Energy Highway Initiative – RFI Proposal:
A One-Megawatt (MW) Solar Power Plant at the Exit 24 Interchange Of the New York State Thruway
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1. **Respondent:** The Solar Energy Consortium (TSEC)
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   Respondent background:

The Solar Energy Consortium (TSEC) is incorporated under the Not-For-Profit Corporation Laws of the State of New York for charitable, scientific and educational purposes as permitted under Section 501(c)(3) of the U. S. Internal Revenue Code. TSEC is funded by the U.S. Department of Energy through 2012; its mission is to build the sustainable energy sector of New York's economy and ensure the State's global competitiveness by catalyzing market transformation and technology commercialization, by advancing energy research and development and by educating the public. TSEC fosters scientific research and technology development through the provision of funding, facilities, personnel and support for application and design research, pilot manufacturing and related activities. TSEC also works in partnership with state, regional, county and local governments and economic development organizations to attract and grow solar energy-related companies in New York State.

TSEC has a long history of support from New York State, providing a vital government resource for solar technology business attraction by offering unique benefits to firms locating in the Hudson Valley and the state. With its network of established industry and academic partners (100+) and partnerships which include The New York State Governor's Office, Empire State Development Corporation (EDC), NYSERDA, Department of Energy (DOE), Department of Health and Human Services (HHS) and the Small Business Administration (SBA), TSEC works to focus state efforts on solar industry attraction and development. Its leadership role was recognized in the fall of 2010 when Pattern for Progress, the regional development advocacy group, presented its annual Economic Development Award to TSEC.

Several million dollars have been awarded to TSEC's sub-recipients for PV module manufacturing equipment and photovoltaic research. The Consortium has been awarded key grants from federal agencies—including the Departments of Energy and Health & Human Services (HHS), the Economic Development Administration (EDA), Education and Training Administration (ETA) and the SBA—providing funding needed to engage in R&D initiatives with its industry and university partners, to attract manufacturing interests to the region, and, in some cases, to become a prime contractor for the delivery of services.

TSEC supports underserved communities by helping to bring new businesses into vacant commercial properties often located in economically challenged urban neighborhoods, thereby bringing new jobs and tax revenue to those communities. The New York Renewable Energy Cluster (NYREC) which TSEC represents has been recognized by the National Renewable Energy Lab (NREL) as one of only eighteen solar industry clusters in the world.

2. Project Description: Solar Power Generation

TSEC proposes to partner with the New York State Thruway Authority, National Grid and NYS solar equipment manufacturers in the construction of a 1 MW solar power plant on Thruway Authority-owned property at the Exit 24 Interchange in Albany. The Authority owns approximately 10 acres of land in the form of gores distributed throughout the Interchange complex, more than enough to comfortably site a system of this size.

The project site is located in NYISO Zone F, in the City of Albany, Albany County.
Planning and construction of the power plant is projected to take 24-36 months.
Photovoltaics, the project technology, are in current use and meet industry standards.

3. Project Justification:

Despite four years of economic recession and two sets of international climate-related accords (Kyoto and Copenhagen), atmospheric greenhouse gas (GHG) concentrations have continued to rise. Consequent effects on global climate patterns, at first subtle, are becoming apparent. Domestic carbon-neutral energy production target dates, federal and state, once comfortably situated in a distant future, are close enough now to touch. The imperatives to accelerate the transition of our energy economy are clear and are reflected in Governor Cuomo's apposite Energy Highway Initiative.

The New York State Thruway Authority uses approximately 27 MW of electricity per year, the vast majority of which is supplied from fossil fuel sources. This rate of usage will increase as our national fleet is electrified and charging infrastructure is deployed to meet resultant electricity demands. The anticipated rebound of our economy will act as an amplifier of energy use, increasing the demands on a power grid already challenged by its own need for technological transformation. Accelerated deployment of carbon-neutral electricity generation is one important way to meet these challenges and it is this awareness which informs the present proposal.

Installation of a utility-scale photovoltaic power plant at a site like the Thruway's Exit 24 interchange will address a significant number of energy-related concerns:

- The installation will increase upstate power-generating capacity without adding to GHG emissions and will offset approximately 4% of the Thruway Authority's current fossil fuel use.

- The Authority has already begun the deployment of wind-derived energy production on its western flank and owns a large amount of right-of-way property which can be used for further sustainable energy production operations. The proposed solar plant will give the Authority the opportunity to develop expertise in the operation and management of these facilities in advance of significant electric vehicle deployment which will require further solar power generation.
- The installation will help the state meet its goal of generating 30% of its power requirements from renewable sources by 2015.
- TSEC is the steward of a growing solar cluster in the mid-Hudson Valley, one that is making critically important contributions to New York's economy in the form of job creation and technological innovation. Over the past two years, the domestic solar industry has been hobbled by the trade practices of foreign competitors and general economic instability and remains challenged by difficulties associated with the introduction of new energy technologies. At a time when subsidies are being curtailed, government procurement of these technologies constitutes a vital and effective buttress for this industry; the present proposal represents an opportunity for the State to demonstrate its support in an optimally public fashion.
- The public's understanding of new energy technologies is often taken for granted; it is our experience that a great deal more education must be provided to our citizens before they can be expected to make the financial and life-style commitments which precede new energy technology adoption. Siting a solar power plant at the Thruway Exit 24 Interchange will put this technology where it will be seen by thousands of potential end-users. These consumers will also see evidence of their government's commitment to this most necessary energy transition.

4. Financial

As the solar industry has grown and differentiated, the number and variety of financial instruments for underwriting installations has increased proportionately. Several of these instruments – notably the Power Purchase Agreement (PPA) and the Solar Leasing Arrangement (SLA) – would allow a public-private partnership and would be suitable for financing a project of the type being proposed. Each arrangement provides its own suite of capital expenditure deferments, guarantees, benefits and obligations and will have to be considered in the light of the Thruway Authority's financing constraints. Either of the aforementioned arrangements will allow the Authority to pay less for its electricity than it otherwise would, at a rate guaranteed for the life of the agreement, and will obviate the need for the Authority to purchase the system outright.

5. Permit/Approval Process

Permitting procedures and NYISO interconnection studies have yet to be undertaken. In addition to standard studies, the Dept. of Transportation (DOT) will be consulted to evaluate potential impacts of the installation on driver safety. In the event a determination is made that light reflection from the solar panels represents a potential driver distraction/hazard, solar panel azimuth will have to be adjusted with a possible decrease in overall system efficiency.

6. Property

The system will be installed on Thruway Authority right-of-way at the Exit 24 Interchange.

7. Projected In-Service Date/Project Schedule

The project is expected to take up to 36 months to complete, allowing for permitting/siting/interconnection studies and procedures, DOT evaluation, engineering and design, construction, testing and commissioning. Project schedule will be determined by Thruway Authority and utility personnel.

9. Technical

The life-span of the project facility's components is expected to range from 20-25 years. Typical manufacturers' warranties for solar panels are of similar length; balance-of-system warrantees vary.

10. Construction

All facility materials, including solar panels and balance-of-system components, will be sourced from NYS manufacturers. Electrical work will be performed by IBEW technicians. Responsibility for end-of-life-cycle arrangements will be a function of financing agreements (PPA, Solar Lease etc.).

11. Operational

PPA and Lease agreements are typically accompanied by energy production guarantees for the duration of the agreements. Safety and emergency considerations will be managed by Thruway Authority and project engineers.

12. Socio-economic

The solar technology industry, here in the U.S. and abroad, is experiencing a period of contraction and consolidation. Falling cost-per-watt figures, high levels of capacity and inventory, decreasing incentive rates and generalized economic instability have reduced manufacturers' margins to all-but-unsustainable levels, setting in motion a winnowing process that shows no signs of abating anytime soon. As the industry has grown, so has the visibility of its failures, a list of which includes not only newer technology manufacturers but industry pioneers as well; whether this is seen as market correction or distortion, it is a state likely to continue for some time.

In this period of uncertainty for the solar market, accentuated by the curtailment of subsidies, government procurement of renewable energy technologies becomes even more important in maintaining the growth of these industries. By now it is abundantly clear that renewable energy technology deployment constitutes the most direct path to

energy and economic sustainability for our state, our region, the country and beyond. Growing sustainable energy industries means jobs for our citizens, renewed vitality for our innovation pipeline, viability for our economy and preservation of our quality of life.

Despite the foregoing, there are still those who find visible forms of energy production, like wind turbines and solar arrays, aesthetically unacceptable. Siting these installations far from population centers in order to appease this constituency means building new transmission capacity, at great cost to the consumer and to the environment. Distributed generation avoids these negative attributes. Perhaps it is time to reconsider notions of aesthetic acceptability.

Public safety concerns associated with the proposed installation should be no different from those posed by any other type of power generation facility and can be effectively managed in similar fashion.

13. Financial

Utilities are taking a greater interest in owning distributed generation solar facilities; National Grid may wish to partner with the Thruway Authority in financing this project. Facilities like the one being proposed help utilities comply with RPS requirements and defer capacity construction; reduce the need for additional transmission lines; help to maintain relationships with customers who are increasingly being approached by third party power providers; and contribute to positive public relations.

The facility will generate approximately 1,000,000 Kwh/year and will provide peak load support and grid enhancement for the utility.

14. Environmental

The proposed facility will avoid the production/emission of approximately 500 tons of CO2/year. Its location on the Thruway Authority's right-of-way at Exit 24 means that no natural areas will be disturbed by its construction.

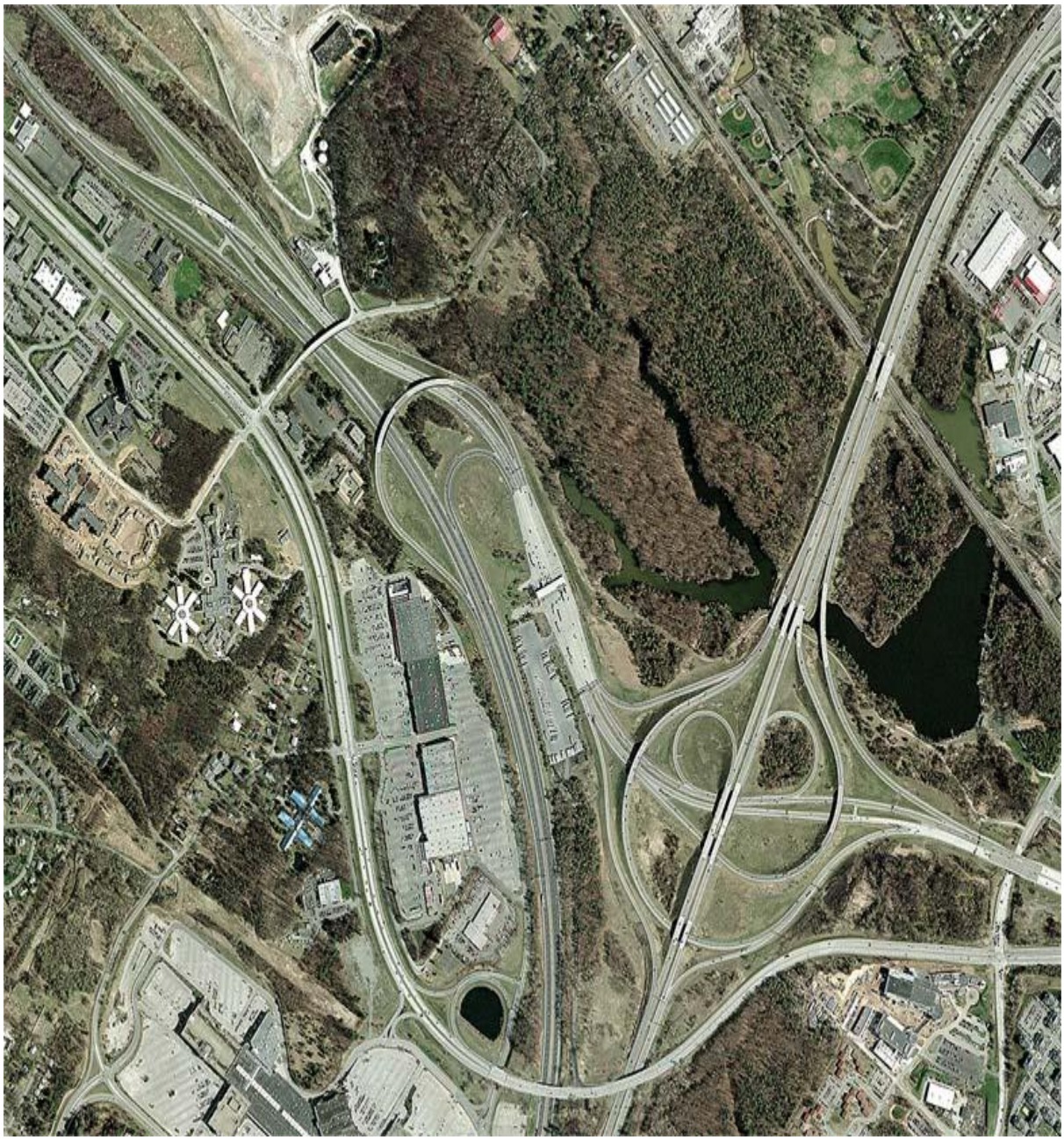
15. RFP Status

The project has not been submitted in response to any other RFPs.

16. Public Outreach

The project will present the opportunity to educate the public about the sponsors' efforts to meet energy and environmental targets. For example, the Authority could consider the installation of educational displays at thruway service areas describing the installation and listing its contributions to the State's energy footprint and to its economy.

APPENDIX



Aerial photograph of the Exit 24 Interchange