CenterPoint Energy Houston Electric
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Project Category	Project Number	Description	Additions	Salvage / Removal	Total	Project Category Total
	HLP/00/0922/0016	includes the following: • Rebuild approximately 18.71 miles of wooden H-frame and single-pole line on three segments of 138 kV ckt 93 from Algoa Corner – Alta Loma – Hitchcock – La Marque with the latest standard double-circuit-capable concrete and/or steel structures except for the 3.5-mile long loop section to Hitchcock which will utilize single-circuit concrete and/or steel structures along the city streets; • Replace the existing 18.71 miles of 2-397 ACSR and 1-2000AAC conductor, including substation jumpers and spans, with the latest standard 2-959 ACSS conductor; • Replace the necessary substation equipment at 138 kV Hitchcock substation with 4000 A equipment. This project is needed to replace aging infrastructure and to address multiple line clearance concerns on 138 kV ckt 93 P.H. Robinson to La Marque segments from Algoa Corner – Alta Loma – Hitchcock – La Marque. The majority of the line was constructed in 1951 followed by the Hitchcock loop in 1988, and an upgrade of the 1951 vintage wooden H-frame line and 1988 vintage wooden single-pole line to the storm-hardened, modern concrete and/or steel	24,775,233.00	1,693.44	24,776,926.44	
	HLP/00/0922/0018	Distribution work required to maintain clearances from LaPorte substation taps	27,435,283.80		27,435,283.80	
	HLP/00/0922/0019	REBUILD/RECONDUCTOR GULFGATE SUB	18,245,594.81		18,245,594.81	
	HLP/00/0922/0020	Distribution work required to maintain clearances for Ckt 06F-2 Holmes to Structure 11434	14,225,925.63	2,362,753.20	16,588,678.83	
	HLP/00/0922/0021	Distribution work required to maintain clearances from LaPorte substation taps	9,505,077.05	2,240,202.94	11,745,279.99	
	HLP/00/0922/0039	BRAZOS RIVER CROSSING Relocate Str #05429	2,411,558.32		2,411,558.32	
	HLP/00/0936	Substation improvements include conversion at Fannin substation and new feeder panel at Needville substation.	3,721,902.91	225,663.05	3,947,565.96	
	HLP/00/1010	Major Underground -automation of switching by adding relaying and either adding motor operators to existing switches or replacing the switches. This will automatically transfer customers load to an alternate circuit during an outage of their normal circuit. This will reduce outage duration in remote locations or areas with restricted access such as airports.	1,380,239.32	54,805.27	1,435,044.59	
	HLP/00/1015	Fiber Duct & Cable- Replace underground fiber conduits (bituminous fiber pipe) with concrete encased PVC ductbanks.	1,752,336.42		1,752,336.42	
	HLP/00/1055	Distribution line clearance corrections between transmission and distribution facilities to meet National Electrical Safety Code (NESC) requirements.	20,775,932.54	2,548,036.64	23,323,969.18	
	HLP/00/1099	Substation Physical Security Enhancement: Replacement of substation facility fencing with more protective fencing to ensure our critical assets receive a greater level of protection.	5,826,667.35		5,826,667.35	
	HLP/00/1189	Replacement of GE UR Relays/Panels	972,023.19	35,618.89	1,007,642.08	

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Project Category	Project Number	Description	Additions	Salvage / Removal	Total	Project Category Total
	HLP/00/1195	SUBSTATION NETWORK MODIFICATIONS - Physically isolate substation communications infrastructure	1,758,894.26	0.02	1,758,894.28	
	HLP/00/1232	Replace underground vault switches	1,140,367.91	101,828.88	1,242,196.79	
	HLP/00/1247	Rebuild Memorial substation due to extensive damage due to Hurricane Harvey. Rebuild included upgrade of transformers and storm hardening measures to mitigate future flooding issues.	4,651,709.41	204,047.49	4,855,756.90	
	HLP/00/1316	Acquisition of property for the construction of new Hermann substation	75,430,951.21		75,430,951.21	
	HLP/00/1399	BUS TO 4000A. The project includes the following: • Rebuild approximately 17.1 miles of wooden H-frame line on three segments of 138 kV ckt 65 from Wallis - GEBHRT - Sealy - Peters with the latest standard double-circuit-capable concrete and/or steel structures; • Replace the existing 17.1 miles of 1-795 AAC conductor, including substation jumpers and spans, with the latest standard 2-959 ACSS conductor; • Replace the necessary substation equipment at Wallis, Sealy, and Peters 138 kV substations with at least 4000 A. This project is needed to replace aging infrastructure and to address line clearance concerns on three segments of the 138 kV ckt 65 from Wallis - GEBHRT - Sealy - Peters. As shown in the analysis, the project would also resolve some significant P6 (maintenance outage) loading concerns that currently exist on the system. The upgrade of the 1974 vintage wooden H-frame line to the storm-hardened, modern concrete and/or steel structures will improve the resiliency of the line against hurricane-force winds. The rebuild will also provide a much higher circuit capacity and the ability to add another circuit to accommodate	2,139,259.18	315,865.03	2,455,124.21	

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Project Category	Project Number	Description	Additions	Salvage / Removal	Total	Project Category Total
	HLP/00/1413	includes the following: • Rebuild approximately 25.69 out of 27.35 miles of wooden H-frame line on the 138 kV FOSTER - Peters circuit 25 with the latest standard double-circuit-capable concrete and/or steel structures; • Reconductor 0.55 miles of 1-795 AAC conductor on the 138 kV Flewellen - FOSTER circuit 25 segment, and 26.04 miles of 1-795 AAC or 1-795 ACSR conductor on the 138 kV FOSTER - Peters circuit 25 segment, including substation jumpers and spans, with the latest standard 2-959 ACSS conductor. The total length of reconductoring is 26.59 miles; and • Replace the necessary substation equipment at Flewellen and Peters 138 kV substations with at least 4000 A. This project is needed to replace aging infrastructure and to address line clearance concerns on the 138 kV FOSTER - Peters circuit 25 segment. The upgrade of the 1974 vintage wooden H-frame line to the storm-hardened, modern concrete and/or steel structures will improve the resiliency of the line against hurricane-force winds. Also, the project resolves CNP Planning Event P3 and CNP Maintenance Outage P6 loading concerns seen in summer peak base cases. The rebuild will also provide a much	19,952,691.01		19,952,691.01	
	HLP/00/1414	several transmission lines crossing the Houston Ship Channel serving a large amount of industrial load. Near the mouth of the Ship Channel, one 345kV and two 138kV transmission lines originate from Cedar Bayou (CBY) and cross the channel onto Spillman Island. To maintain the depth of the channel, mud is dredged from the base of the channel and dumped onto Spillman Island. The accumulated mud has steadily buried the base of the transmission line towers and caused degradation to the structures. Since these towers have an elevated risk of failure, restoration would be needed immediately to support the high density of industrial loads in the area. Restoration of the towers on Spillman Island will be extremely challenging and time consuming; therefore, this study was undertaken to proactively determine the restoration plan should a Spillman Island failure occur. A separate study to determine the long-term permanent solution for Spillman Island will be performed. Four Immediate Restoration options were evaluated to resolve the loading concerns while maintaining reliability during other contingencies. The Spillman Island Immediate Restoration Plan study concluded that Option 3 of the proposed options proved to be the optimal solution based	3,191,288.02	30,461.59	3,221,749.61	

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Project Category	Project Number	Description	Additions	Salvage / Removal	Total	Project Category Total
	HLP/00/1415	P1415 Jordan-BENDER-CONNER. The industrial customer at the existing BENDER substation has requested to increase their existing 9.7 MVA by 34 MVA at 0.97 p.f beginning peak 2020 for a total load of 43.7 MVA. BENDER is a loop-tap substation located on circuit 86 between CONNOR and Jordan substations in the Mont Belvieu area. Results from steady-state power flow analysis indicate that no system upgrades or configuration changes are needed to serve the customer's new 34 MVA load in 2020. However, sensitivity analysis including potential load additions at DALTON and WINFRE on ckt 86 and the associated third Jordan autotransformer and looping 345 kV circuit 97 into Jordan were performed. The results show thermal loading concerns on Jordan - BENDER ckt 86 beginning in summer 2024. However, when the 34 MVA load increase at BENDER is included, this thermal loading concern to begins in summer 2021.	4,890,815.04	1,153,088.81	6,043,903.85	
	HLP/00/1419	SRB AREA 69 KV UPGRADES. With the permanent removal of the SRB units and conversion of all customers and substations between South Channel and SRB, Transmission Planning decided to review the existing configuration with the idea of deenergizing all 69 kV between SRB and South Channel. Also, permanently joining the SRB 138 kV buses and moving HOC CB2 to SRB will be tested to see the impact on the system. CenterPoint Energy Transmission Planning Department evaluated several proposed changes to SRB substation and recommends the following: •De-energize all 69 kV equipment at SRB •De-energize ckt 16 and 23 between SRB and South Channel •Reconfigure ckt 23 to terminate into South Channel creating a new ckt 23 Deepwater – South Channel •Permanently joined the two existing SRB 138 kV buses by closing breaker P750 and adding a new breaker joining the north 138 kV buses •Move 100 MVAR HOC CB2 to SRB	3,306,713.16	253,447.83	3,560,160.99	
	HLP/00/1433	Rehab Underground vault single phase transformers	1,931,631.63	683,083.07	2,614,714.70	

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Project Category	Project Number	Description	Additions	Salvage / Removal	Total	Project Category Total
	HLP/00/1447	CenterPoint Energy Houston Electric, LLC (CenterPoint Energy) High Voltage Projects (HVP) requested Transmission Studies and Modeling (TSM) to review a potential project after a pipeline company requested available space to be allocated between the Explorer Corner and Channelview substation. HVP indicated that space can be made available if the currently deenergized 69 kV ckt 38 were to be upgraded for use at 138 kV by replacing the existing H-frame structures with concrete poles. HVP requested TSM to review the potential project for reliability impacts, particularly any benefits that utilizing the deenergized circuit might provide. TSM identified that this tower section of ckt. 38 could be used to lower the fault duty at the Greens Bayou 138 kV substation by adding approximately 6.5 miles of additional conductor impedance to 138 kV Greens Bayou to LYCHEM ckt 08. CenterPoint Energy's TSM studied the reconfiguration of Greens Bayou to LYCHEM ckt 08 project which includes the following: •Rebuild about 3.25 miles of the retired Explorer Corner to Channelview ckt 38 using a double circuit arrangement and loop it into Greens Bayou to LYCHEM ckt 08. •Convert existing H-frame construction to a 138kV	8,430,187.26	1,640,277.89	10,070,465.15	
	HLP/00/1458	Major Underground Control And Monitoring System	3,441,387.24		3,441,387.24	
	HLP/00/1509	P1509.1 New Gulf Approach Spans. TEXGLF substation is a customer-owned breakered substation which had a single generator connected to it and is connected to South Lane City via 138 kV ckt 60 and West Columbia via 138 kV ckt 04. CenterPoint Energy received an ERCOT Notification of Suspension of Operations for this resource on Dec 1, 2020. The notification indicated that the unit had a forced outage and the resource owner decided to retire the unit immediately rather than repair. Since the resource owner also owns the 138 kV TEXGLF substation, the resource owner has decided to be disconnected from the transmission system. Removing this substation will force CenterPoint Energy to make modifications to the topology. The 138 kV CenterPoint Energy New Gulf distribution substation currently double tapped off 138 kV South Lane City – TEXGLF ckt 60 and West Columbia – TEXGLF ckt 04, will need to be converted to a sectionalizing substation when TEXGLF is removed from the transmission system.	1,240,093.80		1,240,093.80	

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Project Category	Project Number	Description	Additions	Salvage / Removal	Total	Project Category Total
	HLP/00/1538	HOC 69 kV Upgrades. As a follow-up to the White Oak 138/69 kV Auto and Ckt.34 Heights to White Oak Upgrade study finalized in October 2020, CenterPoint Energy has determined the need to resolve additional loading and voltage concerns still present on the 69 kV transmission system. To resolve these remaining concerns, Transmission Planning is recommending the following projects: •Join the HO Clarke 69 kV buses •Retire HOC auto A3 •Upgrade joined HOC 69 kV bus to Minimum 60 kA	3,040,472.08		3,040,472.08	
	HLP/00/1539	Modernization Program in Major Underground to convert circuit feeders crossing freeways from overhead to underground.	8,154,916.84		8,154,916.84	
	HLP/00/1540	Modernization Program in Major Underground to replace aging cable on dedicated underground circuit feeders, substation getaways and roadway dips.	16,734,555.23	573,878.48	17,308,433.71	
	HLP/00/1542	Replace Underground Network protectors with new protectors. Protectors were more than 20 years old and had been flooded in various storms. Electric parts are largely unavailable	2,602,015.13	26,028.69	2,628,043.82	
	TRIP	The maintenance, installation, and/or replacement of Trip Saver Devices.	7,109,790.27	910,573.51	8,020,363.78	
Intelligent Grid						27,184,863
	CG1E	Planned Upgrades or Replacements of Communication Equipment supporting Distribution Automation. (IGSD, DACs, Monitoring Systems, etc)	1,698,126.25	55,243.90	1,753,370.15	
	IDR	Project to replace standard IDR meters with AMS IDR meters	1,851,542.04		1,851,542.04	
	IGSD	Planned/proactive IGSD device installations/replacements.	12,409,422.85	522,572.60	12,931,995.45	
	S/101220/CN/HED070	Demand Response Management System (DRMS) - E-curtailment product was purchased for AMS with the goal of reducing customer demand at the meter level.	8,865,501.98		8,865,501.98	
	S/101710/CE/CG1E	Intelligent Grid Switching Device capital replacements, each switch has a Telecom box which contains communications equipment which is used to remotely operate the switch and the equipment is replaced or repaired by CNP Radio Communications personnel on this project.	1,772,236.77	10,216.12	1,782,452.89	
		Total Projects Greater than $1,000,000	1,971,014,786	126,604,779	2,097,619,565	2,097,619,565
		Total of Projects Less than $1,000,000	(420,520)	7,181,028	6,760,508	6,760,508
		Total of All Projects	1,970,594,266	133,785,807	2,104,380,073	2,104,380,073

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Project Category	Project Number	Description	Additions	Salvage / Removal	Total	Project Category Total
General Equipment						206,200,702
	13090056	HLPD - Meter & Communications Cap - This project captures labor costs incurred to install meters.	1,378,822.79		1,378,822.79	
	13096913	The GIS (Geographic Information System) upgrade will allow us to migrate from our current environment nearing end-of-life (Jan 2024) and standardize platforms, processes, solutions, and data for a "One CenterPoint" initiative. Aligns with GIS server relocation project (CNP Tower to AOC), which addresses the Management Action Plan.	3,211,760.22		3,211,760.22	
	13097334	Datacenter Modernization using Cisco Application Centric Infrastructure (ACI), on multiple datacenters and 150 remote offices, to deliver an agile datacenter with simplified operations and increased application responsiveness to support a new generation of distributed applications while accommodating existing virtualized and non-virtualized environments.	4,144,038.74		4,144,038.74	
	13097542	Development / implement tasks for new capabilities to the Texas Electric Market systems (SAP, EAI, SERVICE SUITE, WEB, BW) for automation of manual processes, enhancements to sync process, exception management, service order processing & automation for compliance reporting.	2,125,306.17		2,125,306.17	
	13098327	Investment is required for the design, development, testing and implementation of existing systems to improve system security controls and ongoing security posture for system resiliency. Primary cost will be labor. No software or hardware acquisitions planned at this time.	3,504,587.25		3,504,587.25	
	13098362	Formulate a strategy that utilizes Customer Experience (CX) and IT digital capabilities to bolster the CNP corporation's ongoing improvement initiatives (CI) for digital transformation. The digital delivery products involved include the Builders Portal, ClearPath + CenterPay (payment platforms), and CrewPoint (Field Capacity planning). Additionally, the Dispatch+ application suite, which includes Dispatch+, Optimizer, Routing Solution, and WorkforceHub, is set to launch in 2024 as a field routing solution complete with a dashboard.	19,660,079.75		19,660,079.75	
	13104890	Capital Mobile Data Computer Replacement - Replacement of computer equipment for Distribution related mobile data.	1,585,163.03		1,585,163.03	
	13105297	Provides critical spares to cover reduced OM maint plans for production failures. In addition delivered recommended best practice spare equipment for critical component failures. Provides hardware for required capacity, data center server hosting and organic growth. Support was for the enterprise network.	1,512,906.38		1,512,906.38	
	13105298	Replaces end of life network components for the enterprise network.	1,040,276.09		1,040,276.09	

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Project Category	Project Number	Description	Additions	Salvage / Removal	Total	Project Category Total
	13105299	Refresh storage hardware and provide organic growth for Windows, Linux, AIX, and VMware platforms utilizing SAN storage, including distribution hardware and applications.	2,826,390.79		2,826,390.79	
	13105325	HEBM015RM6-2022 TRM - Retail Market Transactions. Ongoing enhancements to electric market transaction systems	2,280,639.55		2,280,639.55	
	13105343	Unix server equipment is replaced based on a refresh schedule or purchased based on needs in the environment. Refresh/replacement of existing server hardware is necessary to ensure efficiency, security and performance of the environment as well as to ensure data reliability and business continuity. Organic growth (adding net new hardware) is required to increase the hardware to keep up with demand within the environment (risk mitigation).	1,337,506.85		1,337,506.85	
	13105363	Equipment acquired specifically for the AOC Phase II location; Refresh/replacement of network security and enterprise network equipment hardware is necessary to ensure efficiency and security. Replacing aging hardware increases efficiencies and reliability. Organic growth (adding net new hardware) is required to keep up with demand within the environment (risk mitigation).	1,336,345.75		1,336,345.75	
	13105371	HEB017-3-2022 Advanced Data Management Platform. Migrate of Hadoop to Google Cloud, new use case development on Google Cloud such as smart meter analytics enhancements; load research and forecasting, and gas / electric operations reporting.	1,221,502.11		1,221,502.11	
	13106016	ENTB020-Enterprise Network Transform 23	4,679,902.83		4,679,902.83	
	13106020	ITB005 - Storage Capacity 2023	4,921,338.33		4,921,338.33	
	13106022	Computer equipment replacement such as laptops/desktops, peripherals (like keyboard, mouse, AC adapters, etc), monitors, tablets.	1,274,370.48		1,274,370.48	
	13106053	ITB092-x86 Server Infrastructure Rel 23	1,677,454.73		1,677,454.73	
	13106392	HEBM015RM7-2023 TRM - Retail Market Tran	2,730,473.75		2,730,473.75	
	13106432	ITB001 - 2023 Network Organic Growth	1,431,421.79		1,431,421.79	
	AA80	Facilities modifications including fencing, shelving, furniture, etc.	53,735,337.37		53,735,337.37	
	FLEET	Purchase of Vehicles and Power Operated Equipment.	30,818,090.74	(2,706,688.99)	28,111,401.75	
	HLP/00/0032/42	CKT35A: RELOC FOR BUR/SF RR BAYTOWN. Relocate Transmission for BNRR Bayport Loop	7,741,993.36		7,741,993.36	
	HLP/00/0636	Replacement of the REDE critical infrastructure support systems. These systems include the Mapboard, Video Graphic Recorders and REDE consoles used by RTO System Controllers for power system observability.	7,956,716.09		7,956,716.09	
	HXSF	Field Metering - Purchase of in-service meter equipment.	19,465,815.75		19,465,815.75	
	S/101320/CG/XA20WO	ADMIN & MISC WORK ORDERS. General charges for transmission operations.	1,375,284.17		1,375,284.17	

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	S/101427/CE/XA11	Control Systems Project: build-out and enhancements to CEHE control center (ECDC and AOC) infrastructure, computer hardware, and EMS/SCADA and related software.	1,188,200.71		1,188,200.71	
	S/101784/CE/TOWER	Replace Generators where repair is no longer a viable option.	2,567,406.90		2,567,406.90	
	S/101784/CG/MISC	Purchase of the Video Wall Monitoring Expansion System for the Telecom Control Center, which is used to monitor and manage the Telecommunications Infrastructure.	1,036,340.27		1,036,340.27	
	S/101785/CE/MPLS	MPLS Network - replace routers and related network equipment for the Telecom communications system that are End of Life, damaged and/or no longer functioning to the necessary capacity.	1,723,964.28		1,723,964.28	
	S/101785/CN/FIBER	Purchase and labor to install fiber optic cable. Expand network infrastructure requires increase in network to geographically support expanding backhaul infrastructure, establish fiber footprint in locations microwave communications may limit capacity.	10,117,986.61		10,117,986.61	
	S/101785/CN/SCADA	Provide SCADA communication to new electrical substations controlled, managed, monitored by CNP. Services provided by internal telecommunications infrastructure or leased carrier services to fulfill new operational, business, compliance requirements.	3,594,944.12		3,594,944.12	
	S/101785/CN/TMSY	Purchase and install new Microwave radio and related equipment/systems for the Transport Network.	2,376,858.67		2,376,858.67	
	SHOPWO	General Supplies and Tools	1,328,164.28		1,328,164.28	
Interconnection						81,710,248
	HLP/00/1395	FT BEND SOLAR INTERCONNECTION. The proposed New Generation Facility will consist of 128 PV solar inverters for a maximum output of 240 MW. The New Generation Facility is expected to be connected to a new 138 kV substation ("Beasley"), owned by CenterPoint Energy, to be looped on circuit 60, between Orchard and East Bernard substations. * Interconnect new CNP 0.5 miles west of Orchard substation * New 138 kV CNPSub with a breaker and ½ configuration * 138 kV generator lead with two fiber cables for 0.5 mile (includes $180,000 for a 75ft Right-of-Way) * Upgrade carrier equipment (East Bernard substation) * Upgrade 138 kV loop bus (Sealy substation)	4,205,552.25		4,205,552.25	

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Project Category	Project Number	Description	Additions	Salvage / Removal	Total	Project Category Total
		MYRTLE SOLAR INTERCONNECTION. Previously completed a (FIS) Full Interconnection Study Myrtle Solar II ("Solar Generation Expansion")(20INR0263) for a 100 MW solar generation expansion of the planned 240 MW Myrtle Solar Generation Facility ("Solar Generation Facility")(19INR0041). The Solar Generation Facility will be directly connected to an Existing CenterPoint Energy owned Angleton 138 kV substation via a planned generator lead to the planned Solar Generation Facility. The proposed New Storage Facility will consist of 45 (PCSM FP3510M2) – 3.35 MW rated power storage inverters for a combined total of 150.83 MW. The New Storage Facility is expected to be connected to the same substation as the Solar Generation Facility. All analysis for the proposed New Storage Facility will include the aforementioned Solar Generation Facility with the Solar Generation Expansion. * Install new 138 kV generator position at Angleton Substation. Install generator lead to new generator facility				
	HLP/00/1445	* SCADA and Relay	1,878,575.67	71,503.03	1,950,078.70	
	HLP/00/1450	Build new 345 kV lead from New Generation Facility to CenterPoint Energy 345 kV Hillje Substation. The proposed New Generation Facility will consist of 183 (Sungrow SG3600UD-MV) photovoltaic (PV) solar inverters, each rated at 3.6 MVA, for a combined total output of 619.1 MW. The New Generation Facility is expected to connect to existing CenterPoint Energy owned 345 kV Hillje substation through a single generator lead.	3,481,300.42	145,435.87	3,626,736.29	

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	HLP/00/1454	Generation Owner applied to ERCOT requesting the interconnection of the New Generation Facilities consisting of a new 200 MW solar powered generation facility and a proposed 58 MW battery storage facility. The Westoria Solar facility will consist of 80 TMEIC Solar Ware PVH-L2700GR PV solar inverters each rated at 2.5 MW rated output power while the Battery storage will consist of 20 aggregated resources FREEMAQ PCSK 600 V each rated at 2.9 MW output power. Together both resource represent a combined gross total of 258 MW when the Battery storage is on discharging mode. The New Generation Facility is expected to be connected to a new 138 kV substation ("CNPSub"), owned by CenterPoint Energy, to be looped on 138 kV circuit 02, between Nash and West Columbia. * Build 138 kV Breaker and a half interconnection substation with two CenterPoint Energy positions and one position for the generator lead to connect to the existing 138 kV Ckt 02 between West Columbia and Burke * Burke substation - install POTT relay scheme on Eagle Nest ckt 02 * West Columbia substation - Install POT relay scheme on Eagle Nest ckt 02 * Install single span generator lead	5,081,817.12	28,837.76	5,110,654.88	
	HLP/00/1480	RAMSEY SOLAR GENERATOR INTERCONNECTION. The proposed New Generation Facility will consist of 170, 3.021 MW PV solar inverters for a combined total of 514 MW. The New Generation Facility is expected to be connected to an existing 345 kV substation, Hillje, owned by CenterPoint Energy. * Expand Hillje to accommodate single lead at Hillje * Construct approximately 1 mile of Generator Lead from Hillje to end of customer constructed generator lead on customer's ROW * Connect Ramsey Solar to Hillje 345 kV	1,538,005.55		1,538,005.55	
	HLP/00/1491	CUTLASS SOLAR Interconnection. The proposed New Generation Facility will consist of 150 PV solar inverters each rated at 2 MW for a combined total gross capacity of 300 MW. The New Generation Facility will connect to a new CenterPoint Energy owned 345 kV substation ("CNPSub") looped on (Study Option 1) 345 kV circuit 72, Bailey to WA Parish. * Build new 345 kV CenterPoint Energy Substation and generator lead (0.35 mils) to New Generation Facility * Build new 345 kV circuits looped in/out of New CenterPoint Energy Substation from Circuit 72C (W.A. Parish to Bailey)	1,516,524.10		1,516,524.10	

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Project Category	Project Number	Description	Additions	Salvage / Removal	Total	Project Category Total
	HLP/00/1492	FIGHTING JAYS Interconnection. The proposed New Generation Facility will consist at least 118 PV solar inverters each rated at 3.36 MVA for a combined total gross capacity of 356.54 MW. The New Generation Facility will connect to a new CenterPoint Energy owned 345 kV substation ("CNPSub") looped on (Study Option 1) 345 kV circuit 64, WA Parish to Hillje. * Build new 345 kV CenterPoint Energy Substation and generator lead (0.10 miles) to new Generation Facility * Build new 345 kV circuits looped in/out of New CenterPoint Energy Substation from Circuit 64C (W.A. Parish to Hillje)	12,062,240.67	5,394.86	12,067,635.53	
	HLP/00/1493	RED-TAILED HAWK Interconnection. The Generation Owner applied to ERCOT requesting the Interconnection of the New Generation Facility consisting of a new 353.41 MW solar powered generation facility. The Red-tailed Hawk Solar facility will consist of 27 INGECON SUN 3 IS 3825TL C630 and 104 INGECON SUN 3 IS 3600TL C630 PV solar inverters each rated at 3.491 and 3.156 MW respectively. The New Generation Facility is expected to be connected to future 345 kV substation ("Blue"), owned by CenterPoint Energy, to be looped on circuit 72, between Hillje and Bailey. * Build 345 kV Breaker and a half interconnection substation with two CenterPoint Energy positions and one position for the generator lead to connect to the existing 345 kV Ckt 72 between Hillje and Bailey 345 substations. Would include cost of looping into Bailey to Hillje ckt 72	9,194,356.83	10,091.77	9,204,448.60	
	HLP/00/1495	SPACE CITY SOLAR INTERCONNECTION. The proposed New Generation Facility will consist of 175 PV solar inverters rated at 3.807 MW for a combined gross total of 609.74 MW. The New Generation Facility is expected to be connected to a single position at the existing 345kV Hillje substation in Wharton County, owned by CenterPoint Energy. * Expand 345 kV Hillje substatgion to accommodate single lead at Hillje and connect Space City Solar * Construct single circuit 345 kV Generator Lead from Space City Solar	2,093,103.07		2,093,103.07	

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Project Category	Project Number	Description	Additions	Salvage / Removal	Total	Project Category Total
	HLP/00/1498	RIVERSIDE SUB interconnection. The proposed New Generation Facility will consist of two natural gas-fired generating units (units 1 and 2) each rated at 50 MW for a combined maximum capacity of 100 MW. The New Generation Facility is expected to be connected to a new CenterPoint Energy owned 138 kV substation ("New CNP Sub"). New CNP Sub will be constructed and connected between 138 kV CHAMON – PSARCO circuit 94. * Build new 138kV CenterPoint owned substation "New CNP Sub" (breaker-and-half configuration, one generator position, generator lead cost not included) * CHAMON (remove carrier equipment & wavetrap, install dual fiber, T&C) * PSARCO (remove UPLC-R, T&C) * New approach spans and structures to interconnect New CNP Sub (Assuming 2-959ACSS conductor * Fiber optic cables between: New CNP Sub and New Generation Facility and New CNP Sub and CHAMON (Assuming no additional structures will be needed to route the fiber) * Generator lead portion. (Assuming one tangent poles and one 30Deg dead end pole will be needed to route the generator lead)	3,897,108.63	568.78	3,897,677.41	
	HLP/00/1501	LONGBOW Interconnection. The proposed New Generation Facility will consist of 25 (Sungrow SG3600UD) photovoltaic (PV) solar inverters, each rated at 3.6 MVA, for a combined total output of 78.145 MW. The New Generation Facility is expected to connect to an upcoming CenterPoint Energy owned 138 kV Danbury substation through a single generator lead. Danbury will be connected as a full loop station on circuit 04, between Angleton and Liverpool. * Build new 138kV CenterPoint owned Substation "New CNP Sub" (breaker-and-half configuration)(includes single generator lead) and interconnect between 138 kV Liverpool - PETSON ckt 04 * Angleton - upgrade line relaying, install POTT scheme, T&C * PETSON - upgrade line relaying, install POTT scheme, T&C * HUDSON - upgrade line relaying on MONSAN & Webster circuits * Webster - install POTT relay scheme on HUDSON circuit	7,881,556.74	57,962.19	7,939,518.93	

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Project Category	Project Number	Description	Additions	Salvage / Removal	Total	Project Category Total
	HLP/00/1567	ARCHER - GENERATOR INTERCONNECTION. The New Generation Facility will also include (7) Brush BDAX 7 290ERJT/LM6000 PC electric machine/gas turbine generators, each rated at 52 MW turbine rating totaling 364 MW. The New Generation Facility is expected to be connected to a new 138 kV substation ("New CNP Sub"), owned by CenterPoint Energy, to be looped on circuit 26, between Rosharon and Karsten. * Build new 138 kV CenterPoint owned Substation "New CNPSub" (breaker-and-half configuration) (includes single generator lead) and interconnect between 138 kV Rosharon - Karsten ckt 26 * Upgrade Line relaying at 138 kV Karsten Substation * Upgrade Line relaying at 138 kV Angleton Substation * Upgrade 138 kV Angleton - Winmil circuit 26 to 384 MVA normal and emergency rating * Upgrade 138 kV Rosharon - New CNP Sub circuit 26 to 401 MVA normal and emergency rating	11,547,344.59	43,211.28	11,590,555.87	
	HLP/00/1570	SNUG INTERCONNECT. The proposed New Generation Facility will consist of 106 (Sungrow SG3600UD-MV) solar inverters for a combined total of 351.4 MW. The New Generation Facility is expected to be connected to a future CenterPoint Energy owned 138 kV Snug substation looped on circuit 04 between Liverpool and PETSON. * Build new 138 kV CenterPoint owned Substation "New CNPSub" (breaker-and-half configuration) (includes single generator lead) and interconnect between 138 kV Liverpool - PETSON ckt 04	985,034.43	81,553.02	1,066,587.45	
	HLP/00/1571	WATERHOLE INTERCONNECTION. The proposed New Generation Facility will consist of 178 SunGrow SG3600UD solar inverters, rated at 3.6 MVA each, for a combined gross total of at least 608.76 MW. The New Generation Facility is expected to be connected to a new CenterPoint Energy owned 345 kV substation ("CNPSub") looped into Bailey and Jones Creek circuit 62. * G-Star Solar - build new CNP 345 kV bkr-&-1/2 switchyard * Jones Creek - upgrade line relaying on G-Star Solar ckt 62 * Bailey - upgrade line relaying on G-Star Solar ckt 62 * Loop 345 kV Bailey - Jones Creek ckt 62 into CNPsub. Includes installation of 1-72f ADSS from Bailey	4,217,952.70		4,217,952.70	

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Project Category	Project Number	Description	Additions	Salvage / Removal	Total	Project Category Total
	HLP/00/1577	PE220319 GULFTIE BUILD NEW CNP 138KV BKR-&-1/2 Interconnection SWITCHYARD . The proposed Recommissioned Generation Facility will consist of (1) natural gas-fired generating unit with a rating of 94.0 MW. The Recommissioned Generation Facility connects to a new CenterPoint Energy owned 138 kV Gulftie Switchyard on circuit 60 by a multi-span single generator lead. * Build new 138 kV CenterPoint Energy switchyard (Gulftie) and generator lead to TXGLF substation (Dual fiber optic cables will be required between Gulftie Switchyard and TXGLF substation) * Upgrade line relaying at South Lane City & San Bernard substations	7,302,951.79		7,302,951.79	
	HLP/00/1584	LIMOUSIN OAK STORAGE INTERCONNECTION. The proposed New Generation Facility will consist of 51 (SMA SCS 2475-US) – 2.0514 MW rated power storage inverters for a combined gross total of 104.62 MW. The New Generation Facility is expected to be connected to a single position at the existing 345 kV Singleton substation in Grimes County, owned by CenterPoint Energy. * Expand 345 kV bus at Singleton Substation and build new generator lead (0.10 miles) to New Generation Facility	4,382,263.20		4,382,263.20	
Load Growth						694,948,903
	AF1A	Planned additions/improvements to the 12kV and 35kV overhead distribution system feeder mains as called for in Planning Issued Distribution Development Plans.	105,442,586.45	11,927,081.07	117,369,667.52	
	AF1H	Overhead services to new customers or adding facilities to accommodate additional load to an existing customer.	68,863,352.99	2,210,410.19	71,073,763.18	
	AF1U	Underground residential distribution services to new customers.	91,667,540.33	159,019.88	91,826,560.21	
	AF1Z	Installation of overhead service drops and meters to a new customer or service drop replacement to an existing customer adding load where no other facilities are involved.	28,305,683.56		28,305,683.56	
	AF2A	Unplanned additions/improvements to the 12kV and 35kV overhead distribution system feeder mains relating to area load growth, in conjunction with providing service to customers.	57,167,875.68	2,913,602.99	60,081,478.67	
	AF2H	Overhead line extensions to new underground residential distribution subdivisions.	8,660,582.34	242,959.72	8,903,542.06	
	CE1A	Planned additions/improvements to the 12kV and 35kV distribution system that requires underground feeder mains and underground dips as called for in Planning Issued Distribution Development Plans.	4,417,571.36	40,892.98	4,458,464.34	
	CF1R	New major underground services to customers that require three-phase underground facilities to serve their electrical load.	19,839,909.39	(73,938.29)	19,765,971.10	
	DF1U	Streetlight New Installations	21,473,149.49		21,473,149.49	

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	HLP/00/0017	MYKAWA SUB: BUILD 138KV DOUBLE TAP. Mykawa 35kV substation was installed to support the load growth and balance the load in the area and to alleviate loading from two adjacent substations. Mykawa 12kV substation was installed to support the load growth and balance the load in the area and to alleviate loading from two adjacent substations.	16,222,497.18		16,222,497.18	
	HLP/00/0032/142	MODIFY 138kV CKT 93C TXDOT NON CPAY. Raise 1.024 circuit miles of 138kV Ckt 93C-1 from Str #11740-11752 to accommodate TXDOT I45 roadway project. Initial assumption is to install post insulator brackets on tangent structures.	2,538.52	1,700,382.34	1,702,920.86	
	HLP/00/0095/0117	JONTE -INSTALL 20MVAR CAP BANK. The Internal Base Cases also did show a potential CNP P7 Planning Event voltage deviation larger than 8% at Jonte, Scenic Woods, Lauder, and Lockwood. The voltage deviation concern was corrected by adding a 20 MVAR capacitor bank at Jonte substation.	1,175,190.58		1,175,190.58	
	HLP/00/0130/0034	Upgrade Crosby 138 kV substation to a 50 kA minimum fault duty rating	1,130,194.29		1,130,194.29	
	HLP/00/0130/0041	Upgrade Limestone 345kV React Bus Split. The following are the recommended upgrades for Option 5: •Replace all 63 kA 345 kV breakers at Limestone with 80 kA 345 kV breakers. •Upgrade all substation equipment at Limestone to withstand a minimum 80 kA fault interrupting capability.	15,641,962.33	604,295.53	16,246,257.86	
	HLP/00/0130/0046	"Upgrade CBY 138kV Fault Current - East. The following are the recommended upgrades for Option 2: •Swap the 138 kV side connections between Cedar Bayou autotransformer A1 and Cedar Bayou autotransformer A3. The Cedar Bayou A1 138 kV side will be connected to Cedar Bayou 138 kV East bus and the Cedar Bayou A3 138 kV side will be connected to Cedar Bayou 138 kV West bus. "	1,533,576.39		1,533,576.39	
	HLP/00/0130/0047	Flewellen 138kV Upgrade to 50kA. The 138 kV Flewellen bus has 40 kA fault interrupting rating. Transmission Planning recommends upgrading the breakers and any other applicable equipment to 63 kA fault interrupting capability at the 138 kV Flewellen substation.	1,196,392.78	18,363.79	1,214,756.57	
	HLP/00/0496	Distribution work required to support THWharton-Little York Ckt 29A Upgrades	17,586,083.89	8,191.81	17,594,275.70	
	HLP/00/0817	Treaschwig Substation- Install 3RD transformer & 6th feeder to support load growth. & 6TH FEEDER	7,633,145.43	170,173.27	7,803,318.70	
	HLP/00/0922/0013	FORT BEND CITY STRUCTURE RELOCATION	1,278,479.13	306,636.31	1,585,115.44	
	HLP/00/0971	Build new Fulshear substation due to load growth in the area west of Katy.	1,893,942.24		1,893,942.24	
	HLP/00/0996	Karsten to Manvel 69KV Conversion	8,662,736.51	(371,276.98)	8,291,459.53	

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	HLP/00/0997	Conversion of transmission and substation facilities from 69kv to 138kv from Fort Bend to West Columbia	5,575,266.98	(6,068.86)	5,569,198.12	
	HLP/00/1021	Distribution Improvements at Grant Substation	1,471,951.58		1,471,951.58	
	HLP/00/1086	Galena Park Substation-add 3rd transformer//8TH & 9TH feeders at Galena Park to support load growth.	1,998,619.00		1,998,619.00	
	HLP/00/1110	Green Road Substation: Substation work to add three feeders at Greens Road substation to serve load.	2,936,581.44		2,936,581.44	
	HLP/00/1115/0006	Build 345kv Ckt from Bailey to Jones Creek.	5,519,877.26		5,519,877.26	
	HLP/00/1174	Freeman Substation- Convert freeman Sub to 35kv	5,503,533.15		5,503,533.15	
	HLP/00/1179	Tanner Substation: Add transformer and feeders to support load growth	9,031,486.97	63,563.48	9,095,050.45	
	HLP/00/1184	Crockett Substation; Ad transformers and feeders to support load growth	7,258,866.34	52,780.78	7,311,647.12	
	HLP/00/1250	Lake Houston: Build new 35kv distribution substation	6,413,911.02		6,413,911.02	
	HLP/00/1289	Plaza Substation: Add 3rd transformer and 3 feeders at Plaza substation to support load growth	3,381,377.50	289,576.80	3,670,954.30	
	HLP/00/1306	Land purchase for new Stone Lake substation	16,299,951.70	323,833.85	16,623,785.55	
	HLP/00/1308	Build new Wortham substation to support load growth	5,182,957.58		5,182,957.58	
	HLP/00/1337	Copper to Jones Creek - Work includes reconfiguration of Jones Creek 138kv switchyard	985,907.46	437,013.55	1,422,921.01	
	HLP/00/1345	Limburg: Build new 35kv distribution substation	7,226,937.31		7,226,937.31	
	HLP/00/1424	Add 40MVAR Capacitor bank at Pearland substation	2,689,676.68	158,288.87	2,847,965.55	
	HLP/00/1425	Mont Belvieu Reliability Project. This project includes the following: o Building of a new 138 kV circuit (ckt 52) between Jordan and Mont Belvieu 138 kV using an open tower position. o Reconfiguration of circuits to create the following: 138 kV Jordan – CITIES – DALTON – BRINE – Mont Belvieu ckt 86, 138 kV Jordan – WINFRE – EAGLE – Mont Belvieu ckt 52, and 138 kV Cedar Bayou – CHEV – LNGSTN – Mont Belvieu ckt 86. o Upgrade of 138 kV Cedar Bayou – Cedar distribution tap - HOPSON ckt 84 to a minimum Emergency Rating of 682 MVA. o Upgrade of 138 kV Cedar Bayou - CHEV ckt 86 to a minimum Emergency Rating of 669 MVA. This project is the most cost-effective solution to eliminate potentially significant load loss concerns (300 MW or greater) due to maintenance outage scenarios in the Mont Belvieu area. This project also provides capacity for future area load growth, including a configuration that meets CenterPoint Energy Transmission System Design Criteria that minimizes the number of two-line, loop breakered substations between the major substations, and minimizes landowner impact.	29,222,698.29	10,876,350.52	40,099,048.81	
	HLP/00/1434	Property for Substation expansions.	9,195,271.41		9,195,271.41	

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	HLP/00/1460	Airline Substation; Add feeder to support load growth	2,552,411.13		2,552,411.13	
	HLP/00/1462	Pledger- Build new substation to support load growth.	1,236,772.66		1,236,772.66	
	HLP/00/1472	• Expand Zenith 138 kV substation with a new position; • Build a new 138 kV Zenith – Village Creek radial transmission line, with the latest standard 2-959 ACSS conductor (about 3.6 miles, 838/893/893 MVA) on the vacant side of existing structures; and • Reposition one Village Creek 138/34.5-kV transformer, which serves the larger load, to the new 138 kV line; and reconfigure Village Creek into a double tap arrangement. This project is needed to resolve potential thermal overloading and low voltage concerns on the 138 kV Flewellen – Zenith ckt 09, which were identified in the 2021 Transmission Planning Annual Assessment, performed in compliance with North American Electric Reliability Corporation ("NERC") Reliability Standard TPL-001-4 Transmission System Planning Performance Requirements. The proposed upgrades will not only resolve the identified thermal loading and voltage concerns on 138 kV Flewellen – Zenith ckt 09 under multiple CNP Planning Events (P1, P2, P3, and P6), but also provide a higher circuit capacity to accommodate future load growth between Flewellen and Zenith substations.	4,929,408.30		4,929,408.30	
	HLP/00/1483	build a new switching station in northeast Houston near the North Belt and HWY 59. The new Jonte substation is being proposed to address a CNP Planning Event P1 low voltage concern at Aldine as well as improving the reliability and operational flexibility of the transmission system. Currently, the two circuits which travel by the Jonte location are 138 kV Hardy – Crosby ckt 86 and 138 kV North Belt – Scenic Woods radial ckt 90. Ckt 86 is 36 miles long between breakered stations with 9 distribution transformers tapped off it at six different substations. The ckt 90 radial has 5 distribution transformers at 4 different substations connected to it. The new Jonte substation provides operational flexibility by terminating the existing 36-mile, 138 kV Hardy – Crosby ckt 86 into Jonte, significantly reducing the exposure of the non-breakered substations on the circuit to be outaged due to disturbance to the grid. The proposed project also improves the reliability of Greens Road substation that serves the Bush Intercontinental Airport (IAH) and currently has one of its transformers tapped off radial ckt 90 out of North Belt. Greens Road serves the Bush Intercontinental Airport (IAH). Building Jonte	10,267,753.12		10,267,753.12	
	HLP/00/1487	Crosby Substation - Add 35KV substation to support growth	1,311,108.85		1,311,108.85	

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	HLP/00/1503	CKT 24 UPGRADES. Updated internal CenterPoint Energy base cases completed in September 2020 identified a thermal loading concern on 138 kV Dunvale – Hillcroft ckt24. The most cost-effective way to address this thermal overload concern is to upgrade the circuit. The upgrades for the project are as follows: •Upgrade 138 kV Dunvale – Hillcroft ckt24 to have a minimum emergency rating of 340 MVA by reconductoring with 2-959 ACSS	1,189,344.22	950,989.26	2,140,333.48	
	HLP/00/1506	Angleton substation; Add transformers and feeders to support load growth	5,486,668.31	223,998.55	5,710,666.86	
	HLP/00/1518	CKT 05 LINE REPOSITION. Recommended projects include: •Upgrade substation equipment which are not part of parallel cable segments at Garrott, Midtown, and Polk to 4000 A •Reconductor 138 kV HOC – Kirby – Garrott ckt 90 with 2-959ACSS •Relocate 138 kV ckt 05 to Webster (Southwyck) at HOC to ring bus •Thermally uprate 138 kV HOC Intermediate tap ckt 05 These projects identified in this study are needed to resolve potential loading concerns seen beginning in summer 2022.	4,458,552.96	5,254,870.72	9,713,423.68	
	HLP/00/1553	Dunvale to Westchase Ckt.24 Upgrade. Analysis of the most recent CenterPoint Energy Houston Electric, LLC (CenterPoint Energy) Internal Base Cases indicate new loading concerns for a CNP P1 and P6 Planning Events on 138 kV Dunvale to Jeanetta ckt 05, a CNP Planning Event P6 on 138 kV Dunvale to Westchase ckt 24, and a CNP Planning Event P6 on 138 kV Bellaire to Sharpstown, beginning in summer 2023. • Upgrade circuit 138 kV Dunvale tap to Westchase tap ckt 24 to at least 350 MVA emergency rating.	7,073,623.10		7,073,623.10	
	HLP/00/1558	Ckt05E DUNVALE TO JEANETTA UPGRADE. Analysis of the most recent CenterPoint Energy Houston Electric, LLC (CenterPoint Energy) Internal Base Cases indicate new loading concerns for a CNP P1 and P6 Planning Events on 138 kV Dunvale to Jeanetta ckt 05, a CNP Planning Event P6 on 138 kV Dunvale to Westchase ckt 24, and a CNP Planning Event P6 on 138 kV Bellaire to Sharpstown, beginning in summer 2023. • Upgrade circuit 138 kV Dunvale tap to Jeanetta ckt 05 to at least 485 MVA normal rating and 630 MVA emergency rating.	1,327,687.82		1,327,687.82	
	HLP/00/1575	Ckt 21 Airline – White Oak P1: Reconductor 0.14 mi of 1-2000 AAC to 2-959ACSS to resolve a thermal loading concern on ckt 21.	4,497,602.20		4,497,602.20	
	HLP/00/1576	Rayford - Install 3rd transformer at Rayford	1,906,987.78		1,906,987.78	

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	HLP/00/1581	ADDICKS -CAMPBELL RECONDUCTOR CKTS 09&21. Reconductor the 138 kV Addicks – Campbell circuits 09 and 21, namely •Reconductoring 138 kV Addicks – Campbell circuit 09 with the latest standard 2-959 ACSS conductor (about 3.53 miles, expected ratings of 838/893/893 MVA); and •Reconductoring 138 kV Addicks – Campbell circuit 21 with the latest standard 2-959 ACSS conductor (about 3.55 miles, expected ratings of 478/649/893 MVA). This project is needed to resolve the potential thermal overloading concerns on the 138 kV Addicks – Campbell circuits 09 and 21, which were observed in the latest CNP internal base cases completed on November 2, 2021."	10,537,127.99		10,537,127.99	
Public Improvements						26,358,708
	AD2D	The relocation of CEHE overhead distribution facilities that are generally less than five poles, due to customer request, including city, state, and federal government infrastructure improvement projects, such as road widening or roadway improvements.	8,842,503.74	694,359.62	9,536,863.36	
	AD3D	The relocation of CEHE overhead distribution facilities generally five poles or more, due to customer request, including city, state, and/or federal government infrastructure improvement projects such as road widening or roadway improvements.	12,878,203.85	1,562,121.53	14,440,325.38	
	CG1R	Relocation of major underground facilities for road widening, light rail, etc. Includes relocation of overhead to underground at customer's request.	2,823,798.65	(442,279.21)	2,381,519.44	
Restoration						154,835,636
	AD06	Reactive capitalized replacements that are made to the underground residential distribution system requiring facility replacement. Includes cable replacement, transformers, and other retirement units and their related components.	36,191,559.59	6,508,852.45	42,700,412.04	
	AD07	Reactive capitalized replacements made to the overhead distribution system requiring facility replacement.	46,849,356.19	14,111,147.48	60,960,503.67	
	AD86	Reactive capitalized replacements made to the overhead distribution system requiring facility replacement resulting from the effects of adverse weather conditions.	21,795,274.35	6,864,383.27	28,659,657.62	
	CD1T	Reactive capitalized replacements made to the major underground system requiring replacement of equipment, cable or structures in response to "lights out." Also includes replacement of system neutral associated with copper theft.	13,251,727.81	1,395,753.03	14,647,480.84	
	S/101320/CE/XD11	Project P1020 Mining Sub Ckt 16C Permanent Construction	5,913,218.26	671,935.53	6,585,153.79	
	XD11	Transmission Restoration	1,282,427.66		1,282,427.66	
System Improvements						1,051,236,489

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	AB1C	Planned capital replacement or rehabilitation of overhead distribution system associated with reliability improvement. Includes target top 10% of SAIDI circuits, outage-driven overhead rehab, recurring fuse outages, recurring transformer outages, etc.	12,253,562.92	1,475,204.56	13,728,767.48	
	AB1G	Replacement of CEHE-owned poles found defective that are not part of the Groundline Inspection Program or trouble related.	10,689,817.80	1,310,771.36	12,000,589.16	
	AB1S	Planned underground residential distribution cable replacement on a one-span basis. Includes: spans referred from trouble	8,646,397.86	1,177,442.45	9,823,840.31	
	AB1V	Planned underground residential distribution cable replacement of 12kV and 35kV partial and total loops. Includes: cable relocations, transformer relocation/replacements, raising transformers, and pedestals.	8,499,133.38	633,352.74	9,132,486.12	
	AB1X	Capacitor banks that include the replacement of capital material such as capacitor, vacuum switches, disconnects, controller, etc.	5,423,456.37	385,079.05	5,808,535.42	
	AB1Y	Replacement of existing CNP owned area lighting fixtures as a result of failure or damage. (Does not include streetlights).	989,962.97	97,639.89	1,087,602.86	
	AB1Z	Proactive routine capital replacements to the overhead distribution system.	167,633,592.62	7,751,693.12	175,385,285.74	
	AB2C	Distribution overhead reliability improvement projects	16,039,864.41	3,169,914.87	19,209,779.28	
	AB2G	Replacement of CEHE-owned poles based on inspections for ground rotting-- the Groundline Inspection Program.	24,589,387.47	3,057,258.14	27,646,645.61	
	AB2S	Planned URD cable replacement on a one-span basis. Spans identified for repair/replace based on Cable Life Extension Program. Includes: Spans identified as a result of Cable Life Extension Program. Does not include: Multi-span replacements, partial loop or total loop replacement/rehabilitation, transformer relocation/replacement, or URD cable relocations.	10,099,894.65	373,456.07	10,473,350.72	
	AB2Z	Capital grid hardening work that does not involve replacement of a rotten pole.	4,404,446.51	500,168.97	4,904,615.48	
	AB3C	Grid Resiliency & Modernization	46,185,831.58	7,035,569.19	53,221,400.77	
	AB48	Install C-truss or other approved brace on CEHE poles identified by the Groundline Inspection Program.	5,974,401.20		5,974,401.20	
	AB49	Pole Treatment – Treatments that extend the life of wood poles. This includes groundline treatment, insect and internal decay treatment, fumigation	2,067,643.56		2,067,643.56	
	ABCA	Cable Life Extension Program - Testing the condition of underground cable and mitigating components of good cable with a high probability of failure.	7,556,548.80		7,556,548.80	
	ABP1	Replacement of CEHE retirement units when associated with the replacement of a non-CEHE owned pole.	9,133,256.96	328,821.69	9,462,078.65	

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Project Category	Project Number	Description	Additions	Salvage / Removal	Total	Project Category Total
	AFNC	New Capacitor Installations	1,230,085.30		1,230,085.30	
	CE1B	Proactive replacement of major underground equipment, cable or structures.	4,614,532.33	296,746.20	4,911,278.53	
	DB16	Streetlight Rehabilitation/Relocations	1,394,688.71	97,658.30	1,492,347.01	
	DB17	Replacement of streetlight standards and/or luminaires as a result of failure or damage. Does not include area lighting.	7,380,607.31	127,894.64	7,508,501.95	
	DB18	Streetlight LED Replacement- Program replacement of high pressure sodium, metal halide, and mercury vapor streetlight luminaires with LED streetlight luminaires.	5,006,119.69		5,006,119.69	
	DB2H	Replacement of streetlight standards due to cable cuts.	14,457,443.30	1,832,655.88	16,290,099.18	
	H8FD	Installation of new meter on existing service	3,876,570.50		3,876,570.50	
	HFFD	Install, change or removal of CT service.	2,591,458.29		2,591,458.29	
	HLP/00/0011	Unscheduled Substation Corrective Projects- unscheduled corrective type projects and unforeseen equipment failures. These projects involve replacement of equipment and or structures.	8,666,672.11	971,604.83	9,638,276.94	
	HLP/00/0012	Scheduled Substation Corrective Projects- scheduled corrective projects. These projects involve replacement of equipment and or structures.	6,856,506.10	522,133.84	7,378,639.94	
	HLP/00/0013	Replace failed/obsolete metering equipment at industrial substations or install new metering at new industrial substations	3,712,081.64	65,523.00	3,777,604.64	
	HLP/00/0014	Replace the logic cages in aging and/or unreliable SCADA Remote Terminal Units (RTU's).	1,273,254.87	443,332.54	1,716,587.41	
	HLP/00/0054/TR/0001	TRSM PREV MAINTENANCE PRGM - CAPITAL	12,239,540.70	830,259.17	13,069,799.87	
	HLP/00/0054/TR/0001-C	Replace deteriorating transmission facilities that if left in place could lead to outages in the near future and less reliable service.	9,697,959.97	1,219,082.48	10,917,042.45	
	HLP/00/0054/TR/0018	Install Shunt Devices on Transmission Lines to Mitigate Failing Splices	1,375,335.75		1,375,335.75	
	HLP/00/0054/TR/0018-C	Restore splice integrity on targeted circuits.	1,505,382.13		1,505,382.13	
	HLP/00/0054/TR/0022	Transmission System ROW Access Capital Improvements	1,969,564.48	72,807.88	2,042,372.36	
	HLP/00/0054/TR/0025	S90 Tower Replacement Program. The plan to guarantee circuit reliability and to harden our grid is to replace all approximately 80 S90 towers in our system over a multiyear timeframe. The S90 tower replacement will be done with single circuit 90-degree steel poles and engineered temporary poles. This unique design of varying heights for the single circuit 90-degree steel poles and engineered temporary poles is engineered to work anywhere in our grid thus avoiding custom designs at each location. This allows ordering our steel pole structures faster due to long lead times or to hold in inventory various pole heights knowing they can be used anywhere in our grid.	38,060,412.53	4,482,572.43	42,542,984.96	

CenterPoint Energy Houston Electric
Plant Projects Greater than $1,000,000
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Project Category	Project Number	Description	Additions	Salvage / Removal	Total	Project Category Total
	HLP/00/0055/0140	BOGGY NEW CUSTOMER SUBSTATION	929,350.99	137,985.89	1,067,336.88	
	HLP/00/0072	Substation Transformer Firewall Program - Install firewalls between power transformers in a manner that reduces the risk of fire spreading from a failed transformer to adjacent units.	1,230,800.45		1,230,800.45	
	HLP/00/0075	Provides funding for replacement and repair of failed distribution and transmission transformers as well as replacement of failed transmission circuit breakers. (Transformers may be rewound and the rewind would be capitalized).	19,005,290.52	597,252.56	19,602,543.08	
	HLP/00/0187	Replace obsolete and unreliable circuit switchers.	1,236,555.62	76,658.78	1,313,214.40	
	HLP/00/0484	Substation Security Upgrades – Installation of security equipment to control physical and cyber access to CNP substations. This includes: Plant separation fencing, security cameras, & cyber security equipment at various substations. These substations are selected based on risk, vulnerability, and impact as determined by CNP security policies and/or future regulatory requirements.	5,827,581.95	310,167.11	6,137,749.06	
	HLP/00/0491/0010	GREENS BAYOU FLOOD CONTROL. Flood mitigation project to elevate 345kV control cubicle and replace breaker A970.	6,208,043.20	256,473.28	6,464,516.48	
	HLP/00/0668	Replacement of older breakers. Breakers replaced include four at Grant substation; five at Satsuma substation; three at Humble substation; and two at Ulrich substation.	1,250,558.79	100,718.72	1,351,277.51	
	HLP/00/0672	Provides for various protection improvements on the substation system. Work covered with these amounts was associated with replacement of transformer panels at Grant Substation.	4,426,877.69	99,997.95	4,526,875.64	
	HLP/00/0762	TWS FAULT LOCATOR INSTALLATIONS	1,674,479.75	71,934.20	1,746,413.95	
	HLP/00/0798	Add dual pilot 138kv line relaying for improved protection and reliability.	5,561,469.93	198,176.33	5,759,646.26	
	HLP/00/0801	Foundation Replacements due to Alkali-Silica Reaction (ASR) in the foundation causing large cracks in the piers/foundations. The reaction cannot be stabilized and is not reversible.	800,310.71	442,899.73	1,243,210.44	
	HLP/00/0841	Projects and maintenance for CenterPoint portion of the East DC Tie	2,148,179.27		2,148,179.27	

CenterPoint Energy Houston Electric
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Project Category	Project Number	Description	Additions	Salvage / Removal	Total	Project Category Total
	HLP/00/0914/0005	project includes the following: Before summer peak 2023 • Rebuild approximately 6.2 miles of 69 kV structures on the 69 kV Greens Bayou to Wallisville Ckt 61 with the latest standard concrete and/or steel structures • Reconductor approximately 6.2 miles of 69 kV Greens Bayou to Wallisville Ckt 61, including substation jumpers and spans, with the latest standard 2-959 ACSS conductor • Reduce the size of the Greens Bayou capacitor bank CB1 from 120 MVAR to 100 MVAR Before summer peak 2024 • Convert customer-owned 69 kV TEXWAL substation to a breakered 138 kV substation • Convert CenterPoint Energy-owned 69 kV Wallisville distribution substation to a loop-tap 138 kV substation • Convert customer-owned 69 kV CASTEN substation to a 138 kV loop-tap substation as described in Option 1 or convert 69 kV CASTEN to distribution service from the converted 138 kV Wallisville distribution substation as described in Option 2.	53,951,506.30		53,951,506.30	
	HLP/00/0914/0010	Distribution support for 69kV conversion of Ckt 32A: Dunlavy-Hyde Park-Downtown	958,307.50	2,181,240.89	3,139,548.39	
	HLP/00/0914/0012	CenterPoint Energy has been working to gradually phase out its 69 kV aging infrastructure, to improve resiliency and maintain the reliability of the existing transmission system. The comprehensive plan to eliminate 69 kV from the CenterPoint Energy transmission system is a multi-phase, multi-year effort. Several substations have been converted from 69 kV to 138 kV which allows aged 69 kV circuits to be retired or converted to 138 kV. Heights substation represents the largest 69 kV load left on the transmission at approximately 100 MW. This study will analyze the impact of converting Heights substation and its full load served from 69 kV to 138 kV and retiring of 69kV infrastructure at White Oak and Heights substations on the CenterPoint Energy transmission system. Transmission Planning worked with the Transmission and Substation Engineering groups to develop a feasible plan for converting Heights to 138 kV service. As part of the Heights 138kV conversion, Eureka loop service substation will be converted to double-tap service from 138 kV White Oak – San Felipe Ckt 09D and White Oak – Wirt Ckt 73E. The existing configuration at Eureka substation is with Ckt.09D loop service utilizing two sectionalizing switches. With the addition of	8,025,018.09		8,025,018.09	
	HLP/00/0922/0008	Distribution work required to maintain clearances for Mody-Stewart Ckt 63C-4 Ckt 06F-2	25,507,341.39	1,637,685.97	27,145,027.36	
	HLP/00/0922/0009	Distribution work to support mitigation of galloping on transmission circuits (Relocation of distribution facilities)	5,976,278.73		5,976,278.73	

CenterPoint Energy Houston Electric
Plant Projects Greater than $1,000,000
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Project Category	Project Number	Description	Additions	Salvage / Removal	Total	Project Category Total
	HLP/00/0922/0012	following: • Rebuild approximately 17.1 miles of wooden H-frame line on three segments of 138 kV ckt 65 from Wallis - GEBHRT - Sealy - Peters with the latest standard double-circuit-capable concrete and/or steel structures; • Replace the existing 17.1 miles of 1-795 AAC conductor, including substation jumpers and spans, with the latest standard 2-959 ACSS conductor; • Replace the necessary substation equipment at Wallis, Sealy, and Peters 138 kV substations with at least 4000 A. This project is needed to replace aging infrastructure and to address line clearance concerns on three segments of the 138 kV ckt 65 from Wallis - GEBHRT - Sealy - Peters. As shown in the analysis, the project would also resolve some significant P6 (maintenance outage) loading concerns that currently exist on the system. The upgrade of the 1974 vintage wooden H-frame line to the storm-hardened, modern concrete and/or steel structures will improve the resiliency of the line against hurricane-force winds. The rebuild will also provide a much higher circuit capacity and the ability to add another circuit to accommodate future load growth and/or generation additions.	6,860,532.25	1,715,081.86	8,575,614.11	
	HLP/00/0922/0016	includes the following: • Rebuild approximately 18.71 miles of wooden H-frame and single-pole line on three segments of 138 kV ckt 93 from Algoa Corner – Alta Loma – Hitchcock – La Marque with the latest standard double-circuit-capable concrete and/or steel structures except for the 3.5-mile long loop section to Hitchcock which will utilize single-circuit concrete and/or steel structures along the city streets; • Replace the existing 18.71 miles of 2-397 ACSR and 1-2000AAC conductor, including substation jumpers and spans, with the latest standard 2-959 ACSS conductor; • Replace the necessary substation equipment at 138 kV Hitchcock substation with 4000 A equipment. This project is needed to replace aging infrastructure and to address multiple line clearance concerns on 138 kV ckt 93 P.H. Robinson to La Marque segments from Algoa Corner – Alta Loma – Hitchcock – La Marque. The majority of the line was constructed in 1951 followed by the Hitchcock loop in 1988, and an upgrade of the 1951 vintage wooden H-frame line and 1988 vintage wooden single-pole line to the storm-hardened, modern concrete and/or steel	80,749,607.41	4,029,794.66	84,779,402.07	
	HLP/00/0922/0018	Distribution work required to maintain clearances from LaPorte substation taps	3,532,962.03	5,153,869.67	8,686,831.70	
	HLP/00/0922/0019	REBUILD/RECONDUCTOR GULFGATE SUB	2,110,883.92	5,454,305.18	7,565,189.10	
	HLP/00/0922/0021	Distribution work required to maintain clearances from LaPorte substation taps	1,425,032.46	203,350.51	1,628,382.97	

CenterPoint Energy Houston Electric
Plant Projects Greater than $1,000,000
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Project Category	Project Number	Description	Additions	Salvage / Removal	Total	Project Category Total
	HLP/00/0922/0023	138kV Ckt 02A-1: Str #24713 Sienna-Dewal A grid hardening project consisting of the following: •Rebuild/Reconductor 5.32 circuit miles of 138kV Ckt 02A-1 from Str #24713 to Str #20260. Install 2-959 ACSS, 3/8 HS Steel Static, and 1-72f ADSS or 1-96f OPGW along with the replacement of wood structures. •Rebuild/Reconductor 1.56 circuit miles of 138kV Ckt 02A-1 from Str #20260 (replaced under P1048-1) to Dewalt Sub. Install 2-959 ACSS, 3/8 HS Steel Static, and 72f ADSS. •Rebuild/Reconductor 2.23 circuit miles of 138kV Ckt 02A-2 from Dewalt Sub to Missouri City Sub Tap. Install 2-959 ACSS, 3/8 HS Steel Static, and 72f ADSS.	22,112,292.20		22,112,292.20	
	HLP/00/0922/0025	138kV Ckt 02B Burke-WAP A grid hardening project to rebuild/reconductor 18.1 ckt miles of 138kV Ckt 02B-1 from Str #04618 to WAP Sub with 2-959 ACSS, 3/8 HS Steel Static, and 72f ADSS. Assumed installation of steel towers and steel poles at angle structures in possible floodway near Big Creek. Assumed temporary bypasses at angle structures only. Assumed no full temporary bypass needed but to be updated during detailed engineering design.	31,405,324.11		31,405,324.11	
	HLP/00/0922/0032	138kV Ckt 37C TECO-Garrott This work order covers the transmission line work involved in the partial rebuild of the existing 37C-2 transmission circuit from existing structure #14556 to existing structure #14560 which are located in the proposed Hermann Dog Park. The structures are located approximately 0.07 miles east of the intersection of N MacGregor Way and Cambridge St. in Harris County.	18,643,674.31		18,643,674.31	
	HLP/00/0922/0036	COLLEGE SUB TAPS A grid hardening project consisting of Rebuild/Reconductor 1.70 circuit miles of 138kV Ckt 06G-3 College Sub to Str #14242. Install 2-959 ACSS, 7#8 Static, and 1-72f ADSS using high-leakage insulators. Install conductor in a vertical configuration on the street side.	11,634,983.66		11,634,983.66	
	HLP/00/0922/0038	Grid hardening project to rebuild 3.02 circuit miles of 138kV Ckt 80B-1 from Imperial Sub to Str #06448 . This area is identified as an area with reduced flood risk due to levee, need to consider the expected water level if levee was breached for vertical clearance design purposes to avoid the need for outages due to high water. Install 2-959 ACSS, 3/8 HS Steel Static.	5,029,970.23		5,029,970.23	
	HLP/00/0922/0039	BRAZOS RIVER CROSSING Relocate Str #05429	5,032,287.13	1,334,734.89	6,367,022.02	
	HLP/00/0936	Substation improvements include conversion at Fannin substation and new feeder panel at Needville substation.	11,265,266.65	215,046.94	11,480,313.59	

CenterPoint Energy Houston Electric
Plant Projects Greater than $1,000,000
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Project Category	Project Number	Description	Additions	Salvage / Removal	Total	Project Category Total
	HLP/00/1004	Major Underground Rehab - VLT Replace 15KV BKRS: Replacement of 15KV Vacuum breakers with G&W Trident 15KV Solid Dielectric Interrupters. Replacement reasons include but not limited to obsolescence and operational issues.	1,584,009.39	125,071.70	1,709,081.09	
	HLP/00/1055	Distribution line clearance corrections between transmission and distribution facilities to meet National Electrical Safety Code (NESC) requirements.	11,059,870.42	2,202,463.60	13,262,334.02	
	HLP/00/1095	Rebuild Bringhurst Substation	2,938,825.06		2,938,825.06	
	HLP/00/1099	Substation Physical Security Enhancement: Replacement of substation facility fencing with more protective fencing to ensure our critical assets receive a greater level of protection.	5,902,915.66	2,104,956.52	8,007,872.18	
	HLP/00/1128	Rebuild Galena Park substation	1,048,858.32	68,662.46	1,117,520.78	
	HLP/00/1195	SUBSTATION NETWORK MODIFICATIONS - Physically isolate substation communications infrastructure	1,429,697.39	5,308.45	1,435,005.84	
	HLP/00/1413	includes the following: • Rebuild approximately 25.69 out of 27.35 miles of wooden H-frame line on the 138 kV FOSTER - Peters circuit 25 with the latest standard double-circuit-capable concrete and/or steel structures; • Reconductor 0.55 miles of 1-795 AAC conductor on the 138 kV Flewellen - FOSTER circuit 25 segment, and 26.04 miles of 1-795 AAC or 1-795 ACSR conductor on the 138 kV FOSTER - Peters circuit 25 segment, including substation jumpers and spans, with the latest standard 2-959 ACSS conductor. The total length of reconductoring is 26.59 miles; and • Replace the necessary substation equipment at Flewellen and Peters 138 kV substations with at least 4000 A. This project is needed to replace aging infrastructure and to address line clearance concerns on the 138 kV FOSTER - Peters circuit 25 segment. The upgrade of the 1974 vintage wooden H-frame line to the storm-hardened, modern concrete and/or steel structures will improve the resiliency of the line against hurricane-force winds. Also, the project resolves CNP Planning Event P3 and CNP Maintenance Outage P6 loading concerns seen in summer peak base cases. The rebuild will also provide a much	79,388,894.65	4,016,385.12	83,405,279.77	

CenterPoint Energy Houston Electric
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Project Category	Project Number	Description	Additions	Salvage / Removal	Total	Project Category Total
	HLP/00/1428	CKT96 DEER PARK TO CA UPGRADE. Real Time Operations (RTO) approached Transmission Planning regarding an overload seen on 138kV Cardiff to Deer Park circuit 96 when an outage is taken on 138kV Morgan's Point to DOWLAP circuit 84 and the potential failure of breaker C240 at BAYOU. When duplicating this scenario on the study case, Transmission Planning observed a potential overload of 128% of Rate B on 138 kV Cardiff to Deer Park circuit 96. Should this scenario occur in real-time, the overloaded segment would likely either trip automatically or manually due to the magnitude of the overload. This could result in islanding well over 100 MW of load involving seven industrial customers, causing a NERC-EOP-004 reportable event. Upgrading this single circuit segment would avoid this situation. * Reconductoring 5.81 miles of 138 kV Cardiff to Deer Park circuit 96	8,400,059.98		8,400,059.98	
	HLP/00/1447	CenterPoint Energy Houston Electric, LLC (CenterPoint Energy) High Voltage Projects (HVP) requested Transmission Studies and Modeling (TSM) to review a potential project after a pipeline company requested available space to be allocated between the Explorer Corner and Channelview substation. HVP indicated that space can be made available if the currently deenergized 69 kV ckt 38 were to be upgraded for use at 138 kV by replacing the existing H-frame structures with concrete poles. HVP requested TSM to review the potential project for reliability impacts, particularly any benefits that utilizing the deenergized circuit might provide. TSM identified that this tower section of ckt. 38 could be used to lower the fault duty at the Greens Bayou 138 kV substation by adding approximately 6.5 miles of additional conductor impedance to 138 kV Greens Bayou to LYCHEM ckt 08. CenterPoint Energy's TSM studied the reconfiguration of Greens Bayou to LYCHEM ckt 08 project which includes the following: •Rebuild about 3.25 miles of the retired Explorer Corner to Channelview ckt 38 using a double circuit arrangement and loop it into Greens Bayou to LYCHEM ckt 08. •Convert existing H-frame construction to a 138kV	7,103,020.62	793,477.89	7,896,498.51	
	HLP/00/1466	Substation router refresh	2,678,735.23	99,760.36	2,778,495.59	

CenterPoint Energy Houston Electric
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Project Category	Project Number	Description	Additions	Salvage / Removal	Total	Project Category Total
	HLP/00/1509	P1509.1 New Gulf Approach Spans. TEXGLF substation is a customer-owned breakered substation which had a single generator connected to it and is connected to South Lane City via 138 kV ckt 60 and West Columbia via 138 kV ckt 04. CenterPoint Energy received an ERCOT Notification of Suspension of Operations for this resource on Dec 1, 2020. The notification indicated that the unit had a forced outage and the resource owner decided to retire the unit immediately rather than repair. Since the resource owner also owns the 138 kV TEXGLF substation, the resource owner has decided to be disconnected from the transmission system. Removing this substation will force CenterPoint Energy to make modifications to the topology. The 138 kV CenterPoint Energy New Gulf distribution substation currently double tapped off 138 kV South Lane City – TEXGLF ckt 60 and West Columbia – TEXGLF ckt 04, will need to be converted to a sectionalizing substation when TEXGLF is removed from the transmission system.	2,858,961.61	9,808.50	2,868,770.11	
	HLP/00/1512	Transmission Planning has observed a potential loading concern in future year cases on the 138 kV West Columbia to San Bernard circuit 04. San Bernard is a new substation to be built in 2022 that connects a new solar plant looped on 138 kV circuit 04 between the West Columbia and Pledger substations. The existing conductor configuration on the towers between West Columbia and Pledger is a 1-795ACC on the north side and bundled 2-959ACSS on the south side connected in a parallel bundled arrangement. Due to the parallel bundling, the conductor's normal rating (Rate A) is 532 MVA and the emergency rating (Rate B) is 680 MVA. San Bernard substation will have an equipment normal/emergency ratings of 956/1051 MVA and West Columbia has equipment normal/emergency ratings of 478/525 MVA. The largest potential CNP Planning Event P1 loading concern is 116% of the 478 MVA normal rating. In addition, potential loading concerns are seen for NERC Category P6 Events as high as 142.0% of the 525 MVA emergency rating. Potential short circuit issues are seen at West Columbia with a single line to ground fault at 100.57% of the existing 31.4 kA fault duty rating. * Upgrade West Columbia to a minimum	1,138,470.02		1,138,470.02	
	HLP/00/1539	Modernization Program in Major Underground to convert circuit feeders crossing freeways from overhead to underground.	5,297,030.00		5,297,030.00	
	HLP/00/1540	Modernization Program in Major Underground to replace aging cable on dedicated underground circuit feeders, substation getaways and roadway dips.	10,324,291.92	2,900,211.50	13,224,503.42	

CenterPoint Energy Houston Electric
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Calendar 2023

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		project includes the following: Before summer peak 2023 • Rebuild approximately 6.2 miles of 69 kV structures on the 69 kV Greens Bayou to Wallisville Ckt 61 with the latest standard concrete and/or steel structures • Reconductor approximately 6.2 miles of 69 kV Greens Bayou to Wallisville Ckt 61, including substation jumpers and spans, with the latest standard 2-959 ACSS conductor • Reduce the size of the Greens Bayou capacitor bank CB1 from 120 MVAR to 100 MVAR Before summer peak 2024 • Convert customer-owned 69 kV TEXWAL substation to a breakered 138 kV substation • Convert CenterPoint Energy-owned 69 kV Wallisville distribution substation to a loop-tap 138 kV substation • Convert customer-owned 69 kV CASTEN substation to a 138 kV loop-tap substation as described in Option 1 or convert 69 kV CASTEN to distribution service from the converted 138 kV Wallisville				
	HLP/00/1543	distribution substation as described in Option 2.	5,043,718.20		5,043,718.20	
	HLP/00/1565	Electro-Mechanical Relay Replacements- Replace electromechanical relays with microprocesso relaying.	5,110,397.36	66,308.54	5,176,705.90	
	HLP/00/1603	Cottonwood Bayou Related Upgrades. Upgrade MONSAN – HUDSON ckt04 to minimum 507/507MVA Mustang Bayou – upgrade 138 kV loop bus to minimum 568/568MVA Angleton – upgrade Danbury ckt04 to minimum 563/563MVA Webster – upgrade Friendswood tap ckt04 to minimum 525MVA continuous Liverpool – upgrade 138kV loop bus to minimum 517/517MVA PETSON – upgrade MONSAN & Danbury ckt04 to minimum 531/532MVA (upgrade ring & line equipment to 4000A) MONSAN – upgrade PETSON ckt04 to minimum 520/522MVA Angleton – upgrade WINMIL ckt26 to minimum 287/341MVA[R]	3,397,352.57		3,397,352.57	
	HLP/00/1608	Relocate Ckt 01A and Ckt 63B underground transmission approach spans into Seawall Sub including reconfiguration of associated pressurization plant connections.	2,379,930.57		2,379,930.57	
	S/101318/CG/TES TEQUIP	Purchase capital test equipment to be used for Substations	2,324,068.33		2,324,068.33	
	TRIP	The maintenance, installation, and/or replacement of Trip Saver Devices.	5,255,136.44	1,087,630.47	6,342,766.91	
Intelligent Grid						22,405,965
	CG1E	Planned Upgrades or Replacements of Communication Equipment supporting Distribution Automation. (IGSD, DACs, Monitoring Systems, etc)	4,192,679.84	39,657.72	4,232,337.56	

CenterPoint Energy Houston Electric
Plant Projects Greater than $1,000,000
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Project Category	Project Number	Description	Additions	Salvage / Removal	Total	Project Category Total
	IGSD	Planned/proactive IGSD device installations/replacements.	12,570,393.94	958,108.20	13,528,502.14	
	S/101220/CN/RED 070	Demand Response Management System (DRMS) - E-curtailment product was purchased for AMS with the goal of reducing customer demand at the meter level.	2,060,097.73		2,060,097.73	
	S/101392/CE/CELL RELAY	Deploy (Post DOE) existing cell relay	1,276,858.70	(143,279.47)	1,133,579.23	
	SCIG	Installation of Telecom boxes for intelligent grid devices to support reliability.	1,451,448.70		1,451,448.70	
		Total Projects Greater than $1,000,000	2,093,297,964	144,396,685	2,237,694,650	2,237,694,650
		Total of Projects Less than $1,000,000	49,632,279	2,099,607	51,731,886	51,731,886
		Total of All Projects	2,142,930,243	146,496,292	2,289,426,535	2,289,426,535

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PUC DOCKET NO. 56211

APPLICATION OF CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC FOR AUTHORITY TO CHANGE RATES	§ § §	PUBLIC UTILITY COMMISSION OF TEXAS

DIRECT TESTIMONY

OF

MANDIE SHOOK

ON BEHALF OF

CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC

MARCH 2024

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GLOSSARY OF ACRONYMS AND DEFINED TERMS

Acronym	Definition
CCN	Certificate of Convenience and Necessity
CenterPoint Houston or Company	CenterPoint Energy Houston Electric, LLC
Commission	Public Utility Commission of Texas
ERCOT	Electric Reliability Council of Texas
FERC	Federal Energy Regulatory Commission
NERC	North American Electric Reliability Corporation
O&M	Operation and Maintenance
SAIDI	System Average Interruption Duration Index: average number of outage minutes per customer per year.
SAIFI	System Average Interruption Frequency Index: average number of times that a customer's service is interrupted.
Test Year	12 months ending December 31, 2023
Texas RE	Texas Reliability Entity

EXECUTIVE SUMMARY ELECTRIC ENGINEERING

(MANDIE SHOOK)

CenterPoint Energy Houston Electric, LLC's ("CenterPoint Houston" or the "Company") Electric Engineering Division is one of the divisions within the Company that is responsible for the daily operation of the Company's transmission and distribution system.

My testimony:

- describes the creation of the Electric Engineering Division;
- describes ongoing operations within the Electric Engineering Division;
- describes the major programs and initiatives that drive Electric Engineering investment and expense, including the reliability initiative and resiliency standards;
- describes the planning and cost control programs within the Electric Engineering Division;
- supports the reasonableness and necessity of Operations and Maintenance ("O&M") expenses incurred in support of the Electric Engineering Division during the 12 months ended December 31, 2023 ("Test Year") in the amount of $4.04 million; and
- supports the reasonableness and necessity of Electric Engineering capital costs from January 1, 2019 through December 2023 in the amount of approximately $300 thousand, including amounts reflected in Schedule M of the rate filing package.

Together with the cost-of-service data and testimony of the Company's other witnesses, my testimony demonstrates that the capital expenditures and Test Year O&M expenses for the Electric Engineering Division are reasonable, necessary, and representative of the costs to provide service to customers of CenterPoint Houston and thus, should be included in the Company's cost of service.

DIRECT TESTIMONY OF MANDIE SHOOK

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND POSITION.

A. My name is Mandie Shook and I am employed by CenterPoint Houston as Vice President of Electric Engineering.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND.

A. I graduated from Louisiana State University with a Bachelor of Science degree in Electric Engineering in 1998. I am a registered professional engineer in the state of Texas. I have been employed by CenterPoint Energy, Inc. and its predecessor companies for the past 25 years. My career experience includes distribution engineering, substation engineering, distribution operations, asset management, system protection, major underground engineering, Electric Reliability Council of Texas ("ERCOT") and market regulatory affairs and policy and compliance. Currently, I am Vice President of Electric Engineering.

Q. WHAT ARE YOUR CURRENT RESPONSIBILITIES?

A. As Vice President of Electric Engineering, I lead the division that is responsible for engineering, design, and capital budgeting support for the Company's transmission and distribution system, as well as support for compliance with North American Electric Reliability Corporation ("NERC") Reliability Standards.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS PROCEEDING?

A. I am testifying on behalf of CenterPoint Houston.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to provide an overview of the engineering and design work that the Electric Engineering Division provides to the Company. I also describe the cost control measures in place within the Electric Engineering Division and support the O&M and capital expenses associated with activities performed by the Electric Engineering Division.

At the end of the test year, CenterPoint Houston's Electric Business Unit in Texas consisted of six divisions: (1) Electric Engineering, (2) Grid Transformation and Investment Strategy, (3) High Voltage and System Operations, (4) Distribution Operations and Service Delivery, (5) Major Underground and Distribution Modernization, and (6) Strategic Business Growth and Engagement. The Electric Engineering Division was created in December 2022. It is comprised of five departments: (1) the Transmission Engineering Department, (2) the Policy and Compliance Department, (3) the Major Underground Engineering Department, (4) the Substation Engineering Department, and (5) the Distribution Engineering Department.

My testimony identifies the functions of the Electric Engineering Division and describes how the division is structured and staffed to accomplish the goal of providing a reliable power delivery system at a reasonable cost. My testimony supports the reasonableness and necessity of the Electric Engineering Division's O&M expenses and the prudence of its capital investment. My testimony also

demonstrates that the O&M costs associated with the Electric Engineering Division are effectively and carefully managed and maintained through business planning, budget plan review, and ongoing budget plan monitoring. I also provide testimony to support that the assets associated with the Electric Engineering capital investment are used and useful in the provision of electric utility service and the capital investment was prudently incurred. I conclude that the Electric Engineering Divisions' costs are reasonable and necessary and prudently incurred, and therefore should be recovered in the Company's rates.

Q. PLEASE DESCRIBE THE INTERACTION OF YOUR TESTIMONY WITH OTHER WITNESSES IN THIS CASE.

A. My testimony describes the operation of the Electric Engineering Division and the support the division provides to the other divisions within the Electric Business Unit, including providing engineering support to the High Voltage and System Operations, Major Underground and Distribution Modernization, Distribution Operations and Service Delivery, and Grid Transformation and Investment Strategy. I also provide testimony in support of the capital expenses associated with engineering of projects reflected in Schedule M of the Rate Filing Package. Company witnesses Eric Easton and David Mercado support the other portions of the capital investment reflected in Schedule M. I also support the analysis of the reliability performance of the CenterPoint Houston system, along with Company witnesses Eric Easton and Deryl Tumlinson. Finally, I discuss the engineering support provided to the Company for transmission line certificate of convenience and necessity ("CCN") applications.

The following witnesses present testimony on the operations of the Electric Business Unit:

Overview of CenterPoint Operations Witnesses

Witness, Title	Subjects Addressed
Lynnae Wilson, Senior Vice President, Electric Business Unit	• Overview of CenterPoint Houston and its operations; • Company's organizational and management structure and Company's commitment to its core values; • Summarize the Company's rate filing package, • The Company's efforts related to reliability and resiliency, and the impact of economic and customer growth in the Company's service territory since its last base rate case.
Eric Easton, Vice President, Grid Transformation & Investment Strategy	• How Distribution and Transmission Planning groups identify and develop future capital investment projects; • How capital investments are prioritized and optimized; • The reliability reporting process and various reporting tools that have been developed; • How the addition of a Capital Program Management department will support the efficient execution of capital projects and programs; • How the Strategic Coordination and Analysis department aligns strategic initiatives, identifies synergies, and improves interdepartmental coordination on projects; and • Supports the reasonableness and necessity of Grid Transformation & Investment Strategy-related Test Year O&M expense and capital investment since 2019 and the related schedules.
David Mercado, Vice President, High Voltage and System Operations	• Overview of the structure and functions of the High Voltage and System Operations Division; • Operations in the High Voltage and System Operations Division since 2019; • Key programs and initiatives undertaken by the High Voltage and System Operations; • Expense planning and cost control measures; and • Supports the reasonableness and necessity of High Voltage and System Operations-related Test Year O&M expense and capital investment since 2019 and the related schedules.

Randal M. Pryor, Vice President, Major Underground & Distribution Modernization	• MUG & Distribution Modernization division and the major programs and initiatives; • Implications for MUG & Distribution Modernization due to the growth the Company's distribution system has experienced since 2019; • Processes used to plan, monitor, and control investments and expenditures; and • Supports the reasonableness and necessity of Major Underground & Distribution Modernization-related Test Year O&M expenses and distribution capital investment since 2019 and the related schedules.
Deryl Tumlinson, Vice President, Distribution Operations & Service Delivery	• Distribution Operations and Service Delivery Division; • Quotidian activities and major programs and initiatives that drive distribution investment and expense; • Impacts and operational responses that occurred as a response to significant weather events; • Impact of supply chain disruptions; • Long lead-time asset purchases; and • Supports the reasonableness and necessity of Distribution Operations & Service Delivery-related Test Year O&M expenses and distribution capital investment since 2019 and the related schedules.
Mandie Shook, Vice President, Electric Engineering	• Creation of the Electric Engineering Division; • Operations within the Electric Engineering Division; • Major programs and initiatives that drive Electric Engineering investment and expense, including the reliability initiative and resiliency standards; • Planning and cost control programs within the Electric Engineering Division; • Supports the reasonableness and necessity of Electric Engineering-related O&M expense and capital costs incurred since 2019 and related schedules.
Rina Harris, Vice President, Strategic Business Growth & Engagement	• Functions of the Strategic Business Growth and Engagement Division; • Explains how the division is structured and staffed to enhance the customer service provided to large customers; • Steps taken to understand future customer needs so as to efficiently support large customer's growth and reliability needs; and • Supports the reasonableness and necessity of test year O&M costs.

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II. DESCRIPTION OF THE ELECTRIC ENGINEERING DIVISION

Q. PLEASE EXPLAIN THE HISTORY OF THE ELECTRIC ENGINEERING DIVISION?

A. The Electric Engineering Division was formed in December of 2022. Prior to its formation, the work performed by the Electric Engineering Division was performed by the Engineering and Asset Optimization organization. The former Engineering and Asset Optimization organization was divided into two divisions to better align functionality and support project execution: the Electric Engineering Division which is covered in this testimony and the Grid Transformation and Investment Strategies Division which will be addressed in Eric Easton's testimony. As further described by Lynnae Wilson, the Company reorganized the Electric Business Unit to more strategically align different operations.

Q. WHAT ROLE DOES THE ELECTRIC ENGINEERING DIVISION PLAY WITHIN THE ELECTRIC BUSINESS UNIT?

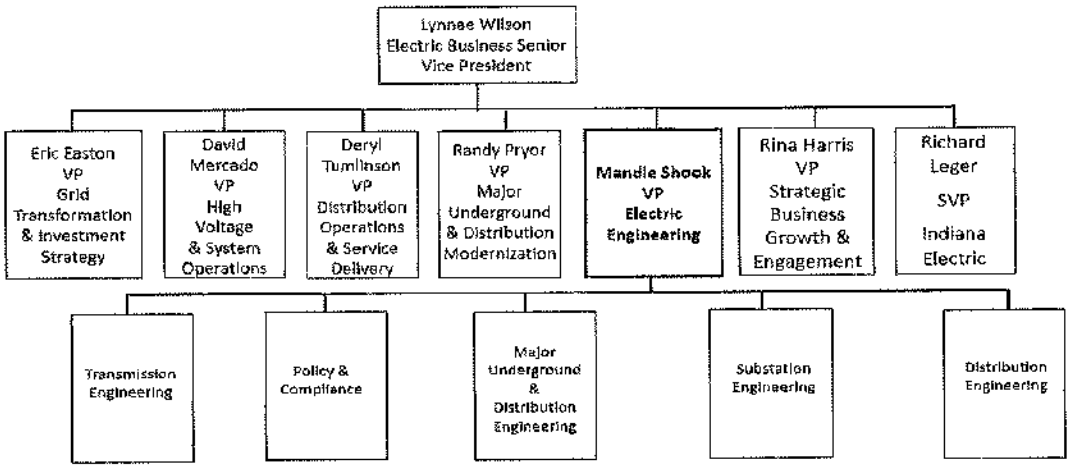
A. Electric Engineering supports the work of the other divisions within the Electric Business Unit by providing engineering, design, and capital budgeting support for the Company's transmission and distribution system. The support provided by the Electric Engineering Division is critical to the work performed by the Electric Business Unit to ensure safe and reliable electric service to CenterPoint Houston's customers.

Q. HOW IS THE ELECTRIC ENGINEERING DIVISION ORGANIZED?

A. In 2023, this division included (1) the Transmission Engineering Department, (2) the Policy and Compliance Department, (3) the Major Underground Engineering Department, (4) the Substation Engineering Department, and (5) the Distribution

Engineering Department. Please see Figure 1 for the organizational chart for Electric Engineering.

Figure MS-1: Electric Business Unit/Electric Engineering Organizational Chart



A. TRANSMISSION ENGINEERING

Q. PLEASE DESCRIBE THE TRANSMISSION ENGINEERING DEPARTMENT.

A. The Transmission Engineering Department provides engineering and design services for the construction of new transmission facilities within the CenterPoint Houston system. The department supports the work of the High Voltage & System Operations Division.

This department is responsible for engineering design and construction support services for the installation and modification of the Company's transmission system. Engineering design and construction services include budget development, schedule management, engineering drawings, work orders, and material and equipment review. This group is also responsible for the development

and engineering support of transmission line clearance, hardening, and resiliency efforts. In addition, the Transmission Engineering Department provides civil and structural engineering services for the substation and distribution projects groups.

B. POLICY AND COMPLIANCE

Q. PLEASE DESCRIBE THE POLICY AND COMPLIANCE DEPARTMENT.

A. The Policy and Compliance department is responsible for overseeing the Company's NERC Reliability Standards compliance program and supporting the various operational departments in their compliance efforts. This includes understanding the requirements of NERC Reliability Standards and providing support to sufficiently demonstrate compliance with the NERC Reliability Standards. Policy and Compliance functions as the point of contact and coordinator for communications with the Federal Energy Regulatory Commission ("FERC"), NERC, and Texas Reliability Entity ("Texas RE") for compliance-related activities. The department also provides support for business planning and regulatory activities including the coordination of the CCN process.

C. MAJOR UNDERGROUND ENGINEERING

Q. PLEASE DESCRIBE THE MAJOR UNDERGROUND ENGINEERING DEPARTMENT.

A. The Major Underground Engineering department provides engineering and design services for the construction of new three phase underground distribution facilities within the CenterPoint Houston system. The department supports the work of the Major Underground and Distribution Modernization Division.

This department is responsible for providing engineering design and construction

support services associated with the Company's three phase underground electric distribution facilities. This includes designated underground areas, such as downtown Houston, the Texas Medical Center, and George Bush Intercontinental Airport, as well as individual commercial loads served with three-phase pad mounted transformers, underground getaways from substations, and underground dips under freeways. Engineering design and construction services include budget development, schedule management, engineering drawings, work orders, and material and equipment review. This group is also responsible for the development and engineering support of major underground hardening and resiliency projects and the protection and automation of underground equipment and network systems.

D. SUBSTATION ENGINEERING

Q. PLEASE DESCRIBE THE SUBSTATION ENGINEERING DEPARTMENT.

A. The Substation Engineering Department provides engineering and design services for the construction of new substation facilities within the CenterPoint Houston system. The Substation Engineering Department is responsible for engineering design and construction support services for the installation of and modification to the Company's substations, as well as engineering support for the installation and modification of Company-owned equipment that is required in customer-owned substations. Engineering design and construction services includes budget development, schedule management, engineering drawings, work orders, and material and equipment review. This group is also responsible for the development and engineering support associated with substation physical infrastructure security,

hardening and resiliency efforts, and the protection and automation of substation and transmission systems.

E. DISTRIBUTION ENGINEERING

Q. PLEASE DESCRIBE THE DISTRIBUTION ENGINEERING DEPARTMENT.

A. The Distribution Engineering Department provides engineering and design services for the construction of new distribution facilities within the CenterPoint Houston system. The department supports the work of the Major Underground and Distribution Modernization Division and the Distribution Operations & Service Delivery Division.

This department is comprised of three functions: Distribution Standards and Materials, Distribution Protection, and Distribution Power Quality. Distribution Standards and Materials is responsible for construction standards, policies, practices, and materials that are needed to build electric distribution facilities in a consistent, reliable, safe, and cost-effective manner. The Distribution Standards and Materials group reviews and updates these standards as necessary to incorporate new requirements and enable new technologies.

Distribution Protection is responsible for the electrical protection of the distribution system by developing and evaluating system protection criteria for the safe and reliable operation of the system at distribution voltage levels. Distribution Protection calculates relay settings for protection and control systems that implement automatic fault detection, isolation, and restoration actions in response to disturbances on the distribution system.

Distribution Power Quality is responsible for managing and reporting on

distribution reliability programs and providing technical support for constructing and operating the distribution system. The Distribution Power Quality group supports overall reliability performance of the distribution system by providing customer level and circuit level technical support to Service Consultants and individual customers, including primary metered and premium rollover services.

III. ELECTRIC ENGINEERING OPERATIONS SINCE DOCKET NO. 49421

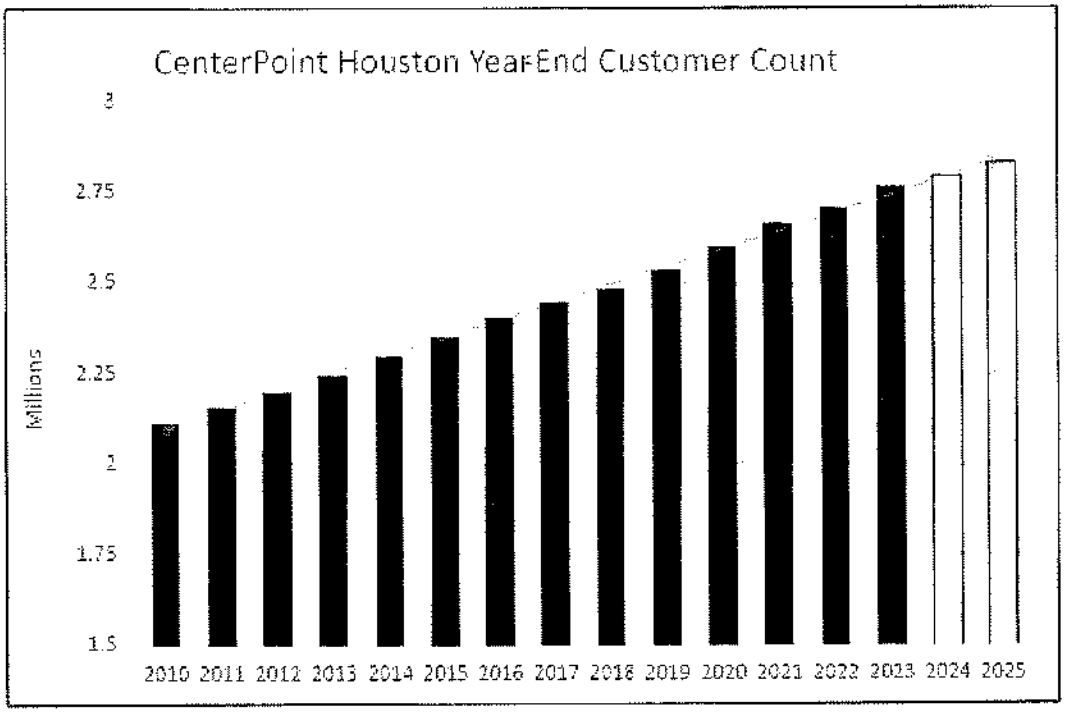
Q. HAVE THERE BEEN CHANGES IN THE COMPANY'S ENGINEERING OPERATIONS SINCE THE PUBLIC UTILITY COMMISSION OF TEXAS ("COMMISSION") LAST CONDUCTED A COMPREHENSIVE BASE RATE REVIEW FOR CENTERPOINT HOUSTON?

A. Yes. The test year in Docket No. 49421 ended December 31, 2018. Since that time, CenterPoint Houston has remained committed to delivering safe and reliable electric delivery service to its customers—this commitment never has and never will change. However, factors such as customer growth, design standard changes, and supply chain disruptions have impacted the way the Electric Engineering Division operates.

Q. PLEASE EXPLAIN HOW CUSTOMER GROWTH HAS IMPACTED ELECTRIC ENGINEERING.

A. The Greater Houston area is the fourth largest metropolitan area in the country and is continuing to grow at a fast pace. As shown on Figure MS-2, CenterPoint Houston serves much of this fast-growing area.

Figure MS-2 CenterPoint Houston Year End Customer Count



As further discussed by CenterPoint Houston witness Lynnae Wilson, the extensive growth in the Houston area has resulted in the addition of nearly 300,000 metered customers from January 1, 2019, through December 31, 2023.

This growth has resulted in a substantial uptick in the projects the Company has undertaken to ensure the continued reliable operation of its system and service to customers. In the Electric Engineering Division, this growth has resulted in an increase in volume of engineering projects.

Q. WHAT DESIGN STANDARDS HAVE CHANGED SINCE 2019?

A. There have been several revisions to CenterPoint Houston's distribution construction standards as outlined below:

1. Beginning in 2022, all new distribution freeway crossings are built underground where feasible. If underground is not feasible, then overhead crossings are built on concrete poles, which was the prior construction standard for distribution freeway crossings. This design decreases the

occurrence of overhead lines obstructing major throughfares during a major storm event.

2. Beginning in 2022, the Company adopted National Electric Safety Code Rules 250C (Extreme Wind) and 250D (Extreme Ice with Concurrent Wind Loading) to apply to all new and replacement distribution structures regardless of height. This adoption will harden distribution structures to better withstand extreme weather events.

3. Beginning in 2022, distribution lines in some areas within the Company's territory have been identified to be at risk of damage from galloping conductors[1]. In these designated areas a special tangent pole framing is used for new or replacement construction. This design hardens distribution lines and structures to better withstand ice buildup during cold weather.

4. Beginning in 2022, distribution critical infrastructure such as switching devices, large transformer banks, regulator banks, double circuits, junction poles, terminal poles, and structures in the first circuit section outside the substation will utilize poles with an engineered material instead of wood poles that were utilized previously.

Q. WHAT IS THE IMPACT OF THE DESIGN STANDARD CHANGES?

A. Electric Engineering facilitates the development and maintenance of the distribution design standards. These standards are utilized by the Major Underground and Distribution Modernization division. Company witness Randy Pryor discusses the impact of design standard changes to this group in his testimony.

Q. WHAT SUPPLY CHAIN ISSUES HAS CENTERPOINT HOUSTON EXPERIENCED SINCE 2019?

A. CenterPoint Houston's supply chain challenges significantly increased due to the COVID-19 global pandemic. Many of our trusted vendors were not able to get the

[1] Galloping conductors refers to a condition where ice build on conductors coupled with wind causes a high-amplitude low-frequency oscillation of the conductor. This can result in faults or mechanical stress.

materials they needed to build equipment. For example, URD transformers were in short supply during and since the pandemic.

Q. HOW HAVE THE SUPPLY CHAIN ISSUES IMPACTED ELECTRIC ENGINEERING?

A. Electric Engineering evaluates vendors and materials that will meet our standards and operational needs. Due to supply chain issues, Electric Engineering has continued to seek out and evaluate additional suppliers. These additional vendors provide support during these times, but also allow for competitive pricing. Company witness Carla Kneipp provides further details regarding the supply challenges faced by CenterPoint Houston and what the Company has done to address them.

IV. ELECTRIC ENGINEERING PROGRAMS AND INITIATIVES

Q. PLEASE DESCRIBE THE TYPES OF PROGRAMS AND INITIATIVES WITHIN THE ELECTRIC ENGINEERING DIVISION.

A. CenterPoint Houston has implemented a number of programs and initiatives that were ongoing during the Test Year. The Electric Engineering Division has a role in the Root Cause Analysis Program, and the Infra-red Program which are part of the Company's overall reliability initiatives. Other reliability programs are discussed by Messrs. Pryor and Tumlinson.

A. THE ROOT CAUSE ANALYSIS PROGRAM

Q. WHAT IS THE ROOT CAUSE ANALYSIS PROGRAM?

A. The Company's Root Cause Analysis Program involves the evaluation and reliability reporting on a circuit level. As part of this program, Electric Engineering

is responsible for the 300% circuit analysis, which is based on the Commission's reliability and continuity of service standards contained in 16 Tex. Admin. Code §25.52. The system-wide reliability standard requires that each utility maintain and operate its electric distribution system so that the utility's system average interruption duration index ("SAIDI"), which represents the average number of outage minutes per customer per year, and the system average interruption frequency index ("SAIFI"), which represents average number of times that a customer's service is interrupted, do not exceed the Commission-approved SAIDI and SAIFI for the utility by more than 5% in any given year. In addition, the Commission's rule requires that each utility maintain and operate its electric distribution system such that no distribution feeder with more than ten customers sustains a 12-month SAIDI or SAIFI value that is more than 300% greater than the system average of all feeders for any two consecutive years.

As part of this program, Electric Engineering reviews any circuit that is projected to become a 300% circuit. Electric Engineering reviews distribution development plans, outage information, inspection data, vegetation management schedules, and performs field inspections including infra-red inspections of major equipment. Based on its engineering evaluation, Electric Engineering develops a circuit action plan and provides that plan to Distribution Operations and Service Delivery for execution. Deryl Tumlinson's testimony describes how the Distribution Operations and Service Delivery Division executes the circuit action plan.

Q. WHY IS THIS PROGRAM IMPORTANT?

A. The 300% circuit analysis is an important part of the Root Cause Analysis Program

because it creates a proactive response to 300% circuit outages. It is designed to identify and initiate corrective actions on circuits with issues before they become a repeating 300% circuit. In order to accomplish this, a circuit's indices are analyzed against predictive data that indicates operational issues. By addressing issues at their root this program leads to greater reliability and customer satisfaction.

B. INFRA-RED PROGRAM

Q. WHAT IS THE INFRA-RED PROGRAM?

A. Infra-red technology allows the Company to see the heat generated by deteriorating components or components that are overloaded on the distribution system, known as "Hot Spots." These Hot Spots eventually result in equipment failure and loss of service to customers. Infra-red technology is a unique tool used to find potential equipment outages before they occur so that proactive repairs can be made prior to an outage. The Infra-red Program deploys this technology through inspection cycles to reduce the number of equipment failures, thereby improving reliability by decreasing SAIDI and SAIFI.

Q. WHAT IS THE INSPECTION CYCLE FOR THE INFRA-RED PROGRAM?

A. All circuits are inspected on an eight-year cycle. Eighty-three benchmark circuits that are representative of the overall CenterPoint Houston system are inspected every two years to ensure that the eight-year cycle is adequate to achieve the desired reliability results. If a circuit is identified as a 4+ year repeating 10% circuit, meaning it's in the top 10% for SAIDI and SAIFI minutes, or a 300% circuit, meaning its SAIDI and SAIFI minutes are three times higher than the average circuit, then it is advanced on the infra-red schedule to the current year. This

additional focus on the circuits with the highest SAIDI and SAIFI measurements is done to address performance issues. Circuits that meet our heavily loaded criteria (greater than 500 amps) are also inspected during the peak loading season, as data has proven a higher failure rate of equipment that is subjected to higher load. Additional equipment is inspected as needed upon request by Operations.

Q. WHAT EQUIPMENT IS INSPECTED?

A. Infra-red scans are conducted on the terminal poles at the substation and major equipment on the circuit, including pole-top switches, reclosers, regulators, and capacitors. Scans may also be performed on the fuse cutouts, jumpers, splices, and transformers along the circuit backbone. The identified Hot Spots are reported, and repairs are made. If the problem is severe enough and there is a danger of imminent failure, then procedures are taken to isolate the device and initiate immediate repairs.

Q. HOW MANY CIRCUITS WERE INSPECTED USING INFRA-RED SCANS?

A. Since 2019, the Company has conducted infra-red scans on 1,532 distribution circuits. As a result of these infra-red scans, the Company identified and took corrective action on 1,328 issues before such issues led to equipment failure.

Q. IS ELECTRIC ENGINEERING THE DEPARTMENT THAT CONDUCTS THE CORRECTIVE ACTION IDENTIFIED IN THE INFRA-RED INSPECTIONS?

A. No. The Distribution Operations and Service Delivery department is responsible for that work. Mr. Tumlinson describes this work in his direct testimony.

Q. WHY IS THIS PROGRAM IMPORTANT?

A. The Infra-red program is an important part of our system reliability. It is designed to identify and initiate corrective actions on deteriorating components or components that are overloaded on the distribution system. By addressing these components before failure this program leads to improved reliability and customer satisfaction.

V. CAPITAL AND O&M EXPENSE PLANNING AND COST CONTROL

Q. HOW DOES CENTERPOINT HOUSTON ENSURE THAT ITS NECESSARY CAPITAL INVESTMENTS AND O&M EXPENSES ARE REASONABLE?

A. CenterPoint Houston carefully plans capital investments and O&M activities and related expenses and adjusts the programs and costs annually based on system performance. The Company uses several processes to accomplish this oversight. These processes include: (1) the workforce planning process, (2) budgeting and cost control, (3) use of contractors, (4) the distribution planning process, (5) the transmission planning process, and 6) the asset management process. I will discuss the workforce planning process, budgeting and cost control, and the use of contractors within the Electric Engineering Division. The distribution planning process, the transmission planning process, and the asset management process are discussed in the testimony of Company witness Eric Easton. Mr. Tumlinson's testimony discusses the workforce planning process along with budgeting and cost controls for internal crews, while Mr. Pryor's testimony will present budgeting and cost control and the use of contractors. In addition, the testimony of Darren Storey describes the Company's planning and budget processes for services provided to the Company by its affiliates.

A. WORKFORCE PLANNING PROCESS

Q. HOW DOES CENTERPOINT HOUSTON ENSURE THAT IT MAINTAINS PERSONNEL LEVELS SUFFICIENT TO OPERATE AND MAINTAIN ITS ELECTRIC ENGINEERING NEEDS?

A. CenterPoint Houston must have an adequate number of experienced and well-trained engineers on staff at all times. This will enable the Company to support the design needs for service area growth and reliability. As such, the Company has processes in place to ensure adequate staffing while, at the same time, ensuring that its staffing is efficient and reasonable.

For instance, the Company regularly and consistently evaluates future staffing needs. Succession planning is reviewed and updated for key positions within the Electric Engineering Division to address attrition, retirements, and promotions.

B. BUDGETING AND COST CONTROL

Q. WHAT MEASURES DOES THE COMPANY USE TO BUDGET, MONITOR, AND CONTROL COSTS?

A. CenterPoint Houston develops the Electric Engineering Division's budget as part of the Company's business planning process. In developing the Electric Engineering Division's budget, CenterPoint Houston uses historical trends for service restoration and maintenance and analyzes current trends in development activity to anticipate growth that must be addressed through the budget. To be sure that planned expenditures remain reasonable, the Company monitors actual expenses, compares them against budgeted amounts on a monthly basis, and investigates variances. On a monthly basis, CenterPoint Houston makes

projections and changes to the budget forecast based on this review. These spending evaluations result in continuous system-wide cost control. Please refer to the testimony of Company witnesses Eric Easton and Darren Storey for more detail on the Company's planning and budget processes.

C. USE OF CONTRACTORS

Q. DOES THE COMPANY UTILIZE CONTRACTORS IN ADDITION TO ITS INTERNAL WORKFORCE?

A. Yes. The Company, including the Electric Engineering Division, utilizes contractors, such as consultants for engineering of distribution, substation, transmission, and major underground projects, to supplement its workforce to handle variations in the workload.

Q. WHAT ARE THE BENEFITS OF ELECTRIC ENGINEERING'S ARRANGEMENTS WITH CONTRACTORS?

A. The Electric Engineering Division utilizes design and engineering consultants, third party inspection services and CCN routing consultants. Engaging with these contractors allows the Company to use skilled professionals for specific projects or works streams that do not require full-time employees or require specialized skill sets. This facilitates cost and performance comparisons and provides resource flexibility.

VI. ELECTRIC ENGINEERING O&M EXPENDITURES

Q. WHAT O&M AMOUNT WAS NECESSARY FOR THE ELECTRIC ENGINEERING DIVISION DURING THE TEST YEAR?

A. Electric Engineering expended $4.035 million in O&M during the Test Year. Figure 2 shows the O&M expense by department for the Test Year.

Figure 2. Test-Year O&M Expense by Department for Electric Engineering

Electric Engineering O&M by Department	Test Year Expense (millions)
Distribution Engineering	$0.970
Major Underground Engineering	$0.293
Policy and Compliance	$1.054
Substation Engineering	$0.681
Transmission Engineering	$0.344
Administrative and General	$0.693
TOTAL:	$4.035

Q. PLEASE DESCRIBE THE ACTIVITIES UNDERTAKEN BY THE DISTRIBUTION ENGINEERING DEPARTMENT AND THE ASSOCIATED O&M COSTS.

A. For the Test Year, the Distribution Engineering Department O&M-related costs were approximately $970 thousand. As described earlier in my testimony, this department is comprised of three functions: Distribution Standards and Materials, Distribution Protection, and Distribution Power Quality. Distribution Standards and Materials is responsible for construction standards, policies, practices, and materials that are needed to build electric distribution, facilities in a consistent, reliable, safe, and cost-effective manner. The group reviews and updates these standards as necessary to incorporate new requirements and enable new technologies.

Distribution Protection is responsible for the electrical protection of the distribution systems by developing and evaluating system protection criteria for the safe and reliable operation of the system at distribution voltage levels. Distribution protection calculates relay settings for protection and control systems that implement automatic fault detection, isolation, and restoration actions in response

to disturbances on the distribution system.

Distribution Power Quality is responsible for managing and reporting on distribution reliability programs and providing technical support for constructing and operating the distribution system. The Power Quality group supports overall reliability performance of the distribution system by providing customer level and circuit level technical support to Service Consultants and individual customers, including primary metered and premium rollover services. The Power Quality group is responsible for administering the Company's infra-red program, and root cause analysis program, analyzing results of these program efforts, and assisting operations departments in determining a course of action.

Q. PLEASE DESCRIBE THE ACTIVITIES PERFORMED BY MAJOR UNDERGROUND ENGINEERING DEPARTMENT AND ASSOCIATED O&M COSTS.

A. For the Test Year, Major Underground Engineering Department O&M-related costs were approximately $293 thousand. As described earlier in my testimony, Major Underground Engineering is responsible for providing engineering design and construction support services associated with the Company's three phase underground electric distribution facilities. This includes designated underground areas, such as downtown Houston, the Texas Medical Center, and George Bush Intercontinental Airport, as well as individual commercial loads served with three-phase pad mounted transformers, underground getaways from substations, and underground dips under freeways. O&M-related costs for engineering design and construction services include budget development, schedule management, engineering drawings, work orders, and material and equipment review. This

group is also responsible for the development and engineering support of major underground hardening and resiliency projects and the protection and automation of underground equipment and network systems.

Q. PLEASE DESCRIBE THE ACTIVITIES PERFORMED BY POLICY AND COMPLIANCE DEPARTMENT AND THE ASSOCIATED O&M COSTS.

A. For the Test Year, Policy and Compliance O&M-related costs were approximately $1.054 million. As described earlier in my testimony, the Policy and Compliance O&M-related costs include the oversight of the Company's NERC Reliability Standards compliance program and support of the various operational departments in their compliance efforts. This includes understanding the requirements of NERC Reliability Standards and providing support to sufficiently demonstrate compliance with the NERC Reliability Standards. Additionally, Policy and Compliance functions as the point of contact and coordinator for communications with FERC, NERC, and Texas RE for all compliance-related activities. These costs also include support services for business planning and regulatory activities including the coordination of the CCN process.

Q. PLEASE DESCRIBE THE ACTIVITIES PERFORMED BY THE SUBSTATION ENGINEERING DEPARTMENT AND THE ASSOCIATED O&M COSTS.

A. For the Test Year, Substation Engineering Department O&M-related costs were approximately $681 thousand. As described earlier in my testimony, this department is responsible for engineering design and construction support services for the installation of and modification to the Company's substations, as well as engineering support for the installation and modification of Company-owned

equipment that is required in customer-owned substations. Engineering design and construction services includes budget development, schedule management, engineering drawings, work orders, and material and equipment review. This group is also responsible for the development and engineering support associated with substation physical infrastructure, security, hardening and resiliency efforts and the protection and automation of substation and transmission systems.

Q. PLEASE DESCRIBE THE ACTIVITIES PERFORMED BY THE TRANSMISSION ENGINEERING DEPARTMENT AND THE ASSOCIATED O&M COSTS.

A. For the Test Year, Transmission Engineering Department O&M-related costs were approximately $344 thousand. As described earlier in my testimony, this department has the responsibility for engineering design and construction support services for the installation and modification of the Company's transmission system. Engineering design and construction services include budget development, schedule management, engineering drawings, work orders, and material and equipment review. These O&M-related costs also include the development and engineering support of transmission line clearance, hardening, and resiliency efforts. In addition, transmission projects provides civil and structural engineering services for the substation and distribution projects groups.

Q. WHAT O&M COSTS ARE ASSOCIATED WITH THE ADMINISTRATIVE AND GENERAL CATEGORY FOR ELECTRIC ENGINEERING?

A. For the Test Year, Electric Engineering O&M costs were approximately $4.035 million. Of that amount, $693 thousand are attributable to administrative and general costs for the Electric Engineering Division. These expenses include

managerial labor, administrative support and miscellaneous general expenses for the Electric Engineering Division.

Q. ARE ALL OF THESE O&M EXPENDITURES REASONABLE AND NECESSARY?

A. Yes. The Test Year O&M expenses for Electric Engineering were related to necessary functions that directly impact the reliability and operation of the electric system to serve both existing and new customers.

VII. ELECTRIC ENGINEERING CAPITAL ADDITIONS

Q. WHAT CAPITAL INVESTMENT IN ELECTRIC ENGINEERING PROJECTS DOES CENTERPOINT HOUSTON SEEK TO INCLUDE IN RATE BASE IN THIS PROCEEDING?

A. The Company spent approximately $300 thousand on electric engineering plant additions between January 1, 2019 and December 31, 2023. These capital investments were prudently incurred and reasonable and necessary to satisfy service area growth, reliability improvements, service restoration, and operations & support activities.

Electric Engineering capital expenditures in support of the design and operation of the CenterPoint Houston electric system include the purchase of infrared cameras, power monitor equipment, mounting enclosures, battery controllers, engineering & technical services and the Distribution Design Studio software utilized by consultants and designers to design distribution facility additions and modifications.

Q. WHY WERE ELECTRIC ENGINEERING CAPITAL INVESTMENTS NECESSARY?

A. Engineering and technical services along with Distribution Design Studio are necessary for the safe and efficient engineering design of electric facility additions and modifications to support safety, growth, reliability, and resiliency. Power quality monitoring equipment and infra-red cameras are utilized in reliability investigations both at the customer and circuit level. As such they are essential tools for investigating and remediating reliability issues.

Q. IS ALL OF THE ELECTRIC ENGINEERING CAPITAL INVESTMENT THAT THE COMPANY SEEKS TO RECOVER IN RATES USED AND USEFUL IN THE PROVISION OF ELECTRIC SERVICE AND WAS THIS INVESTMENT PRUDENTLY INCURRED?

A. Yes. The $300 thousand for electric engineering plant additions that the Company added between January 1, 2019 and December 31, 2023 were prudently incurred and are used and useful in the operation of the electric system that serves both existing and new customers.

Q. DO YOU SUPPORT ANY OF THE CAPITAL ADDITIONS REFLECTED ON SCHEDULE M OF THE RATE FILING PACKAGE?

A. Yes. Along with Messrs. Mercado and Easton I sponsor portions of the "M" Schedules which relate to certain plant additions. Specifically, Mr. Mercado and I co-sponsor Schedules VI-M-1 and VI-M-3 (which includes VI-M-3.1 and VI-M-3.2); I support portions of the costs shown on Schedule M related to the design and engineering of the projects. Mr. Easton sponsors Schedule VI-M-2 (which includes VI-M-2.1 and VI-M-2.2). Additional information regarding Schedule M can be found in Mr. Mercado's testimony.

VIII. CONCLUSION

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

STATE OF Texas §
§
COUNTY OF Harris §

AFFIDAVIT OF MANDIE W. SHOOK

BEFORE ME, the undersigned authority, on this day personally appeared Mandie W. Shook who having been placed under oath by me did depose as follows:

1. "My name is Mandie W. Shook. I am of sound mind and capable of making this affidavit. The facts stated herein are true and correct based upon my personal knowledge.

2. I have prepared the foregoing Direct Testimony and the information contained in this document is true and correct to the best of my knowledge."

Further affiant sayeth not.

Mandie W Shook
Mandie W. Shook

SUBSCRIBED AND SWORN TO BEFORE ME on this 12 day of February, 2024.

SONIA VELA
NOTARY ID #1172328-1
My Commission Expires
August 30, 2027

Sonia Vela
Notary Public in and for the State of TX

My commission expires: 08-30-2027

THERE ARE NO EXHIBITS

TO

THE DIRECT TESTIMONY

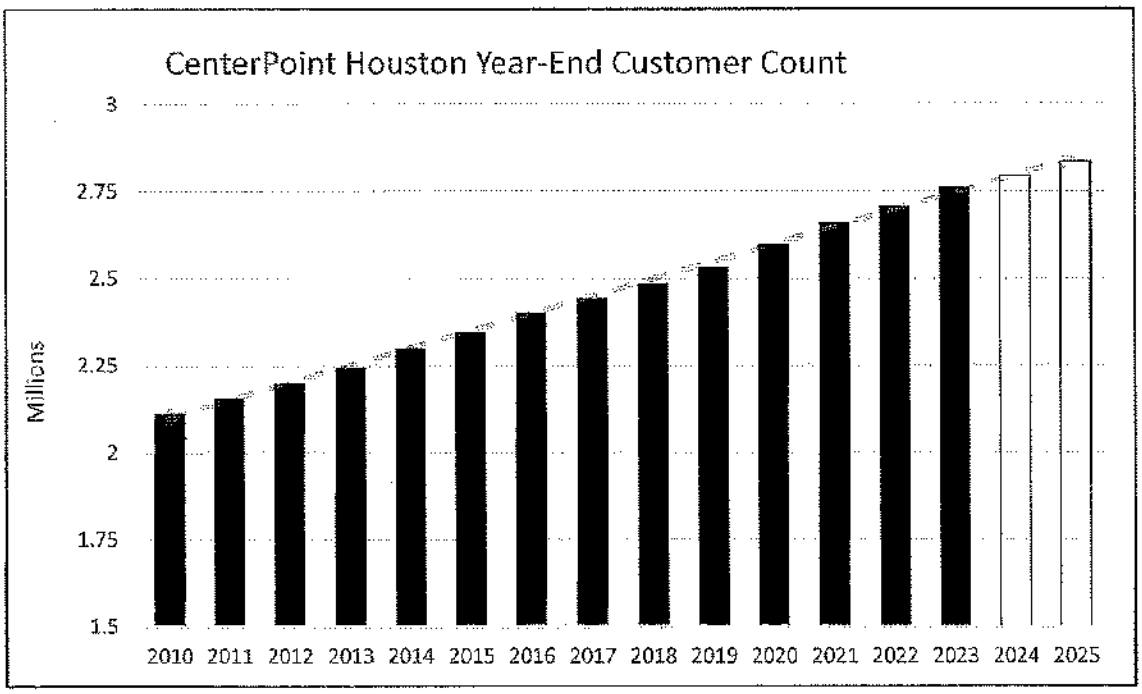
OF

MANDIE SHOOK

MANDIE SHOOK WORKPAPERS

WP MS-1 Customer Count by year

	Year end Customer Count
2010	2,110,582
2011	2,155,645
2012	2,199,721
2013	2,244,249
2014	2,299,211
2015	2,348,552
2016	2,403,433
2017	2,444,332
2018	2,485,413
2019	2,534,286
2020	2,599,827
2021	2,660,938
2022	2,706,598
2023	2,763,535
2024	2,794,003
2025	2,833,514



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PUC DOCKET NO. 56211

APPLICATION OF CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC FOR AUTHORITY TO CHANGE RATES	§ § §	PUBLIC UTILITY COMMISSION OF TEXAS

DIRECT TESTIMONY

OF

RINA H. HARRIS

ON BEHALF OF

CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC

MARCH 2024

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LIST OF EXHIBITS

EXHIBIT	DESCRIPTION
Exhibit RHH-1	Letters of Support
Exhibit RHH-2	AEDO Reaccreditation Letter

GLOSSARY OF ACRONYMS AND DEFINED TERMS

Acronym	Definition
AEDO	Accredited Economic Development Organization
CAT	Clean Air Technologies
CenterPoint Houston or the Company	CenterPoint Energy Houston Electric, LLC
CNP	CenterPoint Energy, Inc.
Commission	Public Utility Commission of Texas
DSM	Demand-Side Management
EDO	Economic Development Organization
EE	Energy Efficiency
EVSE	Electric Vehicle Supply Equipment
KA	Key Accounts
O&M	Operations and Maintenance
RFI	Request for Information
SBG&E	Strategic Business Growth & Engagement
Test Year	Calendar year ending December 31, 2023

EXECUTIVE SUMMARY - STRATEGIC BUSINESS GROWTH AND ENGAGEMENT
(RINA H. HARRIS)

The Strategic Business Growth & Engagement ("SBG&E") Division of CenterPoint Energy Houston Electric, LLC ("CenterPoint Houston" or the "Company") is responsible for overseeing large distribution key accounts, economic development, and the electrification strategy team designed to enhance support for strategic load growth across CenterPoint Houston's service area. Lynnae Wilson, Senior Vice President, Electric Business, explains in her testimony that the Company's investment strategy is driven by the four pillars of system growth, reliability, modernization, and clean energy enablement. The SBG&E division was newly created during the Test Year to allow CenterPoint Houston to provide intentional focus on supporting growth in our communities and provide a higher level of customer engagement to better understand customers' business objectives and, in turn, to better support customers' growth and reliability needs. My Testimony supports the SBG&E Divisions operations and maintenance ("O&M") expenses and capital investments. Additionally, my testimony explains how CenterPoint Houston has responded to changes in large customer demand since the Company's 2019 rate case.

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Rina H. Harris. My business address is 1111 Louisiana Street, Houston, Texas 77002.

Q. BY WHOM ARE YOU EMPLOYED?

A. I am employed by CenterPoint Energy Houston Electric, LLC ("CenterPoint Houston" or the "Company"), as Vice President of Strategic Business Growth and Engagement.

Q. ON WHOSE BEHALF ARE YOU SUBMITTING THIS DIRECT TESTIMONY?

A. I am submitting testimony on behalf of CenterPoint Houston.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL EXPERIENCE.

A. I received a Bachelor of Science degree in Public Affairs from Indiana University in 2005. I also received a Master of Science degree in Public Affairs from Indiana University in 2007.

Prior to my current position, I was the Director of Energy Solutions – Midwest. I was responsible for managing all aspects of large account management, economic development, and gas and electric energy efficiency ("EE") and DSM programs for CenterPoint Energy, Inc.'s Indiana and Ohio regulated utilities. Prior to that, I was the Manager of Gas Conservation and Demand-Side Management ("DSM"), and I had responsibility for the management of all aspects of the gas

conservation portfolio for CenterPoint Energy, Inc.'s ("CNP") regulated gas utilities in Indiana and Ohio and oversight over all evaluation and planning activities. Before that, I was the Supervisor of DSM evaluation and planning responsible for managing all electric and gas evaluation activities, program planning, and conservation-related market research. I have also worked in market research with a focus on conservation initiatives related to demographic analysis, segmentation, targeted marketing, and other special projects.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PUBLIC UTILITY COMMISSION OF TEXAS ("COMMISSION") OR OTHER REGULATORY AUTHORITIES?

A. Yes. I have testified in other jurisdictions, most recently in Cause No. 45564 before the Indiana Utility Regulatory Commission on behalf of CNP's Indiana electric utility that was seeking regulatory approval for two proposed natural gas combustion turbines. I have also testified in several other proceedings before the Indiana Utility Regulatory Commission on behalf of CNP's Indiana electric utility and Indiana gas utility.

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY IN THIS PROCEEDING?

A. At the end of the calendar year ending December 31, 2023 ("Test Year"), the electric organization consisted of six divisions: (1) Distribution Operations and Service Delivery, (2) Major Underground and Distribution Modernization, (3) Electric Engineering, (4) High Voltage and Systems Operations, (5) Grid Transformation and Investment Strategy, and (6) Strategic Business Growth and

Engagement. My testimony identifies the functions of the Strategic Business Growth and Engagement Division and describes how the division is structured and staffed to enhance the customer service provided to large customers while maintaining a high level of support for community priorities through our continued engagement of local economic development organizations. The Company has seen a tremendous increase in interconnection requests as large customers seek to electrify their existing operations that have traditionally been powered by internal combustion engines as well as the rapid expansion of new industries such as hydrogen production. I explain the steps the Company has taken to efficiently and transparently interconnect these customers, while still working with customers of all sizes to ensure they receive reliable and resilient service. My testimony also supports the $2.625 million in O&M expense associated with activities performed by the SBG&E Division.

Q. ARE YOU SPONSORING ANY EXHIBITS IN THIS PROCEEDING?

A. Yes. I am sponsoring the following exhibits:

- **Exhibit RHH-1**: Letters of Support
- **Exhibit RHH-2**: AEDO Reaccreditation Letter

Q. HOW DOES YOUR TESTIMONY RELATE TO OTHER WITNESSES?

A. My organization is now part of the Customer Experience Unit, but was part of the operations group during the Test Year, so I am one of several witnesses who present testimony on the operations of the Electric Business Unit. The following witnesses present testimony on the operations of the Electric Business Unit:

OVERVIEW OF CENTERPOINT OPERATIONS WITNESSES

Witness, Title	Subjects Addressed
Lynnae Wilson, Senior Vice President, Electric Business Unit	• Overview of CenterPoint Houston and its operations; • Company's organizational and management structure and Company's commitment to its core values; • Summarize the Company's rate filing package, • The Company's efforts related to reliability and resiliency, and the impact of economic and customer growth in the Company's service territory since its last base rate case.
Eric Easton, Vice President, Grid Transformation & Investment Strategy	• How Distribution and Transmission Planning groups identify and develop future capital investment projects; • How capital investments are prioritized and optimized; • The reliability reporting process and various reporting tools that have been developed; • How the addition of a Capital Program Management department will support the efficient execution of capital projects and programs; • How the Strategic Coordination and Analysis department aligns strategic initiatives, identifies synergies, and improves interdepartmental coordination on projects; and • Supports the reasonableness and necessity of Grid Transformation & Investment Strategy-related Test Year O&M expense and capital investment since 2019 and the related schedules.
David Mercado, Vice President, High Voltage and System Operations	• Overview of the structure and functions of the High Voltage and System Operations Division; • Operations in the High Voltage and System Operations Division since 2019; • Key programs and initiatives undertaken by the High Voltage and System Operations; • Expense planning and cost control measures; and • Supports the reasonableness and necessity of High Voltage and System Operations-related Test Year O&M expense and capital investment since 2019 and the related schedules.

Randal M. Pryor, Vice President, Major Underground & Distribution Modernization	• MUG & Distribution Modernization division and the major programs and initiatives; • Implications for MUG & Distribution Modernization due to the growth the Company's distribution system has experienced since 2019; • Processes used to plan, monitor, and control investments and expenditures; and • Supports the reasonableness and necessity of Major Underground & Distribution Modernization-related Test Year O&M expenses and distribution capital investment since 2019 and the related schedules.
Deryl Tumlinson, Vice President, Distribution Operations & Service Delivery	• Distribution Operations and Service Delivery Division; • Quotidian activities and major programs and initiatives that drive distribution investment and expense; • Impacts and operational responses that occurred as a response to significant weather events; • Impact of supply chain disruptions; • Long lead-time asset purchases; and • Supports the reasonableness and necessity of Distribution Operations & Service Delivery-related Test Year O&M expenses and distribution capital investment since 2019 and the related schedules.
Mandie Shook, Vice President, Electric Engineering	• Creation of the Electric Engineering Division; • Operations within the Electric Engineering Division; • Major programs and initiatives that drive Electric Engineering investment and expense, including the reliability initiative and resiliency standards; • Planning and cost control programs within the Electric Engineering Division; • Supports the reasonableness and necessity of Electric Engineering-related O&M expense and capital costs incurred since 2019 and related schedules.
Rina Harris, Vice President, Strategic Business Growth & Engagement	• Functions of the Strategic Business Growth and Engagement Division; • Explains how the division is structured and staffed to enhance the customer service provided to large customers; • Steps taken to understand future customer needs so as to efficiently support large customer's growth and reliability needs; and • Supports the reasonableness and necessity of test year O&M costs.

1

II. DESCRIPTION OF THE STRATEGIC BUSINESS GROWTH & ENGAGEMENT DIVISION

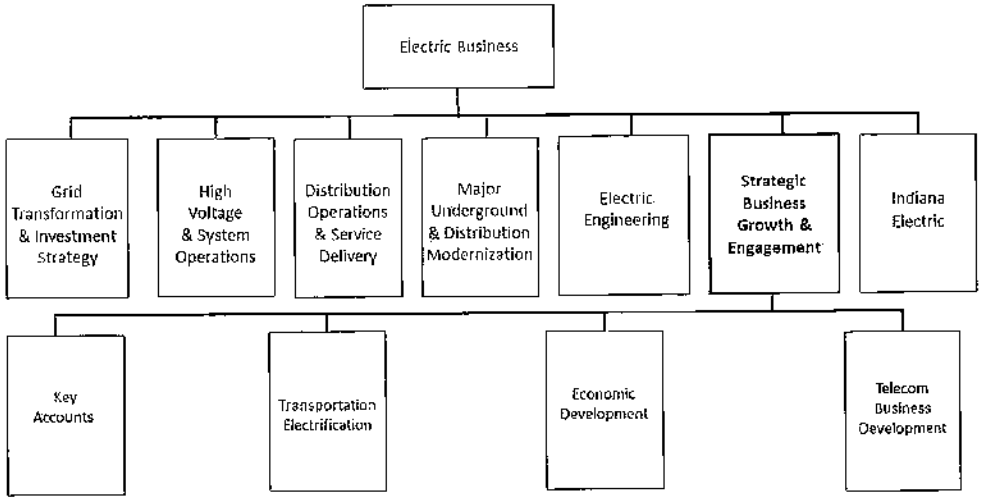
Q. PLEASE EXPLAIN THE ROLE OF THE STRATEGIC BUSINESS GROWTH & ENGAGEMENT ("SBG&E") DIVISION WITHIN CENTERPOINT HOUSTON.

A. The SBG&E Division was newly formed in 2023 to better support the Company's large customer class, their business objectives, and their short- and long-term power needs. In today's economy, the way customers think about and use power is changing. Given the onset of emerging technologies, electrification, and customers' focus on cleaner energy, customer expectations of CenterPoint Houston, its reliability, service, and support, is also changing. For these reasons, it is vitally important that CenterPoint Houston clearly communicates our priorities for customer engagement, provides solutions, and helps our customers better understand what the Company is doing how they can play a productive role in these efforts. CenterPoint Energy is constantly working to develop a more intentional focus that will allow us to better support all of our customers and prepare our grid for the future.

Q. WHAT IS THE BASIC STRUCTURE OF THE SBG&E DIVISION?

A. The SBG&E division comprises four departments: the large distribution key accounts department, the transportation electrification strategy department, the economic development department, and the telecom business development department. An organizational chart of the division is shown in Figure 1.

Figure 1: Organization Chart of Strategic Business Growth and Engagement



1

2 **A. Key Accounts Department**

3 **Q. PLEASE DESCRIBE THE DISTRIBUTION KEY ACCOUNTS ("KA")**
4 **DEPARTMENT.**

5 A. The Key Accounts department serves as a main point of contact for the
6 approximately 450 large commercial, industrial, and municipal customers served
7 by CenterPoint Houston, including critical facilities such as airports, hospitals,
8 emergency call centers, natural gas infrastructure, and municipal utilities. This team
9 proactively engages with key customers to resolve impediments and provide
10 solutions on new construction projects, as well as assist in resolutions related to
11 reliability concerns and providing day-to-day operations support.

12 **Q. PLEASE DESCRIBE AN INSTANCE WHERE THE KEY ACCOUNTS**
13 **DEPARTMENT HAS PROACTIVELY SUPPORTED AN EXISTING**
14 **CUSTOMER.**

A. The Key Accounts department has been well received by the customers it serves. A specific example is the effort to support Texas Medical Center, the Houston region's largest employment centers and one of the leading medical centers in the world. They have expressed appreciation for how their status as a Key Account has resulted in increased responsiveness and a level of predictability that helps them move vital infrastructure projects ahead. Documentation of this can be found in a Letter of support in Exhibit RHH-1.

B. Transportation Electrification Department

Q. PLEASE DESCRIBE THE TRANSPORTATION ELECTRIFICATION DEPARTMENT.

A. The Transportation Electrification department coordinates service and support for large electric vehicle charging projects, including public charging stations, commercial fleet charging stations, and charging stations at large-multifamily residential developments. The team intakes a customer's initial plans for deploying electric vehicle supply equipment ("EVSE") and serves as the single point of contact for the customer until they begin the service upgrade or new service process. The team also gathers market intelligence that enables the Company to plan for the increased use and penetration of electric vehicle charging and electrification in CenterPoint Houston's service area.

Q. HOW DOES CENTERPOINT SUPPORT ELECTRIC TRANSPORTATION INITIATIVES SOUGHT BY ITS CUSTOMERS?

A. The Electrification group works closely with commercial customers that have displayed interest in electrifying their fleet. The team intakes a customer's initial plans for deploying EVSE and provides site feasibility analysis for sites within the Company's service area considered by the customer. The site feasibility analysis entails a thorough review of the site to evaluate existing electrical utility infrastructure, as well as potential land rights impediments and/or State, City, or County permit jurisdictional impediments that could result in delays for electric service acquisition. Distribution Accounts discusses these site-specific circumstances with the customer so that they can make an informed decision on moving forward with EV Charging deployed at the site. In this role the team serves as the single point of contact for the customer until they begin the service upgrade or new service process. Providing this single point of contact has served the Company well as we have received feedback from customers who have sited their projects in CenterPoint territory specifically due to the team's engagement and follow through. Utilizing a single point of contact to leverage a broad team of CenterPoint expertise, entities developing public EV charging stations have benefited from a consistent customer service experience and predictable timeline to plan for infrastructure improvements. A recent example is the way that Shell utilized the single point of contact to begin initial conversation of their charging deployment plans. They have recognized how CenterPoint's "innovative approach"

to developing E-Mobility infrastructure has positively impacted their efforts. Consultation with CenterPoint Energy via one contact assists the customer with making site commitment decisions quickly, saving time and additional expense. In addition, CenterPoint worked closely with Sysco, whose Global Support Center is located within our service territory, on their electrification efforts. They have noted how the "synergistic relationship" fostered by the Electrification group has helped their company respond to complex issues and identify "creative resolutions…to an everchanging industry in electrification." Letters of support from Shell and Sysco are included in Exhibit RHH-1.

Q. WHAT ARE THE CHALLENGES THAT CENTERPOINT IS EXPERIENCING IN THIS SPACE?

A. Deployment of publicly available, fast EV charging locations has expanded in the last couple of years, and CenterPoint has worked with public and private sector customers across our region to identify their electrical equipment needs and to understand how much circuit capacity they may utilize. As the charging infrastructure continues to grow and, in some cases, begins to cluster in certain areas, the Company may begin to realize grid constraints that make it costly to upgrade service to the customers. For this reason, the proactive engagement employed by the electrification team to understand customer charging needs and timelines is of the utmost importance.

C. Economic Development Department

Q. PLEASE DESCRIBE THE ECONOMIC DEVELOPMENT DEPARTMENT.

A. The Economic Development department is charged with gathering market intelligence that enables the Company to anticipate and plan for load growth across CenterPoint Houston's service area. The Economic Development department supports approximately 55 economic development organizations by serving as a trusted energy advisor and by supporting their efforts to attract new businesses. Additionally, to support future growth through the delivery of needed infrastructure serving the greater Houston region, the Economic Development department actively participates on several economic development boards and committees across the region.

Q. WHAT IS THE ROLE OF ECONOMIC DEVELOPMENT WITHIN CEHE?

A. By engaging directly and daily with approximately 55 economic development organizations ("EDOs") across the Company's service area, the economic development team facilitates a two-way flow of information that benefits both the Company and the communities we serve. This team gathers ground-level intelligence directly from the EDOs they interact with, leveraging that information to make better decisions inside our organization. Additionally, the economic development team members are able to inform the EDOs and the various stakeholders brought-into those organizations about the CenterPoint processes that are necessary in order for those EDOs to attract jobs and investment. While the strategies across the Company's service area vary due to the unique nature and scale of each community and customer we serve, many include revitalization and redevelopment projects, road infrastructure initiatives, workforce development

programs and business retention and expansion activities targeting industries that align with either the existing offerings or the vision for growth in each individual community. Economic incentives in Texas are offered by the local economic development organizations, as a result, economic development in the state is lead with a bottom-up approach through these strategies.

In September 2023, CenterPoint's Economic Development department was recertified as an Accredited Economic Development Organization ("AEDO") by the International Economic Development Council; the recertification letter is included in Exhibit RHH-2. As an AEDO, CenterPoint Houston plays an essential role in supporting local and regional responses to the many Requests for Information ("RFIs") issued by the Governor's Office of Economic Development and Tourism to economic development organizations across the state of Texas. Within each RFI, a prospective business will provide the energy needs and desired timeline to receive electric and gas service for their given project. The economic development team receives project inquiries directly from the state but, because of the bottom-up approach long-championed by the State of Texas, provides responses to the state's RFIs in collaboration with local economic development organizations. The importance of this team's longstanding relationship with the local EDOs is evidenced by the trust these organizations place in CenterPoint to deliver accurate and timely information in support of their locally driven initiatives. The economic development team coordinates with the Company's substation planning, service area managers, and transmission accounts teams to deliver quality and reliable

information to EDOs in support of their RFI responses, and to attend site visits with prospective customers when a site within the Company's service area is short-listed.

Q. HOW DOES THE ECONOMIC DEVELOPMENT TEAM ENABLE AND SUPPORT CUSTOMER GROWTH?

A. Local EDOs engage the economic development team on a regular basis to support their efforts in responding to RFIs issued by the state of Texas as well as other leads that they identify. The landing of a prospective business or the retention of businesses that experience operational growth results in growing energy needs. Customer growth, if communicated and planned-for appropriately, provides opportunities to enhance reliability and service. The economic development team facilitates conversations between CEHE operations and community and business leaders to identify solutions that will enable the retention and expansion of businesses of all sizes within CEHE service territories. Additionally, the information brought back to the Company through the relationships with local EDOs about the status of active prospective business leads, often early in the prospect's decision-making timeline, allow CEHE operations to adequately plan for future customer growth.

The economic development team educates customers on the process and timeline to deliver electric service which enables local EDOs to respond strategically to the state RFI's in the furtherance of their local economic development priorities. This allows the EDOs to target businesses which fit the

existing infrastructure and to develop long-term plans for larger electric load-using prospects where additional infrastructure must be built-out.

Letters of support are written by the economic development team to support grant applications for various projects and initiatives that align with the economic development strategies of the communities. Service on the various EDO boards and committees across the CenterPoint service territory also brings our subject matter expertise to the table when these organizations are making decisions about how best to pursue their local economic development priorities.

D. Telecom Business Development Department

Q. PLEASE DESCRIBE THE TELECOM BUSINESS DEVELOPMENT DEPARTMENT.

A. The Company created the telecom business development department in early 2023 to proactively identify opportunities for partnership with telecommunication organizations, enabling faster deployment of wireless and wireline technologies that promote economic development for the greater Houston region. Telecommunication organizations using the Company's assets pay substantial lease payments each year, which ultimately reduce electric rates.

III. OPERATIONS SINCE DOCKET NO. 49421

Q. HOW HAS CENTERPOINT HOUSTON'S APPROACH TO LARGE CUSTOMER GROWTH AND ENGAGEMENT CHANGED SINCE DOCKET NO. 49421?

A. CenterPoint Houston has always been dedicated to providing safe, reliable and cost-effective services to all of its customers. As further discussed by Company witness Shonda Royston-Johnson, the Company strives to provide exceptional customer service to every customer, large or small. Recent changes, however, in large customer load profiles have required the company to retool its approach to serving these customers. To this end, the Company created the SBG&E division in 2023, bringing together three departments with a focus on supporting large load customers and emerging sectors to emphasize the Company's commitment to customer service. The Key Accounts Group was previously a part of the Power Delivery Solutions organization, both Economic Development and the Transportation Electrification team, previously named Clean Air Technologies, were housed in the Customer Operations group, and staff that formed the Telecom Business Development Department were housed in including the Engineering and Asset Optimization group.

Q. PLEASE SUMMARIZE HOW LARGE CUSTOMERS' LOAD PROFILES ARE CHANGING.

A. Within the Company's service area, dozens of large customers have begun shifting towards electrifying processes traditionally powered by internal combustion engines and steam. This includes electrifying transportation fleets. Internally, the Company calls this shift "electrification." The Company expects this process to continue accelerating as electric vehicle technology advances and becomes less expensive. Outside of the electrification trend, the prospective loads communicated

to CenterPoint during the site selection process have grown at incredible rates over the past five years. Looking at the subset of projects that have utilized the RFI process through the State of Texas, prospective loads have grown significantly as have the number of prospective projects that our team is being asked to support. One industry where we have seen substantial prospective load growth over the past two years is around hydrogen production. Prospective hydrogen producers have communicated to our team that the tax credits created under the Inflation Reduction Act are making the CenterPoint service territory very attractive for hydrogen production projects. Our team is currently engaged with prospective developments that could add more than 3.7 Gigawatts of load to our network if built out.

Q. PLEASE EXPLAIN HOW CUSTOMERS' ADOPTION OF ELECTRIFICATION IMPACTS THE WAY THE COMPANY PROVIDES SERVICE.

A. As a result of increased electrification, the Company has needed to modify and upgrade certain parts of its transmission and distribution system to accommodate additional load. Because the Company expects electrification to continue, the Company must continue to modify and upgrade its transmission and distribution system to serve new loads from large customers in a reliable and timely manner. Additionally, new electrification load is more difficult to predict than other forms of load growth, which requires CenterPoint Houston to work more closely with customers to timely serve new loads.

Q. PLEASE DESCRIBE HOW THE COMPANY HAS IMPROVED ITS RELATIONSHIP, COMMUNICATIONS, AND SERVICE WITH CUSTOMERS SINCE THE LAST RATE CASE.

A. The Company understands that service and reliability are more than just poles and wires service for customers, as it represents growth, profitability, and good reputation. As a steward of economic development and community vitality, we continue to support increased employment opportunities, the quality of place, and quality of life within our service territory. To this end, the Company has taken intentional efforts in building and improving its relationship and communications with large customers, resulting in meaningful customer experiences and improved service. The Company now proactively engages with its largest and fastest growing customers to better understand their growth plans and challenges so that it can determine ways it can plan for future service needs and provide better support. The Company has worked to increase the timeliness and transparency of its communications, which has helped to ameliorate historical points of frustration.

Q. PLEASE PROVIDE EXAMPLES OF HOW THE COMPANY HAS DEMONSTRATED ENHANCED FOCUS ON CUSTOMER COMMUNICATIONS, COLLABORATION, AND SERVICE.

A. Since Docket No. 49421, the Company facilitated seven Customer Advisory Council Meetings that were comprised of influential large customers, businesses, and community leaders. The meetings provided a forum for the Company to highlight the strategy for improved resiliency and reliability within its communities and how the Company plans to support the continued growth within its service area.

The forum also allowed customers to provide feedback on how the Company could better support their business objectives and identify customer challenges for remediation. As a result of the feedback we've received, the SBG&E team refined the Company's large customer strategy to ensure proactive and frequent communications within its processes. The 2023 Customer Advisory Council Meetings were focused on distribution-served and large industrial customers.

Furthermore, the Company has incorporated frequent project status meetings with Customers to ensure projects remain on track. The SBG&E leadership and team hold regular customer meetings to discuss long-term growth to ensure projects are submitted to the Company as early as possible. Due to lead times for material or interconnections of load, it is important for the Company to have information early and often.

Finally, to help facilitate proactive conversations with large distribution customers, the Company has developed a reliability dashboard that enables better engagement and proactive solutioning. The dashboard highlights the past several years of reliability data by distribution customer and provides insights into reliability performance and causes for service interruption. The dashboard will support the Company with performance management, providing line of sight to the customer experience and proactively allowing the Company to solve problems. The dashboard is a tool that allows the Company to have a perspective of customer experiences and enables the Company to drive better customer experiences.

Q. HAS THE COMPANY ENGAGED WITH H-E-B AS PART OF THE

COMPANY'S IMPROVEMENTS IN CUSTOMER COMMUNICATIONS AND COLLABORATION?

A. Yes.

Q. HOW HAS THE COMPANY ENGAGED WITH H-E-B SINCE THE 2019 RATE CASE?

A. The Company's refined customer strategy has significantly improved its relationship with H-E-B. Over the past 18 months, the Company received opportunities to visit and tour several H-E-B plants to fully appreciate and understand H-E-B's manufacturing and production processes and the impact that electric service reliability has on H-E-B's business. The Company and H-E-B have worked together to develop trust, a result of proactive, frequent, and timely communications. In 2023, H-E-B initiated multiple new store/warehouse construction projects in the Company's service area. As a result of proactive, frequent, and timely communication and coordination between the Company and H-E-B, the construction projects were completed within H-E-B's timelines. While meeting timelines is an expectation, several projects were complex in nature, requiring the Company to quickly react to issues and challenges identified along the way. The Company worked to coordinate large internal teams to remediate issues, quickly and timely, to meet H-E-B's need dates.

Furthermore, the continued dialogue and collaboration allowed the Company the opportunity to procure appropriately sized transformers for the H-E-B projects quicker than prior procurements for H-E-B projects. Given the proactive, frequent, and timely communications, the Company is pleased with the