COMMONWEALTH EDISON COMPANY

Load Forecast for Five-Year Planning Period
June 2020 – May 2025

July 15, 2019

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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 2020 through May 2025.

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, 2020. 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, 2020 – May 31, 2025)

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 weekday 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 2019 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, 2017 and 2018. 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 2019 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 2018. 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 2016 to December 2018.

Table II-1
Load Forecast Table (Historical Detail 2016-2018)

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
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**
2018	1	845,446	908,000	9,125	8,910	238,589	199,127	404	837	1,093,564	1,116,875
2018	2	675,912	725,536	7,737	7,580	204,344	169,455	360	786	888,353	903,357
2018	3	666,262	717,153	7,846	7,675	213,551	175,574	359	922	888,018	901,323
2018	4	575,775	650,242	7,077	7,119	199,371	165,462	259	865	782,482	823,688
2018	5	692,495	747,914	6,902	6,533	215,360	163,818	228	1,022	914,985	919,287
2018	6	883,802	930,057	7,168	6,858	227,497	180,814	165	764	1,118,633	1,118,493
2018	7	1,131,273	1,118,199	8,099	7,770	255,622	207,653	182	855	1,395,175	1,334,477
2018	8	1,158,528	1,097,459	8,651	7,258	269,255	191,479	218	886	1,436,652	1,297,082
2018	9	734,834	870,535	6,582	7,390	211,985	194,183	232	700	953,632	1,072,807
2018	10	634,924	588,775	6,702	5,930	202,351	142,468	373	871	844,349	738,043
2018	11	689,654	731,598	7,313	7,248	197,373	163,574	348	759	894,688	903,178
2018	12	691,785	864,464	7,814	9,115	210,773	209,572	416	774	910,788	1,083,926
	Totals	**9,380,690**	**9,949,932**	**91,015**	**89,386**	**2,646,071**	**2,163,178**	**3,544**	**10,040**	**12,121,320**	**12,212,536**

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 2016-2018)

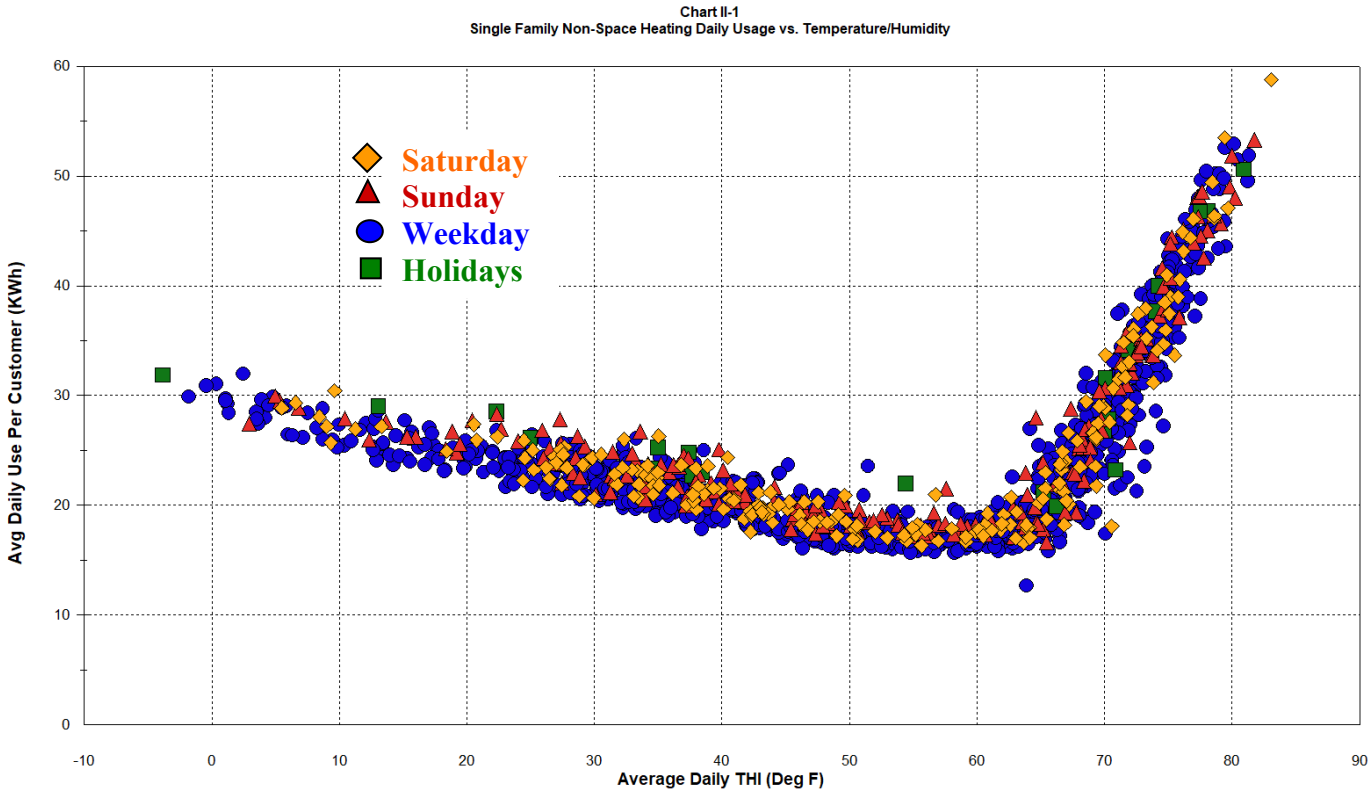
ComEd Historical Actual Usage
Historical Energy Usage for Eligible Retail Customers
(Line Loss Adjusted)

Year	Month	Total Load (MWh)		Average Load (MW)	
		On-Peak	Off-Peak	On-Peak	Off-Peak
2016	1	682,068	1,191,336	2,131	2,810
2016	2	856,731	807,333	2,550	2,243
2016	3	759,960	689,591	2,065	1,834
2016	4	685,406	690,361	2,040	1,798
2016	5	712,805	756,316	2,121	1,854
2016	6	1,124,031	994,315	3,193	2,702
2016	7	1,249,620	1,211,381	3,905	2,857
2016	8	1,453,850	1,127,845	3,951	3,000
2016	9	986,761	942,716	2,937	2,455
2016	10	728,077	747,369	2,167	1,832
2016	11	753,850	767,089	2,244	1,998
2016	12	971,941	1,047,630	2,893	2,568
Totals		**10,965,102**	**10,973,281**		
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**		
2018	1	1,093,564	1,116,875	3,107	2,849
2018	2	888,353	903,357	2,776	2,566
2018	3	888,018	901,323	2,523	2,299
2018	4	782,482	823,688	2,329	2,145
2018	5	914,985	919,287	2,599	2,345
2018	6	1,118,633	1,118,493	3,329	2,913
2018	7	1,395,175	1,334,477	4,152	3,271
2018	8	1,436,652	1,297,082	3,904	3,450
2018	9	953,632	1,072,807	3,137	2,579
2018	10	844,349	738,043	2,294	1,963
2018	11	894,688	903,178	2,663	2,352
2018	12	910,788	1,083,926	2,846	2,556
Totals		**12,121,320**	**12,212,536**		

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.



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 2018 and the average THI on those days. THI, rather than temperature alone, is used because residential usage is sensitive to humidity. Different geometric

shapes and colors are used to distinguish points representing weekdays from those depicting Saturday, Sunday or holiday usage.

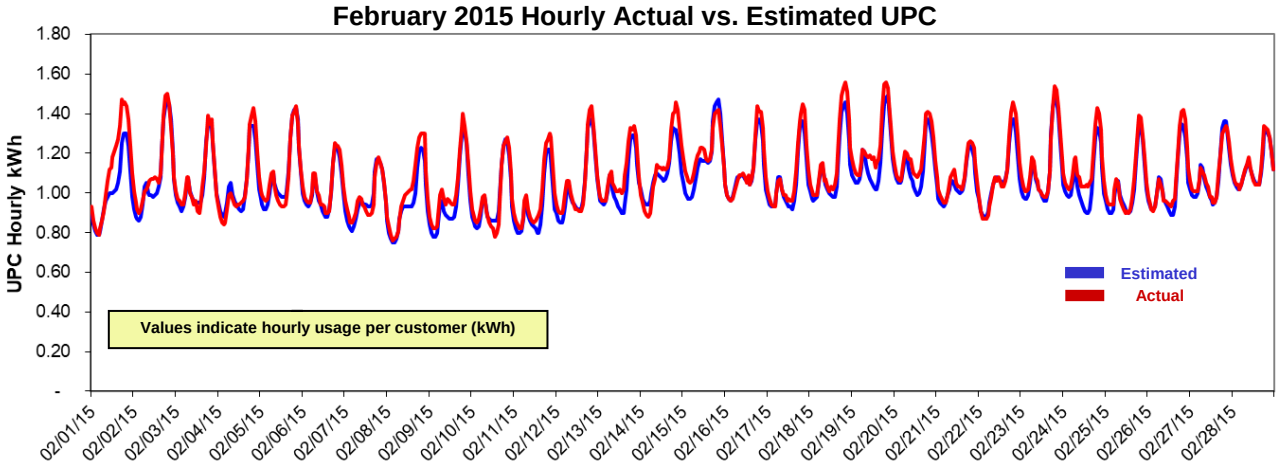
The scatter plot is very useful in understanding the relationship between customer usage and weather. If a relationship between usage and weather did not exist, then the graph would not display a clear pattern. The right side of the graph at the high end of the horizontal axis shows the days on which 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 of 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.

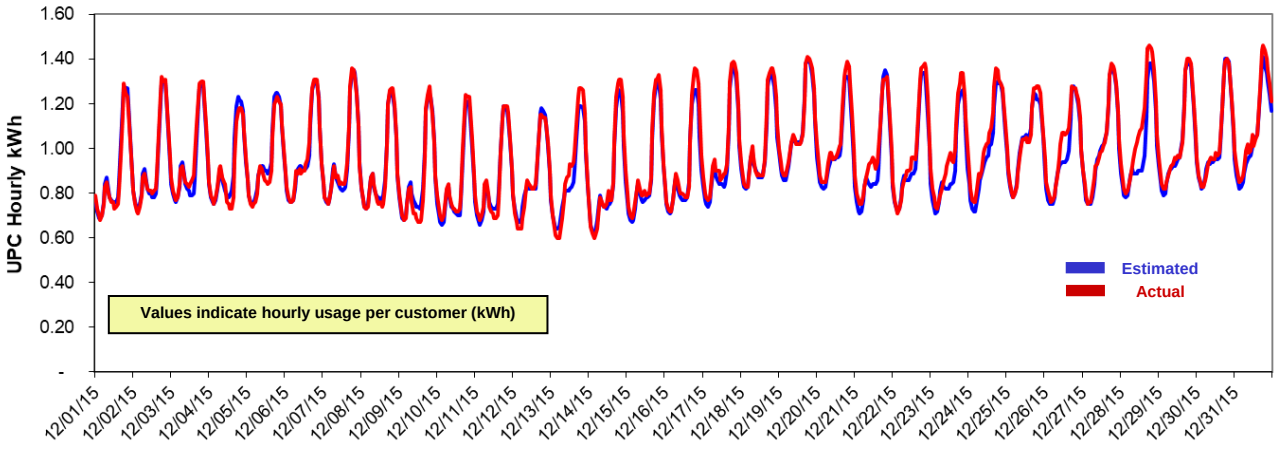
Hourly models were developed to account for the strong weather relationship shown in the graph and to account for numerous other factors that influence residential usage. The models explicitly account for the differing effects of energy use at various temperatures. Variables are included to allow for 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.

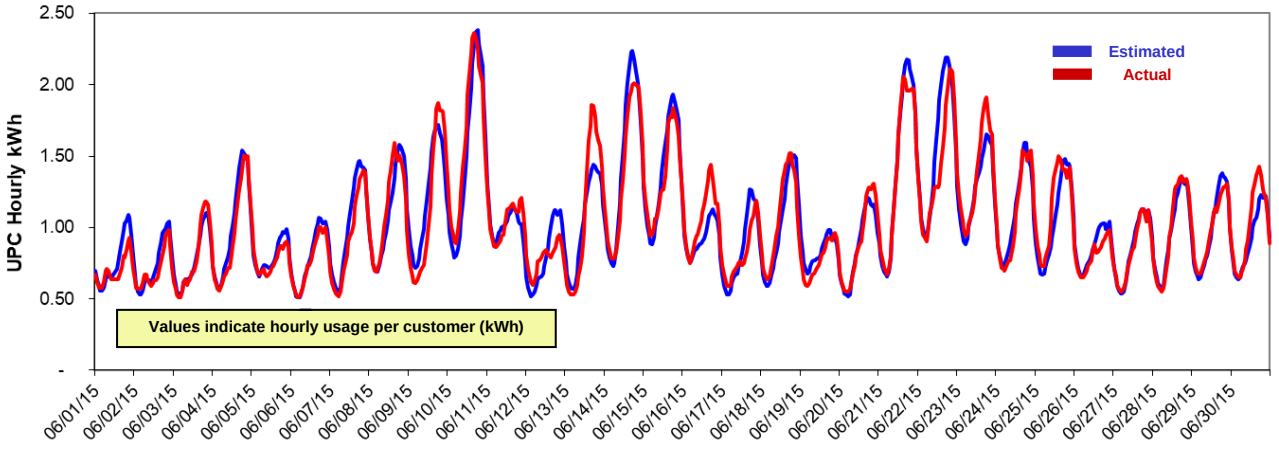
One way to visualize the model's performance is to look at plots of actual and estimated[2] values for the historical estimation period. The following charts demonstrate the performance of the model over four time periods at the hourly level during winter and summer months with warmer or colder than normal weather conditions. The four months are February 2015 (cold winter); December 2015 (warm winter); June 2015 (cool summer) and August 2018 (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 2018 was 356 (above the normal CDD of 247).

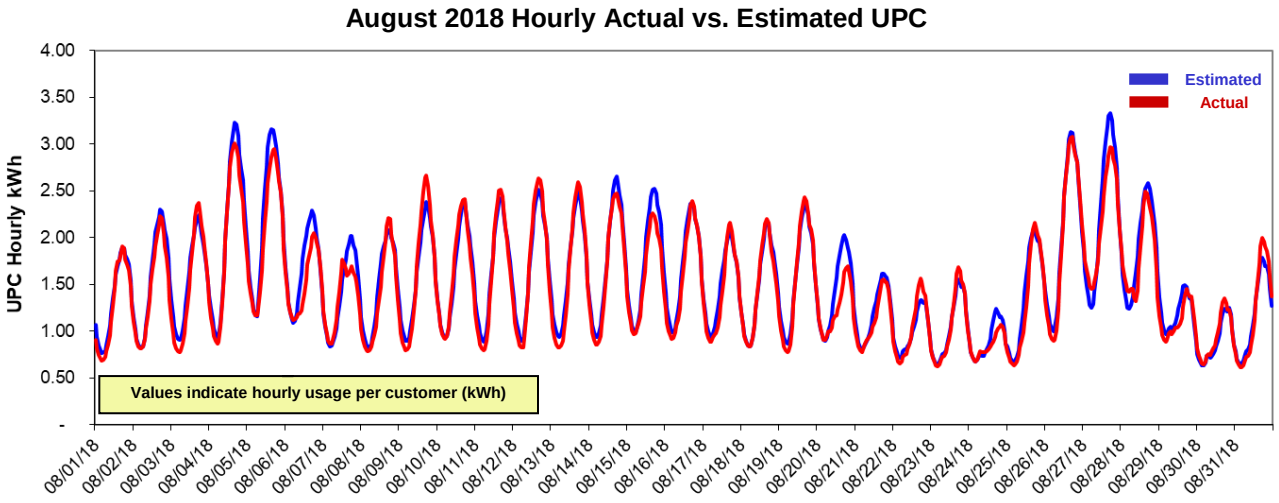
[2] The estimated data in Chart II-2 is based on the actual weather experienced over the relevant period.

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









In all 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 2019 or 32% of total residential customers. RES participation was higher in the past with a monthly average of approximately 2.4 million residential customers taking RES supply from March 2013 to May 2014, which equates to approximately 69% of total residential customers. This high level of engagement denotes meaningful customer choice activity within the ComEd service territory over the past several years.

2. Municipal Aggregation ("Muni Agg") has been an important factor in the expansion of residential RES supply over time. In total there are approximately 359 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 June 2019. Approximately 218 of those Communities (or 61% of the total) were being served under a Muni Agg contract as of June 2019. 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 2019. There is also meaningful participation by the smaller-sized non-residential customers as approximately 62% of the 0 to 100 kW non-residential delivery class was taking RES and Hourly supply in May 2019. Both percentages are almost unchanged from last year's report. These large and steady 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 a large number of RESs within the ComEd service territory. The number of RESs over time is shown in the table below:

Table II-3
RES Development in the ComEd Service Territory

RES Category	May 2013	May 2014	May 2015	May 2016	May 2017	May 2018	May 2019
Number of Active RESs[3]	66	70	71	74	81	90	90
Number of RESs approved to serve Residential customers	49	55	56	63	64	74	78

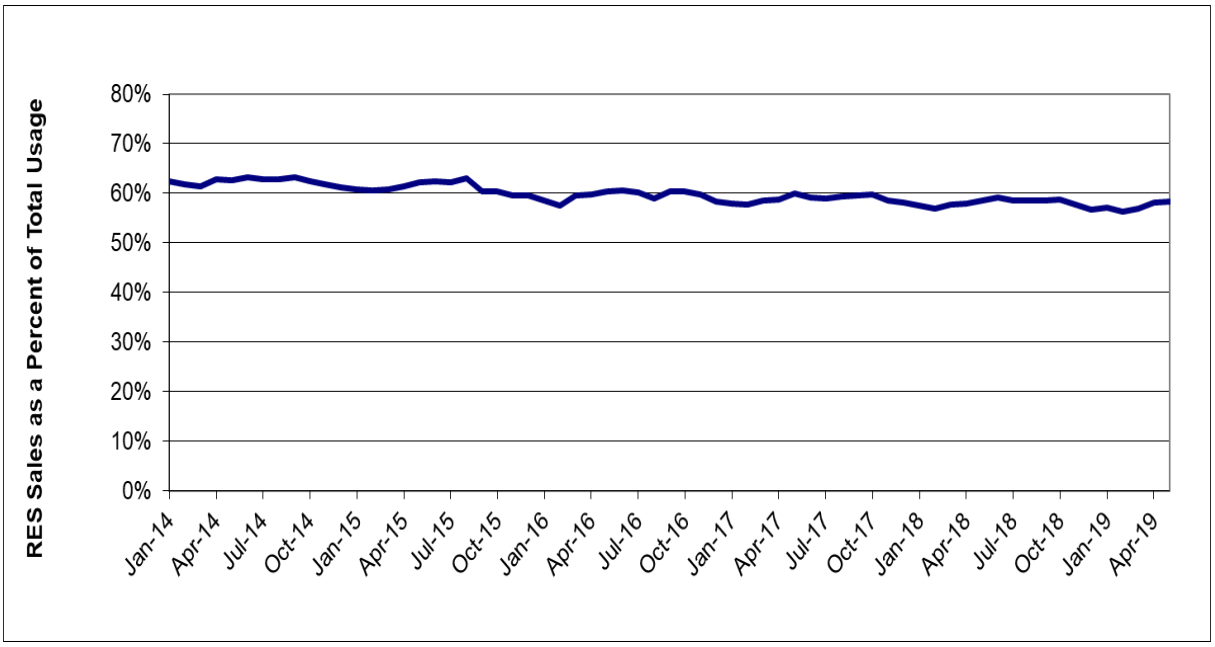
[3] An "Active RES" is defined as an ICC-approved RES that has passed ComEd's certification process.

From May 2013 to May 2019 there has been an approximately 36% increase in the number of active RESs in the ComEd service territory. A rather meaningful increase for a market that already had a great deal of switching activity in the year 2013. Also, the increase in number of RESs approved to serve residential customers has shown a substantial increase over time. This large number of RESs and overall growth in the number of RESs highlights the active retail market in ComEd's service territory.

(iii) Future Trends

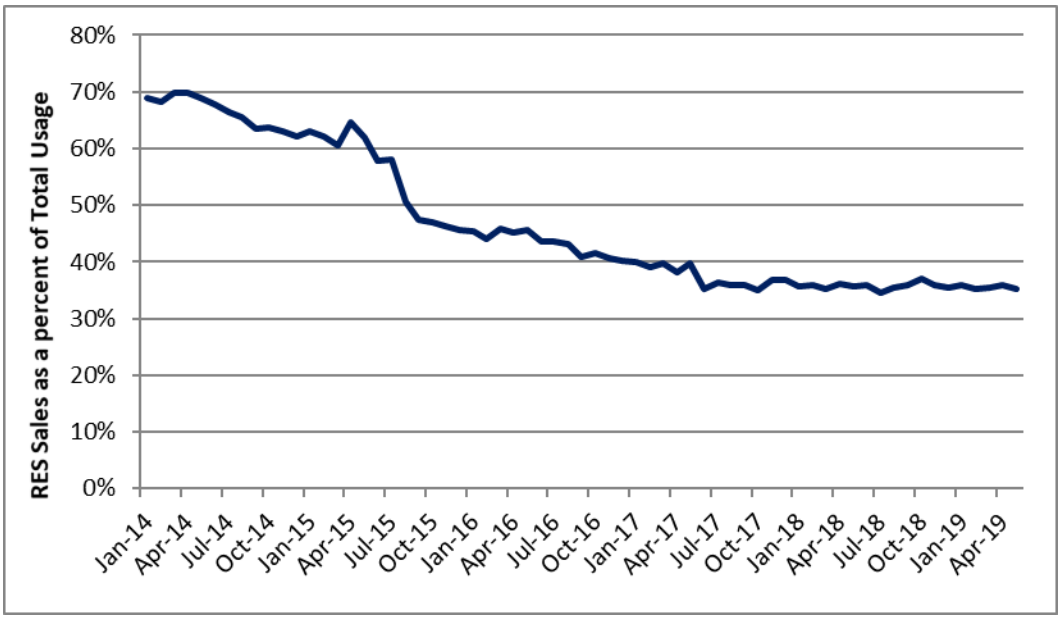
The future trends reflect an active retail market for several reasons. First, RES supply to customers in the 0 to 100 kW class continues to be significant. Chart II-3 contains the monthly percentage of usage by RES customers from January 2014 through May 2019. The RES percentage is at a substantial level with an average of 58.6% RES usage from January 2016 to May 2019. In addition, the percentage of RES usage has been very steady over that time period ranging from a high of 60.6% to a low of 56.3%. It is 58.3% as of May 2019.

Chart II-3
0 to 100 kW Switching Statistics



Second, the retail market for residential customers continues to be at a meaningful level. Chart II-4 contains the monthly percentage of usage by RES customers from January 2014 to May 2019. A little over one-third of residential customers (based on usage) are taking RES supply in 2019. This is down from the over two-thirds taking RES supply in late 2013 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 residential customers have been active participants in the retail markets.

Chart II-4
Residential Switching Statistics



Third, Muni Agg over the past years highlights an engaged customer base related to retail choice. Approximately 359 Communities have passed a Muni Agg referendum within the ComEd service territory. 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%
Jun-18	63.2%	43.0%	36.9%
May-19	63.8%	42.4%	37.7%
Jun-20	63.7%	44.0%	38.7%
Jun-21	64.0%	44.0%	38.7%
Jun-22	64.0%	44.0%	38.7%
Jun-23	64.0%	44.0%	38.7%
Jun-24	64.0%	44.0%	38.7%

The main drivers of this forecast are:

1. Residential Blended supply is expected to remain rather stable with a slight increase in the near-term reflecting year-to-date activity. The percentage of Residential usage that is Blended supply averaged 63.4% for the three months ending May 2019 and is expected to be essentially unchanged at 63.7% by December 2019. The monthly Blended percentage has averaged 63.4% for the past two years (June 2017 to May 2019). This status-quo environment reflects small overall changes in switching activity by residential customers. Plus, there are offsetting dynamics (e.g., a community suspending its Muni Agg program while another renews its previously suspended program). The net result is a stable Blended percentage.

   Muni Agg results for the first several months of 2019 illustrate this offsetting dynamic. We continue to utilize town-code level data related to Muni Agg Communities with contract renewals in 2019. This data reflects recent Muni Agg Communities usages and decisions as of mid-June 2019 and that data can be found in the spreadsheet entitled "2019-20 Muni Ag Renewal Tracking.xlsx". Approximately 10% of the Muni Agg Communities (based on usage) with a contract renewal in 2019 that have made a decision as of mid-June 2019 have opted to suspend their program. This is close to the 7.5% suspension percentage for all of 2018. As was the case last year, some communities have restarted their previously dormant Muni Agg programs in 2019. The netting of these two movements is essentially no change in Blended usage (the details are provided in the previously mentioned spreadsheet). Granted, there has not been a great deal

of Muni Agg decisions in the first half of 2019 so one needs to be cautious in the use of these early results. Nonetheless, the year-to-date Muni Agg activity illustrates well this offsetting dynamic. The assumption for the remainder of 2019 is for a 10% suspension rate with no start-ups. The net-result is a for a Residential Blended percentage by December 2019 that is similar to the percentage for the three months ending May 2019.

2. Looking to the Planning Year ("Planning Year")[4] 2020 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 found in 2018 and occurring in the first half of 2019 is expected to largely continue into the remaining years of the Forecast. The existing population of active Muni Agg Communities have shown a solid preference to continue with their programs, which is demonstrated by the low suspension percentage in 2018 and 2019. A small 5% suspension rate is assumed for 2020 given the repeated renewals by the existing group of Muni Agg Communities. Thus, the Blended percentage is 64.0% by June 2020. Largely a status-quo environment reflecting the offsetting dynamics previously mentioned. Lastly, no Muni Agg referendums are anticipated in the future as there have not been any in the past several years.

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 77.7% of their Residential usage was Blended as of May 2019. This is very close to the 77.4% Blended as of May 2018 and the 78% Blended in May 2017. A very stable Blended percentage for this group of customers has occurred over the past few years. Likewise, as another example and given its overall size, the City of Chicago has 77.9% Blended Residential usage as of May 2019 and is comparable to the 77.6% Blended percentage in May 2018 and the 77.4% as of May 2017. A stable Residential Blended percentage is anticipated among the customers outside Muni Agg communities going forward.

   Based on these considerations, for the years 2020 and thereafter, a relatively stable Residential Blended percentage is anticipated reflecting the status-

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

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. In particular, the State of Illinois recently passed legislation related to residential RES marketing activity. It is unclear as to the impact this new legislation will have on future residential switching activity. 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 2020 and July 2020. In addition, any meaningful development related to switching activity during the remainder of 2019 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 three years: Blended usage in 2016 averaged 37.1%; 2017 averaged 37.4% and 2018 averaged 37.9%. The slight upward trend in the Blended percentage over the past three years is captured in the outlook with 38.7% Blended assumed for December 2019 followed by a stable percentage thereafter. 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. The Watthour Blended percentage averaged 43.7% for 2018 and is projected to be 44.0% by December 2019 and largely reflects the anticipated Residential status quo environment.

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 63.7% by December 2019 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 38.7% by December 2019 and remaining at this level thereafter during the Forecast period.

3. The Blended Service portion of the Watthour customer class is expected to be 44.0% by December 2019 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 29,500 in May 2019 to approximately 70,000 by the end of the year 2024. Experience in the past year is supportive of this outlook as the recent number of Residential RRTP customers has increased by 23% in the past year.

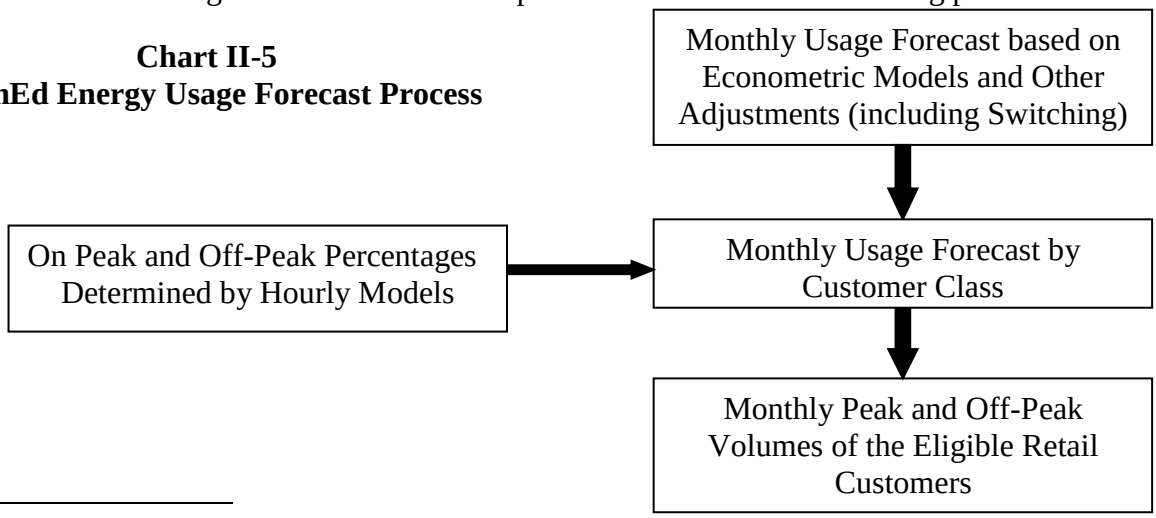
d. Growth Forecast by Customer Class

(i) Introduction

This section describes ComEd's growth forecast by customer class for the 5-year procurement planning period beginning on June 1, 2020. 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.

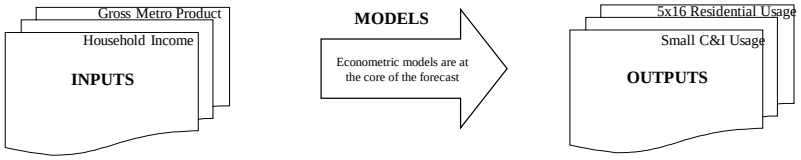
[6] See ICC Order of January 20, 2016 in Docket No. 15-0602.

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 2019)

Economic Variables	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Gross Metro Product (Billions)	$ 569	$ 573	$ 580	$ 594	$ 598	$ 604	$ 618	$ 631	$ 641	$ 648	$ 652	$ 655	$ 662	$ 671
# of Households (Thousands)	3,339	3,355	3,359	3,380	3,396	3,391	3,388	3,392	3,407	3,428	3,446	3,461	3,476	3,491
Total Employment (Thousands)	4,240	4,306	4,374	4,457	4,514	4,550	4,598	4,655	4,694	4,711	4,714	4,705	4,706	4,713
Non-Manufacturing	3,833	3,901	3,969	4,048	4,105	4,140	4,180	4,229	4,270	4,293	4,298	4,292	4,295	4,304
Manufacturing	407	405	405	409	408	409	417	425	424	418	416	414	411	409
U.S. GDP	16,197	16,495	16,900	17,387	17,659	18,051	18,566	19,061	19,468	19,813	20,107	20,400	20,776	21,202
Growth Rate	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Gross Metro Product	2.8%	0.6%	1.2%	2.4%	0.8%	0.9%	2.4%	2.1%	1.7%	1.0%	0.6%	0.5%	1.1%	1.3%
# of Households	0.8%	0.5%	0.1%	0.6%	0.5%	(0.1%)	(0.1%)	0.1%	0.4%	0.6%	0.5%	0.5%	0.4%	0.4%
Total Employment	1.7%	1.6%	1.6%	1.9%	1.3%	0.8%	1.1%	1.2%	0.8%	0.4%	0.1%	(0.2%)	0.0%	0.2%
Non-Manufacturing	1.8%	1.8%	1.7%	2.0%	1.4%	0.8%	1.0%	1.2%	1.0%	0.5%	0.1%	(0.2%)	0.1%	0.2%
Manufacturing	1.0%	(0.4%)	(0.1%)	1.0%	(0.2%)	0.3%	2.0%	1.8%	(0.4%)	(1.3%)	(0.5%)	(0.6%)	(0.6%)	(0.5%)
U.S. GDP	2.2%	1.8%	2.5%	2.9%	1.6%	2.2%	2.9%	2.7%	2.1%	1.8%	1.5%	1.5%	1.8%	2.0%

Source: IHS Markit

All 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").

(ii) ComEd Monthly Zone Model

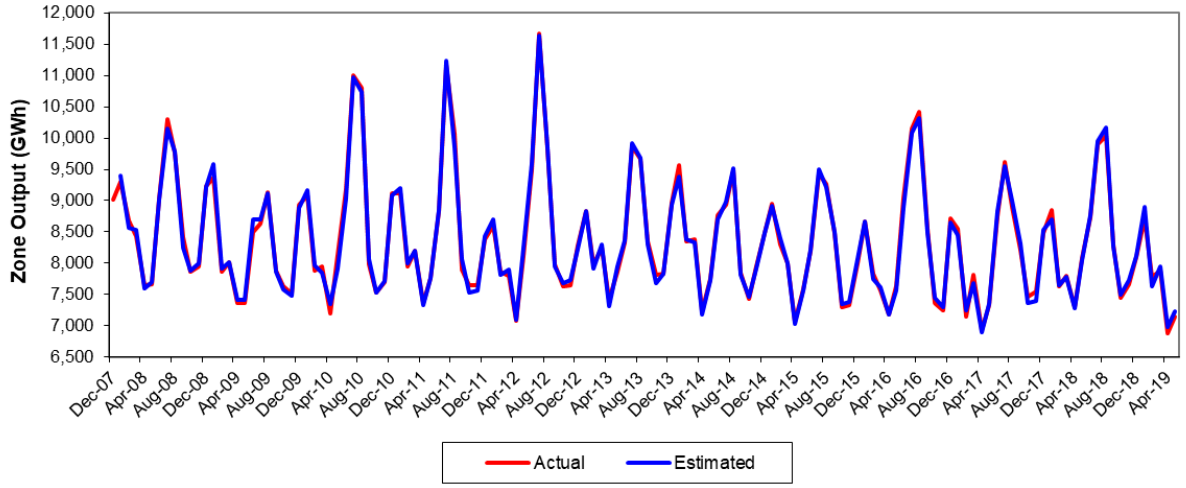
The Monthly Zone Model forecasts energy usage in gigawatt hours (GWh) for the entire ComEd service territory. The following chart shows the performance of the ComEd Monthly Zone Model by comparing actual zone output to the estimates[8] from that model for each calendar month from January 2008 through May 2019.

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

[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-7

ComEd Monthly Zone Model: Estimated vs. Actual



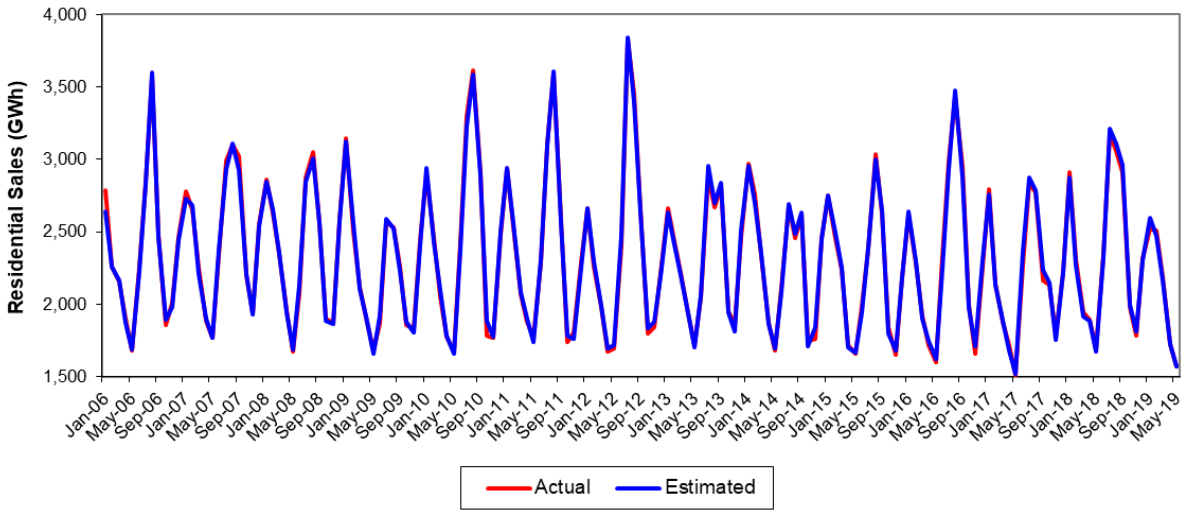
The graph line depicting the Monthly Zone Model's estimated usage (based on actual weather) and the line showing actual usage for the period are nearly identical.

(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 2008 to May 2019. The graph line depicting the model's estimated usage and the line with actual usage for the period are highly correlated.

Chart II-8

ComEd Monthly Residential Model: Estimated vs. Actual

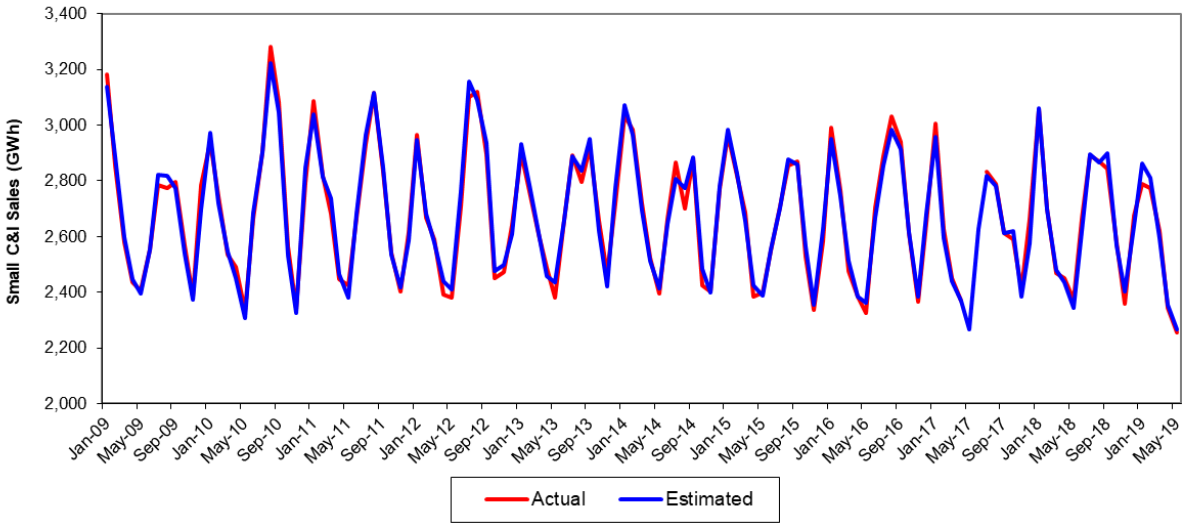


(iv) ComEd Monthly Small C&I Model

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 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 2019 forecast update provided to the IPA). The model captures inputs related to recent IPA decisions, federal tax reform; 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 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
2020	107.8	82.3	190.1	57.4	13.7	71.1
2021	157.2	177.9	335.1	81.6	29.7	111.2
2022	189.9	232.2	422.2	100.7	38.7	139.4
2023	222.5	293.3	515.8	114.7	48.9	163.6
2024	255.1	342.9	598.1	132.0	57.2	189.2
2025	281.3	388.5	669.8	148.6	64.8	213.4

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	26,573	(0.2%)	31,460	0.0%
2019	26,716	0.5%	30,992	(1.5%)
2020	26,574	(0.5%)	30,563	(1.4%)
2021	26,326	(0.9%)	30,360	(0.7%)
2022	26,383	0.2%	29,930	(1.4%)
2023	26,452	0.3%	29,535	(1.3%)
2024	26,684	0.9%	29,279	(0.9%)
2025	26,797	0.4%	28,930	(1.2%)

Residential customer class usage has declined by an average of 0.6% per year from 2013 to 2018. This decline is attributed to a combination of moderate economic growth (average of 1.3% annual service territory employment growth from 2013 to 2018) 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 1.5% per year over the past five years (2013 – 2018). Currently, local economic conditions are doing very well with a 3.8% unemployment rate as of April 2019 for the Chicago-Naperville-Arlington Heights Metropolitan division. This is among the lowest unemployment rates in decades. Looking to the future, employment growth slows to 0.8% per year from 2019 to 2022 in part because of lower population growth (related to the migration of retirees to warmer southern states) reducing employment demand. The dynamics of economic growth being offset by energy efficiency efforts is expected to continue with the general outlook being essentially flat Residential load growth from 2019 to 2024.

Small C&I usage declined by an average of 0.4% per year from 2013 to 2018. 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 2019 to 2024 is expected to decline

by 1.1% 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 2019-2020 (i.e., 6/1/19 to 5/31/20) 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 68,700 customers and a Nest Smart Thermostat option with 28,300 customers for a program combined total of 97,000 customers. The total reduction potential for the program is estimated to be 97 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 968 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 29,264 customers and a load reduction potential of 13 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 grown to more than 291,000

customers enabling ComEd to bring more than 85 MW of capacity to the wholesale market in the 2019-2020 Planning Year. ComEd cleared 56 MW of capacity from the program into the PJM capacity auction for the 2020-2021 Delivery Year, and 80 MW for the 2021-2022 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)
2020	8,247	0.1%	8.25
2021	8,211	0.1%	8.21
2022[9]	7,265	0.1%	7.27
2023	7,231	0.1%	7.23
2024	7,196	0.1%	7.20

(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 implementing a demand response measure in a prior year is added back into that prior year's usage

[9] ComEd's filed Energy Efficiency Plan in ICC Docket 17-0312 is a four-year plan, 2018-2021. For 2022 through 2024, which is not covered in the Plan, the goal is projected in a manner consistent with the Plan.

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 several provisions regarding various types of energy efficiency programs. This section discusses the impact of each of 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 its delivery service customers (except for some very large 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 (excluding some very large 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)
2020	3,120	34	949
2021	3,019	37	1,051
2022	2,928	41	1,152
2023	2,853	44	1,244
2024	2,821	47	1,330

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 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, 2020 through May 31, 2021:

[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**
2020	6	1,129,987	974,833	3,210	2,649
2020	7	1,422,159	1,168,033	3,865	3,106
2020	8	1,206,502	1,204,072	3,591	2,951
2020	9	912,733	882,061	2,716	2,297
2020	10	805,319	780,441	2,288	1,991
2020	11	813,967	914,241	2,544	2,280
2020	12	1,047,764	1,047,581	2,977	2,672
2021	1	960,107	1,157,767	3,000	2,731
2021	2	904,239	904,003	2,826	2,568
2021	3	916,315	851,468	2,490	2,271
2021	4	769,635	729,919	2,186	1,983
2021	5	721,114	845,097	2,253	1,993
Totals		**11,609,841**	**11,459,516**		

The forecast set forth above shows ComEd's expected load for the 2020 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**
2020	6	983,117	859,270	2,793	2,335
2020	7	1,186,601	968,511	3,224	2,576
2020	8	934,223	971,687	2,780	2,382
2020	9	878,483	848,951	2,615	2,211
2020	10	755,330	728,452	2,146	1,858
2020	11	746,752	840,737	2,334	2,097
2020	12	979,291	1,001,550	2,782	2,555
2021	1	950,703	1,125,526	2,971	2,655
2021	2	862,482	841,520	2,695	2,391
2021	3	838,917	761,530	2,280	2,031
2021	4	717,902	676,217	2,039	1,838
2021	5	688,540	757,190	2,152	1,786
Totals		**10,522,341**	**10,381,141**		

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**
2020	6	1,227,519	1,009,358	3,487	2,743
2020	7	1,711,735	1,363,692	4,651	3,627
2020	8	1,476,541	1,441,946	4,394	3,534
2020	9	934,654	875,362	2,782	2,280
2020	10	833,428	806,526	2,368	2,057
2020	11	856,589	948,049	2,677	2,364
2020	12	1,159,119	1,180,342	3,293	3,011
2021	1	1,038,119	1,267,230	3,244	2,989
2021	2	973,368	963,581	3,042	2,737
2021	3	941,509	872,332	2,558	2,326
2021	4	813,763	741,185	2,312	2,014
2021	5	819,506	957,464	2,561	2,258
Totals		**12,785,850**	**12,427,067**		

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 2020 and 2021. This switching change equates to approximately 750 GWh for Program Year 2020 and 1,500 GWh for Program Year 2021. The percentage of Eligible Retail Customers taking Blended Service in this switching scenario is 53% (based on usage) as of December 2021 compared to 57% 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 61% as of December 2020 compared to 57% 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 2019:

> "Broad-based loss of confidence and risk aversion result in a three-quarter recession" Scenario: In the pessimistic scenario, a broad loss in confidence and growing aversion to risk leads to drops in a wide range of investments and consumer spending categories to end the expansion in its 128th month, a new record. Rising real estate prices have left that market vulnerable and as the market growth slows the ensuring price correction causes confidence to plunge. A growing sense of unease marked by declines in consumer confidence and an inverted yield curve spooks capital markets, resulting in a sharp decline in asset values. Business fixed investment accordingly drops and adds to the decline in economic activity. Recession occurs from the first quarter of 2020 to the third quarter of 2020. The S&P 500 plummets 6.8% in 2020, not recovering to the baseline levels until 2024. Housing starts bottom out in late 2020, approximately 30% below the baseline assumption, before beginning to recover. The unemployment rate climbs through 2019 and 2020, peaking at 5.7% in the second quarter of 2021. In this scenario, real GDP grows 1.9% in 2019 and declines 1.4% in 2020 (versus 2.4% and 2.0% growth in the baseline, respectively).
>
> "Strong growth of productivity and less inflation prone economy" Scenario: In the optimistic scenario, faster productivity growth and lower nonaccelerating inflation rate of unemployment spur economic activity. Even though the unemployment rate dips to as low as 3.2% in 2020, the lower natural rate of unemployment keeps core PCE inflation marginally below the baseline rate over the next several years. Productivity improves measurable with wages growing more quickly as a result. With more real income to spend, supported by the low inflation environment, and brighter job prospects, consumers pick up their spending, driving the growth of real personal consumption expenditures to an average annual rate of 3.4% during the 2019 to 2020 time period. Thanks to improved finances

and higher employment household formation accelerates with greater housing starts (i.e., a 1.45 million peak vs. 1.35 million high in the baseline). The rest of the world also experiences strong economic growth and further supports the improving economic activity. In this scenario, real GDP grows 2.8% in 2019 and 3.0% 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, 2020 through May 31, 2025 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	0.88	17.96	Constant term
Monday Binary	-0.11	-7.53	Daily Binary - Monday
Tuesday Binary	-0.11	-7.30	Daily Binary - Tuesday
Wednesday Binary	-0.12	-7.61	Daily Binary - Wednesday
Thursday Binary	-0.14	-8.58	Daily Binary - Thursday
Friday Binary	-0.13	-8.26	Daily Binary - Friday
Saturday Binary	-0.04	-3.28	Daily Binary - Saturday
MLK Binary	0.11	1.73	Martin Luther King's Day
Presidents Day Binary	0.07	1.10	President's Day
GoodFriday Binary	0.01	0.19	Good Friday
Memorial Day Binary	0.13	1.93	Memorial Day
July4th Binary	0.14	1.84	July 4th.
LaborDay Binary	0.24	3.57	Labor Day
Thanksgiving Binary	0.19	2.94	Thanksgiving Day
FriAThanks Binary	0.10	1.41	Friday after Thanksgiving Day
XMasWeek Before Binary	0.10	1.25	Week before Christmas
XMasEve Binary	0.25	2.37	Christmas Eve
XMasDay Binary	0.17	2.15	Christmas Day
XMasWeek Binary	0.09	1.09	Christmas Week
New Years Eve Binary	0.17	1.46	New Year's Eve Day
New Years Day Binary	0.13	1.43	New Year's Day
Feb Binary	-0.07	-1.39	Monthly Binary - February
Mar Binary	-0.14	-2.74	Monthly Binary - March
MarDLS Binary	-0.001	-0.03	Day That Daylight Savings Begins In March
Apr Binary	-0.15	-2.75	Monthly Binary - April
May Binary	-0.21	-3.78	Monthly Binary - May
Jun Binary	0.11	1.88	Monthly Binary - June
Jul Binary	0.15	2.45	Monthly Binary - July
Aug Binary	0.24	3.90	Monthly Binary - August
Sep Binary	0.06	1.08	Monthly Binary - September
Oct Binary	-0.05	-0.83	Monthly Binary - October
NovDLS Binary	0.03	0.45	Day That Daylight Savings Ends In November
Nov Binary	-0.15	-2.51	Monthly Binary - November
Dec Binary	-0.04	-0.66	Monthly Binary - December
JanWalk	-0.002	-1.25	Monthly Time Trend - January
FebWalk	-0.003	-1.29	Monthly Time Trend - February
MarWalk	-0.001	-0.20	Monthly Time Trend - March
AprWalk	-0.0003	-0.14	Monthly Time Trend - April
MayWalk	0.008	4.64	Monthly Time Trend - May
JunWalk	0.001	0.35	Monthly Time Trend - June

JulWalk	0.001	0.50	Monthly Time Trend - July
AugWalk	-0.004	-2.29	Monthly Time Trend - August
SepWalk	-0.001	-0.47	Monthly Time Trend - September
OctWalk	-0.002	-1.27	Monthly Time Trend - October
NovWalk	0.004	2.06	Monthly Time Trend - November
DecWalk	0.002	0.89	Monthly Time Trend - December
SeasonHDD	0.01	7.80	Seasonal Heating Degree Days Spline
LagHDD	0.0002	0.24	1 Day Lag Seasonal Heating Degree Days Spline
Lag2HDD	0.001	1.20	2 Day Lag Seasonal Heating Degree Days Spline
SeasonTDD	0.16	61.08	Seasonal Cooling Degree Days Spline
LagTDD	0.003	0.92	1 Day Lag Seasonal Cooling Degree Days Spline
Lag2TDD	0.01	5.61	2 Day Lag Seasonal Cooling Degree Days Spline
HDDWkEnd	-0.00004	-0.06	Weekend Seasonal Heating Degree Days Spline
TDDWkEnd	0.002	0.61	Weekend Seasonal Cooling Degree Days Spline
Shift2016	0.03	2.87	An End Shift to describe usage for 2016
Shift2017	0.001	0.04	An End Shift to describe usage for 2017
AR(1)	0.32	12.46	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 absolute percent error ("MAPE") for the summation of the hourly models is 3.1%. The 3.1% daily MAPE means that the average absolute 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	4087.268	1002.14	4.08
CalVars.Jan	70.845	37.35	1.90
CalVars.Feb	-413.337	102.31	-4.04
CalVars.Mar	-468.047	94.42	-4.96
CalVars.Apr	-597.408	81.58	-7.32
CalVars.May	-457.914	82.18	-5.57
CalVars.Jun	-319.332	91.90	-3.48
CalVars.Jul	-131.896	98.65	-1.34
CalVars.Aug	-50.115	93.41	-0.54
CalVars.Sep	-367.144	83.21	-4.41
CalVars.Oct	-334.195	82.43	-4.05
CalVars.Nov	-358.945	95.96	-3.74
CalVars.WkEndHols	-22.949	9.71	-2.36
CalHDD.HDD_Spring	2.561	0.22	11.86
CalHDD.HDD_Fall	2.232	0.25	9.03
CalHDD.HDD_Winter	1.815	0.11	17.24
CalCDD.SpringTDD	12.94	1.09	11.83
CalCDD.SummerTDD	13.541	0.38	35.56
CalCDD.FallTDD	10.981	3.26	3.37
Monthly.EconIndex15	4055.365	967.54	4.19
EE_Savings.Total	-0.762	0.09	-8.44
AR(1)	0.449	0.09	5.23

Residential Customer Class Model			
Variable	**Coefficient**	**StdErr**	**T-Stat**
Monthly.Jan	19.589	0.966	20.277
Monthly.Feb	18.508	0.971	19.059
Monthly.Mar	17.872	0.908	19.692
Monthly.Apr	17.272	0.878	19.678
Monthly.May	17.127	0.811	21.11
Monthly.Jun	17.877	0.815	21.947
Monthly.Jul	20.24	0.803	25.195
Monthly.Aug	20.452	0.81	25.248
Monthly.Sep	19.773	0.841	23.508
Monthly.Oct	18.575	0.818	22.713
Monthly.Nov	17.874	0.929	19.249
Monthly.Dec	18.826	0.899	20.949
CycWthrT.ResHDD_Spring	0.26	0.031	8.436
CycWthrT.ResHDD_Fall	0.264	0.053	4.989
CycWthrT.ResHDD_Winter	0.247	0.013	18.478
CycWthrT.ResCDD_Spring	2.468	0.593	4.16
CycWthrT.ResCDD_Jun	2.789	0.172	16.204
CycWthrT.ResCDD_Jul	2.294	0.066	35.005
CycWthrT.ResCDD_Aug	2.407	0.067	36.179
CycWthrT.ResCDD_Sep	2.441	0.099	24.584
CycWthrT.ResCDD_Fall	2.616	0.174	15.038
CycVars.ResEE_PerDay	-0.526	0.039	-13.57
CycVars.ResBill_MA_Index	-1.533	0.712	-2.153
Monthly.Yr2018Plus	-0.463	0.169	-2.733
AR(1)	0.406	0.093	4.392

Small C&I Customer Class Model			
Variable	**Coefficient**	**StdErr**	**T-Stat**
Monthly.Jan	41.642	7.467	5.577
Monthly.Feb	44.71	7.503	5.959
Monthly.Mar	44.337	7.488	5.921
Monthly.Apr	43.852	7.49	5.855
Monthly.May	42.38	7.488	5.66
Monthly.Jun	42.701	7.532	5.669
Monthly.Jul	43.778	7.589	5.768
Monthly.Aug	46.615	7.601	6.133
Monthly.Sep	46.274	7.569	6.114
Monthly.Oct	46.057	7.542	6.107
Monthly.Nov	43.154	7.522	5.737
Monthly.Dec	40.681	7.525	5.406
CycWthrT.SCI_HDD	0.545	0.037	14.689
CycWthrT.SCI_CDD	2.409	0.164	14.696
CycWthrT.SCI_CDDTrend_2021_Cap	-0.029	0.011	-2.621
CycVars.SCI_Econ_Index3	37.884	7.807	4.853
SCI.DelayedBill2	-0.026	0.003	-9.266
CycVars.SCI_EEPerDay	-0.524	0.068	-7.77
AR(1)	0.039	0.094	0.414

StreetLighting Class Model			
Variable	**Coefficient**	**StdErr**	**T-Stat**
Monthly.Jan	2.849	0.033	86.247
Monthly.Feb	2.759	0.035	79.925
Monthly.Mar	2.295	0.036	64.603
Monthly.Apr	2.081	0.033	62.224
Monthly.May	1.852	0.036	51.416
Monthly.Jun	1.827	0.034	54.181
Monthly.Jul	1.657	0.033	49.519
Monthly.Aug	1.816	0.031	58.189
Monthly.Sep	2.046	0.031	66.62
Monthly.Oct	2.186	0.032	69.235
Monthly.Nov	2.428	0.031	77.88
Monthly.Dec	2.609	0.031	85.261
CycVars.SL_DelayedBillsPerDay	-0.973	0.106	-9.143
CycVars.SL_DelayedBillsPerDayLag	0.783	0.037	21.43

Appendix A-3

ComEd Model Regression Statistics

Regression Statistics	Zone	Residential	Small C&I	Street Lighting
Iterations	15	14	14	1
Adjusted Observations	137	132	134	66
Deg. of Freedom for Error	115	107	115	52
R-Squared	0.992	0.995	0.972	0.979
Adjusted R-Squared	0.991	0.994	0.968	0.974
AIC	9.154	-1.993	0.423	-5.138
BIC	9.623	-1.447	0.834	-4.674
Log-Likelihood	-799.47	-30.78	-199.48	89.91
Model Sum of Squares	118,902,970	2,588.34	5,391.54	11.82
Sum of Squared Errors	939,523.89	12.32	154.06	0.25
Mean Squared Error	8,169.77	0.12	1.34	0
Std. Error of Regression	90.39	0.34	1.16	0.07
Mean Abs. Dev. (MAD)	66.1	0.25	0.88	0.05
Mean Abs. % Err. (MAPE)	0.79%	1.17%	1.01%	2.34%
Durbin-Watson Statistic	2.172	1.884	1.995	1.89
Ljung-Box Statistic	29.76	23.88	22.21	29.3
Prob (Ljung-Box)	0.1927	0.4686	0.5665	0.209
Prob (Jarque-Bera)	0.6781	0.6641	0.382	0.5461

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 1989 to 2018 for the forecast years of 2020 to 2025. 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.
- The Year 2018 Plus variable is a binary variable designed to capture the most recent usage activity within the model. It is a binary variable with the unit one for all months beginning with January 2018 and thereafter. By forcing all the residuals to sum to zero for the months January 2018 to present, this variable is useful for

forecasting purposes as it ensures that the forecasted usage is closely aligned with the most recent usage pattern.

- 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.

Appendix B-1

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
2020	6	1,129,987	974,833	3,210	2,649
2020	7	1,422,159	1,168,033	3,865	3,106
2020	8	1,206,502	1,204,072	3,591	2,951
2020	9	912,733	882,061	2,716	2,297
2020	10	805,319	780,441	2,288	1,991
2020	11	813,967	914,241	2,544	2,280
2020	12	1,047,764	1,047,581	2,977	2,672
2021	1	960,107	1,157,767	3,000	2,731
2021	2	904,239	904,003	2,826	2,568
2021	3	916,315	851,468	2,490	2,271
2021	4	769,635	729,919	2,186	1,983
2021	5	721,114	845,097	2,253	1,993
2021	6	1,121,893	962,571	3,187	2,616
2021	7	1,285,736	1,274,388	3,827	3,124
2021	8	1,259,479	1,142,927	3,578	2,916
2021	9	895,879	875,628	2,666	2,280
2021	10	757,551	806,106	2,255	1,976
2021	11	853,534	874,943	2,540	2,273
2021	12	1,092,134	995,480	2,968	2,648
2022	1	1,008,093	1,111,136	3,000	2,723
2022	2	901,823	906,105	2,818	2,574
2022	3	912,305	853,853	2,479	2,277
2022	4	727,633	758,971	2,166	1,976
2022	5	753,193	808,891	2,242	1,983
2022	6	1,118,664	953,346	3,178	2,591
2022	7	1,214,611	1,321,212	3,796	3,116
2022	8	1,317,765	1,084,424	3,581	2,884
2022	9	882,972	876,184	2,628	2,282
2022	10	755,314	805,546	2,248	1,974
2022	11	852,835	874,551	2,538	2,272

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	12	990,826	1,086,200	2,949	2,662
2023	1	1,010,892	1,118,974	3,009	2,743
2023	2	898,766	906,834	2,809	2,576
2023	3	906,824	855,505	2,464	2,281
2023	4	686,925	784,673	2,147	1,962
2023	5	783,968	772,588	2,227	1,971
2023	6	1,113,538	944,704	3,163	2,567
2023	7	1,207,701	1,314,385	3,774	3,100
2023	8	1,305,870	1,083,501	3,549	2,882
2023	9	831,018	905,174	2,597	2,263
2023	10	792,785	773,465	2,252	1,973
2023	11	853,599	872,120	2,540	2,265
2023	12	936,501	1,129,329	2,927	2,664
2024	1	1,066,155	1,079,377	3,029	2,754
2024	2	928,870	919,709	2,764	2,555
2024	3	822,129	922,309	2,447	2,266
2024	4	765,584	726,343	2,175	1,974
2024	5	785,068	763,785	2,230	1,948
2024	6	992,639	1,037,773	3,102	2,594
2024	7	1,330,674	1,210,139	3,780	3,087
2024	8	1,240,693	1,133,423	3,525	2,891
2024	9	831,624	901,196	2,599	2,253
2024	10	832,842	749,134	2,263	1,992
2024	11	810,299	912,490	2,532	2,276
2024	12	992,475	1,093,481	2,954	2,680
2025	1	1,064,900	1,086,409	3,025	2,771
2025	2	897,863	916,234	2,806	2,603
2025	3	821,442	926,241	2,445	2,276
2025	4	762,672	731,562	2,167	1,988
2025	5	736,877	796,039	2,193	1,951
Totals		**57,323,274**	**57,198,874**		

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
2020	6	983,117	859,270	2,793	2,335
2020	7	1,186,601	968,511	3,224	2,576
2020	8	934,223	971,687	2,780	2,382
2020	9	878,483	848,951	2,615	2,211
2020	10	755,330	728,452	2,146	1,858
2020	11	746,752	840,737	2,334	2,097
2020	12	979,291	1,001,550	2,782	2,555
2021	1	950,703	1,125,526	2,971	2,655
2021	2	862,482	841,520	2,695	2,391
2021	3	838,917	761,530	2,280	2,031
2021	4	717,902	676,217	2,039	1,838
2021	5	688,540	757,190	2,152	1,786
2021	6	951,185	773,249	2,702	2,101
2021	7	1,032,379	981,145	3,073	2,405
2021	8	967,067	828,151	2,747	2,113
2021	9	811,888	798,250	2,416	2,079
2021	10	671,033	710,029	1,997	1,740
2021	11	741,520	757,951	2,207	1,969
2021	12	971,902	892,398	2,641	2,373
2022	1	934,075	1,035,252	2,780	2,537
2022	2	814,884	804,326	2,547	2,285
2022	3	797,375	726,299	2,167	1,937
2022	4	654,184	666,398	1,947	1,735
2022	5	696,033	686,528	2,072	1,683
2022	6	920,927	727,677	2,616	1,977
2022	7	949,299	975,101	2,967	2,300
2022	8	974,383	762,449	2,648	2,028
2022	9	779,171	773,079	2,319	2,013
2022	10	650,286	691,787	1,935	1,696
2022	11	727,178	736,650	2,164	1,913
2022	12	866,651	951,031	2,579	2,331
2023	1	923,105	1,017,132	2,747	2,493
2023	2	790,398	794,647	2,470	2,258
2023	3	774,886	715,081	2,106	1,907
2023	4	605,696	675,188	1,893	1,688
2023	5	678,142	671,294	1,927	1,712

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**
2023	6	892,450	712,109	2,535	1,935
2023	7	901,781	973,390	2,818	2,296
2023	8	931,785	760,486	2,532	2,023
2023	9	726,232	774,845	2,269	1,937
2023	10	670,706	649,187	1,905	1,656
2023	11	712,973	720,221	2,122	1,871
2023	12	807,078	964,494	2,522	2,275
2024	1	951,127	964,934	2,702	2,462
2024	2	795,493	789,454	2,368	2,193
2024	3	685,446	758,943	2,040	1,865
2024	4	664,365	608,806	1,887	1,654
2024	5	679,971	636,001	1,932	1,622
2024	6	724,337	825,957	2,264	2,065
2024	7	930,702	920,129	2,644	2,347
2024	8	840,717	806,311	2,388	2,057
2024	9	709,019	759,170	2,216	1,898
2024	10	696,821	610,395	1,894	1,623
2024	11	667,243	734,712	2,085	1,832
2024	12	831,376	922,404	2,474	2,261
2025	1	948,723	934,221	2,695	2,383
2025	2	755,334	774,585	2,360	2,201
2025	3	671,842	747,158	2,000	1,836
2025	4	645,386	604,425	1,833	1,642
2025	5	629,446	646,841	1,873	1,585
Totals		**48,676,341**	**48,131,411**		

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
2020	6	1,227,519	1,009,358	3,487	2,743
2020	7	1,711,735	1,363,692	4,651	3,627
2020	8	1,476,541	1,441,946	4,394	3,534
2020	9	934,654	875,362	2,782	2,280
2020	10	833,428	806,526	2,368	2,057
2020	11	856,589	948,049	2,677	2,364
2020	12	1,159,119	1,180,342	3,293	3,011
2021	1	1,038,119	1,267,230	3,244	2,989
2021	2	973,368	963,581	3,042	2,737
2021	3	941,509	872,332	2,558	2,326
2021	4	813,763	741,185	2,312	2,014
2021	5	819,506	957,464	2,561	2,258
2021	6	1,250,881	1,085,952	3,554	2,951
2021	7	1,630,277	1,574,526	4,852	3,859
2021	8	1,623,227	1,443,290	4,611	3,682
2021	9	996,050	889,885	2,964	2,317
2021	10	827,866	878,986	2,464	2,154
2021	11	939,261	964,729	2,795	2,506
2021	12	1,285,874	1,170,908	3,494	3,114
2022	1	1,153,861	1,270,927	3,434	3,115
2022	2	1,017,311	1,013,168	3,179	2,878
2022	3	983,854	910,924	2,674	2,429
2022	4	798,075	809,436	2,375	2,108
2022	5	924,318	919,556	2,751	2,254
2022	6	1,260,455	1,147,656	3,581	3,119
2022	7	1,616,958	1,665,439	5,053	3,928
2022	8	1,745,917	1,416,224	4,744	3,767
2022	9	1,026,325	900,018	3,055	2,344
2022	10	851,948	895,591	2,536	2,195
2022	11	956,191	989,873	2,846	2,571
2022	12	1,207,383	1,285,839	3,593	3,152
2023	1	1,179,911	1,305,396	3,512	3,200
2023	2	1,032,754	1,035,729	3,227	2,942
2023	3	1,006,544	921,487	2,735	2,457
2023	4	758,509	864,121	2,370	2,160
2023	5	993,799	880,769	2,823	2,247

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**
2023	6	1,311,368	1,129,238	3,725	3,069
2023	7	1,624,673	1,705,593	5,077	4,023
2023	8	1,775,597	1,433,490	4,825	3,812
2023	9	935,760	1,003,104	2,924	2,508
2023	10	913,873	874,667	2,596	2,231
2023	11	981,042	1,001,816	2,920	2,602
2023	12	1,168,089	1,361,509	3,650	3,211
2024	1	1,273,568	1,279,682	3,618	3,264
2024	2	1,089,328	1,067,936	3,242	2,966
2024	3	935,535	1,011,079	2,784	2,484
2024	4	878,288	799,789	2,495	2,173
2024	5	965,082	937,336	2,742	2,391
2024	6	1,227,017	1,229,496	3,834	3,074
2024	7	1,754,523	1,667,049	4,984	4,253
2024	8	1,721,639	1,531,545	4,891	3,907
2024	9	911,459	1,061,512	2,848	2,654
2024	10	986,683	854,848	2,681	2,274
2024	11	955,193	1,063,415	2,985	2,652
2024	12	1,230,091	1,375,353	3,661	3,371
2025	1	1,298,326	1,312,873	3,688	3,349
2025	2	1,077,590	1,084,006	3,367	3,080
2025	3	944,515	1,044,341	2,811	2,566
2025	4	898,875	814,814	2,554	2,214
2025	5	888,647	1,031,809	2,645	2,529
Totals		**67,600,160**	**66,343,796**		