CASE NUMBER:

99-449

United States of America

Federal Energy Regulatory Commission

1999 FERC FORM 715

Annual Transmission Planning and Evaluation Report

CINERGY

Part 4: Transmission Planning Reliability Criteria

Cinergy adheres to ECAR DOCUMENT NUMBER 1 - Reliability Criteria for Evaluation and Simulated Testing of the ECAR Bulk Electric Systems dated July 27, 1998, a copy of which is available from ECAR. Cinergy also adheres to the NERC Planning Standards document, dated September 1997.

Cinergy also has its own detailed planning criteria, which is shown below. Violations of these criteria would result in one or several of the following actions: expansion of transmission system; operating procedures; or a combination of the two. Acceptance of operating procedures is based on engineering judgment with the consideration of the probability of violation weighed against its consequences and possibly other factors.

The following planning criteria are used in assessing the transmission system.

69 kV AND 138 kV SYSTEM

A facility as defined here shall include 69 kV and 138 kV transmission circuits or any transformer with a secondary voltage of 69 or 138 kV.

Under normal system peak load conditions, the loading on all facilities will be no higher than 100% of its normal rating. Voltages will be 95% of nominal or higher.

The 69 kV and 138 kV system will be able to withstand any single facility outage during peak load periods without exceeding the emergency limits of any remaining 69 kV or 138 kV facility. Loss of load shall be minimized although it cannot be eliminated in all situations. The voltages on the 69 kV and 138 kV systems shall not be less than 90% under these conditions.

Double contingency line outages are considered only in cases involving the CG&E 138 kV underground cable feeders that supply the West End and Charles substations. For an outage of any other line with one such underground circuit out of service, the loading on all lines will be no higher than 100% of the emergency conductor rating and voltage will be 90% or higher at all points on the CG&E 138 kV system.

A line outage following an outage of a 138-69 kV autotransformer assumes that the 75 MVA mobile autotransformer is installed, a mobile transformer for tertiary load is installed if necessary, and any desirable mitigating switching or other actions are performed. Under such conditions, the loading on all transmission lines will be no higher than 100% of the emergency conductor rating. The loading on the 138-69 kV autotransformers will be no higher than 110% of the nameplate, normal rating if and only if switching by supervisory control is possible which will reduce the loading to 100% of the nameplate rating for a single contingency outage. The mobile autotransformer must be limited to 100% of the normal rating under all circumstances. Voltages will be 90% or higher at all points on the 138 kV and 69 kV systems.

Under normal system peak-load conditions, with full generation output, all generating units must remain stable with occurrence of a three-phase fault accompanied by a single pole circuit breaker failure with operation of back-up circuit breakers. With one 138 kV component out-of-service, stable operation of all generating units is to be maintained with a subsequent single phase-to-ground fault accompanied by normal clearing of the fault.

All circuit breakers shall be capable of interrupting the maximum fault current duty imposed on the circuit breaker.

The voltage on the 69 and 138 kV system should not exceed 105% for any load level.

230KV AND 345KV SYSTEM

A facility as defined here shall include, 230 and 345 kV transmission circuits, any transformer with a secondary voltage of 230 kV or above or a generating unit connected to the 230 or 345 kV system.

Under normal system peak load conditions, the loading on all facilities will be no higher than 100% of the normal rating of the facility. Voltages will be 95% or higher.

For a single contingency outage during system peak load conditions, the loading on all transmission facilities will be no higher than 100% of the normal conductor rating. The loading on the autotransformers connected to the 230 and 345 kV systems will be no higher than 100% of their normal rating. Voltages will be 95% or higher at all points on the 230 kV and 345 kV system and 90% or higher on the 138 kV system.

The system will be able to withstand any two outages during peak load periods without exceeding the emergency limits of any remaining facility. Loss of load shall be minimized although it cannot be eliminated in all situations. Credible outages may be mitigated by appropriate operating procedures. Voltages will be 92% or higher at the 230 or 345 kV level and 90% or higher on the 138 kV system under these conditions.

Under normal system peak load conditions with full generation output, all generating units must remain stable with occurrence of a three-phase fault accompanied by a single pole circuit breaker failure with operation of back-up circuit breakers. With one 230 kV or 345 kV component out-of-service, stable operation of all generating units is to be maintained with a subsequent single phase-to-ground fault accompanied by normal clearing of the fault.

All circuit breakers shall be capable of interrupting the maximum fault current duty imposed on the circuit breaker.

The voltage on the 230 and 345 kV system should not exceed 105% for any load level.

These planning criteria are not intended to be absolute or applied without exception. Other factors, such as severity of consequences, availability of emergency switching procedures, probability of occurrence and the cost of remedial action are also considered in the evaluation of the transmission system.

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Part 5: Transmission Planning Assessment Practices

The transmission planning assessments by Cinergy use the most recent series of power flow simulation models developed by ECAR, which reflects the current models, utilized by the individual ECAR companies for planning purposes. There are a number of adjustments and changes that must be made to the ECAR cases before they may be utilized effectively for Cinergy planning purposes. The following narrative describes some of the processes Cinergy must use for development of planning studies. When reviewing this process, it is extremely important to note that this is a generalization only, and that any or all parts of this process may change dramatically depending upon individual study requirements.

Initially, a decision must be made as to whether or not the representation of Cinergy in the ECAR base case is adequate for the study requirements. The ECAR model is normally sufficient for all bulk transmission system studies(230 kV and above), whether the case is sufficiently detailed for a particular study depends on the specific area of interest. Cinergy's representation of its transmission system in the ECAR base case retains all major 138 kV substations and transmission lines. Other 138 kV system components and most of the underlying subtransmission networks are equivalized. If it is decided that a more detailed Cinergy model is required, then this model must be inserted into the appropriate ECAR base cases.

The next step is to make adjustments to the output of nearby generating units that will impact Cinergy's transmission system. In most ECAR peak load base cases the generating unit dispatches modeled are based on the various methodologies used by the different companies. This may result in a peak load model in which not all base-load generating units are modeled at maximum output. Based on experience; however, these units tend to operate at maximum output during peak load conditions. Therefore, the dispatch of the following units is reviewed to ensure that they are loaded to the desired MW output levels. These units generally include:

Facility	Desired Output
Tanner's Creek Units 3 & 4 (345 kV)	705 MW
Miami Fort Units 7 & 8 (345 kV)	1000 MW
Beckjord Unit 6 (345 kV)	414 MW
East Bend Unit 2 (345 kV)	600 MW
Stuart Units 1-4 (345 kV)	2340 MW
Killen Unit 2 (345 kV)	600 MW
Conesville Unit 4 (345 kV)	709 MW
Gallagher Units 1 & 2 (138 kV)	280 MW
Gallagher Units 3 & 4 (230 kV)	280 MW
Cayuga Unit 1 (230 kV)	500 MW
Cayuga Unit 2 (345 kV)	474 MW
Gallagher Units 1 & 2 (138 kV)	280 MW
Gallagher Units 3 & 4 (230 kV)	280 MW
Petersburg Units 1-4 (345 kV)	1682 MW
Ghent Units 2-4 (345 kV)	1486 MW
Ghent Unit 1 (138 kV)	491 MW

When the output of these units is increased, other generation must be decreased to maintain a balance between generation and load. The primary decision as to which generating units should be decreased depends on the objective of the study that is being conducted. Since one goal of planning studies is to evaluate the performance of the system under stress, the decision may hinge upon what provides the most stress to the system for the particular study. If there is uncertainty about which condition should be modeled; several possibilities are evaluated.

Another decision made on a study by study basis is the selection of the regulation generator for each area. Cinergy normally models its regulation generator at the WC Beckjord 138 kV bus, and Dayton Power and Light normally models a regulation generator at the Stuart 345 kV bus. If a study is being conducted in the vicinity of these units, and it is anticipated that swings in generating output levels at these units will impact the study results, a different generating station is selected for the regulation bus.

If studies are being conducted on the transmission and subtransmission systems in the northern area of CG&E, it is important to evaluate the performance of CG&E's system with and without DP&L's 69 kV OH Hutchings units in service. The generation dispatch of these units has a significant impact on CG&E's subtransmission system in this vicinity. During peak load conditions, if the Hutchings units are out of service, CG&E's Carlisle 138-69 kV transformer may overload. Operating procedures are in place to eliminate this problem. First, DP&L conducts switching operations to reconfigure their system to decrease the loading on the transformer. If this does not work, the Carlisle-Hutchings 69 kV line may be opened.

Studies that involve the Batesville - Connersville(Indiana) area should consider the operation of the oil peakers located at the Connersville 138 kV substation. These peakers are normally modeled off in the base case but should be turned on and operated as MVAR output only if the voltage on the 69 and 138 kV system in the area drops below 90% of nominal.

Under peak load conditions and this double contingency outage, the 230-138 kV autotransformer at Gallagher will be loaded above its emergency rating. The generation on the 230 kV bus at Gallagher should be reduced until the loading on the autotransformer is below its emergency rating.

Studies that include outages of 345-138 kV transformers must also include connecting the split 138 kV bus to connect all of the 138 kV bus to the transformer remaining in service at the CG&E Terminal, Red Bank, and Port Union stations. This is necessary to reflect a possible operational mode during a long-term outage of a 345-138 kV transformer at any of these substations.

Studies that are conducted to determine transfer capabilities between Cinergy and other companies are extremely complex and time-consuming as various operational conditions may have significant impact on the results of the study. The generation dispatch, load distribution, and any facility outages that are assumed for the study all may have an impact on the capability that is determined. The results of such a study cannot be regarded as an absolute number or absolute indication of the ability of the system to transfer power because of these operating variations. The number should be considered as an indication of a system's ability to support transfers and withstand contingencies. This number is generally the most meaningful when compared to other studies performed since this will provide an indication of the relative strength of the system.

Another important consideration in transfer studies is existing transfers and the thermal ratings of existing interconnections. Utilities can transfer power from (or through) directly-interconnected companies on a direct interconnection if the total transfer level is less than the thermal rating of the interconnection. The interconnection ratings in the Cinergy power flow base case are adequate to make this determination.

The contingencies that are normally evaluated for Cinergy transfer capabilities include:

A) Reduction of generation of WC Beckjord 138 kV Unit

1) Outage Pierce 345-138 kV
2) Outage Pierce-Foster 345 kV
3) Outage Silver Grove 345-138 kV
4) Outage either Red Bank 345-138 kV
5) Outage either Terminal 345-138 kV
6) Outage Miami Fort 345-138 kV
7) Outage Buffington 345-138 kV

B) Reduction of generation at Miami Fort 138 kV

1) Outage of Silver Grove 345-138 kV
2) Outage of Miami Fort 345-138 kV
3) Outage of East Bend-Terminal 345 kV
4) Outage of Pierce-Foster 345 kV
5) Outage of either Red Bank 345-138 kV
6) Outage of either Terminal 345-138 kV
7) Outage of Buffington 345-138 kV

C) Reduction of generation at Gibson 345 kV

1) Outage of Burr Oak - Leesburg 345 kV(NIPSCO circuit)
2) Outage of Trimble County - Clifty 345 kV(LG&E circuit)
3) Outage of AB Brown - Henderson Co. 138 kV(BREC circuit)
4) Outage of Speed 345-138 kV
5) Outage of Gibson - Albion(CIPS) 345 kV
6) Outage of Gibson - Whitestown 345 kV

This is not an exhaustive list of all possibilities tested when calculating Cinergy import or export capability.

The power flow simulation studies will provide an indication of system performance under a variety of conditions. However, it is important to realize that these studies represent only a part of an entire study. If a new facility addition or a change in the network topology is anticipated, then it is necessary to conduct an extensive series of power flow simulations to determine the performance of the changed system. For proposed system changes, it is also important to conduct a series of short circuit studies. The goal of these studies from a planning perspective is to ensure that a planned project utilizes equipment and designs that will withstand the maximum expected short-circuit levels. Relay engineers must conduct similar studies to devise protection schemes for the new equipment or make any required revisions to existing equipment.

Projects that alter the configuration of the outlets from a generating unit, or add generation, remove generation, etc. must also be subjected to a variety of transient stability tests, to ensure that loss of synchronism of any generating unit does not occur for a wide variety of possible conditions.

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Part 6: Evaluation of Transmission System Performance

As part of Cinergy's conformance to NERC Planning Standard IA, measurements 1, 2 and 5, Cinergy has performed an assessment of its transmission system for the projected 1999 peak summer season. Screening studies using the ECAR 1999 summer case indicated no violations of the NERC Standard under normal and single contingency conditions. Although the studies indicated some voltage violations outside the Cinergy planning criteria of 0.95 to 1.05 per unit, these results were due to a combination of base case equivalizing and base kV of selected 69 kV busses in the CG&E operating company. The 69 kV system of Cinergy's CG&E system is actually operated at 66 kV. There were also two single contingency overloads that appeared in the screening results but these were due to the equivalizing of the 69 kV system in the base case. The following is a general discussion of the assessment of the Cinergy transmission system for the 1999 summer season and for the ten year planning horizon.

Cinergy continuously conducts power flow simulation studies of the existing and planned transmission system to assess its expected performance. The assessments are based on the criteria discussed in Part 4 of Cinergy's FERC 715 filing. While Cinergy believes that these tests provide an accurate assessment of the system as currently planned, there are a number of external events that may influence the results of these studies. A change in any of a number of significant variables may dramatically alter the study results. Therefore, it is essential that Cinergy be aware of these changes and incorporate them into the planning process.

Based on power flow simulations and experience, Cinergy expects the primary focus of future development will be the addition of 345-69 kV and 230-69 kV transformer capacity and a new 345 kV circuit. Studies indicate that additional 69 kV transformer capacity will be required in the Carmel - Noblesville(Indiana) area by the year 2000. The present plan is to add a 345-69 kV substation in the area. The Frankfort(Indiana) area will also need additional 69 kV transformer capacity by the year 1999. Present plans are to add additional 230-69 kV capacity in the area by the end of 1999. Additional 69 kV transformer capacity is planned for the Shelbyville(Indiana) area by the year 2001. The addition of a 345-69 kV transformer is being studied for this area. Additional 69kV capacity is planned for the Hendricks County(Indiana) area by the year 2002. Also, additional 69kV capacity is being planned for the Clarksville(Indiana) area for the year 2001.

The 138 kV windings of the three 230-138-69 kV transformers at Kokomo Highland Park may overload for large transfers from either west-to-east or south-to-north or during certain generation or transmission outages in the vicinity of the Greentown 765 kV substation. This overload may be reduced or eliminated by splitting the 138 kV bus at Greentown which isolates the AEP Greentown-Hummel Creek and Greentown-Grant 138 kV circuits from the Greentown-Kokomo and Greentown-Wabash 138 kV circuits. There are no plans to expand the transmission system to handle these contingencies due to the low probability of occurrence of all the necessary conditions occurring.

Cinergy's Greentown 765/230/138 kV transformer failed on July 4, 1998. A replacement bank has been ordered and is expected to be in service by July 15, 1999. Should the in service date get delayed, the transmission system in the vicinity could see lower voltages and possible overloads during additional contingencies. Actual voltages and overloads will depend on system conditions such as level of transfers across the system, system load and conditions on neighboring systems. Cinergy has developed operating procedures that will be utilized if necessary to minimize low voltage conditions and eliminate overloads.

As a result of the completed merger between PSI Energy and CG&E to form Cinergy, Cinergy is planning the construction of a new 345 kV circuit between the two operating companies. This circuit will connect into the Batesville - Ghent 345 kV line and loop into the East Bend 345 kV generating station. This circuit was originally planned for completion by December 31, 1999.

On July 11, 1997, Cinergy filed a request with FERC to defer the in-service date of this facility until 12/31/01, to allow the Company additional time to determine if the effort to develop an Independent System Operator in the Midwest could impact the need for this facility. On September 24, 1997, the FERC issued an order in which they granted Cinergy's request to defer the construction of the line.

Overall, the transmission system is expected to perform well with the budgeted transmission projects placed into service, and no significant problems are expected.

Cinergy continues to stay abreast of the changes in the electric utility industry and the effects they may have on the transmission system. Retail wheeling and increased requests for transmission access due to merchant power plants are just two examples of influences that could potentially alter our assessment of the transmission system. Without knowing the final outcome of regulatory changes, it is difficult if not impossible to currently factor these changes into our assessment.

Cinergy

FORM IRP-1

GENERAL SUPPLY - SIDE PLANNING INFORMATION

Marginal Costing Period Duration (1):

	Summer Season Months (June through September)			Winter Season Months (All Other Months)		
	On Peak	Mid Peak	Off Peak	On Peak	Mid Peak	Off Peak
Annual Hours:	(3)	(3)	(3)	(3)	(3)	(3)

Seasonal Demand Related Capacity Cost Allocation Factors:

Summer (3) %
Winter (3) %

NOTE: Estimate supplied for reporting purposes only. Cinergy does not use this in the evaluation of potential resources.

Generating Reserve Criteria:

Planned Average Generating Reserve Margin for the IRP Period: (3) % (2)

Projected Generating and Transmission Facility Costs:

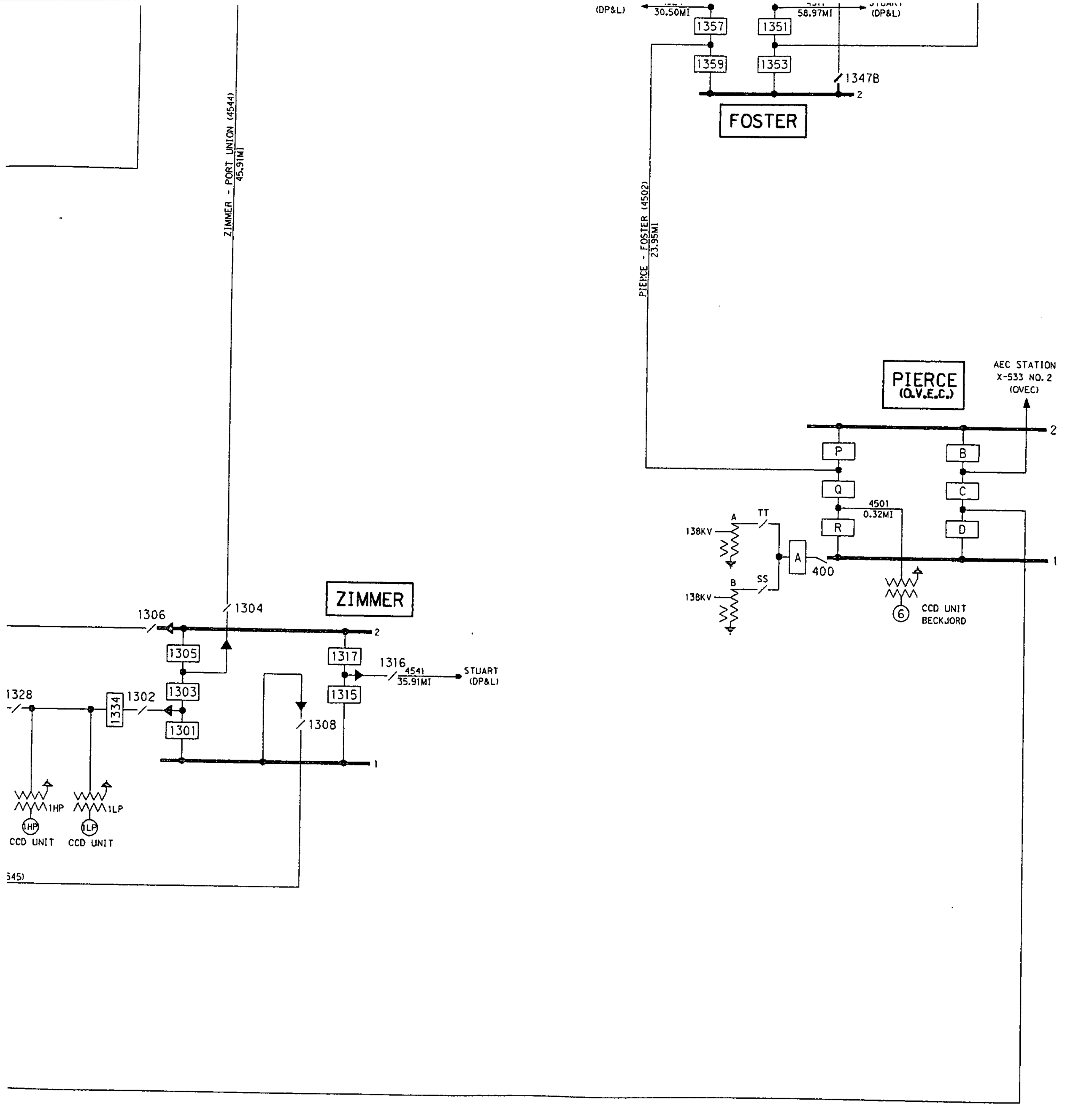
Parameters	Trans. Data	Generating Facility Data (3)				
Facility Designation						
Capital Cost ($/kW)	68.44					
Fixed O&M Cost ($/kW-yr.)	1.51					
Escalation Rates (%/yr.):						
Capital Cost	3.15					
Fixed O&M Cost	2.2					
LARR Rate (%/yr.)	13.2					
Facility Book Life (years)						
Capacity Factors:						
Summer	N/A					
Winter	N/A					

NOTES:

(1) Period breakdowns are approximate and are provided as a filing requirement only, used by Cinergy.

(2) This value is the average of the minimum reserve margin constraints used in Proview™ for the period 1998 through 2018.

(3) The relevant Generation information is located in Volume II (Ohio Appendix), which is prepared independently.



345KV
TRANSF.
138KV

DO NOT USE FOR SWITCHING OR CLEARANCE

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WL 345KV SYSTEM

KEY WORD

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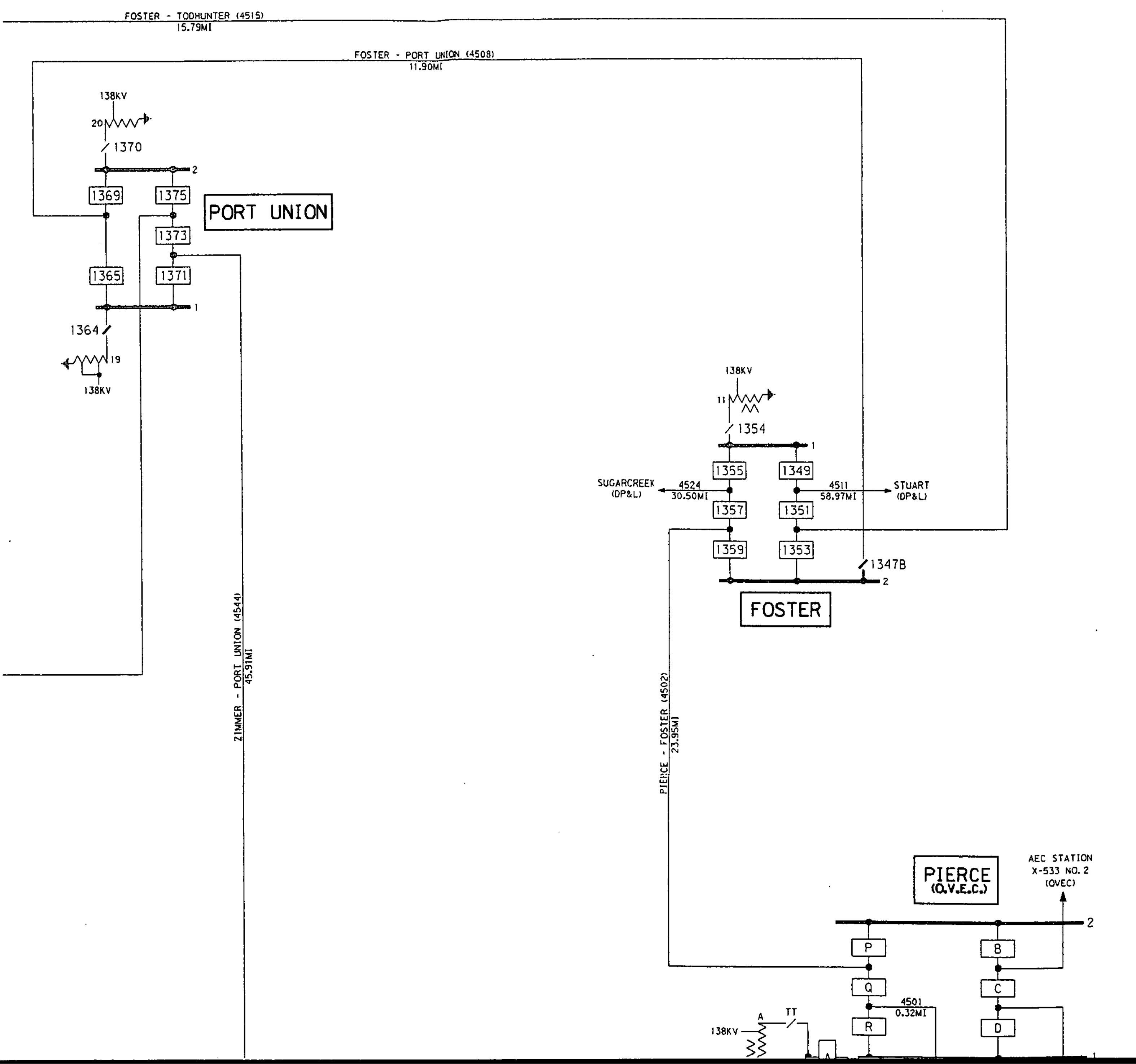
CHK'D		JOB NO.	CO. NO.
ENG'R	FOR: ELECTRIC SYSTEM OPERATIONS		
APP'D			
APP'D	THE CINCINNATI GAS & ELECTRIC COMPANY GENERAL ENGINEERING DEPARTMENT	DWG. NO. 1000-W5-2	
APP'D			

P R S T U V

P	R	S	T	U	V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FOSTER - PORT UNION (4508)
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1373
1365
1371
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1364
19
138KV
ZIMMER - PORT UNION (4544)
45.91MI
138KV
11
1354
1
1355
1349
SUGARCREEK
(DP&L)
4524
30.50MI
4511
58.97MI
STUART
(DP&L)
1357
1351
1359
1353
1347B
2
FOSTER
PIERCE - FOSTER (4502)
23.95MI
PIERCE
(O.V.E.C.)
AEC STATION
X-533 NO. 2
(OVEC)
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138KV
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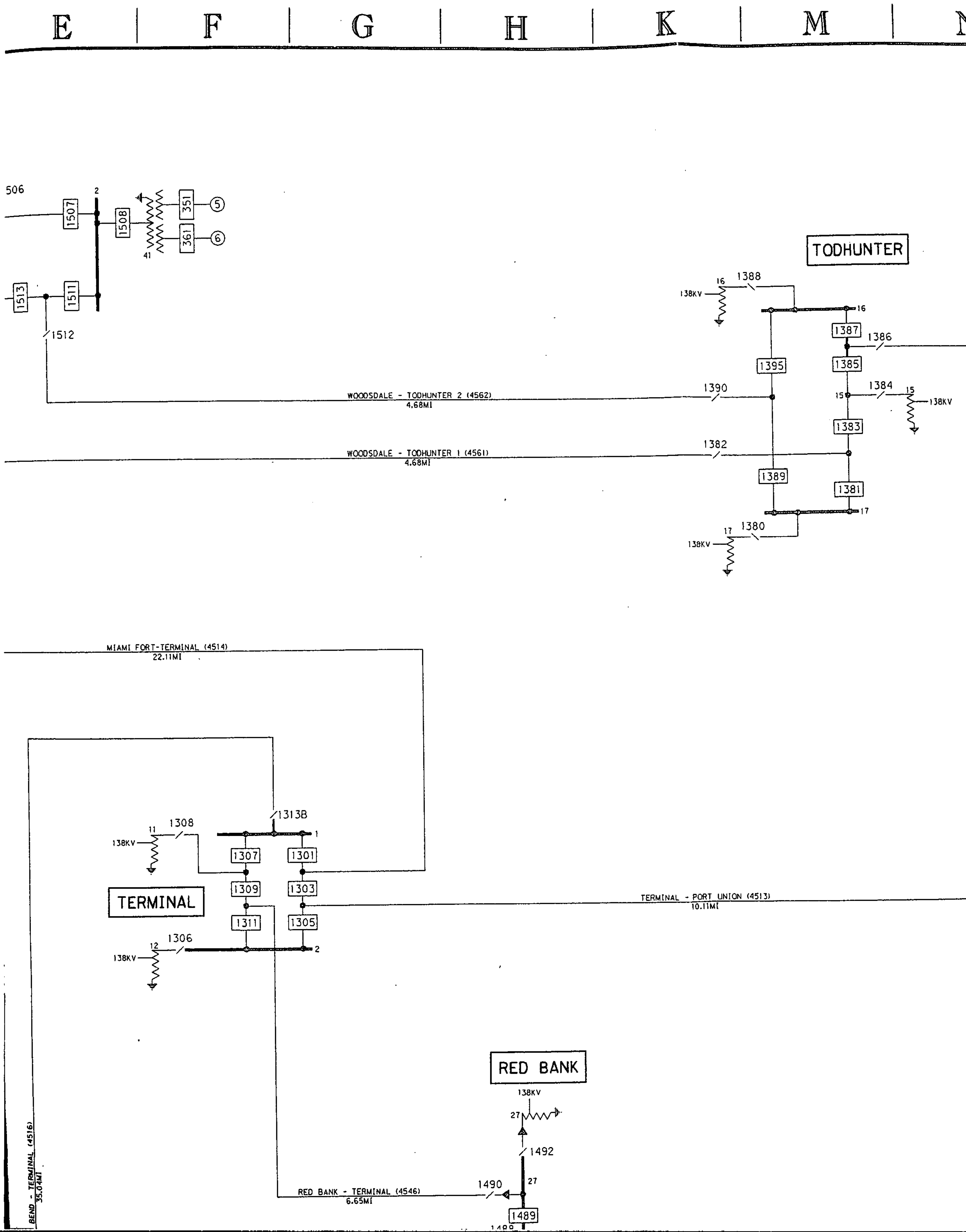

E
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506
1507
1508
351
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1513
1511
1512
TODHUNTER
1388
138KV
1387
1386
1395
1385
1390
1384
WOODSDALE - TODHUNTER 2 (4562)
4.68MI
1383
1382
WOODSDALE - TODHUNTER 1 (4561)
4.68MI
1389
1381
1380
MIAMI FORT-TERMINAL (4514)
22.11MI
1313B
1308
1307
1301
1309
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TERMINAL
TERMINAL - PORT UNION (4513)
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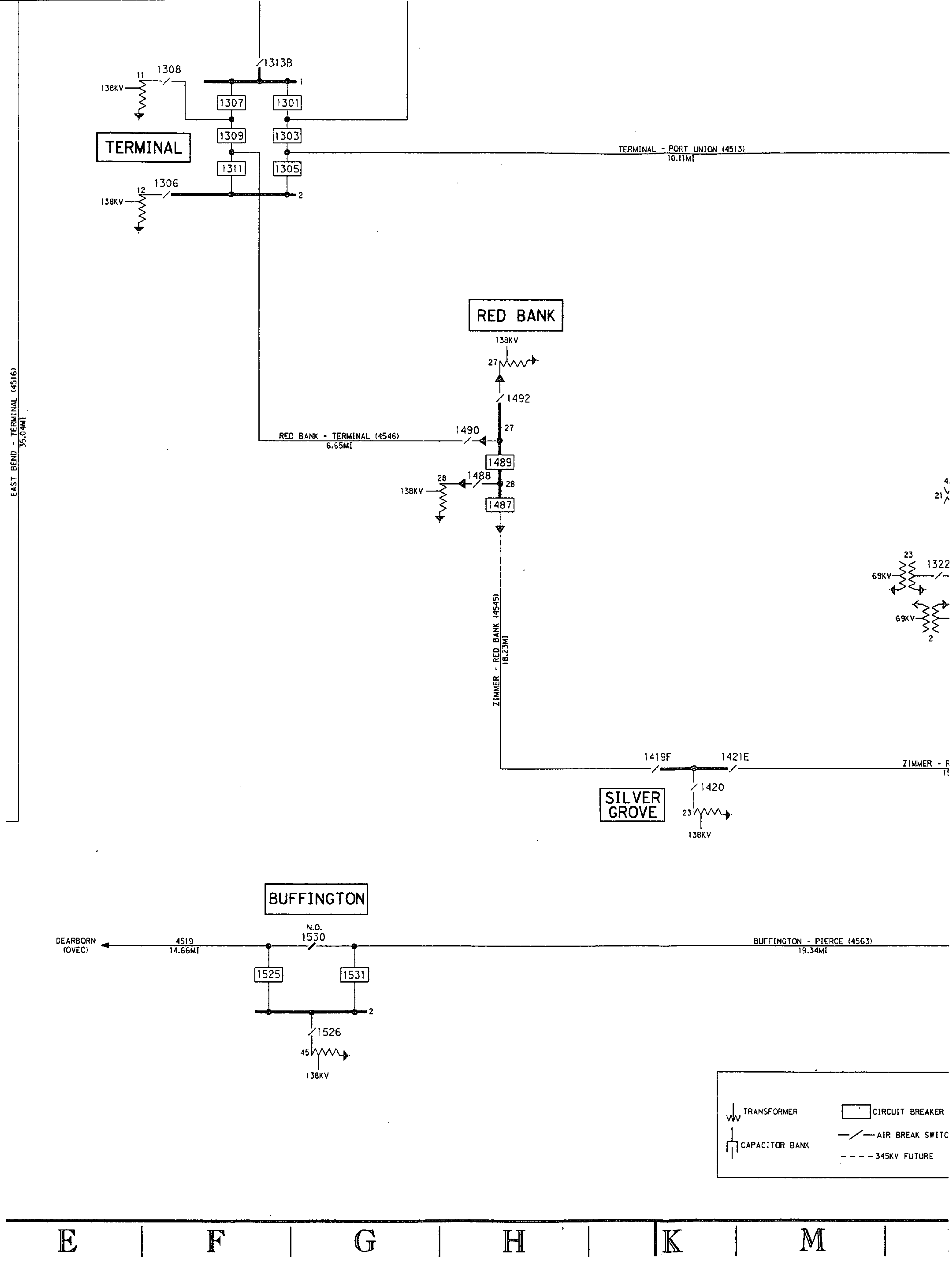
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138KV
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SILVER GROVE
23
138KV
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N.O.
1530
BUFFINGTON - PIERCE (4563)
19.34MI
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1531
2
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TRANSFORMER
CIRCUIT BREAKER
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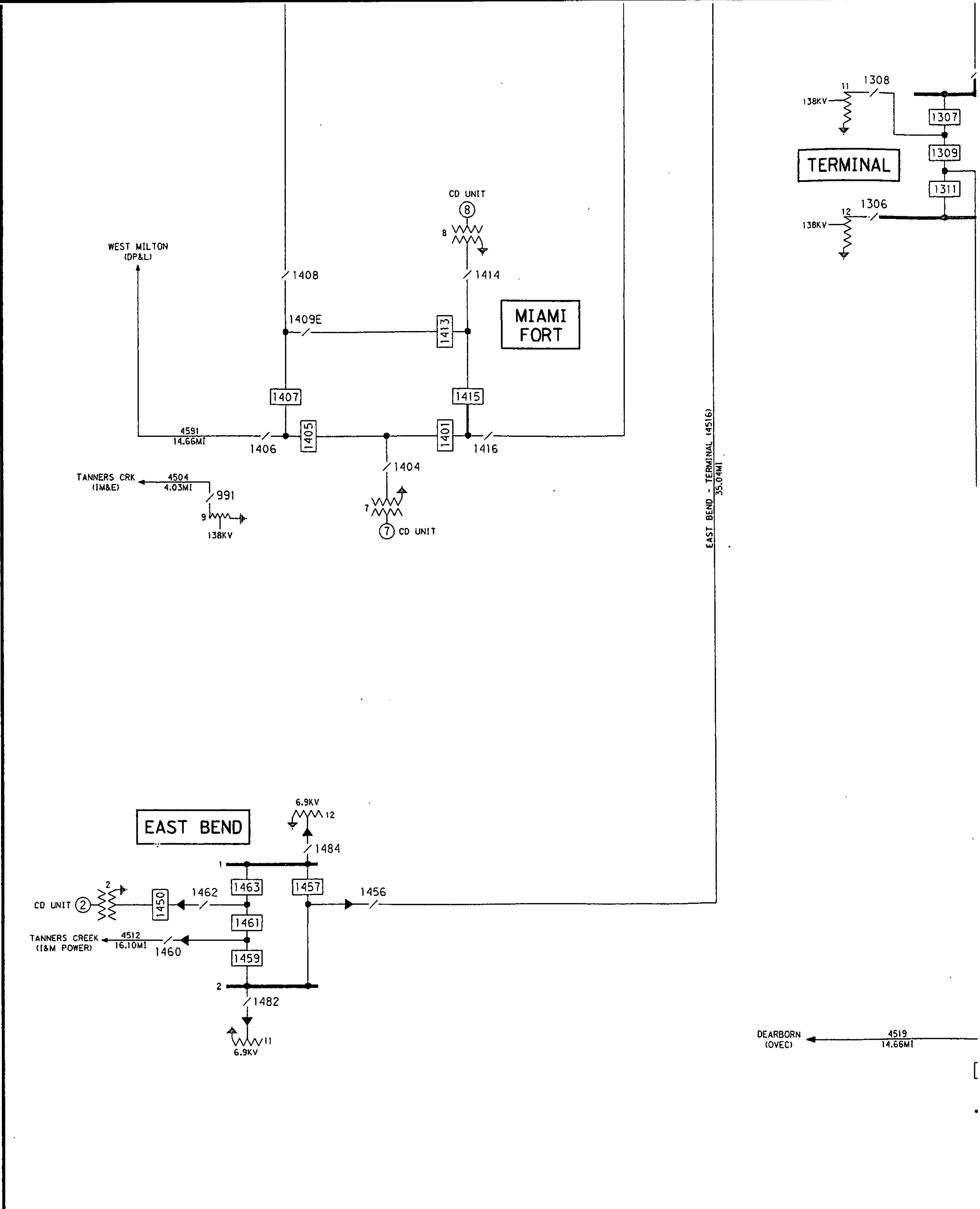

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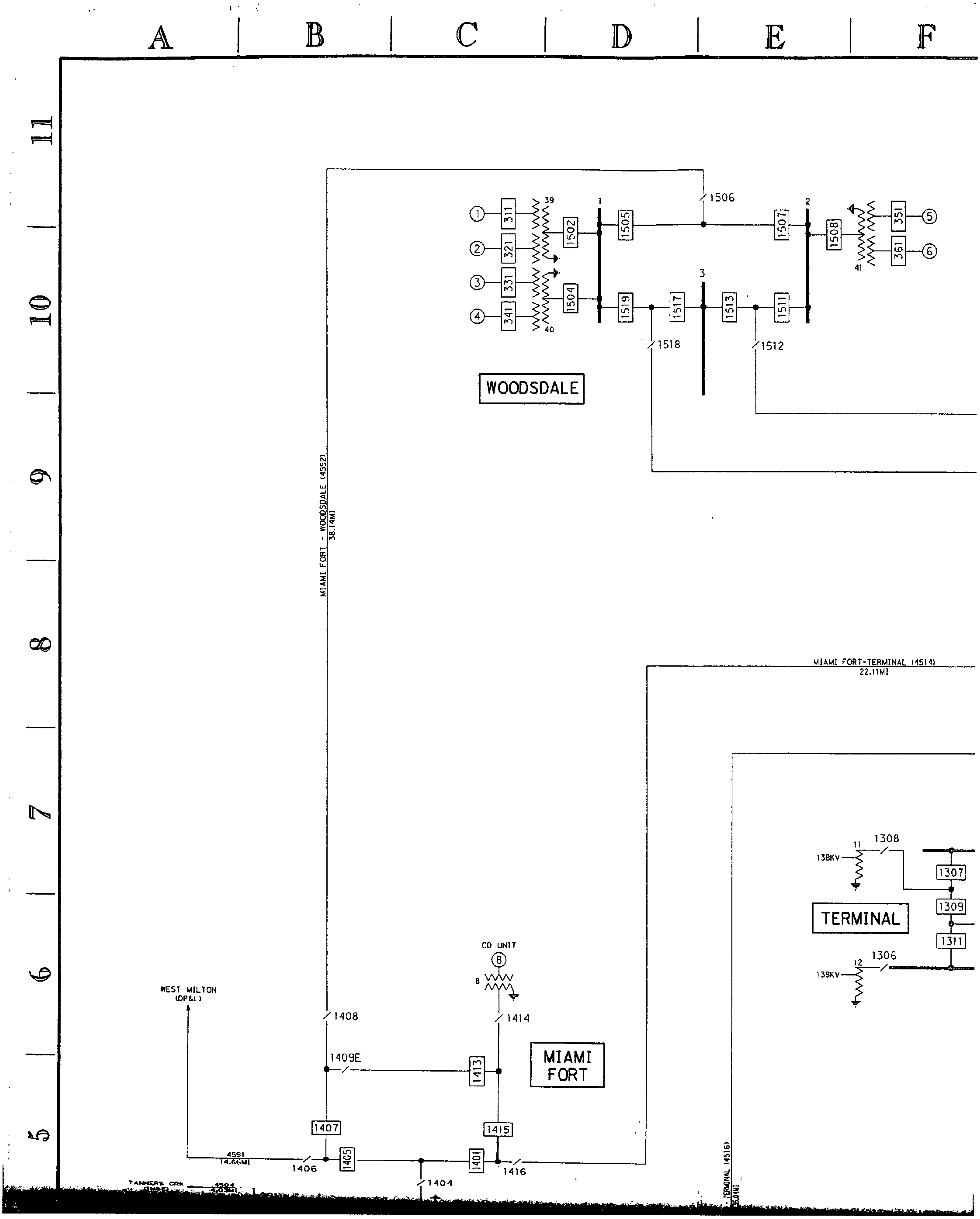
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MIAMI FORT-TERMINAL (4514)
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TERMINAL
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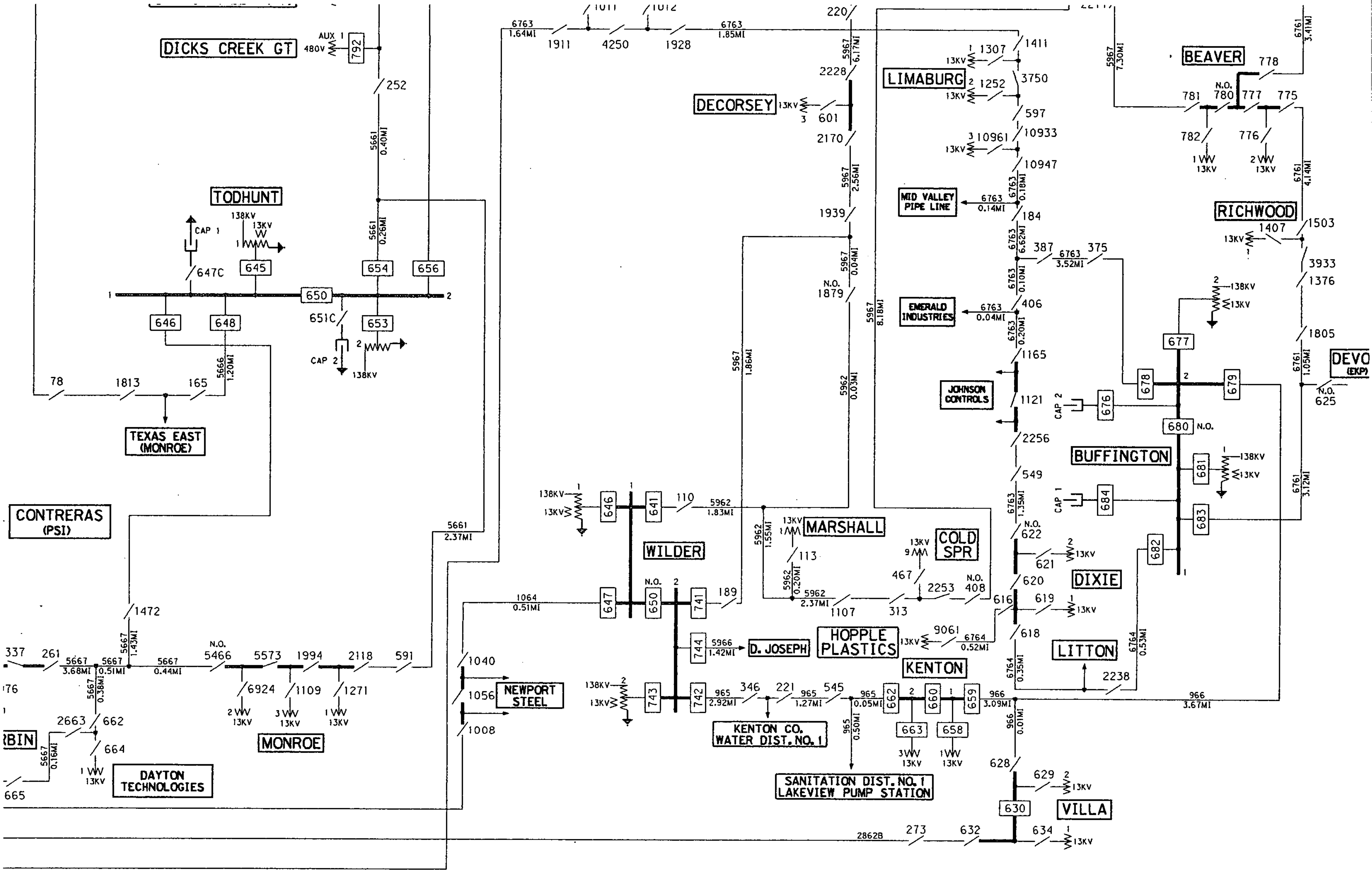
- TERMINAL (4516)



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LEGEND

TRANSFORMER

CAPACITOR BANK

CIRCUIT BREAKER

AIR BREAK SWITCH

69KV FUTURE

69KV

AUTO TRANSF. 138KV 69KV

DO NOT USE FOR SWITCHING OR CLEARANCE

W L 6 9 K V S Y S T E M P 2 KEY WORD

SCALE NTS	TITLE 69KV SYSTEM - PART 2	DATE	
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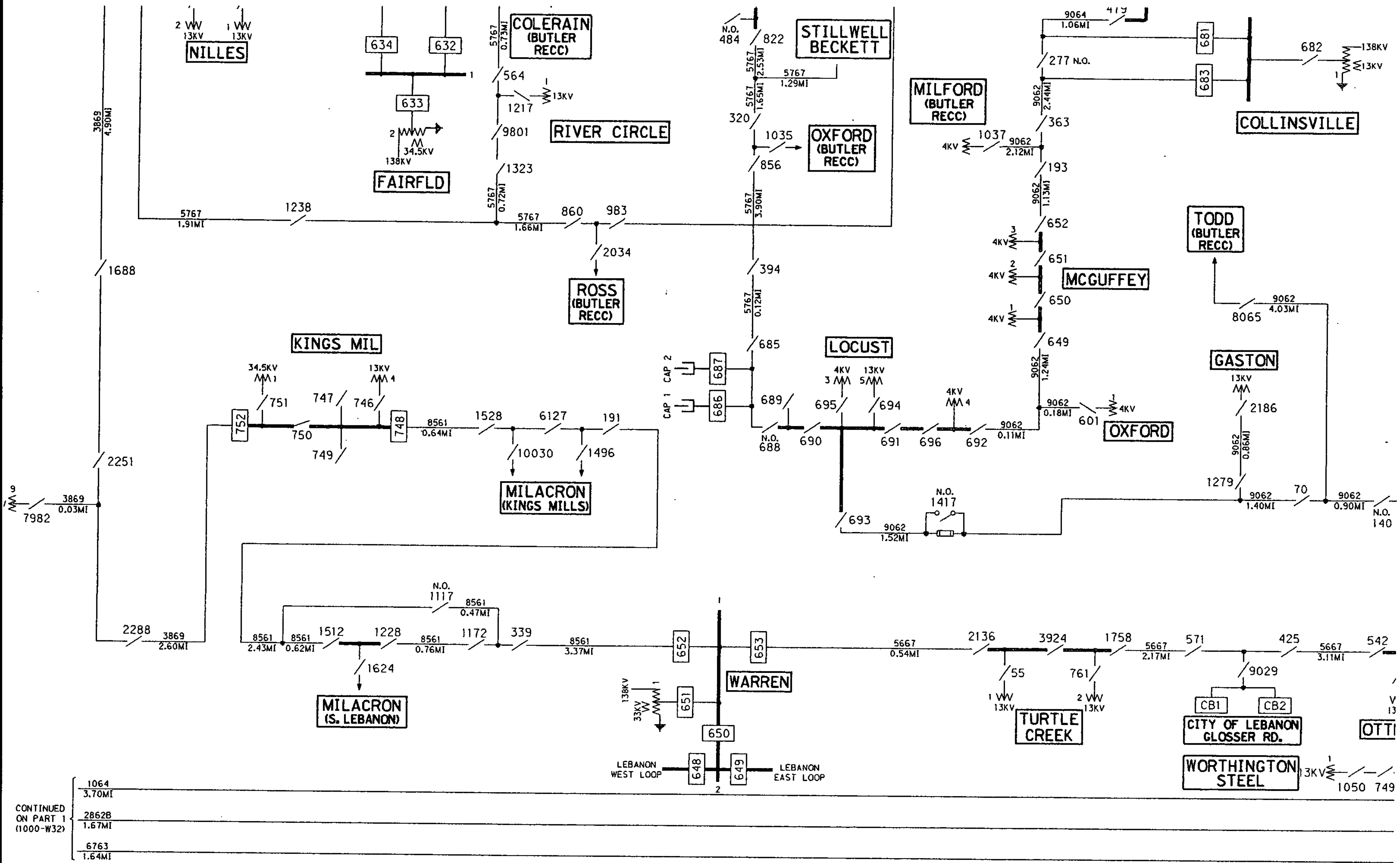
CHK'D			
ENG'R	FOR ELECTRIC SYSTEM OPERATIONS	JOB NO.	CO. N
APP'D			
APP'D	THE CINCINNATI GAS & ELECTRIC COMPANY	DWG. NO. 1000-W4-	



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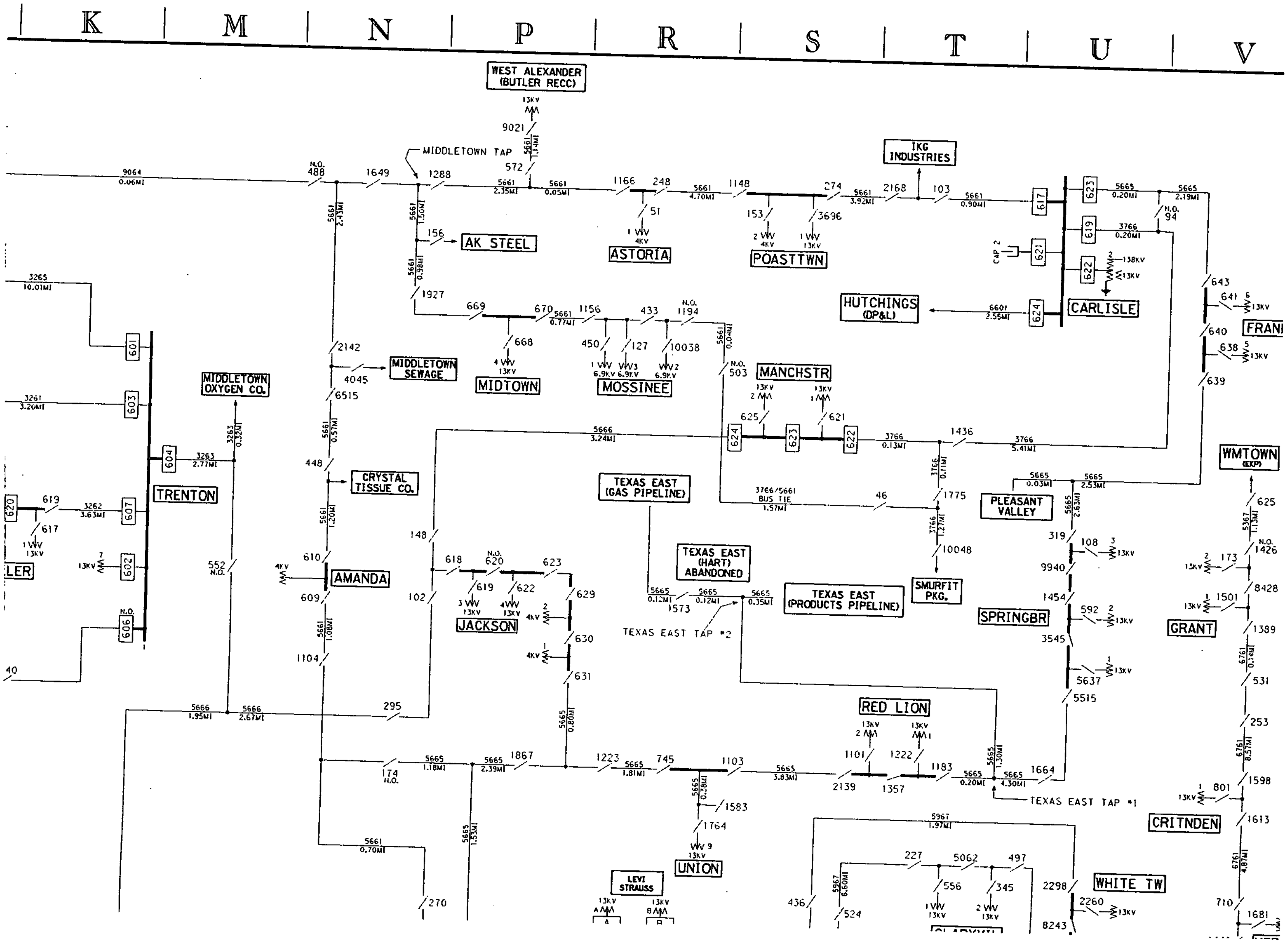

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MIDDLETOWN TAP
IKG INDUSTRIES
AK STEEL
ASTORIA
POASTTWN
HUTCHINGS (DP&L)
CARLISLE
MIDDLETOWN SEWAGE
MIDTOWN
MOSSINEE
MANCHSTR
MIDDLETOWN OXYGEN CO.
TRENTON
CRYSTAL TISSUE CO.
AMANDA
JACKSON
TEXAS EAST (GAS PIPELINE)
TEXAS EAST (HART) ABANDONED
TEXAS EAST (PRODUCTS PIPELINE)
TEXAS EAST TAP #2
TEXAS EAST TAP #1
SMURFIT PKG.
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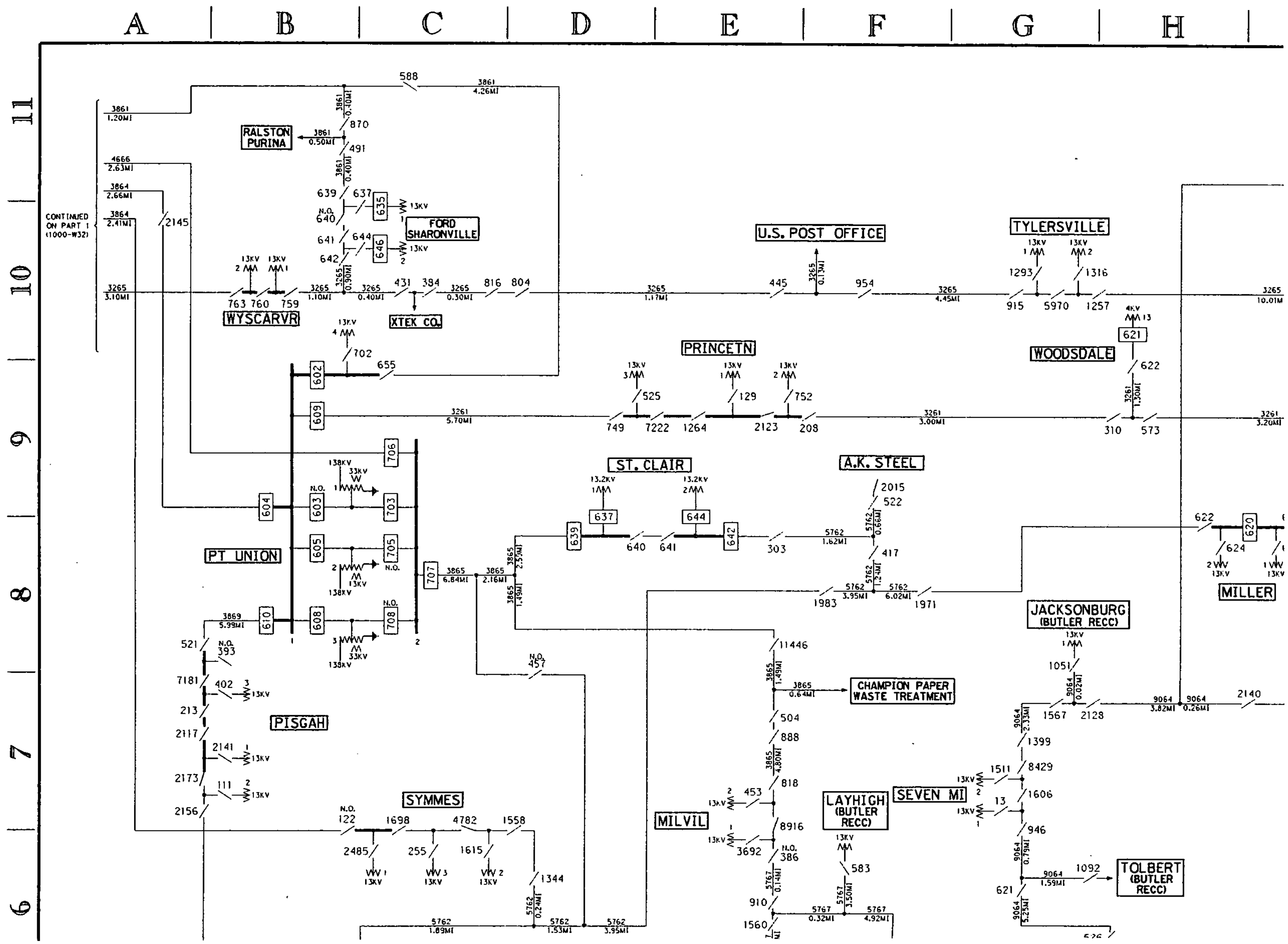

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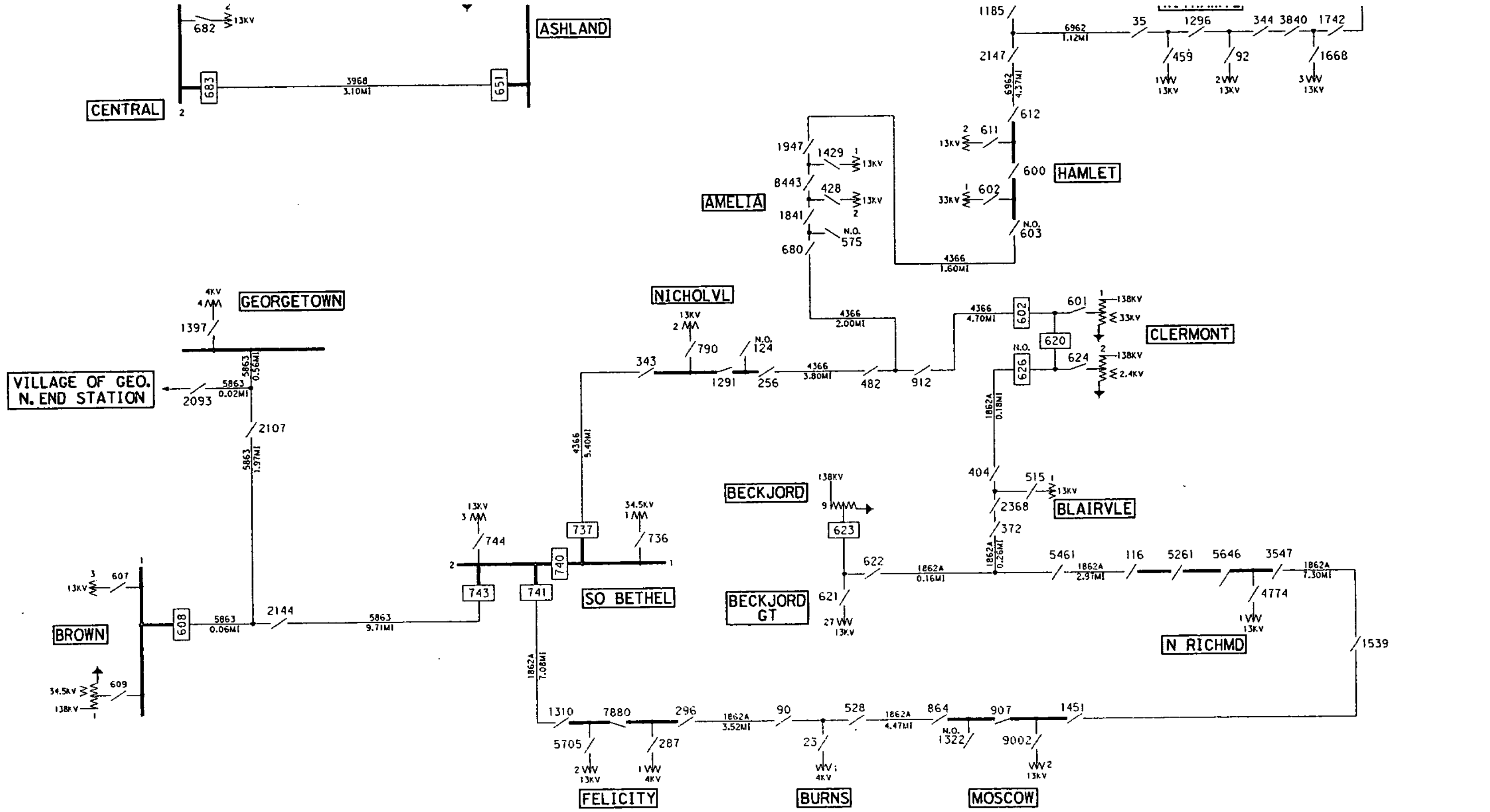
A.K. STEEL
PT UNION
MILLER
JACKSONBURG (BUTLER RECC)
PISGAH
CHAMPION PAPER WASTE TREATMENT
SYMMES
MILVIL
LAYHIGH (BUTLER RECC)
SEVEN MI
TOLBERT (BUTLER RECC)



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KEY WORD

W L 6 9 K V S Y S T E M P 1

SCALE	NTS
DRAWN	
CHK'D	
ENG'R	
APP'D	
APP'D	
APP'D	

TITLE

69KV SYSTEM - PART 1

FOR

ELECTRIC SYSTEM OPERATIONS

THE CINCINNATI GAS & ELECTRIC COMPANY
GENERAL ENGINEERING DEPARTMENT

DATE 6-10-84

W. O. NO. 5066-11

JOB NO.

STA.

CO.

DWG. NO. 1000-W4-

LEGEND

TRANSFORMER

CAPACITOR BANK

CIRCUIT BREAKER

AIR BREAK SWITCH

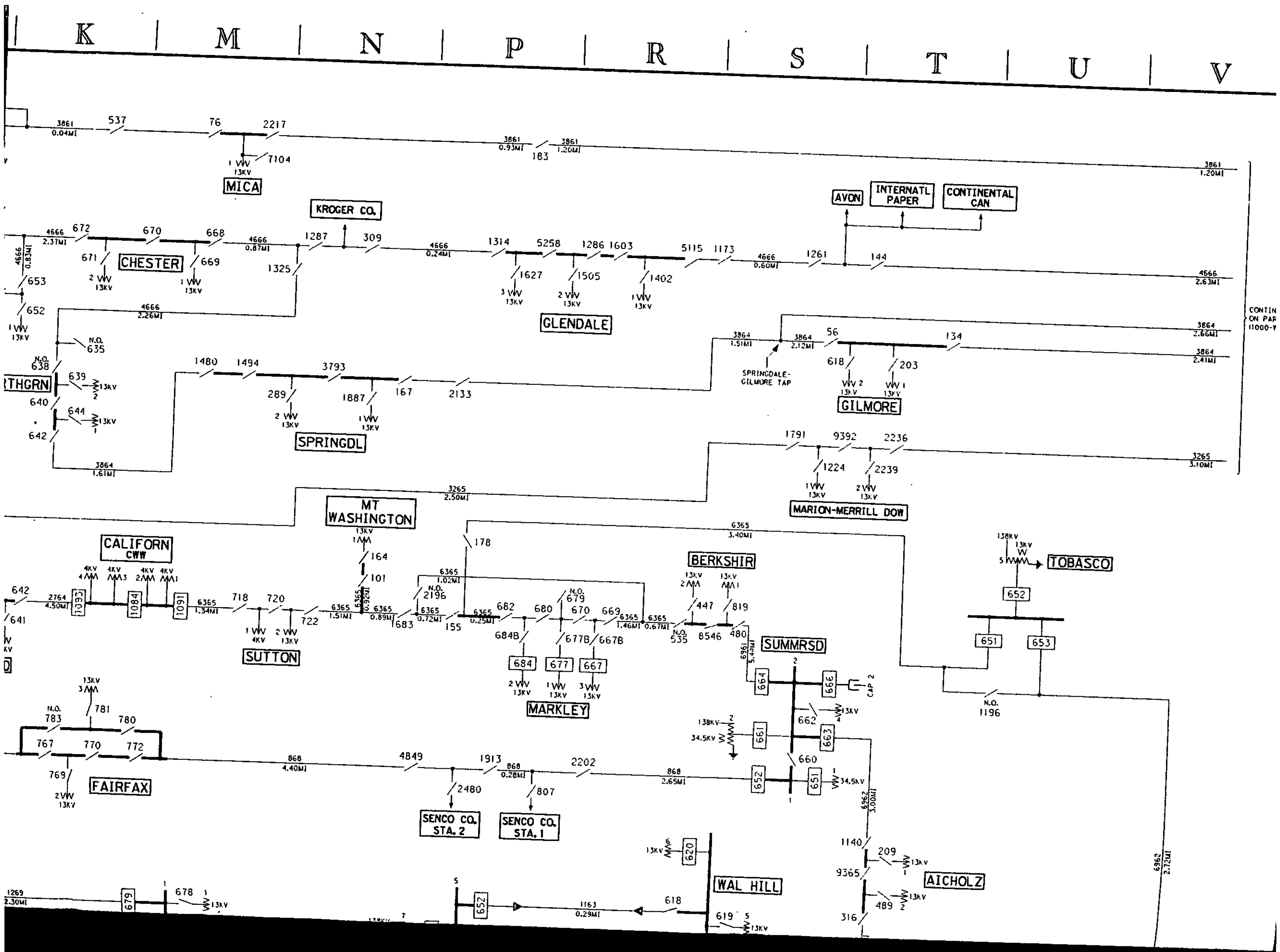
69KV FUTURE

69KV

AUTO TRANSF. 138KV 69KV

DO NOT USE FOR SWITCHING OR CLEARANCE

K | M | N | P | R | S | T | U | V


K
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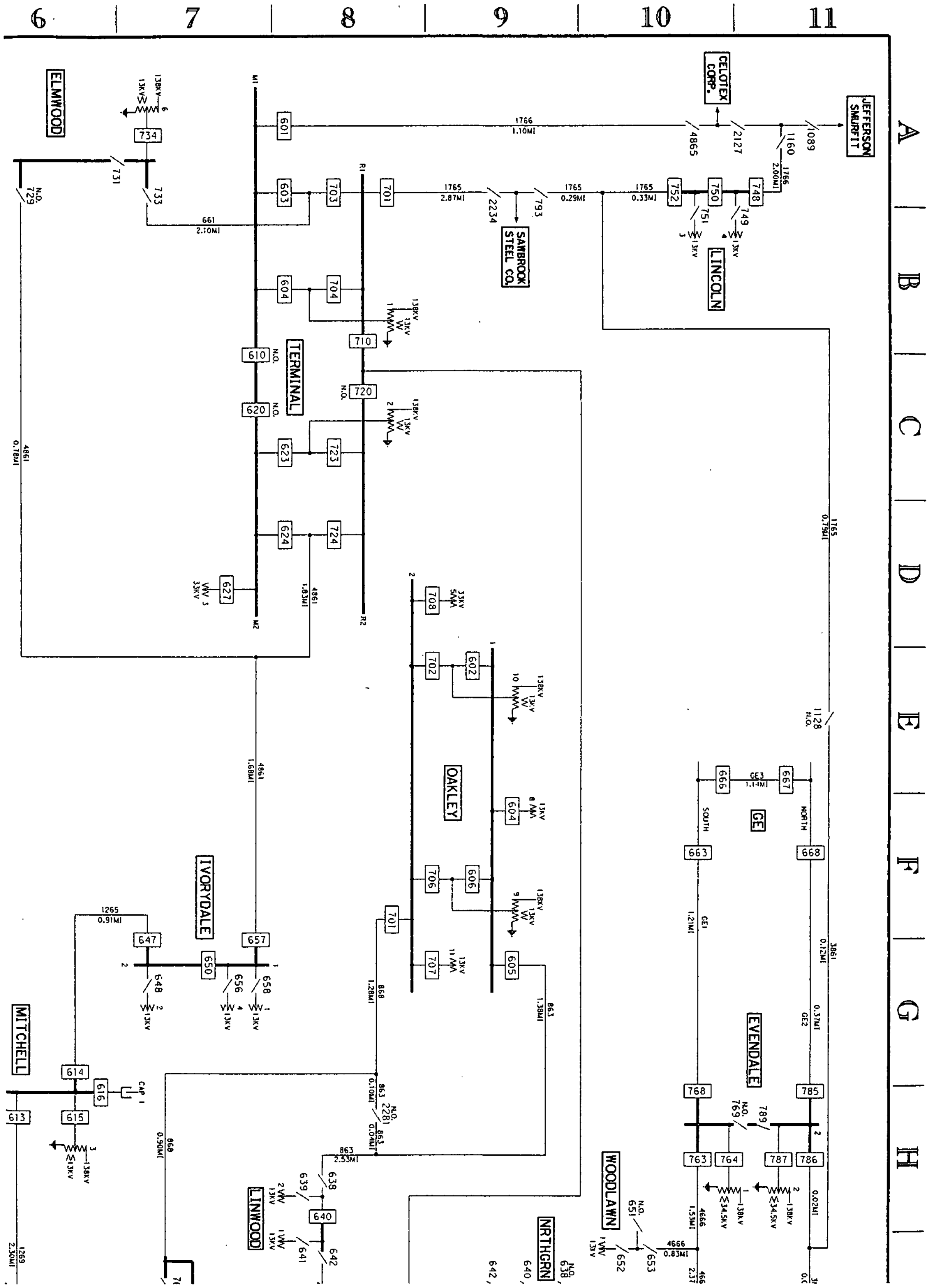
U
V
MICA
KROGER CO.
AVON
INTERNATL PAPER
CONTINENTAL CAN
CHESTER
GLENDALE
SPRINGDL
GILMORE
SPRINGDALE-GILMORE TAP
MARION-MERRILL DOW
MT WASHINGTON
CALIFORN CWW
SUTTON
BERKSHIR
TOBASCO
MARKLEY
SUMMRSD
FAIRFAX
SENCO CO. STA. 2
SENCO CO. STA. 1
WAL HILL
AICHOLZ
CONTIN ON PAF 11000-F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E
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G
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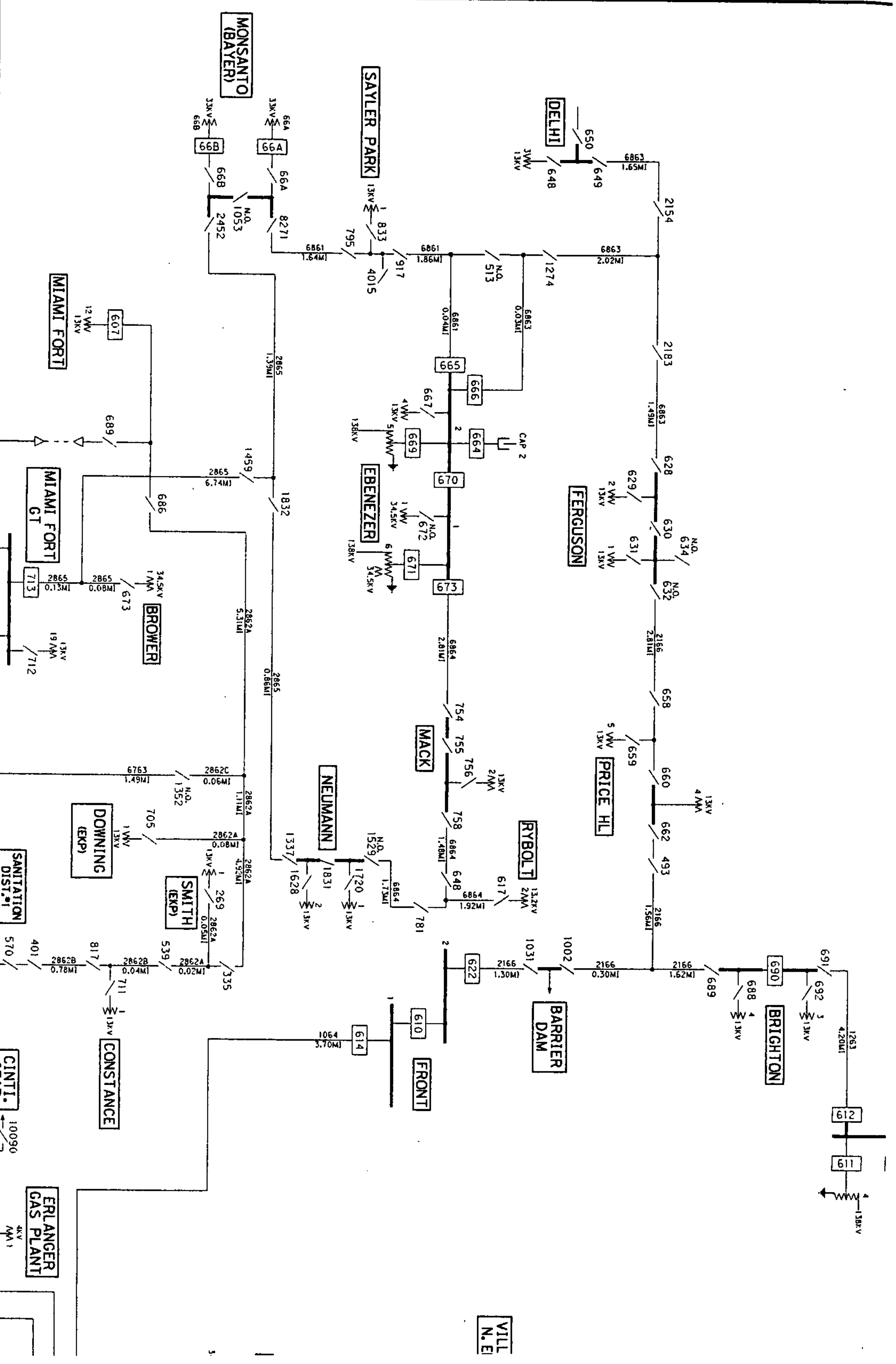
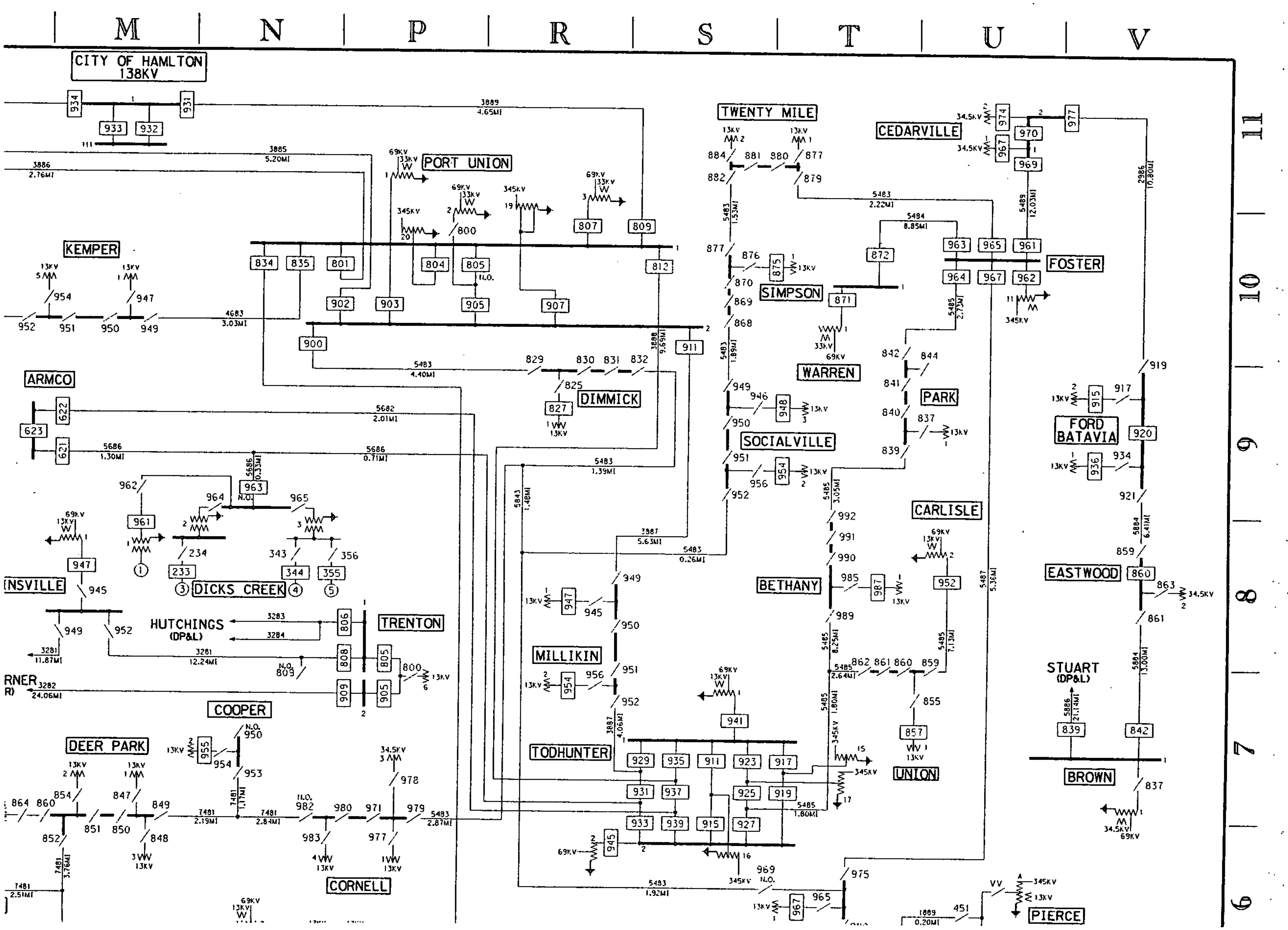
ELMWOOD
TERMINAL
OAKLEY
IVORYDALE
MITCHELL
LINWOOD
NRTHGRN
WOODLAWN
EVENDALE
GE
LINCOLN
SAWBROOK STEEL CO.
CELOTEX CORP.
JEFFERSON SMURFIT

1	2	3	4	5

REVISIONS	
REDRAWN	
1-13-93	17
12-5-94	18
3-24-95	19
11-1-95	20
3-7-97	21
2-16-98	22
1-22-99	23




M
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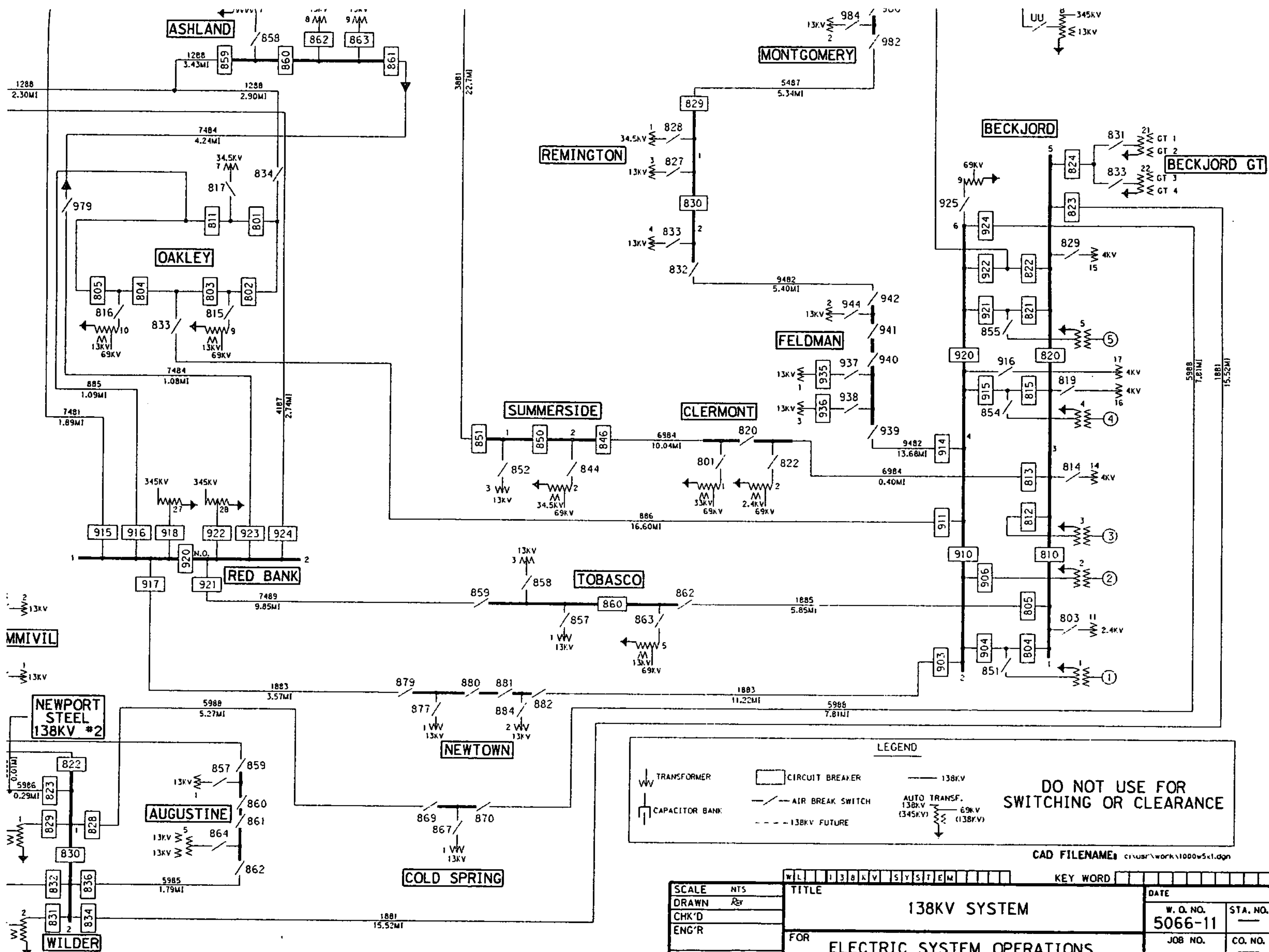
6
CITY OF HAMLTON 138KV
PORT UNION
KEMPER
ARMCO
DIMMICK
DICKS CREEK
INSVILLE
HUTCHINGS (DP&L)
TRENTON
RNER
COOPER
DEER PARK
CORNELL
TWENTY MILE
SIMPSON
WARREN
SOCIALVILLE
MILLIKIN
TODHUNTER
BETHANY
CARLISLE
PARK
UNION
CEDARVILLE
FOSTER
FORD BATAVIA
EASTWOOD
STUART (DP&L)
BROWN
PIERCE



LEGEND

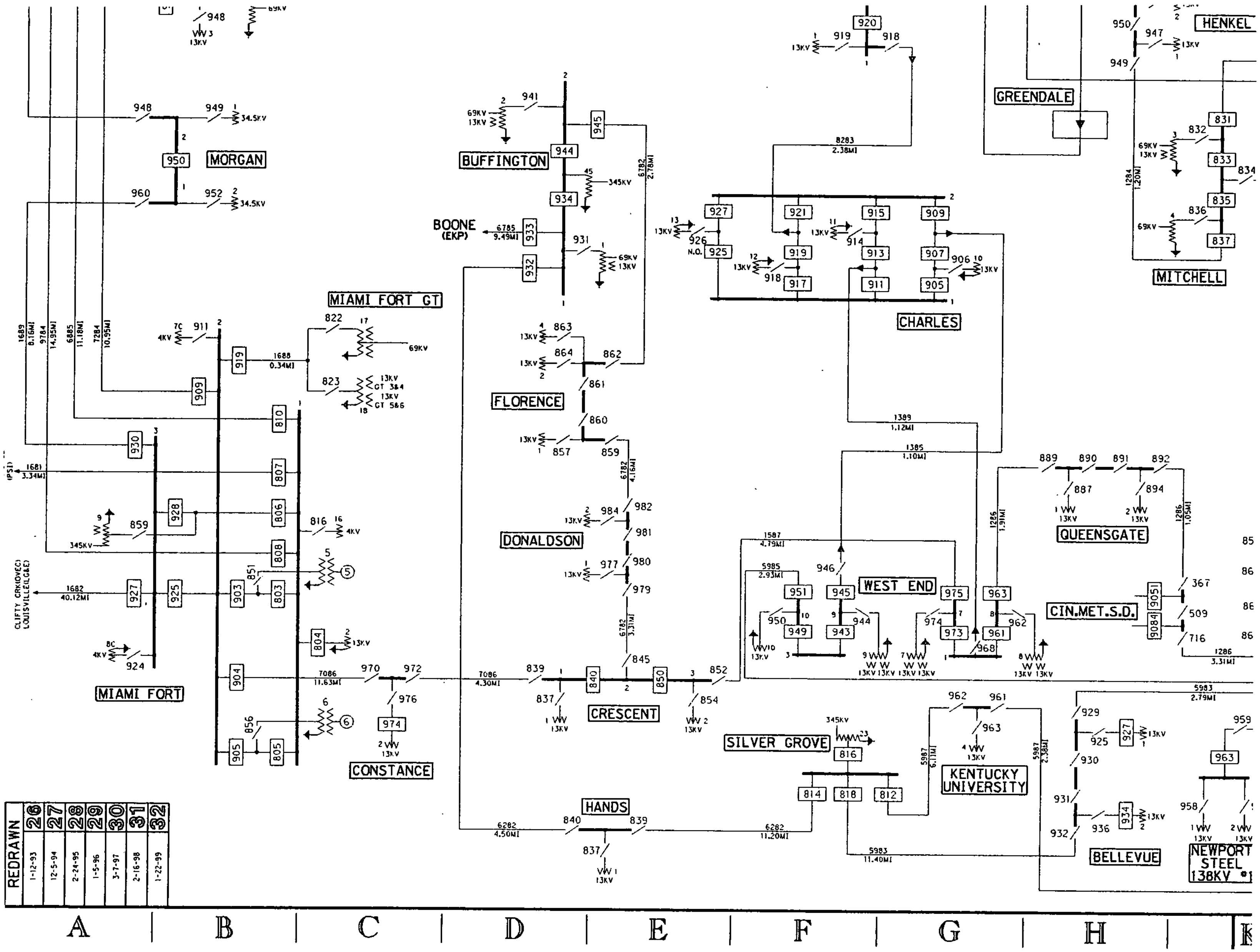
TRANSFORMER
CAPACITOR BANK
CIRCUIT BREAKER
AIR BREAK SWITCH
138KV FUTURE
138KV
AUTO TRANSF. 138KV (345KV) 69KV (138KV)

DO NOT USE FOR SWITCHING OR CLEARANCE

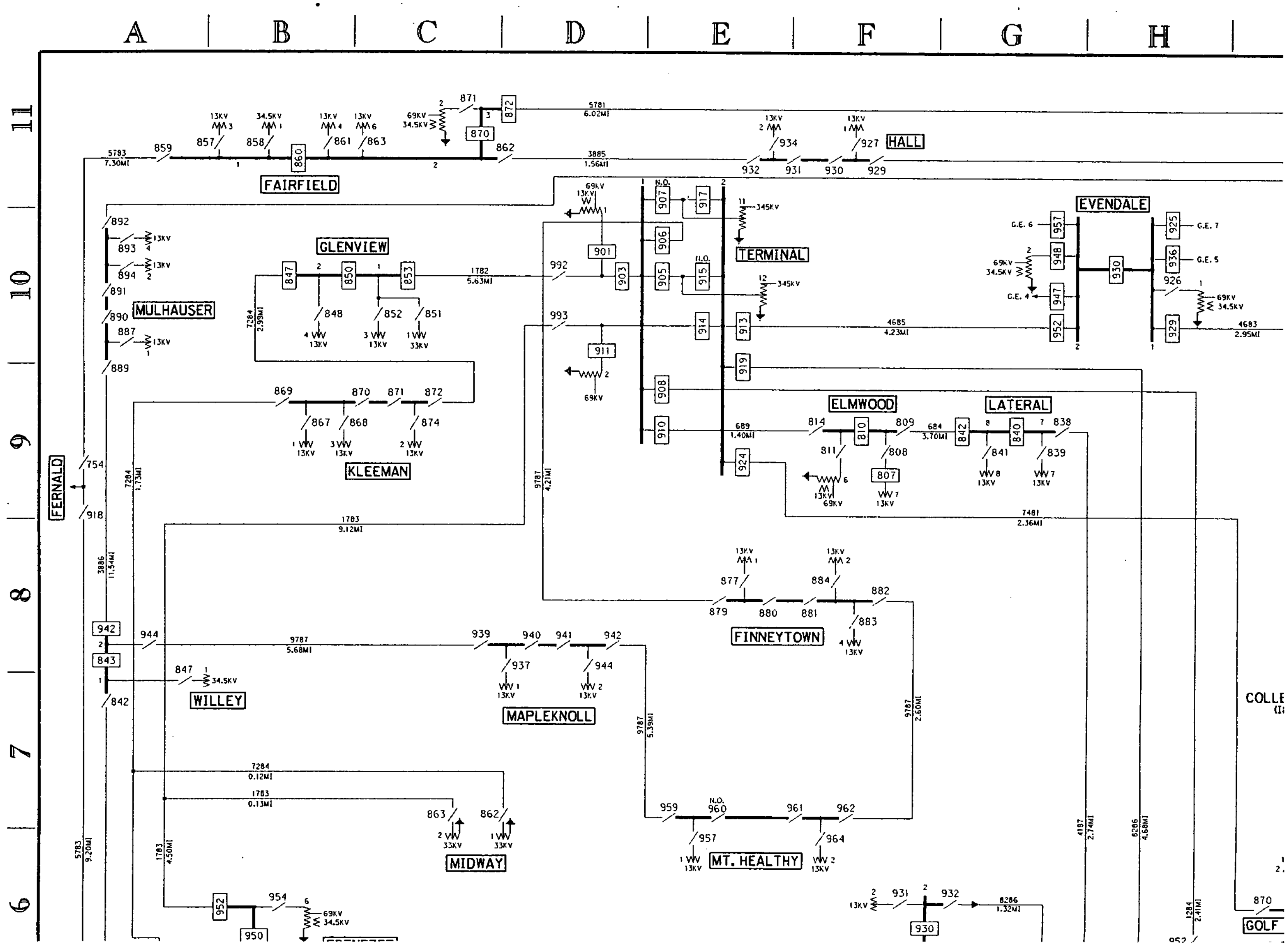
CAD FILENAME: c:\usr\work\1000w5c1.dgn

KEY WORD

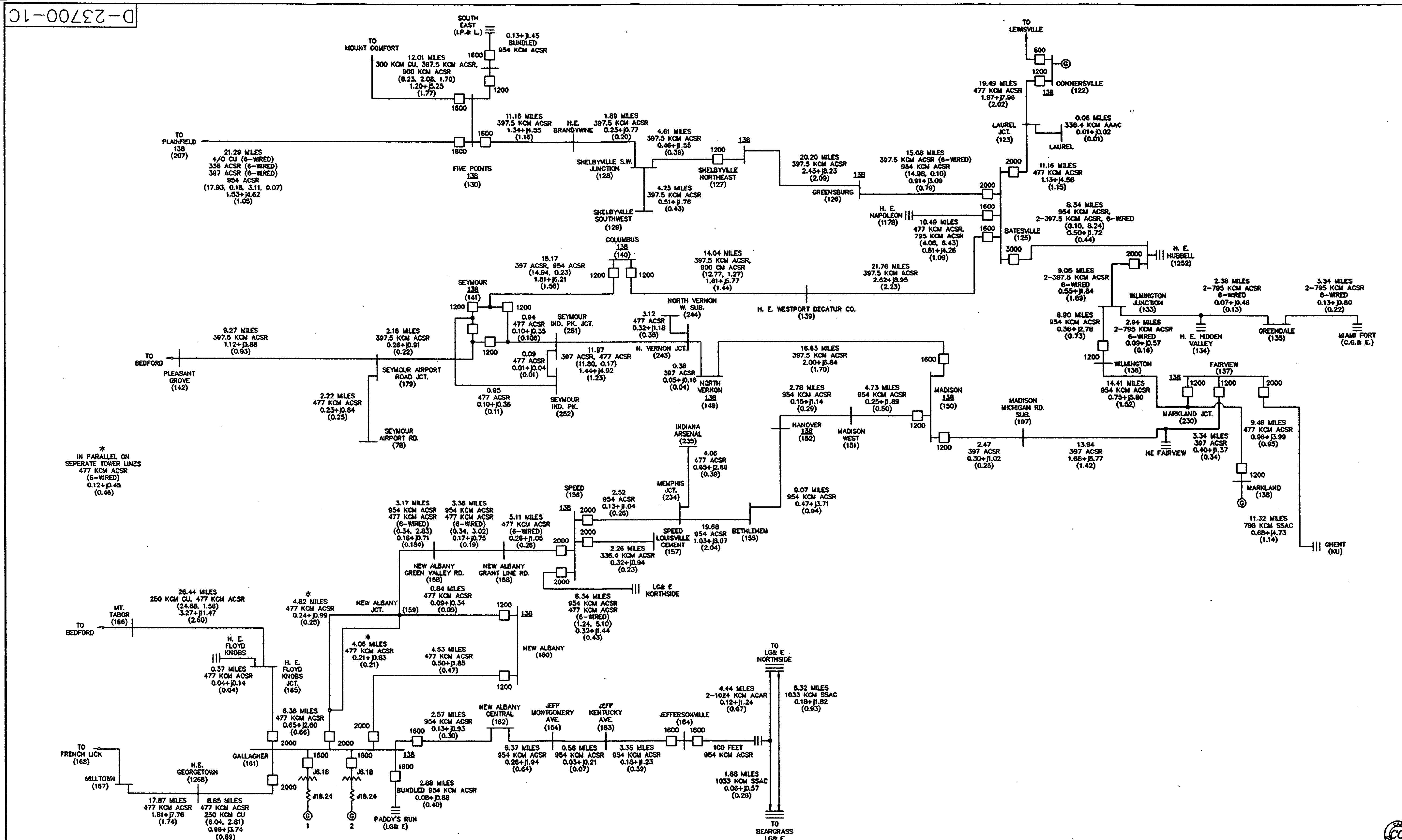
SCALE NTS	TITLE 138KV SYSTEM	W. O. NO. 5066-11	STA. NO. —
DRAWN		JOB NO.	CO. NO. —
CHK'D			
ENG'R	FOR ELECTRIC SYSTEM OPERATIONS		
APP'D			
APP'D	THE CINCINNATI GAS & ELECTRIC COMPANY	DWG. NO.	



MORGAN
BUFFINGTON
BOONE (EKP)
MIAMI FORT GT
MIAMI FORT
FLORENCE
DONALDSON
CRESCENT
CONSTANCE
HANDS
CHARLES
GREENDALE
HENKEL
MITCHELL
QUEENSGATE
CIN.MET.S.D.
WEST END
SILVER GROVE
KENTUCKY UNIVERSITY
BELLEVUE
NEWPORT STEEL 138KV #1
CLIFTY CRK(OVEC) LOUISVILLE(LG&E)
REDRAWN
26 1-12-93
27 12-5-94
28 2-24-95
29 1-5-96
30 3-7-97
31 2-16-98
32 1-22-99
A B C D E F G H K



FAIRFIELD
HALL
MULHAUSER
GLENVIEW
TERMINAL
EVENDALE
KLEEMAN
ELMWOOD
LATERAL
FERNALD
FINNEYTOWN
WILLEY
MAPLEKNOLL
MIDWAY
MT. HEALTHY
GOLF



REVISION	DATE 8-14-48	DRAFTSMAN RKM
DESC. REVISED	APP. J.DOELL	
REVISION	DATE 6-21-48	DRAFTSMAN DBK
DESC. REVISED	APP. D. GROVES	

LEGEND

- 138KV TRANSMISSION LINES
- 230KV TRANSMISSION LINES
- 345KV TRANSMISSION LINES
- CHANGE IN OWNERSHIP
- TRANSFORMER BANK
- BREAKER
- R+jX PERCENT ON 100 MVA
- Ⓖ GENERATOR

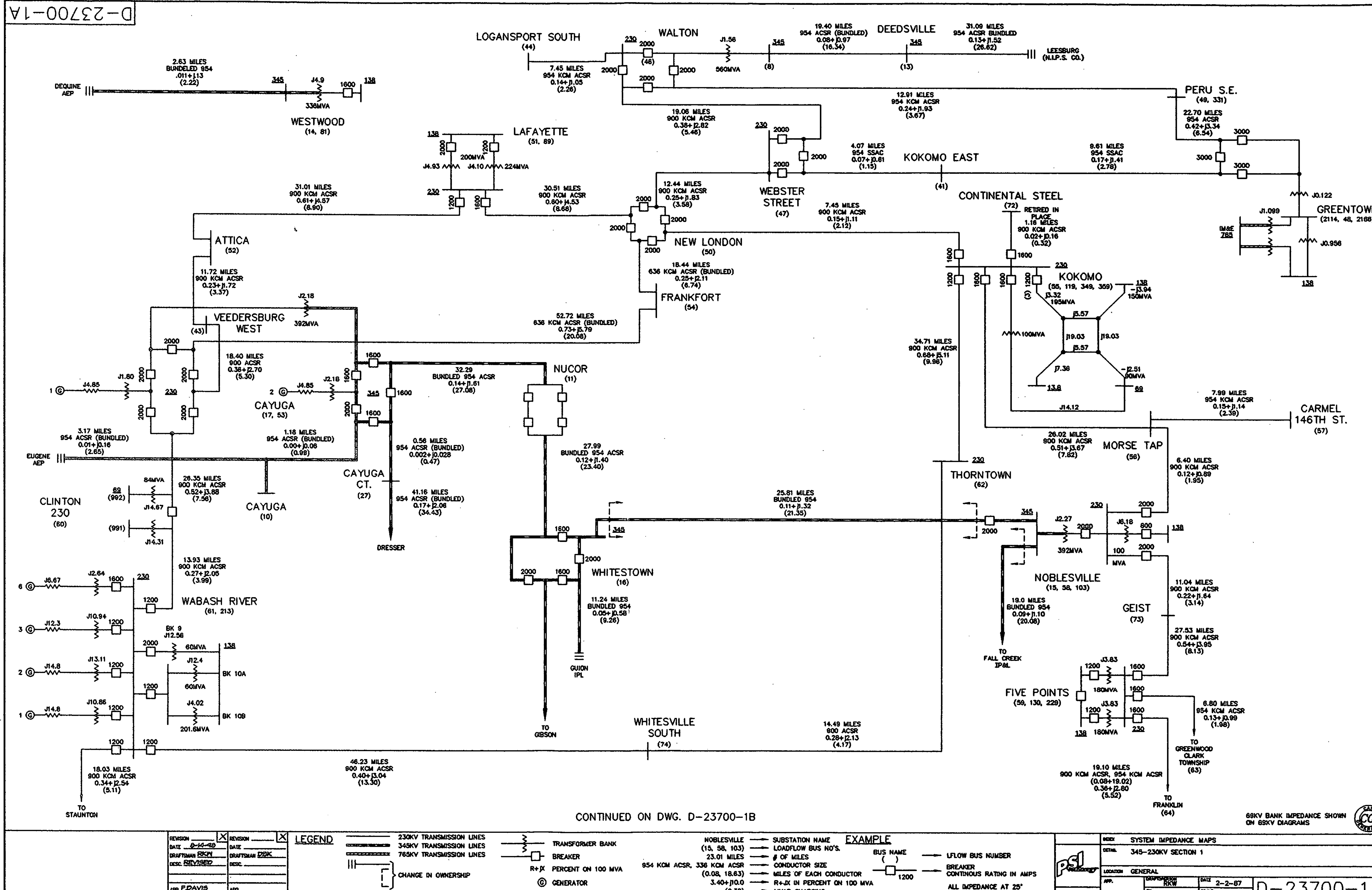
EXAMPLE

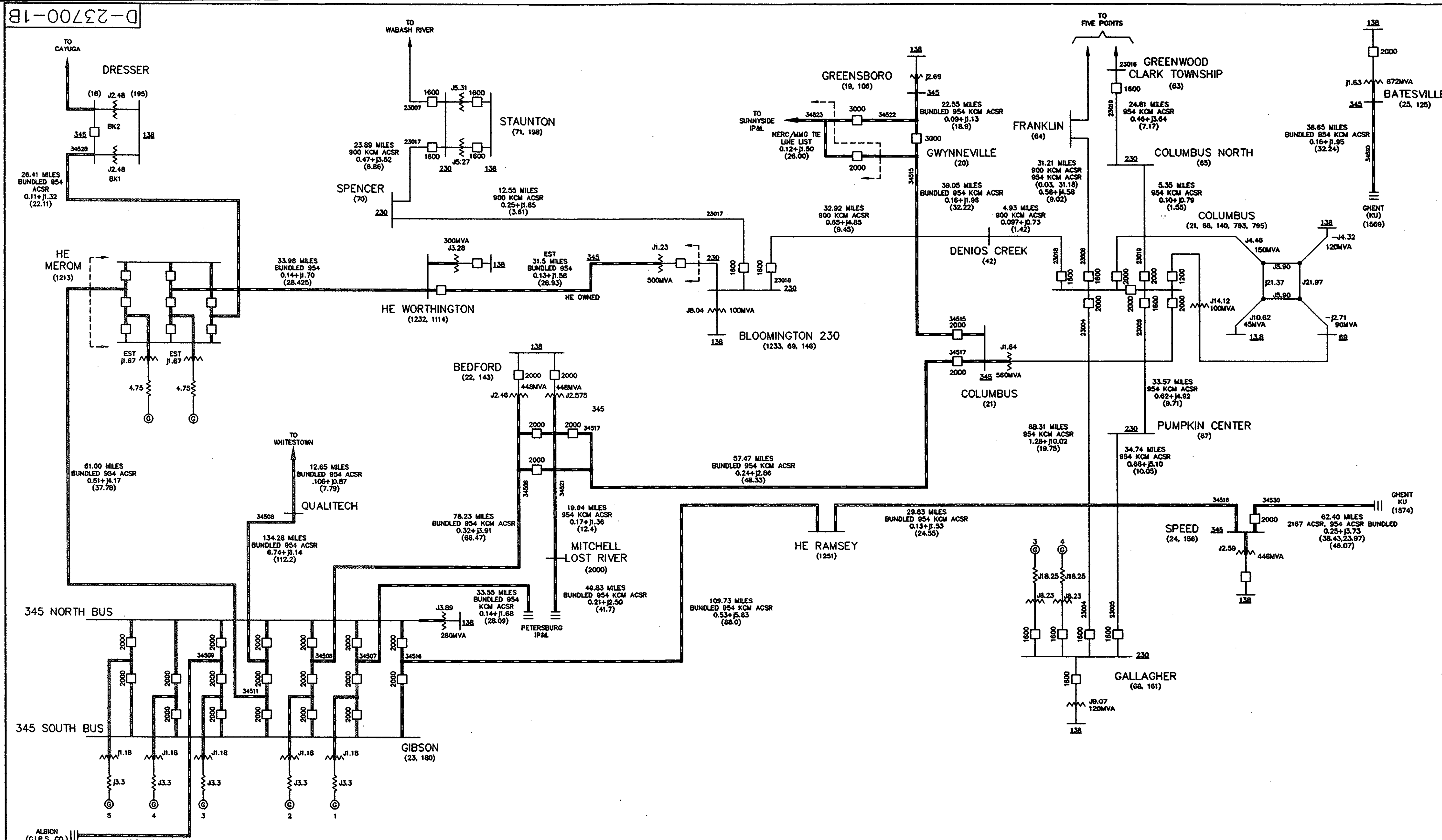
- NOBLESVILLE — SUBSTATION NAME
- (15, 56, 103) — LOADFLOW BUS NO'S.
- 23.01 MILES — # OF MILES
- 954 KCM ACSR, 336 KCM ACSR — CONDUCTOR SIZE
- (0.08, 18.63) — MILES OF EACH CONDUCTOR
- 3.40+j10.0 — R+jX IN PERCENT ON 100 MVA
- (2.30) — MVAR CHARGING
- BUS NAME ( ) — LFLOW BUS NUMBER
- 1200 — BREAKER CONTINOUS RATING IN AMPS

ALL IMPEDANCE AT 25°

INDEX	SYSTEM IMPEDANCE MAPS
DETAIL	138KV
LOCATION	EASTERN DIVISON
DRAFTSMAN	RKW
DATE	2-11-87
SCALE	NONE

D-23700-1C


D-23700-1A
LOGANSPORT SOUTH (44)
WALTON (46)
DEEDSVILLE (13)
LEESBURG (N.I.P.S. CO.)
PERU S.E. (49, 331)
WESTWOOD (14, 81)
DEQUINE AEP
LAFAYETTE (51, 89)
KOKOMO EAST (41)
WEBSTER STREET (47)
CONTINENTAL STEEL (72)
RETIRED IN PLACE
GREENTOWN (2114, 48, 2168)
ATTICA (52)
NEW LONDON (50)
KOKOMO (55, 119, 349, 359)
FRANKFORT (54)
VEEDERSBURG WEST (43)
CAYUGA (17, 53)
NUCOR (11)
CARMEL 146TH ST. (57)
MORSE TAP (56)
EUGENE AEP
CAYUGA CT. (27)
CAYUGA (10)
THORNTOWN (62)
CLINTON 230 (60)
DRESSER
WHITESTOWN (16)
NOBLESVILLE (15, 58, 103)
WABASH RIVER (61, 213)
GUION IPL
TO FALL CREEK IP&L
GEIST (73)
FIVE POINTS (59, 130, 229)
BK 10A
BK 10B
TO GIBSON
WHITESVILLE SOUTH (74)
TO GREENWOOD CLARK TOWNSHIP (63)
TO STAUNTON
TO FRANKLIN (64)
CONTINUED ON DWG. D-23700-1B
69KV BANK IMPEDANCE SHOWN ON 69KV DIAGRAMS
LEGEND
230KV TRANSMISSION LINES
345KV TRANSMISSION LINES
765KV TRANSMISSION LINES
CHANGE IN OWNERSHIP
TRANSFORMER BANK
BREAKER
R+jX PERCENT ON 100 MVA
GENERATOR
EXAMPLE
NOBLESVILLE — SUBSTATION NAME
(15, 58, 103) — LOADFLOW BUS NO'S.
23.01 MILES — # OF MILES
954 KCM ACSR, 336 KCM ACSR — CONDUCTOR SIZE
(0.08, 18.63) — MILES OF EACH CONDUCTOR
3.40+j10.0 — R+jX IN PERCENT ON 100 MVA
(2.30) — MVAR CHARGING
BUS NAME ( ) — LFLOW BUS NUMBER
1200 — BREAKER CONTINOUS RATING IN AMPS
ALL IMPEDANCE AT 25°
SYSTEM IMPEDANCE MAPS
345-230KV SECTION 1
GENERAL
DATE 2-2-87
SCALE NONE
D-23700-1A



CONTINUED ON DWG. D-23700-1A-1

69KV BANK IMPEDANCE SHOWN ON 69KV DIAGRAMS

LEGEND

230KV TRANSMISSION LINES
345KV TRANSMISSION LINES
765KV TRANSMISSION LINES
CHANGE IN OWNERSHIP
TRANSFORMER BANK
BREAKER
R+JX PERCENT ON 100 MVA
GENERATOR

EXAMPLE

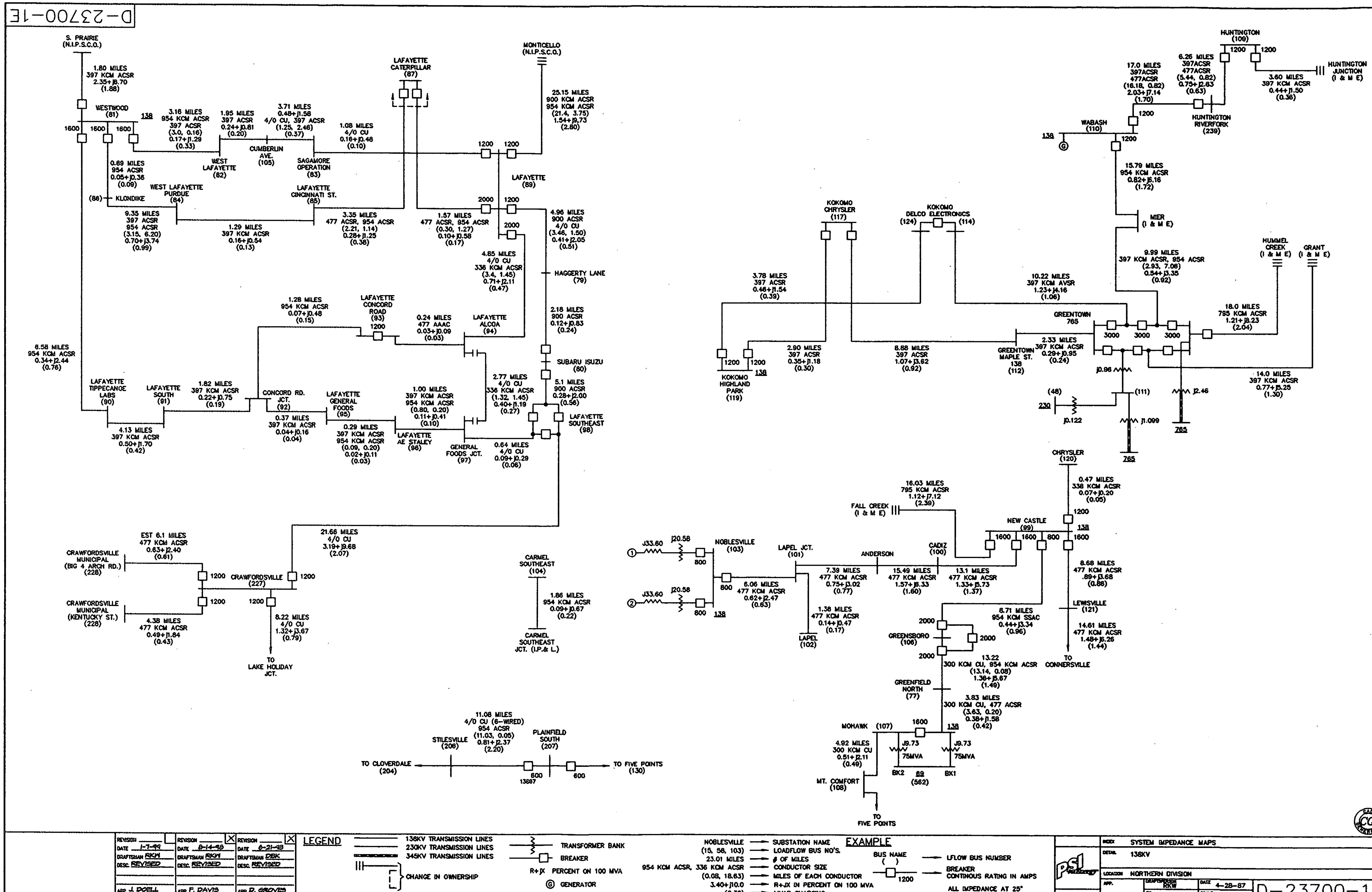
NOBLESVILLE — SUBSTATION NAME
(15, 58, 103) — LOADFLOW BUS NO'S.
23.01 MILES — # OF MILES
954 KCM ACSR, 336 KCM ACSR — CONDUCTOR SIZE
(0.08, 18.63) — MILES OF EACH CONDUCTOR
3.40+J10.0 — R+JX IN PERCENT ON 100 MVA
(2.30) — MVAR CHARGING
BUS NAME ( ) — LFLOW BUS NUMBER
1200 — BREAKER CONTINOUS RATING IN AMPS
ALL IMPEDANCE AT 25°

REVISION	REVISION
DATE 8-14-49	DATE 6-21-49
DRAFTSMAN RKH	DRAFTSMAN PBK
DESC. REVISED	DESC. REVISED
APP. R. VEERKAMP	APP. R. GROVES

PSI

INDEX: SYSTEM IMPEDANCE MAPS
DETAIL: 345-230KV SECTION 2
LOCATION: GENERAL
DRAFTSMAN: RKW
DATE: 1-29-87
SCALE: NONE

D-23700-1B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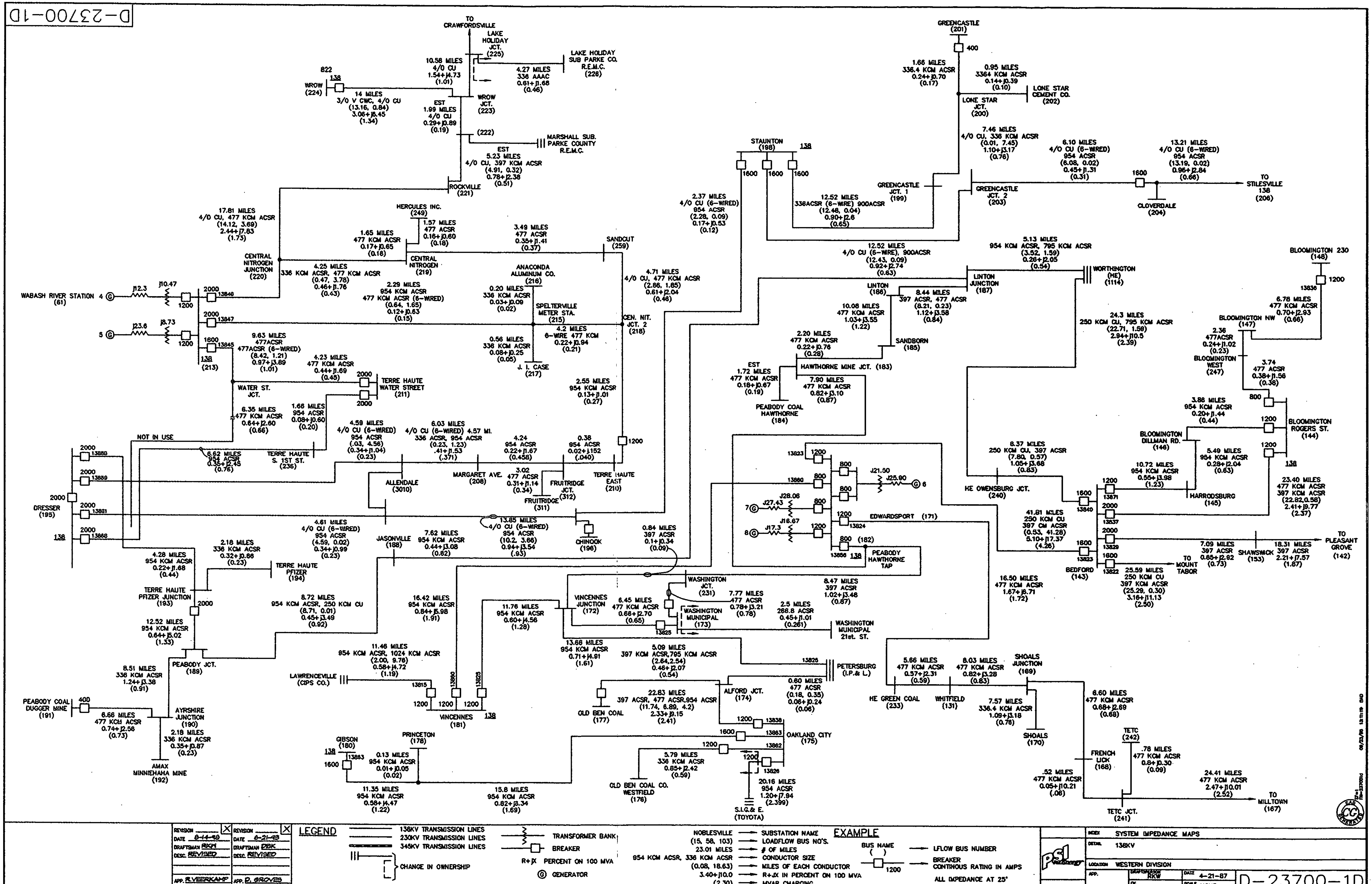
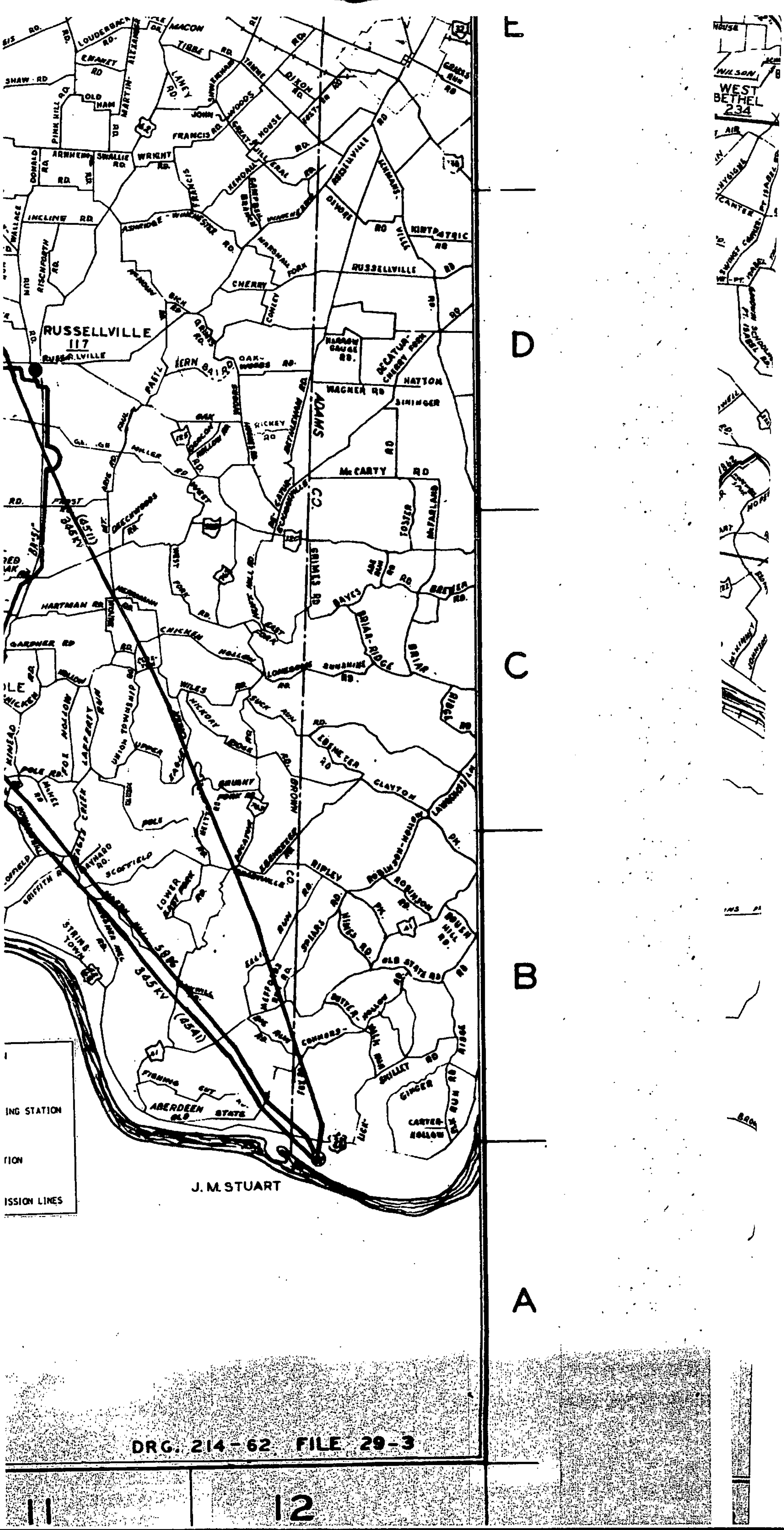
S. PRAIRIE (N.I.P.S.C.O.)
WESTWOOD (81)
LAFAYETTE CATERPILLAR (87)
MONTICELLO (N.I.P.S.C.O.)
LAFAYETTE (89)
WEST LAFAYETTE (82)
CUMBERLIN AVE. (105)
SAGAMORE OPERATION (83)
KLONDIKE (86)
WEST LAFAYETTE PURDUE (84)
LAFAYETTE CINCINNATI ST. (85)
HAGGERTY LANE (79)
SUBARU ISUZU (80)
LAFAYETTE SOUTHEAST (98)
LAFAYETTE CONCORD ROAD (93)
LAFAYETTE ALCOA (94)
LAFAYETTE TIPPECANOE LABS (90)
LAFAYETTE SOUTH (91)
CONCORD RD. JCT. (92)
LAFAYETTE GENERAL FOODS (95)
LAFAYETTE AE STALEY (96)
GENERAL FOODS JCT. (97)
CRAWFORDSVILLE MUNICIPAL (BIG 4 ARCH RD.) (228)
CRAWFORDSVILLE (227)
CRAWFORDSVILLE MUNICIPAL (KENTUCKY ST.) (228)
TO LAKE HOLIDAY JCT.
CARMEL SOUTHEAST (104)
CARMEL SOUTHEAST JCT. (I.P.& L.)
TO CLOVERDALE (204)
STILESVILLE (206)
PLAINFIELD SOUTH (207)
TO FIVE POINTS (130)
KOKOMO CHRYSLER (117)
KOKOMO DELCO ELECTRONICS (124) (114)
KOKOMO HIGHLAND PARK (119)
GREENTOWN MAPLE ST. 138 (112)
GREENTOWN 765
HUNTINGTON (109)
HUNTINGTON JUNCTION (I & M E)
HUNTINGTON RIVERFORK (239)
WABASH (110)
MIER (I & M E)
HUMMEL CREEK (I & M E)
GRANT (I & M E)
CHRYSLER (120)
FALL CREEK (I & M E)
NEW CASTLE (99)
NOBLESVILLE (103)
LAPEL JCT. (101)
ANDERSON
CADIZ (100)
LAPEL (102)
LEWISVILLE (121)
TO CONNERSVILLE
GREENSBORO (106)
GREENFIELD NORTH (77)
MOHAWK (107)
MT. COMFORT (108)
TO FIVE POINTS
LEGEND
138KV TRANSMISSION LINES
230KV TRANSMISSION LINES
345KV TRANSMISSION LINES
CHANGE IN OWNERSHIP
TRANSFORMER BANK
BREAKER
R+jX PERCENT ON 100 MVA
GENERATOR
EXAMPLE
NOBLESVILLE — SUBSTATION NAME
(15, 58, 103) — LOADFLOW BUS NO'S.
23.01 MILES — # OF MILES
954 KCM ACSR, 336 KCM ACSR — CONDUCTOR SIZE
(0.08, 18.63) — MILES OF EACH CONDUCTOR
3.40+j10.0 — R+jX IN PERCENT ON 100 MVA
(2.30) — MVAR CHARGING
BUS NAME — LFLOW BUS NUMBER
BREAKER CONTINOUS RATING IN AMPS
ALL IMPEDANCE AT 25°
SYSTEM IMPEDANCE MAPS
138KV
NORTHERN DIVISION
4-28-87
NONE
D-23700-1E


D-23700-1D
LEGEND
136KV TRANSMISSION LINES
230KV TRANSMISSION LINES
345KV TRANSMISSION LINES
CHANGE IN OWNERSHIP
TRANSFORMER BANK
BREAKER
R+jX PERCENT ON 100 MVA
GENERATOR
EXAMPLE
NOBLESVILLE — SUBSTATION NAME
(15, 58, 103) — LOADFLOW BUS NO'S.
23.01 MILES — # OF MILES
954 KCM ACSR, 336 KCM ACSR — CONDUCTOR SIZE
(0.08, 18.63) — MILES OF EACH CONDUCTOR
3.40+j10.0 — R+jX IN PERCENT ON 100 MVA
(2.30) — MVAR CHARGING
BUS NAME
LFLOW BUS NUMBER
BREAKER CONTINOUS RATING IN AMPS
ALL IMPEDANCE AT 25°
SYSTEM IMPEDANCE MAPS
138KV
WESTERN DIVISION
DATE 4-21-87
SCALE NONE
D-23700-1D


RUSSELLVILLE
117
WEST
BETHEL
234
J. M. STUART
ADAMS
CO.
345 KV
INCLINE RD.
RUSSELLVILLE RD.
MCCARTY RD
HATTON
WAGNER RD
CHICKEN HOLLOW
CLAYTON
RIPLEY
ABERDEEN
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DRG. 214-62 FILE 29-3
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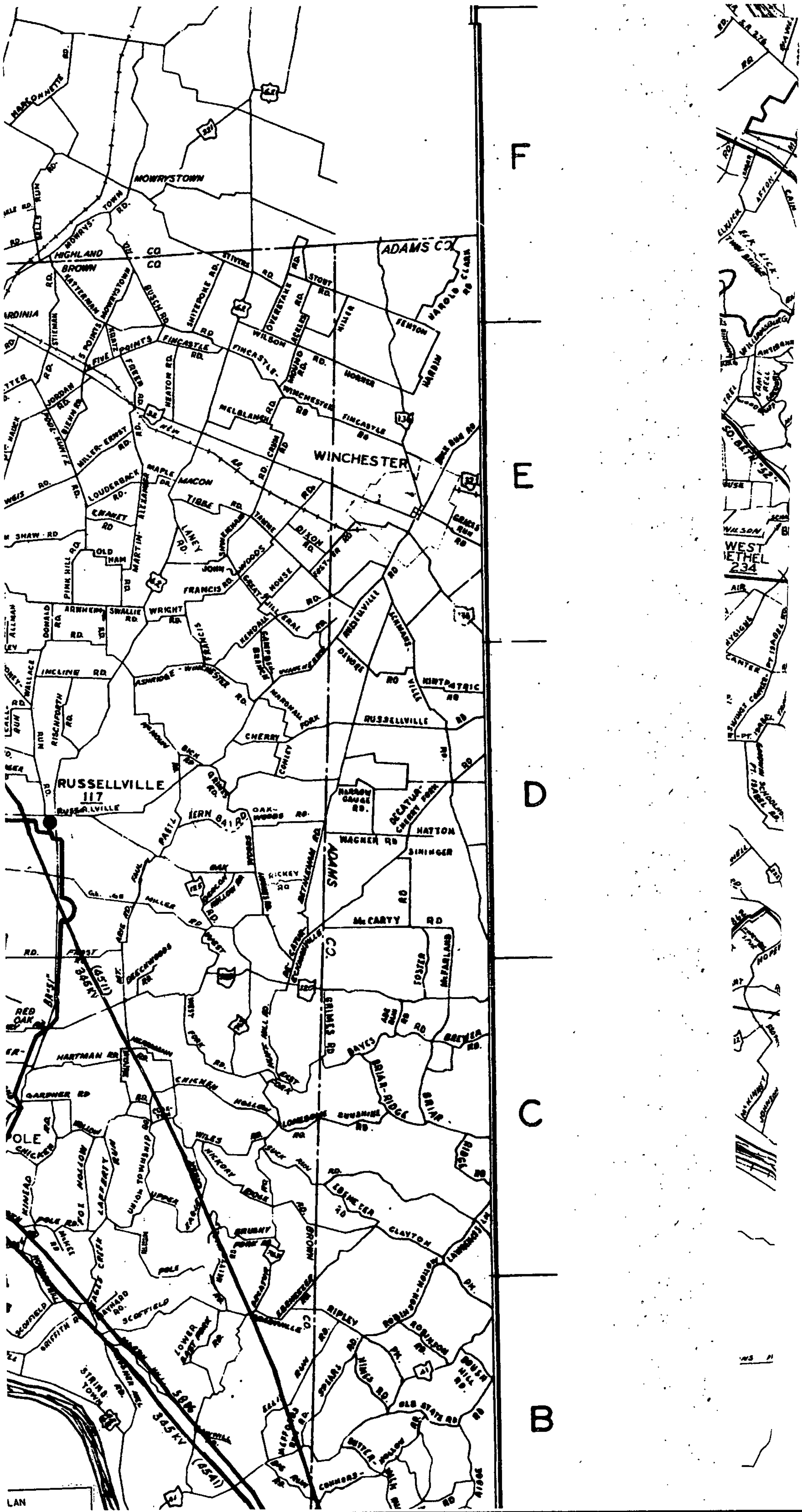

F
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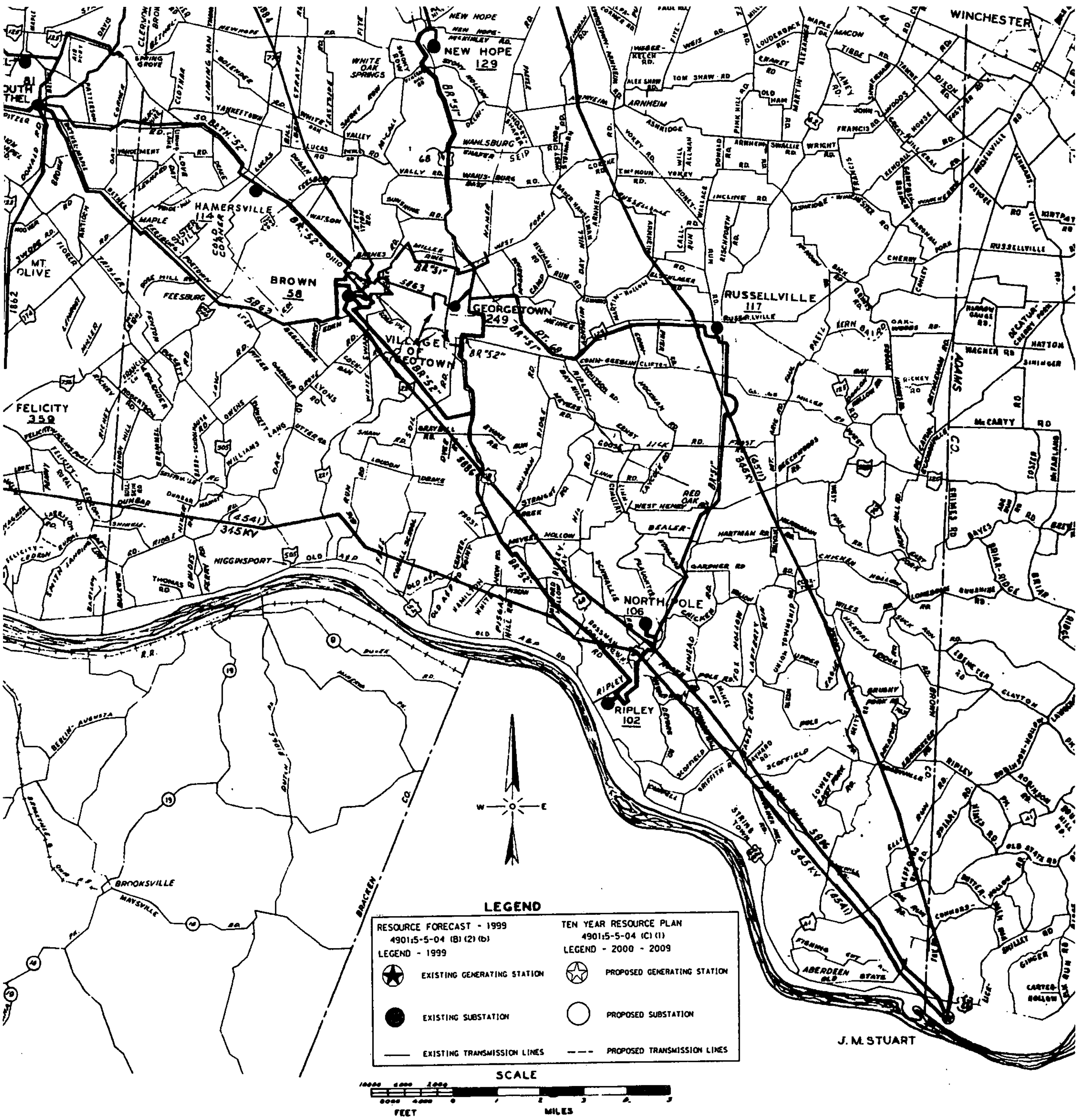
D
C
B
MOWRYSTOWN
HIGHLAND CO.
BROWN CO.
ADAMS CO.
WINCHESTER
RUSSELLVILLE
117
WEST
BETHEL
234
345 KV
ADAMS CO.
FINCASTLE RD.
RUSSELLVILLE RD.
INCLINE RD.
MCCARTY RD.
HARTMAN RD.
GARDNER RD.
CLAYTON
RIPLEY
FOSTER
MCFARLAND
HATTON
WAGNER RD.
SININGER
FIVE POINTS
LOUDERBACK RD.
MAPLE
MACON
TIBBE RD.
DIXON
WILSON
HORNER
FENTON
WINCHESTER RD.



REVISED TO
1-06-98

DRG. 214-62 FILE 29-3

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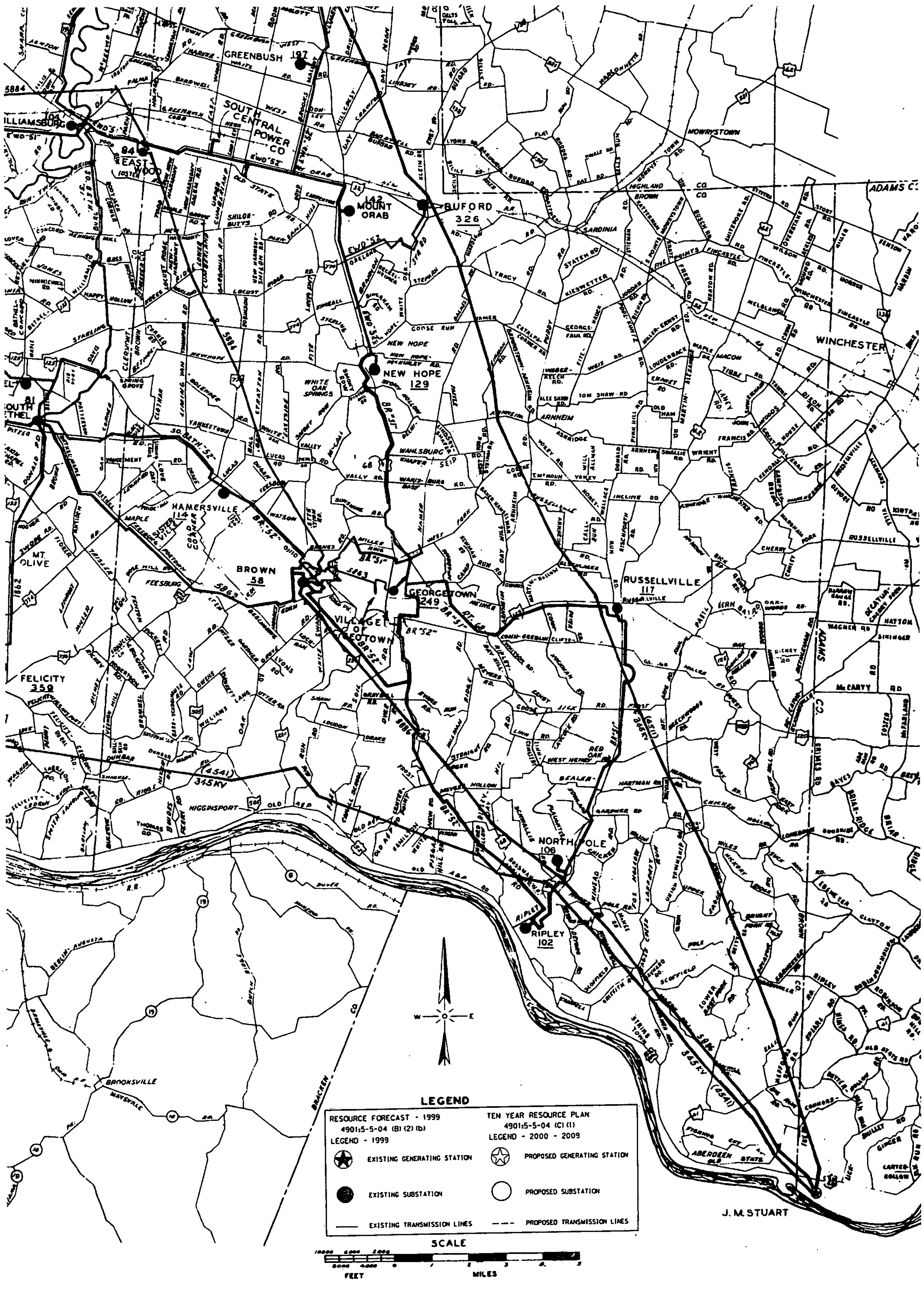
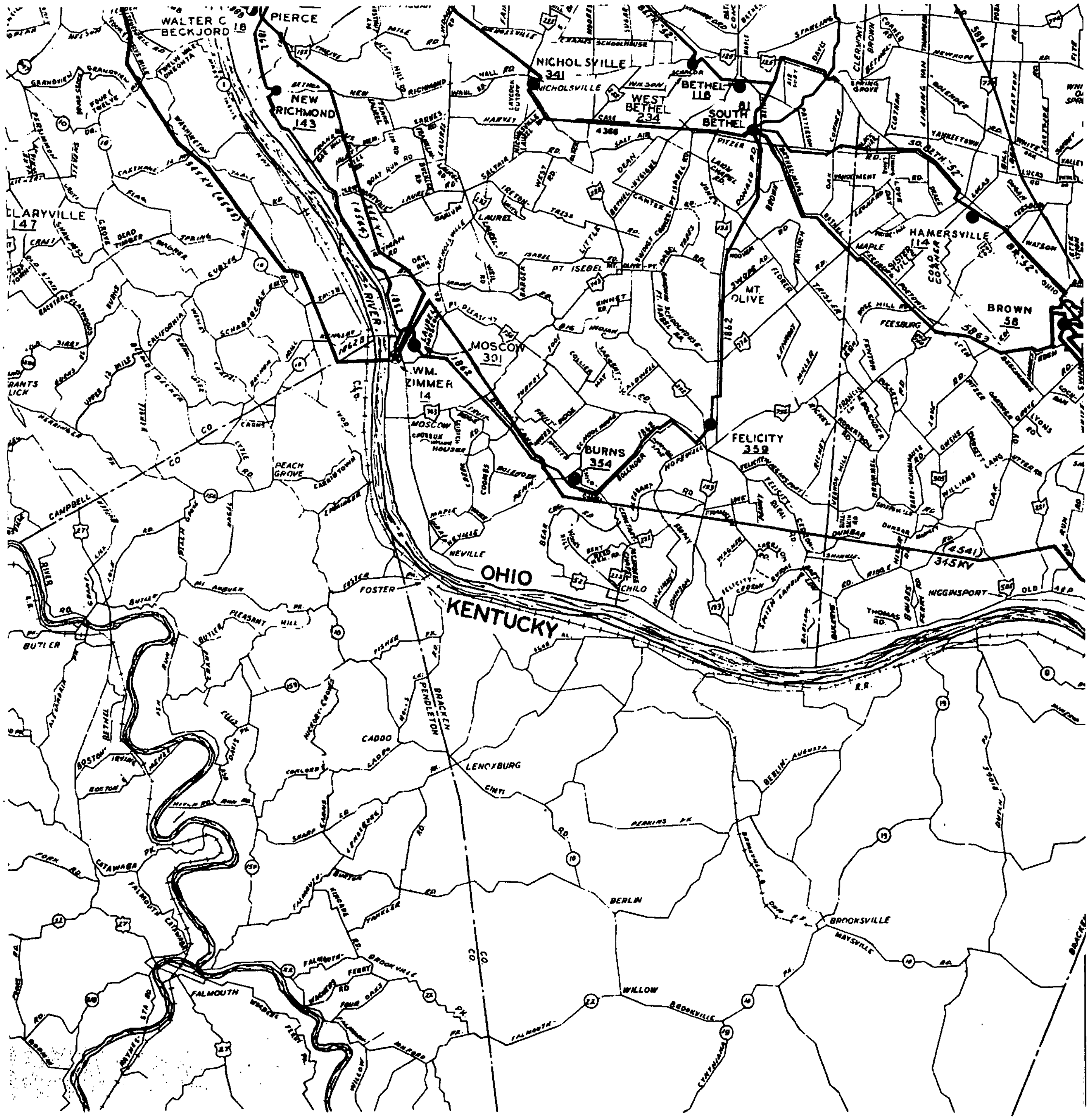


REVISED TO

1-06-98

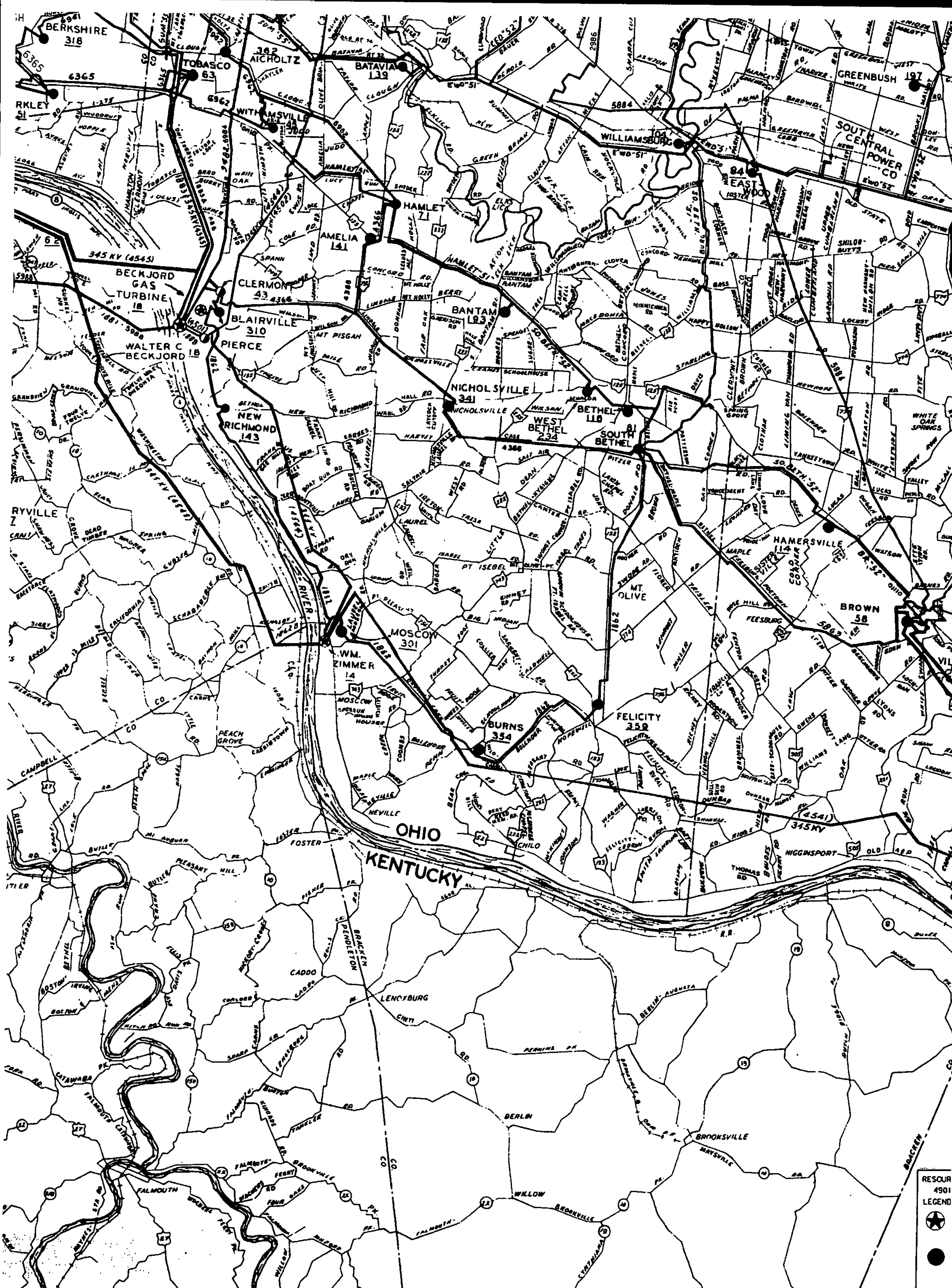


C.G. & E. CO. & U.L.H. & P. CO.

TRICAL SYSTEM AND SUBSTATIONS

33 KV AND ABOVE

6 7 8 9

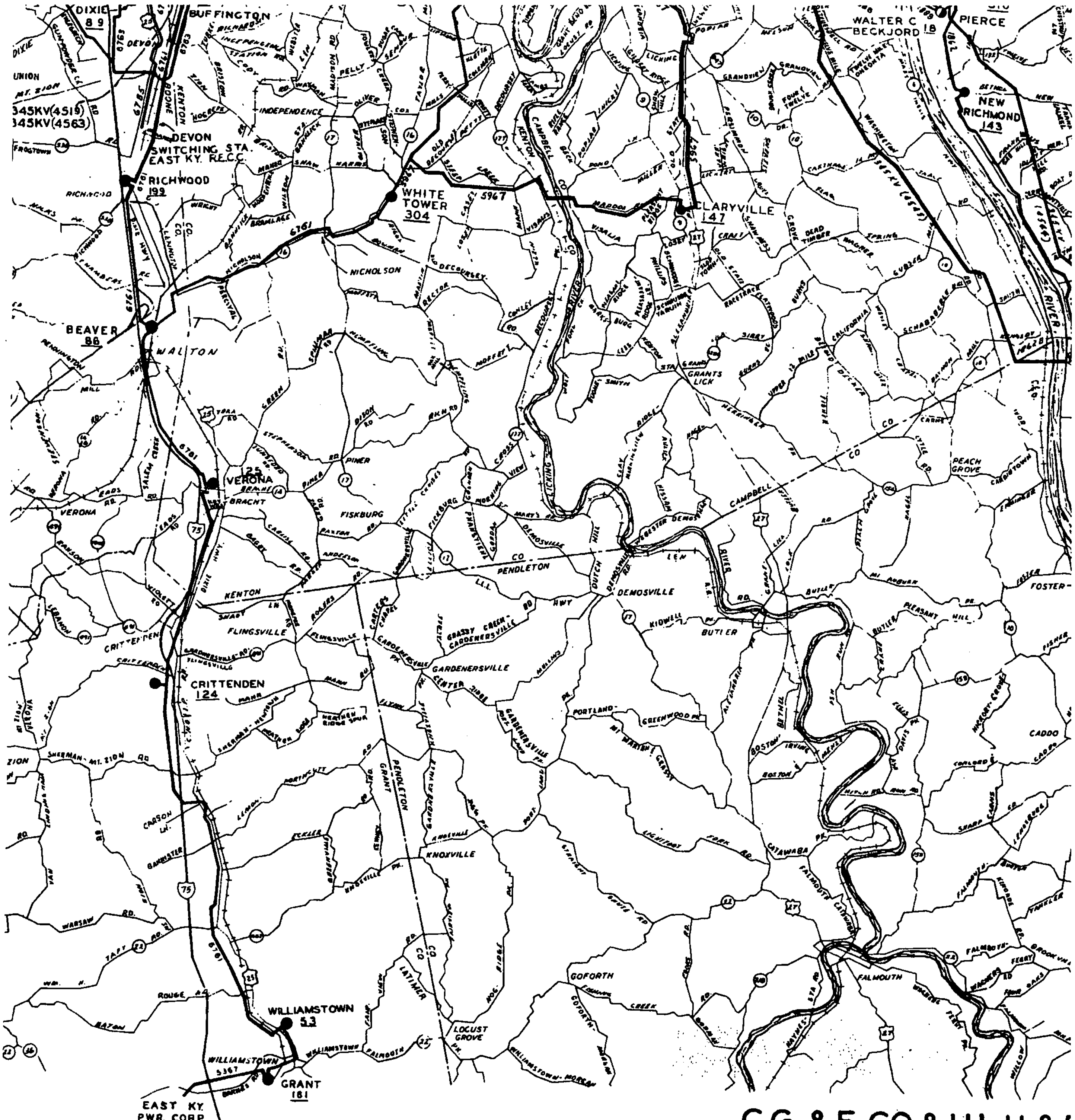


C.G. & E. CO. & U.L.H. & P. CO.

RICAL SYSTEM AND SUBSTATIONS

33 KV AND ABOVE

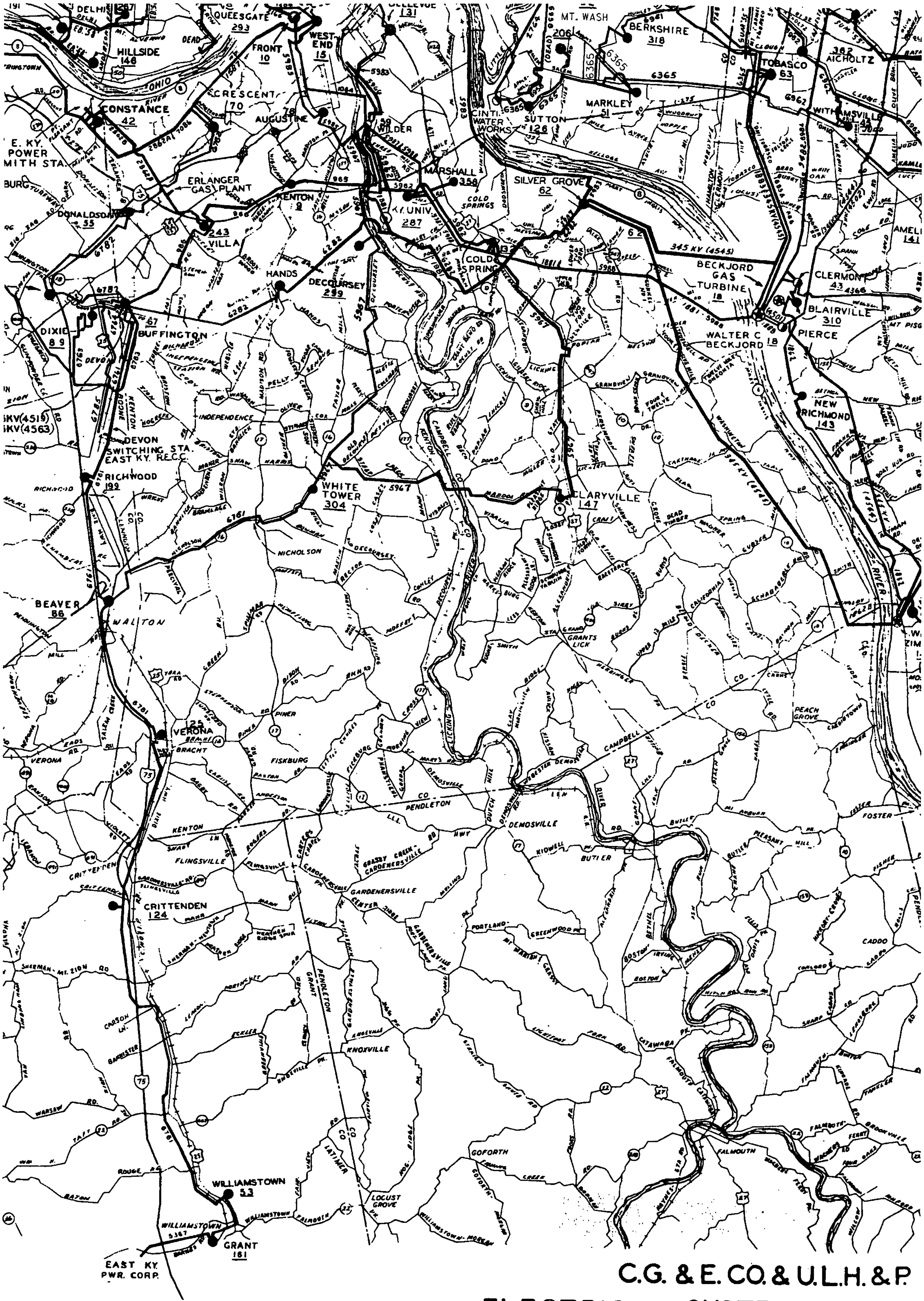
RI



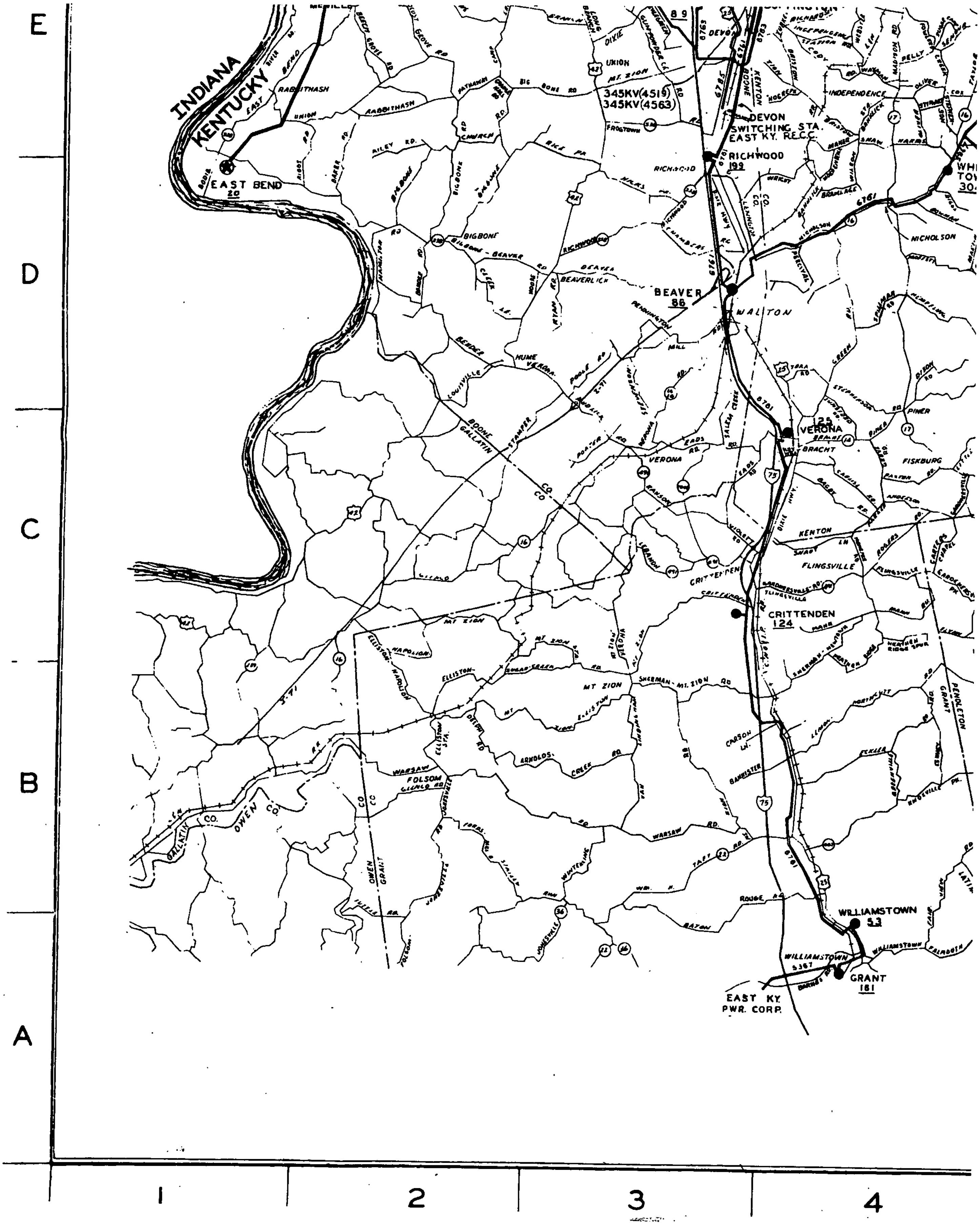
C.G. & E. CO. & U.L.H. & I

ELECTRICAL SYSTEM AND

33 KV AND ABOVE



C.G. & E. CO. & U.L.H. & P.
ELECTRICAL SYSTEM AND S
33 KV AND ABOVE



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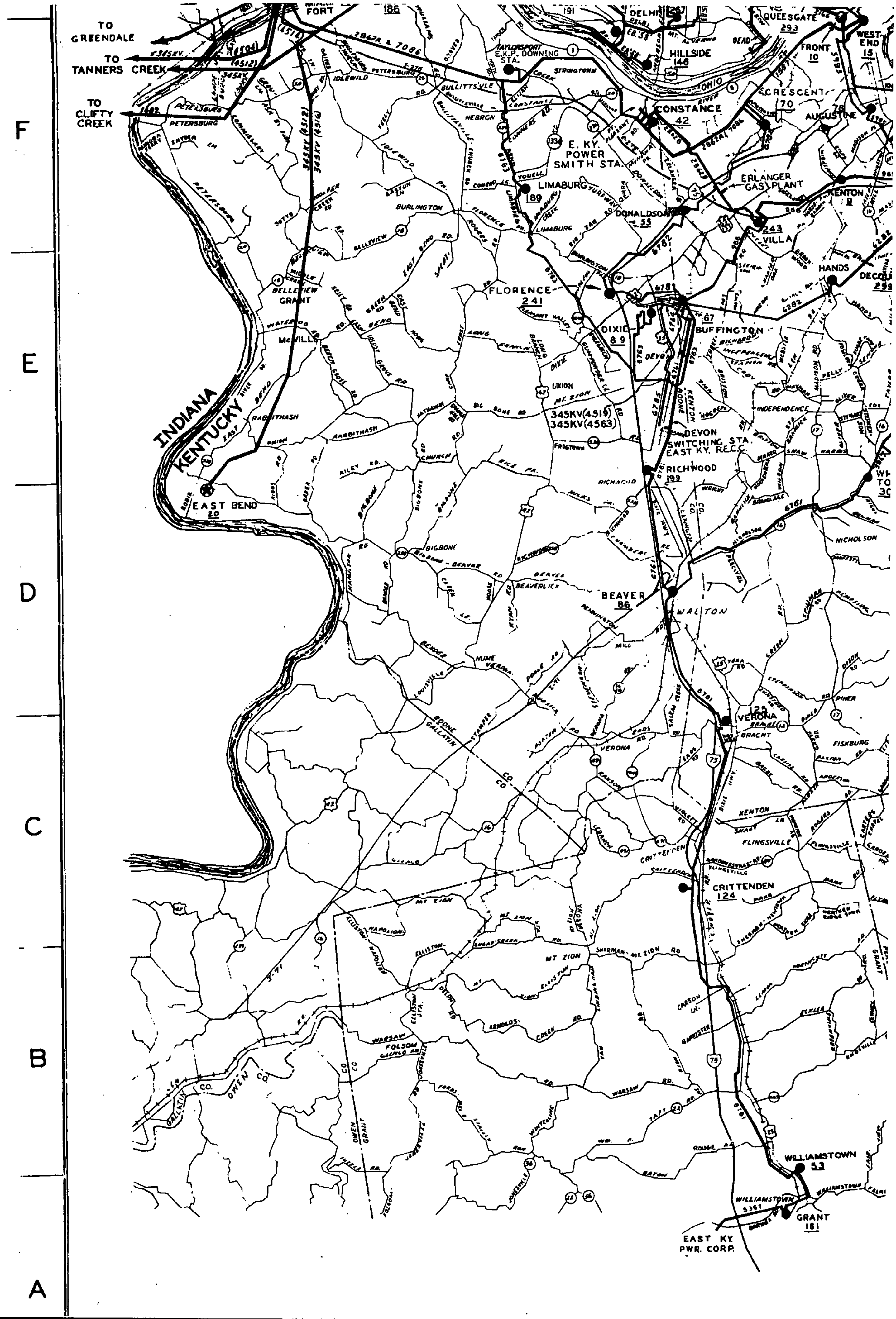
INDIANA
KENTUCKY
EAST BEND
20
RABBITHASH
UNION
345KV(4519)
345KV(4563)
DEVON
SWITCHING STA.
EAST KY. R.E.C.C.
RICHWOOD
199
INDEPENDENCE
NICHOLSON
BIGBONE
BEAVERLICK
BEAVER
86
WALTON
VERONA
125
BRACHT
FISKBURG
PINER
HUME
BOONE
GALLATIN
CO.
CO.
KENTON
FLINGSVILLE
CRITTENDEN
124
MT ZION
FOLSOM
GALLATIN CO.
OWEN CO.
OWEN
GRANT
PENDLETON
GRANT
WILLIAMSTOWN
53
GRANT
161
EAST KY.
PWR. CORP.



F
E
D
C
B
A
TO GREENDALE
TO TANNERS CREEK
TO CLIFTY CREEK
FORT
186
191
DELHI
287
HILLSIDE
146
QUEESGATE
293
WEST END
15
FRONT
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TAYLORSPORT
E.K.P. DOWNING STA.
IDLEWILD
BULLITTSVILLE
HEBRON
STRINGTOWN
CONSTANCE
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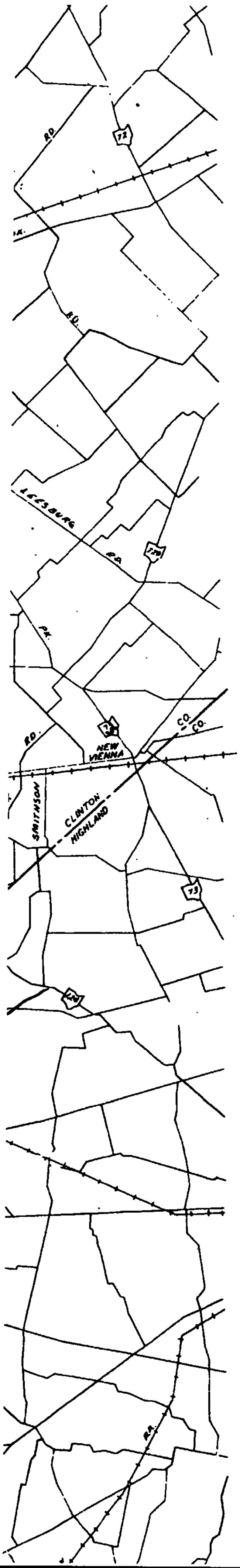
CRESCENT
70
AUGUSTINE
78
E. KY. POWER SMITH STA.
ERLANGER GAS PLANT
KENTON
9
LIMABURG
189
DONALDSON
55
243
VILLA
BURLINGTON
HANDS
FLORENCE
241
BELLEVIEW
GRANT
McVILLE
DIXIE
89
67
BUFFINGTON
INDIANA
KENTUCKY
RABBITHASH
UNION
345KV(4519)
345KV(4563)
DEVON SWITCHING STA. EAST KY. R.E.C.C.
RICHWOOD
199
EAST BEND
20
BIGBONE
BEAVERLICK
BEAVER
86
WALTON
HUME
VERONA
125
BOONE
GALLATIN
CO
BRACHT
FISKBURG
KENTON
FLINGSVILLE
CRITTENDEN
124
MT ZION
ELLISTON
WARSAW
FOLSOM
GALLATIN CO.
OWEN CO.
OWEN
GRANT
WILLIAMSTOWN
53
GRANT
161
EAST KY. PWR. CORP.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LEESBURG
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CO.
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CLINTON
HIGHLAND
73
RR

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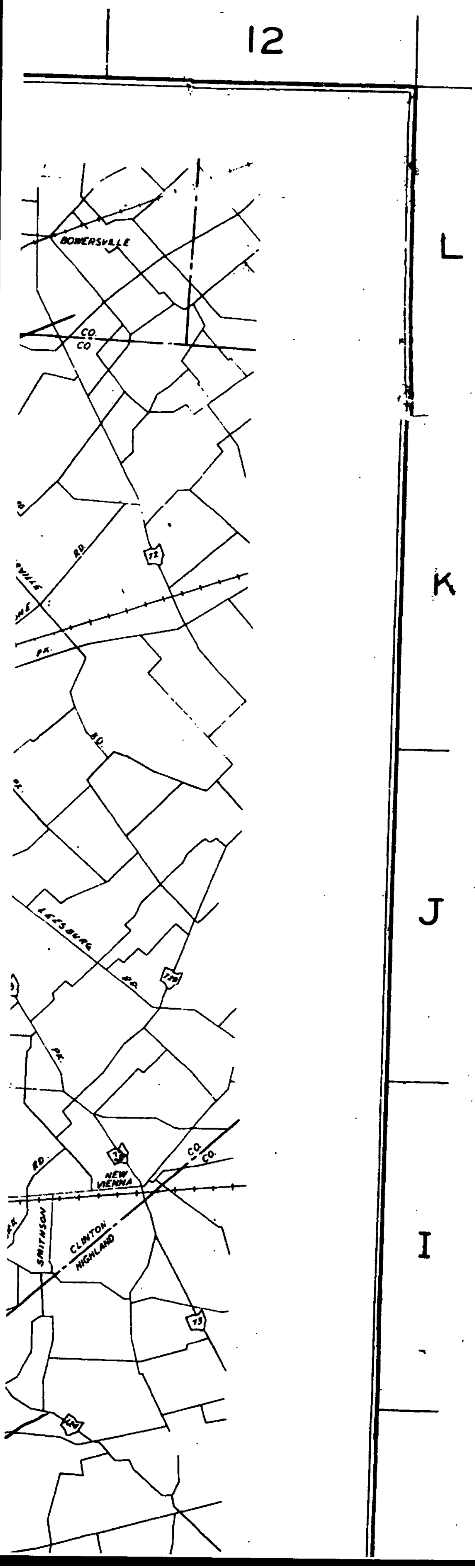
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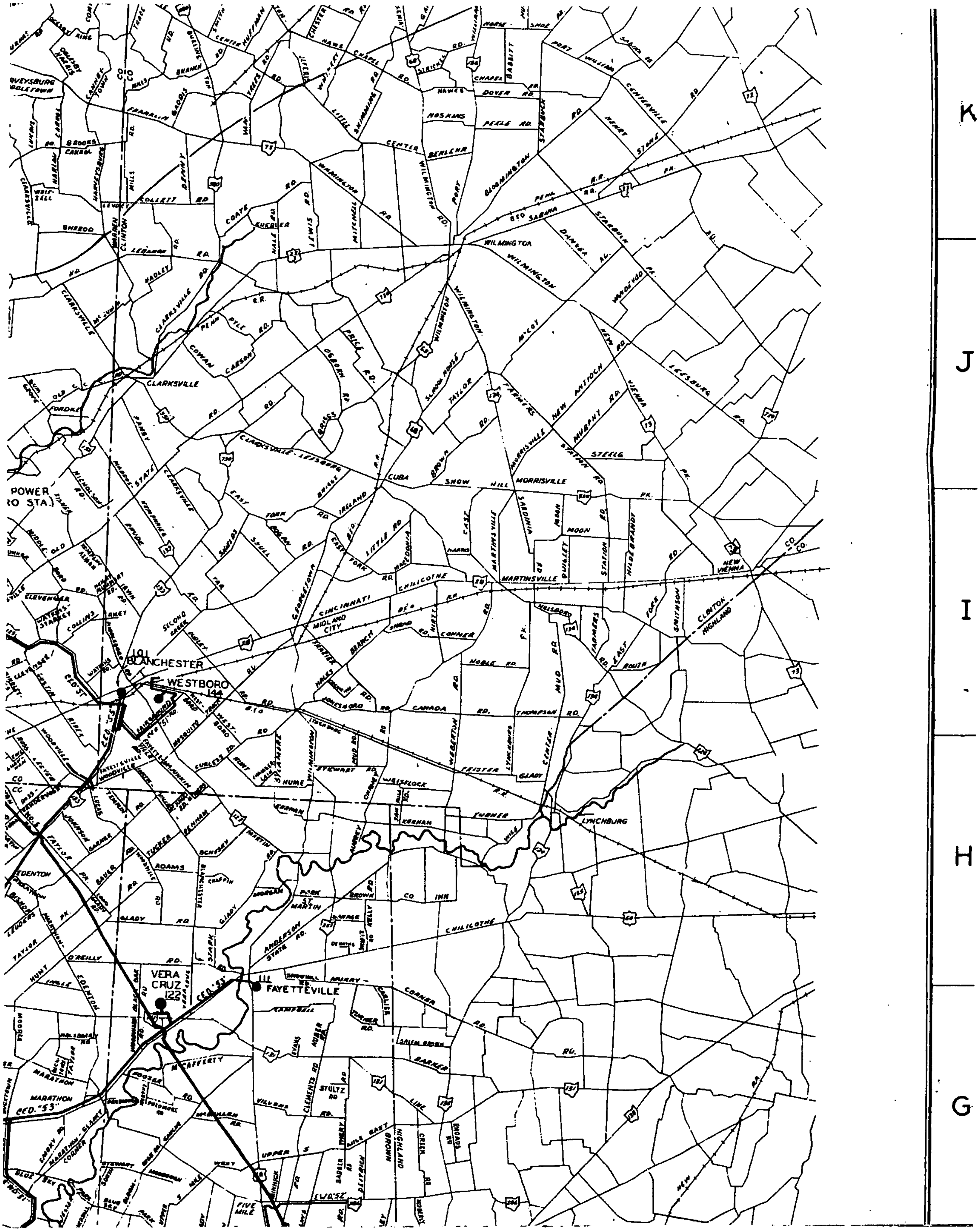

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BLANCHESTER
WESTBORO
144
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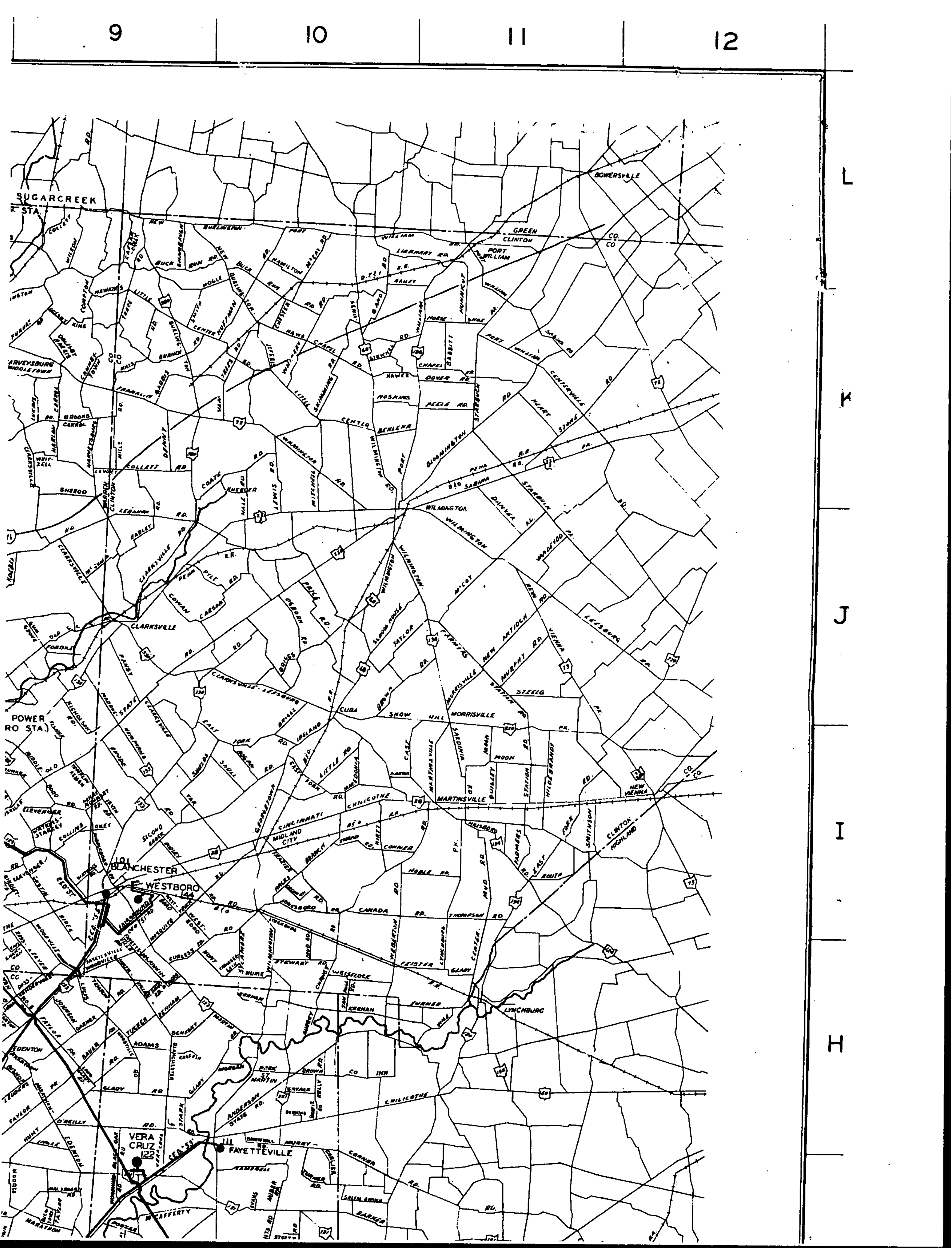
122
111
FAYETTEVILLE
POWER
(O STA.)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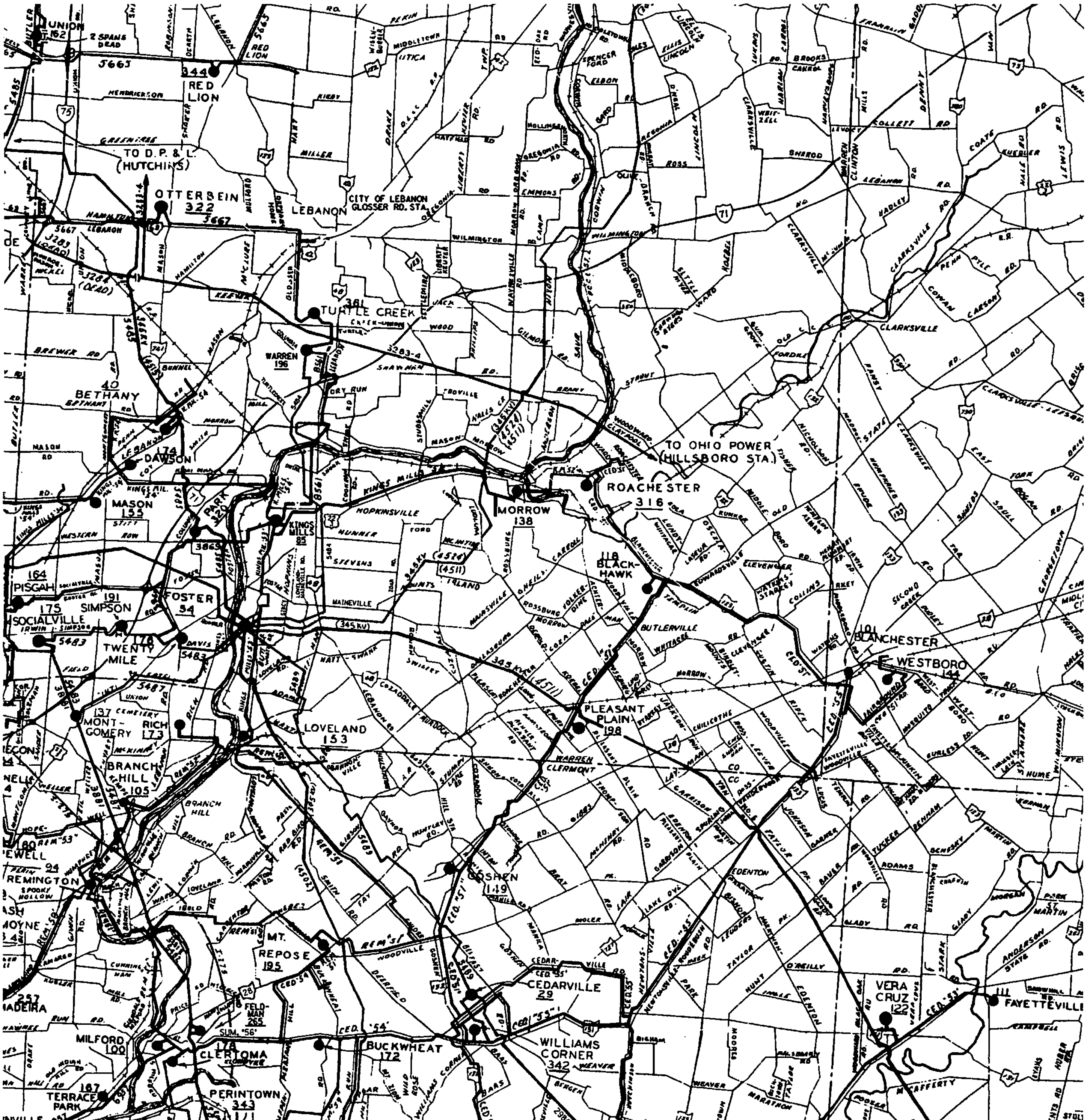
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WARREN 196
BETHANY 40
DAWSON 174
MASON 155
KINGS MILLS 85
MORROW 138
TO OHIO POWER (HILLSBORO STA.)
ROACHESTER 316
BLACK-HAWK 118
PISGAH 164
SIMPSON 191
SOCIALVILLE 175
FOSTER 54
TWENTY MILE 176
BUTLERVILLE
BLANCHESTER 101
WESTBORO 144
PLEASANT PLAIN 198
MONT-GOMERY 137
RICH 173
LOVELAND 153
BRANCH HILL 105
REMINGTON 94
GOSHEN 149
MT. REPOSE 195
CEDARVILLE 29
VERA CRUZ 122
FAYETTEVILLE 111
MILFORD 100
CLERTOMA 178
FELD-MAN 265
BUCKWHEAT 172
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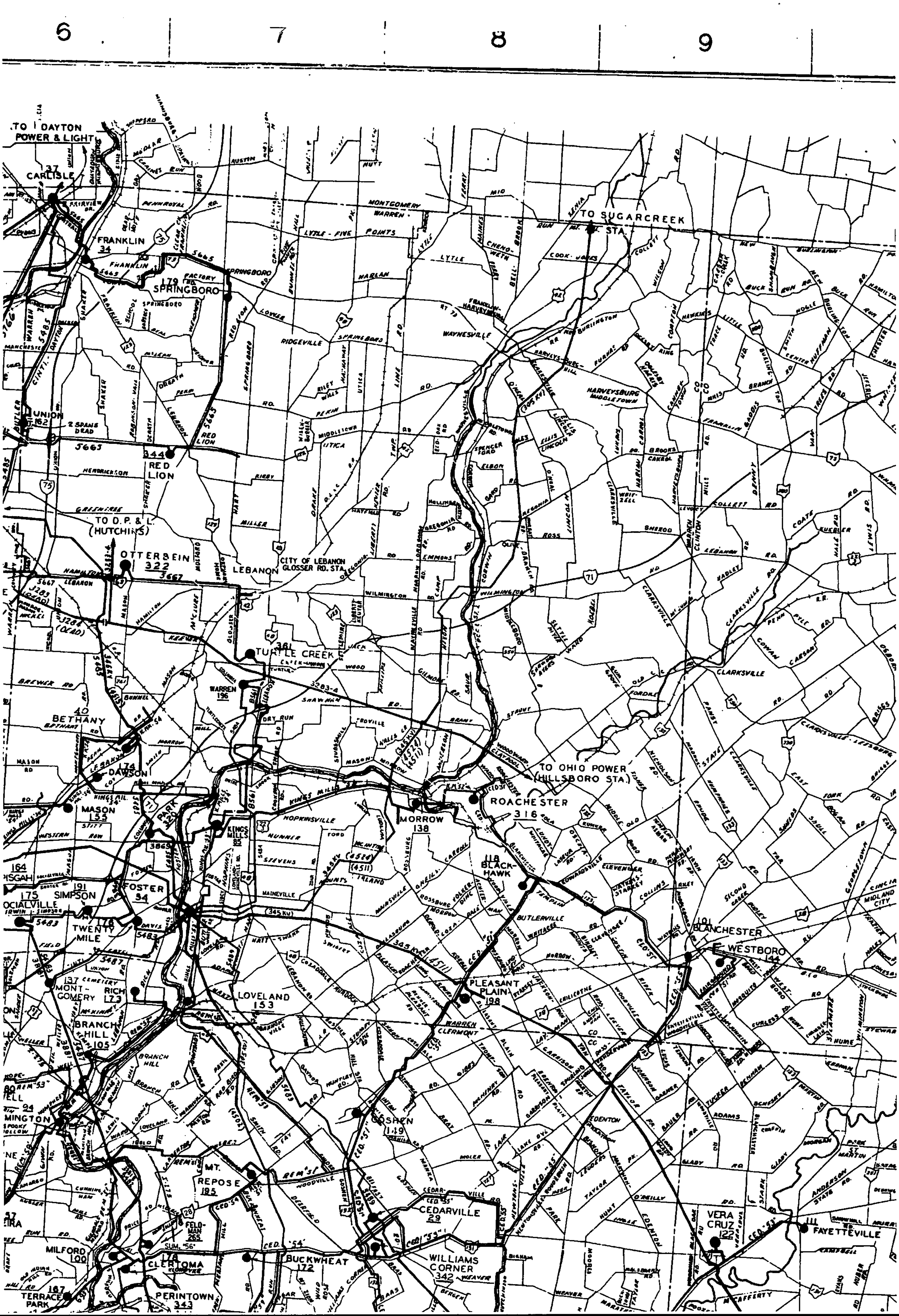
CLERMONT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TO DAYTON POWER & LIGHT
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FRANKLIN 34
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FACTORY
TO SUGARCREEK
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344 RED LION
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LEBANON
CITY OF LEBANON GLOSSER RD. STA.
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MASON 155
KINGS MILLS
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RICH 173
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BRANCH HILL 105
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MT. REPOSE 195
FELO-MAN 265
MILFORD 100
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187 TERRACE PARK
PERINTOWN 343
BUCKWHEAT 172
WILLIAMS CORNER 342
CEDARVILLE 29
GOSHEN 149
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118 BLACK-HAWK
MORROW 138
ROACHESTER 316
TO OHIO POWER (HILLSBORO STA.)
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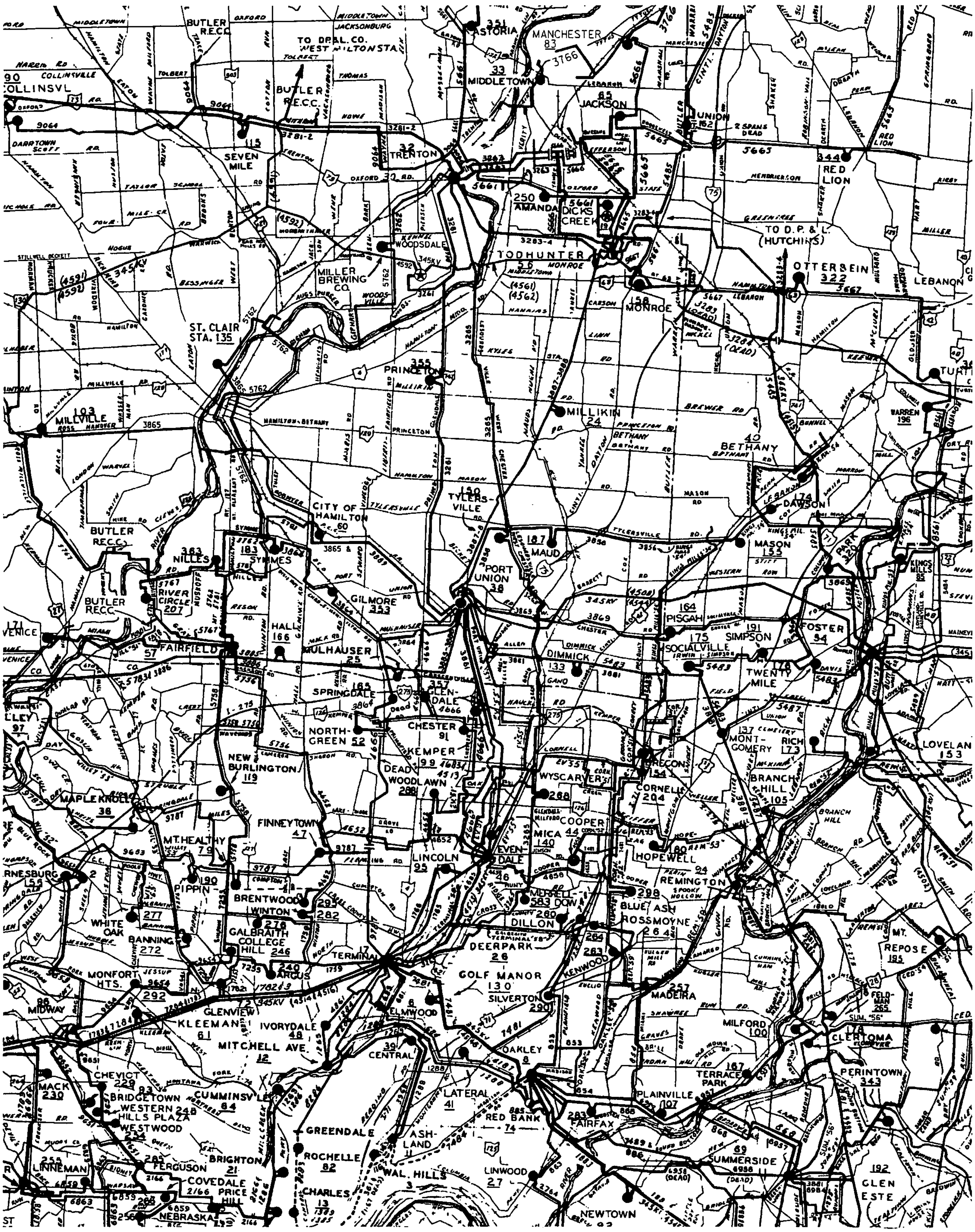

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115 SEVEN MILE
32 TRENTON
344 RED LION
250 AMANDA
5661 DICKS CREEK
TO D.P.&L. (HUTCHINS)
WOODSDALE
MILLER BREWING CO.
TODHUNTER 56
OTTERBEIN 322
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LEBANON
ST. CLAIR STA. 135
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MILLIKIN 24
103 MILLVILLE
40 BETHANY
WARREN 196
150 TYLERSVILLE
174 DAWSON
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BUTLER R.E.C.C.
363 NILLES
183 SYMMES
187 MAUD
MASON 155
PORT UNION 38
GILMORE 353
RIVER CIRCLE 207
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HALL 166
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FOSTER 34
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DIMMICK 133
176 TWENTY MILE
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KEMPER 99
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RICH 173
LOVELAND 153
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DEAD WOODLAWN 288
WYSCARVER 154
BRECON
CORNELL 204
BRANCH HILL 105
MAPLEKNOLL 36
FINNEYTOWN 47
MICA 140
COOPER 44
180 HOPEWELL
MT. HEALTHY 79
LINCOLN 95
EVENDALE 46
94 REMINGTON
PIPPIN 190
BRENTWOOD 291
WINTON 278
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MERRELL 583 DOW
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WHITE OAK 277
BANNING 272
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DILLON 280
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DEERPARK 26
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MONFORT HTS. 292
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SILVERTON 290
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FELDMAN 265
MIDWAY 86
GLENVIEW
KLEEMAN 61
IVORYDALE 48
ELMWOOD 6
MITCHELL AVE. 12
MILFORD 100
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CENTRAL 39
OAKLEY 8
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PERINTOWN 343
MACK 230
CHEVIOT 229
BRIDGETOWN 83
WESTERN HILLS PLAZA 248
WESTWOOD 234
CUMMINSVILLE 64
LATERAL 41
RED BANK 74
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PLAINVILLE 107
GREENDALE
ASHLAND 11
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LINNEMAN 255
BRIGHTON 21
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COVEDALE
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WAL. HILLS 3
LINWOOD 27
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CHARLES 13
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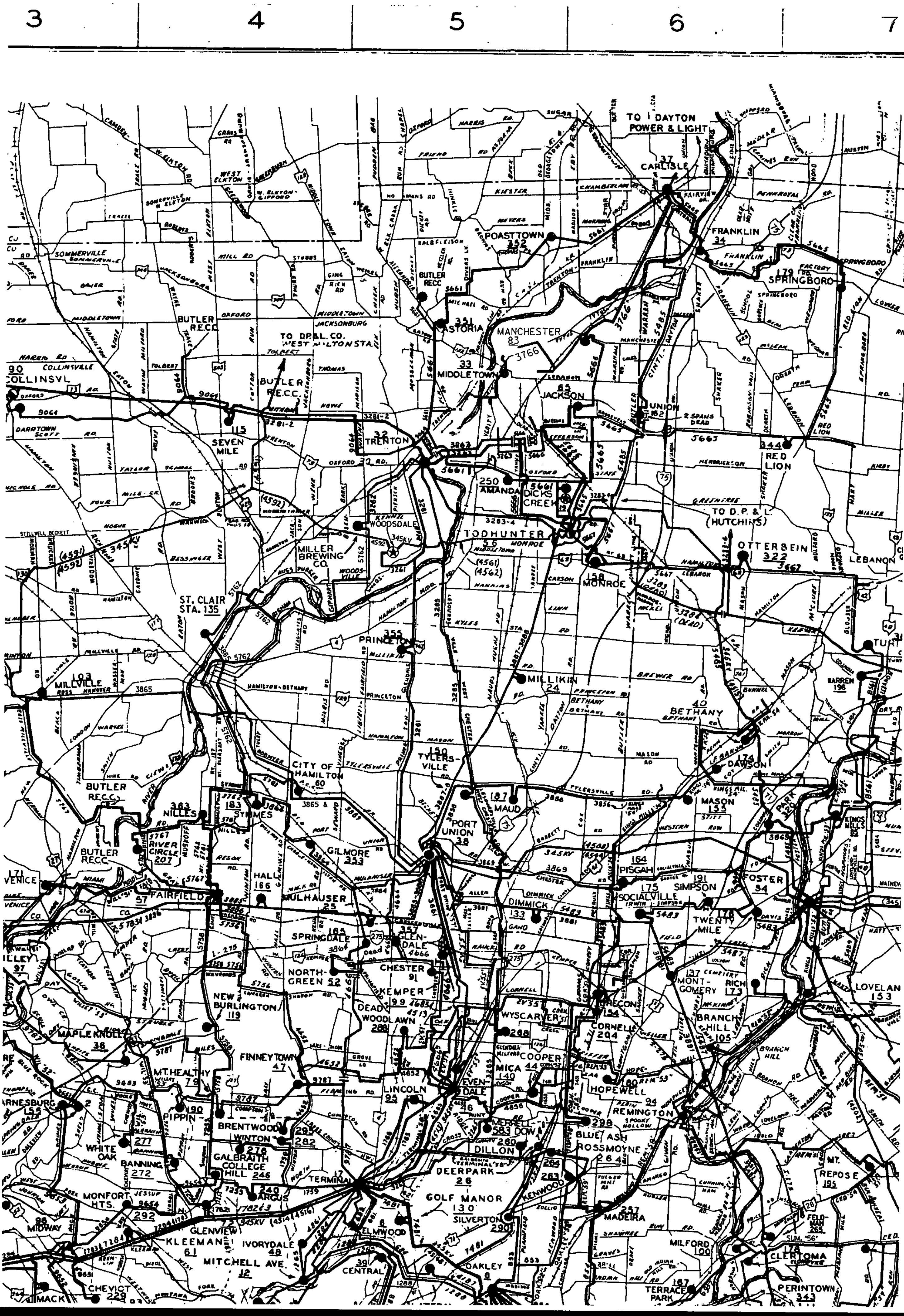
NEWTOWN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TO DAYTON POWER & LIGHT
CARLISLE 37
POASTTOWN 352
FRANKLIN 34
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BUTLER RECC
ASTORIA 351
MANCHESTER 83
TO DP&L. CO. WEST MILTON STA.
BUTLER R.E.C.C
90 COLLINSVL
BUTLER R.E.C.C.
33 MIDDLETOWN
65 JACKSON
UNION 162
2 SPANS DEAD
115 SEVEN MILE
32 TRENTON
344 RED LION
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DICKS CREEK
TO D.P. & L. (HUTCHINS)
TODHUNTER
56 MONROE
OTTERBEIN 322
LEBANON
WOODSDALE
345KV
MILLER BREWING CO.
WOODSVILLE
138 MONROE
ST. CLAIR STA. 135
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MILLIKIN 24
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CITY OF HAMILTON 60
174 DAWSON
BUTLER R.E.C.C.
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MASON 155
383 NILLES
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PORT UNION 38
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HALL 166
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FOSTER 94
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MULHAUSER 25
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RICH 173
LOVELAND 153
NEW BURLINGTON 119
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MAPLE KNOLL 38
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FINNEYTOWN 47
MICA 140
COOPER 44
MT. HEALTHY 79
LINCOLN 95
EVENDALE 46
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BARNESBURG 152
PIPPIN 190
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BRENTWOOD 29
WINTON 282
MERRELL 583
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WHITE OAK 277
BANNING 272
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DEERPARK 26
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MONFORT HTS. 292
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GOLF MANOR 130
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GLENVIEW
KLEEMAN 61
IVORYDALE 48
6 ELMWOOD
SILVERTON 290
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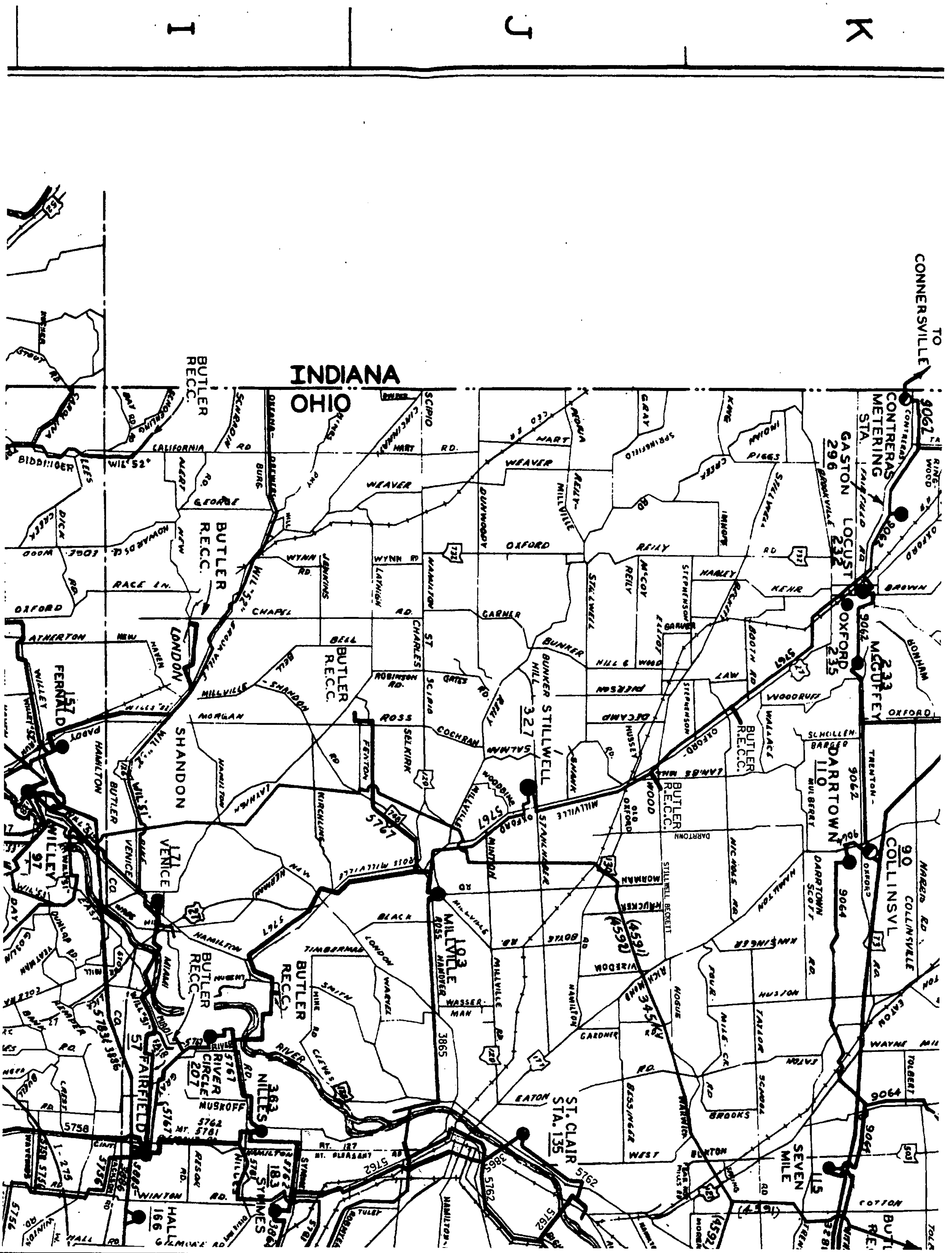

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CONTRERAS METERING STA.
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LOCUST 232
OXFORD 235
McGUFFEY 233
DARRTOWN 110
COLLINSVL 90
STILLWELL 327
SHANDON
FERNALD 157
WILLEY 97
VENICE 171
MILLVILLE 193
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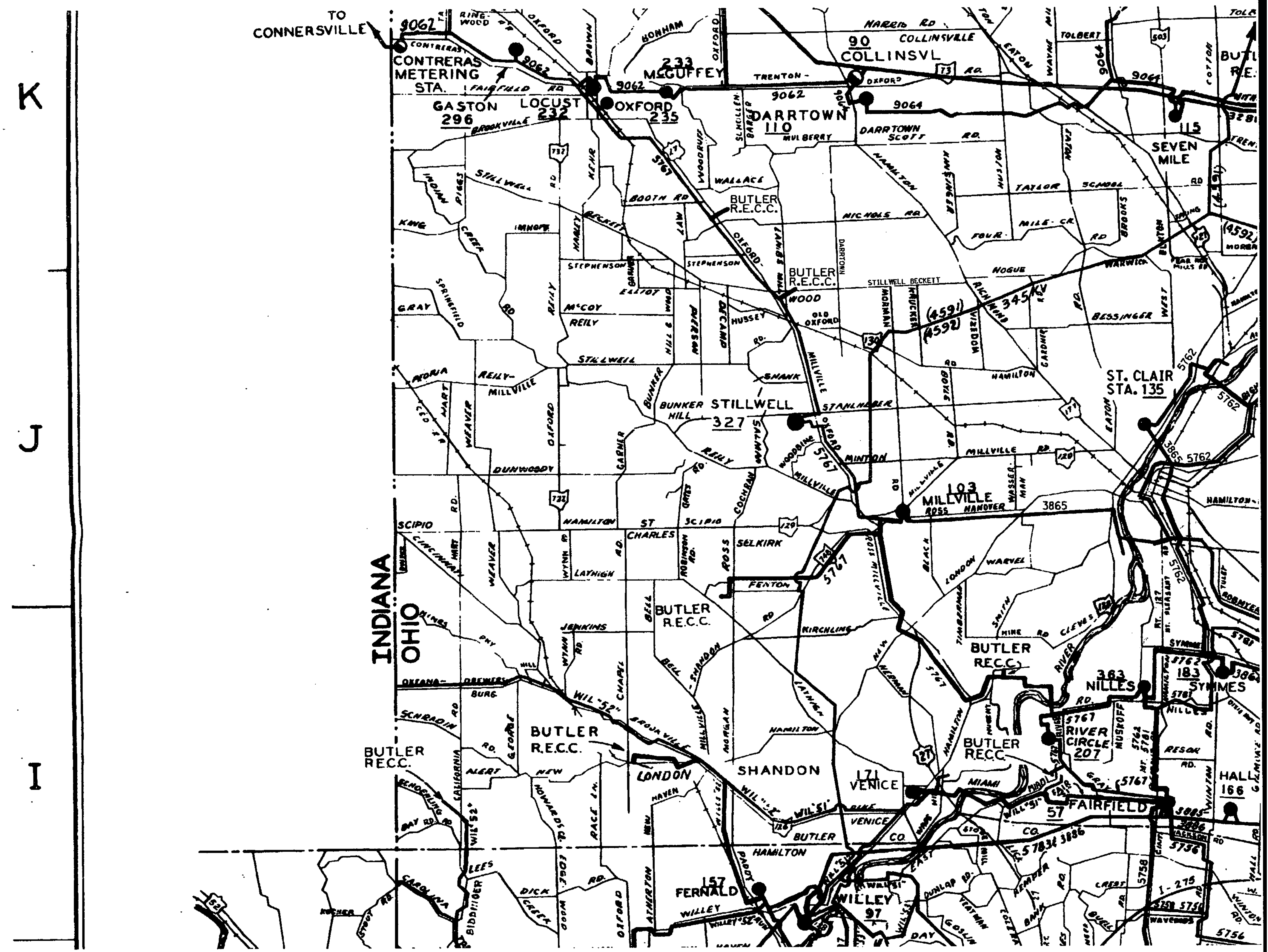
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MILLVILLE 103
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VENICE 171
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RIVER CIRCLE 207
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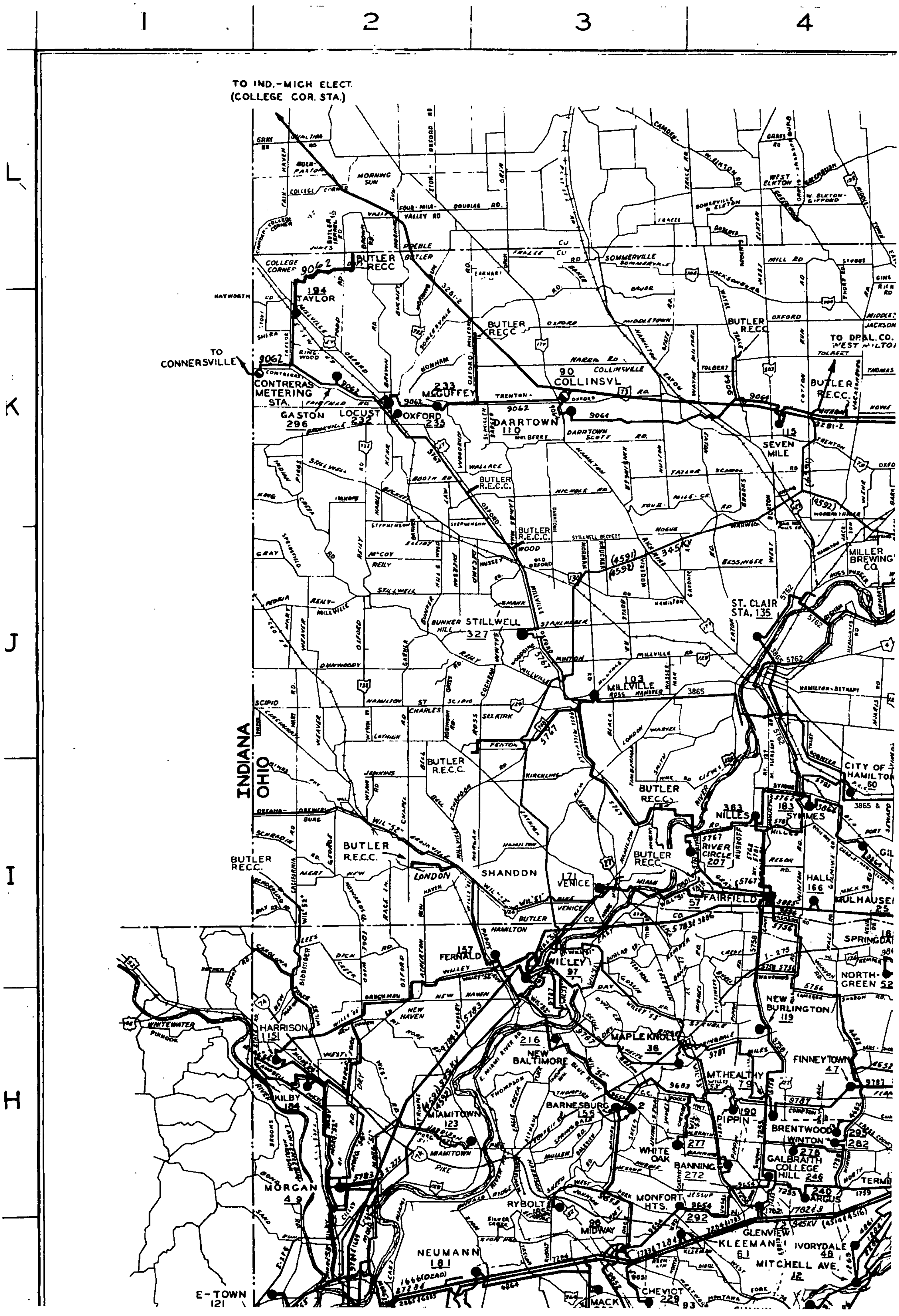

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COLLINSVL 90
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CITY OF HAMILTON
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RIVER CIRCLE 207
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SHANDON
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WILLEY 97
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NEW BURLINGTON 119
HARRISON 151
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MT. HEALTHY 79
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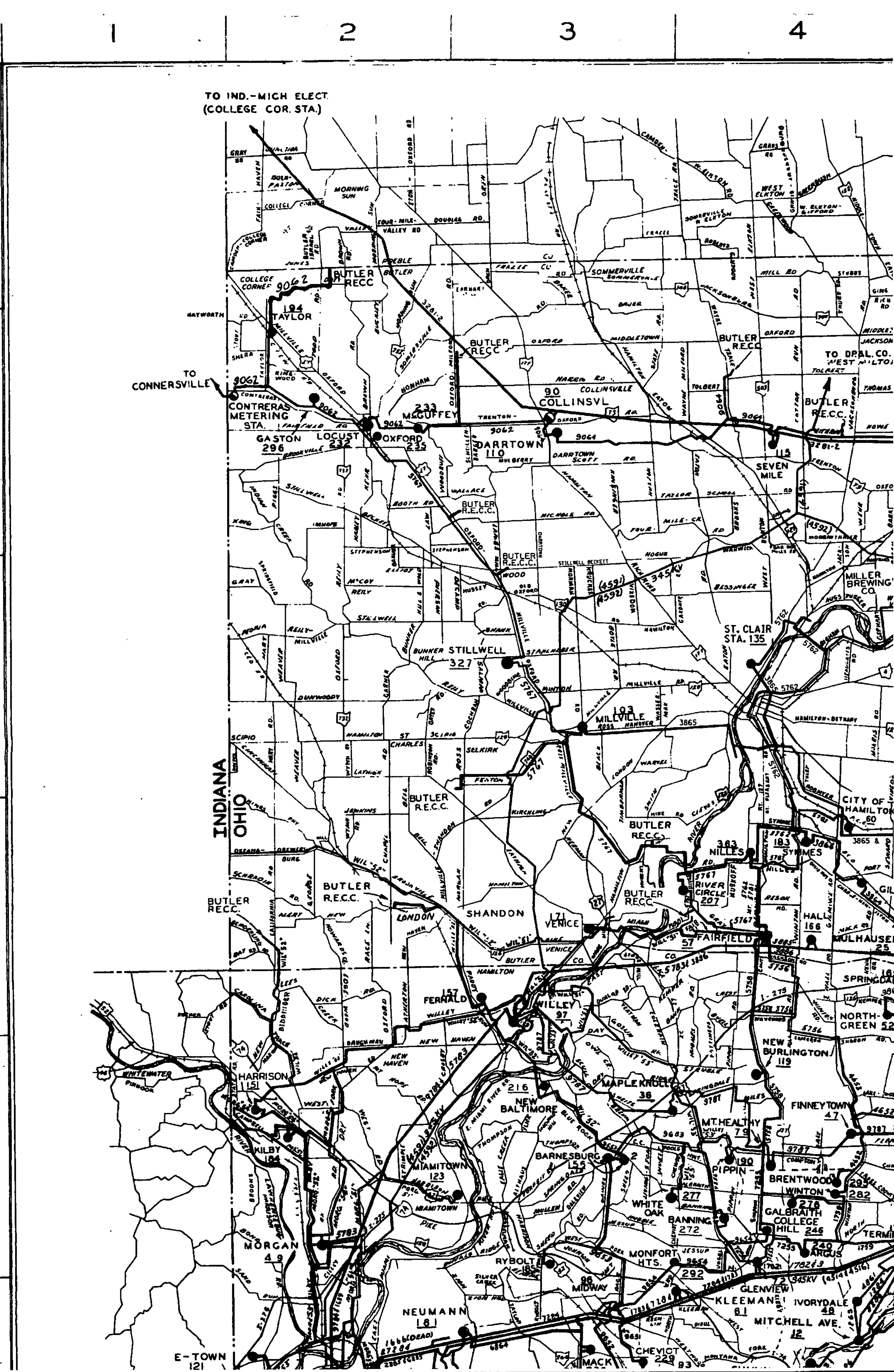

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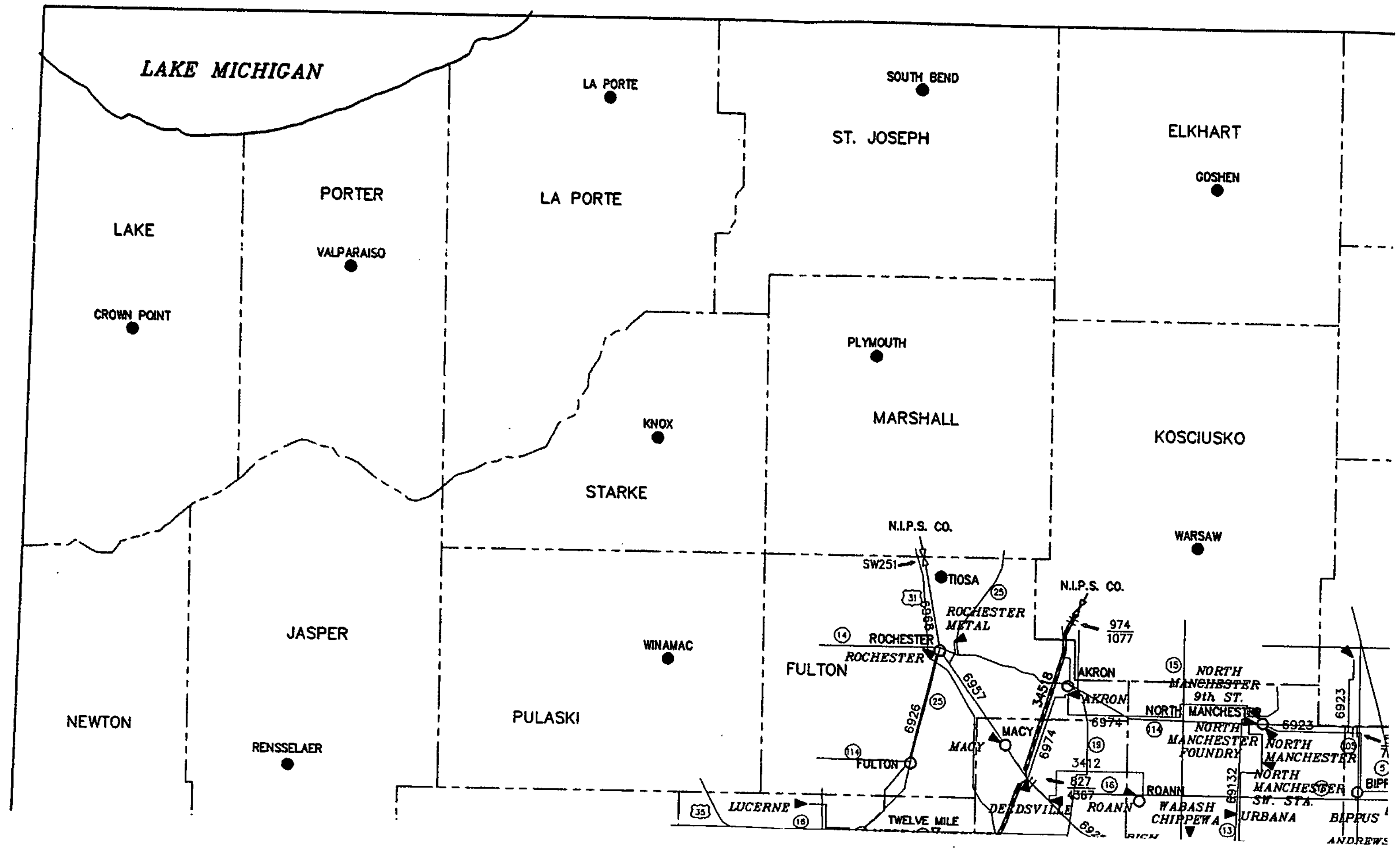

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STARKE
KNOX
MARSHALL
PLYMOUTH
KOSCIUSKO
WARSAW
NEWTON
JASPER
RENSSELAER
PULASKI
WINAMAC
FULTON
N.I.P.S. CO.
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ROCHESTER
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LUCERNE
TWELVE MILE
MACY
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NORTH MANCHESTER 9th ST.
NORTH MANCHESTER FOUNDRY
NORTH MANCHESTER
NORTH MANCHESTER SW. STA.
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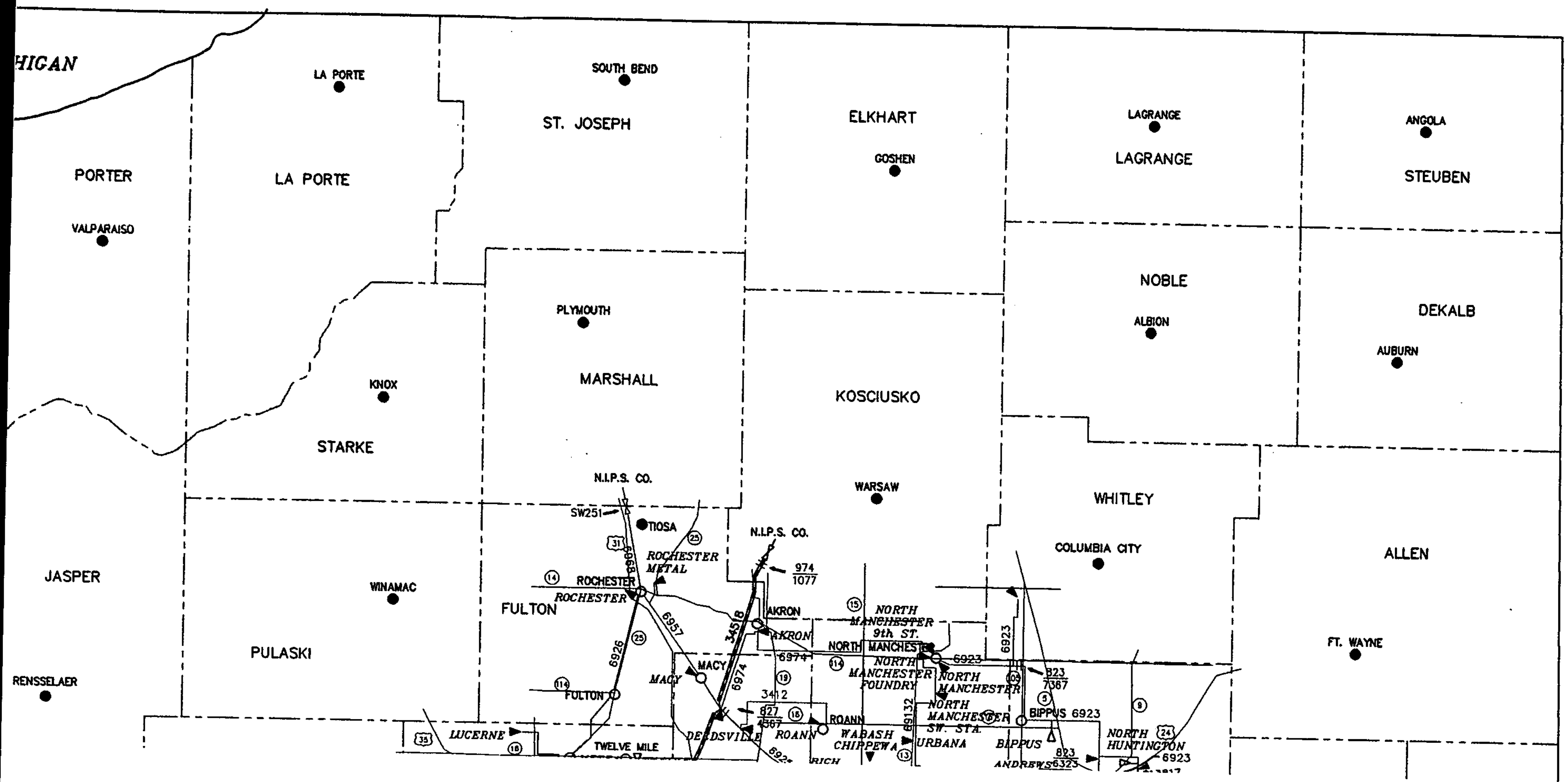
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STEUBEN
ANGOLA
STARKE
KNOX
MARSHALL
PLYMOUTH
KOSCIUSKO
WARSAW
NOBLE
ALBION
DEKALB
AUBURN
JASPER
RENSSELAER
PULASKI
WINAMAC
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COLUMBIA CITY
ALLEN
FT. WAYNE
N.I.P.S. CO.
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ROCHESTER METAL
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LUCERNE
TWELVE MILE
NORTH MANCHESTER 9th ST.
NORTH MANCHESTER
NORTH MANCHESTER FOUNDRY
NORTH MANCHESTER
NORTH MANCHESTER SW. STA.
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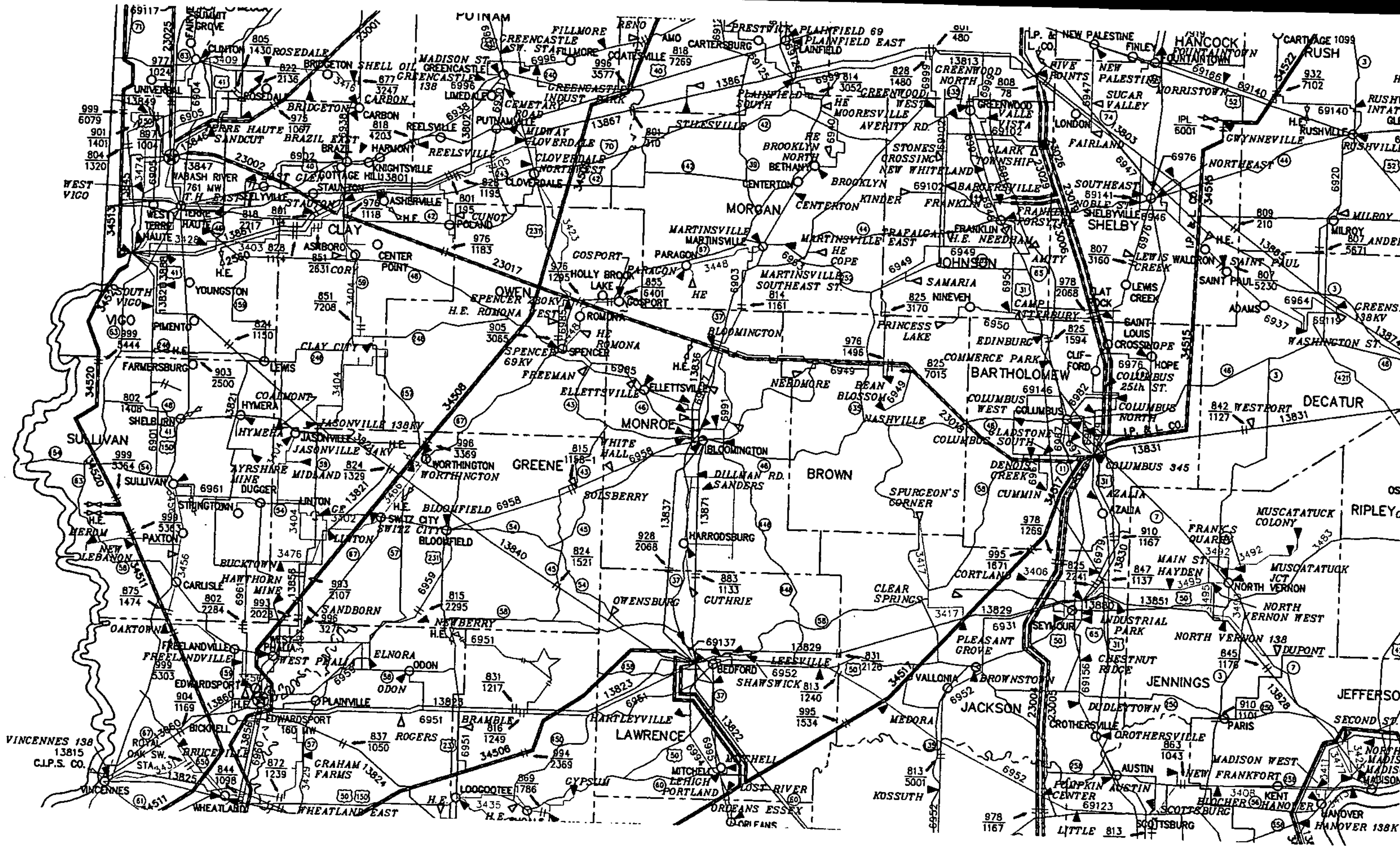
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DECATUR
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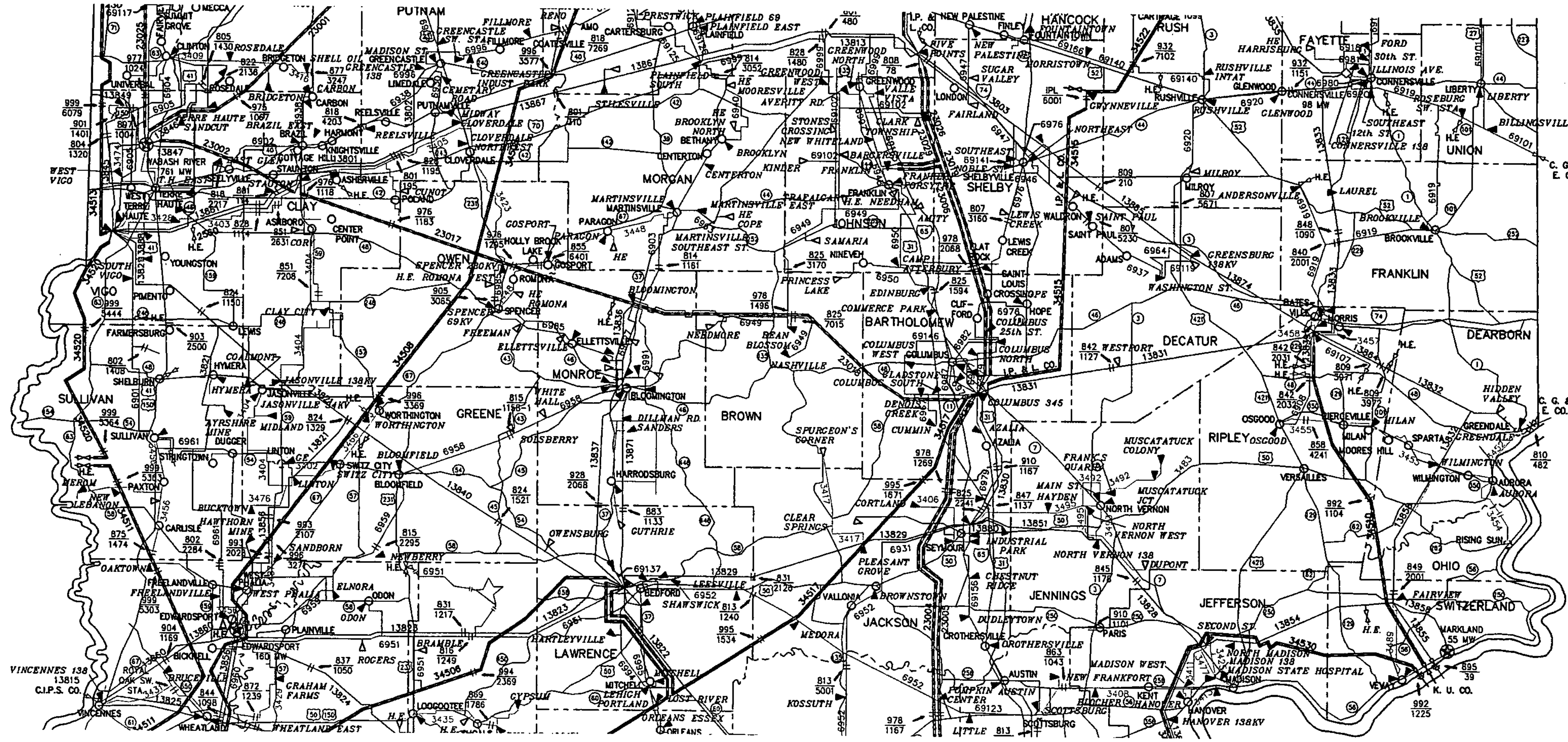
SULLIVAN
JACKSON
JENNINGS
RIPLEY
JEFFERSON
LAWRENCE



PUTNAM
CLAY
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SHELBY
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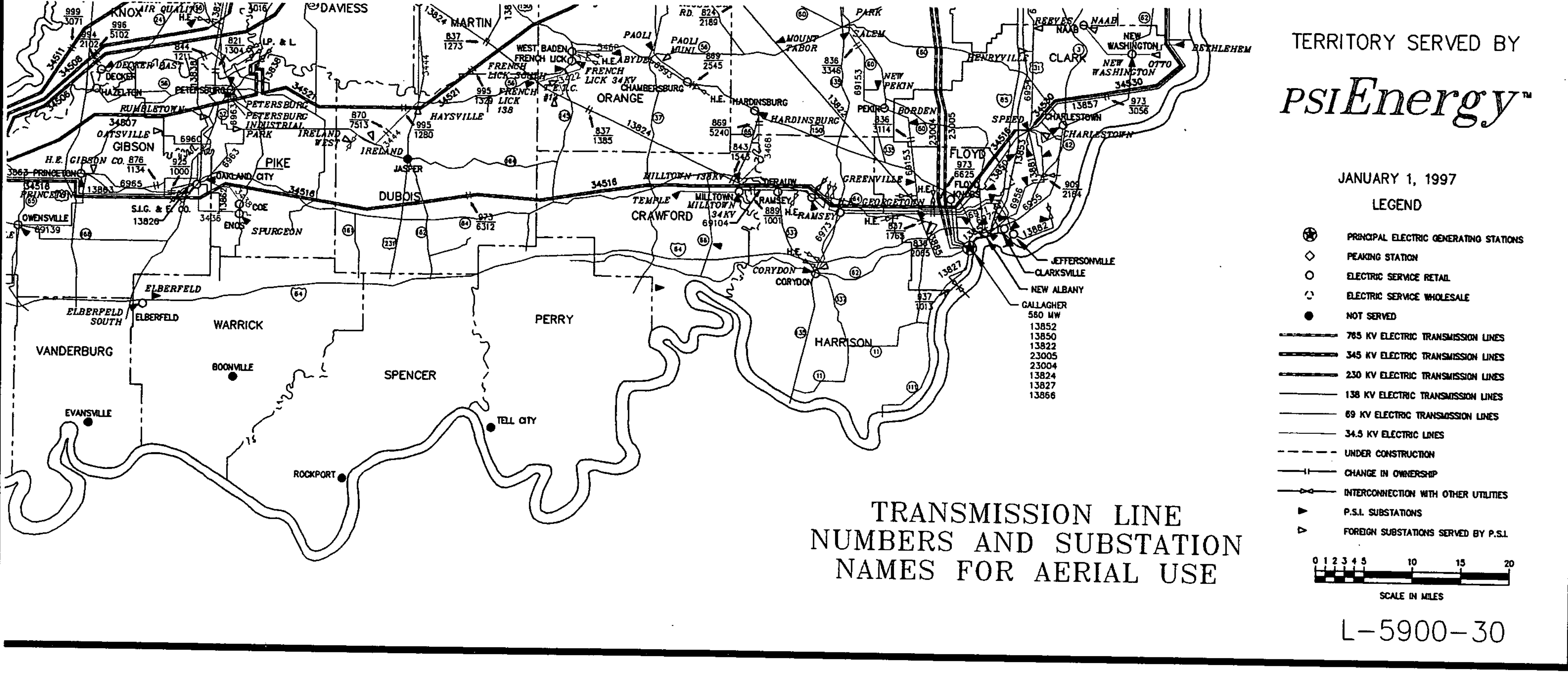

TERRITORY SERVED BY
PSIEnergy™
JANUARY 1, 1997
LEGEND
PRINCIPAL ELECTRIC GENERATING STATIONS
PEAKING STATION
ELECTRIC SERVICE RETAIL
ELECTRIC SERVICE WHOLESALE
NOT SERVED
765 KV ELECTRIC TRANSMISSION LINES
345 KV ELECTRIC TRANSMISSION LINES
230 KV ELECTRIC TRANSMISSION LINES
138 KV ELECTRIC TRANSMISSION LINES
69 KV ELECTRIC TRANSMISSION LINES
34.5 KV ELECTRIC LINES
UNDER CONSTRUCTION
CHANGE IN OWNERSHIP
INTERCONNECTION WITH OTHER UTILITIES
P.S.I. SUBSTATIONS
FOREIGN SUBSTATIONS SERVED BY P.S.I.
0 1 2 3 4 5 10 15 20
SCALE IN MILES
TRANSMISSION LINE NUMBERS AND SUBSTATION NAMES FOR AERIAL USE
KNOX
DAVIESS
MARTIN
ORANGE
GIBSON
PIKE
DUBOIS
CRAWFORD
FLOYD
CLARK
HARRISON
PERRY
SPENCER
WARRICK
VANDERBURG
EVANSVILLE
BOONVILLE
ROCKPORT
TELL CITY
JASPER
CORYDON
JEFFERSONVILLE
CLARKSVILLE
NEW ALBANY
GALLAGHER
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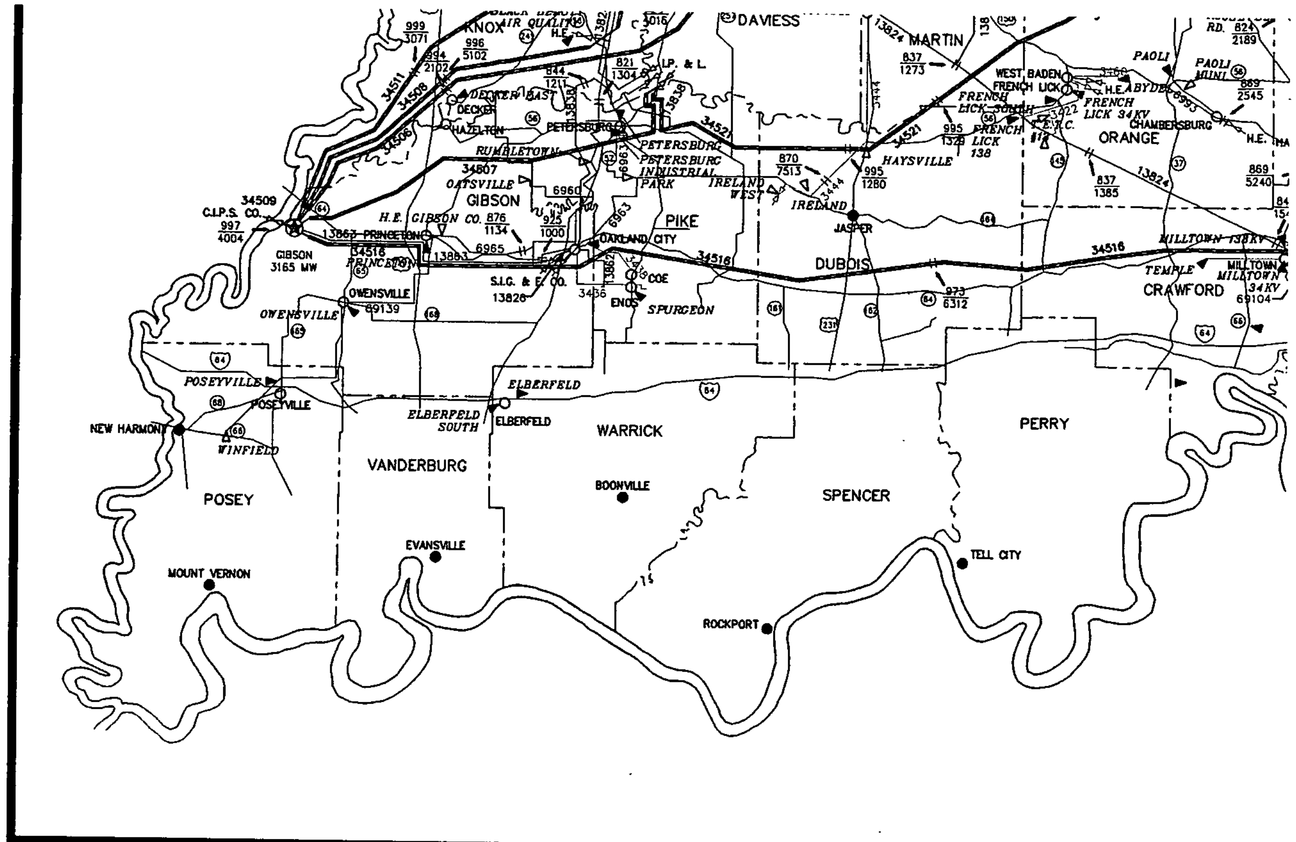
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DAVIESS
MARTIN
ORANGE
GIBSON
PIKE
DUBOIS
CRAWFORD
POSEY
VANDERBURG
WARRICK
SPENCER
PERRY
NEW HARMONY
MOUNT VERNON
EVANSVILLE
BOONVILLE
ROCKPORT
TELL CITY
JASPER
PRINCETON
OWENSVILLE
POSEYVILLE
WINFIELD
ELBERFELD
ELBERFELD SOUTH
OAKLAND CITY
PETERSBURG
PETERSBURG INDUSTRIAL PARK
HAZELTON
DECKER
RUMBLETOWN
OATSVILLE
HAYSVILLE
IRELAND
IRELAND WEST
SPURGEON
ENOS
COE
FRENCH LICK
WEST BADEN
PAOLI
CHAMBERSBURG
MILLTOWN
TEMPLE
GIBSON 3165 MW
C.I.P.S. CO.
S.I.G. & E. CO.
I.P. & L.
H.E. GIBSON CO.
34509
34516
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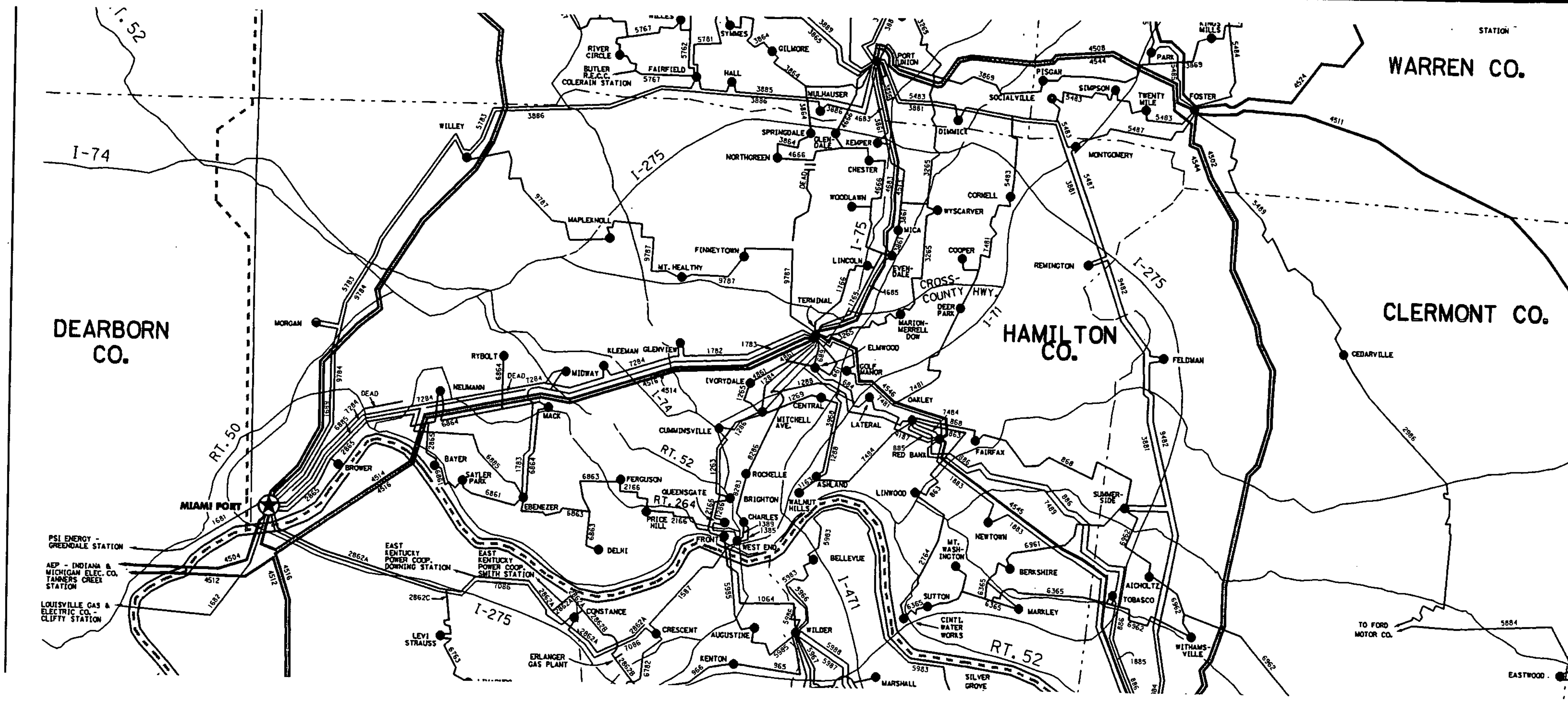

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HAMILTON CO.
DEARBORN CO.
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CROSS-COUNTY HWY.
MIAMI FORT
PSI ENERGY - GREENDALE STATION
AEP - INDIANA & MICHIGAN ELEC. CO. TANNERS CREEK STATION
LOUISVILLE GAS & ELECTRIC CO. - CLIFTY STATION
EAST KENTUCKY POWER COOP. DOWNING STATION
EAST KENTUCKY POWER COOP. SMITH STATION
BUTLER R.E.C.C. COLERAIN STATION
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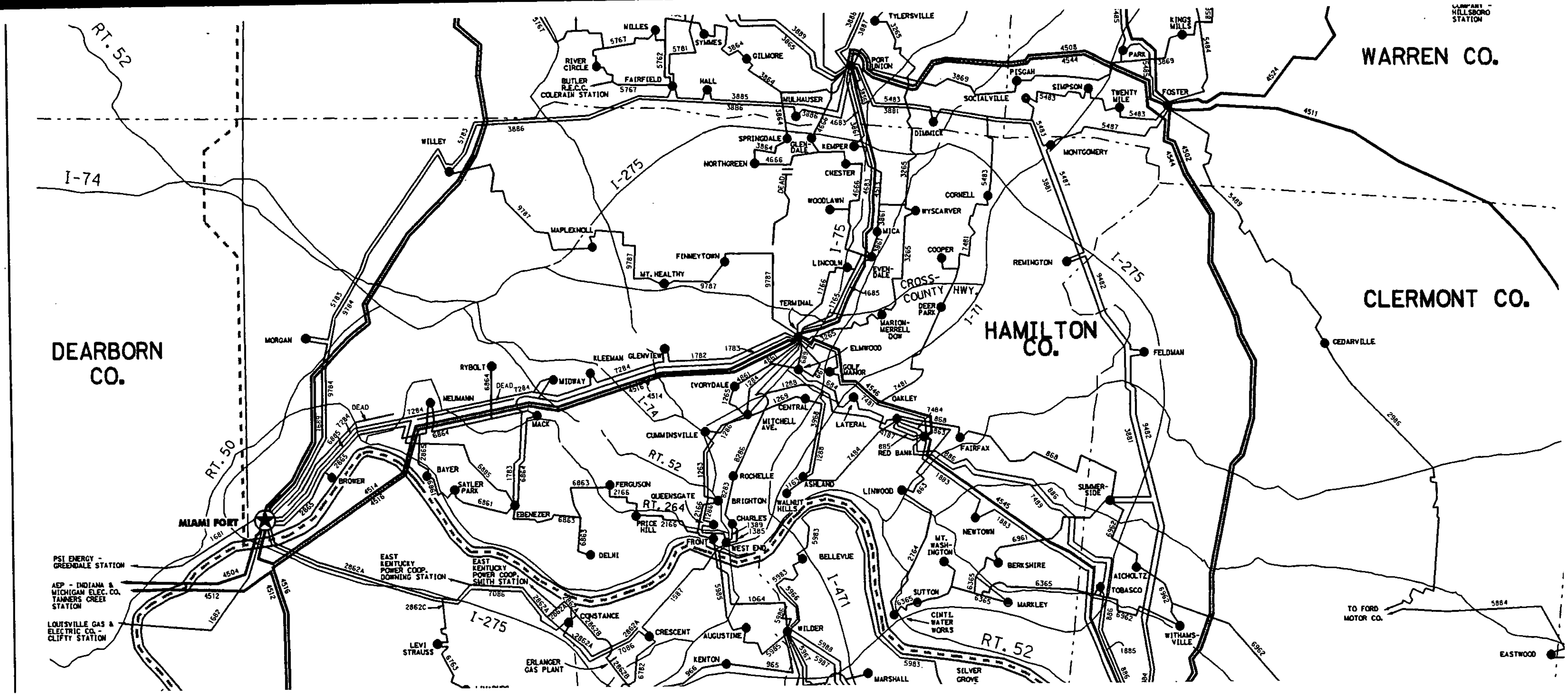
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RYBOLT
KLEEMAN
GLENVIEW
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FAIRFAX
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WEST END
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SUMMERSIDE
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TOBASCO
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SUTTON
CINTI. WATER WORKS
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CONSTANCE
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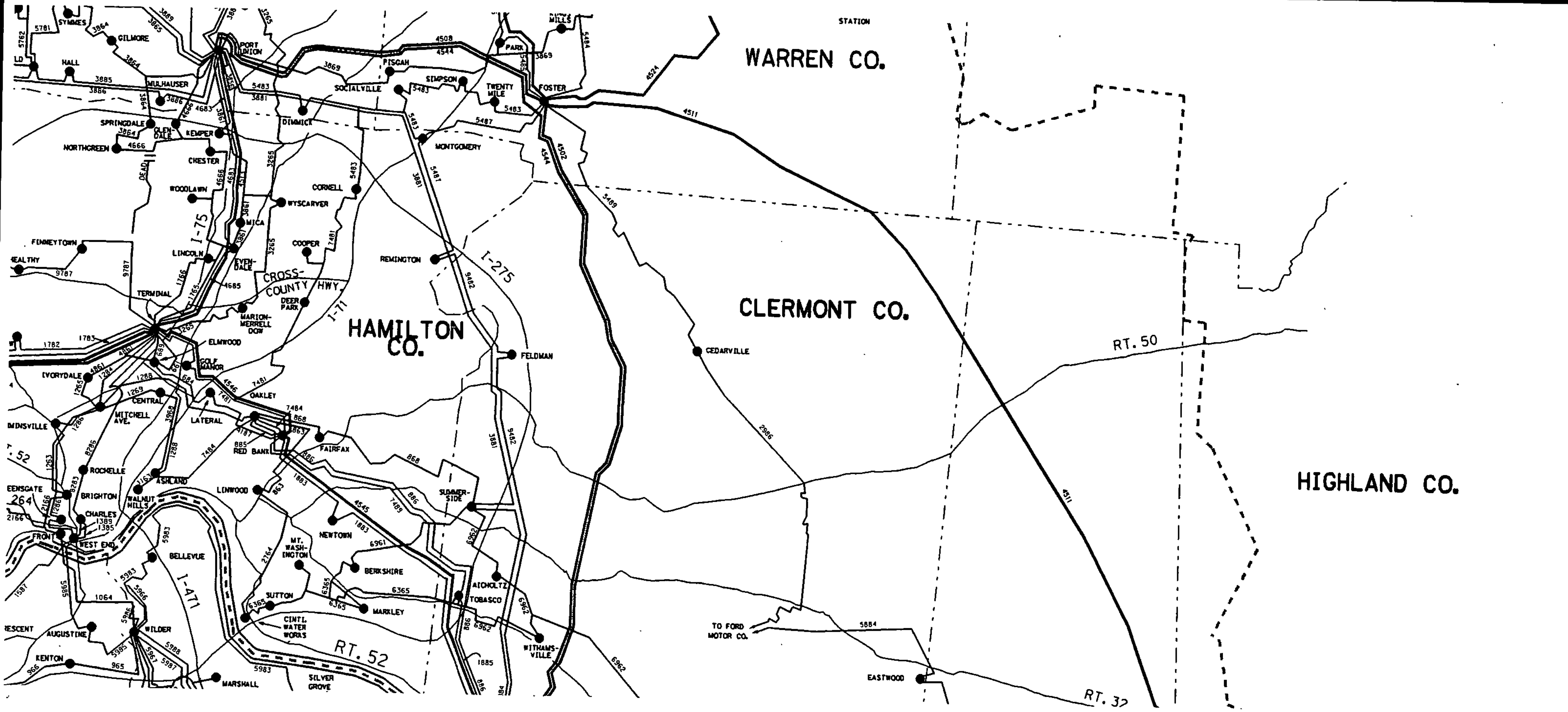

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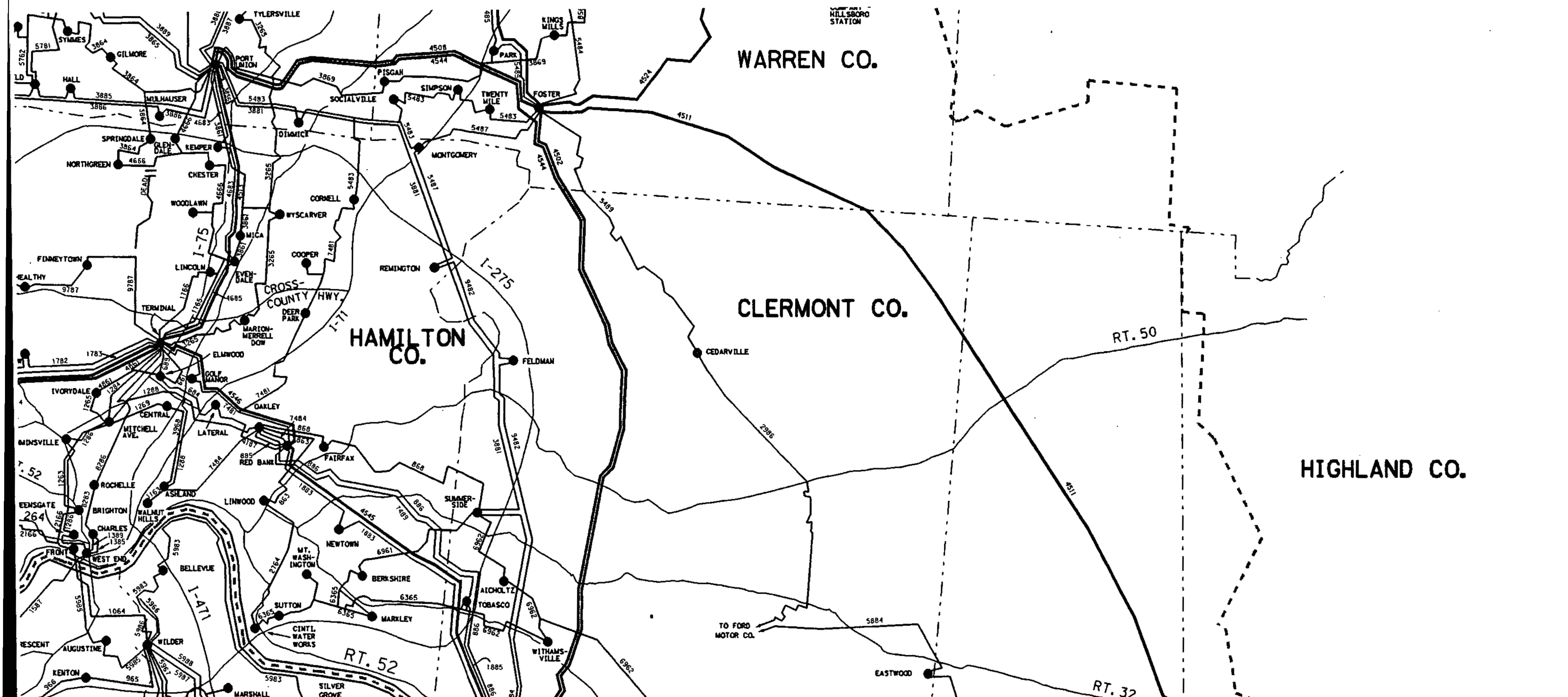
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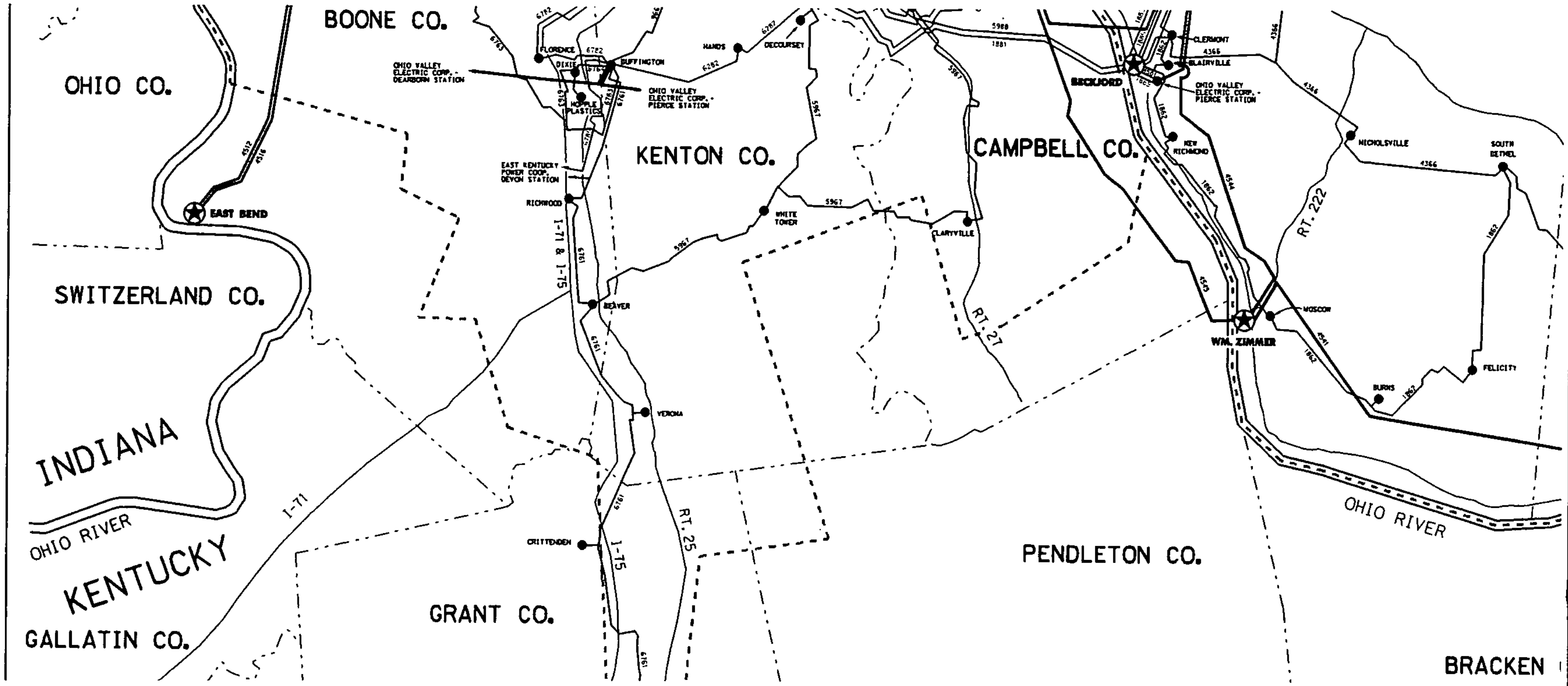

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PENDLETON CO.
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OHIO VALLEY ELECTRIC CORP. - DEARBORN STATION
EAST KENTUCKY POWER COOP. DEVON STATION
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DIXIE
BUFFINGTON
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BLAIRVILLE
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WM. ZIMMER
MOSCOW
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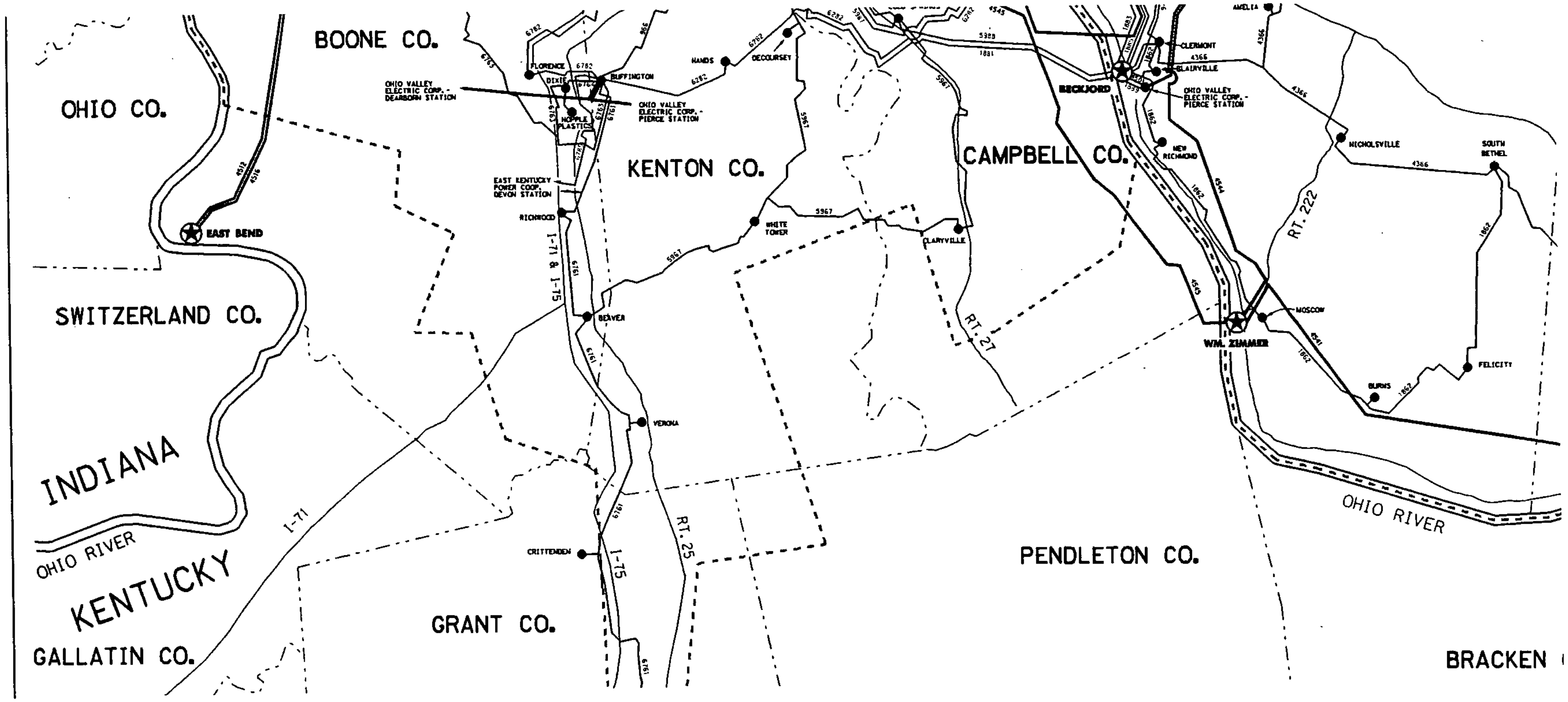
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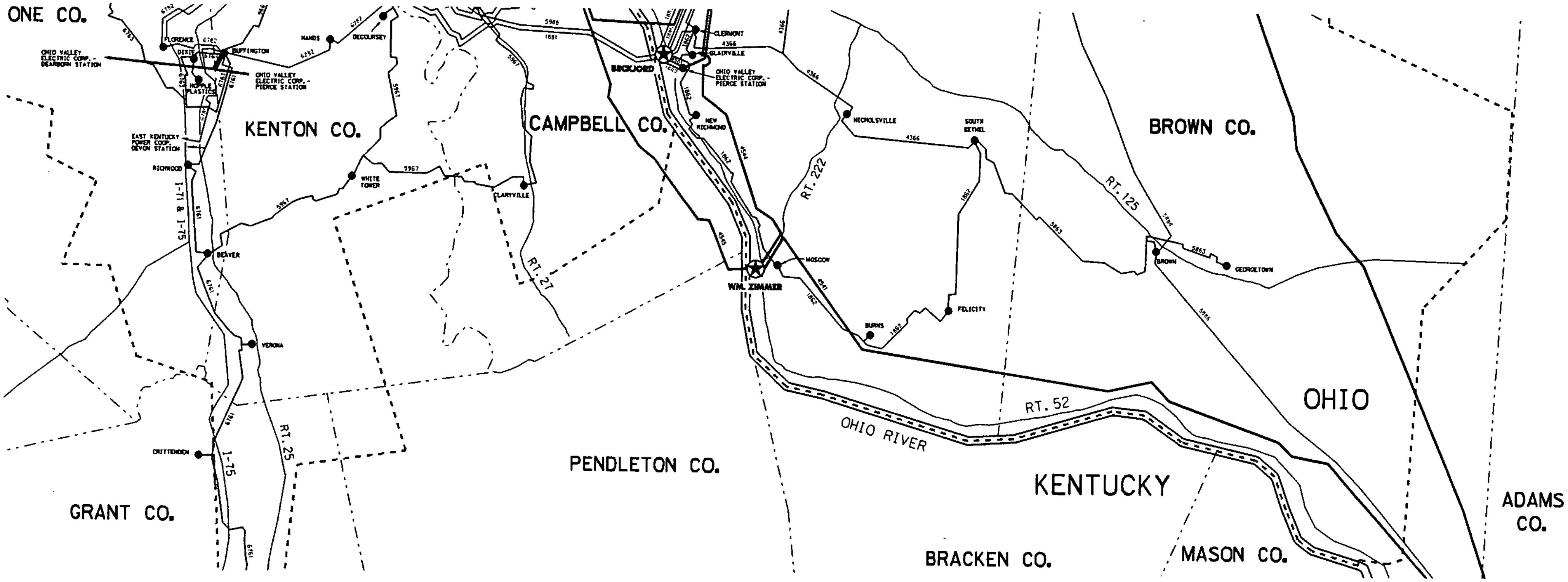
OHIO RIVER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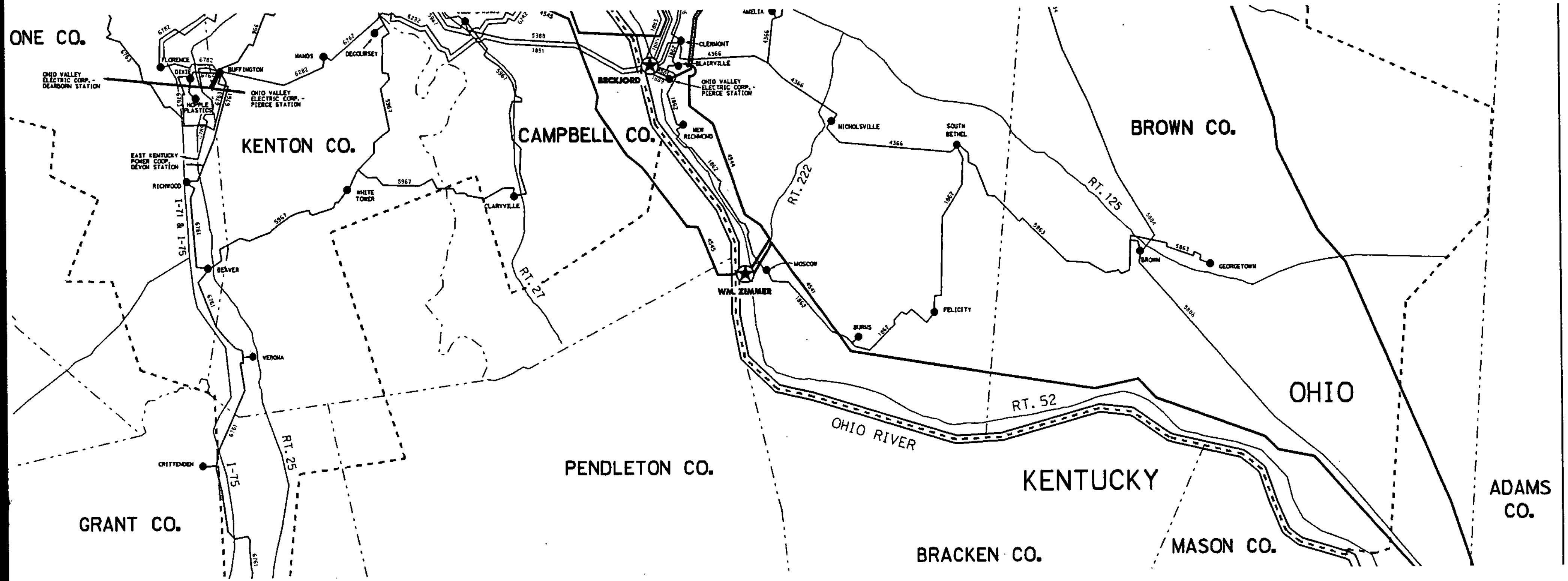
MASON CO.
ADAMS CO.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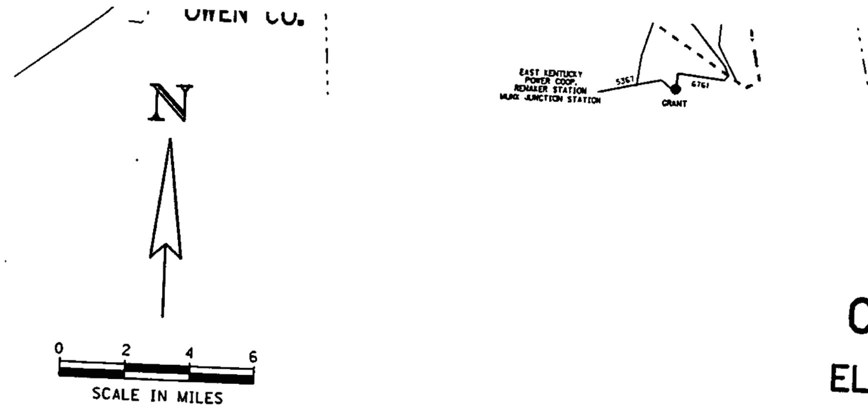


PREPARED TO MEET THE REQUIREMENTS OF:
FERC FORM 715, ANNUAL TRANSMISSION
PLANNING AND EVALUATION REPORT
PART 3: TRANSMITTING UTILITY MAPS AND
DIAGRAMS UPDATED APRIL 27, 1999

LEGEND:

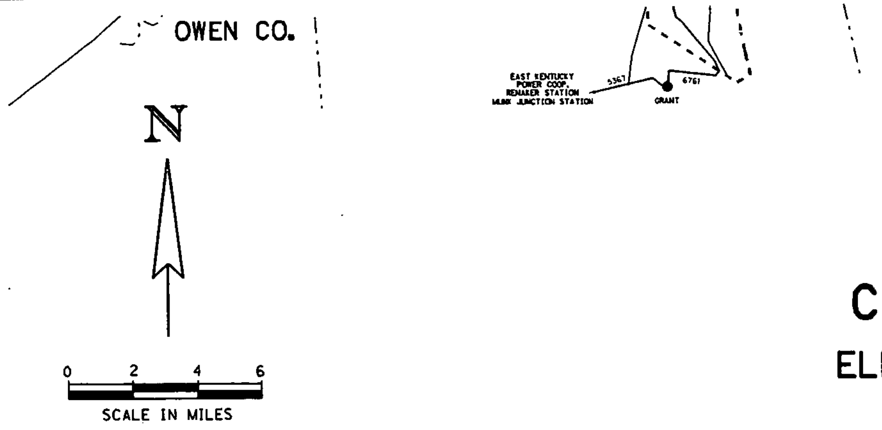
C.G.&E. CO. AND U.L.H.&P. CO.
ELECTRICAL SYSTEM AND SUBSTATIONS
69KV. AND ABOVE

REVISED TO 4-27-99

NOTE

1. ALL 345KV. TRANSMISSION LINES OWNED BY C.G.&E. CO. OR JOINTLY BY C.G.&E. CO. AND OTHER UTILITIES.
2. ALL 138KV. TRANSMISSION LINES OWNED BY C.G.&E. CO..
3. ALL 69KV. TRANSMISSION LINES IN OHIO OWNED BY C.G.&E. CO..
4. ALL 69KV. TRANSMISSION LINES IN KENTUCKY OWNED BY U.L.H.&P., EXCEPT 2862A & 1064, WHICH ARE OWNED BY C.G.&E. CO.

CG&E



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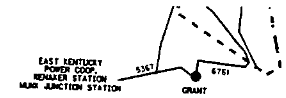

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C.G.&E. CO. AND U.L.H.&P. CO.
ELECTRICAL SYSTEM AND SUBSTATIONS
69KV. AND ABOVE

REVISED TO 4-27-99

LINES OWNED BY C.G.&E. CO. OR JOINTLY UTILITIES.

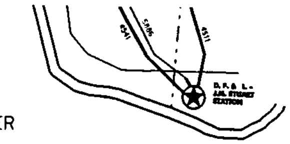
LINES OWNED BY C.G.&E. CO..

.INES IN OHIO OWNED BY C.G.&E. CO..

.INES IN KENTUCKY OWNED BY U.L.H.&P.,
ICH ARE OWNED BY C.G.&E. CO.

<u>LEGEND:</u> ⊛ **GENERATING STATION**

SUBSTATION NAME		LINE CIRCUIT NUMBER
TERMINAL ● (TYPICAL)	345KV.	4545 (TYPICAL)
NEWTOWN ● (TYPICAL)	138KV.	1883 (TYPICAL)
SUTTON ● (TYPICAL)	69KV.	6365 (TYPICAL)

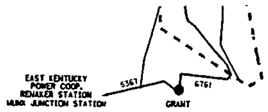


ELECTRIC SERVICE AREA ----------

NOTE: LINES WITH CIRCUIT NUMBER BEGINNING IN '45' ARE 345KV.
LINES WITH CIRCUIT NUMBER WITH '8' AS SECOND DIGIT FROM RIGHT ARE 138KV.
LINES WITH CIRCUIT NUMBER WITH '6' AS SECOND DIGIT FROM RIGHT ARE 69KV.
LINES WITH CIRCUIT NUMBER WITH '5' AS SECOND DIGIT FROM RIGHT ARE 33KV.

CG&E The Energy Service Company

FEEDERS/TRANSRT.DGN



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C.G.&E. CO. AND U.L.H.&P. CO.

ELECTRICAL SYSTEM AND SUBSTATIONS

69KV. AND ABOVE

REVISED TO 4-27-99

LINES OWNED BY C.G.&E. CO. OR JOINTLY
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LINES OWNED BY C.G.&E. CO..

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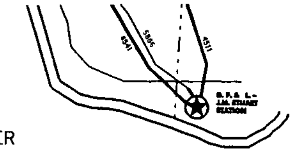

CG&E The Energy Service Company

FEEDERS/TRANSRT.DGN

1999

CINERGY®

Case No. 99-449

Integrated Resource Plan

KENTUCKY APPENDIX

VOLUME II

NOV - 2 1999

PUBLIC SERVICE COMMISSION

CINERGY®

The Union Light, Heat & Power Company

Case NO. 99-449

1999

INTEGRATED RESOURCE PLAN

VOLUME II

KENTUCKY APPENDIX

November 1, 1999

By: Cinergy Services
Douglas F. Esamann, Vice President
139 E. Fourth St.
P.O. Box 960
Cincinnati, Ohio 45201-0960

NOTICE

This state-specific Appendix, Volume II, is an integral part of the Cinergy 1999 IRP filing. Please see the submittal letters and other specific filing attachments contained in the front of Volume I of the Cinergy 1999 Integrated Resource Plan.

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KENTUCKY APPENDIX

Table of Contents

IN COMPLIANCE WITH THE CODES OF CONDUCT IN FERC ORDER 889, ALL OF THE FOLLOWING SECTIONS ARE CONTAINED IN THE TRANSMISSION VOLUME OF THIS REPORT,'WHICH WAS PREPARED INDEPENDENTLY

Section 8(3)(a) Thermal Capacity of Interconnections

Section 4(2) Identification of Individuals Responsible for Preparation of the Plan

The following individuals are responsible for the preparation of this filing:

Name	Department
Diane L. Jenner	Asset Planning and Analysis
Victor A. Needham	Retail Marketing
James A. Riddle	Market Analysis
Ronald C. Snead	Bulk Transmission Planning

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Section 6 Significant Changes

The last official IRP filing by the Company at the Kentucky Public Service Commission (KyPSC or Commission) was the 1993 IRP. Since that time, Cinergy became the parent holding company of The Cincinnati Gas & Electric Company and PSI Energy, Inc. Integrated Resource Planning now is performed for the Cinergy system as a whole. In addition, the Kentucky Commission revised its rules effective July 21, 1995. ULH&P and its parent, Cinergy Corp., have attempted to keep the Commission abreast of on-going planning activities and progress by submitting courtesy copies of all IRP filings made in other jurisdictions (Indiana in November 1995 and October 1997, and Ohio in December 1994, June 1995, October 1996, October 1997, and May 1998) since the last IRP filing in Kentucky. Copies of significant orders have also been provided. For these reasons, the Company believes that summarizing in narrative and tabular form all of the changes and improvements made since the 1993 IRP filing (which contained only CG&E/ULH&P information), all within the context of the 1999 IRP document, would be an unproductive activity for ULH&P and the Commission, consuming resources that would be better used elsewhere. Therefore, no such comparisons have been performed within this filing. Also, please see Volume I, Chapter 2, Section E where some changes to the planning process are discussed.

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Section 7. (2) (b) and (c)

UNION LIGHT, HEAT AND POWER COMPANY
WEATHER NORMALIZED

SERVICE AREA ENERGY (MEGAWATT HOURS/YEAR)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	STREET-HWY LIGHTING	O.P.A.	INTER DEPARTMENT	O.P.U.
1994	1,087,199	818,031	- 860,121	14,578	297,957	1,250	47,427
1995	1,111,054	851,040	899,001	15,018	332,639	991	50,128
1996	1,169,516	895,444	952,086	15,144	344,991	734	52,761
1997	1,184,660	926,892	977,278	15,725	345,425	625	51,409
1998	1,231,621	971,613	1,044,142	15,713	346,731	702	0

	(8)	(8)	(9)	(10)	(11)	(12)
YEAR	COMPANY USE	(1+2+3+4 5+6+7+8 TOTAL CONSUMPTION	LOSSES AND UNACCOUNTED FOR e	(8+9) NET ENERGY FOR LOAD	SUMMER PEAK MW	WINTER PEAK MW
1994	668	3,127,232	75,425	3,202,657	676	552
1995	965	3,260,835	154,441	3,415,276	721	588
1996	752	3,431,429	156,031	3,587,460	758	618
1997	593	3,502,606	195,991	3,698,597	781	637
1998	771	3,611,292	36,753	3,648,045	771	628

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Section 7(4)(d) DSM Program Data

The DSM Program Data which is contained in DSManager input and output summary reports is voluminous in nature. This data is available for viewing at Cinergy offices during normal business hours. Please contact Van Needham at (513) 287-2609 for more information.

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Section 7. (4) (e)

UNION LIGHT, HEAT AND POWER COMPANY
ELECTRIC ENERGY AND PEAK LOAD
FORECAST: ANNUAL GROWTH RATES

	1999 -2019
Residential MWH	1.5%
Commercial MWH	1.5%
Industrial MWH	2.6%
Net Energy MWH	1.8%
Summer Peak MW	1.7%
Winter Peak MW	1.5%

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Section 7. (5) (a)

CINERGY
WEATHER NORMALIZED

SERVICE AREA ENERGY (MEGAWATT HOURS/YEAR)

YEAR	(1) RESIDENTIAL	(2) COMMERCIAL	(3) INDUSTRIAL	(4) STREET-HWY LIGHTING	(5) O.P.A.	(6) INTER DEPARTMENT	(7) O.P.U.
1994	13,623,704	11,214,399	15,596,668	159,398	1,561,361	10,810	4,546,031
1995	13,536,026	11,050,531	16,159,570	162,795	1,606,386	10,281	4,471,124
1996	13,970,606	11,507,941	16,823,669	164,642	1,637,680	10,054	4,548,953
1997	14,706,220	12,134,012	17,324,286	167,285	1,656,816	9,757	5,129,955
1998	15,139,955	12,556,692	18,042,134	169,180	1,634,350	8,728	5,348,204

YEAR	(8) COMPANY USE	(8) (1+2+3+4 5+6+7+8 TOTAL CONSUMPTION	(9) LOSSES AND UNACCOUNTED FOR e	(10) (8+9) NET ENERGY FOR LOAD	(11) SUMMER PEAK MW	(12) WINTER PEAK MW
1994	25,006	46,737,378	3,393,434	50,130,812	9,296	8,143
1995	26,898	47,023,610	3,381,537	50,405,147	9,352	8,187
1996	27,488	48,691,032	3,511,765	52,202,798	9,687	8,480
1997	24,377	51,152,708	3,694,161	54,846,868	10,169	8,908
1998	24,515	52,923,759	3,826,401	56,750,160	10,516	9,217

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Section 7(7)(a) Data Set Description

The following pages contain the descriptions of the variables contained in the load forecast model.

VARIABLE	DESCRIPTION
AHEM	US AVERAGE HOURLY EARNINGS FOR MANUFACTURING
AHEM@1640	SERVICE AREA AVERAGE HOURLY EARNINGS FOR MANUFACTURING
APEIND@CGE	SERVICE AREA AVERAGE PRICE OF ELECTRICITY FOR INDUSTRIAL CUSTOMERS
APGCOM@CGE	SERVICE AREA AVERAGE PRICE OF GAS FOR COMMERCIAL CUSTOMERS
APGIND@CGE	SERVICE AREA AVERAGE PRICE OF GAS FOR INDUSTRIAL CUSTOMERS
APGOPA@CGE	SERVICE AREA AVERAGE PRICE OF GAS FOR OPA CUSTOMER
ARMCOBASE	BASE SALES TO ARMCO STEEL CORP. - 190,000,000 KWH
CDD	ACTUAL COOLING DEGREE DAYS
CDDB	BILLING COOLING DEGREE DAYS
CDDBN	BILLING COOLING DEGREE DAYS NORMAL
CDDN	COOLING DEGREE DAYS NORMAL
CPI	CONSUMER PRICE INDEX (ALL URBAN) - ALL ITEMS
CUSRES@CGE	SERVICE AREA ELECTRIC CUSTOMERS - RESIDENTIAL
DAY	THE DAY OF THE MONTH
DAYS	NUMBER OF DAYS IN THE MONTH
DIV@PER	PERSONAL DIVIDEND INCOME
DS@KW@IND@CGE	SERVICE AREA DS RATE FOR DEMAND FOR INDUSTRIAL CUSTOMER
DS@KW@OPA@CGE	SERVICE AREA DS RATE FOR DEMAND FOR OTHER PUBLIC AUTHORITIES CUSTOMER
DS@KWH@COM@CGE	SERVICE AREA DS RATE FOR USAGE FOR COMMERCIAL CUSTOMER
DS@KWH@IND@CGE	SERVICE AREA DS RATE FOR USAGE FOR INDUSTRIAL CUSTOMER
E15@CGE	SERVICE AREA EMPLOYMENT - CONTRACT CONSTRUCTION
E20	US EMPLOYMENT - FOOD AND PRODUCTS
E20@CGE	SERVICE AREA EMPLOYMENT - FOOD AND PRODUCTS
E23	US EMPLOYMENT - APPAREL AND PRODUCTS
E23@CGE	SERVICE AREA EMPLOYMENT - APPAREL AND PRODUCTS
E26	US EMPLOYMENT - PAPER AND PRODUCTS
E26@CGE	SERVICE AREA EMPLOYMENT - PAPER AND PRODUCTS
E27	US EMPLOYMENT - PRINTING AND PUBLISHING
E27@CGE	SERVICE AREA EMPLOYMENT - PRINTING AND PUBLISHING
E28	US EMPLOYMENT - CHEMICALS AND PRODUCTS
E28@CGE	SERVICE AREA EMPLOYMENT - CHEMICALS AND PRODUCTS
E30	US EMPLOYMENT - RUBBER AND MISCELLANEOUS PLASTICS
E30@CGE	SERVICE AREA EMPLOYMENT - RUBBER AND MISCELLANEOUS PLASTICS
E33	US EMPLOYMENT - PRIMARY METAL INDUSTRIES
E33NS@BUTLER	SERVICE AREA EMPLOYMENT - BUTLER COUNTY - PRIMARY METAL INDUSTRIES
E33NS@CGE	SERVICE AREA EMPLOYMENT - PRIMARY METAL INDUSTRIES
E33NS@CMSA	SERVICE AREA EMPLOYMENT - ALL COUNTIES EXCEPT BUTLER - PRIMARY METALS INDUSTRIES
E34	US EMPLOYMENT - FABRICATED METAL PRODUCTS
E34@CGE	SERVICE AREA EMPLOYMENT - FABRICATED METAL PRODUCTS
E35	US EMPLOYMENT - MACHINERY EXCEPT ELECTRICAL
E35NS@CGE	SERVICE AREA EMPLOYMENT - MACHINERY EXCEPT ELECTRICAL
E36	US EMPLOYMENT - ELECTRICAL MACHINERY
E36NS@CGE	SERVICE AREA EMPLOYMENT - ELECTRICAL MACHINERY
E37	US EMPLOYMENT - TRANSPORTATION EQUIPMENT
E371NS@CGE	SERVICE AREA EMPLOYMENT - TRANSPORTATION EQUIPMENT MOTOR VEHICLES & PARTS
E372@9NS@CGE	SERVICE AREA EMPLOYMENT - TRANSPORTATION EQUIPMENT OTHER THAN MOTOR VEHICLES AND PARTS
E37NS@CGE	SERVICE AREA EMPLOYMENT - TRANSPORTATION EQUIPMENT
E40X@CGE	SERVICE AREA EMPLOYMENT - TRANSPORTATION AND PUBLIC UTILITIES
E50X@CGE	SERVICE AREA EMPLOYMENT - WHOLESALE AND RETAIL TRADE
E60X@CGE	SERVICE AREA EMPLOYMENT - FINANCE, INSURANCE AND REAL ESTATE
E7089@CGE	SERVICE AREA EMPLOYMENT - SERVICES

VARIABLE	DESCRIPTION
E90X@CGE	SERVICE AREA EMPLOYMENT - STATE AND LOCAL GOVERNMENT
E@CGE	SERVICE AREA EMPLOYMENT - TOTAL
EAOI	US EMPLOYMENT - MISCELLANEOUS MANUFACTURERS
EAOI@CGE	SERVICE AREA EMPLOYMENT - ALL OTHER INDUSTRIES
EAOIDG	US EMPLOYMENT - ALL OTHER DURABLE GOODS INDUSTRIES
EAOIDG@CGE	SERVICE AREA EMPLOYMENT - ALL OTHER DURABLE GOODS INDUSTRIES
EAOINDG	US EMPLOYMENT - ALL OTHER NON-DURABLE GOODS INDUSTRIES
EAOINDG@CGE	SERVICE AREA EMPLOYMENT - ALL OTHER NON-DURABLE GOODS INDUSTRIES
EC	US EMPLOYMENT - CONTRACT CONSTRUCTION
ECIWSP	EMPLOYMENT COST INDEX - PRIVATE WAGES & SALARIES
ECOM	US EMPLOYMENT - COMMERCIAL
ECOM@CGE	SERVICE AREA EMPLOYMENT - COMMERCIAL
EEA	US EMPLOYMENT - TOTAL NONAGRICULTURAL ESTABLISHMENTS
EFF@CAC@CGE	EFFICIENCY OF CENTRAL AIR CONDITIONING UNITS IN SERVICE AREA
EFF@EHP@CGE	EFFICIENCY OF ELECTRIC HEAT PUMP UNITS IN SERVICE AREA
EFF@RAC@CGE	EFFICIENCY OF WINDOW AIR CONDITIONING UNITS IN SERVICE AREA
EFIR	US EMPLOYMENT - FINANCE, INSURANCE AND REAL ESTATE
EGSL	US EMPLOYMENT - STATE AND LOCAL GOVERNMENT
EM	US EMPLOYMENT - MANUFACTURING
EM@CGE	SERVICE AREA EMPLOYMENT - MANUFACTURING
ER	US EMPLOYMENT - TRANSPORTATION AND PUBLIC UTILITIES
ESV	US EMPLOYMENT - SERVICES
ET	US EMPLOYMENT - WHOLESALE AND RETAIL TRADE
FRI	QUALITATIVE VARIABLE - FRIDAY
GFML92C	FEDERAL GOVERNMENT CONSUMPTION EXPENDITURES & GROSS INVESTMENT DEFENSE - CHAINED 1992 DOLLARS
HDD	ACTUAL HEATING DEGREE DAYS
HDDB	BILLING HEATING DEGREE DAYS
HDDBN	BILLING HEATING DEGREE DAYS NORMAL
HDDN	HEATING DEGREE DAYS NORMAL
HUM	HUMIDITY - AFTERNOON
JQIND20	US INDUSTRIAL PRODUCTION INDEX - FOOD AND PRODUCTS
JQIND20@CGE	SERVICE AREA INDUSTRIAL PRODUCTION INDEX - FOOD AND PRODUCTS
JQIND23	US INDUSTRIAL PRODUCTION INDEX - APPAREL AND PRODUCTS
JQIND23@CGE	SERVICE AREA INDUSTRIAL PRODUCTION INDEX - APPAREL AND PRODUCTS
JQIND26	US INDUSTRIAL PRODUCTION INDEX - PAPER AND PRODUCTS
JQIND26@CGE	SERVICE AREA INDUSTRIAL PRODUCTION INDEX - PAPER AND PRODUCTS
JQIND27	US INDUSTRIAL PRODUCTION INDEX - PRINTING AND PUBLISHING
JQIND27@CGE	SERVICE AREA INDUSTRIAL PRODUCTION INDEX - PRINTING & PUBLISHING
JQIND28	US INDUSTRIAL PRODUCTION INDEX - CHEMICALS AND PRODUCTS
JQIND28@CGE	SERVICE AREA INDUSTRIAL PRODUCTION INDEX - CHEMICALS AND PRODUCTS
JQIND29	US INDUSTRIAL PRODUCTION INDEX - PETROLEUM REFINING & RELATED INDUSTRIES
JQIND30	US INDUSTRIAL PRODUCTION INDEX - RUBBER AND MISCELLANEOUS PLASTICS
JQIND30@CGE	SERVICE AREA INDUSTRIAL PRODUCTION INDEX-RUBBER & MISCELLANEOUS PLASTICS
JQIND31	US INDUSTRIAL PRODUCTION INDEX - LEATHER AND LEATHER PRODUCTS
JQIND33	US INDUSTRIAL PRODUCTION INDEX - PRIMARY METAL INDUSTRIES
JQIND33@BUTLER	INDUSTRIAL PRODUCTION INDEX - PRIMARY METAL INDUSTRIES - BUTLER COUNTY
JQIND33@CGE	SERVICE AREA INDUSTRIAL PRODUCTION INDEX - PRIMARY METAL INDUSTRIES
JQIND33@CINN	INDUSTRIAL PRODUCTION INDEX - PRIMARY METAL INDUSTRIES - ALL COUNTIES EXCEPT BUTLER
JQIND34	US INDUSTRIAL PRODUCTION INDEX - FABRICATED METAL PRODUCTS
JQIND34@CGE	SERVICE AREA INDUSTRIAL PRODUCTION INDEX - FABRICATED METAL PRODUCTS
JQIND35	US INDUSTRIAL PRODUCTION INDEX - MACHINERY EXCEPT ELECTRICAL
JQIND35@CGE	SERVICE AREA INDUSTRIAL PRODUCTION INDEX - MACHINERY EXCEPT ELECTRICAL

VARIABLE	DESCRIPTION
JQIND36	US INDUSTRIAL PRODUCTION INDEX - ELECTRICAL MACHINERY
JQIND36@CGE	SERVICE AREA INDUSTRIAL PRODUCTION INDEX - ELECTRICAL MACHINERY
JQIND371	US INDUSTRIAL PRODUCTION INDEX - MOTOR VEHICLES AND PARTS
JQIND371@CGE	SERVICE AREA INDUSTRIAL PRODUCTION INDEX - MOTOR VEHICLES AND PARTS
JQIND372	US INDUSTRIAL PRODUCTION INDEX - AIRCRAFT AND PARTS
JQIND372@CGE	SERVICE AREA INDUSTRIAL PRODUCTION INDEX - AIRCRAFT AND PARTS
JQIND37@CGE	SERVICE AREA INDUSTRIAL PRODUCTION INDEX - TRANSPORTATION EQUIPMENT
JQINDAOI@CGE	SERVICE AREA INDUSTRIAL PRODUCTION INDEX - ALL OTHER INDUSTRIES
JQINDAOIDG	US INDUSTRIAL PRODUCTION INDEX - ALL OTHER DURABLE GOODS INDUSTRIES
JQINDAOINDG	US INDUSTRIAL PRODUCTION INDEX - ALL OTHER NON-DURABLE GOODS INDUSTRIES
KWH20NS@CGE	SERVICE AREA KWH SALES - FOOD AND PRODUCTS
KWH23NS@CGE	SERVICE AREA KWH SALES - INDUSTRIAL - APPAREL AND PRODUCTS
KWH26NS@CGE	SERVICE AREA KWH SALES - INDUSTRIAL - PAPER AND PRODUCTS
KWH27NS@CGE	SERVICE AREA KWH SALES - INDUSTRIAL - PRINTING AND PUBLISHING
KWH28NS@CGE	SERVICE AREA KWH SALES - INDUSTRIAL - CHEMICALS AND PRODUCTS
KWH30NS@CGE	SERVICE AREA KWH SALES - INDUSTRIAL - RUBBER AND MISCELLANEOUS PLASTICS
KWH33LARMNS@CGE	SERVICE AREA LESS ARMCO - INDUSTRIAL - PRIMARY METALS INDUSTRIES
KWH33NS@ARMCO	SERVICE AREA KWH SALES - INDUSTRIAL - PRIMARY METAL INDUSTRIES - ARMCO STEEL CORP.
KWH34NS@CGE	SERVICE AREA KWH SALES - INDUSTRIAL - FABRICATED METAL PRODUCTS
KWH35NS@CGE	SERVICE AREA KWH SALES - INDUSTRIAL - MACHINERY EXCEPT ELECTRICAL
KWH36@CGE	SERVICE AREA KWH SALES - INDUSTRIAL - ELECTRICAL MACHINERY
KWH371NS@CGE	SERVICE AREA KWH SALES - INDUSTRIAL - MOTOR VEHICLES AND PARTS
KWH372@9NS@CGE	SERVICE AREA KWH SALES - INDUSTRIAL - TRANSPORTATION EQUIPMENT OTHER THAN MOTOR VEHICLES AND PARTS
KWH372NS@CGE	SERVICE AREA KWH SALES - TRANSPORTATION EQUIPMENT OTHER THAN MOTOR VEHICLES AND PARTS
KWH37NS@CGE	SERVICE AREA KWH SALES - AIRCRAFT
KWHAOIDGNS@CGE	SERVICE AREA KWH SALES - DURABLE GOODS INDUSTRIES
KWHAOINDGNS@CGE	SERVICE AREA KWH SALES - NON-DURABLE GOODS
KWHAOINS@CGE	SERVICE AREA KWH SALES - ALL OTHER INDUSTRIES
KWHCOMNS@CGE	SERVICE AREA KWH SALES - COMMERCIAL
KWHCUNS@CGE	SERVICE AREA KWH SALES - COMPANY USE
KWHCUSRESNS@CGE	SERVICE AREA KWH SALES - USE PER RESIDENTIAL CUSTOMER
KWHOPALWPNS@CGE	SERVICE AREA KWH SALES - OPA LESS WATER PUMPING
KWHOPANS@CGE	SERVICE AREA KWH SALES - OTHER PUBLIC AUTHORITIES
KWHOPAWPNS@CGE	SERVICE AREA KWH SALES - OPA WATER PUMPING
KWHOPUBETHELNS@C	SERVICE AREA KWH SALES - OTHER PUBLIC UTILITIES - BETHEL
KWHOPUBLANCNS@C	SERVICE AREA KWH SALES - OTHER PUBLIC UTILITIES - BLANCHESTER
KWHOPUGTOWNNS@C	SERVICE AREA KWH SALES - OTHER PUBLIC UTILITIES - GEORGETOWN
KWHOPUHAMERSNS@C	SERVICE AREA KWH SALES - OTHER PUBLIC UTILITIES - HAMMERSVILLE
KWHOPULEBANONNS@C	SERVICE AREA KWH SALES - OTHER PUBLIC UTILITIES - LEBANON
KWHOPUNS@CGE	SERVICE AREA KWH SALES - TOTAL OTHER PUBLIC UTILITIES
KWHOPURIPLEYNS@C	SERVICE AREA KWH SALES - OTHER PUBLIC UTILITIES - RIPLEY
KWHRESNS@CGE	SERVICE AREA KWH SALES - RESIDENTIAL
KWHSLNS@CGE	SERVICE AREA KWH SALES - STREET LIGHTING
MAUGEND	QUALITATIVE VARIABLE FOR THE END OF AUGUST
MINWAGE	MINIMUM WAGE
MO	MONTH
MP@RES@CGE	MARGINAL PRICE OF ELECTRICITY - RESIDENTIAL
MWHSENDNORMNS@CGE	MWH SENDOUT - WEATHER NORMALIZED
MWSPEAK	SERVICE AREA MW PEAK - SUMMER
MWWPEAK	SERVICE AREA MW PEAK - WINTER
N	US TOTAL POPULATION

VARIABLE	DESCRIPTION
N20&	US POPULATION AGED 20 AND OVER
N20&@CGE	SERVICE AREA POPULATION AGED 20 AND OVER
N20@64	US POPULATION AGED 20 TO 64
N20@64@CGE	SERVICE AREA POPULATION AGED 20 TO 64
N65&	US POPULATION AGED 65 AND OVER
N65&@CGE	SERVICE AREA POPULATION AGED 65 AND OVER
N@CGE	SERVICE AREA TOTAL POPULATION
PCOCP	AVERAGE REFINERS' ACQUISITION PRICE - CRUDE OIL - COMPOSITE
PRECIP	MONTHLY INCHES OF RAINFALL
REALPCYP	US - REAL PER CAPITA INCOME
RMMPUAANS	YIELD ON AA UTILITY BONDS
RMSHORTREALNS	REAL SHORT-TERM INTEREST RATE
RTCGSL	EFFECTIVE TAX RATE - STATE AND LOCAL CORPORATE INCOME TAXES
RTCGSL@KY	EFFECTIVE TAX RATE - KENTUCKY CORPORATE INCOME TAXES
RTCGSL@OH	EFFECTIVE TAX RATE - OHIO CORPORATE INCOME TAXES
SAT@CAC@CGE	SERVICE AREA SATURATION OF CENTRAL AIR-CONDITIONING
SATCACNHP@CGE	SERVICE AREA SATURATION OF CENTRAL AIR-CONDITIONING - NO ELECTRIC HEAT PUMP
SATMERC@CGE	SERVICE AREA SATURATION OF MERCURY VAPOR STREET LIGHTING
SAT@EHP@CGE	SERVICE AREA SATURATION OF ELECTRIC HEAT PUMPS - RESIDENTIAL
SAT@ER@CGE	SATURATION RATE OF ELECTRIC RESISTANCE HEATERS IN SERVICE AREA
SAT@RAC@CGE	SERVICE AREA SATURATION OF WINDOW AIR CONDITIONING
SAT@SH@CGE	SERVICE AREA SATURATION OF ELECTRIC SPACE HEAT
SATMERC@CGE	SERVICE AREA SATURATION OF MERCURY VAPOR STREET LIGHTING
SATSODVAP@CGE	SERVICE AREA SATURATION OF SODIUM VAPOR STREET LIGHTING
SKY	CLOUD COVER
TAM	MINIMUM HOURLY TEMPERATURE - MORNING
TEMPAM	MINIMUM HOURLY TEMPERATURE - MORNING
TEMPPM	MINIMUM HOURLY TEMPERATURE - EVENING
TEMPPML1	TEMPPM\1
TPMH	MAXIMUM HOURLY TEMPERATURE - AFTERNOON
TPMHL1	TPMH\1
TS@KW@IND@CGE	SERVICE AREA TS RATE FOR DEMAND FOR INDUSTRIAL CUSTOMER
TS@KWH@IND@CGE	SERVICE AREA TS RATE FOR USAGE FOR INDUSTRIAL CUSTOMER
TWPER	US PERSONAL CONTRIBUTIONS TO SOCIAL INSURANCE
TWPER@CGE	SERVICE AREA PERSONAL CONTRIBUTIONS TO SOCIAL INSURANCE
V	US TOTAL TRANSFER PAYMENTS TO PERSONS
V@CGE	SERVICE AREA GOVERNMENT TRANSFER PAYMENTS TO PERSONS
WAPARMNS@C	WEIGHTED AVERAGE OF OFF-PEAK AND SPOT PRICES OF GAS - REFLECTS AVERAGE MARGINAL PRICE PAID BY ARMCO FOR INTERRUPTIBLE GAS
WINDAM	WIND SPEED MPH - MORNING
WINDPM	WIND SPEED MPH - EVENING
WKDAY	QUANTITATIVE VARIABLE INDICATING THE DAY OF THE WEEK
WPI051	WHOLESALE PRICE INDEX FOR COAL
WPI053	WHOLESALE PRICE INDEX - GAS FUELS
WPI053@CGE	SERVICE AREA WHOLESALE PRICE INDEX - GAS FUELS
WPI054	WHOLESALE PRICE INDEX - ELECTRIC POWER
WPI054@CGE	SERVICE AREA WHOLESALE PRICE INDEX - ELECTRIC POWER
WPI0561	WHOLESALE PRICE INDEX FOR CRUDE PETROLEUM
WSD@ADJ	US WAGE AND SALARY DISBURSEMENTS PLUS OTHER INCOME
WSD@ADJ@CGE	SERVICE AREA WAGE AND SALARY DISBURSEMENTS PLUS OTHER INCOME
XMAS	QUALITATIVE VARIABLE - CHRISTMAS WEEK
YENT@CGE	SERVICE AREA NONFARM PROPRIETORS INCOME
YENTNFADJ	NONFARM PROPRIETORS INCOME WITH IVA AND CCADJ
YINTPER	PERSONAL INTEREST INCOME

VARIABLE	DESCRIPTION
YOL	OTHER LABOR INCOME
YP	US PERSONAL INCOME
YP@CGE	SERVICE AREA PERSONAL INCOME
YPPROP@CGE	SERVICE AREA PERSONAL PROPERTY INCOME
YR	YEAR
YRENTADJ	RENTAL INCOME OF PERSONS WITH CAPITAL CONSUMPTION ADJUSTMENT

Section 8(4)(b)2, 3, and 4, and 8(4)(c) Energy by Primary Fuel Type, Energy from Utility Purchases, and Energy from Nonutility Purchases

The energy by primary fuel type, energy from utility purchases, and energy from nonutility purchases are contained in PROSCREEN II® runs which are voluminous. They will be made available for viewing at Cinergy offices during normal business hours. Please contact Diane Jenner at (317) 838-2183 for more information.

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Section 9(4) Yearly Average System Rates

With the inclusion of estimates of both spot market purchases from, and sales to, the ECAR/MAIN regional electricity market within the PROVIEW™ modeling, the yearly average system rate figures would not accurately reflect projected customer rates, so they have been omitted.

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Section 11(4) Response to Staff's Comments and Recommendations

ULH&P last filed an IRP in October 1993. The Kentucky Public Service Commission Staff issued its report on the ULH&P 1993 IRP over four years ago on May 19, 1995. Since that time, DSM has been implemented pursuant to statute and orders of this Commission and the IRP rules were revised. ULH&P and its parent, Cinergy Corp., have attempted to keep the Commission abreast of on-going planning activities and progress by submitting courtesy copies of all IRP filings made in other jurisdictions (Indiana in November 1995 and October 1997, and Ohio in December 1994, June 1995, October 1996, October 1997, and May 1998) since the last IRP filing in Kentucky. Copies of significant orders have been provided also.

In April 1994, H.B. 501 allowing the 'real time recovery' of DSM program costs became law. A ULH&P DSM Collaborative was established in September 1994 to assist the Company with its DSM program activities. Additionally, the Company simultaneously entered into negotiations with the Kentucky Office of the Attorney General, Northern Kentucky Legal Services, Citizens Organized to End Poverty in the Commonwealth, and the Northern Kentucky Citizens Action Commission. These negotiations culminated in a joint application which was approved by the Commission in November

1995. This action allowed for subsequent implementation of DSM programs and an income-qualified tariff.

The passage of time along with the progress made both within the Collaborative, and as detailed in the courtesy copies forwarded to the Commission, render the majority of the specific comments and recommendations outlined in the May 1995 Staff Report moot or no longer pertinent. For these reasons, together with the facts outlined above, the Company believes that addressing the Staff's comments and recommendations outlined in their May 1995 report within the context of the 1999 IRP document would be an unproductive activity for ULH&P and the Commission, consuming resources that would be better used elsewhere. However, the Company did review and consider the Staff report as a part of its continually evolving IRP process.

Section 8(3)(b)(12)a, b, and g Capacity Factors, Availability Factors, Average Heat Rates, Average Variable, and Total Production Costs

The annual capacity factors, availability factors, average heat rates, average variable and total electricity production costs for each unit (both existing and new) are contained in PROSCREEN II® runs which are voluminous. Cinergy also considers forecasts or projections of them to be trade secrets and confidential and competitive information. They will be made available to appropriate parties for viewing at Cinergy offices during normal business hours upon execution of an appropriate confidentiality agreement or protective order. Please contact Diane Jenner at (317) 838-2183 for more information.

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Section 8(3)(b)(12)d Estimated Capital Costs of Planned Units

As discussed in Volume I, Chapter 5, most of the specific technology parameters used in the screening process were based on information taken from The Technical Assessment Guide Supply-Side Technologies (TAG-Supply™), Version 3.08, dated August 1998, produced by the Electric Power Research Institute (EPRI) of Palo Alto, California, supplemented by estimates from vendors. EPRI considers this information to be trade secrets and proprietary and confidential. In addition, the information is contained in PROSCREEN II® runs which are voluminous. The information will be made available to appropriate parties for viewing at Cinergy offices during normal business hours upon execution of appropriate confidentiality agreements or protective orders. Please contact Diane Jenner at (317) 838-2183 for more information.

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Section 8(3)(b)(12)f Capital and O&M Escalation Rates

As discussed in Volume I, Chapter 2, the main source of the construction cost and O&M escalation assumptions used was the *Standard & Poor's DRI Utility Cost and Price Review* for First Quarter, 1998. DRI considers this information to be trade secrets and proprietary and confidential. The information will be made available to appropriate parties for viewing at Cinergy offices during normal business hours upon execution of appropriate confidentiality agreements or protective orders. Please contact Jim Riddle at (513) 287-3858 for more information.

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Section 9(3) Yearly Revenue Requirements

Cinergy considers the forecasts or projections of yearly revenue requirements from PROSCREEN II® to be trade secrets and confidential and competitive information. They will be made available to appropriate parties for viewing at Cinergy offices during normal business hours upon execution of an appropriate confidentiality agreement or protective order. Please contact Diane Jenner at (317) 838-2183 for more information.

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Case No. 99-449

Integrated Resource Plan

OHIO APPENDIX

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The Cincinnati Gas & Electric Company

Case No. 99-449

1999

INTEGRATED RESOURCE PLAN

VOLUME II

OHIO APPENDIX

November 1, 1999

By: Cinergy Services
Douglas F. Esamann, Vice President
139 E. Fourth St.
P.O. Box 960
Cincinnati, Ohio 45201-0960

NOTICE

This state-specific Appendix, including the STATUS Report, Volume II, is an integral part of the Cinergy 1999 IRP filing. Please see the submittal letters and other specific filing attachments contained in the front of Volume I of the Cinergy 1999 Integrated Resource Plan.

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OHIO APPENDIX

Table of Contents

IN COMPLIANCE WITH THE CODES OF CONDUCT IN FERC ORDER 889, ALL OF THE FOLLOWING SECTIONS ARE CONTAINED IN THE TRANSMISSION VOLUME OF THIS REPORT, WHICH WAS PREPARED INDEPENDENTLY

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(D)(2)(a) Ohio Energy Strategy

On April 15, 1994, the Public Utilities Commission of Ohio issued The Ohio Energy Strategy Report (OES), the product of lengthy discussion, the collection of comments and ideas, and the assessment of existing state regulations, codes, and policies related to use of energy resources. The OES provides an overall energy policy for the state contained within 7 implementation strategies which include 53 specific initiatives. The major focus of the OES is to "...develop and utilize energy resources in a manner which fosters economic growth, enhances global competitiveness, employs efficiency and conversation standards, and ensures energy security and environmental quality." [1]

The Company has received a copy of the OES and has given it consideration. Several of the strategies contain initiatives applicable to electric utilities.

Strategy I

The first strategy on educational needs contains an initiative to educate utility company customers regarding the benefits of energy efficiency. CG&E has, for many years, provided

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[1] The Ohio Energy Strategy Report, p. 7.

customers with information on energy efficiency. Chapter 4 in Volume I, the Short-Term Implementation Plan, and the Status Report of this 1999 filing contain further information on CG&E's specific educational efforts.

Strategy II

Strategy II focuses on conservation and energy efficiency measures. Some specific initiatives for electric utilities involve: (1) developing lending opportunities for low and moderate income energy consumers, (2) promoting direct load control programs to limit electricity consumption during peak demand hours, and (3) establishing electric utility sponsored energy efficiency awards programs for each utility's service area. CG&E has previously implemented programs in accordance with each of the initiatives. However, the loan program and the direct load control program have been discontinued following review and action by the PUCO. The specifics of the remaining programs are provided in Chapter 4 of Volume I, the Short-Term Implementation Plan, and the Status Report of this 1999 filing. In addition, CG&E has been working with residential customers to examine their energy use efficiency through an audit program, which includes extensive education, efficient refrigerator programs, an education program targeting behavior modification addressing the PIPP eligible customers, and has been weatherizing homes in the service area. These actions and the discontinuation of non-residential programs are consistent with PUCO decisions. More detailed information on CG&E's efforts and a discussion of the termination of non-residential programs can be found in Chapter 4 of Volume I, the Short-Term Implementation Plan, and the Status Report of this filing.

Strategy III

Strategy III concentrates on the development of traditional indigenous resources such as coal, oil, and natural gas. The initiatives for electric utilities involve: (1) exploring and establishing cost-effective programs to develop and promote commercial products prepared from fly-ash and other by-products of coal combustion, and (2) encouraging technology transfer, marketing, and exporting of Ohio-supported clean coal technologies. For several years, CG&E has been selling 100,000 tons or more of fly-ash each year through a marketer. Cinergy is also investing capital dollars at Zimmer Station to make high quality synthetic gypsum that will be sold to a new wallboard manufacturing plant. Cinergy expects to create a significant environmental benefit by converting the by-product from the unit's sulfur dioxide scrubber into synthetic gypsum, rather than landfilling it. The amount of material placed in the station's landfill can be reduced by as much as 77 percent.

Strategy IV

Strategy IV involves the research and development of renewable energy resources to enhance the diversity of supply options. Within this strategy, the major initiative affecting electric utilities is Initiative #34 which states, "Expand the list of alternatives that need to be considered in any integrated resource plan to include cogeneration, district heating, and cooling applications, the distributed utility concept, and research and development for renewable energy resources."[2] Cogeneration as a future resource option was discussed in Volume I, Section E of Chapter 5 of this filing, which is repeated below:

> It is Cinergy's practice to cooperate with potential cogenerators and independent power producers. A major concern, however, exists in situations where either customers would be subsidizing generation projects through higher than avoided cost buyback rates, or the safety or reliability of the electric system would be jeopardized. Both PSI and CG&E typically receive several requests a year for independent/small power production and cogeneration buyback rates. Currently, on the CG&E system, prospective cogenerators proposing the sale of 100 kW

2 The Ohio Energy Strategy Report, p. 110.

or less are sent both a copy of the filed tariff for small power producers of 100 kW and under, and a copy of the standard interconnection agreement. The larger prospective cogenerators are provided with an explanation of the CG&E methodology for determining avoided cost which is market-based and, if requested, interconnection requirements. The CG&E avoided costs are determined on a case-by-case basis depending on MW size, contract length, and the projected reliability of the cogeneration unit. Currently, on the PSI system, prospective cogenerators are given the interconnection requirements and the current rates under Standard Contract Rider No. 50 - Parallel Operation for Qualifying Facility.

A customer's decision to self-generate or cogenerate is, of course, based on economics. Customers know their costs, profit goals, and competitive positions. The cost of electricity is just one of the many costs associated with the successful operation of their business. If customers believe they can lower their overall costs by self-generating, they will investigate this possibility on their own. There is no way that a utility can know all of the projected costs and/or savings associated with a customer's self-generation. However, during a customer's investigation into self-generation, the customer usually will contact the utility for an estimate of electricity buyback rates. With Cinergy's comparatively low electricity rates and avoided cost buyback rates, cogeneration and small power production are generally uneconomical for most customers.

For these reasons, neither PSI nor CG&E attempts to forecast specific megawatt levels of this activity in their service areas. However, as contracts are signed, the resulting energy and capacity supply will be reflected in future plans. The electric load forecasts discussed in Chapter 3 do consider the impacts on electricity consumption caused by the relative price differences between alternate fuels (such as oil and natural gas) and electricity. As the relative price gap favors alternate fuels, electricity is displaced lowering the forecasted use of electricity and increasing the use of the alternate fuels. Some of the decrease in forecasted electricity consumption may be due to self-generation/cogeneration projects, but the exact composition cannot be determined.

Cinergy has direct involvement in the cogeneration area. In December 1996, Cinergy and Trigen Energy Corporation formed a joint venture, Trigen-Cinergy Solutions, LLC. The joint venture company will build, own, and operate cogeneration and trigeneration facilities for industrial plants, office buildings, shopping centers, hospitals, universities, and other major energy users that can benefit from combined heating/cooling and power production economies.

Other supply-side options such as simple-cycle Combustion Turbines, Combined Cycle units, Fuel Cells, coal-fired units, and/or renewables (all discussed later in this chapter) could represent potential non-utility generating units, power purchases, or utility-constructed units. At the time that Cinergy initiates the acquisition of new capacity, a decision will be made as to the best source.

With regard to district heating and cooling applications, Cinergy's joint venture with Trigen Energy Corporation (Trigen-Cinergy Solutions, LLC) is building and managing a centralized chiller system that will cool downtown Cincinnati.

Trigen is the leading owner and operator of district energy systems in North America, with 23 energy facilities in 13 locations.

The opportunities for district heating in downtown Cincinnati are limited because of the number of buildings built with electric resistance heaters. Conversion of these buildings to a hydronic or a steam system would be very expensive. One major economic barrier is the fact that centralized district energy projects must pay income taxes, while building owners that self cool and heat do not pay income taxes on this service, but generally deduct it as an expense item. As a result, the economic efficiencies created by district energy have to be great enough to absorb all the taxes (the Cincinnati Franchise also has a 4% gross receipts tax) and have a profit remaining, while still being less expensive than self heating or cooling to the building owner/operator.

Fuel Cell technology may be well suited to distributed generation service. Cinergy's research, development, and delivery (RD&D) activities involve Fuel Cell technology. For example, by joining forces with the U.S. Government and Ballard Generation Systems, Cinergy is installing one of the world's first 250 kW class, natural gas-powered, Proton Exchange Membrane (PEM) Fuel Cells. This unit is scheduled to be installed in 1999 at the Naval Surface Warfare Center located in Crane, Indiana. Cinergy is also licensing a 3 kW hydrogen Fuel Cell from Ballard to help develop military and civilian applications. In addition, Cinergy participates in the IEEE Fuel Cell Standards Committee to establish national standards for stationary deployment. As outlined in Volume I, Section F of Chapter 5, Fuel Cells were included in the supply-side screening analysis.

Cinergy has analyzed the use of renewable resources as discussed in Volume I, Section F of Chapter 5 of this filing. The applicable portion is repeated below:

> The information obtained from a continuing review of available alternative energy technologies was considered in the preparation of the 1999 IRP. There is a very limited opportunity to apply renewable resource technologies in Central Indiana, Southwestern Ohio, and Northern Kentucky. With wind speeds averaging 5-6 MPH and relatively low solar power density, generation of significant amounts of electricity using wind or solar energy is not cost-effective relative to more conventional technologies. This is not to say that these technologies may not be feasible in supplying limited amounts of power in

very remote locations or in other special applications. However, their use on a large utility scale is not practical in this region and no major breakthroughs on a utility scale are anticipated in the near future. Consequently, under current environmental assumptions, they continue to be not as cost competitive or as reliable in the Midwest as the more conventional power supply technologies.

Biogas, or landfill gas, generally has both high levels of contaminants and a low-heat content resulting in an overall quality far below that required for pipeline quality natural gas. It is possible to process the gas to pipeline quality standards but doing so increases the cost. This low grade gas may be collected, transported short distances and used in various manufacturing processes, but this activity is generally best suited to private enterprise ventures, not utility-scale projects. To Cinergy's knowledge, a few private companies currently collect landfill gas at three or four different landfills within Cinergy's franchised service territory.

At the present time, the use of tire-derived fuel is not a significant utility-scale energy source. Over time, as operational and environmental issues are resolved, tires or tire residue may become a competitive, but limited, fuel source.

Municipal solid waste (MSW) burning to produce energy is rarely economical from the energy production standpoint. The technology to burn this waste cleanly and reliably is very expensive. Generally, when communities resort to MSW burning it is to dispose of the waste more economically than alternative methods, not to generate low-cost energy. In most instances, the energy sales help to offset some of the costs associated with burning the waste. Siting a MSW burning facility is also a challenge. Concerns abound about truck traffic, odors, vectors, and air toxins. The Public Utility Regulatory Policies Act of 1978 (PURPA) obligates Cinergy to purchase power and energy from a MSW facility within its franchised service territories. However, Cinergy will defend electric customers against subsidizing the disposal costs of municipal solid wastes.

Biomass energy production facilities are generally limited by the availability of fuel within about a 50-mile radius. This is a result of the bulk material handling problems due to the low heat content of current biomass fuels. This limitation negatively impacts both the size and economics of biomass energy facilities. Development of specialized energy crops and further technology developments will be necessary to permit expansion of biomass-generated energy.

Storage technologies such as Pumped Hydro and Compressed Air Energy Storage (CAES) generally have limited application due to the need for suitable geologic formations. Other storage technologies such as Batteries and Superconducting Magnetic Energy Storage (SMES) are applicable to more areas, but the storage time (one to five hours) is a limiting factor. Presently, batteries perform best in systems that require relatively short bursts of energy on an infrequent basis. Demonstration plants such as the 10 MW CHINO Battery Plant at Southern California Edison have been difficult to maintain and have proven to be more suitable for power delivery system stabilization than as a capacity resource. Other demonstration projects, such as EPRI's Transportable Battery System, should further quantify the benefits and appropriate applications of battery storage systems. However, at this point in time, large utility scale battery storage systems are not commercially viable.

The focus of Cinergy's R&D efforts with regard to Alternative Technologies is to provide planning and evaluation methods to assure a strategic advantage in the deployment of emerging technologies and the use of storage to manage energy supply. Despite the fact that Alternative Technologies are generally not economic in comparison to more traditional technologies, they were included nevertheless as part of the screening process to allow an economic comparison between the different technologies and to allow sensitivity analysis around base assumptions to be performed.

Strategies V, VI, and VII

These last three Strategies focus on encouraging competition, government policies and programs, and state government as an energy user. While no specific initiatives require direct utility action, CG&E actively supported the passage of customer choice legislation in Ohio, and, as part of Cinergy, has sought and achieved FERC approval for a transmission tariff that does not create market power for CG&E, i.e., it establishes comparability for transmission charges. Cinergy has also been the leader in the establishment of a Midwest Independent System Operator (ISO) for transmission service providers. In addition, Cinergy continues to promote and support customer choice activities throughout the country.

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(D)(2)(b) 1999 LTFR Special Topic Questions & 95-203-EL-FOR Order Directives Not Addressed Elsewhere

1999 LTFR Special Topic Questions

TRANSMISSION

Provide a discussion of how your company is preparing to react to the FERC initiatives with regard to independent transmission system operators (ISOs) and other regional transmission organizations (RTOs).

In compliance with the codes of conduct in FERC Order 889, the relevant distribution information is located in the Transmission Volume of this report, which was prepared independently.

CLEAN AIR ACT AMENDMENTS

Describe the status of development of the Company's Phase II Compliance strategy, including a description of any plans submitted to U.S. EPA.

Please explain any changes from last year's description.

Cinergy's Phase II compliance strategy continues to be the same as described last year. Under current assumptions, fuel switching to lower sulfur coals is Cinergy's least-cost compliance strategy for Phase II. The planning process that developed this strategy was described in Chapter 6 of Volume I of Cinergy's 1999 Integrated Resource Plan. Cinergy is coordinating the development of its Phase II compliance implementation plans with AEP and DP&L for the jointly owned generating units.

Cinergy submitted the acid rain Phase II sulfur dioxide permit applications on December 19, 1995. The Kentucky Division for Air Quality (KDAQ) issued the Phase II final permit for East Bend Station on December 11, 1996. The Indiana Department of Environmental Management (IDEM) issued the Phase II final permits for Cayuga, Edwardsport, Gallagher, Gibson, Noblesville, and Wabash River stations on December 31, 1997. The Ohio Environmental Protection Agency (OEPA) issued the Phase II final permits for Beckjord, Miami Fort, and Zimmer stations on January 1, 1998, and for Woodsdale station on April 9, 1998, with an effective date of January 1, 2000.

The U.S. EPA required submittal of acid rain Phase II nitrogen oxides applications by January 1, 1998. Under current assumptions, installation of low NO_x burners as necessary to comply with the nitrogen oxide requirements of the CAAA is Cinergy's least-cost compliance strategy for Phase II. Cinergy's applications and averaging plan for Phase II nitrogen oxides were submitted to IDEM, KDAQ, and OEPA on December 19, 1997. A final permit was issued for East Bend Station on March 9, 1999, and draft permits were issued for Cayuga, Edwardsport, Gallagher, Gibson, Noblesville, and

Wabash River stations on December 18, 1998. Draft permits have not been issued yet for Beckjord, Zimmer, and Miami Fort stations.

GLOBAL CLIMATE CHANGE

Please describe your current and planned activities with regard to global climate change issues (especially CO_2 mitigation).

Include a description of any specific JI/AIJ activities you are undertaking (or plan to initiate).

Cinergy is evaluating its climate change activities in light of the Kyoto Protocol that was adopted at the third meeting of the United Nations Conference of the Parties to the Framework Convention on Climate Change. Over the past five years, Cinergy Corp. has been actively involved in climate change issues. Cinergy has been analyzing its generating and natural gas systems to develop strategies to reduce its greenhouse gas (GHG) emissions.

In February of 1995, Cinergy signed a U.S. Department of Energy (DOE) Climate Challenge Participation Accord. This was done to help demonstrate that voluntary measures could be used to reduce industrial GHG emissions. However, President Clinton has endorsed mandatory targets and timetables and has committed the United States to reducing its GHG emissions by 7 percent below 1990 levels through the time period 2008 to 2012. The Kyoto Protocol does not provide a credit mechanism for early reductions. Nevertheless, Cinergy intends to continue its efforts to reduce its greenhouse gas emissions by implementing cost-effective GHG emission-reducing activities.

Cinergy will continue to participate in the U.S. Initiative on Joint Implementation (USIJI) approved Belize Rio Bravo forest preservation and sustainable management project with three other investor owned utilities, The Nature Conservancy, The Programme for Belize (a non-profit environmental organization), and UtiliTree Carbon Company (a utility industry initiative through the Edison Electric Institute). The project includes two components: Component A, forest preservation; and Component B, sustainable forestry practices.

Component A of the project involved the purchase of a 15,000-acre parcel of endangered forest land that links two protected properties with the Rio Bravo Conservation Area. Imminent conversion to agricultural use threatened this property. Winrock International, an independent consultant, measured the greenhouse gas benefit of this purchase and estimated it at more than 800,000 tons of carbon dioxide. This figure is higher than what was originally estimated.

Component B of the project will implement a sustainable forest management program on the Rio Bravo Conservation and Management Area. The program is designed to increase the total pool of sequestered carbon in a 60,000-acre area of the 125,000-acre Rio Bravo Conservation Area, including the area of Component A. It will then seek to extend the sustainable forestry model into adjacent properties. This component also includes plans to develop and implement a marketing strategy for sustainable timber extraction.

Cinergy has committed to invest in the project over a ten-year period. However, Cinergy will receive carbon offsets for a forty-year period. After the first ten years, the Programme for Belize will be self-sufficient based on revenues generated by the sustainable forestry program, forest products program, and environmental tourism. Cinergy estimates that the cost of carbon offsets from the Belize project will be about \$0.64 per ton of CO_2.

Cinergy submits an annual Section 1605(b) report concerning Cinergy's GHG emission reduction and offsetting activities. Cinergy's first report in 1995 identified activities implemented between 1991 and 1995 that reduced or offset Cinergy's GHG emissions. This first report listed activities that reduced or offset Cinergy's GHG emissions by an estimated 1.3 million tons of CO_2 equivalents. (CO_2 equivalents include actual CO_2 emissions as well as methane converted to CO_2 equivalents by using the Intergovernmental Panel on Climate Change (IPCC) factors for these other GHGs.) Cinergy's 1996, 1997, and 1998 reports listed activities that reduced or offset Cinergy GHG emissions by an estimated 8.3 million tons of CO_2 equivalents. Activities implemented or supported by Cinergy that have reduced or offset its GHG emissions include:

- Electric generation from recovered landfill (methane) gas;
- Demand-side management programs;
- Landfill gas recovery for use as a natural gas supply;
- Rio Bravo carbon sequestration project;
- Trees planted at Cinergy facilities;
- Forestry projects with the Ohio and Indiana Chapters of The Nature Conservancy, Ducks Unlimited, and the National Wild Turkey Federation.
- Edison Electric Institute UtiliTree Carbon Co.;
- Beneficial reuse of coal ash;
- Efficiencies created through merged dispatching;
- Power plant efficiency programs;
- Paper and aluminum recycling.

Cinergy's efforts have resulted in a cumulative total of nearly 12.5 million tons of CO_2 equivalent reductions and offsets since 1991.

Cinergy, through its non-regulated subsidiary companies Cinergy Global Power and Trigen-Cinergy Solutions, is developing and implementing a number of renewable energy and higher energy efficiency projects (e.g. cogeneration, district heating and cooling, etc.). These projects are being developed in the United States, including Ohio, and in other countries around the world.

Alternative property and right-of-way management practices are being investigated to reduce annual property management costs. One of the more promising practices appears to be the planting of warm season prairie grasses. Benefits of planting the prairie grasses include less mowing, wildlife habitat, and sequestration of carbon. Cinergy is identifying potential properties and transmission rights-of-way on which to implement the alternative management practices. Cinergy is funding research to develop and implement a protocol to measure the amount of carbon sequestered by the warm season grasses.

New technologies are the only long-term solution that would make the large reductions in carbon dioxide (CO_2) emissions necessary to have any real effect on atmospheric carbon concentrations. Research and development will be very important to any effort to reduce CO_2 emissions by the electric industry.

Even without short-term changes in the carbon-based fossil fuels used to generate electricity, electricity can be part of the solution to reducing GHG emissions. Through the promotion of electrotechnologies to replace less efficient use of fossil fuels, GHG emissions can be reduced. The more wide spread use of electrotechnologies will increase CO_2 emissions from the electric sector, but will be more than offset by the overall reduced CO_2 emissions from the fossil fuels that they replace.

DISTRIBUTION SYSTEM PLANNING

Provide a description of the Company's distribution system planning process, including a discussion of how existing system problems are identified, how future growth is estimated and how the impact of that growth on distribution system performance is determined.

Provide a description of all distribution facilities at voltages greater than or equal to 12.5 kV planned or scheduled for years zero through five.

Provide a discussion of the Company's process for obtaining community involvement in the planning and implementation of distribution system enhancements.

In compliance with the codes of conduct in FERC Order 889, the relevant distribution information is located in the Transmission Volume of this report, which was prepared independently.

WABASH RIVER UNIT OUTAGE MONITORING

Wabash River Station has been eliminating or reducing the amount of Forced Outage Hours for units 2-4. The station staff continuously looks for ways to enhance the station's availability and reduce the Equivalent Forced Outage Rate (EFOR). Both O&M expenditures and capital budget expenditures are involved. Through the efforts of better maintenance practices and increased emphasis on long term planning, the station is working to continue to reduce the amount of Forced Outage Hours (FOH).

Station performance improvement can be seen by looking at the increasing station Net Capacity Factor (NCF). The NCF is increasing, illustrating that the units are running more often and at higher loads than in the past. This is partly a result of the reduction in forced outage hours. Graphs of NCF and EFOR are shown in Figures OA-1 and OA-2 located in the Proprietary and Confidential Information section of this Appendix.

Some of the forced outage hours experienced by Wabash River station are beyond the control of the station. For example, warm weather has caused a lot of extended forced outages due to high river water temperatures. The station requires cooling water from the Wabash River, and during the hot summer months the river water temperature increases. As a result, the station must reduce load or shut down completely at a certain predefined water temperature limit to comply with environmental regulations. Approximately 14% of the forced outage hours the station has experienced between 1991 and 1998 can be attributed to factors that are beyond the control of the station.

Looking at the EFOR for years 1988 to 1999, a couple of items stand out. The major cause of forced outage hours of Unit 4 from 1988 through 1990 was a cracked generator rotor. This has since been replaced, eliminating this cause. In addition, many of the capital expenditures in the past few years address the major availability degraders. For example, the precipitators on Units 2-5 were all upgraded, which has reduced the amount of forced outages due to precipitator failures. This upgrade has also dramatically reduced the amount of precipitator-related derates (partial outages) on these units. Multiple boiler tube replacement projects also have helped to improve the availability of Units 2-4. These include replacement of the unit #4 superheat tubing, unit #5 radiant reheat tubing, and units #2, #3, and #4 spaghetti tubing (section of reheat tubing).

Other boiler work centered on the tubing around the front wall burners. The station startup practices were revisited, front wall tubes around the burners were replaced, and oil guns were modified. Recent changes to the air compressors have reduced derates caused by previous inadequate compressed air supply and thus allowed operators to blow soot more effectively on all units.

As the station continues to age, more equipment will begin to wear out, but, by careful planning and budgeting of our resources, the station will be able to minimize the effects of aging.

SPECIFIC RETIREMENT DATE ASSIGNMENT RESULTS

In the 95-203-EL-FOR Order, Cinergy was ordered to establish retirement dates for all generating units with service lives in excess of 40 years and determine the impact of these tentative retirements in developing future resource plans. To perform this analysis, all units that would be 40 years old or older during the 1999-2008 modeling period were considered. Although many units on Cinergy's system fall into this category, Cinergy's performance of engineering condition analysis has shortened the list of units that would be retired during the ten year modeling period under the guidelines given. Using the retirement dates contained in the last depreciation study filed in an electric rate case for each Operating Company (CG&E and PSI Energy), the following retirements were included in this special sensitivity required in the 95-203-EL-FOR Order:

- Miami Fort 5 12/31/2000
- Dicks Creek 1, 3-5 12/31/2000
- Miami Fort CT 3-6 12/31/2000
- Beckjord CT 1-4 12/31/2000
- Wabash River Diesel 12/31/2002
- Miami Wabash 1-4 12/31/2003
- Miami Wabash 5-6 12/31/2004
- Edwardsport 6-8 12/31/2004
- Beckjord 5 12/31/2005
- Miami Fort 6 12/31/2005
- Noblesville 1-2 12/31/2005
- Connersville 1-2 12/31/2007
- Cayuga Diesel 12/31/2007

Figure OA-3 shows the resulting plans. The Least Cost Plan contains the DSM bundle, as did the Base Case Least Cost Plan. The supply-side resources again consist of purchases for 1999-2003, and a number of Combustion Turbines in 2003-2006. The main difference is that the level of purchases and the number of CTs required is higher, as one would expect.

The 2002 CT Plan is identical to the Least Cost Plan through 2001. It contains the DSM bundle. In 2002, two Combustion Turbines are added, and the level of the purchases is smaller than in the Least Cost Plan. In 2003, 2700 MW is purchased, and from 2004 through 2006, the plan is identical to the Least Cost Plan.

The No DSM Plan is identical to the Least Cost Plan, with the exception of the DSM. Again, the main difference between this sensitivity and the Base Case was the level of supply-side resources required.

The 1st CC Plan also contains purchases through 2001. In 2002, one Combined Cycle unit is added along with a 2229 MW purchase. In 2003, two CCs are added along with a 2229 MW purchase; in 2004, twelve CTs are added; and from 2005 to 2006, the plan is identical to the Least Cost Plan.

The values obtained from the PROVIEW™ model for relative Present Value Total Cost for the four plans are as follows:

	1998 Present Value Total Cost ($1000)*	% Change from Least Cost Plan
Least Cost Plan	$25,243,886	0.00%
2002 CT Plan	$25,246,232	+0.01%
No DSM Plan	$25,253,454	+0.04%
1st CC Plan	$25,250,640	+0.03%

* Based on Market Purchases in increments of 300 MW

Again, as stated in Chapter 8, the figures above should be used only for the relative comparison of the four plans.

There is nothing particularly revealing in this sensitivity. As expected, the level of supply-side resources needed to satisfy the reliability criteria is higher because of the unit retirements. Even though some of the units retired are base load units, the least cost resources chosen were still peaking purchases and CTs, as under Base Case conditions.

As stated previously, the modeling of this sensitivity was required by the PUCO in its 95-203-EL-FOR order. However, the actual retirement dates for Cinergy's units are currently unknown (see Figure 5-1).

CLEAR DETERMINATION OF NEED FOR ADDITIONAL RESOURCE OPTIONS

The PUCO Staff requested more specific information concerning the determination of need for additional electricity resource options in Case No. 95-203-EL-FOR. As a result, the process is clearly and specifically described in Volume I, Chapter 2 near the end of Section D "Reliability Criteria."

ENGINEERING CONDITION PROGRAMS

The PUCO Staff requested in the Order in Case No. 95-203-EL-FOR that this topic be specifically addressed in all future full-LTFR filings. As specified in the Ohio rules, this topic is addressed generally in Volume I, Chapter 5, Section B, subsections (6) and (7) of this filing. The following is provided in this filing to augment the above sections.

There have been no significant engineering condition assessment studies conducted for any of the Cinergy units since the filing of the 1995 IRP (LTFR). With respect to individual pieces of equipment and components, the focus has been on maintenance, repair, and replacement. Evaluations of potential changes are considered when making decisions around replacement of such components on a case-by-case basis, and generally for larger items, during the budgeting process. The main area of "studies" has been for both the scheduled and potential environmental compliance activities.

QF EVALUATION AND MARKET PRICE DETERMINATION

The PUCO Staff raised concerns in Case No. 95-203-EL-FOR about how a potential QF was evaluated and the methodology then used to determine the market price for electricity to evaluate the potential QF.

As discussed in Volume I, Chapter 2, Section E(2) "Analytical Process," the screening and integration steps undertaken during the development of this IRP involved comparisons to a projected market price for electricity. This is in contrast to the traditional comparison to the utility's internal system costs, or what Staff refers to as "build" costs. All resource decisions, both for existing resources and any future resources are compared to the commodity market price of electricity. Generally, the market price is the cost-to-beat before any other resource alternatives are considered seriously. The Energy Market Forecasting (EMF) model is a proprietary model developed for Cinergy. Cinergy considers all of the inputs, methodology, and the specific outputs of the EMF model to be trade secrets and proprietary competitive information. A brief description of and discussion about the model is contained in Volume I, Chapter 8, Section B(1) "Model Descriptions." Cinergy believes this methodology is consistent with the Commission's finding that, on a going-forward basis, any new resource will be presumed to be at market cost, and, thus, cannot be a stranded cost.

As with any other resource alternative, all QF/IPP offers, counteroffers, and negotiations consider the EMF discussed above. Also, as mentioned in Volume I, Chapters 1, 5, and 8, any options surviving the screening or integration phases of the process could ultimately represent potential non-utility generating units, purchases, repowering of existing Cinergy units, or utility constructed units.

Figure OA-3

Significantly Different Plans- Retirement Sensitivity

	Least Cost Plan	2002 CT Plan	No DSM Plan	1st CC Plan
1999	763MW Purch. DSM Bundle	763MW Purch. DSM Bundle	763MW Purch.	763MW Purch. DSM Bundle
2000	1600MW Purch.	1600MW Purch.	1600MW Purch.	1629MW Purch.
2001	2200MW Purch.	2200MW Purch.	2200MW Purch.	2229MW Purch.
2002	2500MW Purch.	2-165MW CTs 2200MW Purch.	2500MW Purch.	1-256MW CC 2229MW Purch.
2003	2-165MW CTs 2700MW Purch.	2700MW Purch.	2-165MW CTs 2700MW Purch.	2-256MW CCs 2129MW Purch.
2004	14-214MW CTs	14-214MW CTs	14-214MW CTs	12-214MW CTs
2005	2-214MW CTs	2-214MW CTs	2-214MW CTs	2-214MW CTs
2006	4-214MW CTs	4-214MW CTs	4-214MW CTs	4-214MW CTs
2007				
2008				

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(D)(4) ENERGY-PRICE RELATIONSHIPS

(a) Impacts Due to Energy-Price Changes. The energy price changes identified within the forecast period reflect changes in energy demand due to changes in the real price of energy.

The difference between a forecast based upon a zero percent increase in real energy price and the actual forecast is the basis for the energy demand and peak load impacts provided on the following Tables 1 and 2.

(b) Description of Methodology. The impact of energy-price changes are based upon the same equations and models as the base forecast. Energy-price impacts were identified by comparing the actual forecast to one based upon a zero percent annual increase (1998 - 2019) in the real price of electricity. The resulting differences in energy (MWh) and peak demand (MW) represent the total forecasted impacts of changes in energy prices.

(D)(4)(cont'd)

TABLE 1

CG&E

PRICE INDUCED IMPACTS (MWH)

YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	SENDOUT
1998	(206)	(12,967)	(20,024)	(43,543)
1999	(6,434)	(38,534)	(79,941)	(162,207)
2000	(19,515)	(68,179)	(172,116)	(320,214)
2001	(33,796)	(97,905)	(277,681)	(498,587)
2002	(45,488)	(128,662)	(391,763)	(685,638)
2003	(58,296)	(162,959)	(522,086)	(896,857)
2004	(71,850)	(198,238)	(664,438)	(1,123,480)
2005	(85,958)	(296,751)	(934,714)	(1,594,481)
2006	(104,741)	(308,180)	(1,165,117)	(1,880,102)
2007	(116,735)	(310,068)	(1,281,092)	(2,018,918)
2008	(119,669)	(311,848)	(1,331,922)	(2,078,951)
2009	(123,360)	(314,246)	(1,363,076)	(2,119,879)
2010	(127,331)	(318,665)	(1,396,659)	(2,167,319)
2011	(132,084)	(323,546)	(1,433,012)	(2,219,217)
2012	(137,392)	(327,575)	(1,461,712)	(2,262,169)
2013	(142,618)	(333,330)	(1,494,176)	(2,311,867)
2014	(148,946)	(337,922)	(1,525,668)	(2,359,678)
2015	(155,255)	(342,879)	(1,559,990)	(2,411,261)
2016	(161,891)	(348,783)	(1,590,993)	(2,461,030)
2017	(167,856)	(353,609)	(1,626,632)	(2,513,003)
2018	(175,144)	(359,709)	(1,660,864)	(2,566,897)
2019	(182,760)	(366,186)	(1,694,237)	(2,620,970)

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(D) (4) (cont'd)

TABLE 2

CG&E

PRICE INDUCED IMPACTS (MWH)

YEAR	SUMMER PEAK	WINTER PEAK
1998	(10)	(14)
1999	(31)	(34)
2000	(61)	(59)
2001	(92)	(84)
2002	(126)	(112)
2003	(163)	(141)
2004	(202)	(190)
2005	(293)	(247)
2006	(334)	(272)
2007	(355)	(282)
2008	(364)	(287)
2009	(370)	(292)
2010	(378)	(299)
2011	(387)	(305)
2012	(394)	(311)
2013	(403)	(318)
2014	(410)	(324)
2015	(419)	(331)
2016	(427)	(337)
2017	(436)	(344)
2018	(445)	(351)
2019	(455)	(358)

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(D) (5) (b) HOURLY LOAD DATA

The 1998 hourly load data mentioned in Volume I, General Appendix, represents hourly sendout for the total CG&E service area, part of which is in Kentucky and Indiana. To provide an indication of the percentage of the total system that is in Ohio, ratios have been computed for recent seasonal peaks. The proportions are as follows:

	Total		Percent
	Ohio	Cinergy System	Ohio
1998 Summer Peak	3981	10,430	38.3%
1998 Winter Peak	3348	8735	38.3%

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(E)(1)(d)(i) and (ii) EQUATIONS and STATISTICAL TEST RESULTS

Following is a display of all the relevant equations and statistical test results used in the development of the CG&E franchised service territory load forecast.

SERVICE AREA EQUATIONS

U.S. AVERAGE HOURLY EARNINGS FOR MANUFACTURING

REGRESSION RESULTS:

LEAST SQUARES WITH 2ND ORDER AUTOCORRELATION CORRECTION

FREQUENCY: Q

INTERVAL: 1979:1 TO 1997:4 (76 OBS.)

DEPENDENT VARIABLE: LAHEM

	COEFFICIENT	STD.ERROR	T-STAT	INDEPENDENT VARIABLE
0)	2.356	0.0042415	555.46	CONSTANT
1)				PDL(LECIWSP,1,2,FAR)
\0	0.56444	0.0096215	.	+*
\1	0.28222	0.0048107	.	*

LAG SUM: 0.84667 STD. ERR.: 0.014432
MEAN LAG: 0.33333

2)	0.0046002	0.0014804	3.1075	Q804
3)	1.3597	0.10942	12.426	RHO1
4)	-0.42535	0.108	-3.9384	RHO2

R-BAR SQUARED:0.9998
DURBIN-WATSON:2.04
STANDARD ERROR:0.0025764 NORMALIZED:0.0011171

U.S. AVERAGE HOURLY EARNINGS FOR MANUFACTURING

WHERE:

LAHEM	=LOG(AHEM)
LECIWSP	=LOG(ECIWSP)
Q804	QUALITATIVE VARIABLE - FOURTH QUARTER, 1980

AND:

AHEM	US AVERAGE HOURLY EARNINGS FOR MANUFACTURING
ECIWSP	EMPLOYMENT COST INDEX - WAGES AND SALARIES, ALL PRIVATE INDUSTRY WORKERS

FORECAST EQUATION:

```
1>AHEM=EXP(<2.356>+PDL(LECIWSP,1,2,FAR,<0.56444,0.28222>)+AHEM@AR2)
```

SERVICE AREA AVERAGE HOURLY EARNINGS FOR MANUFACTURING

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION

```
-----------------------------------------------------------

FREQUENCY: Q
INTERVAL:  1972:1 TO 1997:4  (104 OBS.)
DEPENDENT VARIABLE: LRELAHEM

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0)  0.040867 0.016368   2.4968     CONSTANT
1)  0.19352  0.083328   2.3224     LRELCHEM
2)                                 PDL(LRELPCNT283337,1,2,FAR)

 \0    0.085222 0.024153   .       +    *   +
 \1    0.042611 0.012077   .    + *+
LAG SUM: 0.12783  STD. ERR.: 0.03623
MEAN LAG: 0.33333

3) -0.013113 0.0052375 -2.5036     Q751
4)  0.02053  0.0044732  4.5896     Q801851
5)  0.80356  0.058366  13.768      RHO
R-BAR SQUARED:0.83666
DURBIN-WATSON:1.77
STANDARD ERROR:0.0065986     NORMALIZED:0.065255
```

SERVICE AREA AVERAGE HOURLY EARNINGS FOR MANUFACTURING

WHERE:

LRELAHEM	=LOG(AHEMNS@1640/AHEM)
LRELCHEM	=LOG((EM@CGE/EM@CGE\1)/(EM/EM\1))
LRELPCNT283337	=LOG(((E28@CGE+E33NS@CMSA+E33NS@BUTLER+E371NS@CGE +E372@9NS@CGE)/EM@CGE)/((E28+E33+E37)/EM))
Q751	QUALITATIVE VARIABLE - FIRST QUARTER, 1975
Q801851	QUALITATIVE VARIABLE - FIRST QUARTER, 1980 TO FIRST QUARTER, 1985

AND:

AHEMNS@1640	SERVICE AREA AVERAGE HOURLY EARNINGS FOR MANUFACTURING
AHEM	US AVERAGE HOURLY EARNINGS FOR MANUFACTURING
E28@CGE	SERVICE AREA EMPLOYMENT - CHEMICALS AND PRODUCTS
E33NS@CMSA	CINCINNATI CMSA EMPLOYMENT - PRIMARY METAL INDUSTRIES
E33NS@BUTLER	SERVICE AREA EMPLOYMENT - BUTLER COUNTY - PRIMARY METAL INDUSTRIES
E371NS@CGE	SERVICE AREA EMPLOYMENT - TRANSPORTATION EQUIPMENT MOTOR VEHICLES AND PARTS
E372@9NS@CGE	SERVICE AREA EMPLOYMENT - TRANSPORTATION EQUIPMENT OTHER THAN MOTOR VEHICLES AND PARTS
EM@CGE	SERVICE AREA EMPLOYMENT - MANUFACTURING
E28	US EMPLOYMENT - CHEMICALS AND PRODUCTS
E33	US EMPLOYMENT - PRIMARY METAL INDUSTRIES
E37	US EMPLOYMENT - TRANSPORTATION EQUIPMENT
EM	US EMPLOYMENT - MANUFACTURING

FORECAST EQUATION:

```
1>AHEMNS@1640=AHEM*EXP(<0.041681>+<0.20024>*LRELCHEM&&
2>+PDL(LRELPCNT283337,1,2,FAR,<0.084026,0.042013>)&&
3>+AHEMNS@1640@AR1)
```

SERVICE AREA WAGE AND SALARY DISBURSEMENTS

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION

FREQUENCY: Q
INTERVAL: 1970:1 TO 1995:4 (104 OBS.)
DEPENDENT VARIABLE: LWSDE@CGE

	COEFFICIENT	STD.ERROR	T-STAT	INDEPENDENT VARIABLE
0)	0.1632	0.021526	7.5819	CONSTANT
1)	0.91645	0.007347	124.74	LWSDE
2)	0.02204	0.0050802	4.3383	Q704
3)	-0.012289	0.0050786	-2.4198	Q711
4)	-0.010115	0.0044164	-2.2904	Q741
5)	-0.011673	0.0044159	-2.6434	Q751
6)	-0.014449	0.0044157	-3.2722	Q811
7)	0.84741	0.052062	16.277	RHO

R-BAR SQUARED:0.99979
DURBIN-WATSON:2.20
STANDARD ERROR:0.0057876 NORMALIZED:0.002053

SERVICE AREA WAGE AND SALARY DISBURSEMENTS

WHERE:

LWSDE@CGE	=LOG(WSD@ADJ@CGE/E@CGE)
LWSDE	=LOG(WSD@ADJ@CGE/E@CGE)
Q704	QUALITATIVE VARIABLE - FOURTH QUARTER, 1970
Q711	QUALITATIVE VARIABLE - FIRST QUARTER, 1971
Q741	QUALITATIVE VARIABLE - FIRST QUARTER, 1974
Q751	QUALITATIVE VARIABLE - FIRST QUARTER, 1975
Q811	QUALITATIVE VARIABLE - FIRST QUARTER, 1981

AND:

WSD@ADJ@CGE	SERVICE AREA WAGE AND SALARY DISBURSEMENTS PLUS OTHER INCOME
E@CGE	SERVICE AREA EMPLOYMENT - TOTAL

FORECAST EQUATION:

```
1>WSD@ADJ@CGE=E@CGE*EXP(<0.1632>+<0.91645>*LWSDE+WSDE@CGE@AR1)
```

SERVICE AREA PERSONAL PROPERTY INCOME

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION

FREQUENCY: Q
INTERVAL: 1973:1 TO 1995:4 (92 OBS.)
DEPENDENT VARIABLE: LRPCYPPROP@CGE

	COEFFICIENT	STD.ERROR	T-STAT	INDEPENDENT VARIABLE
0)	0.012095	0.022428	0.5393	CONSTANT
1)	0.99331	0.027162	36.57	LRPCYPPROP
2)	-0.0061929	0.0016406	-3.7748	Q651854*Q1
3)	0.014996	0.0058056	2.583	Q831
4)	0.013412	0.0055577	2.4132	Q901+Q902
5)	0.9122	0.042719	21.353	RHO

R-BAR SQUARED:0.99875
DURBIN-WATSON:1.75
STANDARD ERROR:0.0075344 NORMALIZED:0.0095744

SERVICE AREA PERSONAL PROPERTY INCOME

WHERE:

LRPCYPPROP@CGE	=LOG(YPPROP@CGE/(N@CGE*CPI))
LRPCYPPROP	=LOG((YRENTADJ+INTBUS+DIV)/(N*CPI))
Q651854	QUALITATIVE VARIABLE - FIRST QUARTER, 1965 TO FOURTH QUARTER, 1985
Q1	QUALITATIVE VARIABLE - FIRST QUARTER
Q831	QUALITATIVE VARIABLE - FIRST QUARTER, 1983
Q901	QUALITATIVE VARIABLE - FIRST QUARTER, 1990
Q902	QUALITATIVE VARIABLE - SECOND QUARTER, 1990

AND:

YPPROP@CGE	SERVICE AREA PERSONAL PROPERTY INCOME
N@CGE	SERVICE AREA TOTAL POPULATION
YRENTADJ	RENTAL INCOME OF PERSONS WITH CAPITAL CONSUMPTION ADJUSTMENT
INTBUS	NET INTEREST COMPONENT OF NATIONAL INCOME
DIV	DIVIDENDS
N	US TOTAL POPULATION
CPI	CONSUMER PRICE INDEX (ALL URBAN) - ALL ITEMS

FORECAST EQUATION:

```
1>YPPROP@CGE=(CPI*N@CGE)*EXP(<0.012095>+<0.99331>*LRPCYPPROP&&
2>+YPPROP@CGE@AR1)
```

SERVICE AREA NONFARM PROPRIETORS INCOME

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION

FREQUENCY: Q
INTERVAL: 1970:1 TO 1995:4 (104 OBS.)
DEPENDENT VARIABLE: LRPCYENT@CGE

	COEFFICIENT	STD.ERROR	T-STAT	INDEPENDENT VARIABLE
0)	-0.21388	0.070836	-3.0194	CONSTANT
1)	1.0663	0.062315	17.111	LRPCYENT
2)	-0.029995	0.012404	-2.4182	Q781
3)	-0.030105	0.01246	-2.4162	Q831
4)	0.029923	0.012403	2.4126	Q891
5)	0.030923	0.012364	2.501	Q901
6)	-0.034828	0.012443	-2.7989	Q911
7)	0.98364	0.017664	55.686	RHO

R-BAR SQUARED:0.98549
DURBIN-WATSON:1.72
STANDARD ERROR:0.017343 NORMALIZED:-0.052397

SERVICE AREA NONFARM PROPRIETORS INCOME

WHERE:

LRPCYENT@CGE	=LOG(YENT@CGE/(N@CGE*CPI))
LRPCYENT	=LOG(YENTNFADJ/(N*CPI)
Q781	QUALITATIVE VARIABLE - FIRST QUARTER, 1978
Q831	QUALITATIVE VARIABLE - FIRST QUARTER, 1983
Q891	QUALITATIVE VARIABLE - FIRST QUARTER, 1989
Q901	QUALITATIVE VARIABLE - FIRST QUARTER, 1990
Q911	QUALITATIVE VARIABLE - FIRST QUARTER, 1991

AND:

YENT@CGE	SERVICE AREA NONFARM PROPRIETORS INCOME
N@CGE	SERVICE AREA TOTAL POPULATION
YENTNFADJ	NONFARM PROPRIETORS INCOME WITH IVA AND CCADJ
N	US TOTAL POPULATION
CPI	CONSUMER PRICE INDEX (ALL URBAN) - ALL ITEMS

FORECAST EQUATION:

```
1>YENT@CGE=(N@CGE*CPI)*EXP(<-0.21388>+<1.0663>*LRPCYENT&&
2>+YENT@CGE@AR1)
```

SERVICE AREA TRANSFER PAYMENTS TO PERSONS

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION

FREQUENCY: Q
INTERVAL: 1980:1 TO 1995:4 (64 OBS.)
DEPENDENT VARIABLE: LPCV@CGE

	COEFFICIENT	STD.ERROR	T-STAT	INDEPENDENT VARIABLE
0)	-0.038412	0.021836	-1.7591	CONSTANT
1)	0.99707	0.019973	49.92	LPCV
2)	0.012289	0.0034163	3.5972	Q821+Q822
3)	-0.0089229	0.0034174	-2.611	Q901
4)	0.9698	0.030485	31.812	RHO

R-BAR SQUARED:0.99975
DURBIN-WATSON:1.75
STANDARD ERROR:0.004745 NORMALIZED:0.0056349

SERVICE AREA TRANSFER PAYMENTS TO PERSONS

WHERE:

LPCV@CGE	=LOG(V@CGE/N@CGE)
LPCV	=LOG(VG/N)
Q821	QUALITATIVE VARIABLE - FIRST QUARTER, 1982
Q822	QUALITATIVE VARIABLE - SECOND QUARTER, 1982
Q901	QUALITATIVE VARIABLE - FIRST QUARTER, 1990

AND:

V@CGE	SERVICE AREA TRANSFER PAYMENTS TO PERSONS
N@CGE	SERVICE AREA TOTAL POPULATION
VG	US GOVERNMENT TRANSFER PAYMENTS TO PERSONS
N	US TOTAL POPULATION

FORECAST EQUATION:

```
1>V@CGE=(N@CGE)*EXP(<-0.038412>+<0.99707>*LPCV&&
2>+V@CGE@AR1)
```

SERVICE AREA PERSONAL CONTRIBUTION TO SOCIAL INSURANCE

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION

FREQUENCY: Q
INTERVAL: 1976:1 TO 1995:4 (80 OBS.)
DEPENDENT VARIABLE: LPCTWPER@CGE

	COEFFICIENT	STD.ERROR	T-STAT	INDEPENDENT VARIABLE
0)	-0.048615	0.011961	-4.0646	CONSTANT
1)	1.0223	0.016608	61.554	LPCTWPER
2)	-0.016044	0.0039961	-4.015	Q811
3)	-0.014233	0.0039342	-3.6177	Q821
4)	0.95956	0.031475	30.487	RHO

R-BAR SQUARED:0.99985
DURBIN-WATSON:1.71
STANDARD ERROR:0.005443 NORMALIZED:0.11453

SERVICE AREA PERSONAL CONTRIBUTION TO SOCIAL INSURANCE

WHERE:

LPCTWPER@CGE	=LOG(TWPER@CGE/N20@64@CGE)
LPCTWPER	=LOG(TWPER/N20@64)
Q811	QUALITATIVE VARIABLE - FIRST QUARTER, 1981
Q821	QUALITATIVE VARIABLE - FIRST QUARTER, 1982

AND:

TWPER@CGE	SERVICE AREA PERSONAL CONTRIBUTIONS TO SOCIAL INSURANCE
N20@64@CGE	SERVICE AREA POPULATION AGED 20 TO 64
TWPER	US PERSONAL CONTRIBUTIONS TO SOCIAL INSURANCE
N20@64	US POPULATION AGED 20 TO 64

FORECAST EQUATION:

```
1>TWPER@CGE=(N20@64@CGE)*EXP(<-0.048615>+<1.0223>*LPCTWPER&&
2>+TWPER@CGE@AR1)
```

```
SERVICE AREA EMPLOYMENT - FOOD AND PRODUCTS

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION
---------------------------------------------------------
FREQUENCY: Q
INTERVAL:  1968:1 TO 1997:4  (120 OBS.)
DEPENDENT VARIABLE: LE20@CGE

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0)  8.6885    0.22969   37.826      CONSTANT
1)                                  PDL(LJQIND20,2,6,BOTH)

 \0    0.12099 0.049724   .  + * +
 \1    0.20165 0.082873   .    +   *  +
 \2    0.24198 0.099448   .     +    *    +
 \3    0.24198 0.099448   .     +    *    +
 \4    0.20165 0.082873   .    +   *  +
 \5    0.12099 0.049724   .  + * +
LAG SUM: 1.1293   STD. ERR.: 0.46409
MEAN LAG: 2.5

2)                                  PDL(LJQE20,2,6,BOTH)

 \0    -0.17733 0.047575         + * +   .
 \1    -0.29555 0.079291    +  *  +      .
 \2    -0.35466 0.095149  +  •  +        .
 \3    -0.35466 0.095149  +  *  +        .
 \4    -0.29555 0.079291    +  *  +      .
 \5    -0.17733 0.047575         + * +   .
LAG SUM: -1.6551  STD. ERR.: 0.44403
MEAN LAG: 2.5

3)                                  PDL(LRELRTCGSL@OH,1,8,FAR)

 \0    -0.028717  0.012662    +    *   +     .
 \1    -0.025127  0.011079      +   *   +    .
 \2    -0.021538  0.0094967       +  *   +   .
 \3    -0.017948  0.0079139         + *  +   .
 \4    -0.014358  0.0063311          +  * +  .
 \5    -0.010769  0.0047483            + * + .
 \6    -0.0071792 0.0031656              +* +.
 \7    -0.0035896 0.0015828                +*.
LAG SUM: -0.12923  STD. ERR.: 0.05698
MEAN LAG: 2.3333

4) -0.045376 0.0091724 -4.947      Q683
5)  0.078506 0.013206   5.9447     Q651824
6) -0.029751 0.0091737 -3.243      Q692
7)  0.97271  0.02118   45.926      RHO
R-BAR SQUARED:0.99599
DURBIN-WATSON:1.91
STANDARD ERROR:0.012791     NORMALIZED:0.0013235
```

(e)

SERVICE AREA EMPLOYMENT - FOOD AND PRODUCTS

WHERE:

LE20@CGE	=LOG(E20@CGE)
LJQIND20	=LOG(JQIND20)
LJQE20	=LOG(JQIND20/E20)
LRELRTCGSL@OH	=LOG(RTCGSL@OH/RTCGSL)
Q683	QUALITATIVE VARIABLE - THIRD QUARTER, 1968
Q651824	QUALITATIVE VARIABLE - FIRST QUARTER, 1965 TO FOURTH QUARTER, 1982
Q692	QUALITATIVE VARIABLE - SECOND QUARTER, 1969

AND:

E20@CGE	SERVICE AREA EMPLOYMENT - FOOD AND PRODUCTS
JQIND20	US INDUSTRIAL PRODUCTION INDEX - FOOD AND PRODUCTS
E20	US EMPLOYMENT - FOOD AND PRODUCTS
RTCGSL@OH	EFFECTIVE TAX RATE - OHIO CORPORATE INCOME TAXES
RTCGSL	EFFECTIVE TAX RATE - STATE AND LOCAL CORPORATE INCOME TAXES - US

FORECAST EQUATION:

```
1>E20@CGE=EXP(<8.6885>&&
2>+PDL(LJQIND20,2,6,BOTH,<0.12099,0.20165,0.24198,0.24198,0.20165,
3>0.12099>)&&
4>+PDL(LJQE20,2,6,BOTH,<-0.17733,-0.29555,-0.35466,-0.35466,-0.29555,
5>-0.17733>)&&
6>+PDL(LRELRTCGSL@OH,1,8,FAR,<-0.028717,-0.025127,-0.021538,-0.017948,
7>-0.014358,-0.010769,-0.0071792,-0.0035896>)+E20@CGE@AR1)
```

```
SERVICE AREA EMPLOYMENT - PAPER AND PRODUCTS


REGRESSION RESULTS:


LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION
---------------------------------------------------------

FREQUENCY: Q
INTERVAL:  1975:1 TO 1997:4  (92 OBS.)
DEPENDENT VARIABLE: LE26@CGE

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0)  9.7207    0.054139  179.55       CONSTANT
1)                                   PDL(LJQIND26,1,4,FAR)

 \0    0.19786  0.038496    .         +  * +
 \1    0.1484   0.028872    .       +* +
 \2    0.098932 0.019248    .    +*+
 \3    0.049466 0.0096239   .  *+
LAG SUM: 0.49466  STD. ERR.: 0.096239
MEAN LAG: 1

2)                                   PDL(LRELAHEM,1,4,FAR)

 \0    -0.36771  0.1256     +   *   +      .
 \1    -0.27578  0.094198       +  * +     .
 \2    -0.18386  0.062799          + * +   .
 \3    -0.091928 0.031399              +*+ .
LAG SUM: -0.91928  STD. ERR.: 0.31399
MEAN LAG: 1

3)                                   PDL(LJQE26,2,12,BOTH)

 \0     -0.033762 0.0041476                *+   .
 \1     -0.061898 0.0076039            +*+      .
 \2     -0.084406 0.010369          +* +        .
 \3     -0.10129  0.012443        + *+          .
 \4     -0.11254  0.013825       +* +           .
 \5     -0.11817  0.014516      + *+            .
 \6     -0.11817  0.014516      + *+            .
 \7     -0.11254  0.013825       +* +           .
 \8     -0.10129  0.012443        + *+          .
 \9     -0.084406 0.010369          +* +        .
 \10    -0.061898 0.0076039            +*+      .
 \11    -0.033762 0.0041476                *+   .
LAG SUM: -1.0241  STD. ERR.: 0.12581
MEAN LAG: 5.5

4) -0.02188   0.009092   -2.4065     Q802
5) -0.021116 0.0090901  -2.323      Q902
6)  0.027813 0.010774    2.5813     Q851
7)  0.030815 0.010582    2.9119     Q852
8)  0.9065   0.044018   20.594      RHO
R-BAR SQUARED:0.97997
DURBIN-WATSON:1.80
STANDARD ERROR:0.012251     NORMALIZED:0.001312
```

SERVICE AREA EMPLOYMENT - PAPER AND PRODUCTS

WHERE:

LE26@CGE	=LOG(E26@CGE)
LJQIND26	=LOG(JQIND26)
LRELAHEM	=LOG(AHEMNS@1640/AHEM)
LJQE26	=LOG(JQIND26/E26)
Q802	QUALITATIVE VARIABLE - SECOND QUARTER, 1980
Q902	QUALITATIVE VARIABLE - SECOND QUARTER, 1990
Q851	QUALITATIVE VARIABLE - FIRST QUARTER, 1985
Q852	QUALITATIVE VARIABLE - SECOND QUARTER, 1985

AND:

E26@CGE	SERVICE AREA EMPLOYMENT - PAPER AND PRODUCTS
AHEMNS@1640	SERVICE AREA AVERAGE HOURLY EARNINGS FOR MANUFACTURING
AHEM	US AVERAGE HOURLY EARNINGS FOR MANUFACTURING
JQIND26	US INDUSTRIAL PRODUCTION INDEX - PAPER AND PRODUCTS
E26	US EMPLOYMENT - PAPER AND PRODUCTS

FORECAST EQUATION:

```
1>E26@CGE=EXP(<9.7207>&&
2>+PDL(LJQIND26,1,4,FAR,<0.19786,0.1484,0.098932,0.049466>)&&
3>+PDL(LRELAHEM,1,4,FAR,<-0.36771,-0.27578,-0.18386,-0.091928>)&&
4>+PDL(LJQE26,2,12,BOTH,<-0.033762,-0.061898,-0.084406,-0.10129,-0.11254,
5>-0.11817,-0.11817,-0.11254,-0.10129,-0.084406,-0.061898,-0.033762>)&&
6>+E26@CGE@AR1)
```

```
SERVICE AREA EMPLOYMENT - CHEMICALS AND PRODUCT

REGRESSION RESULTS:

LEAST SQUARES WITH 2ND ORDER AUTOCORRELATION CORRECTION
-------------------------------------------------------
FREQUENCY: Q
INTERVAL:  1970:1 TO 1997:4  (112 OBS.)
DEPENDENT VARIABLE: LE28@CGE

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0) 10.071    0.022746  442.75       CONSTANT
1)                                  PDL(LJQIND28,1,8,FAR)

 \0    0.25302  0.032813    .           +* +
 \1    0.22139  0.028711    .          + *+
 \2    0.18977  0.02461     .         +*+
 \3    0.15814  0.020508    .       +*+
 \4    0.12651  0.016406    .      +*
 \5    0.094883 0.012305    .   +*+
 \6    0.063255 0.0082032   .  *+
 \7    0.031628 0.0041016   .+*
LAG SUM: 1.1386  STD. ERR.: 0.14766
MEAN LAG: 2.3333

2)                                  PDL(LJQE28,1,8,FAR)

 \0    -0.19011  0.033288   + * +          .
 \1    -0.16634  0.029127     + * +        .
 \2    -0.14258  0.024966       +* +       .
 \3    -0.11882  0.020805        +*+       .
 \4    -0.095053 0.016644         + *+     .
 \5    -0.07129  0.012483           +*+    .
 \6    -0.047527 0.008322            +*    .
 \7    -0.023763 0.004161              *+.
LAG SUM: -0.85548  STD. ERR.: 0.1498
MEAN LAG: 2.3333

3)                                  PDL(LRELAHEM,1,3,FAR)

 \0    -0.23669  0.087854   +    *    +     .
 \1    -0.15779  0.058569        +  * +     .
 \2    -0.078897 0.029285           +* + .
LAG SUM: -0.47338  STD. ERR.: 0.17571
MEAN LAG: 0.66667

4)                                  PDL(LRELRTCGSL@OH,1,8,FAR)

 \0    -0.017966  0.0046519   +  *  +         .
 \1    -0.01572   0.0040704     +  * +        .
 \2    -0.013475  0.0034889       + * +       .
 \3    -0.011229  0.0029075         + *+      .
 \4    -0.0089831 0.002326           + * +    .
 \5    -0.0067373 0.0017445            + *+   .
 \6    -0.0044915 0.001163               +*+ .
 \7    -0.0022458 0.00058149               +*.
LAG SUM: -0.080848  STD. ERR.: 0.020934
MEAN LAG: 2.3333

5)  0.030712 0.0041757   7.3551     Q711
6) -0.011075 0.0041913  -2.6423     Q752
7)  0.013683 0.0042095   3.2504     Q861
8) -0.017433 0.0041914  -4.1592     Q884
9) -0.022216 0.0041812  -5.3133     Q944
10) -0.018276 0.004177   -4.3755     Q971
11)  1.3751   0.079538   17.288      RHO1
12) -0.56204  0.080324   -6.9972     RHO2
R-BAR SQUARED:0.99079
DURBIN-WATSON:2.14
STANDARD ERROR:0.007472     NORMALIZED:0.00074801
```

SERVICE AREA EMPLOYMENT - CHEMICALS AND PRODUCT

WHERE:

LE28@CGE	=LOG(E28@CGE)
LJQIND28	=LOG(JQIND28)
LJQE28	=LOG(JQIND28/E28)
LRELAHEM	=LOG(AHEMNS@1640/AHEM)
LRELRTCGSL@OH	=LOG(RTCGSL@OH/RTCGSL)
Q711	QUALITATIVE VARIABLE - FIRST QUARTER, 1971
Q752	QUALITATIVE VARIABLE - SECOND QUARTER, 1975
Q861	QUALITATIVE VARIABLE - FIRST QUARTER, 1986
Q884	QUALITATIVE VARIABLE - FOURTH QUARTER, 1988
Q944	QUALITATIVE VARIABLE - FOURTH QUARTER, 1994
Q971	QUALITATIVE VARIABLE - FIRST QUARTER, 1997

AND:

E28@CGE	SERVICE AREA EMPLOYMENT - CHEMICALS AND PRODUCTS
JQIND28	US INDUSTRIAL PRODUCTION INDEX - CHEMICALS AND PRODUCTS
E28	US EMPLOYMENT - CHEMICALS AND PRODUCTS
AHEMNS@1640	SERVICE AREA AVERAGE HOURLY EARNINGS FOR MANUFACTURING
AHEM	US AVERAGE HOURLY EARNINGS FOR MANUFACTURING
RTCGSL@OH	EFFECTIVE TAX RATE - OHIO CORPORATE INCOME TAXES
RTCGSL	EFFECTIVE TAX RATE - STATE AND LOCAL CORPORATE INCOME TAXES - US

FORECAST EQUATION:

```
1>E28@CGE=EXP(<10.071>+PDL(LJQIND28,1,8,FAR,<0.25302,0.22139,0.18977,0.15814,0
2>+PDL(LJQE28,1,8,FAR,<-0.19011,-0.16634,-0.14258,-0.11882,-0.095053,-0.07129,
3>+PDL(LRELAHEM,1,3,FAR,<-0.23669,-0.15779,-0.078897>)&&
4>+PDL(LRELRTCGSL@OH,1,8,FAR,<-0.017966,-0.01572,-0.013475,-0.011229,-0.008983
5>+E28@CGE@AR2)
```

SERVICE AREA EMPLOYMENT - PRIMARY METAL - BUTLER COUNTY

REGRESSION RESULTS:

```
LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION
---------------------------------------------------------

FREQUENCY: Q
INTERVAL:  1969:2 TO 1997:4  (115 OBS.)
DEPENDENT VARIABLE: LE33NS@BUTLER

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0) 11.618    1.2456     9.3267     CONSTANT
1)                                 PDL(LJQIND33,1,3,FAR)

 \0     0.42456 0.05759     .          + * +
 \1     0.28304 0.038393    .        ++*+
 \2     0.14152 0.019197    .    *+
LAG SUM: 0.84913  STD. ERR.: 0.11518
MEAN LAG: 0.66667

2)                                 PDL(LJQIND371,1,3,FAR)

 \0     0.098921 0.030767   .        +  *   +
 \1     0.065947 0.020511   .    +  * +
 \2     0.032974 0.010256   .  ++*+
LAG SUM: 0.19784  STD. ERR.: 0.061534
MEAN LAG: 0.66667

3)                                 PDL(LJQE33,1,4,FAR)

 \0     -0.38213  0.079182   +  * +          .
 \1     -0.2866   0.059386       + * +       .
 \2     -0.19107  0.039591          + *+     .
 \3     -0.095534 0.019795              ++*+ .
LAG SUM: -0.95534  STD. ERR.: 0.19795
MEAN LAG: 1

4)                                 PDL(LRELAPGI,2,12,BOTH)

 \0      -0.013795 0.0065374          ++*+ .
 \1      -0.025291 0.011985         +  * + .
 \2      -0.034488 0.016344      +   *  +  .
 \3      -0.041385 0.019612    +   *    +  .
 \4      -0.045984 0.021791   +    *    +  .
 \5      -0.048283 0.022881  +     *    +  .
 \6      -0.048283 0.022881  +     *    +  .
 \7      -0.045984 0.021791   +    *    +  .
 \8      -0.041385 0.019612    +   *    +  .
 \9      -0.034488 0.016344      +   *  +  .
 \10     -0.025291 0.011985         +  * + .
 \11     -0.013795 0.0065374          ++*+ .
LAG SUM: -0.41845  STD. ERR.: 0.1983
MEAN LAG: 5.5

5) -0.95029  0.29536   -3.2174     LRELAHEM\6
6)  0.067934 0.017463   3.8902     Q753
7) -0.24019  0.017453 -13.762      Q863
8) -0.045301 0.017294  -2.6195     Q902+Q903
9) -0.037203 0.017671  -2.1054     Q933
10)  0.97584  0.020375  47.893      RHO
R-BAR SQUARED:0.9877
DURBIN-WATSON:1.90
STANDARD ERROR:0.023982     NORMALIZED:0.0027047
```

SERVICE AREA EMPLOYMENT - PRIMARY METAL - BUTLER COUNTY

WHERE:

LE33NS@BUTLER	=LOG(E33NS@BUTLER)
LJQIND33	=LOG(JQIND33)
LJQIND371	=LOG(JQIND371)
LJQE33	=LOG(JQIND33/E33)
LRELAPGI	=LOG(APGIND@CGE/WPI053)
LRELAHEM	=LOG(AHEMNS@1640/AHEM)
Q753	QUALITATIVE VARIABLE - THIRD QUARTER, 1975
Q863	QUALITATIVE VARIABLE - THIRD QUARTER, 1986
Q902	QUALITATIVE VARIABLE - SECOND QUARTER, 1990
Q903	QUALITATIVE VARIABLE - THIRD QUARTER, 1990
Q933	QUALITATIVE VARIABLE - THIRD QUARTER, 1993

AND:

E33NS@BUTLER	SERVICE AREA EMPLOYMENT - BUTLER COUNTY - PRIMARY METAL INDUSTRIES
JQIND371	US INDUSTRIAL PRODUCTION INDEX - MOTOR VEHICLES AND PARTS
JQIND33	US INDUSTRIAL PRODUCTION INDEX - PRIMARY METAL INDUSTRIES
E33	US EMPLOYMENT - PRIMARY METAL INDUSTRIES
APGIND@CGE	SERVICE AREA AVERAGE PRICE OF GAS FOR INDUSTRIAL CUSTOMERS
WPI053	WHOLESALE PRICE INDEX - GAS FUELS
AHEMNS@1640	SERVICE AREA AVERAGE HOURLY EARNINGS FOR MANUFACTURING
AHEM	US AVERAGE HOURLY EARNINGS FOR MANUFACTURING

FORECAST EQUATION:

```
1>E33NS@BUTLER=EXP(<11.618>&&
2>+PDL(LJQIND33,1,3,FAR,<0.42456,0.28304,0.14152>)&&
3>+PDL(LJQIND371,1,3,FAR,<0.098921,0.065947,0.032974>)&&
4>+PDL(LJQE33,1,4,FAR,<-0.38213,-0.2866,-0.19107,-0.095534>)&&
5>+PDL(LRELAPGI,2,12,BOTH,<-0.013795,-0.025291,-0.034488,
6>-0.041385,-0.045984,-0.048283,-0.048283,-0.045984,-0.041385,
7>-0.034488,-0.025291,-0.013795>)&&
8>+<-0.95029>*LRELAHEM\6&&
9>+E33NS@BUTLER@AR1)
```

```
SERVICE AREA EMPLOYMENT - PRIMARY METAL - CINCINNATI CMSA

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION
---------------------------------------------------------

FREQUENCY: Q
INTERVAL:  1967:1 TO 1997:4  (124 OBS.)
DEPENDENT VARIABLE: LE33NS@CMSA

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0)  8.8019   0.28531   30.85        CONSTANT
1)                                  PDL(LJQIND33,1,4,FAR)

 \0    0.37828 0.041243   .            + *+
 \1    0.28371 0.030932   .         ++*+
 \2    0.18914 0.020621   .      +*
 \3    0.09457 0.010311   .   *+
LAG SUM: 0.9457  STD. ERR.: 0.10311
MEAN LAG: 1

2)                                  PDL(LJQE33,1,4,FAR)

 \0    -0.1616   0.04565    +  *   +         .
 \1    -0.1212   0.034237       + *  +       .
 \2    -0.080799 0.022825          + * +     .
 \3    -0.0404   0.011412              ++*+ .
LAG SUM: -0.404  STD. ERR.: 0.11412
MEAN LAG: 1

3)                                  PDL(LRELAPEI,1,8,FAR)

 \0    -0.090184 0.045605    +     *     +    .
 \1    -0.078911 0.039904      +    *     +   .
 \2    -0.067638 0.034204        +    *   +   .
 \3    -0.056365 0.028503          +  *   +   .
 \4    -0.045092 0.022802           +  *   + .
 \5    -0.033819 0.017102             + * + .
 \6    -0.022546 0.011401               + *+.
 \7    -0.011273 0.0057006                 +*.
LAG SUM: -0.40583  STD. ERR.: 0.20522
MEAN LAG: 2.3333

4)  0.017533 0.007858   2.2312      QOIL*LRPCOCP
5)  0.29301  0.038452   7.6201      Q651802
6) -0.53061  0.041668 -12.734       Q651884
7)  0.081545 0.029728   2.743       Q803
8) -0.12198  0.022852  -5.3378      Q811
9) -0.20069  0.028408  -7.0645      Q891954
10) -0.070302 0.022862  -3.0751      Q951
11)  0.80636  0.053112  15.182       RHO
R-BAR SQUARED:0.98393
DURBIN-WATSON:1.93
STANDARD ERROR:0.029341     NORMALIZED:0.0036753
```

SERVICE AREA EMPLOYMENT - PRIMARY METAL - CINCINNATI CMSA

WHERE:

LE33NS@CMSA	=LOG(E33NS@CMSA)
LJQIND33	=LOG(JQIND33)
LJQE33	=LOG(JQIND33/E33)
LRELAPEI	=LOG(APEIND@CGE/WPI054)
QOIL	QUALITATIVE VARIABLE - THIRD QUARTER, 1981 TO FOURTH QUARTER, 1992
LRPCOCP	=LOG(PCOCP/CPI)
Q651802	QUALITATIVE VARIABLE - FIRST QUARTER, 1965 TO SECOND QUARTER, 1980
Q651884	QUALITATIVE VARIABLE - FIRST QUARTER, 1965 TO FOURTH QUARTER, 1988
Q803	QUALITATIVE VARIABLE - THIRD QUARTER, 1980
Q811	QUALITATIVE VARIABLE - FIRST QUARTER, 1981
Q891954	QUALITATIVE VARIABLE - FIRST QUARTER, 1989 TO FOURTH QUARTER, 1995
Q951	QUALITATIVE VARIABLE = FIRST QUARTER, 1995

AND:

E33NS@CMSA	CINCINNATI CMSA EMPLOYMENT - PRIMARY METAL INDUSTRIES
JQIND33	US INDUSTRIAL PRODUCTION INDEX - PRIMARY METAL INDUSTRIES
E33	US EMPLOYMENT - PRIMARY METAL INDUSTRIES
APEIND@CGE	SERVICE AREA AVERAGE PRICE OF ELECTRICITY FOR INDUSTRIAL CUSTOMERS
WPI054	WHOLESALE PRICE INDEX - ELECTRIC POWER
PCOCP	AVERAGE REFINERS' ACQUISITION PRICE - CRUDE OIL - COMPOSITE
CPI	CONSUMER PRICE INDEX (ALL URBAN) - ALL ITEMS

FORECAST EQUATION:

```
1>E33NS@CMSA=EXP(<8.8019>&&
2>+PDL(LJQIND33,1,4,FAR,<0.37828,0.28371,0.18914,0.09457>)&&
3>+PDL(LJQE33,1,4,FAR,<-0.1616,-0.1212,-0.080799,-0.0404>)&&
4>+PDL(LRELAPEI,1,8,FAR,<-0.090184,-0.078911,-0.067638,
5>-0.056365,-0.045092,-0.033819,-0.022546,-0.011273>)&&
6>+<0.017533>*(QOIL*LRPCOCP)&&
7>+E33NS@CMSA@AR1)
```

SERVICE AREA EMPLOYMENT - INDUSTRIAL MACHINERY AND EQUIPMENT

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION

```
--------------------------------------------------------

FREQUENCY: Q
INTERVAL:  1967:1 TO 1997:4  (124 OBS.)
DEPENDENT VARIABLE: LE35NS@CGE

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0)  9.313   0.086613 107.52       CONSTANT
1)  0.96162 0.076029  12.648      LJQIND35
2)                                PDL(LRELAHEM,1,6,FAR)

 \0    -0.37167  0.10249    +  *  +         .
 \1    -0.30972  0.085405     +  *  +       .
 \2    -0.24778  0.068324        + * +      .
 \3    -0.18583  0.051243          + * +    .
 \4    -0.12389  0.034162             ++*+  .
 \5    -0.061944 0.017081               ++*+.
LAG SUM: -1.3008   STD. ERR.: 0.3587
MEAN LAG: 1.6667

3)                                PDL(LJQE35,1,2,FAR)

 \0    -0.73219 0.058876   ++*+              .
 \1    -0.3661  0.029438         ++*+        .
LAG SUM: -1.0983   STD. ERR.: 0.088313
MEAN LAG: 0.33333

4)  0.92432 0.034271  26.971      RHO
R-BAR SQUARED:0.98416
DURBIN-WATSON:1.90
STANDARD ERROR:0.014373     NORMALIZED:0.0014284
```

SERVICE AREA EMPLOYMENT - INDUSTRIAL MACHINERY AND EQUIPMENT

WHERE:

LE35NS@CGE	=LOG(E35NS@CGE)
LJQIND35	=LOG(JQIND35)
LRELAHEM	=LOG(AHEMNS@1640/AHEM)
LJQE35	=LOG(JQIND35/E35)

AND:

E35NS@CGE	SERVICE AREA EMPLOYMENT - INDUSTRIAL MACHINERY AND EQUIPMENT
AHEMNS@1640	SERVICE AREA AVERAGE HOURLY EARNINGS FOR MANUFACTURING
AHEM	US AVERAGE HOURLY EARNINGS FOR MANUFACTURING
JQIND35	US INDUSTRIAL PRODUCTION INDEX - INDUSTRIAL MACHINERY AND EQUIPMENT
E35	US EMPLOYMENT - INDUSTRIAL MACHINERY AND EQUIPMENT

FORECAST EQUATION:

```
1>E35NS@CGE=EXP(<9.313>+<0.96162>*LJQIND35&&
2>+PDL(LRELAHEM,1,6,FAR,<-0.37167,-0.30972,-0.24778,-0.18583,-0.12389,
3>-0.061944>)&&
4>+PDL(LJQE35,1,2,FAR,<-0.73219,-0.3661>)+E35NS@CGE@AR1)
```

SERVICE AREA EMPLOYMENT - ELECTRONIC AND OTHER ELECTRICAL EQUIPMENT

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION

```
FREQUENCY: Q
INTERVAL:  1969:1 TO 1997:4  (116 OBS.)
DEPENDENT VARIABLE: LE36NS@CGE

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0)  5.9887    0.70011   8.554      CONSTANT
1)                                 PDL(LJQIND36,1,2,FAR)

 \0     0.57857 0.080326    .          + * +
 \1     0.28929 0.040163    .      +*
LAG SUM: 0.86786  STD. ERR.: 0.12049
MEAN LAG: 0.33333

2)                                 PDL(LJQE36,1,6,FAR)

 \0     -0.27057  0.035604   + *+              .
 \1     -0.22548  0.02967      + *+            .
 \2     -0.18038  0.023736        ++*+         .
 \3     -0.13529  0.017802          +*+        .
 \4     -0.09019  0.011868             +*      .
 \5     -0.045095 0.005934               +*    .
LAG SUM: -0.947   STD. ERR.: 0.12461
MEAN LAG: 1.6667

3) -0.594     0.25721   -2.3094     LRELAHEM\1
4)  0.28815   0.076076   3.7877     LRELE15\2
5)  0.093172  0.020816   4.4759     Q681784
6)  0.035812  0.016612   2.1558     Q743+Q744
7) -0.034135  0.016316  -2.0922     Q891
8)  0.8509    0.048775  17.446      RHO
R-BAR SQUARED:0.94304
DURBIN-WATSON:1.79
STANDARD ERROR:0.021255     NORMALIZED:0.0023454
```

SERVICE AREA EMPLOYMENT - ELECTRONIC AND OTHER ELECTRICAL EQUIPMENT

WHERE:

LE36NS@CGE	=LOG(E36NS@CGE)
LJQIND36	=LOG(JQIND36)
LJQE36	=LOG(JQIND36/E36)
LRELAHEM	=LOG(AHEMNS@1640/AHEM)
LRELE15	=LOG(E15@CGE/EC)
Q681784	QUALITATIVE VARIABLE - FIRST QUARTER, 1968 TO FOURTH QUARTER, 1978
Q743	QUALITATIVE VARIABLE - THIRD QUARTER, 1974
Q744	QUALITATIVE VARIABLE - FOURTH QUARTER, 1974
Q891	QUALITATIVE VARIABLE - FIRST QUARTER, 1989

AND:

E36NS@CGE	SERVICE AREA EMPLOYMENT - ELECTRONIC AND OTHER ELECTRICAL EQUIPMENT
JQIND36	US INDUSTRIAL PRODUCTION INDEX - ELECTRONIC AND OTHER ELECTRICAL EQUIPMENT
E36	US EMPLOYMENT - ELECTRONIC AND OTHER ELECTRICAL EQUIPMENT
AHEMNS@1640	SERVICE AREA AVERAGE HOURLY EARNINGS FOR MANUFACTURING
AHEM	US AVERAGE HOURLY EARNINGS FOR MANUFACTURING
E15@CGE	SERVICE AREA EMPLOYMENT - CONTRACT CONSTRUCTION
EC	US EMPLOYMENT - CONTRACT CONSTRUCTION

FORECAST EQUATION:

```
1>E36NS@CGE=EXP(<5.9887>+PDL(LJQIND36,1,2,FAR,<0.57857,0.28929>)&&
2>+PDL(LJQE36,1,6,FAR,<-0.27057,-0.22548,-0.18038,-0.13529,
3>-0.09019,-0.045095>)&&
4>+<-0.594>*LRELAHEM\1&&
5>+<0.28815>*LRELE15\2&&
6>+E36NS@CGE@AR1)
```

SERVICE AREA EMPLOYMENT - MOTOR VEHICLES AND PARTS

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION

```
------------------------------------------------------------
FREQUENCY: Q
INTERVAL:  1974:1 TO 1997:4  (96 OBS.)
DEPENDENT VARIABLE: LE371NS@CGE

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0)  9.2852  0.28223  32.9       CONSTANT
1)                              PDL(LJQIND371,1,4,FAR)

 \0    0.30983  0.041304   .         + * +
 \1    0.23238  0.030978   .       +*+
 \2    0.15492  0.020652   .    +*
 \3    0.077459 0.010326   .  *+
LAG SUM: 0.77459  STD. ERR.: 0.10326
MEAN LAG: 1

2)                              PDL(LJQE37,1,2,FAR)

 \0    -0.35325 0.1842      +    *    +    .
 \1    -0.17663 0.092098          +  *  + .
LAG SUM: -0.52988  STD. ERR.: 0.2763
MEAN LAG: 0.33333

3)                              PDL(LRELAHEM,2,16,BOTH)

 \0      -0.069975 0.029459             ++*.
 \1      -0.1312   0.055235          + *+  .
 \2      -0.18369  0.077329       +  * +   .
 \3      -0.22742  0.09574      +  *   +   .
 \4      -0.26241  0.11047    +   *   +    .
 \5      -0.28865  0.12152   +   *    +    .
 \6      -0.30614  0.12888  +    *    +    .
 \7      -0.31489  0.13256  +   *     +    .
 \8      -0.31489  0.13256  +   *     +    .
 \9      -0.30614  0.12888  +    *    +    .
 \10     -0.28865  0.12152   +   *    +    .
 \11     -0.26241  0.11047    +   *   +    .
 \12     -0.22742  0.09574      +  *   +   .
 \13     -0.18369  0.077329       +  * +   .
 \14     -0.1312   0.055235          + *+  .
 \15     -0.069975 0.029459             ++*.
LAG SUM: -3.5687  STD. ERR.: 1.5024
MEAN LAG: 7.5

4) -0.51152 0.2323    -2.202      LRELAPEI\10
5)  0.76955 0.058219 13.218       GMSHUTDOWN
6) -0.1156  0.053946 -2.1429      Q763
7) -0.1577  0.053811 -2.9306      Q764
8) -0.17276 0.049116 -3.5173      Q803
9) -0.17475 0.048896 -3.5739      Q813
10) -0.16833 0.049166 -3.4237      Q862
11) -0.23661 0.049006 -4.8282      Q871
12)  0.49542 0.088656  5.5881      RHO
R-BAR SQUARED:0.97289
DURBIN-WATSON:2.06
STANDARD ERROR:0.054412     NORMALIZED:0.0060788
```

SERVICE AREA EMPLOYMENT - MOTOR VEHICLES AND PARTS

WHERE:

LE371NS@CGE	=LOG(E371NS@CGE)
LJQIND371	=LOG(JQIND371)
LJQE37	=LOG(JQIND37/E37)
LRELAHEM	=LOG(AHEMNS@1640/AHEM)
LRELAPEI	=LOG(APEIND@CGE/WPI054)
GMSHUTDOWN	QUALITATIVE VARIABLE - INDICATES CLOSING OF GM'S LOCAL PLANTS
Q763	QUALITATIVE VARIABLE - THIRD QUARTER, 1976
Q764	QUALITATIVE VARIABLE - FOURTH QUARTER, 1976
Q803	QUALITATIVE VARIABLE - THIRD QUARTER, 1980
Q813	QUALITATIVE VARIABLE - THIRD QUARTER, 1981
Q862	QUALITATIVE VARIABLE - SECOND QUARTER, 1986
Q871	QUALITATIVE VARIABLE - FIRST QUARTER, 1987

AND:

E371NS@CGE	SERVICE AREA EMPLOYMENT - TRANSPORTATION EQUIPMENT MOTOR VEHICLES AND PARTS
JQIND371	US INDUSTRIAL PRODUCTION INDEX - MOTOR VEHICLES AND PARTS
JQIND37	US INDUSTRIAL PRODUCTION INDEX - TRANSPORTATION EQUIPMENT
E37	US EMPLOYMENT - TRANSPORTATION EQUIPMENT
AHEMNS@1640	SERVICE AREA AVERAGE HOURLY EARNINGS FOR MANUFACTURING
AHEM	US AVERAGE HOURLY EARNINGS FOR MANUFACTURING
APEIND@CGE	SERVICE AREA AVERAGE PRICE OF ELECTRICITY FOR INDUSTRIAL CUSTOMERS
WPI054	WHOLESALE PRICE INDEX - ELECTRIC POWER

FORECAST EQUATION:

```
1>E371NS@CGE=EXP(<9.2852>&&
2>+PDL(LJQIND371,1,4,FAR,<0.30983,0.23238,0.15492,0.077459>)&&
3>+PDL(LJQE37,1,2,FAR,<-0.35325,-0.17663>)&&
4>+PDL(LRELAHEM,2,16,BOTH,<-0.069975,-0.1312,-0.18369,-0.22742,
5>-0.26241,-0.28865,-0.30614,-0.31489,-0.31489,-0.30614,
6>-0.28865,-0.26241,-0.22742,-0.18369,-0.1312,-0.069975>)&&
7>+<-0.51152>*LRELAPEI\10&&
8>+E371NS@CGE@AR1)
```

SERVICE AREA EMPLOYMENT - TRANSPORTATION EQUIPMENT OTHER THAN AUTOS

REGRESSION RESULTS:

LEAST SQUARES WITH 2ND ORDER AUTOCORRELATION CORRECTION

```
------------------------------------------------------

FREQUENCY: Q
INTERVAL:  1973:1 TO 1997:4  (100 OBS.)
DEPENDENT VARIABLE: LE372@9NS@CGE

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0)  7.1147   1.2194     5.8345     CONSTANT
1)                                 PDL(LJQIND372,2,5,BOTH)

 \0    0.069674 0.020658    .   +* +
 \1    0.11148  0.033052    .     +  *  +
 \2    0.12541  0.037184    .      +   *  +
 \3    0.11148  0.033052    .     +  *  +
 \4    0.069674 0.020658    .   +* +
LAG SUM: 0.48772  STD. ERR.: 0.1446
MEAN LAG: 2

2)                                  PDL(LGFML92C,1,4,FAR)

 \0    0.14566  0.081023    .  +     *    +
 \1    0.10924  0.060767    . +   *   +
 \2    0.072829 0.040512    . +  * +
 \3    0.036414 0.020256    .+* +
LAG SUM: 0.36414  STD. ERR.: 0.20256
MEAN LAG: 1

3)                                  PDL(LJQE37,2,5,BOTH)

 \0    -0.10992 0.025146          +* +    .
 \1    -0.17587 0.040233     + *  +       .
 \2    -0.19785 0.045262   +  *  +        .
 \3    -0.17587 0.040233     + *  +       .
 \4    -0.10992 0.025146          +* +    .
LAG SUM: -0.76943  STD. ERR.: 0.17602
MEAN LAG: 2

4)                                  PDL(LRELRTCGSL@OH,2,12,BOTH)

 \0     -0.022738 0.0053674              +*  .
 \1     -0.041686 0.0098402          + *+    .
 \2     -0.056845 0.013419        + * +      .
 \3     -0.068214 0.016102      +  * +       .
 \4     -0.075793 0.017891     + *  +        .
 \5     -0.079583 0.018786    +  *  +        .
 \6     -0.079583 0.018786    +  *  +        .
 \7     -0.075793 0.017891     + *  +        .
 \8     -0.068214 0.016102      +  * +       .
 \9     -0.056845 0.013419        + * +      .
 \10    -0.041686 0.0098402          + *+    .
 \11    -0.022738 0.0053674              +*  .
LAG SUM: -0.68972  STD. ERR.: 0.16281
MEAN LAG: 5.5

5)  0.10926  0.025665    4.2571     Q651813
6) -0.12616  0.0077809 -16.214      Q763
7)  0.060954 0.014976    4.0701     Q814
8) -0.10085  0.0077709 -12.978      Q881
9) -0.035377 0.0078125  -4.5282     Q931
10)  1.6138   0.073995   21.81       RHO1
11) -0.69172  0.069009  -10.024      RHO2
R-BAR SQUARED:0.99542
DURBIN-WATSON:2.01
STANDARD ERROR:0.015696     NORMALIZED:0.0016307
```

SERVICE AREA EMPLOYMENT - TRANSPORTATION EQUIPMENT OTHER THAN AUTOS

WHERE:

LE372@9NS@CGE	=LOG(E372@9NS@CGE)
LJQIND372	=LOG(JQIND372)
LGFML92C	=LOG(GFML92C)
LJQE37	=LOG(JQIND37/E37)
LRELRTCGSL@OH	=LOG(RTCGSL@OH/RTCGSL)
Q651813	QUALITATIVE VARIABLE - FIRST QUARTER, 1965 TO THIRD QUARTER, 1981
Q763	QUALITATIVE VARIABLE - THIRD QUARTER, 1976
Q814	QUALITATIVE VARIABLE - FOURTH QUARTER, 1981
Q881	QUALITATIVE VARIABLE - FIRST QUARTER, 1988
Q931	QUALITATIVE VARIABLE - FIRST QUARTER, 1993

AND:

E372@9NS@CGE	SERVICE AREA EMPLOYMENT - TRANSPORTATION EQUIPMENT OTHER THAN MOTOR VEHICLES AND PARTS
JQIND372	US INDUSTRIAL PRODUCTION INDEX - AIRCRAFT AND PARTS
GFML92C	FEDERAL GOVERNMENT PURCHASES FOR NATIONAL DEFENSE - CHAINED 1992 DOLLARS
JQIND37	US INDUSTRIAL PRODUCTION INDEX - TRANSPORTATION EQUIPMENT
E37	US EMPLOYMENT - TRANSPORTATION EQUIPMENT
RTCGSL@OH	EFFECTIVE TAX RATE - OHIO CORPORATE INCOME TAXES
RTCGSL	EFFECTIVE TAX RATE - STATE AND LOCAL CORPORATE INCOME TAXES - US

FORECAST EQUATION:

```
1>E372@9NS@CGE=EXP(<7.1147>&&
2>+PDL(LJQIND372,2,5,BOTH,<0.069674,0.11148,0.12541,0.11148,0.069674>)&&
3>+PDL(LGFML92C,1,4,FAR,<0.14566,0.10924,0.072829,0.036414>)&&
4>+PDL(LJQE37,2,5,BOTH,<-0.10992,-0.17587,-0.19785,-0.17587,-0.10992>)&&
5>+PDL(LRELRTCGSL@OH,2,12,BOTH,<-0.022738,-0.041686,-0.056845,-0.068214,
6>-0.075793,-0.079583,-0.079583,-0.075793,-0.068214,-0.056845,-0.041686,
7>-0.022738>)+E372@9NS@CGE@AR2)
```

SERVICE AREA EMPLOYMENT - ALL OTHER INDUSTRIES - DURABLE GOODS

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION

```
---------------------------------------------------------

FREQUENCY: Q
INTERVAL:  1971:1 TO 1997:4  (108 OBS.)
DEPENDENT VARIABLE: LEAOIDG@CGE

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0)  8.1878   0.393     20.834      CONSTANT
1)  0.39282  0.12802    3.0684     LJQINDAOIDG
2)                                 PDL(LJQEAOIDG,2,12,BOTH)

 \0     -0.030026 0.0059173             *+  .
 \1     -0.055047 0.010848          +* +    .
 \2     -0.075064 0.014793       + * +      .
 \3     -0.090077 0.017752     + * +        .
 \4     -0.10009  0.019724    + * +         .
 \5     -0.10509  0.02071    + *  +         .
 \6     -0.10509  0.02071    + *  +         .
 \7     -0.10009  0.019724    + * +         .
 \8     -0.090077 0.017752     + * +        .
 \9     -0.075064 0.014793       + * +      .
 \10    -0.055047 0.010848          +* +    .
 \11    -0.030026 0.0059173             *+  .
LAG SUM: -0.91078  STD. ERR.: 0.17949
MEAN LAG: 5.5

3)                                 PDL(LEC,1,2,FAR)

 \0    0.37337 0.086814   .        +  *  +
 \1    0.18668 0.043407   .    +*+
LAG SUM: 0.56005  STD. ERR.: 0.13022
MEAN LAG: 0.33333

4)                                 PDL(LRELAHEM,1,2,FAR)

 \0    -0.38066 0.19774    +    *    +   .
 \1    -0.19033 0.098869            +  *  + .
LAG SUM: -0.57099  STD. ERR.: 0.29661
MEAN LAG: 0.33333

5)  0.012065 0.0037959  3.1784     Q1*Q851964
6) -0.03641  0.012587  -2.8926     Q784
7) -0.03009  0.012753  -2.3595     Q824
8)  0.043806 0.013098   3.3445     Q961
9)  0.97123  0.022914  42.387      RHO
R-BAR SQUARED:0.97865
DURBIN-WATSON:1.72
STANDARD ERROR:0.017455     NORMALIZED:0.0016707
```

SERVICE AREA EMPLOYMENT - ALL OTHER INDUSTRIES - DURABLE GOODS

WHERE:

LEAOIDG@CGE	=LOG(EAOIDG@CGE)
LJQINDAOIDG	=LOG(JQINDAOIDG)
LJQEAOIDG	=LOG(JQINDAOIDG/EAOIDG)
LEC	=LOG(EC)
LRELAHEM	=LOG(AHEMNS@1640/AHEM)
Q1	QUALITATIVE VARIABLE - FIRST QUARTER
Q851964	QUALITATIVE VARIABLE - FIRST QUARTER, 1985 TO FOURTH QUARTER, 1996
Q784	QUALITATIVE VARIABLE - FOURTH QUARTER, 1978
Q824	QUALITATIVE VARIABLE - FOURTH QUARTER, 1982
Q961	QUALITATIVE VARIABLE - FIRST QUARTER, 1996

AND:

EAOIDG@CGE	SERVICE AREA EMPLOYMENT - ALL OTHER INDUSTRIES - DURABLE GOODS
JQINDAOIDG	US INDUSTRIAL PRODUCTION INDEX - ALL OTHER INDUSTRIES - DURABLE GOODS
EAOIDG	US EMPLOYMENT - ALL OTHER DURABLE GOODS INDUSTRIES
EC	US EMPLOYMENT - CONTRACT CONSTRUCTION
AHEMNS@1640	SERVICE AREA AVERAGE HOURLY EARNINGS FOR MANUFACTURING
AHEM	US AVERAGE HOURLY EARNINGS FOR MANUFACTURING

FORECAST EQUATION:

```
1>EAOIDG@CGE=EXP(<8.1878>+<0.39282>*LJQINDAOIDG&&
2>+PDL(LJQEAOIDG,2,12,BOTH,<-0.030026,-0.055047,-0.075064,-0.090077,
3>-0.10009,-0.10509,-0.10509,-0.10009,-0.090077,-0.075064,-0.055047,
4>-0.030026>)&&
5>+PDL(LEC,1,2,FAR,<0.37337,0.18668>)&&
6>+PDL(LRELAHEM,1,2,FAR,<-0.38066,-0.19033>)+EAOIDG@CGE@AR1)
```

SERVICE AREA EMPLOYMENT - ALL OTHER INDUSTRIES - NONDURABLE GOODS

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION

```
-----------------------------------------------------------

FREQUENCY: Q
INTERVAL:  1971:3 TO 1997:4  (106 OBS.)
DEPENDENT VARIABLE: LEAOINDG@CGE

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0)  9.7487    0.23483   41.513      CONSTANT
1)                                  PDL(LJQINDAOINDG,1,5,FAR)

 \0    0.25488  0.042944    .          + * +
 \1    0.2039   0.034355    .        +* +
 \2    0.15293  0.025766    .     + *+
 \3    0.10195  0.017177    .   +*+
 \4    0.050976 0.0085887   . +*
LAG SUM: 0.76463   STD. ERR.: 0.12883
MEAN LAG: 1.3333

2)                                  PDL(LJQEAOINDG,1,4,FAR)

 \0    -0.26151  0.055398   +  * +          .
 \1    -0.19613  0.041549     + * +         .
 \2    -0.13075  0.027699        + *+       .
 \3    -0.065377 0.01385             +*+    .
LAG SUM: -0.65377   STD. ERR.: 0.1385
MEAN LAG: 1

3)                                  PDL(LRELAHEM,2,12,BOTH)

 \0     -0.03153  0.014997            +*+  .
 \1     -0.057805 0.027495         +  * +  .
 \2     -0.078825 0.037493      +    *   + .
 \3     -0.094589 0.044991    +   *    +   .
 \4     -0.1051   0.04999    +   *    +    .
 \5     -0.11035  0.05249   +    *    +    .
 \6     -0.11035  0.05249   +    *    +    .
 \7     -0.1051   0.04999    +   *    +    .
 \8     -0.094589 0.044991    +   *    +   .
 \9     -0.078825 0.037493      +    *   + .
 \10    -0.057805 0.027495         +  * +  .
 \11    -0.03153  0.014997            +*+  .
LAG SUM: -0.9564   STD. ERR.: 0.45491
MEAN LAG: 5.5

4) -0.25081    0.059859   -4.1901     LRELAPEI\14
5) -0.0034187 0.0014685  -2.328       Q3
6) -0.021301  0.0074245  -2.8691      Q751
7)  0.017848  0.0075268   2.3713      Q903
8)  0.020074  0.0074142   2.7075      Q964
9)  0.96036   0.027076   35.468       RHO
R-BAR SQUARED:0.96723
DURBIN-WATSON:1.68
STANDARD ERROR:0.010228     NORMALIZED:0.00099775
```

SERVICE AREA EMPLOYMENT - ALL OTHER INDUSTRIES - NONDURABLE GOODS

WHERE:

LEAOINDG@CGE	=LOG(EAOINDG@CGE)
LJQINDAOINDG	=LOG(JQINDAOINDG)
LJQEAOINDG	=LOG(JQINDAOINDG/EAOINDG)
LRELAHEM	=LOG(AHEMNS@1640/AHEM)
LRELAPEI	=LOG(APEIND@CGE/WPI054)
Q3	QUALITATIVE VARIABLE - THIRD QUARTER
Q751	QUALITATIVE VARIABLE - FIRST QUARTER, 1975
Q903	QUALITATIVE VARIABLE - THIRD QUARTER, 1990
Q964	QUALITATIVE VARIABLE - FOURTH QUARTER, 1996

AND:

EAOINDG@CGE	SERVICE AREA EMPLOYMENT - ALL OTHER INDUSTRIES - NONDURABLE GOODS
JQINDAOINDG	US INDUSTRIAL PRODUCTION INDEX - ALL OTHER INDUSTRIES - NONDURABLE GOODS
EAOINDG	US EMPLOYMENT - ALL OTHER NON-DURABLE GOODS INDUSTRIES
AHEMNS@1640	SERVICE AREA AVERAGE HOURLY EARNINGS FOR MANUFACTURING
AHEM	US AVERAGE HOURLY EARNINGS FOR MANUFACTURING
APEIND@CGE	SERVICE AREA AVERAGE PRICE OF ELECTRICITY FOR INDUSTRIAL CUSTOMERS
WPI054	WHOLESALE PRICE INDEX - ELECTRIC POWER

FORECAST EQUATION:

```
1>EAOINDG@CGE=EXP(<9.7487>&&
2>+PDL(LJQINDAOINDG,1,5,FAR,<0.25488,0.2039,0.15293,0.10195,0.050976>)&&
3>+PDL(LJQEAOINDG,1,4,FAR,<-0.26151,-0.19613,-0.13075,-0.065377>)&&
4>+PDL(LRELAHEM,2,12,BOTH,<-0.03153,-0.057805,-0.078825,-0.094589,-0.1051,-0.1
5>+<-0.25081>*LRELAPEI\14+<-0.0034187>*Q3+EAOINDG@CGE@AR1)
```

SERVICE AREA EMPLOYMENT - COMMERCIAL

REGRESSION RESULTS:

```
LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION
---------------------------------------------------------

FREQUENCY: Q
INTERVAL:  1981:1 TO 1997:4  (68 OBS.)
DEPENDENT VARIABLE: LECOM@CGE

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0)  8.8884    0.17075   52.054      CONSTANT
1)  1.0958    0.025411  43.122      LECOM
2)                                  PDL(LRELPCYP,1,2,FAR)

 \0    0.27737 0.14071     .    +     *     +
 \1    0.13869 0.070355    . +   * +
LAG SUM: 0.41606  STD. ERR.: 0.21106
MEAN LAG: 0.33333

3)                                  PDL(LRELAHEM,1,8,FAR)

 \0    -0.054692  0.023961    +    *   +     .
 \1    -0.047855  0.020966      +   *   +    .
 \2    -0.041019  0.017971        +  *   +   .
 \3    -0.034182  0.014976          + *  +   .
 \4    -0.027346  0.011981           +  * +  .
 \5    -0.020509  0.0089855            + * + .
 \6    -0.013673  0.0059903              +* +.
 \7    -0.0068364 0.0029952                +*.
LAG SUM: -0.24611  STD. ERR.: 0.10783
MEAN LAG: 2.3333

4)                                  PDL(LRELAPEC,1,8,FAR)

 \0    -0.035215  0.010007    +  *   +       .
 \1    -0.030813  0.0087562     +  *  +      .
 \2    -0.026411  0.0075053       + *  +     .
 \3    -0.022009  0.0062545         + * +    .
 \4    -0.017607  0.0050036          + * +   .
 \5    -0.013206  0.0037527            + *+  .
 \6    -0.0088037 0.0025018              +*+ .
 \7    -0.0044018 0.0012509                +*.
LAG SUM: -0.15847  STD. ERR.: 0.045032
MEAN LAG: 2.3333

5)  0.007165  0.003008   2.382      Q874
6) -0.0097307 0.0030116 -3.2311     Q951
7)  0.01193   0.0030098  3.9637     Q971
8)  0.72945   0.082951   8.7938     RHO
R-BAR SQUARED:0.99953
DURBIN-WATSON:1.74
STANDARD ERROR:0.003714     NORMALIZED:0.00028362
```

SERVICE AREA EMPLOYMENT - COMMERCIAL

WHERE:

LECOM@CGE	=LOG(ECOM@CGE)
LECOM	=LOG(ECOM)
LRELPCYP	=LOG((YP@CGE/N@CGE)/(YP/N))
LRELAHEM	=LOG(AHEMNS@1640/AHEM)
LRELAPEC	=LOG(APECOM@CGE/WPI054)
Q874	QUALITATIVE VARIABLE - FOURTH QUARTER, 1987
Q951	QUALITATIVE VARIABLE = FIRST QUARTER, 1995
Q971	QUALITATIVE VARIABLE - FIRST QUARTER, 1997

AND:

ECOM@CGE	SERVICE AREA EMPLOYMENT - COMMERCIAL
ECOM	US EMPLOYMENT - COMMERCIAL
YP@CGE	SERVICE AREA PERSONAL INCOME
N@CGE	SERVICE AREA TOTAL POPULATION
YP	US PERSONAL INCOME
N	US TOTAL POPULATION
AHEMNS@1640	SERVICE AREA AVERAGE HOURLY EARNINGS FOR MANUFACTURING
AHEM	US AVERAGE HOURLY EARNINGS FOR MANUFACTURING
APECOM@CGE	SERVICE AREA PRICE OF ELECTRICITY FOR COMMERCIAL CUSTOMERS
WPI054	WHOLESALE PRICE INDEX - ELECTRIC POWER

FORECAST EQUATION:

```
1>ECOM@CGE=EXP(<8.8884>&&
2>+<1.0958>*LECOM&&
3>+PDL(LRELPCYP,1,2,FAR,<0.27737,0.13869>)&&
4>+PDL(LRELAHEM,1,8,FAR,<-0.054692,-0.047855,-0.041019,
5>-0.034182,-0.027346,-0.020509,-0.013673,-0.0068364>)&&
6>+PDL(LRELAPEC,1,8,FAR,<-0.035215,-0.030813,-0.026411,
7>-0.022009,-0.017607,-0.013206,-0.0088037,-0.0044018>)&&
8>+ECOM@CGE@AR1)
```

SERVICE AREA EMPLOYMENT - STATE AND LOCAL GOVERNMENT

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION

```
-----------------------------------------------------------------

FREQUENCY: Q
INTERVAL:  1968:1 TO 1997:4  (120 OBS.)
DEPENDENT VARIABLE: LE90X@CGE

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0)  1.3864   3.9392      0.35195     CONSTANT
1)                                   PDL(LEGSL,2,4,BOTH)

 \0    0.19931 0.017057   .       +*+
 \1    0.29896 0.025586   .             +*+
 \2    0.29896 0.025586   .             +*+
 \3    0.19931 0.017057   .       +*+
LAG SUM: 0.99654  STD. ERR.: 0.085286
MEAN LAG: 1.5

2)                                   PDL(LRELPCYP,1,3,FAR)

 \0    0.19398  0.092822   .    +     *     +
 \1    0.12932  0.061882   .  +   *   +
 \2    0.064658 0.030941   . +* +
LAG SUM: 0.38795  STD. ERR.: 0.18564
MEAN LAG: 0.66667

3)                                   PDL(LRMINWAGE,1,5,FAR)

 \0    -0.030323  0.015034    +     *     +    .
 \1    -0.024259  0.012028       +    *    +   .
 \2    -0.018194  0.0090207         +   *   +  .
 \3    -0.012129  0.0060138            + * + .
 \4    -0.0060647 0.0030069               +*+.
LAG SUM: -0.09097  STD. ERR.: 0.045103
MEAN LAG: 1.3333

4)                                   PDL(LRELPOP,2,8,BOTH)

 \0    0.057385 0.02815    . + * +
 \1    0.10042  0.049262   .  +  *  +
 \2    0.12912  0.063337   .   +    *   +
 \3    0.14346  0.070374   .   +     *     +
 \4    0.14346  0.070374   .   +     *     +
 \5    0.12912  0.063337   .   +    *   +
 \6    0.10042  0.049262   .  +  *  +
 \7    0.057385 0.02815    . + * +
LAG SUM: 0.86077  STD. ERR.: 0.42225
MEAN LAG: 3.5

5) -0.087284 0.0071919 -12.136      Q651734
6) -0.032657 0.0052051  -6.274      Q714
7)  0.014735 0.0051979   2.8349     Q743
8)  0.0169   0.0052271   3.2332     Q754
9)  0.024715 0.0051879   4.7639     Q773
10)  0.021196 0.0052073   4.0704     Q791
11) -0.016753 0.0051881  -3.2291     Q971
12)  0.90754  0.038338   23.672      RHO
R-BAR SQUARED:0.99849
DURBIN-WATSON:1.71
STANDARD ERROR:0.0070019     NORMALIZED:0.00060988
```

SERVICE AREA EMPLOYMENT - STATE AND LOCAL GOVERNMENT

```
WHERE:
     LE90X@CGE          =LOG(E90X@CGE)
     LEGSL              =LOG(N@CGE*(EGSL/N))
     LRELPCYP           =LOG((YP@CGE/N@CGE)/(YP/N))
```

LRMINWAGE	=LOG(MINWAGE/CPI)
LRELPOP	=LOG(N@CGE/N)
Q651734	QUALITATIVE VARIABLE - FIRST QUARTER, 1965 TO FOURTH QUARTER, 1973
Q714	QUALITATIVE VARIABLE - FOURTH QUARTER, 1971
Q743	QUALITATIVE VARIABLE - THIRD QUARTER, 1974
Q754	QUALITATIVE VARIABLE - FOURTH QUARTER, 1975
Q773	QUALITATIVE VARIABLE - THIRD QUARTER, 1977
Q791	QUALITATIVE VARIABLE - FIRST QUARTER, 1979
Q971	QUALITATIVE VARIABLE - FIRST QUARTER, 1997

AND:

E90X@CGE	SERVICE AREA EMPLOYMENT - STATE AND LOCAL GOVERNMENT
EGSL	US EMPLOYMENT - STATE AND LOCAL GOVERNMENT
YP@CGE	SERVICE AREA PERSONAL INCOME
YP	US PERSONAL INCOME
MINWAGE	MINIMUM WAGE
CPI	CONSUMER PRICE INDEX (ALL URBAN) - ALL ITEMS
N@CGE	SERVICE AREA TOTAL POPULATION
N	US TOTAL POPULATION

FORECAST EQUATION:

```
1>E90X@CGE=EXP(<1.3864>&&
2>+PDL(LEGSL,2,4,BOTH,<0.19931,0.29896,0.29896,0.19931>)&&
3>+PDL(LRELPCYP,1,3,FAR,<0.19398,0.12932,0.064658>)&&
4>+PDL(LRMINWAGE,1,5,FAR,<-0.030323,-0.024259,
5>-0.018194,-0.012129,-0.0060647>)&&
6>+PDL(LRELPOP,2,8,BOTH,<0.057385,0.10042,0.12912,
7>0.14346,0.14346,0.12912,0.10042,0.057385>)&&
8>+E90X@CGE@AR1)
```

SERVICE AREA EMPLOYMENT - CONTRACT CONSTRUCTION

REGRESSION RESULTS:

```
LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION
----------------------------------------------------------

FREQUENCY: Q
INTERVAL:  1975:1 TO 1997:4  (92 OBS.)
DEPENDENT VARIABLE: LE15@CGE

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0) 8.7337   0.21589   40.454       CONSTANT
1)                                 PDL(LEC,1,3,FAR)

 \0    0.60335 0.066372   .              + *+
 \1    0.40224 0.044248   .          +*+
 \2    0.20112 0.022124   .   +*
LAG SUM: 1.2067  STD. ERR.: 0.13274
MEAN LAG: 0.66667

2)                                 PDL(RMSHORTREALNS,2,6,BOTH)

 \0    -0.0018288 0.00058301       + * +   .
 \1    -0.0030481 0.00097168    +    *  +    .
 \2    -0.0036577 0.001166    +   *  +       .
 \3    -0.0036577 0.001166    +   *  +       .
 \4    -0.0030481 0.00097168    +    *  +    .
 \5    -0.0018288 0.00058301       + * +   .
LAG SUM: -0.017069  STD. ERR.: 0.0054414
MEAN LAG: 2.5

3) 0.65935  0.31735    2.0777      LRELCHECOM
4) 1.3414   0.65765    2.0397      LRELPCYP
5) 0.049831 0.016442   3.0308      Q801
6) 0.95799  0.029901  32.039       RHO
R-BAR SQUARED:0.98928
DURBIN-WATSON:1.99
STANDARD ERROR:0.021013      NORMALIZED:0.0020199
```

SERVICE AREA EMPLOYMENT - CONTRACT CONSTRUCTION

WHERE:

LE15@CGE	=LOG(E15@CGE)
LEC	=LOG(EC)
RMSHORTREALNS	REAL SHORT-TERM INTEREST RATE
LRELCHECOM	=LOG((ECOM@CGE/ECOM@CGE\1)/(ECOM/ECOM\1))
LRELPCYP	=LOG((YP@CGE/N@CGE)/(YP/N))
Q801	QUALITATIVE VARIABLE - FIRST QUARTER, 1980

AND:

E15@CGE	SERVICE AREA EMPLOYMENT - CONTRACT CONSTRUCTION
EC	US EMPLOYMENT - CONTRACT CONSTRUCTION
ECOM@CGE	SERVICE AREA EMPLOYMENT - COMMERCIAL
ECOM	US EMPLOYMENT - COMMERCIAL
YP@CGE	SERVICE AREA PERSONAL INCOME
N@CGE	SERVICE AREA TOTAL POPULATION
YP	US PERSONAL INCOME
N	US TOTAL POPULATION

FORECAST EQUATION:

```
1>E15@CGE=EXP(<8.7337>&&
2>+PDL(LEC,1,3,FAR,<0.60335,0.40224,0.20112>)&&
3>+PDL(RMSHORTREALNS,2,6,BOTH,<-0.0018288,-0.0030481,
4>-0.0036577,-0.0036577,-0.0030481,-0.0018288>)&&
5>+<0.65935>*LRELCHECOM&&
6>+<1.3414>*LRELPCYP&&
7>+E15@CGE@AR1)
```

SERVICE AREA PERSONAL INCOME

EQUATION:

YP@CGE=WSD@ADJ@CGE+YPPROP@CGE+YENT@CGE+V@CGE-TWPER@CGE

WHERE:

YP@CGE	SERVICE AREA PERSONAL INCOME
V@CGE	SERVICE AREA TOTAL TRANSFER PAYMENTS
WSD@ADJ@CGE	SERVICE AREA WAGE AND SALARY DISBURSEMENTS PLUS OTHER INCOME
YENT@CGE	SERVICE AREA NONFARM PROPRIETORS INCOME
YPROP@CGE	SERVICE AREA PERSONAL PROPERTY INCOME
TWPER@CGE	SERVICE AREA PERSONAL CONTRIBUTIONS FOR SOCIAL INSURANCE

SERVICE AREA EMPLOYMENT - MANUFACTURING

EQUATION:

```
EM@CGE=E20@CGE+E26@CGE+E28@CGE+E33NS@BUTLER+E33NS@CMSA&&
+E35NS@CGE+E36NS@CGE+E371NS@CGE+E372@9NS@CGE+EAOIDG@CGE+EAOINDG@CGE
```

WHERE:

EM@CGE	SERVICE AREA EMPLOYMENT - MANUFACTURING
EAOIDGNS@CGE	SERVICE AREA EMPLOYMENT - ALL OTHER INDUSTRIES - DURABLE GOODS
EAOINDGNS@CGE	SERVICE AREA EMPLOYMENT - ALL OTHER INDUSTRIES - NON-DURABLE GOODS
E20@CGE	SERVICE AREA EMPLOYMENT - FOOD AND PRODUCTS
E26@CGE	SERVICE AREA EMPLOYMENT - PAPER AND PRODUCTS
E28@CGE	SERVICE AREA EMPLOYMENT - CHEMICALS AND PRODUCTS
E33NS@BUTLER	SERVICE AREA EMPLOYMENT - PRIMARY METALS INDUSTRIES - BUTLER COUNTY
E33NS@CINN	SERVICE AREA EMPLOYMENT - PRIMARY METALS INDUSTRIES - ALL COUNTIES EXCEPT BUTLER
E35NS@CGE	SERVICE AREA EMPLOYMENT - MACHINERY EXCEPT ELECTRICAL
E36NS@CGE	SERVICE AREA EMPLOYMENT - ELECTRICAL MACHINERY
E371NS@CGE	SERVICE AREA EMPLOYMENT - TRANSPORTATION EQUIPMENT MOTOR VEHICLES AND PARTS
E372@9NS@CGE	SERVICE AREA EMPLOYMENT - TRANSPORTATION EQUIPMENT OTHER THAN MOTOR VEHICLES AND PARTS

SERVICE AREA EMPLOYMENT - TOTAL

EQUATION:

E@CGE=EM@CGE+ECOM@CGE+E9OX@CGE+E15@CGE

WHERE:

E@CGE	SERVICE AREA EMPLOYMENT - TOTAL
EM@CGE	SERVICE AREA EMPLOYMENT - MANUFACTURING
ECOM@CGE	SERVICE AREA EMPLOYMENT - COMMERCIAL
E9OX@CGE	SERVICE AREA EMPLOYMENT - STATE AND LOCAL GOVERNMENT
E15@CGE	SERVICE AREA EMPLOYMENT - CONTRACT CONSTRUCTION

ELECTRIC EQUATIONS

SERVICE AREA CUSTOMERS - RESIDENTIAL

LEAST SQUARES WITH 2ND ORDER AUTOCORRELATION CORRECTION

```
---------------------------------------------------------
FREQUENCY: Q
INTERVAL:  1973:1 TO 1997:4  (100 OBS.)
DEPENDENT VARIABLE: LCUSRES@CGE

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0)  1.7554     1.1148       1.5746      CONSTANT
1)  0.43725    0.069382     6.302       LRPCYP@CGEMA32
2)                                      PDL(LN20&@CGE,1,4,FAR)

 \0    0.29662  0.036657    .              +* +
 \1    0.22246  0.027493    .          +*+
 \2    0.14831  0.018329    .      +*
 \3    0.074154 0.0091643   .  *+
LAG SUM: 0.74154  STD. ERR.: 0.091643
MEAN LAG: 1

3)  0.01676    0.00084748 19.776      Q651932
4)  0.0054559  0.00066291  8.2302     Q752
5)  0.0019543  0.00066354  2.9453     Q753
6)  0.0030538  0.00049343  6.1889     Q941
7)  1.6155     0.075134   21.501      RHO1
8) -0.68679    0.074931   -9.1656     RHO2
R-BAR SQUARED:0.9999
DURBIN-WATSON:2.05
STANDARD ERROR:0.00099642     NORMALIZED:0.000075319
```

SERVICE AREA CUSTOMERS - RESIDENTIAL

WHERE:

LCUSRES@CGE	=LOG(CUSRES@CGE)
LRPCYP@CGEMA32	32 MONTH MOVING AVERAGE OF REAL PER CAPITA SERVICE AREA PERSONAL INCOME
LN20&@CGE	=LOG(N20&@CGE)
Q651932	QUALITATIVE VARIABLE - FIRST QUARTER, 1965 TO SECOND QUARTER, 1993
Q752	QUALITATIVE VARIABLE - SECOND QUARTER, 1975
Q753	QUALITATIVE VARIABLE - THIRD QUARTER, 1975
Q941	QUALITATIVE VARIABLE - FIRST QUARTER, 1994

AND:

CUSRES@CGE	SERVICE AREA ELECTRIC CUSTOMERS - RESIDENTIAL
N20&@CGE	SERVICE AREA POPULATION AGED 20 AND OVER

FORECAST EQUATION:

```
1>CUSRES@CGE=EXP(<1.7554>&&
2>+<0.43725>*LRPCYP@CGEMA32&&
3>+PDL(LN20&@CGE,1,4,FAR,<0.29662,0.22246,0.14831,0.074154>)&&
4>+CUSRES@CGE@AR2)
```

KWH USE PER CUSTOMER - RESIDENTIAL

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION

```
-------------------------------------------------------

FREQUENCY: M
INTERVAL:  1981:1 TO 1997:12  (204 OBS.)
DEPENDENT VARIABLE: LKWHCUSRESNS@CGE

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0)  2.3368      0.37357       6.2555      CONSTANT
1)                                        PDL(LRPCYP@CGE@APP,2,10,BOTH)

 \0     0.01739  0.0012305    .   +*
 \1     0.031302 0.002215     .       *+
 \2     0.041736 0.0029533    .         ++*+
 \3     0.048692 0.0034455    .           +*+
 \4     0.05217  0.0036916    .            +*+
 \5     0.05217  0.0036916    .            +*+
 \6     0.048692 0.0034455    .           +*+
 \7     0.041736 0.0029533    .         +*+
 \8     0.031302 0.002215     .       *+
 \9     0.01739  0.0012305    .   +*
LAG SUM: 0.38258   STD. ERR.: 0.027072
MEAN LAG: 4.5

2)                                        PDL(LRMP@RES@CGE@APP,2,12,BOTH)

 \0      -0.0023721 0.00080067             +*+ .
 \1      -0.0043488 0.0014679          + * +   .
 \2      -0.0059302 0.0020017       +  *  +    .
 \3      -0.0071163 0.002402      +  *  +      .
 \4      -0.007907  0.0026689    +  *   +      .
 \5      -0.0083023 0.0028024   +   •   +      .
 \6      -0.0083023 0.0028024   +   *   +      .
 \7      -0.007907  0.0026689    +  *   +      .
 \8      -0.0071163 0.002402      +  *  +      .
 \9      -0.0059302 0.0020017       +  *  +    .
 \10     -0.0043488 0.0014679          + * +   .
 \11     -0.0023721 0.00080067             +*+ .
LAG SUM: -0.071954   STD. ERR.: 0.024287
MEAN LAG: 5.5

3)  0.00082165 0.00022784     3.6062      HEAT*HDDB@EFF
4)  0.0022097  0.00024142     9.1527      COOL*CDDB@EFF@CAC
5)  0.00051124 0.00019962     2.5611      (MMAY+COOL)*CDDB@EFF@RAC
6)  0.00014087 0.000050315    2.7998      (MNOV)*HDDB
7)  0.00035542 0.000047226    7.526       (MDEC)*HDDB
8)  0.00038862 0.000046059    8.4375      (MJAN)*HDDB
9)  0.00035075 0.00004628     7.5789      (MFEB)*HDDB
10)  0.00033811 0.000047359     7.1393     (MMAR)*HDDB
11)  0.00027699 0.00004966      5.5777     (MAPR+MMAY)*HDDB
12)  0.00026851 0.00011002      2.4407     (MJUN)*CDDB
13)  0.00045233 0.00011767      3.8442     (MJUL)*CDDB
14)  0.00050253 0.00011676      4.3038     (MAUG)*CDDB
15)  0.00054069 0.00011072      4.8834     (MSEP)*CDDB
16) -0.044598    0.0071058    -6.2762     MMAY
17) -0.06509     0.023967     -2.7158     M856
18) -0.051722    0.023996     -2.1554     M857
19) -0.056308    0.018624     -3.0234     M954+M955
20)  0.091882    0.023578      3.897      M967
21) -0.064966    0.023974     -2.7099     M973
22) -0.10689     0.024817     -4.3071     M974
23) -0.1074      0.024436     -4.3951     M975
24)  0.11145     0.023651      4.7124     M977
25)  0.19947     0.068607      2.9075      RHO
R-BAR SQUARED:0.98721
DURBIN-WATSON:1.97
STANDARD ERROR:0.023239      NORMALIZED:0.003432
```

KWH USE PER CUSTOMER - RESIDENTIAL

```
WHERE:
   LKWHCUSRESNS@CGE   =LOG(KWHCUSRESNS@CGE)
   LRPCYP@CGE@APP     =LOG(APPLSTK@EFF@CGE*(YP@CGE/N@CGE/CPI))
   LRMP@RES@CGE@APP   =LOG(APPLSTK@EFF@CGE*(MP@RES@CGE/CPI))
   HEAT               QUALITATIVE VARIABLE - HEATING MONTHS, NOVEMBER
                        THROUGH MAY
   HDDB@EFF           =HDDB*(SAT@ER@CGE+SAT@EHP@CGE*EFF@EHP@CGE)
   CDDB@EFF@CAC       =CDDB*EFF@CAC@CGE*(SAT@EHP@CGE+SAT@CACnHP@CGE)
   COOL               QUALITATIVE VARIABLE - COOLING MONTHS, JUNE
                        THROUGH OCTOBER
   CDDB@EFF@RAC       =CDDB*EFF@RAC@CGE*SAT@RAC@CGE
   MNOV               QUALITATIVE VARIABLE - NOVEMBER
   MDEC               QUALITAIVE VARIABLE - DECEMBER
   MJAN               QUALITATIVE VARIABLE - JANUARY
   MFEB               QUALITATIVE VARIABLE - FEBRUARY
   MMAR               QUALITATIVE VARIABLE - MARCH
   MAPR               QUALITATIVE VARIABLE - APRIL
   HDDB               BILLING HEATING DEGREE DAYS
   MJUN               QUALITATIVE VARIABLE - JUNE
   MJUL               QUALITATIVE VARIABLE - JULY
   MAUG               QUALITATIVE VARIABLE - AUGUST
   MSEP               QUALITATIVE VARIABLE - SEPTEMBER
   CDDB               BILLING COOLING DEGREE DAYS
   MMAY               QUALITATIVE VARIABLE - MAY
   M856               QUALITATIVE VARIABLE - JUNE, 1985
   M857               QUALITATIVE VARIABLE - JULY, 1985
   M954               QUALITATIVE VARIABLE - APRIL, 1995
   M955               QUALITATIVE VARIABLE - MAY, 1995
   M967               QUALITATIVE VARIABLE - JULY, 1996
   M973               QUALITATIVE VARIABLE - MARCH, 1997
   M974               QUALITATIVE VARIABLE - APRIL, 1997
   M975               QUALITATIVE VARIABLE - MAY, 1997
   M977               QUALITATIVE VARIABLE - JULY, 1997

 AND:
   KWHCUSRESNS@CGE    SERVICE AREA KWH SALES - USE PER RESIDENTIAL
                        CUSTOMER
   YP@CGE             SERVICE AREA PERSONAL INCOME
   N@CGE              SERVICE AREA TOTAL POPULATION
   APPLSTK@EFF@CGE    EFFICIENT APPLIANCE STOCK
   MP@RES@CGE         MARGINAL PRICE OF ELECTRICITY - RESIDENTIAL
   CPI                CONSUMER PRICE INDEX (ALL URBAN) - ALL ITEMS
   HDDB               BILLING HEATING DEGREE DAYS
   SAT@ER@CGE         SATURATION RATE OF ELECTRIC RESISTANCE HEATERS IN
                        SERVICE AREA
   EFF@EHP@CGE        EFFICIENCY OF ELECTRIC HEAT PUMP UNITS IN SERVICE
                        AREA
   EFF@CAC@CGE        EFFICIENCY OF CENTRAL AIR CONDITIONING UNITS IN
                        SERVICE AREA
   SAT@EHP@CGE        SERVICE AREA SATURATION OF ELECTRIC HEAT PUMPS -
                        RESIDENTIAL
   SAT@CACHP@CGE      SERVICE AREA SATURATION OF CENTRAL AIR
                        CONDITIONING WITHOUT HEAT PUMP
   CDDB               BILLING COOLING DEGREE DAYS
   EFF@RAC@CGE        EFFICIENCY OF WINDOW AIR CONDITIONING UNITS IN
                        SERVICE AREA
   SAT@RAC@CGE        SERVICE AREA SATURATION OF WINDOW AIR CONDITIONING
```

FORECAST EQUATION:

```
 1>KWHCUSRESNS@CGE=EXP(<2.2743>&&
 2>+PDL(LRPCYP@CGE@APP,2,10,BOTH,<0.017587,0.031657,0.04221,0.049245,
 3>0.052762,0.052762,0.049245,0.04221,0.031657,0.017587>)&&
 4>+PDL(LRMP@RES@CGE@APP,2,12,BOTH,<-0.0023289,-0.0042696,-0.0058221,
 5>-0.0069866,-0.0077628,-0.008151,-0.008151,-0.0077628,-0.0069866,
 6>-0.0058221,-0.0042696,-0.0023289>)&&
 7>+<0.00079976>*(HEAT*HDDB@EFF)&&
 8>+<0.0022221>*(COOL*CDDB@EFF@CAC)&&
 9>+<0.0006275>*((MMAY+COOL)*CDDB@EFF@RAC)&&
10>+<0.00015195>*((MNOV)*HDDB)&&
11>+<0.00036187>*((MDEC)*HDDB)&&
12>+<0.00039422>*((MJAN)*HDDB)&&
13>+<0.00035914>*((MFEB)*HDDB)&&
14>+<0.00034589>*((MMAR)*HDDB)&&
15>+<0.00028614>*((MAPR+MMAY)*HDDB)&&
16>+<0.0002257>*((MJUN)*CDDB)&&
17>+<0.0004026>*((MJUL)*CDDB)&&
18>+<0.00044805>*((MAUG)*CDDB)&&
19>+<0.00048918>*((MSEP)*CDDB)&&
20>+<-0.045309>*MMAY+KWHCUSRESNS@CGE@AR1)
```

KWH SALES - COMMERCIAL

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION

```
------------------------------------------------------------

FREQUENCY: M
INTERVAL:  1975:1 TO 1997:12  (276 OBS.)
DEPENDENT VARIABLE: LKWHCOMNS@CGE

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0)  0.96664     0.052168    18.529      LECOM@CGE
1)                                      PDL(LDS@KWH@COM@CPI,1,2,FAR)

 \0    -0.10423  0.026296    +  *  +           .
 \1    -0.052114 0.013148           +  *  +    .
LAG SUM: -0.15634  STD. ERR.: 0.039444
MEAN LAG: 0.33333

2)                                      PDL(LRAPGCOM@CGE,1,4,FAR)

 \0    0.013214  0.006481     .    +     *     +
 \1    0.0099103 0.0048608    .   +    *   +
 \2    0.0066069 0.0032405    .  + * +
 \3    0.0033034 0.0016203   .+ *+
LAG SUM: 0.033034  STD. ERR.: 0.016203
MEAN LAG: 1

3)  0.00014701 0.000014316 10.269      HDDB
4)  0.00068978 0.000040414 17.068      CDDB
5)  6.1805      0.54586     11.323      MJAN
6)  6.1525      0.54605     11.267      MFEB
7)  6.1417      0.54601     11.248      MMAR
8)  6.1227      0.54575     11.219      MAPR
9)  6.1348      0.5456      11.244      MMAY
10)  6.2122      0.54551     11.388      MJUN
11)  6.2267      0.54555     11.414      MJUL
12)  6.2241      0.54567     11.406      MAUG
13)  6.2381      0.54576     11.43       MSEP
14)  6.1546      0.54589     11.274      MOCT
15)  6.1105      0.54593     11.193      MNOV
16)  6.1656      0.54581     11.296      MDEC
17) -0.086922    0.018023    -4.8227     M7511
18)  0.040291    0.018002     2.2382     M7711
19) -0.042482    0.019967    -2.1276     M805
20) -0.052158    0.020002    -2.6077     M806
21)  0.075678    0.017848     4.2401     M817
22) -0.040228    0.017817    -2.2578     M849
23)  0.06511     0.017834     3.6508     M9111
24)  0.097284    0.017843     5.4523     M914
25)  0.044129    0.017844     2.4731     M927
26)  0.083508    0.020692     4.0357     M938
27) -0.067116    0.02319     -2.8942     M939
28)  0.11918     0.020742     5.7458     M9310
29)  0.10649     0.017837     5.9701     M954
30)  0.049137    0.01784      2.7543     M956
31) -0.054778    0.020061    -2.7305     M972
32) -0.046974    0.020128    -2.3337     M973
33)  0.074978    0.017868     4.1963     M977
34)  0.63374     0.046562    13.611      RHO
R-BAR SQUARED:0.99408
DURBIN-WATSON:2.05
STANDARD ERROR:0.020593     NORMALIZED:0.0010475
```

KWH SALES - COMMERCIAL

WHERE:

LKWHCOMNS@CGE	=LOG(KWHCOMNS@CGE)
LECOM@CGE	=LOG(ECOM@CGE)
LDS@KWH@COM@CPI	=LOG(DS@KWH@COM@CGE/CPI)
LRAPGCOM@CGE	=LOG(APGCOM@CGE/CPI)
HDDB	BILLING HEATING DEGREE DAYS
CDDB	BILLING COOLING DEGREE DAYS
MJAN	QUALITATIVE VARIABLE - JANUARY
MFEB	QUALITATIVE VARIABLE - FEBRUARY
MMAR	QUALITATIVE VARIABLE - MARCH
MAPR	QUALITATIVE VARIABLE - APRIL
MMAY	QUALITATIVE VARIABLE - MAY
MJUN	QUALITATIVE VARIABLE - JUNE
MJUL	QUALITATIVE VARIABLE - JULY
MAUG	QUALITATIVE VARIABLE - AUGUST
MSEP	QUALITATIVE VARIABLE - SEPTEMBER
MOCT	QUALITATIVE VARIABLE - OCTOBER
MNOV	QUALITATIVE VARIABLE - NOVEMBER
MDEC	QUALITAITVE VARIABLE - DECEMBER
M7511	QUALITATIVE VARIABLE - NOVEMBER, 1975
M7711	QUALITATIVE VARIABLE - NOVEMBER, 1977
M805	QUALITATIVE VARIABLE - MAY, 1980
M806	QUALITATIVE VARIABLE - JUNE, 1980
M817	QUALITATIVE VARIABLE - JULY, 1981
M849	QUALITATIVE VARIABLE - SEPTEMBER, 1984
M9111	QUALITATIVE VARIABLE - NOVEMBER, 1991
M914	QUALITATIVE VARIABLE - APRIL, 1991
M927	QUALITATIVE VARIABLE - JULY, 1992
M938	QUALITATIVE VARIABLE - AUGUST, 1993
M939	QUALITATIVE VARIABLE - SEPTEMBER, 1993
M9310	QUALITATIVE VARIABLE - OCTOBER, 1993
M954	QUALITATIVE VARIABLE - APRIL, 1995
M956	QUALITATIVE VARIABLE - JUNE, 1995
M972	QUALITATIVE VARIABLE - FEBRUARY, 1997
M973	QUALITATIVE VARIABLE - MARCH, 1997
M977	QUALITATIVE VARIABLE - JULY, 1997

AND:

KWHCOMNS@CGE	KWH SALES - COMMERCIAL
ECOM@CGE	SERVICE AREA EMPLOYMENT - COMMERCIAL
DS@KWH@COM@CGE	SERVICE AREA DS RATE FOR USAGE FOR COMMERCIAL CUSTOMER
APGCOM@CGE	SERVICE AREA AVERAGE PRICE OF GAS FOR COMMERCIAL CUSTOMER
CPI	CONSUMER PRICE INDEX (ALL URBAN) - ALL ITEMS

FORECAST EQUATION:

```
1>KWHCOMNS@CGE=EXP(<0.96664>*LECOM@CGE&&
2>+PDL(LDS@KWH@COM@CPI,1,2,FAR,<-0.10423,-0.052114>)&&
3>+PDL(LRAPGCOM@CGE,1,4,FAR,<0.013214,0.0099103,0.0066069,0.0033034>)&&
4>+<0.00014701>*HDDB&&
5>+<0.00068978>*CDDB&&
6>+<6.1805>*MJAN+<6.1525>*MFEB+<6.1417>*MMAR+<6.1227>*MAPR+<6.1348>*MMAY&&
7>+<6.2122>*MJUN+<6.2267>*MJUL+<6.2241>*MAUG+<6.2381>*MSEP+<6.1546>*MOCT&&
8>+<6.1105>*MNOV+<6.1656>*MDEC&&
9>+KWHCOMNS@CGE@AR1)
```

KWH SALES - FOOD AND PRODUCTS

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION

```
----------------------------------------------------------

FREQUENCY: Q
INTERVAL:  1972:1 TO 1997:4  (104 OBS.)
DEPENDENT VARIABLE: LKWH20NS@CGE

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0) 18.056       0.28526       63.298      CONSTANT
1)                                        PDL(LJQIND20@CGE,1,2,FAR)

 \0    0.55009 0.17695     .       +   *    +
 \1    0.27505 0.088474    .    + *+
LAG SUM: 0.82514   STD. ERR.: 0.26542
MEAN LAG: 0.33333

2)                                        PDL(LDS@KW@IND@CPI,2,8,BOTH)

 \0    -0.014797 0.0074743          + * + .
 \1    -0.025895 0.01308        +   *   +  .
 \2    -0.033294 0.016817     +    *    +  .
 \3    -0.036993 0.018686    +    *    +   .
 \4    -0.036993 0.018686    +    *    +   .
 \5    -0.033294 0.016817     +    *    +  .
 \6    -0.025895 0.01308        +   *   +  .
 \7    -0.014797 0.0074743          + * + .
LAG SUM: -0.22196   STD. ERR.: 0.11211
MEAN LAG: 3.5

3)                                        PDL(LDS@KWH@IND@OIL,1,4,FAR)

 \0    -0.045554 0.019302    +   *    +     .
 \1    -0.034165 0.014477        +  *  +    .
 \2    -0.022777 0.009651          +  * +   .
 \3    -0.011388 0.0048255            ++*+  .
LAG SUM: -0.11388   STD. ERR.: 0.048255
MEAN LAG: 1

4)  0.000085899 0.000010109    8.4972      Q3*CDDB
5) -0.000053283 0.0000035617 -14.96        HDDB
6) -0.041761     0.0079379    -5.2609      Q2
7) -0.12934      0.024117     -5.3629      Q922
8) -0.083287     0.024138     -3.4505      Q932
9) -0.076636     0.024059     -3.1854      Q952
10)  0.99        0.013833     71.569        RHO
R-BAR SQUARED:0.97698
DURBIN-WATSON:1.86
STANDARD ERROR:0.033062      NORMALIZED:0.0018328
```

KWH SALES - FOOD AND PRODUCTS

WHERE:

LKWH20NS@CGE	=LOG(KWH20NS@CGE)
LJQIND20@CGE	=LOG(JQIND20@CGE)
LDS@KW@IND@CPI	=LOG(DS@KW@IND@CGE/CPI)
LDS@KWH@IND@OIL	=LOG(DS@KWH@IND@CGE/WPI0561)
Q3	QUALITATIVE VARIABLE - THIRD QUARTER
CDDB	BILLING COOLING DEGREE DAYS
HDDB	BILLING HEATING DEGREE DAYS
Q2	QUALITATIVE VARIABLE - SECOND QUARTER
Q922	QUALITATIVE VARIABLE - SECOND QUARTER, 1992
Q932	QUALITATIVE VARIABLE - SECOND QUARTER, 1993
Q952	QUALITATIVE VARIABLE - SECOND QUARTER, 1995

AND:

KWH20NS@CGE	KWH SALES - FOOD AND PRODUCTS
JQIND20@CGE	SERVICE AREA INDUSTRIAL PRODUCTION INDEX - FOOD AND PRODUCTS
DS@KW@IND@CGE	SERVICE AREA DS RATE FOR DEMAND FOR INDUSTRIAL CUSTOMER
CPI	CONSUMER PRICE INDEX (ALL URBAN) - ALL ITEMS
DS@KWH@IND@CGE	SERVICE AREA DS RATE FOR USAGE FOR INDUSTRIAL CUSTOMER
WPI0561	WHOLESALE PRICE INDEX FOR CRUDE PETROLEUM

FORECAST EQUATION:

```
1>KWH20NS@CGE=EXP(<18.08>+PDL(LJQIND20@CGE,1,2,FAR,<0.57799,0.28899>)&&
2>+PDL(LDS@KW@IND@CPI,2,8,BOTH,<-0.014675,-0.025682,-0.033019,
3>-0.036688,-0.036688,-0.033019,-0.025682,-0.014675>)&&
4>+PDL(LDS@KWH@IND@OIL,1,4,FAR,<-0.041606,-0.031205,-0.020803,-0.010402>)&&
5>+<0.00008661>*(Q3*CDDB)+<-0.000053231>*HDDB&&
6>+<-0.040779>*Q2+KWH20NS@CGE@AR1)
```

KWH SALES - PAPER AND PRODUCTS

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION

```
FREQUENCY: Q
INTERVAL:  1976:1 TO 1997:4  (88 OBS.)
DEPENDENT VARIABLE: LKWH26NS@CGE

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0)                                  PDL(LJQIND26@CGE,1,5,FAR)

 \0    0.3123   0.08746    .       +    *   +
 \1    0.24984  0.069968   .      + *   +
 \2    0.18738  0.052476   .    + * +
 \3    0.12492  0.034984   .  + *+
 \4    0.062459 0.017492   . *+
LAG SUM: 0.93689  STD. ERR.: 0.26238
MEAN LAG: 1.3333

1)                                  PDL(LDS@KWH@IND@AHEM,1,3,FAR)

 \0    -0.10347  0.040872  +    *    +         .
 \1    -0.068983 0.027248       +   *   +      .
 \2    -0.034491 0.013624            +* +      .
LAG SUM: -0.20695  STD. ERR.: 0.081745
MEAN LAG: 0.66667

2)                                  PDL(LDS@KW@IND@CPI,1,2,FAR)

 \0    -0.073843 0.033067  +    *    +         .
 \1    -0.036922 0.016534       +   * +        .
LAG SUM: -0.11077  STD. ERR.: 0.049601
MEAN LAG: 0.33333

3) 17.457    0.50042  34.884      Q1
4) 17.518    0.5005   35.001      Q2
5) 17.525    0.50019  35.037      Q3
6) 17.496    0.50063  34.948      Q4
7) -0.12661  0.032759 -3.8648     Q781
8)  0.068554 0.032703  2.0962     Q921
9)  0.13314  0.032741  4.0665     Q931
10) -0.074514 0.03266  -2.2815    Q963
11)  0.73133  0.072704 10.059     RHO
R-BAR SQUARED:0.91053
DURBIN-WATSON:1.96
STANDARD ERROR:0.039432     NORMALIZED:0.0021308
```

KWH SALES - PAPER AND PRODUCTS

WHERE:

LKWH26NS@CGE	=LOG(KWH26NS@CGE)
LJQIND26@CGE	=LOG(JQIND26@CGE)
LDS@KWH@IND@AHEM	=LOG(DS@KWH@IND@CGE/AHEM@1640)
LDS@KW@IND@CPI	=LOG(DS@KW@IND@CGE/CPI)
Q1	QUALITATIVE VARIABLE - FIRST QUARTER
Q2	QUALITATIVE VARIABLE - SECOND QUARTER
Q3	QUALITATIVE VARIABLE - THIRD QUARTER
Q4	QUALITATIVE VARIABLE - FOURTH QUARTER
Q781	QUALITATIVE VARIABLE - FIRST QUARTER, 1978
Q921	QUALITATIVE VARIABLE - FIRST QUARTER, 1992
Q931	QUALITATIVE VARIABLE - FIRST QUARTER, 1993
Q963	QUALITATIVE VARIABLE - THIRD QUARTER, 1996

AND:

KWH26NS@CGE	SERVICE AREA KWH - INDUSTRIAL - PAPER AND PRODUCTS
JQIND26@CGE	SERVICE AREA INDUSTRIAL PRODUCTION INDEX - PAPER AND PRODUCTS
DS@KWH@IND@CGE	SERVICE AREA DS RATE FOR USAGE FOR INDUSTRIAL CUSTOMER
AHEM@1640	SERVICE AREA AVERAGE HOURLY EARNINGS FOR MANUFACTURING
DS@KW@IND@CGE	SERVICE AREA DS RATE FOR DEMAND FOR INDUSTRIAL CUSTOMER
CPI	CONSUMER PRICE INDEX (ALL URBAN) - ALL ITEMS

FORECAST EQUATION:

```
1>KWH26NS@CGE=EXP(PDL(LJQIND26@CGE,1,5,FAR,<0.3123,
2>0.24984,0.18738,0.12492,0.062459>)&&
3>+PDL(LDS@KWH@IND@AHEM,1,3,FAR,<-0.10347,-0.068983,-0.034491>)&&
4>+PDL(LDS@KW@IND@CPI,1,2,FAR,<-0.073843,-0.036922>)&&
5>+<17.457>*Q1+<17.518>*Q2+<17.525>*Q3+<17.496>*Q4&&
6>+KWH26NS@CGE@AR1)
```

```
KWH SALES - CHEMICALS AND PRODUCTS

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION
---------------------------------------------------------

FREQUENCY: Q
INTERVAL:  1968:1 TO 1997:4  (120 OBS.)
DEPENDENT VARIABLE: LKWH28NS@CGE

COFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0)                                        PDL(LJQIND28@CGE,1,3,FAR)

 \0    0.4431 0.029337    .          +*+
 \1    0.2954 0.019558    .      *+
 \2    0.1477 0.009779    .  +*
LAG SUM: 0.8862  STD. ERR.: 0.058674
MEAN LAG: 0.66667

1)                                        PDL(LTS@KWH@IND@OIL,2,12,BOTH)

 \0     -0.0045935 0.0023509              ++ +.
 \1     -0.0084214 0.0043099          +  * +  .
 \2     -0.011484  0.0058771       +    *   +  .
 \3     -0.01378   0.0070526     +    *    +   .
 \4     -0.015312  0.0078362    +    *    +    .
 \5     -0.016077  0.008228    +    *     +    .
 \6     -0.016077  0.008228    +    *     +    .
 \7     -0.015312  0.0078362    +    *    +    .
 \8     -0.01378   0.0070526     +    *    +   .
 \9     -0.011484  0.0058771       +    *   +  .
 \10    -0.0084214 0.0043099          +  * +  .
 \11    -0.0045935 0.0023509              ++ +.
LAG SUM: -0.13934  STD. ERR.: 0.071309
MEAN LAG: 5.5

2)                                        PDL(LTS@KWH@IND@AHEM,1,2,FAR)

 \0    -0.066289 0.025321    +    *    +       .
 \1    -0.033145 0.012661           +  *  +    .
LAG SUM: -0.099434  STD. ERR.: 0.037982
MEAN LAG: 0.33333

3)                                        PDL(LTS@KWH@IND@COAL,2,12,BOTH)

 \0     -0.010666 0.0029016             +*+ .
 \1     -0.019555 0.0053197          + * +    .
 \2     -0.026666 0.0072541       +  * +      .
 \3     -0.031999 0.0087049     +  *  +       .
 \4     -0.035555 0.0096721    +  *  +        .
 \5     -0.037333 0.010156    +  *  +         .
 \6     -0.037333 0.010156    +  *  +         .
 \7     -0.035555 0.0096721    +  *  +        .
 \8     -0.031999 0.0087049     +  *  +       .
 \9     -0.026666 0.0072541       +  * +      .
 \10    -0.019555 0.0053197          + * +    .
 \11    -0.010666 0.0029016             +*+ .
LAG SUM: -0.32355  STD. ERR.: 0.088016
MEAN LAG: 5.5

4)  0.000014835 0.0000038263  3.877     Q1*HDDB*(1-Q651824)
5)  0.00017378  0.000041406   4.1969    CDDB
6) 16.901       0.48379      34.935     Q1
7) 16.939       0.48411      34.99      Q2
8) 16.875       0.4866       34.679     Q3
9) 16.954       0.48418      35.015     Q4
10)  0.087408     0.031649     2.7618    Q923
11)  0.70942      0.064338    11.027     RHO
R-BAR SQUARED:0.97816
DURBIN-WATSON:2.19
STANDARD ERROR:0.036022     NORMALIZED:0.0018837
```

KWH SALES - CHEMICALS AND PRODUCTS

WHERE:

LKWH28NS@CGE	=LOG(KWH28NS@CGE)
LJQIND28@CGE	=LOG(JQIND28@CGE)
LTS@KWH@IND@OIL	=LOG(TS@KWH@IND@CGE/WPI0561)
LTS@KWH@IND@AHEM	=LOG(TS@KWH@IND@CGE/AHEM@1640)
LTS@KWH@IND@COAL	=LOG(TS@KWH@IND@CGE/WPIO51)
HDDB	BILLING HEATING DEGREE DAYS
Q651824	QUALITATIVE VARIABLE - FIRST QUARTER, 1965 TO FOURTH QUARTER, 1982
CDDB	BILLING COOLING DEGREE DAYS
Q1	QUALITATIVE VARIABLE - FIRST QUARTER
Q2	QUALITATIVE VARIABLE - SECOND QUARTER
Q3	QUALITATIVE VARIABLE - THIRD QUARTER
Q4	QUALITATIVE VARIABLE - FOURTH QUARTER
Q923	QUALITATIVE VARIABLE - THIRD QUARTER, 1992

AND:

KWH28NS@CGE	SERVICE AREA KWH SALES - INDUSTRIAL - CHEMICALS AND PRODUCTS
JQIND28@CGE	SERVICE AREA INDUSTRIAL PRODUCTION INDEX - CHEMICALS AND PRODUCTS
WPI0561	WHOLESALE PRICE INDEX FOR CRUDE PETROLEUM
AHEM@1640	SERVICE AREA AVERAGE HOURLY EARNINGS FOR MANUFACTURING
TS@KWH@IND@CGE	SERVICE AREA TS RATE FOR USAGE FOR INDUSTRIAL CUSTOMER
WPIO51	PRODUCER PRICE INDEX - COAL

FORECAST EQUATION:

```
1>KWH28NS@CGE=EXP(PDL(LJQIND28@CGE,1,3,FAR,<0.4431,0.2954,0.1477>)&&
2>+PDL(LTS@KWH@IND@OIL,2,12,BOTH,<-0.0045935,-0.0084214,-0.011484,
3>-0.01378,-0.015312,-0.016077,-0.016077,-0.015312,-0.01378,-0.011484,
4>-0.0084214,-0.0045935>)&&
5>+PDL(LTS@KWH@IND@AHEM,1,2,FAR,<-0.066289,-0.033145>)&&
6>+PDL(LTS@KWH@IND@COAL,2,12,BOTH,<-0.010666,-0.019555,-0.026666,
7>-0.031999,-0.035555,-0.037333,-0.037333,-0.035555,-0.031999,-0.026666,
8>-0.019555,-0.010666>)&&
9>+<0.000014835>*(Q1*HDDB*(1-Q651824))+<0.00017378>*CDDB+<16.901>*Q1+<16.939>*
```

```
KWH SALES - PRIMARY METALS LESS - AK STEEL CO.

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION
---------------------------------------------------------

FREQUENCY: Q
INTERVAL:  1976:1 TO 1997:4  (88 OBS.)
DEPENDENT VARIABLE: LKWH33NS@ARMCO@BASE

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0) 10.152    3.5672    2.8459     CONSTANT
1)  2.9898   0.55979   5.341      (Q651854)*LJQIND33@BUTLER
2)  1.558    0.62727   2.4838     (1-Q651854)*LJQIND33@BUTLER
3)                                PDL(LTS@KW@IND@CPI,2,14,BOTH)

 \0      -0.013992 0.0067938            +* +.
 \1      -0.025984 0.012617          + *  + .
 \2      -0.035978 0.01747         +   *  +  .
 \3      -0.043973 0.021352      +   *   +   .
 \4      -0.04997  0.024264     +   *   +    .
 \5      -0.053967 0.026205    +   *    +    .
 \6      -0.055966 0.027175   +    *    +    .
 \7      -0.055966 0.027175   +    *    +    .
 \8      -0.053967 0.026205    +   *    +    .
 \9      -0.04997  0.024264     +   *   +    .
 \10     -0.043973 0.021352      +   *   +   .
 \11     -0.035978 0.01747         +   *  +  .
 \12     -0.025984 0.012617          + *  + .
 \13     -0.013992 0.0067938            +* +.
LAG SUM: -0.55966  STD. ERR.: 0.27175
MEAN LAG: 6.5

4)                                PDL(LTS@KWH@IND@WAPARM,1,4,FAR)

 \0     -0.38911  0.15485   +   *   +    .
 \1     -0.29184  0.11614       +  *  +    .
 \2     -0.19456  0.077426        +  * +   .
 \3     -0.097279 0.038713           +*+   .
LAG SUM: -0.97279  STD. ERR.: 0.38713
MEAN LAG: 1

5) -0.525    0.21372  -2.4565     Q651854
6) -0.55924  0.22477  -2.488      Q651954
7)  0.09121  0.0449    2.0314     Q3
8) -0.52061  0.19193  -2.7125     Q902+Q903
9)  0.69506  0.1979    3.5122     Q914
10)  0.68459 0.077704  8.8102      RHO
R-BAR SQUARED:0.77573
DURBIN-WATSON:2.22
STANDARD ERROR:0.23784     NORMALIZED:0.013359
```

KWH SALES - PRIMARY METALS - AK STEEL CO.

WHERE:

LKWH33NS@ARMCO@BASE	=LOG(KWH33NS@ARMCO-KWH33NS@ARMCO@BASE)
LJQIND33@BUTLER	=LOG(JQIND33@BUTLER)
LTS@KW@IND@CPI	=LOG(TS@KW@IND@CGE/CPI)
LTS@KWH@IND@WAPARM	=LOG(TS@KWH@IND@CGE/WAPARMNS@C)
Q651854	QUALITATIVE VARIABLE - FIRST QUARTER, 1965 TO FOURTH QUARTER, 1985
Q651954	QUALITATIVE VARIABLE - FIRST QUARTER, 1965 TO FOURTH QUARTER, 1995
Q3	QUALITATIVE VARIABLE - THIRD QUARTER
Q902	QUALITATIVE VARIABLE - SECOND QUARTER, 1990
Q903	QUALITATIVE VARIABLE - THIRD QUARTER, 1990
Q914	QUALITATIVE VARIABLE - FOURTH QUARTER, 1991

AND:

KWH33NS@ARMCO	SERVICE AREA SALES - INDUSTRIAL - PRIMARY METAL INDUSTRIES - AK STEEL CORP.
KWH33NS@ARMCO@BASE	BASE KWH SALES TO AK STEEL - 190,000,000 KWH
JQIND33@BUTLER	INDUSTRIAL PRODUCTION INDEX - PRIMARY METAL INDUSTRIES - BUTLER COUNTY ONLY
TS@KW@IND@CGE	SERVICE AREA TS RATE FOR DEMAND FOR INDUSTRIAL CUSTOMER
CPI	CONSUMER PRICE INDEX (ALL URBAN) - ALL ITEMS
TS@KWH@IND@CGE	SERVICE AREA TS RATE FOR USAGE FOR INDUSTRIAL CUSTOMER
WAPARMNS@C	WEIGHTED AVERAGE OF OFF-PEAK AND SPOT PRICES OF GAS - REFLECTS AVERAGE MARGINAL PRICE PAID BY AK STEEL FOR INTERRUPTIBLE GAS

FORECAST EQUATION:

```
1>KWH33NS@ARMCO=ARMCOBASE+EXP(<10.152>&&
2>+<1.558>*LJQIND33@BUTLER&&
3>+PDL(LTS@KW@IND@CPI,2,14,BOTH,<-0.013992,-0.025984,-0.035978,
4>-0.043973,-0.04997,-0.053967,-0.055966,-0.055966,-0.053967,
5>-0.04997,-0.043973,-0.035978,-0.025984,-0.013992>)&&
6>+PDL(LTS@KWH@IND@WAPARM,1,4,FAR,<-0.38911,-0.29184,-0.19456,-0.097279>)&&
7>+<0.09121>*Q3&&
8>+KWH33NS@ARMCO@AR1)
```

```
KWH SALES - PRIMARY METALS - LESS AK STEEL CO.

REGRESSION RESULTS:

ORDINARY LEAST SQUARES
----------------------

FREQUENCY: Q
INTERVAL:  1976:1 TO 1997:4   (88 OBS.)
DEPENDENT VARIABLE: LKWH33LARMNS@CGE

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0)                                  PDL(LJQIND33@CMSA,1,2,FAR)

 \0    0.56823 0.021632   .              *+
 \1    0.28412 0.010816   .      *
LAG SUM: 0.85235   STD. ERR.: 0.032448
MEAN LAG: 0.33333

1)                                  PDL(LTS@KWH@IND@APG,2,10,BOTH)

 \0    -0.020404 0.0071643              +* + .
 \1    -0.036727 0.012896           + *  +   .
 \2    -0.048969 0.017194        +  *  +     .
 \3    -0.057131 0.02006       +   *  +      .
 \4    -0.061212 0.021493     +   *   +      .
 \5    -0.061212 0.021493     +   *   +      .
 \6    -0.057131 0.02006       +   *  +      .
 \7    -0.048969 0.017194        +  *  +     .
 \8    -0.036727 0.012896           + *  +   .
 \9    -0.020404 0.0071643              +* + .
LAG SUM: -0.44888  STD. ERR.: 0.15761
MEAN LAG: 4.5

2)                                  PDL(LTS@KW@IND@CPI,2,6,BOTH)

 \0    -0.042207 0.012075           + * +    .
 \1    -0.070345 0.020124      +  *  +       .
 \2    -0.084413 0.024149    +  *    +       .
 \3    -0.084413 0.024149    +  *    +       .
 \4    -0.070345 0.020124      +  *  +       .
 \5    -0.042207 0.012075           + * +    .
LAG SUM: -0.39393  STD. ERR.: 0.1127
MEAN LAG: 2.5

3)  0.070394 0.02404    2.9282     Q813974*LRPCOCP
4) 14.173    1.4176     9.9977     Q1
5) 14.171    1.4172     9.9992     Q2
6) 14.172    1.4189     9.9877     Q3
7) 14.153    1.4192     9.9721     Q4
8)  0.43362  0.042185 10.279       Q864882
9) -0.3963   0.072083 -5.4978      Q803+Q804
10) -0.51466  0.10171   -5.0602     Q811
11) -0.24438  0.096167 -2.5412      Q823
12)  0.19064  0.094936  2.0081      Q834
13)  0.19106  0.093982  2.033       Q923
14)  0.21359  0.093539  2.2834      Q924
15) -0.24324  0.095875 -2.5371      Q963
16) -0.26976  0.095494 -2.8249      Q972
17) -0.49917  0.09673  -5.1605      Q973
R-BAR SQUARED:0.93112
DURBIN-WATSON:1.95
STANDARD ERROR:0.090279     NORMALIZED:0.004938
```

KWH SALES - PRIMARY METALS - LESS AK STEEL CO.

WHERE:

LKWH33LARMNS@CGE	=LOG(KWH33LARMNS@CGE)
LJQIND33@CMSA	=LOG(JQIND33@CMSA)
LTS@KWH@IND@APG	=LOG(TS@KWH@IND@CGE/APGIND@CGE)
LTS@KW@IND@CPI	=LOG(TS@KW@IND@CGE/CPI)
Q813974	QUALITATIVE VARIABLE - THIRD QUARTER, 1981 TO FOURTH QUARTER, 1997
LRPCOCP	=LOG(PCOCP/CPI)
Q1	QUALITATIVE VARIABLE - FIRST QUARTER
Q2	QUALITATIVE VARIABLE - SECOND QUARTER
Q3	QUALITATIVE VARIABLE - THIRD QUARTER
Q4	QUALITATIVE VARIABLE - FOURTH QUARTER
Q864882	QUALITATIVE VARIABLE - FOURTH QUARTER, 1986 TO SECOND QUARTER, 1988
Q803	QUALITATIVE VARIABLE - THIRD QUARTER, 1980
Q804	QUALITATIVE VARIABLE - FOURTH QUARTER, 1980
Q811	QUALITATIVE VARIABLE - FIRST QUARTER, 1981
Q823	QUALITATIVE VARIABLE - THIRD QUARTER, 1982
Q834	QUALITATIVE VARIABLE - FOURTH QUARTER, 1983
Q923	QUALITATIVE VARIABLE - THIRD QUARTER, 1992
Q924	QUALITATIVE VARIABLE - FOURTH QUARTER, 1992
Q963	QUALITATIVE VARIABLE - THIRD QUARTER, 1996
Q972	QUALITATIVE VARIABLE - SECOND QUARTER, 1997
Q973	QUALITATIVE VARIABLE - THIRD QUARTER, 1997

AND:

KWH33LARMNS@CGE	SERVICE AREA LESS AK STEEL - INDUSTRIAL - PRIMARY METAL INDUSTRIES
JQIND33@CMSA	CINCINNATI CMSA INDUSTRIAL PRODUCTION INDEX - PRIMARY METAL INDUSTRIES
TS@KWH@IND@CGE	SERVICE AREA TS RATE FOR USAGE FOR INDUSTRIAL CUSTOMER
APGIND@CGE	SERVICE AREA AVERAGE PRICE OF GAS FOR INDUSTRIAL CUSTOMERS
TS@KW@IND@CGE	SERVICE AREA TS RATE FOR DEMAND FOR INDUSTRIAL CUSTOMER
PCOCP	AVERAGE REFINERS' ACQUISITION PRICE - CRUDE OIL - COMPOSITE
CPI	CONSUMER PRICE INDEX (ALL URBAN) - ALL ITEMS

FORECAST EQUATION:

```
1>KWH33LARMNS@CGE=EXP(PDL(LJQIND33@CMSA,1,2,FAR,<0.56823,0.28412>)&&
2>+PDL(LTS@KWH@IND@APG,2,10,BOTH,<-0.020404,-0.036727,-0.048969,
3>-0.057131,-0.061212,-0.061212,-0.057131,-0.048969,-0.036727,-0.020404>)&&
4>+PDL(LTS@KW@IND@CPI,2,6,BOTH,<-0.042207,-0.070345,-0.084413,
5>-0.084413,-0.070345,-0.042207>)&&
6>+<0.070394>*LRPCOCP&&
7>+<14.173>*Q1+<14.171>*Q2+<14.172>*Q3+<14.153>*Q4)
```

KWH SALES - MACHINERY - EXCEPT ELECTRICAL

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION

```
-------------------------------------------------------
FREQUENCY: Q
INTERVAL:  1969:1 TO 1997:4  (116 OBS.)
DEPENDENT VARIABLE: LKWH35NS@CGE

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0) 18.349       0.12821      143.11       CONSTANT
1)  0.65882     0.058183      11.323      LJQIND35@CGE
2)                                        PDL(LDS@KW@IND@CPI,2,7,BOTH)

 \0    -0.010277 0.0051299          +  *  + .
 \1    -0.017617 0.0087941      +   *   +   .
 \2    -0.022022 0.010993     +    *    +   .
 \3    -0.02349  0.011725     +   *    +    .
 \4    -0.022022 0.010993     +    *    +   .
 \5    -0.017617 0.0087941      +   *   +   .
 \6    -0.010277 0.0051299          +  *  + .
LAG SUM: -0.12332  STD. ERR.: 0.061558
MEAN LAG: 3

3)                                        PDL(LRWPI0561,2,6,BOTH)

 \0    0.010445 0.0050073   .  + * +
 \1    0.017408 0.0083455   .   +   *   +
 \2    0.02089  0.010015    .    +    *    +
 \3    0.02089  0.010015    .    +    *    +
 \4    0.017408 0.0083455   .   +   *   +
 \5    0.010445 0.0050073   .  + • +
LAG SUM: 0.097485  STD. ERR.: 0.046735
MEAN LAG: 2.5

4)  0.000010435 0.0000028352   3.6805     HDDB
5)  0.000031808 0.0000099409   3.1997     CDDB*Q651862
6)  0.000077179 0.00001049     7.3572     CDDB*(1-Q651862)
7) -0.086774    0.028117      -3.0861     Q781
8) -0.084531    0.027549      -3.0684     Q782
9) -0.059669    0.024231      -2.4625     Q793
10)  0.081917    0.024536      3.3387     Q801
11)  0.15611     0.032907      4.7441     Q651862
12)  0.82947     0.05186      15.994      RHO
R-BAR SQUARED:0.96387
DURBIN-WATSON:2.01
STANDARD ERROR:0.030865     NORMALIZED:0.0017057
```

KWH SALES - MACHINERY - EXCEPT ELECTRICAL

WHERE:

LKWH35NS@CGE	=LOG(KWH35NS@CGE)
LJQIND35@CGE	=LOG(JQIND35@CGE)
LDS@KW@IND@CPI	=LOG(DS@KW@IND@CGE/CPI)
LRWPI0561	=LOG(WPI0561/CPI)
HDDB	BILLING HEATING DEGREE DAYS
CDDB	BILLING COOLING DEGREE DAYS
Q781	QUALITATIVE VARIABLE - FIRST QUARTER, 1978
Q782	QUALITATIVE VARIABLE - SECOND QUARTER, 1978
Q793	QUALITATIVE VARIABLE - THIRD QUARTER, 1979
Q801	QUALITATIVE VARIABLE - FIRST QUARTER, 1980
Q651862	QUALITATIVE VARIABLE - FIRST QUARTER, 1965 TO SECOND QUARTER, 1986

AND:

KWH35NS@CGE	SERVICE AREA KWH SALES - INDUSTRIAL - INDUSTRIAL MACHINERY AND EQUIPMENT
JQIND35@CGE	SERVICE AREA INDUSTRIAL PRODUCTION INDEX - INDUSTRIAL MACHINERY AND EQUIPMENT
DS@KW@IND@CGE	SERVICE AREA DS RATE FOR DEMAND FOR INDUSTRIAL CUSTOMER
WPI0561	WHOLESALE PRICE INDEX FOR CRUDE PETROLEUM
CPI	CONSUMER PRICE INDEX (ALL URBAN) - ALL ITEMS

FORECAST EQUATION:

```
1>KWH35NS@CGE=EXP(<18.349>&&
2>+<0.65882>*LJQIND35@CGE&&
3>+PDL(LDS@KW@IND@CPI,2,7,BOTH,<-0.010277,-0.017617,
4>-0.022022,-0.02349,-0.022022,-0.017617,-0.010277>)&&
5>+PDL(LRWPI0561,2,6,BOTH,<0.010445,0.017408,0.02089,
6>0.02089,0.017408,0.010445>)&&
7>+<0.000010435>*HDDB&&
8>+<0.000077179>*CDDB&&
9>+KWH35NS@CGE@AR1)
```

KWH SALES - ELECTRICAL MACHINERY

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION

```
-------------------------------------------------------------

FREQUENCY: Q
INTERVAL:  1968:2 TO 1997:4  (119 OBS.)
DEPENDENT VARIABLE: LKWH36NS@CGE

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0) 14.188        1.1866       11.957      CONSTANT
1)                                        PDL(LJQIND36@CGE,1,3,FAR)

 \0    0.22147  0.039694   .         +   * +
 \1    0.14764  0.026463   .       +* +
 \2    0.073822 0.013231   .  ++*+
LAG SUM: 0.44293  STD. ERR.: 0.079389
MEAN LAG: 0.66667

2)                                        PDL(LDS@KW@IND@CPI,1,2,FAR)

 \0    -0.094106 0.04788   +     *     +    .
 \1    -0.047053 0.02394         +   *   + .
LAG SUM: -0.14116  STD. ERR.: 0.07182
MEAN LAG: 0.33333

3)                                        PDL(LDS@KWH@IND@APG,2,10,BOTH)

 \0    -0.016647 0.0059195           +* + .
 \1    -0.029965 0.010655         + *  +   .
 \2    -0.039953 0.014207       +  *  +    .
 \3    -0.046611 0.016575     +   *   +    .
 \4    -0.049941 0.017758    +   *    +    .
 \5    -0.049941 0.017758    +   *    +    .
 \6    -0.046611 0.016575     +   *   +    .
 \7    -0.039953 0.014207       +  *  +    .
 \8    -0.029965 0.010655         + *  +   .
 \9    -0.016647 0.0059195           +* + .
LAG SUM: -0.36623  STD. ERR.: 0.13023
MEAN LAG: 4.5

4)  0.000086395   0.0000098999  8.7269     CDDB
5) -0.0000097376 0.0000033241 -2.9294     HDDB
6)  0.084915      0.029448      2.8835     Q761
7) -0.070147      0.029387     -2.387      Q793
8)  0.07683       0.029371      2.6159     Q804
9) -0.061525      0.029378     -2.0943     Q831
10) -0.13166       0.034285     -3.8401     Q883
11)  0.10685       0.033683      3.1722     Q884
12) -0.20258       0.029192     -6.9396     Q922
13)  0.93712       0.031994     29.29       RHO
R-BAR SQUARED:0.98748
DURBIN-WATSON:2.15
STANDARD ERROR:0.039823     NORMALIZED:0.00229
```

KWH SALES - ELECTRICAL MACHINERY

WHERE:

LKWH36NS@CGE	=LOG(KWH36NS@CGE)
LJQIND36@CGE	=LOG(JQIND36@CGE)
LDS@KW@IND@CPI	=LOG(DS@KW@IND@CGE/CPI)
LDS@KWH@IND@APG	=LOG(DS@KWH@IND@CGE/APGIND@CGE)
CDDB	BILLING COOLING DEGREE DAYS
HDDB	BILLING HEATING DEGREE DAYS
Q761	QUALITATIVE VARIABLE - FIRST QUARTER, 1976
Q793	QUALITATIVE VARIABLE - THIRD QUARTER, 1979
Q804	QUALITATIVE VARIABLE - FOURTH QUARTER, 1980
Q831	QUALITATIVE VARIABLE - FIRST QUARTER, 1983
Q883	QUALITATIVE VARIABLE - THIRD QUARTER, 1988
Q884	QUALITATIVE VARIABLE - FOURTH QUARTER, 1988
Q922	QUALITATIVE VARIABLE - SECOND QUARTER, 1992

AND:

KWH36NS@CGE	SERVICE AREA KWH SALES - INDUSTRIAL - ELECTRONIC AND OTHER ELECTRICAL EQUIPMENT
JQIND36@CGE	SERVICE AREA INDUSTRIAL PRODUCTION INDEX - ELECTRONIC AND OTHER ELECTRICAL EQUIPMENT
DS@KW@IND@CGE	SERVICE AREA DS RATE FOR DEMAND FOR INDUSTRIAL CUSTOMER
CPI	CONSUMER PRICE INDEX (ALL URBAN) - ALL ITEMS
DS@KWH@IND@CGE	SERVICE AREA DS RATE FOR USAGE FOR INDUSTRIAL CUSTOMER
APGIND@CGE	SERVICE AREA AVERAGE PRICE OF GAS FOR INDUSTRIAL CUSTOMERS

FORECAST EQUATION:

```
1>KWH36NS@CGE=EXP(<14.188>&&
2>+PDL(LJQIND36@CGE,1,3,FAR,<0.22147,0.14764,0.073822>)&&
3>+PDL(LDS@KW@IND@CPI,1,2,FAR,<-0.094106,-0.047053>)&&
4>+PDL(LDS@KWH@IND@APG,2,10,BOTH,<-0.016647,-0.029965,-0.039953,-0.046611,
5>-0.049941,-0.049941,-0.046611,-0.039953,-0.029965,-0.016647>)&&
6>+<0.000086395>*CDDB+<-0.0000097376>*HDDB+KWH36NS@CGE@AR1)
```

KWH SALES - MOTOR VEHICLES AND PARTS

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION

```
---------------------------------------------------------

FREQUENCY: Q
INTERVAL:  1970:1 TO 1997:4  (112 OBS.)
DEPENDENT VARIABLE: LKWH371NS@CGE

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0)                                   PDL(LJQIND371@CGE,2,5,BOTH)

 \0    0.088737 0.015184   .      +*+
 \1    0.14198  0.024295   .         + * +
 \2    0.15973  0.027331   .           + * +
 \3    0.14198  0.024295   .         + * +
 \4    0.088737 0.015184   .      +*+
LAG SUM: 0.62116  STD. ERR.: 0.10629
MEAN LAG: 2

1)                                   PDL(LTS@KW@IND@CPI,2,14,BOTH)

 \0     -0.004752  0.0021524              +* +.
 \1     -0.0088252 0.0039974            + * +  .
 \2     -0.012219  0.0055349         +  *  +   .
 \3     -0.014935  0.0067648       +   *   +   .
 \4     -0.016971  0.0076873      +   *   +    .
 \5     -0.018329  0.0083023     +   *   +     .
 \6     -0.019008  0.0086098    +   *   +      .
 \7     -0.019008  0.0086098    +   *   +      .
 \8     -0.018329  0.0083023     +   *   +     .
 \9     -0.016971  0.0076873      +   *   +    .
 \10    -0.014935  0.0067648       +   *   +   .
 \11    -0.012219  0.0055349         +  *  +   .
 \12    -0.0088252 0.0039974            + * +  .
 \13    -0.004752  0.0021524              +* +.
LAG SUM: -0.19008  STD. ERR.: 0.086098
MEAN LAG: 6.5

2)                                   PDL(LTS@KWH@IND@APG,1,2,FAR)

 \0    -0.11906  0.058772  +     *     +    .
 \1    -0.059531 0.029386        +  * +     .
LAG SUM: -0.17859  STD. ERR.: 0.088158
MEAN LAG: 0.33333

3)  0.00018378 0.000073161  2.512     CDDB
4) 16.633      0.83343     19.957     Q1
5) 16.695      0.83412     20.015     Q2
6) 16.583      0.83791     19.791     Q3
7) 16.642      0.8341      19.952     Q4
8) -0.46424    0.078537    -5.9112    Q651802
9) -0.25141    0.054803    -4.5876    Q704
10) -0.18284    0.054689    -3.3433    Q713
11)  0.26198    0.065889     3.9761    Q724
12)  0.29626    0.074751     3.9634    Q731
13)  0.14071    0.065246     2.1565    Q732
14) -0.1758     0.068568    -2.5639    Q803
15)  0.12675    0.054762     2.3146    Q813
16)  0.29218    0.054629     5.3484    Q881
17)  0.69099    0.068304    10.116     RHO
R-BAR SQUARED:0.89608
DURBIN-WATSON:1.93
STANDARD ERROR:0.065023      NORMALIZED:0.0035887
```

KWH SALES - AIRCRAFT AND PARTS

WHERE:

LKWH372@9NS@CGE	=LOG(KWH372@9NS@CGE)
LJQIND372@CGE	=LOG(JQIND372@CGE)
LTS@KWH@IND@CPI	=LOG(TS@KWH@IND@CGE/CPI)
LTS@KWH@IND@APG	=LOG(TS@KWH@IND@CGE/APGIND@CGE)
LTS@KWH@IND@OIL	=LOG(TS@KWH@IND@CGE/WPI0561)
CDDB	BILLING COOLING DEGREE DAYS
HDDB	BILLING HEATING DEGREE DAYS
Q651774	QUALITATIVE VARIABLE - FIRST QUARTER, 1965TO FOURTH QUARTER, 1974
Q1	QUALITATIVE VARIABLE - FIRST QUARTER
Q2	QUALITATIVE VARIABLE - SECOND QUARTER
Q3	QUALITATIVE VARIABLE - THIRD QUARTER
Q4	QUALITATIVE VARIABLE - FOURTH QUARTER
Q781	QUALITATIVE VARIABLE - FIRST QUARTER, 1978
Q914	QUALITATIVE VARIABLE - FOURTH QUARTER, 1991
Q922	QUALITATIVE VARIABLE - SECOND QUARTER, 1992
Q923	QUALITATIVE VARIABLE - THIRD QUARTER, 1992
Q942	QUALITATIVE VARIABLE - SECOND QUARTER, 1994
Q961	QUALITATIVE VARIABLE - FIRST QUARTER, 1996
Q973	QUALITATIVE VARIABLE - THIRD QUARTER, 1997

AND:

KWH372@9NS@CGE	SERVICE AREA KWH SALES - INDUSTRIAL - TRANSPORTATION EQUIPMENT OTHER THAN MOTOR VEHICLES AND PARTS
JQIND372@CGE	SERVICE AREA INDUSTRIAL PRODUCTION INDEX - AIRCRAFT AND PARTS
CPI	CONSUMER PRICE INDEX (ALL URBAN) - ALL ITEMS
APGIND@CGE	SERVICE AREA AVERAGE PRICE OF GAS FOR INDUSTRIAL CUSTOMERS
TS@KWH@IND@CGE	SERVICE AREA TS RATE FOR USAGE FOR INDUSTRIAL CUSTOMER
WPI0561	WHOLESALE PRICE INDEX FOR CRUDE PETROLEUM

FORECAST EQUATION:

```
 1>KWH372@9NS@CGE=EXP(<0.41393>*LJQIND372@CGE&&
 2>+<-0.24541>*LTS@KWH@IND@CPI**
 3>+PDL(LTS@KWH@IND@APG,2,12,BOTH,<-0.0041233,-0.0075594,-0.010308,
 4>-0.01237,-0.013744,-0.014432,-0.014432,-0.013744,-0.01237,
 5>-0.010308,-0.0075594,-0.0041233>)&&
 6>+PDL(LTS@KWH@IND@OIL,2,14,BOTH,<-0.0027258,-0.0050623,-0.0070093,
 7>-0.0085669,-0.0097351,-0.010514,-0.010903,-0.010903,-0.010514,
 8>-0.0097351,-0.0085669,-0.0070093,-0.0050623,-0.0027258>)&&
 9>+<0.00017783>*CDDB&&
10>+<-0.000023366>*HDDB&&
11>+<15.738>*Q1+<15.703>*Q2+<15.604>*Q3+<15.7>*Q4&&
12>+KWH372@9NS@CGE@AR1)
```

KWH SALES - ALL OTHER INDUSTRIALS

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION

```
-------------------------------------------------------

FREQUENCY: Q
INTERVAL:  1971:1 TO 1997:4  (108 OBS.)
DEPENDENT VARIABLE: LKWHAOINS@CGE

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0) 17.583       0.49144      35.779      CONSTANT
1)                                       PDL(LJQINDAOIDG@CGE,1,3,FAR)

 \0    0.21079  0.044763   .         + *  +
 \1    0.14053  0.029842   .      + * +
 \2    0.070263 0.014921   .  +*+
LAG SUM: 0.42158   STD. ERR.: 0.089527
MEAN LAG: 0.66667

2)  0.96035     0.090411     10.622      LJQINDAOINDG@CGE
3)                                       PDL(LDS@KWH@IND@APG,2,5,BOTH)

 \0    -0.011429 0.005712            + *  +  .
 \1    -0.018286 0.0091392     +   *     +   .
 \2    -0.020572 0.010282    +    *     +    .
 \3    -0.018286 0.0091392     +   *     +   .
 \4    -0.011429 0.005712            + *  +  .
LAG SUM: -0.080001   STD. ERR.: 0.039984
MEAN LAG: 2

4)                                       PDL(LDS@KWH@IND@OIL,1,9,FAR)

 \0    -0.019166  0.0093347  +    *    +    .
 \1    -0.017036  0.0082975   +   *    +    .
 \2    -0.014907  0.0072603    +   *    +   .
 \3    -0.012777  0.0062231      +  *   +   .
 \4    -0.010648  0.0051859        + *  +   .
 \5    -0.0085181 0.0041488         +  * +  .
 \6    -0.0063886 0.0031116           + *+  .
 \7    -0.0042591 0.0020744             +*+.
 \8    -0.0021295 0.0010372              +*.
LAG SUM: -0.095829   STD. ERR.: 0.046674
MEAN LAG: 2.6667

5)                                       PDL(LDS@KWH@IND@COAL,2,9,BOTH)

 \0    -0.011455 0.0053944           +* + .
 \1    -0.020365 0.0095901       +  *   +  .
 \2    -0.026729 0.012587     +   *    +   .
 \3    -0.030547 0.014385    +    *    +   .
 \4    -0.03182  0.014985   +     *    +   .
 \5    -0.030547 0.014385    +    *    +   .
 \6    -0.026729 0.012587     +   *    +   .
 \7    -0.020365 0.0095901       +  *   +  .
 \8    -0.011455 0.0053944           +* + .
LAG SUM: -0.21001   STD. ERR.: 0.098898
MEAN LAG: 4

6)  0.0001443   0.0000127    11.362      CDDB
7)  0.000033417 0.0000095825  3.4873     HDDB
8) -0.074551    0.018564     -4.016      Q1
9) -0.013339    0.0071647    -1.8617     Q4
10) -0.044624    0.018287     -2.4402     Q771
11) -0.062259    0.019832     -3.1393     Q781
12)  0.061395    0.017839      3.4416     Q933
13) -0.080096    0.01763      -4.5431     Q962
14) -0.049553    0.017876     -2.772      Q972
15)  0.75023     0.063622     11.792      RHO
R-BAR SQUARED:0.99329
DURBIN-WATSON:1.88
STANDARD ERROR:0.021508     NORMALIZED:0.0011091
```

KWH SALES - ALL OTHER INDUSTRIALS

WHERE:

LKWHAOINS@CGE	=LOG(KWHAOINS@CGE)
LJQINDAOIDG@CGE	=LOG(JQINDAOIDG@CGE)
LJQINDAOINDG@CGE	=LOG(JQINDAOINDG@CGE)
LDS@KWH@IND@APG	=LOG(DS@KWH@IND@CGE/APGIND@CGE)
LDS@KWH@IND@OIL	=LOG(DS@KWH@IND@CGE/WPI0561)
LDS@KWH@IND@COAL	=LOG(DS@KWH@IND@CGE/WPI051)
CDDB	BILLING COOLING DEGREE DAYS
HDDB	BILLING HEATING DEGREE DAYS
Q1	QUALITATIVE VARIABLE - FIRST QUARTER
Q4	QUALITATIVE VARIABLE - FOURTH QUARTER
Q771	QUALITATIVE VARIABLE - FIRST QUARTER, 1977
Q781	QUALITATIVE VARIABLE - FIRST QUARTER, 1978
Q933	QUALITATIVE VARIABLE - THIRD QUARTER, 1993
Q962	QUALITATIVE VARIABLE - SECOND QUARTER, 1996
Q972	QUALITATIVE VARIABLE - SECOND QUARTER, 1997

AND:

KWHAOINS@CGE	SERVICE AREA KWH SALES - ALL OTHER INDUSTRIES
JQINDAOIDG@CGE	SERVICE AREA INDUSTRIAL PRODUCTION - ALL OTHER INDUSTRIES - DURABLE GOODS
JQINDAOINDG@CGE	SERVICE AREA INDUSTRIAL PRODUCTION - ALL OTHER INDUSTRIES - NON-DURABLE GOODS
APGIND@CGE	SERVICE AREA AVERAGE PRICE OF GAS FOR INDUSTRIAL CUSTOMERS
WPI0561	WHOLESALE PRICE INDEX FOR CRUDE PETROLEUM
DS@KWH@IND@CGE	SERVICE AREA DS RATE FOR USAGE FOR INDUSTRIAL CUSTOMER
WPI051	WHOLESALE PRICE INDEX FOR COAL

FORECAST EQUATION:

```
 1>KWHAOINS@CGE=EXP(<17.583>&&
 2>+PDL(LJQINDAOIDG@CGE,1,3,FAR,<0.21079,0.14053,0.070263>)&&
 3>+<0.96035>*LJQINDAOINDG@CGE&&
 4>+PDL(LDS@KWH@IND@APG,2,5,BOTH,<-0.011429,-0.018286,
 5>-0.020572,-0.018286,-0.011429>)&&
 6>+PDL(LDS@KWH@IND@OIL,1,9,FAR,<-0.019166,-0.017036,-0.014907,
 7>-0.012777,-0.010648,-0.0085181,-0.0063886,-0.0042591,-0.0021295>)&&
 8>+PDL(LDS@KWH@IND@COAL,2,9,BOTH,<-0.011455,-0.020365,-0.026729,
 9>-0.030547,-0.03182,-0.030547,-0.026729,-0.020365,-0.011455>)&&
10>+<0.0001443>*CDDB&&
11>+<0.000033417>*HDDB&&
12>+<-0.074551>*Q1+<-0.013339>*Q4&&
13>+KWHAOINS@CGE@AR1)
```

KWH SALES - STREET LIGHTING

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION

FREQUENCY: Q
INTERVAL: 1977:1 TO 1997:4 (84 OBS.)
DEPENDENT VARIABLE: LKWHSL@CGE

	COEFFICIENT	STD.ERROR	T-STAT	INDEPENDENT VARIABLE
0)	10.266	1.1572	8.872	CONSTANT
1)	0.47722	0.07897	6.0431	LCUSRES@CGE
2)	-0.52993	0.19028	-2.7851	LOG(.50*SATMERC@CGE+.50*SATSODVAP@CGE)
3)	-0.024637	0.0032644	-7.5473	Q782+Q812
4)	-0.038287	0.0043169	-8.8689	Q791
5)	-0.013441	0.0033389	-4.0256	Q793+Q913
6)	-0.012888	0.0054399	-2.3692	Q794
7)	-0.0324	0.005094	-6.3605	Q801
8)	0.030092	0.004612	6.5247	Q811
9)	-0.020204	0.0043179	-4.6792	Q851
10)	-0.050708	0.0043163	-11.748	Q911
11)	0.88797	0.05018	17.696	RHO

R-BAR SQUARED:0.95981
DURBIN-WATSON:2.06
STANDARD ERROR:0.0057717 NORMALIZED:0.00033973

KWH SALES - STREET LIGHTING

WHERE:

LKWHSL@CGE	=LOG(KWHSL@CGE)
LCUSRES@CGE	=LOG(CUSRES@CGE)
SATMERC@CGE	SERVICE AREA SATURATION OF MERCURY VAPOR STREET LIGHTING
SATSODVAP@CGE	SERVICE AREA SATURATION OF SODIUM VAPOR STREET LIGHTING
Q782	QUALITATIVE VARIABLE - SECOND QUARTER, 1978
Q812	QUALITATIVE VARIABLE - SECOND QUARTER, 1981
Q791	QUALITATIVE VARIABLE - FIRST QUARTER, 1979
Q793	QUALITATIVE VARIABLE - THIRD QUARTER, 1979
Q913	QUALITATIVE VARIABLE - THIRD QUARTER, 1991
Q794	QUALITATIVE VARIABLE - FOURTH QUARTER, 1979
Q801	QUALITATIVE VARIABLE - FIRST QUARTER, 1980
Q811	QUALITATIVE VARIABLE - FIRST QUARTER, 1981
Q851	QUALITATIVE VARIABLE - FIRST QUARTER, 1985
Q911	QUALITATIVE VARIABLE - FIRST QUARTER, 1991

AND:

KWHSL@CGE	SERVICE AREA KWH SALES - STREET LIGHTING
CUSRES@CGE	SERVICE AREA ELECTRIC CUSTOMERS - RESIDENTIAL

FORECAST EQUATION:

```
1>KWHSL@CGE=EXP(<10.266>+<0.47722>*LCUSRES@CGE&&
2>+<-0.52993>*(LOG(.50*SATMERC@CGE+.50*SATSODVAP@CGE))&&
3>+KWHSL@CGE@AR1)
```

```
KWH SALES - OTHER PUBLIC AUTHORITIES: LESS WATER PUMPING

REGRESSION RESULTS:

LEAST SQUARES WITH FIRST-ORDER AUTOCORRELATION CORRECTION
---------------------------------------------------------

FREQUENCY: M
INTERVAL:  1976:1 TO 1997:12  (264 OBS.)
DEPENDENT VARIABLE: LKWHOPALWPNS@CGE

COEFFICIENT STD.ERROR T-STAT  INDEPENDENT VARIABLE

0)  3.0096     1.7913       1.6801      CONSTANT
1)                                      PDL(LE90X@CGE,1,2,FAR)

 \0    0.75681 0.108        .          + * +
 \1    0.3784  0.053999     .      +*
LAG SUM: 1.1352  STD. ERR.: 0.162
MEAN LAG: 0.33333

2)                                      PDL(LDS@KWH@OPA@CPI,1,2,FAR)

 \0    -0.17035  0.036449   +  * +          .
 \1    -0.085177 0.018224          + *+     .
LAG SUM: -0.25553  STD. ERR.: 0.054673
MEAN LAG: 0.33333

3)                                      PDL(LDS@KWH@OPA@APG,1,6,FAR)

 \0    -0.032617  0.0081805   +  *  +          .
 \1    -0.027181  0.006817      +  *  +        .
 \2    -0.021745  0.0054536        + * +       .
 \3    -0.016309  0.0040902          + * +     .
 \4    -0.010872  0.0027268             +*+    .
 \5    -0.0054362 0.0013634               +*+.
LAG SUM: -0.11416  STD. ERR.: 0.028632
MEAN LAG: 1.6667

4)  0.00033534 0.000047148  7.1125     CDDB*M7618412
5)  0.00054793 0.00003844  14.254      CDDB*(1-M7618412)
6)  0.00015136 0.00001388  10.905      HDDB*M7618412
7)  0.00013133 0.0000132    9.9491     HDDB*(1-M7618412)
8)  0.029912   0.0070139    4.2647     MJUN
9)  0.041976   0.0072628    5.7796     MSEP
10)  0.071922    0.031175    2.307       M7612
11)  0.10292     0.031488    3.2685      M775
12) -0.11259     0.035267   -3.1924      M782
13) -0.098339    0.035198   -2.7938      M783
14) -0.10869     0.031117   -3.4931      M892
15) -0.15093     0.031326   -4.8181      M928
16)  0.14427     0.036163    3.9893      M939
17) -0.11532     0.039725   -2.903       M9310
18) -0.27315     0.035571   -7.6791      M9311
19) -0.25554     0.031483   -8.1167      M941
20) -0.24209     0.031124   -7.7784      M943
21)  0.077123    0.031872    2.4198      M946
22)  0.11604     0.031361    3.7001      M9410
23) -0.17132     0.032084   -5.3396      M969
24) -0.085884    0.031163   -2.7559      M9611
25) -0.16519     0.03116    -5.3015      M9711
26) -0.19079     0.031856   -5.9892      M958
27)  0.56662     0.050713    11.173      RHO
R-BAR SQUARED:0.96671
DURBIN-WATSON:2.09
STANDARD ERROR:0.035745      NORMALIZED:0.00195
```

KWH SALES - OTHER PUBLIC AUTHORITIES: LESS WATER PUMPING

WHERE:

LKWHOPALWPNS@CGE	=LOG(KWHOPALWPNS@CGE)
LE90X@CGE	=LOG(E90X@CGE)
LDS@KWH@OPA@CPI	=LOG(DS@KWH@OPA@CGE/CPI)
LDS@KWH@OPA@APG	=LOG(DS@KWH@OPA@CGE/APGOPA@CGE)
CDDB	BILLING COOLING DEGREE DAYS
HDDB	BILLING HEATING DEGREE DAYS
M7618412	QUALITATIVE VARIABLE - JANUARY, 1976 TO DECEMBER, 1984
MJUN	QUALITATIVE VARIABLE - JUNE
MSEP	QUALITATIVE VARIABLE - SEPTEMBER
M7612	QUALITATIVE VARIABLE - DECEMBER, 1976
M775	QUALITATIVE VARIABLE - MAY, 1977
M782	QUALITATIVE VARIABLE - FEBRUARY, 1978
M783	QUALITATIVE VARIABLE - MARCH, 1978
M892	QUALITATIVE VARIABLE - FEBRUARY, 1989
M928	QUALITATIVE VARIABLE - AUGUST, 1992
M939	QUALITATIVE VARIABLE - SEPTEMBER, 1993
M9310	QUALITATIVE VARIABLE - OCTOBER, 1993
M9311	QUALITATIVE VARIABLE - NOVEMBER, 1993
M941	QUALITATIVE VARIABLE - JANUARY, 1994
M943	QUALITATIVE VARIABLE - MARCH, 1994
M946	QUALITATIVE VARIABLE - JUNE, 1994
M9410	QUALITATIVE VARIABLE - OCTOBER, 1994
M969	QUALITATIVE VARIABLE - SEPTEMBER, 1996
M9611	QUALITATIVE VARIABLE - NOVEMBER, 1996
M9711	QUALITATIVE VARIABLE - NOVEMBER, 1997
M958	QUALITATIVE VARIABLE - AUGUST, 1995

AND:

KWHOPALWPNS@CGE	KWH SALES - OPA LESS WATER PUMPING
E90X@CGE	SERVICE AREA EMPLOYMENT - STATE AND LOCAL GOVERNMENT
CPI	CONSUMER PRICE INDEX (ALL URBAN) - ALL ITEMS
DS@KWH@OPA@CGE	SERVICE AREA DS RATE FOR USAGE FOR OTHER PUBLIC AUTHORITIES CUSTOMER
APGOPA@CGE	SERVICE AREA AVERAGE PRICE OF GAS FOR OPA CUSTOMER

FORECAST EQUATION:

```
1>KWHOPALWPNS@CGE=EXP(<3.0096>+PDL(LE90X@CGE,1,2,FAR,<0.75681,0.3784>)&&
2>+PDL(LDS@KWH@OPA@CPI,1,2,FAR,<-0.17035,-0.085177>)&&
3>+PDL(LDS@KWH@OPA@APG,1,6,FAR,<-0.032617,-0.027181,-0.021745,-0.016309,
4>-0.010872,-0.0054362>)&&
5>+<0.00033534>*(CDDB*M7618412)+<0.00054793>*(CDDB*(1-M7618412))&&
6>+<0.00015136>*(HDDB*M7618412)+<0.00013133>*(HDDB*(1-M7618412))&&
7>+<0.029912>*MJUN+<0.041976>*MSEP+KWHOPALWPNS@CGE@AR1)
```

KWH SALES - OTHER PUBLIC AUTHORITIES: WATER PUMPING

REGRESSION RESULTS:

ORDINARY LEAST SQUARES

FREQUENCY: M
INTERVAL: 1976:1 TO 1997:12 (264 OBS.)
DEPENDENT VARIABLE: LKWHOPAWPNS@CGE

COEFFICIENT STD.ERROR T-STAT INDEPENDENT VARIABLE

```
0)                                              PDL(LCUSRESNS@CGE,1,2,FAR)

 \0    0.53537 0.02629       .                  *+
 \1    0.26769 0.013145      .       *
LAG SUM: 0.80306  STD. ERR.: 0.039436
MEAN LAG: 0.33333

1)                                              PDL(LDS@KW@OPA@CPI,1,2,FAR)

 \0    -0.032558 0.0079741    +  •  +          .
 \1    -0.016279 0.0039871          + *+       .
LAG SUM: -0.048837  STD. ERR.: 0.011961
MEAN LAG: 0.33333
```

2)	-0.0095175	0.0016215	-5.8697	(MMAY+MJUN+MJUL+MAUG+MSEP)*(PRC+PRC\1)
3)	-0.0052336	0.002296	-2.2795	(MNOV+MOCT+MAPR)•(PRC+PRC\1)
4)	0.00038223	0.000077084	4.9586	CDD
5)	0.000057184	0.000027217	2.101	(MDEC+MJAN+MFEB+MMAR+MAPR)*HDD
6)	5.9392	0.5157	11.517	MJAN
7)	5.8591	0.51446	11.389	MFEB
8)	5.9151	0.51352	11.519	MMAR
9)	5.9431	0.51316	11.581	MAPR
10)	6.0431	0.51074	11.832	MMAY
11)	6.0803	0.51194	11.877	MJUN
12)	6.1025	0.51288	11.898	MJUL
13)	6.1126	0.51234	11.931	MAUG
14)	6.0953	0.51127	11.922	MSEP
15)	6.0226	0.51143	11.776	MOCT
16)	5.9687	0.51183	11.661	MNOV
17)	5.8925	0.51496	11.443	MDEC
18)	0.17615	0.022074	7.9802	SUMMER885888
19)	0.46039	0.043989	10.466	M789
20)	0.12455	0.043445	2.8668	M8011
21)	0.7882	0.044582	17.68	M826
22)	-0.16184	0.04409	-3.6706	M9111
23)	-0.17864	0.043395	-4.1166	M9112
24)	-0.29605	0.044325	-6.679	M926
25)	-0.22915	0.043715	-5.2419	M927
26)	-0.18353	0.04332	-4.2365	M923
27)	-0.22951	0.044082	-5.2063	M937
28)	-0.16766	0.044128	-3.7994	M968
29)	-0.093054	0.043592	-2.1347	M972
30)	0.22624	0.044217	5.1167	M9710

R-BAR SQUARED:0.894
DURBIN-WATSON:1.71
STANDARD ERROR:0.042186 NORMALIZED:0.0025455

KWH SALES - OTHER PUBLIC AUTHORITIES: WATER PUMPING

WHERE:

LKWHOPAWPNS@CGE	=LOG(KWHOPAWPNS@CGE)
LCUSRESNS@CGE	=LOG(CUSRESNS@CGE)
LDS@KW@OPA@CPI	=LOG(DS@KW@OPA@CGE/CPI)
PRC	PRECIPITATION
CDD	ACTUAL COOLING DEGREE DAYS
HDD	ACTUAL HEATING DEGREE DAYS
MJAN	QUALITATIVE VARIABLE - JANUARY
MFEB	QUALITATIVE VARIABLE - FEBRUARY
MMAR	QUALITATIVE VARIABLE - MARCH
MAPR	QUALITATIVE VARIABLE - APRIL
MMAY	QUALITATIVE VARIABLE - MAY
MJUN	QUALITATIVE VARIABLE - JUNE
MJUL	QUALITATIVE VARIABLE - JULY
MAUG	QUALITATIVE VARIABLE - AUGUST
MSEP	QUALITATIVE VARIABLE - SEPTEMBER
MOCT	QUALITATIVE VARIABLE - OCTOBER
MNOV	QUALITATIVE VARIABLE - NOVEMBER
MDEC	QUALITAITVE VARIABLE - DECEMBER
SUMMER885888	QUALITATIVE VARIABLE - MAY, 1988 THRU AUG, 1988
M789	QUALITATIVE VARIABLE - SEPTEMBER, 1978
M8011	QUALITATIVE VARIABLE - NOVEMBER, 1980
M826	QUALITATIVE VARIABLE - JUNE, 1982
M9111	QUALITATIVE VARIABLE - NOVEMBER, 1991
M9112	QUALITATIVE VARIABLE - DECEMBER, 1991
M926	QUALITATIVE VARIABLE - JUNE, 1992
M927	QUALITATIVE VARIABLE - JULY, 1992
M923	QUALITATIVE VARIABLE - MARCH, 1992
M937	QUALITATIVE VARIABLE - JULY, 1993
M968	QUALITATIVE VARIABLE - AUGUST, 1996
M972	QUALITATIVE VARIABLE - FEBRUARY, 1997
M9710	QUALITATIVE VARIABLE - OCTOBER, 1997

AND:

KWHOPAWPNS@CGE	KWH SALES - OPA WATER PUMPING
CUSRESNS@CGE	SERVICE AREA ELECTRIC CUSTOMERS - RESIDENTIAL
DS@KW@OPA@CGE	SERVICE AREA DS RATE FOR DEMAND FOR OTHER PUBLIC AUTHORITIES CUSTOMER
CPI	CONSUMER PRICE INDEX (ALL URBAN) - ALL ITEMS

FORECAST EQUATION:

```
1>KWHOPAWPNS@CGE=EXP(PDL(LCUSRESNS@CGE,1,2,FAR,<0.53537,0.26769>)&&
2>+PDL(LDS@KW@OPA@CPI,1,2,FAR,<-0.032558,-0.016279>)&&
3>+<-0.0095175>*((MMAY+MJUN+MJUL+MAUG+MSEP)*(PRECIP+PRECIP\1))&&
4>+<-0.0052336>*((MNOV+MOCT+MAPR)*(PRECIP+PRECIP\1))
5>+<0.00038223>*CDD&&
6>+<0.000057184>*((MDEC+MJAN+MFEB+MMAR+MAPR)*HDD)&&
7>+<5.9392>*MJAN+<5.8591>*MFEB+<5.9151>*MMAR+<5.9431>*MAPR+<6.0431>*MMAY&&
8>+<6.0803>*MJUN+<6.1025>*MJUL+<6.1126>*MAUG+<6.0953>*MSEP+<6.0226>*MOCT&&
9>+<5.9687>*MNOV+<5.8925>*MDEC)
```

KWH SALES - OTHER PUBLIC UTILITIES : BETHEL, OHIO

REGRESSION RESULTS:

ORDINARY LEAST SQUARES

FREQUENCY: M
INTERVAL: 1976:1 TO 1997:12 (264 OBS.)
DEPENDENT VARIABLE: LKWHOPUBETHELNS@C

	COEFFICIENT	STD.ERROR	T-STAT	INDEPENDENT VARIABLE
1)	0.4275	0.051806	8.252	LKWHRESNS@CGE
2)	0.45928	0.038062	12.067	LKWHCOMNS@CGE
3)	0.000091674	0.000032746	2.7995	HDDB
4)	-3.2412	0.44401	-7.2997	MJAN
5)	-3.1842	0.44255	-7.1952	MFEB
6)	-3.3219	0.44101	-7.5325	MMAR
7)	-3.2273	0.43767	-7.3738	MAPR
8)	-3.2528	0.43466	-7.4834	MMAY
9)	-3.3212	0.44021	-7.5447	MJUN
10)	-3.3915	0.44967	-7.5421	MJUL
11)	-3.3634	0.45158	-7.4481	MAUG
12)	-3.3689	0.44745	-7.529	MSEP
13)	-3.2798	0.43542	-7.5324	MOCT
14)	-3.1723	0.43549	-7.2844	MNOV
15)	-3.2382	0.44103	-7.3423	MDEC
16)	-0.056086	0.0099926	-5.6127	GASR731796
17)	0.12941	0.045953	2.8161	M829
18)	0.13148	0.04549	2.8904	M834
19)	0.12939	0.045501	2.8437	M836
20)	0.15973	0.045319	3.5246	M843
21)	-0.16032	0.045293	-3.5397	M945
22)	0.18661	0.045377	4.1124	M948
23)	-0.21069	0.045549	-4.6255	M949
24)	-0.11145	0.04543	-2.4533	M9710

R-BAR SQUARED:0.96589
DURBIN-WATSON:2.11
STANDARD ERROR:0.044024 NORMALIZED:0.0030711

KWH SALES - OTHER PUBLIC UTILITIES : BETHEL, OHIO

WHERE:

LKWHCOMNS@CGE	=LOG(KWHCOMNS@CGE)
LECOM@CGE	=LOG(ECOM@CGE)
LDS@KWH@COM@CPI	=LOG(DS@KWH@COM@CGE/CPI)
LRAPGCOM@CGE	=LOG(APGCOM@CGE/CPI)
HDDB	BILLING HEATING DEGREE DAYS
CDDB	BILLING COOLING DEGREE DAYS
MJAN	QUALITATIVE VARIABLE - JANUARY
MFEB	QUALITATIVE VARIABLE - FEBRUARY
MMAR	QUALITATIVE VARIABLE - MARCH
MAPR	QUALITATIVE VARIABLE - APRIL
MMAY	QUALITATIVE VARIABLE - MAY
MJUN	QUALITATIVE VARIABLE - JUNE
MJUL	QUALITATIVE VARIABLE - JULY
MAUG	QUALITATIVE VARIABLE - AUGUST
MSEP	QUALITATIVE VARIABLE - SEPTEMBER
MOCT	QUALITATIVE VARIABLE - OCTOBER
MNOV	QUALITATIVE VARIABLE - NOVEMBER
MDEC	QUALITAITVE VARIABLE - DECEMBER
M7511	QUALITATIVE VARIABLE - NOVEMBER, 1975
M7711	QUALITATIVE VARIABLE - NOVEMBER, 1977
M805	QUALITATIVE VARIABLE - MAY, 1980
M806	QUALITATIVE VARIABLE - JUNE, 1980
M817	QUALITATIVE VARIABLE - JULY, 1981
M849	QUALITATIVE VARIABLE - SEPTEMBER, 1984
M9111	QUALITATIVE VARIABLE - NOVEMBER, 1991
M914	QUALITATIVE VARIABLE - APRIL, 1991
M927	QUALITATIVE VARIABLE - JULY, 1992
M938	QUALITATIVE VARIABLE - AUGUST, 1993
M939	QUALITATIVE VARIABLE - SEPTEMBER, 1993
M9310	QUALITATIVE VARIABLE - OCTOBER, 1993
M954	QUALITATIVE VARIABLE - APRIL, 1995
M956	QUALITATIVE VARIABLE - JUNE, 1995
M972	QUALITATIVE VARIABLE - FEBRUARY, 1997
M973	QUALITATIVE VARIABLE - MARCH, 1997
M977	QUALITATIVE VARIABLE - JULY, 1997

AND:

KWHCOMNS@CGE	KWH SALES - COMMERCIAL
ECOM@CGE	SERVICE AREA EMPLOYMENT - COMMERCIAL
DS@KWH@COM@CGE	SERVICE AREA DS RATE FOR USAGE FOR COMMERCIAL CUSTOMER
APGCOM@CGE	SERVICE AREA AVERAGE PRICE OF GAS FOR COMMERCIAL CUSTOMER
CPI	CONSUMER PRICE INDEX (ALL URBAN) - ALL ITEMS

FORECAST EQUATION:

```
1>KWHOPUBETHELNS@C=EXP(<0.42154>*LKWHRESNS@CGE&&
2>+<0.46739>*LKWHCOMNS@CGE&&
3>+<0.000097568>*HDDB&&
4>+<-3.2893>*MJAN+<-3.2279>*MFEB+<-3.3683>*MMAR+<-3.2689>*MAPR&&
5>+<-3.2958>*MMAY+<-3.3626>*MJUN+<-3.43>*MJUL+<-3.4068>*MAUG&&
6>+<-3.4082>*MSEP+<-3.3223>*MOCT+<-3.2141>*MNOV+<-3.2802>*MDEC)
```

KWH SALES - OTHER PUBLIC UTILITIES : BLANCHESTER, OHIO

REGRESSION RESULTS:

ORDINARY LEAST SQUARES

FREQUENCY: M
INTERVAL: 1975:1 TO 1997:12 (276 OBS.)
DEPENDENT VARIABLE: LKWHOPUBLANCNS@C

	COEFFICIENT	STD.ERROR	T-STAT	INDEPENDENT VARIABLE
1)	0.4242	0.043604	9.7285	LOG(KWHRESNS@CGE)
2)	0.17294	0.032488	5.3232	LOG(KWHCOMNS@CGE)
3)	0.0001957	0.000028476	6.8723	HDDB
4)	3.0258	0.37467	8.0759	MJAN
5)	3.0889	0.37348	8.2705	MFEB
6)	2.9796	0.37247	7.9997	MMAR
7)	3.081	0.36996	8.3279	MAPR
8)	3.0378	0.36775	8.2604	MMAY
9)	3.0184	0.37243	8.1044	MJUN
10)	2.9327	0.38033	7.711	MJUL
11)	2.9897	0.38194	7.8277	MAUG
12)	2.9705	0.37829	7.8526	MSEP
13)	3.0211	0.36868	8.1943	MOCT
14)	3.127	0.36827	8.4911	MNOV
15)	3.048	0.37243	8.184	MDEC
16)	-0.017924	0.0084918	-2.1107	GASR731796
17)	0.11626	0.040576	2.8651	M785
18)	-0.11816	0.040451	-2.9211	M826
19)	0.1284	0.040413	3.1773	M843
20)	-0.091804	0.040487	-2.2675	M914
21)	-0.1167	0.04064	-2.8716	M9310
22)	-0.13802	0.040399	-3.4164	M956

R-BAR SQUARED:0.9594
DURBIN-WATSON:1.98
STANDARD ERROR:0.039314 NORMALIZED:0.0026245

KWH SALES - OTHER PUBLIC UTILITIES : BLANCHESTER, OHIO

WHERE:

LKWHOPUBLANCNS@C	=LOG(KWHOPUBLANCNS@C)
KWHRESNS@CGE	KWH SALES - RESIDENTIAL
KWHCOMNS@CGE	KWH SALES - COMMERCIAL
HDDB	BILLING HEATING DEGREE DAYS
MJAN	QUALITATIVE VARIABLE - JANUARY
MFEB	QUALITATIVE VARIABLE - FEBRUARY
MMAR	QUALITATIVE VARIABLE - MARCH
MAPR	QUALITATIVE VARIABLE - APRIL
MMAY	QUALITATIVE VARIABLE - MAY
MJUN	QUALITATIVE VARIABLE - JUNE
MJUL	QUALITATIVE VARIABLE - JULY
MAUG	QUALITATIVE VARIABLE - AUGUST
MSEP	QUALITATIVE VARIABLE - SEPTEMBER
MOCT	QUALITATIVE VARIABLE - OCTOBER
MNOV	QUALITATIVE VARIABLE - NOVEMBER
MDEC	QUALITAITVE VARIABLE - DECEMBER
GASR731796	QUALITATIVE VARIABLE - JANUARY, 1973 TO JUNE, 1979 - GAS HOOKUP RESTRICTION
M785	QUALITATIVE VARIABLE - MAY, 1978
M826	QUALITATIVE VARIABLE - JUNE, 1982
M843	QUALITATIVE VARIABLE - MARCH, 1984
M914	QUALITATIVE VARIABLE - APRIL, 1991
M9310	QUALITATIVE VARIABLE - OCTOBER, 1993
M956	QUALITATIVE VARIABLE - JUNE, 1995

AND:

KWHOPUBLANCNS@C	KWH SALES - OTHER PUBLIC UTILITIES - BLANCHESTER

FORECAST EQUATION:

```
1>KWHOPUBLANCNS@C=EXP(<0.4242>*LOG(KWHRESNS@CGE)&&
2>+<0.17294>*LOG(KWHCOMNS@CGE)&&
3>+<0.0001957>*HDDB&&
4>+<3.0258>*MJAN+<3.0889>*MFEB+<2.9796>*MMAR+<3.081>*MAPR+<3.0378>*MMAY&&
5>+<3.0184>*MJUN+<2.9327>*MJUL+<2.9897>*MAUG+<2.9705>*MSEP+<3.0211>*MOCT&&
6>+<3.127>*MNOV+<3.048>*MDEC)
```

KWH SALES - OTHER PUBLIC UTILITIES : GEORGETOWN, OHIO

REGRESSION RESULTS:

ORDINARY LEAST SQUARES

FREQUENCY: M
INTERVAL: 1976:1 TO 1997:12 (264 OBS.)
DEPENDENT VARIABLE: LKWHOPUGTOWNNS@C

	COEFFICIENT	STD.ERROR	T-STAT	INDEPENDENT VARIABLE
0)	1.5645	0.46046	3.3978	CONSTANT
1)	0.40206	0.027474	14.635	LKWHRESNS@CGE
2)	0.25402	0.030314	8.3796	LKWHCOMNS@CGE
3)	0.00027941	0.000012209	22.885	M6518712*HDDB
4)	0.0002926	0.000015303	19.12	(1-M6518712)*HDDB
5)	0.0000887	0.000046373	1.9127	(1-M6518712)*CDDB
6)	-0.024955	0.0090989	-2.7426	GASR731796
7)	-0.10556	0.0104	-10.15	MMAR
8)	-0.034132	0.011501	-2.9676	MJUL
9)	-0.043189	0.011085	-3.8963	MSEP
10)	0.056328	0.010094	5.5804	MNOV
11)	0.090022	0.042131	2.1367	M788
12)	0.097313	0.041112	2.367	M834
13)	0.14156	0.042028	3.3683	M843
14)	0.10407	0.04252	2.4477	M937
15)	0.14341	0.042219	3.3968	M939
16)	0.20795	0.042085	4.9411	M943
17)	0.12097	0.041282	2.9304	M946
18)	0.16284	0.041568	3.9174	M948
19)	0.14527	0.041461	3.5038	M952
20)	0.12918	0.04109	3.1438	M955
21)	0.11447	0.042369	2.7017	M959
22)	0.10446	0.041496	2.5174	M9510
23)	0.13715	0.042006	3.265	M9511
24)	0.12871	0.041527	3.0994	M962
25)	0.095203	0.042149	2.2587	M963
26)	0.11551	0.041306	2.7965	M965
27)	0.094108	0.042032	2.239	M967
28)	0.12138	0.042122	2.8815	M9611
29)	0.091685	0.042135	2.176	M973
30)	0.094305	0.041422	2.2767	M975
31)	0.15344	0.04202	3.6517	M978
32)	0.10814	0.042298	2.5566	M979
33)	0.12582	0.041675	3.0192	M9710

R-BAR SQUARED:0.96688
DURBIN-WATSON:2.13
STANDARD ERROR:0.0407 NORMALIZED:0.0027641

KWH SALES - OTHER PUBLIC UTILITIES : GEORGETOWN, OHIO

WHERE:

LKWHOPUGTOWNNS@C	=LOG(KWHOPUGTOWNNS@C)
LKWHRESNS@CGE	=LOG(KWHRESNS@CGE)
LKWHCOMNS@CGE	=LOG(KWHCOMNS@CGE)
HDDB	BILLING HEATING DEGREE DAYS
M6518712	QUALITATIVE VARIABLE - JANUARY, 1965 TO DECEMBER, 1987
CDDB	BILLING COOLING DEGREE DAYS
GASR731796	QUALITATIVE VARIABLE - JANUARY, 1973 TO JUNE, 1979 - GAS HOOKUP RESTRICTION
MMAR	QUALITATIVE VARIABLE - MARCH
MJUL	QUALITATIVE VARIABLE - JULY
MSEP	QUALITATIVE VARIABLE - SEPTEMBER
MNOV	QUALITATIVE VARIABLE - NOVEMBER
M788	QUALITATIVE VARIABLE - AUGUST, 1978
M834	QUALITATIVE VARIABLE - APRIL, 1983
M843	QUALITATIVE VARIABLE - MARCH, 1984
M937	QUALITATIVE VARIABLE - JULY, 1993
M939	QUALITATIVE VARIABLE - SEPTEMBER, 1993
M943	QUALITATIVE VARIABLE - MARCH, 1994
M946	QUALITATIVE VARIABLE - JUNE, 1994
M948	QUALITATIVE VARIABLE - AUGUST, 1994
M952	QUALITATIVE VARIABLE - FEBRUARY, 1995
M955	QUALITATIVE VARIABLE - MAY, 1995
M959	QUALITATIVE VARIABLE - SEPTEMBER, 1995
M9510	QUALITATIVE VARIABLE - OCTOBER, 1995
M9511	QUALITATIVE VARIABLE - NOVEMBER, 1995
M962	QUALITATIVE VARIABLE - FEBRUARY, 1996
M963	QUALITATIVE VARIABLE - MARCH, 1996
M965	QUALITATIVE VARIABLE - MAY, 1996
M967	QUALITATIVE VARIABLE - JULY, 1996
M9611	QUALITATIVE VARIABLE - NOVEMBER, 1996
M973	QUALITATIVE VARIABLE - MARCH, 1997
M975	QUALITATIVE VARIABLE - MAY, 1997
M978	QUALITATIVE VARIABLE - AUGUST, 1997
M979	QUALITATIVE VARIABLE - SEPTEMBER, 1997
M9710	QUALITATIVE VARIABLE - OCTOBER, 1997

AND:

KWHOPUGTOWNNS@C	KWH SALES - OTHER PUBLIC UTILITIES - GEORGETOWN
KWHRESNS@CGE	KWH SALES - RESIDENTIAL
KWHCOMNS@CGE	KWH SALES - COMMERCIAL

FORECAST EQUATION:

```
1>KWHOPUGTOWNNS@C=EXP(<1.5645>+<0.40206>*LKWHRESNS@CGE&&
2>+<0.25402>*LKWHCOMNS@CGE+<0.00027941>*(M6518712*HDDB)&&
3>+<0.0002926>*((1-M6518712)*HDDB)+<0.0000887>*((1-M6518712)*CDDB)&&
4>+<-0.024955>*GASR731796+<-0.10556>*MMAR+<-0.034132>*MJUL&&
5>+<-0.043189>*MSEP+<0.056328>*MNOV)
```

KWH SALES - OTHER PUBLIC UTILITIES : HAMERSVILLE, OHIO

REGRESSION RESULTS:

ORDINARY LEAST SQUARES

FREQUENCY: M
INTERVAL: 1982:1 TO 1997:12 (192 OBS.)
DEPENDENT VARIABLE: LKWHOPUHAMERSNS@C

	COEFFICIENT	STD.ERROR	T-STAT	INDEPENDENT VARIABLE
0)	-6.2597	0.56527	-11.074	CONSTANT
1)	0.48772	0.065929	7.3977	LOG(KWHRESNS@CGE)
2)	0.45604	0.049159	9.2767	LOG(KWHCOMNS@CGE)
3)	0.00033725	0.000035473	9.5071	HDDB
4)	-0.08378	0.0163	-5.1398	MJAN
5)	-0.081112	0.01448	-5.6018	MMAR
6)	0.054486	0.014035	3.8821	MAPR
7)	-0.078114	0.017934	-4.3555	MJUN
8)	-0.16635	0.029801	-5.582	MJUL
9)	-0.13108	0.031782	-4.1244	MAUG
10)	-0.097715	0.025287	-3.8643	MSEP
11)	0.11299	0.014001	8.0698	MNOV
12)	0.10613	0.050595	2.0977	M821
13)	0.11323	0.050426	2.2455	M843
14)	-0.1477	0.049243	-2.9994	M9212
15)	0.12296	0.050211	2.4489	M944
16)	-0.24284	0.049457	-4.9102	M945
17)	0.12636	0.050452	2.5046	M948
18)	-0.13033	0.050481	-2.5818	M949
19)	0.17409	0.049196	3.5387	M955
20)	0.13832	0.049623	2.7875	M9510

R-BAR SQUARED:0.96143
DURBIN-WATSON:1.94
STANDARD ERROR:0.048469 NORMALIZED:0.0038293

KWH SALES - OTHER PUBLIC UTILITIES : HAMERSVILLE, OHIO

WHERE:

LKWHOPUHAMERSNS@C	=LOG(KWHOPUHAMERSNS@C)
KWHRESNS@CGE	KWH SALES - RESIDENTIAL
KWHCOMNS@CGE	KWH SALES - COMMERCIAL
HDDB	BILLING HEATING DEGREE DAYS
MJAN	QUALITATIVE VARIABLE - JANUARY
MMAR	QUALITATIVE VARIABLE - MARCH
MAPR	QUALITATIVE VARIABLE - APRIL
MJUN	QUALITATIVE VARIABLE - JUNE
MJUL	QUALITATIVE VARIABLE - JULY
MAUG	QUALITATIVE VARIABLE - AUGUST
MSEP	QUALITATIVE VARIABLE - SEPTEMBER
MNOV	QUALITATIVE VARIABLE - NOVEMBER
M821	QUALITATIVE VARIABLE - JANUARY, 1982
M843	QUALITATIVE VARIABLE - MARCH, 1984
M9212	QUALITATIVE VARIABLE - DECEMBER, 1992
M944	QUALITATIVE VARIABLE - APRIL, 1994
M945	QUALITATIVE VARIABLE - MAY, 1994
M948	QUALITATIVE VARIABLE - AUGUST, 1994
M949	QUALITATIVE VARIABLE - SEPTEMBER, 1994
M955	QUALITATIVE VARIABLE - MAY, 1995
M9510	QUALITATIVE VARIABLE - OCTOBER, 1995

AND:

KWHOPUHAMERSNS@C	KWH SALES - OTHER PUBLIC UTILITIES

FORECAST EQUATION:

```
EKWHOPUHAMERSNS@C
1>KWHOPUHAMERSNS@C=EXP(<-6.2597>&&
2>+<0.48772>*LOG(KWHRESNS@CGE)&&
3>+<0.45604>*LOG(KWHCOMNS@CGE)&&
4>+<0.00033725>*HDDB&&
5>+<-0.08378>*MJAN+<-0.081112>*MMAR+<0.054486>*MAPR+<-0.078114>*MJUN&&
6>+<-0.16635>*MJUL+<-0.13108>*MAUG+<-0.097715>*MSEP+<0.11299>*MNOV)
```

KWH SALES - OTHER PUBLIC UTILITIES : LEBANON, OHIO

REGRESSION RESULTS:

LEAST SQUARES WITH 2ND ORDER AUTOCORRELATION CORRECTION

FREQUENCY: M
INTERVAL: 1985:1 TO 1997:12 (156 OBS.)
DEPENDENT VARIABLE: LKWHOPULEBANONNS@C

	COEFFICIENT	STD.ERROR	T-STAT	INDEPENDENT VARIABLE
1)	0.25808	0.056358	4.5794	LKWHRESNS@CGE
2)	0.70774	0.053817	13.151	LKWHCOMNS@CGE
3)	-3.1837	0.6154	-5.1733	MJAN
4)	-3.1157	0.61317	-5.0813	MFEB
5)	-3.2824	0.60997	-5.3813	MMAR
6)	-3.1971	0.6062	-5.2739	MAPR
7)	-3.2692	0.60232	-5.4277	MMAY
8)	-3.2676	0.60685	-5.3846	MJUN
9)	-3.2867	0.61424	-5.3509	MJUL
10)	-3.2747	0.61485	-5.326	MAUG
11)	-3.2854	0.61168	-5.3711	MSEP
12)	-3.2884	0.60323	-5.4513	MOCT
13)	-3.1565	0.60461	-5.2207	MNOV
14)	-3.2149	0.61151	-5.2572	MDEC
15)	-0.15446	0.039513	-3.9091	M8511
16)	-0.38718	0.037472	-10.333	M8512
17)	-0.23743	0.039236	-6.0513	M861
18)	-0.16849	0.039043	-4.3156	M868
19)	0.11365	0.03922	2.8977	M8610
20)	-0.12848	0.0373	-3.4446	M871
21)	-0.1602	0.038885	-4.1198	M872
22)	0.26868	0.039276	6.8407	M874
23)	0.32378	0.037246	8.693	M875
24)	-0.098852	0.036898	-2.6791	M889
25)	-0.10189	0.037997	-2.6816	M914
26)	-0.075283	0.037051	-2.0319	M936
27)	-0.090423	0.037208	-2.4302	M9310
28)	-0.091389	0.037257	-2.4529	M9411
29)	-0.14773	0.040673	-3.6322	M954
30)	0.15133	0.037572	4.0276	M955
31)	-0.12835	0.039424	-3.2556	M956
32)	0.11197	0.037279	3.0035	M968
33)	-1.1131	0.037319	-29.826	M977
34)	-0.42749	0.039234	-10.896	M978
35)	0.094462	0.039188	2.4105	M9710
36)	-0.1706	0.08496	-2.008	RHO1
37)	0.33026	0.087047	3.7941	RHO2

R-BAR SQUARED:0.95722
DURBIN-WATSON:2.07
STANDARD ERROR:0.037708 NORMALIZED:0.0023581

KWH SALES - OTHER PUBLIC UTILITIES : LEBANON, OHIO

WHERE:

LKWHOPULEBANONNS@C	=LOG(KWHOPULEBANONNS@C)
LKWHRESNS@CGE	=LOG(KWHRESNS@CGE)
LKWHCOMNS@CGE	=LOG(KWHCOMNS@CGE)
MJAN	QUALITATIVE VARIABLE - JANUARY
MFEB	QUALITATIVE VARIABLE - FEBRUARY
MMAR	QUALITATIVE VARIABLE - MARCH
MAPR	QUALITATIVE VARIABLE - APRIL
MMAY	QUALITATIVE VARIABLE - MAY
MJUN	QUALITATIVE VARIABLE - JUNE
MJUL	QUALITATIVE VARIABLE - JULY
MAUG	QUALITATIVE VARIABLE - AUGUST
MSEP	QUALITATIVE VARIABLE - SEPTEMBER
MOCT	QUALITATIVE VARIABLE - OCTOBER
MNOV	QUALITATIVE VARIABLE - NOVEMBER
MDEC	QUALITAITVE VARIABLE - DECEMBER
M8511	QUALITATIVE VARIABLE - NOVEMBER, 1985
M8512	QUALITATIVE VARIABLE - DECEMBER, 1985
M861	QUALITATIVE VARIABLE - JANUARY, 1986
M868	QUALITATIVE VARIABLE - AUGUST, 1986
M8610	QUALITATIVE VARIABLE - OCTOBER, 1986
M871	QUALITATIVE VARIABLE - JANUARY, 1987
M872	QUALITATIVE VARIABLE - FEBRUARY, 1987
M874	QUALITATIVE VARIABLE - APRIL, 1987
M875	QUALITATIVE VARIABLE - MAY, 1987
M889	QUALITATIVE VARIABLE - SEPTEMBER, 1988
M914	QUALITATIVE VARIABLE - APRIL, 1991
M936	QUALITATIVE VARIABLE - JUNE, 1993
M9310	QUALITATIVE VARIABLE - OCTOBER, 1993
M9411	QUALITATIVE VARIABLE - NOVEMBER, 1994
M954	QUALITATIVE VARIABLE - APRIL, 1995
M955	QUALITATIVE VARIABLE - MAY, 1995
M956	QUALITATIVE VARIABLE - JUNE, 1995
M968	QUALITATIVE VARIABLE - AUGUST, 1996
M977	QUALITATIVE VARIABLE - JULY, 1997
M978	QUALITATIVE VARIABLE - AUGUST, 1997
M9710	QUALITATIVE VARIABLE - OCTOBER, 1997

AND:

KWHOPULEBANONNS@C	KWH SALES - OTHER PUBLIC UTILITIES - LEBANON
KWHRESNS@CGE	KWH SALES - RESIDENTIAL
KWHCOMNS@CGE	KWH SALES - COMMERCIAL

FORECAST EQUATION:

```
EKWHOPULEBANONNS@C
1>KWHOPULEBANONNS@C=EXP(<0.38582>*LKWHRESNS@CGE&&
2>+<0.64172>*LKWHCOMNS@CGE&&
3>+<-4.4845>*MJAN+<-4.4091>*MFEB+<-4.5514>*MMAR+<-4.4658>*MAPR&&
4>+<-4.4964>*MMAY+<-4.5233>*MJUN+<-4.5603>*MJUL+<-4.5393>*MAUG&&
5>+<-4.5526>*MSEP+<-4.5181>*MOCT+<-4.4164>*MNOV+<-4.4834>*MDEC)
```

KWH SALES - OTHER PUBLIC UTILITIES : RIPLEY, OHIO

REGRESSION RESULTS:

ORDINARY LEAST SQUARES

FREQUENCY: M
INTERVAL: 1979:1 TO 1997:12 (228 OBS.)
DEPENDENT VARIABLE: LKWHOPURIPLEYNS@C

	COEFFICIENT	STD.ERROR	T-STAT	INDEPENDENT VARIABLE
0)	-0.039204	0.33582	-0.11674	CONSTANT
1)	0.32722	0.026184	12.497	LKWHRESNS@CGE
2)	0.37832	0.026392	14.335	LKWHCOMNS@CGE
3)	0.05476	0.014123	3.8773	MFEB
4)	0.063569	0.013264	4.7924	MNOV
5)	-0.10087	0.022087	-4.567	M8378312
6)	-0.18259	0.053151	-3.4353	M793
7)	0.11613	0.052928	2.1942	M834
8)	-0.1862	0.054009	-3.4476	M842
9)	-0.16307	0.052744	-3.0918	M863
10)	-0.16477	0.052735	-3.1245	M893
11)	-0.15633	0.052695	-2.9667	M913
12)	-0.1206	0.052793	-2.2844	M9212
13)	-0.14069	0.052631	-2.6732	M934
14)	-0.14868	0.05301	-2.8048	M935
15)	-0.17091	0.052939	-3.2283	M936
16)	-0.21859	0.053289	-4.1019	M9310
17)	-0.19284	0.053082	-3.6328	M945
18)	-0.15785	0.052923	-2.9827	M949
19)	0.092352	0.038378	2.4064	M952+M9511
20)	-0.14107	0.052705	-2.6765	M953
21)	0.10783	0.053016	2.0338	M959
22)	0.20132	0.053091	3.792	M978

R-BAR SQUARED:0.90673
DURBIN-WATSON:1.80
STANDARD ERROR:0.052458 NORMALIZED:0.0037519

KWH SALES - OTHER PUBLIC UTILITIES : RIPLEY, OHIO

WHERE:

LKWHOPURIPLEYNS@C	=LOG(KWHOPURIPLEYNS@C)
LKWHRESNS@CGE	=LOG(KWHRESNS@CGE)
LKWHCOMNS@CGE	=LOG(KWHCOMNS@CGE)
MFEB	QUALITATIVE VARIABLE - FEBRUARY
MNOV	QUALITATIVE VARIABLE - NOVEMBER
M8378312	QUALITATIVE VARIABLE - JULY, 1983 TO DECEMBER, 1983
M793	QUALITATIVE VARIABLE - MARCH, 1979
M834	QUALITATIVE VARIABLE - APRIL, 1983
M842	QUALITATIVE VARIABLE - FEBRUARY, 1984
M863	QUALITATIVE VARIABLE - MARCH, 1986
M893	QUALITATIVE VARIABLE - MARCH, 1989
M913	QUALITATIVE VARIABLE - MARCH, 1991
M9212	QUALITATIVE VARIABLE - DECEMBER, 1992
M934	QUALITATIVE VARIABLE - APRIL, 1993
M935	QUALITATIVE VARIABLE - MAY, 1993
M936	QUALITATIVE VARIABLE - JUNE, 1993
M9310	QUALITATIVE VARIABLE - OCTOBER, 1993
M945	QUALITATIVE VARIABLE - MAY, 1994
M949	QUALITATIVE VARIABLE - SEPTEMBER, 1994
M952	QUALITATIVE VARIABLE - FEBRUARY, 1995
M9511	QUALITATIVE VARIABLE - NOVEMBER, 1995
M953	QUALITATIVE VARIABLE - MARCH, 1995
M959	QUALITATIVE VARIABLE - SEPTEMBER, 1995
M978	QUALITATIVE VARIABLE - AUGUST, 1997

AND:

KWHOPURIPLEYNS@C	KWH SALES - OTHER PUBLIC UTILITIES - RIPLEY
KWHRESNS@CGE	KWH SALES - RESIDENTIAL

FORECAST EQUATION:

```
1>KWHOPURIPLEYNS@C=EXP(<-0.039204>&&
2>+<0.32722>*LKWHRESNS@CGE&&
3>+<0.37832>*LKWHCOMNS@CGE&&
4>+<0.05476>*MFEB+<0.063569>*MNOV)
```

SERVICE AREA SUMMER MW PEAK

REGRESSION RESULTS:

ORDINARY LEAST SQUARES

FREQUENCY: M
INTERVAL: 1971:4 TO 1989:7 (220 OBS.)
DEPENDENT VARIABLE: LOG(MWSPEAK)

	COEFFICIENT	STD.ERROR	T-STAT	INDEPENDENT VARIABLE
1)	-4.0294	0.31281	-12.881	MJUN
2)	-3.5488	0.1652	-21.482	MJUL+MAUG
3)	0.96722	0.025713	37.616	MJUN*LSENDDAYS
4)	0.93218	0.011902	78.319	(MJUL+MAUG)*LSENDDAYS
5)	0.01003	0.0029978	3.3458	TPMH*MJUN
6)	0.010459	0.0012095	8.6477	TPMH*(MJUL+MAUG)
7)	0.0032659	0.0014413	2.266	TPMHL1*MJUN
8)	0.0033325	0.00070082	4.7551	TPMHL1*(MJUL+MAUG)
9)	0.0039527	0.0013999	2.8237	TAM*MJUN
10)	0.0037529	0.0008198	4.5778	TAM*(MJUL+MAUG)
11)	0.0028717	0.00077624	3.6995	HUM*MJUN
12)	0.00064929	0.00031633	2.0526	HUM*(MJUL+MAUG)
13)	-0.00045523	0.000061773	-7.3695	JULY4WKALT*TPMH
14)	0.00063724	0.000080203	7.9454	MAUGEND*TPMH
15)	-0.060662	0.027376	-2.2159	M715
16)	-0.12258	0.028399	-4.3162	M717
17)	-0.069015	0.025833	-2.6716	M7210
18)	-0.067137	0.026479	-2.5355	M766
19)	-0.11709	0.031546	-3.7116	M801
20)	0.061363	0.026016	2.3587	M822
21)	0.064487	0.025722	2.5071	M823
22)	-0.072714	0.026221	-2.7731	M8411
23)	0.052793	0.026127	2.0207	M8412
24)	-0.056399	0.026502	-2.1281	M858
25)	0.078284	0.026068	3.0031	M875
26)	0.09443	0.025845	3.6538	M876
27)	0.052699	0.025782	2.044	M877
28)	0.079331	0.025938	3.0584	M878
29)	0.080692	0.025891	3.1166	M879
30)	0.088209	0.025824	3.4158	M8711
31)	-0.06002	0.02606	-2.3031	M895

R-BAR SQUARED:0.97969
DURBIN-WATSON:1.21
STANDARD ERROR:0.025458 NORMALIZED:0.003124

SERVICE AREA SUMMER MW PEAK

WHERE:

MWSPEAK	SERVICE AREA MW PEAK - SUMMER
LSENDDAYS	=LOG(MWHSENDNORMNS@CGE/DAYS)
TPMHL1	TPMH\1
TAM	MINIMUM HOURLY TEMPERATURE - MORNING
MJUN	QUALITATIVE VARIABLE - JUNE
HUM	HUMIDITY - AFTERNOON
MJUL	QUALITATIVE VARIABLE - JULY
MAUG	QUALITATIVE VARIABLE - AUGUST
JULY4WKALT	QUALITATIVE VARIABLE FOR THE WEEK OF JULY 4TH
MAUGEND	QUALITATIVE VARIABLE FOR THE END OF AUGUST
TPMH	MAXIMUM HOURLY TEMPERATURE - AFTERNOON
M715	QUALITATIVE VARIABLE - MAY, 1971
M717	QUALITATIVE VARIABLE - JULY, 1971
M7210	QUALITATIVE VARIABLE - OCTOBER, 1972
M766	QUALITATIVE VARIABLE - JUNE, 1976
M801	QUALITATIVE VARIABLE - JANUARY, 1980
M822	QUALITATIVE VARIABLE - FEBRUARY, 1982
M823	QUALITATIVE VARIABLE - MARCH, 1982
M8411	QUALITATIVE VARIABLE - NOVEMBER, 1984
M8412	QUALITATIVE VARIABLE - DECEMBER, 1984
M858	QUALITATIVE VARIABLE - AUGUST, 1985
M875	QUALITATIVE VARIABLE - MAY, 1987
M876	QUALITATIVE VARIABLE - JUNE, 1987
M877	QUALITATIVE VARIABLE - JULY, 1987
M878	QUALITATIVE VARIABLE - AUGUST, 1987
M879	QUALITATIVE VARIABLE - SEPTEMBER, 1987
M8711	QUALITATIVE VARIABLE - NOVEMBER, 1987
M895	QUALITATIVE VARIABLE - MAY, 1989

AND:

MWHSENDNORMNS@CGE	MWH SENDOUT - WEATHER NORMALIZED
DAYS	NUMBER OF DAYS IN THE MONTH

FORECAST EQUATION:

```
1>MWSPEAK=EXP(<-3.5488>&&
2>+<0.93218>*LOG(MWHSENDNS@CGE/31)&&
3>+<0.010459>*TPMH&&
4>+<0.0033325>*TPMHL1&&
5>+<0.0037529>*TAM&&
6>+<0.00064929>*HUMIDITY)
```

SERVICE AREA WINTER MW PEAK

REGRESSION RESULTS:

ORDINARY LEAST SQUARES

FREQUENCY: M
INTERVAL: 1975:4 TO 1985:2 (119 OBS.)
DEPENDENT VARIABLE: LOG(MWWPEAK)

	COEFFICIENT	STD.ERROR	T-STAT	INDEPENDENT VARIABLE
1)	-1.522	0.15508	-9.8144	AMPEAK*MDEC
2)	-1.6454	0.15704	-10.478	AMPEAK*MJAN
3)	-1.6053	0.15554	-10.321	AMPEAK*MFEB
4)	0.88821	0.014315	62.049	AMPEAK*(MDEC+MJAN+MFEB)*LSENDDAYS
5)	-0.0053279	0.0011625	-4.5833	TEMPAMBLO@0*TEMPAM*MDEC*AMPEAK
6)	-0.006196	0.0016252	-3.8125	(1-TEMPAMBLO@0)*TEMPAM*MDEC*AMPEAK
7)	-0.0060219	0.00087915	-6.8497	TEMPAMBLO@0*TEMPAM*MJAN*AMPEAK
8)	-0.0041116	0.0010779	-3.8145	(1-TEMPAMBLO@0)*TEMPAM*MJAN*AMPEAK
9)	-0.0035267	0.00061921	-5.6955	TEMPAM*MFEB*AMPEAK
10)	0.0013696	0.00072876	1.8793	WINDAM*AMPEAK*MJAN
11)	-0.00084088	0.00041138	-2.044	TEMPPML1*AMPEAK
12)	-3.0691	0.48774	-6.2924	PMPEAK*MDEC
13)	-1.2707	0.29456	-4.3139	PMPEAK*MJAN
14)	-1.2356	0.29153	-4.2383	PMPEAK*MFEB
15)	1.0296	0.045219	22.769	PMPEAK*LSENDDAYS*MDEC
16)	0.855	0.026805	31.898	PMPEAK*LSENDDAYS*(MJAN+MFEB)
17)	-0.0062746	0.00081425	-7.706	TEMPPM*PMPEAK*(MDEC+MFEB)
18)	-0.0073107	0.0007465	-9.7933	TEMPPM*PMPEAK*MJAN
19)	-0.077575	0.011938	-6.498	XMAS*AMPEAK
20)	-0.068725	0.021188	-3.2437	M777
21)	-0.053074	0.02137	-2.4835	M7711
22)	-0.059197	0.023506	-2.5183	M786
23)	0.037981	0.008317	4.5667	M788+M768+M802+M815+M827+M845+M846

R-BAR SQUARED:0.98263
DURBIN-WATSON:1.48
STANDARD ERROR:0.019773 NORMALIZED:0.0024652

SERVICE AREA WINTER MW PEAK

WHERE:

MWWPEAK	SERVICE AREA MW PEAK - WINTER
TEMPAMBLO@0	QUALITATIVE VARIABLE - TEMPAM BELOW 0
TEMPAM	MINIMUM HOURLY TEMPERATURE - MORNING
WINDAM	WIND SPEED MPH - MORNING
TEMPPML1	TEMPPM\1
LSENDDAYS	=LOG(MWHSENDNORMNS@CGE/DAYS)
MDEC	QUALITAITVE VARIABLE - DECEMBER
MFEB	QUALITATIVE VARIABLE - FEBRUARY
TEMPPM	MINIMUM HOURLY TEMPERATURE - EVENING
PMPEAK	QUALITATIVE VARIABLE - EVENING PEAK
MJAN	QUALITATIVE VARIABLE - JANUARY
XMAS	QUALITATIVE VARIABLE - CHRISTMAS WEEK
AMPEAK	QUALITATIVE VARIABLE - MORNING PEAK
M777	QUALITATIVE VARIABLE - JULY, 1977
M7711	QUALITATIVE VARIABLE - NOVEMBER, 1977
M786	QUALITATIVE VARIABLE - JUNE, 1978
M788	QUALITATIVE VARIABLE - AUGUST, 1978
M768	QUALITATIVE VARIABLE - AUGUST, 1976
M802	QUALITATIVE VARIABLE - FEBRUARY, 1980
M815	QUALITATIVE VARIABLE - MAY, 1981
M827	QUALITATIVE VARIABLE - JULY, 1982
M845	QUALITATIVE VARIABLE - MAY, 1984
M846	QUALITATIVE VARIABLE - JUNE, 1984

AND:

MWHSENDNORMNS@CGE	MWH SENDOUT - WEATHER NORMALIZED
DAYS	NUMBER OF DAYS IN THE MONTH

FORECAST EQUATION:

```
1>MWWPEAK=EXP(<-1.6454>
2>+<0.88821>*LOG(MWHSENDNS@CGE@JAN/31)
3>+<-0.0041116>*TEMPAM
4>+<0.0013696>*WINDAM
5>+<-0.00084088>*TEMPPML1)
```

Cinergy

FORM IRP-1

GENERAL SUPPLY - SIDE PLANNING INFORMATION

Marginal Costing Period Duration (1):

	Summer Season Months (June through September)			Winter Season Months (All Other Months)		
	On Peak	Mid Peak	Off Peak	On Peak	Mid Peak	Off Peak
Annual Hours:	784	262	1882	1562	1041	3229

Seasonal Demand Related Capacity Cost Allocation Factors:

Summer 100 %
Winter 0 %

NOTE: Estimate supplied for reporting purposes only. Cinergy does not use this in the evaluation of potential resources.

Generating Reserve Criteria:

Planned Average Generating Reserve Margin for the IRP Period: 17.0 % (2)

Projected Generating and Transmission Facility Costs:

Parameters	Trans. Data	Generating Facility Data				
Facility Designation		CT	NCT			
Capital Cost ($/kW) (4)	(3)	[redacted]				
Fixed O&M Cost ($/kW-yr) (4)	(3)	[redacted]				
Cost Escalation Rates (%/yr):		[redacted]				
Capital Cost	(3)	[redacted]				
Fixed O&M Cost	(3)	[redacted]				
LARR Rate (%/yr)	(3)	11.9	11.9			
Facility Book Life (years)		30	30			
Capacity Factors:						
Summer	N/A	Varies by Year, see note (5)				
Winter	N/A	Varies by Year, see note (5)				

Note: Capital and fixed O&M costs are in 1999 dollars, and capital costs include an estimate of AFUDC.

NOTES: (1) Period breakdowns are approximate and are provided as a filing requirement only, they are NOT necessarily recommended or used by Cinergy.

(2) This value is the System Planning Reserve Margin from the March 2, 1994, Operating Agreement among PSI, CG&E, and Cinergy Services, Inc.

(3) In compliance with FERC Order 889, the relevant transmission information is located in Volume II, which was prepared independently.

(4) The values shown are relative values used for planning purposes. Absolute values may vary considerable depending on many factors, including but not limited to: unit size, seasonal derating, specific site requirements, equipment vendor(s), ultimate number of units planned on a specific site and future and/or unforeseen regulatory requirements. Costs are based on ISO MW ratings.

(5) For generating facilities, capacity factor varies by year depending on, among other things, new unit additions, relative fuel costs, purchased power costs, and the actual performance of the other generating units on the system.

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Cinergy

FORM IRP-2

PROJECTED ON-SYSTEM VARIABLE ELECTRIC ENERGY COSTS

Marginal Variable Energy Costs ($/MWh) (1)

		Summer Season (2)			Winter Season (2)		
	Year	On Peak	Mid Peak	Off Peak	On Peak	Mid Peak	Off Peak
1999	0	[redacted]					
	1						
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11	First five years provided per order in case 95-203-EL-FOR.					
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						

Note: All cost data should be in nominal dollars.

The marginal variable energy cost information is considered by Cinergy to be trade secrets and confidential and competitive information. The redacted information will be made available to appropriate parties upon execution of an appropriate confidentiality agreement or protective order. Please contact Diane Jenner at (317)838-2183 for more information.

NOTES: (1) Estimated average marginal energy costs for the periods shown. Estimated costs of SO_2 allowances consumed are included. Cinergy is dispatched against the energy market.

(2) Period breakdowns are approximate and are provided as a filing requirement only, they are NOT necessarily recommended or used by Cinergy. Refer to Form IRP-1 for period duration.

Figure OA-1

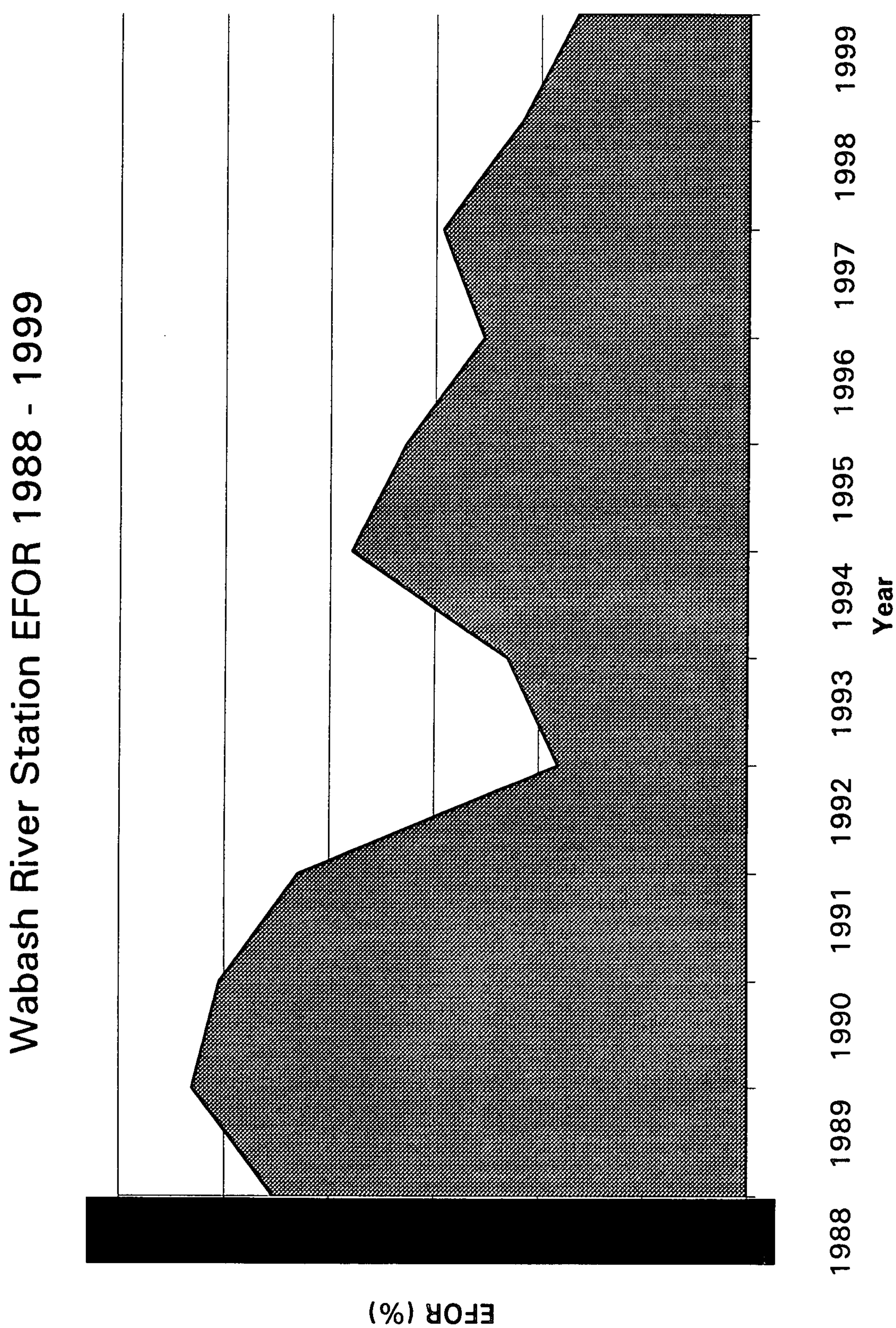
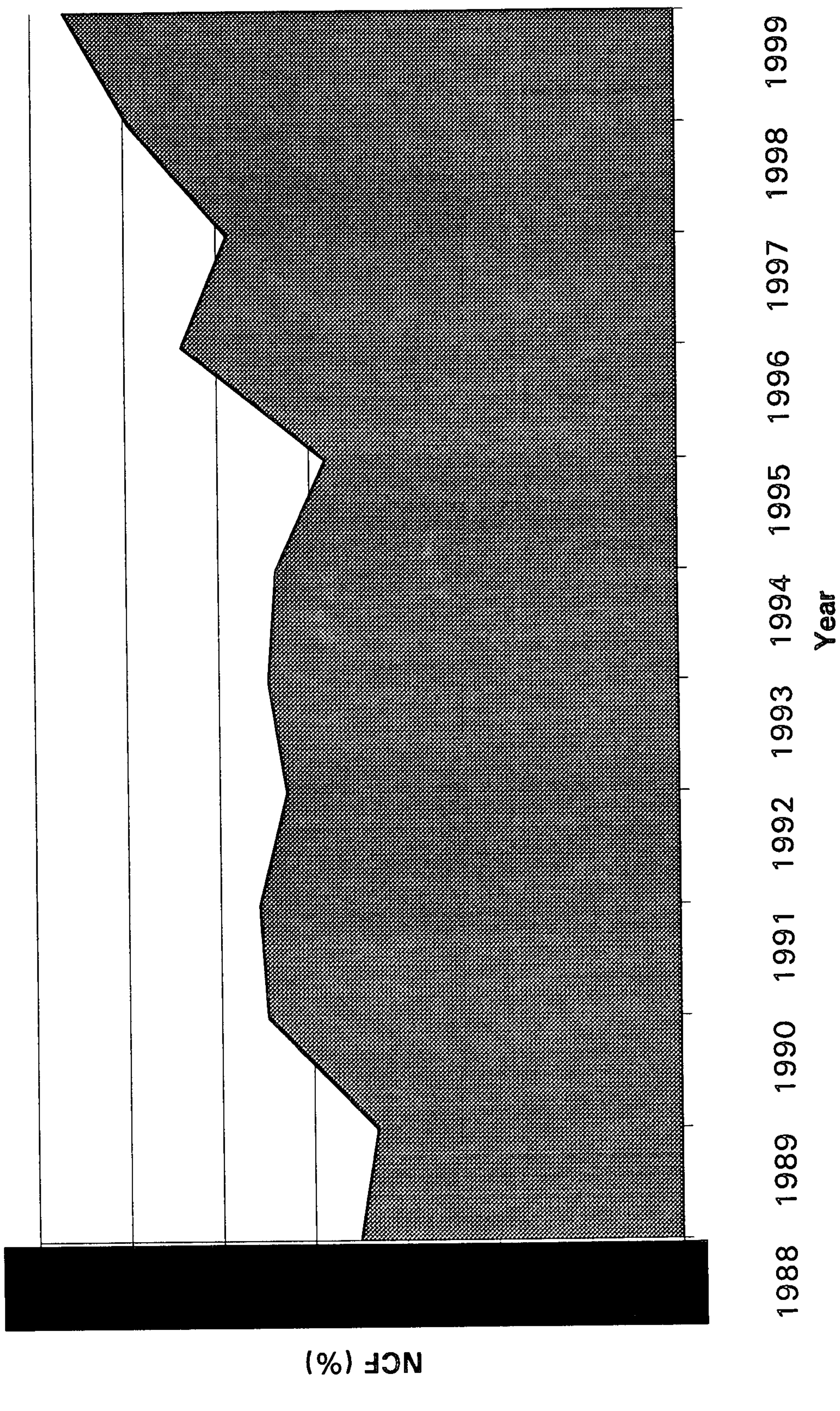

Wabash River Station EFOR 1988 - 1999
EFOR (%)
[redacted]
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
Year

Figure OA-2

Wabash River Station NCF 1988 - 1999



CINERGY®

The Cincinnati Gas & Electric Company

1999

INTEGRATED RESOURCE PLAN

STATUS REPORT

November 1, 1999

By: Cinergy Services
Douglas F. Esamann, Vice President
139 East Fourth Street
P.O. Box 960
Cincinnati, Ohio 45201-0960

NOTICE

This STATUS Report is an integral part of the Cinergy 1999 IRP filing. Please see the submittal letters and other specific filing attachments contained in the front of Volume I of the Cinergy 1999 Integrated Resource Plan. For ease of comparison with past Short-Term Implementation Plans (STIPs), the same major headings as in the STIPs have been used.

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TABLE OF CONTENTS

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Planned New Generation and Transmission Facilities

There were no expenditures in 1998 on new generation facilities.

In compliance with the codes of conduct in FERC Order 889, the relevant transmission and distribution information is located in the Transmission Volume of this report, which was prepared independently.

Planned Improvements in Operations of Existing Generation, Transmission, and Distribution

Environmental Compliance Projects

In 1998, Cinergy made changes to some of its existing generating units as part of its compliance strategy for both the Federal Clean Air Act Amendments and state and local requirements. Several Projects have been consolidated for reporting purposes. The general types of projects included:

1) NO_x control projects.

2) Boiler Optimization

	PSI	CG&E	Cinergy
Estimated 1998 Expenditures	$ 292,602	$ 2,940,099	$ 3,232,701
Actual 1998 Expenditures	$ 198,206	$ 2,956,248	$ 3,154,454

Inlet Cooling

Cinergy has made Inlet Cooling changes to some of the Combustion Turbine units (see Figure GA-8-4 found in the General Appendix for the units affected). The expenditures for this project were budgeted for and occurred primarily in 1999.

	PSI	CG&E	Cinergy
Estimated 1998 Expenditures	$ -	$ -	$ -
Actual 1998 Expenditures	$ 16,781	$ 70,477	$ 87,258

Zimmer Synthetic Gypsum Project

Cinergy is investing capital dollars at Zimmer Station to make high quality synthetic gypsum that will be sold to a new wallboard manufacturing plant. Cinergy expects to create a significant environmental benefit by converting the by-product from the unit's sulfur dioxide scrubber into synthetic gypsum, rather than landfilling it. The amount of material placed in the station's landfill can be reduced by as much as 77 percent. The expenditures for this project will occur primarily in 1999 and 2000.

	PSI	CG&E	Cinergy
Estimated 1998 Expenditures	$ -	$ 60,000	$ 60,000
Actual 1998 Expenditures	$ -	$ 53,900	$ 53,900

In compliance with the codes of conduct in FERC Order 889, the relevant transmission and distribution information is located in the Transmission Volume of this report, which was prepared independently.

Planned Conservation, Load Modification, or Other Demand-Side Management Programs (Ohio Only)

Please note that estimated and actual expenditures reported throughout this section are for OHIO ONLY (not CG&E System).

Electric Weatherization

Program Description

The Electric Weatherization Program provides energy education and direct installation of energy saving measures in the homes of CG&E's electrically heated residential customers with income levels up to 200% of the poverty level. This program is only available to customers whose homes are being weatherized as part of the State Weatherization program. The program consists of the direct installation of specific DSM measures and energy education on the energy savings features of the measures. This program results in a reduction in the energy consumption of electric appliances and provides energy education for participants so that they can learn how to save energy and lower their electric bills. The measures available for installation under this program are:

- weatherization measures
- compact fluorescent lamps
- low flow showerheads
- faucet aerators

- pipe wrap
- water heater wraps
- waterbed covers

Process Evaluation

This "piggyback" program was not evaluated in 1998. Evaluation is expected in early 2000.

Impact Evaluation

This "piggyback" program was not evaluated in 1998. Evaluation is expected in early 2000.

Program Costs

Estimated 1998 Expenditures	$350,000
Actual 1998 Expenditures	$162

Program Performance

The program began at the end of 1998.

Energy Decisions

Program Description

The Energy Decisions program was jointly developed by CG&E

and the Educational Work Team of CG&E's Collaborative Effort. It is an annual educational series of training programs for area science and physics teachers.

This program focuses on energy use and economic decision-making for educators. The program offers the following classes: Three one-day classes for teachers (grades 2-9), and a one-week Summer Institute class. Class participants are assessed a nominal fee for materials.

All of the classes offered under this program are conducted in cooperation with the University of Cincinnati's Center for Economic Education (the Center). Educators who complete the one-day session receive one-quarter graduate credit hour. Completion of the five day Summer Institute class earns each educator three graduate credit hours. All recruiting for these classes is the responsibility of the Center.

Each course is taught primarily by staff of the Center, CG&E staff, and area science teachers. CG&E, Cinergy/Community Energy Partnership (CCEP), and the Center jointly developed the class topics.

Process Evaluation

Feedback from class participants is considered in the design of future class curricula.

Impact Evaluation

The Energy Decisions program has been designed as an educational program. Therefore, no attempt has been made to calculate load impacts.

Program Costs

Estimated 1998 Expenditures	$70,000
Actual 1998 Expenditures	$70,800

Promotional Efforts

The Center for Economic Education at the University of Cincinnati is responsible for promoting this program. Teachers apply to participate in the program through the internet.

Program Performance

Energy Decisions has been selected to receive the Governor's Award of Excellence for Energy Efficiency. More than 145 educators participated in one-day classes for educators were offered during 1998. Each class consisted of approximately 35 to 40 science and physics teachers from schools located in the CG&E service territory. The Summer Institute session was held in June 1998. One of the goals of the Summer Institute is to encourage teachers to incorporate energy economics into the school curriculum. It is hoped that at every Summer Institute at least one science teacher from each of the area school districts will participate in the class to facilitate this goal. The Center and CG&E cooperatively taught this class. CG&E discussed subjects ranging from how CG&E determines generation needs to the calculation of a typical bill. Tours of a power plant and an alternate energy source also were included in the class. There was a nominal charge of $20.00 for materials. Forty-five educators attended the Summer Institute in 1998.

Energy Maintenance Services

Program Description

This pilot program was designed to determine whether or not an energy maintenance program could result in energy savings for elderly/disabled customers with income levels less than

150% of poverty guidelines.

Process Evaluation

An evaluation was completed in 1998. It revealed high customer satisfaction and an increase in the efficiency of participants' homes.

Impact Evaluation

No formal impact evaluation was conducted in 1998.

Program Costs

Estimated 1998 Expenditures	$84,000
Actual 1998 Expenditures	$57,450

Program Performance

The program began in July 1998 and was completed in October 1998. Two hundred and one customers were served in 1998, exceeding the program goal to serve 200 customers.

General Use Program

Program Description

This program was designed to install energy savings measures in the homes of income-qualified electric customers throughout the CG&E service territory. This "piggyback" program promotes electric efficiency measures in low-income customers' homes as State Weatherization Agencies provide their services. Using an organization already in the home, these measures can be installed cost-effectively.

The program is delivered in conjunction with the State Weatherization Program through Community Action Agencies (CAA's) as a piggyback effort to their existing services. The CAA's solicit participation in this program. This program is only available to customers whose homes are being weatherized as part of the State Weatherization program. The program consists of the direct installation of specific DSM measures and energy education on the energy savings features of the measures. This program results in a reduction in the energy consumption of electric appliances and provides energy education for participants so that they can learn how to save energy and lower their electric bills. The measures available for installation under this program are:

- compact fluorescent lamps
- low flow showerheads
- faucet aerators
- pipe wrap
- water heater wraps
- waterbed covers

Process Evaluation

No process evaluation was performed in 1998.

Impact Evaluation

An impact evaluation was conducted in 1996. The results indicated that the program was not cost effective with a Total Resource Cost (TRC) test benefit/cost (B/C) ratio of 0.56.

Program Costs

1998 Estimated Expenditures	$15,000
1998 Actual Expenditures	$15,800

Program Performance

Seventy-eight customers were served in 1998. They following measures were installed in clients' homes:

213 compact fluorescent lamps

8 water heater jackets

25 insulated water heater pipes

23 low flow showerheads

61 faucet aerators

0 waterbed covers

Homebuyer Energy Education

Program Description

This program provides energy efficiency education to first-time homebuyers in low/moderate income communities. The training is conducted by the Communities United for Action (CUFA), which added an energy education component to its existing homebuyer training classes. CUFA is a grassroots coalition consisting of forty-four community groups, which was formed in 1980 to bring together residents of low and moderate income communities to work on common concerns. The energy education component of the program focuses on three primary areas: 1) guidance on how to shop for an energy efficient home, 2) making a home more energy efficient (measures to incorporate), and 3) conserving energy by reduced consumption and energy efficient measures. Besides the energy efficiency component, these classes also educate potential buyers on the following subjects: budgeting, qualifying for a loan, how to work with a realtor, how to shop for a home, sales contracts, applying for a loan, credit, etc. Each participant receives a compact fluorescent lamp.

Process Evaluation

No process evaluation was performed in 1998. However, participant evaluations are kept on file.

Impact Evaluation

Since this is an education program, there are currently no plans to perform an impact evaluation.

Program Costs

Expected 1998 Expenditures	$18,850
Actual 1998 Expenditures	$19,140

Program Performance

Eleven classes were conducted in 1998 and 225 customers were served.

Home Energy House Call

Program Description

The Home Energy House Call (HEHC) consists of three major components:

- Home Energy Survey
- Comprehensive Energy Audit & Review
- Measures Installation Opportunity

When a Home Energy House Call is requested by a customer, a qualified home energy specialist visits the site to gather information about the home. A questionnaire about the energy usage also is completed.

The energy specialist gives the customer a detailed report that explains how the customer's home uses energy each month. The specialist also will check the home for air leaks, inspect the furnace filter, and look at the insulation levels in different areas. If needed, the specialist will recommend cost saving do-it-yourself measures to make the home more energy efficient.

In addition to helping the customer with energy efficiency, the Home Energy House Call assists the customer with "Earth Perks." This part of the program looks at the natural resources and pollution prevention needs of the customer's home and community and offers a list of action items. This list of action items is prioritized by the home's environmental profile.

Program Evaluation

An evaluation was completed in 1998. The evaluation of the HEHC service showed a very successful program. A strong majority of participants are more knowledgeable about saving energy as a result of the audit. Participants implemented 39% of recommended measures within 6 months to 2 years after the audit and another 11% were still planned at the time of the survey. These findings indicate that customers have taken or plan to take 50% of all recommended actions contained in their audit report. Minor measures (items with low investment costs) were implemented at a much higher rate (74%) than major measures and most of the minor measures were implemented in less than 2 months, although there are some exceptions. The majority of all measures implemented (80%) were installed by customers and 17% were contracted out. Customer satisfaction with specific program components was very good and ranged from 8.2 to 9.6 on a 10-point scale. Saving money and learning about the home drove participation and many participants enrolled in the program for non-energy related reasons.

Impact Evaluation

An energy savings analysis was performed as part of the program evaluation discussed above. This study revealed that electric customers saved as much as 19 percent of their annual energy consumption. Home Energy House Call is essentially an educational program. No energy or demand impacts have been attributed to the program in the Integrated Resource Plan.

Program Costs

Estimated 1998 Expenditures	$350,000
Actual 1998 Expenditures	$390,000

Program Performance

During 1998, 4,500 audits were completed. More details are available in the 1998 CCEP Annual Report and in the evaluation reports.

Learn and Earn Pilot

Program Description

The Learn and Earn Pilot program was initiated to educate customers receiving Percentage of Income Payment Plan (PIPP) benefits about energy consumption within their homes. Eligible customers also receive education to help them reduce their energy usage and to assist them with money management so the participants can reduce their PIPP arrearages.

Process and Impact Evaluation

As a result of the process and impact evaluation completed by TecMRKT Works, an outside market research firm, the major findings were:

- Customer enrollment is strong
- Incentives drove participation but customers perceived education and information to be more valuable
- Agency familiarity is not necessary for participation
- Program drop out rate is very low
- Customer satisfaction is strong for program components and the home visits
- Baseline estimation methods worked well for the program as a whole
- Participants reduced their energy consumption

Complete details of their findings are available under separate cover. An impact evaluation completed in 1999 revealed average savings of 1.5 percent of gas consumption and 5.7 percent of electricity consumption.

Program Costs

Estimated 1998 Expenditures	$226,700
Actual 1998 Expenditures	$207,000

Program Performance

The goal of the pilot program was 150 customers. However, one provider was not able to perform the work as requested. For the pilot program, 126 customers started the program and 96 actually completed the program in its entirety.

Learn and Earn

Program Description

The Learn and Earn Program is a continuation and expansion of the pilot program that was conducted in 1998. The program provides a series of individual training and counseling sessions to participants on energy usage and conservation, as well as budget management. This program is open to any Percentage of Income Payment Plan (PIPP) customer as of January 1, 1998. The education sessions, which include a home energy audit, in-home basics education program, and follow-up counseling sessions for participants, are provided by social service/weatherization agencies now serving the PIPP customers. As an incentive for Program participation and energy consumption changes, CG&E, through the Providers, offers customers a two-part incentive award; the first incentive for Program Participation and the second incentive for lowering monthly energy consumption from a pre-determined baseline amount of energy consumption.

Process and Impact Evaluation

The evaluation of the pilot program is described above. This expanded program began in November 1998.

Program Costs

Estimated Expenditures through 1999	$384,000
Actual 1998 Expenditures	$49,300

Program Performance

At the end of 1998, initial visits had been completed for 151 customers. 1998 expenditures reflect the related costs.

Library Partnership Program

Program Description

The Library Partnership Program was a new program that uses libraries as the distribution points for energy education materials. Cinergy has the expertise and energy information, which it would like to share with the community. Libraries are an excellent distribution system for information, but often don't have the energy-related or the financial resources to identify and obtain the specialized materials required. Together the partnership provides a mechanism to get quality energy information to the interested public.

The Cinergy/Community Energy Partnership (CCEP) has developed this program with five main elements:

- Energy Materials: CCEP provides funding and guidance for the libraries to buy energy books, videos, computer disks and materials. This is in the form of a grant to the library. The library and CCEP will publicize the availability of this energy information.
- Adult Workshops: Cinergy will provide internal and/or community experts to provide energy workshops in the local libraries, some of which will be associated with other library activities. Participants will receive

energy information and a compact fluorescent light bulb (CFL) to install in their home to start them saving.

- Children's Workshops: Energy Workshops will be held for children using the Ohio Energy Project, an existing program that the CCEP has funded for the past several years. The Ohio Energy Project uses trained high school aged instructors that relate well to young audiences.
- Displays: Energy displays will be circulated among the local libraries to demonstrate energy issues. Initial displays will relate to the workshop topics as well as general energy information and include how to read your energy meter, energy and the environment, energy conservation tips, low-income assistance programs, energy conservation in new construction, and fluorescent lighting energy savings.
- Energy Meters: Small plug-in energy meters will be loaned to library patrons to help them understand what a specific appliance consumes. Manufactured by Pacific Technologies, these devices read cumulative kWh over the time period installed.

Impact Evaluation

This is primarily an educational program and no impacts have been included in the Integrated Resource Plan; therefore, there are currently no plans to perform an impact evaluation.

Program Costs

Estimated 1998 Expenditures	$35,000
Actual 1998 Expenditures	$39,800

Promotional Efforts

Cinergy and the library systems have promoted this program through various marketing channels including direct mail, newsletters, media, and community posters.

Program Performance

Grants totaling $30,000 were awarded to eight libraries. An average of 5 participants attended each of the adult programs. Two children's programs were conducted and 3 more will be held in the Spring of 1999. Springboro rescheduled for 1999.

There was limited attendance at the Adult Programs, in spite of aggressive promotion via flyers, press releases, local newspaper ads and direct mailings to library patrons. Given the attendance and the fact that all of the participating libraries had extensive energy materials at the end of 1998, the program was not continued in 1999.

New Home Owners' Training

Program Description

The New Home Owners' Training program focuses on helping new homeowners understand how energy impacts their new home investment and finances. This information is incorporated into an existing "Life As a Homeowner Class" offered by the Better Housing League which is a one-night/morning 3-hour class offered monthly. Participants are educated about energy efficient upgrades and how they can make their home less expensive to maintain. They are also provided a compact fluorescent bulb. The program is designed to educate customers on energy consumption within their home, so they can modify their energy use behavior and reduce their energy consumption. Basic budgeting and money management skills are also included in the program.

Process Evaluation

Participant evaluations are on file with the Better Housing League.

Impact Evaluation

This is primarily an educational program; therefore, there are currently no plans to perform an impact evaluation.

Program Costs

Estimated 1998 Expenditures	$11,450
Actual 1998 Expenditures	$5,690

Promotional Efforts

The Better Housing League promotes the program through its community contacts.

Program Performance

Twelve workshops were conducted serving 408 participants in 1998.

Non-Profit Energy Management Program

Program Description

The Non-Profit Energy Management Program (NEMP) is an energy audit and financial assistance service offered to non-profit, social service agencies in the CG&E service area. The audit is provided at no cost to the customer and the program funds 50% percent of the cost of energy efficiency improvements implemented by participants with a 5-year or less simple payback up to $3,000. Workshops are also periodically offered to representatives of the targeted market segment to encourage participation in the program and to provide energy education. The program is designed to help non-profit social-service organizations reduce their own overhead costs through sound energy management practices. In theory, reducing these costs frees-up money to be applied to the provision of agency services.

Process Evaluation

None performed in 1998.

Impact Evaluation

None performed in 1998.

Program Costs

Estimated 1998 Expenditures	$235,000
Actual 1998 Expenditures	$30,750

Program Performance

Forty audits and three workshops were planned. Contractor issues resulted in completion of only four audits and one workshop in 1998. The program has been re-bid, and will now be provided through another contractor for the duration of the program.

Ohio Energy Project

Program Description

This is an education program designed to increase energy and environmental awareness to Ohio students, parents, and communities. Ohio Energy Project uses the method of children teaching children to get the word across. It provides unbiased information on the ten major energy sources. Energy education is provided through educational materials and leadership training workshops for students and teachers in grades K-12. The materials, developed by the national office, are designed to educate students at all levels of learning, which includes students with learning disabilities, gifted and talented students, and students that maintain average grades. An "Energy Kit," containing 30 energy activities, is provided to teachers free of charge. The activities emphasize cooperative learning and are developed to be entertaining as well as educational for the students. The Leadership Training Workshops are unique in that teachers attend workshops in their area with several of their students. The workshops are conducted by area high school students and demonstrate the success of "kids teaching kids." The goal of the workshops is to have students return to their schools and conduct similar activities for their classmates and community members.

Program Costs

Estimated 1998 Expenditures	$110,000
Actual 1998 Expenditures	$110,000

Program Performance

This program was identified in the Ohio Energy Strategy Report, under Strategy I: Educational Needs and Benefits, as an implementation strategy. The strategy recommends expansion of the Ohio Energy Project. As a response to the Strategy Report, CG&E funded the first state regional office in July 1994. Cinergy was presented the Regional Award at the 1995 Ohio Energy Project Youth Awards Banquet on May 17, 1995.

This program was presented the 1995 Ohio BEST (Building Excellent Schools Today) Practices Award and was recognized by the Ohio Business Roundtable (a business and education partnership) as a successful program.

PIPP Orientation Program

Program Description

The PIPP Orientation Program (PIPP-OR) is intended to provide orientation and education to customers about Percentage of Income Payment Plan (PIPP) and other possible payment options.

The objective of the PIPP Orientation Service is to educate new PIPP enrollees on the full implications of PIPP, review other payment options, and to educate the customer on potential strategies to save on their energy bill. If, during the course of the service, the customer determines another payment option to be superior to PIPP, then the customer will be enrolled in the chosen payment option plan and removed from the PIPP enrollee list. This service will also arrange for weatherization of customers who are currently missed. The initial test of this service concept will be from July 13 through September 11 and help approximately 200 customers.

The goal of the program was to increase the customer's understanding of PIPP and its obligations. Through this better understanding, it was anticipated that people would stay on PIPP for a shorter period and would shift to other billing plan options or reduce the rate of arrearage accumulation. The program evaluation measured the length of time these customers were on PIPP versus customers who had not received the orientation. It also compared the level of understanding of PIPP among participants and non-participants.

Two area providers delivered this service to Cinergy's PIPP customers in Ohio. Working in Neighborhoods (WIN) and People working Cooperatively (PWC) scheduled the appointments with the customers and visited the customer's homes to provide the program information. The program manager conducted a training class with the providers to give them the details of how to read customer bills, payment options, energy saving materials and the like.

Providers reviewed the following information with and provided the following services to customers:

a) customer's gas and electric usage history
b) PIPP program details and obligations
c) alternative payment options
d) walk through energy audit
e) energy saving materials
f) compact fluorescent bulbs
g) application of weatherization services, if applicable

h) other social service assistance, if applicable

Program Costs

Estimated 1998 Expenditures	$30,000
Actual 1998 Expenditures	$31,260

Program Performance

An evaluation based upon a small sample indicated that the program was well designed and operated and that PIPP-OR participants were very satisfied with the program. Additionally, the evaluation found that participants' desire to move off of the PIPP was increased by education and other services provided. Participants also reported that they were better able to control their energy consumption as a result of the program. However, there appeared to be no difference in the PIPP knowledge level between participants, non-participants, and those who refused to participate, providing evidence that the program did not significantly increase customer knowledge levels.

The CCEP did not authorize this program to continue in 1999.

Problem Diagnostic Service Test

Program Description

The Problem Diagnostic Services program provides customers who have high bill problems, heating/cooling problems, and moisture problems with an in-depth field analysis and recommendations. These problems are often observed during a regular energy audit (House Call audit) but require more in-depth analysis tools to diagnose the problem. Diagnostic tools such as blower door tests and infrared scans are used for this service.

Process Evaluation

The evaluation plan was developed and planned for completion in 1999.

Impact Evaluation

The evaluation plan was developed and planned for completion in 1999.

Program Costs

Estimated 1998 Expenditures	$20,000
Actual 1998 Expenditures	$16,000

Program Performance

The program began in June 1998 and fifty clients had been served by the end of 1998. The evaluation results will be reviewed and the CCEP will decide whether to develop the program to full scale in 1999.

Securities Issued

CG&E and its subsidiaries (including ULH&P), and PSI estimate that a combination of internal and external funds will be used to meet their capital needs. External funds will be used for refinancing of maturing debt and preferred stock, and the early refunding of existing high-cost debt and preferred stock, in addition to financing other capital needs.

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Integrated Resource Plan

INDIANA APPENDIX

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PSI Energy, Inc.

Case No. 99-449

1999

INTEGRATED RESOURCE PLAN

VOLUME II

INDIANA APPENDIX

November 1, 1999

By: Cinergy Services
Douglas F. Esamann, Vice President
139 E. Fourth St.
P.O. Box 960
Cincinnati, Ohio 45201-0960

NOTICE

This state-specific Appendix, Volume II, is an integral part of the Cinergy 1999 IRP filing. Please see the submittal letters and other specific filing attachments contained in the front of Volume I of the Cinergy 1999 Integrated Resource Plan.

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INDIANA APPENDIX

Table of Contents

IN COMPLIANCE WITH THE CODES OF CONDUCT IN FERC ORDER 889, ALL OF THE FOLLOWING SECTIONS ARE CONTAINED IN THE TRANSMISSION VOLUME OF THIS REPORT, WHICH WAS PREPARED INDEPENDENTLY

Section 4(15) System-Wide Reliability Measure

Section 6(d)(3) PSI 138 kV Transmission Project Descriptions

Section 4(1) Load Forecast Dataset

The PROSCREEN II® Load Forecast Dataset (LFA module) utilized in developing Cinergy's 1999 IRP is voluminous in nature. In addition, New Energy Associates treats the format of this information as trade secrets and proprietary and confidential. This data will be made available to appropriate parties for viewing at Cinergy offices during normal business hours upon execution of an appropriate confidentiality agreement or protective order. Please contact Jim Riddle at (513) 287-3858 for more information.

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Section 4(3) Schedule for End-Use Surveys

In the residential sector, PSI is currently on a three-year schedule for conducting customer end-use surveys. The most recent survey was conducted during 1997. The current schedule calls for surveys to be conducted during 2000, and again in 2003. This schedule may be modified according to the information needs of the Cinergy forecasting department and other departments.

In the commercial sector, the last survey was conducted in 1991.

There has been no formal survey work conducted in the industrial sector. This is due to the nature of the sector itself. The industrial sector is a heterogeneous mix of distinct operations. Even customers within the same SIC (Standard Industrial Code) can exhibit significant differences in processes and energy use patterns. For this reason, a formal on-site census is the preferred method for gathering useful end-use information. Currently, Cinergy has no plans to conduct a formal industrial end-use census. This may also be modified according to the information needs of the Cinergy forecasting department and other departments.

See also the "Long-Term Electric and Gas Load Forecasts" report provided in the General Appendix contained in Volume I.

Sections 4(5) and 5(a)(7) Evaluation of Previous 10 Years of Forecasts

Tables are attached showing actual versus forecast for the previous ten years.

In general, the methodology, the kinds of equations and the types of data used have remained consistent over the past decade. In addition, on more than one occasion during this time period, the IURC has passed judgment on the reasonableness of the forecast and the methodology. Finally, the State Utility Forecasting Group (SUFG), though using models quite distinct from PSI's, has produced forecasts that are similar.

PSI Energy Sales Forecasts - Comparison to Actuals in Thousand of Megawatts

	Actual	Dec. 88	Dec. 89	Feb. 91	Apr. 92	Dec. 92	Dec. 94	Jun. 95	Feb. 96	Feb. 97	Feb. 98
1989											
Domestic	5642	5610									
Commercial	4675	4731									
Industrial	6991	7046									
Other	58	60									
Sales for Resale	3757	3434									
Total Sales	21123	20881									
1990											
Domestic	5781	5743	5693								
Commercial	4854	4898	4810								
Industrial	7702	7607	7792								
Other	58	60	58								
Sales for Resale	3691	3451	3634								
Total Sales	22086	21757	21987								
1991											
Domestic	6249	5763	5805	5876							
Commercial	5148	5080	4944	5003							
Industrial	7956	7727	8056	8095							
Other	58	60	58	58							
Sales for Resale	3868	3493	3650	3737							
Total Sales	23279	22123	22513	22769							
1992											
Domestic	5974	5782	6075	5991	6150						
Commercial	5150	5263	5284	5169	5189						
Industrial	8354	7847	8036	8346	8132						
Other	59	60	60	58	59						
Sales for Resale	3935	3570	3829	3856	3829						
Total Sales	23472	22522	23284	23420	23359						
1993											
Domestic	6590	5864	6138	6347	6369	6340					
Commercial	5445	5466	5499	5532	5477	5430					
Industrial	8728	8105	8182	8627	8536	8754					
Other	60	60	60	60	60	59					
Sales for Resale	4225	3650	3915	4025	3911	4036					
Total Sales	25048	23145	23794	24591	24353	24619					
1994											
Domestic	6643	5950	6194	6445	6543	6479	6795				
Commercial	5610	5636	5662	5683	5694	5616	5697				
Industrial	9279	8352	8393	8866	8788	9107	9571				
Other	61	60	60	60	60	59	59				
Sales for Resale	4261	3730	4005	4116	4022	4173	4393				
Total Sales	25854	23728	24314	25170	25107	25434	26515				
1995											
Domestic	6941	6036	6274	6535	6640	6578	6937	6673			
Commercial	5809	5854	5823	5784	5848	5775	5907	5650			
Industrial	9368	8584	8645	9062	8872	9159	10071	9572			
Other	63	60	60	60	60	60	59	60			
Sales for Resale	4465	3813	4096	4211	4096	4161	4567	4501			
Total Sales	26646	24347	24898	25652	25516	25733	27541	26456			
1996											
Domestic	7201	6123	6359	6618	6724	6662	7015	6818			
Commercial	5926	5911	5988	5884	5999	5923	6055	5707			
Industrial	10015	8784	8879	9297	9059	9211	10157	10071			
Other	63	60	60	60	60	60	59	60			
Sales for Resale	4641	3899	4190	4308	4171	4245	4689	4647			
Total Sales	27846	24777	25474	26165	26013	26101	27975	27303			
1997											
Domestic	7058	6207	6432	6700	6783	6739	7089	6560	7070	7093	
Commercial	5947	5976	6122	5989	6120	6083	6199	5723	5872	5932	
Industrial	10230	8948	9118	9593	9224	9405	10241	10246	10305	10277	
Other	65	60	60	60	60	60	60	60	60	60	
Sales for Resale	4741	3985	4279	4400	4247	4337	4783	4794	4794	4760	
Total Sales	28041	25176	26011	26742	26434	26604	28372	27383	28101	28122	
1998											
Domestic	7284	6294	6504	6788	6867	6832	7197	6907	7168	7368	7362
Commercial	6288	6080	6220	6078	6244	6204	6365	5680	5944	6069	6120
Industrial	10790	9127	9402	9803	9599	9746	10303	10336	10672	11185	11551
Other	65	60	60	60	60	60	60	60	60	60	65
Sales for Resale	4982	4073	4371	4495	4325	4438	4882	4614	4614	4584	4601
Total Sales	29409	25634	26557	27224	27095	27280	28807	27597	28458	29266	28899

PSI Energy Coincident Summer Peak Forecasts - Comparison to Actual in Megawatts

	Actual	Dec. 1988	Dec. 1989	Feb. 1991	Apr. 1992	Dec. 1992	Dec. 1994	Jun. 1995	Dec. 1996	Feb. 1997	Feb. 1998
1989	4304	4304									
1990	4642	4424	4348								
1991	4907	4585	4471	4604							
1992	4827	4700	4638	4756	4650						
1993	5110	4830	4744	4872	4836	4862					
1994	5161	4949	4847	4982	4980	5015					
1995	5581	5083	4966	5078	5069	5106	5470	5340			
1996	5623	5158	5080	5173	5168	5187	5487	5494			
1997	5676	5232	5188	5283	5252	5289	5594	5614	5596	5587	
1998	5705	5263	5230	5310	5298	5327	5555	5435	5522	5760	5791

PSI Energy Coincident Winter Peak Forecasts - Comparison to Actual in Megawatts

	Actual	Dec. 1988	Dec. 1989	Feb. 1991	Apr. 1992	Dec. 1992	Dec. 1994	Jun. 1995	Dec. 1996	Feb. 1997	Feb. 1998
1988-89	3815	4127									
1989-90	4418	4346	4068								
1990-91	4136	4466	4160	4229							
1991-92	4266	4610	4283	4357	4333						
1992-93	4461	4748	4395	4479	4483	4294					
1993-94	4937	4880	4478	4579	4577	4461					
1994-95	4657	5013	4571	4676	4656	4546	5003	4822			
1995-96	4949	5125	4665	4761	4731	4612	5064	4961	4950		
1996-97	5102	5210	4757	4856	4750	4683	5086	5069	5052	5201	
1997-98	4665	5241	4781	4887	4858	4694	5014	4838	4973	5351	5342

Section 4(16)(A) and (D) Avoided Cost Explanation

The avoided costs used in screening the DSM programs included in this IRP were based on the energy market price forecast. Cinergy considers this forecast to be a trade secret and confidential and competitive information. It will be made available to appropriate parties for viewing at Cinergy offices during normal business hours upon execution of an appropriate confidentiality agreement or protective order. Please contact Diane Jenner at (317) 838-2183 for more information.

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Section 4(17) 1998 Hourly System Lambda

The 1998 hourly system lambda data is voluminous in nature. This data will be made available to appropriate parties for viewing at Cinergy offices and at other locations during normal business hours. Please contact Diane Jenner at (317) 838-2183 for more information.

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Section 5(a)(1) Load Shapes

(A) and (B) Annual and seasonal load shapes are discussed in Volume I, Chapter 3, Section E of Cinergy's 1999 IRP. For the forecast period, no significant trends or changes from the historic load shapes are expected.

(C) A graphical representation of the monthly load shapes for 1998 is attached. For the forecast period, no significant trends or changes from the historic load shapes are expected.

(D) Summer and winter peak day load shapes are contained in Volume I, Chapter 3, Section E of Cinergy's 1999 IRP. Typical Summer and Winter weekday and weekend shapes are attached. The typical week load shapes for each month that were utilized in the 1999 IRP are contained in Cinergy's PROSCREEN II® dataset, the format of which New Energy Associates treats as trade secrets and proprietary and confidential. This data will be made available to appropriate parties for viewing at Cinergy offices during normal business hours upon execution of an appropriate confidentiality agreement or protective order. Please contact Diane Jenner at (317) 838-2183 for more information.

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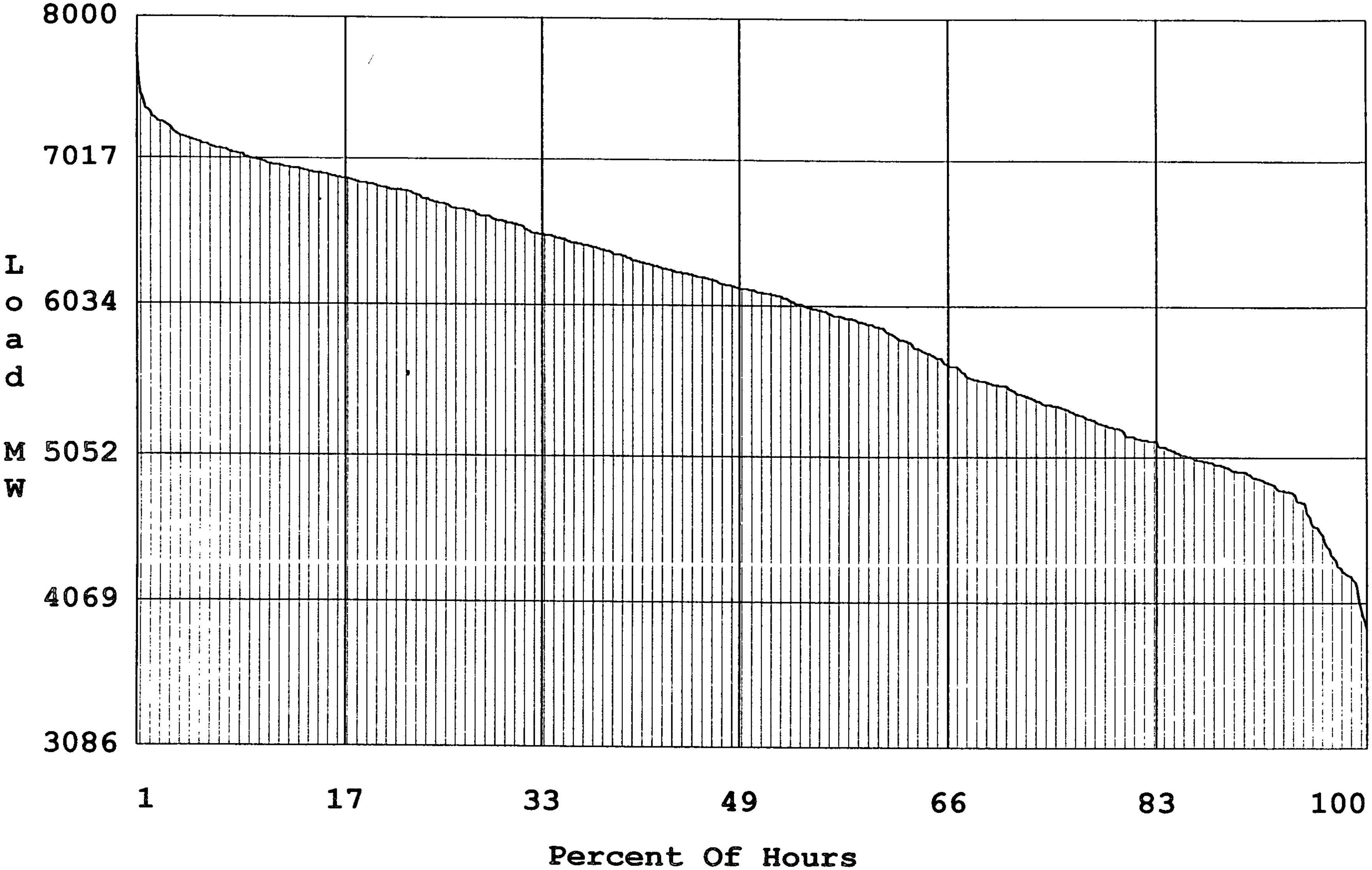
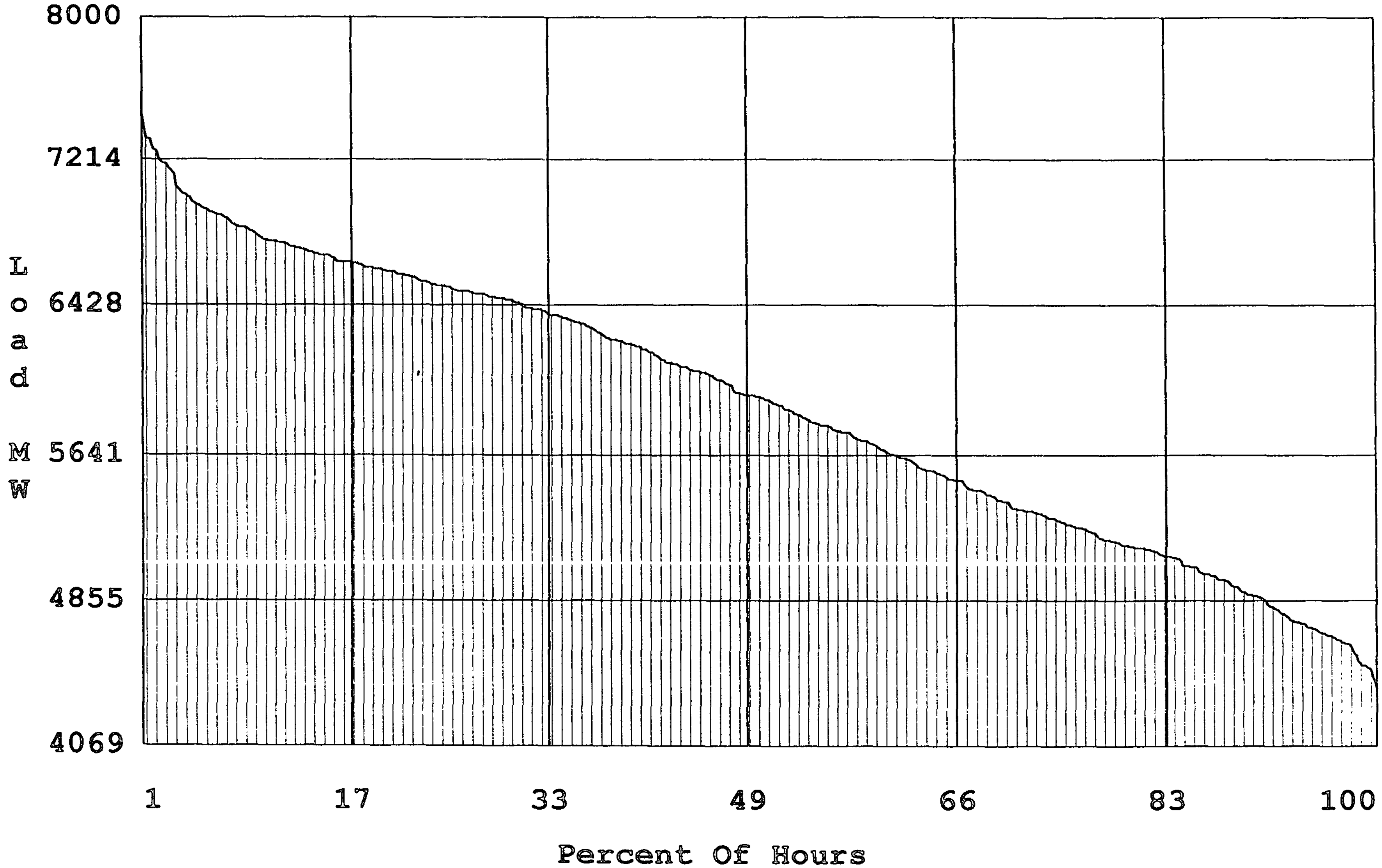
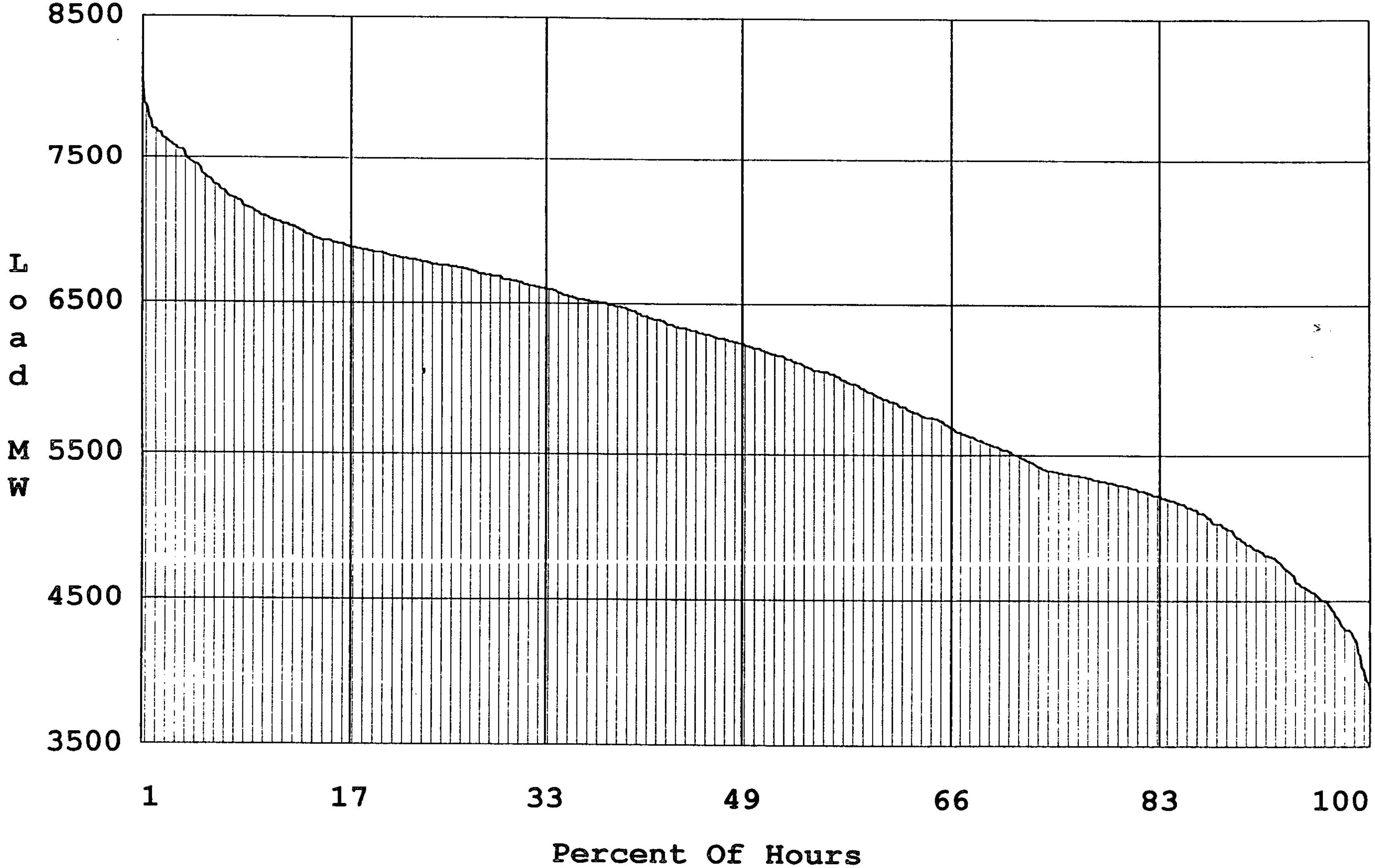
CINERGY 1998 LOAD DURATION
CURVE-JANUARY



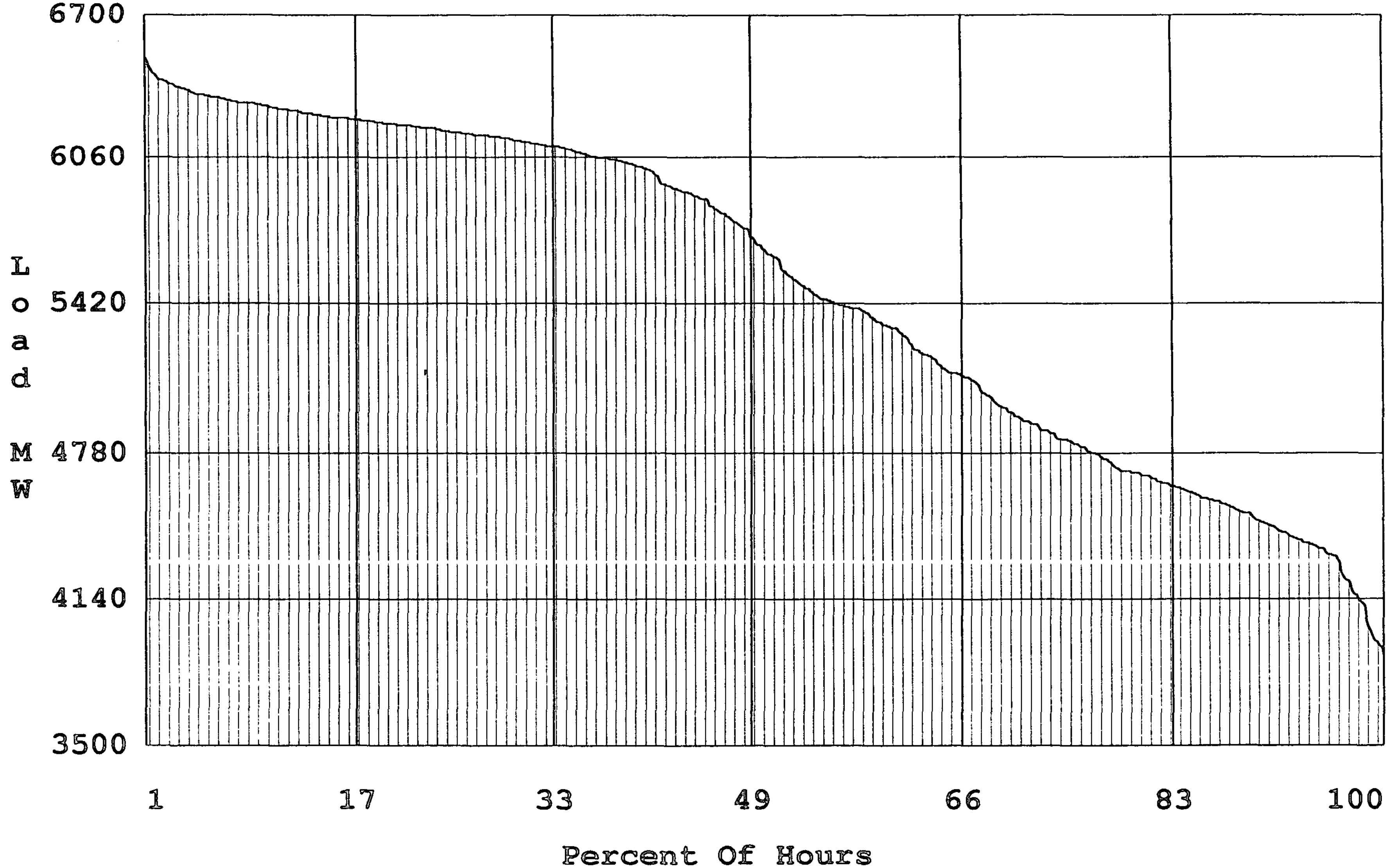
CINERGY 1998 LOAD DURATION CURVE-FEBRUARY



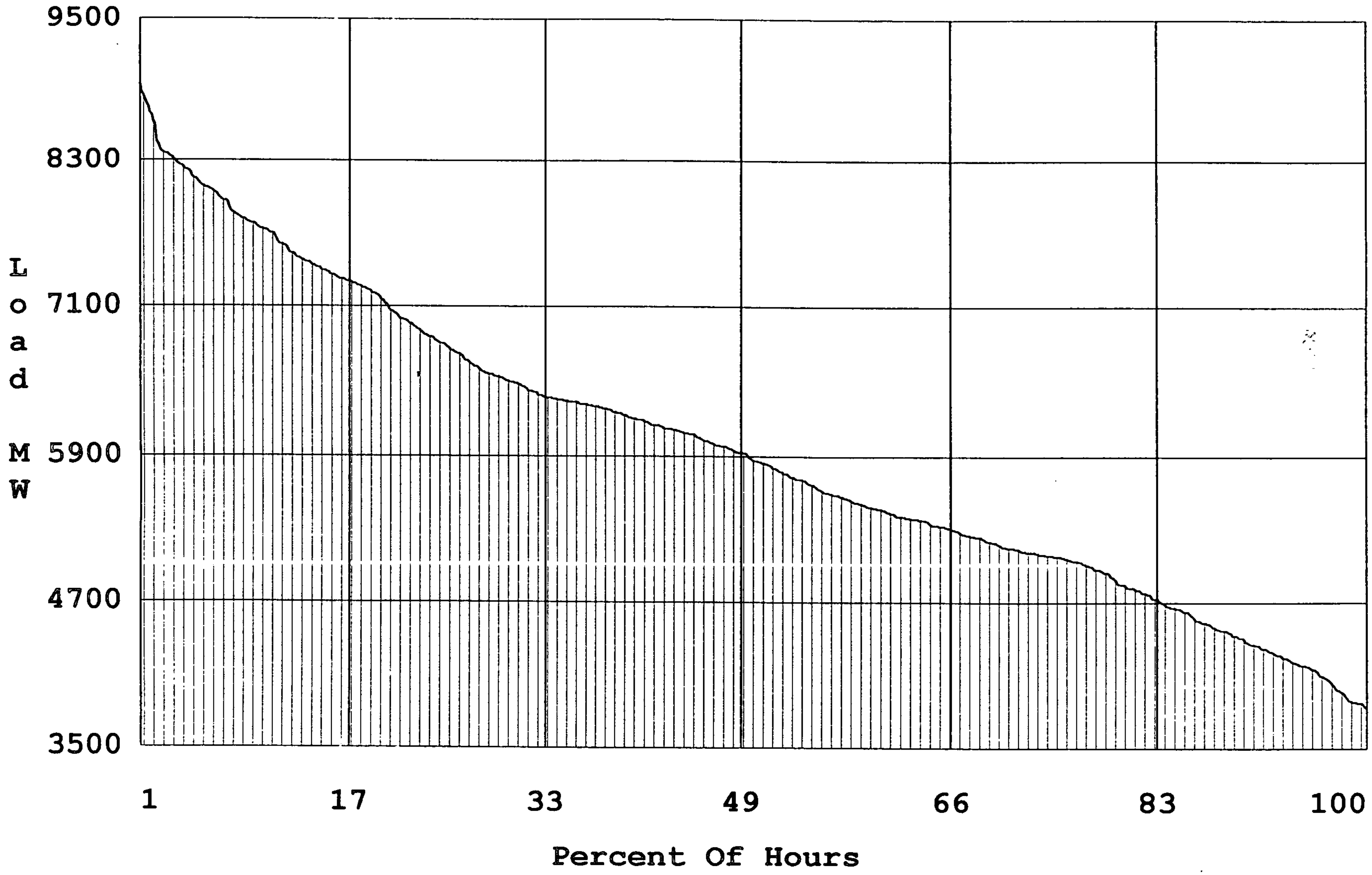
CINERGY 1998 LOAD DURATION
CURVE-MARCH



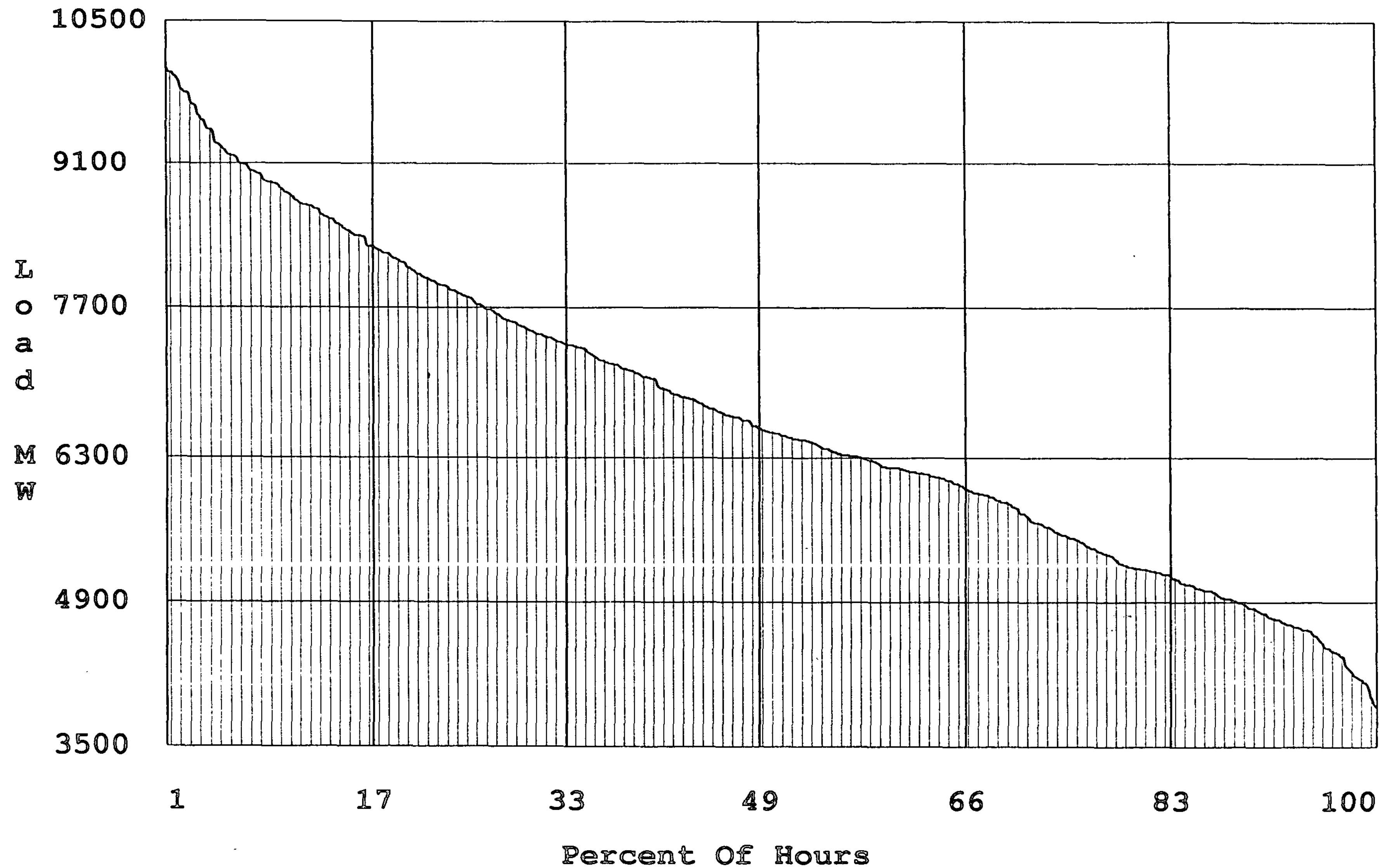
CINERGY 1998 LOAD DURATION
CURVE-APRIL



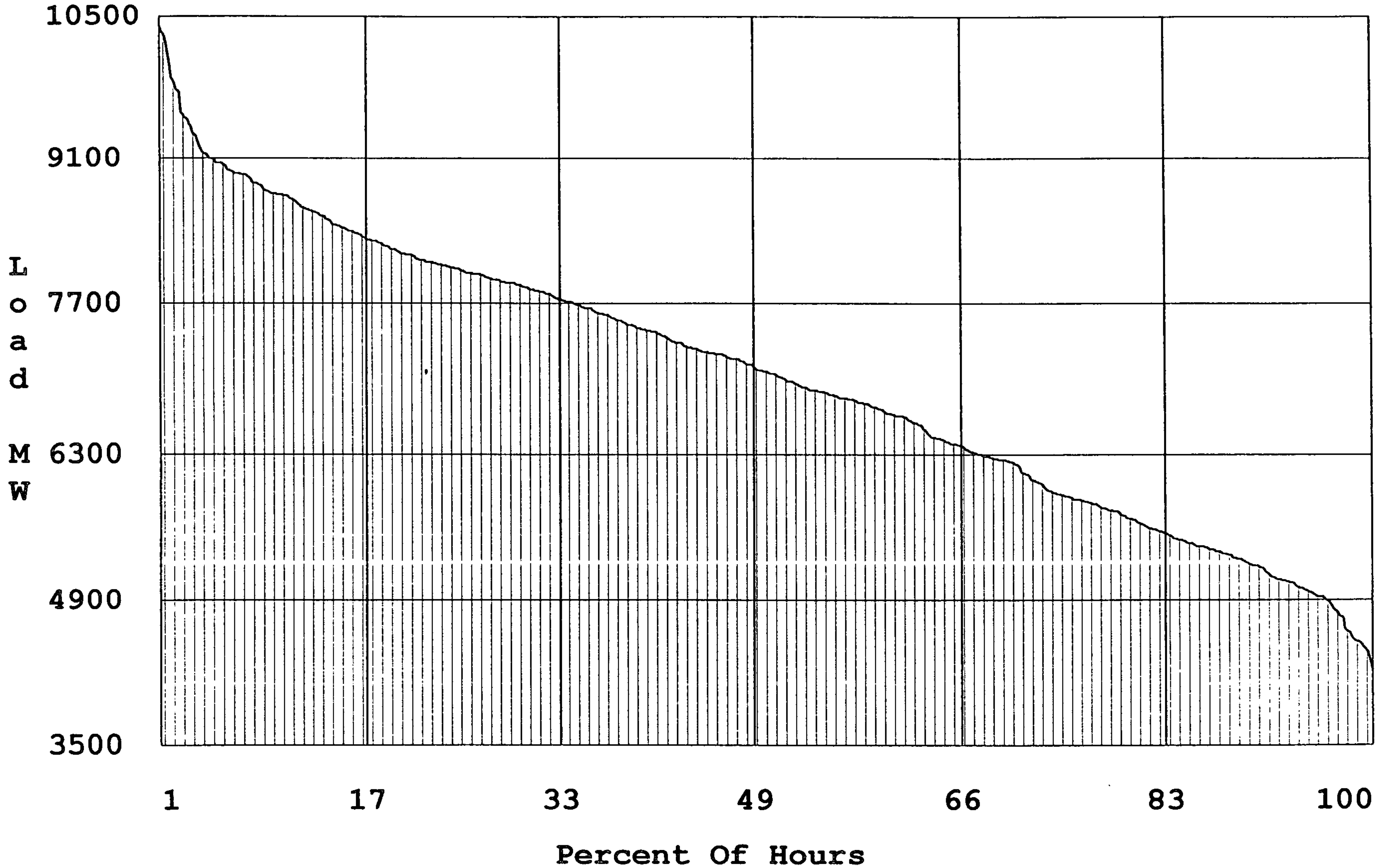
CINERGY 1998 LOAD DURATION
CURVE-MAY



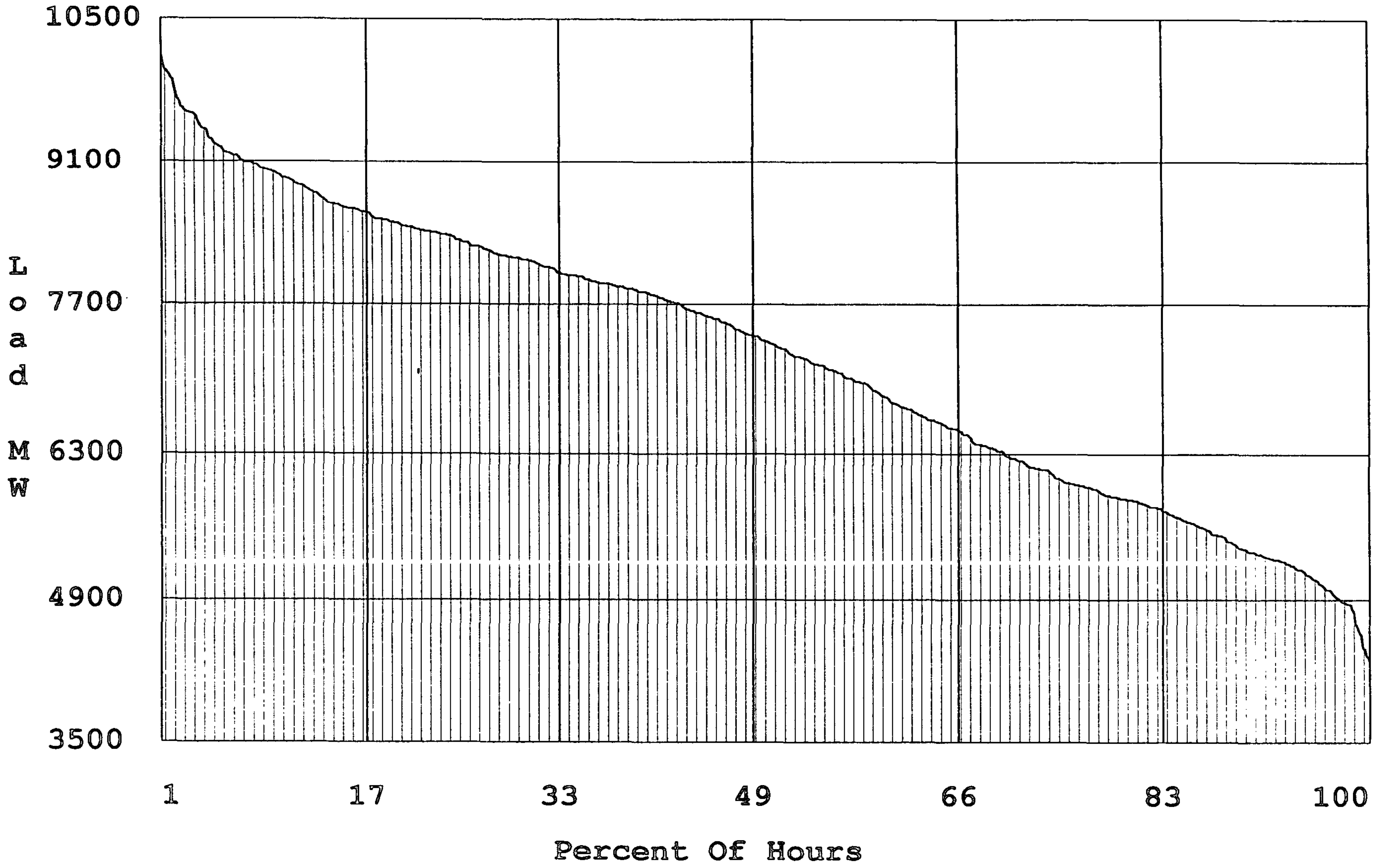
CINERGY 1998 LOAD DURATION
CURVE-JUNE

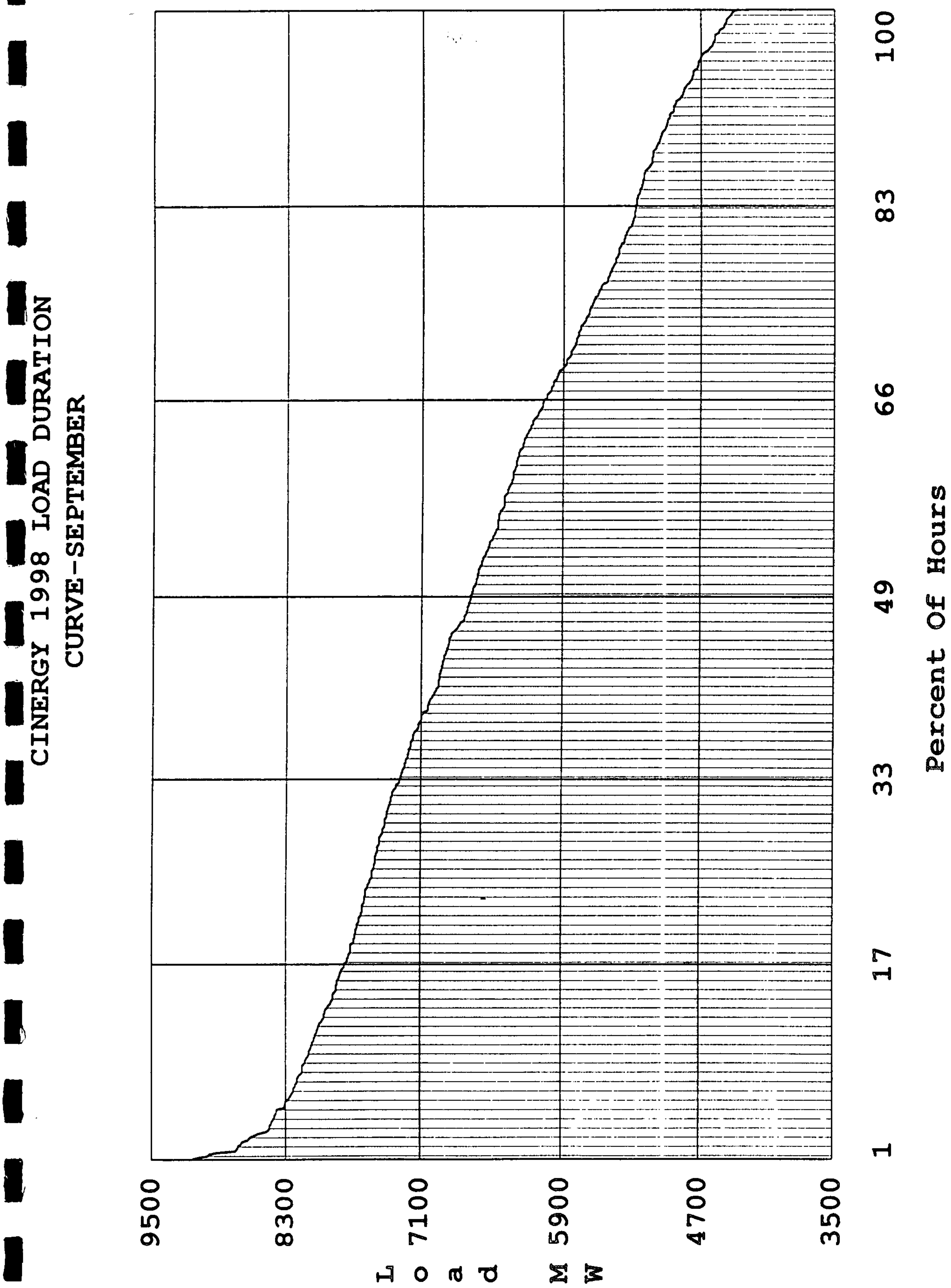


CINERGY 1998 LOAD DURATION
CURVE-JULY

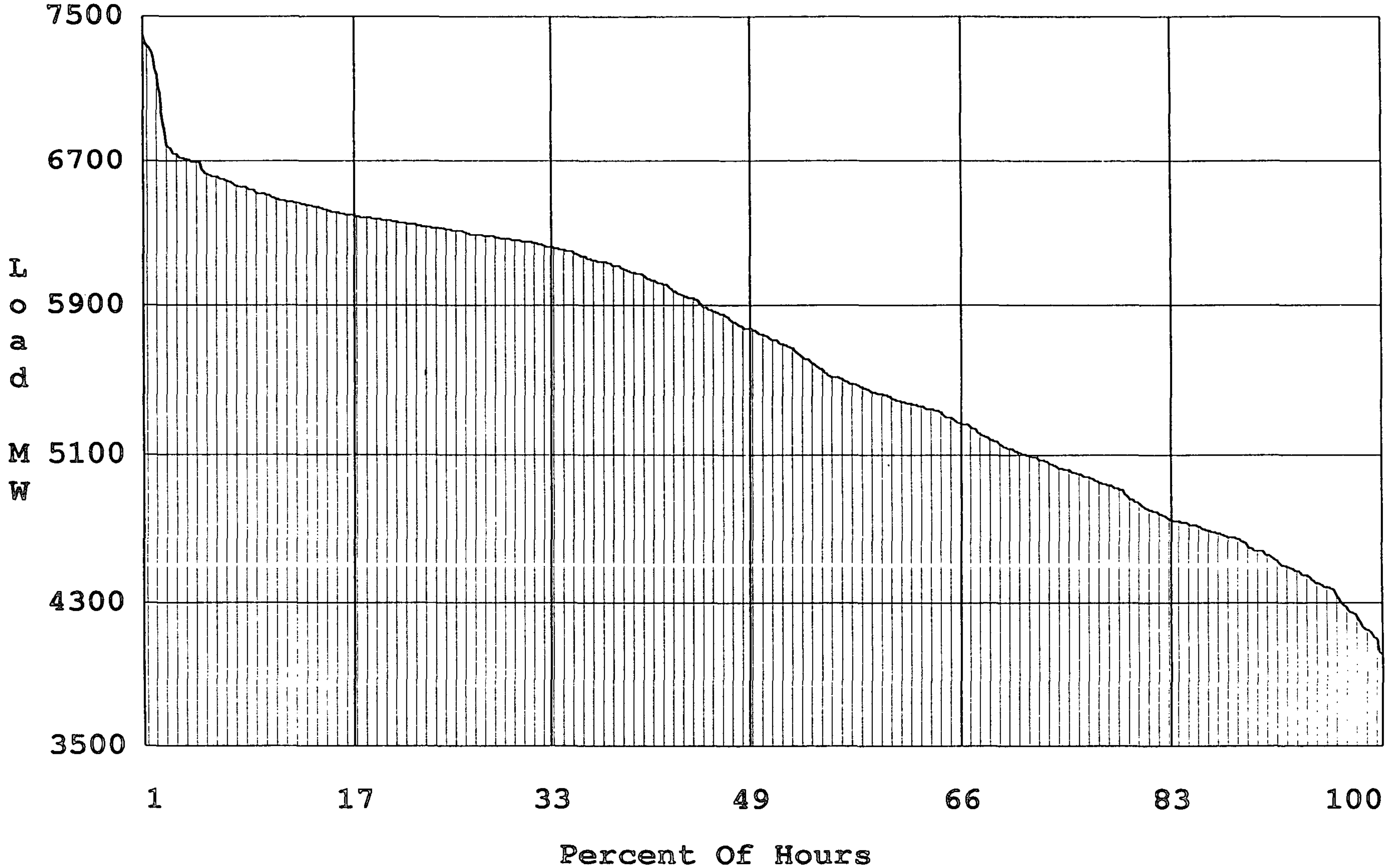


CINERGY 1998 LOAD DURATION CURVE-AUGUST

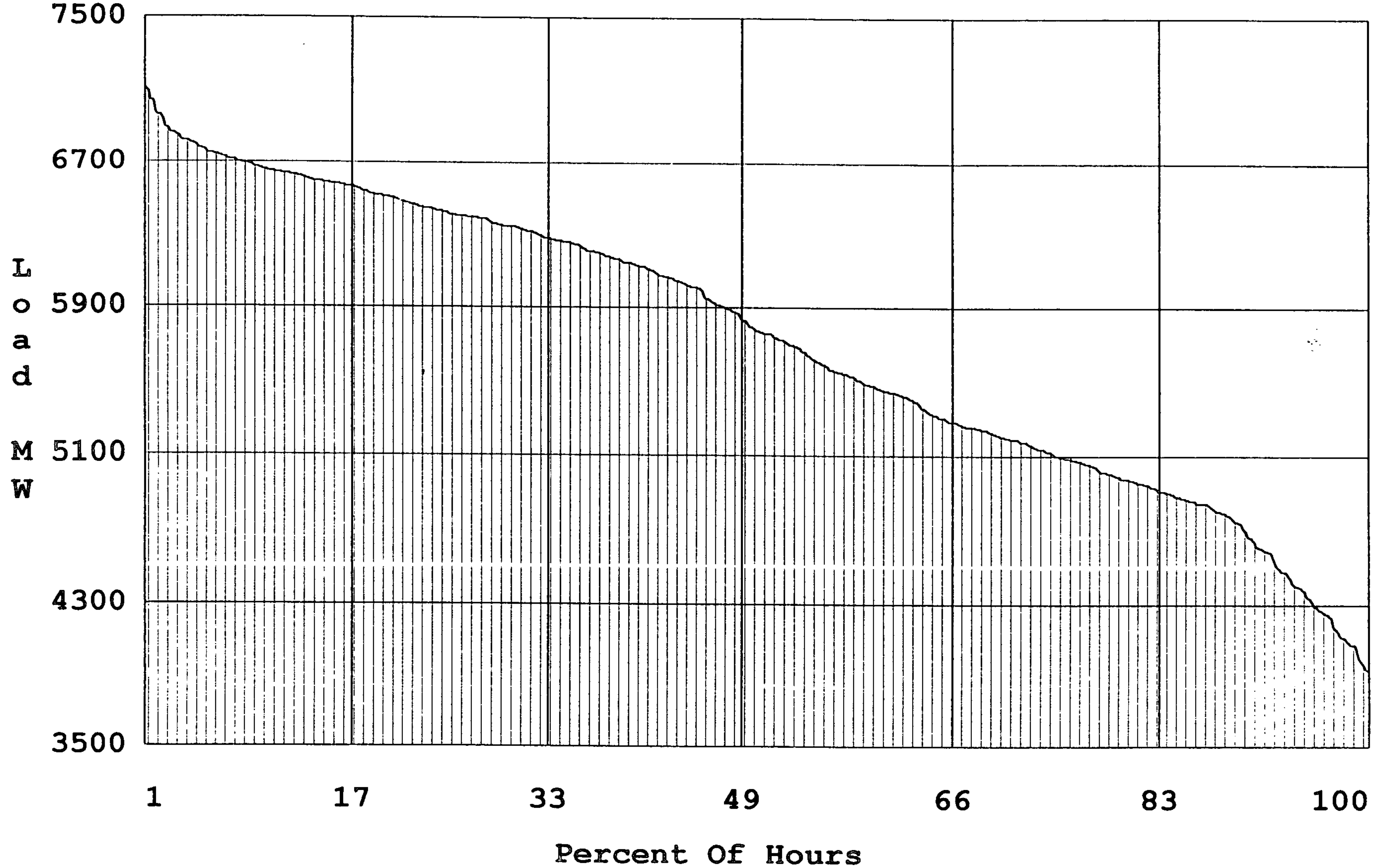



CINERGY 1998 LOAD DURATION
CURVE-SEPTEMBER
Load MW
9500
8300
7100
5900
4700
3500
Percent Of Hours
1
17
33
49
66
83
100

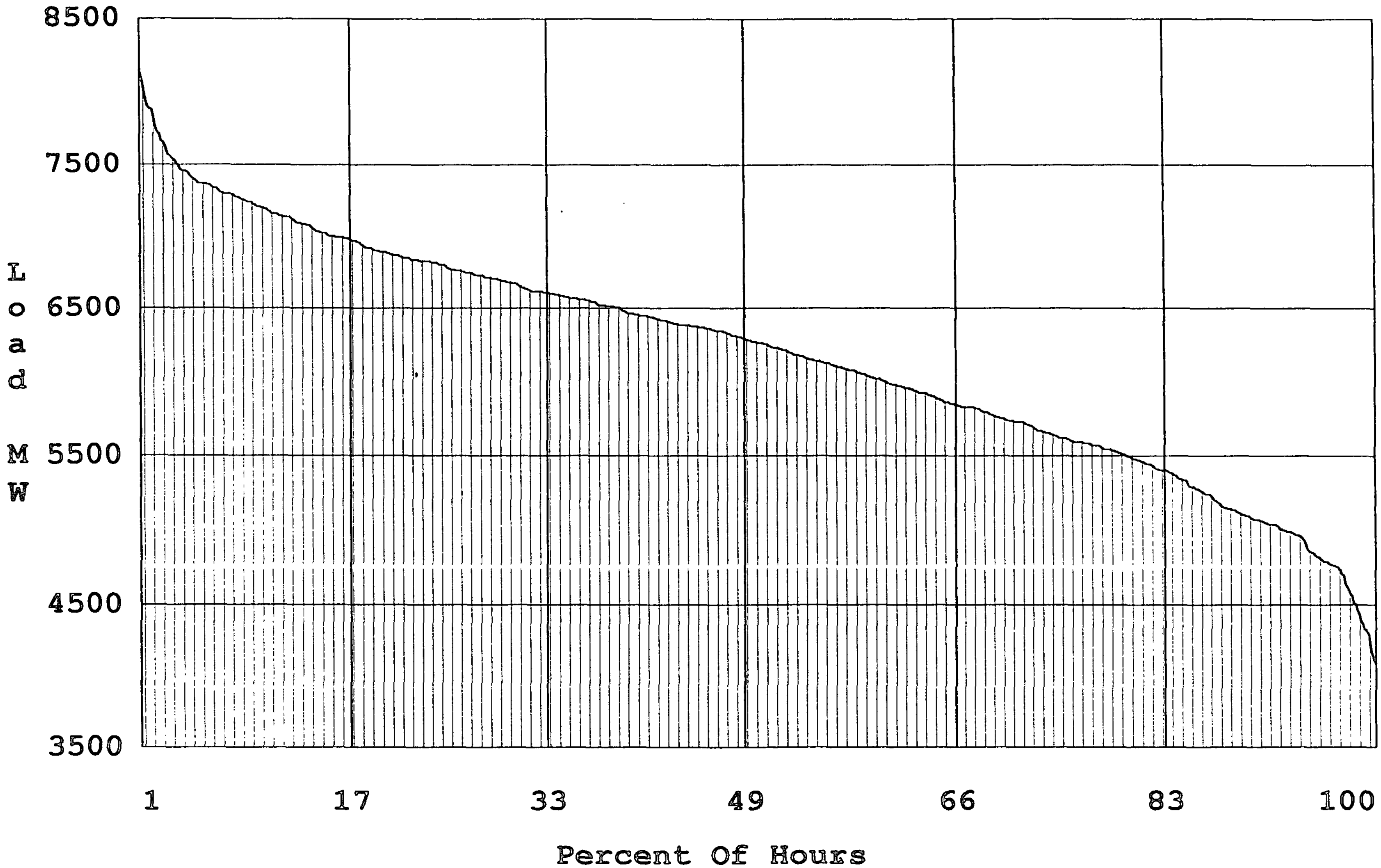
CINERGY 1998 LOAD DURATION
CURVE-OCTOBER



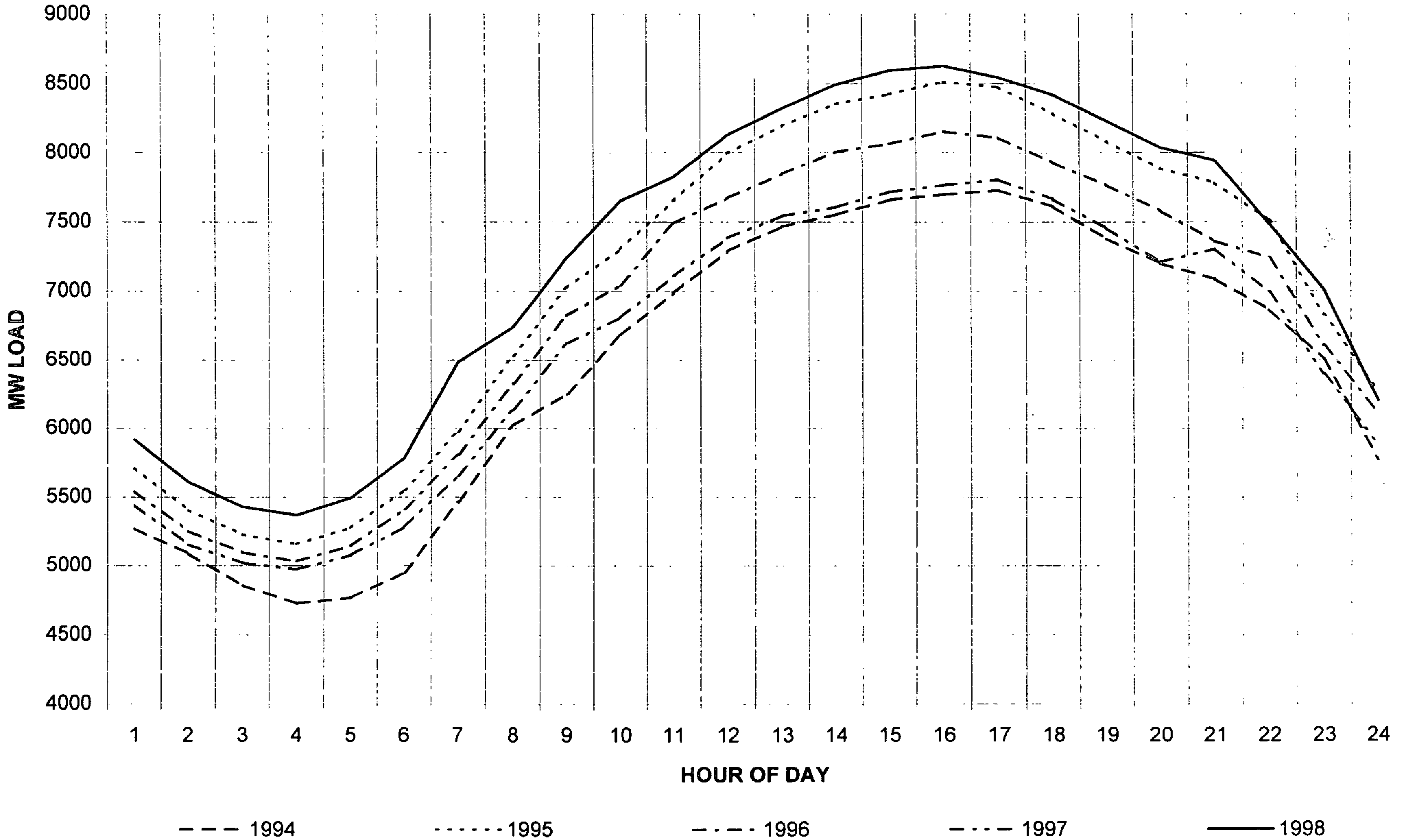
CINERGY 1998 LOAD DURATION
CURVE-NOVEMBER



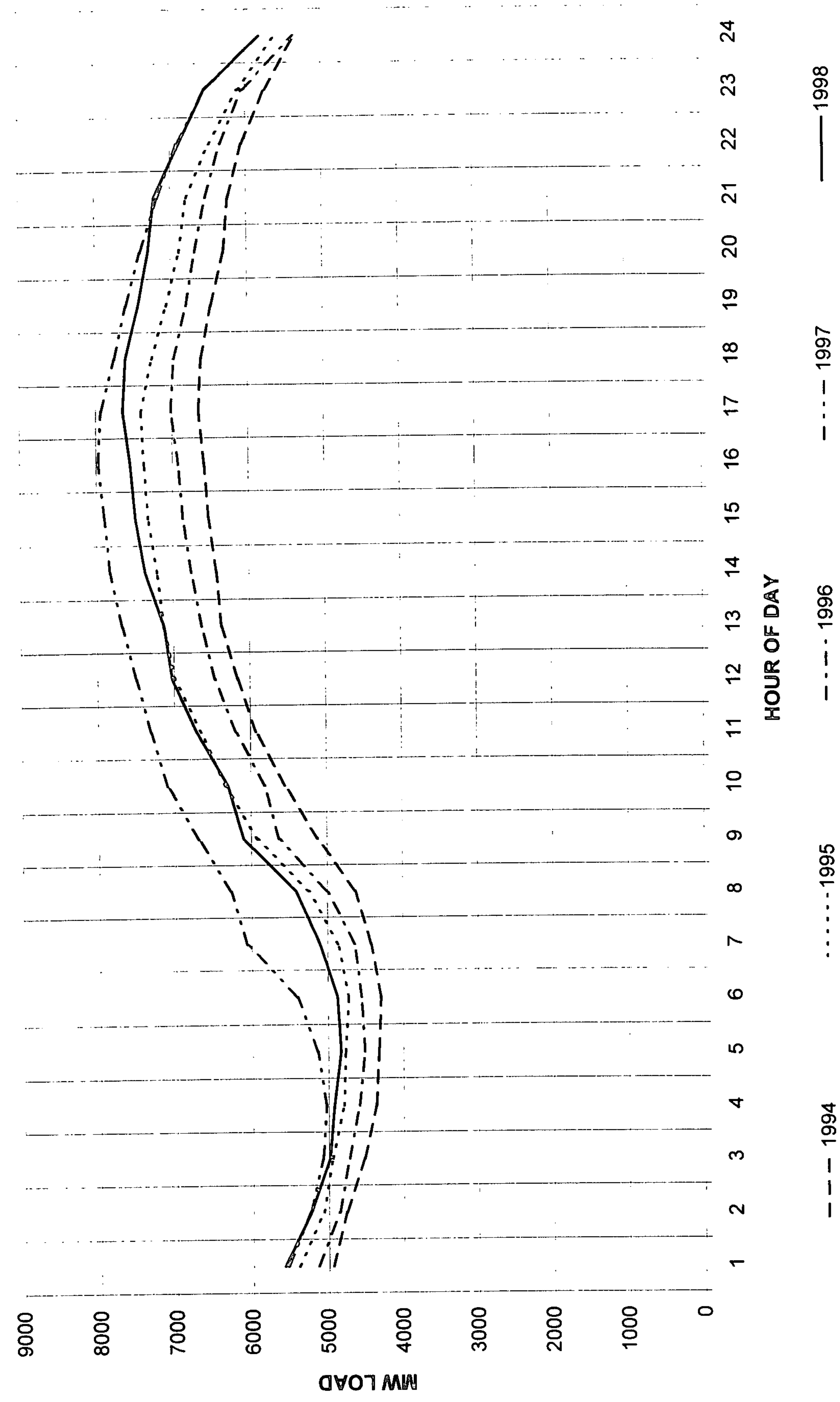
CINERGY 1998 LOAD DURATION
CURVE-DECEMBER



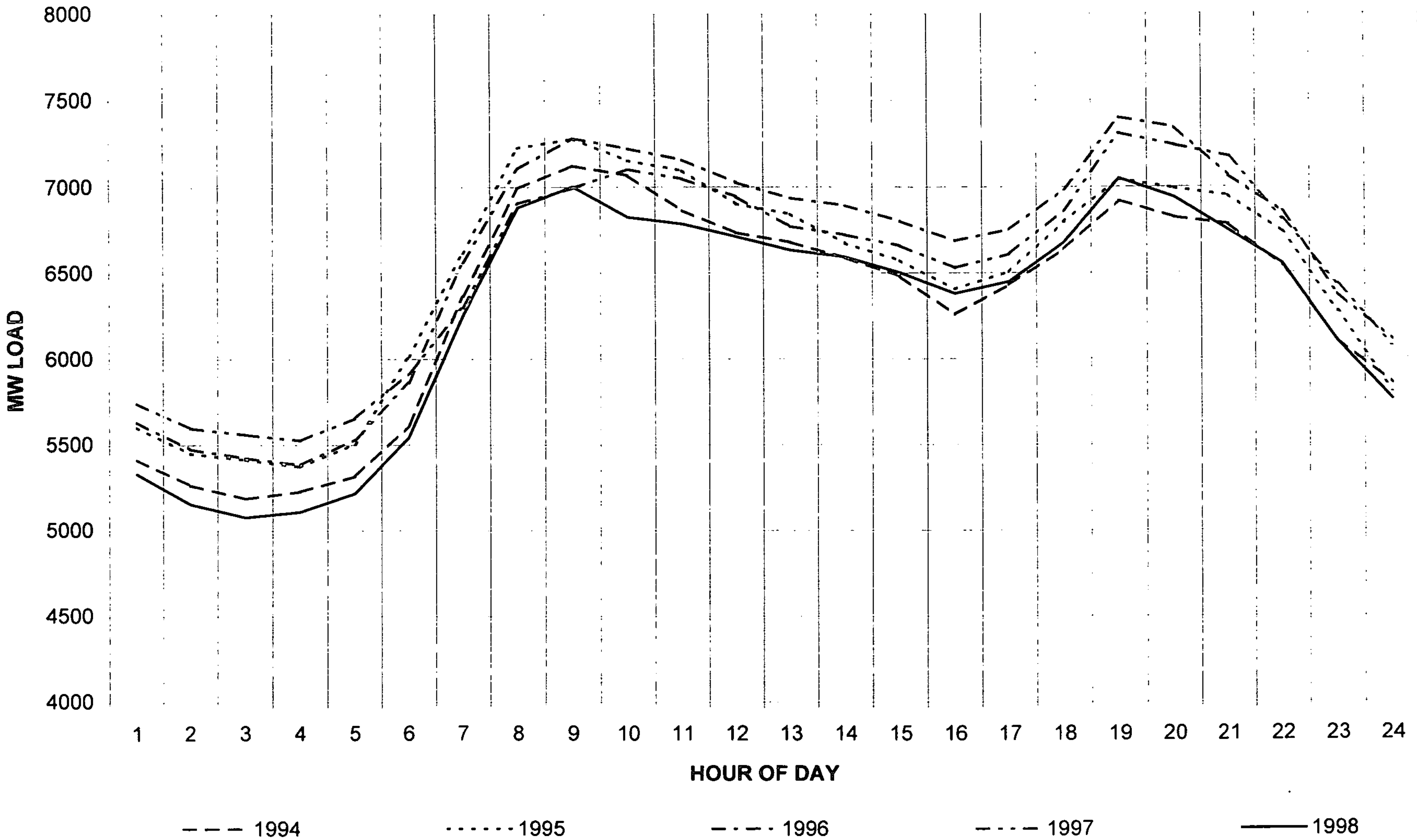
CINERGY TYPICAL SUMMER WEEKDAY 24-HOUR LOAD SHAPE



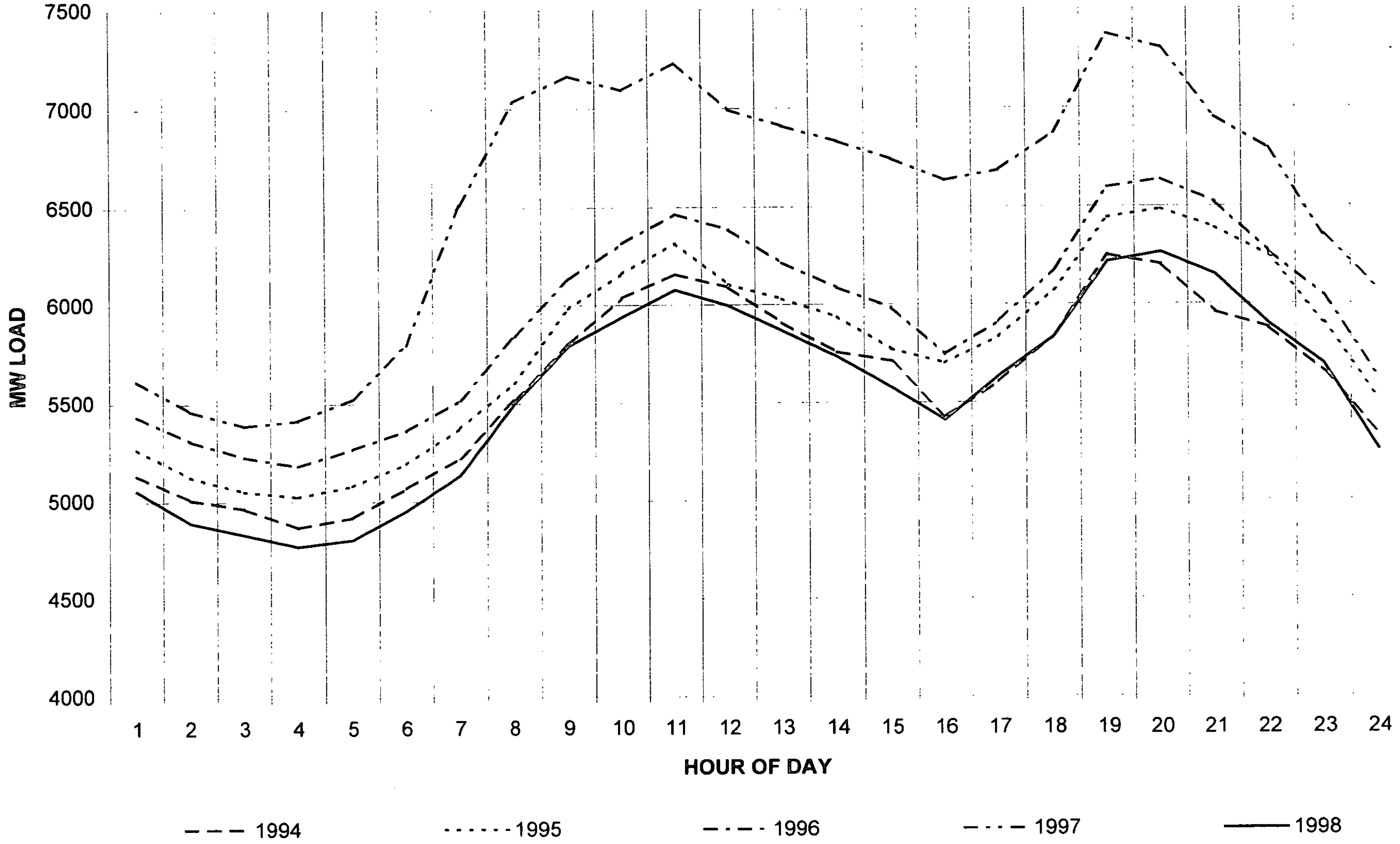
CINERGY TYPICAL SUMMER WEEKEND 24-HOUR LOAD SHAPE



CINERGY TYPICAL WINTER WEEKDAY 24-HOUR LOAD SHAPE



CINERGY TYPICAL WINTER WEEKEND 24-HOUR LOAD SHAPE



Section 5(a)(2) Disaggregated Load Shapes

This information, to the extent available, is contained in the document, "Load Characteristics," produced by the Load Research department. A copy is attached. A brief explanation of this load research effort is contained in Volume I, Chapter 3, Section D of Cinergy's 1999 IRP document.

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1996

LOAD CHARACTERISTICS

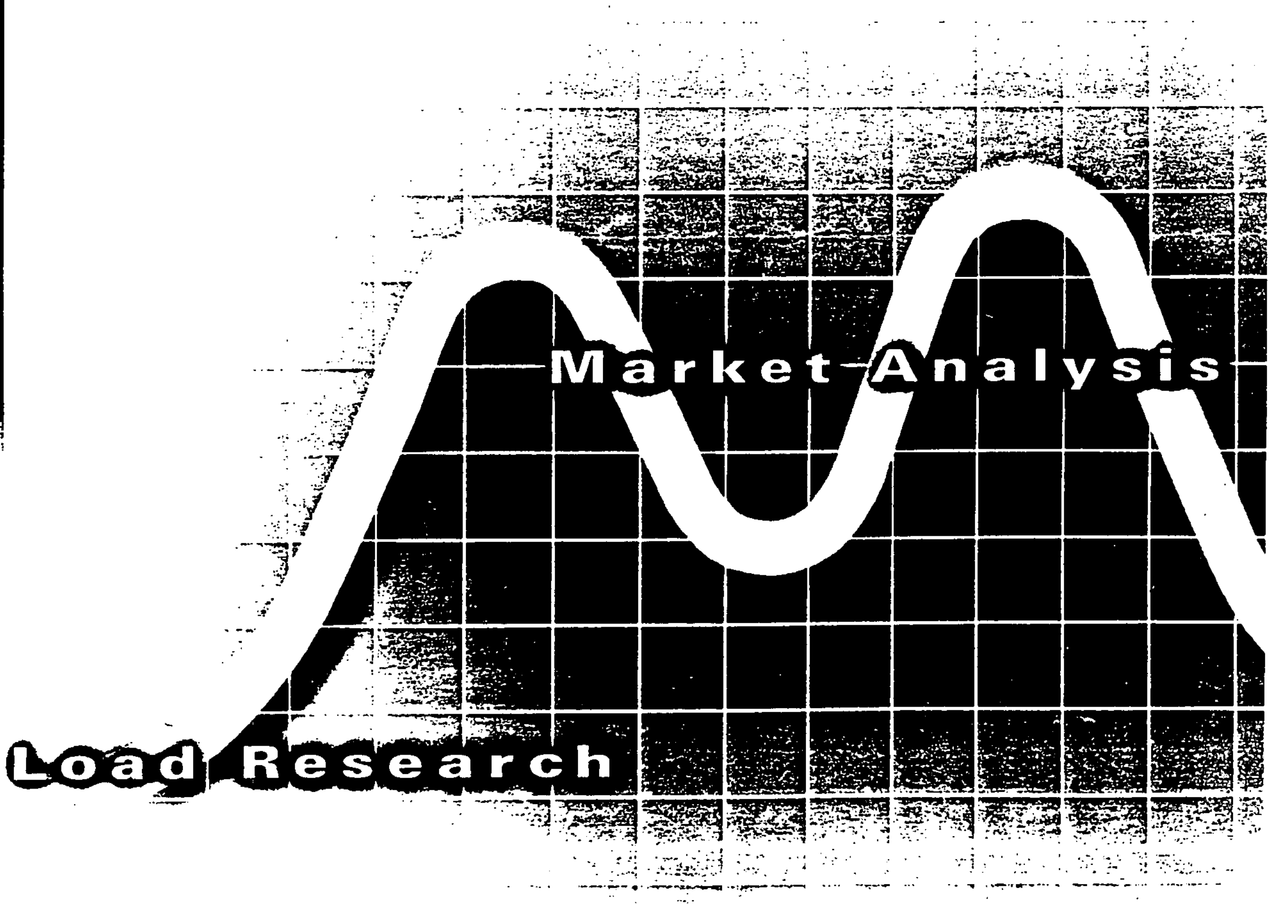

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Table of Contents

Section 1

Introduction

Section 1—Introduction

Fundamentally, electric Load Research is conducted by utilities to determine an unknown element or characteristic, namely demand (kW or MW) of the customers it serves. Load Research is necessary, because in a real world where resources are limited, complete customer load information is not available or practical to collect. However, the demand of the various customer classes, each with a unique requirement for service, has a profound effect upon the efficient operation of company resources. Electric Load Research at the end-use or premise level is fundamental to this understanding of the relationship between the customer's load characteristics and the supply of electrical services.

As such, Cinergy is committed to an on-going Load Research program. Analysis and presentation of system and load characteristics are performed on the company's various customer classes in the Load Research section. This information is currently being utilized internally in Cost of Service studies and Rate Design to establish the company's rate levels and pricing strategies, Load Forecasting to assist in developing long-range forecasts, and Market Research to assist in determining end-use and market segment load characteristics. Often the information is also used externally by the Commission Staff, State Utility Forecasting Group and various consultants representing the company.

The sources of the information presented in these studies are from randomly selected samples from customer classes where demand data is unavailable, otherwise it is derived from demand meter billing information. When demand data for a customer class is unknown, statistical sampling techniques are utilized to select customer accounts. The watt-hour meters of the customer selected to participate in a Load Research study are removed and replaced by a load profile metering device. Every attempt is made to assure installation of the demand metering device on the selected customer, keeping substitutions to a minimum, thus attempting to maintain the randomness of the sample. Substitutions are made when necessary due to customer refusals and meter configuration problems. In an attempt to select alternatives with characteristics as similar to those of the primary selection as possible, substitution criteria area utilized for evaluation of possible alternatives such as: 12 month consumption history, type and age of dwelling and the location. These precautions are taken to insure that the sample is representative of the customer class or group under study.

This report consists of tables and graphs which display the various load characteristics of the company's customer classes (residential, commercial and industrial) and the total system for the calendar year 1996. As such, it is intended to be a summary of Load Research Programs for 1996.

Any request for other information of this type or additional analyses can be directed to the Load Research section.

PSI Energy

Load Research Studies

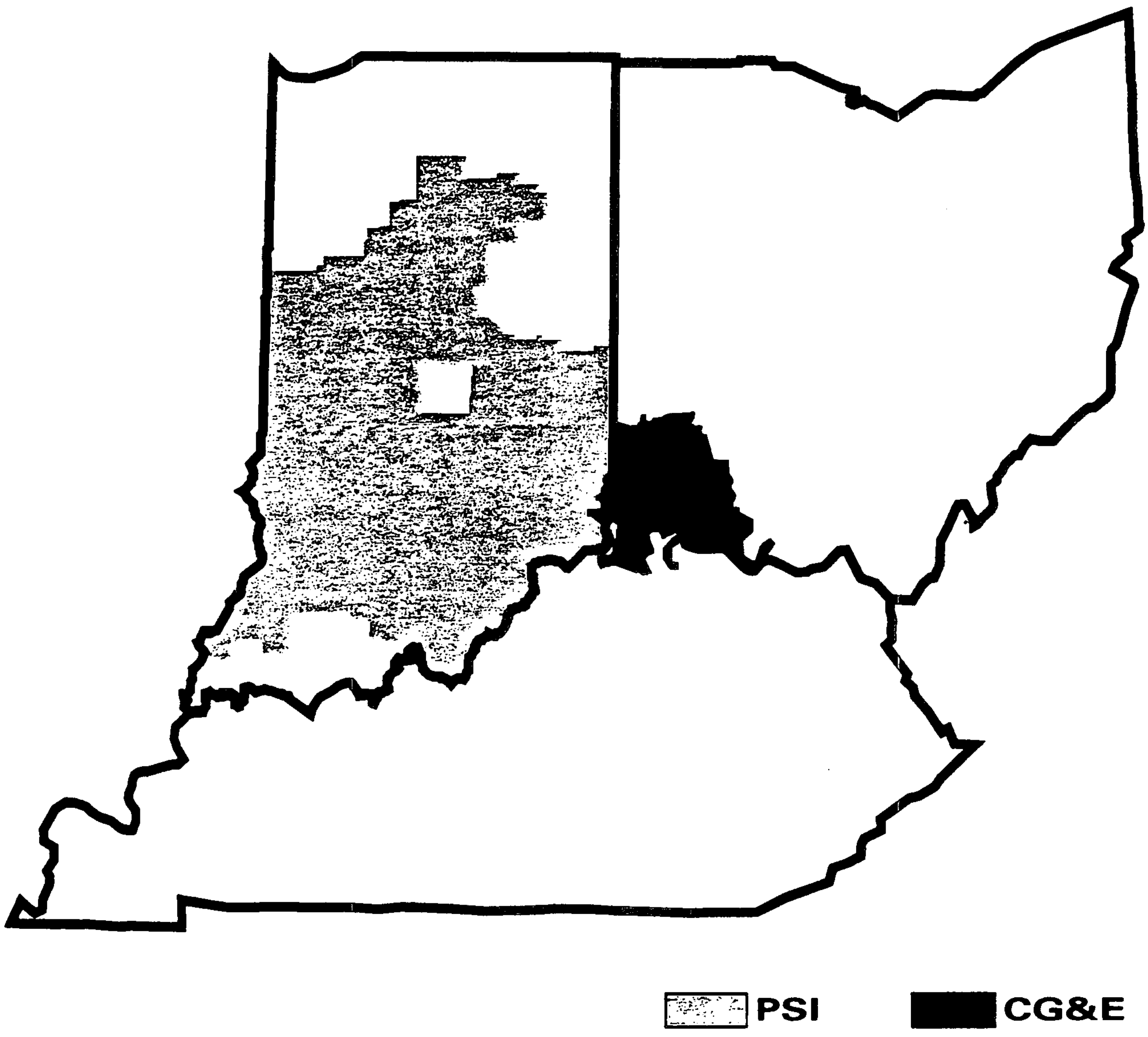
Description	Current Sample Size	Installation Date of Current Sample	Type of Study
Residential Studies			
Residential Service (RS)			
General - R060	150	Dec '93	Stratified - 3 Strata
Water Heating - R061	120	Jul '94	Stratified - 3 Strata
Space Heating - X061	100	Jul '93	Stratified - 3 Strata
Optional High Efficiency-X081	100	May '91	Stratified - 3 Strata
Farm Services			
Residential With Farm - FSB	65	Dec '91	Stratified - 3 Strata
Farm Only - FSC	155	Dec '91	Stratified - 4 Strata
Commercial/Industrial Studies			
Commercial Service (CS)			
General - C110	195	May '91	Stratified - 5 Strata
Heating - K110	59	May '91	Stratified - 3 Strata
TEC	30	Jan '96	Stratified - 2 Strata
OCS	30	Jan '96	Stratified - 2 Strata
Low Load Factor - LLF	194	Jun '91	Stratified - 5 Strata
Medium Load Factor - MLF	95	Jun '91	Stratified - 5 Strata

CG&E

Load Research Studies

Description	Current Sample Size	Installation Date of Current Sample	Type of Study
Electric Service			
Residential			
Ohio	165	Apr '94	Stratified - 4 Strata
Kentucky	150	Jan '96	Stratified - 3 Strata
Commercial-Distribution Service			
Dist Sml - Secondary (OH)	155	Apr '93	Stratified - 3 Strata
Less Than 12.5 kV (OH)	152	Nov '93	Stratified - 9 Strata
Less Than 12.5 kV (KY)	188	Nov '93	Stratified - 7 Strata

Cinergy Service Territory



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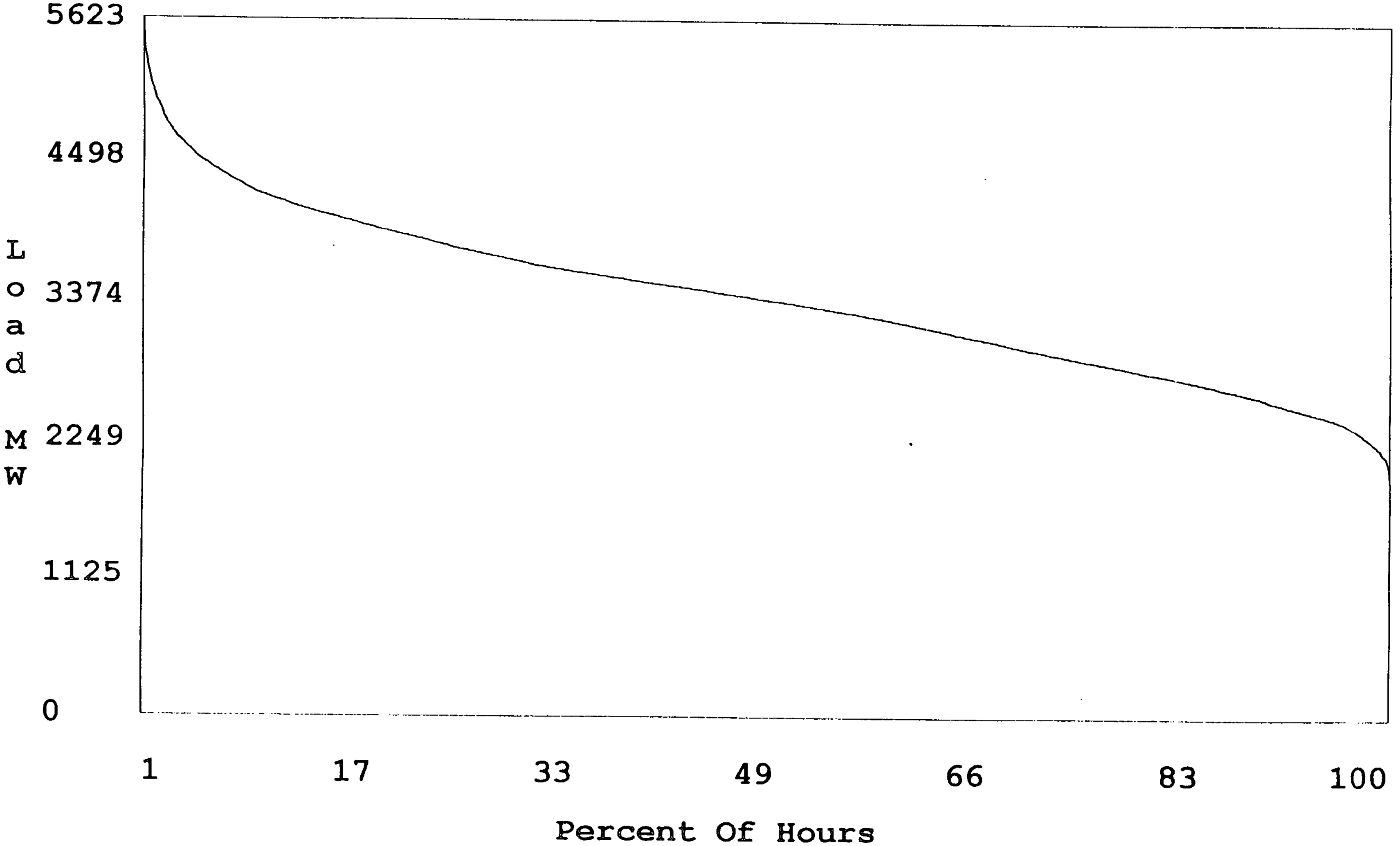
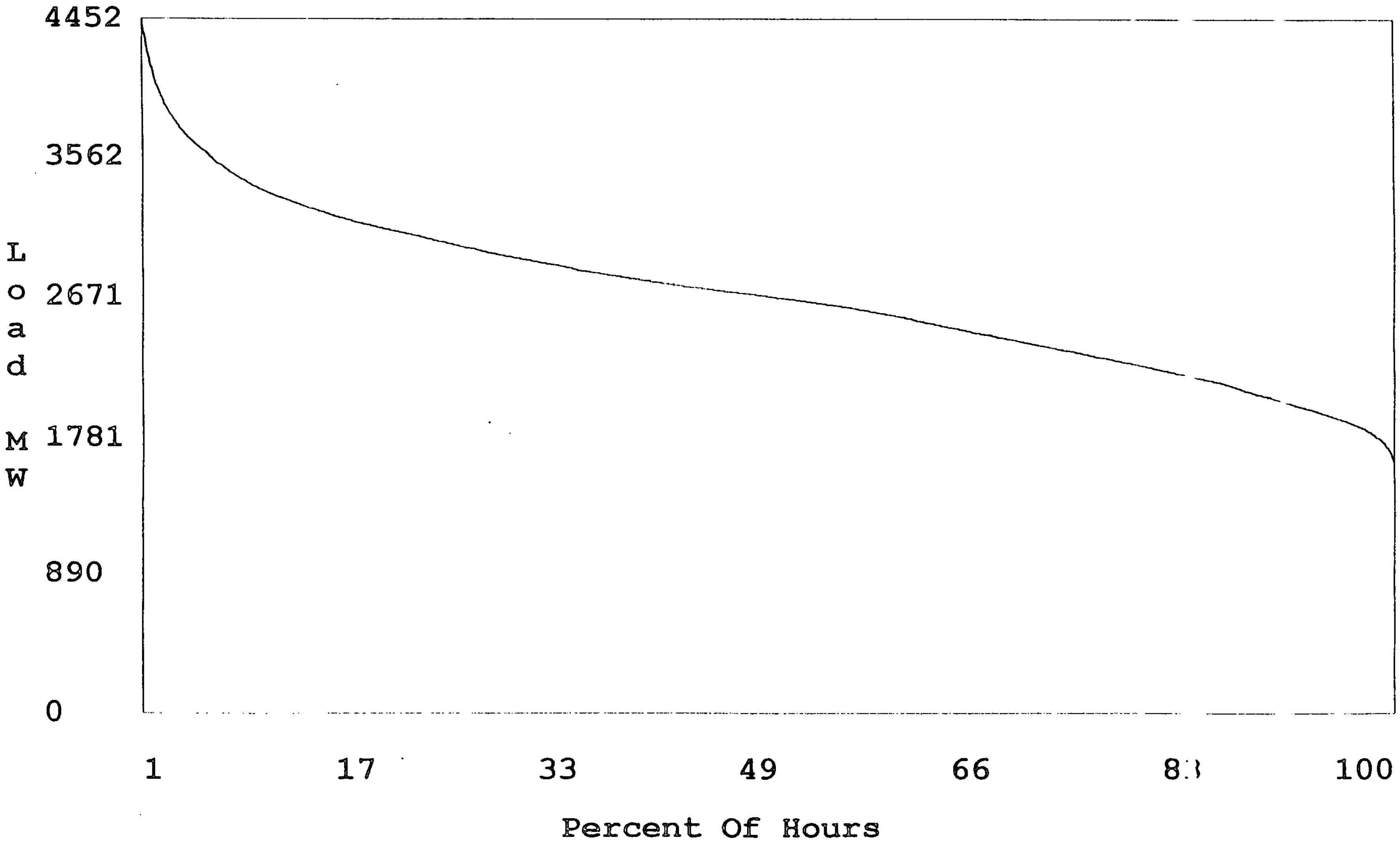
Section 2

Load Duration Curves

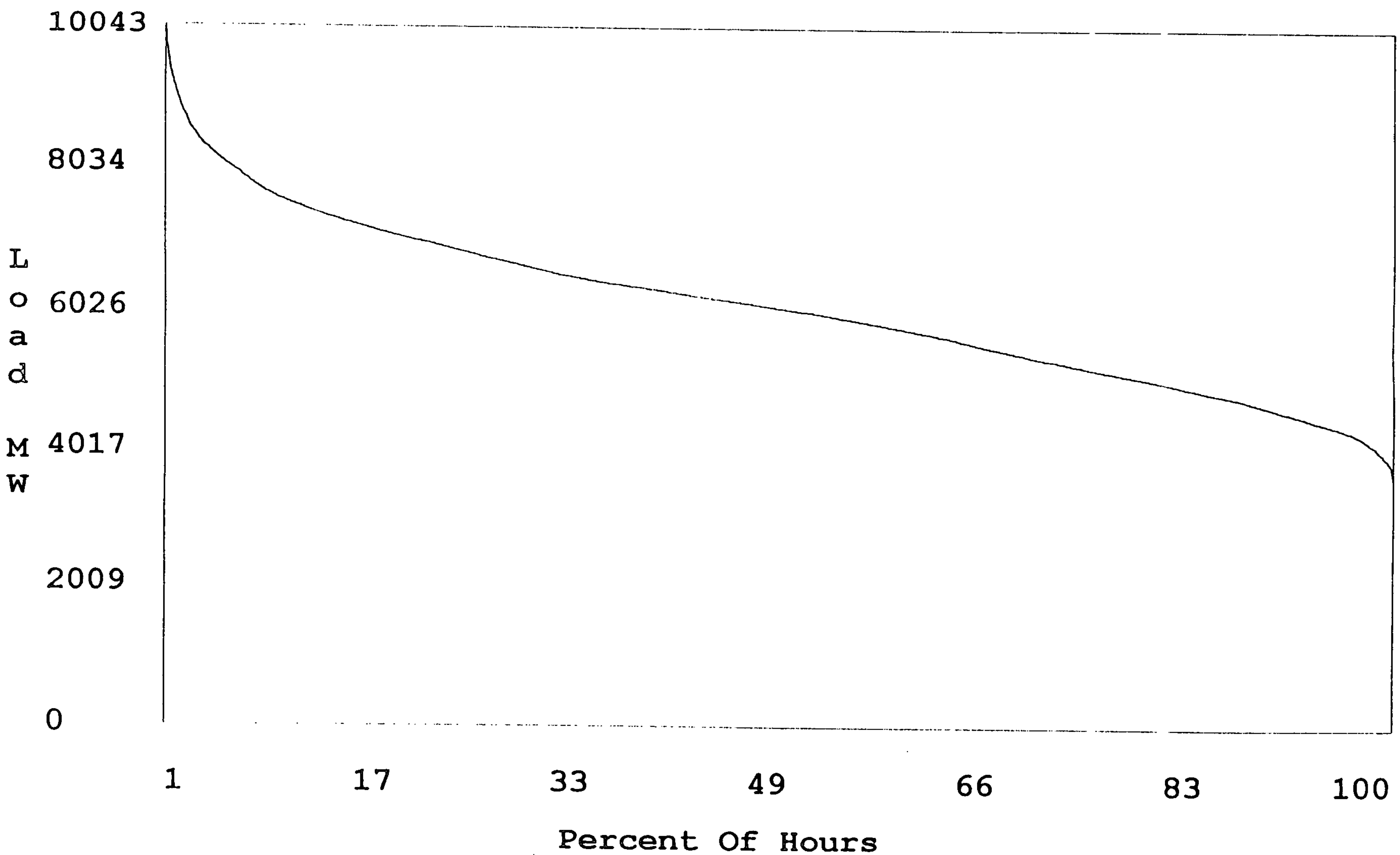
1996 PSI Energy System
Load Duration Curve



1996 Cin Gas and Elec System
Load Duration Curve



1996 CINERGY System
Load Duration Curve



Section 3

Sample Statistics

Section—Sample Statistics

The following section contains tables detailing demand and energy statistics for the major Load Research studies during 1996. Included are sample size, energy use per customer, relevant maximum demands, load factors and coincident factors. All PSI statistics are calculated on 30 minute intervals except for those at the time of monthly system peak. All CG&E statistics are calculated on 15 minute intervals except for those at the time of monthly system peak. Both PSI and CG&E monthly system peak statistics are calculated on 60 minute intervals.

PSI Energy Statistics

RESIDENTIAL RATE - R060
1996

	JAN	FEB	MAR	APR
SAMPLE STATISTICS				
CUSTOMERS IN SAMPLE	123	130	132	138
MAXIMUN DEMAND (KW/CUST.)				
CLASS MAX. DIV. AT RS PEAK	1.542	1.772	1.516	1.032
DAY,DATE	WED,31	SUN,04	THU,07	WED,10
TIME ENDED	9:00PM	9:00PM	8:00PM	6:00AM
RELATIVE PRECISION	12.8%	11.6%	12.6%	11.6%
AT TIME OF SYSTEM PEAK	1.216	1.1457	1.088	0.916
DAY, DATE	WED,31	FRI,02	FRI,08	TUE,09
TIME ENDED	8:00AM	9:00AM	8:00AM	8:00AM
RELATIVE PRECISION	14.8%	9.5%	12.0%	13.6%
NONCOINCIDENT DEMAND	4.914	5.282	4.956	5.085
RELATIVE PRECISION	7.5%	7.2%	7.5%	7.6%
LOAD FACTOR				
BASED ON MAX. DIV. DEMAND	65.4%	56.5%	59.6%	78.4%
AT TIME OF SYSTEM PEAK	82.9%	87.4%	83.0%	88.4%
BASED ON NONCOIN. DEMAND	20.5%	18.9%	18.2%	15.9%
COINCIDENCE FACTOR				
BASED ON MAX. DIV. DEMAND	31.4%	33.6%	30.6%	20.3%
AT TIME OF SYSTEM PEAK	29.0%	25.6%	26.0%	21.7%
POPULATION STATISTICS				
TOTAL CUSTOMERS	292,855	292,941	293,830	294,409
MWH SALES	223,831	229,534	217,693	200,156
USAGE (KWH/CUST.)	764	784	741	680

RESIDENTIAL RATE - R060
1996

MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
139	138	138	133	133	129	130	116
2.135	2.873	2.701	2.912	2.118	1.291	1.498	1.732
SUN,19	SUN,30	MON,01	WED,07	SUN,08	THU,31	TUE,26	THU,19
3:30PM	5:30PM	5:00PM	5:30PM	4:00PM	9:30PM	7:30PM	7:30PM
14.9%	9.3%	8.3%	9.0%	10.6%	23.3%	16.7%	14.0%
1.753	2.500	2.485	2.798	1.874	1.130	1.121	1.651
MON,20	FRI,28	FRI,19	WED,07	FRI,06	TUE,01	WED,27	THU,19
2:00PM	5:00PM	3:00PM	4:00PM	3:00PM	8:00PM	8:00AM	7:00PM
14.6%	9.2%	9.3%	7.8%	8.6%	13.2%	10.3%	11.3%
5.486	6.402	6.334	6.438	5.806	5.150	5.620	5.435
8.4%	6.2%	6.8%	7.2%	7.5%	10.2%	7.4%	7.3%
40.7%	45.8%	51.9%	51.3%	46.6%	60.4%	64.8%	62.4%
49.6%	52.6%	56.5%	53.4%	52.7%	69.0%	86.6%	65.5%
15.9%	20.5%	22.2%	23.2%	17.0%	15.1%	17.3%	19.9%
38.9%	44.9%	46.6%	45.2%	36.5%	25.1%	26.7%	31.9%
37.1%	44.8%	44.9%	49.9%	38.1%	26.6%	23.8%	35.2%
295,018	295,249	295,859	296,393	297,300	298,115	298,832	299,704
179,928	191,429	263,648	315,182	308,922	247,842	177,508	202,636
610	648	891	1,063	1,039	831	594	676

RESIDENTIAL RATE - R061
1996

	JAN	FEB	MAR	APR
SAMPLE STATISTICS				
CUSTOMERS IN SAMPLE	98	104	104	109
MAXIMUN DEMAND (KW/CUST.)				
CLASS MAX. DIV. AT RS PEAK	1.969	2.376	2.262	1.652
DAY,DATE	WED,31	SUN,04	THU,07	WED,10
TIME ENDED	9:00PM	9:00PM	8:00PM	6:00AM
RELATIVE PRECISION	11.9%	12.0%	14.0%	15.8%
AT TIME OF SYSTEM PEAK	1.521	1.674	1.755	1.392
DAY, DATE	WED,31	FRI,02	FRI,08	TUE,09
TIME ENDED	8:00AM	9:00AM	8:00AM	8:00AM
RELATIVE PRECISION	11.3%	11.5%	10.1%	12.7%
NONCOINCIDENT DEMAND	6.794	7.049	7.219	6.942
RELATIVE PRECISION	7.4%	7.1%	6.9%	6.1%
LOAD FACTOR				
BASED ON MAX. DIV. DEMAND	68.8%	55.2%	55.8%	67.5%
AT TIME OF SYSTEM PEAK	89.1%	78.3%	72.0%	80.1%
BASED ON NONCOIN. DEMAND	20.0%	18.6%	17.5%	16.1%
COINCIDENCE FACTOR				
BASED ON MAX. DIV. DEMAND	29.0%	33.7%	31.3%	23.8%
AT TIME OF SYSTEM PEAK	27.0%	28.4%	29.2%	23.8%
POPULATION STATISTICS				
TOTAL CUSTOMERS	120,103	120,375	120,034	120,007
MWH SALES	122,511	126,721	121,130	110,855
USAGE (KWH/CUST.)	1,020	1,053	1,009	924

RESIDENTIAL RATE - R061
1996

MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
106	106	109	109	102	104	108	93
2.628	3.227	2.859	3.425	2.418	1.327	2.080	2.102
SUN,19	SUN,30	MON,01	WED,07	SUN,08	THU,31	TUE,26	THU,19
3:30PM	5:30PM	5:00PM	5:30PM	4:00PM	9:30PM	7:30PM	7:30PM
13.0%	9.6%	7.9%	8.2%	12.4%	12.9%	12.5%	11.8%
2.121	2.623	2.568	3.129	2.009	1.228	1.737	2.141
MON,20	FRI,28	FRI,19	WED,07	FRI,06	TUE,01	WED,27	THU,19
2:00PM	5:00PM	3:00PM	4:00PM	3:00PM	8:00PM	8:00AM	7:00PM
11.8%	9.9%	8.2%	7.3%	10.5%	12.4%	13.1%	12.0%
7.653	7.637	7.364	7.677	6.813	6.413	7.263	7.863
5.6%	6.6%	7.1%	7.1%	8.1%	9.3%	7.2%	6.2%
45.3%	47.9%	54.1%	49.8%	46.5%	73.4%	59.3%	65.2%
56.2%	58.9%	60.3%	54.5%	55.9%	79.3%	71.0%	64.0%
15.6%	20.2%	21.0%	22.2%	16.5%	15.2%	17.0%	17.4%
34.3%	42.3%	38.8%	44.6%	35.5%	20.7%	28.6%	26.7%
32.8%	40.2%	41.0%	46.9%	34.9%	23.0%	28.5%	32.8%
119,909	119,821	119,720	119,696	119,732	119,764	119,804	119,959
99,404	98,869	123,791	140,302	136,599	114,076	92,661	107,386
829	825	1,034	1,172	1,141	953	773	895

RESIDENTIAL RATE - X061
1996

	JAN	FEB	MAR	APR
SAMPLE STATISTICS				
CUSTOMERS IN SAMPLE	79	88	89	92
MAXIMUN DEMAND (KW/CUST.)				
CLASS MAX. DIV. AT RS PEAK	4.836	5.752	4.688	3.566
DAY,DATE	WED,31	SUN,04	THU,07	WED,10
TIME ENDED	9:00PM	9:00PM	8:00PM	6:00AM
RELATIVE PRECISION	9.6%	6.9%	8.3%	9.8%
AT TIME OF SYSTEM PEAK	4.800	5.352	5.299	2.975
DAY, DATE	WED,31	FRI,02	FRI,08	TUE,09
TIME ENDED	8:00AM	9:00AM	8:00AM	8:00AM
RELATIVE PRECISION	6.1%	5.2%	6.6%	8.8%
NONCOINCIDENT DEMAND	10.914	12.462	11.948	10.638
RELATIVE PRECISION	6.6%	5.8%	6.0%	7.8%
LOAD FACTOR				
BASED ON MAX. DIV. DEMAND	66.2%	56.1%	62.3%	53.4%
AT TIME OF SYSTEM PEAK	66.7%	60.3%	55.1%	64.0%
BASED ON NONCOIN. DEMAND	29.3%	25.9%	24.4%	17.9%
COINCIDENCE FACTOR				
BASED ON MAX. DIV. DEMAND	44.3%	46.2%	39.2%	33.5%
AT TIME OF SYSTEM PEAK	51.8%	49.0%	52.5%	33.7%
POPULATION STATISTICS				
TOTAL CUSTOMERS	127,938	127,782	127,958	128,126
MWH SALES	296,808	335,031	313,177	254,236
USAGE (KWH/CUST.)	2,320	2,622	2,448	1,984

RESIDENTIAL RATE - X061
1996

MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
94	93	92	89	83	88	87	82
2.553	3.047	2.688	2.914	2.246	2.307	3.657	4.863
SUN,19	SUN,30	MON,01	WED,07	SUN,08	THU,31	TUE,26	THU,19
3:30PM	5:30PM	5:00PM	5:30PM	4:00PM	9:30PM	7:30PM	7:30PM
13.6%	12.2%	11.6%	11.2%	12.7%	18.0%	16.6%	10.1%
2.042	2.894	2.463	2.663	1.959	1.521	3.524	4.803
MON,20	FRI,28	FRI,19	WED,07	FRI,06	TUE,01	WED,27	THUR,19
2:00PM	5:00PM	3:00PM	4:00PM	3:00PM	8:00PM	8:00AM	7:00PM
15.2%	9.9%	11.7%	9.2%	11.2%	14.0%	13.5%	9.2%
9.593	8.616	7.464	7.992	7.825	8.830	9.675	10.920
7.4%	6.8%	9.1%	9.3%	11.6%	10.8%	9.9%	7.5%
57.8%	52.8%	55.1%	55.2%	54.9%	61.5%	61.8%	56.2%
72.3%	54.8%	60.1%	60.4%	62.9%	93.3%	64.1%	56.9%
15.4%	18.4%	19.8%	20.1%	15.7%	16.1%	23.4%	25.0%
26.6%	35.4%	36.0%	36.5%	28.7%	26.1%	37.8%	44.5%
26.1%	40.1%	39.4%	38.4%	30.0%	20.9%	44.1%	52.0%
128,027	127,865	127,896	127,807	128,166	128,542	128,779	129,067
181,466	128,104	132,627	147,600	144,272	126,621	127,162	217,809
1,417	1,002	1,037	1,155	1,126	985	987	1,688

RESIDENTIAL RATE - HIGH EFFICIENCY
1996

	JAN	FEB	MAR	APR
SAMPLE STATISTICS				
CUSTOMERS IN SAMPLE	85	91	91	96
MAXIMUN DEMAND (KW/CUST.)				
CLASS MAX. DIV. AT RS PEAK	6.347	8.635	6.145	4.871
DAY,DATE	WED,31	SUN,04	THU,07	WED,10
TIME ENDED	9:00PM	9:00PM	8:00PM	6:00AM
RELATIVE PRECISION	14.3%	8.5%	8.9%	10.6%
AT TIME OF SYSTEM PEAK	6.632	7.485	7.890	3.876
DAY, DATE	WED,31	FRI,02	FRI,08	TUE,09
TIME ENDED	8:00AM	9:00AM	8:00AM	8:00AM
RELATIVE PRECISION	10.4%	9.5%	7.5%	10.8%
NONCOINCIDENT DEMAND	12.717	15.687	14.997	12.799
RELATIVE PRECISION	7.7%	6.8%	6.4%	7.4%
LOAD FACTOR				
BASED ON MAX. DIV. DEMAND	60.2%	47.9%	58.1%	49.6%
AT TIME OF SYSTEM PEAK	57.7%	55.2%	45.2%	62.3%
BASED ON NONCOIN. DEMAND	30.1%	26.3%	23.8%	18.9%
COINCIDENCE FACTOR				
BASED ON MAX. DIV. DEMAND	49.9%	55.0%	41.0%	38.1%
AT TIME OF SYSTEM PEAK	60.6%	54.6%	61.4%	36.4%
POPULATION STATISTICS				
TOTAL CUSTOMERS	17,361	17,665	18,052	18,304
MWH SALES	49,832	61,071	57,836	44,871
USAGE (KWH/CUST.)	2,870	3,457	3,204	2,451

RESIDENTIAL RATE - HIGH EFFICIENCY
1996

MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
95	93	91	94	91	91	88	80
3.412	3.532	3.039	3.537	2.866	2.764	4.106	6.2473
SUN,19	SUN,30	MON,01	WED,07	SUN,08	THU,31	TUE,26	THU,19
3:30PM	5:30PM	5:00PM	5:30PM	4:00PM	9:30PM	7:30PM	7:30PM
12.6%	10.0%	12.3%	11.6%	13.2%	11.2%	10.7%	10.9%
3.500	3.201	2.919	3.245	2.161	2.256	4.992	6.679
MON,20	FRI,28	FRI,19	WED,07	FRI,06	TUE,01	WED,27	THU,19
2:00PM	5:00PM	3:00PM	4:00PM	3:00PM	8:00PM	8:00AM	7:00PM
14.0%	10.9%	10.2%	9.1%	13.3%	15.1%	12.0%	10.5%
11.106	9.223	8.455	8.789	8.309	9.905	11.398	13.334
7.9%	6.0%	6.8%	7.0%	6.7%	11.1%	7.5%	9.4%
55.2%	55.2%	60.9%	57.2%	53.4%	59.5%	68.0%	54.3%
66.0%	60.9%	63.4%	62.4%	70.8%	72.9%	55.9%	50.8%
16.9%	21.1%	21.9%	23.0%	18.4%	16.6%	24.5%	25.5%
30.7%	38.3%	35.9%	40.2%	34.5%	27.9%	36.0%	46.9%
31.4%	40.8%	39.6%	42.3%	31.2%	28.2%	52.3%	57.6%
18,638	18,884	19,087	19,503	19,750	20,092	20,308	20,580
32,344	24,172	24,918	27,770	27,196	25,075	24,759	40,920
1,735	1,280	1,306	1,424	1,377	1,248	1,219	1,988

FARM RATE - FSB
1996

	JAN	FEB	MAR	APR
SAMPLE STATISTICS				
CUSTOMERS IN SAMPLE	51	56	56	61
MAXIMUN DEMAND (KW/CUST.)				
CLASS MAX. DIV. AT RS PEAK	2.987	3.977	3.547	2.621
DAY,DATE	WED,31	SUN,04	THU,07	WED,10
TIME ENDED	9:00PM	9:00PM	8:00PM	6:00AM
RELATIVE PRECISION	11.7%	10.2%	13.5%	12.9%
AT TIME OF SYSTEM PEAK	3.135	3.532	3.537	2.505
DAY, DATE	WED,31	FRI,02	FRI,08	TUE,09
TIME ENDED	8:00AM	9:00AM	8:00AM	8:00AM
RELATIVE PRECISION	13.0%	9.4%	11.7%	13.6%
NONCOINCIDENT DEMAND	8.500	9.697	8.971	8.252
RELATIVE PRECISION	14.4%	11.2%	12.5%	12.9%
LOAD FACTOR				
BASED ON MAX. DIV. DEMAND	84.0%	66.7%	66.5%	70.6%
AT TIME OF SYSTEM PEAK	80.0%	75.1%	66.7%	73.8%
BASED ON NONCOIN. DEMAND	29.5%	27.4%	26.3%	22.4%
COINCIDENCE FACTOR				
BASED ON MAX. DIV. DEMAND	35.1%	41.0%	39.5%	31.7%
AT TIME OF SYSTEM PEAK	42.4%	42.4%	46.2%	36.9%
POPULATION STATISTICS				
TOTAL CUSTOMERS	6,747	6,716	6,735	6,729
MWH SALES	12,506	13,472	12,986	11,071
USAGE (KWH/CUST.)	1,854	2,006	1,928	1,645

FARM RATE - FSB
1996

MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
60	61	61	60	60	59	59	55
1.891	2.871	2.594	3.231	2.475	3.611	4.395	4.686
SUN,19	SUN,30	MON,01	WED,07	SUN,08	THU,31	TUE,26	THU,19
3:30PM	5:30PM	5:00PM	5:30PM	4:00PM	9:30PM	7:30PM	7:30PM
22.8%	18.1%	11.5%	10.4%	17.4%	27.4%	23.3%	21.3%
2.159	2.652	3.021	3.420	2.134	1.762	4.318	4.561
MON,20	FRI,28	FRI,19	WED,07	FRI,06	TUE,01	WED,27	THU,19
2:00PM	5:00PM	3:00PM	4:00PM	3:00PM	8:00PM	8:00AM	7:00PM
25.3%	14.8%	10.3%	9.4%	12.6%	15.2%	25.4%	19.4%
7.778	8.224	8.397	9.046	8.047	9.498	12.178	10.934
14.8%	13.7%	12.1%	10.7%	12.5%	16.8%	14.4%	12.8%
80.1%	60.4%	69.1%	61.0%	66.3%	56.7%	72.9%	59.3%
70.2%	65.4%	59.4%	54.2%	79.9%	116.2%	74.2%	61.0%
19.5%	21.1%	21.4%	21.8%	20.4%	21.6%	26.3%	25.4%
24.3%	34.9%	30.9%	36.9%	30.8%	38.0%	36.1%	42.9%
33.6%	37.9%	42.0%	44.3%	31.2%	21.3%	40.1%	48.2%
6,721	6,723	6,714	6,711	6,712	6,717	6,735	6,741
9,387	7,991	8,825	9,529	9,279	8,540	9,788	15,184
1,397	1,189	1,314	1,420	1,383	1,271	1,453	2,252

FARM RATE - FSC
1996

	JAN	FEB	MAR	APR
SAMPLE STATISTICS				
CUSTOMERS IN SAMPLE	140	135	133	145
MAXIMUN DEMAND (KW/CUST.)				
CLASS MAX. DIV. AT RS PEAK	1.727	1.701	1.187	1.018
DAY,DATE	WED,31	SUN,04	THU,07	WED,10
TIME ENDED	9:00PM	9:00PM	8:00PM	6:00AM
RELATIVE PRECISION	9.0%	28.0%	15.0%	8.7%
AT TIME OF SYSTEM PEAK	1.747	1.474	1.388	1.151
DAY, DATE	WED,31	FRI,02	FRI,08	TUE,09
TIME ENDED	8:00AM	9:00AM	8:00AM	8:00AM
RELATIVE PRECISION	28.0%	7.1%	25.4%	11.4%
NONCOINCIDENT DEMAND	5.166	5.259	3.506	3.608
RELATIVE PRECISION	22.6%	34.6%	30.6%	17.1%
LOAD FACTOR				
BASED ON MAX. DIV. DEMAND	84.0%	71.0%	79.3%	92.9%
AT TIME OF SYSTEM PEAK	83.0%	82.0%	67.8%	82.2%
BASED ON NONCOIN. DEMAND	28.1%	23.0%	26.8%	26.2%
COINCIDENCE FACTOR				
BASED ON MAX. DIV. DEMAND	33.4%	32.4%	33.9%	28.2%
AT TIME OF SYSTEM PEAK	36.8%	31.2%	45.4%	36.3%
POPULATION STATISTICS				
TOTAL CUSTOMERS	3,218	3,204	3,208	3,198
MWH SALES	3,479	2,882	2,409	2,474
USAGE (KWH/CUST.)	1,081	899	751	774

FARM RATE - FSC
1996

MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
145	144	148	146	146	146	144	128
0.991	0.936	1.211	1.532	1.018	3.971	3.918	1.886
SUN,19	SUN,30	MON,01	WED,07	SUN,08	THU,31	TUE,26	THU,19
3:30PM	5:30PM	5:00PM	5:30PM	4:00PM	9:30PM	7:30PM	7:30PM
17.6%	12.7%	10.2%	39.8%	16.9%	32.0%	47.6%	45.6%
0.975	0.998	1.257	1.617	1.029	1.185	3.223	1.947
MON,20	FRI,28	FRI,19	WED,07	FRI,06	TUE,01	WED,27	THU,19
2:00PM	5:00PM	3:00PM	4:00PM	3:00PM	8:00PM	8:00AM	7:00PM
19.5%	19.8%	12.2%	38.1%	15.7%	16.7%	44.5%	44.0%
3.740	3.120	3.438	3.553	3.946	8.739	10.235	7.426
19.0%	29.9%	13.1%	21.9%	20.5%	23.3%	26.8%	14.5%
90.4%	85.2%	79.0%	66.4%	80.1%	55.7%	93.3%	89.7%
91.9%	80.0%	76.1%	62.9%	79.2%	186.7%	113.4%	86.9%
24.0%	25.6%	27.8%	28.6%	20.7%	25.3%	35.7%	22.8%
26.5%	30.0%	36.0%	43.1%	25.8%	45.4%	38.3%	25.4%
30.2%	35.5%	41.3%	50.9%	30.8%	14.3%	32.9%	27.5%
3,191	3,187	3,181	3,179	3,174	3,177	3,180	3,175
2,349	1,679	2,042	2,244	2,054	2,321	4,044	7,890
736	527	642	706	647	731	1,272	2,485

COMMERCIAL RATE - C110
1996

	JAN	FEB	MAR	APR
SAMPLE STATISTICS				
CUSTOMERS IN SAMPLE	162	167	168	177
MAXIMUN DEMAND (KW/CUST.)				
CLASS MAX. DIV. AT CS PEAK	2.802	3.101	2.629	2.648
DAY,DATE	FRI,19	FRI,02	FRI,08	TUE,09
TIME ENDED	11:00AM	12:30PM	10:00AM	9:30AM
RELATIVE PRECISION	9.9%	8.6%	9.3%	9.5%
AT TIME OF SYSTEM PEAK	2.105	2.688	2.014	2.259
DAY, DATE	WED,31	FRI,02	FRI,08	TUE,09
TIME ENDED	8:00AM	9:00AM	8:00AM	8:00AM
RELATIVE PRECISION	7.9%	9.5%	8.6%	10.8%
NONCOINCIDENT DEMAND	5.363	5.979	5.647	6.451
RELATIVE PRECISION	11.3%	10.5%	11.1%	11.4%
LOAD FACTOR				
BASED ON MAX. DIV. DEMAND	66.4%	63.1%	67.5%	64.9%
AT TIME OF SYSTEM PEAK	88.4%	72.8%	88.1%	76.1%
BASED ON NONCOIN. DEMAND	34.7%	32.7%	31.4%	26.6%
COINCIDENCE FACTOR				
BASED ON MAX. DIV. DEMAND	52.2%	51.9%	46.6%	37.5%
AT TIME OF SYSTEM PEAK	42.4%	48.7%	38.8%	41.0%
POPULATION STATISTICS				
TOTAL CUSTOMERS	56,059	55,924	55,735	55,687
MWH SALES	77,250	82,487	81,182	74,822
USAGE (KWH/CUST.)	1,378	1,475	1,457	1,344

COMMERCIAL RATE - C110
1996

MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
176	173	172	169	164	167	171	159
3.689	3.903	3.954	4.193	3.535	2.796	2.764	2.795
MON,20	FRI,28	FRI,19	WED,07	TUE,03	TUE,15	FRI,15	FRI,20
1:30PM	2:30PM	1:30PM	3:00PM	2:00PM	2:00PM	11:00AM	11:00AM
12.0%	10.7%	9.4%	7.2%	10.4%	12.2%	13.0%	9.8%
3.660	3.434	3.849	3.993	3.329	1.846	2.060	2.613
MON,20	FRI,28	FRI,19	WED,07	FRI,06	TUE,01	WED,27	THU,19
2:00PM	5:00PM	3:00PM	4:00PM	3:00PM	8:00PM	8:00AM	7:00PM
11.8%	11.8%	8.9%	6.6%	7.6%	10.9%	15.0%	10.4%
7.043	7.247	7.191	7.186	6.852	6.044	5.813	5.702
11.7%	11.8%	11.1%	9.3%	11.1%	11.0%	12.4%	11.1%
48.2%	54.7%	56.9%	56.0%	51.8%	58.5%	63.3%	65.9%
48.5%	62.2%	58.5%	58.8%	54.9%	88.6%	84.9%	70.5%
25.2%	29.5%	31.3%	32.7%	26.7%	27.1%	30.1%	32.3%
52.4%	53.9%	55.0%	58.4%	51.6%	46.3%	35.6%	49.0%
55.2%	50.0%	57.1%	58.5%	51.7%	33.3%	38.5%	49.4%
55,884	56,025	56,116	56,152	56,172	56,253	56,238	56,232
69,183	70,469	84,841	94,700	92,737	81,578	67,876	72,676
1,238	1,258	1,512	1,686	1,651	1,450	1,207	1,292

COMMERCIAL RATE - K110
1996

	JAN	FEB	MAR	APR
SAMPLE STATISTICS				
CUSTOMERS IN SAMPLE	56	53	53	56
MAXIMUN DEMAND (KW/CUST.)				
CLASS MAX. DIV. AT CS PEAK	8.452	9.520	9.129	5.814
DAY,DATE	FRI,19	FRI,02	FRI,08	TUE,09
TIME ENDED	11:00AM	12:30PM	10:00AM	9:30AM
RELATIVE PRECISION	10.3%	7.9%	11.8%	14.1%
AT TIME OF SYSTEM PEAK	7.796	10.157	8.933	6.008
DAY, DATE	WED,31	FRI,02	FRI,08	TUE,09
TIME ENDED	8:00AM	9:00AM	8:00AM	8:00AM
RELATIVE PRECISION	8.1%	7.8%	10.5%	13.0%
NONCOINCIDENT DEMAND	14.822	17.046	16.232	13.893
RELATIVE PRECISION	14.1%	10.8%	11.4%	12.8%
LOAD FACTOR				
BASED ON MAX. DIV. DEMAND	62.7%	59.1%	55.3%	57.3%
AT TIME OF SYSTEM PEAK	68.0%	55.4%	56.6%	55.5%
BASED ON NONCOIN. DEMAND	35.8%	33.0%	31.1%	24.0%
COINCIDENCE FACTOR				
BASED ON MAX. DIV. DEMAND	57.0%	55.8%	56.2%	41.8%
AT TIME OF SYSTEM PEAK	57.7%	65.2%	63.1%	50.2%
POPULATION STATISTICS				
TOTAL CUSTOMERS	3,480	3,483	3,486	3,482
MWH SALES	13,340	15,931	14,593	12,199
USAGE (KWH/CUST.)	3,833	4,574	4,186	3,504

COMMERCIAL RATE - K110
1996

MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
55	54	52	53	52	50	51	47
4.944	5.512	5.515	6.455	5.004	4.376	6.228	9.001
MON,20	FRI,28	FRI,19	WED,07	TUE,03	TUE,15	FRI,15	FRI,20
1:30PM	2:30PM	1:30PM	3:00PM	2:00PM	2:00PM	11:00AM	11:00AM
15.6%	12.5%	13.3%	11.5%	11.9%	13.8%	13.9%	13.7%
4.939	4.989	5.523	6.640	5.243	2.887	7.095	8.221
MON,20	FRI,28	FRI,19	WED,07	FRI,06	TUE,01	WED,27	THU,19
2:00PM	5:00PM	3:00PM	4:00PM	3:00PM	8:00PM	8:00AM	7:00PM
15.2%	11.1%	12.8%	12.6%	14.5%	26.6%	14.9%	8.7%
12.008	11.833	11.044	11.145	11.779	12.705	14.706	15.372
14.7%	14.0%	15.4%	14.7%	19.2%	17.6%	17.7%	13.4%
58.9%	61.6%	61.4%	57.5%	57.5%	62.0%	71.4%	58.0%
59.0%	68.1%	61.3%	55.9%	54.9%	94.0%	62.7%	63.5%
24.3%	28.7%	30.7%	33.3%	24.4%	21.4%	30.3%	34.0%
41.2%	46.6%	49.9%	57.9%	42.5%	34.5%	42.4%	58.6%
46.9%	47.4%	54.5%	66.0%	49.9%	25.9%	54.2%	58.6%
3,475	3,468	3,460	3,458	3,462	3,455	3,453	3,457
8,878	7,570	8,226	8,685	8,640	7,722	7,187	10,555
2,555	2,183	2,377	2,511	2,496	2,235	2,081	3,053

COMMERCIAL RATE - TEC
1996

	JAN	FEB	MAR	APR
SAMPLE STATISTICS				
CUSTOMERS IN SAMPLE	18	22	21	20
MAXIMUN DEMAND (KW/CUST.)				
CLASS MAX. DIV. AT CS PEAK	102.559	126.743	103.336	79.697
DAY,DATE	WED,31	MON,05	FRI,08	TUE,09
TIME ENDED	11:00AM	10:30AM	11:30AM	9:30AM
RELATIVE PRECISION	8.8%	8.8%	10.9%	10.7%
AT TIME OF SYSTEM PEAK	103.188	113.382	98.917	79.225
DAY, DATE	WED,31	FRI,02	FRI,08	TUE,09
TIME ENDED	8:00AM	9:00AM	8:00AM	8:00AM
RELATIVE PRECISION	7.2%	9.7%	8.9%	7.0%
NONCOINCIDENT DEMAND	139.145	152.12	128.079	105.89
RELATIVE PRECISION	6.1%	8.7%	8.1%	7.4%
LOAD FACTOR				
BASED ON MAX. DIV. DEMAND	83.1%	64.5%	70.7%	78.1%
AT TIME OF SYSTEM PEAK	82.6%	72.2%	73.9%	78.6%
BASED ON NONCOIN. DEMAND	61.2%	53.8%	57.1%	58.8%
COINCIDENCE FACTOR				
BASED ON MAX. DIV. DEMAND	73.7%	83.3%	80.7%	75.3%
AT TIME OF SYSTEM PEAK	76.6%	76.9%	80.6%	78.1%
POPULATION STATISTICS				
TOTAL CUSTOMERS	196	197	198	199
MWH SALES	11,303	12,003	11,301	10,170
USAGE (KWH/CUST.)	56,671	60,928	57,074	51,103

COMMERCIAL RATE - TEC
1996

MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
20	22	22	18	19	20	21	21
94.003	96.489	100.994	111.996	90.547	77.753	81.939	105.445
MON,20	WED,19	WED,17	THU,22	FRI,06	WED,02	TUE,26	FRI,20
12:00NO	12:00NO	12:00NO	12:00NO	12:30PM	12:00NO	10:30AM	11:00AM
11.5%	10.3%	8.5%	8.7%	9.0%	11.5%	10.5%	11.4%
92.224	89.748	102.757	112.697	86.32	71.893	85.721	107.551
MON,20	FRI,28	FRI,19	WED,07	FRI,06	TUE,01	WED,27	THU,19
2:00PM	5:00PM	3:00PM	4:00PM	3:00PM	8:00PM	8:00AM	7:00PM
13.5%	8.5%	7.7%	7.4%	8.6%	10.3%	10.4%	11.1%
113.125	115.559	120.523	132.066	105.668	104.242	119.756	132.455
10.9%	8.2%	6.7%	7.0%	7.2%	7.3%	9.9%	9.5%
69.1%	72.7%	73.1%	75.1%	68.5%	79.6%	88.3%	72.5%
70.5%	78.2%	71.9%	74.6%	71.8%	86.1%	84.4%	71.0%
57.4%	60.7%	61.3%	63.7%	58.7%	59.4%	60.4%	57.7%
83.1%	83.5%	83.8%	84.8%	85.7%	74.6%	68.4%	79.6%
84.2%	79.7%	87.3%	88.0%	84.7%	72.4%	74.4%	85.0%
199	196	203	200	200	199	199	200
9,318	9,273	10,676	12,028	9,898	9,478	9,626	10,525
46,825	47,311	52,590	60,139	49,490	47,630	48,370	52,624

COMMERCIAL RATE- OCS
1996

	JAN	FEB	MAR	APR
SAMPLE STATISTICS				
CUSTOMERS IN SAMPLE	23	27	27	27
MAXIMUN DEMAND (KW/CUST.)				
CLASS MAX. DIV. AT CS PEAK	17.968	24.063	21.866	14.895
DAY,DATE	FRI,19	FRI,02	FRI,08	TUE,09
TIME ENDED	11:00AM	12:30PM	10:00AM	9:30AM
RELATIVE PRECISION	13.1%	8.5%	11.2%	10.7%
AT TIME OF SYSTEM PEAK	18.579	25.086	20.584	14.106
DAY, DATE	WED,31	FRI,02	FRI,08	TUE,09
TIME ENDED	8:00AM	9:00AM	8:00AM	8:00AM
RELATIVE PRECISION	8.9%	7.6%	7.4%	11.9%
NONCOINCIDENT DEMAND	30.065	36.36	34.500	32.016
RELATIVE PRECISION	9.8%	5.8%	6.7%	7.9%
LOAD FACTOR				
BASED ON MAX. DIV. DEMAND	78.7%	64.6%	65.1%	92.1%
AT TIME OF SYSTEM PEAK	76.1%	62.0%	69.1%	97.2%
BASED ON NONCOIN. DEMAND	47.1%	42.8%	41.2%	42.8%
COINCIDENCE FACTOR				
BASED ON MAX. DIV. DEMAND	59.8%	66.2%	63.4%	46.5%
AT TIME OF SYSTEM PEAK	65.7%	73.3%	64.6%	49.1%
POPULATION STATISTICS				
TOTAL CUSTOMERS	70	71	68	68
MWH SALES	736	813	764	711
USAGE (KWH/CUST.)	10,515	11.450	11.233	10.452

COMMERCIAL RATE- OCS
1996

MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
29	29	30	26	27	28	28	30
18.155	19.465	19.591	19.819	18.446	15.552	16.744	19.816
MON,20	FRI,28	FRI,19	WED,07	TUE,03	TUE,15	FRI,15	FRI,20
1:30PM	2:30PM	1:30PM	3:00PM	2:00PM	2:00PM	11:00AM	11:00AM
9.7%	10.2%	7.8%	9.6%	8.5%	10.9%	12.3%	9.1%
19.296	18.421	19.125	18.930	19.409	17.004	17.552	21.987
MON,20	FRI,28	FRI,19	WED,07	FRI,06	TUE,01	WED,27	THU,19
2:00PM	5:00PM	3:00PM	4:00PM	3:00PM	8:00PM	8:00AM	7:00PM
9.6%	8.5%	8.5%	8.5%	8.7%	6.3%	9.0%	6.9%
28.203	28.780	28.734	29.702	28.684	29.883	29.905	34.446
6.2%	6.0%	5.2%	7.5%	6.3%	8.5%	8.3%	7.4%
77.0%	77.4%	78.6%	79.2%	77.5%	88.4%	85.7%	75.4%
76.5%	81.8%	80.5%	82.9%	73.6%	80.8%	81.8%	68.0%
49.6%	52.4%	53.6%	52.8%	49.8%	46.0%	48.0%	43.4%
64.4%	67.6%	68.2%	66.7%	64.3%	52.0%	56.0%	57.5%
68.6%	67.1%	69.8%	66.3%	71.2%	62.4%	64.4%	69.9%
68	67	67	67	67	66	66	67
678	672	731	763	731	729	698	698
9,965	10,035	10,904	11,387	10,907	11,044	10,583	10,423

COMMERCIAL RATE - LLF (SEC / SEC)
1996

	JAN	FEB	MAR	APR
SAMPLE STATISTICS				
CUSTOMERS IN SAMPLE	166	168	163	170
MAXIMUN DEMAND (KW/CUST.)				
CLASS MAX. DIV. AT CS PEAK	26.927	29.601	27.421	24.955
DAY,DATE	WED,31	MON,05	FRI,08	TUE,09
TIME ENDED	11:00AM	10:30AM	11:30AM	9:30AM
RELATIVE PRECISION	8.9%	8.7%	9.4%	11.8%
AT TIME OF SYSTEM PEAK	23.460	28.935	23.339	23.387
DAY, DATE	WED,31	FRI,02	FRI,08	TUE,09
TIME ENDED	8:00AM	9:00AM	8:00AM	8:00AM
RELATIVE PRECISION	10.9%	8.4%	11.6%	11.8%
NONCOINCIDENT DEMAND	38.563	42.977	39.377	40.814
RELATIVE PRECISION	9.0%	9.3%	9.5%	10.3%
LOAD FACTOR				
BASED ON MAX. DIV. DEMAND	56.2%	53.9%	54.1%	55.0%
AT TIME OF SYSTEM PEAK	64.6%	61.1%	63.5%	58.7%
BASED ON NONCOIN. DEMAND	39.3%	37.1%	35.9%	33.6%
COINCIDENCE FACTOR				
BASED ON MAX. DIV. DEMAND	69.8%	68.9%	66.4%	61.1%
AT TIME OF SYSTEM PEAK	64.4%	63.6%	59.3%	60.6%
POPULATION STATISTICS				
TOTAL CUSTOMERS	16,968	17,087	17,050	17,094
MWH SALES	181,690	195,430	195,463	180,307
USAGE (KWH/CUST.)	10,708	11,437	11,464	10,548

COMMERCIAL RATE - LLF (SEC / SEC)
1996

MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
169	171	174	167	171	170	166	158
30.139	28.711	27.881	32.766	30.060	28.309	28.770	28.213
MON,20	WED,19	WED,17	THU,22	FRI,06	WED,02	TUE,26	FRI,20
12:00NO	12:00NO	12:00NO	12:00NO	12:30PM	12:00NO	10:30AM	11:00AM
10.0%	10.6%	7.3%	10.6%	7.8%	11.7%	10.1%	11.3%
29.016	19.318	25.907	25.603	27.098	14.486	24.102	17.976
MON,20	FRI,28	FRI,19	WED,07	FRI,06	TUE,01	WED,27	THU,19
2:00PM	5:00PM	3:00PM	4:00PM	3:00PM	8:00PM	8:00AM	7:00PM
9.2%	11.6%	7.6%	6.8%	6.5%	12.4%	12.1%	9.8%
42.922	42.124	42.103	46.611	43.330	42.836	43.172	43.323
9.3%	9.3%	9.6%	9.7%	9.4%	10.8%	10.3%	10.7%
46.9%	52.2%	55.1%	51.5%	47.8%	49.3%	52.7%	54.1%
48.7%	77.6%	59.3%	65.9%	53.0%	96.3%	62.9%	84.9%
32.9%	35.6%	36.5%	36.2%	33.1%	32.6%	35.1%	35.2%
70.2%	68.2%	66.2%	70.3%	69.4%	66.1%	66.6%	65.1%
71.0%	47.8%	64.2%	57.4%	65.5%	35.7%	59.1%	44.1%
17,169	17,213	17,209	17,234	17,284	17,296	17,304	17,330
171,534	173,628	189,291	199,541	200,772	196,107	181,934	194,263
9,991	10,087	11,000	11,578	11,616	11,338	10,514	11,210

INDUSTRIAL RATE - MLF (SEC / SEC)
1996

	JAN	FEB	MAR	APR
SAMPLE STATISTICS				
CUSTOMERS IN SAMPLE	87	88	88	88
MAXIMUN DEMAND (KW/CUST.)				
CLASS MAX. DIV. AT MLF PEAK	74.189	76.115	71.327	84.694
DAY,DATE	WED,31	THU,01	FRI,08	FRI,19
TIME ENDED	10:00AM	10:30AM	10:30AM	12:30PM
RELATIVE PRECISION	13.4%	7.1%	6.3%	3.3%
AT TIME OF SYSTEM PEAK	70.710	73.269	66.289	72.920
DAY, DATE	WED,31	FRI,02	FRI,08	TUE,09
TIME ENDED	8:00AM	9:00AM	8:00AM	8:00AM
RELATIVE PRECISION	14.5%	7.9%	7.6%	4.0%
NONCOINCIDENT DEMAND	91.277	97.402	90.021	104.178
RELATIVE PRECISION	11.9%	5.7%	4.7%	4.1%
LOAD FACTOR				
BASED ON MAX. DIV. DEMAND	81.1%	82.2%	79.7%	76.4%
AT TIME OF SYSTEM PEAK	85.1%	85.4%	85.7%	88.7%
BASED ON NONCOIN. DEMAND	65.9%	64.3%	63.1%	62.1%
COINCIDENCE FACTOR				
BASED ON MAX. DIV. DEMAND	81.3%	78.1%	79.2%	81.3%
AT TIME OF SYSTEM PEAK	79.6%	77.3%	75.8%	72.1%
POPULATION STATISTICS				
TOTAL CUSTOMERS	1,771	1,782	1,771	1,771
MWH SALES	74,790	79,069	75,368	86,197
USAGE (KWH/CUST.)	42,230	44,371	42,557	48,672

INDUSTRIAL RATE - MLF (SEC / SEC)
1996

MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
88	89	87	84	84	81	84	87
78.612	92.048	93.417	92.167	85.581	75.835	61.795	68.318
MON,20	FRI,21	FRI,19	THU,22	FRI,06	WED,02	WED,06	THU,19
12:30PM	12:30PM	12:00NO	12:00NO	12:00NO	12:30PM	11:00AM	11:00AM
6.4%	4.8%	3.7%	4.5%	4.0%	4.1%	8.2%	6.1%
78.437	89.213	93.465	92.201	85.173	69.823	58.889	70.544
MON,20	FRI,28	FRI,19	WED,07	FRI,06	TUE,01	WED,27	THU,19
2:00PM	5:00PM	3:00PM	4:00PM	3:00PM	8:00PM	8:00AM	7:00PM
6.5%	5.9%	4.1%	4.6%	4.0%	4.0%	12.6%	5.8%
88.689	105.262	106.286	106.074	98.089	90.550	82.566	85.910
5.8%	5.0%	4.0%	4.1%	4.4%	4.9%	9.4%	4.9%
68.9%	74.4%	73.8%	76.5%	73.5%	76.1%	85.4%	82.5%
69.0%	76.8%	73.8%	76.5%	73.8%	82.6%	89.6%	79.9%
61.0%	65.1%	64.9%	66.5%	64.1%	63.7%	63.9%	65.6%
88.6%	87.4%	87.9%	86.9%	87.3%	83.7%	74.8%	79.5%
90.1%	86.4%	89.2%	88.9%	88.6%	79.8%	73.6%	84.4%
1,774	1,768	1,762	1,763	1,771	1,768	1,758	1,755
65,141	83,181	90,306	86,756	88,997	78,561	71,942	73,411
36,720	47,048	51,252	49,209	50,253	44,435	40,923	41,830

CG&E Statistics

RESIDENTIAL RATE - OHIO
1996

	JAN	FEB	MAR	APR
SAMPLE STATISTICS				
CUSTOMERS IN SAMPLE	143	155	149	158
MAXIMUN DEMAND (KW/CUST.)				
CLASS MAX. DIV. AT RS PEAK	2.974	2.904	2.442	1.874
DAY,DATE	SUN,07	SUN,04	FRI,08	MON,08
TIME ENDED	7:00PM	7:30PM	7:45PM	8:30PM
RELATIVE PRECISION	8.4%	8.3%	11.5%	9.9%
AT TIME OF SYSTEM PEAK	2.477	2.118	2.165	1.411
DAY, DATE	FRI,19	MON,05	FRI,08	MON,01
TIME ENDED	7:00PM	10:00AM	8:00AM	11:00AM
RELATIVE PRECISION	7.1%	7.5%	6.9%	9.7%
NONCOINCIDENT DEMAND	8.047	8.072	7.713	7.230
RELATIVE PRECISION	5.2%	4.8%	4.8%	5.3%
LOAD FACTOR				
BASED ON MAX. DIV. DEMAND	54.2%	52.3%	55.3%	56.9%
AT TIME OF SYSTEM PEAK	65.0%	71.7%	62.4%	75.5%
BASED ON NONCOIN. DEMAND	20.0%	18.8%	17.5%	14.7%
COINCIDENCE FACTOR				
BASED ON MAX. DIV. DEMAND	37.0%	36.0%	31.7%	25.9%
AT TIME OF SYSTEM PEAK	41.4%	34.6%	38.0%	27.1%
POPULATION STATISTICS				
TOTAL CUSTOMERS	553,137	553,881	553,680	553,577
MWH SALES	724,109	648,358	563,456	484,651
USAGE (KWH/CUST.)	1,309	1,171	1,018	875

RESIDENTIAL RATE - OHIO
1996

MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
159	154	156	157	153	155	158	158
2.668	3.149	2.945	3.329	2.478	1.343	2.131	2.723
SUN,19	SUN,30	SUN,07	WED,07	SUN,08	SUN,20	MON,11	THU,19
5:30PM	4:45PM	6:00PM	5:15PM	5:45PM	9:15AM	7:15PM	9:30PM
10.3%	8.8%	8.7%	7.5%	9.0%	17.9%	10.5%	8.6%
2.327	2.468	2.739	2.843	2.199	0.889	1.848	2.463
MON,20	MON,17	WED,17	TUE,06	THU,05	WED,02	TUE,26	THU,19
4:00PM	4:00PM	5:00PM	4:00PM	5:00PM	3:00PM	7:00PM	7:00PM
10.5%	8.4%	6.8%	6.3%	7.8%	17.2%	8.6%	6.5%
7.637	7.574	7.427	7.608	7.217	5.661	7.438	8.043
5.5%	5.5%	5.8%	5.3%	6.5%	7.5%	6.0%	4.7%
39.2%	43.1%	48.2%	45.5%	44.6%	57.1%	58.7%	51.4%
44.9%	55.0%	51.9%	53.2%	50.3%	86.3%	67.7%	56.8%
13.7%	17.9%	19.1%	19.9%	15.3%	13.6%	16.8%	17.4%
34.9%	41.6%	39.7%	43.8%	34.3%	23.7%	28.7%	33.9%
40.8%	42.7%	48.1%	47.9%	40.9%	22.8%	35.1%	41.8%
551,749	551,712	551,919	552,270	553,040	554,494	556,011	559,248
397,148	446,864	615,409	567,673	574,453	377,575	414,992	587,134
720	810	1,115	1,028	1,039	681	746	1,050

RESIDENTIAL RATE - KENTUCKY
1996

	JAN	FEB	MAR	APR
SAMPLE STATISTICS				
CUSTOMERS IN SAMPLE	93	125	126	134
MAXIMUN DEMAND (KW/CUST.)				
CLASS MAX. DIV. AT RS PEAK	2.859	2.893	2.414	1.835
DAY,DATE	WED,31	SUN,04	FRI,08	MON,01
TIME ENDED	7:45PM	9:00PM	8:15PM	8:30PM
RELATIVE PRECISION	21.7%	9.3%	18.9%	14.1%
AT TIME OF SYSTEM PEAK	1.970	2.311	2.288	1.337
DAY, DATE	THU,25	THU,01	FRI,08	MON,01
TIME ENDED	8:00AM	7:00PM	8:00PM	12:00NO
RELATIVE PRECISION	10.3%	12.5%	11.3%	14.6%
NONCOINCIDENT DEMAND	8.200	8.029	7.702	7.139
RELATIVE PRECISION	7.6%	7.3%	7.0%	7.6%
LOAD FACTOR				
BASED ON MAX. DIV. DEMAND	55.5%	49.5%	52.4%	53.7%
AT TIME OF SYSTEM PEAK	80.6%	62.0%	55.3%	73.8%
BASED ON NONCOIN. DEMAND	19.4%	17.8%	16.4%	13.8%
COINCIDENCE FACTOR				
BASED ON MAX. DIV. DEMAND	34.9%	36.0%	31.3%	25.7%
AT TIME OF SYSTEM PEAK	34.1%	38.6%	41.4%	26.2%
POPULATION STATISTICS				
TOTAL CUSTOMERS	108,308	109,872	109,138	109,355
MWH SALES	133,988	121,167	103,904	89,432
USAGE (KWH/CUST.)	1,237	1,103	952	818

RESIDENTIAL RATE - KENTUCKY
1996

MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
133	138	138	137	137	139	140	139
2.335	2.640	2.759	2.913	2.357	1.506	2.122	2.608
MON,20	SUN,30	WED,17	WED,07	SUN,08	THU,24	THU,28	THU,19
9:30PM	5:15PM	5:30PM	4:45PM	7:45PM	8:30PM	9:30AM	10:00PM
12.9%	10.7%	9.0%	9.6%	13.1%	12.6%	14.5%	11.6%
1.748	2.063	2.500	2.578	1.754	0.712	1.868	2.288
MON,20	MON,17	TUE,02	WED,21	THU,05	MON,28	TUE,26	THU,19
4:00PM	4:00PM	5:00PM	5:00PM	3:00PM	3:00PM	8:00PM	7:00PM
12.2%	12.6%	7.6%	7.5%	9.2%	10.9%	8.9%	7.1%
6.671	7.140	7.324	7.161	6.714	6.943	7.256	7.436
6.5%	6.9%	7.1%	8.5%	8.9%	8.8%	7.4%	6.6%
40.1%	46.4%	51.1%	50.0%	43.0%	58.3%	57.3%	51.0%
53.6%	59.3%	56.4%	56.4%	57.8%	123.4%	65.1%	58.2%
14.1%	17.1%	19.3%	20.3%	15.1%	12.7%	16.8%	17.9%
35.0%	37.0%	37.7%	40.7%	35.1%	14.4%	29.3%	35.1%
35.0%	37.2%	44.6%	46.9%	35.0%	21.7%	35.8%	42.6%
113,259	111,945	110,747	110,462	111,019	112,139	111,578	111,294
73,659	84,387	116,858	109,125	108,653	69,959	76,739	110,868
650	754	1,055	988	979	624	688	996

DISTRIBUTION SERVICE - OHIO (SML/SEC)
1996

	JAN	FEB	MAR	APR
SAMPLE STATISTICS				
CUSTOMERS IN SAMPLE	131	141	139	145
MAXIMUN DEMAND (KW/CUST.)				
CLASS MAX. DIV. AT DM PEAK	2.817	2.917	2.672	2.669
DAY,DATE	WED,24	MON,05	MON,04	MON,22
TIME ENDED	12:00NO	9:30AM	9:45AM	2:45PM
RELATIVE PRECISION	13.3%	10.5%	13.2%	13.8%
AT TIME OF SYSTEM PEAK	1.689	2.903	1.681	2.490
DAY, DATE	FRI,19	MON,05	FRI,08	MON,01
TIME ENDED	7:00PM	10:00AM	8:00AM	11:00AM
RELATIVE PRECISION	10.6%	10.2%	11.2%	10.5%
NONCOINCIDENT DEMAND	5.841	5.921	5.634	6.034
RELATIVE PRECISION	11.4%	10.2%	11.2%	10.0%
LOAD FACTOR				
BASED ON MAX. DIV. DEMAND	58.8%	56.4%	54.6%	52.8%
AT TIME OF SYSTEM PEAK	98.0%	56.7%	86.7%	56.6%
BASED ON NONCOIN. DEMAND	28.3%	27.8%	25.9%	23.4%
COINCIDENCE FACTOR				
BASED ON MAX. DIV. DEMAND	48.2%	49.3%	47.4%	44.2%
AT TIME OF SYSTEM PEAK	33.2%	56.3%	34.1%	47.9%
POPULATION STATISTICS				
TOTAL CUSTOMERS	34,475	34,763	34,827	34,786
MWH SALES	43,591	42,009	38,345	37,228
USAGE (KWH/CUST.)	1,264	1,208	1,101	1,070

DISTRIBUTION SERVICE - OHIO (SML/SEC)
1996

MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
146	144	142	145	138	141	138	136
3.288	3.230	3.584	3.652	3.244	2.660	2.498	2.700
MON,20	WED,19	TUE,02	TUE,20	THU,05	WED,02	TUE,26	MON,09
3:00PM	2:30PM	1:15PM	2:00PM	12:45PM	1:45PM	12:00NO	11:45AM
11.6%	11.0%	9.2%	9.6%	12.3%	12.5%	13.4%	11.2%
2.965	2.927	2.267	3.292	2.070	2.602	1.557	1.734
MON,20	MON,17	WED,17	TUE,06	THU,05	WED,02	TUE,26	THU,19
4:00PM	4:00PM	5:00PM	4:00PM	5:00PM	3:00PM	7:00PM	7:00PM
11.7%	10.8%	9.9%	9.3%	11.6%	12.2%	11.8%	10.6%
6.186	5.803	6.224	6.275	5.834	5.564	5.736	5.689
10.7%	11.0%	10.9%	10.5%	12.0%	12.3%	12.1%	11.4%
43.8%	48.9%	49.1%	51.0%	44.3%	48.6%	57.0%	54.9%
48.5%	54.0%	77.6%	56.6%	69.4%	49.7%	91.5%	85.4%
23.3%	27.2%	28.3%	29.7%	24.6%	23.2%	24.8%	26.0%
53.2%	55.7%	57.6%	58.2%	55.6%	47.8%	43.5%	47.5%
54.9%	57.0%	41.5%	59.7%	40.8%	55.3%	32.2%	35.2%
34,933	35,069	35,254	35,274	35,395	35,164	35,268	35,222
34,010	36,790	46,488	44,264	44,570	33,579	33,263	41,066
974	1,049	1,319	1,255	1,259	955	943	1,166

DISTRIBUTION SERVICE - KENTUCKY (LESS THAN 12.5KV)
1996

	JAN	FEB	MAR	APR
SAMPLE STATISTICS				
CUSTOMERS IN SAMPLE	142	159	153	169
MAXIMUN DEMAND (KW/CUST.)				
CLASS MAX. DIV. AT DS PEAK	13.370	14.312	13.039	12.596
DAY,DATE	FRI,19	MON,05	FRI,08	MON,22
TIME ENDED	11:30AM	10:45AM	10:15AM	12:00NO
RELATIVE PRECISION	8.2%	6.6%	8.1%	8.4%
AT TIME OF SYSTEM PEAK	10.931	9.813	9.172	12.186
DAY, DATE	THU,25	THU,01	FRI,08	MON,01
TIME ENDED	8:00AM	7:00PM	8:00PM	12:00NO
RELATIVE PRECISION	7.8%	6.1%	8.0%	7.2%
NONCOINCIDENT DEMAND	20.618	21.911	20.965	21.785
RELATIVE PRECISION	8.5%	7.8%	9.5%	7.7%
LOAD FACTOR				
BASED ON MAX. DIV. DEMAND	65.4%	59.4%	60.9%	59.9%
AT TIME OF SYSTEM PEAK	79.9%	86.7%	86.6%	62.4%
BASED ON NONCOIN. DEMAND	42.4%	38.8%	37.9%	34.6%
COINCIDENCE FACTOR				
BASED ON MAX. DIV. DEMAND	64.8%	65.3%	62.2%	57.8%
AT TIME OF SYSTEM PEAK	58.5%	49.2%	48.2%	61.1%
POPULATION STATISTICS				
TOTAL CUSTOMERS	10,057	10,325	10,210	10,177
MWH SALES	67,647	64,606	60,608	57,839
USAGE (KWH/CUST.)	6,726	6,257	5,936	5,683

DISTRIBUTION SERVICE - KENTUCKY (LESS THAN 12.5KV)
1996

MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
167	167	167	167	169	169	169	166
16.725	16.358	17.072	21.491	14.652	14.505	13.800	13.307
MON,20	MON,24	WED,17	THU,22	FRI,06	WED,02	WED,13	FRI,20
12:45PM	12:30PM	1:45PM	12:15PM	11:45PM	12:45PM	10:15AM	10:00AM
7.4%	6.9%	12.7%	8.4%	15.4%	10.3%	16.6%	7.7%
14.146	14.500	13.262	16.513	13.606	10.886	8.971	10.07
MON,20	MON,17	TUE,02	WED,21	THU,05	MON,28	TUE,26	THU,19
4:00PM	4:00PM	5:00PM	5:00PM	3:00PM	3:00PM	8:00PM	7:00PM
6.5%	6.1%	8.1%	5.5%	7.6%	7.1%	8.3%	7.4%
25.651	26.310	25.793	31.011	21.488	22.981	21.589	22.137
12.3%	13.7%	12.7%	9.5%	15.1%	12.4%	13.0%	11.4%
48.9%	57.0%	57.1%	55.0%	50.4%	53.6%	56.4%	59.4%
57.8%	64.3%	73.5%	71.6%	55.5%	71.5%	86.8%	78.5%
31.9%	35.4%	37.8%	38.1%	34.4%	33.9%	36.0%	35.7%
65.2%	62.2%	66.2%	69.3%	68.2%	63.1%	63.9%	60.1%
60.7%	61.5%	56.2%	58.3%	68.2%	54.1%	46.2%	51.0%
10,473	10,330	10,430	10,376	10,375	10,328	10,395	10,360
58,874	65,559	74,316	84,178	62,582	59,196	56,065	65,870
5,621	6,347	7,125	8,113	6,032	5,731	5,393	6,358

Appendix

Glossary of Terms

Average Demand—kWh usage during a specified interval, divided by the number of hours in that interval. Demand is measured in kilowatts (kW).

Class—Customers who have similar specified load characteristics or uses (residential, commercial, industrial) and are served under one rate schedule (RS, CS, LLF, MLF, etc.).

Coincident Demand at the Time of System Peak—The sum of two or more demands which occur in the same time interval as the system peak.

Coincident Factor—(Reciprocal of Diversity Factor)-A measure in ratio form of the extent to which a set of customers, group or class maximum demands coincide. It is the ratio of the diversified maximum demand of a group of customers to the sum of the maximum demands of the individual components of the group.

Control Area Load—The demand (measured in MW) on an electric system or the amount of electricity required for each hour of each day. This measure is confined to the company's service territory. Alternatively, the total generation in the control area plus the net interchange of power from the interconnected utilities.

Demand—The rate at which electric energy is delivered to or by a system, part of a system, or a piece of equipment. It is expressed in kW or other suitable unit at a given instant or averaged over any designated period of time.

Demand Interval—The period of time during which the electric energy flow or load is averaged in determining demand, such as 60-minute, 30-minute, 15-minute or instantaneous.

Diversified Demand—The sum of the simultaneous demands of a group of customers. Determined by direct measurement or by the addition of the load curves of the individual customers constituting the group or class.

Diversity Factor—(Reciprocal of Coincident Factor) The ratio of the noncoincident maximum demands to the class maximum diversified demand during the same time interval within the same class.

Energy—The kWh supplied to or used by an individual customer, a group of customers, or a class of customers.

Group—Customers with similar characteristics within a class: RS (Class) X061 (Group)-residences with electric heat and electric water heating.

Load—The amount of electric power delivered or required at any specific point or points on a system.

Load Characteristics—All or each of the features of the electric service rendered, including the quantity of energy supplied, the load or demand, the time of its occurrence, and derivable factors, such as coincidence factor and load factor.

Load Curve—A curve on a chart showing power (kW) supplied, plotted against time of occurrence, and illustrating the varying magnitude of the load during the period covered.

Load Factor—The ratio of the kWH usage in a time period to the product of the maximum load and the number of hours in the period, multiplied by 100:

$$\frac{\text{kWh} \times 100}{(\text{Hours in Period} \times \text{Maximum Demand})} = \text{Load Factor}$$

Noncoincident Maximum Demand—The sum of two or more individual customer maximum demands. Meaningful when a time interval is established (day, week, month or year)

Rate Code—Grouping customers, with like requirements for service, for billing, books and records.

System Peak—The highest 60 minute integrated control area demand during a specific measuring period (i.e., annually, monthly, etc.). System Peak can be based on Control Area, Native or Production criteria.

Section 5(a)(4) Weather Normalized Energy and Demand Levels

This information is contained in the attached set of tables.

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PSI ENERGY
ACTUAL ENERGY SALES IN KWH (THOUSANDS)
1990-1998 BILLED

YEAR	RESIDENTIAL	%CH	COMMERCIAL	%CH	INDUSTRIAL	%CH	PUBLIC STREET & HIGHWAY LIGHTING	%CH	TOTAL RETAIL SALES	%CH	SALES FOR RESALE	%CH	TOTAL SALES	%CH
1990	5,780,965	2.5	4,853,767	3.8	7,702,316	10.2	58,339	1.4	18,395,387	5.9	3,691,354	-1.7	22,086,741	4.6
1991	6,248,582	8.1	5,148,085	6.1	7,955,596	3.3	58,313	0.0	19,410,576	5.5	3,868,225	4.8	23,278,801	5.4
1992	5,974,309	-4.4	5,149,539	0.0	8,353,505	5.0	59,210	1.5	19,536,563	0.6	3,934,762	1.7	23,471,325	0.8
1993	6,589,828	10.3	5,445,120	5.7	8,728,425	4.5	59,788	1.0	20,823,161	6.6	4,224,550	7.4	25,047,711	6.7
1994	6,642,940	0.8	5,609,893	3.0	9,279,380	6.3	61,212	2.4	21,593,425	3.7	4,261,812	0.9	25,855,237	3.2
1995	6,940,905	4.5	5,810,210	3.6	9,650,345	4.0	63,038	3.0	22,464,498	4.0	4,465,068	4.8	26,929,566	4.2
1996	7,200,655	3.7	5,925,737	2.0	10,015,319	3.8	64,055	1.6	23,205,766	3.3	4,640,566	3.9	27,846,332	3.4
1997	7,058,264	-2.0	5,969,256	0.7	10,242,033	2.3	64,859	1.3	23,334,412	0.6	4,740,906	2.2	28,075,318	0.8
1998	7,284,429	3.2	6,288,073	5.3	10,789,845	5.3	65,465	0.9	24,427,812	4.7	4,982,402	5.1	29,410,214	4.8

PSI ENERGY
WEATHER-NORMALIZED ENERGY SALES IN KWH (THOUSANDS)
1990-1998 BILLED

YEAR	RESIDENTIAL	%CH	COMMERCIAL	%CH	INDUSTRIAL	%CH	PUBLIC STREET & HIGHWAY LIGHTING	%CH	TOTAL RETAIL SALES	%CH	SALES FOR RESALE	%CH	TOTAL SALES	%CH
1990	6,109,324	6.7	4,935,796	5.1	7,702,316	10.2	58,339	1.4	18,805,775	7.6	3,871,566	1.7	22,677,341	6.6
1991	6,071,122	-0.6	5,060,053	2.5	7,955,596	3.3	58,313	0.0	19,145,084	1.8	3,767,110	-2.7	22,912,194	1.0
1992	6,296,922	3.7	5,252,530	3.8	8,353,505	5.0	59,210	1.5	19,962,167	4.3	4,120,483	9.4	24,082,650	5.1
1993	6,537,109	3.8	5,423,340	3.3	8,728,425	4.5	59,788	1.0	20,748,662	3.9	4,194,133	1.8	24,942,795	3.6
1994	6,636,297	1.5	5,615,503	3.5	9,279,380	6.3	61,212	2.4	21,592,392	4.1	4,259,255	1.6	25,851,647	3.6
1995	6,456,195	-2.7	5,348,750	-4.8	9,650,345	4.0	63,038	3.0	21,518,328	-0.3	4,171,882	-2.1	25,690,210	-0.6
1996	6,585,508	2.0	5,606,159	4.8	10,015,319	3.8	64,055	1.6	22,271,041	3.5	4,234,999	1.5	26,506,040	3.2
1997	7,270,831	10.4	6,033,970	7.6	10,229,714	2.1	64,860	1.3	23,599,375	6.0	4,824,682	13.9	28,424,057	7.2
1998	7,513,451	3.3	6,289,732	4.2	10,783,945	5.4	65,474	0.9	24,652,602	4.5	5,069,663	5.1	29,722,265	4.6

PSI ENERGY
ACTUAL AND WEATHER-NORMALIZED PEAKS (MW)
1990-1998

	SUMMER		WINTER	
YEAR	ACTUAL	WEATHER NORMALIZED	ACTUAL	WEATHER NORMALIZED
1990	4,642	4,700	4,418	4,141
1991	4,907	4,797	4,136	4,154
1992	4,827	5,026	4,266	4,157
1993	5,110	5,136	4,461	4,255
1994	5,161	5,080	4,937	4,611
1995	5,581	5,581	4,657	4,696
1996	5,623	5,685	4,949	4,889
1997	5,676	5,747	5,102	5,165
1998	5,705	5,766	4,665	4,714

Section 5(a)(8) Explanation of Why End-Use Methodology Was Not Used

Many different forecasting methodologies exist, each with its own strengths and weaknesses. Historically, PSI Energy has projected energy requirements through econometric analysis. Econometric methods are a means of representing economic behavior through statistical techniques such as regression analysis. The primary factors affecting energy use, such as income, employment, price, weather and the like are included in the equations used to project energy requirements.

In PSI's view, the forecasts derived from these models have appeared to be reasonable. In addition, these models previously have been presented to, and accepted by, the IURC in many formal proceedings over the past few years. However, PSI continuously reviews its forecasting methodology and makes modifications and refinements each year to make the forecasting methodology as accurate and reliable as possible, given all the variables and uncertainties involved.

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Section 6(a)(4) and (c)(2) Air Emissions

The air emissions projections for Cinergy's existing and planned units is voluminous in nature. This data will be made available to appropriate parties for viewing at Cinergy offices and at other locations during normal business hours. Please contact Diane Jenner at (317) 838-2183 for more information.

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Sections 6(b)(3) and 8(8)(C) Avoided Cost

The avoided costs of the DSM included in this IRP were based on the energy market price forecast. Cinergy considers this forecast to be a trade secret and confidential and competitive information. It will be made available to appropriate parties for viewing at Cinergy offices during normal business hours upon execution of an appropriate confidentiality agreement or protective order. Please contact Diane Jenner at (317) 838-2183 for more information.

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Sections 6(b)(6),(7) and 7(b) PSI DSM Program Data

The DSM Program Data which is contained in DSManager input and output summary reports is voluminous in nature. This data will be made available to appropriate parties for viewing at Cinergy offices during normal business hours. Please contact Van Needham at (513) 287-2609 for more information.

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Section 6(b)(8) Annual Penetrations Utilized for PSI DSM Programs

The Annual Penetrations are shown below:

Total Penetration for PSI Energy's Current Demand - Side Management Programs
Program Years 2000 - 2002
DSM Settlement Agreement & 1999 IRP

Year	Motors (1)	Lighting (1)	HVAC (1)	Residential Incentives (2)	Smart $aver (3)
2000	0.04%	1%	1%	1%	32%
2001	0.04%	1%	1%	1%	32%
2002	0.04%	1%	1%	1%	32%

(1) Based upon number of PSI customers at or below 500 kW peak demand.
(2) Based upon the number of residential customers with electric heat and/or water heat.
(3) Based upon the number of new completions.

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BENEFIT/COST TEST MATRIX

	Participant Test	Utility Test	Ratepayer Impact Test	Total Resource Test	Societal Test
Benefits:					
Customer Electric Bill Decrease	x				
Customer Non-electric Bill Decrease	x				
Customer O&M and Other Cost Decrease	x			x	x
Customer Income Tax Decrease	x			x	
Customer Investment Decrease	x			x	x
Customer Rebates Received	x				
Utility Revenue Increase			x		
Utility Electric Production Cost Decrease		x	x	x	x
Utility Generation Capacity Credit		x	x	x	x
Utility Transmission Capacity Credit		x	x	x	x
Utility Distribution Capacity Credit		x	x	x	x
Utility Administrative Cost Decrease		x	x	x	x
Utility Cap. Administrative Cost Decrease		x	x	x	x
Nonelectric Acquisition Cost Decrease				x	x
Utility Sales Tax Cost Decrease		x	x	x	
Costs:					
Customer Electric Bill Increase	x				
Customer Non-electric Bill Increase	x			x	
Customer O&M and Other Cost Increase	x			x	x
Customer Income Tax Increase	x			x	
Customer Capital Investment Increase	x			x	x
Utility Revenue Decrease			x		
Utility Electric Production Cost Increase		x	x	x	x
Utility Generation Capacity Debit		x	x	x	x
Utility Transmission Capacity Debit		x	x	x	x
Utility Distribution Capacity Debit		x	x	x	x
Utility Rebates Paid		x	x		
Utility Administrative Cost Increase		x	x	x	x
Utility Cap. Administrative Cost Increase		x	x	x	x
Nonelectric Acquisition Cost Increase				x	x
Utility Sales Tax Cost Increase		x	x	x	

Benefit/Cost Ratio = Total Benefits/Total Costs

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Section 8(8)(D) Impact of a Planned Addition on Rates

Information concerning the impact of each individual planned resource addition by itself is not available and is not useful because an IRP, by definition, is an integrated combination of resources which together provide energy services in a reliable, efficient, and economic manner while factoring in environmental considerations.

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