

Mason County Public Utility District No. 1 Resource Plan and HB1010 Filing

Prepared by:



August 2008

Contents

1	Introduction.....	1
2	Current Loads and Resources	2
	Background.....	2
	Historic Loads.....	2
	Existing Resources	4
3	Forecasted Loads and Resources	7
	Electric Load Forecast	7
	Planned Resources	7
4	Resource Summary.....	10
	Resource Choice	10
	Appendix A.....	A-1

List of Tables

Table 1	Historic Conservation Savings	5
Table 2	The District’s Share of NEEA Savings	6
Table 3	Medium Scenario Load Forecast Summary	7
Table 4	Planned Resources 2012-2026.....	10

List of Figures

Figure 1	Historic Energy Sales 2003 through 2007	3
Figure 2	Weather Adjusted Total Requirements.....	3
Figure 3	Historic Conservation Savings 2002 to 2007	5
Figure 4	Load Resource Balance- ENERGY	9

1 Introduction

Mason County Public Utility District 1 (District) contracted EES Consulting (EESC) to develop a resource plan consistent with Engrossed Substitute House Bill 1010 (HB 1010) for Washington State utilities. The District is currently a full requirements customer of the Bonneville Power Administration (BPA) which means that BPA provides all power requirements at cost-based rates. However, The District's power supply portfolio will change and be impacted in the future due to fundamental changes to the pricing structure of BPA power sales beginning in October 2011. BPA has developed two pricing tiers to capture the difference in costs associated with existing BPA resources (Tier 1), and new resources or market priced purchases (Tier 2) required to meet customers' loads in excess of the current capability of the BPA system.

The intent of HB 1010 is to pursue safe, clean, and reliable energy resources to meet demand in Washington. HB 1010 requires all utilities, regardless of size, to develop resource plans that consider renewable and conservation resources. Because The District serves fewer than 25,000 customers, HB 1010 requires that The District develop a resource plan that:

1. Estimates loads for the next five and ten years;
2. Enumerates the resources that will be maintained and/or required to serve those loads; and
3. Explains why the resources in (2.) were chosen and, if the resources chosen are not renewable or conservation resources, why such a decision was made.

This report addresses each of these requirements and is meant as a planning document for meeting the District's future energy requirements. First, the District's current loads and resources are discussed. Then energy and demand forecasts are described and planned future resources identified. These planned resources include a combination of federal (Bonneville Power Administration, BPA) resources, demand-side resources, and other local resources. Lastly, a resource summary describes the resource choice identified in the forecasted loads and resource balance section.

2 Current Loads and Resources

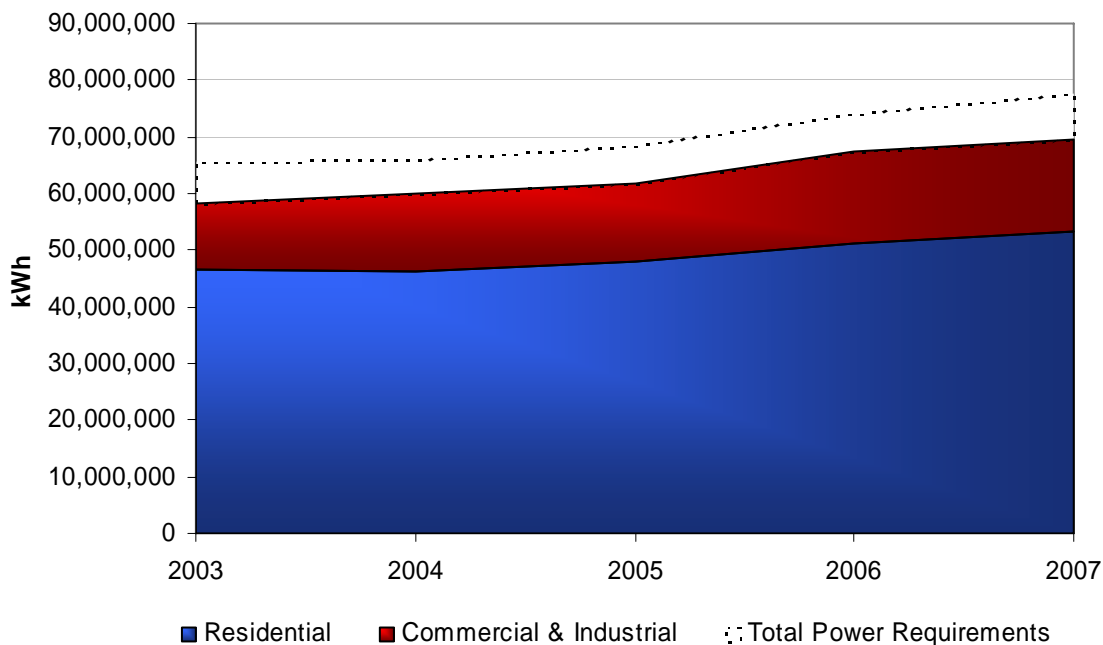
Background

Mason County Public Utility District 1 (District) became the first operating Public Utility District in the State of Washington when voters approved a proposition on November 6, 1934. The District is publicly owned and serves approximately 5,065 electric customers. The PUD's electric service area begins approximately 2 miles west of Twanoh State Park along South Shore and Hwy 106 to Hwy 101, and includes the Skokomish Indian Reservation and Skokomish Valley. Its northern boundary is in the Brinnon and Mount Walker area in Jefferson County.

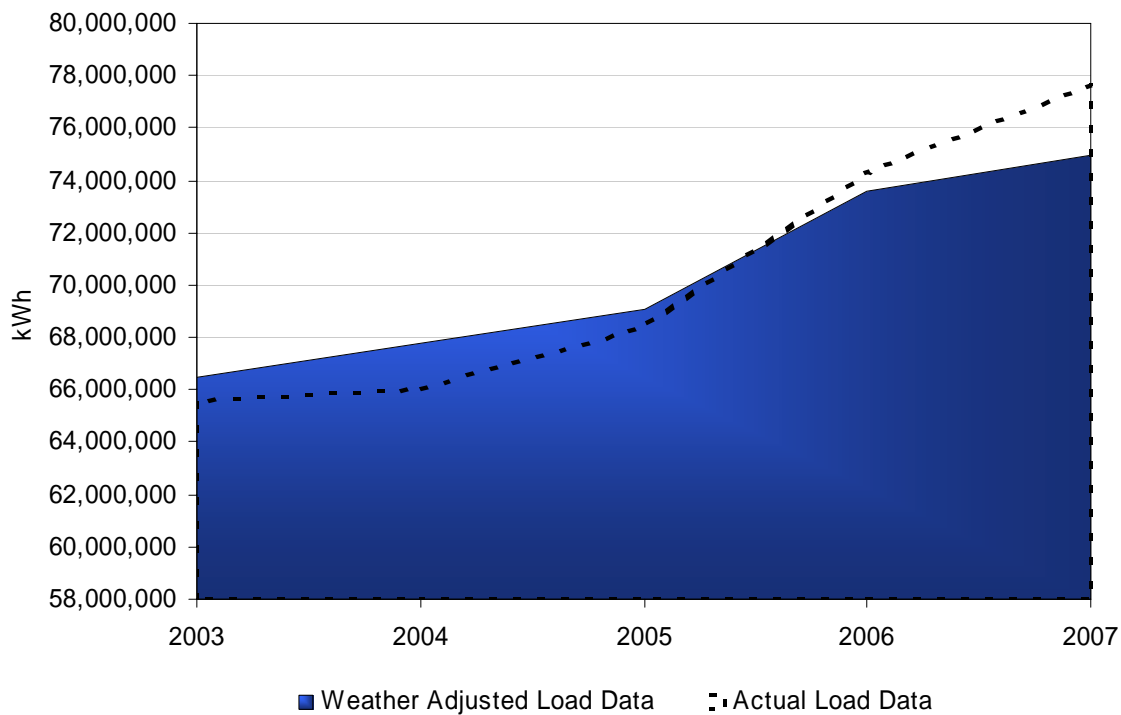
Historic Loads

Figure 1 shows historic energy loads by customer class. Total energy requirements have increased from 65,597 MWh in 2003 to 77,661 MWh in 2007. The increase is due to an average annual residential energy sales growth of 3.7 percent and 7.2 percent growth in commercial energy use. Energy for the District's own use and line losses make up the difference between retail sales and total energy requirements in Figure 1. Peak demand increased from 12.3 MW in 2003 to 18.8 MW in 2007. Figure 2 shows weather adjusted loads for the period 2003 through 2007. The total requirements in Figure 2 were calculated using Heating Degree Days (HDD) from the Shelton Sanderson Field weather station provided by NOAA (National Oceanic and Atmospheric Administration).

**Figure 1
Historic Energy Sales 2003 through 2007**



**Figure 2
Weather Adjusted Total Requirements
2003 through 2007**



Existing Resources

Bonneville Power Administration Resources

The District is a BPA full requirements customer; they rely solely on BPA to provide their energy and demand requirements at low rates. Under BPA’s current rate structure, when BPA acquires additional resources to serve its customers’ increasing loads (load growth), the cost of purchasing additional power is averaged or “melded” with the cost of the existing resources. As a result, BPA’s current rates reflect the average cost of both its existing and new resources.

Local Resources

The District currently has no local resources on its system. Therefore, the District is a BPA full requirements customer.

Demand-Side Management

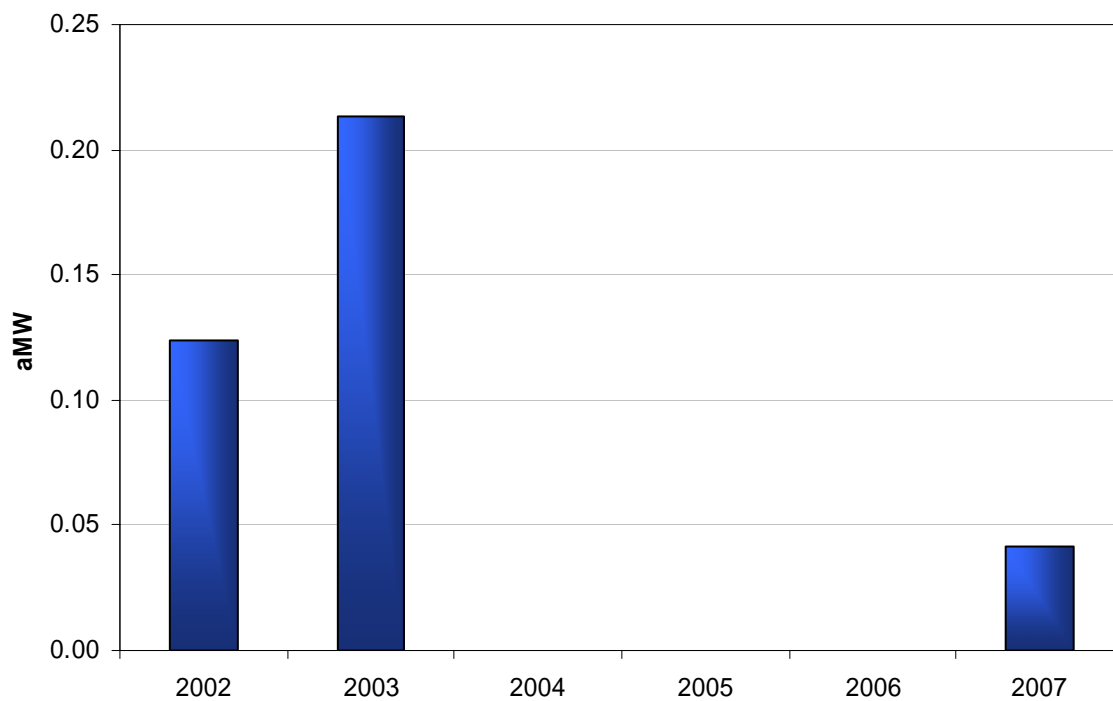
In the past, the District has participated in Bonneville’s conservation programs. These programs include commercial and residential CAA, CR&D, and ConAug programs. Currently the District offers rebates for Energy Star appliances including clothes washers, refrigerator, freezers, dishwasher, hot water heater, programmable thermostats, CFL bulbs, and showerheads. In addition, the District offers a program for lighting retrofits in commercial buildings and energy audits for both residential and commercial buildings. Table 1 provides historic conservation data for the period 2002 through 2007. Figure 3 illustrates annual savings for each year. Overall, the District has saved an average of 0.06 aMW each year through several conservation and energy efficiency measures. Conservation data is taken from the Regional Technical Forum (RTF) website.¹

**Table 1
Historic Conservation Savings**

Year	Residential kWh	Commercial kWh	Industrial kWh	Total aMW
2002	531,030	527,362	23,776	0.12
2003	548,850	1,263,600	55,572	0.21
2004	0	0		0.00
2005	0	0		0.00
2006	0	0		0.00
2007	42,234	322,431		0.04

¹ The RTF obtains this data from BPA, utilities, or other organizations. Some data may not be reported and the savings data for 2007 are preliminary.

Figure 3
Historic Conservation Savings 2002 to 2007



Northwest Energy Efficiency Alliance Savings

The Northwest Energy Efficiency Alliance (NEEA) is an organization that coordinates regional conservation efforts through a multitude of programs. The Bonneville Power Administration contributes money each year toward NEEA's conservation efforts, and each BPA customer (utility) can claim their pro rata share of BPA savings. For this resource plan, EES Consulting estimated the District's share of the BPA NEEA savings. This estimate is based on the assumption that BPA funds 50 percent of NEEA's total budget; therefore, BPA can claim 50 percent of the savings. Also, the District's pro rata share of BPA's conservation savings is calculated using the high watermark data released in August 2007. The District's actual share of NEEA savings may vary depending on actual load data. The District's average NEEA savings from 2001 through 2006 is approximately 0.02 aMW per year. Table 2 shows the details of the NEEA estimates.

Table 2
The District's Share of NEEA Savings

	2001	2002	2003	2004	2005	2006	Average
BPA and Utility Programs	115.92	110.66	99.48	103.23	100.16	95.81	104.21
Alliance Programs	30.17	35.39	33.53	35.14	28.89	24.53	31.27
BPA Share of NEEA	15.09	17.70	16.76	17.57	14.44	12.27	15.64
Mason County Public Utility District 1	0.01	0.02	0.02	0.02	0.02	0.02	0.02

3 Forecasted Loads and Resources

Electric Load Forecast

The District provided an electric load forecast developed in 2007. The 15-year forecast projects energy and demand for the period 2008 through 2022. Each customer class energy use per customer and number of customers is forecasted separately taking into account projected weather, heating degree days, population, and average price of electricity. Three scenarios were developed; however, the medium scenario is used for HB 1010 planning purposes. Forecasted peak demand is calculated using total energy requirements and assumed load factor. The District's load factor generally falls between 44 and 60 percent with peaks occurring mainly in January. Table 3 below summarizes the medium scenario load forecast and Table A1 in the appendix shows the details of the forecast.

Table 3
Load Forecast Summary (kWh)

Year	Residential	Commercial & Industrial	Total Sales	Utility Use	Losses	Total Energy Requirements	Loss as % of Total Req.	Peak Demand kW	Load Factor
2007*	50,711,950	16,002,925	66,714,875	166,000	8,064,064	74,944,939	10%	18,809	47%
2010	59,244,000	16,745,400	75,989,400	173,500	6,854,661	83,017,561	8%	18,954	50%
2013	62,844,000	17,312,400	80,156,400	181,000	7,230,366	87,567,766	8%	19,993	50%
2018	68,844,000	18,257,400	87,101,400	193,500	7,201,829	94,496,729	8%	21,575	50%
2022	73,644,000	19,013,400	92,657,400	203,500	6,500,263	99,361,163	7%	22,685	50%
Avg Growth	3.01%	1.25%	2.59%	1.51%	-1.29%	2.17%		1.37%	

*2007 data are actuals; residential loads are weather adjusted

Planned Resources

Bonneville Power Administration Resources

Beginning in October 2011, BPA will implement a tiered rate system where the traditional low rates will be available for only the first block of power. The first block is known as the utility's high water mark (HWM) and is equal to 2010 loads. Loads above a utility's HWM will be met with either Tier 2 BPA resources (at higher rates than Tier 1 resources) or non-federal resources chosen by the utility. Tier 1 is intended to capture the costs of BPA's current resources and Tier 2 is intended to capture the costs of additional resources acquired by BPA to serve its customers' loads in excess of their Tier 1 allocation. The general structure of the products that BPA intends to make available at Tier 1 rates is likely to remain essentially unchanged from the products that it currently provides. However, BPA and its customers are still working on finalizing the tiered rates methodology, rate design and product catalog. It is therefore difficult, at this time, to determine the impact of these changes on the District.

At the time of this resource plan, the District's Tier 1 energy is estimated based on the data provided. The District's forecast Contract High Water Mark (CHWM) is 9.5 aMW per year using the District's latest load forecast and historic local resources. The District's 2010 forecasted total requirements are 9.5 aMW. Therefore, the District's assumed CHWM and Tier 1 allocation is 9.5 aMW annually assuming the amount of conservation the District achieves is on the same scale as other utilities. As such, the District's HWM is not raised or lowered based on their conservation efforts.

Local Resources

This resource plan assumes that no new renewable energy resources are installed during the ten-year planning period. While projects may be installed during the planning period, the power supply provided by these new projects is likely to remain too small to include in this plan.

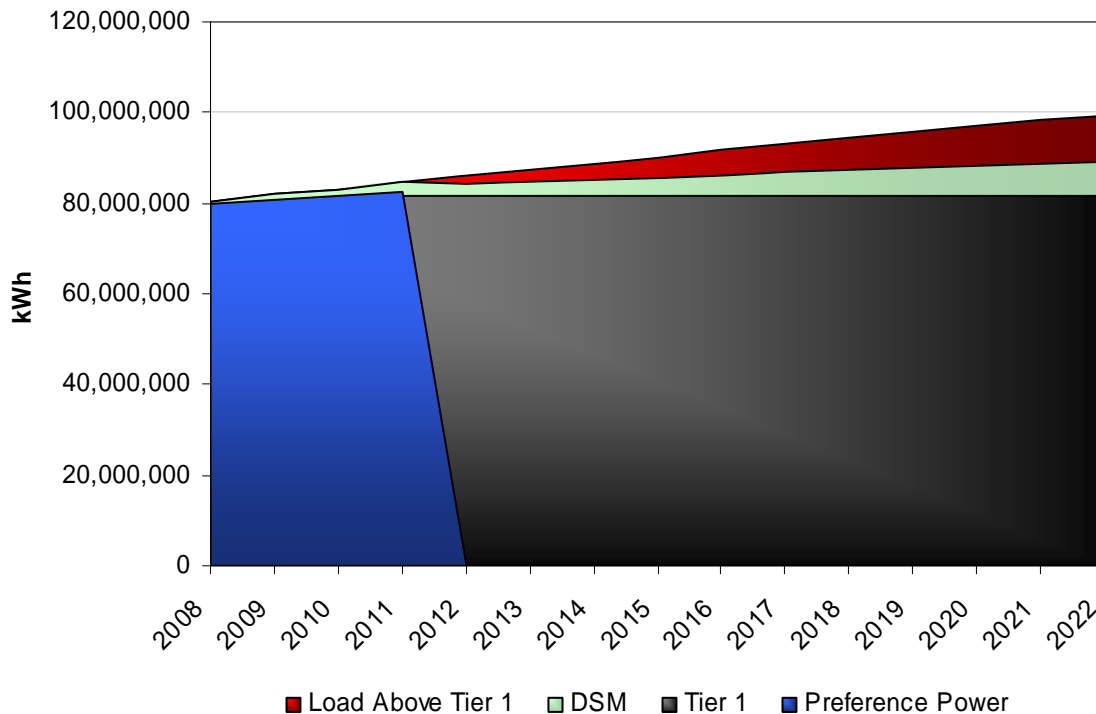
Demand-Side Management

Currently The District offers rebates for Energy Star appliances including clothes washers, refrigerator, freezers, dishwasher, hot water heater, programmable thermostats, CFL bulbs, and showerheads. In addition, The District offers a program for lighting retrofits in commercial buildings and energy audits for both residential and commercial buildings. These programs and their 2007 savings together with The District's NEEA savings portion amount to an average of 0.06 aMW per year of conservation resources. This average is used as an estimate of future annual savings. The District will continue to work with BPA to determine and implement cost effective programs in the District service area.

Load Resource Balance

Figure 4 illustrates the District's load resource balance for the period 2008 through 2018. The District's continued conservation efforts reduce power requirements above Tier 1 resources.

**Figure 3
Load Resource Balance - ENERGY**



Load Above Tier 1

At this time, the District plans to meet load above Tier 1 and DSM with BPA’s load following product. Since the District’s estimated load growth is moderate (1.6 percent), only a small portion of the District’s load requirements are subject to BPA Tier 2 rates. The District will continue to explore other resource options, such as DSM or renewable resources, as they become available.

Resource Summary

Mason County Public Utility District 1 has developed this plan in response to HB1010 requirements. Table 4 summarizes the planned resources for the period 2012 through 2018. Additional detail and the Cover Sheet and Summary of Biennial Utility Resource Plans form required by HB1010 can be found in the attached appendix.

Table 4
Planned Resources 2012-2022 (aMW)

	Total Power Requirements	Tier 1 Resources	DSM	Load Above Tier 1*
2012	9.82	9.48	0.30	0.05
2013	10.00	9.48	0.36	0.16
2014	10.15	9.48	0.42	0.25
2015	10.30	9.48	0.48	0.34
2016	10.47	9.48	0.54	0.45
2017	10.64	9.48	0.60	0.56
2018	10.79	9.48	0.66	0.65
2019	10.93	9.48	0.72	0.74
2020	11.08	9.48	0.78	0.82
2021	11.23	9.48	0.84	0.91
2022	11.34	9.48	0.90	0.97

*Since "Load Above Tier 1" is less than 1 aMW, it will be part of the Tier 1 load following product and not subject to Tier 2 rates.

Resource Choice

The District plans on continue purchasing all power requirements in excess of DSM from BPA. To meet power needs in excess of Tier 1, BPA plans to offer Tier 2 products. Tier 2 is intended to be power from sources other than the existing federal system, offered at approximately the cost of the resources. For example, a Tier 2 product may consist of wind project output purchased by BPA or market purchases. At this time, BPA's customers do not know what products will be available from BPA, how much they will cost, or any other details about the terms. Therefore, it is assumed in this analysis that Tier 2 power is simply some combination of supply-side resources, renewable or non-renewable, that can be purchased from BPA instead of other vendors. It is not considered to be a distinct resource for purposes of the resource plan.

Further, the District plans to continue active conservation resource acquisition to further reduce load requirements above Tier 1 resources.

Appendix A

Table A1
Medium Growth Load Forecast

	Total Power Requirements	Retail Sales	Residential	Residential Customers	Commercial & Industrial	Commercial & Industrial Customers	Utility Use	Losses kWh	Losses %	Peak Demand kW	Annual Load Factor
2003	65,596,504	58,319,977	46,560,275	4,312	11,759,702	406	145,000	7,131,527	10.9%	12,370	60.5%
2004	66,016,572	60,098,330	46,295,814	4,370	13,802,516	415	135,000	5,783,242	8.8%	16,880	44.6%
2005	68,404,940	61,824,755	47,959,647	4,481	13,865,108	429	165,000	6,415,185	9.4%	15,489	50.4%
2006	74,253,986	67,260,883	51,316,339	4,575	15,944,544	431	175,000	6,818,103	9.2%	16,313	52.0%
2007	77,661,250	69,431,186	53,428,261	4,637	16,002,925	428	166,000	8,064,064	10.4%	18,809	47.1%
2008	80,356,161	73,211,400	56,844,000	4,737	16,367,400	433	168,500	6,971,091	8.7%	18,345	50.0%
2009	81,879,958	74,600,400	58,044,000	4,837	16,556,400	438	171,000	7,103,283	8.7%	18,693	50.0%
2010	83,022,941	75,989,400	59,244,000	4,937	16,745,400	443	173,500	6,854,661	8.3%	18,954	50.0%
2011	84,539,781	77,378,400	60,444,000	5,037	16,934,400	448	176,000	6,979,896	8.3%	19,300	50.0%
2012	86,056,621	78,767,400	61,644,000	5,137	17,123,400	453	178,500	7,105,131	8.3%	19,646	50.0%
2013	87,573,461	80,156,400	62,844,000	5,237	17,312,400	458	181,000	7,230,366	8.3%	19,993	50.0%
2014	88,885,979	81,545,400	64,044,000	5,337	17,501,400	463	183,500	7,151,279	8.0%	20,292	50.0%
2015	90,191,539	82,934,400	65,244,000	5,437	17,690,400	468	186,000	7,065,234	7.8%	20,590	50.0%
2016	91,701,422	84,323,400	66,444,000	5,537	17,879,400	473	188,500	7,183,512	7.8%	20,935	50.0%
2017	93,211,304	85,712,400	67,644,000	5,637	18,068,400	478	191,000	7,301,789	7.8%	21,280	50.0%
2018	94,502,949	87,101,400	68,844,000	5,737	18,257,400	483	193,500	7,201,829	7.6%	21,575	50.0%
2019	95,787,637	88,490,400	70,044,000	5,837	18,446,400	488	196,000	7,094,912	7.4%	21,868	50.0%
2020	97,065,367	89,879,400	71,244,000	5,937	18,635,400	493	198,500	6,981,037	7.2%	22,160	50.0%
2021	98,336,140	91,268,400	72,444,000	6,037	18,824,400	498	201,000	6,860,205	7.0%	22,450	50.0%
2022	99,367,803	92,657,400	73,644,000	6,137	19,013,400	503	203,500	6,500,263	6.5%	22,685	50.0%
<i>Average Annual Growth Rate</i>											
2003-2007	3.7%	3.8%	3.0%	1.5%	7.2%	1.1%	2.9%	2.6%	-0.9%	10.4%	
2008-2022	1.6%	1.8%	2.0%	2.0%	1.1%	1.1%	1.4%	-0.5%	-1.6%	1.6%	

*Bolded values are actuals and not weather-adjusted.

**Cover Sheet and Summary of Biennial Utility Resource Plans
2008 Report**

Mason County Public Utility District 1

Prepared by: EES Consulting
570 Kirkland Way, Suite 200
Kirkland, WA 98033
p:(425) 889-2700 f:(425) 889-2726

**Base Year of RP:
Loads/Resources
CY 2007**

Projected Energy

	Annual Energy (MWa)	2013	2018
(1) Loads	8.87	10.00	10.79
Resources			
(2) Conservation/Efficiency	N/A	0.36	0.66
(3) Demand Response	N/A		
(4) Cogeneration (minor)			
(5) Hydro (minor)			
(6) Wind (minor)			
(7) Other Renewables (solar)			
(8) BPA Tier 1 Load Following	8.87	9.48	9.48
(9) BPA Tier 2: Load Growth Rate		0.16	0.65
(10) BPA Tier 2: Market Purchase		-	-
(11) BPA Tier 2: Green Product			
(12) Non BPA Load Following			
(13) Non BPA: Market Purchase			
(14) Other (Specify)			
(15) Total (sum lines 2 through 7)	-	0.36	0.66
(16) Load/Resource Balance	8.87	9.64	10.13

If a resource other than Conservation and renewables is included in the plan (rows 9, 10, 12,13 or 14) please explain the choice:

Please see attached document.