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BEFORE THE
LOUISIANA PUBLIC SERVICE COMMISSION

IN RE: APPLICATION OF)
ENTERGY LOUISIANA, LLC FOR)
RECOVERY IN RATES OF COSTS)
RELATED TO HURRICANE IDA)
AND FOR RELATED RELIEF)

DOCKET NO. U- 36350

DIRECT TESTIMONY
OF
MICHELLE P. BOURG

ON BEHALF OF
ENTERGY LOUISIANA, LLC

APRIL 2022

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1 **I. INTRODUCTION AND BACKGROUND**

2 Q1. PLEASE STATE YOUR NAME, POSITION, AND BUSINESS ADDRESS.

3 A. My name is Michelle P. Bourg. I am employed by Entergy Services, LLC (“ESL”)¹ as
4 Vice President, Asset Management. My business address is 639 Loyola Avenue, New
5 Orleans, Louisiana.

6
7 Q2. ON WHOSE BEHALF ARE YOU TESTIFYING?

8 A. I am submitting this Direct Testimony on behalf of Entergy Louisiana, LLC (“ELL” or the
9 “Company”).

10
11 Q3. PLEASE DESCRIBE BRIEFLY YOUR EDUCATIONAL BACKGROUND AND
12 PROFESSIONAL EXPERIENCE.

13 A. I hold a Bachelor of Science in Electrical Engineering from Louisiana State University and
14 subsequently earned a Master of Business Administration from Tulane University. I am a
15 registered professional engineer in the state of Louisiana. In 2002, I began working for
16 ESL’s Transmission organization as a planning engineer in the Transmission Operational
17 Planning department and, in April 2006, became the department’s Manager, Transmission
18 Planning. In September 2009, I accepted the position of Manager, Performance
19 Management in ESL’s Utility Operations department and, in December 2010, assumed the
20 position of Director, Performance Management, where I was responsible for developing,
21 refining, and overseeing the performance reporting processes and benchmarking activities

¹ ESL is a service company to the Entergy Operating Companies (“EOCs”), which are Entergy Arkansas, LLC (“EAL”); Entergy Louisiana, LLC; Entergy Mississippi, LLC (“EML”); Entergy New Orleans, LLC (“ENO”); and Entergy Texas, Inc. (“ETI”).

1 for the Utility and Energy Delivery businesses. In 2014, I accepted the position of Director
2 of Gas Distribution. In this capacity, I oversaw all aspects of the safe, reliable delivery of
3 natural gas service to ENO's and ELL's natural gas customers. My specific responsibilities
4 included, but were not limited to, safety, compliance with applicable pipeline safety
5 regulations, operations, customer service, construction, maintenance, engineering,
6 planning, and gas real-time system monitoring and dispatch for the Company's gas
7 distribution system. I assumed my current role in 2019.

8

9 Q4. WHAT ARE YOUR JOB RESPONSIBILITIES?

10 A. In my current role, I am responsible for all aspects of the safe, efficient, and compliant field
11 operation of ESL's transmission line and substation equipment. This includes the
12 execution of routine transmission line and substation inspections and maintenance in
13 accordance with ESL's procedures, the renewal and replacement of existing transmission
14 facilities, and outage and emergency response. I am also responsible for the execution of
15 the transmission vegetation management program, development of transmission safety
16 programs, and skills training delivery for substation, relay protection, and line
17 professionals.

18

19 Q5. WHAT ARE YOUR JOB RESPONSIBILITIES RELATING TO STORM
20 RESTORATION?

21 A. I serve as the Operations Section Chief for the Entergy System. In this capacity, I am
22 responsible for the safe and efficient restoration of transmission facilities that may
23 experience an outage during a storm event. This includes ensuring that pre-storm activities

1 to prepare the transmission system for the storm event are completed in a timely fashion
2 and proactively identifying resources (including people, materials, and equipment) that
3 may be required for the restoration of transmission facilities. In addition, I am responsible
4 for ensuring that ESL's objectives and strategies for completing the restoration of any
5 transmission facilities impacted by the storm are met, including patrolling transmission
6 facilities following passage of the storm, identifying any damage, efficiently completing
7 any required design modifications and repairs, and returning to "normal or new normal
8 operations" following a storm.

9
10 Q6. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION OR ANY
11 OTHER REGULATORY AGENCIES?

12 A. Yes. A list of my prior testimony is provided in Exhibit MPB-1.
13

14 II. PURPOSE AND SUMMARY OF TESTIMONY

15 A. Purpose of Testimony

16 Q7. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

17 A. My testimony presents ELL's reasonable and necessary transmission-related storm costs
18 for Hurricane Ida in the total amount of \$232.9 million that were incurred for restoration
19 activities through March 31, 2022. As outlined in my testimony, the Company's
20 transmission-related hurricane storm costs associated with Hurricane Ida were necessary
21 to repair, in the most expeditious and safe manner possible, the damage sustained by the
22 Company's transmission system and to restore services associated with electric power
23 outages affecting the Company's customers in Louisiana. As further discussed in my

1 testimony, these costs were reasonable and necessary under the circumstances, and
2 processes were put in place and followed to manage, control, and verify the costs incurred.
3 I also discuss the estimated costs for certain storm-related on-going projects that have not
4 yet been completed.

5 In my discussion of the transmission restoration work and costs, I describe the
6 Entergy Transmission Organization, including its structure and function. I also discuss
7 ELL's transmission system, along with the Company's investment, design, and
8 maintenance of its system. Next, I address the Entergy System's storm plan and the manner
9 in which it was implemented during the 2021 hurricane season. I then describe the damage
10 suffered by the Company's transmission system from Hurricane Ida and the work that was
11 undertaken to restore the system. I also discuss the resources used to restore service.
12 Finally, I describe in detail the total transmission-related costs necessary to restore ELL's
13 system following Hurricane Ida.

14

15 Q8. DO YOU SPONSOR ANY EXHIBITS?

16 A. Yes. My exhibits are listed in the table of contents to this testimony.

17

18 **B. Summary of Transmission Storm Costs**

19 Q9. WHAT WERE THE TRANSMISSION STORM COSTS INCURRED BY ELL
20 RELATED TO HURRICANE IDA THAT YOU ARE PRESENTING IN THIS
21 PROCEEDING?

22 A. The transmission-related storm costs incurred as a result of Hurricane Ida that are presented
23 in my testimony total \$232,932,746. These dollar amounts are reflected in Exhibit MPB-

1 transmission lines that interconnect the transmission system that serves the greater New
2 Orleans area to the remainder of the Entergy transmission system and neighboring systems.
3 However, as I discuss below, within 48 hours of the storm's exit, the Company had restored
4 the first transmission line into the greater New Orleans area, reconnecting it to the regional
5 grid.

6 Food and lodging were another challenge given the widespread damage. To
7 overcome this challenge, ELL utilized commercial lodging where available, as well as a
8 variety of logistics contractors to provide alternative lodging sites, both fixed and mobile.

9 On top of those challenges, it was necessary to implement COVID-19 safety
10 protocols for travel, logistics, lodging, and work execution, which, in turn, resulted in
11 increased costs associated with those safety measures, including alternative lodging,
12 extended travel, and personal protection equipment.

13 14 **III. ELL'S TRANSMISSION SYSTEM & OPERATIONS**

15 **A. Transmission Organization**

16 Q11. HOW IS THE ENTERGY TRANSMISSION BUSINESS UNIT ORGANIZED?

17 A. The transmission systems of all EOCs, including ELL's, are planned and operated as a
18 single integrated transmission system. The Entergy Transmission organization is
19 responsible for the planning, operation, maintenance, and construction management of the
20 electric transmission systems of the EOCs, including ELL. Entergy Transmission
21 employees are employees of either ESL, which provides services in a consistent and
22 efficient manner to all of the jurisdictional EOCs, or of one of the EOCs.

23

1 Q12. WHAT ARE THE RESPONSIBILITIES OF THE ENTERGY TRANSMISSION
2 ORGANIZATION RELATIVE TO ELL?

3 A. ELL transmission personnel are responsible for local activities, which include various
4 aspects of field execution, including dispatching, maintenance, and construction. For their
5 part, ESL's transmission personnel generally provide planning, design and project
6 management services, transmission real-time operations, engineering support, safety,
7 training, environmental services, business services, regulatory and litigation support, and
8 emergency preparation for the transmission systems of all EOCs, including ELL. There is
9 no duplication of responsibilities between ELL personnel and ESL personnel.

10
11 Q13. PLEASE ELABORATE ON THE FUNCTIONS AND RESPONSIBILITIES OF THE
12 ENTERGY TRANSMISSION ORGANIZATION.

13 A. Within the Entergy Transmission organization, there are five distinct functions that work
14 closely together: (1) Planning and Strategy, (2) Project Management, Construction, and
15 Engineering, (3) Operations, (4) Asset Management, and (5) Transmission Customer
16 Service. These functions are described as follows:

- 17 • The Planning and Strategy function performs long-range transmission planning and
18 develops projects and/or operating guides necessary to ensure the EOCs'
19 transmission systems function reliably and efficiently. During storm restorations,
20 the Planning and Strategy function plans for the restoration execution by
21 monitoring system conditions as they change and then developing prioritized
22 restoration plans for facilities that experienced outages during the storm.

- 1 • The Project Management, Construction, and Engineering function executes the
2 planned capital projects. This includes managing costs and schedules and
3 overseeing construction activities. During a storm, this function provides scouting,
4 damage assessment, procurement and logistical support, and supports Asset
5 Management in rebuilding facilities destroyed by the storm. In addition, the
6 Engineering function designs replacement facilities, assists in the evaluation of
7 replacement materials, and performs analyses of facilities that were not destroyed
8 to ensure that they continue to meet design specifications post-storm.
- 9 • The Operations function encompasses short-term or operational planning functions
10 and real-time operations. During storm restoration, the Operations function
11 monitors real-time system conditions, including the loading on lines as they are
12 restored, ensuring that no lines become overloaded and that no voltage problems
13 are developing. They also interface extensively with field personnel to coordinate
14 the sequence of switching operations to restore facilities to service following the
15 storm.
- 16 • The Asset Management function is responsible for managing the condition of the
17 Company's transmission line and substation assets. During normal operations, this
18 function executes its preventative, corrective and diagnostic substation and
19 transmission line maintenance programs, executes transmission vegetation
20 management programs, and responds to outages and equipment problems when
21 they arise. During a major storm restoration, this function provides personnel to
22 perform damage assessment immediately following passage of the storm, repair
23 and restore facilities, and supervise contractor and mutual-aid personnel.

- 1 • Transmission Customer Service is the customer service function for transmission-
2 interconnected customers such as large industrial facilities, electric cooperatives,
3 municipals, etc. During a storm, this function assists the Planning section in
4 ensuring that restoration priorities include customers interconnected to the
5 transmission system, including those not served by the EOCs, to ensure
6 prioritization is fair and equitable.

7

8

B. ELL's Transmission System

9 Q14. PLEASE PROVIDE A GENERAL DESCRIPTION OF THE ENTERGY
10 TRANSMISSION SYSTEMS.

11 A. The Entergy transmission systems span portions of five states (Arkansas, Louisiana,
12 Mississippi, Texas, and Missouri) and are comprised of over 16,100 circuit miles of
13 transmission lines and approximately 1,600 substations. Employees based at various
14 locations throughout the service area plan, design, construct, operate, and maintain the
15 transmission systems.

16

17 Q15. WHAT GENERAL FUNCTIONS DO THE ENTERGY TRANSMISSION SYSTEMS
18 PERFORM?

19 A. The Entergy transmission systems move high-voltage, bulk electric power produced by
20 market participants within the Midcontinent Independent System Operator, Inc. ("MISO")
21 Regional Transmission Organization and neighboring regions across an interconnected
22 system of transmission lines and substations to distribution points for delivery to retail
23 customers of the EOCs, as well as to wholesale customers such as municipalities and

1 cooperatives, or to points of delivery into other transmission systems. The Entergy
2 transmission systems also deliver power directly to large commercial and industrial retail
3 customers of the EOCs. These customers include refineries, chemical plants, oil and gas
4 processing facilities, pumping stations, and large manufacturing sites vital to the region
5 and nation.

6
7 Q16. WHO OWNS THE TRANSMISSION ASSETS IN THE SYSTEM?

8 A. The EOCs own the transmission system assets located in their respective service areas, as
9 well as other assets (such as computer systems) that support the operations of the
10 transmission systems.

11
12 Q17. PLEASE DESCRIBE ELL'S TRANSMISSION SYSTEM SPECIFICALLY.

13 A. The ELL transmission system is comprised of over 5,400 circuit miles of transmission
14 lines. In addition to the lines, there are approximately 516 substations in the system. ELL's
15 transmission system includes transmission lines and substations operating at voltages of
16 500 kV, 345 kV, 230 kV, 138 kV, 115 kV, and 69 kV. The following table identifies ELL's
17 circuit miles of transmission line by voltage class:

18 **Table 1**
19 **ELL's Transmission Circuit Miles by Voltage Class**
20

Voltage Class (kV)	Circuit Miles
500	679
345	16
230	1,428
138	701
115	1,700
69	897
TOTAL	5,421

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The ELL transmission system is interconnected with the transmission systems of EAL, ENO, EML, ETI, Lafayette Utilities System, Louisiana Generating LLC, Cleco Power LLC (“Cleco”), Louisiana Electric Power Authority, Mississippi Power Company, and Southwestern Electric Power Company.

Q18. WHY IS ELL’S TRANSMISSION SYSTEM INTERCONNECTED WITH OTHER TRANSMISSION SYSTEMS?

A. ELL’s transmission system is interconnected with other transmission systems primarily to promote system reliability. The interconnection of transmission systems also provides access to other power suppliers, some of which may provide more economic sources of power than is available on-system.

Q19. WHAT IS THE ROLE OF THE MIDCONTINENT INDEPENDENT SYSTEM OPERATOR?

A. MISO has significant roles in planning and operating the Bulk Electric System, in addition to its more well-known planning and market functions. As the Reliability Coordinator for the portion of the Bulk Electric System that includes ELL and the other EOCs, MISO has the ultimate responsibility in determining what actions are necessary to safeguard the reliable operation of the Bulk Electric System. MISO can directly or indirectly, via operating instructions, control the commitment and dispatch of generation, the status of available transmission lines (opening or closing them to improve system reliability), and the demand served by the system. This is achieved through actions such as declaring

1 equipment; and (3) projects that build new facilities to reduce congestion on the system to
2 ensure customers have access to the lowest cost power. For the period 2013-2021, the
3 Company invested approximately \$3 billion in its transmission system. Note that 2020 and
4 2021 totals in Table 2 below include approximately \$385 million (2020) and \$194 million
5 (2021) in costs associated with Hurricanes Laura, Delta, and Zeta, Winter Storm Uri, and
6 Hurricane Ida.

7 **Table 2**
8 **ELL Transmission Capital Closings**

9 Values in \$M

2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
168.9	201.4	188.1	289.1	292.8	491.5	449.4	906.9	568.9	3,557.13

10 Source: FERC FORM No. 1

11 The need for this level of investment was driven by many factors, including reliability
12 planning, load growth, infrastructure maintenance and reliability needs, economic
13 transmission investments (*i.e.*, investments that produce cost savings to customers), and
14 generation interconnection projects. Examples of the type of work recently performed to
15 promote the reliability and resiliency of the Company's transmission system include:

- 16 • Updating and replacing older "legacy" lattice and wooden structures with steel
17 mono-pole or multi-pole framings;
- 18 • Maintaining or exceeding National Electric Safety Code ("NESC") wind speed
19 design standards, with most coastal areas being designed to withstand 140-150 mph
20 winds; and
- 21 • Installing 30-foot to 60-foot steel caisson foundations for transmission structures
22 located in coastal areas.

23

1 Q21. CAN YOU PROVIDE SPECIFIC EXAMPLES OF TRANSMISSION PROJECTS
2 RECENTLY COMPLETED BY THE COMPANY?

3 A. Yes. The Company recently completed a transmission system upgrade in Lafourche Parish
4 in south Louisiana that is designed to improve resiliency and reliability of the local power
5 grid for customers in the Bayou region. The Company's transmission lines were upgraded
6 and approximately 80 steel structures between Cut Off and Golden Meadow were replaced
7 with infrastructure built to withstand winds of up to 150 mph. In particular, new
8 infrastructure was placed into steel caissons to create strong foundations.

9 Another example is the West Monroe Reliability Improvement Project that spans
10 across Ouachita Parish and positions the region for economic growth and increased
11 resiliency and reliability. New transmission equipment was installed and portions of the
12 existing, local transmission system were upgraded. Major components of the project
13 include:

- 14 • Upgrading 4 transmission lines to 230kV,
- 15 • Construction of a new 3-mile 230kV transmission line, and
- 16 • Upgrading or expanding 5 substations.

17 This work made the electric system in the area more interconnected with higher capacity,
18 which will help the Company deliver power now and into the future by way of clean
19 generating resources like solar, for example. Also, while the project enhances service
20 reliability, it can also help import lower-cost power to keep the region attractive to existing
21 or new customers, including those turning to electrification to reach sustainability goals,
22 and is an important step in the Company's modernization of the electric system in north
23 Louisiana.

1 Another recently-completed project is the Waterford – Vacherie 230 kV line
2 upgrade. This project, located in southeast Louisiana, involved upgrading the Waterford –
3 Vacherie 230 kV line to a higher rating to address future load growth and reliability needs.
4

5 Q22. WAS THE DAMAGE TO THE COMPANY’S TRANSMISSION SYSTEM FROM
6 HURRICANE IDA DUE TO INADEQUATE INVESTMENT IN, OR HARDENING OF,
7 THE SYSTEM?

8 A. No. As I noted above, ELL has made significant investments in its transmission system
9 during the past several years utilizing modern design standards. The Company evaluates
10 hardening strategies from a customer perspective, weighing the benefits of fewer and
11 shorter outages against the increased costs of hardening the system, which our customers
12 ultimately must pay for. Maximizing resiliency on every aspect of the grid is not cost-
13 effective for customers, but targeted programs that cost-effectively reduce the risks to
14 reliability posed by major storms is good for all stakeholders. In other words, ELL
15 continually searches for ways to improve the resiliency of its transmission system while
16 also managing and balancing rates that are paid by customers. Furthermore, all of the
17 Company’s transmission facilities are designed and constructed to meet or exceed the
18 applicable design standards at the time of construction.
19

20 Q23. CAN YOU EXPLAIN WHAT YOU MEAN BY APPLICABLE DESIGN STANDARDS?

21 A. Yes. Referring specifically to the transmission system in southeast Louisiana that was
22 impacted during Hurricane Ida, that system was designed under different sets of standards.
23 Older structures were designed to either the Louisiana Power & Light (“LP&L”) or the

1 New Orleans Public Service Inc. (“NOPSI”) standards that were in effect at the time of
2 construction, which have been grandfathered into ELL’s system. These standards were
3 developed under different versions of the NESC, and, therefore, structures built under each
4 set of standards were designed to withstand different wind loadings. Transmission
5 facilities designed and constructed more recently utilize the unified Entergy Design
6 Standard implemented in 1997.

7 Specifically, the unified Entergy Design Standard requires all transmission lines
8 built or substantially upgraded in southeast Louisiana to be designed for at least 110 mph,
9 with the majority being designed for 125 mph or 140 mph winds. Older transmission lines
10 located in south Louisiana that were designed and constructed before the development of
11 the unified Entergy Design Standard are based on legacy LP&L or NOPSI design
12 standards. All lines, regardless of vintage, meet or exceed the NESC requirements in effect
13 at the time of their construction.

14
15 Q24. CAN YOU PROVIDE SPECIFIC EXAMPLES OF HOW THE COMPANY’S
16 TRANSMISSION SYSTEM FARED DURING HURRICANE IDA?

17 A. Yes. The transmission system performed well in Hurricane Ida, with more recently
18 installed facilities that were designed and constructed under current standards largely
19 remaining intact and requiring repairs as opposed to full scale replacement as shown in
20 Exhibit MPB-6 to my testimony. For example, the Bayou Vista – Terrebonne 230 kV
21 transmission line, which runs right through the heart of the Bayou region that took a direct
22 hit from Ida’s winds, sustained minimal damage. This new line was built on structures
23 designed to withstand winds of up to 150 mph. Another example is the Valentine –

1 Clovelly 115 kV transmission line, which was also in the direct path of Hurricane Ida and
2 took a direct hit from the storm, yet sustained no damage.

3 The eight transmission lines used to import power into the New Orleans region (the
4 great majority of which are owned by ELL) sustained only minimal damage. Although
5 those lines went out of service in the wake of a strong hurricane-force winds, the lines
6 incurred damage to less than 2% of their structures and were restored to service within a
7 few days of the storm's exit from the area as I discuss below.

8
9 Q25. PLEASE DESCRIBE THE COMPANY'S MAINTENANCE PROGRAMS AND
10 PRACTICES APPLICABLE TO ITS TRANSMISSION SYSTEM.

11 A. The Company utilizes several types of inspections for its transmission line structures,
12 including routine aerial patrols leveraging both helicopters and Unmanned Aerial System
13 ("UAS") technology, wood pole groundline treatment and inspection, climbing inspection
14 (for wood poles), and comprehensive aerial inspection (for concrete and steel poles).
15 Climbing and comprehensive aerial inspections are triggered by the performance of the
16 lines and through conditions found during routine aerial patrols, outage patrols, and
17 groundline inspections. As it relates to the Company's preparation for storms, the
18 Company typically completes at least one cycle of transmission aerial inspections prior to
19 June of each year.

20 The Company flags corrective maintenance items identified through inspections
21 that are then prioritized for remediation into the following categories:

- 22 • Priority 1 – emergency work to begin within 0-24 hours from the time work is
23 identified;

- 1 • Priority 2 – urgent work to begin within 14 days from the time work is identified;
- 2 • Priority 3 (High) – work identified to be planned, scheduled, and work to begin
- 3 within 90 days from the time work is identified;
- 4 • Priority 3 (Medium) – work identified to be planned, scheduled, and work to begin
- 5 in the next calendar year; and
- 6 • Priority 3 (Low) – work identified to be planned, scheduled, and bundled with other
- 7 work.

8

9 Q26. WAS THE DAMAGE TO THE COMPANY'S TRANSMISSION SYSTEM FROM
10 HURRICANE IDA DUE TO INADEQUATE MAINTENANCE AND INSPECTION
11 PROGRAMS?

12 A. No. ELL's maintenance and inspection programs are consistent with industry practices for
13 maintaining transmission systems, and the damage sustained by ELL's transmission
14 system during Hurricane Ida is not fairly attributable to any deficiencies in those programs.

15

16 Q27. PLEASE DESCRIBE THE COMPANY'S VEGETATION PROGRAMS AND
17 PRACTICES APPLICABLE TO ITS TRANSMISSION SYSTEM.

18 A. To keep rights-of-way ("ROWs") in proper condition, the Company typically performs at
19 least two aerial patrols of all transmission lines each year to inspect the ROWs and identify
20 any areas requiring corrective maintenance. Vegetation is maintained in a manner that
21 keeps it clear from growing into the transmission lines and causing associated electrical
22 interruptions based on proximity. A combination of traditional trimming and herbicides
23 are used to maintain the ROWs, and the Company implements an inspection program to

1 identify and remove trees located outside of the Company's ROWs that may endanger the
2 conductor zone.

3
4 Q28. WAS THE DAMAGE TO THE COMPANY'S TRANSMISSION SYSTEM FROM
5 HURRICANE IDA DUE TO INADEQUATE VEGETATION MANAGEMENT?

6 A. No. Our damage assessment observations during Hurricane Ida did not indicate that we
7 had inadequate vegetation management in our transmission line ROWs. To the contrary,
8 we experienced a high degree of vegetation-related damage to our facilities from trees
9 growing outside of the Company's ROWs. Through the inspection program that I noted
10 previously, the Company works to proactively mitigate high risk trees outside of our ROWs
11 with customer permission; however, obtaining customer consent to trim beyond our ROWs
12 can, at times, pose a challenge.

13
14 **IV. HURRICANE IDA IMPACTS AND STORM PLAN**

15 **A. Description of Hurricane Ida**

16 Q29. PLEASE DESCRIBE HURRICANE IDA.

17 A. Hurricane Ida came ashore at 11:55 a.m. CDT on August 29, 2021, at Port Fourchon,
18 Louisiana, as strong Category 4 hurricane impacting the region between the Atchafalaya
19 Basin and greater New Orleans area. Ida brought with it sustained winds of 150 mph, a
20 reported instantaneous peak wind gust of 172 mph near the coast, and winds over 135 mph
21 in the greater New Orleans area. The eye of the storm did not clear the Louisiana region
22 until late in the night on August 29 (or early the next morning).

1 Hurricane Ida is tied with several other storms for the fifth strongest hurricane to
2 ever hit the mainland United States. By far, the most significant damage caused by the
3 storm was in the coastal regions and the river parishes near where the hurricane made
4 landfall and within the direct path of the eye wall, which brings the most damaging winds
5 and intense rainfall.

6 The path that Ida took was directly over critical transmission corridors in the region.
7 Sixty percent (60%) of ELL's transmission structures damaged or destroyed during
8 Hurricane Ida occurred on 5 transmission lines, 4 of which were located in the Bayou
9 region and 1 in the Hammond area. In addition, as I noted above, Hurricane Ida resulted
10 in the disconnection of the greater New Orleans region from the bulk electric system with
11 the loss of eight transmission ties into that region.

12
13 **B. Damage Caused by Hurricane Ida**

14 Q30. CAN YOU SUMMARIZE THE DAMAGE TO THE COMPANY'S TRANSMISSION
15 SYSTEM SPECIFICALLY CAUSED BY HURRICANE IDA?

16 A. Yes. Damage to ELL's transmission system included:

- 17 • 530 transmission structures damaged² and/or destroyed;³
- 18 • 91 substations damaged and/or impacted; and
- 19 • 190 transmission lines out of service.

20

² Structures are damaged by wind or wind-blown debris detaching shield wire, conductor, or damaging insulators. Contact from vegetation is also a driver of damaged structures or outages.

³ Structures are generally destroyed by extreme wind, the failure of a tower pulling down another tower, or, in extreme circumstances, large structures crashing into poles or towers driven by flood.

1 Q31. DO YOU HAVE ANY OBSERVATIONS ABOUT WHAT THESE DAMAGE
2 NUMBERS SHOW WITH RESPECT TO THE COMPANY'S TRANSMISSION
3 SYSTEM?

4 A. Yes. To put these numbers in context, the southeast Louisiana region impacted by
5 Hurricane Ida's winds included 19 parishes representing over 2,300 miles of transmission
6 lines and approximately 17,000 individual transmission structures. Of these roughly
7 17,000 structures, 250 ELL structures were destroyed, and 280 others were
8 damaged. Newer facilities, which are designed to withstand winds of up to 150 mph,
9 performed well in Ida. For example, following a transmission path where the storm made
10 landfall along the coast, fewer than 1% of the newer, more resilient structures were
11 destroyed.

12 What this shows is that, despite Hurricane Ida's intensity, and contrary to
13 various erroneous media reports in the immediate aftermath of the storm relating to one
14 ELL-owned transmission structure on the border of Avondale and Bridge City⁴ that was
15 destroyed, the Company's transmission system withstood the storm well and was rapidly
16 restored to service. However, the distribution system in southeast Louisiana sustained a
17 severe amount of damage as a result of Hurricane Ida, and, within a few days after Ida
18 struck, it was that damage to distribution facilities, not transmission facilities, that drove
19 the timeline within which the Company was able to restore service to customers.

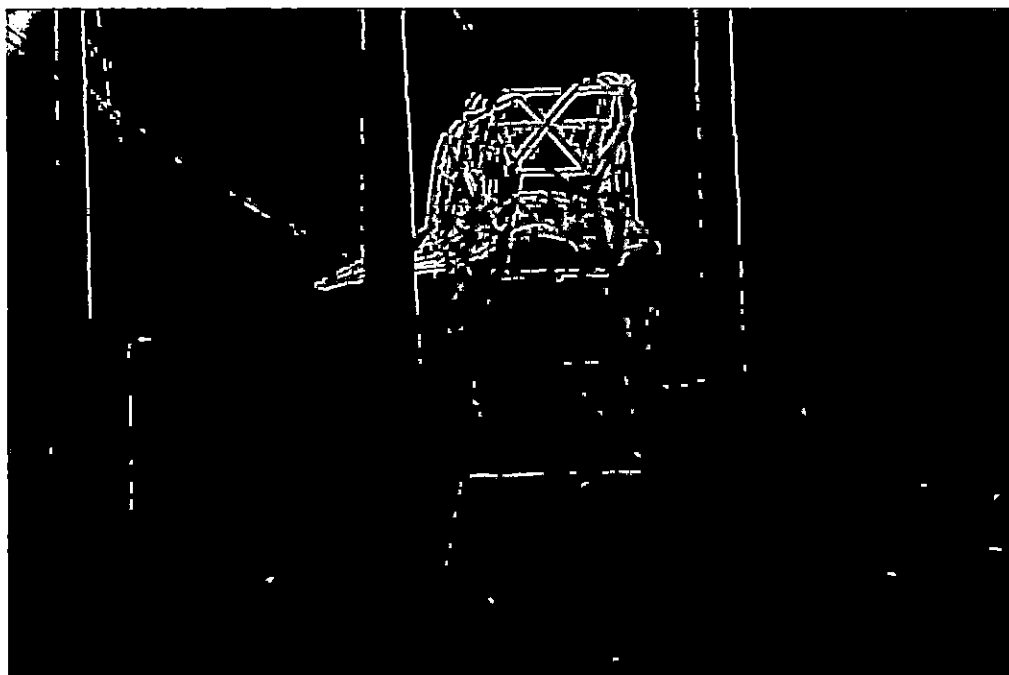
20

⁴ The transmission tower in question was located across the Mississippi River from Harahan, Louisiana, and just upstream from New Orleans.

1 Q32. CAN YOU EXPLAIN BRIEFLY THE TYPE OF DAMAGE EXPERIENCED ON THE
2 COMPANY'S TRANSMISSION SYSTEM AS A RESULT OF HURRICANE IDA?

3 A. Generally speaking, the type of damage that Hurricane Ida inflicted upon the Company's
4 transmission system included poles and towers knocked down or damaged by extreme
5 wind loading and flying debris, conductors broken or detached from structures by falling
6 trees or failing adjacent structures, broken arms and cross braces, and broken insulators.
7 Substation damage included flooding of transformer and circuit breaker equipment, water
8 and wind damage to control houses and relaying equipment, and, in the case of one coastal
9 area substation (the Caminada 34.5 kV substation in Grand Isle), complete destruction from
10 storm surge. The pictures below demonstrate damage resulting from Hurricane Ida's
11 powerful winds:

12 **Figure 1**

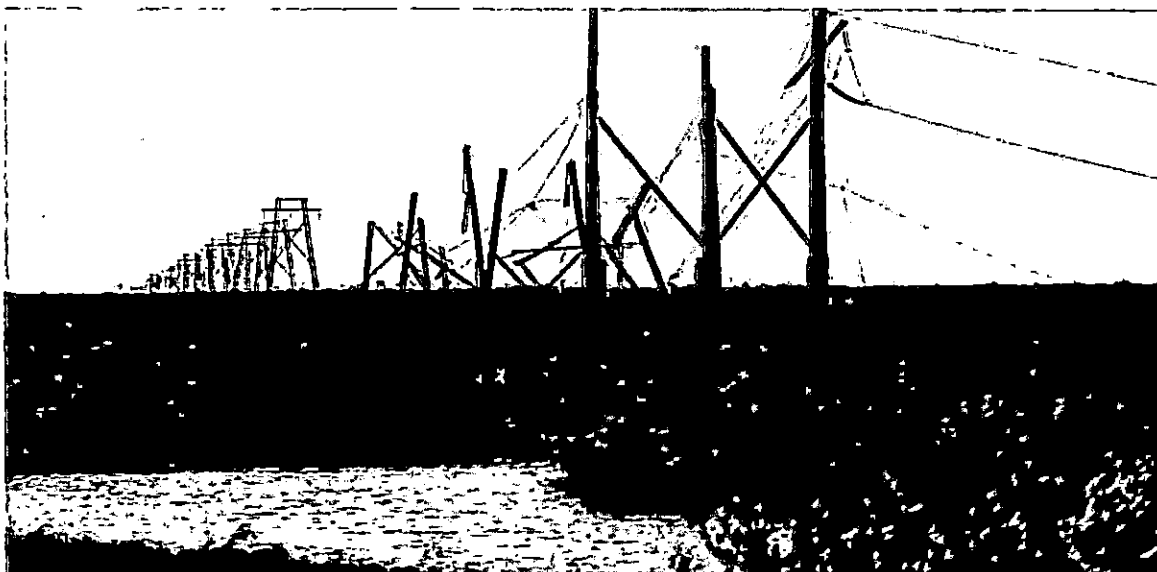


13

14

1

Figure 2



2

3 Exhibit JWH-3 to Mr. Hawkins's testimony shows the downed vegetation throughout
4 Hurricane Ida's path and the access issues that we faced in coastal areas. And Exhibit
5 PRM-2, page 7, to Mr. May's testimony has additional pictures of transmission
6 infrastructure after the storm.

7

8 Q33. WHAT IMPACT DID THE COLLAPSED TRANSMISSION TOWER IN AVONDALE
9 HAVE ON THE COMPANY'S RESTORATION OF SERVICE TO CUSTOMERS?

10 A. None. While the single collapsing transmission tower made for sensational headlines and
11 reports in the immediate aftermath of the storm, the transmission tower in question was not
12 critical for transmission system security or stability. The transmission system was resilient
13 and was restored quickly after Hurricane Ida and is still operating reliably today even
14 though that river crossing segment is out of service while new river crossing structures are
15 being constructed.

1 As I discuss below, within 48 hours of the storm’s exit, the Company had restored
2 the first transmission line into the greater New Orleans area, reconnecting it to the regional
3 grid. And within 5 days of Ida’s exit, 6 of the 8 transmission lines into the New Orleans
4 area were returned to service, bolstering the reliability of the transmission system in the
5 region.

6
7 Q34. HOW DOES THE DAMAGE TO THE COMPANY’S TRANSMISSION SYSTEM AS A
8 RESULT OF HURRICANE IDA COMPARE TO PRIOR STORMS IMPACTING ELL’S
9 SERVICE AREA?

10 A. With the caveat that each storm is unique, Table 3 below shows that transmission-system
11 damage resulting from Hurricane Ida was less extensive than after earlier storms of equal
12 or lesser intensity:

13 **Table 3**

	Katrina (Category 3 at landfall in 2005)	Rita (Category 3 at landfall in 2005)	Gustav (Category 2 at landfall in 2008)	Ike (Category 2 at landfall in 2008)	Laura (Category 4 at landfall in 2020)	Ida (Category 4 at landfall in 2021)
Transmission Structures Destroyed	---	664	105	566	1,459	254
Total of Transmission Structures Destroyed and Damaged (inclusive of the figures in the row above)	Approx. 1,000	1,327	260	980	1,909	553

14 * Values in Table 3 reflect damage to the transmission system of all affected EOCs.
15

1 The transmission-system investment that I discussed earlier in my testimony helped to
2 prepare the system for Hurricane Ida and put the Company in the position to complete fast
3 repairs to the system after the storm rather than lengthy and costly rebuilds.
4

5 **C. The Company's Restoration Plan and Implementation**

6 **1. The Company's Transmission Incident Response Plan**

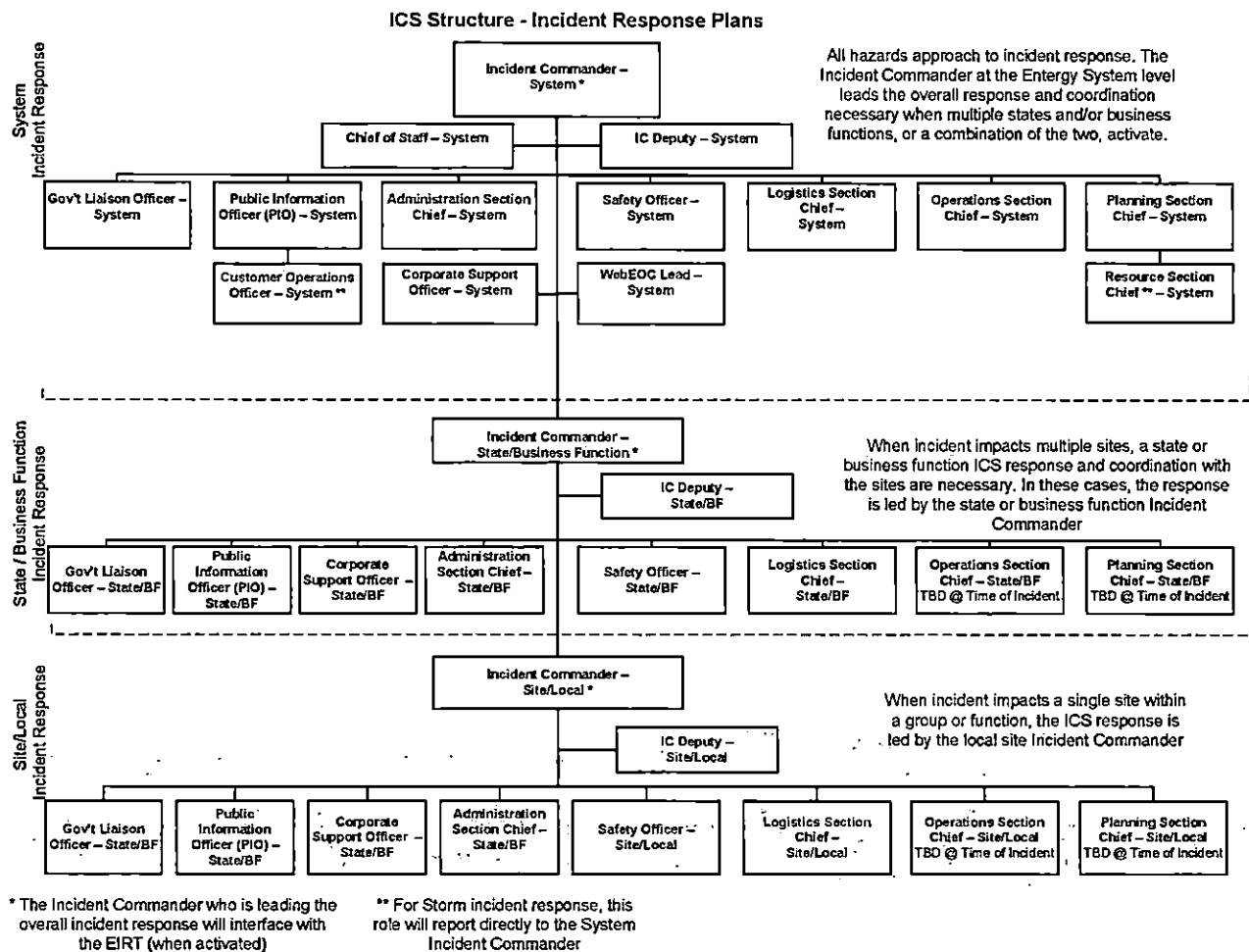
7 Q35. PLEASE DESCRIBE ENTERGY TRANSMISSION'S PLANNING TO ADDRESS
8 MAJOR STORMS.

9 A. Entergy Transmission maintains a thorough and comprehensive storm plan, the
10 Transmission Incident Response Plan ("Transmission IRP"), and conducts refresher
11 training primarily in conjunction with an annual System-level drill to test processes and
12 abilities, which drill is discussed in more detail by Mr. Hawkins. For storm incidents, due
13 to the close coordination necessary, Entergy Transmission also follows, and is a component
14 of, the System Incident Response Plan ("System IRP") and the Storm Incident Specific
15 Response Plan. In other words, Entergy's overall incident response is comprised of
16 smaller, but well-coordinated, incident response plans at the department, business unit,
17 state, and overall system levels. These plans, including the Transmission IRP, are updated
18 on an ongoing basis. The Transmission IRP is accessible by all transmission employees
19 via an internal company website.
20

1 Q36. PLEASE DESCRIBE THE INCIDENT RESPONSE ORGANIZATIONAL
 2 STRUCTURE.

3 A. The Transmission IRP and the System IRP implements an Incident Command System
 4 (“ICS”) structure that assigns individuals to fill key incident preparedness and response
 5 positions, along with defining their roles and responsibilities. All business functions,
 6 including Transmission activities, are completely integrated within this command
 7 structure. The ICS structure reflected in the Transmission IRP is shown in Figure 3.

Figure 3



1 The Transmission IRP includes definitions of the roles and responsibilities of the key
2 positions in our leadership structure. Detailed contact information is included in the plan
3 for employees and contractors.

4 The System Incident Commander is responsible for coordinating the response
5 among all applicable organizations and functions, including ensuring communications with
6 customers, as well as key governmental, regulatory, and emergency management contacts.
7 I serve as the System Operations Section Chief and had the same responsibilities for that
8 role during Hurricane Ida. In my storm role, I report to the System Incident Commander,
9 who facilitates overall internal and external resource procurement and allocation among
10 the EOCs and oversees prioritization decisions at the System level to ensure the success of
11 the overall storm response and restoration effort.

12 The State Command Centers, including the Louisiana Command Center under the
13 leadership of ELL President and CEO Phillip R. May, direct prioritization and restoration
14 efforts within their respective EOCs.

15

16 **2. Implementation of the Incident Response Plan**

17 Q37. DID THE COMPANY ACT CONSISTENTLY WITH ITS STORM PLAN IN
18 PLANNING FOR, AND RESPONDING TO, HURRICANE IDA?

19 A. Yes. Mr. Hawkins describes the Company's preparation for Hurricane Ida, and the actions
20 taken by the Company after the storm made landfall, including the Company's efforts to
21 ensure that enough workers were available to carry out the tasks that were necessary to
22 restore the Company's transmission and distribution systems.