



# STATE OF CONNECTICUT

## PUBLIC UTILITIES REGULATORY AUTHORITY

October 14, 2022

Agency:

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**RE: Request for Information (RFI) Grid Resilience and Innovation Partnerships Program  
(DE-FOA-0002827)**

The Connecticut Public Utilities Regulatory Authority appreciates the opportunity to submit the following comments in response to the Request for Information (RFI) issued by the U.S. Department of Energy's (DOE) Grid Deployment Office (GDO) in collaboration with the Office of Clean Energy Demonstrations (OCED) on August 30, 2022.

### **I. Introduction**

The Grid Resilience and Innovation Partnerships (GRIP) program aims “to prevent outages and enhance the resilience of the electric grid, deploy technologies to enhance grid flexibility, and to demonstrate innovative approaches to power sector infrastructure resilience and reliability.” The GRIP program encompasses three sections of the Infrastructure Investment and Jobs Act (IIJA) (Pub. L. 117-58), 40101(c) Grid Resilience Grants, 40103(b) Grid Innovation Program, and 40107 Smart Grid Grants.

#### **a. PURA's role and statutory responsibilities**

The Public Utilities Regulatory Authority (PURA or Authority) is statutorily-charged with ensuring that Connecticut's investor-owned utilities, including the state's electric distribution companies (EDCs), natural gas, water, and telecommunications companies, provide safe, clean, reliable, and affordable utility service and infrastructure. PURA's mission is essential to advancing the state's energy, economic, and environmental goals and is critical to maintaining public health and safety, as well as a robust economy.

PURA is a quasi-judicial agency that interprets and applies the statutes and regulations governing all aspects of Connecticut's utility sector. Among other things, PURA sets the rates charged by investor-owned utilities, advances the modernization of the electric distribution

system, regulates the retail electric supplier market, implements federal requirements for natural gas pipeline safety, ensures adequate water system infrastructure investments, reviews mergers and acquisitions, provides education and outreach for consumers, and regulates the expansion of telecommunications infrastructure.

**b. PURA’s grid modernization objectives**

On October 2, 2019, PURA issued an Interim Decision in Docket No. 17-12-03 - [PURA Investigation into Distribution System Planning of the Electric Distribution Companies](#). The Interim Decision outlines the Authority’s framework for realizing an equitable modern electric grid in Connecticut (Equitable Modern Grid Framework), including both near-term and long-term plans to ensure continued developments to Connecticut’s electric grid. PURA established the following objectives for its Equitable Modern Grid Framework:

1. Support (or remove barriers to) the growth of Connecticut’s green economy;
2. Enable a cost-effective, economy-wide transition to a decarbonized future;
3. Enhance customer access to a more resilient, reliable, and secure commodity; and
4. Advance the ongoing energy affordability dialogue in the State, particularly in underserved communities.

For many of the questions in this RFI, PURA will rely on its work and recent decisions in dockets that support the Equitable Modern Grid Framework and its key objectives or grid resilience and reliability investments. These decisions and their resulting programs are supported by robust evidence and input from diverse stakeholders including Connecticut’s EDCs, the Connecticut Department of Energy & Environmental Protection, the Office of Consumer Counsel, low-income advocates, municipalities, members of the public, academia, environmental groups, consulting companies, industry representatives, and more. The following are the key docket decisions related to grid resilience and reliability that DOE may want to consider in finalizing its GRIP program design. Further detail on each decision will be provided throughout PURA’s responses herein.

- Docket No. 17-12-03 - [PURA Investigation into Distribution System Planning of the Electric Distribution Companies](#) (Grid Modernization Decision).
- Docket No. 17-12-03RE05 – [PURA Investigation into Distribution Planning of the Electric Distribution Companies – Innovative Technology Applications and Programs \(Innovation Pilots\)](#) (Innovative Energy Solutions Decision)
- Docket No. 17-12-03RE07 – [PURA Investigation into Distribution System Planning of the Electric Distribution Companies – Non-Wires Alternatives](#) (Non-Wires Solutions Draft Decision)
- Docket No. 17-12-03RE08 – [PURA Investigation into Distribution Planning of the Electric Distribution Companies – Resilience and Reliability Standards and Programs](#) (Resilience and Reliability Decision)
- Docket No. 22-06-05 – [PURA Implementation of Public Act 22-55](#) (EDC ESS Decision)

- Docket No. 22-01-10 - [2022 PURA Review of Connecticut Public Service Company Emergency Response Plans](#) (2022 ERP Decision)
- Docket No. 14-05-12 – [PURA Cybersecurity Compliance Standards and Oversight Procedures](#) (Cybersecurity Report Docket)

## **II. Category 1: DOE’s Proposed Implementation Strategy for GRIP Program**

2. How should DOE best assess and prioritize applications that further state objectives developed through the Grid Resilience formula grants under BIL section 40101(d), the State Energy Security Plans under BIL section 40108, and activities supported by the State Energy Program under BIL section 40109?
  - a. If the goal of DOE is to encourage coordination and collaboration between States and eligible entities under BIL Section 40101(d), PURA recommends DOE consider including a bid preference through the State grant formula to incentivize coordinated applications. DOE could include specific requests for States to demonstrate how their plan supplements and enhances the applications of eligible entities. Eligible entities could also be explicitly asked to confirm coordination with whom and how they coordinated with other entities in developing their applications.
3. How can funding from the GRIP program best overcome challenges impeding the development of transmission, grid solutions, and interconnecting new generation and storage to improve grid resilience and reliability?
  - a. Ratepayers are facing increasing costs and reliability risk due to global supply chain issues, increasing storm frequency and intensity, and aging infrastructure. Modernizing the grid with all manner of innovative technologies is essential to meeting these challenges, but should start with the foundational investment in and deployment of smart grid technologies. Ensuring that the entire US grid has baseline modern grid infrastructure will allow the nation to build on additional measures that further enhance reliability, resilience, and flexibility. Absent a common baseline, the US distribution and transmission grid will continue to exist as a patchwork of varying technological capabilities across the nation, which creates a barrier to greater deployment of advanced technologies (e.g., interoperability barrier, unnecessary market segmentation, etc.).

## **III. Category 2: DOE Proposed Implementation for Grid Resilience Grants (40101(c))**

1. How should DOE define community and assess the “greatest community benefit in reducing the likelihood and consequences of disruptive events” for prioritization of applications?
  - a. See PURA’s response to question #9 below.
2. What other relevant entities should the Secretary consider as eligible entities?
  - a. The Authority finds that the existing list of eligible entities is appropriate as it is inclusive of those groups and organizations that are already implementing grid hardening programs.

4. What information could be provided by applicants to ensure proposals are supplemental to existing or already planned hardening efforts?
  - a. PURA offers the following suggested information that applicants could and should supply:
    - i. The name of existing resilience programs or hardening efforts that funding would supplement;
    - ii. Relevant statutes, regulations, or programs that require existing hardening efforts;
    - iii. How much money the applicant already expends on each listed program annually and in total;
    - iv. How long the programs are in effect; and
    - v. Relevant cost recovery mechanisms for each type of program expenditure.
  - b. This information will allow DOE to determine what is already occurring both voluntarily and by statutory or regulatory requirement and how those costs are being recovered and from whom. This information is likely readily available in all states through filings in the investor-owned utilities' most recent rate case and could be used for the application to this program. Question #8 below highlights specific reporting requirements PURA requires of Connecticut's EDCs.
  
5. What evaluation criteria, and what accompanying evidence, should DOE seek to best achieve the goals of this program as laid out in the FOA?
  - a. As stated in the FOA, the objective of the Grid Resilience Grant funding is to support and supplement existing hardening efforts and to reduce the impacts of extreme weather on the electric grid. Prioritization of projects that provide the greatest community benefit is a key component of the funding objectives. The Authority recommends that DOE review PURA's responses to questions #8 and #9 below for further detail on specific resilience, reliability, and community benefits metrics and criteria but offers the following additional criteria:
    - i. What is the baseline information about a zone / community / town / or region that demonstrates greatest need for hardening and resiliency? This would likely include metrics included in PURA's response to question #9 such as number of people impacted, types of customers impacted (e.g., medical protection customers), etc.
    - ii. Does the project protect critical infrastructure? Using the definition in Presidential Policy Directive No. 21, [Critical Infrastructure Security and Resilience](#), dated February 12, 2013, the eligible entity should identify critical facilities according to the defined designations and describe how the funding will be used to improve resilience of the critical infrastructure.
    - iii. What is the impact on environmental justice communities? There are widely available mapping resources for applicants to understand whether their proposal will have impacts in these communities. Connecticut now has a detailed GIS Map that displays environmental justice communities as defined by § 22a-20a of the General Statutes of Connecticut (Conn.

Gen. Stat.). If an eligible participating entity is based in a state that does not offer such a map, DOE can leverage the EPA's Environmental Justice Screening and Mapping Tool.<sup>1</sup>

- iv. How has the applicant considered the impact or needs of a community as a factor for identifying projects? Participating eligible entities should note if there are facilities identified by municipalities for priority restoration following storm events that are among the applicant's top priorities.
6. Is the proposed \$100 million Federal funds cap per award appropriate? What actions can DOE take to optimize the overall portfolio supported by 40101(c) through the mobilization of other funds?
    - a. Per the decision in Eversource's 2018 Rate Settlement (Docket No. 17-10-46), Eversource, which is Connecticut's largest EDC, was approved to spend \$89,400,000 over three years in vegetation management alone.<sup>2</sup> Many of the technologies eligible under 40101(c) could be implemented in Connecticut in tandem with conventional vegetation management, and be used to both optimize vegetation management costs and improve overall resilience. Allowing applicants to distribute grants over several years of work and to use existing expenditure on eligible measures as their matching contribution will help encourage symbiotic and coincident resilience strategizing. Further, the Authority believes a cap of \$100 million is generally appropriate.
  7. Is the proposed information to be contained in the Report on Resilience Investments appropriate to determine if proposed projects are supplemental to existing efforts? What challenges may be faced in developing the report? What additional DOE guidance would aid in development of the report?
    - a. See PURA's response to questions #4 and #8. Connecticut requires Eversource to report on its system resiliency projects and vegetation management activities accomplished during the preceding year, both on a summary basis and by circuit. Much of the required data included in those reports would align with what is requested by the Report on Resilience Investments.
  8. What data should be required to be tracked by awardees for the duration of the project and/or after project completion to assess "the extent to which the ability of the power grid to withstand disruptive events has increased" and to inform the biennial Report to Congress?
    - a. In its Resilience and Reliability Decision, PURA referenced and relied on the Sandia National Laboratories May 2021 report on *Performance Metrics to Evaluate Utility Resilience Investments* (Sandia Report) to develop its Evaluation, Measurement & Verification (EM&V) process for the EDCs' plans. PURA

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<sup>1</sup> <https://www.epa.gov/ejscreen>.

<sup>2</sup> Settlement attachment 3 Appendix D.

selected the following reliability-based metrics for the EDCs to report on for each calendar year:<sup>3</sup>

- i. *SAIDI and SAIFI*: Industry standard metrics have been in place for many years to measure and track EDC reliability performance, namely System Average Interruption Duration Index (SAIDI) and System Average Interruption Frequency Index (SAIFI). SAIDI is defined as the sum of customer interruptions in the preceding 12-month period, in minutes, divided by the average total number of customers served during that period. Conn. Gen. Stat. § 16-245y(a). SAIFI is defined as the total number of customers interrupted in the preceding 12-month period, divided by the average total number of customers served during that period. *Id.* SAIDI can be interpreted as the average outage duration experienced by all customers on an EDC's system, while SAIFI can be viewed as the average outage frequency on an EDC's system. Lower SAIDI and SAIFI numbers reflect better reliability performance in terms of outage duration and frequency, respectively. The Resilience and Reliability Decision requires the EDCs to report SAIDI and SAIFI in the following in the following formats:
  1. Including major storms
  2. Including planned outages and major storms
  3. Excluding planned outages and major storms
- ii. *CAIDI and MAIFI*: Another common industry metric can be derived from SAIDI and SAIFI, namely Customer Average Interruption Duration Index (CAIDI), which is the ratio of SAIDI to SAIFI. It can be interpreted as the average duration of an interruption for customers who experience an outage. MAIFI is the Momentary Average Interruption Frequency Index. The Resilience and Reliability Decision requires the EDCs to report CAIDI and MAIFI in the following in the following formats:
  1. Including Major Storms
  2. Excluding Major Storms
  3. Including planned outages & Major Storms
  4. Excluding planned outages & Major Storms
- iii. *CEMI, CELID, CEMSMI, and CEMM*: A number of other useful reliability metrics<sup>4</sup> are gaining prominence in the industry as well. These emerging metrics are designed to identify customer-based reliability performance on a granular level, rather than from the system-based perspective that SAIDI and SAIFI provide. These metrics include:
  1. Customers Experiencing Multiple Interruptions (CEMI);
  2. Customers Experiencing Long Interruption Durations (CELID);
  3. Customers Experiencing Multiple Sustained Interruptions and Momentary Interruptions Events (CEMSMI);

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<sup>3</sup> See Decision in Docket No. 17-12-03RE08 for definitions of each term.

<sup>4</sup> See Moving Beyond Average Reliability Metrics, S&C Electric Company:

<https://www.sandc.com/globalassets/sac-electric/documents/sharepoint/documents---alldocuments/technical-paper-100-t128.pdf?dt=637691309027453197>.

4. Customers Experiencing Multiple Momentary Outages (CEMM);  
The Authority determined that these metrics provide incremental benefit because they are customer-oriented metrics and provide more granularity than the system averages provided by SAIDI and SAIFI. As such, the Resilience and Reliability Decision requires the EDCs to report CEMI, CELID, CEMSMI and CEMM in tranches for customers experiencing three or more, five or more, seven or more, and nine or more sustained interruptions for the following formats:
  1. Including Major Storms
  2. Excluding Major Storms
  3. Including planned outages & Major Storms
  4. Excluding planned outages & Major Storms
- b. For resilience-based metrics, PURA's Resilience Framework established in the Resilience and Reliability Decision allows the EDCs to rely on models to predict the benefits of specific resilience measures when formulating the plan for Authority review and approval. However, though such models are suitable for an initial estimate of expected outcomes, they are not yet suitable for validating a resilience plan's effectiveness.
- c. Therefore, until a peer-reviewed model or tool is readily available for verifying the effectiveness of a resilience measure(s), PURA's solution is to begin to track a set of data by storm intensity level and use it to perform an ex-post analysis to evaluate program effectiveness. The Authority offers the following solution to DOE for measuring "the extent to which the ability of the power grid to withstand disruptive events has increased":
  - i. The Authority determined it is best to track the information according to the storm Event Levels as set forth in the EDCs' Emergency Response Plans, as these designations best reflect current EDC system characteristics in relation to storms of varying intensity. Tracking information according to storm intensity allows for the evaluation of system hardening measures for gray-sky events (minor storms) and dark-sky events (catastrophic storms).
  - ii. The Authority directed the EDCs to track the information separately by "Resilience Zone" (i.e., those Zones that have been previously hardened), "non-hardened" Zones, and "vegetation management only" Zones. Non-hardened Zones include those zones not targeted, as well as those Zones that are targeted but not yet in service, by the current plan filed in accordance with the Resilience Framework.
  - iii. The data will also be collected on the basis of the mitigation measure utilized, in line with these general categories: undergrounding, resilience-based vegetation management, pole replacement, reconductoring, and aerial cable. The Authority directed the EDCs to compare the data collected from the Resilience Zones with non-hardened Zones. Zone comparison should be made by zones that are comparable according to system characteristics, such as by feeder type, rural/urban/suburban, tree density, geographical proximity, and so forth.

- iv. In the Authority’s view, a key justification for the approval of resilience programs is to reduce the impact (both scale and duration) of dark-sky conditions on the distribution system, so that the EDCs are less reliant on mutual aid lineworkers and other storm duty resources. Therefore, it is crucial that programs track metrics to assess performance in this regard. Accordingly, the Authority directed the EDCs to track metrics regarding life threatening emergency response events, blocked roads, and critical facility outages. The Authority provided the following information to be tracked for each Major Storm in the below table.

**Reporting Metrics for Major Storms**

For each category: Overhead Backbone, Overhead Lateral, Underground			
	Non-hardened Zones	Resilience Zone	VM-only Zone
Event Type			
Event Level			
Event Start Date			
Event End Date			
Event Duration			
Total Customer Min. Interrupted			
No. of Customer Outages			
Total Customers			
% of Customers Out			
Estimate of Lost Load			
No. of C&I Outages			
Total C&I Customers			
% of C&I Outages			
Estimate of Lost Load			
No. of Critical Facility Outages			
Total Critical Facilities			
% of Critical Facility Outages			
No. of Life Support Outages			
Total Life Support Customers			
% of Life Support Outages			
Time to Restore 50% customers			
Time to Restore 90% customers			
No. of Cust. Outages Exceeding 96 hr.			
No. of Cust. Outages Exceeding 120 hr.			



No. of Distribution Miles			
No. of Pole Failures			
No of Blocked Roads			
No. of Fire Police (FPS) Priority 1			
Average time to respond FPS1			
No. of Fire Police Priority 2			
Average time to respond FPS2			
No. of Fire Police Priority 3			
Average time to respond FPS2			

- b. How long after project completion should data be tracked to fully understand the impacts of project funding beyond the biennial report?
    - i. Because PURA’s Resilience and Reliability Program has rolling, annual reporting requirements for the duration of the program, PURA does not have specific recommendations about the duration of data tracking for this program based on findings in proceedings before the Authority. However, due to the infrequent nature of the most catastrophic events, 10- to 20--year timeframes, or longer, should be considered for resilience measures.
    - ii. PURA notes that the Sandia Report referenced above recommends that “if there were one or more resilience events in any of the past five years, a utility should provide the Annual Performance Metrics section and a Resilience Event Performance Metrics section for each resilience event experienced.” Sandia Report, p. 29. DOE could consider this for establishing a reporting period for each funded project.
  - c. What data should be tracked to understand changes in community resilience?
    - i. See PURA’s response to question #9 below and the Customer Level Reporting metrics provided in the Sandia Report.
9. Information or analysis that could be submitted to help identify the highest impact projects and proposals that address (1) public benefit (e.g., cost/benefit of the project), (2) additionality (e.g., obstacles that additional funding would allow the project to overcome or would otherwise prevent the project from advancing in the absence of the funding), (3) stakeholder support (e.g., projects where a regional planning process is underway or is taking place), and (4) transformative potential of the project (e.g., the value of the project in catalyzing follow-on replication).
- a. PURA considered similar issues in its Resilience and Reliability Decision, focusing on segments of the electric distribution system, termed “Zones”. Zones are a distinct portion of an EDC’s distribution system and can be as large as an entire circuit or as small as circuit segment between isolated devices. The EDCs identified vulnerable Zones primarily by using past storm data and “all-in SAIDI” which includes outages during blue-sky, gray-sky, and dark-sky conditions, and “all-in SAIFI” which identifies Zones experiencing multiple interruptions.
  - b. Though SAIDI and SAIFI are important metrics on which to prioritize Zones for transformative resilience and hardening measures, they do not capture the characteristics of the community and environment around them. Environmental

justice communities, medical hardship customers, critical infrastructure, and local commercial and industrial businesses all represent important factors that support a more holistic, fair, and reasonable approach to classifying the vulnerability of a Zone and quantifying the benefit of resilience measures there.

- c. As such, PURA now requires the EDCs to classify the vulnerability of Zones using the criteria in Table 1 below. Each of the secondary factors will be assessed using a three-tiered ranking (low, medium, high) to prioritize Zones selected by the All-In SAIDI metric. DOE could consider a similar framework for prioritizing communities on their vulnerability.

**Criteria to Identify and Prioritize Vulnerable Zones.**

<b>Criteria</b>	<b>Category</b>	<b>Rank</b>
All-in SAIDI (for last four years)	Outage-based	Primary
All-in SAIFI (for last four years)		
All-in CAIDI (for last four years)		
Major Storm-only SAIDI		
Major Storm-only SAIFI		
No. of Customers per Zone	System Characteristics	Secondary
Mainline length		
Density and Type of Vegetation		
Feeder Type: Backbone or Lateral		
Feeder ties		
Site Access Difficulty (e.g., hard to access right-of-ways)		
Municipal Priorities including Blocked Roads	Community Priorities	
No. of Commercial and Industrial Customers per Zone		
Located in Distressed Municipality		
Located in Environmental Justice Community		
No. of Life Support Customers		

- d. In the 2022 ERP Decision, PURA directed local gas distribution companies (LDCs), facilities-based telecommunications providers, and certain privately-owned water companies to provide to the EDCs in whose service territories they operate a list of facilities that are critical to their operation that rely on electric service. This type of information could also be used to prioritize projects. DOE may also want to consider using the definition in Presidential Policy Directive No. 21, [Critical Infrastructure Security and Resilience](#), dated February 12, 2013, to have eligible entities identify critical facilities according to the defined designations and describe how the funding will be used to improve resilience of the critical infrastructure.

#### IV. Category 3: DOE Proposed Implementation for Smart Grid Grants (40107)

1. Appropriateness of highlighted grid flexibility functions and technologies of interest identified by DOE above. Are there additional smart grid functionalities or technologies that would support grid reliability and resilience that should be considered?
  - a. In its Resilience and Reliability Decision, PURA stated the following: “Resilience is not limited to hardening; it also includes preparedness activities such as the development of emergency response plans, coordination with other emergency responders, and planning of regular trainings and exercises, as well as the completion of after-action reviews. A company’s response actions to an event are also resilience measures. For example, securing additional crews through mutual aid agreements in advance of storms,<sup>5</sup> prestaging crews and equipment, and activating incident command systems all help reduce the impact of emergency events on customers and communities. Since the number of restoration crews are a resilience measure, there is a relationship between hardening programs and minimum staffing needs. Other resilience measures focus more on enhancing restoration activities, rather than preventing outages or mitigating damage. These include efforts such as increasing automation and improving situational awareness using ‘smart’ field devices. Field devices connected to advanced data management systems allow visibility to better identify faults, damage locations, and even restore customers remotely using smart switching devices. Unfortunately though, in the very large storms (such as those of a similar magnitude to Tropical Storm Isaias), the damage is so great that these solutions may be unavailable, and thus hardened infrastructure is a prerequisite to achieve their full value.” Resilience and Reliability Decision, p. 58.
  - b. As such, DOE may want to consider innovative technologies or strategies related to preparedness activities such as the development of emergency response plans, coordination with other emergency responders, and planning of regular trainings and exercises, as well as the completion of after-action reviews.
2. Information or analysis that could be submitted to help identify the highest impact solutions and proposals that address (1) greatest public benefit (e.g., cost/benefit of the project), (2) additionality (e.g., obstacles that the Federal funding would allow the project to overcome that would otherwise prevent the project from advancing in the absence of the Federal funding), and (3) transformative potential of the project, (e.g., the value of the project in catalyzing follow-on replication).
  - a. DOE should request a number of industry standard metrics be submitted with proposals including any of the following: SAIDI; SAIFI; CAIDI, CEMI, CELID, CEMSMI, CEMM, and MAIFI. The Authority provides more information on each metric in response to question #8 of Section III above.
  - b. Though not yet formally adopted or approved by the Authority, PURA recommends that DOE review the Draft Decision and Program Design

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<sup>5</sup> Although, effective hardening measures may reduce a company’s reliance on mutual aid restoration crews.

Document in Docket No. 17-12-03RE07 – PURA Investigation into Distribution System Planning of the Electric Distribution Companies – Non-Wires Alternatives.<sup>6</sup> Similar to the objectives of the Smart Grid Grants program, the pending Non-Wires Solutions (NWS) program is designed to introduce broader competition and solutions that lower system costs, avoid or defer distribution system or capacity upgrades, provide greater visibility into the distribution system, improve communications, and enable ratepayers to have greater control over their energy consumption. Potential qualifying technologies will include:

- i. Passive distributed energy resources, including energy efficiency;
- ii. Active distributed energy resources such as electric batteries to provide load serving, voltage regulation, frequency regulation, or other grid functions;
- iii. Demand response;
- iv. Connecticut Class I and Class III resources;
- v. Behind-the-Meter (BTM) technologies, whether aggregated or not; and
- vi. Front-of-the-Meter (FTM) technologies, whether aggregated or not.

During an annual solicitation, each proposal will be evaluated based on feasibility, cost effectiveness, and the specific distribution costs the proposal would avoid. The proposed cost-benefit test and required evaluation, measurement & verification elements are included in Appendix A to the proposed final decision. The Authority recommends DOE consider a similar approach in reviewing proposals in order to understand (1) the public benefit provided by a proposal, and (2) the transformative potential in terms of solutions that avoid traditional distribution upgrades and enable other benefits.

3. In the collective portfolio of awarded projects, any suggestions regarding project types that have special strategic importance?
  - a. In areas with dense tree cover and risk of significant wind events, the conversion of existing overhead utility infrastructure to underground infrastructure is a high value solution that effectively deals with the overwhelming amount of damage and outages caused by downed trees and large limbs. Challenges exist with this solution, including the high cost to convert to underground, whether other overhead utilities should be converted as well (telecommunication, municipal, etc.), costs to customers who may need overhead service converted to underground, and the amount of redundancy needed to be built into underground facilities (due to the long duration outages when faults do happen on these facilities). Also, due to the limited amount of underground facilities in relation to overhead, there is less understanding of the benefit of this measure on reliability/resilience. Therefore, there is an opportunity to expand this understanding. Federal funding would help

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<sup>6</sup><https://www.dpuc.state.ct.us/2nddockcurr.nsf/8e6fc37a54110e3e852576190052b64d/8aca270aaf0e81a0852588cb0072ed4a?OpenDocument>.

overcome these challenges and provide opportunities to better understand the benefits of undergrounding.

- b. Resilience programs can be designed to address resource inadequacies during dark-sky conditions such as those discussed above. Unfortunately, however, the industry does not yet have a consensus methodology as to how to determine the appropriate scale of resilience programs targeted to dark-sky conditions (particularly as compared to gray-sky conditions) without breaking the bank. Therefore, in the Authority's view, a key justification for a resilience investment program must be to show how it will address dark-sky conditions by best reducing long-duration outages for different types of customers; i.e., a demonstration of how such investment will reduce the number and severity of long-duration outages attributable to high-impact events, especially in the early stages of an event when qualified crews may be limited and public safety requires emergency response to life-threatening incidents, road clearing, critical facility restoration, and customer restoration in an efficient and timely manner. The Authority recommends that DOE consider prioritizing projects that address long-duration outages.
4. Appropriateness of the requirement for a cybersecurity plan for this provision, and the required contents of such a cybersecurity plan.
    - a. Public utilities in Connecticut and throughout the United States face the credible danger of cyber penetration, compromise, and disruption. National deterrence and remediation must incorporate action at the state level including partnership among public utilities, regulators, and emergency response managers. Since 2016, PURA has collaborated with Connecticut's public utilities in its Cybersecurity Report Docket to evaluate cybersecurity threats facing public utilities and to review their cybersecurity programs to ensure they are appropriately robust and able to prepare for and respond to cyber threats.<sup>7</sup>
    - b. PURA considers cybersecurity to be a permanent, but dynamic aspect of resilience and reliability. It is therefore appropriate and necessary to require applicants to provide a cybersecurity plan for this provision.
    - c. Contents of a cybersecurity plan may include:
      - i. Summary of planned/executed exercises (GridEx, state/local exercises);
      - ii. Coordination and information-sharing with federal/state/local officials, law enforcement, emergency management officials, academies of excellence, critical infrastructure sectors, utilities, and so forth;
      - iii. A description of corporate culture of cybersecurity (c-suite level support, employee buy-in, etc.); and
      - iv. A description of cybersecurity risk-management program.

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<sup>7</sup> See Docket No. [14-05-12](#) and PURA's cybersecurity report website: <https://portal.ct.gov/PURA/Electric/Cybersecurity-and-Connecticut-Public-Utility-Companies>.

**V. Category 4: DOE Proposed Implementation for Grid Innovation Program (40103(b))**

1. How should DOE define and evaluate a full range of “innovative approaches” to transmission and distribution projects that deploy large-scale, high-value projects that are innovative in scope; scale; stakeholder engagement; technology; partnership or business model; financial arrangement; use of innovative planning, modeling, or cost allocation approaches; environmental siting or permitting strategies; or in overcoming other existing barriers to project development and deployment in ways that enhance reliability and resilience and unlock new renewable generation?
  - a. In its Regulatory Sandbox Strategic Vision Document issued early in Docket No. 17-12-03RE05, PURA defined “innovative ideas and products” as being “new and unique,” and continued on to explain that: “as such, innovation, by its very nature is often in tension with incumbent regulation or other constraints. Innovation requires testing unproven concepts and technologies and pursuing ideas that may very well fail. These tenets of innovation are often at odds with the obligations of the EDCs, which are encouraged to avoid risks for safety, security and reliability, and the duty of regulators to ensure a well-run and efficient electricity system.”<sup>8</sup>
  - b. DOE should clearly define the intended purpose of this program. The language of the program indicates that this intends to deploy demonstration projects, but this question uses the term “large-scale” to describe projects. DOE should clarify the desired development stage project proposals should meet.
  - c. Additionally, DOE should clarify whether different agencies or eligible entities in the same state are able to submit multiple applications, and if yes, if more than one application from a single state may be awarded funding for their projects.
  
2. What technical review criteria, and what accompanying evidence, should DOE seek to best achieve the goals of this program as laid out in the FOA?
  - a. In PURA’s March 2022 Innovative Energy Solutions Decision, the Authority provided a detailed program design structure that will serve as a safe, but monitored, place to test new energy ideas and solutions within the Authority’s larger grid modernization framework and to validate benefits in the real world. This Innovative Energy Solutions (IES) Program will consider and test innovative pilot programs, technologies, products, and services by deploying them on a limited basis, and then evaluating them for overall impact, costs, and benefits. If those benefits and impacts are sufficiently and empirically demonstrated, they will be deployed at scale statewide. Ultimately, the intent of the IES Program is to enable the deployment of high-value project solutions that might not otherwise be possible or expedient within the current regulatory environment.
  - b. The IES Program appears to be similar to the Grid Innovation Program because they are both broad in scope and will evaluate diverse innovative proposals. The IES Program takes an increasingly rigorous and detailed approach to project

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<sup>8</sup><https://www.dpuc.state.ct.us/2nddockcurr.nsf/8e6fc37a54110e3e852576190052b64d/e7cd668707943a8385258752007990f8?OpenDocument>,

review, starting with high level, conceptual screening, and proceeding through to a formal evaluation, akin to conventional investment due diligence procedures. At each review phase, projects are evaluated against four key metrics that are aligned with the overall goals of the IES Program: (1) economic benefits; (2) cost-effectiveness; (3) programmatic or market gaps; and (4) equity. The figure below provides a high-level overview of the types of questions asked during each phase, with more detailed criteria are available in Appendix C of the Attachment B Program Design Document to the Decision.<sup>9</sup> PURA recommends that DOE consider the specific metrics used at phase in the IES program review process.

Figure 9. Key Metrics Applied at Each Phase of the Framework

	Ideation & Screening	Prioritization & Selection	Project Deployment	Assessment & Scale
Economic Benefit	Does the project provide economic value?	What are projected job or economic benefits?	What were job and economic impacts?	What economic and job benefits could the project provide at scale?
Cost-Effectiveness	Does the project estimate cost-effectiveness?	Which projects have the greatest cost-effectiveness?	What were actual costs and benefits?	How much value could the project deliver to all ratepayers?
Programmatic or Market Gaps	Does the project address gaps in existing customer offerings?	Would the project improve or expand customer offerings?	What were customer participation and satisfaction levels?	Would the project foster competition and customer choice?
Equity	Does the project consider underserved communities?	Would the project create or improve opportunities for underserved communities?	What were impacts to underserved communities?	Would the program address or create equity challenges at scale?

3. Information or analysis that could be submitted to help identify the highest impact projects and proposals that address (1) greatest public benefit (e.g., cost/benefit of the project), (2) additionality (e.g., obstacles that the Federal funding would allow the project to overcome that would otherwise prevent the project from advancing in the absence of the Federal funding), (3) stakeholder support (e.g., projects where a regional planning process is underway or is taking place), and (4) transformative potential of the project (e.g., the value of the project unlocking resilience and reliability benefits from investments elsewhere on the grid).
  - a. As described in PURA’s response to question #2 above, the purpose of the increasingly rigorous review criteria used in each phase of the IES Program is to ensure that at the end of a program cycle, PURA is left with projects that have strong evidence for scalability, cost effectiveness, and demonstrated benefits for ratepayers.
  - b. Additionally, PURA clearly identified “transparency, accountability and clear communication around how public funds will be spent, and how outcomes of the IES program will be measured and evaluated,” as essential guiding principles of the IES Program. DOE could require applicants to demonstrate how they intend

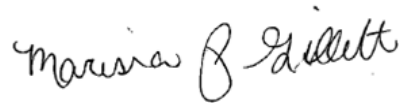
<sup>9</sup><https://www.dpuc.state.ct.us/2nddockcurr.nsf/8e6fc37a54110e3e852576190052b64d/da52e606ad2c1efe85258815005aa04f?OpenDocument>.

to prioritize transparency and stakeholder engagement as part of the project. In the IES Program, PURA will use the following mechanisms to prioritize transparency:

- i. A public launch of each annual Innovation Solicitation;
  - ii. At least one Innovation Workshop per program cycle;
  - iii. A public, docketed proceeding before the Authority that will track project selection, performance, and recommendations from an independent Innovation Advisory Council; and
  - iv. The development and maintenance of a dedicated, online Program Portal that is accessible to the public and makes program documents readily available.
4. Appropriateness of the requirement for a cybersecurity plan for this provision, and the required contents of such a cybersecurity plan.
- a. See PURA's response to question #4 of Section IV above, as the Authority takes the same stance with respect to the Grid Innovation Program.

The Authority appreciates the opportunity to comment and share this information with DOE. We look forward to further participation in the advancement of these exciting programs.

Sincerely,



Marissa P. Gillett  
Chairman  
Public Utilities Regulatory Authority