

February 18, 2019

BY HAND DELIVERY

Ms. Lora W. Johnson
Clerk of Council
Council of the City of New Orleans
City Hall, Room IE09
1300 Perdido Street
New Orleans, LA 70112

In Re: Resolution Directing ENO to Investigate and Remediate Electric Service Disruptions and Complaints and to Establish Minimum Electric Reliability Performance Standards and Financial Penalty Mechanisms, CNO Docket No. UD-17-04

Dear Ms. Johnson:

Enclosed please find an original and three (3) copies of the *Advisors' Comments on the 2019 Remediation Plan* in the above referenced docket, which we are requesting that you file into the record along with this letter in accordance with your normal procedure.

Sincerely,



Jay Beatmann
Counsel

JAB/dpm
Enclosures

cc: Official Service List for UD-17-04

FEB 18 4 34

COUNCIL DOCKET NO. UD-17-04

TECHNICAL ADVISORS REVIEW OF ENTERGY NEW ORLEANS 2019 RELIABILITY PLAN FILING

Council Resolution R-18-98, adopted on April 5, 2018, initiated a Show Cause Order regarding Entergy New Orleans' ("ENO") electric reliability. This Resolution directed ENO to modify and resubmit its Remediation Plan ("Revised Reliability Plan") filed in Docket No. UD-17-04 including at a minimum: (i) a substantive evaluation and analysis of the root causes of ENO's distribution problems; (ii) ENO's proposed technical and engineering approach to the remediation of its problems; (iii) a time schedule for completion, including proposed construction budget and expenditures by fiscal quarter; (iv) priority and interim projects to quickly alleviate the most severe customer service quality problems; and (v) such other analysis and information as may be required by the Council and its Advisors to evaluate the effectiveness of ENO's proposed plans.

On January 18, 2019, pursuant to Resolution R-18-98, ENO filed its 2019 Reliability Plan ("2019 Plan" or "Plan"). The Technical Advisors have accomplished a review of ENO's 2019 Plan to determine if it is responsive to the Show Cause ordering provisions.

ENO'S 2019 PLAN

ENO's 2019 Plan proposes to invest \$15.4 million in 2019 and approximately \$75 million aggregate over the next five years for baseline reliability improvements to ENO's system. ENO's Plan is designed to complement its Grid Modernization efforts to maximize reliability benefits.

Backbone Program: In conjunction with the Plan, ENO has suspended its Backbone Program for 2019 – 2023. ENO's Backbone Program was initiated as part of ENO's 2018 Revised Reliability Plan. The Backbone Program selected certain backbone distribution feeders for inspection up to the first protective device for accomplishment of reliability improvements. For 2019 - 2023, ENO has replaced this program with its Fix-It-Now ("FIN") Inspection Program.

FIN Program: ENO's FIN Program concentrates on performing visual and infrared inspection of entire distribution feeders to identify potential vulnerabilities and outage threats, and to accomplish necessary repairs in support of operational reliability. In support of this program, ENO established a dedicated four-person FIN reliability crew to accomplish inspections and needed repairs. ENO has also assigned three reliability servicemen to assist the FIN crew for inspections and investigation of prior outages to identify any additional repairs. ENO estimates that in 2018, FIN related work avoided 50,000 customer interruptions. In addition, the Quanta Report¹ recommended that ENO's entire distribution system be inspected within five to eight years. ENO's expanded FIN Program will be responsible for accomplishing this inspection work

¹ On October 31, 2018, Quanta Technology, LLC ("Quanta") submitted its final report titled "Assessment of Distribution Reliability Improvement Initiatives" re: Quanta's review of ENO's distribution reliability program and comparison of ENO's distribution reliability practices vs. industry leading practices, and those of a selected group of high performing utility peers.

to identify and mitigate imminent failures that might occur with six months in order to eliminate such issues.

FOCUS Program: For 2019, ENO has budgeted \$3 million to address specific outage causes through a focused inspection and mitigation program. For the 1st and 2nd quarter 2019 effort, ENO has identified two substation circuit breakers, three reclosers, and five line fuses for focused inspections.

Pole Program: For 2019, ENO has budgeted \$2.7 million, of which \$200,000 is earmarked for pole inspections, \$1.5 million for pole restoration work, and \$1 million for replacement of non-restorable poles. This program is a continuation of ENO's pole inspection/remediation plan initiated in Council Docket No. UD-12-04, and has been contracted to Osmose Utility Services, Inc. ("Osmose"). Osmose has completed inspection of thirty two percent of ENO's poles. ENO notes that its utilization of PoleForeman software has identified the need to install more Class 1 poles to provide greater resilience during major storm events than would result from ENO's historic use of Class 3 poles.

Distribution Automation: For 2019, ENO has budgeted \$2.5 million for the fast-track installation of distribution automation ("DA") devices in conjunction with its Advanced Metering Infrastructure ("AMI") and Grid Modernization programs. Such devices would include advanced reclosers with communications capabilities which would support remote operating capability.

Underground Cable Renewal Program: For 2019, ENO has budgeted \$450,000 for the replacement of existing aging underground distribution cables.

Equipment Inspection Program: For 2019, ENO has budgeted \$200,000 for inspection of all capacitor banks, reclosers, and voltage regulators to ensure timely repair of equipment needed to support ENO's distribution system.

Internal Program: For 2019, ENO has budgeted \$500,000 to address National Electric Safety Code ("NESC") and Entergy Service Standards compliance-related projects.

Exhibit 1 provides further detail regarding ENO's proposals in response to the Quanta Report recommendations.

QUANTA REPORT RECOMMENDATIONS

ENO's 2019 Plan includes a discussion of its efforts to adopt the recommendations contained in the Quanta Report. ENO's major points follow:

- ENO notes that it is working to evaluate and adopt the Quanta Report's recommendations through time.
- ENO is working to achieve a crew dispatch time of ten minutes or less to respond to outages.
- In support of reducing outage durations, ENO has installed 300 fault indicators on its distribution lines to quickly identify and isolate fault locations in order to accelerate restoration of service.

- ENO notes that a number of ENO’s efforts in response to Quanta’s recommendations are being aligned with ENO’s Grid Modernization Program.

Exhibit 1 provides further detail excerpted from ENO’s 2019 Plan regarding its proposed and ongoing activities in response to the Quanta Report recommendations.

Advisors Observations: ENO’s 2019 Plan represents a continuation of the activities accomplished by ENO in its 2018 Reliability Plan. Overall, ENO’s 2019 Plan should positively support ongoing improvements in ENO’s distribution reliability.

From the Advisors’ perspective, ENO’s proposed suspension of its Backbone Program through 2023 with its proposed FIN Program should accelerate reliability gains in comparison to its Backbone Program, as it was limited to only investigating and remediating its distribution feeders up to the first protective device. ENO’s FIN Program is designed to investigate and remediate entire distribution feeders. The Advisors support this replacement program.

Continuation of ENO’s FOCUS Program, Pole Program, Underground Cable Renewal Program, Equipment Inspection Program, and Internal Program makes sense and should support continuing reliability improvement.

To the extent that ENO adopts the Quanta Report recommendations, as detailed in Exhibit 1, such actions should greatly advance ENO’s ability to reduce crew dispatch times, track and identify equipment in need of replacement prior to failure, enhance analysis of reliability performance using additional metrics, and improve outage reporting. ENO’s commitment to fast-track distribution automation projects should reduce the number of customers affected by outages and reduce outage durations.

TRANSMISSION PLAN

For the 2014 - 2018 period, ENO experienced fifty-two transmission outages resulting in customer interruptions. During 2018, ENO experienced fourteen transmission outages. The following table compares ENO’s transmission outage causes 2014 – 2018 to ENO’s transmission outage experience in 2018.

Comparison of ENO Transmission Outage Causes

Outage Cause	2014-2018 (%)	2018 (%)
Asset Condition	70	39
System Configuration	19	30
Human Performance	11	31

As a result of increased transmission system outages in 2018, ENO has initiated the following work:

- ENO has developed a plan to improve its transmission reliability and has reviewed and updated its list of transmission asset candidates for renewal including the addition of transmission level circuit breakers at key substations to reduce customer outage exposure.

- ENO has increased transmission system maintenance activities.
- ENO is evaluating additional technologies that may support proactive identification of impending transmission equipment problems and has initiated actions to eliminate identified human performance traps.

ENO has proposed the expenditure of approximately \$47 million between 2019 – 2023 for transmission related improvement reliability improvements, as shown in the following table:

Projected ENO Transmission Reliability Spending (\$Millions)

2019 – 2023

Category	2019	2020	2021	2022	2023
Substation – Distribution Equipment	4.1	4.5	2.9	3.0	3.0
Substation – Transmission Equipment	2.0	2.2	2.3	2.4	2.1
Transmission Line	1.3	1.0	1.0	1.1	1.1
Transmission System Configuration	3.7	5.5	0.0	3.6	0.0
Approximate Total	11.0	13.2	6.20	10.10	6.2

Advisors’ Observations: ENO’s Transmission Plan represents a significant commitment to replace transmission equipment and reconfigure its system design to reduce the number of transmission outages. This program is overdue and should be supported.

Sewerage & Water Board of New Orleans (“S&WB”) Comments: The S&WB is critical of ENO’s 2019 Plan, primarily in that it does not address certain issues that need to be addressed to improve the reliability of service to the S&WB. The Advisors note that at the February 14, 2019 Council Utility, Cable, Telecommunications and Technology Committee (“UCTTC”) meeting, ENO advised that it is presently working collaboratively with the S&WB on short-term, medium-term, and long-term solutions to increase the reliability of power supply to the S&WB. The Advisors believe that such actions should alleviate the S&WB’s stated concerns.

RECOMMENDATIONS

Based upon the Technical Advisors’ review, we find that:

ENO’s 2019 Reliability Plan meets the provisions set forth in Resolution R-18-98 and provides all the information required by the Council to measure ENO’s performance and adherence to ENO’s proposed project and budgeted expenditure schedules. The 2019 Plan should be accepted by the Council.

EXHIBIT 1

C. Quanta Technology, LLC Recommendations

In 2018, ENO retained Quanta Technology, LLC (“Quanta”), national experts in, among other things, electric distribution system reliability, to perform an assessment of our 2018 reliability plan, as well as benchmarking of our reliability practices and performance with select high-performing peer utilities, and to provide recommendations for reliability improvement.

Quanta completed its review and written assessment in October 2018 and that report was filed with the Council on October 31, 2018. ENO has been working to incorporate Quanta’s recommendations, to the extent currently feasible, into its 2019 Distribution Reliability Plan. A discussion of the Quanta recommendations and the implementation of those recommendations is set forth below.

Recommendation 6.3.1.1: It is recommended that ENO consider using SAIDI, along with SAIFI as part of the metrics used in the benefit-cost analysis for evaluation and prioritization of reliability improvement projects. Consideration of MAIFIE and CEMIn is also recommended to the extent these indices can be applied with the currently available data gathering technology.

Response: Emphasis on acceleration of Distribution Automation (DA) was driven in large part due to consideration of reducing customer interruption minutes. DA projects have been prioritized to occur as early in the year as possible to provide customers with maximum benefit to reduce the duration of outages by allowing for stepped restoration and better isolation of issues.

MAIFI is not a metric we are capable of using with our current technology. Once GridMod is fully implemented, MAIFI will be more feasible as a metric to include in the reliability analysis.

Recommendation 6.3.1.2: It is recommended that ENO consider accelerating the implementation of a data analytics program, to the extent possible within regulatory requirements. An analytics program will provide the required data for the implementation of advanced distribution planning applications.

Response: Timing of analytics capabilities associated with the Grid Modernization investments has been incorporated to the current project scope of investments such as AMI and OMS/DMS. Deployment of associated analytics related to these investments is currently aligned with deployment timelines. ENO is currently accelerating deployment of AMI and the communication network as discussed in Council Resolution R-18-224.

In the interim, ENO has improved availability of data to the line supervisors through the introduction of PowerBI software for reporting. This tool allows users to visualize and dive into data with greater ease to allow more data driven decision making.

Recommendation 6.3.1.3: It is recommended to consider estimated customer benefits due to outage cost reduction. As discussed in section 5.4.1, other utilities have included this type of analysis (e.g., using the [Interruption Cost Estimator] (“ICE”)) in the benefit-cost evaluation and prioritization of distribution reliability improvement projects/programs, particularly for those that require large investments.

Response: The ICE Calculator is a tool available by Internet designed to estimate the aggregate cost (loss) as seen by the customers due to outages experienced by customers. The calculator uses a preset average value for Electrical rates and customer losses and are State specific (not Utility specific). These values vary based on Residential and Non-Residential classifications and typical metrics that are input by the user of the ICE Calculator. Because the calculator looks at cost to the customer of the outage and residential

customer experience very little cost while non-residential customers experience higher costs, the ICE calculator values non-residential customers more than residential customers. While this is true in terms of customer financial loss (i.e. restaurant cannot make sales during outage time, manufacturing companies cannot manufacture products), SAIFI/SAIDI metrics do not place any additional value on customer type. The ENO reliability strategy is to eliminate the outages regardless of customer type. Local management knowledge of the customer type (hospitals, emergency pumping systems, water sources, etc.) are part of the decision making, but are not algorithmically weighted. Since the majority of outages are a mixture of customer types, and since the Reliability Strategy is based on eliminating outage count, the use off the ICE Calculator as a decision factor may inadvertently lower the priority of purely residential customer devices.

Recommendation 6.3.2.1.1: The process for recording outage events needs to be modified to aggregate the multiple restoration events into a single outage. Although this is being pursued as part of the ENO Grid Mod/ADMS project it should be evaluated for a change in the near future. This will reduce the number of outages reported, will provide the ability for establishing failure rates, and will ensure that when ADMS is implemented that process will be aligned properly.

Response: The new ADMS system will aggregate the multiple outages associated with a higher-level failure (e.g. substation transformer) into one, single outage. The new ADMS will also contain the multiple restoration steps into one record. This new system is scheduled to be in service at the end of 2019. Given that, the investment and work to enhance the current OMS system along with the fact that many of the same employee resources on the ADMS project would be needed to implement the enhancement (impacting the ADMS timeline), it is best to wait until ADMS is available to implement this recommendation.

In the interim, ENO is considering guidance with regards to outage type coding on the separate events created because of stepped restoration. This would improve ENO's trend analysis on outage causes until ADMS can be fully deployed.

Recommendation 6.3.2.1.2: Currently ENO is reporting outage count based on the number of events which includes scheduled outages. With a count in excess of 2,000, that number appears excessive for a utility the size of ENO. The industry norm is to exclude scheduled outages, thus ENO should consider excluding those (or reporting scheduled outages separately) when the overall outage count is provided externally.

Response: Scheduled outages will be excluded from future reliability reporting to align with the industry norm.

Recommendation 6.3.2.2.1: With Current Outage Data - Before both design and construction, some level of prioritization should be pursued. Currently a 70% CI improvement is estimated. Since that value is based on overall Entergy, a value for ENO should be pursued. Once the inspection has been performed and expected enhancements identified, a ballpark cost should be developed for a benefit/cost (B/C) metric. With that metric, it can be determined if the project is reasonable to be designed. Once designed and a more accurate estimate is determined, then the benefit/cost can also be re-done to ensure the highest B/C value projects move forward.

Response: ENO has revised our selection criteria for FOCUS projects to ensure appropriate cost-benefit justification. ENO has implemented a stage gate process with cost benefit review following inspection and design in alignment with the Quanta recommendation. ENO is further considering revising the 70% CI improvement estimate based on recent project performance.

Recommendation 6.3.2.2.2: With Aggregated Outage Data - Once the multiple outage events can be aggregated, analysis can be performed to determine infrastructure failure rates.

Including a before and after. These results would provide an enhanced B/C analysis.

Response: The ability to associate failure rates to specific materials and equipment to inform future material and construction standards is included as a requirement in the Entergy Asset Management project to improve overall asset management capabilities at ENO.

Recommendation 6.3.2.3.1: Outage durations should be evaluated for potential enhancements. With the increase in SAIFI, SAIDI has increased by a larger proportion indicating that average outage durations have also increased. A large proportion of the SAIDI impact during an outage often occurs before the crew is on site for repairs. The average duration for the customers impacted can be reduced via sectionalizing devices that expedite partial restorations, as well as outage response from the time the outage began until repairs have been made.

Response: To reduce customer interruption duration, ENO has prioritized the acceleration of Distribution Automation projects in 2019 which will assist in fault location and expediting partial restorations. Aside from restoration efforts, the DOC is also working on new dispatch metrics (using region times to determine the problem areas, a dispatch time of 10 minutes or less, etc.) that will improve our dispatch times. Additionally, ENO has installed 300 fault indicators at strategic locations to allow the responding personnel to quickly identify and isolate the fault and more quickly restore customers.

Recommendation 6.3.2.4.1: It is recommended that ENO evaluate the additional implementation of distribution automation schemes (FLISR) to complement ENO's grid modernization program and reduce the system average amount of customers within each switching/protection zone to 500 customers. This is an industry leading practice that is gradually being adopted by other utilities.

Response: This will be considered in conjunction with the full implementation of the DA program in connection with Grid Modernization.

Recommendation 6.3.2.4.2: It is recommended that ENO explore the implementation of advanced reclosing solutions that are available in modern microprocessor-based reclosers (e.g., single-phase reclosing/tripping and lockout).

Response: The DA team has included coordination with Entergy Distribution Design Basis on the strategy and selection of specific equipment and material requirements and selection. The team is aware of these benefits and it is being considered in their equipment selection.

Recommendation 6.3.2.4.3: It is recommended that ENO consider accelerating, to the extent possible within regulatory requirements, the implementation of its grid modernization, AMI and ADMS programs, which will provide some of the foundational and intelligent infrastructure and systems (e.g., FLISR schemes) needed to improve distribution reliability, including the ability to automate outage data collection and analysis.

Response: ENO has established an accelerated plan to deploy the foundational technologies of AMI and the communication network. In the September 2018 ENO Rate Case, ENO has detailed the approach to deploy additional Grid Modernization investments.

Recommendation 6.3.2.5.1: ENO should pursue a corrective maintenance program that is based on a 100% inspection of the entire distribution system within an identified cycle, such as every 5-8 years. This would be similar to an expansion of the Backbone program in that the effort is to identify and fix specific problems and not perform an extensive rebuild. For example, if a broken crossarm or excessive leaning pole is identified, that needs to be fixed soon. As part of this effort, an overall standard practice should be developed specifying the requirements. Elements of a system inspection currently exist in the reliability programs currently underway at ENO. Full distribution inspection programs are not common practice in the industry, however, the current efforts by ENO offer a good start toward such an effort.

Response: The FIN Inspection program described above was designed to implement this recommendation.

Recommendation 6.3.2.6: An overall evaluation of the current ENO vegetation program should be performed to review current trim cycles, clearance requirements, trimming obstacles, and the different types of vegetation outages. ENO currently operates with highly restrictive vegetation practices within the City and deeper evaluation of the impact of those restrictions is warranted. That information can then be used to determine the need for improvements in the program and whether regulatory support will be required.

Response: ENO has previously discussed increasing the trim clearance distance from the current four feet to eight feet from primary conductor following Hurricane Isaac in 2012, but the City was not open to drastically altering the urban canopy based upon worse case hurricane scenarios. ENO remains open to exploring whether trim clearances in the City can be increased to improve reliability.

Recommendation 6.3.2.7: An evaluation of the transmission reliability should be performed combined with a plan to improve the transmission reliability.

Response: A transmission reliability plan has been developed and included.

Recommendation 6.3.2.8: An Internal Audit Program should be pursued to ensure current and new processes are effectively pursued and implemented. The level of an internal audit can vary but should ensure that committed requirements are being followed. As a first step, requirements should be documented. Examples of validation audits are: a. Outage data, b. Prioritization process, c. Corrective maintenance program, d. Tree Trim clearance, e. Pole Inspections.

Response: Internal Audit Services' ("IAS") efforts are based on a risk assessment of Entergy and this risk assessment has determined that one of our areas of focus should be on the changes in the utility processes, like the Grid Modernization projects. As a result, IAS is providing consulting services on the Grid Modernization projects, specifically, AMI, EAM, OMS/DMS, Customer Digital and Distribution Automation. The objective of the consulting projects is to ensure that risks are identified, and adequate controls are developed to mitigate the risks for both business processes and Information Technology General Controls, which includes system security. For the business processes, IAS is reviewing the Standard Operating Procedures ("SOPs") for each process to ensure that risks are identified, and adequate

controls are developed to address the risks. IAS is also reviewing the Cyber Security Plans to ensure that appropriate security controls/measures are implemented to mitigate any cyber security risks.

After each system is implemented, IAS will perform a post-implementation review to ensure that the new processes and systems are adequately controlled and that the controls identified in the consulting projects were implemented.