Gasoline demand= Total fossil energy demand * Gasoline demand share

Jet-fuel demand= Total fossil energy demand * Jet-fuel demand share

Kerosene demand= Total fossil energy demand * Kerosene demand share

Diesel demand= Total fossil energy demand * Diesel demand share

Fuel oil demand= Total fossil energy demand *Fuel oil demand share

Natural gas demand =Total fossil energy demand * Natural gas demand share

Renewable energy demand= Total fossil energy demand * Renewable energy demand share

Total fossil energy demand = Energy demand in Transportation – Power demand

k. Fossil energy demand ratio

Coal demand ratio is exogenous.

LPG demand ratio is exogenous

Gasoline demand ratio is exogenous

Jet-fuel d demand ratio is exogenous

Kerosene demand ratio is exogenous

Diesel demand ratio is exogenous

Fuel oil demand ratio is exogenous

Natural gas demand ratio is exogenous

Renewable energy demand ratio is exogenous

(7) Power demand forecasting in Commercial & Services sector

Table 2-4-9 Power demand forecasting in Commercial sector in Model sheet

	H	I	J	Y	Type	X1	X2	X3	X4	X5
260	Commercials & Service	Energy conservation rate	S%	COMNCOR	=	Lag1.COMNCOR*(1+COMNTEC/100)*IF(GRPRFO>0, (1+COMNEVP*GRPRFO/100), (1+				
261		Technical Improvement	%	COMNTEC	=	COMNTEC				
262		Elasticity to Crude oil pric		COMNEVP	=	COMNEVP				
263		Energy intensity to GDP	TOE/Bil Don	COMNEFF	=	COMNDEA/RGDP*1000				
264		Energy demand before E.save	KTOE	COMNDEM	$CA	RGPTRA				
265		Energy demand after E.save	KTOE	COMNDEA	=	COMNDEM*(COMNCOR/100)				
266		Electricity ratio	S%	COMNELR	=	COMNELR				
267		Power demand (kTOE)	KTOE	COMNELT	=	COMNDEA*(COMNELR/100)				
268		Power demand (GWh)	GWh	COMNELE	=	COMNELT/0.086				
269										
270		Coal demand	KTOE	COMMCOA	=	COMMTOT*COSMCOA/100				
271		LPG demand	KTOE	COMMLPG	=	COMMTOT*COSMLPG/100				
272		Gasoline demand	KTOE	COMMGAS	=	COMMTOT*COSMGAS/100				
273		Jetfuel demand	KTOE	COMMJET	=	COMMTOT*COSMJET/100				
274		Kerosene demand	KTOE	COMMKER	=	COMMTOT*COSMKER/100				
275		Diesel demand	KTOE	COMMDIE	=	COMMTOT*COSMDIE/100				
276		Fuel oil demand	KTOE	COMMFUL	=	COMMTOT*COSMFUL/100				
277		Natural gas demand	KTOE	COMMNG	=	COMMTOT*COSMNG/100				
278		Renewable energy demand	KTOE	COMMREW	=	COMMTOT*COSMREW/100				
279		Total	KTOE	COMMTOT	=	COMNDEA-COMNELT				
280										
281		Coal demand	S%	COSMCOA	=	COSMCOA				
282		LPG demand	S%	COSMLPG	=	COSMLPG				
283		Gasoline demand	S%	COSMGAS	=	COSMGAS				
284		Jetfuel demand	S%	COSMJET	=	COSMJET				
285		Kerosene demand	S%	COSMKER	=	COSMKER				
286		Diesel demand	S%	COSMDIE	=	COSMDIE				
287		Fuel oil demand	S%	COSMFUL	=	COSMFUL				
288		Natural gas demand	S%	COSMNG	=	COSMNG				
289		Renewable energy demand	S%	COSMREW	=	COSMREW				
290		Total	S%	COSMTOT	=	COSMTOT				
291										

a. Energy conservation rate

Energy conservation rate

GR of fuel oil price >0

= Energy conservation rate (1)*(1+Technical improvement)

*(1+ Elasticity of energy price * GR of fuel oil price)

GR of fuel oil price < 0

= Energy conservation rate (1)*(1+Technical improvement)

*(1+ Elasticity of energy price /2 * GR of fuel oil price)

b. Technical Improvement

Technical Improvement is exogenous.

c. Elasticity to Energy price

Technical Improvement is exogenous.

d. Energy intensity to GDP

Energy intensity to GDP = Energy demand in Commercial & Services / Real GDP

e. Energy demand before Energy saving

. Energy demand before Energy saving

= f (Energy demand before Energy saving (1)

*(1+2*GR of Commercial & Services GDP)

f. Energy demand after energy saving

Energy demand after energy saving =Energy demand before Energy saving

* Energy conservation rate

g. Electricity ratio

Electricity ratio is exogenous.

h. Power demand（k TOE）

Power demand (kTOE)= Energy demand after energy saving * Power ratio.

i. Power demand（GWh）

Power demand with (GWh) = Energy demand f(kTOE) * 0.086.

j. Fossil energy demand

Coal demand = Total fossil energy demand * Coal demand share

LPG demand= Total fossil energy demand * LPG demand share

Gasoline demand= Total fossil energy demand * Gasoline demand share

Jet-fuel demand= Total fossil energy demand * Jet-fuel demand share

Kerosene demand= Total fossil energy demand * Kerosene demand share

Diesel demand= Total fossil energy demand * Diesel demand share

Fuel oil demand= Total fossil energy demand *Fuel oil demand share

Natural gas demand =Total fossil energy demand * Natural gas demand share

Renewable energy demand Total fossil energy demand * Renewable energy demand share

Total fossil energy demand = Energy demand in Commercial & Service – Power demand

k. Fossil energy demand ratio

Coal demand ratio is exogenous.

LPG demand ratio is exogenous.

Gasoline demand ratio is exogenous.

Jet-fuel d demand ratio is exogenous

Kerosene demand ratio is exogenous

Diesel demand ratio is exogenous.

Fuel oil demand ratio is exogenous.

Natural gas demand ratio is exogenous.

Renewable energy= demand ratio is exogenous.

(8) Power demand forecasting in Residential sector

Table 2-4-10 Power demand forecasting in Residential sector in Model sheet

F	H	I	J	Y	Type	X1	X2	X3	X4	X5
292	Residentials	Energy conservation rate	S%	RESNCOR	=	Lag1.RESNCOR*(1+RESNTEC/100)*IF(GRPRFO>0, (1+RESNEVP*GRPRFO/100), (1+(R				
293		Technical Improvement	%	RESNTEC	=	RESNTEC				
294		Elasticity to Energy price		RESNEVP	=	RESNEVP				
295		Energy intensity to GDP	TOE/Bil Don	RESNEFF	=	RESNDEA/RGDP*1000				
296		Energy demand before E.save	KTOE	RESNDEM	$CA	RGDP				
297		Energy demand after E.save	KTOE	RESNDEA	=	RESNDEM*(RESNCOR/100)				
298		Electricity ratio	S%	RESNELR	=	RESNELR				
299		Power demand (kTOE)	KTOE	RESNELT	=	RESNDEA*RESNELR/100				
300		Power demand (GWh)	GWh	RESENELE	=	RESNELT/0.086				
301										
302		Coal demand	KTOE	REDMCOA	=	REDMTOT*RESMCOA/100				
303		LPG demand	KTOE	REDMLPG	=	REDMTOT*RESMLPG/100				
304		Gasoline demand	KTOE	REDMGAS	=	REDMTOT*RESMGAS/100				
305		Jetfuel demand	KTOE	REDMJET	=	REDMTOT*RESMJET/100				
306		Kerosene demand	KTOE	REDMKER	=	REDMTOT*RESMKER/100				
307		Diesel demand	KTOE	REDMDIE	=	REDMTOT*RESMDIE/100				
308		Fuel oil demand	KTOE	REDMFUL	=	REDMTOT*RESMFUL/100				
309		Natural gas demand	KTOE	REDMNG	=	REDMTOT*RESMNG/100				
310		Renewable energy demand	KTOE	REDMREW	=	REDMTOT*RESMREW/100				
311		Total	KTOE	REDMTOT	=	RESNDEA-RESNELT				
312										
313		Coal demand	S%	RESMCOA	=	RESMCOA				
314		LPG demand	S%	RESMLPG	=	RESMLPG				
315		Gasoline demand	S%	RESMGAS	=	RESMGAS				
316		Jetfuel demand	S%	RESMJET	=	RESMJET				
317		Kerosene demand	S%	RESMKER	=	RESMKER				
318		Diesel demand	S%	RESMDIE	=	RESMDIE				
319		Fuel oil demand	S%	RESMFUL	=	RESMFUL				
320		Natural gas demand	S%	RESMNG	=	RESMNG				
321		Renewable energy demand	S%	RESMREW	=	RESMREW				
322		Total	S%	RESMTOT	=	RESMTOT				
323										

a. Energy conservation rate

Energy conservation rate

GR of fuel oil price >0

= Energy conservation rate (1)*(1+Technical improvement)

*(1+ Elasticity of energy price * GR of fuel oil price)

GR of fuel oil price < 0

= Energy conservation rate (1)*(1+Technical improvement)

*(1+ Elasticity of energy price /2 * GR of fuel oil price)

b. Technical Improvement

Technical Improvement is exogenous.

c. Elasticity to Energy price

Technical Improvement is exogenous.

d. Energy intensity to GDP

Energy intensity to GDP = Energy demand in Residential / Real GDP

e. Energy demand before Energy saving

. Energy demand before Energy saving = f (Real GDP)

f. Energy demand after energy saving

Energy demand after energy saving =Energy demand before Energy saving

* Energy conservation rate

g. Electricity ratio

Electricity ratio is exogenous.

h. Power demand（k TOE）

Power demand (kTOE)= Energy demand after energy saving * Power ratio.

i. Power demand（GWh）

Power demand with (GWh) = Energy demand f(kTOE) * 0.086.

j. Fossil energy demand

Coal demand = Total fossil energy demand * Coal demand share

LPG demand= Total fossil energy demand * LPG demand share

Gasoline demand= Total fossil energy demand * Gasoline demand share

Jet-fuel demand= Total fossil energy demand * Jet-fuel demand share

Kerosene demand= Total fossil energy demand * Kerosene demand share

Diesel demand= Total fossil energy demand * Diesel demand share

Fuel oil demand= Total fossil energy demand *Fuel oil demand share

Natural gas demand =Total fossil energy demand * Natural gas demand share

Renewable energy demand=Total fossil energy demand * Renewable energy demand share

Total fossil energy demand = Energy demand in Residential – Power demand

k. Fossil energy demand ratio

Coal demand ratio is exogenous.

LPG demand ratio is exogenous.

Gasoline demand ratio is exogenous.

Jet-fuel d demand ratio is exogenous

Kerosene demand ratio is exogenous

Diesel demand ratio is exogenous.

Fuel oil demand ratio is exogenous.

Natural gas demand ratio is exogenous.

Renewable energy demand ratio is exogenous.

(9) Power demand forecasting in Other sector

Table 2-4-11 Power demand forecasting in Other sector in Model sheet

F	H	I	J	Y	Type	X1	X2	X3	X4	X5
324	Others	Energy conservation rate	S%	NONNCOR	=	Lag1.NONNCOR*(1+NONNTEC/100)*IF(GRPRFO>0, (1+NONNEVP*GRPRFO/100), (1+(N				
325		Technical Improvement	%	NONNTEC	=	NONNTEC				
326		Elasticity to Energy price		NONNEVP	=	NONNEVP				
327		Energy intensity to GDP	TOE/Bil Don	NONNFFF	=	NONNDEA/RGDP*1000				
328		Energy demand before E.save	KTOE	NONNDEM	$CA	RGDP	DUM2001Z	DUM2003T		
329		Energy demand after E.save	KTOE	NONNDEA	=	NONNDEM*(NONNCOR/100)				
330		Electricity ratio	S%	NONNELR	=	NONNELR				
331		Power demand (kTOE)	KTOE	NONNELT	=	NONNDEA*NONNELR/100				
332		Power demand (GWh)	GWh	NONNELE	=	NONNELT/0.086				
333										
334		Coal demand	KTOE	NONMCOA	=	NONMTOT*NOSMCOA/100				
335		LPG demand	KTOE	NONMLPG	=	NONMTOT*NOSMLPG/100				
336		Gasoline demand	KTOE	NONMGAS	=	NONMTOT*NOSMGAS/100				
337		Jetfuel demand	KTOE	NONMJET	=	NONMTOT*NOSMJET/100				
338		Kerosene demand	KTOE	NONMKER	=	NONMTOT*NOSMKER/100				
339		Diesel demand	KTOE	NONMDIE	=	NONMTOT*NOSMDIE/100				
340		Fuel oil demand	KTOE	NONMFUL	=	NONMTOT*NOSMFUL/100				
341		Natural gas demand	KTOE	NONMNG	=	NONMTOT*NOSMNG/100				
342		Renewable energy demand	KTOE	NONMREW	=	NONMTOT*NOSMREW/100				
343		Total	KTOE	NONMTOT	=	NONNDEA-NONNELT				
344										
345		Coal demand	S%	NOSMCOA	=	NOSMCOA				
346		LPG demand	S%	NOSMLPG	=	NOSMLPG				
347		Gasoline demand	S%	NOSMGAS	=	NOSMGAS				
348		Jetfuel demand	S%	NOSMJET	=	NOSMJET				
349		Kerosene demand	S%	NOSMKER	=	NOSMKER				
350		Diesel demand	S%	NOSMDIE	=	NOSMDIE				
351		Fuel oil demand	S%	NOSMFUL	=	NOSMFUL				
352		Natural gas demand	S%	NOSMNG	=	NOSMNG				
353		Renewable energy demand	S%	NOSMREW	=	NOSMREW				
354		Total	S%	NOSMTOT	=	NOSMTOT				
355										

a. Energy conservation rate

Energy conservation rate

GR of fuel oil price >0

= Energy conservation rate (1)*(1+Technical improvement)
*(1+ Elasticity of energy price * GR of fuel oil price)

GR of fuel oil price < 0

= Energy conservation rate (1)*(1+Technical improvement)
*(1+ Elasticity of energy price /2 * GR of fuel oil price)

b. Technical Improvement

Technical improvement is exogenous.

c. Elasticity to Energy price

Technical Improvement is exogenous.

d. Energy intensity to GDP

Energy intensity to GDP = Energy demand in Other / Real GDP

e. Energy demand before Energy saving

. Energy demand before Energy saving = f (Real GDP)

f. Energy demand after energy saving

Energy demand after energy saving =Energy demand before Energy saving
* Energy conservation rate

g. Electricity ratio

Electricity ratio is exogenous.

h. Power demand（k TOE）

Power demand (kTOE)= Energy demand after energy saving * Power ratio.

i. Power demand（GWh）

Power demand with (GWh) = Energy demand f(kTOE) * 0.086.

j. Fossil energy demand

Coal demand = Total fossil energy demand * Coal demand share

LPG demand= Total fossil energy demand * LPG demand share

Gasoline demand= Total fossil energy demand * Gasoline demand share
Jet-fuel demand= Total fossil energy demand * Jet-fuel demand share
Kerosene demand= Total fossil energy demand * Kerosene demand share
Diesel demand= Total fossil energy demand * Diesel demand share
Fuel oil demand= Total fossil energy demand *Fuel oil demand share
Natural gas demand =Total fossil energy demand * Natural gas demand share
Renewable energy demand Total fossil energy demand * Renewable energy demand share
Total fossil energy demand = Energy demand in Other – Power demand

k. Fossil energy demand ratio

Coal demand ratio is exogenous.
LPG demand ratio is exogenous.
Gasoline demand ratio is exogenous.
Jet-fuel d demand ratio is exogenous
Kerosene demand ratio is exogenous
Diesel demand ratio is exogenous.
Fuel oil demand ratio is exogenous.
Natural gas demand ratio is exogenous.
Renewable energy demand ratio is exogenous.

(10) Power supply forecasting

a. Power demand in final use

The power demands by sector are already forecasted in power demand forecasting blocks. For making the total power demand in a country, the power demand of all sectors such as Agriculture &Forestry &Fishery, Industry, Transportation, Commercials &Banking &Services, Residential and other sector are summed up. This is power demand in final use.

b. Energy Demand

The energy demands by sector are already forecasted in power demand forecasting blocks. For making the total energy demand in a country, the energy demand of all sectors are summed up by energy. The energies are Coal, LPG, Gasoline, Jet-fuel, Kerosene , Diesel, Fuel oil, Natural gas, and Renewable energy.

c. Power distribution loss & Own use in Power sector

Power distribution loss (%) is exogenous.
Power distribution loss (GWh) = f(Power demand* Power distribution loss (%))

Own use in Power sector(GWh) =f(Power demand)

Power distribution loss (KTOE)= Power distribution loss (GWh) * 0.086

Own use in Power sector(KTOE)= Own use in Power sector(GWh) * 0.086

Table 2-4-12 Power distribution loss & Own use in Power sector in Model sheet

F	H	I	J	Y	Type	X1	X2	X3	X4	X5
356	Power demand in final	Agriculture.Forestry.Fishery	GWh	PWDMPA	=	PAENELE				
357		manufacturing	GWh	PWDMMN	=	MANNELE				
358		Transportation	GWh	PWDMTR	=	TREENELE				
359		Commercials.Banking..Service	GWh	PWDMCM	=	COMNELE				
360		Residentials	Gwh	PWDMRE	=	RESENELE				
361		Other	GWh	PWDMNO	=	NONNELE				
362		Total	GWh	PWDMTOT	=	PWDMPA+PWDMMN+PWDMTR+PWDMCM+PWDMRE+PWDMNO				
363										
364	Energy Demand	Coal demand	KTOE	DEDCOA	=	PADMCOA+MANMCOA+TREMCOA+COMMCOA+REDMCOA+NONMCOA				
365		LPG demand	KTOE	DEDLPG	=	PADMLPG+MANMLPG+TREMLPG+COMMLPG+REDMLPG+NONMLPG				
366		Gasoline demand	KTOE	DEDGAS	=	PADMGAS+MANMGAS+TREMGAS+COMMGAS+REDMGAS+NONMGAS				
367		Jetfuel demand	KTOE	DEDJET	=	PADMJET+MANMJET+TREMJET+COMMJET+REDMJET+NONMJET				
368		Kerosene demand	KTOE	DEDKER	=	PADMKER+MANMKER+TREMKER+COMMKER+REDMKER+NONMKER				
369		Diesel demand	KTOE	DEDDIE	=	PADMDIE+MANMDIE+TREMDIE+COMMDIE+REDMDIE+NONMDIE				
370		Fuel oil demand	KTOE	DEDFUE	=	PADMFUL+MANMFUL+TREMFUL+COMMFUL+REDMFUL+NONMFUL				
371		Petroleum total	KTOE	DEDSTO	=	DEDLPG+DEDGAS+DEDJET+DEDKER+DEDDIE+DEDFUE				
372		Natural gas demand	KTOE	DEDNG	=	PADMNG+MANMNG+TREMNG+COMMNG+REDMNG+NONMNG				
373		Renewable energy demand	KTOE	DEDREW	=	PADMREW+MANMREW+TREMREW+COMMREW+REDMREW+NONMREW				
374		Power	KTOE	DEDPOW	=	PWDMTOT*0.086				
375		Total(Coal+Petro+Renew+Power	KTOE	DEDTOT	=	DEDCOA+DEDSTO+DEDREW+DEDPOW+DEDNG				
376										
377	Power supply	Power distribution loss	%	PWGELOR	=	PWGELOR				
378		Power distribution loss (GWh	GWh	PWLOSSG	$CA	PWDMTOT*PWGELOR/100				
379		Own use in Power sector(GWh)	GWh	PWOWNG	$CA	PWDMTOT	DUM1998Z			
380		Power distribution loss (KTO	KTOE	PWLOSST	=	PWLOSSG*0.086				
381		Own use in Power sector(KTOE	KTOE	PWOWNT	=	PWOWNG*0.086				
382										
383		Power from Hydro	GWh	PWGEHYD	=	PWGEHYD				
384		Power from Fossil	GWh	PWGEFOS	=	PWGETOT-PWGEHYD-PWGEBAL-PWGENEW-PWGENCL				
385		Power foreign trade balance	GWh	PWGEBAL	=	PWGEBAL				
386		Power from Renewable energy	GWh	PWGENEW	=	PWGENEW				
387		Power from Nuclear	GWh	PWGENCL	=	PWGENCL				
388		Total of power generation	GWh	PWGETOT	=	PWDMTOT+PWLOSSG+PWOWNG				
389										
390		Power from Thermal(Coal)	GWh	PWGECOA	=	PWGEFOS*PWSCCOA/100				
391		Power from Thermal(FO)	GWh	PWGEFOT	=	PWGEFOS*PWSCFOT/100				
392		Power from Gasturbine(FO)	GWh	PWGEFOB	=	PWGEFOS*PWSCFOB/100				
393		Power from Gasturbine(GAS)	GWh	PWGEGAB	=	PWGEFOS*PWSCGAT/100				
394		Power from Gas steam	GWh	PWGEGAS	=	PWGEFOS*PWSCGAB/100				
395		Power from Diesel	GWh	PWGEDIE	=	PWGEFOS*PWSCDIE/100				
396		Power from Fossil	GWh	PWGETTT	=	PWGECOA+PWGEFOT+PWGEFOB+PWGEGAB+PWGEGAS+PWGEDIE				
397										
398	Power resources	Coal consumption for Thermal	KTOE	PWCCCOA	=	PWGECOA/COPCOCA*(5600/10000)				
399		FO consumption for Thermal	KTOE	PWCCFOT	=	PWGEFOT/COPOFOT*(9910/10000)				
400		FO consumption for Gasturbin	KTOE	PWCCFOB	=	PWGEFOB/COPOFOB*(9910/10000)				
401		NG & AG consumption for Turb	KTOE	PWCCGAT	=	PWGEGAB/COPOGAB*(9000/10000)				
402		NG & AG consumption for Gas	KTOE	PWCCGAB	=	PWGEGAS/COPODAS*(9000/10000)				
403		Diesel consumption for Diese	KTOE	PWCCDIE	=	PWGEDIE/COPODIE*(10150/10000)				
404		Total	KTOE	PWCCTOT	=	PWCCCOA+PWCCFOT+PWCCFOB+PWCCGAT+PWCCGAB+PWCCDIE				
405										
406		Power from Thermal(Coal)	% of KTOE	PWSCCOA	=	PWSCCOA				
407		Power from Thermal(FO)	% of KTOE	PWSCFOT	=	PWSCFOT				
408		Power from Gasturbine(FO)	% of KTOE	PWSCFOB	=	PWSCFOB				
409		Power from Gasturbine(GAS)	% of KTOE	PWSCGAT	=	PWSCGAT				
410		Power from Gas steam	% of KTOE	PWSCGAB	=	PWSCGAB				
411		Power from Diesel	% of KTOE	PWSCDIE	=	PWSCDIE				
412		Power from Fossil	% of KTOE	PWSCTOT	=	PWSCTOT				
413										
414	Evaluation factors	Energy demand per capita	KOE/persons	EDPERCAP	=	DEDTOT/POPNUM				
415		Energy demand per uGDP	KOE/US$	EDPERGDP	=	DEDTOT/GDDOL				
416		Power demand per capita	KWh/person	POPERCAP	=	PWDMTOT/POPNUM				
417		Power demand per uGDP	KWh/US$	POPERGDP	=	PWDMTOT/GDDOL				
418										
419	LF			PINLOADF	=	PINLOADF				
420	Pmax	Peak demand(Total gen / (365*24)/L	MW	PINPMAX	$CA	(PWDMTOT*1000)/(PINLOADF/100)/(365*24)				
421										
422										

d. Power supply

Hydro Power generation is exogenous.

Fossil Power generation =Total power generation – Hydro Power generation
- Power foreign trade - Renewable energy power – Nuclear power

Foreign trade power is exogenous balance

Renewable energy power is exogenous

Nuclear power is exogenous

Total power generation = Power demand + Power distribution loss (GWh)
+ Own use in Power sector(GWh)

e. Thermal power generation by generator

Power from Thermal(Coal) = Fossil power generation * Coal fired power generation share

Power from Thermal(FO)= Fossil power generation * Fuel oil fired power generation share

Power from Gas-turbine(FO) = Fossil power generation * Fuel oil gas-turbine generation share

Power from Gas-turbine(GAS) =Fossil power generation * Gas-turbine generation share

Power from Gas steam=Fossil power generation * Gas-steam generation share

Power from Diesel=Fossil power generation * Diesel generation share

f. Power resources

Coal consumption for Thermal = Power from Thermal(Coal) / Coal to Power efficiency
*5600 / 1000

FO consumption for Thermal= Power from Thermal(FO) / FO to Power efficiency
*9910 / 10000

FO consumption for Gas-turbine = Power from Gas-turbine(FO) / FO to Power efficiency
*9910 / 10000

NG & AG consumption for Turbine =Power from Gas-turbine(GAS) / Gas to Power efficiency
*9000/10000

NG & AG consumption for Gas steam = Power from Gas steam/ Gas to Power efficiency
*9000/10000

Diesel consumption for Diesel engine =Power from Diesel / Diesel to Power efficiency
10150/10000

g. Shares of Thermal power generation by generator

Share of Thermal(Coal) power is exogenous from power sheet.

Share of Thermal(FO) power is exogenous from power sheet.

Share of Gas-turbine(FO) is exogenous from power sheet.

Share of Gas-turbine(GAS)) power is exogenous from power sheet.

Share of Gas steam power is exogenous from power sheet.

Share of Diesel power is exogenous from power sheet.

h. Evaluation factors

Energy demand per capita = Energy demand / Population

Energy demand per uGDP = Energy demand / US$ GDP

Power demand per capita = Power demand / Population

Power demand per uGDP = Power demand / US$ GDP

i. Load factor and Peak demand(P-max)

Load factor is exogenous.

Peak demand = Power demand*1000 /(Load facto/100)/(365*24)

(11) Energy balance

Regarding Coal, LPG, Gasoline, Jet-fuel, Kerosene, Diesel, Fuel oil, Natural gas and Renewable, energy final demand, consumption in Power sector and domestic demand are calculated.

Table 2-4-13 Energy balance in Model sheet

F	H	I	J	Y	Type	X1	X2	X3	X4	X5
423	Coal total demand	Final demand	KTOE	COACDEM	=	PADMCOA+MANMCOA+TREMCOA+COMMCOA+REDMCOA+NONMCOA				
424		Consumption in Power sector	KTOE	COACPOW	=	PWCCCOA				
425		Domestic total	KTOE	COACDTO	=	COACDEM+COACPOW				
426										
427	LPG demand	Final demand	KTOE	LPGCDEM	=	PADMLPG+MANMLPG+TREMLPG+COMMLPG+REDMLPG+NONMLPG				
428		Consumption in Power sector	KTOE	LPGCPOW	=	0				
429		Domestic total	KTOE	LPGCTOT	=	LPGCDEM+LPGCPOW				
430										
431	Gasoline demand	Final demand	KTOE	GASCDEM	=	PADMGAS+MANMGAS+TREMGAS+COMMGAS+REDMGAS+NONMGAS				
432		Consumption in Power sector	KTOE	GASCPOW	=	0				
433		Domestic total	KTOE	GASCTOT	=	GASCDEM+GASCPOW				
434										
435	Jetfuel demand	Final demand	KTOE	JETCDEM	=	PADMJET+MANMJET+TREMJET+COMMJET+REDMJET+NONMJET				
436		Consumption in Power sector	KTOE	JETCPOW	=	0				
437		Domestic total	KTOE	JETCTOT	=	JETCDEM+JETCPOW				
438										
439	Kerosene demand	Final demand	KTOE	KERCDEM	=	PADMKER+MANMKER+TREMKER+COMMKER+REDMKER+NONMKER				
440		Consumption in Power sector	KTOE	KERCPOW	=	0				
441		Domestic total	KTOE	KERCTOT	=	KERCDEM+KERCPOW				
442										
443	Diesel demand	Final demand	KTOE	DIECDEM	=	PADMDIE+MANMDIE+TREMDIE+COMMDIE+REDMDIE+NONMDIE				
444		Consumption in Power sector	KTOE	DIECPOW	=	PWCCDIE				
445		Domestic total	KTOE	DIECTOT	=	DIECDEM+DIECPOW				
446										
447	Fuel oil demand	Final demand	KTOE	FULCDEM	=	PADMFUL+MANMFUL+TREMFUL+COMMFUL+REDMFUL+NONMFUL				
448		Consumption in Power sector	KTOE	FULCPOW	=	PWCCFOT+PWCCFOB				
449		Domestic total	KTOE	FULCTOT	=	FULCDEM+FULCPOW				
450										
451	NG & AG demand	Final demand	KTOE	NAGCDEM	=	PADMNG+MANMNG+TREMNG+COMMNG+REDMNG+NONMNG				
452		Consumption in Power sector	KTOE	NAGCPOW	=	PWCCGAT+PWCCGAB				
453		Domestic total	KTOE	NAGCTOT	=	NAGCDEM+NAGCPOW				
454										
455	Renewable & Other Ene	Final demand	KTOE	OTHCDEM	=	PADMREW+MANMREW+TREMREW+COMMREW+REDMREW+NONMREW				
456		Consumption in Power sector	KTOE	OTHCPOW	=	0				
457		Domestic total	KTOE	OTHCTOT	=	OTHCDEM+OTHCPOW				
458										
459	Energy Demand	Domestic final demand	KTOE	EGSCDFD	=	COACDEM+LPGCDEM+GASCDEM+JETCDEM+KERCDEM+DIECDEM+FULCDEM+NAG				
460		Consumption in Power sector	KTOE	EGSCPOW	=	PWCCTOT				
461		Domestic Energy Demand	KTOE	EGSCTOT	=	EGSCDFD+EGSCPOW				
462										

Coal total demand

Final demand= Coal final demand in Agriculture
+ Coal final demand in Manufacturing
+ Coal final demand in Transportation
+ Coal final demand in Commercial & Services
+ Coal final demand in Residential
+ + Coal final demand in Other

Consumption in Power sector= Coal consumption in power sector

Domestic total= Final demand + Consumption in Power sector

LPG total demand

Final demand= LPG final demand in Agriculture
+ LPG final demand in Manufacturing
+ LPG final demand in Transportation
+ LPG final demand in Commercial & Services
+ LPG final demand in Residential
+ LPG final demand in Other

Consumption in Power sector= 0

Domestic total= Final demand + Consumption in Power sector

Gasoline total demand

Final demand= Gasoline final demand in Agriculture
+ Gasoline final demand in Manufacturing
+ Gasoline final demand in Transportation
+ Gasoline final demand in Commercial & Services
+ Gasoline final demand in Residential
+ Gasoline final demand in Other

Consumption in Power sector= 0

Domestic total= Final demand + Consumption in Power sector

Jet-fuel total demand

Final demand= Jet-fuel final demand in Agriculture
+ Jet-fuel final demand in Manufacturing
+ Jet-fuel final demand in Transportation
+ Jet-fuel final demand in Commercial & Services
+ Jet-fuel final demand in Residential

+ Jet-fuel final demand in Other

Consumption in Power sector= 0

Domestic total= Final demand + Consumption in Power sector

Kerosene total demand

Final demand= Kerosene final demand in Agriculture
+ Kerosene final demand in Manufacturing
+ Kerosene final demand in Transportation
+ Kerosene final demand in Commercial & Services
+ Kerosene final demand in Residential
+ Kerosene final demand in Other

Consumption in Power sector= 0

Domestic total= Final demand + Consumption in Power sector

Diesel total demand

Final demand= Diesel final demand in Agriculture
+ Diesel final demand in Manufacturing
+ Diesel final demand in Transportation
+ Diesel final demand in Commercial & Services
+ Diesel final demand in Residential
+ Diesel final demand in Other

Consumption in Power sector= Diesel consumption in power sector

Domestic total= Final demand + Consumption in Power sector

Fuel oil total demand

Final demand= Fuel oil final demand in Agriculture
+ Fuel oil final demand in Manufacturing
+ Fuel oil final demand in Transportation
+ Fuel oil final demand in Commercial & Services
+ Fuel oil final demand in Residential
+ Fuel oil final demand in Other

Consumption in Power sector= Fuel oil consumption in power sector

Domestic total= Final demand + Consumption in Power sector

Natural gas total demand

Final demand= Natural gas final demand in Agriculture

+ Natural gas final demand in Manufacturing

+ Natural gas final demand in Transportation

+ Natural gas final demand in Commercial & Services

+ Natural gas final demand in Residential

+ Natural gas final demand in Other

Consumption in Power sector= National gas consumption in power sector

Domestic total= Final demand + Consumption in Power sector

Renewable energy total demand

Final demand= Renewable energy final demand in Agriculture

+ Renewable energy final demand in Manufacturing

+ Renewable energy final demand in Transportation

+ Renewable energy final demand in Commercial & Services

+ Renewable energy final demand in Residential

+ Renewable energy final demand in Other

Consumption in Power sector= Renewable energy consumption in power sector

Domestic total= Final demand + Consumption in Power sector

Energy Demand

Final demand= Coal final demand + LPG final demand

+ Gasoline final demand + Jet-fuel final demand

+ Kerosene final demand + Diesel final demand

+ Fuel oil final demand + NG & AG final demand

+ Renewable & Other Energy final demand

Final demand= Coal final demand + LPG final demand

+ Gasoline final demand + Jet-fuel final demand

+ Kerosene final demand + Diesel final demand

+ Fuel oil final demand + NG & AG final demand

Energy consumption in Power sector = Total energy demand in power sector

Domestic total= Final demand + Energy consumption in Power sector

(12) Power demand forecast in North region

The future power demand in whole country is shared to North, Center and South regions by regional GDP. The regional GDP and sectoral GDP are exogenous. Sector nominal GDP are calculated by the variables of the sector real GDP and GDP deflator.

Table 2-4-14 Power demand forecast in North region in Model sheet

F	H	I	J	Y	Type	X1	X2	X3	X4	X5
465	<Northern region >									
466	(1) Census	Population	Million	NPOP	=	LAG1.NPOP*(1+NPOPX/100)				
467		G.R. of Population	G%	NPOPX	=	NPOPX				
468										
469	(3) NGDP nominal	NGDP	Million Dong	NGNTL	=	NGNIN+NGNCO+NGNAG				
470		Industry	Million Dong	NGNIN	=	NGRIN*GDFLT/100				
471		Commercial	Million Dong	NGNCO	=	NGRCO*GDFLT/100				
472		Agriculture	Million Dong	NGNAG	=	NGRAG*GDFLT/100				
473										
474		Share of NGDP	%	NGNTLX	=	NGNTL/(NGNTL+CGNTL+SGNTL)*100				
475		Share of Industry	%	NGNINX	=	NGNIN/(NGNIN+CGNIN+SGNIN)*100				
476		Share of Commercial	%	NGNCOX	=	NGNCO/(NGNCO+CGNCO+SGNCO)*100				
477		Share of Agriculture	%	NGNAGX	=	NGNAG/(NGNAG+CGNAG+SGNAG)*100				
478										
479	(4) RGDP 1994 price	RGDP	Million Dong	NGRTL	=	NGRIN+NGRCO+NGRAG				
480		Industry	Million Dong	NGRIN	=	Lag1.NGRIN*(1+NGRINX/100)				
481		Commercial	Million Dong	NGRCO	=	Lag1.NGRCO*(1+NGRCOX/100)				
482		Agriculture	Million Dong	NGRAG	=	Lag1.NGRAG*(1+NGRAGX/100)				
483										
484		G.R. of RGDP	%	NGRTLX	=	NGRTLX				
485		G.R. of Industry	%	NGRINX	=	NGRINX				
486		G.R. of Commercial	%	NGRCOX	=	NGRCOX				
487		G.R. of Agriculture	%	NGRAGX	=	NGRAGX				
488										
489		GDP E.V. to RGDP		NEVTLX	=	NEVTLX				
490		Industry E.V. to RGDP		NEVINX	=	NEVINX				
491		Commercial E.V. to RGDP		NEVCOX	=	NEVCOX				
492		Agriculture E.V. to RGDP		NEVAGX	=	NEVAGX				
493										
494	(5) Power demand in f	N-total	GWh	NWDTOT	=	NWDMAG+NWDMIN+NWDMCO+NWDMRE+NWDMOT				
495		Agriculture.Forestry.Fishery	GWh	NWDMAG	$CA	PWDMPA*NGNAGX/100				
496		Industry & Construction	GWh	NWDMIN	$CA	PWDMMN*NGNINX/100				
497		Commercials & Services.	GWh	NWDMCO	$CA	PWDMCM*NGNCOX/100				
498		Office & Residentials	Gwh	NWDMRE	$CA	PWDMRE*NGNTLX/100				
499		Others	GWh	NWDMOT	$CA	PWDMNO*NGNTLX/100				
500										
501	(6) Power demand in f	N-total	GWh	NADTOT	=	NADMAG+NADMIN+NADMCO+NADMRE+NADMOT				
502	Adjusted	Agriculture.Forestry.Fishery	GWh	NADMAG	=	NWDMAG/TWDMAG*PWDMPA				
503		Industry & Construction	GWh	NADMIN	=	NWDMIN/TWDMIN*PWDMMN				
504		Commercials & Services.	GWh	NADMCO	=	NWDMCO/TWDMCO*PWDMCM				
505		Office & Residentials	GWh	NADMRE	=	NWDMRE/TWDMRE*PWDMRE				
506		Others	GWh	NADMOT	=	NWDMOT/TWDMOT*(PWDMNO+PWDMTR)				
507										

a. Census

Population in North region

= Population in North region(1)*(1+ GR of the population in North region)

GR of the population in North region is exogenous.

b. NGDP nominal

Nominal Industrial GDP in North = Real Industrial GDP in North * GDP deflator

Nominal Commercial GDP in North =Nominal Commercial GDP in North* GDP deflator

Nominal Agricultural GDP in North =Nominal Agricultural GDP in North* GDP deflator

North GDP = Nominal Industrial GDP +Nominal Commercial GDP
+Nominal Agricultural GDP

Share of Nominal Industrial GDP in North

= Nominal Industrial GDP in North / (Nominal Industrial GDP in North
+ Nominal Industrial GDP in Center + Nominal Industrial GDP in South)

Share of Nominal Commercial GDP in North

= Nominal Commercial GDP in North / (Nominal Commercial GDP in North
+ Nominal Commercial GDP in Center + Nominal Commercial GDP in South

Share of Nominal Agricultural GDP in North

= Nominal Agricultural GDP in North / (Nominal Agricultural GDP in North
+ Nominal Agricultural GDP in Center + Nominal Agricultural GDP in South)

c. RGDP 1994 price

Real GDP in North = Real Industrial GDP in North + Real Commercial GDP in North
+ Real Agricultural GDP in North

Real Industrial GDP in North

= Real Industrial GDP in North(1)*(1+GR of Real Industrial GDP in North)

Real Commercial GDP in North

= Real Commercial GDP in North(1)*(1+GR of Real Commercial GDP in North)

Real Agricultural GDP in North

= Real Agricultural GDP in North(1)*(1+GR of Real Agricultural GDP in North)

G.R. of Real GDP in North is exogenous.

G.R. of Real Industrial GDP in North is exogenous

G.R. of Real Commercial GDP in North is exogenous

G.R. of Real Agricultural GDP in North is exogenous

Industrial elasticity to Real GDP in North is exogenous

Commercial elasticity to Real GDP in North is exogenous

Agricultural elasticity to Real GDP in North is exogenous

d. Power demand in final use

Total power demand in North= Agriculture Power demand in North
+Industry & Construction Power demand in North
+ Commercials & Services Power demand in North
+ Office & Residential Power demand in North

Agriculture Power demand in North

= Agriculture Power demand in Whole * Share of Nominal Agricultural GDP in North

Industry & Construction Power demand in North

= Industrial Power demand in Whole * Share of Nominal Industrial GDP in North

Commercials & Services Power demand in North

= Commercial Power demand in Whole * Share of Nominal Commercial GDP in North

Office & Residential Power demand in North

= Office & Residential Power demand in Whole * Share of Nominal GDP in North

Other sector Power demand in North

= Other sector Power demand in Whole * Share of Nominal GDP in North

e. Power demand in final use Adjusted

Total Power demand in North = Agricultural Power demand in North
+ Industrial Power demand in North
+ Commercial Power demand in North
+ Residential Power demand sector in North
+ Other sector Power demand in North

Agricultural Power demand in North

= Agricultural Power demand in North / Agricultural Power demand in regional total
* Agricultural Power demand in whole country

Industrial Power demand in North

= Industrial Power demand in North / Industrial Power demand in regional total
* Industrial Power demand in whole country

Commercial Power demand in North

= Commercial Power demand in North / Commercial Power demand in regional total
* Commercial Power demand in whole country

Residential Power demand sector in North

= Residential Power demand in North / residential Power demand in regional total
* Residential Power demand in whole country

Other Power demand in North

= Other sector Power demand North / Other sector Power demand in regional total
* Other sector power demand in whole country

(13) Power demand forecast in Center region

Table 2-4-15 Power demand forecast in Center region in Model sheet

F	H	I	J	Y	Type	X1	X2	X3	X4	X5
512	<Central region >									
513	(1) Census	Population	Million	CPOP	=	LAG1.CPOP*(1+CPOPX/100)				
514		G.R. of Population	G%	CPOPX	=	CPOPX				
515										
516	(3) GDP nominal	NGDP	Million Dong	CGNTL	=	CGNIN+CGNCO+CGNAG				
517		Industry	Million Dong	CGNIN	=	CGRIN*GDFLT/100				
518		Commercial	Million Dong	CGNCO	=	CGRCO*GDFLT/100				
519		Agriculture	Million Dong	CGNAG	=	CGRAG*GDFLT/100				
520										
521		Share of NGDP	%	CGNTLX	=	CGNTL/(NGNTL+CGNTL+SGNTL)*100				
522		Share of Industry	%	CGNINX	=	CGNIN/(NGNIN+CGNIN+SGNIN)*100				
523		Share of Commercial	%	CGNCOX	=	CGNCO/(NGNCO+CGNCO+SGNCO)*100				
524		Share of Agriculture	%	CGNAGX	=	CGNAG/(NGNAG+CGNAG+SGNAG)*100				
525										
526	(4) RGDP 1994 price	RGDP	Million Dong	CGRTL	=	CGRIN+CGRCO+CGRAG				
527		Industry	Million Dong	CGRIN	=	Lag1.CGRIN*(1+CGRINX/100)				
528		Commercial	Million Dong	CGRCO	=	Lag1.CGRCO*(1+CGRCOX/100)				
529		Agriculture	Million Dong	CGRAG	=	Lag1.CGRAG*(1+CGRAGX/100)				
530										
531		G.R. of RGDP	%	CGRTLX	=	CGRTLX				
532		G.R. of Industry	%	CGRINX	=	CGRINX				
533		G.R. of Commercial	%	CGRCOX	=	CGRCOX				
534		G.R. of Agriculture	%	CGRAGX	=	CGRAGX				
535					=					
536		GDP E.V. to RGDP		CEVTLX	=	CEVTLX				
537		Industry E.V. to RGDP		CEVINX	=	CEVINX				
538		Commercial E.V. to RGDP		CEVCOX	=	CEVCOX				
539		Agriculture E.V. to RGDP		CEVAGX	=	CEVAGX				
540										
541	(5) Power demand in f	C-total	GWh	CWDTOT	=	CWDMAG+CWDMIN+CWDMCO+CWDMRE+CWDMOT				
542		Agriculture.Forestry.Fishery	GWh	CWDMAG	$CA	(PWDMPA^0.9)*CGNAGX/100				
543		Industry & Construction	GWh	CWDMIN	$CA	(PWDMMN^0.9)*CGNINX/100				
544		Commercials & Services.	GWh	CWDMCO	$CA	(PWDMCM^0.9)*CGNCOX/100	DUM2002Z	DUM2003T		
545		Office & Residentials	Gwh	CWDMRE	$CA	(PWDMRE^0.9)*CGNTLX/100				
546		Others	GWh	CWDMOT	$CA	(PWDMNO^0.9)*CGNTLX/100				
547										
548	(6) Power demand in f	C-total	GWh	CADTOT	=	CADMAG+CADMIN+CADMCO+CADMRE+CADMOT				
549	Adjusted	Agriculture.Forestry.Fishery	GWh	CADMAG	=	CWDMAG/TWDMAG*PWDMPA				
550		Industry & Construction	GWh	CADMIN	=	CWDMIN/TWDMIN*PWDMMN				
551		Commercials & Services.	GWh	CADMCO	=	CWDMCO/TWDMCO*PWDMCM				
552		Office & Residentials	Gwh	CADMRE	=	CWDMRE/TWDMRE*PWDMRE				
553		Others	GWh	CADMOT	=	CWDMOT/TWDMOT*(PWDMNO+PWDMTR)				
554										
555	(7) Load factor	LF	%	CLOADF	=	CLOADF				
556		Peak demand	MW	CPMAX	$CA	(CADTOT*1000)/(CLOADF/100)/(365*24)				
557										
558										

a. Census

Population in Center region

= Population in Center region(1)*(1+ GR of the population in Center region)

GR of the population in Center region is exogenous.

b. NGDP nominal

Nominal Industrial GDP in Center = Real Industrial GDP in Center * GDP Deflator

Nominal Commercial GDP in Center =Nominal Commercial GDP in Center* GDP Deflator

Nominal Agricultural GDP in Center =Nominal Agricultural GDP in Center* GDP Deflator

Center GDP = Nominal Industrial GDP +Nominal Commercial GDP

+Nominal Agricultural GDP

Share of Nominal Industrial GDP in Center

= Nominal Industrial GDP in Center / (Nominal Industrial GDP in North

+ Nominal Industrial GDP in Center + Nominal Industrial GDP in South)

Share of Nominal Commercial GDP in Center

= Nominal Commercial GDP in Center / (Nominal Commercial GDP in North + Nominal Commercial GDP in Center + Nominal Commercial GDP in South

Share of Nominal Agricultural GDP in Center

= Nominal Agricultural GDP in Center / (Nominal Agricultural GDP in North + Nominal Agricultural GDP in Center + Nominal Agricultural GDP in South)

c. RGDP 1994 price

Real GDP in Center = Real Industrial GDP in Center +Real Commercial GDP in Center + Real Agricultural GDP in Center

Real Industrial GDP in Center

= Real Industrial GDP in Center (1)*(1+GR of Real Industrial GDP in Center)

Real Commercial GDP in Center

= Real Commercial GDP in Center(1)*(1+GR of Real Commercial GDP in Center)

Real Agricultural GDP in Center

= Real Agricultural GDP in Center(1)*(1+GR of Real Agricultural GDP in Center)

G.R. of Real GDP in Center is exogenous.

G.R. of Real Industrial GDP in Center is exogenous

G.R. of Real Commercial GDP in Center is exogenous

G.R. of Real Agricultural GDP in Center is exogenous

Industrial elasticity to Real GDP in Center is exogenous.

Commercial elasticity to Real GDP in Center is exogenous.

Agricultural elasticity to Real GDP in Center is exogenous

d. Power demand in final use

Nominal total = Agriculture Power demand in Center
+Industry & Construction Power demand in Center
+ Commercials & Services Power demand in Center
+ Office & Residential Power demand in Center

Agriculture Power demand in Center

= Agriculture Power demand in Whole * Share of Nominal Agricultural GDP in Center

Industry & Construction Power demand in Center

= Industrial Power demand in Whole * Share of Nominal Industrial GDP in Center

Commercials & Services Power demand in Center

= Commercial Power demand in Whole * Share of Nominal Commercial GDP in Center

Office & Residential Power demand in Center

= Office & Residential Power demand in Whole * Share of Nominal GDP in Center

Other sector Power demand in Center

= Other sector Power demand in Whole * Share of Nominal GDP in Center

e. Power demand in final use Adjusted

Power demand in Center = Agricultural Power demand in Center
+ Industrial Power demand in Center
+ Commercial Power demand in Center
+ Residential Power demand sector in Center
+ Other sector Power demand in Center

Agricultural Power demand in Center

= Agricultural Power demand in Center / Agricultural Power demand in regional total
* Agricultural Power demand in whole country

Industrial Power demand in Center

= Industrial Power demand in Center / Industrial Power demand in regional total
* Industrial Power demand in sector forecasting

Commercial Power demand in Center

= Commercial Power demand in Center / Commercial Power demand in regional total
* Commercial Power demand in whole country

Residential Power demand sector in Center

= Residential Power demand in Center / residential Power demand in regional total
* Residential Power demand in whole country

Other Power demand in Center

= Other sector Power demand Center / Other sector Power demand in regional total
* Other sector power demand in whole country

(14) Power demand forecast in South region

Table 2-4-16 Power demand forecast in South region in Model sheet

F	H	I	J	Y	Type	X1	X2	X3	X4	X5
559	<Southern region >									
560	(1) Census	Population	Milliom	SPOP	=	LAG1.SPOP*(1+SPOPX/100)				
561		Population share	S%	SPOPX	=	CPOPX				
562										
563	(3) GDP nominal	NGDP	Million Dong	SGNTL	=	SGNIN+SGNCO+SGNAG				
564		Industry	Million Dong	SGNIN	=	SGRIN*GDFLT/100				
565		Commercial	Million Dong	SGNCO	=	SGRCO*GDFLT/100				
566		Agriculture	Million Dong	SGNAG	=	SGRAG*GDFLT/100				
567										
568		Share of NGDP	%	SGNTLX	=	SGNTL/(NGNTL+CGNTL+SGNTL)*100				
569		Share of Industry	%	SGNINX	=	SGNIN/(NGNIN+CGNIN+SGNIN)*100				
570		Share of Commercial	%	SGNCOX	=	SGNCO/(NGNCO+CGNCO+SGNCO)*100				
571		Share of Agriculture	%	SGNAGX	=	SGNAG/(NGNAG+CGNAG+SGNAG)*100				
572										
573	(4) RGDP 1994 price	RGDP	Million Dong	SGRTL	=	SGRIN+SGRCO+SGRAG				
574		Industry	Million Dong	SGRIN	=	Lag1.SGRIN*(1+SGRINX/100)				
575		Commercial	Million Dong	SGRCO	=	Lag1.SGRCO*(1+SGRCOX/100)				
576		Agriculture	Million Dong	SGRAG	=	Lag1.SGRAG*(1+SGRAGX/100)				
577										
578		G.R. of RGDP	%	SGRTLX	=	SGRTLX				
579		G.R. of Industry	%	SGRINX	=	SGRINX				
580		G.R. of Commercial	%	SGRCOX	=	SGRCOX				
581		G.R. of Agriculture	%	SGRAGX	=	SGRAGX				
582					=					
583		GDP E.V. to RGDP		SEVTLX	=	SEVTLX				
584		Industry E.V. to RGDP		SEVINX	=	SEVINX				
585		Commercial E.V. to RGDP		SEVCOX	=	SEVCOX				
586		Agriculture E.V. to RGDP		SEVAGX	=	SEVAGX				
587										
588	(5) Power demand in f	S-total	GWh	SWDTOT	=	SWDMAG+SWDMIN+SWDMCO+SWDMRE+SWDMOT				
589		Agriculture.Forestry.Fishery	GWh	SWDMAG	$CA	PWDMPA*SGNAGX/100	DUM2003T			
590		Industry & Construction	GWh	SWDMIN	$CA	PWDMMN*SGNINX/100				
591		Commercials & Services.	GWh	SWDMCO	$CA	PWDMCM*SGNCOX/100				
592		Office & Residentials	Gwh	SWDMRE	$CA	PWDMRE*SGNTLX/100				
593		Others	GWh	SWDMOT	$CA	PWDMNO*SGNTLX/100				
594										
595	(6) Power demand in f	S-total	GWh	SADTOT	=	SADMAG+SADMIN+SADMCO+SADMRE+SADMOT				
596	Adjusted	Agriculture.Forestry.Fishery	GWh	SADMAG	=	SWDMAG/TWDMAG*PWDMPA				
597		Industry & Construction	GWh	SADMIN	=	SWDMIN/TWDMIN*PWDMMN				
598		Commercials & Services.	GWh	SADMCO	=	SWDMCO/TWDMCO*PWDMCM				
599		Office & Residentials	Gwh	SADMRE	=	SWDMRE/TWDMRE*PWDMRE				
600		Others	GWh	SADMOT	=	SWDMOT/TWDMOT*(PWDMNO+PWDMTR)				
601										
602	(7) Load factor	LF	%	SLOADF	=	SLOADF				
603		Peak demand	MW	SPMAX	$CA	(SADTOT*1000)/(SLOADF/100)/(365*24)				
604										
605										

a. Census

Population in South region

= Population in South region(1)*(1+ GR of the population in South region)

GR of the population in South region is exogenous.

b. NGDP nominal

Nominal Industrial GDP in South = Real Industrial GDP in South * GDP Deflator

Nominal Commercial GDP in South =Nominal Commercial GDP in South* GDP Deflator

Nominal Agricultural GDP in South =Nominal Agricultural GDP in South* GDP Deflator

South GDP = Nominal Industrial GDP +Nominal Commercial GDP

+Nominal Agricultural GDP

Share of Nominal Industrial GDP in South

= Nominal Industrial GDP in South / (Nominal Industrial GDP in North
+ N-Industrial GDP in Center + Nominal Industrial GDP in South)

Share of Nominal Commercial GDP in South

= Nominal Commercial GDP in South / (Nominal Commercial GDP in North
+ Nominal Commercial GDP in Center + Nominal Commercial GDP in South

Share of Nominal Agricultural GDP in South

= Nominal Agricultural GDP in South / (Nominal Agricultural GDP in North
+ Nominal Agricultural GDP in Center + Nominal Agricultural GDP in South)

c. RGDP 1994 price

Real GDP in South = Real Industrial GDP in South+ Real Commercial GDP in South
+ Real Agricultural GDP in South

Real Industrial GDP in South

= Real Industrial GDP in South (1)*(1+GR of Real Industrial GDP in South)

Real Commercial GDP in South

= Real Commercial GDP in South(1)*(1+GR of Real Commercial GDP in South)

Real Agricultural GDP in South

= Real Agricultural GDP in South(1)*(1+GR of Real Agricultural GDP in South)

G.R. of Real GDP in South is exogenous.

G.R. of Real Industrial GDP in South is exogenous

G.R. of Real Commercial GDP in South is exogenous

G.R. of Real Agricultural GDP in South is exogenous

Industrial elasticity to Real GDP in South is exogenous.

Commercial elasticity to Real GDP in South is exogenous.

Agricultural elasticity to Real GDP in South is exogenous.

d. Power demand in final use

N-total = Agriculture Power demand in South
+Industry & Construction Power demand in South
+ Commercials & Services Power demand in South
+ Office & Residential Power demand in South

Agriculture Power demand in South

= Agriculture Power demand in Whole * Share of N-Agricultural GDP in South

Industry & Construction Power demand in South

= Industrial Power demand in Whole * Share of N-Industrial GDP in South

Commercials & Services Power demand in South

= Commercial Power demand in Whole * Share of N-Commercial GDP in South

Office & Residential Power demand in South

= Office & Residential Power demand in Whole * Share of Nominal GDP in South

Other sector Power demand in South

= Other sector Power demand in Whole * Share of Nominal GDP in South

e. Power demand in final use Adjusted

Power demand in South = Agricultural Power demand in South
+ Industrial Power demand in South
+ Commercial Power demand in South
+ Residential Power demand sector in South
+ Other sector Power demand in South

Agricultural Power demand in South

= Agricultural Power demand in South / Agricultural Power demand in regional total
* Agricultural Power demand in whole country

Industrial Power demand in South

= Industrial Power demand in South / Industrial Power demand in regional total
* Industrial Power demand in whole country

Commercial Power demand in South

= Commercial Power demand in South / Commercial Power demand in regional total
* Commercial Power demand in whole country

Residential Power demand sector in South

= Residential Power demand in South / residential Power demand in regional total
* Residential Power demand in whole country

Other Power demand in South

= Other sector Power demand South / Other sector Power demand in regional total
* Other sector power demand in whole country