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PUCO Case Caption: In the Matter of the Application of Duke Energy Ohio for Authority to Establish a Standard Service Offer ~~Offer~~ Pursuant to Section 4928.143, Revised Code, in the Form of an Electric Security Plan, Accounting Modifications and Tariffs for Generation and In the Matter of the Application of Duke Energy Ohio for Authority to Amend its Certified Supplier Tariff P.U.C.O. No. 20.

List of exhibits being filed: Volume III

OEG 1

IGS 9

Reporter's Signature: Karen Sue Gibson

Date Submitted: 11/13/14

BEFORE THE PUBLIC UTILITIES COMMISSION OF OHIO

- - -

In the Matter of the Application of Duke Energy Ohio for Authority to Establish a Standard Service Offer Pursuant to Section 4928.143, Revised Code, in the Form of an Electric Security Plan, Accounting Modifications and Tariffs for Generation Service.	:	Case No. 14-841-EL-SSO
In the Matter of the Application of Duke Energy Ohio for Authority to Amend its Certified Supplier Tariff, P.U.C.O. No. 20.	:	Case No. 14-842-EL-ATA

- - -

PROCEEDINGS

before Ms. Christine M.T. Pirik and Mr. Nick Walstra, Attorney Examiners, at the Public Utilities Commission of Ohio, 180 East Broad Street, Room 11-A, Columbus, Ohio, called at 9:00 a.m. on Thursday, October 30, 2014.

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VOLUME VII

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ARMSTRONG & OKEY, INC.
222 East Town Street, Second Floor
Columbus, Ohio 43215-5201
(614) 224-9481 - (800) 223-9481
Fax - (614) 224-5724

- - -

BEFORE THE
PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Duke Energy Ohio for Authority to Establish a Standard Service Offer Pursuant to Section 4928.143, Revised Code, in the Form of an Electric Security Plan, Accounting Modifications and Tariffs for Generation Service.	)	**Case No. 14-841-EL-SSO**
In the Matter of the Application of Duke Energy Ohio for Authority to Amend its Certified Supplier Tariff, P.U.C.O. No. 20.	)	**Case No. 14-842-EL-ATA**

DIRECT TESTIMONY

OF

ALAN S. TAYLOR

ON BEHALF OF

THE OHIO ENERGY GROUP

SEDWAY CONSULTING, INC.
BOULDER, COLORADO

September 2014

BEFORE THE
PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Duke Energy Ohio for Authority to Establish a Standard Service Offer Pursuant to 4928.143, Revised Code, in the Form of an Electric Security Plan, Accounting Modifications and Tariffs for Generation Service.	)	**Case No. 14-841-EL-SSO**
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I. QUALIFICATIONS AND SUMMARY

Q. Please state your name and business address.

A. My name is Alan S. Taylor. My business address is Sedway Consulting, Inc. ("Sedway Consulting"), 821 15th Street, Boulder, Colorado 80302.

Q. What is your occupation and by who are you employed?

A. I am the President of Sedway Consulting, a firm that specializes in providing independent evaluation services to utilities around the country in procuring and negotiating contracts for new power supplies and hedging products.

Q. Please describe your education and professional experience.

A. I earned a Bachelor of Science Degree in energy engineering from the Massachusetts Institute of Technology and a Masters of Business Administration from the Haas School of Business at the University of California, Berkeley, where I specialized in corporate finance.

I have worked in the utility planning and operations area for 29 years, predominantly as a consultant specializing in integrated resource planning, competitive bidding analysis, utility industry restructuring, market price forecasting, and asset valuation. I have testified before state commissions in proceedings involving resource solicitations, environmental surcharges, fuel adjustment clauses, and other rate riders.

I began my career at Baltimore Gas & Electric Company (BG&E), where I performed efficiency and environmental compliance testing on the utility system's power plants. I subsequently worked for five years as a senior consultant at Energy Management Associates (EMA, subsequently New Energy Associates and now a division of Ventyx), training and assisting over two dozen utilities in their use of EMA's operational and strategic planning models, PROMOD III and PROSCREEN II. During my graduate studies, I was employed by Pacific Gas & Electric Company (PG&E), where I analyzed the utility's proposed demand side management (DSM) incentive ratemaking mechanism, and by Lawrence Berkeley Laboratory (LBL), where I evaluated utility regulatory policies surrounding the development of brownfield generation sites.

Subsequently, I worked at PHB Hagler Bailly (and its predecessor firms) for ten years, serving ultimately as a vice president in the firm's Global Economic Business Services practice and then as a senior member of the Wholesale Energy Markets practice of PA Consulting Group when that firm acquired PHB Hagler Bailly in 2000. In 2001, I founded Sedway Consulting, Inc. and have continued to specialize in economic analyses associated with electricity wholesale markets. I have been the project lead in overseeing dozens of conventional and renewable resource solicitations and have evaluated thousands of proposals for power supply contracts. In addition, I have monitored and evaluated offers in hedging product solicitations and auctions where utility clients were seeking fixed-for-floating swaps, call options,

or other hedging products to stabilize their customers' exposure to electric or natural gas market fluctuations.

In recent years, I have been very active in California – a state that took a similar path to the one Ohio has chosen, requiring in the 1990s that investor-owned utilities divest most of their generation and rely on an energy market exchange for their primary power supplies. As I describe later, this led to disastrous results, ultimately causing the state to change course and adopt stabilizing policies that I have helped implement and which may be applicable and valuable for Ohio.

My resume is attached as Taylor Exhibit __ (AST-1).

Q. On whose behalf are you testifying in this proceeding?

A. I am testifying on behalf of The Ohio Energy Group ("OEG"), a group of large industrial customers of Duke Energy Ohio ("the Company").

Q. Have you previously testified before the Public Utilities Commission of Ohio?

A. Yes, in fact, I testified earlier this year in a similar Electric Security Plan ("ESP") proceeding involving an application by AEP-Ohio.

Q. What is the purpose of your testimony?

A. I am supporting the concept of a Price Stabilization Rider associated with the net benefits of Duke Energy Ohio's portion of the Ohio Valley Electric Corporation

("OVEC") power plants that is discussed in Company Witness William Don Wathen Jr.'s direct testimony. I think that such a rider would have the effect of stabilizing or providing certainty regarding retail electric service rates for the Company's customers. However, there are modifications to the Price Stabilization Rider that I am proposing that could enhance its stabilizing nature and provide benefits over a more appropriate time frame.

Q. Please summarize your testimony.

A. My testimony is organized into three sections. In the first section, I provide some background on rate stabilizing products and the deregulatory path that California took. I believe that price stability is beneficial for most utility customers and that a balanced supply portfolio (where market or marginal cost pricing is hedged with fixed-price or countercyclical products) can stabilize customer electricity prices that might otherwise be prone to significant fluctuations.

In the second section, I provide an overview of the OVEC assets and the associated Price Stabilization Rider that is being proposed by Duke Energy Ohio. While the current costs of the OVEC power supplies are greater than the market benefits of such supplies, I think that this is likely to change before long, given that a significant amount of coal-fired generation in the PJM Interconnection system ("PJM") is retiring and market supplies for energy and capacity are tightening. This is likely to drive up market prices and increase the benefits associated with the OVEC generation. Also, given that the OVEC assets have a portion of their costs that are

fixed and the remainder is based on low-cost coal at a relatively fixed-price, this OVEC generation is likely to provide countercyclical benefits. As energy market prices rise (either because of severe weather conditions or generating capacity scarcity), the OVEC plants will be dispatched more and their all-in $/MWh price of generation will decline. Thus, customers with a balanced, blended portfolio of market purchases and OVEC generation would experience offsetting influences that would stabilize their electricity prices.

In the third section, I propose modifications to Duke Energy Ohio's Price Stabilization Rider. First, I recommend that it be established as a non-cancellable rider that should be formally instituted for a reasonable period of time – longer than the ESP that is the subject of the current proceeding but shorter than the remaining lives of the OVEC generating assets. Duke Energy Ohio's forecasts indicate that the costs of the OVEC generation are likely to exceed its energy and capacity market benefits for the next several years. As discussed above, this is likely to reverse (and indeed is shown to do so in Duke Energy Ohio's forecasts) in the near future, with the OVEC benefits expected to exceed costs as we near the end of this decade. I think that Duke Energy Ohio's customers should be assured of the longer-term net benefits of the rider by locking it in for a period that spans the next several ESPs. Also, I propose a levelization approach that would flatten the Price Stabilization Rider and remove what is otherwise likely to be a front-loaded cost to Duke Energy Ohio's customers under the current plan. The proposed levelization approach would advance the long-term benefits and bring the rider closer to a market-neutral hedge

in all years. Because the levelization approach would involve Duke Energy Ohio advancing future savings to its customers in the current year, there would be a regulatory balancing account included in the arithmetic of the rider whereby Duke Energy Ohio would be made financially whole by earning its weighted average cost of capital on the cumulative balance in the account. Thus, the proposed levelized approach is revenue-neutral to Duke Energy Ohio. Finally, it is important to recognize that because the modified Price Stabilization Rider is a financial instrument, it does not change the physical amount of energy or capacity that a shopping customer must buy for its own account. Likewise, it does not change the amount of energy or capacity that must be supplied in the standard service offer ("SSO") auctions for non-shopping customers. Therefore, the modified Price Stabilization Rider maintains the benefits of a competitive market, while adding needed price stability.

II. THE BENEFITS OF HEDGES AND CALIFORNIA'S EXPERIENCE

Q. Please describe what you mean by a hedge.

A. A hedge is a simply a transaction that helps offset the consequences of circumstances that are outside of one's control. In our regular lives, insurance is an example of a hedge. Most people insure their homes so that a loss (such as a fire or flood) will be offset with payments that will help the household financially recover should there be such a bad turn of events. If there never is a fire or flood, so much the better; even though the insurance ends up being a net outflow of money (in the

form of insurance premiums), the owners of the house benefit from having the peace of mind that the insurance provides. In the context of this Duke Energy Ohio proceeding, the OVEC hedge can provide a similar form of insurance against high market prices. Even if those high market prices do not materialize, having the OVEC hedge as part of Duke Energy Ohio's customer supply portfolio can provide the peace of mind and avoid the concerns associated with customers being 100% reliant on the marginal-cost wholesale electricity markets.

Q. Do you think that 100% reliance on the marginal-cost wholesale electricity markets is wise?

A. Everyone has their own level of risk tolerance, but no, I think that most customers benefit from rate stability and that 100% reliance on a marginal-cost electricity market is unwise. Perhaps it has looked like an attractive bet in recent years in the PJM energy market, but it represents an unbalanced supply portfolio that can be vulnerable to significant price spikes. The relative calm in the PJM markets in the 2009-2013 timeframe may be coming to an end. This past winter's "polar vortex" that blanketed much of the country with colder-than-normal weather certainly moved prices up significantly. To be clear, I think that marginal-cost or spot energy markets can be a valuable component of a utility's or end user's supply portfolio, but it should not be all of it. State-regulated hedging products or fixed-cost supplies should be part of the portfolio as well. A balanced supply portfolio can help a utility weather the economic storms that invariably roil markets from time to time and thereby help the utility stabilize its customers' electricity prices.

Q. Please describe common electricity and natural gas hedging products that you have seen employed to stabilize customer electricity prices.

A. I have overseen solicitations for hedging products such as fixed-for-floating swaps and call options. Both can be used to protect against unexpected increases in natural gas or electricity market prices. Fixed-for-floating swaps in the natural gas sector (and in the electricity sector) are contracts where a seller is agreeing to financially settle with a buyer each month over the term of the contract for any differences (positive or negative) between a fixed price of natural gas (or electricity) and the actual market price in that month. Utilities use this type of hedging product to lock in the effective price of some portion of their monthly natural gas purchases. This keeps them from being completely exposed to dramatic fluctuations in the price of natural gas. Such a hedge is financially beneficial for the buyer during periods when natural gas prices move up quickly. Conversely, if natural gas prices decline, the buyer's purchase of the hedge can look like the wrong decision. In either scenario, though, fixed-for-floating swaps that cover some portion of a utility's likely gas quantity purchases provide for greater stability of procurement costs than without them – i.e., where the utility is 100% exposed to the market. The same type of hedge in the electricity markets has the same stabilizing influence on a utility's electricity procurement costs and/or trading operations. For example, I have overseen solicitations where the utility has entertained fixed-for-floating offers from Qualifying Facility ("QF") owners who are willing to propose a fixed sales price for their electricity versus the fluctuating formulaic prices that are in their QF contracts.

Q. You mentioned call options. Please describe those.

A. A call option is a hedging product where the seller guarantees to sell the product (e.g., natural gas, electricity, a corporation's publically-traded stock) to the buyer at a set price – the strike price. Thus, when market prices move above that strike price, the buyer's costs are capped. Call options can provide valuable protection from skyrocketing prices. It does not matter how high market prices go, the buyer can procure the quantity of the product covered by the call option at the set strike price. Of course, the call option comes at a cost – namely the option premium that the buyer must pay to acquire the call option. In a sense, utility power purchase agreements ("PPAs") are essentially call options, where monthly capacity payments are made to power plant owner/operators in return for the ability to purchase energy from their facilities at a fixed price or, in tolling PPAs, at a guaranteed heat rate. Whether it is through financially-settled call options or through PPAs, these products provide utilities with protection from high market prices and help stabilize their energy procurement costs. I have seen these products used effectively in California (and elsewhere) to stabilize prices, ensure system reliability, and prevent the problems that had previously driven that state's electricity sector into crisis when it was overly exposed to market prices.

Q. Please describe what happened in California.

A. California pursued a similar path to Ohio in that the state's investor-owned utilities ("IOUs") were required to divest most of their generation in the 1990s and buy their customers' energy requirements from a state power exchange. The expectation was

that supply shortages would drive up market prices and consequently encourage merchant developers to construct new generation facilities, thereby eliminating the supply shortage and bringing prices back down. However, power plant development takes years and cannot respond quickly to high market prices. In 2000 and 2001, insufficient generation capacity (in addition to alleged market manipulation on the part of market traders such as Enron) led to rolling brown-outs and rapidly increasing market prices that pushed the state's IOUs to the financial brink (and over it, in the case of Pacific Gas & Electric, which declared bankruptcy). In reaction to this crisis, the state legislature passed California Assembly Bill 52 ("AB52") which made the IOUs responsible for soliciting and procuring contracts for new generation facilities that would meet capacity targets authorized by the California Public Utilities Commission ("CPUC"). AB52 gave assurance that the IOUs would be allowed to recover the full cost of appropriately-procured contracts and provided for the sharing of the net capacity costs of these contracts among all benefitting customers, including those in the utility's area that had left the utility for alternative suppliers.

Q. So the IOUs became responsible for signing contracts that promoted the development of new generation in a timely fashion to ensure system reliability and stabilize prices?

A. Yes. There are biennial Long Term Procurement Plan ("LTPP") proceedings that set the authorized procurement targets for each of the IOUs, after which the utilities issue requests for proposals ("RFPs"), evaluate responses, and negotiate contracts

for the best resources. This has resulted in a hybrid market, where new capacity is brought on-line under long-term contracts from these RFPs and existing capacity is bid into annual utility solicitations for compliance with each utility's near-term capacity requirements.

Q. So the utilities' customers have received rate stabilizing benefits from these new generation contracts?

A. Yes, both in the form of the power plant call option benefits I discussed above and in the form of tamer energy and capacity markets where adequate targeted reserve margins ensure a reliable system and avoid prolonged skyrocketing prices. The utilities' customers are hedged with these PPAs and therefore are not 100% exposed to marginal-cost market prices. Effectively, their supply portfolio is a balanced blend of market purchases and generation from PPAs.

Q. And in a similar fashion, an OVEC Price Stabilization Rider could be used to stabilize the rates of Duke Energy Ohio's customers and protect them from being overly exposed to the energy market?

A. Exactly.

III. DESCRIPTION OF OVEC SUPPLY RESOURCE AND DUKE ENERGY OHIO'S PROPOSED PRICE STABILIZATION RIDER

Q. Please describe the OVEC supply resource.

A. The Ohio Valley Electric Corporation (OVEC), of which Duke Energy Ohio is a Sponsoring Company, has 11 coal-fired generating units – five at Kyger Creek in Gallipolis, Ohio with a combined nameplate capacity of approximately 1,086 MW, and six at Clifty Creek in Madison, Indiana with a combined nameplate capacity of approximately 1,304 MW. These plants were initially developed to provide electricity to the U.S. government's uranium enrichment operations, with some surplus going to the Sponsoring Companies. However, the U.S. government terminated the supply agreement in 2003. Thus, each Sponsoring Company now receives its entire portion of OVEC capacity and generation for its own supply portfolio. Duke Energy Ohio has entitlement to a 9% share of OVEC. Duke Energy Ohio's witness William Don Wathen Jr. introduced testimony with a proposal to implement a Price Stabilization Rider that would pass through to its customers the net benefits (be they positive or negative) of the OVEC resources for the duration of Duke Energy Ohio's entitlement.

Q. Do you think that the Price Stabilization Rider proposed by Mr. Wathen would be good for Duke Energy Ohio's customers?

A. In concept, yes, but I think that the duration of Duke Energy Ohio's proposed rider may be too indefinite or long of a period, thereby exposing the Company's

customers to long-term risks. Also, at the same time, I believe that the rider should be instituted for a defined period of time, whereby both the Company and its customers would be bound to the hedging arrangement and it could not be terminated by either side for one or the other's advantage during this defined period. That is the essence of a hedge, and neither the Company nor its customers should be able to move in or out of the OVEC hedge at will. Instead, it should represent a bilateral commitment.

Q. Before turning to the defined time period issue, why do you think that the OVEC Price Stabilization Rider would be good – in concept – for Duke Energy Ohio's customers?

A. I think that OVEC's generation represents a stable source of power from facilities that have been recently upgraded with pollution control equipment that will allow them to comply with the upcoming Mercury and Air Toxics Standards ("MATS"). It is my understanding that no significant capital expenditures are expected over the next decade. The forecast of demand charges is relatively flat. The cost of coal is likely to be stable – particularly with the retirement of a lot of other coal units in the Midwest putting downward pressure on coal prices. Also, those coal plant retirements will put upward pressure on the capacity and energy market prices; so I think that OVEC's all-in generation costs are likely to be at or below market prices in the near future.

Q. What do you mean by all-in generation costs?

A. I am simply referring to the combined demand charges and generation costs, as calculated on a $/MWh basis (with the energy and capacity market prices similarly combined and represented on a $/MWh basis). It is important to note that with high energy market prices, OVEC's plants will be called on for more generation in more hours than in low energy market price situations. Because this additional generation is coal-based and is already very competitively priced relative to current energy market prices, it will cause the all-in $/MWh to decline with higher levels of generation. Also, it means that the volume of generation associated with the OVEC hedge will increase under the conditions when one would most want the additional generation (i.e., when market prices are high) and decrease when one would not want the generation (i.e., when market prices are low). This is in contrast to fixed-quantity hedges that are sometimes traded in electricity markets and is an added benefit of the OVEC hedge.

Q. So in high-market price circumstances, this would result in more OVEC generation being allocated to Duke Energy Ohio's customers?

A. In the context of the Price Stabilization Rider's financial settlement, yes; but it is important to recognize that the Price Stabilization Rider is a financial instrument and does not change the physical energy and capacity obligations or transactions in Ohio's deregulated market.

Q. So the Price Stabilization Rider would not have an effect on the physical quantities associated with the Ohio competitive market processes?

A. Correct. It would not change what a shopping customer has to buy for its own account and would not affect the SSO auction for non-shoppers. The OVEC hedge should have no effect on Competitive Retail Electric Suppliers ("CRES") providers. It maintains the benefits of a competitive market, while adding needed price stability. The OVEC hedge would provide rate stabilizing benefits for Duke Energy Ohio's customers while having no adverse effect on the market.

Q. When do you think that OVEC's all-in costs are likely to be at or below market prices?

A. I do not know, but Duke Energy Ohio's forecast from a January 2014 analysis showed that OVEC's combined demand and energy costs are expected to be above market prices in the next several years. Specifically, the OVEC net benefits are expected to be negative (i.e., where market prices are less than OVEC costs) in 2015 through 2018 but positive in 2019 and in all years thereafter. These net benefits are depicted in Confidential Taylor Exhibit__(AST-2) which is a summary of information extracted from Duke Energy Ohio's OEG-DR-01-001_Attachment_HIGH CONF interrogatory response. By "net benefits," I am referring to the amount that the energy and capacity revenues associated with Duke Energy Ohio's portion of the OVEC assets exceed Duke Energy Ohio's portion of the OVEC costs. The energy and capacity revenues represent what Duke Energy Ohio expects it would receive from selling its portion of the OVEC generation into

the PJM energy market and its portion of the OVEC capacity into the PJM Reliability Pricing Model ("RPM") process. The OVEC costs are Duke Energy Ohio's portion of the OVEC Demand Charges plus OVEC generation energy costs. When these net benefits are negative, they translate into a charge that would increase customer bills. When positive, they would translate into a credit that would reduce the customer bills.

Q. So by Duke Energy Ohio's January 2014 forecast and analysis, it appears that much of the OVEC benefits (when net benefits are expected to be positive) will occur after the upcoming ESP?

A. Yes; and while it may be Duke Energy Ohio's intention to continue the Price Stabilization Rider through subsequent ESPs and the end of its OVEC entitlement, I think it would be appropriate to lock in the Price Stabilization Rider for a reasonable, defined period of time so that the Company cannot change its mind and drop the rider when the net benefits turn positive; if customers are going to be exposed to the early years of negative net benefits, they should be assured of the opportunity to benefit from the expected OVEC positive net benefits in future years.

Q. Do you think that Duke Energy Ohio's January 2014 forecast and analysis is reasonable?

A. I think that it is a conservative outlook for the OVEC net benefits. The long-term values were developed before the full impact of this last winter's "polar vortex" was experienced. In addition, earlier this year, I participated in a similar Ohio regulatory

proceeding involving AEP-Ohio's ESP III filing. That utility also owns a portion of the OVEC assets and provided a forecast of the expected costs and revenues from its entitlement. That forecast – which I still think was on the conservative side – showed greater net benefits than Duke Energy Ohio's forecast. Both forecasts included estimates of PJM RPM future capacity prices that, based on my experience in power supply procurement and contracting, appear to be too low to attract the development of new generation in the state. I believe that the PJM RPM capacity prices are likely to trend higher than either of these utilities' forecasts. Given the amount of capacity that is being retired in PJM, I think that will provide upward pressure on capacity prices and will increase the net benefits of the OVEC hedge beyond what may have been forecasted in these ESP proceedings.

Q. But don't you agree that Ohio has a well-functioning competitive market, as evidenced by the considerable number of CRES providers?

A. I do not think that the number of CRES providers is the best metric for gauging the success or strength of Ohio's competitive wholesale market. Instead, one needs to see adequate wholesale market pricing and the consequent development of new generation projects (and/or demand-side investments) that result in long-term reliable service for the state's customers.

IV. PROPOSED MODIFIED PRICE STABILIZATION RIDER

Q. So your proposed modified Price Stabilization Rider would apply to a specific span of years?

A. Yes. I am proposing a rider that would start in June 2015 at the beginning of the upcoming ESP and continue through and beyond the next two ESPs until the end of calendar year 2024 – approximately nine and half years. This time frame would be consistent with the PPAs and tolling-types of hedge products that I have seen procured elsewhere in the country. Also, this time frame would increase the likelihood that cumulative OVEC net benefits and associated rider would be rate neutral (i.e., close to zero). Based on the results depicted in Taylor Exhibit__(AST-2), Duke Energy Ohio's January 2014 analysis projected that the expected OVEC net benefits over the eight and half years from June, 2015 through the end of calendar year 2023 would be approximately -$6 million or about -$627,000/year. Note that this time frame for projected benefits is one year less than the time frame for the rider. This is because there would be a true-up of actual costs at the end of each calendar year (described below) that would translate into a final year's rider in 2024 for trued-up expenses from the end of 2023.

Q. Would extending the time period for the Price Stabilization Rider beyond 2024 yield potentially greater benefits?

A. Possibly, but going too far into the future may expose Duke Energy Ohio's customers to unknown risks (such as eventual decommissioning costs and higher-

than-expected CO2 costs, should federal or state legislation be enacted in this area). As I will discuss later, the concept behind the Price Stabilization Rider is that both Duke Energy Ohio and its participating customers would be bound to the nine and a half year term. There would be no opportunity for jumping in or jumping out in either party's case.

Q. You mentioned in your testimony summary that the Price Stabilization Rider would be levelized. Please describe this process.

A. The Price Stabilization Rider would be premised on Duke Energy Ohio's approximately -$6 million of OVEC net benefits over the nine and a half year period. That net benefit total would be divided by the number of years to arrive at an annual value of -$627,000/year as depicted in Taylor Exhibit__(AST-3), with an appropriate partial-year adjustment for 2015. That average annual net benefit would be the starting foundation for the annual Price Stabilization Rider. However, because the forecasted OVEC net benefits are expected to be negative in the first several years, then increasing into positive values later, a flat stream of payments to Duke Energy Ohio's customers will entail the utility pre-paying future savings. Duke Energy Ohio will need to be compensated for, in effect, loaning money to its customers in the early years of the rider. Thus, a regulatory balancing account would be established to track Duke Energy Ohio's cumulative net pre-payments and allow the utility to earn a return on that balance at its after-tax weighted average cost of capital. Incidentally, the converse would be true as well. If in any year the regulatory balancing account was negative (i.e., the utility's customers were lending

money to Duke Energy Ohio), the same Duke Energy Ohio after-tax weighted average cost of capital would be used to determine the return that should be conveyed to the customers. In any case, a levelized return on this regulatory balancing account would be initially calculated, based on the Duke Energy Ohio foundational forecast of OVEC net costs. This levelized return would have the same value in each year, and its net present value would be the same as the net present value for the non-levelized return. Taylor Exhibit__(AST-3) shows this levelized return to be approximately $0.966 million/year. The combination of the levelized return and the levelized net benefits would yield the initial Price Stabilization Rider of $1.593 million/year (= $0.966 million + $0.627 million), with the positive value reflecting a rider cost/adder. This first year rider would be adjusted for the 2015 partial year and for a Duke Energy Ohio 10% participation rate, discussed below.

Q. But this is all based on a forecast of OVEC net benefits. Forecasts are never perfect. What happens when the actual net benefits are different than the forecast?

A. At the end of each year or quarter, there would be a true-up process. Actual OVEC net benefits for the year or quarter that just ended (and perhaps any known capacity revenues or budgets for the prospective year or quarter) would be compared to that year's or quarter's forecasted net benefits. The difference would be amortized over the following three years in a layering process depicted in Taylor Exhibit__(AST-3). Note that Lines 11 and 12 on Page 2 of 3 of that exhibit depict a specific scenario of "actual" OVEC net benefits and their differences from the forecast. The exhibit

demonstrates how this scenario of specific OVEC net benefit differences would be trued-up and is illustrative only. Toward the end of the Price Stabilization Rider period (e.g., 2022 and 2023) – where there are not three years left in the rider period – the differences would be amortized over the remaining years or year. There would also be a true-up to the regulatory balancing account – in effect, a separate regulatory balancing account that would only track the returns on the cumulative net loans (positive or negative) associated with the annual differences between the actual OVEC net benefits and the forecasted ones. This is because the original levelized return already accounted for the returns associated with the forecasted net benefits. In the end, the two true-up components – 3-year amortized differences and trued-up return would be added to the original levelized Price Stabilization Rider.

Q. Would that be the rider for Duke Energy Ohio's customers?

A. Almost. There is one final step depicted in Taylor Exhibit__(AST-3). In order to provide incentives for Duke Energy Ohio to keep OVEC costs as low as possible and revenues from OVEC energy and capacity as high as possible, at least 10% of the rider would be allocated to the utility (i.e., its shareholders). The remainder would be put on Duke Energy Ohio's customer bills. This is expected to fluctuate (in a countercyclical and beneficial fashion) between being a credit or an adder.

Q. Would all Duke Energy Ohio customers get the Price Stabilization Rider?

A. There may be large industrial customers who would want to self-insure. These firms may have corporate finance departments that already deal with commodity, interest

rate, or currency exchange rate hedges. Customers who can self-insure should have that option. Thus, I propose that any customer with more than 10 MW of load per single site should be given the chance to self-insure and not participate in the OVEC hedge. This would be a one-time election at the very beginning. Such customers would either be in or out of the hedge for the entire nine and a half years. There would be no allowance for moving in or out after the start of the OVEC hedge. The percent of load for any customers who chose not to participate would be added to Duke Energy Ohio's 10%. Thus, the rest of the customer base would not be affected (either positively or negatively) by any self-insurance decisions on the part of large customers.

Q. To what extent does the proposed Price Stabilization Rider hinge on the forecast of OVEC net benefits? To reiterate the earlier concern, isn't the rider flawed if the forecast is wrong?

A. While it is true that the Price Stabilization Rider is based on Duke Energy Ohio's January 2014 forecast of 2015-2023 OVEC net benefits, the forecast itself is largely irrelevant to the Price Stabilization Rider because the rider is self-correcting and is trued-up with actual OVEC costs and benefits. The forecast provides a "best guess" and helps start the Price Stabilization Rider at the right level; but the forecast need not be anything more than a ballpark approximation. Of course, the better the forecast, the more stable the rider's baseline – but even that baseline is an average over more than eight years and thus represents an annualized estimate where the forecast's year-to-year values have been smoothed out. In addition, forecasts aside,

it is important to remember that the rider will always move from its baseline from quarter to quarter and year to year in providing the counter-cyclical benefits of dampening price swings in market prices as described earlier.

Q. Does this complete your testimony?

A. Yes.

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In the Matter of the Application of Duke Energy Ohio for Authority to Establish a Standard Service Offer Pursuant to Section 4928.143, Revised Code, in the Form of an Electric Security Plan, Accounting Modifications and Tariffs for Generation Service.	)	**Case No. 14-841-EL-SSO**
In the Matter of the Application of Duke Energy Ohio for Authority to Amend its Certified Supplier Tariff, P.U.C.O. No. 20.	)	**Case No. 14-842-EL-ATA**

EXHIBITS

OF

ALAN S. TAYLOR

ON BEHALF OF

THE OHIO ENERGY GROUP

SEDWAY CONSULTING, INC.
BOULDER, COLORADO

September 2014

EXHIBIT__(AST-1) RESUME OF ALAN S. TAYLOR

AREAS OF QUALIFICATION

Independent evaluation services for competitive bidding resource selection, integrated resource planning, market analysis, risk assessment, and strategic planning

EMPLOYMENT HISTORY

- President, Sedway Consulting, Inc., Boulder, CO, 2001-present
- Senior Member of PA Consulting, Inc., Boulder, CO, 2001
- Vice President, Global Energy Business Sector, PHB Hagler Bailly, Inc., Boulder, CO, 2000
- From Senior Associate to Principal, Utility Services Group, Hagler Bailly Consulting, Inc., Boulder, CO, 1991-1999
- Senior Consultant, Energy Management Associates, Atlanta, GA, 1983-1988
- Internships at: *Pacific Gas & Electric Company, San Francisco, CA (1990)*
  Lawrence Berkeley National Laboratory, Berkeley, CA (1989-1991)
  MIT Resource Extraction Laboratory, Cambridge, MA (1982)
  Baltimore Gas and Electric Company, Baltimore, MD (1980)

EDUCATION

- Walter A. Haas School of Business, University of California at Berkeley, MBA, Valedictorian, Corporate Finance, 1991
- Massachusetts Institute of Technology, BS, Energy Engineering, 1983

PROFESSIONAL EXPERIENCE

- Conducted numerous competitive bidding project evaluations for conventional generating resources, renewable facilities, and off-system power purchases; analyzed thousands of such power supply proposals.
- Developed and/or reviewed dozens of requests for proposals for utility resource solicitations.
- Assisted in or monitored contract negotiations with hundreds of shortlisted bidders in utility resource solicitations.
- Testified on utility competitive bidding solicitation results, affiliate transactions, cost recovery procedures, rate case calculations, and incentive ratemaking proposals.
- Managed the development of market price forecasts of North American and European electricity markets under deregulation.
- Performed financial modeling of electric utility bankruptcy workout plans.
- Trained and assisted many of the nation's largest electric and gas utilities in their use of operational and strategic planning computer models.

SELECTED PROJECTS

2014 **Analysis of Ohio Hedging Transaction**
Client: Ohio Energy Group

Analyzed and provided expert testimony in AEP-Ohio's Energy Security Plan/Standard Service Offer proceeding regarding the hedging and price stabilizing benefits of a proposed rider for the net benefits associated with utility's entitlement to the Ohio Valley Electric Corporation's generating assets.

2013- **California Solicitations for Resources**
2014 Client: Southern California Edison

Currently serving as the Independent Evaluator (IE) in Southern California Edison's (SCE) Local Capacity Requirements Request for Offers (LCR RFO) for 1,900-2,500 MW of new local capacity resources from energy efficiency, demand response, energy storage and/or gas-fired facilities. Also served as the IE for all five of SCE's 2013 reverse energy auctions of the dispatch rights to facilities under power purchase agreements executed with developers of facilities selected in the utility's 2006 New Generation RFO.

2013- **Florida Solicitation for Resources**
2014 Client: Duke Energy Florida

Provided Independent Monitor/Evaluator services in a solicitation for over 1,600 MW of power supplies for Duke Energy Florida's supply portfolio that were needed by the end of 2018. Mr. Taylor participated in all bidder conferences, was copied on all emails between the utility and bidders, performed an independent evaluation of all proposals, and testified before the Florida Public Service Commission regarding the solicitation's results.

2013 **Minnesota Solicitation for New Resources**
Client: Minnesota Power Company

Provided independent evaluation services in a solicitation for 220 MW of wind generation in Minnesota; bids were compared to the utility's proposal to develop its own wind farm. Mr. Taylor assisted with the development of the request for proposals (RFP), performed a parallel economic evaluation of the utility's facility and all competing proposals, monitored communications and negotiations with shortlisted bidders, and provided a report for filing with the Minnesota Public Utilities Commission regarding the results of the solicitation.

2013 **Kentucky Renewable Resource Analysis**
Client: Kentucky Industrial Utility Customers

Provided expert analysis and testimony on behalf of customers of Kentucky Power regarding a renewable energy purchase agreement for output from a new 58 MW biomass facility that is expected on-line in 2017.

2006-2013 **California Solicitations for Conventional and Renewable Resources**
Client: Southern California Edison

Currently serving or has served as the IE in 23 solicitations for power or gas supplies in southern California – one, as noted above, for SCE's 2013 LCR RFO, an earlier one for over 2,500 MW of new conventional resources, four for renewable energy purchases to help SCE meet its state Renewables Portfolio Standard (RPS) requirements, five for near-term capacity resources, eight for reverse energy auctions of the dispatch rights to facilities under power purchase agreements, and four for gas financial hedging products. Mr. Taylor managed or is managing a Sedway Consulting team to perform a parallel evaluation of all proposals, monitor communications and negotiations with power suppliers, and support the review of the final selected proposals by the Procurement Review Group – a collection of non-market-participant stakeholders and regulators who are/were provided confidential access to the evaluation results at intermediate stages. He has filed IE reports and sponsored testimony before the California Public Utilities Commission concerning the results of most of these solicitations.

2012 **Florida Solicitation for New Resources**
Client: Tampa Electric Company

Served as an independent evaluator in a solicitation for 500 MW of power supplies in Florida. New capacity had to be on-line by 2017; bids were compared to the utility's proposal to repower four existing combustion turbines into a larger combined-cycle facility. Mr. Taylor assisted with the development of the RFP, performed a parallel evaluation of all proposals, monitored communications and negotiations with contracting counterparties, and testified before the Florida Public Service Commission regarding the solicitation's results.

2011 **Minnesota Solicitation for Wind Resources**
Client: Minnesota Power

Provided independent evaluation services in a solicitation for 100 MW of wind generation in Minnesota. Proposals competed with a utility proposal to develop its own wind farm. Mr. Taylor assisted with the development of the RFP and performed a parallel economic evaluation of the utility's facility and all competing proposals.

2005- **California Solicitations for Conventional and Renewable Resources**
2010 Client: Pacific Gas & Electric

Served as the Independent Evaluator in four solicitations for new power supplies in northern California – one for 2,200 MW of new conventional resources, another for up to 1,200 MW of new generating resources from any source, and two others for between 1,400 and 2,800 GWh/year of renewable energy purchases. Mr. Taylor managed a Sedway Consulting team to perform a parallel evaluation of all proposals, monitor communications and negotiations with power suppliers, and support the review of the final selected proposals by the Procurement Review Group – a collection of non-market-participant stakeholders and regulators who were provided confidential access to the evaluation results at intermediate stages. He has filed IE reports and sponsored testimony before the California Public Utilities Commission concerning the results of most of these solicitations.

2007- **Florida Solicitation for New Resources**
2008 Client: Florida Power & Light

Provided independent evaluation services in Florida Power & Light's solicitation for 1,250 MW of new power supplies for 2011. Mr. Taylor performed a parallel economic evaluation to that which was undertaken by the utility. His work efforts allowed all proposal parameters to be cross-checked and corrected where necessary. He sponsored testimony before the Florida Public Service Commission concerning the results of the solicitation evaluation.

2007- **Avoided Cost Analysis for Interruptible Loads**
2008 Client: Public Service Company of Colorado

Provided an independent assessment of Public Service Company of Colorado's peaking resource avoided costs for use in the utility's development of customer credits for its interruptible service tariff.

2007- **Florida Solicitations for New Resources**
2008 Client: Tampa Electric Company

Provided independent evaluation services in two separate Tampa Electric Company solicitations for 600 MW of new power supplies for 2013, as a market test for the utility's proposals to develop initially an integrated gasification combined cycle (IGCC) facility and later a gas-fired combined cycle facility.

2004- **Regulatory Support of Commission Staff**
2005 Client: Utah Division of Public Utilities

Assisted staff for the Utah Division of Public Utilities in the division's efforts to analyze PacifiCorp's 2005 rate case. Mr. Taylor reviewed production cost modeling results and forecasts of system-wide fuel and purchase power costs.

2004- **Minnesota Solicitation for New Resources**
2005 Client: Minnesota Power

Provided independent evaluation services in a solicitation for 200 MW of firm power supplies. Mr. Taylor reviewed all proposals and performed a parallel economic evaluation among proposed turnkey facilities and power purchases.

2004 **Canadian Solicitations for Conventional and Renewable Resources**
Client: Ontario Energy Ministry

Participated in a broader consulting team and provided assistance in the development of RFPs for 2,500 MW of conventional resources and 300 MW of renewable resources. New long-term sources of power were sought to replace regional coal-fired generation.

2003- **Florida Solicitation for New Resources**
2004 Client: Florida Power & Light

Provided independent evaluation services in Florida Power & Light's solicitation for 1,100 MW of new power supplies for 2007. Mr. Taylor performed a parallel economic evaluation of all proposals and reviewed, cross-checked, and corrected (where necessary) the utility's analyses. He sponsored testimony before the Florida Public Service Commission concerning the results of the solicitation evaluation.

2002- **Minnesota Solicitation for New Resources**
2003 Client: Northern States Power

Assisted in the evaluation of a large number of multi-option proposals for new power supplies in the 2005-2009 time frame. Mr. Taylor was the independent evaluator in two separate solicitations. He managed a team of individuals in the evaluation of responses for both Requests for Proposals (RFPs). In the first solicitation, contingent proposals were received that could serve as replacement contracts for 1,100 MW of nuclear capacity if NSP were forced to decommission its Prairie Island power plant in 2007. In the second solicitation, NSP sought approximately 1,000 MW of new supplies to supplement its existing supply portfolio. The evaluation included the review of over a dozen proposed wind projects.

2002 **Florida Revisions to Bidding Rule**
Client: Consortium of utilities

Provided the Florida Public Service Commission with recommendations concerning appropriate revisions to the state's bidding rule. Mr. Taylor participated in public workshops to provide the benefits of his extensive experience in performing competitive bidding solicitations and to convey what changes should or should not be made to Florida's existing bid rule to ensure the selection of the best resources for the state's electricity customers.

2002 **Arizona Testimony Concerning Competitive Bidding Solicitations**
Client: Harquahala Generating Company, LLC

Filed testimony before the Arizona Corporation Commission in the Generic Proceedings Concerning Electric Restructuring Issues and Associated Proceedings. Mr. Taylor's testimony provided the Commission with information about competitive bidding processes that he had seen work in other states. Also, his testimony addressed various concerns that were raised by Arizona Public Service as to the feasibility of implementing competitive bidding in Arizona.

2002 **Florida Solicitation for New Resources**
Client: Florida Power & Light

Provided independent evaluation services in Florida Power & Light's solicitation for 1,750 MW of new power supplies in the 2005-2006 time frame. Mr. Taylor performed a parallel economic evaluation to that which was undertaken by the utility. His work efforts allowed all proposal parameters to be cross-checked and corrected where necessary. Also, he provided suggestions on resource optimization modeling approaches that ensured the most comprehensive examination of thousands of potential combinations of proposals.

2001 **Wisconsin Testimony Concerning Competitive Bidding Solicitations**
Client: MidWest Independent Power Suppliers

Provided testimony in a proceeding before the Wisconsin Public Service Commission on behalf of a consortium of independent power producers. Mr. Taylor testified on the benefits and timing of a competitive bidding solicitation that Wisconsin Electric Power Company (WEPCO) should be ordered to conduct prior to the utility's development of $2.8 billion in self-build generation facilities (embodied in a WEPCO proposal called Power the Future – 2). Without the benefits of a competitive solicitation, there would be no defensible means of ensuring that the utility's customers were being offered the best, most cost-effective resources.

Exhibit__AST-2

Duke Energy Ohio's Projection of 2015-2023 OVEC Net Benefits – January 2014 Analysis*
Highly Confidential

line		2015	2016	2017	2018	2019	2020	2021	2022	2023
1	OVEC Capacity ICAP (MW)	[redacted]								
2	OVEC Capacity UCAP (MW)	[redacted]								
3	OVEC Energy (GWH)	[redacted]								
4	OVEC Capacity Factor (%)	[redacted]								
5	OVEC Demand Charge ($000)	[redacted]								
6	OVEC Demand Charge ($/MW-Day)	[redacted]								
7	RPM price for capacity ($/MW-Day)	[redacted]								
8	Capacity Revenue ($ 000)	[redacted]								
9	Dividends ($000)	[redacted]								
10	Energy Market Price ($/MWh)	[redacted]								
11	Energy Revenue ($000)	[redacted]								
12	OVEC Energy Cost ($/MWh)	[redacted]								
13	OVEC Cost of Generation ($000)	[redacted]								
14	OVEC Energy Gross Margin ($000)	[redacted]								
15	OVEC Revenue (Cap., En., and Div.)	[redacted]								
16	OVEC Cost (Demand & Energy)	[redacted]								
17	**OVEC Net Benefits ($000)**	(4,784)	(7,611)	(8,439)	(8,442)	1,923	2,878	4,566	5,626	6,295
18	**Adjusted for initial partial year**	**(2,805)**	**(7,611)**	**(8,439)**	**(8,442)**	**1,923**	**2,878**	**4,566**	**5,626**	**6,295**
19	**Cumulative**	**(2,805)**	**(10,416)**	**(18,855)**	**(27,297)**	**(25,374)**	**(22,496)**	**(17,931)**	**(12,305)**	**(6,010)**

Source: Duke Energy Ohio Response OEG-DR-01-001_Attachment_HIGH CONF.xlsx

*Note: 2015-2018 forecast values as of June 2014.

Exhibit__AST-3, Page 1 of 3

Calculation of Modified Price Stabilization Rider (all values in $000)

Contains Highly Confidential Information

Line				2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
1	**Forecasted OVEC Net Benefits**			(2,805)	(7,611)	(8,439)	(8,442)	1,923	2,878	4,566	5,626	6,295	N/A
2	**Year 1 Average Expected Savings**			(368)	(627)	(627)	(627)	(627)	(627)	(627)	(627)	(627)	(627)
3	**Regulatory Account - Forecasted**												
4	Balance - Beginning of Year			0	2,438	9,421	17,233	25,049	22,499	18,994	13,801	7,549	627
5	Balance - End of Year			2,438	9,421	17,233	25,049	22,499	18,994	13,801	7,549	627	0
6	Balance - Average			1,219	5,929	13,327	21,141	23,774	20,746	16,398	10,675	4,088	313
			NPV										
7	Calculated Return		6,193	94	458	1,030	1,634	1,838	1,604	1,268	825	316	24
8	Levelized Return		6,193	567	966	966	966	966	966	966	966	966	966
9	WACC	7.73%											
10	**Initial PPA Stability Rider**			934	1,593	1,593	1,593	1,593	1,593	1,593	1,593	1,593	1,593

Exhibit__AST-3, Page 2 of 3

Calculation of Modified Price Stabilization Rider (all values in $000)

Contains Highly Confidential Information

Line		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Annual True-Up										
11	Actual OVEC Net Benefits *(illustrative)*	(1,805)	(6,611)	(6,439)	(6,442)	2,923	1,878	6,566	7,626	7,295	
12	Difference from Estimate	1,000	1,000	2,000	2,000	1,000	(1,000)	2,000	2,000	1,000	
	Amortization of Differences										
13	Calendar Year 2		(333)	(333)	(333)						
14	Calendar Year 3			(333)	(333)	(333)					
15	Calendar Year 4				(667)	(667)	(667)				
16	Calendar Year 5					(667)	(667)	(667)			
17	Calendar Year 6						(333)	(333)	(333)		
18	Calendar Year 7							333	333	333	
19	Calendar Year 8								(667)	(667)	(667)
20	Calendar Year 9									(1,000)	(1,000)
21	Calendar Year 10										(1,000)
22	Net Benefit Adjustments	-	(333)	(667)	(1,333)	(1,667)	(1,667)	(667)	(667)	(1,333)	(2,667)
	Regulatory Account - True-up Adjustment										
23	Balance - Beginning of Year	-	(1,000)	(1,667)	(3,000)	(3,667)	(3,000)	(333)	(1,667)	(3,000)	(2,667)
24	Balance - End of Year	(1,000)	(1,667)	(3,000)	(3,667)	(3,000)	(333)	(1,667)	(3,000)	(2,667)	-
25	Balance – Average	(500)	(1,333)	(2,333)	(3,333)	(3,333)	(1,667)	(1,000)	(2,333)	(2,833)	(1,333)
26	Calculated Return	(39)	(103)	(180)	(258)	(258)	(129)	(77)	(180)	(219)	(103)

Exhibit__AST-3, Page 3 of 3

Calculation of Modified Price Stabilization Rider (all values in $000)

Contains Highly Confidential Information

Line		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
27	Initial Annual Rider *(line 10)*	934	1,593	1,593	1,593	1,593	1,593	1,593	1,593	1,593	1,593
28	Net Benefit Adjustments *(line 22)*	-	(333)	(667)	(1,333)	(1,667)	(1,667)	(667)	(667)	(1,333)	(2,667)
29	Return on Regulatory Account - True-up Adj	-	(39)	(103)	(180)	(258)	(258)	(129)	(77)	(180)	(322)
	(line 26 – one year lag, except for final year)										
30	Revised Annual Rider	934	1,221	824	80	(331)	(331)	798	849	80	(1,395)
31	Duke Energy Ohio Percentage 10.0%										
32	**Final PPA Stability Rider (Customer Portion)**	**841**	**1,099**	**741**	**72**	**(298)**	**(298)**	**718**	**764**	**72**	**(1,256)**

U.S. Energy Information Administration

Electric Power Monthly

Data for July 2014 | **Release Date:** September 25, 2014 | **Next Release:** October 24, 2014

Previous Issues

Issue: August 2014 Format: pdf Go

Table 5.6.A. Average Retail Price of Electricity to Ultimate Customers by End-Use Sector,

by State, July 2014 and 2013 (Cents per Kilowatthour)

	Residential		Commercial		Industrial		Transportation		All Sectors	
Census Division and State Graph	July 2014	July 2013	July 2014	July 2013	July 2014	July 2013	July 2014	July 2013	July 2014	July 2013
New England	**17.17**	**15.68**	**14.37**	**13.80**	**11.59**	**12.61**	**NM**	**NM**	**15.08**	**14.34**
Connecticut	19.45	17.31	14.96	14.37	12.97	12.53	10.06	11.03	16.73	15.55
Maine	15.31	14.26	11.91	11.54	7.96	8.50	--	--	12.22	11.90
Massachusetts	16.27	15.12	14.63	14.45	12.63	13.78	NM	NM	14.96	14.50
New Hampshire	17.23	16.11	13.95	13.30	11.52	11.23	--	--	14.86	14.14
Rhode Island	15.85	13.31	13.54	11.55	12.12	10.75	15.08	13.61	14.36	12.27
Vermont	17.93	17.23	14.73	14.39	10.28	10.10	--	--	14.79	14.46
Middle Atlantic	**16.95**	**16.62**	**13.99**	**13.98**	**7.38**	**7.54**	**12.74**	**12.69**	**13.86**	**13.94**
New Jersey	16.52	16.42	13.58	13.79	11.50	11.92	11.62	9.69	14.69	14.85
New York	20.31	20.04	16.73	16.67	6.36	6.26	14.33	14.38	16.75	17.08
Pennsylvania	13.96	13.12	9.49	9.26	7.10	7.23	7.39	7.74	10.35	10.08
East North Central	**13.08**	**12.39**	**10.02**	**9.67**	**7.03**	**6.78**	**5.29**	**6.10**	**10.02**	**9.74**
Illinois	11.62	10.04	8.77	8.01	6.25	5.78	4.98	5.89	8.95	8.12
Indiana	11.67	11.05	9.88	9.40	6.95	6.62	9.82	9.30	9.17	8.81
Michigan	15.11	15.06	11.06	11.46	7.73	8.30	--	9.29	11.37	11.99
Ohio	13.44	12.87	9.96	9.41	6.83	6.31	7.80	6.88	10.21	9.72
Wisconsin	14.53	14.13	11.27	11.25	8.07	7.96	--	--	11.12	11.13
West North Central	**12.51**	**12.27**	**10.03**	**9.84**	**7.34**	**7.30**	**10.62**	**11.00**	**10.11**	**10.03**
Iowa	12.70	12.21	9.71	9.34	6.29	6.36	--	--	9.16	9.10
Kansas	12.74	12.08	10.59	9.87	7.81	7.41	--	--	10.72	10.13
Minnesota	13.06	12.78	10.10	10.15	7.32	7.43	10.11	10.58	10.15	10.18

Missouri	12.34	12.48	10.26	10.26	7.37	7.49	11.30	11.42	10.62	10.77
Nebraska	12.25	12.00	9.57	9.39	8.19	8.13	--	--	9.88	9.78
North Dakota	10.96	10.27	8.90	8.49	8.10	7.36	--	--	9.08	8.61
South Dakota	11.58	11.19	9.10	8.91	7.36	7.27	--	--	9.57	9.39
South Atlantic	**12.09**	**11.75**	**9.74**	**9.48**	**7.12**	**6.83**	**8.66**	**8.69**	**10.41**	**10.08**
Delaware	13.63	12.28	10.35	9.96	8.56	8.90	--	--	11.48	10.80
District of Columbia	12.17	12.89	11.63	12.03	8.41	5.96	NM	NM	11.61	12.01
Florida	11.96	11.39	9.81	9.38	8.21	7.85	8.77	8.90	10.87	10.36
Georgia	12.55	12.31	10.44	10.02	7.32	6.75	9.17	9.35	10.69	10.30
Maryland	13.77	13.71	11.05	10.88	8.42	8.64	8.24	8.31	12.06	12.02
North Carolina	11.29	11.17	9.00	9.05	6.92	6.85	7.70	7.85	9.68	9.56
South Carolina	12.55	12.12	10.23	10.02	6.53	6.22	--	--	9.99	9.56
Virginia	11.98	11.58	8.47	8.14	7.28	6.65	8.22	7.79	9.79	9.37
West Virginia	9.38	9.60	7.72	7.87	5.91	6.31	6.70	7.55	7.58	7.94
East South Central	**11.14**	**10.73**	**10.58**	**9.76**	**6.92**	**6.64**	**9.15**	**11.45**	**9.64**	**9.21**
Alabama	11.88	11.56	10.98	10.62	6.93	6.59	--	--	9.84	9.51
Kentucky	10.35	10.04	9.47	7.93	6.02	5.97	--	--	8.44	7.99
Mississippi	11.63	10.88	10.95	10.34	7.43	6.99	--	--	10.11	9.51
Tennessee	10.76	10.42	10.76	10.26	7.74	7.41	9.15	11.45	10.11	9.80
West South Central	**11.43**	**10.89**	**8.43**	**8.23**	**6.53**	**6.23**	**5.12**	**10.41**	**9.15**	**8.86**
Arkansas	10.17	9.94	8.42	8.18	6.48	6.43	10.25	NM	8.45	8.31
Louisiana	10.10	9.74	9.38	9.05	6.78	6.21	9.92	9.93	8.78	8.43
Oklahoma	10.50	9.80	8.87	8.37	6.20	5.85	--	--	8.86	8.38
Texas	12.00	11.42	8.20	8.07	6.52	6.26	4.83	10.49	9.36	9.10
Mountain	**12.42**	**12.10**	**10.26**	**9.84**	**7.57**	**7.23**	**10.69**	**10.86**	**10.33**	**10.00**
Arizona	12.53	12.51	10.76	10.52	7.48	7.43	--	--	11.18	11.14
Colorado	13.09	12.81	10.71	10.28	7.75	7.43	10.73	10.80	10.74	10.40
Idaho	10.63	10.50	8.26	7.99	7.19	7.01	--	--	8.43	8.22
Montana	10.82	11.03	9.62	9.71	5.75	5.69	--	--	8.76	8.85
Nevada	12.65	11.60	10.14	9.00	9.88	9.25	10.81	9.66	11.18	10.27
New Mexico	13.63	12.76	11.47	10.64	7.04	6.68	--	--	10.85	10.15
Utah	11.61	11.39	8.89	8.53	6.73	6.24	10.64	11.16	9.18	8.88
Wyoming	11.27	10.86	9.01	8.59	6.67	6.21	--	--	7.77	7.40
Pacific Contiguous	**15.28**	**14.48**	**15.47**	**14.53**	**9.72**	**9.09**	**9.86**	**8.27**	**14.19**	**13.35**

California	17.67	16.71	17.89	16.78	13.89	12.59	9.89	8.24	17.14	16.02
Oregon	10.83	10.22	8.82	8.37	6.33	6.03	9.24	9.03	8.85	8.44
Washington	8.96	8.87	7.93	7.72	4.40	4.27	7.81	8.31	7.09	6.98
Pacific Noncontiguous	**31.35**	**29.84**	**27.38**	**25.57**	**27.12**	**25.88**	**--**	**--**	**28.40**	**26.87**
Alaska	20.59	19.28	17.96	15.88	16.97	16.56	--	--	18.52	17.06
Hawaii	38.42	36.61	34.79	33.06	30.57	29.12	--	--	34.07	32.49
U.S. Total	**13.05**	**12.61**	**11.16**	**10.76**	**7.49**	**7.32**	**10.49**	**10.57**	**11.01**	**10.70**

See Technical notes for additional information on the Commercial, Industrial, and Transportation sectors.
Notes: - See Glossary for definitions. - Values are preliminary estimates based on a cutoff model sample.
See Technical Notes for a discussion of the sample design for the Form EIA-826.
Utilities and energy service providers may classify commercial and industrial customers based on either NAICS codes or demands or usage falling within specified limits by rate schedule.
Changes from year to year in consumer counts, sales and revenues, particularly involving the commercial and industrial consumer sectors, may result from respondent implementation of changes in the definitions of consumers, and reclassifications.
Totals may not equal sum of components because of independent rounding.
Source: U.S. Energy Information Administration, Form EIA-826, Monthly Electric Sales and Revenue Report with State Distributions Report.