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VIA ELECTRONIC FILING
Aida Camacho-Welch
Secretary of the Board
44 South Clinton Ave, 1st Floor
PO Box 350
Trenton, NJ 08625-0350

RE: Response to Request for Comments on Grid Modernization Report ("GMR") – Docket No. QO21010085

Dear Secretary Camacho-Welch,

Ecogy Energy, based in Brooklyn, NY, and founded in 2010, is an experienced developer, financier, and owner-operator of distributed generation projects across the U.S. and Caribbean. Ecogy's focus and niche is on the <1 MW arena, particularly on systems sited on rooftops, parking lots, and brownfields. Ecogy believes that with sound planning, proper development and fair incentives for these types of projects, the state, and its residents, the clean energy industry as a whole will ultimately be more successful. Ecogy firmly believes that by focusing on projects constructed in and on the built environment, the development community can preserve precious and limited natural resources while directing the benefits of local solar to small businesses, property owners, nonprofits, low-income individuals, and other organizations that need them most.

We welcome the New Jersey Board of Public Utilities ("NJBPU" or "Board")efforts in driving grid modernization in New Jersey ("NJ"). The intention plan is progressive,forward looking and will surely drive NJ's net zero plan. The Grid Modernization Report ("GMR") shows that NJ is looking to other jurisdictions which might be ahead in deploying similar initiatives under the GMR. Additionally, we welcome the long term goal ST2.1.6 to develop mechanisms to compensate distributed energy resources ("DERs") for their full value stack at the regional and federal level.

We look forward to the opportunity to engage with the Board and further to the Board's request for written comments on the GMR, we kindly urge you to consider our suggestions below.

I. HOSTING CAPACITY MAPS

Ecogy agrees with Finding #3 and in addition to the recommendations stated, suggest the following:

a. It will be effective if Electric Distribution Companies ("EDC") are required as a matter of regulation to update hosting capacity maps ("HCMs") when the aggregate change in load exceeds an EDC specified amount or at the least biweekly. Mandating updates to HCMs (with the possibility of penalties) will cause EDCs to be more hands-on and will give more insight into Developer's decisions as to where the most beneficial projects can be sited.

b. Alternatively, the BPU can engage a third party entity to perform the task of updating hosting capacity maps in EDC territories. EDCs should have a forum for communicating with this third party that enables EDCs to seamlessly inform the third party of needed updates to the HCM. EDCs and ratepayers should foot the cost of this service as they will be benefiting by directing developers where solar PV is needed the most and which provides the most direct grid benefits.

c. The inaccuracy of HCMs in Atlantic City Electric territory (where Ecogy has experience developing in) leads to cases where project development will require Ecogy to confirm the correctness of hosting capacity (HC) information obtained online with a designated staff of the EDC and it turns out that the HC information obtained online is wrong. This process is inefficient and adds to the burden of project development.

d. The methodology used in estimating hosting capacity (as stated on page 30) should be also based on real world empirical data as well as the stochastic model.

e. In implementing recommendations #3, it is important for New Jersey to also consider a comparative analysis of what is being done in other states and EDCs. Such comparative study should aim to answer the questions: how are others working towards developing accurate HCMs online representation? What are the best kind of maps?

f. Ecogy fully supports finding & recommendation #5 for the provision of a '"regulatory sandbox" for stakeholders, including equipment vendors and the EDCs, to pilot new equipment capabilities, procedures, thresholds for technical studies (e.g., increasing Level 1 from 10 kW) and cost recovery pilots. The regulatory sandbox will allow stakeholders to align operational practices within the diverse sectors in each EDC service area while maintaining grid safety and reliability'.

Ecogy believes this would facilitate synergy between developers, EDCs and other stakeholders. Nevertheless, it is Ecogy's considered opinion that the regulatory sandbox should not repeat what has been done in other states.[1]

g. The GMR remarks that, "*Stakeholders also expressed a need for improved customer-facing systems for the interconnection application process. Digitally-based customer-facing systems provide high potential for improved recordkeeping, data accessibility, and data management. Suggestions include integrating automation processes for application submissions, standardization, application tracking, and pre-applications. Sunnova provided SolarAPP+ as an example that was developed by NREL to assist with the application process for residential photovoltaic (PV) systems.*"[2]

Similar to the role played by SolarAPP+ there is also the AHJ Registry which is a crowdsourced, public registry that allows solar installers to conduct comprehensive code research before building. The AHJ registry, Authority Having Jurisdiction **("AHJ") Registry** was developed as part of the US Department of Energy's **Orange Button Initiative** and addresses data standardization for solar permitting.[3] The AHJ Registry, aims to eliminate the cost for solar installers to research and identify the appropriate AHJ for construction, electrical, and fire codes. The AHJ Registry is an example of a solution that can be developed to enable automation and standardization of interconnection processes.

h. On page 35, it is stated that 'the EDCs recommended upgrades for projects at all interconnection levels, including community solar projects'. Ecogy is a developer of community solar projects and we would like to understand what the specific upgrades stated here involve.

II. INTERCONNECTION READINESS

[1] Now is the time for regulatory sandboxes in energy and utilities; California moves to simplify interconnection rules for distributed energy resources | Utility Dive; Horowitz, Kelsey, Zac Peterson, Michael Coddington, Fei Ding, Ben Sigrin, Danish Saleem, Sara E. Baldwin, et al. 2019. An Overview of Distributed Energy Resource (DER) Interconnection: Current Practices and Emerging Solutions. Golden, CO: National Renewable Energy Laboratory. NREL/TP-6A20-72102. Available at: An Overview of Distributed Energy Resource (DER) Interconnection: Current Practices and Emerging Solutions

[2] Guidehouse Inc. *Grid Modernization Study: New Jersey Board of Public Utilities* 27, 2022.

[3] Developed by the SunSpec Alliance, a trade alliance of more than 100 solar and storage distributed energy industry participants, and Blu Banyan, a software company combating climate change, the AHJ Registry is a free tool for anyone to use.

BPU should consider mandating utilities to make circuits interconnection-ready by requiring upgrades even prior to interconnection. The need to make circuits interconnection-ready is made even more urgent by the increase in EV charging and bidirectional flow technologies. Making circuits interconnection-ready is a proactive approach that will shorten project timeline now and in the future. The need for project timelines to be shortened is underlined by the possibility of projects failing to benefit from incentives due to delays caused by EDC interconnection. Our comments are supported by those of Mid-Atlantic Solar & Storage Industries Association ("MSSIA") that emphasize the action of upgrading substations and circuits as a necessary step toward adding capacity for moving more power "uphill."[4] In thinking about interconnection readiness, it is important to consider who will fund interconnection readiness.

III. DYNAMIC HOSTING CAPACITY/ENERGY SERVICES INTERACTIVE

While the GMR makes mention of both uncoordinated (VoltVAR control) and coordinated (flexible interconnection technology) DHC approaches, the emphasis should be placed on the coordinated approaches.

a. Dynamic Hosting Capacity

Dynamic Hosting Capacity ("DHC") represents the concept of calculating the hosting capacity for a specific location in the distribution grid in real-time at given time intervals. It can be further expanded to include the ability to calculate hosting capacity across all grid levels and can be applied to any given time frame for a specific location in the grid. This observed time frame can stretch from years (analysis of data) to just a single event (real-time) depending on the utility's use case.[5] According to NREL, DHC is '...based on quasi-static time-series simulation, which:

- Considers the behavior of distributed photovoltaics ("DPV"), loads, and grid devices over time
- Accounts for the fact that some over-voltages and thermal overloading are acceptable for short periods of time and during a limited number of time points during the year.'[6]

[4] Guidehouse Inc. *Grid Modernization Study: New Jersey Board of Public Utilities* 29, 2022.
[5] OpusOne Solutions, Dynamic Hosting Capacity A dialogue on Extracting Distribution Maximum Value from Interconnected Distributed Energy Resources for Distribution Utilities and Customers 2017. Available at: Dynamic Hosting Capacity
[6] NREL, Advanced Hosting Capacity Analysis - Solar Research

DHC is not based on worst-case snapshot power flows, so it requires probabilistic screens that consider the uncertainty around the time-series input variables, like hourly PV productions and building loads. DHC is already used in a number of places such as Hawaii.[7]

There are two approaches to DHC, depending on how the individual DPV and the utility-owned grid devices are controlled. These are: Uncoordinated dynamic hosting capacity — when only local, autonomous control functions for distributed energy resources ("DER") and grid devices are used without communication. Coordinated dynamic hosting capacity — when a communications-based, coordinated control approach is used to adjust the output of DPV. This coordination may occur at various levels, for example through distributed controls within a certain portion of the feeder, at the substation level, or throughout the distribution system and multiple substations. This may also involve an optimization or simply adjusting the output according to a predefined set of rules or principles of access.[8]

There are many different control architectures that can be used in the coordinated case. Interconnecting in this coordinated dynamic regime has previously been referred to as flexible interconnection. Coordinated dynamic approaches to DPV integration have also been referred to as Active Network Management or as a subset of distributed energy management systems functionality.[9]

DHC is simply where the future and the present is at as it is now economically optimal for solar to be overbuilt in conjunction with curtailment.[10] Unfortunately, policy and other status quo societal structures still make this optimal solution hard to deliver. In Hawaii, Hawaii Electric Company ("HECO") now manages consenting of new solar in a manner that has effectively unleashed a DER connection solution which delivers dynamic hosting capacity.[11] In particular using this "Quick Connect" approach that HECO customers can now leverage when connecting solar to the grid, new solar systems that meet basic requirements can be installed and energized without full prior approval from Hawaiian Electric:

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[7] Marc Asano et. al. Application of Dynamic V Ar Controllers for Increasing Solar Hosting Capacity in Distribution Grids. Available at: Application of Dynamic V Ar Controllers for Increasing Solar Hosting Capacity in Distribution Grids | IEEE Conference Publication

[8] See Baringa Partners and UK Power Networks, Flexible Plug and Play Principles of Access Report: Final report on smart commercial arrangements for generators connecting under the Flexible Plug and Play Project, December 2012 Available at: https://www.ukpowernetworks.co.uk/internet/asset/dac8de6d-1243-4689-b5b5-a8285a2553fO/Principles_of_Access_report_FINAL.pdf

[9] NREL, Advanced Hosting Capacity Analysis - Solar Research

[10] Jan Remund, Michael Schmutz, Marc Perez & Richard Perez, Firm PV Power generation for Switzerland 7, Technical Report · June 2022. Available at: https://www.researchgate.net/publication/361208262_Firm_PV_Power_generation_for_Switzerland

[11] See Advanced Inverter Voltage Controls: Simulation and Field Pilot Findings. This will likely result in a similar overall outcome on the grid to that advocated for by the Swiss study in note 9.

> In March 2021, the Companies expanded Quick Connect to all circuits, such that, even on circuits with 30% or less circuit hosting capacity, **customers can now install and energize their systems prior to application submittal** so long as the system is operating in a non-export mode until conditional approval is granted by the Companies. One of the conditions to utilize the Quick Connect process is for the customer to activate Volt-Watt so that the Companies can mitigate high-voltage risk in allowing customers to **"install first, get approval later.**[12]

Every utility in the USA should be offering a DER connection solution similar to what HECO already offers with the goal to deliver an optimally economic and vastly cleaner grid (as evidenced by the Swiss study).

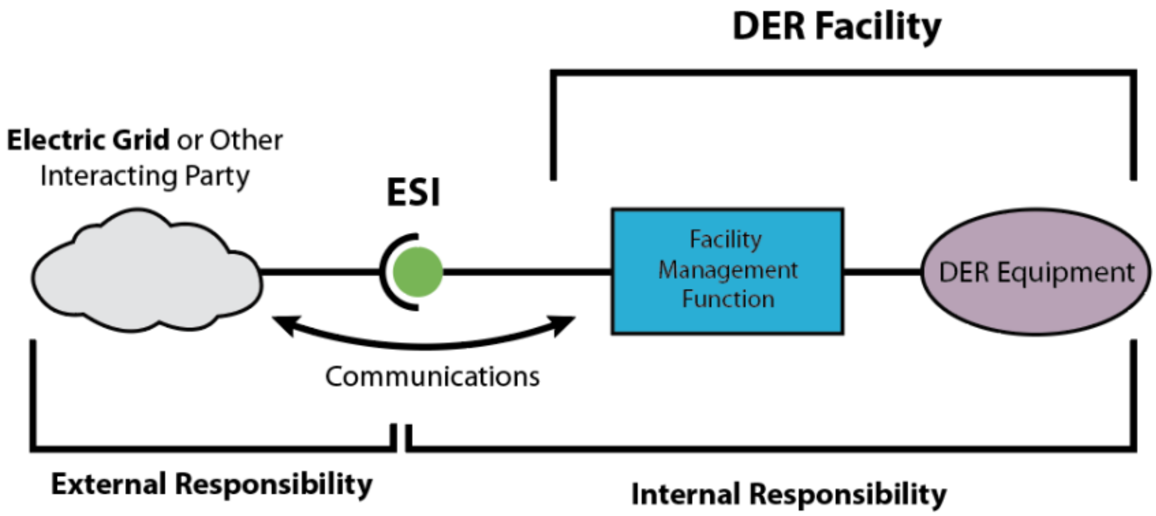
Clearly this is advocating for a vastly different approach compared to the "closed circuits" approach and the Circuit Capacity ideas discussed in section 3.4 of the report. These dynamic hosting capacity ideas must be added to the report to make it a well rounded and fully informed report.

b. Energy Services Interactive (ESI)

In 2019, Ecogy won the Department of Energy's Plug and Play DER Challenge aimed at identifying and implementing grid modernization strategies. For the challenge, Ecogy developed an 'Energy Services Interactive' solution.

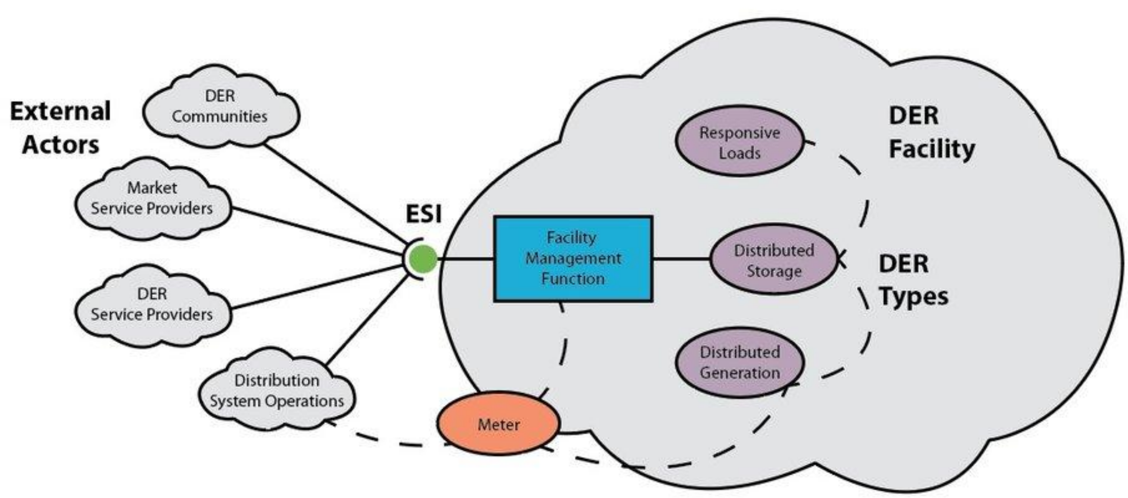
ESI is one part of a multi part technology play to deliver dynamic hosting capacity. ESI is a solution that enables DHC. According to the DOE, "An ESI is a bi-directional, [service-orientated], logical interface that supports the secure communication of information between entities inside and entities outside of a customer boundary to facilitate various energy interactions between electrical loads, storage, and generation within customer facilities and external entities."[13] Given the communication importance in the modern grid, the communication interface between the Grid and any DER has been generalized as an Energy Services Interface (ESI).

[12] Steven Rhymsa, New Jersey Interconnection Stakeholder Workshop, January 28, 2022. Available at: Sunrun 2202-28- New Jersey Interconnection Working Group.pptx
[13] Department of Energy, Energy Services Interface (ESI)



The ESI is a standardized/open interface between DERs and utilities. When an ESI is implemented it creates:

1. An ecosystem that encourages device level interoperability (e.g. through device level plugins within the implementation), making it easy for customers with DER devices to interconnect and participate
2. Grid level interoperability by creating a standard data interface on which a Utility can create a market and interface to DER
3. A prerequisite for any true Transactive Energy Market at the distribution level
4. A clear line at the point of common coupling between utilities and the customer



The DHC approach of the future and the present of grid modernization. Ecogy hopes the proceeding will produce innovative and technology driven solutions to modernize the NJ grid.

We thank you for your consideration of these comments and appreciate you supporting the NJ clean energy industry.

Warmest regards,

/s/

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