

International Energy Producer

Modeling Noise to Advance New York's Clean Energy Goals

Case Study

Across the United States, communities are moving toward cleaner energy futures. This is no more apparent than in New York, which has set an **ambitious goal** of sourcing 70% of its electricity from renewable resources by 2030. Large solar projects are central to achieving this target, delivering new capacity to the grid while reducing reliance on fossil fuels.

One of the most significant recent investments in this effort is a utility-scale solar facility in western New York. Developed by a leading renewable energy company with a national footprint, the project is designed to generate enough clean electricity to power tens of thousands of households. Its scale makes it both a milestone in the state's renewable energy transition and a project requiring careful planning to move from vision to reality.

The Challenge

Bringing a project of this scale to life required more than installing solar panels and connecting to the grid. It also meant meeting New York's stringent permitting requirements and addressing concerns of the surrounding community.

Residents weighed the promise of clean energy against uncertainty about how the

project might affect their daily lives. Would the hum of transformers or the operation of inverters be annoying? Would noise from construction activities be disruptive? These were not abstract questions but tangible concerns raised during the permitting process.

State regulators also set clear expectations. New York's Section 94-c permitting framework requires solar developers to demonstrate that projects will meet specific sound-level thresholds at homes and property lines. These standards establish protective limits (e.g., ensuring non-participating residences do not experience long-term sound levels above 45 dBA). Demonstrating compliance is not optional; it is a critical prerequisite for project approval.

At the same time, the project itself was technically complex. With approximately 370,000 solar panels, nearly 50 inverter skids, two large substation transformers, and hundreds of megawatts of generating capacity, accurately predicting sound levels across the relatively large project area was no small task. Background noise levels also vary seasonally in rural western New York, requiring extensive field monitoring.



The challenge, then, was to provide regulators with rigorous, defensible evidence that the project would meet or exceed state noise standards and help minimize noise impacts to the community. Meeting this challenge required specialized **noise control engineering** expertise.

RSG's Solution

To support project approval and protect community quality of life, RSG delivered a comprehensive noise impact assessment that combined rigorous fieldwork, advanced modeling, and practical mitigation strategies. Our team of board-certified acousticians guided the developer through each stage of the permitting process, ensuring compliance with state standards while addressing local concerns head-on.

The work began with on-the-ground sound monitoring. RSG deployed precision instruments to capture background sound levels across multiple seasons, accounting for variations in weather, land use, and community activity. These measurements were the foundation for a transparent and defensible baseline against which project sound could be evaluated.

From there, our engineers built detailed models of how sound from the project's major equipment would propagate across the surrounding landscape. Using industry-standard acoustical software and conservative assumptions, we simulated both typical and worst-case conditions. This modeling incorporated not only direct sound from equipment but also potential tonal characteristics that could increase annoyance in sensitive areas.

With these results in hand, RSG worked with the project team to identify and incorporate mitigation strategies. These included specifying quieter transformer designs, ensuring appropriate sound enclosures for auxiliary equipment, and adjusting equipment placement to minimize impacts on nearby residences. We also assessed potential construction noise and recommended best practices such as limiting work hours, maintaining equipment mufflers, and staging activities away from homes whenever possible.

Finally, RSG documented the findings in clear, regulator-ready reports. Our analysis demonstrated that, with the recommended design and mitigation measures, the project would meet or exceed all applicable New York Section 94-c sound standards. Equally important, the reports provided assurance to community members that their concerns were taken seriously and addressed.

Through this process, RSG helped transform potential barriers into solutions. By combining **technical rigor** with a focus on community trust, we enabled the project to advance confidently toward construction and operation, supporting New York's renewable energy goals while safeguarding the character of the local community.



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