COMMONWEALTH EDISON COMPANY

Load Forecast for Five-Year Planning Period
June 2019 – May 2024

July 12, 2018

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I. INTRODUCTION AND SUMMARY

The Public Utilities Act ("PUA") provides that beginning in 2008 electric utilities in Illinois shall provide a range of load forecasts to the Illinois Power Agency ("IPA") by July 15th of each year. The PUA further provides that these load forecasts shall cover the 5-year planning period for the next procurement plan and shall include hourly data representing high-load, low-load and expected-load scenarios for the load of eligible retail customers ("Eligible Retail Customers"). The electric utility is also to provide supporting data and assumptions (220 ILCS 5/16-111.5(d)(2)). This document presents Commonwealth Edison Company's ("ComEd") load forecast for the planning period of June 2019 through May 2024.

ComEd's 5-year hourly load forecast ("Forecast") is based on the PUA's definition of Eligible Retail Customers. Eligible Retail Customers include residential and non-residential customers who purchase power and energy from ComEd under fixed-price bundled service ("Blended Service") tariffs, other than those customers whose service has been declared competitive. Because service to certain classes of customers has been declared competitive either by statute or by the Illinois Commerce Commission ("ICC"), only residential and non-residential customers below 100 kW in size are eligible for Blended Service.[1]

The Forecast includes the effects of energy efficiency, demand response and renewable energy resources programs. The Forecast anticipates that these programs will be observed in full compliance with the PUA's requirements, subject to the defined rate impact test.

II. LOAD FORECAST

A. Purpose and Summary

This section of the Forecast provides forecasted energy usage for the Eligible Retail Customers within ComEd's service territory for the 5-year procurement planning period beginning on June 1, 2019. In accordance with Section 16-111.5(b) of the PUA, the Forecast includes a multi-year historical analysis of hourly loads, a review of switching trends and competitive retail market development, a discussion of known and projected changes to future loads and growth forecasts by customer classes. The Forecast also addresses the impacts of demand response and energy efficiency programs on the forecast. Lastly, this Forecast discusses any supply side needs that are projected to be offset by the purchase of renewable energy resources.

B. Development of the Five-Year Load Forecast (June 1, 2019 – May 31, 2024)

The hourly load analysis provides the means to determine the on-peak and off-peak quantities needed in the procurement process. In presenting the Forecast, this document focuses on average usage or load during the 12 monthly on-peak and off-peak periods during a year. For the purposes of this Forecast, the definitions of the on-peak and off-peak periods are consistent

[1] There is one exception to this statement. The common area accounts for the condominium associations are exempted from this competitive declaration (see Section 16-103.1 of the PUA).

with those commonly used in the wholesale power markets, and on trading platforms such as the New York Mercantile Exchange ("NYMEX") and the Intercontinental Exchange, Inc. ("ICE"). The on-peak period consists of the week day period from 6 a.m. to 10 p.m. CPT excluding NERC holidays (this is referred to as the 5X16 peak period). The off-peak period consists of all other hours (this is referred to as the off-peak "wrap" period). The Forecast therefore has been summarized as load requirements using the 24 different time periods covered by these standard products. This is the same approach that was presented in past forecasts and approved by the ICC. The hourly load data is being supplied with the supporting data and assumptions materials.

1. Hourly Load Analysis

a. Multi-year historical analysis of hourly load

The 2018 multi-year historical analysis of hourly load is very similar to the approach used in past procurement filings. The expanding deployment of Advanced Metering Infrastructure ("AMI") within ComEd's service territory has provided the Company with the ability to enhance its standard hourly load profiles. Data from AMI meters were utilized to develop delivery class hourly load profiles for 2015, 2016 and 2017. This data was used in the typical hourly models that have been developed and refined over the past few years. These models are performing well.

The 2018 multi-year historical analysis of load during the 24 monthly on-peak and off-peak periods is based on hourly profile data for the period from January 2015 to December 2017. These are the same profiles used in ComEd's cost of service studies. As discussed in greater detail below, the profiles show distinct and stable weather-related usage patterns that are indicative of how residential and small non-residential customers use electricity. The customer load profiles provide reliable information on the historical hourly usage of customers.

Using the hourly load profiles and actual customer aggregate usage, Table II-1 depicts the historical on-peak and off-peak hourly usage of the major customer groups within the Eligible Retail Customers for the period from January 2015 to December 2017.

Table II-1
Load Forecast Table (Historical Detail 2015-2017)

ComEd Historical Actual Usage

Historical Energy Usage in MWh for Eligible Retail Customers (Line Loss Adjusted)

		Residential Load		Watthour		Small Load (0 to 100kW)		Street Lighting Load		Total Load (MWh)	
Year	Month	On-Peak	Off-Peak	On-Peak	Off-Peak	On-Peak	Off-Peak	On-Peak	Off-Peak	On-Peak	Off-Peak
2015	1	476,714	538,625	5,863	5,335	214,141	190,941	589	1,257	697,308	736,157
2015	2	476,714	484,624	6,645	5,567	207,164	169,191	490	1,091	691,014	660,473
2015	3	427,317	467,237	5,275	4,394	212,538	172,854	465	1,225	645,594	645,711
2015	4	310,909	309,919	4,378	3,317	184,811	134,831	413	1,382	500,511	449,448
2015	5	337,101	416,319	4,376	4,035	183,401	164,164	269	1,368	525,147	585,886
2015	6	527,083	481,903	5,315	3,685	214,500	148,479	249	1,316	747,146	635,384
2015	7	668,905	613,692	5,892	3,915	237,741	165,813	282	1,401	912,820	784,821
2015	8	686,980	783,783	5,786	4,771	225,439	189,435	280	1,260	918,485	979,247
2015	9	655,298	669,285	8,687	6,431	221,562	166,578	373	1,172	885,920	843,466
2015	10	493,319	503,808	6,774	4,926	199,321	141,220	442	1,180	699,855	651,134
2015	11	502,636	616,626	7,400	6,441	185,017	163,033	45	526	695,097	786,625
2015	12	647,226	661,219	7,577	6,007	203,756	163,479	546	1,080	859,105	831,786
	Totals	**6,210,203**	**6,547,038**	**73,968**	**58,824**	**2,489,390**	**1,970,019**	**4,442**	**14,257**	**8,778,002**	**8,590,138**
2016	1	453,112	976,868	7,255	8,328	220,874	204,614	495	1,081	681,736	1,190,891
2016	2	627,933	635,511	7,703	7,236	220,211	163,133	496	1,128	856,344	807,008
2016	3	534,941	531,580	7,095	6,392	217,087	150,014	509	1,355	759,632	689,341
2016	4	478,231	530,677	6,296	6,346	200,235	151,849	364	1,259	685,126	690,131
2016	5	508,244	595,179	5,875	6,084	198,148	153,478	253	1,329	712,519	756,070
2016	6	865,614	822,519	7,121	6,003	250,652	164,150	251	1,353	1,123,638	994,024
2016	7	997,940	995,444	7,003	7,214	243,993	206,988	257	1,393	1,249,194	1,211,039
2016	8	1,147,073	928,465	8,581	6,961	297,408	190,783	285	1,310	1,453,346	1,127,519
2016	9	750,147	766,686	6,937	6,570	228,916	167,874	405	1,309	986,404	942,439
2016	10	531,146	588,979	5,668	5,929	190,527	151,083	463	1,150	727,804	747,141
2016	11	554,704	614,507	6,087	6,056	192,297	145,239	480	1,049	753,567	766,851
2016	12	738,393	849,970	7,712	8,106	224,813	188,010	612	1,151	971,530	1,047,236
	Totals	**8,187,476**	**8,836,385**	**83,332**	**81,225**	**2,685,162**	**2,037,214**	**4,869**	**14,865**	**10,960,840**	**10,969,690**
2017	1	736,292	841,838	8,094	8,545	226,028	200,116	531	1,140	970,946	1,051,639
2017	2	595,580	629,146	6,841	6,625	201,578	161,107	510	1,137	804,509	798,015
2017	3	642,583	626,298	7,524	6,730	223,921	165,137	449	1,162	874,478	799,326
2017	4	480,645	580,767	6,014	6,588	181,285	160,471	322	1,101	668,266	748,927
2017	5	566,144	563,412	6,402	6,073	200,829	151,967	278	1,374	773,653	722,827
2017	6	935,850	880,441	7,129	6,141	236,945	166,904	242	1,243	1,180,166	1,054,729
2017	7	1,017,864	1,093,139	7,251	7,611	243,011	213,415	222	1,112	1,268,349	1,315,277
2017	8	967,433	782,539	7,843	6,419	253,847	168,179	219	834	1,229,342	957,971
2017	9	776,055	887,157	6,392	6,625	212,702	180,551	240	712	995,389	1,075,045
2017	10	592,001	602,052	6,591	6,269	212,751	161,511	403	938	811,747	770,770
2017	11	669,686	726,486	6,841	6,779	192,246	156,749	413	874	869,187	890,888
2017	12	716,721	902,240	7,537	8,694	208,687	201,487	384	715	933,329	1,113,136
	Totals	**8,696,855**	**9,115,516**	**84,461**	**83,100**	**2,593,829**	**2,087,594**	**4,214**	**12,342**	**11,379,360**	**11,298,552**

Table II-2 carries forward the total load in MWh from Table II-1 and then provides the average load for each period in MW, which is useful in determining the required volume of standard wholesale energy products.

Table II-2

Load Forecast Table (Historical Summary 2015-2017)

ComEd Historical Actual Usage
Historical Energy Usage for Eligible Retail Customers
(Line Loss Adjusted)

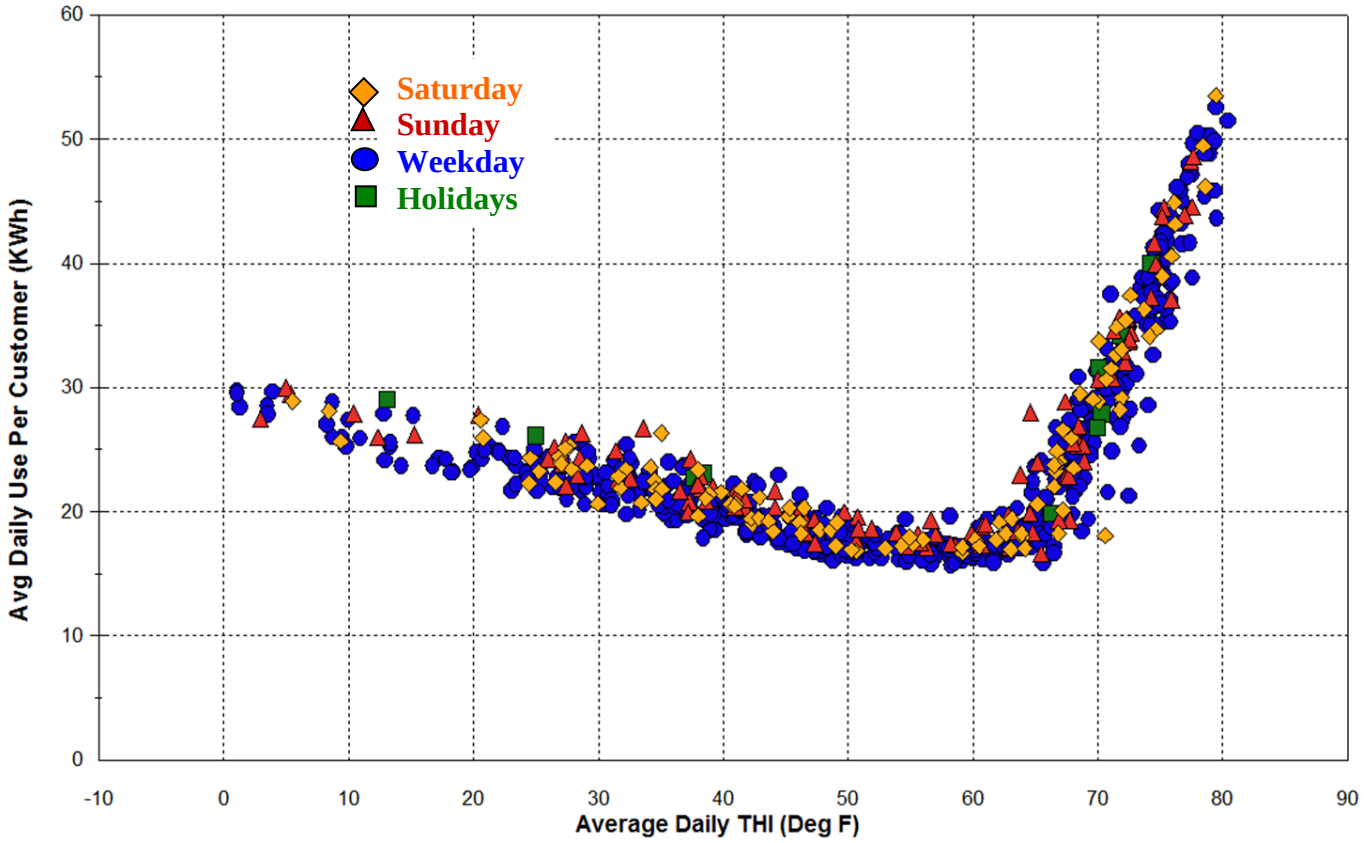
Year	Month	Total Load (MWh)		Average Load (MW)	
		On-Peak	Off-Peak	On-Peak	Off-Peak
2015	1	697,308	736,157	2,075	1,804
2015	2	691,014	660,473	2,159	1,876
2015	3	645,594	645,711	1,834	1,647
2015	4	500,511	449,448	1,422	1,221
2015	5	525,147	585,886	1,641	1,382
2015	6	747,146	635,384	2,123	1,727
2015	7	912,820	784,821	2,480	2,087
2015	8	918,485	979,247	2,734	2,400
2015	9	885,920	843,466	2,637	2,197
2015	10	699,855	651,134	1,988	1,661
2015	11	695,097	786,625	2,172	1,967
2015	12	859,105	831,786	2,441	2,122
Totals		**8,778,002**	**8,590,138**		
2016	1	681,736	1,190,891	2,130	2,809
2016	2	856,344	807,008	2,549	2,242
2016	3	759,632	689,341	2,064	1,833
2016	4	685,126	690,131	2,039	1,797
2016	5	712,519	756,070	2,121	1,853
2016	6	1,123,638	994,024	3,192	2,701
2016	7	1,249,194	1,211,039	3,904	2,856
2016	8	1,453,346	1,127,519	3,949	2,999
2016	9	986,404	942,439	2,936	2,454
2016	10	727,804	747,141	2,166	1,831
2016	11	753,567	766,851	2,243	1,997
2016	12	971,530	1,047,236	2,891	2,567
Totals		**10,960,840**	**10,969,690**		
2017	1	970,946	1,051,639	2,890	2,578
2017	2	804,509	798,015	2,514	2,267
2017	3	874,478	799,326	2,376	2,126
2017	4	668,266	748,927	2,088	1,872
2017	5	773,653	722,827	2,198	1,844
2017	6	1,180,166	1,054,729	3,353	2,866
2017	7	1,268,349	1,315,277	3,964	3,102
2017	8	1,229,342	957,971	3,341	2,548
2017	9	995,389	1,075,045	3,111	2,688
2017	10	811,747	770,770	2,306	1,966
2017	11	869,187	890,888	2,587	2,320
2017	12	933,329	1,113,136	2,917	2,625
Totals		**11,379,360**	**11,298,552**		

ComEd analyzed the hourly load profiles for all the major customer groups within the Eligible Retail Customers. As a result of that analysis, ComEd developed hourly load models for those major customer groups that determined the average percentage of monthly usage that each customer group used in each hour of that month. Those hourly models were then used to develop the monthly on-peak and off-peak usage percentages for the planning periods. These percentages were applied to ComEd's forecasted monthly usage to obtain the forecasted procurement quantities. In the following section, the hourly analysis of the residential single-family non-space heating customer segment is described. This class represents approximately half of the annual usage of the Eligible Retail Customer segment and provides a good example of how the hourly load profile data were analyzed and modeled.

(i) Residential Single-Family Hourly Load Profile Analysis

One of the most significant and easily understood determinants of residential energy usage is weather. The "scatter plot" shown below (Chart II-1) demonstrates the significant relationship that exists between weather and usage for the single-family non-space heating residential customer segment.

Chart II-1
Single Family Non-Space Heating Daily Usage vs. Temperature/Humidity



A scatter plot shows the relationship between two variables. Each point represents a single observation (a day in this case). In this chart, the values shown on the vertical or Y-axis are daily usage per customer ("UPC"). The values shown on the horizontal or X-axis are the daily average temperature-humidity index ("THI"). The graph shows daily UPC based on observations

from January 2015 to December 2017 and the average THI on those days. THI, rather than temperature alone, is used because residential usage is sensitive to humidity. Different geometric shapes are used to distinguish points representing weekdays from those depicting Saturday, Sunday or holiday usage.

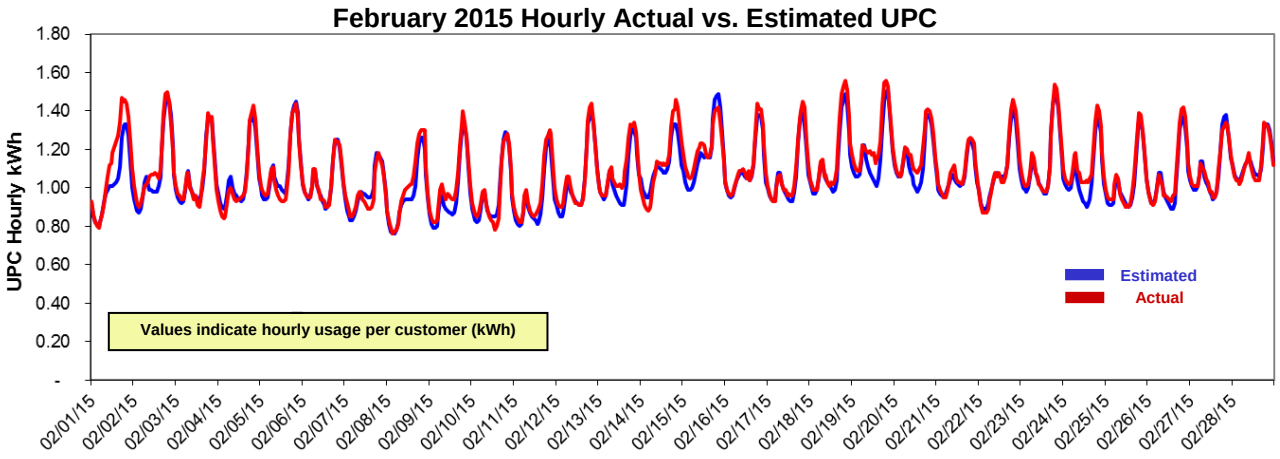
The scatter plot is very useful in understanding the relationship between customer usage and weather. If a relationship between usage and weather did not exist then the graph would not display a clear pattern. However, it is apparent that there is a clear pattern. The right side of the graph at the high end of the horizontal axis shows the days on which THI was the highest. The points at that end of the graph indicate that the highest UPC occurred when THI levels were at their peak or 75 plus degrees. Moving to the left, the points show UPC declining rapidly as the THI decreases until the 60 degree level is reached at which a base usage level appears. From that base level, UPC gradually increases as colder temperatures are experienced.

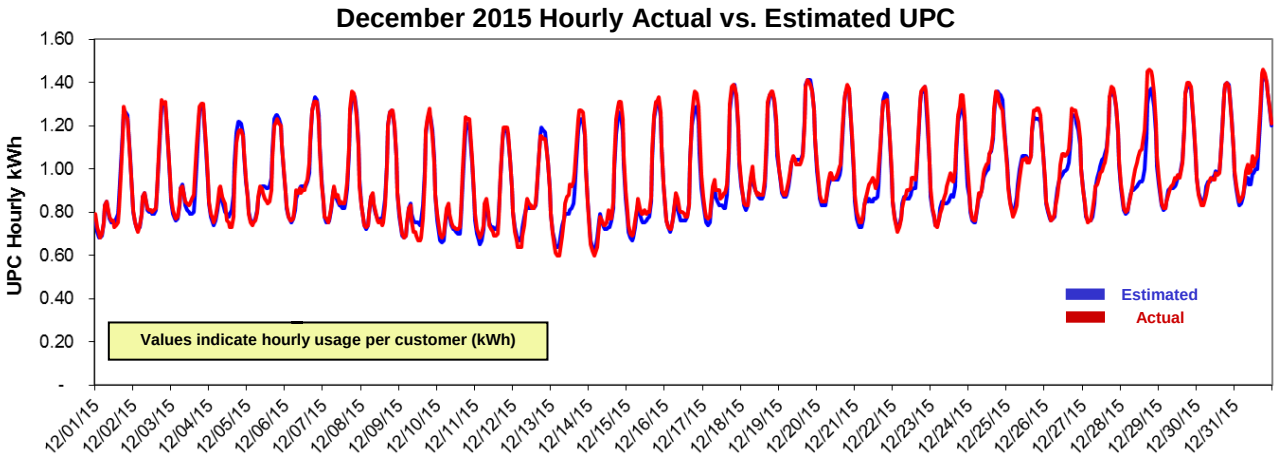
Hourly models were developed to account for the strong weather relationship shown in the graph and to account for numerous other factors that influence residential usage. The models explicitly account for the differing effects of energy use at various temperatures. Variables are included to allow for seasonal usage patterns in water heating, refrigeration and other seasonal uses. Weekend and holiday variables are included to allow for behavioral differences on those days relative to weekdays. Weather variables for prior days are included in the model to account for the dynamic effects of temperature buildup. The full list of variables included in the residential single-family model is shown in Appendix A-1.

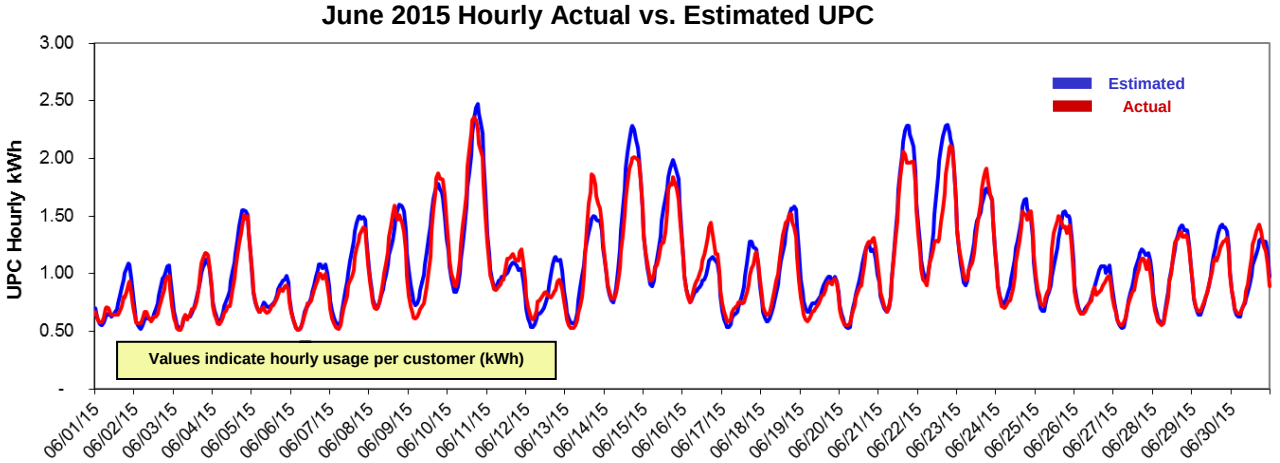
One way to visualize the model's performance is to look at plots of actual and estimated[2] values for the historical estimation period. The following charts demonstrate the performance of the model over four time periods at the hourly level during winter and summer months with warmer or colder than normal weather conditions. The four months are February 2015 (cold winter); December 2015 (warm winter); June 2015 (cool summer) and August 2016 (warm summer). The charts illustrate the model's ability to accurately estimate under varying weather conditions. The heating degree days ("HDD") in February 2015 were 1,405 (above the normal HDD of 1,056) and December 2015 was 800 (below the normal HDD of 1,107). The cooling degree days ("CDD") in June 2015 were 118 (below the normal CDD of 180) and August 2016 was 343 (above the normal CDD of 247).

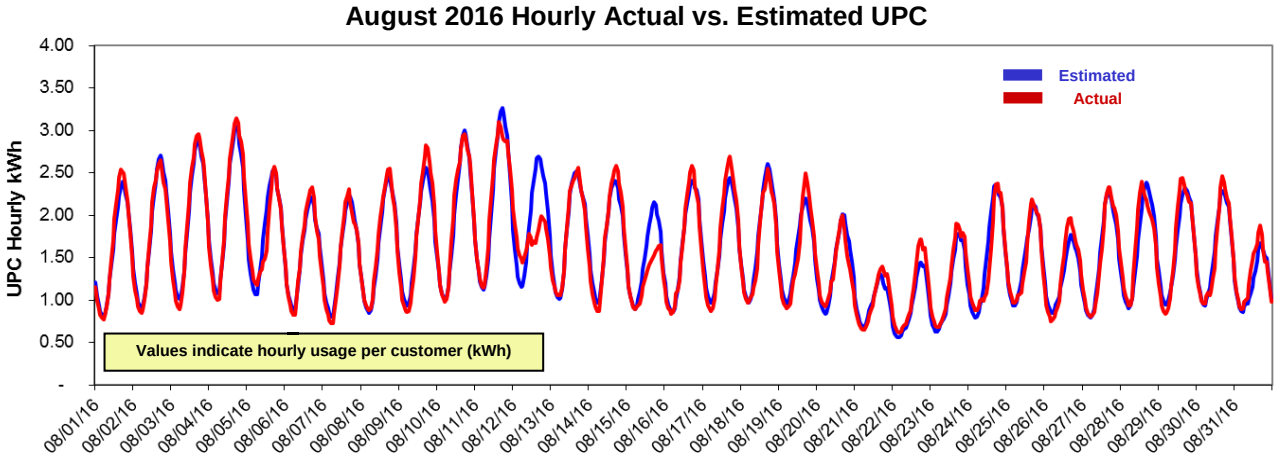
[2] The estimated data in Chart II-2 is based on the actual weather experienced over the relevant period.

Chart II-2
ComEd Single Family Profile: Estimated vs. Actual









In all of the graphs above in Chart II-2, the red line indicates the "actual" load data and the blue line indicates the model's estimated values, adjusted for actual weather. The charts demonstrate that the model's estimated usage closely mirrors the actual usage and the model is effective in estimating variations in electrical usage patterns that are significantly influenced by weather conditions.

b. Switching Trends and Competitive Retail Market Analysis

In determining the expected load requirements for which standard wholesale products will be procured, it is important to provide the best possible estimate of the number of Eligible Retail Customers that are likely to be served by Retail Electric Suppliers ("RES"). That issue is considered in the following discussion, which reviews retail development in ComEd's service territory, the entry of RES, the rate of customer switching in the past, future trends affecting customer choice and ComEd's 5-year forecast of the percentage of load from various customer segments that will continue to be served with supply procured by ComEd.

(i) Introduction and Brief Overview of Retail Development

Retail choice is very active within ComEd's service territory as demonstrated in several ways:

1. A very large number of residential customers have participated in customer choice over the past few years. Approximately 1.2 million residential customers in the ComEd service territory were taking RES supply as of May 2018. The RES numbers were even higher in early 2014 with approximately 2.4 million residential customers taking RES supply, which equated to approximately 70% of all Residential usage as shown below in Chart II-4. Clearly, millions of residential customers have participated in customer choice over the past several years. This high level of engagement denotes meaningful customer choice in the ComEd service territory.

2. Municipal Aggregation ("Muni Agg") has been an important factor in the expansion of residential RES supply over time. In total there are approximately 358 governmental entities (i.e., municipalities, townships or counties, hereinafter jointly referred to as "Communities") within the ComEd service territory that had approved a Muni Agg referendum as of April 2018. Approximately 212 of those Communities (or 59% of the total) were being served under a Muni Agg contract as of April 2018. The large number of on-going Muni Agg Communities highlights the continued interest in customer choice within the service territory by community groups.

3. As noted below, there are a very large number of residential retailers in the ComEd service territory.

4. Non-residential customers are actively participating in customer choice including smaller sized customers. Approximately 92% of ComEd's entire non-residential usage is supplied through either RES or Hourly service as of May 2018. There is also meaningful participation by the smaller sized non-residential customers as approximately 63% of the 0 to 100 kW non-residential delivery class was taking RES and Hourly supply in May 2018. These large percentages illustrate that customer choice is very active among a variety of non-residential customers within the ComEd service territory.

In summary, customers are actively engaged in retail choice within the ComEd service territory.

(ii) RES Development

There continues to be growth in the number of RESs within the ComEd service territory. This growth is shown in the table below:

Table II-3
RES Development in the ComEd Service Territory

RES Category	May 2012	May 2013	May 2014	May 2015	May 2016	May 2017	May 2018
Number of Active RESs[3]	48	66	70	71	74	81	90
Number of RESs approved to serve Residential customers	32	49	55	56	63	64	74

From May 2012 to May 2018 there has been an approximately 88% increase in the number of active RES in the ComEd service territory. The increase in the last year alone was just over ten percent. Also, the increase in RES approved to serve residential customers has shown a

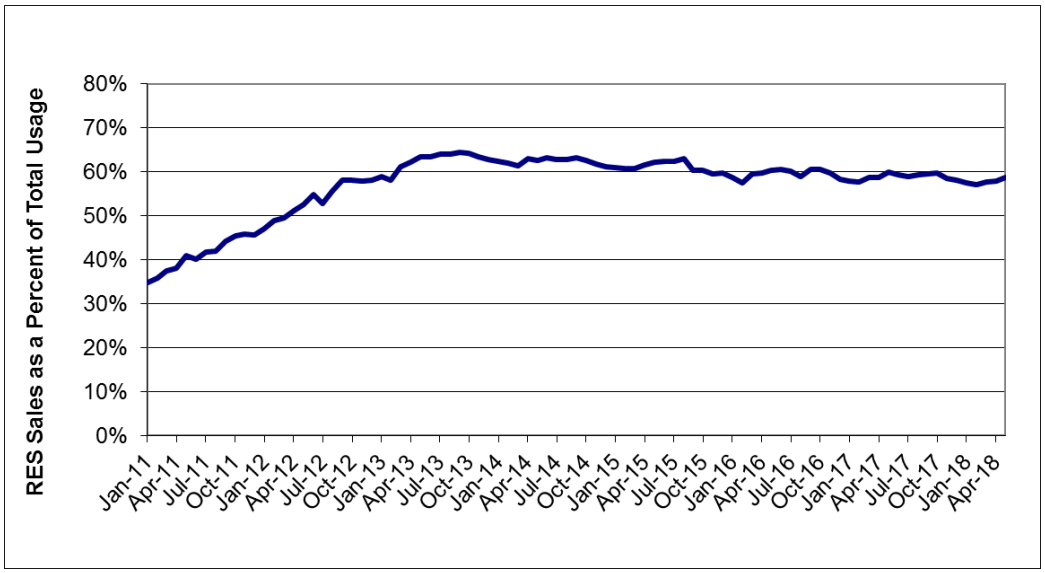
[3] An "Active RES" is defined as an ICC-approved RES that has passed ComEd's certification process.

substantial increase over time. This overall growth in the number of RES highlights the active retail market in ComEd's service territory.

(iii) Future Trends

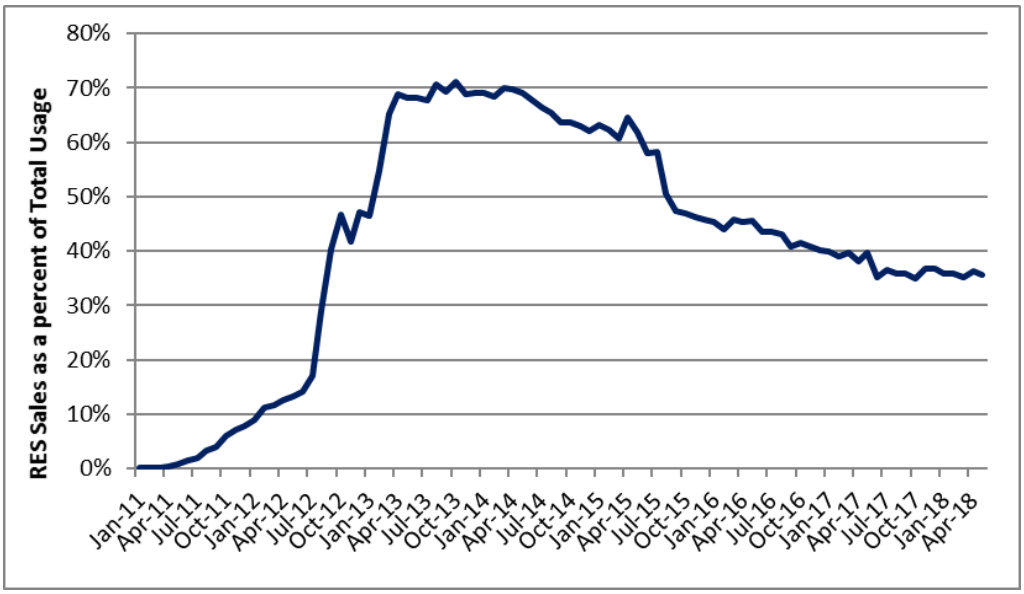
The future trends reflect an active retail market for several reasons. First, RES supply to customers in the 0 to 100 kW class continues to be very significant. Chart II-3 contains the monthly percentage of usage by RES customers from January 2011 through May 2018. RES usage was increasing prior to mid-2013 and has been relatively steady since mid- 2013. The group has averaged approximately 60% from January 2015 to May 2018.

Chart II-3
0 to 100 kW Switching Statistics



Second, the retail market for residential customers has found wide-spread acceptance over the past few years. Chart II-4 contains the monthly percentage of usage by RES customers from January 2011 to May 2018. In just over four years, residential RES usage went from essentially zero usage in May 2011 to approximately 70% of total residential usage by late 2013. Currently it is just over 35% as various Muni Agg Communities have suspended their programs. However, for the purposes of judging the acceptance and engagement in retail choice by residential customers, Chart II-4 highlights that customers have been very active in the retail markets.

Chart II-4
Residential Switching Statistics



Third, as previously noted, Muni Agg is very active within the ComEd service territory with approximately 358 Communities passing a Muni Agg referendum. Muni Agg by its very nature requires engagement not only by public officials within each community, but also by the citizens of the community that approve the Muni Agg referendums. This large number of Communities is another indicator of an engaged customer base that is active in retail choice.

For these reasons, we expect retail markets to continue to reflect a meaningful level of engagement during the Forecast period.

(iv) Forecasted Retail Usage

The forecast percentages of Blended Service usage are shown below, along with some historical perspective.

Table II-4
Percentage of Blended Service Usage

Month	Residential	Watthour	0-100 kW
Jun-12	85.6%	76.0%	43.2%
Jun-13	31.3%	20.8%	34.1%
Jun-14	31.8%	24.9%	33.9%
Jun-15	41.6%	27.0%	34.4%
Jun-16	55.9%	38.8%	36.6%
Jun-17	64.3%	41.9%	37.5%
May-18	63.5%	41.1%	37.4%
Jun-19	63.0%	40.7%	37.4%
Jun-20	63.0%	40.7%	37.4%
Jun-21	63.0%	40.7%	37.4%
Jun-22	63.0%	40.7%	37.4%
Jun-23	63.0%	40.7%	37.4%

The main drivers of this forecast are:

1. Residential Blended supply in the near-term is expected to decline very slightly from 63.5% as of May 2018 to approximately 63.0% by the end of 2018. The slight decline reflects the actual decisions from Muni Agg Communities in the first several months of 2018 along with an estimate for the remaining Muni Agg Communities with contract expirations in 2018. The forecast for the remainder of 2018 utilizes town-code level data related to those Muni Agg Communities with contract renewals in 2018. This data reflects recent Muni Agg Communities usages and decisions as of mid-June 2018. Unlike past years where approximately a third of the Muni Agg Communities would suspend their programs, only three percent of the 2018 Communities that have made a decision in 2018 have suspended their program (based on usage). This is not overly surprising as approximately three-quarters of the 2018 Muni Agg Communities have renewed their program at least twice in the past. In short, these communities are very comfortable with Muni Agg. In addition, a hand-full of Communities have restarted their previously suspended program in 2018. See the spreadsheet entitled "2018-19 Muni Ag Renewal Tracking.xlsx" for additional details related to 2018 activity. The net result is that these two relatively small and offsetting dynamics result in a status-quo environment with very little change in the Residential switching percentage. The assumption for the remainder of 2018 is for no additional suspensions or start-ups. Given this assumption and recent decisions, the forecast is for a very slight decline in the Residential Blended percentage from May 2018 to December 2018.

2. Looking to the Planning Year ("Planning Year")[4] 2019 and beyond, the savings opportunity will continue to be an important factor. The Blended Service supply price will likely be slightly higher than market prices for the next few years given the existing contracts within the portfolio. This small amount of headroom is due to the above market Long Term renewables contracts ComEd was required to enter into in 2010 as well as the administrative and general costs related to the IPA and the ComEd call center and collection agency costs the ICC requires ComEd to allocate to ComEd supplied customers. These costs are anticipated to provide a relatively small amount of savings (or headroom) between Blended Service and RES pricing going forward.

3. The status-quo Muni Agg switching environment that is occurring in 2018 is expected to continue into the remaining years of the Forecast. Muni Agg Communities have historically demonstrated a solid preference to continue with their programs. Roughly two-thirds of the Muni Agg Communities (based on usage) would renew their programs during the years 2015 to 2017. The renewal percentage is considerably higher in 2018. Thus, the preference for renewing is only stronger among the remaining Muni Agg Communities with existing contracts, which is demonstrated by their repeated renewals (as previously noted). While there is always the potential for a few Communities to suspend their program in the following years, the potential for a few start-ups also exists. These offsetting dynamics combined with the overall preference for renewing, produces a Muni Agg status-quo switching environment into the future. One final point is that no Muni Agg referendums are anticipated in the future as there have not been any in the years 2016, 2017 or 2018.

4. Non-Muni Agg Residential switching activity is also expected to remain stable over the Forecast. For example, of Communities that never implemented a Muni Agg program approximately 77.4% of their Residential usage was Blended supply as of May 2018 and that percentage is very close to the 78% Blended in May 2017. The May 2017 percentage is also very similar to the May 2016 Blended percentage. Thus, a very stable Blended percentage for this group of customers has occurred over the past few years. Likewise, as another example, the City of Chicago has 77.6% Blended Residential usage as of May 2018, which is very similar to the 77.4% in May 2017. Thus, a very stable Residential Blended percentage is anticipated among the customers outside Muni Agg communities. Further to this point (and highlighted given its overall size), the City of Chicago is assumed to continue with the suspension of its Muni Agg program as there are no external reports to the contrary. The City of Chicago suspended its program almost three years ago in August 2015.

[4] A Planning Year runs from June 1 through May 31.

Based on these considerations, for the years 2019 and thereafter, a relatively stable Residential Blended percentage is anticipated reflecting the status-quo level of Muni Agg activity; a small anticipated savings opportunity and a stable non-Muni Agg switching activity.

This Forecast is based on a combination of actual results over several years, recent switching activity and granular data (e.g., community level information). ComEd will continue to monitor and analyze Muni Agg activity (along with other switching activities) and keep the IPA informed of any developments. The best approach in forecasting switching activity, especially in a market that is responding to changing conditions, is to provide regular updates. ComEd will provide a forecast update in March 2019 and July 2019; subject to any meaningful development related to switching activity during the remainder of 2018 that will be communicated to the IPA.

5. Regarding the non-residential customer forecast there are two distinct groups. The 0 to 100 kW customer group is marginally influenced by Muni Agg activity and the Blended percentage has held rather steady the past two years: Blended usage in 2016 averaged 37.1% and 37.4% in 2017. The outlook is for this general steadiness to continue going forward. The Watt-hour customer group is influenced by Muni Agg activity. The percentage of Blended supplied usage for the watt-hour group often follows the same general pattern as the residential customer group. Accordingly, a slight decline in Watthour Blended usage is expected by year-end: 41.1% in May 2018 and expected to be 40.7% by December 2018. The anticipated Residential status quo environment likewise results in the Watt-hour Blended percentage remaining at the 40.7% level thereafter.

The effects of those drivers by customer group are as follows:

1. The Blended Service portion of the Residential customer class is expected to be 63.0% by December 2018 with no meaningful change thereafter for the reasons noted above.

2. The Blended Service portion of the 0 to 100 kW customer class is expected to be 37.4% by December 2018 projection and remaining at this level thereafter during the Forecast period.

3. The Blended Service portion of the Watthour customer class is expected to be 40.7% by December with this percentage holding steady into the future.

c. Known or Projected Changes to Future Load

Typically when ComEd forecasts future loads it considers whether there are any known major customer decisions that would impact load, such as the relocation of part or all of a business. For the Eligible Retail Customers, other than the factors we have discussed elsewhere,

e.g. switching, energy efficiency measures, growth, etc., there is only one known or projected change that ComEd is aware of that is different from past conditions and could affect future loads for this group of customers. This is the residential real-time pricing program ("RRTP").

In compliance with Section 16-107(b-5) of the PUA, ComEd received ICC approval to implement an RRTP program for a four-year period,[5] and, more recently, to continue the program post-2016.[6] Accordingly, ComEd still anticipates expansion of its marketing for RRTP. The expectation is for RRTP customers to grow from approximately 24,000 in May 2018 to approximately 54,000 by the end of the year 2023. Experience in the past year is supportive of this outlook as the recent number of Residential RRTP customers is approximately 50% greater than the approximately 16,000 RRTP customers in May 2017.

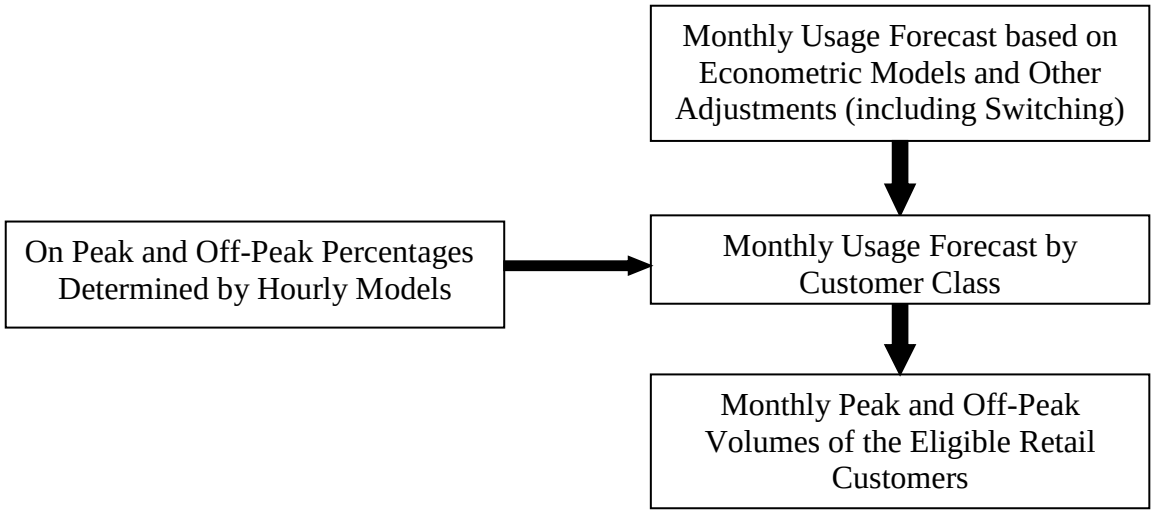
d. Growth Forecast by Customer Class

(i) Introduction

This section describes ComEd's growth forecast by customer class for the 5-year procurement planning period beginning on June 1, 2019. Section II(B)(1) discussed the hourly customer load profiles used by ComEd to develop models to present the historical load analysis required by the PUA and to predict UPC, or usage per customer. As indicated in this section, in arriving at a growth forecast by customer class, there are additional models beyond those customer-level hourly models that are used to forecast future customer class usage. These other models play an important role in determining expected load during the 5-year planning period among the Eligible Retail Customer groups.

The following chart illustrates the steps in the ComEd load forecasting process.

Chart II-5
ComEd Energy Usage Forecast Process



[5] See ICC Order of December 20, 2006, in Docket No. 06-0617.

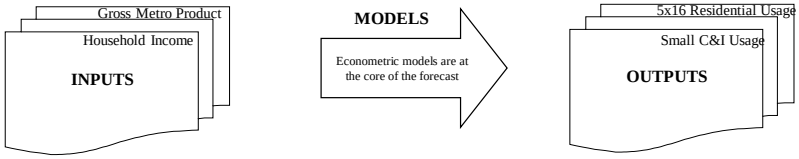
[6] See ICC Order of January 20, 2016 in Docket No. 15-0602.

The forecasting process is model based subject to adjustments and judgment. A suite of econometric models is used to produce monthly usage forecasts for ComEd's revenue customer classes. The two major customer classes applicable to this Forecast are Residential and Small C&I. That monthly forecast is adjusted for other considerations (e.g., switching activity) and allocated to more granular delivery service classes (e.g., the residential customer class is composed of four delivery service classes). The forecast usage is combined with the input from the hourly models to obtain on-peak and off-peak quantities for each month and delivery service class.

The econometric modeling portion of the process is described in the following chart:

Chart
II-6

Econometric Modeling Process



Economic Forecasts
- Chicago Gross Metro Product
- Real Income per Household
- Household Growth

Switching Forecast
- RES Activity
- Market Developments

Top Down Approach
- Zone output modeled using historical weather and economic variables
- Customer class usage modeled using historic weather data and economic variables for each class
- Customer class forecast calibrated to equal zone output forecast (less line loss)
- Other research and judgment used to determine final energy forecast (e.g., effects from new energy efficiency programs)
- Usage forecast adjusted for projected switching activity
- Hourly customer class models used to determine on-peak and off-peak usage

Sales and Load Forecasts
- ComEd Zone Output
- Customer Class Usage
- Procurement Eligible Usage by On-Peak and Off-Peak Usage

As the chart indicates, ComEd's forecasts of usage for its service territory are based on a "top-down" approach. The top-down approach provides a forecast of total usage for the entire service territory and allocates the usage to various customer classes using the models specific to each class. The allocation is achieved by reducing the forecasted zone usage by the inherent difference between zone and customer class usage (in particular, line loss) and then calibrating the forecasted customer class usage to equal that system-wide at the meter usage. The econometric models are based on monthly data and have very robust characteristics. Subsequent sections describe the significant relationship between energy usage and other independent variables. For example, the zone model contains sophisticated variables to reflect the effects of temperature and humidity, as well as seasonal usage patterns and other factors. The zone model includes an energy

efficiency variable to capture the relationship of ComEd's energy efficiency efforts in reducing usage. Economic variables are also included. Again, by way of example, the gross metropolitan product ("GMP") for the Chicago and other metropolitan areas within ComEd's service territory is a useful measure of economic activity of the service territory. As GMP (which is expressed in billions of dollars) increases, use of electric energy rises as well. There are other economic variables used in the econometric models and those are described below. The economic assumptions (i.e., economic outlook) related to the economic variables are shown in Table II-6.

Table II-6

Chicago Area Economic Forecasts - IHS Markit (May 2018)

Economic Variables	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Gross Metro Product (Billions)	$ 516	$ 531	$ 529	$ 541	$ 554	$ 559	$ 566	$ 579	$ 592	$ 600	$ 606	$ 611	$ 616	$ 623
# of Households (Thousands)	3,313	3,339	3,355	3,358	3,379	3,394	3,390	3,392	3,405	3,425	3,450	3,471	3,492	3,512
Real Income/HH	$101,018	$104,403	$105,186	$109,917	$113,404	$114,134	$114,289	$116,775	$ 119,756	$121,817	$123,193	$124,561	$126,005	$127,603
Total Employment (Thousands)	4,167	4,237	4,304	4,371	4,454	4,513	4,549	4,593	4,658	4,686	4,699	4,707	4,712	4,720
Non-Manufacturing	3,765	3,830	3,899	3,967	4,045	4,105	4,140	4,174	4,232	4,256	4,270	4,280	4,286	4,294
Manufacturing	403	406	405	405	409	408	409	420	427	430	429	427	426	426
Housing Starts	6,059	7,775	9,590	12,994	11,274	16,287	16,543	14,630	18,290	20,019	21,293	22,244	22,925	23,816
U.S. GDP	15,021	15,355	15,612	16,013	16,472	16,716	17,096	17,582	18,074	18,426	18,731	19,039	19,361	19,704
Growth Rate	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Gross Metro Product	1.4%	2.9%	(0.3%)	2.3%	2.4%	0.8%	1.3%	2.3%	2.2%	1.2%	1.0%	1.0%	0.8%	1.1%
# of Households	(0.1%)	0.8%	0.5%	0.1%	0.6%	0.4%	(0.1%)	0.1%	0.4%	0.6%	0.7%	0.6%	0.6%	0.6%
Real Income/HH	0.4%	3.4%	0.8%	4.5%	3.2%	0.6%	0.1%	2.2%	2.6%	1.7%	1.1%	1.1%	1.2%	1.3%
Total Employment	1.4%	1.7%	1.6%	1.6%	1.9%	1.3%	0.8%	1.0%	1.4%	0.6%	0.3%	0.2%	0.1%	0.2%
Non-Manufacturing	1.3%	1.7%	1.8%	1.7%	2.0%	1.5%	0.8%	0.8%	1.4%	0.6%	0.3%	0.2%	0.1%	0.2%
Manufacturing	1.9%	1.0%	(0.4%)	(0.1%)	1.0%	(0.2%)	0.4%	2.6%	1.6%	0.7%	(0.2%)	(0.4%)	(0.3%)	(0.0%)
Housing Starts	11.6%	28.3%	23.3%	35.5%	(13.2%)	44.5%	1.6%	(11.6%)	25.0%	9.4%	6.4%	4.5%	3.1%	3.9%
U.S. GDP	1.6%	2.2%	1.7%	2.6%	2.9%	1.5%	2.3%	2.8%	2.8%	1.9%	1.7%	1.6%	1.7%	1.8%

Source: IHS Markit

All of the variables used in each of the models in the forecasting process are identified in Appendix A-4.[7]

The remainder of this section will provide a brief description of the models, starting with the ComEd's Monthly Zone energy usage model ("Monthly Zone Model") and proceeding to the three customer-level models for Monthly Residential bill-cycle energy usage ("Monthly Residential Model"), Monthly Small C&I bill-cycle energy usage ("Monthly Small C&I Model") and Monthly Street Lighting bill-cycle energy usage (Monthly Street Lighting Model").

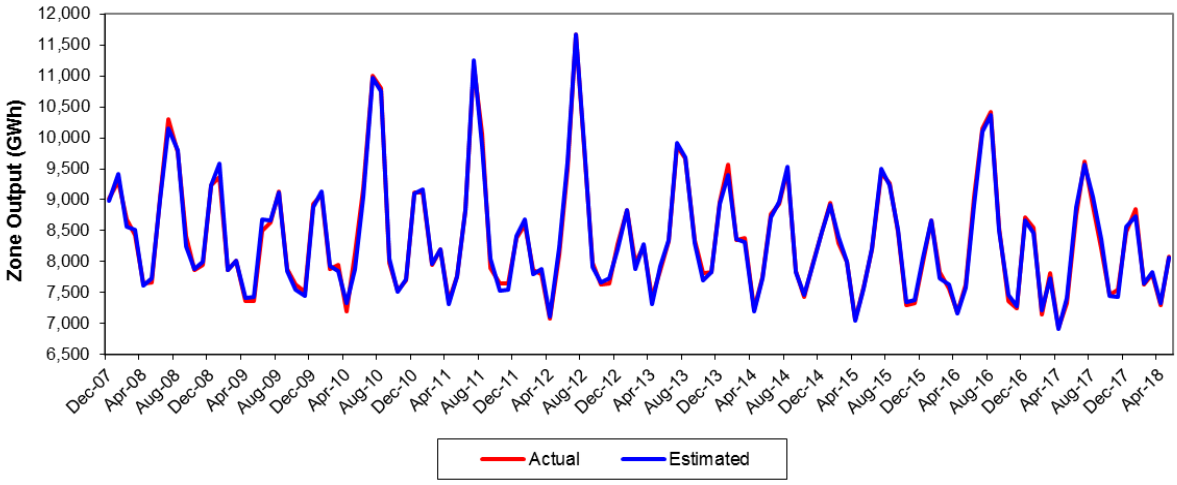
[7] Technical information about the model coefficients and regression statistics are included in Appendix A-2 and A-3.

(ii) ComEd Monthly Zone Model

The Monthly Zone Model forecasts energy usage in gigawatt hours (GWh) for the entire ComEd service territory. The following chart shows the performance of the ComEd Monthly Zone Model by comparing actual zone output to the estimates[8] from that model for each calendar month from January 2008 through May 2018.

Chart II-7

ComEd Monthly Zone Model: Estimated vs. Actual



The graph line depicting the Monthly Zone Model's estimated usage (based on actual weather) and the line showing actual usage for the period are nearly identical.

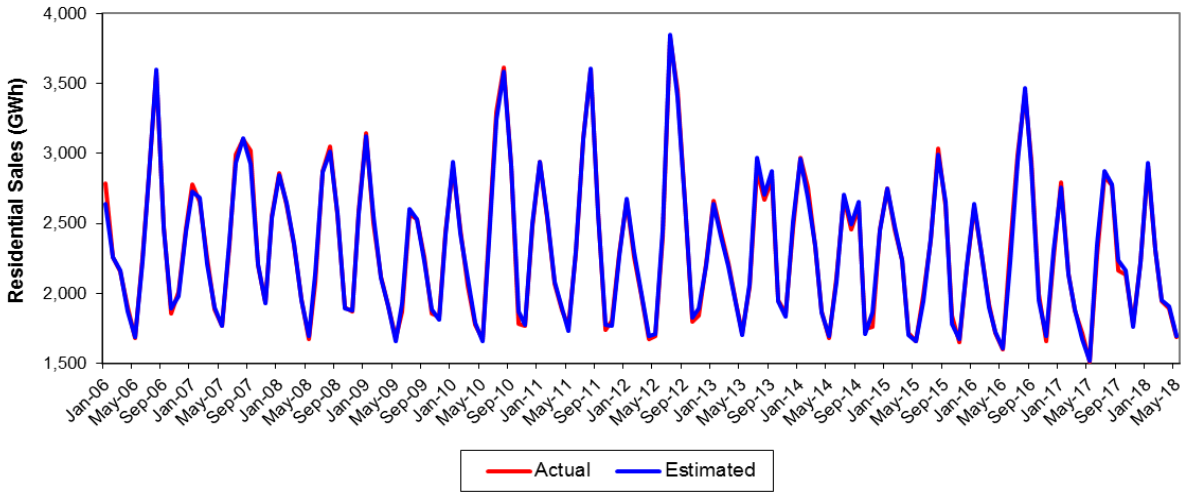
(iii) ComEd Monthly Residential Model

The Monthly Residential Model forecasts monthly residential bill-cycle usage expressed in kWh per customer per day. The Monthly Residential Model is also very useful in understanding energy usage for this customer segment. The following chart compares the monthly energy usage for residential customers estimated by the Monthly Residential Model to the actual residential usage for the time period of January 2006 to May 2018. The graph line depicting the model's estimated usage and the line with actual usage for the period are highly correlated.

[8] Once again, for purposes of this Forecast, the estimates used in Charts II-7, II-8 and II-9 are based on actual weather.

Chart II-8

ComEd Monthly Residential Model: Estimated vs. Actual

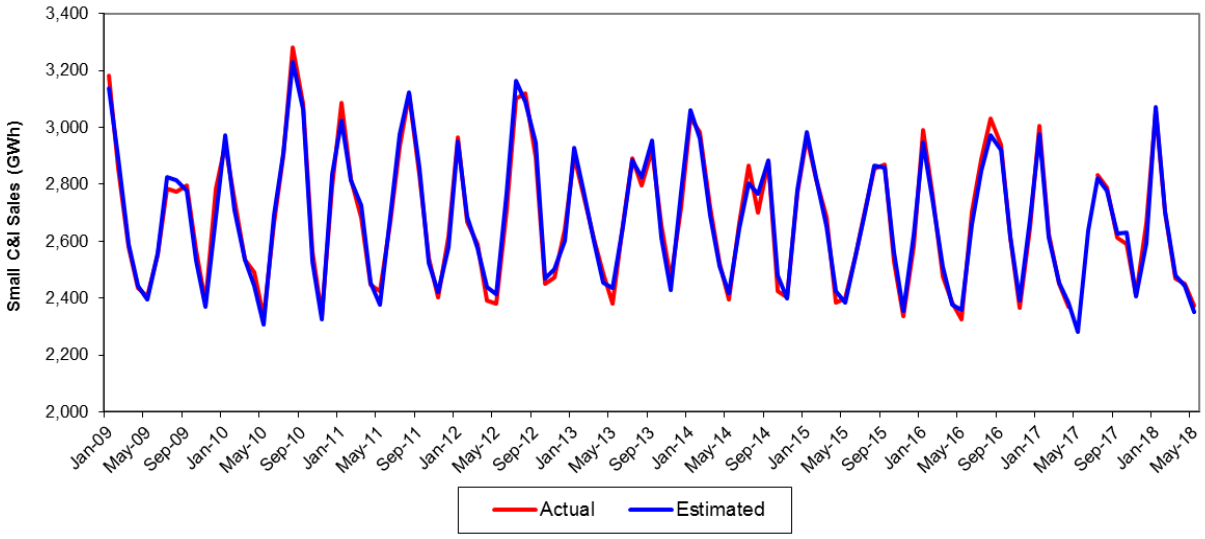


(iv) ComEd Monthly Small C&I Model

The Monthly Small C&I Model forecasts monthly Small C&I bill-cycle usage. Chart II-9 shows an estimated versus actual comparison demonstrating the model's effectiveness.

Chart II-9

ComEd Monthly Small C&I Model: Estimated vs. Actual



(v) ComEd Monthly Street Light Model

The Monthly Street Lighting Model forecasts monthly bill-cycle usage related to street lighting. This final model estimates use per day in GWh.

(vi) Growth Forecast

The forecast reflects the above assumptions and a progressively greater adoption of solar generation in the coming years.

In the case of forecasting solar adoption by retail customers, the approach is to consider as many factors as reasonably possible while acknowledging that solar penetration is still in the very early stages within the ComEd service territory. Along these lines, ComEd's solar forecast uses the System Dynamics model to account for various factors influencing solar adoption (this is the same model used in the March 2018 forecast update provided to the IPA). The model captures inputs related to recent IPA decisions, federal tax reform; photovoltaic (PV) tariff case; and expected PV costs. Building upon the first point, the IPA has made various decisions in the past year that have been very helpful in providing more clarity to the economics of solar adoption. Given these various factors and decisions, the resulting forecast of solar impacts for the Residential and Small C&I customer classes is shown in Table II-7(a). Community solar is a large portion of the solar outlook. Technically, community solar does not reduce customer usage, but for the purposes of this Forecast it was included as a reduction to usage in order to reflect the ultimate quantities the IPA needs to procure.

Table II-7(a)

	Residential Solar (GWh)			Small C&I Solar (GWh)		
Calendar Year	Rooftop	Community*	Total Solar	Rooftop	Community*	Total Solar
2019	21.4	67.0	88.4	55.9	11.2	67.1
2020	52.0	195.7	247.7	94.1	32.6	126.8
2021	69.1	320.5	389.6	101.9	53.4	155.3
2022	79.6	446.2	525.8	145.8	74.4	220.1
2023	103.5	582.5	686.0	222.4	97.1	319.5
2024	123.6	658.4	782.0	263.6	109.7	373.4

* Does not reduce retail usage.

ComEd's historical and forecasted weather-adjusted energy usage for the Residential and Small C&I customer classes are shown in Table II-7(b) and include the above solar assumptions.

Table II-7(b)

ComEd Weather Adjusted Annual Energy Usage				
	Residential		Small C&I	
Year	Usage (GWh)	Percent Growth	Usage (GWh)	Percent Growth
2010	27,874	(1.2%)	32,477	(0.6%)
2011	27,522	(1.3%)	32,217	(0.8%)
2012	27,361	(0.6%)	32,297	0.2%
2013	27,353	(0.0%)	32,149	(0.5%)
2014	27,447	0.3%	32,046	(0.3%)
2015	27,038	(1.5%)	31,771	(0.9%)
2016	26,888	(0.6%)	31,664	(0.3%)
2017	26,637	(0.9%)	31,455	(0.7%)
2018	26,827	0.7%	31,280	(0.6%)
2019	26,735	(0.3%)	30,842	(1.4%)
2020	26,833	0.4%	30,461	(1.2%)
2021	26,746	(0.3%)	29,941	(1.7%)
2022	26,533	(0.8%)	29,455	(1.6%)
2023	26,453	(0.3%)	28,976	(1.6%)
2024	26,467	0.1%	28,674	(1.0%)

Residential customer class usage has declined by an average of 0.5% per year from 2011 to 2017. This decline is attributed to a combination of moderate economic growth (average of 1.6% annual real GMP growth from 2011 to 2017) and growing energy efficiency programs. The implementation of ComEd-related energy efficiency programs beginning in 2008 has reduced residential usage over time. Likewise, changes to national lighting standards in recent years have contributed to a decline in usage. Residential use per customer declined by approximately 2% per year over the past three years (2015 – 2017). Looking to the future, economic growth is expected to pick-up as the labor market is doing very well. The Chicago-Naperville-Arlington Heights Metropolitan division unemployment rate of 4.4% in May 2018 has not been that low since October 2006 (roughly the peak of the housing boom). The Federal tax changes from December 2017 and other factors also contribute to a slightly better economic growth of 1.9% (real GMP) from 2017 to 2020. The dynamics of moderate economic growth being offset by energy efficiency efforts is expected to continue into the future with the general outlook being essentially flat load growth. The community solar output also reduces future usage in this Forecast with the resulting Residential annual usage expected to decline by only 0.1% per year from 2017 to 2023.

Small C&I usage declined by an average of 0.4% per year from 2011 to 2017. Small C&I is ComEd's revenue class related to commercial and industrial customers below 1,000 kW in size. As in the case of Residential, the Small C&I class has been affected by moderate economic growth and energy efficiency programs in the past several years. However, going forward a considerable proportion of ComEd's growing energy efficiency programs is devoted to the Small

C&I customer class. The forecasted Small C&I usage from 2017 to 2023 is expected to decline by 1.4% per year mainly because of the significant energy efficiency efforts devoted to this class in the future.

2. Impact of Demand Side and Energy Efficiency Initiatives

The PUA sets out annual targets for the implementation of cost-effective demand side and energy efficiency measures.

a. Impact of demand response programs, current and projected

(i) Background

ComEd is a strong supporter of the use of demand response to actively manage peak demands. Use of demand response resources grew in the mid to late 1990s, and ComEd has maintained a large portfolio of demand response resources, with participation from residential, commercial, and industrial customers. ComEd is a leader in the development and management of demand response resources, and will increase participation in appropriate programs to meet the requirements of the PUA.

The 2018-2019 (i.e., 6/1/18 to 5/31/19) portfolio of ComEd programs includes the following:

- **Direct Load Control ("DLC"):** ComEd's residential central air conditioning cycling program includes two DLC switch options (i.e., 50% and 100% options) with 70,000 customers and a Nest Smart Thermostat option with 19,400 customers for a program combined total of 89,400 customers. The total reduction potential for the program is estimated to be 89 MW.

- **Voluntary Load Reduction ("VLR") Program:** VLR is a demand response program that provides fixed compensation amounts to customers for the energy (kWh) they reduce during curtailment events. This program provides for transmission and distribution ("T&D") compensation based on the local conditions of the T&D network. The portfolio has 915 MW of potential load reduction (ComEd Rider VLR).

- **Hourly Pricing (formerly known as Residential Real-Time Pricing - RRTP) Program:** ComEd residential supply customers have the option to select Hourly Pricing (i.e., Rate BESH), provided they have a smart meter. The Hourly Pricing program gives customers access to hourly electricity prices that are based on the Residual ComEd Zone PJM wholesale market prices. These prices vary from hour to hour and day to day according to the actual market price of power. This program has 24,300 customers and a load reduction potential of 12 MW.

- **Peak Time Savings (PTS) Program:** This program is required by Section 16-108.6(g) of the PUA and was approved by the ICC in Docket No. 12-0484. The PTS program is an opt-in, market-based demand response program for customers with smart meters. Under the program, customers receive bill credits for kWh usage reduction during

curtailment periods. Enrollment in Peak Time Savings has since quadrupled to more than 274,400 customers enabling ComEd to bring more than 76 MW of capacity to the wholesale market in the 2018-2019 Planning Year. ComEd sold 75 MW of capacity from the program into the PJM capacity auction for the 2019-2020 Planning Year, and 50 MW for the 2020-2021 Planning Year.

(ii) Legislative Requirement

Section 8-103B(f)(4.5) of the PUA establishes a goal to implement demand response measures, providing that:

> (c) Implement cost-effective demand-response measures to reduce peak demand by 0.1% over the prior year for eligible retail customers, as defined in Section 16-111.5 of this Act, and for customers that elect hourly service from the utility pursuant to Section 16-107 of this Act, provided those customers have not been declared competitive. This requirement continues until December 31, 2026.

Section 1-10 of the Illinois Power Agency Act defines demand response as "measures that decrease peak demand or shifts demand from peak to off-peak periods."

Table II-8 shows the estimated annual MWs of demand response measures that will need to be implemented over the Five-year Forecast period to meet the goals set forth in the PUA:

Table II-8
Estimated Annual Level of Demand Response Measures

Planning Year	Peak Load (Prior Year) (MW)	Annual Goal	Annual Goal (MW)
2019	8,247	0.1%	8.25
2020	8,247	0.1%	8.25
2021	8,211	0.1%	8.21
2022[9]	7,076	0.1%	7.08
2023	7,092	0.1%	7.09

(iii) Impact of Demand Response Programs

Demand response programs do not impact ComEd's load forecasts. Load forecasts are made on a weather normalized, unrestricted basis. Since demand response measures are called on days when the temperature is hotter than "normal", the avoided capacity and energy associated with these resources is incremental to the weather normal forecast, and thus is not factored into the load forecasts. In fact, when developing forecasts, any impact on energy usage from

[9] ComEd's filed Energy Efficiency Plan in ICC Docket 17-0312 is a four-year plan, 2019-2021. For 2022 and 2023, which is not covered in the Plan, the goal is projected in a manner consistent with the Plan.

implementing a demand response measure in a prior year is added back into that prior year's usage data and then weather normalized before being used to assist in the forecasting process. This assures that the forecast represents a complete picture of the unrestricted demands on the system.

b. Impact of Energy Efficiency Programs

The PUA has a number of provisions regarding various types of energy efficiency programs. This section discusses the impact of each on these programs on the Forecast.

(i) Section 8-103B Energy Efficiency Measures

As of June 1, 2018, Section 8-103 of the PUA is superseded by Section 8-103B which has new energy efficiency requirements for ComEd. Section 8-103B requires ComEd to implement cost-effective energy efficiency measures beginning January 1, 2018. This provision provides annual kWh targets based on a projection of the upcoming years' energy usage for all delivery service customers. Additionally, there is a spending cap that limits the amount of expenditures on energy efficiency measures in any year.

(A) kWh Targets

The kWh target for energy efficiency is based on a projection of the amount of energy to be delivered by ComEd to all of its delivery service customers in the upcoming Planning Year. Previously, the kWh target was an annual goal based on first year savings. Starting in 2018 under Section 8-103B, the kWh targets will be based on cumulative persisting annual savings ("CPAS") which is defined as the total electric energy savings in a given year from measures installed in that year or in previous years, but no earlier than January 1, 2012, that are still operational and providing savings in that year because the measures have not yet reached the end of their useful lives. The table below shows the target percentages.

Table II-9
Target Cumulative Persisting Annual Savings ("CPAS") Percentages to Meet Energy Efficiency Goals

Year	Annual CPAS Percent Reduction in Energy Delivered
2018	7.8%
2019	9.1%
2020	10.4%
2021	11.8%
2022	13.1%
2023	14.4%
2024	15.7%
2025	17.0%
2026	17.9%
2027	18.8%
2028	19.7%
2029	20.6%
2030	21.5%

(B) Projected Overall Goals

The annual energy efficiency goals were determined based on the kWh targets and the rate impact criteria. ComEd has filed its first plan under Section 8-103B on June 30, 2017 (Docket 17-0312) and was approved by the ICC on September 11, 2017. Also, for purposes of this Forecast only,[10] the allocation of the energy (kWh) targets to the various customer classes (as shown in Table II-7(b)) was based on several years of historical data and judgment.

The above percentages represent the CPAS goal to be achieved by the end of each year for all delivery services customers. Since the various energy efficiency measures will be implemented and phased in over the course of each Planning Year and since Eligible Retail Customers are only a subset of delivery services customers, the actual amount of GWh for Eligible Retail Customers that is impacted in each Planning Year will be somewhat less (as shown in Table II-10, below).

[10] The PUA does not prescribe how the kWh targets are to be apportioned among the customer classes, and the energy efficiency plan did not set goals on a customer class basis.

(C) Impact on Forecasts

Energy efficiency measures directly impact the amount of energy used by customers throughout the year. As such, they will directly impact the forecasts of future load. The following chart depicts the cumulative impacts of these measures on the Forecast:

Table II-10
Cumulative Impacts of EE on Load Forecast by Customer Type[11]

Planning Year	Residential Allocation (GWh)	Watt-Hour Allocation (GWh)	0-100 kW Allocation (GWh)
2019	3,124	27	793
2020	3,040	31	893
2021	2,920	34	991
2022	2,800	37	1,088
2023	2,706	40	1,178

c. Impact of Renewable Energy Resources

Section 1-75(c) of the IPA Act (20 ILCS 3855/1-75(c)) establishes goals and cost thresholds for cost effective renewable energy resources. However, other than the impact of DG solar which was discussed earlier in this document and the energy prices hedging impact related to the 2010 Long Term Renewable contracts, there is no impact on the amount of energy ComEd must procure for Eligible Retail Customers.

3. Five-Year Monthly Load Forecast

Based on all of the factors discussed in this section, ComEd has developed the following forecast of projected energy usage of Eligible Retail Customers for the period from June 1, 2018 through May 31, 2019:

[11] These amounts are cumulative from 2008, when the statutory program began.

Table II-14

ComEd Procurement Period Load Forecast (Expected Load) Projected Energy Usage and Average Demand For Eligible Retail Customers (Weather Normal, Line Loss and DSM Adjusted)					
Year	**Month**	**Total Load (MWh)**		**Average Load (MW)**	
		On-Peak	**Off-Peak**	**On-Peak**	**Off-Peak**
2019	6	1,033,053	1,069,603	3,228	2,674
2019	7	1,380,647	1,248,434	3,922	3,185
2019	8	1,288,796	1,171,901	3,661	2,990
2019	9	853,318	917,148	2,667	2,293
2019	10	850,254	751,280	2,310	1,998
2019	11	818,362	920,972	2,557	2,297
2019	12	983,672	1,082,119	2,928	2,652
2020	1	1,062,989	1,076,576	3,020	2,746
2020	2	881,136	956,707	2,754	2,544
2020	3	872,252	889,366	2,478	2,275
2020	4	780,747	734,315	2,218	1,995
2020	5	734,816	866,949	2,296	2,045
Totals		**11,540,042**	**11,685,370**		

The forecast set forth above shows ComEd's expected load for the 2019 Planning Year. The PUA requires that the forecast cover a 5-year planning period. The forecast for ComEd's expected load for the 5-year planning period is set forth in Appendix B-1. The PUA also requires ComEd to provide low-load and high-load scenarios. That information for the 2019 Planning Year is set forth in Tables II-15 and II-16. The low-load and high-load scenarios for the 5-year planning period are set forth in Appendix B-2 and Appendix B-3, respectively. In all of the forecasted usage tables, "line loss" refers only to distribution losses.

Table II-15

ComEd Procurement Period Load Forecast (Low Load) Projected Energy Usage and Average Demand For Eligible Retail Customers (Line Loss and DSM Adjusted)					
Year	**Month**	**Total Load (MWh)**		**Average Load (MW)**	
		On-Peak	**Off-Peak**	**On-Peak**	**Off-Peak**
2019	6	852,060	977,373	2,663	2,443
2019	7	1,085,666	1,080,249	3,084	2,756
2019	8	981,049	944,953	2,787	2,411
2019	9	830,722	893,883	2,596	2,235
2019	10	799,180	698,983	2,172	1,859
2019	11	760,430	840,023	2,376	2,095
2019	12	925,994	1,027,006	2,756	2,517
2020	1	1,055,978	1,037,423	3,000	2,646
2020	2	824,554	896,572	2,577	2,385
2020	3	793,659	800,917	2,255	2,048
2020	4	722,949	687,646	2,054	1,869
2020	5	685,353	791,426	2,142	1,867
Totals		**10,317,594**	**10,676,454**		

Table II-16

ComEd Procurement Period Load Forecast (High Load) Projected Energy Usage and Average Demand For Eligible Retail Customers (Line Loss and DSM Adjusted)					
Year	**Month**	**Total Load (MWh)**		**Average Load (MW)**	
		On-Peak	**Off-Peak**	**On-Peak**	**Off-Peak**
2019	6	1,108,844	1,119,693	3,465	2,799
2019	7	1,585,505	1,520,641	4,504	3,879
2019	8	1,562,903	1,402,446	4,440	3,578
2019	9	830,920	975,921	2,597	2,440
2019	10	887,304	769,234	2,411	2,046
2019	11	860,103	961,590	2,688	2,398
2019	12	1,090,308	1,219,313	3,245	2,989
2020	1	1,155,653	1,168,557	3,283	2,981
2020	2	944,823	1,015,391	2,953	2,701
2020	3	896,019	912,263	2,546	2,333
2020	4	822,934	749,429	2,338	2,036
2020	5	777,393	1,042,365	2,429	2,458
Totals		**12,522,709**	**12,856,843**		

The low-load and the high-load scenarios are based upon a change to three of the main variables impacting load: weather, switching and load growth.

The Low-Load Forecast assumes that the summer weather is cooler than normal, that load growth occurs at a rate 2% less than the Expected Load Forecast and higher RES service relative to the Expected Load Forecast shown in Table II-14. In this scenario for switching purposes, Residential, Watt-Hour and 0 to 100 kW Blended usage is reduced by a total of four percentage points over the course of the calendar years 2019 and 2020. This switching change equates to approximately 750 GWh for Program Year 2019 and 1,500 GWh for Program Year 2020. The percentage of Eligible Retail Customers taking Blended Service in this switching scenario is 52% (based on usage) as of December 2020 compared to 56% in the Expected Load Forecast.

The High-Load Forecast assumes that the summer weather is hotter than normal, that load growth occurs at a rate 2% more than is expected, and lower RES service. In this scenario for switching purposes, Residential, Watt-Hour and 0 to 100 kW Blended usage is reduced by a total of four percentage points over the course of the calendar years 2019 and 2020. This switching change equates to approximately (750) GWh for Program Year 2019 and (1,500) GWh for Program Year 2020. The percentage of Eligible Retail Customers taking Blended Service in this switching scenario is 60% as of December 2020 compared to 56% in the Expected Load Forecast.

The +/- 2% load growth assumption in both scenarios reflects, in part, the current economic uncertainty. That uncertainty is described by IHS Markit in its U.S. Executive Summary dated May 2018:

> "A Loss in Confidence and a Two-Quarter Recession" Scenario: In the pessimistic scenario, a loss in confidence in continued economic growth (given that the U.S. economy has been growing 107 months and is the second-longest expansion since 1854) leads to a drop in fixed investment with the expansion ending in the 117th month. Adding to this situation is that rising prices have left the commercial real estate market a bit wobbly lately and it turns into a fall with the onset of less confidence. Likewise, households become concerned with these developments and housing starts tumble as they pull back from the housing market. The result is a two-quarter recession starting in the second quarter of 2019. The unemployment rate climbs through most of 2019, reaching a high of 5.2% in the first quarter of 2020. The Federal Reserve responds to the recession by lowering interest rates. With interest rates initially so low, it finds less economy pick-up from this effort. The end result is a weak recovery and an economy that never gets back on track. In this scenario, real GDP grows 0.9% in 2019 and 1.5% in 2020 (versus 2.8% and 1.9% in the baseline, respectively).
>
> "Housing Market Bounces Back" Scenario: In the optimistic scenario, young adults move to form households in greater numbers because of the improving economy. This drives the level of housing starts above 1.7 million in 2020. Also, with higher productivity, wage and price pressures remain relatively muted in 2018. Continuing oversupply conditions in the oil markets keep prices lower than in the baseline. The Federal Reserve take a gradual approach to raising interest rates given this benign inflation environment. Given the strengthening outlook, both consumer and business confidence improves. Robust consumer spending follows with real spending growth averaging 3.5% in 2019. Meanwhile, economic conditions in the rest of the world improve with the help of structural

reforms and further support the U.S. growth. In this scenario, real GDP grows 4.0% in 2019 and 2.8% in 2020.

ComEd's intention is to keep the IPA informed of significant changes in its forecast during the procurement proceeding.

III. CONCLUSION

For all of the reasons described here, ComEd believes that its Forecast for the period June 1, 2019 through May 31, 2024 is consistent with the requirements of the PUA and provides an appropriate approach to develop the procurement plan to acquire supply for the Eligible Retail Customers.

Appendices

A. Load Forecast Models

1. Residential Single Family Model (Hour 16)

2. ComEd Model Coefficients

3. ComEd Model Regression Statistics

4. Detailed Description of Variables Used In Forecast Models

B. Five-Year Load Forecast

1. Expected load

2. Low Load

3. High Load

Appendix A-1

Residential Single Family Model (Hour 16)			
Variable	**Coefficient**	**T-Stat**	**Notes**
Constant	0.857	16.67	Constant term
Monday Binary	-0.097	-5.85	Daily Binary - Monday
Tuesday Binary	-0.104	-5.91	Daily Binary - Tuesday
Wednesday Binary	-0.114	-6.33	Daily Binary - Wednesday
Thursday Binary	-0.135	-7.41	Daily Binary - Thursday
Friday Binary	-0.126	-7.02	Daily Binary - Friday
Saturday Binary	-0.032	-2.50	Daily Binary - Saturday
MLK Binary	0.102	1.37	Martin Luther King's Day
Presidents Day Binary	0.050	0.67	President's Day
GoodFriday Binary	0.025	0.35	Good Friday
Memorial Day Binary	0.115	1.51	Memorial Day
July4th Binary	0.241	2.90	July 4th.
LaborDay Binary	0.247	3.17	Labor Day
Thanksgiving Binary	0.218	2.87	Thanksgiving Day
FriAThanks Binary	0.113	1.43	Friday after Thanksgiving Day
XMasWeek Before Binary	0.114	1.31	Week before Christmas
XMasEve Binary	0.386	2.51	Christmas Eve
XMasDay Binary	0.184	1.98	Christmas Day
XMasWeek Binary	0.086	0.99	Christmas Week
New Years Eve Binary	0.100	0.69	New Year's Eve Day
New Years Day Binary	0.103	0.85	New Year's Day
Feb Binary	-0.068	-1.27	Monthly Binary - February
Mar Binary	-0.119	-2.27	Monthly Binary - March
MarDLS Binary	0.002	0.04	Day That Daylight Savings Begins In March
Apr Binary	-0.135	-2.38	Monthly Binary - April
May Binary	-0.175	-3.01	Monthly Binary - May
Jun Binary	0.086	1.42	Monthly Binary - June
Jul Binary	0.147	2.34	Monthly Binary - July
Aug Binary	0.242	3.79	Monthly Binary - August
Sep Binary	0.076	1.22	Monthly Binary - September
Oct Binary	-0.045	-0.74	Monthly Binary - October
NovDLS Binary	0.044	0.71	Day That Daylight Savings Ends In November
Nov Binary	-0.145	-2.32	Monthly Binary - November
Dec Binary	-0.033	-0.57	Monthly Binary - December
JanWalk	-0.002	-0.93	Monthly Time Trend - January
FebWalk	-0.002	-1.10	Monthly Time Trend - February
MarWalk	-0.001	-0.22	Monthly Time Trend - March
AprWalk	0.000	0.17	Monthly Time Trend - April
MayWalk	0.006	3.07	Monthly Time Trend - May
JunWalk	0.002	1.17	Monthly Time Trend - June

JulWalk	0.001	0.50	Monthly Time Trend - July
AugWalk	-0.004	-1.91	Monthly Time Trend - August
SepWalk	-0.001	-0.49	Monthly Time Trend - September
OctWalk	-0.001	-0.67	Monthly Time Trend - October
NovWalk	0.005	2.11	Monthly Time Trend - November
DecWalk	0.003	1.08	Monthly Time Trend - December
SeasonHDD	0.007	7.01	Seasonal Heating Degree Days Spline
LagHDD	0.000	0.38	1 Day Lag Seasonal Heating Degree Days Spline
Lag2HDD	0.001	1.16	2 Day Lag Seasonal Heating Degree Days Spline
SeasonTDD	0.163	51.85	Seasonal Cooling Degree Days Spline
LagTDD	0.004	1.29	1 Day Lag Seasonal Cooling Degree Days Spline
Lag2TDD	0.015	5.19	2 Day Lag Seasonal Cooling Degree Days Spline
HDDWkEnd	0.000	0.20	Weekend Seasonal Heating Degree Days Spline
TDDWkEnd	0.006	1.83	Weekend Seasonal Cooling Degree Days Spline
Shift2016	0.024	1.93	An End Shift to describe usage for 2016
Shift2017	-0.007	-0.53	An End Shift to describe usage for 2017
AR(1)	0.252	8.22	Autoregressive Term

The coefficients provide the effect that each variable has on the hourly usage for a single hour (Hour 16 which includes the load from 3 p.m. to 4 p.m. in the afternoon). The "T-Stat" provides the statistical significance of the variable, with a value generally greater than +/- two (2) indicating that the coefficient is significantly different from zero. The hourly model for Hour 16 has an adjusted R-squared of 0.95, which means that 95% of the variance in the hourly data is being explained by the model.

At the daily level, the mean average percent error ("MAPE") for the summation of the hourly models is 3.2%. The 3.2% daily MAPE means that the average percentage difference on a daily basis between the usage predicted by the model and the actual usage for that period was very small. In other words, the model can explain usage with a 97% accuracy rate. Such a high accuracy rate is particularly noteworthy because the model is dealing with very short time frames in which many factors may come into play. The high accuracy rate, the low MAPE and the high R-squared indicate that the model captures the vast majority of factors that affect electrical usage.

Appendix A-2

ComEd Model Coefficients

ComEd Zone Model			
Variable	**Coefficient**	**StdErr**	**T-Stat**
CONST	3493.175	777.46	4.49
CalVars.Jan	52.55	33.99	1.55
CalVars.Feb	-401.97	81.35	-4.94
CalVars.Mar	-421.987	87.81	-4.81
CalVars.Apr	-534.046	74.56	-7.16
CalVars.May	-370.489	82.26	-4.50
CalVars.Jun	-287.25	84.69	-3.39
CalVars.Jul	-130.301	91.92	-1.42
CalVars.Aug	-28.257	86.74	-0.33
CalVars.Sep	-313.9	76.77	-4.09
CalVars.Oct	-320.442	73.92	-4.34
CalVars.Nov	-319.626	89.85	-3.56
CalVars.WkEndHols	-27.027	9.08	-2.98
CalHDD.HDD_Spring	2.528	0.20	12.38
CalHDD.HDD_Fall	2.379	0.27	8.88
CalHDD.HDD_Winter	1.906	0.10	19.73
CalCDD.SpringTDD	12.081	1.11	10.86
CalCDD.SummerTDD	13.829	0.36	38.51
CalCDD.FallTDD	13.616	2.49	5.47
Monthly.EconIndex15	4648.306	741.65	6.27
EE_Savings.Total	-0.761	0.07	-11.73
AR(1)	0.438	0.09	5.17

Residential Customer Class Model			
Variable	**Coefficient**	**StdErr**	**T-Stat**
Monthly.Jan	21.053	0.718	29.336
Monthly.Feb	19.901	0.714	27.854
Monthly.Mar	19.122	0.662	28.879
Monthly.Apr	18.331	0.666	27.512
Monthly.May	18.052	0.601	30.042
Monthly.Jun	18.95	0.63	30.071
Monthly.Jul	21.289	0.609	34.967
Monthly.Aug	21.396	0.634	33.772
Monthly.Sep	20.447	0.653	31.301
Monthly.Oct	19.345	0.616	31.43
Monthly.Nov	18.553	0.745	24.887
Monthly.Dec	20.105	0.652	30.845
CycWthrT.ResHDD_Spring	0.243	0.029	8.263
CycWthrT.ResHDD_Fall	0.303	0.054	5.655
CycWthrT.ResHDD_Winter	0.229	0.013	18.161
CycWthrT.ResCDD_Spring	2.399	0.577	4.159
CycWthrT.ResCDD_Jun	2.644	0.173	15.28
CycWthrT.ResCDD_Jul	2.273	0.064	35.381
CycWthrT.ResCDD_Aug	2.404	0.06	39.886
CycWthrT.ResCDD_Sep	2.567	0.107	24.094
CycWthrT.ResCDD_Fall	2.718	0.158	17.226
CycVars.ResEE_PerDay	-0.574	0.03	-19.03
CycVars.ResBill_MA_Index	-2.279	0.539	-4.227
AR(1)	0.372	0.089	4.186

Small C&I Customer Class Model			
Variable	**Coefficient**	**StdErr**	**T-Stat**
Monthly.Jan	28.436	6.643	4.281
Monthly.Feb	31.525	6.65	4.74
Monthly.Mar	30.999	6.616	4.686
Monthly.Apr	30.668	6.599	4.647
Monthly.May	29.315	6.605	4.438
Monthly.Jun	29.518	6.608	4.467
Monthly.Jul	30.344	6.631	4.576
Monthly.Aug	32.996	6.626	4.98
Monthly.Sep	33.128	6.625	5.001
Monthly.Oct	32.703	6.635	4.929
Monthly.Nov	30.103	6.642	4.533
Monthly.Dec	27.34	6.663	4.103
CycWthrT.SCI_HDD	0.551	0.04	13.728
CycWthrT.SCI_CDD	2.613	0.165	15.88
CycWthrT.SCI_CDDTrend_2021_Cap	-0.048	0.013	-3.807
CycVars.SCI_Econ_Index3	51.653	6.885	7.502
SCI.DelayedBill2	-0.026	0.003	-9.284
CycVars.SCI_EEPerDay	-0.642	0.068	-9.502
AR(1)	0.118	0.094	1.256

StreetLighting Class Model			
Variable	**Coefficient**	**StdErr**	**T-Stat**
Monthly.Jan	2.852	0.034	83.953
Monthly.Feb	2.763	0.035	79.685
Monthly.Mar	2.299	0.036	63.656
Monthly.Apr	2.084	0.036	58.374
Monthly.May	1.857	0.036	51.327
Monthly.Jun	1.817	0.037	49.22
Monthly.Jul	1.677	0.036	46.202
Monthly.Aug	1.838	0.034	54.44
Monthly.Sep	2.071	0.034	60.291
Monthly.Oct	2.2	0.035	63.278
Monthly.Nov	2.447	0.035	69.235
Monthly.Dec	2.618	0.035	75.393
CycVars.SL_DelayedBillsPerDay	-1.001	0.122	-8.219
CycVars.SL_DelayedBillsPerDayLag	0.784	0.134	5.835

Appendix A-3

ComEd Model Regression Statistics

Regression Statistics	Zone	Residential	Small C&I	Street Lighting
Iterations	16	16	14	1
Adjusted Observations	137	142	130	58
Deg. of Freedom for Error	115	118	111	44
R-Squared	0.992	0.995	0.972	0.976
Adjusted R-Squared	0.991	0.994	0.967	0.969
AIC	9.132	-2.039	0.474	-5.151
BIC	9.601	-1.539	0.893	-4.654
Log-Likelihood	-797.96	-32.72	-196.3	81.08
Model Sum of Squares	118,698,174	2,843.85	5,335.44	8.46
Sum of Squared Errors	919,153.11	13.18	155.96	0.21
Mean Squared Error	7,992.64	0.11	1.41	0
Std. Error of Regression	89.4	0.33	1.19	0.07
Mean Abs. Dev. (MAD)	63.1	0.24	0.9	0.05
Mean Abs. % Err. (MAPE)	0.75%	1.10%	1.01%	2.24%
Durbin-Watson Statistic	2.04	1.934	1.957	2.157
Ljung-Box Statistic	21.36	22.83	26.39	31.55
Prob (Ljung-Box)	0.6175	0.5297	0.3339	0.1386
Prob (Jarque-Bera)	0.0998	0.1971	0.625	0.5293

Appendix A-4
Detailed Description Of Variables
Used In Forecast Models

The econometric models are statistical multi-variant regressions that determine the correlation between electrical usage (dependent variable) and weather, economic and monthly factors (independent variables). ComEd's weather normals are based on the 30-year time period of 1987 to 2016 for the forecast years of 2019 to 2024. The following models are used in producing the energy usage forecast (GWh) for the eligible customers:

Monthly Zone energy usage for the ComEd zone
Monthly Residential bill-cycle energy usage
Monthly Small C&I bill-cycle energy usage
Monthly Street Lighting bill-cycle energy usage

ComEd's Load Forecasting group with the input of industry experts developed the models. The following sections describe each model and its specifications. Appendices A-2 and A-3 contain the coefficients and other regression statistics for the models.

ComEd's Monthly Zone Model

The dependent variable in the Monthly Zone Model is monthly zone energy usage for the ComEd service territory. The monthly zone usage is in GWh units.

The independent variables within the model are:

- The monthly binary variables reflect monthly usage patterns. Customer electrical usage is a function of other items besides cooling and heating (e.g., lighting). This other usage is not constant per month and the monthly binary variables are used to account for this variability. December is excluded from the monthly binaries, as the constant term establishes December as the base from which the monthly binary variables are adjusted.

- The WkEndHols variable informs the model of the number of weekend days and holidays within each calendar month

- The EconIndex15 variable is a composite economic variable that weights the contributions of GMP, US Gross Domestic Product ("GDP"), households, manufacturing employment and non-manufacturing employment in the ComEd service territory. GMP is the gross metropolitan product for the Chicago metropolitan area and also includes other metropolitan areas within ComEd's service territory. This variable measures economic activity for the ComEd service territory. Both the GMP and GDP are adjusted for inflation and obtained from IHS Economics. Further, the variables are adjusted for the number of weekends (and holidays) and weekdays within a calendar month because overall energy usage for a given month is a function of those daily influences. The variables' units are billions of dollars. The households component is the total number of households

within the ComEd service territory. This economic variable reflects the effect of a growing customer base on energy usage. This variable is also adjusted for the number of weekends, holidays and weekdays within a calendar month. Both manufacturing and non-manufacturing employment are measured for the ComEd service territory and are also adjusted for the number of weekdays, weekends and holidays. The five economic variables are each indexed to January 2008 and then weighted based on an exponential formula with each of these economic variables receiving a roughly one-fifth weighting.

- The EE_Savings.Total variable is composed of estimated monthly cumulative gross energy efficiency savings across ComEd's Residential, Small C&I and Large C&I customer class programs. This variable is intended to capture the overall trend of energy efficiency activity in the ComEd service territory by ComEd sponsored programs (e.g., lightbulbs, home energy reports).

- The temperature and humidity degree day ("TDD") variables are weather variables designed to capture the effect on usage from cooling equipment. The TDD variable is similar in design to a cooling degree day ("CDD") variable. A CDD weather variable is often used in energy models. The standard CDD measures the difference in the average daily temperature above a specific threshold (typically 65 degrees as that is a common point at which cooling activity begins). The TDD variable provides several enhancements to the typical CDD variable as delineated below:

  The average daily temperature is the 24-hour average instead of the average of the maximum and minimum temperatures for the day. This captures frontal movements within the day.

  Humidity is included in the TDD variable as humidity does influence electrical usage.

  The TDD variable uses multiple degree bases instead of just a 65 degree-base. This captures the change in the rate at which customers use electricity at different temperature levels.

  The TDD variable is interacted with seasonal binary variables (i.e., Spring, Summer and Fall) to reflect the seasonal usage pattern related to cooling equipment.

  The TDD variable is in degree-day units.

- The HDD Spline variable is a weather variable that measures the relationship on electrical usage from space heating equipment (e.g., natural gas furnace fans and electrical space-heating equipment). The HDD Spline variable is similar in concept to the industry-standard heating degree day ("HDD") weather variable. The HDD Spline provides a couple of enhancements to the HDD weather variable:

The average daily temperature is the 24-hour average instead of the average of the maximum and minimum temperatures for the day. This captures frontal movements within the day.

The HDD Spline uses multiple degree bases instead of just a 65 degree-base. This captures the change in the rate at which customers use electricity at different temperature levels.

The HDD Spline variable is in degree-day units.

The coefficient values and the standard measurements of significance within the model (e.g., t-stats) and the overall model performance (e.g., R-squared and MAPE) are contained in Appendices A-2 and A-3.

ComEd Residential Model

The dependent variable in the Residential Model is residential use per customer per day and the units are kWh per customer per day.

The independent variables are noted below. (Because many of the variables follow the same purpose and logic as in the Monthly Zone model, please see the Monthly Zone Model description for additional information.)

- The monthly binary variables reflect monthly usage patterns.
- The Monthly Bill (Moving Average) Index variable is a typical monthly residential electricity bill assuming historical tariff charges and weather normal customer usage for the year 2002 (adjusted for inflation). Specifically, the historical tariff charges for a single-family and multi-family (both non-space heat) were multiplied by the weather adjusted billing units from the year 2002 for both residential groups. The monthly bills for both residential groups were weighted, based on energy usage, to form a single monthly bill. The monthly bill was also adjusted for the Chicago CPI-U. A 12 month moving average is calculated for each month (average of the current month and the 11 preceding months). Lastly, this variable is indexed to January 2008. This variable reflects the influence of electricity charges/prices over time related to consumer behavior.
- See EE_Savings.Total variable in the Zone Model section above for description. The ResEE_PerDay variable is a measure of gross energy efficiency savings on a per customer per day basis for the Residential customer class.
- Weather variables used in the residential model are similar in concept to the weather variables described in the Monthly Zone Model section and will not be repeated here.

ComEd Small C&I Model

The dependent variable in the Small C&I Model is Small C&I use per day and the units are GWh per day. The independent variables within the model are:

- The monthly binary variables, weather variables and shift variables are similar in concept to the Monthly Zone Model and will not be repeated here.

- The Small C&I Economic Index variable is a composite economic variable that weights the contributions of GMP and non-manufacturing employment in the ComEd service territory. These economic variables are each indexed to January 2008 and then weighted based on an exponential formula with a weighting of employment (80%) and GMP (20%). The GMP variable is defined in the Zone model description above and the employment variable is an economic variable that measures the total non-manufacturing employment in the Chicago area. Job growth is correlated to Small C&I development and growth

- See EE_Savings.Total variable in the Zone Model section above for description. The SCI_EEPerDay variable is a measure of gross energy efficiency savings on a per day basis for the Small C&I customer class

- The Delayed Bill variable is the month over month (current vs. one month prior) variance in the Small C&I's estimated usage (GWh) of bills that are delayed beginning in October 2009. This variable is used to inform the model about an increase in delayed bill activity primarily in 2010.

ComEd Street Light Model

The dependent variable in the Street Lighting Model is Street Lighting use per day and the units are GWh per day. The independent variables are:

- Monthly binary variables and a shift variable are similar in concept to the Monthly Zone Model.

- The Delayed Bill Per Day variable is the current month's estimated Streetlight usage (GWh) of bills that are delayed beginning in January 2008 on a per day basis.

- The Delayed Bill Per Day Lag variable is the previous month's estimated Streetlight usage (GWh) of bills that are delayed beginning in January 2008 on a per day basis.

ComEd Procurement Period Load Forecast (Expected Load) Projected Energy Usage and Average Demand For Eligible Retail Customers (Weather Normal, Line Loss and DSM Adjusted)					
Year	Month	Total Load (MWh)		Average Load (MW)	
		On-Peak	Off-Peak	On-Peak	Off-Peak
2019	6	1,033,053	1,069,603	3,228	2,674
2019	7	1,380,647	1,248,434	3,922	3,185
2019	8	1,288,796	1,171,901	3,661	2,990
2019	9	853,318	917,148	2,667	2,293
2019	10	850,254	751,280	2,310	1,998
2019	11	818,362	920,972	2,557	2,297
2019	12	983,672	1,082,119	2,928	2,652
2020	1	1,062,989	1,076,576	3,020	2,746
2020	2	881,136	956,707	2,754	2,544
2020	3	872,252	889,366	2,478	2,275
2020	4	780,747	734,315	2,218	1,995
2020	5	734,816	866,949	2,296	2,045
2020	6	1,135,144	987,535	3,225	2,684
2020	7	1,440,204	1,186,888	3,914	3,157
2020	8	1,219,719	1,223,614	3,630	2,999
2020	9	898,587	875,253	2,674	2,279
2020	10	804,662	784,697	2,286	2,002
2020	11	813,852	923,584	2,543	2,303
2020	12	1,032,653	1,042,337	2,934	2,659
2021	1	951,416	1,156,013	2,973	2,726
2021	2	893,735	902,572	2,793	2,564
2021	3	913,089	853,880	2,481	2,277
2021	4	773,727	735,614	2,198	1,999
2021	5	725,586	859,594	2,267	2,027
2021	6	1,134,714	976,689	3,224	2,654
2021	7	1,305,220	1,298,723	3,885	3,183
2021	8	1,279,283	1,165,964	3,634	2,974
2021	9	885,758	874,401	2,636	2,277
2021	10	759,859	814,306	2,261	1,996
2021	11	855,611	887,758	2,546	2,306
2021	12	1,076,912	993,666	2,926	2,643
2022	1	989,310	1,104,172	2,944	2,706
2022	2	883,495	897,927	2,761	2,551
2022	3	902,614	850,032	2,453	2,267
2022	4	724,362	760,056	2,156	1,979
2022	5	754,180	819,231	2,245	2,008
2022	6	1,128,273	963,978	3,205	2,620
2022	7	1,229,023	1,342,971	3,841	3,167
2022	8	1,334,436	1,103,766	3,626	2,936

ComEd Procurement Period Load Forecast (Expected Load) Projected Energy Usage and Average Demand For Eligible Retail Customers (Weather Normal, Line Loss and DSM Adjusted)					
Year	**Month**	**Total Load (MWh)**		**Average Load (MW)**	
		On-Peak	**Off-Peak**	**On-Peak**	**Off-Peak**
2022	9	867,559	869,746	2,582	2,265
2022	10	751,410	806,725	2,236	1,977
2022	11	844,660	880,860	2,514	2,288
2022	12	962,902	1,075,525	2,866	2,636
2023	1	986,358	1,109,564	2,936	2,720
2023	2	874,870	896,582	2,734	2,547
2023	3	892,570	850,473	2,425	2,268
2023	4	679,088	785,589	2,122	1,964
2023	5	785,529	782,302	2,232	1,996
2023	6	1,129,760	950,439	3,210	2,583
2023	7	1,229,573	1,332,008	3,842	3,142
2023	8	1,329,137	1,096,654	3,612	2,917
2023	9	819,697	890,856	2,562	2,227
2023	10	794,191	766,451	2,256	1,955
2023	11	850,264	864,836	2,531	2,246
2023	12	913,918	1,100,362	2,856	2,595
2024	1	1,044,846	1,052,528	2,968	2,685
2024	2	910,570	894,694	2,710	2,485
2024	3	810,984	899,561	2,414	2,210
2024	4	767,136	713,317	2,179	1,938
2024	5	791,296	762,090	2,248	1,944
Totals		**57,421,784**	**57,451,753**		

Appendix B-2

ComEd Procurement Period Load Forecast (Low Load) Projected Energy Usage and Average Demand For Eligible Retail Customers (Line Loss and DSM Adjusted)					
Year	Month	Total Load (MWh)		Average Load (MW)	
		On-Peak	Off-Peak	On-Peak	Off-Peak
2019	6	852,060	977,373	2,663	2,443
2019	7	1,085,666	1,080,249	3,084	2,756
2019	8	981,049	944,953	2,787	2,411
2019	9	830,722	893,883	2,596	2,235
2019	10	799,180	698,983	2,172	1,859
2019	11	760,430	840,023	2,376	2,095
2019	12	925,994	1,027,006	2,756	2,517
2020	1	1,055,978	1,037,423	3,000	2,646
2020	2	824,554	896,572	2,577	2,385
2020	3	793,659	800,917	2,255	2,048
2020	4	722,949	687,646	2,054	1,869
2020	5	685,353	791,426	2,142	1,867
2020	6	927,049	817,962	2,634	2,223
2020	7	1,121,689	922,666	3,048	2,454
2020	8	882,140	924,153	2,625	2,265
2020	9	826,390	805,735	2,459	2,098
2020	10	713,155	690,209	2,026	1,761
2020	11	706,929	802,645	2,209	2,002
2020	12	914,358	938,888	2,598	2,395
2021	1	892,963	1,060,015	2,791	2,500
2021	2	809,175	794,495	2,529	2,257
2021	3	796,896	727,671	2,165	1,940
2021	4	689,527	653,067	1,959	1,775
2021	5	663,079	737,772	2,072	1,740
2021	6	917,448	751,596	2,606	2,042
2021	7	997,364	957,186	2,968	2,346
2021	8	939,410	809,693	2,669	2,066
2021	9	788,882	783,204	2,348	2,040
2021	10	656,265	696,969	1,953	1,708
2021	11	729,239	750,802	2,170	1,950
2021	12	943,663	868,605	2,564	2,310
2022	1	900,931	1,000,520	2,681	2,452
2022	2	782,181	776,257	2,444	2,205
2022	3	773,711	708,000	2,102	1,888
2022	4	639,510	654,089	1,903	1,703
2022	5	682,533	680,047	2,031	1,667

ComEd Procurement Period Load Forecast (Low Load) Projected Energy Usage and Average Demand For Eligible Retail Customers (Line Loss and DSM Adjusted)					
Year	**Month**	**Total Load (MWh)**		**Average Load (MW)**	
		On-Peak	**Off-Peak**	**On-Peak**	**Off-Peak**
2022	6	902,385	717,919	2,564	1,951
2022	7	928,675	962,847	2,902	2,271
2022	8	955,874	752,558	2,597	2,001
2022	9	759,388	760,877	2,260	1,981
2022	10	635,055	676,931	1,890	1,659
2022	11	710,647	724,590	2,115	1,882
2022	12	831,284	916,538	2,474	2,246
2023	1	887,206	978,760	2,640	2,399
2023	2	755,411	763,398	2,361	2,169
2023	3	749,254	694,711	2,036	1,853
2023	4	590,055	660,456	1,844	1,651
2023	5	665,136	665,138	1,890	1,697
2023	6	875,042	703,417	2,486	1,911
2023	7	883,824	962,129	2,762	2,269
2023	8	913,822	751,217	2,483	1,998
2023	9	706,234	760,340	2,207	1,901
2023	10	653,777	634,123	1,857	1,618
2023	11	693,124	704,718	2,063	1,830
2023	12	768,952	923,251	2,403	2,177
2024	1	907,841	922,283	2,579	2,353
2024	2	756,756	754,726	2,252	2,096
2024	3	656,918	730,615	1,955	1,795
2024	4	645,204	593,990	1,833	1,614
2024	5	663,215	628,217	1,884	1,603
Totals		**48,507,160**	**48,332,449**		

Appendix B-3

ComEd Procurement Period Load Forecast (High Load) Projected Energy Usage and Average Demand For Eligible Retail Customers (Line Loss and DSM Adjusted)					
Year	Month	Total Load (MWh)		Load (MW)	
		On-Peak	Off-Peak	On-Peak	Off-Peak
2019	6	1,108,844	1,119,693	3,465	2,799
2019	7	1,585,505	1,520,641	4,504	3,879
2019	8	1,562,903	1,402,446	4,440	3,578
2019	9	830,920	975,921	2,597	2,440
2019	10	887,304	769,234	2,411	2,046
2019	11	860,103	961,590	2,688	2,398
2019	12	1,090,308	1,219,313	3,245	2,989
2020	1	1,155,653	1,168,557	3,283	2,981
2020	2	944,823	1,015,391	2,953	2,701
2020	3	896,019	912,263	2,546	2,333
2020	4	822,934	749,429	2,338	2,036
2020	5	777,393	1,042,365	2,429	2,458
2020	6	1,297,458	1,075,820	3,686	2,923
2020	7	1,815,397	1,458,584	4,933	3,879
2020	8	1,564,962	1,540,192	4,658	3,775
2020	9	984,207	925,866	2,929	2,411
2020	10	881,246	853,471	2,504	2,177
2020	11	908,123	1,011,143	2,838	2,522
2020	12	1,211,702	1,234,514	3,442	3,149
2021	1	1,083,739	1,324,342	3,387	3,123
2021	2	1,008,248	1,003,358	3,151	2,850
2021	3	982,313	914,376	2,669	2,438
2021	4	853,271	780,629	2,424	2,121
2021	5	859,052	1,014,609	2,685	2,393
2021	6	1,304,788	1,143,079	3,707	3,106
2021	7	1,698,430	1,657,652	5,055	4,063
2021	8	1,689,353	1,515,597	4,799	3,866
2021	9	1,026,267	923,548	3,054	2,405
2021	10	853,334	909,071	2,540	2,228
2021	11	968,312	1,001,509	2,882	2,601
2021	12	1,302,376	1,187,373	3,539	3,158
2022	1	1,160,363	1,279,728	3,453	3,137
2022	2	1,016,855	1,018,339	3,178	2,893
2022	3	994,348	924,702	2,702	2,466
2022	4	811,935	827,059	2,416	2,154
2022	5	946,714	950,776	2,818	2,330

ComEd Procurement Period Load Forecast (High Load) Projected Energy Usage and Average Demand For Eligible Retail Customers (Line Loss and DSM Adjusted)					
Year	**Month**	**Total Load (MWh)**		**Load (MW)**	
		On-Peak	**Off-Peak**	**On-Peak**	**Off-Peak**
2022	6	1,289,183	1,185,311	3,662	3,221
2022	7	1,657,276	1,724,698	5,179	4,068
2022	8	1,792,931	1,467,601	4,872	3,903
2022	9	1,042,336	921,127	3,102	2,399
2022	10	866,467	913,311	2,579	2,239
2022	11	974,212	1,014,855	2,899	2,636
2022	12	1,208,852	1,291,737	3,598	3,166
2023	1	1,182,391	1,309,234	3,519	3,209
2023	2	1,028,068	1,036,314	3,213	2,944
2023	3	1,014,101	932,355	2,756	2,486
2023	4	769,203	880,026	2,404	2,200
2023	5	1,018,384	910,620	2,893	2,323
2023	6	1,343,003	1,166,658	3,815	3,170
2023	7	1,668,558	1,767,431	5,214	4,168
2023	8	1,823,972	1,485,787	4,956	3,952
2023	9	946,966	1,024,990	2,959	2,562
2023	10	927,852	890,336	2,636	2,271
2023	11	994,701	1,021,876	2,960	2,654
2023	12	1,161,919	1,359,044	3,631	3,205
2024	1	1,267,761	1,275,350	3,602	3,253
2024	2	1,079,923	1,063,587	3,214	2,954
2024	3	934,476	1,014,301	2,781	2,492
2024	4	888,096	812,546	2,523	2,208
2024	5	982,328	967,422	2,791	2,468
Totals		**67,608,461**	**66,768,697**		