BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In re: Union Electric Company's	)	
2008 Utility Resource Filing pursuant to	)	Case No. EO-2007-0409
4 CSR 240 – Chapter 22.	)	

AMERENUE'S SUPPLEMENTAL FILING AND
REQUEST FOR COMMISSION TO ACCEPT SUPPLEMENTAL FILING

COMES NOW, Union Electric Company, d/b/a AmerenUE (AmerenUE or the Company), and for its request for the Missouri Public Service Commission (Commission) to accept AmerenUE's Supplemental Filing, states as follows:

1. AmerenUE made its IRP filing on February 5, 2008.

2. Since that time, parties in this case filed pleadings alleging certain deficiencies with AmerenUE's IRP filing. The parties filing comments were the Commission Staff (Staff), the Office of the Public Council (OPC), the Missouri Department of Natural Resources (DNR), the Missouri Industrial Energy Consumers (MIEC), Sierra Club, Missouri Coalition for the Environment, Mid-Missouri Peaceworks and ACORN (collectively, Sierra Club).

3. AmerenUE and the parties have discussed those alleged deficiencies and believe several of them would be resolved with additional information placed in the record. The requested additional information is included in and attached to this filing as indicated below.

4 CSR 240-22.030 Load Analysis and Forecasting

4. 4 CSR 240-22.030(2)(A). Staff alleged a deficiency because of the lack of an explanation for the assumptions necessary for including driver variables that are shown to be statistically insignificant. *Staff Report on AmerenUE's Integrated Resource Planning Compliance Filing*, June 19, 2008, p. 8. (Staff Report)

AmerenUE recognizes there are instances where driver variables may not be statistically significant but still believed they were intuitively correct in terms of mathematical sign and overall magnitude.

In particular, Staff identified the Residential customer model as an example of a model which had a statistically insignificant variable included. In this model, Population was used as a driver variable by AmerenUE despite being statistically insignificant. Population was selected as a driver variable because of its obvious intuitive appeal for describing AmerenUE's customer base. As Staff has pointed out, Number of Households would also be an intuitive choice for this. Because of the high correlation between households and population (99.3%), either should be a reasonable choice for the model. However, these variables alone did not accurately capture the historical trend in customer counts. When population is the sole variable in the model, the R-squared value for the model fell to approximately .64. By adding the lagged dependent value, the historical relationship is cleaned up significantly, improving the R-squared value to .996. With a coefficient of .999, the lagged dependent variable acts essentially as an intercept in the model that also tunes up the fit between the Population trend and the customer trend. The growth is still driven by changes in the Population variable over the forecast horizon. But because over the history there was significant correlation between the lagged dependent variable and Population, the Population variable is rendered statistically insignificant. The customer growth over the forecast horizon declines very slowly, as does the Population variable, and is at a very reasonable 0.5%-0.7%. This is right in line with the historical growth rate.

The Commercial SGS customer model included a statistically insignificant intercept and auto-regressive term. The inclusion of these terms, however, helped the model achieve a realistic growth rate. Without them, the same model resulted in growth at an

increasing rate over time. By adding the intercept, the model is fit to result in growth that matches the recent historically observed growth.

The Commercial LGS customer model has a statistically insignificant binary variable for January 1999 in it. This variable is intended to mark an historical value as an outlier. It still achieves this objective regardless of the statistical significance of the coefficient. Also, the Population variable in this model technically fails to be statistically significant at the 90% confidence level, but is so close that it is perfectly reasonable to include in the model, with actual significance at the 89% confidence level.

The Residential Statistically Adjusted End-Use model had an Intercept that is only significant at the 89% confidence level. But this is reasonable to construe as marginally significant and include in the final model specification.

The Industrial sales model included two economic variables, Manufacturing employment and Manufacturing GDP. The Manufacturing GDP variable was statistically insignificant. This is because the two economic variables had similar declines over the historical period, so they in effect were attempting to explain the same historical effects, rendering one of the variables statistically insignificant. However, over the forecast horizon, these variables do markedly different things. Namely, the employment variable continues to decline while the GDP begins to increase. Because the GDP increase will have upward influence on sales, it was deemed important to include it in the final model specification.

The wholesale sales model included an auto-regressive term that is not statistically significant. It was selected because the ARMA structure necessary to address the auto correlation in this model requires such a term.

The weather normalization models reported in section 1 had two models that included statistically insignificant variables. The Commercial SGS model had an HDD variable

that was only significant at the 85% confidence level, but had an intuitively correct sign and magnitude that increased confidence in using this variable. The Commercial LPS includes a CDD variable interacted with a binary for months of July after 2005. The effect that this variable is attempting to capture is shown more clearly in the August and September variables with similar construction. Because the effect is not as strong in July, it fails statistical significance, but when compared with the direction and magnitude of the coefficient are considered against the similar August and September variables, it passes the test of reasonableness.

Finally, many of the class daily weather normalization models have a few statistically insignificant variables. For these models, a base group of variables was selected that describe daily load-temperature relationships well. These variables, such as monthly binaries, day of the week binaries, and holiday binaries all make sense and are interpreted jointly. To the extent that an individual variable is statistically insignificant, it may still make sense when interpreted in the context of the group of similar variables.

5. 4 CSR 240-22.030(5)(B)1.B. Staff alleged that AmerenUE failed to compare the forecasts of the number of units for each major class to historical trends. *Staff Report*, p. 9.

Attached to this pleading as Exhibit 1 are updated tables of historical and forecasted customer counts by customer class.

6. In what Staff labeled "Staff Concern A," Staff requested clarification of AmerenUE's plans for serving wholesale customers in the future and how this may impact the load forecast. *Staff Report*, p. 7.

AmerenUE intends to offer relatively short-term contracts based on market pricing to Missouri customers seeking wholesale power, subject to projected availability of sufficient excess capacity after serving its retail native load obligations and subject to transmission availability. Wholesale customers have not been included in the base load forecast

beyond the expiration of any existing contracts because their status at that point is subject to the competitive landscape and decisions of those customers. AmerenUE has not planned its resources in order to serve any wholesale customers beyond existing contracts.

7. Staff Concern B noted gaps and inconsistencies in certain databases used by AmerenUE and requested an explanation of why these data anomalies occurred and how they were handled in forecasting. *Staff Report*, p. 8.

Staff has correctly identified that there are values which do not appear to be correct. There are various reasons for historical data problems, primarily billing and reporting errors that occurred during the time period in question. Most significant are the errors that occurred in the years around 1998 and 1999. At this time, AmerenUE was converting to its new customer billing and information system. During the conversion process, some reporting problems affected the quality of data reported for that time period. Other instances of poor data quality are related to isolated billing and reporting problems that have occurred from time to time. AmerenUE is making ongoing efforts to clean and correct historical and present period data to ameliorate the situation identified by Staff. However, the presence of errant historical data in the database presents an issue that must be addressed in order to develop accurate forecasts. To mitigate the impact of poor data quality on the forecast, AmerenUE has either excluded the time period which contained erroneous data from the relevant model's estimation period or used binary variables to exclude the outlier data points from estimation so that they would not influence the relationships in the models. Specifically, the techniques used for each data problem identified by the Staff are included in the table below.

Class	Page	Units	Figure	Data Issue Time Frame	Modeling Remedy
Com SPS	288	Customers	8-17	1999	Estimation began June 2000
Com LPS	288	Customers	8-18	1999	Estimation began May 2000
Ind LGS	289	Customers	8-20	1999	Binary variables marked outliers in Dec 1998 - March 1999, Feb 1999 and 2000, Jan 2001 and 2002
DTD	291	Customers	8-23	1995-1998,2002-2003	Estimation began December 1998, binary variable used to account for level shift after 2002
SLPA	291	Customers	8-24	1999-2002	Dummy variables used to mark outliers for Dec 1998 through April 2002 plus Dec 2002
DTD	301	UPC	8-43	1995-1998,2002-2003	Function of Sales and Customer modeling remedies
SLPA	302	UPC	8-45	1999-2001,2005-2006	Function of Sales and Customer modeling remedies
SLPA	313	Sales	8-67	1999-2001,2005-2006	Estimation began May 2002, Dummy variables marked outliers in Nov 2005 and Feb 2006

8. Staff Concern C deals with documentation of the source of the exponents on the variables used to calculate the Heat Use, Cooling and Other variables in the Residential and Commercial Statistically Adjusted End-Use (SAE) models. *Staff Report*, p. 8.

The exponents used in the SAE model are designed to capture the elasticity of demand with respect to certain economic variables. Specifically, the variables in the Residential SAE model that require elasticity parameter estimates are Personal Income, Price, and Household Size. This captures the expectation that, for example, electricity usage will increase by some amount with Personal Income, as customers with higher incomes will tend to buy more electronic equipment and perhaps are less inclined to cut back on discretionary electricity consumption. Price elasticity, on the other hand, captures the effect that as the price of electricity increases, customers will be more inclined to take conservation measures in order to save money, and therefore will reduce their total usage.

In its forecasting models, AmerenUE has used a price elasticity parameter of -15%. What this means is that for every 1% increase in price, demand is expected to decline by 0.15%. Estimates of elasticity are a topic of considerable conversation among industry forecasting groups right now. It is fairly difficult to develop good estimates of elasticity, as the historical period of time available to review was characterized by declining prices in real terms. This means that there has not been a period available to study in which customers have had a strong incentive to react to price. AmerenUE, however, has attempted to model elasticity over an historical period in order to glean whatever information may be in that data. Additionally, AmerenUE forecasting personnel have reviewed papers written on the topic, attended industry workshops and discussed with colleagues from other utilities, and taken input from Itron, an industry leading forecasting consultant. All of these forums help inform the decisions made regarding elasticity parameters.

Among the data that was most instructive in selecting a price elasticity parameter was a study that AmerenUE performed. Annual residential sales from 1982 through 2005 were modeled as a function of heating degree days, cooling degree days, real personal income, and real price. The model was in log-log form, which means that the natural logarithm of each variable was taken before estimating the model. This is a common model specification for evaluating elasticities. The resultant coefficients on the real price and real personal income are estimates of the elasticity of residential sales with respect to those variables. Despite the lack of dramatic price changes over the historical period of study, all variables are statistically significant at or near the 90% confidence level. The model output is shown below:

Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	13.218	0.631	20.956	0.00%
Annual.logHDD	0.256	0.038	6.671	0.00%
Annual.logCDD	0.241	0.023	10.643	0.00%
AnnualEcon.logRPI	0.456	0.017	27.436	0.00%

Annual.logPrice	-0.157	0.089	-1.762	10.16%

The -0.157 coefficient on Annual.logPrice is very close to the final -0.15 value used for price elasticity in the SAE models. The coefficient on AnnualEcon.logRPI implies a 0.456 elasticity on the real personal income variable. However, this was adjusted down before being used in SAE models because the simple form of the model above does not account for many of the other drivers of sales growth included in the SAE model (such as saturation of appliances and number of customers). Therefore, there was almost certainly significant influence of sales growth attributable to these factors on the coefficient on AnnualEcon.logRPI. Using the 0.456 from this model would have overstated the true elasticity with respect to real personal income.

For more comfort with the -0.15 used as the price elasticity parameter, and to find adjusted values for the real personal income elasticity and a value to use for household size, AmerenUE largely relied on its consultant Itron. Itron's experience with forecasting in the electric utility industry is extensive and their SAE models are used widely across the industry. Based on review of papers, various studies, and experience with many utilities, Itron has developed recommended values for elasticity. Where study of AmerenUE specific data was unavailable, or as with real personal income, where the results were subject to potential inaccuracy, these recommendations from Itron have been adopted.

Additionally, Itron's survey of the industry on the topic of price elasticity supports the value that AmerenUE developed independently. Itron performed an elasticity survey which found that the elasticity estimates used in the industry for residential sales modeling ranged from 0 to -0.35 in the short term with an average of -0.15, and -0.05 to -0.7 in the long-term with an average of approximately -0.2. This puts the estimate done by AmerenUE squarely within the mainstream of the industry.

The estimate of elasticity with respect to real personal income used in the Residential SAE model was 0.15 and elasticity with respect to household size was 0.2. In the Commercial SAE model the elasticity with price was -0.15 for smaller classes and -0.2 for larger customer classes, and elasticity with respect to GDP range from 0.4 to 0.7, again depending on the size of the customer class. These values are, as described above, primarily resultant from recommendations made by Itron as well as discussions with peers at industry conferences and workshops.

Staff also noted that the elasticity parameters have changed since the Load Analysis and Forecasting Workshop held at the beginning of the Stakeholder process for this IRP. It should be noted that the only value that changed was the Income elasticity parameter. Rather than a change in the AmerenUE decision for the appropriate value for this elasticity, this was simply an oversight which took place when the presentation and models were not double checked to be sure they were in sync. The 0.15 used in the modeling work however is well within the range of reasonableness for this parameter.

9. Staff Concern D dealt with Staff's belief that AmerenUE had not quantified or explained the statement "some level of energy efficiency improvement" (page 266) that is used in the base load analysis. *Staff Report*, p. 8.

The requested explanation is attached to this pleading as Exhibit 2, which is a memorandum written by CRA International.

4 CSR 240-22.040 Supply-Side Resource Analysis

10. 4 CSR 240-22.040(1), (6) and (7). OPC states that AmerenUE failed to analyze transmission upgrades that could alleviate the transmission outlet capacity constraints which limit the bulk power sales AmerenUE can make from its Audrain gas-fired generating facility. *OPC Report*, p. 4.

AmerenUE has started its analysis of the Audrain transmission constraints by requesting the Midwest Independent Transmission System Operator, Inc. (MISO) to complete a detailed transmission study to evaluate the transmission upgrades required to potentially make additional capacity available from the Audrain Combustion Turbine Generator facility.

The Audrain upgrade (G847) transmission study must wait for completion of the Callaway 2 (G733) transmission study. The Callaway 2 study is ahead of the Audrain study in the queue and MISO has such a large backlog of generator interconnection studies, it is doing these studies in the sequence received within each Study Area. If the G847 study starts this fall, it may be finished as early as January or February of 2009. However, it may not be completed until June of 2009. After the G847 transmission study is complete, study results will be reviewed by AmerenUE Transmission, Plant and Energy Trading personnel and then negotiations can begin on the Large Generator Interconnection Agreement (LGIA). The LGIA will contain provisions for whatever new cost effective transmission facilities may be required to increase the capacity that is available from the Audrain generating facility.

AmerenUE agrees to update stakeholders on the status of both the Audrain and the Callaway 2 MISO transmission studies at its semi-annual IRP update meetings and reflect the results of the Audrain study, if available, in the supply-side screening in its next IRP filing.

4 CSR 240-22.050 Demand-Side Resource Analysis

11. 4 CSR 240-22.050(6)(B). Staff's identified Deficiency 6 alleged that AmerenUE's evaluation plans did not include a study of the interactive effects for the demand-side resources in current preferred resource plan. *Staff Report*, p. 12.

For a general explanation of how interactive effects were accounted for, see AmerenUE's response to 4 CSR 240-22.050 (6)(B). For measures that were modeled using the DOE-2 building simulation software, the interactive effects were implicit in the results. An

example of this would be R-30 insulation installed in a residential single family home with a heat pump, in a home with existing R-7 insulation. The DOE-2 software would model the home with R-7 insulation, and provide hourly energy usage. The same home would then be modeled with R-30 insulation, and the sum of hourly energy usage would be compared with the R-7 results. This particular measure resulted in savings of 994 kWh. Since the measure was modeled for all 8760 hours in a year, it would include savings or increases resulting from the extra insulation:

- storing additional heat indoors, and preventing additional outside cold air from coming in during the winter
- the opposite occurring during the winter, and
- heat expelled from lighting and other appliances.

These DOE-2 modeled measures can be identified using the color key in cell CF959 in the Technologies worksheet of the Program Model spreadsheet; the Demand Interactive Effects and Energy Interactive Effects columns (columns N and O) have been left blank, since they are implicit in the DOE-2 savings results.

For measures that were not modeled using the DOE-2 software, interactive effects were accounted for using interactive effects from the Database for Energy Efficient Resources (DEER), mainly for lighting measures. DEER also estimates these factors using DOE-2 software, and has compiled interactive effects for lighting measures for a variety of technologies and building types. For example, the total kWh savings from the installation of a 13 watt CFL in a commercial building (replacing a 40 watt CFL, row 348, ID 346) would result in 27 watts of savings for each of an assumed 2,653 hours of operation annually. The gross savings of 71.6 kWh is then multiplied by the Energy Interactive Effects factor of 1.15 to get the total savings of 82.4 kWh, as shown in cell AI348. These measures with interactive effects can be identified by factors shown in columns N and O.

The DEER interactive effects factors have been used in a variety of energy efficiency potential studies, program plans, and program evaluations throughout the country.

4 CSR 24-22.070 Risk Analysis and Strategy Selection

12. 4 CSR 24-22.070(9)(C). DNR pointed to the absence of any plan on biomass research as a deficiency. Synapse Review attachment to *Missouri Department of Natural Resources Energy Center Review of AmerenUE Demonstration of Compliance with Stip [sic] for Case No. EO-2006-0240 Dated May 9, 2008 and Integrated Resource Plan Filing Dated February 5, 2008. (DNR Report, Synapse Attachment*), p. 31.

13. 4 CSR 240-22.070(10)(E). DNR states that the IRP discussion of the process for monitoring critical uncertain factors is deficient because it does not present any details on the process or describe the methods that AmerenUE will use to monitor and report on trends in the capital costs of new nuclear and coal capacity, carbon policy or other critical uncertain factors. *DNR Report, Synapse Attachment*, p. 7.

AmerenUE will use the following process to monitor and report on each critical uncertain factor.

> Carbon Policy: AmerenUE senior management and Strategic Initiatives Group will monitor and evaluate developments on possible carbon legislation and potential carbon policy outcomes, and discuss significant developments and changes. Absent the need for more frequent discussions, determined by AmerenUE senior management at their sole discretion, these discussions will occur annually with the first of these annual discussions to occur before November 1, 2008 with the two other annual discussions occurring before AmerenUE's next IRP filing.
>
> Gas Prices: The President and CEO of AmerenUE is updated annually by the Corporate Planning and Risk Management groups on trends and drivers of natural gas prices as part of the update on the drivers of forward commodity prices. AmerenUE senior management may, in its sole discretion, request more frequent updates to discuss significant changes in natural gas prices.
>
> Load Growth: AmerenUE senior management, Corporate Planning and Strategic Initiatives will review assumptions on load growth in the fall of 2009 after approximately a year of implementation of AmerenUE's energy efficiency programs and one more time as part of the analysis for the next IRP.
>
> Capital Costs: Corporate Planning or another group, as directed by AmerenUE senior management, will develop a range of capital costs for all, some or one of several supply-side technologies including nuclear, coal, gas-fired and renewable technologies by

August of 2009. AmerenUE senior management will review these costs with Corporate Planning to evaluate if any significant changes have occurred since AmerenUE's 2008 IRP filing. These ranges of capital costs may be updated for AmerenUE's next IRP analysis based on discussions with the IRP stakeholders.

Interest Rates and Financial Metrics: Corporate Planning and Treasury or another group as directed by AmerenUE senior management will, before the next IRP filing, develop a methodology for evaluating the impact of interest rates and various financial metrics on revenue requirements consistent with maintaining investment grade ratings for debt issued at AmerenUE in evaluating the resource acquisition strategy and preferred plan for the next IRP. This evaluation will include an analysis of the level of interest rates and financial metrics that would trigger a consideration of the Contingency Plan in the next IRP and be discussed with the stakeholders as part of the IRP participatory process.

Off-System sales: AmerenUE senior management and Corporate Planning will review the assumptions on Off-System sales for the next IRP based on an evaluation of continued participation of AmerenUE in an RTO.

Renewable Production Tax Credits: AmerenUE senior management and the Renewables team will monitor the developments on continued availability of Renewable Production Tax Credits annually starting in 2009 and discuss the impact of any changes in these credits on the renewables resource acquisition strategy.

Attached to this pleading as Exhibit 3 is AmerenUE's plan for biomass research.

Other

14. AmerenUE submits errata sheets as Exhibit 4 to correct reference and other errors contained within its February 5, 2008 IRP filing.

WHEREFORE, AmerenUE requests the Commission accept the additional information provided by AmerenUE in this Supplemental Filing.

Respectfully submitted,

UNION ELECTRIC COMPANY
d/b/a AmerenUE

/s/ Wendy Tatro
Steven R. Sullivan, # 33102
Sr. Vice President, General
Counsel and Secretary
Wendy K. Tatro, # 60261

Assoc. General Counsel
Ameren Services Company
P.O. Box 66149
St. Louis, MO 63166-6149
(314) 554-3484 (phone)
(314) 554-4014 (fax)
ssullivan@ameren.com
wtatro@ameren.com

Dated: August 12, 2008

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing have been mailed, hand-delivered, transmitted by facsimile or electronically mailed to all counsel of record this 12th day of August, 2008.

Wendy Tatro

Wendy Tatro

General Counsel Office
Missouri Public Service Commission
200 Madison Street, Suite 800
P.O. Box 360
Jefferson City, MO 65102
GenCounsel@psc.mo.gov

Lewis Mills
Office Of Public Counsel
200 Madison Street, Suite 650
P.O. Box 2230
Jefferson City, MO 65102
opcservice@ded.mo.gov

Bruce A. Morrison
Association of Community Organizations for Reform Now
705 Olive Street, Suite 614
St. Louis, MO 63101
bamorrison@greatriverslaw.org

Henry B. Robertson
Association of Community Organizations for Reform Now
705 Olive Street, Suite 614
St. Louis, MO 63101
hrobertson@greatriverslaw.org

Shelley Woods
Missouri Department of Natural Resources
P.O. Box 899
Jefferson City, MO 65102-0899
shelley.woods@ago.mo.gov

Lisa C. Langeneckert
Missouri Energy Group
Sandberg Phoenix & von Gontard, P.C.
One City Centre, 15th Floor
515 North Sixth Street
St. Louis, MO 63101-1880
llangeneckert@spvq.com

Stuart Conrad
Noranda Aluminum, Inc.
3100 Broadway, Suite 1209
Kansas City, MO 64111
stucon@fcplaw.com

Kathleen G. Henry
Association of Community Organizations for Reform Now
705 Olive Street, Suite 614
St. Louis, MO 63101
khenry@greatriverslaw.org

Steve Dottheim
Missouri Public Service Commission
200 Madison Street, Suite 800
P.O. Box 360
Jefferson City, MO 65102
Steve.Dottheim@psc.mo.gov

Diana M. Vuylsteke
Missouri Industrial Energy Consumers
211 N. Broadway, Suite 3600
St. Louis, MO 63102
dmvuylsteke@bryancave.com

SUPPLEMENTAL FILING EXHIBIT 1

Staff identified as a deficiency that AmerenUE did not provide trends in historical customer counts in the tables in Section 4 CSR 240-22.030(5)(B)1.B for comparison with the forecasted trends. They recommended that updated tables be filed along with a discussion of any significant differences between the historical and forecasted trends. The tables are provided below, updated to include historical information as well as the forecasted values. The tables with significant differences between forecasted and historical trends include the Commercial LPS and Industrial SGS, SPS, and LPS classes. In these cases, customer counts have been forecasted to remain flat despite what historical trends have occurred. This is because these classes have fairly small total customer counts. As such, macro level economic variables can be ineffective at capturing historical trends, as just a few customers being added will cause significant growth that is not explained by economic conditions. Additionally, these customer classes are particularly susceptible to having a few billing errors distort historical values, adding to the challenge of accurately modeling them. In these cases, the energy forecasts for the class are forecasted to grow as driven by economic conditions, but the customer counts are assumed to persist from year to year as there is little basis for other conclusions to be derived from historical modeling.

The Commercial LGS customer class shows much stronger growth over the historical period than over the forecast horizon, particularly in the years prior to 2003. It was unrealistic to expect that 5-7% annual growth would occur indefinitely into the future. The Population variable was used in this forecast which helped to moderate growth into the future. As the growth rate has already come down somewhat in the years since 2003, it should be reasonably expected to grow, but at more moderating levels into future years.

In the Street Lighting and Public Authority and Dusk-to-Dawn Lighting classes, the problems with historical data identified by Staff in Concern B distort some of the historical trends, accounting for differences from the forecasted trends for those classes.

Table (5) (B)-14: Residential customer forecast

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Change
1996	938,064	938,834	939,941	939,598	938,778	937,331	936,715	937,031	938,150	939,249	941,160	943,193	939,004	0.6%
1997	944,545	945,283	945,711	945,955	945,157	944,470	944,623	944,972	945,882	944,906	946,598	949,183	945,607	0.7%
1998	951,065	952,407	953,644	953,769	952,572	951,468	952,012	952,258	952,982	953,911	954,840	956,514	953,120	0.8%
1999	958,893	960,156	961,126	961,015	960,062	959,612	959,908	960,299	961,430	962,008	963,036	965,025	961,048	0.8%
2000	967,330	969,301	969,809	969,501	968,330	967,359	967,737	968,486	969,696	971,075	971,545	973,653	969,485	0.9%
2001	975,181	976,083	976,641	976,686	975,058	973,822	974,024	974,859	976,210	976,517	977,475	978,527	975,924	0.7%
2002	980,458	981,629	982,359	982,507	984,058	982,810	983,014	983,857	985,220	985,530	986,497	987,559	983,792	0.8%
2003	993,556	994,475	995,044	995,090	993,431	992,172	993,494	992,509	995,312	996,225	995,728	998,995	994,669	1.1%
2004	999,743	1,001,187	1,002,157	999,046	998,233	1,000,954	1,000,882	998,792	1,004,587	1,002,067	1,004,852	1,004,589	1,001,424	0.7%
2005	1,008,136	1,011,395	1,011,153	1,010,179	1,007,353	1,008,142	1,006,761	1,013,239	1,013,316	1,010,432	1,013,811	1,016,367	1,010,857	0.9%
2006	1,019,147	1,018,019	1,021,275	1,019,073	1,017,019	1,018,106	1,018,722	1,019,339	1,019,955	1,020,571	1,021,187	1,021,802	1,019,518	0.9%
2007	1,022,418	1,023,034	1,023,649	1,024,265	1,024,880	1,025,495	1,026,111	1,026,726	1,027,340	1,027,955	1,028,569	1,029,184	1,025,802	0.6%
2008	1,029,798	1,030,412	1,031,025	1,031,639	1,032,252	1,032,865	1,033,478	1,034,090	1,034,703	1,035,315	1,035,926	1,036,538	1,033,170	0.7%
2009	1,037,149	1,037,759	1,038,370	1,038,980	1,039,589	1,040,199	1,040,808	1,041,417	1,042,025	1,042,633	1,043,240	1,043,848	1,040,501	0.7%
2010	1,044,454	1,045,061	1,045,667	1,046,273	1,046,878	1,047,483	1,048,087	1,048,691	1,049,295	1,049,898	1,050,501	1,051,104	1,047,783	0.7%
2011	1,051,706	1,052,307	1,052,909	1,053,509	1,054,110	1,054,710	1,055,309	1,055,908	1,056,507	1,057,105	1,057,702	1,058,299	1,055,007	0.7%
2012	1,058,896	1,059,492	1,060,088	1,060,683	1,061,277	1,061,871	1,062,465	1,063,058	1,063,651	1,064,243	1,064,835	1,065,426	1,062,165	0.7%
2013	1,066,017	1,066,607	1,067,197	1,067,786	1,068,375	1,068,963	1,069,551	1,070,139	1,070,726	1,071,313	1,071,899	1,072,485	1,069,255	0.7%
2014	1,073,071	1,073,656	1,074,240	1,074,825	1,075,408	1,075,992	1,076,575	1,077,158	1,077,740	1,078,322	1,078,904	1,079,485	1,076,281	0.7%
2015	1,080,066	1,080,647	1,081,227	1,081,807	1,082,387	1,082,966	1,083,545	1,084,123	1,084,701	1,085,278	1,085,856	1,086,432	1,083,253	0.6%
2016	1,087,008	1,087,584	1,088,159	1,088,734	1,089,309	1,089,883	1,090,456	1,091,029	1,091,602	1,092,174	1,092,746	1,093,317	1,090,167	0.6%
2017	1,093,888	1,094,459	1,095,029	1,095,599	1,096,168	1,096,737	1,097,306	1,097,874	1,098,441	1,099,009	1,099,576	1,100,143	1,097,019	0.6%
2018	1,100,709	1,101,275	1,101,840	1,102,406	1,102,971	1,103,535	1,104,099	1,104,663	1,105,226	1,105,789	1,106,352	1,106,914	1,103,815	0.6%
2019	1,107,476	1,108,038	1,108,599	1,109,160	1,109,720	1,110,281	1,110,840	1,111,400	1,111,959	1,112,518	1,113,076	1,113,634	1,110,558	0.6%
2020	1,114,192	1,114,749	1,115,307	1,115,863	1,116,420	1,116,976	1,117,532	1,118,088	1,118,643	1,119,197	1,119,752	1,120,306	1,117,252	0.6%
2021	1,120,859	1,121,412	1,121,965	1,122,518	1,123,070	1,123,622	1,124,173	1,124,724	1,125,274	1,125,825	1,126,375	1,126,924	1,123,895	0.6%
2022	1,127,473	1,128,022	1,128,570	1,129,118	1,129,666	1,130,213	1,130,760	1,131,306	1,131,852	1,132,398	1,132,943	1,133,488	1,130,484	0.6%
2023	1,134,033	1,134,577	1,135,121	1,135,665	1,136,208	1,136,751	1,137,294	1,137,836	1,138,377	1,138,919	1,139,460	1,140,000	1,137,020	0.6%
2024	1,140,540	1,141,080	1,141,620	1,142,159	1,142,697	1,143,236	1,143,773	1,144,311	1,144,848	1,145,385	1,145,922	1,146,458	1,143,502	0.6%
2025	1,146,994	1,147,529	1,148,065	1,148,599	1,149,134	1,149,668	1,150,202	1,150,736	1,151,269	1,151,802	1,152,334	1,152,866	1,149,933	0.6%
2026	1,153,398	1,153,929	1,154,459	1,154,990	1,155,520	1,156,049	1,156,579	1,157,107	1,157,636	1,158,164	1,158,691	1,159,219	1,156,312	0.6%
2027	1,159,745	1,160,272	1,160,798	1,161,323	1,161,848	1,162,373	1,162,897	1,163,421	1,163,945	1,164,468	1,164,991	1,165,513	1,162,633	0.5%
2028	1,166,035	1,166,557	1,167,078	1,167,599	1,168,119	1,168,639	1,169,159	1,169,678	1,170,197	1,170,715	1,171,234	1,171,751	1,168,897	0.5%
2029	1,172,269	1,172,786	1,173,303	1,173,819	1,174,335	1,174,851	1,175,366	1,175,881	1,176,395	1,176,909	1,177,423	1,177,937	1,175,106	0.5%
2030	1,178,450	1,178,963	1,179,475	1,179,987	1,180,499	1,181,010	1,181,521	1,182,031	1,182,541	1,183,051	1,183,560	1,184,069	1,181,263	0.5%

Table (5) (B)-15: Commercial SGS customer forecast

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Change
1995	102,392	102,345	102,597	102,718	102,790	102,961	102,796	102,933	103,008	103,117	103,443	103,862	102,914	
1996	103,987	104,142	104,364	104,645	104,915	105,045	105,196	105,411	105,728	105,801	106,097	106,523	105,155	2.2%
1997	106,755	107,002	107,229	107,549	107,870	108,205	108,495	108,763	108,964	108,742	109,055	109,581	108,184	2.9%
1998	109,874	110,402	110,837	111,125	111,408	111,848	112,198	112,461	112,748	112,632	112,516	112,209	111,688	3.2%
1999	113,057	113,529	113,694	114,084	114,574	115,017	115,371	115,596	116,142	116,576	117,186	117,831	115,221	3.2%
2000	118,461	119,041	119,642	119,950	120,187	120,407	120,561	120,725	120,914	121,104	121,388	121,726	120,342	4.4%
2001	121,956	121,952	122,072	122,174	122,294	122,380	122,457	122,512	122,732	122,955	123,131	123,321	122,495	1.8%
2002	123,628	123,860	124,130	124,299	123,854	123,485	123,709	123,637	123,741	124,151	124,395	125,188	124,006	1.2%
2003	125,981	125,161	125,410	127,526	127,604	127,760	128,138	128,169	128,398	128,898	129,070	129,872	127,666	3.0%
2004	129,637	129,660	130,032	129,946	130,016	130,264	130,349	130,449	131,224	131,199	131,457	131,636	130,489	2.2%
2005	131,812	132,024	131,944	132,233	132,333	132,609	132,541	133,057	133,125	133,335	133,843	133,762	132,718	1.7%
2006	134,032	133,909	134,253	134,187	134,322	134,476	134,657	134,835	135,012	135,190	135,366	135,543	134,649	1.5%
2007	135,718	135,894	136,068	136,243	136,417	136,590	136,763	136,936	137,108	137,279	137,451	137,621	136,674	1.5%
2008	137,792	137,961	138,131	138,300	138,468	138,636	138,804	138,971	139,138	139,304	139,470	139,635	138,718	1.5%
2009	139,800	139,965	140,129	140,293	140,456	140,619	140,781	140,943	141,104	141,265	141,426	141,586	140,697	1.4%
2010	141,746	141,906	142,065	142,223	142,381	142,539	142,696	142,853	143,010	143,166	143,321	143,477	142,615	1.4%
2011	143,632	143,786	143,940	144,094	144,247	144,400	144,552	144,704	144,856	145,007	145,158	145,308	144,474	1.3%
2012	145,458	145,608	145,757	145,906	146,054	146,202	146,350	146,497	146,644	146,791	146,937	147,082	146,274	1.2%
2013	147,228	147,373	147,517	147,661	147,805	147,949	148,092	148,234	148,377	148,519	148,660	148,801	148,018	1.2%
2014	148,942	149,083	149,223	149,362	149,502	149,641	149,779	149,917	150,055	150,193	150,330	150,467	149,708	1.1%
2015	150,603	150,739	150,875	151,010	151,145	151,280	151,414	151,548	151,681	151,815	151,948	152,080	151,345	1.1%
2016	152,212	152,344	152,475	152,607	152,737	152,868	152,998	153,128	153,257	153,386	153,515	153,643	152,931	1.0%
2017	153,771	153,899	154,026	154,153	154,280	154,406	154,532	154,658	154,783	154,908	155,033	155,158	154,467	1.0%
2018	155,282	155,405	155,529	155,652	155,775	155,897	156,019	156,141	156,262	156,383	156,504	156,625	155,956	1.0%
2019	156,745	156,865	156,984	157,104	157,222	157,341	157,459	157,577	157,695	157,812	157,929	158,046	157,398	0.9%
2020	158,163	158,279	158,394	158,510	158,625	158,740	158,855	158,969	159,083	159,197	159,310	159,423	158,796	0.9%
2021	159,536	159,649	159,761	159,873	159,984	160,096	160,207	160,317	160,428	160,538	160,648	160,757	160,150	0.9%
2022	160,867	160,976	161,084	161,193	161,301	161,409	161,516	161,624	161,731	161,837	161,944	162,050	161,461	0.8%
2023	162,156	162,261	162,367	162,472	162,577	162,681	162,785	162,889	162,993	163,096	163,199	163,302	162,732	0.8%
2024	163,405	163,507	163,609	163,711	163,812	163,914	164,015	164,115	164,216	164,316	164,416	164,515	163,963	0.8%
2025	164,615	164,714	164,813	164,911	165,010	165,108	165,206	165,303	165,400	165,497	165,594	165,691	165,155	0.7%
2026	165,787	165,883	165,979	166,074	166,170	166,265	166,359	166,454	166,548	166,642	166,736	166,829	166,311	0.7%
2027	166,923	167,016	167,109	167,201	167,293	167,385	167,477	167,569	167,660	167,751	167,842	167,933	167,430	0.7%
2028	168,023	168,113	168,203	168,293	168,382	168,471	168,560	168,649	168,738	168,826	168,914	169,002	168,515	0.6%
2029	169,089	169,176	169,264	169,350	169,437	169,523	169,610	169,696	169,781	169,867	169,952	170,037	169,565	0.6%
2030	170,122	170,206	170,291	170,375	170,459	170,543	170,626	170,709	170,792	170,875	170,958	171,040	170,583	0.6%

Table (5) (B)-16: Commercial LGS customer forecast

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Change
1995	5,498	5,494	5,509	5,514	5,526	5,518	5,582	5,624	5,680	5,720	5,738	5,755	5,597	
1996	5,788	5,804	5,815	5,833	5,851	5,857	5,930	5,961	5,983	6,011	6,007	6,014	5,905	5.5%
1997	6,024	6,029	6,050	6,053	6,065	6,056	6,120	6,150	6,182	6,202	6,206	6,204	6,112	3.5%
1998	6,215	6,209	6,198	6,190	6,188	6,186	6,295	6,321	6,362	6,387	6,411	6,323	6,274	2.7%
1999	6,323	6,323	6,086	6,268	6,299	6,327	6,402	6,370	6,421	6,489	6,433	6,489	6,353	1.3%
2000	6,657	6,622	6,647	6,714	6,709	6,781	6,838	6,862	6,950	7,005	7,006	6,993	6,815	7.3%
2001	7,336	7,042	7,060	7,055	7,079	7,172	7,174	7,314	7,324	7,353	7,184	7,196	7,191	5.5%
2002	7,642	7,516	7,489	7,444	7,437	7,512	7,565	7,558	7,648	7,706	7,661	7,609	7,566	5.2%
2003	7,769	7,693	7,660	7,666	7,665	7,714	7,803	7,831	7,858	7,935	7,981	7,916	7,791	3.0%
2004	7,977	7,965	7,969	7,971	7,942	7,997	8,045	8,090	8,111	8,127	8,128	8,123	8,037	3.2%
2005	8,138	8,142	8,164	8,160	8,148	8,203	8,241	8,346	8,361	8,346	8,365	8,402	8,251	2.7%
2006	8,380	8,401	8,402	8,401	8,413	8,523	8,553	8,588	8,603	8,625	8,601	8,622	8,509	3.1%
2007	8,642	8,663	8,617	8,638	8,658	8,678	8,744	8,764	8,784	8,804	8,781	8,801	8,715	2.4%
2008	8,821	8,841	8,795	8,815	8,835	8,855	8,920	8,940	8,959	8,979	8,955	8,975	8,891	2.0%
2009	8,994	9,014	8,967	8,987	9,006	9,026	9,091	9,110	9,129	9,148	9,124	9,143	9,062	1.9%
2010	9,162	9,181	9,135	9,154	9,173	9,192	9,257	9,275	9,294	9,313	9,288	9,307	9,228	1.8%
2011	9,326	9,344	9,297	9,316	9,334	9,353	9,417	9,435	9,454	9,472	9,447	9,465	9,388	1.7%
2012	9,483	9,502	9,454	9,472	9,490	9,509	9,572	9,590	9,608	9,626	9,601	9,618	9,544	1.7%
2013	9,636	9,654	9,606	9,624	9,642	9,660	9,723	9,741	9,758	9,776	9,750	9,767	9,695	1.6%
2014	9,785	9,802	9,753	9,771	9,789	9,806	9,869	9,886	9,903	9,920	9,894	9,911	9,841	1.5%
2015	9,928	9,945	9,897	9,914	9,931	9,948	10,011	10,028	10,044	10,061	10,034	10,051	9,983	1.4%
2016	10,068	10,085	10,035	10,052	10,069	10,086	10,148	10,164	10,181	10,197	10,170	10,187	10,120	1.4%
2017	10,203	10,219	10,170	10,186	10,203	10,219	10,281	10,297	10,313	10,329	10,302	10,318	10,253	1.3%
2018	10,334	10,350	10,300	10,316	10,332	10,348	10,410	10,426	10,441	10,457	10,429	10,445	10,382	1.3%
2019	10,461	10,476	10,426	10,442	10,458	10,474	10,535	10,550	10,566	10,581	10,553	10,569	10,508	1.2%
2020	10,584	10,600	10,549	10,565	10,580	10,595	10,657	10,672	10,687	10,702	10,674	10,689	10,630	1.2%
2021	10,704	10,719	10,668	10,684	10,699	10,714	10,775	10,790	10,805	10,819	10,791	10,806	10,748	1.1%
2022	10,821	10,835	10,784	10,799	10,814	10,829	10,890	10,904	10,919	10,933	10,905	10,919	10,863	1.1%
2023	10,934	10,948	10,897	10,912	10,926	10,941	11,001	11,016	11,030	11,044	11,015	11,030	10,975	1.0%
2024	11,044	11,058	11,007	11,021	11,035	11,050	11,110	11,124	11,138	11,152	11,123	11,137	11,083	1.0%
2025	11,151	11,165	11,113	11,127	11,142	11,156	11,215	11,229	11,243	11,257	11,227	11,241	11,189	1.0%
2026	11,255	11,269	11,217	11,231	11,245	11,259	11,318	11,332	11,345	11,359	11,329	11,343	11,292	0.9%
2027	11,356	11,370	11,318	11,331	11,345	11,359	11,418	11,431	11,445	11,458	11,428	11,442	11,392	0.9%
2028	11,455	11,468	11,416	11,429	11,443	11,456	11,515	11,528	11,541	11,555	11,524	11,537	11,489	0.9%
2029	11,551	11,564	11,511	11,524	11,538	11,551	11,610	11,623	11,635	11,648	11,618	11,631	11,584	0.8%
2030	11,644	11,657	11,604	11,617	11,630	11,643	11,702	11,714	11,727	11,740	11,709	11,722	11,676	0.8%

Table (5) (B)-17: Commercial SPS customer forecast

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Change
1995	345	346	347	348	351	348	355	363	365	364	365	365	355	
1996	368	365	366	367	368	369	371	373	377	380	382	380	372	4.8%
1997	381	385	388	393	399	399	401	396	395	392	391	393	393	5.5%
1998	392	392	395	393	396	395	399	400	399	402	404	196	380	-3.2%
1999	303	377	365	382	380	382	393	387	385	367	337	352	368	-3.4%
2000	405	401	397	408	410	419	415	423	424	418	418	417	413	12.4%
2001	447	421	411	423	425	435	433	436	434	434	428	424	429	4.0%
2002	460	453	444	423	439	448	441	445	436	460	460	474	449	4.5%
2003	459	440	453	446	448	438	440	462	442	454	459	446	449	0.1%
2004	437	459	450	453	458	451	449	448	444	459	437	446	449	0.1%
2005	459	436	456	457	451	451	449	444	453	451	442	455	450	0.2%
2006	464	448	438	448	445	453	449	450	450	450	451	451	450	-0.1%
2007	460	449	449	450	450	450	451	451	452	452	452	453	452	0.4%
2008	462	451	451	451	452	452	453	453	454	454	454	455	454	0.4%
2009	464	453	453	453	454	454	455	455	456	456	456	457	456	0.4%
2010	466	454	455	455	456	456	457	457	457	458	458	459	457	0.4%
2011	467	456	457	457	458	458	458	459	459	460	460	460	459	0.4%
2012	469	458	458	459	459	460	460	460	461	461	462	462	461	0.4%
2013	471	459	460	460	461	461	462	462	462	463	463	463	462	0.3%
2014	472	461	461	462	462	463	463	464	464	464	465	465	464	0.3%
2015	474	463	463	463	464	464	465	465	465	466	466	467	465	0.3%
2016	475	464	465	465	465	466	466	467	467	467	468	468	467	0.3%
2017	477	465	466	466	467	467	468	468	468	469	469	469	468	0.3%
2018	478	467	467	468	468	469	469	469	470	470	470	471	470	0.3%
2019	479	468	469	469	470	470	470	471	471	471	472	472	471	0.3%
2020	481	470	470	471	471	471	472	472	472	473	473	474	473	0.3%
2021	482	471	472	472	472	473	473	474	474	474	475	475	474	0.3%
2022	484	472	473	473	474	474	475	475	475	476	476	476	475	0.3%
2023	485	474	474	475	475	476	476	476	477	477	477	478	477	0.3%
2024	486	475	476	476	477	477	477	478	478	478	479	479	478	0.3%
2025	488	477	477	477	478	478	479	479	479	480	480	480	479	0.3%
2026	489	478	478	479	479	480	480	480	481	481	481	482	481	0.3%
2027	490	479	480	480	481	481	481	482	482	482	483	483	482	0.3%
2028	492	481	481	481	482	482	483	483	483	484	484	484	483	0.3%
2029	493	482	482	483	483	483	484	484	484	485	485	485	484	0.2%
2030	494	483	483	484	484	485	485	485	486	486	486	487	486	0.3%

Table (5) (B)-18: Commercial LPS customer forecast

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Change
1995	15	15	15	15	15	15	15	15	15	15	15	15	15	
1996	15	15	15	15	15	16	16	16	16	17	17	18	16	6.1%
1997	18	18	18	18	17	18	18	18	18	18	18	18	18	12.6%
1998	18	18	18	18	18	18	18	18	18	18	18	3	17	-6.5%
1999	14	17	14	17	14	17	20	18	19	19	19	14	17	0.5%
2000	22	19	14	18	18	19	19	19	19	20	20	19	19	11.9%
2001	20	20	17	20	20	20	20	20	20	20	21	19	20	4.9%
2002	20	20	20	20	20	21	20	20	20	20	19	20	20	1.3%
2003	20	23	20	22	22	23	24	24	22	25	22	23	23	12.5%
2004	26	22	22	22	22	22	22	22	22	23	23	24	23	0.7%
2005	24	24	24	25	25	25	25	25	25	25	25	25	25	9.2%
2006	25	25	25	24	28	27	26	26	26	27	26	26	26	4.7%
2007	27	27	26	26	27	27	26	26	26	27	26	26	26	1.9%
2008	27	27	26	26	27	27	26	26	26	27	26	26	26	0.0%
2009	27	27	26	26	27	27	26	26	26	27	26	26	26	0.0%
2010	27	27	26	26	27	27	26	26	26	27	26	26	26	0.0%
2011	27	27	26	26	27	27	26	26	26	27	26	26	26	0.0%
2012	27	27	26	26	27	27	26	26	26	27	26	26	26	0.0%
2013	27	27	26	26	27	27	26	26	26	27	26	26	26	0.0%
2014	27	27	26	26	27	27	26	26	26	27	26	26	26	0.0%
2015	27	27	26	26	27	27	26	26	26	27	26	26	26	0.0%
2016	27	27	26	26	27	27	26	26	26	27	26	26	26	0.0%
2017	27	27	26	26	27	27	26	26	26	27	26	26	26	0.0%
2018	27	27	26	26	27	27	26	26	26	27	26	26	26	0.0%
2019	27	27	26	26	27	27	26	26	26	27	26	26	26	0.0%
2020	27	27	26	26	27	27	26	26	26	27	26	26	26	0.0%
2021	27	27	26	26	27	27	26	26	26	27	26	26	26	0.0%
2022	27	27	26	26	27	27	26	26	26	27	26	26	26	0.0%
2023	27	27	26	26	27	27	26	26	26	27	26	26	26	0.0%
2024	27	27	26	26	27	27	26	26	26	27	26	26	26	0.0%
2025	27	27	26	26	27	27	26	26	26	27	26	26	26	0.0%
2026	27	27	26	26	27	27	26	26	26	27	26	26	26	0.0%
2027	27	27	26	26	27	27	26	26	26	27	26	26	26	0.0%
2028	27	27	26	26	27	27	26	26	26	27	26	26	26	0.0%
2029	27	27	26	26	27	27	26	26	26	27	26	26	26	0.0%
2030	27	27	26	26	27	27	26	26	26	27	26	26	26	0.0%

Table (5) (B)-19: Industrial SGS customer forecast

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Change
1995	4,561	4,577	4,563	4,598	4,613	4,623	4,577	4,558	4,557	4,551	4,541	4,534	4,571	
1996	4,533	4,519	4,503	4,477	4,457	4,446	4,417	4,409	4,404	4,401	4,410	4,436	4,451	-2.6%
1997	4,431	4,433	4,427	4,423	4,408	4,405	4,380	4,372	4,367	4,328	4,332	4,333	4,387	-1.4%
1998	4,322	4,306	4,305	4,319	4,303	4,296	4,245	4,230	4,223	4,204	4,185	4,020	4,247	-3.2%
1999	4,084	4,103	4,070	4,059	4,063	4,059	4,042	4,006	3,989	3,970	3,982	3,962	4,032	-5.0%
2000	3,966	3,944	3,954	3,962	3,939	3,915	3,908	3,885	3,864	3,853	3,843	3,828	3,905	-3.2%
2001	3,822	3,792	3,800	3,796	3,796	3,801	3,794	3,788	3,784	3,808	3,830	3,861	3,806	-2.5%
2002	3,889	3,897	3,900	3,898	3,842	3,827	3,822	3,797	3,786	3,781	3,775	3,780	3,833	0.7%
2003	3,780	3,780	3,780	3,762	3,761	3,740	3,751	3,722	3,709	3,707	3,687	3,680	3,738	-2.5%
2004	3,683	3,674	3,673	3,670	3,645	3,639	3,615	3,619	3,631	3,611	3,621	3,594	3,640	-2.6%
2005	3,600	3,607	3,618	3,621	3,604	3,576	3,577	3,576	3,558	3,556	3,565	3,552	3,584	-1.5%
2006	3,558	3,539	3,547	3,544	3,531	3,525	3,534	3,522	3,509	3,504	3,506	3,491	3,526	-1.6%
2007	3,499	3,502	3,515	3,517	3,514	3,522	3,534	3,522	3,509	3,504	3,506	3,491	3,511	-0.4%
2008	3,499	3,502	3,515	3,517	3,514	3,522	3,534	3,522	3,509	3,504	3,506	3,491	3,511	0.0%
2009	3,499	3,502	3,515	3,517	3,514	3,522	3,534	3,522	3,509	3,504	3,506	3,491	3,511	0.0%
2010	3,499	3,502	3,515	3,517	3,514	3,522	3,534	3,522	3,509	3,504	3,506	3,491	3,511	0.0%
2011	3,499	3,502	3,515	3,517	3,514	3,522	3,534	3,522	3,509	3,504	3,506	3,491	3,511	0.0%
2012	3,499	3,502	3,515	3,517	3,514	3,522	3,534	3,522	3,509	3,504	3,506	3,491	3,511	0.0%
2013	3,499	3,502	3,515	3,517	3,514	3,522	3,534	3,522	3,509	3,504	3,506	3,491	3,511	0.0%
2014	3,499	3,502	3,515	3,517	3,514	3,522	3,534	3,522	3,509	3,504	3,506	3,491	3,511	0.0%
2015	3,499	3,502	3,515	3,517	3,514	3,522	3,534	3,522	3,509	3,504	3,506	3,491	3,511	0.0%
2016	3,499	3,502	3,515	3,517	3,514	3,522	3,534	3,522	3,509	3,504	3,506	3,491	3,511	0.0%
2017	3,499	3,502	3,515	3,517	3,514	3,522	3,534	3,522	3,509	3,504	3,506	3,491	3,511	0.0%
2018	3,499	3,502	3,515	3,517	3,514	3,522	3,534	3,522	3,509	3,504	3,506	3,491	3,511	0.0%
2019	3,499	3,502	3,515	3,517	3,514	3,522	3,534	3,522	3,509	3,504	3,506	3,491	3,511	0.0%
2020	3,499	3,502	3,515	3,517	3,514	3,522	3,534	3,522	3,509	3,504	3,506	3,491	3,511	0.0%
2021	3,499	3,502	3,515	3,517	3,514	3,522	3,534	3,522	3,509	3,504	3,506	3,491	3,511	0.0%
2022	3,499	3,502	3,515	3,517	3,514	3,522	3,534	3,522	3,509	3,504	3,506	3,491	3,511	0.0%
2023	3,499	3,502	3,515	3,517	3,514	3,522	3,534	3,522	3,509	3,504	3,506	3,491	3,511	0.0%
2024	3,499	3,502	3,515	3,517	3,514	3,522	3,534	3,522	3,509	3,504	3,506	3,491	3,511	0.0%
2025	3,499	3,502	3,515	3,517	3,514	3,522	3,534	3,522	3,509	3,504	3,506	3,491	3,511	0.0%
2026	3,499	3,502	3,515	3,517	3,514	3,522	3,534	3,522	3,509	3,504	3,506	3,491	3,511	0.0%
2027	3,499	3,502	3,515	3,517	3,514	3,522	3,534	3,522	3,509	3,504	3,506	3,491	3,511	0.0%
2028	3,499	3,502	3,515	3,517	3,514	3,522	3,534	3,522	3,509	3,504	3,506	3,491	3,511	0.0%
2029	3,499	3,502	3,515	3,517	3,514	3,522	3,534	3,522	3,509	3,504	3,506	3,491	3,511	0.0%
2030	3,499	3,502	3,515	3,517	3,514	3,522	3,534	3,522	3,509	3,504	3,506	3,491	3,511	0.0%

Table (5) (B)-20: Industrial LGS customer forecast

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Change
1995	1,103	1,104	1,102	1,103	1,106	1,099	1,130	1,140	1,149	1,153	1,144	1,147	1,123	
1996	1,147	1,146	1,145	1,145	1,148	1,145	1,168	1,170	1,173	1,179	1,180	1,177	1,160	3.3%
1997	1,176	1,172	1,167	1,166	1,163	1,164	1,189	1,197	1,197	1,208	1,204	1,190	1,183	1.9%
1998	1,194	1,188	1,181	1,171	1,176	1,178	1,199	1,207	1,218	1,215	1,211	857	1,166	-1.4%
1999	1,052	1,143	1,090	1,099	1,101	1,110	1,115	1,104	1,103	1,112	1,093	1,093	1,101	-5.6%
2000	1,116	1,104	1,139	1,190	1,182	1,190	1,186	1,183	1,187	1,175	1,175	1,158	1,165	5.8%
2001	1,206	1,145	1,142	1,138	1,135	1,141	1,136	1,136	1,130	1,126	1,101	1,111	1,137	-2.4%
2002	1,156	1,125	1,131	1,128	1,130	1,114	1,120	1,114	1,124	1,108	1,105	1,105	1,122	-1.4%
2003	1,121	1,140	1,109	1,106	1,105	1,102	1,114	1,119	1,105	1,109	1,114	1,105	1,112	-0.8%
2004	1,105	1,127	1,111	1,102	1,111	1,110	1,113	1,098	1,099	1,111	1,096	1,103	1,107	-0.5%
2005	1,093	1,096	1,088	1,093	1,081	1,089	1,088	1,093	1,094	1,090	1,089	1,095	1,091	-1.5%
2006	1,099	1,090	1,074	1,076	1,073	1,094	1,094	1,094	1,094	1,093	1,093	1,093	1,089	-0.2%
2007	1,093	1,093	1,093	1,093	1,093	1,093	1,093	1,092	1,092	1,092	1,092	1,092	1,093	0.3%
2008	1,092	1,091	1,091	1,091	1,091	1,091	1,091	1,091	1,091	1,091	1,091	1,091	1,091	-0.1%
2009	1,091	1,091	1,091	1,091	1,090	1,090	1,090	1,090	1,090	1,090	1,090	1,090	1,090	-0.1%
2010	1,090	1,090	1,090	1,090	1,090	1,090	1,090	1,090	1,089	1,089	1,089	1,089	1,090	-0.1%
2011	1,089	1,089	1,089	1,089	1,089	1,089	1,089	1,089	1,089	1,089	1,089	1,089	1,089	-0.1%
2012	1,089	1,089	1,089	1,089	1,088	1,088	1,088	1,088	1,088	1,088	1,088	1,088	1,088	-0.1%
2013	1,088	1,088	1,088	1,088	1,087	1,087	1,087	1,087	1,087	1,087	1,087	1,087	1,087	-0.1%
2014	1,087	1,087	1,087	1,087	1,087	1,086	1,086	1,086	1,086	1,086	1,086	1,086	1,086	-0.1%
2015	1,086	1,086	1,086	1,086	1,086	1,085	1,085	1,085	1,085	1,085	1,085	1,085	1,085	-0.1%
2016	1,085	1,085	1,085	1,085	1,085	1,085	1,085	1,085	1,085	1,085	1,084	1,084	1,085	-0.1%
2017	1,084	1,084	1,084	1,084	1,084	1,084	1,084	1,084	1,084	1,084	1,084	1,084	1,084	-0.1%
2018	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	-0.1%
2019	1,083	1,082	1,082	1,082	1,082	1,082	1,082	1,082	1,082	1,082	1,082	1,082	1,082	-0.1%
2020	1,082	1,082	1,081	1,081	1,081	1,081	1,081	1,081	1,081	1,081	1,081	1,081	1,081	-0.1%
2021	1,081	1,081	1,080	1,080	1,080	1,080	1,080	1,080	1,080	1,080	1,080	1,080	1,080	-0.1%
2022	1,080	1,079	1,079	1,079	1,079	1,079	1,079	1,079	1,079	1,079	1,078	1,078	1,079	-0.1%
2023	1,078	1,078	1,078	1,078	1,078	1,078	1,078	1,077	1,077	1,077	1,077	1,077	1,078	-0.1%
2024	1,077	1,077	1,077	1,076	1,076	1,076	1,076	1,076	1,076	1,076	1,075	1,075	1,076	-0.1%
2025	1,075	1,075	1,075	1,075	1,075	1,075	1,074	1,074	1,074	1,074	1,074	1,074	1,075	-0.1%
2026	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,072	1,072	1,072	1,072	1,072	1,073	-0.2%
2027	1,072	1,071	1,071	1,071	1,071	1,071	1,071	1,070	1,070	1,070	1,070	1,070	1,071	-0.2%
2028	1,070	1,070	1,069	1,069	1,069	1,069	1,069	1,068	1,068	1,068	1,068	1,067	1,069	-0.2%
2029	1,067	1,067	1,067	1,066	1,066	1,066	1,066	1,066	1,066	1,066	1,067	1,067	1,066	-0.2%
2030	1,067	1,067	1,067	1,067	1,067	1,068	1,068	1,068	1,068	1,068	1,068	1,068	1,068	0.1%

Table (5) (B)-21: Industrial SPS customer forecast

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Change
1995	208	205	207	209	209	212	213	213	213	215	216	218	212	
1996	218	218	219	220	221	221	222	222	221	223	225	224	221	4.6%
1997	224	227	226	227	226	226	225	225	226	228	227	230	226	2.4%
1998	235	237	234	234	234	232	233	233	231	234	237	213	232	2.6%
1999	213	211	206	213	215	213	212	210	208	198	182	198	207	-11.1%
2000	213	205	201	218	215	213	212	215	212	211	211	209	211	2.3%
2001	228	206	199	206	204	205	203	202	204	202	196	201	205	-3.1%
2002	208	202	205	198	198	202	199	194	208	208	202	203	202	-1.2%
2003	210	201	208	206	213	209	209	206	194	197	218	209	207	2.2%
2004	193	199	197	196	197	192	194	193	196	203	188	193	195	-5.6%
2005	195	190	194	192	196	195	191	192	195	193	193	190	193	-1.1%
2006	196	192	191	191	190	191	187	189	190	191	190	191	191	-1.2%
2007	193	189	189	189	190	189	188	189	190	191	190	191	190	-0.5%
2008	193	189	189	189	190	189	188	189	190	191	190	191	190	0.0%
2009	193	189	189	189	190	189	188	189	190	191	190	191	190	0.0%
2010	193	189	189	189	190	189	188	189	190	191	190	191	190	0.0%
2011	193	189	189	189	190	189	188	189	190	191	190	191	190	0.0%
2012	193	189	189	189	190	189	188	189	190	191	190	191	190	0.0%
2013	193	189	189	189	190	189	188	189	190	191	190	191	190	0.0%
2014	193	189	189	189	190	189	188	189	190	191	190	191	190	0.0%
2015	193	189	189	189	190	189	188	189	190	191	190	191	190	0.0%
2016	193	189	189	189	190	189	188	189	190	191	190	191	190	0.0%
2017	193	189	189	189	190	189	188	189	190	191	190	191	190	0.0%
2018	193	189	189	189	190	189	188	189	190	191	190	191	190	0.0%
2019	193	189	189	189	190	189	188	189	190	191	190	191	190	0.0%
2020	193	189	189	189	190	189	188	189	190	191	190	191	190	0.0%
2021	193	189	189	189	190	189	188	189	190	191	190	191	190	0.0%
2022	193	189	189	189	190	189	188	189	190	191	190	191	190	0.0%
2023	193	189	189	189	190	189	188	189	190	191	190	191	190	0.0%
2024	193	189	189	189	190	189	188	189	190	191	190	191	190	0.0%
2025	193	189	189	189	190	189	188	189	190	191	190	191	190	0.0%
2026	193	189	189	189	190	189	188	189	190	191	190	191	190	0.0%
2027	193	189	189	189	190	189	188	189	190	191	190	191	190	0.0%
2028	193	189	189	189	190	189	188	189	190	191	190	191	190	0.0%
2029	193	189	189	189	190	189	188	189	190	191	190	191	190	0.0%
2030	193	189	189	189	190	189	188	189	190	191	190	191	190	0.0%

Table (5) (B)-22: Industrial LPS customer forecast

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Change
1995	27	27	27	27	26	26	26	26	27	27	26	26	27	
1996	26	27	26	25	25	27	26	27	26	27	26	26	26	-1.3%
1997	26	26	27	26	26	27	26	26	27	26	26	26	26	0.3%
1998	26	27	27	27	28	28	29	28	28	27	25	25	27	3.2%
1999	20	23	23	25	24	21	26	29	30	33	24	30	26	-5.2%
2000	31	31	28	34	32	34	27	27	27	26	26	27	29	13.6%
2001	28	27	23	25	27	27	27	27	27	26	25	27	26	-9.7%
2002	38	39	38	38	37	36	38	38	37	36	37	41	38	43.4%
2003	37	36	36	39	35	35	38	36	37	40	38	37	37	-2.0%
2004	42	36	37	41	35	37	36	36	35	36	38	37	37	0.5%
2005	37	37	37	37	37	37	37	37	37	37	37	37	37	-0.4%
2006	36	36	36	36	36	36	31	36	36	36	36	36	36	-3.8%
2007	36	36	36	36	36	36	36	36	36	36	36	36	36	1.2%
2008	36	36	36	36	36	36	36	36	36	36	36	36	36	0.0%
2009	36	36	36	36	36	36	36	36	36	36	36	36	36	0.0%
2010	36	36	36	36	36	36	36	36	36	36	36	36	36	0.0%
2011	36	36	36	36	36	36	36	36	36	36	36	36	36	0.0%
2012	36	36	36	36	36	36	36	36	36	36	36	36	36	0.0%
2013	36	36	36	36	36	36	36	36	36	36	36	36	36	0.0%
2014	36	36	36	36	36	36	36	36	36	36	36	36	36	0.0%
2015	36	36	36	36	36	36	36	36	36	36	36	36	36	0.0%
2016	36	36	36	36	36	36	36	36	36	36	36	36	36	0.0%
2017	36	36	36	36	36	36	36	36	36	36	36	36	36	0.0%
2018	36	36	36	36	36	36	36	36	36	36	36	36	36	0.0%
2019	36	36	36	36	36	36	36	36	36	36	36	36	36	0.0%
2020	36	36	36	36	36	36	36	36	36	36	36	36	36	0.0%
2021	36	36	36	36	36	36	36	36	36	36	36	36	36	0.0%
2022	36	36	36	36	36	36	36	36	36	36	36	36	36	0.0%
2023	36	36	36	36	36	36	36	36	36	36	36	36	36	0.0%
2024	36	36	36	36	36	36	36	36	36	36	36	36	36	0.0%
2025	36	36	36	36	36	36	36	36	36	36	36	36	36	0.0%
2026	36	36	36	36	36	36	36	36	36	36	36	36	36	0.0%
2027	36	36	36	36	36	36	36	36	36	36	36	36	36	0.0%
2028	36	36	36	36	36	36	36	36	36	36	36	36	36	0.0%
2029	36	36	36	36	36	36	36	36	36	36	36	36	36	0.0%
2030	36	36	36	36	36	36	36	36	36	36	36	36	36	0.0%

Table (5) (B)-23: DtD customer forecast

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Change
1995	12,543	12,587	12,624	12,628	12,639	12,658	12,645	12,625	12,641	12,618	12,624	12,624	12,621	
1996	12,619	12,579	12,584	12,582	12,555	12,546	12,547	12,535	12,563	12,460	12,469	12,467	12,542	-0.6%
1997	12,437	12,427	12,424	12,433	12,414	12,417	12,422	12,411	12,400	12,422	12,404	12,418	12,419	-1.0%
1998	12,396	12,363	12,375	12,357	12,352	12,338	12,325	12,307	12,285	0	51,748	51,739	17,882	44.0%
1999	51,738	51,823	51,964	51,926	51,894	51,959	51,969	51,954	51,921	51,939	52,008	52,082	51,931	190.4%
2000	52,201	52,126	52,186	52,194	52,170	52,233	52,315	52,200	52,260	52,296	52,443	52,385	52,251	0.6%
2001	52,431	52,487	52,479	52,563	52,533	52,551	52,537	52,538	52,552	52,476	52,559	52,644	52,529	0.5%
2002	12,159	12,160	12,162	12,146	12,337	13,387	13,270	13,149	13,231	13,234	13,129	12,772	12,761	-75.7%
2003	11,625	11,806	11,958	10,534	10,683	11,265	52,584	52,460	52,530	52,531	52,520	52,695	31,933	150.2%
2004	52,768	52,902	52,971	52,827	52,907	53,009	52,896	53,068	53,155	53,124	53,340	53,329	53,025	66.1%
2005	53,482	53,614	53,498	53,569	53,596	53,523	53,701	53,578	53,690	53,646	53,766	53,822	53,624	1.1%
2006	53,858	53,883	53,937	53,888	53,926	53,906	53,854	53,883	53,914	53,946	53,978	54,009	53,915	0.5%
2007	54,040	54,070	54,101	54,132	54,163	54,193	54,223	54,252	54,281	54,309	54,337	54,365	54,206	0.5%
2008	54,393	54,421	54,449	54,477	54,505	54,533	54,559	54,585	54,609	54,634	54,658	54,682	54,542	0.6%
2009	54,707	54,731	54,755	54,779	54,804	54,827	54,851	54,874	54,896	54,917	54,939	54,961	54,837	0.5%
2010	54,983	55,004	55,026	55,048	55,070	55,091	55,112	55,133	55,154	55,174	55,194	55,214	55,100	0.5%
2011	55,235	55,255	55,275	55,295	55,315	55,335	55,354	55,373	55,392	55,410	55,428	55,446	55,343	0.4%
2012	55,464	55,482	55,500	55,518	55,537	55,555	55,573	55,592	55,611	55,630	55,649	55,668	55,565	0.4%
2013	55,687	55,705	55,724	55,742	55,761	55,780	55,800	55,820	55,840	55,860	55,880	55,901	55,792	0.4%
2014	55,921	55,941	55,960	55,980	56,001	56,021	56,042	56,063	56,085	56,106	56,128	56,149	56,033	0.4%
2015	56,171	56,192	56,213	56,235	56,256	56,276	56,296	56,315	56,333	56,351	56,368	56,386	56,283	0.4%
2016	56,404	56,422	56,440	56,458	56,476	56,494	56,512	56,531	56,549	56,568	56,587	56,605	56,504	0.4%
2017	56,624	56,642	56,660	56,679	56,698	56,717	56,736	56,756	56,777	56,797	56,818	56,838	56,729	0.4%
2018	56,859	56,878	56,898	56,919	56,939	56,959	56,980	57,000	57,020	57,040	57,061	57,081	56,970	0.4%
2019	57,101	57,121	57,141	57,161	57,181	57,201	57,222	57,244	57,265	57,287	57,308	57,330	57,214	0.4%
2020	57,351	57,373	57,394	57,416	57,437	57,458	57,479	57,499	57,519	57,538	57,558	57,577	57,467	0.4%
2021	57,597	57,616	57,635	57,655	57,675	57,694	57,713	57,733	57,752	57,771	57,791	57,810	57,704	0.4%
2022	57,829	57,848	57,867	57,886	57,905	57,925	57,944	57,964	57,984	58,004	58,024	58,043	57,935	0.4%
2023	58,063	58,083	58,102	58,122	58,142	58,161	58,181	58,200	58,218	58,236	58,255	58,273	58,170	0.4%
2024	58,292	58,310	58,328	58,347	58,365	58,384	58,403	58,424	58,444	58,464	58,485	58,505	58,396	0.4%
2025	58,526	58,546	58,566	58,587	58,607	58,627	58,646	58,665	58,683	58,700	58,718	58,736	58,634	0.4%
2026	58,754	58,772	58,789	58,807	58,825	58,843	58,860	58,878	58,896	58,913	58,930	58,947	58,851	0.4%
2027	58,965	58,982	58,999	59,016	59,034	59,051	59,068	59,086	59,103	59,120	59,138	59,155	59,060	0.4%
2028	59,173	59,190	59,207	59,224	59,241	59,259	59,277	59,295	59,313	59,331	59,349	59,367	59,269	0.4%
2029	59,386	59,403	59,421	59,439	59,457	59,475	59,494	59,512	59,530	59,548	59,567	59,585	59,485	0.4%
2030	59,603	59,621	59,639	59,657	59,675	59,693	59,710	59,726	59,742	59,758	59,773	59,788	59,699	0.4%

Table (5) (B)-24: SLPA customer forecast

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Change
1995	1,518	1,516	1,518	1,519	1,519	1,518	1,516	1,516	1,516	1,517	1,519	1,517	1,517	
1996	1,517	1,517	1,516	1,513	1,511	1,509	1,508	1,509	1,512	1,507	1,507	1,504	1,511	-0.4%
1997	1,504	1,505	1,506	1,508	1,506	1,506	1,503	1,504	1,502	1,491	1,491	1,489	1,501	-0.6%
1998	1,487	1,476	1,488	1,487	1,488	1,490	1,490	1,492	1,490	1,497	1,504	1,181	1,464	-2.5%
1999	1,323	1,348	1,340	1,339	1,350	1,352	1,350	1,350	1,345	1,356	1,360	1,385	1,350	-7.8%
2000	1,387	1,388	1,387	1,385	1,381	1,385	1,384	1,383	1,387	1,386	1,387	1,386	1,386	2.6%
2001	1,401	1,388	1,395	1,381	1,389	1,391	1,386	1,381	1,369	1,380	1,380	1,413	1,388	0.2%
2002	1,589	1,572	1,567	1,571	1,417	1,419	1,438	1,431	1,435	1,438	1,449	1,482	1,484	6.9%
2003	1,471	1,459	1,455	1,462	1,463	1,466	1,475	1,473	1,471	1,483	1,474	1,492	1,470	-0.9%
2004	1,497	1,499	1,502	1,503	1,501	1,496	1,499	1,495	1,505	1,510	1,512	1,512	1,503	2.2%
2005	1,523	1,523	1,519	1,521	1,525	1,525	1,523	1,527	1,523	1,523	1,533	1,529	1,525	1.5%
2006	1,536	1,534	1,540	1,553	1,565	1,574	1,573	1,573	1,572	1,571	1,571	1,570	1,561	2.4%
2007	1,570	1,569	1,569	1,568	1,568	1,568	1,568	1,567	1,567	1,567	1,567	1,567	1,568	0.4%
2008	1,567	1,567	1,567	1,567	1,567	1,567	1,567	1,567	1,567	1,567	1,567	1,567	1,567	-0.1%
2009	1,567	1,567	1,567	1,567	1,567	1,567	1,568	1,568	1,568	1,568	1,568	1,568	1,568	0.0%
2010	1,569	1,569	1,569	1,569	1,569	1,570	1,570	1,570	1,570	1,570	1,571	1,571	1,570	0.1%
2011	1,571	1,571	1,571	1,572	1,572	1,572	1,572	1,573	1,573	1,573	1,574	1,574	1,572	0.2%
2012	1,574	1,575	1,575	1,575	1,576	1,576	1,576	1,577	1,577	1,577	1,578	1,578	1,576	0.2%
2013	1,579	1,579	1,579	1,580	1,580	1,580	1,581	1,581	1,581	1,582	1,582	1,583	1,581	0.3%
2014	1,583	1,583	1,584	1,584	1,585	1,585	1,585	1,586	1,586	1,587	1,587	1,587	1,585	0.3%
2015	1,588	1,588	1,589	1,589	1,589	1,590	1,590	1,591	1,591	1,591	1,592	1,592	1,590	0.3%
2016	1,592	1,593	1,593	1,593	1,593	1,594	1,594	1,594	1,595	1,595	1,596	1,596	1,594	0.3%
2017	1,596	1,597	1,597	1,597	1,598	1,598	1,598	1,599	1,599	1,599	1,600	1,600	1,598	0.3%
2018	1,601	1,601	1,601	1,602	1,602	1,603	1,603	1,603	1,604	1,604	1,605	1,605	1,603	0.3%
2019	1,605	1,606	1,606	1,606	1,607	1,607	1,608	1,608	1,609	1,609	1,609	1,610	1,608	0.3%
2020	1,610	1,611	1,611	1,611	1,612	1,612	1,613	1,613	1,614	1,614	1,614	1,615	1,613	0.3%
2021	1,615	1,615	1,616	1,616	1,617	1,617	1,617	1,618	1,618	1,618	1,619	1,619	1,617	0.3%
2022	1,620	1,620	1,620	1,621	1,621	1,621	1,622	1,622	1,623	1,623	1,623	1,624	1,622	0.3%
2023	1,624	1,625	1,625	1,625	1,626	1,626	1,626	1,627	1,627	1,628	1,628	1,628	1,626	0.3%
2024	1,629	1,629	1,629	1,630	1,630	1,630	1,631	1,631	1,632	1,632	1,632	1,633	1,631	0.3%
2025	1,633	1,634	1,634	1,634	1,635	1,635	1,636	1,636	1,636	1,637	1,637	1,637	1,635	0.3%
2026	1,638	1,638	1,638	1,639	1,639	1,639	1,640	1,640	1,640	1,641	1,641	1,641	1,640	0.3%
2027	1,642	1,642	1,642	1,643	1,643	1,643	1,644	1,644	1,644	1,645	1,645	1,645	1,644	0.2%
2028	1,646	1,646	1,646	1,647	1,647	1,647	1,648	1,648	1,648	1,649	1,649	1,649	1,648	0.2%
2029	1,650	1,650	1,650	1,651	1,651	1,652	1,652	1,652	1,653	1,653	1,653	1,654	1,652	0.3%
2030	1,654	1,654	1,655	1,655	1,655	1,656	1,656	1,656	1,657	1,657	1,657	1,658	1,656	0.2%

CRA INTERNATIONAL

Memorandum

To: Mike Whitmore

From: Scott Bloomberg and Michael Neimeyer

Date: July 3, 2008

Subject: **QUANTIFYING THE IMPACTS OF AEEI ON BASE CASE LOAD**

Staff Concern D: Lack of quantification of energy efficiency improvements effect on forecasts.

As stated in the response to section 4 CSR 240-22.030 (7), the Autonomous Energy Efficiency Improvement, or AEEI, represents a general trend in technology improvement within the energy-using sectors of the economy. CRA's MRN-NEEM model incorporates historically observed rates of this AEEI index, which can be approximated by calculating the total U.S. load (kWh) per dollar of GDP. Figure 1 plots historical electricity intensities across all U.S. sectors[1] alongside MRN-NEEM forecasts for the base load and transformed demand cases. Of note is how the base case demonstrates a downward trend in electricity intensity consistent with the AEEI index implied by recent historical data.

[1] Historical electricity intensities shown in Figure 1 are calculated based upon data from Table 1.5 and Table 8.2a of the 2006 EIA Annual Energy Review.

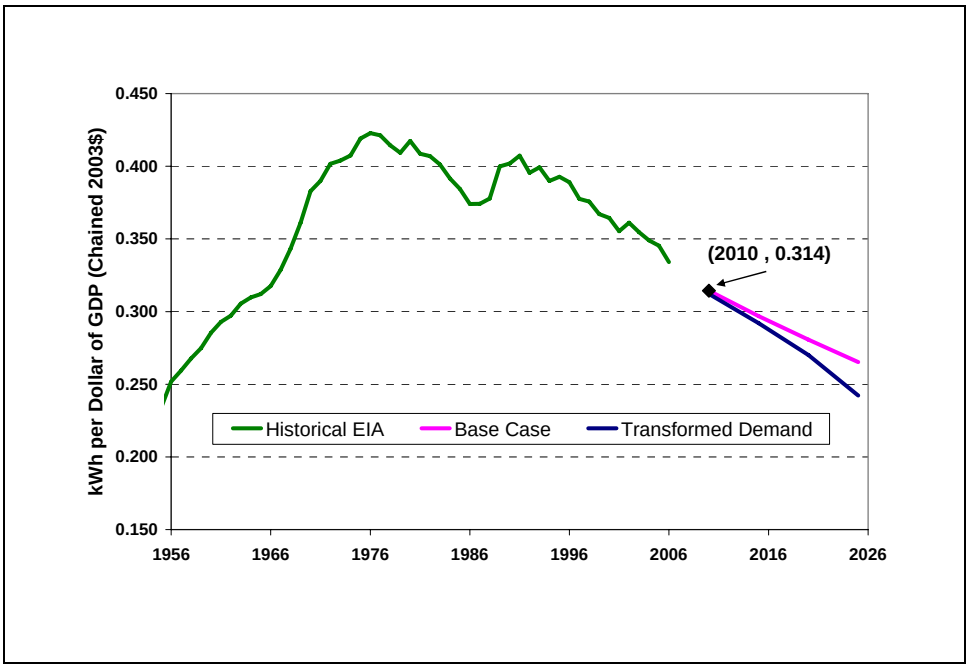

Figure 1: Net Generation (kWh) Across All U.S. Sectors per Dollar of GDP.

If the base case forecast were to exclude any improvement of the AEEI, then the electricity intensity would remain constant over time, and, as a result, load would be higher. Assuming a fixed electricity intensity of roughly 0.31 kWh per dollar of GDP (as given in Figure 1 above in the year 2010), one can use the base case MRN-NEEM GDP forecasts to back-calculate base load levels without AEEI. Figure 2 below demonstrates that inclusion of AEEI results in a 17% reduction in total U.S. load by 2026, equal to an absolute difference of more than 1,100 TWh.

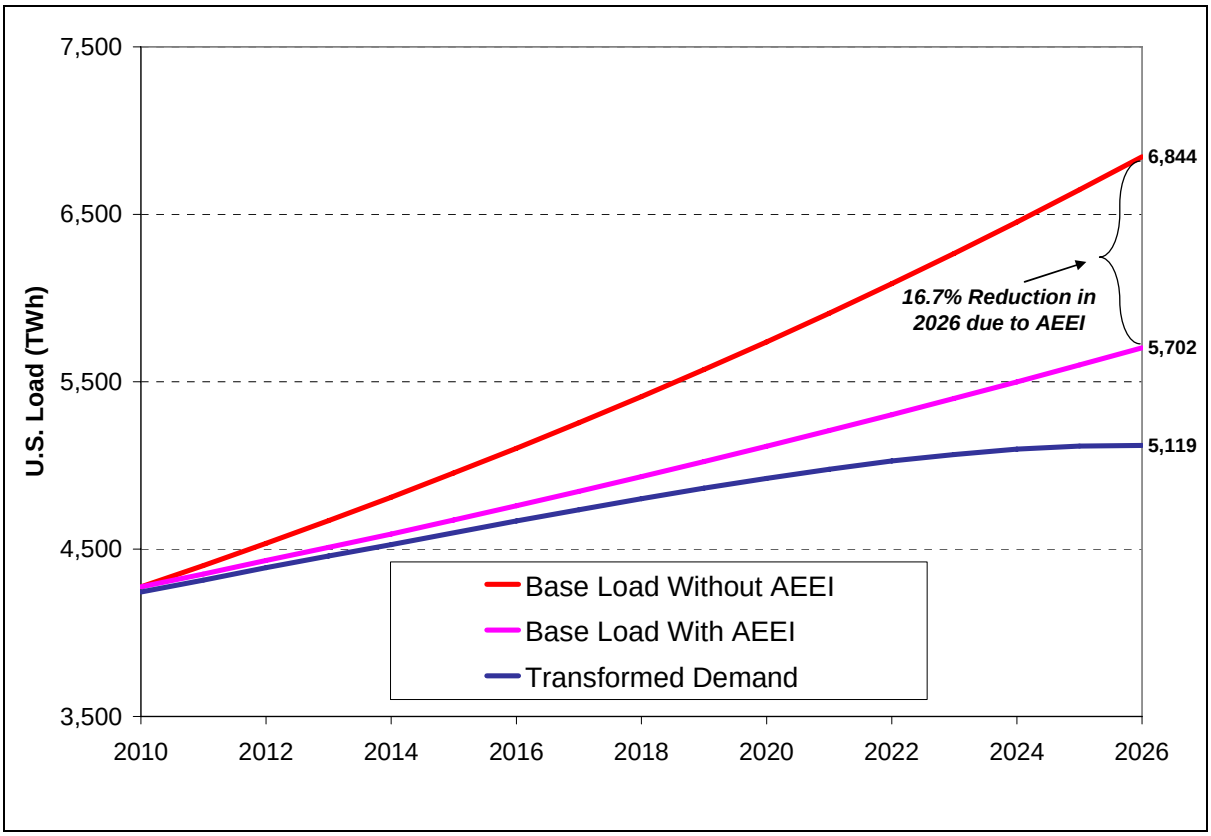

Figure 2: Total U.S. Load With and Without AEEI.

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SUPPLEMENTAL FILING EXHIBIT 3

AmerenUE's Biomass Research Plan

Due to the vast agricultural region that is served by AmerenUE and the potential for biofuels that exists in this region, AmerenUE is committed to exploring various opportunities to generate electricity with these renewable resources.

In order to accomplish this objective, AmerenUE will focus on the development of biofuels and electrical generation from those fuels in conjunction with various stakeholders that possess critical information towards its development and utilization. A partnership with the Department of Natural Resources, Department of Agriculture, academia and various trade groups from industry will provide the basis in drawing on the expertise and experience of these groups for developing the natural resources in this region.

Program Goals

The overall strategic initiative will be to develop sustainable and economically viable biomass technology integration to produce biopower that will provide environmental benefits, greenhouse gas reductions and provide for increased economic opportunities to the region.

AmerenUE will target research, development and demonstration projects in an effort to generate up to 120 MWs from regional biomass and landfill gas resources by 2020 as AmerenUE strives to become an industry leader in regional biomass generation.

In the original IRP filing, AmerenUE indicated that a consultant would be hired to prepare a report related to renewable technologies that would be better applicable to the AmerenUE service territory. Part of that technology study is to include evaluation of biomass. The following is intended to provide additional details related to the specific aspects of the consultant's study in connection with biomass evaluations and working with the stakeholder process

Action Plan

The following outlines the course of action that AmerenUE intends to pursue. Many of these activities will be preformed simultaneously.

1. Establish and verify existing biomass technologies currently being utilized in the process of electrical generation. These technologies will include but not be limited to:

   Anaerobic digesters
   Pyrolysis gasification
   Co-firing

2. Fuel research to include:

   Energy crops-miscanthus, switch grass
   Agricultural waste-tree trimmings, crop residue
   Polycultural grasses-pelletization processes
   Forest woody biomass

3. Regional Assessment- Working in conjunction with experts from the Departments of Agriculture and Natural Resources:

   Determine fuel quantities
   Source locations
   Feedstock production capabilities and cycles
   Harvesting and fuels deliverability
   Storage requirements
   Electrical distribution or transmission requirements

4. Investigate impacts on existing electrical generation systems and explore potential modification requirements

5. Initiate discussions with existing generators that have implemented biomass into their systems

6. Economic evaluation and implementation cost estimates to be determined

The initial results of these activities will be detailed in an assessment report to be issued in late 2009. The intention of the assessment report is to yield a course of action in selecting specific technologies that will be chosen along with acceptable fuel sources. A corresponding timetable for implementation of the selected generation technologies will then be developed. Capital requirements will be analyzed in comparison with other renewable technologies and an integration schedule will be determined.

Program Process

The Projected Timeline for the study as proposed in the original IRP has been revised in an effort to increase the number of prospective consultants who will be capable of providing the most current information on site specific projects. The revised timeline is as follows:

Develop specific criteria for consulting services	June, 2008
Issuance of RFP for consulting services	August, 2008
Contract with chosen consultant	September, 2008
Begin data accumulation and research	October, 2008
First draft report due	March, 2009
Review and comment period	Apr-May, 2009
Revise and finalize report	June, 2009

Once selected, AmerenUE will conduct an initial meeting to introduce the consultant to the appropriate group of stakeholders and to discuss and review the overall Biomass Action Plan. In order to facilitate the work to be performed and reviewed, a core group of stakeholders will be selected who will be responsible for more detailed analyses that will, in turn, be reported to the overall group throughout the process.

The primary objective of the consultant is to provide information to AmerenUE and the stakeholder group on specific biomass projects that are currently in development or are planned for development and located in and/or adjacent to the AmerenUE service territory. The consultant will further provide information related to technologies that have or may be employed in the field of biomass generation. The ultimate goal is to identify those projects and technologies that can be practically and economically utilized by AmerenUE in order to achieve successful integration of biomass resources into the AmerenUE generation portfolio.

AmerenUE will periodically schedule meetings throughout this process with the consultant and the stakeholders to review the findings and to discuss any changes that may be required in order to achieve the desired objectives of the plan. Participation from specific stakeholder representatives of the Missouri Department of Natural Resources and the Missouri Department of Agriculture will be necessary in order to accurately assess the potential fuel sources that will be necessary in developing sustainable biomass generation for AmerenUE. After the first draft report has been prepared and during the review and comment period, AmerenUE will schedule any necessary meetings with the consultant and stakeholders in order to address any areas that may require further analysis or review. Further meetings between the parties may be required prior to the issuance of the final report.