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PROJECT NO. 57236

PROJECT TO DEVELOP THE TEXAS BACKUP POWER PACKAGE PROGRAM	**§**	**PUBLIC UTILITY COMMISSION OF TEXAS**

COMMENTS BY TEXAS ENERGY POVERTY RESEARCH INSTITUTE (TEPRI)

Texas Energy Poverty Research Institute (TEPRI) appreciates the opportunity to provide comments on Project No. 57236 Project to Develop the Texas Backup Power Package Program. TEPRI is a 501(c)3 nonprofit organization that advances equitable solutions for affordable, reliable, and clean energy for disadvantaged communities across Texas. Our work advances research on the energy needs of low-income households, develops solutions to address those needs, and establishes a network of on the ground relationships to enable deployment.

A key focus of our work is developing solar and storage systems that reduce facility electricity demand while providing critical backup power during grid outages. TEPRI has conducted feasibility studies for multiple facilities across Texas seeking to serve as resilience hubs for their communities. Recently, we were awarded $1 million by Google to develop two resilience hubs in partnership with Foundation Communities in Arlington, TX. We look forward to integrating TBPP solutions into our future projects to further strengthen community resilience.

1. The Final Report outlines specifications for TBPPs of various sizes to serve critical facilities. How, if at all, could these specifications affect the ability of critical facilities to apply for, install, or utilize TBPPs? How, if at all, should the outlined specifications for TBPP packages be modified to ensure that the packages can serve most critical facilities in Texas?

1.) The Patrick Engineering study currently limits package sizes to 10 kW, 25 kW, 100 kW, 500 kW, and 1000 kW and dictates the size of each major equipment.

Table 3: TBPP Technology capacity summary

TBPP size kW	Genset capacity kW	BESS capacity kW/kWh	Solar capacity kW DC
10	10	10	2
25	25	25	5
100	100	100	20
500	500	500	100
1000	1,000	1,000	200

In TEPRI's experience, gensets and BESSs usually come in off-the-shelf sizes. Deviating from existing sizes may increase system costs. TEPRI recommends that the Commission request genset and BESS vendors to supply information on their typical equipment sizes.

2.) TEPRI recommends the Commission allow for greater flexibility in choosing the size of individual equipment to meet the needs of the facilities. Facilities would need to find space for the solar modules, batteries and generators and ensure that they follow safety protocols. Solar, storage, and generator microgrids will likely not be combined in a single skid. Allowing flexibility will reduce the cost of the system.

3.) Patrick Engineering assumes that the main source of power will be from the generator to sustain the facility for 48 hours. In TEPRI's view, combined solar-storage systems are an important design option, wherein the solar system would serve as the primary source of power in an outage during daylight hours; the battery system can support the facility during the night, and the generator would be used if there is not enough solar to maintain the load and charge the battery. In feasibility studies that TEPRI has conducted, the ratio between solar kW and battery kWh have ranged from 20% to 65%. Patrick Engineering is currently recommending 16% which would be enough to charge the battery but not enough to support the load during the day.

4.) TEPRI recommends that participating facilities be allowed to choose smaller packages that allow backup for only critical portions of their load. The program may also want to consider if the battery kW rating really needs to be 100% of the capacity.

3. In Sections 2-4 and 2-5, the Final Report outlines design requirements and assumptions; technology specifications; operating sequences; and installation requirements. How, if at all, could the specifications described in these sections affect implementation of the TBPP program? How, if at all, should the specifications be modified to ensure effective implementation of the TBPP program?

1.) TEPRI strongly recommends that grid-connection be permitted for participating systems. The Patrick Engineering study currently assumes that the systems "operate only islanded with grid failure. Grid connection is not permitted, with the possible exception of charging of the BESS from the grid." This appears to be inconsistent with the legislation, which states that the package "is not used by the owner or host facility for the sale of energy or ancillary services". There should be flexibility in allowing the facility to use the assets to reduce their loads or participate in non-market programs that can create greater resiliency and reliability of the grid. Additionally, Patrick Engineering assumes that the cost of the packages will be between $1,200/kW and $2,300/kW. The TBPP will only cover $500/kW of the cost. To increase the feasibility of a critical facility being able to afford the system, they should be allowed to use the assets during non-emergencies.

2.) In TEPRI's discussion with facilities interested in becoming resilience hubs, many are concerned with how the equipment will fare in the face of weather events. It would be helpful if Patrick Engineering consider how to mitigate risks related to hail, high winds, flooding, heat, cold, and corrosive environments. For example, the program could dictate how elevated the BESS and generators would need to be from the flood plain, the

thickness of the PV modules, the grade of materials to prevent corrosion, the rating of electrical enclosures, etc.

4. How should the TBPP be designed to mitigate or remedy any other factors that could negatively affect program implementation or participation, while ensuring compliance with statutory requirements? Please limit this response to factors not previously mentioned in responses to questions one through three above.

1.) TEPRI encourages the Commission to provide flexibility in financing options. Many organizations TEPRI collaborates with prefer third-party ownership, energy-as-a-service, or leasing models to avoid the burden of system maintenance. These alternative financing structures ensure long-term system reliability without placing additional operational strain on facilities, allowing them to focus on their core services while benefiting from resilient energy solutions.

2.) TEPRI strongly encourages the Commission to permit these systems to function as behind-the-meter assets during normal operations. While Texas has faced prolonged reliability challenges in recent years, the grid remains stable for much of the year. Enabling regular system operation will allow facilities to actively manage electricity costs, proactively identify maintenance needs, and offset ongoing operational expenses, ultimately enhancing long-term system sustainability.

Respectfully submitted,

Margo Weisz
Executive Director
Texas Energy Poverty Research Institute
[cell phone]
margo@tepri.org

Executive Summary
Project No. 57236: Project to Develop the Texas Backup Power Package Program
Submitted by Texas Energy Poverty Research Institute (TEPRI)

TEPRI's feedback emphasizes the importance of flexibility, affordability, and resilience in the TBPP design. Key recommendations include:

1. **Equipment Specifications and Sizing Flexibility**
    - The current study limits package sizes to specific increments. TEPRI recommends allowing facilities to select equipment sizes that align with their operational needs and space constraints, improving feasibility.
    - Standardized equipment sizes should be determined based on vendor equipment to avoid unnecessary cost increases.

2. **Optimizing Solar-Storage-Generator Integration**
    - The report assumes generators as the primary power source for 48 hours. TEPRI advocates for a combined solar-storage system where solar provides power during daylight, batteries supply overnight energy, and generators serve as a backup when solar and storage are insufficient.
    - The proposed solar-to-battery ratio of 16% should be increased to ensure solar systems can support loads effectively.
    - Facilities should be allowed to size their backup systems to support only critical loads, increasing adoption potential.

3. **Grid Connectivity and Cost Considerations**
    - The current proposal restricts grid connectivity, except for battery charging. TEPRI suggests allowing non-market grid interactions to enhance resilience without violating legislative intent.
    - The estimated cost of TBPP packages ($1,200/kW – $2,300/kW) far exceeds the proposed subsidy of $500/kW. Allowing facilities to use backup systems for daily operations can improve affordability and ensure long-term sustainability.

4. **Resilience Against Extreme Weather Conditions**
    - To enhance system reliability, TEPRI recommends incorporating design specifications that address extreme weather risks, such as flooding, hail, wind, and extreme temperatures. Requirements should include elevation standards for battery storage, corrosion-resistant materials, and durable PV modules.

5. **Flexible Financing & Ownership Models**
    - Many facilities prefer third-party ownership, leasing, or energy-as-a-service models to avoid maintenance burdens. TEPRI recommends the TBPP accommodate diverse financing mechanisms to increase program participation.
    - Allowing backup systems to operate during normal conditions (e.g., reducing facility energy costs) will help facilities monitor performance, detect maintenance needs, and offset operational costs.