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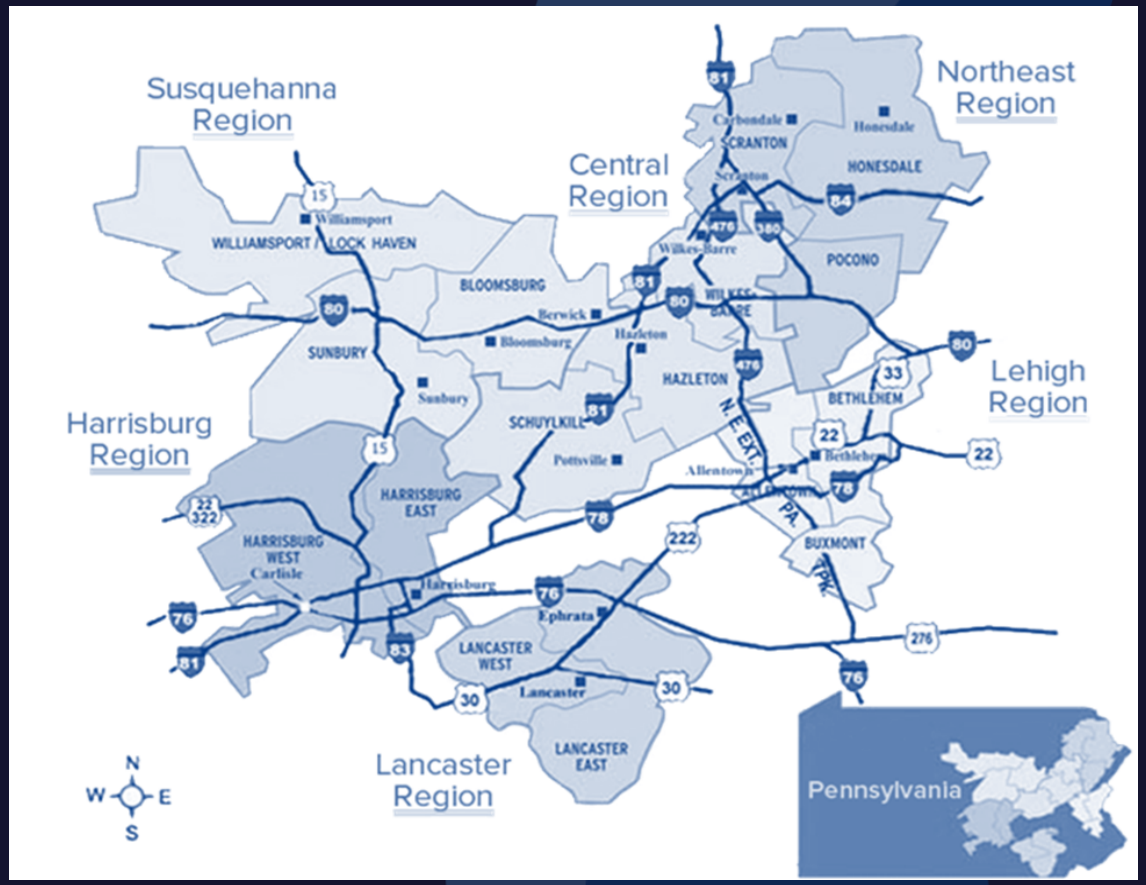
PPL Electric Connected Lighting Pilot Evaluation

August 22, 2019

PPL Electric Utilities

PPL offers a suite of residential and commercial energy-efficiency programs



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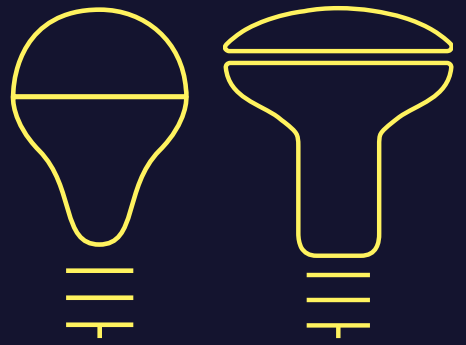
Connected Lighting Pilot Overview

300 “early adopter” participants

Lighting hub with smart phone app



5 preconfigured LEDs in each kit

Pilot and Evaluation Objectives

Insight into preferences of targeted audience

- Targeted recruiting
- Motivations and satisfaction
- Interest in connected technology
- Demographics

Could propensity for remotely controlling lighting lead to savings?

- Usage patterns and level of interaction with LED
- Persistence of use

Quantifying savings was *not* an objective

- No information about baseline lamp types
- Previous research indicating minimal savings

Methodology

Online Surveys

$50 if completed all 3

- Point-of-purchase (n=239)
- Midpoint (n=178)
- Post-Pilot (n=100)

Hub Data Analysis

Initial 3 months of data for 228 participants

- Unique user ID
- Unique device ID & type (A-line or BR30)
- Power State (actual)
- Desired Power State (via hub)
- Last brightness (0 – 1)
- New brightness (0 – 1)
- Timestamp

Motivations and Preferences

High level of awareness and interest

About ½ already using some connected tech

Higher income and education levels

Discount was most important factor

Non-energy benefits attractive

- Increased security
- Controlling lighting remotely
- 25% neutral about energy-saving benefits

Usage and Persistence

Actual usage reasonably aligned with intentions

Most continued to interact via hub

- More frequently than manual

Installation rates

Data analysis consistent with survey

Higher ISR for A-line bulbs (93%) than for BR30 (77%)

Hub Data

Timestamp issues

- Multiple user requests recorded, regardless of device state
- Timestamps generated by cloud-based system vs device hub
  - Could be out of order

Unable to use final dataset

- Delayed receipt from manufacturer
- Data quality issues

Potential exists to measures changes in usage

- Lots of potentially valuable data
- Minor improvements to data collection needed

Conclusions

Recruitment was successful

May be good model for future emerging tech offerings

Non-energy benefits vs. saving energy

- Potential to *increase* equipment usage
- Most were interested in saving energy
- Initiatives offering efficiency and non-energy benefits likely most attractive

Discount was important

- Most would not have purchased without discount
- Current market pricing may be barrier for general adoption; utility incentives can help

Data have value

- Potential for robust analysis
- Clarify requirements with third-party data providers
- Test data collection tools prior to launch
- Attempt analysis with sample of data

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Thank You / Q&A
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