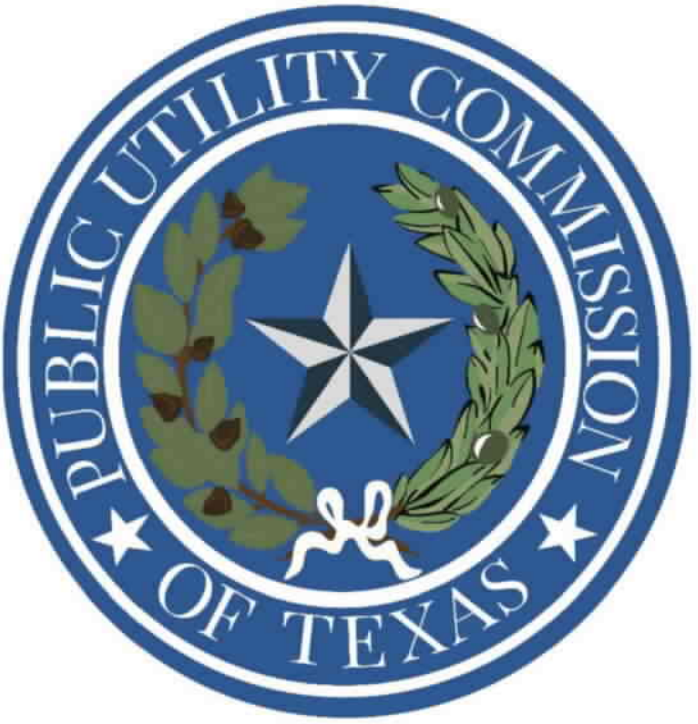

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COMMENTS ON THE TEXAS BACKUP POWER PACKAGE PROGRAM RESEARCH ENTITY FINAL REPORT	§ § §	**PUBLIC UTILITY COMMISSION OF TEXAS**

COMMENTS OF
ALISON SILVERSTEIN CONSULTING

Comes now Alison Silverstein Consulting, an independent energy consultancy, to respond to the questions for comment on the Texas Backup Power Package (TBPP) Program Research Entity Final Report. These comments address Commission Staff's questions but also look at how the Final Report and specifications can be improved and TBPP costs reduced to enhance and expand TBPP deployment.

Staff asks, how could these specifications affect the ability of critical facilities (CFs) to apply for, install or utilize TBPPs and how should the specifications for TBPP packages be modified to ensure that the TBPPs can serve most critical facilities in Texas? Related questions are, will the proposed specifications yield TBPPs that work effectively to meet Texas CF resilience goals, and are there elements in the proposed specifications that should be corrected or improved?

The Final Report estimates that 30% of the Texas CFs have loads under 10kW and another 16.4% of CFs use between 10-25 kW – these total almost 11,000 facilities across our state. In order to assure that the TBPP program fulfills its statutory goals of protecting the critical facilities that serve Texas communities, we must assure that the TBPP program holds down the cost and maximizes the availability of these smaller units in particular. But several elements in the TBPP Final Report appear to raise the costs of and reduce the accessibility of TBPPs.

1) **Switchover time** -- The statute indicates that TBPP technology and controls should "enable immediate islanding from the power grid and stand-alone operation for the host facility." [PURA Sec. 34.0204 (2)] The Final Report interprets this as a design requirement to require "instantaneous," zero-second switch-over from the grid to the battery, followed by switchover to the genset. But "immediate" means "happening without delay," not instantaneous. While a zero-second delay would be great, it is probable that most Texas CFs can handle a 5-10 second delay and outage between the moment of grid loss and switchover to the TBPP battery or genset; such a delay occurs routinely today with most backup generators and microgrids. The assumed requirement of a zero-second delay is how the Research Entity justifies sizing the TBPP battery at 100% of the package load, so the battery can handle the full CF load instantaneously.

   Solution -- The Commission and Research Entity should explore whether requiring "immediate" (10-15 seconds delay at most) rather than "instantaneous" islanding could lower package costs by requiring less battery storage capacity and less costly automatic transfer switches.

2) **CF capacity requirement** – The Final Report assumes that a TBPP must serve the full electric demand of each CF. But it ignores the reality that not every electricity use within a CF is itself critical; for instance, while air conditioning and refrigeration, water processing or medical functions may represent essential CF functions, many plug loads and sections of the host facility may not be critical for the purpose of Critical Facility functional operation and resilience. This full load assumption increases the capacity requirement for every CF and would lead to consistent oversizing of TBPPs, potentially pushing most facilities to larger, higher cost TBPP packages. This could make TBPPs unaffordable for smaller CFs. If oversized packages unnecessarily increase the cost of many TBPPs, this would reduce the number of CFs that can be served with the available Texas Energy Fund (TEF) dollars.

   Solution 1 – Adopt TBPP program rules that modify the Final Report's assumptions to specify that the TBPP should be sized to serve CF critical loads rather than full load (with some guidance as to how to identify critical v. non-critical loads) and to specify use of smart electric panels that can switch off (i.e., not serve) those non-critical loads when operating in islanded mode. These measures could materially reduce TBPP sizes without compromising CF functionality; this would improve TBPP affordability and stretch the available TEF funding to more CFs.

   Solution 2 – Enable greater flexibility in the specification of battery sizing. The Final Report makes clear that the BESS component (Battery Electric Storage) is the most costly element of the TBPP designs. [See Report Table 10, p.29] The Final Report indicates that multiple TBPP packages will be aggregated to serve CFs in ranges between the five specified package sizes (10kW, 25kW, 100 kW, 500 kW and 1,000 kW [Report Table 3, p.17, and Table 8, p.27]. But even though BESS unit costs are falling rapidly, it would be helpful to create some limited package design flexibility so that smaller CFs don't have to buy full-sized battery units that grossly exceed the facility's actual needs and may challenge its physical footprint; this could occur, for instance, if a 325 kW CF needs to get a 500 kW TBPP package. The Report's logic with respect to photovoltaic sizing appears sound (to use the PV to recharge the battery, rather than to support full CF load); so if the Commission decides to allow smaller batteries in TBPP aggregation, then it should allow a corresponding reduction of the PV requirements as well. Allowing smaller batteries and smaller PV under rigorously defined conditions would reduce the cost of TBPP acquisition for numerous CFs and allow the total funds to be shared with a larger population of CFs.

   Solution 3 -- As the Final Report acknowledges, the Commission-implemented TBPP program should encourage CFs to pursue energy efficiency measures that reduce the facility's total and critical functions load, enhance facility resilience (as from better insulation), increase the amount of energy services realized per kWh of electricity consumed, and lower the facility's total electric bill. The Commission should link the TBPP program to utilities' energy efficiency programs and to the Texas PACE Authority and other energy efficiency-funding entities.

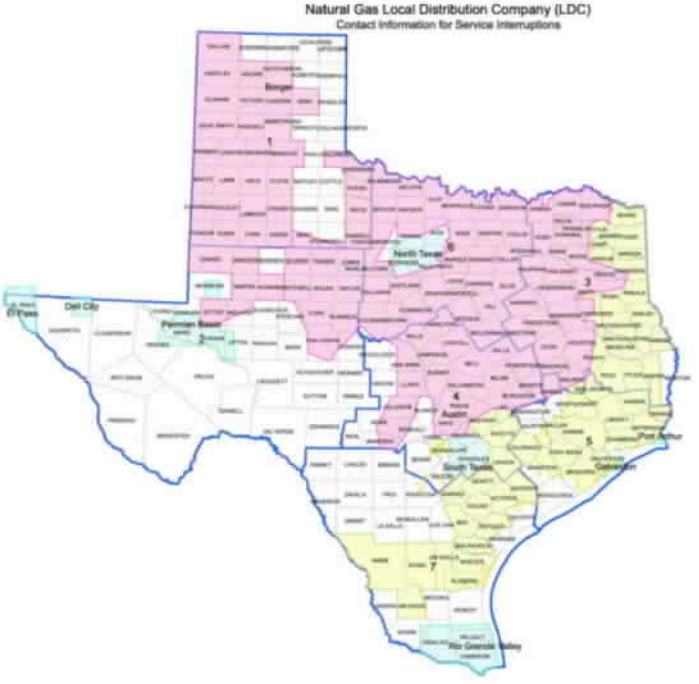
3) **TBPP operation only in event of grid failure** – The Final Report assumes that the TBPP will only be operated in the event of grid failure, or in anticipation of an approaching storm that could cause a grid failure. This misinterprets the statutory language. The statute says

only that the TBPP, "is not used by the owner or host facility for the sale of energy or ancillary services." [PURA Sec. 34.0204 (6); note that storm anticipation is NOT specified within the statute] But this statutory language does allow the CF to operate its TBPP behind the meter to reduce its peak load use and costs. This language also allows ERCOT to call on the CFs to activate their TBPPs to reduce grid-facing demand under Energy Emergency Alert Stage 2 conditions. For such use, ERCOT could provide compensation for that load reduction equal the price paid to commercial LAAR providers, to offset the CF's operational costs, without finding that the CFs are selling an ancillary service into the wholesale market. Furthermore, the statutory prohibition on the "owner or host facility" selling "energy and ancillary services" may leave room to allow an aggregator to activate multiple CF TBPPs for non-ancillary service, behind the meter load reduction purposes such as 4CP avoidance.

Solution – The Final Report Operating Sequence assumptions about when and how the TBPP unit will be used must be reconsidered. The Commission should design the TBPP program rules to enable CFs to use TBPPs behind the meter to reduce grid-facing demand and billed loads for a limited number of hours (e.g., don't allow usage that reduces the TBPP's islanded capability to less than 45 hours relative to the required 48 hour minimum). This would turn the TBPP into an asset that reduces the CF's net TBPP resilience costs. And aggregation of multiple CF TBPPs for targeted load reduction could create a small revenue stream from TBPP operation.

4) **Fuel flexibility** -- The Final Report follows the statutory language to specify that the gensets must be natural gas or propane-fired. However, there are areas of Texas that have no natural gas local distribution (LDC) service, so methane-fired gensets will not be an option in those locations.

Texas LDC service territories [per Texas Railroad Commission]



Solution – The Commission should consider whether it is feasible to expand the set of TBPP-eligible fuels to include clean diesel and biogas, to create more options for CFs in the areas of Texas without access to natural gas LDC service. CFs in natural gas-limited locations may also need help with on-site fuel storage funding and permitting.

Staff Q. 2 -- How should the TBPP program be designed to maximize the ability of vendors to assist with the sale, installation, operation and ongoing maintenance of TBPPs?

The TBPP program should be designed to enable and encourage a variety of financial arrangements for CF funding of TBPPs, including lease-to-own, resilience-as-a-service, and vendor loans, accompanied by solid equipment and operational warranties and customer financial protection measures. It may also be appropriate to give CF customers the option to buy ongoing maintenance service packages from competing providers rather than be locked into ongoing service arrangements with the initial vendor.

Staff Q. 3 – How do the Final Report design requirements and assumptions affect TBPP implementation and should any of the specs be modified to ensure effective implementation of the program?

As noted above, several of the Final Report requirements and assumptions appear to raise TBPP costs and diminish TBPP functionality for both the host CF and ERCOT as a whole. The discussion above offers specific solutions to modify each of these problematic assumptions and requirements.

The Final Report contains very high TBPP cost estimates. [Report Tables 10 and 11, pp. 29-30] If actual TBPP costs are this high, it will dramatically reduce the impact of the TBPP grants on TBPP cost and adoption rates and reduce the number of CFs that the TEF TBPP funds are able to serve. If the Commission attempts to design and implement the TBPP program based on cost estimates that don't match the reality of what vendors can offer, then the program and the Commission will lose credibility and few CFs will be able to realize the promise of better power resilience.

It would be worthwhile for the Commission to dig into how the Research Entity determined these cost estimates, to gain a better understanding of whether these cost estimates are well-founded or contain some biases or omissions. Some of the vendors received cost inquiries very late in report preparation; others were not queried at all. It is not clear whether the Research Entity asked for pricing for individual components [Tables 10 and 12] or for components as part of an integrated package; or for pricing for one unit or in volume (e.g., what if we buy 20 or 100 at a time, rather than one?); or for the final recommended package sizes or the different set of sizes suggested in the Initial Report (the Final Report indicates that cost inquiries began in October 2024). All these factors would affect the magnitude and accuracy of TBPP cost estimates and therefore deserve transparency and close scrutiny. If the Report cost estimates are not valid, the Commission will have to secure better cost estimates for TBPP program design.

Staff Q. 4 – How should the TBPP be designed to mitigate or remedy any other factors that could negatively affect program implementation or participation?

- **Additional funding sources** -- The program should be designed to enable and encourage CF participants to access and use additional funding sources such as federal and state grants (e.g., from FEMA for emergency readiness, EPA for water and wastewater operation, Department of Transportation Electric School Bus grants) and loans (Texas LoanStar, federal Rural Utility Service, Texas PACE Authority) to supplement the TBPP TEF grants.
- **Loans as well as grants** -- The TBPP cost estimates are very high; as the Final Report notes, the $500/kw grants won't go far to offset estimated TBPP costs. Therefore, the Commission should assess whether the TBPP and TEF statutory language would allow the use of Texas Energy Funds to provide loans as well as grants, to support TBPP installation or other costs. Such loans might be limited to the segment of CFs seeking 10kW TBPP packages, since those smaller CFs represent 30% or more of the Texas CF population and those 10kW units are the most costly on a per-kW basis.

Commission next steps

Several of the Final Report requirements and assumptions raise TBPP costs and diminish TBPP functionality for the host CF and ERCOT as a whole. The Commission should take several steps to validate and improve upon the findings of the TBPP Final Report before designing the full Texas Backup Power Package program:

1) TBPP technical specifications:
   a. Replace the Report's assumption of zero-delay switchover to a 10-15 second switchover and examine whether that allows battery resizing and a different automatic transfer switch.
   b. Rather than assuming the TBPP must serve the routine peak load of each critical facility, which could effectively oversize TBPPs relative to the host CF's critical functions load, define what CF critical loads are, and specify TBPP sizing to serve those loads with use of a smart electrical panel that isolates non-critical loads so the TBPP doesn't have to serve them in an emergency.
   c. For CFs with critical function loads that don't match individual or combined TBPP package sizes, allow limited reductions on battery and associated PV sizing in order to reduce the cost of TBPPs for individual CFs.
   d. The Final Report Operating Sequence assumptions about when and how the TBPP unit will be used must be reconsidered. Rather than assuming that the TBPPs can only be used during a power outage, the Commission should design the TBPP program rules to enable CFs to use TBPPs behind the meter to reduce grid-facing demand and billed loads for a limited number of hours. This would also enable ERCOT to call on the CF TBPP fleet to activate and serve CF load behind the meter in the event of a Stage 2 Energy Emergency Alert, to drop their grid-facing load and ease ERCOT's supply obligation.
   e. The Commission should consider whether it is appropriate to expand the set of TBPP-eligible fuels to include clean diesel and biogas, to create more options for CFs in the areas of Texas without access to natural gas LDC service.

2) The Final Report contains very high TBPP cost estimates. If actual TBPP costs are this high, it will dramatically reduce the impact of the TBPP grants on TBPP cost and adoption rates

and reduce the number of CFs that the TEF TBPP funds are able to serve. The Commission should closely scrutinize the Research Entity's TBPP input cost data to determine whether it is accurate or biased, and secure better estimates if the Report estimates are found to be inappropriate.

3) TBPP program design considerations:
   a. The TBPP program should recommend that CFs access energy efficiency funds to reduce their total and critical functions loads and enhance resilience to power loss.
   b. The TBPP program should be designed to enable and encourage a variety of financial arrangements for CF funding of TBPPs, including lease-to-own, resilience-as-a-service, and vendor loans, accompanied by strict equipment and operational warranties and customer financial protection measures.
   c. The Commission should design the TBPP program to enable and encourage CF participants to access and use additional funding sources such as federal and state grants.
   d. Because it appears that the smallest TBPP packages will be the most costly on a $/kW basis, and over 40% of Texas CFs will need small 10kW or 25 kW TBPP packages, the Commission should consider whether the statutory language allows them to use the Texas Energy Fund to provide loans to complement TBPP grants for smaller CFs.

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THE TEXAS BACKUP POWER PACKAGE PROGRAM RESEARCH ENTITY FINAL REPORT	**§ § §**	**PUBLIC UTILITY COMMISSION OF TEXAS**

COMMENTS OF ALISON SILVERSTEIN CONSULTING EXECUTIVE SUMMARY

Several of the Final Report requirements and assumptions raise TBPP costs and diminish TBPP functionality for the host CF and ERCOT as a whole. The Commission should reexamine and modify the findings of the TBPP Final Report on the following points:

1) TBPP technical specifications:
   a. Replace the Report's assumption of zero-delay switchover to a 10-15 second switchover and examine whether that allows battery resizing and a different transfer switch.
   b. Rather than assuming the TBPP must serve the routine peak load of each CF, which oversizes a TBPP relative to the host CF's critical functions load, define CF critical functions load and size TBPPs to serve those critical loads with a smart electrical panel that isolates non-critical loads so the TBPP doesn't have to serve them in an emergency.
   c. For CFs with critical function loads notably smaller than individual or combined TBPP package sizes, allow strategically limited reductions on battery and associated PV sizing in order to lower TBPP costs for those CFs.
   d. The Final Report Operating Sequence assumption that the TBPPs can only be used during a power outage is wrong. The Commission should design the TBPP program rules so CFs can use TBPPs behind the meter (without grid injection) to reduce grid-facing demand and billed loads for a limited number of hours. This would enable ERCOT to call on the CF TBPP fleet to activate behind the meter in the event of a Stage 2 Energy Emergency Alert, to drop CFs'grid-facing load and ease ERCOT's supply obligation.
   e. The Commission should consider expanding the set of TBPP-eligible fuels to include clean diesel and biogas, to create more options for CFs in the areas of Texas without access to natural gas LDC service.
2) The Final Report contains very high TBPP cost estimates that could dramatically reduce the impact of the TBPP grants on TBPP cost and adoption rates and reduce the number of CFs that the TEF TBPP funds are able to serve. The Commission should closely scrutinize the Research Entity's TBPP input cost data to determine whether it is accurate or biased, and secure better estimates if the Report estimates are found to be inappropriate.
3) The TBPP program should enable and encourage a variety of financial arrangements for CF funding of TBPPs, including lease-to-own, resilience-as-a-service, and vendor loans, with strict equipment and operational warranties and customer financial protection measures.
4) Because the smallest TBPP packages will be the most costly on a $/kW basis, and over 40% of Texas CFs will need small 10kW or 25 kW TBPP packages, the Commission should

consider whether the statutory language allows the Texas Energy Fund to provide loans to complement TBPP grants for smaller CFs.