BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Kansas City Power & Light Company's Notice of Intent to File an Application for Authority to Establish a Demand-Side Programs Investment Mechanism	))))	File No. EO-2019-0132
In the Matter of KCP&L Greater Missouri Operations Company's Notice of Intent to File an Application for Authority to Establish a Demand-Side Programs Investment Mechanism	))))	File No. EO-2019-0133

RESPONSE TO PAY AS YOU SAVE (PAYS) FEASIBILITY STUDY

COMES NOW, the Office of the Public Counsel (OPC), by and through counsel, to submit this Response to Pay as You Save (PAYS) Feasibility Study and state as follows:

1. In its Report and Order from a prior general rate case for Kansas City Power & Light (KCPL) and KCP&L – Greater Missouri Operations (GMO), the Public Service Commission (Commission) ordered the companies to consider incorporating PAYS into a Missouri Energy Efficiency and Investment Act demand-side management program.[1]

2. KCPL and GMO contracted with the Cadmus Group LLC to complete a feasibility study.

3. Cadmus Group completed the study on September 28, 2018, and found that a PAYS program could support KCPL and GMO customers without other means of accessing capital, but that KCPL and GMO must address implementation barriers to realize the PAYS' full potential. Cadmus Group recommended that KCPL and GMO consider a PAYS program that targets low-

[1] *Report and Order*, File No. ER-2016-0285 (May 3, 2017).

income and multifamily populations. KCPL and GMO submitted the study alongside their latest application for a demand-side management program.

4. In response to KCPL and GMO's feasibility study, the Energy Efficiency Institute, Inc. (EEI), the proprietary owner of PAYS, reached out to the OPC with concerns regarding Cadmus Group's methodology.

5. The EEI provided the OPC with documentation of its concerns, and the OPC attaches said document hereto as **OPC-1**.

WHEREFORE, the OPC respectfully submits this Response to PAYS Feasibility Study and tenders **OPC-1** for the Commission's future consideration regarding the PAYS program. The OPC does not request any particular action of the Commission at this time.

Respectfully,

OFFICE OF THE PUBLIC COUNSEL

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CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing was served, either electronically or by hand delivery or by First Class United States Mail, postage prepaid, on this 8th day of January, 2019, with notice of the same being sent to all counsel of record.

/s/ Caleb Hall

Response to

PAYS[1] Feasibility Study prepared for Kansas City Power & Light by Cadmus

prepared by the Energy Efficiency Institute, Inc.

for Missouri Office of the Public Counsel

Given recent interest in the Pay As You Save® (PAYS®) system in Missouri, it is vital that decision makers assess whether PAYS should be implemented in Missouri based on accurate information about how PAYS works and experiences in other states.

The Energy Efficiency Institute, Inc. (EEI) is not only the originator of the Pay As You Save system, it has also been involved to varying degrees in the regulatory approval, design, and implementation of all 17 programs in the seven states where the PAYS system has been implemented.

EEI reviewed the Cadmus "PAYS Feasibility Study" (sic) prepared for Kansas City Power and Light (KCP&L), which was delivered September 28, 2018.

The Cadmus report is based on a survey of KCP&L residential customers intended to assess "*…whether the Pay As You Save (PAYS) program model could contribute to increased energy efficiency uptake among KCP&L residential customers, and whether offering the program would be administratively feasible for KCP&L.*" (p. 1)

Generally, the report's conclusions and recommendations are positive about the appropriateness of PAYS for KCP&L residential customers. The report notes, for example, that "*…potentially a reasonably large subset of homes in KCP&L territory that could provide significant savings opportunity and be good candidates for PAYS*." (p. 3) And Cadmus acknowledges the unique aspects of the PAYS offer to customers on page 17 when it writes, "*PAYS incorporates several unique features that most people are not accustomed to considering when thinking about payment or financing options*."

At the same time, this report evidences a troubling misunderstanding of PAYS and unfortunately that can leave readers (including KCP&L decision makers) confused about what PAYS is, how it works, and the attractiveness of the offer to customers. And that misunderstanding has not only impacted the survey and its results, it undermines the report's positive conclusions and

[1] The report title should include the registered trademark symbol. In 2003 (PAYS®) and 2005 (Pay As You Save®), the U.S. Trademark and Patent Office awarded EEI trademarks for its system and its acronym. As of those dates, there is no PAYS-like program or a generic Pay As You Save program. Using the name or its acronym must refer to EEI's system (i.e., has all the essential elements and meets all the minimum program requirements) and should be accompanied by the registration mark. It must also be used when utilities receive permission to use PAYS as part of their branding. EEI has never charged a program for using the mark. EEI has asked numerous persons with relationships with Cadmus (e.g., Dr. Holmes Hummel at Clean Energy Works and Jennifer Greene the City of Burlington Vermont's Sustainability Office) to point out that PAYS is a trademarked system and U.S. Patent and Trade Mark law requires the use of the registered mark symbol. Cadmus acknowledges on page 5: "*PAYS is a trademarked program model used in a number of energy efficiency programs around the country*," however, they do not use the registered trademark symbol in the report as required by U.S. Patent and Trademark law.

recommendations. We are especially concerned because this study repeats many of the same errors that EEI found in the studies Cadmus published earlier this year for Empire District and Ameren Missouri.[2]

We have cited excerpts from this study and provided clarifications that we think are necessary as well as recommendations that we think would help KCP&L meet its operational goals for efficiency programs through implementing a successful and cost effective PAYS program that serves all customers including renters and low- moderate- income and other hard-to-reach customers. As we did with our response to Cadmus' report for Empire District, we have also included in this response an addendum listing examples of misinformation in the Cadmus report for KCP&L that should be corrected.

We have organized this response into five sections plus an addendum: 1. PAYS background and key distinctions; 2. Unrealistically high cost estimates; 3. Low penetration targets and few eligible measures; 4. Survey flaws; and 5. Recommendations.

1. PAYS® background and key distinctions

The PAYS system was developed in the mid-1990s. Rebates, low- or no-interest loans, and on-bill financing were used as incentives to customers to purchase and install energy efficiency measures in their homes and businesses. But none of these efforts produced robust customer acceptance.

EEI's assessment was that these incentives failed to produce widespread building energy efficiency because they were not focused on customers, the people who make the decisions about whether or not to install building upgrades. In fact, these programs required participants to accept most of the risk that the purchase might not deliver as promised (e.g., problems with contractors, insufficient savings to justify the cost, upgrade failure, shoddy products or installations, leaving premises before upgrades repaid their cost through savings, unaffordability that excluded participation of more than half of utilities' customers, that is, renters and low- moderate- income customers). As a result, the customer take-up rates for most utility programs have been very low.

While the PAYS system includes elements of rebate and loan programs, it takes a different approach to achieving widespread building energy efficiency: making an offer to customers that is too good to refuse. Because PAYS is focused on the offer to the customer, it is often misunderstood or mischaracterized by analysts used to thinking about programs using rebates or financing incentives, which also appears to be the case with Cadmus.

In this section of the response, we look at some key distinctions between PAYS and other types of programs and how misunderstanding these distinctions has led Cadmus to erroneous conclusions in its report for KCP&L that put PAYS in an unrealistically negative light.

<u>Utility investment, not consumer loans:</u>
PAYS involves no consumer purchases or loans. The participating utility customer does not take on new debt, and therefore, there is no need to go through a credit check. In the PAYS system, the

[2] Missouri Office of Public Counsel. 2018. Response to Notice of Completion of PAYS Study. https://www.efis.psc.mo.gov/mpsc/commoncomponents/view_itemno_details.asp?caseno=ER-2016-0023&attach_id=2018021923. EEI communicated to the Missouri Office of the Public Counsel that there was no need to respond to Cadmus' feasibility study for Ameren because it cited similar costs and faulty conclusions as its Empire study.

utility places no lender lien on the property, and there is no loan balance to be paid off by when a utility customer vacates the premises. In short, customers are not borrowers under PAYS programs.

Instead, PAYS involves utilities investing in upgrades on the customer side of the meter and then collecting payments through a tariff to recover their investments from customer(s) at the locations where the upgrades were installed. If any money needs to be borrowed, it is borrowed by the utility. And payment obligations are tied to the location, so whoever is a customer at a location where upgrades are installed makes the payments for only as long as they are a customer there.

Cadmus represents PAYS as a consumer financing program throughout this study, introducing confusion with loan programs. For example, immediately following the Executive Summary on page 1, the report states: "*…the study examined whether any on-bill financing program would be a beneficial addition to KCP&L's residential energy efficiency portfolio…*". Financing in this context typically means a consumer loan that includes debt on the participant's balance sheet as the borrower, a lien placed on the property by the lender, and the need for the participant to pay off the loan when they vacate the premises. Since PAYS is not a consumer loan, it includes none of those barriers to customer participation; it is a very different kind of offer to the customer. At best, the report is ambiguous about whether on-bill financing involves a loan to the participant.

In the scenarios that Cadmus uses to describe PAYS to survey participants, it describes it as a consumer loan. In scenario two on page 18 (and in scenario three on page 19), for example, the report states: "*You would repay the loan as an extra $40 charge each month on your electric bill ($480 per year) for about 14 years*." It's no surprise that the percentage of respondents who selected rebate and financing options was lower (54%) than the percentage selecting rebates only (84%). We know that customers do not want to take on more debt. That's one of the barriers to participation that PAYS was designed to eliminate. Customers incur no new debt with PAYS upgrades.

In fact, none of the four scenarios (pp. 17-21) describe PAYS. Many of the survey questions do not address information that might be helpful to any Missouri utility considering implementing a PAYS program. The KCP&L customers in the sample surveyed by Cadmus are asked to comment on differences that are never clearly or fully explained to them in Cadmus' questions. Findings related to non-PAYS on-bill finance programs have no relevance to well-designed PAYS programs in terms of operations costs, upgrade costs, installation costs, and offer acceptance rates. It is a mistake to use such information to inform conclusions about the viability of PAYS at KCP&L.

<u>PAYS® is a system:</u>
In the Willingness to Accept PAYS Features section (pp. 17- 21), Cadmus examines customer interest in individual features of the PAYS system, such as "…th*e 'tied to the meter' tariff aspect, the guaranteed positive cash flow and the utility endorsement*."

A significant problem in this section is that it leaves out other features that, in concert with the cited features, combine to create an offer that works. PAYS works as a system with each element of the system designed to help create an offer that customers find too good to refuse. The offer is not effective unless all of the features are included. Cadmus should have asked the KCP&L customers in the sample about the desirability of a PAYS offer with all of its customer benefits.

The first scenario in this section of the study by Cadmus for KCP&L has nothing to do with PAYS features. Cadmus writes, "The first scenario presented a rebate-only option… The majority of

respondents (84%) selected the rebate option, as shown in Figure 9." Rebates are not a requirement of PAYS though many utilities have continued their rebates when implementing PAYS.

Rebates were originally designed to provide the least possible subsidy to get customers to purchase items they would not otherwise purchase that would benefit the utility and all of its customers. EEI is not familiar with and cannot comment on the efficacy of KCP&L's rebate programs. However, since more than half of all customers receiving a PAYS offer accepted it (80% in neighboring Arkansas' HELP PAYS® program and more than 70% in Kansas' Midwest Energy's How$mart® program), implementing a PAYS program would provide utilities the opportunity to reevaluate the amount of the rebates required to get customers to purchase efficiency upgrades.

Without any justification, on page 47, Cadmus writes, "*Due to its strict requirements for eligible projects, PAYS will prove unattractive to customers with access to other financing options*." As noted elsewhere in this response, Cadmus never presents its sample of KCP&L customers with a PAYS offer that includes all of its benefits, so the survey provides little insight into whether those surveyed would like or dislike a PAYS offer. The choice to ask questions about features of PAYS in isolation (and not all of the features) rather than about the actual PAYS offer and its benefits for customers undermines the survey. There is no basis for the conclusion from the Cadmus survey that PAYS will prove unattractive, since the sample of KCP&L customers were not presented a PAYS offer.

2. Unrealistically high cost estimates

Loan loss reserves:
On pages 39 and 40, Cadmus writes, "*Research for other PAYS feasibility studies has found several PAYS administrators, including the MACED program in Kentucky, use loss reserves to fully protect ratepayers from participant nonpayment. Loss reserve funds typically are set equal to a certain percentage of the program's outstanding loan volume, just above the expected nonpayment rate. This limits the funding amount needed in reserve, but protects the administrator (and ratepayers) from absorbing the cost of unrecovered investments*."

In three and four years of program operation respectively, neither Ouachita Electric (Arkansas) nor Roanoke Electric (North Carolina) Cooperatives has filed a claim against their reserve fund. Actual PAYS programs that report uncollectables average less than a 0.1 percent loss. MACED, cited above by Cadmus, has less than a 0.2 percent nonpayment rate. According to MACED program manager Chris Woolery, since How$mart®KY program design changes and a revised tariff were put in place in August 2013, only one of MACED's utilities filed a claim against the risk mitigation fund.[3] Nevertheless, Cadmus assumes a five percent charge on project funding to be paid by program participants for a reserve fund (Table 9, p. 41), 25 times the nonpayment rate at MACED.[4] Since PAYS uncollectables average 0.1 percent and the Illinois Energy Efficiency Loan Program (EELP) had uncollectables of 0.16 percent (p. 39) and both are lower than average uncollectables for KCP&L, there is no need to require participants to pay for a costly loss reserve fund, which makes fewer upgrades qualify for installation.

[3] Based on a Jan. 3, 2019 phone call with Harlan Lachman.
[4] MACED was required by the implementing utilities to fund a reserve fund through participant fees based on 5% of their upgrades' cost. This was not a design recommendation, nor has the amount been reduced in spite of the performance of collections at PAYS upgraded locations.

IT upgrades:
The report states, "*Upgrades to IT systems that manage billing may be a significant cost – in the low hundreds of thousands as a base estimate…*" (p. 41).

Cadmus provides no credible source for this estimate. The only utility that we know of that commissioned an add-on module to its information and billing system software system to comply with EEI's (and its own staff's) recommendations spent less than $40,000 for the upgrade (c.f., p. 3 of the Cadmus Process Evaluation Report of the Windsor Efficiency PAYS® program). Before the estimate in the report for KCP&L is taken seriously, Cadmus should share the bids that justify an estimate that is five to 10 times an actual expenditure noted in a previous Cadmus evaluation.

Origination and servicing for consumer loans:
On pages 41 and 42, in Table 8. Estimated KCP&L Costs for Annual PAYS Implementation, Cadmus estimates a servicing cost of $900 per participant, an origination cost of $600 per participation, and a $700 - $1000 cost per participant for implementation.

Origination and servicing are terms related to consumer loans, and they refer to activities like underwriting and debt collections. These activities are not applicable to PAYS investments with on-bill cost recovery and, therefore, those costs are not necessary.

EEI does not dispute an estimate of a one-time $700 - $1000 per-participant cost for implementation by the program operator although in most PAYS weatherization programs, participants reimburse their utility approximately $325 of these costs which are rolled into the participant's project cost (c.f., Roanoke, Ouachita, and Appalachian Electric). The one-time implementation cost includes the work to visit the site, develop a proposal, discuss the proposal with the customer, get a signature, inspect the installation, and communicate to the utility that it should begin to collect the monthly charge.

None of the 17 utilities, including the two IOUs that have operated programs based on PAYS, have reported one-time or annual per-participant costs for servicing of $900, and similarly, none have reported one-time or annual per-participant costs for origination of $600. These costs should be eliminated from the Cadmus estimate of total costs.

Unnecessary staffing:
In the second of four conclusions in the Executive Summary (p. 3) and again in the Conclusions section (p. 46) the report states, "*While a significant number of customers accepted the PAYS offer, survey responses indicated a significant information barrier for many customers when evaluating this unique program.*" Cadmus goes on to write, "*KCP&L intends to add additional staff to manage its pilot programs. Cadmus expects that this staff will be critically important to ensuring the program delivers a clear, strong message…*"

These additional staff are unnecessary and needlessly inflate the costs for implementing a PAYS program. Since not only have a significant number of customers accepted offers, but a very high percentage of customers receiving offers accepted them, it is unlikely that there is a "significant information barrier." More than 80% of customers in neighboring Arkansas and approximately 70% of customers in neighboring Kansas who have received PAYS offers said yes to those offers. These are unprecedented customer acceptance levels for utility efficiency programs that contradict the notion that there is a significant information barrier that requires the addition of expensive new

staff, which will reduce funding available for efficiency upgrades that the program can offer to customers.

3. Low penetration targets and few eligible measures

Renters:
On page 43, Cadmus wrote, "*In interviews conducted for the Ameren Missouri PAYS feasibility study, a PAYS implementer reported that, in most cooperative PAYS programs in the Midwest and South, the majority of participants were single-family home owners*."

While it is true that most participants have been single-family home owners, it's noteworthy that Arkansas' HELP PAYS® reached 100 percent of the customers in the service territory living in multifamily housing and responsible for their energy bills. And just a few years ago, Kansas' How$mart® program reported that 15 percent of its participants were renters. These are significant achievements in this hard-to-reach market and should be used as the basis for setting minimum goals for penetration levels that utilities initiating programs should be expected to reach with renters.

Overall program participation:
In its presentation of Estimated Costs Paid by Participants (Table 9, p. 42), Cadmus assumes a program of 250 customers in a year. That scale is smaller than the sample size for Cadmus' survey for its report for KCP&L.

In citing Participation in PAYS Programs (Table 10, p. 43), the report lists the number of participants in several programs that are based on PAYS without noting the percentage of each utility's customers served by the program. In a revised version of Table 10 below, EEI shows the level of participation that could be assumed for KCP&L if it served the same percentage of its residential customers as the utilities cited by Cadmus. This table shows that it would not be unreasonable to expect KCP&L to implement a program serving 21,000 customers in three years, since the HELP PAYS® program reached 4% of Ouachita Electric Cooperative's customers in only two years.

By using a number as low as 250 participants in a year, the Cadmus report sets a very low bar for KCP&L program participation compared to programs operated in other states.

Residential Program	Number of Utility Customers	Participants	Years of Operation	Comparable KCP&L Participants*
HELP PAYS®	6,500	278	2016–2017	22,000
Upgrade to $ave	14,000	400	2014–2017	15,000
How$mart®	50,293	1915	2010-2018	20,000
Windsor Efficiency PAYS®	8,000	242	2012-2014	16,000
How$mart®KY	139,230	289	2011–2017	1,100

* KCP&L has 522,032 residential customers.[5] These numbers are derived by applying the percentages of residential customers that are program participants for the other listed utilities to the number of KCP&L residential customers.

[5] This estimate was provided to EEI by the Office of the Consumer Counsel.

Eligible measures:

• On page 9, the report states, "*Cadmus relied on recently completed feasibility studies for PAYS in Ameren Missouri's and Empire District's territories for acquiring basic information on the requirements to launch and operate PAYS, and findings from currently implemented PAYS and on-bill financing programs. As the author, Cadmus could access these unpublished reports and the primary data collection informing them*."

Cadmus evaluated the feasibility of implementing a PAYS program for Empire District and Ameren primarily on its assessment of the costs and economics. EEI reviewed Empire District Feasibility Study by Cadmus and wrote a detailed assessment noting: "There are a number of assumptions included in the Cadmus analysis, however, that significantly reduce the reported cost effectiveness of implementing PAYS in Missouri…" The Office of the Public Counsel filed EEI's response with the Missouri Public Service Commission (https://www.efis.psc.mo.gov/mpsc/commoncomponents/view_itemno_details.asp?caseno=ER-2016-0023&attach_id=2018021923).

• On page 19, the report for KCP&L states, "*In other analyses of PAYS feasibility, replacing working electrical heating equipment with a high efficiency heat pump was the only project that generated sufficient savings to allow administrators to finance full project costs under PAYS guidelines*."

Two utilities in neighboring states achieved the high offer acceptance rates described above (80% of customers receiving an offer in neighboring Arkansas' HELP PAYS® program and more than 70% in Kansas' Midwest Energy's How$mart® program) even while installing comprehensive residential upgrades such as air and duct sealing, gas fired heating upgrades, high efficiency heat pumps, attic insulation, LEDs, low flow showerheads, and ground water heat pump systems. In EEI's response to the Cadmus study for Empire District, EEI discusses some of the reasons why Cadmus arrived at this faulty conclusion distorting PAYS potential in Missouri.

On page 25, the report for KCP&L states, "*Other PAYS feasibility studies have shown that project savings must be extremely high to generate saving necessary for PAYS to cover most or all upfront project costs. Upgrading working electric furnaces to high-efficiency heat pumps is one of a few project types likely to consistently provide sufficient savings to support full project funding*." And, on page 44, Cadmus writes, "*At the same time, analysis for Ameren Missouri and Empire District found that PAYS, if limited to projects offering sufficient savings for the program to fund full project costs, potentially could be cost-effective with fewer than 300 participants."*

Midwest Energy in Kansas, with only 50,293 electric customers (https://www.mwenergy.com/assets/uploads/pages/2017_Annual_Report.pdf), has fewer than 10% of KCP&L's customers (and a small percentage of the cited number of customers for both Ameren and Empire District), yet it has completed 1,915 projects. While these projects involved some copayments, it would seem reasonable that if Midwest Energy is able to report that more than 70% of offers have been accepted, Cadmus' presumption that a program needs to operate with no copayments is unnecessarily limiting eligible measures.

An independent February 2018 evaluation of Ouachita Electric Cooperative's HELP PAYS® program performed by OptiMiser LLC, reported that 92% of participants installed air sealing, 75% installed duct sealing, 88% installed LEDs, 79% added attic insulation, and 80% installed HVAC

upgrades. Recent results at a utility in an adjacent state serving one of the most economically distressed regions in the country shows that most customers accept offers to install comprehensive energy efficiency upgrades in both owner-occupied and rental housing.

Finally, it is important to note that in all three of the feasibility studies prepared by Cadmus to date for investor-owned utilities in Missouri, in addition to using incorrect assumptions about operations and upgrade costs, Cadmus excludes customers' gas savings as a program benefit. Excluding gas savings from customers' upgrade cost-effectiveness calculations reduces the number of eligible upgrades that will qualify for the tariff. For at least half of the programs not targeted to a single upgrade (e.g., Hawaii's Solar$aver pilot replaced electric water heaters with solar water heaters), the PAYS tariff allowed customers' gas savings to be included in the cost-effectiveness screening to determine which upgrades could be installed.

Cadmus' focus on targeting replacement of electric furnaces with heat pumps is viable, although other upgrades should be included in those homes as has been the case in the Kansas and Arkansas PAYS programs. In its previous studies of the PAYS system for two other investor-owned utilities in Missouri, Cadmus examined only savings from the utility's perspective and ignored savings from the customer's perspective. This error appears to be the basis for the exclusion of heat pumps that replace gas and propane HVAC systems from the list of eligible measures.

In the PAYS system, the determination of which upgrades qualify for a PAYS tariff considers all the savings that will accrue to participants, excluding societal costs and energy rate inflation. Due to the efficiency of propane-fired heating systems and the high cost for propane, the savings for customers who heat with propane may be even higher than those who heat with electricity. In its study noted above, OptiMiser LLC wrote that the HELP PAYS® program includes upgrades that result in fuel switching: "The participants included 4 apartments, and 6 homes where the HVAC measure resulted in fuel switching." (p. 9) In Kentucky, fuel switching is also permitted. MACED's six utilities allow gas heating customers to fuel switch to heat pumps, but it is only cost effective when customers use propane for heating.

4. Survey flaws

The Cadmus study for KCP&L has discussed the viability of PAYS in its report based primarily on survey data. The challenge with surveys is sample size (i.e., whether the sample is large enough to make generalizations to the total population), sample selection (i.e., whether the sample represents the same characteristics of the total population), response rate (i.e., whether enough respondents respond to a question to ensure accuracy), and question wording (i.e., whether the questions were clearly worded in an unbiased way so responses can be trusted).

There are approximately 522,032 KCP&L residential customers including customers served by KCP&L Missouri and by KCP&L Greater Missouri Operations.[6] Based on estimates provided by Cadmus (p. 25), EEI assumes approximately 65% are in owner-occupied houses (339,000 homeowners) and 35% are in rental units (182,000 renters).

In its study for KCP&L (p. 7), Cadmus' sample size for homeowners was 321 and for renters 62 for a total of 383, which is a little more than .07 percent of residential customers. However, some of its findings were based on a fraction of those numbers. For example, in Figure 6 relating to interest

[6] Information provided by the Missouri Office of Public Counsel.

rates, findings were based on the responses of 58 homeowners, just 18 percent of the sample size or less than 0.02 percent of single-family customers. The sample size for renters is only 16 percent of the total sample size though renters account for 35 percent of the KCL&P's residential customers. Inadequate sample size, non-representative sample selection, low response rate, and poorly framed questions may be responsible for the anomalies discussed below.

• On page 24 Cadmus writes, *"As shown in Figure 16, renters accepting the utility offer in the second scenario dropped to 42%. Of 36 respondents selecting Option A in Scenario 1, 14% (five respondents) said they were not sure if they would accept Option A in Scenario 2, and 31% (11 respondents) selected Option B. Of 26 respondents that did not select Option A in Scenario 1, 23% (six respondents) selected Option A in Scenario 2."*

Cadmus has reported findings here as if they provide significant information for utility planners to consider in developing a PAYS program. The number of respondents is so small that the findings do not provide a basis for decision making.

• On page 14, the authors write, "*Three respondents (4%) indicated that they wanted their monthly energy savings to be more than their monthly payments*." On page 16, they write, "*The ability to qualify for a loan was the least likely to be rated for a significant concern, with only 16% of the respondents ranking this barrier a 4 or a 5.*"

On its face, Cadmus reports that only 4 percent of the customers in the sample indicated that they wanted their savings to exceed their payments, so 96 percent did not have this concern. Implicit with the second quote is that if only 16 person percent indicated they were concerned about being able to qualify for a loan, the rest of the KCP&L customers in the sample either had the money or did not doubt their ability to obtain credit at acceptable terms. Both of these observations raise questions about whether the sample of customers was representative of one of the customer market segments that KCP&L would want to reach with a PAYS offer.

In **Figure 4. Homeowner Alternative Purchase Decision**, Cadmus notes that of those homeowners who responded to the survey, 152 paid cash and only 71, less than half, used some form of financing. In **Figure 3. Homeowner Payment Method by Project Costs**, Cadmus showed the range of costs for these projects. Most projects cost more than $3,000 and some respondents financed projects up to $48,000. At no project cost amount did more than half of Cadmus' respondents choose financing.

This sample is supposed to be representative of KCP&L's residential customers, at least half of whom are likely to be low- to moderate- income customers and approximately 35% of whom are renters (p. 47). It is not credible that 96 percent of this population was unconcerned about having positive cash flow or that 84 percent were unconcerned about their ability to qualify for a loan. The report does not provide adequate information to discern how Cadmus' conclusions were affected by the sample selection, the number of respondents, questions asked, or how the questions were worded.

The validity of the sample size for renters surfaces as an issue again in the study for KCP&L on page 22: "*Nine renters reported paying for a home improvement project, with project costs ranging from $793 to $5,000, with an average cost of $1,666. This question was not limited to the energy-related projects in Figure 13, but one respondent purchased a water heater, one purchased a major*

household appliance, and two said they purchased all or part of an HVAC system. The nine respondents that reported paying for a project used a variety of payment methods."

The split incentive between property owners and renters is acknowledged as a barrier to installing improvements in rental housing and especially multifamily housing. "*The two respondents paying cash or using their credit cards reported doing so as the cost was too small to finance, and they had the cash available*." There is no explanation why these renters opted to make improvements to their landlord's buildings costing as much as $793 - $5,000. It is not typical for renters to pay for expensive improvements to a building they don't own. These responses without explanation should not influence how a PAYS or any program can best reach KCP&L's hard to reach customers.

• A subtle problem with Cadmus' study for KCP&L is that the questions, at least as represented by this report, appear flawed. For example, in scenario 2 on page 18, the monthly payments are presented in one sentence while the estimated savings are provided in the following sentence — with no mention that the savings exceed costs by 25 percent. One might legitimately question whether the sample customers understood the relationship between costs and savings. If this information had been in one sentence that identified the percent by which savings exceed costs, there might have been a different response.

5. Recommendations for KCP&L implementation of a PAYS® program

EEI is including recommendations in this response to show how PAYS could be implemented in KCP&L service territories in a way that is in line with the company's stated preferences, avoids licensing and design costs, eliminates the need for new staff, and is delivered by a proven program operator.

<u>KCP&L preferences</u>
On page 35, Cadmus reports five KCP&L's preferences for its efficiency programs and two assumptions about such programs that are not in alignment with its preferences:

1. "*KCP&L staff confirmed that the typical KCP&L energy efficiency program is designed for implementation by a third party, with minimal management required by internal staff*."

2. "*As required by the Missouri Energy Efficiency Investment Act (MEEIA), all programs must pass a cost-effectiveness test, except for programs targeting low-income or multifamily markets*."

3. "*KCP&L generally selects programs based on their ability to deliver cost-effective energy savings at scale; so the utility meets its energy efficiency targets at the least cost to ratepayers*."

4. "*Because of the multiyear timeframe, the utility favors field-tested program models to incur the least risk possible to the portfolio's ability to achieve its goals*."

5. "*For the coming year, KCP&L staff reported it will place greater priority on programs that target hard-to reach markets that historically have not participated in existing programs in large numbers: low-income and multifamily*."

    - "*KCP&L staff expect that programs targeting hard-to-reach markets will present challenges that the utility has not faced with its more mainstream programs. For example, staff expect pilot programs specifically targeting these harder-to-reach markets to require a dedicated*

internal staff to identify opportunities, coordinate pilot implementation, and provide customer support."

- "*Another issue may be achieving scale; staff expect to pilot multiple new program models, and then focus on scaling up pilots that show potential for increased participation*."

EEI proposes an approach that meets all five criteria and does not require adding additional program staff to reach harder-to-reach markets or multiple pilots that unnecessarily waste utility resources on anything other than the best possible program. The program that EEI recommends:

- Will be implemented by a third party so no new staff need to be hired by KCP&L. Existing managers may be able to oversee program operations using data management tools provided by the vendor.

- Will pass any utility cost-effectiveness test since participants pay almost all costs for their upgrades even though the program can be targeted to harder-to-reach customers as it has been in Arkansas and North Carolina.

- Can reach four percent of KCP&L's residential customers (i.e., approximately 21,000 customers) in three years after a three- to five-month start-up period following approval by the Public Service Commission.

- Will incur the largest investment in resource efficiency upgrades for the least possible impact on KCP&L's budget for ratepayer funded spending on energy efficiency resources.

- Can reach large numbers of renters and low- moderate-income, hard-to-reach customers.

- Will not require a dedicated internal staff to address the challenges assumed in serving hard-to-reach customers.

- Has been field tested and produced outstanding results in several states, including two adjacent states for several years.

EEI recommends that KCP&L implement a residential PAYS program by hiring a third-party operator, such as EEtility, Inc. EEtility operates the successful programs in Arkansas and North Carolina. The program should have the funding and capital to reach at least 21,000 customers including hard-to-reach customers. EEI has consulted with EEtility management and they are prepared to operate a program for KCP&L at this scale. This recommendation will achieve all of the bulleted claims noted above and eliminate the need for KCP&L to pay EEI for a license for its intellectual property, hire new staff to fulfill new duties, or to pay what Cadmus estimates as "*PAYS program design and marketing*" of *$50,000* (**Table 7. Start-up Costs for PAYS**. 41).

This recommendation should also result in the greatest likelihood of Missouri Public Service Commission approval for a PAYS program. Since five commissions and other oversight bodies (e.g., Tennessee Valley Authority) have approved PAYS programs targeting investor-owned, cooperative, and municipal utilities, these Commissions have established precedents that would facilitate Missouri Public Service Commission approval, especially when two of those states border Missouri. The success of the seventeen programs in seven states would also seem to facilitate Missouri Public Service Commission approval. Finally, if KCP&L seeks approval for a program

implemented by a proven PAYS program operator, that would also seem to facilitate Missouri Public Service Commission approval.

In order to illustrate what a PAYS program that would enable 21,000 customers in three years to implement projects averaging $5,500, based on EEI's recommendation, we have used the categories shown in Cadmus' Tables 7 and 8 to compare Cadmus' to EEI's estimates.

Revised Tables 7 & 8 Showing KCP&L Costs for a 3-year program serving 21,000 customers based on Cadmus' estimates and EEI estimates for an EEtility-operated program

Category	Cadmus Estimated Cost	EEI Estimated Cost
PAYS design & licensing	$50,000	$0 licensing; $20,000 assistance with testimony and capital
Utility Administration (program staff)	$240,000	$240,000 (or $0 if existing personnel are assigned)
Implementation $700 to $1,000 per participant	$15.4 – $21.0 million	$20,450,000 ($975 per participant)
Participants Fees	-$0	-$6,825,000 ($325 each)
Marketing/outreach $25,000 per yr.	$75,000	$75,000 (or less)
Evaluation $24,000 per yr.	$72,000	$72,000 (or less)
Servicing (10-year term) $900 per participant	$18,900,000	$0 No loans to be serviced
Origination $600 per participant per year for each year of tariff duration (12 yr. per)[7]	$12,600,000	$0 One loan to utility
Call Center ($61 per participant)	$1,281,000	$0 (Program Operator handles most calls; Utility handles remainder)
Subtotal	**$54,218,000**	**$14,057,000**
Capital Costs (interest to be paid by participants) $5,500 per project	**$115,500,000**	**$115,500,000**
Utility Cost Recovery 15 years (12-year tariff and 3 years of implementation)	Uncollectables offset by participant funded loss reserve	**$115,384,500**
Net Capital Costs	**$0**	**$115,500**
Total Utility Costs	**$54,218,000**	**$14,172,500**

EEI's recommended approach would cost KCP&L only 26 percent of the total cost of this sized program using Cadmus' assumptions. KCP&L's total costs would be less than 12.3 percent of its total investment in efficiency upgrades.

Tables 7 and 8 do not show that for a program of this size, Cadmus' is proposing that KCP&L charge participants a one-time five-percent fee of their project's costs to fund a loss reserve fund. In the above example, Cadmus would charge participants $5,775,000 (i.e., .05 X $115,500,000) to protect against estimated uncollectables likely to be less than $115,500.

[7] The sentence describing Origination costs could be interpreted in two ways. EEI interprets the Origination costs to mean $600 per participant for every year there are participants.

Addendum

Misinformation in the report by Cadmus for KCP&L that should be corrected

In this Cadmus report for KCP&L, as in the Cadmus report for Empire District, there is information presented as fact and used as the basis for assumptions that is not correct.

Since Cadmus published *The Empire District Electric Company PAYS Feasibility Study* (May 31, 2018), new information has been published about the field experience with PAYS that would have prevented a repeat of many of the errors Cadmus made in that study. Instead, Cadmus repeatedly cites the Empire report in its KCL&P report and repeats many of its errors.

Here are links to three documents published between the date of Cadmus' study for Empire District and this one for KCL&P:

- The Missouri Office of Public Counsel submitted EEI's response to Cadmus' Empire District report on the public record on June 28, 2018 (https://www.efis.psc.mo.gov/mpsc/commoncomponents/view_itemno_details.asp?caseno=ER-2016-0023&attach_id=2018021923);
- Jessica Lin wrote a *The Pay As You Save Program in Rural Arkansas: An opportunity for rural distribution cooperative profits* published in the Electricity Journal (Volume 31, Issue 6, July 2018, Pages 33-39, payment required without a subscription https://www.sciencedirect.com/search?pub=The%20Electricity%20Journal&volume=31&issue=6&show=25&sortBy=relevance&origin=jrnl_home&zone=search&cid=272016)
- Dr. Holmes Hummel and Harlan Lachman wrote a piece entitled *What is inclusive financing for energy efficiency, and why are some of the largest states in the country calling for it now?* published by ACEEE on September 4 (https://aceee.org/files/proceedings/2018/index.html#/paper/event-data/p401)

While we have not noted every error in Cadmus' report, we highlight below a number of them to illustrate the nature of these errors, each of which can be corrected in this and future feasibility studies of the PAYS system. In this section, we have copied statements from the Cadmus study for KCP&L and then explained the apparent error.

1. On page 36, the report states, "*Although a trademarked concept, in practice, PAYS programs are typically customized to a program administrator's needs, as long as it includes the basic features (e.g., the energy audit, capped monthly tariff, no credit score requirement). Most PAYS programs conform to a common organizational structure, as shown in* ***Figure 21 PAYS Program Design***."

None of the seventeen utilities that have or are operating PAYS programs use the model illustrated in Figure 21. In the myriad presentations given about PAYS by knowledgeable people, many of which are available on the web (e.g., http://www.cleanenergyworks.org/about-pays/) none have used this model. We have no idea where the image in Figure 21 came from, but it confuses PAYS with a loan program by including an Origination Provider and a Servicer, both roles associated with consumer loans. Since PAYS does not involve consumer loans, neither role is needed for a PAYS program.

Also the "basic features" noted in the quote above do not correspond to PAYS Essential Elements and Minimum Program Requirements, which all PAYS programs must include, noted on EEI's website (http://www.eeivt.com/?page_id=48).

2. On page 38, the report states, "*No investor-owned utilities (IOUs) currently implement PAYS*."

Eversource, an IOU, is operating the longest running PAYS program, Smart$tart, in New Hampshire and has been since 2002. https://www.eversource.com/content/nh/business/save-money-energy/manage-energy-costs-usage/smart-energy-solutions/municipal-smart-start-program.

3. On page 38, the report states, "*IOUs, as regulated entities, face strict requirements for protecting ratepayers from unnecessary expenses*." Again, on page 40, it states, "*Cooperatives and municipal utilities, which are not regulated and do not answer to shareholders, have greater leeway for accepting financial risk to ratepayers through an energy efficiency program used by only a minority of customers. IOUs face much tougher restrictions on types of financial risk they can incur*."

There are two issues raised by these statements. First, there is a suggestion that energy efficiency expenses are an unnecessary expense. Commissions in five states (and oversight bodies in three other states, including the Tennessee Valley Authority) have approved the use of a PAYS tariff with disconnection for nonpayment because regulators consider efficiency investments to be part of basic service that the utility is obligated to provide to its customers. These are not unnecessary expenses.

Second, there is an implication that the financial risk related to operating a PAYS program is significant enough that an IOU might not able to tolerate it. As is noted in Section 2 Unrealistically high cost estimates in this response, of the utilities with PAYS programs that have reported rates of uncollectables for participants, the average nonpayment rate is less than 0.1 percent, which is lower than most utilities' prevailing rate for uncollectable charges. Further, because installation of efficiency upgrades lowers customers' bills, PAYS programs actually reduce risk to utilities because customers are better able to pay their bills, which is consistent with the low rate of nonpayment observed among PAYS participants.

4. On page 38 Cadmus writes, "*Most private sector investors have very little appetite for alternative screening methods, such as the bill payment history used by most PAYS programs, despite that most PAYS programs—like most energy efficiency financing programs—offer nonpayment rates below 2%*."

PAYS does not involve consumer loans. The only loan that might be part of a PAYS program is a capital provider's loan to the utility to capitalize its PAYS investment portfolio. A loan to the utility is made based on the strength of the utility's own balance sheet, and not based on the creditworthiness of customers determined by any screening methods. Since any private sector investor putting up capital for a PAYS program would be making a loan to the utility, not to an individual customer, the screening methods used by the utility with its customers should be of little concern to the investor.

Even if a private sector investor was concerned about the prospects of utility default on its commercial paper (i.e. corporate debt), PAYS programs require that utilities make payments to capital providers on the schedule set out in the loan agreement regardless of a utility's collections from its customers. Additionally, since PAYS requires that the utility have access to disconnection for unpaid PAYS charges, applying the same protocols as apply to all other utility charges, the utility is assured of its normal high rate of cost recovery. And, finally, since PAYS requires that a utility treat PAYS uncollectables the same as all other uncollectables, all ratepayers will pay to offset any small losses that may occur.

Since PAYS makes it easier, not harder, for participants to pay their bills, there is no requirement that PAYS programs do any screening of customers except based on whether they have cost-effective upgrade opportunities in their homes. In our experience, utility managers typically want to build in a review of a customer's bill payment history as a screening tool and not invest in efficiency at a location where a customer chronically misses payments. This is not a screening method that is required for a PAYS program.

5. Cadmus writes that one of its objectives for its study is to answer, "…*whether PAYS or another on-bill financing program offers the best approach to address unmet financing needs*." (Executive Summary, Objectives, p1).

First, PAYS is not a consumer loan program. Second, loan programs by design do not reach more than half of a utility's customers (i.e., low- moderate- income customers and renters), and they do not achieve comparable offer acceptance rates in the field. Therefore, framing a question about whether on-bill loan programs or the PAYS system offers the best approach to addressing unmet financial needs raises the question as to why this question was even asked.

6. Cadmus listed its fourth conclusion in its executive summary (p. 3) and conclusion (p. 47), "*The primary PAYS barrier for KCP&L will be obtaining regulatory approval for appropriate credit enhancements to attract investors willing to provide low-cost capital*."

There is no basis in this report for this conclusion. First, there is no need to enhance consumer credit because the creditworthiness of a customer does not put capital at risk. Second, investors routinely provide large amounts of low-cost capital to utilities with sound balance sheets, and these transactions typically occur without regulatory approval of subsidies to attract investors. If the utility is willing to guarantee repayment of principal and interest to a capital provider regardless of collections, as PAYS requires, no subsidy on the cost of capital would be warranted. (See http://www.eeivt.com/?page_id=48)

7. On pages 29 through 34, Cadmus compares various financing products (e.g., credit card, PACE, OBF) to PAYS.

PAYS is not a financing product, but rather it is a utility investment system with cost recovery via tariffed charges over time paid by customers residing at a location where upgrades have been installed. In Table 5 on page 32, Cadmus summarizes its perceived differences between financing products and PAYS:

- Overall Cost. The ratings for the overall cost estimates of OBF, PACE, and PAYS are backwards. No OBF or PACE program includes control of upgrade or installation pricing. All of the recent PAYS weatherization programs have included mechanisms to ensure fair prices for participants (e.g., RFPs, maximum price paid, etc.). OBF programs require credit enhancements, especially if a utility has any interest in providing financing to customers with low eligible credit scores. PAYS needs no credit enhancements. The "Excellent" rating for OBF and the "Okay" rating for PAYS should be switched.

- Available Loan Amounts. This category should refer to "available capital amounts," without specifying the financing mechanism. The ratings for the overall available loan amounts for financing products and PAYS are also backwards because it appears that Cadmus presumes

larger amounts of capital are better. Most cost-effective efficiency projects in the residential sector range from several hundred dollars to $9,000. Many PACE and OBF programs have minimum loan amounts that prohibit installation of moderate-cost upgrades (e.g. less than ~$5,000) for anyone who lacks the disposable income to install them. PAYS does not involve loans to participants, and most PAYS programs do not have minimum project cost limits. More of these projects can be addressed by PAYS than by loan products that have high minimums (e.g., $5,000). By looking at amounts needed for reaching cost-effective efficiency improvements in the residential sector, the "Excellent" ratings for home equity lines of credit (HELC) and OBF should be switched with the "Poor-Okay" rating for PAYS.

- Outcome When Borrower Moves. Every category in Table 5 has an understandable rating, even though some of the ratings are wrong. This category has no ratings. The rating for HELC and OBF when the borrower moves should be "Poor" since the borrower must pay off the obligation when they move from the home. For any participant that leaves their residence before the cost recovery period is complete, the requirement to make all future payments in one lump sum is almost guaranteed to leave them with negative savings from their efficiency improvements. The rating for PACE should be poor-good. PACE also requires the borrower to pay off the balance due unless a successor customer agrees to assume the payment obligation (without any assurances the upgrades will last as long as the payments and with the leverage of being able to force the seller to pay off the obligation). Given these alternatives, PAYS is the best option for the original participant (who is not a borrower) and should be rated "Excellent".

8. On page 32 Cadmus writes, "*States do regulate some aspects of the financing market, such as licensing lenders, and rules vary from state to state. However, from the consumer perspective, differences in available financing products are modest even across state lines*."

PAYS does not involve any consumer loans.

9. On page 33, the report states, "*PAYS was rated Poor-Okay due to its strict formula for determining available funding, which will cover the full project cost of only a handful of measures."*

Some experts consider the fact that PAYS highlights which portion of the cost of an upgrade will provide immediate net savings and which portion will not to be one of the major benefits of the PAYS system. This feature is a consumer protection. PAYS has not encountered consumer advocates' attacks such as those regarding predatory practices in the credit card industry. PAYS has not experienced rejection such as those by California municipalities seeking to ban PACE in their municipalities (c.f., http://www.governing.com/topics/transportation-infrastructure/gov-california-cities-clean-energy-loans-pace.html or https://www.latimes.com/business/la-fi-pace-bakersfield-20170720-story.html) because of problems with foreclosure caused by high lending costs for equipment that is no longer working or not producing sufficient savings to offset their costs.

10. Cadmus writes on page 36 that, "*While a utility may operate a tariff or financing program using internal resources and capital, most IOUs choose to partner with organizations that specialize in this function. The origination provider may serve as a liaison with a capital provider*."

Neither of the two IOUs that have implemented PAYS programs have used origination providers.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

AFFIDAVIT OF HARLAN LACHMAN

STATE OF VERMONT)
) SS.
CHITTENDEN COUNTY)

COMES NOW HARLAN LACHMAN and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing *RESPONSE TO CADMUS' "PAYS' FEASIBILITY STUDY";* and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

Harlan Lachman
President, Energy Efficiency Institute, Inc.

JURAT

Subscribed and sworn before me, a duly constituted and authorized Notary Public, in and for the Chittenden County, State of Vermont, at my office in the Town of Colchester, on this 8th day January, 2019.

Signature Erin Hogan #157-00001348

Print Name Erin Hogan
Notary Public

My Commission expires 1/31/2021.

ERIN HOGAN NOTARY PUBLIC VERMONT

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

AFFIDAVIT OF PAUL CILLO

STATE OF VERMONT)
) SS.
COUNTY OF CALEDONIA)

COMES NOW PAUL A. CILLO and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing *RESPONSE TO CADMUS' "PAYS' FEASIBILITY STUDY";* and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

Paul A. Cillo
Vice-President, Energy Efficiency Institute, Inc.

JURAT

Subscribed and sworn before me, a duly constituted and authorized Notary Public, in and for the County of Caledonia, State of Vermont, at my office in Hardwick, on this 7th day January, 2019.

Notary Public

My Commission expires 2-10-2019.