CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC
COMPUTATION OF DISTRIBUTION FUNCTION
RESERVE REALLOCATION AND REMAINING LIFE
AT DECEMBER 31, 2017

Account	Vintage Year	Age	Plant Balance at 12/31/2017	Average Service Life	Remaining Life	Plant $ x Remaining Life	Net Salvage %	Theoretical Reserve	Proration Factor	Allocated Reserve	Composite Remaining Life
E36002	2017	0.5	1,035,280.00	60.00	59.63	61,732,483.36	0.00%	6,405.28	1.2273	7,861.12	
E36002	2003	14.5	26,230.79	60.00	49.60	1,300,928.62	0.00%	4,548.65	1.2273	5,582.50	
E36002	1993	24.5	9,652.00	60.00	42.78	412,922.89	0.00%	2,769.95	1.2273	3,399.53	
E36002	1992	25.5	3,563.69	60.00	42.12	150,084.98	0.00%	1,062.27	1.2273	1,303.72	
E36002	1991	26.5	133,604.90	60.00	41.45	5,538,202.34	0.00%	41,301.53	1.2273	50,688.88	
E36002	1990	27.5	12,255.00	60.00	40.79	499,914.54	0.00%	3,923.09	1.2273	4,814.76	
E36002	1989	28.5	98,495.92	60.00	40.14	3,953,336.65	0.00%	32,606.98	1.2273	40,018.16	
E36002	1988	29.5	110,186.60	60.00	39.48	4,350,713.49	0.00%	37,674.71	1.2273	46,237.73	
E36002	1987	30.5	35,052.50	60.00	38.84	1,361,332.19	0.00%	12,363.63	1.2273	15,173.74	
E36002	1986	31.5	8,912.36	60.00	38.19	340,391.64	0.00%	3,239.17	1.2273	3,975.39	
E36002	1985	32.5	58,842.93	60.00	37.55	2,209,756.79	0.00%	22,013.65	1.2273	27,017.10	
E36002	1984	33.5	31,641.87	60.00	36.92	1,168,164.68	0.00%	12,172.46	1.2273	14,939.12	
E36002	1983	34.5	22,383.92	60.00	36.29	812,265.45	0.00%	8,846.16	1.2273	10,856.79	
E36002	1982	35.5	52,575.41	60.00	35.66	1,874,939.54	0.00%	21,326.42	1.2273	26,173.66	
E36002	1981	36.5	42,710.91	60.00	35.04	1,496,630.01	0.00%	17,767.08	1.2273	21,805.33	
E36002	1980	37.5	9,275.96	60.00	34.43	319,325.85	0.00%	3,953.86	1.2273	4,852.53	
E36002	1979	38.5	84,381.29	60.00	33.81	2,853,274.00	0.00%	36,826.72	1.2273	45,197.01	
E36002	1978	39.5	62,809.70	60.00	33.21	2,085,807.76	0.00%	28,046.24	1.2273	34,420.82	
E36002	1977	40.5	3,379.38	60.00	32.61	110,195.36	0.00%	1,542.79	1.2273	1,893.45	
E36002	1976	41.5	12,096.35	60.00	32.01	387,240.82	0.00%	5,642.34	1.2273	6,924.77	
E36002	1975	42.5	28,403.12	60.00	31.42	892,526.58	0.00%	13,527.68	1.2273	16,602.36	
E36002	1974	43.5	46,001.17	60.00	30.84	1,418,665.04	0.00%	22,356.75	1.2273	27,438.18	
E36002	1973	44.5	54,874.45	60.00	30.26	1,660,571.10	0.00%	27,198.27	1.2273	33,380.11	
E36002	1972	45.5	14,274.54	60.00	29.69	423,791.39	0.00%	7,211.35	1.2273	8,850.41	
E36002	1971	46.5	8,376.19	60.00	29.12	243,929.98	0.00%	4,310.69	1.2273	5,290.46	
E36002	1970	47.5	15,606.33	60.00	28.56	445,724.59	0.00%	8,177.59	1.2273	10,036.26	
E36002	1969	48.5	6,031.08	60.00	28.01	168,901.00	0.00%	3,216.06	1.2273	3,947.04	
E36002	1968	49.5	4,078.19	60.00	27.46	111,969.36	0.00%	2,212.03	1.2273	2,714.80	
E36002	1967	50.5	12,977.26	60.00	26.91	349,240.52	0.00%	7,156.58	1.2273	8,783.19	
E36002	1966	51.5	8,777.32	60.00	26.37	231,491.19	0.00%	4,919.13	1.2273	6,037.20	
E36002	1965	52.5	1,590.33	60.00	25.84	41,097.02	0.00%	905.38	1.2273	1,111.16	
E36002	1964	53.5	7,446.50	60.00	25.32	188,511.20	0.00%	4,304.65	1.2273	5,283.04	
E36002	1963	54.5	5,485.98	60.00	24.79	136,024.60	0.00%	3,218.90	1.2273	3,950.52	
E36002	1962	55.5	2,144.30	60.00	24.28	52,064.53	0.00%	1,276.56	1.2273	1,566.70	
E36002	1961	56.5	654.08	60.00	23.77	15,548.42	0.00%	394.94	1.2273	484.70	
E36002	1960	57.5	653.06	60.00	23.27	15,195.61	0.00%	399.80	1.2273	490.67	
E36002	1959	58.5	48,565.57	60.00	22.77	1,105,888.54	0.00%	30,134.09	1.2273	36,983.22	
E36002	1958	59.5	1,932.30	60.00	22.28	43,050.19	0.00%	1,214.80	1.2273	1,490.91	
E36002	1957	60.5	2,472.87	60.00	21.79	53,891.78	0.00%	1,574.67	1.2273	1,932.58	

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E36002	1956	61.5	1,108.69	60.00	21.31	23,629.38	0.00%	714.87	1.2273	877.35	
E36002	1955	62.5	1,459.10	60.00	20.84	30,404.65	0.00%	952.36	1.2273	1,168.82	
E36002	1954	63.5	1,741.65	60.00	20.37	35,475.02	0.00%	1,150.40	1.2273	1,411.87	
E36002	1953	64.5	1,290.08	60.00	19.90	25,678.84	0.00%	862.10	1.2273	1,058.04	
E36002	1952	65.5	882.54	60.00	19.45	17,162.18	0.00%	596.50	1.2273	732.08	
E36002	1951	66.5	1,527.81	60.00	18.99	29,018.15	0.00%	1,044.17	1.2273	1,281.50	
E36002	1950	67.5	1,374.11	60.00	18.55	25,483.69	0.00%	949.38	1.2273	1,165.17	
E36002	1949	68.5	3,286.84	60.00	18.10	59,501.89	0.00%	2,295.14	1.2273	2,816.80	
E36002	1948	69.5	2,338.31	60.00	17.67	41,308.07	0.00%	1,649.84	1.2273	2,024.83	
E36002	1947	70.5	2,690.26	60.00	17.23	46,363.00	0.00%	1,917.54	1.2273	2,353.38	
E36002	1946	71.5	1,828.27	60.00	16.81	30,726.95	0.00%	1,316.15	1.2273	1,615.30	
E36002	1945	72.5	2,041.85	60.00	16.38	33,454.73	0.00%	1,484.27	1.2273	1,821.63	
E36002	1944	73.5	2,485.23	60.00	15.97	39,682.69	0.00%	1,823.85	1.2273	2,238.39	
E36002	1943	74.5	1,502.58	60.00	15.56	23,373.01	0.00%	1,113.03	1.2273	1,366.01	
E36002	1942	75.5	1,065.07	60.00	15.15	16,133.57	0.00%	796.18	1.2273	977.14	
E36002	1941	76.5	6,443.08	60.00	14.75	95,004.89	0.00%	4,859.67	1.2273	5,964.21	
E36002	1940	77.5	3,416.43	60.00	14.35	49,017.16	0.00%	2,599.48	1.2273	3,190.31	
E36002	1939	78.5	2,479.99	60.00	13.95	34,606.52	0.00%	1,903.21	1.2273	2,335.79	
E36002	1938	79.5	1,776.07	60.00	13.57	24,093.44	0.00%	1,374.51	1.2273	1,686.92	
E36002	1937	80.5	3,943.58	60.00	13.18	51,982.93	0.00%	3,077.20	1.2273	3,776.61	
E36002	1936	81.5	3,219.41	60.00	12.80	41,215.24	0.00%	2,532.49	1.2273	3,108.09	
E36002	1935	82.5	2,977.59	60.00	12.43	37,001.95	0.00%	2,360.89	1.2273	2,897.49	
E36002	1934	83.5	557.29	60.00	12.06	6,718.82	0.00%	445.31	1.2273	546.52	
E36002	1933	84.5	1,196.63	60.00	11.69	13,988.40	0.00%	963.49	1.2273	1,182.48	
E36002	1932	85.5	961.82	60.00	11.33	10,894.97	0.00%	780.24	1.2273	957.58	
E36002	1931	86.5	4,166.84	60.00	10.97	45,709.23	0.00%	3,405.02	1.2273	4,166.84	
E36002	1930	87.5	6,648.51	60.00	10.62	70,580.78	0.00%	5,472.16	1.2273	6,648.51	
E36002	1929	88.5	4,892.84	60.00	10.27	50,230.34	0.00%	4,055.67	1.2273	4,892.84	
E36002	1928	89.5	5,253.09	60.00	9.92	52,115.06	0.00%	4,384.51	1.2273	5,253.09	
E36002	1927	90.5	9,986.56	60.00	9.58	95,664.60	0.00%	8,392.15	1.2273	9,986.56	
E36002	1926	91.5	2,470.07	60.00	9.24	22,826.86	0.00%	2,089.62	1.2273	2,470.07	
E36002 Total			2,210,688.31			101,735,040.62		515,104.30		631,481.87	46.02
E36101	2017	0.5	7,825,697.00	60.00	59.50	465,632,180.04	-10.00%	71,676.73	1.2273	87,968.02	
E36101	2016	1.5	3,169,399.00	60.00	58.50	185,414,246.96	-10.00%	87,077.71	1.2273	106,869.45	
E36101	2015	2.5	10,714,015.00	60.00	57.50	616,083,718.94	-10.00%	490,548.32	1.2273	602,044.24	
E36101	2014	3.5	4,712,189.00	60.00	56.50	266,258,092.72	-10.00%	302,009.53	1.2273	370,652.78	
E36101	2013	4.5	6,802,079.00	60.00	55.51	377,556,333.02	-10.00%	560,420.79	1.2273	687,797.92	
E36101	2012	5.5	2,293,435.00	60.00	54.51	125,011,311.81	-10.00%	230,904.45	1.2273	283,386.34	
E36101	2011	6.5	1,601,978.00	60.00	53.51	85,723,701.07	-10.00%	190,574.61	1.2273	233,890.00	

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E36101	2010	7.5	358,808.50	60.00	52.51	18,842,695.62	-10.00%	49,239.93	1.2273	60,431.59	
E36101	2009	8.5	253,372.50	60.00	51.52	13,053,444.62	-10.00%	39,396.60	1.2273	48,350.99	
E36101	2008	9.5	598,125.50	60.00	50.52	30,219,585.10	-10.00%	103,912.32	1.2273	127,530.38	
E36101	2007	10.5	1,608,265.00	60.00	49.53	79,657,172.46	-10.00%	308,710.00	1.2273	378,876.20	
E36101	2006	11.5	788,479.50	60.00	48.54	38,270,461.03	-10.00%	165,702.33	1.2273	203,364.54	
E36101	2005	12.5	1,857,508.00	60.00	47.55	88,316,276.64	-10.00%	424,127.06	1.2273	520,526.21	
E36101	2004	13.5	5,003,222.00	60.00	46.56	232,928,402.40	-10.00%	1,233,190.16	1.2273	1,513,479.92	
E36101	2003	14.5	833,658.50	60.00	45.57	37,987,708.69	-10.00%	220,583.02	1.2273	270,718.98	
E36101	2002	15.5	2,991,009.00	60.00	44.58	133,343,099.44	-10.00%	845,486.41	1.2273	1,037,655.63	
E36101	2001	16.5	2,541,775.00	60.00	43.60	110,815,010.14	-10.00%	764,343.98	1.2273	938,070.47	
E36101	2000	17.5	1,411,649.00	60.00	42.62	60,159,003.18	-10.00%	449,898.84	1.2273	552,155.61	
E36101	1999	18.5	3,306,619.00	60.00	41.64	137,679,976.87	-10.00%	1,113,147.99	1.2273	1,366,153.57	
E36101	1998	19.5	977,194.50	60.00	40.66	39,735,239.76	-10.00%	346,434.55	1.2273	425,175.10	
E36101	1997	20.5	776,225.50	60.00	39.69	30,809,073.17	-10.00%	289,015.04	1.2273	354,704.80	
E36101	1996	21.5	111,300.50	60.00	38.72	4,309,914.86	-10.00%	43,415.44	1.2273	53,283.27	
E36101	1995	22.5	230,493.50	60.00	37.76	8,703,457.61	-10.00%	93,979.46	1.2273	115,339.90	
E36101	1994	23.5	670,031.50	60.00	36.80	24,658,191.05	-10.00%	284,967.81	1.2273	349,737.68	
E36101	1993	24.5	709,275.50	60.00	35.85	25,426,363.46	-10.00%	314,053.05	1.2273	385,433.66	
E36101	1992	25.5	1,488,402.00	60.00	34.90	51,946,822.39	-10.00%	684,883.79	1.2273	840,549.90	
E36101	1991	26.5	1,451,956.00	60.00	33.96	49,307,961.13	-10.00%	693,172.31	1.2273	850,722.31	
E36101	1990	27.5	2,586,545.00	60.00	33.03	85,421,010.74	-10.00%	1,279,147.64	1.2273	1,569,883.00	
E36101	1989	28.5	1,413,293.00	60.00	32.10	45,363,878.71	-10.00%	722,951.19	1.2273	887,269.58	
E36101	1988	29.5	928,784.10	60.00	31.18	28,957,788.56	-10.00%	490,769.72	1.2273	602,315.96	
E36101	1987	30.5	1,587,565.00	60.00	30.27	48,050,401.21	-10.00%	865,397.48	1.2273	1,062,092.25	
E36101	1986	31.5	2,572,323.00	60.00	29.36	75,534,361.38	-10.00%	1,444,758.67	1.2273	1,773,135.50	
E36101	1985	32.5	2,627,825.00	60.00	28.47	74,815,491.66	-10.00%	1,518,990.15	1.2273	1,864,238.93	
E36101	1984	33.5	3,068,664.00	60.00	27.59	84,654,159.74	-10.00%	1,823,537.47	1.2273	2,238,006.31	
E36101	1983	34.5	1,771,145.00	60.00	26.71	47,313,003.75	-10.00%	1,080,854.43	1.2273	1,326,520.06	
E36101	1982	35.5	1,859,042.00	60.00	25.85	48,055,901.07	-10.00%	1,163,921.35	1.2273	1,428,467.12	
E36101	1981	36.5	1,603,694.00	60.00	25.00	40,088,597.36	-10.00%	1,029,105.78	1.2273	1,263,009.55	
E36101	1980	37.5	877,335.20	60.00	24.16	21,193,961.89	-10.00%	576,512.75	1.2273	707,547.39	
E36101	1979	38.5	511,776.20	60.00	23.33	11,938,607.72	-10.00%	344,079.35	1.2273	422,284.58	
E36101	1978	39.5	702,345.30	60.00	22.51	15,810,277.32	-10.00%	482,724.75	1.2273	592,442.46	
E36101	1977	40.5	508,885.40	60.00	21.71	11,045,968.27	-10.00%	357,264.52	1.2273	438,466.59	
E36101	1976	41.5	1,243,768.00	60.00	20.91	26,011,442.57	-10.00%	891,268.35	1.2273	1,093,843.27	
E36101	1975	42.5	742,755.80	60.00	20.13	14,954,311.04	-10.00%	542,869.01	1.2273	666,256.82	
E36101	1974	43.5	676,344.90	60.00	19.37	13,098,582.30	-10.00%	503,838.71	1.2273	618,355.39	
E36101	1973	44.5	502,433.70	60.00	18.61	9,351,175.44	-10.00%	381,238.85	1.2273	467,890.01	
E36101	1972	45.5	474,929.90	60.00	17.87	8,486,864.33	-10.00%	366,830.38	1.2273	450,206.65	

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E36101	1971	46.5	152,301.20	60.00	17.14	2,610,518.72	-10.00%	119,671.81	1.2273	146,871.82	
E36101	1970	47.5	203,141.00	60.00	16.42	3,336,115.58	-10.00%	162,292.98	1.2273	199,180.29	
E36101	1969	48.5	464,359.60	60.00	15.72	7,298,353.76	-10.00%	376,992.41	1.2273	462,678.39	
E36101	1968	49.5	126,139.00	60.00	15.02	1,895,010.16	-10.00%	104,011.05	1.2273	127,651.55	
E36101	1967	50.5	268,566.40	60.00	14.34	3,851,177.72	-10.00%	224,818.12	1.2273	275,916.66	
E36101	1966	51.5	93,244.03	60.00	13.67	1,274,517.21	-10.00%	79,202.28	1.2273	97,204.04	
E36101	1965	52.5	78,128.21	60.00	13.01	1,016,600.36	-10.00%	67,303.36	1.2273	82,600.63	
E36101	1964	53.5	11,599.77	60.00	12.37	143,501.22	-10.00%	10,128.89	1.2273	12,431.07	
E36101	1963	54.5	127,467.10	60.00	11.75	1,497,785.59	-10.00%	112,754.41	1.2273	138,382.17	
E36101	1962	55.5	86,670.83	60.00	11.15	966,642.37	-10.00%	77,616.14	1.2273	95,257.38	
E36101	1961	56.5	121,108.30	60.00	10.58	1,281,247.09	-10.00%	109,729.60	1.2273	133,219.13	
E36101	1960	57.5	80,920.34	60.00	10.03	811,856.78	-10.00%	74,128.33	1.2273	89,012.37	
E36101	1959	58.5	62,853.76	60.00	9.51	597,999.16	-10.00%	58,175.82	1.2273	69,139.14	
E36101	1958	59.5	70,497.06	60.00	9.02	636,008.40	-10.00%	65,886.61	1.2273	77,546.77	
E36101	1957	60.5	50,483.74	60.00	8.56	431,983.36	-10.00%	47,612.42	1.2273	55,532.11	
E36101	1956	61.5	60,195.43	60.00	8.12	488,671.62	-10.00%	57,255.99	1.2273	66,214.97	
E36101	1955	62.5	38,348.68	60.00	7.70	295,404.60	-10.00%	36,767.80	1.2273	42,183.55	
E36101	1954	63.5	36,294.91	60.00	7.31	265,358.37	-10.00%	35,059.50	1.2273	39,924.40	
E36101	1953	64.5	31,629.74	60.00	6.94	219,503.12	-10.00%	30,768.49	1.2273	34,792.71	
E36101	1952	65.5	33,396.22	60.00	6.59	219,992.82	-10.00%	32,702.64	1.2273	36,735.84	
E36101	1951	66.5	19,694.54	60.00	6.25	123,121.17	-10.00%	19,406.77	1.2273	21,663.99	
E36101	1950	67.5	73,504.12	60.00	5.93	435,848.12	-10.00%	72,863.98	1.2273	80,854.53	
E36101	1949	68.5	15,150.67	60.00	5.62	85,167.55	-10.00%	15,104.33	1.2273	16,665.74	
E36101	1948	69.5	2,482.86	60.00	5.32	13,217.06	-10.00%	2,488.83	1.2273	2,731.15	
E36101	1947	70.5	2,809.40	60.00	5.03	14,139.53	-10.00%	2,831.12	1.2273	3,090.34	
E36101	1946	71.5	1,979.32	60.00	4.75	9,405.72	-10.00%	2,004.81	1.2273	2,177.25	
E36101	1945	72.5	1,288.99	60.00	4.48	5,769.62	-10.00%	1,312.11	1.2273	1,417.89	
E36101	1944	73.5	65.86	60.00	4.20	276.83	-10.00%	67.37	1.2273	72.45	
E36101	1941	76.5	66.39	60.00	3.41	226.54	-10.00%	68.88	1.2273	73.03	
E36101	1940	77.5	122.50	60.00	3.16	386.81	-10.00%	127.66	1.2273	134.75	
E36101	1939	78.5	275.19	60.00	2.91	799.51	-10.00%	288.05	1.2273	302.71	
E36101	1938	79.5	183.18	60.00	2.65	486.22	-10.00%	192.58	1.2273	201.50	
E36101	1937	80.5	57.64	60.00	2.41	139.15	-10.00%	60.85	1.2273	63.40	
E36101	1936	81.5	40.76	60.00	2.18	88.76	-10.00%	43.21	1.2273	44.84	
E36101	1935	82.5	4.00	60.00	1.94	7.77	-10.00%	4.26	1.2273	4.40	
E36101	1934	83.5	1.57	60.00	1.72	2.71	-10.00%	1.68	1.2273	1.73	
E36101 Total			93,660,689.31			4,077,822,560.34		28,266,677.97		34,649,075.59	43.54
E36201	2017	0.5	70,209,831.00	48.00	47.63	3,344,009,296.63	-10.00%	597,267.72	1.2273	733,019.72	
E36201	2016	1.5	44,914,185.00	48.00	46.89	2,106,027,931.22	-10.00%	1,142,463.41	1.2273	1,402,132.04	

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E36201	2015	2.5	136,000,000.00	48.00	46.16	6,277,229,600.00	-10.00%	5,746,821.67	1.2273	7,053,007.34	
E36201	2014	3.5	66,408,109.00	48.00	45.43	3,016,710,542.25	-10.00%	3,915,969.97	1.2273	4,806,024.37	
E36201	2013	4.5	69,206,536.00	48.00	44.70	3,093,680,261.19	-10.00%	5,230,350.28	1.2273	6,419,148.02	
E36201	2012	5.5	43,160,449.00	48.00	43.98	1,898,277,257.06	-10.00%	3,974,306.76	1.2273	4,877,620.42	
E36201	2011	6.5	24,472,790.00	48.00	43.27	1,058,837,529.59	-10.00%	2,655,042.28	1.2273	3,258,502.49	
E36201	2010	7.5	21,086,885.00	48.00	42.55	897,333,834.72	-10.00%	2,631,673.12	1.2273	3,229,821.79	
E36201	2009	8.5	32,010,349.00	48.00	41.85	1,339,516,587.98	-10.00%	4,514,128.76	1.2273	5,540,137.68	
E36201	2008	9.5	26,981,806.00	48.00	41.14	1,110,098,683.54	-10.00%	4,240,225.10	1.2273	5,203,978.91	
E36201	2007	10.5	26,543,772.00	48.00	40.44	1,073,492,782.98	-10.00%	4,597,272.92	1.2273	5,642,179.55	
E36201	2006	11.5	29,917,944.00	48.00	39.75	1,189,113,216.99	-10.00%	5,659,227.18	1.2273	6,945,503.64	
E36201	2005	12.5	21,041,764.00	48.00	39.05	821,739,380.30	-10.00%	4,314,412.93	1.2273	5,295,028.77	
E36201	2004	13.5	14,834,772.00	48.00	38.36	569,107,396.67	-10.00%	3,276,204.69	1.2273	4,020,847.88	
E36201	2003	14.5	11,165,740.00	48.00	37.68	420,686,003.11	-10.00%	2,641,593.10	1.2273	3,241,996.46	
E36201	2002	15.5	26,464,907.00	48.00	36.99	979,016,304.65	-10.00%	6,675,607.39	1.2273	8,192,895.24	
E36201	2001	16.5	35,429,023.00	48.00	36.31	1,286,521,003.46	-10.00%	9,489,152.30	1.2273	11,645,926.17	
E36201	2000	17.5	19,680,595.00	48.00	35.64	701,328,433.54	-10.00%	5,576,544.56	1.2273	6,844,028.23	
E36201	1999	18.5	35,915,982.00	48.00	34.96	1,255,689,534.45	-10.00%	10,731,361.70	1.2273	13,170,475.30	
E36201	1998	19.5	23,836,308.00	48.00	34.29	817,390,860.13	-10.00%	7,488,064.92	1.2273	9,190,014.92	
E36201	1997	20.5	16,587,581.00	48.00	33.63	557,768,856.56	-10.00%	5,464,136.14	1.2273	6,706,070.68	
E36201	1996	21.5	4,003,717.00	48.00	32.96	131,977,205.96	-10.00%	1,379,611.06	1.2273	1,693,180.60	
E36201	1995	22.5	3,962,925.00	48.00	32.31	128,026,373.94	-10.00%	1,425,279.76	1.2273	1,749,229.26	
E36201	1994	23.5	16,203,841.00	48.00	31.65	512,900,827.33	-10.00%	6,070,247.81	1.2273	7,449,944.47	
E36201	1993	24.5	17,594,052.00	48.00	31.01	545,504,286.02	-10.00%	6,852,317.31	1.2273	8,409,769.27	
E36201	1992	25.5	11,424,216.00	48.00	30.36	346,865,473.46	-10.00%	4,617,637.17	1.2273	5,667,172.34	
E36201	1991	26.5	25,434,913.00	48.00	29.72	756,052,025.88	-10.00%	10,652,212.04	1.2273	13,073,335.84	
E36201	1990	27.5	19,795,839.00	48.00	29.09	575,926,480.74	-10.00%	8,577,107.72	1.2273	10,526,584.46	
E36201	1989	28.5	10,724,705.00	48.00	28.47	305,305,646.83	-10.00%	4,800,587.76	1.2273	5,891,705.48	
E36201	1988	29.5	17,380,978.00	48.00	27.85	484,022,172.96	-10.00%	8,026,901.00	1.2273	9,851,322.17	
E36201	1987	30.5	25,382,949.00	48.00	27.23	691,288,878.59	-10.00%	12,079,207.10	1.2273	14,824,670.27	
E36201	1986	31.5	11,159,816.00	48.00	26.63	297,156,772.96	-10.00%	5,465,954.89	1.2273	6,708,302.81	
E36201	1985	32.5	17,863,271.00	48.00	26.03	464,927,532.95	-10.00%	8,995,008.80	1.2273	11,039,469.60	
E36201	1984	33.5	28,493,154.00	48.00	25.43	724,676,928.15	-10.00%	14,735,289.80	1.2273	18,084,449.64	
E36201	1983	34.5	20,369,408.00	48.00	24.85	506,110,532.81	-10.00%	10,807,982.42	1.2273	13,264,511.02	
E36201	1982	35.5	19,234,270.00	48.00	24.27	466,754,375.58	-10.00%	10,461,242.56	1.2273	12,838,961.22	
E36201	1981	36.5	16,653,993.00	48.00	23.69	394,602,541.32	-10.00%	9,276,417.39	1.2273	11,384,839.09	
E36201	1980	37.5	6,784,720.00	48.00	23.13	156,922,160.55	-10.00%	3,867,059.15	1.2273	4,745,996.69	
E36201	1979	38.5	5,732,968.00	48.00	22.57	129,396,183.56	-10.00%	3,340,935.59	1.2273	4,100,291.36	
E36201	1978	39.5	4,298,882.00	48.00	22.02	94,659,533.12	-10.00%	2,559,489.23	1.2273	3,141,231.34	
E36201	1977	40.5	6,421,114.00	48.00	21.48	137,898,881.10	-10.00%	3,903,042.71	1.2273	4,790,158.88	

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E36201	1976	41.5	8,854,340.00	48.00	20.94	185,404,567.00	-10.00%	5,490,919.34	1.2273	6,738,941.39	
E36201	1975	42.5	6,395,876.00	48.00	20.41	130,541,364.17	-10.00%	4,043,890.67	1.2273	4,963,019.95	
E36201	1974	43.5	6,531,460.00	48.00	19.89	129,899,897.18	-10.00%	4,207,733.36	1.2273	5,164,102.17	
E36201	1973	44.5	4,641,081.00	48.00	19.37	89,914,864.56	-10.00%	3,044,640.12	1.2273	3,736,651.38	
E36201	1972	45.5	6,936,695.00	48.00	18.87	130,869,491.41	-10.00%	4,631,271.99	1.2273	5,683,906.20	
E36201	1971	46.5	2,003,807.00	48.00	18.37	36,801,899.32	-10.00%	1,360,810.84	1.2273	1,670,107.30	
E36201	1970	47.5	3,091,319.00	48.00	17.87	55,250,711.70	-10.00%	2,134,288.76	1.2273	2,619,387.75	
E36201	1969	48.5	4,250,406.00	48.00	17.39	73,901,214.07	-10.00%	2,981,877.11	1.2273	3,659,623.07	
E36201	1968	49.5	2,788,668.00	48.00	16.91	47,150,575.45	-10.00%	1,987,000.78	1.2273	2,438,622.93	
E36201	1967	50.5	1,721,569.00	48.00	16.44	28,295,535.93	-10.00%	1,245,286.54	1.2273	1,528,325.67	
E36201	1966	51.5	1,664,132.00	48.00	15.97	26,577,436.14	-10.00%	1,221,478.96	1.2273	1,499,106.90	
E36201	1965	52.5	1,027,122.00	48.00	15.51	15,933,096.50	-10.00%	764,700.74	1.2273	938,508.32	
E36201	1964	53.5	711,953.10	48.00	15.06	10,722,504.93	-10.00%	537,424.34	1.2273	659,574.63	
E36201	1963	54.5	445,084.80	48.00	14.62	6,505,185.85	-10.00%	340,516.10	1.2273	417,911.45	
E36201	1962	55.5	661,032.40	48.00	14.18	9,371,502.61	-10.00%	512,372.04	1.2273	628,828.24	
E36201	1961	56.5	443,055.90	48.00	13.74	6,089,785.62	-10.00%	347,803.90	1.2273	426,855.68	
E36201	1960	57.5	1,047,794.00	48.00	13.32	13,955,767.37	-10.00%	832,753.73	1.2273	1,022,028.96	
E36201	1959	58.5	617,340.30	48.00	12.90	7,963,498.49	-10.00%	496,577.49	1.2273	609,443.77	
E36201	1958	59.5	894,828.70	48.00	12.49	11,173,153.29	-10.00%	728,260.14	1.2273	893,785.19	
E36201	1957	60.5	534,968.50	48.00	12.08	6,461,932.66	-10.00%	440,379.39	1.2273	540,472.50	
E36201	1956	61.5	492,984.20	48.00	11.68	5,756,941.31	-10.00%	410,352.71	1.2273	503,621.11	
E36201	1955	62.5	486,214.40	48.00	11.28	5,485,597.28	-10.00%	409,124.24	1.2273	502,113.41	
E36201	1954	63.5	490,083.30	48.00	10.89	5,338,261.75	-10.00%	416,756.46	1.2273	511,480.36	
E36201	1953	64.5	445,729.80	48.00	10.51	4,683,969.43	-10.00%	382,961.81	1.2273	470,004.58	
E36201	1952	65.5	397,741.80	48.00	10.13	4,029,180.12	-10.00%	345,180.60	1.2273	423,636.14	
E36201	1951	66.5	289,984.30	48.00	9.76	2,829,453.08	-10.00%	254,141.10	1.2273	311,904.41	
E36201	1950	67.5	232,861.70	48.00	9.39	2,186,535.50	-10.00%	206,039.76	1.2273	252,870.20	
E36201	1949	68.5	313,736.50	48.00	9.03	2,832,354.14	-10.00%	280,202.03	1.2273	343,888.70	
E36201	1948	69.5	229,015.20	48.00	8.67	1,985,812.56	-10.00%	206,408.52	1.2273	251,916.72	
E36201	1947	70.5	170,393.20	48.00	8.32	1,417,609.74	-10.00%	154,945.63	1.2273	187,432.52	
E36201	1946	71.5	139,584.30	48.00	7.97	1,112,959.22	-10.00%	128,037.41	1.2273	153,542.73	
E36201	1945	72.5	111,428.60	48.00	7.63	850,428.31	-10.00%	103,082.48	1.2273	122,571.46	
E36201	1944	73.5	86,263.04	48.00	7.30	629,329.85	-10.00%	80,467.20	1.2273	94,889.34	
E36201	1943	74.5	245,529.65	48.00	6.96	1,709,814.47	-10.00%	230,899.37	1.2273	270,082.62	
E36201	1942	75.5	0.00	48.00	6.64	0.00	-10.00%	0.00	1.2273	0.00	
E36201	1941	76.5	0.00	48.00	6.31	0.00	-10.00%	0.00	1.2273	0.00	
E36201 Total			1,144,183,141.69			42,728,182,341.81		279,413,943.86		342,892,643.17	37.34
E36401	2017	0.5	54,083,638.00	35.00	34.69	1,876,132,737.89	-45.00%	695,775.96	1.2273	853,917.74	
E36401	2016	1.5	55,062,660.00	35.00	34.07	1,875,992,534.97	-45.00%	2,121,166.27	1.2273	2,603,282.67	

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E36401	2015	2.5	43,603,040.00	35.00	33.45	1,458,665,578.03	-45.00%	2,793,976.91	1.2273	3,429,015.34	
E36401	2014	3.5	55,561,942.00	35.00	32.84	1,824,592,501.52	-45.00%	4,974,555.12	1.2273	6,105,213.60	
E36401	2013	4.5	34,251,683.00	35.00	32.23	1,103,826,590.42	-45.00%	3,934,981.60	1.2273	4,829,357.12	
E36401	2012	5.5	25,027,339.00	35.00	31.62	791,295,884.27	-45.00%	3,507,383.49	1.2273	4,304,570.93	
E36401	2011	6.5	22,838,147.00	35.00	31.01	708,206,370.84	-45.00%	3,775,334.93	1.2273	4,633,424.61	
E36401	2010	7.5	19,952,705.00	35.00	30.40	606,651,221.06	-45.00%	3,798,728.81	1.2273	4,662,135.65	
E36401	2009	8.5	20,565,849.00	35.00	29.80	612,885,950.93	-45.00%	4,429,491.65	1.2273	5,436,263.55	
E36401	2008	9.5	17,401,128.00	35.00	29.20	508,108,587.32	-45.00%	4,181,422.70	1.2273	5,131,811.40	
E36401	2007	10.5	18,500,624.00	35.00	28.60	529,120,621.49	-45.00%	4,905,193.34	1.2273	6,020,086.69	
E36401	2006	11.5	18,382,809.00	35.00	28.00	514,762,954.57	-45.00%	5,329,179.22	1.2273	6,540,439.62	
E36401	2005	12.5	16,995,241.00	35.00	27.41	465,780,752.28	-45.00%	5,346,468.28	1.2273	6,561,658.29	
E36401	2004	13.5	10,576,326.00	35.00	26.81	283,580,490.72	-45.00%	3,587,338.08	1.2273	4,402,698.27	
E36401	2003	14.5	12,641,499.00	35.00	26.22	331,476,790.56	-45.00%	4,597,563.66	1.2273	5,642,536.36	
E36401	2002	15.5	18,601,755.00	35.00	25.63	476,809,857.07	-45.00%	7,218,993.53	1.2273	8,859,786.73	
E36401	2001	16.5	26,031,054.00	35.00	25.05	651,991,739.91	-45.00%	10,733,941.93	1.2273	13,173,641.99	
E36401	2000	17.5	30,266,200.00	35.00	24.46	740,437,764.72	-45.00%	13,210,711.18	1.2273	16,213,352.05	
E36401	1999	18.5	26,411,551.00	35.00	23.89	630,852,044.95	-45.00%	12,161,449.94	1.2273	14,925,605.95	
E36401	1998	19.5	20,483,303.00	35.00	23.31	477,481,360.24	-45.00%	9,919,418.71	1.2273	12,173,987.12	
E36401	1997	20.5	14,788,996.00	35.00	22.74	336,308,128.31	-45.00%	7,511,278.88	1.2273	9,218,505.14	
E36401	1996	21.5	18,292,556.00	35.00	22.17	405,633,404.94	-45.00%	9,719,393.71	1.2273	11,928,498.76	
E36401	1995	22.5	13,291,264.00	35.00	21.61	287,278,975.05	-45.00%	7,370,775.26	1.2273	9,046,066.68	
E36401	1994	23.5	14,482,465.00	35.00	21.06	304,982,175.34	-45.00%	8,364,598.41	1.2273	10,265,774.27	
E36401	1993	24.5	13,433,819.00	35.00	20.51	275,512,044.46	-45.00%	8,064,967.14	1.2273	9,898,040.29	
E36401	1992	25.5	10,137,610.00	35.00	19.96	202,396,065.76	-45.00%	6,314,554.63	1.2273	7,749,779.40	
E36401	1991	26.5	11,663,583.00	35.00	19.43	226,586,794.04	-45.00%	7,525,028.17	1.2273	9,235,379.48	
E36401	1990	27.5	10,629,902.00	35.00	18.89	200,851,891.99	-45.00%	7,092,350.95	1.2273	8,704,359.76	
E36401	1989	28.5	10,796,369.00	35.00	18.37	198,322,928.67	-45.00%	7,438,499.43	1.2273	9,129,183.77	
E36401	1988	29.5	10,567,344.00	35.00	17.85	188,629,837.91	-45.00%	7,507,984.09	1.2273	9,214,461.47	
E36401	1987	30.5	10,578,535.00	35.00	17.34	183,406,514.20	-45.00%	7,740,605.88	1.2273	9,499,955.49	
E36401	1986	31.5	9,777,813.00	35.00	16.83	164,575,552.84	-45.00%	7,359,698.80	1.2273	9,032,472.67	
E36401	1985	32.5	14,879,109.00	35.00	16.33	243,008,584.01	-45.00%	11,507,209.57	1.2273	14,122,664.36	
E36401	1984	33.5	16,908,126.00	35.00	15.84	267,816,092.70	-45.00%	13,421,544.57	1.2273	16,472,105.42	
E36401	1983	34.5	10,179,609.00	35.00	15.35	156,291,710.62	-45.00%	8,285,490.75	1.2273	10,168,686.36	
E36401	1982	35.5	9,255,471.00	35.00	14.87	137,665,042.66	-45.00%	7,717,166.90	1.2273	9,471,189.10	
E36401	1981	36.5	9,981,464.00	35.00	14.40	143,742,364.36	-45.00%	8,518,081.99	1.2273	10,454,142.87	
E36401	1980	37.5	6,246,537.00	35.00	13.93	87,041,807.64	-45.00%	5,451,460.90	1.2273	6,690,514.51	
E36401	1979	38.5	5,888,278.00	35.00	13.47	79,340,129.84	-45.00%	5,251,054.86	1.2273	6,444,558.51	
E36401	1978	39.5	3,452,838.00	35.00	13.02	44,957,124.72	-45.00%	3,144,105.65	1.2273	3,858,724.26	
E36401	1977	40.5	2,378,655.00	35.00	12.57	29,905,592.41	-45.00%	2,210,103.78	1.2273	2,712,434.64	

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E36401	1976	41.5	1,963,608.00	35.00	12.13	23,819,546.84	-45.00%	1,860,421.80	1.2273	2,283,274.02	
E36401	1975	42.5	2,498,777.00	35.00	11.69	29,221,222.98	-45.00%	2,412,633.13	1.2273	2,960,996.55	
E36401	1974	43.5	2,084,580.00	35.00	11.26	23,479,416.68	-45.00%	2,049,922.31	1.2273	2,515,845.79	
E36401	1973	44.5	1,693,111.00	35.00	10.84	18,349,530.67	-45.00%	1,694,816.11	1.2273	2,080,028.08	
E36401	1972	45.5	1,682,392.00	35.00	10.42	0.30	-45.00%	1,713,405.94	1.2273	2,102,843.16	
E36401	1971	46.5	1,198,029.00	35.00	10.00	0.29	-45.00%	1,240,766.61	1.2273	1,522,778.42	
E36401	1970	47.5	1,061,493.00	35.00	9.59	0.27	-45.00%	1,117,471.98	1.2273	1,371,460.36	
E36401	1969	48.5	838,948.00	35.00	9.18	0.26	-45.00%	897,370.55	1.2273	1,101,332.43	
E36401	1968	49.5	795,827.80	35.00	8.78	0.25	-45.00%	864,584.11	1.2273	1,061,094.02	
E36401	1967	50.5	727,188.50	35.00	8.38	0.24	-45.00%	802,110.22	1.2273	984,420.53	
E36401	1966	51.5	594,041.90	35.00	7.98	0.23	-45.00%	665,064.93	1.2273	816,226.45	
E36401	1965	52.5	545,026.60	35.00	7.58	0.22	-45.00%	619,154.63	1.2273	759,881.27	
E36401	1964	53.5	394,722.30	35.00	7.18	0.21	-45.00%	454,884.21	1.2273	558,274.10	
E36401	1963	54.5	353,523.10	35.00	6.79	0.19	-45.00%	413,198.62	1.2273	507,113.86	
E36401	1962	55.5	308,377.50	35.00	6.39	0.18	-45.00%	365,489.14	1.2273	447,147.38	
E36401	1961	56.5	250,814.40	35.00	5.99	0.17	-45.00%	301,390.13	1.2273	363,680.88	
E36401	1960	57.5	252,336.90	35.00	5.60	0.16	-45.00%	307,391.58	1.2273	365,888.51	
E36401	1959	58.5	225,054.50	35.00	5.19	0.15	-45.00%	277,907.07	1.2273	326,329.03	
E36401	1958	59.5	199,853.10	35.00	4.79	0.14	-45.00%	250,153.34	1.2273	289,787.00	
E36401	1957	60.5	194,204.90	35.00	4.37	0.12	-45.00%	246,403.53	1.2273	281,597.11	
E36401	1956	61.5	151,695.30	35.00	3.95	0.11	-45.00%	195,105.12	1.2273	219,958.19	
E36401	1955	62.5	117,304.10	35.00	3.53	0.10	-45.00%	152,951.45	1.2273	170,090.95	
E36401	1954	63.5	92,590.27	35.00	3.09	0.09	-45.00%	122,404.17	1.2273	134,255.89	
E36401	1953	64.5	68,055.03	35.00	2.64	0.08	-45.00%	91,229.26	1.2273	98,679.79	
E36401	1952	65.5	50,765.30	35.00	2.19	0.06	-45.00%	69,012.48	1.2273	73,609.69	
E36401	1951	66.5	43,423.68	35.00	1.72	0.05	-45.00%	59,864.59	1.2273	62,964.34	
E36401	1950	67.5	30,260.28	35.00	1.26	0.04	-45.00%	42,300.37	1.2273	43,877.41	
E36401	1949	68.5	21,975.40	35.00	0.80	0.02	-45.00%	31,137.13	1.2273	31,864.33	
E36401 Total			793,286,814.86			20,727,774,817.35		288,057,574.15		353,355,582.37	26.13
E36501	2017	0.5	52488391	38.00	37.69	1,978,258,063.29	-23.00%	527,630.99	1.2273	647,555.37	
E36501	2016	1.5	56699113	38.00	37.07	2,101,828,181.03	-23.00%	1,707,049.45	1.2273	2,095,041.91	
E36501	2015	2.5	51584592	38.00	36.45	1,880,398,688.49	-23.00%	2,583,511.66	1.2273	3,170,713.79	
E36501	2014	3.5	57623193	38.00	35.84	2,065,085,584.94	-23.00%	4,032,967.67	1.2273	4,949,614.27	
E36501	2013	4.5	40709512	38.00	35.22	1,433,992,153.10	-23.00%	3,656,637.96	1.2273	4,487,749.21	
E36501	2012	5.5	27455514	38.00	34.61	950,357,242.02	-23.00%	3,008,718.86	1.2273	3,692,565.63	
E36501	2011	6.5	23332292	38.00	34.01	793,434,888.55	-23.00%	3,016,484.61	1.2273	3,702,096.45	
E36501	2010	7.5	24523989	38.00	33.40	819,086,518.21	-23.00%	3,651,969.17	1.2273	4,482,019.25	
E36501	2009	8.5	20359050	38.00	32.79	667,671,583.71	-23.00%	3,430,156.55	1.2273	4,209,791.21	
E36501	2008	9.5	22499686	38.00	32.19	724,310,341.71	-23.00%	4,229,831.67	1.2273	5,191,223.17	

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E36501	2007	10.5	24231329	38.00	31.59	765,494,579.89	-23.00%	5,026,683.79	1.2273	6,169,190.51	
E36501	2006	11.5	22482793	38.00	30.99	696,781,549.61	-23.00%	5,100,116.81	1.2273	6,259,313.99	
E36501	2005	12.5	21237168	38.00	30.39	645,483,546.05	-23.00%	5,228,433.44	1.2273	6,416,795.50	
E36501	2004	13.5	13098487	38.00	29.80	390,310,811.38	-23.00%	3,477,394.33	1.2273	4,267,765.58	
E36501	2003	14.5	14155298	38.00	29.20	413,392,596.77	-23.00%	4,030,150.91	1.2273	4,946,157.30	
E36501	2002	15.5	22277906	38.00	28.61	637,419,679.27	-23.00%	6,769,555.81	1.2273	8,308,197.05	
E36501	2001	16.5	41439983	38.00	28.02	1,161,260,211.61	-23.00%	13,383,019.61	1.2273	16,424,824.18	
E36501	2000	17.5	47422630	38.00	27.44	1,301,075,421.02	-23.00%	16,216,077.85	1.2273	19,901,803.59	
E36501	1999	18.5	41238625	38.00	26.85	1,107,335,847.02	-23.00%	14,880,795.81	1.2273	18,263,027.48	
E36501	1998	19.5	24722583	38.00	26.27	649,493,158.64	-23.00%	9,385,709.06	1.2273	11,518,971.48	
E36501	1997	20.5	14811787	38.00	25.69	380,574,795.77	-23.00%	5,899,892.78	1.2273	7,240,869.73	
E36501	1996	21.5	17104513	38.00	25.12	429,680,076.44	-23.00%	7,130,485.36	1.2273	8,751,161.68	
E36501	1995	22.5	14819273	38.00	24.55	363,837,900.34	-23.00%	6,450,847.44	1.2273	7,917,049.97	
E36501	1994	23.5	17193813	38.00	23.99	412,426,273.05	-23.00%	7,798,802.73	1.2273	9,571,379.81	
E36501	1993	24.5	18046096	38.00	23.43	422,763,003.62	-23.00%	8,512,527.17	1.2273	10,447,325.51	
E36501	1992	25.5	14248463	38.00	22.87	325,884,291.44	-23.00%	6,977,249.53	1.2273	8,563,097.13	
E36501	1991	26.5	16934635	38.00	22.32	378,005,947.11	-23.00%	8,594,145.39	1.2273	10,547,494.60	
E36501	1990	27.5	15165937	38.00	21.78	330,263,605.29	-23.00%	7,963,991.08	1.2273	9,774,113.54	
E36501	1989	28.5	14831180	38.00	21.24	314,972,884.21	-23.00%	8,047,176.46	1.2273	9,876,206.00	
E36501	1988	29.5	13544464	38.00	20.70	280,419,706.65	-23.00%	7,582,947.58	1.2273	9,306,463.30	
E36501	1987	30.5	13510305	38.00	20.18	272,579,725.49	-23.00%	7,794,699.83	1.2273	9,566,344.36	
E36501	1986	31.5	11915533	38.00	19.65	234,183,119.37	-23.00%	7,075,967.78	1.2273	8,684,252.89	
E36501	1985	32.5	16537215	38.00	19.14	316,482,605.78	-23.00%	10,096,732.21	1.2273	12,391,601.91	
E36501	1984	33.5	20811284	38.00	18.63	387,662,400.82	-23.00%	13,049,859.50	1.2273	16,015,940.66	
E36501	1983	34.5	13248898	38.00	18.12	240,117,595.30	-23.00%	8,523,917.11	1.2273	10,461,304.25	
E36501	1982	35.5	12082724	38.00	17.63	212,967,676.68	-23.00%	7,968,323.09	1.2273	9,779,430.18	
E36501	1981	36.5	14375560	38.00	17.13	246,311,132.55	-23.00%	9,709,236.35	1.2273	11,916,032.76	
E36501	1980	37.5	8921629	38.00	16.65	148,531,651.19	-23.00%	6,165,868.64	1.2273	7,567,298.81	
E36501	1979	38.5	8720970	38.00	16.17	141,009,189.51	-23.00%	6,162,548.28	1.2273	7,563,223.77	
E36501	1978	39.5	4136451	38.00	15.70	64,923,418.48	-23.00%	2,986,366.18	1.2273	3,665,132.46	
E36501	1977	40.5	2922775	38.00	15.23	44,507,900.79	-23.00%	2,154,362.78	1.2273	2,644,024.36	
E36501	1976	41.5	2512961	38.00	14.77	37,107,110.88	-23.00%	1,889,843.44	1.2273	2,319,382.86	
E36501	1975	42.5	3764359	38.00	14.31	53,869,445.39	-23.00%	2,886,492.68	1.2273	3,542,558.87	
E36501	1974	43.5	3375785	38.00	13.86	46,788,852.71	-23.00%	2,637,734.26	1.2273	3,237,260.56	
E36501	1973	44.5	2902749	38.00	13.42	38,941,451.85	-23.00%	2,309,907.96	1.2273	2,834,923.15	
E36501	1972	45.5	3280292	38.00	12.98	42,564,904.98	-23.00%	2,657,000.39	1.2273	3,260,905.65	
E36501	1971	46.5	2007800	38.00	12.54	25,181,165.03	-23.00%	1,654,519.45	1.2273	2,030,572.46	
E36501	1970	47.5	1791206	38.00	12.11	21,695,785.64	-23.00%	1,500,925.06	1.2273	1,842,067.85	
E36501	1969	48.5	1414621	38.00	11.69	16,533,750.74	-23.00%	1,204,812.42	1.2273	1,478,652.26	

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E36501	1968	49.5	1423195	38.00	11.27	16,036,091.61	-23.00%	1,231,466.88	1.2273	1,511,364.97	
E36501	1967	50.5	1352824	38.00	10.85	14,680,616.07	-23.00%	1,188,785.16	1.2273	1,458,982.19	
E36501	1966	51.5	964911.4	38.00	10.44	10,073,482.03	-23.00%	860,778.31	1.2273	1,056,423.21	
E36501	1965	52.5	783026.9	38.00	10.03	7,854,934.35	-23.00%	708,871.26	1.2273	869,989.45	
E36501	1964	53.5	541405.3	38.00	9.63	5,211,763.41	-23.00%	497,231.97	1.2273	610,247.00	
E36501	1963	54.5	504498.9	38.00	9.22	4,653,511.48	-23.00%	469,906.83	1.2273	576,711.18	
E36501	1962	55.5	402165.8	38.00	8.82	3,548,842.13	-23.00%	379,793.52	1.2273	466,116.16	
E36501	1961	56.5	379905.4	38.00	8.43	3,201,181.30	-23.00%	363,666.46	1.2273	446,323.61	
E36501	1960	57.5	374157.5	38.00	8.03	3,004,384.82	-23.00%	362,966.53	1.2273	445,464.60	
E36501	1959	58.5	301776	38.00	7.63	2,303,832.52	-23.00%	296,613.06	1.2273	364,029.75	
E36501	1958	59.5	304511.9	38.00	7.24	2,204,215.78	-23.00%	303,202.65	1.2273	372,117.09	
E36501	1957	60.5	314792.9	38.00	6.84	2,154,003.16	-23.00%	317,473.59	1.2273	387,195.27	
E36501	1956	61.5	265684.6	38.00	6.45	1,712,433.16	-23.00%	271,363.30	1.2273	326,792.06	
E36501	1955	62.5	197252.7	38.00	6.05	1,192,534.59	-23.00%	204,020.36	1.2273	242,620.82	
E36501	1954	63.5	207899.1	38.00	5.64	1,173,272.33	-23.00%	217,738.92	1.2273	255,715.89	
E36501	1953	64.5	147394.4	38.00	5.24	771,862.61	-23.00%	156,311.14	1.2273	181,295.11	
E36501	1952	65.5	91261.62	38.00	4.82	440,328.37	-23.00%	97,999.06	1.2273	112,251.79	
E36501	1951	66.5	102244.5	38.00	4.41	450,636.81	-23.00%	111,174.33	1.2273	125,760.74	
E36501	1950	67.5	82784.64	38.00	3.98	329,624.76	-23.00%	91,155.67	1.2273	101,825.11	
E36501	1949	68.5	104285.3	38.00	3.55	370,019.05	-23.00%	116,293.99	1.2273	128,270.92	
E36501	1948	69.5	59865.1	38.00	3.11	185,917.17	-23.00%	67,616.23	1.2273	73,634.07	
E36501	1947	70.5	40402.72	38.00	2.65	107,195.89	-23.00%	46,225.58	1.2273	49,695.35	
E36501	1946	71.5	21702.81	38.00	2.19	47,596.06	-23.00%	25,153.85	1.2273	26,694.46	
E36501	1945	72.5	9470.52	38.00	1.73	16,369.62	-23.00%	11,118.88	1.2273	11,648.74	
E36501	1944	73.5	5072.49	38.00	1.26	6,403.94	-23.00%	6,031.88	1.2273	6,239.16	
E36501	1943	74.5	1562.52	38.00	0.80	1,257.05	-23.00%	1,881.21	1.2273	1,921.90	
E36501 Total			963,499,466.02			27,494,990,323.51		295,134,919.58		362,109,818.88	28.54
E36601	2017	0.5	22592238	62.00	61.53	1,390,043,471.70	-30.00%	223,836.61	1.2273	274,712.06	
E36601	2016	1.5	36966886	62.00	60.58	2,239,619,195.86	-30.00%	1,097,194.47	1.2273	1,346,574.00	
E36601	2015	2.5	47217508	62.00	59.64	2,816,252,379.35	-30.00%	2,332,307.28	1.2273	2,862,413.58	
E36601	2014	3.5	36433987	62.00	58.71	2,138,947,563.12	-30.00%	2,515,282.58	1.2273	3,086,977.04	
E36601	2013	4.5	21443462	62.00	57.77	1,238,870,499.33	-30.00%	1,900,183.68	1.2273	2,332,073.31	
E36601	2012	5.5	13849215	62.00	56.84	787,238,268.33	-30.00%	1,497,370.65	1.2273	1,837,705.57	
E36601	2011	6.5	6207443	62.00	55.92	347,101,714.38	-30.00%	791,736.73	1.2273	971,689.27	
E36601	2010	7.5	5385705	62.00	54.99	296,181,137.63	-30.00%	791,166.84	1.2273	970,989.85	
E36601	2009	8.5	7866441	62.00	54.08	425,377,797.08	-30.00%	1,307,161.43	1.2273	1,604,264.00	
E36601	2008	9.5	14419102	62.00	53.16	766,519,318.13	-30.00%	2,672,653.35	1.2273	3,280,116.34	
E36601	2007	10.5	8910338	62.00	52.25	465,555,893.75	-30.00%	1,821,783.56	1.2273	2,235,853.76	
E36601	2006	11.5	3648230	62.00	51.34	187,309,796.01	-30.00%	815,235.54	1.2273	1,000,529.08	

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E36601	2005	12.5	22085683	62.00	50.44	1,114,012,672.50	-30.00%	5,353,057.67	1.2273	6,569,745.37	
E36601	2004	13.5	9551594	62.00	49.54	473,216,054.28	-30.00%	2,494,800.09	1.2273	3,061,839.12	
E36601	2003	14.5	7940825	62.00	48.65	386,326,377.19	-30.00%	2,222,680.72	1.2273	2,727,870.18	
E36601	2002	15.5	13991637	62.00	47.76	668,278,920.21	-30.00%	4,176,828.16	1.2273	5,126,172.58	
E36601	2001	16.5	27840245	62.00	46.88	1,305,166,832.94	-30.00%	8,825,917.16	1.2273	10,831,945.40	
E36601	2000	17.5	25105031	62.00	46.00	1,154,914,272.60	-30.00%	8,420,595.87	1.2273	10,334,499.30	
E36601	1999	18.5	23170545	62.00	45.13	1,045,720,988.26	-30.00%	8,195,300.68	1.2273	10,057,997.13	
E36601	1998	19.5	15933561	62.00	44.27	705,306,885.11	-30.00%	5,924,936.55	1.2273	7,271,605.66	
E36601	1997	20.5	7127969	62.00	43.40	309,387,997.57	-30.00%	2,779,192.01	1.2273	3,410,870.00	
E36601	1996	21.5	6720522	62.00	42.55	285,961,772.98	-30.00%	2,740,705.94	1.2273	3,363,636.50	
E36601	1995	22.5	9275027	62.00	41.70	386,787,732.46	-30.00%	3,947,469.74	1.2273	4,844,683.66	
E36601	1994	23.5	15046526	62.00	40.86	614,794,732.82	-30.00%	6,669,626.50	1.2273	8,185,554.97	
E36601	1993	24.5	14134970	62.00	40.02	565,737,191.18	-30.00%	6,513,229.57	1.2273	7,993,610.84	
E36601	1992	25.5	10821819	62.00	39.19	424,153,079.34	-30.00%	5,174,832.39	1.2273	6,351,011.56	
E36601	1991	26.5	13309700	62.00	38.37	510,713,952.13	-30.00%	6,594,091.65	1.2273	8,092,851.92	
E36601	1990	27.5	10741052	62.00	37.56	403,386,222.85	-30.00%	5,505,269.38	1.2273	6,756,553.03	
E36601	1989	28.5	10942902	62.00	36.75	402,107,658.03	-30.00%	5,794,483.00	1.2273	7,111,501.53	
E36601	1988	29.5	9608304	62.00	35.94	345,363,088.89	-30.00%	5,249,311.08	1.2273	6,442,418.38	
E36601	1987	30.5	7733222	62.00	35.15	271,815,329.41	-30.00%	4,353,834.92	1.2273	5,343,410.92	
E36601	1986	31.5	6680231	62.00	34.36	229,541,421.46	-30.00%	3,871,335.01	1.2273	4,751,244.40	
E36601	1985	32.5	9374618	62.00	33.58	314,810,640.74	-30.00%	5,586,135.13	1.2273	6,855,798.62	
E36601	1984	33.5	12168757	62.00	32.81	399,231,727.84	-30.00%	7,448,396.26	1.2273	9,141,330.03	
E36601	1983	34.5	10370113	62.00	32.04	332,292,538.19	-30.00%	6,513,722.71	1.2273	7,994,216.06	
E36601	1982	35.5	4057643	62.00	31.29	126,947,256.59	-30.00%	2,613,138.58	1.2273	3,207,074.57	
E36601	1981	36.5	4632862	62.00	30.54	141,471,390.46	-30.00%	3,056,384.99	1.2273	3,751,065.73	
E36601	1980	37.5	1420167	62.00	29.80	42,314,869.88	-30.00%	958,969.83	1.2273	1,176,932.51	
E36601	1979	38.5	1986326	62.00	29.06	57,727,539.79	-30.00%	1,371,807.64	1.2273	1,683,603.55	
E36601	1978	39.5	458613.6	62.00	28.34	12,996,375.64	-30.00%	323,693.03	1.2273	397,264.69	
E36601	1977	40.5	1063831	62.00	27.62	29,385,937.76	-30.00%	766,823.54	1.2273	941,113.61	
E36601	1976	41.5	951080.1	62.00	26.92	25,598,786.92	-30.00%	699,655.37	1.2273	858,678.89	
E36601	1975	42.5	1132705	62.00	26.22	29,697,508.89	-30.00%	849,826.80	1.2273	1,042,982.54	
E36601	1974	43.5	1197800	62.00	25.53	30,579,199.17	-30.00%	915,963.24	1.2273	1,124,151.03	
E36601	1973	44.5	1491353	62.00	24.85	37,061,106.34	-30.00%	1,161,671.19	1.2273	1,425,705.52	
E36601	1972	45.5	2033899	62.00	24.18	49,183,176.13	-30.00%	1,612,808.56	1.2273	1,979,381.17	
E36601	1971	46.5	1178839	62.00	23.52	27,728,650.96	-30.00%	951,083.50	1.2273	1,167,253.71	
E36601	1970	47.5	1461954	62.00	22.87	33,440,706.56	-30.00%	1,199,364.09	1.2273	1,471,965.59	
E36601	1969	48.5	1343740	62.00	22.24	29,879,107.02	-30.00%	1,120,364.59	1.2273	1,375,010.43	
E36601	1968	49.5	972633.9	62.00	21.61	21,017,237.44	-30.00%	823,740.06	1.2273	1,010,966.59	
E36601	1967	50.5	275729.2	62.00	20.99	5,788,416.18	-30.00%	237,077.94	1.2273	290,963.00	

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E36601	1966	51.5	219562.6	62.00	20.39	4,476,516.94	-30.00%	191,568.93	1.2273	235,110.32	
E36601	1965	52.5	109804.6	62.00	19.80	2,173,747.86	-30.00%	97,167.40	1.2273	119,252.41	
E36601	1964	53.5	175884.1	62.00	19.22	3,379,857.46	-30.00%	157,781.35	1.2273	193,643.22	
E36601	1963	54.5	202100.8	62.00	18.65	3,768,872.73	-30.00%	183,706.29	1.2273	225,460.59	
E36601	1962	55.5	148564.8	62.00	18.09	2,688,165.66	-30.00%	136,769.48	1.2273	167,855.59	
E36601	1961	56.5	84829.62	62.00	17.55	1,488,945.61	-30.00%	79,058.68	1.2273	97,027.80	
E36601	1960	57.5	68523.33	62.00	17.02	1,166,550.76	-30.00%	64,620.39	1.2273	79,307.86	
E36601	1959	58.5	117996.9	62.00	16.51	1,948,073.36	-30.00%	112,549.27	1.2273	138,130.41	
E36601	1958	59.5	119403.1	62.00	16.01	1,911,413.18	-30.00%	115,146.01	1.2273	141,317.36	
E36601	1957	60.5	159446.9	62.00	15.52	2,474,869.41	-30.00%	155,388.55	1.2273	190,706.55	
E36601	1956	61.5	152782.3	62.00	15.05	2,299,130.69	-30.00%	150,409.41	1.2273	184,595.72	
E36601	1955	62.5	31775.19	62.00	14.59	463,586.04	-30.00%	31,587.39	1.2273	38,766.84	
E36601	1954	63.5	47475.05	62.00	14.14	671,533.16	-30.00%	47,637.03	1.2273	58,464.37	
E36601	1953	64.5	61916.85	62.00	13.71	849,126.44	-30.00%	62,687.64	1.2273	76,935.81	
E36601	1952	65.5	104360.3	62.00	13.30	1,387,740.48	-30.00%	106,570.61	1.2273	130,792.86	
E36601	1951	66.5	104019.1	62.00	12.89	1,341,295.09	-30.00%	107,100.90	1.2273	131,443.69	
E36601	1950	67.5	283707.6	62.00	12.51	3,547,899.72	-30.00%	294,428.43	1.2273	361,348.59	
E36601	1949	68.5	239750.6	62.00	12.13	2,908,081.28	-30.00%	250,699.88	1.2273	307,681.05	
E36601	1948	69.5	69967.11	62.00	11.77	823,288.29	-30.00%	73,694.75	1.2273	90,444.70	
E36601	1947	70.5	14889.79	62.00	11.42	169,988.25	-30.00%	15,792.46	1.2273	19,356.73	
E36601	1946	71.5	2002.04	62.00	11.08	22,179.00	-30.00%	2,137.61	1.2273	2,602.65	
E36601	1945	72.5	2753.02	62.00	10.75	29,600.33	-30.00%	2,958.27	1.2273	3,578.93	
E36601	1944	73.5	328.88	62.00	10.44	3,432.15	-30.00%	355.58	1.2273	427.54	
E36601	1943	74.5	28.74	62.00	10.13	291.16	-30.00%	31.26	1.2273	37.36	
E36601	1942	75.5	2628.09	62.00	9.84	25,847.91	-30.00%	2,874.54	1.2273	3,416.52	
E36601	1941	76.5	5585.71	62.00	9.55	53,333.95	-30.00%	6,143.13	1.2273	7,261.42	
E36601	1940	77.5	11163.06	62.00	9.27	103,493.85	-30.00%	12,341.95	1.2273	14,511.98	
E36601	1939	78.5	5755.85	62.00	9.00	51,795.90	-30.00%	6,396.56	1.2273	7,482.61	
E36601	1938	79.5	8034.02	62.00	8.73	70,176.17	-30.00%	8,972.79	1.2273	10,444.23	
E36601	1937	80.5	2778.92	62.00	8.48	23,556.53	-30.00%	3,118.67	1.2273	3,612.60	
E36601	1936	81.5	900.86	62.00	8.22	7,407.81	-30.00%	1,015.79	1.2273	1,171.12	
E36601	1935	82.5	670.71	62.00	7.98	5,349.69	-30.00%	759.75	1.2273	871.92	
E36601	1934	83.5	521.85	62.00	7.73	4,034.21	-30.00%	593.82	1.2273	678.41	
E36601	1933	84.5	742.91	62.00	7.49	5,564.41	-30.00%	849.11	1.2273	965.78	
E36601	1932	85.5	399.83	62.00	7.25	2,900.31	-30.00%	458.97	1.2273	519.78	
E36601	1931	86.5	9,695.93	62.00	7.02	68,043.52	-30.00%	11,177.99	1.2273	12,604.71	
E36601	1930	87.5	6,831.65	62.00	6.79	46,369.84	-30.00%	7,908.87	1.2273	8,881.15	
E36601	1929	88.5	5,651.92	62.00	6.56	37,062.00	-30.00%	6,570.39	1.2273	7,347.50	
E36601	1928	89.5	9,019.57	62.00	6.33	57,094.18	-30.00%	10,528.30	1.2273	11,725.44	

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E36601	1927	90.5	5,268.53	62.00	6.11	32,180.24	-30.00%	6,174.34	1.2273	6,849.09	
E36601	1926	91.5	3,616.69	62.00	5.88	21,275.35	-30.00%	4,255.60	1.2273	4,701.70	
E36601	1925	92.5	2,350.21	62.00	5.66	13,308.26	-30.00%	2,776.23	1.2273	3,055.27	
E36601	1924	93.5	1,588.95	62.00	5.44	8,647.86	-30.00%	1,884.31	1.2273	2,065.64	
E36601	1923	94.5	2,872.26	62.00	5.22	14,996.53	-30.00%	3,419.49	1.2273	3,733.94	
E36601	1922	95.5	430.72	62.00	5.00	2,155.38	-30.00%	514.74	1.2273	559.94	
E36601	1921	96.5	215.92	62.00	4.78	1,031.64	-30.00%	259.06	1.2273	280.70	
E36601	1920	97.5	74.59	62.00	4.55	339.49	-30.00%	89.85	1.2273	96.97	
E36601	1919	98.5	17.27	62.00	4.32	74.61	-30.00%	20.89	1.2273	22.45	
E36601	1917	100.5	38.77	62.00	3.83	148.41	-30.00%	47.29	1.2273	50.40	
E36601	1916	101.5	56.67	62.00	3.56	201.85	-30.00%	69.44	1.2273	73.67	
E36601	1915	102.5	96.29	62.00	3.28	316.22	-30.00%	118.55	1.2273	125.18	
E36601	1914	103.5	4.23	62.00	3.00	12.67	-30.00%	5.23	1.2273	5.50	
E36601	1913	104.5	714.16	62.00	2.62	1,871.89	-30.00%	889.16	1.2273	928.41	
E36601 Total			552,884,183.26			26,489,515,165.10		163,324,120.26		200,436,711.04	47.91
E36701	2017	0.5	56,964,501.00	38.00	37.69	2,146,960,142.57	-35.00%	628,492.34	1.2273	771,341.33	
E36701	2016	1.5	63,779,711.00	38.00	37.07	2,364,304,957.61	-35.00%	2,107,565.30	1.2273	2,586,590.36	
E36701	2015	2.5	70,973,712.00	38.00	36.45	2,587,184,850.90	-35.00%	3,901,365.18	1.2273	4,788,100.07	
E36701	2014	3.5	71,040,593.00	38.00	35.84	2,545,935,011.79	-35.00%	5,457,109.34	1.2273	6,697,446.77	
E36701	2013	4.5	34,799,865.00	38.00	35.22	1,225,824,896.63	-35.00%	3,430,775.37	1.2273	4,210,550.68	
E36701	2012	5.5	44,512,764.00	38.00	34.61	1,540,784,398.71	-35.00%	5,353,838.29	1.2273	6,570,703.41	
E36701	2011	6.5	27,555,446.00	38.00	34.01	937,046,914.47	-35.00%	3,910,027.51	1.2273	4,798,731.25	
E36701	2010	7.5	24,062,927.00	38.00	33.40	803,687,324.04	-35.00%	3,932,901.78	1.2273	4,826,804.57	
E36701	2009	8.5	36,550,634.00	38.00	32.79	1,198,671,828.42	-35.00%	6,758,962.00	1.2273	8,295,195.38	
E36701	2008	9.5	40,467,546.00	38.00	32.19	1,302,732,050.18	-35.00%	8,349,916.90	1.2273	10,247,755.81	
E36701	2007	10.5	38,593,244.00	38.00	31.59	1,219,203,416.46	-35.00%	8,787,073.82	1.2273	10,784,273.41	
E36701	2006	11.5	31,136,293.00	38.00	30.99	964,968,831.31	-35.00%	7,752,208.12	1.2273	9,514,194.79	
E36701	2005	12.5	35,757,027.00	38.00	30.39	1,086,800,866.49	-35.00%	9,661,955.67	1.2273	11,858,005.72	
E36701	2004	13.5	27,864,594.00	38.00	29.80	830,313,630.35	-35.00%	8,119,217.66	1.2273	9,964,621.33	
E36701	2003	14.5	27,116,990.00	38.00	29.20	791,927,016.49	-35.00%	8,473,687.23	1.2273	10,399,657.70	
E36701	2002	15.5	26,583,453.00	38.00	28.61	760,610,808.09	-35.00%	8,865,961.79	1.2273	10,881,091.70	
E36701	2001	16.5	25,457,032.00	38.00	28.02	713,374,770.63	-35.00%	9,023,415.82	1.2273	11,074,333.20	
E36701	2000	17.5	30,191,949.00	38.00	27.44	828,338,764.78	-35.00%	11,331,306.61	1.2273	13,906,780.70	
E36701	1999	18.5	28,636,503.00	38.00	26.85	768,944,801.27	-35.00%	11,341,503.22	1.2273	13,919,294.88	
E36701	1998	19.5	24,307,077.00	38.00	26.27	638,577,296.64	-35.00%	10,128,255.25	1.2273	12,430,289.78	
E36701	1997	20.5	11,333,974.00	38.00	25.69	291,215,694.65	-35.00%	4,955,044.17	1.2273	6,081,268.03	
E36701	1996	21.5	12,055,359.00	38.00	25.12	302,840,985.69	-35.00%	5,515,910.16	1.2273	6,769,612.33	
E36701	1995	22.5	9,844,464.00	38.00	24.55	241,698,031.45	-35.00%	4,703,385.81	1.2273	5,772,410.65	
E36701	1994	23.5	15,978,885.00	38.00	23.99	383,283,916.61	-35.00%	7,954,829.29	1.2273	9,762,869.39	

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E36701	1993	24.5	18,990,877.00	38.00	23.43	444,896,236.94	-35.00%	9,832,159.74	1.2273	12,066,895.20	
E36701	1992	25.5	13,841,981.00	38.00	22.87	316,587,422.12	-35.00%	7,439,489.62	1.2273	9,130,399.01	
E36701	1991	26.5	15,556,444.00	38.00	22.32	347,242,698.05	-35.00%	8,664,945.65	1.2273	10,634,386.94	
E36701	1990	27.5	12,216,816.00	38.00	21.78	266,041,570.48	-35.00%	7,041,224.75	1.2273	8,641,613.18	
E36701	1989	28.5	12,672,620.00	38.00	21.24	269,131,092.19	-35.00%	7,546,800.83	1.2273	9,262,100.81	
E36701	1988	29.5	10,110,966.00	38.00	20.70	209,333,800.12	-35.00%	6,212,945.41	1.2273	7,625,075.58	
E36701	1987	30.5	7,505,323.00	38.00	20.18	151,425,070.20	-35.00%	4,752,611.19	1.2273	5,832,824.39	
E36701	1986	31.5	6,468,330.00	38.00	19.65	127,125,970.49	-35.00%	4,215,928.13	1.2273	5,174,159.52	
E36701	1985	32.5	9,756,755.00	38.00	19.14	186,720,874.49	-35.00%	6,538,114.50	1.2273	8,024,151.82	
E36701	1984	33.5	13,764,641.00	38.00	18.63	256,400,987.87	-35.00%	9,473,282.89	1.2273	11,626,449.81	
E36701	1983	34.5	13,647,288.00	38.00	18.12	247,337,852.32	-35.00%	9,636,836.15	1.2273	11,827,176.83	
E36701	1982	35.5	7,845,825.00	38.00	17.63	138,288,942.29	-35.00%	5,678,967.12	1.2273	6,969,730.24	
E36701	1981	36.5	9,047,399.00	38.00	17.13	155,018,315.41	-35.00%	6,706,759.02	1.2273	8,231,127.28	
E36701	1980	37.5	4,985,119.00	38.00	16.65	82,994,703.82	-35.00%	3,781,414.59	1.2273	4,640,886.11	
E36701	1979	38.5	7,803,895.00	38.00	16.17	126,181,022.18	-35.00%	6,052,511.41	1.2273	7,428,176.80	
E36701	1978	39.5	2,240,445.00	38.00	15.70	35,164,770.07	-35.00%	1,775,326.02	1.2273	2,178,836.96	
E36701	1977	40.5	3,088,147.00	38.00	15.23	47,026,178.99	-35.00%	2,498,331.56	1.2273	3,066,173.25	
E36701	1976	41.5	1,884,334.00	38.00	14.77	27,824,622.30	-35.00%	1,555,344.58	1.2273	1,908,856.30	
E36701	1975	42.5	1,964,946.00	38.00	14.31	28,119,143.59	-35.00%	1,653,707.53	1.2273	2,029,576.00	
E36701	1974	43.5	1,605,754.00	38.00	13.86	22,255,975.25	-35.00%	1,377,095.10	1.2273	1,690,092.78	
E36701	1973	44.5	1,687,116.00	38.00	13.42	22,633,285.37	-35.00%	1,473,529.36	1.2273	1,808,445.43	
E36701	1972	45.5	1,581,260.00	38.00	12.98	20,518,350.70	-35.00%	1,405,759.59	1.2273	1,725,272.39	
E36701	1971	46.5	1,157,491.00	38.00	12.54	14,516,870.15	-35.00%	1,046,881.94	1.2273	1,284,826.01	
E36701	1970	47.5	863,669.00	38.00	12.11	10,461,095.76	-35.00%	794,308.96	1.2273	974,846.14	
E36701	1969	48.5	853,464.10	38.00	11.69	9,975,083.57	-35.00%	797,798.57	1.2273	979,128.89	
E36701	1968	49.5	596,139.10	38.00	11.27	6,717,098.65	-35.00%	566,154.02	1.2273	694,834.23	
E36701	1967	50.5	294,496.30	38.00	10.85	3,195,823.78	-35.00%	284,034.16	1.2273	348,591.82	
E36701	1966	51.5	154,573.30	38.00	10.44	1,613,714.34	-35.00%	151,344.63	1.2273	185,743.50	
E36701	1965	52.5	127,945.80	38.00	10.03	1,283,488.29	-35.00%	127,129.22	1.2273	156,024.21	
E36701	1964	53.5	122,825.00	38.00	9.63	1,182,357.91	-35.00%	123,808.93	1.2273	151,949.26	
E36701	1963	54.5	144,967.20	38.00	9.22	1,337,181.37	-35.00%	148,200.59	1.2273	181,884.86	
E36701	1962	55.5	180,598.70	38.00	8.82	1,593,661.80	-35.00%	187,191.31	1.2273	229,737.72	
E36701	1961	56.5	78,795.75	38.00	8.43	663,953.40	-35.00%	82,786.44	1.2273	101,602.84	
E36701	1960	57.5	96,315.95	38.00	8.03	773,391.36	-35.00%	102,550.79	1.2273	125,859.39	
E36701	1959	58.5	68,888.18	38.00	7.63	525,909.38	-35.00%	74,315.42	1.2273	91,206.45	
E36701	1958	59.5	92,399.89	38.00	7.24	668,838.54	-35.00%	100,978.48	1.2273	123,929.72	
E36701	1957	60.5	102,548.30	38.00	6.84	701,697.41	-35.00%	113,511.48	1.2273	138,440.21	
E36701	1956	61.5	90,041.37	38.00	6.45	580,349.13	-35.00%	100,938.18	1.2273	121,555.85	
E36701	1955	62.5	21,693.48	38.00	6.05	131,152.71	-35.00%	24,626.83	1.2273	29,286.20	

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Account	Vintage Year	Age	Plant Balance at 12/31/2017	Average Service Life	Remaining Life	Plant $ x Remaining Life	Net Salvage %	Theoretical Reserve	Proration Factor	Allocated Reserve	Composite Remaining Life
E36701	1954	63.5	16,288.54	38.00	5.64	91,923.89	-35.00%	18,723.81	1.2273	21,989.53	
E36701	1953	64.5	27,778.52	38.00	5.24	145,468.22	-35.00%	32,333.05	1.2273	37,501.00	
E36701	1952	65.5	37,494.60	38.00	4.82	180,907.77	-35.00%	44,190.72	1.2273	50,617.71	
E36701	1951	66.5	33,525.11	38.00	4.41	147,760.01	-35.00%	40,009.53	1.2273	45,258.90	
E36701	1950	67.5	25,272.51	38.00	3.98	100,627.91	-35.00%	30,542.95	1.2273	34,117.89	
E36701	1949	68.5	39,797.39	38.00	3.55	141,206.79	-35.00%	48,709.92	1.2273	53,726.48	
E36701	1948	69.5	13,292.65	38.00	3.11	41,281.68	-35.00%	16,478.49	1.2273	17,945.08	
E36701	1947	70.5	3,721.08	38.00	2.65	9,872.71	-35.00%	4,672.72	1.2273	5,023.46	
E36701	1946	71.5	1,273.47	38.00	2.19	2,792.83	-35.00%	1,619.97	1.2273	1,719.18	
E36701	1945	72.5	418.27	38.00	1.73	722.97	-35.00%	538.98	1.2273	564.66	
E36701	1944	73.5	129.71	38.00	1.26	163.76	-35.00%	169.29	1.2273	175.11	
E36701	1943	74.5	18.46	38.00	0.80	14.85	-35.00%	24.39	1.2273	24.92	
E36701 Total			999,076,686.73			30,060,284,502.40		280,822,367.13		344,622,441.11	30.09
E36801	2017	0.5	87,815,761.00	28.00	27.63	2,426,286,249.08	-15.00%	1,337,082.78	1.2273	1,640,986.13	
E36801	2016	1.5	90,797,901.00	28.00	26.89	2,441,916,025.56	-15.00%	4,124,606.53	1.2273	5,062,081.58	
E36801	2015	2.5	82,956,996.00	28.00	26.17	2,170,701,701.96	-15.00%	6,246,725.50	1.2273	7,666,533.49	
E36801	2014	3.5	69,946,092.00	28.00	25.45	1,779,921,000.97	-15.00%	7,334,107.55	1.2273	9,001,064.82	
E36801	2013	4.5	56,007,998.00	28.00	24.73	1,385,335,427.33	-15.00%	7,511,492.65	1.2273	9,218,767.49	
E36801	2012	5.5	55,215,496.00	28.00	24.03	1,326,784,196.48	-15.00%	9,004,898.04	1.2273	11,051,606.55	
E36801	2011	6.5	49,007,617.00	28.00	23.33	1,143,355,055.75	-15.00%	9,399,534.05	1.2273	11,535,938.72	
E36801	2010	7.5	46,284,830.00	28.00	22.64	1,047,755,713.74	-15.00%	10,194,730.54	1.2273	12,511,874.13	
E36801	2009	8.5	57,697,451.00	28.00	21.95	1,266,440,009.29	-15.00%	14,337,568.27	1.2273	17,596,330.64	
E36801	2008	9.5	51,106,598.00	28.00	21.27	1,086,907,017.64	-15.00%	14,131,763.76	1.2273	17,343,749.17	
E36801	2007	10.5	50,622,432.00	28.00	20.59	1,042,363,966.19	-15.00%	15,404,419.62	1.2273	18,905,664.88	
E36801	2006	11.5	49,515,357.00	28.00	19.92	986,364,232.12	-15.00%	16,431,272.44	1.2273	20,165,909.41	
E36801	2005	12.5	42,644,830.00	28.00	19.26	821,199,550.76	-15.00%	15,313,715.81	1.2273	18,794,345.16	
E36801	2004	13.5	31,712,650.00	28.00	18.60	589,870,512.07	-15.00%	12,242,722.90	1.2273	15,025,351.30	
E36801	2003	14.5	33,860,712.00	28.00	17.95	607,886,802.43	-15.00%	13,973,039.41	1.2273	17,148,948.62	
E36801	2002	15.5	42,071,183.00	28.00	17.31	728,409,103.24	-15.00%	18,465,058.00	1.2273	22,661,950.74	
E36801	2001	16.5	44,697,482.00	28.00	16.68	745,755,138.43	-15.00%	20,772,875.40	1.2273	25,494,308.18	
E36801	2000	17.5	30,017,564.00	28.00	16.07	482,258,280.94	-15.00%	14,713,162.06	1.2273	18,057,292.53	
E36801	1999	18.5	37,167,270.00	28.00	15.46	574,529,429.62	-15.00%	19,145,616.07	1.2273	23,497,191.74	
E36801	1998	19.5	27,917,795.00	28.00	14.86	414,904,498.06	-15.00%	15,064,743.79	1.2273	18,488,784.70	
E36801	1997	20.5	20,179,997.00	28.00	14.28	288,109,817.17	-15.00%	11,373,914.77	1.2273	13,959,073.21	
E36801	1996	21.5	17,754,021.00	28.00	13.70	243,309,625.71	-15.00%	10,424,050.24	1.2273	12,793,315.52	
E36801	1995	22.5	16,604,555.00	28.00	13.14	218,255,252.29	-15.00%	10,131,183.25	1.2273	12,433,883.27	
E36801	1994	23.5	17,456,805.00	28.00	12.60	219,893,247.64	-15.00%	11,043,995.94	1.2273	13,554,167.66	
E36801	1993	24.5	14,889,874.00	28.00	12.06	179,590,492.78	-15.00%	9,747,317.00	1.2273	11,962,768.70	
E36801	1992	25.5	15,863,567.00	28.00	11.54	183,039,705.57	-15.00%	10,725,399.86	1.2273	13,163,158.40	

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E36801	1991	26.5	16,571,835.00	28.00	11.03	182,756,019.28	-15.00%	11,551,559.46	1.2273	14,177,094.46	
E36801	1990	27.5	14,894,541.00	28.00	10.53	156,840,708.29	-15.00%	10,687,050.20	1.2273	13,116,092.31	
E36801	1989	28.5	11,149,770.00	28.00	10.04	111,991,077.32	-15.00%	8,222,601.97	1.2273	10,091,503.68	
E36801	1988	29.5	8,023,881.00	28.00	9.57	76,792,079.70	-15.00%	6,073,502.73	1.2273	7,453,939.21	
E36801	1987	30.5	6,685,206.00	28.00	9.11	60,891,155.96	-15.00%	5,187,100.14	1.2273	6,366,067.62	
E36801	1986	31.5	8,176,919.00	28.00	8.66	70,794,718.06	-15.00%	6,495,816.64	1.2273	7,972,240.15	
E36801	1985	32.5	14,369,948.00	28.00	8.22	118,101,199.51	-15.00%	11,674,855.22	1.2273	14,328,413.91	
E36801	1984	33.5	21,885,568.00	28.00	7.79	170,497,876.09	-15.00%	18,165,811.86	1.2273	22,294,689.44	
E36801	1983	34.5	17,506,320.00	28.00	7.37	129,073,554.66	-15.00%	14,831,032.72	1.2273	18,201,953.82	
E36801	1982	35.5	14,903,973.00	28.00	6.97	103,820,897.07	-15.00%	12,875,496.39	1.2273	15,801,946.85	
E36801	1981	36.5	9,291,495.00	28.00	6.57	61,037,521.71	-15.00%	8,178,321.04	1.2273	10,037,158.21	
E36801	1980	37.5	8,421,724.00	28.00	6.18	52,066,677.00	-15.00%	7,546,529.79	1.2273	9,261,768.17	
E36801	1979	38.5	5,654,445.00	28.00	5.81	32,824,907.05	-15.00%	5,154,445.92	1.2273	6,325,991.48	
E36801	1978	39.5	7,279,524.00	28.00	5.44	39,583,015.95	-15.00%	6,745,721.59	1.2273	8,278,945.58	
E36801	1977	40.5	3,877,590.00	28.00	5.08	19,693,950.01	-15.00%	3,650,369.84	1.2273	4,459,228.50	
E36801	1976	41.5	1,530,828.00	28.00	4.73	7,239,966.83	-15.00%	1,463,096.42	1.2273	1,760,452.20	
E36801	1975	42.5	1,647,531.00	28.00	4.39	7,230,509.41	-15.00%	1,597,693.30	1.2273	1,894,660.65	
E36801	1974	43.5	1,407,330.00	28.00	4.06	5,708,644.16	-15.00%	1,383,967.33	1.2273	1,618,429.50	
E36801	1973	44.5	1,289,991.00	28.00	3.73	4,815,339.03	-15.00%	1,285,716.80	1.2273	1,483,489.65	
E36801	1972	45.5	1,016,913.00	28.00	3.42	3,474,324.96	-15.00%	1,026,754.46	1.2273	1,169,449.95	
E36801	1971	46.5	718,629.50	28.00	3.11	2,234,066.77	-15.00%	734,667.61	1.2273	826,423.93	
E36801	1970	47.5	539,067.80	28.00	2.81	1,513,029.09	-15.00%	557,785.70	1.2273	619,927.97	
E36801	1969	48.5	295,100.90	28.00	2.51	740,956.16	-15.00%	308,933.91	1.2273	339,366.04	
E36801	1968	49.5	232,468.30	28.00	2.22	515,542.86	-15.00%	246,164.46	1.2273	267,338.55	
E36801	1967	50.5	152,732.40	28.00	1.92	293,614.75	-15.00%	163,583.08	1.2273	175,642.26	
E36801	1966	51.5	75,133.77	28.00	1.62	121,680.04	-15.00%	81,406.26	1.2273	86,403.84	
E36801	1965	52.5	45,160.05	28.00	1.30	58,558.45	-15.00%	49,528.98	1.2273	51,934.06	
E36801	1964	53.5	23,735.39	28.00	0.97	23,099.07	-15.00%	26,346.99	1.2273	27,295.70	
E36801	1963	54.5	9,763.26	28.00	0.66	6,472.37	-15.00%	10,961.92	1.2273	11,227.75	
E36801 Total			1,317,489,957.37			25,821,883,214.43		454,571,818.95		557,234,122.15	19.60
E36901	2017	0.5	7,699,331.00	46.00	45.69	351,777,351.83	-60.00%	83,195.62	1.2273	102,105.02	
E36901	2016	1.5	8,103,080.00	46.00	45.07	365,201,520.97	-60.00%	262,266.40	1.2273	321,876.50	
E36901	2015	2.5	4,616,578.00	46.00	44.45	205,213,724.64	-60.00%	248,656.12	1.2273	305,172.76	
E36901	2014	3.5	11,132,389.00	46.00	43.84	487,992,279.48	-60.00%	838,177.90	1.2273	1,028,685.98	
E36901	2013	4.5	6,435,975.00	46.00	43.22	278,169,661.63	-60.00%	622,093.51	1.2273	763,488.12	
E36901	2012	5.5	5,298,310.00	46.00	42.61	225,753,253.57	-60.00%	625,008.92	1.2273	767,066.17	
E36901	2011	6.5	5,975,180.00	46.00	42.00	250,944,892.62	-60.00%	831,770.00	1.2273	1,020,821.63	
E36901	2010	7.5	5,733,497.00	46.00	41.39	237,303,420.66	-60.00%	919,563.18	1.2273	1,128,569.18	
E36901	2009	8.5	6,829,726.00	46.00	40.78	278,527,700.22	-60.00%	1,239,641.59	1.2273	1,521,397.70	

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E36901	2008	9.5	8,083,568.00	46.00	40.18	324,765,508.80	-60.00%	1,637,517.19	1.2273	2,009,705.79	
E36901	2007	10.5	8,090,223.00	46.00	39.57	320,145,414.63	-60.00%	1,808,864.12	1.2273	2,219,997.88	
E36901	2006	11.5	5,842,140.00	46.00	38.97	227,663,814.20	-60.00%	1,428,682.64	1.2273	1,753,405.57	
E36901	2005	12.5	6,771,474.00	46.00	38.37	259,808,997.87	-60.00%	1,797,523.69	1.2273	2,206,079.90	
E36901	2004	13.5	5,033,733.00	46.00	37.77	190,116,242.79	-60.00%	1,441,233.92	1.2273	1,768,809.61	
E36901	2003	14.5	5,086,007.00	46.00	37.17	189,047,083.63	-60.00%	1,562,060.47	1.2273	1,917,098.63	
E36901	2002	15.5	5,667,142.00	46.00	36.57	207,264,384.37	-60.00%	1,858,231.22	1.2273	2,280,585.55	
	2001	16.5	8,018,023.00	46.00	35.98						
	2000	17.5	3,283,227.00	46.00	35.38						
	1999	18.5	3,858,867.00	46.00	34.79						
	1998	19.5	4,681,657.00	46.00	34.20						
E36901	1997	20.5	3,655,832.00	46.00	33.61	122,882,859.52	-60.00%	1,575,144.78	1.2273	1,933,156.86	
E36901	1996	21.5	4,472,159.00	46.00	33.03	147,701,637.52	-60.00%	2,018,006.14	1.2273	2,476,675.44	
E36901	1995	22.5	3,123,689.00	46.00	32.44	101,343,341.60	-60.00%	1,472,916.61	1.2273	1,807,693.40	
E36901	1994	23.5	3,427,367.00	46.00	31.86	109,205,509.25	-60.00%	1,685,334.70	1.2273	2,068,391.66	
E36901	1993	24.5	3,203,528.00	46.00	31.29	100,222,661.80	-60.00%	1,639,639.17	1.2273	2,012,310.07	
E36901	1992	25.5	2,783,543.00	46.00	30.71	85,483,885.96	-60.00%	1,480,316.24	1.2273	1,816,774.90	
E36901	1991	26.5	3,176,426.00	46.00	30.14	95,734,620.86	-60.00%	1,752,381.74	1.2273	2,150,677.72	
E36901	1990	27.5	2,547,634.00	46.00	29.57	75,336,620.02	-60.00%	1,455,810.23	1.2273	1,786,698.94	
E36901	1989	28.5	2,796,454.00	46.00	29.01	81,116,573.39	-60.00%	1,652,880.37	1.2273	2,028,560.84	
E36901	1988	29.5	3,042,587.00	46.00	28.45	86,551,407.48	-60.00%	1,857,655.46	1.2273	2,279,878.92	
E36901	1987	30.5	2,956,087.00	46.00	27.89	82,446,389.74	-60.00%	1,862,038.69	1.2273	2,285,258.41	
E36901	1986	31.5	2,976,536.00	46.00	27.34	81,373,285.30	-60.00%	1,932,082.46	1.2273	2,371,222.31	
E36901	1985	32.5	2,907,882.00	46.00	26.79	77,903,263.78	-60.00%	1,942,932.46	1.2273	2,384,538.39	
E36901	1984	33.5	2,921,373.00	46.00	26.25	76,677,014.21	-60.00%	2,007,170.22	1.2273	2,463,376.65	
E36901	1983	34.5	2,675,206.00	46.00	25.71	68,774,035.34	-60.00%	1,888,189.24	1.2273	2,317,352.68	
E36901	1982	35.5	2,579,813.00	46.00	25.17	64,943,748.10	-60.00%	1,868,787.82	1.2273	2,293,541.54	
E36901	1981	36.5	2,030,861.00	46.00	24.64	50,049,371.14	-60.00%	1,508,529.91	1.2273	1,851,401.20	
E36901	1980	37.5	1,744,112.00	46.00	24.12	42,067,615.18	-60.00%	1,327,357.80	1.2273	1,629,050.78	
E36901	1979	38.5	1,493,311.00	46.00	23.60	35,242,184.40	-60.00%	1,163,482.49	1.2273	1,427,928.52	
E36901	1978	39.5	1,327,846.00	46.00	23.09	30,653,577.20	-60.00%	1,058,342.22	1.2273	1,298,891.09	
E36901	1977	40.5	1,049,868.00	46.00	22.58	23,701,148.05	-60.00%	855,401.04	1.2273	1,049,823.74	
E36901	1976	41.5	956,495.00	46.00	22.07	21,110,485.50	-60.00%	796,114.24	1.2273	977,061.74	
E36901	1975	42.5	864,149.90	46.00	21.57	18,640,568.85	-60.00%	734,272.23	1.2273	901,163.76	
E36901	1974	43.5	734,112.00	46.00	21.08	15,472,401.45	-60.00%	636,408.71	1.2273	781,057.01	
E36901	1973	44.5	658,816.70	46.00	20.59	13,562,874.93	-60.00%	582,354.55	1.2273	714,716.96	
E36901	1972	45.5	633,821.80	46.00	20.10	12,741,155.54	-60.00%	570,944.25	1.2273	700,713.23	
E36901	1971	46.5	538,487.10	46.00	19.62	10,566,506.20	-60.00%	494,048.71	1.2273	606,340.23	
E36901	1970	47.5	605,200.80	46.00	19.15	11,588,421.23	-60.00%	565,245.76	1.2273	693,719.54	

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Account	Vintage Year	Age	Plant Balance at 12/31/2017	Average Service Life	Remaining Life	Plant $ x Remaining Life	Net Salvage %	Theoretical Reserve	Proration Factor	Allocated Reserve	Composite Remaining Life
E36901	1969	48.5	524,019.80	46.00	18.68	9,787,882.87	-60.00%	497,983.58	1.2273	611,169.45	
E36901	1968	49.5	445,780.40	46.00	18.21	8,119,314.93	-60.00%	430,837.69	1.2273	528,762.08	
E36901	1967	50.5	425,388.60	46.00	17.75	7,552,251.37	-60.00%	417,934.76	1.2273	512,926.46	
E36901	1966	51.5	361,093.40	46.00	17.30	6,246,399.46	-60.00%	360,483.37	1.2273	442,417.05	
E36901	1965	52.5	330,172.70	46.00	16.85	5,562,766.16	-60.00%	334,788.80	1.2273	410,882.40	
E36901	1964	53.5	317,840.20	46.00	16.40	5,213,240.39	-60.00%	327,214.22	1.2273	401,586.20	
E36901	1963	54.5	274,717.10	46.00	15.96	4,384,636.01	-60.00%	287,038.28	1.2273	352,278.74	
E36901	1962	55.5	257,156.90	46.00	15.52	3,991,936.56	-60.00%	272,601.07	1.2273	334,560.12	
E36901	1961	56.5	210,088.70	46.00	15.09	3,170,316.22	-60.00%	225,870.05	1.2273	277,207.69	
E36901	1960	57.5	216,337.10	46.00	14.66	3,171,817.74	-60.00%	235,815.26	1.2273	289,413.33	
E36901	1959	58.5	225,006.30	46.00	14.24	3,203,281.94	-60.00%	248,591.58	1.2273	305,093.55	
E36901	1958	59.5	212,332.10	46.00	13.82	2,933,389.19	-60.00%	237,700.43	1.2273	291,726.97	
E36901	1957	60.5	227,329.40	46.00	13.40	3,045,613.81	-60.00%	257,792.65	1.2273	316,385.91	
E36901	1956	61.5	222,838.50	46.00	12.98	2,893,116.70	-60.00%	255,911.45	1.2273	314,077.15	
E36901	1955	62.5	213,191.60	46.00	12.57	2,680,219.21	-60.00%	247,881.54	1.2273	304,222.13	
E36901	1954	63.5	194,513.80	46.00	12.16	2,366,003.62	-60.00%	228,926.30	1.2273	280,958.59	
E36901	1953	64.5	172,146.70	46.00	11.76	2,024,104.34	-60.00%	205,031.09	1.2273	251,632.27	
E36901	1952	65.5	134,250.50	46.00	11.35	1,524,388.92	-60.00%	161,778.58	1.2273	198,548.96	
E36901	1951	66.5	126,438.30	46.00	10.95	1,384,977.32	-60.00%	154,128.16	1.2273	189,159.69	
E36901	1950	67.5	105,302.70	46.00	10.55	1,111,432.09	-60.00%	129,825.81	1.2273	159,333.71	
E36901	1949	68.5	90,458.52	46.00	10.16	918,794.42	-60.00%	112,775.57	1.2273	138,408.14	
E36901	1948	69.5	78,410.73	46.00	9.76	765,329.34	-60.00%	98,837.02	1.2273	121,301.52	
E36901	1947	70.5	58,488.16	46.00	9.36	547,713.95	-60.00%	74,530.14	1.2273	91,469.97	
E36901	1946	71.5	34,593.42	46.00	8.97	310,264.51	-60.00%	44,557.66	1.2273	54,685.10	
E36901	1945	72.5	18,356.88	46.00	8.57	157,376.47	-60.00%	23,897.04	1.2273	29,328.56	
E36901	1944	73.5	15,169.41	46.00	8.18	124,038.37	-60.00%	19,956.68	1.2273	24,271.06	
E36901	1943	74.5	7,059.83	46.00	7.78	54,922.05	-60.00%	9,385.40	1.2273	11,295.73	
E36901	1942	75.5	10,881.93	46.00	7.38	80,308.52	-60.00%	14,617.75	1.2273	17,411.09	
E36901	1941	76.5	13,108.93	46.00	6.98	91,473.31	-60.00%	17,792.61	1.2273	20,974.29	
E36901	1940	77.5	10,772.48	46.00	6.57	70,806.05	-60.00%	14,773.15	1.2273	17,235.97	
E36901	1939	78.5	7,875.56	46.00	6.16	48,545.64	-60.00%	10,912.35	1.2273	12,600.90	
E36901	1938	79.5	6,095.04	46.00	5.75	35,052.02	-60.00%	8,532.86	1.2273	9,752.06	
E36901	1937	80.5	4,919.25	46.00	5.33	26,232.48	-60.00%	6,958.37	1.2273	7,870.80	
E36901	1936	81.5	3,303.06	46.00	4.91	16,209.91	-60.00%	4,721.07	1.2273	5,284.90	
E36901	1935	82.5	1,949.80	46.00	4.48	8,726.83	-60.00%	2,816.14	1.2273	3,119.68	
E36901	1934	83.5	1,188.61	46.00	4.04	4,798.04	-60.00%	1,734.89	1.2273	1,901.78	
E36901	1933	84.5	990.84	46.00	3.59	3,557.07	-60.00%	1,461.62	1.2273	1,585.34	
E36901	1932	85.5	1,237.62	46.00	3.14	3,880.73	-60.00%	1,845.21	1.2273	1,980.19	
E36901	1931	86.5	477.26	46.00	2.67	1,276.44	-60.00%	719.22	1.2273	763.62	

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E36901	1930	87.5	1,033.33	46.00	2.21	2,282.76	-60.00%	1,573.93	1.2273	1,653.33	
E36901	1929	88.5	867.14	46.00	1.74	1,510.19	-60.00%	1,334.90	1.2273	1,387.42	
E36901	1928	89.5	691.24	46.00	1.27	880.96	-60.00%	1,075.34	1.2273	1,105.98	
E36901	1927	90.5	318.47	46.00	0.82	260.76	-60.00%	500.48	1.2273	509.55	
E36901 Total			193,687,516.61			6,226,429,745.10		61,581,718.78		75,571,081.93	32.15
E37301 & I	2017	0.5	39,785,945.00	39.00	38.63	1,536,892,860.84	-30.00%	491,966.47	1.2273	603,784.72	
E37301 & I	2016	1.5	48,447,346.00	39.00	37.89	1,835,733,405.96	-30.00%	1,790,436.27	1.2273	2,197,381.59	
E37301 & I	2015	2.5	39,708,392.00	39.00	37.16	1,475,547,169.20	-30.00%	2,436,003.96	1.2273	2,989,679.30	
E37301 & I	2014	3.5	23,692,856.00	39.00	36.43	863,209,404.36	-30.00%	2,027,065.99	1.2273	2,487,794.49	
E37301 & I	2013	4.5	15,502,267.00	39.00	35.71	553,630,291.05	-30.00%	1,698,604.06	1.2273	2,084,677.00	
E37301 & I	2012	5.5	14,338,293.00	39.00	35.00	501,803,692.35	-30.00%	1,912,991.15	1.2273	2,347,791.78	
E37301 & I	2011	6.5	12,838,584.00	39.00	34.29	440,200,766.34	-30.00%	2,016,800.32	1.2273	2,475,195.56	
E37301 & I	2010	7.5	13,186,574.00	39.00	33.58	442,831,264.34	-30.00%	2,381,504.06	1.2273	2,922,792.21	
E37301 & I	2009	8.5	16,031,838.00	39.00	32.88	527,148,155.78	-30.00%	3,269,784.21	1.2273	4,012,968.10	
E37301 & I	2008	9.5	19,330,639.00	39.00	32.19	622,159,709.12	-30.00%	4,391,173.73	1.2273	5,389,236.40	
E37301 & I	2007	10.5	21,238,335.00	39.00	31.49	668,860,158.46	-30.00%	5,314,496.88	1.2273	6,522,420.16	
E37301 & I	2006	11.5	18,174,979.00	39.00	30.81	559,882,227.34	-30.00%	4,964,731.79	1.2273	6,093,157.53	
E37301 & I	2005	12.5	15,650,764.00	39.00	30.12	471,412,906.26	-30.00%	4,632,229.66	1.2273	5,685,081.54	
E37301 & I	2004	13.5	20,056,702.00	39.00	29.44	590,479,335.23	-30.00%	6,391,068.09	1.2273	7,843,683.48	
E37301 & I	2003	14.5	19,679,567.00	39.00	28.76	566,065,426.74	-30.00%	6,714,589.54	1.2273	8,240,737.59	
E37301 & I	2002	15.5	16,094,888.00	39.00	28.09	452,140,007.93	-30.00%	5,852,020.80	1.2273	7,182,117.01	
E37301 & I	2001	16.5	16,475,448.00	39.00	27.42	451,836,360.57	-30.00%	6,356,870.38	1.2273	7,801,713.02	
E37301 & I	2000	17.5	17,066,289.00	39.00	26.76	456,736,047.37	-30.00%	6,961,640.79	1.2273	8,543,940.70	
E37301 & I	1999	18.5	16,477,399.00	39.00	26.11	430,154,035.07	-30.00%	7,082,150.86	1.2273	8,691,841.32	
E37301 & I	1998	19.5	17,463,463.00	39.00	25.45	444,523,195.03	-30.00%	7,885,062.07	1.2273	9,677,244.89	
E37301 & I	1997	20.5	14,994,233.00	39.00	24.81	372,004,821.54	-30.00%	7,092,342.18	1.2273	8,704,349.00	
E37301 & I	1996	21.5	12,844,348.00	39.00	24.17	310,467,671.46	-30.00%	6,348,730.02	1.2273	7,791,722.45	
E37301 & I	1995	22.5	13,636,211.00	39.00	23.54	321,001,588.70	-30.00%	7,027,021.34	1.2273	8,624,181.50	
E37301 & I	1994	23.5	13,004,357.00	39.00	22.92	298,013,306.84	-30.00%	6,971,887.21	1.2273	8,556,516.01	
E37301 & I	1993	24.5	10,316,088.00	39.00	22.30	230,049,175.04	-30.00%	5,742,608.57	1.2273	7,047,836.65	
E37301 & I	1992	25.5	7,912,670.00	39.00	21.69	171,639,026.46	-30.00%	4,565,170.12	1.2273	5,602,780.15	
E37301 & I	1991	26.5	6,613,273.00	39.00	21.09	139,481,665.10	-30.00%	3,947,866.06	1.2273	4,845,170.07	
E37301 & I	1990	27.5	7,734,791.00	39.00	20.50	158,558,342.58	-30.00%	4,769,950.21	1.2273	5,854,104.37	
E37301 & I	1989	28.5	7,596,480.00	39.00	19.92	151,289,520.60	-30.00%	4,832,439.98	1.2273	5,930,797.34	
E37301 & I	1988	29.5	6,459,315.00	39.00	19.34	124,930,257.35	-30.00%	4,232,767.59	1.2273	5,194,826.39	
E37301 & I	1987	30.5	3,686,311.00	39.00	18.78	69,210,599.61	-30.00%	2,485,184.31	1.2273	3,050,037.78	
E37301 & I	1986	31.5	2,974,067.00	39.00	18.22	54,181,314.68	-30.00%	2,060,243.28	1.2273	2,528,512.59	
E37301 & I	1985	32.5	5,160,379.00	39.00	17.67	91,182,658.44	-30.00%	3,669,070.75	1.2273	4,503,007.82	
E37301 & I	1984	33.5	5,054,065.00	39.00	17.13	86,578,306.70	-30.00%	3,684,340.94	1.2273	4,521,748.75	

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E37301 & I	1983	34.5	4,262,595.00	39.00	16.60	70,760,355.78	-30.00%	3,182,694.97	1.2273	3,906,084.49	
E37301 & I	1982	35.5	2,878,199.00	39.00	16.08	46,278,101.21	-30.00%	2,199,055.33	1.2273	2,698,875.00	
E37301 & I	1981	36.5	4,249,130.00	39.00	15.57	66,144,677.02	-30.00%	3,319,046.43	1.2273	4,073,427.05	
E37301 & I	1980	37.5	3,644,594.00	39.00	15.06	54,898,810.99	-30.00%	2,908,011.83	1.2273	3,568,969.07	
E37301 & I	1979	38.5	5,244,641.00	39.00	14.57	76,406,290.18	-30.00%	4,271,156.96	1.2273	5,241,941.22	
E37301 & I	1978	39.5	3,636,073.00	39.00	14.08	51,204,998.02	-30.00%	3,020,061.63	1.2273	3,706,486.49	
E37301 & I	1977	40.5	1,972,892.00	39.00	13.61	26,841,452.14	-30.00%	1,670,044.53	1.2273	2,049,626.21	
E37301 & I	1976	41.5	1,404,903.00	39.00	13.14	18,455,311.57	-30.00%	1,211,196.85	1.2273	1,486,487.79	
E37301 & I	1975	42.5	991,341.20	39.00	12.68	12,566,112.18	-30.00%	869,873.15	1.2273	1,067,585.20	
E37301 & I	1974	43.5	962,817.00	39.00	12.22	11,769,282.44	-30.00%	859,352.69	1.2273	1,054,673.55	
E37301 & I	1973	44.5	1,013,502.00	39.00	11.78	11,938,820.45	-30.00%	919,591.92	1.2273	1,128,604.46	
E37301 & I	1972	45.5	1,064,463.00	39.00	11.34	12,075,055.38	-30.00%	981,300.05	1.2273	1,204,338.13	
E37301 & I	1971	46.5	752,353.90	39.00	10.92	8,212,454.42	-30.00%	704,311.59	1.2273	864,393.42	
E37301 & I	1970	47.5	572,123.20	39.00	10.50	6,004,598.90	-30.00%	543,606.86	1.2273	667,162.38	
E37301 & I	1969	48.5	602,024.60	39.00	10.08	6,069,888.95	-30.00%	580,302.35	1.2273	712,198.32	
E37301 & I	1968	49.5	608,528.50	39.00	9.68	5,888,822.18	-30.00%	594,792.98	1.2273	729,982.50	
E37301 & I	1967	50.5	480,643.40	39.00	9.28	4,459,895.40	-30.00%	476,173.24	1.2273	584,401.87	
E37301 & I	1966	51.5	308,330.40	39.00	8.89	2,740,512.13	-30.00%	309,479.12	1.2273	379,820.12	
E37301 & I	1965	52.5	247,866.40	39.00	8.50	2,107,913.12	-30.00%	251,962.55	1.2273	309,230.70	
E37301 & I	1964	53.5	189,521.10	39.00	8.13	1,540,299.20	-30.00%	195,034.12	1.2273	239,363.11	
E37301 & I	1963	54.5	176,143.70	39.00	7.76	1,366,359.36	-30.00%	183,441.50	1.2273	225,135.62	
E37301 & I	1962	55.5	135,092.90	39.00	7.39	998,804.22	-30.00%	142,327.30	1.2273	174,676.63	
E37301 & I	1961	56.5	158,457.90	39.00	7.04	1,115,000.42	-30.00%	168,828.59	1.2273	205,995.27	
E37301 & I	1960	57.5	239,243.30	39.00	6.69	1,599,510.37	-30.00%	257,699.28	1.2273	311,016.29	
E37301 & I	1959	58.5	152,983.00	39.00	6.34	970,197.38	-30.00%	166,537.99	1.2273	198,877.90	
E37301 & I	1958	59.5	84,502.54	39.00	6.00	507,285.48	-30.00%	92,943.79	1.2273	109,853.30	
E37301 & I	1957	60.5	78,769.75	39.00	5.67	446,736.81	-30.00%	87,509.45	1.2273	102,400.68	
E37301 & I	1956	61.5	116,873.20	39.00	5.34	624,685.85	-30.00%	131,112.30	1.2273	151,935.16	
E37301 & I	1955	62.5	108,831.20	39.00	5.02	546,837.60	-30.00%	123,252.64	1.2273	141,480.56	
E37301 & I	1954	63.5	50,555.30	39.00	4.71	238,115.11	-30.00%	57,784.72	1.2273	65,721.89	
E37301 & I	1953	64.5	45,497.65	39.00	4.40	200,194.48	-30.00%	52,473.80	1.2273	59,146.95	
E37301 & I	1952	65.5	21,045.52	39.00	4.10	86,211.67	-30.00%	24,485.45	1.2273	27,359.18	
E37301 & I	1951	66.5	8,341.54	39.00	3.80	31,658.10	-30.00%	9,788.73	1.2273	10,844.00	
E37301 & I	1950	67.5	15,634.39	39.00	3.50	54,713.38	-30.00%	18,500.93	1.2273	20,324.71	
E37301 & I	1949	68.5	18,539.70	39.00	3.20	59,400.09	-30.00%	22,121.61	1.2273	24,101.61	
E37301 & I	1948	69.5	4,595.15	39.00	2.91	13,370.59	-30.00%	5,528.01	1.2273	5,973.70	
E37301 & I	1947	70.5	2,101.86	39.00	2.61	5,489.63	-30.00%	2,549.43	1.2273	2,732.42	
E37301 & I	1946	71.5	758.81	39.00	2.31	1,749.71	-30.00%	928.13	1.2273	986.45	
E37301 & I	1945	72.5	448.49	39.00	1.99	892.09	-30.00%	553.30	1.2273	583.04	

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Account	Vintage Year	Age	Plant Balance at 12/31/2017	Average Service Life	Remaining Life	Plant $ x Remaining Life	Net Salvage %	Theoretical Reserve	Proration Factor	Allocated Reserve	Composite Remaining Life
E37301 & I	1944	73.5	92.58	39.00	1.66	153.33	-30.00%	115.24	1.2273	120.35	
E37301 & I	1943	74.5	126.08	39.00	1.33	167.58	-30.00%	158.32	1.2273	163.90	
E37301 & I	1942	75.5	47.48	39.00	1.01	47.72	-30.00%	60.13	1.2273	61.72	
E37301 & I	1941	76.5	116.22	39.00	0.70	81.75	-30.00%	148.36	1.2273	151.09	
E37301 & E37401 Total			575,732,495.96			16,975,065,988.82		182,616,711.79		224,062,122.74	29.48
E37001	2017	0.5	1,219,571.00	21.00	20.51	25,011,157.20	0.00%	28,563.51	1.2273	35,055.67	
E37001	2016	1.5	1,644,867.00	21.00	19.53	32,122,936.62	0.00%	115,203.35	1.2273	141,387.73	
E37001	2015	2.5	1,620,266.00	21.00	18.56	30,068,961.24	0.00%	188,410.70	1.2273	231,234.26	
E37001	2014	3.5	1,031,957.00	21.00	17.60	18,158,893.27	0.00%	167,247.80	1.2273	205,261.27	
E37001	2013	4.5	727,562.40	21.00	16.65	12,111,454.80	0.00%	150,826.46	1.2273	185,107.56	
E37001	2012	5.5	438,689.50	21.00	15.71	6,891,904.17	0.00%	110,503.59	1.2273	135,619.77	
E37001	2011	6.5	596,233.30	21.00	14.79	8,817,902.96	0.00%	176,333.16	1.2273	216,411.63	
E37001	2010	7.5	1,549,932.00	21.00	13.89	21,522,510.75	0.00%	525,050.54	1.2273	644,388.41	
E37001	2009	8.5	5,297,303.00	21.00	13.00	68,875,745.50	0.00%	2,017,505.60	1.2273	2,476,061.13	
E37001	2008	9.5	7,217,445.00	21.00	12.14	87,610,543.97	0.00%	3,045,514.33	1.2273	3,737,724.29	
E37001	2007	10.5	3,249,027.00	21.00	11.30	36,705,915.02	0.00%	1,501,126.28	1.2273	1,842,314.82	
E37001	2006	11.5	2,140,295.00	21.00	10.48	22,430,420.02	0.00%	1,072,179.76	1.2273	1,315,873.74	
E37001	2005	12.5	5,051,982.00	21.00	9.69	48,940,110.70	0.00%	2,721,500.54	1.2273	3,340,065.93	
E37001	2004	13.5	3,637,821.00	21.00	8.92	32,451,757.01	0.00%	2,092,499.24	1.2273	2,568,099.96	
E37001	2003	14.5	3,700,380.00	21.00	8.18	30,275,861.59	0.00%	2,258,672.31	1.2273	2,772,042.23	
E37001	2002	15.5	3,258,143.00	21.00	7.47	24,349,487.35	0.00%	2,098,643.60	1.2273	2,575,640.86	
E37001	2001	16.5	4,269,345.00	21.00	6.80	29,022,772.50	0.00%	2,887,308.21	1.2273	3,543,559.76	
E37001	2000	17.5	4,037,616.00	21.00	6.16	24,865,226.11	0.00%	2,853,557.61	1.2273	3,502,138.04	
E37001	1999	18.5	4,127,268.00	21.00	5.56	22,939,347.29	0.00%	3,034,918.13	1.2273	3,724,719.69	
E37001	1998	19.5	5,508,059.00	21.00	5.00	27,540,851.31	0.00%	4,196,589.89	1.2273	5,150,425.92	
E37001	1997	20.5	2,923,773.00	21.00	4.49	13,118,495.80	0.00%	2,299,082.72	1.2273	2,821,637.46	
E37001	1996	21.5	4,062,386.00	21.00	4.02	16,327,021.83	0.00%	3,284,908.77	1.2273	4,031,530.30	
E37001	1995	22.5	2,039,348.00	21.00	3.60	7,334,437.59	0.00%	1,690,089.07	1.2273	2,039,348.00	
E37001	1994	23.5	1,981,599.00	21.00	3.22	6,374,825.78	0.00%	1,678,035.87	1.2273	1,981,599.00	
E37001	1993	24.5	1,284,700.00	21.00	2.88	3,695,426.70	0.00%	1,108,727.30	1.2273	1,284,700.00	
E37001	1992	25.5	800,826.00	21.00	2.57	2,057,449.33	0.00%	702,852.22	1.2273	800,826.00	
E37001	1991	26.5	1,054,621.00	21.00	2.29	2,412,809.38	0.00%	939,725.32	1.2273	1,054,621.00	
E37001	1990	27.5	889,630.10	21.00	2.02	1,800,742.99	0.00%	803,880.43	1.2273	889,630.10	
E37001	1989	28.5	492,064.90	21.00	1.77	870,272.38	0.00%	450,623.36	1.2273	492,064.90	
E37001	1988	29.5	322,427.90	21.00	1.52	489,076.69	0.00%	299,138.53	1.2273	322,427.90	
E37001	1987	30.5	174,257.20	21.00	1.27	221,018.95	0.00%	163,732.49	1.2273	174,257.20	
E37001	1986	31.5	106,521.50	21.00	1.03	109,560.45	0.00%	101,304.34	1.2273	106,521.50	
E37001	1985	32.5	67,861.37	21.00	0.80	54,425.63	0.00%	65,269.67	1.2273	67,861.37	
E37001	1984	33.5	12,772.70	21.00	0.61	7,744.68	0.00%	12,403.91	1.2273	12,772.70	

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Account	Vintage Year	Age	Plant Balance at 12/31/2017	Average Service Life	Remaining Life	Plant $ x Remaining Life	Net Salvage %	Theoretical Reserve	Proration Factor	Allocated Reserve	Composite Remaining Life
E37001	1983	34.5	1,822.98	21.00	0.49	902.18	0.00%	1,780.02	1.2273	1,822.98	
E37001			76,538,373.85			665,587,969.71		44,843,708.63		54,424,753.10	8.70
E37003	2017	0.5	13,489,480.00	20.00	19.55	263,695,592.52	0.00%	304,700.37	1.2273	373,955.22	
E37003	2016	1.5	13,102,167.00	20.00	18.65	244,410,312.63	0.00%	881,651.37	1.2273	1,082,040.46	
E37003	2015	2.5	17,751,831.00	20.00	17.77	315,515,363.61	0.00%	1,976,062.82	1.2273	2,425,198.90	
E37003	2014	3.5	4,047,346.50	20.00	16.91	68,430,996.63	0.00%	625,796.67	1.2273	768,032.97	
E37003	2013	4.5	11,377,863.00	20.00	16.06	182,693,094.63	0.00%	2,243,208.27	1.2273	2,753,063.40	
E37003	2012	5.5	38,087,559.00	20.00	15.22	579,784,058.12	0.00%	9,098,356.09	1.2273	11,166,306.53	
E37003	2011	6.5	9,396,222.46	20.00	14.41	135,352,772.46	0.00%	2,628,583.84	1.2273	3,226,030.35	
E37003			107,252,468.96			1,789,882,190.59		17,758,359.43		21,794,627.82	16.69
Grand Total			6,819,502,482.93			203,159,153,859.79		2,096,907,024.82		2,571,784,461.77	

Distribution Book Reserve	($2,571,784,461.77)
Difference	(0.00)
Proration Factor	1.23

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Account	Vintage Year	Age	Plant Balance at 12/31/2017	Average Service Life	Remaining Life	Plant $ x Remaining Life	Net Salvage %	Theoretical Reserve	Proration Factor	Allocated Reserve	Composite Remaining Life
E38902	2013	4.5	1,500.01	55.00	50.97	76,449.90	0.00%	110.01	1.044246	114.88	
E38902	2012	5.5	114,340.00	55.00	50.08	5,726,484.50	0.00%	10,222.10	1.044246	10,674.38	
E38902	1993	24.5	12,084.05	55.00	34.40	415,738.21	0.00%	4,525.17	1.044246	4,725.39	
E38902	1982	35.5	3,894.81	55.00	26.49	103,166.39	0.00%	2,019.06	1.044246	2,108.39	
E38902	1980	37.5	333.84	55.00	25.16	8,398.99	0.00%	181.13	1.044246	189.15	
E38902	1979	38.5	21,543.91	55.00	24.51	527,988.02	0.00%	11,944.13	1.044246	12,472.60	
E38902	1975	42.5	676.49	55.00	22.00	14,882.41	0.00%	405.90	1.044246	423.86	
E38902	1970	47.5	26.72	55.00	19.09	510.04	0.00%	17.45	1.044246	18.22	
E38902 Total			154,399.83			6,873,618.46		29,424.95		30,726.88	44.52
E39001	2017	0.5	2,287,916.00	50.00	49.50	113,252,780.05	-5.00%	24,003.42	1.044246	25,065.47	
E39001	2016	1.5	6,288,178.00	50.00	48.50	304,985,625.09	-5.00%	197,888.77	1.044246	206,644.51	
E39001	2015	2.5	44,597,544.00	50.00	47.50	2,118,506,429.22	-5.00%	2,338,786.19	1.044246	2,442,267.55	
E39001	2014	3.5	29,675,696.00	50.00	46.50	1,380,053,107.88	-5.00%	2,178,365.53	1.044246	2,274,748.96	
E39001	2013	4.5	5,293,173.00	50.00	45.51	240,874,888.69	-5.00%	499,458.99	1.044246	521,557.93	
E39001	2012	5.5	2,445,120.00	50.00	44.51	108,831,190.90	-5.00%	281,920.99	1.044246	294,394.80	
E39001	2011	6.5	282,886.20	50.00	43.51	12,309,264.00	-5.00%	38,535.97	1.044246	40,241.02	
E39001	2010	7.5	726,485.60	50.00	42.52	30,888,453.21	-5.00%	114,152.36	1.044246	119,203.12	
E39001	2009	8.5	813,084.60	50.00	41.52	33,761,915.12	-5.00%	144,738.61	1.044246	151,142.68	
E39001	2008	9.5	182,280.60	50.00	40.53	7,387,867.35	-5.00%	36,249.42	1.044246	37,853.30	
E39001	2007	10.5	939,047.60	50.00	39.54	37,128,740.12	-5.00%	206,296.44	1.044246	215,424.18	
E39001	2006	11.5	45,587.61	50.00	38.55	1,757,362.25	-5.00%	10,962.38	1.044246	11,447.42	
E39001	2005	12.5	15,063,876.00	50.00	37.56	565,825,092.43	-5.00%	3,934,742.86	1.044246	4,108,838.53	
E39001	2004	13.5	6,382,177.00	50.00	36.58	233,440,186.09	-5.00%	1,799,041.94	1.044246	1,878,641.91	
E39001	2003	14.5	984,942.90	50.00	35.60	35,059,081.92	-5.00%	297,949.32	1.044246	311,132.32	
E39001	2002	15.5	678,553.70	50.00	34.62	23,489,228.80	-5.00%	219,207.58	1.044246	228,906.59	
E39001	2001	16.5	275,732.60	50.00	33.64	9,276,218.19	-5.00%	94,718.65	1.044246	98,909.55	
E39001	2000	17.5	2,606,578.00	50.00	32.67	85,162,142.48	-5.00%	948,501.91	1.044246	990,469.09	
E39001	1999	18.5	21,474.67	50.00	31.71	680,896.29	-5.00%	8,249.58	1.044246	8,614.59	
E39001	1998	19.5	121,579.00	50.00	30.75	3,738,250.30	-5.00%	49,154.69	1.044246	51,329.58	
E39001	1997	20.5	773,193.40	50.00	29.79	23,036,771.58	-5.00%	328,080.87	1.044246	342,597.05	
E39001	1995	22.5	166,376.30	50.00	27.91	4,643,471.03	-5.00%	77,182.22	1.044246	80,597.21	
E39001	1994	23.5	463,603.80	50.00	26.98	12,507,641.10	-5.00%	224,123.53	1.044246	234,040.04	
E39001	1993	24.5	755,039.60	50.00	26.06	19,674,776.59	-5.00%	379,621.27	1.044246	396,417.90	
E39001	1992	25.5	616,617.30	50.00	25.15	15,505,766.93	-5.00%	321,827.06	1.044246	336,066.54	
E39001	1991	26.5	1,190,207.00	50.00	24.25	28,857,247.13	-5.00%	643,715.16	1.044246	672,196.82	
E39001	1990	27.5	1,579,915.00	50.00	23.36	36,900,273.55	-5.00%	884,005.01	1.044246	923,118.47	
E39001	1989	28.5	3,444,143.00	50.00	22.48	77,417,549.68	-5.00%	1,990,581.61	1.044246	2,078,656.39	
E39001	1988	29.5	4,045,784.00	50.00	21.61	87,440,477.69	-5.00%	2,411,823.17	1.044246	2,518,536.10	
E39001	1987	30.5	11,979,715.00	50.00	20.76	248,705,951.43	-5.00%	7,355,875.77	1.044246	7,681,342.04	

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E39001	1986	31.5	198,038.40	50.00	19.92	3,945,342.79	-5.00%	125,088.12	1.044246	130,622.74	
E39001	1985	32.5	16,372,328.00	50.00	19.10	312,675,118.23	-5.00%	10,624,766.92	1.044246	11,094,867.75	
E39001	1984	33.5	6,803,549.00	50.00	18.29	124,423,304.11	-5.00%	4,530,837.06	1.044246	4,731,307.37	
E39001	1983	34.5	3,145,244.00	50.00	17.49	55,019,973.46	-5.00%	2,147,086.76	1.044246	2,242,086.23	
E39001	1982	35.5	7,427,154.00	50.00	16.71	124,131,584.50	-5.00%	5,191,748.43	1.044246	5,421,461.25	
E39001	1981	36.5	7,153,656.00	50.00	15.95	114,090,225.79	-5.00%	5,115,444.06	1.044246	5,341,780.74	
E39001	1980	37.5	634,301.40	50.00	15.20	9,640,727.95	-5.00%	463,561.18	1.044246	484,071.80	
E39001	1979	38.5	201,277.50	50.00	14.46	2,911,362.30	-5.00%	150,202.77	1.044246	156,848.60	
E39001	1978	39.5	34,271.76	50.00	13.74	471,050.26	-5.00%	26,093.29	1.044246	27,247.81	
E39001	1977	40.5	19,196,704.00	50.00	13.04	250,304,671.65	-5.00%	14,900,141.10	1.044246	15,559,409.08	
E39001	1976	41.5	41,326.20	50.00	12.35	510,252.53	-5.00%	32,677.21	1.044246	34,123.03	
E39001	1975	42.5	996,052.00	50.00	11.67	11,622,432.76	-5.00%	801,783.51	1.044246	837,259.03	
E39001	1974	43.5	3,210,691.00	50.00	11.01	35,335,067.16	-5.00%	2,629,189.14	1.044246	2,745,519.60	
E39001	1973	44.5	2,817,896.00	50.00	10.36	29,197,375.79	-5.00%	2,345,645.91	1.044246	2,449,430.78	
E39001	1972	45.5	730,218.10	50.00	9.74	7,112,896.05	-5.00%	617,358.19	1.044246	644,673.67	
E39001	1971	46.5	94,863.09	50.00	9.15	867,774.06	-5.00%	81,382.99	1.044246	84,983.84	
E39001	1970	47.5	37,477.15	50.00	8.59	321,745.16	-5.00%	32,594.36	1.044246	34,036.52	
E39001 Total			213,821,555.08			6,983,679,551.64		77,855,362.25		81,300,131.51	32.66
E39201	2017	0.5	1,130,529.00	13.00	12.50	14,132,641.28	10.00%	39,062.47	1.044246	40,790.82	
E39201	2016	1.5	2,673,153.00	13.00	11.52	30,795,283.92	10.00%	273,856.51	1.044246	285,973.49	
E39201	2015	2.5	15,782,914.00	13.00	10.58	166,989,227.63	10.00%	2,643,829.92	1.044246	2,760,808.17	
E39201	2014	3.5	14,355,707.00	13.00	9.69	139,117,366.63	10.00%	3,288,933.99	1.044246	3,434,455.36	
E39201	2013	4.5	25,340,906.00	13.00	8.85	224,322,514.68	10.00%	7,276,795.15	1.044246	7,598,762.45	
E39201	2012	5.5	18,916,067.00	13.00	8.08	152,823,737.60	10.00%	6,444,355.39	1.044246	6,729,490.76	
E39201	2011	6.5	7,646,782.00	13.00	7.41	56,634,590.93	10.00%	2,961,247.50	1.044246	3,092,270.14	
E39201	2010	7.5	5,548,953.00	13.00	6.85	37,996,161.57	10.00%	2,363,554.21	1.044246	2,468,131.45	
E39201	2009	8.5	5,919,402.00	13.00	6.39	37,837,291.14	10.00%	2,707,957.03	1.044246	2,827,772.63	
E39201	2008	9.5	4,566,976.00	13.00	6.02	27,495,063.41	10.00%	2,206,774.01	1.044246	2,304,414.39	
E39201	2007	10.5	5,986,936.00	13.00	5.71	34,186,009.24	10.00%	3,021,518.68	1.044246	3,155,208.06	
E39201	2006	11.5	2,087,811.00	13.00	5.44	11,357,374.49	10.00%	1,092,750.13	1.044246	1,141,099.68	
E39201	2005	12.5	758,978.70	13.00	5.19	3,940,473.20	10.00%	410,278.84	1.044246	428,431.94	
E39201	2004	13.5	610,649.60	13.00	4.95	3,024,065.06	10.00%	340,226.29	1.044246	355,279.86	
E39201	2003	14.5	466,952.30	13.00	4.71	2,200,376.83	10.00%	267,923.29	1.044246	279,777.76	
E39201	2002	15.5	2,488,068.00	13.00	4.47	11,116,667.92	10.00%	1,469,645.73	1.044246	1,534,671.31	
E39201	2001	16.5	2,284,800.00	13.00	4.22	9,640,210.94	10.00%	1,388,920.78	1.044246	1,450,374.63	
E39201	2000	17.5	775,590.90	13.00	3.97	3,077,609.84	10.00%	484,966.51	1.044246	506,424.22	
E39201	1999	18.5	1,038,914.00	13.00	3.72	3,862,686.41	10.00%	667,605.85	1.044246	697,144.57	
E39201	1998	19.5	415,871.80	13.00	3.47	1,443,987.98	10.00%	274,316.22	1.044246	286,453.55	
E39201	1997	20.5	328,421.30	13.00	3.23	1,061,566.02	10.00%	222,086.14	1.044246	231,912.51	

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GENERAL PLANT DEPRECIATED RESERVE REALLOCATION
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Account	Vintage Year	Age	Plant Balance at 12/31/2017	Average Service Life	Remaining Life	Plant $ x Remaining Life	Net Salvage %	Theoretical Reserve	Proration Factor	Allocated Reserve	Composite Remaining Life
E39201	1996	21.5	142,942.80	13.00	3.00	428,847.70	10.00%	98,959.06	1.044246	103,337.58	
E39201	1995	22.5	700,379.90	13.00	2.78	1,944,307.83	10.00%	495,735.98	1.044246	517,670.20	
E39201	1994	23.5	119,862.40	13.00	2.56	306,768.16	10.00%	86,638.36	1.044246	90,471.74	
E39201	1993	24.5	30,655.04	13.00	2.35	72,029.99	10.00%	22,602.84	1.044246	23,602.92	
E39201	1992	25.5	330,011.20	13.00	2.15	708,521.18	10.00%	247,958.61	1.044246	258,929.73	
E39201	1990	27.5	2,190.56	13.00	1.76	3,852.94	10.00%	1,704.76	1.044246	1,780.19	
E39201	1989	28.5	3,493.98	13.00	1.57	5,497.62	10.00%	2,763.98	1.044246	2,886.27	
E39201	1988	29.5	145,157.40	13.00	1.39	202,324.30	10.00%	116,634.59	1.044246	121,795.18	
E39201	1987	30.5	7,239.50	13.00	1.22	8,824.36	10.00%	5,904.63	1.044246	6,165.89	
E39201	1986	31.5	650.00	13.00	1.05	682.86	10.00%	537.72	1.044246	561.52	
E39201	1985	32.5	41,386.16	13.00	0.89	36,883.30	10.00%	34,694.08	1.044246	36,229.15	
E39201	1984	33.5	169,553.50	13.00	0.74	125,543.35	10.00%	143,906.69	1.044246	150,273.95	
E39201	1983	34.5	97,244.23	13.00	0.61	58,931.85	10.00%	83,439.91	1.044246	87,131.77	
E39201	1982	35.5	461,458.80	13.00	0.50	232,527.24	10.00%	399,214.88	1.044246	415,312.92	
E39201	1981	36.5	170,806.80	13.00	0.01	2,534.60	10.00%	153,550.65	1.044246	153,726.12	
E39201	1979	38.5	30,496.94	13.00	0.00	0.00	10.00%	27,447.25	1.044246	27,447.25	
E39201	1975	42.5	18,788.88	13.00	0.00	0.00	10.00%	16,909.99	1.044246	16,909.99	
E39201	1973	44.5	8,573.90	13.00	0.00	0.00	10.00%	7,716.51	1.044246	7,716.51	
E39201	1972	45.5	15,909.12	13.00	0.00	0.00	10.00%	14,318.21	1.044246	14,318.21	
E39201	1970	47.5	5,458.93	13.00	0.00	0.00	10.00%	4,913.04	1.044246	4,913.04	
E39201	1968	49.5	24,683.26	13.00	0.00	0.00	10.00%	22,214.93	1.044246	22,214.93	
E39201 Total			121,651,325.90			977,192,984.03		41,834,371.34		43,673,042.80	8.03
E39601	2017	0.5	78,476.77	18.00	17.50	1,373,384.28	6.00%	2,046.98	1.044246	2,137.55	
E39601	2016	1.5	311,633.60	18.00	16.51	5,145,454.05	6.00%	24,228.54	1.044246	25,300.55	
E39601	2015	2.5	1,522,438.00	18.00	15.55	23,668,171.31	6.00%	195,087.22	1.044246	203,719.00	
E39601	2014	3.5	3,910,032.00	18.00	14.61	57,141,989.65	6.00%	691,348.40	1.044246	721,937.63	
E39601	2013	4.5	2,747,342.00	18.00	13.72	37,689,301.33	6.00%	614,282.41	1.044246	641,461.80	
E39601	2012	5.5	2,714,019.00	18.00	12.86	34,902,528.60	6.00%	728,490.26	1.044246	760,722.86	
E39601	2011	6.5	1,000,179.00	18.00	12.04	12,040,784.91	6.00%	311,371.71	1.044246	325,148.59	
E39601	2010	7.5	737,301.80	18.00	11.27	8,308,683.48	6.00%	259,165.78	1.044246	270,632.76	
E39601	2009	8.5	1,627,925.00	18.00	10.57	17,208,713.78	6.00%	631,572.22	1.044246	659,516.61	
E39601	2008	9.5	256,655.20	18.00	9.95	2,554,876.50	6.00%	107,834.56	1.044246	112,605.78	
E39601	2007	10.5	118,086.20	18.00	9.42	1,112,294.89	6.00%	52,914.52	1.044246	55,255.76	
E39601	2006	11.5	155,669.40	18.00	8.96	1,394,512.79	6.00%	73,504.68	1.044246	76,756.95	
E39601	2005	12.5	189,137.50	18.00	8.56	1,619,191.76	6.00%	93,231.46	1.044246	97,356.55	
E39601	2004	13.5	429,804.10	18.00	8.22	3,531,061.17	6.00%	219,615.99	1.044246	229,333.07	
E39601	2003	14.5	52,256.03	18.00	7.91	413,371.43	6.00%	27,533.49	1.044246	28,751.73	
E39601	2002	15.5	102,402.20	18.00	7.63	781,827.48	6.00%	55,429.30	1.044246	57,881.81	
E39601	2001	16.5	1,472,608.00	18.00	7.38	10,866,004.81	6.00%	816,804.60	1.044246	852,944.74	

CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC
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Account	Vintage Year	Age	Plant Balance at 12/31/2017	Average Service Life	Remaining Life	Plant $ x Remaining Life	Net Salvage %	Theoretical Reserve	Proration Factor	Allocated Reserve	Composite Remaining Life
E39601	2000	17.5	544,827.30	18.00	7.13	3,886,856.80	6.00%	309,157.36	1.044246	322,836.26	
E39601	1999	18.5	254,138.50	18.00	6.89	1,752,123.58	6.00%	147,390.40	1.044246	153,911.80	
E39601	1998	19.5	591,453.50	18.00	6.65	3,936,062.12	6.00%	350,416.38	1.044246	365,920.82	
E39601	1997	20.5	28,298.71	18.00	6.41	181,484.52	6.00%	17,123.26	1.044246	17,880.89	
E39601	1996	21.5	141,274.10	18.00	6.17	871,322.85	6.00%	87,295.24	1.044246	91,157.68	
E39601	1995	22.5	263,351.20	18.00	5.92	1,558,801.82	6.00%	166,146.03	1.044246	173,497.29	
E39601	1994	23.5	207,103.90	18.00	5.67	1,173,827.83	6.00%	133,377.77	1.044246	139,279.17	
E39601	1993	24.5	295,475.20	18.00	5.42	1,600,390.30	6.00%	194,170.75	1.044246	202,761.98	
E39601	1992	25.5	5,009.13	18.00	5.17	25,875.44	6.00%	3,357.31	1.044246	3,505.86	
E39601	1991	26.5	105,988.00	18.00	4.92	521,238.07	6.00%	72,408.51	1.044246	75,612.28	
E39601	1990	27.5	117,343.10	18.00	4.67	548,473.97	6.00%	81,659.98	1.044246	85,273.09	
E39601	1989	28.5	78,792.41	18.00	4.44	349,457.02	6.00%	55,815.44	1.044246	58,285.04	
E39601	1987	30.5	32,054.38	18.00	3.97	127,380.10	6.00%	23,479.05	1.044246	24,517.89	
E39601	1986	31.5	148,863.40	18.00	3.75		6.00%	110,762.94	1.044246	115,663.73	
E39601	1985	32.5	37,511.46	18.00	3.53	132,593.86	6.00%	28,336.43	1.044246	29,590.19	
E39601	1984	33.5	420,830.80	18.00	3.32	1,398,510.39	6.00%	322,547.63	1.044246	336,819.00	
E39601	1983	34.5	82,876.57	18.00	3.12	258,230.30	6.00%	64,418.62	1.044246	67,268.87	
E39601	1982	35.5	128,656.20	18.00	2.91	374,811.79	6.00%	101,363.32	1.044246	105,848.22	
E39601	1979	38.5	42,931.73	18.00	2.33	100,021.74	6.00%	35,132.47	1.044246	36,686.93	
E39601	1973	44.5	2,500.00	18.00	1.26	3,150.71	6.00%	2,185.46	1.044246	2,282.16	
E39601	1971	46.5	1,116.17	18.00	0.94	1,045.75	6.00%	994.59	1.044246	1,038.59	
E39601 Total			20,956,361.56			238,553,811.21		7,212,001.07		7,531,101.50	11.38
E39701	2017	0.5	34,547,292.00	22.00	21.55	558,548.73	2.00%	695,455.52	1.044246	726,226.47	
E39701	2016	1.5	38,252,445.00	22.00	20.65	790,020,478.62	2.00%	2,295,574.78	1.044246	2,397,144.22	
E39701	2015	2.5	39,531,964.00	22.00	19.77	781,538,231.25	2.00%	3,927,348.96	1.044246	4,101,117.48	
E39701	2014	3.5	44,528,271.00	22.00	18.90	841,566,065.31	2.00%	6,149,762.67	1.044246	6,421,863.56	
E39701	2013	4.5	38,951,906.00	22.00	18.04	702,818,198.90	2.00%	6,865,511.75	1.044246	7,169,281.50	
E39701	2012	5.5	28,221,953.00	22.00	17.20	485,448,353.53	2.00%	6,032,996.37	1.044246	6,299,930.85	
E39701	2011	6.5	1,245,931.00	22.00	16.37	20,401,322.73	2.00%	312,226.19	1.044246	326,040.87	
E39701	2010	7.5	10,089,879.00	22.00	15.56	157,031,712.94	2.00%	2,893,032.39	1.044246	3,021,036.79	
E39701	2009	8.5	37,675,639.00	22.00	14.77	556,431,512.39	2.00%	12,135,631.58	1.044246	12,672,581.76	
E39701	2008	9.5	2,190,774.00	22.00	13.99	30,653,200.27	2.00%	781,497.78	1.044246	816,075.74	
E39701	2007	10.5	4,868,135.00	22.00	13.23	64,420,663.31	2.00%	1,901,124.57	1.044246	1,985,241.26	
E39701	2006	11.5	3,686,432.00	22.00	12.49	46,055,479.72	2.00%	1,561,141.08	1.044246	1,630,214.95	
E39701	2005	12.5	336,505.90	22.00	11.77	3,961,724.34	2.00%	153,298.97	1.044246	160,081.80	
E39701	2004	13.5	472,127.30	22.00	11.07	5,228,248.02	2.00%	229,790.07	1.044246	239,957.30	
E39701	2003	14.5	1,041,976.00	22.00	10.40	10,832,319.98	2.00%	538,605.86	1.044246	562,436.89	
E39701	2002	15.5	1,541,905.00	22.00	9.74	15,019,551.67	2.00%	842,014.14	1.044246	879,269.70	
E39701	2001	16.5	1,357,467.00	22.00	9.11	12,365,249.71	2.00%	779,501.99	1.044246	813,991.65	

CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC
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E39701	2000	17.5	7,089,921.00	22.00	8.50	60,279,146.43	2.00%	4,262,960.60	1.044246	4,451,578.51	
E39701	1999	18.5	7,416,126.00	22.00	7.92	58,736,533.69	2.00%	4,651,357.89	1.044246	4,857,160.73	
E39701	1998	19.5	2,689,366.00	22.00	7.36	19,805,760.60	2.00%	1,753,322.07	1.044246	1,830,899.13	
E39701	1997	20.5	1,035,176.00	22.00	6.84	7,075,791.31	2.00%	699,278.14	1.044246	730,218.23	
E39701	1996	21.5	1,561,161.00	22.00	6.33	9,887,478.93	2.00%	1,089,495.54	1.044246	1,137,701.09	
E39701	1995	22.5	1,369,752.00	22.00	5.86	8,024,909.88	2.00%	984,883.70	1.044246	1,028,460.62	
E39701	1994	23.5	2,114,673.00	22.00	5.41	11,442,296.82	2.00%	1,562,677.23	1.044246	1,631,819.06	
E39701	1993	24.5	5,110,179.00	22.00	4.99	25,497,795.13	2.00%	3,872,164.55	1.044246	4,043,491.39	
E39701	1992	25.5	2,537,054.00	22.00	4.59	11,654,467.50	2.00%	1,967,159.37	1.044246	2,054,197.82	
E39701	1991	26.5	6,685,726.00	22.00	4.22	28,224,113.22	2.00%	5,294,755.53	1.044246	5,529,025.98	
E39701	1990	27.5	863,775.63	22.00	3.87	3,343,985.56	2.00%	697,540.76	1.044246	728,403.98	
E39701 Total			327,013,511.83			4,768,323,140.49		74,930,110.05		78,245,449.31	14.58
Total General Depreciated			683,597,154.20					201,861,269.65		210,780,452.00	

CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC
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E39101	2017	0.5	1,430,243.00	24.00	23.50	33,610,710.50	0.00%	29,796.73	1.0442	31,115.11		
E39101	2016	1.5	854,024.20	24.00	22.50	19,215,544.50	0.00%	53,376.51	1.0442	55,738.20		
E39101	2015	2.5	608,018.80	24.00	21.50	13,072,404.20	0.00%	63,335.29	1.0442	66,137.61		
E39101	2014	3.5	1,976,896.00	24.00	20.50	40,526,368.00	0.00%	288,297.33	1.0442	301,053.27		
E39101	2013	4.5	1,657,955.00	24.00	19.50	32,330,122.50	0.00%	310,866.56	1.0442	324,621.09		
E39101	2012	5.5	250,080.00	24.00	18.50	4,626,480.00	0.00%	57,310.00	1.0442	59,845.72		
E39101	2011	6.5	52,816.03	24.00	17.50	924,280.53	0.00%	14,304.34	1.0442	14,937.25		
E39101	2010	7.5	43,016.76	24.00	16.50	709,776.54	0.00%	13,442.74	1.0442	14,037.52		
E39101	2009	8.5	98,725.95	24.00	15.50	1,530,252.23	0.00%	34,965.44	1.0442	36,512.51		
E39101	2008	9.5	14,507.67	24.00	14.50	210,361.22	0.00%	5,742.62	1.0442	5,996.71		
E39101	2007	10.5	131,643.70	24.00	13.50	1,777,189.95	0.00%	57,594.12	1.0442	60,142.41		
E39101	2006	11.5	19,880.86	24.00	12.50	248,510.75	0.00%	9,526.25	1.0442	9,947.74		
E39101	2005	12.5	827,976.60	24.00	11.50	9,521,730.90	0.00%	431,237.81	1.0442	450,318.25		
E39101	2004	13.5	193,596.50	24.00	10.50	2,032,763.25	0.00%	108,898.03	1.0442	113,716.31		
E39101	2003	14.5	102,302.20	24.00	9.50	971,870.90	0.00%	61,807.58	1.0442	64,542.30		
E39101	2002	15.5	579,907.00	24.00	8.50	4,929,209.50	0.00%	374,523.27	1.0442	391,094.34		
E39101	2001	16.5	50,066 18	24.00	7.50	375,496.35	0.00%	34,420.50	1.0442	35,943.46		
E39101	2000	17.5	691,239.60	24.00	6.50	4,493,057.40	0.00%	504,028.88	1.0442	526,330.01		
E39101	1999	18.5	138,514.80	24.00	5.50	761,831.40	0.00%	106,771.83	1.0442	111,496.02		
E39101	1997	20.5	10,585.25	24.00	3.50	37,048.38	0.00%	9,041.57	1.0442	9,441.62		
E39101												
Total			9,731,996.10			171,905,008.98		2,569,287.39		2,682,967.45	0.00	17.66
E39301	2017	0.5	18,524.95	19.00	18.50	342,711.58	0.00%	487.50	1.0442	509.07		
E39301	2016	1.5	12,753.48	19.00	17.50	223,185.90	0.00%	1,006 85	1.0442	1,051.40		
E39301	2015	2.5	164,404.30	19.00	16.50	2,712,670.95	0.00%	21,632.14	1.0442	22,589.28		
E39301	2014	3.5	9,169.76	19.00	15.50	142,131.28	0.00%	1,689.17	1.0442	1,763.90		
E39301	2011	6.5	913.33	19.00	12.50	11,416.63	0.00%	312.46	1.0442	326.28		
E39301	2007	10.5	820.64	19.00	8.50	6,975.44	0.00%	453.51	1.0442	473.58		
E39301	2002	15.5	166,938.40	19.00	3.50	584,284.40	0.00%	136,186.59	1.0442	142,212.27		
E39301	2001	16.5	10,322.68	19.00	2.50	25,806.70	0.00%	8,964.43	1.0442	9,361.07		
E39301	1999	18.5	4,639.04	19.00	0.50	2,319.52	0.00%	4,516.96	1.0442	4,639.04		
E39301												
Total			388,486.58			4,051,502.39		175,249.61		182,925.89	0.00	10.43
E39401	2017	0.5	7791698.89	18.00	17.50	136,354,730.58	0.00%	216,436.08	1.0442	226,012.46		
E39401	2016	1.5	672397.8	18.00	16.50	11,094,563.70	0.00%	56,033.15	1.0442	58,512.38		
E39401	2015	2.5	644008.75	18.00	15.50	9,982,135.63	0.00%	89,445.66	1.0442	93,403.25		
E39401	2014	3.5	2571354.54	18.00	14.50	37,284,640.83	0.00%	499,985.61	1.0442	522,107.85		
E39401	2013	4.5	701517.74	18.00	13.50	9,470,489.49	0.00%	175,379.44	1.0442	183,139.23		
E39401	2012	5.5	610933.93	18.00	12.50	7,636,674.13	0.00%	186,674.26	1.0442	194,933.80		
E39401	2011	6.5	119034.15	18.00	11.50	1,368,892 73	0.00%	42,984.55	1.0442	44,886.44		
E39401	2010	7.5	52525.19	18.00	10.50	551,514.50	0.00%	21,885.50	1.0442	22,853.84		
E39401	2009	8.5	46999.06	18.00	9.50	446,491.07	0.00%	22,194.00	1.0442	23,175.99		
E39401	2008	9.5	33251.75	18.00	8.50	282,639.88	0.00%	17,549.53	1.0442	18,326.03		
E39401	2007	10.5	98156.67	18.00	7.50	736,175.03	0.00%	57,258.06	1.0442	59,791.48		
E39401	2006	11.5	30548.26	18.00	6.50	198,563.69	0.00%	19,516.94	1.0442	20,380.49		

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E39401	2005	12.5	179504.95	18.00	5.50	987,277.23	0.00%	124,656.22	1.0442	130,171.72		
E39401	2004	13.5	73126.92	18.00	4.50	329,071.14	0.00%	54,845.19	1.0442	57,271.86		
E39401	2003	14.5	74250	18.00	3.50	259,875.00	0.00%	59,812.50	1.0442	62,458.95		
E39401	2002	15.5	144460.54	18.00	2.50	361,151.35	0.00%	124,396.58	1.0442	129,900.60		
E39401	2001	16.5	99441.92	18.00	1.50	149,162.88	0.00%	91,155.09	1.0442	95,188.32		
E39401	2000	17.5	2259.3	18.00	0.50	1,129.65	0.00%	2,196.54	1.0442	2,259.30		
E39401	1999	18.5	38818.73	18.00	0.00	0.00	0.00%	38,818.73	1.0000	38,818.73	38,818.73	
E39401	1997	20.5	6162.21	18.00	0.00	0.00	0.00%	6,162.21	1.0000	6,162.21	6,162.21	
E39401	1996	21.5	11137.53	18.00	0.00	0.00	0.00%	11,137.53	1.0000	11,137.53	11,137.53	
E39401 Total			14,001,588.83			217,495,178.47		1,918,523.36		2,000,892.44	56,118.47	15.53
E39501	2017	0.5	2,236,430.00	25.00	24.50	54,792,535.00	0.00%	44,728.60	1.0442	46,707.65		
E39501	2016	1.5	11,299.09	25.00	23.50	265,528.62	0.00%	677.95	1.0442	707.94		
E39501	2015	2.5	444,625.20	25.00	22.50	10,004,067.00	0.00%	44,462.52	1.0442	46,429.80		
E39501	2014	3.5	3,918,856.00	25.00	21.50	84,255,404.00	0.00%	548,639.84	1.0442	572,914.82		
E39501	2013	4.5	862,994.10	25.00	20.50	17,691,379.05	0.00%	155,338.94	1.0442	162,212.03		
E39501	2012	5.5	2,622,830.00	25.00	19.50	51,145,185.00	0.00%	577,022.60	1.0442	602,553.40		
E39501	2011	6.5	188,482.00	25.00	18.50	3,486,917.00	0.00%	49,005.32	1.0442	51,173.60		
E39501	2010	7.5	607,465.90	25.00	17.50	10,630,653.25	0.00%	182,239.77	1.0442	190,303.11		
E39501	2009	8.5	417,297.70	25.00	16.50	6,885,412.05	0.00%	141,881.22	1.0442	148,158.86		
E39501	2008	9.5	442,397.30	25.00	15.50	6,857,158.15	0.00%	168,110.97	1.0442	175,549.17		
E39501	2007	10.5	1,093,220.00	25.00	14.50	15,851,690.00	0.00%	459,152.40	1.0442	479,467.94		
E39501	2006	11.5	94,746.23	25.00	13.50	1,279,074.11	0.00%	43,583.27	1.0442	45,511.64		
E39501	2005	12.5	472,721.50	25.00	12.50	5,909,018.75	0.00%	236,360.75	1.0442	246,818.71		
E39501	2004	13.5	384,225.90	25.00	11.50	4,418,597.85	0.00%	207,481.99	1.0442	216,662.18		
E39501	2003	14.5	591,899.80	25.00	10.50	6,214,947.90	0.00%	343,301.88	1.0442	358,491.53		
E39501	2002	15.5	2,657,146.00	25.00	9.50	25,242,887.00	0.00%	1,647,430.52	1.0442	1,720,322.33		
E39501	2001	16.5	40,424.77	25.00	8.50	343,610.55	0.00%	26,680.35	1.0442	27,860.84		
E39501	2000	17.5	791,919.60	25.00	7.50	5,939,397.00	0.00%	554,343.72	1.0442	578,871.08		
E39501	1999	18.5	450,113.00	25.00	6.50	2,925,734.50	0.00%	333,083.62	1.0442	347,821.16		
E39501	1998	19.5	2,537.53	25.00	5.50	13,956.42	0.00%	1,979.27	1.0442	2,066.85		
E39501	1997	20.5	126,794.00	25.00	4.50	570,573.00	0.00%	103,971.08	1.0442	108,571.36		
E39501	1996	21.5	323.56	25.00	3.50	1,132.46	0.00%	278.26	1.0442	290.57		
E39501	1994	23.5	1,458,957.00	25.00	1.50	2,188,435.50	0.00%	1,371,419.58	1.0442	1,432,099.07		
E39501	1993	24.5	125,447.80	25.00	0.50	62,723.90	0.00%	122,938.84	1.0442	125,447.80		
E39501	1992	25.5	771,201.65	25.00	0.00	0.00	0.00%	771,201.65	1.0000	771,201.65	771,201.65	
E39501 Total			20,814,355.63			316,976,018.04		8,135,314.91	1.0442	8,495,268.06	771,201.65	15.23
E39702	2017	0.5	18,054,320.00	8.00	7.50	135,407,400.00	0.00%	1,128,395.00	1.0442	1,178,321.69		
E39702	2016	1.5	12,978,365.00	8.00	6.50	84,359,372.50	0.00%	2,433,443.44	1.0442	2,541,112.98		
E39702	2015	2.5	60,655,375.00	8.00	5.50	333,604,562.50	0.00%	18,954,804.69	1.0442	19,793,474.33		
E39702	2014	3.5	19,645,801.00	8.00	4.50	88,406,104.50	0.00%	8,595,037.94	1.0442	8,975,331.88		
E39702	2013	4.5	8,499,531.00	8.00	3.50	29,748,358.50	0.00%	4,780,986.19	1.0442	4,992,524.53		
E39702	2012	5.5	13,989,768.00	8.00	2.50	34,974,420.00	0.00%	9,617,965.50	1.0442	10,043,519.64		
E39702	2011	6.5	829,321.90	8.00	1.50	1,243,982.85	0.00%	673,824.04	1.0442	703,637.90		
E39702	2010	7.5	1,360,835.00	8.00	0.50	680,417.50	0.00%	1,275,782.81	1.0442	1,332,230.79		

CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC
COMPUTATION OF GENERAL PLANT AMORTIZED
RESERVE REALLOCATION AND REMAINING LIFE
AT DECEMBER 31, 2017

Account	Vintage Year	Age	Plant Balance at 12/31/2017	Average Service Life	Remaining Life	Plant $ x Remaining Life	Net Salvage %	Theoretical Reserve	Proration Factor	Allocated Reserve	Retirements After AR15	Composite Remaining Life
E39702	2009	8.5	10,465,361.00	8.00	0.00	0.00	0.00%	10,465,361.00	1.0000	10,465,361.00	10,465,361.00	
E39702	2008	9.5	461,273.92	8.00	0.00	0.00	0.00%	461,273.92	1.0000	461,273.92	461,273.92	
			146,939,951.82			708,424,618.35		58,386,874.53		60,486,788.65	10,926,634.92	4.82
E39801	2017	0.5	2544100	20.00	19.50	49,609,950.00	0.00%	63,602.50	1.0442	66,416.64		
E39801	2016	1.5	843162.99	20.00	18.50	15,598,515.32	0.00%	63,237.22	1.0442	66,035.20		
E39801	2015	2.5	2459365.56	20.00	17.50	43,038,897.30	0.00%	307,420.70	1.0442	321,022.76		
E39801	2014	3.5	1332018.26	20.00	16.50	21,978,301.29	0.00%	233,103.20	1.0442	243,417.02		
E39801	2013	4.5	448237.03	20.00	15.50	6,947,673.97	0.00%	100,853.33	1.0442	105,315.66		
E39801	2012	5.5	43605.07	20.00	14.50	632,273.52	0.00%	11,991.39	1 0442	12,521.96		
E39801	2011	6.5	181487.08	20.00	13.50	2,450,075.58	0.00%	58,983.30	1.0442	61,593.06		
E39801	2010	7.5	109623.93	20.00	12.50	1,370,299.13	0.00%	41,108.97	1.0442	42,927.87		
E39801	2009	8.5	101069.06	20.00	11.50	1,162,294.19	0.00%	42,954.35	1.0442	44,854.90		
E39801	2008	9.5	700191.83	20.00	10.50	7,352,014.22	0.00%	332,591.12	1.0442	347,306.86		
E39801	2007	10.5	159105.42	20.00	9.50	1,511,501.49	0.00%	83,530.35	1.0442	87,226.21		
E39801	2006	11.5	5021.81	20.00	8.50	42,685.39	0.00%	2,887.54	1.0442	3,015.30		
E39801	2005	12.5	204614.39	20.00	7.50	1,534,607.93	0.00%	127,883.99	1.0442	133,542.32		
E39801	2004	13.5	59611.21	20.00	6.50	387,472.87	0.00%	40,237.57	1.0442	42,017.91		
E39801	2002	15.5	210566.98	20.00	4.50	947,551.41	0.00%	163,189.41	1.0442	170,409.85		
E39801	2001	16.5	123010.71	20.00	3.50	430,537.49	0.00%	101,483.84	1.0442	105,974.06		
E39801	1999	18.5	11135.36	20.00	1.50	16,703.04	0.00%	10,300.21	1.0442	10,755.95		
E39801	1998	19.5	59823.29	20.00	0.50	29,911.65	0.00%	58,327.71	1.0442	59,823.29		
E39801 Total			9,595,749.98			155,041,265.74		1,843,686.69		1,924,176.83	0.00	16.16
Grand Total			201,472,128.94			1,573,893,591.97		73,028,936.49		75,773,019.31	11,753,955.04	

General Depreciated Reserve	210,780,452.00
General Amortized Reserve	75,773,019.31
General Plant Book Reserve	-286,553,471.31
Difference	0.00
Proration Factor	1.04425

Asset Location	Commission	Docket (If Applicable	Company	Year	Description
Alaska	Regulatory Commission of Alaska	U-18-121	Municipal Power and Light City of Anchorage	2018	Electric Depreciation Study
Various	FERC	RP19-352-000	Sea Robin	2018	Gas Depreciation Study
Texas New Mexico	Federal Energy Regulatory Commission	ER19-404-000	Southwestern Public Service Company	2018	Electric Transmission Depreciation Study
California	Federal Energy Regulatory Commission	ER19-221-000	San Diego Gas and Electric	2018	Electric Transmission Depreciation Study
Kentucky	Kentucky Public Service Commission	2018-00281	Atmos Kentucky	2018	Gas Depreciation Study
Alaska	Regulatory Commission of Alaska	U-18-054	Matanuska Electric Coop	2018	Electric Generation Depreciation Study
California	California Public Utilities Commission	A17-10-007	San Diego Gas and Electric	2018	Electric and Gas Depreciation Study
Texas	Public Utility Commission of Texas	48401	Texas New Mexico Power	2018	Electric Depreciation Study
Nevada	Public Utility Commission of Nevada	18-05031	Southwest Gas	2018	Gas Depreciation Study
Texas	Public Utility Commission of Texas	48231	Oncor Electric Delivery	2018	Depreciation Rates
Texas	Public Utility Commission of Texas	48371	Entergy Texas	2018	Electric Depreciation Study
Kansas	Kansas Corporation Commission	18-KCPE-480-RTS	Kansas City Power and Light	2018	Electric Depreciation Study
Arkansas	Arkansas Public Service Commission	18-027-U	Liberty Pine Bluff Water	2018	Water Depreciation Study
Kentucky	Kentucky Public Service Commission	2017-00349	Atmos KY	2018	Gas Depreciation Rates
Tennessee	Tennessee Public Utility Commission	18-00017	Chattanooga Gas	2018	Gas Depreciation Study

Asset Location	Commission	Docket (If Applicable	Company	Year	Description
Texas	Railroad Commission of Texas	10679	Si Energy	2018	Gas Depreciation Study
Alaska	Regulatory Commission of Alaska	U-17-104	Anchorage Water and Wastewater	2017	Water and Waste Water Depreciation Study
Michigan	Michigan Public Service Commission	U-18488	Michigan Gas Utilities Corporation	2017	Gas Depreciation Study
Texas	Railroad Commission of Texas	10669	CenterPoint South Texas	2017	Gas Depreciation Study
Arkansas	Arkansas Public Service Commission	17-061-U	Empire District Electric Company	2017	Depreciation Rates for New Wind Generation
Kansas	Kansas Corporation Commission	18-EPDE-184-PRE	Empire District Electric Company	2017	Depreciation Rates for New Wind Generation
Oklahoma	Oklahoma Corporation Commission	PUD 201700471	Empire District Electric Company	2017	Depreciation Rates for New Wind Generation
Missouri	Missouri Public Service Commission	EO-2018-0092	Empire District Electric Company	2017	Depreciation Rates for New Wind Generation
Michigan	Michigan Public Service Commission	U-18457	Upper Peninsula Power Company	2017	Electric Depreciation Study
Florida	Florida Public Service Commission	20170179-GU	Florida City Gas	2017	Gas Depreciation Study
Michigan	FERC	ER18-56-000	Consumers Energy	2017	Electric Depreciation Study
Missouri	Missouri Public Service Commission	GR-2018-0013	Liberty Utilities	2017	Gas Depreciation Study
Michigan	Michigan Public Service Commission	U-18452	SEMCO	2017	Gas Depreciation Study
Texas	Public Utility Commission of Texas	47527	Southwestern Public Service Company	2017	Electric Production Depreciation Study
MultiState	FERC	ER17-1664	American Transmission Company	2017	Electric Depreciation Study
Alaska	Regulatory Commission of Alaska	U-17-008	Municipal Power and Light City of Anchorage	2017	Generating Unit Depreciation Study

Asset Location	Commission	Docket (If Applicable	Company	Year	Description
Mississippi	Mississippi Public Service Commission	2017-UN-041	Atmos Energy	2017	Gas Depreciation Study
Texas	Public Utility Commission of Texas	46957	Oncor Electric Delivery	2017	Electric Depreciation Study
Oklahoma	Oklahoma Corporation Commission	PUD 201700078	CenterPoint Oklahoma	2017	Gas Depreciation Study
New York	FERC	ER17-1010-000	New York Power Authority	2017	Electric Depreciation Study
Texas	Railroad Commission of Texas	GUD 10580	Atmos Pipeline Texas	2017	Gas Depreciation Study
Texas	Railroad Commission of Texas	GUD 10567	CenterPoint Texas	2016	Gas Depreciation Study
MultiState	FERC	ER17-191-000	American Transmission Company	2016	Electric Depreciation Study
New Jersey	New Jersey Public Utilities Board	GR16090826	Elizabethtown Natural Gas	2016	Gas Depreciation Study
North Carolina	North Carolina Utilities Commission	Docket G-9 Sub 77H	Piedmont Natural Gas	2016	Gas Depreciation Study
Michigan	Michigan Public Service Commission	U-18195	Consumers Energy/DTE Electric	2016	Ludington Pumped Storage Depreciation Study
Alabama	FERC	ER16-2313-000	SEGCO	2016	Electric Depreciation Study
Alabama	FERC	ER16-2312-000	Alabama Power Company	2016	Electric Depreciation Study
Michigan	Michigan Public Service Commission	U-18127	Consumers Energy	2016	Natural Gas Depreciation Study
Mississippi	Mississippi Public Service Commission	2016 UN 267	Willmut Natural Gas	2016	Natural Gas Depreciation Study
Iowa	Iowa Utilities Board	RPU-2016-0003	Liberty-Iowa	2016	Natural Gas Depreciation Study
Illinois	Illinois Commerce Commission	GRM #16-208	Liberty-Illinois	2016	Natural Gas Depreciation Study
Kentucky	FERC	RP16-097-000	KOT	2016	Natural Gas Depreciation Study

Asset Location	Commission	Docket (If Applicable	Company	Year	Description
Alaska	Regulatory Commission of Alaska	U-16-067	Alaska Electric Light and Power	2016	Generating Unit Depreciation Study
Florida	Florida Public Service Commission	160170-EI	Gulf Power	2016	Electric Depreciation Study
California	California Public Utilities Commission	A 16-07-002	California American Water	2016	Water and Waste Water Depreciation Study
Arizona	Arizona Corporation Commission	G-01551A-16-0107	Southwest Gas	2016	Gas Depreciation Study
Texas	Public Utility Commission of Texas	45414	Sharyland	2016	Electric Depreciation Study
Colorado	Colorado Public Utilities Commission	16A-0231E	Public Service Company of Colorado	2016	Electric Depreciation Study
Multi-State NE US	FERC	16-453-000	Northeast Transmission Development, LLC	2015	Electric Depreciation Study
Arkansas	Arkansas Public Service Commission	15-098-U	CenterPoint Arkansas	2015	Gas Depreciation Study and Cost of Removal Study
New Mexico	New Mexico Public Regulation Commission	15-00296-UT	Southwestern Public Service Company	2015	Electric Depreciation Study
Atmos Energy Corporation	Tennessee Regulatory Authority	14-00146	Atmos Tennessee	2015	Natural Gas Depreciation Study
New Mexico	New Mexico Public Regulation Commission	15-00261-UT	Public Service Company of New Mexico	2015	Electric Depreciation Study
Hawaii	NA	NA	Hawaii American Water	2015	Water/Wastewater Depreciation Study
Kansas	Kansas Corporation Commission	16-ATMG-079-RTS	Atmos Kansas	2015	Gas Depreciation Study
Texas	Public Utility Commission of Texas	44704	Entergy Texas	2015	Electric Depreciation Study
Alaska	Regulatory Commission of Alaska	U-15-089	Fairbanks Water and Wastewater	2015	Water and Waste Water Depreciation Study
Arkansas	Arkansas Public Service Commission	15-031-U	Source Gas Arkansas	2015	Underground Storage Gas Depreciation Study

Asset Location	Commission	Docket (If Applicable	Company	Year	Description
New Mexico	New Mexico Public Regulation Commission	15-00139-UT	Southwestern Public Service Company	2015	Electric Depreciation Study
Texas	Public Utility Commission of Texas	44746	Wind Energy Transmission Texas	2015	Electric Depreciation Study
Colorado	Colorado Public Utilities Commission	15-AL-0299G	Atmos Colorado	2015	Gas Depreciation Study
Arkansas	Arkansas Public Service Commission	15-011-U	Source Gas Arkansas	2015	Gas Depreciation Study
Texas	Railroad Commission of Texas	GUD 10432	CenterPoint- Texas Coast Division	2015	Gas Depreciation Study
Kansas	Kansas Corporation Commission	15-KCPE-116-RTS	Kansas City Power and Light	2015	Electric Depreciation Study
Alaska	Regulatory Commission of Alaska	U-14-120	Alaska Electric Light and Power	2014-2015	Electric Depreciation Study
Texas	Public Utility Commission of Texas	43950	Cross Texas Transmission	2014	Electric Depreciation Study
New Mexico	New Mexico Public Regulation Commission	14-00332-UT	Public Service of New Mexico	2014	Electric Depreciation Study
Texas	Public Utility Commission of Texas	43695	Xcel Energy	2014	Electric Depreciation Study
Multi State – SE US	FERC	RP15-101	Florida Gas Transmission	2014	Gas Transmission Depreciation Study
California	California Public Utilities Commission	A.14-07-006	Golden State Water	2014	Water and Waste Water Depreciation Study
Michigan	Michigan Public Service Commission	U-17653	Consumers Energy Company	2014	Electric and Common Depreciation Study
Colorado	Public Utilities Commission of Colorado	14AL-0660E	Public Service of Colorado	2014	Electric Depreciation Study
Wisconsin	Wisconsin	05-DU-102	WE Energies	2014	Electric, Gas, Steam and Common Depreciation Studies
Texas	Public Utility Commission of Texas	42469	Lone Star Transmission	2014	Electric Depreciation Study

Asset Location	Commission	Docket (If Applicable	Company	Year	Description
Nebraska	Nebraska Public Service Commission	NG-0079	Source Gas Nebraska	2014	Gas Depreciation Study
Alaska	Regulatory Commission of Alaska	U-14-055	TDX North Slope Generating	2014	Electric Depreciation Study
Alaska	Regulatory Commission of Alaska	U-14-054	Sand Point Generating LLC	2014	Electric Depreciation Study
Alaska	Regulatory Commission of Alaska	U-14-045	Matanuska Electric Coop	2014	Electric Generation Depreciation Study
Texas, New Mexico	Public Utility Commission of Texas	42004	Southwestern Public Service Company	2013-2014	Electric Production, Transmission, Distribution and General Plant Depreciation Study
New Jersey	Board of Public Utilities	GR13111137	South Jersey Gas	2013	Gas Depreciation Study
Various	FERC	RP14-247-000	Sea Robin	2013	Gas Depreciation Study
Arkansas	Arkansas Public Service Commission	13-078-U	Arkansas Oklahoma Gas	2013	Gas Depreciation Study
Arkansas	Arkansas Public Service Commission	13-079-U	Source Gas Arkansas	2013	Gas Depreciation Study
California	California Public Utilities Commission	Proceeding No.: A.13-11-003	Southern California Edison	2013	Electric Depreciation Study
North Carolina/South Carolina	FERC	ER13-1313	Progress Energy Carolina	2013	Electric Depreciation Study
Wisconsin	Public Service Commission of Wisconsin	4220-DU-108	Northern States Power Company - Wisconsin	2013	Electric, Gas and Common Transmission, Distribution and General
Texas	Public Utility Commission of Texas	41474	Sharyland	2013	Electric Depreciation Study
Kentucky	Kentucky Public Service Commission	2013-00148	Atmos Energy Corporation	2013	Gas Depreciation Study
Minnesota	Minnesota Public Utilities Commission	13-252	Allete Minnesota Power	2013	Electric Depreciation Study

Asset Location	Commission	Docket (If Applicable	Company	Year	Description
New Hampshire	New Hampshire Public Service Commission	DE 13-063	Liberty Utilities	2013	Electric Distribution and General
Texas	Railroad Commission of Texas	10235	West Texas Gas	2013	Gas Depreciation Study
Alaska	Regulatory Commission of Alaska	U-12-154	Alaska Telephone Company	2012	Telecommunications Utility
New Mexico	New Mexico Public Regulation Commission	12-00350-UT	Southwestern Public Service Company	2012	Electric Depreciation Study
Colorado	Colorado Public Utilities Commission	12AL-1269ST	Public Service Company of Colorado	2012	Gas and Steam Depreciation Study
Colorado	Colorado Public Utilities Commission	12AL-1268G	Public Service Company of Colorado	2012	Gas and Steam Depreciation Study
Alaska	Regulatory Commission of Alaska	U-12-149	Municipal Power and Light City of Anchorage	2012	Electric Depreciation Study
Texas	Texas Public Utility Commission	40824	Xcel Energy	2012	Electric Depreciation Study
South Carolina	Public Service Commission of South Carolina	Docket 2012-384-E	Progress Energy Carolina	2012	Electric Depreciation Study
Alaska	Regulatory Commission of Alaska	U-12-141	Interior Telephone Company	2012	Telecommunications Utility
Michigan	Michigan Public Service Commission	U-17104	Michigan Gas Utilities Corporation	2012	Gas Depreciation Study
North Carolina	North Carolina Utilities Commission	E-2 Sub 1025	Progress Energy Carolina	2012	Electric Depreciation Study
Texas	Texas Public Utility Commission	40606	Wind Energy Transmission Texas	2012	Electric Depreciation Study
Texas	Texas Public Utility Commission	40604	Cross Texas Transmission	2012	Electric Depreciation Study
Minnesota	Minnesota Public Utilities Commission	12-858	Northern States Power Company - Minnesota	2012	Electric, Gas and Common Transmission, Distribution and General
Texas	Railroad Commission of Texas	10170	Atmos Mid-Tex	2012	Gas Depreciation Study

Asset Location	Commission	Docket (If Applicable	Company	Year	Description
Texas	Railroad Commission of Texas	10174	Atmos West Texas	2012	Gas Depreciation Study
Texas	Railroad Commission of Texas	10182	CenterPoint Beaumont/ East Texas	2012	Gas Depreciation Study
Kansas	Kansas Corporation Commission	12-KCPE-764-RTS	Kansas City Power and Light	2012	Electric Depreciation Study
Nevada	Public Utility Commission of Nevada	12-04005	Southwest Gas	2012	Gas Depreciation Study
Texas	Railroad Commission of Texas	10147, 10170	Atmos Mid-Tex	2012	Gas Depreciation Study
Kansas	Kansas Corporation Commission	12-ATMG-564-RTS	Atmos Kansas	2012	Gas Depreciation Study
Texas	Texas Public Utility Commission	40020	Lone Star Transmission	2012	Electric Depreciation Study
Michigan	Michigan Public Service Commission	U-16938	Consumers Energy Company	2011	Gas Depreciation Study
Colorado	Public Utilities Commission of Colorado	11AL-947E	Public Service of Colorado	2011	Electric Depreciation Study
Texas	Texas Public Utility Commission	39896	Entergy Texas	2011	Electric Depreciation Study
MultiState	FERC	ER12-212	American Transmission Company	2011	Electric Depreciation Study
California	California Public Utilities Commission	A1011015	Southern California Edison	2011	Electric Depreciation Study
Mississippi	Mississippi Public Service Commission	2011-UN-184	Atmos Energy	2011	Gas Depreciation Study
Michigan	Michigan Public Service Commission	U-16536	Consumers Energy Company	2011	Wind Depreciation Rate Study
Texas	Public Utility Commission of Texas	38929	Oncor	2011	Electric Depreciation Study
Texas	Railroad Commission of Texas	10038	CenterPoint South TX	2010	Gas Depreciation Study
Alaska	Regulatory Commission of Alaska	U-10-070	Inside Passage Electric Cooperative	2010	Electric Depreciation Study

Asset Location	Commission	Docket (If Applicable	Company	Year	Description
Texas	Public Utility Commission of Texas	36633	City Public Service of San Antonio	2010	Electric Depreciation Study
Texas	Texas Railroad Commission	10000	Atmos Pipeline Texas	2010	Gas Depreciation Study
Multi State – SE US	FERC	RP10-21-000	Florida Gas Transmission	2010	Gas Depreciation Study
Maine/ New Hampshire	FERC	10-896	Granite State Gas Transmission	2010	Gas Depreciation Study
Texas	Public Utility Commission of Texas	38480	Texas New Mexico Power	2010	Electric Depreciation Study
Texas	Public Utility Commission of Texas	38339	CenterPoint Electric	2010	Electric Depreciation Study
Texas	Texas Railroad Commission	10041	Atmos Amarillo	2010	Gas Depreciation Study
Georgia	Georgia Public Service Commission	31647	Atlanta Gas Light	2010	Gas Depreciation Study
Texas	Public Utility Commission of Texas	38147	Southwestern Public Service	2010	Electric Technical Update
Alaska	Regulatory Commission of Alaska	U-09-015	Alaska Electric Light and Power	2009-2010	Electric Depreciation Study
Alaska	Regulatory Commission of Alaska	U-10-043	Utility Services of Alaska	2009-2010	Water Depreciation Study
Michigan	Michigan Public Service Commission	U-16055	Consumers Energy/DTE Energy	2009-2010	Ludington Pumped Storage Depreciation Study
Michigan	Michigan Public Service Commission	U-16054	Consumers Energy	2009-2010	Electric Depreciation Study
Michigan	Michigan Public Service Commission	U-15963	Michigan Gas Utilities Corporation	2009	Gas Depreciation Study
Michigan	Michigan Public Service Commission	U-15989	Upper Peninsula Power Company	2009	Electric Depreciation Study
Texas	Railroad Commission of Texas	9869	Atmos Energy	2009	Shared Services Depreciation Study
Mississippi	Mississippi Public Service Commission	09-UN-334	CenterPoint Energy Mississippi	2009	Gas Depreciation Study
Texas	Railroad Commission of Texas	9902	CenterPoint Energy Houston	2009	Gas Depreciation Study

Asset Location	Commission	Docket (If Applicable	Company	Year	Description
Colorado	Colorado Public Utilities Commission	09AL-299E	Public Service Company of Colorado	2009	Electric Depreciation Study
Tennessee	Tennessee Regulatory Authority	11-00144	Piedmont Natural Gas	2009	Gas Depreciation Study
Louisiana	Louisiana Public Service Commission	U-30689	Cleco	2008	Electric Depreciation Study
Texas	Public Utility Commission of Texas	35763	Southwestern Public Service Company	2008	Electric Production, Transmission, Distribution and General Plant Depreciation Study
Wisconsin	Wisconsin	05-DU-101	WE Energies	2008	Electric, Gas, Steam and Common Depreciation Studies
North Dakota	North Dakota Public Service Commission	PU-07-776	Northern States Power Company - Minnesota	2008	Net Salvage
New Mexico	New Mexico Public Regulation Commission	07-00319-UT	Southwestern Public Service Company	2008	Testimony – Depreciation
Multiple States	Railroad Commission of Texas	9762	Atmos Energy	2007-2008	Shared Services Depreciation Study
Minnesota	Minnesota Public Utilities Commission	E015/D-08-422	Minnesota Power	2007-2008	Electric Depreciation Study
Texas	Public Utility Commission of Texas	35717	Oncor	2008	Electric Depreciation Study
Texas	Public Utility Commission of Texas	34040	Oncor	2007	Electric Depreciation Study
Michigan	Michigan Public Service Commission	U-15629	Consumers Energy	2006-2009	Gas Depreciation Study
Colorado	Colorado Public Utilities Commission	06-234-EG	Public Service Company of Colorado	2006	Electric Depreciation Study
Arkansas	Arkansas Public Service Commission	06-161-U	CenterPoint Energy – Arkla Gas	2006	Gas Distribution Depreciation Study and Removal Cost Study
Texas, New Mexico	Public Utility Commission of Texas	32766	Southwestern Public Service Company	2005-2006	Electric Production, Transmission, Distribution and General Plant Depreciation Study
Texas	Railroad Commission of Texas	9670/9676	Atmos Energy Corp	2005-2006	Gas Distribution Depreciation Study

- Voluminous WP - Exhibit DAW-1.pdf
- Voluminous WP - Exhibit DAW-2.pdf

WP DAW-2-Cost of Removal Report - Voluminous

Removal Cost Study WP

SUB FOLDER:

- Cost of Removal Report 3-6-19.docx

SUB FOLDER: Work Type Analysis

- 2017 RR Street Light Removal Cost Task Template for PropAcctg - V2.xlsx
- 2017 RR Telecom Removal Cost Task Template for PropAcctg - V3 to Dane S Krivacka.xlsx
- Copy of Transmission Summary Weighted Removal Percent v3.xlsx
- RR Distr Cost of Removal Final Summary 20181108.xlsx
- RR Removal Cost Task Template MUG 10-30-18.xlsx
- RR Substation Unit cost Removal Final.xlsx

WP Exhibit DAW-1-Depreciation Study - Voluminous

SUB FOLDERS: Accrual Rate

- WP Exhibit DAW-1 Accrual Rate Centerpoint Final.xls

SUB FOLDERS: Actuarial

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Graphs

- WP Exhibit DAW-1 39001 P19-17 E03-17 R3 44.pdf
- WP Exhibit DAW-1 39001 P19-17 E03-17 R3 45.pdf
- WP Exhibit DAW-1 39001 P19-17 E03-17 R4 47.pdf
- WP Exhibit DAW-1 39001 P19-17 E03-17 R25 44.pdf
- WP Exhibit DAW-1 39001 P19-17 E03-17 R25 54.pdf
- WP Exhibit DAW-1 39001 P19-17 E74-17 R2 41.pdf
- WP Exhibit DAW-1 39001 P19-17 E74-17 R3 50.pdf
- WP Exhibit DAW-1 39001 P19-17 E74-17 R4 51.pdf
- WP Exhibit DAW-1 39001 P19-17 E74-17 R4 52.pdf
- WP Exhibit DAW-1 39001 P19-17 E74-17 R25 51.pdf
- WP Exhibit DAW-1 39001 P19-17 E93-17 R3 51.pdf
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Observed Life Table

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Statistics

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Graphs

- WP Exhibit DAW-1 39201 P03-17 E03-17 L15 13.pdf
- WP Exhibit DAW-1 39201 P03-17 E03-17 R15 12.pdf
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Graphs

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Graphs

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Statistics

- WP Exhibit DAW-1 39702 Rolling Band Hazard Function.PDF
- WP Exhibit DAW-1 39702 Rolling Band Least Squares Function.PDF
- WP Exhibit DAW-1 39702 Shrinking Band Hazard Function.PDF
- WP Exhibit DAW-1 39702 Shrinking Band Least Squares Function.PDF

SUB FOLDER: Actuarial Data set

- Vintaged balances & General plant Actuarial data set.xls

SUB FOLDER: Averages

- CPT General Plant Avg Age Retirements.xlsx
- CPT General Plant Avg Age Survivors.xlsx

SUB FOLDER: Intangible Plant

- Co. 03 Depr Verify January 2019 software with comments (003).xlsx

SUB FOLDER: Interview Notes

- Interview Notes 7-2-18.doc

SUB FOLDER: Net Salvage

- CPT Elect Net salvage 2017 v3 with T & M.xlsx
- CPT Elect Net salvage 2017 without T and M adjustements.xlsx

SUB FOLDER: RTU data

- CPT RTU data.xlsx

SUB FOLDER: SPR Data Set

- SPR data set Non Substation accts v3 2017.xls
- Substations acct SPR with adj 2017.xls

SUB-FOLDER: SPR Plots

- Acct 352
  - CPT 352 49 S1 2017.xlsx
  - CPT 352 60 R1.5 2017.xlsx
  - CPT 352 75 R1 2017.xlsx
- Acct 353
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CPT 361 56 R4.xlsx
CPT 361 60 R4.xlsx
CPT 361 66 S2.5.xlsx

Acct 362

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CPT 362 48 R1.xlsx

Acct 364

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Acct 365

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Acct 366

CPT 366 37 S6.xlsx
CPT 366 53 R5.xlsx
CPT 366 62 S2.5.xlsx

Acct 367

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Acct 368

CPT 368 28 R1.xlsx

Acct 369

CPT 369 36 R0.5.xlsx
CPT 369 38 R0.5.xlsx
CPT 369 46 R0.5.xlsx

Acct 370 01

CPT 370.01 21 R3.xlsx
CPT 370.01 27 R2.xlsx

Acct 370 03

- CPT 370.03 7 SQ.xlsx

Acct 373 & 374

- CPT 373 & 374 36 R1.xlsx
- CPT 373 & 374 39 R1.xlsx
- CPT 373 & 374 44 R0.5.xlsx

SUB FOLDER: SPR Runs

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- 352 10 Yr band.PDF
- 352 20 Yr band.PDF
- 352 30 Yr band.PDF
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- 352 50 Yr band.PDF
- 352 60 Yr band.PDF
- 352 70 Yr band.PDF
- 352 80 Yr band.PDF
- 352 90 Yr band.PDF
- 352 Overall band.PDF

Acct 352 & 361

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- 353 20 Yr band.PDF
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- 355 60 Yr band.PDF
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- 356 90 Yr band.PDF
- 356 Oveall band.PDF

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- 359 90 Yr band.PDF
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WORKPAPERS

TO

EXHIBIT

OF

DANE A. WATSON

Workpaper Exhibit DAW-1 Depreciation Study to Exhibit of Dane A. Watson is voluminous and will be provided in electronic format.

WORKPAPERS

TO

TESTIMONY

OF

DANE A. WATSON

Workpaper DAW-2 Cost of Removal Study

to Testimony of Dane A. Watson is voluminous and will be provided in electronic format.

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

DIRECT TESTIMONY

OF

ROBERT B. HEVERT

ON BEHALF OF

CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC

April 2019

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LIST OF EXHIBITS

EXECUTIVE SUMMARY OF ROBERT B. HEVERT

Mr. Hevert's Direct Testimony establishes that for CenterPoint Energy Houston Electric, LLC ("CenterPoint Houston" or the "Company"): (1) a Return on Equity ("ROE") of 10.40 percent is reasonable and necessary; and (2) a capital structure consisting of 50.00 percent common equity and 50.00 percent long-term debt is appropriate. His recommended ROE of 10.40 percent considers a variety of factors that affect the required return to equity investors in the Company.

Mr. Hevert's Direct Testimony:

- Discusses the multiple analytical approaches that were evaluated to develop the ROE recommendation, as well as support the Company's proposed capital structure;
- Explains how the analysis to determine an appropriate ROE is affected by the various business and operating risks faced by the Company; and
- Describes the current capital markets and economic conditions, and the degree to which those conditions affect CenterPoint Houston's ROE and capital structure.

Together with the exhibits attached to his Direct Testimony, the evidence demonstrates that an ROE of 10.40 percent, and a capital structure of 50.00 percent common equity and 50.00 percent long-term debt should be approved for CenterPoint Houston to provide a reasonable opportunity to earn returns sufficient to provide efficient access to the long-term capital needed to make the investments required to ensure the continued safety and reliability of the Company's system.

DIRECT TESTIMONY OF ROBERT B. HEVERT

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND AFFILIATION.

A. My name is Robert B. Hevert. I am a Partner at ScottMadden, Inc. ("ScottMadden"). My business address is 1900 West Park Drive, Suite 250, Westborough, Massachusetts 01581.

Q. ON WHOSE BEHALF ARE YOU SUBMITTING THIS TESTIMONY?

A. I am submitting this direct testimony ("Direct Testimony") before the Public Utility Commission of Texas ("Commission") on behalf of CenterPoint Energy Houston Electric, LLC ("CenterPoint Houston" or the "Company").

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND.

A. I hold a Bachelor's degree in Business and Economics from the University of Delaware, and an MBA with a concentration in Finance from the University of Massachusetts. I also hold the Chartered Financial Analyst designation.

Q. PLEASE DESCRIBE YOUR EXPERIENCE IN THE ENERGY AND UTILITY INDUSTRIES.

A. I have worked in regulated industries for over twenty-five years, having served as an executive and manager with consulting firms, a financial officer of a publicly traded natural gas utility, and an analyst at a telecommunications utility. In my role as a consultant, I have advised numerous energy and utility clients on a wide range of financial and economic issues including corporate and asset-based transactions, asset and enterprise valuation, transaction due diligence, and strategic matters. As an expert witness, I have provided testimony in more than 250 proceedings regarding various financial and regulatory matters before numerous state utility

regulatory agencies, the Federal Energy Regulatory Commission ("FERC"), the Alberta Utilities Commission, and United States Federal Court. A summary of my professional and educational background, including a list of my testimony in prior proceedings, is included as Attachment A to my Direct Testimony.

II. PURPOSE AND OVERVIEW OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my Direct Testimony is to present evidence and provide a recommendation regarding the ROE and capital structure that should be adopted in this proceeding.[1] The analyses and conclusions are supported by the data presented in Exhibit RBH-1 through Exhibit RBH-9, which have been prepared by me or under my direction.

Q. WHAT ARE YOUR CONCLUSIONS REGARDING THE COMPANY'S CAPITAL STRUCTURE?

A. As discussed in Section VI, the Company's capital structure, including the 50.00 percent common equity ratio proposed by Company witness Robert B. McRae, is consistent with industry practice, and should be approved.

Q. WHAT ARE YOUR CONCLUSIONS REGARDING THE APPROPRIATE COST OF EQUITY?

A. The analyses discussed below indicate the Company's Cost of Equity currently to be in the range of 10.00 percent to 10.75 percent. Based on the quantitative and qualitative analyses discussed throughout my Direct Testimony, I find an ROE of 10.40 percent is reasonable and appropriate.

[1] Throughout my testimony, I interchangeably use the terms "ROE" and "Cost of Equity."

Q. PLEASE PROVIDE A BRIEF OVERVIEW OF THE ANALYSES THAT LED TO YOUR ROE RECOMMENDATION.

A. Because all financial models are subject to various assumptions and constraints, equity analysts and investors tend to use multiple methods to develop their return requirements. I therefore relied on three widely-accepted approaches to develop my ROE recommendation: (1) the Constant Growth Discounted Cash Flow ("DCF") model; (2) the Capital Asset Pricing Model ("CAPM"); and (3) the Bond Yield Plus Risk Premium method. Those analyses indicate the Company's Cost of Equity currently to be in the range of 10.00 percent to 10.75 percent. That range is corroborated by the Expected Earnings approach which, as I discuss later in my Direct Testimony, is supported by recent FERC Orders.

In addition to the methods noted above, I calculated the costs of issuing common stock (that is, "flotation" costs), and considered evolving capital market and business conditions, including changes in Federal Reserve monetary policy, increases in current and projected government bond yields, and the effects of the Tax Cuts and Jobs Act of 2017 ("TCJA") on the utility industry. Although I did not make explicit adjustments to the ROE estimates for those factors, I did consider them in determining where the Company's Cost of Equity falls within the range of analytical results.

My analyses recognize that estimating the Cost of Equity is an empirical, but not entirely mathematical exercise; it relies on both quantitative and qualitative data and analyses, all of which are used to inform the judgment that inevitably must be applied. I therefore considered the analytical results in the context of such

Company-specific and general capital market factors as those summarized below. Based on the quantitative and qualitative analyses discussed throughout my Direct Testimony, I conclude that an ROE of 10.40 percent is reasonable and appropriate.

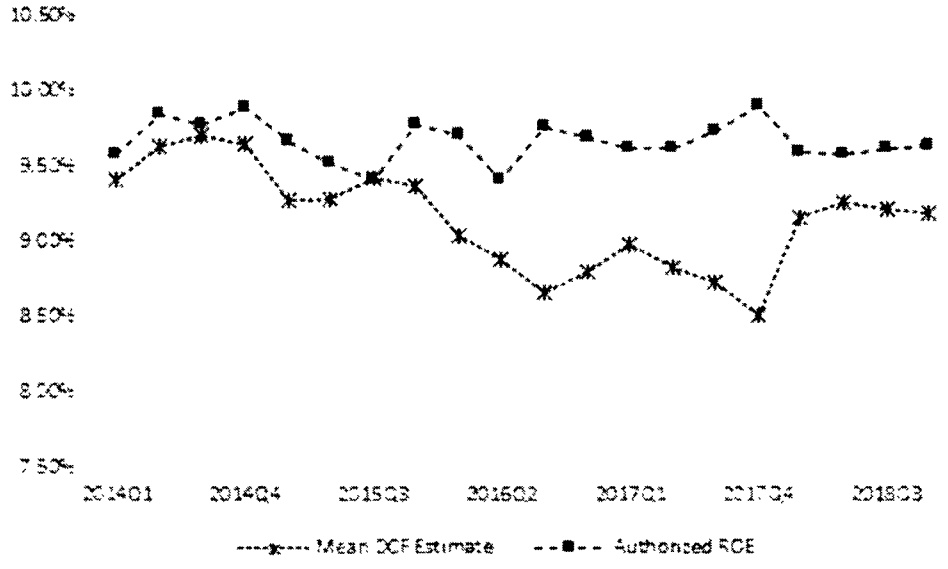
No single model is more reliable than all others under all market conditions, and all require the use of reasoned judgment in their application, and in interpreting their results. Therefore, the results of each ROE model must be assessed in the context of current and expected capital market conditions, and relative to other appropriate benchmarks. In developing my recommendation, I recognized that the low and high ends of the range of results (set by the low end of the range of Constant Growth DCF model results, and the high end of the range of CAPM results, respectively) are not likely to be reasonable estimates of the Company's Cost of Equity. In large measure, that is the case because those results are far removed from the returns recently authorized in other jurisdictions and, in the case of DCF-based methods, fail to adequately reflect evolving capital market conditions. Because Risk Premium-based methods directly reflect measures of capital market risk, they are more likely than other approaches (such as the Constant Growth DCF method) to provide reliable estimates of the Cost of Equity during periods of market instability.

Q. WHAT IS THE BASIS OF YOUR VIEW THAT THE CONSTANT GROWTH DCF METHOD RECENTLY HAS FAILED TO PROVIDE RELIABLE ROE ESTIMATES?

A. Since 2014, the model has produced results (i.e., mean results) consistently and meaningfully below authorized returns (see, Chart 1, below). That data suggests

state regulatory commissions have recognized the model's results are not necessarily reliable estimates of the Cost of Equity, and that other methods should be given meaningful weight in determining the ROE. As discussed in Section IV, FERC recently has addressed its longstanding focus on the DCF method.

Chart 1: Mean DCF Results vs. Authorized ROE Over Time[2]



Q. PLEASE SUMMARIZE THE RESULTS OF THE ANALYSES, AND HOW THEY CONTRIBUTED TO YOUR ROE RECOMMENDATION.

A. The range of results produced by the three primary approaches noted above are summarized in Tables 1a and 1b, below.

[2] DCF results based on quarterly average stock prices, Earnings Per Share growth rates from Value Line, Zacks, and First Call; assumes my proxy group. Authorized ROEs are quarterly averages for vertically-integrated and transmission and distribution electric utilities; source: S&P Global Market Intelligence. Please note that 2015 Q3 included only two ROE decisions. Excludes Illinois formula rate plans.

Table 1a: Summary of Discounted Cash Flow Model Results[3]

	Mean	Mean High
30-Day Average	9.22%	10.09%
90-Day Average	9.24%	10.11%
180-Day Average	9.32%	10.20%

Table 1b: Summary of Risk Premium Results

	Bloomberg Derived Market Risk Premium	Value Line Derived Market Risk Premium
Average Bloomberg Beta Coefficient		
Current 30-Year Treasury (3.03%)	8.37%	10.05%
Near Term Projected 30-Year Treasury (3.33%)	8.66%	10.35%
Average Value Line Beta Coefficient		
Current 30-Year Treasury (3.03%)	9.27%	11.24%
Near Term Projected 30-Year Treasury (3.33%)	9.57%	11.54%
Bond Yield Plus Risk Premium Approach		
Current 30-Year Treasury (3.03%)	9.93%	
Near Term Projected 30-Year Treasury (3.33%)	9.98%	
Long-Term Projected 30-Year Treasury (4.05%)	10.17%	

Based on those estimates, it is my view that a reasonable range of estimates is from 10.00 percent to 10.75 percent, and within that range, an ROE of 10.40 percent is reasonable and appropriate. That range is supported by the Expected Earnings approach, which results in an average ROE estimate of 10.27 percent and a median ROE estimate of 10.26 percent.

As discussed in more detail throughout the balance of my Direct Testimony, my conclusions and recommendations reflect the following considerations:

[3] *See* also Exhibit RBH-1, which includes the Mean Low estimates.

- Expectations for increases in interest rates, as revealed in economists' consensus projections, which weigh in the evaluation of the DCF, CAPM, and Bond Yield Plus Risk Premium results;
- The effect of flotation costs on the Company's level of capital;
- The Company's concentration of revenues from a small number of retail electric providers ("REPs");
- The multiple risks associated with severe weather in the Company's service area, including restoration costs and corresponding liquidity risks;
- The regulatory environment and the associated risks due to the timing effects of the Company's cost-recovery mechanisms given the Company's capital spending plans; and
- The need to maintain the financial profile required to access capital at reasonable rates, even during periods of capital market distress.

Q. HOW IS THE REMAINDER OF YOUR DIRECT TESTIMONY ORGANIZED?

A. The balance of my Direct Testimony is organized as follows:

Section III – Discusses the effect of the current capital market environment on the Cost of Equity;

Section IV – Discusses the Cost of Equity analyses;

Section V – Discusses the Company's business risks;

Section VI – Addresses the reasonableness of the Company's proposed capital structure;

Section VII – Summarizes my conclusions and recommendations; and

Appendix A – Provides the details regarding the analytical methodologies.

III. CAPITAL MARKET ENVIRONMENT

Q. DO ECONOMIC CONDITIONS INFLUENCE THE REQUIRED COST OF CAPITAL AND REQUIRED RETURN ON COMMON EQUITY?

A. Yes. As discussed in Section IV, the models used to estimate the Cost of Equity are meant to reflect, and therefore are influenced by, current and expected capital market conditions. Therefore, it is important to assess the reasonableness of any

financial model's results in the context of observable market data. To the extent a given model's assumptions are misaligned with such data, or its results are inconsistent with basic financial principles, it is appropriate to consider whether alternative estimation techniques are likely to provide more meaningful and reliable results.

Q. DO YOU HAVE ANY GENERAL OBSERVATIONS REGARDING THE RELATIONSHIP BETWEEN CURRENT CAPITAL MARKET CONDITIONS AND THE COMPANY'S COST OF EQUITY?

A. Yes, I do. Although the Federal Reserve completed its Quantitative Easing initiative in October 2014, it was not until December 2015 that it raised the Federal Funds rate, and began the process of rate normalization.[4] A significant issue is how investors likely will react as that process continues, and eventually is completed. For example, increasing interest rates may be an indication of expanding macroeconomic growth, in which case we reasonably could expect the growth rate component of the DCF model to increase. At the same time, sectors that historically included dividend-paying companies would see increasing dividend yields, as investors look to alternative sources of current income. It therefore remains important to understand the relationships among capital market and macroeconomic variables, and to consider how those factors may affect different models and their results.

Q. DOES YOUR RECOMMENDATION CONSIDER THE INTEREST RATE ENVIRONMENT?

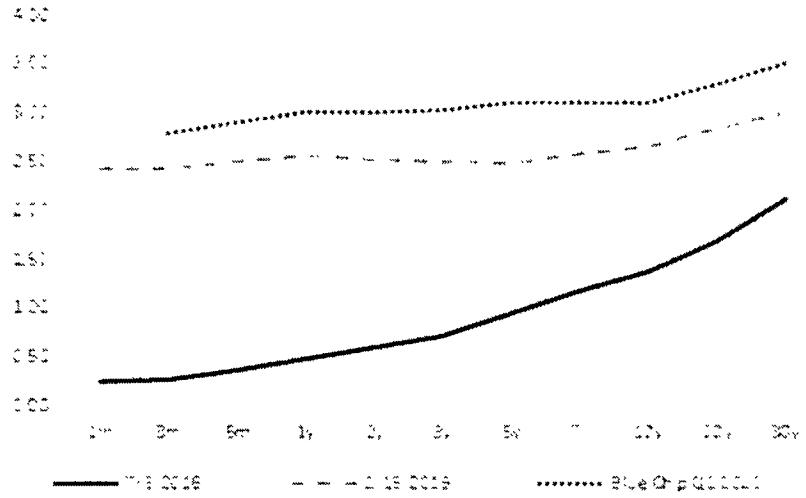
[4] Federal Reserve Press Release dated December 16, 2015.

A. Yes, it does. From an analytical perspective, it is important that the inputs and assumptions used to arrive at an ROE recommendation, including assessments of capital market conditions, are consistent with the recommendation itself. Although all analyses require an element of judgment, the application of that judgment must be made in the context of the quantitative and qualitative information available to the analyst, and the capital market environment in which the analyses were undertaken. Because the Cost of Equity is forward-looking, the salient issue is whether investors see the likelihood of increasing costs of capital during the period in which the rates set in this proceeding will be in effect.

Although the Federal Reserve's market intervention policies have kept interest rates historically low, since July 8, 2016 (when the 30-year Treasury fell to its secular low of 2.11 percent) rates have risen. As the Federal Reserve increased the Federal Funds target rate eight times between December 2016 and December 2018 to 2.25 percent to 2.50 percent, short-term and long-term interest rates also increased (see Chart 2 below).[5]

[5] Federal Reserve Board Schedule H.15. 1-year, 10-year and 30-year Treasury yields increased by 207 basis points, 129 basis points and 89 basis points, respectively, July 8, 2016 to February 15, 2019.

Chart 2: Treasury Yield Curve: 7/8/2016, 2/15/19 and Projected Q2 2020[6]



In a press conference following the December 2018 Federal Open Market Committee meeting, Chairman Powell discussed the recent increases in the Federal Funds rate and the expectation for some further gradual rate increases, noting a strengthening economy, a strong labor market and rising wages.[7]

Aside from the increase in the Federal Funds rate, in October 2017, the Federal Reserve also initiated its balance sheet normalization program that includes gradual reductions to its security holdings by decreasing its reinvestment activities.[8] In the January 2019 meeting, the Federal Reserve decided to continue with the balance sheet wind-down.[9] At the same time, the supply of marketable U.S.

[6] Sources: Federal Reserve Board Schedule H.15.; Blue Chip Financial Forecasts, Vol. 38, No. 2, February 1, 2019, at 2. Three, seven, and 20-year projected Treasury yields are interpolated.
[7] Transcript of Chairman Powell's Press Conference, December 19, 2018.
[8] *See:* https://www.federalreserve.gov/monetarypolicy/policy-normalization.htm and Federal Open Market Committee ("FOMC") Press Release, June 14, 2017. In its January 30, 2019 press release the FOMC noted that although it continues to view changes in the federal funds target rate as the "primary means of adjusting monetary policy", it also would adjust the details of its balance sheet normalization based on economic and financial developments.
[9] *Federal Reserve Press Release* dated January 30, 2019.

Treasury securities has increased by approximately $1.14 trillion.[10] The growing supply of Treasury securities from both the Federal Reserve and the U.S. Treasury tends to put upward pressure on Treasury rates.

Q. DOES MARKET-BASED DATA INDICATE THAT INVESTORS SEE A PROBABILITY OF INCREASING INTEREST RATES?

A. Yes. Consensus near-term forecasts of the 30-year Treasury yield reported by Blue Chip Financial Forecast indicate the market expects long-term rates to reach 3.50 percent by the second quarter of 2020.[11] Importantly, the potential for rising rates represents risk for utility investors.

Q. HAS MARKET VOLATILITY CHANGED WITH THE FEDERAL RESERVE'S MOVE TOWARD MONETARY POLICY NORMALIZATION?

A. Yes, it has. A visible and widely reported measure of expected volatility is the Cboe Options Exchange ("Cboe") Volatility Index, often referred to as the VIX. As Cboe explains, the VIX "is a calculation designed to produce a measure of constant, 30-day expected volatility of the U.S. stock market, derived from real-time, mid-quote prices of S&P 500® Index call and put options."[12] Simply, the VIX is a market-based measure of expected volatility. Because volatility is a measure of risk, increases in the VIX, or in its volatility, are a broad indicator of expected increases in market risk.

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[10] Source: U.S. Treasury, Monthly Statement of the Public Debt. *See* https://www.treasurydirect.gov/govt/reports/pd/mspd/mspd.htm. U.S. marketable securities increased from $14.48 trillion to $15.62 trillion between December 31, 2017 and December 31, 2018.

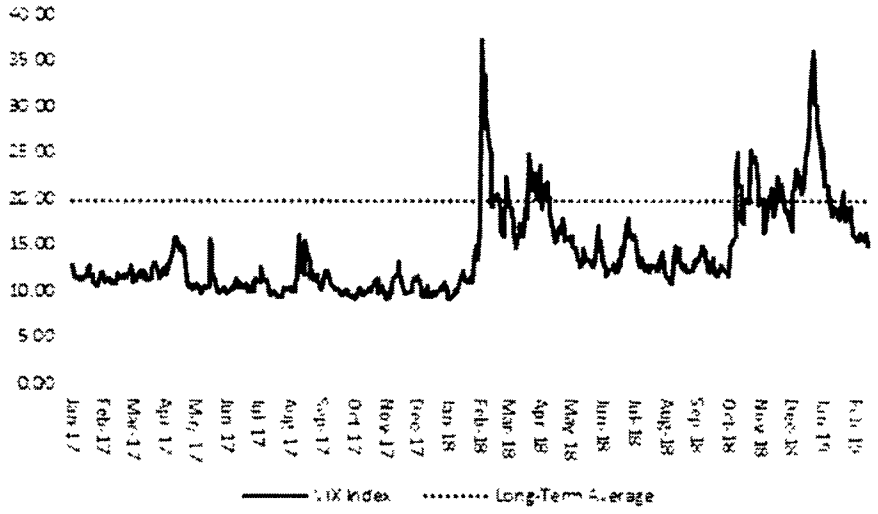
[11] Blue Chip Financial Forecast at 2, Vol. 38, No. 2, February 1, 2019.

[12] Source: http://www.cboe.com/vix.

Although the VIX is not expressed as a percentage, it should be understood as such. That is, if the VIX stood at 15.00, it would be interpreted as an expected standard deviation in annual market returns of 15.00 percent over the coming 30 days. Since 2000, the VIX has averaged about 19.69, which is highly consistent with the long-term standard deviation on annual market returns (19.80 percent, as reported by Duff & Phelps).

As Chart 3 (below) demonstrates, in 2017 market volatility was well below its long-term average, and moved within a somewhat narrow range; the VIX averaged about 11.09, with a standard deviation of 1.36. Throughout 2018 and into 2019, the VIX average increased to 16.82 with a standard deviation of 4.89. That is, from 2017 to 2019 both the level and the volatility of market volatility increased.

Chart 3: VIX Since January 2017[13]



[13] Source: Bloomberg Professional Services.

Table 2 (below) further demonstrates the increase in market uncertainty from 2017 to 2019. As that table notes, the standard deviation (that is, the volatility of volatility) in 2018-2019 is about 3.610 times higher than its 2017 level (1.36).

Table 2: VIX Levels and Volatility[14]

Long-Term Average	19.69
2018-2019 Average	16.82
2018-2019 Maximum	37.32
2018-2019 Minimum	9.15
2018-2019 Standard Deviation	4.89
2017 Average	11.09
2017 Maximum	16.04
2017 Minimum	9.14
2017 Standard Deviation	1.36

Q. IS MARKET VOLATILITY EXPECTED TO INCREASE FROM ITS CURRENT LEVELS?

A. Yes, it is. One means of assessing market expectations regarding the future level of volatility is to review Cboe's "Term Structure of Volatility." As Cboe points out:

> The implied volatility term structure observed in SPX options markets is analogous to the term structure of interest rates observed in fixed income markets. Similar to the calculation of forward rates of interest, it is possible to observe the option market's expectation of future market volatility through use of the SPX implied volatility term structure.[15]

Cboe's term structure data is upward sloping, indicating market expectations of increasing volatility. The expected VIX value in December 2020 is about 19.75, suggesting investors see a reversion to long-term average volatility

[14] Source: Bloomberg Professional Services. Data as of February 15, 2019.
[15] Source: http://www.cboe.com/trading-tools/strategy-planning-tools/term-structure-data.

over the coming months.[16] That increase in expected volatility makes intuitive sense, given the Federal Reserve's movement toward normalizing monetary policy. That policy change includes reducing the liquidity provided to the financial markets during the Federal Reserve's Quantitative Easing initiatives. Because that liquidity had the effect of dampening volatility as it was added to the markets, it stands to reason that volatility will increase as liquidity is diminished.

Q. DOES THE FEDERAL RESERVE'S TIGHTENING OF MONETARY POLICY HAVE OTHER IMPLICATIONS FOR THE ASSESSMENT OF CAPITAL MARKETS?

A. Yes. Just as the Federal Reserve's monetary policy in the post-financial crisis era was aimed at lowering interest rates and market volatility, its "normalization" will tend to increase both. Because it is at least a directional indicator of investors' return requirements, the elevated uncertainty supports my recommended range.

It also is important to recognize that the Federal Reserve's reduction in monetary stimulus is related to expectations of improved economic and financial conditions, and sustained growth in the overall economy. When increasing the Federal Funds rate on December 19, 2018, the Federal Open Market Committee ("FOMC") noted the labor market continued to strengthen and that household spending was rising at a strong rate while business fixed investment had moderated from its rapid pace earlier in the year.[17] Although it did not increase the Federal Funds rate in its January 2019 meeting, the FOMC observed the labor market

[16] Source: http://www.cboe.com/trading-tools/strategy-planning-tools/term-structure-data, accessed February 18, 2019.
[17] *Federal Reserve Press Release* dated December 19, 2018.

continued to strengthen, and economic activity continued to rise at a solid rate.[18] From that perspective, investors would expect to see higher growth estimates for companies in the overall economy, including the utility sector.

Q. HAVE YOU ALSO CONSIDERED THE EFFECT OF THE RECENTLY ENACTED TAX CUTS AND JOBS ACT ("TCJA")?

A. Yes, I have. On December 22, 2017, the President of the United States signed the TCJA into law. The major rating agencies have observed that a reduction in utilities' revenue associated with lower income taxes and the potential return of excess accumulated deferred income taxes, and the loss of bonus depreciation also may reduce utilities' cash flow, putting downward pressure on key credit metrics. Because rating agencies have assessed the consequences of the TCJA to utilities' cash flow and credit statistics, we reasonably can assume equity investors also recognize those concerns.

Q. WHAT CONCERNS HAVE THE MAJOR RATING AGENCIES RAISED AS THEY CONSIDER THE IMPLICATIONS OF THE TCJA FOR UTILITES' CASH FLOW AND CREDIT STATISTICS?

A. The major rating agencies have observed that a reduction in utilities' revenue associated with lower income taxes and the potential return of excess accumulated deferred income taxes may reduce utilities' cash flow.[19] As FitchRatings ("Fitch") pointed out "[a]bsent mitigating strategies on the regulatory front, this is expected to lead to weaker credit metrics and negative rating actions for issuers with limited

[18] *Federal Reserve Press Release* dated January 30, 2019.
[19] *See* S&P Global Market Intelligence, *Rating agencies warn tax reform could drag US utility sector credit quality*, January 25, 2018.

headroom to absorb the leverage creep."[20] In a similar vein, Standard & Poor's ("S&P") observed that the TCJA is "...negative for credit quality because the combination of a lower tax rate and the loss of stimulus provisions related to bonus depreciation or full expensing of capital spending will create headwinds in operating cash-flow generation capabilities as customer rates are lowered in response to the new tax code."[21] Moody's Investors Service ("Moody's") stated the following:

> Tax reform is credit negative for US regulated utilities because the lower 21% statutory tax rate reduces cash collected from customers, while the loss of bonus depreciation reduces tax deferrals, all else being equal. Moody's calculates that the recent changes in tax laws will dilute a utility's ratio of cash flow before changes in working capital to debt by approximately 150 - 250 basis points on average, depending to some degree on the size of the company's capital expenditure programs. From a leverage perspective, Moody's estimates that debt to total capitalization ratios will increase, based on the lower value of deferred tax liabilities.[22]

All three rating agencies, therefore, have observed the negative effects of the TCJA on utilities' cash flow, and the potential consequences for their credit profiles.

Q. DID MOODY'S UPDATE ITS REVIEW OF THE UTILITY SECTOR?

A. Yes. On June 18, 2018 Moody's changed its outlook on the U.S. regulated utility sector to "negative" from "stable". Moody's explained that its change in outlook "...primarily reflects a degradation in key financial credit ratios, specifically the ratio of cash flow from operations to debt, funds from operations (FFO) to debt and

[20] FitchRatings Special Report, *Tax Reform Impact on the U.S. Utilities, Power & Gas Sector*, January 24, 2018.
[21] S&P Global Ratings, *U.S. Tax Reform: For Utilities' Credit Quality, Challenges Abound*, January 24, 2018.
[22] Moody's Investors' Service, *Rating Action: Moody's changes outlooks on 25 US regulated utilities primarily impacted by tax reform*, January 19, 2018.

retained cash flow to debt, as well as certain book leverage ratios."[23] The sector's outlook could remain "negative" if cash flow-based metrics continue to decline, or if there emerge signs of a more "contentious" regulatory environment (which, Moody's notes, is not fully reflected in lower authorized returns). Moody's also noted that "[m]anagement teams' defensive efforts and a few initial signs of supportive regulatory responses to tax reform are important first steps in addressing the sector's increased financial risk," and explained that in its view, "it will take longer than 12-18 months for the sector to exhibit a material financial improvement from these actions."[24]

Q. WHAT CONCLUSIONS DO YOU DRAW FROM THE DATA AND INFORMATION DISCUSSED ABOVE?

A. There is little question the TCJA has increased cash flow-related risks, and the potentially dilutive effects of additional equity issuances, for utilities. Those risks are manifested in the comments of financial participants such as Moody's, S&P, and Fitch. Further, because non-regulated companies may benefit from the TCJA in ways utilities cannot, it is reasonable to conclude investors have begun to see utilities as less attractive relative to other industry sectors. In addition, to the extent the TCJA accelerates economic growth and inflation, and increases the potential for widening federal budget deficits, investors may see further reason to expect increasing interest rates.[25] Lastly, the dilution in cash flow may increase short-term borrowing requirements to fund day-to-day utility operations. Because those

[23] See Moody's Investors Service, *Announcement: Moody's changes the US regulated utility sector outlook to negative from stable*, June 18, 2018.
[24] *Id.*
[25] Blue Chip Financial Forecasts at 1, Vol. 37, No. 3, March 1, 2018.

effects weigh against utilities, we should focus on the upper end of the range of analytical results.

Q. IS THE TCJA EXPECTED TO AFFECT CENTERPOINT HOUSTON'S FINANCIAL PROFILE ON A FORWARD BASIS?

A. As described above, the TCJA's effect on CenterPoint Houston is expected to be similar to that of its peers. As discussed by Mr. McRae,[26] the TCJA's effect on the Company represents a meaningful reduction to its cash flows. As a result, CenterPoint Houston will require access to the capital markets on a more frequent basis to finance its capital budget of $5.14 billion during the period 2019-2023 (see below). The need to more frequently access external capital, together with the dilution of its cash flow related credit metrics, reflects on-going challenges to the Company as a result of the TCJA.

Q. ARE YOU RECOMMENDING A HIGHER ROE IN THIS PROCEEDING IN CONNECTION WITH THE TCJA?

A. No, I am not. Rather, I recommend that the Commission consider the capital market implications of the TCJA as part of its review. Based on the data and information discussed above, it is my view that the TCJA, and its implications for utilities' cash flows and credit profiles, provide further support for my ROE range and recommendation.

[26] *See* Direct Testimony of Robert B. McRae.

Q. WHAT CONCLUSIONS DO YOU DRAW FROM THE ANALYSES OF THE CURRENT CAPITAL MARKET ENVIRONMENT, AND HOW DO THOSE CONCLUSIONS AFFECT YOUR ROE RECOMMENDATION?

A. From an analytical perspective, it is important that the inputs and assumptions used to arrive at an ROE determination, including assessments of capital market conditions, are consistent with the conclusion itself. Although all analyses require an element of judgment, the application of that judgment must be made in the context of the quantitative and qualitative information available to the analyst and the capital market environment in which the analyses were undertaken. Because the application of financial models and interpretation of their results often is the subject of differences among analysts in regulatory proceedings, it is important to review and consider a variety of data points. That approach enables us to put in context both quantitative analyses and the associated recommendations. Further, because all models produce ranges of results, it is important to consider the type of information discussed above to determine where the Company's ROE falls within those ranges. As discussed throughout my Direct Testimony, doing so supports my recommended range of 10.00 percent to 10.75 percent.

IV. COST OF EQUITY ANALYSIS

A. Regulatory Guidelines and Financial Considerations

Q. BEFORE ADDRESSING THE SPECIFIC ASPECTS OF THIS PROCEEDING, PLEASE PROVIDE AN OVERVIEW OF THE ISSUES SURROUNDING THE COST OF EQUITY IN REGULATORY PROCEEDINGS, GENERALLY.

A. In very general terms, the Cost of Equity is the return investors require to make an equity investment in a firm. That is, investors will provide funds to a firm only if the return they *expect* is equal to, or greater than, the return they *require* to accept the risk of providing funds to the firm. From the firm's perspective, that required return, whether it is provided to debt or equity investors, has a cost. Individually, we speak of the "Cost of Debt" and the "Cost of Equity" as measures of those costs; together, they are referred to as the "Cost of Capital."

The Cost of Capital (including the costs of both debt and equity) is based on the economic principle of "opportunity costs." Investing in any asset, whether debt or equity securities, implies a forgone opportunity to invest in alternative assets. For any investment to be sensible, its expected return must be at least equal to the return expected on alternative, comparable risk investment opportunities. Because investments with like risks should offer similar returns, the opportunity cost of an investment should equal the return available on an investment of comparable risk. In that important respect, the returns required by debt and equity investors represent a cost to the Company.

Although both debt and equity have required costs, they differ in certain fundamental ways. Most noticeably, the Cost of Debt is contractually defined and

can be directly observed as the interest rate or yield on debt securities.[27] The Cost of Equity, on the other hand, is neither directly observable nor a contractual obligation. Rather, equity investors have a claim on cash flows only after debt holders are paid; the uncertainty (or risk) associated with those residual cash flows determines the Cost of Equity. Because equity investors bear that additional, "residual risk", they require higher returns than debt holders. In that basic sense, equity and debt investors differ: they invest in different securities, face different risks, and require different returns.

Whereas the Cost of Debt can be directly observed, the Cost of Equity must be estimated based on market data and various financial models. As discussed throughout my Direct Testimony, each of those models is subject to specific assumptions, which may be more, or less, applicable under differing market conditions. In addition, because the Cost of Equity is premised on opportunity costs, the models typically are applied to a group of "comparable" or "proxy" companies. The choice of models (including their inputs), the selection of proxy companies, and the interpretation of the model results all require the application of reasoned judgment. That judgment should consider data and information that is not necessarily included in the models themselves. In the end, the estimated Cost of Equity should reflect the return that investors require in light of the subject company's risks, and the returns available on comparable investments.

[27] The observed interest rate may be adjusted to reflect issuance costs.

Q. PLEASE NOW PROVIDE A BRIEF SUMMARY OF THE REGULATORY GUIDELINES ESTABLISHED FOR THE PURPOSE OF DETERMINING THE ROE.

A. The United States Supreme Court ("Supreme Court") established the guiding principles for establishing a fair return for capital in *Bluefield Waterworks & Imp. Co. v. Public Service Commission of W. Va.*, 262 U.S. 679 (1923); and *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591 (1944). In those cases, the Supreme Court recognized that the fair ROE should be: (1) comparable to returns investors expect to earn on other investments of similar risk; (2) sufficient to assure confidence in the company's financial integrity; and (3) adequate to maintain and support the company's credit, and its ability to attract capital.

Q. DOES COMMISSION PRECEDENT PROVIDE SIMILAR GUIDANCE?

A. Yes. The Commission upholds the *Hope* and *Bluefield* standards, and regularly finds that a utility is entitled to a fair and reasonable return.[28] The Public Utility Regulatory Act[29] describes the Commission's obligation in establishing a reasonable return:

> In establishing an electric utility's rates, the regulatory authority shall establish the utility's overall revenues at an amount that will permit the utility a reasonable opportunity to earn a reasonable return on the utility's invested capital used and useful in providing service to the public in excess of the utility's reasonable and necessary operating expenses.[30]

[28] See, *Application of Southwestern Public Service Company for Authority to Change Rates*, Docket No. 43695, Proposal for Decision at 53-54 (Oct. 12, 2015) (affirmed in pertinent part by the Commission's Order on Rehearing (Feb. 23, 2016)).
[29] Tex. Util. Code Ann. §§ 11.001-66.016.
[30] *Id.* § 36.051.

That position was affirmatively stated in *Gulf States Utilities Company v. Public Utility Commission of Texas*, in which the Austin Court of Appeals stated:

> The Commission's ratefixing power operates exclusively within a range of reasonableness, bounded on the one hand by the utility's constitutional right to a fair and reasonable return, and on the other hand by its customers' statutory right to rates that are not unreasonable or exorbitant.[31]

Based on those standards, the authorized ROE should provide CenterPoint Houston with the opportunity to earn a fair and reasonable return, and should enable efficient access to external capital in both accommodating and constrained capital markets.

Q. WHY IS IT IMPORTANT FOR A UTILITY TO BE ALLOWED THE OPPORTUNITY TO EARN A RETURN ADEQUATE TO ATTRACT CAPITAL AT REASONABLE TERMS?

A. A return that is adequate to attract capital at reasonable terms enables the utility to provide safe and reliable service while maintaining its financial integrity. As discussed above, and in keeping with the *Hope* and *Bluefield* standards, that return should be commensurate with the returns expected elsewhere in the market for investments of equivalent risk. The consequence of the Commission's order in this case, therefore, should be to provide CenterPoint Houston with the opportunity to earn an ROE that is: (1) adequate to attract capital at reasonable terms; (2) sufficient to ensure its financial integrity; and (3) commensurate with returns on investments in enterprises having corresponding risks.

To the extent CenterPoint Houston is provided a reasonable opportunity to earn its market-based Cost of Equity, neither customers nor shareholders should be

[31] 784 S.W.2d 519, 520 (Tex. App.—Austin 1990), aff'd, 809 S.W.2d 201 (1991).

disadvantaged. In fact, a return that is adequate to attract capital at reasonable terms enables the Company to provide safe, reliable electric utility service while maintaining its financial integrity, all to the benefit of both investors and ratepayers.

B. Proxy Group Selection

Q. AS A PRELIMINARY MATTER, WHY IS IT NECESSARY TO SELECT A GROUP OF PROXY COMPANIES TO DETERMINE THE COST OF EQUITY FOR CENTERPOINT HOUSTON?

A. First, it is important to bear in mind that the Cost of Equity for a given enterprise depends on the risks attendant to the business in which it is engaged. According to financial theory, the value of a given company is equal to the aggregate market value of its constituent business units. The value of the individual business units reflects the risks and opportunities inherent in the business sectors in which those units operate. In this proceeding, we are focused on estimating the Cost of Equity for CenterPoint Houston, whose parent is CenterPoint Energy, Inc. ("CNP"). Because the ROE is a market-based concept and CenterPoint Houston is not a separate entity with its own stock price, it is necessary to establish a group of companies that are both publicly traded and comparable to CenterPoint Houston in certain fundamental respects to serve as its "proxy" in the ROE estimation process.

Even if CenterPoint Houston were a publicly traded entity, short-term events could bias its market value during a given period. A significant benefit of using a proxy group is that it serves to moderate the effects of anomalous, temporary events associated with any one company.

Q. DOES THE SELECTION OF A PROXY GROUP SUGGEST THAT ANALYTICAL RESULTS WILL BE TIGHTLY CLUSTERED AROUND AVERAGE (I.E., MEAN) RESULTS?

A. Not necessarily. For example, the Constant Growth DCF approach defines the Cost of Equity as the sum of the expected dividend yield and projected long-term growth. Despite the care taken to ensure risk comparability, market expectations with respect to future risks and growth opportunities will vary from company to company. Therefore, even within a group of similarly situated companies, it is common for analytical results to reflect a seemingly wide range. Consequently, at issue is how to estimate the Cost of Equity from within that range. Such a determination necessarily must consider a wide range of both quantitative and qualitative information.

Q. PLEASE PROVIDE A SUMMARY PROFILE OF CENTERPOINT HOUSTON.

A. CenterPoint Houston is a wholly owned operating subsidiary of CNP. The Company provides electric transmission and distribution service to approximately 65 REPs in the Houston area.[32] CNP's current long-term issuer credit ratings are: BBB+ (outlook: Stable) from S&P, Baa2 (outlook: Stable) from Moody's, and BBB (outlook: Stable) from Fitch. CenterPoint Houston currently is rated BBB+ (outlook: Stable) by S&P, A3 (outlook: Stable) by Moody's, and A- (outlook: Stable) by Fitch.[33]

[32] CenterPoint Energy, Inc., SEC Form 10-K for fiscal year end at 4, December 31, 2018.

[33] Source: Bloomberg Professional Services; Moody's Investor Service, *Update to Credit Analysis: CenterPoint Energy Houston Electric, LLC*, June 19, 2018; S&P Global Ratings, *Research Update: CenterPoint Energy Inc. And Subsidiaries Ratings Lowered to 'BBB+' From 'A-'; Outlook Stable,* February 1, 2019; Fitch Ratings, *CenterPoint Houston Electric, LLC*, April 13, 2018.

Q. HOW DID YOU SELECT THE COMPANIES INCLUDED IN YOUR PROXY GROUP?

A. A proxy group should consist of companies with risk profiles comparable to the subject company. The objective in developing the proxy group is to select companies that are highly representative of the risks and prospects faced by CenterPoint Houston, while ensuring a sufficiently large group. Based on those two considerations, I began with the universe of companies that Value Line classifies as Electric Utilities, and applied the following screening criteria:

- I excluded companies that do not consistently pay quarterly cash dividends;
- I excluded companies not covered by at least two utility industry equity analysts;
- I excluded companies without investment grade senior bond and/or corporate credit ratings from S&P;
- I excluded companies whose regulated operating income over the three most recently reported fiscal years comprised less than 60.00 percent of the consolidated enterprise;
- I excluded companies whose regulated electric operating income over the three most recently reported fiscal years represented less than 60.00 percent of total regulated operating income; and
- I eliminated any companies that are currently known to be party to a transformative transaction.

Q. DID YOU INCLUDE CNP IN YOUR ANALYSIS?

A. No. To avoid the circular logic that otherwise would occur, it has been my consistent practice to exclude the subject company (or its parent) from the proxy group.

Q. WHY DID YOU INCLUDE VERTICALLY INTEGRATED UTILITIES IN YOUR PROXY GROUP WHEN CENTERPOINT HOUSTON IS A TRANSMISSION AND DISTRIBUTION COMPANY?

A. Although CenterPoint Houston is a transmission and distribution utility ("TDU"), there are no "pure play" state-jurisdictional electric TDUs that may be used as a proxy for the Company's Texas electric distribution operations. I therefore concluded that including vertically integrated electric utilities is a reasonable approach in estimating the Company's Cost of Equity.

Q. WHAT COMPANIES MET THOSE SCREENING CRITERIA?

A. The criteria discussed above resulted in the following group of 24 proxy companies:[34]

[34] Although I am aware of CenterPoint Energy's merger with Vectren Corporation, as discussed above, the proxy group is meant to include companies fundamentally comparable to CenterPoint Houston. Moreover, it has been my practice to exclude the parent company, and companies that are parties to significant transactions. Consequently, the CenterPoint Energy/Vectren transaction does not affect the proxy group composition.

Table 3: Proxy Group

Company	Ticker
ALLETE, Inc.	ALE
Alliant Energy Corporation	LNT
Ameren Corporation	AEE
American Electric Power Company, Inc.	AEP
Avangrid, Inc.	AGR
Black Hills Corporation	BKH
CMS Energy Corporation	CMS
Consolidated Edison, Inc.	ED
DTE Energy Company	DTE
Duke Energy Corporation	DUK
El Paso Electric Company	EE
Evergy, Inc.	EVRG
Eversource Energy	ES
Hawaiian Electric Industries, Inc.	HE
NextEra Energy, Inc.	NEE
NorthWestern Corporation	NWE
OGE Energy Corp.	OGE
Otter Tail Corporation	OTTR
Pinnacle West Capital Corporation	PNW
PNM Resources, Inc.	PNM
Portland General Electric Company	POR
Southern Company	SO
WEC Energy Group, Inc.	WEC
Xcel Energy Inc.	XEL

C. Cost of Equity

Q. HOW HAVE YOU DETERMINED THE INVESTOR-REQUIRED ROE?

A. As noted earlier, because the Cost of Equity is not directly observable, it must be estimated based on both quantitative and qualitative information. Although several empirical models have been developed for that purpose, all are subject to limiting assumptions or other constraints. Consequently, many finance texts recommend

using multiple approaches to estimate the Cost of Equity, as discussed in Appendix A.[35] When faced with the task of estimating the Cost of Equity, analysts and investors are inclined to gather and evaluate as much relevant data as reasonably can be analyzed and, therefore, rely on multiple analytical approaches.

As a practical matter, no individual model is more reliable than all others under all market conditions. Therefore, it is important to use multiple methods to mitigate the effects of assumptions and inputs associated with any single approach. The use of multiple methods, and the consideration given to them, recently was addressed by FERC. In its November 15, 2018 *Order Directing Briefs,* FERC found that "in light of current investor behavior and capital market conditions, relying on the DCF methodology alone will not produce a just and reasonable ROE".[36]

In its October 16, 2018 Order Directing Briefs, FERC found that although it "previously relied solely on the DCF model to produce the evidentiary zone of reasonableness…", it is "…concerned that relying on that methodology alone will not produce just and reasonable results."[37] As FERC explained, because the Cost of Equity depends on what the market expects, it is important to understand "how investors analyze and compare their investment opportunities."[38] FERC also explained that, although certain investors may give some weight to the DCF

[35] *See, e.g.*, Eugene Brigham, Louis Gapenski, Financial Management: Theory and Practice, 7th Ed. at 341, 1994, and Tom Copeland, Tim Koller and Jack Murrin, Valuation: Measuring and Managing the Value of Companies, 3rd ed. at 214, 2000.
[36] Docket Nos. EL14-12-003 and EL15-45-000, Order Directing Briefs at para. 34, 165 FERC ¶ 61,118 (Nov. 15, 2018).
[37] Docket No. EL11-66-001, *et al.*, Order Directing Briefs at 30, 165 FERC ¶ 61,030 (Oct. 16, 2018).
[38] *Id.* at 33.

approach, other investors "place greater weight on one or more of the other methods..."[39]

Consistent with that approach, I have considered the results of the Constant Growth DCF model, the Capital Asset Pricing Model, and the Bond Yield Plus Risk Premium approach. I also have provided an Expected Earnings analysis, which I have applied as a corroborating method. FERC issued similar guidance, using the Expected Earnings analysis in its determination of the "zone of reasonableness," observing that "*investors use those models.*"[40]

Q. PLEASE BRIEFLY DESCRIBE THE CONSTANT GROWTH DCF MODEL.

A. The Constant Growth DCF approach defines the Cost of Equity as the sum of (1) the expected dividend yield, and (2) expected long-term growth. As explained in Appendix A, the model often is expressed in the familiar form $k = \frac{D(1+g)}{P_0} + g$, where the expected dividend yield generally equals the expected annual dividend divided by the current stock price, and the growth rate is based on analysts' expectations of earnings growth. The Constant Growth DCF formula, which falls from the longer "present value" structure,[41] requires several simplifying assumptions, among them the constancy of inputs in perpetuity.

Under the model's strict assumptions, the growth rate equals the rate of capital appreciation (that is, the growth in the stock price).[42] Given that assumption, it does not matter whether the investor holds the stock in perpetuity, or whether

[39] *Id.* at 35.
[40] *Id.* at 29 (italics in original).
[41] *See*, Appendix A, part A.
[42] As discussed in Appendix A, part A, the model assumes that earnings, dividends, book value, and the stock price all grow at the same constant rate in perpetuity. Additionally, academic research has indicated that analysts forecasts of growth are superior to other measures of growth (*see* Appendix A, part A).

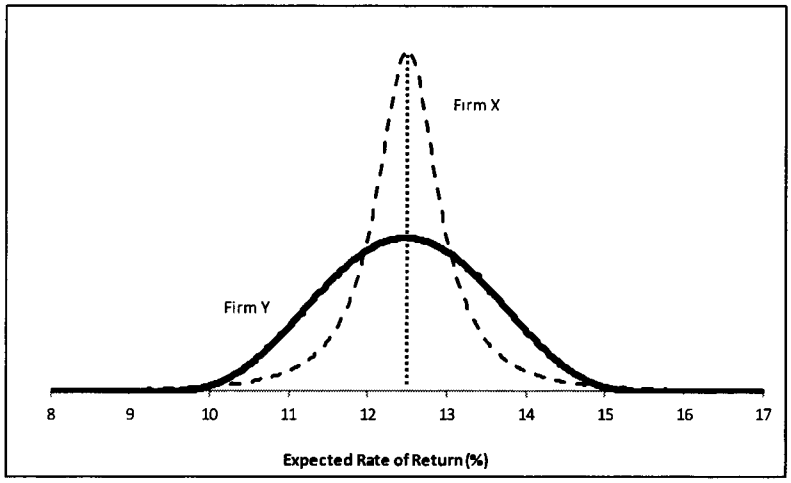
they hold the stock for some period of time, collect the dividends, then sell at the prevailing market price. That result also requires that the ROE result reached today will remain unchanged in perpetuity. So, if market conditions are such that the model produces an unreasonably low (or high) ROE estimate today, it assumes that estimate will be the same ROE investors require every day in the future, regardless of whether or how market conditions change.

Q. PLEASE BRIEFLY DESCRIBE THE CAPITAL ASSET PRICING MODEL.

A. Whereas DCF models focus on expected cash flows,[43] Risk Premium-based models such as the CAPM focus on the additional return that investors require for taking on additional risk. In finance, "risk" generally refers to the variation in expected returns, rather than the expected return, itself. Consider two firms, X and Y, with expected returns, and the expected variation in returns noted in Chart 4, below. Although the two have the same expected return (12.50 percent), Firm Y's are far more variable. From that perspective, Firm Y would be considered the riskier investment.

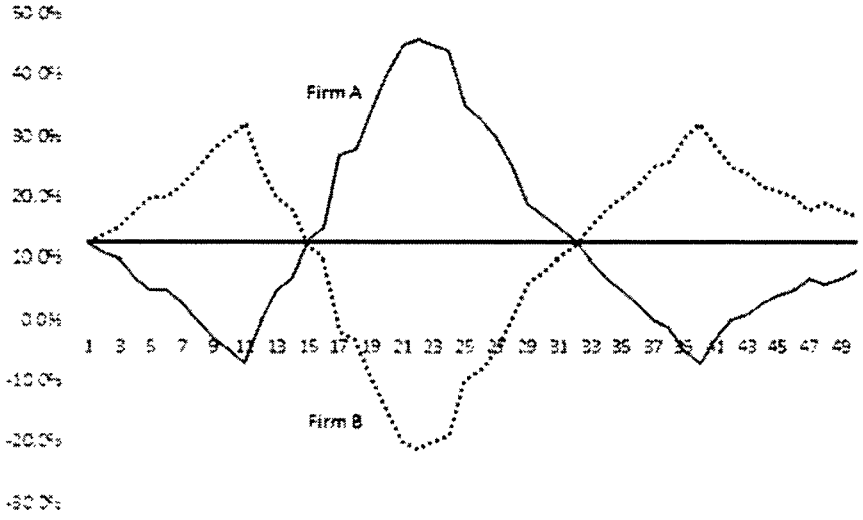
[43] *See* Appendix A, part A.

Chart 4: Expected Return and Risk



Now consider two other firms, Firm A and Firm B. Both have expected returns of 12.50 percent, and both are equally risky as measured by their volatility. But as Firm A's returns go up, Firm B's returns go down. That is, the returns are negatively correlated.

Chart 5: Relative Risk



If we were to combine Firms A and B into a portfolio, we would expect a 12.50 percent return with no uncertainty because of the opposing symmetry of their

risk profiles. That is, we can diversify the risk away. As long as two stocks are not perfectly correlated, we can achieve diversification benefits by combining them in a portfolio. That is the essence of the Capital Asset Pricing Model - because we can combine firms into a portfolio, the only risk that matters is the risk that remains after diversification, i.e., the "non-diversifiable" risk.

The CAPM defines the Cost of Equity as the sum of the "risk-free" rate, and a premium to reflect the additional risk associated with equity investments. The "risk-free" rate is the yield on a security viewed as having no default risk, such as long-term Treasury bonds. The risk-free rate essentially sets the baseline of the CAPM. That is, an investor would expect a higher return than the risk-free rate to purchase an asset that carries risk. The difference between that higher return (i.e., the required return) and the risk-free rate is the risk premium:

$$\text{Risk Free Rate} + \text{Risk Premium} = \text{Cost of Equity} \quad [1]$$

The risk premium is defined as a security's Beta coefficient multiplied by the risk premium of the overall market (the "Market Risk Premium" or "MRP").[44] The Beta coefficient is a measure of the subject company's risk relative to the overall market, i.e., the "non-diversifiable" risk. A Beta coefficient of 1.00 means the security is as risky as the overall market; a value below 1.00 represents a security with less risk than the overall market, and a value over 1.00 represents a

[44] As discussed in Appendix A, part B, I have relied on a forward-looking measure of the MRP, using inputs from Value Line and Bloomberg to derive an *ex-ante* market return estimate.

security with more risk than the overall market.[45] In general, the CAPM is expressed as follows:

Risk Free Rate + (Beta Coefficient x Market Risk Premium) = Cost of Equity [2]

As with the Constant Growth DCF model, it is important to understand the CAPM's inputs, assumptions, and results in the context of observable market data. Appendix A, part B explains that Beta coefficients reflect two aspects of stock price movements: (1) the variability of the subject company's returns relative to the market; and (2) the correlation of the subject company's returns to the market's returns. Both are important factors. For example, Section III discusses (among other issues) the TCJA's effect on utility stock prices relative to the overall market. When utility stock prices fall but the overall market increases, the correlation will fall. When that happens (all else remaining equal), Beta coefficients also will fall. That is especially the case when they are calculated over relatively short periods, as Bloomberg does. The question then becomes whether those Beta coefficients are likely to reflect investors' views of utility risk going forward. Here again, a certain amount of judgment must be applied.

Q. PLEASE BRIEFLY DESCRIBE THE BOND YIELD PLUS RISK PREMIUM.

A. This approach is based on the basic financial principle that equity investors bear the risk associated with ownership and therefore require a premium over the return they

[45] An alternative CAPM approach is the Empirical CAPM ("ECAPM") approach. The ECAPM adjusts for the CAPM's tendency to under-estimate returns for companies that (like utilities) have Beta coefficients less than one, and over-estimate returns for relatively high-Beta coefficient stocks. Given that the correlation between the proxy group companies and the S&P 500 has declined since 2010, while the relative risk has increased, the CAPM in the form presented here may not adequately reflect the expected systematic risk, and therefore, the returns required by investors in low-Beta companies. While the Empirical ECAPM has not been included in the analyses, it is my view that its application under the current circumstances is not unreasonable.

would have earned as a bondholder. That is, because returns to equity holders are more risky than returns to bondholders, equity investors must be compensated for bearing that additional risk (that difference often is referred to as the "Equity Risk Premium"). Bond Yield Plus Risk Premium approaches estimate the Cost of Equity as the sum of the Equity Risk Premium and the yield on a particular class of bonds.[46]

Bond Yield + Equity Risk Premium = Cost of Equity [3]

Q. WHAT ARE THE RESULTS OF THE DCF-BASED ANALYSIS?

A. The results of the model described above are provided in Table 4, below.[47]

Table 4: Summary of DCF Results[48]

	Mean	Mean High
30-Day Average	9.22%	10.09%
90-Day Average	9.24%	10.11%
180-Day Average	9.32%	10.20%

Q. PLEASE NOW SUMMARIZE THE REMAINING ANALYTICAL RESULTS.

A. The Risk Premium-based results, including the CAPM and Bond Yield Plus Risk Premium methods, are provided in Table 5 below.

[46] Prior research has shown that the Equity Risk Premium is inversely related to the level of interest rates (*see* Appendix A, part C).
[47] *See* Appendix A for a more detailed description of the models, assumptions, and inputs described in Section IV.
[48] *See* Exhibit RBH-1.

Table 5: Summary of Risk Premium Results[49]

	Bloomberg Derived Market Risk Premium	Value Line Derived Market Risk Premium
Average Bloomberg Beta Coefficient		
Current 30-Year Treasury (3.03%)	8.37%	10.05%
Near Term Projected 30-Year Treasury (3.33%)	8.66%	10.35%
Average Value Line Beta Coefficient		
Current 30-Year Treasury (3.03%)	9.27%	11.24%
Near Term Projected 30-Year Treasury (3.33%)	9.57%	11.54%
Bond Yield Plus Risk Premium Approach		
Current 30-Year Treasury (3.03%)	9.93%	
Near Term Projected 30-Year Treasury (3.33%)	9.98%	
Long-Term Projected 30-Year Treasury (4.05%)	10.17%	

Q. PLEASE BRIEFLY DESCRIBE THE EXPECTED EARNINGS ANALYSIS.

A. The Expected Earnings analysis is based on the principle of opportunity costs. By taking historical returns on book equity and comparing those authorized ROEs, investors are able to directly compare returns from investments of similar risk. In addition to historical returns, Value Line also provides projected returns on book equity. Because the Cost of Equity is forward-looking, I relied solely on forward-looking projections in the Expected Earnings analysis.[50] The Expected Earnings analysis results in an average ROE estimate of 10.27 percent and median ROE estimate of 10.26 percent. As noted earlier, I used those results to assess the reasonableness of the DCF, CAPM and Bond-Yield Plus Risk Premium results.[51]

[49] *See* Exhibit RBH-4 and Exhibit RBH-5.
[50] As described more fully in Appendix A, part D, an adjustment is necessary to accurately reflect the average invested capital over the period in question.
[51] *See*, Docket Nos. EL14-12-003 and EL15-45-000, Order Directing Briefs, 165 FERC ¶ 61,118 (Nov. 15, 2018).

D. Flotation Costs

Q. WHAT ARE FLOTATION COSTS?

A. Flotation costs are the costs associated with the sale of new issues of common stock. These include out-of-pocket expenditures for preparation, filing, underwriting, and other costs of issuance.

Q. ARE FLOTATION COSTS PART OF THE UTILITY'S INVESTED COSTS OR PART OF THE UTILITY'S EXPENSES?

A. Flotation costs are part of capital costs, which are properly reflected on the balance sheet under "paid in capital" rather than current expenses on the income statement. Like investments in rate base or the issuance costs of long-term debt, flotation costs are incurred over time. As a result, the great majority of flotation costs are incurred prior to the test year, but remain part of the cost structure during the test year and beyond.

Q. IS THE NEED TO CONSIDER FLOTATION COSTS ELIMINATED BECAUSE CENTERPOINT HOUSTON IS A WHOLLY OWNED SUBSIDIARY OF CNP?

A. No. Although the Company is a wholly owned subsidiary of CNP, it is appropriate to consider flotation costs because wholly owned subsidiaries receive equity capital from their parents and provide returns on the capital that roll up to the parent, which is designated to attract and raise capital based on the returns of those subsidiaries. To deny recovery of issuance costs associated with the capital that is invested in the subsidiaries ultimately would penalize the investors that fund the utility operations and would inhibit the utility's ability to obtain new equity capital at a reasonable cost. This is important for companies such as CenterPoint Houston that