VIRGINIA ELECTRIC AND POWER COMPANY FPC DOCKET NO. E-9147

PLEASE STATE YOUR NAME AND ADDRESS. 1 Q 2 3 A My name is Robert M. Gross, Jr. My business address is 1000 Crescent Avenue, N.E., Atlanta, Georgia 30309. 4 5 6 Q WHAT IS YOUR EDUCATIONAL BACKGROUND? 7 I graduated from Georgia Institute of Technology in 1965, receiving 8 A the degree of Bachelor of Industrial Engineering. I also attended 9 Georgia State University and in 1971 received the degree of Master 10 of Business Administration, majoring in finance. 11 12 PLEASE STATE YOUR PROFESSIONAL EXPERIENCE. 13 Q 14 I have been employed by Southern Engineering Company of Georgia for 15 A approximately eight years. During this time I have been involved 16 in the preparation of cost of service studies of investor-owned 17 utilities, rural electric cooperatives and municipal systems and 18 have participated in wholesale rate and retail electric consulting 19 assignments in 23 states. I am a registered professional engineer 20 21 in the State of Georgia. 22 23 Q HAVE YOU EVER TESTIFIED IN OTHER COMMISSION PROCEEDINGS? 24 25 A Yes, I have testified as a rate expert and cost of service witness before the State Commissions of Kentucky, Indiana, Michigan, Vermont 26 and Virginia. I have also testified before the Federal Power Commis-27 sion in proceedings involving the Mississippi Power Company, FPC 28 Docket No. E-7625; Central Vermont Public Service Corporation, FPC 29 Docket No. E-7685; Appalachian Power Company, FPC Docket No. E-7775; 30 Duke Power Company, FPC Docket No. E-7994; Gulf States Utilities 31 Company, FPC Docket No. E-8121; and Gulf Power Company, FPC Docket 32 E-8911 and Appalachian Power Company, FPC Docket No. E-9101. 33 34 BY WHOM IS SOUTHERN ENGINEERING COMPANY RETAINED IN THIS PROCEEDING? 35 Q 36 37 A By the Cooperative Intervenors. 38 WHAT WAS YOUR ASSIGNMENT IN THIS PROCEEDING? 39 Q 40 My assignment was threefold: First I was to review VEPCO's direct 41 A testimony, exhibits and other available information concerning the 42 cost to serve VEPCO's wholesale cooperative customers. Specifically 43 I was to consider whether the methods employed by VEPCO for Period II 44 to develop the overall Company cost of service and the allocation of 45 cost of service are proper according to Commission precedents and 46 sound ratemaking procedures. In addition, based on the adjustments 47 to VEPCO's cost of service which are found necessary by cooperative 48 witnesses, I was to prepare an overall cost of service study which 49 accurately reflects the rates of return that are actually being earned 50

by VEPCO under its present wholesale electric tariff and that will actually be earned by VEPCO under its proposed wholesale electric tariff applicable to cooperative customers. Finally, using the cost of service as adjusted by the cooperative's witnesses and the overall cost of capital recommended by witness Wilson but subject to the adjustment factor calculated by O. Franklin Rogers, I was to compute the amounts of wholesale rate increase which are deemed just and reasonable and accordingly are recommended to be granted to VEPCO by this Commission.

Secondly, I was to make a determination as to the justness and reasonableness of the Company's proposed 90% summer-based billing demand ratchet as contained in the proposed cooperative wholesale rate "RC".

The third and last aspect of my assignment was to compare VEPCO's proposed cooperative wholesale rate with the retail commercial and industrial rates of the Company applicable in Virginia and North Carolina. Furthermore I was to determine whether the cooperative customers can purchase their power requirements from VEPCO under its proposed cooperative wholesale rate schedule and sell such power to a new large power or industrial customer at a rate equivalent to VEPCO's current rate schedules applicable to such service. In fact I was to determine if the cooperative wholesale customers can, with the above conditions, offer an industrial rate competitive with VEPCO's retail rates applicable to large power or industrial service and maintain a sound financial posture.

30 Q WHAT DATA HAVE YOU REVIEWED IN PREPARING YOUR TESTIMONY AND RELATED EXHIBITS?

I have reviewed those portions of the Company's filing which
relate to its cost of service studies and subsequent rate design
including testimony and exhibits of VEPCO's witnesses and other
information, such as VEPCO's 1973 and 1974 Form No. 1, which
VEPCO supplied in response to the FPC Staff's and the Cooperative
Intervenors' request for data.

WITH REGARD TO THE FIRST PART OF YOUR ASSIGNMENT DEALING WITH COST
OF SERVICE ISSUES, WILL YOU BRIEFLY SUMMARIZE THE CONCLUSIONS WHICH
YOU AND THE OTHER WITNESSES FOR THE COOPERATIVE INTERVENORS HAVE
REACHED AS A RESULT OF STUDYING VEPCO'S COST OF SERVING ITS COOPERATIVE WHOLESALE CUSTOMERS.

The cost of service studies presented by VEPCO in this proceeding significantly overstate the cost of serving VEPCO's cooperative wholesale customers. The following major errors have been made by VEPCO in its Period II cost of service study necessitating adjustments by the Cooperative Intervenors:

 VEPCO has improperly inflated its expenses for Period II for the amortization of expenses related to the abandonment of the Marble Valley hydro electric project and expenses resulting from Hurricane Agnes.

- VEPCO has not deducted from rate base the average balances during the test year for Account 282, liberalized depreciation, as is required by Commission precedent.
- 3. As testified to by Dr. Livingstone, VEPCO has inflated its rate base by using capitalization rates for Allowance For Funds Used During Construction (AFUDC) that would result in an excessive rate of return on the equity component of this allowance. In addition the Company's capitalization rate overstates the actual net cost of debt source funds available for construction purposes.
- 4. As testified to by Dr. Livingstone, VEPCO has improperly computed the deduction from income taxes for interest expense associated with both long term debt and notes payable for Period II.
- 5. As testified to by Dr. Livingstone, the Company's deferred tax treatment of Virginia gross receipts tax is incorrect. The proper accounting for ratemaking purposes of this tax item is a flow-through of the tax reduction to the customer.
- 6. As also testified to by Dr. Livingstone, the Company has improperly increased income taxes charged to the cost of service during Period II for nonexistent income taxes that would have been payable in the absence of the Company's actual tax deduction taken for interest paid for funds used during construction. Obviously the Company's method of excluding the beneficial tax impact of interest expense amounts with regard to the Period II cost of service is in error.
- 7. As testified to by Mr. Martin, the demand allocation factors utilizing the Company's annual peak one hour demand do not accurately reflect the actual demand imposed on VEPCO's facilities by each class of customer. The use of the average of the 12-monhtly coincident peak demands does more accurately reflect use by each customer class of VEPCO's facilities.
- 8. As testified to by Mr. Martin, VEPCO has assigned a disproportionately large amount of transmission plant and associated expenses to its wholesale customers. Moreover some transmission facilities were specifically assigned by VEPCO to wholesale customers on a basis that differs from

that on which assignments were made to the retail class of customers even though there are transmission facili-2 ties used to serve retail customers that are functionally 3 similar to transmission facilities used to serve whole-4 sale customers. I have adjusted for these inequities 5 by using the rolled-in method of transmission plant allo-6 cation as suggested by Mr. Martin. 7 8 HAVE YOU PREPARED COST OF SERVICE STUDIES WHICH SHOW THE EFFECT 9 OF THE COOPERATIVE INTERVENORS' ADJUSTMENT TO THE RATES OF RETURN 10 THAT VEPCO EARNED UNDER THE PRESENT WHOLESALE TARIFF AND WOULD 11 EARN UNDER THE PROPOSED COOPERATIVE WHOLESALE TARIFF? 12 13 Yes. 14 A 15 I HAND YOU COOPERATIVE INTERVENORS' EXHIBIT (RMG-1) AND ASK YOU 16 Q 17 TO IDENTIFY IT. 18 This Exhibit is entitled "Cost of Service Study, Virginia Electric and 19 A Power Company -- Year Ending 12/31/75 (Period II) As Adjusted". 20 21 WOULD YOU PLEASE EXPLAIN THIS EXHIBIT. 22 Q 23 Yes. This Exhibit shows the resulting allocated cost of service 24 A by class which is produced by adjusting the Company's Period II 25 cost of service for the errors made by the Company. The rates of 26 return that VEPCO earns under its present tariff for cooperative 27 wholesale customers is shown to increase from 4.68 percent to 6.93. 28 Likewise the rates of return that VEPCO would earn from its coopera-29 tive wholesale customers under its proposed wholesale cooperative 30 rate schedule is shown to increase from 10.10 percent as shown in 31 VEPCO's study to 13.63 percent as shown on Cooperative Intervenors' 32 Exhibit (RMG-1), Page 2. 33 34 WHAT AMOUNTS OF COOPERATIVE RATE INCREASE DO THE COOPERATIVE INTER-35 Q VENORS RECOMMEND AS JUST AND REASONABLE? 36 37 Using the proper rate of return (overall cost of capital) of 8.52% 38 A as testified to by intervenors' witness Wilson, but adjusted by 39 the 71.8% factor recommended by witness O. F. Rogers, the amount 40 of wholesale cooperative rate increase that would be paid to VEPCO 41 by the cooperative is reduced from the requested \$12,575,000 to negative 42 \$1,649,748. This amount as reduced is just and reasonable and 43 provides VEPCO with a fair return on its cooperative wholesale 44 portion of its business. 45 46 PLEASE EXPLAIN WHY YOU HAVE DEDUCTED THE AVERAGE BALANCES FOR ACCOUNT 47 Q 282 DURING THE TEST YEAR FROM THE RATE BASE. 48

It has been standard Commission precedent to deduct from the rate base

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the average balances for the test year held in Account 282, liberalized depreciation. On Statement "A", Period II, VEPCO shows that its outstanding deferred tax balance for liberalized depreciation on December 31, 1974 is \$3,248,000 and shows a figure of \$12,494,000 for December 31, 1975. The average of these beginning and end of year balances is \$7,871,000. I have adjusted this amount by a factor of 99.44% to recognize the very small amount of Account 282 relating to gas utility plant investment. The resulting balance of \$7,826,922 is assigned functionally based upon gross plant and then allocated by classification based upon the functional plant allocators shown on Schedule II, Sheets 1 and 2 of Cooperative Intervenors' Exhibit (RMG-1). 28

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WOULD YOU PLEASE EXPLAIN WHY YOU ELIMINATED FROM THE PERIOD II 15 Q COST OF SERVICE THE AMORTIZED EXPENSES RELATED TO THE ABANDON-MENT OF THE MARBLE VALLEY HYDRO ELECTRIC PROJECT AND HURRICANE AGNES' DAMAGES.

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Both of these adjustments are recognized by the Company in Statement "N" Page 3 of 3, Period II, as pro forma adjustments to the actual projected expenses of the Company for the test year ending December 31, 1975. For ratemaking purposes these pro forma adjustments are not proper since the amortization period for both the Marble Valley hydro electric abandonment and the damages caused by Hurricane Agnes are soon to conclude. The amortization of the expenses resulting from the abandonment in February 1971 of the Marble Valley hydro electric project terminates in 1975. The amortization of the expenses associated with the damages caused by Hurricane Agnes in 1972 terminates in 1976. Since the term of the proposed wholesale rate will in any event run well into 1976 and probably 1977, particularly in view of the Company's excess reserve situation, I believe that normal ratemaking practices should preclude the additions of these amortized expenses in the test year.

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In addition, pro forma adjustments such as these are outside the scope of the Section 35.13(b)(iii) as defined in the Commission's Order No. 487 with regard to Statement "M". One of the purposes of that order was to eliminate the need for the use of pro formaadjustments to the actual expenses and investments of the test period. I see no significant reason for the Commission's Regulations to be manipulated in this case through the use of ad hoc adjustments made in Statement "N".

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MR. GROSS, THE SECOND ASPECT OF YOUR STATED ASSIGNMENT IN THIS CASE CONCERNS THE REASONABLENESS OF THE COMPANY'S PROPOSED 90% BILLING DEMAND RATCHET APPLICABLE TO THE COOPERATIVE CUSTOMERS. HAVE YOU MADE A STUDY TO DETERMINE IF THE 90% BILLING RATCHET IS JUSTIFIED?

Yes, sir. My studies show that given the long-run necessity of 1 A 2 including a summer-based billing demand ratchet in the Cooperative wholesale rate, the ratchet should not exceed an amount of 78%. 3 Although I have some doubt as to the necessity of including any 4 ratchet in the rate to cooperative customers, I have accepted the 5 testimony of VEPCO's witnesses that the Company will be faced in 6 the future with a "continuation and widening of the summer peak 7 demand over other monthly demands" (witness Carpenter's direct 8 9 testimony, Page 6). Based on such a trend, I would agree that a summer-based billing demand ratchet would represent a reasonably 10 consistent approach toward establishing a long-run pricing pattern 11 12 applicable to developing cost trends.

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I should point out however, that using the Staff and Cooperative Intervenors' demand allocation method based upon the average of the 12-monthly coincident peak demands produces a definite inconsistency between the manner in which costs are allocated (average of 12-monthly coincident demands) and the manner in which revenues are generated (skewed heavily for loads experienced during the summer peak season). Without VEPCO's strong inclination toward a widening summer peak differential, I would hesitate to recommend a summer based billing demand ratchet since such a device could stimulate winter load growth to the point where VEPCO may revert back to its earlier load patterns of experiencing its annual peak during the winter heating system.

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MR. GROSS, PLEASE DISCUSS YOUR STUDIES SUPPORTING YOUR OPINION THAT 27 Q THE SUMMER BASED BILLING DEMAND RATCHET SHOULD NOT EXCEED A VALUE OF 78%.

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First of all, let me emphasize that although there are many reasons to include a billing demand ratchet in a rate structure, usually the most prevalent reason and the one that VEPCO is utilizing in this case, is to match as close as possible the flow of demand charge related revenues with the causation of fixed costs on VEPCO's system. VEPCO's witness maintains that the principal causation of fixed cost on the Company's system is growth in VEPCO's annual peak summer demand. The ratchet is therefore designed to reflect back on the maximum demand of the wholesale customer established in the month's of June through September when VEPCO is likely to establish its annual peak demand. The ratchet therefore serves as a pricing device to measure the relative contribution of each delivery point to VEPCO's annual peak demand and to insure that should the customer require capacity in the summer peak season, then the customer will be held accountable for such capacity on a billing basis for the remainder of the year.

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I have studied the likelihood of cooperative delivery point demands reaching a maximum summer period value at a time coincident with the Company's annual system peak demand. My studies show that the

1 incidence of demand coincidence during the system peak for the 2 total wholesale cooperative class (all delivery points) is approxi-3 mately 78%. This percentage is measured by dividing the cooperative 4 load coincident with the system annual peak by the sum of each 5 cooperative delivery point non-coincident demands which occurred 6 during the months of June through September (summer months governing 7 ratchet application). The purpose of this analysis is to determine 8 the degree of summer seasonal diversity that is experienced by the 9 cooperative class with respect to the Company's annual peak demand. 10 The ratchet should obviously reflect normal load diversity otherwise 11 the class could be unduely penalized if the ratchet was set at a level not consistant with normal diversity. 12 13 14 Q I SHOW YOU A DOCUMENT MARKED COOPERATIVE INTERVENORS' EXHIBIT 15 (RMG-2) AND ASK YOU TO IDENTIFY IT. 16 17 A This Exhibit is entitled "Determination of Maximum Measured Integrated 18 Cooperative Delivery Point Demand For Billing Period June Through 19 September 1974". 20 21 Q WAS THIS EXHIBIT PREPARED UNDER YOUR SUPERVISION? 22 23 A Yes. 24 25 Q PLEASE DISCUSS THIS EXHIBIT. 26 27 A I have summed for all delivery points the maximum 30 minute integrated 28 29 that the summation of such 30 minute demands is equal to 448,270 kW. 30 31 32

demand established in the period of June through September, 1974. I show When this figure is divided into the cooperative class demand coincident with the Company's system annual peak demand as shown on Cooperative Intervenors' Exhibit (EPM-1) page 5, of 350,787 kW, I calculated 33 the incidence of peak demand coincidence of the Cooperative class for 34 the summer period of June through September 1974 to be 78.25%. 35

I believe that the ratchet should recognize the historical peak season diversity experienced by the wholesale class with respect to the Company's annual peak demand. For this reason the billing demand ratchet should be limited to no more than a value of 78%.

41 Q IF THE BILLING DEMAND WAS REDUCED TO 78%, WHAT IMPACT WOULD IT HAVE ON THE DEMAND CHARGE IN THE WHOLESALE COOPERATIVE RATE? 42 43

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The demand charge would have to be increased by an appropriate amount 44 A to recover the revenue generated by application of the 90% ratchet 45 in excess of application of a 78% ratchet. I have limited my testi-46 47 mony to only the proper level of the ratchet and I have not made a 48 study, as yet, of the resulting demand charge variation caused by 49 the lowering of the ratchet to 78%. 50

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2 SHIP BETWEEN THE PROPOSED WHOLESALE RATE AND VEPCO'S RATES APPLI-3 CABLE TO INDUSTRIAL SERVICE IN VIRGINIA AND NORTH CAROLINA. WOULD 4 YOU PLEASE DISCUSS THIS RELATIONSHIP AS IT NOW EXISTS IN VIRGINIA 5 AND NORTH CAROLINA. 6 7 A Yes, sir. My studies show that cooperatives who are required to 8 purchase supplemental power from VEPCO under the proposed whole-9 sale rate schedule will pay more for such power than retail com-10 mercial or industrial customers of VEPCO with comparable service 11 characteristics. 12 13 Q HAVE YOU COMPARED THE PROPOSED WHOLESALE RATE WITH VEPCO'S RETAIL 14 RATES APPLICABLE IN NORTH CAROLINA AND VIRGINIA? 15 16 A Yes I have. 17 18 0 I HAND YOU A DOCUMENT MARKED FOR IDENTIFICATION AS COOPERATIVE 19 INTERVENORS' EXHIBIT (RMG-3). WAS THIS DOCUMENT PREPARED UNDER 20 YOUR SUPERVISION? 21 22 A Yes. 23 24 0 WILL YOU PLEASE EXPLAIN THIS EXHIBIT? 25 26 A Yes. Cooperative Intervenors' Exhibit (RMG-3), consists of two 27 pages which show billing comparisons between the proposed wholesale 28 and present retail rates of VEPCO based on typical monthly load 29 patterns of large industrial customers or wholesale points of delivery. 30 The billing comparisons have been based on service at voltages of 31 delivery less than 69 kV. 32 33 The comparison illustrates the difference in rate pricing as between 34 wholesale and retail service. For instance, a large industrial 35 customer with an average monthly demand of 20 megawatts and load 36 factor of 68.5% (500 hours use of demand) would receive service for 37 \$217,256.56 in Virginia and \$212,940.75 in North Carolina. On the 38 other hand, a delivery point of a cooperative customer of VEPCO with 39 a supplemental load of equal size would pay \$222,897.75. The pro-40 posed wholesale rate is therefore approximately 2.6% higher than the 41 comparable retail rate in Virginia and 4.7% higher than the comparable 42 retail rate in North Carolina. 43 44 Page 1 of Cooperative Intervenors' Exhibit (RMG-3) focuses on the 45 North Carolina retail rate while Page 2 of this Exhibit compares the 46 retail rate applicable in Virginia. The comparison shows that VEPCO's

MR. GROSS, YOUR LAST ASSIGNMENT IN THIS CASE CONCERNS THE RELATION-

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cable retail rates.

proposed wholesale rate applicable to cooperatives is uniformly higher

for industrial size loads between 5 and 20 megawatts than the appli-

MR. GROSS, IN YOUR OPINION, GIVEN THE LEVEL OF THE PROPOSED
WHOLESALE RATE, CAN COOPERATIVES EFFECTIVELY COMPETE WITH VEPCO
ON A COMPARATIVE RATE BASIS FOR INDUSTRIAL LOADS IN THE 5 TO
20 MEGAWATT RANGE?

No, sir. The comparisons show that for a page-profile to the second state of the

No, sir. The comparisons show that for a cooperative to effectively compete for such industrial loads given the proposed 7 wholesale rate, it would be forced to resell such power to an 8 industrial load at a rate that would produce less revenue than 9 the cost of such power to the cooperative. The relationship 10 therefore between VEPCO's applicable retail rates and the rate 11 under which it proposes to sell power to the cooperative customers 12 makes it economically unrealistic for the cooperative to offer 13 14 an industrial rate competitive with the industrial rate of VEPCO 15 in either North Carolina or Virginia.

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MR. GROSS, ARE THERE OTHER FACTORS THAT MAY HAVE A BEARING ON THE COOPERATIVE'S ABILITY TO COMPETE WITH VEPCO FOR INDUSTRIAL LOADS IN THE 5 TO 20 MEGAWATT RANGE?

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Yes, sir. Theoretically, factors such as load diversity, alternative sources of power, and service at transmission voltages could influence the retail rates of the cooperative. From a practical standpoint, however, with the type of loads under analysis, such factors have a negligible effect on the cooperative's ability to offer a competitive rate.

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Based upon expected 1975 peak delivery point loads, there are presently only 14 delivery points out of the 181 cooperative delivery points that exceed a peak load of 5 megawatts. Only 6 of these delivery points exceed 10 megawatts presently. For most cooperative customers of VEPCO, adding a large industrial load to their system would automatically require adding a new delivery point from VEPCO because the capacity at existing points of delivery is not adequate to serve large load increases. Unless the cooperative engaged in considerable transmission investment, a new industrial load in the 5 to 20 megawatt range would be served out of a new delivery point obtained from VEPCO. Since metering and billing is by delivery point, there would be little, if any, diversity gained by the cooperative in serving such a load. In other words, the quantities of power and energy governing the wholesale transaction would be virtually the same quantities governing the retail transaction. In my opinion, diversity would not be of sufficient significance to enter the pricing considerations of the cooperative.

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With regard to alternative power sources, the only additional power source now available in Virginia and North Carolina, for VEPCO-served cooperatives is Southeastern Power Administration hydro power and energy. The availability of SEPA power and energy is fixed and will not expand in the future unless additional hydro

resources are developed by the Corps of Engineers. The present allotments of SEPA power and energy, for the cooperatives who have allotments, amount to less than 10% of their total load. The relative low-cost benefits of such power have been fully absorbed by each cooperative over the years. It would be impractical from a ratemaking standpoint to include the relative low-cost benefits of hydro-electric power in a rate to a new industrial load since the source of all of the power to serve that load would be from VEPCO's resources under its applicable wholesale rate.

The billing amounts shown on Cooperative Intervenors' Exhibit (RMG-3) were calculated based upon delivery voltages of less than 69 kV. The proposed wholesale rate provides a high voltage discount for delivery voltages at 69 kV and higher. In some circumstances the cooperative may have the opportunity of taking service from VEPCO at voltages which qualify for the high voltage discount. Under such condition it would then be incumbent on the cooperative to make the necessary investment in transmission and distribution facilities in order to provide service to the ultimate customer. In most cases the cost to the cooperative of making the necessary investment in transmission and distribution facilities in order to provide service to an industrial load would fully offset the advantage provided in taking service from VEPCO at a rate reflecting a transmission discount.

In summary then, it is my opinion that neither diversity, nor alternative sources of lower cost power, nor the availability of high voltage discounts will have anything other than a negligible impact on the ability of a VEPCO served cooperative customer to be competitive with VEPCO's industrial retail rates under present conditions.

Q DOES THAT CONCLUDE YOUR TESTIMONY?

A Yes, it does.