COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:	**)**	
	)	
THE ELECTRONIC APPLICATION OF DUKE ENERGY	**)**	
KENTUCKY, INC. FOR: 1) AN ADJUSTMENT OF	**)**	**CASE NO. 2019-00271**
THE ELECTRIC RATES; 2) APPROVAL OF NEW	**)**	
NEW TARIFFS; 3) APPROVAL OF ACCOUNTING	**)**	
PRACTICES TO ESTABLISH REGULATORY ASSETS	**)**	
AND LIABILITIES; AND 4) ALL OTHER REQUIRED	**)**	
APPROVALS AND RELIEF	**)**	

DIRECT TESTIMONY

OF

GLENN A. WATKINS

DECEMBER 13, 2019

INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Glenn A. Watkins. My business address is 6377 Mattawan Trail, Mechanicsville, Virginia 23116.

Q. WHAT IS YOUR PROFESSIONAL AND EDUCATIONAL BACKGROUND?

A. I am President and Senior Economist of Technical Associates, Inc., which is an economics and financial consulting firm with offices in the Richmond, Virginia area. Except for a six month period during 1987 in which I was employed by Old Dominion Electric Cooperative, as its forecasting and rate economist, I have been employed by Technical Associates continuously since 1980.

During my 39-year career at Technical Associates, I have conducted hundreds of marginal and embedded cost of service, rate design, cost of capital, revenue requirement, and load forecasting studies involving electric, gas, water/wastewater, and telephone utilities throughout the United States and Canada and have provided expert testimony in Alabama, Arizona, Delaware, Georgia, Illinois, Indiana, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Montana, Nevada, New Jersey, North Carolina, Ohio, Pennsylvania, Vermont, Virginia, South Carolina, Washington, and West Virginia. In addition, I have provided expert testimony before State and Federal courts as well as before State legislatures. A more complete description of my education and experience is provided in Schedule GAW-1.

Q. HAVE YOU PREVIOUSLY PROVIDED EXPERT TESTIMONY BEFORE THIS COMMISSION?

A. Yes. I have provided testimony relating to class cost of service and rate design before this Commission on numerous occasions.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. Technical Associates has been retained by the Kentucky Office of the Attorney General ("OAG") to evaluate the reasonableness of Duke Energy Kentucky Inc.'s

("Duke" or "Company") proposed residential fixed monthly customer charge. The purpose of my testimony, therefore, is to comment on Duke's proposals on these issues and to present my findings and recommendations based on the results of the studies I have undertaken on behalf of the OAG.

RESIDENTIAL CUSTOMER CHARGE

Q. DOES DUKE PROPOSE A SIGNIFICANT INCREASE TO THE RESIDENTIAL FIXED MONTHLY CUSTOMER CHARGE?

A. Yes. Duke witness Jeff Kern proposes to increase the Residential Rate RS customer charge from $11.00 to $14.00 per month, or by 27%.

Q. WAS DUKE'S RESIDENTIAL, NON-AVOIDABLE, FIXED MONTHLY CUSTOMER CHARGE RECENTLY INCREASED BY A SUBSTANTIAL AMOUNT?

A. Yes. In Case No. 2017-00321, the Commission approved a 144% increase in the Residential customer charge from $4.50 to $11.00 per month. This increase became effective on October 2, 2018.

Q. IF DUKE'S PROPOSED $14.00 PER MONTH RESIDENTIAL CUSTOMER CHARGE IS APPROVED, WHAT PERCENTAGE INCREASE WOULD THIS EQUATE TO IN LITTLE MORE THAN A YEAR?

A. If the Company's proposed $14.00 monthly Residential customer charge is approved, this would represent an increase of 211% in fixed monthly customer charges that were in effect a little more than a year ago.

Q. WOULD SUCH AN INCREASE COMPORT WITH THE WELL-ACCEPTED REGULATORY PRACTICE OF GRADUAL CHANGES TO RATES; I.E., THE CONCEPT OF GRADUALISM?

A. No. General inflation has been running at, or below, about 2% during the last several years such that the Company's proposal to more than triple this unavoidable fixed

charge in less than two years will result in what is known as "rate shock" to numerous Residential customers.

Q. IS IT NOT TRUE THAT THE FIXED MONTHLY CUSTOMER CHARGE IS ONLY ONE COMPONENT OF A CUSTOMER'S TOTAL ELECTRIC BILL?

A. Yes. A customer's total electric bill is comprised of a fixed monthly customer charge plus an energy charge plus various riders. As such, large energy usage Residential customers' total electric bills would not increase by this massive percentage increase. However, low energy usage customers, including those that are low income customers, would incur very large percentage increases in their total electric bills.

Q. DOES MR. KERN PROVIDE ANY SUPPORT FOR HIS PROPOSED RESIDENTIAL CUSTOMER CHARGE?

A. The only support I can find in Mr. Kern's direct testimony is on page 8 where he states: "I used the cost of service information provided by Duke Energy Kentucky witness James E. Ziolkowski as a basis for the rate design." In addition, Filing Requirement, Schedule L states the rationale for the Company's proposed residential customer charge is as follows:

> The customer charge is increased by 27.3% to better reflect the customer related fixed cost to serve. This change better aligns price signals with cost causation. The energy charge recovers the remaining cost of service revenue requirement.

Q. DOES MR. KERN'S OR MR. ZIOLKOWSKI'S TESTIMONY OR ATTACHMENTS INDICATE THE AMOUNT OF THE "CUSTOMER RELATED FIXED COST TO SERVE" RESIDENTIAL CUSTOMERS?

A. No. However, in examining the Company's response to Staff-DR-01-055, which is Mr. Ziolkowski's class cost of service study ("CCOSS") in Excel format, a Residential amount of $14.29 per month can be found.

Q. WERE YOU ABLE TO DETERMINE HOW MR. ZIOLKOWSKI DETERMINED THIS $14.29 AMOUNT?

A. Yes. In conducting his CCOSS, Mr. Ziolkowski classified every rate base and expense item as energy-related, demand-related, or customer-related. To better understand Mr. Ziolkowski's procedure, he classified distribution plant such as poles, overhead lines, and underground lines as partially customer-related and partially demand-related. As a result, a portion of the Company's distribution system upstream from the customer's service line is included within Mr. Ziolkowski's calculation of "customer" costs. Furthermore, every rate base and expense account is placed into one of the three cost buckets (energy, demand, and/or customer). However, because many of the Company's overhead costs (including common and general plant as well as traditional overhead expenses such as administrative and general) are classified based on previously classified FERC accounts, these overhead costs are classified as partially demand, partially customer, and in some instances, partially energy-related.

Q. IS IT APPROPRIATE TO INCLUDE DISTRIBUTION SYSTEM COSTS UPSTREAM FROM A CUSTOMER'S SERVICE LINE WITHIN THE DEVELOPMENT OF REASONABLE CUSTOMER CHARGES?

A. No. While it may be appropriate to ultimately allocate distribution costs that are upstream from a customer's service line based partially on the number of customers, this does not mean that Residential fixed monthly charges should include recovery of the Company's investment in facilities that serve all customers. The classification and allocation of these costs based partially on peak demand and partially on number of customers may be appropriate for class cost allocation purposes, but does not mean that the recovery of these joint costs (which are largely sunk or fixed costs in the short-term) should be made through fixed customer charges. In order to fairly and equitably allocate Duke's sunk, or fixed, distribution costs across customer classes, it is appropriate to consider the differences in customer densities and mixes of customers throughout the Company's service area. However, it should not be inferred that these costs are in any way required to connect a customer. For example, it makes no sense to infer that 18% of an overhead distribution circuit or 26% of an underground distribution circuit is required

to connect a customer to the system.[1] Indeed, the conductor (and required cost) is there to meet the collective energy needs of all of its customers within that circuit and is planned, and sized, to meet the collective maximum loads of those consumers. Put differently, if an additional customer is added to the distribution system, the Company will not incur additional conductor investment costs in order to serve this new customer. As such, the classification of distribution plant is no more than a convenient, fair, and equitable way to allocate distribution costs across rate classes. However, because of the way Mr. Ziolkowski placed all costs into various classification "buckets," his calculations placed a significant level of poles, conductors, and conduit within the customer cost "bucket."

Q. IS IT APPROPRIATE TO INCLUDE VARIOUS OVERHEAD COSTS WITHIN THE DEVELOPMENT OF REASONABLE CUSTOMER CHARGES?

A. No. As mentioned earlier, Mr. Ziolkowski placed every rate base and expense account into one or more costing "buckets." However, general and overhead costs are largely classified and allocated based on previously classified and allocated plant and O&M expenses. As a result, while there is no true "cost causation" that can be ascribed to these general and overhead costs, Mr. Ziolkowski has nevertheless placed a portion of these costs into his "customer" bucket. By doing so, Mr. Ziolkowski's calculation of so-called "customer" costs are significantly overstated.

Duke Energy is in the business of producing, transmitting, and distributing, electricity to its consumers and is indeed, a business enterprise. As such, Duke's rates should not be structured like that of a taxing, or governmental, agency wherein revenue recovery is guaranteed. Indeed, strict adherence to Mr. Ziolkowski's cost allocation procedures in Residential rates eliminates substantial business risk of the Company similar to that of a taxing, or governmental, agency.

[1] Mr. Ziolkowski has classified overhead distribution (primary plus secondary) conductors as 18.0% customer-related and classified underground distribution (primary plus secondary) conductors as 25.8% customer-related.

Q. PLEASE PROVIDE EXAMPLES OF THE MAGNITUDE OF COSTS THAT MR. ZIOLKOWSKI PLACED WITHIN HIS RESIDENTIAL "CUSTOMER" BUCKET WHEREIN MR. KERN INFERS THAT THESE COSTS SHOULD BE COLLECTED FROM FIXED MONTHLY CUSTOMER CHARGES?

A. With regard to the Residential class, the Company's cost of service study includes the following allocated amounts within his costs classified as "customer":

Ziolkowski Inappropriate Costs
Included in Residential "Customer Costs"
($ Millions)

	Residential		
	Customer-Classified Costs	Total Allocated Costs	% Customer-Related Costs
Gross Plant:			
Distribution Poles	$16.707	$38.129	43.8%
Distribution OH Lines	$20.956	$70.646	29.7%
Distribution UG Lines	$20.644	$51.514	40.1%
Transformers	$13.811	$35.929	38.4%
Dist. Const. Not Classified	$21.359	$53.946	39.6%
General Plant	$7.544	$29.151	25.9%
Common Plant	$4.270	$16.499	25.9%
Total Inappropriate Gross Plant	$105.291	$295.814	35.6%
O&M Expenses:			
Distribution OH Lines	$1.441	$4.857	29.7%
Distribution UG Lines	$0.248	$0.618	40.1%
Credit Card Fees	$0.398	$0.398	100.0%
Sale of Accounts Receivable	$0.395	$0.395	100.0%
Customer Svc. & Info.	$0.546	$0.546	100.0%
Sales Expenses	$1.350	$1.350	100.0%
Administrative & General	$2.541	$12.850	19.8%
Total Inappropriate O&M Expenses	$6.919	$21.014	32.9%

As can be seen above, Mr. Kern claims that more than $105 million of the Company's plant investment, which is incurred to meet customers' energy needs on a collective basis, should be recovered from fixed monthly charges. Similarly, he claims that almost $7 million of O&M expenses that are not required to connect or maintain a customer's account should be recovered as non-avoidable fixed monthly charges.

Q. IS THERE ACADEMIC SUPPORT FOR YOUR OPINION THAT CERTAIN DISTRIBUTION COSTS CLASSIFIED AS "CUSTOMER-RELATED," AS WELL AS A SIGNIFICANT PORTION OF THE COMPANY'S OVERHEAD EXPENSES, ARE NOT PROPERLY CONSIDERED AS TRUE CUSTOMER COSTS?

A. In his well-known treatise Principles of Public Utility Rates, Professor James C. Bonbright states:

> . . . if the hypothetical cost of a minimum-sized distribution system is properly excluded from the demand-related costs for the reason just given, while it is also denied a place among the customer costs for the reason stated previously, to which cost function does it then belong? The only defensible answer, in our opinion, is that it belongs to none of them. Instead, it should be recognized as a strictly unallocable portion of total costs. And this is the disposition that it would probably receive in an estimate of long-run marginal costs. But fully-distributed cost analysts dare not avail themselves of this solution, since they are the prisoners of their own assumption that "the sum of the parts equals the whole." **They are therefore under impelling pressure to fudge their cost apportionments by using the category of customer costs as a dumping ground for costs that they cannot plausibly impute to any of their other cost categories.** [Emphasis added] (Second Edition, page 492)

Q. DOES DUKE'S PROPOSAL TO COLLECT A SUBSTANTIAL PORTION OF RESIDENTIAL DISTRIBUTION REVENUE FROM FIXED MONTHLY CHARGES COMPORT WITH THE ECONOMIC THEORY OF COMPETITIVE MARKETS OR THE ACTUAL PRACTICES OF SUCH COMPETITIVE MARKETS?

A. No. The most basic tenet of competition is that prices determined through a competitive market ensure the most efficient allocation of society's resources. Because public utilities are generally afforded monopoly status under the belief that resources are better utilized without duplicating the fixed facilities required to serve consumers, a fundamental goal of regulatory policy is that regulation should serve as a surrogate for competition to the greatest extent practical.[2] As such, the pricing policy for a regulated public utility should mirror those of competitive firms to the greatest extent practical.

[2] James C. Bonbright, et al., *Principles of Public Utility Rates*, p. 141 (Second Edition, 1988).

Q. PLEASE BRIEFLY DISCUSS HOW PRICES ARE GENERALLY STRUCTURED IN COMPETITIVE MARKETS.

A. Under economic theory, efficient price signals result when prices are equal to marginal costs.[3] It is well known that all costs are variable in the long-run. Therefore, efficient pricing results from the incremental variability of costs even though a firm's short-run cost structure may include a high level of sunk or "fixed" costs or be reflective of excess capacity. Indeed, competitive market-based prices are generally structured based on usage, i.e. volume-based pricing.

Q. PLEASE BRIEFLY EXPLAIN THE ECONOMIC PRINCIPLES OF EFFICIENT PRICE THEORY AND HOW SHORT-RUN FIXED COSTS ARE RECOVERED UNDER SUCH EFFICIENT PRICING.

A. Perhaps the best known micro-economic principle is that in competitive markets (i.e., markets in which no monopoly power or excessive profits exist) prices are equal to marginal cost. Marginal cost is equal to the incremental change in cost resulting from an incremental change in output. A full discussion of the calculus involved in determining marginal costs is not appropriate here. However, it is readily apparent that because marginal costs measure the changes in costs with output, short-run "fixed" costs are irrelevant in efficient pricing. This is not to say that efficient pricing does not allow for the recovery of short-run fixed costs. Rather, they are reflected within a firm's production function such that no excess capacity exists and that an increase in output will require an increase in costs -- including those considered "fixed" from an accounting perspective. As such, under efficient pricing principles, marginal costs capture the variability of costs, and prices are variable because prices equal these costs.

Q. PLEASE EXPLAIN HOW EFFICIENT PRICING PRINCIPLES ARE APPLIED TO THE ELECTRIC UTILITY INDUSTRY.

A. Universally, utility marginal cost studies include three separate categories of marginal costs: demand, energy, and customer. Consistent with the general concept of

[3] Strictly speaking, efficiency is achieved only when there is no excess capacity such that short-run marginal costs equal long-run marginal costs. In practice, there is usually at least some excess capacity present such that pricing based on long-run marginal costs represents the most efficient utilization of resources.

marginal costs, each of these costs varies with incremental changes. Marginal demand costs measure the incremental change in costs resulting from an incremental change in peak load (demand). Marginal energy costs measure the incremental change in costs resulting from an incremental change in kWh (energy) consumption. Marginal customer costs measure the incremental change in costs resulting from an incremental change in number of customers.

Particularly relevant here is understanding what costs are included within, and the procedures used to determine, marginal customer costs. Since marginal customer costs reflect the measurement of how costs vary with the number of customers, they only include those costs that directly vary as a result of adding a new customer. Therefore, marginal customer costs only reflect costs such as service lines, meters, and incremental billing and accounting costs.

Q. PLEASE EXPLAIN HOW THIS THEORY OF COMPETITIVE PRICING SHOULD BE APPLIED TO REGULATED PUBLIC UTILITIES, SUCH AS DUKE.

A. Due to Duke's investment in system infrastructure, there is no debate that many of its costs are sunk costs and are therefore, characterized as fixed costs in the short-run. However, as discussed above, efficient competitive prices are established based on long-run costs, which are entirely variable in nature.

Marginal cost pricing only relates to efficiency. This pricing does not attempt to address fairness or equity. Fair and equitable pricing of a regulated monopoly's products and services should reflect the benefits received for the goods or services. In this regard, it is generally agreed in our society, and economic system, that those who receive more benefits should pay more in total than those who receive fewer benefits. Regarding electricity usage, i.e., the level of kWh (electric) consumption is the best and most direct indicator of benefits received. Thus, volumetric pricing promotes the fairest pricing mechanism to customers and to the utility.

The above philosophy has consistently been the belief of economists, regulators, and policy makers for many years. For example, consider utility industry pricing in the 1800s, when the industry was in its infancy. Customers paid a fixed monthly fee and

consumed as much of the utility commodity/service as they desired (usually water). It soon became apparent that this fixed monthly fee rate schedule was inefficient and unfair. Utilities soon began metering their commodity/service and charging only for the amount actually consumed. In this way, consumers receiving more benefits from the utility paid more, in total, for the utility service because they used more of the commodity.

Q. IS THE ELECTRIC UTILITY INDUSTRY UNIQUE IN ITS COST STRUCTURES, WHICH ARE COMPRISED LARGELY OF FIXED COSTS IN THE SHORT-RUN?

A. No. Most manufacturing and transportation industries are comprised of cost structures predominated with "fixed" costs. Indeed, virtually every capital-intensive industry is faced with a high percentage of fixed costs in the short-run. Prices for competitive products and services in these capital-intensive industries are invariably established on a volumetric basis, including those that were once rate regulated, e.g., motor transportation, airline travel, and rail service.

Accordingly, Duke's position that a large portion of its fixed costs should be recovered through fixed monthly charges is incorrect. Pricing should reflect the Company's long-run costs, wherein all costs are variable or volumetric in nature, and users requiring more of the Company's products and services should pay more than customers who use less of these products and services. Stated more simply, those customers who conserve and are otherwise more energy efficient, or those who use less of the commodity for any reason, pay less than those who use more electricity.

Q. HOW ARE HIGH FIXED CUSTOMER CHARGE RATE STRUCTURES CONTRARY TO EFFECTIVE CONSERVATION EFFORTS?

A. High fixed charge rate structures actually promote additional consumption because a consumer's price of incremental consumption is less than what an efficient price structure would otherwise be. A clear example of this principle is exhibited in the natural gas transmission pipeline industry. As discussed in its well-known Order 636, the

FERC's adoption of a "Straight Fixed Variable" ("SFV") pricing method[4] was a result of national policy (primarily that of Congress) to encourage increased use of domestic natural gas by promoting additional interruptible (and incremental firm) gas usage. The FERC's SFV pricing mechanism greatly reduced the price of incremental (additional) natural gas consumption. This resulted in significantly increasing the demand for and use of natural gas in the United States after Order 636 was issued in 1992.

FERC Order 636 had two primary goals. The first goal was to enhance gas competition at the wellhead by completely unbundling the merchant and transportation functions of pipelines.[5] The second goal was to encourage the increased consumption of natural gas in the United States. In the introductory statement of the Order, FERC stated:

> The Commission's intent is to further facilitate the unimpeded operation of market forces to stimulate the production of natural gas... [and thereby] contribute to reducing our Nation's dependence upon imported oil… .[6]

With specific regard to the SFV rate design adopted in Order 636, FERC stated:

> Moreover, the Commission's adoption of SFV should maximize pipeline throughput over time by allowing gas to compete with alternate fuels on a timely basis as the prices of alternate fuels change. The Commission believes it is beyond doubt that it is in the national interest to promote the use of clean and abundant gas over alternate fuels such as foreign oil. SFV is the best method for doing that.[7]

Recently, some public utilities have begun to advocate SFV Residential pricing. The companies claim a need for enhanced fixed charge revenues. To support their claim, the companies argue that because retail rates have been historically volumetric based, there has been a disincentive for utilities to promote conservation, or encourage reduced consumption. However, the FERC's objective in adopting SFV pricing suggests the exact opposite. The price signal that results from SFV pricing is meant to promote additional consumption, not reduce consumption. Thus, a rate structure that is heavily based on a fixed monthly customer charge sends an even stronger price signal to consumers to use more energy.

---

[4] Under Straight Fixed Variable pricing, customers pay a fixed charge that is designed to recover all of the utility's fixed costs.

[5] Federal Energy Regulatory Commission, Docket Nos. RM91-11-001 and RM87-34-065, Order No. 636 (Apr. 9, 1992), p. 7.

[6] *Id.* p. 8 (alteration in original).

[7] *Id.* pp. 128-129.

Q. AS A PUBLIC POLICY MATTER, WHAT IS THE MOST EFFECTIVE TOOL THAT REGULATORS HAVE TO PROMOTE COST EFFECTIVE CONSERVATION AND THE EFFICIENT UTILIZATION OF RESOURCES?

A. Unquestionably, one of the most important and effective tools that this, or any, regulatory Commission has to promote conservation is by developing rates that send proper pricing signals to conserve and utilize resources efficiently. A pricing structure that is largely fixed, such that customers' effective prices do not properly vary with consumption, promotes the inefficient utilization of resources. Pricing structures that are weighted heavily on fixed charges are much more inferior from a conservation and efficiency standpoint than pricing structures that require consumers to incur more cost with additional consumption.

Q. NOTWITHSTANDING THE EFFICIENCY REASONS AS TO WHY REGULATION SHOULD SERVE AS A SURROGATE FOR COMPETITION, ARE THERE OTHER RELEVANT ASPECTS TO THE PRICING STRUCTURES IN COMPETITIVE MARKETS *VIS A VIS* THOSE OF REGULATED UTILITIES?

A. Yes. In competitive markets, consumers, by definition, have the ability to choose various suppliers of goods and services. Consumers and the market have a clear preference for volumetric pricing. Utility customers are not so fortunate in that the local utility is a monopoly. The only reason utilities are able to achieve pricing structures with high fixed monthly charges is due to their monopoly status. In my opinion, this is a critical consideration in establishing utility pricing structures. Competitive markets and consumers in the United States have demanded volumetric based prices for generations. Hence, a regulated utility's pricing structure should not be allowed to counter the collective wisdom of markets and consumers simply because of its market power.

Q. WITH REGARD TO THE COMPANY'S LAST RATE CASE (CASE NO. 2017-00321), THE COMMISSION'S ORDER STATES THAT: "DUKE KENTUCKY'S REVISED 12-CP COSS SUPPORTS A RESIDENTIAL CUSTOMER CHARGE IN THE AMOUNT OF $11.31, WHICH INCLUDES ALL COSTS IDENTIFIED AS CUSTOMER-RELATED IN ITS COSS. THIS METHOD OF CALCULATING THE CUSTOMER CHARGE IS GENERALLY ACCEPTED IN THE UTILITY INDUSTRY AND IS BEING ACCEPTED BY THE COMMISSION." DO YOU AGREE THAT THIS METHOD OF CALCULATING THE CUSTOMER CHARGE IS GENERALLY ACCEPTED IN THE INDUSTRY?

A. No. The level of Residential fixed monthly charges varies across Commissions in this Country and is frankly, a matter of policy. Several Commissions in the Country have a policy of maintaining relatively low fixed monthly customer charges primarily due to the reasoning that customers should have greater flexibility in controlling their energy bills with revenues collected primarily through volumetric rates as well as concerns over the affordability of energy by low income and low usage customers. Examples of States with this policy include: Maryland, Washington State, Virginia, Montana, Oregon, Pennsylvania and South Carolina. Other State Commissions have allowed and established very high fixed monthly customer charges primarily due to the reasoning that fixed costs should be recovered from fixed charges and that fixed charges promote a greater level of revenue stability to utilities. Examples of these high customer charge policy States include: Ohio and New York.

My philosophy and opinions align with those States that have a policy of maintaining relatively low fixed monthly customer charges. Duke is in the business of providing electricity to its customers such that the most equitable method of collecting revenues from its customers should be based upon the utilization of the Company's facilities and resources. Furthermore, as a matter of conservation as well as equity, the establishment of relatively low fixed charges enables customers to more easily control their energy bills. In these regards, the ratemaking process is such that rates are developed with the best expectation that the company will have an opportunity to recover its costs and collect its authorized revenue requirement. This is true even with relatively low customer charges.

My philosophy is particularly relevant within Kentucky's ratemaking process given the fact that Duke is entitled to use a fully projected future test year for ratemaking as well as the numerous guaranteed cost recovery riders that are in place within Duke's tariff.

Q. YOU INDICATE THAT SOME STATES HAVE A POLICY OF MAINTAINING RELATIVELY LOW CUSTOMER CHARGES. CAN YOU PROVIDE MORE SPECIFIC DETAILS RELATING TO THIS POLICY OF MAINTAINING RELATIVELY LOW CUSTOMER CHARGES?

A. Yes. Maryland, Montana, Oregon, and South Carolina simply have a policy of maintaining relatively low customer charges with no specific reference to those costs that should or should not be included within the development of fixed monthly Residential customer charges. With regard to Washington State, Virginia, and Pennsylvania, these Commissions have specifically developed Residential customer charges based only on those costs required to connect and maintain a customer's account.[8]

Q. IS THERE AN AUTHORITATIVE PUBLICATION THAT DISCUSSES THE DETERMINATION OF RESIDENTIAL CUSTOMER CHARGES FOR RATE DESIGN PURPOSES?

A. Yes. A NARUC Publication entitled Charging for Distribution Utility Services: Issues in Rate Design, 2000 states the following as it relates to the determination of fixed monthly customer charges:

> In evaluating proposals for redesign of distribution rates, commissions may be asked to consider structures that call for some blend of customer

[8] See for example,

a. Virginia State Corporation Commission, Case No. PUE-2014-00020, Columbia Gas of Virginia, Hearing Examiner's Report and Final Order);
b. Washington Utilities and Transportation Commission, Docket No. UE-140762, Pacific Power & Light Company, Order 08;.
c. Washington Utilities and Transportation Commission, Docket Nos. UE-170033 and UG-170034, Puget Sound Energy, Order 08;
d. Pennsylvania Public Utility Commission, Docket No. R-00061398, PPL Gas Company, Final Order;
e. Pennsylvania Public Utility Commission, Docket No. R-00932670, Pennsylvania-American Water Company, Final Order; and,
f. Pennsylvania Public Utility Commission, Docket No. R-00942991, National Fuel Gas Distribution Company, Final Order.

and usage charges, weighted so as to increase the revenue share of the fixed rate elements (in relation to historical allocations). Although much of the discussion in this paper has been cast in either-or terms (usage-based vs. fixed rates), its general prescriptions apply no less to any intermediate proposal: the magnitude of a shift from usage-based to fixed rate elements will have predictable effects on consumer demand, utility revenues, and long-term dynamic efficiency. As one moves along the continuum of rate designs from usage-based to fixed, the benefits of the former give way more and more to the difficulties of the latter. This is the kind of trade-off that commissions are often faced with balancing: our analysis concludes that the balance strongly favors a rate structure that allows consumers to avoid charges, when there cost-effective alternatives that they value more highly. Usage-based rates fit this bill; so do hook-up fees (page 46).

Q. HAVE YOU CONDUCTED STUDIES AND ANALYSES TO INDICATE THE LEVELS AT WHICH DUKE'S RESIDENTIAL CUSTOMER CHARGES SHOULD BE ESTABLISHED?

A. Yes. In designing public utility rates, there is a method that produces maximum fixed monthly customer charges and is consistent with efficient pricing theory and practice. This technique considers only those costs that vary as a result of connecting a new customer and which are required in order to maintain a customer's account. This technique is a direct customer cost analysis and uses a traditional revenue requirement approach. Under this method, capital cost provisions include a return, interest, and depreciation associated with the investment in service lines and meters. In addition, operating and maintenance provisions are included for customer metering, records, and billing.

Under this direct customer cost approach, there is no provision for corporate overhead expenses or any other indirect costs as these costs are more appropriately recovered through energy (kWh) charges.

Q. HAVE YOU CALCULATED RESIDENTIAL DIRECT CUSTOMER COSTS FOR DUKE?

A. Yes. My Schedule GAW-2 presents the results of my direct residential customer cost analysis. As indicated on Schedule GAW-2, my direct customer cost analysis includes the return of (depreciation) and return on (interest, equity return, and income

taxes) the investment in services and meters (including Smart Meters), as well as the O&M expenses associated with meters, meter reading, and customer accounting.

In evaluating the true customer costs that are required to connect and maintain a customer's account, the Commission should consider Duke's very large investment in Smart Meters. The investment in Smart Meters is much larger than that required for traditional metering of energy usage. Indeed, the purpose of Smart Meters is to assist customers and the Company in managing energy throughout the month and assists in potential load control activities. As such, the total cost of Smart Meters should not be considered as true "customer" related costs. Therefore, I have conducted my customer cost analysis under three scenarios.

The first scenario is shown in Column (1) of page 1 of Schedule GAW-2 and assigns 100% of the costs of Smart Meters as customer-related at the Company's requested cost of capital. Column (2) of Schedule GAW-2 (page 1) reflects an adjustment to meter investments and meter reading expenses to reflect those costs that would be incurred absent the Company's investment in Smart Meters. This scenario in Column (2) is also based on the Company's requested cost of capital. Column (3) of this Schedule is the same as Column (2) except that the Attorney General's recommended cost of capital is utilized.

Q. WHAT ARE THE RESULTS OF YOUR RESIDENTIAL CUSTOMER COST ANALYSES?

A. The table below provides the results of my direct customer cost analyses:

	Full Cost Of Meters	Adjusted to Reflect Energy Component of Smart Meters	Adjusted At AG ROR
Residential Direct Customer Cost	$5.47	$4.44	$4.40

As discussed above, the calculated monthly Residential customer cost of $5.47 utilizing 100% of Smart Meter costs within the customer cost component is overstated. Therefore, it is my opinion that the reasonable Residential customer cost is in the range of $4.40 to $4.44 per month.

Q. GIVEN YOUR FINDINGS THAT THE APPROPRIATE RESIDENTIAL CUSTOMER COST IS IN THE RANGE OF $4.40 TO $4.44 PER MONTH, WHAT IS YOUR RECOMMENDATION REGARDING RESIDENTIAL CUSTOMER CHARGES FOR THIS CASE?

A. Although my calculated customer costs of $4.40 to $4.44 are less than the current Residential customer charge of $11.00, in order to maintain rate continuity, I recommend that the current rate of $11.00 per month be maintained for Residential customers. By doing so, the current customer charge amount of $11.00 per month will enable the Company to recover all of its direct customer costs plus a provision of about $6.60 ($11.00 minus $4.40) for the recovery of overhead and other sunk (fixed) costs.

Q. DOES THIS COMPLETE YOUR TESTIMONY?

A. Yes.

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC APPLICATION OF DUKE ENERGY KENTUCKY, INC. FOR: 1) AN ADJUSTMENT OF THE ELECTRIC RATES; 2) APPROVAL OF NEW TARIFFS; 3) APPROVAL OF ACCOUNTING PRACTICES TO ESTABLISH REGULATORY ASSETS AND LIABILITIES; AND 4) ALL OTHER REQUIRED APPROVALS AND RELIEF	)	CASE NO. 2019-00271

AFFIDAVIT OF Glenn Watkins

Commonwealth of Virginia)

Glenn Watkins, being first duly sworn, states the following: The prepared Pre-Filed Direct Testimony and the Schedules attached thereto constitute the direct testimony of Affiant in the above-styled cases. Affiant states that he would give the answers set forth in the Pre-Filed Direct Testimony if asked the questions propounded therein. Affiant further states that, to the best of his knowledge, his statements made are true and correct. Further affiant saith not.

Glenn Watkins

SUBSCRIBED AND SWORN to before me this 12th day of December, 2019.

NOTARY PUBLIC

My Commission Expires: 10/31/2022

JENNIFER R. DOLEN NOTARY PUBLIC REG # 7315146 MY COMMISSION EXPIRES 10/31/2022 COMMONWEALTH OF VIRGINIA

EXHIBIT ____ (GAW-1)

BACKGROUND & EXPERIENCE PROFILE

GLENN A. WATKINS

PRESIDENT/SENIOR ECONOMIST
TECHNICAL ASSOCIATES, INC.

EDUCATION

1982 - 1988	M.B.A., Virginia Commonwealth University, Richmond, Virginia
1980 - 1982	B.S., Economics; Virginia Commonwealth University
1976 - 1980	A.A., Economics; Richard Bland College of The College of William and Mary, Petersburg, Virginia

POSITIONS

Jan. 2017-Present	President/Senior Economist, Technical Associates, Inc.
Mar. 1993-Dec. 2016	Vice President/Senior Economist, Technical Associates, Inc. (Mar. 1993-June 1995 Traded as C. W. Amos of Virginia)
Apr. 1990-Mar. 1993	Principal/Senior Economist, Technical Associates, Inc.
Aug. 1987-Apr. 1990	Staff Economist, Technical Associates, Inc., Richmond, Virginia
Feb. 1987-Aug. 1987	Economist, Old Dominion Electric Cooperative, Richmond, Virginia
May 1984-Jan. 1987	Staff Economist, Technical Associates, Inc.
May 1982-May 1984	Economic Analyst, Technical Associates, Inc.
Sep. 1980-May 1982	Research Assistant, Technical Associates, Inc.

EXPERIENCE

I. Public Utility Regulation

A. Costing Studies -- Conducted, and presented as expert testimony, numerous embedded and marginal cost of service studies. Cost studies have been conducted for electric, gas, telecommunications, water, and wastewater utilities. Analyses and issues have included the evaluation and development of alternative cost allocation methods with particular emphasis on ratemaking implications of distribution plant classification and capacity cost allocation methodologies. Distribution plant classifications have been conducted using the minimum system and zero-intercept methods. Capacity cost allocations have been evaluated using virtually every recognized method of allocating demand related costs (e.g., single and multiple coincident peaks, non-coincident peaks, probability of loss of load, average and excess, and peak and average).

Embedded and marginal cost studies have been analyzed with respect to the seasonal and diurnal distribution of system energy and demand costs, as well as cost effective approaches to incorporating energy and demand losses for rate design purposes. Economic dispatch models have been evaluated to determine long range capacity requirements as well as system marginal energy costs for ratemaking purposes.

B. Rate Design Studies -- Analyzed, designed and provided expert testimony relating to rate structures for all retail rate classes, employing embedded and marginal cost studies. These rate structures have included flat rates, declining block rates, inverted block rates, hours use of demand blocking, lighting rates, and interruptible rates. Economic development and special industrial rates have been developed in recognition of the competitive environment for specific customers. Assessed alternative time differentiated rates with diurnal and seasonal pricing structures. Applied Ramsey (Inverse Elasticity) Pricing to marginal costs in order to adjust for embedded revenue requirement constraints.

GLENN A. WATKINS

C. Forecasting and System Profile Studies -- Development of long range energy (Kwh or Mcf) and demand forecasts for rural electric cooperatives and investor owned utilities. Analysis of electric plant operating characteristics for the determination of the most efficient dispatch of generating units on a system-wide basis. Factors analyzed include system load requirements, unit generating capacities, planned and unplanned outages, marginal energy costs, long term purchased capacity and energy costs, and short term power interchange agreements.

D. Cost of Capital Studies -- Analyzed and provided expert testimony on the costs of capital and proper capital structures for ratemaking purposes, for electric, gas, telephone, water, and wastewater utilities. Costs of capital have been applied to both actual and hypothetical capital structures. Cost of equity studies have employed comparable earnings, DCF, and CAPM analyses. Econometric analyses of adjustments required to electric utilities cost of equity due to the reduced risks of completing and placing new nuclear generating units into service.

E. Accounting Studies -- Performed and provided expert testimony for numerous accounting studies relating to revenue requirements and cost of service. Assignments have included original cost studies, cost of reproduction new studies, depreciation studies, lead-lag studies, Weather normalization studies, merger and acquisition issues and other rate base and operating income adjustments.

II. Transportation Regulation

A. Oil and Products Pipelines -- Conducted cost of service studies utilizing embedded costs, I.C.C. Valuation, and trended original cost. Development of computer models for cost of service studies utilizing the "Williams" (FERC 154-B) methodology. Performed alternative tariff designs, and dismantlement and restoration studies.

B. Railroads -- Analyses of costing studies using both embedded and marginal cost methodologies. Analyses of market dominance and cross-subsidization, including the implementation of differential pricing and inverse elasticity for various railroad commodities. Analyses of capital and operation costs required to operate "stand alone" railroads. Conducted cost of capital and revenue adequacy studies of railroads.

III. Insurance Studies

Conducted and presented expert testimony relating to market structure, performance, and profitability by line and sub-line of business within specific geographic areas, e.g. by state. These studies have included the determination of rates of return on Statutory Surplus and GAAP Equity by line - by state using the NAIC methodology, and comparison of individual insurance company performance vis a vis industry Country-Wide performance.

Conducted and presented expert testimony relating to rate regulation of workers' compensation, automobile, and professional malpractice insurance. These studies have included the determination of a proper profit and contingency factor utilizing an internal rate of return methodology, the development of a fair investment income rate, capital structure, cost of capital.

Other insurance studies have included testimony before the Virginia Legislature regarding proper regulatory structure of Credit Life and P&C insurance; the effects on competition and prices resulting from proposed insurance company mergers, maximum and minimum expense multiplier limits, determination of specific class code rate increase limits (swing limits); and investigation of the reasonableness of NCCI's administrative assigned risk plan and pool expenses.

GLENN A. WATKINS

IV. Anti-Trust and Commercial Business Damage Litigation

Analyses of alleged claims of attempts to monopolize, predatory pricing, unfair trade practices and economic losses. Assignments have involved definitions of relevant market areas(geographic and product) and performance of that market, the pricing and cost allocation practices of manufacturers, and the economic performance of manufacturers' distributors.

Performed and provided expert testimony relating to market impacts involving automobile and truck dealerships, incremental profitability, the present value of damages, diminution in value of business, market and dealer performance, future sales potential, optimal inventory levels, fair allocation of products, financial performance; and business valuations.

MEMBERSHIPS AND CERTIFICATIONS

Member, Association of Energy Engineers (1998)
Certified Rate of Return Analyst, Society of Utility and Regulatory Financial Analysts (1992)
Member, American Water Works Association
National Association of Business Economists
Richmond Association of Business Economists
National Economics Honor Society

EXHIBIT ____ (GAW-2)

DUKE ENERGY KENTUCKY
Residential Customer Cost Analysis

	(1) At Duke Proposed ROR	(2) At Duke Proposed ROR	(3)
	Full Cost of Meters	**Adjusted to Reflect Energy Component of Smart Meters**	**Adjusted At AG ROR**
Gross Plant			
369 Services	$18,964,823	$18,964,823	$18,964,823
370 Meters-Total Alloc. to Resid. ($18,247,177)			
Non-AMI Meters	$2,154,815 1/	$2,154,815	$2,154,815
AMI Meters	$16,092,362 1/	$3,210,775 2/	$3,210,775
Total Gross Plant	**$37,212,000**	**$24,330,413**	**$24,330,413**
Depreciation Reserve			
Services	$10,417,084	$10,417,084	$10,417,084
Meters-Total Alloc. to Resid. ($4,014,009)			
Non-AMI Meters	$474,016 3/	$474,016	$474,016
AMI Meters	$3,539,993 3/	$706,305 4/	$706,305
Total Depreciation Reserve	**$14,431,093**	**$11,597,405**	**$11,597,405**
Total Net Plant	**$22,780,907**	**$12,733,008**	**$12,733,008**
Operation & Maintenance Expenses			
Meters O&M	$869,842	$869,842	$869,842
Customer Accounting Expense	$4,204,371	$4,204,371	$4,204,371
Meter Reading	$0	$237,164 5/	$237,164
Total O & M Expenses	**$5,074,213**	**$5,311,377**	**$5,311,377**
Depreciation Expense 1/			
Services	$292,219 6/	$292,219	$292,219
Meters-Total Allocated to Residential			
Non-AMI Meters	$74,557 7/	$74,557	$74,557
AMI Meters	$1,103,936 7/	$111,093 8/	$111,093
Total Depreciation Expense	$1,470,712	$477,869	$477,869
Revenue Requirement			
Interest	$451,895	$252,579	$251,843
Equity return	$1,076,972	$601,956	$552,702
State Income Taxes @ 5.228%	$75,203	$42,033	$38,594
Federal Income Tax @ 21.00%	$286,284	$160,013	$146,921
Revenue For Return	$1,890,353	$1,056,581	$990,060
O & M Expenses	$5,074,213	$5,311,377	$5,311,377
Depreciation Expense	$1,470,712	$477,869	$477,869
Subtotal Customer Revenue Requirement	$8,435,278	$6,845,827	$6,779,306
Total Revenue Requirement	**$8,435,278**	**$6,845,827**	**$6,779,306**
Number of Customers	128,431	128,431	128,431
Number of Bills	$1,541,172	$1,541,172	$1,541,172
TOTAL MONTHLY CUSTOMER COST	**$5.47**	**$4.44**	**$4.40**

1/ Total allocated meter Gross Plant times ratio of non-AMI to AMI meters per Company Filing Schedule B-3, page 4.

2/ Estimate of non-AMI meter cost of $25.00 based on two sources: (1) Response to AG-1-78, Attachment 1 (weighted average cost of $24.45), calculated per page 2 of Schedule GAW-2; and, (2) Response to AG-1-78, Attachment 2 weighted average cost of Residential meters in Case No. 2017-00321 of $24.92 ($3,285,527 ÷ 131,839).

3/ Total allocated meter depreciation reserve times ratio of gross plant per 1/.

4/ Based on ratio of Gross Plant.

5/ Estimated amount assuming no Smart Meters based on 2017 rate case Meter Reading expense of $233,172 divided by 126,269 Residential customers.

6/ Weighted average Underground and Overhead Services depreciation rate of 1.54%, per Company Filing Schedule B-3.2, page 4.

7/ Non-AMI meter depreciation rate of 3.46% and AMI meter depreciation rate of 6.86%, per Company Filing Schedule B-3.2, page 4.

8/ Same depreciation rate as non-AMI meters (3.46%).

DUKE ENERGY KENTUCKY
Residential Meter Cost

	RS			
	Meter Cost Per Unit	**Total Cost**	**No. of Meters**	**(1) Average Cost Per Meter**
Non-AMI Meters				
	$ 18.95	$ 13,038	688	
	$ 25.86	$ 983	38	
	$ 28.75	$ 2,731	95	
	$ 33.22	$ 6,212	187	
	$ 41.75	$ 292	7	
	$ 42.23	$ 2,745	65	
	$ 42.33	$ 42	1	
	$ 42.87	$ 43	1	
	$ 64.63	$ 194	3	
	$ 86.16	$ 345	4	
	Subtotal	$ 26,625	1,089	$ 24.45
AMI Meters				
	$ 95.00	$ 12,003,250	126,350	
	$ 105.00	$ 194,880	1,856	
	$ 110.90	$ 17,522	158	
	$ 125.00	$ 262,250	2,098	
	$ 147.22	$ 12,955	88	
	$ 148.08	$ 148	1	
	$ 149.78	$ 182,132	1,216	
	$ 241.90	$ 726	3	
	$ 255.00	$ 11,985	47	
	$ 259.00	$ 518	2	
	$ 266.00	$ 61,712	232	
	$ 367.00	$ 5,505	15	
	$ 372.06	$ 2,232	6	

Source: Duke response to AG-DR-1-78, Attachment 1.