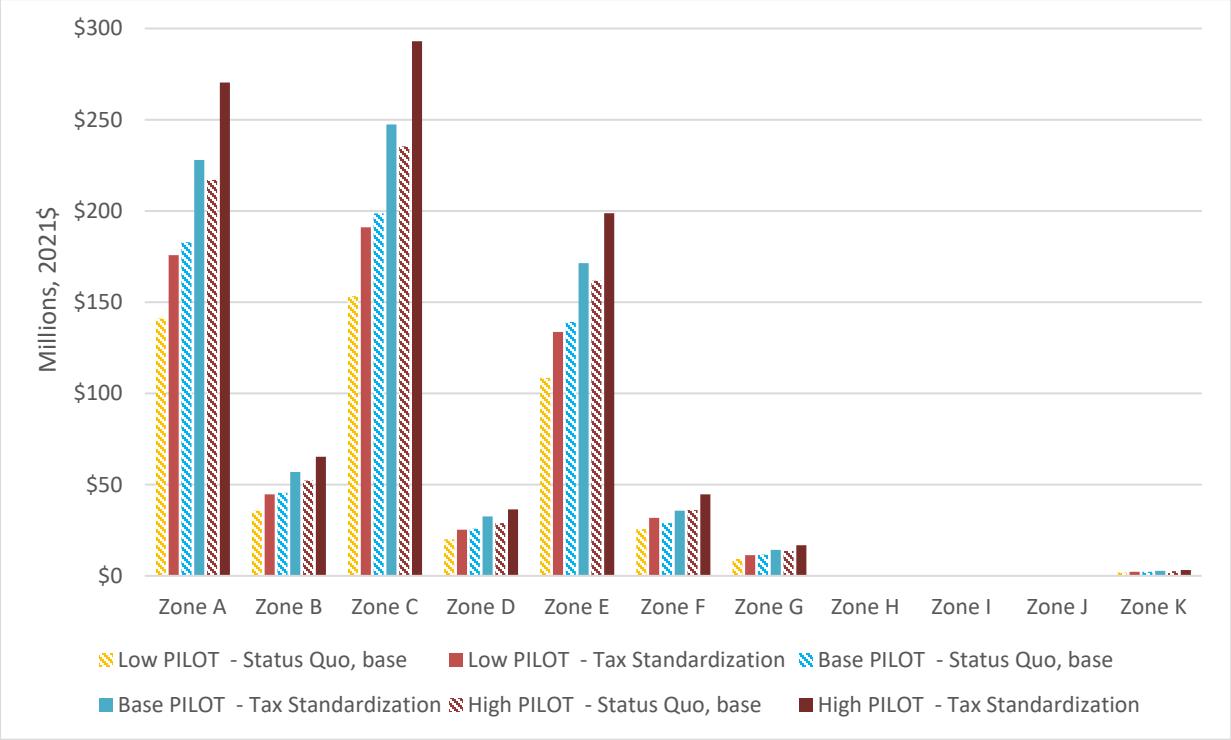
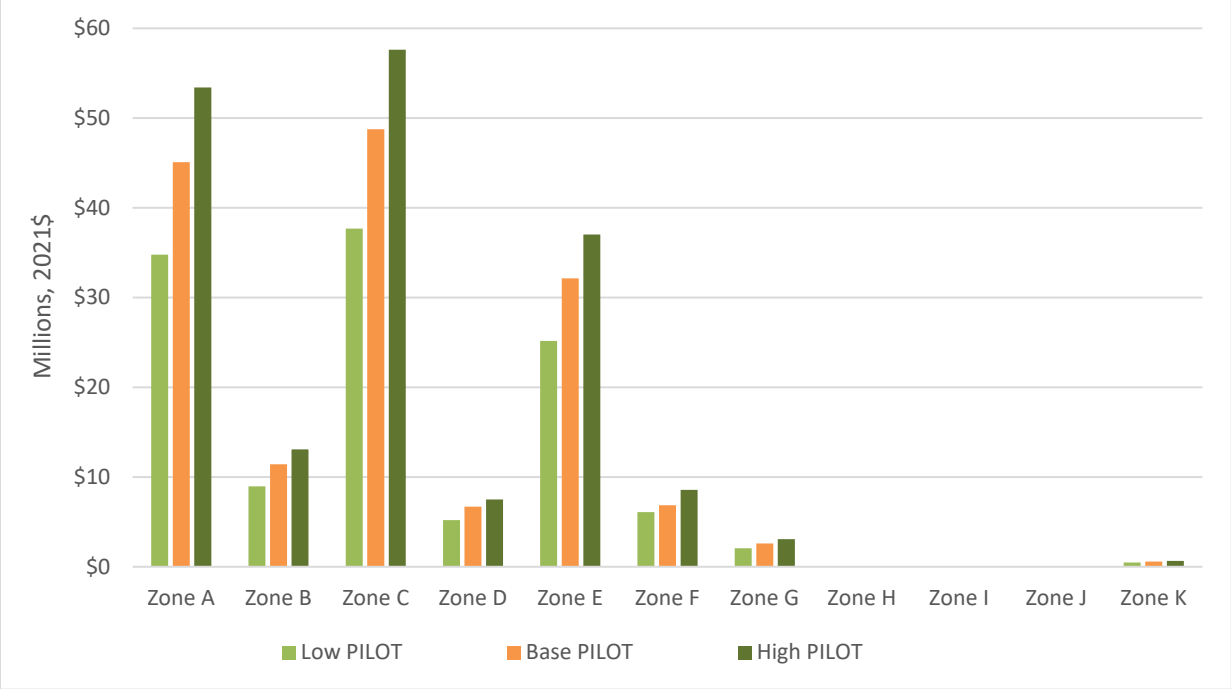


Figure 16 shows the *incremental* difference in NPV of PILOTs by load zone between the Tax Standardization Case and Status Quo base case, by NYISO zone. Under tax standardization, local jurisdictions can expect an additional $154.2 million in PILOTs statewide resulting from projects built between 2022-2030 with a base assumption for PILOT values, an additional $181.0 million with a high PILOT value assumption, and an additional $120.4 million with a low PILOT value assumption.

Figure 16: Additional NPV of PILOTs from Large-Scale Renewables in Tax Standardization Case, relative to Status Quo Base Scenario Case, by zone



4.1.2.3 Total NPV of PILOTs, all renewables

Figure 17 shows the full range of PILOTs across both the distributed solar and large-scale renewables segments, from the lowest modeled MW deployment case scenario (Status Quo – high impacts) to the highest modeled MW deployment scenario (Tax Standardization). Figure 17 represents the total PILOT values realized statewide across the four case scenarios, each with low, base, and high PILOT value assumptions. The range of potential results is between $570.4 million with no tax standardization (and assuming high impacts of PILOT negotiation to LSR projects) and low realized PILOT values, to $1,370.3 million with tax standardization and high realized PILOT values.

Figure 17: Total NPV of PILOTs from all renewables, all cases, statewide

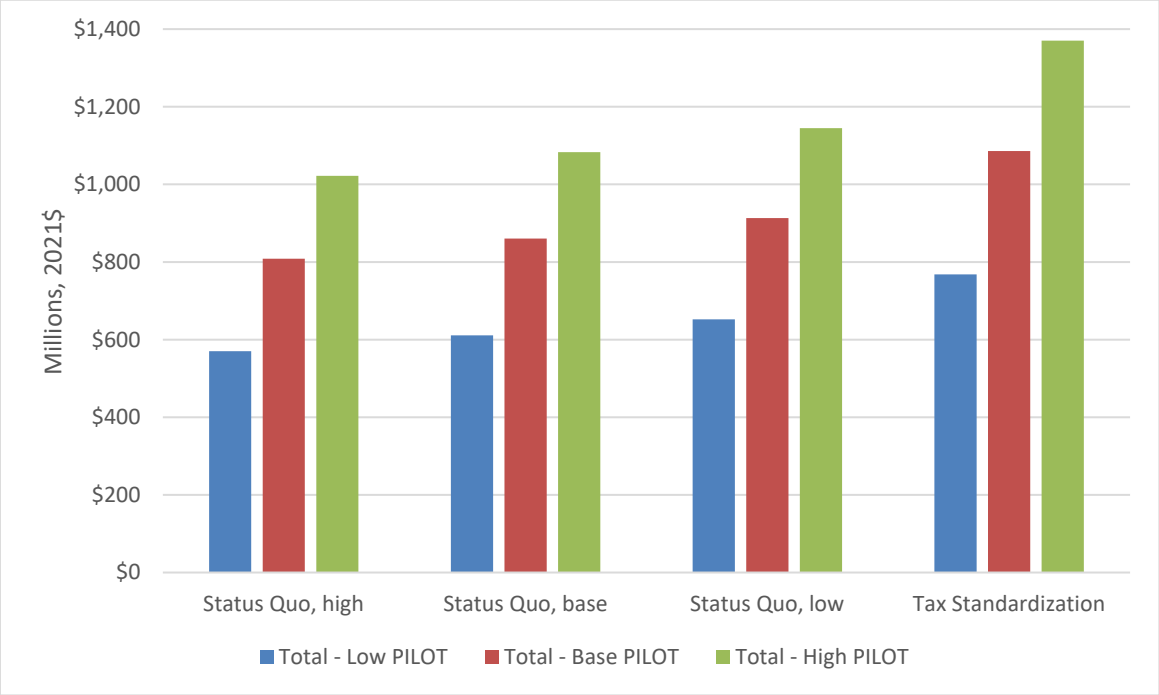


Table 3 presents a summary of the NPV of total PILOTs collected under each modeled case, assuming a range of low, base, or high PILOT values. It also presents the difference between the estimated total NPV of PILOTs collected between each of the modeled Status Quo cases and the Tax Standardization case, demonstrating the net impact of tax standardization on the total amount of PILOT revenues to local jurisdictions. The impact ranges from $116 million (assuming low PILOT values and low impacts of PILOT negotiations to large-scale renewables under the status quo) to $348 million (assuming high PILOT values and high impacts of PILOT negotiations to large-scale renewables under the status quo).

Table 3: Total NPV of PILOTS, Tax Standardization vs Status Quo

NPV (Millions, 2021$)	Low PILOT Values	Base PILOT Values	High Pilot Values
Tax Standardization	$768.1	$1,086.1	$1,370.3
Status Quo (High Impacts)	$570.3	$808.4	$1,021.9
Net Impact	***$197.7***	***$277.7***	***$348.4***
Status Quo (Base Impacts)	$611.0	$860.3	$1,082.9
Net Impact	***$157.1***	***$225.8***	***$287.4***
Status Quo (Low Impacts)	$652.1	$913.0	$1,144.7
Net Impact	***$116.0***	***$173.1***	***$225.6***

4.1.3 Total economic impacts

This section summarizes the economic impacts estimated to accrue to New York State as a result of renewable energy deployment. Figure 18 shows regional employment estimates for the Tax Standardization scenario and three Status Quo scenarios. The number of jobs presented includes a mix of full-time, part-time, and temporary positions.

Under the Status Quo – Base scenario, New York State can expect approximately 51,300 jobs by 2030. Under Tax Standardization, the State can expect about 67,900 jobs. These 16,600 additional jobs represent a 32 percent increase. Job creation could vary by several thousand depending on the Status Quo scenario. There could be 4,000 fewer jobs under Status Quo – High than under Status Quo – Base (7.9% less). In contrast, there could be 4,200 more jobs under Status Quo – Low than under Status Quo – Base (8.3% more).

New York State can expect up to $8.2 billion in labor income under Tax Standardization, compared with $6.2 billion under Status Quo – Base (Figure 19). We project that the State would experience an estimated $21.5 billion in gross state product under Tax Standardization, compared with $16.3 billion under Status Quo – Base (Figure 20). Lastly, the State will experience $38.2 billion in business sales under Tax Standardization, compared with $29.0 billion under Status Quo – Base (Figure 21).

Because the four economic measures are interrelated and based on the same capacity expansion assumptions, they show similar relationships across scenarios and regions. As mentioned previously, employment under Tax Standardization is 32 percent greater than under Status Quo – Base. The same is true for labor income, gross state product, and business sales. Employment under Status Quo – High is about 8 percent less than under Status Quo – Base. Employment under Status Quo – Low is about 8 percent more than under Status Quo – Base. The same patterns hold for labor income, gross state product, and business sales.

Based on the concentration of new solar and wind capacity, Western New York will experience the greatest amount of impact under Tax Standardization (across all measures), followed by the North Country and Mid-Hudson regions. Long Island and New York City will experience the least amount of impact.

Figure 18. Employment by Scenario & Economic Development Region

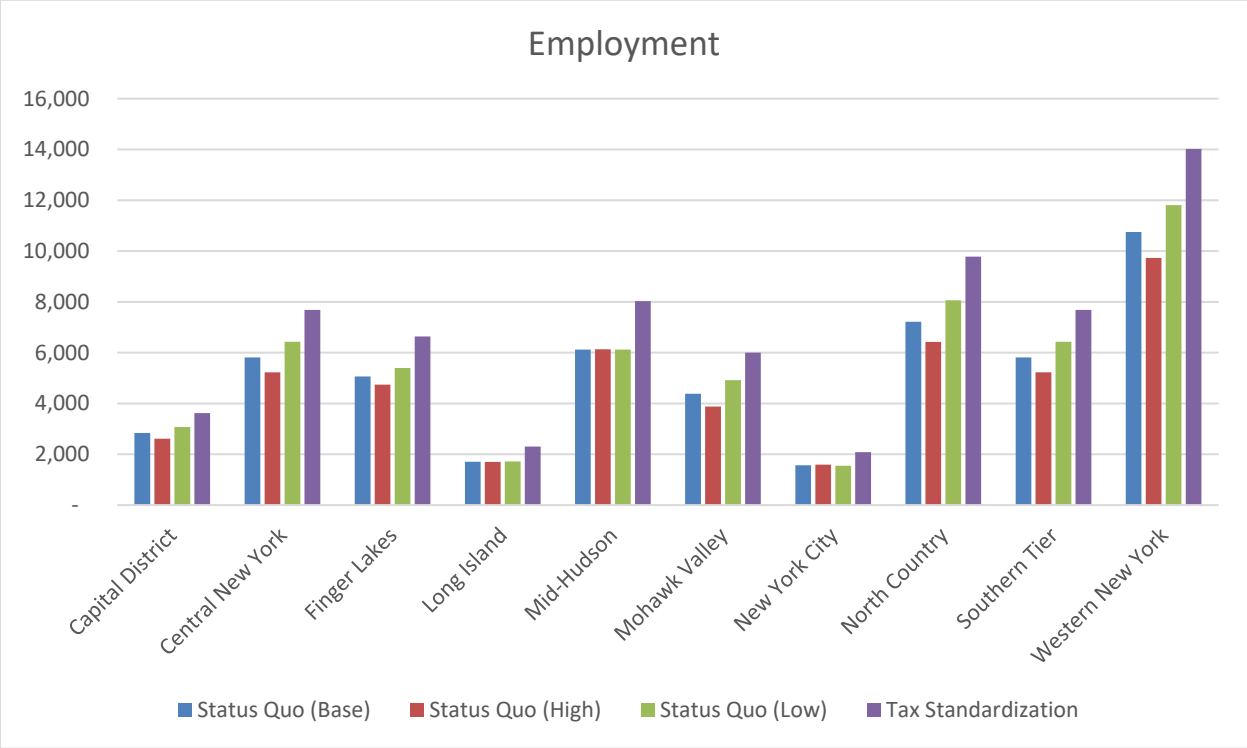


Figure 19. Labor Income by Scenario & Economic Development Region

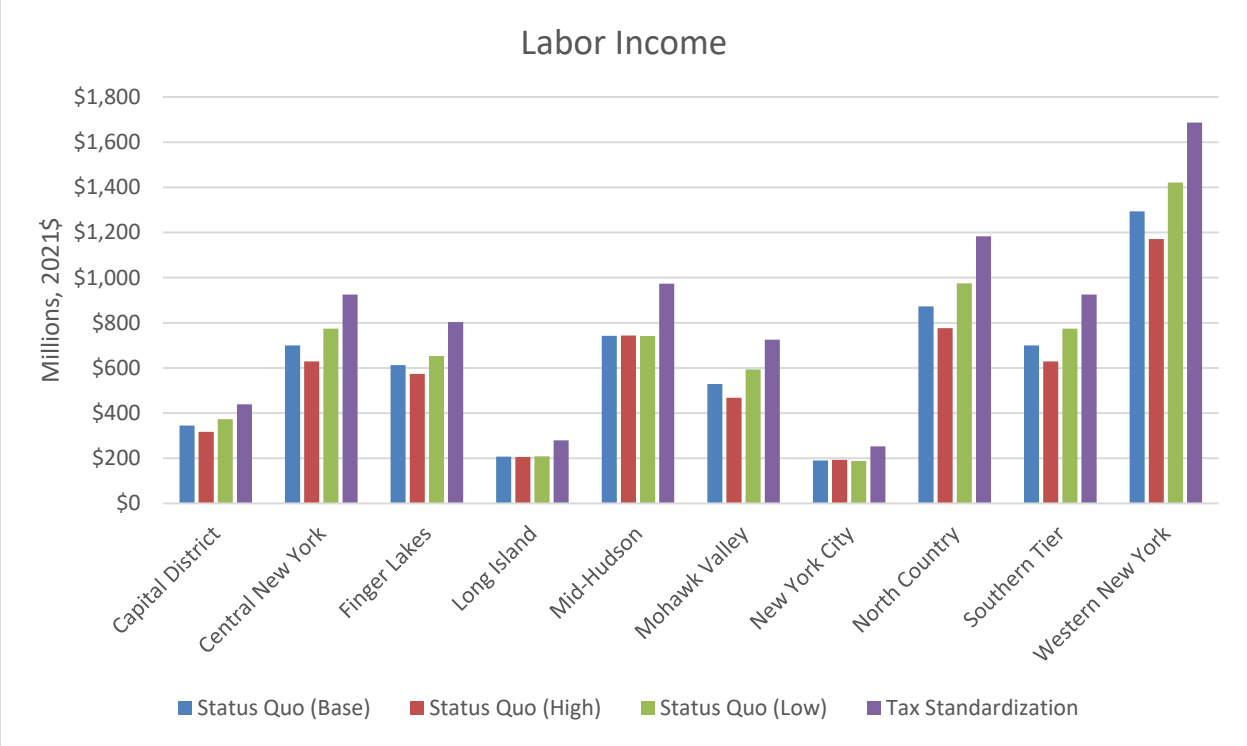


Figure 20. Gross State Product by Scenario & Economic Development Region

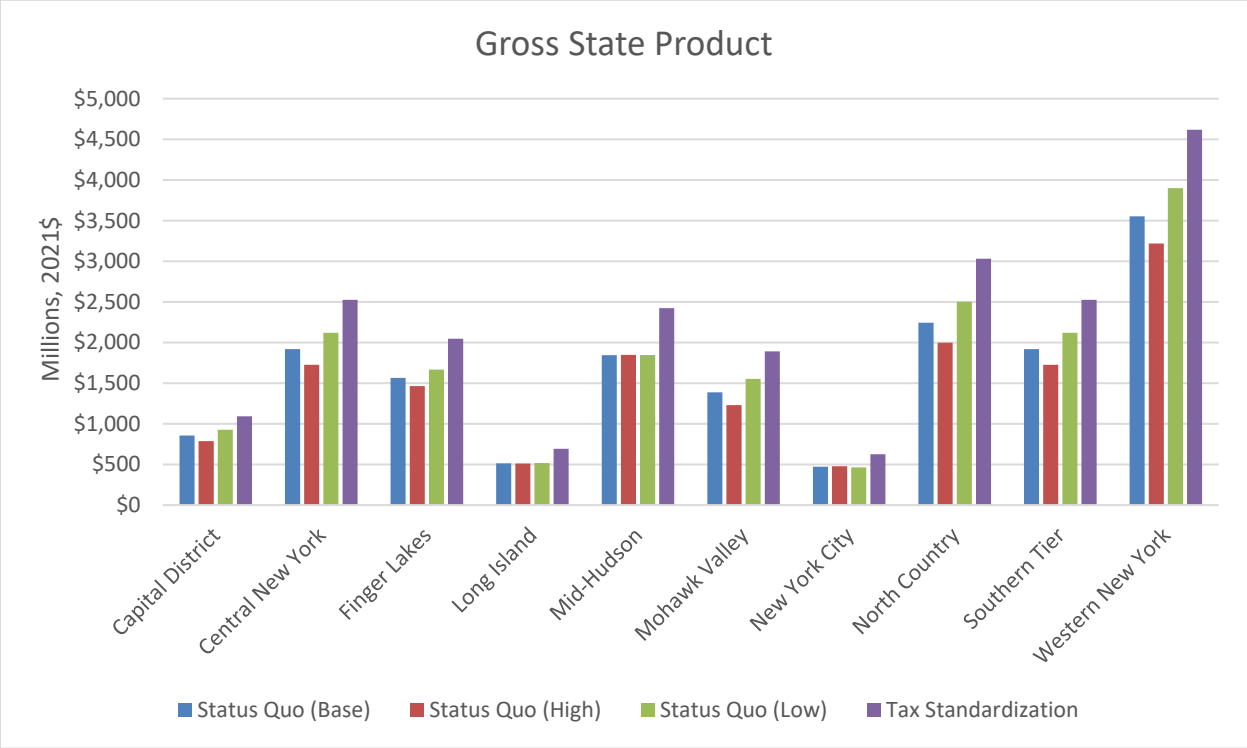
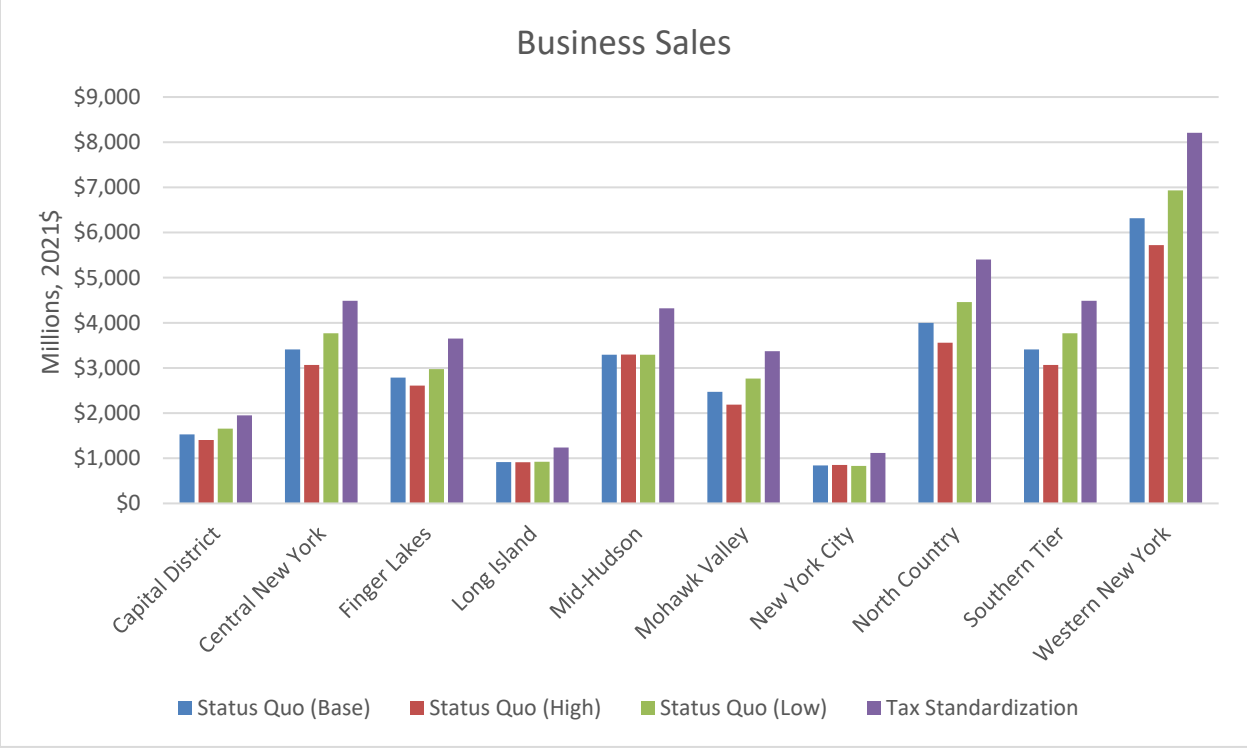


Figure 21. Business Sales by Scenario & Economic Development Region



4.2 Summary of key takeaways

Our analysis indicates that, considering both distributed solar and large-scale renewables deployment, local jurisdictions across the State could receive **$116 million to $348 million more** in the net present value of PILOTs over project lifetimes if renewable energy tax standardization is adopted. The increase in tax payment receipts is driven by the additional deployment of renewable energy that will be achieved by 2030 if the barrier to negotiating PILOT agreements is mitigated.

Further, the State could see **12,300-20,600 additional jobs** by 2030 resulting from increased renewable energy deployment under tax standardization. These include direct, indirect, and induced jobs. Total **business sales could increase by $6.9 billion to $11.6 billion** and **gross state product could increase by $3.9 billion to $6.5 billion** if tax standardization is adopted. This activity will benefit a range of industries as developers, their suppliers, and employees spend money on goods and services throughout the economy.

Differential Impacts to Distributed Solar and Large-Scale Renewables

In the distributed solar segment, the total cumulative deployment by 2030 is 25% higher in the Tax Standardization case than under the Status Quo. The total statewide cumulative deployment for large-scale renewables under tax standardization is 32% higher than the Status Quo – Base Impacts scenario. Property tax standardization may have a larger impact to the large-scale renewables segment because:

- Large-scale project developers were more likely to indicate that challenges with PILOT negotiations could lead to the project's cancellation than distributed solar developers, who indicated that the negotiations could slow down projects and draw development resources away from other projects, but were not very likely to lead to a project's cancellation. The differences stem largely from the drivers of development, as described below, and availability of suitable project sites. While distributed solar developers note that they typically avoid development activities in communities that are known to require full taxation or pursue high PILOTs, large-scale wind and solar projects are more constrained by site suitability and resource availability when selecting project sites.
- Large-scale renewable developers expected longer lags resulting from PILOT negotiations (or alternatively, greater acceleration in project timelines should tax standardization be adopted) than distributed solar developers. Project delays in either segment could cause attrition if the delay results in losing tax credit qualification or capital equipment pricing; in the LSR segment, delay poses the additional risk related to limits on how long a project can extend its contractual COD milestone obligations.
- Large-scale renewable projects in New York compete on price for REC contracts, and therefore can be highly sensitive to increases in project costs. The resolution of a property tax or PILOT obligation at a value higher than estimated, or an inability to reach a resolution on a PILOT value, may make a project unfinanceable.

- The stakes for the taxing jurisdictions on large projects may be higher because larger projects have more visibility and a larger impact to host communities. Local elected officials and representatives may have a different stance than project developers on what is reasonable for a PILOT or Host Community Agreement deal; with higher stakes, the parties may find reaching a negotiated resolution more challenging.

4.3 Opportunities for further analysis

This analysis aims to quantify the benefits to local communities and New York State that would accrue if more standardized property tax approaches mitigates the current development challenges of reaching a PILOT agreement. The analysis faces several limitations related to the use of simplifying assumptions as identified in Section 3.2, many of which could be refined further with additional study and analysis. For example, another iteration of the analysis could research further how PILOTs amounts may differ in the Status Quo and under Tax Standardization, and test the sensitivity of those differences on property tax-related revenue and total economic impacts. Further study could refine assumptions related to Host Community Agreements, how such agreements impact PILOT negotiations and values, and break down the total payments stemming from each type of agreement. Finally, this analysis did not examine if, when, or how taxing jurisdictions or IDAs use PILOT agreements as an *incentive* to attract projects to the community. Future studies could analyze how much additional renewable energy growth could result from this type of PILOT arrangement.

A Appendix A: ACE NY Memo to NYSERDA re NYSERDA Development of Guidance Regarding PILOTs for Grid-Scale Solar

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Date: September 9, 2019

To: Houtan Mouvani

From: Anne Reynolds

Re: NYSERDA Development of Guidance Regarding PILOTs for Grid-Scale Solar

Thank you for the opportunity to provide feedback on NYSERDA's development of guidance to municipalities regarding Payment In Lieu of Taxes (PILOT) agreements for grid-scale solar projects. We have discussed this among ACE NY membership have compiled the following feedback:

- We support NYSERDA developing guidance to municipalities, and we appreciate that different and separate guidance is needed for grid-scale projects as compared to NYSERDA PILOT guidance related to distributed solar. Our members reiterate that the revenue sources and revenue levels are very different for grid-scale solar than distributed solar. We believe that explaining this difference to municipalities in a guidance document would be valuable to all parties. We do note that the underlying assumption that 1-3% of gross revenues is a sensible guide for an appropriate PILOT level, which we believe is used in the distributed solar guidance, is also appropriate for grid-scale solar.

- ACE NY members firmly believe that PILOT agreements are a beneficial alternative to traditional property tax collection due to the length of the agreement, which provides certainty to project owners/operators and taxing jurisdictions. For the taxing jurisdictions, a known and certain revenue stream allows them to plan expenses and expenditures, and to avoid a time-consuming re-negotiation process that would be more frequent. For project owners, a PILOT agreement provides long-term certainty about their expenses, which is critical to getting projects financed. Accordingly, we strongly recommend that NYSERDA's guidance describe these benefits to the parties and recommend to IDAs and taxing jurisdictions that the term of PILOTs should be the life of the project, or a minimum of 20 years.

- ACE NY members are often engaged in entering into Host Community Agreements as well as PILOTs. In many cases, a Host Community Agreement offers more opportunity to target financial benefits to the towns that are hosting a project or even a neighborhood or fire district that is hosting a project. As you know, renewable energy projects, in general, do not significantly increase the responsibilities or expenses of counties or school districts. While a renewable energy developer is happy to contribute to the tax revenue of counties and school districts, there are good reasons to target benefits to the towns or fire districts that will host/view the project. Further, a Host Community Agreement may give the town

the opportunity to use new revenues for specific community need or desire. Accordingly, we recommend that NYSERDA's guidance highlight the possibility and benefits of Host Community Agreements, and the fact that a lower PILOT assessment would be appropriate in cases where a project owner/operator has also committed to financial payments via a Host Community Agreement. Similarly, some projects also need to pay Special District taxes, which should also be taken into account.

- ACE received quantitative feedback from several member companies, which we then summarized and discussed with membership (specifically, the ACE NY Large Scale Renewables Work Group). From these discussions, we developed the recommendations in Table 1 below. We note that due to a lack of recent experience developing grid-scale solar in zones H-K, we did not receive any input from members regarding appropriate property taxes in these zones (though we can continue to solicit that input if NYSERDA would like). Also, we note that these levels are (1) inclusive of what would be paid in a Host Community Agreement and (2) do not include escalators. The revenue received by project owners will come from a 20-year fixed REC contract, which will not have an escalator, and from the NYISO wholesale markets, which are not expected to experience increasing market clearing prices. For these two reasons, we do not believe escalator in PILOT agreements for grid-scale renewable energy are needed nor appropriate at this time.

	PILOT ($/MW AC) combined with HCA level		
	20 MW or less	*20 MW-100 MW*	*Over 100 MW*
A - West	$1,600	$2,000	$2,200
B - Genesee	1600	2000	2200
C - Central	1600	2000	2200
D - North	1400	1800	2000
E - Mohawk Valley	1600	2000	2200
F - Capital	1800	2000	2500
G - Hudson Valley	1800	2200	2500
H - Millwood	No Recommendation	No Recommendation	No Recommendation
I - Dunwoodie	No Recommendation	No Recommendation	No Recommendation
J - New York City	No Recommendation	No Recommendation	No Recommendation
K - Long Island	No Recommendation	No Recommendation	No Recommendation

Again, thank you for the opportunity for ACE NY to opine on these matters. We look forward to discussing this feedback with you further and we would be happy to discuss it in an in-person meeting at your convenience.

Further, during our discussions, several individuals expressed a request for a standardized methodology for full assessment of taxes for grid-scale solar, while others felt that grid-scale solar is fundamentally not an asset where traditional tax assessment methodologies work. This is an issue worth further discussion.