

Part 1 - Appendix C

SJLP End-Use Forecast Models

Aquila Networks: St. Joseph Light & Power (SJLP)

A. Residential Model

SJLP residential model is based on Itron MetrixND statistically-adjusted end-use (SAE) forecast of use per customer multiplied by a forecast of residential customers.

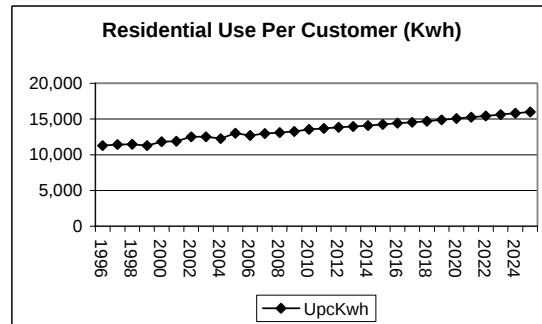
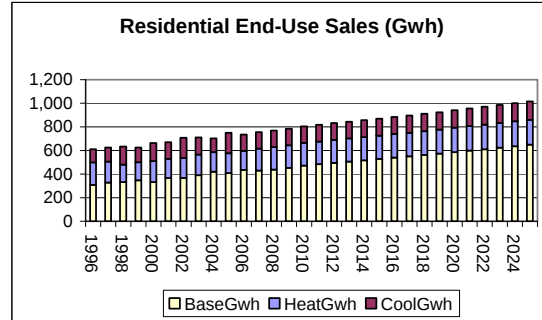
Explanatory variables include monthly intercepts, XHeat, XCool, and XOther, which are based on end-use efficiency trends, market saturation, real prices, and weather.

Model: ResUPC Residential Kwh Per Customer				
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	12.26	85.17	0.14	88.57%
Res.XResHeat	2.89	0.15	19.14	0.00%
Res.XResCool	1.10	0.05	22.20	0.00%
Res.XResOther	0.38	0.06	6.41	0.00%
Regression Statistics Jan96:Dec09				
Iterations	1			
Adjusted Observations	168			
Deg. of Freedom for Error	164			
R-Squared	78.66%			
Adjusted R-Squared	78.27%			
Durbin-Watson Statistic	1.85			
Mean Abs. % Err. (MAPE)	9.02%			

Model: ResCust Residential Customers				
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	34,059.22	2,412.25	14.12	0.00%
Econ.Households	218.69	26.23	8.34	0.00%
Monthly.TimeTrend	1,332.75	200.33	6.65	0.00%
Monthly.Jan	-159.18	48.86	-3.26	0.14%
Monthly.Feb	-177.15			
Monthly.Mar	-101.77			
Monthly.Apr	-169.67			
Monthly.May	48.86415683			
Monthly.Jun	-94.53480435			
Monthly.Jul	-128.2909084			
Monthly.Aug	-59.83272671			
Monthly.Sep	-56.80311646			
Monthly.Oct	-137.7735062			
Monthly.Nov	-117.6724674			
Regression Statistics Jan96:Dec09				
Iterations	1			
Adjusted Observations	168			
Deg. of Freedom for Error	154			
R-Squared	99.43%			
Adjusted R-Squared	99.38%			
Durbin-Watson Statistic	1.16			
Mean Abs. % Err. (MAPE)	0.15%			

Plot C-1 SJLP Residential End-Use Forecast:

Year	HeatGwh	CoolGwh	BaseGwh	TotalGwh	UpckWh	Customers
1996	190.21	113.00	307.91	611.12	11,268	54,234
1997	177.17	118.91	328.40	624.48	11,433	54,619
1998	147.41	153.88	331.29	632.58	11,477	55,116
1999	152.30	125.68	347.67	625.64	11,277	55,478
2000	176.68	153.55	332.02	662.25	11,829	55,985
2001	161.64	142.33	366.65	670.62	11,907	56,319
2002	170.26	168.93	367.45	706.64	12,511	56,481
2003	175.55	145.53	389.20	710.28	12,503	56,809
2004	167.42	115.64	419.37	702.43	12,278	57,212
2005	169.01	171.97	408.37	749.36	13,015	57,575
2006	161.97	138.66	434.53	735.16	12,700	57,885
2007	187.27	138.91	429.35	755.54	12,965	58,277
2008	189.83	139.23	438.96	768.02	13,091	58,670
2009	190.36	139.68	453.15	783.19	13,260	59,062
2010	191.78	140.01	472.87	804.66	13,550	59,383
2011	193.10	140.50	483.35	816.95	13,681	59,715
2012	195.59	141.09	495.42	832.09	13,850	60,079
2013	195.92	141.73	505.33	842.98	13,948	60,437
2014	197.27	142.42	516.34	856.03	14,088	60,764
2015	198.55	143.19	527.59	869.33	14,236	61,064
2016	200.78	144.00	540.14	884.92	14,427	61,337
2017	200.83	144.95	550.28	896.06	14,546	61,600
2018	202.11	146.05	561.73	909.89	14,707	61,867
2019	203.32	147.19	573.44	923.96	14,870	62,135
2020	205.70	148.18	586.68	940.56	15,074	62,394
2021	206.92	149.30	598.81	955.02	15,248	62,634
2022	208.17	150.53	610.84	969.54	15,425	62,856
2023	209.41	151.87	623.32	984.60	15,612	63,067
2024	210.64	153.30	636.02	999.97	15,806	63,266
2025	211.90	154.87	649.04	1015.80	16,006	63,462
2026	215.18	157.27	659.10	1031.55	16,199	63,678
2027	218.52	159.71	669.33	1047.55	16,395	63,895
2028	221.91	162.18	679.71	1063.80	16,593	64,112
2029	225.35	164.70	690.25	1080.30	16,793	64,330
2030	228.85	167.25	700.95	1097.06	16,996	64,549
2031	232.40	169.85	711.83	1114.07	17,201	64,768
2032	236.00	172.48	722.87	1131.35	17,408	64,988
2033	239.66	175.16	734.08	1148.90	17,619	65,209
2034	243.38	177.87	745.46	1166.72	17,831	65,431
2035	247.15	180.63	757.02	1184.81	18,046	65,654
2006-25	1.4%	0.6%	2.1%	1.7%	1.2%	0.5%
2026-35	1.6%	1.6%	1.6%	1.6%	1.2%	0.3%



The regression period for the Residential SAE model includes 10-years of actual data from 1996 to 2006, and 3-years budget data through 2009 in order to calibrate short-term budget and long-term forecast to 2025. Real price elasticity of -0.1 is assumed along with declining real prices in variables XResHeat, XResCool, and XResOther.

Plot C-2 SJLP Residential SAE Model Variables:

The screenshot displays the NDMetrix - SalesModel_SJD.NDM software interface. The left sidebar shows a tree view of the model structure, including Parameter Tables, Data Tables, and Transformation Tables. The main window is divided into two panes. The top pane, titled 'Transform Table: Res', contains a list of equations defining model variables. The bottom pane, titled 'Parameter Table: ElasRes', displays a table of parameters with their values, units, and definitions.

Transform Table: Res

```

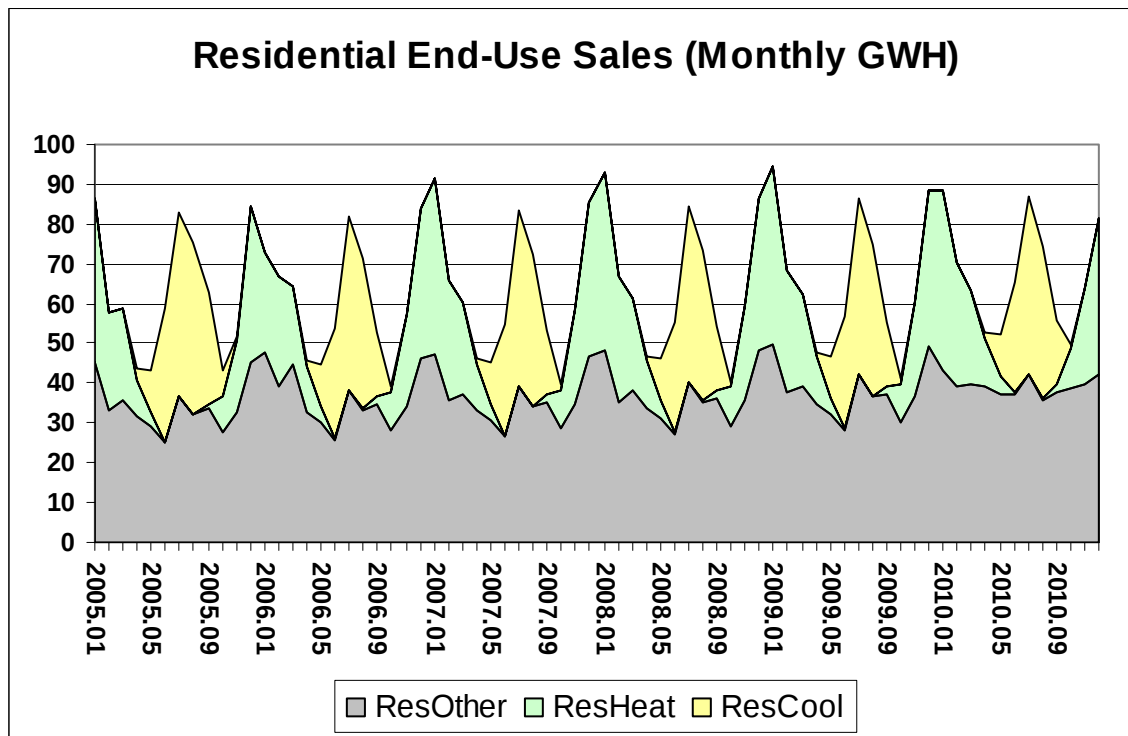
ResSalesPerHH = ESales.Res * 1000000 / ECust.Res
HHSIZE = Econ.Population / Econ.Households
HHSIZEINDEX = Res.HHSIZE / Params.HHSIZE98
HHIncome = Econ.IncomePersonal * 1000 / Econ.Households
HHIncomeINDEX = Res.HHIncome / Params.HHIncome98
ResEPrice = (EPrices.Res / Params.ResPrice98) / Econ.CPI * Value(Econ.CPI, 1998, 7)
ResHeatUse = WeatherTrans.HDDIndex * (Res.HHSIZEINDEX^ElasRes.HSize_Ht) *
              (Res.HHIncomeINDEX^ElasRes.HInc_Ht) * (Res.ResEPrice^ElasRes.Price_Ht)
ResCoolUse = WeatherTrans.CDDIndex * (Res.HHSIZEINDEX^ElasRes.HSize_Cl) *
              (Res.HHIncomeINDEX^ElasRes.HInc_Cl) * (Res.ResEPrice^ElasRes.Price_Cl)
ResOtherUse = (Econ.BillingDays/30.5) * (Res.HHSIZEINDEX^ElasRes.HSize_Oth) *
              (Res.HHIncomeINDEX^ElasRes.HInc_Oth) * (Res.ResEPrice^ElasRes.Price_Oth)
XResHeat = Res.ResHeatUse * Convstock(ResEquipIndices.Heating)
XResCool = Res.ResCoolUse * Convstock(ResEquipIndices.Cooling)
XResOther = Res.ResOtherUse * Res.OtherEqIndex
XResHeatTrend = Res.XResHeat * Shifts.LinearTrend
XResCoolTrend = Res.XResCool * Shifts.LinearTrend
XResOtherTrend = Res.XResOther * Shifts.LinearTrend

```

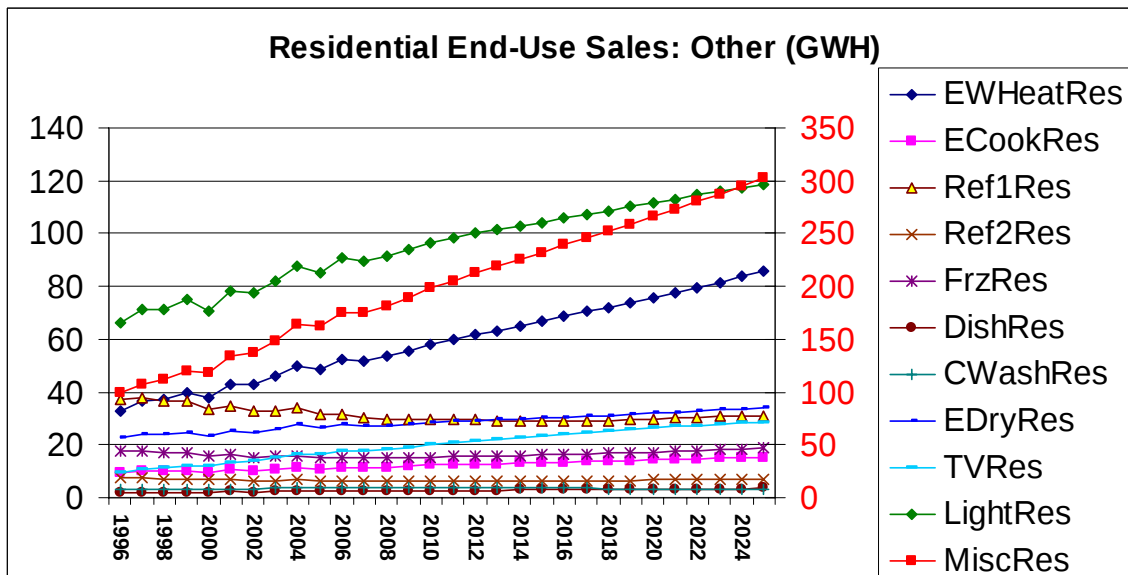
Parameter Table: ElasRes

Name	Value	Units	Format	Definition
HSize_Ht	0.10		#,##0.00	Household size elasticity for space heating
HInc_Ht	0.20		#,##0.00	Household income elasticity for space heating
Price_Ht	-0.10		#,##0.00	Electricity price elasticity for space heating
HSize_Cl	0.10		#,##0.00	Household size elasticity for space cooling
HInc_Cl	0.20		#,##0.00	Household income elasticity for space cooling
Price_Cl	-0.10		#,##0.00	Electricity price elasticity for space cooling
HSize_Oth	0.10		#,##0.00	Household size elasticity for non HVAC end-uses
HInc_Oth	0.20		#,##0.00	Household income elasticity for non HVAC end-uses
Price_Oth	-0.10		#,##0.00	Electricity price elasticity for non HVAC end-uses

Plot C-3 SJLP Residential End-Use Sales (GWH):



Plot C-4 SJLP Residential End-Use Sales: Other (GWH)



B. Commercial Model

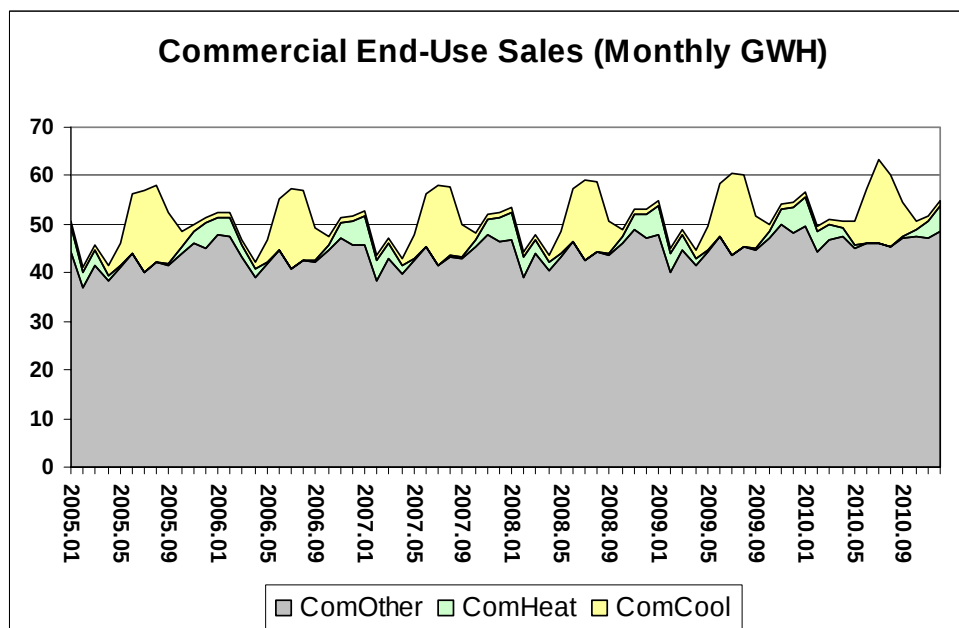
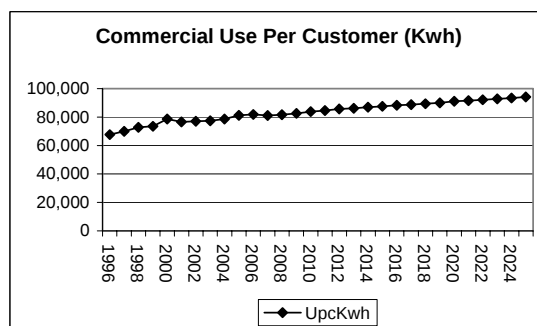
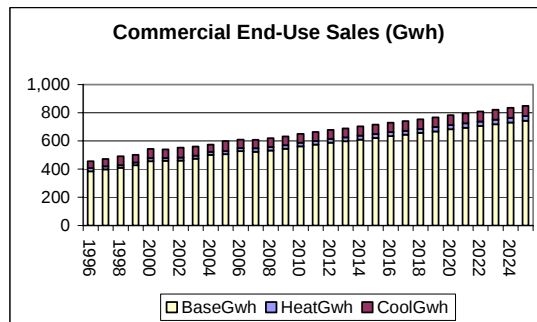
SJLP commercial model is based on Itron MetrixND statistically-adjusted end-use (SAE) forecast of use per customer multiplied by a forecast of commercial customers. Explanatory variables include monthly intercepts, XHeat, XCool, and XOther, which are based on end-use efficiency trends, market saturation, real prices, and weather.

Model:		ComUPC Commercial Kwh Per Customer		
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	-1,549.17	1,113.28	-1.39	16.60%
Com.XComHeat	0.10	0.02	5.73	0.00%
Com.XComCool	0.15	0.01	18.72	0.00%
Com.XComOther	0.02	0.00	5.90	0.00%
Shifts.Shift01_02	195.51	91.39	2.14	3.39%
Shifts.Shift03	243.79	95.88	2.54	1.20%
Regression Statistics		Jan96:Dec09		
Iterations	1			
Adjusted Observations	168			
Deg. of Freedom for Error	162			
R-Squared	76.99%			
Adjusted R-Squared	76.28%			
Durbin-Watson Statistic	1.81			
Mean Abs. % Err. (MAPE)	4.58%			

Model:		ComCust Commercial Customers		
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	7,166.00	550.01	13.03	0.00%
Econ.EmpCom	-6.76	6.68	-1.01	31.35%
Monthly.TimeTrend	743.95	92.23	8.07	0.00%
AR(1)	0.67	0.06	11.02	0.00%
Regression Statistics		Jan96:Dec09		
Iterations	7			
Adjusted Observations	167			
Deg. of Freedom for Error	163			
R-Squared	97.90%			
Adjusted R-Squared	97.86%			
Durbin-Watson Statistic	2.11			
Mean Abs. % Err. (MAPE)	0.36%			

Plot C-5 SJLP Commercial End-Use Forecast:

Year	HeatGwh	CoolGwh	BaseGwh	TotalGwh	UpcKwh	Customers
1996	23.09	49.15	383.85	456.10	67,569	6,750
1997	21.76	52.22	398.02	472.00	70,017	6,741
1998	18.08	63.44	409.17	490.69	72,776	6,743
1999	18.70	54.48	428.25	501.43	73,470	6,825
2000	21.68	64.02	456.41	542.11	78,510	6,905
2001	19.79	60.85	459.31	539.95	76,611	7,048
2002	21.44	70.35	460.71	552.50	76,981	7,177
2003	22.29	62.73	474.54	559.56	77,282	7,241
2004	21.52	52.48	500.44	574.44	78,617	7,307
2005	21.68	71.80	505.22	598.70	81,255	7,368
2006	21.08	60.82	527.43	609.32	81,859	7,444
2007	24.54	61.31	522.49	608.34	81,007	7,510
2008	25.07	61.81	532.47	619.35	81,663	7,584
2009	25.32	62.32	544.54	632.18	82,544	7,659
2010	25.77	62.95	561.50	650.22	83,850	7,755
2011	26.22	63.55	573.96	663.73	84,627	7,843
2012	26.80	64.15	587.68	678.63	85,633	7,925
2013	27.09	64.77	597.66	689.51	86,110	8,007
2014	27.52	65.40	609.83	702.75	86,861	8,091
2015	27.96	66.05	621.05	715.06	87,470	8,175
2016	28.56	66.70	634.28	729.55	88,323	8,260
2017	28.86	67.38	643.69	739.93	88,676	8,344
2018	29.33	68.08	655.66	753.07	89,354	8,428
2019	29.80	68.78	667.81	766.40	90,032	8,512
2020	30.43	69.40	682.43	782.25	90,995	8,597
2021	30.90	70.03	694.36	795.29	91,601	8,682
2022	31.38	70.70	706.40	808.48	92,209	8,768
2023	31.87	71.40	718.56	821.83	92,821	8,854
2024	32.37	72.13	730.86	835.35	93,436	8,940
2025	32.88	72.89	743.37	849.14	94,068	9,027
2026	33.42	74.09	755.67	863.18	94,695	9,115
2027	33.98	75.32	768.17	877.46	95,326	9,205
2028	34.54	76.57	780.87	891.98	95,961	9,295
2029	35.11	77.83	793.79	906.74	96,601	9,386
2030	35.69	79.12	806.93	921.74	97,244	9,479
2031	36.28	80.43	820.27	936.99	97,892	9,572
2032	36.88	81.76	833.84	952.49	98,545	9,666
2033	37.49	83.11	847.64	968.24	99,201	9,760
2034	38.11	84.49	861.66	984.26	99,862	9,856
2035	38.74	85.88	875.92	1000.54	100,528	9,953
2006-25	2.4%	1.0%	1.8%	1.8%	0.7%	1.0%
2026-35	1.7%	1.7%	1.7%	1.7%	0.7%	1.0%



The regression period for the Commercial SAE model includes 10-years of actual data from 1996 to 2006, and 3-years budget data through 2009 in order to calibrate short-term budget and long-term forecast to 2025. Real price elasticity of -0.1 is assumed along with declining real prices in variables XComHeat, XComCool, and XComOther.

Plot C-6 SJLP Commercial SAE Model Variables:

The screenshot displays the NDMetrix - SalesModel_SJD.NDM software interface. The left sidebar shows a tree view of the model structure, including Parameter Tables, Data Tables, Transformation Tables, and Models. The main window is divided into two panes. The top pane, titled 'Transform Table: Com', contains a list of equations defining model variables. The bottom pane, titled 'Parameter Table: ElasCom', displays a table of parameters.

Transform Table: Com

```

ComEmp = Econ.EmpCom
ComSalesPerEmp = ESales.Com * 1000000 / ECust.Com
ComEPrice = (EPrices.Com / Params.ComPrice98) / Econ.CPI * Value(Econ.CPI, 1998, 7)
ComOut = Econ.GSP
ComOutIndex = Com.ComOut / Params.OutCom98
ComHeatUse = WeatherTrans.HDDIndex * ((Com.ComEPrice)^ElasCom.Price) *
              (Com.ComOutIndex^ElasCom.Output)
ComCoolUse = (Params.ComBaseCoolPct/12 + (1-Params.ComBaseCoolPct)*WeatherTrans.CDDIndex) *
              (Com.ComEPrice^ElasCom.Price) * (Com.ComOutIndex^ElasCom.Output)
ComOtherUse = (Econ.BillingDays/30.5) * ((Com.ComEPrice)^ElasCom.Price) *
              (Com.ComOutIndex^ElasCom.Output)
XComHeat = Com.ComHeatUse * Convstock(ComEquipIndices.Heating)
XComCool = Com.ComCoolUse * Convstock(ComEquipIndices.Cooling)
XComOther = Com.ComOtherUse * Convstock(ComEquipIndices.NonHVAC)
  
```

Parameter Table: ElasCom

Name	Value	Units	Format	Definition
Output	0.20	##0.00		Real commercial output elasticity
Price	-0.10	##0.00		Real Commercial electricity price elasticity

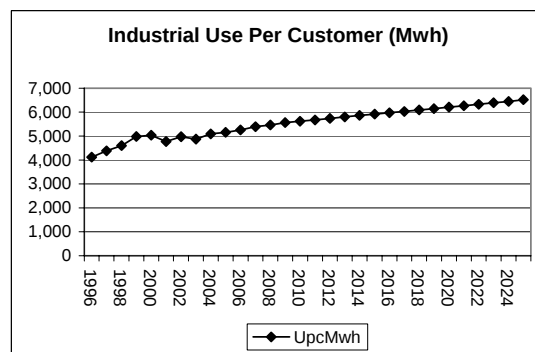
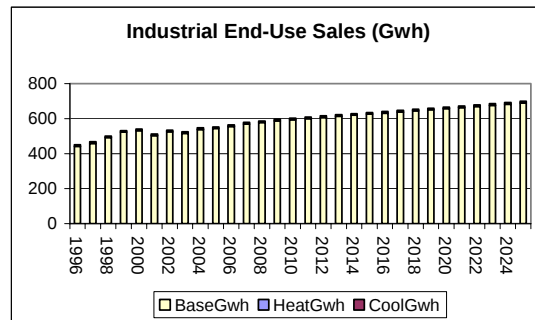
C. Industrial Model

SJLP industrial model is based on Itron MetrixND statistically-adjusted end-use (SAE) model of industrial sales. Explanatory variables include weather (CDDIndex), Industrial Output Price Index, and monthly intercepts.

Model:	IndSales	Industrial Sales (Gwh)		
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	27.85	1.69	16.51	0.00%
Ind.IndOutPriceIndex	10.85	1.44	7.53	0.00%
WeatherTrans.CDDIndex	9.25	2.45	3.77	0.02%
Shifts.Shift00	2.13	0.73	2.93	0.39%
Shifts.BadInd	-5.32	0.73	-7.30	0.00%
Monthly.Jan	-3.90	0.81	-4.80	0.00%
Monthly.Apr	-2.12	0.80	-2.63	0.93%
Monthly.Jun	2.47	0.84	2.94	0.38%
Monthly.Aug	1.79	0.94	1.90	5.87%
Monthly.Nov	3.99	0.82	4.88	0.00%
Regression Statistics	Jan96:Dec09			
Iterations	1			
Adjusted Observations	168			
Deg. of Freedom for Error	158			
R-Squared	71.67%			
Adjusted R-Squared	70.05%			
Durbin-Watson Statistic	1.75			
Mean Abs. % Err. (MAPE)	5.03%			

Plot C-7 SJLP Industrial End-Use Forecast:

Year	HeatGwh	CoolGwh	BaseGwh	TotalGwh	UpcMwh	Customers
1996		9.25	441.58	450.83	4,120	109
1997		9.25	458.14	467.39	4,385	107
1998		9.25	491.18	500.43	4,598	109
1999		9.25	522.25	531.50	4,983	107
2000		9.25	531.20	540.45	5,039	107
2001		9.25	502.36	511.61	4,770	107
2002		9.25	524.87	534.12	4,969	108
2003		9.25	515.59	524.84	4,871	108
2004		9.25	537.92	547.17	5,094	107
2005		9.25	543.16	552.41	5,151	107
2006		9.25	554.57	563.82	5,257	107
2007		9.25	569.18	578.43	5,393	107
2008		9.25	577.11	586.36	5,467	107
2009		9.25	587.73	596.98	5,566	107
2010		9.25	592.96	602.21	5,615	107
2011		9.25	599.51	608.76	5,676	107
2012		9.25	606.35	615.59	5,740	107
2013		9.25	612.93	622.18	5,801	107
2014		9.25	619.30	628.55	5,861	107
2015		9.25	625.41	634.66	5,918	107
2016		9.25	631.21	640.46	5,972	107
2017		9.25	637.45	646.70	6,030	107
2018		9.25	643.88	653.13	6,090	107
2019		9.25	650.14	659.39	6,148	107
2020		9.25	656.67	665.92	6,209	107
2021		9.25	662.87	672.12	6,267	107
2022		9.25	669.21	678.46	6,326	107
2023		9.25	675.73	684.98	6,387	107
2024		9.25	682.38	691.63	6,449	107
2025		9.25	689.35	698.60	6,514	107
2026		9.25	696.08	705.33	6,577	107
2027		9.25	702.87	712.12	6,640	107
2028		9.25	709.73	718.98	6,704	107
2029		9.25	716.65	725.90	6,768	107
2030		9.25	723.64	732.89	6,834	107
2031		9.25	730.70	739.95	6,899	107
2032		9.25	737.83	747.08	6,966	107
2033		9.25	745.02	754.27	7,033	107
2034		9.25	752.28	761.53	7,101	107
2035		9.25	759.62	768.87	7,169	107
2006-25		0.0%	1.2%	1.1%	1.1%	0.0%
2026-35		0.0%	1.0%	1.0%	1.0%	0.0%



The regression period for the Industrial SAE model includes 10-years of actual data from 1996 to 2006, and 3-years budget data through 2009 in order to calibrate short-term budget and long-term forecast to 2025. Real price elasticity of -0.1 is assumed along with declining real prices in variable IndOutputPriceIndex.

Plot C-8 SJLP Industrial SAE Model Variables:

The screenshot displays the NDMetrix - SalesModel_SJD.NDM software interface. The left pane shows a tree view of the model structure, including Parameter Tables, Data Tables, Transformation Tables, and Models. The right pane contains three tables: Transform Table: Ind, Transform Table: WeatherTrans, and Parameter Table: Parns.

Transform Table: Ind

```

IndSalesPerEmp = ESales.Ind*1000/Ind.IndEmp
IndSalesPerOutput = ESales.Ind*1000/Ind.IndOutput
IndEmp = Econ.EmpMfg
IndOutput = (Econ.GSP/Parms.OutManuf98)
IndPrice = (EPrices.Ind / Parms.IndPrice98) / Econ.CPI * Value(Econ.CPI,1996,7)
IndOutPriceIndex = (Ind.IndOutput)*(Ind.IndPrice*ElasCom.Price)
SummerIndex = Shifts.Summer*Ind.IndOutPriceIndex
WinterIndex = Shifts.Winter*Ind.IndOutPriceIndex

```

Transform Table: WeatherTrans

```

HDD Index = (Econ.BillingDays/30.5) *
((1-Parms.LagHDDWgt)*Weather.HDD+
Parms.LagHDDWgt*Lag(Weather.HDD,1))/Parms.AnnHDDNorm
CDD Index = (Econ.BillingDays/30.5) *
((1-Parms.LagCDDWgt)*Weather.CDD+
Parms.LagCDDWgt*Lag(Weather.CDD,1))/Parms.AnnCDDNorm

```

Parameter Table: Parns

Name	Value	Units	Format	Definition
AnnCDDNorm	1325.00		###0.00	Normal CDD
AnnHDDNorm	5249.00		###0.00	Normal HDD
LagCDDWgt	0.00		###0.00	Weight for lag month CDD
LagHDDWgt	0.00		###0.00	Lag Month HDD
ResPrice98	5.89	Cents/kWh	###0.00	Base Period Residential Price
HHSize98	2.60	Persons per HH	###0.00	Base Period Household Size
HHInc98	5774.00	Millions of \$96	###0.00	Base Period Household Income
OutCom98	5.31	GSP 96\$Billions	###0.00	Base Period Commercial Output
ComPrice98	4.82	Cents/kWh	###0.00	Base Period Commercial Price
ComBaseCoolPct	20.00%		0.00%	Base Period Commercial Cooling Percent
OutManuf98	5.31	GSP 96\$Billions	###0.00	Base Period Manufacturing Output
IndPrice98	3.04	Cents/kWh	###0.00	Base Period Industrial Price

D. Other Sales

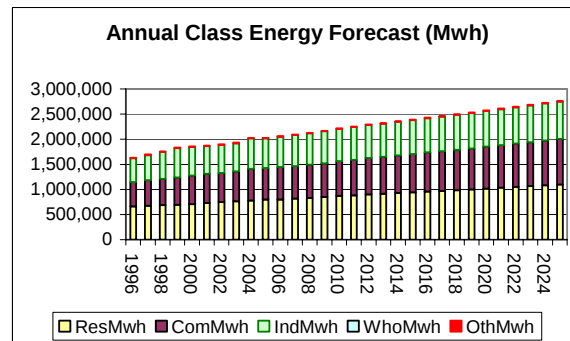
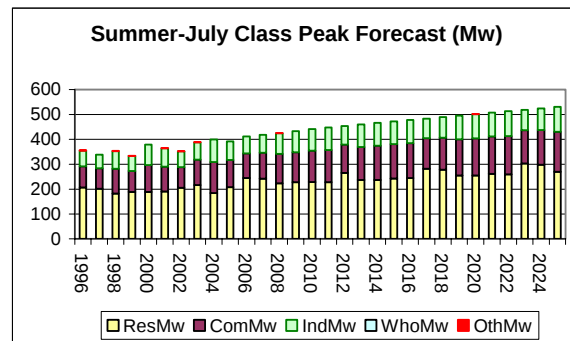
SJLP Other sales are primarily street lighting. Other sales are assumed to not grow significantly during the 2006-2025 forecast period.

E. Class and System Peak Demand

SJLP class peak demands are based on 2005 load research profiles, which have been weather normalized and calibrated to the monthly system energy and peak demand forecast to 2025. Class peaks are reported on a coincident basis with system peak demand in table below.

Plot C-9 SJLP Peak Demand Forecast (MW):

07 Class Peak Forecast (Summer-July)						
Year	ResMw	ComMw	IndMw	WhoMw	OthMw	TotalMw
1996	206	85	63	0	1.29	356
1997	202	82	55	0	0.10	339
1998	182	100	71	0	0.11	353
1999	189	83	62	0	0.11	334
2000	188	109	81	0	0.10	379
2001	191	100	73	0	0.55	365
2002	206	83	63	0	0.62	352
2003	216	102	70	0	0.66	389
2004	184	125	91	0	0.11	399
2005	208	109	74	0	0.09	392
2006	244	99	68	0	0.11	412
2007	242	104	72	0	0.10	418
2008	223	118	84	0	0.10	425
2009	227	121	84	0	0.10	433
2010	229	126	87	0	0.09	442
2011	228	130	90	0	0.10	448
2012	265	113	75	0	0.11	454
2013	237	133	91	0	0.10	460
2014	237	137	92	0	0.10	466
2015	243	138	91	0	0.10	472
2016	245	140	93	0	0.10	478
2017	282	123	79	0	0.11	484
2018	278	129	83	0	0.11	490
2019	254	146	95	0	0.10	496
2020	254	150	97	0	0.10	502
2021	261	150	96	0	0.09	507
2022	260	154	99	0	0.10	513
2023	303	134	82	0	0.11	519
2024	298	140	87	0	0.11	525
2025	270	160	100	0	0.10	531
2026	274	163	101	0	0.10	538
2027	279	166	102	0	0.10	546
2028	283	168	103	0	0.10	554
2029	287	171	104	0	0.10	561
2030	292	174	105	0	0.10	569
2031	296	177	106	0	0.10	578
2032	301	180	107	0	0.10	586
2033	305	183	108	0	0.10	594
2034	310	186	109	0	0.10	603
2035	315	189	110	0	0.10	611
2006-25	0.5%	2.6%	2.0%		0.0%	1.3%
2026-35	1.5%	1.7%	1.0%		0.0%	1.4%



Annual system load factor grows by about 0.1% annually from 57.1% in 2006 to 59.4% by 2025 primarily due to growth in residential class load factor. Residential sales are forecast to grow at 1.7% annually over 2006-2025 forecast period; slightly less than commercial sales growth of 1.8% annually.

Plot C-10 SJLP Class Energy Forecast (GWH), including losses:

12 Class Energy Forecast (Annual)

Year	ResMwh	ComMwh	IndMwh	WhoMwh	OthMwh	TotalMwh
1996	660,077	484,501	478,186	0	10,187	1,632,951
1997	676,321	505,199	502,581	0	10,116	1,694,217
1998	688,102	523,318	535,053	0	10,577	1,757,050
1999	692,546	547,359	583,431	0	10,989	1,834,325
2000	706,072	568,815	570,895	0	10,678	1,856,459
2001	730,756	579,842	552,501	0	10,801	1,873,900
2002	750,176	576,462	560,433	0	10,607	1,897,677
2003	763,877	594,555	562,090	0	10,955	1,931,477
2004	782,013	629,842	603,647	0	11,258	2,026,760
2005	799,735	629,062	585,767	0	10,933	2,025,496
2006	798,193	649,175	600,989	0	10,964	2,059,322
2007	818,921	648,262	616,794	0	10,913	2,094,889
2008	831,825	660,366	625,617	0	10,756	2,128,564
2009	848,910	673,423	636,871	0	10,829	2,170,033
2010	871,713	692,899	642,530	0	10,813	2,217,954
2011	885,186	707,170	649,463	0	10,816	2,252,636
2012	902,301	722,705	656,380	0	10,818	2,292,203
2013	913,082	734,983	663,769	0	10,773	2,322,607
2014	927,258	748,721	670,834	0	10,814	2,357,628
2015	942,078	761,577	677,200	0	10,849	2,391,704
2016	958,775	777,339	683,298	0	10,808	2,430,219
2017	971,787	787,800	689,551	0	10,839	2,459,976
2018	986,057	802,248	696,699	0	10,825	2,495,830
2019	1,000,555	816,859	703,710	0	10,794	2,531,918
2020	1,018,312	833,046	711,475	0	10,885	2,573,719
2021	1,035,047	846,954	717,083	0	10,851	2,609,935
2022	1,050,760	860,998	723,837	0	10,859	2,646,454
2023	1,067,172	875,164	730,725	0	10,866	2,683,927
2024	1,083,624	889,696	737,896	0	10,860	2,722,076
2025	1,099,438	904,577	746,380	0	10,879	2,761,274
2026	1,116,423	919,604	753,564	0	10,879	2,800,470
2027	1,133,670	934,881	760,817	0	10,879	2,840,247
2028	1,151,184	950,411	768,140	0	10,879	2,880,614
2029	1,168,968	966,199	775,533	0	10,879	2,921,580
2030	1,187,027	982,250	782,998	0	10,879	2,963,154
2031	1,205,365	998,567	790,534	0	10,879	3,005,345
2032	1,223,987	1,015,155	798,143	0	10,879	3,048,164
2033	1,242,896	1,032,019	805,825	0	10,879	3,091,619
2034	1,262,097	1,049,163	813,581	0	10,879	3,135,720
2035	1,281,594	1,066,592	821,412	0	10,879	3,180,477
2006-25	1.7%	1.8%	1.1%		0.0%	1.6%
2026-35	1.5%	1.7%	1.0%		0.0%	1.4%
LF-2005	43.8%	68.1%	90.1%			57.1%
LF-2025	46.5%	64.5%	84.9%			59.4%

SJLP monthly peak forecast model explanatory variables include monthly system energy, customers, monthly intercepts, and weather variables on the day of monthly peaks (Hdd65, Cdd65).

Model:				
MonthPeak		System Monthly Peak (Mw)		
Variable	Coefficient	StdErr	T-Stat	P-Value
Monthly.Energy	0.0011	0.00	9.02	0.00%
Monthly.Customers	0.0066	0.00	4.55	0.00%
Monthly.Shift06	-352.9154	82.53	-4.28	0.00%
Monthly.Hdd_Pk	1.2104	0.15	7.85	0.00%
Monthly.Cdd_Pk	4.6903	0.45	10.40	0.00%
Monthly.May	16.0394	5.88	2.73	0.73%
Monthly.Jun	20.6748	5.67	3.65	0.04%
Monthly.Sep	29.7201	5.69	5.23	0.00%
Regression Statistics	Jan96:Mar06			
Iterations	1			
Adjusted Observations	123			
Deg. of Freedom for Error	115			
R-Squared	92.00%			
Adjusted R-Squared	91.51%			
Durbin-Watson Statistic	2.12			
Mean Abs. % Err. (MAPE)	3.79%			

SJLP weather normalized hourly load profiles are based on a Daily Energy model which drives 24 hourly models. Explanatory variables include weekdays, holidays, monthly intercepts, and weather variables (cubic average daily dry-bulb temperatures).

Model:	DayEnergy	System Daily Energy (Mwh)		
Variable	Coefficient	StdErr	T-Stat	P-Value
CONST	6333.30	88.33	71.70	0.00%
Daily.WkDay	628.87	22.03	28.55	0.00%
Calendar.Saturday	139.99	28.40	4.93	0.00%
Calendar.GoodFri	-571.58	149.01	-3.84	0.01%
Calendar.MemDay	-927.63	147.97	-6.27	0.00%
Calendar.July4th	-934.17	146.86	-6.36	0.00%
Calendar.LaborDay	-772.30	146.27	-5.28	0.00%
Calendar.Thanks	-1118.27	150.32	-7.44	0.00%
Calendar.FriAThanks	-785.56	148.26	-5.30	0.00%
Calendar.XMasEve	-1066.12	176.27	-6.05	0.00%
Calendar.XMasDay	-1274.88	180.50	-7.06	0.00%
Calendar.XMasWk	-524.56	135.93	-3.86	0.01%
Calendar.NYEve	-1023.06	190.63	-5.37	0.00%
Calendar.NYDay	-1193.97	165.61	-7.21	0.00%
Daily.AvgDB	20.58	6.11	3.37	0.08%
Daily.AverageDBSquared	-2.55	0.13	-19.15	0.00%
Daily.AverageDBCubed	0.03	0.00	30.29	0.00%
Daily.Feb	-42.92	31.05	-1.38	16.69%
Daily.Mar	-174.27	29.94	-5.82	0.00%
Daily.Apr	-459.24	31.68	-14.50	0.00%
Daily.May	-402.11	31.86	-12.62	0.00%
Daily.Jul	225.16	36.84	6.11	0.00%
Daily.Aug	155.61	34.92	4.46	0.00%
Daily.Oct	-319.48	31.14	-10.26	0.00%
Daily.Nov	-178.64	32.51	-5.49	0.00%
Regression Statistics		Jan96:Mar06		
Iterations	1			
Adjusted Observations	2647			
Deg. of Freedom for Error	2622			
R-Squared	81.93%			
Adjusted R-Squared	81.77%			
Durbin-Watson Statistic	0.75			
Mean Abs. % Err. (MAPE)	5.51%			

Annual energy (GWH), including losses of about 6.8%, is forecast to grow 1.6% annually, and summer peak demand (MW) is forecast to grow 1.3% annually over the 2006-2025 forecast period. Winter peak demand grows by 1.4% annually over the 2006-25 forecast period.

Plot C-11 SJLP System Peak Forecast: Summer and Winter:

System Peak Forecast					
Year	Summer		Winter		TotalCust
	SalesGwh	NEL_Gwh	PeakMw.07	PeakMw.01	
1996	1,527.59	1,632.95	356	276	61,188
1997	1,573.11	1,696.76	339	297	61,563
1998	1,633.39	1,757.05	353	312	62,115
1999	1,668.42	1,834.33	334	330	62,608
2000	1,754.68	1,856.46	379	333	63,203
2001	1,731.98	1,873.90	365	348	63,689
2002	1,803.10	1,897.68	352	343	63,928
2003	1,804.95	1,931.48	389	349	64,327
2004	1,834.18	2,026.76	399	347	64,787
2005	1,910.65	2,025.50	392	371	65,214
2006	1,918.49	2,059.32	412	368	65,601
2007	1,952.47	2,094.89	418	379	66,059
2008	1,983.79	2,128.56	425	386	66,526
2009	2,022.40	2,170.03	433	394	66,993
2010	2,067.15	2,217.95	442	395	67,410
2011	2,099.49	2,252.64	448	402	67,830
2012	2,136.38	2,292.20	454	408	68,276
2013	2,164.72	2,322.61	460	415	68,717
2014	2,197.39	2,357.63	466	422	69,127
2015	2,229.11	2,391.70	472	428	69,511
2016	2,264.98	2,430.22	478	434	69,869
2017	2,292.75	2,459.98	484	440	70,217
2018	2,326.15	2,495.83	490	446	70,568
2019	2,359.81	2,531.92	496	452	70,920
2020	2,398.79	2,573.72	502	458	71,263
2021	2,432.49	2,609.94	507	464	71,588
2022	2,466.53	2,646.45	513	470	71,896
2023	2,501.47	2,683.93	519	475	72,193
2024	2,537.01	2,722.08	525	481	72,478
2025	2,573.60	2,761.27	531	487	72,762
2026	2,610.13	2,800.47	538	494	73,065
2027	2,647.20	2,840.25	546	501	73,370
2028	2,684.83	2,880.61	554	508	73,676
2029	2,723.01	2,921.58	561	515	73,983
2030	2,761.76	2,963.15	569	523	74,291
2031	2,801.08	3,005.35	578	530	74,601
2032	2,840.99	3,048.16	586	538	74,912
2033	2,881.49	3,091.62	594	545	75,225
2034	2,922.59	3,135.72	603	553	75,538
2035	2,964.31	3,180.48	611	561	75,853
2006-25	1.6%	1.6%	1.3%	1.5%	0.5%
2026-35	1.4%	1.4%	1.4%	1.4%	0.4%

