MEEIA 2017-2018 Collaborative Program Review – KCP&L Findings

EXECUTIVE SUMMARY

The Stipulation and Agreement for KCP&L's MEEIA cycle 2 filing[1] states: "As a separate initiative, KCP&L/GMO agree to a collaborative process with Signatories, to address new, unserved, or underserved customer markets and identify cost-effective energy and demand savings strategies (a possible additional 200 GWh of savings) that could be considered for implementation for program years 2017 and 2018 if all customers within the customer class realize a benefit. The possible additional 200 GWh is neither a floor nor a cap."

This memo provides a write-up of the findings after receiving several proposals from stakeholders for such additional savings, reviewing the data, filling in gaps where necessary, and analyzing the cost-effectiveness and feasibility of each. Applied Energy Group conducted this work with review provided by KCP&L. KCP&L also provided DSMore cost-effectiveness runs for select programs to supplement these calculations for select programs.

The stakeholder group also identified several program categories to frame the eventual proposals as written in the Stipulation, under Identification of Additional Energy Savings: "cost effective strategies to be assessed will include, but are not limited to:"

Per Stipulation	Per Collaborative Project Proposals Received and Considered Here
Expanding upstream programs	C&I Upstream Program
Whole building benchmarking	Tailored approaches for C&I customers
Refining target markets to reduce free riders	Bulb buy back
Evaluation/re-evaluation of incentive payment levels & modifying if appropriate	Whole Home Efficiency
Evaluating charging participants for program services	Financing
Evaluating EO in relationship to participant payments	Tailored approaches for C&I customers
Increased participation rates via single point of contact	Tailored approaches for C&I customers and residential program bundling
Working w/ large employers to market EE to their employees	Residential Program Bundling/Gamification
Assist with whole building EE for new construction & existing buildings	Circuit Rider
Whole home approach for new & existing homes	Whole Home Efficiency
Co-delivery w/ gas utilities	Residential Bundling, Circuit Rider and Single Family

The summary table below provides a high-level perspective of the savings and budgets proposed by the stakeholders. It also contains a second, slightly revised set of values where data has been supplemented in order to make the program proposals more complete. Finally, it shows at a high level whether KCP&L is planning to proceed further in the planning process with the given proposals

[1] Stipulation & Agreement Reference numbers: KCP&L-MO: EO-2015-0240, GMO: EO-2015-0241. Approved by Missouri Public Service Commission on March 12, 2016

Table 1 - Summary of stakeholder submitted and KCP&L evaluated programs

Program	Incremental for 2017/2018 As Received from Stakeholders			Incremental for 2017/2018 As Evaluated				Findings
	Energy Savings (MWh)	Demand Savings (MW)	Budget ($million)	Energy Savings (MWh)	Demand Savings (MW)	Budget ($million)	TRC Ratio	
New Initiatives								
Building Code Circuit Rider	4,394	1.67	$0.18	4,394	1.67	$0. 30	1.73	Could co-fund as statewide program & split cost 3 ways with KCP&L, Ameren, and DED.
Water Heater - Demand Response	Stakeholder proposal only included per-unit information. KCP&L supplemented with potential study data.			0	3.60	$2.08	1.76	Researching in potential study; possibly incorporate program into MEEIA cycle 3
Financing	41,981	0.00	$8.20	Increases costs & participation of a targeted program by 10%		$8.20	n/a	Preferred approach would likely be to develop financing option for select program(s) with third party banks.
Already Offering, Opportunity to Expand?								
Low Income Single Family	14,764	2.05	$25.10	14,764	2.05	$25.10	0.25	Evaluate delivery learnings from stakeholders. Increase funding but limit with market potential.
Concierge / Tailored approaches for C&I customers	88,939	10.40	$19.80	88,939	10.40	$19.80	0.66	Evaluate delivery learnings from stakeholders to expand existing SEM Program.
C&I Upstream Program *(two proposals averaged)*	73,842	12.63	$11.40	82,836	16.46	$19.00	1.89	No additional funding or savings since proposal exceeds market potential and existing KCP&L program offered.
	91,829	20.30	$26.60					
LED Streetlighting	12,761	0.00	$3.45	12,761	0.00	$3.45	0.87	Occurring through rate base, not MEEIA. No additional funding or savings
Opportunity to Enhance Overall Marketing Strategy								
Town Competition	6,746	0.00	$0.17	6,746	0.00	$0.17	1.16	Evaluate delivery learnings from stakeholders. Consider increasing general marketing budget for these or related initiatives.
Cool Choices	450	0.00	-	450	0.00	$0.01	1.09	
Home Energy Makeover	613	0.00	$0.02	613	0.00	$0.02	0.89	
Residential Competition	135	0.00	$0.004	135	0.00	$0.004	2.24	
Meter Genius	3% per user	0.00	$0.11	1,735	0.00	$0.11	0.46	
Bulb Buy Back	44	0.00	$0.12	44	0.01	$0.15	0.15	
Already Offering								
Residential Program Bundling	19,383	2.69	$17.50	19,383	2.69	$17.50	0.48	Incorporate delivery learnings from stakeholders. No additional funding or savings since embedded in existing plans.
Whole Home Efficiency	980	0.00	$0.47	980	0.00	$0.47	2.74	
Total	**274,026**	**33.27**	**$94.12**	**233,780**	**36.87**	**$96.36**		
MEEIA Cycle 2 planned values for comparison (KCP&L & GMO combined)				466,771	263.89	$103.08		

Highlighted cells in table show completions or adjustments of stakeholder-provided data.

Consistent with the collaborative process, KCP&L worked with stakeholders to review and discuss these stakeholder proposals during Q2 and Q3 2016. The collaborative process included presentations, meetings, conference calls and follow-up email correspondence. The primary interactions included:

Meeting and presentations:

- (7/15) Presentation of approach and process in Jefferson City
- (8/26) Update at DSM Advisory Group meeting in Jefferson City
- (9/19) Presentation of preliminary findings in Jefferson City

Special topic discussions:

- (7/27) Joint call discussion with DED and Ameren MO gaining clarification on initial proposed programs
- (9/26) Discussion with NRDC regarding C&I Concierge and Residential Program Bundling
- (9/28) Discussion with DED/MEEA regarding Building Codes Circuit Rider

Please also see the following reference materials that correspond to analysis conducted throughout the collaborative process:

- Powerpoint presentation of preliminary findings as discussed at 9/19 meeting: KCPL MEEIA Collaborative Program Findings - ppt - 9-16-2016.pptx
- Spreadsheet file containing stakeholders' proposals as received and cost-effectiveness calculations and notes added throughout the analysis process: KCPL MEEIA 2017-2018 Collaborative Matrix - 10-04-2016.xlsx

In addition to meeting the specific requirement of KCP&L's MEEIA Cycle 2 Stipulation to create this summary report of the collaborative process of program ideas and analysis, KCP&L will also follow through with an additional deliverable. The additional deliverable is that KCP&L commits to informing the Commission within 90 days of the filing of this report whether an additional filing will be made to request new funding for new programs and savings during program years 2017 and 2018, or whether no such additional filing will be required. Regardless, KCP&L will look to (or possibly have already) incorporate many of the ideas and feedback into the current approved program structure, allowable budget and savings variance, and research/pilot budget.

Ideas from stakeholders that KCP&L is already incorporating in MEEIA Cycle 2 portfolio of programs is as follows:

- **Low Income Single Family** KCP&L is currently offering a Low Income Program to single family customers. However, the single family low income program is moving to rate-based funding rather than being included in MEEIA. KCP&L will evaluate delivery learnings from stakeholders, such as neighborhood blitz strategies, measure bundling, and gamification.
- **Whole Home Efficiency** KCP&L is currently offering the packaging and bundling of measures recommended in the Whole House Efficiency proposal in our currently Whole Home and Low Income Weatherization programs. KCP&L will incorporate delivery learnings from stakeholders, but no additional funding or savings are expected since these concepts are already embedded in existing plans.

Ideas from stakeholders that KCP&L will use to make immediate impact on the MEEIA Cycle 2 portfolio of programs are as follows:

- **C&I Concierge** Using a Strategic Energy Management "Lite" type class to engage more commercial and industrial customers to a long term energy efficiency plan

- **C&I Midstream Offering** Move certain measures from the Business rebate programs to a "mid-stream" delivery model allowing for a wider market adoption to appropriate end use customers
- **C&I Tailored Approach** Engaging local employers to promote energy efficiency programs to their employees with possible contests and prizes for enhanced engagement and ultimately participation in energy efficiency
- **LED Streetlights** Conversion of exterior street lights to LED (executed outside of MEEIA 2 in rate tariffs)

Ideas from stakeholders that KCP&L will consider incorporating MEEIA Cycle 2 portfolio of programs that could potentially increase awareness of KCP&L's energy efficiency offerings and facilitate behavior change are as follows:

- **Energy Education Kit Pilot**
    - Participants: test two schools, target two teachers from each school
    - Estimated budget: 4 teachers * 30 kids * $50 kits (measures and student teacher curriculum) = $6,000
- **Town Competition / Cool Choices Style Marketing Program**
    - Recommend mirroring a program similar to the Town Competition or Cool Choices concepts (or some combination of the two), with a few additions/tweaks. Program would be most successful with engagement (including time and finances) from many internal/external parties with interest in promoting energy efficiency.
- **Water Heater Demand Response** is being considered in AEG's 2016. Further exploration of program delivery and start up is still needed. KCP&L will continue researching in the ongoing DSM potential study and possibly incorporate this program into MEEIA cycle 3 plans.

The remainder of this memo is separated into two sections: summary information on a program by program basis, followed by detailed information on a program by program basis.

SUMMARY OF PROPOSALS AND RESPONSES

BUILDING CODE CIRCUIT RIDER

SUMMARY OF STAKEHOLDER PROPOSAL

Index #	1
Stakeholder	DED
Program	Circuit Rider
Sector	Res New SF Homes
Category	Code Compliance
Short Description	Hire local resource to train and educate marketplace on codes
Estimated Program Incremental Savings (kWh)	4,394,072
Estimated Program Cost ($)	$181,600

SUMMARY OF KCP&L'S RESPONSE

- Funding could be split among all utilities in the state – this is a program that would benefit from jointly implementing and funding with Ameren Missouri and other stakeholders like the Division of Energy, especially given their involvement to date with the new construction baseline practices study they are conducting with the Midwest Energy Efficiency Alliance (MEEA).
- Several cost categories associated with the program were not provided in the proposal and KCP&L has developed estimates for them. Program cost does not include the following: administration costs ($10,000); code compliance study ($150,000 for a full study or $20,000 for interviews with key builders); advanced training program (unknown cost). Additional cost categories not provided include measure costs incurred by builders, administrative costs beyond circuit rider's salary alone, and evaluation costs to measure savings.[2]
- Current building codes would normally be considered the baseline in new construction programs, so there would need to be an agreement to define the baseline and to allow these savings to be counted.
- Based on similar programs in other utilities, savings could be counted. The methodology should be established prior to implementing to ensure that savings would hold up under evaluation. The majority of examined programs were/are run in conjunction with a regional policy agency such as MEEA or Southeast Energy Efficiency Alliance (SEEA). These programs typically account for savings determined with these agencies.

[2] MEEA provided an estimate of the incremental measure costs to move from current levels (of non-compliance) to code compliant construction, and this was about $823 per home. This value was not available until the analysis was completed, but KCP&L and AEG had used a proxy value of $1000 per home, which is relatively close and will not change the TRC significantly.

WATER HEATER - DEMAND RESPONSE

SUMMARY OF STAKEHOLDER PROPOSAL

Index #	3
Stakeholder	DED
Program	Water Heater - Demand Response
Sector	Residential Retrofit
Category	Demand Response
Short Description	Optimize use of residential water heater by direct control
Estimated Program Incremental Savings (kWh)	.93-1.49 kWh/month per participant
Estimated Program Cost ($)	$100 incentive per user

SUMMARY OF KCP&L'S RESPONSE

- This measure is being considered in AEG's 2016 Demand Response Potential Study. AEG is using data and information from that research and modeling effort to fill data gaps where information was not provided by stakeholders, specifically peak demand savings.
- This program is initially showing as cost-effective in the potential study.
- Could possibly use all year and round the clock to help with ancillary services and load dispatch needs.
- Note that the savings figures provided by stakeholders are per-participant, and not in aggregate such that program and funding assumptions can be made. Potential study preliminary numbers show that 15 to 22.5% of customers with eligible equipment (electric water heaters) could be persuaded/marketed/incentivized to enroll over a 5-year ramp up.
- Further exploration of program delivery and start up is still needed. KCP&L will continue researching in the ongoing DSM potential study and possibly incorporate this program into MEEIA cycle 3 plans.

FINANCING

SUMMARY OF STAKEHOLDER PROPOSAL

Index #	4
Stakeholder	DED
Program	On Bill Financing
Sector	Residential Retrofit
Category	Financing
Short Description	Provide EE financing option for residential customers
Estimated Program Incremental Savings (kWh)	41,980,750
Estimated Program Cost ($)	$1.4 - $15 Million/yr

SUMMARY OF KCP&L'S RESPONSE

- There are many EE financing programs around the country. The key issues often revolve around the source of the capital (utility or third-party) and the capabilities of the utility billing systems. Many of these programs operate well because utility payment history is a relatively reliable indicator of creditworthiness. On-bill financing doesn't remove the need or desirability of incentives -- it's just a way to help finance the remainder.
- There are often competitive financing programs already available from contractors. It will be necessary to fully understand the need for financing to increase market share/penetration.
- With respect to performing direct-to-consumer and on-bill DSM project financing, KCP&L anticipates complexity and interactions with its core regulatory mandates of supplying electricity to customers if also directly acting as a lender and financier to them. KCP&L also anticipates significant complexity, cost, and timelines associated with adding an *on-bill* financing component. There is already a rapidly moving, multi-year project being deployed to update KCP&L's metering and billing systems pre-established specifications and designs.
- The research literature does not provide a consensus on an explicit, quantifiable, or causal link to "lift" or increased levels of savings achievable by DSM programs. Some industry experts suggest anecdotally that over the long term, a *mature* financing program can lift customer adoption for applicable programs by 30-50% (EE Financing Panel, 2013 AESP National Conference, Orlando, FL). It is difficult to tell, however, if this is because of the financing, or other simultaneous marketing, education, and market transformation. Most likely all of the above. We would assume for modeling that a 10% boost in participation would occur in programs where financing is applicable and enabled, and that a corresponding 10% increase in per-unit measure and admin costs would occur to cover interest and administration. The most applicable KCP&L program would be Whole Home for HVAC and Building Shell measures.
- KCP&L will investigate the concept of procuring and attracting third party financing to the region, as well as the formation of associations and partnerships with relevant financing institutions such as Green Banks like WHEEL (warehouse for energy efficiency loans) or traditional regional or national banks.

- KCP&L has also committed to discuss Property Assessed Clean Energy (PACE) loans and Pay as You Save® (PAYS) options as part of their upcoming rate case testimony. Additional discussion may be found there.

LOW INCOME SINGLE FAMILY

SUMMARY OF STAKEHOLDER PROPOSAL

Index #	6
Stakeholder	NRDC
Program	Low Income Single Family
Sector	Residential Retrofit
Category	Income Eligible
Short Description	Comprehensive look at income qualified single family residential
Estimated Program Incremental Savings (kWh)	14,763,914
Estimated Program Cost ($)	$25.1 million

SUMMARY OF KCP&L'S RESPONSE (LOW INCOME SINGLE FAMILY)

- Note that KCP&L is currently offering a Low Income Program to single family customers. However, the single family low income program is moving to rate-based funding rather than being included in MEEIA.
- KCP&L will evaluate delivery learnings from stakeholders, such as neighborhood blitz strategies, measure bundling, and gamification.
- The proposed level of spending for this program is a substantial increase relative to KCP&L's existing plans and efforts and exceeds savings levels suggested as the maximum achievable potential in KCP&L's preliminary market potential study results. Further, it would raise the spending to greater than 20% of the portfolio for a population that uses significantly less than 20% of system energy or demand; representing a possible portfolio equity issue.
- The current potential study includes measures for single family low income customers as well as multifamily.
- If the Clean Power Plan proceeds after its current legal hiatus and review, the early-action credits associated with low-income energy efficiency programs could be of strategic interest to KCP&L.

CONCIERGE / TAILORED APPROACHES FOR C&I CUSTOMERS

SUMMARY OF STAKEHOLDER PROPOSAL

Index #	2
Stakeholder	NRDC
Program	Tailored approaches for C&I customers
Sector	Business
Category	Custom Business
Short Description	Long term relationship thru Concierge, Retrocommissioning, auditing
Estimated Program Incremental Savings (kWh)	88,938,902
Estimated Program Cost ($)	$19.8 million over two years

SUMMARY OF KCP&L'S RESPONSE

- Most of the elements of this proposal are already being covered by KCP&L's existing Strategic Energy Management (SEM) program, which is already a part of the MEEIA cycle 2 program plans as well as the forthcoming potential study.
- KCP&L tracks O&M savings through a model for two years, with the intent that the customers will be capable of tracking their own baseline and savings progress in years after that.
- There is also a Training series for smaller customers in a broader audience (Tier 2), which provides best practices and recommendations from peer customers within their industry. This is part of our *Bridging the Gap* partnership initiative.
- Note that many of the larger C&I customers have opted out, so this limits the savings potential to begin with, and stakeholder-provided participation estimates may be high.
- Concierge services as described are a labor-intensive undertaking and can be costly because it will require higher level technical and engineering resources, especially for industrial customers and more complex commercial facilities.
- Per conversations with NRDC and KCP&L program management, a possible enhancement to the existing Strategic Energy Management Program to capitalize on the strategies and concepts proposed by the stakeholders involves increasing the delivery budget by $1.5 million to incorporate the following elements:
    - Three FTE's: (1) Energy Coach, (1) Program Engineer/RCx subject matter expert, (1) Energy Advisor
    - Targeting Certain Markets or Audiences: Property Management Firms, Grocery Stores, National Accounts (Private Sector Industries) with a focus on underserved buildings with low benchmark scores that can be improved through a bundled offering of O&M/RCx and capital side investments.
    - Consultative approach providing customers with regular feedback and training for improvement and long term persistent savings.

- Bi-monthly trainings to provide customers with the necessary resources to be successful.

C&I UPSTREAM PROGRAM

SUMMARY OF STAKEHOLDER PROPOSAL

Index #	8
Stakeholder	NRDC /DED
Program	C&I Upstream Program
Sector	Business
Category	Upstream
Short Description	Selling lighting initially thru distributors at a discount
Estimated Program Incremental Savings (kWh)	82,835,583 (Average of two proposals)
Estimated Program Cost ($)	$19 million (Average of two proposals)

SUMMARY OF KCP&L'S RESPONSE

- KCP&L is already running a midstream C&I program in lighting and is expanding the program to include pumps, engineered nozzles, and condensate valves (measures will be moved from Standard to Midstream in October 2016).
- Moving program efforts upstream enables substantial reach and influence on downstream practices.
- The downside to an upstream program is there is little data provided at the manufacturer level. One also loses the value of having a relationship with customer (downstream) and getting them to engage in more retrofits.
- With some upstream programs there can be concerns regarding whether or not customers are within the utility service territory – a program of this kind is best coordinated with other utilities.
- KCP&L anticipates no additional funding or savings in this area since the effort already exists in KCP&L's portfolio, and also since the increment added by the stakeholder proposals would exceed the available maximum achievable market potential based on preliminary results of the ongoing potential study.

LED STREET LIGHTING

SUMMARY OF STAKEHOLDER PROPOSAL

Index #	7
Stakeholder	DED / NRDC
Program	LED Street lighting
Sector	Business
Category	Lighting
Short Description	Retrofit existing inefficient street lighting
Estimated Program Incremental Savings (kWh)	12,761,313
Estimated Program Cost ($)	$3.45 million

SUMMARY OF KCP&L'S RESPONSE

- KCP&L is currently developing tariffs around this.
    - KCP&L-MO: LED Streetlight tariff approved in June 2016. KCP&L will convert ~7,500 street lights mostly during 2016.
    - GMO: expect to file LED Streetlight tariff and plan in 2016. GMO would convert starting in 2017.
- Significant O&M savings in addition to energy savings, but no peak demand savings, which decreases the attractiveness to the Commission and to KCP&L.
- Note that when designing a program for street lighting, a primary concern is who owns/pays for the lights.

GAMIFICATION AND EDUCATION MEASURES

SUMMARY OF STAKEHOLDER PROPOSALS

Index #	5a	5b	5c	5d	5e
Stakeholder	DED	DED	DED	DED	OPC
Program	Town Competition	Cool Choices	Home Energy Makeover	Residential Competition	Meter Genius
Sector	All Res & Bus	Residential Retrofit	Residential Retrofit	Residential Retrofit	Residential
Category	Gamification	Gamification	Gamification	Gamification	Gamification
Short Description	Reward towns to compete to save energy	Workplace competition for employee's homes w/ prizes	Homeowner competition to win EE upgrades	Prizes for overall home savings	Engage customers in online portal EE games
Estimated Incremental Savings (kWh)	6,746,400	449,760	612,570	134,928	3% per user
Estimated Program Cost ($)	$170,000	Not provided	$20,000	$3,520 (Assumed equal to incentives)	$109,375

SUMMARY OF KCP&L'S RESPONSE (GAMIFICATION MEASURES)

- These are primarily marketing avenues or approaches rather than directly installed and tangible measures with quantifiable savings
- The various proposed gamification measures are often in direct competition with one another and with customers' limited attention spans. There is potential to overlap if care is not taken to avoid double-counting savings.

KPC&L is currently considering the following related actions which incorporate elements of these proposals:

Energy Education Kit Pilot.

- Participants: test two schools, target two teachers from each school
- Estimated budget: 4 teachers * 30 kids * $50 kits (measures and student teacher curriculum) = $6,000

Town Competition / Cool Choices Style Marketing Program

- Recommend mirroring a program similar to the Town Competition or Cool Choices concepts (or some combination of the two), with a few additions/tweaks. Program would be most successful with engagement (including time and finances) from many internal/external parties with interest in promoting energy efficiency.
- Three objectives: (1) increase awareness of KCP&L's energy efficiency offerings, (2) reduce overall kWh per neighborhood, and (3) facilitate behavior change.
- *Social Media:* video clips of town officials encouraging families and individuals in their town to participate. Possibly include a fun "winner/loser" piece.

- *Recommended Prize:* Neighborhood block party or grant to the city/town to go toward implementing something good for the environment (i.e. community garden, solar panels, etc.).

BULB BUY BACK

SUMMARY OF STAKEHOLDER PROPOSAL

Index #	9
Stakeholder	DED
Program	Bulb Buy Back
Sector	Res New SF Homes
Category	Upstream
Short Description	Install LEDs at new construction by incenting builders
Estimated Program Incremental Savings (kWh)	44,120 per year
Estimated Program Cost ($)	$120,071

SUMMARY OF KCP&L'S RESPONSE

- The good marketing qualities and the small scale associated with this initiative make it also primarily a marketing avenue/approach like the gamification initiatives discussed above.
- AEG was unable to verify the cited total available savings. Magnitude of the program in individual towns was on the order of 200-400 bulbs per event.
- Each swap event would have overhead and staffing costs in addition to the incremental cost of LED bulbs
- Substantial NTG risk from gaming or double-counting, especially if cash buybacks used. "In-kind" swap of LED for old incandescent (as opposed to halogens) works better.
- Generally difficult to reach scale with this program, more useful for spot-marketing efforts from local or community events.
- KCP&L will consider developing a comprehensive enhanced marketing and gamification strategy that includes elements of this proposal.

RESIDENTIAL PROGRAM BUNDLING

SUMMARY OF STAKEHOLDER PROPOSAL

Index #	10
Stakeholder	NRDC
Program	Residential Program Bundling
Sector	Residential Retrofit
Category	Whole Building
Short Description	Package offering of residential measures
Estimated Program Incremental Savings (kWh)	19,383,000
Estimated Program Cost ($)	$17.5 million

SUMMARY OF KCP&L'S RESPONSE

- This packaging and bundling of measures is commonly done with KCP&L's programs already.
- We are interpreting this as effectively just another way to phrase KCP&L's existing Whole Home program or Low income weatherization program
- KCP&L will incorporate delivery learnings from stakeholders, but no additional funding or savings are expected since these concepts are already embedded in existing plans.

WHOLE HOME EFFICIENCY

SUMMARY OF STAKEHOLDER PROPOSAL

Index #	11
Stakeholder	DED
Program	Whole Home Efficiency
Sector	Residential Retrofit
Category	Whole Building
Short Description	Tiered rebates for whole home retrofits
Estimated Program Incremental Savings (kWh)	980,239
Estimated Program Cost ($)	$468,097

SUMMARY OF KCP&L'S RESPONSE

- This packaging and bundling of measures is commonly done with KCP&L's programs already.
- We are interpreting this as effectively just another way to phrase KCP&L's existing Whole Home program or Low income weatherization program
- At core, this is very similar to the gamification measures – compensating customers for energy saved however they choose to do it. However, at the tiers incentivized, this can be very expensive for homeowners, and may require early replacement of currently working equipment.
- KCP&L will incorporate delivery learnings from stakeholders, but no additional funding or savings are expected since these concepts are already embedded in existing plans.

Details of Proposals and Responses

Building Code Circuit Rider

Details provided by Stakeholder

Description of proposal	Propose that KCP&L and Ameren Missouri create a residential Circuit Rider Program to assist local building departments, code officials, homebuilders, material supply houses, and contractors with energy code compliance. The utilities will hire one full-time individual to proactively contact building departments and homebuilders in all counties within the service territories to share information with code officials and builders on the local energy code. The Circuit Rider will emphasize aspects of local energy codes that rarely saw 100% compliance in the Missouri Residential Baseline Study and will also be available to assist builders on site visits and answer questions via phone and e-mail. As the Circuit Rider provides assistance and expertise to building departments, the homes built in the KCP&L and Ameren Missouri service territory will use less energy due to increased code compliance and builder understanding of the energy codes.
Reference to other utility implementations	Structured similar to the successful program currently operating in Kentucky. There, as proposed here, the Circuit Rider is a pro-active expert, reaching out to builders, code officials and other stakeholders to provide assistance and expertise with residential energy code compliance and construction best practices. There are also circuit rider programs in Idaho, Florida and Rhode Island.
Target Market	Single family residential new construction in the entire utility service territories. By focusing on code officials and builders, the Circuit Rider will directly or indirectly impact the majority of new homes being built in the utility service territories.
Market actors impacted (e.g. distributers, retailers, trade allies)	Buyers of new homes throughout Missouri will experience lower energy bills and increased comfort. Trade allies such as homebuilders, HVAC contractors, and insulation installers who are required to meet the local energy code will likely be held to a higher standard by code officials. There is an additional possibility that local distributers will also be affected; for example, if insulation requirements within a jurisdiction are not currently meeting code, sales and demand for insulation products may increase.
Infrastructure requirements and dependencies	The program would require an existing infrastructure of contacts and relationships with local Home Builders Associations, and building official offices. In addition local building supply houses, energy raters and building material manufacturers are significant actors. Because a residential construction baseline study is nearly complete in Missouri, these relationships already exist and could be leveraged.
Cost of proposal ($)	Full time Circuit Rider (two years) $181,600, including travel and reimbursables. This cost is derived from the Kentucky Circuit Rider Program and doesn't include management /overhead costs.

Incremental kWh savings	4,394,072 kWh. The estimate is derived from a MEEA measure level analysis of potential code compliance savings based on the recently completed Missouri Residential Baseline Study.
Incremental kW savings	1,668 kW. The estimate is derived from Pacific Northwest National Laboratory / MEEA analysis of potential demand savings from HVAC equipment right-sizing and improved measure level compliance.
Incremental savings for other energy sources (e.g. therms)	717,210 therms. The estimate is derived from a MEEA measure level analysis of potential code compliance savings based on the recently completed Missouri Residential Baseline Study.
Interactive effects	Based on a similar Circuit Rider initiative in Kentucky, the Circuit Rider's conversations with builders and code officials will address a range of topics but focus on areas of potential savings identified in the Missouri Residential Baseline Study - duct sealing, installation of code-compliant windows, installation of high efficacy lighting, and installation of basement insulation. These components of a building interact as a system, so improvements to one area may result in other consumer benefits such as increased comfort, decreased contractor callbacks, decreased moisture issues, and so on.
Number of participants	The intent of a Circuit Rider is to interact, directly (via builders and sub-contractors) or indirectly (via code officials) with the majority of new homes being constructed in the service territory. We estimate the Circuit Rider will directly interact with approximately 200 builders or code officials per year.
End-Use Measures	While this program would not directly install measures for end-users, likely areas of code compliance improvement will include basement insulation installation and high-efficacy lighting – both high sources of energy savings in new single-family homes.
Evaluation Requirements	The program could be evaluated in several different ways. One method would entail calling code officials and builders to inquire if they made any changes as a result of the Circuit Rider Program, and if so, what type of changes and to what extent. Another method could be conducting a post-program residential code study at the end of the project.
References to Existing Evaluation Reports	We do not have a reference to a specific evaluation given that there are several different ways a utility could opt to evaluate this kind of Circuit Rider program.
Exit Strategy	If jurisdictions continue to adopt new energy codes, there is potential for a Circuit Rider program to last beyond this 2-year program in order to help code officials and builders comply with the changes in energy codes requirements. If, however, the market is transformed as evidenced by substantially increased code compliance through this Circuit Rider's work, and therefore amount of potential energy savings decreases, an exit strategy may become necessary. In that event, the Circuit Rider will give notice to all of his/her contacts created through the course of the program and notify them that the program will be ending. The Circuit Rider would leave them with a list of online resources for future reference that might be able to help their work going forward.

KCP&L Analysis

TRC Test Results	1.73
Utility Cost Test Results	13.18
RIM Test Results	1.01
Participant Cost Test Results	1.56
Risks	If this program is intended to facilitate code compliance, the savings may not be countable as incremental from the utility and regulator perspective, as they would be more properly defined as the baseline for code-compliant new construction. There would have to be an agreement or further conversation to allow these savings to be counted. There is considerable evaluation risk due to the difficulty of explicitly measuring changes in the installation rate of specific measures. The program is a broad-strokes market transformation program, and does not lend itself to an analysis approach that is accurate without considerable expense for onsite survey and assessment work. The utilities would hire one circuit rider to cover the entire utility service territories. This individual would need to have a background with building code and construction work as well as numerous contacts.
Reliance on partnerships with other utilities (high/medium/low)	High A single circuit rider would be utilized for KCP&L and Ameren service territories.
Effort to implement (high/medium/low)	High A single circuit rider is theoretically a low cost and low effort endeavor, but evaluation before and after the program and significant other ancillary efforts and costs would be required to achieve and measure savings from this program.
Disruption to existing portfolio (high/medium/low)	Low
Fit with existing utility portfolio (high/medium/low)	High
Learning opportunities (high/medium/low)	High
Quality of Cost Estimates (high/medium/low)	Low Considerable incremental measure costs incurred by builders - no information provided. No costs provides for Phase 2 Advanced Training Program
Quality of Energy/Demand Savings Estimates (high/medium/low)	Low No details provided on the measure-level analysis from the MO code compliance study. Is this a technical potential or achievable with some assumption about market penetration/reach/take rates? Is code compliance lifted 50% to 100%, or 50% to 80%, or other? We will need to see measures and potentially account for overlap and double-counting with any current program measures.
Lead time on Implementation (# of months)	6 to 12 months

Maturity of proposal (high/medium/low)	Medium
Consistency with Missouri Public Service Commission's stated priorities (high/medium/low)	High A primarily customer-relationship measure with some expected peak and energy savings, however, applicability and savings estimates are both difficult to predict for KCP&L's territory.
Expected customer experience (high/medium/low)	Medium Will require good handling to be seen as beneficial rather than intrusive.
Impact of entering and exiting the marketplace (high/medium/low)	High Code compliance circuit rider would need to come up to speed with construction community all over the state. High learning curve. Relationships with targeted customers could persist even after a program is terminated, but it is not guaranteed, and there is the possibility of losing the relationship after the program ends.

Supplemental Material and Research

MEEA/Kentucky Code Compliance project includes several other components and costs in plan to achieve savings:

- Establish Circuit Rider (Only element cited in MO submitted plan to date)
- Setting up a code helpline/hotline
- Performing trainings around the state for code officials, sponsor online trainings and videos
- Establish advisory working group
- Ex ante code assessment (Also underway in MO) and ex poste code assessment (not planned or considered in MO as of yet)

http://energy.ky.gov/efficiency/Documents/Energy%20Codes%20-%20Project%20Overview%20-%203-11-15%20v2.pdf

http://energy.ky.gov/efficiency/Pages/energycodesurvey.aspx

Discussion with MEEA

A second phase of the project will include an Advanced Training Program.

Program Costs:

- Circuit Rider and expenses: $200,000
- Code compliance study: $150,000 for a full study or $20,000 for interviews with key builders
- Program administration: approximately $10,000
- Advanced training program (unknown cost)

WATER HEATER – DEMAND RESPONSE

DETAILS PROVIDED BY STAKEHOLDER

Description of proposal	Demand response water heater allows utilities to actively control water heater as a way to reduce grid load during peak times. The grid operator or demand-response program manager actively monitors customer hot water levels and usage. Power flows to each water heater are optimized to ensure hot water availability, and to provide both diurnal storage and ancillary services to the utility. Water can be heated to a higher temperature and blended with cold water at the outflow pipe to increase thermal storage capacity
Reference to other utility implementations	Hawaiian Electric Company's, Northwest Energy Efficiency Alliance's (NEEA) Heat Pump Water Heaters for Demand Response and Energy Storage Cover Note
Target Market	Consumers can act as 15 KWH storage
Market actors impacted (e.g. distributers, retailers, trade allies)	
Infrastructure requirements and dependencies	Two-Way Communication
Cost of proposal ($)	The first group of ten received $100 for agreeing to participate. The low income participants received new GeoSpring™ water heaters
Incremental kWh savings	Groups 1 and 2: average reduction of 1.48 kWh per month Groups 3 and 4: average reduction of 0.93 kWh per month
Incremental kW savings	
Incremental savings for other energy sources (e.g. therms)	
Interactive effects	In a few cases, end-use customers experienced difficulties with their water heaters that they naturally attributed to the test project, although they were generally unrelated (e.g., malfunctioning units). Another interesting result was that data from the project was used to identify one water heater that was not energizing the compressor at all. This fact might not have been easily discovered by the homeowner except by noticing a disappointing result on the monthly electric bill. The issue was immediately identifiable through the collected data and ultimately led to repairing the water heater.
Number of participants	
End-Use Measures	
Evaluation Requirements	
References to Existing Evaluation Reports	
Exit Strategy	

KCP&L Analysis

TRC Test Results	1.76
Utility Cost Test Results	1.39
RIM Test Results	1.28
Participant Cost Test Results	No cost to participant
Risks	
Reliance on partnerships with other utilities	Low
Effort to implement	High Requires installation of control devices on interior of household. Must coordinate to get inside, which is more difficult than similar Central AC direct load control switches that can be installed on exterior compressor unit without coordinating interior access. Same as KCP&L's smart thermostat DR program, though.
Disruption to existing portfolio	Low
Fit with existing utility portfolio	High
Learning opportunities	High Could possibly use all year and round the clock to help with ancillary services and load dispatch needs.
Quality of Cost Estimates	Medium Supplementing with data from concurrent KCP&L potential study analysis with AEG
Quality of Energy/Demand Savings Estimates	Medium Supplementing with data from AEG's 2016 KCP&L Potential Study. Primarily a peak demand program, only monthly energy savings provided.
Lead time on Implementation (# of months)	12
Maturity of proposal	Low
Consistency with Missouri PSC's stated priorities	High
Expected customer experience	Medium
Impact of entering and exiting the marketplace	Medium

Supplemental Materials and Research

NEEA report cited by DED can be found here: https://neea.org/docs/default-source/reports/final-hpwh-dr-report-and-summary.pdf?sfvrsn=6

AEG using data and information from concurrent potential study analysis to fill data gaps where information was not provided by stakeholders

FINANCING

DETAILS PROVIDED BY STAKEHOLDER

Description of proposal	There are programs that we could tailor or build out based on existing programs. One such example is an On-Bill-Financing program similar to the How$mart energy efficiency program that Kansas utilities currently operate. The program is available to all Midwest customers in good standing. This is a program has surcharge that follows the meter. The average program investment by the company is about $5,700 per authorized borrower. Interest rates have varied from 0 - 8 percent. The How$mart® typically funds improvements such as insulation, air sealing, and new heating and cooling systems thru charges on the customer's monthly bills There will need to be many protections to the utility and consumers. We would need a program that sets stipulations (e.g., in order for consumers to qualify, there must be a utility bill repayment history). Upon transfer of property for rentals, landlords must inform new tenants of the monthly charge prior to lease signing, or may be ultimately responsible for paying down the balance. We may want to allow customers the option to not have to put any money down, but are allowed to buy down the principal to meet payback criteria. Billing may need to be outsourced to a third party provider.
Reference to other utility implementations	Kansas How$mart, NYSERDA's Two-Tiered Underwriting Criteria, Laclede Gas, Clean Energy Finance and Investment Authority (CEFIA), NRDC
Target Market	Residential (owner-occupied and rental) and small commercial
Market actors impacted (e.g. distributers, retailers, trade allies)	Utility billing department, Third party financiers, Verified Contractors, Manufacturers, Insurance companies, Legal experts, Auditors.
Infrastructure requirements and dependencies	Third party networking, develop algorithm that that tracks estimated savings to payback period. Underwriting Requirements.
Cost of proposal ($)	$1.4 - $15 million a year
Incremental kWh savings	6,326 kWh - 10,809 kWh a year for individual small business projects; see Help My House Pilot Program Summary. These measurements are from the Kansas How$mart program.
Incremental kW savings	41,980,750 based on Kansas How$mart with a Cumulative Penetration Rate of 1.4 percent.
Incremental savings for other energy sources (e.g. therms)	1,431,338 conversion from KWh to Therms from Kansas How$mart
Interactive effects	Interacts with rebate program allowing a higher participation in currently offered rebates.
Number of participants	United Illuminating's Small Business Energy Advantage program is an example where we can see impacted a significant portion of the utility's small business community–and it continues to expand. The program executed nearly 4,900 loans, totaling approximately $39 million, while maintaining a default rate below one percent.
End-Use Measures	Allow prepayments and consumer self-installation to reduce cost and pay back.
Evaluation Requirements	On bill financing should be evaluated by examining the default rate; upholding a lower default rate below 1% needs to be the goal. The

	evaluation should also determine if an adequate loan loss reserves balance was maintained, and program synergies with other rebate programs.
References to Existing Evaluation Reports	Financing Energy Improvements on Utility Bills Technical Appendix—Case Studies https://www4.eere.energy.gov/seeaction/system/files/documents/publications/chapters/onbill_financing_appendix.pdf
Exit Strategy	Evaluate program, maintain loan loss reserve, and taper down program until all account balances are settled; take on no new accounts after 2 year program expires.

KCP&L Analysis

TRC Test Results	About 10% below original, affected program B/C ratio Increases affected program administrative and incremental measure costs by ~10% due to interest and admin fees. Increases affected program participation by ~10% to 50% (50% is very high case over multi-year long term) Use life of specific affected measures
Utility Cost Test Results	About 10% below original, affected program B/C ratio
RIM Test Results	About 10% below original, affected program B/C ratio
Participant Cost Test Results	About 10% below original, affected program B/C ratio
Risks	Loan default / non-payment (often 5% or fewer for EE-related loans, which are rather safe/good investment grade, depending on the terms of the program). Commission reaction to utility earning interest as a lender, is this considered outside the charter of an energy utility? Significant complexity, cost, and timelines associated with adding an *on-bill* financing component. There is a current, multi-year project plan to update KCP&L's metering and billing systems that is already vigorously moving forward according to specifications designed and bid-out years ago.
Reliance on partnerships with other utilities	Low
Effort to implement	High IT, regulatory, finance, retailer, and other third-party relationships need to be understood and contractually established. Payments need to be received and monitored for the life of all loans.
Disruption to existing portfolio	Medium Relevant high-cost measure bundles will be eligible for financing and have this extra layer to implementation. Can make as frictionless as possible.
Fit with existing utility portfolio	Medium
Learning opportunities	High Could pilot with a single program at first and test the concept – like small business direct install or whole home efficiency
Quality of Cost Estimates	Medium

Quality of Energy/Demand Savings Estimates	Low
Lead time on Implementation (# of months)	12 months+
Maturity of proposal	Medium
Consistency with Missouri Public Service Commission's stated priorities	Medium
Expected customer experience	Medium
Impact of entering and exiting the marketplace	Medium There are often competitive financing programs already available from contractors.

Supplemental Materials and Research

Laclede EnergyWise Furnace Financing Program

> "We will help you purchase a high-efficiency natural gas furnace and other energy-efficient and environmentally friendly gas appliances as well as high-efficiency air conditioners at competitive interest rates.
>
> This program is open to credit-qualified residential and commercial customers. We will finance up to $10,000 per heating system, including some additional appliances that you can pay back on your monthly gas bill. A down payment of 5% is required and the program has a lifetime limit of four heating systems per customer."
>
> They also place a lien on the home if the loan exceeds $500 (most do).
>
> www.lacledegas.com/efficiency/Conservation%20&%20Energy%20Efficiency%20Programs/EnergyWise%20Furnace%20Financing%20Program/

"Lending for Energy Efficiency Upgrades in Low- to Moderate-Income Communities: Bank of America's Energy Efficiency Finance Program" James Barrett and Brian Stickles, July 2016, ACEEE Report Number F1601 http://aceee.org/research-report/f1601

Midwest Energy program referenced by Stakeholders www.mwenergy.com/environmental/energy-efficiency/howsmart

Warehouse for Energy Efficiency Loans (WHEEL) from the National Association of State Energy Officials. www.naseo.org/wheel

"Ameren Illinois on-bill financing option: state-wide collaborative with utilities Ameren Illinois, ComEd, Nicor, Peoples Gas, North Shore Gas." http://ilenergyloan.com/

Pay as You Save® is an off-the-shelf or franchised framework program for utilities to implement and deliver customer financing, as developed by the Energy Efficiency Institute, Inc. Notes from 'Common Inquiries' memo.

- Tariff-based on-bill investment programs for energy efficiency upgrades are being used successfully in North Carolina, Kansas, Arkansas, Kentucky, and California.
- Any energy efficiency upgrade is eligible. Some utilities require that eligible measures are affixed to the property
- Average cost of energy efficiency upgrades range from $6,000 to $8,000.
- Maximum duration for recovery period is typically 80% of the estimated measure life or the duration of the full parts and labor warranty, whichever is longer. The average duration is 12 years.

- The PAYS® system is designed to cap the cost recovery charge at 80% of estimated savings.
- If the upgrades do stop working at no fault of the customer, the utility will arrange for repair, and if necessary, the utility can extend the cost recovery period to take those additional costs into account.
- Investments in efficiency upgrades made through a tariffed on-bill program are *tied to the meter*, not to the person holding the account.

Below is a general approach for how a utility can think about financing. From 2013 AEG Analysis of Financing programs for State of New Jersey. Recommend issuing RFP to receive detailed vendor proposals.

1) Identify programs with high-capital cost measures or measure bundles amenable to financing. i.e. You may get a loan for a furnace under an HVAC program, but not a single light bulb
2) Find total measure costs for each program with financing potential
3) Estimate percentage of projects which will opt for financing. Experts indicate that a *mature* financing program can lift customer adoption over the long term for applicable programs by 30-50% (EE Financing Panel, 2013 AESP National Conference, Orlando, FL). Difficult to tell if this is because of the financing, or other simultaneous marketing, education, and market transformation. Most likely all of the above.
4) Allocate from program budget a portion of funding to act as pool of financing dollars. Typical multiplier effect of 5X to 10X from other private or government capital sources that will be attracted to the pool to also fund the loans.
5) Results in a revolving loan fund that is part of program expenses. Some portfolios dedicate 2% to 3% of total annual budget to this. Functions as a loss-reserve to cover the fraction of people who default on their loans (often 5% or fewer for EE-related loans, which are rather safe/good investment grade, depending on the terms of the program). Utility sponsored funds provide market signal of credibility to the loan program, attracting potential borrowers as well as other sources of capital and financing.

Low Income Single Family

Details provided by Stakeholder

Description of proposal	Low-income single family. KCP&L current MEEIA plans involve an offering for low-income multi-family buildings, but nothing for low-income individuals living in single family households. This would offer standard audit, EE measures, and weatherization services at no cost to qualifying single family households.
Reference to other utility implementations	Most utility run EE programs have a similar offering
Target Market	Low-income single family households
Market actors impacted (e.g. distributers, retailers, trade allies)	Trained contractors would provide audits, weatherization, and other EE measures
Infrastructure requirements and dependencies	There needs to be a mechanism for recruiting and training contractors as well as an entity charged with contractor management
Cost of proposal ($)	$25.1 million
Incremental kWh savings	14,763,914
Incremental kW savings	2,047
Incremental savings for other energy sources (e.g. therms)	95,893 MMBtu of oil, gas, and propane expected to be saved through weatherization
Interactive effects	If significant weatherization occurs, it is possible that HVAC measures will save less energy (if they are done on house). However, it is also possible that weatherization allows downsizing of equipment, which saves additional energy and money.
Number of participants	10,000
End-Use Measures	Weatherization, lighting, smart strips, air sealing, duct sealing
Evaluation Requirements	Evaluation could likely be rolled into a similar residential non-low income program evaluation
References to Existing Evaluation Reports	www.rieermc.ri.gov/documents/2014%20Evaluation%20Studies/National%20Grid%20Rhode%20Island%20Income%20Eligible%20Services%20Impact%20Evaluation,%20Volume%20II.pdf Also see above impact evaluation for LI
Exit Strategy	Stop offering program

KCP&L Analysis

TRC Test Results	0.25
Utility Cost Test Results	0.25
RIM Test Results	0.16
Participant Cost Test Results	Costs to participant are unknown
Risks	
Reliance on partnerships with other utilities	Low
Effort to implement	Medium
Disruption to existing portfolio	Low
Fit with existing utility portfolio	High
Learning opportunities	Low
Quality of Cost Estimates	Medium Similar to existing KCP&L cost estimates. $2,510 per home compares to KCP&L MEEIA plan of ~$2,300 per home.
Quality of Energy/Demand Savings Estimates	Medium Similar to existing KCP&L savings estimates. 1,476 kWh saved per home compares to KCP&L MEEIA plan of ~1,100 kWh per home. Will need to investigate participation and uptake assumptions. 10,000 households is 10 to 15% of full low income population in MO.
Lead time on Implementation (# of months)	6 to 12 months
Maturity of proposal	High
Consistency with Missouri Public Service Commission's stated priorities	High
Expected customer experience	High
Impact of entering and exiting the marketplace	Low

- If the Clean Power Plan proceeds after its current legal hiatus and review, the early-action credits associated with low-income energy efficiency programs could be of strategic interest to KCP&L.

Concierge / Tailored Approaches for C&I Customers

Details provided by Stakeholder

Description of proposal	This approach would cause higher C&I participation by creating long-term relationships with active account managers of medium and large accounts. In conjunction with benchmarking, the account manager would act as a concierge for KCP&L's range of C&I services including developing multi-year MOUs with specific savings targets, increased technical assistance and audit support, and RCx/SEM.
Reference to other utility implementations	Utilities in RI and MA have had particular success using this approach. A recent market study in MA has found an annual participation rate of over 50% for customers using 10 GWh or more, and has for many years. (http://ma-eeac.org/wordpress/wp-content/uploads/FINAL-2014-Customer-Profile-1.pdf). NYS also launching something similar to this earlier this year.
Target Market	Large and Medium C&I customers. Actual number unknown - but commercial makes up 44% of KCP&L load, and industrial 20%. If we assume 80/20 rule and go after largest 20% of customers, this could impact 50% of total KCP&L load. The benchmarking ordinance has identified 1500 buildings over 50,000 square feet.
Market actors impacted (e.g. distributers, retailers, trade allies)	Most impacted market actors are facility managers at large C&I buildings. This class will have a much higher level of engagement with KCP&L account managers. Distributors, retailers, and other trade allies will hopefully be impacted through higher deal flow.
Infrastructure requirements and dependencies	Will require additional KCP&L staff time in order to more closely engage large accounts. Will require increased financial support for energy audits, TA, and RCx, which may not produce immediate savings. Experience in other states shows that this investment pays off with significantly higher levels of relatively cheap savings.
Cost of proposal ($)	$19.8 million over two years
Incremental kWh savings	88,938,902
Incremental kW savings	10,401
Incremental savings for other energy sources (e.g. therms)	There will be some gas, oil, and water savings, with magnitude dependent on types of measures achieved through program.
Interactive effects	There are no additional interactive effects beyond those created by the current custom and prescriptive programs. Specific interactive effects depend on types of measures achieved through program, as well as comprehensiveness of measures done on each building. Interactive effects are included in current savings estimates.
Number of participants	1,788
End-Use Measures	This is a marketing/customer engagement approach rather than offerings for new measures. Therefore, end use and measures will be the same as for current custom and prescriptive programs (which cover all cost-effective end uses and measures)
Evaluation Requirements	Covered by current evaluation process of C&I programs.
References to Existing Evaluation Reports	http://ma-eeac.org/wordpress/wp-content/uploads/FINAL-2014-Customer-Profile-1.pdf; www.nyserda.ny.gov/-/media/Files/About/Clean-Energy-Fund/CEF-Commercial-chapter.pdf
Exit Strategy	Stop offering services, Reduce services and/or incentives offered

KCP&L Analysis

TRC Test Results	0.66
Utility Cost Test Results	0.66
RIM Test Results	0.41
Participant Cost Test Results	No cost to Participant
Risks	By nature, these programs are extremely specific and it is extremely difficult to create reasonable estimates or comparisons until specific target customers are identified and characterized. Customers most likely to benefit from these measures are also commonly likely to opt out.
Reliance on partnerships with other utilities	Low
Effort to implement	High
Disruption to existing portfolio	Low
Fit with existing utility portfolio	Low
Learning opportunities	High
Quality of Cost Estimates	Low
Quality of Energy/Demand Savings Estimates	Low
Lead time on Implementation (# of months)	24
Maturity of proposal	Medium
Consistency with Missouri Public Service Commission's stated priorities	Low
Expected customer experience	Medium
Impact of entering and exiting the marketplace	Low

Supplemental Materials and Research

"Boulder's Pathway to Sustainability Lies in Being Bolder." ACEEE 2016 Summer Study. http://aceee.org/files/proceedings/2016/data/papers/11_838.pdf

- Energy Advisor program targeting residential rental properties
- "The Energy Advisors combine building science technical knowledge, sales and customer service skills to provide a friendly, helpful, expert resource to customers during their energy upgrade journey or journeys …. Through phone-based energy advising, CLEAResult provides individualized and ongoing assistance to property owners with relevant programs, energy efficiency benefits, contractor selection, assessment report and bid review, financing options, upgrade project support, and customer service to both the City of Boulder and Boulder County."

"Concierge Energy Efficiency." ACEEE 2016 Summer Study.

"Pay for Performance (PfP) – Commercial." 2016 E Source Forum. Sam Walker.

C&I Upstream Program (DED)

Details provided by Stakeholder

Description of proposal	Expanded Upstream Program. KCP&L already runs a highly successful upstream program for residential lighting. This model can easily be extended to other measures, such as C&I lighting (including exterior lighting for parking lots), HVAC, and residential appliances. The numbers in the spreadsheet currently assume that it is only expanded to C&I lighting. The savings numbers also include savings estimates from a program retrofit MO streetlights with LEDs. NRDC urges KCP&L to develop an LED streetlighting program, even if it is outside of MEEIA.
Reference to other utility implementations	MA, RI, CA, and VT all have successful upstream programs for C&I. NYSERDA, VT, MA, and others run successful LED streetlighting programs.
Target Market	All commercial and industrial customers
Market actors impacted (e.g. distributers, retailers, trade allies)	KCP&L will pay an incentive directly to electrical/lighting distributors. Downstream actors are not impacted, besides seeing a lower price on qualified products.
Infrastructure requirements and dependencies	Develop relationships and agreements with lighting/electrical distributors
Cost of proposal ($)	$11.4 million for C&I upstream lighting, $3.45 million for LED streetlighting
Incremental kWh savings	73,842,166 kWh for C&I upstream lighting, 12,761,313 kWh for streetlighting
Incremental kW savings	12,626 kW for C&I upstream. No peak demand savings expected from LED streetlighting (or exterior parking lot lighting).
Incremental savings for other energy sources (e.g. therms)	There will likely be a small increase in gas usage due to reduced waste heat.
Interactive effects	There will be a small reduction in AC usage and increase in gas usage due to the reduction in waste heat from lighting.
Number of participants	1,846 for C&I upstream lighting. Streetlighting savings assumes 40% of Ameren's streetlights are retrofit to LEDs.
End-Use Measures	Indoor Lighting, Outdoor Lighting, LEDs
Evaluation Requirements	The expanded LED program would be evaluated in the same manner as the current residential upstream lighting program.
References to Existing Evaluation Reports	www.rieermc.ri.gov/documents/2013%20Evaluation%20Studies/KEMA,%20Inc.,%202013%20Process%20Evaluation%20of%20the%202012%20Bright%20Oppor.pdf; http://ma-eeac.org/wordpress/wp-content/uploads/Upstream-Lighting-Impact-Evaluation-Final-Report.pdf; www.rieermc.ri.gov/documents/2014%20Evaluation%20Studies/Impact%20Evaluation%20of%20National%20Grid%20Rhode%20Island%20Commercial%20and%20Industrial%20Upstream%20Lighting%20Program.pdf
Exit Strategy	Stop offering upstream incentives for technologies as market transforms.

KCP&L Analysis

TRC Test Results	2.44
Utility Cost Test Results	5.85
RIM Test Results	1.05
Participant Cost Test Results	2.30
Risks	
Reliance on partnerships with other utilities	High – Customers may shop outside their home utility's territory
Effort to implement	High
Disruption to existing portfolio	Medium
Fit with existing utility portfolio	High
Learning opportunities	Low
Quality of Cost Estimates	High
Quality of Energy/Demand Savings Estimates	High
Lead time on Implementation (# of months)	12
Maturity of proposal	High
Consistency with Missouri Public Service Commission's stated priorities	Medium
Expected customer experience	High
Impact of entering and exiting the marketplace	Medium

C&I Upstream Program (NRDC)

Details provided by Stakeholder

Description of proposal	Midstream Incentives Lighting program: The report utilized in this proposal, prepared by Navigant on behalf of ComEd, is evaluating the Business Instant Lighting Discounts program, it's ability increase market share of energy efficient lighting products commonly sold to business customers, the ability of the program to provide cost-effective energy savings, and to provide an expedited, simple solution for business consumers interested in purchasing energy efficient lighting. The program, primarily aimed at lighting Distributors (though 14% of units were through a 'Retail' portion of the program), provided instant rebates at the point of sale at the commercial/distributor level of sales for energy efficient lighting. The retail segment of the program provided instant rebates on energy efficient lighting to contractors (through a 'pro desk') from a major do-it-yourself retailer.
Reference to other utility implementations	
Target Market	Contractors, Property Owners/Property Developers, Commercial/Business class, Industrial Class, those that buy lighting products in large volumes
Market actors impacted (e.g. distributers, retailers, trade allies)	Commercial distributors/retailers of lighting products, do-it-yourself retailers, trade allies
Infrastructure requirements and dependencies	No infrastructure requirements; may have to tailor existing lighting programs to reflect midstream rebates, would lead to different marketing techniques and incentive structure
Cost of proposal ($)	Measure Life 4.25 years - Administration Costs: $9; Implementation Costs: $862; Other/Misc: $265; Utility Incentive Costs: $3,697; Net Participant Costs: $18,070; IL TRC Test: 2.36
Incremental kWh savings	Measure Life 4.25 Years - Gross Savings: 124,093,000 kWh; Net Savings: 91,829,000 kWh
Incremental kW savings	Measure Life 4.25 years - Gross Savings: 27,500 kW; Net Savings: 20,300 kW
Incremental savings for other energy sources (e.g. therms)	N/A
Interactive effects	Efficient lighting typically radiates less heat energy than incandescent light, carrying the potential of further reducing energy costs due to less energy utilized for cooling purposes.
Number of participants	Program Year 6 Participants - Distributors: 128 enrolled, 89 participating; Retailers: 1 enrolled/participating; End-users: ~5,500
End-Use Measures	Purchase/Installation of Standard CFLs, Specialty CFLs, LEDs, Linear FLs, HIDs, LF Ballasts, energy saved from these products being purchased and utilized.
Evaluation Requirements	Compares standard energy consumption, energy consumption after installation measures, interactive effects, program participation, market saturation
References to Existing	www.dpandl.com/save-money/business-government/lighting-

Evaluation Reports	discounts-for-your-business/ www.comed.com/WaysToSave/ForYourBusiness/Pages/BusinessInstantLightingDiscounts.aspx http://blogs.dnvgl.com/energy/the-top-5-challenges-and-opportunities-of-implementing-a-midstream-program
Exit Strategy	Report does not give an example of an exit strategy, but as program reaches sunset, a goal is to have market saturation with EE lighting products while partnering with commercial distributors/builders/contractors that will continue to use EE lighting products as older style lighting phases out.

KCP&L Analysis

TRC Test Results	1.34
Utility Cost Test Results	6.37
RIM Test Results	1.16
Participant Cost Test Results	1.12
Risks	
Reliance on partnerships with other utilities	High – Customers may shop outside their home utility's territory
Effort to implement	High
Disruption to existing portfolio	Medium
Fit with existing utility portfolio	High
Learning opportunities	Low
Quality of Cost Estimates	High
Quality of Energy/Demand Savings Estimates	High
Lead time on Implementation (# of months)	12
Maturity of proposal	High
Consistency with Missouri Public Service Commission's stated priorities	Medium
Expected customer experience	High
Impact of entering and exiting the marketplace	Medium

LED Street Lighting

Details provided by Stakeholder

Description of proposal	As has been evidenced in case studies, there are multiple approaches towards street light retrofitting due to the diverse property ownership characteristics around the nation. Some street lights are operated and maintained wholly by municipalities, some by utilities, and others through a municipality-utility partnership. There is an aggregation of data from 9 case studies in Iowa (proposal 1) as well as a data from Asheville, North Carolina (proposal 2). Both proposals capture the same idea: Capturing cost and energy savings from retrofitting (or installing) LED lighting in the place of high pressure sodium (the most commonly used outdoor lighting).
Reference to other utility implementations	
Target Market	Local/City/State government, Utilities, Commercial/Industrial class customers
Market actors impacted (e.g. distributers, retailers, trade allies)	Local governments, Utilities, rate-payers, tax-payers
Infrastructure requirements and dependencies	LED lighting/bulbs that fit into existing outdoor lighting fixtures. Will need different LED bulb styles to accommodate a variety of lighting needs.
Cost of proposal ($)	$3.45 million
Incremental kWh savings	12,761,313
Incremental kW savings	
Incremental savings for other energy sources (e.g. therms)	
Interactive effects	Undetermined
Number of participants	
End-Use Measures	Type of EE lights used, costs, energy saved, net savings
Evaluation Requirements	Energy consumption before and after, savings, total costs
References to Existing Evaluation Reports	http://archive.iamu.org/services/electric/efficiency/Street%20Lighting/StreetLightingHandbook.pdf
Exit Strategy	Undefined exit strategy -- lights are installed, maintenance plan must be in place

KCP&L Analysis

TRC Test Results	0.87
Utility Cost Test Results	4.34
RIM Test Results	0.37
Participant Cost Test Results	2.64
Risks	
Reliance on partnerships with other utilities	High

Effort to implement	Medium
Disruption to existing portfolio	Low
Fit with existing utility portfolio	Low
Learning opportunities	Low
Quality of Cost Estimates	Low
Quality of Energy/Demand Savings Estimates	Low
Lead time on Implementation (# of months)	6
Maturity of proposal	Medium
Consistency with Missouri Public Service Commission's stated priorities	Low
Expected customer experience	High
Impact of entering and exiting the marketplace	Low

Town Competition

Details provided by Stakeholder

Description of proposal	A group of small- to mid-size municipalities would compete with each other to save energy over the course of a year, compared as a percentage to demographically similar towns not participating in the competition. Using web applications (if available) and bought/earned/owned media, utilities would provide participating towns with information on how to participate and monthly updates on progress; customers could be notified of participation, rankings, and progress on their bills, online, and through the media. Savings could be measured through participant entries of measures undertaken on a website and/or comparisons of energy use by town. Energy-themed prizes (e.g., money towards a community energy-saving initiative) would be appropriate for winners.[3] Utilities could target areas of congestion for participation.
Reference to other utility implementations	The most relevant example is the "Kansas Take Charge Challenge," which originated with the Climate and Energy Project. The "Energy Smackdown" is also similar. See Grossberg et al.
Target Market	Broadly targeted to residential customers in participating towns. The initial Kansas competition involved 6 towns and second 16 towns. For purposes of this proposal, 10,000 participants are assumed per territory (per the results of one of the Kansas competitions).
Market actors impacted (e.g. distributers, retailers, trade allies)	This would impact numerous market actors, including distributors, retailers, trade allies, and community leaders. The utility should integrate its other efficiency programs by promoting them as ways to save and win. Community leaders and the media should be utilized to encourage participation; Kansas example: third-party communications were a key part of the program's success.
Infrastructure requirements and dependencies	A website allowing participants to compare progress and enter measures which they have undertaken would be helpful. KCP&L's Opower application could serve as the basis of a participant platform, or the utility could integrate a portal on their website. Customer bills could serve as a method of communication. KCP&L will need to use existing contacts with media, community leaders, and market participants to promote the competition.
Cost of proposal ($)	The Kansas competition cost $170,000 for six towns, consisting of $75,000 in staff time, $75,000 in prizes and other direct expenses, and $20,000 in participating utility costs.
Incremental kWh savings	The winning town in the Kansas competition reduced energy use by 5.5 % in one year. Grossberg et al. cite 3 to 6 percent energy savings across surveyed gamification programs more generally. Based on 10,000 participants and a 3 percent reduction in energy use per customer during the competition would result in 6,746,400 kWh
Incremental kW savings	
Incremental savings for other energy sources (e.g. therms)	

[3] See http://climateandenergy.org/news.1049483.merriam-quinter-wind-the-take-charge-challenge-six-kansas-towns-save-over-6-million-kilowatt-hours-and-more-than-half-a-million-dollars

Interactive effects	
Number of participants	The Kansas competition achieved an estimated participation rate of over 10 percent (approximately 10,000 people).
End-Use Measures	All end-use measures could be incorporated, either directly by participants or indirectly by KCP&L through marketing and outreach. A particular focus should be made on behavioral measures.
Evaluation Requirements	Incorporating KCP&L's other programs into the competition (e.g., through marketing) would make attribution of some savings to the competition in isolation more difficult. However, this would also boost the savings and participation attributable to the other programs, improving their cost-effectiveness.
References to Existing Evaluation Reports	Grossberg et al. (2015)
Exit Strategy	

KCP&L Analysis

TRC Test Results	1.16
Utility Cost Test Results	1.16
RIM Test Results	0.23
Participant Cost Test Results	Costs to participants are unknown
Risks	Customers may underestimate their own costs to participate, or become upset if they are out-competed after spending significantly. Persistence risk if unable to repeat. Program competes / overlaps with the other gamification programs.
Reliance on partnerships with other utilities	Low
Effort to implement	High
Disruption to existing portfolio	High – Tracking overlap between gamification and actual installed measure programs is difficult.
Fit with existing utility portfolio	Low
Learning opportunities	Medium
Quality of Cost Estimates	Medium
Quality of Energy/Demand Savings Estimates	Low
Lead time on Implementation (# of months)	12
Maturity of proposal	Low
Consistency with Missouri Public Service Commission's stated priorities	Medium
Expected customer experience	High
Impact of entering and exiting the marketplace	Low

Cool Choices

Details provided by Stakeholder

Description of proposal	Utilities would work with Cool Choices, a Wisconsin nonprofit, to implement a version of its game for commercial customers' employees as a workplace competition that drives residential (and perhaps some commercial) savings. Cool Choices' games use virtual "cards" and a point system to encourage sustainable choices, such as watching less television or evaluating home energy use. Higher points are awarded for more in-depth actions. "Players" log their actions online to receive points and compare scores, with the website also serving as a communication platform. Prizes can be offered, and competition can occur either between individuals or teams.
Reference to other utility implementations	Duke Energy began limited implementation for commercial customers in 2014. Other sponsors have included manufacturers, a law firm, public organizations, meat processors, and a university department.
Target Market	The game would target employers in commercial customer classes, encouraging participation by employees (i.e., residential customers). One game had 959 participants, with participation rates across implementations vary from 10-70%; the pilot implementation involved 220 of 330 employees at a construction company.
Market actors impacted (e.g. distributers, retailers, trade allies)	Impacted market actors include the game's implementation contractor, commercial customers, and retailers and trade allies involved in cross-promotional activities.
Infrastructure requirements and dependencies	Use of Cool Choices' solution would require utilities to contract with the nonprofit. Potentially, utilities could investigate the integration of extant platforms (such as Opower).
Cost of proposal ($)	Dependent on customization and size of target population.
Incremental kWh savings	For the pilot implementation, the Energy Center of Wisconsin (ECW) estimated 4% annual electricity consumption savings based on a billing analysis. Cool Choices, using the ECW's evaluation and other data, estimates savings for Midwestern players averaging 390 kWh of electricity. At 500 participants per utility, the following utility-specific savings could result based on the 4% estimate and the monthly average use of residential customers for each utility (per the most recently filed rate cases), the following energy savings could be achieved for each utility during the competition: KCP&L 199,680 GMO 250,080
Incremental kW savings	
Incremental savings for other energy sources (e.g. therms)	
Interactive effects	Not indicated by Grossberg et al. (2015).
Number of participants	For the pilot implementation, the ECW estimated natural gas savings of less than 1 percent compared to pre-game usage. Cool Choices, using the ECW's evaluation and other data, estimates savings for Midwestern players averaging 10 therms of natural gas and 645 gallons of water.

End-Use Measures	If incented by the game directly or prompted through online cross-promotions, "players" might be encouraged to participate in other utility energy efficiency programs. This would increase participation rates for the other programs, but might complicate the attribution of savings to particular programs.
Evaluation Requirements	One game had 959 participants, with participation rates across implementations varying from 10-70%; the pilot implementation involved 220 of 330 employees at a construction company. Potentially, a pilot implementation could involve 500 residential participants per utility territory.
References to Existing Evaluation Reports	End-use measures could vary depending on actions incented by the game. Appendix A of Grossberg et al. (2015) (cited under "References to Existing Evaluation Reports") provides examples of these actions, which include thermostat adjustments, LED replacements, air sealing and insulation, and professional audits.
Exit Strategy	The pilot implementation's evaluation involved post-game interviews and bill impact analyses by the ECW.

KCP&L Analysis

TRC Test Results	1.09
Utility Cost Test Results	1.09
RIM Test Results	0.23
Participant Cost Test Results	No cost to Participant
Risks	
Reliance on partnerships with other utilities	Low
Effort to implement	Medium
Disruption to existing portfolio	High – Tracking overlap between gamification and actual installed measure programs is difficult.
Fit with existing utility portfolio	Low
Learning opportunities	Low
Quality of Cost Estimates	Low
Quality of Energy/Demand Savings Estimates	Low
Lead time on Implementation (# of months)	12
Maturity of proposal	Low
Consistency with Missouri Public Service Commission's stated priorities	Medium
Expected customer experience	Medium
Impact of entering and exiting the marketplace	Low

HOME ENERGY MAKEOVER

DETAILS PROVIDED BY STAKEHOLDER

Description of proposal	The goal is to show-case energy efficiency through the "eyes of a local home owner." Homeowners compete to win a prize package in energy efficiency improvements. Project should use a whole house science based approach. Sponsors receive recognition through product placement and website/advertisement coverage. The winning home is opened to the community to tour the makeover installations once the contest is completed.
Reference to other utility implementations	Xcel, SMUD, Texas Co-op, Electric Co-ops of Arkansas, Jacksonville Electric Authority, FirstEnergy, and more.
Target Market	Single family residential customers who own their home. The program could be modified to include rental homes and would require advertising to landlords.
Market actors impacted (e.g. distributers, retailers, trade allies)	Retailers, distributers and trade allies would be involved in marketing and "sponsorship" of contest. Residential customers who owned their home would be allowed to compete. The community would be able to tour the winning home and have the opportunity to discuss how they could do energy efficiency upgrades in their own homes. Can network program into home shows and other promotional opportunities. Program has potential for co-delivery with a natural gas company.
Infrastructure requirements and dependencies	Website, marketing - social media and paid advertisement. Personnel and/or contractor to plan, recruit, administer and conduct post event report. Stakeholder planning meetings. Contest concludes with a half-day workshop for all contest applicants.
Cost of proposal ($)	Products and labor are donated through local sponsorship - $0.00. As a consolation prize, runner-ups receive a home performance analysis report - $350-500 each (5-20 runner-ups). 1/2 day workshop - $3,000 - $10,000.
Incremental kWh savings	Electric savings ranged from 12-53% on winning homes in Oregon. Energy savings of 612,570 kWh
Incremental kW savings	
Incremental savings for other energy sources (e.g. therms)	39,830 therms (Oregon)
Interactive effects	12% of entrants from one contest went on to hire a participating contractor and install EE upgrades.
Number of participants	1 winner and 5-20 runner ups. Entrants in past contests nationwide have ranged from 1,000 upwards to 6,600 homeowners.
End-Use Measures	From Oregon 2011: 950 entrants installed 1,571 measures: EE products, weatherization, heating, water heaters and solar. 753 entrants scheduled and received home energy reviews. 25 entrants completed home performance with Energy Star projects. A South Carolina Co-op Makeover contest led to an on-bill financing pilot project with a goal of upgrading 225,000 homes over 10 years.
Evaluation Requirements	(1) 1 year of pre and post contest energy use of the winning home. (2) Website analytics during the contest and a time period post contest (utilities posted video of the winning home to their websites). (3) Comparison of customer participation with

	participating trade alley contest sponsors pre and post contest (3) comparison rebate participation pre and post contest. (4) Follow-up survey with contest entrants to capture post contest EE upgrades.
References to Existing Evaluation Reports	Home Energy Makeover Contests - Who are the Winners and Losers in Motivating Existing Homeowners to Make "Whole House" Energy Saving Improvements. https://rpsc.energy.gov/sites/default/files/publication/c-616_Home%20Energy%20Makeover%20Contests%20at%20ECEEE%20final%20052313.pdf Report contains evaluation data from Energy Trust of Oregon and Texas Electric Co-op.
Exit Strategy	The end date, goals, and prizes should be clearly defined. The program should be marketed such that participants understand both the timeframe of the competition and the ability to save energy following competition completion.

KCP&L Analysis

TRC Test Results	0.89
Utility Cost Test Results	0.89
RIM Test Results	0.22
Participant Cost Test Results	Participant costs are unknown
Risks	This program requires the cooperation of manufacturers and builders to volunteer/donate the energy saving measures for the winning household. Without those donations, the costs would be prohibitive.
Reliance on partnerships with other utilities	Low
Effort to implement	High
Disruption to existing portfolio	High – Tracking overlap between gamification and actual installed measure programs is difficult.
Fit with existing utility portfolio	Low
Learning opportunities	Low
Quality of Cost Estimates	Low
Quality of Energy/Demand Savings Estimates	Low
Lead time on Implementation (# of months)	12
Maturity of proposal	Low
Consistency with Missouri Public Service Commission's stated priorities	Medium
Expected customer experience	Medium
Impact of entering and exiting the marketplace	Low

RESIDENTIAL COMPETITION

DETAILS PROVIDED BY STAKEHOLDER

Description of proposal	KCP&L would hold individual competitions amongst residential customers over a specified timeframe (e.g., one year, three months). Program participants would be provided monthly updates on their per-capita usage and savings, rankings compared to other participants, and energy savings tips. The competition could also take place using a social media platform, such as Facebook and/or Opower. Winners would receive energy savings-themed prizes, such as money towards an ENERGY STAR- appliance or efficiency kits. The focus of the competition would be on encouraging behavioral measures. Utilities could target areas of congestion for participation.
Reference to other utility implementations	The New York State Energy Research and Development Authority (NYSERDA) hosted a 1-year residential competition in District 39 of Brooklyn ("Reduce the Use in District 39") in partnership with ConEdison and a New York City Councilmember. The Southern Maryland Electric Cooperative (SMECO) hosted a 3-month spring residential competition.
Target Market	The target would be the residential class. The Brooklyn competition garnered 161 participants, while the SMECO competition involved 201 participants. A target for the utilities implementing the program should be at least 200 participants.
Market actors impacted (e.g. distributers, retailers, trade allies)	Distributors, retailers, and trade allies would be both indirectly and directly affected.
Infrastructure requirements and dependencies	At a minimum, utilities will need the ability to track individual monthly customer usage and provide relevant information on individual customer bills. If the contest uses social media platforms, utilities will need access to the platforms and customers will need to be web-savvy. Connections with market actors will be critical to cross-promotional efforts and determining prizes.
Cost of proposal ($)	In 2011, a NYSERDA presentation indicated yearly funding for a variety of programs (not just residential) at $500,000 for 2012-2015.[4] The SMECO competition awarded prizes totaling $1,760.
Incremental kWh savings	NYSERDA competition participants averaged 4% reduction in energy use (note there was no third-party verification of savings). The SMECO competition had 38% of customers achieving the goal of 3% reduction in energy use, totaling 29,233 kWh saved (including customers with increased use). Grossberg et al. cite 3 to 6% energy savings across surveyed gamification programs more generally. Based on 200 participants per territory and a 3% reduction in annual energy use per customer during the competition: KCP&L 59,904 kWh (Minimum filing requirements in ER-2016-0285) GMO 75,024 kWh (Minimum filing requirements in ER-2016-0156)
Incremental kW savings	
Incremental savings for other energy sources (e.g. therms)	

[4] See Bard and Kessler, 2011

Interactive effects	Not estimated.
Number of participants	The target for the utilities implementing the program should be at least 200 participants (for each territory).
End-Use Measures	Though prizes would be targeted at specific end-use measures, contest participation would be measure-neutral, instead focusing on overall savings. A focus on behavioral measures - such as turning off unused lights - should be undertaken. Cross-promotional efforts could result in increased participation in other utility programs. While this might make savings attribution more difficult, savings in other programs could increase as a result of the competitions.
Evaluation Requirements	The program should be evaluated by a third party using a comparison to baseline data involving post-program interviews with participants, billing analyses, and comparisons to non-participants.
References to Existing Evaluation Reports	Bard and Kessler, 2011 Grossberg et al., 2015
Exit Strategy	

KCP&L Analysis

TRC Test Results	2.24
Utility Cost Test Results	1.12
RIM Test Results	0.23
Participant Cost Test Results	Costs to participants are unknown
Risks	
Reliance on partnerships with other utilities	Low
Effort to implement	High
Disruption to existing portfolio	High – Tracking overlap between gamification and actual installed measure programs is difficult.
Fit with existing utility portfolio	Low
Learning opportunities	Low
Quality of Cost Estimates	Low
Quality of Energy/Demand Savings Estimates	Low
Lead time on Implementation (# of months)	12
Maturity of proposal	Low
Consistency with Missouri Public Service Commission's stated priorities	Medium
Expected customer experience	Medium
Impact of entering and exiting the marketplace	Low

METER GENIUS

DETAILS PROVIDED BY STAKEHOLDER

Description of proposal	MeterGenius will build and manage a web and mobile application for KCP&L customers that have smart meters. The applications, along with all communications (email, push notifications, text messages) to customers, will be branded as KCP&L. Customers that enroll in the program will be able to view usage in 15 or 30 minute intervals (depending on the granularity of KCP&L's meter data), receive user-specific tips to become more energy efficient, participate in weekly competitions to reduce energy consumption, earn points which can be redeemed for gift cards and smart devices, and have access to a library of energy efficient content.
Reference to other utility implementations	MeterGenius ran a program with 6,500 ComEd customers in Illinois from December 2015 to June 2016. Program participants were residential customers that had smart meters. On average, customers reduced their energy consumption by 1%. The more engaged customers saved significantly more. Customers that participated in the weekly competitions saved an average of 7% during the weeks of the competitions. Customers that opted into energy efficient habit notifications reduced their consumption by an average of 11% while receiving those reminders.
Target Market	We propose to offer this program to 50,000 KCP&L residential customers with smart meters. Ideally, we'd like to only include customers that have an active email address on file with KCP&L. By offering the program to 50,000 customers, we expect 10% of customers will opt-in over the one year program, which means only 5,000 customers will participate in the program.
Market actors impacted (e.g. distributers, retailers, trade allies)	MeterGenius will host and maintain the data, servers, and applications for this program.
Infrastructure requirements and dependencies	We will need to establish the transfer of data from the KCP&L meter data management system into the MeterGenius system. In other programs, we have set up a daily transfer via a secure FTP.
Cost of proposal ($)	KCP&L will only pay for the customers that opt into the program. MeterGenius will send a monthly email to every customer, but KCP&L will only pay for customers that create an online account. The fee is $2.50 per month per customer that opts into the program.
Incremental kWh savings	We expect to save 3% for users that opt into the program.
Incremental kW savings	
Incremental savings for other energy sources (e.g. therms)	
Interactive effects	We expect to increase customer satisfaction, KCP&L's energy efficiency programs, and KCP&L's installation of smart meters.
Number of participants	By offering this to 50,000 customers, we expect 5,000 customers to participate in the year long program.
End-Use Measures	
Evaluation Requirements	We will work with a 3rd party EMV firm to analyze the kWh saved during the program. MeterGenius will also perform monthly unaudited savings analyses. MeterGenius uses the "difference of

	differences" methodology. We create a baseline of usage change based on the year over year change within the control group, and then we compare that to the year over year change within the test group for those users that have opted into the program.
References to Existing Evaluation Reports	
Exit Strategy	Two weeks prior to the end of the pilot, the program landing page and mobile application will have a message that informs all participants that the program will be coming to an end. After the pilot is over, assuming KCP&L decides not to extend the duration of the program, the login landing page and mobile application will inform visitors the pilot is no longer available. This page will also include a link back to KCP&L's customer portal. The copy, design, and links will be approved by KCP&L. Once the program ends, points will have no value and will not be redeemable. Users with enough points to redeem the least expensive reward will be notified two weeks before the pilot ends that their points will expire when the program ends.

KCP&L Analysis

TRC Test Results	0.46
Utility Cost Test Results	0.46
RIM Test Results	0.18
Participant Cost Test Results	No cost to participant
Risks	
Reliance on partnerships with other utilities	Low
Effort to implement	High
Disruption to existing portfolio	High
Fit with existing utility portfolio	Low
Learning opportunities	Medium
Quality of Cost Estimates	Low
Quality of Energy/Demand Savings Estimates	Medium
Lead time on Implementation (# of months)	12
Maturity of proposal	Low
Consistency with Missouri Public Service Commission's stated priorities	Medium
Expected customer experience	Medium
Impact of entering and exiting the marketplace	Low

BULB BUY BACK

DETAILS PROVIDED BY STAKEHOLDER

Description of proposal	The Light Bulb Exchange Program would allow consumers and large commercial distributors to exchange Incandescent bulbs for the more energy efficient LED light bulbs, directly through the utility or indirectly thru retailers. The main goal of this program would be to reduce the surplus supply of existing incandescent lighting, which is still predominantly used in Missouri's newly constructed residential buildings. By targeting the commercial distributors and retailers who work regularly with residential developers, utilities can tailor a simple-to-understand incentive, rebate, discount, or direct exchange for the older less efficient bulbs. By doing so, utilities can drastically increase the market uptake of higher efficient lighting in newer and older construction, while reducing the availability of inefficient lighting that can be placed into service. Emphasizing ENERGY STAR LED bulbs would also be an indirect goal of the program.
Reference to other utility implementations	Energize Connecticut the Great Bulb Exchange
Target Market	Residential, Small business, With the Energize Connecticut the Great Bulb Exchange reached 230 residential households within its first year.
Market actors impacted (e.g. distributers, retailers, trade allies)	Local and National chain lighting retailers, General contractors, Commercial distributors and Home developers. Mainly targeting residential and Developers to reduce non-LED lightning supply.
Infrastructure requirements and dependencies	Location and material cost need to facilitate exchange, also there needs to be media outlets to inform consumers of the program.
Cost of proposal ($)	Cost of LED bulbs $1.99-$3.32 for 60 Watt equivalent; total cost for materials estimated to be $71,970-$120,071. Obtained from current market price and average retail price data that available prices may fluctuate or continue to drop in price.
Incremental kWh savings	44,120 kilowatt-hours (kWh) each year based on Energize Connecticut the Great Bulb Exchange
Incremental kW savings	
Incremental savings for other energy sources (e.g. therms)	There may be a possibility but not significant data to present a solid conclusion
Interactive effects	
Number of participants	10944 Participants, 36,166 Bulbs exchanged based on Energize Connecticut the Great Bulb Exchange
End-Use Measures	All bulbs obtained from recycling will be deposited with a recycling center.
Evaluation Requirements	Evaluate program on savings from new bulbs and if bulbs in storage vs in socket has been reduced Currently reported by Cadmus team from Ameren's EMV study showed that at energy efficient bulbs dropped from 79% down to 82% that are in sockets maybe see a change back up to 79% or greater
References to Existing Evaluation Reports	

Exit Strategy	Stop exchange by notifying distributors and consumers with on bill notification that program is ending a 2-3 months before. Take all old remaining bulbs to recycling centers for proper disposable

KCP&L Analysis

TRC Test Results	0.15
Utility Cost Test Results	0.35
RIM Test Results	0.21
Participant Cost Test Results	0.67
Risks	Substantial NTG risk from gaming or double-counting, especially if cash buybacks used. "In-kind" swap of LED for old incandescent works better. Generally difficult to reach scale with this program, more useful for spot-marketing efforts from local or community events.
Reliance on partnerships with other utilities	Low
Effort to implement	Medium
Disruption to existing portfolio	Medium – competes with other lighting direct install and upstream measures
Fit with existing utility portfolio	Medium
Learning opportunities	Medium – community events allow dialog with customers
Quality of Cost Estimates	High
Quality of Energy/Demand Savings Estimates	High
Lead time on Implementation (# of months)	6
Maturity of proposal	Medium
Consistency with Missouri Public Service Commission's stated priorities	Medium
Expected customer experience	High
Impact of entering and exiting the marketplace	Low

Residential Program Bundling

Details provided by Stakeholder

Description of proposal	Simplified approach to achieve comprehensive savings in single family homes by combining typical EE measures into discrete packages with predictable costs and savings. These packages, or bundles, can then be implemented through a streamlined, turnkey approach with limited burden to building owners. This could be promoted en masse through partnerships with large employers.
Reference to other utility implementations	Similar Home Energy Service programs are successful in many jurisdictions such as RI, MA, and CA. The bundling will hopefully drive higher throughput at a lower acquisition cost.
Target Market	Residential single family homes
Market actors impacted (e.g. distributers, retailers, trade allies)	Participation and training of contractors to provide standardized bundles of measures to homes and to enable them to determine which bundle the home needs. It would also benefit from the participation of financial institution to provide financing for portion of cost not covered by incentive.
Infrastructure requirements and dependencies	Study and develop multiple tiers of bundles. Train contractors to seamlessly install bundles of measures in homes. Partnerships with large employers to encourage participation. Cooperation with gas utilities to set up a framework of cooperation to run the program.
Cost of proposal ($)	$17.5 million
Incremental kWh savings	19,383,000
Incremental kW savings	2,687
Incremental savings for other energy sources (e.g. therms)	125,894 MMBtu of oil, gas, and propane expected to be saved through weatherization program
Interactive effects	If significant weatherization occurs, it is possible that HVAC measures will save less energy (if they are done). However, it is also possible that weatherization allows for the downsizing of equipment, which saves additional energy and money.
Number of participants	14,000
End-Use Measures	Weatherization, lighting, smart strips, air sealing, duct sealing
Evaluation Requirements	Would likely need to be evaluated as a separate program.
References to Existing Evaluation Reports	http://ma-eeac.org/wordpress/wp-content/uploads/HES-and-HEAT-Loan-Program-Assessment-Final-Report.pdf www.energizect.com/sites/default/files/HES%20and%20HES-IE%20Impact%20Evaluation%20(R16),%20Final%20Report,%2012-31-14.pdf
Exit Strategy	Stop offering program

KCP&L Analysis

TRC Test Results	0.48
Utility Cost Test Results	2.31
RIM Test Results	0.38
Participant Cost Test Results	1.31

Risks	High degree of overlap with other programs, care must be taken in counting savings. Generally unclear how this is different from or interacts with KCP&L's existing Whole Home Energy Efficiency Program
Reliance on partnerships with other utilities	Low
Effort to implement	Medium
Disruption to existing portfolio	Medium
Fit with existing utility portfolio	Medium
Learning opportunities	Low
Quality of Cost Estimates	Medium
Quality of Energy/Demand Savings Estimates	Medium
Lead time on Implementation (# of months)	6
Maturity of proposal	High
Consistency with Missouri Public Service Commission's stated priorities	Medium
Expected customer experience	High
Impact of entering and exiting the marketplace	Low

WHOLE HOME EFFICIENCY

DETAILS PROVIDED BY STAKEHOLDER

Description of proposal	Tiered whole home efficiency standards. Participants enter agreement to achieve a % level of whole-building energy savings which grants participants a % rebate of total cost incurred on energy savings measures. Tiered savings are not related to specific products or services but to levels of energy saved, granting participants a great deal of autonomy. Program administrator (acting as or contracting one-stop shop) acts as program representative, engages in: recruiting & intake, building assessment & direct install measures, identification of opportunities (including information re: products, services, and financing options), selection of upgrades, installation & quality control (from a cohort of approved contractors/vendors), verification of completion (leading to incentive rebate).
Reference to other utility implementations	This information is from a collaborative effort by Xcel Energy & CenterPoint Energy in Minnesota service areas.
Target Market	Multifamily, can be tailored to residential or commercial/industrial
Market actors impacted (e.g. distributers, retailers, trade allies)	Property owners, trade allies, utilities, residents/rate-payers, local community, property managers (with decision-making authority), developers, distributors, vendors, contractors, residents.
Infrastructure requirements and dependencies	No changes to utility infrastructure. Whole-home programs may have to be retailored to allow flexibility.
Cost of proposal ($)	Minnesota: Utility Project costs - Customer Services: $270,883; Project Administration: $77,583; Advertising & Promotion: $2,635; Measurement & Verification: $15,810; Rebates: $101,186;
Incremental kWh savings	Minnesota: Gross annual kWh Saved at Customer: 980,239 kWh
Incremental kW savings	Not measured.
Incremental savings for other energy sources (e.g. therms)	Minnesota: 7,081 Mcf saved; 7,081,000,000 BTUs saved
Interactive effects	The measures of building renovation/projects act as a system, so improvements to one area may result in other participants/consumer benefits such as increased market value of dwelling, increased comfort, decreased contractor callbacks, decreased moisture issues, and so on.
Number of participants	2,055
End-Use Measures	With this program aimed at providing great flexibility, end-use measures would be hard to define as there is not a standardized protocol of processes. Some measures, such as specific direct install measures or retrofit measures can be evaluated to show their savings. Other metrics can be utilized to provide a more accurate snapshot of savings (e.g., average saving per home).
Evaluation Requirements	Xcel/CenterPoint collaboration was conducted with multifamily market, savings/costs could change if applied single-family dwellings or brought to a commercial/industrial level. Evaluations compared participants' energy consumption from business-as-usual to energy consumption after participating in whole-home efficiency measures.

References to Existing Evaluation Reports	Report on CD: DE "Xcel-CPE MF Whole Home EE Report." www.xcelenergy.com/staticfiles/xe/PDF/Marketing/Multi-Family-Cobrand-Multi-Housing-Fact-Sheet.pdf
Exit Strategy	Due to the flexibility and ongoing nature of program and the many different ways it can be approached, no specific exit strategy has been developed. As the program ages and reaches sunset, notification of service areas must be notified that program is winding down while keeping incentive reserves maintained for participants finishing their upgrade cycles. Trade allies could be encouraged to continue focusing on whole-home energy efficiency services based upon customer feedback/satisfaction/local market trends.

KCP&L Analysis

TRC Test Results	2.74
Utility Cost Test Results	0.56
RIM Test Results	0.19
Participant Cost Test Results	Participant costs are unknown
Risks	Generally unclear how this is different from or interacts with KCP&L's existing Whole Home Energy Efficiency Program
Reliance on partnerships with other utilities	Low
Effort to implement	Medium
Disruption to existing portfolio	Medium
Fit with existing utility portfolio	Low
Learning opportunities	Medium
Quality of Cost Estimates	Medium
Quality of Energy/Demand Savings Estimates	Medium
Lead time on Implementation (# of months)	6
Maturity of proposal	Low
Consistency with Missouri Public Service Commission's stated priorities	Medium
Expected customer experience	Medium
Impact of entering and exiting the marketplace	Low