



Appendix 6.0
SEE Region Demand Forecasting



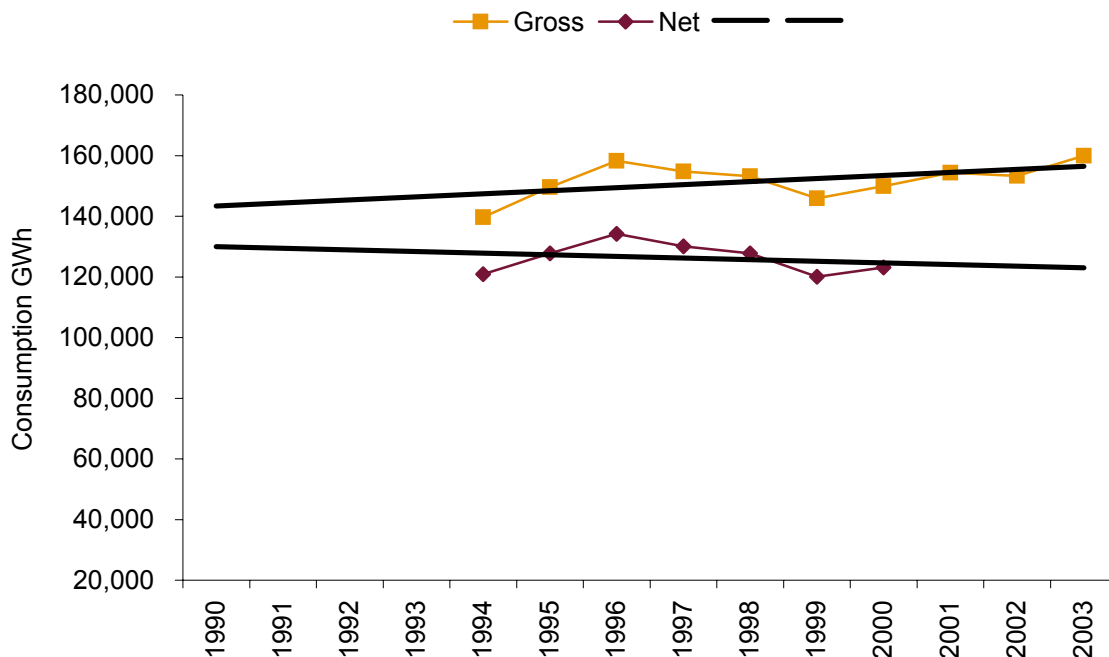
1. Historical Trend Analysis

The data for SEE Region was sourced from the national utility. A complete data set of historical electricity demand was made available for analysis.

Figure A6.0.1: Historical Electricity Consumption

	(1)	(1)	(1)	(1)	(2)	(2)	
	Net Demand GWh	Transmis Losses GWh	Distrib Losses GWh	Total Losses GWh	Gross Demand GWh	All Losses Share of Gross	Population Net Energy Intensity ('000) kWh/cap
1990	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-
1994	120,856	-	-	-	139,732	13.5%	-
1995	127,730	-	-	-	149,627	14.6%	-
1996	134,158	-	-	-	158,236	15.2%	-
1997	130,051	-	-	-	154,764	16.0%	-
1998	127,724	-	-	-	153,217	16.6%	-
1999	120,059	-	-	-	145,908	17.7%	-
2000	123,121	-	-	-	149,959	17.9%	-
2001	-	-	-	-	154,313	-	-
2002	-	-	-	-	153,305	-	53,566
2003	-	-	-	-	159,953	-	-

Source: PwC, governments, utilities



Source: PwC, governments, utilities



y

Figure A6.0.2: Historical Sectoral Electricity Demand

	Domestic Demand GWh	Industry Demand GWh	Other Demand GWh	Total Net Demand GWh	Domestic Demand Growth	Industry Demand Growth	Other Demand Growth	Total Net Demand Growth
1990	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-	-
1994	-	-	-	120,856	-	-	-	-
1995	-	-	-	127,730	-	-	-	5.4%
1996	-	-	-	134,158	-	-	-	4.8%
1997	-	-	-	130,051	-	-	-	-3.2%
1998	-	-	-	127,724	-	-	-	-1.8%
1999	-	-	-	120,059	-	-	-	-6.4%
2000	-	-	-	123,121	-	-	-	2.5%
2001	-	-	-	-	-	-	-	-
2002	-	-	-	-	-	-	-	-
2003	-	-	-	-	-	-	-	-

Source: PwC, governments, utilities



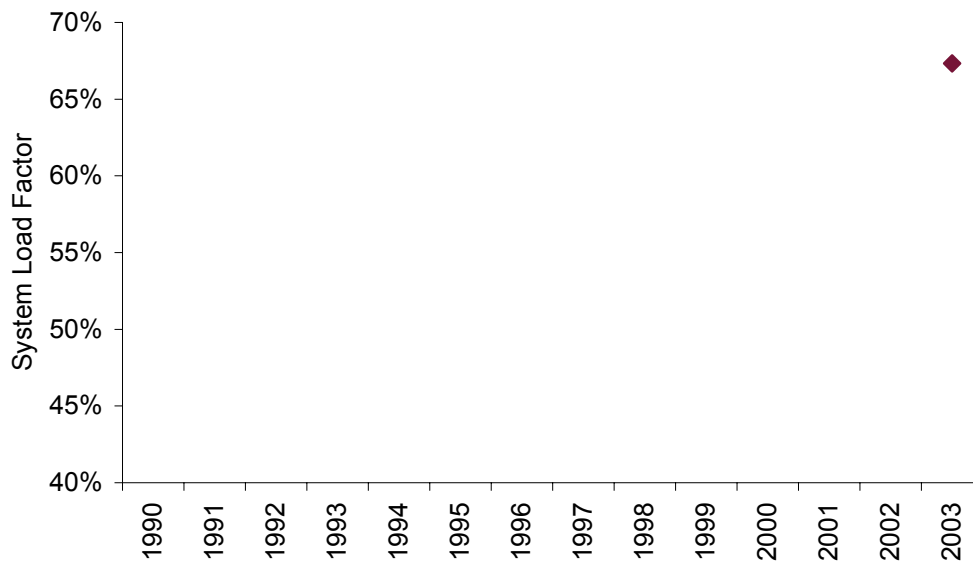
Source: PwC, governments, utilities



Figure A6.0.3: Historical System Load Factor

	Gross Demand GWh	Auxilliary Demand GWh	Pumping Demand GWh	Gross Consump GWh	Gross Consm Growth	System Peak MW	System Peak Growth	System Load Factor
1990	-	-	-	-	-	-	-	-
1991	-	-	-	-	0.0%	-	0.0%	-
1992	-	-	-	-	0.0%	-	0.0%	-
1993	-	-	-	-	0.0%	-	0.0%	-
1994	139,732	-	-	139,732	0.0%	-	0.0%	-
1995	149,627	-	-	149,627	7.1%	-	0.0%	-
1996	158,236	-	-	158,236	5.8%	-	0.0%	-
1997	154,764	-	-	154,764	-2.2%	-	0.0%	-
1998	153,217	-	-	153,217	-1.0%	-	0.0%	-
1999	145,908	-	-	145,908	-4.8%	-	0.0%	-
2000	149,959	-	-	149,959	2.8%	-	0.0%	-
2001	154,313	-	-	154,313	2.9%	-	0.0%	-
2002	153,305	-	-	153,305	-0.7%	-	0.0%	-
2003	159,953	-	-	159,953	4.3%	27,117	0.0%	67.3%

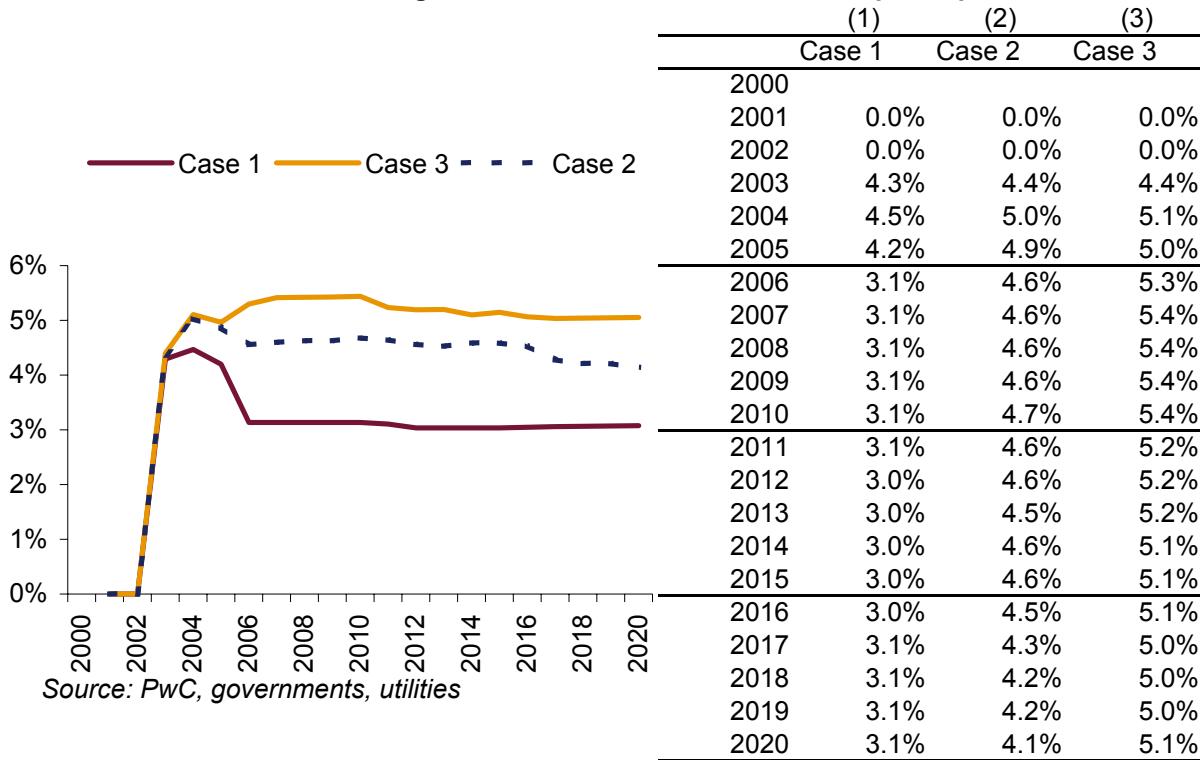
Source: PwC, governments, utilities





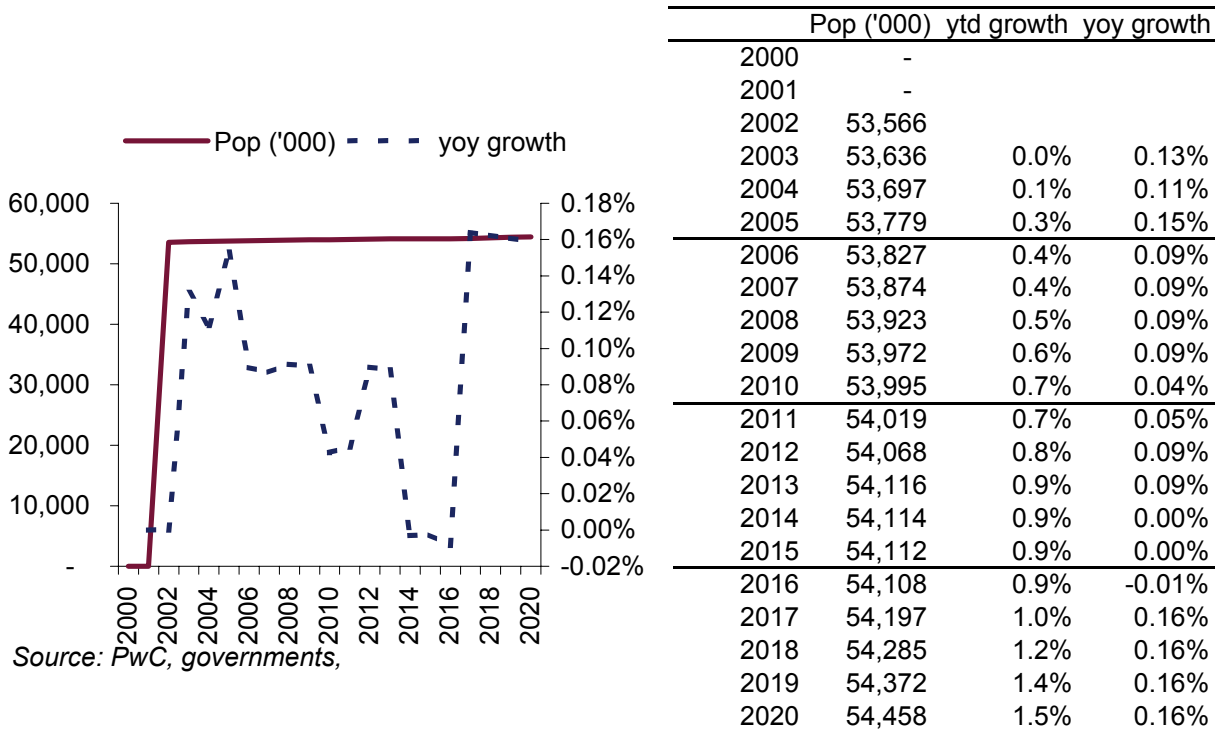
2. Forecast Assumptions

Figure A6.0.4: Scenario Forecast GDP per Capita



Source: PwC, governments, utilities

Figure A6.0.5: Forecast Population



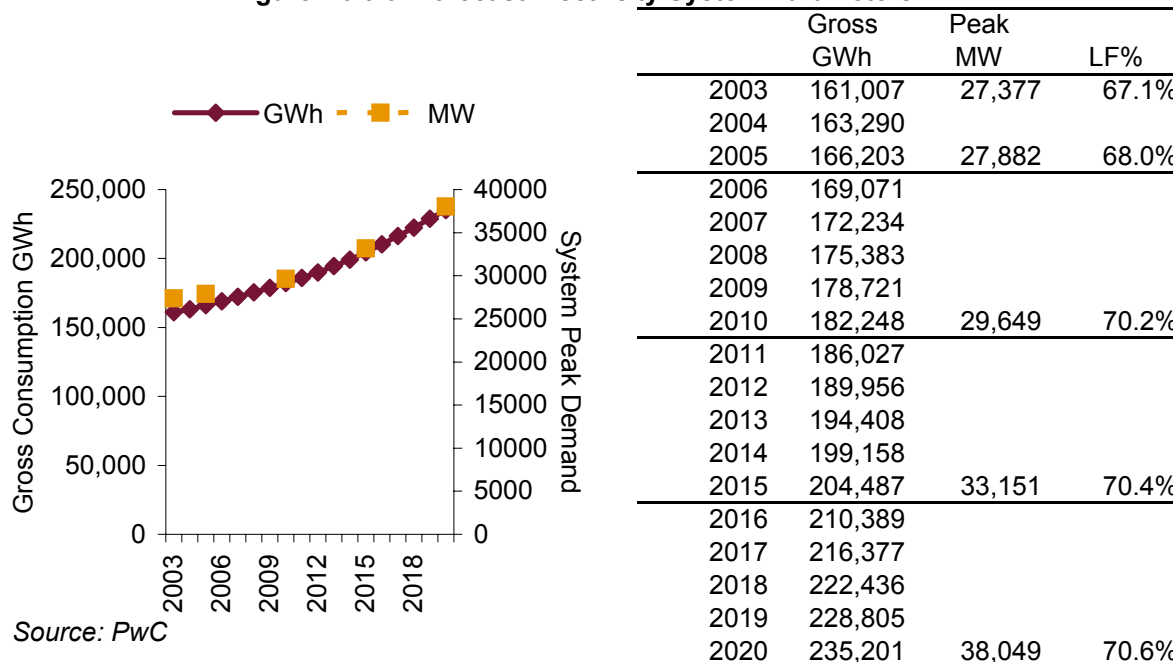
Source: PwC, governments, utilities



3. Forecast Calculation

Using the econometric demand forecasting model described in Chapter 3 of this report, together with GDP growth forecast assumptions, the following data are forecast for energy demand.

Figure A6.0.6: Forecast Electricity System Parameters



Source: PwC

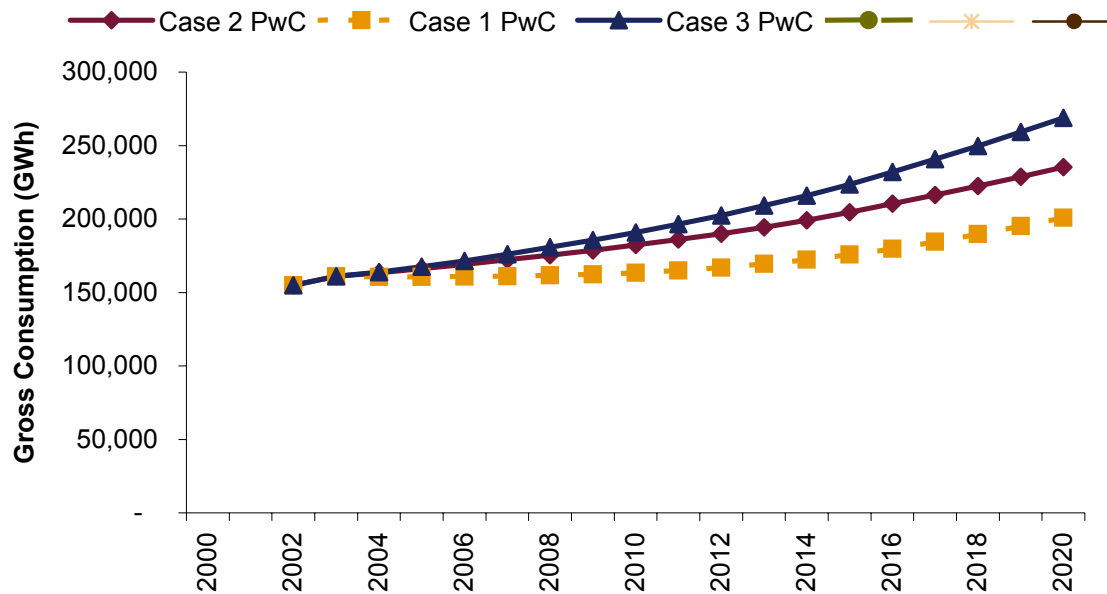
Figure A6.0.7: Case 2 Economic Model Forecast Calculation

Year	GDP per Capita (95 US\$)	Forecast Growth (%)	Electricity Intensity (kWh/GDP)	Electricity per capita (kWh pp)	Population ('000)	Net Consumpt (GWh)	D & T Losses (%)	Gross Consumpt (GWh)
2002	1,800		1.31	2,350	53,566	125,864	18.8%	154,933
2003	1,892	5.1%	1.29	2,443	53,636	131,054	18.6%	161,007
2004	1,983	4.8%	1.25	2,481	53,697	133,209	18.4%	163,290
2005	2,079	4.8%	1.22	2,537	53,779	136,448	17.9%	166,203
2006	2,173	4.5%	1.20	2,597	53,827	139,815	17.3%	169,071
2007	2,273	4.6%	1.17	2,664	53,874	143,543	16.7%	172,234
2008	2,378	4.6%	1.15	2,734	53,923	147,420	15.9%	175,383
2009	2,488	4.6%	1.13	2,809	53,972	151,599	15.2%	178,721
2010	2,604	4.7%	1.11	2,890	53,995	156,027	14.4%	182,248
2011	2,725	4.6%	1.09	2,974	54,019	160,664	13.6%	186,027
2012	2,849	4.5%	1.07	3,060	54,068	165,433	12.9%	189,956
2013	2,977	4.5%	1.06	3,147	54,116	170,318	12.4%	194,408
2014	3,113	4.6%	1.04	3,240	54,114	175,311	12.0%	199,158
2015	3,255	4.6%	1.03	3,337	54,112	180,558	11.7%	204,487
2016	3,401	4.5%	1.01	3,437	54,108	185,953	11.6%	210,389
2017	3,546	4.3%	1.00	3,532	54,197	191,425	11.5%	216,377
2018	3,695	4.2%	0.98	3,629	54,285	196,972	11.4%	222,436
2019	3,849	4.2%	0.97	3,729	54,372	202,777	11.4%	228,805
2020	4,008	4.1%	0.96	3,832	54,458	208,662	11.3%	235,201

Source: PwC



Figure A6.0.8: Comparison with other Forecasts



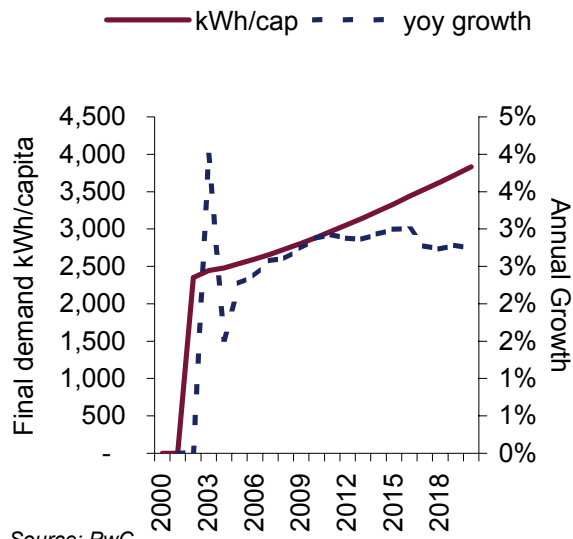
Source: PwC, governments, utilities

GWh	Case 2	Case 1	Case 3
2000			
2001			
2002	154,933	154,933	154,933
2003	161,007	161,007	161,007
2004	163,290	160,535	163,879
2005	166,203	160,613	167,510
2006	169,071	160,687	171,458
2007	172,234	161,110	176,112
2008	175,383	161,575	180,720
2009	178,721	162,402	185,644
2010	182,248	163,451	190,896
2011	186,027	164,878	196,504
2012	189,956	166,803	202,370
2013	194,408	169,428	209,069
2014	199,158	172,305	215,864
2015	204,487	175,714	223,591
2016	210,389	179,794	232,087
2017	216,377	184,603	240,808
2018	222,436	189,709	249,741
2019	228,805	195,144	259,163
2020	235,201	200,839	268,758

Source: PwC, governments, utilities



Figure A6.0.9: Forecast Final Demand per Capita

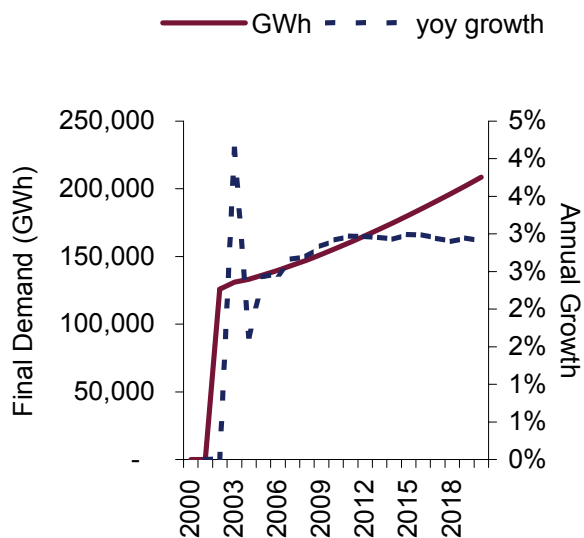


Source: PwC

	kWh/cap	ytd growth	yoy growth
2000	-		
2001	-		
2002	2,350		
2003	2,443	0.0%	4.0%
2004	2,481	1.5%	1.5%
2005	2,537	3.8%	2.3%
2006	2,597	6.3%	2.4%
2007	2,664	9.0%	2.6%
2008	2,734	11.9%	2.6%
2009	2,809	15.0%	2.7%
2010	2,890	18.3%	2.9%
2011	2,974	21.7%	2.9%
2012	3,060	25.2%	2.9%
2013	3,147	28.8%	2.9%
2014	3,240	32.6%	2.9%
2015	3,337	36.6%	3.0%
2016	3,437	40.7%	3.0%
2017	3,532	44.6%	2.8%
2018	3,629	48.5%	2.7%
2019	3,729	52.6%	2.8%
2020	3,832	56.8%	2.7%

Source: PwC

Figure A6.0.10: Forecast Final Net Demand



Source: PwC

	GWh	ytd growth	yoy growth
2000	-		
2001	-		
2002	125,864		
2003	131,054	0.0%	4.1%
2004	133,209	1.6%	1.6%
2005	136,448	4.1%	2.4%
2006	139,815	6.7%	2.5%
2007	143,543	9.5%	2.7%
2008	147,420	12.5%	2.7%
2009	151,599	15.7%	2.8%
2010	156,027	19.1%	2.9%
2011	160,664	22.6%	3.0%
2012	165,433	26.2%	3.0%
2013	170,318	30.0%	3.0%
2014	175,311	33.8%	2.9%
2015	180,558	37.8%	3.0%
2016	185,953	41.9%	3.0%
2017	191,425	46.1%	2.9%
2018	196,972	50.3%	2.9%
2019	202,777	54.7%	2.9%
2020	208,662	59.2%	2.9%

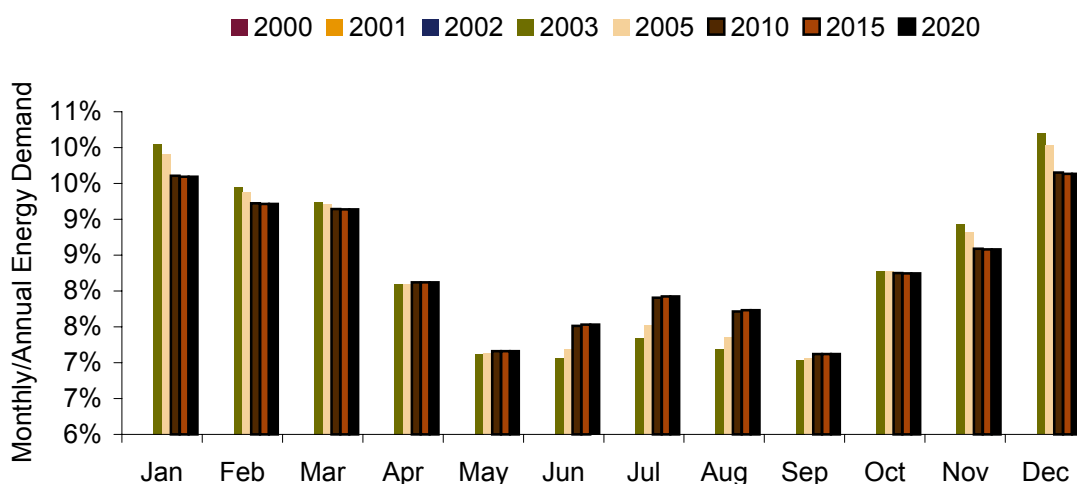
Source: PwC



4. Forecast variation in monthly electricity demand

Following the analysis in Chapter 3 of the main report, we have forecast a change in the share of annual energy demand and peak demand. We detail here the forecast annual change of these parameters.

Figure A6.0.11: Forecast Monthly Energy Demand



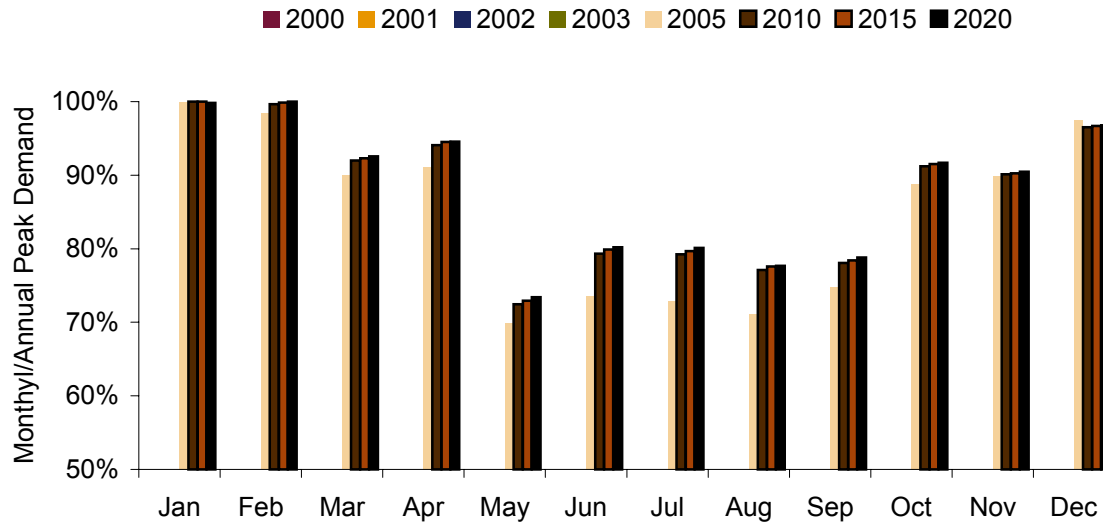
Source: PwC

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	-	-	-	-	-	-	-	-	-	-	-	-
2001	-	-	-	-	-	-	-	-	-	-	-	-
2002	-	-	-	-	-	-	-	-	-	-	-	-
2003	10.0%	9.4%	9.2%	8.1%	7.1%	7.1%	7.3%	7.2%	7.0%	8.3%	8.9%	10.2%
2004	10.0%	9.4%	9.2%	8.1%	7.1%	7.1%	7.4%	7.3%	7.0%	8.3%	8.9%	10.1%
2005	9.9%	9.4%	9.2%	8.1%	7.1%	7.2%	7.5%	7.4%	7.1%	8.3%	8.8%	10.0%
2006	9.8%	9.4%	9.2%	8.1%	7.1%	7.3%	7.6%	7.4%	7.1%	8.3%	8.8%	10.0%
2007	9.8%	9.3%	9.2%	8.1%	7.1%	7.3%	7.7%	7.5%	7.1%	8.3%	8.7%	9.9%
2008	9.7%	9.3%	9.2%	8.1%	7.1%	7.4%	7.8%	7.6%	7.1%	8.3%	8.7%	9.8%
2009	9.7%	9.3%	9.2%	8.1%	7.2%	7.5%	7.8%	7.6%	7.1%	8.3%	8.6%	9.7%
2010	9.6%	9.2%	9.1%	8.1%	7.2%	7.5%	7.9%	7.7%	7.1%	8.2%	8.6%	9.7%
2011	9.6%	9.2%	9.1%	8.1%	7.2%	7.5%	7.9%	7.7%	7.1%	8.2%	8.6%	9.6%
2012	9.6%	9.2%	9.1%	8.1%	7.2%	7.5%	7.9%	7.7%	7.1%	8.2%	8.6%	9.6%
2013	9.6%	9.2%	9.1%	8.1%	7.2%	7.5%	7.9%	7.7%	7.1%	8.2%	8.6%	9.6%
2014	9.6%	9.2%	9.1%	8.1%	7.2%	7.5%	7.9%	7.7%	7.1%	8.2%	8.6%	9.6%
2015	9.6%	9.2%	9.1%	8.1%	7.2%	7.5%	7.9%	7.7%	7.1%	8.2%	8.6%	9.6%
2016	9.6%	9.2%	9.1%	8.1%	7.2%	7.5%	7.9%	7.7%	7.1%	8.2%	8.6%	9.6%
2017	9.6%	9.2%	9.1%	8.1%	7.2%	7.5%	7.9%	7.7%	7.1%	8.2%	8.6%	9.6%
2018	9.6%	9.2%	9.1%	8.1%	7.2%	7.5%	7.9%	7.7%	7.1%	8.2%	8.6%	9.6%
2019	9.6%	9.2%	9.1%	8.1%	7.2%	7.5%	7.9%	7.7%	7.1%	8.2%	8.6%	9.6%
2020	9.6%	9.2%	9.1%	8.1%	7.2%	7.5%	7.9%	7.7%	7.1%	8.2%	8.6%	9.6%

Source: PwC



Figure A6.0.12: Forecast Monthly Peak Demand



Source: PwC

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	-	-	-	-	-	-	-	-	-	-	-	-
2001	-	-	-	-	-	-	-	-	-	-	-	-
2002	-	-	-	-	-	-	-	-	-	-	-	-
2003	-	-	-	-	-	-	-	-	-	-	-	-
2005	100.0%	98.4%	89.9%	91.1%	69.9%	73.6%	72.9%	71.1%	74.8%	88.8%	89.8%	97.4%
2010	100.0%	99.7%	92.0%	94.1%	72.5%	79.4%	79.2%	77.1%	78.1%	91.2%	90.1%	96.5%
2015	100.0%	99.9%	92.3%	94.5%	72.9%	79.9%	79.7%	77.6%	78.4%	91.5%	90.2%	96.7%
2020	99.8%	100.0%	92.5%	94.6%	73.4%	80.2%	80.1%	77.7%	78.8%	91.7%	90.5%	96.8%

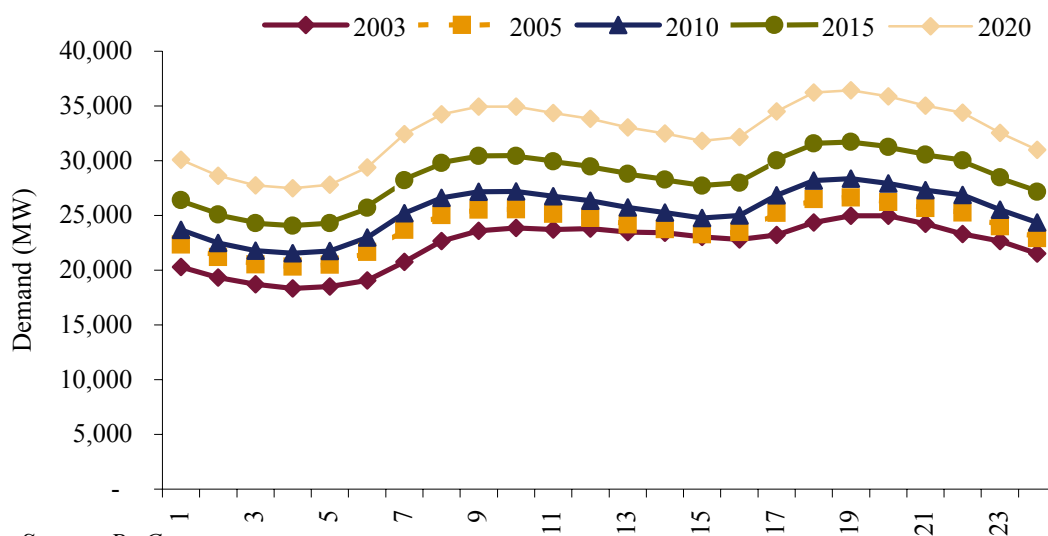
Source: PwC



5. Historical and forecast daily profiles

Using a combination of the 2003 load profiles for the 3rd week of January, April, July and October and the previous analysis of changing seasonal demand, we compare forecast and historical profiles.

Figure A6.0.13: 3rd Wed January Daily Profiles



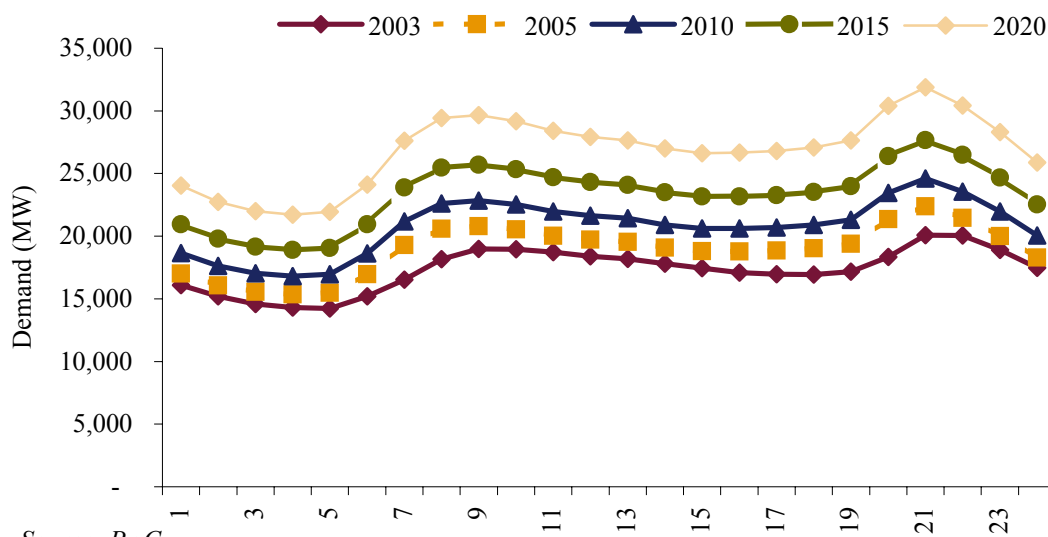
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	-	-	-	20,280	22,327	23,674	26,393	30,095
2	-	-	-	19,331	21,204	22,482	25,076	28,613
3	-	-	-	18,713	20,528	21,770	24,296	27,751
4	-	-	-	18,341	20,308	21,541	24,052	27,495
5	-	-	-	18,521	20,489	21,742	24,292	27,801
6	-	-	-	19,056	21,659	22,989	25,689	29,392
7	-	-	-	20,768	23,688	25,194	28,219	32,439
8	-	-	-	22,653	25,016	26,616	29,805	34,247
9	-	-	-	23,583	25,526	27,171	30,427	34,956
10	-	-	-	23,855	25,543	27,185	30,435	34,955
11	-	-	-	23,724	25,145	26,754	29,942	34,368
12	-	-	-	23,788	24,766	26,348	29,487	33,843
13	-	-	-	23,480	24,179	25,724	28,791	33,051
14	-	-	-	23,418	23,743	25,264	28,279	32,477
15	-	-	-	23,034	23,282	24,767	27,711	31,806
16	-	-	-	22,803	23,487	24,991	27,977	32,159
17	-	-	-	23,225	25,228	26,835	30,035	34,505
18	-	-	-	24,364	26,492	28,199	31,565	36,239
19	-	-	-	24,973	26,643	28,357	31,737	36,423
20	-	-	-	24,962	26,235	27,927	31,258	35,882
21	-	-	-	24,228	25,674	27,318	30,556	35,040
22	-	-	-	23,302	25,251	26,867	30,037	34,392
23	-	-	-	22,662	24,007	25,518	28,491	32,550
24	-	-	-	21,517	22,938	24,356	27,172	31,007

Source: PwC



Figure A6.0.14: 3rd Wed April Daily Profiles



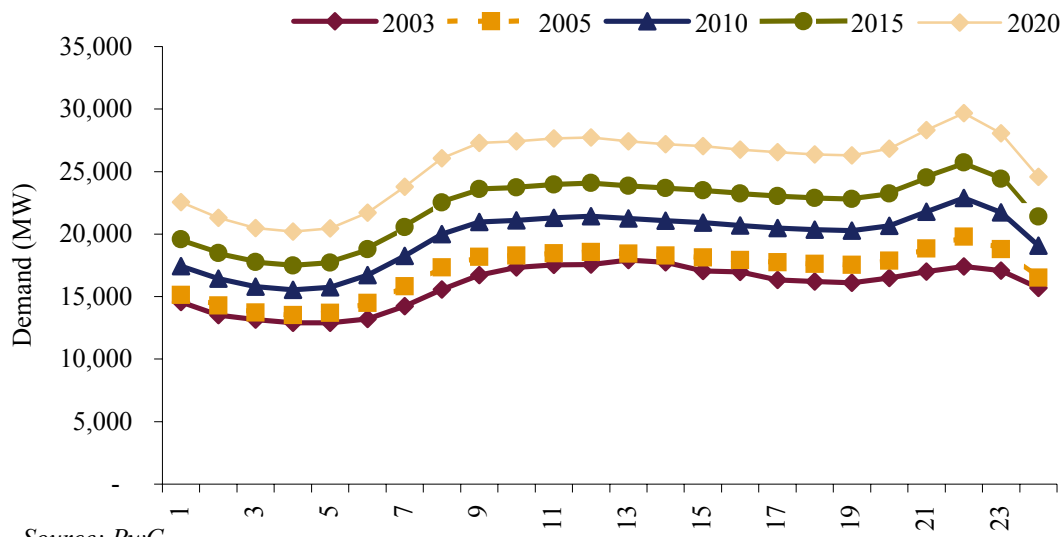
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	-	-	-	16,090	17,014	18,654	20,948	24,038
2	-	-	-	15,209	16,081	17,624	19,797	22,732
3	-	-	-	14,600	15,558	17,046	19,154	22,001
4	-	-	-	14,303	15,349	16,813	18,893	21,706
5	-	-	-	14,224	15,472	16,952	19,069	21,954
6	-	-	-	15,213	16,970	18,614	20,944	24,121
7	-	-	-	16,525	19,278	21,182	23,876	27,605
8	-	-	-	18,158	20,581	22,612	25,479	29,434
9	-	-	-	18,973	20,797	22,837	25,712	29,649
10	-	-	-	18,944	20,538	22,535	25,349	29,185
11	-	-	-	18,715	20,038	21,976	24,703	28,407
12	-	-	-	18,399	19,734	21,635	24,311	27,925
13	-	-	-	18,199	19,554	21,436	24,082	27,649
14	-	-	-	17,813	19,072	20,909	23,496	26,991
15	-	-	-	17,457	18,808	20,626	23,175	26,622
16	-	-	-	17,089	18,778	20,605	23,168	26,661
17	-	-	-	16,959	18,852	20,695	23,276	26,801
18	-	-	-	16,928	19,033	20,906	23,521	27,091
19	-	-	-	17,178	19,400	21,313	23,980	27,632
20	-	-	-	18,345	21,354	23,456	26,385	30,393
21	-	-	-	20,085	22,385	24,599	27,674	31,876
22	-	-	-	20,049	21,448	23,566	26,484	30,427
23	-	-	-	18,911	19,995	21,961	24,672	28,315
24	-	-	-	17,475	18,288	20,068	22,539	25,871

Source: PwC



Figure A6.0.15: 3rd Wed Jul Daily Profiles



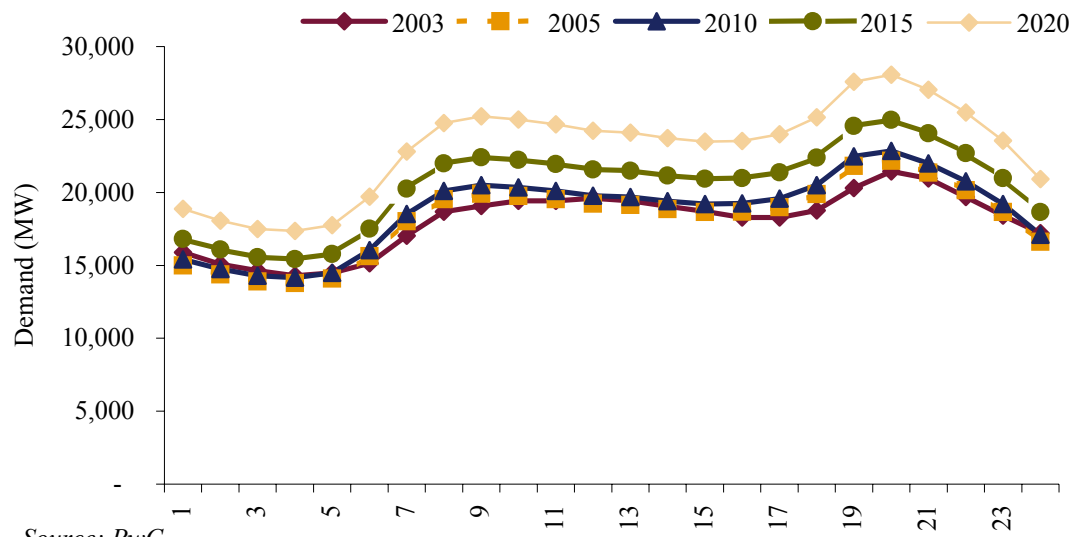
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	-	-	-	14,570	15,141	17,445	19,592	22,548
2	-	-	-	13,506	14,287	16,445	18,479	21,299
3	-	-	-	13,153	13,734	15,794	17,759	20,494
4	-	-	-	12,903	13,522	15,540	17,480	20,193
5	-	-	-	12,905	13,687	15,741	17,710	20,466
6	-	-	-	13,217	14,502	16,721	18,802	21,717
7	-	-	-	14,236	15,831	18,260	20,553	23,774
8	-	-	-	15,556	17,338	20,004	22,523	26,056
9	-	-	-	16,717	18,169	20,966	23,606	27,295
10	-	-	-	17,330	18,278	21,093	23,744	27,430
11	-	-	-	17,526	18,455	21,300	23,961	27,644
12	-	-	-	17,569	18,569	21,426	24,082	27,726
13	-	-	-	17,925	18,433	21,255	23,871	27,432
14	-	-	-	17,752	18,279	21,083	23,675	27,202
15	-	-	-	17,051	18,126	20,924	23,509	27,046
16	-	-	-	16,971	17,927	20,693	23,250	26,755
17	-	-	-	16,343	17,735	20,481	23,032	26,549
18	-	-	-	16,214	17,607	20,344	22,879	26,382
19	-	-	-	16,095	17,548	20,277	22,805	26,303
20	-	-	-	16,478	17,877	20,661	23,244	26,824
21	-	-	-	17,003	18,852	21,800	24,527	28,321
22	-	-	-	17,412	19,789	22,894	25,740	29,676
23	-	-	-	17,087	18,792	21,744	24,417	28,067
24	-	-	-	15,701	16,526	19,077	21,411	24,589

Source: PwC



Figure A6.0.16: 3rd Wed Oct Daily Profiles



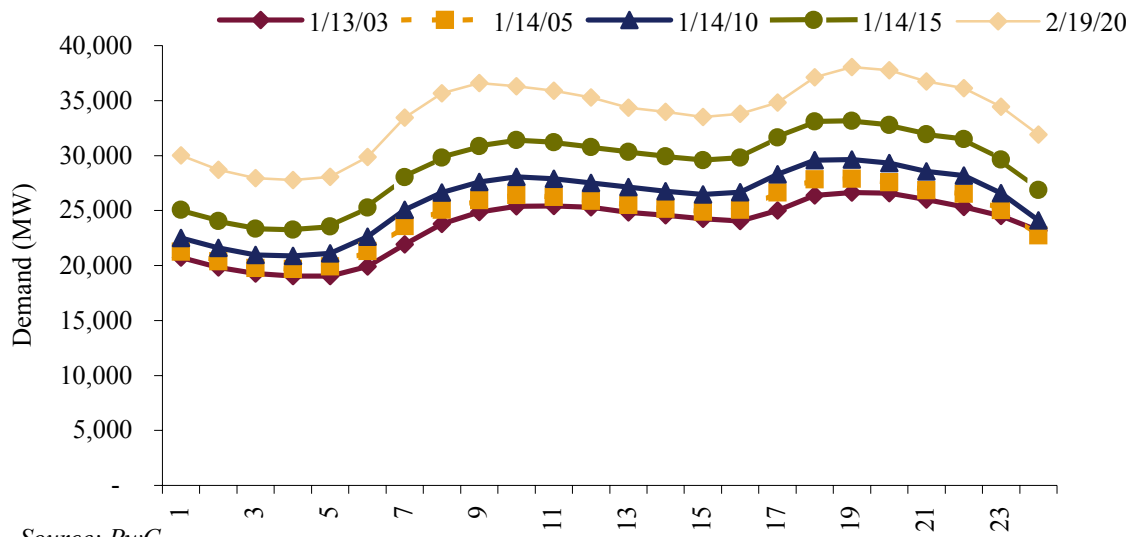
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	-	-	-	15,878	14,996	15,412	16,804	18,874
2	-	-	-	15,068	14,364	14,756	16,084	18,069
3	-	-	-	14,637	13,900	14,281	15,566	17,498
4	-	-	-	14,289	13,781	14,156	15,434	17,359
5	-	-	-	14,476	14,091	14,474	15,782	17,759
6	-	-	-	15,151	15,616	16,050	17,513	19,711
7	-	-	-	17,032	18,020	18,529	20,247	22,810
8	-	-	-	18,676	19,533	20,099	21,981	24,755
9	-	-	-	19,072	19,906	20,492	22,410	25,222
10	-	-	-	19,422	19,758	20,336	22,224	24,993
11	-	-	-	19,427	19,537	20,106	21,955	24,667
12	-	-	-	19,589	19,216	19,774	21,579	24,221
13	-	-	-	19,413	19,142	19,695	21,481	24,097
14	-	-	-	19,053	18,846	19,393	21,148	23,721
15	-	-	-	18,706	18,651	19,207	20,947	23,488
16	-	-	-	18,273	18,680	19,236	20,981	23,535
17	-	-	-	18,274	18,993	19,573	21,373	23,990
18	-	-	-	18,770	19,883	20,488	22,380	25,140
19	-	-	-	20,299	21,816	22,477	24,557	27,585
20	-	-	-	21,451	22,175	22,845	24,979	28,077
21	-	-	-	20,958	21,344	21,990	24,047	27,030
22	-	-	-	19,696	20,139	20,752	22,682	25,479
23	-	-	-	18,415	18,644	19,210	20,984	23,556
24	-	-	-	17,202	16,602	17,087	18,645	20,921

Source: PwC



Figure A6.0.17: Peak Hourly Demand Daily Profiles



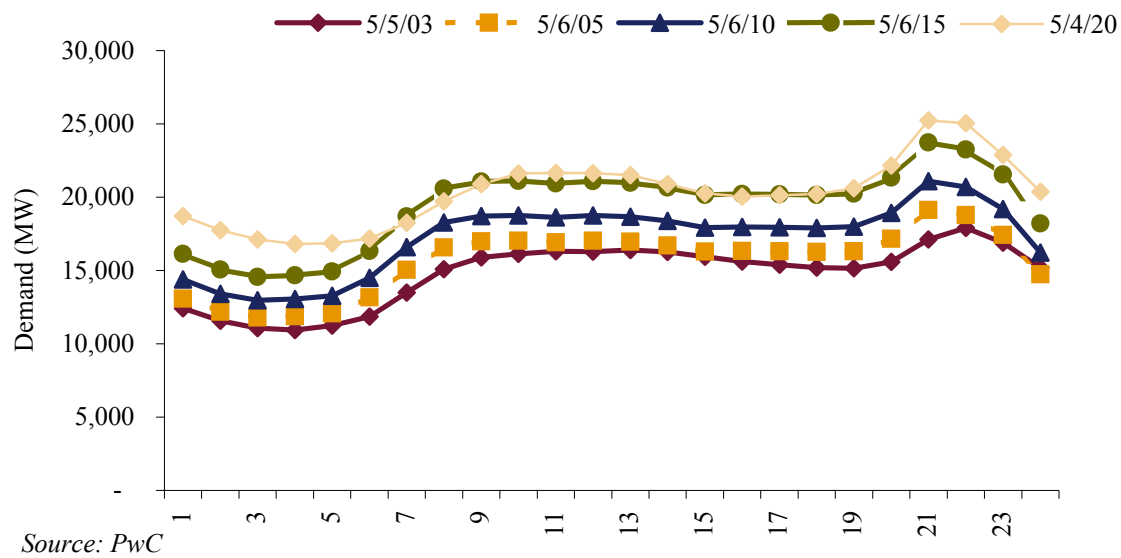
Source: PwC

MW	1/0/00	1/0/00	1/0/00	1/13/03	1/14/05	1/14/10	1/14/15	2/19/20
1	-	-	-	20,735	21,245	22,504	25,057	30,023
2	-	-	-	19,827	20,385	21,592	24,054	28,698
3	-	-	-	19,276	19,778	20,954	23,356	27,943
4	-	-	-	19,048	19,686	20,862	23,265	27,764
5	-	-	-	19,051	19,900	21,103	23,553	28,079
6	-	-	-	19,906	21,301	22,606	25,257	29,874
7	-	-	-	21,917	23,574	25,053	28,039	33,457
8	-	-	-	23,797	25,063	26,650	29,822	35,673
9	-	-	-	24,861	25,940	27,590	30,873	36,591
10	-	-	-	25,376	26,393	28,078	31,415	36,304
11	-	-	-	25,429	26,235	27,901	31,202	35,897
12	-	-	-	25,308	25,868	27,511	30,769	35,293
13	-	-	-	24,838	25,503	27,121	30,331	34,351
14	-	-	-	24,578	25,165	26,763	29,933	33,964
15	-	-	-	24,263	24,877	26,454	29,580	33,499
16	-	-	-	24,047	25,068	26,652	29,801	33,793
17	-	-	-	25,020	26,639	28,310	31,643	34,816
18	-	-	-	26,374	27,823	29,590	33,087	37,104
19	-	-	-	26,629	27,882	29,649	33,151	38,049
20	-	-	-	26,582	27,562	29,313	32,779	37,744
21	-	-	-	25,992	26,846	28,551	31,923	36,747
22	-	-	-	25,335	26,510	28,195	31,512	36,121
23	-	-	-	24,522	25,028	26,572	29,635	34,445
24	-	-	-	23,176	22,728	24,111	26,860	31,916

Source: PwC



Figure A6.0.18: Minimum Hourly Demand Daily Profiles



MW	1/0/00	1/0/00	1/0/00	5/5/03	5/6/05	5/6/10	5/6/15	5/4/20
1	-	-	-	12,430	13,072	14,381	16,143	18,721
2	-	-	-	11,571	12,193	13,410	15,065	17,747
3	-	-	-	11,063	11,787	12,960	14,568	17,120
4	-	-	-	10,934	11,878	13,060	14,677	16,811
5	-	-	-	11,248	12,071	13,273	14,926	16,852
6	-	-	-	11,850	13,171	14,507	16,327	17,190
7	-	-	-	13,488	15,043	16,585	18,693	18,261
8	-	-	-	15,081	16,582	18,278	20,596	19,723
9	-	-	-	15,901	16,978	18,711	21,076	20,891
10	-	-	-	16,135	17,029	18,758	21,116	21,614
11	-	-	-	16,300	16,920	18,625	20,945	21,660
12	-	-	-	16,292	17,041	18,754	21,083	21,635
13	-	-	-	16,407	16,968	18,669	20,990	21,508
14	-	-	-	16,277	16,705	18,374	20,649	20,894
15	-	-	-	15,945	16,289	17,923	20,146	20,268
16	-	-	-	15,610	16,335	17,978	20,210	20,054
17	-	-	-	15,386	16,305	17,956	20,196	20,121
18	-	-	-	15,196	16,257	17,914	20,161	20,219
19	-	-	-	15,149	16,312	17,985	20,245	20,620
20	-	-	-	15,582	17,163	18,937	21,321	22,151
21	-	-	-	17,116	19,129	21,097	23,737	25,235
22	-	-	-	17,898	18,785	20,702	23,259	25,044
23	-	-	-	16,901	17,422	19,194	21,555	22,893
24	-	-	-	15,171	14,737	16,227	18,202	20,369

Source: PwC



Appendix 6.1
Albania Demand Forecasting



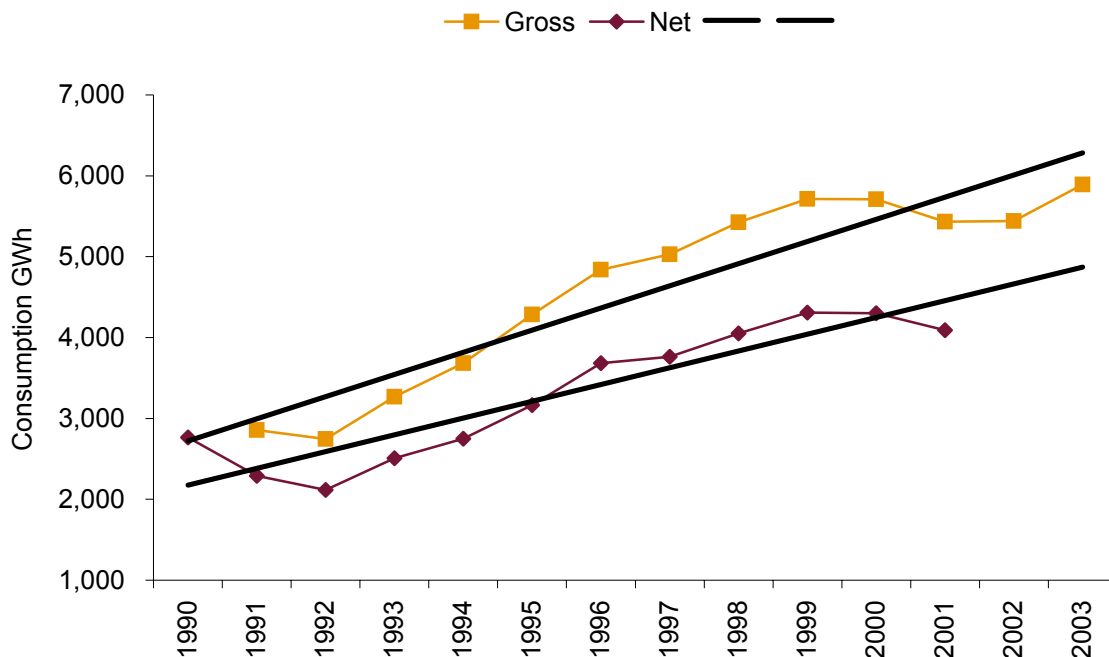
1. Historical Trend Analysis

The data for Albania was sourced from the national utility. A complete data set of historical electricity demand was made available for analysis.

Figure A6.1.1: Historical Electricity Consumption

	(1)	(1)	(1)	(1)	(1)	(2)	(2)
	Net Demand GWh	Transmis Losses GWh	Distrib Losses GWh	Total Losses GWh	Gross Demand GWh	All Losses Share of Gross	Population Net Energy Intensity ('000) kWh/cap
1990	2,765	-	-	-	-	-	-
1991	2,289	285	281	566	2,855	19.8%	-
1992	2,115	323	309	631	2,746	23.0%	-
1993	2,508	357	405	761	3,269	23.3%	-
1994	2,750	452	479	932	3,682	25.3%	-
1995	3,165	568	552	1,120	4,285	26.1%	-
1996	3,682	665	492	1,157	4,839	23.9%	-
1997	3,762	739	527	1,266	5,028	25.2%	-
1998	4,053	769	601	1,370	5,423	25.3%	-
1999	4,307	720	686	1,406	5,713	24.6%	-
2000	4,302	710	698	1,408	5,710	24.7%	-
2001	4,093	675	664	1,339	5,432	24.7%	-
2002	-	-	-	-	5,439	-	3,129 1,000
2003	-	-	-	-	5,893	-	3,163 1,104

Sources: (1) KESH. Demand incl non-tech loss & shed load (2) Albania Statistics Office



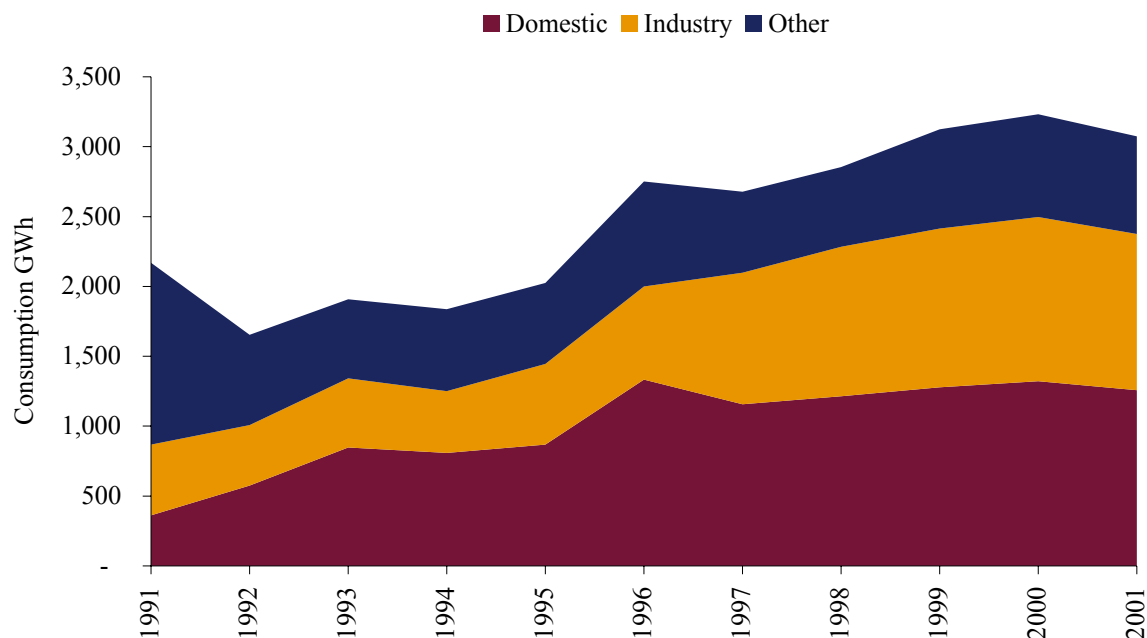
Sources: (1) KESH



Figure A6.1.2: Historical Sectoral Electricity Demand

	Domestic Demand GWh	Industry Demand GWh	Other Demand GWh	Total Net Demand GWh	Domestic Demand Growth	Industry Demand Growth	Other Demand Growth	Total Net Demand Growth
1990	-	-	-	2,765				
1991	362	506	1,301	2,289	-	-	-	-20.8%
1992	575	431	647	2,115	37.2%	-17.3%	-101.1%	-8.2%
1993	848	495	565	2,508	32.2%	12.8%	-14.5%	15.7%
1994	809	441	588	2,750	-4.9%	-12.1%	3.9%	8.8%
1995	867	578	578	3,165	6.8%	23.7%	-1.7%	13.1%
1996	1,333	667	750	3,682	34.9%	13.3%	22.9%	14.0%
1997	1,158	941	579	3,762	-15.2%	29.1%	-29.6%	2.1%
1998	1,213	1,070	571	4,053	4.6%	12.1%	-1.4%	7.2%
1999	1,278	1,136	710	4,307	5.1%	5.8%	19.6%	5.9%
2000	1,322	1,175	734	4,302	3.3%	3.3%	3.3%	-0.1%
2001	1,258	1,118	699	4,093	-5.1%	-5.1%	-5.1%	-5.1%
2002	-	-	-	-	-	-	-	-
2003	-	-	-	-	-	-	-	-

Sources: (1) KESH



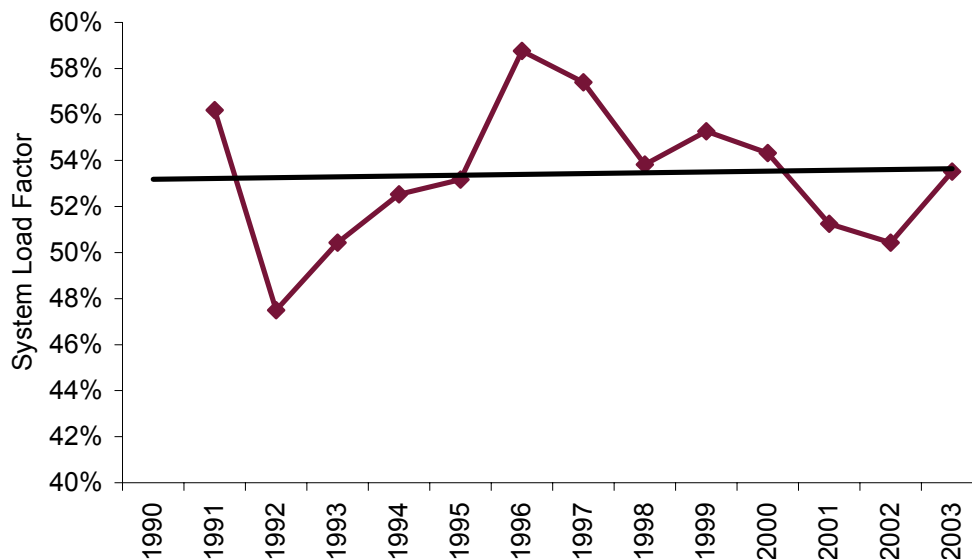
Sources: (1) KESH



Figure A6.1.3: Historical System Load Factor

	Gross Demand GWh	Auxilliary Demand GWh	Pumping Demand GWh	Gross Consump GWh	Gross Consm Growth	System Peak MW	System Peak Growth	System Load Factor
1990	-	-	-	-	-	-	-	-
1991	2,855	-	-	2,855	0.0%	580	0.0%	56.2%
1992	2,746	-	-	2,746	-3.8%	660	13.8%	47.5%
1993	3,269	-	-	3,269	19.0%	740	12.1%	50.4%
1994	3,682	-	-	3,682	12.6%	800	8.1%	52.5%
1995	4,285	-	-	4,285	16.4%	920	15.0%	53.2%
1996	4,839	-	-	4,839	12.9%	940	2.2%	58.8%
1997	5,028	-	-	5,028	3.9%	1,000	6.4%	57.4%
1998	5,423	-	-	5,423	7.9%	1,150	15.0%	53.8%
1999	5,713	-	-	5,713	5.3%	1,180	2.6%	55.3%
2000	5,710	-	-	5,710	-0.1%	1,200	1.7%	54.3%
2001	5,432	-	-	5,432	-4.9%	1,210	0.8%	51.2%
2002	5,439	-	-	5,439	0.1%	1,231	1.7%	50.4%
2003	5,893	-	-	5,893	8.3%	1,257	2.1%	53.5%

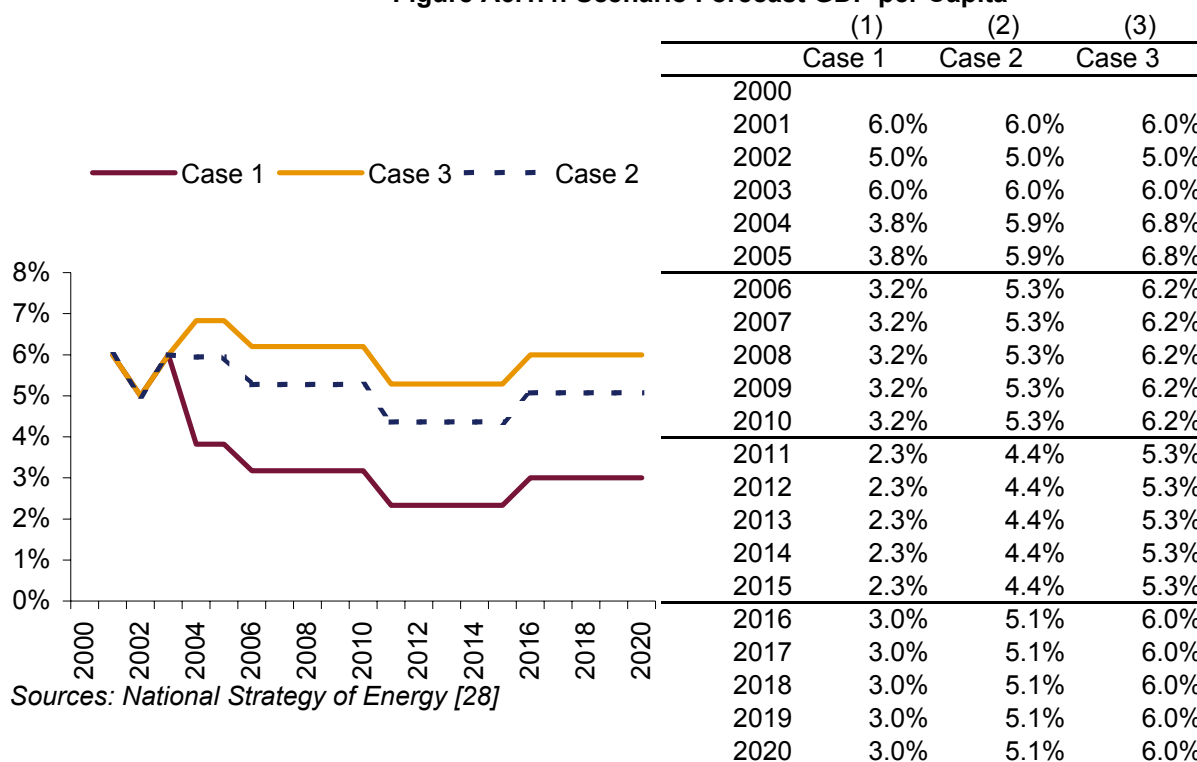
Sources: (1) KESH





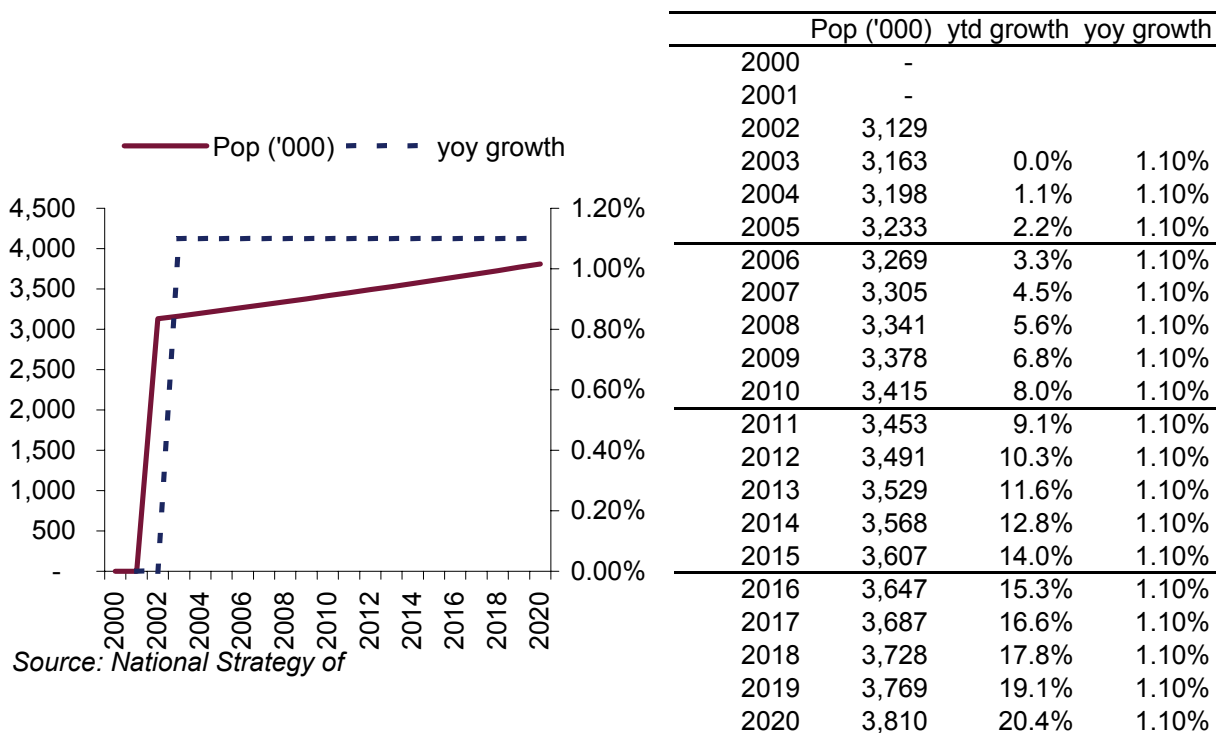
2. Forecast Assumptions

Figure A6.1.4: Scenario Forecast GDP per Capita



Sources: National Strategy of Energy [28]

Figure A6.1.5: Forecast Population



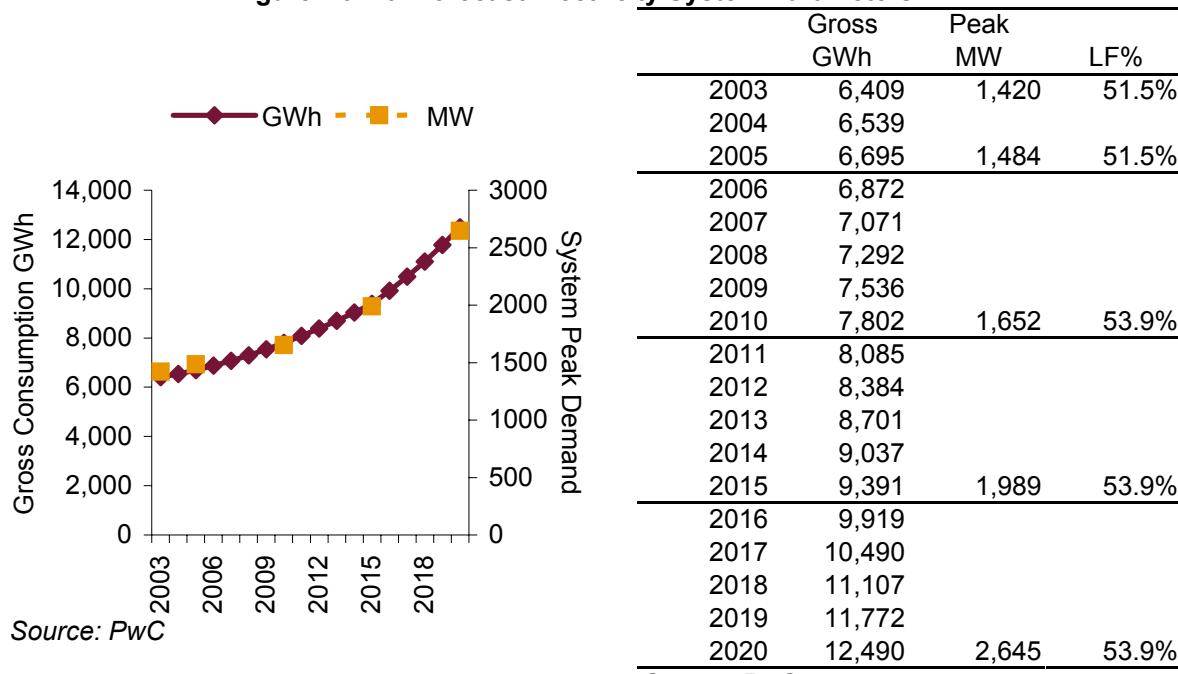
Source: National Strategy of Energy [28]



3. Forecast Calculation

Using the econometric demand forecasting model described in Chapter 3 of this report, together with GDP growth forecast assumptions, the following data are forecast for energy demand.

Figure A6.1.6: Forecast Electricity System Parameters



Source: PwC

Source: PwC

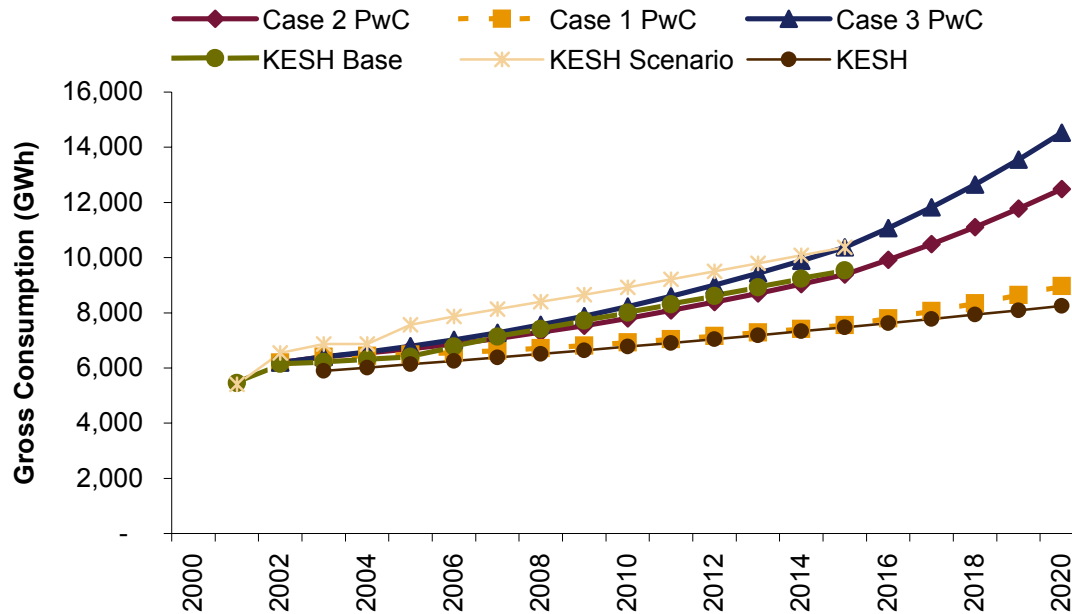
Figure A6.1.7: Case 2 Economic Model Forecast Calculation

Year	GDP per Capita (95 US\$)	Forecast Growth (%)	Electricity Intensity (kWh/GDP)	Electricity per capita (kWh pp)	Population ('000)	Net Consumpt (GWh)	D & T Losses (%)	Gross Consumpt (GWh)
2002	1,090	5.0%	0.92	1,000	3,129	4,754	23.3%	6,196
2003	1,155	6.0%	0.96	1,104	3,163	4,862	24.1%	6,409
2004	1,224	5.9%	0.93	1,139	3,198	5,010	23.4%	6,539
2005	1,296	5.9%	0.91	1,181	3,233	5,181	22.6%	6,695
2006	1,365	5.3%	0.90	1,228	3,269	5,372	21.8%	6,872
2007	1,436	5.3%	0.89	1,280	3,305	5,584	21.0%	7,071
2008	1,512	5.3%	0.88	1,336	3,341	5,817	20.2%	7,292
2009	1,592	5.3%	0.88	1,399	3,378	6,074	19.4%	7,536
2010	1,676	5.3%	0.88	1,466	3,415	6,355	18.5%	7,802
2011	1,749	4.4%	0.88	1,538	3,453	6,655	17.7%	8,085
2012	1,825	4.4%	0.88	1,614	3,491	6,976	16.8%	8,384
2013	1,905	4.4%	0.89	1,694	3,529	7,318	15.9%	8,701
2014	1,988	4.4%	0.89	1,778	3,568	7,683	15.0%	9,037
2015	2,074	4.4%	0.90	1,868	3,607	8,073	14.0%	9,391
2016	2,179	5.1%	0.90	1,964	3,647	8,527	14.0%	9,919
2017	2,290	5.1%	0.90	2,066	3,687	9,018	14.0%	10,490
2018	2,406	5.1%	0.90	2,177	3,728	9,548	14.0%	11,107
2019	2,528	5.1%	0.91	2,295	3,769	10,120	14.0%	11,772
2020	2,656	5.1%	0.91	2,421	3,810	10,737	14.0%	12,490

Source: PwC



Figure A6.1.8: Comparison with other Forecasts



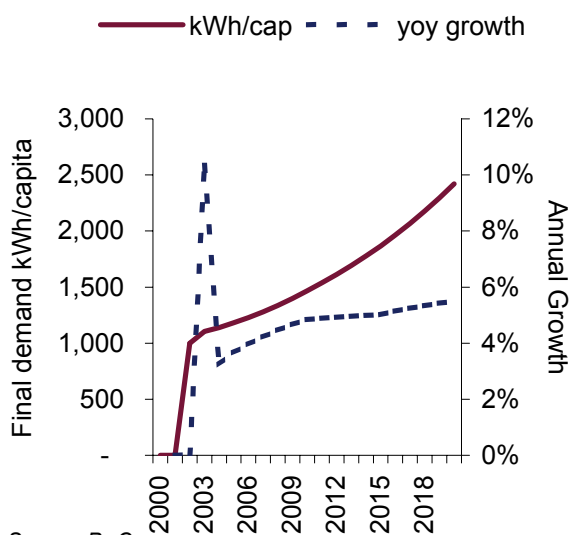
Source: PwC 2004, KESH 2003 & 2001

GWh	Case 2	Case 1	Case 3	KESH	KESH	KESH
2000						
2001				5,458	5,407	
2002	6,196	6,196	6,196	6,144	6,546	
2003	6,409	6,409	6,409	6,216	6,867	5,895
2004	6,539	6,439	6,584	6,309	6,867	6,013
2005	6,695	6,488	6,788	6,407	7,560	6,133
2006	6,872	6,552	7,020	6,771	7,868	6,256
2007	7,071	6,627	7,279	7,131	8,133	6,381
2008	7,292	6,715	7,566	7,418	8,399	6,509
2009	7,536	6,815	7,883	7,710	8,660	6,639
2010	7,802	6,926	8,230	8,007	8,918	6,772
2011	8,085	7,041	8,603	8,311	9,210	6,907
2012	8,384	7,161	9,002	8,614	9,499	7,045
2013	8,701	7,286	9,428	8,921	9,789	7,186
2014	9,037	7,415	9,883	9,230	10,081	7,330
2015	9,391	7,549	10,369	9,534	10,369	7,476
2016	9,919	7,799	11,065			7,626
2017	10,490	8,065	11,824			7,778
2018	11,107	8,347	12,651			7,934
2019	11,772	8,647	13,551			8,093
2020	12,490	8,964	14,530			8,254

Source: PwC 2004, KESH 2003 & 2001



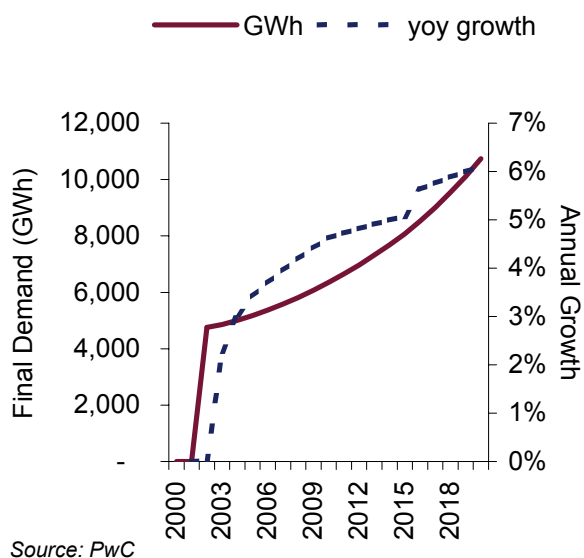
Figure A6.1.9: Forecast Final Demand per Capita



	kWh/cap	ytd growth	yoy growth
2000	-		
2001	-		
2002	1,000		
2003	1,104	0.0%	10.3%
2004	1,139	3.2%	3.2%
2005	1,181	7.0%	3.7%
2006	1,228	11.2%	4.0%
2007	1,280	15.9%	4.2%
2008	1,336	21.1%	4.4%
2009	1,399	26.7%	4.7%
2010	1,466	32.8%	4.8%
2011	1,538	39.3%	4.9%
2012	1,614	46.2%	4.9%
2013	1,694	53.4%	5.0%
2014	1,778	61.1%	5.0%
2015	1,868	69.2%	5.0%
2016	1,964	77.9%	5.1%
2017	2,066	87.2%	5.2%
2018	2,177	97.2%	5.3%
2019	2,295	107.9%	5.4%
2020	2,421	119.3%	5.5%

Source: PwC

Figure A6.1.10: Forecast Final Net Demand



	GWh	ytd growth	yoy growth
2000	-		
2001	-		
2002	4,754		
2003	4,862	0.0%	2.3%
2004	5,010	3.0%	3.0%
2005	5,181	6.6%	3.4%
2006	5,372	10.5%	3.7%
2007	5,584	14.8%	3.9%
2008	5,817	19.6%	4.2%
2009	6,074	24.9%	4.4%
2010	6,355	30.7%	4.6%
2011	6,655	36.9%	4.7%
2012	6,976	43.5%	4.8%
2013	7,318	50.5%	4.9%
2014	7,683	58.0%	5.0%
2015	8,073	66.0%	5.1%
2016	8,527	75.4%	5.6%
2017	9,018	85.5%	5.8%
2018	9,548	96.4%	5.9%
2019	10,120	108.1%	6.0%
2020	10,737	120.8%	6.1%

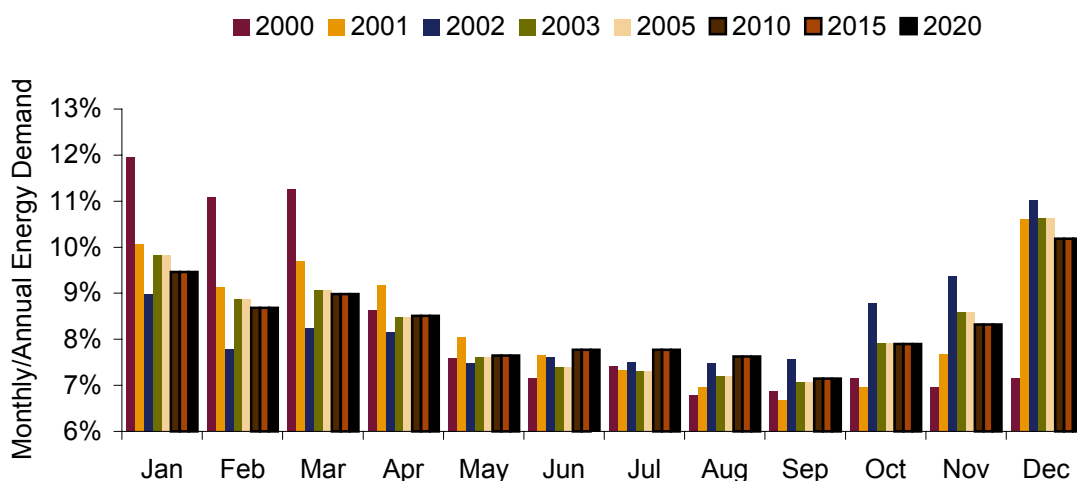
Source: PwC



4. Forecast variation in monthly electricity demand

Following the analysis in Chapter 3 of the main report, we have forecast a change in the share of annual energy demand and peak demand. We detail here the forecast annual change of these parameters.

Figure A6.1.11: Forecast Monthly Energy Demand



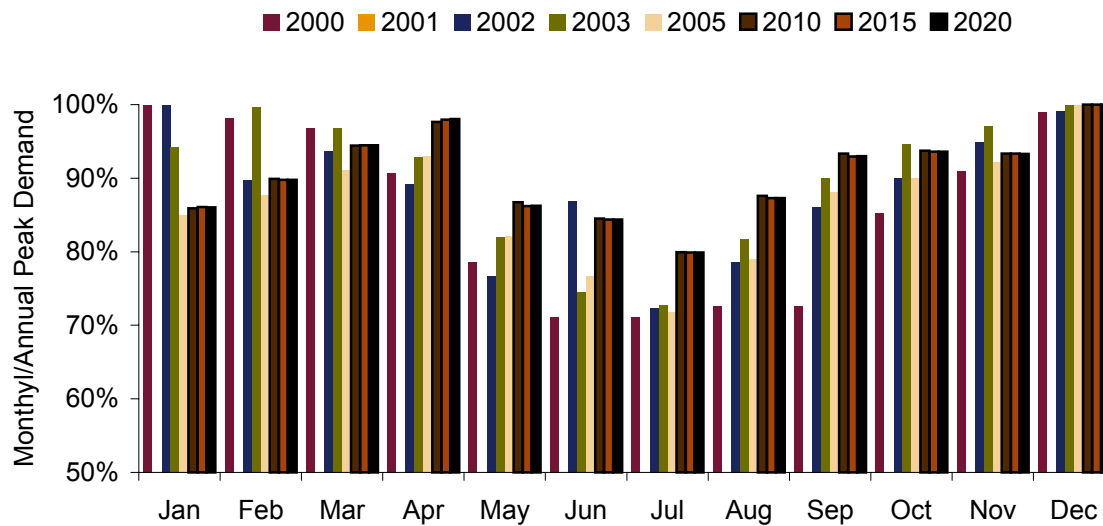
Source: PwC

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	11.9%	11.1%	11.3%	8.6%	7.6%	7.2%	7.4%	6.8%	6.9%	7.1%	7.0%	7.1%
2001	10.1%	9.1%	9.7%	9.2%	8.0%	7.7%	7.3%	7.0%	6.7%	7.0%	7.7%	10.6%
2002	9.0%	7.8%	8.2%	8.2%	7.5%	7.6%	7.5%	7.5%	7.6%	8.8%	9.4%	11.0%
2003	9.8%	8.9%	9.1%	8.5%	7.6%	7.4%	7.3%	7.2%	7.1%	7.9%	8.6%	10.6%
2004	9.8%	8.9%	9.1%	8.5%	7.6%	7.4%	7.3%	7.2%	7.1%	7.9%	8.6%	10.6%
2005	9.8%	8.9%	9.1%	8.5%	7.6%	7.4%	7.3%	7.2%	7.1%	7.9%	8.6%	10.6%
2006	9.8%	8.9%	9.1%	8.5%	7.6%	7.4%	7.3%	7.2%	7.1%	7.9%	8.6%	10.6%
2007	9.8%	8.9%	9.1%	8.5%	7.6%	7.4%	7.3%	7.2%	7.1%	7.9%	8.6%	10.6%
2008	9.7%	8.8%	9.0%	8.5%	7.6%	7.5%	7.5%	7.3%	7.1%	7.9%	8.5%	10.5%
2009	9.6%	8.7%	9.0%	8.5%	7.6%	7.6%	7.6%	7.5%	7.1%	7.9%	8.4%	10.3%
2010	9.5%	8.7%	9.0%	8.5%	7.6%	7.8%	7.8%	7.6%	7.1%	7.9%	8.3%	10.2%
2011	9.5%	8.7%	9.0%	8.5%	7.6%	7.8%	7.8%	7.6%	7.1%	7.9%	8.3%	10.2%
2012	9.5%	8.7%	9.0%	8.5%	7.6%	7.8%	7.8%	7.6%	7.1%	7.9%	8.3%	10.2%
2013	9.5%	8.7%	9.0%	8.5%	7.6%	7.8%	7.8%	7.6%	7.1%	7.9%	8.3%	10.2%
2014	9.5%	8.7%	9.0%	8.5%	7.6%	7.8%	7.8%	7.6%	7.1%	7.9%	8.3%	10.2%
2015	9.5%	8.7%	9.0%	8.5%	7.6%	7.8%	7.8%	7.6%	7.1%	7.9%	8.3%	10.2%
2016	9.5%	8.7%	9.0%	8.5%	7.6%	7.8%	7.8%	7.6%	7.1%	7.9%	8.3%	10.2%
2017	9.5%	8.7%	9.0%	8.5%	7.6%	7.8%	7.8%	7.6%	7.1%	7.9%	8.3%	10.2%
2018	9.5%	8.7%	9.0%	8.5%	7.6%	7.8%	7.8%	7.6%	7.1%	7.9%	8.3%	10.2%
2019	9.5%	8.7%	9.0%	8.5%	7.6%	7.8%	7.8%	7.6%	7.1%	7.9%	8.3%	10.2%
2020	9.5%	8.7%	9.0%	8.5%	7.6%	7.8%	7.8%	7.6%	7.1%	7.9%	8.3%	10.2%

Source: PwC



Figure A6.1.12: Forecast Monthly Peak Demand



Source: PwC

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	100.0%	98.2%	96.8%	90.7%	78.5%	71.2%	71.1%	72.7%	72.7%	85.3%	91.0%	99.0%
2001	-	-	-	-	-	-	-	-	-	-	-	-
2002	100.0%	89.8%	93.7%	89.2%	76.7%	86.9%	72.4%	78.6%	86.0%	89.9%	95.0%	99.1%
2003	94.2%	99.7%	96.8%	92.8%	82.0%	74.5%	72.7%	81.7%	90.0%	94.6%	97.1%	100.0%
2005	85.0%	87.6%	91.0%	93.0%	82.1%	76.7%	71.8%	79.0%	88.2%	89.9%	92.1%	100.0%
2010	85.9%	89.9%	94.4%	97.6%	86.7%	84.5%	80.0%	87.6%	93.3%	93.7%	93.3%	100.0%
2015	86.1%	89.8%	94.5%	98.0%	86.2%	84.4%	79.9%	87.3%	93.0%	93.6%	93.3%	100.0%
2020	86.0%	89.8%	94.5%	98.0%	86.2%	84.4%	79.9%	87.3%	93.0%	93.6%	93.3%	100.0%

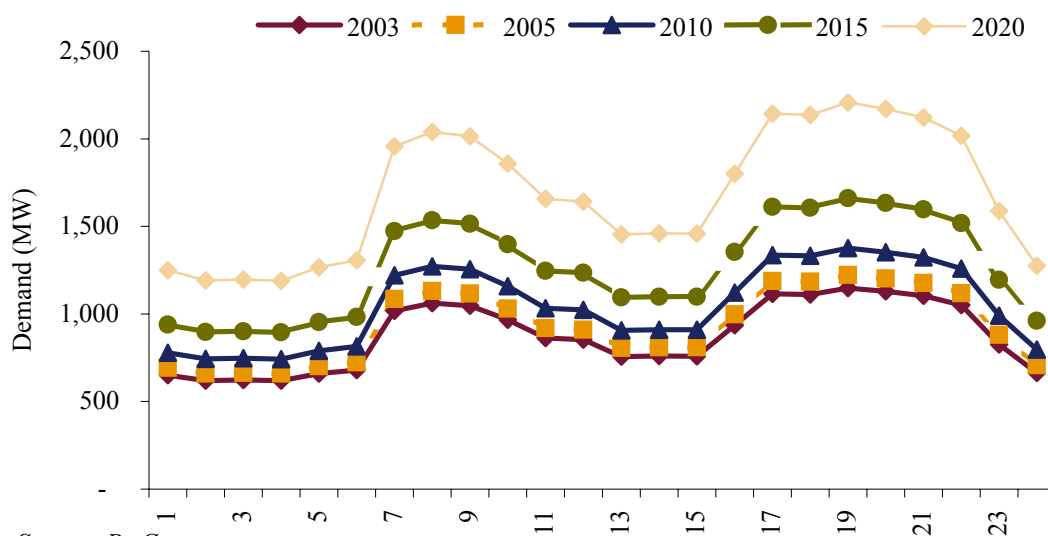
Source: PwC



5. Historical and forecast daily profiles

Using a combination of the 2003 load profiles for the 3rd week of January, April, July and October and the previous analysis of changing seasonal demand, we compare forecast and historical profiles.

Figure A6.1.13: 3rd Wed January Daily Profiles



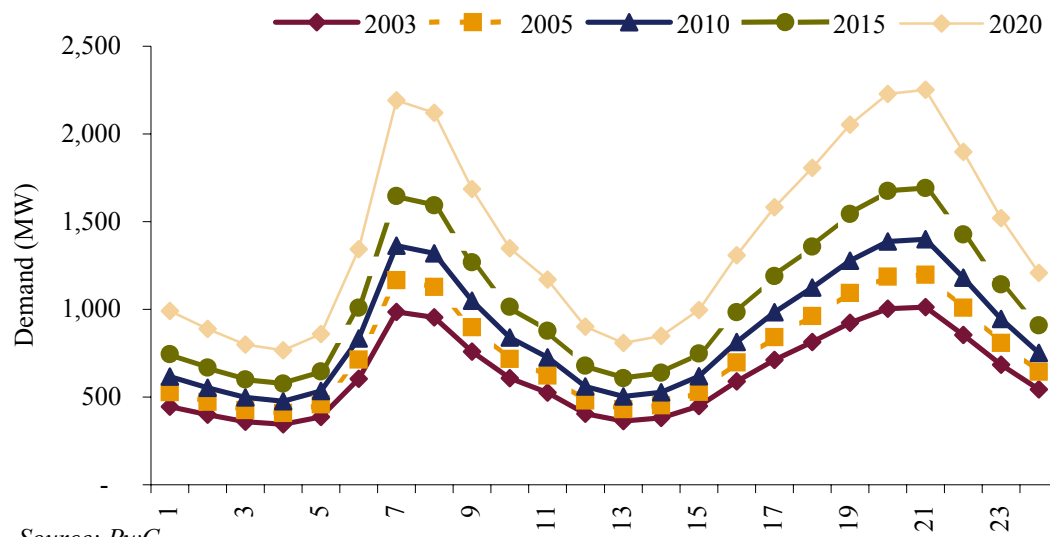
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	648	-	324	650	693	779	940	1,249
2	630	-	318	620	661	743	897	1,192
3	630	-	323	623	664	747	901	1,198
4	630	-	306	619	660	742	895	1,190
5	732	-	405	659	702	790	953	1,267
6	759	-	707	680	725	815	983	1,307
7	964	-	992	1,018	1,085	1,220	1,472	1,957
8	1,088	-	624	1,061	1,131	1,272	1,535	2,040
9	1,072	-	151	1,048	1,117	1,256	1,516	2,015
10	1,057	-	149	967	1,030	1,159	1,399	1,859
11	1,079	-	152	862	918	1,033	1,247	1,657
12	1,082	-	175	854	910	1,024	1,235	1,642
13	1,089	-	174	757	807	907	1,095	1,455
14	1,095	-	164	760	810	911	1,099	1,461
15	1,099	-	194	759	809	910	1,098	1,459
16	1,100	-	234	936	997	1,122	1,354	1,799
17	1,137	-	553	1,115	1,188	1,336	1,613	2,143
18	1,140	-	1,022	1,111	1,184	1,332	1,607	2,136
19	1,207	-	1,131	1,148	1,223	1,376	1,660	2,207
20	1,151	-	1,102	1,129	1,203	1,353	1,633	2,170
21	1,132	-	1,091	1,104	1,176	1,323	1,597	2,122
22	1,116	-	1,154	1,050	1,119	1,259	1,519	2,018
23	916	-	774	826	880	990	1,195	1,588
24	782	-	423	664	708	796	960	1,276

Source: PwC



Figure A6.1.14: 3rd Wed April Daily Profiles



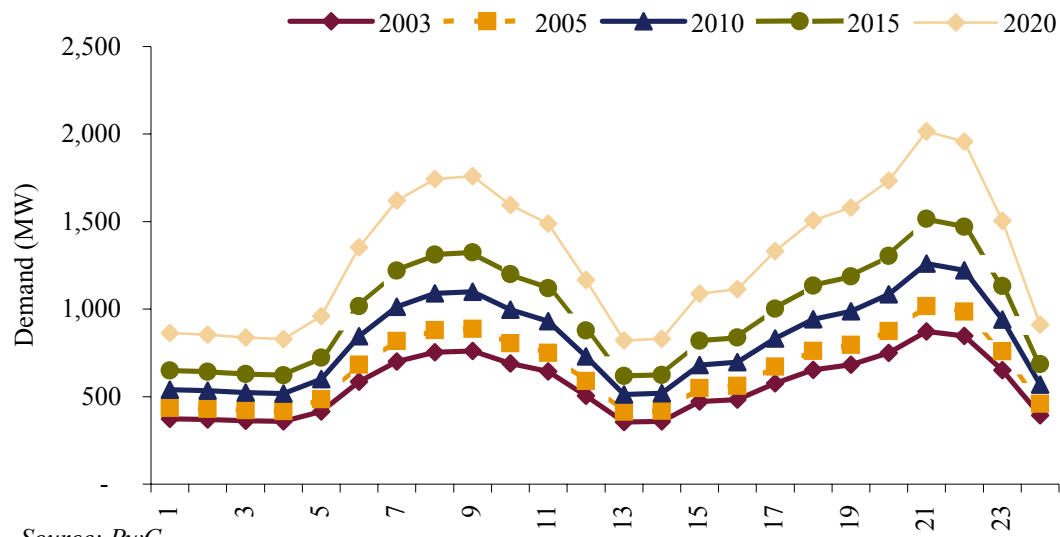
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	346	-	405	446	527	616	745	991
2	341	-	394	400	473	553	668	889
3	335	-	383	360	426	498	601	800
4	325	-	375	345	408	477	576	767
5	330	-	395	387	458	535	646	860
6	592	-	558	604	714	835	1,009	1,342
7	853	-	833	986	1,166	1,363	1,647	2,191
8	864	-	890	954	1,128	1,318	1,593	2,120
9	816	-	776	759	898	1,049	1,268	1,687
10	813	-	689	607	718	839	1,014	1,349
11	793	-	646	526	622	727	878	1,169
12	762	-	674	406	480	561	678	902
13	713	-	691	364	430	503	608	809
14	711	-	626	382	452	528	638	849
15	672	-	662	448	530	619	748	996
16	655	-	673	589	696	814	984	1,309
17	655	-	700	712	842	984	1,189	1,582
18	656	-	773	813	961	1,124	1,358	1,807
19	736	-	805	924	1,093	1,277	1,543	2,053
20	783	-	983	1,003	1,186	1,386	1,675	2,229
21	868	-	990	1,013	1,198	1,400	1,692	2,251
22	720	-	913	854	1,010	1,180	1,426	1,898
23	651	-	663	684	809	945	1,142	1,520
24	365	-	505	544	643	752	908	1,209

Source: PwC



Figure A6.1.15: 3rd Wed Jul Daily Profiles



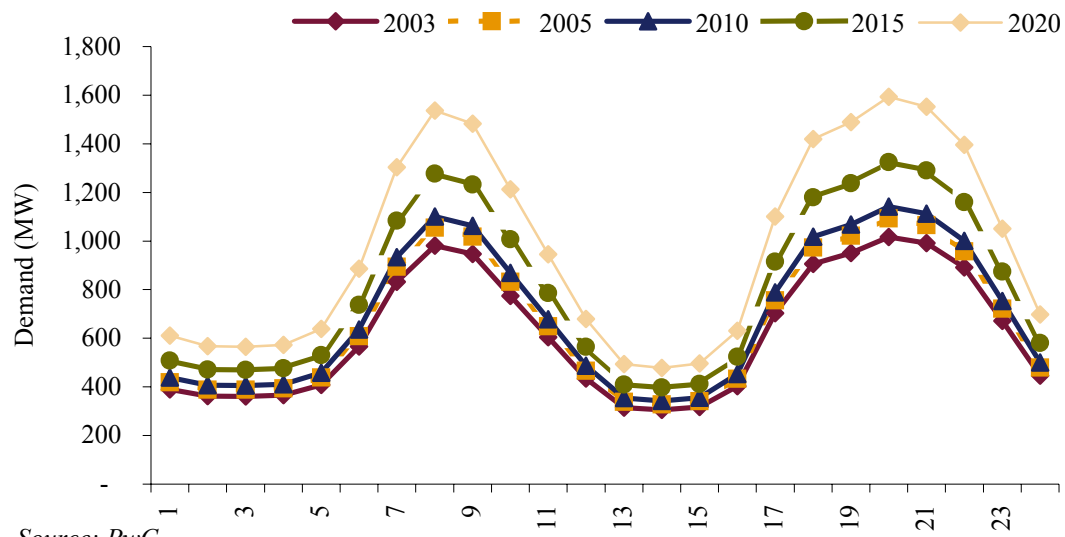
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	322	-	426	373	435	539	649	862
2	322	-	393	369	430	533	642	853
3	322	-	383	362	422	523	629	837
4	322	-	391	358	417	517	623	828
5	371	-	405	415	484	600	722	960
6	534	-	534	585	682	845	1,017	1,353
7	633	-	690	701	817	1,013	1,219	1,621
8	733	-	675	754	879	1,090	1,311	1,743
9	695	-	579	761	887	1,100	1,323	1,760
10	688	-	520	690	804	997	1,200	1,595
11	688	-	525	644	751	931	1,120	1,489
12	680	-	531	505	589	730	878	1,168
13	679	-	566	355	414	513	617	821
14	633	-	572	359	418	519	624	830
15	630	-	569	471	549	681	819	1,089
16	611	-	396	482	562	696	838	1,114
17	603	-	407	576	671	832	1,002	1,332
18	622	-	474	652	760	942	1,134	1,508
19	650	-	550	683	796	987	1,188	1,579
20	713	-	660	750	874	1,084	1,304	1,734
21	738	-	874	872	1,016	1,260	1,516	2,016
22	645	-	870	846	986	1,222	1,471	1,956
23	440	-	658	651	759	941	1,132	1,505
24	330	-	424	394	459	569	685	911

Source: PwC



Figure A6.1.16: 3rd Wed Oct Daily Profiles



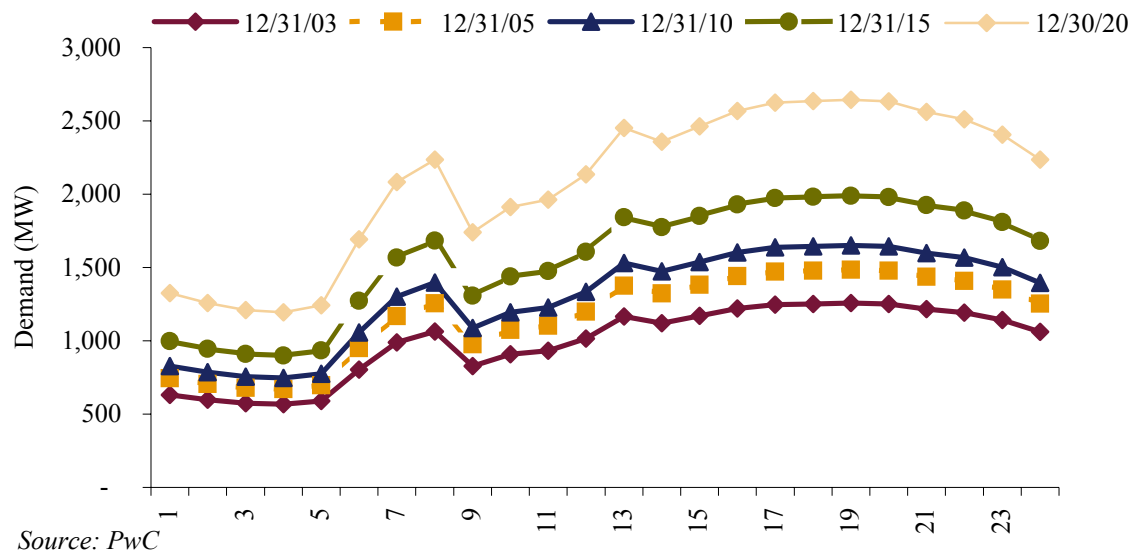
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	326	-	412	390	419	438	508	611
2	286	-	399	362	389	406	471	567
3	277	-	392	361	388	405	470	565
4	267	-	399	366	393	411	477	573
5	286	-	410	408	438	458	531	639
6	506	-	550	566	608	635	737	886
7	795	-	840	832	894	934	1,083	1,303
8	836	-	974	981	1,054	1,101	1,277	1,536
9	568	-	836	947	1,018	1,063	1,233	1,483
10	472	-	684	774	832	869	1,008	1,212
11	580	-	645	604	649	678	786	946
12	609	-	476	434	466	487	565	680
13	680	-	365	315	338	354	410	493
14	660	-	395	305	328	342	397	478
15	559	-	330	317	341	356	413	496
16	550	-	525	403	433	452	525	631
17	570	-	671	703	755	789	915	1,101
18	770	-	826	906	973	1,017	1,180	1,419
19	910	-	1,034	951	1,022	1,068	1,238	1,489
20	863	-	979	1,017	1,093	1,142	1,324	1,593
21	769	-	916	991	1,065	1,113	1,290	1,552
22	666	-	773	891	957	1,000	1,160	1,395
23	427	-	548	671	721	753	874	1,051
24	357	-	455	446	479	501	581	698

Source: PwC



Figure A6.1.17: Peak Hourly Demand Daily Profiles



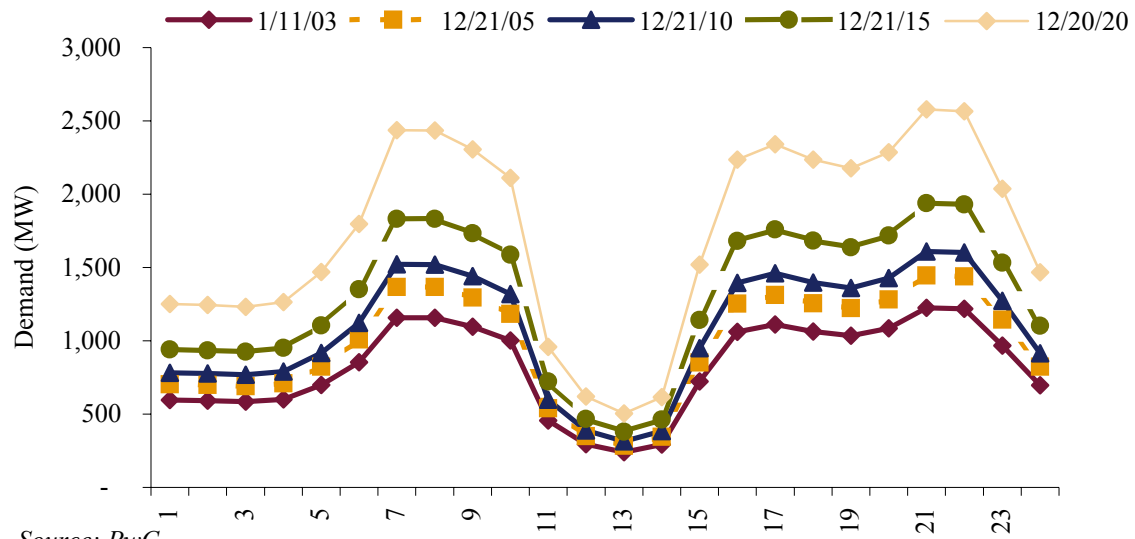
Source: PwC

MW	1/22/00	1/0/00	1/8/02	12/31/03	12/31/05	12/31/10	12/31/15	12/30/20
1	648	-	529	630	744	828	997	1,326
2	630	-	468	598	706	786	946	1,258
3	630	-	474	575	679	756	910	1,210
4	630	-	464	568	671	746	899	1,195
5	732	-	620	590	697	775	934	1,242
6	759	-	873	804	949	1,056	1,272	1,692
7	964	-	1,085	990	1,169	1,301	1,567	2,083
8	1,088	-	981	1,063	1,255	1,397	1,682	2,237
9	1,072	-	630	827	977	1,087	1,309	1,740
10	1,057	-	448	909	1,073	1,194	1,439	1,913
11	1,079	-	470	933	1,102	1,226	1,477	1,963
12	1,082	-	372	1,015	1,199	1,334	1,606	2,136
13	1,089	-	458	1,165	1,376	1,531	1,844	2,451
14	1,095	-	522	1,121	1,324	1,473	1,774	2,359
15	1,099	-	562	1,170	1,382	1,537	1,852	2,462
16	1,100	-	708	1,220	1,441	1,603	1,931	2,567
17	1,137	-	1,062	1,247	1,472	1,639	1,974	2,624
18	1,140	-	1,209	1,252	1,478	1,645	1,982	2,635
19	1,207	-	1,214	1,257	1,484	1,652	1,989	2,645
20	1,151	-	1,231	1,251	1,477	1,644	1,980	2,632
21	1,132	-	1,206	1,217	1,437	1,599	1,926	2,561
22	1,116	-	1,188	1,193	1,409	1,568	1,888	2,510
23	916	-	1,000	1,143	1,350	1,502	1,809	2,405
24	782	-	461	1,062	1,254	1,396	1,681	2,235

Source: PwC



Figure A6.1.18: Minimum Hourly Demand Daily Profiles



Source: PwC

MW	11/16/00	1/0/00	1/16/02	1/11/03	12/21/05	12/21/10	12/21/15	12/20/20
1	233	-	305	595	703	782	942	1,252
2	203	-	286	591	698	777	935	1,244
3	208	-	270	585	691	769	926	1,231
4	193	-	272	601	710	790	951	1,265
5	343	-	382	698	824	917	1,105	1,469
6	587	-	578	854	1,008	1,122	1,352	1,797
7	846	-	1,006	1,158	1,367	1,522	1,833	2,437
8	666	-	332	1,157	1,366	1,520	1,831	2,435
9	407	-	240	1,096	1,294	1,440	1,735	2,306
10	325	-	166	1,003	1,184	1,318	1,587	2,111
11	467	-	178	456	538	599	722	960
12	421	-	201	295	348	388	467	621
13	453	-	213	240	283	315	380	505
14	558	-	196	293	346	385	464	617
15	834	-	217	722	853	949	1,143	1,519
16	828	-	265	1,062	1,254	1,396	1,681	2,235
17	742	-	497	1,112	1,313	1,461	1,760	2,340
18	833	-	1,105	1,063	1,255	1,397	1,682	2,237
19	940	-	1,116	1,035	1,222	1,360	1,638	2,178
20	937	-	1,161	1,086	1,282	1,427	1,719	2,285
21	856	-	1,131	1,225	1,447	1,610	1,939	2,578
22	706	-	1,093	1,219	1,439	1,602	1,929	2,565
23	527	-	691	968	1,143	1,272	1,532	2,037
24	356	-	300	697	823	916	1,103	1,467

Source: PwC



Appendix 6.2
BiH Demand Forecasting



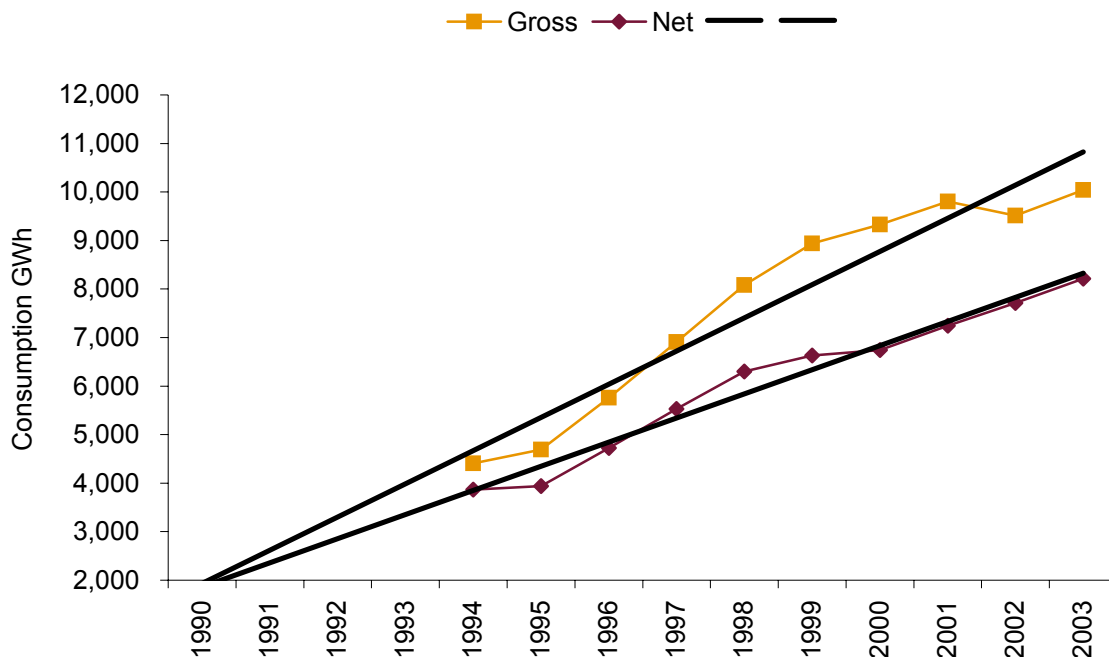
1. Historical Trend Analysis

The data for BiH was sourced from the national utility. A complete data set of historical electricity demand was made available for analysis.

Figure A6.2.1: Historical Electricity Consumption

	(1)	(1)	(1)	(1)	(1)	(2)	(2)
	Net Demand GWh	Transmis Losses GWh	Distrib Losses GWh	Total Losses GWh	Gross Demand GWh	All Losses Share of Gross	Population Net Energy Intensity ('000) kWh/cap
1990	-	-	-	-	-	-	4,424
1991	-	-	-	-	-	-	4,449
1992	-	-	-	-	-	-	4,427
1993	-	-	-	-	-	-	4,152
1994	3,867	155	385	540	4,407	12.3%	3,704
1995	3,939	244	506	750	4,689	16.0%	3,356
1996	4,726	312	720	1,032	5,758	17.9%	3,247
1997	5,527	283	1,099	1,382	6,909	20.0%	3,335
1998	6,303	299	1,481	1,780	8,083	22.0%	3,502
1999	6,631	324	1,985	2,309	8,940	25.8%	3,690
2000	6,740	308	2,283	2,591	9,331	27.8%	3,836
2001	7,243	293	2,268	2,561	9,804	26.1%	3,922
2002	7,710	268	1,534	1,802	9,512	18.9%	3,964
2003	8,213	295	1,534	1,829	10,043	18.2%	3,989

Sources: (1) ZEK/EPHZHB, EPBIH, ERS (2) US Census Bureau



Sources: (1) ZEK/EPHZHB, EPBIH, ERS



Figure A6.2.2: Historical Sectoral Electricity Demand

	Domestic Demand GWh	Industry Demand GWh	Other Demand GWh	Total Net Demand GWh	Domestic Demand Growth	Industry Demand Growth	Other Demand Growth	Total Net Demand Growth
1990	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-	-
1994	-	-	-	3,867	-	-	-	-
1995	-	-	-	3,939	-	-	-	1.8%
1996	-	-	-	4,726	-	-	-	16.6%
1997	-	-	-	5,527	-	-	-	14.5%
1998	-	-	-	6,303	-	-	-	12.3%
1999	-	-	-	6,631	-	-	-	4.9%
2000	-	-	-	6,740	-	-	-	1.6%
2001	-	-	-	7,243	-	-	-	6.9%
2002	-	-	-	7,710	-	-	-	6.1%
2003	-	-	-	8,213	-	-	-	6.1%

Sources: (1) ZEK/EPHZHB, EPBIH, ERS



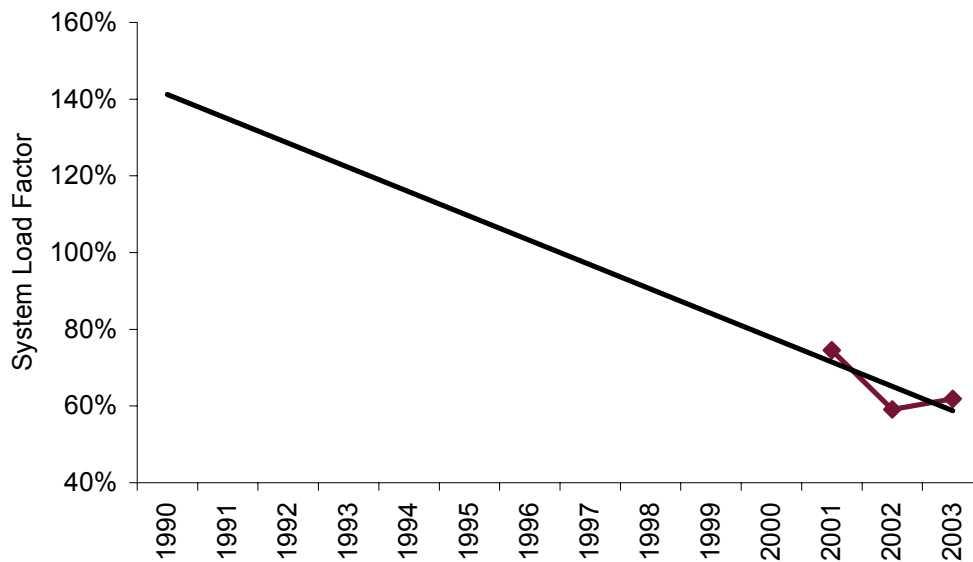
Sources: (1) ZEK/EPHZHB, EPBIH, ERS



Figure A6.2.3: Historical System Load Factor

	Gross Demand GWh	Auxilliary Demand GWh	Pumping Demand GWh	Gross Consump GWh	Gross Consm Growth	System Peak MW	System Peak Growth	System Load Factor
1990	-	-	-	-	-	-	-	-
1991	-	-	-	-	0.0%	-	0.0%	-
1992	-	-	-	-	0.0%	-	0.0%	-
1993	-	-	-	-	0.0%	-	0.0%	-
1994	4,407	-	-	4,407	0.0%	-	0.0%	-
1995	4,689	-	-	4,689	6.4%	-	0.0%	-
1996	5,758	-	-	5,758	22.8%	-	0.0%	-
1997	6,909	-	-	6,909	20.0%	-	0.0%	-
1998	8,083	-	-	8,083	17.0%	-	0.0%	-
1999	8,940	-	-	8,940	10.6%	-	0.0%	-
2000	9,331	-	-	9,331	4.4%	-	0.0%	-
2001	9,804	-	-	9,804	5.1%	1,502	0.0%	74.5%
2002	9,512	-	-	9,512	-3.0%	1,838	22.4%	59.1%
2003	10,043	-	-	10,043	5.6%	1,854	0.9%	61.8%

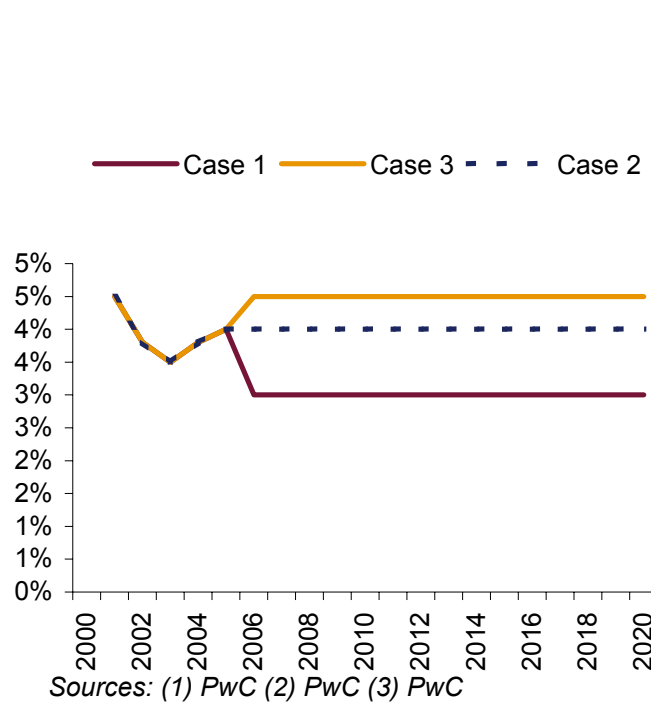
Sources: (1) ZEK/EPHZHB, EPBIH, ERS





2. Forecast Assumptions

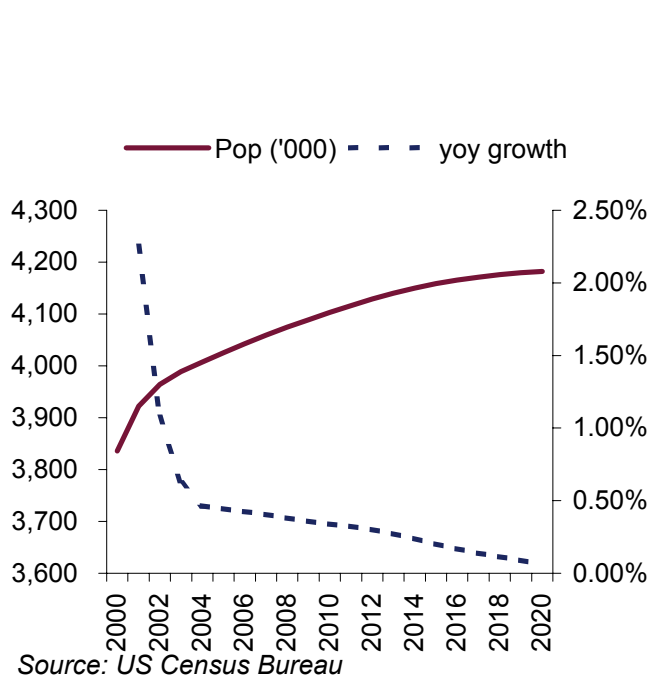
Figure A6.2.4: Scenario Forecast GDP per Capita



	(1)	(2)	(3)
	Case 1	Case 2	Case 3
2000			
2001	4.5%	4.5%	4.5%
2002	3.8%	3.8%	3.8%
2003	3.5%	3.5%	3.5%
2004	3.8%	3.8%	3.8%
2005	4.0%	4.0%	4.0%
2006	3.0%	4.0%	4.5%
2007	3.0%	4.0%	4.5%
2008	3.0%	4.0%	4.5%
2009	3.0%	4.0%	4.5%
2010	3.0%	4.0%	4.5%
2011	3.0%	4.0%	4.5%
2012	3.0%	4.0%	4.5%
2013	3.0%	4.0%	4.5%
2014	3.0%	4.0%	4.5%
2015	3.0%	4.0%	4.5%
2016	3.0%	4.0%	4.5%
2017	3.0%	4.0%	4.5%
2018	3.0%	4.0%	4.5%
2019	3.0%	4.0%	4.5%
2020	3.0%	4.0%	4.5%

Sources: (1) PwC (2) PwC (3) PwC

Figure A6.2.5: Forecast Population



	Pop ('000)	ytd growth	yoy growth
2000	3,836		
2001	3,922		2.25%
2002	3,964		1.08%
2003	3,989	0.0%	0.62%
2004	4,008	0.5%	0.47%
2005	4,025	0.9%	0.45%
2006	4,043	1.3%	0.43%
2007	4,059	1.8%	0.41%
2008	4,075	2.1%	0.38%
2009	4,089	2.5%	0.36%
2010	4,103	2.9%	0.34%
2011	4,116	3.2%	0.32%
2012	4,129	3.5%	0.30%
2013	4,140	3.8%	0.27%
2014	4,150	4.0%	0.24%
2015	4,158	4.2%	0.20%
2016	4,165	4.4%	0.17%
2017	4,171	4.6%	0.14%
2018	4,176	4.7%	0.11%
2019	4,180	4.8%	0.09%
2020	4,182	4.8%	0.06%

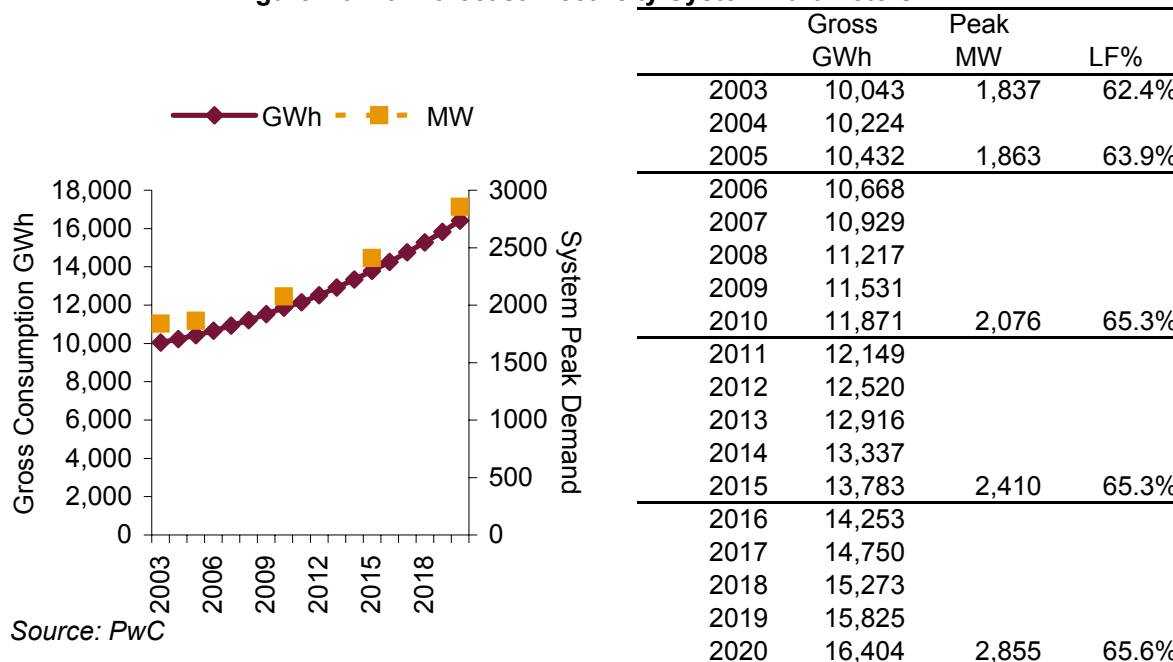
Source: US Census Bureau



3. Forecast Calculation

Using the econometric demand forecasting model described in Chapter 3 of this report, together with GDP growth forecast assumptions, the following data are forecast for energy demand.

Figure A6.2.6: Forecast Electricity System Parameters



Source: PwC

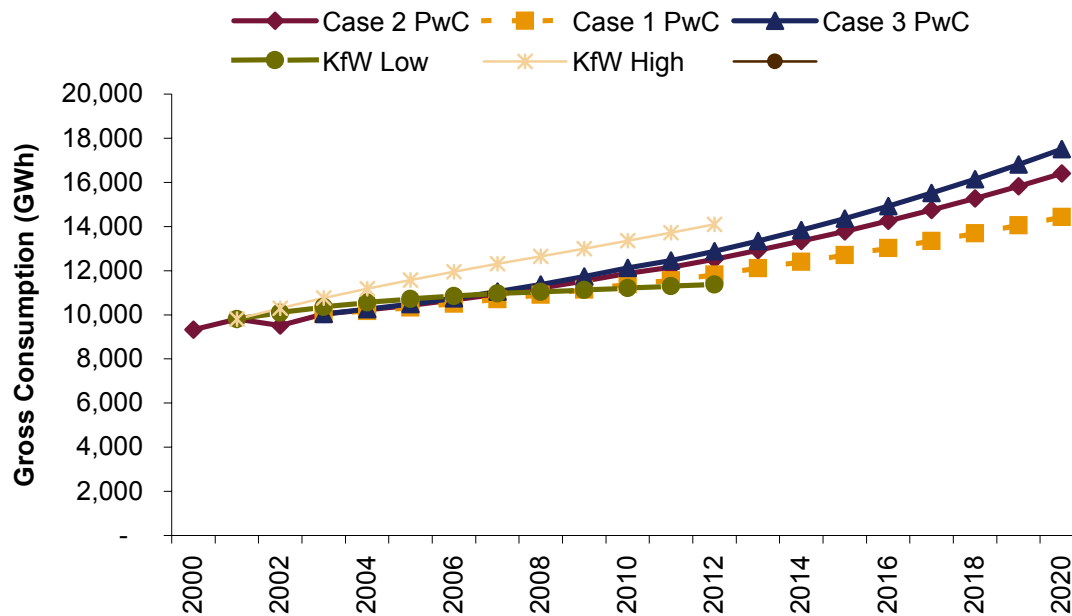
Figure A6.2.7: Case 2 Economic Model Forecast Calculation

Year	GDP per Capita (95 US\$)	Forecast Growth (%)	Electricity Intensity (kWh/GDP)	Electricity per capita (kWh pp)	Population ('000)	Net Consumpt (GWh)	D & T Losses (%)	Gross Consumpt (GWh)
2002	1,655	3.8%	0.95	1,566	3,964	7,710	18.9%	9,512
2003	1,713	3.5%	0.98	1,683	3,989	8,213	18.2%	10,043
2004	1,778	3.8%	0.96	1,712	4,008	8,418	17.7%	10,224
2005	1,849	4.0%	0.94	1,747	4,025	8,649	17.1%	10,432
2006	1,923	4.0%	0.93	1,788	4,043	8,907	16.5%	10,668
2007	2,000	4.0%	0.92	1,835	4,059	9,192	15.9%	10,929
2008	2,080	4.0%	0.91	1,888	4,075	9,503	15.3%	11,217
2009	2,163	4.0%	0.90	1,946	4,089	9,842	14.7%	11,531
2010	2,250	4.0%	0.89	2,010	4,103	10,208	14.0%	11,871
2011	2,340	4.0%	0.89	2,079	4,116	10,520	13.4%	12,149
2012	2,433	4.0%	0.89	2,154	4,129	10,854	13.3%	12,520
2013	2,531	4.0%	0.88	2,234	4,140	11,211	13.2%	12,916
2014	2,632	4.0%	0.88	2,320	4,150	11,590	13.1%	13,337
2015	2,737	4.0%	0.88	2,412	4,158	11,991	13.0%	13,783
2016	2,847	4.0%	0.88	2,509	4,165	12,414	12.9%	14,253
2017	2,961	4.0%	0.88	2,613	4,171	12,861	12.8%	14,750
2018	3,079	4.0%	0.88	2,723	4,176	13,332	12.7%	15,273
2019	3,202	4.0%	0.89	2,839	4,180	13,829	12.6%	15,825
2020	3,330	4.0%	0.89	2,962	4,182	14,350	12.5%	16,404

Source: PwC



Figure A6.2.8: Comparison with other Forecasts



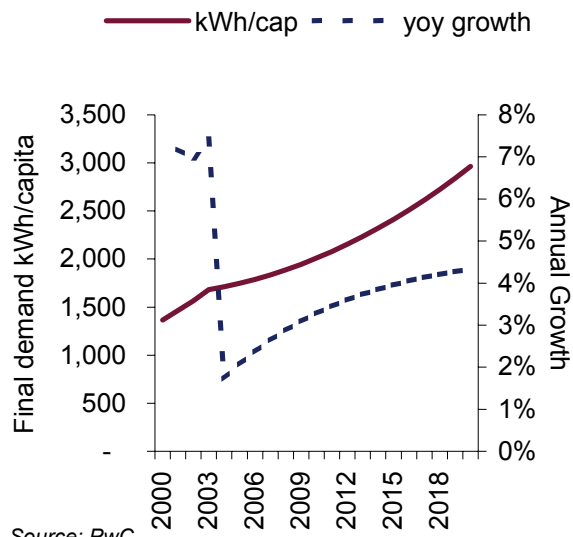
Source: PwC 2004, KfW 2002 [7]

GWh	Case 2	Case 1	Case 3	KfW Low	KfW High
2000	9,331				
2001	9,804			9,804	9,804
2002	9,512			10,098	10,294
2003	10,043	10,043	10,043	10,351	10,757
2004	10,224	10,169	10,251	10,558	11,188
2005	10,432	10,326	10,486	10,716	11,579
2006	10,668	10,502	10,752	10,850	11,956
2007	10,929	10,696	11,048	10,958	12,314
2008	11,217	10,908	11,376	11,041	12,653
2009	11,531	11,138	11,734	11,123	13,001
2010	11,871	11,384	12,124	11,207	13,358
2011	12,149	11,564	12,454	11,291	13,726
2012	12,520	11,826	12,885	11,376	14,103
2013	12,916	12,103	13,347		
2014	13,337	12,394	13,841		
2015	13,783	12,699	14,365		
2016	14,253	13,017	14,923		
2017	14,750	13,349	15,514		
2018	15,273	13,696	16,141		
2019	15,825	14,057	16,804		
2020	16,404	14,431	17,506		

Source: PwC 2004, KfW 2002 [7]



Figure A6.2.9: Forecast Final Demand per Capita

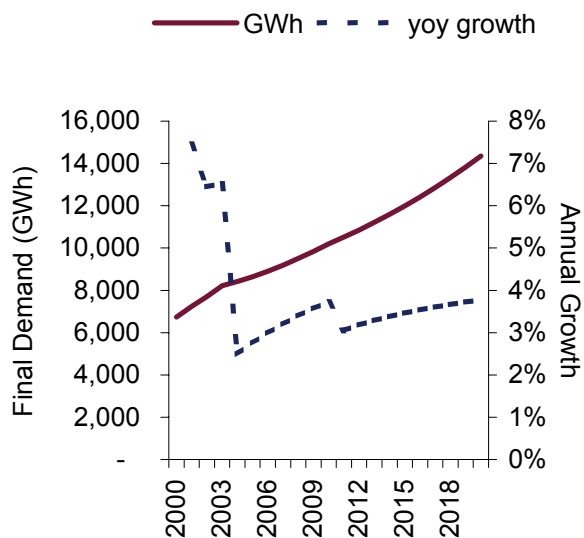


Source: PwC

	kWh/cap	ytd growth	yoy growth
2000	1,366		
2001	1,464		7.2%
2002	1,566		7.0%
2003	1,683	0.0%	7.4%
2004	1,712	1.7%	1.7%
2005	1,747	3.8%	2.1%
2006	1,788	6.3%	2.4%
2007	1,835	9.1%	2.6%
2008	1,888	12.2%	2.9%
2009	1,946	15.7%	3.1%
2010	2,010	19.4%	3.3%
2011	2,079	23.6%	3.4%
2012	2,154	28.0%	3.6%
2013	2,234	32.8%	3.7%
2014	2,320	37.9%	3.8%
2015	2,412	43.3%	4.0%
2016	2,509	49.1%	4.0%
2017	2,613	55.3%	4.1%
2018	2,723	61.8%	4.2%
2019	2,839	68.7%	4.3%
2020	2,962	76.0%	4.3%

Source: PwC

Figure A6.2.10: Forecast Final Net Demand



Source: PwC

	GWh	ytd growth	yoy growth
2000	6,740		
2001	7,243		7.5%
2002	7,710		6.4%
2003	8,213	0.0%	6.5%
2004	8,418	2.5%	2.5%
2005	8,649	5.3%	2.7%
2006	8,907	8.4%	3.0%
2007	9,192	11.9%	3.2%
2008	9,503	15.7%	3.4%
2009	9,842	19.8%	3.6%
2010	10,208	24.3%	3.7%
2011	10,520	28.1%	3.1%
2012	10,854	32.2%	3.2%
2013	11,211	36.5%	3.3%
2014	11,590	41.1%	3.4%
2015	11,991	46.0%	3.5%
2016	12,414	51.2%	3.5%
2017	12,861	56.6%	3.6%
2018	13,332	62.3%	3.7%
2019	13,829	68.4%	3.7%
2020	14,350	74.7%	3.8%

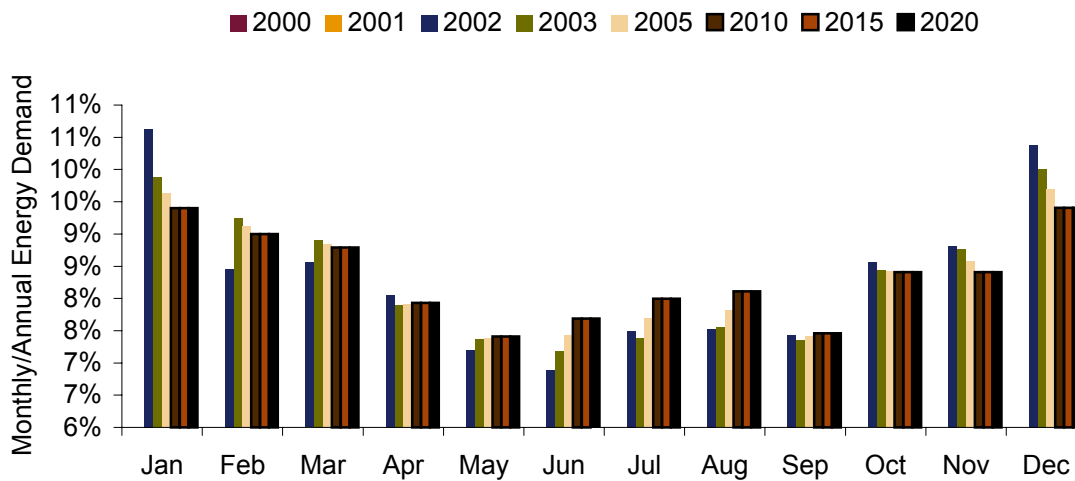
Source: PwC



4. Forecast variation in monthly electricity demand

Following the analysis in Chapter 3 of the main report, we have forecast a change in the share of annual energy demand and peak demand. We detail here the forecast annual change of these parameters.

Figure A6.2.11: Forecast Monthly Energy Demand



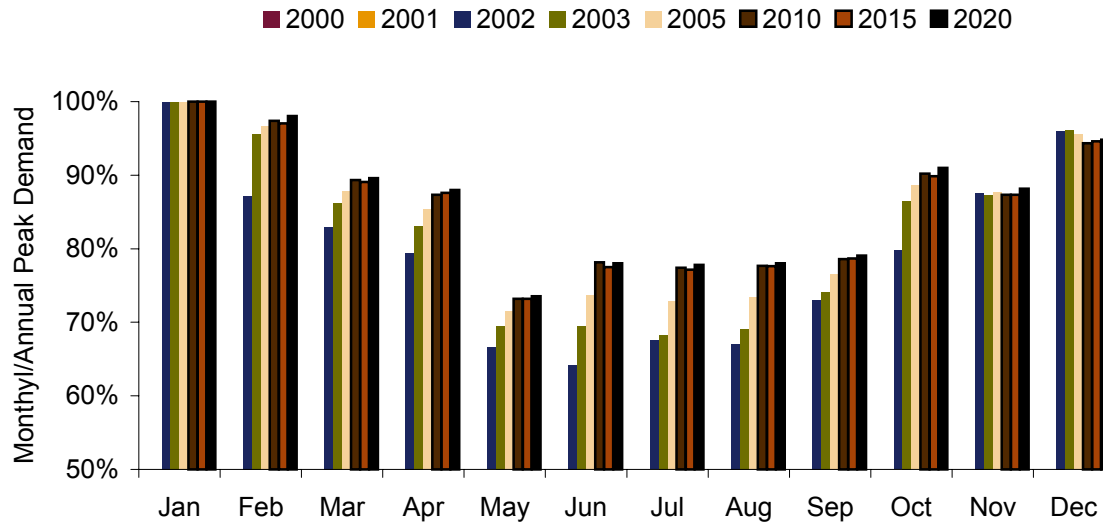
Source: PwC

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	-	-	-	-	-	-	-	-	-	-	-	-
2001	-	-	-	-	-	-	-	-	-	-	-	-
2002	10.6%	8.5%	8.6%	8.1%	7.2%	6.9%	7.5%	7.5%	7.4%	8.6%	8.8%	10.4%
2003	9.9%	9.3%	8.9%	7.9%	7.4%	7.2%	7.4%	7.5%	7.4%	8.4%	8.8%	10.0%
2004	9.8%	9.2%	8.9%	7.9%	7.4%	7.3%	7.5%	7.7%	7.4%	8.4%	8.7%	9.9%
2005	9.6%	9.1%	8.8%	7.9%	7.4%	7.4%	7.7%	7.8%	7.4%	8.4%	8.6%	9.7%
2006	9.5%	9.1%	8.8%	7.9%	7.4%	7.6%	7.8%	8.0%	7.4%	8.4%	8.5%	9.6%
2007	9.4%	9.0%	8.8%	7.9%	7.4%	7.7%	8.0%	8.1%	7.5%	8.4%	8.4%	9.4%
2008	9.4%	9.0%	8.8%	7.9%	7.4%	7.7%	8.0%	8.1%	7.5%	8.4%	8.4%	9.4%
2009	9.4%	9.0%	8.8%	7.9%	7.4%	7.7%	8.0%	8.1%	7.5%	8.4%	8.4%	9.4%
2010	9.4%	9.0%	8.8%	7.9%	7.4%	7.7%	8.0%	8.1%	7.5%	8.4%	8.4%	9.4%
2011	9.4%	9.0%	8.8%	7.9%	7.4%	7.7%	8.0%	8.1%	7.5%	8.4%	8.4%	9.4%
2012	9.4%	9.0%	8.8%	7.9%	7.4%	7.7%	8.0%	8.1%	7.5%	8.4%	8.4%	9.4%
2013	9.4%	9.0%	8.8%	7.9%	7.4%	7.7%	8.0%	8.1%	7.5%	8.4%	8.4%	9.4%
2014	9.4%	9.0%	8.8%	7.9%	7.4%	7.7%	8.0%	8.1%	7.5%	8.4%	8.4%	9.4%
2015	9.4%	9.0%	8.8%	7.9%	7.4%	7.7%	8.0%	8.1%	7.5%	8.4%	8.4%	9.4%
2016	9.4%	9.0%	8.8%	7.9%	7.4%	7.7%	8.0%	8.1%	7.5%	8.4%	8.4%	9.4%
2017	9.4%	9.0%	8.8%	7.9%	7.4%	7.7%	8.0%	8.1%	7.5%	8.4%	8.4%	9.4%
2018	9.4%	9.0%	8.8%	7.9%	7.4%	7.7%	8.0%	8.1%	7.5%	8.4%	8.4%	9.4%
2019	9.4%	9.0%	8.8%	7.9%	7.4%	7.7%	8.0%	8.1%	7.5%	8.4%	8.4%	9.4%
2020	9.4%	9.0%	8.8%	7.9%	7.4%	7.7%	8.0%	8.1%	7.5%	8.4%	8.4%	9.4%

Source: PwC



Figure A6.2.12: Forecast Monthly Peak Demand



Source: PwC

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	-	-	-	-	-	-	-	-	-	-	-	-
2001	-	-	-	-	-	-	-	-	-	-	-	-
2002	100.0%	87.2%	83.0%	79.4%	66.6%	64.2%	67.5%	67.1%	73.0%	79.8%	87.6%	96.0%
2003	100.0%	95.6%	86.2%	83.1%	69.5%	69.5%	68.2%	69.0%	74.1%	86.5%	87.3%	96.1%
2005	100.0%	96.7%	87.9%	85.4%	71.5%	73.8%	72.9%	73.5%	76.5%	88.6%	87.8%	95.6%
2010	100.0%	97.4%	89.3%	87.3%	73.2%	78.2%	77.4%	77.7%	78.6%	90.2%	87.3%	94.3%
2015	100.0%	97.0%	89.1%	87.6%	73.2%	77.5%	77.2%	77.6%	78.7%	89.8%	87.3%	94.6%
2020	100.0%	98.1%	89.6%	88.0%	73.5%	78.0%	77.8%	78.0%	79.1%	91.0%	88.2%	94.8%

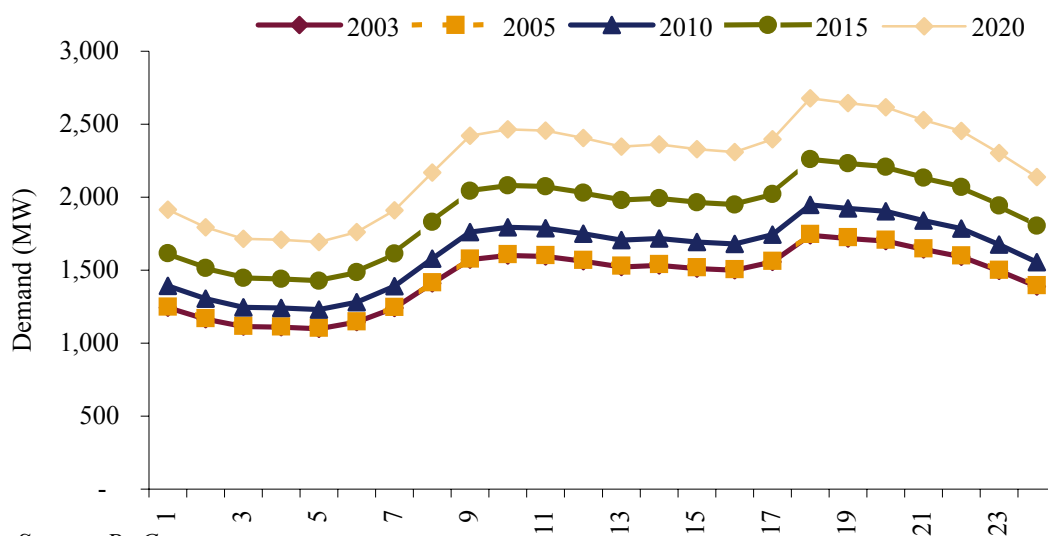
Source: PwC



5. Historical and forecast daily profiles

Using a combination of the 2003 load profiles for the 3rd week of January, April, July and October and the previous analysis of changing seasonal demand, we compare forecast and historical profiles.

Figure A6.2.13: 3rd Wed January Daily Profiles



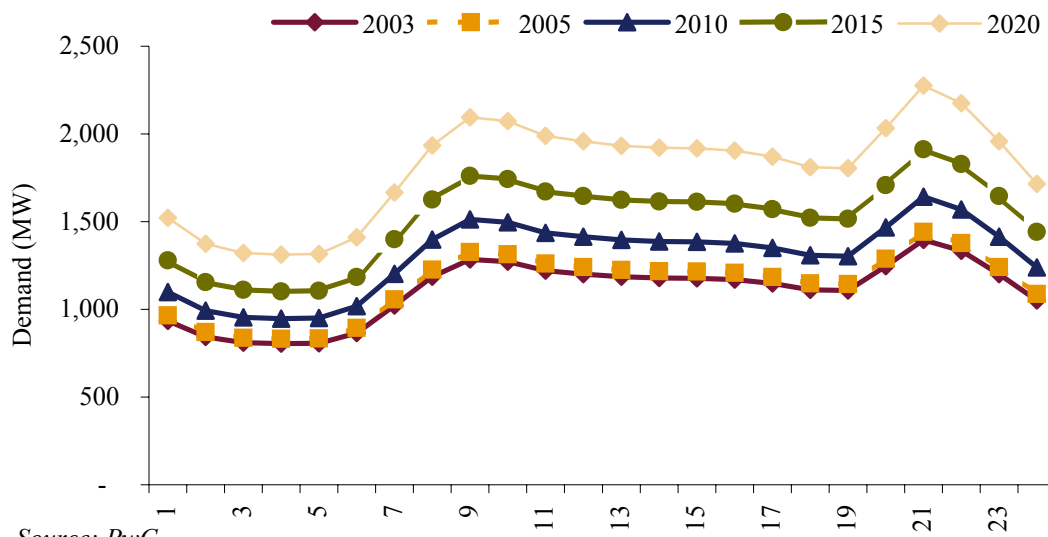
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	-	-	1,190	1,243	1,249	1,392	1,616	1,914
2	-	-	1,118	1,165	1,171	1,305	1,515	1,794
3	-	-	1,083	1,113	1,119	1,247	1,447	1,714
4	-	-	1,083	1,109	1,115	1,242	1,442	1,708
5	-	-	1,078	1,099	1,104	1,231	1,429	1,692
6	-	-	1,118	1,144	1,150	1,281	1,487	1,762
7	-	-	1,254	1,241	1,247	1,390	1,613	1,911
8	-	-	1,420	1,409	1,416	1,578	1,832	2,170
9	-	-	1,550	1,572	1,580	1,761	2,044	2,421
10	-	-	1,597	1,601	1,609	1,793	2,081	2,466
11	-	-	1,592	1,595	1,603	1,786	2,074	2,456
12	-	-	1,590	1,562	1,570	1,749	2,031	2,405
13	-	-	1,587	1,523	1,531	1,706	1,980	2,345
14	-	-	1,552	1,533	1,541	1,717	1,993	2,361
15	-	-	1,547	1,512	1,520	1,693	1,966	2,328
16	-	-	1,547	1,500	1,508	1,680	1,950	2,310
17	-	-	1,647	1,556	1,564	1,743	2,023	2,396
18	-	-	1,730	1,739	1,748	1,948	2,261	2,678
19	-	-	1,715	1,718	1,727	1,924	2,233	2,646
20	-	-	1,690	1,699	1,707	1,903	2,209	2,616
21	-	-	1,657	1,642	1,650	1,839	2,135	2,529
22	-	-	1,617	1,593	1,601	1,784	2,071	2,453
23	-	-	1,478	1,495	1,502	1,674	1,944	2,302
24	-	-	1,388	1,389	1,396	1,556	1,806	2,139

Source: PwC



Figure A6.2.14: 3rd Wed April Daily Profiles



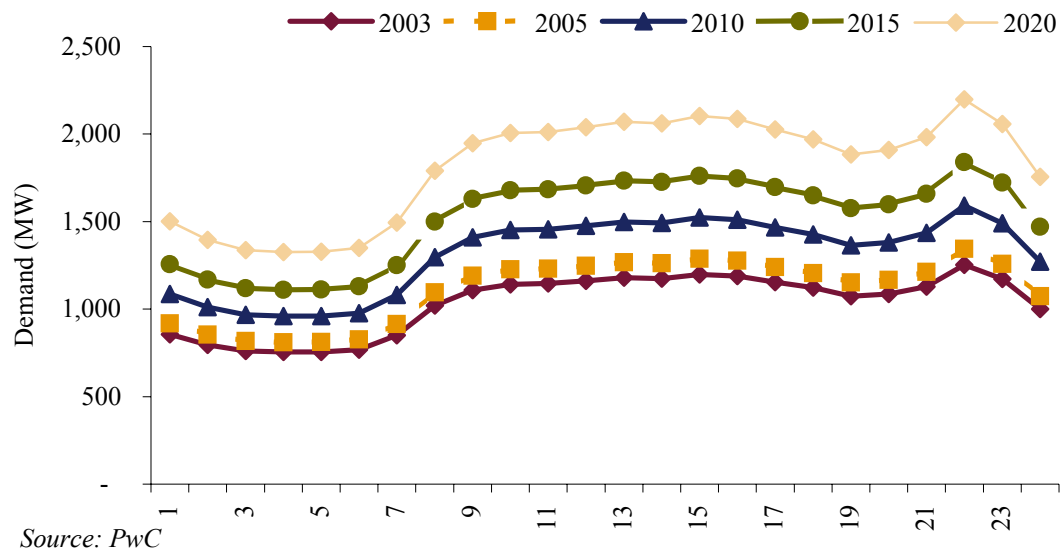
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	-	-	848	934	965	1,099	1,280	1,522
2	-	-	798	843	871	992	1,155	1,374
3	-	-	768	811	838	955	1,111	1,322
4	-	-	763	805	832	947	1,103	1,312
5	-	-	763	807	834	950	1,106	1,315
6	-	-	808	865	894	1,018	1,185	1,410
7	-	-	915	1,022	1,056	1,203	1,400	1,666
8	-	-	1,121	1,187	1,226	1,397	1,626	1,935
9	-	-	1,229	1,285	1,327	1,512	1,760	2,095
10	-	-	1,229	1,272	1,314	1,497	1,743	2,073
11	-	-	1,194	1,220	1,260	1,436	1,671	1,989
12	-	-	1,181	1,201	1,241	1,414	1,645	1,958
13	-	-	1,166	1,186	1,225	1,396	1,625	1,933
14	-	-	1,111	1,179	1,218	1,388	1,615	1,922
15	-	-	1,126	1,177	1,216	1,385	1,612	1,919
16	-	-	1,101	1,169	1,208	1,376	1,602	1,905
17	-	-	1,083	1,147	1,185	1,350	1,571	1,870
18	-	-	1,058	1,111	1,148	1,308	1,522	1,811
19	-	-	1,063	1,107	1,144	1,303	1,517	1,804
20	-	-	1,218	1,247	1,288	1,468	1,708	2,033
21	-	-	1,331	1,396	1,442	1,643	1,913	2,275
22	-	-	1,280	1,334	1,378	1,570	1,828	2,174
23	-	-	1,097	1,201	1,241	1,414	1,645	1,958
24	-	-	977	1,052	1,087	1,238	1,441	1,715

Source: PwC



Figure A6.2.15: 3rd Wed Jul Daily Profiles



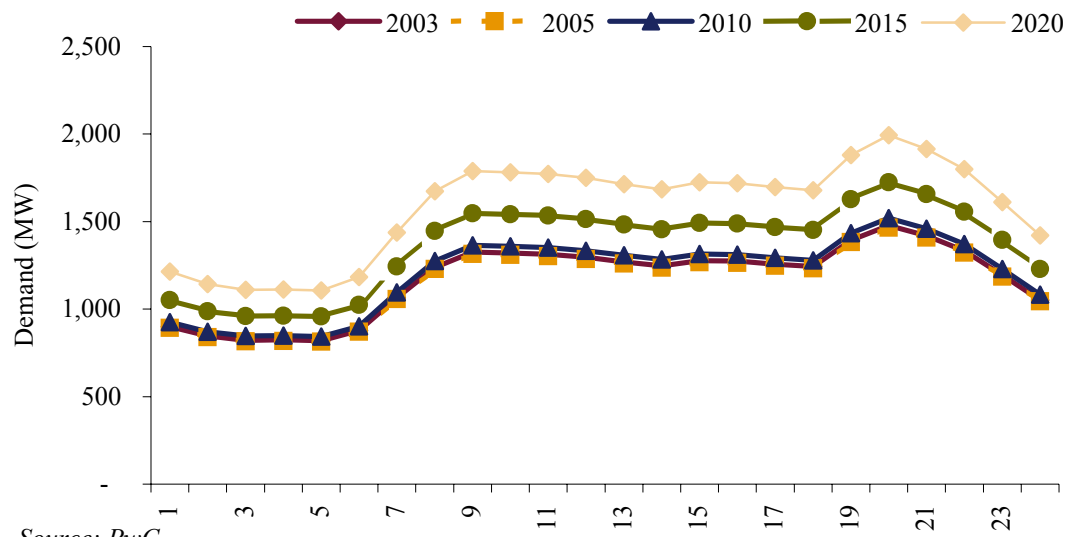
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	-	-	810	855	918	1,087	1,257	1,501
2	-	-	757	795	854	1,010	1,169	1,396
3	-	-	715	761	817	967	1,119	1,336
4	-	-	715	755	811	960	1,110	1,326
5	-	-	710	756	812	961	1,111	1,328
6	-	-	725	769	826	977	1,130	1,350
7	-	-	806	851	914	1,082	1,251	1,494
8	-	-	971	1,020	1,096	1,296	1,499	1,791
9	-	-	1,044	1,109	1,191	1,410	1,630	1,947
10	-	-	1,096	1,142	1,227	1,451	1,679	2,005
11	-	-	1,104	1,146	1,231	1,457	1,685	2,012
12	-	-	1,126	1,161	1,247	1,476	1,707	2,039
13	-	-	1,098	1,179	1,266	1,499	1,733	2,070
14	-	-	1,103	1,174	1,261	1,492	1,726	2,062
15	-	-	1,107	1,198	1,287	1,523	1,761	2,104
16	-	-	1,093	1,188	1,276	1,510	1,746	2,086
17	-	-	1,056	1,154	1,240	1,467	1,696	2,026
18	-	-	1,030	1,122	1,205	1,426	1,649	1,970
19	-	-	1,021	1,073	1,153	1,364	1,577	1,884
20	-	-	1,016	1,087	1,168	1,382	1,598	1,909
21	-	-	1,082	1,129	1,213	1,435	1,660	1,983
22	-	-	1,152	1,252	1,345	1,591	1,840	2,199
23	-	-	1,084	1,172	1,259	1,490	1,723	2,058
24	-	-	954	1,000	1,074	1,271	1,470	1,756

Source: PwC



Figure A6.2.16: 3rd Wed Oct Daily Profiles



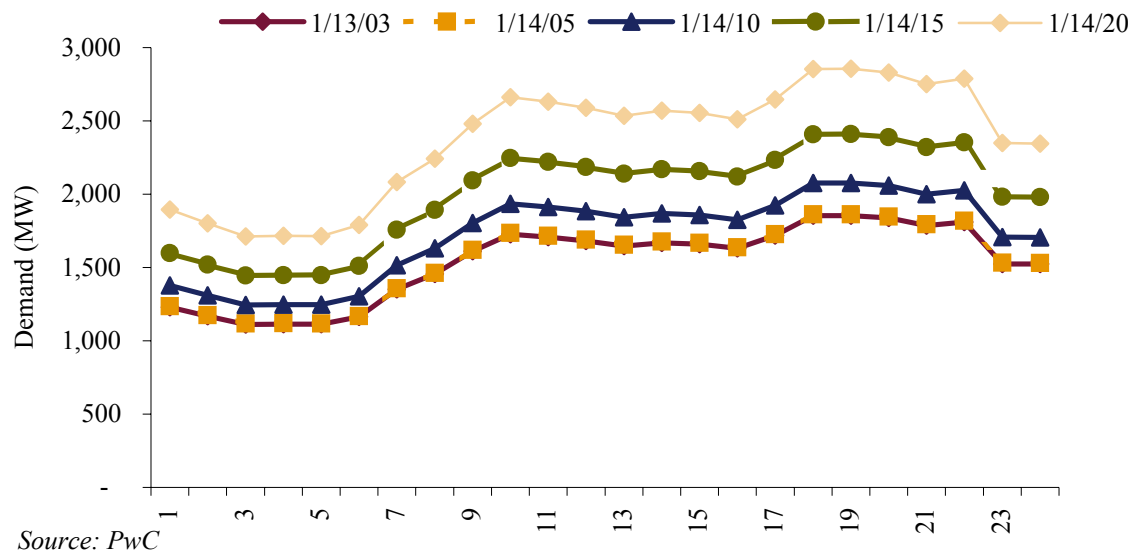
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	-	-	910	900	893	926	1,051	1,215
2	-	-	846	846	839	871	988	1,142
3	-	-	829	822	815	846	960	1,110
4	-	-	804	824	817	848	962	1,112
5	-	-	814	820	813	844	958	1,107
6	-	-	876	877	870	902	1,024	1,184
7	-	-	1,035	1,065	1,056	1,096	1,244	1,438
8	-	-	1,236	1,239	1,229	1,275	1,447	1,673
9	-	-	1,307	1,325	1,314	1,363	1,548	1,789
10	-	-	1,260	1,320	1,309	1,358	1,542	1,782
11	-	-	1,236	1,313	1,302	1,351	1,534	1,773
12	-	-	1,116	1,296	1,286	1,334	1,514	1,750
13	-	-	1,106	1,270	1,260	1,307	1,483	1,715
14	-	-	1,086	1,247	1,237	1,283	1,456	1,683
15	-	-	1,085	1,277	1,267	1,314	1,492	1,724
16	-	-	1,072	1,274	1,264	1,311	1,488	1,720
17	-	-	1,051	1,257	1,247	1,293	1,468	1,697
18	-	-	1,103	1,243	1,233	1,279	1,452	1,678
19	-	-	1,210	1,393	1,382	1,433	1,627	1,881
20	-	-	1,285	1,477	1,465	1,520	1,725	1,994
21	-	-	1,378	1,419	1,408	1,460	1,657	1,916
22	-	-	1,303	1,333	1,322	1,372	1,557	1,800
23	-	-	1,164	1,194	1,184	1,229	1,395	1,612
24	-	-	1,026	1,052	1,044	1,083	1,229	1,420

Source: PwC



Figure A6.2.17: Peak Hourly Demand Daily Profiles



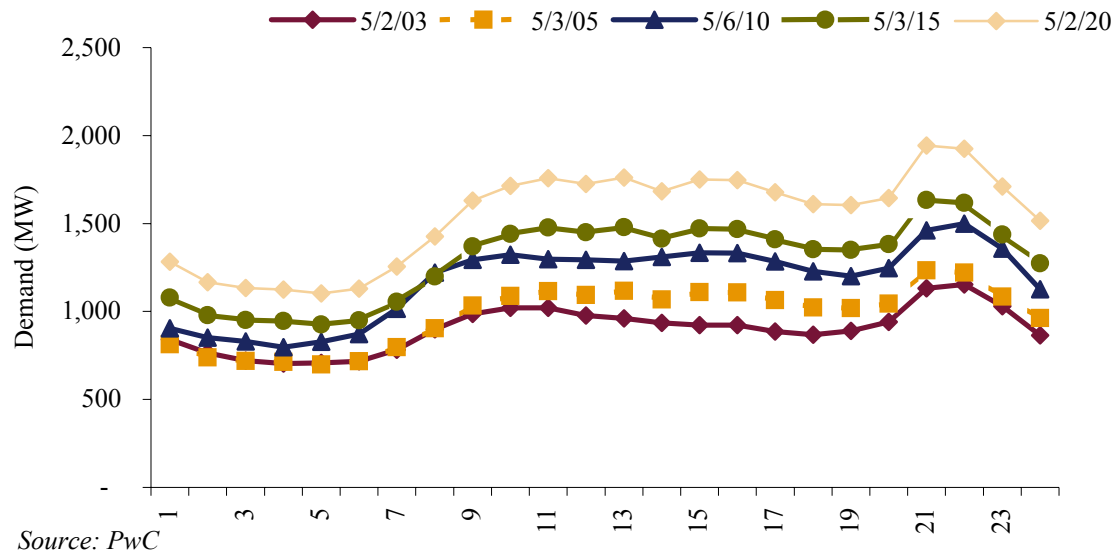
Source: PwC

MW	1/0/00	1/22/01	1/3/02	1/13/03	1/14/05	1/14/10	1/14/15	1/14/20
1	-	-	1,170	1,230	1,236	1,378	1,599	1,894
2	-	-	1,110	1,169	1,175	1,309	1,520	1,800
3	-	-	1,060	1,112	1,118	1,245	1,446	1,712
4	-	-	1,030	1,114	1,120	1,248	1,448	1,716
5	-	-	1,035	1,113	1,119	1,247	1,447	1,714
6	-	-	1,060	1,163	1,169	1,303	1,512	1,791
7	-	-	1,292	1,352	1,359	1,514	1,758	2,082
8	-	-	1,443	1,456	1,463	1,631	1,893	2,242
9	-	-	1,548	1,611	1,619	1,804	2,094	2,481
10	-	-	1,692	1,728	1,737	1,935	2,246	2,661
11	-	-	1,717	1,708	1,717	1,913	2,220	2,630
12	-	-	1,663	1,682	1,690	1,884	2,187	2,590
13	-	-	1,692	1,646	1,654	1,844	2,140	2,535
14	-	-	1,707	1,669	1,677	1,869	2,170	2,570
15	-	-	1,692	1,659	1,667	1,858	2,157	2,555
16	-	-	1,682	1,630	1,638	1,826	2,119	2,510
17	-	-	1,742	1,718	1,727	1,924	2,233	2,646
18	-	-	1,808	1,853	1,862	2,075	2,409	2,854
19	-	-	1,838	1,854	1,863	2,076	2,410	2,855
20	-	-	1,803	1,838	1,847	2,059	2,389	2,831
21	-	-	1,797	1,786	1,795	2,000	2,322	2,750
22	-	-	1,737	1,810	1,819	2,027	2,353	2,787
23	-	-	1,615	1,525	1,533	1,708	1,983	2,349
24	-	-	1,495	1,523	1,531	1,706	1,980	2,345

Source: PwC



Figure A6.2.18: Minimum Hourly Demand Daily Profiles



Source: PwC

MW	1/0/00	8/12/01	6/2/02	5/2/03	5/3/05	5/6/10	5/3/15	5/2/20
1	-	-	738	841	814	905	1,078	1,283
2	-	-	698	765	739	851	980	1,165
3	-	-	677	721	719	830	952	1,133
4	-	-	672	705	714	798	945	1,125
5	-	-	672	707	699	827	926	1,102
6	-	-	692	716	717	871	949	1,130
7	-	-	793	782	796	1,015	1,055	1,255
8	-	-	950	899	905	1,221	1,199	1,426
9	-	-	1,040	986	1,034	1,294	1,370	1,630
10	-	-	1,065	1,020	1,088	1,323	1,441	1,715
11	-	-	1,065	1,020	1,115	1,298	1,477	1,757
12	-	-	1,064	977	1,094	1,294	1,449	1,725
13	-	-	1,052	961	1,117	1,286	1,480	1,760
14	-	-	1,045	935	1,067	1,310	1,414	1,682
15	-	-	1,060	923	1,111	1,333	1,471	1,751
16	-	-	1,030	923	1,109	1,331	1,469	1,747
17	-	-	1,015	887	1,064	1,285	1,410	1,677
18	-	-	985	868	1,022	1,228	1,354	1,610
19	-	-	980	889	1,019	1,201	1,349	1,606
20	-	-	1,015	940	1,044	1,247	1,382	1,645
21	-	-	1,110	1,131	1,233	1,461	1,633	1,943
22	-	-	1,159	1,153	1,221	1,499	1,618	1,925
23	-	-	1,019	1,029	1,085	1,358	1,437	1,710
24	-	-	869	864	962	1,127	1,274	1,516

Source: PwC



Appendix 6.3
Bulgaria Demand Forecasting



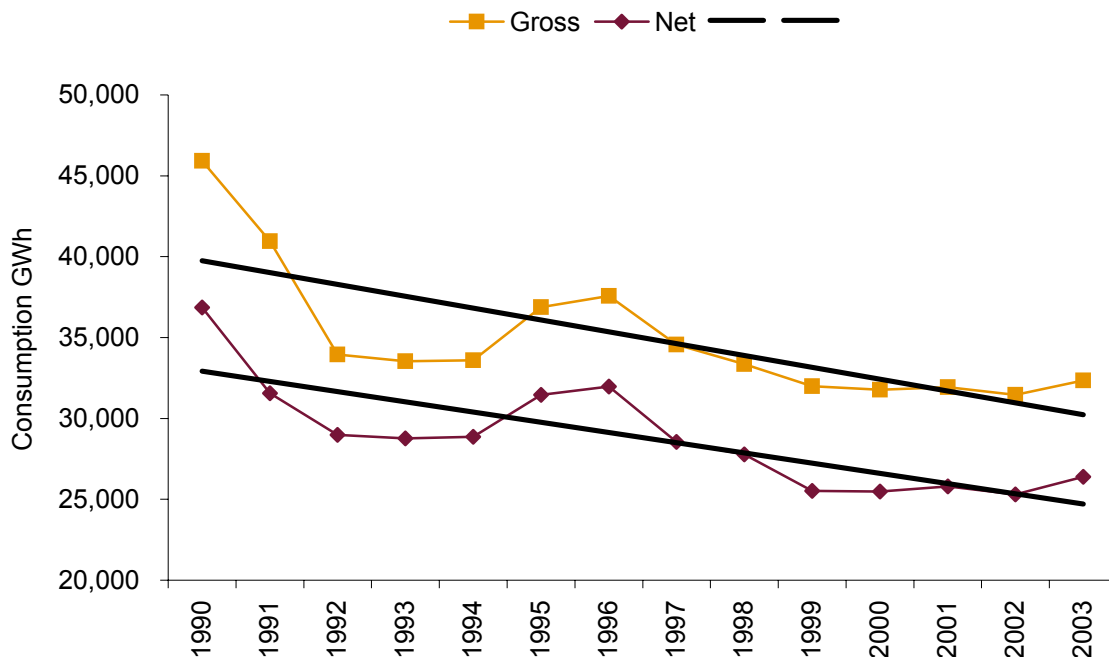
1. Historical Trend Analysis

The data for Bulgaria was sourced from the national utility. A complete data set of historical electricity demand was made available for analysis.

Figure A6.3.1: Historical Electricity Consumption

	(1)	(1)	(1)	(1)	(1)	(2)	(2)
	Net Demand GWh	Transmis Losses GWh	Distrib Losses GWh	Total Losses GWh	Gross Demand GWh	All Losses Share of Gross	Population Net Energy Intensity ('000) kWh/cap
1990	36,854	-	-	-	45,920	19.7%	8,718 4,227
1991	31,561	-	-	-	40,958	22.9%	8,632 3,656
1992	28,987	1,435	3,525	4,960	33,947	14.6%	8,540 3,394
1993	28,775	1,310	3,443	4,753	33,528	14.2%	8,472 3,396
1994	28,862	1,264	3,467	4,731	33,593	14.1%	8,444 3,418
1995	31,467	1,421	3,993	5,414	36,881	14.7%	8,406 3,743
1996	31,982	1,388	4,208	5,596	37,578	14.9%	8,362 3,825
1997	28,551	1,321	4,689	6,010	34,561	17.4%	8,312 3,435
1998	27,769	1,298	4,297	5,595	33,364	16.8%	8,257 3,363
1999	25,522	1,995	4,474	6,469	31,991	20.2%	8,211 3,108
2000	25,486	1,232	5,058	6,290	31,776	19.8%	8,170 3,119
2001	25,800	835	5,291	6,126	31,926	19.2%	7,913 3,260
2002	25,312	825	5,326	6,151	31,463	19.5%	7,846 3,226
2003	26,396	762	5,186	5,948	32,344	18.4%	7,801 3,384

Sources: (1&2) NEK



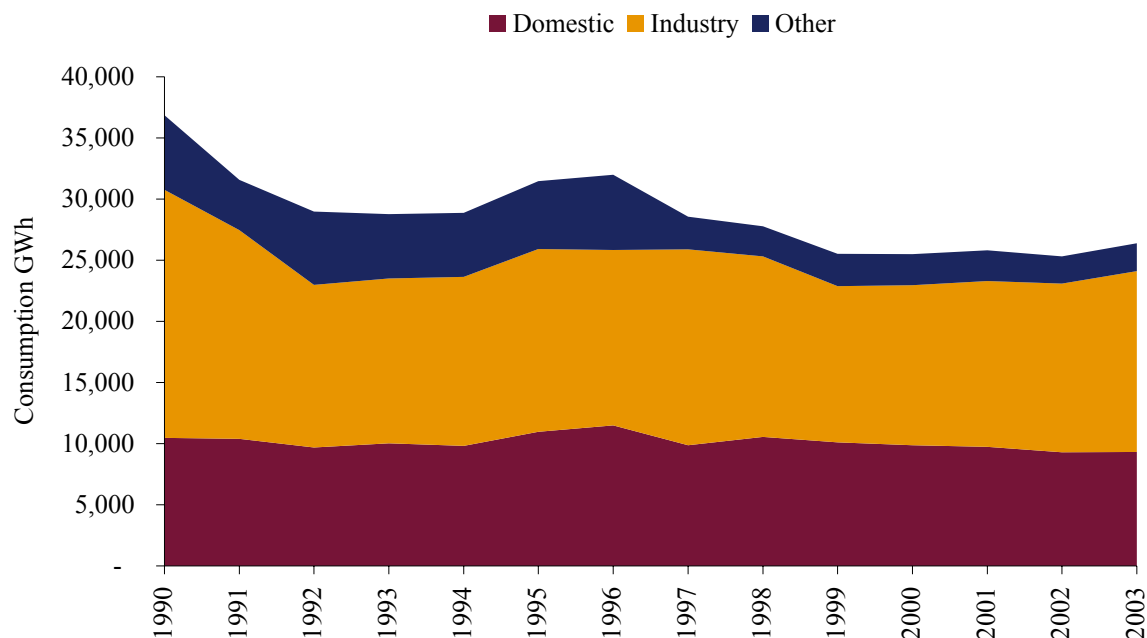
Source: NEK Peak demand incl. Pumping & Aux



Figure A6.3.2: Historical Sectoral Electricity Demand

	Domestic Demand GWh	Industry Demand GWh	Other Demand GWh	Total Net Demand GWh	Domestic Demand Growth	Industry Demand Growth	Other Demand Growth	Total Net Demand Growth
1990	10,475	20,291	6,088	36,854				
1991	10,405	17,065	4,091	31,561	-0.7%	-18.9%	-48.8%	-16.8%
1992	9,685	13,300	6,002	28,987	-7.4%	-28.3%	31.8%	-8.9%
1993	10,021	13,496	5,258	28,775	3.4%	1.5%	-14.1%	-0.7%
1994	9,806	13,840	5,216	28,862	-2.2%	2.5%	-0.8%	0.3%
1995	10,956	14,951	5,560	31,467	10.5%	7.4%	6.2%	8.3%
1996	11,486	14,357	6,139	31,982	4.6%	-4.1%	9.4%	1.6%
1997	9,882	16,003	2,666	28,551	-16.2%	10.3%	-130.3%	-12.0%
1998	10,540	14,787	2,442	27,769	6.2%	-8.2%	-9.2%	-2.8%
1999	10,115	12,762	2,645	25,522	-4.2%	-15.9%	7.7%	-8.8%
2000	9,858	13,096	2,532	25,486	-2.6%	2.6%	-4.5%	-0.1%
2001	9,751	13,555	2,494	25,800	-1.1%	3.4%	-1.5%	1.2%
2002	9,306	13,795	2,211	25,312	-4.8%	1.7%	-12.8%	-1.9%
2003	9,311	14,798	2,287	26,396	0.1%	6.8%	3.3%	4.1%

Source: NEK Peak demand incl. Pumping & Aux



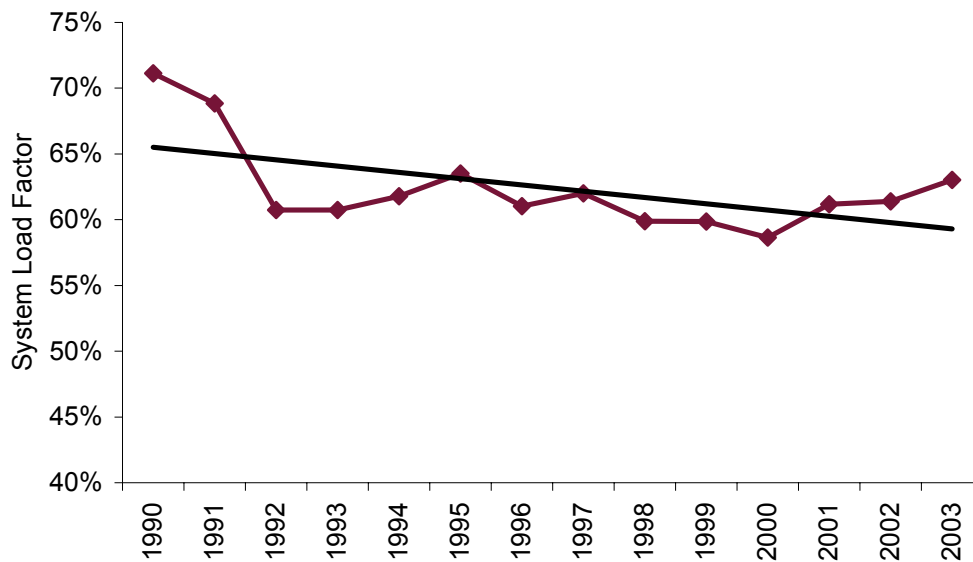
Source: NEK Peak demand incl. Pumping & Aux



Figure A6.3.3: Historical System Load Factor

	Gross Demand GWh	Auxilliary Demand GWh	Pumping Demand GWh	Gross Consump GWh	Gross Consm Growth	System Peak MW	System Peak Growth	System Load Factor
1990	45,920	4,623	-	50,543		8,111		71.1%
1991	40,958	4,206	-	45,164	-10.6%	7,489	-7.7%	68.8%
1992	33,947	4,082	246	38,275	-15.3%	7,193	-4.0%	60.7%
1993	33,528	4,254	232	38,014	-0.7%	7,145	-0.7%	60.7%
1994	33,593	4,173	339	38,105	0.2%	7,040	-1.5%	61.8%
1995	36,881	4,293	668	41,842	9.8%	7,522	6.8%	63.5%
1996	37,578	4,281	494	42,353	1.2%	7,923	5.3%	61.0%
1997	34,561	4,389	329	39,279	-7.3%	7,232	-8.7%	62.0%
1998	33,364	4,356	344	38,064	-3.1%	7,257	0.3%	59.9%
1999	31,991	3,955	351	36,297	-4.6%	6,923	-4.6%	59.9%
2000	31,776	4,040	491	36,307	0.0%	7,068	2.1%	58.6%
2001	31,926	4,351	767	37,044	2.0%	6,912	-2.2%	61.2%
2002	31,463	4,106	837	36,406	-1.7%	6,768	-2.1%	61.4%
2003	32,344	4,230	483	37,057	1.8%	6,713	-0.8%	63.0%

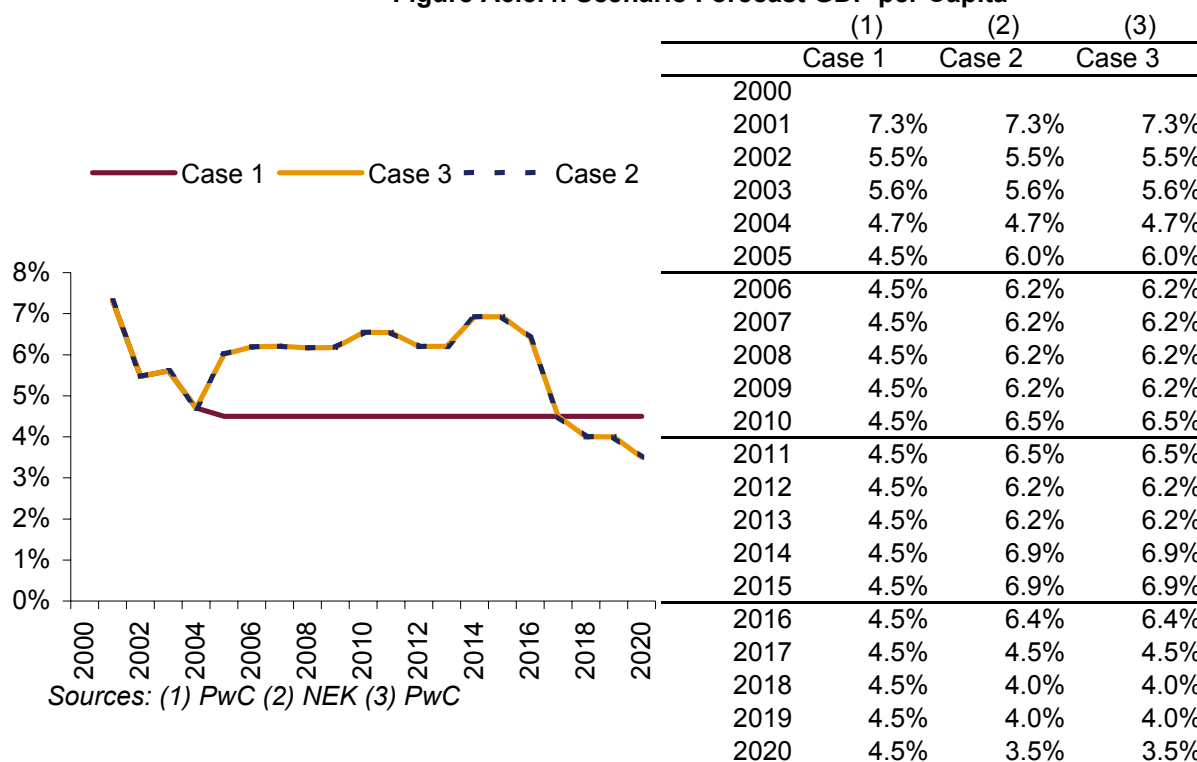
Source: NEK Peak demand incl. Pumping & Aux





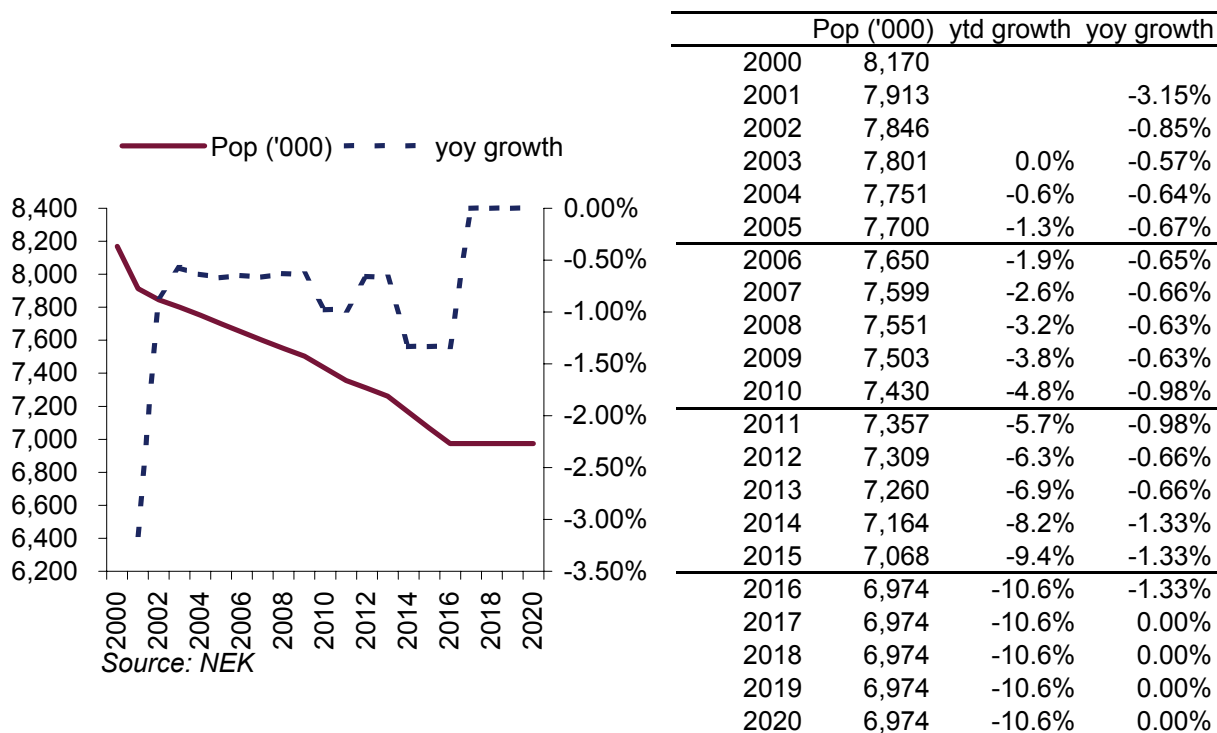
2. Forecast Assumptions

Figure A6.3.4: Scenario Forecast GDP per Capita



Sources: (1) PwC (2) NEK (3) PwC

Figure A6.3.5: Forecast Population



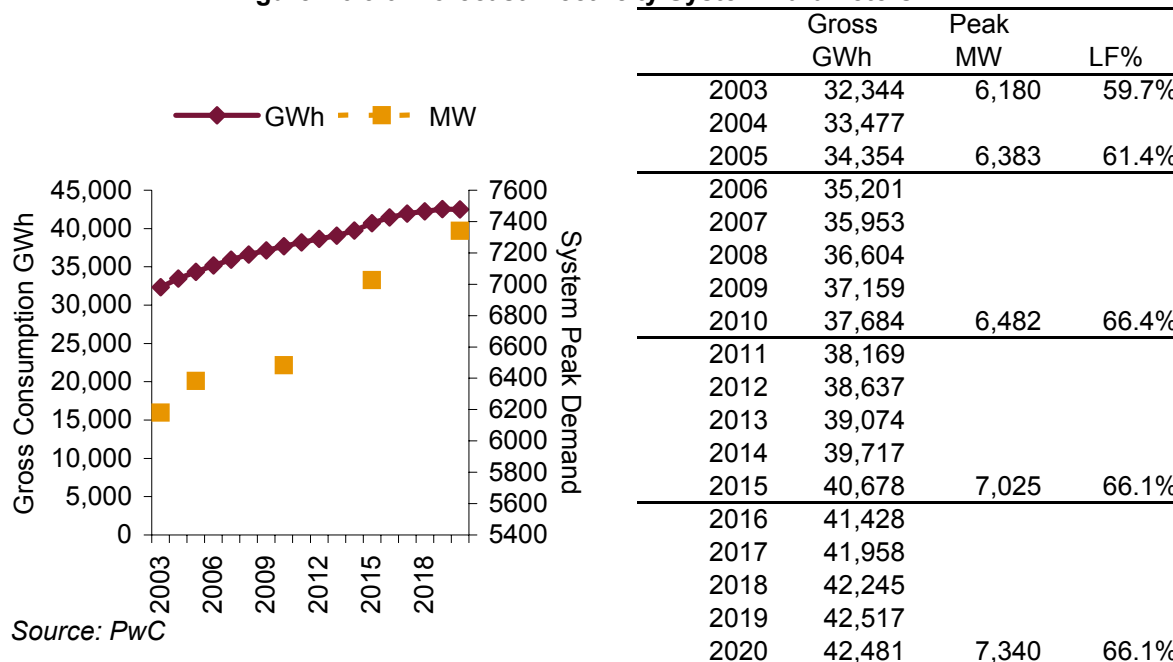
Source: NEK



3. Forecast Calculation

Using the econometric demand forecasting model described in Chapter 3 of this report, together with GDP growth forecast assumptions, the following data are forecast for energy demand.

Figure A6.3.6: Forecast Electricity System Parameters



Source: PwC

Source: PwC

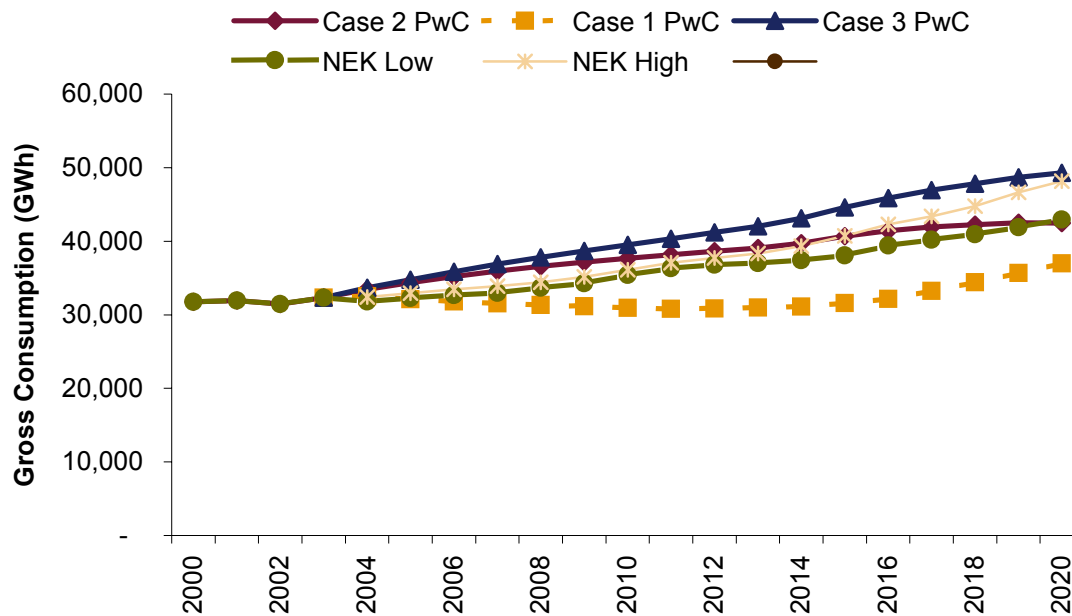
Figure A6.3.7: Case 2 Economic Model Forecast Calculation

Year	GDP per Capita (95 US\$)	Forecast Growth (%)	Electricity Intensity (kWh/GDP)	Electricity per capita (kWh pp)	Population ('000)	Net Consumpt (GWh)	D & T Losses (%)	Gross Consumpt (GWh)
2002	1,613	5.5%	2.00	3,226	7,846	25,312	19.5%	31,463
2003	1,703	5.6%	1.99	3,384	7,801	26,396	18.4%	32,344
2004	1,783	4.7%	1.94	3,465	7,751	26,855	19.8%	33,477
2005	1,891	6.0%	1.90	3,590	7,700	27,641	19.5%	34,354
2006	2,008	6.2%	1.86	3,724	7,650	28,488	19.1%	35,201
2007	2,132	6.2%	1.81	3,862	7,599	29,345	18.4%	35,953
2008	2,264	6.2%	1.77	4,001	7,551	30,210	17.5%	36,604
2009	2,403	6.2%	1.72	4,142	7,503	31,081	16.4%	37,159
2010	2,561	6.5%	1.68	4,301	7,430	31,957	15.2%	37,684
2011	2,728	6.5%	1.64	4,463	7,357	32,835	14.0%	38,169
2012	2,897	6.2%	1.59	4,613	7,309	33,713	12.7%	38,637
2013	3,077	6.2%	1.55	4,764	7,260	34,589	11.5%	39,074
2014	3,290	6.9%	1.50	4,950	7,164	35,458	10.7%	39,717
2015	3,518	6.9%	1.46	5,138	7,068	36,319	10.7%	40,678
2016	3,744	6.4%	1.42	5,304	6,974	36,991	10.7%	41,428
2017	3,912	4.5%	1.37	5,371	6,974	37,460	10.7%	41,958
2018	4,069	4.0%	1.33	5,408	6,974	37,715	10.7%	42,245
2019	4,231	4.0%	1.29	5,439	6,974	37,930	10.8%	42,517
2020	4,379	3.5%	1.24	5,437	6,974	37,920	10.7%	42,481

Source: PwC



Figure A6.3.8: Comparison with other Forecasts



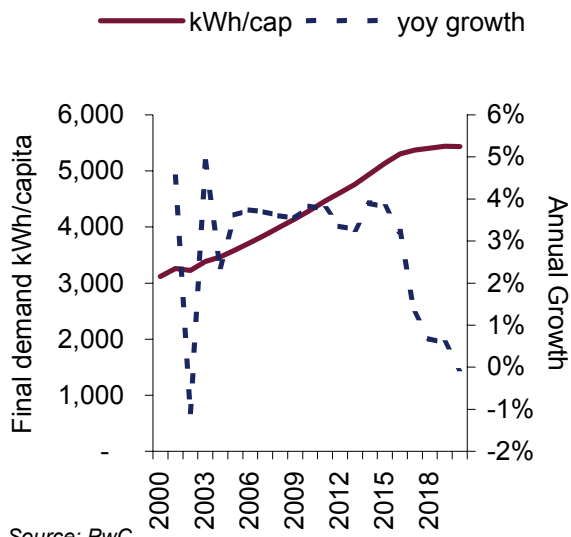
Source: PwC 2004, NEK 2003 [1]

GWh	Case 2	Case 1	Case 3	NEK Low	NEK High
2000	31,776			31,776	
2001	31,926			31,926	
2002	31,463			31,463	
2003	32,344	32,344	32,344	32,344	
2004	33,477	32,489	33,678	31,800	32,420
2005	34,354	32,124	34,777	32,290	32,940
2006	35,201	31,815	35,866	32,670	33,460
2007	35,953	31,548	36,881	32,970	33,900
2008	36,604	31,327	37,814	33,660	34,410
2009	37,159	31,139	38,670	34,300	35,160
2010	37,684	30,931	39,519	35,400	36,120
2011	38,169	30,796	40,351	36,350	37,050
2012	38,637	30,844	41,190	36,800	37,740
2013	39,074	30,960	42,023	37,020	38,350
2014	39,717	31,117	43,110	37,400	39,320
2015	40,678	31,606	44,583	38,070	40,720
2016	41,428	32,162	45,870	39,400	42,280
2017	41,958	33,235	46,958	40,200	43,400
2018	42,245	34,395	47,815	40,940	44,750
2019	42,517	35,672	48,701	41,900	46,640
2020	42,481	37,000	49,278	42,930	48,170

Source: PwC 2004, NEK 2003 [1]



Figure A6.3.9: Forecast Final Demand per Capita

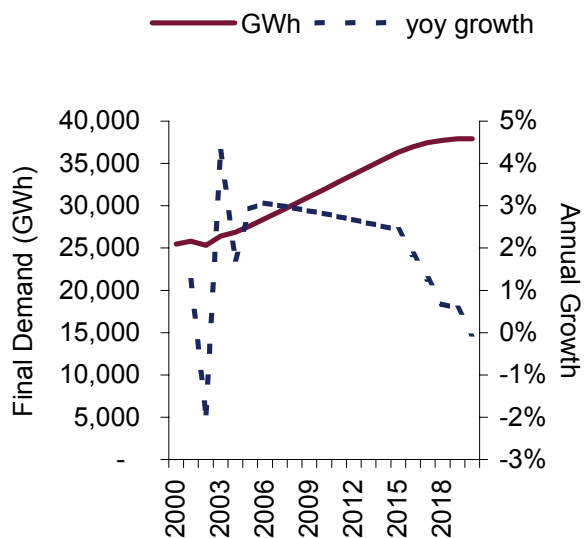


Source: PwC

	kWh/cap	ytd growth	yoy growth
2000	3,119		
2001	3,260		4.5%
2002	3,226		-1.1%
2003	3,384	0.0%	4.9%
2004	3,465	2.4%	2.4%
2005	3,590	6.1%	3.6%
2006	3,724	10.1%	3.7%
2007	3,862	14.1%	3.7%
2008	4,001	18.2%	3.6%
2009	4,142	22.4%	3.5%
2010	4,301	27.1%	3.8%
2011	4,463	31.9%	3.8%
2012	4,613	36.3%	3.4%
2013	4,764	40.8%	3.3%
2014	4,950	46.3%	3.9%
2015	5,138	51.9%	3.8%
2016	5,304	56.8%	3.2%
2017	5,371	58.7%	1.3%
2018	5,408	59.8%	0.7%
2019	5,439	60.7%	0.6%
2020	5,437	60.7%	0.0%

Source: PwC

Figure A6.3.10: Forecast Final Net Demand



Source: PwC

	GWh	ytd growth	yoy growth
2000	25,486		
2001	25,800		1.2%
2002	25,312		-1.9%
2003	26,396	0.0%	4.3%
2004	26,855	1.7%	1.7%
2005	27,641	4.7%	2.9%
2006	28,488	7.9%	3.1%
2007	29,345	11.2%	3.0%
2008	30,210	14.4%	2.9%
2009	31,081	17.7%	2.9%
2010	31,957	21.1%	2.8%
2011	32,835	24.4%	2.7%
2012	33,713	27.7%	2.7%
2013	34,589	31.0%	2.6%
2014	35,458	34.3%	2.5%
2015	36,319	37.6%	2.4%
2016	36,991	40.1%	1.9%
2017	37,460	41.9%	1.3%
2018	37,715	42.9%	0.7%
2019	37,930	43.7%	0.6%
2020	37,920	43.7%	0.0%

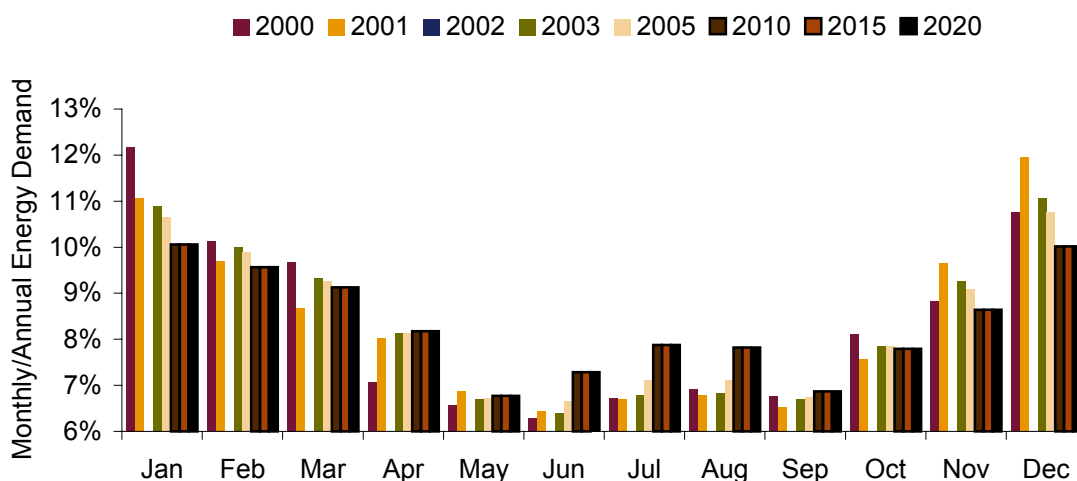
Source: PwC



4. Forecast variation in monthly electricity demand

Following the analysis in Chapter 3 of the main report, we have forecast a change in the share of annual energy demand and peak demand. We detail here the forecast annual change of these parameters.

Figure A6.3.11: Forecast Monthly Energy Demand



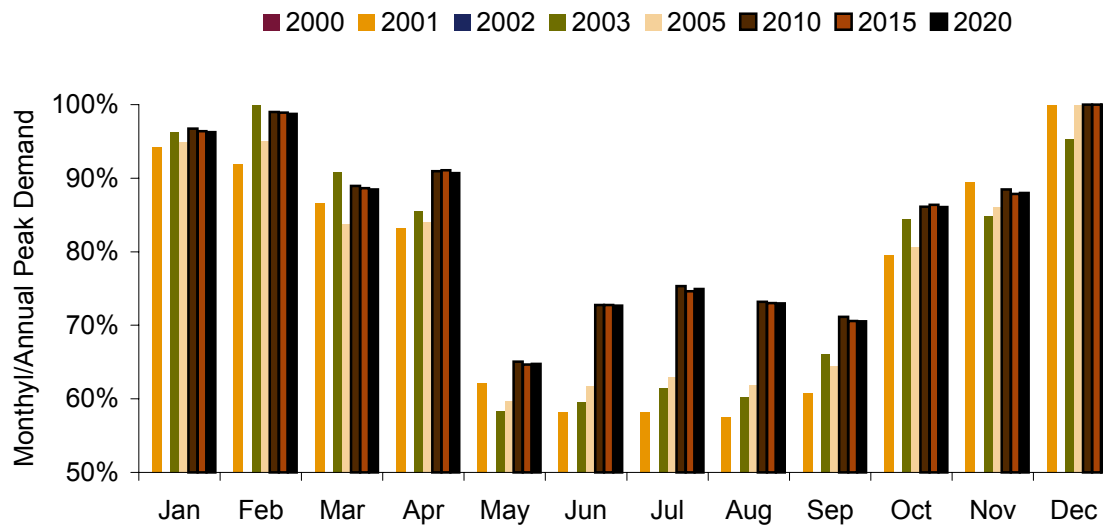
Source: PwC

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	12.2%	10.1%	9.7%	7.1%	6.6%	6.3%	6.7%	6.9%	6.8%	8.1%	8.8%	10.8%
2001	11.1%	9.7%	8.7%	8.0%	6.9%	6.4%	6.7%	6.8%	6.5%	7.6%	9.7%	11.9%
2002	-	-	-	-	-	-	-	-	-	-	-	-
2003	10.9%	10.0%	9.3%	8.1%	6.7%	6.4%	6.8%	6.8%	6.7%	7.9%	9.3%	11.1%
2004	10.8%	9.9%	9.3%	8.1%	6.7%	6.5%	7.0%	7.0%	6.7%	7.9%	9.2%	10.9%
2005	10.7%	9.9%	9.3%	8.1%	6.7%	6.7%	7.1%	7.1%	6.7%	7.8%	9.1%	10.8%
2006	10.5%	9.8%	9.2%	8.1%	6.7%	6.8%	7.3%	7.3%	6.8%	7.8%	9.0%	10.6%
2007	10.4%	9.8%	9.2%	8.2%	6.7%	6.9%	7.4%	7.4%	6.8%	7.8%	8.9%	10.5%
2008	10.3%	9.7%	9.2%	8.2%	6.7%	7.0%	7.6%	7.5%	6.8%	7.8%	8.8%	10.3%
2009	10.2%	9.6%	9.2%	8.2%	6.8%	7.2%	7.7%	7.7%	6.8%	7.8%	8.7%	10.2%
2010	10.1%	9.6%	9.1%	8.2%	6.8%	7.3%	7.9%	7.8%	6.9%	7.8%	8.6%	10.0%
2011	10.1%	9.6%	9.1%	8.2%	6.8%	7.3%	7.9%	7.8%	6.9%	7.8%	8.6%	10.0%
2012	10.1%	9.6%	9.1%	8.2%	6.8%	7.3%	7.9%	7.8%	6.9%	7.8%	8.6%	10.0%
2013	10.1%	9.6%	9.1%	8.2%	6.8%	7.3%	7.9%	7.8%	6.9%	7.8%	8.6%	10.0%
2014	10.1%	9.6%	9.1%	8.2%	6.8%	7.3%	7.9%	7.8%	6.9%	7.8%	8.6%	10.0%
2015	10.1%	9.6%	9.1%	8.2%	6.8%	7.3%	7.9%	7.8%	6.9%	7.8%	8.6%	10.0%
2016	10.1%	9.6%	9.1%	8.2%	6.8%	7.3%	7.9%	7.8%	6.9%	7.8%	8.6%	10.0%
2017	10.1%	9.6%	9.1%	8.2%	6.8%	7.3%	7.9%	7.8%	6.9%	7.8%	8.6%	10.0%
2018	10.1%	9.6%	9.1%	8.2%	6.8%	7.3%	7.9%	7.8%	6.9%	7.8%	8.6%	10.0%
2019	10.1%	9.6%	9.1%	8.2%	6.8%	7.3%	7.9%	7.8%	6.9%	7.8%	8.6%	10.0%
2020	10.1%	9.6%	9.1%	8.2%	6.8%	7.3%	7.9%	7.8%	6.9%	7.8%	8.6%	10.0%

Source: PwC



Figure A6.3.12: Forecast Monthly Peak Demand



Source: PwC

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	-	-	-	-	-	-	-	-	-	-	-	-
2001	94.2%	91.9%	86.7%	83.2%	62.2%	58.1%	58.2%	57.5%	60.9%	79.6%	89.4%	100.0%
2002	-	-	-	-	-	-	-	-	-	-	-	-
2003	96.3%	100.0%	90.9%	85.5%	58.3%	59.6%	61.5%	60.3%	66.1%	84.4%	84.9%	95.3%
2005	94.9%	95.0%	83.8%	84.0%	59.8%	61.8%	62.9%	61.8%	64.5%	80.6%	86.1%	100.0%
2010	96.8%	99.0%	89.0%	90.9%	65.1%	72.7%	75.3%	73.2%	71.2%	86.1%	88.5%	100.0%
2015	96.4%	98.9%	88.6%	91.1%	64.7%	72.8%	74.7%	73.0%	70.6%	86.4%	87.9%	100.0%
2020	96.2%	98.8%	88.5%	90.7%	64.7%	72.7%	75.0%	73.0%	70.5%	86.1%	88.0%	100.0%

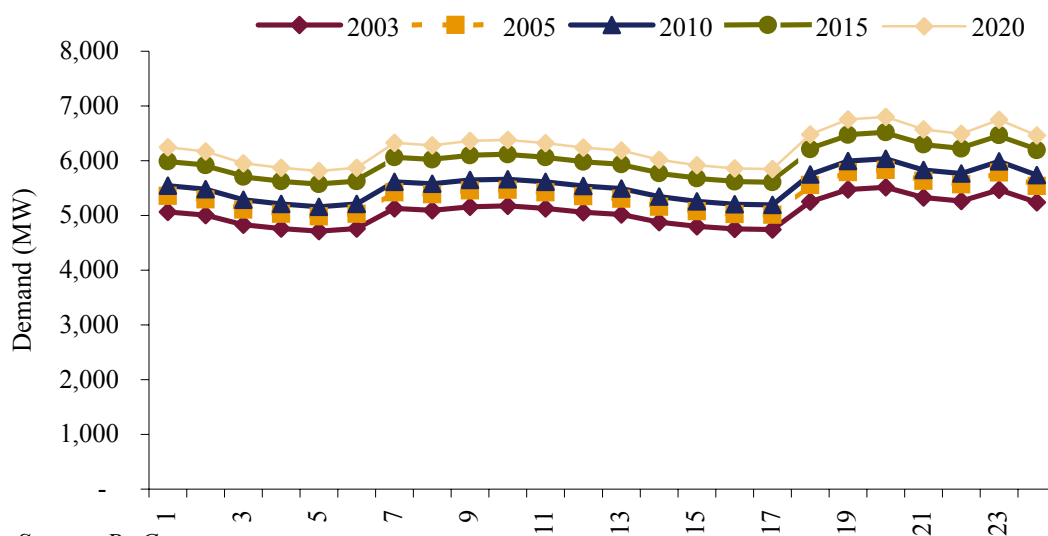
Source: PwC



5. Historical and forecast daily profiles

Using a combination of the 2003 load profiles for the 3rd week of January, April, July and October and the previous analysis of changing seasonal demand, we compare forecast and historical profiles.

Figure A6.3.13: 3rd Wed January Daily Profiles



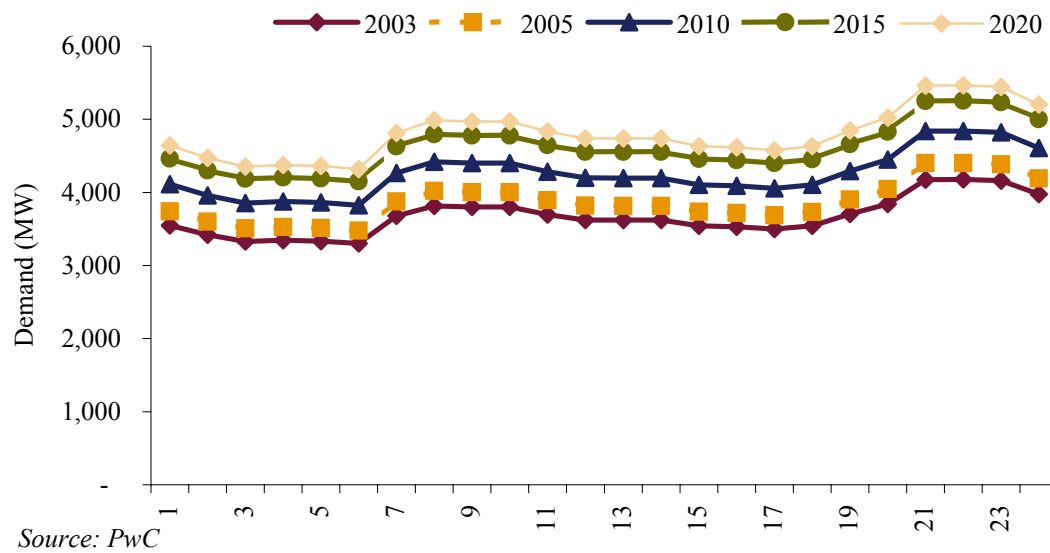
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	-	4,783	-	5,066	5,356	5,546	5,990	6,247
2	-	4,642	-	5,005	5,291	5,479	5,917	6,172
3	-	4,444	-	4,828	5,104	5,285	5,708	5,953
4	-	4,305	-	4,759	5,032	5,211	5,627	5,869
5	-	4,207	-	4,712	4,981	5,158	5,571	5,810
6	-	4,307	-	4,759	5,032	5,211	5,627	5,869
7	-	4,821	-	5,129	5,422	5,615	6,064	6,325
8	-	5,142	-	5,093	5,385	5,576	6,022	6,281
9	-	5,193	-	5,160	5,455	5,649	6,101	6,363
10	-	5,255	-	5,173	5,469	5,664	6,116	6,379
11	-	5,135	-	5,127	5,420	5,613	6,062	6,323
12	-	5,132	-	5,060	5,349	5,539	5,982	6,240
13	-	5,029	-	5,018	5,305	5,494	5,933	6,188
14	-	5,025	-	4,880	5,159	5,343	5,770	6,018
15	-	4,964	-	4,801	5,076	5,256	5,676	5,921
16	-	4,953	-	4,752	5,024	5,203	5,619	5,861
17	-	4,944	-	4,743	5,014	5,192	5,607	5,849
18	-	5,320	-	5,253	5,553	5,751	6,210	6,478
19	-	5,652	-	5,475	5,788	5,994	6,473	6,752
20	-	5,668	-	5,514	5,829	6,037	6,519	6,800
21	-	5,544	-	5,328	5,633	5,833	6,299	6,571
22	-	5,469	-	5,264	5,565	5,763	6,224	6,492
23	-	5,508	-	5,471	5,783	5,989	6,468	6,746
24	-	5,325	-	5,239	5,539	5,736	6,195	6,461

Source: PwC



Figure A6.3.14: 3rd Wed April Daily Profiles



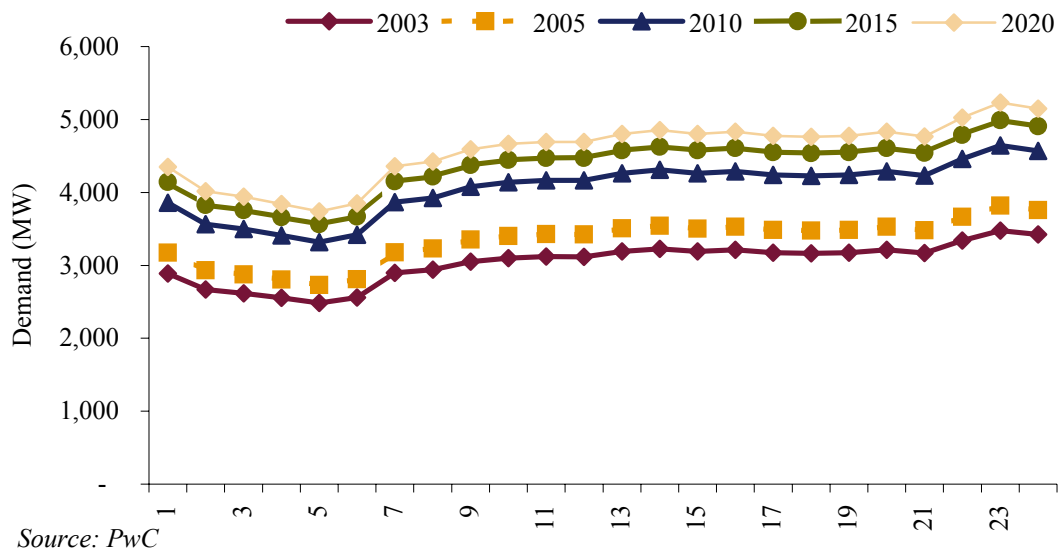
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	-	3,417	-	3,549	3,739	4,112	4,463	4,642
2	-	3,167	-	3,419	3,602	3,961	4,299	4,472
3	-	3,030	-	3,327	3,506	3,855	4,185	4,353
4	-	2,943	-	3,344	3,524	3,875	4,206	4,375
5	-	2,898	-	3,334	3,512	3,862	4,193	4,361
6	-	2,970	-	3,301	3,478	3,824	4,151	4,318
7	-	3,557	-	3,680	3,877	4,264	4,628	4,814
8	-	3,753	-	3,814	4,019	4,420	4,797	4,990
9	-	3,866	-	3,799	4,003	4,402	4,778	4,970
10	-	3,914	-	3,799	4,003	4,402	4,778	4,970
11	-	3,895	-	3,695	3,893	4,281	4,647	4,834
12	-	3,878	-	3,623	3,818	4,198	4,557	4,740
13	-	3,872	-	3,621	3,816	4,196	4,555	4,737
14	-	3,922	-	3,622	3,817	4,197	4,556	4,739
15	-	3,898	-	3,543	3,734	4,106	4,457	4,636
16	-	3,833	-	3,530	3,720	4,090	4,440	4,618
17	-	3,750	-	3,500	3,688	4,055	4,402	4,579
18	-	3,748	-	3,543	3,733	4,105	4,455	4,634
19	-	3,887	-	3,705	3,904	4,292	4,659	4,846
20	-	3,940	-	3,839	4,045	4,448	4,829	5,022
21	-	4,307	-	4,176	4,400	4,838	5,252	5,463
22	-	4,339	-	4,178	4,403	4,841	5,255	5,466
23	-	4,294	-	4,162	4,385	4,822	5,234	5,444
24	-	3,990	-	3,976	4,189	4,606	5,000	5,201

Source: PwC



Figure A6.3.15: 3rd Wed Jul Daily Profiles



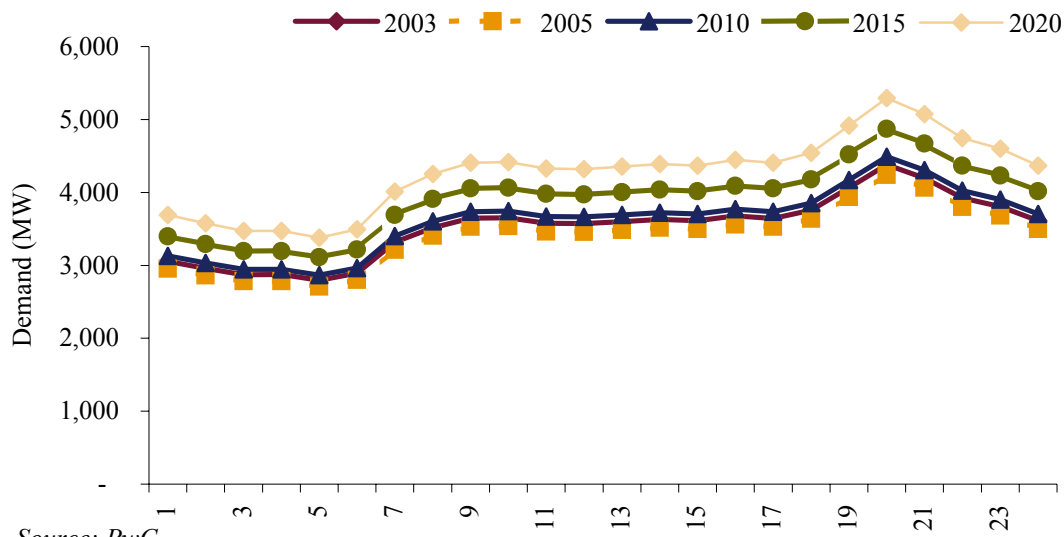
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	-	2,563	-	2,890	3,174	3,860	4,145	4,349
2	-	2,334	-	2,668	2,930	3,563	3,827	4,014
3	-	2,341	-	2,618	2,875	3,496	3,755	3,940
4	-	2,296	-	2,553	2,804	3,410	3,663	3,842
5	-	2,168	-	2,485	2,729	3,319	3,565	3,740
6	-	2,206	-	2,559	2,810	3,417	3,670	3,850
7	-	2,715	-	2,895	3,180	3,867	4,153	4,357
8	-	2,926	-	2,939	3,228	3,926	4,217	4,424
9	-	3,202	-	3,052	3,352	4,076	4,378	4,593
10	-	3,190	-	3,099	3,404	4,139	4,445	4,664
11	-	3,145	-	3,119	3,426	4,166	4,474	4,694
12	-	3,176	-	3,118	3,425	4,165	4,473	4,693
13	-	3,232	-	3,192	3,506	4,263	4,579	4,803
14	-	3,252	-	3,226	3,544	4,309	4,628	4,855
15	-	3,175	-	3,190	3,504	4,261	4,576	4,801
16	-	3,118	-	3,211	3,527	4,289	4,607	4,833
17	-	3,156	-	3,173	3,485	4,238	4,552	4,776
18	-	3,137	-	3,164	3,476	4,226	4,539	4,762
19	-	3,180	-	3,174	3,486	4,239	4,553	4,777
20	-	3,125	-	3,212	3,528	4,290	4,608	4,834
21	-	3,141	-	3,167	3,478	4,230	4,543	4,766
22	-	3,377	-	3,339	3,667	4,459	4,790	5,025
23	-	3,537	-	3,478	3,820	4,645	4,989	5,234
24	-	3,292	-	3,422	3,759	4,570	4,909	5,150

Source: PwC



Figure A6.3.16: 3rd Wed Oct Daily Profiles



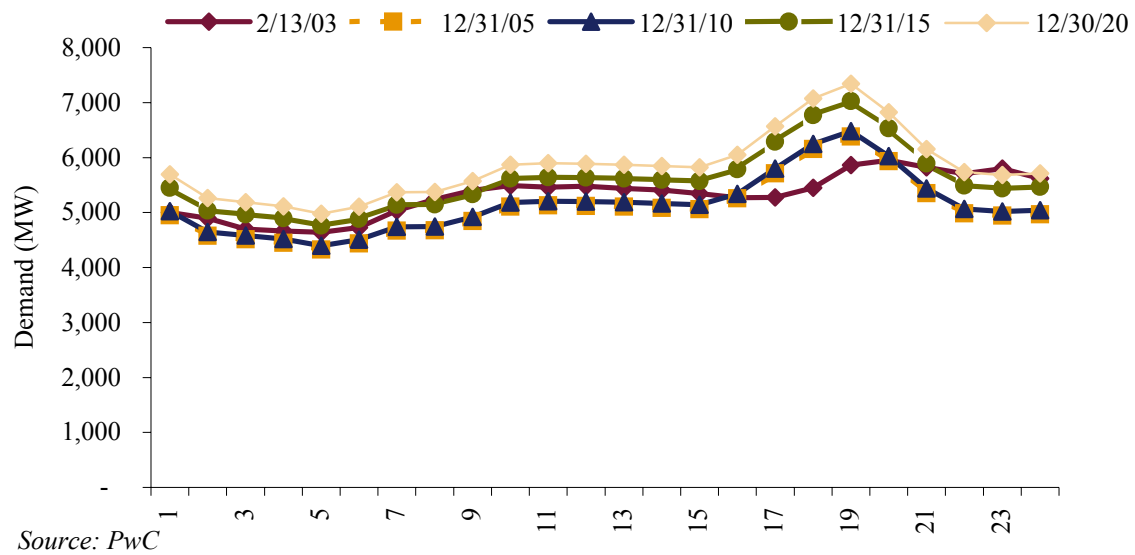
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	-	2,616	-	3,053	2,956	3,130	3,396	3,691
2	-	2,434	-	2,958	2,864	3,033	3,290	3,576
3	-	2,226	-	2,872	2,781	2,945	3,195	3,472
4	-	2,179	-	2,873	2,782	2,945	3,196	3,473
5	-	2,177	-	2,796	2,707	2,866	3,110	3,380
6	-	2,321	-	2,892	2,800	2,965	3,216	3,496
7	-	3,146	-	3,317	3,211	3,400	3,689	4,010
8	-	3,245	-	3,517	3,405	3,606	3,912	4,252
9	-	3,303	-	3,645	3,529	3,737	4,055	4,407
10	-	3,315	-	3,653	3,537	3,745	4,063	4,417
11	-	3,221	-	3,579	3,465	3,669	3,981	4,327
12	-	3,177	-	3,573	3,459	3,663	3,974	4,319
13	-	3,126	-	3,600	3,486	3,691	4,004	4,353
14	-	3,122	-	3,630	3,515	3,722	4,038	4,389
15	-	3,095	-	3,612	3,497	3,703	4,017	4,366
16	-	3,079	-	3,676	3,559	3,769	4,089	4,445
17	-	3,112	-	3,644	3,528	3,736	4,054	4,406
18	-	3,143	-	3,759	3,639	3,853	4,181	4,544
19	-	3,432	-	4,065	3,936	4,168	4,522	4,915
20	-	3,938	-	4,379	4,239	4,489	4,870	5,294
21	-	3,813	-	4,198	4,064	4,304	4,669	5,075
22	-	3,536	-	3,925	3,800	4,024	4,366	4,746
23	-	3,432	-	3,806	3,684	3,902	4,233	4,601
24	-	3,190	-	3,613	3,498	3,704	4,018	4,368

Source: PwC



Figure A6.3.17: Peak Hourly Demand Daily Profiles



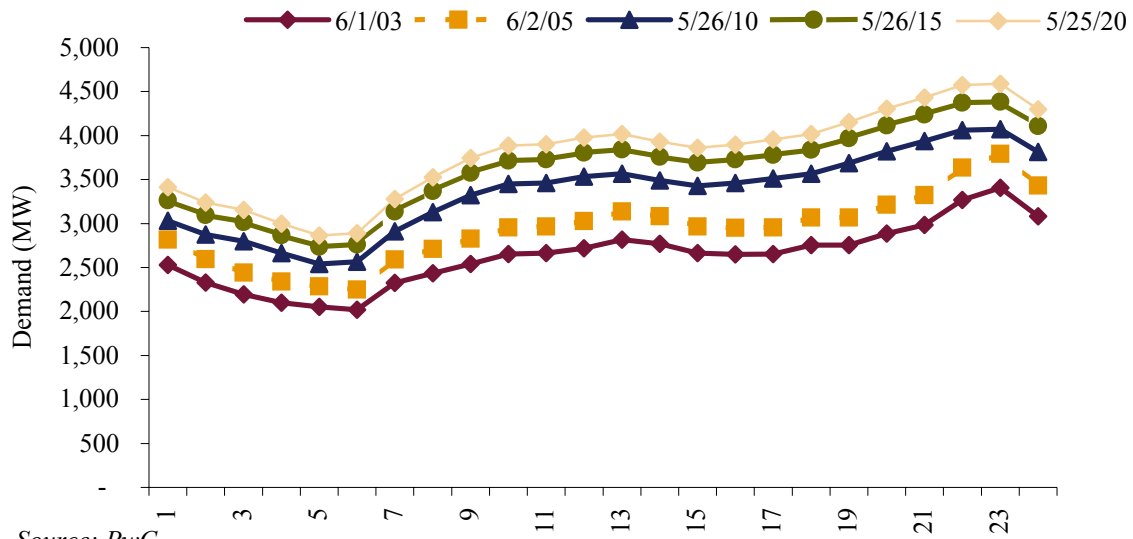
Source: PwC

MW	1/0/00	12/19/01	1/0/00	2/13/03	12/31/05	12/31/10	12/31/15	12/30/20
1	-	5,165	-	5,001	4,951	5,027	5,449	5,693
2	-	4,958	-	4,897	4,578	4,649	5,039	5,264
3	-	4,829	-	4,697	4,512	4,582	4,966	5,189
4	-	4,763	-	4,666	4,447	4,515	4,894	5,113
5	-	4,739	-	4,640	4,327	4,394	4,762	4,976
6	-	4,840	-	4,728	4,440	4,508	4,886	5,105
7	-	5,323	-	5,038	4,669	4,741	5,138	5,369
8	-	5,566	-	5,240	4,675	4,747	5,145	5,376
9	-	5,748	-	5,401	4,844	4,919	5,331	5,570
10	-	5,746	-	5,492	5,105	5,184	5,619	5,871
11	-	5,646	-	5,464	5,128	5,208	5,644	5,897
12	-	5,568	-	5,479	5,119	5,199	5,634	5,887
13	-	5,448	-	5,439	5,106	5,185	5,620	5,872
14	-	5,346	-	5,411	5,085	5,164	5,597	5,848
15	-	5,261	-	5,345	5,062	5,140	5,571	5,820
16	-	5,348	-	5,270	5,259	5,340	5,788	6,047
17	-	5,433	-	5,276	5,711	5,800	6,286	6,568
18	-	5,802	-	5,449	6,154	6,249	6,773	7,077
19	-	6,033	-	5,865	6,383	6,482	7,025	7,340
20	-	6,080	-	5,949	5,936	6,028	6,533	6,825
21	-	6,006	-	5,824	5,353	5,435	5,891	6,155
22	-	5,951	-	5,704	4,987	5,064	5,488	5,734
23	-	6,021	-	5,798	4,942	5,018	5,439	5,683
24	-	5,798	-	5,620	4,966	5,043	5,465	5,710

Source: PwC



Figure A6.3.18: Minimum Hourly Demand Daily Profiles



Source: PwC

MW	1/0/00	9/23/01	1/0/00	6/1/03	6/2/05	5/26/10	5/26/15	5/25/20
1	-	2,224	-	2,529	2,816	3,031	3,265	3,414
2	-	2,022	-	2,329	2,594	2,873	3,095	3,237
3	-	1,899	-	2,193	2,442	2,799	3,015	3,153
4	-	1,830	-	2,100	2,338	2,663	2,868	2,999
5	-	1,788	-	2,052	2,285	2,541	2,737	2,862
6	-	1,829	-	2,018	2,247	2,565	2,763	2,889
7	-	2,247	-	2,326	2,590	2,911	3,136	3,280
8	-	2,406	-	2,434	2,710	3,130	3,371	3,526
9	-	2,628	-	2,540	2,828	3,322	3,579	3,743
10	-	2,791	-	2,653	2,953	3,450	3,717	3,887
11	-	2,817	-	2,663	2,965	3,462	3,729	3,900
12	-	2,881	-	2,719	3,027	3,532	3,805	3,979
13	-	2,931	-	2,818	3,138	3,567	3,842	4,018
14	-	2,814	-	2,769	3,084	3,489	3,758	3,931
15	-	2,733	-	2,664	2,966	3,428	3,692	3,862
16	-	2,696	-	2,650	2,951	3,461	3,728	3,899
17	-	2,739	-	2,653	2,954	3,511	3,782	3,955
18	-	2,856	-	2,753	3,066	3,566	3,841	4,017
19	-	2,970	-	2,754	3,067	3,686	3,971	4,153
20	-	3,299	-	2,886	3,214	3,822	4,117	4,305
21	-	3,563	-	2,985	3,323	3,936	4,240	4,434
22	-	3,315	-	3,266	3,637	4,060	4,373	4,573
23	-	3,095	-	3,406	3,793	4,072	4,387	4,588
24	-	2,828	-	3,083	3,433	3,814	4,109	4,297

Source: PwC



Appendix 6.4
Croatia Demand Forecasting



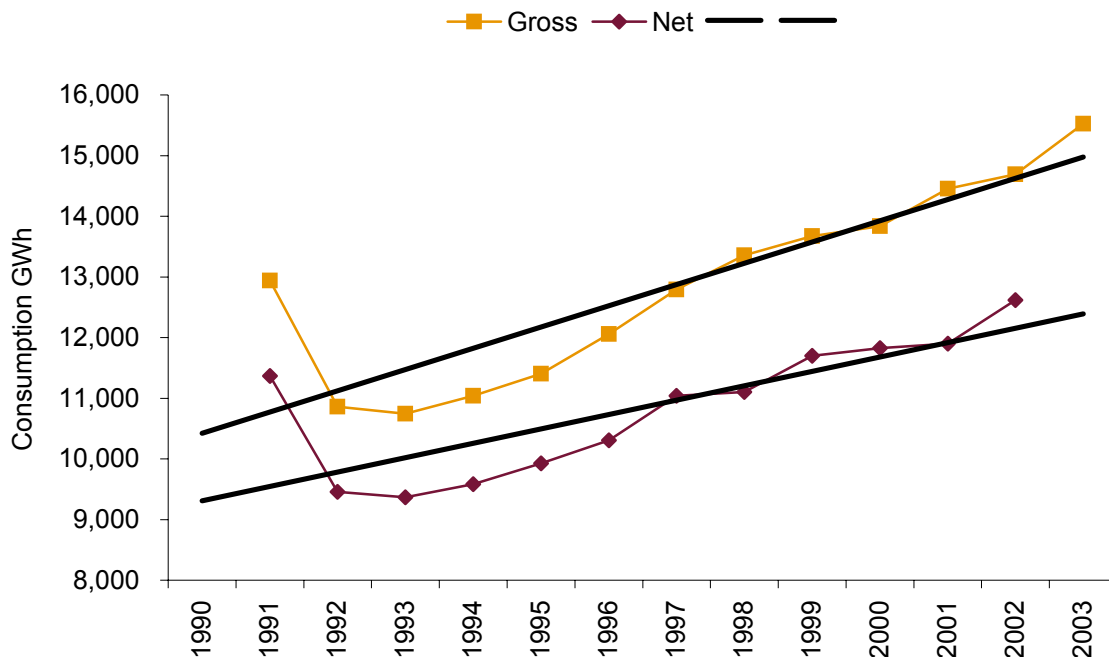
1. Historical Trend Analysis

The data for Croatia was sourced from the national utility. A complete data set of historical electricity demand was made available for analysis.

Figure A6.4.1: Historical Electricity Consumption

	(1)	(1)	(1)	(1)	(1)	(2)	
	Net Demand GWh	Transmis Losses GWh	Distrib Losses GWh	Total Losses GWh	Gross Demand GWh	All Losses Share of Gross	Population Net Energy Intensity ('000) kWh/cap
1990	-	-	-	-	-	-	-
1991	11,369	420	1,151	1,571	12,940	12.1%	-
1992	9,456	346	1,060	1,406	10,862	12.9%	-
1993	9,369	385	989	1,374	10,743	12.8%	-
1994	9,582	360	1,097	1,457	11,039	13.2%	-
1995	9,927	415	1,062	1,477	11,404	13.0%	-
1996	10,306	444	1,308	1,752	12,058	14.5%	-
1997	11,039	444	1,310	1,754	12,793	13.7%	-
1998	11,102	498	1,754	2,252	13,354	16.9%	-
1999	11,699	556	1,420	1,976	13,675	14.4%	-
2000	11,824	695	1,317	2,012	13,836	14.5%	4,437
2001	11,900	721	1,834	2,555	14,455	17.7%	4,437
2002	12,615	-	-	-	14,691	14.1%	4,462
2003	-	-	-	-	15,525	-	4,486

Sources: (1) HEP (2) Hrvoje Požar 2001 [3]



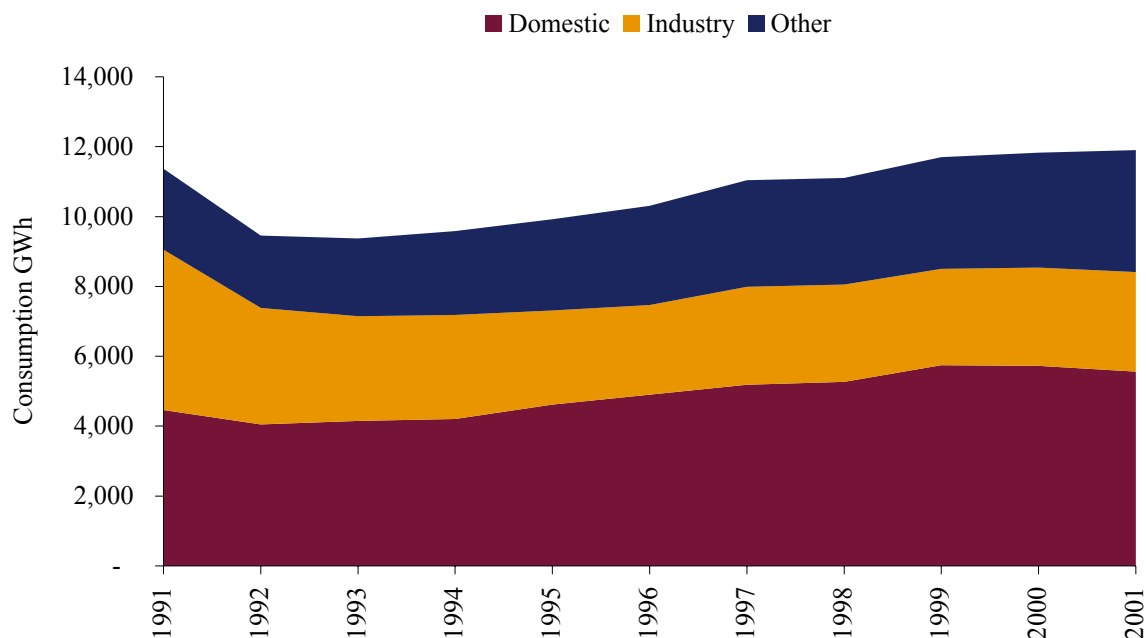
Source: HEP



Figure A6.4.2: Historical Sectoral Electricity Demand

	Domestic Demand GWh	Industry Demand GWh	Other Demand GWh	Total Net Demand GWh	Domestic Demand Growth	Industry Demand Growth	Other Demand Growth	Total Net Demand Growth
1990	-	-	-	-	-	-	-	-
1991	4,462	4,591	2,316	11,369	-	-	-	-
1992	4,048	3,333	2,075	9,456	-10.2%	-37.7%	-11.6%	-20.2%
1993	4,146	2,997	2,226	9,369	2.4%	-11.2%	6.8%	-0.9%
1994	4,208	2,972	2,402	9,582	1.5%	-0.8%	7.3%	2.2%
1995	4,621	2,695	2,611	9,927	8.9%	-10.3%	8.0%	3.5%
1996	4,898	2,567	2,841	10,306	5.7%	-5.0%	8.1%	3.7%
1997	5,190	2,796	3,053	11,039	5.6%	8.2%	6.9%	6.6%
1998	5,267	2,786	3,049	11,102	1.5%	-0.4%	-0.1%	0.6%
1999	5,742	2,759	3,198	11,699	8.3%	-1.0%	4.7%	5.1%
2000	5,729	2,809	3,286	11,824	-0.2%	1.8%	2.7%	1.1%
2001	5,560	2,850	3,490	11,900	-3.0%	1.4%	5.8%	0.6%
2002	5,954	-	-	12,615	6.6%	-	-	5.7%
2003	-	-	-	-	-	-	-	-

Source: HEP



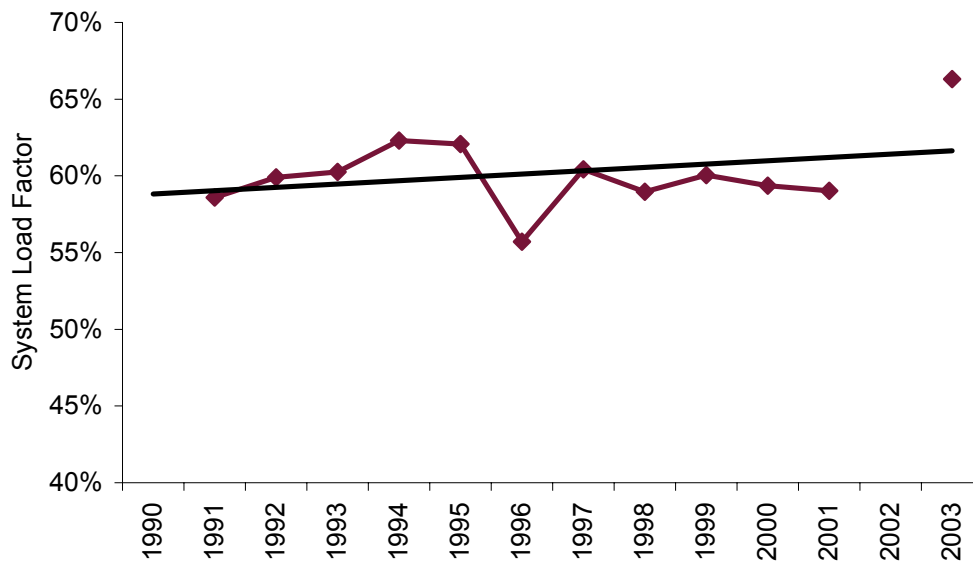
Source: HEP



Figure A6.4.3: Historical System Load Factor

	Gross Demand GWh	Auxilliary Demand GWh	Pumping Demand GWh	Gross Consmpt GWh	Gross Consmpt Growth	System Peak MW	System Peak Growth	System Load Factor
1990	-	-	-	-	-	-	-	-
1991	12,940	-	-	12,940	0.0%	2,521	0.0%	58.6%
1992	10,862	-	-	10,862	-16.1%	2,070	-17.9%	59.9%
1993	10,743	-	-	10,743	-1.1%	2,035	-1.7%	60.3%
1994	11,039	-	-	11,039	2.8%	2,023	-0.6%	62.3%
1995	11,404	-	-	11,404	3.3%	2,097	3.7%	62.1%
1996	12,058	-	-	12,058	5.7%	2,471	17.8%	55.7%
1997	12,793	-	-	12,793	6.1%	2,417	-2.2%	60.4%
1998	13,354	-	-	13,354	4.4%	2,585	7.0%	59.0%
1999	13,675	-	-	13,675	2.4%	2,600	0.6%	60.0%
2000	13,836	-	-	13,836	1.2%	2,661	2.3%	59.4%
2001	14,455	-	-	14,455	4.5%	2,796	5.1%	59.0%
2002	14,691	44	86	14,821	2.5%	-	0.0%	-
2003	15,525	-	-	15,525	4.7%	2,673	0.0%	66.3%

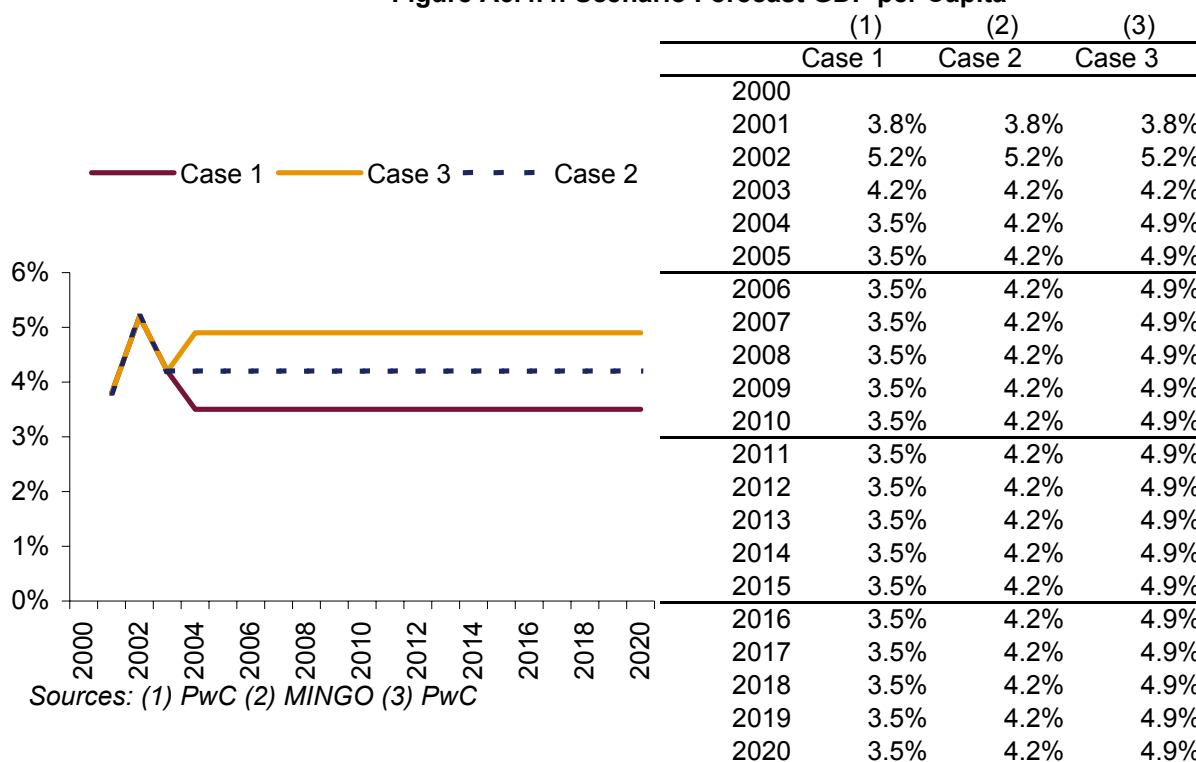
Source: HEP





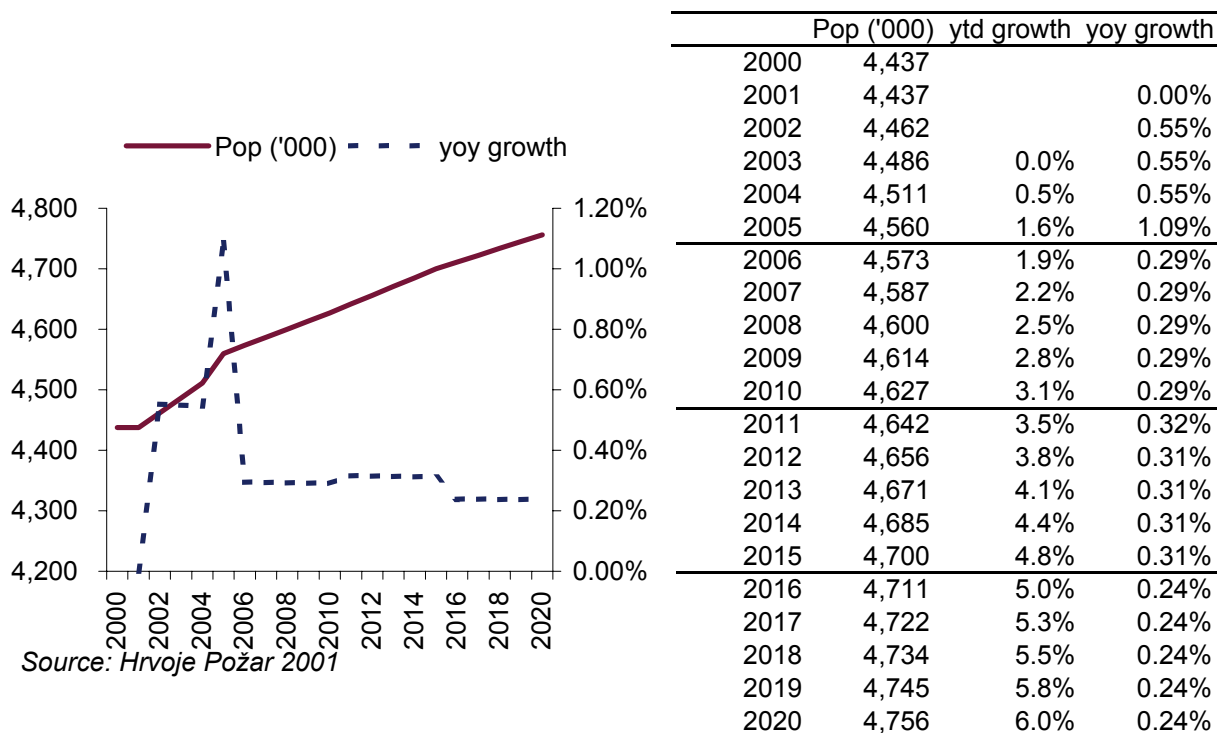
2. Forecast Assumptions

Figure A6.4.4: Scenario Forecast GDP per Capita



Sources: (1) PwC (2) MINGO (3) PwC

Figure A6.4.5: Forecast Population



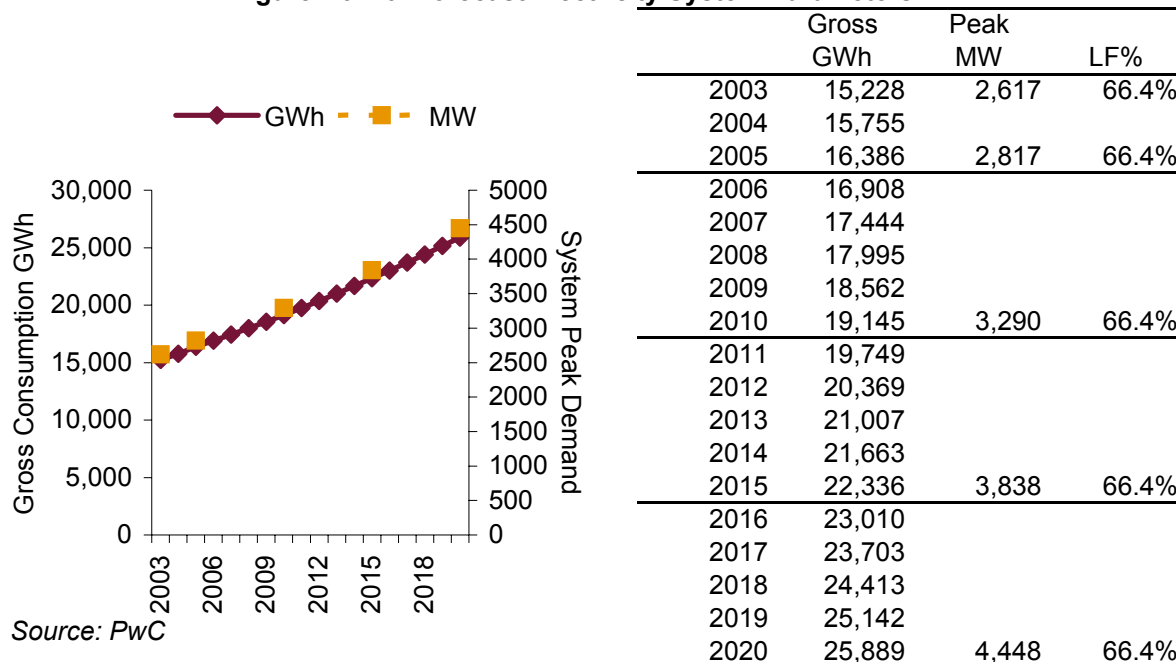
Source: Hrvoje Požar 2001 [3]



3. Forecast Calculation

Using the econometric demand forecasting model described in Chapter 3 of this report, together with GDP growth forecast assumptions, the following data are forecast for energy demand.

Figure A6.4.6: Forecast Electricity System Parameters



Source: PwC

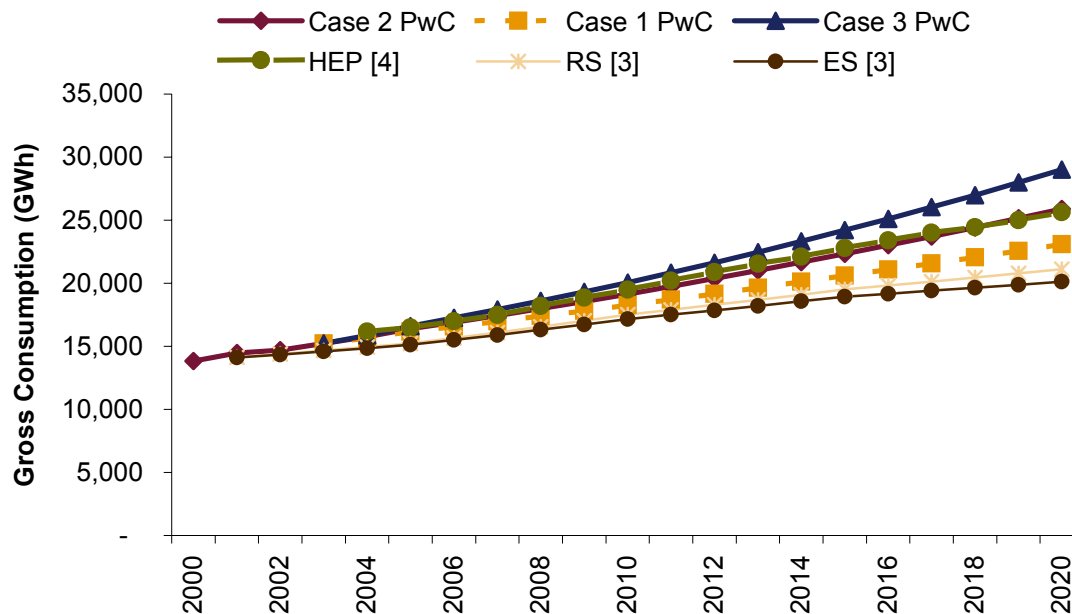
Figure A6.4.7: Case 2 Economic Model Forecast Calculation

Year	GDP per Capita (95 US\$)	Forecast Growth (%)	Electricity Intensity (kWh/GDP)	Electricity per capita (kWh pp)	Population ('000)	Net Consumpt (GWh)	D & T Losses (%)	Gross Consumpt (GWh)
2002	5,619	5.2%	0.50	2,827	4,462	12,615	14.1%	14,691
2003	5,855	4.2%	0.50	2,915	4,486	13,076	14.1%	15,228
2004	6,101	4.2%	0.49	3,011	4,511	13,582	13.8%	15,755
2005	6,357	4.2%	0.49	3,110	4,560	14,182	13.5%	16,386
2006	6,624	4.2%	0.48	3,212	4,573	14,691	13.1%	16,908
2007	6,902	4.2%	0.48	3,318	4,587	15,218	12.8%	17,444
2008	7,192	4.2%	0.48	3,426	4,600	15,761	12.4%	17,995
2009	7,494	4.2%	0.47	3,538	4,614	16,323	12.1%	18,562
2010	7,809	4.2%	0.47	3,653	4,627	16,903	11.7%	19,145
2011	8,137	4.2%	0.46	3,772	4,642	17,507	11.4%	19,749
2012	8,479	4.2%	0.46	3,894	4,656	18,131	11.0%	20,369
2013	8,835	4.2%	0.45	4,020	4,671	18,775	10.6%	21,007
2014	9,206	4.2%	0.45	4,149	4,685	19,440	10.3%	21,663
2015	9,593	4.2%	0.45	4,282	4,700	20,126	9.9%	22,336
2016	9,995	4.2%	0.44	4,419	4,711	20,820	9.5%	23,010
2017	10,415	4.2%	0.44	4,560	4,722	21,535	9.1%	23,703
2018	10,853	4.2%	0.43	4,705	4,734	22,273	8.8%	24,413
2019	11,308	4.2%	0.43	4,855	4,745	23,034	8.4%	25,142
2020	11,783	4.2%	0.43	5,008	4,756	23,818	8.0%	25,889

Source: PwC



Figure A6.4.8: Comparison with other Forecasts



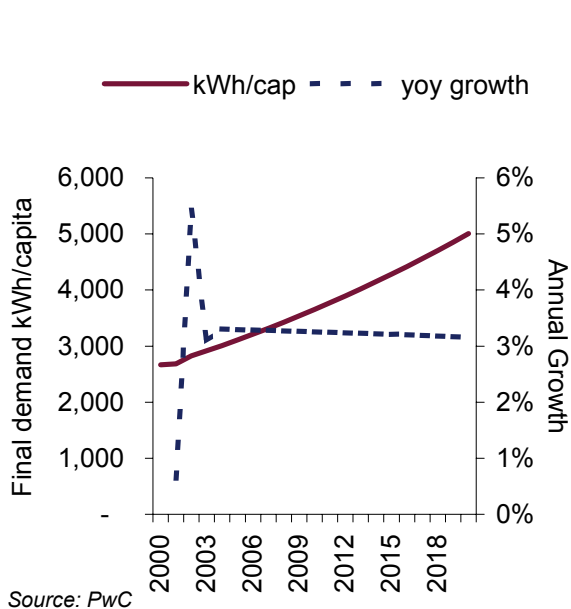
Source: PwC 2004, HEP 2003 [4], Hrvoje Požar 2001 [3]

GWh	Case 2	Case 1	Case 3	HEP [4]	RS [3]	ES [3]
2000	13,836					
2001	14,455				14,125	14,105
2002	14,691				14,393	14,351
2003	15,228	15,228	15,228		14,665	14,601
2004	15,755	15,649	15,861	16,167	14,942	14,856
2005	16,386	16,167	16,607	16,500	15,225	15,115
2006	16,908	16,569	17,251	16,973	15,658	15,503
2007	17,444	16,980	17,917	17,500	16,103	15,901
2008	17,995	17,399	18,608	18,200	16,560	16,309
2009	18,562	17,826	19,323	18,850	17,031	16,728
2010	19,145	18,262	20,063	19,500	17,515	17,158
2011	19,749	18,712	20,835	20,200	17,897	17,501
2012	20,369	19,170	21,635	20,900	18,288	17,851
2013	21,007	19,638	22,462	21,550	18,687	18,207
2014	21,663	20,114	23,318	22,110	19,095	18,571
2015	22,336	20,600	24,204	22,790	19,511	18,943
2016	23,010	21,080	25,103	23,410	19,823	19,173
2017	23,703	21,568	26,032	24,000	20,139	19,406
2018	24,413	22,065	26,992	24,430	20,461	19,642
2019	25,142	22,571	27,984	25,000	20,788	19,881
2020	25,889	23,086	29,010	25,640	21,120	20,122

Source: PwC 2004, HEP 2003 [4], Hrvoje Požar 2001 [3]



Figure A6.4.9: Forecast Final Demand per Capita

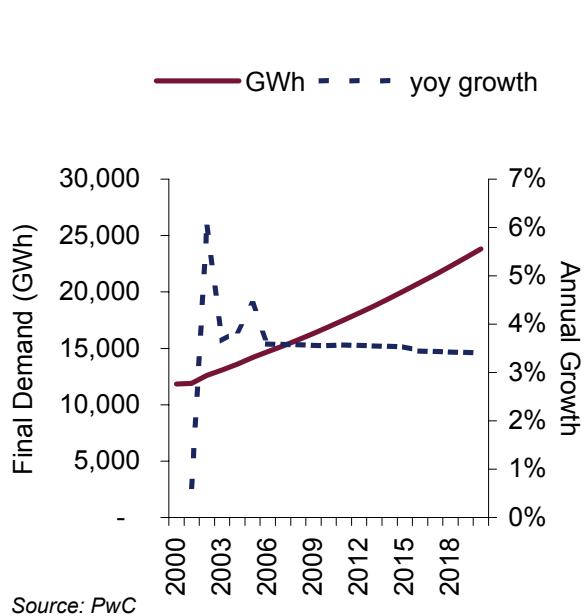


	kWh/cap	ytd growth	yoy growth
2000	2,665		
2001	2,682		0.6%
2002	2,827		5.4%
2003	2,915	0.0%	3.1%
2004	3,011	3.3%	3.3%
2005	3,110	6.7%	3.3%
2006	3,212	10.2%	3.3%
2007	3,318	13.8%	3.3%
2008	3,426	17.6%	3.3%
2009	3,538	21.4%	3.3%
2010	3,653	25.3%	3.3%
2011	3,772	29.4%	3.2%
2012	3,894	33.6%	3.2%
2013	4,020	37.9%	3.2%
2014	4,149	42.4%	3.2%
2015	4,282	46.9%	3.2%
2016	4,419	51.6%	3.2%
2017	4,560	56.5%	3.2%
2018	4,705	61.4%	3.2%
2019	4,855	66.6%	3.2%
2020	5,008	71.8%	3.2%

Source: PwC

Source: PwC

Figure A6.4.10: Forecast Final Net Demand



	GWh	ytd growth	yoy growth
2000	11,824		
2001	11,900		0.6%
2002	12,615		6.0%
2003	13,076	0.0%	3.7%
2004	13,582	3.9%	3.9%
2005	14,182	8.5%	4.4%
2006	14,691	12.4%	3.6%
2007	15,218	16.4%	3.6%
2008	15,761	20.5%	3.6%
2009	16,323	24.8%	3.6%
2010	16,903	29.3%	3.6%
2011	17,507	33.9%	3.6%
2012	18,131	38.7%	3.6%
2013	18,775	43.6%	3.6%
2014	19,440	48.7%	3.5%
2015	20,126	53.9%	3.5%
2016	20,820	59.2%	3.4%
2017	21,535	64.7%	3.4%
2018	22,273	70.3%	3.4%
2019	23,034	76.2%	3.4%
2020	23,818	82.1%	3.4%

Source: PwC

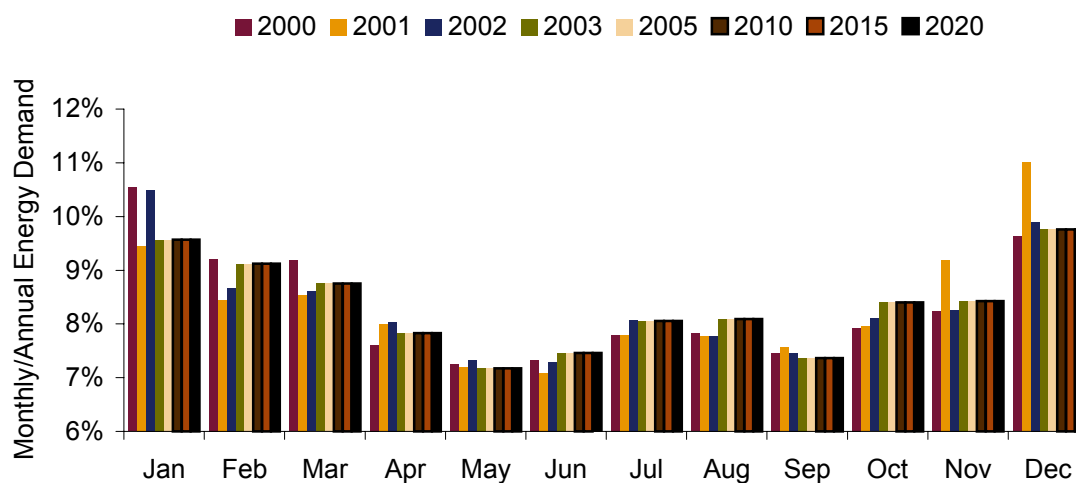
Source: PwC



4. Forecast variation in monthly electricity demand

Following the analysis in Chapter 3 of the main report, we have forecast a change in the share of annual energy demand and peak demand. We detail here the forecast annual change of these parameters.

Figure A6.4.11: Forecast Monthly Energy Demand



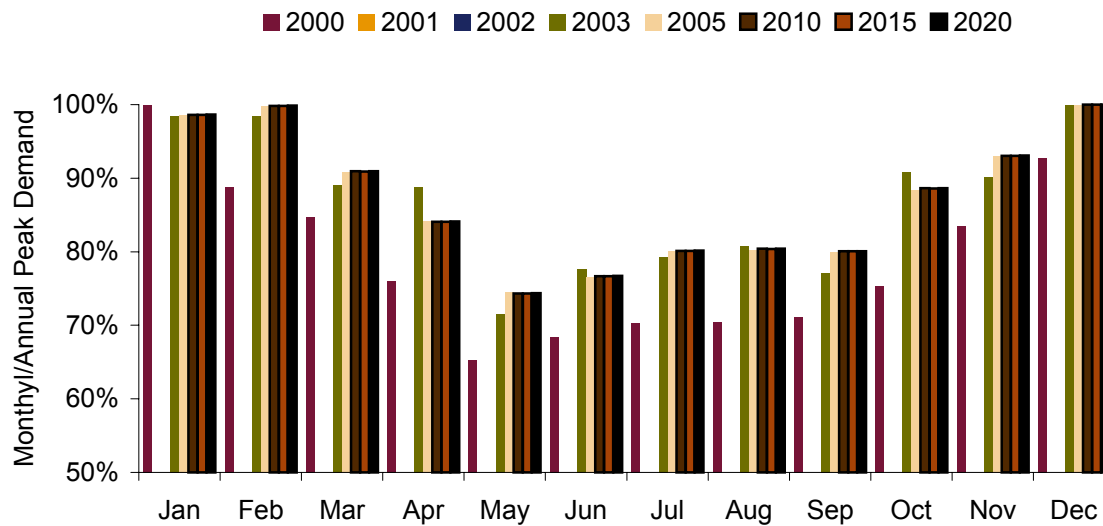
Source: PwC

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	10.5%	9.2%	9.2%	7.6%	7.2%	7.3%	7.8%	7.8%	7.5%	7.9%	8.2%	9.6%
2001	9.4%	8.4%	8.5%	8.0%	7.2%	7.1%	7.8%	7.8%	7.6%	8.0%	9.2%	11.0%
2002	10.5%	8.7%	8.6%	8.0%	7.3%	7.3%	8.1%	7.8%	7.5%	8.1%	8.3%	9.9%
2003	9.6%	9.1%	8.8%	7.8%	7.2%	7.5%	8.1%	8.1%	7.4%	8.4%	8.4%	9.8%
2004	9.6%	9.1%	8.8%	7.8%	7.2%	7.5%	8.1%	8.1%	7.4%	8.4%	8.4%	9.8%
2005	9.6%	9.1%	8.8%	7.8%	7.2%	7.5%	8.1%	8.1%	7.4%	8.4%	8.4%	9.8%
2006	9.6%	9.1%	8.8%	7.8%	7.2%	7.5%	8.1%	8.1%	7.4%	8.4%	8.4%	9.8%
2007	9.6%	9.1%	8.8%	7.8%	7.2%	7.5%	8.1%	8.1%	7.4%	8.4%	8.4%	9.8%
2008	9.6%	9.1%	8.8%	7.8%	7.2%	7.5%	8.1%	8.1%	7.4%	8.4%	8.4%	9.8%
2009	9.6%	9.1%	8.8%	7.8%	7.2%	7.5%	8.1%	8.1%	7.4%	8.4%	8.4%	9.8%
2010	9.6%	9.1%	8.8%	7.8%	7.2%	7.5%	8.1%	8.1%	7.4%	8.4%	8.4%	9.8%
2011	9.6%	9.1%	8.8%	7.8%	7.2%	7.5%	8.1%	8.1%	7.4%	8.4%	8.4%	9.8%
2012	9.6%	9.1%	8.8%	7.8%	7.2%	7.5%	8.1%	8.1%	7.4%	8.4%	8.4%	9.8%
2013	9.6%	9.1%	8.8%	7.8%	7.2%	7.5%	8.1%	8.1%	7.4%	8.4%	8.4%	9.8%
2014	9.6%	9.1%	8.8%	7.8%	7.2%	7.5%	8.1%	8.1%	7.4%	8.4%	8.4%	9.8%
2015	9.6%	9.1%	8.8%	7.8%	7.2%	7.5%	8.1%	8.1%	7.4%	8.4%	8.4%	9.8%
2016	9.6%	9.1%	8.8%	7.8%	7.2%	7.5%	8.1%	8.1%	7.4%	8.4%	8.4%	9.8%
2017	9.6%	9.1%	8.8%	7.8%	7.2%	7.5%	8.1%	8.1%	7.4%	8.4%	8.4%	9.8%
2018	9.6%	9.1%	8.8%	7.8%	7.2%	7.5%	8.1%	8.1%	7.4%	8.4%	8.4%	9.8%
2019	9.6%	9.1%	8.8%	7.8%	7.2%	7.5%	8.1%	8.1%	7.4%	8.4%	8.4%	9.8%
2020	9.6%	9.1%	8.8%	7.8%	7.2%	7.5%	8.1%	8.1%	7.4%	8.4%	8.4%	9.8%

Source: PwC



Figure A6.4.12: Forecast Monthly Peak Demand



Source: PwC

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	100.0%	88.8%	84.7%	76.1%	65.3%	68.4%	70.3%	70.5%	71.1%	75.4%	83.5%	92.7%
2001	-	-	-	-	-	-	-	-	-	-	-	-
2002	-	-	-	-	-	-	-	-	-	-	-	-
2003	98.5%	98.4%	89.1%	88.9%	71.5%	77.6%	79.3%	80.8%	77.1%	90.9%	90.2%	100.0%
2005	98.6%	99.8%	90.9%	84.2%	74.6%	76.6%	80.0%	80.3%	79.9%	88.4%	93.0%	100.0%
2010	98.6%	99.8%	90.9%	84.1%	74.3%	76.7%	80.1%	80.4%	80.1%	88.6%	93.1%	100.0%
2015	98.6%	99.8%	90.9%	84.1%	74.3%	76.7%	80.1%	80.4%	80.1%	88.6%	93.0%	100.0%
2020	98.6%	99.9%	91.0%	84.1%	74.4%	76.7%	80.1%	80.4%	80.1%	88.6%	93.1%	100.0%

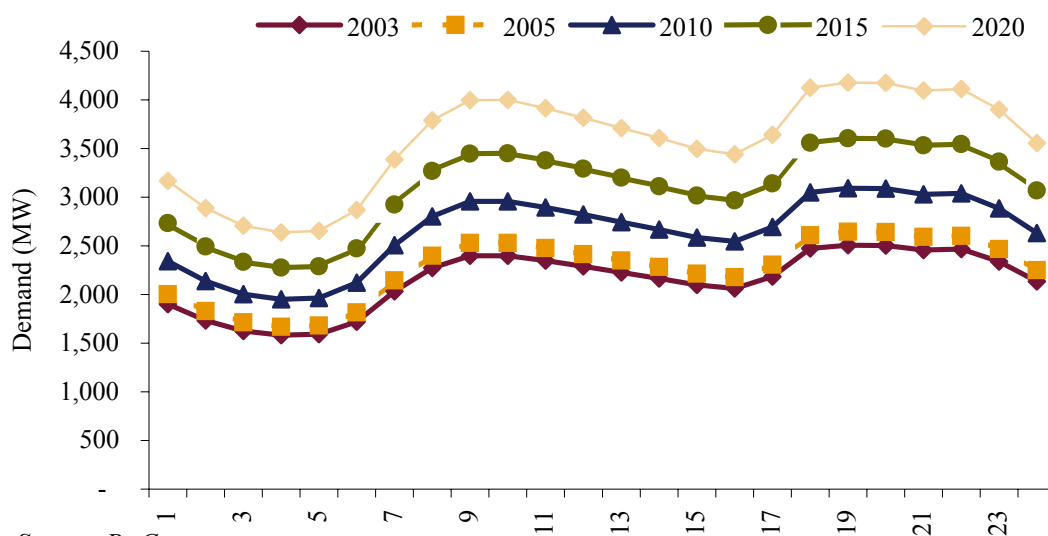
Source: PwC



5. Historical and forecast daily profiles

Using a combination of the 2003 load profiles for the 3rd week of January, April, July and October and the previous analysis of changing seasonal demand, we compare forecast and historical profiles.

Figure A6.4.13: 3rd Wed January Daily Profiles



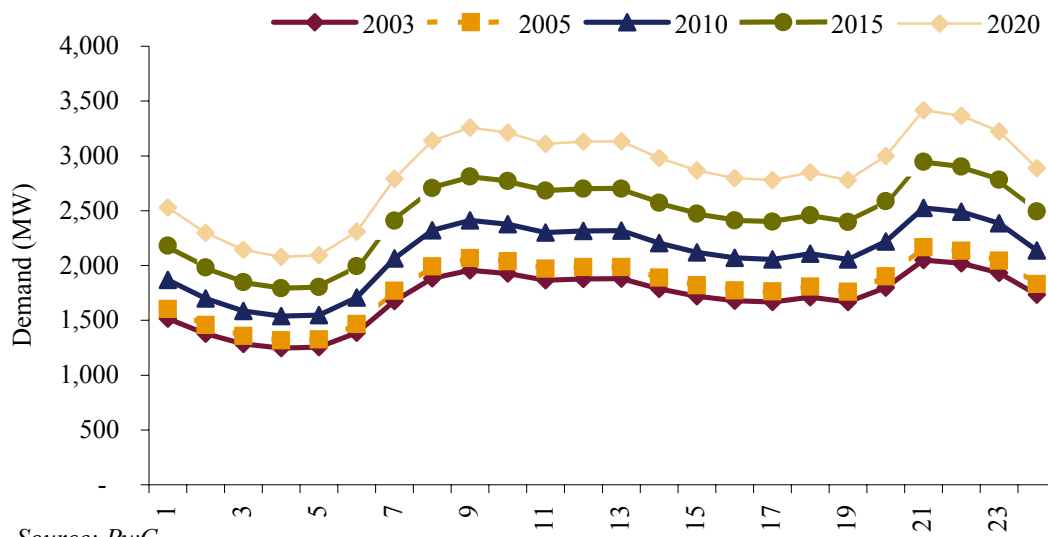
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	1,823	-	-	1,900	2,005	2,343	2,732	3,167
2	1,670	-	-	1,733	1,828	2,137	2,492	2,889
3	1,592	-	-	1,624	1,713	2,002	2,335	2,707
4	1,556	-	-	1,582	1,669	1,951	2,275	2,637
5	1,571	-	-	1,593	1,681	1,964	2,291	2,656
6	1,687	-	-	1,720	1,815	2,121	2,473	2,867
7	2,008	-	-	2,033	2,145	2,507	2,923	3,389
8	2,365	-	-	2,274	2,399	2,804	3,270	3,791
9	2,556	-	-	2,398	2,530	2,957	3,448	3,997
10	2,601	-	-	2,399	2,531	2,958	3,450	3,999
11	2,606	-	-	2,349	2,478	2,896	3,378	3,916
12	2,593	-	-	2,289	2,415	2,822	3,292	3,816
13	2,543	-	-	2,226	2,348	2,745	3,201	3,711
14	2,489	-	-	2,164	2,283	2,668	3,112	3,607
15	2,371	-	-	2,098	2,213	2,587	3,017	3,497
16	2,335	-	-	2,064	2,178	2,545	2,968	3,441
17	2,393	-	-	2,185	2,305	2,694	3,142	3,642
18	2,614	-	-	2,474	2,610	3,050	3,558	4,124
19	2,661	-	-	2,507	2,645	3,091	3,605	4,179
20	2,640	-	-	2,504	2,642	3,087	3,601	4,174
21	2,560	-	-	2,456	2,591	3,028	3,532	4,094
22	2,473	-	-	2,466	2,602	3,041	3,546	4,111
23	2,281	-	-	2,340	2,469	2,885	3,365	3,901
24	2,023	-	-	2,134	2,251	2,631	3,069	3,557

Source: PwC



Figure A6.4.14: 3rd Wed April Daily Profiles



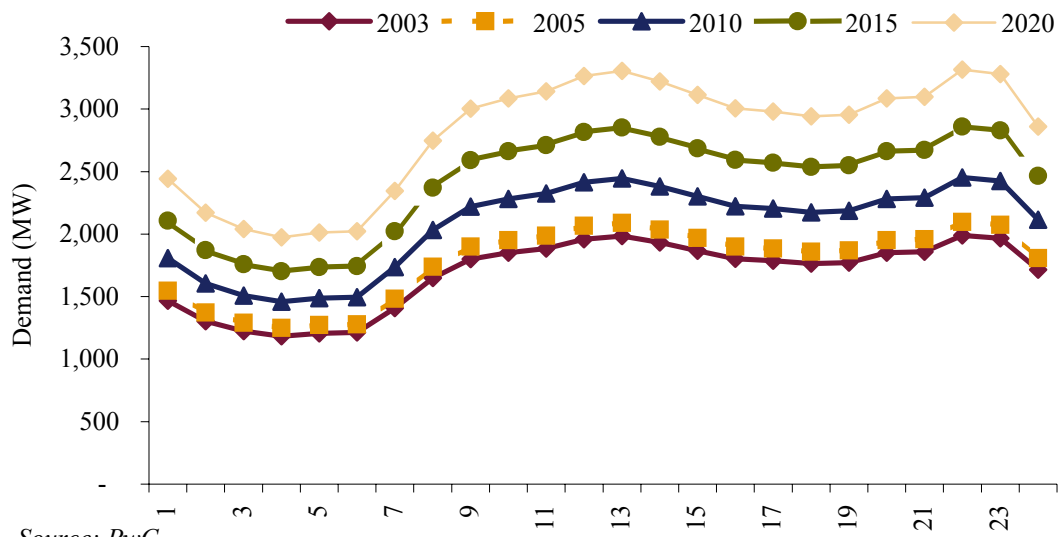
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	1,122	-	-	1,516	1,602	1,869	2,180	2,527
2	1,044	-	-	1,379	1,458	1,700	1,983	2,299
3	993	-	-	1,285	1,358	1,584	1,848	2,142
4	965	-	-	1,247	1,318	1,538	1,793	2,079
5	993	-	-	1,255	1,327	1,547	1,805	2,092
6	1,079	-	-	1,386	1,465	1,709	1,993	2,310
7	1,264	-	-	1,675	1,770	2,065	2,409	2,792
8	1,508	-	-	1,883	1,990	2,322	2,708	3,139
9	1,642	-	-	1,955	2,066	2,411	2,811	3,259
10	1,648	-	-	1,927	2,037	2,376	2,771	3,212
11	1,641	-	-	1,865	1,971	2,300	2,682	3,109
12	1,689	-	-	1,878	1,985	2,316	2,701	3,131
13	1,655	-	-	1,879	1,986	2,317	2,702	3,132
14	1,587	-	-	1,788	1,890	2,205	2,571	2,981
15	1,540	-	-	1,720	1,818	2,121	2,473	2,867
16	1,478	-	-	1,678	1,774	2,069	2,413	2,797
17	1,441	-	-	1,668	1,763	2,057	2,399	2,781
18	1,396	-	-	1,710	1,807	2,108	2,459	2,851
19	1,388	-	-	1,667	1,762	2,055	2,397	2,779
20	1,472	-	-	1,799	1,902	2,218	2,587	2,999
21	1,766	-	-	2,049	2,166	2,526	2,946	3,416
22	1,733	-	-	2,019	2,134	2,489	2,903	3,366
23	1,568	-	-	1,934	2,044	2,385	2,781	3,224
24	1,340	-	-	1,733	1,832	2,137	2,492	2,889

Source: PwC



Figure A6.4.15: 3rd Wed Jul Daily Profiles



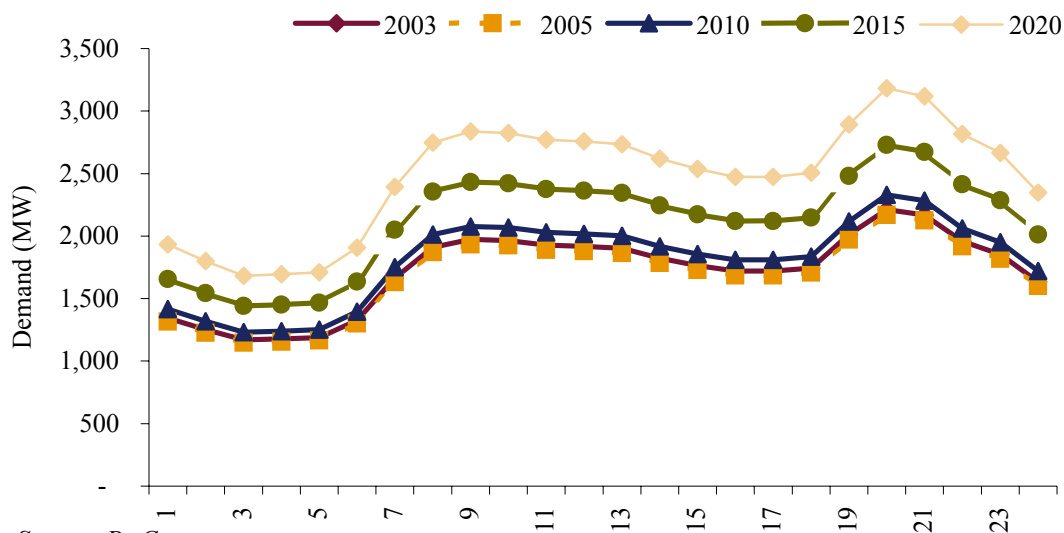
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	1,285	-	-	1,466	1,545	1,808	2,108	2,444
2	1,182	-	-	1,302	1,373	1,605	1,872	2,170
3	1,121	-	-	1,224	1,290	1,509	1,760	2,040
4	1,089	-	-	1,184	1,248	1,460	1,703	1,974
5	1,105	-	-	1,207	1,272	1,488	1,736	2,012
6	1,129	-	-	1,213	1,279	1,496	1,744	2,022
7	1,302	-	-	1,407	1,483	1,735	2,023	2,345
8	1,519	-	-	1,648	1,737	2,032	2,370	2,747
9	1,689	-	-	1,801	1,899	2,221	2,590	3,002
10	1,718	-	-	1,851	1,951	2,282	2,662	3,086
11	1,775	-	-	1,885	1,987	2,324	2,711	3,142
12	1,826	-	-	1,959	2,065	2,415	2,817	3,266
13	1,832	-	-	1,983	2,090	2,445	2,852	3,306
14	1,747	-	-	1,932	2,037	2,382	2,778	3,221
15	1,722	-	-	1,867	1,968	2,302	2,685	3,112
16	1,636	-	-	1,803	1,901	2,223	2,593	3,006
17	1,607	-	-	1,788	1,885	2,205	2,571	2,981
18	1,566	-	-	1,764	1,860	2,175	2,537	2,941
19	1,579	-	-	1,773	1,869	2,186	2,550	2,956
20	1,581	-	-	1,851	1,951	2,282	2,662	3,086
21	1,675	-	-	1,859	1,960	2,292	2,673	3,099
22	1,801	-	-	1,989	2,097	2,452	2,860	3,316
23	1,712	-	-	1,967	2,074	2,425	2,829	3,279
24	1,472	-	-	1,715	1,808	2,115	2,466	2,859

Source: PwC



Figure A6.4.16: 3rd Wed Oct Daily Profiles



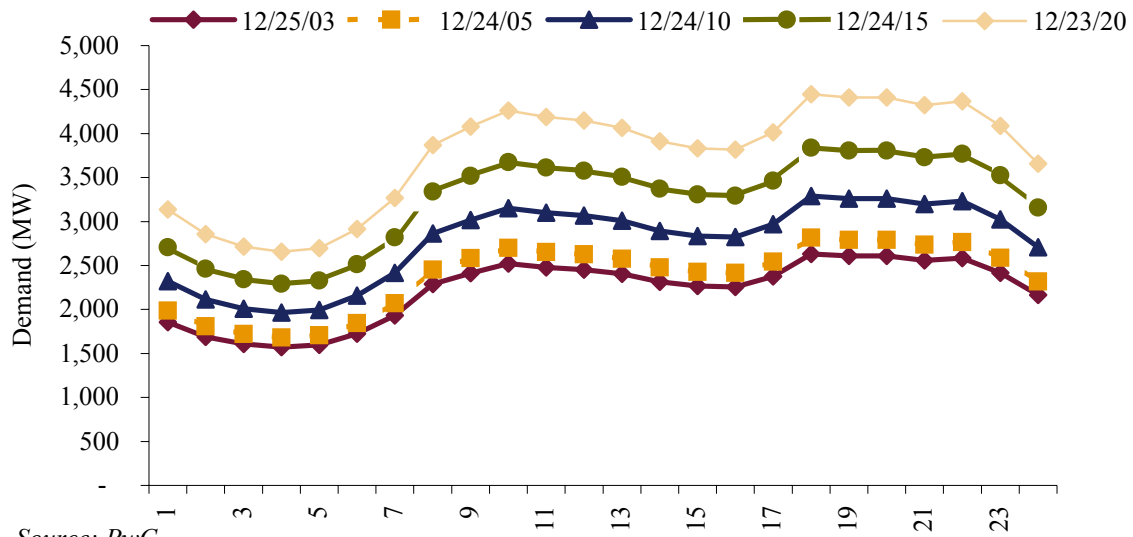
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	1,203	-	-	1,344	1,317	1,415	1,657	1,933
2	1,130	-	-	1,252	1,227	1,318	1,544	1,800
3	1,088	-	-	1,170	1,147	1,232	1,443	1,682
4	1,066	-	-	1,178	1,154	1,240	1,452	1,694
5	1,089	-	-	1,189	1,165	1,252	1,466	1,710
6	1,189	-	-	1,326	1,299	1,396	1,635	1,907
7	1,527	-	-	1,664	1,631	1,752	2,052	2,393
8	1,792	-	-	1,910	1,872	2,011	2,355	2,747
9	1,887	-	-	1,973	1,934	2,078	2,433	2,837
10	1,857	-	-	1,964	1,925	2,068	2,422	2,824
11	1,824	-	-	1,927	1,888	2,029	2,376	2,771
12	1,838	-	-	1,917	1,879	2,019	2,364	2,757
13	1,772	-	-	1,902	1,864	2,003	2,345	2,735
14	1,672	-	-	1,822	1,786	1,919	2,247	2,620
15	1,608	-	-	1,764	1,729	1,857	2,175	2,537
16	1,590	-	-	1,720	1,686	1,811	2,121	2,473
17	1,589	-	-	1,720	1,686	1,811	2,121	2,473
18	1,649	-	-	1,743	1,708	1,835	2,149	2,506
19	1,921	-	-	2,012	1,972	2,119	2,481	2,893
20	2,006	-	-	2,213	2,169	2,330	2,729	3,182
21	1,898	-	-	2,168	2,125	2,283	2,673	3,118
22	1,767	-	-	1,958	1,919	2,062	2,414	2,816
23	1,575	-	-	1,854	1,817	1,952	2,286	2,666
24	1,384	-	-	1,633	1,600	1,720	2,013	2,348

Source: PwC



Figure A6.4.17: Peak Hourly Demand Daily Profiles



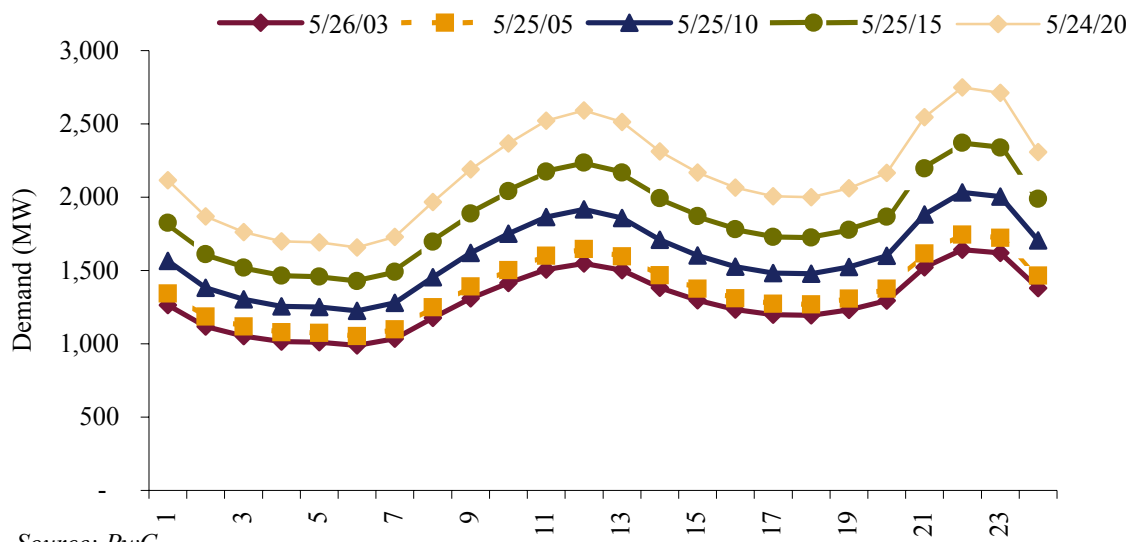
Source: PwC

MW	1/26/00	1/0/00	1/0/00	12/25/03	12/24/05	12/24/10	12/24/15	12/23/20
1	1,823	-	-	1,856	1,987	2,320	2,707	3,136
2	1,670	-	-	1,690	1,809	2,113	2,465	2,856
3	1,592	-	-	1,607	1,720	2,009	2,344	2,716
4	1,556	-	-	1,572	1,683	1,965	2,293	2,657
5	1,571	-	-	1,596	1,708	1,995	2,328	2,697
6	1,687	-	-	1,725	1,846	2,157	2,516	2,915
7	2,008	-	-	1,934	2,070	2,418	2,820	3,268
8	2,365	-	-	2,290	2,451	2,863	3,340	3,870
9	2,556	-	-	2,414	2,584	3,018	3,521	4,079
10	2,601	-	-	2,521	2,699	3,152	3,677	4,260
11	2,606	-	-	2,479	2,654	3,099	3,615	4,189
12	2,593	-	-	2,454	2,627	3,068	3,579	4,147
13	2,543	-	-	2,406	2,575	3,008	3,509	4,066
14	2,489	-	-	2,314	2,477	2,893	3,375	3,910
15	2,371	-	-	2,267	2,427	2,834	3,306	3,831
16	2,335	-	-	2,258	2,417	2,823	3,293	3,816
17	2,393	-	-	2,376	2,543	2,970	3,465	4,015
18	2,614	-	-	2,632	2,817	3,290	3,838	4,448
19	2,661	-	-	2,609	2,793	3,262	3,805	4,409
20	2,640	-	-	2,609	2,793	3,262	3,805	4,409
21	2,560	-	-	2,558	2,738	3,198	3,731	4,323
22	2,473	-	-	2,584	2,766	3,230	3,768	4,367
23	2,281	-	-	2,418	2,588	3,023	3,526	4,086
24	2,023	-	-	2,165	2,317	2,707	3,157	3,659

Source: PwC



Figure A6.4.18: Minimum Hourly Demand Daily Profiles



Source: PwC

MW	4/24/00	1/0/00	1/0/00	5/26/03	5/25/05	5/25/10	5/25/15	5/24/20
1	1,074	-	-	1,265	1,344	1,565	1,825	2,116
2	982	-	-	1,117	1,186	1,382	1,612	1,869
3	905	-	-	1,053	1,118	1,303	1,519	1,762
4	883	-	-	1,015	1,078	1,256	1,465	1,698
5	856	-	-	1,011	1,074	1,251	1,459	1,691
6	878	-	-	990	1,052	1,225	1,429	1,656
7	898	-	-	1,034	1,098	1,279	1,492	1,730
8	1,027	-	-	1,176	1,249	1,455	1,697	1,967
9	1,189	-	-	1,309	1,390	1,619	1,889	2,190
10	1,294	-	-	1,415	1,503	1,750	2,042	2,367
11	1,358	-	-	1,507	1,601	1,864	2,175	2,521
12	1,378	-	-	1,549	1,645	1,916	2,235	2,591
13	1,312	-	-	1,502	1,595	1,858	2,167	2,513
14	1,178	-	-	1,382	1,468	1,710	1,994	2,312
15	1,107	-	-	1,296	1,377	1,603	1,870	2,168
16	1,024	-	-	1,234	1,311	1,526	1,781	2,064
17	990	-	-	1,199	1,274	1,483	1,730	2,006
18	983	-	-	1,195	1,269	1,478	1,724	1,999
19	970	-	-	1,232	1,309	1,524	1,778	2,061
20	1,061	-	-	1,294	1,374	1,601	1,867	2,165
21	1,339	-	-	1,522	1,617	1,883	2,196	2,546
22	1,341	-	-	1,643	1,745	2,032	2,371	2,749
23	1,251	-	-	1,621	1,722	2,005	2,339	2,712
24	1,111	-	-	1,379	1,465	1,706	1,990	2,307

Source: PwC



Appendix 6.5
UNMIK Demand Forecasting



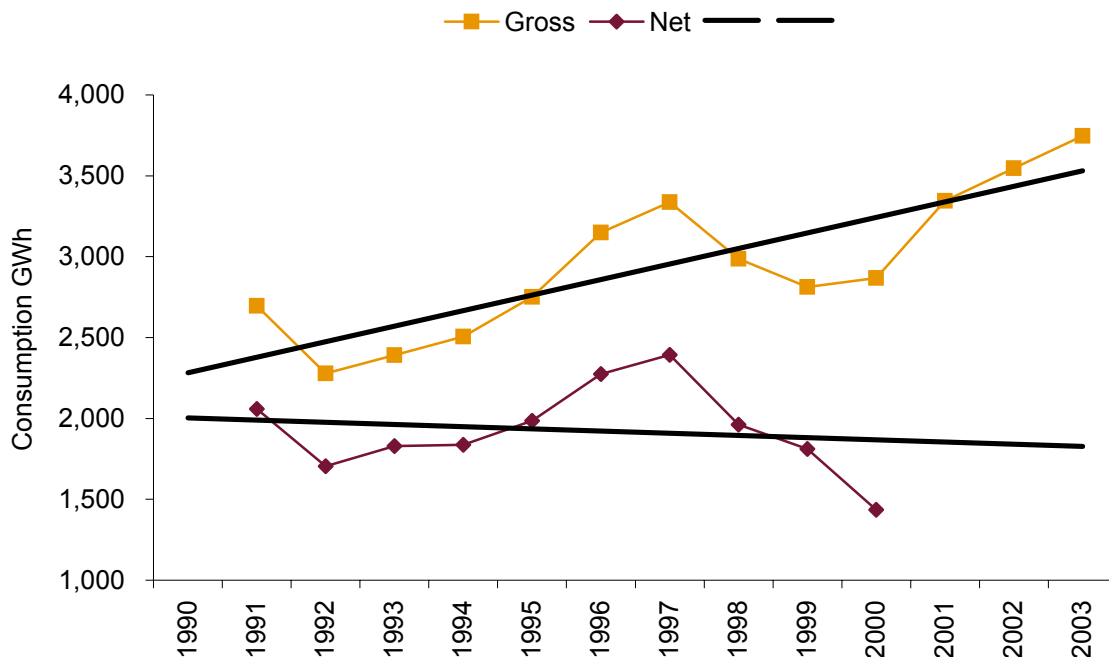
1. Historical Trend Analysis

The data for UNMIK was sourced from the national utility. A complete data set of historical electricity demand was made available for analysis.

Figure A6.5.1: Historical Electricity Consumption

	(1)	(1)	(1)	(1)	(1)	(2)	(2)
	Net Demand GWh	Transmis Losses GWh	Distrib Losses GWh	Total Losses GWh	Gross Demand GWh	All Losses Share of Gross	Population Net Energy Intensity ('000) kWh/cap
1990	-	-	-	-	-	-	-
1991	2,059	130	506	636	2,695	23.6%	-
1992	1,705	109	465	574	2,279	25.2%	-
1993	1,830	114	448	562	2,392	23.5%	-
1994	1,838	119	548	667	2,505	26.6%	-
1995	1,985	131	635	766	2,751	27.8%	-
1996	2,275	147	728	875	3,150	27.8%	-
1997	2,394	158	786	944	3,338	28.3%	-
1998	1,962	147	877	1,024	2,986	34.3%	-
1999	1,812	150	850	1,000	2,812	35.6%	-
2000	1,436	379	1,054	1,433	2,869	49.9%	2,073
2001	-	-	-	-	3,345	-	2,096
2002	-	-	-	-	3,546	-	2,119
2003	-	-	-	-	3,746	-	2,142

Sources: (1)KEK (2) UNMIK/OSCE



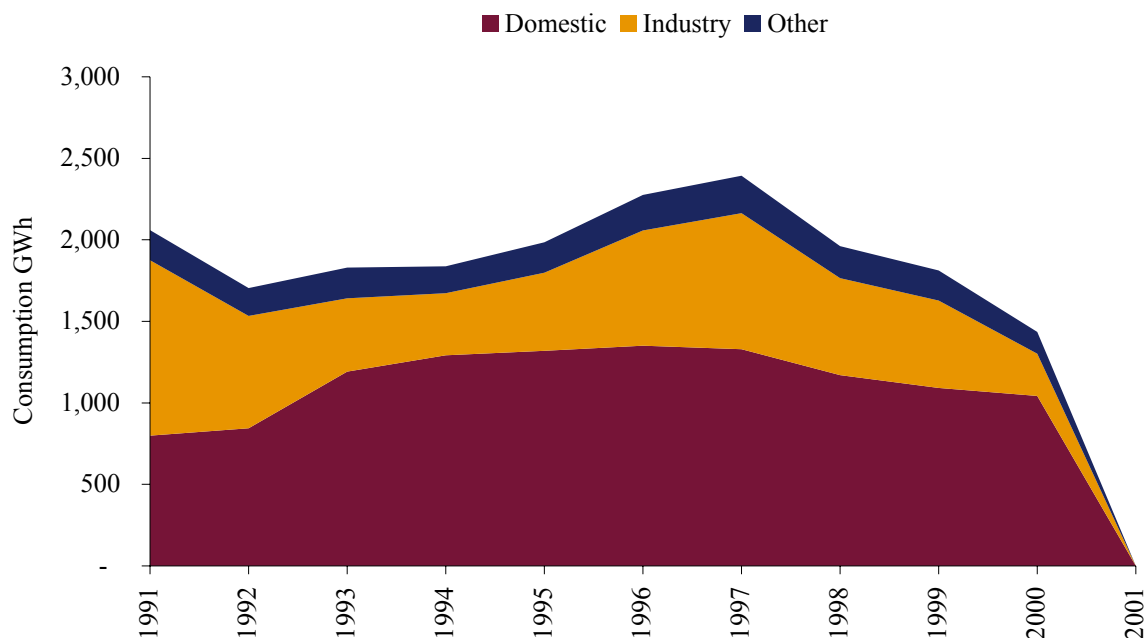
Source: KEK



Figure A6.5.2: Historical Sectoral Electricity Demand

	Domestic Demand GWh	Industry Demand GWh	Other Demand GWh	Total Net Demand GWh	Domestic Demand Growth	Industry Demand Growth	Other Demand Growth	Total Net Demand Growth
1990	-	-	-	-	-	-	-	-
1991	799	1,076	184	2,059	-	-	-	-
1992	845	689	171	1,705	5.4%	-56.2%	-7.6%	-20.8%
1993	1,192	450	188	1,830	29.1%	-53.1%	9.0%	6.8%
1994	1,291	382	165	1,838	7.7%	-17.8%	-13.9%	0.4%
1995	1,319	479	187	1,985	2.1%	20.3%	11.8%	7.4%
1996	1,350	707	218	2,275	2.3%	32.2%	14.2%	12.7%
1997	1,329	835	230	2,394	-1.6%	15.3%	5.2%	5.0%
1998	1,171	595	196	1,962	-13.5%	-40.3%	-17.3%	-22.0%
1999	1,092	535	185	1,812	-7.2%	-11.2%	-5.9%	-8.3%
2000	1,042	260	134	1,436	-4.8%	-105.8%	-38.1%	-26.2%
2001	-	-	-	-	-	-	-	-
2002	-	-	-	-	-	-	-	-
2003	-	-	-	-	-	-	-	-

Source: KEK



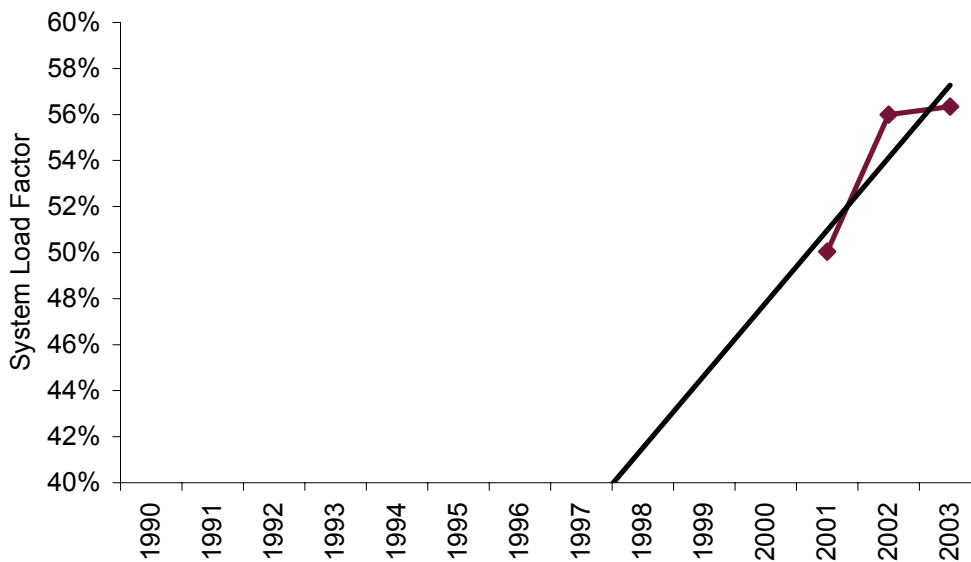
Source: KEK



Figure A6.5.3: Historical System Load Factor

	Gross Demand GWh	Auxilliary Demand GWh	Pumping Demand GWh	Gross Consump GWh	Gross Consm Growth	System Peak MW	System Peak Growth	System Load Factor
1990	-	-	-	-	-	-	-	-
1991	2,695	-	-	2,695	0.0%	-	0.0%	-
1992	2,279	-	-	2,279	-15.4%	-	0.0%	-
1993	2,392	-	-	2,392	5.0%	-	0.0%	-
1994	2,505	-	-	2,505	4.7%	-	0.0%	-
1995	2,751	-	-	2,751	9.8%	-	0.0%	-
1996	3,150	-	-	3,150	14.5%	-	0.0%	-
1997	3,338	-	-	3,338	6.0%	-	0.0%	-
1998	2,986	-	-	2,986	-10.5%	-	0.0%	-
1999	2,812	-	-	2,812	-5.8%	-	0.0%	-
2000	2,869	-	-	2,869	2.0%	-	0.0%	-
2001	3,345	-	-	3,345	16.6%	763	0.0%	50.0%
2002	3,546	-	-	3,546	6.0%	723	-5.2%	56.0%
2003	3,746	-	-	3,746	5.6%	759	5.0%	56.3%

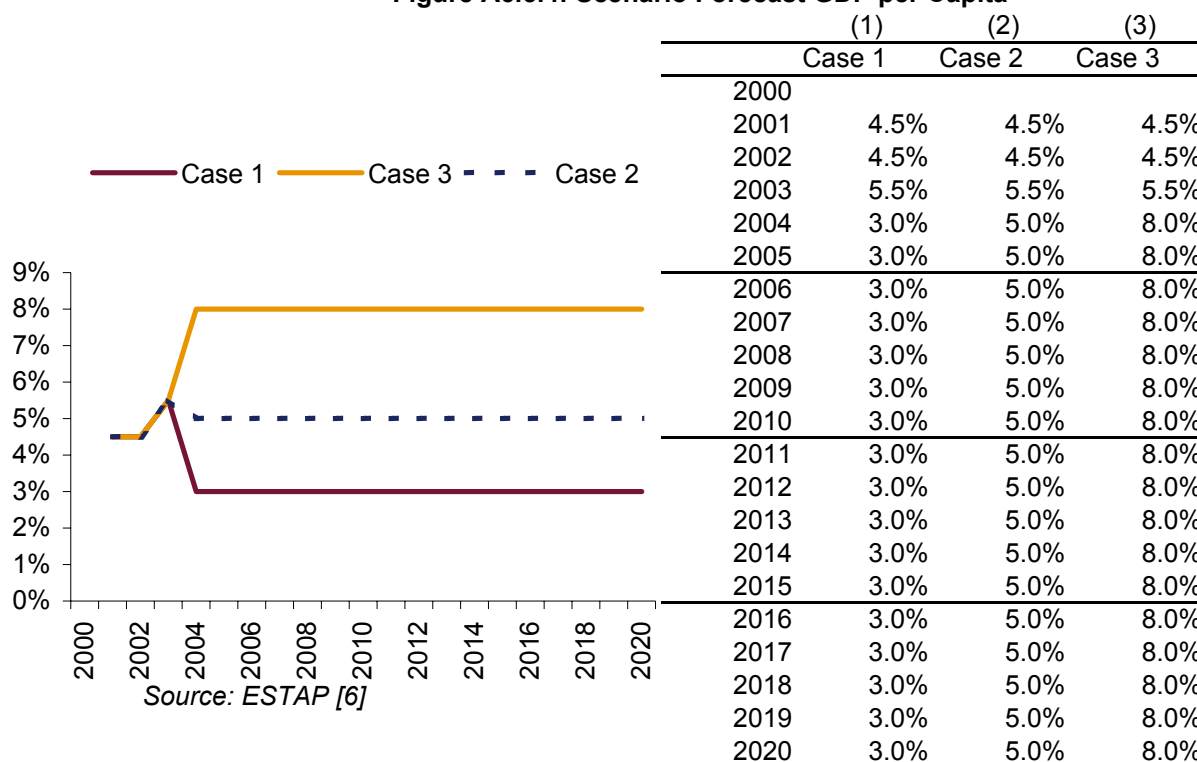
Source: KEK





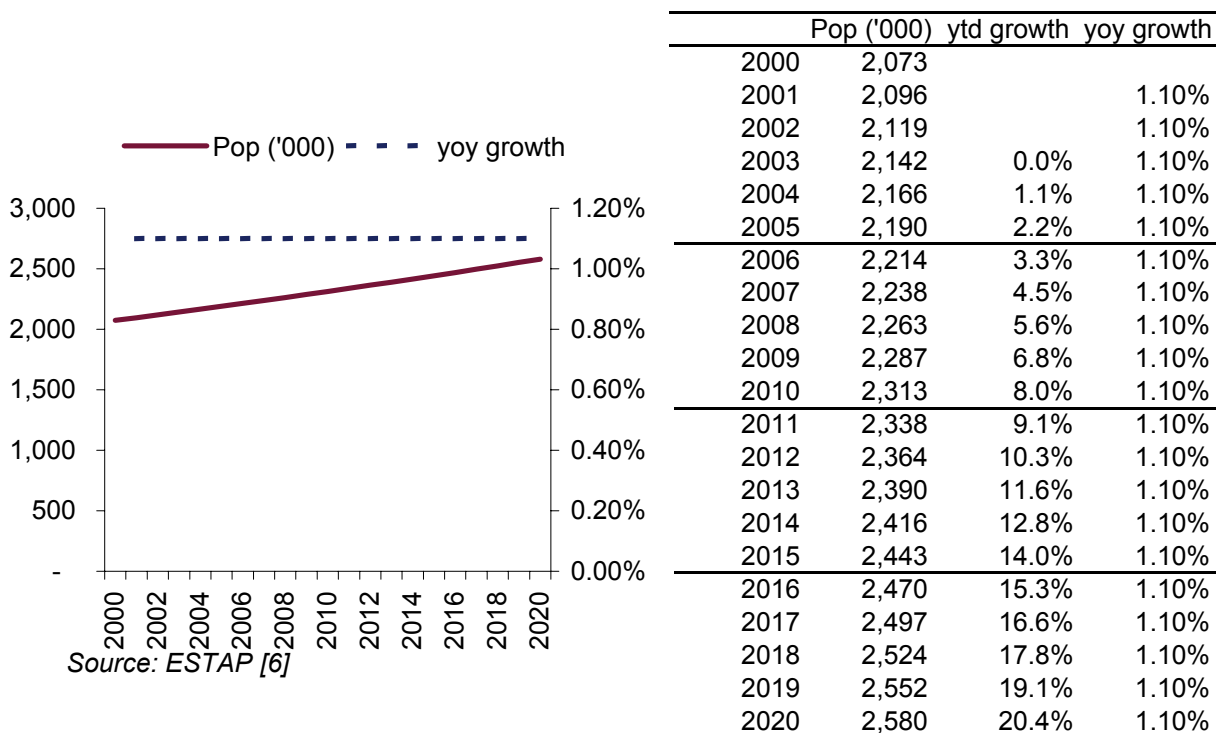
2. Forecast Assumptions

Figure A6.5.4: Scenario Forecast GDP per Capita



Source: ESTAP [6]

Figure A6.5.5: Forecast Population



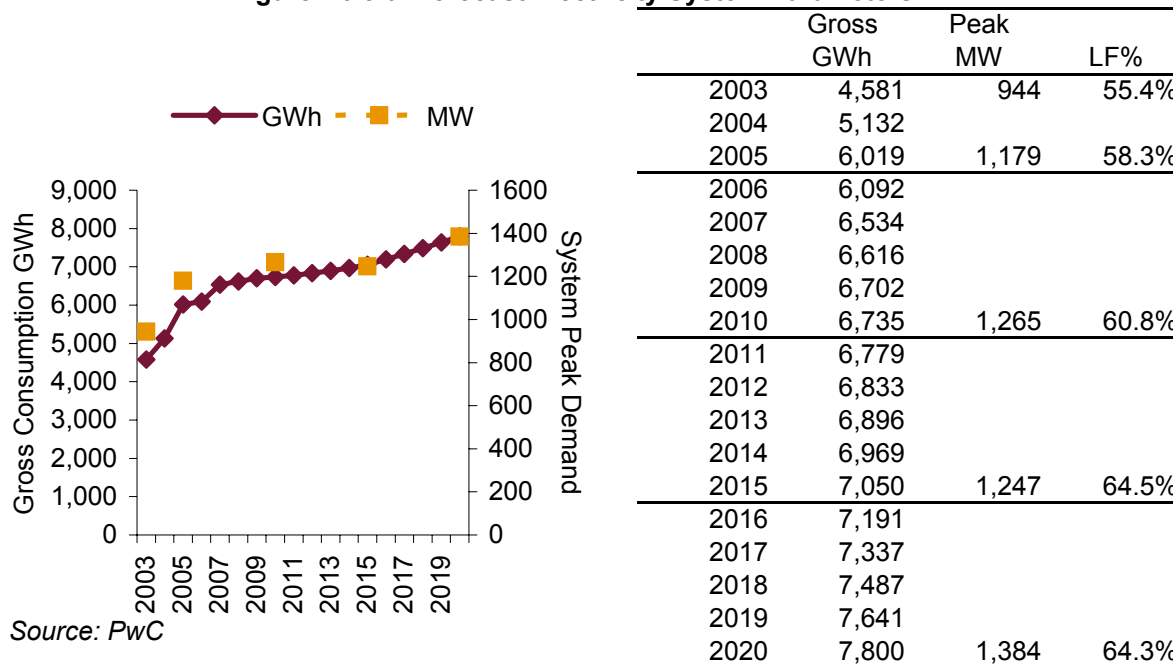
Source: ESTAP [6]



3. Forecast Calculation

Using the econometric demand forecasting model described in Chapter 3 of this report, together with GDP growth forecast assumptions, the following data are forecast for energy demand.

Figure A6.5.6: Forecast Electricity System Parameters



Source: PwC

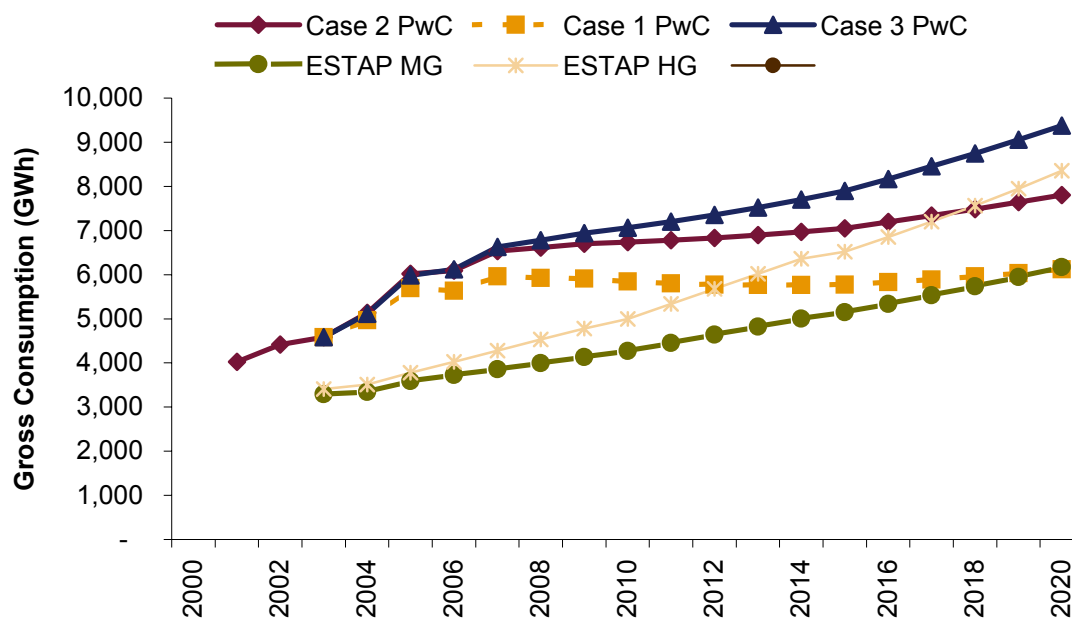
Figure A6.5.7: Case 2 Economic Model Forecast Calculation

Year	GDP per Capita (95 US\$)	Forecast Growth (%)	Electricity Intensity (kWh/GDP)	Electricity per capita (kWh pp)	Population ('000)	Net Consumpt (GWh)	D & T Losses (%)	Gross Consumpt (GWh)
2002	595	7.0%	1.41	839	2,119	3,574	19.1%	4,418
2003	621	4.5%	1.41	876	2,142	3,573	22.0%	4,581
2004	649	4.5%	1.39	902	2,166	4,022	21.6%	5,132
2005	685	5.5%	1.37	938	2,190	4,741	21.2%	6,019
2006	719	5.0%	1.35	969	2,214	4,822	20.8%	6,092
2007	755	5.0%	1.33	1,002	2,238	5,198	20.5%	6,534
2008	793	5.0%	1.31	1,036	2,263	5,289	20.1%	6,616
2009	833	5.0%	1.29	1,070	2,287	5,384	19.7%	6,702
2010	874	5.0%	1.26	1,106	2,313	5,438	19.3%	6,735
2011	918	5.0%	1.24	1,142	2,338	5,501	18.8%	6,779
2012	964	5.0%	1.22	1,179	2,364	5,573	18.4%	6,833
2013	1,012	5.0%	1.20	1,217	2,390	5,654	18.0%	6,896
2014	1,063	5.0%	1.18	1,256	2,416	5,742	17.6%	6,969
2015	1,116	5.0%	1.16	1,296	2,443	5,839	17.2%	7,050
2016	1,172	5.0%	1.14	1,336	2,470	5,987	16.7%	7,191
2017	1,230	5.0%	1.12	1,378	2,497	6,140	16.3%	7,337
2018	1,292	5.0%	1.10	1,420	2,524	6,299	15.9%	7,487
2019	1,356	5.0%	1.08	1,462	2,552	6,462	15.4%	7,641
2020	1,424	5.0%	1.06	1,506	2,580	6,631	15.0%	7,800

Source: PwC



Figure A6.5.8: Comparison with other Forecasts



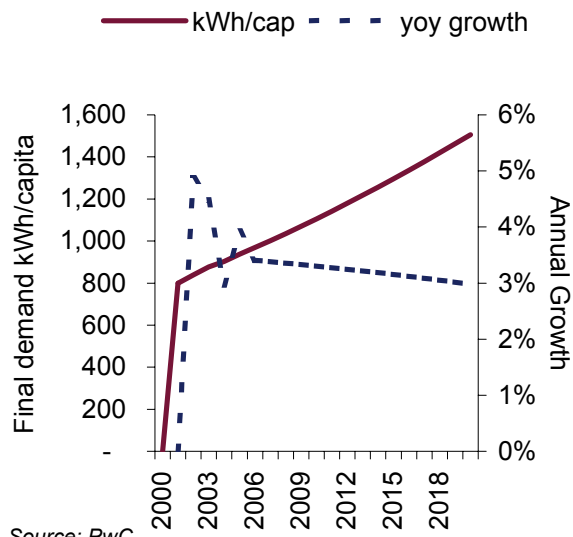
Source: PwC 2004, ESTAP 2002 [6]

GWh	Case 2	Case 1	Case 3	ESTAP	ESTAP
2000					
2001	4,027				
2002	4,418				
2003	4,581	4,581	4,581	3,292	3,409
2004	5,132	4,969	5,116	3,343	3,507
2005	6,019	5,696	5,985	3,590	3,777
2006	6,092	5,636	6,119	3,725	4,028
2007	6,534	5,958	6,628	3,861	4,280
2008	6,616	5,927	6,779	3,996	4,531
2009	6,702	5,909	6,942	4,131	4,782
2010	6,735	5,847	7,064	4,271	4,994
2011	6,779	5,803	7,201	4,455	5,337
2012	6,833	5,776	7,353	4,638	5,678
2013	6,896	5,762	7,519	4,821	6,020
2014	6,969	5,762	7,700	5,005	6,362
2015	7,050	5,773	7,894	5,147	6,519
2016	7,191	5,828	8,168	5,337	6,850
2017	7,337	5,891	8,453	5,534	7,199
2018	7,487	5,960	8,749	5,737	7,564
2019	7,641	6,036	9,057	5,949	7,949
2020	7,800	6,118	9,375	6,168	8,353

Source: PwC 2004, ESTAP 2002 [6]



Figure A6.5.9: Forecast Final Demand per Capita

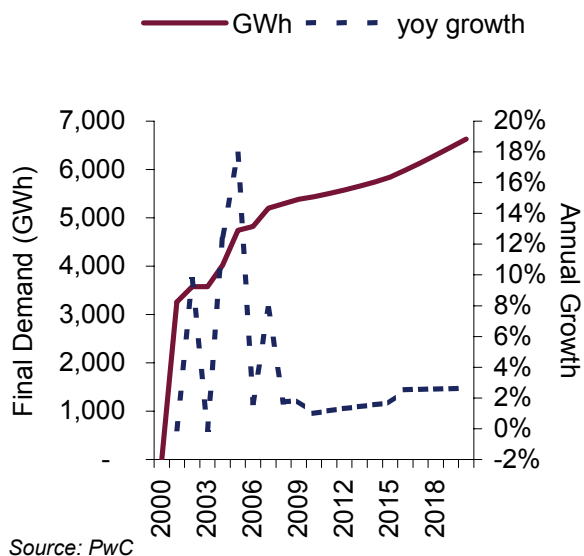


Source: PwC

	kWh/cap	ytd growth	yoy growth
2000	-		
2001	800		
2002	839		4.9%
2003	876	0.0%	4.5%
2004	902	3.0%	3.0%
2005	938	7.0%	3.9%
2006	969	10.7%	3.4%
2007	1,002	14.4%	3.4%
2008	1,036	18.2%	3.4%
2009	1,070	22.2%	3.3%
2010	1,106	26.2%	3.3%
2011	1,142	30.4%	3.3%
2012	1,179	34.6%	3.3%
2013	1,217	38.9%	3.2%
2014	1,256	43.4%	3.2%
2015	1,296	47.9%	3.2%
2016	1,336	52.5%	3.1%
2017	1,378	57.2%	3.1%
2018	1,420	62.0%	3.1%
2019	1,462	66.9%	3.0%
2020	1,506	71.9%	3.0%

Source: PwC

Figure A6.5.10: Forecast Final Net Demand



Source: PwC

	GWh	ytd growth	yoy growth
2000	-		
2001	3,257		
2002	3,574		9.7%
2003	3,573	0.0%	0.0%
2004	4,022	12.6%	12.6%
2005	4,741	32.7%	17.9%
2006	4,822	35.0%	1.7%
2007	5,198	45.5%	7.8%
2008	5,289	48.0%	1.7%
2009	5,384	50.7%	1.8%
2010	5,438	52.2%	1.0%
2011	5,501	54.0%	1.2%
2012	5,573	56.0%	1.3%
2013	5,654	58.2%	1.4%
2014	5,742	60.7%	1.6%
2015	5,839	63.4%	1.7%
2016	5,987	67.6%	2.5%
2017	6,140	71.9%	2.6%
2018	6,299	76.3%	2.6%
2019	6,462	80.9%	2.6%
2020	6,631	85.6%	2.6%

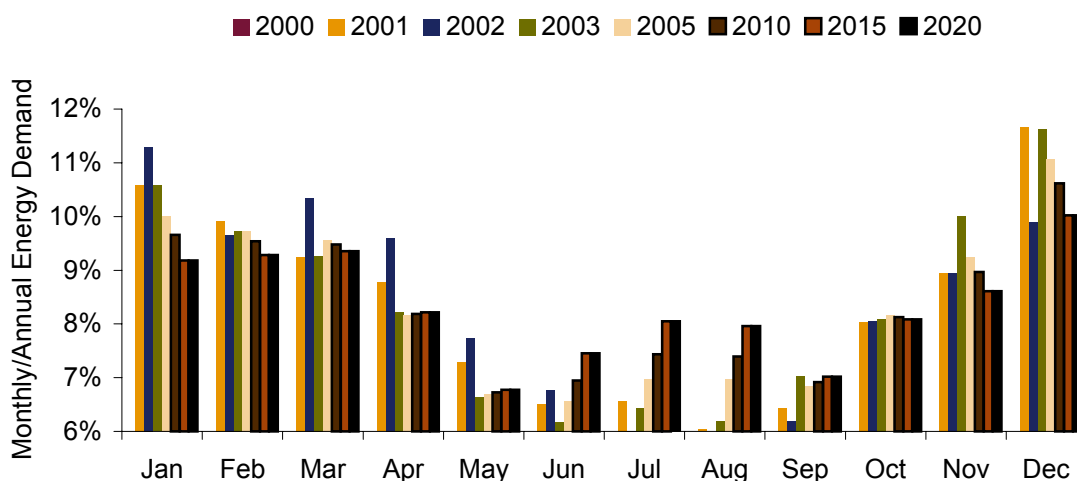
Source: PwC



4. Forecast variation in monthly electricity demand

Following the analysis in Chapter 3 of the main report, we have forecast a change in the share of annual energy demand and peak demand. We detail here the forecast annual change of these parameters.

Figure A6.5.11: Forecast Monthly Energy Demand



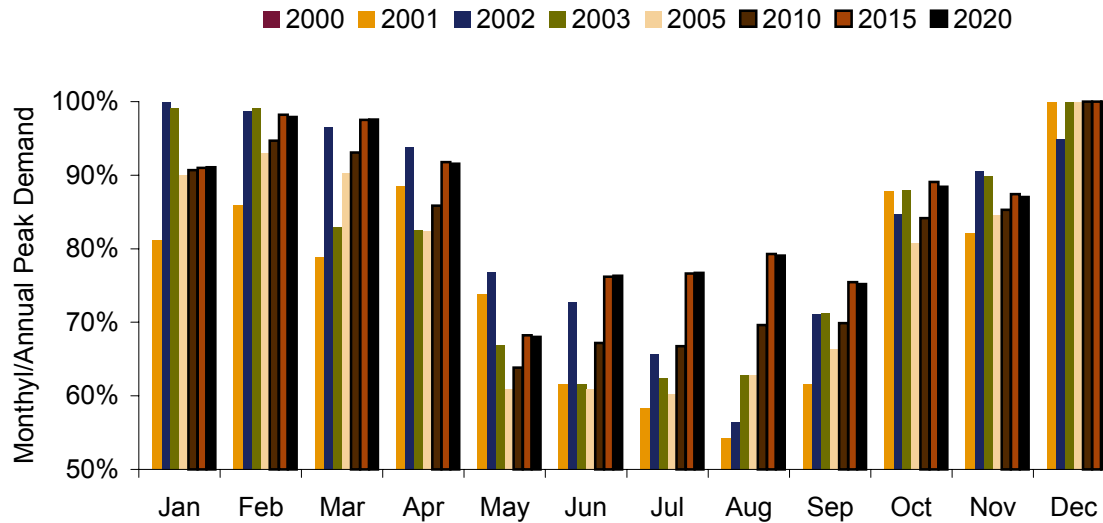
Source: PwC

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	-	-	-	-	-	-	-	-	-	-	-	-
2001	10.6%	9.9%	9.2%	8.8%	7.3%	6.5%	6.6%	6.0%	6.4%	8.0%	8.9%	11.7%
2002	11.3%	9.7%	10.3%	9.6%	7.7%	6.8%	6.0%	5.5%	6.2%	8.0%	9.0%	9.9%
2003	10.6%	9.7%	9.3%	8.2%	6.6%	6.2%	6.4%	6.2%	7.0%	8.1%	10.0%	11.6%
2004	10.6%	9.7%	9.3%	8.2%	6.6%	6.2%	6.4%	6.2%	7.0%	8.1%	10.0%	11.6%
2005	10.0%	9.7%	9.6%	8.2%	6.7%	6.6%	7.0%	7.0%	6.8%	8.2%	9.2%	11.1%
2006	10.0%	9.7%	9.6%	8.2%	6.7%	6.6%	7.0%	7.0%	6.8%	8.2%	9.2%	11.1%
2007	10.0%	9.7%	9.6%	8.2%	6.7%	6.6%	7.0%	7.0%	6.8%	8.2%	9.2%	11.1%
2008	9.9%	9.7%	9.5%	8.2%	6.7%	6.7%	7.1%	7.1%	6.9%	8.1%	9.1%	10.9%
2009	9.8%	9.6%	9.5%	8.2%	6.7%	6.8%	7.3%	7.3%	6.9%	8.1%	9.1%	10.8%
2010	9.7%	9.5%	9.5%	8.2%	6.7%	6.9%	7.4%	7.4%	6.9%	8.1%	9.0%	10.6%
2011	9.5%	9.5%	9.4%	8.2%	6.7%	7.1%	7.6%	7.5%	6.9%	8.1%	8.9%	10.5%
2012	9.4%	9.4%	9.4%	8.2%	6.8%	7.2%	7.7%	7.7%	7.0%	8.1%	8.8%	10.3%
2013	9.3%	9.3%	9.4%	8.2%	6.8%	7.3%	7.9%	7.8%	7.0%	8.1%	8.7%	10.2%
2014	9.2%	9.3%	9.4%	8.2%	6.8%	7.5%	8.0%	8.0%	7.0%	8.1%	8.6%	10.0%
2015	9.2%	9.3%	9.4%	8.2%	6.8%	7.5%	8.0%	8.0%	7.0%	8.1%	8.6%	10.0%
2016	9.2%	9.3%	9.4%	8.2%	6.8%	7.5%	8.0%	8.0%	7.0%	8.1%	8.6%	10.0%
2017	9.2%	9.3%	9.4%	8.2%	6.8%	7.5%	8.0%	8.0%	7.0%	8.1%	8.6%	10.0%
2018	9.2%	9.3%	9.4%	8.2%	6.8%	7.5%	8.0%	8.0%	7.0%	8.1%	8.6%	10.0%
2019	9.2%	9.3%	9.4%	8.2%	6.8%	7.5%	8.0%	8.0%	7.0%	8.1%	8.6%	10.0%
2020	9.2%	9.3%	9.4%	8.2%	6.8%	7.5%	8.0%	8.0%	7.0%	8.1%	8.6%	10.0%

Source: PwC



Figure A6.5.12: Forecast Monthly Peak Demand



Source: PwC

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	-	-	-	-	-	-	-	-	-	-	-	-
2001	81.1%	86.0%	78.9%	88.5%	73.8%	61.6%	58.3%	54.3%	61.6%	87.8%	82.2%	100.0%
2002	100.0%	98.8%	96.5%	93.8%	76.9%	72.8%	65.7%	56.4%	71.1%	84.8%	90.6%	94.9%
2003	99.1%	99.1%	83.0%	82.6%	66.9%	61.7%	62.5%	62.8%	71.3%	88.0%	89.9%	100.0%
2005	90.0%	92.9%	90.3%	82.4%	60.9%	61.0%	60.2%	62.8%	66.4%	80.8%	84.6%	100.0%
2010	90.7%	94.7%	93.1%	85.8%	63.8%	67.2%	66.7%	69.6%	69.9%	84.2%	85.3%	100.0%
2015	91.0%	98.2%	97.5%	91.8%	68.2%	76.2%	76.6%	79.3%	75.5%	89.1%	87.4%	100.0%
2020	91.1%	97.9%	97.5%	91.5%	68.0%	76.3%	76.7%	79.1%	75.2%	88.4%	87.0%	100.0%

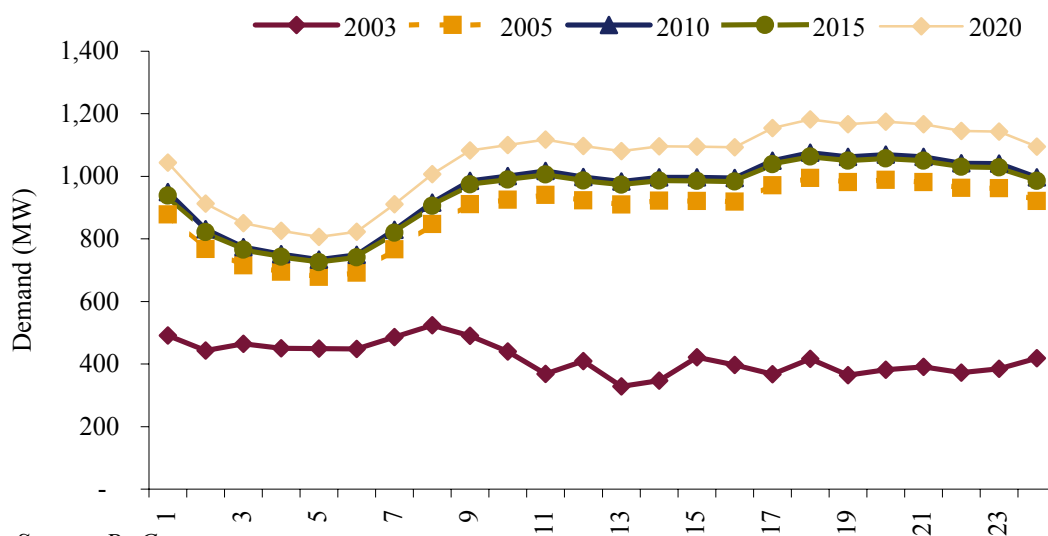
Source: PwC



5. Historical and forecast daily profiles

Using a combination of the 2003 load profiles for the 3rd week of January, April, July and October and the previous analysis of changing seasonal demand, we compare forecast and historical profiles.

Figure A6.5.13: 3rd Wed January Daily Profiles



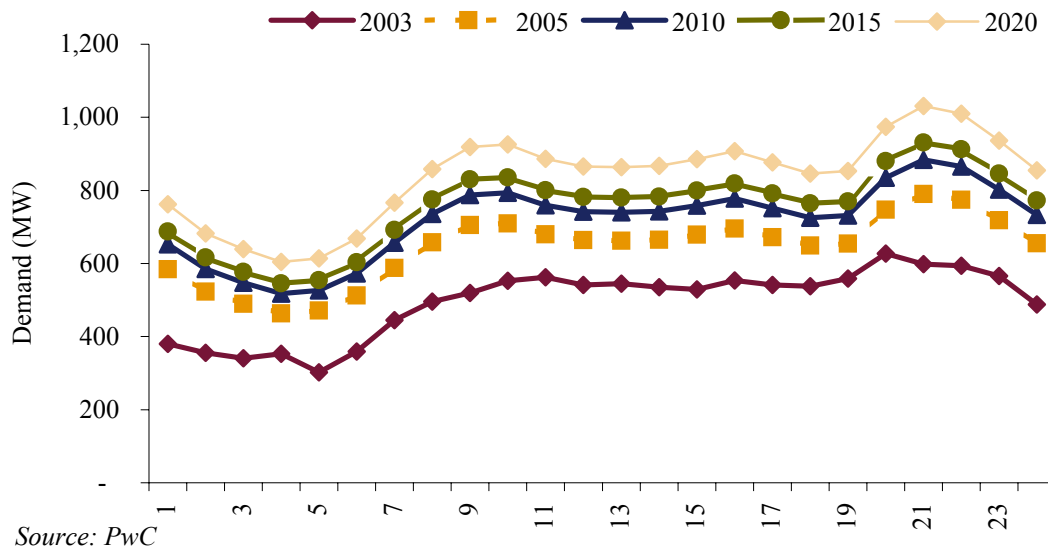
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	-	509	557	491	878	950	939	1,043
2	-	502	543	443	768	831	821	913
3	-	492	514	465	716	774	765	851
4	-	480	504	450	695	752	743	826
5	-	458	513	449	678	734	725	806
6	-	469	518	448	692	749	740	823
7	-	504	516	486	766	829	820	911
8	-	518	570	524	847	916	906	1,007
9	-	508	572	490	911	986	975	1,083
10	-	521	597	440	925	1,001	990	1,100
11	-	534	601	368	940	1,017	1,006	1,118
12	-	523	597	409	923	998	987	1,097
13	-	535	587	329	909	984	973	1,081
14	-	516	589	347	922	997	986	1,096
15	-	509	556	422	921	996	985	1,095
16	-	523	550	397	919	995	983	1,093
17	-	536	595	367	971	1,050	1,039	1,154
18	-	521	605	417	994	1,076	1,064	1,182
19	-	533	628	364	982	1,062	1,050	1,167
20	-	544	647	382	988	1,069	1,057	1,175
21	-	529	603	391	982	1,062	1,050	1,167
22	-	554	627	373	963	1,042	1,031	1,145
23	-	548	621	385	962	1,040	1,029	1,143
24	-	517	596	419	921	996	985	1,095

Source: PwC



Figure A6.5.14: 3rd Wed April Daily Profiles



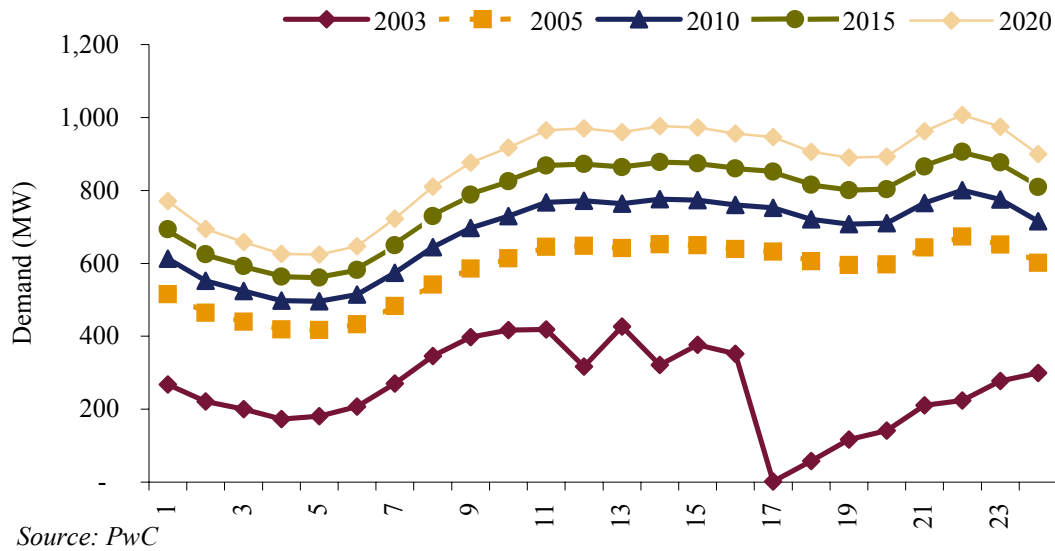
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	-	424	328	380	584	653	688	762
2	-	364	281	356	523	585	616	682
3	-	322	262	341	490	548	577	639
4	-	316	251	353	463	518	546	604
5	-	282	260	302	471	526	555	614
6	-	299	257	359	513	573	604	668
7	-	386	342	445	587	657	692	766
8	-	408	424	496	658	736	775	858
9	-	428	494	519	705	788	830	919
10	-	416	516	553	710	793	836	926
11	-	455	495	562	680	760	801	886
12	-	499	469	541	664	742	782	866
13	-	532	441	545	662	740	780	864
14	-	503	373	535	665	743	783	867
15	-	474	373	529	679	759	800	885
16	-	445	394	554	696	777	819	907
17	-	455	520	541	672	751	792	877
18	-	462	550	538	649	725	764	846
19	-	404	568	559	654	731	770	853
20	-	382	589	627	747	835	880	974
21	-	414	586	598	790	884	931	1,031
22	-	472	575	594	775	866	912	1,010
23	-	447	468	566	718	803	846	936
24	-	408	434	488	656	733	772	855

Source: PwC



Figure A6.5.15: 3rd Wed Jul Daily Profiles



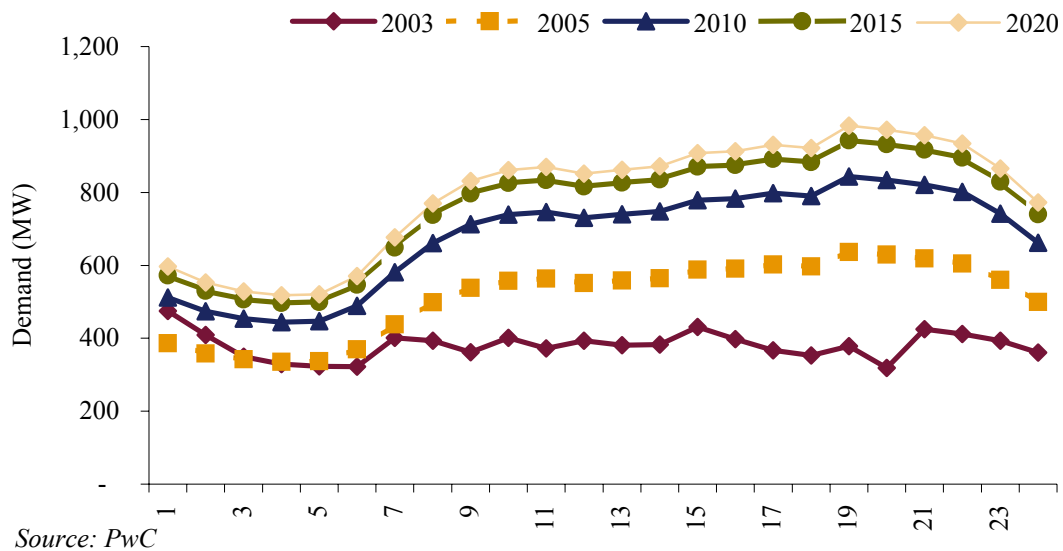
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	-	239	258	268	515	613	693	771
2	-	197	219	221	464	552	625	695
3	-	173	180	200	440	524	592	659
4	-	173	171	173	418	498	563	626
5	-	186	155	181	417	496	561	624
6	-	185	184	207	433	515	582	647
7	-	258	244	270	483	574	650	722
8	-	302	358	346	542	644	729	810
9	-	386	390	398	586	697	788	876
10	-	388	388	417	613	730	825	918
11	-	360	385	419	645	767	868	965
12	-	369	385	317	648	771	872	970
13	-	328	355	427	641	763	864	960
14	-	322	350	321	652	776	878	976
15	-	356	346	377	650	773	875	972
16	-	338	342	352	639	760	860	956
17	-	320	328	2	632	752	851	946
18	-	313	312	58	606	721	815	906
19	-	302	319	117	595	708	801	890
20	-	322	337	141	597	710	803	893
21	-	376	393	211	643	765	866	962
22	-	373	379	224	673	801	906	1,007
23	-	368	367	277	651	775	877	975
24	-	318	317	299	602	716	810	900

Source: PwC



Figure A6.5.16: 3rd Wed Oct Daily Profiles



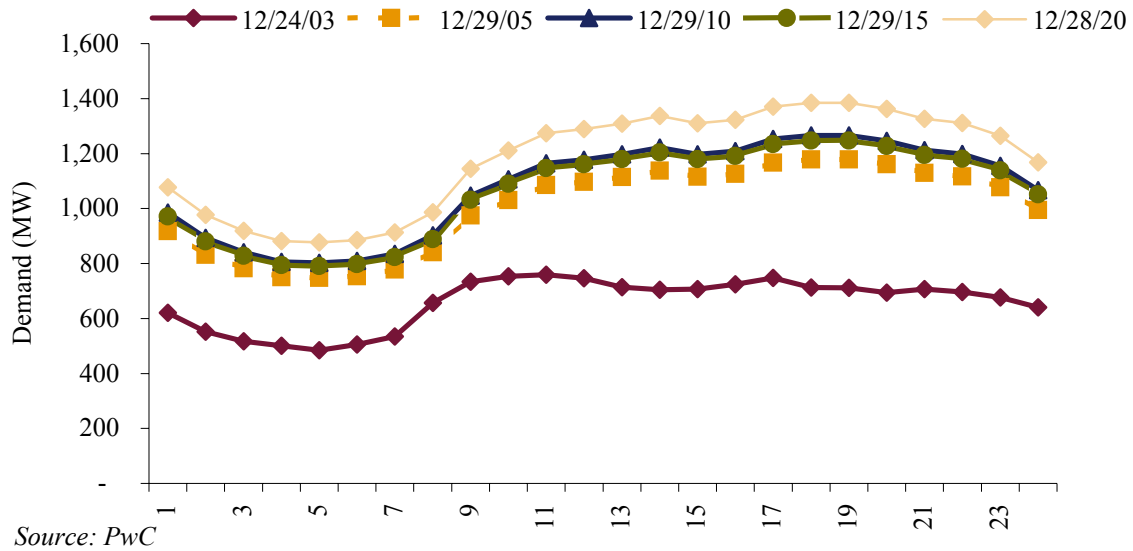
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	-	277	320	475	386	512	572	597
2	-	225	284	409	358	474	530	553
3	-	202	250	349	342	453	507	529
4	-	204	233	329	335	444	497	518
5	-	208	230	323	337	447	499	521
6	-	218	247	322	369	489	547	570
7	-	260	304	401	438	581	649	677
8	-	283	344	393	499	661	738	770
9	-	373	433	362	538	713	797	831
10	-	365	445	401	558	739	826	861
11	-	373	428	372	563	746	834	870
12	-	353	419	393	551	730	817	852
13	-	349	455	381	558	740	827	862
14	-	397	428	383	565	748	836	872
15	-	384	418	431	588	779	870	908
16	-	358	410	398	591	783	875	913
17	-	393	410	367	602	798	892	930
18	-	398	431	353	597	790	884	922
19	-	459	420	378	637	844	943	984
20	-	470	438	319	629	834	932	972
21	-	505	457	425	619	820	917	956
22	-	469	413	412	605	801	896	934
23	-	422	416	393	560	742	830	865
24	-	344	370	361	500	662	740	772

Source: PwC



Figure A6.5.17: Peak Hourly Demand Daily Profiles



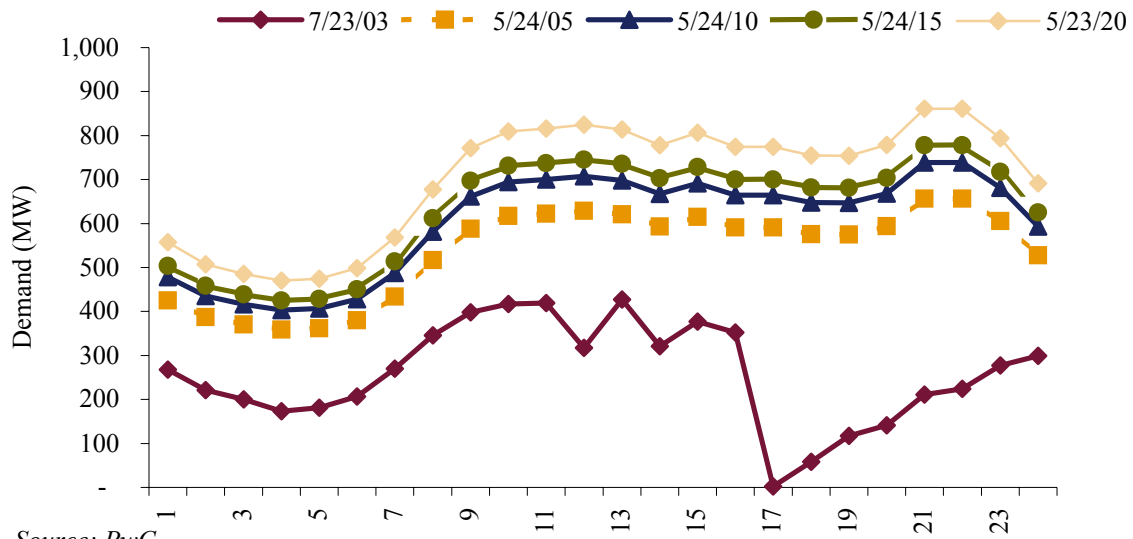
Source: PwC

MW	1/0/00	12/31/01	1/1/02	12/24/03	12/29/05	12/29/10	12/29/15	12/28/20
1	-	640	676	621	918	985	971	1,078
2	-	596	685	552	832	893	880	977
3	-	544	645	517	783	840	828	919
4	-	527	593	501	750	805	794	881
5	-	519	535	485	747	802	790	877
6	-	536	503	505	754	809	797	885
7	-	546	509	535	778	835	823	913
8	-	626	549	657	840	902	889	987
9	-	693	567	734	975	1,047	1,031	1,145
10	-	683	614	753	1,031	1,106	1,090	1,211
11	-	671	617	759	1,085	1,164	1,148	1,274
12	-	690	646	747	1,097	1,178	1,161	1,289
13	-	717	670	714	1,115	1,197	1,179	1,309
14	-	615	660	704	1,138	1,222	1,204	1,337
15	-	678	648	707	1,116	1,198	1,180	1,310
16	-	663	678	724	1,127	1,209	1,192	1,323
17	-	709	704	748	1,167	1,253	1,235	1,371
18	-	719	649	713	1,179	1,265	1,247	1,384
19	-	748	645	711	1,179	1,265	1,247	1,384
20	-	763	648	694	1,161	1,246	1,228	1,363
21	-	737	713	707	1,130	1,213	1,195	1,327
22	-	699	723	696	1,117	1,198	1,181	1,311
23	-	688	672	677	1,077	1,156	1,139	1,264
24	-	698	632	641	994	1,067	1,052	1,168

Source: PwC



Figure A6.5.18: Minimum Hourly Demand Daily Profiles



Source: PwC

MW	1/0/00	2/26/01	7/9/02	7/23/03	5/24/05	5/24/10	5/24/15	5/23/20
1	-	353	253	268	425	478	504	558
2	-	339	213	221	387	435	458	507
3	-	335	188	200	370	417	439	485
4	-	334	152	173	359	403	425	470
5	-	384	178	181	362	407	429	475
6	-	427	187	207	380	428	451	499
7	-	441	164	270	433	488	514	568
8	-	501	192	346	517	581	612	678
9	-	507	234	398	588	662	697	771
10	-	512	310	417	617	695	732	810
11	-	465	243	419	622	700	738	816
12	-	517	34	317	629	708	745	825
13	-	554	76	427	621	698	736	814
14	-	525	99	321	593	667	703	778
15	-	550	138	377	615	692	729	806
16	-	577	352	352	591	665	700	775
17	-	573	395	2	591	665	700	775
18	-	604	398	58	576	648	682	755
19	-	618	357	117	575	647	681	754
20	-	634	378	141	594	668	704	779
21	-	646	376	211	656	739	778	861
22	-	624	393	224	656	739	778	861
23	-	582	418	277	606	681	718	794
24	-	550	350	299	527	593	625	692

Source: PwC



Appendix 6.6
Macedonia Demand Forecasting



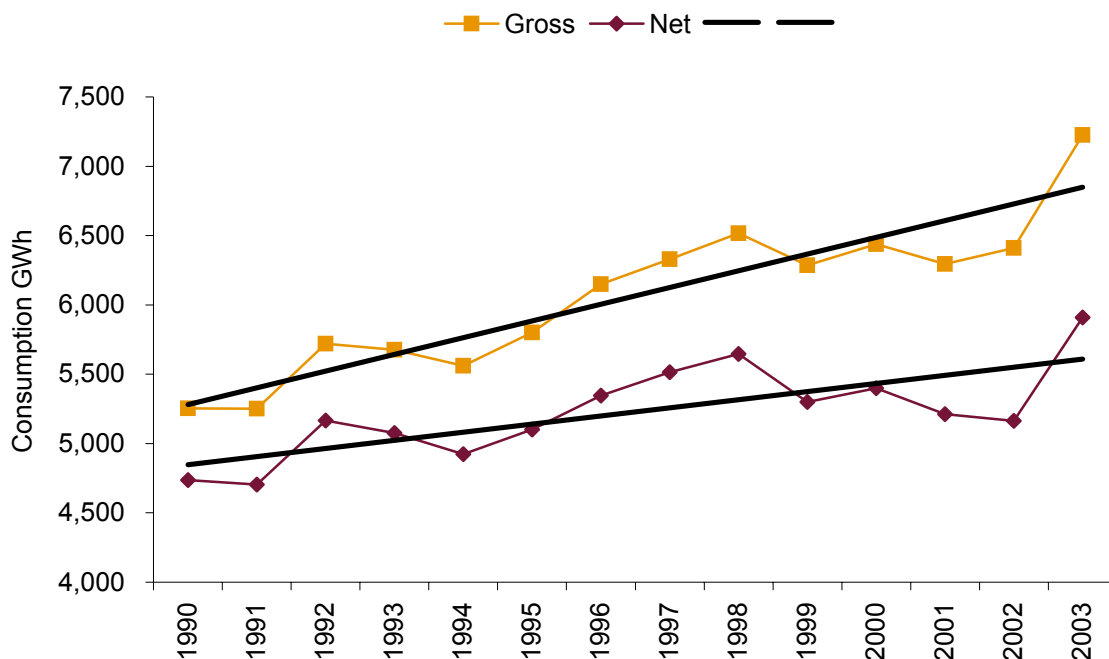
1. Historical Trend Analysis

The data for Macedonia was sourced from the national utility. A complete data set of historical electricity demand was made available for analysis.

Figure A6.6.1: Historical Electricity Consumption

	(1)	(1)	(1)	(1)	(1)	(2)	(2)	
	Net Demand GWh	Transmis Losses GWh	Distrib Losses GWh	Total Losses GWh	Gross Demand GWh	All Losses Share of Gross	Population (‘000)	Net Energy Intensity kWh/cap
1990	4,735	164.0	353.0	517.0	5,252	9.8%	-	-
1991	4,705	166	381	547	5,252	10.4%	1,903	2,472
1992	5,165	168	387	555	5,720	9.7%	1,929	2,677
1993	5,076	143	457	600	5,676	10.6%	1,962	2,587
1994	4,923	173	464	637	5,560	11.5%	1,983	2,482
1995	5,101	192	507	699	5,800	12.1%	1,986	2,568
1996	5,345	194	609	803	6,148	13.1%	1,993	2,682
1997	5,516	191	624	815	6,331	12.9%	2,002	2,755
1998	5,647	185	686	871	6,518	13.4%	2,015	2,802
1999	5,299	197	789	986	6,285	15.7%	2,032	2,607
2000	5,399	215	824	1,039	6,439	16.1%	2,041	2,645
2001	5,213	207	875	1,082	6,294	17.2%	2,046	2,547
2002	5,163	189	1,058	1,247	6,410	19.4%	2,055	2,513
2003	5,909	229	1,088	1,317	7,226	18.2%	2,063	2,864

Sources: (1) ESM (2) US Census Bureau



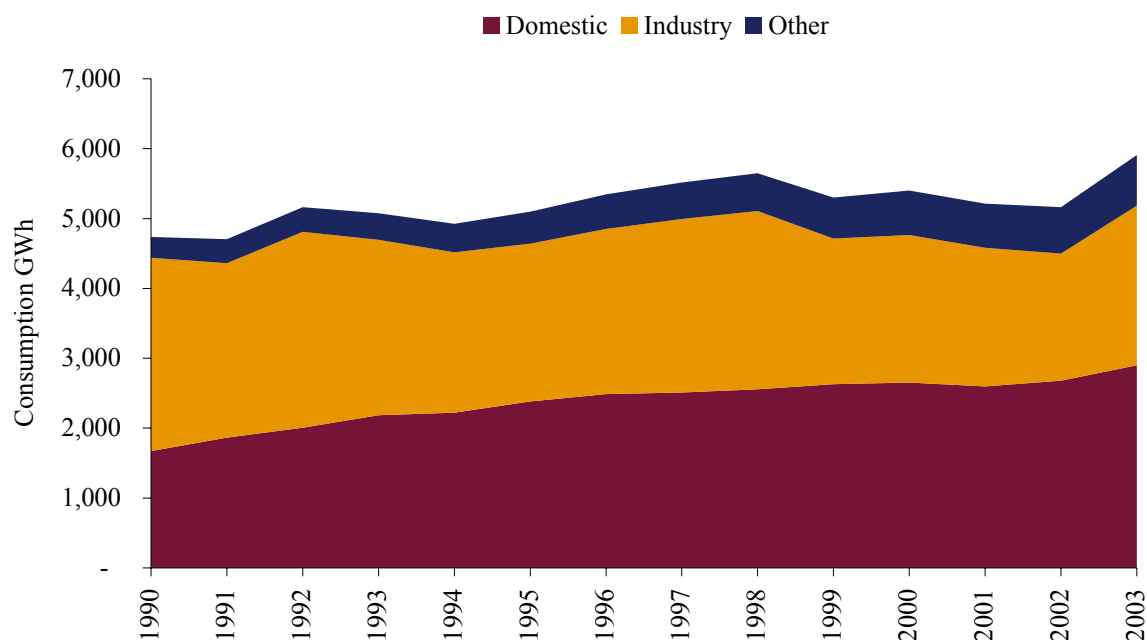
Source: ESM



Figure A6.6.2: Historical Sectoral Electricity Demand

	Domestic Demand GWh	Industry Demand GWh	Other Demand GWh	Total Net Demand GWh	Domestic Demand Growth	Industry Demand Growth	Other Demand Growth	Total Net Demand Growth
1990	1,672	2,765	298	4,735				
1991	1,863	2,500	342	4,705	10.2%	-10.6%	12.9%	-0.7%
1992	2,008	2,802	355	5,165	7.3%	10.8%	3.5%	8.9%
1993	2,186	2,512	378	5,076	8.1%	-11.5%	6.1%	-1.8%
1994	2,224	2,295	404	4,923	1.7%	-9.5%	6.4%	-3.1%
1995	2,382	2,258	461	5,101	6.6%	-1.6%	12.4%	3.5%
1996	2,486	2,365	494	5,345	4.2%	4.5%	6.7%	4.6%
1997	2,509	2,484	523	5,516	0.9%	4.8%	5.5%	3.1%
1998	2,555	2,551	540	5,647	1.8%	2.6%	3.2%	2.3%
1999	2,631	2,084	584	5,299	2.9%	-22.4%	7.5%	-6.6%
2000	2,653	2,109	637	5,399	0.8%	1.2%	8.3%	1.8%
2001	2,599	1,982	632	5,213	-2.1%	-6.4%	-0.8%	-3.6%
2002	2,682	1,816	665	5,163	3.1%	-9.1%	5.0%	-1.0%
2003	2,901	2,287	721	5,909	7.6%	20.6%	7.7%	12.6%

Source: ESM



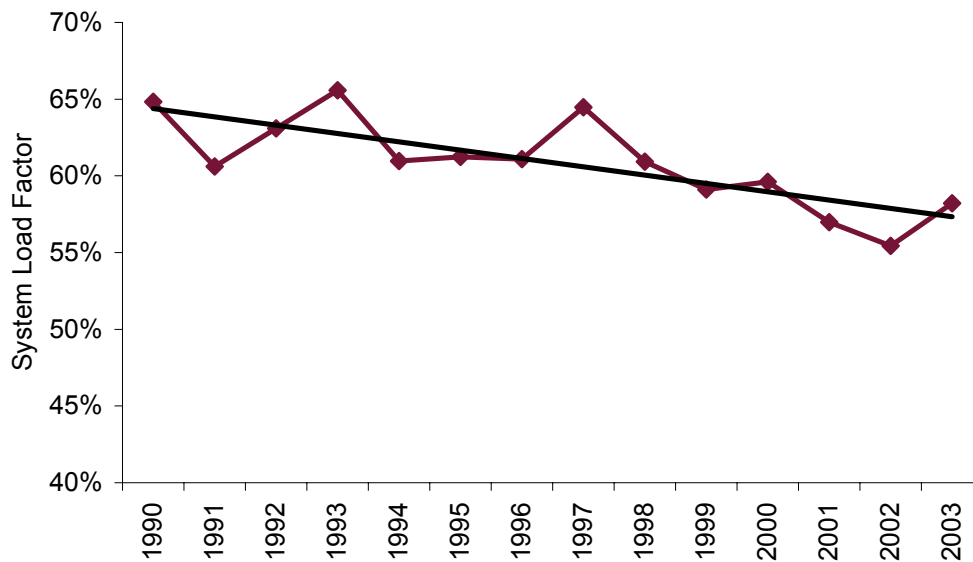
Source: ESM



Figure A6.6.3: Historical System Load Factor

	Gross Demand GWh	Auxilliary Demand GWh	Pumping Demand GWh	Gross Consump GWh	Gross Consm Growth	System Peak MW	System Peak Growth	System Load Factor
1990	5,252	-	-	5,252		925		64.8%
1991	5,252	-	-	5,252	0.0%	989	6.9%	60.6%
1992	5,720	-	-	5,720	8.9%	1,035	4.7%	63.1%
1993	5,676	-	-	5,676	-0.8%	988	-4.5%	65.6%
1994	5,560	-	-	5,560	-2.0%	1,041	5.4%	61.0%
1995	5,800	-	-	5,800	4.3%	1,081	3.8%	61.2%
1996	6,148	-	-	6,148	6.0%	1,149	6.3%	61.1%
1997	6,331	-	-	6,331	3.0%	1,121	-2.4%	64.5%
1998	6,518	-	-	6,518	3.0%	1,221	8.9%	60.9%
1999	6,285	-	-	6,285	-3.6%	1,214	-0.6%	59.1%
2000	6,439	-	-	6,439	2.4%	1,233	1.6%	59.6%
2001	6,294	-	-	6,294	-2.2%	1,261	2.3%	57.0%
2002	6,410	-	-	6,410	1.8%	1,320	4.7%	55.4%
2003	7,226	-	-	7,226	12.7%	1,417	7.3%	58.2%

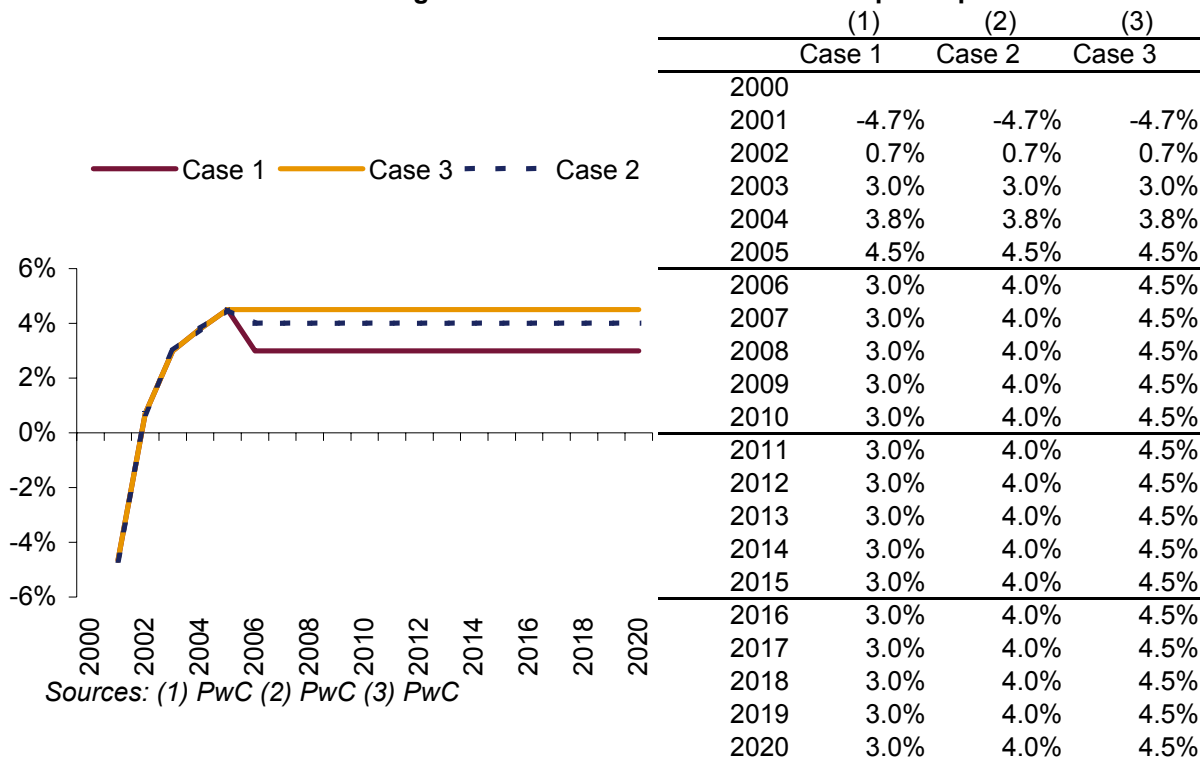
Source: ESM





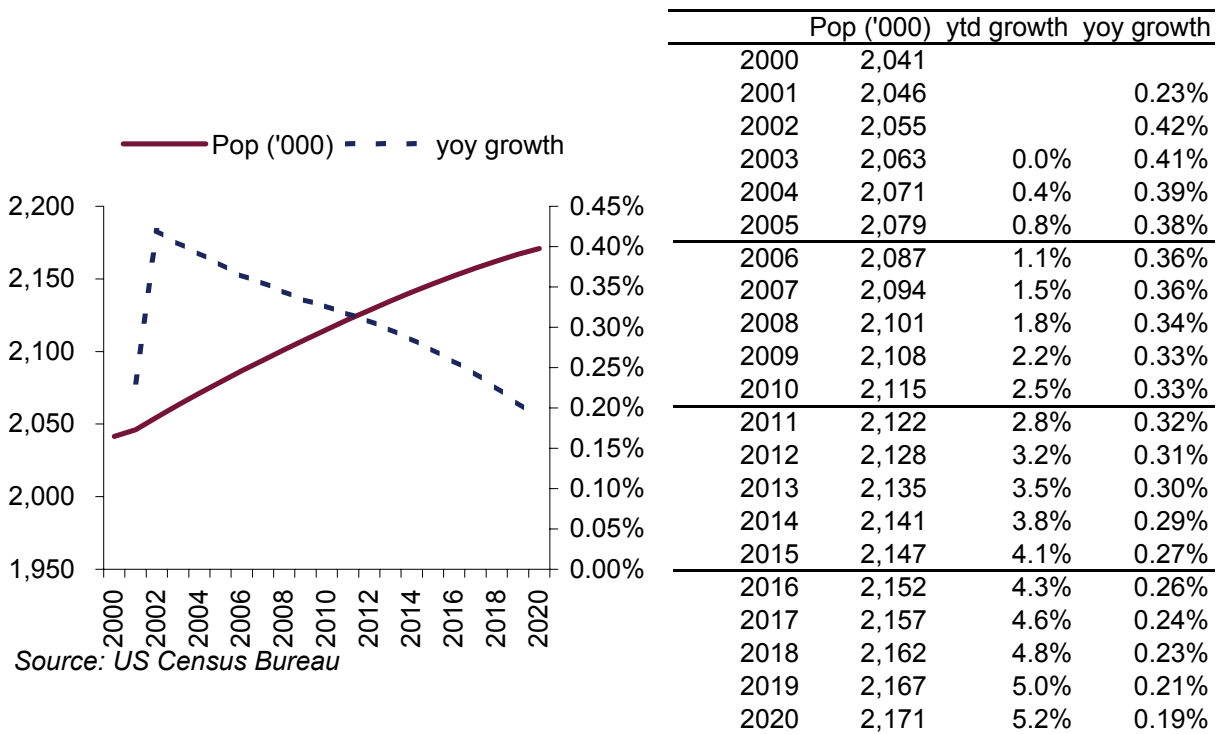
2. Forecast Assumptions

Figure A6.6.4: Scenario Forecast GDP per Capita



Sources: (1) PwC (2) PwC (3) PwC

Figure A6.6.5: Forecast Population



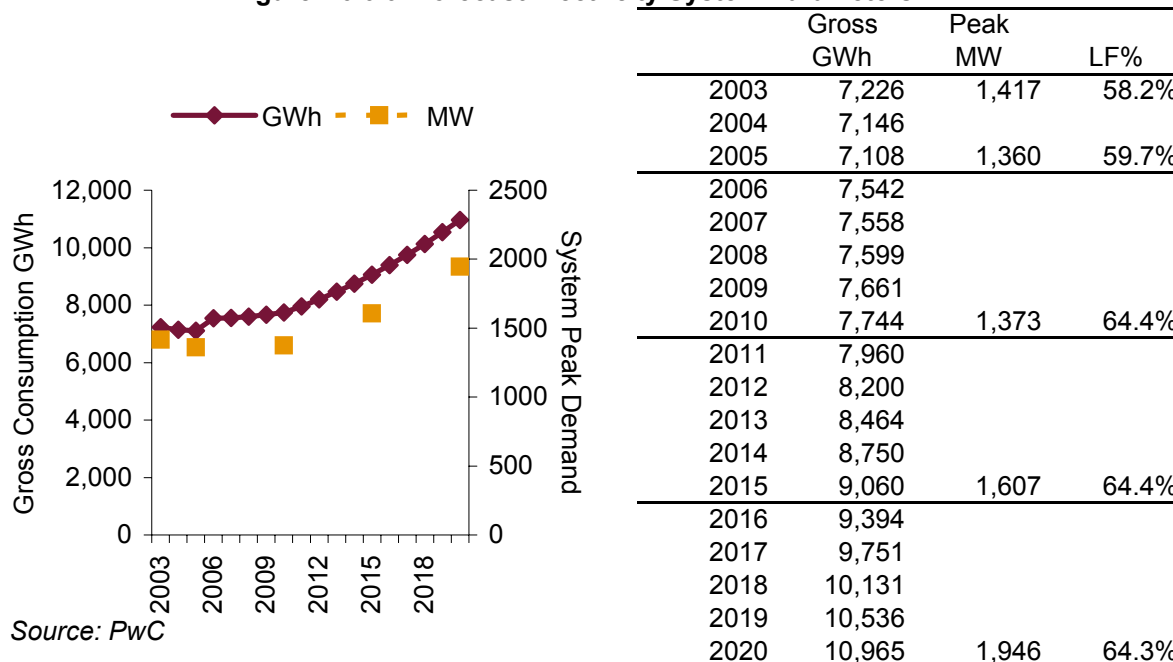
Source: US Census Bureau



3. Forecast Calculation

Using the econometric demand forecasting model described in Chapter 3 of this report, together with GDP growth forecast assumptions, the following data are forecast for energy demand.

Figure A6.6.6: Forecast Electricity System Parameters



Source: PwC

Source: PwC

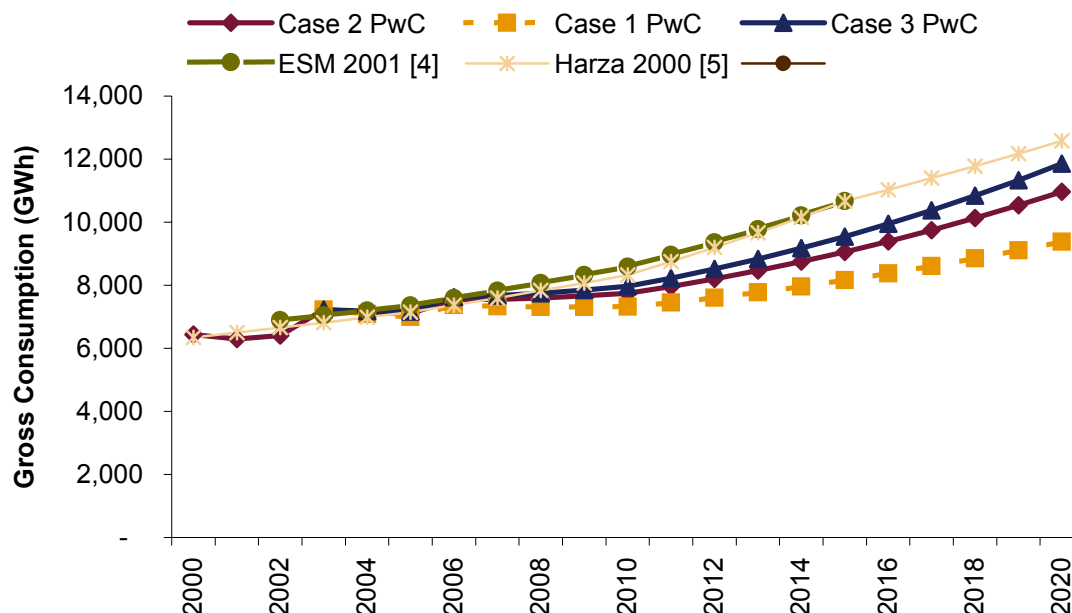
Figure A6.6.7: Case 2 Economic Model Forecast Calculation

Year	GDP per Capita (95 US\$)	Forecast Growth (%)	Electricity Intensity (kWh/GDP)	Electricity per capita (kWh pp)	Population ('000)	Net Consumpt (GWh)	D & T Losses (%)	Gross Consumpt (GWh)
2002	2,434	0.7%	1.03	2,513	2,055	5,163	19.4%	6,410
2003	2,507	3.0%	1.14	2,864	2,063	5,909	18.2%	7,226
2004	2,602	3.8%	1.10	2,859	2,071	5,921	17.1%	7,146
2005	2,719	4.5%	1.06	2,871	2,079	5,969	16.0%	7,108
2006	2,828	4.0%	1.02	2,897	2,087	6,419	14.9%	7,542
2007	2,941	4.0%	1.00	2,935	2,094	6,522	13.7%	7,558
2008	3,058	4.0%	0.98	2,985	2,101	6,648	12.5%	7,599
2009	3,181	4.0%	0.96	3,047	2,108	6,798	11.3%	7,661
2010	3,308	4.0%	0.94	3,118	2,115	6,971	10.0%	7,744
2011	3,440	4.0%	0.93	3,200	2,122	7,165	10.0%	7,960
2012	3,578	4.0%	0.92	3,292	2,128	7,381	10.0%	8,200
2013	3,721	4.0%	0.91	3,393	2,135	7,618	10.0%	8,464
2014	3,870	4.0%	0.91	3,504	2,141	7,876	10.0%	8,750
2015	4,025	4.0%	0.90	3,624	2,147	8,155	10.0%	9,060
2016	4,186	4.0%	0.90	3,754	2,152	8,455	10.0%	9,394
2017	4,353	4.0%	0.89	3,894	2,157	8,777	10.0%	9,751
2018	4,527	4.0%	0.89	4,044	2,162	9,119	10.0%	10,131
2019	4,708	4.0%	0.89	4,204	2,167	9,483	10.0%	10,536
2020	4,897	4.0%	0.89	4,374	2,171	9,869	10.0%	10,965

Source: PwC



Figure A6.6.8: Comparison with other Forecasts



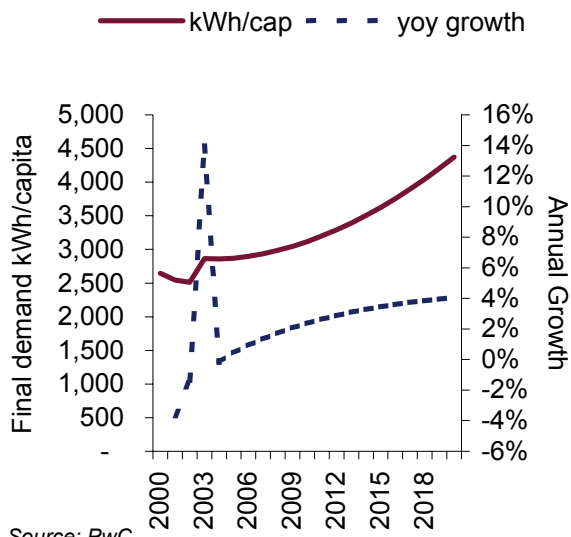
Source: PwC 2004, ESM 2001 [4], Harza 2000 [5]

GWh	Case 2	Case 1	Case 3	ESM 2001	Harza
2000	6,439				6,345
2001	6,294				6,498
2002	6,410			6,888	6,655
2003	7,226	7,226	7,226	7,044	6,815
2004	7,146	7,086	7,177	7,202	6,980
2005	7,108	6,995	7,166	7,365	7,148
2006	7,542	7,373	7,628	7,594	7,369
2007	7,558	7,330	7,675	7,830	7,597
2008	7,599	7,309	7,748	8,074	7,833
2009	7,661	7,306	7,845	8,327	8,075
2010	7,744	7,320	7,966	8,588	8,325
2011	7,960	7,456	8,226	8,966	8,749
2012	8,200	7,609	8,513	9,363	9,195
2013	8,464	7,778	8,829	9,780	9,663
2014	8,750	7,963	9,173	10,216	10,156
2015	9,060	8,163	9,546	10,673	10,673
2016	9,394	8,378	9,947		11,030
2017	9,751	8,608	10,378		11,399
2018	10,131	8,851	10,840		11,780
2019	10,536	9,108	11,332		12,174
2020	10,965	9,378	11,857		12,581

Source: PwC 2004, ESM 2001 [4], Harza 2000 [5]



Figure A6.6.9: Forecast Final Demand per Capita

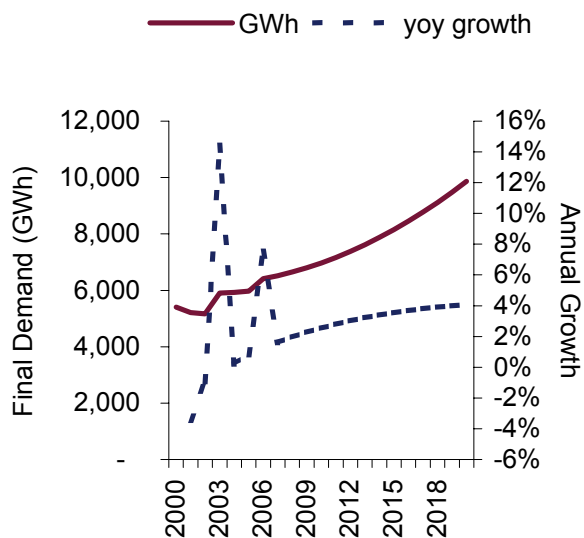


Source: PwC

	kWh/cap	ytd growth	yoy growth
2000	2,645		
2001	2,547		-3.7%
2002	2,513		-1.4%
2003	2,864	0.0%	14.0%
2004	2,859	-0.2%	-0.2%
2005	2,871	0.2%	0.4%
2006	2,897	1.1%	0.9%
2007	2,935	2.5%	1.3%
2008	2,985	4.2%	1.7%
2009	3,047	6.4%	2.0%
2010	3,118	8.9%	2.4%
2011	3,200	11.7%	2.6%
2012	3,292	14.9%	2.9%
2013	3,393	18.5%	3.1%
2014	3,504	22.3%	3.3%
2015	3,624	26.5%	3.4%
2016	3,754	31.1%	3.6%
2017	3,894	36.0%	3.7%
2018	4,044	41.2%	3.8%
2019	4,204	46.8%	3.9%
2020	4,374	52.7%	4.0%

Source: PwC

Figure A6.6.10: Forecast Final Net Demand



Source: PwC

	GWh	ytd growth	yoy growth
2000	5,399		
2001	5,213		-3.5%
2002	5,163		-0.9%
2003	5,909	0.0%	14.4%
2004	5,921	0.2%	0.2%
2005	5,969	1.0%	0.8%
2006	6,419	8.6%	7.6%
2007	6,522	10.4%	1.6%
2008	6,648	12.5%	1.9%
2009	6,798	15.0%	2.3%
2010	6,971	18.0%	2.5%
2011	7,165	21.3%	2.8%
2012	7,381	24.9%	3.0%
2013	7,618	28.9%	3.2%
2014	7,876	33.3%	3.4%
2015	8,155	38.0%	3.5%
2016	8,455	43.1%	3.7%
2017	8,777	48.5%	3.8%
2018	9,119	54.3%	3.9%
2019	9,483	60.5%	4.0%
2020	9,869	67.0%	4.1%

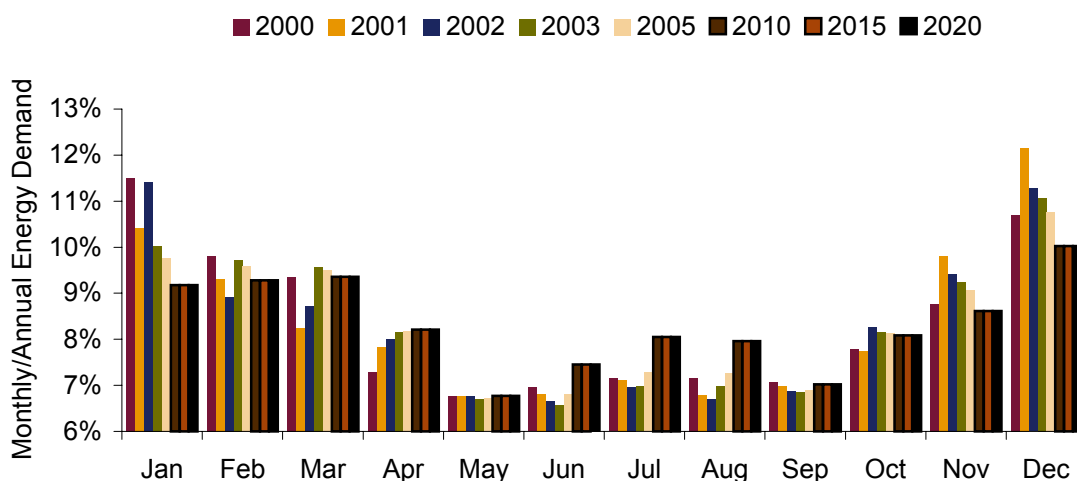
Source: PwC



4. Forecast variation in monthly electricity demand

Following the analysis in Chapter 3 of the main report, we have forecast a change in the share of annual energy demand and peak demand. We detail here the forecast annual change of these parameters.

Figure A6.6.11: Forecast Monthly Energy Demand



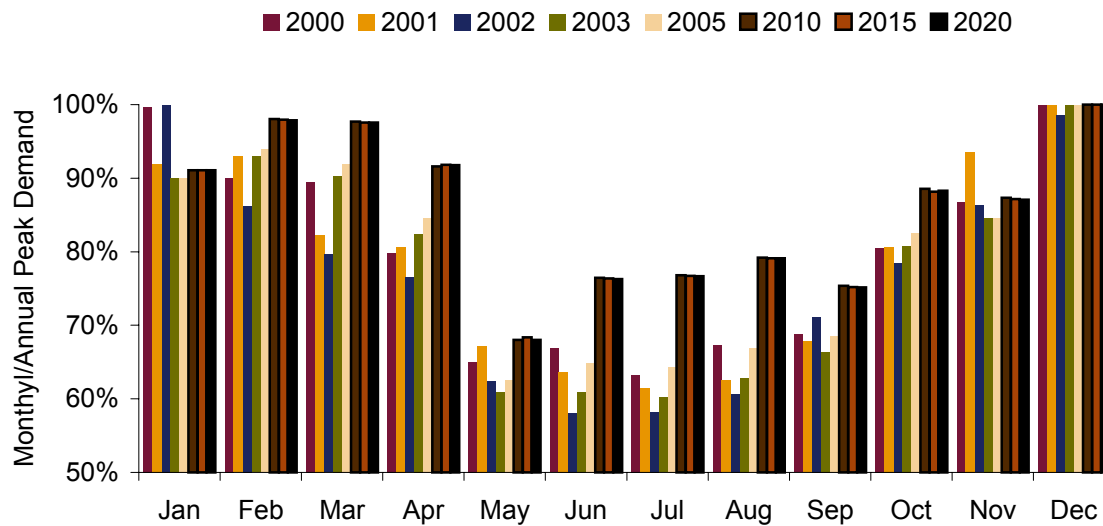
Source: PwC

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	11.5%	9.8%	9.4%	7.3%	6.8%	7.0%	7.1%	7.2%	7.1%	7.8%	8.8%	10.7%
2001	10.4%	9.3%	8.3%	7.8%	6.8%	6.8%	7.1%	6.8%	7.0%	7.7%	9.8%	12.2%
2002	11.4%	8.9%	8.7%	8.0%	6.8%	6.7%	7.0%	6.7%	6.9%	8.3%	9.4%	11.3%
2003	10.0%	9.7%	9.6%	8.2%	6.7%	6.6%	7.0%	7.0%	6.8%	8.2%	9.2%	11.1%
2004	9.9%	9.7%	9.5%	8.2%	6.7%	6.7%	7.1%	7.1%	6.9%	8.1%	9.1%	10.9%
2005	9.8%	9.6%	9.5%	8.2%	6.7%	6.8%	7.3%	7.3%	6.9%	8.1%	9.1%	10.8%
2006	9.7%	9.5%	9.5%	8.2%	6.7%	6.9%	7.4%	7.4%	6.9%	8.1%	9.0%	10.6%
2007	9.5%	9.5%	9.4%	8.2%	6.7%	7.1%	7.6%	7.5%	6.9%	8.1%	8.9%	10.5%
2008	9.4%	9.4%	9.4%	8.2%	6.8%	7.2%	7.7%	7.7%	7.0%	8.1%	8.8%	10.3%
2009	9.3%	9.3%	9.4%	8.2%	6.8%	7.3%	7.9%	7.8%	7.0%	8.1%	8.7%	10.2%
2010	9.2%	9.3%	9.4%	8.2%	6.8%	7.5%	8.0%	8.0%	7.0%	8.1%	8.6%	10.0%
2011	9.2%	9.3%	9.4%	8.2%	6.8%	7.5%	8.0%	8.0%	7.0%	8.1%	8.6%	10.0%
2012	9.2%	9.3%	9.4%	8.2%	6.8%	7.5%	8.0%	8.0%	7.0%	8.1%	8.6%	10.0%
2013	9.2%	9.3%	9.4%	8.2%	6.8%	7.5%	8.0%	8.0%	7.0%	8.1%	8.6%	10.0%
2014	9.2%	9.3%	9.4%	8.2%	6.8%	7.5%	8.0%	8.0%	7.0%	8.1%	8.6%	10.0%
2015	9.2%	9.3%	9.4%	8.2%	6.8%	7.5%	8.0%	8.0%	7.0%	8.1%	8.6%	10.0%
2016	9.2%	9.3%	9.4%	8.2%	6.8%	7.5%	8.0%	8.0%	7.0%	8.1%	8.6%	10.0%
2017	9.2%	9.3%	9.4%	8.2%	6.8%	7.5%	8.0%	8.0%	7.0%	8.1%	8.6%	10.0%
2018	9.2%	9.3%	9.4%	8.2%	6.8%	7.5%	8.0%	8.0%	7.0%	8.1%	8.6%	10.0%
2019	9.2%	9.3%	9.4%	8.2%	6.8%	7.5%	8.0%	8.0%	7.0%	8.1%	8.6%	10.0%
2020	9.2%	9.3%	9.4%	8.2%	6.8%	7.5%	8.0%	8.0%	7.0%	8.1%	8.6%	10.0%

Source: PwC



Figure A6.12: Forecast Monthly Peak Demand



Source: PwC

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	99.7%	90.0%	89.5%	79.8%	65.0%	66.8%	63.3%	67.3%	68.8%	80.5%	86.8%	100.0%
2001	91.9%	92.9%	82.3%	80.6%	67.2%	63.6%	61.5%	62.5%	67.8%	80.6%	93.5%	100.0%
2002	100.0%	86.2%	79.6%	76.5%	62.3%	58.1%	58.2%	60.7%	71.1%	78.5%	86.3%	98.6%
2003	90.0%	92.9%	90.3%	82.4%	60.9%	61.0%	60.2%	62.8%	66.4%	80.8%	84.6%	100.0%
2005	90.0%	93.9%	91.9%	84.6%	62.6%	64.8%	64.3%	66.9%	68.5%	82.6%	84.6%	100.0%
2010	91.1%	98.0%	97.7%	91.6%	68.0%	76.5%	76.8%	79.2%	75.4%	88.6%	87.3%	100.0%
2015	91.1%	97.9%	97.6%	91.8%	68.4%	76.4%	76.7%	79.1%	75.2%	88.1%	87.2%	100.0%
2020	91.1%	97.9%	97.6%	91.8%	68.0%	76.3%	76.7%	79.1%	75.2%	88.3%	87.1%	100.0%

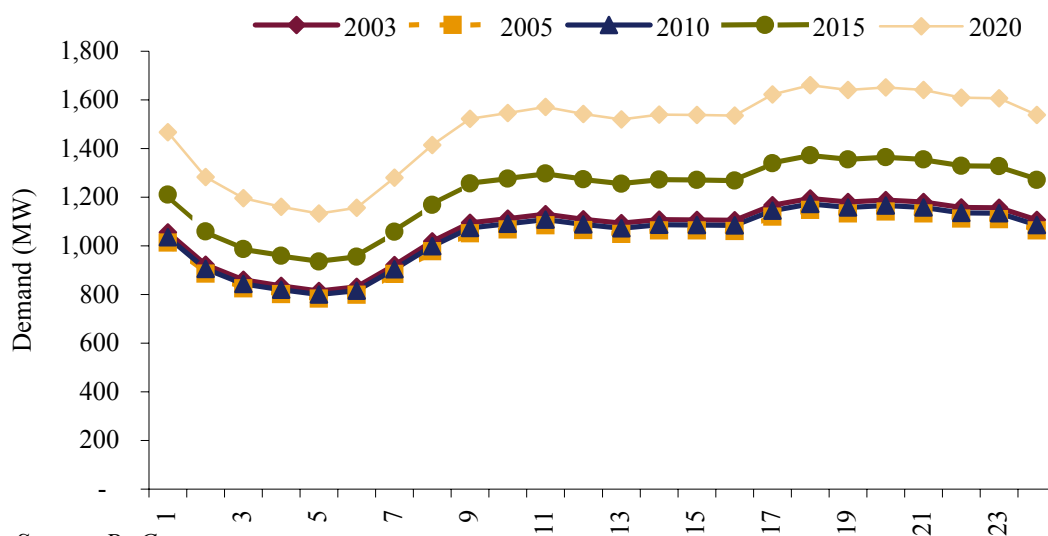
Source: PwC



5. Historical and forecast daily profiles

Using a combination of the 2003 load profiles for the 3rd week of January, April, July and October and the previous analysis of changing seasonal demand, we compare forecast and historical profiles.

Figure A6.6.13: 3rd Wed January Daily Profiles



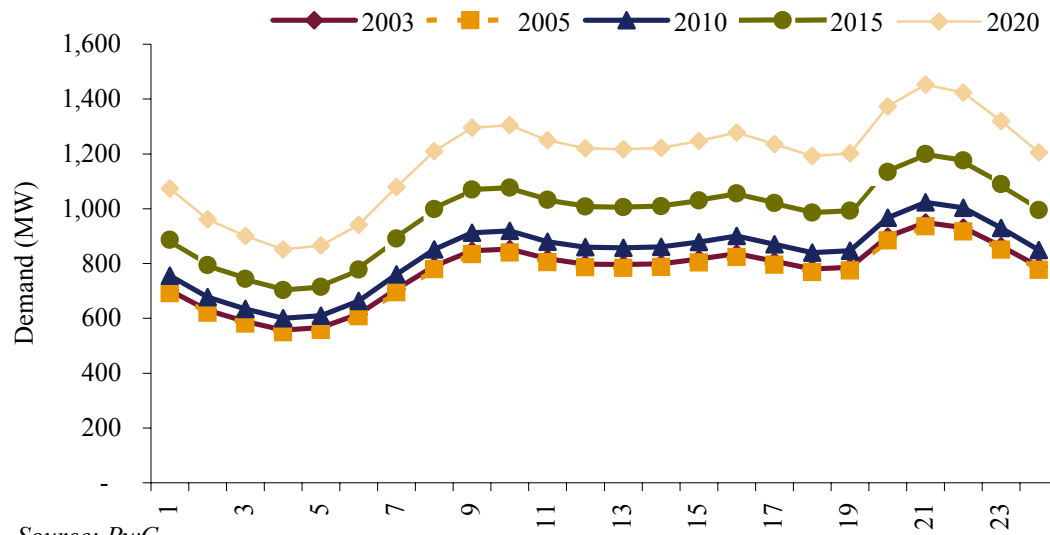
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	906	-	953	1,055	1,013	1,035	1,211	1,466
2	841	-	865	923	886	905	1,060	1,283
3	784	-	783	860	826	844	987	1,195
4	735	-	750	835	802	819	959	1,161
5	718	-	736	815	782	800	936	1,133
6	733	-	753	832	799	816	955	1,156
7	797	-	852	921	884	904	1,057	1,280
8	890	-	922	1,018	977	999	1,169	1,415
9	948	-	975	1,095	1,051	1,074	1,257	1,522
10	970	-	1,024	1,112	1,068	1,091	1,277	1,546
11	951	-	1,029	1,130	1,085	1,109	1,297	1,571
12	947	-	1,009	1,109	1,065	1,088	1,273	1,542
13	965	-	1,027	1,093	1,049	1,072	1,255	1,519
14	970	-	1,041	1,108	1,064	1,087	1,272	1,540
15	981	-	1,064	1,107	1,063	1,086	1,271	1,539
16	990	-	1,059	1,105	1,061	1,084	1,269	1,536
17	1,029	-	1,084	1,167	1,120	1,145	1,340	1,622
18	1,085	-	1,115	1,195	1,147	1,172	1,372	1,661
19	1,093	-	1,092	1,180	1,133	1,158	1,355	1,640
20	1,058	-	1,081	1,188	1,140	1,165	1,364	1,651
21	1,033	-	1,076	1,180	1,133	1,158	1,355	1,640
22	1,039	-	1,057	1,158	1,112	1,136	1,329	1,610
23	1,076	-	1,029	1,156	1,110	1,134	1,327	1,607
24	1,053	-	993	1,107	1,063	1,086	1,271	1,539

Source: PwC



Figure A6.6.14: 3rd Wed April Daily Profiles



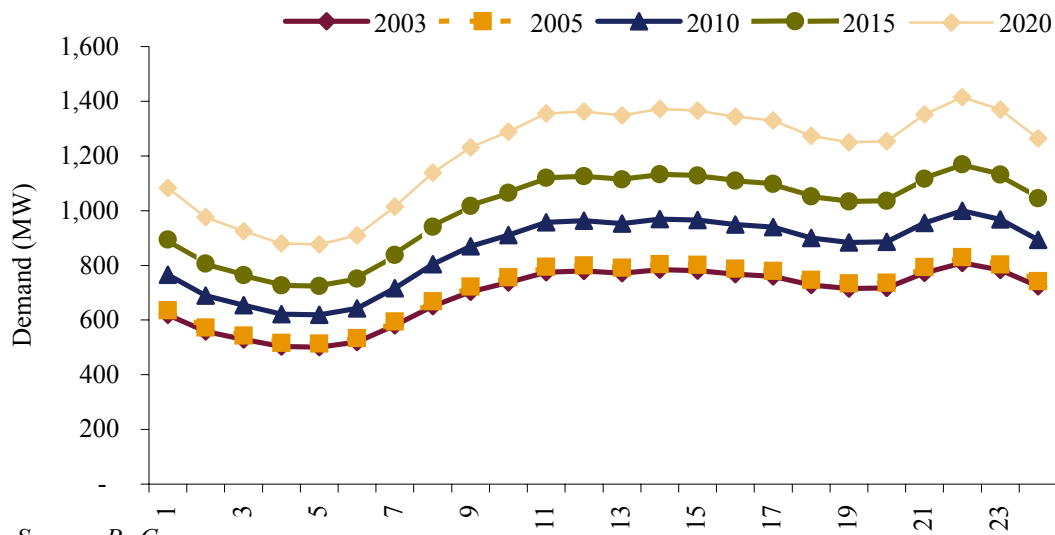
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	512	-	576	702	691	756	887	1,073
2	461	-	517	629	620	677	794	962
3	439	-	470	589	580	634	744	901
4	425	-	469	557	549	600	703	852
5	426	-	467	566	558	610	715	865
6	458	-	471	616	607	663	778	942
7	557	-	583	706	695	760	892	1,079
8	621	-	689	791	779	852	999	1,209
9	692	-	763	847	834	912	1,070	1,295
10	681	-	754	853	840	919	1,077	1,304
11	675	-	717	817	805	880	1,032	1,249
12	680	-	764	798	786	859	1,008	1,220
13	698	-	749	796	784	857	1,005	1,217
14	669	-	757	799	787	861	1,009	1,222
15	667	-	775	816	804	879	1,031	1,248
16	675	-	772	836	823	900	1,056	1,278
17	658	-	732	808	796	870	1,021	1,235
18	620	-	718	780	768	840	985	1,193
19	642	-	722	786	774	847	993	1,202
20	730	-	819	898	885	967	1,134	1,373
21	786	-	854	950	936	1,023	1,200	1,453
22	741	-	799	931	917	1,003	1,176	1,423
23	660	-	761	863	850	929	1,090	1,320
24	604	-	705	788	776	849	995	1,205

Source: PwC



Figure A6.6.15: 3rd Wed Jul Daily Profiles



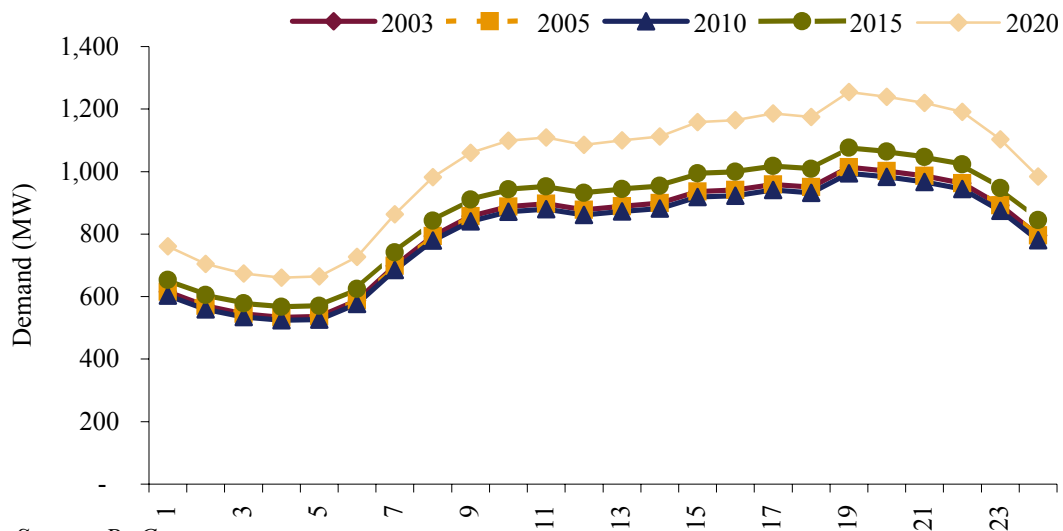
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	531	-	557	619	635	765	894	1,083
2	504	-	484	558	573	690	806	976
3	469	-	468	529	543	654	764	925
4	445	-	453	503	516	622	727	880
5	486	-	445	501	514	619	724	876
6	457	-	460	520	534	643	751	909
7	517	-	506	580	595	717	838	1,014
8	575	-	584	651	668	805	941	1,139
9	656	-	651	704	722	870	1,017	1,231
10	662	-	700	737	756	911	1,065	1,289
11	680	-	678	775	795	958	1,120	1,355
12	694	-	711	779	799	963	1,126	1,362
13	696	-	704	771	791	953	1,114	1,348
14	689	-	711	784	804	969	1,133	1,371
15	710	-	712	781	801	965	1,129	1,366
16	688	-	711	768	788	949	1,110	1,343
17	664	-	664	760	780	939	1,098	1,329
18	616	-	651	728	747	900	1,052	1,273
19	621	-	629	715	734	884	1,033	1,251
20	644	-	617	717	736	886	1,036	1,254
21	716	-	672	773	793	955	1,117	1,352
22	738	-	710	809	830	1,000	1,169	1,415
23	654	-	643	783	803	968	1,131	1,369
24	621	-	626	723	742	894	1,045	1,265

Source: PwC



Figure A6.6.16: 3rd Wed Oct Daily Profiles



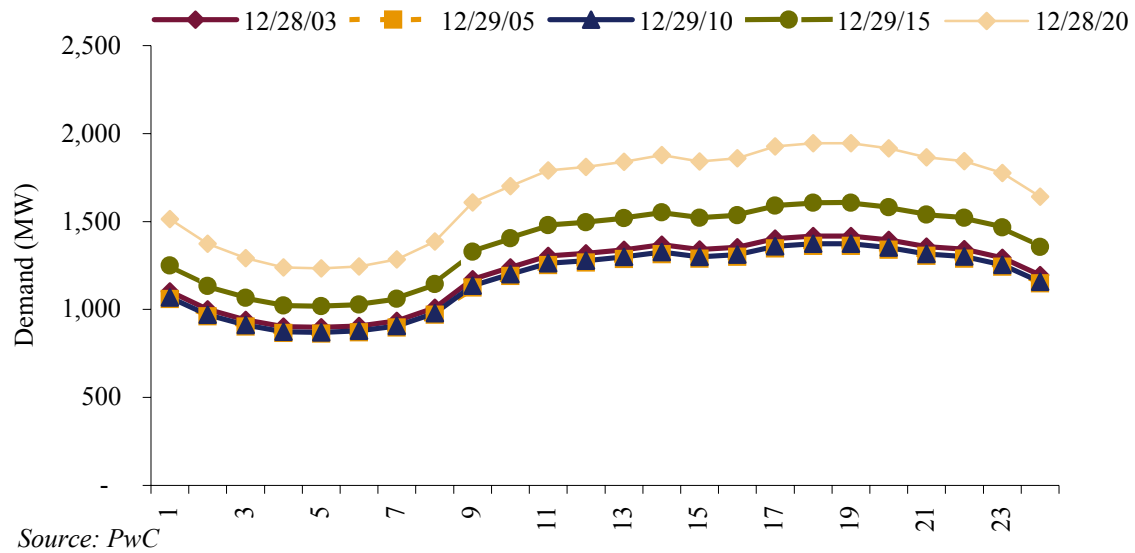
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	480	-	571	615	615	603	653	761
2	445	-	510	570	570	559	605	705
3	436	-	495	545	545	535	579	674
4	403	-	482	534	534	524	567	661
5	424	-	477	537	537	527	570	664
6	448	-	523	588	588	577	624	727
7	526	-	609	698	698	685	741	863
8	629	-	674	794	794	779	843	982
9	679	-	745	857	857	841	910	1,060
10	688	-	784	888	888	871	943	1,098
11	687	-	768	897	897	880	953	1,110
12	678	-	757	878	878	861	932	1,086
13	677	-	732	889	889	872	944	1,100
14	652	-	717	899	899	882	955	1,112
15	676	-	741	936	936	918	994	1,158
16	678	-	726	941	941	923	999	1,164
17	698	-	704	959	959	941	1,018	1,186
18	712	-	708	950	950	932	1,009	1,175
19	783	-	832	1,014	1,014	995	1,077	1,254
20	801	-	884	1,002	1,002	983	1,064	1,239
21	783	-	873	986	986	967	1,047	1,220
22	725	-	794	963	963	945	1,023	1,191
23	665	-	773	892	892	875	947	1,103
24	581	-	742	796	796	781	845	985

Source: PwC



Figure A6.6.17: Peak Hourly Demand Daily Profiles



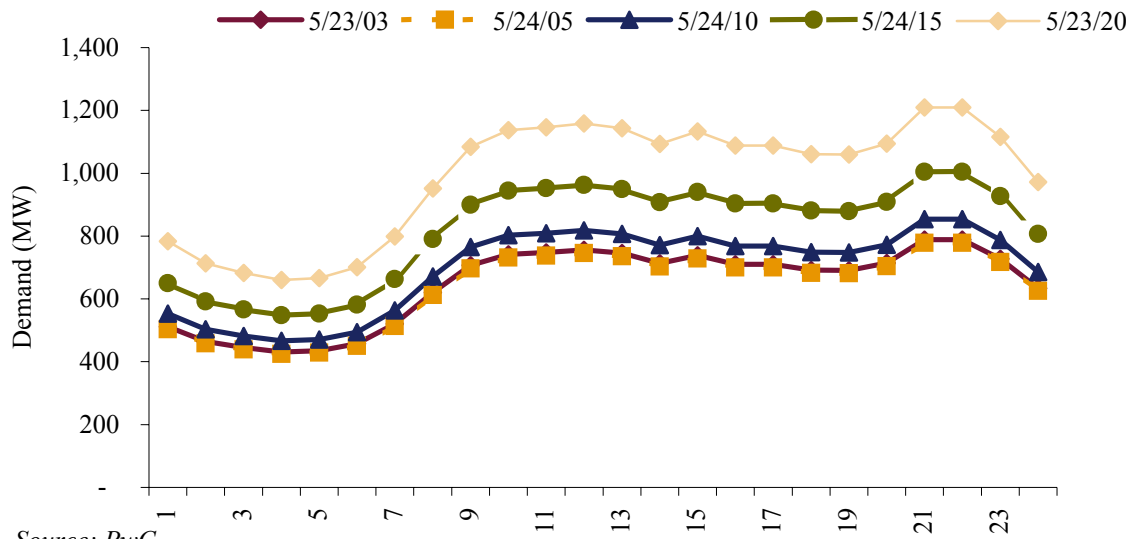
Source: PwC

MW	12/24/00	1/0/00	1/6/02	12/28/03	12/29/05	12/29/10	12/29/15	12/28/20
1	893	-	1,071	1,103	1,059	1,069	1,251	1,514
2	902	-	977	1,000	960	969	1,134	1,373
3	830	-	932	941	903	912	1,067	1,292
4	783	-	889	902	866	874	1,023	1,238
5	777	-	855	898	862	870	1,018	1,233
6	821	-	855	906	870	878	1,027	1,244
7	747	-	886	935	898	906	1,060	1,284
8	843	-	910	1,010	970	979	1,145	1,387
9	932	-	1,012	1,172	1,125	1,136	1,329	1,609
10	1,023	-	1,092	1,239	1,189	1,201	1,405	1,701
11	1,100	-	1,139	1,304	1,252	1,264	1,479	1,790
12	1,096	-	1,151	1,319	1,266	1,278	1,496	1,811
13	1,141	-	1,173	1,340	1,286	1,298	1,520	1,840
14	1,105	-	1,191	1,368	1,313	1,326	1,551	1,878
15	1,105	-	1,209	1,341	1,287	1,299	1,521	1,841
16	1,114	-	1,234	1,354	1,300	1,312	1,535	1,859
17	1,139	-	1,278	1,403	1,347	1,360	1,591	1,926
18	1,150	-	1,320	1,417	1,360	1,373	1,607	1,946
19	1,194	-	1,296	1,417	1,360	1,373	1,607	1,946
20	1,233	-	1,248	1,395	1,339	1,352	1,582	1,915
21	1,222	-	1,212	1,358	1,304	1,316	1,540	1,865
22	1,174	-	1,197	1,342	1,288	1,300	1,522	1,843
23	1,095	-	1,167	1,294	1,242	1,254	1,467	1,777
24	1,060	-	1,106	1,195	1,147	1,158	1,355	1,641

Source: PwC



Figure A6.6.18: Minimum Hourly Demand Daily Profiles



Source: PwC

MW	5/28/00	1/0/00	8/4/02	5/23/03	5/24/05	5/24/10	5/24/15	5/23/20
1	532	-	488	511	504	553	651	783
2	464	-	432	465	458	503	592	713
3	433	-	393	445	439	481	566	682
4	434	-	394	431	425	466	549	661
5	426	-	368	435	429	471	554	667
6	448	-	366	457	451	494	582	701
7	498	-	392	521	514	564	663	799
8	517	-	445	621	612	672	791	952
9	622	-	502	707	697	765	900	1,084
10	653	-	522	742	732	803	945	1,137
11	656	-	544	748	738	809	952	1,147
12	650	-	558	756	745	818	962	1,159
13	676	-	565	746	736	807	950	1,144
14	672	-	569	713	703	771	908	1,093
15	705	-	522	739	729	800	941	1,133
16	678	-	513	710	700	768	904	1,088
17	634	-	496	710	700	768	904	1,088
18	611	-	471	692	682	749	881	1,061
19	601	-	480	691	681	748	880	1,059
20	617	-	502	714	704	773	909	1,095
21	732	-	583	789	778	854	1,004	1,210
22	730	-	601	789	778	854	1,004	1,210
23	653	-	572	728	718	788	927	1,116
24	593	-	523	634	625	686	807	972

Source: PwC



Appendix 6.7
Montenegro Demand Forecasting



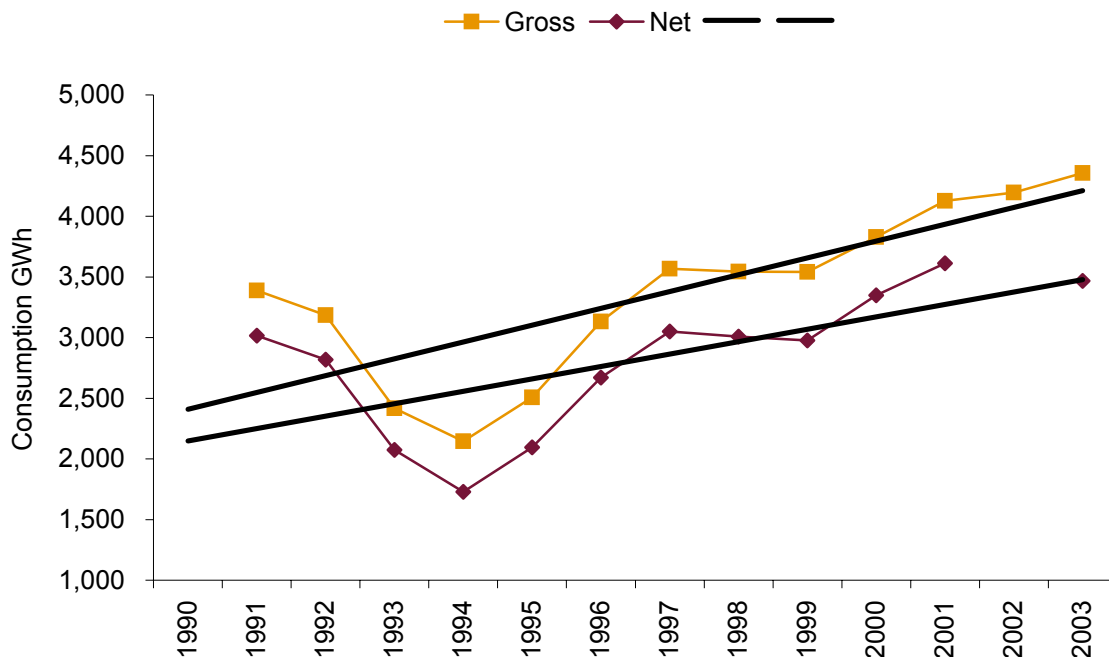
1. Historical Trend Analysis

The data for Montenegro was sourced from the national utility. A complete data set of historical electricity demand was made available for analysis.

Figure A6.7.1: Historical Electricity Consumption

	(1)	(1)	(1)	(1)	(1)	(2)	(2)
	Net Demand GWh	Transmis Losses GWh	Distrib Losses GWh	Total Losses GWh	Gross Demand GWh	All Losses Share of Gross	Population Net Energy Intensity ('000) kWh/cap
1990	-	-	-	-	-	-	-
1991	3,016	143	230	373	3,389	11.0%	-
1992	2,817	122	245	367	3,184	11.5%	-
1993	2,074	92	250	342	2,416	14.2%	-
1994	1,729	103	313	416	2,145	19.4%	-
1995	2,095	99	313	412	2,507	16.4%	-
1996	2,669	149	313	462	3,131	14.8%	-
1997	3,051	142	374	516	3,567	14.5%	-
1998	3,007	127	409	536	3,543	15.1%	647
1999	2,976	149	417	566	3,542	16.0%	651
2000	3,349	150	329	479	3,828	12.5%	654
2001	3,612	161	353	514	4,126	12.5%	658
2002	-	-	-	-	4,196	-	657
2003	3,467	157	475	632	4,355	20.4%	657

Sources: (1) EPCG (2) S&M Statistics office



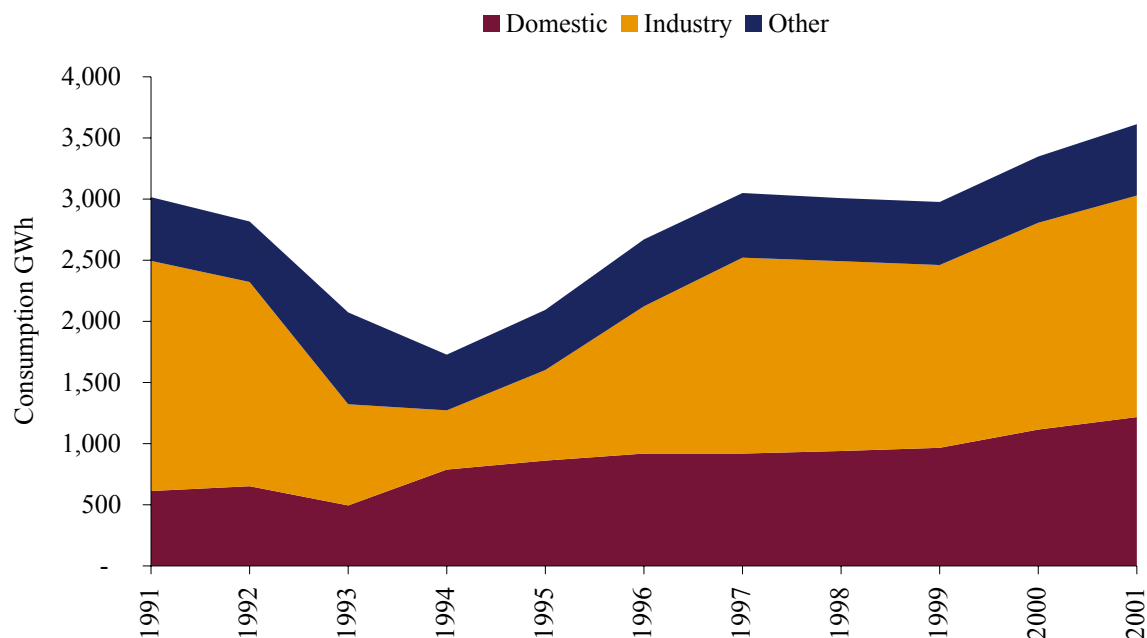
Sources: (1) EPCG



Figure A6.7.2: Historical Sectoral Electricity Demand

	Domestic Demand GWh	Industry Demand GWh	Other Demand GWh	Total Net Demand GWh	Domestic Demand Growth	Industry Demand Growth	Other Demand Growth	Total Net Demand Growth
1990	-	-	-	-	-	-	-	-
1991	612	1,884	520	3,016	-	-	-	-
1992	651	1,672	494	2,817	6.0%	-12.7%	-5.3%	-7.1%
1993	494	829	751	2,074	-31.8%	-101.7%	34.2%	-35.8%
1994	787	485	457	1,729	37.2%	-70.9%	-64.3%	-20.0%
1995	860	741	494	2,095	8.5%	34.5%	7.5%	17.5%
1996	919	1,204	546	2,669	6.4%	38.5%	9.5%	21.5%
1997	920	1,601	530	3,051	0.1%	24.8%	-3.0%	12.5%
1998	940	1,551	516	3,007	2.1%	-3.2%	-2.7%	-1.5%
1999	965	1,496	515	2,976	2.6%	-3.7%	-0.2%	-1.0%
2000	1,114	1,692	543	3,349	13.4%	11.6%	5.2%	11.1%
2001	1,216	1,814	582	3,612	8.4%	6.7%	6.7%	7.3%
2002	-	-	-	-	-	-	-	-
2003	-	-	-	3,467	-	-	-	-

Sources: (1) EPCG



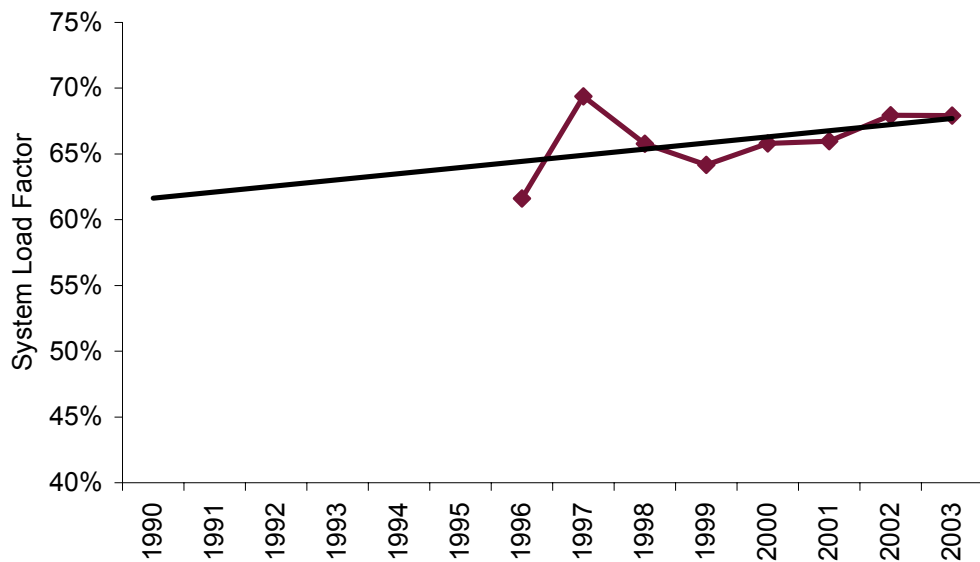
Sources: (1) EPCG



Figure A6.7.3: Historical System Load Factor

	Gross Demand GWh	Auxilliary Demand GWh	Pumping Demand GWh	Gross Consmpt GWh	Gross Consmpt Growth	System Peak MW	System Peak Growth	System Load Factor
1990	-	-	-	-	-	-	-	-
1991	3,389	-	-	3,389	0.0%	-	0.0%	-
1992	3,184	-	-	3,184	-6.0%	-	0.0%	-
1993	2,416	-	-	2,416	-24.1%	-	0.0%	-
1994	2,145	-	-	2,145	-11.2%	-	0.0%	-
1995	2,507	-	-	2,507	16.9%	-	0.0%	-
1996	3,131	-	-	3,131	24.9%	580	0.0%	61.6%
1997	3,567	-	-	3,567	13.9%	587	1.2%	69.4%
1998	3,543	-	-	3,543	-0.7%	615	4.8%	65.8%
1999	3,542	-	-	3,542	0.0%	630	2.4%	64.2%
2000	3,828	-	-	3,828	8.1%	664	5.4%	65.8%
2001	4,126	-	-	4,126	7.8%	714	7.5%	66.0%
2002	4,196	-	-	4,196	1.7%	705	-1.3%	67.9%
2003	4,355	-	-	4,355	3.8%	732	3.8%	67.9%

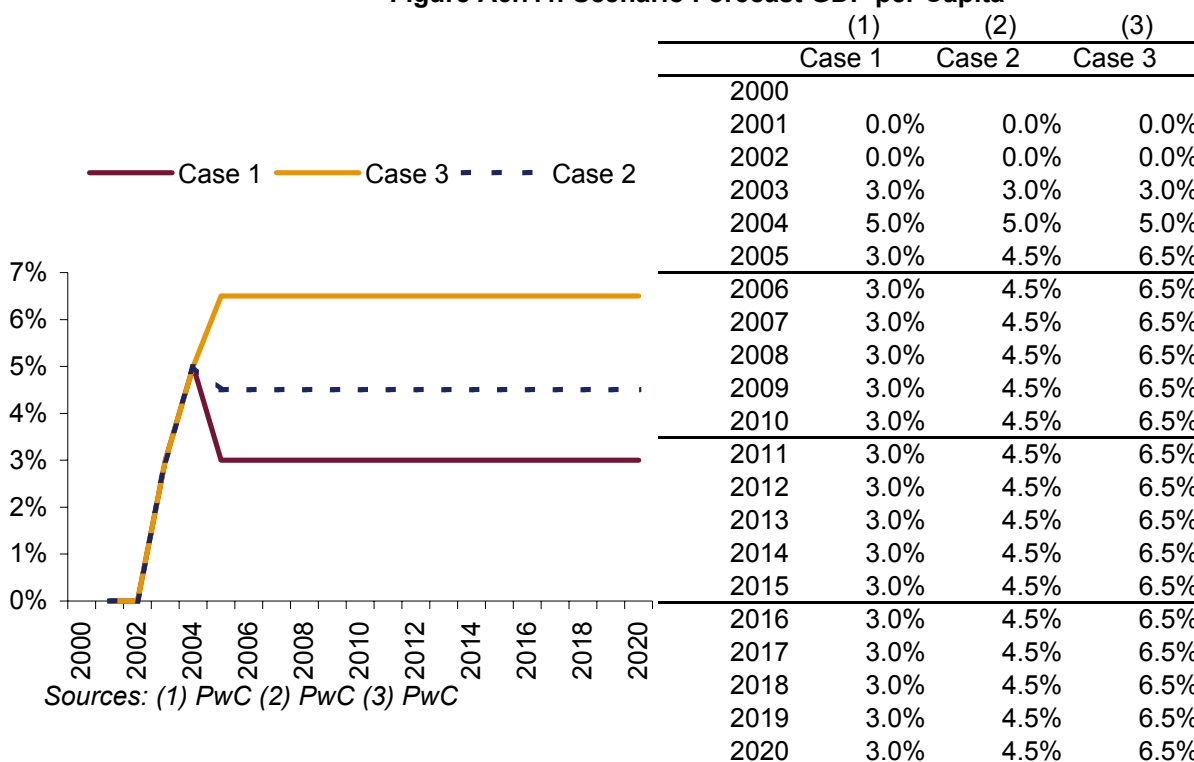
Sources: (1) EPCG





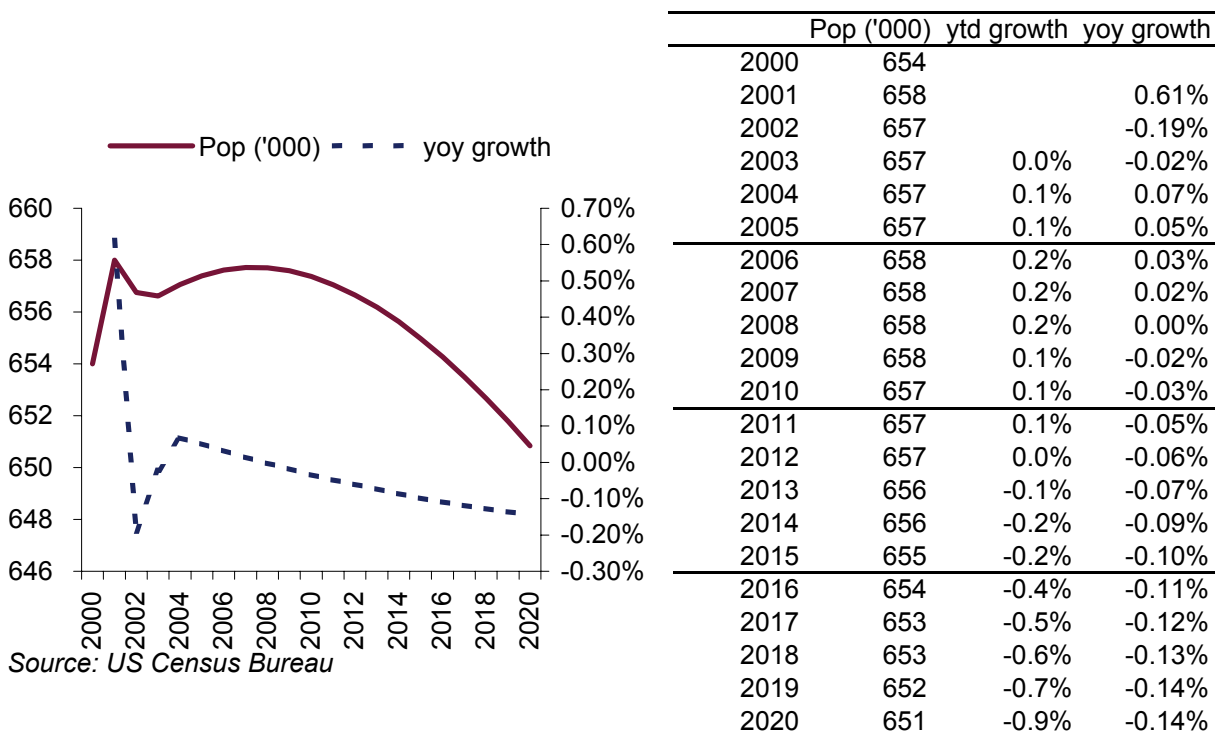
2. Forecast Assumptions

Figure A6.7.4: Scenario Forecast GDP per Capita



Sources: (1) PwC (2) PwC (3) PwC

Figure A6.7.5: Forecast Population



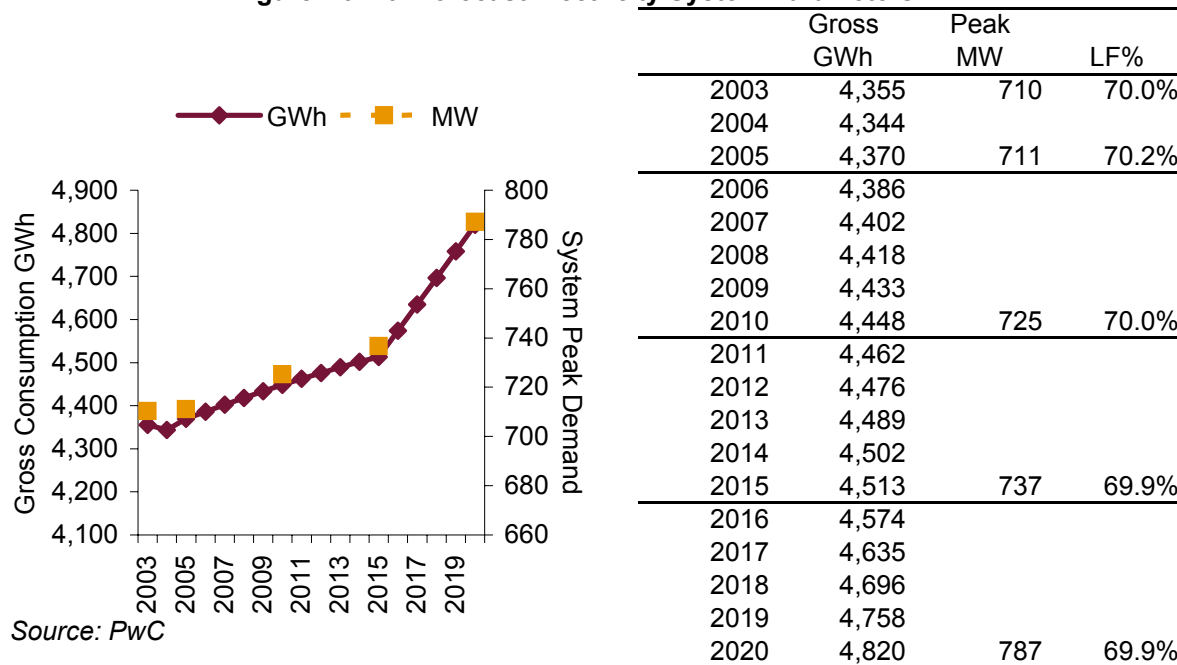
Source: US Census Bureau



3. Forecast Calculation

Using the econometric demand forecasting model described in Chapter 3 of this report, together with GDP growth forecast assumptions, the following data are forecast for energy demand.

Figure A6.7.6: Forecast Electricity System Parameters



Source: PwC

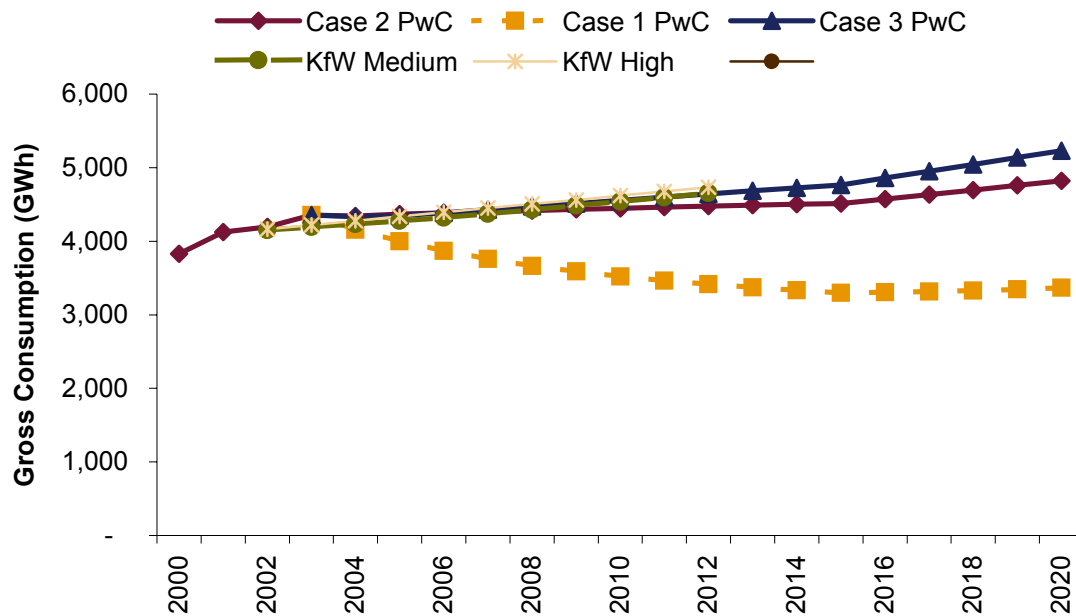
Figure A6.7.7: Case 2 Economic Model Forecast Calculation

Year	GDP per Capita (95 US\$)	Forecast Growth (%)	Electricity Intensity (kWh/GDP)	Electricity per capita (kWh pp)	Population ('000)	Net Consumpt (GWh)	D & T Losses (%)	Gross Consumpt (GWh)
2002	1,018	-16.5%	2.34	2,386	657	3,340	20.4%	4,196
2003	1,115	9.5%	2.14	2,386	657	3,467	20.4%	4,355
2004	1,149	3.0%	2.11	2,422	657	3,491	19.6%	4,344
2005	1,206	5.0%	2.08	2,505	657	3,547	18.8%	4,370
2006	1,260	4.5%	2.05	2,578	658	3,595	18.0%	4,386
2007	1,317	4.5%	2.01	2,652	658	3,644	17.2%	4,402
2008	1,376	4.5%	1.98	2,728	658	3,694	16.4%	4,418
2009	1,438	4.5%	1.95	2,806	658	3,745	15.5%	4,433
2010	1,503	4.5%	1.92	2,885	657	3,796	14.6%	4,448
2011	1,570	4.5%	1.89	2,965	657	3,848	13.8%	4,462
2012	1,641	4.5%	1.86	3,047	657	3,901	12.9%	4,476
2013	1,715	4.5%	1.83	3,130	656	3,954	11.9%	4,489
2014	1,792	4.5%	1.79	3,215	656	4,008	11.0%	4,502
2015	1,873	4.5%	1.76	3,300	655	4,062	10.0%	4,513
2016	1,957	4.5%	1.73	3,387	654	4,116	10.0%	4,574
2017	2,045	4.5%	1.70	3,475	653	4,171	10.0%	4,635
2018	2,137	4.5%	1.67	3,564	653	4,226	10.0%	4,696
2019	2,233	4.5%	1.64	3,655	652	4,282	10.0%	4,758
2020	2,334	4.5%	1.60	3,746	651	4,338	10.0%	4,820

Source: PwC



Figure A6.7.8: Comparison with other Forecasts



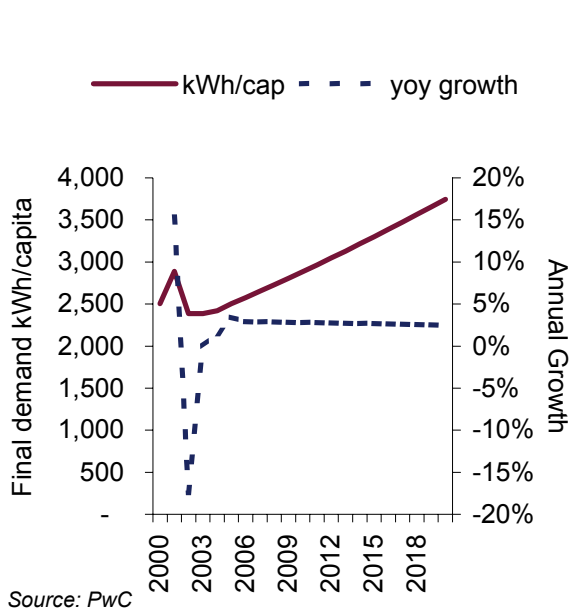
Source: PwC 2004, KfW 2002

GWh	Case 2	Case 1	Case 3	KfW	KfW High
2000	3,828				
2001	4,126				
2002	4,196			4,151	4,165
2003	4,355	4,355	4,355	4,193	4,222
2004	4,344	4,155	4,332	4,235	4,279
2005	4,370	3,997	4,345	4,277	4,336
2006	4,386	3,866	4,387	4,320	4,395
2007	4,402	3,757	4,429	4,374	4,450
2008	4,418	3,665	4,471	4,428	4,506
2009	4,433	3,587	4,514	4,484	4,562
2010	4,448	3,521	4,557	4,540	4,619
2011	4,462	3,463	4,599	4,596	4,677
2012	4,476	3,413	4,642	4,654	4,735
2013	4,489	3,370	4,684		
2014	4,502	3,332	4,725		
2015	4,513	3,299	4,766		
2016	4,574	3,306	4,858		
2017	4,635	3,316	4,951		
2018	4,696	3,330	5,044		
2019	4,758	3,347	5,138		
2020	4,820	3,367	5,231		

Source: PwC 2004, KfW 2002



Figure A6.7.9: Forecast Final Demand per Capita

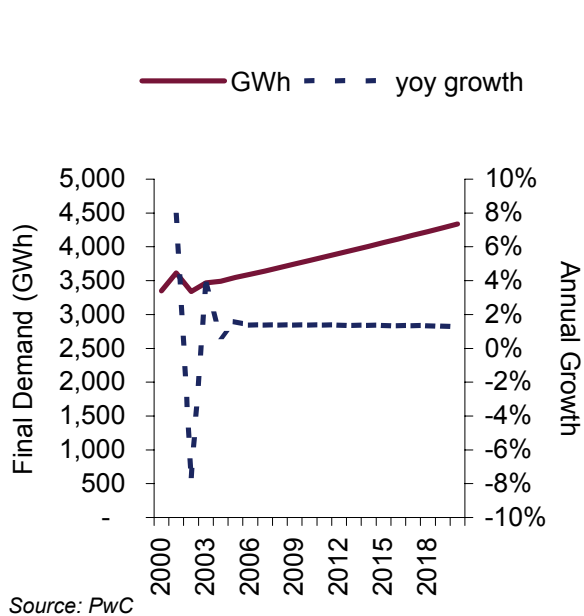


	kWh/cap	ytd growth	yoy growth
2000	2,505		
2001	2,889		15.4%
2002	2,386		-17.4%
2003	2,386	0.0%	0.0%
2004	2,422	1.5%	1.5%
2005	2,505	5.0%	3.4%
2006	2,578	8.0%	2.9%
2007	2,652	11.2%	2.9%
2008	2,728	14.3%	2.9%
2009	2,806	17.6%	2.8%
2010	2,885	20.9%	2.8%
2011	2,965	24.3%	2.8%
2012	3,047	27.7%	2.8%
2013	3,130	31.2%	2.7%
2014	3,215	34.7%	2.7%
2015	3,300	38.3%	2.7%
2016	3,387	42.0%	2.6%
2017	3,475	45.6%	2.6%
2018	3,564	49.4%	2.6%
2019	3,655	53.2%	2.5%
2020	3,746	57.0%	2.5%

Source: PwC

Source: PwC

Figure A6.7.10: Forecast Final Net Demand



	GWh	ytd growth	yoy growth
2000	3,349		
2001	3,612		7.9%
2002	3,340		-7.5%
2003	3,467	0.0%	3.8%
2004	3,491	0.7%	0.7%
2005	3,547	2.3%	1.6%
2006	3,595	3.7%	1.4%
2007	3,644	5.1%	1.4%
2008	3,694	6.6%	1.4%
2009	3,745	8.0%	1.4%
2010	3,796	9.5%	1.4%
2011	3,848	11.0%	1.4%
2012	3,901	12.5%	1.4%
2013	3,954	14.1%	1.4%
2014	4,008	15.6%	1.4%
2015	4,062	17.2%	1.3%
2016	4,116	18.7%	1.3%
2017	4,171	20.3%	1.3%
2018	4,226	21.9%	1.3%
2019	4,282	23.5%	1.3%
2020	4,338	25.1%	1.3%

Source: PwC

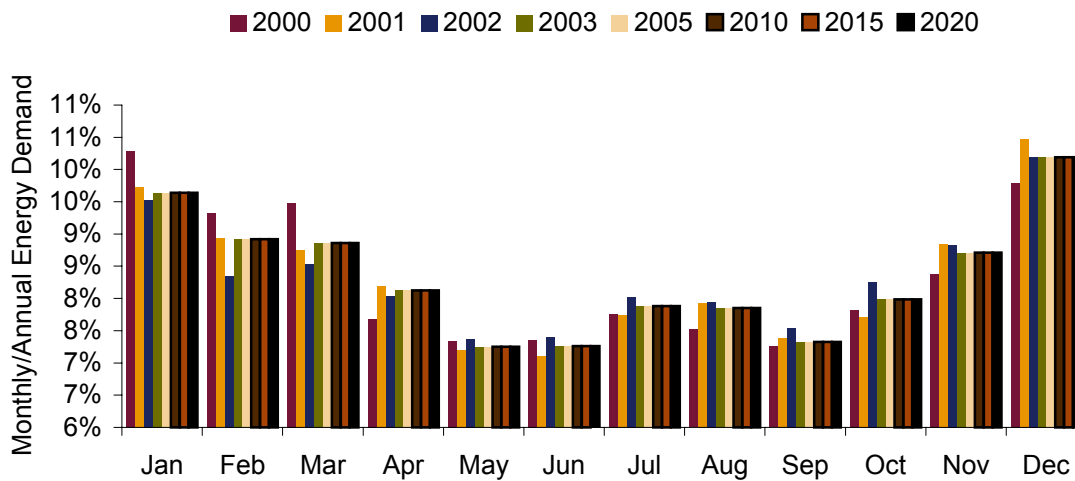
Source: PwC



4. Forecast variation in monthly electricity demand

Following the analysis in Chapter 3 of the main report, we have forecast a change in the share of annual energy demand and peak demand. We detail here the forecast annual change of these parameters.

Figure A6.7.11: Forecast Monthly Energy Demand



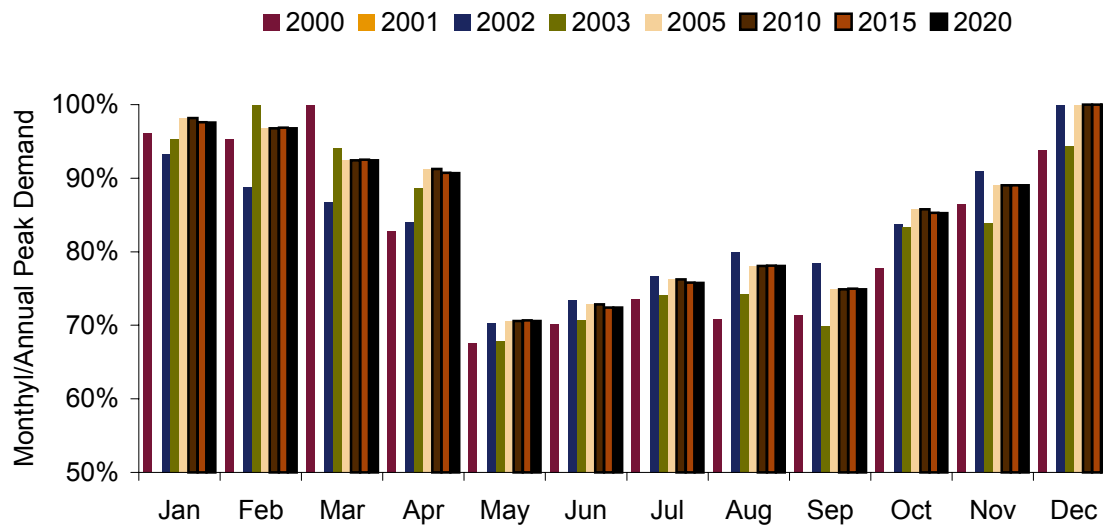
Source: PwC

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	10.3%	9.3%	9.5%	7.7%	7.3%	7.4%	7.8%	7.5%	7.3%	7.8%	8.4%	9.8%
2001	9.7%	8.9%	8.8%	8.2%	7.2%	7.1%	7.7%	7.9%	7.4%	7.7%	8.8%	10.5%
2002	9.5%	8.3%	8.5%	8.0%	7.4%	7.4%	8.0%	8.0%	7.5%	8.3%	8.8%	10.2%
2003	9.6%	8.9%	8.9%	8.1%	7.2%	7.3%	7.9%	7.9%	7.3%	8.0%	8.7%	10.2%
2004	9.6%	8.9%	8.9%	8.1%	7.2%	7.3%	7.9%	7.9%	7.3%	8.0%	8.7%	10.2%
2005	9.6%	8.9%	8.9%	8.1%	7.2%	7.3%	7.9%	7.9%	7.3%	8.0%	8.7%	10.2%
2006	9.6%	8.9%	8.9%	8.1%	7.2%	7.3%	7.9%	7.9%	7.3%	8.0%	8.7%	10.2%
2007	9.6%	8.9%	8.9%	8.1%	7.2%	7.3%	7.9%	7.9%	7.3%	8.0%	8.7%	10.2%
2008	9.6%	8.9%	8.9%	8.1%	7.2%	7.3%	7.9%	7.9%	7.3%	8.0%	8.7%	10.2%
2009	9.6%	8.9%	8.9%	8.1%	7.2%	7.3%	7.9%	7.9%	7.3%	8.0%	8.7%	10.2%
2010	9.6%	8.9%	8.9%	8.1%	7.2%	7.3%	7.9%	7.9%	7.3%	8.0%	8.7%	10.2%
2011	9.6%	8.9%	8.9%	8.1%	7.2%	7.3%	7.9%	7.9%	7.3%	8.0%	8.7%	10.2%
2012	9.6%	8.9%	8.9%	8.1%	7.2%	7.3%	7.9%	7.9%	7.3%	8.0%	8.7%	10.2%
2013	9.6%	8.9%	8.9%	8.1%	7.2%	7.3%	7.9%	7.9%	7.3%	8.0%	8.7%	10.2%
2014	9.6%	8.9%	8.9%	8.1%	7.2%	7.3%	7.9%	7.9%	7.3%	8.0%	8.7%	10.2%
2015	9.6%	8.9%	8.9%	8.1%	7.2%	7.3%	7.9%	7.9%	7.3%	8.0%	8.7%	10.2%
2016	9.6%	8.9%	8.9%	8.1%	7.2%	7.3%	7.9%	7.9%	7.3%	8.0%	8.7%	10.2%
2017	9.6%	8.9%	8.9%	8.1%	7.2%	7.3%	7.9%	7.9%	7.3%	8.0%	8.7%	10.2%
2018	9.6%	8.9%	8.9%	8.1%	7.2%	7.3%	7.9%	7.9%	7.3%	8.0%	8.7%	10.2%
2019	9.6%	8.9%	8.9%	8.1%	7.2%	7.3%	7.9%	7.9%	7.3%	8.0%	8.7%	10.2%
2020	9.6%	8.9%	8.9%	8.1%	7.2%	7.3%	7.9%	7.9%	7.3%	8.0%	8.7%	10.2%

Source: PwC



Figure A6.7.12: Forecast Monthly Peak Demand



Source: PwC

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	96.1%	95.3%	100.0%	82.8%	67.6%	70.2%	73.6%	70.8%	71.4%	77.7%	86.4%	93.8%
2001	-	-	-	-	-	-	-	-	-	-	-	-
2002	93.3%	88.8%	86.8%	84.0%	70.4%	73.5%	76.7%	80.0%	78.4%	83.8%	90.9%	100.0%
2003	95.4%	100.0%	94.1%	88.7%	67.9%	70.8%	74.0%	74.2%	69.9%	83.3%	83.9%	94.4%
2005	98.2%	96.8%	92.4%	91.3%	70.6%	72.9%	76.2%	78.0%	74.9%	85.8%	89.0%	100.0%
2010	98.2%	96.8%	92.4%	91.3%	70.6%	72.9%	76.2%	78.0%	74.9%	85.8%	89.0%	100.0%
2015	97.6%	96.9%	92.5%	90.7%	70.7%	72.4%	75.8%	78.1%	75.0%	85.3%	89.0%	100.0%
2020	97.5%	96.8%	92.4%	90.7%	70.6%	72.4%	75.7%	78.0%	74.9%	85.2%	89.0%	100.0%

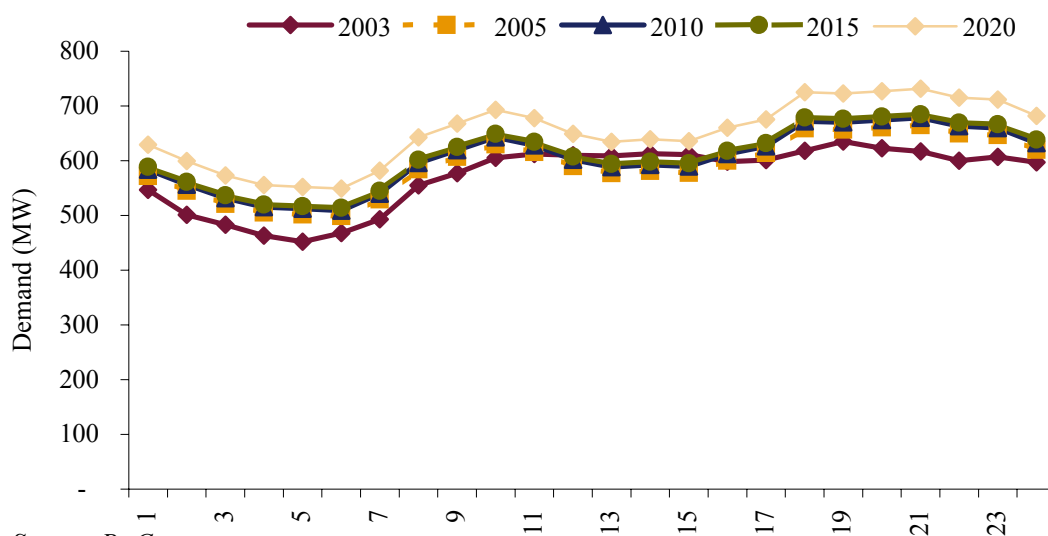
Source: PwC



5. Historical and forecast daily profiles

Using a combination of the 2003 load profiles for the 3rd week of January, April, July and October and the previous analysis of changing seasonal demand, we compare forecast and historical profiles.

Figure A6.7.13: 3rd Wed January Daily Profiles



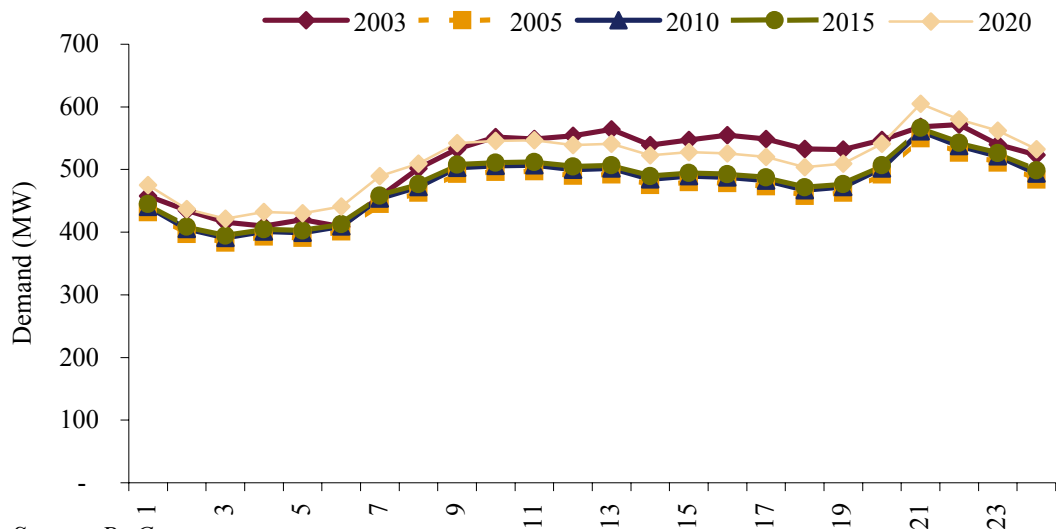
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	552	-	518	547	572	583	589	629
2	528	-	498	501	545	556	561	600
3	498	-	458	483	521	531	537	573
4	494	-	450	463	505	515	520	556
5	481	-	446	452	502	512	517	552
6	479	-	463	468	499	509	514	549
7	531	-	497	493	529	540	545	582
8	576	-	514	555	584	596	602	642
9	590	-	511	577	607	619	625	668
10	606	-	520	605	630	643	649	693
11	612	-	527	612	616	628	634	678
12	602	-	547	610	590	602	608	649
13	622	-	537	609	577	589	594	635
14	638	-	519	613	581	593	598	639
15	614	-	532	611	578	590	595	636
16	612	-	528	598	600	612	618	660
17	634	-	524	601	614	626	632	675
18	631	-	544	618	659	672	679	725
19	615	-	564	635	657	670	677	723
20	626	-	625	623	661	674	681	727
21	612	-	625	617	665	678	685	732
22	624	-	612	600	650	663	670	715
23	612	-	597	607	647	660	666	712
24	590	-	573	597	620	632	639	682

Source: PwC



Figure A6.7.14: 3rd Wed April Daily Profiles



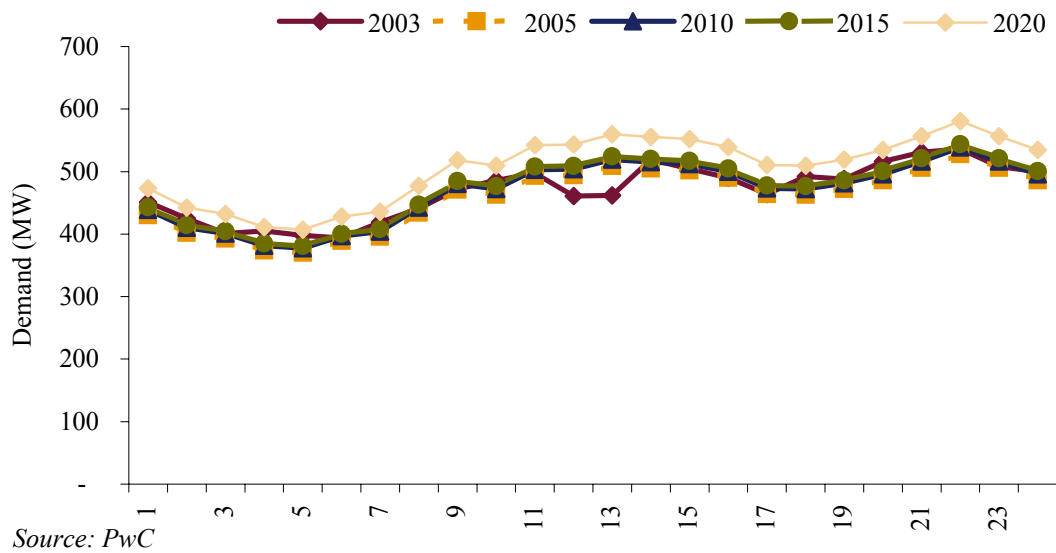
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	371	-	408	458	432	441	445	475
2	322	-	391	435	397	405	409	437
3	330	-	386	416	383	391	394	421
4	330	-	375	410	393	401	405	432
5	314	-	371	420	391	399	403	430
6	324	-	393	409	401	409	413	441
7	360	-	403	457	445	454	458	490
8	387	-	449	502	463	472	477	509
9	397	-	479	533	493	503	508	542
10	431	-	473	552	496	506	511	546
11	408	-	473	549	497	507	512	547
12	421	-	473	554	490	500	505	539
13	421	-	482	564	492	502	507	541
14	412	-	463	539	475	485	489	523
15	412	-	460	547	480	490	494	528
16	409	-	445	555	478	488	492	526
17	391	-	440	549	473	482	487	520
18	377	-	437	533	458	467	472	504
19	373	-	426	532	463	472	477	509
20	398	-	467	547	492	502	507	541
21	445	-	500	568	550	561	567	605
22	438	-	496	572	527	538	543	580
23	418	-	477	540	511	521	526	562
24	396	-	493	523	484	494	499	532

Source: PwC



Figure A6.7.15: 3rd Wed Jul Daily Profiles

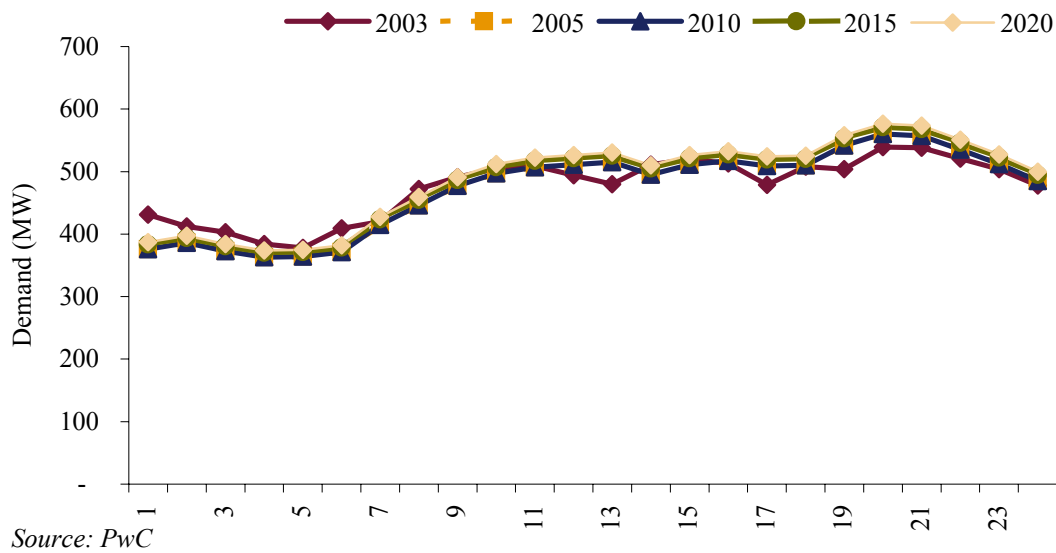


MW	2000	2001	2002	2003	2005	2010	2015	2020
1	413	-	431	451	430	439	443	473
2	379	-	407	425	402	410	414	442
3	345	-	395	401	393	401	405	432
4	345	-	384	405	374	381	385	411
5	346	-	376	398	370	377	381	407
6	331	-	379	394	389	397	401	428
7	368	-	397	419	396	404	408	436
8	400	-	436	441	434	443	447	477
9	428	-	466	472	471	480	485	518
10	439	-	471	486	463	472	477	509
11	438	-	490	497	493	503	508	542
12	454	-	493	461	494	504	509	543
13	462	-	507	462	509	519	524	560
14	452	-	498	519	505	515	520	556
15	402	-	497	505	502	512	517	552
16	332	-	491	490	490	500	505	539
17	347	-	472	464	464	473	478	510
18	349	-	477	492	463	472	477	509
19	425	-	487	488	472	481	486	519
20	427	-	492	516	486	496	501	535
21	454	-	534	531	506	516	521	557
22	472	-	538	536	528	539	544	581
23	453	-	534	508	506	516	521	557
24	420	-	483	500	486	496	501	535

Source: PwC



Figure A6.7.16: 3rd Wed Oct Daily Profiles

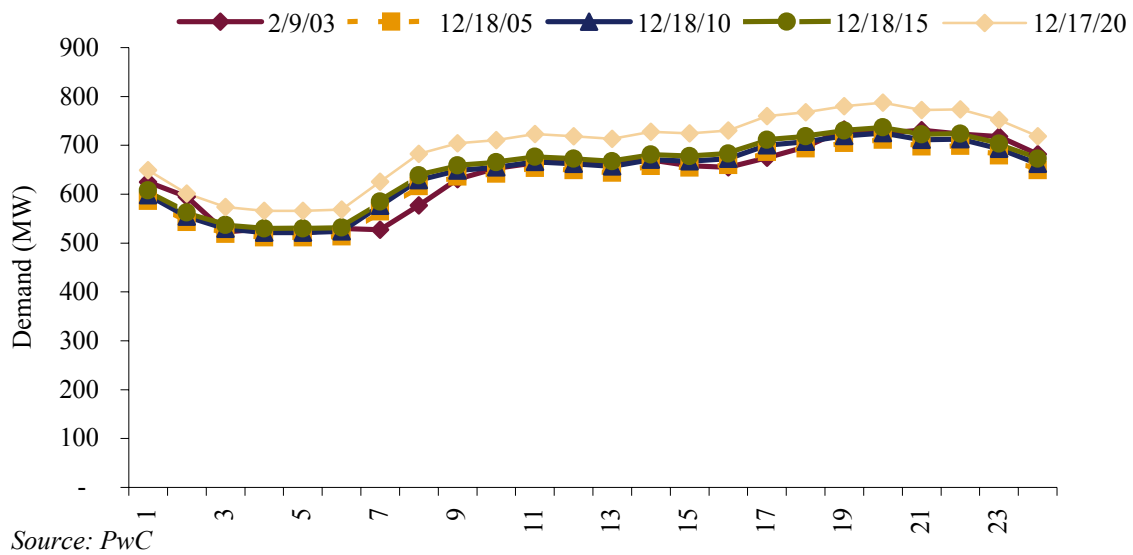


MW	2000	2001	2002	2003	2005	2010	2015	2020
1	390	-	433	431	376	376	384	387
2	363	-	402	412	386	386	394	398
3	357	-	384	403	373	373	380	384
4	340	-	374	384	363	363	370	374
5	340	-	375	378	364	364	371	375
6	360	-	385	409	371	371	378	382
7	400	-	408	420	415	415	423	427
8	439	-	472	472	446	446	455	459
9	469	-	490	491	477	477	487	491
10	475	-	481	505	497	497	507	512
11	467	-	487	509	507	507	517	522
12	448	-	487	494	511	511	521	526
13	436	-	485	480	515	515	525	530
14	428	-	475	511	495	495	505	510
15	435	-	470	520	511	511	521	526
16	422	-	472	513	517	517	527	533
17	428	-	460	479	509	509	519	524
18	432	-	477	508	510	510	520	525
19	497	-	522	504	542	542	553	558
20	504	-	529	539	560	560	571	577
21	516	-	526	538	557	557	568	574
22	484	-	510	521	535	535	546	551
23	465	-	481	504	512	512	522	527
24	445	-	470	478	485	485	495	500

Source: PwC



Figure A6.7.17: Peak Hourly Demand Daily Profiles



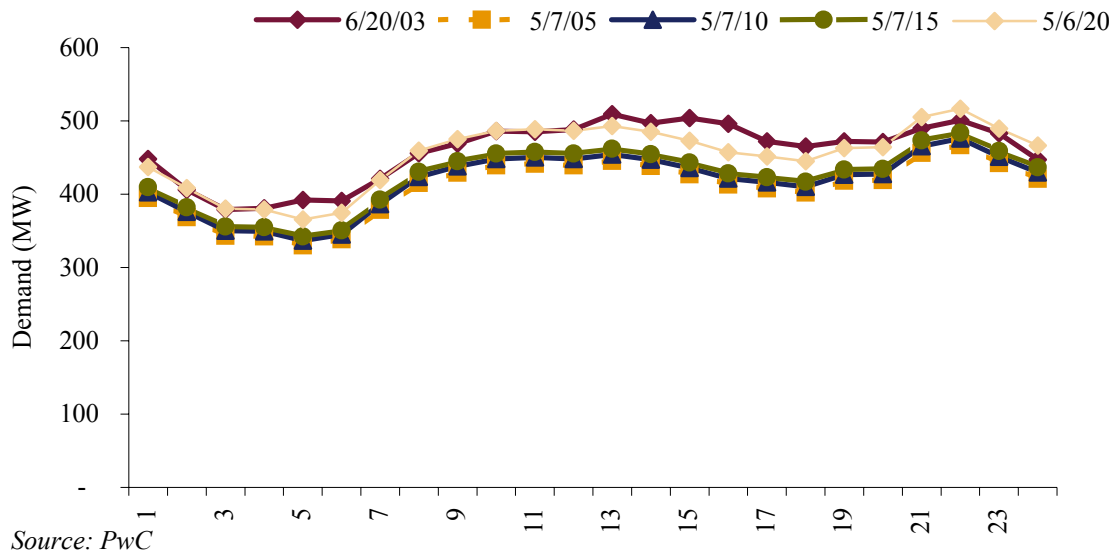
Source: PwC

MW	3/1/00	12/13/01	12/21/02	2/9/03	12/18/05	12/18/10	12/18/15	12/17/20
1	484	592	585	625	587	598	608	649
2	445	528	529	595	543	554	563	601
3	453	512	512	523	519	529	537	574
4	432	508	500	529	511	522	530	566
5	422	511	489	520	511	522	530	566
6	427	507	502	530	513	524	532	568
7	496	566	524	527	565	576	585	625
8	534	588	570	577	616	629	639	682
9	554	630	607	631	636	649	659	704
10	552	647	639	653	642	655	665	711
11	558	661	648	664	653	666	677	723
12	549	665	639	672	649	662	673	719
13	567	655	633	663	644	657	667	713
14	571	674	645	670	658	671	681	728
15	556	679	657	658	654	668	678	724
16	566	672	655	655	660	673	683	730
17	570	701	676	675	686	700	711	760
18	582	709	705	697	694	707	719	768
19	588	693	696	732	705	719	730	780
20	586	706	687	725	711	725	737	787
21	597	714	676	731	698	712	723	772
22	587	705	657	723	699	713	724	773
23	664	673	658	718	679	693	704	752
24	530	647	632	682	649	662	673	719

Source: PwC



Figure A6.7.18: Minimum Hourly Demand Daily Profiles



MW	7/11/00	5/6/01	6/25/02	6/20/03	5/7/05	5/7/10	5/7/15	5/6/20
1	390	354	446	448	395	403	410	437
2	356	322	403	406	369	376	382	408
3	340	309	386	379	343	350	356	380
4	326	302	378	381	342	349	355	379
5	11	292	363	392	330	337	342	366
6	44	313	373	391	338	345	351	375
7	329	341	385	421	379	386	393	419
8	377	358	433	456	415	423	430	460
9	385	380	450	469	429	438	445	475
10	420	411	473	486	439	448	456	486
11	434	420	477	485	441	450	458	489
12	433	430	483	488	439	448	456	486
13	435	428	480	509	445	454	462	493
14	439	413	472	497	438	447	455	485
15	462	413	465	504	427	436	443	473
16	433	411	450	496	413	421	428	457
17	419	407	447	472	408	416	423	452
18	417	400	446	465	402	410	417	445
19	437	413	449	472	418	427	434	463
20	439	441	449	471	419	428	435	464
21	445	484	477	490	457	466	473	505
22	454	434	500	501	467	476	484	517
23	440	408	472	483	442	451	459	490
24	415	400	457	447	421	430	437	466

Source: PwC



Appendix 6.8
Romania Demand Forecasting



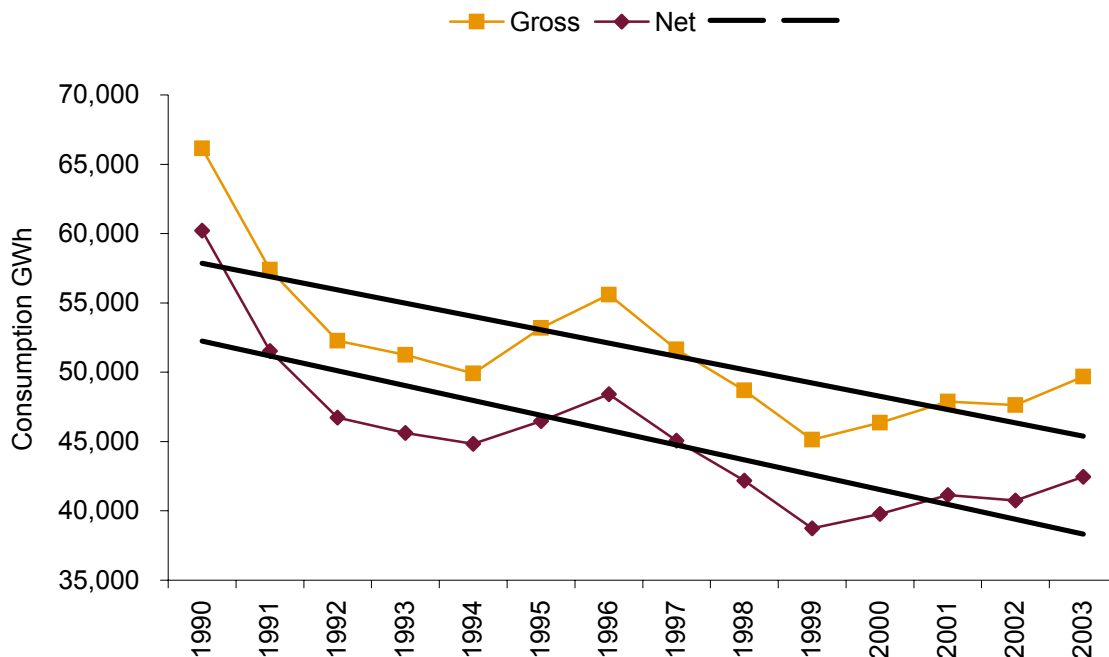
1. Historical Trend Analysis

The data for Romania was sourced from the national utility. A complete data set of historical electricity demand was made available for analysis.

Figure A6.8.1: Historical Electricity Consumption

	(1)	(1)	(1)	(1)	(1)	(2)	(2)
	Net Demand GWh	Transmis Losses GWh	Distrib Losses GWh	Total Losses GWh	Gross Demand GWh	All Losses Share of Gross	Population Net Energy Intensity ('000) kWh/cap
1990	60,216	-	5,929.0	5,929.0	66,145	9.0%	23,207 2,595
1991	51,531	-	5,864	5,864	57,395	10.2%	23,185 2,223
1992	46,736	-	5,525	5,525	52,261	10.6%	22,789 2,051
1993	45,614	-	5,628	5,628	51,242	11.0%	22,755 2,005
1994	44,841	-	5,065	5,065	49,906	10.1%	22,731 1,973
1995	46,463	-	6,738	6,738	53,201	12.7%	22,681 2,049
1996	48,407	-	7,183	7,183	55,590	12.9%	22,608 2,141
1997	45,069	-	6,581	6,581	51,650	12.7%	22,546 1,999
1998	42,177	-	6,515	6,515	48,692	13.4%	22,503 1,874
1999	38,747	-	6,387	6,387	45,134	14.2%	22,458 1,725
2000	39,769	-	6,590	6,590	46,359	14.2%	22,435 1,773
2001	41,136	-	6,750	6,750	47,886	14.1%	22,408 1,836
2002	40,749	-	6,886	6,886	47,635	14.5%	21,681 1,879
2003	42,464	-	7,230	7,230	49,694	14.5%	21,681 1,959

Source: National Institute of Statistics (Romania)



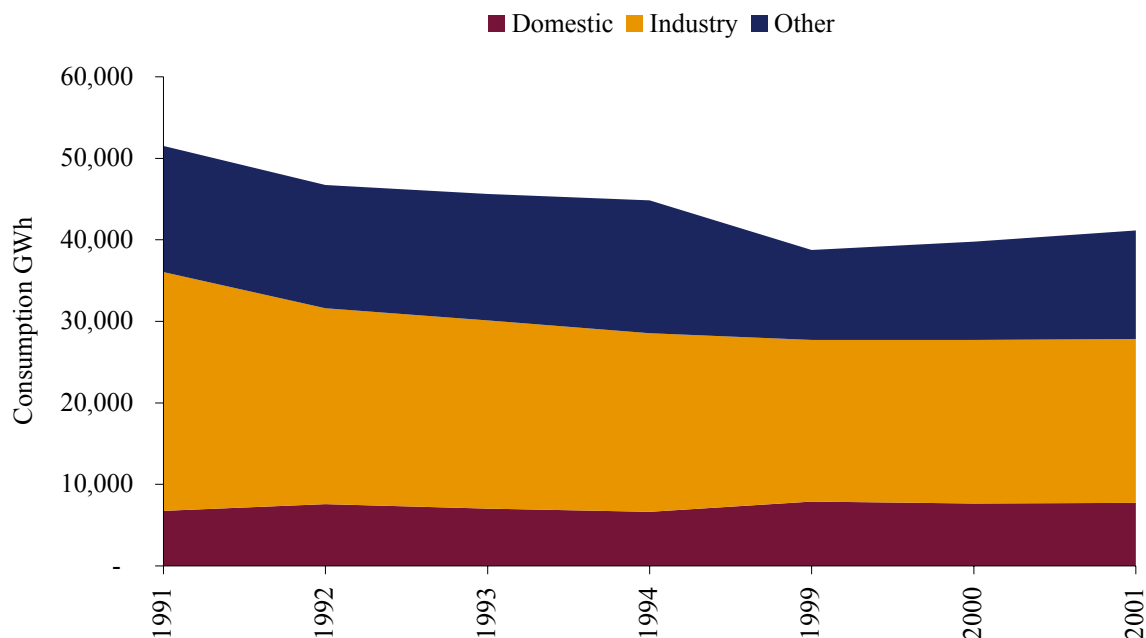
Source: National Institute of Statistics (Romania)



Figure A6.8.2: Historical Sectoral Electricity Demand

	Domestic Demand GWh	Industry Demand GWh	Other Demand GWh	Total Net Demand GWh	Domestic Demand Growth	Industry Demand Growth	Other Demand Growth	Total Net Demand Growth
1990	5,354	36,893	17,969	60,216				
1991	6,747	29,303	15,481	51,531	20.6%	-25.9%	-16.1%	-16.9%
1992	7,596	24,010	15,130	46,736	11.2%	-22.0%	-2.3%	-10.3%
1993	7,023	23,084	15,507	45,614	-8.2%	-4.0%	2.4%	-2.5%
1994	6,646	21,902	16,293	44,841	-5.7%	-5.4%	4.8%	-1.7%
1995	7,116	22,971	16,376	46,463	6.6%	4.7%	0.5%	3.5%
1996	8,122	23,725	16,560	48,407	12.4%	3.2%	1.1%	4.0%
1997	7,946	25,206	11,917	45,069	-2.2%	5.9%	-39.0%	-7.4%
1998	7,917	22,710	11,550	42,177	-0.4%	-11.0%	-3.2%	-6.9%
1999	7,883	19,831	11,033	38,747	-0.4%	-14.5%	-4.7%	-8.9%
2000	7,652	20,067	12,050	39,769	-3.0%	1.2%	8.4%	2.6%
2001	7,724	20,117	13,295	41,136	0.9%	0.2%	9.4%	3.3%
2002	7,771	22,706	10,272	40,749	0.6%	11.4%	-29.4%	-0.9%
2003	7,971	23,662	10,831	42,464	2.5%	4.0%	5.2%	4.0%

Source: National Institute of Statistics (Romania)



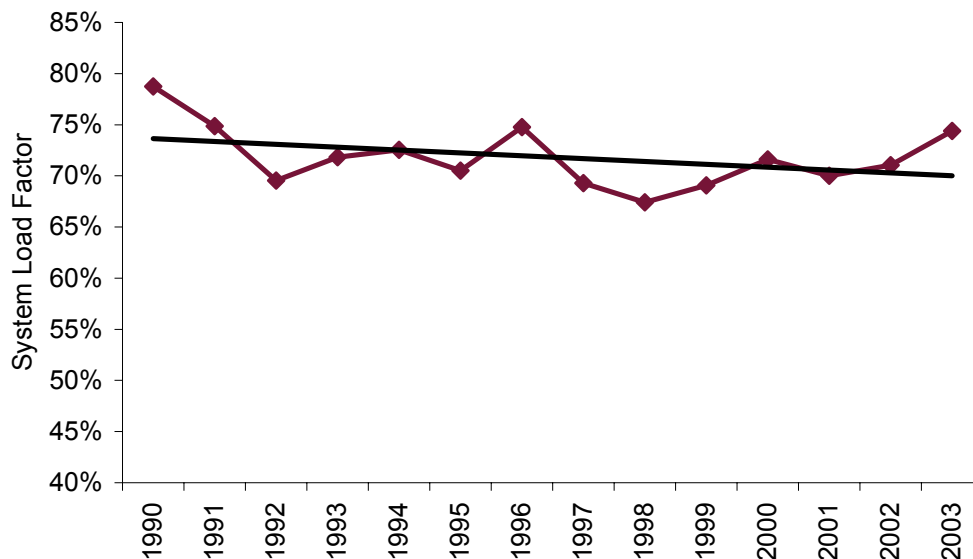
Source: National Institute of Statistics (Romania)



Figure A6.8.3: Historical System Load Factor

	Gross Demand GWh	Auxilliary Demand GWh	Pumping Demand GWh	Gross Consmpt GWh	Gross Consmpt Growth	System Peak MW	System Peak Growth	System Load Factor
1990	66,145	7,640	-	73,785		10,699		78.7%
1991	57,395	6,564	-	63,959	-13.3%	9,753	-8.8%	74.9%
1992	52,261	6,137	-	58,398	-8.7%	9,585	-1.7%	69.6%
1993	51,242	6,107	-	57,349	-1.8%	9,115	-4.9%	71.8%
1994	49,906	5,955	-	55,861	-2.6%	8,790	-3.6%	72.5%
1995	53,201	6,365	-	59,566	6.6%	9,645	9.7%	70.5%
1996	55,590	6,567	-	62,157	4.3%	9,491	-1.6%	74.8%
1997	51,650	5,720	-	57,370	-7.7%	9,450	-0.4%	69.3%
1998	48,692	5,207	-	53,899	-6.1%	9,128	-3.4%	67.4%
1999	45,134	4,752	-	49,886	-7.4%	8,245	-9.7%	69.1%
2000	46,359	4,880	-	51,239	2.7%	8,169	-0.9%	71.6%
2001	47,886	4,670	-	52,556	2.6%	8,569	4.9%	70.0%
2002	47,635	4,700	-	52,335	-0.4%	8,410	-1.9%	71.0%
2003	49,694	4,760	-	54,454	4.0%	8,356	-0.6%	74.4%

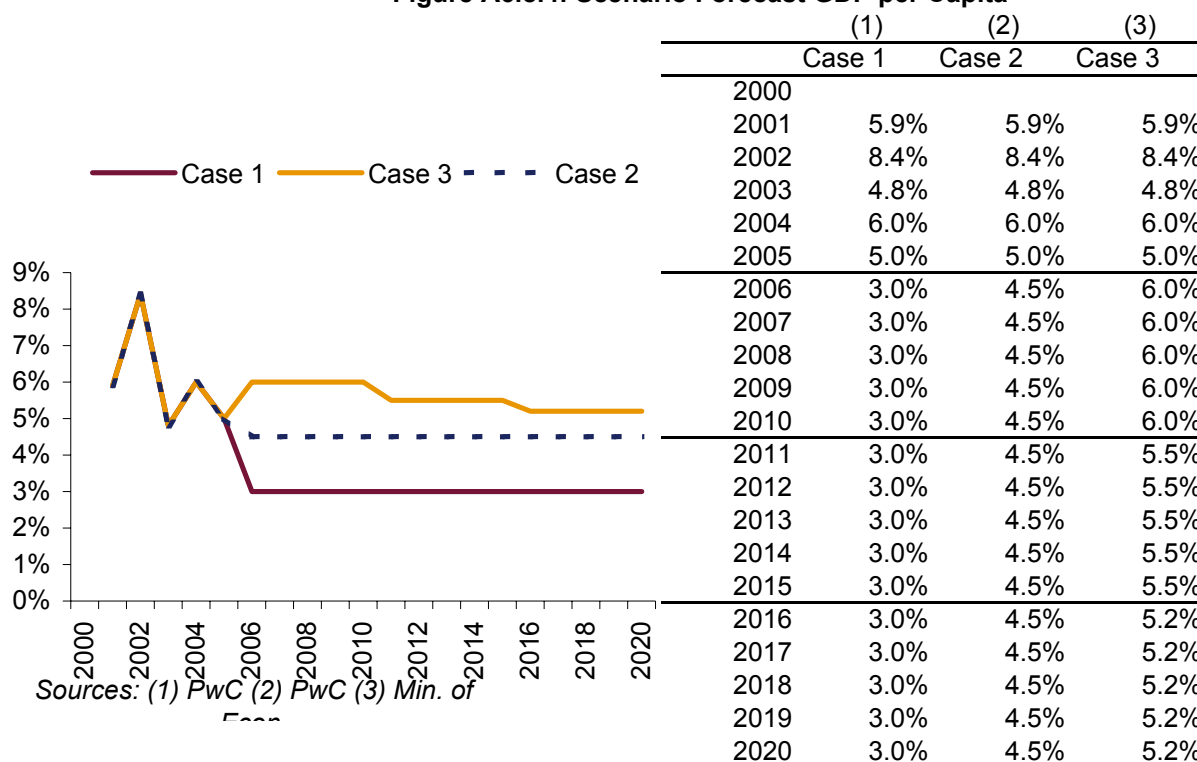
Source: National Institute of Statistics (Romania)





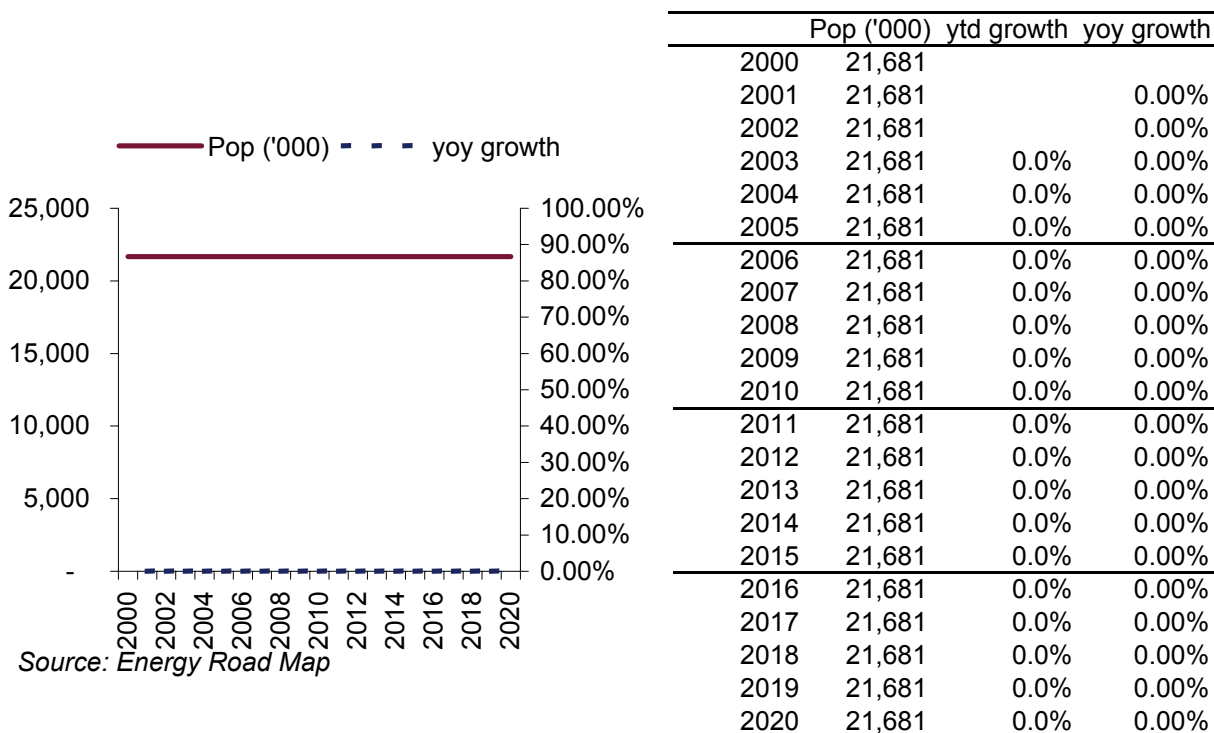
2. Forecast Assumptions

Figure A6.8.4: Scenario Forecast GDP per Capita



Sources: (1) PwC (2) PwC (3) Min. of Econ.

Figure A6.8.5: Forecast Population



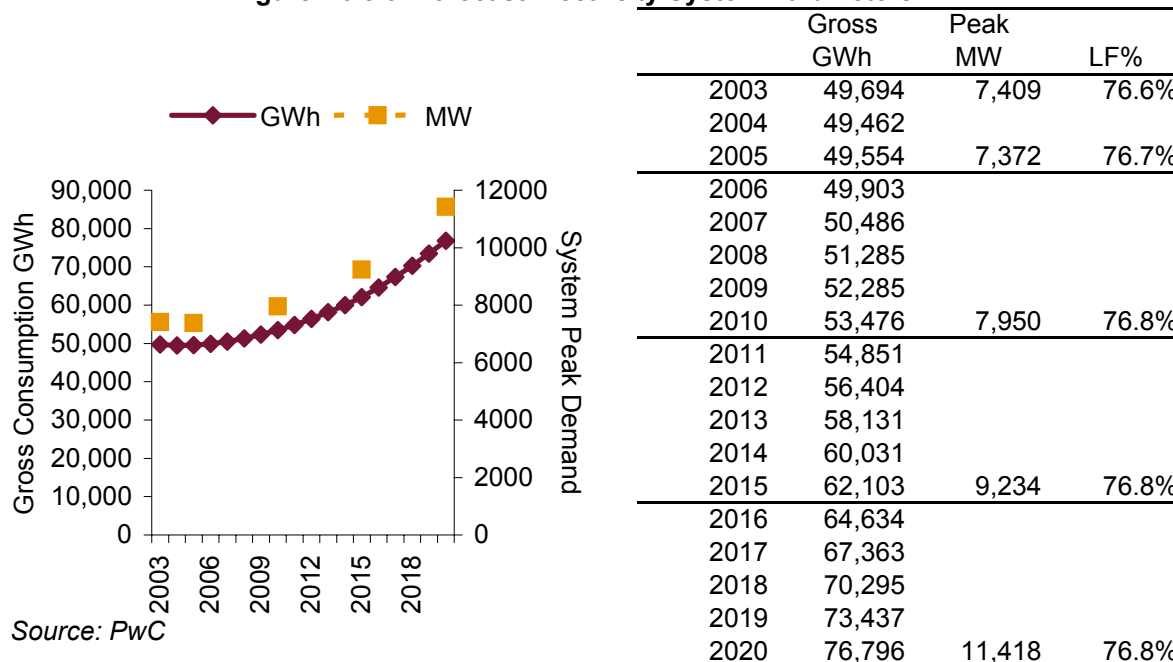
Source: Energy Road Map [29]



3. Forecast Calculation

Using the econometric demand forecasting model described in Chapter 3 of this report, together with GDP growth forecast assumptions, the following data are forecast for energy demand.

Figure A6.8.6: Forecast Electricity System Parameters



Source: PwC

Source: PwC

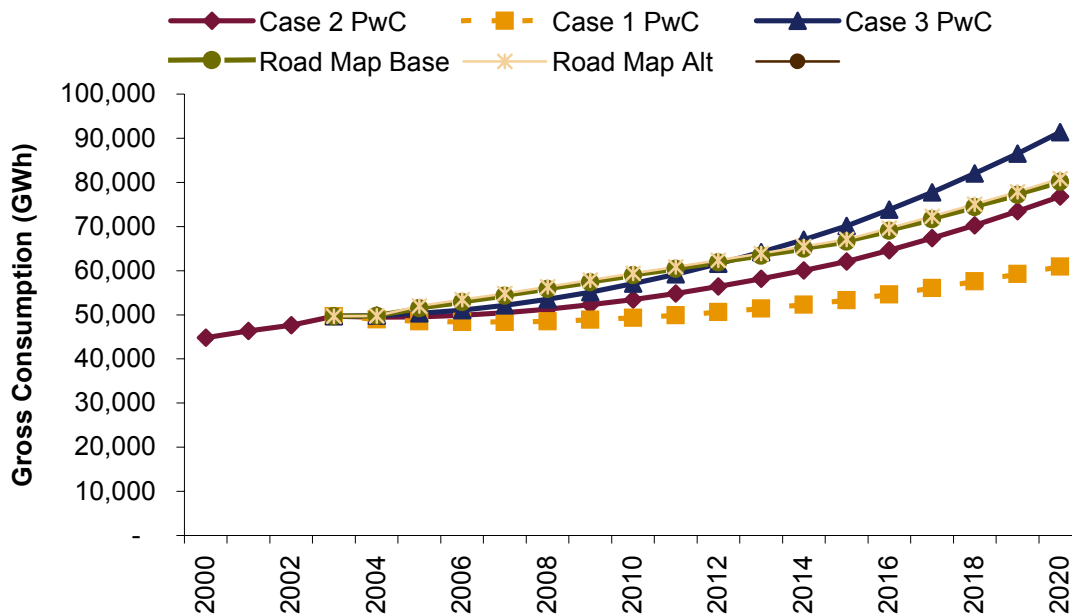
Figure A6.8.7: Case 2 Economic Model Forecast Calculation

Year	GDP per Capita (95 US\$)	Forecast Growth (%)	Electricity Intensity (kWh/GDP)	Electricity per capita (kWh pp)	Population ('000)	Net Consumpt (GWh)	D & T Losses (%)	Gross Consumpt (GWh)
2002	1,517	8.4%	1.24	1,879	21,681	40,749	14.5%	47,635
2003	1,590	4.8%	1.23	1,959	21,681	42,464	14.5%	49,694
2004	1,685	6.0%	1.16	1,958	21,681	42,444	14.2%	49,462
2005	1,770	5.0%	1.11	1,970	21,681	42,703	13.8%	49,554
2006	1,849	4.5%	1.08	1,992	21,681	43,187	13.5%	49,903
2007	1,932	4.5%	1.05	2,024	21,681	43,878	13.1%	50,486
2008	2,019	4.5%	1.02	2,065	21,681	44,763	12.7%	51,285
2009	2,110	4.5%	1.00	2,114	21,681	45,833	12.3%	52,285
2010	2,205	4.5%	0.98	2,171	21,681	47,080	12.0%	53,476
2011	2,305	4.5%	0.97	2,237	21,681	48,500	11.6%	54,851
2012	2,408	4.5%	0.96	2,310	21,681	50,091	11.2%	56,404
2013	2,517	4.5%	0.95	2,392	21,681	51,851	10.8%	58,131
2014	2,630	4.5%	0.94	2,481	21,681	53,782	10.4%	60,031
2015	2,748	4.5%	0.94	2,578	21,681	55,884	10.0%	62,103
2016	2,872	4.5%	0.93	2,683	21,681	58,161	10.0%	64,634
2017	3,001	4.5%	0.93	2,796	21,681	60,617	10.0%	67,363
2018	3,136	4.5%	0.93	2,918	21,681	63,255	10.0%	70,295
2019	3,277	4.5%	0.93	3,048	21,681	66,083	10.0%	73,437
2020	3,425	4.5%	0.93	3,187	21,681	69,105	10.0%	76,796

Source: PwC



Figure A6.8.8: Comparison with other Forecasts



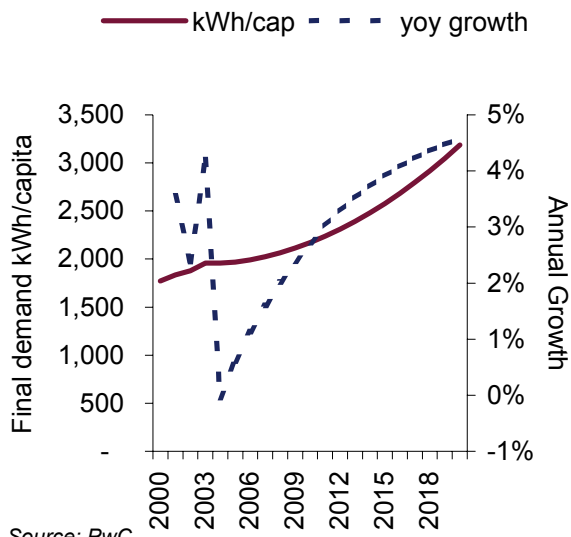
Source: PwC 2004, Energy Road Map 2003 [29]

GWh	Case 2	Case 1	Case 3	Road Map	Road Map
2000	44,801				
2001	46,332				
2002	47,635				
2003	49,694	49,694	49,694	49,694	49,694
2004	49,462	48,915	49,855	49,710	49,710
2005	49,554	48,524	50,299	51,470	52,020
2006	49,903	48,346	51,068	52,882	53,419
2007	50,486	48,355	52,139	54,333	54,855
2008	51,285	48,529	53,497	55,824	56,330
2009	52,285	48,853	55,132	57,356	57,845
2010	53,476	49,311	57,040	58,930	59,400
2011	54,851	49,894	59,182	60,381	60,866
2012	56,404	50,590	61,559	61,867	62,368
2013	58,131	51,394	64,176	63,390	63,907
2014	60,031	52,298	67,037	64,951	65,484
2015	62,103	53,296	70,149	66,550	67,100
2016	64,634	54,628	73,819	69,063	69,650
2017	67,363	56,059	77,765	71,671	72,296
2018	70,295	57,588	82,000	74,377	75,044
2019	73,437	59,215	86,538	77,185	77,895
2020	76,796	60,938	91,397	80,100	80,855

Source: PwC 2004, Energy Road Map 2003 [29]



Figure A6.8.9: Forecast Final Demand per Capita

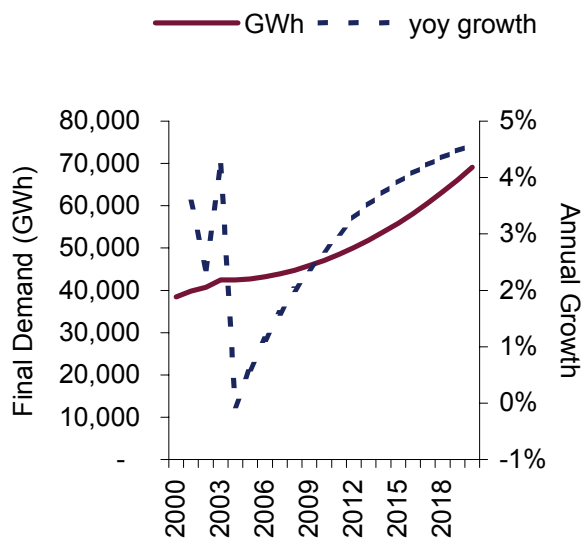


Source: PwC

	kWh/cap	ytd growth	yoy growth
2000	1,773		
2001	1,836		3.6%
2002	1,879		2.4%
2003	1,959	0.0%	4.2%
2004	1,958	0.0%	0.0%
2005	1,970	0.6%	0.6%
2006	1,992	1.7%	1.1%
2007	2,024	3.3%	1.6%
2008	2,065	5.4%	2.0%
2009	2,114	7.9%	2.4%
2010	2,171	10.9%	2.7%
2011	2,237	14.2%	3.0%
2012	2,310	18.0%	3.3%
2013	2,392	22.1%	3.5%
2014	2,481	26.7%	3.7%
2015	2,578	31.6%	3.9%
2016	2,683	37.0%	4.1%
2017	2,796	42.7%	4.2%
2018	2,918	49.0%	4.4%
2019	3,048	55.6%	4.5%
2020	3,187	62.7%	4.6%

Source: PwC

Figure A6.8.10: Forecast Final Net Demand



Source: PwC

	GWh	ytd growth	yoy growth
2000	38,432		
2001	39,801		3.6%
2002	40,749		2.4%
2003	42,464	0.0%	4.2%
2004	42,444	0.0%	0.0%
2005	42,703	0.6%	0.6%
2006	43,187	1.7%	1.1%
2007	43,878	3.3%	1.6%
2008	44,763	5.4%	2.0%
2009	45,833	7.9%	2.4%
2010	47,080	10.9%	2.7%
2011	48,500	14.2%	3.0%
2012	50,091	18.0%	3.3%
2013	51,851	22.1%	3.5%
2014	53,782	26.7%	3.7%
2015	55,884	31.6%	3.9%
2016	58,161	37.0%	4.1%
2017	60,617	42.7%	4.2%
2018	63,255	49.0%	4.4%
2019	66,083	55.6%	4.5%
2020	69,105	62.7%	4.6%

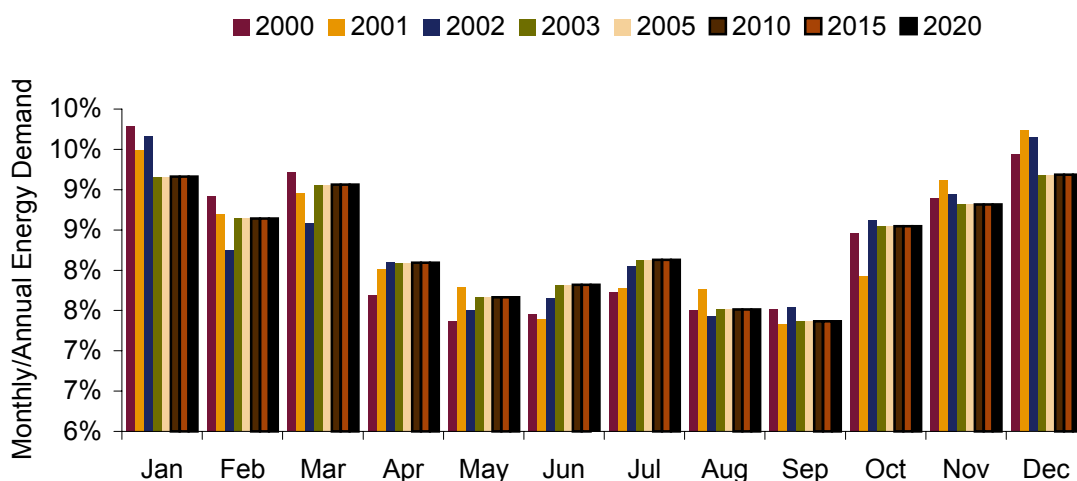
Source: PwC



4. Forecast variation in monthly electricity demand

Following the analysis in Chapter 3 of the main report, we have forecast a change in the share of annual energy demand and peak demand. We detail here the forecast annual change of these parameters.

Figure A6.8.11: Forecast Monthly Energy Demand



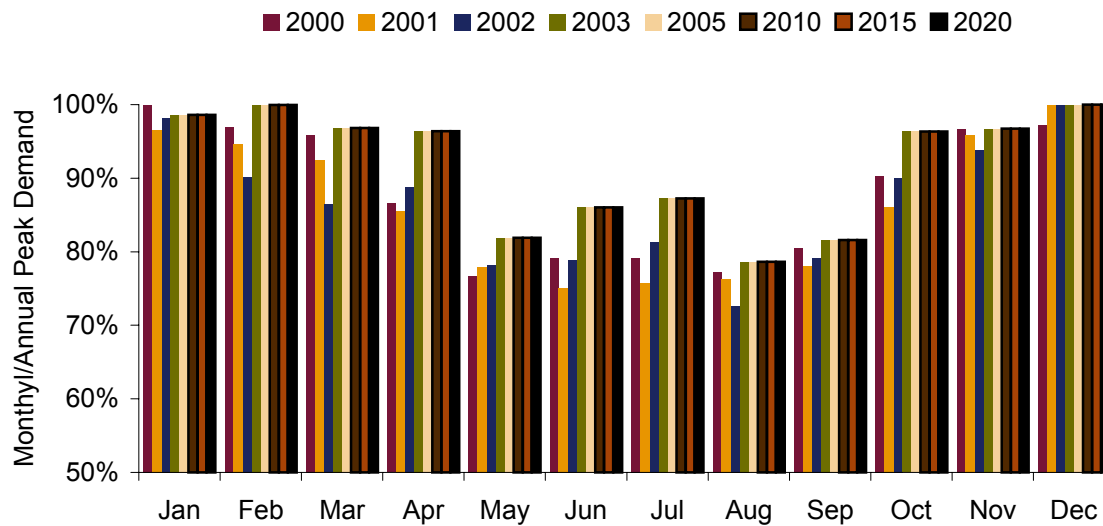
Source: PwC

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	9.8%	8.9%	9.2%	7.7%	7.4%	7.5%	7.7%	7.5%	7.5%	8.5%	8.9%	9.4%
2001	9.5%	8.7%	9.0%	8.0%	7.8%	7.4%	7.8%	7.8%	7.3%	7.9%	9.1%	9.7%
2002	9.7%	8.3%	8.6%	8.1%	7.5%	7.7%	8.1%	7.4%	7.5%	8.6%	8.9%	9.6%
2003	9.2%	8.6%	9.1%	8.1%	7.7%	7.8%	8.1%	7.5%	7.4%	8.5%	8.8%	9.2%
2004	9.2%	8.6%	9.1%	8.1%	7.7%	7.8%	8.1%	7.5%	7.4%	8.5%	8.8%	9.2%
2005	9.2%	8.6%	9.1%	8.1%	7.7%	7.8%	8.1%	7.5%	7.4%	8.5%	8.8%	9.2%
2006	9.2%	8.6%	9.1%	8.1%	7.7%	7.8%	8.1%	7.5%	7.4%	8.5%	8.8%	9.2%
2007	9.2%	8.6%	9.1%	8.1%	7.7%	7.8%	8.1%	7.5%	7.4%	8.5%	8.8%	9.2%
2008	9.2%	8.6%	9.1%	8.1%	7.7%	7.8%	8.1%	7.5%	7.4%	8.5%	8.8%	9.2%
2009	9.2%	8.6%	9.1%	8.1%	7.7%	7.8%	8.1%	7.5%	7.4%	8.5%	8.8%	9.2%
2010	9.2%	8.6%	9.1%	8.1%	7.7%	7.8%	8.1%	7.5%	7.4%	8.5%	8.8%	9.2%
2011	9.2%	8.6%	9.1%	8.1%	7.7%	7.8%	8.1%	7.5%	7.4%	8.5%	8.8%	9.2%
2012	9.2%	8.6%	9.1%	8.1%	7.7%	7.8%	8.1%	7.5%	7.4%	8.5%	8.8%	9.2%
2013	9.2%	8.6%	9.1%	8.1%	7.7%	7.8%	8.1%	7.5%	7.4%	8.5%	8.8%	9.2%
2014	9.2%	8.6%	9.1%	8.1%	7.7%	7.8%	8.1%	7.5%	7.4%	8.5%	8.8%	9.2%
2015	9.2%	8.6%	9.1%	8.1%	7.7%	7.8%	8.1%	7.5%	7.4%	8.5%	8.8%	9.2%
2016	9.2%	8.6%	9.1%	8.1%	7.7%	7.8%	8.1%	7.5%	7.4%	8.5%	8.8%	9.2%
2017	9.2%	8.6%	9.1%	8.1%	7.7%	7.8%	8.1%	7.5%	7.4%	8.5%	8.8%	9.2%
2018	9.2%	8.6%	9.1%	8.1%	7.7%	7.8%	8.1%	7.5%	7.4%	8.5%	8.8%	9.2%
2019	9.2%	8.6%	9.1%	8.1%	7.7%	7.8%	8.1%	7.5%	7.4%	8.5%	8.8%	9.2%
2020	9.2%	8.6%	9.1%	8.1%	7.7%	7.8%	8.1%	7.5%	7.4%	8.5%	8.8%	9.2%

Source: PwC



Figure A6.8.12: Forecast Monthly Peak Demand



Source: PwC

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	100.0%	97.0%	95.9%	86.5%	76.7%	79.2%	79.1%	77.2%	80.5%	90.3%	96.6%	97.2%
2001	96.6%	94.7%	92.5%	85.6%	78.0%	75.1%	75.7%	76.3%	78.1%	86.1%	95.8%	100.0%
2002	98.2%	90.2%	86.5%	88.9%	78.2%	78.9%	81.3%	72.6%	79.1%	90.1%	93.9%	100.0%
2003	98.6%	100.0%	96.8%	96.4%	81.9%	86.0%	87.2%	78.6%	81.6%	96.3%	96.7%	100.0%
2005	98.6%	100.0%	96.8%	96.4%	81.9%	86.0%	87.2%	78.6%	81.6%	96.3%	96.7%	100.0%
2010	98.6%	100.0%	96.8%	96.4%	81.9%	86.0%	87.2%	78.6%	81.6%	96.3%	96.7%	100.0%
2015	98.6%	100.0%	96.8%	96.4%	81.9%	86.0%	87.2%	78.6%	81.6%	96.3%	96.7%	100.0%
2020	98.6%	100.0%	96.8%	96.4%	81.9%	86.0%	87.2%	78.6%	81.6%	96.3%	96.7%	100.0%

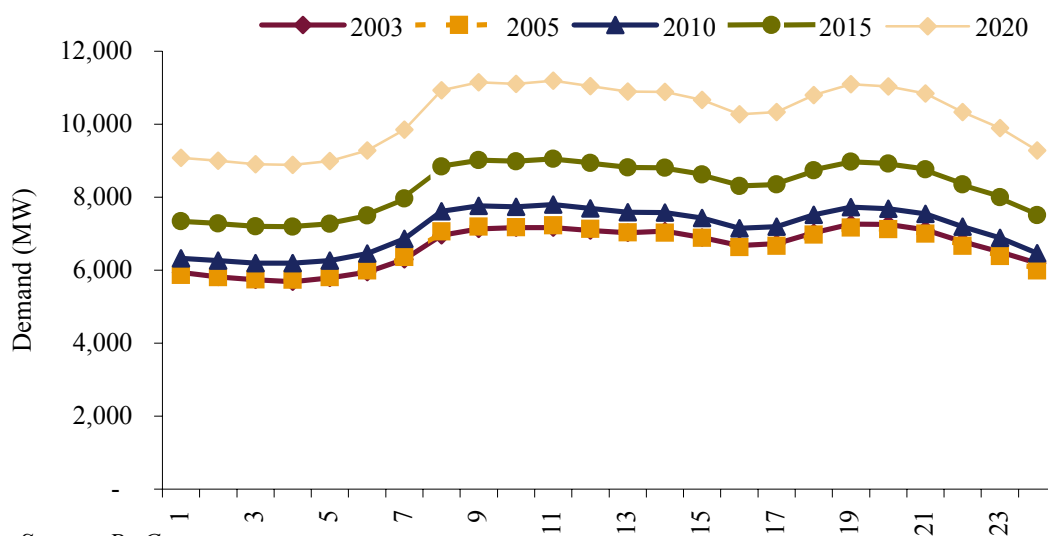
Source: PwC



5. Historical and forecast daily profiles

Using a combination of the 2003 load profiles for the 3rd week of January, April, July and October and the previous analysis of changing seasonal demand, we compare forecast and historical profiles.

Figure A6.8.13: 3rd Wed January Daily Profiles



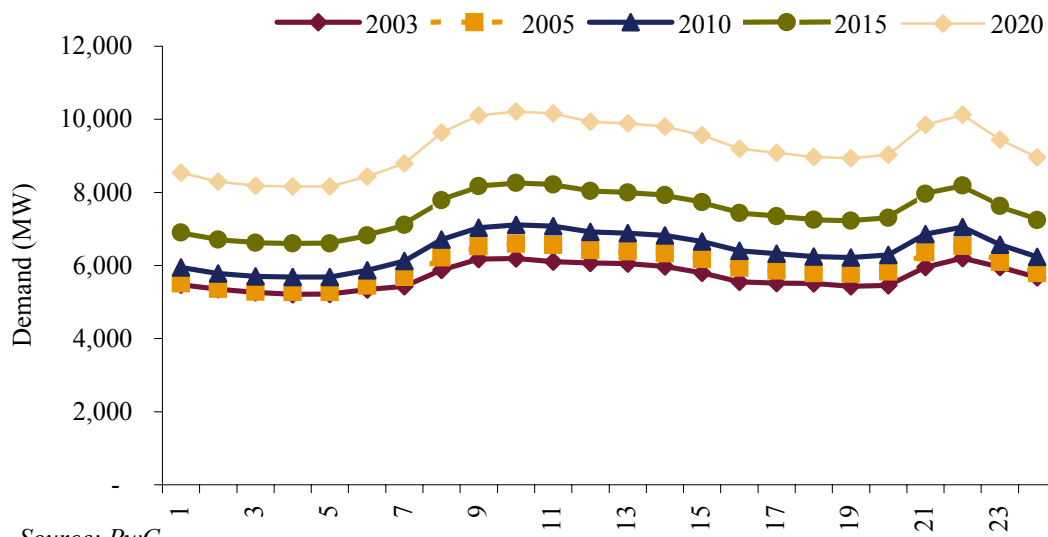
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	5,593	5,823	6,019	5,936	5,864	6,324	7,345	9,082
2	5,475	5,716	5,858	5,812	5,810	6,265	7,277	8,998
3	5,386	5,615	5,788	5,741	5,746	6,197	7,198	8,899
4	5,429	5,643	5,834	5,688	5,740	6,190	7,189	8,889
5	5,492	5,704	5,951	5,793	5,807	6,262	7,273	8,993
6	5,690	5,898	6,154	5,951	5,991	6,460	7,504	9,278
7	6,121	6,300	6,534	6,300	6,358	6,857	7,964	9,847
8	6,764	6,987	7,311	6,960	7,059	7,612	8,841	10,932
9	6,978	7,186	7,293	7,128	7,197	7,762	9,015	11,147
10	6,970	7,124	7,294	7,166	7,173	7,735	8,984	11,109
11	6,901	7,029	7,260	7,169	7,228	7,794	9,053	11,194
12	6,836	6,891	7,118	7,087	7,133	7,692	8,935	11,047
13	6,811	6,918	7,085	7,029	7,035	7,587	8,812	10,895
14	6,792	6,905	7,085	7,071	7,030	7,581	8,806	10,888
15	6,564	6,712	6,884	6,894	6,888	7,427	8,627	10,667
16	6,318	6,537	6,729	6,676	6,630	7,150	8,304	10,268
17	6,451	6,615	6,756	6,732	6,670	7,193	8,354	10,330
18	6,795	6,915	7,041	7,028	6,974	7,521	8,736	10,802
19	7,028	7,180	7,246	7,263	7,167	7,729	8,978	11,100
20	6,986	7,220	7,248	7,257	7,126	7,684	8,925	11,036
21	6,877	7,107	7,147	7,103	6,999	7,547	8,766	10,839
22	6,547	6,731	6,833	6,779	6,670	7,193	8,354	10,330
23	6,223	6,367	6,541	6,500	6,389	6,890	8,003	9,896
24	5,843	6,104	6,336	6,196	5,993	6,463	7,507	9,282

Source: PwC



Figure A6.8.14: 3rd Wed April Daily Profiles



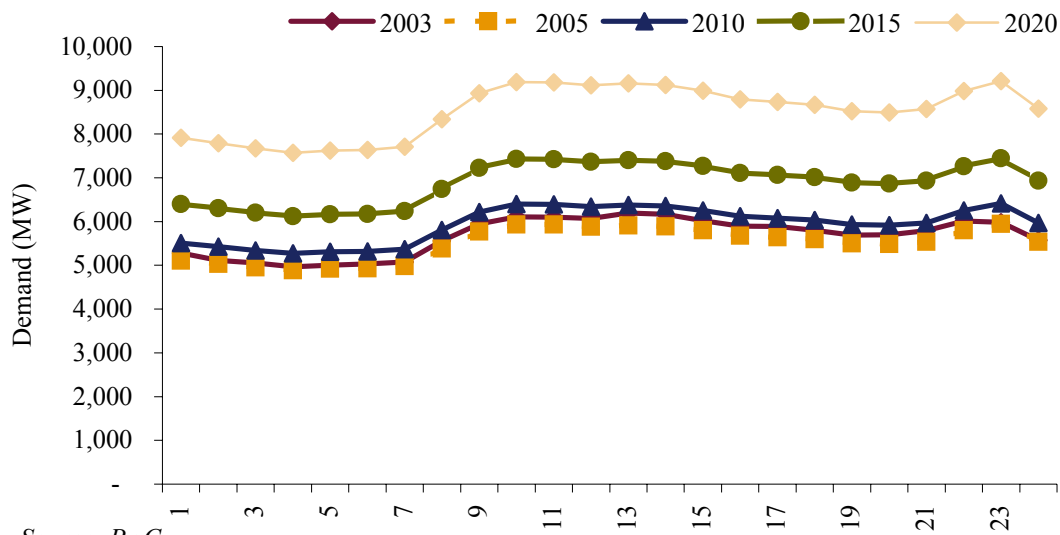
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	4,715	5,004	5,203	5,477	5,512	5,944	6,904	8,537
2	4,549	4,859	5,068	5,349	5,358	5,778	6,711	8,298
3	4,492	4,794	4,956	5,261	5,285	5,699	6,620	8,185
4	4,434	4,823	4,884	5,215	5,271	5,685	6,603	8,164
5	4,474	4,920	4,935	5,224	5,273	5,687	6,605	8,167
6	4,661	5,050	5,157	5,346	5,446	5,872	6,821	8,434
7	4,869	5,223	5,342	5,430	5,681	6,126	7,115	8,798
8	5,243	5,708	5,741	5,878	6,219	6,707	7,790	9,632
9	5,528	6,165	6,060	6,174	6,526	7,037	8,174	10,106
10	5,601	6,334	6,126	6,197	6,596	7,113	8,262	10,216
11	5,558	6,363	6,025	6,104	6,560	7,075	8,217	10,160
12	5,449	6,331	5,920	6,066	6,416	6,919	8,037	9,937
13	5,404	6,347	5,834	6,052	6,388	6,888	8,001	9,893
14	5,359	6,330	5,833	5,977	6,330	6,826	7,928	9,803
15	5,232	6,157	5,691	5,801	6,177	6,661	7,737	9,566
16	5,030	5,982	5,410	5,549	5,940	6,405	7,440	9,199
17	5,013	5,875	5,342	5,517	5,864	6,324	7,345	9,082
18	5,049	5,823	5,328	5,509	5,790	6,244	7,253	8,968
19	4,956	5,739	5,290	5,432	5,771	6,223	7,228	8,937
20	4,926	5,646	5,272	5,456	5,832	6,290	7,305	9,033
21	5,390	6,128	5,787	5,959	6,357	6,856	7,963	9,846
22	5,596	6,165	5,928	6,201	6,535	7,047	8,186	10,121
23	5,351	5,909	5,743	5,954	6,094	6,572	7,633	9,438
24	4,925	5,672	5,364	5,673	5,785	6,239	7,247	8,960

Source: PwC



Figure A6.8.15: 3rd Wed Jul Daily Profiles



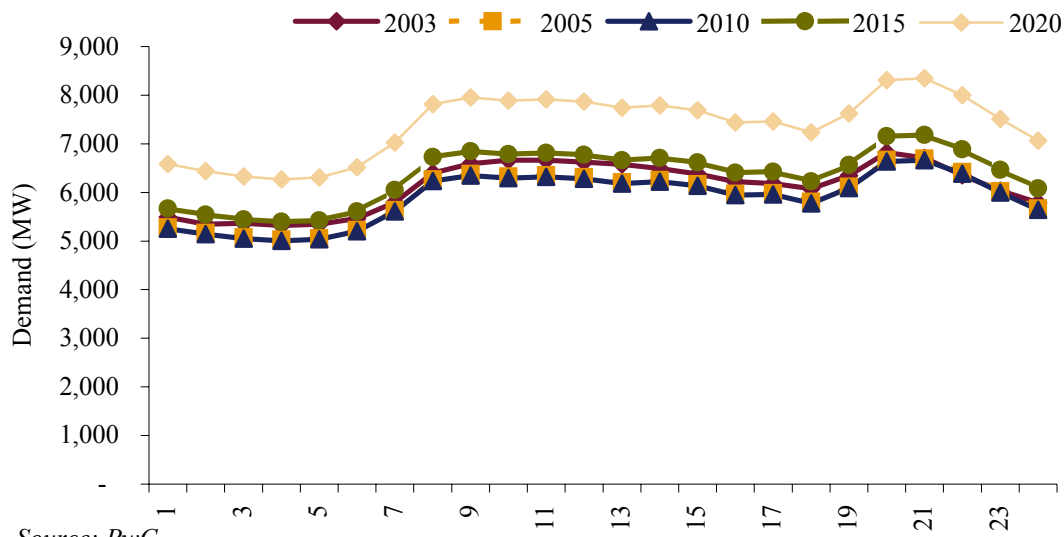
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	4,642	5,004	5,103	5,283	5,109	5,509	6,399	7,913
2	4,516	4,859	4,938	5,110	5,033	5,427	6,304	7,794
3	4,451	4,794	4,943	5,053	4,954	5,342	6,205	7,672
4	4,455	4,823	4,881	4,967	4,888	5,271	6,123	7,571
5	4,472	4,920	4,908	5,007	4,924	5,310	6,167	7,626
6	4,468	5,050	4,945	5,032	4,930	5,317	6,175	7,635
7	4,595	5,223	5,071	5,075	4,979	5,369	6,237	7,711
8	5,042	5,708	5,486	5,559	5,383	5,805	6,743	8,337
9	5,429	6,165	5,955	5,948	5,769	6,222	7,226	8,935
10	5,523	6,334	6,057	6,108	5,934	6,399	7,432	9,190
11	5,495	6,363	6,090	6,101	5,929	6,394	7,427	9,183
12	5,599	6,331	6,032	6,069	5,884	6,345	7,370	9,112
13	5,553	6,347	6,011	6,193	5,912	6,375	7,405	9,156
14	5,504	6,330	6,038	6,167	5,892	6,354	7,380	9,125
15	5,496	6,157	5,914	6,018	5,803	6,258	7,268	8,987
16	5,467	5,982	5,792	5,894	5,677	6,122	7,110	8,792
17	5,458	5,875	5,654	5,888	5,640	6,082	7,065	8,735
18	5,093	5,823	5,625	5,802	5,599	6,038	7,014	8,672
19	4,975	5,739	5,537	5,691	5,503	5,935	6,893	8,523
20	4,969	5,646	5,457	5,700	5,486	5,916	6,871	8,496
21	5,055	6,128	5,552	5,796	5,536	5,970	6,934	8,574
22	5,340	6,165	5,744	6,010	5,801	6,256	7,266	8,984
23	5,310	5,909	5,720	5,985	5,948	6,415	7,451	9,212
24	4,965	5,672	5,318	5,577	5,539	5,973	6,937	8,578

Source: PwC



Figure A6.8.16: 3rd Wed Oct Daily Profiles



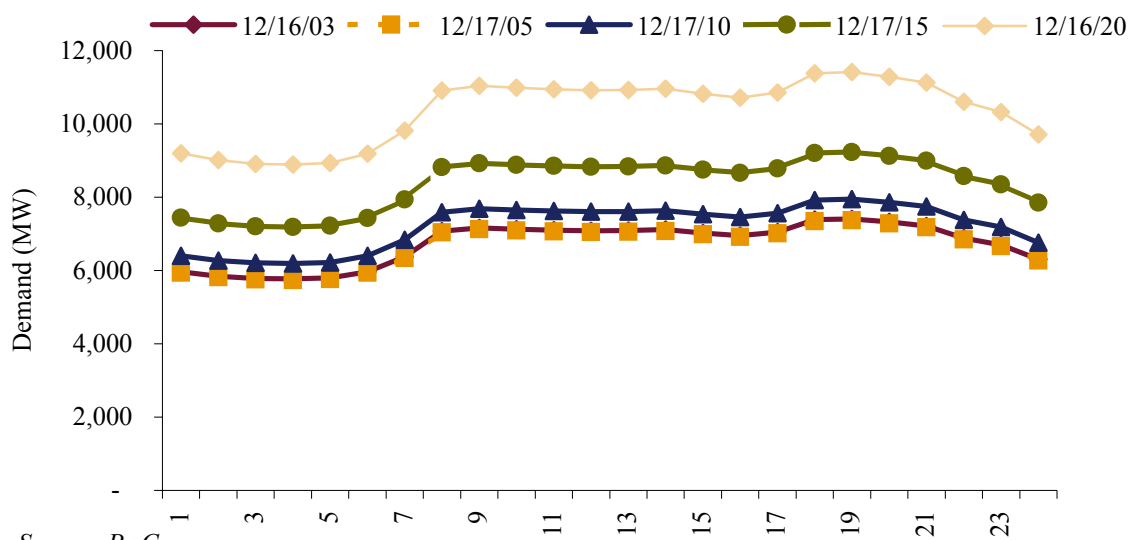
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	4,916	4,647	5,257	5,489	5,283	5,256	5,668	6,584
2	4,791	4,579	5,084	5,344	5,167	5,141	5,544	6,439
3	4,741	4,517	5,056	5,365	5,076	5,051	5,447	6,327
4	4,739	4,500	5,017	5,321	5,030	5,005	5,397	6,268
5	4,755	4,530	5,027	5,346	5,059	5,034	5,428	6,305
6	4,918	4,676	5,179	5,464	5,231	5,204	5,612	6,519
7	5,381	5,055	5,630	5,792	5,637	5,609	6,048	7,025
8	5,980	5,675	6,111	6,400	6,269	6,238	6,727	7,813
9	6,049	5,731	6,212	6,593	6,380	6,348	6,845	7,951
10	6,036	5,699	6,239	6,661	6,328	6,296	6,790	7,886
11	5,991	5,643	6,302	6,663	6,351	6,319	6,814	7,915
12	5,978	5,579	6,259	6,625	6,314	6,282	6,775	7,869
13	5,986	5,519	6,172	6,576	6,211	6,180	6,664	7,741
14	5,977	5,487	6,216	6,495	6,252	6,221	6,708	7,792
15	5,803	5,327	5,990	6,377	6,169	6,138	6,619	7,688
16	5,595	5,122	5,696	6,221	5,972	5,942	6,408	7,443
17	5,553	5,090	5,642	6,182	5,986	5,956	6,423	7,461
18	5,498	5,026	5,629	6,078	5,806	5,777	6,229	7,236
19	5,530	5,080	5,665	6,348	6,118	6,087	6,564	7,625
20	6,083	5,787	6,342	6,820	6,669	6,636	7,156	8,312
21	6,081	5,827	6,383	6,710	6,697	6,663	7,185	8,346
22	5,812	5,517	6,102	6,356	6,417	6,385	6,886	7,998
23	5,539	5,205	5,820	6,037	6,026	5,996	6,466	7,511
24	5,196	4,946	5,544	5,786	5,670	5,641	6,083	7,066

Source: PwC



Figure A6.8.17: Peak Hourly Demand Daily Profiles



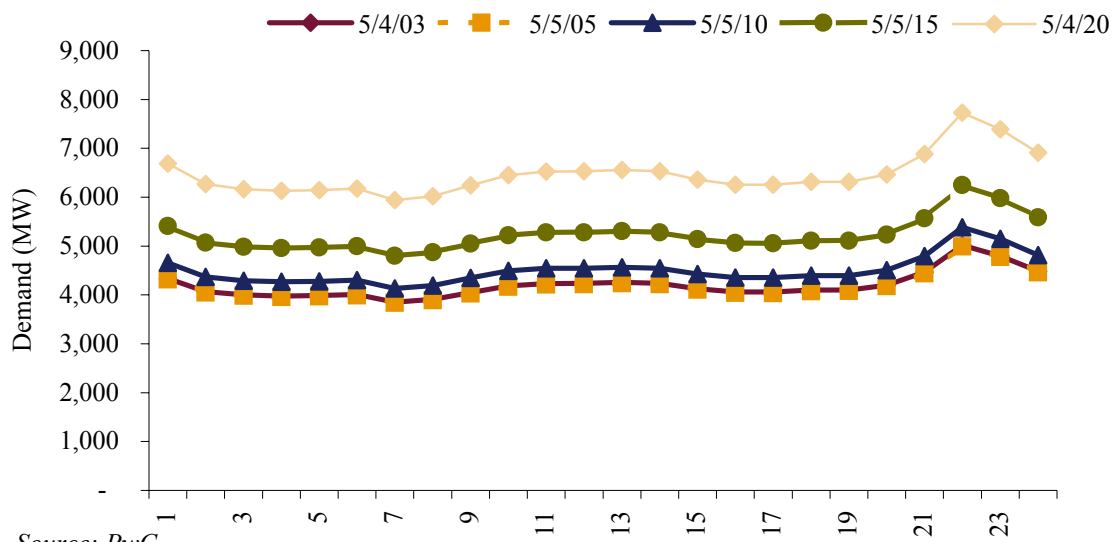
Source: PwC

MW	1/26/00	12/18/01	12/11/02	12/16/03	12/17/05	12/17/10	12/17/15	12/16/20
1	5,861	6,240	6,069	5,968	5,938	6,404	7,438	9,197
2	5,752	6,096	5,960	5,847	5,817	6,273	7,287	9,010
3	5,665	6,059	5,875	5,784	5,755	6,206	7,208	8,913
4	5,694	6,072	5,840	5,770	5,741	6,191	7,191	8,892
5	5,799	6,154	5,924	5,797	5,768	6,221	7,225	8,934
6	5,943	6,365	6,125	5,964	5,935	6,400	7,433	9,191
7	6,247	6,697	6,534	6,372	6,340	6,837	7,941	9,819
8	6,788	7,393	7,170	7,077	7,042	7,594	8,820	10,906
9	7,195	7,547	7,298	7,165	7,129	7,688	8,929	11,041
10	7,253	7,574	7,451	7,127	7,092	7,648	8,883	10,983
11	7,184	7,669	7,404	7,104	7,068	7,622	8,853	10,947
12	7,090	7,488	7,322	7,086	7,051	7,604	8,832	10,920
13	7,018	7,434	7,303	7,091	7,055	7,608	8,837	10,927
14	6,999	7,403	7,369	7,114	7,078	7,633	8,866	10,962
15	6,802	7,306	7,244	7,021	6,986	7,534	8,751	10,820
16	6,619	7,096	7,018	6,952	6,917	7,460	8,664	10,713
17	6,695	7,235	7,177	7,047	7,012	7,561	8,783	10,859
18	6,947	7,553	7,554	7,385	7,348	7,924	9,204	11,380
19	7,091	7,611	7,591	7,409	7,372	7,950	9,234	11,418
20	7,109	7,535	7,515	7,324	7,287	7,858	9,127	11,286
21	7,064	7,320	7,304	7,218	7,182	7,745	8,995	11,123
22	6,760	7,029	7,066	6,879	6,845	7,381	8,573	10,601
23	6,423	6,753	6,709	6,697	6,664	7,186	8,347	10,321
24	6,001	6,449	6,402	6,303	6,272	6,763	7,856	9,713

Source: PwC



Figure A6.8.18: Minimum Hourly Demand Daily Profiles



Source: PwC

MW	10/1/00	10/14/01	5/6/02	5/4/03	5/5/05	5/5/10	5/5/15	5/4/20
1	4,246	4,303	3,704	4,339	4,317	4,656	5,408	6,686
2	4,125	4,136	3,561	4,070	4,049	4,367	5,072	6,272
3	4,073	4,025	3,480	4,000	3,980	4,292	4,985	6,163
4	4,048	4,006	3,430	3,979	3,959	4,269	4,959	6,132
5	4,107	4,033	3,411	3,987	3,967	4,278	4,969	6,144
6	4,250	4,068	3,440	4,010	3,990	4,303	4,998	6,179
7	4,736	4,074	3,362	3,855	3,835	4,136	4,804	5,940
8	5,226	4,057	3,442	3,908	3,889	4,193	4,871	6,023
9	5,445	4,058	3,610	4,051	4,030	4,346	5,048	6,242
10	5,518	4,060	3,669	4,189	4,168	4,494	5,220	6,454
11	5,585	4,007	3,698	4,234	4,213	4,543	5,277	6,525
12	5,544	3,891	3,662	4,238	4,216	4,547	5,281	6,530
13	5,514	3,883	3,642	4,256	4,235	4,567	5,305	6,559
14	5,496	3,818	3,609	4,238	4,217	4,547	5,282	6,531
15	5,253	3,741	3,557	4,127	4,106	4,428	5,143	6,359
16	5,111	3,742	3,539	4,060	4,040	4,357	5,060	6,257
17	5,070	3,768	3,519	4,058	4,038	4,355	5,058	6,254
18	4,958	3,761	3,535	4,097	4,077	4,396	5,106	6,314
19	4,890	4,016	3,573	4,099	4,078	4,398	5,108	6,316
20	5,415	4,760	3,646	4,197	4,176	4,503	5,231	6,468
21	5,665	4,893	3,787	4,466	4,444	4,792	5,566	6,883
22	5,418	4,642	4,267	5,017	4,991	5,383	6,252	7,730
23	5,153	4,428	4,237	4,796	4,772	5,147	5,978	7,391
24	4,860	4,172	4,023	4,484	4,462	4,812	5,589	6,910

Source: PwC



Appendix 6.9
Serbia Demand Forecasting



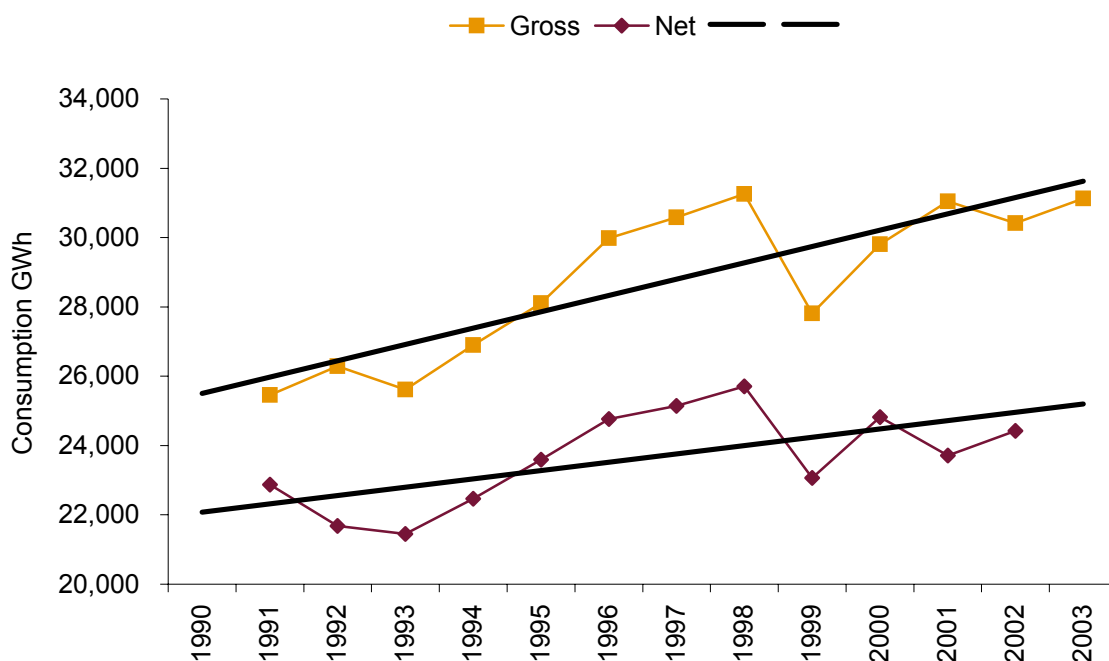
1. Historical Trend Analysis

The data for Serbia was sourced from the national utility. A complete data set of historical electricity demand was made available for analysis.

Figure A6.9.1: Historical Electricity Consumption

	(1)	(1)	(1)	(1)	(1)	(2)	(2)
	Net Demand GWh	Transmis Losses GWh	Distrib Losses GWh	Total Losses GWh	Gross Demand GWh	All Losses Share of Gross	Population Net Energy Intensity ('000) kWh/cap
1990	-	-	-	-	-	-	-
1991	22,870	959	1,630	2,589	25,459	10.2%	-
1992	21,683	2,332	2,273	4,605	26,288	17.5%	-
1993	21,446	1,770	2,398	4,168	25,614	16.3%	-
1994	22,465	1,579	2,852	4,431	26,896	16.5%	-
1995	23,588	1,661	2,860	4,521	28,109	16.1%	-
1996	24,766	1,765	3,453	5,218	29,984	17.4%	-
1997	25,142	1,751	3,694	5,445	30,587	17.8%	-
1998	25,704	1,838	3,712	5,550	31,254	17.8%	7,748
1999	23,066	1,446	3,304	4,750	27,816	17.1%	7,721
2000	24,816	1,159	3,836	4,995	29,811	16.8%	7,688
2001	23,715	1,453	5,877	7,330	31,045	23.6%	7,668
2002	24,420	-	-	-	30,413	19.7%	7,653
2003	-	-	-	-	31,128	-	-

Sources: (1) EPS (2) Serbian Statistics office



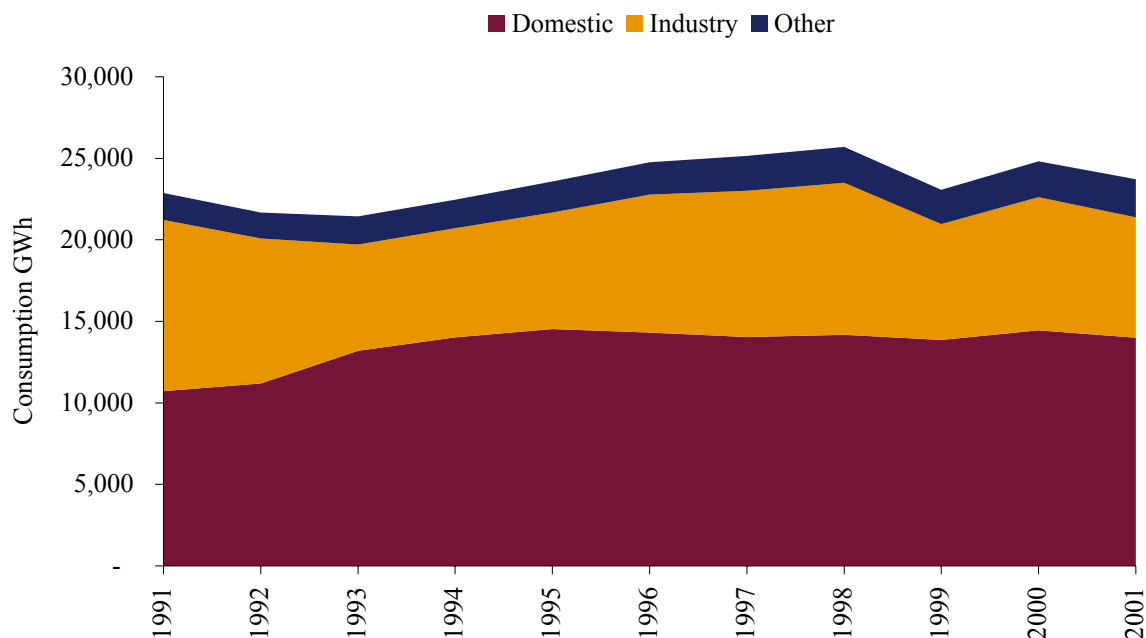
Sources: (1) EPS



Figure A6.9.2: Historical Sectoral Electricity Demand

	Domestic Demand GWh	Industry Demand GWh	Other Demand GWh	Total Net Demand GWh	Domestic Demand Growth	Industry Demand Growth	Other Demand Growth	Total Net Demand Growth
1990	-	-	-	-	-	-	-	-
1991	10,718	10,498	1,654	22,870	-	-	-	-
1992	11,200	8,878	1,605	21,683	4.3%	-18.2%	-3.1%	-5.5%
1993	13,195	6,518	1,733	21,446	15.1%	-36.2%	7.4%	-1.1%
1994	14,026	6,682	1,757	22,465	5.9%	2.5%	1.4%	4.5%
1995	14,523	7,155	1,910	23,588	3.4%	6.6%	8.0%	4.8%
1996	14,321	8,457	1,988	24,766	-1.4%	15.4%	3.9%	4.8%
1997	14,038	8,965	2,139	25,142	-2.0%	5.7%	7.1%	1.5%
1998	14,177	9,327	2,200	25,704	1.0%	3.9%	2.8%	2.2%
1999	13,862	7,113	2,091	23,066	-2.3%	-31.1%	-5.2%	-11.4%
2000	14,460	8,150	2,206	24,816	4.1%	12.7%	5.2%	7.1%
2001	13,995	7,380	2,340	23,715	-3.3%	-10.4%	5.7%	-4.6%
2002	-	-	-	24,420	-	-	-	2.9%
2003	-	-	-	-	-	-	-	-

Sources: (1) EPS



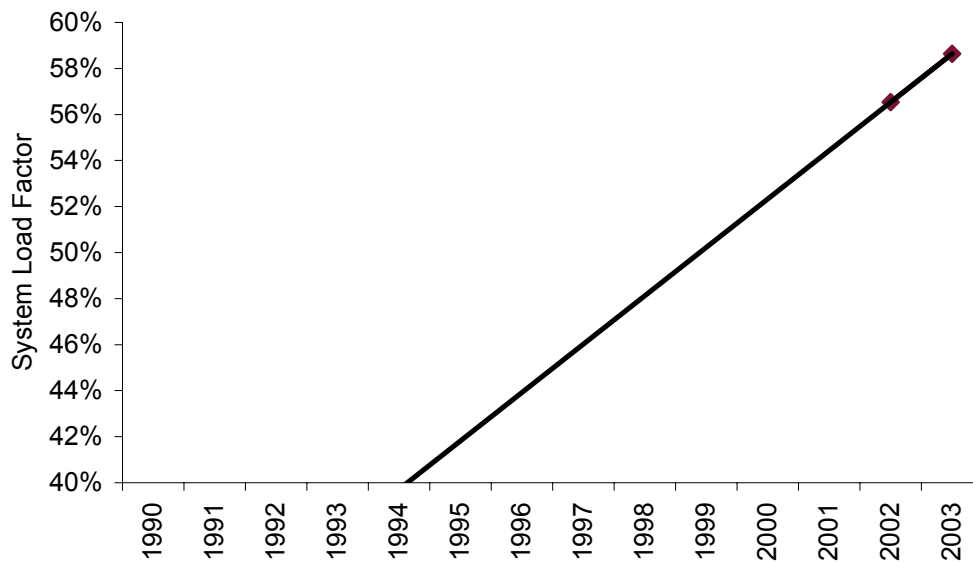
Sources: (1) EPS



Figure A6.9.3: Historical System Load Factor

	Gross Demand GWh	Auxilliary Demand GWh	Pumping Demand GWh	Gross Consmpt GWh	Gross Consmpt Growth	System Peak MW	System Peak Growth	System Load Factor
1990	-	-	-	-	-	-	-	-
1991	25,459	-	-	25,459	0.0%	-	0.0%	-
1992	26,288	-	-	26,288	3.3%	-	0.0%	-
1993	25,614	-	-	25,614	-2.6%	-	0.0%	-
1994	26,896	-	-	26,896	5.0%	-	0.0%	-
1995	28,109	-	-	28,109	4.5%	-	0.0%	-
1996	29,984	-	-	29,984	6.7%	-	0.0%	-
1997	30,587	-	-	30,587	2.0%	-	0.0%	-
1998	31,254	-	-	31,254	2.2%	-	0.0%	-
1999	27,816	-	-	27,816	-11.0%	-	0.0%	-
2000	29,811	-	-	29,811	7.2%	-	0.0%	-
2001	31,045	-	-	31,045	4.1%	-	0.0%	-
2002	30,413	-	-	30,413	-2.0%	6,141	0.0%	56.5%
2003	31,128	-	-	31,128	2.3%	6,060	-1.3%	58.6%

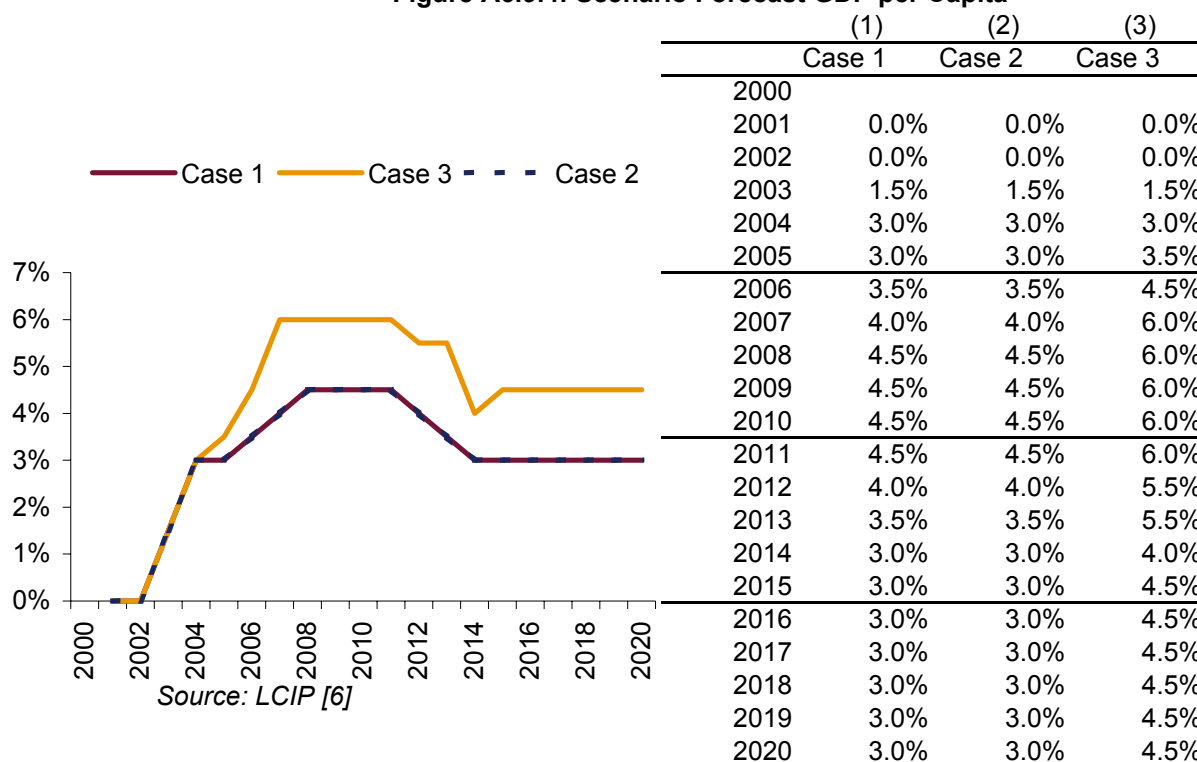
Sources: (1) EPS





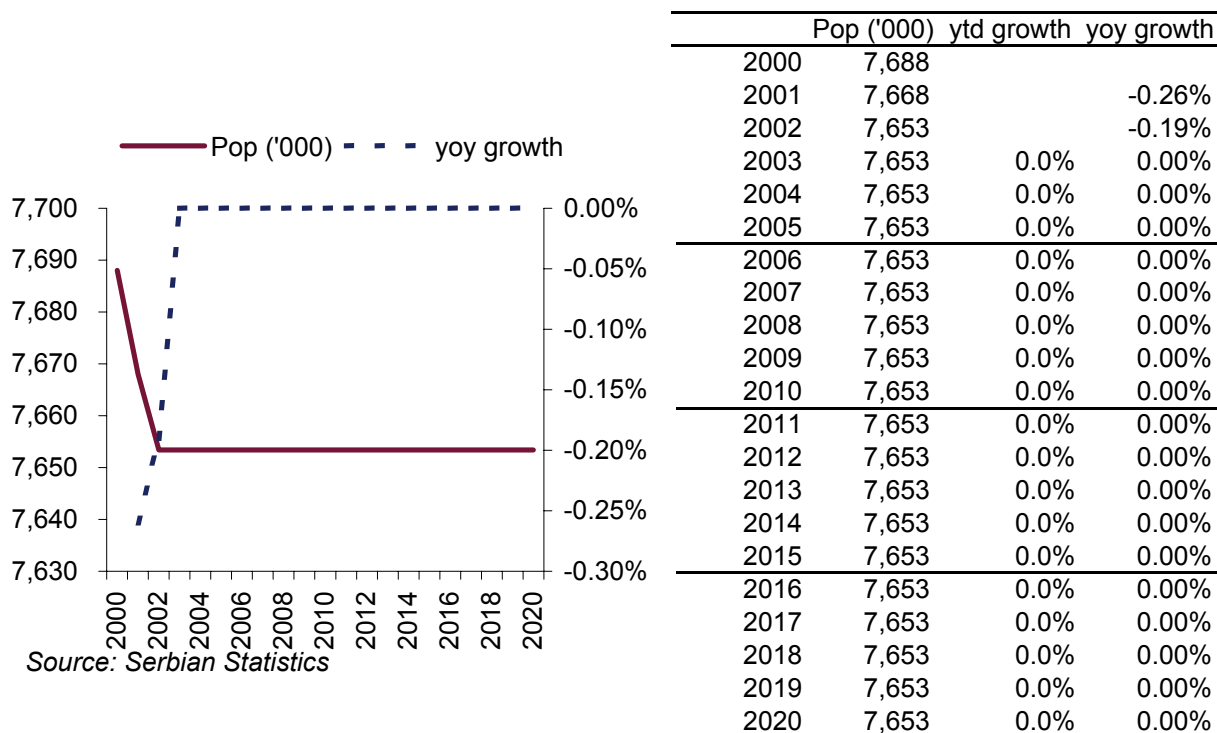
2. Forecast Assumptions

Figure A6.9.4: Scenario Forecast GDP per Capita



Source: LCIP [6]

Figure A6.9.5: Forecast Population



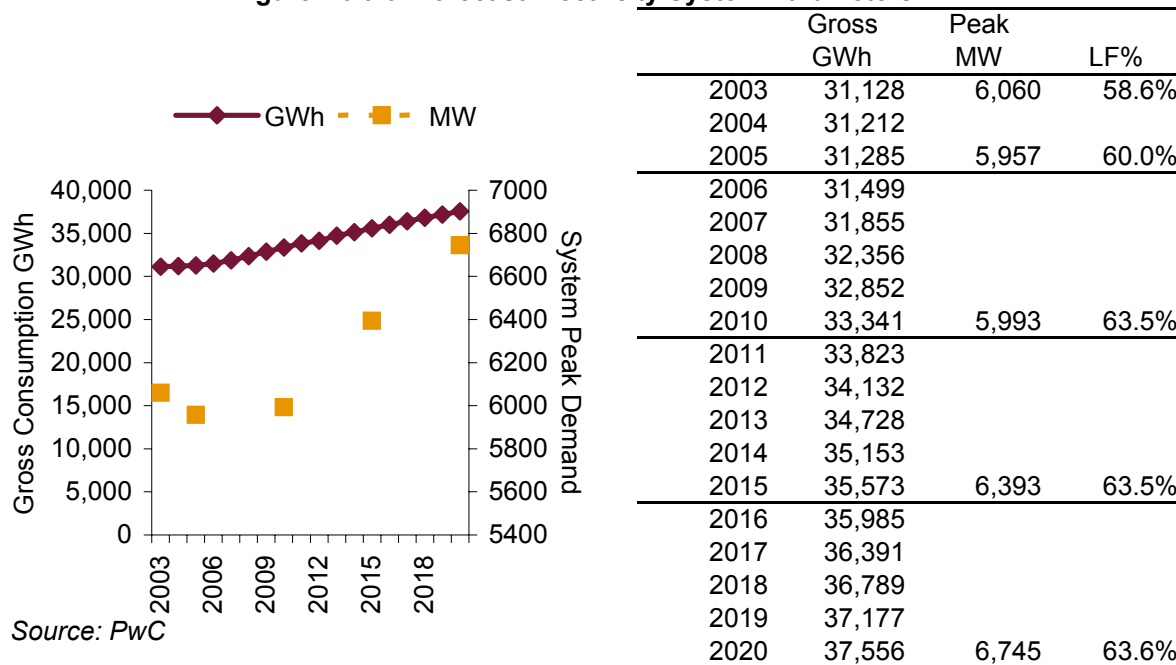
Source: Serbian Statistics office, LCIP [6]



3. Forecast Calculation

Using the econometric demand forecasting model described in Chapter 3 of this report, together with GDP growth forecast assumptions, the following data are forecast for energy demand.

Figure A6.9.6: Forecast Electricity System Parameters



Source: PwC

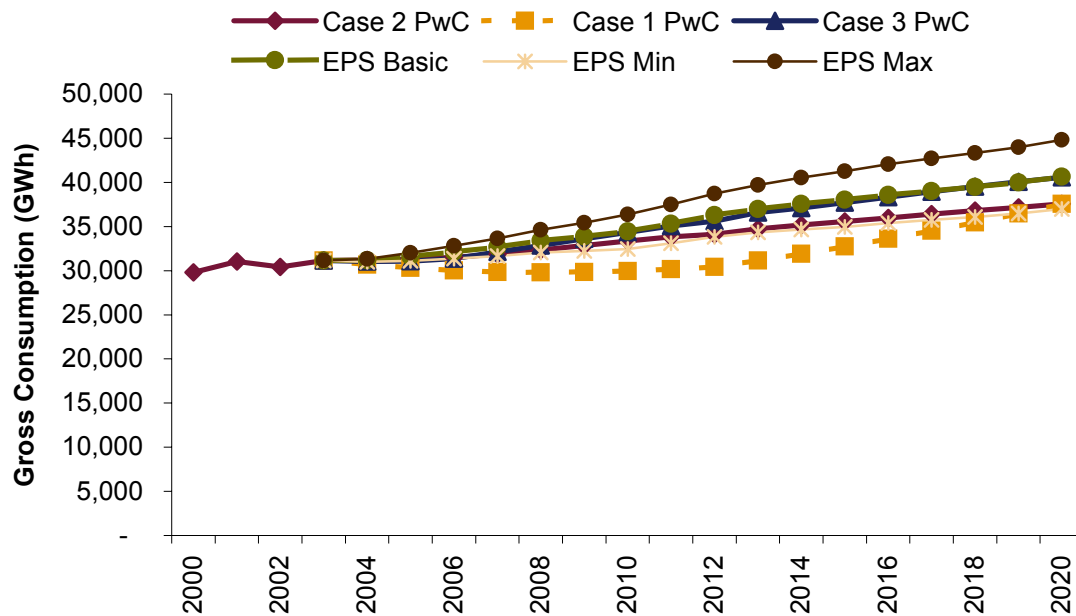
Figure A6.9.7: Case 2 Economic Model Forecast Calculation

Year	GDP per Capita (95 US\$)	Forecast Growth (%)	Electricity Intensity (kWh/GDP)	Electricity per capita (kWh pp)	Population ('000)	Net Consumpt (GWh)	D & T Losses (%)	Gross Consumpt (GWh)
2002	1,163	21.4%	2.74	3,191	7,653	24,420	19.7%	30,413
2003	1,272	9.3%	2.57	3,266	7,653	24,994	19.7%	31,128
2004	1,310	3.0%	2.53	3,314	7,653	25,365	18.7%	31,212
2005	1,349	3.0%	2.49	3,363	7,653	25,736	17.7%	31,285
2006	1,397	3.5%	2.45	3,428	7,653	26,233	16.7%	31,499
2007	1,453	4.0%	2.42	3,510	7,653	26,863	15.7%	31,855
2008	1,518	4.5%	2.38	3,611	7,653	27,633	14.6%	32,356
2009	1,586	4.5%	2.34	3,713	7,653	28,418	13.5%	32,852
2010	1,658	4.5%	2.30	3,818	7,653	29,218	12.4%	33,341
2011	1,732	4.5%	2.27	3,924	7,653	30,033	11.2%	33,823
2012	1,801	4.0%	2.23	4,013	7,653	30,713	10.0%	34,132
2013	1,864	3.5%	2.19	4,083	7,653	31,249	10.0%	34,728
2014	1,920	3.0%	2.15	4,133	7,653	31,632	10.0%	35,153
2015	1,978	3.0%	2.11	4,182	7,653	32,009	10.0%	35,573
2016	2,037	3.0%	2.08	4,231	7,653	32,381	10.0%	35,985
2017	2,098	3.0%	2.04	4,279	7,653	32,746	10.0%	36,391
2018	2,161	3.0%	2.00	4,325	7,653	33,104	10.0%	36,789
2019	2,226	3.0%	1.96	4,371	7,653	33,453	10.0%	37,177
2020	2,293	3.0%	1.93	4,416	7,653	33,794	10.0%	37,556

Source: PwC



Figure A6.9.8: Comparison with other Forecasts



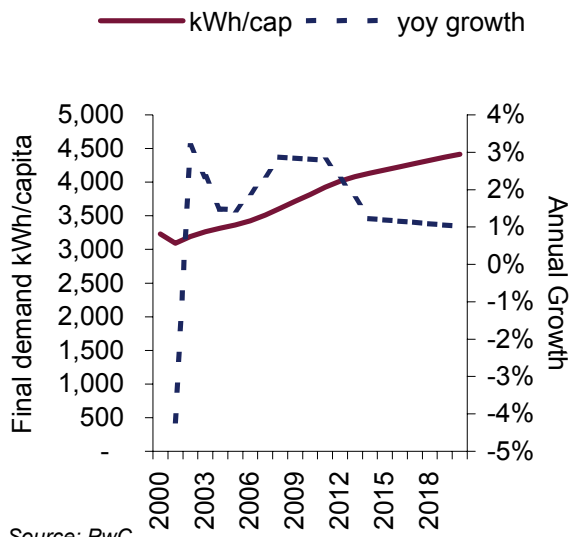
Source: PwC 2004, EPS 2003

GWh	Case 2	Case 1	Case 3	EPS Basic	EPS Min	EPS Max
2000	29,811					
2001	31,045					
2002	30,413					
2003	31,128	31,128	31,128	31,128	31,128	31,128
2004	31,212	30,665	31,026	31,170	31,014	31,315
2005	31,285	30,297	31,056	31,603	31,110	32,033
2006	31,499	30,027	31,368	32,122	31,361	32,814
2007	31,855	29,858	32,117	32,677	31,642	33,643
2008	32,356	29,795	32,862	33,388	32,061	34,644
2009	32,852	29,828	33,601	33,852	32,231	35,410
2010	33,341	29,948	34,332	34,429	32,433	36,349
2011	33,823	30,150	35,053	35,321	33,105	37,497
2012	34,132	30,413	35,592	36,284	33,839	38,719
2013	34,728	31,138	36,601	36,999	34,329	39,696
2014	35,153	31,909	37,078	37,567	34,677	40,529
2015	35,573	32,729	37,715	38,024	34,971	41,250
2016	35,985	33,596	38,334	38,561	35,391	42,057
2017	36,391	34,512	38,933	39,016	35,734	42,723
2018	36,789	35,477	39,508	39,478	36,079	43,332
2019	37,177	36,491	40,057	39,986	36,465	43,997
2020	37,556	37,556	40,574	40,635	36,978	44,817

Source: PwC 2004, EPS 2003



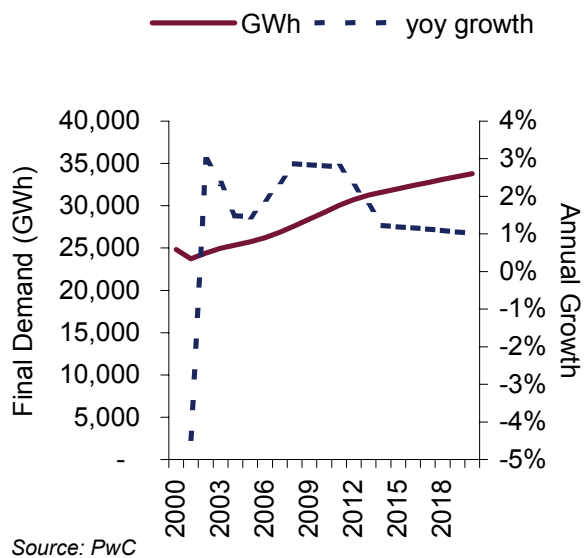
Figure A6.9.9: Forecast Final Demand per Capita



	kWh/cap	ytd growth	yoy growth
2000	3,228		
2001	3,093		-4.2%
2002	3,191		3.2%
2003	3,266	0.0%	2.4%
2004	3,314	1.5%	1.5%
2005	3,363	3.0%	1.5%
2006	3,428	5.0%	1.9%
2007	3,510	7.5%	2.4%
2008	3,611	10.6%	2.9%
2009	3,713	13.7%	2.8%
2010	3,818	16.9%	2.8%
2011	3,924	20.2%	2.8%
2012	4,013	22.9%	2.3%
2013	4,083	25.0%	1.7%
2014	4,133	26.6%	1.2%
2015	4,182	28.1%	1.2%
2016	4,231	29.6%	1.2%
2017	4,279	31.0%	1.1%
2018	4,325	32.4%	1.1%
2019	4,371	33.8%	1.1%
2020	4,416	35.2%	1.0%

Source: PwC

Figure A6.9.10: Forecast Final Net Demand



	GWh	ytd growth	yoy growth
2000	24,816		
2001	23,715		-4.4%
2002	24,420		3.0%
2003	24,994	0.0%	2.4%
2004	25,365	1.5%	1.5%
2005	25,736	3.0%	1.5%
2006	26,233	5.0%	1.9%
2007	26,863	7.5%	2.4%
2008	27,633	10.6%	2.9%
2009	28,418	13.7%	2.8%
2010	29,218	16.9%	2.8%
2011	30,033	20.2%	2.8%
2012	30,713	22.9%	2.3%
2013	31,249	25.0%	1.7%
2014	31,632	26.6%	1.2%
2015	32,009	28.1%	1.2%
2016	32,381	29.6%	1.2%
2017	32,746	31.0%	1.1%
2018	33,104	32.4%	1.1%
2019	33,453	33.8%	1.1%
2020	33,794	35.2%	1.0%

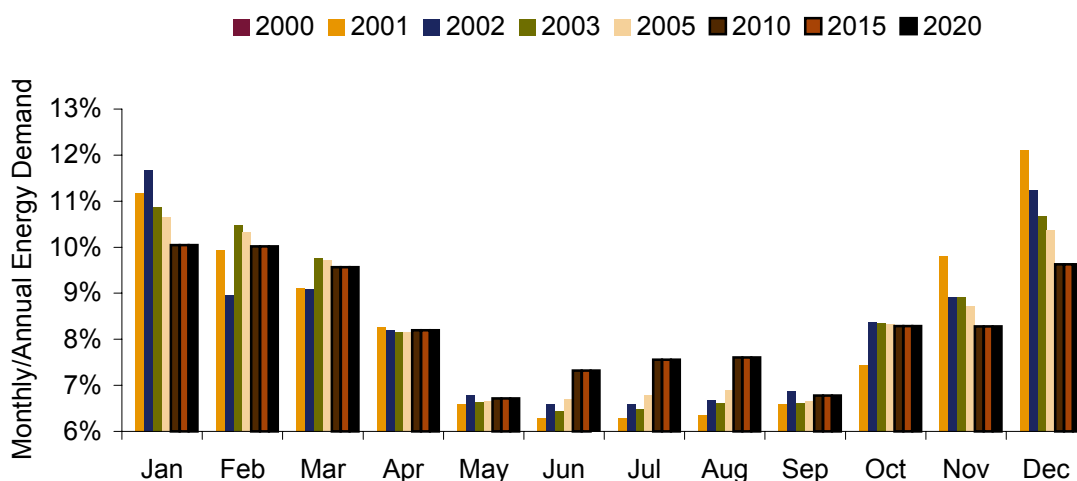
Source: PwC



4. Forecast variation in monthly electricity demand

Following the analysis in Chapter 3 of the main report, we have forecast a change in the share of annual energy demand and peak demand. We detail here the forecast annual change of these parameters.

Figure A6.9.11: Forecast Monthly Energy Demand



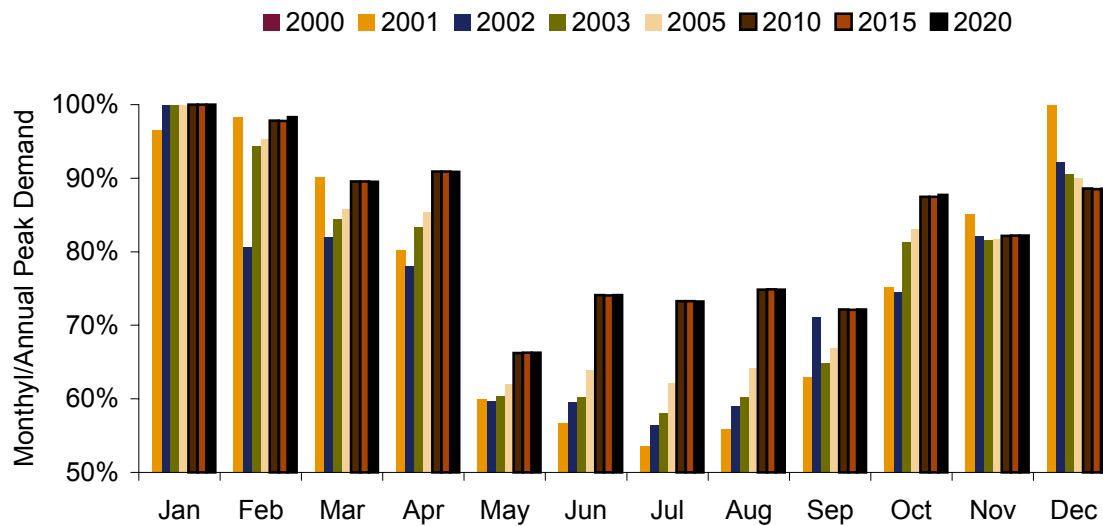
Source: PwC

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	-	-	-	-	-	-	-	-	-	-	-	-
2001	11.2%	9.9%	9.1%	8.3%	6.6%	6.3%	6.3%	6.4%	6.6%	7.4%	9.8%	12.1%
2002	11.7%	9.0%	9.1%	8.2%	6.8%	6.6%	6.6%	6.7%	6.9%	8.4%	8.9%	11.2%
2003	10.9%	10.5%	9.8%	8.1%	6.6%	6.4%	6.5%	6.6%	6.6%	8.4%	8.9%	10.7%
2004	10.8%	10.4%	9.7%	8.2%	6.6%	6.6%	6.6%	6.8%	6.6%	8.3%	8.8%	10.5%
2005	10.6%	10.3%	9.7%	8.2%	6.7%	6.7%	6.8%	6.9%	6.7%	8.3%	8.7%	10.4%
2006	10.5%	10.3%	9.7%	8.2%	6.7%	6.8%	6.9%	7.0%	6.7%	8.3%	8.6%	10.2%
2007	10.4%	10.2%	9.7%	8.2%	6.7%	6.9%	7.1%	7.2%	6.7%	8.3%	8.6%	10.1%
2008	10.3%	10.1%	9.6%	8.2%	6.7%	7.1%	7.2%	7.3%	6.7%	8.3%	8.5%	9.9%
2009	10.2%	10.1%	9.6%	8.2%	6.7%	7.2%	7.4%	7.5%	6.8%	8.3%	8.4%	9.8%
2010	10.0%	10.0%	9.6%	8.2%	6.7%	7.3%	7.6%	7.6%	6.8%	8.3%	8.3%	9.6%
2011	10.0%	10.0%	9.6%	8.2%	6.7%	7.3%	7.6%	7.6%	6.8%	8.3%	8.3%	9.6%
2012	10.0%	10.0%	9.6%	8.2%	6.7%	7.3%	7.6%	7.6%	6.8%	8.3%	8.3%	9.6%
2013	10.0%	10.0%	9.6%	8.2%	6.7%	7.3%	7.6%	7.6%	6.8%	8.3%	8.3%	9.6%
2014	10.0%	10.0%	9.6%	8.2%	6.7%	7.3%	7.6%	7.6%	6.8%	8.3%	8.3%	9.6%
2015	10.0%	10.0%	9.6%	8.2%	6.7%	7.3%	7.6%	7.6%	6.8%	8.3%	8.3%	9.6%
2016	10.0%	10.0%	9.6%	8.2%	6.7%	7.3%	7.6%	7.6%	6.8%	8.3%	8.3%	9.6%
2017	10.0%	10.0%	9.6%	8.2%	6.7%	7.3%	7.6%	7.6%	6.8%	8.3%	8.3%	9.6%
2018	10.0%	10.0%	9.6%	8.2%	6.7%	7.3%	7.6%	7.6%	6.8%	8.3%	8.3%	9.6%
2019	10.0%	10.0%	9.6%	8.2%	6.7%	7.3%	7.6%	7.6%	6.8%	8.3%	8.3%	9.6%
2020	10.0%	10.0%	9.6%	8.2%	6.7%	7.3%	7.6%	7.6%	6.8%	8.3%	8.3%	9.6%

Source: PwC



Figure A6.9.12: Forecast Monthly Peak Demand



Source: PwC

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	-	-	-	-	-	-	-	-	-	-	-	-
2001	96.5%	98.3%	90.2%	80.3%	60.0%	56.7%	53.6%	55.9%	62.9%	75.2%	85.2%	100.0%
2002	100.0%	80.7%	82.0%	78.1%	59.7%	59.6%	56.5%	59.1%	71.1%	74.5%	82.1%	92.2%
2003	100.0%	94.3%	84.4%	83.4%	60.4%	60.2%	58.0%	60.2%	64.9%	81.4%	81.6%	90.6%
2005	100.0%	95.3%	85.8%	85.4%	62.0%	64.0%	62.1%	64.1%	66.8%	83.0%	81.8%	90.0%
2010	100.0%	97.8%	89.5%	90.9%	66.3%	74.1%	73.3%	74.8%	72.1%	87.5%	82.2%	88.6%
2015	100.0%	97.8%	89.5%	90.9%	66.3%	74.1%	73.3%	74.9%	72.1%	87.5%	82.2%	88.5%
2020	100.0%	98.3%	89.5%	90.9%	66.3%	74.1%	73.3%	74.9%	72.1%	87.7%	82.2%	88.6%

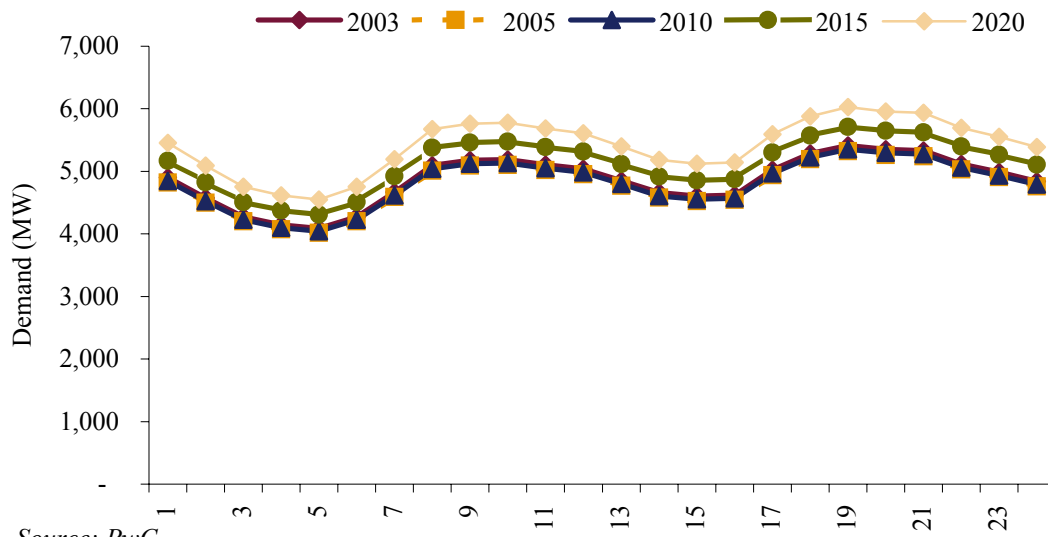
Source: PwC



5. Historical and forecast daily profiles

Using a combination of the 2003 load profiles for the 3rd week of January, April, July and October and the previous analysis of changing seasonal demand, we compare forecast and historical profiles.

Figure A6.9.13: 3rd Wed January Daily Profiles



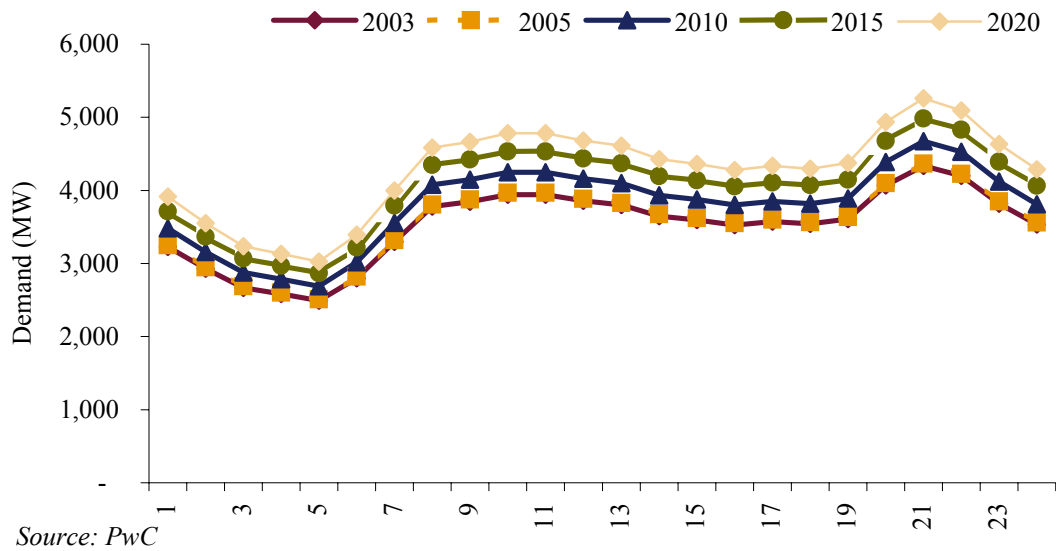
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	-	4,634	5,111	4,901	4,818	4,847	5,171	5,455
2	-	4,261	4,664	4,573	4,495	4,523	4,825	5,090
3	-	3,925	4,462	4,272	4,199	4,225	4,507	4,755
4	-	3,945	4,268	4,146	4,076	4,100	4,374	4,614
5	-	3,812	4,191	4,086	4,017	4,041	4,311	4,548
6	-	4,156	4,383	4,273	4,200	4,226	4,508	4,756
7	-	4,783	4,893	4,668	4,589	4,617	4,925	5,195
8	-	5,310	5,292	5,097	5,010	5,041	5,377	5,673
9	-	5,592	5,505	5,177	5,089	5,120	5,462	5,762
10	-	5,631	5,587	5,190	5,102	5,133	5,475	5,776
11	-	5,598	5,545	5,109	5,022	5,053	5,390	5,686
12	-	5,693	5,530	5,040	4,954	4,985	5,317	5,610
13	-	5,391	5,472	4,851	4,769	4,798	5,118	5,399
14	-	5,489	5,356	4,659	4,580	4,608	4,915	5,185
15	-	5,325	5,221	4,603	4,525	4,552	4,856	5,123
16	-	5,461	5,267	4,620	4,541	4,569	4,874	5,142
17	-	5,516	5,429	5,024	4,939	4,969	5,300	5,592
18	-	5,670	5,575	5,284	5,194	5,226	5,575	5,881
19	-	5,816	5,658	5,414	5,322	5,354	5,712	6,026
20	-	5,664	5,686	5,353	5,262	5,294	5,647	5,958
21	-	5,543	5,530	5,332	5,241	5,273	5,625	5,935
22	-	5,382	5,393	5,119	5,032	5,063	5,401	5,697
23	-	5,286	5,301	4,990	4,905	4,935	5,264	5,554
24	-	5,182	5,400	4,842	4,760	4,789	5,108	5,389

Source: PwC



Figure A6.9.14: 3rd Wed April Daily Profiles



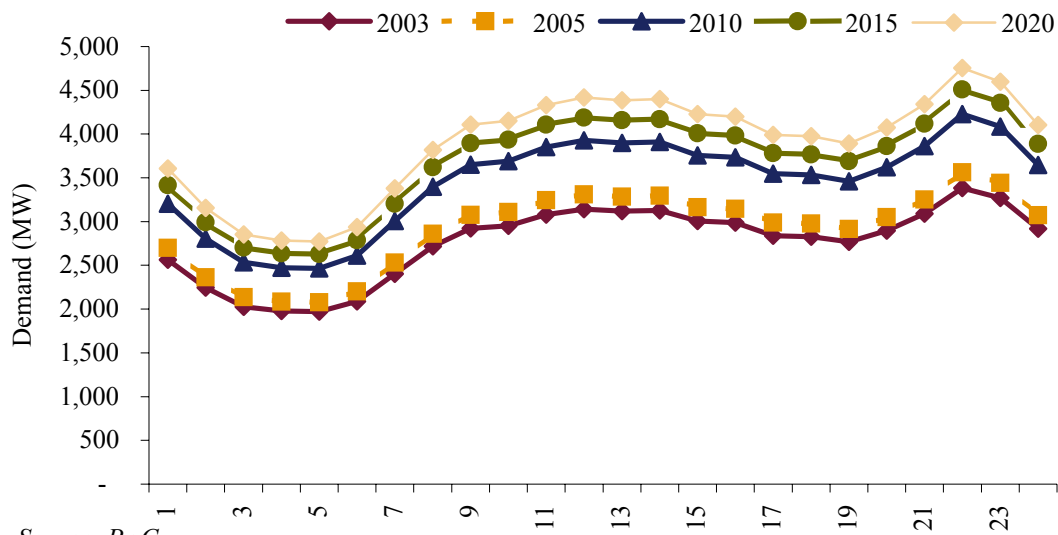
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	-	3,504	3,028	3,229	3,252	3,481	3,713	3,917
2	-	3,230	2,754	2,928	2,948	3,156	3,367	3,552
3	-	3,106	2,571	2,669	2,688	2,877	3,069	3,237
4	-	2,979	2,422	2,582	2,600	2,783	2,969	3,132
5	-	2,762	2,441	2,494	2,511	2,689	2,868	3,025
6	-	3,214	2,681	2,799	2,819	3,017	3,219	3,395
7	-	3,772	3,106	3,297	3,320	3,554	3,792	3,999
8	-	4,417	3,563	3,781	3,807	4,076	4,348	4,586
9	-	4,595	3,626	3,847	3,874	4,147	4,424	4,666
10	-	4,602	3,638	3,942	3,970	4,249	4,533	4,782
11	-	4,465	3,552	3,942	3,970	4,249	4,533	4,782
12	-	4,415	3,531	3,858	3,885	4,159	4,437	4,680
13	-	4,360	3,449	3,801	3,828	4,097	4,371	4,611
14	-	4,132	3,382	3,650	3,676	3,935	4,198	4,427
15	-	3,898	3,248	3,597	3,622	3,878	4,137	4,363
16	-	3,875	3,220	3,527	3,552	3,802	4,056	4,278
17	-	3,762	3,289	3,573	3,598	3,852	4,109	4,334
18	-	3,608	3,373	3,542	3,567	3,818	4,073	4,296
19	-	3,706	3,544	3,608	3,633	3,889	4,149	4,377
20	-	4,104	4,000	4,069	4,097	4,386	4,679	4,936
21	-	4,524	4,158	4,335	4,365	4,673	4,985	5,258
22	-	4,370	4,031	4,199	4,228	4,527	4,829	5,093
23	-	4,088	3,610	3,821	3,848	4,119	4,394	4,635
24	-	3,839	3,311	3,534	3,559	3,810	4,064	4,287

Source: PwC



Figure A6.9.15: 3rd Wed Jul Daily Profiles



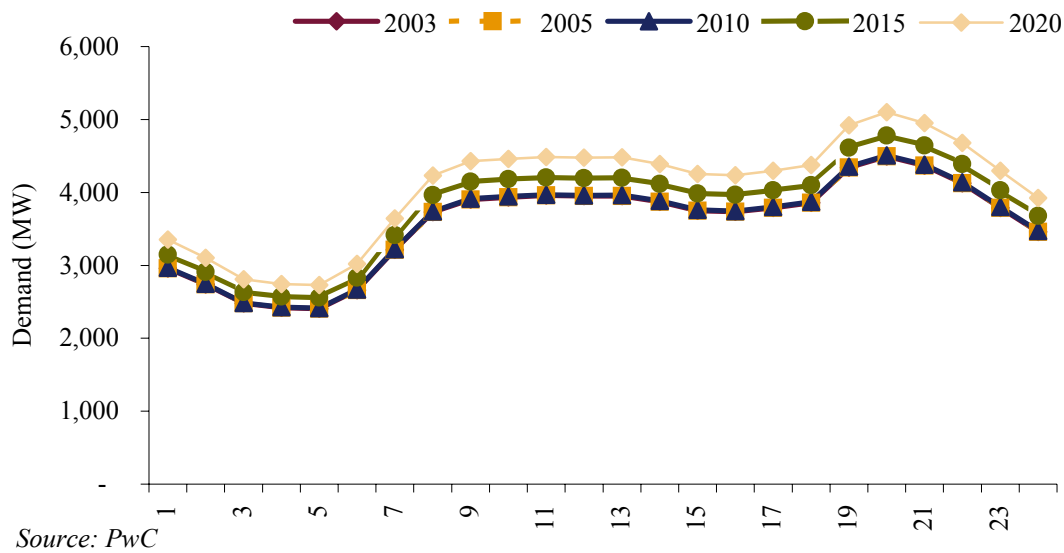
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	-	2,364	2,547	2,564	2,700	3,205	3,418	3,605
2	-	2,149	2,307	2,244	2,363	2,805	2,991	3,155
3	-	1,998	2,115	2,028	2,135	2,535	2,703	2,851
4	-	1,882	2,082	1,979	2,084	2,474	2,638	2,782
5	-	1,928	2,055	1,973	2,078	2,466	2,630	2,774
6	-	2,032	2,148	2,090	2,201	2,613	2,786	2,939
7	-	2,373	2,488	2,404	2,531	3,005	3,205	3,380
8	-	2,681	2,750	2,717	2,861	3,396	3,622	3,820
9	-	2,856	2,962	2,921	3,076	3,651	3,894	4,107
10	-	2,961	3,028	2,952	3,108	3,690	3,935	4,151
11	-	2,972	3,124	3,081	3,244	3,851	4,107	4,332
12	-	3,061	3,128	3,143	3,310	3,929	4,190	4,419
13	-	3,074	3,158	3,120	3,285	3,900	4,159	4,387
14	-	3,041	3,128	3,129	3,295	3,911	4,171	4,399
15	-	2,946	3,027	3,006	3,165	3,758	4,007	4,226
16	-	2,866	2,943	2,987	3,145	3,734	3,982	4,200
17	-	2,793	2,928	2,838	2,988	3,548	3,783	3,990
18	-	2,748	2,836	2,827	2,977	3,534	3,768	3,975
19	-	2,676	2,810	2,769	2,916	3,461	3,691	3,893
20	-	2,768	2,954	2,898	3,052	3,623	3,863	4,075
21	-	3,056	3,065	3,089	3,253	3,861	4,118	4,343
22	-	3,283	3,267	3,383	3,562	4,229	4,510	4,756
23	-	3,004	3,018	3,269	3,442	4,086	4,358	4,596
24	-	2,708	2,745	2,918	3,073	3,648	3,890	4,103

Source: PwC



Figure A6.9.16: 3rd Wed Oct Daily Profiles



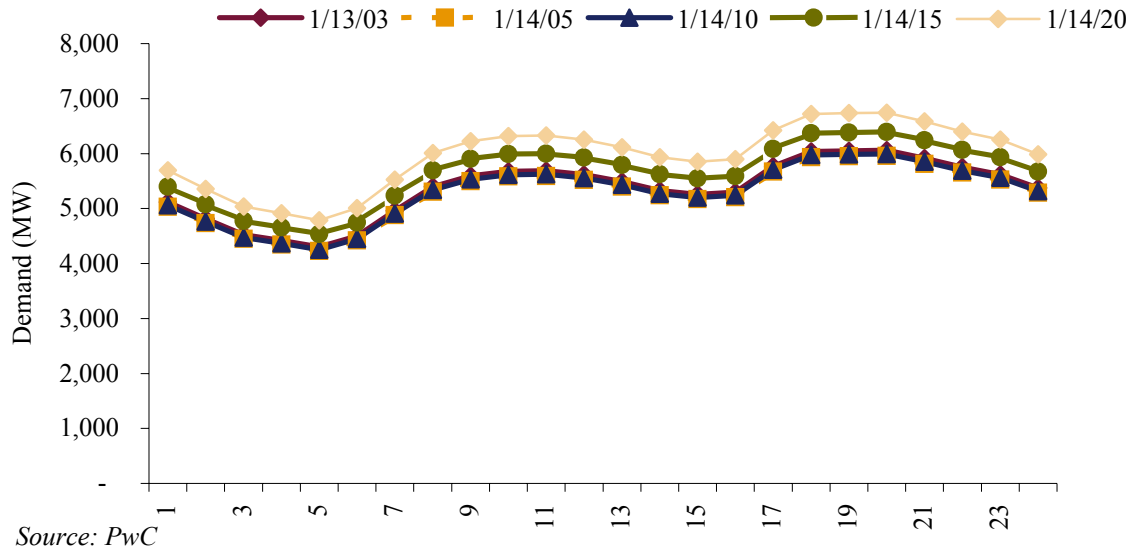
Source: PwC

MW	2000	2001	2002	2003	2005	2010	2015	2020
1	-	2,407	3,170	2,959	2,959	2,968	3,145	3,356
2	-	2,311	2,864	2,738	2,738	2,746	2,910	3,105
3	-	2,136	2,604	2,479	2,479	2,486	2,635	2,811
4	-	2,086	2,530	2,418	2,418	2,425	2,570	2,742
5	-	1,912	2,543	2,406	2,406	2,413	2,558	2,728
6	-	2,355	2,836	2,662	2,662	2,670	2,830	3,019
7	-	2,966	3,393	3,213	3,213	3,223	3,415	3,644
8	-	3,390	3,821	3,730	3,730	3,741	3,965	4,230
9	-	3,501	3,892	3,904	3,904	3,916	4,150	4,427
10	-	3,468	3,812	3,934	3,934	3,946	4,182	4,461
11	-	3,407	3,653	3,957	3,957	3,969	4,206	4,487
12	-	3,349	3,599	3,949	3,949	3,961	4,198	4,478
13	-	3,271	3,498	3,951	3,951	3,963	4,200	4,480
14	-	3,165	3,362	3,872	3,872	3,884	4,116	4,391
15	-	3,051	3,270	3,749	3,749	3,760	3,985	4,251
16	-	3,017	3,284	3,734	3,734	3,745	3,969	4,234
17	-	3,084	3,255	3,790	3,790	3,801	4,029	4,298
18	-	3,205	3,347	3,858	3,858	3,870	4,101	4,375
19	-	3,779	4,035	4,339	4,339	4,352	4,612	4,920
20	-	3,990	4,316	4,496	4,496	4,509	4,779	5,098
21	-	3,891	4,109	4,367	4,367	4,380	4,642	4,952
22	-	3,446	3,935	4,127	4,127	4,139	4,387	4,680
23	-	3,302	3,635	3,790	3,790	3,801	4,029	4,298
24	-	2,848	3,263	3,460	3,460	3,470	3,678	3,924

Source: PwC



Figure A6.9.17: Peak Hourly Demand Daily Profiles

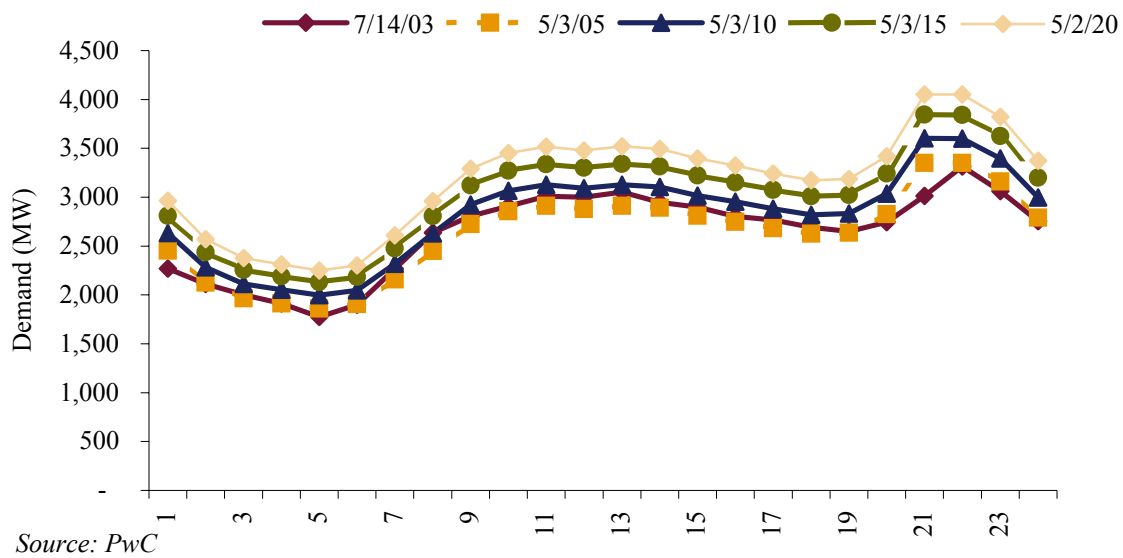


MW	1/0/00	12/18/01	1/5/02	1/13/03	1/14/05	1/14/10	1/14/15	1/14/20
1	-	5,482	5,415	5,115	5,028	5,059	5,396	5,693
2	-	5,068	5,133	4,813	4,731	4,760	5,078	5,357
3	-	4,793	4,722	4,524	4,447	4,474	4,773	5,035
4	-	4,594	4,497	4,417	4,342	4,368	4,660	4,916
5	-	4,584	4,424	4,300	4,227	4,253	4,537	4,786
6	-	4,779	4,482	4,498	4,422	4,449	4,745	5,006
7	-	5,368	4,648	4,962	4,878	4,907	5,235	5,523
8	-	5,841	4,881	5,397	5,305	5,338	5,694	6,007
9	-	5,994	5,283	5,594	5,499	5,532	5,902	6,226
10	-	6,203	5,502	5,678	5,581	5,616	5,990	6,320
11	-	6,108	5,574	5,687	5,590	5,624	6,000	6,330
12	-	6,133	5,597	5,616	5,521	5,554	5,925	6,251
13	-	6,077	5,590	5,491	5,398	5,431	5,793	6,111
14	-	5,906	5,610	5,329	5,238	5,270	5,622	5,931
15	-	5,919	5,575	5,257	5,168	5,199	5,546	5,851
16	-	6,052	5,526	5,298	5,208	5,240	5,589	5,897
17	-	6,337	5,948	5,768	5,670	5,705	6,085	6,420
18	-	6,279	6,141	6,038	5,935	5,972	6,370	6,720
19	-	6,238	6,044	6,051	5,948	5,984	6,384	6,735
20	-	6,204	6,012	6,060	5,957	5,993	6,393	6,745
21	-	6,073	5,970	5,914	5,813	5,849	6,239	6,582
22	-	5,897	5,888	5,751	5,653	5,688	6,067	6,401
23	-	5,836	5,778	5,621	5,525	5,559	5,930	6,256
24	-	5,881	5,695	5,376	5,285	5,317	5,672	5,983

Source: PwC



Figure A6.9.18: Minimum Hourly Demand Daily Profiles



Source: PwC

MW	1/0/00	5/10/01	8/11/02	7/14/03	5/3/05	5/3/10	5/3/15	5/2/20
1	-	2,283	2,459	2,271	2,452	2,634	2,812	2,965
2	-	2,088	2,205	2,114	2,126	2,284	2,438	2,571
3	-	1,908	2,019	2,002	1,967	2,113	2,255	2,378
4	-	1,875	2,007	1,912	1,911	2,053	2,191	2,311
5	-	1,937	1,985	1,775	1,860	1,998	2,132	2,248
6	-	2,063	2,081	1,899	1,905	2,047	2,184	2,303
7	-	2,489	2,367	2,265	2,158	2,319	2,475	2,610
8	-	2,946	2,667	2,638	2,449	2,631	2,808	2,961
9	-	3,111	2,886	2,808	2,723	2,926	3,123	3,293
10	-	3,190	2,980	2,909	2,854	3,067	3,273	3,451
11	-	3,225	3,015	3,010	2,910	3,126	3,337	3,518
12	-	3,317	3,118	2,999	2,878	3,092	3,300	3,479
13	-	3,151	3,086	3,053	2,912	3,128	3,339	3,521
14	-	3,095	3,044	2,947	2,891	3,106	3,315	3,495
15	-	3,020	2,937	2,900	2,809	3,018	3,221	3,396
16	-	2,973	2,862	2,805	2,749	2,953	3,152	3,323
17	-	2,953	2,825	2,766	2,683	2,882	3,076	3,244
18	-	2,841	2,711	2,691	2,625	2,821	3,011	3,174
19	-	2,997	2,763	2,651	2,637	2,832	3,023	3,188
20	-	3,227	2,874	2,743	2,827	3,037	3,242	3,418
21	-	3,463	3,099	3,013	3,352	3,601	3,844	4,053
22	-	3,296	3,086	3,313	3,351	3,600	3,842	4,052
23	-	3,008	2,857	3,061	3,161	3,396	3,625	3,822
24	-	2,616	2,581	2,756	2,791	2,998	3,200	3,375

Source: PwC