Exhibit No.:	_____
Issue(s):	Economic Considerations/ Rate Design/ Cyber Security Tracker
Witness/Type of Exhibit:	Marke/Surrebuttal
Sponsoring Party:	Public Counsel
Case No.:	ER-2014-0370

SURREBUTTAL TESTIMONY

OF

GEOFF MARKE

Submitted on Behalf of
the Office of the Public Counsel

KANSAS CITY POWER & LIGHT COMPANY

Case No. ER-2014-0370

June 5, 2015

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Kansas City Power & Light Company's Request for Authority to Implement a General Rate Increase for Electric Service.	))))	Case No. ER-2014-0370

AFFIDAVIT OF GEOFF MARKE

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

Geoff Marke, of lawful age and being first duly sworn, deposes and states:

1. My name is Geoff Marke. I am a Regulatory Economist for the Office of the Public Counsel.

2. Attached hereto and made a part hereof for all purposes is my surrebuttal testimony.

3. I hereby swear and affirm that my statements contained in the attached testimony are true and correct to the best of my knowledge and belief.

Geoff Marke

Subscribed and sworn to me this 5th day of June 2015.

NOTARY PUBLIC NOTARY SEAL STATE OF MISSOURI

JERENE A. BUCKMAN
My Commission Expires
August 23, 2017
Cole County
Commission #13754037

Jerene A. Buckman
Notary Public

My Commission expires August 23, 2017.

TABLE OF CONTENTS

SURREBUTTAL TESTIMONY

OF

GEOFF MARKE

KANSAS CITY POWER & LIGHT COMPANY

CASE NO. ER-2014-0370

I. INTRODUCTION

Q. Please state your name, title and business address.

A. Dr. Geoffrey Marke, Economist, Office of the Public Counsel (OPC or Public Counsel), P.O. Box 2230, Jefferson City, Missouri 65102.

Q. Are you the same Dr. Marke that filed direct and rebuttal testimony in ER-2014-0370?

A. I am.

Q. What is the purpose of your surrebuttal testimony?

A. The purpose of this testimony is to respond to rebuttal testimony regarding:

- Economic Considerations from:
  - Kansas City Power and Light (KCPL) witness Darrin Ives
- Rate Design considerations from:
  - KCPL witness Tim Rush and Dr. Edwin Overcast
- CIP/Cyber Security Tracker from:
  - KCPL witness Joshua Phelps-Roper and Dr. Edwin Overcast

Q. Please summarize your primary positions and conclusions.

A. Public Counsel recommends that the Commission:

- Reject KCPL's proposal to increase residential customer fixed charges by 177%.
- Reject KCPL's proposal for a tracker for cyber security expenditures.

II. ECONOMIC CONSIDERATIONS

Q. Please summarize Mr. Ives economic considerations for KCPL ratepayers.

A. Mr. Ives provides four points including:

- Company investments since 2006.
- Rate comparisons with regional and national electric utilities.
- Company rate and ratepayer wage increase comparison from 1988 to present.
- Concern about rate increases and a recognition that KCPL sponsors low-income programs.

I will respond to each of these points in turn.

Q. Should the Commission consider all of the Company investments since 2006?

A. Yes, to the extent that the Commission has not already considered these investments in the five rate cases that preceded the current one and which resulted in ratepayers experiencing a 57.69% total compounded increase in their rates. Otherwise, no, their inclusion is nothing more than the cost of doing business and meeting service expectations for a regulated electric utility.

Q. Should the Commission consider KCPL's regional and national rates ranking?

A. Yes, as stated in Mr. Ives rebuttal testimony,

> KCP&L-MO's rates are approximately 15% below the national average, and slightly above (2%) the regional average for investor-owned utilities. As I

mentioned in my Direct Testimony, this demonstrates that our KCP&L-MO rates are not outliers today.[1]

Of course the Commission should also consider that the strength of this line of argument is diminished in light of the Company's request for a 15.75% overall rate increase and a 177% residential customer charge increase. The former (15.75% overall rate increase) would significantly inflate KCPL's regional rate ranking and the latter (177% residential customer charge increase) would in fact represent a nation-wide outlier.

The Commission should also consider that ten years ago KCPL was 31.27% below the national average and 8.43% below the region.[2] The large percentage drop at both the national and regional level in affordable electric services for KCPL when compared to its peers should give the Commission pause. This is especially true in light of the other economic data submitted by Staff and OPC reflecting the lingering effects of the great recession on KCPL's service territory relative to the rest of the country and the Company's past five rate increases.

Finally, the Commission should consider that these ranking estimates do not account for the surcharge bill increases for KCPL ratepayers outside of traditional rate cases—most notably seen in the Demand-Side Investment Mechanism (DSIM). The DSIM surcharge will increase significantly (particularly for the residential customer class) as the Company begins to collect their throughput disincentive and utility performance incentive from their MEEIA portfolio.

Q. Should the Commission consider Mr. Ives' larger historical range of economic data and Company rate levels which extends to 1988?

A. Not at the expense or risk of distorting Staff and OPC's more pertinent contemporary data. By expanding the historical range of data, Mr. Ives attempts to diminish the cost impact ratepayers have experienced. This is because from the mid-80s to early 00s slow input price growth played a major role in the declining real price of power. This was largely a result of

[1] ER-2014-0370 Rebuttal Testimony of Darrin Ives p. 6, 8-10.
[2] ER-2014-0370 Direct Testimony of Darrin Ives p. 32, 14-16.

declining long-term bond yields, a favorable price for coal, and increased nuclear output.[3] But this begs a further question, why start at 1988?

If the historical range of economic data and Company rate levels were expanded to include the 70s and early 80s the Commission would see a period where power prices rose considerably relative to general inflation.[4] The point being, Mr. Ives' suggestion that 1988 represents a more accurate picture for baseline economic consideration is a biased selection. The average ratepayer will take little comfort in knowing that electricity was a really great value twenty-seven years ago in 1988 when they are being asked to pay substantially more of their income to keep the lights on in 2015. The low-income and fixed-income ratepayers will experience an even greater erosion of living standards with some households forced to choose between the energy needed to cool their homes and their other necessities, such as food, medicine and transportation.[5]

Q. Should the Commission consider KCPL's sponsorship of programs to help vulnerable customers cope with the 57.75% compounded increase in rates from the past five rate cases as well as the 15.75% overall and 177% residential customer charge requested increases in this case?

A. Yes, however, the Commission also should be aware that all of the income-eligible programs that Mr. Ives referenced: the Economic Relief Pilot Program (ERPP), Dollar-Aide, and Low-Income Weatherization Assistance Program (LIWAP) have seen either a decline in their available funding or otherwise have failed to fully expend their budget. These deficiencies are especially disconcerting given the fact that more than 20% of KCPL ratepayers (over 48,000 accounts) have past-due balances as of October 2014.[6]

[3] Edison Electric Institute (2006) Assessing Rate Trends of U.S. Electric Utilities http://www.eei.org/issuesandpolicy/stateregulation/Documents/assessing_rate_trends.pdf
[4] Ibid.
[5] Bhattacharya, J. et al. (2002) Heat or eat? Cold weather shocks and nutrition in poor American families. *National Bureau of Economic Research* http://www.nber.org/papers/w9004.pdf
[6] ER-2014-0370 Direct Testimony of Tim Rush p. 45, 6-7.

Q. Please comment on the three low-income programs.

A. According to company witness Tim Rush's rebuttal testimony, through December 2014, the ERPP program had 8.13% or $51,230 in unspent funds. It is important to remember that the ERPP services approximately 1,000 income-eligible ratepayers in the KCPL service territory. Both the unspent funds and the small size of the program should be contrasted against the large number of ratepayers that are currently experiencing economic hardships. Currently KCPL's ERPP program is funded as a 50/50 split between ratepayers and shareholders at a combined $630,000. KCPL has proposed to double this amount and increase the number of applicants by 500. However, KCPL's proposed expansion of the program is contingent on the 177% residential customer charge increase as stated in Mr. Rush's rebuttal testimony:

> I would say the ERPP expansion is contingent on the increased residential customer charge. . . . Absent approval of an increased customer charge, this expansion is not warranted.[7]

In addition to the ERPP direct bill payment program, KCPL has a second bill assistance program, Dollar-Aide. In response to OPC data request ER-2014-0370 2049, the Company provided funding and usage level for Dollar-Aide for 2011 to 2014 which showed a four-year decline in both households served and funds utilized as seen in table 1 and table 2 respectively.

[7] ER-2014-0370 Rebuttal Testimony of Tim Rush p. 5, 13-14 & 21.

Table 1: KCPL Dollar Aide and Dollar Aide credits in households served 2011-2014

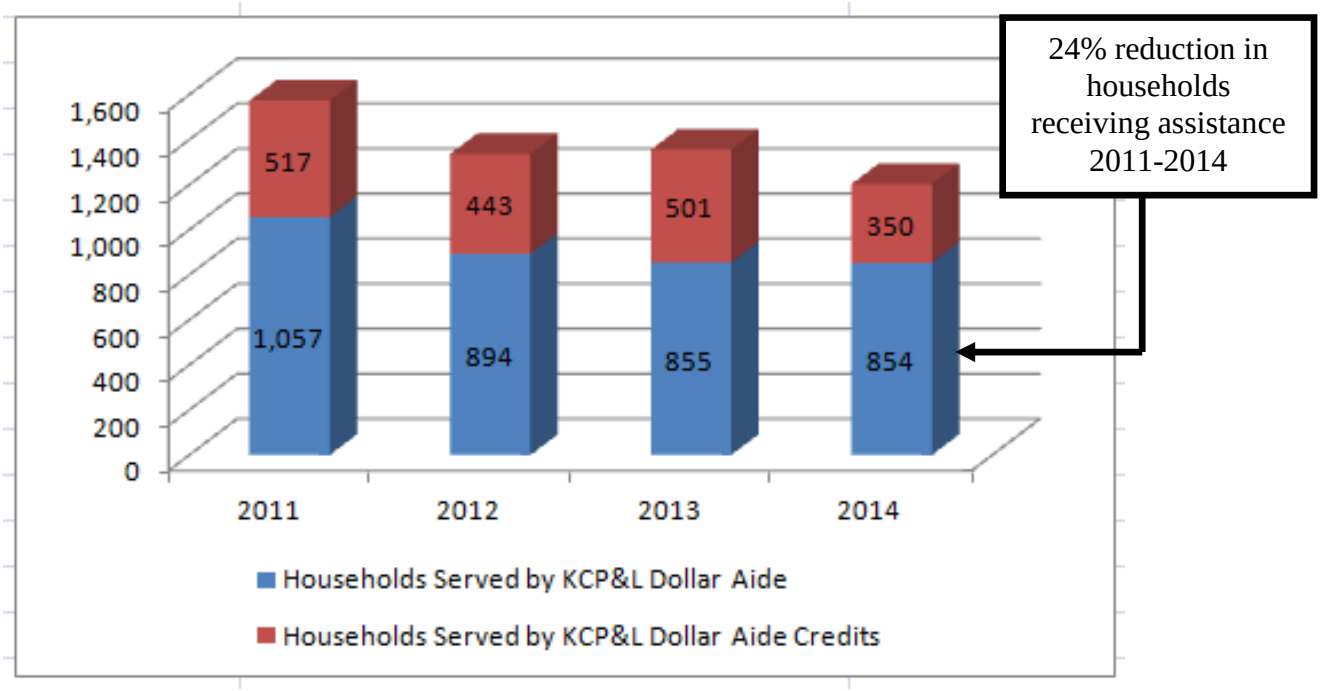
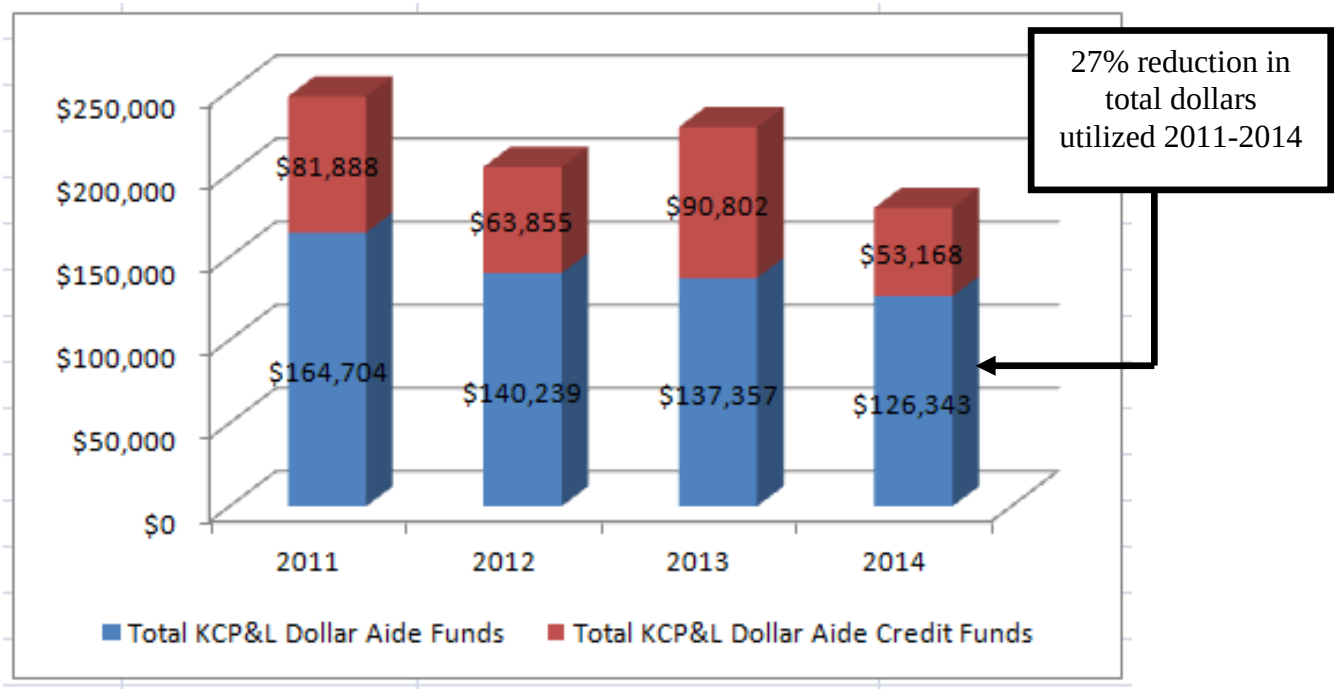


Table 2: KCPL Dollar Aide and Dollar Aide credits in funds utilized 2011-2014



As seen above, there has been a 24% reduction in the overall number of households receiving assistance and a 27% reduction in the overall amount of total dollars utilized from 2011 to 2014. Consider also that the Dollar-Aide program operates primarily on voluntary donations from KCPL ratepayers; KCPL gives an additional $0.50 for each $1 donated by a ratepayer. To offer some perspective:

- Dollar-Aide 2014 expenditures = $179,511
    - $119,674 were from voluntary donations from ratepayers
    - $59,837 from Company shareholders

Finally, Mr. Ives cites KCPL's support for LIWAP as evidence of proactive mitigation efforts to reduce the energy burden. According to OPC data request ER-2014-0370 2054 KCPL has expended:

- LIWAP expenditures Feb. 2013 to June 2014 (fifteen months) = $434,239.77
    - $574,888 was the stipulated annual amount per ER-2012-0174
    - More than 24% of funds approved were not spent with three additional operating months.
    - All costs collected from ratepayers
- LIWAP expenditures July 2014 to Dec. 2014 (five months) = $26,590.21
    - $209,052 was budgeted for this period for KCPL's MEEIA (EO-2014-0095)
    - 87% of funds approved were not spent
    - All costs collected from ratepayers (excludes opt-out customers)

Both funding stipulated from KCPL's last rate case and funding budgeted from KCPL's MEEIA portfolio have been significantly underutilized to date. It is important to note that KCPL does not administer LIWAP programs in their service territory and recent LIWAP funding agency transitions in the KC metro area account for much of the cost discrepancy in this example. Regardless of the reasons, the fact remains, that LIWAP activity in the KCPL service territory has been below expectations.

Q. Please continue.

A. KCPL is clearly not in the charity business, nor should they be. However, it seems wholly inappropriate for the Company to frame itself as though it has been operating at a level above and beyond what would reasonably be expected when data suggests otherwise. Moreover, repeated claims from Company witnesses Rush and Ives in both direct and rebuttal regarding the Company's concerns for low-income customers should be tempered when proposals to assist those customers are couched with attached monetary strings.

Rather than suggesting the Company has been proactively taking steps to mitigate the impact of previous rate increases and is uniquely in a position to help low-income customers weather a 177% increase to the residential customer charge, data provided by the Company would imply otherwise.

II. RATE DESIGN

Q. Please summarize Mr. Rush's rate design comments as they pertain to the residential customer charge increase.

A. Mr. Rush provides a general argument for an increase in the residential customer charge based on overall trends in the electric industry, referencing the testimony of KCPL witness Dr. Overcast as further support. He then cites five positions in the Commission's Report and Order in Ameren Missouri's ER-2014-0258 that supported rejecting a $0.50 increase in Ameren Missouri's residential customer charge. Those Commission findings from the Ameren Missouri rate case and Mr. Rush's counterarguments (listed as sub-points) as they pertain to KCPL include:

1.) Commission Finding: Customer-related costs represent the minimum costs necessary to make electric service available to the customer.

- Rush Response: The Company believes customer-related costs extend beyond the bill, meter and drop to include local facilities costs as well for the residential customer class.

2.) Commission Finding: Any increase in the company's customer charge should be accompanied by a decrease in the volumetric charge.

- Rush Response: The Company's tariff offsets the customer charge increase with a reduction in the energy charge.

3.) Commission Finding: The customer charge should be based on the results of a particular class cost of service report.

- Rush Response: The customer charge increase is based on KCPL's CCOS report.

4.) Commission Finding: The Commission must also consider the public policy implications of changing the existing customer charge.

- Rush Response: There is too much focus on the customer perspective for energy efficiency and not enough focus on the company's perspective for fixed cost recovery.

5.) Commission Finding: Residential customers should have as much control over the amounts of their bills as possible.

- Rush Response: The residential customer will still have control over the majority of their bill.

I will respond to Mr. Rush and Dr. Overcast's sentiments on overall trends in the electric industry and each of the aforementioned points raised above.

Overall Trends in the Electric Industry

Q. What overall trends in the electric industry does Mr. Rush cite as evidence that the Commission should depart from traditional ratemaking principles.

A. First, it should be noted that seeking to shift risk from shareholders to ratepayers through an increased customer charge is not a new "trend." Historically, utilities have attempted to make similar arguments during previous over-hyped "death spirals," most notably in the early 80s after the Public Utility Regulatory Policies Act (PURPA)[8] and in the late 90s following electric deregulation in many U.S. states.[9, 10] The arguments for shifting fixed cost recovery to a customer charge did not gain traction during the previous two rate design windows and now the argument has resurfaced this time driven in part by a report from the Edison Electric Institute.[11] Sentiments of that report have been restated in Mr. Rush's rebuttal testimony as justification for the 177% increase in the residential customer charge and include: the availability of distributed generation at the customer home (rooftop solar), an increased focus on energy efficiency, and appliance efficiency standards.[12]

Q. Please respond.

A. None of these "trends" are currently impacting KCPL to a significant extent. Barring a dramatic drop in the price of rooftop solar and/or major legislative mandates, there are no foreseeable disruptive trends that will impact KCPL in the near future. The fact that these perceived trends may or may not actually be playing out in other parts of the country should

[8] Sterzinger G.J. (1981). The customer charge and problems of double allocation of costs. *Public Utilities Fortnightly* p. 30-32. (See attachment GM-1).

1. [9] Weston, F. (2000) Charging for Distribution Utility Services: Issues in Rate Design. Regulatory Assistance Project. http://www.oca.state.pa.us/cinfo/DistributedResourcesWorkshop/DistributionUtilityIssues/DistributionUtilityRateDesign.pdf

[10] Marcus, W.B. & Coyle, E.P. (1999) Customer Charges in the Restructured World: Historical, Policy, and Technical Issues. Adapted from a presentation to NARUC's Energy Resources and Environment Committee. JBS Energy, Inc. http://www.jbsenergy.com/Energy/Papers/Customer_Charges/customer_charges.html

[11] Kind, P. (2013) Disruptive Challenges: Financial implications and strategic responses to a changing retail electric business. Edison Electric Institute. http://www.eei.org/ourissues/finance/Documents/disruptivechallenges.pdf

[12] ER-2014-0370 Rebuttal Testimony of Tim Rush p. 52, 7-14.

not distract the Commission from the environment in which KCPL operates. Nor should these trends justify such a major departure from traditional ratemaking principles, especially when the relevant available data suggests otherwise.

Distributed Generation

Q. Please speak to the increased availability of distributive generation at the customer's home.

A. My rebuttal testimony has spoken previously to why this is not an issue for KCPL by pointing out the minimal amount of rooftop solar in KCPL's service territory and how the Company will not need to seek further customer-generated solar for compliance in the near future. For comparative purposes, it may help to examine a state where rooftop solar *is* an issue. Of all of the U.S. states, Hawaii and its unique geographic make-up, serve as an example where aggressive rooftop solar deployment has been realized. According to Hawaiian Electric:

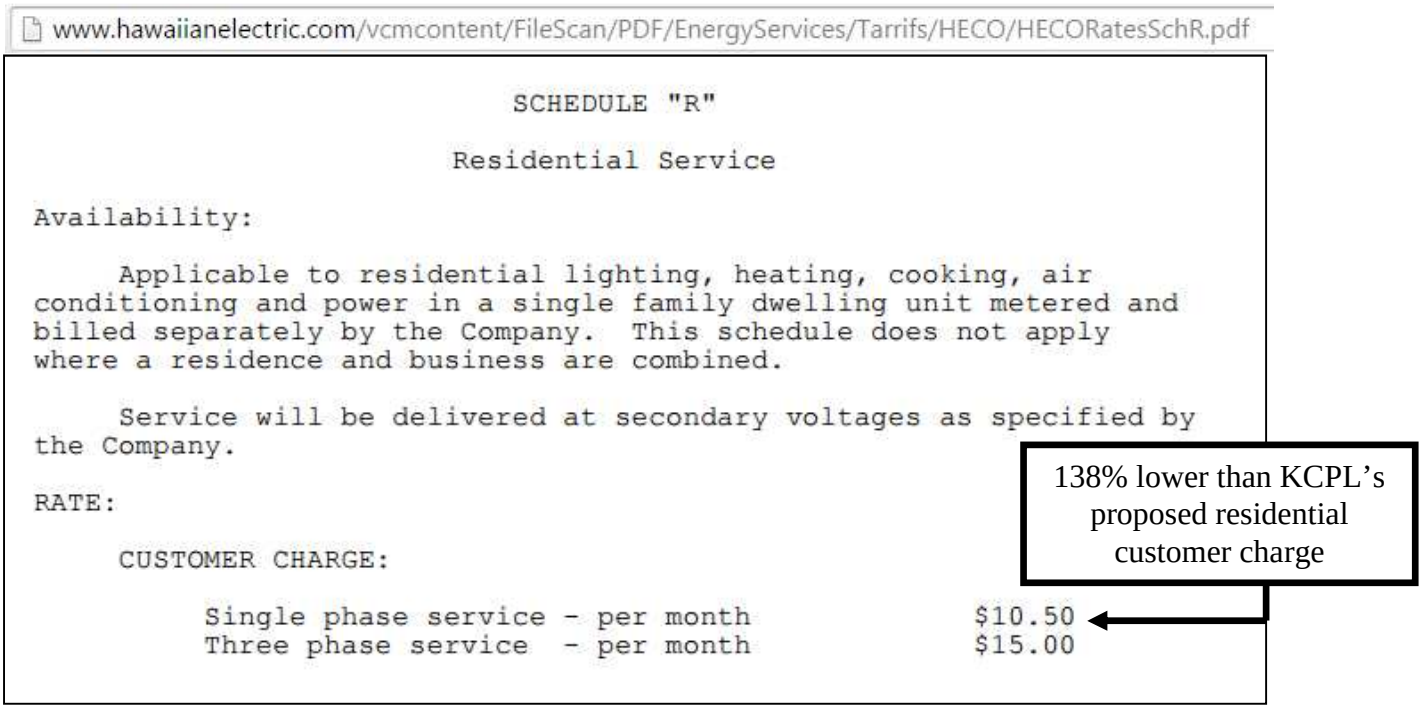
> Across the three Hawaiian Electric Companies, more than 51,000 customers have rooftop solar. As of December 2014, about 12 percent of Hawaiian Electric customers, 10 percent of Maui Electric customers and 9 percent of Hawaii Electric Light customers have rooftop solar. This compares to a national average of one-half of 1 percent (0.5) as of December 2013, according to the Solar Electric Power Association.[13]

In contrast to Hawaii and the national average, KCPL has one-twentieth of 1 percent (0.2) of their customers with rooftop solar. In further contrast, while KCPL seeks Commission approval for a 177% increase to the residential customer charge from $9.00 to $25.00 based upon one-twentieth of one percent rooftop penetration, Hawaiian Electric customers pay a

[13] Hawaiian Electric (2015) Hawaiian Electric Companies propose plan to sustainably increase rooftop solar. http://www.hawaiianelectric.com/heco/_hidden_Hidden/CorpComm/Hawaiian-Electric-Companies-propose-plan-to-sustainably-increase-rooftop-solar

$10.50 customer charge when twelve percent of their customers have rooftop solar. Figure 1 provides a snapshot of Hawaiian Electric's Residential Service Rate's customer charge.

Figure 1: Hawaiian Electric Residential Tariff Customer Charge amount [14]



In Hawaii, a minimum bill charge (plus applicable surcharges) was applied if in a given month a resident's net kWh use is zero or a negative number, or if their net kWh use was so low that the sum of the customer charge, non-fuel energy charge, base fuel energy charge, plus applicable surcharges were lower than the minimum charge.[15]

Moving forward, the Hawaiian IOU's have proposed a transitional program that would double the threshold of rooftop solar and include a new pricing structure for customers who

[14] Hawaiian Electric Schedule "R" Residential Service (2015) http://www.hawaiianelectric.com/vcmcontent/FileScan/PDF/EnergyServices/Tarrifs/HELCO/HELCORatesSchR.pdf

[15] Hawaiian Electric (2015) Understanding your net energy metering bill summary https://www.hawaiianelectric.com/vcmcontent/EnergyServices/NetEnergyMetering/Understanding_Your_NEM_Bill_Summary_Brochure_FC.pdf

install new rooftop solar which would more accurately account for the costs of operating and maintaining their electric grid. According to Hawaiian Electric's press release:

> This new pricing would ONLY apply to NEW PV customers. Existing customers and those with pending applications would still be compensated under the current NEM program.[16]

As stated in my rebuttal testimony, barring a significant drop in costs for panels and installation it is unlikely there will be many new rooftop solar customers in KCPL's service territory because the ratepayer-funded solar rebates are no longer available, and KCPL's solar requirements have been met. If KCPL's customer charge were approved, it would represent a 138% *higher* customer charge than Hawaiian Electric. The minimal amount of rooftop solar to date in KCPL's service territory is not an appropriate justification for a 177% residential customer charge increase.

The Commission should also be aware that the minimal amount of rooftop solar in KCPL's service territory to date was, at least in part, enabled by KCPL's unregulated affiliate KCP&L Solar. That entity substantially profited in this area including money from the finite amount of solar rebates made available from ratepayer's pockets. It would seem disingenuous to cite rooftop solar as grounds for shifting risk to ratepayers while the Company's unregulated affiliate has simultaneously profited from this "trend."

[16]Hawaiian Electric (2015) A sustainable solar future for Hawaii http://www.hawaiianelectric.com/heco/_hidden_Hidden/CorpComm/Hawaiian-Electric-Companies-propose-plan-to-sustainably-increase-rooftop-solar

Energy Efficiency

Q. Please speak to the increased focus on energy efficiency at the customer's home.

My rebuttal testimony spoke to how a 177% residential customer charge increase would jeopardize future MEEIA applications and call into question the assumptions and cost recovery of KCPL's current Cycle I portfolio. To be clear, KCPL is being financially compensated and allowed to receive *additional* monetary rewards for promoting energy efficiency. This is a "trend" only insofar as KCPL is actively supporting and profiting from it.

Q. How does the customer charge increase impact KCPL's MEEIA Cycle I assumptions?

A. If the customer charge was increased, KCPL's Commission-approved MEEIA would no longer reflect the operating environment assumed when it was approved. All three of KCPL's cost-recovery "legs" of their MEEIA would have to be adjusted downward, including: past and future recovery of program costs, throughput disincentive, and the utility performance incentive. It is unclear whether a MEEIA would still be cost-effective for the residential customer class.

Without going into great detail, consider that a MEEIA is designed to reconcile the utility's traditional business model with the goal of promoting and encouraging energy efficiency. Part of that reconciliation, the throughput disincentive, as well as the potential for an additional monetary reward is predicated on how much fixed costs are collected in volumetric rates. If the residential customer charge is increased to account for a considerable amount of fixed costs (e.g., $9.00 to $25.00), the throughput disincentive for the Company to provide a MEEIA portfolio will have to be reduced going forward, and previously collected throughput disincentive recovery would need to be audited yet again to account for the double-counting of fixed costs. Removing a considerable amount of the "benefits" from investments made by residential customers since July 2014 will also ensure that the utility

performance incentive is no longer a foregone conclusion. Finally, it is anyone's guess how customers who have already made capital investments in energy efficiency end-use measures would respond if the payback period of those items were extended and likely no longer cost-effective. Incidentally, this line of reasoning is also true for customers who have made rooftop solar investments.

In short, the Company will be jeopardizing millions of dollars in sunk costs as well as considerable time and effort from all parties towards the promotion of energy efficiency as a least cost resource to date. A 177% increase to the residential customer charge will also impact the assumptions of KCPL's recently filed triennial IRP in EO-2015-0254 which emphasizes demand-side management (DSM)[17] as the only resource the Company would be seeking actively each of the next twenty years. Table 3 reprints a breakdown of KCPL's preferred resource plan.

Table 3: KCPL Preferred Resource Plan[18]

4827 MW of Demand-Side Management (2015-2034)

Table 10: KCP&L Preferred Resource Plan

Year	CT's (MW)	Wind (MW)	Solar (MW)	DSM (MW)	Retire (MW)	Total Capacity
2015	0			29		4372
2016	0	350	3	71		4321
2017	0	300		103		4434
2018	0			124		4434
2019	0			139		4444
2020	0			176		4444
2021	0			206		4254
2022	0			228		4254
2023	0			248		4269
2024	0			266		4258
2025	0			284		4283
2026	0		7	299		4284
2027	0			308		4309
2028	0			316		4359
2029	207			325		4366
2030	0			333		4416
2031	0			337		4441
2032	0			341		4466
2033	0			345		4516
2034	0			349		4541

[17] Demand-side management is the modification of consumer demand for energy through various methods such as energy efficiency and conservation.
[18] EO-2015-0254 Kansas City Power & Light Company (KCP&L) Integrated Resource Plan. Volume 1: Executive Summary p. 15

Moving forward, OPC would insist that cost-effectiveness testing accompany any drastic customer charge increase as well as further consultation from KCPL's third-party potential study contractor as to what the appropriate payback assumptions should be in KCPL's MEEIA case EO-2014-0095. Any associated costs for recalculating KCPL's MEEIA design should be assumed solely by the Company, as this would essentially amount to a refiling of their application.

Appliance Codes and Standards

Q. Please speak to the increase of appliance efficiency standards and building codes.

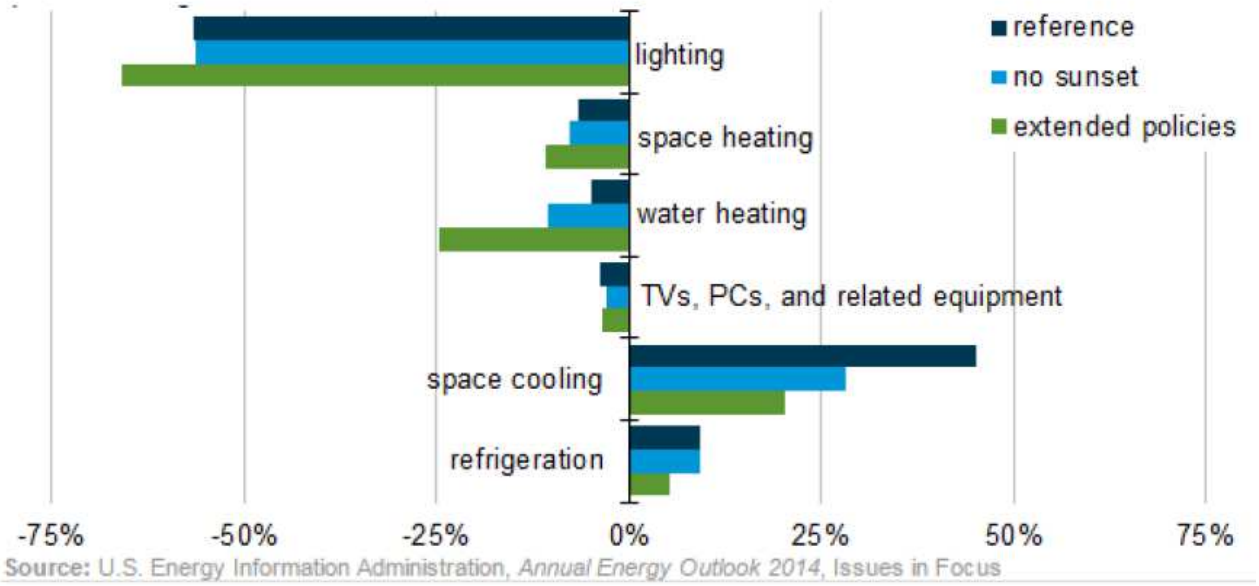
A. First, various appliance efficiency standards have been in place for decades.[19] Second, federal appliance efficiency standards only set minimum energy efficiency levels. They remove the most inefficient products from the market while retaining consumer choice. Moreover, the enactment[20] and enforcement[21] of those standards has been inconsistent and has played out unevenly over multiple years. Even then, according to the U.S. Energy Information's Administration's (EIA) 2014 Annual Energy Outlook the current federal efficiency appliance standards are expected to impact certain end uses more than others.

Table 4 reprints data presented by the EIA's 2014 Annual Energy Outlook which looked at changes in the residential delivered energy consumption for selected end uses projected out to 2040 based on three different modeling scenarios. The EIA scenarios included: the reference case (current laws and regulations), no sunset (reference + federal tax credits are

[19] U.S. Department of Energy (2015) Appliance and Equipment Standards Program http://energy.gov/node/773531/history.html
[20] Tomich, J. (2013) Feds withdraw new furnace efficiency standards. http://www.stltoday.com/business/local/feds-withdraw-new-furnace-efficiency-standards/article_7ccf47e4-2e7b-55a4-a1fc-6c301b7eec7f.html
[21] Dawson, K. (2013) US House Blocks Enforcement of Energy Standards Again. http://www.allledlighting.com/author.asp?section_id=560&doc_id=563134

extended) and extended policies (increase in appliance standards and a national building energy code enforced).[22]

Table 4: Change in residential delivered energy consumption for selected end uses, 2012-2040



Source: U.S. Energy Information Administration, *Annual Energy Outlook 2014*, Issues in Focus

Table 4 shows that federal appliance standards impact certain end uses more than others. For example, energy consumption by residential space cooling equipment (air conditioners) is projected to increase by about 45% from 2012 to 2040 due mainly to the projected growth in the number and size of homes.[23]

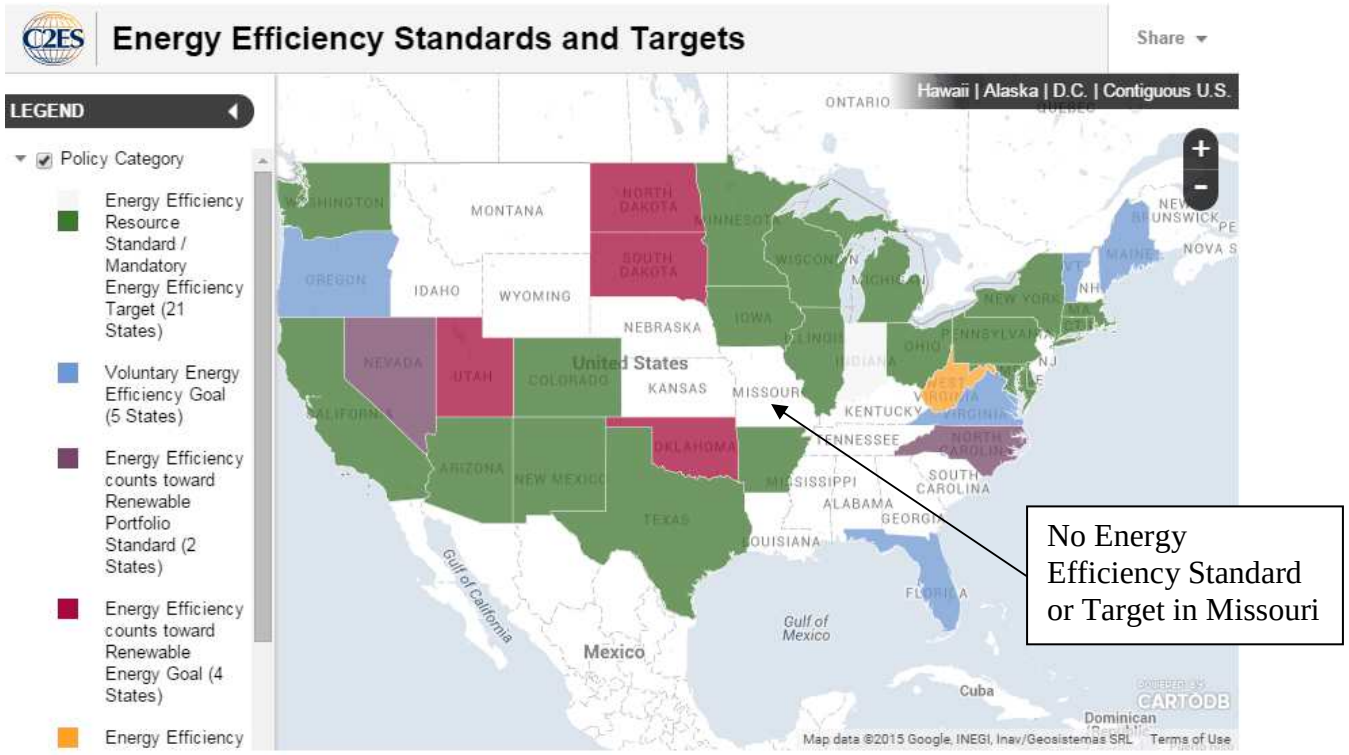
To date, the most cited federal standard that has impacted utility-run energy efficiency programs has been the phase-out of the incandescent light bulb. This is less of an issue for KCPL in the near future, because their MEEIA portfolio has been in place less than a year. Consider also that lighting only accounts for roughly 14% of a home's residential energy usage. Moreover, there is a considerable body of research that has shown that an increase in

[22] Boedecer, E. et. al (2014) Issues in Focus: No Sunset and Extended Polices Cases. EIA 2014 Annual Energy Outlook. http://www.eia.gov/forecasts/aeo/section_issues.cfm#updated_nosunset
[23] Ibid.

efficient lighting can be accompanied by an increase in average hours-of-use, a phenomenon commonly referred to as the "rebound effect."[24]

Putting lighting aside for the moment, it should be noted that Missouri can be seen as an outlier compared to the rest of the nation when it comes to efficient appliance and building standards. A look at U.S. energy policy on a state-by-state basis in Figures 3 through 6 from the Center for Climate and Energy Solutions illustrates this.

Figure 3: Energy Efficiency Standards and Targets:[25]



[24] Nadel, S. (2012).The Rebound Effect: Large or Small? ACEEE White Paper http://aceee.org/files/pdf/white-paper/rebound-large-and-small.pdf

[25] Center for Climate and Energy Solutions: Energy Efficiency Standards and Targets 2015 http://www.c2es.org/us-states-regions/policy-maps/energy-efficiency-standards

Figure 4: Residential Building Energy Codes[26]

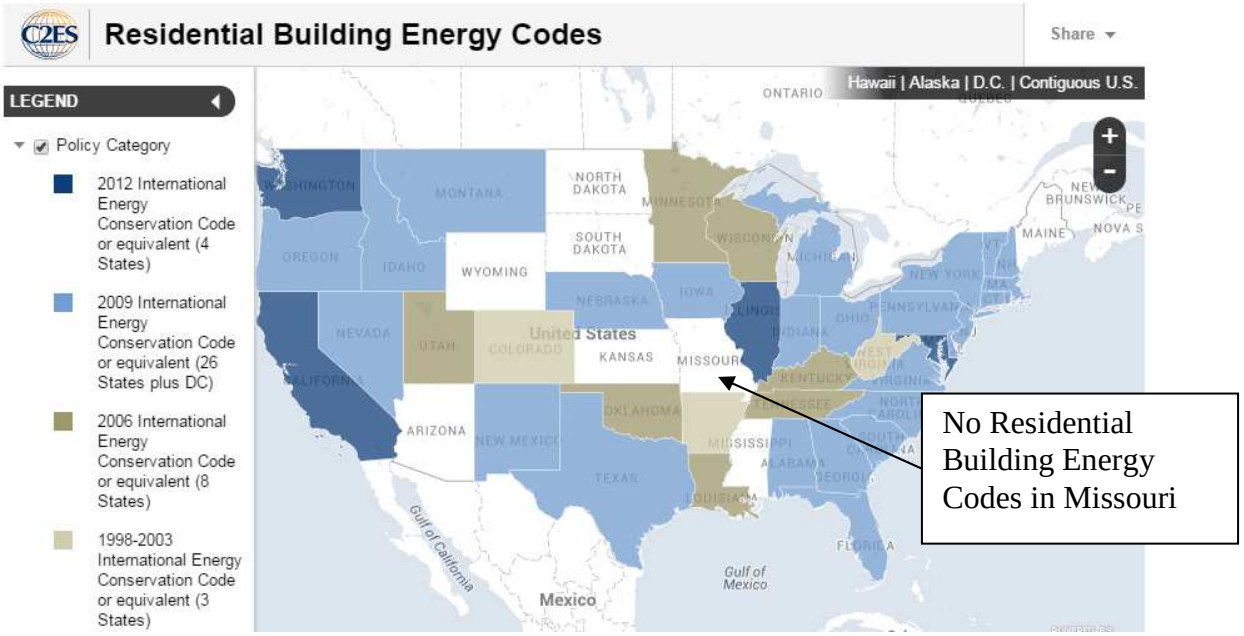
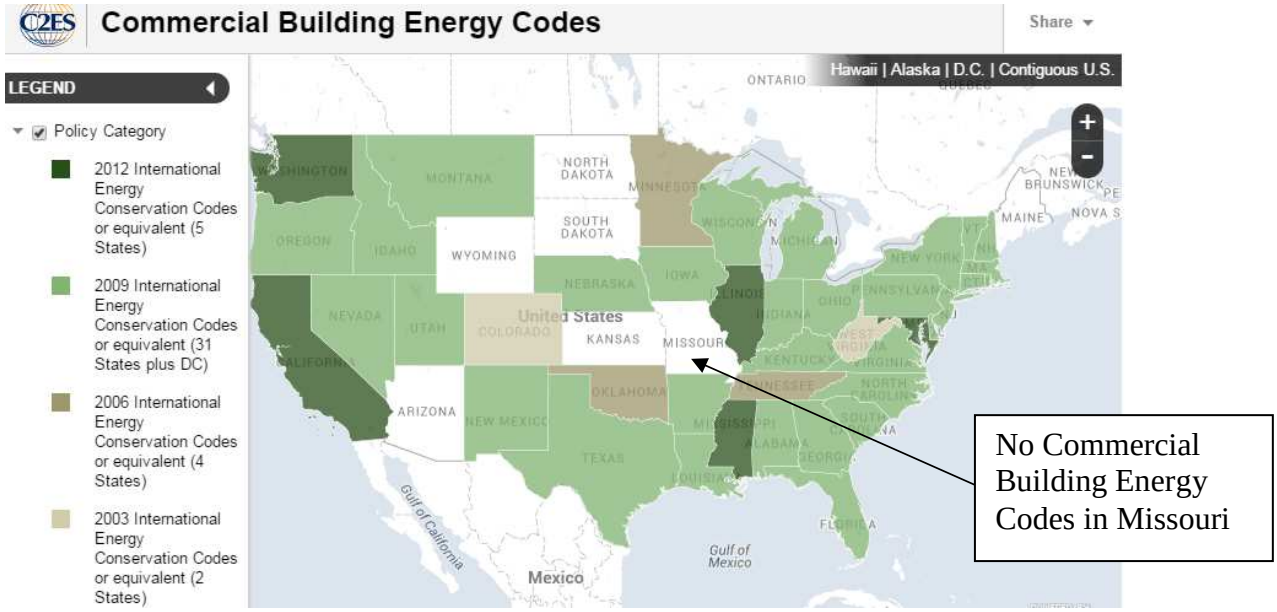


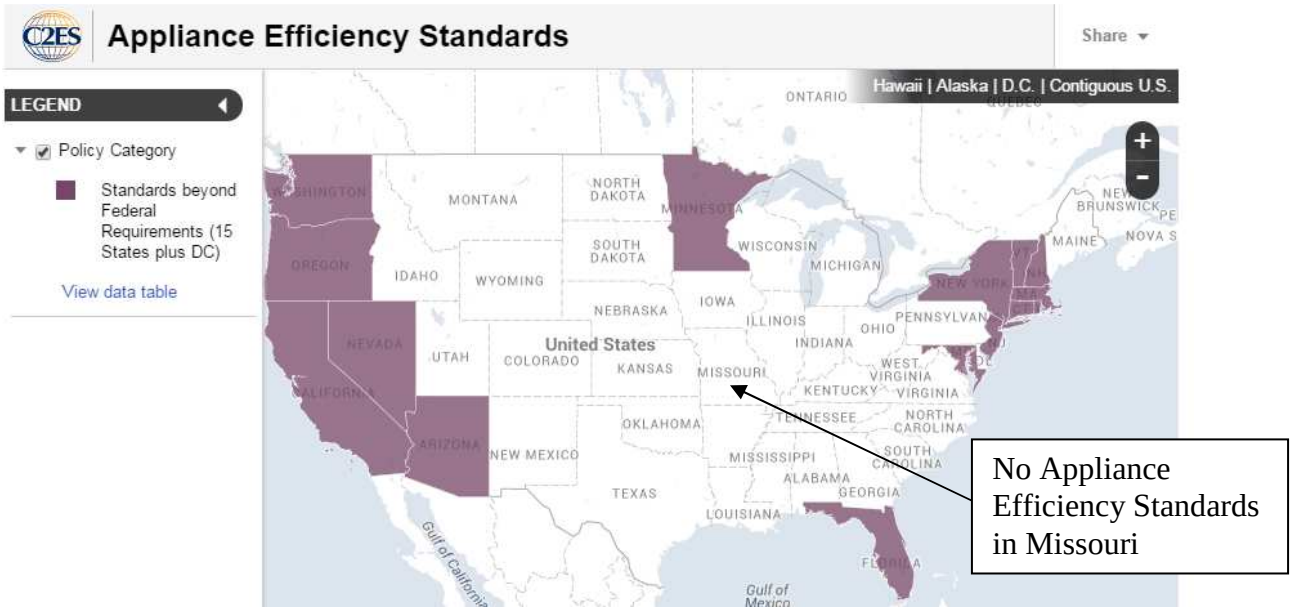
Figure 5: Commercial Building Energy Codes:[27]



[26] Center for Climate and Energy Solutions: Residential Building Energy Codes 2015 http://www.c2es.org/us-states-regions/policy-maps/residential-building-energy-codes

[27] Center for Climate and Energy Solutions: Commercial Building Energy Codes 2015 http://www.c2es.org/us-states-regions/policy-maps/commercial-building-energy-codes

Figure 6: Appliance Efficiency Standards[28]



Figures 1 through 4 reveal that Missouri has:

- No Mandated Energy Efficiency Standards and Targets
- No Residential Building Energy Codes
- No Commercial Building Energy Codes
- No Appliance Efficiency Standards

Only two other states—Kansas and Wyoming—share these characteristics. The fact that there are no state-specific building codes, or an appliance standard, in place in Missouri suggests that KCPL is clearly not experiencing any "trends" that may be present with other utilities in regards to energy efficiency standards.

[28] Center for Climate and Energy Solutions: Appliance Efficiency Standards 2015 http://www.c2es.org/us-states-regions/policy-maps/appliance-energy-efficiency

Recent cases involving the residential customer charge

Q. Please respond to Mr. Rush's assertion that customer charge increases are being approved throughout the country.

A. Mr. Rush's analysis of an increased customer charge approval "trend" has been confined largely to decisions made by the Wisconsin Public Service Commission involving three investor-owned utilities (IOUs) where residential customer charges were increased 82% for two utilities (Madison Gas & Electric and Wisconsin Public Service) and 78% for another (WE Energies). If any trend is evident, it is one where Commissions across the country are rejecting such an inappropriate increase because it violates traditional regulatory practice, produces a regressive and discriminatory impact on intra-class ratepayers within the residential customer class, and runs counter to existing public policy objectives. In contrast to the three Wisconsin utilities, customer charge increases have recently been dropped through settlement or rejected outright by Commissions including:

- First Energy—West Penn customer charge settled at $5.81—no increase[29]
- Kentucky Utilities and Louisville Gas & Electric customer charge settled at $10.75[30]
- PacifiCorp, Washington Utilities and Transportation Commission rejecting Company ($14) and Staff ($13) customer increase from $7.75.[31]
- Appalachian Power customer charge settled at $8.35—no increase[32]
- New Mexico Public Regulation Commission rejected the Public Service Company of New Mexico's request to raise charges by 16 percent as well as a $26 connection fee for new solar customers.[33]
- Xcel Energy, Minnesota Public Utilities Commission rejected Company customer ($9.25) increase from $8.00.[34]

[29] http://www.puc.state.pa.us/about_puc/search_results.aspx?q=r-2014-2428742
[30] http://psc.ky.gov/PSC_WebNet/ViewCaseFilings.aspx?Case=2014-00371
[31] http://www.utc.wa.gov/docs/Pages/PacifiCorpUE-140762.aspx
[32] http://www.scc.virginia.gov/newsrel/e_apcobi_14.aspx
[33] http://www.nmprc.state.nm.us/rssfeedfiles/pressreleases/2015-5-14PNMsRequestToRaiseResidentialRatesUnanimouslyRejectedByThePRC.pdf

- Ameren Missouri, Missouri Public Service Commission rejected a $0.50 increase to customer charge.[35]

- Empire Electric District (Missouri) customer charge settled at $12.52—no increase[36]

Q. What overall trends in the electric industry does Dr. Overcast cite as evidence that the Commission should depart from traditional ratemaking principles?

A. Dr. Overcast's rebuttal testimony and to a much larger extent his attached KCPL report, "Modernizing Utility Ratemaking Practices in a Changing Industry" goes into greater detail about the variety of utility and regulatory challenges across the country. Although Dr. Overcast's central argument revolves around justification for the FAC and an overall argument against regulatory lag, he does speak to electric trends throughout the country that he believes justify a departure for KCPL from Missouri's traditional regulatory model.

In one specific example, Dr. Overcast cites the New York Public Service Commission's (NYPSC) Reforming the Energy Vision (REV) docket 14-M-0101 as an example of evidence where other Commissions are actively reforming ratemaking principles to ensure success towards modernizing electricity in the 21st century.[37]

Q. Should the Commission consider the NYPSC's REV docket?

A. Absolutely, but with the understanding that New York utilities operate in a deregulated environment and where the Commission is aggressively promoting market animation, ratepayer protection and empowerment, and a utility rate structure based on Performance-Based Regulation (PBR) that specifically promotes a mixed monopoly/competitive model as opposed to the cost-of-service regulatory model in place in Missouri.

[34] http://mn.gov/puc/documents/pdf_files/press_release_xcel_ratecase_3-26.pdf
[35] ER-2014-0258 Report and Order
[36] ER-2014-0351 Non-unanimous stipulation and agreement on certain issues
[37] New York State Governor (2014) Governor Cuomo announces fundamental shift in utility regulation. https://www.governor.ny.gov/news/governor-cuomo-announces-fundamental-shift-utility-regulation

NYPSC's REV docket is still an experimental work in progress and its results will no doubt take many years to play out. For example, the NYPSC has not yet released how they plan to accomplish many of the competitive market goals that have been set out in its initial Track One Issues.[38] For purposes of this testimony, in regard to this case, it is important to note that New York's regulatory environment is now so different from Missouri's that meaningful comparisons are difficult.

If the Company wants to cite disruptive trends in other parts of the country as justification for their 177% residential customer charge increase then they should acknowledge the diverse responses to those trends. A significant departure in traditional ratemaking principles should not be based on selective non-germane comparisons that seek to only produce advantageous outcomes for the utility at the expense of their customers.

Response to KCPL's Counter-Arguments to the Commission's Report & Order in ER-2014-0258

Q. Please respond to the assertion that the local facilities charge should be included as an input into the residential customer charge.

A. Traditionally, the only distribution costs that are attributable to any particular customer are the meter and service drop, and billing costs. We know that even service drops are sized depending on the load of the site (single family, mobile home, multi-family and under or over head service).[39] Sites with more demand will have bigger and more expensive service lines. It may be a self-evident point, but it has implications for the use of customer charges in a rate design where there are no demand charges in the bill. If it is claimed that some part of the system is a "customer cost" to be collected in a "customer charge," and if each customer is to

[38] State of New York Department of Public Service. 14-M-0101. Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision.
http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7bCA26764A-09C8-46BF-9CF6-F5215F63EF62%7d

[39] KCPL (2014) Electric Service Standards
http://www.kcpl.com/~/media/Files/About%20KCPL/4541%20%20New%20Construction%20Electric%20Service%20Standards.pdf

pay the same dollar amount, then low-usage ratepayers within a customer class will subsidize higher usage customers. This intra-class discrimination becomes particularly concerning when low-usage customers are found to largely include apartment renters, low-income residents and customers on fixed incomes.[40, 41] That is because low-income customers are less likely to own peaking end-use measures (washer and dryer) and more likely to be working or away from their residences during class peaks as well (i.e., high-income earners are likely not working the night shift at their place of employment). [42, 43]

Traditional rate design has prioritized volumetric charges for the recovery of all but specific fixed costs because this aligns customer consumption and investment choices with utility outcomes, and generally reinforces the regulatory compact (both utility and ratepayer). Prospectively, this same prioritization of volumetric charges for the recovery of all but customer specific fixed costs aligns with pending federal greenhouse gas emission compliance, existing policy streams (energy efficiency, renewable), and is preferable absent wide-scale deployment of AMI technology. [44]

Q. Should a customer charge increase be offset by a decrease in the energy charge?

A. To the extent that any customer charge increase is approved, it should absolutely be offset by a decrease in the energy charge. Keep in mind, that KCPL already has a rate design which includes declining block rates. Because declining block rates lower prices for consumption beyond the basic block of consumption, declining block rates encourage customers to increase rather than decrease energy consumption and convey the message that using more

[40] Economic Opportunity Studies (2015) Low-Income Households' Average Energy Usage: Total & Percent by End Use http://www.opportunitystudies.org/repository/File/Energy_Usage_Full_Report.pdf
[41] SmartGrid Consumer Collaborative (2012) Spotlight on Low Income Consumers Final Report http://smartgridcc.org/wp-content/uploads/2013/02/SGCC-LI-Spotlight_2.13.pdf
[42] Enchautegui, M.E. (2013) Nonstandard work schedules and the well-being of low-income families. http://www.urban.org/research/publication/nonstandard-work-schedules-and-well-being-low-income-families
[43] Watson L. et. al. (2014) Collateral Damage: Scheduling challenges for workers in low-wage jobs and their consequences. http://www.nwlc.org/sites/default/files/pdfs/collateral_damage_scheduling_fact_sheet.pdf
[44] United States Environmental Protection Agency (2015) Incorporating Energy Efficiency/Renewable Energy in State and Tribal Implementation Plans: Roadmap Manual http://epa.gov/airquality/eere/manual.html

power is good, and that the utility can always provide more power at cheaper costs. As stated throughout this testimony, raising the residential customer charge to the highest amount in the region and one of the highest in the nation would run counter to the Commission's policy directions and ratepayer investments in energy efficiency and conservation efforts to date.

Q. Should KCPL's submitted CCOS serve as an appropriate justification for the 177% residential customer charge increase?

A. KCPL's CCOS lacks the detail required to use it as a guide in setting a customer charge. Mr. Rush's CCOS includes a single footnote stating that the monthly customer charge "includes local facilities." In any event, the Commission is not bound to set the customer charges based solely on the details (or lack thereof) of a cost of service study. Utilities are asked to justify any significant changes from the status quo—from practices previously accepted by the Commission. Cost-of-service regulation focuses on minimizing utility costs and preventing the undue exercise of utility monopoly power. Mr. Rush's proposal provides no meaningful justification for a departure from the status quo.

All distribution costs are not customer costs and all residential customers do not have the same customer costs. To drastically increase the customer charges to include such cost recovery creates an intra-class subsidy where higher income homeowners benefit at the expense of low-income apartment dwellers. Those customers who make greater use of the distribution system should bear a proportionately greater share of its costs.

Q. Is the Company correct that their Commission-approved MEEIA fails to account for fixed costs recovery?

A. No, KCPL's Commission-approved MEEIA includes a portion of fixed cost recovery in the throughput-disincentive net shared benefits (TD-NSB).

A higher customer charge creates a system of dueling incentives. If KCPL and Missouri want to promote energy efficiency programs they will pay more or accomplish less under a rate

design with more costs recovered through fixed charges. This shift will also make greenhouse gas reduction more burdensome and the associated compliance costs more expensive.

Q. Please respond to the assertion that the customer will still have control over their bill in spite of the increase.

A. There will still be an energy usage charge on the customer's bill. However, the Commission should recognize that regulation is meant to serve as a proxy for market competition for a captive audience. In market competition, a consumer who does not consume a product or service does not typically pay its availability. As a general matter, prices should be structured so that, if a consumer chooses not to purchase a good or service, they have no residual obligation to pay for some portion of the costs to provide that good or service. Seemingly small changes in a rate design can have very significant consequences for different customers. Under KCPL's proposal, lower-volume and off-peak customers will pay a disproportionate share of the system's costs. These customers are also more likely to be low-income or fixed income customers.

An inflated customer charge will ensure that KCPL will collect their revenues regardless of economic conditions and minimizes any of KCPL's worries about demand risk or load growth. Of course, this proposal to reduce risk to shareholders is absent from the Company's testimony requesting a 10.3% return on equity.

Q. Is there any other information of which the Commission should be aware?

A. An increase in the customer charge results in a rage design that further incents energy consumption. A rate design that promotes energy consumption is counterintuitive to policy efforts to date and ratepayer's best interests for the future. For this and the many reasons articulated in this and my rebuttal testimony, OPC recommends that the Commission reject KCPL's 177% residential customer charge increase.

III. CYBER SECURITY TRACKER

Q. Please summarize Mr. Phelps-Roper's arguments for a Commission-approved tracker for future cyber security costs.

A. Mr. Phelps-Roper essentially makes two arguments for a Commission-approved tracker for future cyber security costs. The first, and consistent with the Company's other witnesses (Rush, Ives and Overcast), centers on why approval for a tracker mechanism is appropriate (increased or expected increases in costs in the near future) for cyber security costs. This argument can be seen as an extension of the larger assertion made by the Company in both direct and rebuttal that their recent earnings are unreasonably low as a result of Missouri's ratemaking process and that cyber (as well a property and vegetation trackers and the fuel adjustment clause) costs require deviation from traditional cost-recovery.

Mr. Phelps-Roper's second argument is not explicitly tied to the ratemaking treatment of the tracker, rather it appears to be a thinly veiled tactic concerning the possible repercussions if the Commission does not approve the cyber security tracker.

Q. Please respond to the first argument.

A. Regarding the first argument, there has been extensive testimony submitted in this case over both the deferred accounting treatment and the economic justification for regulatory lag in Missouri and how KCPL's requests for trackers are both inappropriate and unnecessary.[45] Trackers and other single-issue ratemaking mechanisms work as a strong disincentive for utility management to control costs and they run counter to cost of service regulation. Given the 57.75% compounded increase in rates from the past five rate cases as well as the 15.75% rate increase sought in this case, controlling costs must be a priority. KCPL has failed to provide compelling evidence as to why a deviation from cost of service regulation is appropriate for any of their numerous sought-after single-issue ratemaking mechanisms.

[45] See ER-2014-0370 Rebuttal Testimony of Charles R. Hyneman

Q. Please respond to the second argument.

A. Mr. Phelps-Roper's second argument can be seen as an appeal to fear and is illustrated in the following Q and A exchange from his rebuttal testimony:

> **Q. Please describe the potential consequences of a failure by KCP&L to comply with CIP/Cyber standards?**
>
> A. There are two potential consequences of a failure to comply with CIP/Cyber standards. The first, and most important, is a cyber-security incident at a critical facility or involving critical cyber infrastructure. Preventing the destruction of physical and electric assets from a cyber-security attack is what the CIP Standards were created to prevent. Second, and still very important, are fines and penalties from FERC. As noted above, FERC has the legal authority to implement mandatory reliability standards. A utility can receive fines and/or civil penalty, or could be required to implement above-and-beyond compliance measures, if not found in compliance.[46]

The inclusion of this Q & A exchange is disconcerting. To be clear, appropriate measures to secure NERC CIP/Cyber standard compliance will take place regardless of whether or not KCPL has a tracker. It is inappropriate for the Company to frame this tracker as an either/or dilemma for the Commission.

Moreover, the proposed tracker would be applicable for NERC CIP Version 5 Standards. This is not the first-time KCPL has had to conform to a set of security standards, as the name implies this is the fifth version of standards set forth by NERC.

[46] ER-2014-0370 Rebuttal Testimony of Joshua F. Phelps-Roper p. 9, 18-23 & p 10, 1.

In fact, OPC has been unable to find a single example of a CIP/Cyber Tracker or other related adjustment clause mechanism being approved by any Commission in the U.S. Most recently, West Virginia's Public Service Commission rejected a single-issue rate mechanism proposal for CIP/Cyber compliance by American Electric Power in 14-1152-E-42.[47]

The Company's own outside expert witness, Dr. Overcast, hired to make the case to the Commission for justifying a departure from traditional ratemaking practices, includes a single paragraph about CIP standards in his 159 page rebuttal testimony. The 68 pages of tariffs included as examples in which other states adopted adjustment clauses include no examples of CIP-based adjustment clauses. Even Dr. Overcast's comprehensive list of the various types of adjustment clauses approved for utilities in the U.S. does not include an example for CIP/Cyber costs. That list is reprinted here in figure 7 below.

[47] West Virginia Commission Final Order (2014) 14-1152-E-42T and 14-1151-E-D Appalachian Power Company and Wheeling Power Company p. 94-95.

No CIP/Cyber clause examples listed

Figure 7: Types of adjustment clauses for utilities in the U.S.[48]

ADJUSTMENT CLAUSE DESCRIPTION	
Fuel and Purchased Power	Vegetation Management
Infrastructure Cost	Revenue Decoupling
Transmission Cost	Smart Grid/AMI Costs
Environmental Cost	Property Taxes
Renewable Energy Cost	Pension/OPEB Costs
DSM/EE Cost	Bad Debt/Uncollectible Expense
Annual Cost of Capital	Weather Normalization
Nuclear Construction Cost	Bill Stabilization
Transmission Costs for ISO/RTO Charges	Construction Work in Progress (CWIP)

Q. Is a CIP/cyber security tracker justified by the recent phone scam where someone poses as a KCPL representative to get a hold of a customer's banking information?[49]

A. Predatory parties posing as KCPL customer representatives cause little risk to the reliability and security of the bulk power system. Furthermore, this is not a new phenomenon. A review of KCPL's media archive information reveals the following scam notices to customers:

- May 21, 2015: KCP&L Warns Customers of a New Scam[50]
- December 16, 2014: KCP&L Warns Customers of a Rise in Scams[51]
- January 29, 2014: KCPL Warns Customers of a Rise in Scams[52]
- April 4, 2013: KCP&L Customer Scam Warning[53]

[48] ER-2014-0370 Rebuttal Testimony of Dr. H. Edwin Overcast, Schedule HEO-2 p. 18.
[49] Lee's Summit Tribune (2015) KCP&L warns of a new scam. http://lstribune.net/lees-summit-news/kcp-l-warns-of-a-new-scam.htm
[50] http://kcpl.com/about-kcpl/media-center/2015/may/kcpl-warns-customers-of-a-new-scam
[51] http://kcpl.com/about-kcpl/media-center/2014/december/kcpl-warns-customers-of-a-rise-in-scams
[52] http://kcpl.com/about-kcpl/media-center/2014/january/kcpl-warns-customers-of-a-rise-in-scams
[53] http://kcpl.com/about-kcpl/media-center/2013/april/customer-scam-warning

- May 8, 2013: KCP&L Customer Scam Warning[54]
- July 3, 2012: KCP&L Customer Scam Alert[55]

The security of sensitive customer data should be a priority for every utility. Partnerships that exchange customer data with 3rd parties (Allconnect Inc.) could heighten the risk of a data breach, and this is no doubt one of the issues being examined in the complaint case filed by Staff in EC-2015-0309.

Cyber-security and infrastructure risk mitigation is not a novel concept that somehow necessitates special ratemaking treatment. KCPL has every incentive it already needs in traditional ratemaking to be fully compliant with all cyber-security and infrastructure protection requirements placed on it and there should be no doubt that the existence or non-existence of a cost tracker will do nothing to change that.

Q. Does this conclude your testimony?

A. Yes, it does.

[54] http://kcpl.com/about-kcpl/media-center/2013/may/customer-scam-warning
[55] http://kcpl.com/about-kcpl/media-center/2012/july/customer-scam-alert

The Customer Charge and Problems Of Double Allocation of Costs

By GEORGE J. STERZINGER

After several years of the "great rate debate" attention finally seems to be turning towards a forgotten part of rate design: the customer charge. Utilities, forced by the Public Utility Regulatory Policies Act to justify or do away with declining energy charges, have begun arguing for cost classification and subsequent rate design with increasingly large customer charges. Recently proposed customer charges seem to be consistently in the $6 to $9 range, accompanied by embedded cost-of-service studies supporting even greater charges.

Consumer and environmental groups concerned about rate design reform (rather than using the customer charge as a place to dump costs, as the utilities do) have seen it as a place to shave costs. Concerned primarily with getting a kilowatt-hour or usage charge to reflect incremental or marginal costs more accurately, these groups have attempted to resolve the problem of the resulting excess revenue by proposing that the customer charge be lowered enough to "lose" the surplus. Negative customer charges or lump sum monthly payments from the utility to consumers have been proposed by more imaginative analysts.[1]

Analyses of the proper customer charge have often yielded contradictory results depending upon whether incremental or embedded costs were used. Incremental analyses often, but not always, support low customer charges, while embedded cost analyses often, but not always, support high customer charges.

The importance of incremental price signals and the need to strike a balance between revenue constraints and proper price signals have produced wide agreement that the customer charge is the least "informative" of all parts of a rate design and should be the last place a utility is allowed to collect revenues if incremental costs are found to be useful in designing rates.

Unfortunately, the debate on the proper definition and use of incremental costs remains unresolved, while traditional practices of embedded cost allocation seem to support very high customer charges. Regulators, forced with making a decision, have found some cost basis to be

This article is a critique of the currently most widely used methodology for classifying a portion of electric utility distribution plant as a customer cost. The author argues that this classification, combined with an allocation of the "above minimum" portion on a demand basis, leads to an overallocation of costs to low-use residential customers of the electric system.

George J. Sterzinger is an economist with the New England Regional Energy Project where he specializes in electric utility rate design testimony. In 1979 he became director of the project. The NEREP provides economic, legal, and technical assistance to low-income groups on regulatory utility issues and other energy policy matters. **Mr. Sterzinger** received a BA degree in economics from St. Joseph College, Rensselaer, Indiana, and has completed all requirements but the dissertation for a PhD degree in economics at Purdue University.

[1] "Customer Charges and the Public Utility Regulatory Policies Act," by Edward F. Renshaw and Perry Renshaw, 104 Public Utilities Fortnightly 17, August 30, 1979, found high customer charges contrary to the intention of PURPA.

preferable to unresolved speculation, and raised the customer charge based on embedded cost-of-service studies.

Since incremental analyses cannot by themselves support a low customer charge, the embedded cost analyses which support high customer charges must also be closely investigated to determine if they meet current objectives of rate design. An examination of these methodologies reveals the following characteristics:

— Almost all of them rely for their justification on the determination of the cost of a minimum distribution system, and the classification of this system as a customer cost.

— Once the classification has been made, it is an inescapable conclusion of the allocated cost-of-service study that calculated customer costs will be substantial.

— However, an examination of the rationale for the classification and the implications of that classification lead equally inescapably to the conclusion that minimum use residential customers will be overcharged by such cost allocation practices.

— The only reasonable remedy for the problem of overcharging is to classify the entire distribution system on a consistent basis, which would be a demand basis.

— Once this is done, traditional cost-of-service studies no longer provide support for high customer charges.

A national survey of utility practices in classification of distribution system costs determine that the great majority used some form of minimum system to classify costs in the relevant Federal Energy Regulatory Commission accounts. (The survey was conducted by Carolina Power and Light Company, Raleigh, North Carolina.) The survey summarized the results of company practices to determine how much, on average, each distribution plant account was classified as demand. The results by FERC account were as follows:

— Account 364 — Poles and fixtures were separated into primary and secondary; the primary portion was split 50-50 between customer and demand costs, the secondary portion was classified 56.5 per cent customer and 43.5 per cent demand.

— Account 365 — Conductors and devices were also separated into primary and secondary; the primary portion was classified 44.3 per cent customer and 55.7 per cent demand, and the secondary portion was classified 46.4 per cent customer and 53.6 per cent demand.

— Account 368 — Line transformers were classified 34 per cent customer and 66 per cent demand.

— Account 369 — Services were classified 70.8 per cent customer and 29.2 per cent demand.

The difficulties with these methodologies only begin with the minimum distribution system. The concept is very difficult to define and consequently susceptible to widely varying interpretations. No single method exists for calculating the cost of this system; nevertheless, a fairly standard approach is to reconstruct the existing distribution system using some type of minimum equipment. Minimum equipment could be of the type employed by the company, currently purchased by the company, currently used in the industry, or currently required by safety code. The cost of this equipment can be either booked or in current prices. Obviously, with this large a menu of definitions to choose from, a utility analyst can calculate costs for these systems over a wide range.

It should be mentioned here that one other method sometimes used to calculate the cost of a minimum system is the "zero-intercept" method whereby regression equations relating cost to various sizes of equipment are derived, and then solved for the cost of zero-sized or "zero-intercept" equipment. The strongest objections to this methodology arise from the limitations on data, the unreliability of the derived equations, and some fundamental problems that arise from making the statistical inference about the cost of the zero-sized equipment.

A typical utility in the sample discussed earlier, faced with the problem of classifying costs in Account 365 —overhead lines, for example, would determine the cost of the minimum equipment needed to replace all existing lines, calculate that cost as a fraction of the total costs of equipment in the account, and use that fraction to classify customer costs. Thus, a utility with 1,000 miles of overhead lines and two types of line costing $1 per foot and $2 per foot would calculate a minimum system cost of roughly $5.28 million ($1 × 5,280 feet per mile × 1,000 miles). This $5.28 million can, of course, be varied if different types of minimum lines are used, or if for other reasons the cost of $1 per foot is changed.

Beyond problems arising from the indeterminate nature of the minimum system, the appropriateness of classifying these costs as customer costs has been long debated. Strictly speaking, customer costs should be limited to those costs which can be shown to vary exclusively with number of customers. Distribution system costs, both as built and hypothetical minimum system, obviously depend to a great extent on geographical considerations — type of terrain and customer density. Several analysts have argued that the nature of cost causation — in this case at least in part due to geography — does not allow the costs to be neatly fit into either demand or customer cost categories; that the costs are simply unallocable. Recent statistical analyses support this notion.[2]

An additional and more severe problem with this methodology arises from the consequences of classifying distribution system costs into both customer and demand portions. Simply put, this practice leads

[2] "The Economics of Electric Distribution System Costs and Investments," by David J. Lessels, 106 PUBLIC UTILITIES FORTNIGHTLY 37, December 4, 1980, found no statistical justification for the classification of distribution costs as customer related.

inevitably to a double allocation and possibly a double collection of these costs from low-use residential customers and a misallocation of costs among customer classes.

To see why this is so, one need only step back for a moment to consider what it is that a cost allocation study attempts to do, and what happens when distribution system costs are split into customer and demand portions and then allocated to individual classes.

An allocation study assigns costs to customers on the basis of usage characteristics; fairness requires that allocated costs follow, as closely as possible, the actual costs of serving customers. Splitting the distribution system into a minimum usage and an above minimum usage portion, and allocating the minimum portion on a customer basis, and the above minimum on a usage basis results in low-use residential customers paying for more of the system than is required to serve them. By splitting the distribution system into two parts, low-use residential consumers are charged twice: once, on a customer basis, for a portion of the system sized to meet their demands; and again on a demand basis for a portion of the system sized to serve demand beyond what would be needed to serve them. The only practical way satisfactorily to assure that low-use customers are charged only once for distribution equipment is to allocate the distribution system costs on a single consistent basis. Of the two considered, customer and demand, it is obvious that only demand can be used to classify and allocate distribution costs on a satisfactory basis.

In order to explain more fully why this method constitutes double charging of low-use customers, we can look more closely at the handling of FERC Accounts 364 and 365 which represent the cost of overhead lines and poles. To illustrate this, suppose the company had only 1,000 miles of overhead lines and 10,000 poles; and in addition it used two types of line — one costing $1 per foot, for 500 miles of overhead, the other costing $2 per foot, for the remainder; and two sizes of pole — 5,000 costing $30 per pole and 5,000 costing $60 per pole. Total cost of this system would be:

a) Line: 500 miles at $1 per foot	$2,640,000	
b) Line: 500 miles at $2 per foot	5,280,000	
Subtotal		$7,920,000
c) Poles: 5,000 poles at $30 per pole	$ 150,000	
d) Poles: 5,000 poles at $60 per pole	300,000	
Subtotal		$ 450,000
Total		$8,370,000

A minimum system in this case would be determined by calculating the cost of the 1,000 miles of overheads if only the minimum-sized line was used, plus the cost of the 10,000 poles if only the minimum-sized pole was used.

Cost of the minimum system is:

a) Line: 1,000 miles at $1 per foot	$5,280,000	
b) Poles: 10,000 poles at $30 per pole	300,000	
Total		$5,580,000

Therefore, the cost of the above minimum (or capacity) system would be the remainder, or $2,780,000.

The minimum system calculated in this fashion could, and actually does, serve a considerable level of usage.

The minimum system is allocated on a customer basis — all customers are charged for an equal share of it. The remainder of the system, the more expensive facilities required to meet loads beyond those handled by minimum-sized equipment, is allocated on some demand basis; noncoincident peak demand is often used. In the calculation of the noncoincident peak demand allocation factors, usage at all levels of the residential and general service customer classes is used to determine allocation factors.

If, for example, the minimum overhead lines, conductors, and poles could supply a demand of two kilowatts per residential customer, that amount of usage would be paid for in the customer charge. In the determination of demand allocation factors, however, each residential customer's demand is calculated and added to determine the portion of the above minimum system costs to be allocated to the residential class and to each customer through the appropriate rates. So a residential customer who has a demand of two kilowatts will have paid for all the distribution costs associated with his load through the customer charge, but will also have his two-kilowatt usage go into the demand allocation factor to allocate distribution costs associated with above minimum usage.

One way to solve the double allocation problem would be to determine, for each piece of minimum equipment, the demand level it would be capable of serving, and then adjusting the demand allocation factors used to allocate the costs of all equipment of that type in order to assure that minimum use customers and the residential class were not charged twice. In many cases this would mean calculating several allocation factors for each FERC distribution account, since more than one type of equipment is used in the account. Even after overcoming all the problems of this approach one is still confronted with the dubious value of charging for equipment on an up-front basis rather than through a per kilowatt-hour charge at a time when conservation is recognized as an important goal of energy policy.

The direct way to assure that problems of overcollection are not built into the methodology used to determine class costs of service is to classify all distribution costs as demand costs. If this methodology is used in embedded cost studies, the studies will produce more equitable estimates of the cost of serving low-use residential customers.

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