

October 14, 2022

VIA ELECTRONIC MAIL

Luly E. Massaro, Commission Clerk
Rhode Island Public Utilities Commission
89 Jefferson Boulevard
Warwick, RI 02888

**RE: Docket Nos. 4770 & 4780 – The Narragansett Electric Company d/b/a
Rhode Island Energy Electric and Gas Distribution Rate Filing
Advanced Metering Functionality Workshop
Rhode Island Energy Presentation and Follow-up**

Dear Ms. Massaro:

On behalf of Rhode Island Energy,¹ I have enclosed an electronic version of the Company's Advanced Metering Functionality ("AMF") presentation that the Company provided to the Public Utilities Commission ("Commission") at the AMF Workshop on September 1, 2022.² Also, enclosed is an electronic version of additional information that the Company prepared as a follow-up to the Commission's questions and feedback during the AMF Workshop. Rhode Island Energy is making this informational filing to assist the Commission with posting these files to its website in the above-referenced dockets.

Thank you for your attention to this matter. If you have any questions, please contact me at (401) 316-7429.

Sincerely yours,



Jennifer Brooks Hutchinson

Enclosure

cc: Docket 4770 Service List
Linda George, Division
John Bell, Division
Al Mancini, Division
Christy Hetherington, Esq.

¹ The Narragansett Electric Company d/b/a Rhode Island Energy (Rhode Island Energy or the Company).

² Per a communication from Commission counsel on October 4, 2021, the Company is sending an electronic version of this filing followed by six (6) hard copies filed with the Clerk within 24 hours of the electronic filing.



Rhode Island Energy™

a PPL company

Advanced Meter Functionality Overview

RI Public Utility Commission Technical Session

September 1, 2022

Agenda

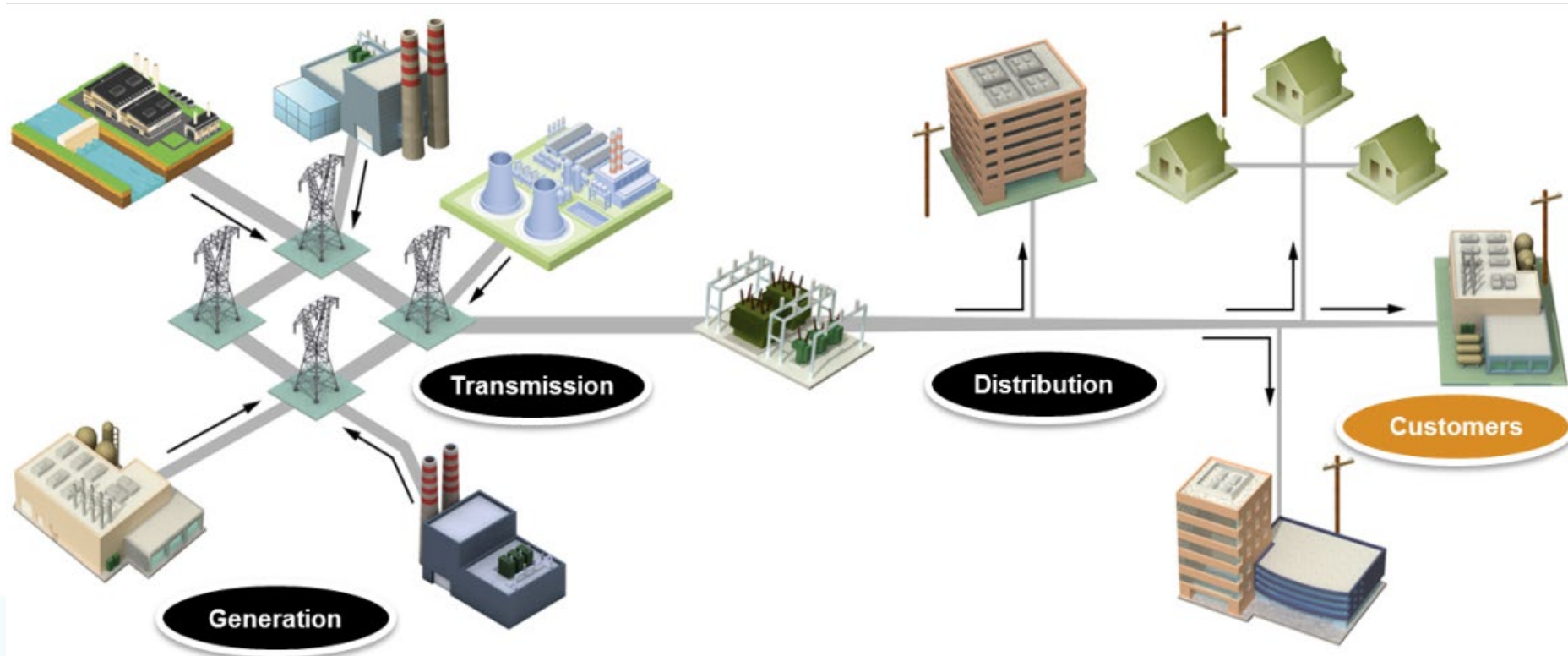
- Introductions, overview and approach
- Technology and deployment plan
- Customer engagement
- Benefits and costs
- Revenue requirements / cost recovery
- Filing discussion and next steps

Background: Today



Rhode Island Energy™
a PPL company

The Grid Today

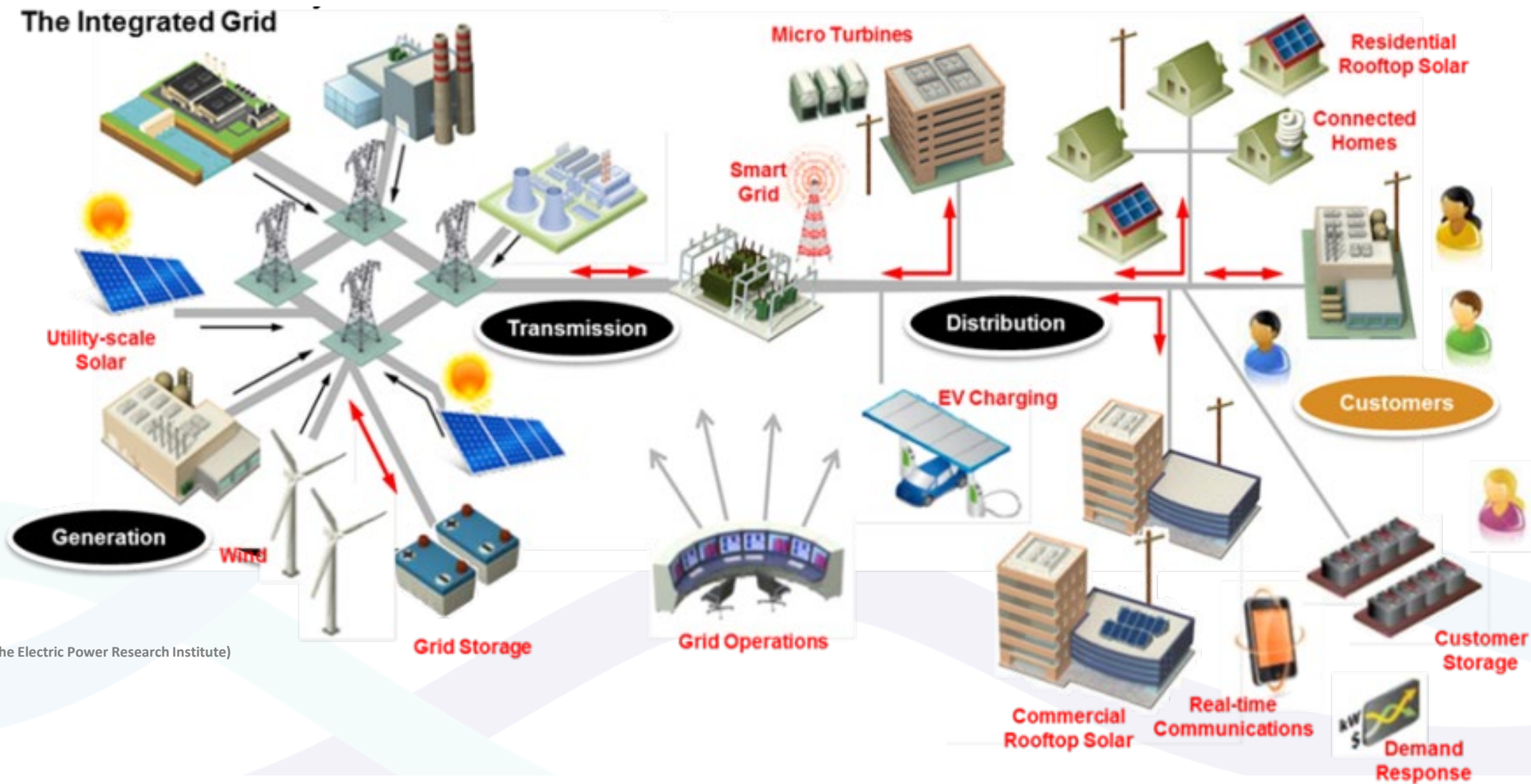


(Graphic courtesy of the Electric Power Research Institute)

Background: Tomorrow



Rhode Island Energy™
a PPL company



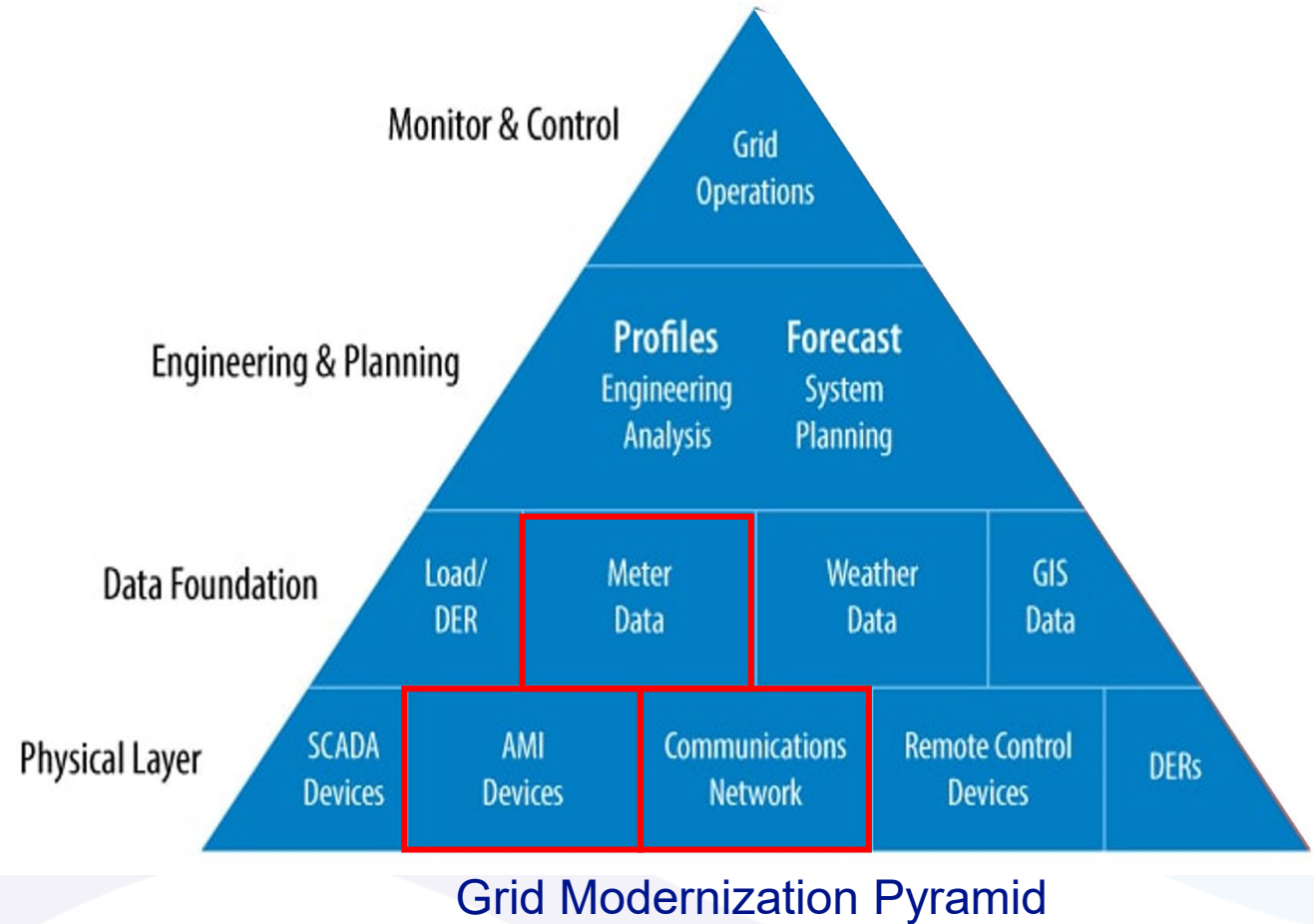
(Graphic courtesy of the Electric Power Research Institute)

Position for Future Success



Rhode Island Energy™
a PPL company

- Develop infrastructure that enables long-term goals and objectives
- Work towards the grid modernization pyramid to achieve capability to successfully operate in the new world
- Recognize evolving needs and identify capability gaps
- Define ideal characteristics and apply technology to meet requirements
- Leveraging existing infrastructure and capabilities where possible
- Integrate to optimize value streams



 AMF is foundational and an enabling platform

AMF Business Case Summary

AMF is foundational to RIE achieving a vision of enabling clean, fair, and affordable energy future.

Need:

- Operational: Approximately 60% of the AMR meters are at the end of their design life.
- Environmental: Achieve clean energy mandate of Net-zero carbon emissions in Rhode Island
- Customer Expectations: Manage energy usage; superior customer experience.
- Modernized System: Increased visibility/control (planning, integration, management).

Value:

- BCA developed and refined consistent with the Docket 4600 Framework.
- Net benefits: \$ 734.6 million NPV (opt-in)
- Net costs: \$189.6 million NPV
- BCA Ratios: 3.9 (opt-in)

Accountability:

- Delivering AMF at a cost not to exceed that proposed in 2021 by National Grid in Docket 5113
- Provide a BCA that is at least as positive as the BCA in the same docket
- Annual reporting with semi-annual project updates

AMF Business Case Overview

Scope:

- Replace ~525,000 electric AMR meters with AMF meters over a 3 ½ year deployment
- Design and build a fixed, secure IP-based radio frequency (RF) mesh network
- Back-office IT systems are developed to receive and process AMF data
- Electric AMF functionality necessary to achieve customer, utility and clean energy objectives

Anticipated Outcomes:

- Additional customer capabilities to manage their energy usage
- A technologically-advanced, state-of-the-art metering infrastructure
- The requisite tools and technology required to achieve clean energy goals
- An enabling platform to position for future grid modernization, gas AMF and more

Our AMF Approach



Rhode Island Energy™
a PPL company

- Presents the need to replace the AMR system with a proposal having costs and benefits over 20-years
- Utilized National Grid Updated Business Case (Docket 5113) and addressed ASA items
- Factored in PPL AMF deployment experience, costs, business impacts, processes and systems
- Incorporated pricing estimates from suppliers
- Updated BCA assumptions with current information
- Created a detailed deployment plan and system release schedule harmonized with TSA developments
- Factor in feedback from collaboration with stakeholders

Amended Settlement Agreement (ASA)

1	A refined and updated AMF business plan, benefit-cost analysis (BCA), and a detailed customer engagement plan
2	An updated AMF deployment schedule with a BCA (using Societal Cost Test) for different meter deployment periods
3	Revenue Requirement for AMF deployment
4	Deployment proposals, a proposal for cost recovery of AMF, and any activities associated with implementation of AMF
5	A proposal to allocate AMF costs among rate classifications
6	Assumptions upon which a proposal for Time-Varying rates will be based
7	A Data Governance Plan regarding customer, NPP, and third-party access to system and customer data in place with access to quality customer and billing data, along with appropriate privacy and security protections
8	Updated costs for AMF deployment based on information gained from procurement efforts
9	Transparent, updated benefit cost analysis that fully incorporates the Docket 4600 framework
10	Investigation of alternative business models and ownership models
11	Analysis of data latency
12	Deployment details
13	Role of non-regulated power producers, including articles to share customer information and customer engagement
14	Ownership model for assets and telecom
15	Detailed AMF functionalities, how RI will achieve these functionalities, and a timeline for when those functionalities are available
16	Identification of the most cost-effective way to achieve the functionalities, and how the functionalities align to policy objectives
17	Explanation of whether the realization of those functionalities align to policy objectives will require additional future work and costs over 20 years
18	Identification of what functionalities the AMF will achieve that are part of the grid modernization plan and which are in addition to the Grid Modernization Plan
19	Identification of which functionalities are dependent on full-scale roll out instead of a targeted roll out
20	Business case based on both a RI-only scenario and RI/New York scenario
21	A business case based on the length (duration) of meter deployment
22	Identification of the critically linked parts of grid modernization and AMF
23	Identification of whether the AMF solution would allow for proper net metering according to the tariff

RIE Benefits from PPL AMF Insights



Rhode Island Energy™
a PPL company

PPL Full-Scale Automated Meter Reading Experience includes several million meters over the last two decades:

- PPL First Generation in PA: 2002 – 2004
- PPL Second Generation in PA: 2015 – 2020
- LG&E KU Full Scale Launch in KY: Sept. 2022 - 2025

PPL Offers Many Insights:

- AMF Meter Implementation
- Back-Office Systems Deployment and Integration
- Communication Network Design/Implementation
- People, Process, and Tools
- DER Management and Monitoring
- Integration with grid modernization

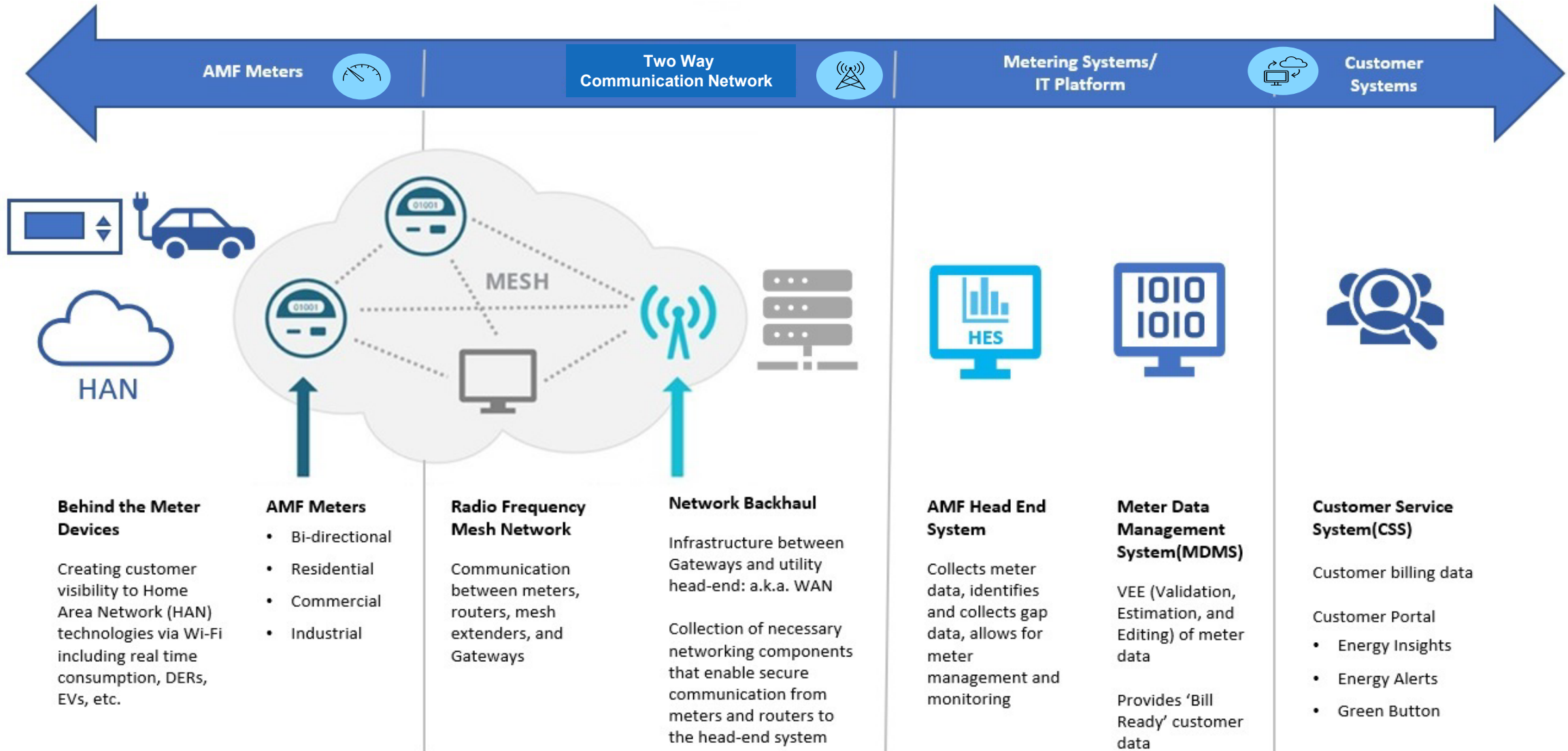
RIE Benefits:

- Implementation Cost Efficiencies
- Functionality Efficiencies
- Lessons Learned and Best Practices
- Vendor Relations and Purchasing Power
- Operational Efficiencies
- Shared Network Services
- Analytics

Full Scale AMF Technology Elements



Rhode Island Energy™



Full-scale is the only fit-for-purpose solution that supports all enhanced functionalities



Network – All RF Mesh / Analysis of Alternatives



Rhode Island Energy™

a PPL company

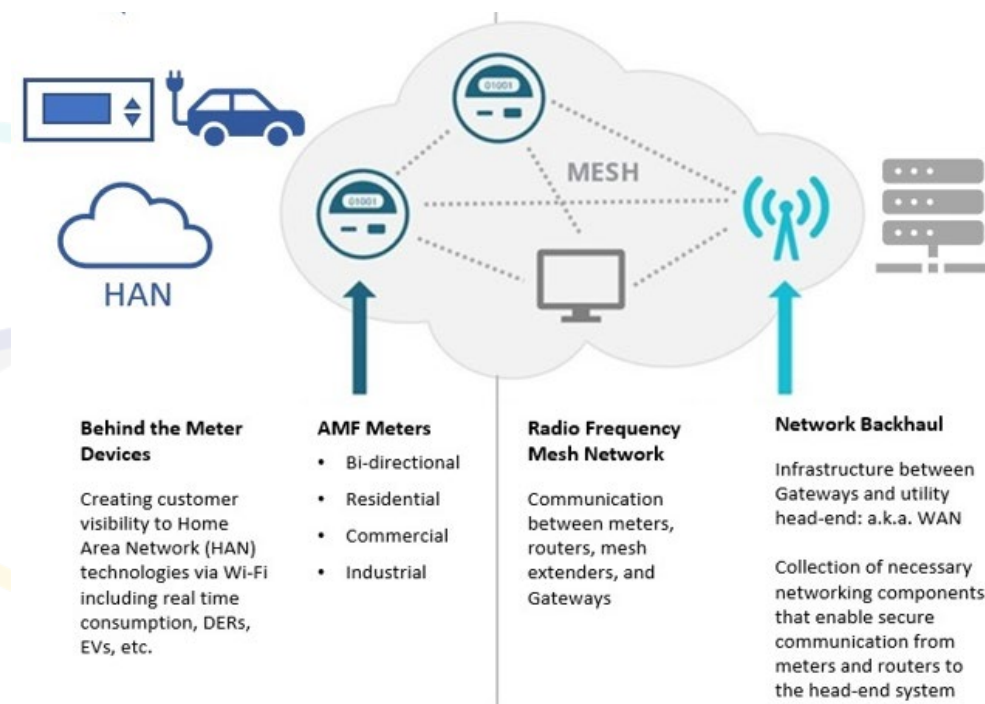


All RF-Mesh Network

- Successful all RF-Mesh deployment in Pennsylvania (1.4M meters)
- **Minimizes types** of meters **deployed** (operational efficiencies)
- Long technology lifecycle
- Will utilize a **cellular network as backhaul** unless RIE fiber is available, in which case it will be used.
- Dedicated utility-owned network

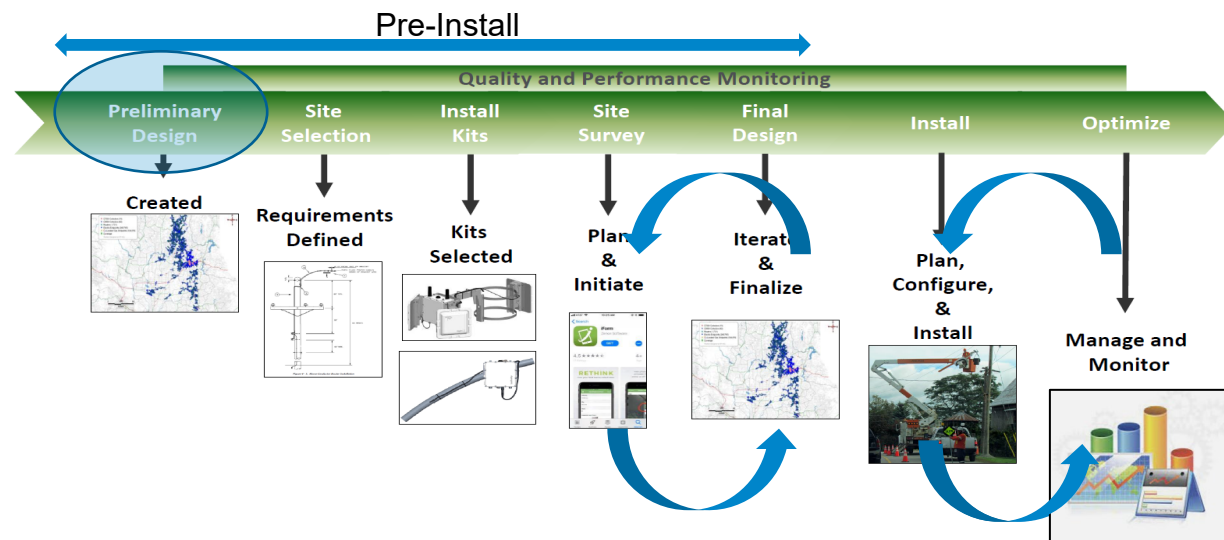
Alternatives evaluated:

- End-to-End Cellular
 - Meter cost more expensive
 - Short technology lifecycle, monthly recurring data plans
- Mesh to Fiber
 - Low amount of RIE fiber
 - High cost to deploy fiber
- Fiber to Home





Two-Way Communication Network Staging and Deployment



Preliminary RF Network Design Completed

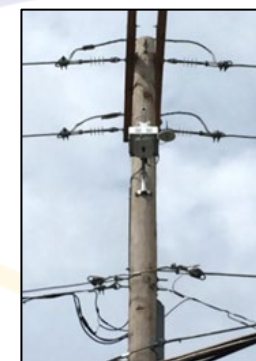
- Provides estimated count of network gateway hardware and potential locations
- Example design input parameters: meter location, pole/antenna heights, topography, land-use, and hop count

Substation / High-Capacity Network Gateways (~90)



- Communicates with 4000-6000 endpoints (meters)
- Multiple antennas
- Battery backup power
- Gateway from head-end system to RF Mesh

Pole-Mounted Network Equipment



Routers (~1060)

- Extends RF mesh coverage
- Small backup battery

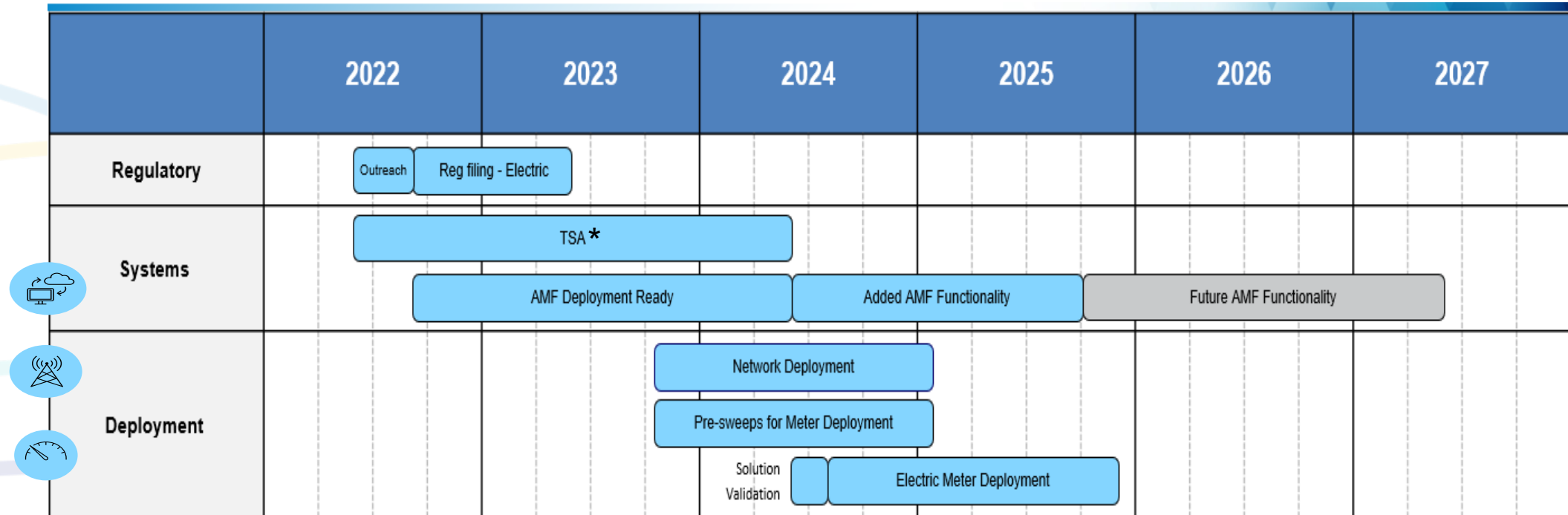


Network Gateways (~390)

- Communicates with ~2000 endpoints (meters)
- Gateway from head-end system to RF Mesh

AMF Deployment

AMF Deployment Schedule (3 ½ Years)



* TSA is the “Transition Service Agreement” where National Grid operates and maintains its back-office systems for RIE customers for up to two years after PPL closed on the transaction to acquire Narragansett Electric Company.

AMF Functionality Roadmap

“AMF Deploy Ready”		“AMF Enhancements from Meter Deployment Start”			Future
GROUP 1 & 2 (TSA Exit)		GROUP 3 (w/in 6 months)	GROUP 4 (w/in 12 months)	GROUP 5 (w/in 18 months)	GROUP 6 (future)
Remote (AMF) Meter Reading & Billing	Proactive Outage Mgmt. (Last Gasp / Power Up)	CP: Green Button Connect	ADMS: Voltage Conservation (Volt-Var Optimization)	ADMS-DER: Monitor & Mgmt Foundational	Load Disaggregation & Waveform Analytics
Remote Meter Configuration & Investigation	Remote Electric Connect & Disconnect	CP: Bill Alerts	ADMS: Voltage Automated Notification (Sag/Swell)	TVR Foundational – need Reg approval	Grid Edge Computing (writing applications to the meter)
Deployment Exchange Management Solution	CP: Customer Portal	CP: Customer Mobile App (Native Mobile App)	ADMS: On Demand Voltage Measurement (to ADMS)	CP: Distributed Generation “DG” Portal	CP: Streamlined Energy Efficiency & Demand Response Program Signup
AMO Data Driven Operations (routine measurement from devices including meters, routers, collectors, voltage)	Customer Outage Alerts	CP: Near Real-Time Customer Data Access	Network Model Analytics	CP: Carbon Footprint Calculator	Enable TVR – post Reg approval
Alerts & Alarms: High Temp		CP: In-Home Device Support	Theft Detection Analytics	CP: C&I and Multi-Family Portfolio View	

LEGEND

STANDARD FUNCTION

ADVANCED FUNCTION, FURTHER REVIEW NEEDED

● CSS DRIVEN

● CUSTOMER ENGAGEMENT DRIVEN

● OPS (ADMS/OMS) DRIVEN

AMF Functionality working definitions are included in the Appendix



Deployment by Sector

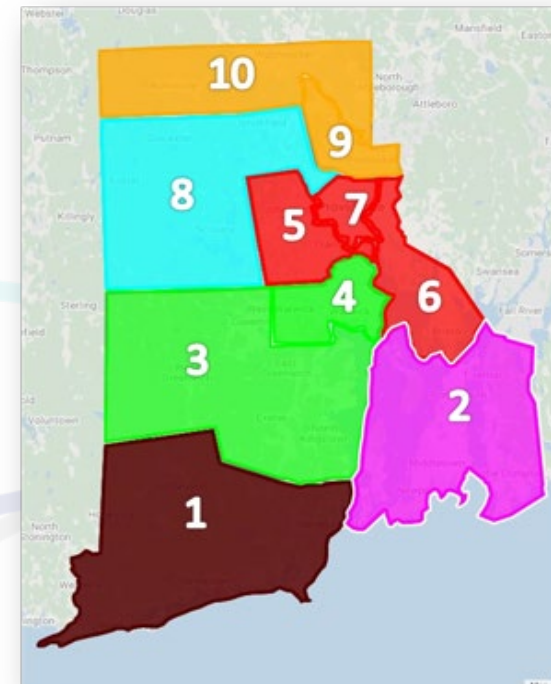


Rhode Island Energy™
a PPL company

Considerations for Deployment Sector Rollout:

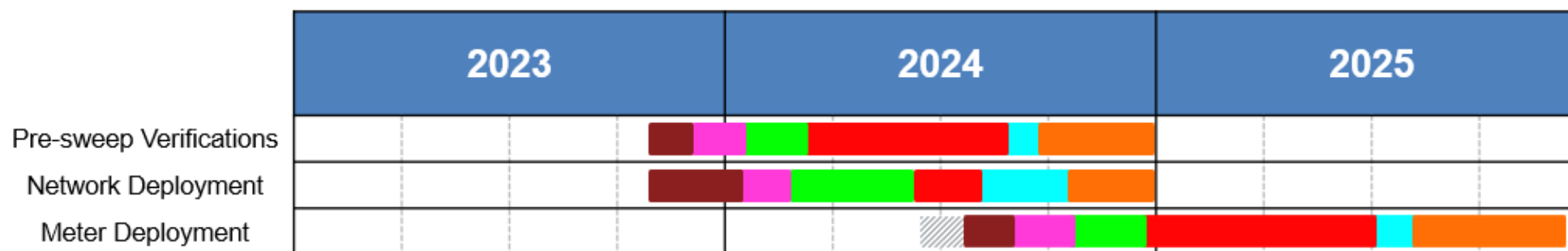
- Allows time to address hard-to-access indoor meter situations
- Homogenous mix of service and meter types at the start of the project
- Avoids heavily populated areas in the initial stages to reduce complexity
- Prioritizes higher density DER areas

Deployment Sectors



Sequence No.	Sector
1	Westerly
2	Middletown
3	North Kingstown - W
4	North Kingstown - E
5	Providence - W
6	Providence - E
7	Providence
8	Chopmist
9	Lincoln - E
10	Lincoln - W

Deployment Sector Schedule



= Solution Validation

AMF Reporting



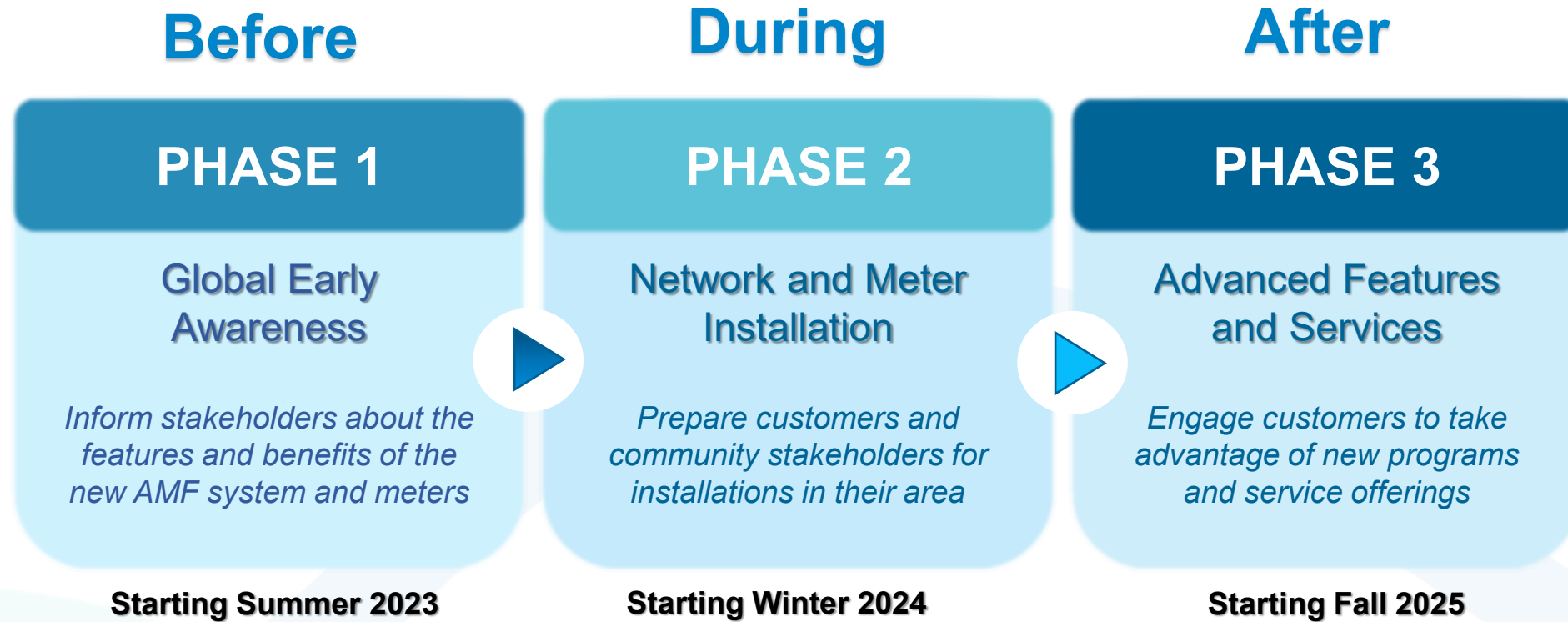
Rhode Island Energy™
a PPL company

- Suite of reporting metrics designed to provide a transparent assessment progress of AMF implementation in key areas
- Focus is on providing reporting metrics for three key areas:
 - Implementation
 - Customer
 - Operations
- AMF Program Report proposed to be provided at the end of the year with a mid-year project status update meeting

DRAFT Reporting Metrics

Benefit Category	Benefit Metric
Program Implementation	Major Project Release progress Progress of AMF Program Functionality Releases
	Meter Pre-Sweep Completions Counts of Completed Pre-Sweeps
	Network Deployment Counts of Completed Device Installs
	Meter Deployment Counts of Completed Exchanges
	Meter Base Repairs Counts of Meter Bases requiring repairs prior to meter exchange
	Sector Completion Sector Acceptance Status
	Program Spend Costs Breakdown Summary for key categories of the AMF Program
Customer	Customer Interactions Counts and reasons for customer contacts to the AMF Program
	Customer Portal Enrollments Counts of customers signing up for Customer Portal access
	Customer Surveys / Customer Satisfaction Breakdown of Customer Satisfaction survey results of AMF communication, access to information & FAQs, and issue resolution
	Customers Accessing Green Button Connect Data Counts of customers who have exported their Green Button Connect data
	Customers who Opt out of AMF meter Count of customers who have elected to Opt Out from receiving an AMF meter
Operations	Billing Read Rate Register meter reads expected vs. delivered
	Interval Read Rate Interval meter reads expected vs. delivered
	MDMS estimates sent to Billing Percentage of meters requiring estimates for billing
	Remote Switch Performance Percentage success rates of remote switches
	Last Gasp Alerting Percentage of Last Gasp alerts successfully delivered to the OMS (Outage Management System)
	VVO metric Number of feeders with AMF deployed that have implemented Volt Var Optimization

3 Phases of Customer Engagement



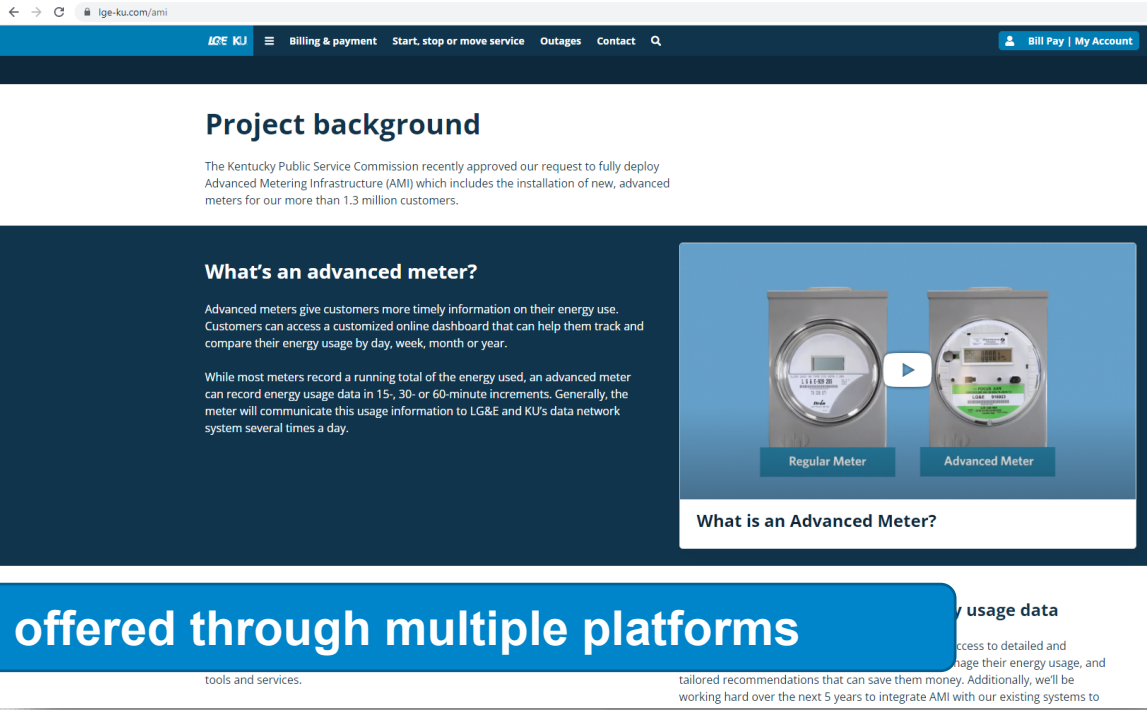
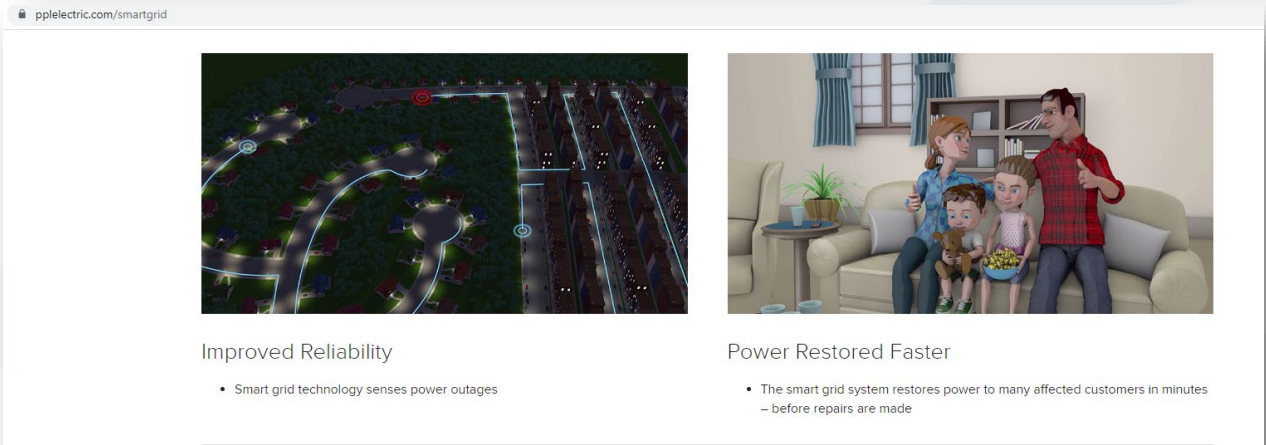
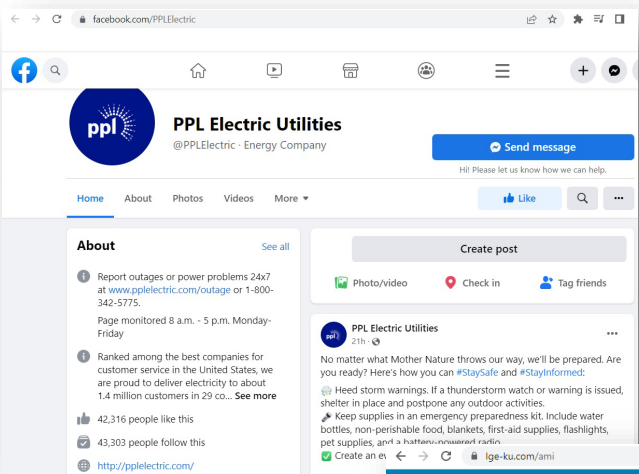
Communication Platforms



Rhode Island Energy™
a PPL company

Target Platforms:

- Website, Customer Portal & Social Media
- Direct Mail
- Email
- Phone
- Pamphlets, Door Hangers



Examples of PPL customer communications offered through multiple platforms

3 Key Components of the Customer Portal

Personalized Insights

- Ability to view current and historical energy usage in a graphical format
- Analytics - weather, price, and carbon intensity
- Bill education - how to review and analyze an energy bill
- Share billing and energy data with third parties via GBC

Tools

- Assists customers with their pricing plans and energy expenses through calculators, reporting, and forecasting
- Ability to set communication preferences for notifications related to energy usage, high-usage alerts, and future energy-related events (e.g., critical peak pricing events)

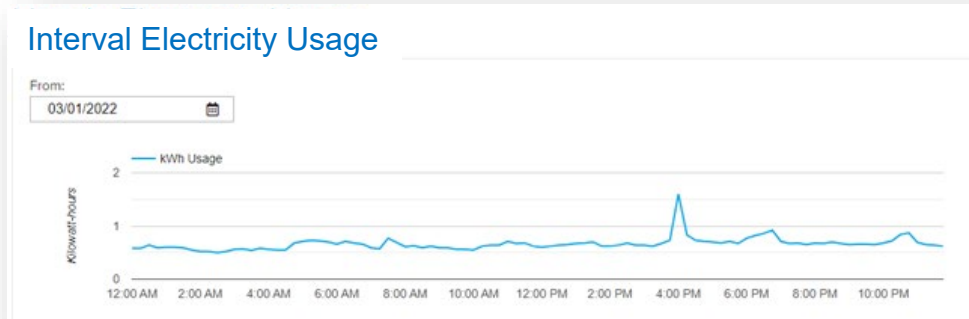
Integrated Customer Actions

- Empowers customers to take educated actions based on the personalized insights and tools within the Portal.
- Enrollment in demand response and energy efficiency programs
- Purchases from established marketplaces for energy-saving technologies

Customer Portal – Interval Usage Reporting

- Customer will have the ability to view interval usage data
- Energy analysis provide the ability to show trends
- Customer energy data can be exported at 15 min intervals

Customer hourly usage:



Data latency and availability

- 15-minute raw customer data will be available for viewing on the Customer Portal within 45 min
- Billing quality (VEE) data will be available within 24 hours
 - * **Raw data** – initial cut of meter data
 - * **VEE data** – data that has undergone Validation, Estimation, and Editing

15 minute customer data export:

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
Account Number	Meter Number	Date	Min	Max	Total	12:00 AM	12:15 AM	12:30 AM	12:45 AM	1:00 AM	1:15 AM	1:30 AM	1:45 AM	2:00 AM	2:15 AM	2:30 AM	2:45 AM	3:00 AM	3:15 AM	3:30 AM	3:45 AM	4:00 AM	4:15 AM
5782049026	301334557	07/26/2022	0.08	0.84	17.09	0.16	0.16	0.2	0.17	0.17	0.14	0.16	0.16	0.16	0.14	0.14	0.16	0.16	0.13	0.12	0.16	0.45	0.1
5782049026	301334557	07/25/2022	0.1	1.12	20.18	0.2	0.2	0.16	0.17	0.17	0.19	0.18	0.2	0.19	0.15	0.17	0.14	0.18	0.17	0.19	0.17	0.15	0.17
5782049026	301334557	07/24/2022	0.11	1.42	30.66	0.19	0.18	0.21	0.18	0.19	0.17	0.16	0.19	0.19	0.18	0.15	0.2	0.2	0.21	0.18	0.18	0.18	0.2
5782049026	301334557	07/23/2022	0.06	1.12	15.94	0.19	0.46	0.17	0.15	0.2	0.19	0.19	0.2	0.18	0.16	0.18	0.2	0.17	0.17	0.15	0.17	0.17	0.16
5782049026	301334557	07/22/2022	0.06	1.69	27.08	0.21	0.18	0.16	0.2	0.18	0.19	0.2	0.16	0.17	0.19	0.18	0.15	0.14	0.16	0.16	0.2	0.12	0.11
5782049026	301334557	07/21/2022	0.05	0.68	17.06	0.21	0.21	0.19	0.19	0.2	0.21	0.17	0.18	0.16	0.21	0.18	0.19	0.17	0.18	0.18	0.16	0.17	0.2
5782049026	301334557	07/20/2022	0.1	1.32	20.65	0.16	0.18	0.14	0.17	0.16	0.13	0.15	0.15	0.16	0.14	0.13	0.14	0.15	0.15	0.11	0.15	0.16	0.13
5782049026	301334557	07/19/2022	0.07	0.67	17.5	0.16	0.14	0.12	0.12	0.12	0.12	0.14	0.16	0.14	0.12	0.12	0.11	0.14	0.15	0.47	0.13	0.13	0.1
5782049026	301334557	07/18/2022	0.06	1.43	20.05	0.14	0.13	0.14	0.15	0.14	0.13	0.12	0.2	0.44	0.1	0.15	0.15	0.13	0.12	0.13	0.14	0.12	0.13
5782049026	301334557	07/17/2022	0.06	1.3	20.11	0.17	0.14	0.12	0.16	0.14	0.13	0.15	0.14	0.14	0.12	0.11	0.15	0.12	0.11	0.13	0.16	0.13	0.16
5782049026	301334557	07/16/2022	0.06	0.76	16.58	0.11	0.13	0.15	0.45	0.11	0.14	0.13	0.15	0.11	0.1	0.15	0.15	0.09	0.11	0.15	0.12	0.08	0.15
5782049026	301334557	07/15/2022	0.06	1.2	16.47	0.16	0.19	0.51	0.13	0.15	0.15	0.16	0.15	0.13	0.15	0.16	0.13	0.12	0.16	0.15	0.11	0.16	0.14
5782049026	301334557	07/14/2022	0.08	1.86	20.78	0.13	0.14	0.17	0.17	0.11	0.13	0.16	0.13	0.12	0.13	0.14	0.13	0.12	0.14	0.14	0.14	0.09	0.13
5782049026	301334557	07/13/2022	0.08	0.87	17.71	0.17	0.15	0.18	0.15	0.13	0.14	0.14	0.16	0.12	0.12	0.14	0.16	0.44	0.12	0.16	0.11	0.12	0.14
The information contained in this file is intended for the confidential use by the customer and third parties authorized by the customer to receive the information. Any unauthorized use is prohibited.																							

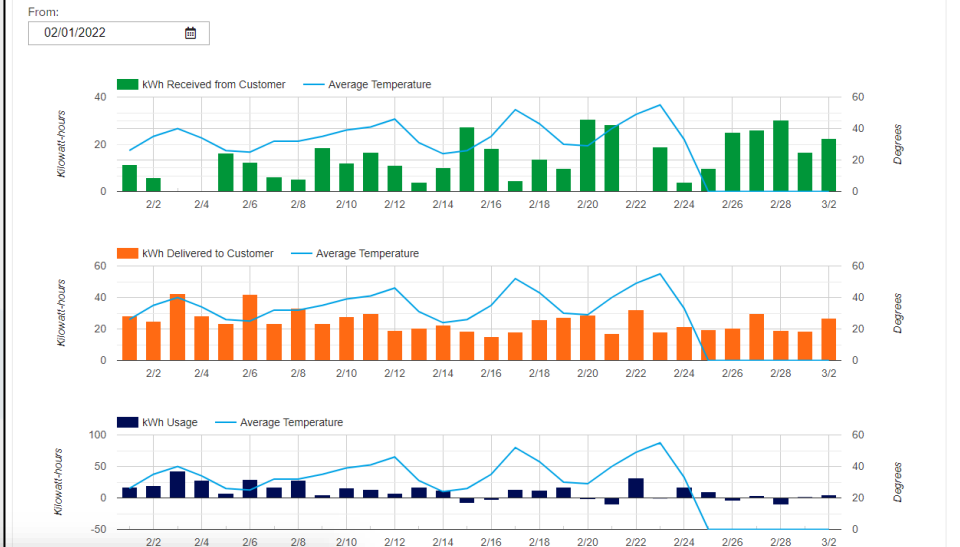
Net Metering Customers



Rhode Island Energy™
a PPL company

- Net Metering information will be available in the Customer Portal
- Customers will have visibility into Received, Delivered, and Net Usage channels
- Contact Center agent will have ability to see same data when working with customers
- Yields billing process efficiencies

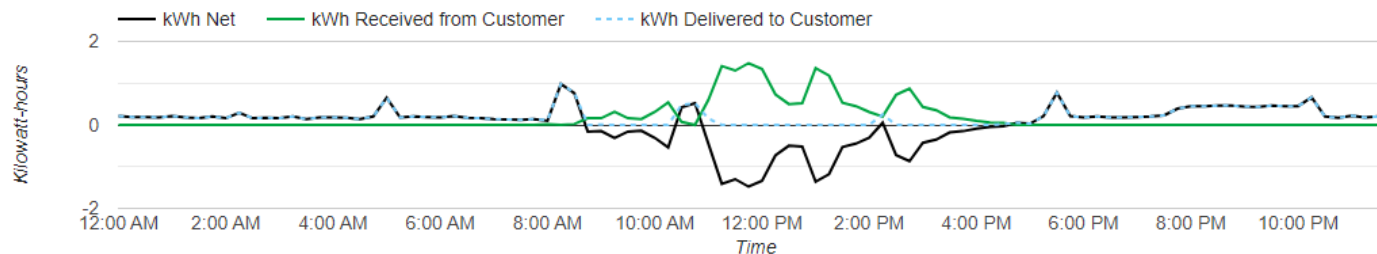
Daily Electricity Usage



Interval Electricity Usage

From:

03/01/2022



Supplier Portal



Rhode Island Energy™
a PPL company

Available for all Non-regulated Power Producers (NPPs) licensed in Rhode Island.

NPPs will be able to view their customers' metering and billing data including:

- Customer billing details
- Monthly usage – summary and interval
- Historical interval usage
- Load Profile
- Meter Constant

Additional Benefits

- Supplier management of Rate Ready offerings
- Ability to update contact information
- Visibility to EDI transaction lifecycles

The screenshot displays the 'Supplier Portal' interface. On the left, a 'Welcome!' sidebar shows the user 'e166067admin' with email 'jpysher@pplweb.com' and a 'Log Out' button. Below this is a 'Navigation' menu with options for 'GENERATION SUPPLIER' (View Bills) and 'RETAIL SUPPLIER' (Account Number Lookup, Account Status Lookup, Request Customer Bill, Request Monthly Usage, Request ICAP and NITS, Request Account Interval Usage, and Request Meter Interval Usage). The main content area is titled 'Request Meter Interval Usage' and shows a dropdown for 'Choose a Supplier' set to 'ADMINISTRATOR'. It displays account details for 'Account A1012345', 'Meter Number M1012345', 'Customer', 'Data Element Interval Usage (approved)', 'Multiplier 0', and 'Manufacturer Power Measurement'. A table of interval usage data is shown, with columns for Date and time intervals (12:00 AM to 2:15 AM) and rows for dates from 2014-07-05 to 2014-07-11. Buttons for 'Done' and 'Export to Excel' are also visible.

Date	12:00 AM	12:15 AM	12:30 AM	12:45 AM	1:00 AM	1:15 AM	1:30 AM	1:45 AM	2:00 AM	2:15 AM
2014-07-05	-10000	-9400	-9300	-8700	-7500	-7200	-7200	-7100	-7400	-7500
2014-07-06	-11300	-11400	-11200	-11300	-11000	-11200	-11400	-10300	-9000	-9300
2014-07-07	-8300	-8800	-8800	-9100	-9800	-10500	-10400	-11200	-12000	-11500
2014-07-08	2100	2600	2100	600	0	-200	-1600	-900	-500	-1000
2014-07-09	-2300	-1900	-2400	-2100	-2400	-2900	-3600	-4400	-3800	-4100
2014-07-10	-5100	-5500	-5800	-5800	-6600	-6600	-7000	-7800	-8400	-8000
2014-07-11	-8800	-9200	-9200	-9700	-10000	-10700	-11200	-10500	-10400	-10800

Customer Engagement Plan – Meter Opt-Out

- RIE Customers will be able to Opt-out from receiving an AMF meter
- Full adoption is the goal: awareness and education will be provided
- Customers who Opt-out of an AMF meter will be subject to charges
- For those customers who Opt-Out, the Company will continue to provide information on AMF
- AMF Business Case assumes 1% Opt-Out based upon benchmarking results

AMF Opt-Out



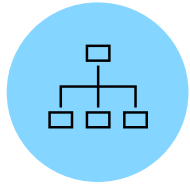
PPL Data Governance Plan

- Defines pertinent policies addressing data privacy, data governance, information classification, and Cybersecurity and enterprise security standards
- Supports critical infrastructure and vital business functions including AMF
- Framework includes a comprehensive set of principles and standards:
 - ✓ Data Governance Policy
 - ✓ PPL Standards of Integrity
 - ✓ PPL Responsible Behavior Program
 - ✓ Information Security
 - ✓ Information Classification and Handling
 - ✓ Electronic Information Security
 - ✓ Records Management
 - ✓ PPL Cybersecurity Policy
 - ✓ PPL FERC Standards of Conduct
 - ✓ PPL Enterprise Information Security Policy
 - ✓ Data Security Standard
- Designed to ensure the data generated by the Company and through its AMF:
 - Collected, managed, stored, transferred, and protected in a way that preserves customer privacy
 - Practices are consistent with cybersecurity requirements
 - Facilitates access to further operational requirements
 - Enables grid modernization and clean energy objectives
- AMF Security and Data Privacy review is planned to identify where further alignment is needed

AMF Cost Review



Rhode Island Energy™
a PPL company



Overview



Meter

- ⊞ Hardware
- ⊞ Installs
- ⊞ Pre-Sweeps
- ⊞ Program Management
- ⊞ Repairs



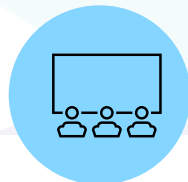
Network

- ⊞ Hardware
- ⊞ Installs
- ⊞ Program Management
- ⊞ Steady State Operations



Systems

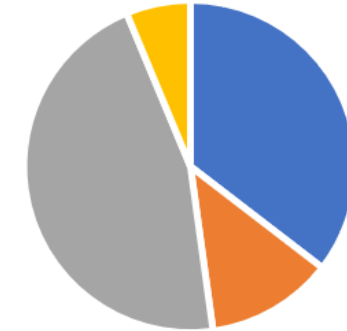
- ⊞ ADMS & OMS
- ⊞ Analytics
- ⊞ CSS
- ⊞ Customer Engagement
- ⊞ CyberSecurity
- ⊞ Deployment Exchange Mgt.
- ⊞ Grid Edge & Load Dissag.
- ⊞ Headend
- ⊞ MDMS
- ⊞ Middleware
- ⊞ Program Management
- ⊞ Steady State Operations



Program

- ⊞ Change Management
- ⊞ Program Management

AMF 20-Year Nominal Cost
\$288.52M*



AMF 20-Year NPV
\$189.64M*



■ Meter ■ Network ■ Systems ■ Program

* Compared to NG of \$289.35 nominal and 192.60 NPV

Benefits and costs

AMF Benefit Components

AMF 20-Year Nominal Benefit = \$1,117.1M

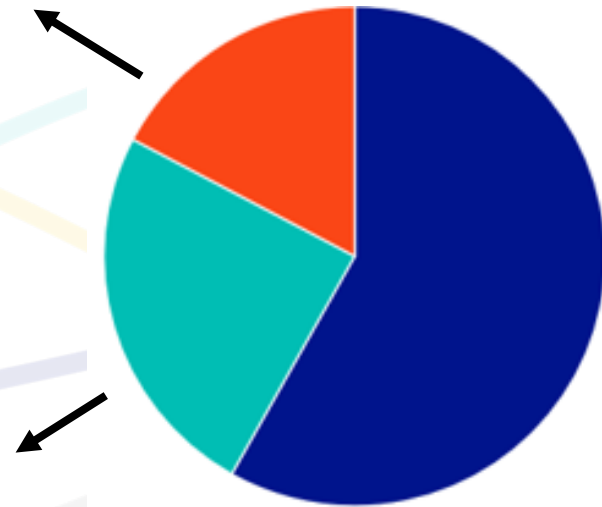
AMF 20-Year NPV Benefit = \$734.6M

Societal Benefits

- Non-Embedded CO2 Benefits
- Non-Embedded NOx Benefits
- Public Health Benefits
- Cross-DRIPE Benefits

Direct Customer Benefits

- Energy Insights Electric Bill Savings
- Faster Outage Notification Savings



Utility Benefits

- Avoided AMR Costs
- Avoided Personnel
- Energy Cost Savings
- Capacity Cost Savings
- Transmission Cost Savings
- Distribution Cost Savings
- DRIPE Benefits
- Monetized CO2 Benefits

Complies with Docket 4600 requirements

AMF Benefits by Program



Rhode Island Energy™
a PPL company

AMF Benefits - August 1, 2022
NPV (\$M) ➡ \$734.6



	Benefit Program
1	Direct Customer Benefits
2	Avoided AMR & Sensor Utility Costs
3	Energy Insights Savings
4	VVO/CVR Benefits
5	EV/TVR Benefits
6	Whole House TOU/CPP

1 Direct Customer Benefits



Rhode Island Energy™
a PPL company

The RIE Direct Customer benefits for RIE are higher than those calculated by National Grid because RIE included two significant benefits that were not quantified in the NG 2021 BCA.

- Energy Insights
 - Electric reductions of 1.5% by participating customers
 - Included energy savings in Utility savings
 - Remainder of the savings applied as Electric Bill Reductions
- Faster Outage Notification
 - 22-minute reduction in overall customer outage time
 - Used ICE calculator to estimate savings per customer group
 - Applied savings/customer group to customers in RIE

AMF Benefits - August 1, 2022
NPV (\$M) ➔ \$734.6



2 Avoided Utility Costs



Rhode Island Energy™
a PPL company

Avoided utility costs primarily come from avoiding the expense of replacing the AMR metering system, avoiding voltage sensors that are needed for increased visibility and to implement VVO, and utility efficiencies

- The existing AMR system needs to be replaced. By proceeding with AMF, this expense is avoided.
- 50-75% of the voltage sensors for Volt/Var optimization are avoided due to AMF inputs.
- Utility efficiencies were estimated by reviewing National Grid assumptions and making adjustments after factoring in PPL experiences

AMF Benefits - August 1, 2022
NPV (\$M) ➔ \$734.6



3 Energy Insights Savings



Rhode Island Energy™
a PPL company

Assumed that customers who have near real-time electricity usage information will reduce that usage, particularly as phone apps are developed making more sophisticated energy information available with time.

BCA based upon:

- 1.5% energy savings for participating customers
- 50% of residential customers participating
- 25% of commercial customers participating
- AESC 2021 for avoided costs except for DRIPE and Cross DRIPE benefits

RIE will experience fuel savings as a result of these reductions, and the customers will save on their electricity bills. The amount that customers would save on their bills was included in Direct Customer Benefits after subtracting out the RIE's energy cost savings.

AMF Benefits - August 1, 2022
NPV (\$M) ➔ \$734.6



4 Volt VAR Optimization and CVR Benefits



Rhode Island Energy™
a PPL company

- Meters produce accurate voltage readings at the customer service delivery points
- Visibility of voltage provided by the meters enhances the ability for voltage conservation to reduce demand and energy use through conservation voltage reduction (CVR). The advanced Volt-VAR Optimization (VVO) control schemes coordinate multiple voltage regulating devices that will be located on a circuit via Grid Mod investments to achieve optimal voltage performance.
- The BCA assumed:
 - 0.5% energy savings on feeders with CVR
 - 0.165% capacity savings
 - AESC 2021 avoided costs for energy, capacity, non-embedded CO2, monetized CO2, NOx, Public Health, transmission and distribution
 - National Grid values for DRIPE and Cross-DRIPE benefits

AMF Benefits - August 1, 2022
NPV (\$M) ➔ \$734.6



5 EV / TVR Benefits



Rhode Island Energy™
a PPL company

AMF provides functionality to implement Time Varying Rates (TVR) in the future if approved through a separate proceeding.

The following assumptions were used to calculate the benefits from TVR for Electric Vehicles (EVs):

- Number of EVs were forecast to meet 2040 goal of 80% GHG reduction
- Assumed TVR was Opt-In with 20% EV owners participating
- Used AESC 2021 avoided costs for energy, capacity, non-embedded CO2, monetized CO2, NOx, Public Health, transmission and distribution
- Applied National Grid values for DRIPE and Cross-DRIPE benefits
- Assumed the peak savings increase from 28% to 60% over course of analysis

AMF Benefits - August 1, 2022
NPV (\$M) ➔ \$734.6



6 Whole House TOU / Critical Peak Pricing



Rhode Island Energy™
a PPL company

- RIE analyzed a whole house TOU/CPP with Opt-In and Opt-Out approach. Participation is significantly different with the two approaches: 20% of eligible customers will participate in Opt-In while 85% of the eligible customers will participate in Opt-Out.
- Both groups ultimately reduce their peaks by the same amount
- RIE took the most conservative scenario for this BCA that includes 20% of customers participate as Opt-In utilizing the following assumptions:
 - Capacity savings = 20% of residential peak for CPP
 - Energy shift: Averaged National Grid values for low and high, Opt-In
 - Applied Transmission & distribution avoided cost values from AESC 2021 report
 - Utilized National Grid values CO₂, NO_x, Public Health, DRIPE and cross-DRIPE benefits

AMF Benefits - August 1, 2022
NPV (\$M) → \$734.6

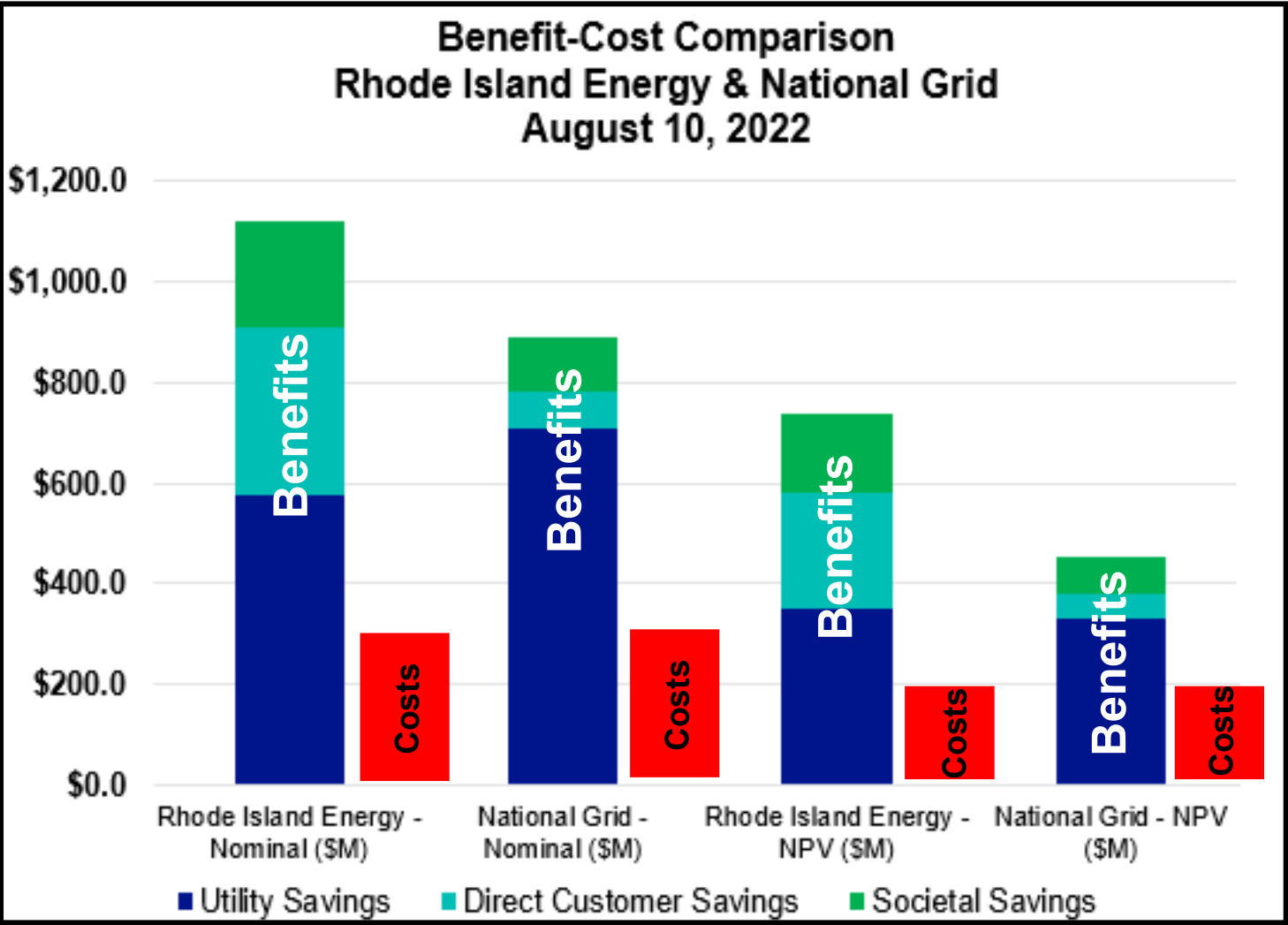


Benefits & Costs: Comparison to National Grid



Rhode Island Energy™

a PPL company



Nominal (\$M)	RIE	NG
Utility Savings	\$ 574.8	\$ 708.89
Direct Customer Savings	\$ 331.9	\$ 70.77
Societal Savings	\$ 210.4	\$ 109.73
Total Savings	\$ 1,117.1	\$ 889.4
AMF Costs	\$ 288.7	\$ 289.4
Benefit / Cost Ratio	3.9	3.1

NPV (\$M)	RIE	NG
Utility Savings	\$ 352.4	\$ 333.50
Direct Customer Savings	\$ 225.5	\$ 48.46
Societal Savings	\$ 156.7	\$ 72.90
Total Savings	\$ 734.6	\$ 454.9
AMF Costs	\$ 189.6	\$ 192.6
Benefit / Cost Ratio	3.9	2.4

BCA ratio 3.9. Sensitivities are all positive. AMF Business Case assumptions are conservative.

Revenue Requirements

- Total revenue requirement for 20 years is approximately \$320m*
 - Comprised of incremental AMF related capital in-service and O&M costs
 - Reduced for costs already recovered in base rates
 - Reduced to credit customers with 80% of projected AMF-driven operational cost savings until reflected in the next base rate case (similar to NG proposal)
- Modeled over 20 years, peak year of revenue requirement is expected to be year 4 of cost recovery, declines after that
- Customer allocation consistent with methodology approved in last distribution base rate case (Docket No. 4770)

* Based on preliminary numbers

Pricing and Customer Considerations

Pricing Considerations:

- Amended Settlement Agreement (Docket No. 4770) provides for reopening for AMF cost recovery
- Consideration is being given to an alternative proposal to establish a separate AMF factor (per-kWh volumetric)
 - Price based on revenue requirement using historical costs (actual dollars spent)
 - Change price every ~6 months
 - Roll then current rate base into next distribution base rate case

Potential Benefits to Customers from Proposal:

- Pays only for what the company has already spent or placed in-service
- Given a longer time before a distribution base rate case, customers could receive the operational cost savings timely through pricing mechanism if savings realized quicker or more than forecast
- As spend decreases, customer will see a decrease in the factor
- Smaller (though more frequent) price changes for customers

Updated AMF Comparison: RIE and National Grid

Similarities

- Deployment period of 3 ½ years
- Fixed IP-based RF mesh communication system
- Full-scale technical solution
- AMF Opt-out assumption 1%
- Alternative business analysis
- Used the NG BCA framework applying Docket 4600 requirements
- Customer Engagement Plan
- Data latency assumptions
- Assumptions designed to meet clean energy goals
- TVR assumed in a separate filing

Differences

- Broader interpretation of AMF as enabling platform
- More robust, future-proofed communication system
- Cellular communications is not needed for meters
- Meter unit costs are slightly higher than the NG filing
- More functionality, sooner, leveraging prior PPL integration and experience
- Added pre-sweeps as a deployment activity
- Update meter bases where needed
- More operational savings with PPL business impacts
- Quantification of reduced time for outage notification and customer savings from energy insight
- Used AESC 2021 report rather than 2018 report
- VVO saves .5% energy savings
- TVR used Opt-In values for Whole House and EV

AMF Enables the GMP: Coordinated Business Plans

AMF enables GMP:

- Granular interval data
- Voltage data
- Remote connect / disconnect
- Automatic notification of outages
- Interaction with customers and in-home technologies
- Remote configuration

GMP Outcomes:

- Fault location, isolation and automatic restoration
- Improved outage restore process
- Safety and operational efficiencies
- Improved power quality
- Volt / Var optimization
- Increased hosting capacity
- Dynamic pricing to incent behaviors
- Demand response
- DER visibility and management
- Greater DER interconnection flexibility

AMF and GMP business plans coordinate benefit and timing assumptions

Rhode Island Stakeholder Collaboration

PST Advisory AMF & GMP Subcommittee Meetings and Preliminary Agendas

Stakeholder Collaboration (i.e., Subcommittee meetings and discussions)

Obtain Feedback and Seek Alignment on Proposals and Approaches

Review Initial, Refined and Final Proposals

Jun 21, 2022

- RI Division and OER Meeting
- Introductions
- Proposed timeline
- Preliminary agenda for PST meetings
- AMF Introduction and overview of key areas
- GMP Introduction and coordination

July 14, 2022

- PST Advisory Meeting
- Introductions
- PPL Background and Experience
- Full Scale Enabling Platform
- Detailed Deployment Plan
- Functionality Timing
- ASA coverage
- AMF cost review
- GMP study scope and approach
- GMP forecast analysis

Aug 2, 2022

- PST Advisory Meeting
- Prior meeting will drive agenda
- AMF Customer Engagement Plan
- AMF Opt-out
- AMF Customer value streams
- AMF Auto-notification
- AMF Benefits

Aug 16, 2022

- PST Advisory Meeting
- Prior meeting will drive agenda
- AMF Data access, privacy, governance
- AMF Cyber Security
- AMF Cost and Benefit Recap
- Cost Recovery and Revenue Requirements
- GMP scenario analysis
- GMP solution development
- GMP ISR Coordination plans

Sept 1, 2022

- PUC Technical Session

September 2022 ★

- File AMF
- AMF Includes Business Case, Testimonies and BCA
- Coordinate with GMP execution plan and BCA

w/o Oct 20, 2022

- PST Advisory Meeting
- Prior meeting will drive agenda
- GMP Alternative recommendation
- GMP BCA review

December 2022 ★

- File GMP
- GMP Includes Business Case, Testimonies and BCA
- Coordinate with ISR and AMF details

AMF – Advanced Metering Functionality
GMP – Grid Modernization Plan
BCA – Benefit-Cost Analysis

★ **September 2022**

AMF Targeted Filing Date

★ **December 2022**

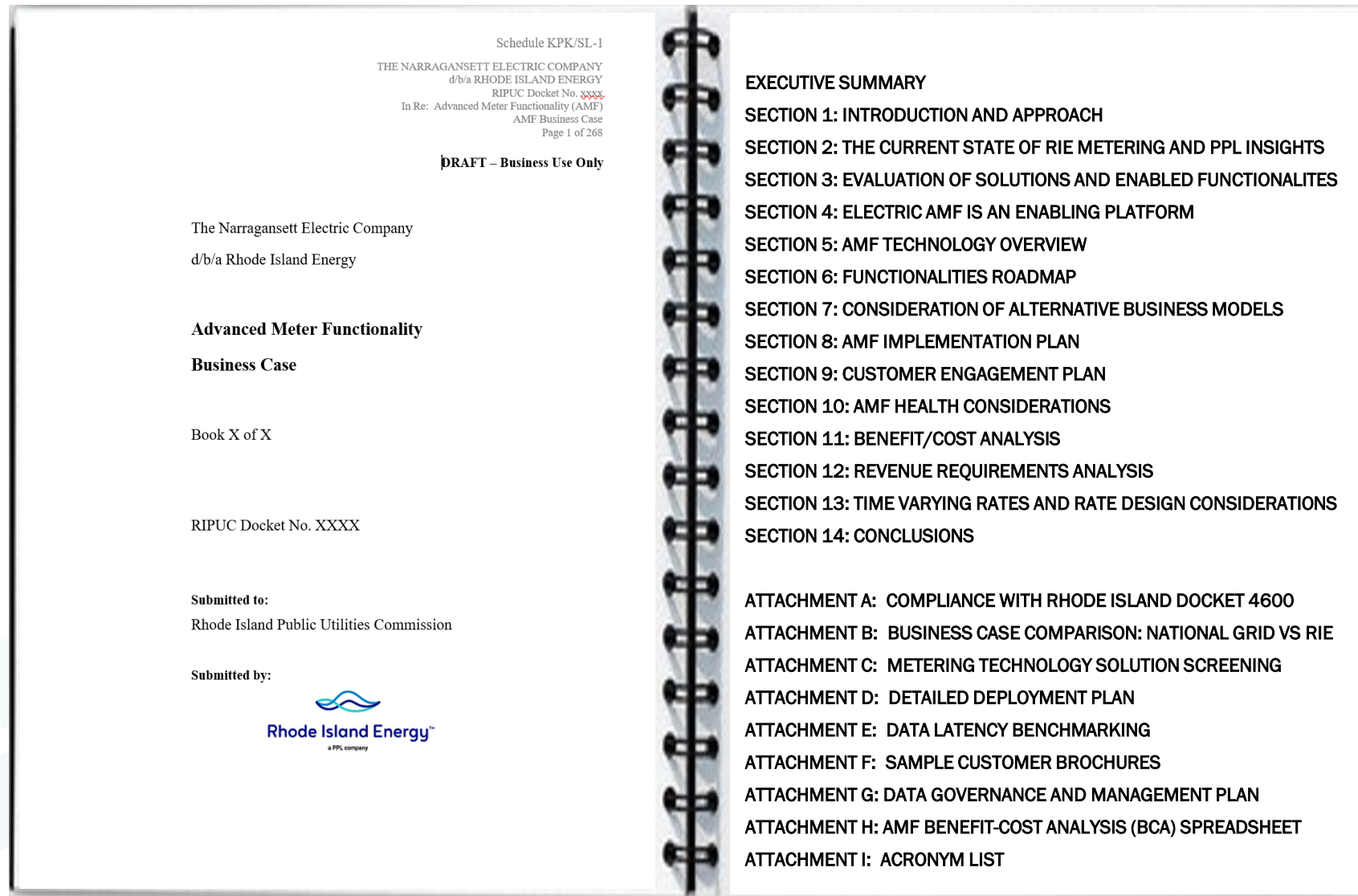
GMP Targeted Filing Date

- Initial alignment meeting with RI Division and OER
- PST Advisory Sub-Committee Meeting AMF
- PST Advisory Sub-Committee Meeting GMP
- PUC Technical Session

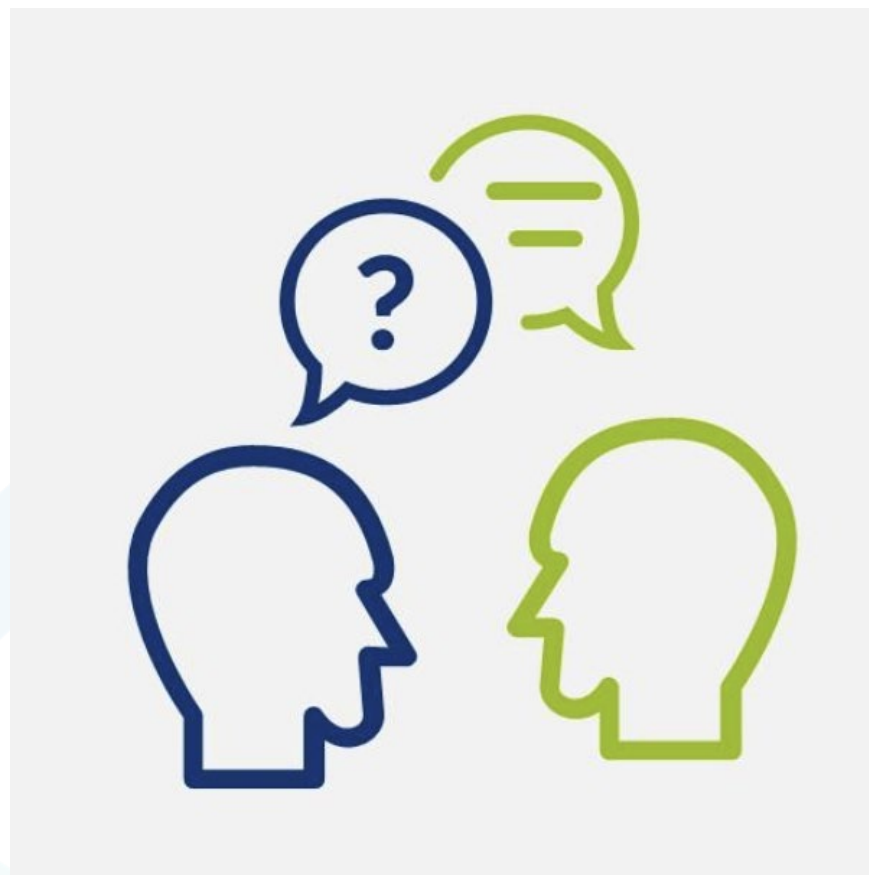
Incorporate Feedback into the AMF Business Case and File



Rhode Island Energy™
a PPL company



Discussion and Next Steps





Rhode Island Energy™
a PPL company



Appendix

Functionality Available at TSA Exit

AMR or AMF Functionality	Working Definition
Remote (AMF) Meter Reading & Billing	Reading and billing interval energy usage at standard latency using AMI meters.
Remote Meter Configuration & Investigation	Remote "over-the-air" firmware and software updates & investigation of meter malfunctions. Proactively enabled energy data analytics and reactively enabled by alerts and alarming
Deployment Exchange Management Solution	The Meter Deployment Vendor solution (TBD) to status and update the accounts that have been exchanged as part of the AMF deployment. Traditionally this involves exchanging of a "Population file" and synchronizing with the customer system and other asset systems to reflect the newly installed AMF meter.
AMO Data Driven Operations	Implementation of operational dashboards to manage and facilitate the Smart Grid Network and associated endpoints. For example, population configuration management, population firmware levels, installed endpoint inventory, reading percentages, interval completeness, and overall network health.
Alerts & Alarms: High Temp	Alerting & Alarming - Alerting when configurable internal temperature is reached and sending to work management system for disposition
Proactive Outage Management (Last Gasp / Power-up)	Alerting operations when meter experiences an outage, or power is restored via the OMS system.
Remote Electric Connect & Disconnect	Activation of remote electric meter switch to turn on/off service; meter tamper alerts and usage analytics.
CP: Customer Portal	Customer-facing usage data availability, usage analytics, normative comparisons, and other data-driven customer experience features. Provide omni-channel access and continuous improvement through an agile and iterative development approach that incorporates on-going customer experience updates.
Customer Outage Alerts	Proactive communication of outages identified in the OMS system to customers.

Enhanced Functionality During Meter Deployment

AMR or AMF Functionality	Working Definition
CP: Green Button Connect	Enables customers to provide for the automated transfer of customer energy usage data at standard latency to authorized third parties.
CP - Bill Alerts	Alerts for variety of customer needs. Examples include projected high-bill (consumption and/or costs), prediction of peak demand or usage, and customizable threshold alert at various points during a billing period.
CP: Customer Mobile App (Native Mobile App, IHD)	Extension of the customer portal to a native Android/iOS mobile application.
CP: Near Real-Time Customer Data Access	Availability of near real-time raw usage data through the customer portal. This allows 15-minute electrical raw usage data, available within 45 minutes, updated with bill quality data within 24 hours.
CP: In-Home Device Support	Enable communications between a customer owned In Home Device and the AMF meter
ADMS: Voltage Conservation (Volt-Var Optimization)	Providing interval meter voltage and reactive power data to the ADMS to support conservation voltage reduction (CVR) and Volt-Var Optimization (VVO). This also includes new ADMS functionality to implement CVR and VVO.
ADMS: Voltage Automated Notification (Sag/Swell)	Configurable real-time alert for momentary under or over voltage on a meter, integrated to ADMS for immediate action.
ADMS: On Demand Voltage Measurement (to ADMS)	ADMS function to ping networked electric devices and meters for voltage measurements.
ADMS-DER: Monitor & Management	Monitor & management of distributed energy resource (DER) inverter-based infrastructure (<u>i.e.</u> battery banks, solar PV, net-meters).

Enhanced Functionality During Meter Deployment – Cont'd

AMR or AMF Functionality	Working Definition
Network Model Analytics	MDMS functionality to support analysis of the network, identifying outlier issues for investigation (i.e. circuits missing a meter, mis-associated meters).
Theft Detection Analytics	MDMS functionality to identify outlier patterns and settlement issues that indicate potential energy theft.
CP: Distributed Generation “DG” Portal	Customer portal functionality that creates an integrated marketplace for customer research of solar PV adoption, A customer completes an online survey/audit and numerous estimates are provided for customer's review and subsequent selection of options from qualified <u>thirdparty</u> service providers/installers.
CP: Carbon Footprint Calculator	Customer portal functionality that creates an ability for customers to calculate carbon footprint based on usage data and actions to better manage usage.
CP: C&I and Multi-Family Portfolio View	Customer portal functionality that enables (1) a portfolio view of C&I facilities as well as properties for multifamily unit owners and managers, (2) search/sort, aggregate data and insights, assist with evaluation, measurement, and verification (“EM&V”), and (3) usage normalization on variables such as production, sq. ft., occupancy, weather.

Future Functionality

AMR or AMF Functionality	Working Definition
CP: Streamlined Energy Efficiency & Demand Response Program Signup	Reduce program marketing spend by targeting customers who are eligible, have a higher probability of participating, and represent the highest potential load shed or shift based on specific consumption. Outreach and communications costs can be reduced by utilizing personalized channels, rather than mass marketing efforts.
Time Varying Rates (TVR) Foundational	Interval meter data with VEE integrated to billing systems and billing system functionality to support Time Variable Rate billing.
Load Disaggregation & Waveform Analytics	Provide a breakdown of electricity consumption by appliance or end-use for educational purposes and/or recommended actions to save, available through the customer portal. Meter waveform data from a representative sample of bellwether meters for general analytics use.
Grid Edge Computing (writing applications to the meter)	Metering platform for customer- and grid-facing software applications at the meter.
Enabled Time Varying Rates ("TVR")	Customer engagement and approved regulatory framework to support Time Variable Rate billing options to customers.

Acronyms



Rhode Island Energy™

a PPL company

- ADMS = Advanced Distribution Management System
- AESC = Avoided Energy Supply Cost
- AMF = Advanced Meter Functionality
- AMI = Advanced Meter Infrastructure
- AMR = Automatic Meter Reading
- ASA = Amended Settlement Agreement
- ASHP = Air Source Heat Pump
- BAU = Business as Usual
- BCA = Benefit Cost Analysis
- C&I = Commercial and Industrial
- CEP = Customer Engagement Plan
- CGR = Connected Grid Router
- CO2 = Carbon Dioxide
- CP = Customer Portal
- CPP = Critical Peak Pricing
- D = Distribution
- DCFC = Direct Current Fast Charging
- DER = Distributed Energy Resource
- DERMS = Distributed Energy Resource Management System
- DG = Distributed Generation
- DLM = Dynamic Load Management
- DPAM = Distribution Planning & Asset Management
- DPL = Dayton Power and Light
- DR = Demand Response
- DRIPE = Demand Reduction Induced Price Effect
- DSCADA = Distributed Supervisory Control and Data Acquisition
- EC4 = Executive Climate Change Coordinating Council
- EE = Energy Efficiency
- EDI = Electronic Data Interchange
- EHP = Electric Heat Pump
- EIA = Energy Information Administration
- EPO = Energy Profiler Online
- ESB = Enterprise Service Bus
- EV = Electric Vehicle
- FAN = Field Area Network
- FLISR = Fault Location Isolation and Service Restoration
- GBC = Green Button Connect
- GBD = Green Button Download my data
- GHG = Greenhouse Gas
- GIS = Geographical Information Systems
- GMP = Grid Modernization Plan
- HAN = Home Area Network
- HCA = Hosting Capacity Analysis
- HES = Head End System
- HVAC = Heating, Ventilation, and Air Conditioning
- ICAP = Installed Capacity
- ICE = Interruption Cost Estimate
- IoT = Internet of Things
- IP = Internet Protocol
- ISA = Interconnection Service Agreement
- ISO NE = Independent System Operator New England
- IT = Information Technology
- KY = Kentucky
- LDV = Light Duty Vehicle
- LVA = Locational Value Analysis
- MA = Massachusetts
- MDM = Meter Data Management
- MV/LV = Medium Voltage/Low Voltage
- NEM = Net Energy Metering
- NMPC = Niagara Mohawk Power Corporation
- NPP = Non-Regulated Power Producer
- NY = New York
- NWA = Non-Wires Alternative
- OER = RI Office of Energy Resources
- OMS = Outage Management Systems
- PA = Pennsylvania
- PBR = Performance-Based Regulation
- PI Historian = Plant Information Historian
- PIM = Performance Incentive Mechanism
- PLC = Power-Line Communication
- PPL = Pennsylvania Power and Light
- PSE&G = Public Service Electric & Gas
- PSR = Platform Service Revenue
- PST = Power Sector Transformation
- PUC = Public Utilities Commission
- PV = Photovoltaic
- REC = Renewable Energy Credit
- REV = Reforming the Energy Vision
- RF = Radio Frequency
- RGGI = Regional Greenhouse Gas Initiative
- RI = Rhode Island
- RIE = Rhode Island Energy
- RMD = Residential Methane Detector
- RTP = Real Time Pricing
- RTU = Remote Terminal Unit
- SaaS = Software as a System
- SCT = Societal Cost Test
- SME = Subject Matter Expert
- ToC = Table of Contents
- TOU = Time Of Use
- TSA = Transition Service Agreement
- TVR = Time Varying Rate
- VDER = Value of Distributed Energy Resources
- VMT = Vehicle Miles Traveled
- VPP = Variable Peak Pricing
- VVO/CVR = Volt-Var Optimization/Conservation Voltage Reduction
- WACC = Weighted Average Cost of Capital



Rhode Island Energy™
a PPL company



Rhode Island Energy AMF Workshop Follow-Up

October 14, 2022

Follow Up Items From 9/1/2022 AMF Workshop

- A request was made by Chairman Gerwatowski to provide the link to the LG&E KU AMF Website link [**slide 3**]
- A request was made by Chairman Gerwatowski to provide access to the Pennsylvania portals. The data in the portals is actual customer data, which Rhode Island Energy/PPL treats as confidential for privacy reasons; therefore, in lieu of access to the portals, Rhode Island Energy is providing additional screen shots to further illustrate the functionality in these portals. [**slides 4 - 13**]
 - Customer Portal [**slides 4 - 11**]
 - Supplier Portal [**slides 12, 13**]
- A question was asked by Commissioner Anthony on how the replacement of existing test meters would impact RIE's ability to perform the Load Research function. A clarification has been provided. [**slide 14**]
- A slide was presented on the Energy Insights Savings benefits, and it incorrectly stated that the customer would "experience fuel savings". A correction has been made to indicate 'Electricity Market cost savings': [**slide 15**]
- A clarification was requested by John Bell, Division on the meter channels that will be available on AMF meters for net metering customers. Revised definitions on kWh Delivered, kWh Received, and kWh Net have been provided. [**slide 16**]

LG&E KU AMI Website

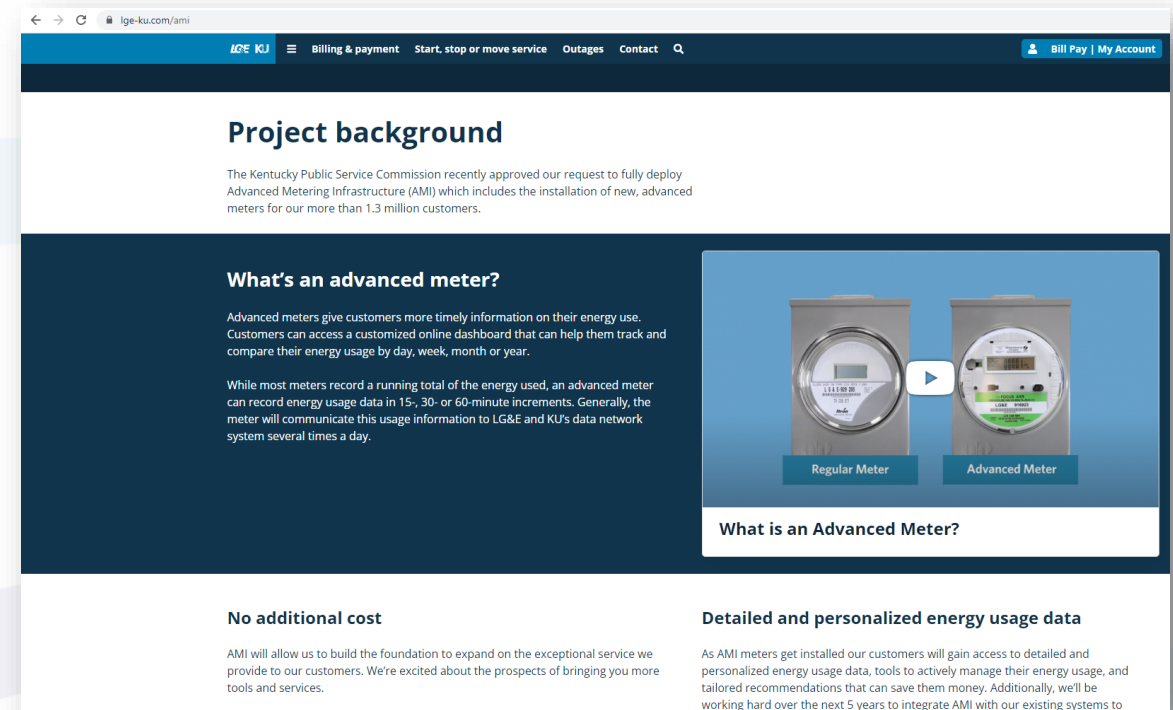


Rhode Island Energy™
a PPL company

A link to the KU Smart Meter Portal as requested by Chairman Gerwatowski

Link: <https://lge-ku.com/meter-upgrade>

- The LG&E KU Smart Meter webpage builds off of PA's Meter Rollout website by providing more concise program information for customers including the following program details:
 - Meter Upgrade Impact map
 - “My Meter Dashboard” Features and Benefits Videos
 - FAQ section to answer common questions about Smart Meters



PA Customer Portal

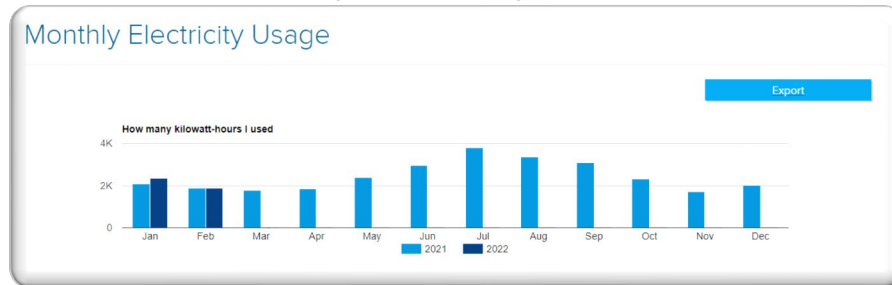


Rhode Island Energy™
a PPL company

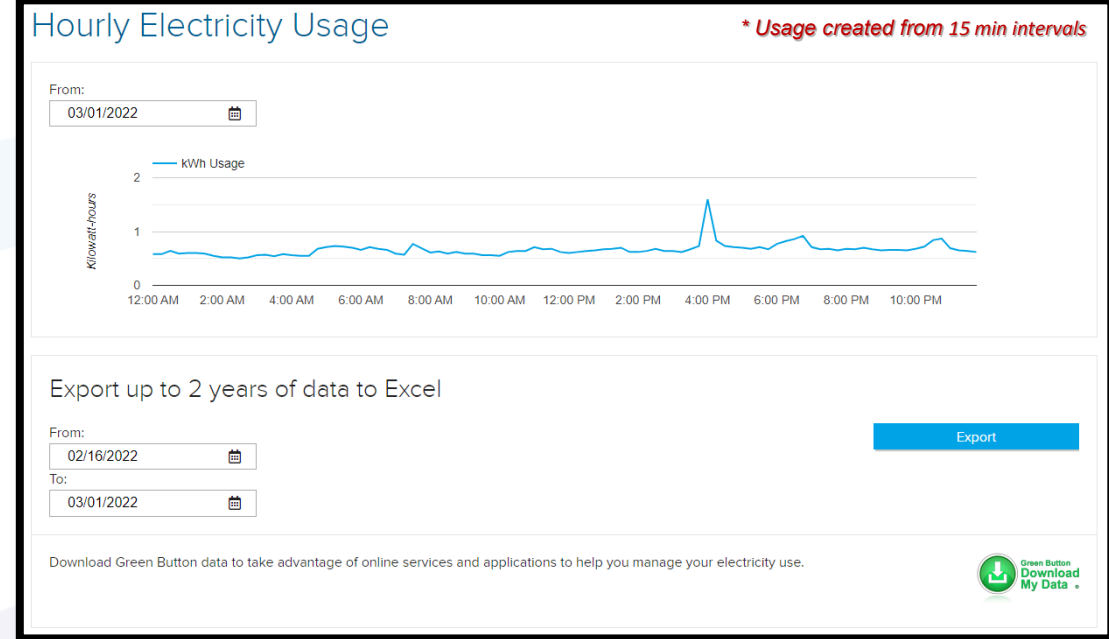
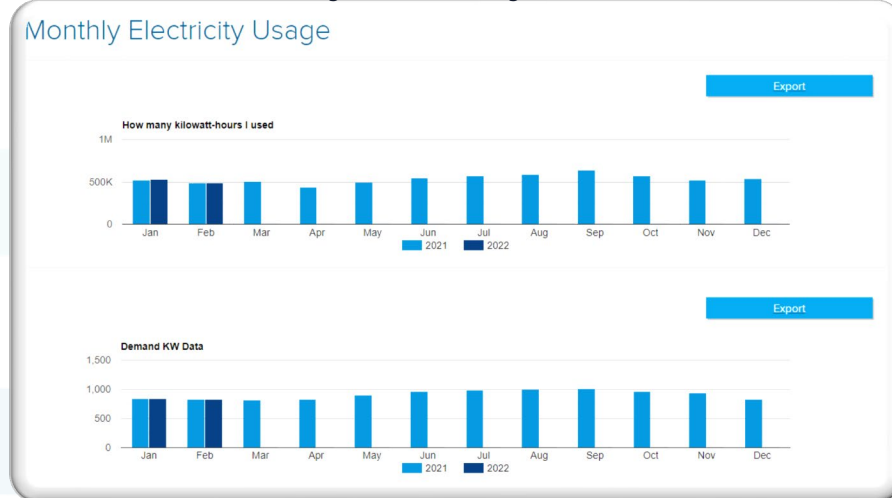
Examples of the PA Customer Portal are contained in slides 4-13 to provide additional context to the benefits and insight customers will receive with the AMF Program

The PA Customer Portal provides reporting for both Residential and Commercial customers in Summary and Hourly increments and offers the ability to export data

Residential Monthly Summary

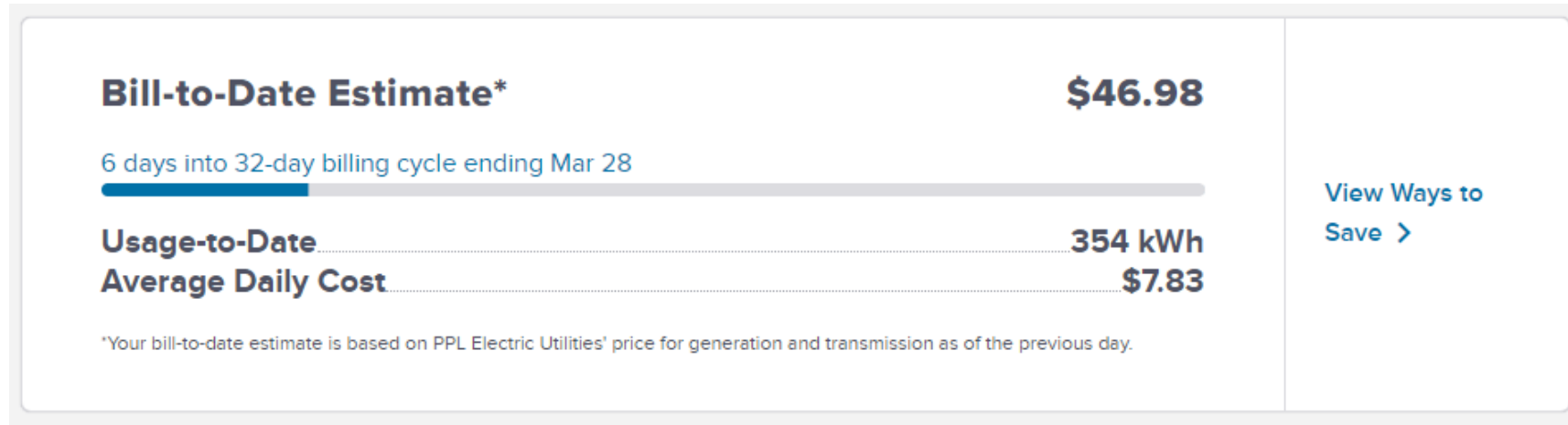


Commercial Monthly Summary



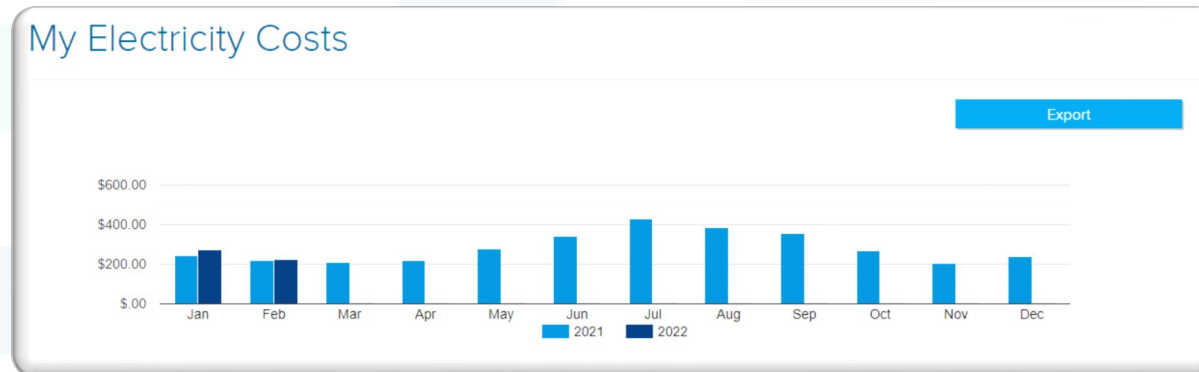
PA Customer Portal - Bill-to-Date Estimate

Customers can see their spending before they are billed



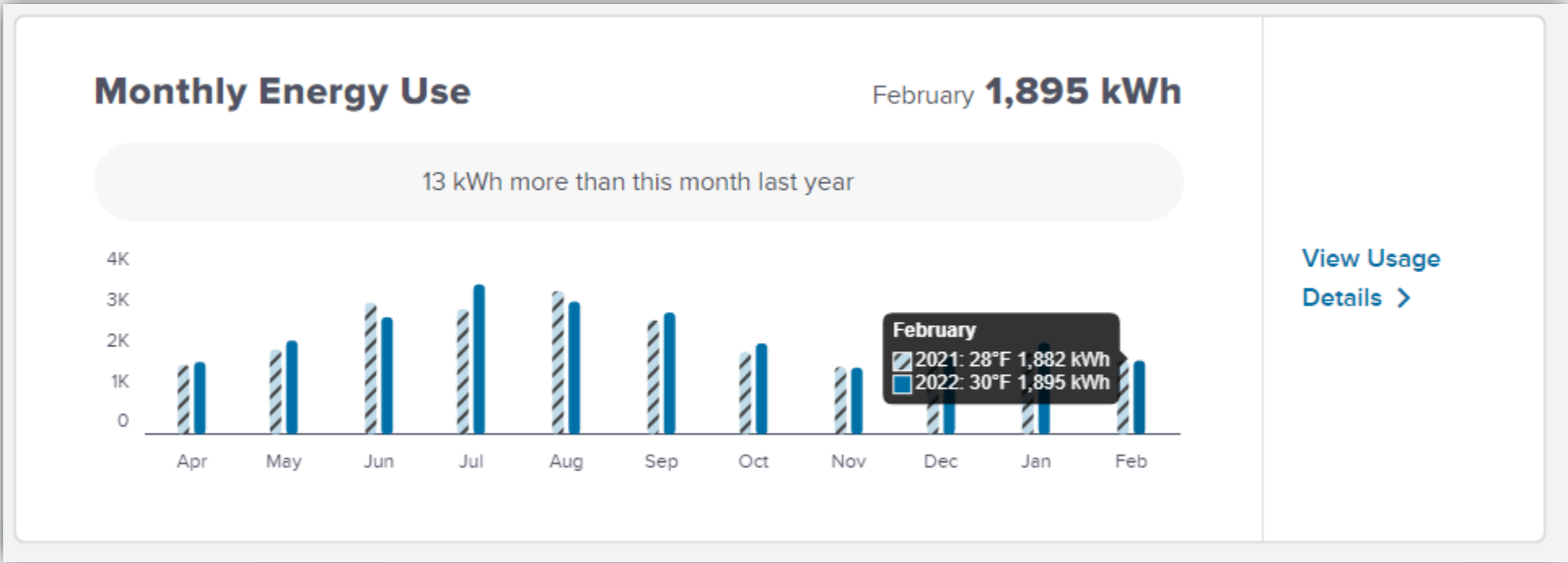
This feature is currently based on the PPL price to compare

Or historical costs over a period of time



PA Customer Portal – Monthly Usage at a Glance

A rolling graph allows customers to compare year-over-year



If customers hover (or tap) on the graph, they see the temperature and kWh

PA Customer Portal – Green Button data



Rhode Island Energy™
a PPL company

Data is available to download in Green Button format

Usage Information		
For location: Green Button Usage Data		
Summary of Usage Information*		
* Note: Quality of this summary and information is "raw: data that has not gone through the validation, editing and estimation process"		
Current billing period as of: 2022-03-03 15:20 Consumption(Real energy in kilowatt-hours) :357.000		
Last billing period: 2022-01-27 00:00 to 2022-02-25 00:00 Consumption last period(Real energy in kilowatt-hours) :1,895.000		
Meter Reading Information		
Type of readings: Electricity, Monthly Electricity Consumption, Real energy in kilowatt-hours		
Detailed Usage		
Start date: 2022-02-01 00:00 for 30 days		
Data for period starting: 2022-02-01 00:00 for 1 day		
Energy consumption time period	Usage (Real energy in kilowatt-hours)	Events occurred
2022-02-01 00:00 to 2022-02-02 00:00	63.000	
Data for period starting: 2022-02-02 00:00 for 1 day		
Energy consumption time period	Usage (Real energy in kilowatt-hours)	Events occurred
2022-02-02 00:00 to 2022-02-03 00:00	58.000	
Data for period starting: 2022-02-03 00:00 for 1 day		
Energy consumption time period	Usage (Real energy in kilowatt-hours)	Events occurred
2022-02-03 00:00 to 2022-02-04 00:00	65.000	



Green Button
Download
My Data®

PA Customer Portal – Net Metering Monthly Usage

Net metering customers can see information about their equipment and meter bank

Net Metering Equipment Information

Status	Generation Type	Output Rating	Certificate of Completion Received
Approved	Third Party Solar	3.0	5/5/2021 12:00:00 AM

Export

Net Metering Bank Information

Month/Year	Event Type	Bank Type	Previous Balance	Change	New Balance	Payout Rate	Change Value
July 2021	Billing Used	Regular	26	-26	0		
June 2021	Billing Excess Generated	Regular	0	26	26		

PA Customer Portal – Usage Summary

Business customers have 4 years of demand information available

Usage Summary

Export

Usage Summary

Billed	Days in bill	KW Demand	Total kWh Used	Avg. kWh/Day	Electricity Costs	Avg. Temperature
02/04/2022	29	831	486,000	16,759	\$3,199.21	27
01/06/2022	31	841	527,400	17,013	\$3,225.40	40
12/06/2021	32	824	538,200	16,819	\$3,197.23	43
11/04/2021	29	941	523,800	18,062	\$3,491.04	59
10/06/2021	29	965	570,600	19,676	\$3,601.70	69

PA Customer Portal – Customer Service Representatives

- Customer Service Representatives [CSR's] can view all the same graphs as customers, including bill-to-date
- CSR's can change daily usage to view many months at once
- CSR's can additionally view tables of interval usage, daily reads, and the meter reading history
- CSR's can complete a profile and decision tool to evaluate high bill complaints

PA Customer Portal – CSR View



Rhode Island Energy™
a PPL company

Data may also be exported; net metering will show all 3 read types

Note: Weekends shown in bold. Actual meter reads display in black. Estimated meter reads display in orange. Estimates may change.
Read types: NET=kWh Net (Received from Customer-Delivered to Customer). DEL=kWh Delivered to Customer. REC=kWh Received from Customer.

Date	Read Type	Min	Max	Total	12:00 AM	12:15 AM	12:30 AM	12:45 AM	1:00 AM	1:15 AM	1:30 AM	1:45 AM	2:00 AM	2:15 AM	2:30 AM	2:45 AM	3:00 AM	3:15 AM
2/25/2022	NET	-0.03	0.36	16.47	0.13	0.22	0.15	0.13	0.22	0.12	0.2	0.17	0.12	0.25	0.12	0.19	0.19	0.13
2/25/2022	DEL	0.01	0.36	16.59	0.13	0.22	0.15	0.13	0.22	0.12	0.2	0.17	0.12	0.25	0.12	0.19	0.19	0.13
2/25/2022	REC	0	0.04	0.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/24/2022	NET	-0.04	0.41	13.45	0.24	0.13	0.12	0.23	0.1	0.14	0.21	0.12	0.13	0.2	0.11	0.18	0.15	0.11
2/24/2022	DEL	0	0.41	13.71	0.24	0.13	0.12	0.23	0.1	0.14	0.21	0.12	0.13	0.2	0.11	0.18	0.15	0.11
2/24/2022	REC	0	0.04	0.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/23/2022	NET	0.0	0.42	0.55	0.17	0.17	0.26	0.17	0.17	0.11	0.1	0.11	0.0	0.11	0.11	0.1	0.11	0.11



Slides 12 & 13 are specific to the additional benefits received by Non-Regulated Power Producers (NPPs) from the AMF Program

The Supplier Portal can be used for both Suppliers and Energy Marketers to analyze and provides relevant energy program offerings to customers.

Account Status Lookup:

Supplier Portal

Welcome!

PPLEU

ABC SUPPLIER

Log Out

Navigation

RETAIL SUPPLIER

Account Status Lookup

Request Customer Bill

Request Monthly Usage

Request ICAP and NITS

Request Account Interval Usage

Request Meter Interval Usage

Current Rates

Rate Code History

Retail Supplier +

Account Status Lookup

Note: You can request data for up to ten bill account numbers at a time

PPL Bill Account Number

Submit

Account(s) Entered:

10 records found

Get Status

Requesting Installed Capacity:

Welcome!

PPLEU

ABC SUPPLIER

Log Out

Navigation

RETAIL SUPPLIER

Account Status Lookup

Request Customer Bill

Request Monthly Usage

Request ICAP and NITS

Request Account Interval Usage

Request Meter Interval Usage

Current Rates

Rate Code History

Standard Offer Pending Enrollments

Standard Offer Referrals

Supplier Contact Information

Download Eligible Customer List

Retail Supplier +

Request ICAP and NITS

ICAP NITS Usage for Selected Account(s)

Export to Excel Done

Please Note:

Transmission PLCs are assigned on a calendar year basis (1/1 to 12/31) as designated in the PJM Open Access Transmission Tariff.

Capacity PLCs are assigned on a planning year basis (6/1 to 5/31) as designated in the Reliability Assurance Agreement.

Values provide are Peak Load Contribution and represent the customer average contribution to the highest hour on the five highest peak load days.

PLCs do not include any scaling factors or reserve adjustments to obtain obligations made by PJM.

A PLC of null indicates that no PLC is available for this period or no PLC has been created for the account.

Applicable Transmission Loss Factors

Transmission 1.0268

Primary 1.0536

Secondary 1.0805

PPL Bill Account	Customer Name	Rate Class	Current ICAP	Current NITS	Future ICAP	Future NITS	Status	Bill Code	Last Profile
07450-09014-09015	SCHLETTZROD	Gen Residential 1999	4.518	3.800	4.891		Active	S	RS-GAC

PA Supplier Portal Cont'd



Rhode Island Energy™
a PPL company

The Portal also provides visibility into customer energy consumption patterns and billing data for the Supplier's customer base and allows the Supplier to submit inquiries to the Utility via a web ticketing system to help manage the customer billing process.

Consumption Pattern Insights:

Welcome!

PPLEU

ABC SUPPLIER

Log Out

Navigation

RETAIL SUPPLIER

Account Status Lookup

Request Customer Bill

Request Monthly Usage

Request ICAP and NITS

Request Account Interval Usage

Request Meter Interval Usage

Current Rates

Rate Code History

Standard Offer Pending Enrollments

Standard Offer Referrals

Supplier Contact Information

Download Eligible Customer List

Retail Supplier >

Request Account Interval Usage

Interval Usage for Selected Account(s)
Note: Only the last 75 days of IU is displayed. Clicking 'Export to Excel' will provide IU for the last 365 days.

Account 012345-6789
Customer John Doe
Data Element Interval Usage (approved)
Multiplier 1
Manufacturer Landis & Gyr

Date	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM	8:00 AM
2014-02-21	1.2096	1.2672	1.2096	3.0528	1.6128	1.728	1.6704	1.6704	1.5632
2014-02-22	1.2096	1.2672	3.0528	1.6704	1.8432	1.6704	1.728	1.6704	1.8432
2014-02-23	0.4032	0.4032	2.1312	0.9792	1.5968	0.9792	0.9792	1.6368	1.152
2014-02-24	1.2672	1.2672	1.3248	1.728	3.1104	1.6704	1.7956	2.2464	2.1888
2014-02-25	2.9952	1.3248	1.2672	1.7956	2.9952	2.1312	1.7956	2.1888	2.1312
2014-02-26	1.2672	1.2672	2.304	2.5344	1.8432	1.6704	1.8432	2.3616	2.1312
2014-02-27	2.016	1.2672	1.2672	3.3408	1.7956	1.728	2.0736	2.5344	1.7956
2014-02-28	1.3824	1.3248	3.2256	1.7956	1.7956	1.7956	3.168	2.1312	2.1312
2014-03-01	1.5952	1.4976	2.304	2.7948	1.7956	1.8432	1.7956	2.2464	2.7972
2014-03-02	1.3824	1.2096	2.88	1.728	1.728	1.8432	2.9952	1.2672	
2014-03-03	1.8432	1.2672	2.2464	2.3616	1.6704	1.7956	3.2256	2.2464	2.016
2014-03-04	1.2672	1.3248	3.1104	1.7956	1.728	2.4192	2.5344	2.592	2.016
2014-03-05	1.3248	0.4032	0.576	2.5344	1.5944	1.5944	1.5944	1.4976	1.2096

Market Transaction(EDI) inquiries between Supplier and the Utility :

View Bills

RETAIL SUPPLIER

Account Number Lookup

Account Status Lookup

Request Customer Bill

Request Monthly Usage

Request ICAP and NITS

Request Account Interval Usage

Request Meter Interval Usage

Current Rates

Rate Code History

Standard Offer Pending Enrollments

Standard Offer Referrals

Supplier Contact Information

Download Eligible Customer List

Download My Current Customer List

Submit Web Inquiry

Web Inquiry Status

ADMINISTRATIVE

Maintain Users

Manage Access Confirmations

Maintain Suppliers

Category EDI Questions

E-mail account(s) of response copy (cc) recipients - each email account separated by a comma

E-mail account(s) of response blind copy (bcc) recipients - each email account separated by a comma

☒ Inquiring about Bill Accounts? (check the box to specify 1 to 10 bill accounts)

Account Number	Bill Period Begin	Bill Period End	Comments
1 1234567890			Comments for this particular bill account number
2			
3			
4			
5			
6			
7			
8			
9			
10			

September, 2014

Su	Mo	Tu	We	Th	Fr	Sa
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4
5	6	7	8	9	10	11

Today: September 8, 2014

Your Message

General Overall Message

Load Research Meters Clarification



Rhode Island Energy™
a PPL company

A question was asked by Commissioner Anthony: “What will happen to the test meter population used to provide Load Curve Analysis during AMF Deployment?”

- The current population of test meters are used to provide interval data to support Load research on a select pool of customers (residential/small commercial).
- Rhode Island Energy will continue to perform Load research during AMF deployment; no data will be lost due to the AMF meter exchanges.
- As AMF meters begin replacing AMR, the pool of meters that can support Load research will increase as all meters will provide 15-minute interval data.

RIE Energy Insights Savings



Rhode Island Energy™
a PPL company

A previous slide presented on the Energy Insights Savings incorrectly stated that the customer would “experience fuel savings”. Note the correction updated below as ‘Electricity Market cost savings’:

It is assumed that customers who have timely access to electricity usage information will modify their consumption patterns by better understanding when electricity usage is at its highest and the cost implications of higher usage.

The BCA is based upon:

- 1.5% kWh electricity savings for participating customers
 - Assumption of 50% of residential customers participating
 - Assumption of 25% of commercial customers participating
- RIE will realize **Electricity Market cost savings** as a results of these reductions.
 - AESC 2021 was used to calculate the avoided Electricity Market costs.
- Customers will save 1.5% on their total bill.
- The amount that customers would save on their bills was included in Direct Customer Benefits after subtracting out RIE’s Electricity Market savings.

Net Metering Customers



Rhode Island Energy™
a PPL company

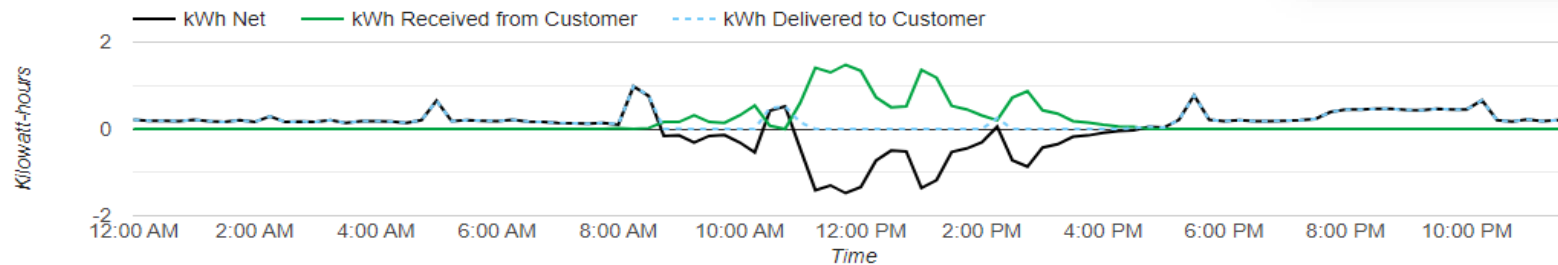
Clarifying 'Delivered' vs. 'Received' for Net Metering Customers

- Net Metering information will be available in the Customer Portal
- Net Metering information is broken into 3 views:
 - kWh Delivered** – Total energy delivered to the customer from the Utility.
 - kWh Received** – Total energy received by the Utility from the customer. The received energy is excess energy, meaning the generated energy first powers the customer's home or business and any remaining excess energy is sent to the Utility.
 - kWh Net** – kWh Delivered *minus* kWh Received – Net is used for billing calculation.

Interval Electricity Usage

From:

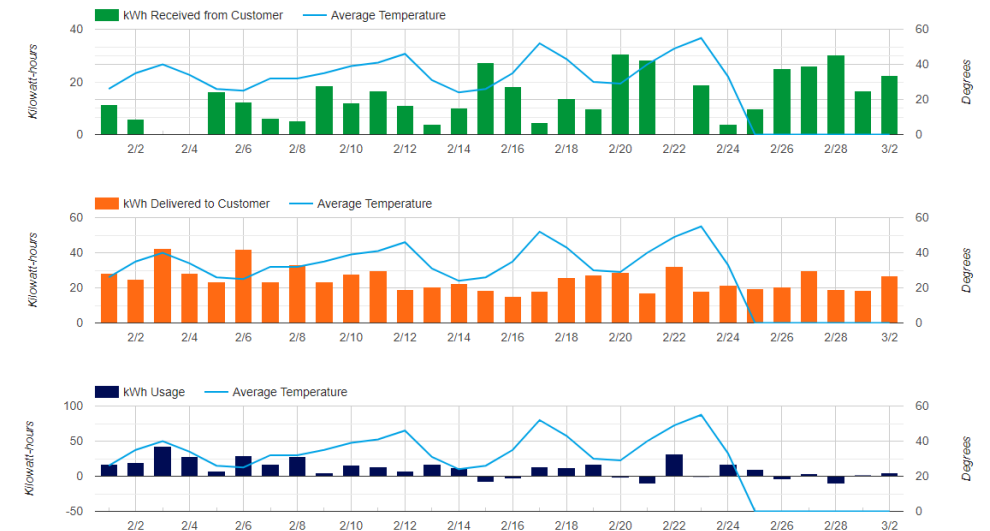
03/01/2022



Daily Electricity Usage

From:

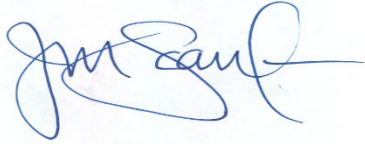
02/01/2022



Certificate of Service

I hereby certify that a copy of the cover letter and any materials accompanying this certificate was electronically transmitted to the individuals listed below.

The paper copies of this filing are being hand delivered to the Rhode Island Public Utilities Commission and to the Rhode Island Division of Public Utilities and Carriers.



Joanne M. Scanlon

October 14, 2022
Date

Narragansett Electric Co. d/b/a RI Energy - Docket No. 4770 (Rate Application) & Docket No. 4780 (PST)
Combined Service list updated 8/31/2022

Docket No. 4770 Name/Address	E-mail Distribution List	Phone
The Narragansett Electric Company d/b/a Rhode Island Energy Celia B. O'Brien, Esq. Jennifer Hutchinson, Esq. 280 Melrose Street Providence, RI 02907	COBrien@pplweb.com ;	401-578-2700 401-784-7288 401-784-4263
	JHutchinson@pplweb.com	
	AMarcaccio@pplweb.com	
	JScanlon@pplweb.com ;	
	SBriggs@pplweb.com ;	
	JOliveira@pplweb.com ;	
Adam Ramos, Esq. Hinckley Allen 100 Westminster Street, Suite 1500 Providence, RI 02903-2319	aramos@hinckleyallen.com ;	401-457-5164
Electric Transportation: John Habib, Esq. Keegan Werlin LLP 99 High Street, Suite 2900 Boston, MA 02110 National Grid Theresa Burns	jhabib@keeganwerlin.com ;	617-951-1400
	Theresa.burns@nationalgrid.com ;	
	Scott.mccabe@nationalgrid.com ;	

Scott McCabe Jason Small	Jason.small@nationalgrid.com ;	
Division of Public Utilities (Division) Leo Wold, Esq. Christy Hetherington, Esq. Division of Public Utilities and Carriers 89 Jefferson Blvd. Warwick, RI 02888	Leo.Wold@dpuc.ri.gov ;	401-780-2140
	Christy.Hetherington@dpuc.ri.gov ;	
	Margaret.L.Hogan@dpuc.ri.gov ;	
	John.bell@dpuc.ri.gov ;	
	Linda.George@dpuc.ri.gov ;	
	Machaela.Seaton@dpuc.ri.gov ;	
	Al.mancini@dpuc.ri.gov ;	
	Paul.Roberti@dpuc.ri.gov ;	
	Thomas.kogut@dpuc.ri.gov ;	
David Effron Berkshire Consulting 12 Pond Path North Hampton, NH 03862-2243	Djeffron@aol.com ;	603-964-6526
Gregory L. Booth, PLLC 14460 Falls of Neuse Rd. Suite 149-110 Raleigh, N. C. 27614 Linda Kushner L. Kushner Consulting, LLC 514 Daniels St. #254 Raleigh, NC 27605	gboothpe@gmail.com ;	919-441-6440
	lkushner33@gmail.com ;	919-810-1616
Office of Energy Resources (OER) Albert Vitali, Esq. Dept. of Administration Division of Legal Services One Capitol Hill, 4 th Floor Providence, RI 02908	Albert.Vitali@doa.ri.gov ;	401-222-8880
	nancy.russolino@doa.ri.gov ;	
	Christopher.Kearns@energy.ri.gov ;	
	Shauna.Beland@energy.ri.gov ;	
	Matthew.Moretta.CTR@energy.ri.gov ;	
Conservation Law Foundation (CLF) James Crowley, Esq. Conservation Law Foundation 235 Promenade Street Suite 560, Mailbox 28 Providence, RI 02908	jcrowley@clf.org ;	401-228-1904
	mcurran@clf.org ;	

Dept. of Navy (DON) Kelsey A. Harrer, Esq. Office of Counsel NAVFAC Atlantic, Department of the Navy 6506 Hampton Blvd. Norfolk, VA 23508-1278	kelsey.a.harrer@navy.mil ;	757-322-4119
Kay Davoodi, Director Larry R. Allen, Public Utilities Specialist Utilities Rates and Studies Office NAVFAC HQ, Department of the Navy 1322 Patterson Avenue SE Suite 1000 Washington Navy Yard, D.C. 20374	khojasteh.davoodi@navy.mil ;	
	larry.r.allen@navy.mil ;	
Ali Al-Jabir Maurice Brubaker Brubaker and Associates	aaljabir@consultbai.com ;	
New Energy Rhode Island (NERI) Seth H. Handy, Esq. Handy Law, LLC 42 Weybosset St. Providence, RI 02903 The RI League of Cities and Towns c/o Jordan Day and Jennifer Slatterly PRISM & WCRPC c/o Jeff Broadhead, Executive Director Newport Solar c/o Doug Sabetti Green Development, LLC c/o Hannah Morini Clean Economy Development, LLC c/o Julian Dash ISM Solar Development, LLC c/o Michael Lucini Heartwood Group, Inc. c/o Fred Unger	seth@handylawllc.com ;	401-626-4839
	helen@handylawllc.com ;	
	jday@rileague.org ;	401 272-3434
	jslattery@rileague.org ;	
	jb@wcrpc.org ;	401-792-9900
	doug@newportsolarri.com ;	401.787.5682
	hm@green-ri.com ;	
	jdash@cleaneconomydevelopment.com ;	
	mlucini@ismgroup.com ;	401.435.7900
	unger@hrtwd.com ;	401.861.1650

Energy Consumers Alliance of NE James Rhodes Rhodes Consulting 860 West Shore Rd. Warwick, RI 02889 Larry Chretien, PPL	jamie.rhodes@gmail.com ;	401-225-3441
	larry@massenergy.org ;	
Acadia Center Amy Boyd, Esq. Acadia Center 31 Milk St., Suite 501 Boston MA 02109-5128	aboyd@acadiacenter.org ;	
Hank Webster Policy Advocate & Staff Attorney Acadia Center 144 Westminster Street, Suite 203 Providence, RI 02903-2216	hwebster@acadiacenter.org ;	
Northeast Clean Energy Council Jeremy McDiarmid, NECEC Dan Bosley, NECEC Sean Burke	jmcdiarmid@necec.org ;	401-724-3600
	dbosley@necec.org ;	
The George Wiley Center Jennifer Wood Rhode Island Center for Justice 1 Empire Plaza, Suite 410 Providence, RI 02903 Camilo Viveiros, Wiley Center	jwood@centerforjustice.org ;	401-491-1101
	georgewileycenterri@gmail.com ;	
	Camiloviveiros@gmail.com ;	
Wal-Mart Stores East & Sam's East, Inc. Melissa M. Horne, Esq. Higgins, Cavanagh & Cooney, LLC 10 Dorrance St., Suite 400 Providence, RI 02903 Gregory W. Tillman, Sr. Mgr./ERA Walmart	mhorne@hcc-law.com ;	401-272-3500
	Greg.tillman@walmart.com ;	479-204-1594
AMTRAK Clint D. Watts, Esq.	CWatts@mdmc-law.com ;	401-519-3848

Paul E. Dwyer, Esq. McElroy, Deutsch, Mulvaney & Carpenter 10 Dorrance St., Suite 700 Providence, RI 02903 Robert A. Weishaar, Jr., Esq. Kenneth R. Stark, Esq.	PDwyer@mdmc-law.com ;	
	BWeishaar@mcneeslaw.com ;	
	KStark@mcneeslaw.com ;	
Original & 9 copies file w/: Luly E. Massaro, Commission Clerk Public Utilities Commission 89 Jefferson Blvd. Warwick, RI 02888	Luly.massaro@puc.ri.gov ;	401-780-2107 401-780-2147
	Cynthia.WilsonFrias@puc.ri.gov ;	
	Alan.nault@puc.ri.gov ;	
	Todd.bianco@puc.ri.gov ;	
	Emma.rodvien@puc.ri.gov ;	
	John.harrington@puc.ri.gov ;	
DOCKET NO. 4780		
ChargePoint, Inc. Edward D. Pare, Jr., Esq. Brown Rudnick LLP One Financial Center Boston, MA 02111 Anne Smart, Charge Point, Inc.	EPare@brownrudnick.com ;	617-856-8338
	Anne.Smart@chargepoint.com ;	
	Kevin.Miller@chargepoint.com ;	
Direct Energy Craig R. Waksler, Esq. Eckert Seamans Cherin & Mellott, LLC Two International Place, 16 th Floor Boston, MA 02110 Marc Hanks, Sr. Mgr./GRA Direct Energy Services,	cwaksler@eckertseamans.com ;	617-342-6800
	dclearfield@eckertseamans.com ;	413-642-3575
	Marc.hanks@directenergy.com ;	
INTERESTED PERSONS		
EERMC Marisa Desautel, Esq	marisa@desautelesq.com ;	401-477-0023
	guerard@optenergy.com ;	
Frank Epps, EDP	Frank@edp-energy.com ;	
Matt Davey	mdavey@ssni.com ;	
Nathan Phelps	nathan@votesolar.org ;	
Radina Valova, Pace Energy & Climate Ctr.	rvalova@law.pace.edu ;	
Lisa Fontanella	Lisa.Fontanella@spglobal.com ;	
Frank Lacey, EAC Power	frank@eacpower.com ;	
PPL Electric Utilities Ronald Reybitz	rjreybitz@pplweb.com ;	

Stephen Breininger	skbreininger@pplweb.com	
--------------------	--	--