To:	**LIPA Board of Trustees & REV Committee (boardoftrustees@lipower.org)**
From:	**Leading Solar, Storage & Other Distributed Generation Industries & Related Organizations of Long Island**
Regarding:	**Formation of a joint PSEGLI & Industry Interconnection Working Group (IWG)**
Date:	**Submitted 15 May 2019 for 22 May 2019 Board Meetings**

Summary – Connecting distributed energy resources (DER) to the grid is increasingly challenging and prohibitive. Inability to connect, costs, extended timelines and many other obstacles are greatly inhibiting and preventing DER deployment and only getting worse in an accelerating manner. We believe the current approach significantly handicaps the growth clean energy generation to the Long Island grid. New technical, policy and procedural approaches are urgently needed to even come close to achieving the Governor's goals. We, the leading distributed generation industries of Long Island (including but not limited to solar, energy storage, gas turbine cogeneration, small wind, fuel cell, etc) have thus organized and write to make LIPA aware of these challenges and summarize our request to PSEG to create a new collaborative entity with sufficient leadership and authority to begin addressing these challenges. Our ultimate goal is not only to drive down costs and remove other impediments to connecting DER's to the grid, but to find solutions which drastically increase our ability to connect and evolve the grid as necessary to realize a new energy paradigm.

IWG Summary – To achieve desired outcomes we have been communicating with PSEG to create a collaborative entity with the right authority and expertise to begin addressing the foundational technical, policy and procedural issues. Our near term goal is to create an "Interconnection Working Group" (IWG) whereby select credentialed industry & non-governmental organization (NGO) representatives work side by side with utility representatives to assess challenges and seek solutions. The IWG would consist of approximately 10-15 industry/NGO and 10-15 utility representatives. Both industry/NGO and utility members would consist of credentialed subject matter experts and technical decision makers. The primary goal of this group would be to reach consensus on interconnection policy issues and propose revisions to technical, procedural and other policy documentation. Upon consensus the official recommendation of this group would be routed to utility management for final review. Group operation and conduct is summarized by a written charter that will be revised as needed with consensus among industry and utility chairs. Please see enclosed proposed charter that we have already shared and modified based on feedback from PSEG. At present we are hoping for line-item comments from PSEG.

Urgency – Below we provide a small sampling of the many topics which require review as soon as possible. These issues are complex and require ongoing expert exchange and review. The State goal of "100% Carbon Offset by 2050" will absolutely not be achieved under the current paradigm. We believe there is overwhelming public support for resolution of these issues and accelerated grid evolution. This was addressed upstate by DPS as a consumer advocate, but is lacking on Long Island. The need to roll up our sleeves and begin addressing these topics by industry and PSEG leadership could not be more urgent.

Modeled after ITWG & IPWG – This group is mostly based on the make-up and operation of the "Interconnection Technical Working Group" (ITWG) which was commissioned and run by the NYS Department of Public Service (DPS), which is the regulator for the "Joint Utilities" (JU). The sister organization of the ITWG is the "Interconnection Policy Working Group" (IPWG). The ITWG and IPWG have been in operation for approximately three years.

Industry/NGO & PSEG Collaborative Effort – As you are aware, PSEG is not a member of the JU and thus not subject to the decisions made by the ITWG or IPWG, as enforced by the DPS. While PSEG does have

a representative at the ITWG meetings, we feel strongly that a Long Island specific entity, such as the IWG we have proposed, is required to perform functions similar to the ITWG & IPWG. A key difference is that we would be focused on challenges unique to Long Island territory. This group will provide an official mechanism for direct review, information exchange and collaboration with industry or other stakeholders. We believe that the proposed IWG is a collaborative solution to performing these tasks.

Prior Meetings vs. New Proposal – PSEG has had previous industry & PSEG advisory meetings, and we sincerely appreciate these efforts. However, we strongly believe that the new IWG proposed will be a far more effective and direct method for information exchange and collaborative decision making. We believe that the group should initially meet on a monthly basis whereby each side would give updates on the various tasks each are assigned with, giving presentations and reviewing evidence to support their recommendations. As stated, the issues are complex and require careful, rational exchange backed by logical reasoning and scientific evidence. This system of presentation and exchange has been very effective for the ITWG and IPWG.

Industry/NGO as a Resource – The opportunity to the utility to directly tap into expert, voluntary resources cannot be overstated. Through the IWG, wholly committed industry and NGO experts will sit side by side with the utility members and address these most pressing challenges in order to create the grid of the future. We view being a member of the IWG as a big deal, with each member committing hundreds of hours toward doing research and preparing presentations as part of our ongoing exchange with the utility members. Moreover, industry and NGO members will have access to a vast network of personnel and experience across the country and world.

Key Existing Challenges & First Topics – Some of the many challenges and first topics to address include:

- Detailed review of "Key Performance Indicators" (KPI's) and which should be reported monthly by PSEG to LIPA? Do these KPI's properly measure PSEG success? Subsequent evaluation of said KPI's and whether additional funding and support is needed for PAM group and associated departments to support interconnections.
- Deep dive into feeder loading limits and basis for all limits.
- Deep dive into "Direct Transfer Trip" and associated requirement to enter into long term contract with Verizon to maintain direct communication line: what alternatives exist, what are the costs to implement alternatives, etc.
- Deep dive into under what exact conditions "utility grade relaying" is required, which is arguably redundant with protection already inherent in a UL compliant inverter.
- Interconnection on network systems
- Ongoing evaluation of what decisions have been made by the IPWG & ITWG and which should be implemented in LIPA territory and associated timeline?
- Review interconnection application and review procedures for energy storage on Long Island.
- General review of organizational make-up of PSEG's PAM group and related departments; what makeup and arrangement is needed to streamline the DG evaluation through to construction completion.

LIPA Regulated Alternative – One alternative to the model we have proposed is that industry formally request LIPA appointment a representative to directly oversee IWG meetings and perform functions as a regulating entity, just like is done by DPS for the ITWG & IPWG. If direct industry/utility collaboration is not possible this option is desirable. Under this scenario LIPA, as an independent third party seeking the best interests of the public at large (which includes industry, NGO, PSEG, etc) can moderate discussion, direct meetings, and mandate decisions and timelines, et cetera. PSEG has expressed that changes to their Operating Service Agreement (OSA) may be necessary if we pursue this option.

Why Long Island IWG – It could be asked that PSEG become part of the JU, but this may or may not be possible given the LIPA-PSEG structure and OSA. As such, and for many additional reasons, we believe that a separate Long Island territory IWG entity is essential. Given the unique grid conditions on Long Island, and that LIPA territory is a leader in solar and other DG installations, a LI specific group can be effectively utilized to focus on local and unique challenges that need to be addressed.

Industry Reach & Representation – While our initial group mostly consists of solar and energy storage contractors, we are confident in our ability to adequately represent all DG related industries. Our existing group of companies already includes most of the methods of DG connection cited previously. The industry chairperson's information would be listed on a LIPA or PSEG website, and is readily available to speak with and incorporate their concerns. When an entity has a particular issue or topic they would like addressed as part of the IWG mechanism, we would take that feedback and see if it is already being addressed and rank it appropriately among the existing list of priorities. Meeting minutes and other presentations can be published on a dedicated LIPA or PSEG webpage. A call-in system for listening only can be arranged to allow for the public to hear meeting proceedings. Each of these items are exactly how the ITWG is successfully conducted.

Comments from PSEG on this Letter – We shared a final draft of this letter to PSEG and here is their response: *PSEG LI is interested in obtaining feedback from our industry stakeholders on the interconnection process. Presently PSEG LI is reviewing some associated legal concerns on this proposed Interconnection Working Group (IWG) by the industry. PSEG LI is committed to come up with a plan that addresses both the legal concerns and the industry request. Our goal is to collaborate with the industry stakeholders and streamline our processes to accommodate the transforming electric grid.*

Industry/NGO Response to Concerns – We sincerely appreciate the ongoing exchange with PSEG leadership. We understand that PSEG legal has some concerns. These concerns are perplexing because we believe said concerns can be easily overcome, evidenced by the existence of the ITWG and IPWG which operate in the same exact manner we request the IWG operate.

Massive Industry, NGO, Public Support & Next Steps – Please know that the industry, NGO and public response to this initiative is overwhelming. We have had complete support from every entity we have requested endorsements. At present this represents literally thousands of employees and organization members. We are confident in our ability to continue gaining full public and political support of the IWG as outlined in the enclosed draft charter. We will continue to urgently await specific feedback from PSEG on the draft charter we have written. Pending their response we may or may not make additional requests to the LIPA Board of Trustees.

Respectfully Submitted,
Leading DER Industries & Organizations of LI

Organizational Endorsement, & associated representation

Association of Energy Engineers, Long Island Chapter
Citizens Campaign for the Environment
HealthyPlanet
IEEE Power & Energy Society, & Industry Applications Society, Long Island Chapter
New York Battery and Energy Storage Technology Consortium (NY-BEST)

Developer, Contractor, Engineer, & Other Business Endorsement

Best Energy Power
Blueprint Power
Bright Power
CED Greentech
Edgewise Energy
EDF Renewables Distributed Solutions
Empire Clean Energy Supply

Renewable Energy Long Island
SEIA Long Island
SEIA New York
Sierra Club L.I. Group
Sisters of St. Joseph
Sustainability Institute
The Nature Conservancy in New York
Vision Long Island

EmPower Solar
EnterSolar
GreenLogic Energy
Harvest Power
Horizon Solar
Integrated Storage Technologies
Long Island Power Solutions
Morton Engineering
SUNation Solar
Sunrise Power Solutions
Sunrise Solar Solutions

[Endorsements are ongoing]

Charter – PSEG-LI & Industry Interconnection Working Group

DRAFT Ver: 10 April 2019

Formation

- This document hereby commissions & outlines the core operating principles of the PSEG-LI & Industry Policy & Technical ***Interconnection working group (IWG)***
- This is a voluntarily formed working group between Industry & PSEG-LI
- Revisions to this governance document may be performed anytime via group consensus

Foundational Principles

- Holds health, welfare and safety of public paramount
- Ensures safe, continuous operation of the grid within required standards
- While updating/evolving technical, procedural and economic policies acknowledging vast potential good that comes from large scale deployment of renewable energy resources
- A "solution finding" body to support New York State public renewable energy goals
- Core focus on apolitical, rational and evidence based decision making
- Has authority to make official technical & procedural policy recommendations to senior PSEG management

General Function

- Covers all DG technologies including small generator technologies: solar, wind, battery, fuel-cell, other CoGen, etc
- Act as an instrument for ongoing review and updating of (a) technical, (b) procedural & (c) economic interconnection policies which include both utility and industry representatives
- Single combined Policy & Technical group (not two separate groups)
- Act as the entity which provides the "technical/procedural policy change pathway"

Primary Scope

- Tracks & implements activities & decisions made by NYS ITWG & IPWG, oversees implementation in PSEGLI territory
- Focus areas: (a) revisions & maintenance of existing & new source SGIP documentation, (b) assessment of public/published vs. private information, and (c) anything else decided by the IWG

Liaisons & Communication

- Communicate & share information with DER industries via published meeting minutes or other means
- Industry members & chair to act as a liaison information from DER industries and ensure topics proposed are prioritized properly in working group sessions
- Interact with DEP & NYSERDA
- Share updates to LIPA board members

Research Functions

- Interpret and understand technical papers & studies
- Has capabilities & backing to commission testing through independent 3rd parties such as EPRI, etc

Decision Making & Authority

- Official recommendations made by the IWG are consensus based, requiring both industry & utility agreement
- All final suggestions are accepted and implemented per mutually agreed upon timelines
- Disagreements are mediated by & between industry & PSEG committee co-chairs

IWG Membership Makeup

- Min 75% credentialed scientists, engineers and technicians, balance (25% or less) non-technical management/leadership
- Goal is 50% balance of utility and industry/non-utility members
- New members must be approved by both industry and utility chairs
- Initial membership selected by consensuses of PSEG & industry/non-utility
- Maximum group size of 16 members

Leadership Selection & Joint Responsibilities

- Both utility and industry members respectively select their co-chair
- Set agenda, prioritize topics, meeting frequency & location
- Seek majority and consensus of their team, mediate disagreements or disputes
- Primary representatives of IWG as required
- Group will select a secretary from members to write and publish meeting minutes

Sample Starting Topics & Issues
(to be organized and prioritized as part of first IWG meetings)

1. Review & synchronization with "Joint Utility" (JU) requirements/operations
2. Implementation & publishing of KPI's. Comprehensive timeline review on all items including post CESIR follow-ups, etc. Review of said KPI's and commission additional resources.
3. Review of exact calculation methods and basis behind the below. For all relay functions, please specify when each are required and how does this change at different system sizes and/or feeder scenarios (ex 300, 500, 750). Examine basis for exceptions.
    a. Utility grade relaying superseding inherent inverter protection. The new SGIP requires that systems <500kw still need intertie breaker and relaying, just volts & hertz. What is the basis for this requirement? At what size or under what conditions is redundant relaying not required?
    b. DTT/SCADA is only supposed to be required for systems >1MW. What exactly define current requirements? Comprehensive basis review for both.
    c. Lease lines and communication methods for DTT or other
    d. When is 3V0 protection (59G) required and what is the basis for requirement?
    e. Meter reading phone line requirements
    f. What is the system size and basis for requiring a lockout relay? "Nuisance tripping" is common and cumbersome.
    g. Others
4. Cost impact review
    a. Utility to understand costs associated with each additional PSEG requirement
    b. Industry to understand PSEG estimated costs
5. Feeder and Substation limitations review. Please provide the exact calculation methods and basis for determining max connected DG to a feeder. Perception that PSEG-LI has the most conservative calculations on allowable DG at the feeder and substation level. Comprehensive review of feeder and substation assessment methods and limitations. Review of basis for all limitations.
6. Feeder and substation maps updating
7. In how many instances has a PAM used VAR power factor correction by an inverter to increase the ability to inject power into feeder? Increased use policies.
8. Construction timeline review.
    a. Long process timelines and extended communication delays to get answers, lack of response to inquiries. Extremely slow in providing required CT's, installing poles, transformers.
    b. Easement processing is also very slow - process and communication
9. Requirements and policies regarding connected energy storage. Resi vs. commercial.
10. PSEG organization. PAM authority within PSEG. Department and personnel hierarchy.
11. Alternative, cost reducing options existing requirements. Seek also guidance and example from other utilities.
    a. Wireless and cellular communication. Etc. Why can't cellular or fiber be used?
12. Cost sharing & rate basing portion of interconnection costs
13. Noted that advanced fault ride-thru features are covered in revised standards. Important to ensure compensation for the grid support which will ultimately reduce annual kWh production depending on feeder support demands.
    a. Ex, with curtailment you can increase your connected capacity. As more systems come on line, revenue will go down across various interconnected DG.
    b. Related: Confirm PAM plan to implement the revised IEEE1547 requirements for volts/hertz ride-through? this would likely reduce nuisance tripping, and better enables the advanced features available to increase feeder DER capacity: Curtailment, Volt Var Control (utility send signal or detect var load and adjust accordingly mode) and PF correction.
14. Discussion about prohibiting or limiting interconnections to underground network primary or secondary systems (bus from utility, ex 3000 A, thus valuts), vs a overhead radial or overhead loop. To review. (Reverse power relays, utility network protectors). Need to be able to backfeed power.

Much more.