DOCKET
09-IEP-1C
DATE
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California Energy Commission
2009 Integrated Energy Policy Report
Docket Number 09-IEP-1C

The following spreadsheets are the California Energy Commission (Energy Commission) forms for collecting data and analyses relating to electricity demand. The Energy Commission's statues and regulations specify that a broad array of information can be collected and analyzed to prepare the ***Integrated Energy Policy Report***. Specifically, Public Resources Code (PRC) Section 25301 directs the Energy Commission to conduct regular assessments of all aspects of energy demand and supply to that it may develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety. To carry out these assessments the Energy Commission may require submission of data from market participants in California:

To perform these assessments and forecasts, the Energy Commission may require submission of demand forecasts, resource plans, market assessments, and related outlooks from electric and natural gas utilities, transportation fuel and technology suppliers, and other market participants. PRC 25301(a)

Submittal Format

Parties are requested to submit a diskette or compact disk containing:
data from Forms 1, 2, 3, 6, 7, and 8, and
reports on Forms 4 and 5 in Word or Acrobat.

Data with no confidentiality request should be sent to:
California Energy Commission
Docket Office
Attn: Docket 09-IEP-1C
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
or email to: Docket@energy.state.ca.us. Please include "Docket #09-IEP-1C Demand Forecast", in the subject line.

If you are requesting confidentiality, please review the detailed instructions.

To expedite the forecast comparison and review process, an Excel template with formats for each form in 1, 2, and 3 is provided. While it is preferred that filers use this template, participants may provide these results in their own format as long as the equivalent information is provided and the information is clearly labeled.

Due Date: **All** **Friday, February 13, 2009**

The data do not have to be distributed to the IEPR service list.

Technical questions relating to the electricity demand forecast should be directed to Chris Kavalec (916) 654-5184 or Tom Gorin (916) 654-4759 of the Demand Analysis Office or by email at ckavalec@energy.state.ca.us or tgorin@energy.state.ca.us.

Introduction

Prior to 2008, IID used a simple trend model for forecasting total energy requirements. While the trend model may once have been applicable for IID's purposes, a backcast illustrated that since 2005 (and perhaps earlier) the trend model was over-forecasting IID's energy requirements and annual peak demand.

As a result, IID has begun preparing the 2009 forecast using an econometric model of energy requirements.

Forecasting Energy Requirements

IID's development of an econometric model of monthly energy requirements and monthly peak demand is still under development although it has already improved upon the results of the previously used trend model.

The model is a two-stage process. In the first stage, employment for IID's service territory is calculated based upon changes in California total employment as forecasted by the California Department of Finance.

In the second stage, the employment data, along with temperature data, is used to forecast monthly energy requirements. The following table summarizes the first regression equation used for forecasting

SUMMARY OUTPUT

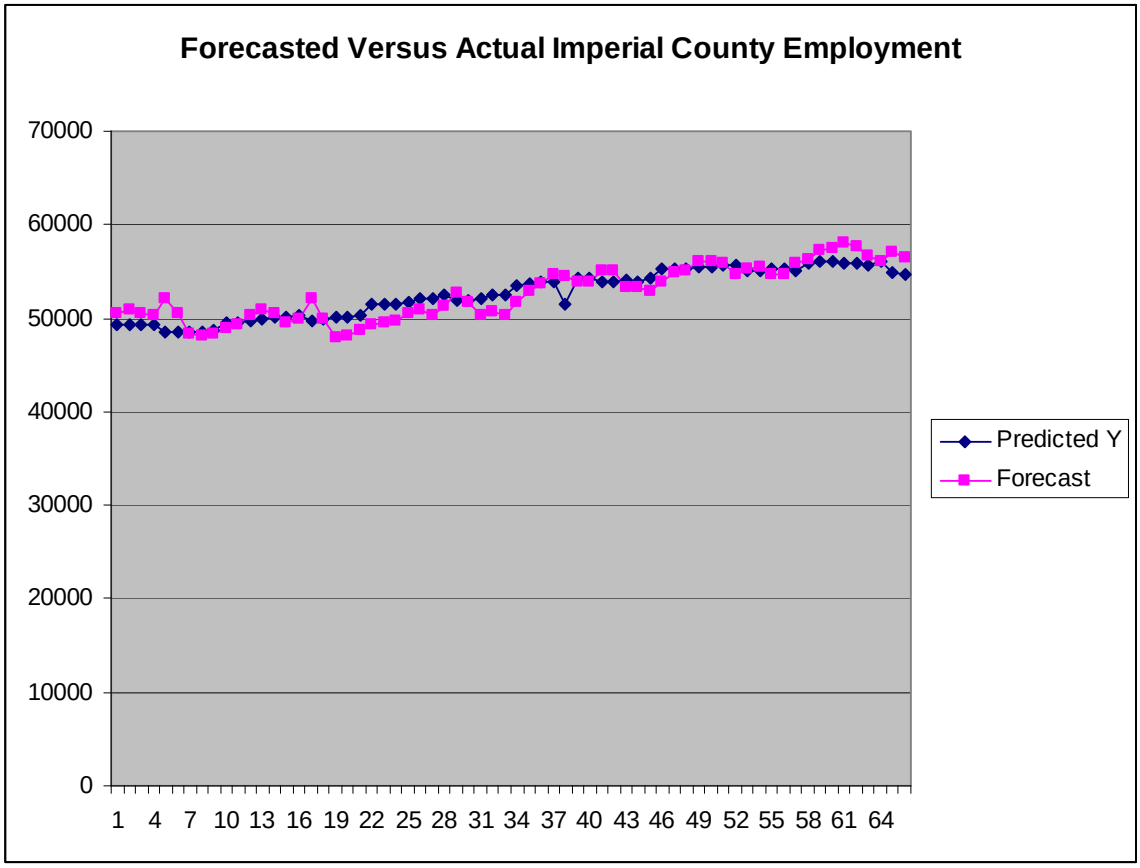
Regression Statistics	
Multiple R	0.881171
R Square	0.776462
Adjusted R Square	0.769365
Standard Error	1375.782
Observations	66

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	4.14E+08	2.07E+08	109.4156	3.2E-21
Residual	63	1.19E+08	1892776		
Total	65	5.33E+08			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-53736.8	7290.857	-7.37044	4.51E-10	-68306.4	-39167.2	-68306.4	-39167.2
cal emp	6.366291	0.434934	14.63736	6.07E-22	5.497143	7.235438	5.497143	7.235438
summer binary	-759.328	344.4385	-2.20454	0.031146	-1447.63	-71.0228	-1447.63	-71.0228

The regression provides a good historic fit of the employment data.



The second portion of the modeling process is to forecast electricity requirements. This is done using a forecasting model that uses county employment, degree days heating and degree days cooling as the explanatory variables.

Regression Statistics	
Multiple R	0.97471021
R Square	0.95005999
Adjusted R Square	0.94764353
Standard Error	19222.3181
Observations	66

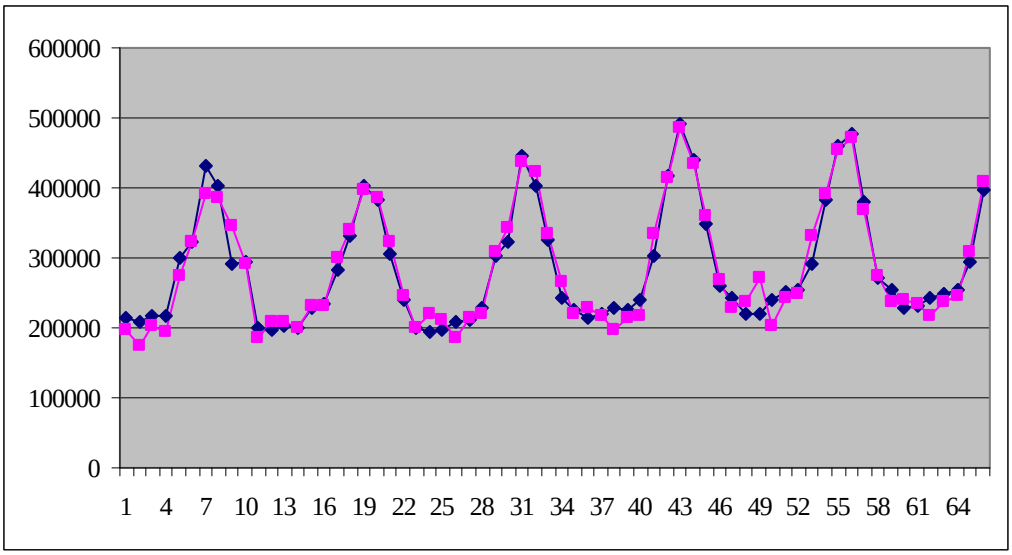
ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	4.36E+11	1.45E+11	393.1631	2.78275E-40
Residual	62	2.29E+10	3.69E+08		
Total	65	4.59E+11			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-59895.379	45247.59	-1.32373	0.190454	-150344.0138	30553.26	-150344	30553.26

ddh	-64.261105	15.76152	-4.07709	0.000132	-95.76792903	-32.7543	-95.7679	-32.7543
ddc	412.81493	16.64011	24.80843	6.78E-34	379.5518305	446.078	379.5518	446.078
county emp	5.69469519	0.854696	6.662832	8.21E-09	3.986182456	7.403208	3.986182	7.403208

This model again provides a good estimate of total energy requirements.



Forecast of Peak Demand

The forecast of peak demand was derived from the average of the monthly load factors for the period 2002-2008. A “maximum” peak demand based upon the lowest of the monthly load factors was also calculated.

The method for estimating peak demand generally lowered IID’s forecasted peaks by between 25 and 50 MW per month and brought the forecasted values back into line with actual values in 2007 and 2008 rather than the much higher values that IID had been using.

Baseline Peak Demand

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Jan	356	363	369	372	416	399	396	408	415	423	430	437	445
Feb	328	346	362	371	387	400	441	455	463	471	480	488	497
Mar	412	548	437	379	549	470	511	529	538	548	557	567	577
Apr	411	616	446	490	632	622	598	621	631	643	654	665	677
May	737	645	748	772	735	894	733	760	775	791	806	823	839
Jun	742	737	853	909	874	979	857	885	902	921	939	958	977
Jul	792	815	898	993	936	956	964	996	1010	1031	1051	1072	1094
Aug	787	840	887	884	995	925	934	964	983	1003	1023	1043	1064
Sep	780	762	806	882	976	943	945	971	995	1020	1046	1072	1099
Oct	683	626	653	705	699	705	717	758	773	789	804	820	837

Nov	332	374	448	514	505	482	492	527	536	546	555	565	575
Dec	377	382	407	430	423	398	408	441	449	457	465	473	481

Improvements to IID Forecasting Methodology

IID recognizes that its forecasting methodology needs to be improved. Specifically, IID intends to:

Forecast economic development by major industrial sector;
Forecast monthly energy sales by end-use customer class;
Better define the relationship between temperature variations and peak demand;
Identify the saturation of major energy using devices into each customer class;
Better define the effects of conservation and energy efficiency on each customer class.

At this point however, the forecasts of energy requirements and monthly peak demand are improved from prior years and provide better backcasts of 2008 demand and energy than prior methods and provides reasonable forecasts of monthly requirements in 2009 and 2010 allowing IID to refine and expand its forecasting methodology.