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Transitioning to AMI, & Ongoing Meter Refresh Practices

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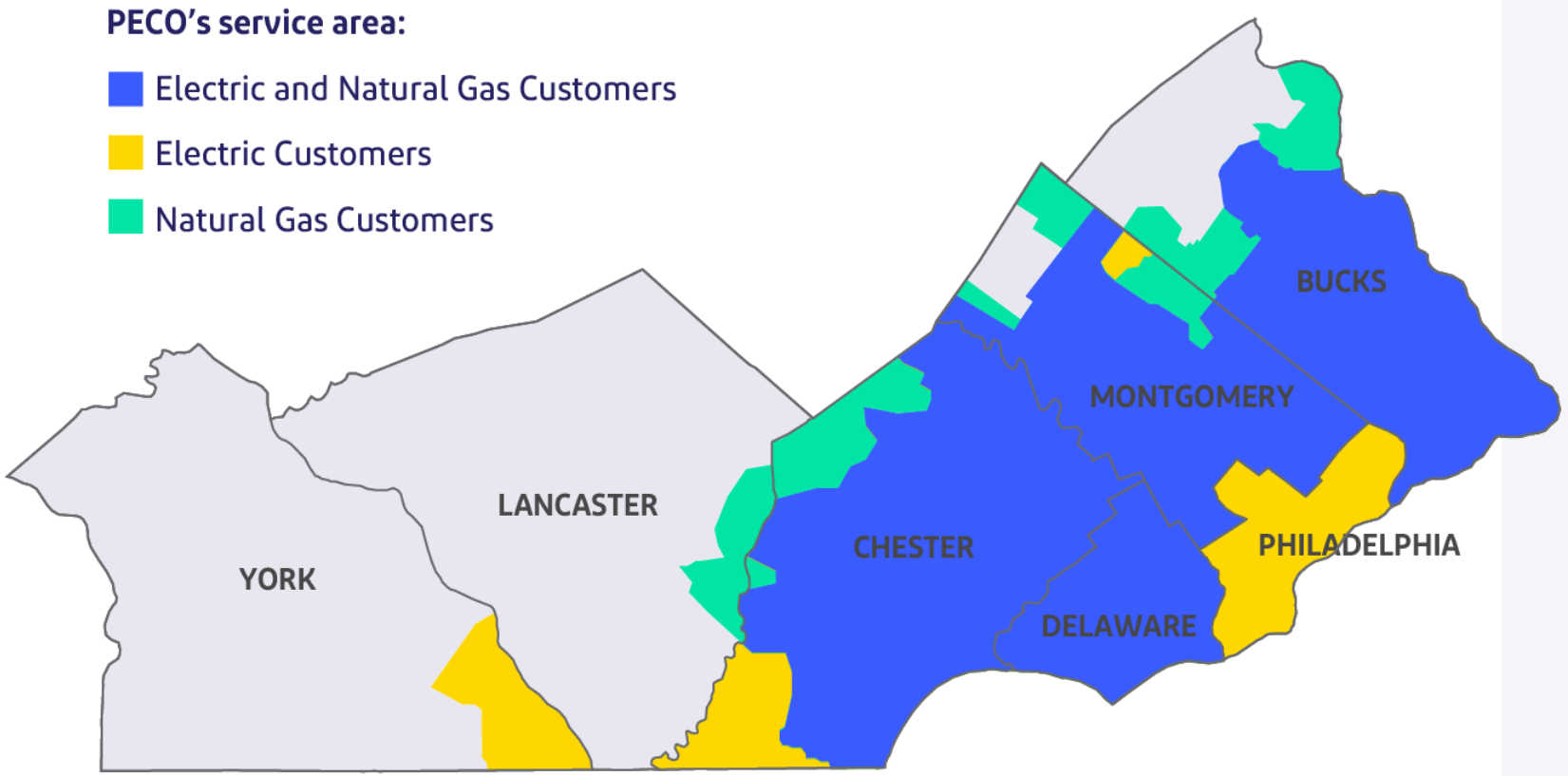
Agenda

- PECO – About Us
- PECO's Automated Metering Journey
- Current Situation/Challenge
- Device Obsolescence / Meter Failure Bathtub Curve
- Industry Trends
- PECO's Plan – the strategy and actions
- Open Discussion

Overview

Headquartered in Philadelphia, PECO is Pennsylvania's largest electric and natural gas energy delivery company, serving 1.7 million electric customers and more than 553,000 natural gas customers in southeastern Pennsylvania. PECO employs approximately 3,000 people and is a subsidiary of Exelon Corporation (NASDAQ: EXC), the largest fully regulated utility company in the nation with more than 10 million customers.

PECO



22,659
distribution miles

1.7 million
electric customers

553,000
natural gas customers

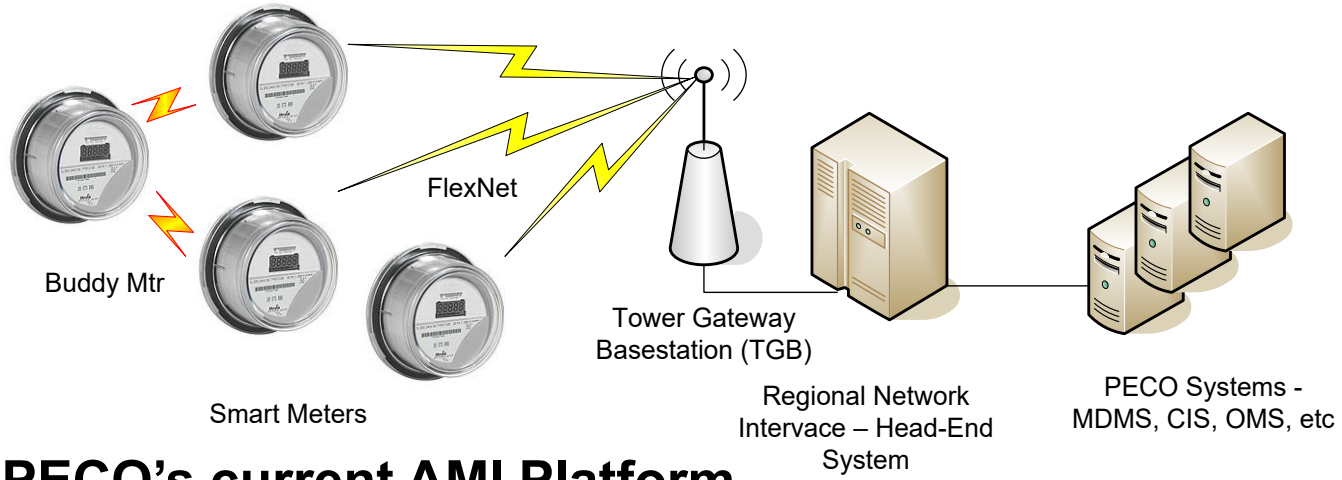
10%
commercial/industrial

90%
residential

PECO's Automated Metering Journey

Timeline

- Pre-2000 – Emetcon PLC
- 2000-2016 – Landis+Gyr/CellNet Fixed Network AMR (*Full Deployment*)
- 2008 – Pa. Act 129
- 2010 – Federal ARRA Stimulus Grant Award
- 2011–Present - Sensus FlexNet AMI, Generation 1 (*Full Deployment*)
- 2022 – Next Generation Meters and V2 Communications Protocols
- 2027 – Obsolescence Plan Starts



PECO's current AMI Platform

- PECO's network consists of a private Radio Frequency (RF) network, which operates using Tower Gateway Base Stations (TGBs), FlexNet SmartPoint modules, and the FlexNet AMI Regional Network Interface (RNI).
  - PECO licenses our radio frequencies from the FCC
- The network consists of nearly 250 TGBs
  - Individual meters interact with 3-7 TGBs on average
- Meters from Aclara, Honeywell, Landis+Gyr and Sensus are used today
- The head-end application is hosted by Sensus

Advanced Meter Functionality

Act 129 Summary Requirements List
Bi-directional data communications
Remote disconnection and reconnection
15-minute or shorter interval data to customers, EGSs, 3rd parties and RTOs on daily basis
Record minimum hourly reads and deliver at least once per day
On-board meter storage of meter compliant with national, non-proprietary standards
Open standards and protocols compliant with national, non-proprietary standards
Ability to upgrade minimum capabilities as technology advances and becomes economically feasible
Ability to monitor voltage at each meter and report data
Remote programming
Communicate outages and restorations
Ability to support net metering of customer-generators
Support automatic load control by EDC, customer and 3rd parties with customer consent
Support time-of-use and real-time pricing programs
Provide customer direct access to consumption and pricing information (hourly consumption information)

Benefits of AMI

Core Areas of Benefits

- Meter Reading – Usage and Load Profile Data
- Alarms and Alerts
  - Outage Management – Power Outage, Pinging and Restoration
  - Hot Socket Monitoring
  - Tamper and Theft Alarms
- Remote Connect/Disconnect Functionality

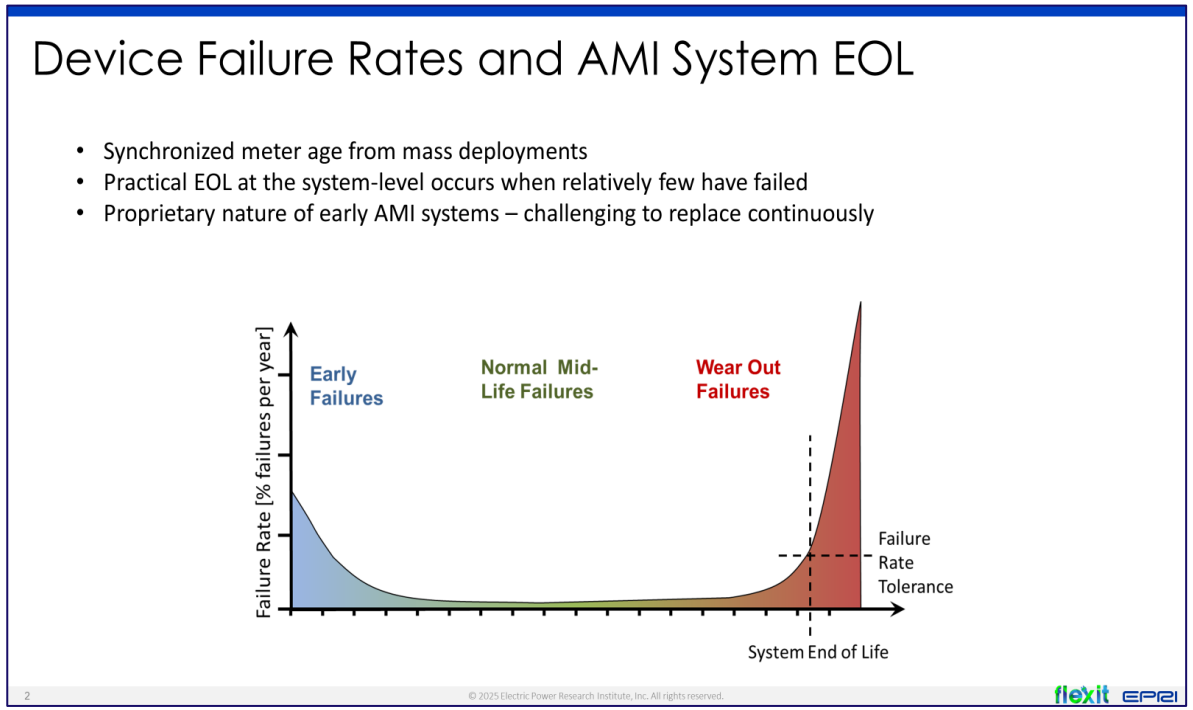
Additional Opportunities

- Data Analytics – Operational Efficiency and Improve Effectiveness
- Voltage Monitoring
- Power Quality Monitoring

Current Performance

	YTD Actuals	YTD Target
Total AMI % Meters Read	99.83%	99.80%
Electric AMI % Meters Read	99.84%	99.81%
Gas AMI % Meters Read	99.81%	99.79%
Billing Register Read Delivery - Electric	99.96%	99.94%
Billing Register Read Delivery - Gas	99.98%	99.93%

Device Obsolescence and Failure Rates

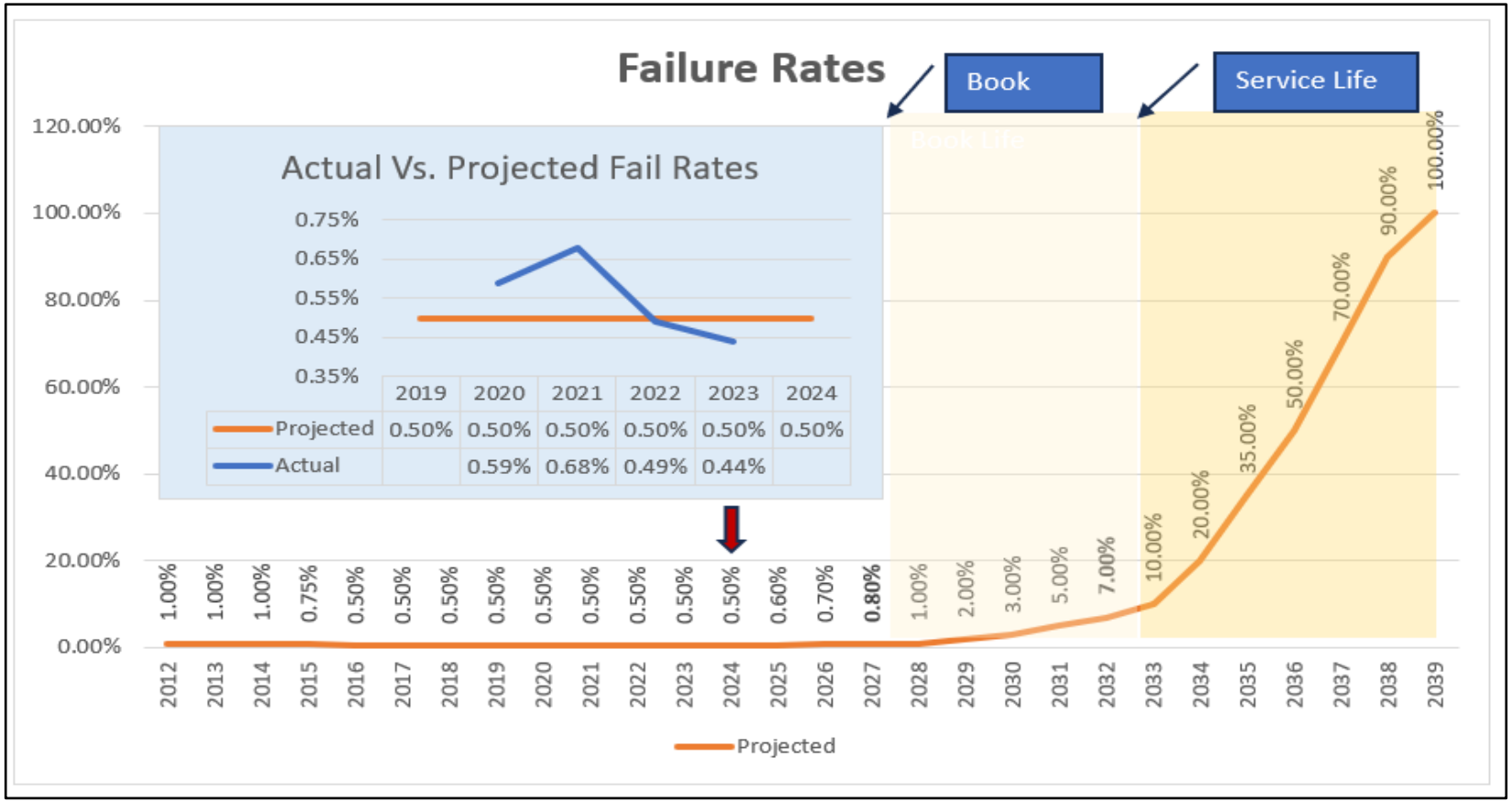


- **Electric Meters have no Utility serviceable components**
- Meter **"Failure" is seen to be a binary event**, it either works as designed or it is removed from service and retired as *failed*.

Typical Meter Failure Modes

- Higher part-count/complexity – fundamental Mean Time Between Failure (MTBF) from random failures is lower
- Electrolytic (wet) capacitors dry out
- Crystal oscillators age - frequency changes. Radios don't work well.
- MOV Surge Suppressors wear out, stop protecting against overvoltage transients
- LCD displays fade, become unreadable
- Memory semiconductors are write/erase cycle limited

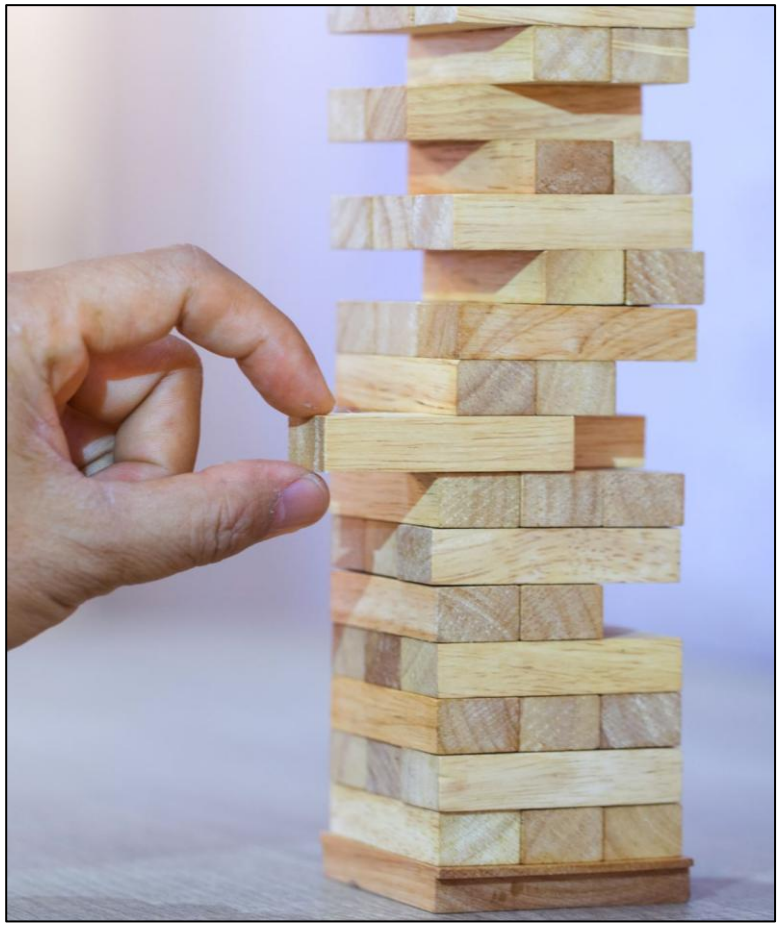
Projected Meter Failures



- Analysis of failure rates over the past 4 years confirms current failure rate curve projections
- Recommend beginning replacement in earnest by 2027 to stay ahead of the expected failure rates
- Meter failure rates will quickly increase by 2029, exceeding meter shop capacity to adequately respond without significant additional support
  - Meter Shop Capacity estimated to be exceeded by 2030
  - ~50% deployment recommended by 2031 to stay ahead of failure curve

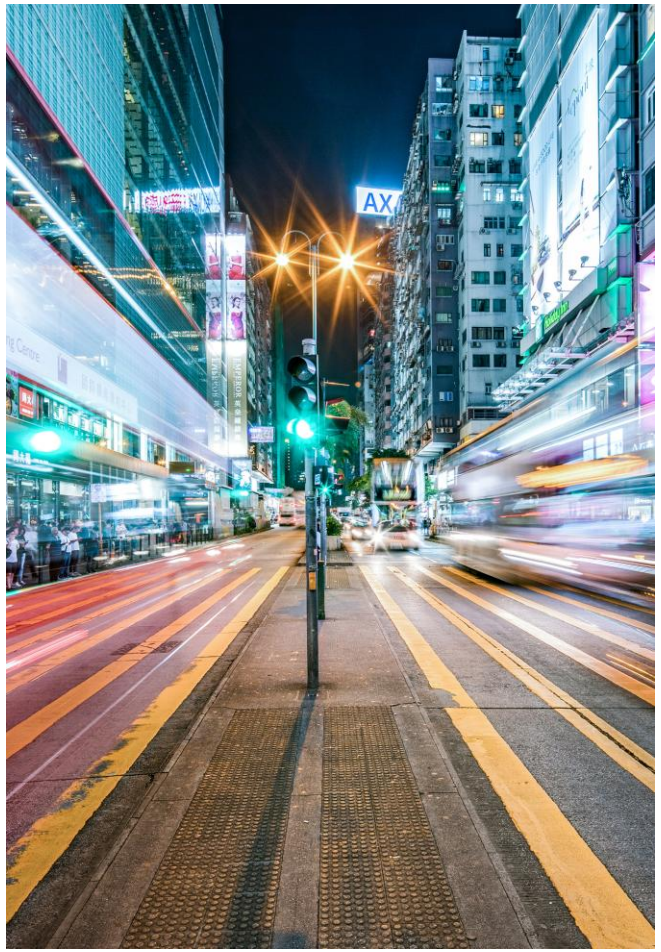
Developing Strategies

- The Industry and each Exelon OpCo has installed AMI systems across their territories
  - Initial deployments started as **early as 2008**
- All Exelon Utilities have acknowledged AMI meter life is finite and not **expected to exceed 20 years**
  - Meter Vendors have confirmed this expectation
- PECO Finance has affirmed the 15-year book life of the AMI meters
- All Exelon Opcos are developing plans that include **5% ongoing annual meter replacement**
  - Initial program deployment rates may be higher to account for the original “big bang” meter deployments, up to 10%

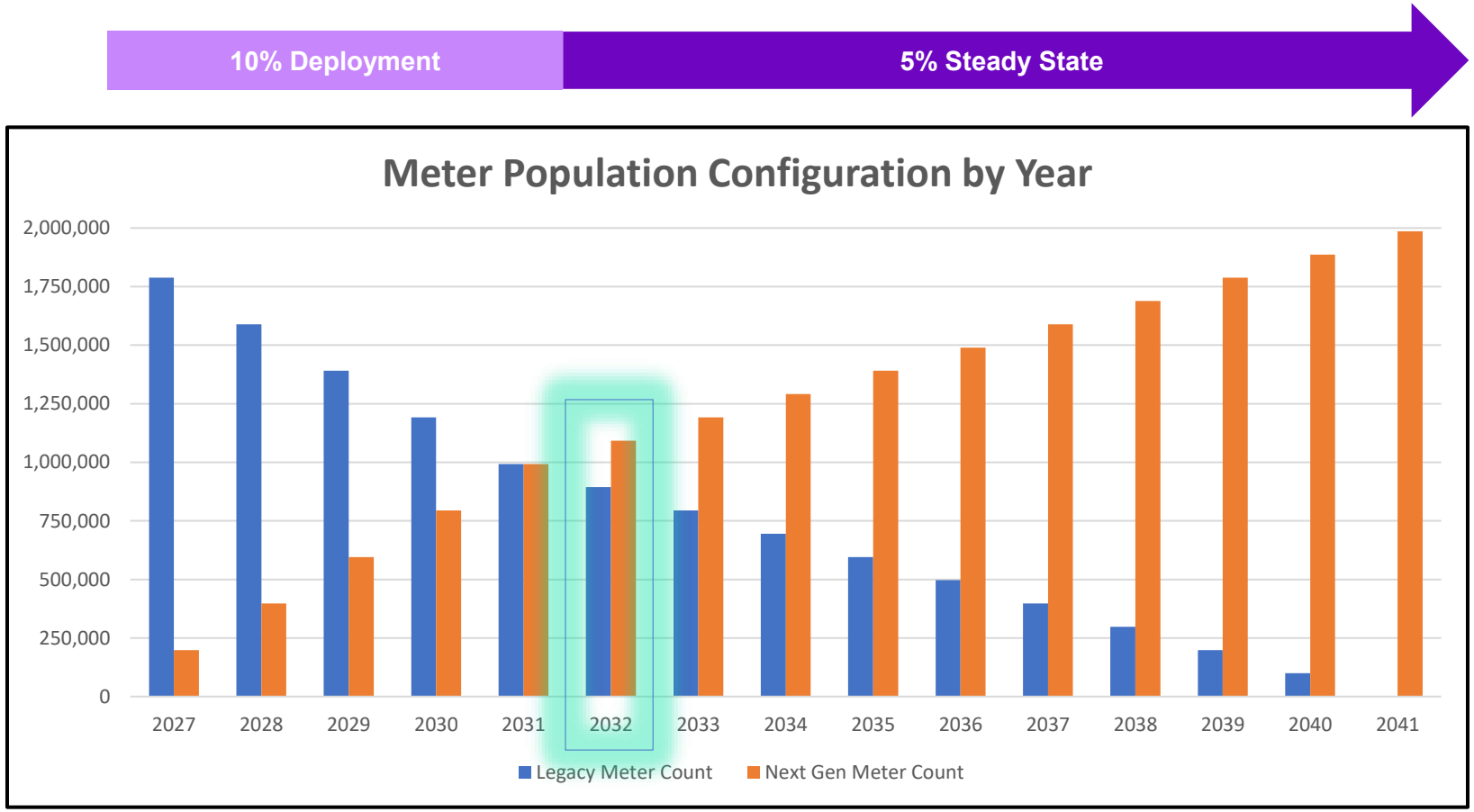


PECO's Obsolescence Plan

- 15-Year Replacement Plan with Continuous Meter Refresh
  - Assumes replacement of current generation PECO Electric meter population over 15-year period 2027-2041
  - Plan will continue on to address future meter generations
- Deployment Rates
  - 10% Yearly Deployment in 2027-2031 to address oldest meters
  - 5% Continuous Deployment starting in 2032
- The 10% and 5% deployment rate was selected to ensure that the current field operations and meter shop will not be overwhelmed with failing meters
  - The PECO meter is currently sized to manage 25,000 meters per year.



15-Year Next Gen Meter Deployment



- Next Gen meter population projected to exceed Legacy meter population by 2032
  - Oldest legacy meters (2012-2016) projected to be fully replaced by 2036

PECO's Obsolescence Plan

- The Plan is designed to leverage the newest, most capable meters throughout the deployment
  - The meters purchased in year 1, will likely not be the same as the meters purchased in year 5 or year 10
  - Initially, meters from Sensus and Aclara will be deployed
- If Customer or Utility needs dictate a change in AMI Communications or AMI Vendor platform, flexibility has been designed into the plan to account for shifting needs and/or strategies

New Meter Functionality

- While the Plan is not designed to introduce new meter functionality, the meters will be able to foundationally support new features* and programs such as:
  - Distributed Intelligence and Grid Edge Functionality
  - Enhanced Power Quality and Voltage Monitoring
  - Loss of Neutral Detection
  - Enhanced Hot Socket Detection and Safety Measures including Auto-Shut Off Functionality

** New functionality requires additional IT integration and business process changes*

- PECO is separately in the process of introducing Over The Air (OTA) meter programming which is expected to reduce meter configuration issues and speed customer addition of DER products (meter exchanges and site visits will not longer be required)
  - This functionality is expected to be available to coincide with the Obsolescence Program initiation in 2027

Summary and Open Discussion

- PECO is changing its meter deployment strategy from an orchestrated “big bang” deployment to a continuous replacement program
  - As meters near their 20-year service life, they will be replaced

- PECO is has committed to delivering the most capable meters to our business and our customers to support their evolving needs

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Thank you

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