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Selected Residential Electric Rates and Rate Structures in the U. S. July 1979

David L. Caskey

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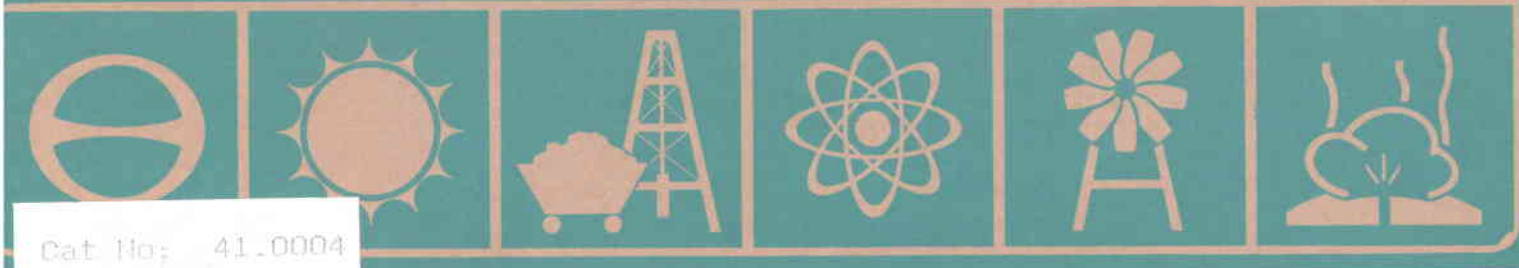

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SELECTED RESIDENTIAL ELECTRIC RATES AND RATE STRUCTURES IN THE U.S. JULY, 1979

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ABSTRACT

Residential electric rate structures, including fuel adjustments and other charges, for 16 U.S. cities were surveyed in July, 1979. Total bills for usages of 1000 kWh and 2000 kWh per month were determined. The average rate of increase in rates over the past three years was found to be 15% per year, compared to the general inflation rate of just over 7% per year for the same period. Present and proposed utility rates for Time-of-Day pricing and buyback are included.

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SELECTED RESIDENTIAL ELECTRIC RATES
AND RATE STRUCTURES IN THE U.S.
JULY, 1979

Introduction

This report provides an update to a 1976 electric rate survey of 13 cities,* and adds 3 new cities. Rates cited for July 1979 are inclusive of all fuel adjustments, indexing, taxes, or other surcharges. It is not known if the 1976 survey included all of these factors.

During this three-year period the annual percent increase in rates averaged 15%, with extremes of 6% (Madison, WI, and Grand Junction, CO) and 37% (Seattle). The general inflation rate for the same period was just over 7%.

Another purpose of the survey was to determine utility plans for handling Time-of-Day (TOD) pricing and buyback of power from customer owned generators (PV, wind turbines). The Public Utility Retail Pricing Act (PURPA) requires state regulatory bodies to examine both of these factors to ascertain if their use would be feasible and economic. Neither TOD ratios nor buyback ratios are specified in PURPA, except that it is recommended that buyback not exceed the marginal fuel cost of the utility at the time of buyback. That is, no capacity credit is to be allowed the customer. This may have implications for the proper mix of customer generation and/or storage capability.

The current situation seems to be that most utilities are investigating TOD pricing, but few are offering it, at least not to residential customers. As for buyback, most utilities aren't even thinking about it. Southern California Edison is supposedly willing to pay 100% whenever the occasion arises, but this could not be confirmed. In general,

* "An Economic Analysis of Solar Water and Space Heating," MITRE Corp., November, 1976.

early applications of wind turbines and photovoltaics involve generating capacity considerably smaller than the load, so the sellback problem is never addressed. The next five years will see considerable activity in these utility pricing strategies.

At least one utility believes that a system of graduated demand charges better tracks their actual cost-of-service than energy charges, even if TOD pricing is used. This is a new concept for residential pricing, although it has been used in a limited way with commercial and industrial customers. Such a rate system would greatly affect the configuration of a customer generation system, and enhance the desirability of storage.

Appendix A contains the detailed rate structure for each utility surveyed. Where rates vary within a service area, a representative rate was chosen.

Appendix B contains some existing, experimental, or proposed TOD pricing structures.

SUMMARY OF RATES
(July 1979)

		Av. Rate for: 1000 kWh/mo	2000 kWh/mo	'76 rate	Δ%†	APR*
Atlanta	S**	4.72¢	5.08¢			
	W	4.08	3.89	2.80	+ 45%	13%
Albuquerque, NM	S	6.44	6.67			
	W	6.36	6.53			
Bismarck		4.33	3.90	2.81	+ 54%	15%
Boston	S	8.14	7.14			
	W	7.09	5.81	4.60	+ 54%	15%
Charleston, SC	S	5.13	5.02			
	W	5.13	4.38	3.87	+ 33%	10%
Columbia, MO		4.74	4.54	3.49	+ 36%	11%
Dallas/Ft Worth	S	5.28	5.07			
	W	4.82	4.61	2.54	+ 90%	24%
Grand Junction		4.04	3.42	3.36	+ 20%	6%
Los Angeles		6.82	6.03	3.88	+ 76%	21%
Madison	S	5.31	5.21			
	W	4.44	4.02	3.69	+ 20%	6%
Miami		4.99	5.01	4.00	+ 25%	8%
Nashville		2.97	3.05			
New York City	S	13.9	13.9			
	W	11.6	11.2	6.36	+ 82%	22%
Phoenix	S	5.56	5.32			
	W	5.12	4.61			
Seattle		2.22	2.09	.86	+ 158%	37%
Washington, DC	S	4.94	5.20			
	W	4.26	4.25	3.53	+ 21%	7%
Average rate:	S	5.60	5.42			15%
	W	5.18	4.83			
				General Inflation:		7.3%

† Total Percentage Change from '76 to '79.

* Annual Percentage Rate Increase: 1976-1979

** S = Summer
W = Winter

APPENDIX A

Detailed Rate Structures

This appendix provides details of the various utility rate structures. These structures vary considerably. Some offer declining rates with increased usage, while others now charge more as usage increases (inverted rates). Over half of those surveyed now increase rates during their peak season (summer). None offer mandatory Time-of-Day (TOD) rates at this time; however, Madison Gas and Electric, as of January, 1979, offers an optional TOD system to all residential customers. The ratios are 7.5:1 in summer and 5.2:1 in winter. Southern California Edison is now in the midst of an experimental program to evaluate TOD rates for residential customers. Peak to off-peak rate ratios of 3:1, 5:1, 7:1, and 9:1 are being tested, each with two different peak time definitions. Public Service of New Mexico has filed new residential rates with the state PSC which include an optional TOD structure. (See Appendix B.)

Location:	Albuquerque, NM	
Utility:	Public Service Company of NM	
	Summer (June-Oct.)	Winter
Rates: (Overhead)	$1.60/month	$1.60/month
First 200 kWh:	4.994¢/kWh	4.994¢/kWh
Next 450 kWh:	4.594¢/kWh	4.594¢/kWh
All over 650 kWh:	4.094¢/kWh	3.894¢/kWh
Fuel adjustment:	1.5289¢/kWh	
Other adjustments:	none	
Tax:	4%	
Total bill for:	1000 kWh/month	2000 kWh/month
	$64.36 summer	$133.37 summer
	$63.63 winter	$130.56 winter

Comments: PNM's summer peak is only slightly greater than its winter peak; hence the rather insignificant seasonal differential.

Location: Atlanta, Georgia
Utility: Georgia Power Company

	Summer (June-Sept.)	Winter
Rates:	$3.50/month	$3.50/month
First 650 kWh:	1.8728¢/kWh	1.8728¢/kWh
All over 650 kWh:	3.3628¢/kWh	1.7528¢/kWh
Fuel adjustment:	none	
Other adjustments:	none	
Tax:	4%	
Total bill for:	1000 kWh/month	2000 kWh/month
	$28.54 summer	$63.52 summer
	$22.68 winter	$41.82 winter

Comments: Declining block rates in winter, inverted block in summer.

Location:	Bismarck, ND
Utility:	Montana-Dakota Utilities
Rates:	$3.50/month service charge plus:
First 1000 kWh:	3.78¢/kWh
Next 1000 kWh:	3.27¢/kWh
All over 2000 kWh:	2.60¢/kWh
Fuel adjustment:	0.197¢/kWh
Other adjustments:	none
Tax:	none

Total bill for:	1000 kWh	2000 kWh
	$43.27 summer or winter	$77.94

Comments: Low costs--primarily coal generation?

Location:	Boston, MA	
Utility:	Boston Edison	
	Summer (July-October)	Winter
Rates:		
First 15 kWh or less:	$2.06/mo	$2.06/mo
Next 35 kWh:	5.93¢/kWh	5.93¢/kWh
Next 50 kWh:	4.56¢/kWh	4.56¢/kWh
Next 50 kWh:	3.71¢/kWh	3.71¢/kWh
Next 150 kWh:	3.40¢/kWh	3.40¢/kWh
Next 84 kWh:	3.09¢/kWh	3.09¢/kWh
384 kWh		384 kWh
Next 616 kWh:	5.73¢/kWh	4.13¢/kWh
All over 1000 kWh:	3.2¢/kWh	1.6¢/kWh
Fuel adjustment:	2.9¢/kWh	
Other adjustments:	add 1.205% to all basic rates, as of 1/79	
Tax:	none	
Total bill for:	1000 kWh/month	2000 kWh/month
	$81.44 summer	$142.82 summer
	$70.91 winter	$116.10 winter

Comments: First 384 kWh is considered to be at a "lifeline" rate. Very large fuel adjustment charges.

Location:	Charleston, South Carolina	
Utility:	South Carolina Electric and Gas Company	
	Summer	Winter (Nov.-April)*
Rates:	$6.00/month plus:	$6.00/month plus:
First 1000 kWh:	4.334¢/kWh	4.334¢/kWh
All over 1000 kWh:	4.718¢/kWh	3.490¢/kWh
Fuel adjustment:	none	
Other adjustments:	none	
Tax:	4%	
Total bill for:	1000 kWh/mo.	2000 kWh/mo.
	$51.31 summer	$100.38 summer
	$51.31 winter	$ 87.61 winter*

*Winter rates apply only to all-electric house. Otherwise summer rates apply.

Location:	Columbia, MO	
Utility:	City of Columbia (municipal system)	
Rates:		
First 40 kWh:	7.35¢/kWh	
Next 60 kWh:	4.668¢/kWh	
Next 900 kWh:	3.510¢/kWh	
All over 1000 kWh:	2.878¢/kWh	
Fuel Adjustment:	.496¢/kWh	
Other Adjustments:	none	
Tax:	7.526% municipal	
	4.125% state	
Total bill for:	1000 kWh/mo.	2000 kWh/mo.
	$47.35	$90.79

Location:	Dallas, Texas	
Utility:	Dallas Power and Light	
	Summer (May-Nov.)	Winter
Rates:		
20 kWh or less:	$4.50	$4.50
All over 20 kWh:	2.78¢/kWh	2.33¢/kWh
Fuel Adjustment:	1.5589¢/kWh	
Other Adjustments:	none	
Tax:	4%	
Total bill for:	1000 kWh/mo.	2000 kWh/mo.
	$52.77 summer	$101.45 summer
	$48.19 winter	92.18 winter

Comments: linear rates--one rate for all usage. Basic rate is 20% higher in summer.

Location:	Grand Junction, CO
Utility:	Public Service of Colorado

Rates:	
30 kWh or Less:	$1.72
Next 70 kWh	4.317¢/kWh
Next 900 kWh:	3.467¢/kWh
All over 1000 kWh:	2.409¢/kWh

Fuel Adjustment:	0.2243¢/kWh
Other Adjustments:	Firm Purchased Power adj. (FPP): 0.0299¢/kWh
Tax:	5%

Total bill for:	1000 kWh	2000 kWh
	$40.41	$68.37

Comments: Rates given are <u>not</u> for all-electric homes. Contrary to most areas, PS of Colorado has <u>higher</u> rates for all-electric (about .5¢/kWh more).

Location:	Los Angeles, CA area (but not City of Los Angeles)
Utility:	Southern California Edison
Rates:	$2.00/month plus:
First 240 kWh:	3.915¢/kWh ("lifeline" rate)
All over 240 kWh:	4.647¢/kWh
Fuel Adjustment:	0.857¢/kWh for usage under 240 kWh 1.596¢/kWh for usage over 240 kWh
Other Adjustments:	none
Tax:	.11¢/kWh state tax, varying municipal taxes. Inglewood rate of 10% used here.

Total bill for:	1000 kWh	2000 kWh
	$68.20	$120.53

Comments: Rate is unvarying above "lifeline" amount. Unique in having a different fuel adjustment for the "lifeline" rate. Are experimenting with TOD rates; ratios of 3:1, 5:1, 7:1, and 9:1 are being tried, with two different time schedules for the peak rate.

Location:	Madison, WI	
Utility:	Madison Gas and Electric	
	Summer (June 1-Oct. 15)	Winter
Rates:	$2.00/month plus:	$2.00/month plus:
First 100 kWh:	4.2¢/kWh	3.6¢/kWh
Next 400 kWh:	4.2¢/kWh	3.5¢/kWh
Next 500 kWh:	4.2¢/kWh	3.2¢/kWh
All over 1000 kWh:	4.2¢/kWh	2.75¢/kWh
Fuel Adjustment:	0.704¢/kWh	
Other Adjustments:	none	
Taxes:	4% sales tax	
Total bill for:	1000 kWh	2000 kWh
	$53.08 summer	$104.15 summer
	$44.39 winter	$ 80.31 winter

Comments: Absolute flat rate in summer during utility peak, typical declining block rates in winter. Only utility surveyed offering optional TOD rates to all residential customers. (See Appendix B)

Location:	Miami, FL	
Utility:	Florida Power and Light	
Rates:	$3.20/month plus:	
First 750 kWh:	3.3¢/kWh	
All over 750 kWh:	3.8¢/kWh	
Fuel Adjustment:	0.865¢/kWh, see comments	
Other Adjustments:	none	
Taxes:	10% on bill before fuel adjustment	
Total bill for:	1000 kWh	2000 kWh
	$49.85	$100.30

Comments: Fuel adjustment of .978¢, .865¢, and 1.118¢/kWh for June, July, and August, 1979 respectively, represents a time period when nuclear capacity was down. Normal fuel adjustments had been close to .265¢/kWh.

Location:	Nashville, TN	
Utility:	Nashville Electric	
Rates:	$2.10/month plus:	
First 500 kWh:	2.370¢/kWh	
All over 500 kWh:	3.074¢/kWh	
Fuel adjustment:	none	
Other adjustments:	none	
Taxes:	1.5% sales tax	
Total bill for:	1000 kWh	2000 kWh
	$29.66	$60.96

Comments: Purchases power from TVA. A 6% rate increase expected in the fall ('79).

Location:	New York City	
Utility:	Consolidated Edison	
Rates:	Summer (May 15-Oct. 15)	Winter
First 900 kWh:	11.6¢/kWh	9.56¢/kWh
All over 900 kWh:	10.33¢/kWh	8.83¢/kWh
Fuel Adjustment:	.6004¢/kWh	
Other Adjustments:	none	
Taxes:	8% state tax plus 6.23% city tax	
Total bill for:	1000 kWh	2000 kWh
	$138.51 summer	$246.13 summer
	$115.73 winter	$223.92 winter

Comments: By far the highest rates in the surveyed cities.

Location:	Phoenix, AZ		
Utility:	Arizona Public Service Co.		
	Summer (May-Oct.)	Winter	
Rates:	$7.88 plus:	$7.88 plus:	
First 400 kWh:	3.84¢/kWh	first 1500 kWh:	3.79¢/kWh
All over 400 kWh:	4.51¢/kWh	all over 1500 kWh:	3.42¢/kWh
Fuel adjustment:	0.3016¢/kWh		
Other adjustments:	none		
Taxes:	5% sales tax		
Total bill for:	1000 kWh	2000 kWh	
	$55.99 summer	$106.51 summer	
	$51.24 winter	$ 92.26 winter	

Comments: Typical summer peak structure--declining block in winter, inverted block in summer.

Location:	Seattle, WA	
Utility:	Puget Sound Power and Light Co.	
Rates:	$3.45/month, plus:	
First 1500 kWh:	1.7656¢/kWh	
All over 1500 kWh:	1.9576¢/kWh	
Fuel adjustment:	none	
Other adjustments:	.0144¢/kWh R&D charge	
Taxes:	municipal tax, 4.5%	
Total bill for:	1000 kWh	2000 kWh
	$22.21	$41.82

Comments: Generation is hydro bought from Bonneville Power Administration. Biggest percentage increase from '76, but still lowest rates in survey.

Location:	Washington, DC	
Utility:	Potomac Electric Power Co.	
Rates:	Summer	Winter
Up to 30 kWh:	$2.00	$2.00
Next 20 kWh:	3.55¢/kWh	3.55¢/kWh
Next 150 kWh:	2.38¢/kWh	2.38¢/kWh
Next 250 kWh:	2.09¢/kWh	2.09¢/kWh
All over 450 kWh:	3.67¢/kWh	2.50¢/kWh
Fuel adjustment:	1.53228¢/kWh	
Other adjustments:	none	
Taxes:	5% sales tax	
Total bill for:	1000 kWh	2000 kWh
	$49.36 summer	$103.98 summer
	$42.60 winter	$ 84.94 winter

Comments: Declining block up to 450 kWh, then higher. The "penalty" is higher during the summer.

APPENDIX B

Time-of-Day Rates for Residential Uses

This section contains residential TOD rates for three different utilities. Each represents a different state of maturity. Madison Gas and Electric offers its TOD as an option to any residential customer who wants it. Southern California Edison has an experimental program with its TOD rates in order to gather information on customer reaction and load shifting. Finally, Public Service Company of NM has no operational or experimental TOD rates at present, but has filed an exhibit with the Public Service Commission as an example of how PNM might set up such rates.

TOD Rates: Madison Gas and Electric

Status: In use, available to all residential customers on optional basis

Rates:

A. Fixed monthly charge of $5.50 or $11.00, depending on capacity.

B. Energy charges of:

11.25¢/kWh	10 am-9 pm, Mon-Fri	summer
1.5¢/kWh	all other times	

Ratio: 7.5:1

7.82¢/kWh	10 am-9 pm, Mon-Fri	winter
1.5¢/kWh	all other times	

Ratio: 5.2:1

Other charges: Fuel adjustment and taxes are added to above basic rates.

TOD Rates: Southern California Edison

Status: Experimental testing of eight different schedules under way

Rates: All schedules contain a fixed monthly charge of $2.00/month. Peak time is defined as either 10 am-8 pm, Mon-Fri, or 12 noon-10 pm, Mon-Fri. Each definition of peak time is used with each of the following four rate schedules.

Energy Charges:

3:1 Ratio	7.77¢/kWh on-peak
	2.59¢/kWh off-peak
5:1 Ratio	9.15¢/kWh on-peak
	1.83¢/kWh off-peak
7:1 Ratio	9.94¢/kWh on-peak
	1.42¢/kWh off-peak
9:1 Ratio	10.35¢/kWh on-peak
	1.15¢/kWh off-peak

Other charges: Participating customers are excluded from fuel adjustment charges during this 3 year test.

TOD Rates: Public Service of New Mexico

Status: Exhibit only, for PSC information on possible rate structure

Rates:

A. System charge of $4.00/month

B. Facilities charge of $8.00/month (10 kW or less)

C. Meter charge of $5.00/month

D. Energy charges of:

6.7¢/kWh	11 am-7 pm, Mon-Fri	June-August
2.0¢/kWh	all other times	
	Ratio: 3.35:1	
4.6¢/kWh	8 am-10 pm, Mon-Fri	Dec., Jan., Feb.
1.9¢/kWh	all other times	
	Ratio: 2.42:1	
3.9¢/kWh	8 am-10 pm, Mon-Fri	Mar.-May, Sept.-Nov.
2.2¢/kWh	all other times	
	Ratio: 1.77:1	

Other charges: Fuel adjustment, indexing, and taxes are added to above basic rates.

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