Bonneville
POWER ADMINISTRATION

INTEGRATED PROGRAM REVIEW
Energy Efficiency

JUNE 21, 2018

Agenda

Time	Topic	Speaker
9:00-9:15	Introductions and Background	Kim Thompson
9:15-9:30	EE Action Plan Overview	Allie Mace
9:30-10:00	BPA Resource Program	Rob Petty/Danielle Walker
10:00-10:15	Break	
10:15-10:30	Energy Efficiency Program	Dave Moody
10:30-11:00	EE Savings and Budget	Kim Thompson
11:00-11:15	Timeline and Next Steps	Kim Thompson

Background

Commitment to review of how BPA determines EE goal

Increase focus on EE that supports BPA's evolving needs

Identified as the likely platform for informing the reassessment process

Current EE Program - Planning

Public Power Share of Region Goal

Programmatic Savings

Market Transformation Savings

Momentum Savings

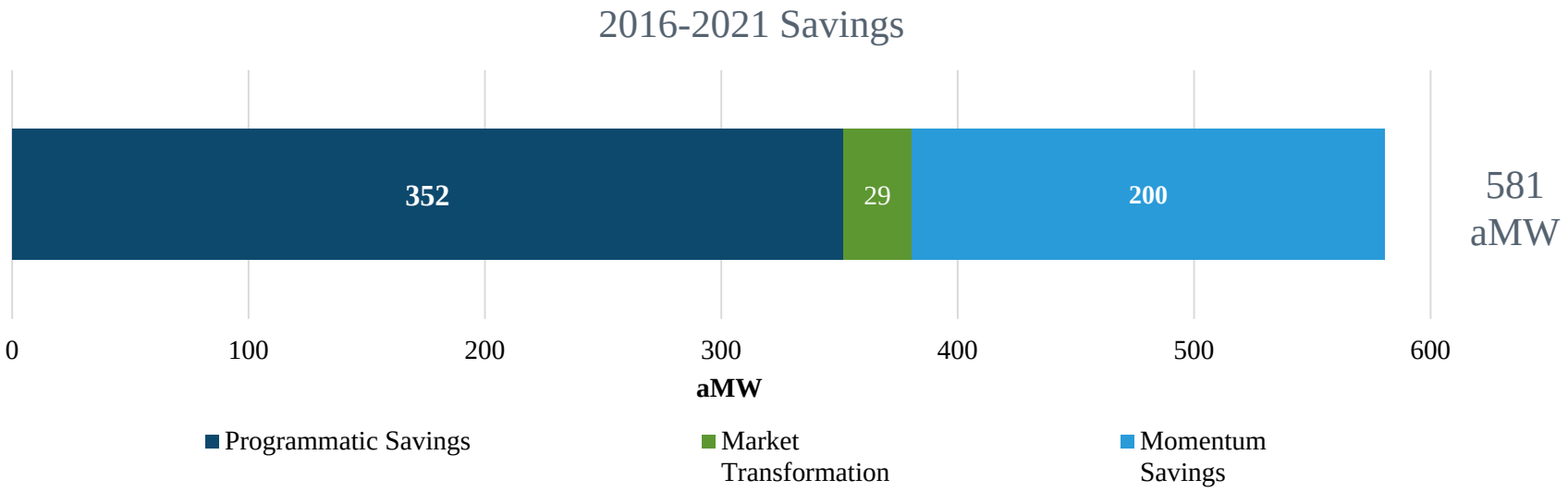
EEI Funded Savings (70%)

Self Funded Savings (30%)

TOCA Allocation of EEI

EEI: Energy Efficiency Incentive
TOCA: Tier One Cost Allocator

BPA's Energy Efficiency Action Plan

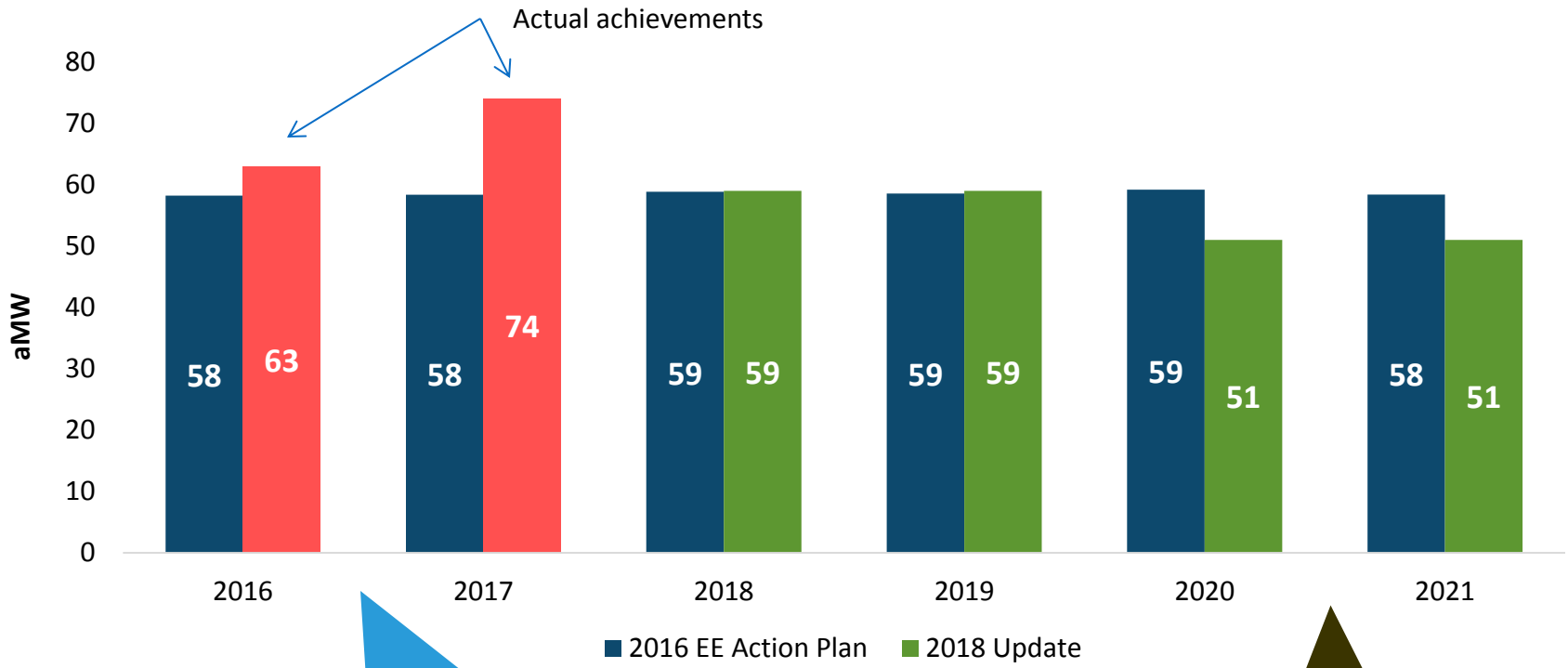


BPA's 2016 EE Action Plan projected achieving a total of 581 aMW of savings towards the 7th Plan goal

Of that savings, 352 aMW was expected to come through programmatic savings

Programmatic savings are savings achieved through utility EE programs, funding through EEI and customer self funding

Programmatic Savings Achievements



Public power exceeded Action Plan programmatic savings expectations in 2016 and 2017

This resulted in fewer programmatic savings needed in 2020 and 2021 to meet the EE Plan goal

Programmatic Savings and Costs 2020-21

Updated EE Action Plan			
2016 EE Plan	Updated Savings	Average Cost ($M/aMW)	EEI Budget ($M)
118 aMW	101 aMW	$1.33/aMW	$134 M

A EEI budget of $134 million was the forecasted funding amount needed to achieve 101 aMW of programmatic savings.

BPA Resource Program

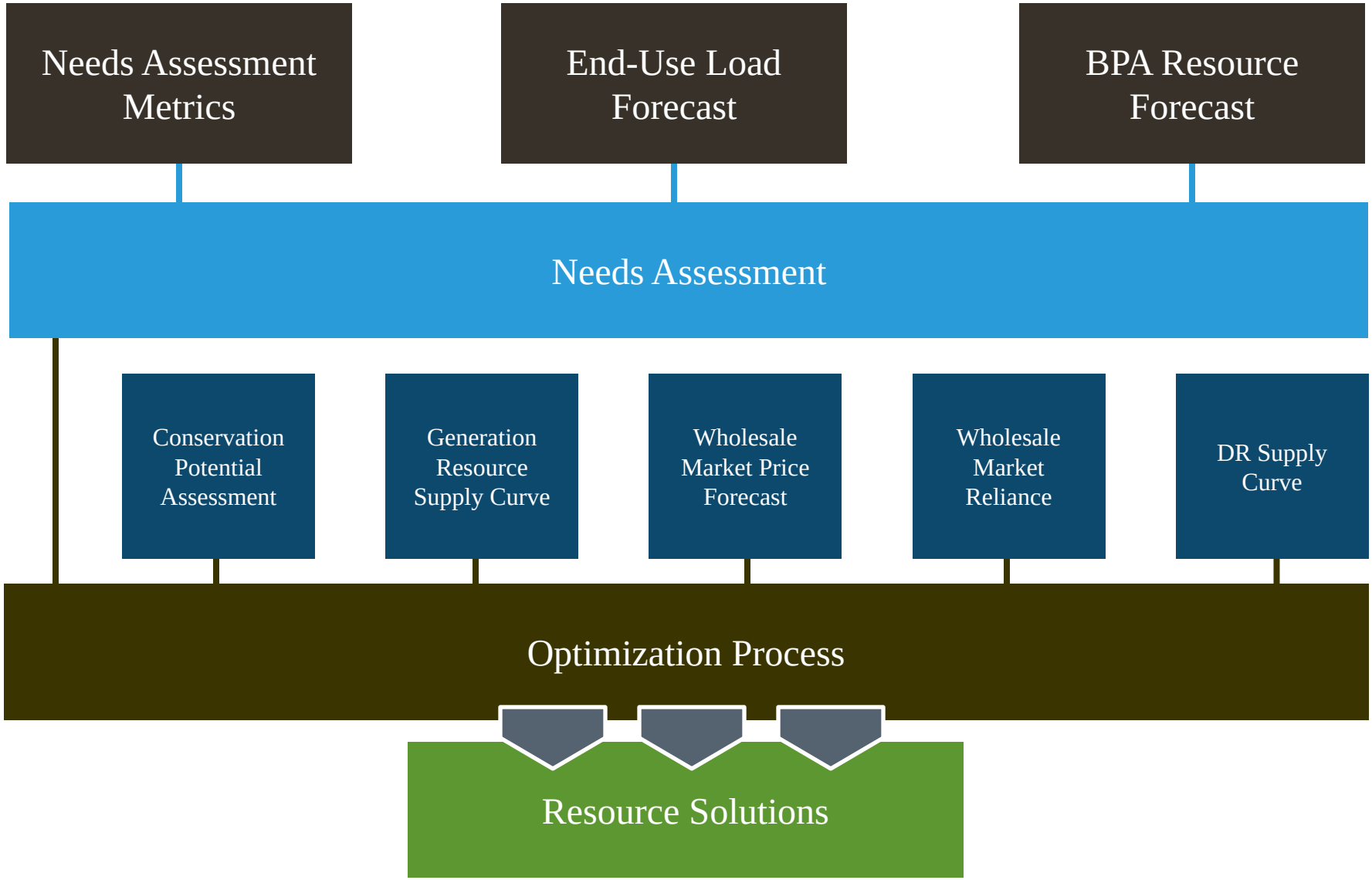
Overview

- Begins with a forecast of BPA load obligations and existing resources and then determines needs
- Identifies and evaluates potential solutions to meeting the needs (energy efficiency, demand response, wind, solar, natural gas plants, etc.)
- Outlines potential strategies for meeting those needs

The Resource Program is not:

- A decision or policy document such as an administrators record of decision
- A requirement of law or a regulating body such as FERC or NERC

Resource Program Overview



BPA Needs Assessment

A focus on BPA specific needs

- The needs assessment provides forecasts of federal system needs
- Based on all existing resources available to BPA, identifies future deficits where load obligations exceed available resources
- Measured in energy (aMW) and capacity (MW)
- Identifies needs over a 20-year period

BPA Energy and Capacity Needs

BPA is forecasting to have energy and capacity needs

- BPA is energy limited with the biggest forecasted deficits in the winter and smaller deficits in the early spring and late summer
- BPA is forecasting to have a capacity deficit in late summer by 2025 but is not forecasting a winter capacity deficit through 2039
- Currently, BPA is not forecasting the need for additional balancing reserves

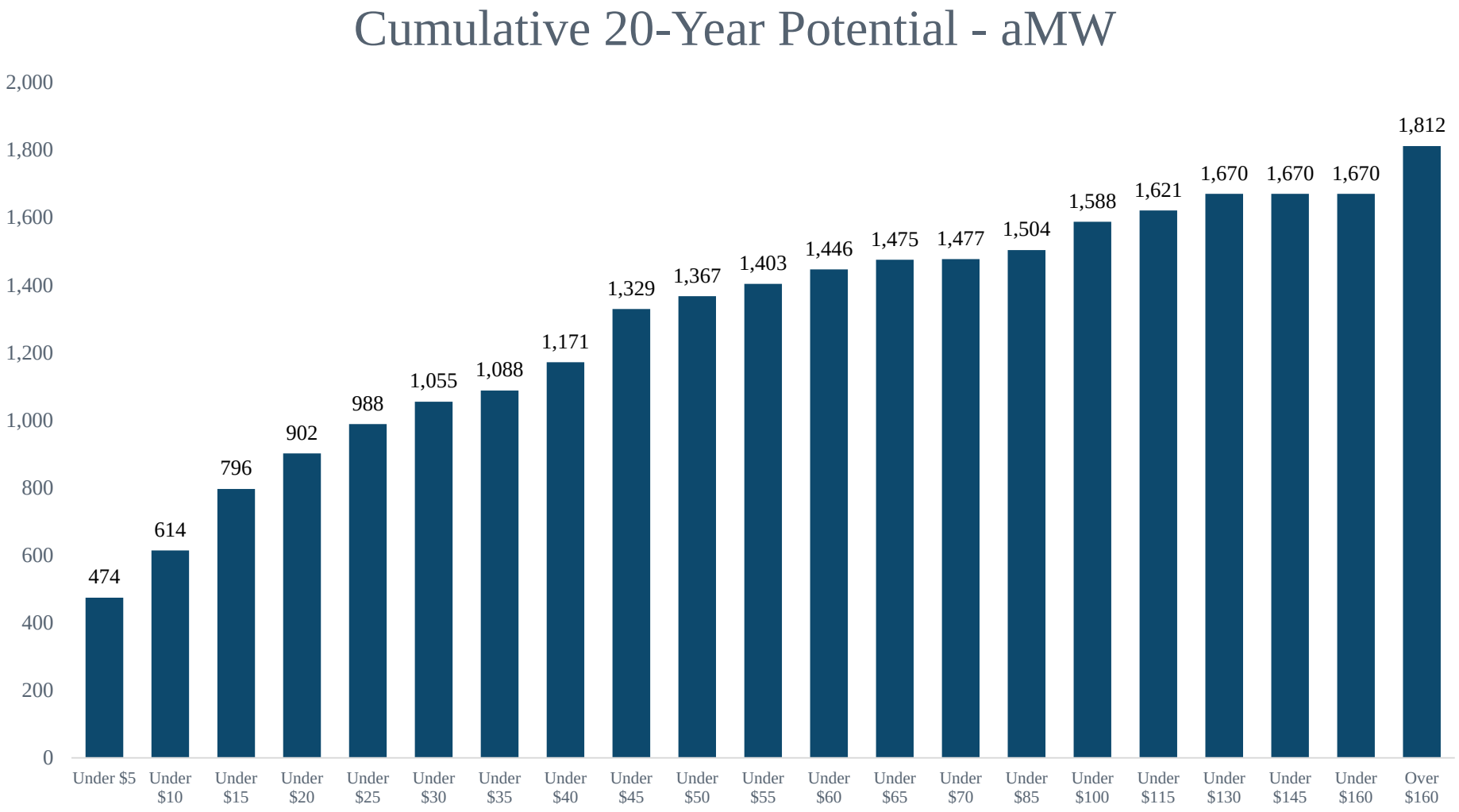
BPA Energy and Capacity Needs

BPA Needs Assessment Tested Against Five Metrics:

Energy-limited; Deficits greatest in winter

Capacity deficits in summer by 2025, but not deficit for winter

Conservation Potential Assessment



Demand Response Potential Assessment

Area	Winter Achievable Potential (MW)	Winter Percent of System Peak	Summer Achievable Potential (MW)	Summer Percent of System Peak
West	1,061	9.9%	807	10.8%
East	490	9.6%	795	13.5%
Total	1,551	9.8%	1,602	12.0%

Additional Resources

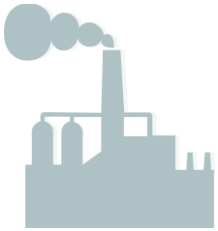
Wind

Market Reliance

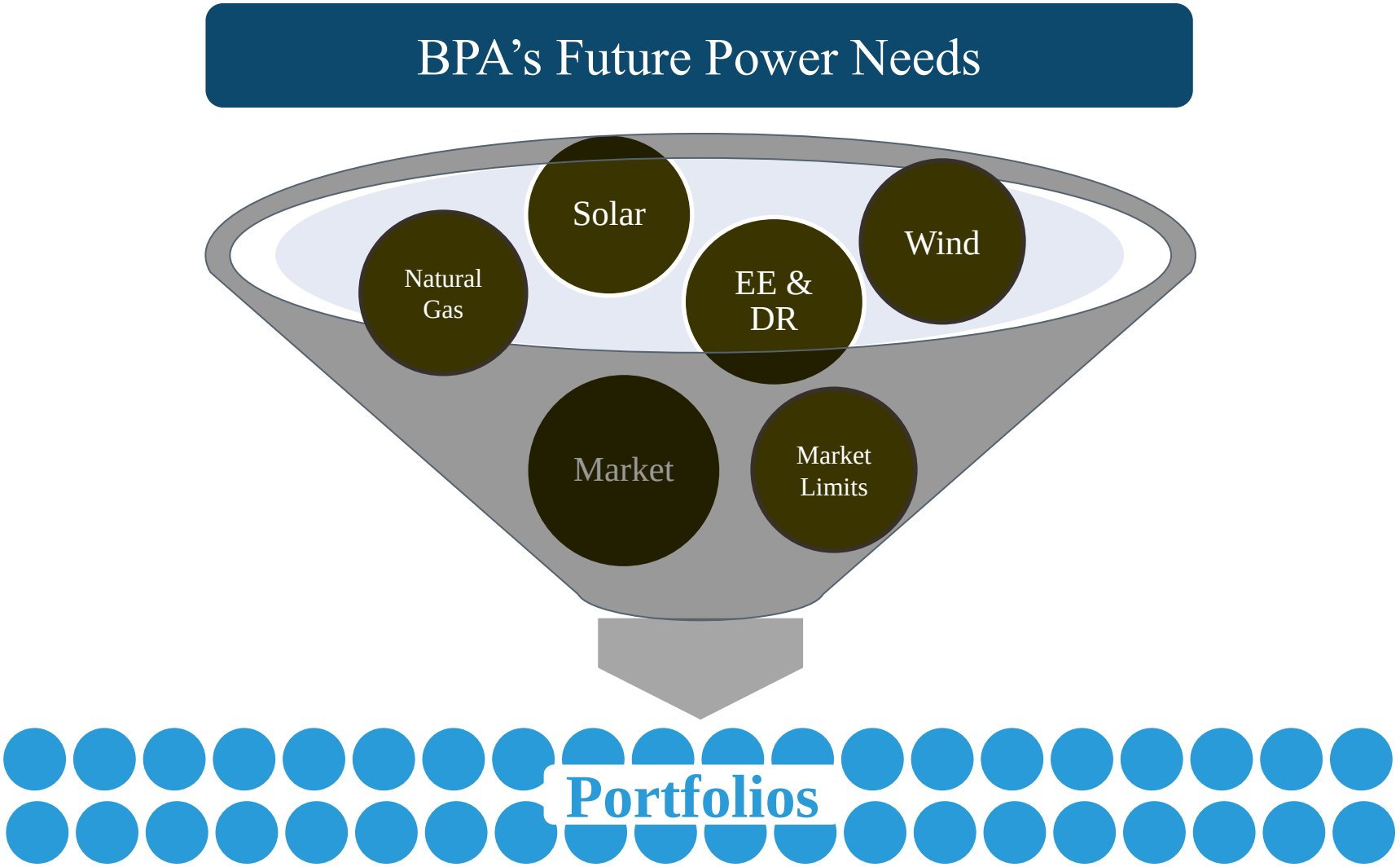
(Threshold for how many purchases can by made from the market)

Solar

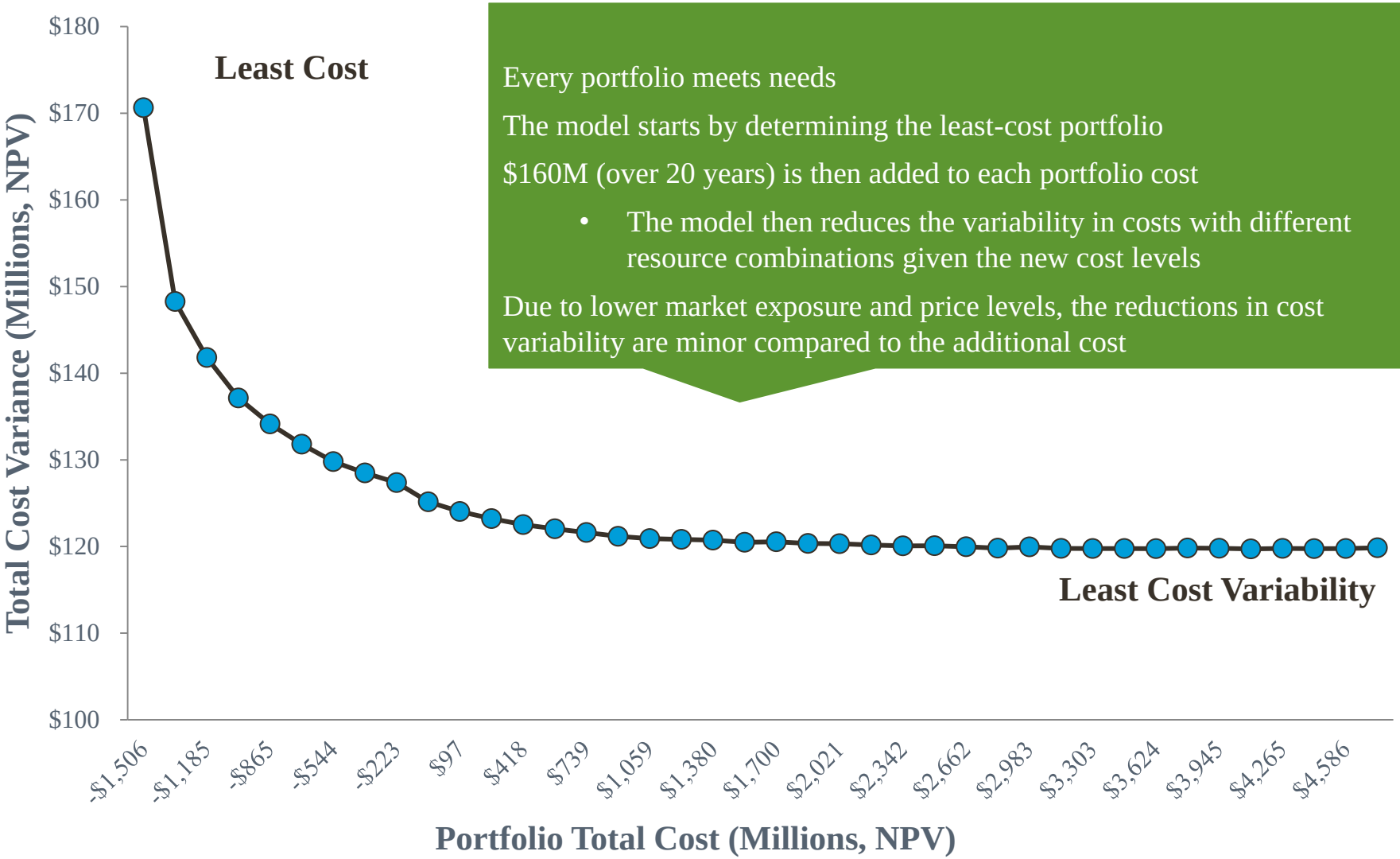
Natural Gas Plant



Optimization Model



Efficiency Frontier



Every portfolio meets needs

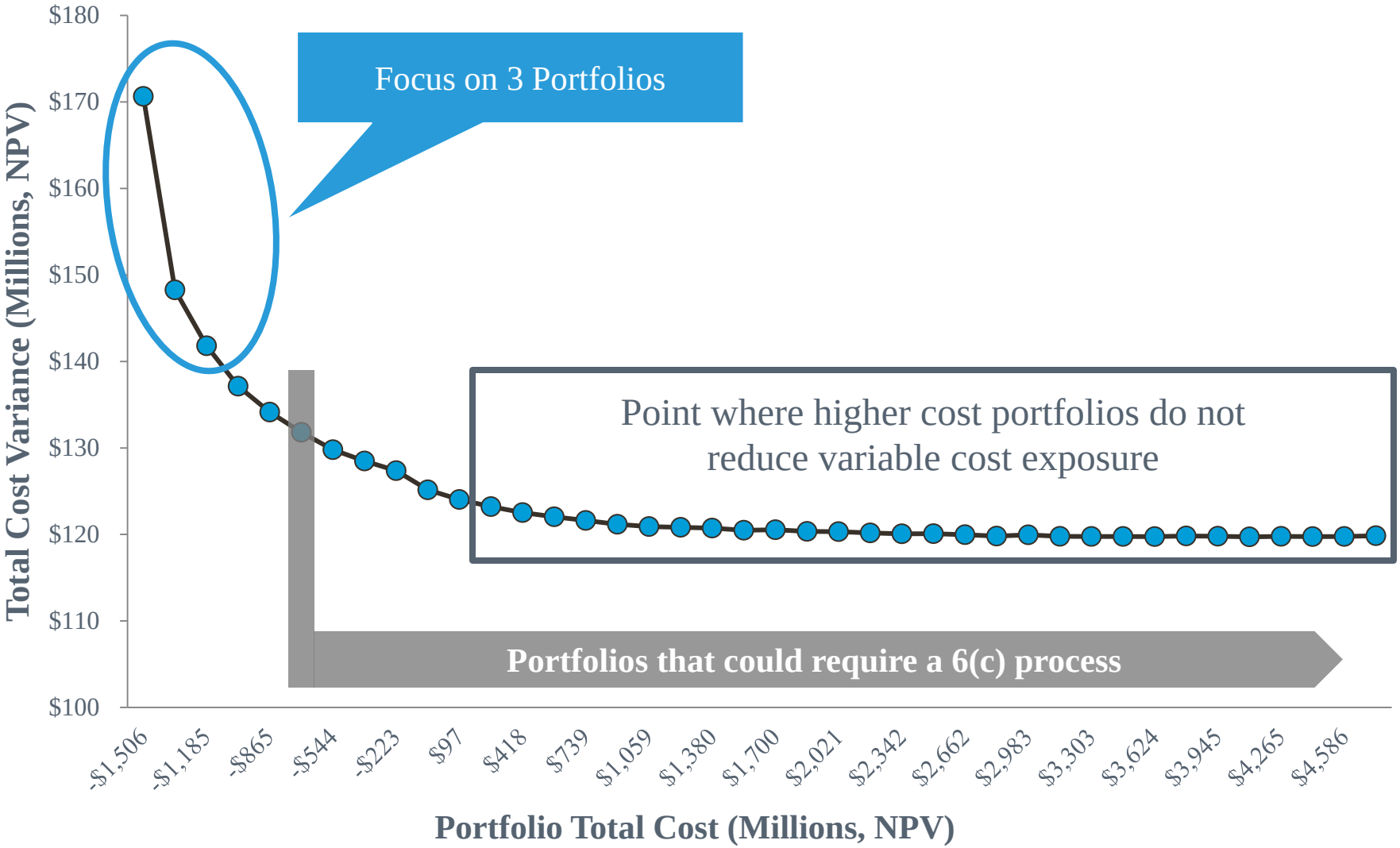
The model starts by determining the least-cost portfolio

$160M (over 20 years) is then added to each portfolio cost

- The model then reduces the variability in costs with different resource combinations given the new cost levels

Due to lower market exposure and price levels, the reductions in cost variability are minor compared to the additional cost

Efficiency Frontier Results

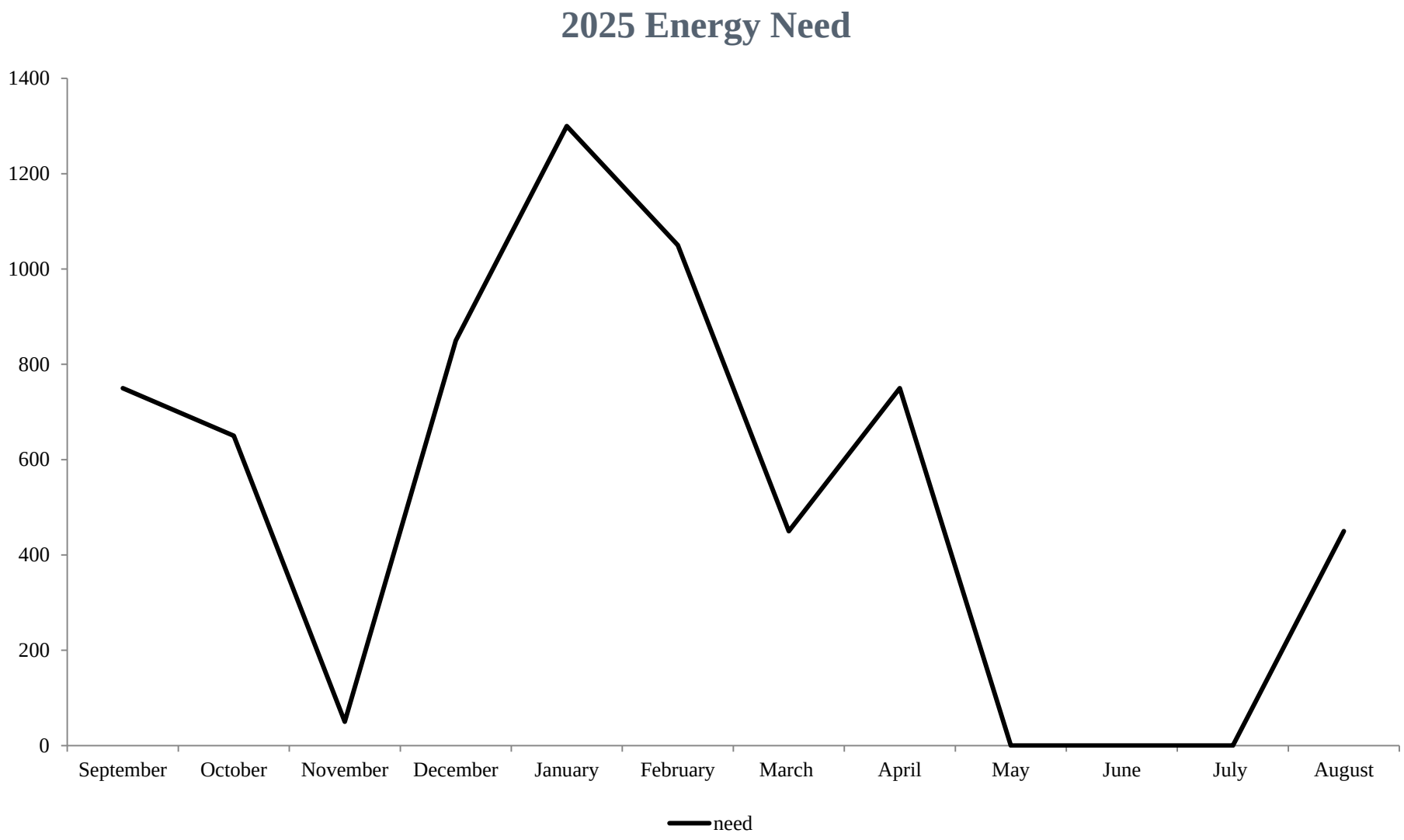


Resource Program Results - 2021

Total Acquisitions – Cumulative 2020-2021				
Portfolio	Max Monthly Market Purchases (aMW)	Energy Efficiency Acquired (aMW)	Highest EE Cost Bundle ($/MWh)	Demand Response Acquired (MW)
1	775 aMW	121 aMW	$25/MWh	40 MW
2	737 aMW	154 aMW	$40/MWh	131 MW
3	729 aMW	161 aMW	$50/MWh	131 MW

More EE and DR acquired as market purchase reliance is reduced

How EE Helps Meet Our Energy Needs



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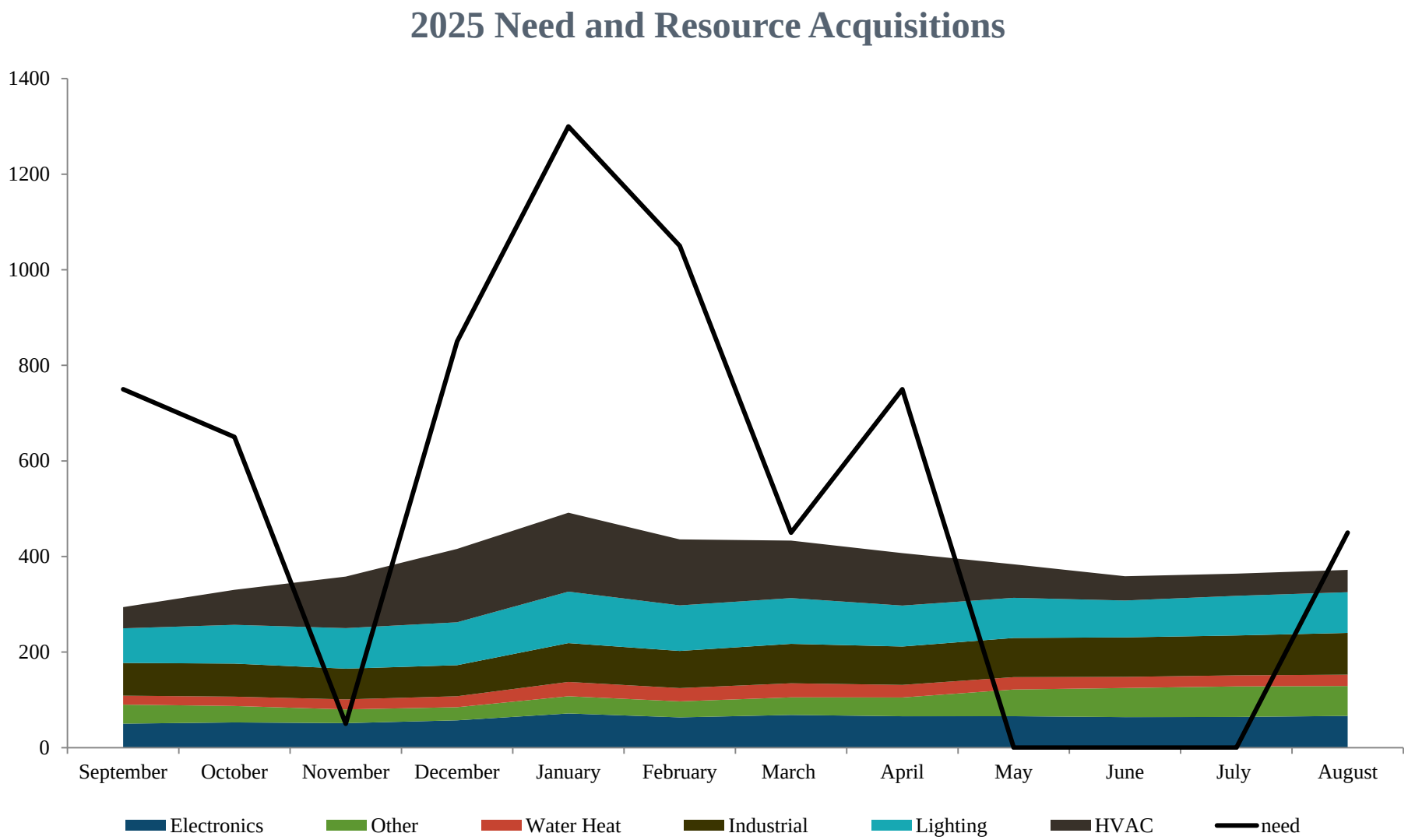

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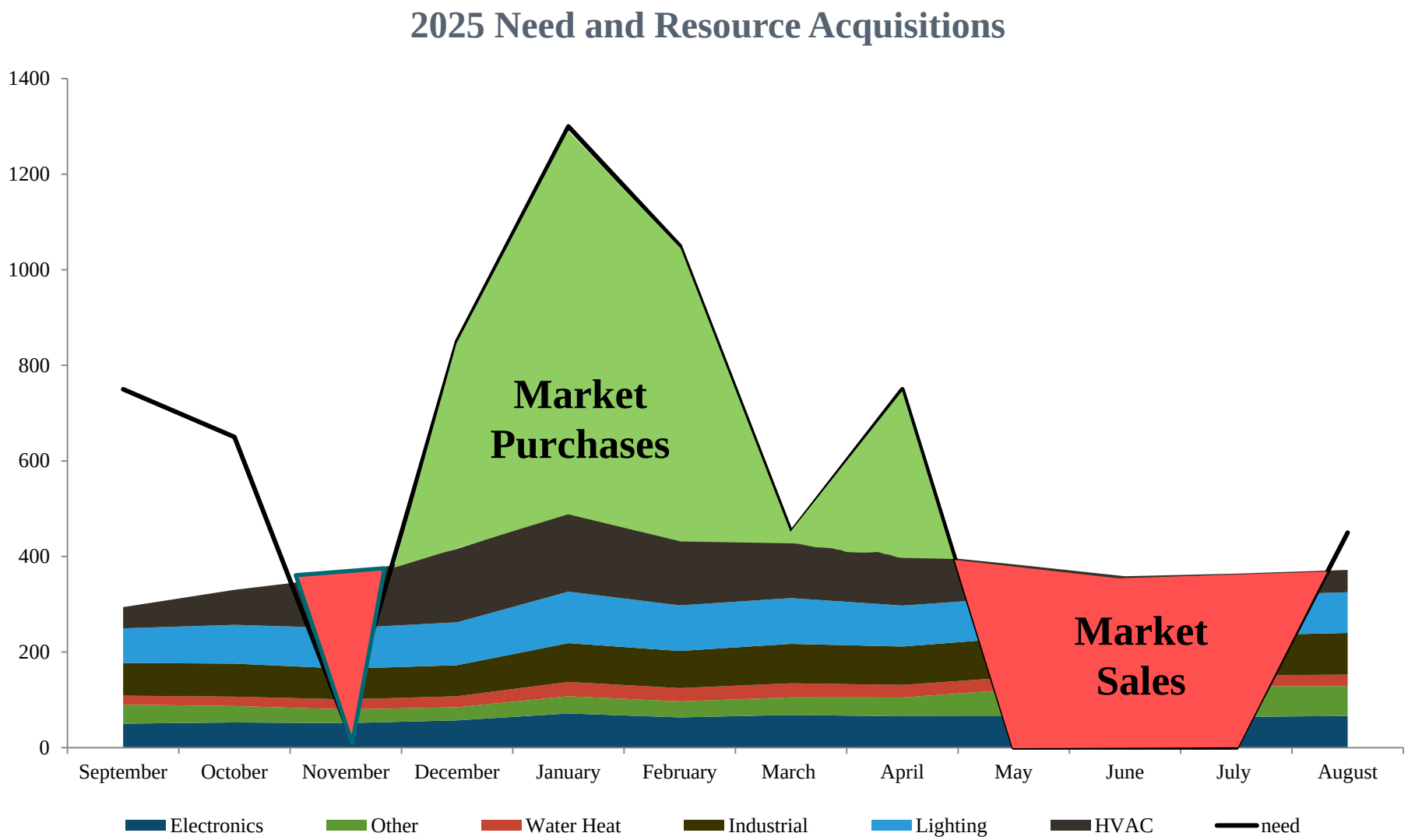


Resource Program Takeaways

EE, DR and Market Purchases

BPA can continue to meet its obligations with a mix of EE, DR and market purchases

Least Cost Contributor

EE is a significant component of a least-cost acquisition portfolio

Not All Savings Are Equal

Some energy efficiency provides a greater contribution to our needs

Current EE Program - Implementation

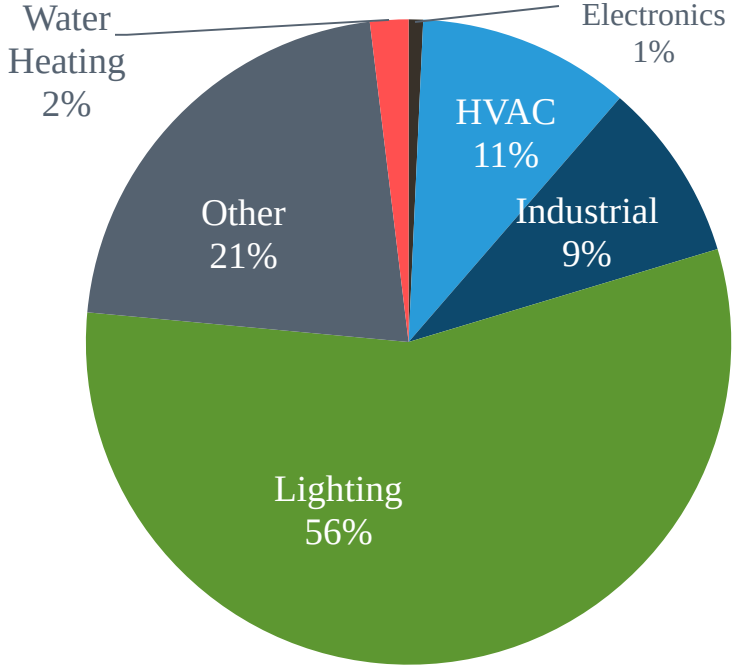
Our current portfolio is customer-service focused

Customer-service oriented program design

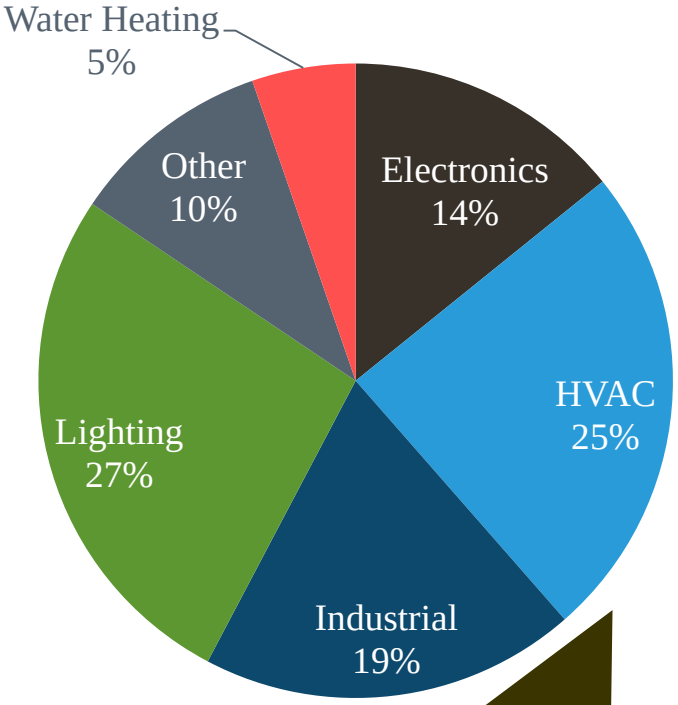
- Equity based allocation of acquisition funding: TOCA
- Broadest possible mix of measures and incentives to ensure local ability to deploy program
- No differentiation of measure support or BPA payment based on value to BPA system

Current Mix vs Potential Mix – All Savings Types

2017 Savings Achievements

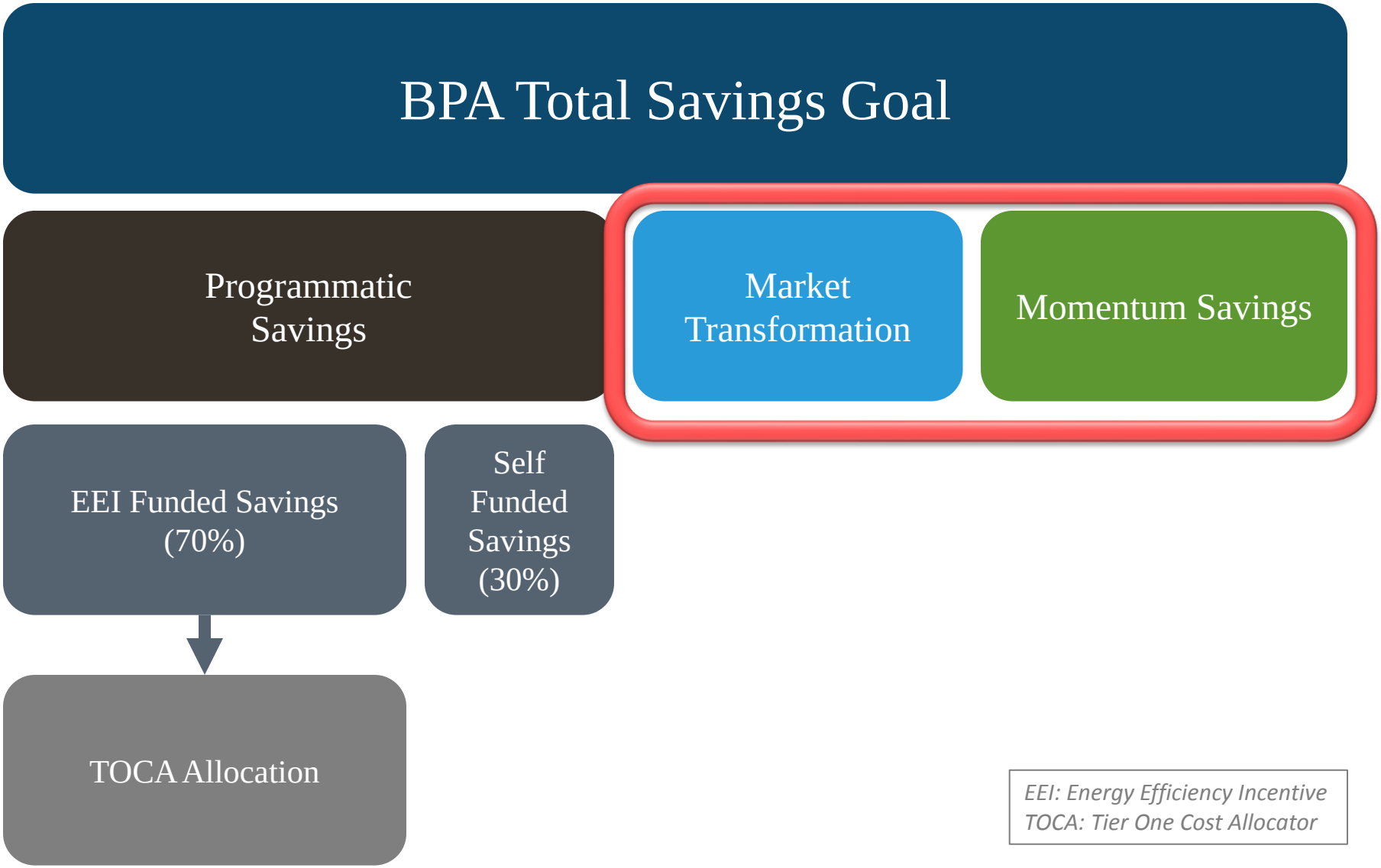


Resource Program Output



Better match to needs; higher barriers to achieve (cost and implementation)

Breakout of Savings Types



EEI: Energy Efficiency Incentive
TOCA: Tier One Cost Allocator

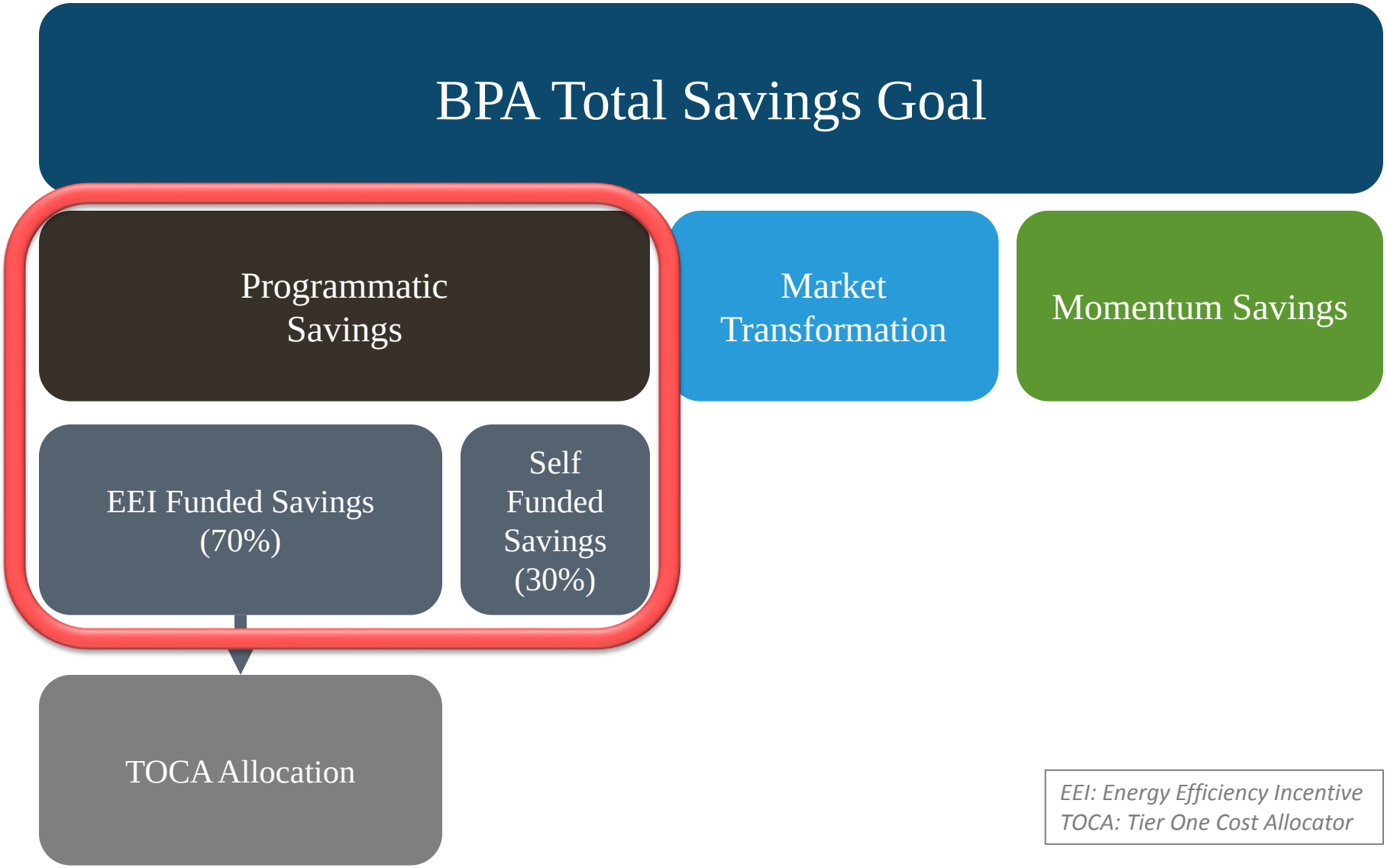
Momentum and NEEA Savings

2020 - 2021				
aMW	EE Plan	Portfolio 1	Portfolio 2	Portfolio 3
Momentum & NEEA Savings	121	47-74	64-74	65-74

There is some uncertainty in Momentum savings forecasts due to availability of data and risk of market research not finding significant savings

BPA forecasted a range of Momentum savings to recognize this uncertainty

Breakout of Savings Types



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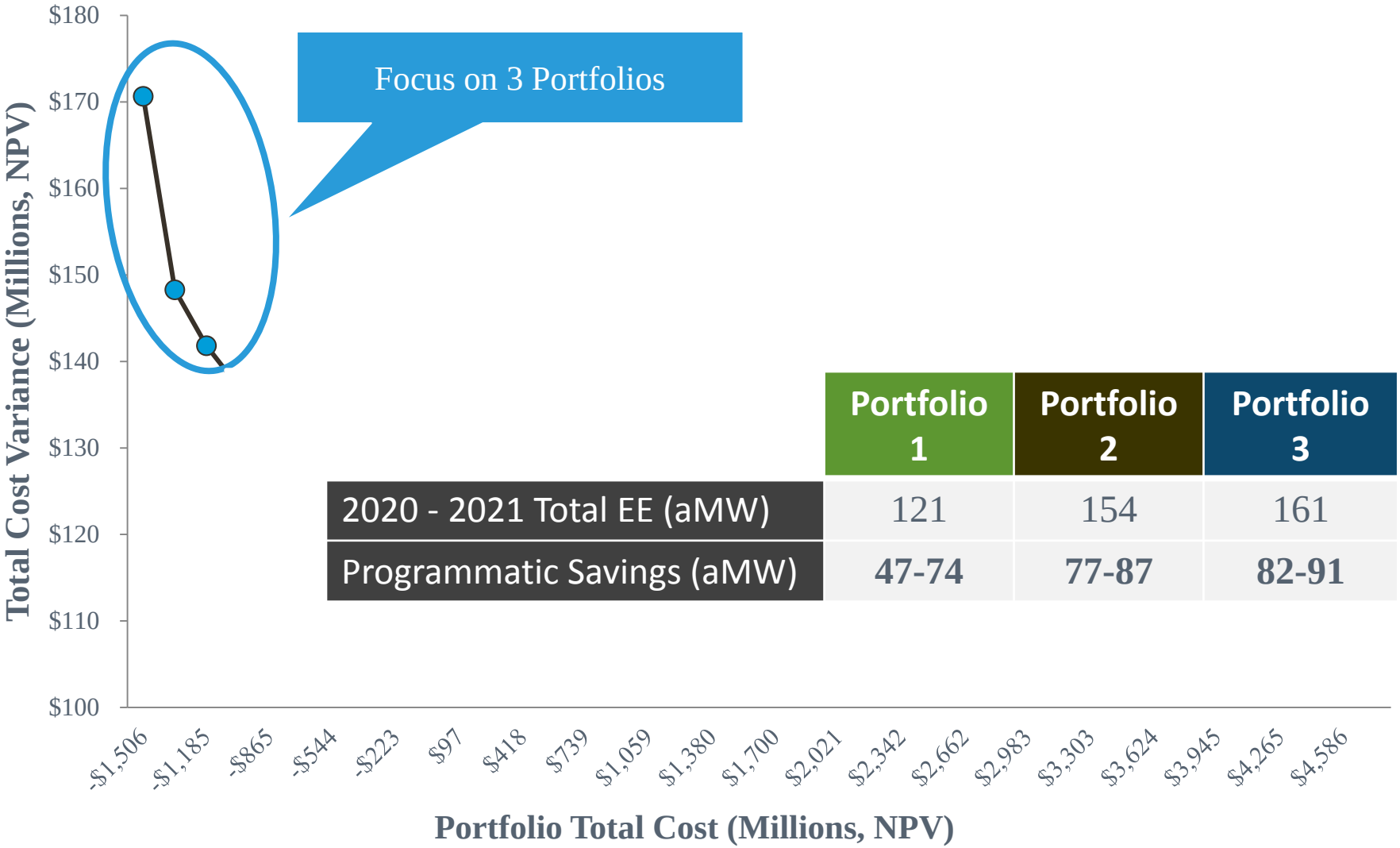
Efficiency Frontier Results



	Portfolio 1	Portfolio 2	Portfolio 3
2020 - 2021 Total EE (aMW)	121	154	161
Programmatic Savings (aMW)	**47-74**	**77-87**	**82-91**

Programmatic Savings

2020 - 2021				
	Updated Savings	Portfolio 1	Portfolio 2	Portfolio 3
Programmatic Savings (aMW)	101	47-74	77-87	82-91

Each portfolio has a different composition of savings, resulting in different costs compared to the current EE portfolio

Acquisition Costs

2020 - 2021				
	Updated EE Plan	Portfolio 1	Portfolio 2	Portfolio 3
Programmatic Savings (aMW)	101	47-74	77-87	82-91
Average Portfolio Cost ($M/aMW)	$1.33	$2.30	$3.00	$3.10

The cost of the programmatic portfolio increases as the mix of energy efficiency measures changes across portfolios.

Each portfolio adds more higher cost HVAC

Total Budget

2020 - 2021				
	Updated EE Plan	Portfolio 1	Portfolio 2	Portfolio 3
Programmatic Savings (aMW)	101	47-74	77-87	82-91
Average Portfolio Cost ($M/aMW)	$1.33	$2.30	$3.00	$3.10
Total Programmatic Cost ($M)	$134	$110 - $150	$230 - $260	$250 - $285

A range of programmatic savings at an average portfolio cost results in a range of total Conservation Purchases budget

EE Program Principles

Acquire savings that meet BPA's needs

Maintain customer equity

Retain program stability

Recognize cost pressures, as well as goals of the BPA strategic plan

Programmatic Savings Proposal

2020 - 2021			
	Updated EE Plan	Resource Program Portfolio 1	Proposal
Programmatic Savings (aMW)	101	47-74	74-101
Average Portfolio Cost ($M/aMW)	$1.33	$2.30	$1.81 -$1.33
Total Programmatic Cost ($M)	$134	$110-150	$134

BPA expects to achieve a blend of savings between the current program and the mix chosen by the Resource Program. This will likely result in a portfolio cost somewhere between the current cost and the higher cost of Portfolio 1

EE Budget Categories

Conservation Acquisition

- Energy Efficiency Incentives
- Energy Smart Reserve Power

Conservation Infrastructure

- Program Infrastructure Support
- Momentum Savings

Distributed Energy Resources

Market Transformation

Low-Income Conservation State and Tribal Grants

Energy Efficiency Development (Reimbursable Activities)

Legacy Programs

EE IPR Cost Table

	Actuals		Rate Case		Proposed IPR	
($ Thousands)	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
Conservation Infrastructure	22,826	20,437	27,149	27,283	27,296	27,296
Conservation Purchases	76,758	72,548	71,785	71,785	67,000	67,000
Demand Response & Smart Grid	947	729	856	854	855	855
Low-income Energy Efficiency	5,361	5,415	5,523	5,627	5,739	5,853
Market Transformation	12,213	12,117	12,364	12,049	12,050	12,050
Grand Total	**118,106**	**111,246**	**117,677**	**117,597**	**112,940**	**113,054**

Demand Response

Total Acquisitions – Cumulative 2020-2021				
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Resource Program ID's DR for summer capacity in lowest cost portfolios

Demand Response

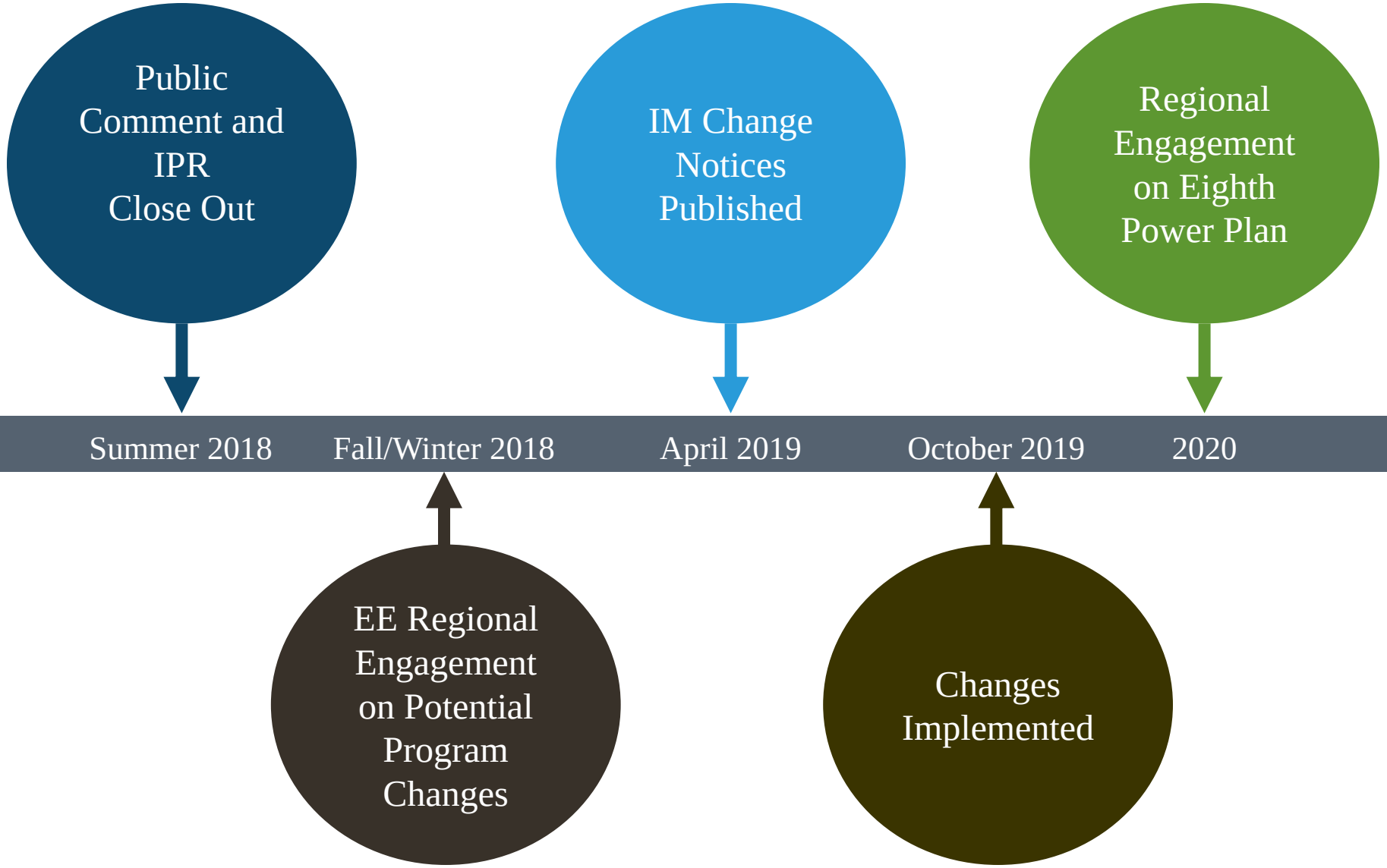
DR to demonstrate reliability and commercial viability

DR to meet operational power and transmission needs

Resource Program
Non-wires analysis
Integrated Planning

Implementation costs out of scope for Energy Efficiency IPR. Specific funding pending program design proposal and tied to benefitting business

Timeline


Public Comment and IPR Close Out
IM Change Notices Published
Regional Engagement on Eighth Power Plan
Summer 2018
Fall/Winter 2018
April 2019
October 2019
2020
EE Regional Engagement on Potential Program Changes
Changes Implemented

EE Program Next Steps

Summer 2018

- Evaluate current portfolio and potential program adjustments

Fall/Winter 2018-2019

- Engage with customers and stakeholders on potential changes

April 2018

- Announce changes in April Change Notice document

QUESTIONS?

FINANCIAL DISCLOSURE

This information was publicly available on June 18, 2018, and contains information not sourced directly from BPA financial statements.