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A STRUCTURE OF THE ELECTRIC UTILITY INDUSTRY, 1990

Final Report

By
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November 1979

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University of Illinois at Urbana-Champaign
Urbana, Illinois

U. S. DEPARTMENT OF ENERGY

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FINAL REPORT

A STRUCTURE OF THE ELECTRIC UTILITY INDUSTRY, 1990

by

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Revised April 1980

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OBJECTIVE

This memo attempts to create a vector of normalized inputs to a hypothetical 1990 electric utility industry. Inputs and outputs from the industry are all considered as homogeneous components of Bureau of Economic Analysis (BEA) economic sectors at approximately the 2-digit (83-sector) level of aggregation. While the sector definitions are BEA-compatible, our vector is created at a 90-sector level of detail for use within the Energy Research Group (ERG) energy input-output model as described in ERG Document 214 [9]. In I-O terminology, we are creating a column of the direct requirements or A matrix for BEA sector 68.01, electric utilities. Note that the ERG I/O model is a mixed units model, with energy sectors (1-5) trading in Btu and all other sectors (5-90) trading in dollars.

METHODOLOGY

The basic method used to create the vector is as follows:

A. From electric industry sources, we obtain a projection of the mix of generating technologies projected to be in use in the industry in 1990 [4].

B. For each of these technologies, we obtain an input-output description (A column) describing only the normalized inputs per unit generated output. Note that within these vectors technology and industry practices are basically frozen in a scale-insensitive, linear description applicable to a single historic year. However, direct energy inputs to each generating technology are modified, if necessary, to reflect anticipated changes and most other minor inputs are not expected to change much.

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C. These technological descriptions stem from two sources, the Bechtel Energy Planning and Supply Model [3] and the Brookhaven National Laboratories [1]. Both data sources furnish data requiring much manipulation before it is compatible with a hybrid I/O model, such as the allocation of misc. inputs, price level adjustment, sector aggregation, etc. These manipulations are described further below.

D. The technologies are linearly weighted and combined to produce a single aggregate generating-technology vector for the 1990 industry. To this we add a normalized 90-order vector of electric utility industry non-generating overhead based on the 1967 industry. This consists of the meter-reading, repair, billing, and public relations apparatus of the industry and is assumed to vary little between now and 1990.

DATA SOURCES AND DETAILED METHODOLOGY NOTES

We key our notes to the four steps noted above.

A. Generating mix is taken from the National Electric Reliability Council, 1979 [4], as shown in Table 1 and the accompanying notes. Sources contributing 1% or less to the total projected kWh generation in 1990 are ignored.

B, C: First of all, note that direct energy (fuel) inputs to all vectors are handled independently as discussed in the section below. The coal, oil, gas, and coal liquids generating technologies are all taken from BNL 50532 [1] which we identify as BNLFOS. Note that except for fuel inputs, which we handle separately, they found insignificant operating differences between fossil plants. Light water reactors and hydroelectric plants are also taken from this BNL

source and called BNLLWR and BNLHYD, respectively.

These vectors are listed at 110-sector detail, directly aggregatable to our 90 sector definitions using a bridge matrix called BRDGBNL. This process is described in ERG Technical Memo 118.

The pump storage and geothermal components are taken from operating descriptions in the Bechtel Energy Planning and Supply Model [3] and reaggregated via a bridge program called BRBTHOP described in ERG T.M. 119[4]. In addition, these vectors have lumped miscellaneous categories we disaggregate using a normalized vector called MISCMAT derived in Tech. Memo 119. Briefly, the vector is a normalized distribution of all non-overhead, non-generating expenses derived by comparing the weighted sum of generating and overhead activities in 1967 with the actual structure of the industry that year as determined by BEA [5]. These vectors are also deflated to 1967 price levels using deflators documented in ERG T.M. 117 [10].

D. The electric industry overhead is also aggregated from BNL 50532 using BRDGBNL and is already in the correct years' dollars and normalized per unit electric output.

The entire program is attached as Appendix A. The resulting A vector is shown as Table 5, along with the conventional 1967 A columns for 68.01

Direct Energy Costs

In this section we produce values for direct energy inputs to all energy facilities used by the electric utility industry in 1990

(Table 4). The direct energy cost figures used depend somewhat on the source of the non-energy technology data. All plants have O & M petroleum use derived from Bechtel data specified in 1978 dollars. We use a price for direct products of .377 \$/Gal. 1978 from Paul Paskert of Bechtel. Self-consumption of electricity and related data is shown in Table 3. Assumed annual outputs, rated capacity, and capacity factor for these (and also the remaining units) are shown in Table 2.

For the fossil plants, fuel use is computed based on the plant heat rate taken from the estimate of Pete Niggard of FERC [7]. We recognize that plant heat rate has generally increased over the last several years after a long period decline as environmental controls take their toll. We assume that improvements in technology will approximately balance out environmental losses such that the 1977 heat rate will approximately prevail in 1990. Power plant self-consumption is taken from FERC statistics as summarized in Table 3 [8].

Nuclear fuel presents a special problem. Known to be extremely energy intensive in its production, its energy content found through input-output analysis is far too low due to its classification in Sector 27.01, chemical products. We follow the approach taken by Bullard, et al [11], i.e. adding to power plant electricity self-use a term to account for enrichment and other fuel cycle energy use. This bypasses Sector 27.01 entirely by treating all fuel cycle energy costs as if they were performed in-plant. From [11], total fuel cycle energy cost for the average nuclear plant adds .18240 Btu/Btu of electric self-use.

CORRECTION FOR DEPRECIATION CAPITAL

In this section we discuss the method of computing the allocated annual depreciation of capital plant associated with the hypothetical 1990 electric utility industry. Our method basically consists of dividing vectors of capital purchases needed to create a single prototype power plan of a given type by its lifetime output in Btu electricity (Btue). These normalized vectors are then weighted by the projected generating mix in Table 1 to produce a single depreciation capital vector (\$1967 per Btue).

The calculation of the individual prototype power plant depreciation vectors is similar to the algorithm used to describe operating inputs above. All capital data are from the Bechtel ESPM and processed by

- (a) rearranging sectors to conform to BEA definitions. This is a tricky process -- see ERG TM 119 for further information on this;
- (b) allocation of miscellaneous Bechtel categories by exactly the same technique as above. This introduces some error, as the miscellaneous allocation procedure was derived for operating rather than capital inputs. Data here are, however, generally several orders of magnitude lower than directly allocated data;
- (c) allocations of margins per the same technique as above. Again, this is based on margins on operating purchases and errors are of a relatively low order of magnitude.

- (d) More Bechtel data list only refined petroleum direct energy inputs to electric utility capital programs;
- (e) Unlike operating inputs, capital cost vectors are subject to escalation during construction. We apply this escalation proportionately to all inputs based on their original estimate, i.e., assign a constant inflation rate for all sector inputs.

Pump storage capital has been omitted as it appears negligible. Table 6 displays a summary of relevant data. Addition of allocated depreciation adds about 20% to the "cost," or total of non-energy inputs, of the hypothetical industry described here.

CONCLUSION

A 90-order ERG-compatible vector of projected 1990 electric utility operating inputs has been produced subject to the above assumptions. The vector is listed as ERGELIN. The normalized vector of depreciation capital inputs is stored as ELINDEP. The sum of the two is the final depreciation-corrected vector of 1990 electric utility industry inputs and is stored as EGELIND. All vectors have units Btu/Btue (1st five sectors) and \$1967 per million Btue. Table 5 shows all vectors in final form.

Table 1.
Weighted Projected Generating Mix, 1990 - Electric Utility Industry

ENERGY TYPE	1979 ^a 10 ⁹ kWh	1988 ^a 10 ⁹ kWh	AVERAGE ANNUAL GROWTH (Decline) 10 ⁹ kWh	1990 10 ⁹ kWh	FRACTION OF GENERATION	WEIGHT IN ERG VECTOR
Coal	1095.0	1726.6	70.18	1867.0	.47	.48
Oil-Steam	356.6	398.5	4.66	407.8	.10	.10
Gas-Steam	251.5	109.7	(15.76)	78.2	.02	.02
Sub-Fossil	-	-	-	-	.59	.60
Nuclear	317.4	959.2	71.31	1101.8	.28	.29
Hydro	237.4	242.9	.61	244.1	.06	.06
Other	9.7	9.7	-	9.7	.002	0
Combined Cycle Oil	4.8	29.8	2.78	34.4	.01	0
Gas	11.1	8.1	(.33)	7.9	.002	0
Pump Storage In	16.6	30.4	1.53	33.4	.01	0
Out	11.8	21.7	1.1	23.9	.01	0
Net Use	4.8	8.7	.43	9.6	.002	0
Geothermal	40.7	153.2	12.50	178.2	.05	.05
Gas Turbine	4.2	2.4	(.20)	2.0	.001	0
Oil Turbine	17.9	19.2	.14	19.5	.01	0
Sub-Turbine	-	-	-	-	.01	0
TOTAL				3959.7	1.00	1.00

^aData Summary to 9th Annual Review, NERC, Princeton, N.J., 7/79 [4]

Table 2.

Assumed Facility Generating Characteristics, 1990.

FACILITY	RATED CAPACITY	CAPACITY FACTOR ^c	ANNUAL OUTPUT ^c (10 ⁹ kWh)	HEAT RATE ^a (Btu/kWh)	O & M PETROLEUM USE ^c [million \$78] (Btu/kWh)
Coal-fired Steam	800 MWe	.60	4.906	9,500	-
Oil-fired Steam	800 MWe	.55	3.854	9,600	-
Gas-fired Steam	800 MWe	N.A.	N.A.	9,700	-
Hydro	200 MWe	.56	.981	n.a.	-
Geothermal	200 MWe	.75	1.314	n.a.	-
Nuclear	1110 MWe	.71	6.842	.18240 Btu/Btu ^b	.049774 (2.66)

N.A. = Not Available

n.a. = Not applicable

- means zero or negligible

^a[7]^b[11], p. 25. Includes fuel cycle energy use.^c[3]

Table 3.
Sample Power Plant Electricity Self-Use.

PLANT	COMPANY	LOCATION	CAPACITY (MWe)	FUEL TYPE	GROSS GEN. (MWh)	SELF-USE	% SELF-USE (our assumption)
Haas ^a	PG&E	Fresno, CA	135	Hydro	909,403	1,455	.16
Black ^a	PG&E	Montgomery Creek, CA	155	Hydro	664,486	4,472	.63
Balch ^a	PG&E	Fresno, CA	97	Hydro	824,885	2,012	.24
Geysers ^a	PG&E	Cloverdale, CA	559	Geothermal	3,093,879	118,228	3.8
Millington ^a	PSCNH	Millington, N.H.	414	No. 6 Oil	1,683,072	78,523	4.7
Merrimac ^a	PSCNH	Beau, N.H.	459	Coal	2,076,714	136,379	6.6
Bowen ^b	Geo.Pwr.Lite	Bartow Co., GA	3499	Coal	14,328,541	507,750	3.5
Wansley ^b	Geo.Pwr.Lite	Weisburg, GA	1940	Coal	6,618,045	398,684	6.0
Yates ^b	Geo.Pwr.Lite	Newnan, GA	1487	Coal/oil/gas	9,447,520	442,277	4.7
Hatch ^b	Geo.Pwr.Lite		850	Nuke	4,493,470	216,161	4.81
Clinton	IP	Clinton, IL	950		-	-	1.79*

*based on 933 net MW and 950 design MWe per NUREG 0030 v. 2, no. 2.

^aFERC form 12 Schedule 1 for utilities cited, 1978 per Marley

^bFink, EIA, (202) 252-6553, 11/21/79

Ibid per Pete Niggard, FERC Div. Interconn. and System Analysis, (202) 376-4449, 11/21/79.

Table 4.

Energy Inputs to Electric Generating Technologies, 1990 (Btu/Btue)

	COAL-FIRED ELECTRIC	OIL-FIRED ELECTRIC	GAS-FIRED ELECTRIC	GEOTHERMAL ELECTRIC	HYDRO- ELECTRIC	LIGHT WATER REACTOR	TOTAL INDUSTRY (per Table/weights)
7.00	2.78	-	-	-	-	-	1.33000
8.00	-	-	-	-	-	-	-
31.01	-	2.81	-	-	-	.00078	.28178
68.01	.06	.047	.047	.038	.003	.18240	.08942
68.02	-	-	2.84	-	-	-	.05680

SOURCES: Electricity - see Table 3

Petroleum [3]

All Others- Table 2

Table 5.

ELECTRIC UTILITY A COLUMNS

(1-5 [Btu/Btu] 6-90 [\$67/Million Btu])

			Operating Inputs Only	Allocated Depreciation
			(ERGELIN)	Inputs Only
				(ELINDEP)
1	700	COAL MINING	1.33	0.
2	800	CRUDE PETRO. GAS	0.	0.
3	3101	PETRO REFIN PROD	.29178	.0113261709
4	6301	ELECTRIC UTIL	.08942	0.
5	6302	GAS UTILITIES	.0568	0.
6	100	LIVESTOCK	0.	0.
7	200	MISC AG PRODUCTS	0.	3.123341745695E-10
8	300	FOREST FISH PROD	0.	0.
9	400	AG FOR, FISH SER	0.	5.326795193084E-10
10	500	IRON ORE MINING	.00006291621230208	6.059633436674E-8
11	600	NONFERR MINING	.0001527378287049	1.413914468557E-7
12	900	STONE CLAY MIN	.0000180382324839	4.794066364335E-8
13	1000	CHEM MINERAL MIN	.00008947044465233	4.626201237645E-8
14	1100	NEW CONSTRUCTION	0.	.00001303386792869
15	1200	MAINT, REP CONST	.2260038017786	.0002496280941557
16	1300	ORDNANCE	.00004537000108601	3.55531065009E-8
17	1400	FOOD	.0003267642525163	6.253401076559E-7
18	1500	TOBACCO	.00006358254065753	1.261209201118E-7
19	1600	FABRIC & MILLS	.0003917413495908	8.890972171145E-7
20	1700	TEXTILE GOODS	.0006381737313572	.000001372078939927
21	1800	APPAREL	.002761865060731	.000002332357388405
22	1900	FAB TEXTILE PROD	0.	.004800378093228
23	2000	WOOD PRODUCTS	.0004739034260732	2.14330569306E-7
24	2100	WOOD CONTAINERS	0.	0.
25	2200	H'OLD FURNITURE	.00001827869452797	4.707327909293E-8
26	2300	FURN, FIXTURES	0.	7.69931158394E-8
27	2400	PAPER PRODUCTS	.006892625422584	.0003769636194374
28	2500	PAPERBOARD CONT	.0005772945311799	.00002134220585663
29	2600	PRINTING, PUBL	.004402353630142	.000005418563343658
30	2700	CHEM PRODUCTS	.1486154279801	.0000174579539465
31	2800	PLASTICS	.0004645681206633	.00000104906864829
32	2900	DRUGS, TOIL PREP	.002925466676255	.000002429153474506
33	3000	PAINTS	.0001251894555131	.000006292030304257
34	3102	PAVING	0.	1.785663286458E-9
35	3103	ASPHALT	0.	0.
36	3200	RUBBER PRODUCTS	.005132920318333	.0001818519961442
37	3300	LEATHER PRODUCTS	.00001819204799409	3.855273784295E-8
38	3400	FOOTWEAR	0.	0.
39	3500	GLASS PRODUCTS	.0004848219313606	.004360079918549
40	3600	STONE CLAY PROD	.0002493935198733	.002060112927185
41	3700	PRIM IR, STL MAHU	.004684238516183	.004960406284655
42	3800	PRIM NONFER MET	.003680637447035	.003456608529307
43	3900	METAL CONTAINERS	0.	0.
44	4000	HEATING, PLUMBING	.0034799	.07630012917515
45	4100	SCREW MACH PROD	.00006292347597349	1.125973541225E-7

46	4200	FAB METAL PROD	.007793682684497	.007463360045129
47	4300	ENGINES, TURBINES	.0003714867032009	.04995059971555
48	4400	FARM MACHINERY	.0001995046600101	3.643043410931E-7
49	4500	CONST, MINING EQ	.0001983917883541	.01297062422842
50	4600	MAT HANDLING EQ	0.	.002769872934666
51	4700	METALWORKING EQ	0.	0.
52	4800	SPEC IND MACH	0.	8.375836135231E-7
53	4900	GEN IND MACH	.007962429818739	.005518051750882
54	5000	MACH SHOP PROD	.0003526877813087	5.549501952617E-7
55	5100	DFC, COMPUT MACH	0.	6.469578371977E-7
56	5200	SERVICE IND MACH	0.	.003101859584106
57	5300	ELEC IND APPARAT	.009971535263533	.009934646923496
58	5400	H'OLD APPLIANCE	0.	0.
59	5500	ELEC LIGHT EQ	.01062287862702	.00001072226609945
60	5600	R-TV COMMUN EQ	.0002460135056951	5.829511222323E-7
61	5700	ELECTRONIC COMP	.002314	1.20040276078E-8
62	5800	ELECTRICAL EQUIP	.000432459775374	6.378774292004E-7
63	5900	MOTOR VEH & EQ	.001202250770354	9.121115233517E-7
64	6000	AIRCRAFT & PARTS	0.	0.
65	6100	TRANSPORT EQUIP	0.	0.
66	6200	PROF SCIENT SUPP	.00211012972668	.003027465876752
67	6300	OPTICAL SUPPLIES	.00001839349964672	5.836284494398E-8
68	6400	MISC MANUFACT	.0003972522315978	2.305065587034E-8
69	6501	RAILROAD	.08856721701295	.0004729771647522
70	6502	LOCAL TRANSPORT	0.	0.
71	6503	MOTOR FGT TRANSP	.02377912865928	.00004837422353979
72	6504	WATER TRANSPORT	.01167732804429	.000843902114589
73	6505	AIR TRANSPORT	.0001030895406584	.000003024323172633
74	6506	PIPE LINE TRANSP	.0002650138291398	.00003574372753
75	6507	TRANSP SERVICES	0.	0.
76	6600	COMMUNICATIONS	.02768796138658	.00003002035361697
77	6700	R-TV BROADCAST	0.	0.
78	6803	WATER, SANIT SER	.008714021422923	.000002234351596157
79	6900	WHOLE, RETAIL TR	.04647876038553	.00008759822479738
80	7000	FINANCE INSUR	.08223183086208	.1722857059729
81	7100	REAL ESTATE	.01753977782461	.009116179126795
82	7200	HOTELS, PERS SER	.004381269306216	.000008119599805134
83	7300	BUSINESS SERVICE	.1414455591227	.0008863827476235
84	7500	AUTO REPAIR	.01116391493026	.00001674046567571
85	7600	AMUSEMENTS	0.	0.
86	7700	MED, EDUC SER	.003590149489796	.00000277344494144
87	7800	FED GOVT ENTERP	.05182548149987	.0000250189172331
88	7900	ST, LOC GOVT ENT	.009205876788574	3.080207115674E-7
89	8100	BUSINESS, TRAVEL	.02868201730573	.00001446405548441
90	8200	OFFICE SUPPLIES	.006931442852001	.000007061325500241

			Total Inputs (EGELIND)	Depreciation Capital as a fraction of Operating Input*
1	700	COAL MINING	1.33	0.
2	800	CRUDE PETRO, GAS	0.	I
3	3101	PETRO REFIN PROD	.2931061709	.04019508446306
4	6801	ELECTRIC UTIL	.08942	0.
5	6802	GAS UTILITIES	.0568	I
6	100	LIVESTOCK	0.	I
7	200	MISC AG PRODUCTS	3.123341745695E-10	R
8	300	FOREST FISH PROD	0.	I
9	400	AG FOR, FISH SER	5.326795193034E-10	R
10	500	IRON ORE MINING	.00006297680863645	.0009631275016333
11	600	NONFERR MINING	.0001528792201517	.0009257133485178
12	900	STONE CLAY MIN	.00001808617314755	.002657725122799
13	1000	CHEM MINERAL MIN	.0000895167066652	.00051706474754
14	1100	NEW CONSTRUCTION	.00001303386792869	R
15	1200	MAINT, REP CONST	.2262534298727	.00110453050874
16	1300	ORDNANCE	.00004545555419251	.001885675654685
17	1400	FOOD	.000327390092624	.001915264912965
18	1500	TOBACCO	.00006370866157765	.001983577862847
19	1600	FABRIC & MILLS	.0003926304468079	.002269602680552
20	1700	TEXTILE GOODS	.0006395458103471	.00215000856743
21	1800	APPAREL	.00276419741812	.0008444863659587
22	1900	FAB TEXTILE PROD	.004800378098228	R
23	2000	WOOD PRODUCTS	.0004741177566425	.0004522663427062
24	2100	WOOD CONTAINERS	0.	I
25	2200	HOMEHOLD FURNITURE	.00001832576780706	.002575308593341
26	2300	FURN, FIXTURES	7.69931158394E-8	R
27	2400	PAPER PRODUCTS	.007269589042022	.05469086107629
28	2500	PAPERBOARD CONT	.0005986367370366	.03696935395007
29	2600	PRINTING, PUBL	.004407772193486	.001230833276672
30	2700	CHEM PRODUCTS	.1486328859341	.000117470670332
31	2800	PLASTICS	.000465617189312	.002258158925738
32	2900	DRUGS, TOIL PREP	.00292789582973	.0003303473405534
33	3000	PAINTS	.0001314814858173	.05026006606124
34	3102	PAVING	1.785663286450E-9	R
35	3103	ASPHALT	0.	I
36	3200	RUBBER PRODUCTS	.005314772314477	.03542856402714
37	3300	LEATHER PRODUCTS	.00001823060073193	.002119203230732
38	3400	FOOTWEAR	0.	I
39	3500	GLASS PRODUCTS	.00484490189991	8.993156428907
40	3600	STONE CLAY PROD	.002309506447059	8.260491003261
41	3700	PRIM IR, STL MANU	.009644644800838	1.058956811767
42	3800	PRIM NONFER MET	.007137245976342	.939133120023
43	3900	METAL CONTAINERS	0.	I
44	4000	HEATING, PLUMBING	.07978002917515	21.92595453178
45	4100	SCREW MACH PROD	.00006303606323261	.001789274234308
46	4200	FAB METAL PROD	.01525704272963	.9576166168497
47	4300	ENGINES, TURBINES	.05032203641875	134.4613394912
48	4400	FARM MACHINERY	.0001998689643512	.00182604426924
49	4500	CONST, MINING EQ	.01316901601677	65.3788361707
50	4600	MAT HANDLING EQ	.002769872934666	R

* R = No operating input, all depreciation capital
I = None of either input

51	4700	METALWORKING EQ	0.	I
52	4800	SPEC IND MACH	8.375836135231E-7	R
53	4900	GEN IND MACH	.01343043156962	.6930110376473
54	5000	MACH SHOP PROD	.000353242731504	.001573489577354
55	5100	DFC, COMPUT MACH	6.469578371977E-7	R
56	5200	SERVICE IND MACH	.003101859584106	R
57	5300	ELEC IND APPARAT	.01990618218703	.9963006358537
58	5400	H'OLD APPLIANCE	0.	I
59	5500	ELEC LIGHT EQ	.01063360089312	.001009355983055
60	5600	R-TV COMMUN EQ	.0002465964568173	.002369589915746
61	5700	ELECTRONIC COMP	.002314012004028	.000005187565949782
62	5800	ELECTRICAL EQUIP	.0004031476528032	.001590615979499
63	5900	MOTOR VEH & EQ	.001203162881877	.0007586699429465
64	6000	AIRCRAFT & PARTS	0.	I
65	6100	TRANSPORT EQUIP	0.	I
66	6200	PROD SCIENT SUPP	.005137595603432	1.434729741245
67	6300	OPTICAL SUPPLIES	.00001845186249166	.003173014709813
68	6400	MISC MANUFACT	.0003972752822537	.00005802523947474
69	6501	RAILROAD	.0890401941777	.005340318694705
70	6502	LOCAL TRANSPORT	0.	I
71	6503	MOTOR FGT TRANSP	.02382650288287	.002034399943029
72	6504	WATER TRANSPORT	.01252123015888	.07226842573316
73	6505	AIR TRANSPORT	.0001061128638311	.02933714216261
74	6506	PIPE LINE TRANSP	.0003007625566698	.1348938191114
75	6507	TRANSP SERVICES	0.	I
76	6600	COMMUNICATIONS	.0277179822452	.001084256735186
77	6700	R-TV BROADCAST	0.	I
78	6803	WATER, SANIT SER	.008716255774519	.0002564087793357
79	6900	WHOLE, RETAIL TR	.04656635861032	.00188469365514
80	7000	FINANCE INSUR	.2545175368349	2.095121854479
81	7100	REAL ESTATE	.02665595695141	.5197431357428
82	7200	HOTELS, PERS SER	.004389388906021	.001853252844698
83	7300	BUSINESS SERVICE	.1423319418703	.006266600048252
84	7500	AUTO REPAIR	.01118065539594	.001499515696803
85	7600	AMUSEMENTS	0.	I
86	7700	MED, EDUC SER	.003592927934737	.0007739078691116
87	7800	FED GOVT ENTERP	.0518505004171	.0004827532038107
88	7900	ST, LOC GOVT ENT	.009206184809285	.00003345913905232
89	8100	BUSINESS, TRAVEL	.02869648136121	.0005042900340737
90	8200	OFFICE SUPPLIES	.006938504177502	.001018738183624

Table 6.

Summary of Depreciation Capital Data in Projected 1990 Utility Industry

FUEL TYPE POWER PLANT	BECHTEL FACILITY NUMBER AND SIZE (MWe)	LIFETIME OUTPUT (billion kwhe)	ORIGINAL DATA FILE	MISC. ALLOCATED DATA FILE	FULLY COMPATIBLE DATA FILE
Coal - High Btu	E54 - 800 MWe	126.15	BFL 54 CL	BFL 54 IO	BFL 54 EG
Oil	E51 - 800 MWe	115.62	51	51	51
Gas - High Btu	E59 - 800 MWe	115.62	59	59	59
LWR	E64 -1100 MWe	205.26	64	64	64
Hydro	E67 - 200 MWe	58.86	67	67	67
Geothermal	E69 - 200 MWe	39.42	69	69	69

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