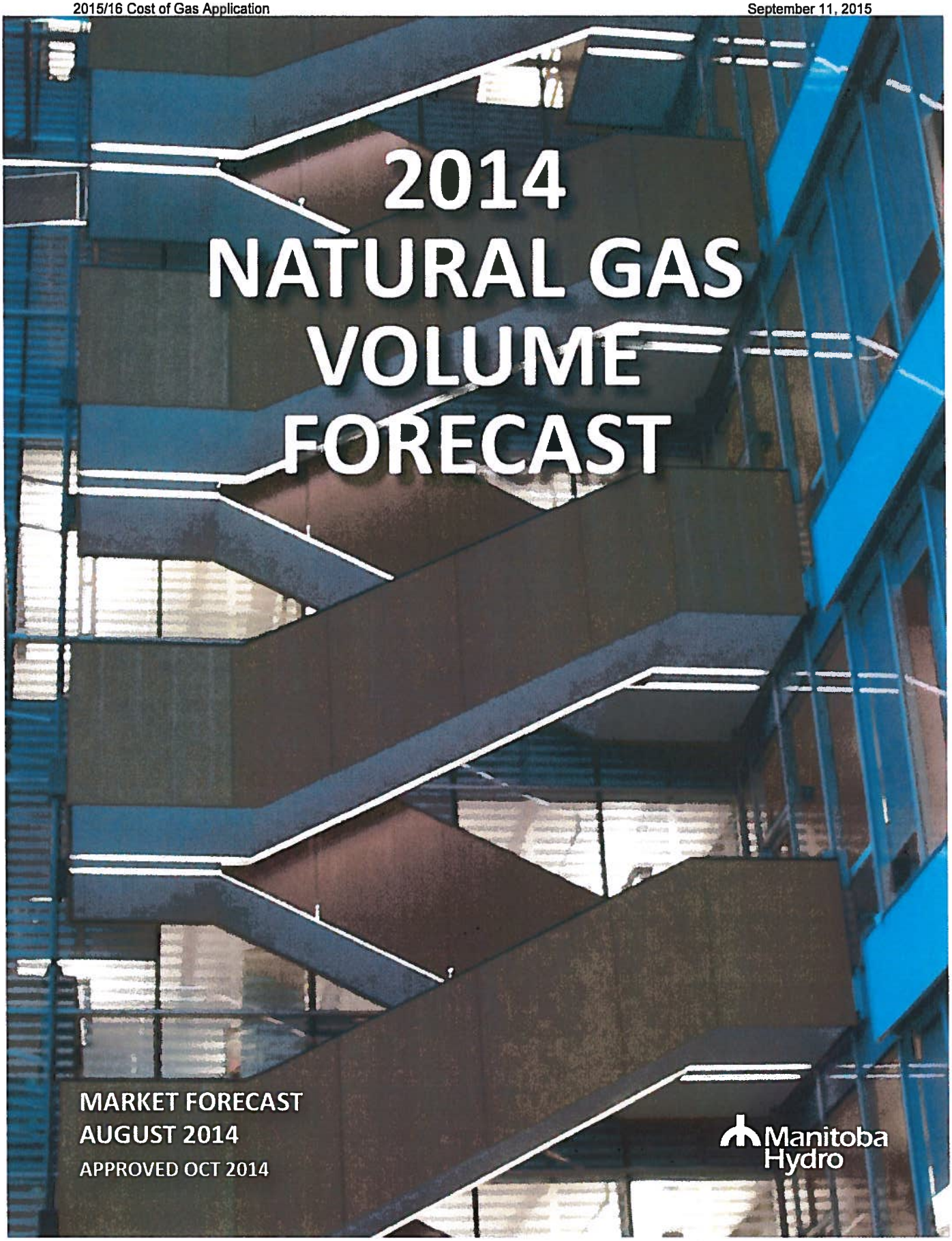
2014
NATURAL GAS
VOLUME
FORECAST
MARKET FORECAST
AUGUST 2014
APPROVED OCT 2014
Manitoba
Hydro

EXECUTIVE SUMMARY

Overview

In 2013/14 Manitoba Hydro had 270,953 natural gas customers who used [redacted] 10^3m^3. After a heating value adjustment of [redacted] 10^3m^3 and a weather adjustment of [redacted] 10^3m^3, the Heating Value Weather (HVW) Adjusted volume was [redacted] 10^3m^3.

During 2013/14 there were an average of 254,517 System Supply customers who used [redacted] 10^3m^3. Manitoba Hydro has two different rate options for their supply: a Quarterly service, and a Fixed Rate service.

During 2013/14 there were an average of 16,419 WTS customers who used [redacted] 10^3m^3 and there were 17 Transportation Service customers who used [redacted] 10^3m^3.

2014/15 - First Year of the Forecast

The 2014/15 forecast is for an average number of 273,556 customers with a total volume of [redacted] 10^3m^3. This is an increase of 2,604 customers ([redacted]%) from 2013/14 and a volume decrease of [redacted] 10^3m^3 ([redacted]%) from the Heating Value and Weather Adjusted actual from 2013/14.

For the 2014/15 fiscal year, Quarterly Rate customers are forecast to increase 3,717 customers to 257,863, Fixed Rate customers to decrease 104 customers to 266, WTS customers to decrease 1,008 customers to 15,411, and T-Service to decrease 1 customer to 16.

Also for 2014/15, Quarterly Rate volume is forecast to decrease [redacted] 10^3m^3 ([redacted]%) to [redacted] 10^3m^3. Fixed Rate volume is forecast to decrease [redacted] 10^3m^3 ([redacted]%) to [redacted] 10^3m^3. WTS volume is forecast to decrease [redacted] 10^3m^3 ([redacted]%) to [redacted] 10^3m^3. T-Service is forecast to decrease [redacted] 10^3m^3 ([redacted]%) to [redacted] 10^3m^3. These are all compared to the 2013/14 Heating Value and Weather Adjusted actuals.

Comparison of the 2013 Forecast to the 2014 Forecast

The 2014 forecast of 273,556 customers for 2014/15 represents an increase of 343 customers from the 2013 forecast of 273,213 customers. This reflects a higher residential customer

forecast in the first year and for the years following 2014/15. By 2023/24, the forecast is for 302,325 customers, an increase of 2,660 customers compared to the 2013 forecast of 299,665.

Last year, more Residential WTS customers reverted back to Manitoba Hydro's Quarterly service. The forecast for SGS Residential Quarterly customers in 2014/15 is up 1,121 and the forecast for SGS Residential WTS customers is down 897.

Volume Variability

Variability due to economic/year-to-year variation is estimated to be [redacted]% in the first year of the forecast, and [redacted]% in the second year of the forecast. This represents the best level of accuracy possible within the gas volume forecast.

A record warm winter would result in annual volume reductions of [redacted]% and a record cold winter would result in annual volume increases of [redacted]%. There were [redacted] Degree Days Heating ([redacted]) compared to the 25 year normal of [redacted] DDH. This resulted in an increase of [redacted] 10^3m^3 or [redacted]% from what would have been used in a normal year.

Table 1 - Volume Forecast by Supply Source

MANITOBA HYDRO GAS CUSTOMERS AND VOLUME (10^3m^3) BY SUPPLY SOURCE

2004/05 - 2023/24

	System Supply				WTS		T-Service		Total	
	Quarterly Rate		Fixed Rate							
Fiscal Year	Ave Custs	10^3m^3	Ave Custs	10^3m^3	Ave Custs	10^3m^3	Ave Custs	10^3m^3	Ave Custs	10^3m^3
2004/05	212,014	[redacted]	0	[redacted]	41,450	[redacted]	14	[redacted]	253,478	[redacted]
2005/06	205,604	[redacted]	0	[redacted]	49,797	[redacted]	15	[redacted]	255,416	[redacted]
2006/07	207,370	[redacted]	0	[redacted]	50,510	[redacted]	15	[redacted]	257,895	[redacted]
2007/08	214,615	[redacted]	0	[redacted]	44,973	[redacted]	15	[redacted]	259,602	[redacted]
2008/09	218,132	[redacted]	0	[redacted]	43,788	[redacted]	15	[redacted]	261,935	[redacted]
2009/10	224,106	[redacted]	154	[redacted]	39,115	[redacted]	16	[redacted]	263,391	[redacted]
2010/11	233,246	[redacted]	327	[redacted]	31,390	[redacted]	16	[redacted]	264,978	[redacted]
2011/12	244,093	[redacted]	453	[redacted]	22,137	[redacted]	17	[redacted]	266,699	[redacted]
2012/13	250,512	[redacted]	424	[redacted]	17,671	[redacted]	17	[redacted]	268,625	[redacted]
2013/14	254,146	[redacted]	371	[redacted]	16,419	[redacted]	17	[redacted]	270,953	[redacted]
HeatVal Adj.		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]
Weather Adj.		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]
13/14 HVWAdj		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]
2014/15	257,863	[redacted]	266	[redacted]	15,411	[redacted]	16	[redacted]	273,556	[redacted]
2015/16	260,923	[redacted]	295	[redacted]	14,800	[redacted]	16	[redacted]	276,034	[redacted]
2016/17	264,297	[redacted]	286	[redacted]	14,228	[redacted]	16	[redacted]	278,826	[redacted]
2017/18	267,980	[redacted]	277	[redacted]	13,693	[redacted]	16	[redacted]	281,967	[redacted]
2018/19	271,834	[redacted]	241	[redacted]	13,187	[redacted]	16	[redacted]	285,278	[redacted]
2019/20	275,781	[redacted]	175	[redacted]	12,702	[redacted]	16	[redacted]	288,674	[redacted]
2020/21	279,704	[redacted]	181	[redacted]	12,236	[redacted]	16	[redacted]	292,137	[redacted]
2021/22	283,612	[redacted]	187	[redacted]	11,787	[redacted]	16	[redacted]	295,602	[redacted]
2022/23	287,451	[redacted]	191	[redacted]	11,351	[redacted]	16	[redacted]	299,009	[redacted]
2023/24	291,190	[redacted]	192	[redacted]	10,926	[redacted]	16	[redacted]	302,325	[redacted]

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INTRODUCTION

This document is prepared annually as Manitoba Hydro's forecast of its future natural gas volume requirements for its service area. The service area includes all natural gas consumers in Manitoba. 238 customers in the towns of Swan River and Benito started being supplied by Manitoba Hydro as of May 30, 2014 and the forecast of their use is included in this document.

Centra Gas Manitoba Incorporated is a wholly owned subsidiary of Manitoba Hydro that oversees the natural gas distribution operations of Manitoba Hydro. Centra's rates and terms of service are regulated by the Manitoba Public Utilities Board. This document will refer to "Manitoba Hydro" rather than "Centra".

This document only addresses volumetric sales at the customers' gas meters. It does not consider Unaccounted For Gas (UFG), which is made up of losses due to leakage and accounting discrepancies due to billing cycles, meter inaccuracies and adjustments.

Customer sales are measured by volume. The unit of measurement is cubic meters (m^3) and this document forecasts customer sales in thousands of cubic meters (10^3m^3). An average Small General Service Residential natural gas customer uses [redacted] m^3 of natural gas per year.

Natural gas is purchased from suppliers as an amount of energy measured in gigajoules (GJ). Customers are billed in terms of volume measured in cubic meters (m^3). The heating content of the gas can vary, so in order to allow the volumes to be comparable on an energy basis, the historic billed volumes are adjusted to a heating value of 37.8 $GJ/10^3m^3$

[redacted]

In 2013/14 Manitoba Hydro had 270,953 natural gas customers who used [redacted] 10^3m^3. After a heating value adjustment of [redacted] 10^3m^3 and a weather adjustment of [redacted] 10^3m^3, the Heating Value Weather (HVW) Adjusted volume was [redacted] 10^3m^3.

The fiscal year in this document encompasses the April through March period that corresponds to Manitoba Hydro's fiscal year. This differs from the natural gas year, used for gas purchasing, which runs from November to October. A "month" in this document refers to the actual calendar month. Customer billing periods have been adjusted in both the history and forecast to correspond to the calendar months.

Rate Classes

Most customers are classified as General Service. During 2013/14 there were an average of 270,814 General Service customers who used [redacted] 10^3m^3. General Service customers are divided into Small (SGS) and Large (LGS). Small General Service customers are further divided into Residential (SRES) and Commercial (SCOM).

The remaining customers include 138 Top Consumers, two Power Stations and one Special Contract customer. Top Consumers are divided into High Volume Firm (HVF), Mainline Firm (MLF) and Interruptible (INT). In total, the remaining customers used [redacted] 10^3m^3 in 2013/14.

Supply Services

System Supply is the service where Manitoba Hydro's purchases the primary gas for the customer. During 2013/14 there were an average of 254,517 System Supply customers who used [redacted] 10^3m^3. Manitoba Hydro has two different rate options for their supply: a Quarterly service, and a Fixed Rate service.

Western Transportation Service (WTS) is the service where a broker purchases the primary gas for a customer. Manitoba Hydro bills customers on behalf of the broker and remits the primary gas charges to the broker. During 2013/14 there were an average of 16,419 WTS customers who used [redacted] 10^3m^3.

Transportation Service is the service where customers purchase their own primary gas and Manitoba Hydro does not bill the customer for the primary gas. During 2013/14 there were 17 Transportation Service customers who used [redacted] 10^3m^3.

Table 2 - 2013/14 Average Customers

2013/14 AVERAGE CUSTOMERS BY CLASS Actuals					
	Quarterly Rate	Fixed Rate	WTS	T-Service	Total
SGS Residential	230,977	323	14,565	0	245,865
SGS Commercial	16,097	9	830	0	16,936
LGS	6,979	39	993	0	8,011
High Volume Firm	64	0	25	5	94
Mainline Firm	1	0	1	6	8
Interruptible Sales	29	0	5	3	36
Power Stations	0	0	0	2	2
Special Contract	0	0	0	1	1
Total	254,146	371	16,419	17	270,953

Table 3 - 2013/14 Volume

[redacted]

Table 4 - 2013/14 Average Use

[redacted]

Heating Value Adjustment

In 2013/14 the average Heating Value of the gas consumed was [redacted] $GJ/10^3m^3$. The gas contained 0.4% less energy than a normal of [redacted] $GJ/10^3m^3$ would provide. For forecasting and comparison purposes, the actual volume has been adjusted down by [redacted] 10^3m^3 to represent what would have been used with the normal Heating Value.

Table 5 - Heating Value Adjustments

[redacted]

Table 6 - Weather Adjustments

Table 7 - 2013/14 HVW Adj Volume

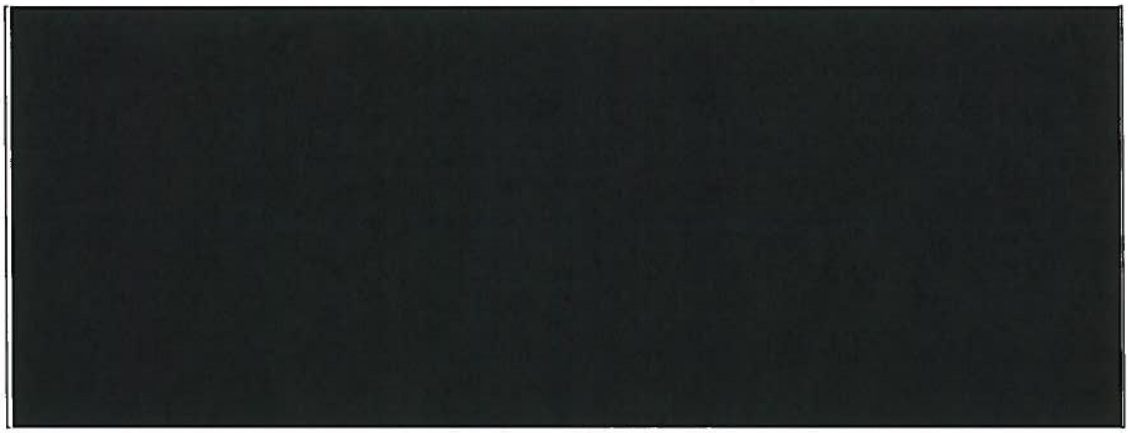


Table 8 - 2013/14 HVW Adj Average Use

FORECAST OVERVIEW

2014/15 - First Year of the Forecast

The 2014/15 forecast is for an average of 273,556 customers with a total volume of [redacted] 10^3m^3. This is a customer increase of 2,604 customers (1.0%) from 2013/14 and a volume decrease of [redacted] 10^3m^3 ([redacted]%) from the Heating Value and Weather Adjusted actual from 2013/14.

For the 2014/15 fiscal year, Quarterly Rate customers are forecast to increase 3,717 customers to 257,863, Fixed Rate customers to decrease 104 customers to 266, WTS customers to decrease 1,008 customers to 15,411, and T-Service to decrease 1 customer to 16.

Also for 2014/15, Quarterly Rate volume is forecast to decrease [redacted] 10^3m^3 ([redacted]%) to [redacted] 10^3m^3. Fixed Rate volume is forecast to decrease [redacted] 10^3m^3 ([redacted]%) to [redacted] 10^3m^3. WTS volume is forecast to decrease [redacted] 10^3m^3 ([redacted]%) to [redacted] 10^3m^3. T-Service is forecast to decrease [redacted] 10^3m^3 ([redacted]%) to [redacted] 10^3m^3. These are all compared to the 2013/14 Heating Value and Weather Adjusted actuals.

The average use of SGS Residential customers is forecast to decrease [redacted] m^3/year ([redacted]%) to [redacted] m^3/year. The average use of SGS Residential Fixed Rate customers are forecast to be the same as SGS Residential Quarterly Rate customers at [redacted] m^3/year, but SGS Residential WTS customers are lower usage customers on average and are forecast to use [redacted]% [redacted] at [redacted] m^3/year.

The average use of SGS Commercial customers is forecast to increase [redacted] m^3/year ([redacted]%) to [redacted] m^3/year. The average use of SGS Commercial Quarterly and Fixed Rate customers are both forecast to be [redacted] m^3/year and SGS Commercial WTS customers are forecast to be [redacted]% [redacted] at [redacted] m^3/year.

The average use of LGS customers is forecast to decrease [redacted] m^3/year ([redacted]%) to [redacted] m^3/year. The average use of LGS Quarterly and Fixed Rate customers are both forecast to be [redacted] m^3/year and LGS WTS customers are forecast to be [redacted]% [redacted] at [redacted] m^3/year.

Table 9 - 2014/15 Average Customers by Class

2014/15 AVERAGE CUSTOMERS BY CLASS 2014 Forecast					
	Quarterly Rate	Fixed Rate	WTS	T-Service	Total
SGS Residential	234,261	240	13,679	0	248,180
SGS Commercial	16,452	8	764	0	17,223
LGS	7,055	19	941	0	8,015
High Volume Firm	70	0	25	5	100
Mainline Firm	1	0	1	6	8
Interruptible Sales	24	0	2	2	28
Power Stations	0	0	0	2	2
Special Contract	0	0	0	1	1
Total	257,863	266	15,411	16	273,556

Table 10 - 2014/15 Volume by Class

[redacted]

Table 11 - 2014/15 Average Use Per Customer

[redacted]

2015/16 - Second Year of the Forecast

The 2015/16 forecast is for an average of 276,034 customers with a total volume of [redacted] 10^3m^3. This is a customer increase of 3,060 customers (1.2%) from the 2014/15 forecast and a volume decrease of [redacted] 10^3m^3 ([redacted]) from the 2014/15 forecast.

Quarterly Rate customers are forecast to increase 3,060 customers to 260,923 in 2015/16, Fixed Rate customers to increase 29 customers to 295 in 2015/16, WTS customers to decrease 612 customers to 14,800 in 2015/16, and T-Service to remain at 16 customers in 2015/16. These are all compared to the 2014/15 forecast year.

Quarterly Rate volume is forecast to decrease [redacted] 10^3m^3 ([redacted]%) to [redacted] 10^3m^3 in 2015/16. Fixed Rate volume is forecast to increase [redacted] 10^3m^3 ([redacted]%) to [redacted] 10^3m^3 in 2015/16. WTS volume is forecast to decrease [redacted] 10^3m^3 ([redacted]%) to [redacted] 10^3m^3 in 2015/16. T-Service is forecast to stay the same at [redacted] 10^3m^3 in 2015/16. These are all compared to the 2014/15 forecast year.

The 2015/16 SGS Residential customer average use forecast is down [redacted] m^3/year ([redacted]%) to [redacted] m^3/year. Residential average use is going down due to the conversions from standard and mid-efficiency furnaces to high efficiency, the installation of high efficiency furnaces in new dwellings, improvements in insulation levels for both new and existing dwellings, and the decreasing market penetration of natural gas water heaters.

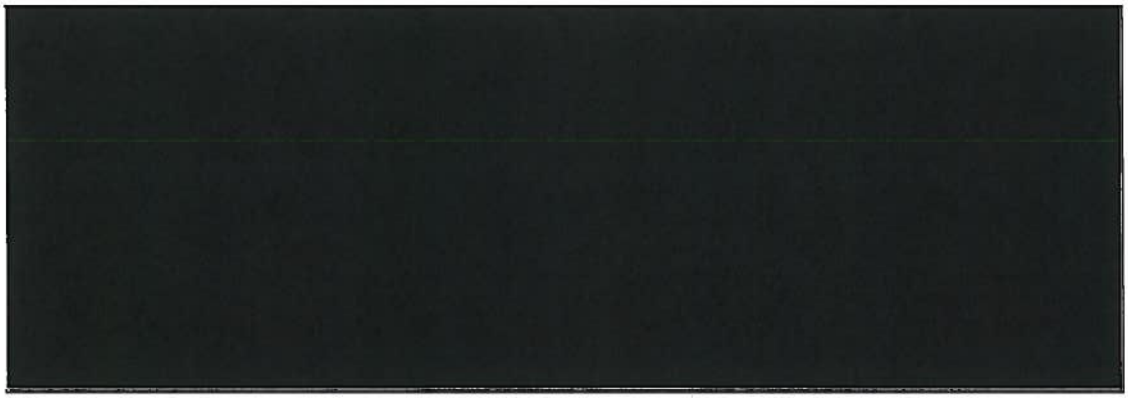
The 2015/16 average use is forecast to be [redacted] m^3/year for SGS Commercial customers and [redacted] m^3/year for LGS customers. The average use of these rate classes is not forecast to change because the customers shift classes when their usage changes resulting in little change to the class averages.

Table **12 - 2015/16 Average Customers by Class**

2015/16 AVERAGE CUSTOMERS BY CLASS 2014 Forecast					
	Quarterly Rate	**Fixed Rate**	**WTS**	**T-Service**	**Total**
SGS Residential	237,162	263	13,118	0	250,543
SGS Commercial	16,708	11	735	0	17,454
LGS	6,959	22	918	0	7,898
High Volume Firm	70	0	25	5	100
Mainline Firm	1	0	1	6	8
Interruptible Sales	24	0	2	2	28
Power Stations	0	0	0	2	2
Special Contract	0	0	0	1	1
Total	260,923	295	14,800	16	276,034

Table 13 - 2015/16 Volume by Class

Table 14 - 2015/16 Average Use Per Customer



Comparison of the 2013 Forecast to the Actuals

There were 95 more customers in 2013/14 than forecast. There were 71 more in the SGS Residential group and 25 more in the combined SGS Commercial and LGS groups. Each year some LGS customers are expected to qualify as SGS Commercial when their consumption reduces. Fewer customers than expected switched from LGS to SGS Commercial during 2013/14 so the number of LGS customers was 123 higher than forecast and the number of SGS Commercial customers was 98 lower than forecast.

The number of WTS customers was 673 lower than forecast and the number of Quarterly Rate customers was 788 higher than forecast. More customers than forecast switched from WTS to Quarterly Rate.

The Heating Value and Weather (HVW) Adjusted actual volume for 2013/14 was [redacted] 10^3m^3 more than forecast. The majority of the difference was spread across the LGS and Special Contract groups.

Excluding Power Stations and Special Contract, whose forecasts are based on their 3-year historic average, the total HVW Adjusted actual volume was [redacted] 10^3m^3 or [redacted]% [redacted] than forecast. The largest differences were in the LGS group that used [redacted] 10^3m^3 more than forecast and the SGS Residential group that used [redacted] 10^3m^3 [redacted] than forecast.

Table 15 - 2013 Forecast Compared to Actuals

	2013 FORECAST COMPARED TO ACTUALS					
	2013/14 Average Customers			2013/14 Volume (10^3m^3)		
	Actual	Forecast	Act - Fcst	HVWAdj Act	Forecast	Act - Fcst
SRES	245,865	245,794	71			
SCOM	16,936	17,034	-98			
LGS	8,011	7,888	123			
HVF	94	91	3			
MLF	8	8	0			
INT	36	40	-4			
PS	2	2	0			
SPEC	1	1	0			
TOTAL	270,953	270,858	95			
SRES-S	230,977	230,252	725			
SCOM-S	16,097	16,171	-74			
LGS-S	6,979	6,844	135			
HVF-S	64	60	4			
MLF-S	1	1	0			
INT-S	29	30	-2			
CURT-S	0	0	0			
TOTAL-S	254,146	253,358	788			
SRES-F	323	340	-17			
SCOM-F	9	9	0			
LGS-F	39	42	-3			
TOTAL-F	371	390	-20			
SRES-W	14,565	15,202	-638			
SCOM-W	830	854	-24			
LGS-W	993	1,002	-9			
HVF-W	25	26	-1			
MLF-W	1	1	0			
INT-W	5	7	-2			
CURT-W	0	0	0			
TOTAL-W	16,419	17,093	-673			
HVF-T	5	5	0			
MLF-T	6	6	0			
INT-T	3	3	0			
PS-T	2	2	0			
SPEC-T	1	1	0			
TOTAL-T	17	17	0			

Change Between the 2013 and 2014 Forecasts

The 2014 forecast of 273,556 customers for 2014/15 represents an increase of 343 customers from the 2013 forecast of 273,213 customers. This reflects a higher residential customer forecast in the first year and for the years following 2014/15. By 2023/24, the forecast is for 302,325 customers, an increase of 2,660 customers compared to the 2013 forecast of 299,665.

Last year, more Residential WTS customers reverted back to Manitoba Hydro's Quarterly service. The forecast for SGS Residential Quarterly customers is up 1,121 and the forecast for SGS Residential WTS customers is down 897.

The volume forecast is up [redacted] 10^3m^3 from the 2013 forecast. This is mostly due to a change in the expected usage of the Top Consumer groups.

Table 16 - Change Between the 2013 and 2014 Forecast

	CHANGE BETWEEN THE 2013 AND 2014 FORECASTS					
	2014/15 Average Customers			2014/15 Volume (10^3m^3)		
	2014 Fcst	2013 Fcst	Change	2014 Fcst	2013 Fcst	Change
SRES	248,180	248,066	114			
SCOM	17,223	17,210	13			
LGS	8,015	7,795	220			
HVF	100	91	9			
MLF	8	8	0			
INT	28	40	-12			
PS	2	2	0			
SPEC	1	1	0			
TOTAL	273,556	273,213	343			
SRES-S	234,261	233,140	1,121			
SCOM-S	16,452	16,378	74			
LGS-S	7,055	6,771	284			
HVF-S	70	60	10			
MLF-S	1	1	0			
INT-S	24	30	-6			
CURT-S	0	0	0			
TOTAL-S	257,863	256,380	1,483			
SRES-F	240	350	-110			
SCOM-F	8	12	-5			
LGS-F	19	44	-25			
TOTAL-F	266	406	-140			
SRES-W	13,679	14,576	-897			
SCOM-W	764	820	-57			
LGS-W	941	981	-40			
HVF-W	25	26	-1			
MLF-W	1	1	0			
INT-W	2	7	-5			
CURT-W	0	0	0			
TOTAL-W	15,411	16,410	-999			
HVF-T	5	5	0			
MLF-T	6	6	0			
INT-T	2	3	-1			
PS-T	2	2	0			
SPEC-T	1	1	0			
TOTAL-T	16	17	-1			

FORECAST DETAILS

SGS Residential

SGS Residential (SRES) includes the residential customer class portion of the Small General Service (SGS) rate class. This is made up of dwellings that are directly billed by Manitoba Hydro for their natural gas use.

Excluded are multi-family gas heated dwellings (multiplexes, townhouses and apartments) where the individual residential units are not directly billed by Manitoba Hydro for their natural gas use. The bill and recorded consumption for their gas use is associated with a common service that serves multiple units. The gas used by these common services is part of the commercial sector: SGS Commercial or Large General Service. Also excluded are about a dozen very large dwellings that have high usage and are classified in the Large General Service (LGS class).

This forecast now includes 138 SGS Residential customers in the towns of Swan River and Benito started being supplied by Manitoba Hydro as of May 30, 2014. These customers were previously served by the Swan Valley Gas Corporation.

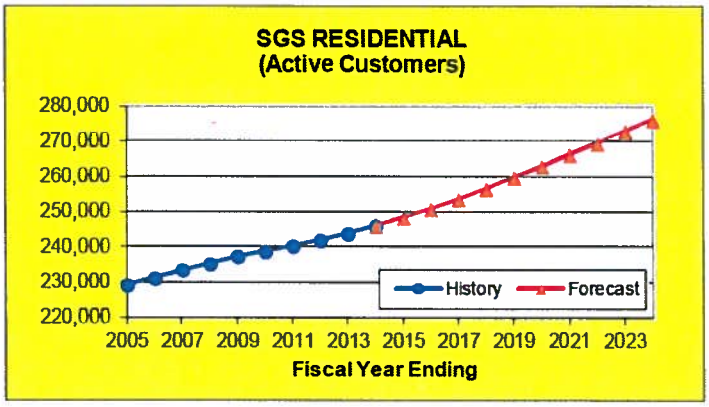
All but approximately [redacted] SGS Residential Customers use natural gas for space heating of their dwelling. The remainder either uses their natural gas for other purposes (e.g. gas fireplace or barbeque) or has a gas connection but is not using it.

The primary gas supply for SGS Residential customers may be provided by Manitoba Hydro's regular Quarterly Service, broker-supplied fixed price contracts up to five years long (known as Western Transportation Service or WTS), or Manitoba Hydro's Fixed Rate Primary Gas Service.

Approximately [redacted]% of Residential gas use is for space heating. About [redacted]% is for water heating, and the remaining [redacted]% is for other natural gas end uses such as ranges, dryers, fireplaces, barbeques, saunas, hot tubs, and pool heaters.

SGS Residential Customers

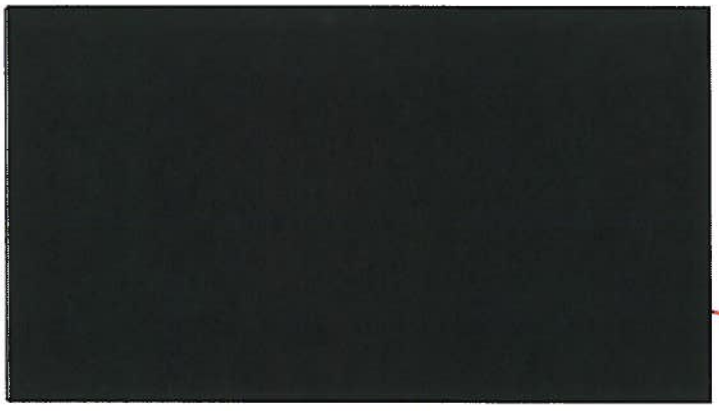
Figure 1 – SGS Residential Customers



During 2013/14 there was an average of 245,865 SGS Residential customers. Over the last nine years, this class has grown an average of 1,863 customers or 0.8% per year. They are forecast to grow at an average of 3,006 customers or 1.2% per year between 2013/14 and 2023/24. The increase is due to the customer growth forecast in Manitoba Hydro's 2014 Economic Outlook and an increase of customers from the Heating Fuel Choice initiative.

SGS Residential Average Use

Figure 2 – SGS Residential Average Use

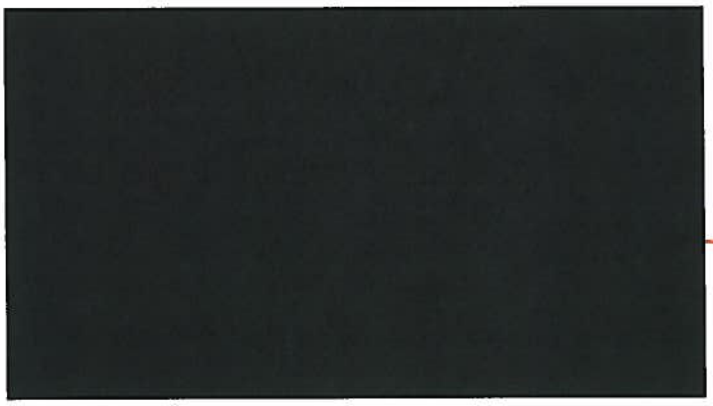


SGS Residential average use is currently [redacted] m^3 per customer. It has declined [redacted] m^3 or [redacted]% per year since 2004/05. It is forecast to decline at [redacted] m^3 or [redacted]% per year up to 2023/24.

Residential average use is decreasing due to the conversions from standard and mid-efficiency furnaces to high efficiency, the installation of high efficiency furnaces in new dwellings, improvements in insulation levels for both new and existing dwellings, and the decreasing market penetration of natural gas water heaters.

SGS Residential Volume

Figure 3 – SGS Residential Volume



The decline in the forecast for Residential average use is larger than the growth in the number of gas customers for the first four years of the forecast. This results in a downward trend in volume for these years. From 2017/18 and forward, the volume starts to grow, reflecting the Heating Fuel Choice Initiative that encourages the use of natural gas as the fuel of choice for space and water heating.

Since 2003/04, SGS Residential volume has decreased an average of [redacted] 10^3m^3 or [redacted]% per year. It is forecast to grow by [redacted] 10^3m^3 or [redacted]% per year until 2023/24.

SGS Commercial and LGS

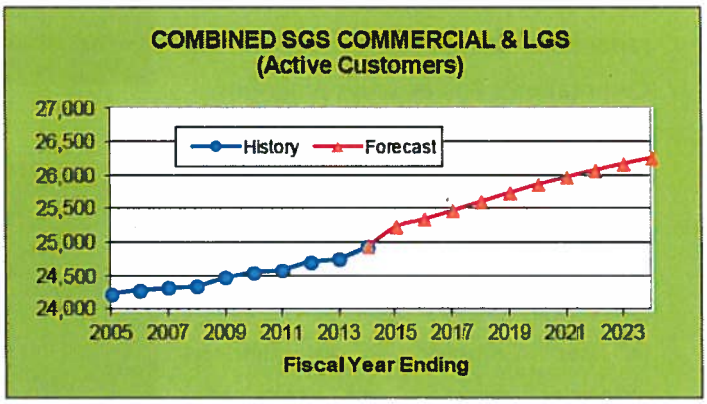
SGS Commercial (SCOM) includes the commercial customer class portion of the Small General Service (SGS) rate class. SGS customers typically have an annual volume of less than 15,000 m^3 per year.

Large General Service (LGS) consists of medium-sized customers with usage between 15,000 m^3 and 680,000 m^3 per year. Most of these are commercial customers, but about 70 large residential dwellings are included in this class as well.

SGS Commercial and LGS Customers

The total number of customers in the combined SGS Commercial and LGS classes is continuing to grow slowly. Over the past nine years, the increase has been about 80 customers or 0.3% per year. Over the next ten years, these classes are forecast to grow by about 132 customers or 0.5% per year.

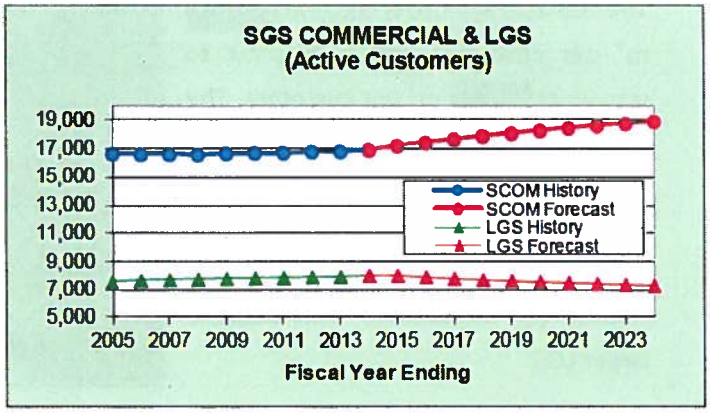
Figure 4 – SGS Commercial & LGS Customers



The forecast assumes that there will be transfers between classes in the future, primarily from LGS to SGS Commercial, as the efficiency of individual LGS customers improve and annual usage declines to where it becomes more favorable from a rates perspective to be classified as an SGS commercial customer.

Figure 5 - SGS Commercial & LGS Customers Separated

The SGS Commercial class has increased by 29 customers or 0.2% per year over the last nine years. It is forecast to increase by 202 customers or 1.1% per year over the next ten years. LGS has increased by 51 customers or 0.7% per year over the last nine years. It is forecast to decrease by 70 customers or -0.9% per year over the next ten years.



SGS Commercial and LGS Average Use

The combined average use of SGS Commercial and LGS has declined an average of [redacted] m^3 or [redacted]% per year due to improvements in heating equipment efficiency and customer efforts to reduce heat losses. This is forecast to continue declining at [redacted] m^3 or [redacted]% per year for the next ten years. This includes reductions in gas usage due to the Corporation's Power Smart programs.

Figure 6 - SGS Commercial & LGS Average Use

[redacted]

The SGS Commercial average use is currently [redacted] m^3 per customer and is forecast to remain at [redacted] m^3. The group is limited to a maximum of 15,000 m^3 per customer, so as customer efficiency improves and usage goes down, the reduced usage is compensated by smaller LGS customers becoming larger SGS Commercial.

Figure 7 - SGS Commercial Average Use

[redacted]

The LGS average use is currently [redacted] m^3 per customer and is forecast to remain at [redacted] m^3 per customer. The group is limited to the range 15,000 m^3 to 680,000 m^3 per customer, so as overall customer usage goes down, the reduced usage is compensated by smaller Top Consumers who become larger LGS.

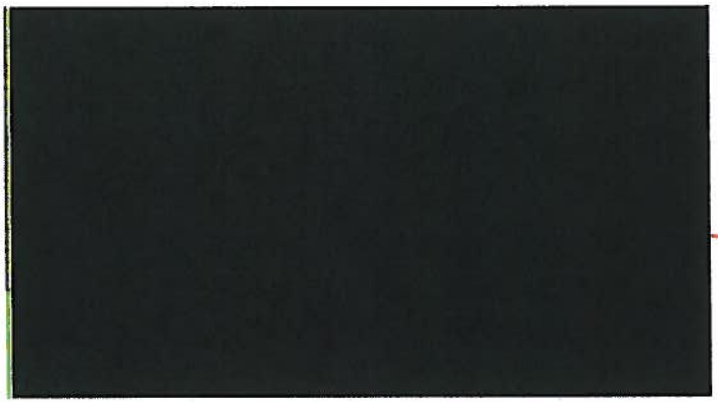
Figure 8 - LGS Average Use

[redacted]

SGS Commercial and LGS Volume

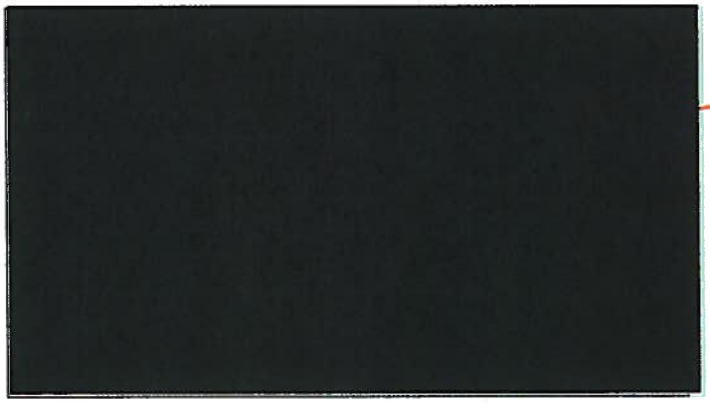
The combined total volume of SGS Commercial and LGS classes has decreased by [redacted] 10^3m^3 or [redacted]% per year over the last nine years. It is expected to continue to decrease by [redacted] 10^3m^3 or [redacted]% per year for the next ten years.

Figure 9 - SGS Commercial & LGS Volume



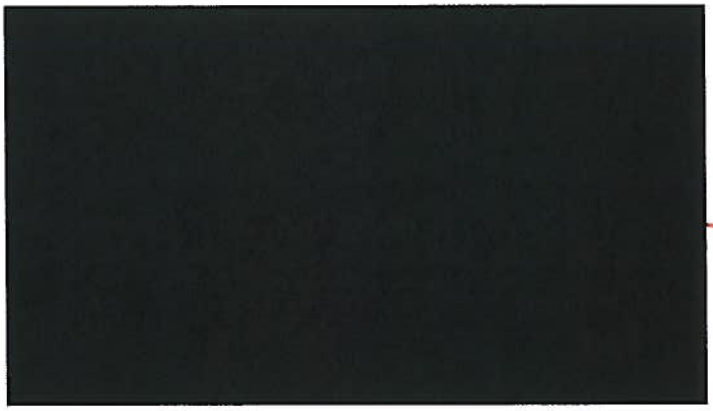
SGS Commercial volume has decreased by [redacted] 10^3m^3 or [redacted]% over the last nine years. The SGS Commercial class is forecast to increase by [redacted] 10^3m^3 or [redacted]% per year for the next ten years.

Figure 10 - SGS Commercial Volume



Large General Service volume has increased by [redacted] 10^3m^3 or [redacted]% per year. It is forecast to continue to decrease by [redacted] 10^3m^3 or [redacted]% per year for the next ten years.

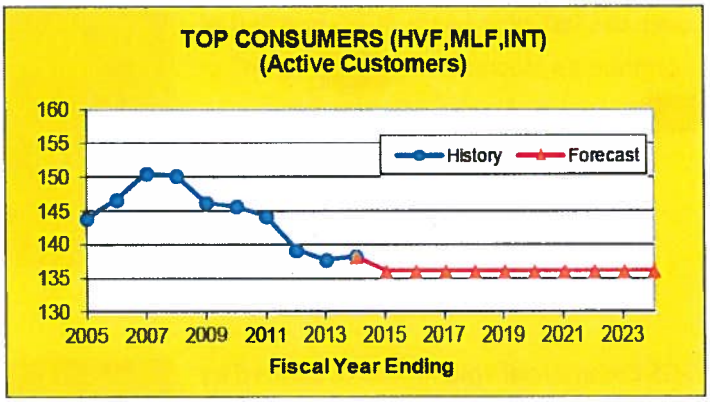
Figure 11 - LGS Volume



Top Consumers

Top Consumers Customers

Figure 12 - Top Consumers Customers

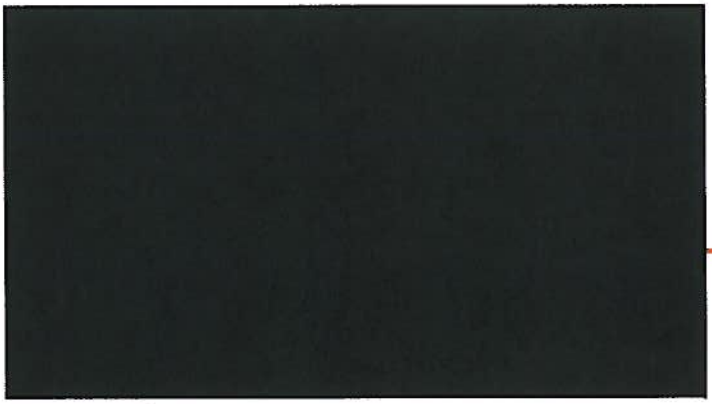


This category includes all active Top Consumers in the High Volume Firm (HVF), Mainline Firm (MLF) and Interruptible (INT) classes, whether their gas is supplied by Manitoba Hydro (System Supply) or a broker (WTS) or purchased directly by the customer (Transport). The number of Top Consumers has decreased from 144 in 2004/05 to 138 in 2013/14.

This forecast assumes that there will be 136 customers in the Top Consumers class for the duration of the forecast.

Top Consumers Volume

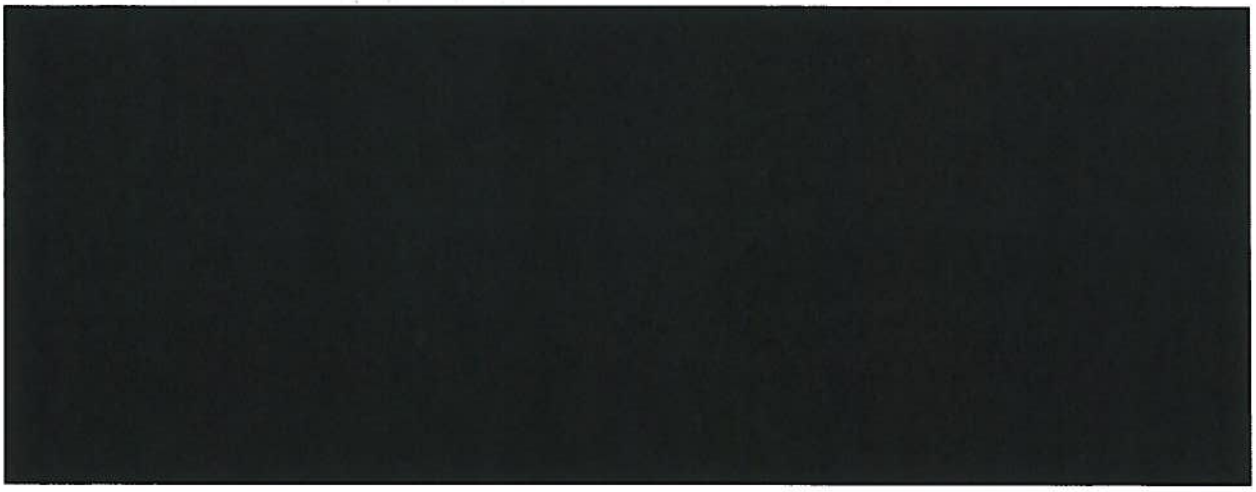
Figure 13 - Top Consumers Volume



Top Consumers volume remained about the same for the past ten years. Their total volume is forecast to continue to remain about the same. Individual customers are forecast for three years, and then the third forecast year is extended for the remainder of the forecast period as there are no adequate long term indicators of either an increase of decrease in gas use for these customers.

Special Rates

There are three customers who consume large amounts of natural gas and have special rates because they use gas very differently from all other gas customers. Their forecasts are based on three-year historical averages instead of attempting to forecast their volume. Their consumption can vary greatly from year to year, and an incorrect forecast can have an adverse effect on their billing. The use of a three-year average eliminates any possibility of bias for rate setting purposes.

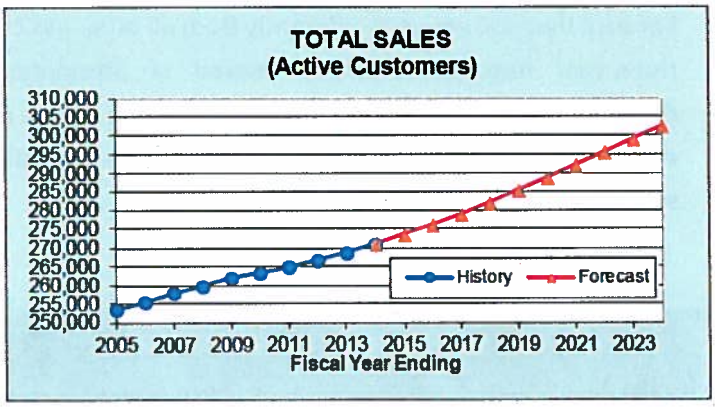


Total Sales

Total Sales Customers

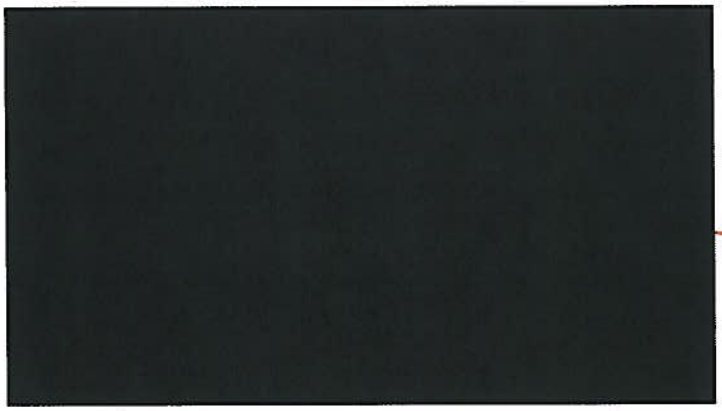
Total Sales includes all active gas customers. Growth has been quite stable over the past nine years with an average increase of 1,942 customers or 0.7% per year. The number of customers is forecast to increase at 3,137 customers or 1.1% per year due to the expected increase of the population in Manitoba.

Figure 16 - Total Sales Customers



Total Sales Volume

Figure 17 - Total Sales Volume



The Total Sales volume forecast is the sum of the volume forecasts for all SGS, LGS, High Volume Firm (HVF), Mainline Firm (MLF), Interruptible (INT), Power Station and Special Contract classes. Total Sales volume has decreased [redacted] 10^3m^3 or [redacted]% per year in the last nine years and is forecast to decrease by [redacted] 10^3m^3 or [redacted]% per year. The volume is decreasing even though the number of customers is rising, and this is due to reductions in average use per customer. Customers in all sectors are reducing their non-process related natural gas usage, due to conversions to high efficiency furnaces, improvements to insulation levels, and conversion in the Residential sector of natural gas to electric water heaters.

Fixed Rate Primary Gas Service

Manitoba Hydro's Fixed Rate Primary Gas Service (FRPGS) began in 2009. There have been several offerings each year with 1, 3 and 5 year terms available.

FRPGS product information is provided to customers to allow them to make informed decisions by understanding the differences between choosing the quarterly service, broker fixed price offerings, and Manitoba Hydro's fixed price offering for their primary gas service.

During 2013/14 the number of customers enrolled averaged 323 for SGS Residential, 9 for SGS, and 39 for Large General Service customers. The total actual volume consumed by these FRPGS Customers for 2013/14 was [redacted] 10^3m^3 for SGS Residential, [redacted] 10^3m^3 for SGS Commercial and [redacted] 10^3m^3 for LGS.

The number of FRPGS SGS Residential customers is forecast to be 240 in 2014/15, 263 in 2015/16 reducing to 164 in 2023/24. The number of FRPGS SGS Commercial customers is forecast to be 8 in 2014/15, 11 in 2015/16 growing to 16 in 2023/24. The number of FRPGS LGS customers forecast is forecast to be 20 in 2014/15, 23 in 2015/16 reducing to 12 in 2023/24.

The FRPGS SGS Residential volume forecast is [redacted] 10^3m^3 in 2014/15, [redacted] 10^3m^3 in 2015/16 and reduce to [redacted] 10^3m^3 in 2023/24. The FRPGS SGS Commercial volume forecast is [redacted] 10^3m^3 in 2014/15, [redacted] 10^3m^3 in 2015/16 growing to [redacted] 10^3m^3 in 2023/24. The FRPGS LGS volume forecast is [redacted] 10^3m^3 in 2014/15, [redacted] 10^3m^3 in 2015/16 reducing to [redacted] 10^3m^3 in 2023/24.

The average use for all FRPGS classes (SGS Residential, SGS Commercial and LGS) was forecast using the average use for System Supply Customers (quarterly rate and FRPGS) as FRPGS does not currently have sufficient customer participation to establish a program specific average use.

Western Transportation Service

Western Transportation Service (WTS) is the service where a broker purchases the primary gas for a customer. Manitoba Hydro bills customers on behalf of the broker and remits the primary gas charges to the broker.

WTS started offering fixed price contracts in 2000. WTS customers reached a maximum of 20% of Manitoba gas customers in 2007, but have fallen to 13,940 customers or 5.4% as of March 2014.

SGS Residential customers using a broker are forecast to be 13,679 in 2014/15, 13,118 in 2015/16 and 9,585 by 2023/24.

The SGS Commercial customers using a broker are forecast to be 764 in 2014/15, 735 in 2015/16 and 530 by 2023/24.

The LGS customers using a broker are forecast to be 941 in 2014/15, 918 in 2015/16 and 784 by 2023/24.

For the forecast period, compared to the class average, the WTS monthly average use is forecast at [redacted]% for SGS Residential, [redacted]% for SGS Commercial and [redacted]% for LGS.

There are also 31 WTS customers in the Top Consumers classes that consumed [redacted] 10^3m^3 in 2013/14. This group of large WTS customers is expected to reduce by 3 customers, with some customers leaving WTS for System Supply.

FORECAST TABLES

The forecast tables include monthly information on customers, volume and billed demand for 2014/15 and 2015/16. This document also includes fiscal year information on customers, volume and average use for the 2014/15 to 2023/24 period, as required for preparation of the Integrated Financial Forecast (IFF).

Each table starts with class totals. The classes are:

SRES - Small General Service Residential
SCOM - Small General Service Commercial
LGS - Large General Service
HVF - High Volume Firm
INT – Interruptible
CURT – Curtailed Interruptible
PS - Power Stations
SPEC - Special Contract
TOTAL - Total Sales

This is followed by 4 sections that itemize all the classes by service type. The 4 service types are:

xxxx-S - System Supply Quarterly Service
xxxx-F - System Supply Fixed Rate Primary Gas Service
xxxx-W - Western Transportation Service
xxxx-T - Transport Service

Curtailed Interruptible

Interruptible customers may be interrupted from time to time. The curtailed volume is provided as an alternate service and is a non firm volume which is removed from forecast. The forecast interruption volumes are provided by the Gas Supply Division. They are shown as negative numbers in the CURT-S and CURT-W classes for System Supply and WTS respectively.

Table 17 - 2013/14 Monthly Customers

2014/15 MONTHLY CUSTOMERS												
CLASS	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**JAN**	**FEB**	**MAR**
SRES	247,300	247,361	247,420	247,494	247,647	247,929	248,203	248,475	248,746	248,972	249,193	249,416
SCOM	17,093	17,116	17,140	17,164	17,188	17,211	17,235	17,259	17,283	17,306	17,330	17,354
LGS	8,094	8,080	8,065	8,051	8,036	8,022	8,007	7,993	7,978	7,964	7,949	7,935
HVF	100	100	100	100	100	100	100	100	100	100	100	100
MLF	8	8	8	8	8	8	8	8	8	8	8	8
INT	28	28	28	28	28	28	28	28	28	28	28	28
PS	2	2	2	2	2	2	2	2	2	2	2	2
SPEC	1	1	1	1	1	1	1	1	1	1	1	1
TOTAL	272,626	272,696	272,764	272,848	273,010	273,301	273,584	273,866	274,146	274,381	274,611	274,844
SRES-S	233,180	233,224	233,315	233,409	233,594	233,949	234,295	234,628	234,968	235,251	235,518	235,799
SCOM-S	16,310	16,335	16,362	16,388	16,414	16,439	16,466	16,491	16,517	16,542	16,568	16,594
LGS-S	7,121	7,110	7,097	7,086	7,073	7,062	7,049	7,037	7,024	7,013	6,999	6,988
HVF-S	70	70	70	70	70	70	70	70	70	70	70	70
MLF-S	1	1	1	1	1	1	1	1	1	1	1	1
INT-S	24	24	24	24	24	24	24	24	24	24	24	24
TOTAL-S	256,706	256,764	256,869	256,978	257,176	257,545	257,905	258,251	258,604	258,901	259,180	259,476
SRES-F	219	251	234	233	239	238	235	243	243	243	253	252
SCOM-F	7	7	7	7	7	7	7	8	8	8	9	9
LGS-F	18	18	18	18	18	18	18	19	19	19	20	20
TOTAL-F	244	276	259	258	264	263	260	270	270	270	282	281
SRES-W	13,901	13,886	13,871	13,852	13,814	13,742	13,673	13,604	13,535	13,478	13,422	13,365
SCOM-W	776	774	771	769	767	765	762	760	758	756	753	751
LGS-W	955	952	950	947	945	942	940	937	935	932	930	927
HVF-W	25	25	25	25	25	25	25	25	25	25	25	25
MLF-W	1	1	1	1	1	1	1	1	1	1	1	1
INT-W	2	2	2	2	2	2	2	2	2	2	2	2
TOTAL-W	15,660	15,640	15,620	15,596	15,554	15,477	15,403	15,329	15,256	15,194	15,133	15,071
HVF-T	5	5	5	5	5	5	5	5	5	5	5	5
MLF-T	6	6	6	6	6	6	6	6	6	6	6	6
INT-T	2	2	2	2	2	2	2	2	2	2	2	2
PS-T	2	2	2	2	2	2	2	2	2	2	2	2
SPEC-T	1	1	1	1	1	1	1	1	1	1	1	1
TOTAL-T	16	16	16	16	16	16	16	16	16	16	16	16

Table 18 - 2014/15 Monthly Volumes

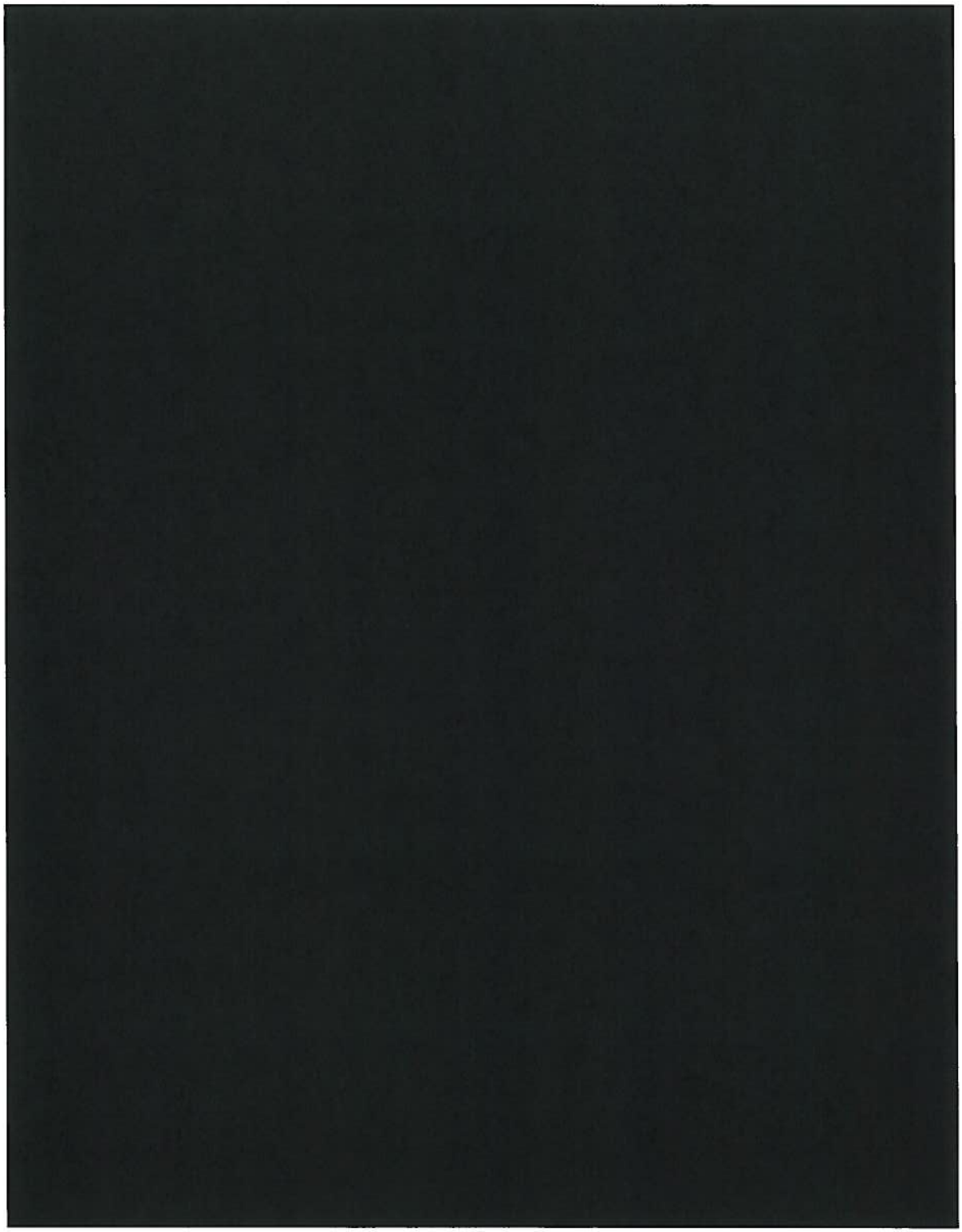


Table 19 - 2014/15 Monthly Demand

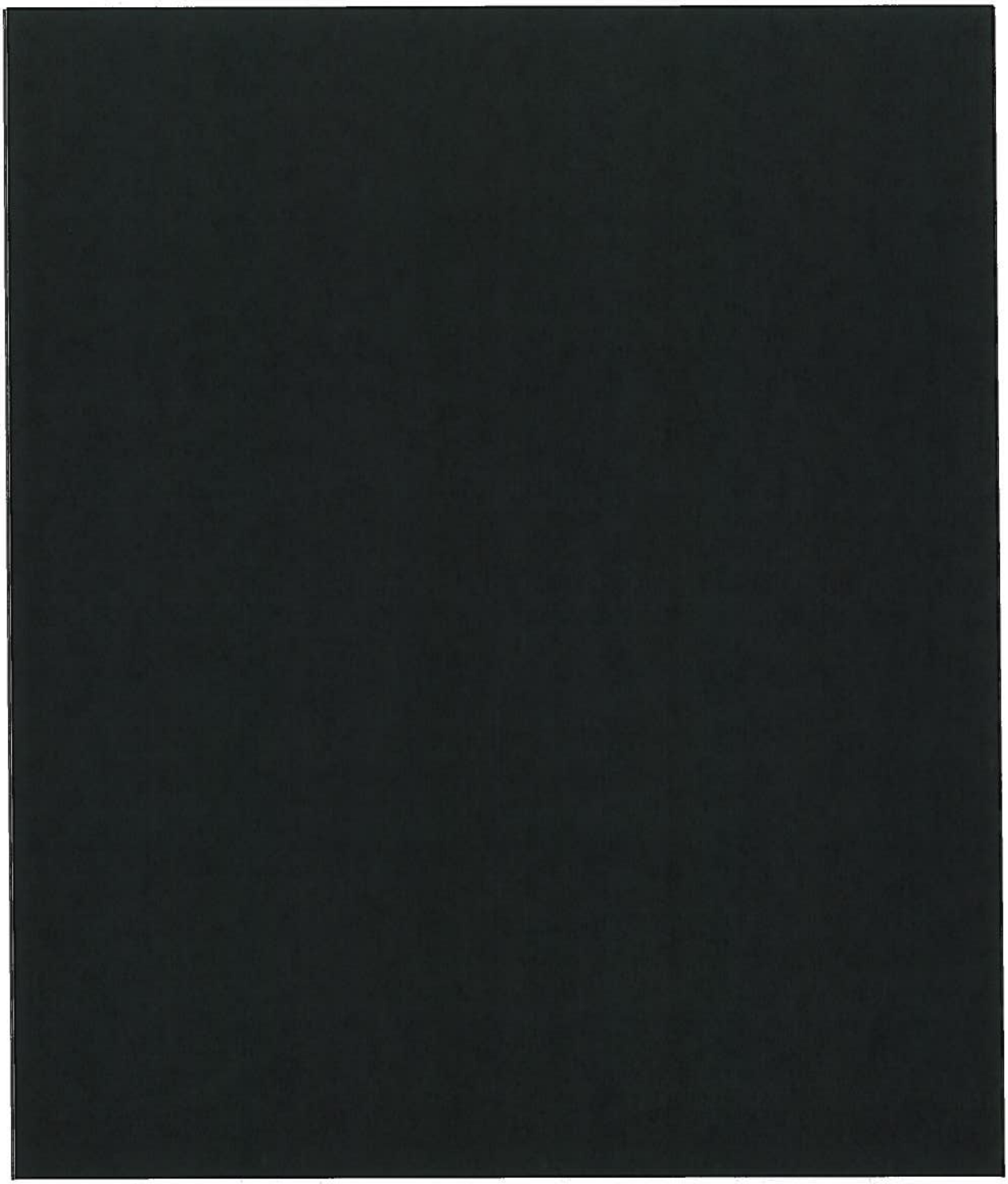


Table 20 - 2014/15 Monthly Average Use

[redacted]

Table 21 - 2015/16 Monthly Customers

2015/16 MONTHLY CUSTOMERS												
CLASS	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR
SRES	249,582	249,648	249,713	249,794	249,961	250,269	250,568	250,865	251,161	251,409	251,650	251,894
SCOM	17,369	17,385	17,400	17,416	17,431	17,447	17,462	17,477	17,493	17,508	17,524	17,539
LGS	7,929	7,923	7,918	7,912	7,906	7,901	7,895	7,890	7,884	7,878	7,873	7,867
HVF	100	100	100	100	100	100	100	100	100	100	100	100
MLF	8	8	8	8	8	8	8	8	8	8	8	8
INT	28	28	28	28	28	28	28	28	28	28	28	28
PS	2	2	2	2	2	2	2	2	2	2	2	2
SPEC	1	1	1	1	1	1	1	1	1	1	1	1
TOTAL	275,019	275,095	275,170	275,261	275,437	275,756	276,064	276,371	276,677	276,934	277,186	277,439
SRES-S	236,001	236,075	236,154	236,256	236,453	236,829	237,195	237,551	237,912	238,214	238,501	238,799
SCOM-S	16,611	16,629	16,646	16,665	16,681	16,699	16,717	16,733	16,752	16,769	16,787	16,804
LGS-S	6,983	6,978	6,974	6,970	6,965	6,961	6,957	6,952	6,948	6,943	6,939	6,934
HVF-S	70	70	70	70	70	70	70	70	70	70	70	70
MLF-S	1	1	1	1	1	1	1	1	1	1	1	1
INT-S	24	24	24	24	24	24	24	24	24	24	24	24
TOTAL-S	259,690	259,777	259,869	259,986	260,194	260,584	260,964	261,331	261,707	262,021	262,322	262,632
SRES-F	252	259	259	256	262	262	260	266	266	266	273	272
SCOM-F	9	10	10	10	11	11	11	12	12	12	13	13
LGS-F	20	21	21	21	21	21	21	22	22	22	23	23
TOTAL-F	281	290	290	287	294	294	292	300	300	300	309	308
SRES-W	13,329	13,314	13,300	13,282	13,246	13,178	13,113	13,048	12,983	12,929	12,876	12,823
SCOM-W	749	746	744	741	739	737	734	732	729	727	724	722
LGS-W	926	924	923	921	920	919	917	916	914	913	911	910
HVF-W	25	25	25	25	25	25	25	25	25	25	25	25
MLF-W	1	1	1	1	1	1	1	1	1	1	1	1
INT-W	2	2	2	2	2	2	2	2	2	2	2	2
TOTAL-W	15,032	15,012	14,995	14,972	14,933	14,862	14,792	14,724	14,654	14,597	14,539	14,483
HVF-T	5	5	5	5	5	5	5	5	5	5	5	5
MLF-T	6	6	6	6	6	6	6	6	6	6	6	6
INT-T	2	2	2	2	2	2	2	2	2	2	2	2
PS-T	2	2	2	2	2	2	2	2	2	2	2	2
SPEC-T	1	1	1	1	1	1	1	1	1	1	1	1
TOTAL-T	16	16	16	16	16	16	16	16	16	16	16	16

Table 22 - 2015/16 Monthly Volumes

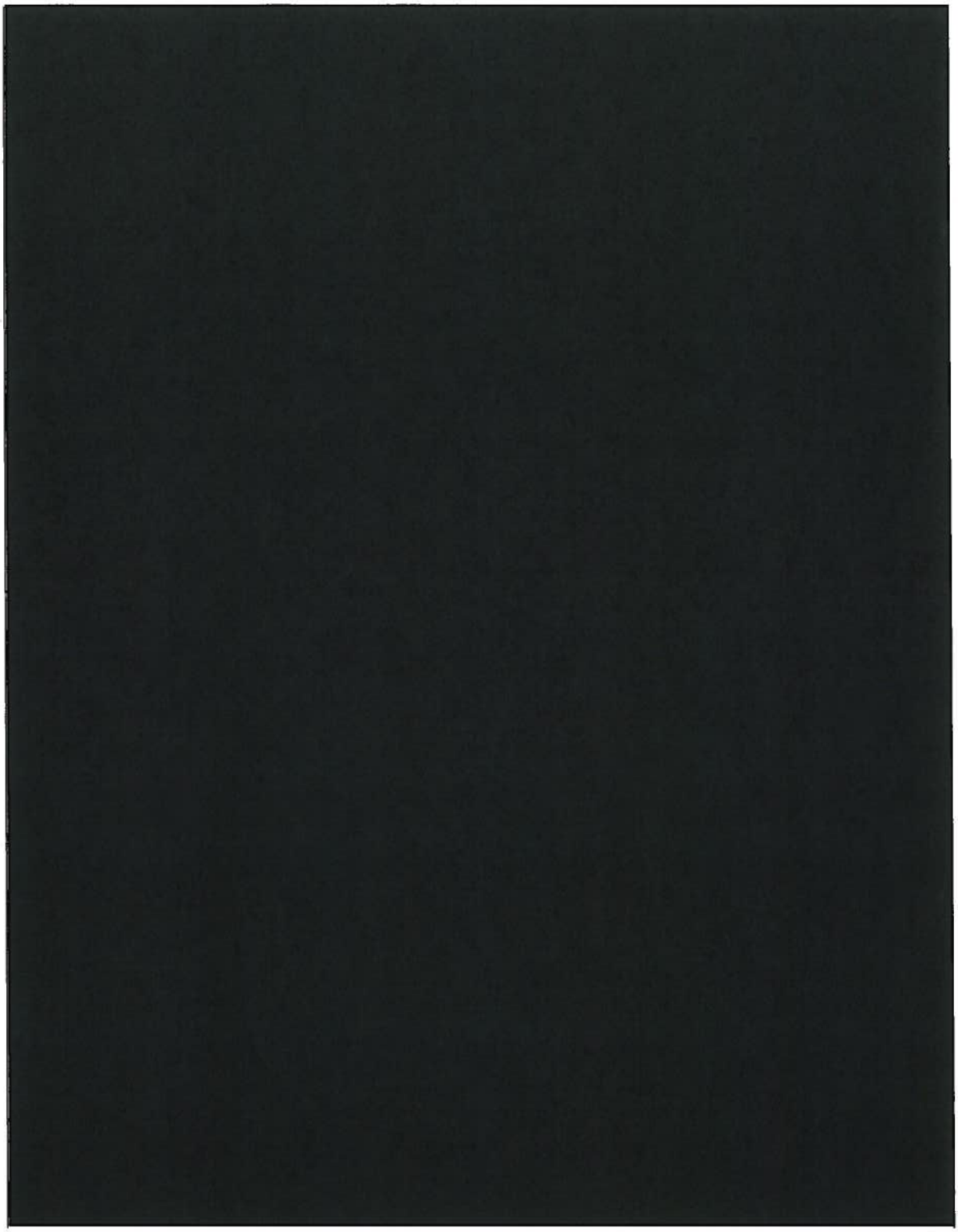


Table 23 - 2015/16 Monthly Demand

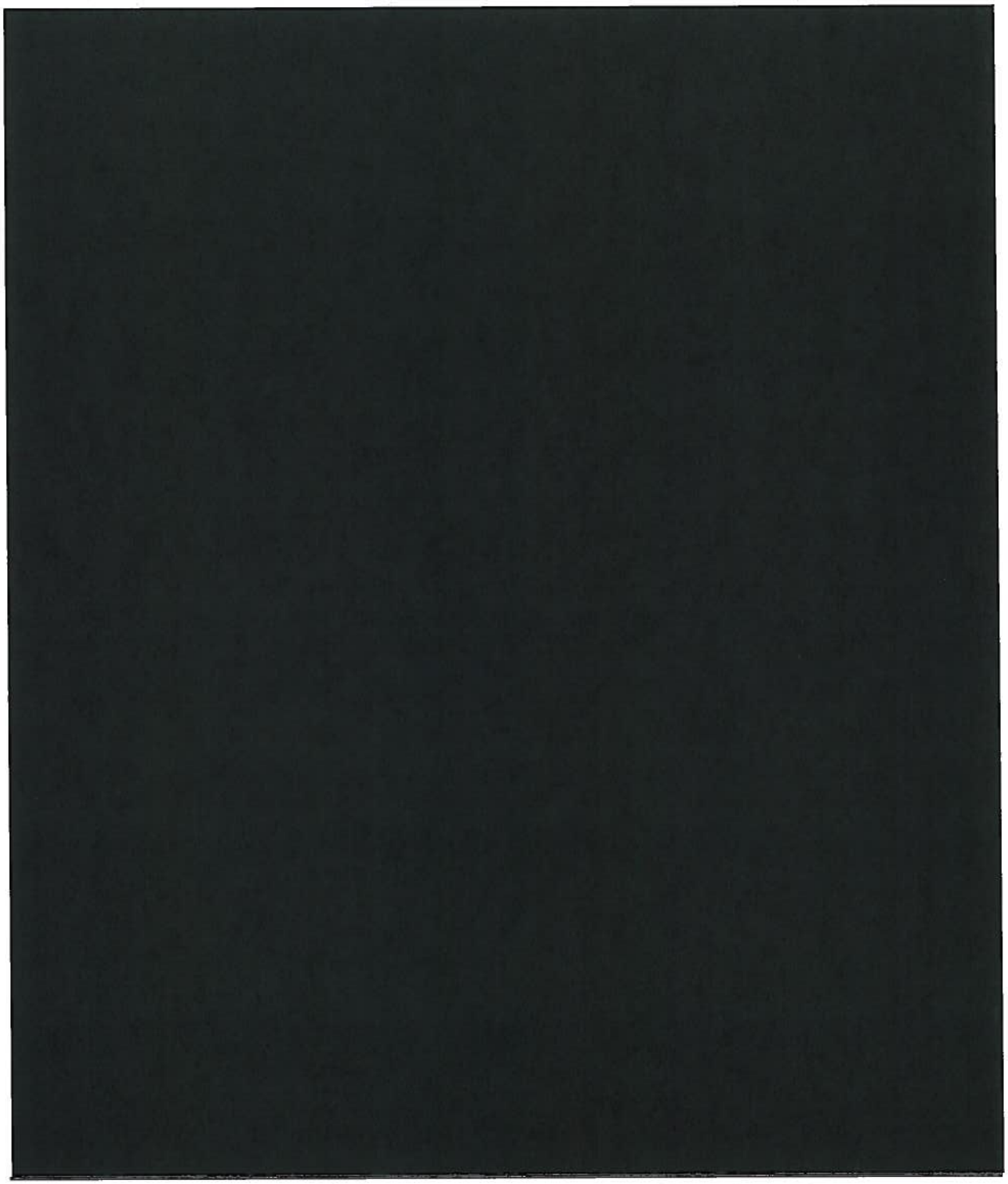


Table 24 - 2015/16 Monthly Average Use

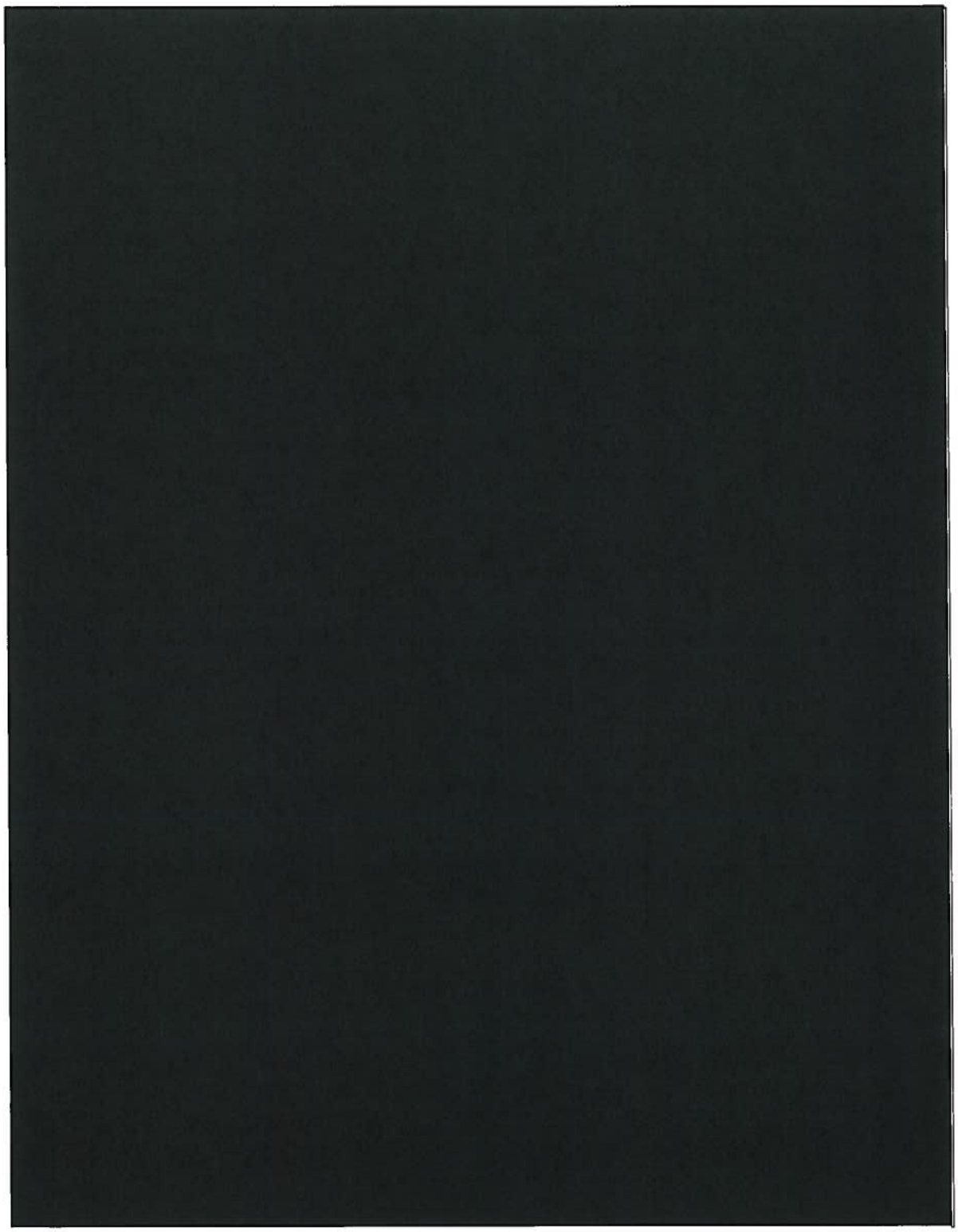


Table 25 - Annual Average Customers

Long Term	AVERAGE CUSTOMERS									
Fiscal Year	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
SRES	248,180	250,543	253,210	256,217	259,397	262,669	266,020	269,382	272,694	275,920
SCOM	17,223	17,454	17,679	17,906	18,106	18,300	18,478	18,645	18,802	18,952
LGS	8,015	7,898	7,798	7,704	7,636	7,566	7,500	7,436	7,374	7,314
HVF	100	100	100	100	100	100	100	100	100	100
MLF	8	8	8	8	8	8	8	8	8	8
INT	28	28	28	28	28	28	28	28	28	28
PS	2	2	2	2	2	2	2	2	2	2
SPEC	1	1	1	1	1	1	1	1	1	1
TOTAL	273,556	276,034	278,826	281,967	285,278	288,674	292,137	295,602	299,009	302,325
SRES-S	234,261	237,162	240,368	243,880	247,557	251,325	255,092	258,857	262,561	266,172
SCOM-S	16,452	16,708	16,957	17,207	17,434	17,656	17,860	18,051	18,233	18,407
LGS-S	7,055	6,959	6,877	6,799	6,749	6,706	6,657	6,610	6,562	6,517
HVF-S	70	70	70	70	70	70	70	70	70	70
MLF-S	1	1	1	1	1	1	1	1	1	1
INT-S	24	24	24	24	24	24	24	24	24	24
TOTAL-S	257,863	260,923	264,297	267,980	271,834	275,781	279,704	283,612	287,451	291,190
SRES-F	240	263	247	231	196	143	151	157	162	164
SCOM-F	8	11	15	18	19	16	16	16	16	16
LGS-F	19	22	24	28	26	16	14	13	13	13
TOTAL-F	266	295	286	277	241	175	181	187	191	192
SRES-W	13,679	13,118	12,595	12,107	11,645	11,202	10,777	10,368	9,971	9,585
SCOM-W	764	735	708	681	654	628	603	578	553	530
LGS-W	941	918	897	877	861	844	828	813	799	784
HVF-W	25	25	25	25	25	25	25	25	25	25
MLF-W	1	1	1	1	1	1	1	1	1	1
INT-W	2	2	2	2	2	2	2	2	2	2
TOTAL-W	15,411	14,800	14,228	13,693	13,187	12,702	12,236	11,787	11,351	10,926
HVF-T	5	5	5	5	5	5	5	5	5	5
MLF-T	6	6	6	6	6	6	6	6	6	6
INT-T	2	2	2	2	2	2	2	2	2	2
PS-T	2	2	2	2	2	2	2	2	2	2
SPEC-T	1	1	1	1	1	1	1	1	1	1
TOTAL-T	16	16	16	16	16	16	16	16	16	16

Table 26 - Annual Volume

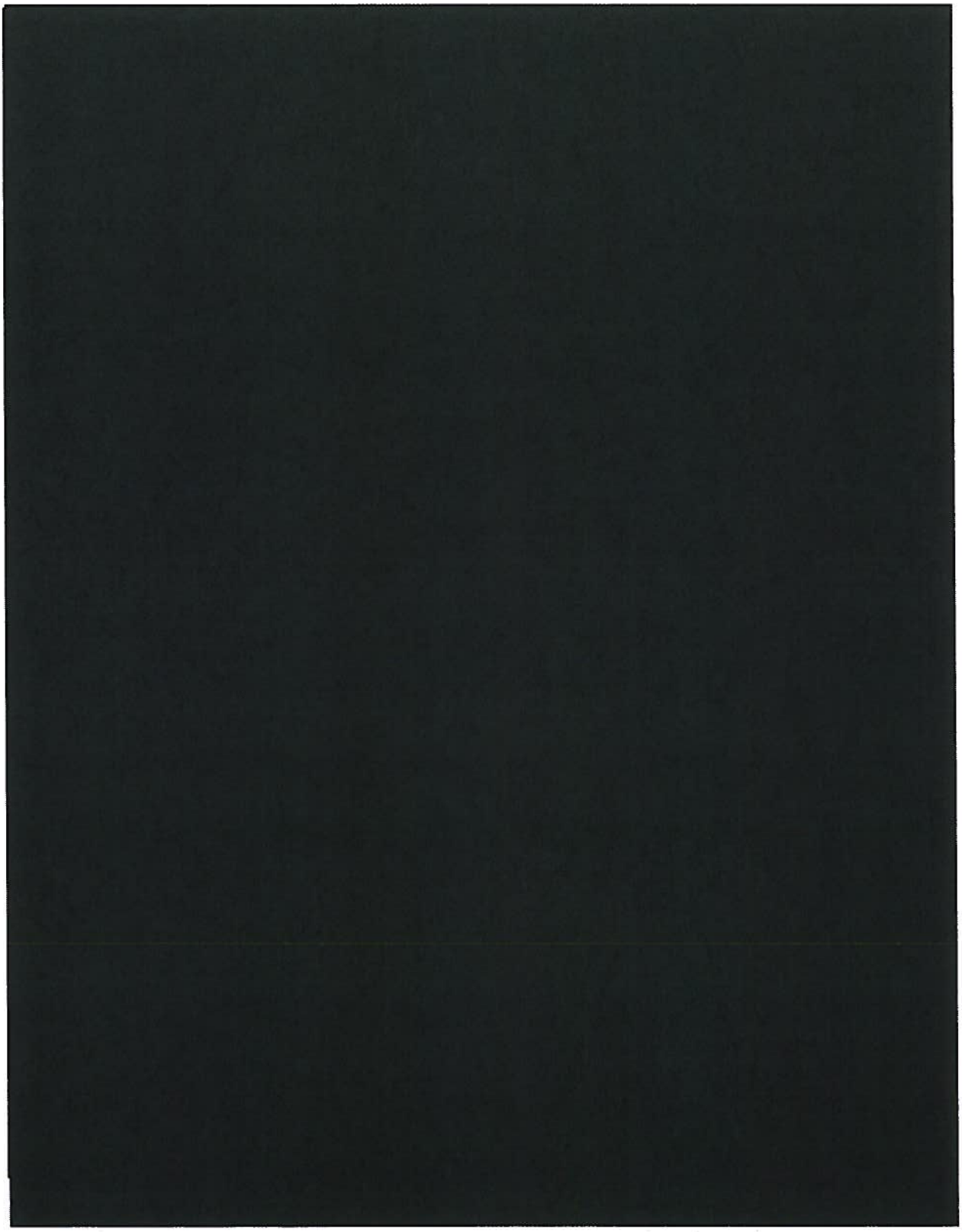
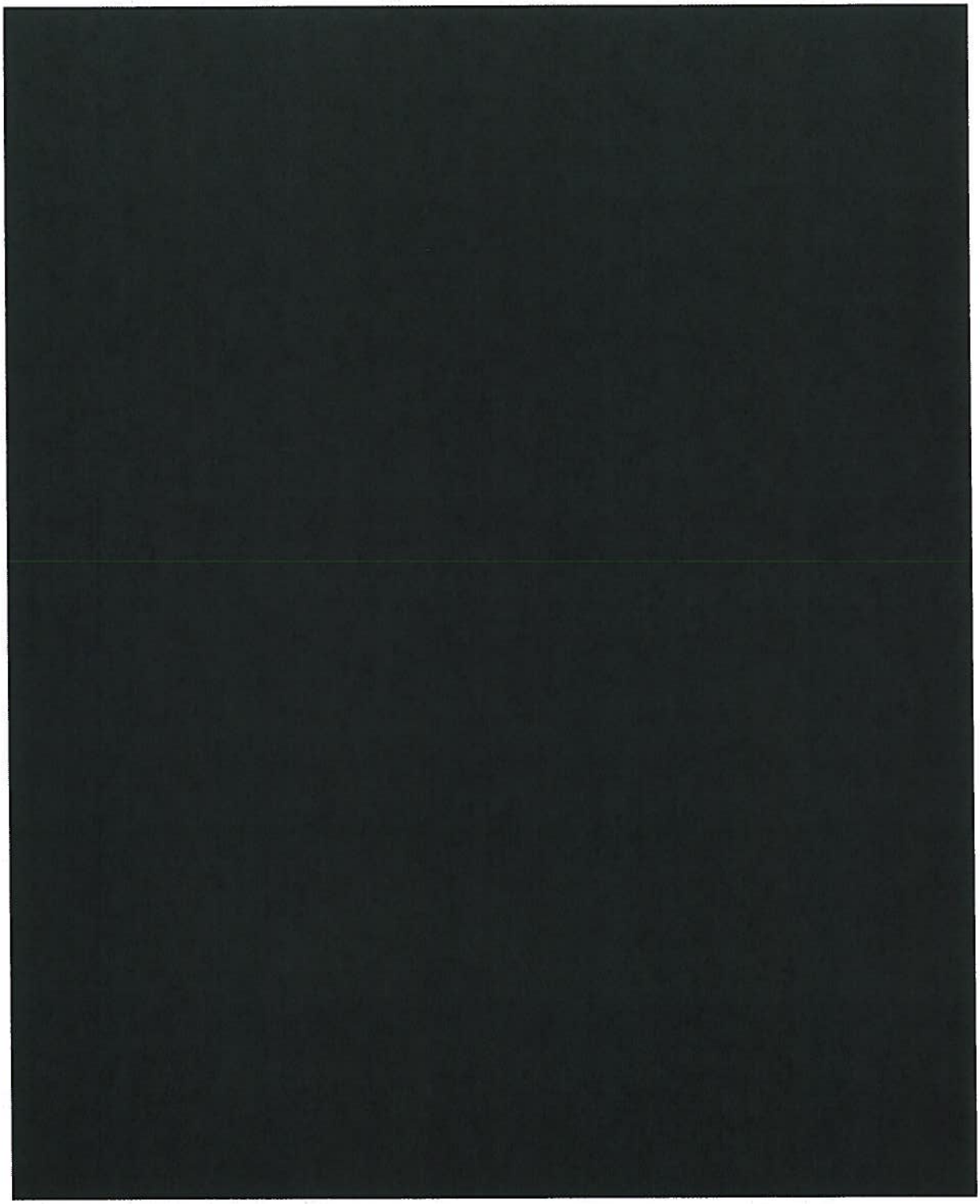


Table 27 - Annual Average Use



[redacted]

[redacted]

[redacted]

Table 28 - Effect of Weather

[redacted]

[redacted]

Table 29 – SGS Residential Effect of Weather

[redacted]

Volume Variability

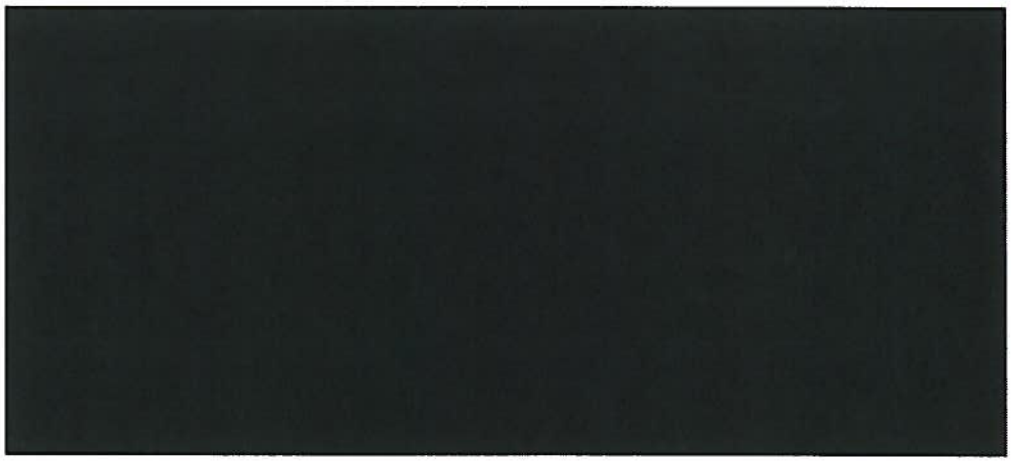
The forecast is prepared with the goal of being an unbiased and accurate predictor of future volumes. It was produced with the expectation that there is a 50% chance that the actual will be higher than forecast, and a 50% chance that the actual will be lower than forecast.

This section presents a probability-based estimate of how much future actual volumes might vary from forecast. This can be used to produce forecasts with a specific probability of occurrence, or can be used to determine the probability of specific volumes occurring. This analysis was done excluding the Special Contract and Power Stations, since their use varies by their level of production and they are forecast using their own three-year historical averages.

The standard deviation and correlation coefficient of historical weather adjusted volume was determined. These were then applied to the forecast to give an estimate of the width of the volume confidence bands. 10% and 90% confidence bands (-/+ 1.28 standard deviations) were selected to represent a low and high scenario.

This calculation gives the variability due to economic effects and year-to-year variation in natural gas use. It does not include variability due to weather which was removed through the use of weather adjusted volumes. The following table summarizes the variability of volume due to economic effects and year-to-year variation:

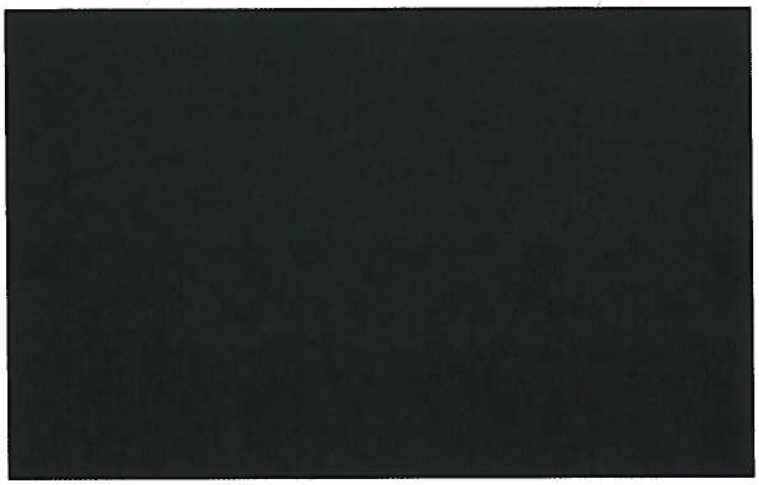
Table 30 - Volume Variability



Variability due to economic/year-to-year variation is estimated to be 1.9% in the first year of the forecast, and 2.7% in the second year of the forecast. This represents the best level of accuracy possible within the gas volume forecast.

[redacted]

Figure 18 - Volume Variability



Forecast Accuracy

The tables below show the first and second year forecast accuracy of the last eight Natural Gas Volume Forecasts for total volume less Special Contract and Power Stations:

Table 31 - First Year Forecast Accuracy

Forecast Created	Year being Forecast	Forecast 10^3m^3	Actual 10^3m^3	HVWAdj Actual 10^3m^3	% Diff	Over/ Under
2013	2013/14	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2012	2012/13	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2011	2011/12	1,577,627	[redacted]	[redacted]	[redacted]	[redacted]
2010	2010/11	1,601,893	[redacted]	[redacted]	[redacted]	[redacted]
2009	2009/10	1,612,727	[redacted]	[redacted]	[redacted]	[redacted]
2008	2008/09	1,604,224	[redacted]	[redacted]	[redacted]	[redacted]
2007	2007/08	1,581,138	[redacted]	[redacted]	[redacted]	[redacted]
2006	2006/07	1,593,297	[redacted]	[redacted]	[redacted]	[redacted]

Table 32 - Second Year Forecast Accuracy

Second Year Forecast Accuracy						
Forecast Created	Year being Forecast	Forecast 10^3m^3	Actual 10^3m^3	HVWAdj Actual 10^3m^3	% Diff	Over/ Under
2012	2013/14	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2011	2012/13	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2010	2011/12	1,602,442	[redacted]	[redacted]	[redacted]	[redacted]
2009	2010/11	1,617,771	[redacted]	[redacted]	[redacted]	[redacted]
2008	2009/10	1,604,283	[redacted]	[redacted]	[redacted]	[redacted]
2007	2008/09	1,610,526	[redacted]	[redacted]	[redacted]	[redacted]
2006	2007/08	1,619,285	[redacted]	[redacted]	[redacted]	[redacted]

[redacted]

ASSUMPTIONS

Economic Assumptions

Economic forecast assumptions are taken from the 2014 Economic Outlook and the 2014 Energy Price Outlook. These documents contain Manitoba Hydro's forecasts of economic variables including prices of electricity, natural gas and oil, Gross Domestic Product (GDP), Manitoba population and residential electric customers.

The following are the economic variables used for this Natural Gas Volume Forecast:

Residential Electric Customers - The number of residential electric customers in Manitoba is forecast to increase by 1.3% (5,802 units) in 2014/15 and averages 1.0% per year over the forecast period. This compares to a historical average increase of 1.0% per year over the last ten years. This is used to forecast the number of SGS Residential natural gas customers.

Electricity Prices - The electricity price forecast is based on Consumer Price Index (CPI) and rate increase projections contained in the Integrated Financial Forecast. The real electricity price is forecast to increase by 2.2% in 2014/15 and then increase between 1.9% and 2.1% per year throughout the rest of the forecast period.

Natural Gas Prices – Manitoba Hydro views the natural gas price forecast as commercially sensitive information. Consistent with the Clean Environment Commission and Electric General Rate Application, this information will not be publicly disclosed.

Heating Value Assumptions

The Heating Value is the amount of energy per unit of gas and it varies month to month. All forecast volumes are standardized to their energy equivalent Heating Value of 37.8 GJ/10^3m^3.

[redacted]

Demand Side Management (DSM) in the Forecast

This forecast reflects future DSM savings arising from future Power Smart offerings and market engagement as outlined in Manitoba Hydro's 2014-2017 Power Smart Plan. Savings due to DSM programs to date are embedded in the historical data that is the basis for this forecast. The current level of past achieved DSM savings is assumed to remain in place throughout the future. Future DSM savings arising from future Power Smart offerings and market engagement above those already achieved are included as outlined in Manitoba Hydro's 2014 Power Smart Plan.

METHODOLOGY

SGS Residential Methodology

The SGS Residential Basic forecast was derived from population forecasts contained in Manitoba Hydro's 2014 Economic Outlook produced by the Economic Analysis Department, combined with an appliance forecast developed in an end use model.

1. **Forecast Residential Dwellings** - The forecast of the total number of Manitoba Hydro Electric Residential Basic customers for the 2014/15 to 2023/24 period was taken from the 2014 Economic Outlook. The customer forecast is based on the average of several Manitoba population forecasts from various external agencies multiplied by a forecast of the people per customer ratio. The customer forecast is reduced by about 0.5% to account for customers with multiple services to obtain the forecast of individual dwellings.

2. **Determine Historical and Forecast Dwelling Breakdowns** – Historical data was taken back to 2009, the year of the last Residential Energy Use Survey. Billing data between 2009/10 and 2013/14 was used to update the survey data. The number of historical dwellings each year since 2009/10 was broken down by dwelling type (Single-Family Detached, Multi-Family Attached, and Individually-Metered Apartment suites) within Winnipeg and Gas Available outside Winnipeg. Demolitions were estimated and the historical percentage of the number of new dwellings out of the total was applied to each regional dwelling forecast.

3. **Historical Space Heating Systems** – The number of historical dwellings by type and region were each divided into four space heating systems: Gas High-Efficiency Furnace, Gas Mid-Efficiency Furnace, Gas Standard-Efficiency Furnace and Gas Boiler. Starting percentages for 2009/10 were taken from the 2009 Residential Survey.

4. **Forecast of Space Heating Systems in New Dwellings** – For the Electric Forecast, econometric equations were developed to forecast the number of electric space heating systems in new single detached and multi attached dwellings in Winnipeg and South Gas regions. The remaining new dwellings would all be heated with natural gas, and were considered to be the number of new gas heated dwellings.

5. **Forecast of Space Heating Systems in Existing Dwellings** – The average age of heating systems in existing dwellings was determined from the 2009 Residential Energy Use Survey. The number of replacements was estimated using a Weibull distribution based on the average age of furnaces from the survey. Switches of furnace types were estimated using survey respondents in older dwellings with newer heating systems. Their former heating system was determined from billing system notes and inventory.

6. **Forecast of Water Heating Systems in New and Existing Dwellings – N**atural gas water heater saturations and average age were estimated for dwellings with and without natural gas space heat using information from the 2009 Residential Energy Use Survey. The number of replacements was forecast using a Weibull distribution based on the average age of water heaters. Switches between fuels were taken into account when forecasting future numbers of water heaters.

7. **Other End Uses** – Gas cooking, gas clothes dryers and miscellaneous natural gas use were forecast by dwelling type using the saturation data from the 2009 Residential Energy Use Survey.

8. **Space Heating, Water Heating and Appliance Usage** – Conditional Demand Analysis using the 2009 Residential Survey data combined with 2009/10 customer annual use from billing data was used to derive the average annual energy use for different types of heating systems and natural gas appliances for existing and for newer dwellings. These average uses were multiplied by the number of each type of system and appliance to get the forecast of total energy use.

9. **Determine Total Usage -** The forecast number of dwellings multiplied by the overall average use determined the volume forecast. Annual estimates from the Heating Fuel Choice Initiative were included. The forecast of Codes and Standards energy savings and projected savings of future Demand Side Management Programs as outlined in the 2014-2017 Power Smart Plan 15 year Supplementary Analysis Report were subtracted.

SGS Commercial and LGS Methodology

Customer Forecast

The combined number of SGS Commercial and LGS customers was generated for each year of the forecast period. The annual increase in customers was forecast using historical correlation with GS Mass Market customer growth, which was forecast from GDP and residential customers.

The yearend historical customer data from 1999/2000 to 2013/14 was modeled and the parameters are as follows:

Number of Customers (t)

= 11044.509 + 0.210 x GSMM

GSMM - General Service Mass Market Customer Count

R-squared: 88.1%

T-stats:

Constant:	8.12
GSMM:	9.83

The number of Commercial Customers for each year was split into SGS Commercial and LGS classes based on historical trends. In 2013/14, 67.8% of the customers were in the SGS Commercial class and 32.2% were in the LGS class. The SGS Commercial percentage is forecast to increase to 72.3% by 2023/24. The increase in the percentage of SGS Commercial customers is due to ongoing efficiency improvements that are reducing customer use and therefore moving customers from LGS to SGS Commercial.

When a customer's expected annual volume reduces to less than 15,000 m^3, the customer is eligible to be switched from the LGS customer class to the SGS Commercial customer class. This increases the SGS Commercial proportion of customers relative to LGS.

Average Use

The SGS Commercial class consists of customers using up to 15,000 m^3 of gas per year, and the LGS class consists of customers using between 15,000 m^3 and 680,000 m^3 per year. By

definition, the truncation of these classes results in relatively stable average uses for each respective class.

In other words, if usage by individual customers increases sufficiently then they will be re-classed, switching from either SGS Commercial to LGS or from LGS to High Volume Firm (HVF). Conversely, if usage by individual customers decreases, customers will either move from HVF to LGS or from LGS to SGS Commercial. These shifts have tended to offset each other over time, so SGS Commercial and LGS classes have not exhibited either significant upward or downward trends in average use. This result could be expected since the classes are defined by specific volume ranges.

[redacted]

Volume Forecast

The forecasts for customers and average use are multiplied together for each class to calculate demand in m^3 for SGS Commercial and LGS.

SGS Commercial Total Use (t)
= SGS Commercial Number of Customers (t)
x SGS Commercial Average Annual Use (t)

LGS Total Use (t)
= LGS Number of Customers (t)
x LGS Average Annual Use (t)

Top Consumers Methodology

The Top Consumers forecast was prepared on a customer by customer basis. Each customer was analyzed individually, and a monthly forecast was determined for the first three forecast years.

To help forecast monthly volumes, historic monthly consumption for the past three years was first adjusted to the standard heating value and then weather adjusted. For customers with unchanging usage over that time, the three years of monthlies were averaged and used. In cases where the historic volume trended up or down, the last year of monthlies or two years of averaged monthlies was used.

Similarly, historic monthly recorded demand for the past three years was used to help forecast monthly peak consumption. From the forecast of customer monthly peaks, the billed demand was determined. Billed demand is the highest recorded demand of the current month and the previous 11 months, but only from the winter months of November through March.

Information on individual company operating plans was collected from industry news and from Manitoba Hydro's Key and Major Account representatives. This information was used to help forecast volume and demand changes, rate classifications and gas supply arrangements. The first three years of the forecast includes production-related and square footage related increases that are confirmed to be taking place.

For each Top Consumer customer, year three of their forecast is used from year four and on.

Monthly Allocations

Monthly Customers

The monthly historical growth pattern of the number of customers in each rate class is used to allocate annual growth throughout the year. This way, customer growth is reflected more accurately to the month in which it will occur.

Table 33 – Monthly Allocation of Customer Changes

MONTHLY ALLOCATION OF CUSTOMER CHANGES												
Class	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR
SGS Res	6.70%	2.68%	2.60%	3.28%	6.74%	12.43%	12.07%	11.99%	11.95%	9.98%	9.74%	9.84%
SGS Com	8.33%	8.33%	8.33%	8.33%	8.33%	8.33%	8.33%	8.33%	8.33%	8.33%	8.33%	8.37%
LGS	8.33%	8.33%	8.33%	8.33%	8.33%	8.33%	8.33%	8.33%	8.33%	8.33%	8.33%	8.37%

[redacted]

[redacted]

Table 34 – Monthly Allocation of Volume

[redacted]

GLOSSARY OF TERMS

Small General Service Class (SGS) – Residential and small commercial customers with an annual volume of less than 15,000 m^3 per year. If their volume is higher, then it is in their favor to switch to Large General Service (LGS) which has a higher basic charge but lower per unit charge. In this document, SGS Residential is abbreviated as SRES, and SGS Commercial is abbreviated as SCOM.

Large General Service Class (LGS) – Medium-sized commercial and industrial customers (and a few residential customers) with annual consumption greater than 15,000 m^3 and less than 680,000 m^3.

High Volume Firm Class (HVF) – Commercial and industrial customers where annual consumption exceeds 680,000 m^3.

Mainline Firm Class (MLF) – Commercial and industrial customers where annual consumption exceeds 680,000 m^3 and where the customer is served directly from the Company's transmission system or through dedicated distribution facilities at high pressure

Interruptible Class (INT) – Commercial and industrial customers where annual consumption must exceed 680,000 m^3, and elect to allow their service to be interrupted upon notice. The customer pays a lower cost for this service. Manitoba Hydro may help the customer find alternative service, but the customer is expected to have an alternative energy source available.

Curtailed Interruptible – Refers to the gas that was not supplied to interruptible customers due to the interruptions.

Quarterly Service (-S) – This is the Quarterly Service of gas that Manitoba Hydro procures (System Supply) and delivers to its gas customers. The primary gas rate is set every three months.

Fixed Rate Primary Gas Service (-F) – This is the 1-year, 3-year and 5-year contract service that Manitoba Hydro procures (System Supply) and delivers to its gas customers.

Western Transportation Service (WTS or -W) – This is an unbundled service pertaining only to the primary gas portion of the gas consumed at a customer's facility. Under WTS, Manitoba

Hydro receives, manages and re-delivers broker-provided primary gas. Manitoba Hydro bills WTS customers for the primary gas portion of the customer's consumption on behalf of the broker (using the broker's primary gas price) and remits the money collected to the broker.

Transportation Service (T-Service or -T) – Under this service, the customer is obligated to arrange for the supply and delivery of its own gas to the Manitoba gate stations. The gas is then received by Manitoba Hydro at the Manitoba gates and transported to the customer's plant gate. Manitoba Hydro does not purchase the gas for the customer. Charges for this service include delivery on the Manitoba Hydro system but do not include any supply cost component other than a charge to cover a proportionate share of unaccounted for gas losses on the Manitoba Hydro distribution system.

Billed Demand – This is the level at which customers are assessed a Demand Charge. For High Volume Firm, Mainline and Interruptible customers, the Monthly Billed Demand is equal to each customer's maximum recorded daily usage during the last twelve months, but only in the months covering the November to March period.

Recorded Demand – This is the maximum recorded daily usage during a month. Daily usage is based on a gas day that begins that day at 9 a.m. and ends 24 hours later on the next day.

Gas Year – This is the year from November to October. This is the fiscal year used for gas purchasing.

Cubic Meter (m^3) – The unit of measurement used for natural gas volumes.

Ten-Three-M-Three (10^3m^3) – A thousand cubic meters.

Ten-Three-M-Six (10^3m^6) – A million cubic meters.

A Thousand cubic feet (Mcf) – The older form of measurement for natural gas volumes prior to the metric system. 1 Mcf = 28.32784 m^3.

Gigajoule (GJ) - One billion joules. A joule is a units of energy used to measure energy content.

Heating Value (HV) – A Measure of the energy content of gas. Units are given in $GJ/10^3m^3$. The Heating Value varies depending on the richness of the gas, but normal is considered to be 37.8 $GJ/10^3m^3$. To convert GJ to 10^3m^3, divide the GJ by the Heating Value.