

EERMC Update for Pilots, Demonstrations, and Assessments

January 21, 2021



Agenda

Overview of process – Mission and Methods

PDA's Concluded in 2020

PDA's continuing and beginning in 2021

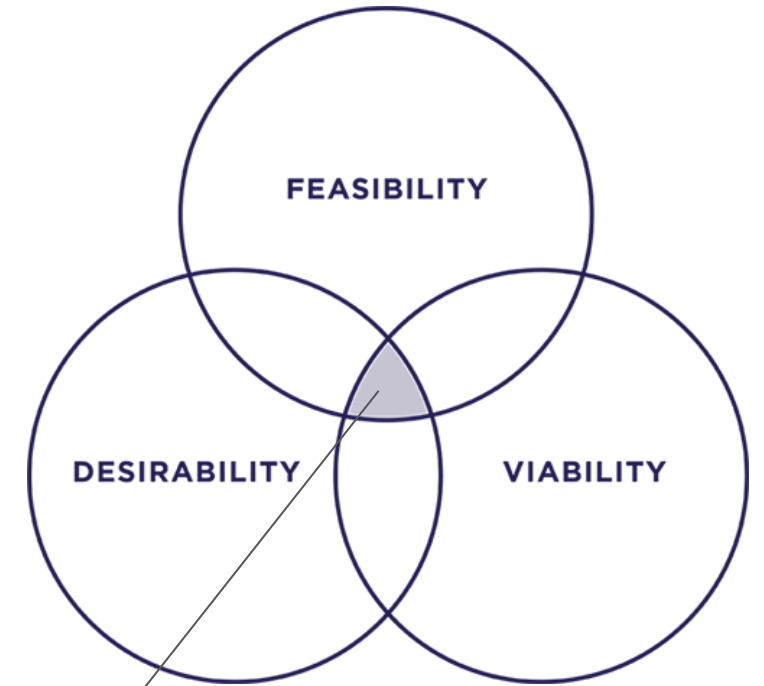
CEM Growth & Development Mission

Identify new solutions for the MA and RI EE, DR and Heat Electrification portfolios

Maintain focus on well defined, available, impactful ideas valuable to customers

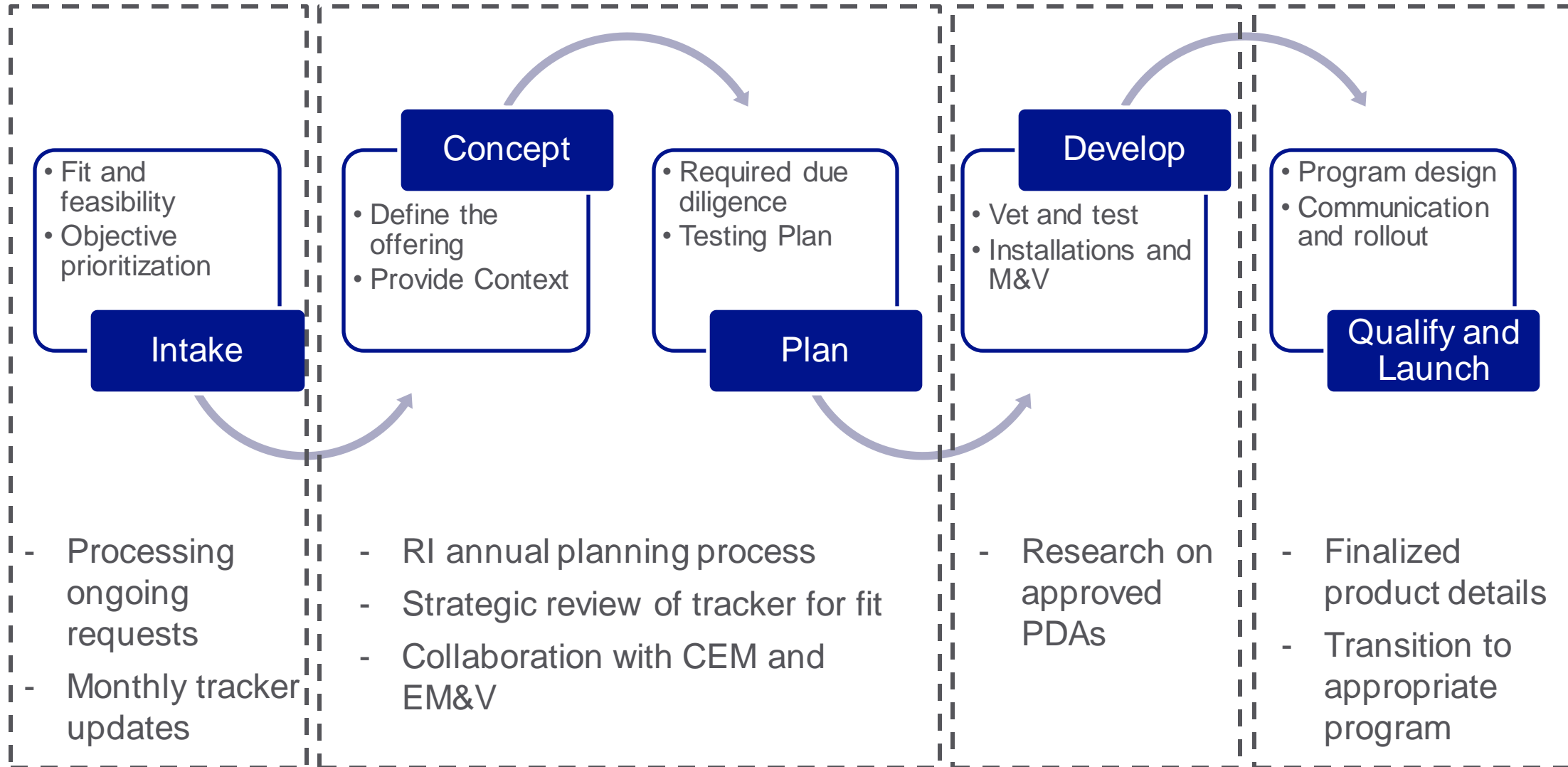
Right size and implement testing efforts

Work with stakeholders to successfully launch vetted solutions into the portfolio

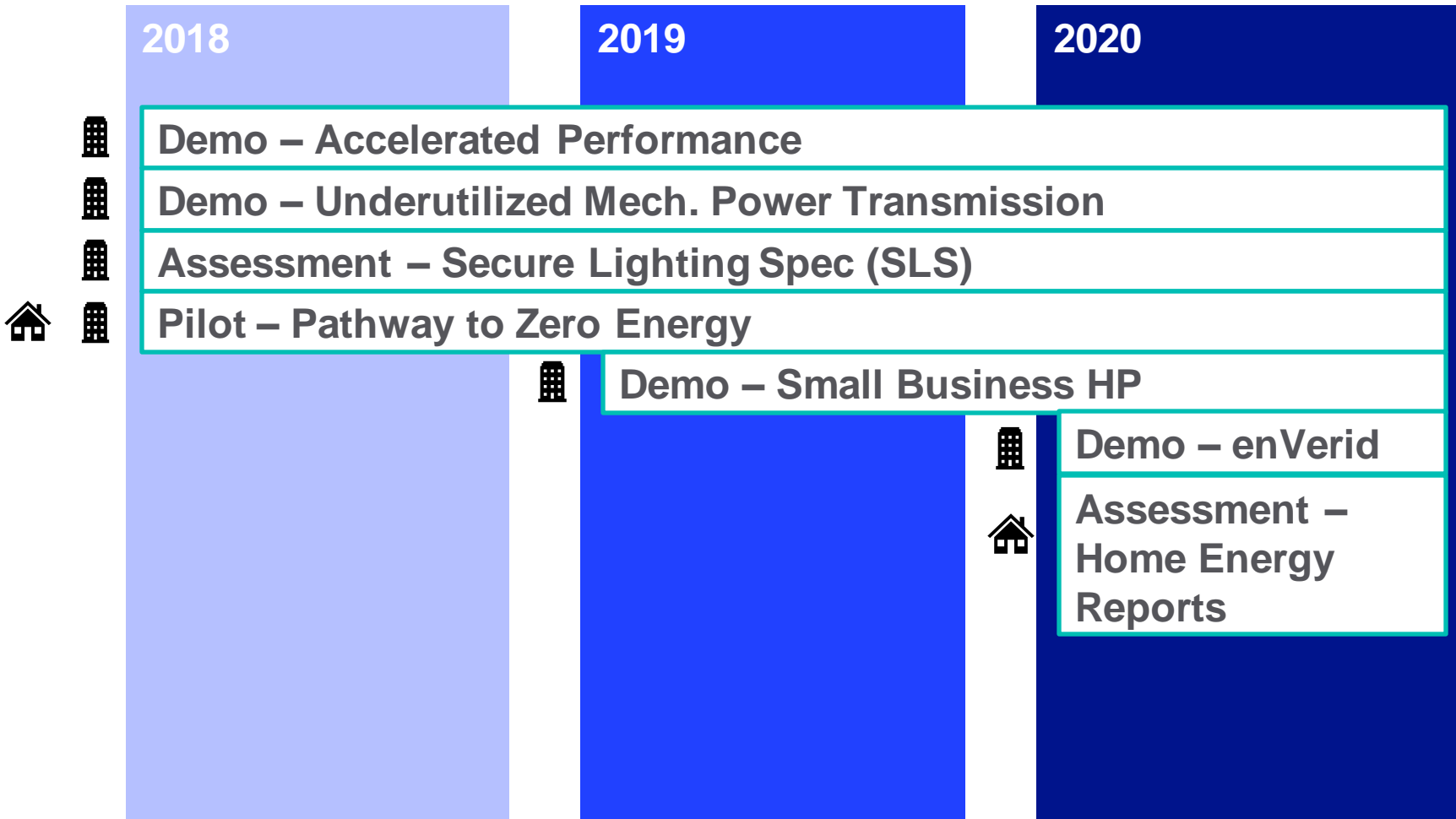


Achieve EE & DR & HE at scale and grow portfolio





The method







PDA's Concluded in 2020



PDAs Concluded in 2020

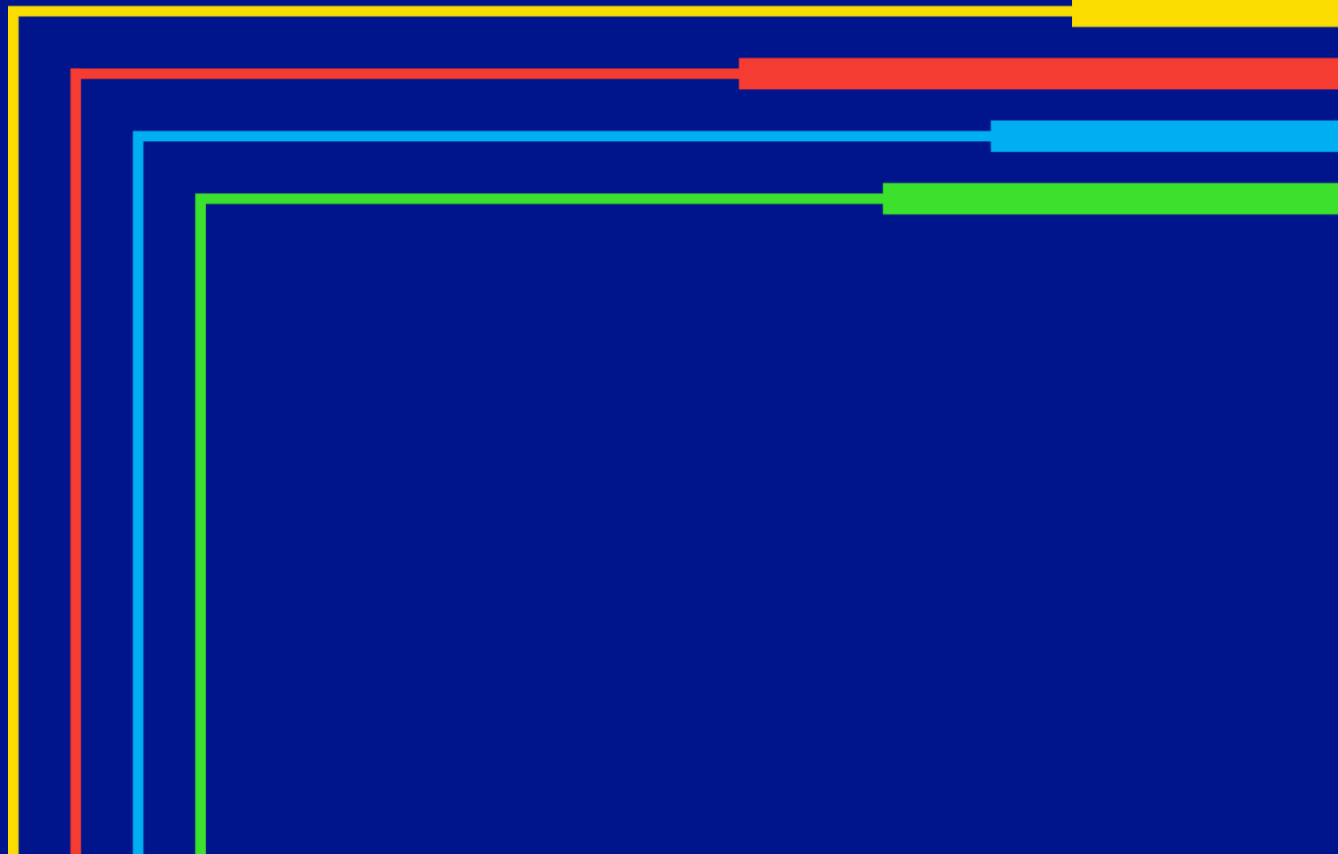
PDA	Objectives	Findings	Next Steps
 Accelerate Performance	Use performance-based procurement to hold design teams contractually accountable throughout design and into occupancy.	Tried six different project recruitment efforts. Customers ultimately not willing to sign up. Projects pivoted to typical whole building approach offerings.	Close demonstration; Pivot to focus on whole building design approach.
 Mechanical Power Transmission	To investigate adoption of higher efficiency belt and other various types of machinery used in C&I facilities	No installations; common enough understanding to combine with other O&M-type measures using ESPO platform	Transfer replacement of v-belts with synchronous belts and similar settings to ESPO offering suite
 Secure Lighting Spec	Develop a partnership with Lighting Manufacturers Reps, the common quoting software	Partnerships unable to be formed. Software unable to be augmented.	Closed assessment
 Small Business Heat Pumps	Explore a go-to market strategy for cold climate heat pumps for small business.	Using the energy optimization framework, MA determined cost-effective fuel switching for small business electrification. Currently prohibited in RI, except with elec heat.	Use MA methodology, where applicable for RI (e.g. Elec Resistance)

PDAAs Concluded in 2020 (cont.)

PDA	Objectives	Findings	Next Steps
 Absorption Air Cleaner	(1) Identify the barriers to adoption of this technology; (2) Measuring energy savings and monitoring (IAQ)	Potential for scalability if energy analysis is simplified; code authorities use prescriptive codes for ventilation	Recommend to offer this measure through our custom gas and electric programs
 Pathway to Zero Energy – C&I	Test if the program design, can successfully drive market participation in Zero Energy Buildings in Rhode Island.	Education, awareness, marketing, and training was deployable. Recruiting, construction, and completion challenging.	Transfer market activity to programs: Whole Building New Construction offering
 Pathway to Zero Energy – Resi	Test if the program design, can successfully drive market participation in Zero Energy Buildings in Rhode Island.	Education and awareness, marketing, and training was deployable. ~100 ZER units in design, development, and construction	Transfer market activity to programs: Residential New Construction offering
 Home Energy Reports	(1) identify if HES improved conversion rates, and (2) assess the how HES could be integrated within HEA processes	Participants receiving the score had a higher conversion rate. Due to small sample size no clear conclusion on installing major measures. Sustained marketing needed	Complete. Use findings of the evaluation in program design evolution.

2021 PDA Highlights

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Solar Inverter Power Factor Correction – Demonstration



RI Budget	Duration	# of Locations
\$154k	2021	>20 systems

- Expanding past thermostat controlled DR, using existing functionality of customer solar inverters to improve grid power factor and overall electrical efficiency
- This demonstration will enroll customers who already have a supported solar inverter or who are installing a new solar system with an inverter from a supported inverter manufacturer



Residential – AeroBarrier and Injection Foam – Demonstration



RI Budget	Duration	# of Locations
\$103k	2021-2022	6 homes

- Two technologies – sprayed-in [air sealing](#) for new construction, and [injection foam insulation](#) for residential and MF existing buildings
- Injection foam as a possible retrofit measure with aging buildings; claims to have solved risk with outgassing. Need for low-cost insulation improvements
- AeroBarrier is known for ducting but claims of building air sealing need and injection foam concept needs vetting or demonstration



C&I Multifamily – Shared laundry facilities – Assessment



High efficiency commercial washers and dryers exist and could be used by MF buildings with shared laundry, laundromats

Products are commercially available, may take significant effort to create the program design to drive adoption

Upstream potential- few companies lease out equipment to customers. Leasing model is tricky...

Research and analysis for realistic savings potential and level of effort needed to get buy in from market players

RI Budget	Duration	# of Locations
\$25k	2021	N/A



C&I – Enzyme-based HVAC Coil Cleaning – Demonstration



Biological enzyme coil cleaning, for improved treatment of biofilm and deeper cleaning

Applicable to existing coil cleaning customers

Improved coil cleaning, claimed possible disinfection benefit

Limited in-field performance data available, referral if not demo

RI Budget	Duration	# of Locations
\$85k	2021	3-6 buildings



C&I –Refrigeration Leak Survey and Repair



Assessment

Survey for refrigeration leaks, repair

Grocery stores

Measure offered by Efficiency VT, could incorporate into existing grocery offerings

Service not currently offered, new savings opportunity, with NEIs

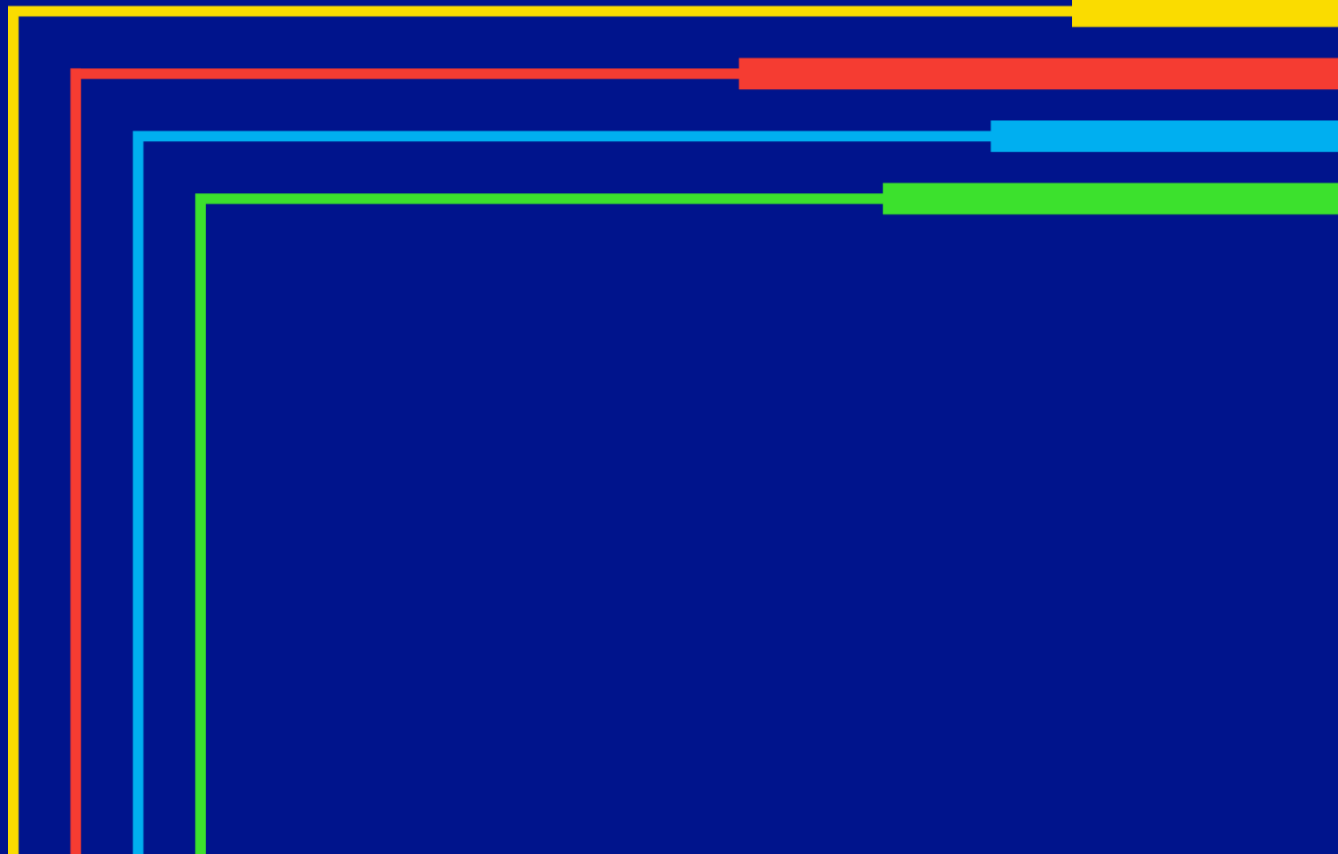
Possible refer to EnergySmart Grocer for inclusion in existing offering. Connect with Efficiency VT for their experience. Demonstrate at few sites before full roll out.

RI Budget	Duration	# of Locations
\$26k	2021	N/A

















2021 PDA Detailed List





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New and Continued in 2021

2018-2019	2020	2021
 Pilot – Gas Demand Response		
 Demo – Continuous Energy Improvement		
	 Demo – Network Lighting Controls +	
	 Demo – Kitchen Exhaust	
	 Demo – Gas Heat Pumps	
		 Demo – New Air Sealing and Insulation
		 Demo – Solar Inverter Direct Load Control
		 Assessment – Pre-Fab Energy Retrofit
		 Demo – Enzyme-based HVAC Coil Cleaning
		 Assessment – Refrig. Leak Survey and Repair
		 Assessment – HVAC Automation for DR
		 Assessment – Shared Laundry Facilities
		 Assessment – Submetering to Support EE
		 Demo – Smart Valves for CW Systems




PDA's Continuing in 2021

PDA	Objectives	Planned 2021 Activity	Next Steps
 Gas Demand Response Pilot	Target hourly peak reduction from Extended Demand Response (EDR) pilot offering, and Peak Period Gas Demand Response (PPDR) pilot offering	Pilot offerings will continue in the winter of 2020/21. Retain current levels of enrollment in the EDR offering and slightly increase participation in the PPDR pilot offering.	Monitor and call events for winter 2020/2021 season, pay customer incentives, assess
 Continuous Energy Improvement	Will CEI (aka SEM) recruits establish medium/long-term energy savings performance?	Comparing the customer's O&M plus capital measure savings during the test period to pre-intervention savings. Measuring the impact of coaching and education on custom savings.	Continue use of implementation vendor to deliver demonstration
 Network Lighting + HVAC Control	The benefits and costs associated with integrating NLC systems with BAS? What is the capacity in RI market to support integrated controls projects?	Phase I, completed in 2020, deployed 22 interviews with program staff, customers, and industry representatives. Phase II will include 4 customer installation projects, likely to be initiated in 2021.	Recruit customers, install measures, M&V.
 Kitchen Exhaust Controls	What is the savings potential of three kitchen exhaust measures?	Phase II will include 4 customer installations of energy recovery and electrostatic filtration products.	Recruit customers, install measures, M&V.





PDA New in 2021

PDA	Objectives	Planned 2021 Activity	Next Steps
  Gas Heat Pumps	Validate performance of newer absorption gas HPs for C&I & Residential	Using assessment research, plan to recruit 3-4 C&I and 2-3 Residential customers for installation, measurement, cost comparisons.	Plan recruitment & customer outreach
 New Air Sealing & Insulation Approaches	New approaches claim improvement from current infiltration and insulation. Costs and savings need to be measured.	Testing will evaluate the infiltration and insulation improvements of each technology, as well as two homes with both technologies implemented, with the final measurements of air infiltration rate and R-value.	Plan recruitment with residential implementation vendor
 Solar Inverter Direct Load Control	Can a BYOD type offering targeting customer-owned and connected inverter optimization demonstrate measurable energy and/or demand reduction?	The demonstration will, test recruitment, communication, setting adjustment, and measure impact of adjusting customer-owned inverters.	Plan customer recruitment

PDA New in 2021 (cont.)

PDA	Objectives	Planned 2021 Activity	Next Steps
 Pre-Fab Energy Retrofit	Assess, research and document the capability in the building supply chain to specify, design, and deliver prefabricated exterior improvements to substantially improve housing while residents continue to live in the structures.	The research will look at the building lifecycle “trigger event”, the ability to aggregate owner demand and market power, the building industry capability, and building owner financing opportunities for interventions of this sort.	Plan research and schedule interviews
 Enzyme-Based Coil Cleaning	Comparing and quantifying savings from conventional HVAC coil cleaning to an approach using an enzyme solution	This demonstration will identify 3-4 customer sites and install submetering with roof-top units. Some RTUs will be treated with enzyme and some just conventional.	Plan recruitment, perform intervention, monitor performance
 Refrig. Leak Survey & Repair	The assessment will answer whether a refrigeration leak survey and repair offering would be cost effective.	The assessment will perform research and interviews to quantify the energy and GHG savings associated with refrigeration leak survey and repair above regulatory requirements.	Plan research

PDA New 2021 (cont.)

PDA	Objectives	Planned 2021 Activity	Next Steps
 Submetering to Support EE	Research and document the costs and opportunities associated with supporting installation of submetering through the energy efficiency programs.	Research will assess different types of submetering, what savings opportunities or other benefits they support, costs, and persistence of savings. Using lit review and interviews.	Plan research
 Smart Valves for Chilled Water	Quantify the overall potential of the valve, estimate the energy savings associated with each installation.	The demonstration will include three to four customer installations with M&V and characterize the energy savings for the device.	Contracting and additional customer recruitment
 HVAC Automation for DR	Explore the role of incentivizing advanced communications and control infrastructure in enabling increased demand response-ready capacity.	Interviewing the controls and communications vendors, as well as with a range of alternative incentive schemes, to judge best pathways to DR enablement.	Plan research
 Shared Laundry	research the feasibility of a midstream or upstream commercial laundry offering to promote the installation of higher efficiency shared washers and dryers.	Research savings and costs for HE equipment, the market, and potential delivery pathways.	Plan research

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