

Borough of Perkasio, PA

Power Supply Master Plan

May 14, 2012



Discussion Agenda

- Current Power Supply Position
- Block Procurement Strategy
 - 2014-2015
 - 2016-2017
 - Post-2017
- Long-Term Portfolio Diversity
- Other Key Power Supply Planning Issues
- Next Steps



Current Power Supply Position



Current Power Supply Position

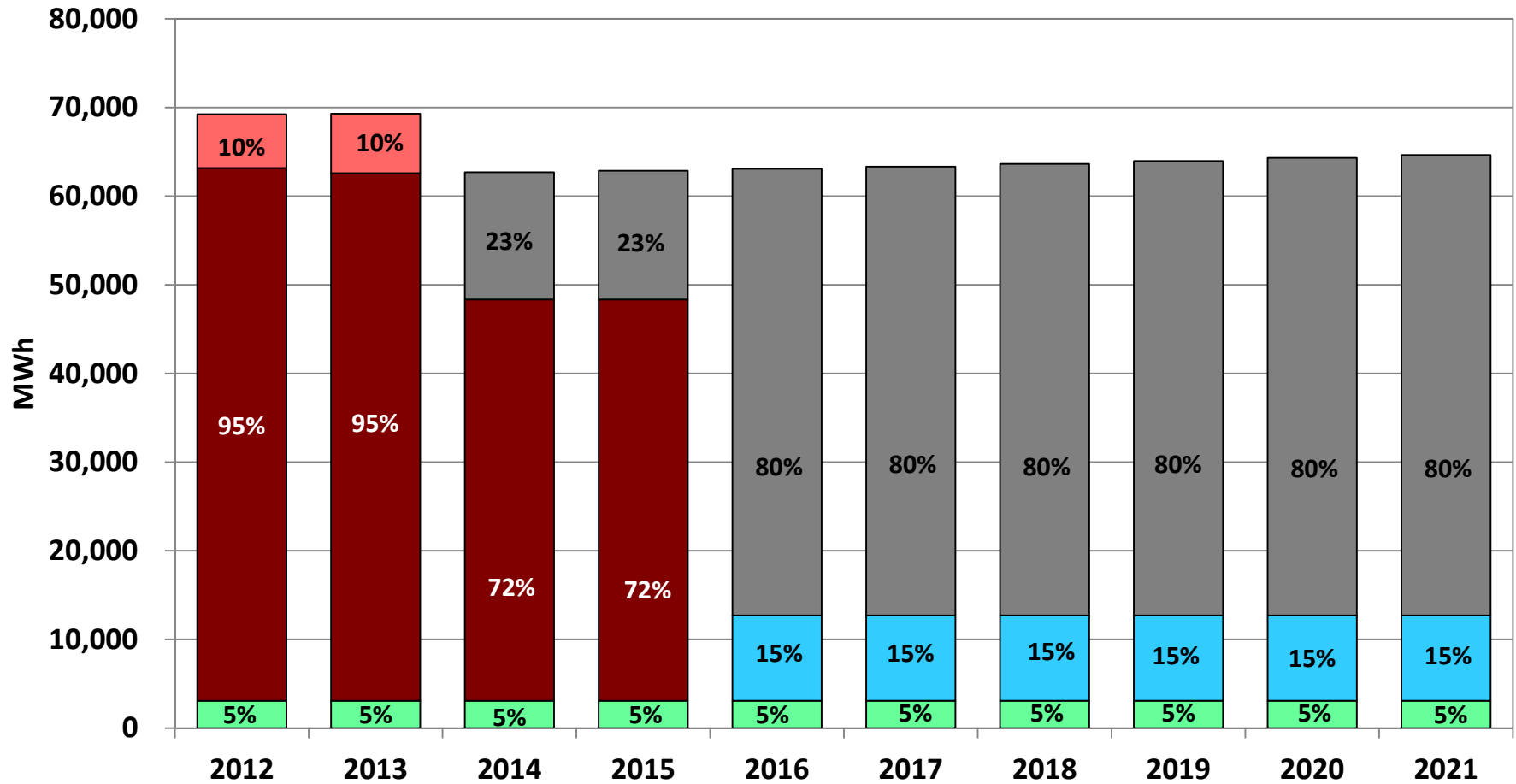
	Fixed Load Shape Contact Price (\$/MWh)
2009	83.17
2010	80.25
2011	81.50
2012	83.17
2013	83.17
2014	82.00
2015	82.00

- Perkasio holds a Fixed Load Shape contract with Morgan Stanley through 2015 for on-peak and off-peak power blocks delivered to the PPL Zone
- Perkasio also purchased a 1.1 MW, 7x24 Block from Exelon for 2016-2022 delivered to the PPL Zone

– Contract price: \$71.50/MWh

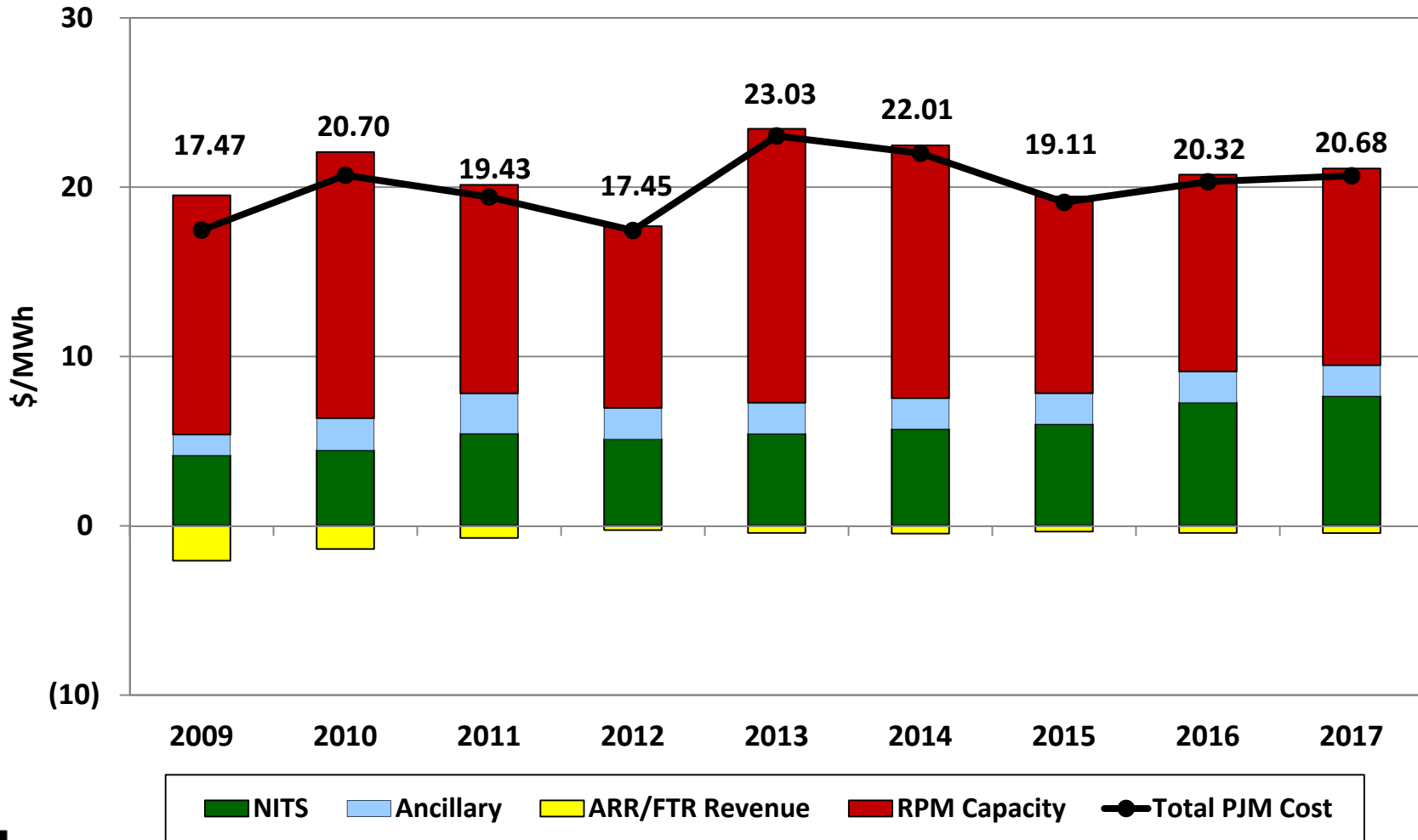


Projected Energy Requirements and Purchases



*NYPA generation based on 2010-2011 average dispatch

Estimated PJM Charges

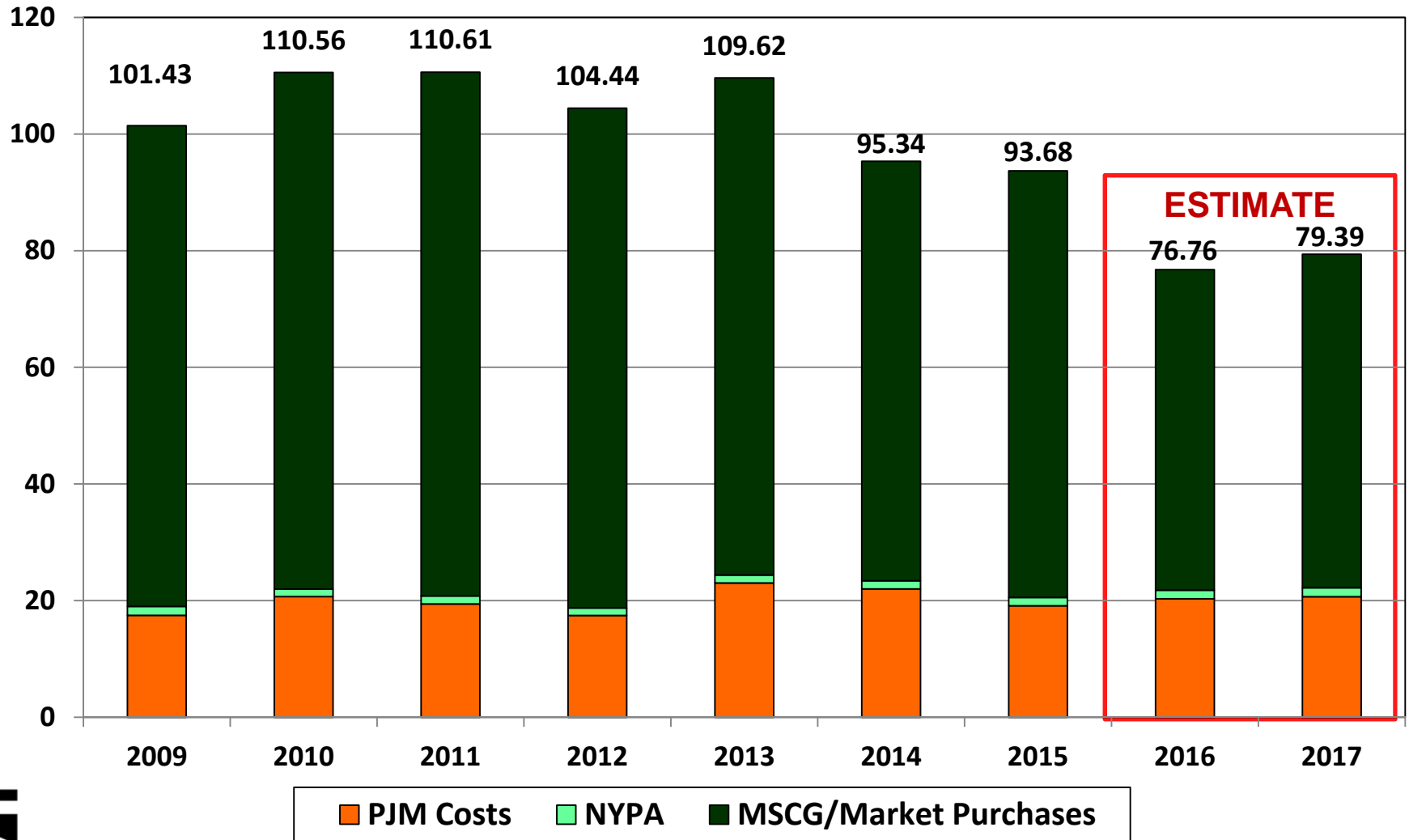


■ NITS
 ■ Ancillary
 ■ ARR/FTR Revenue
 ■ RPM Capacity
 ● Total PJM Cost



*2009-2011 All-in Rates based on actual costs
 *2012-2015 All-in Rates based on projected costs
 *RPM Rates based on actuals through May 2015; RPM Rate assumed flat for June 2015-Dec 2017
 *FTR Credit based on PROMOD market prices

Estimated All-in Power Rates



*2009-2011 All-in Rates based on actual costs
 *2012-2015 All-in Rates based on projected costs
 *2016-2017 Market Rates based on PPL Zone market price projections from PROMOD

Block Procurement Strategy



Proposed Future Power Supply Block Procurement Strategy Overview

- Perkasio's short-term block procurement strategy will be implemented in 3 stages to achieve price stability goals:
- Stage 1 (2014-2015)
 - **Goals:**
 - Fulfill remaining monthly block power needs in 2012 for 2014/2015
 - Review opportunities to decrease energy prices in 2014/2015
- Stage 2 (2016-2017)
 - **Goal:**
 - Achieve greater price certainty by purchasing ~70% of energy requirements now while market prices are low
 - Purchase remaining monthly block needs 2 years prior to delivery year
- Stage 3 (Post-2017)
 - **Goal: Begin procurement strategy that develops long-term portfolio stability and diversity**



Stage 1: 2014-2015

Block Procurement Strategy

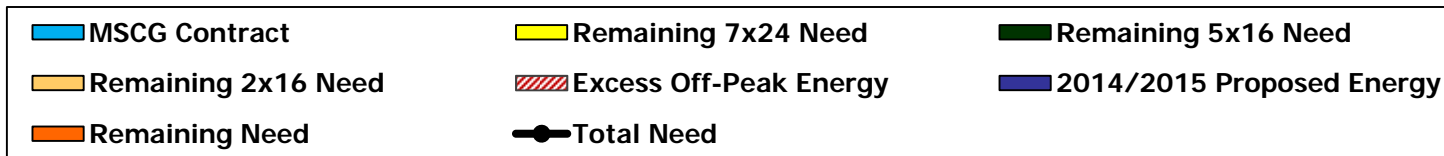
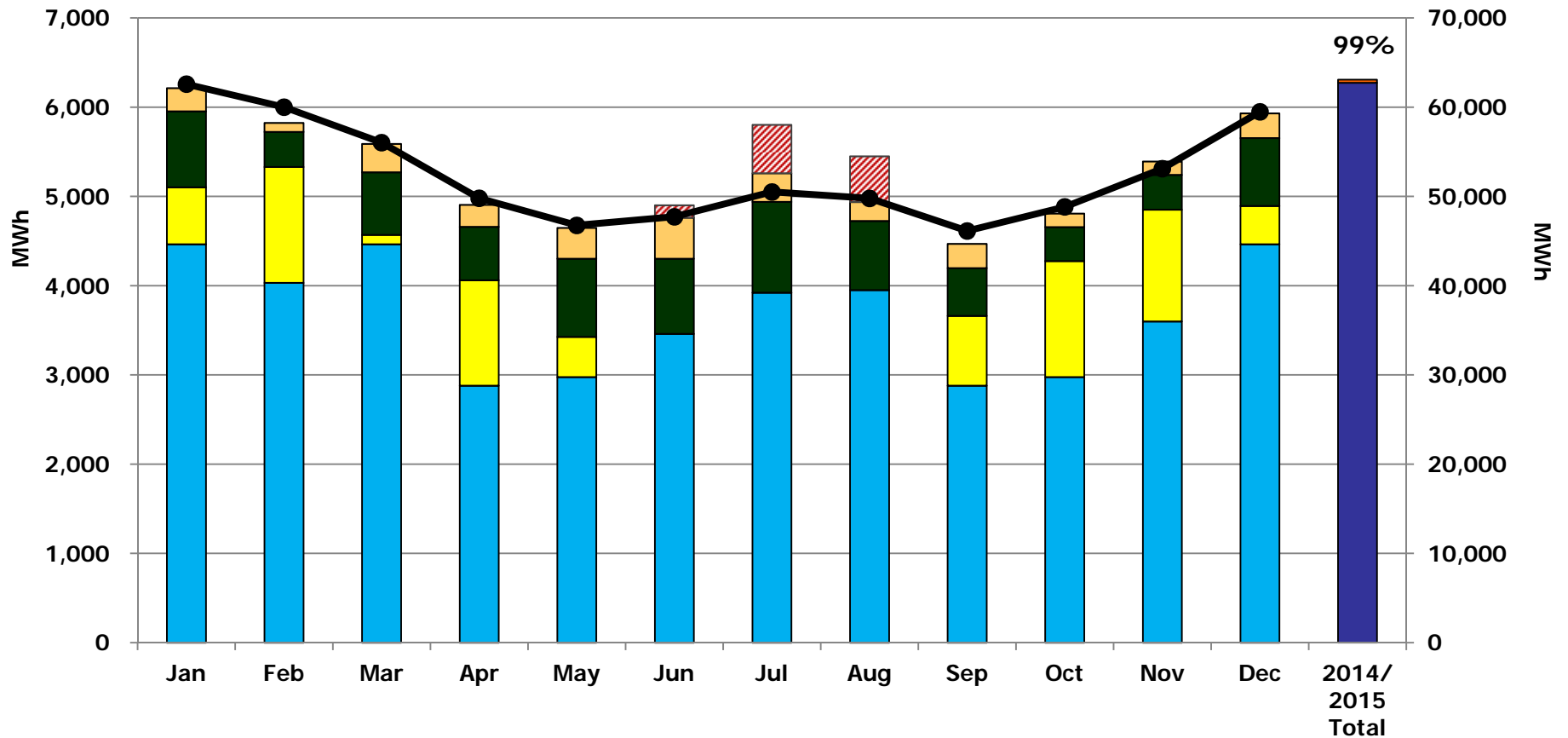
- Goal:
 - Fulfill remaining monthly block power needs in 2012 for 2014/2015
 - Review opportunities to decrease energy prices in 2014/2015
- Strategy:
 - Review current 2014-2015 Morgan Stanley block purchases
 - Determine remaining monthly block purchases required to fulfill energy requirements
 - Discuss blend-and-extend contract option in 2014/2015 to achieve lower prices in final years of Morgan Stanley contract



Stage 1: 2014-2015

2014/2015 Total Annual Energy Requirements

Block Sizing Model Results



Stage 1: 2014-2015

2014/2015 Blend and Extend Option

- Perkasio's current Fixed Load Shape contract with Morgan Stanley includes prices in the \$80/MWh range

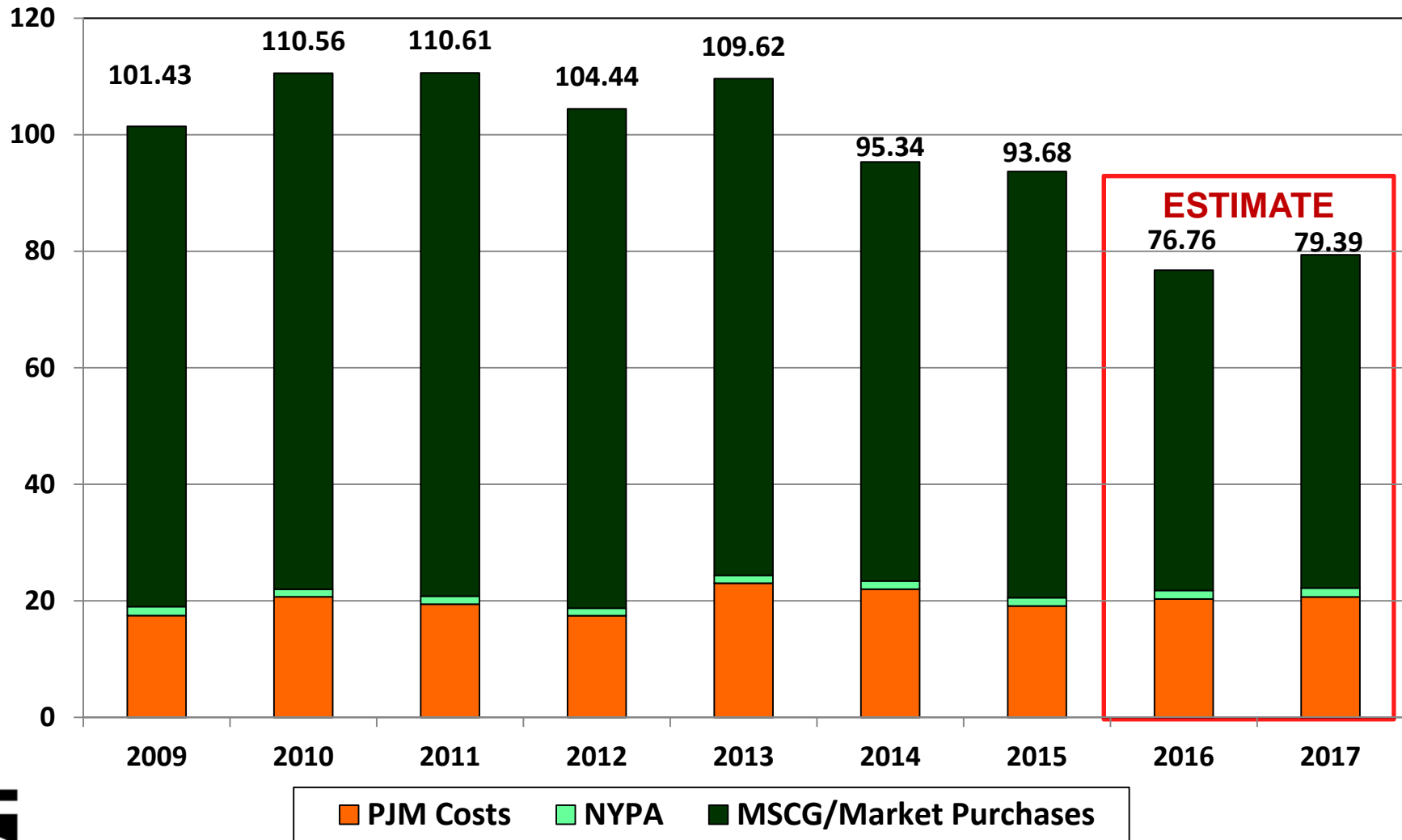
	Fixed Load Shape Contract Price (\$/MWh)
2010	83.17
2010	80.25
2011	81.50
2012	83.17
2013	83.17
2014	82.00
2015	82.00

- A contract extension option could be a blend-and-extend contract with Morgan Stanley or another counter-party
 - Blends lower costs in 2016/2017 with higher costs in 2014/2015
 - Would have to utilize one supplier for a longer period of time and for a predominant portion of the energy requirements



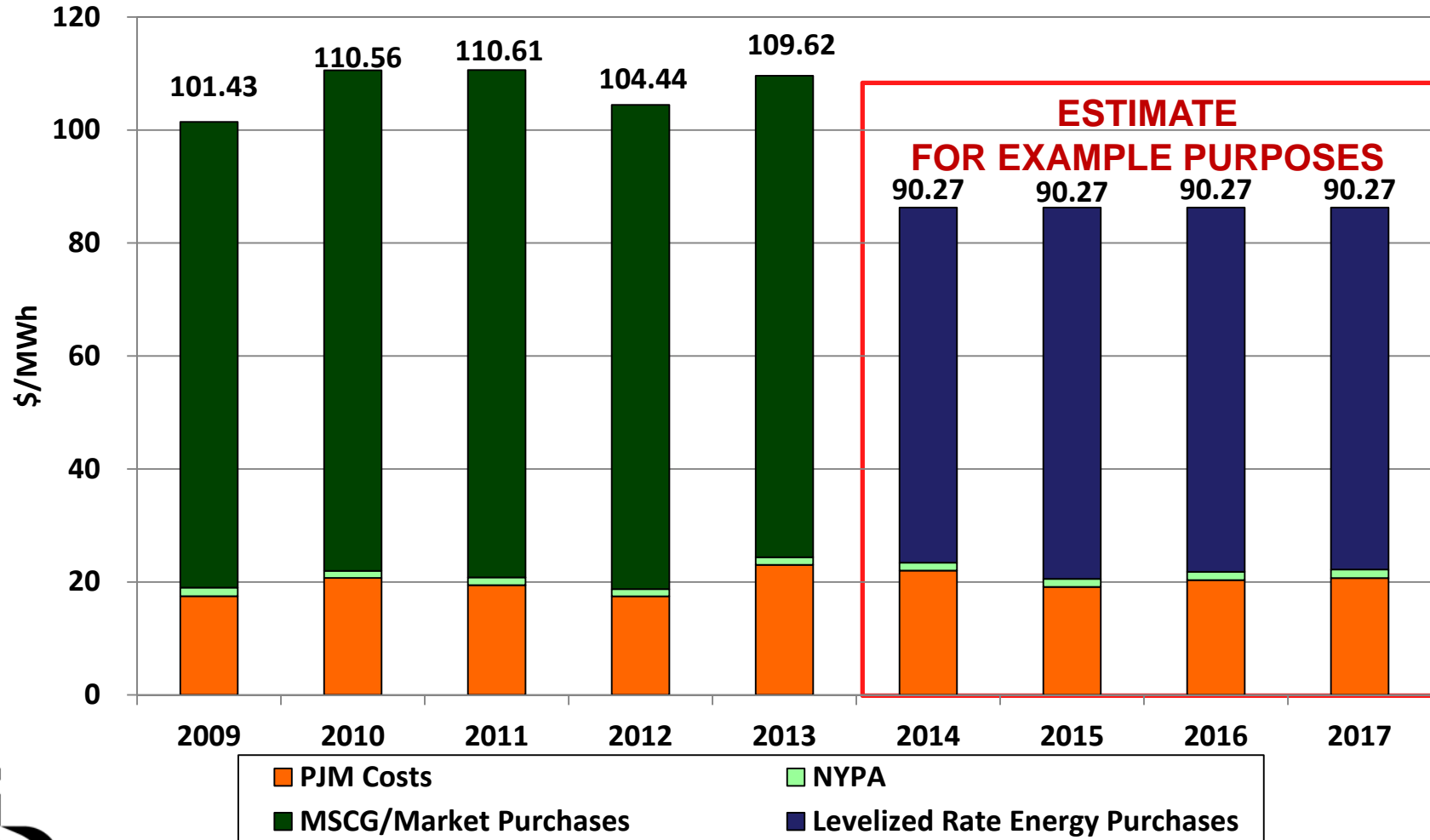
Stage 1: 2014-2015

Current Estimated All-in Power Rates



*2009-2011 All-in Rates based on actual costs
 *2012-2015 All-in Rates based on projected costs
 *2016-2017 Market Rates based on market prices projections from PROMOD

Stage 1: 2014-2015 Blend and Extend Estimated All-in Power Rates



*2009-2011 All-in Rates based on actual costs
 *2012-2013 All-in Rates based on projected costs
 *2014-2017 All-in Rates based on nominal dollar shift to levelize prices
 *Estimated Blend and Extend Premium included in 2014-2017 Blend and Extend price

Stage 2: 2016-2017

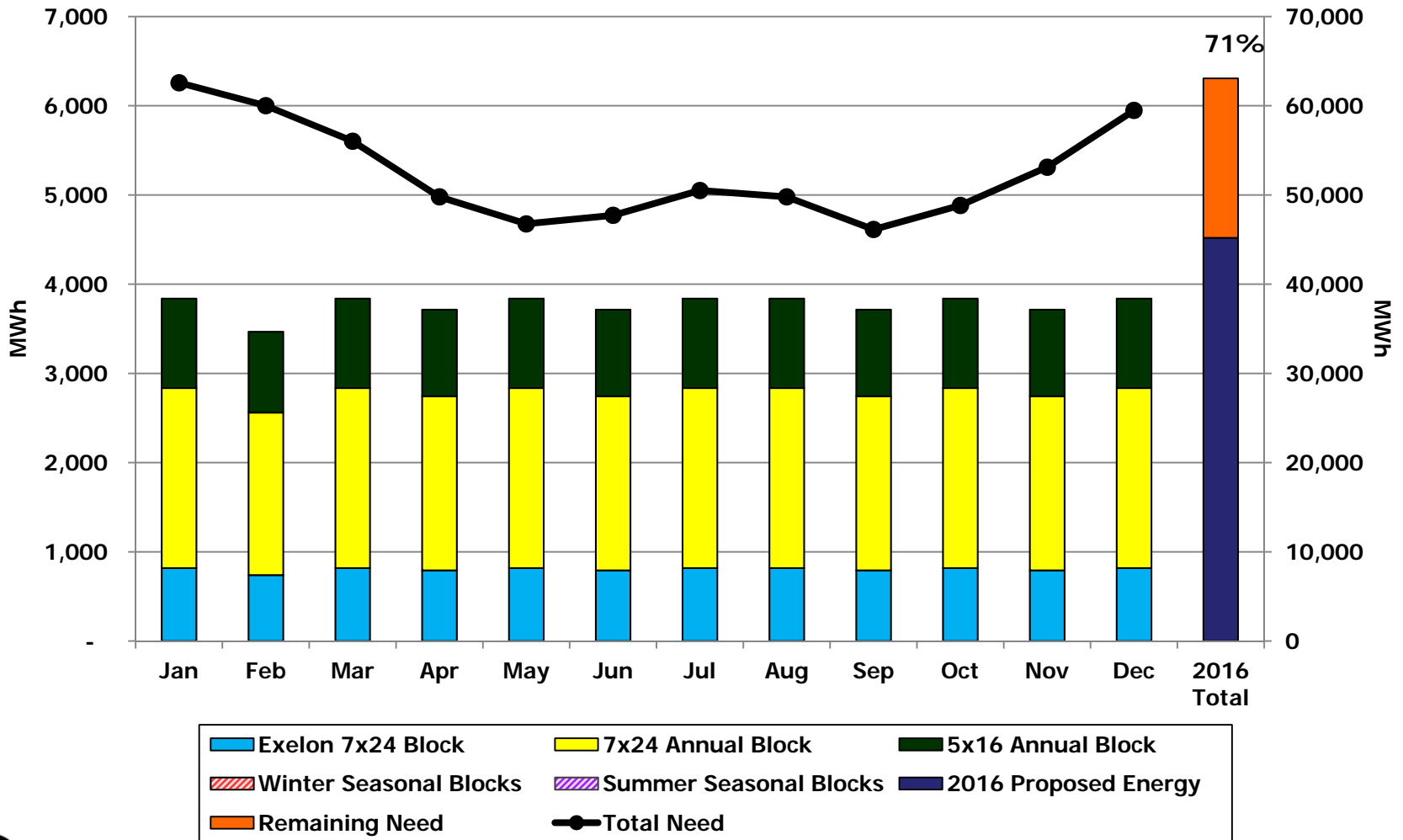
Block Procurement Strategy

- Purchase Strategy
 - Goal:
 - Create greater price certainty in 2016/2017 by procuring ~70% of 2016/2017 energy requirements now while market prices are low
 - Achieve decreasing average energy prices with each block purchase
 - Purchase remaining monthly block needs 2 years prior to delivery year
 - Strategy:
 - Determine annual 5x16 and 7x24 block sizes to fulfill a large percentage of 2016/2017 energy requirements
 - Purchase 5-year 5x16 annual power block
 - Target price: Lower than Exelon 7x24 long-term annual block of \$71.50/MWh
 - Layer in 7x24 annual power block for 2016/2017
 - Target price: Lower than 5-Year 5x16 annual block price
 - Fill in remaining monthly block purchases 1-2 years prior to delivery year



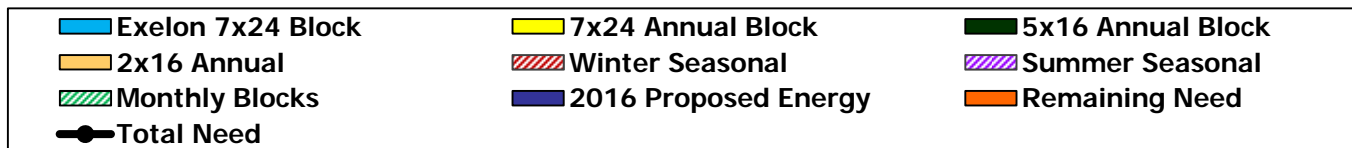
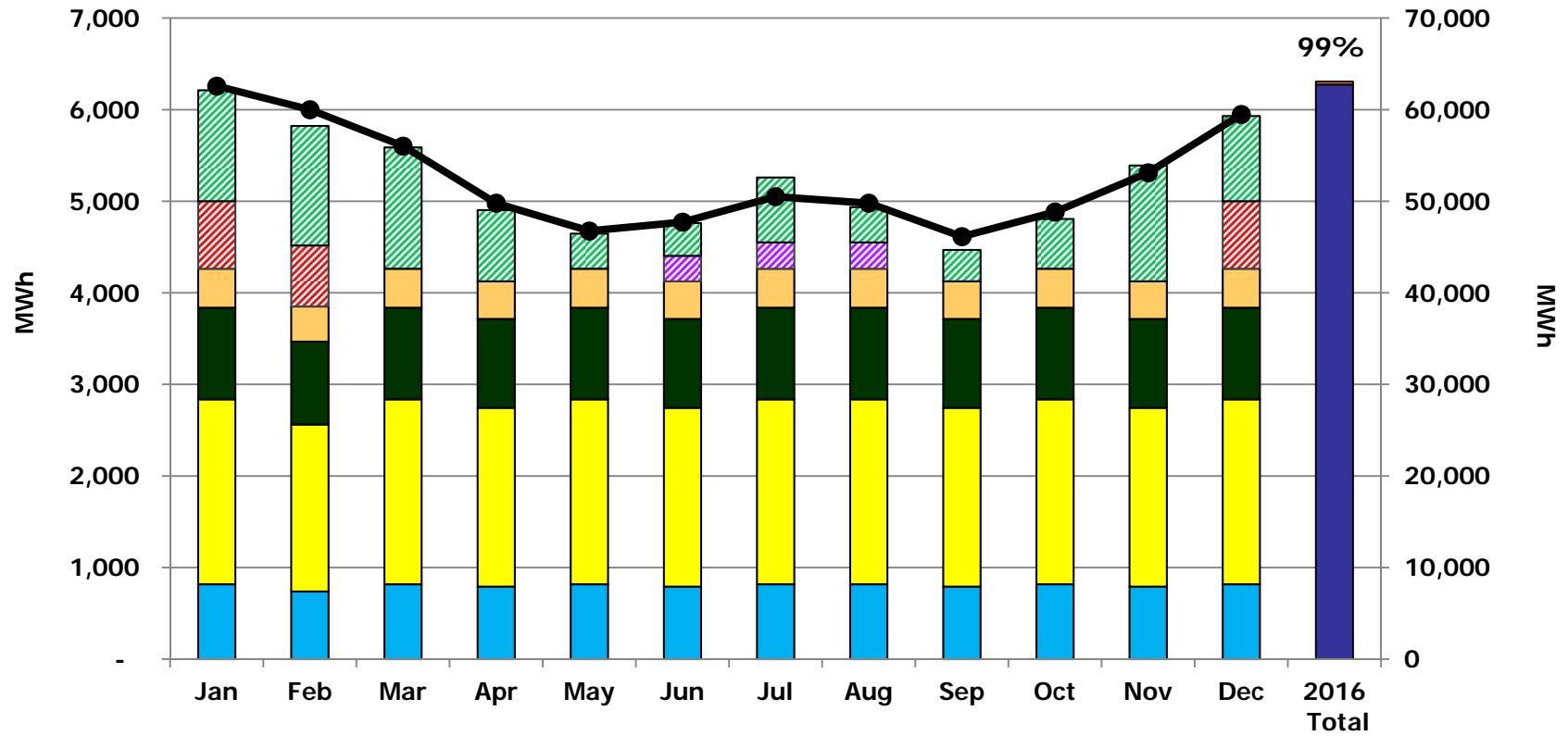
Stage 2: 2016-2017

2016/2017 Annual Blocks



Stage 2: 2016-2017

2016 Total Energy Requirements



Stage 3: Post-2017

Block Procurement Strategy

- Goal: Implement a procurement strategy offers long-term portfolio stability and diversity by:
 - Forcing purchases to be spread out instead of purchasing at a single point in time
 - Allows Perkasio to take advantage of market changes and develop contract diversity with varying contract terms/suppliers
 - Discouraging chasing the lowest price in the market
 - Markets can be volatile and difficult to predict
 - Removing market highs and lows
 - Purchasing portions of Perkasio's portfolio across multiple time periods can achieve balanced costs that average out fluctuations in the market



Stage 3: Post-2017

Block Procurement Strategy

- Strategy: Create short and long-term stability and portfolio diversity through balanced purchasing strategy by developing:
 - Appropriate block power sizes that fit load requirement
 - Product type for purchase (7x24, 5x16, 7x8, etc)
 - Guidelines outlining purchasing benchmarks for long-term needs, mid-term needs, and short-term remaining market needs one to two year prior to delivery year
 - Term length for purchases
 - Guidelines outlining the timing for power supply procurement
 - Triggers for conducting purchase targets



Stage 3: Post-2017

Guidelines for block power sizes

Annual Block Summary – 7x24

	Total Annual Block Need (MW)	Conservative Annual Block Need (MW)
7x24 Annual Block	3.8	2.5
Exelon 7x24 Block	1.1	1.1
Net 7x24 Annual Block	2.7	1.4

Annual Block Summary – 5x16

	Total Annual Block Need (MW)	Conservative Annual Block Need (MW)
5x16 Annual Block	2.8	0.0

- Important to consider conservative block sizes below load levels for longer term purchases
 - Market sales from annual long-term blocks with levelized prices that exceed load will appear to be large losses in the front-end of the term



Stage 3: Post-2017

Guidelines for block power sizes

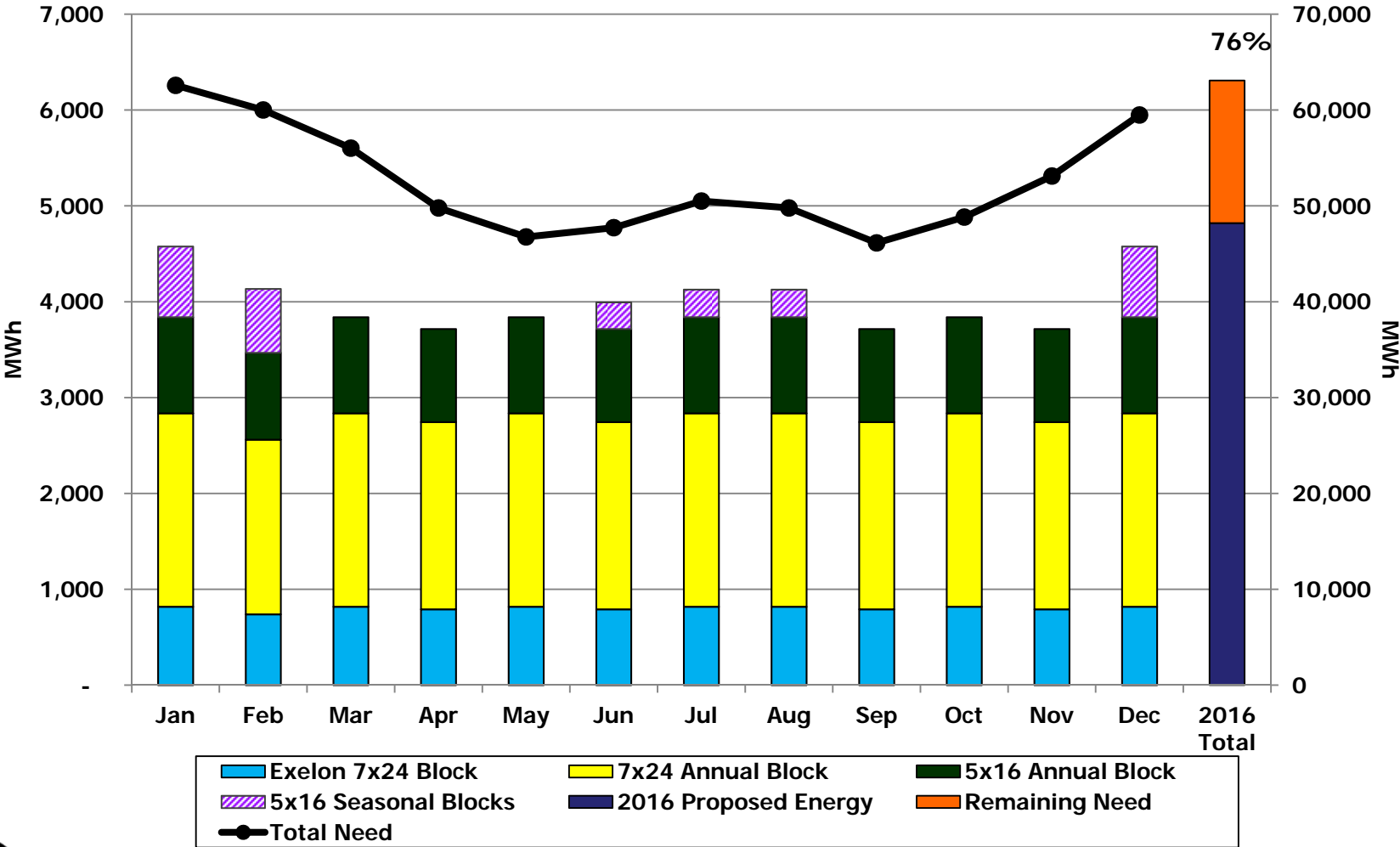
Seasonal Block Summary – 5x16

	Total Winter Seasonal Block Need (MW)	Total Summer Seasonal Block Need (MW)
5x16 Seasonal Block	2.1	0.8

- Seasonal block products offer an alternative product option to fit Perkasio's elevated off-peak winter load and elevated on-peak summer load

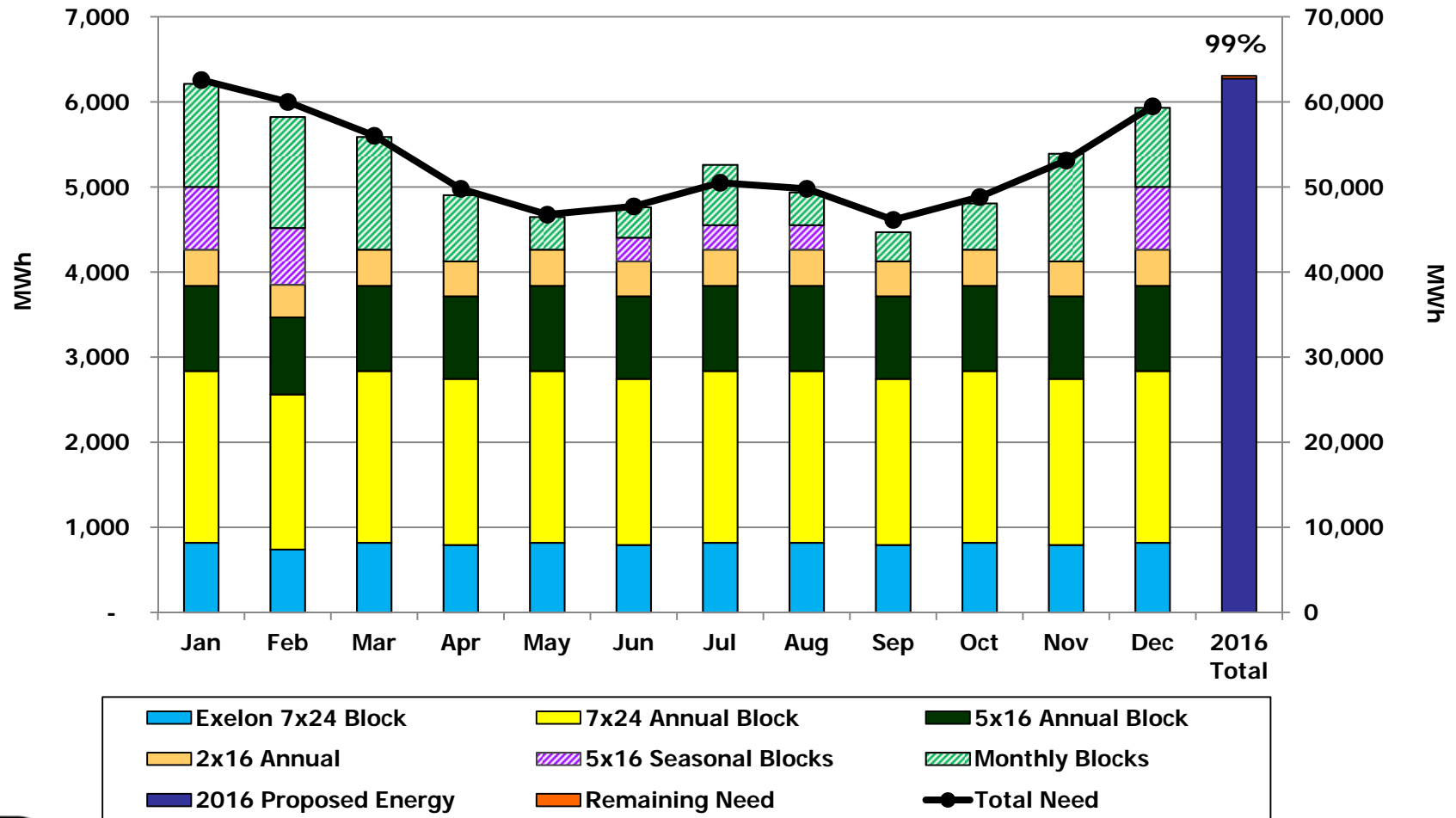


Stage 3: Post-2017 Annual & Seasonal Blocks

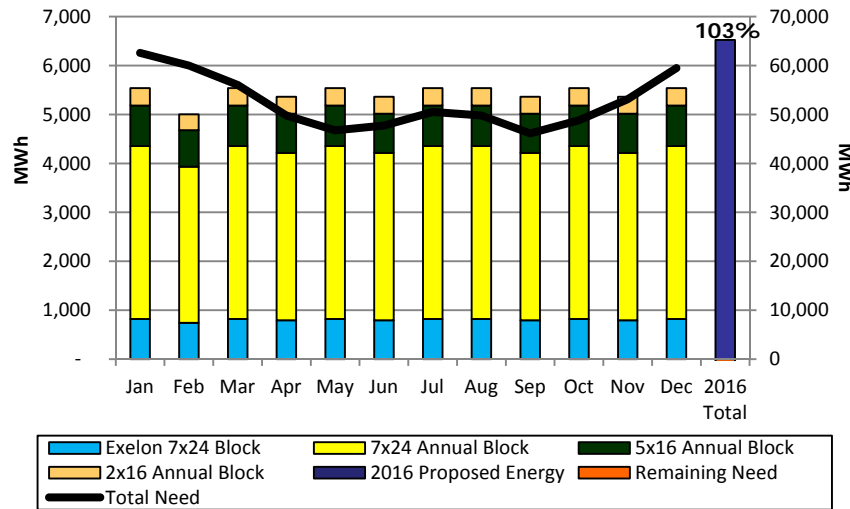


Stage 3: Post-2017

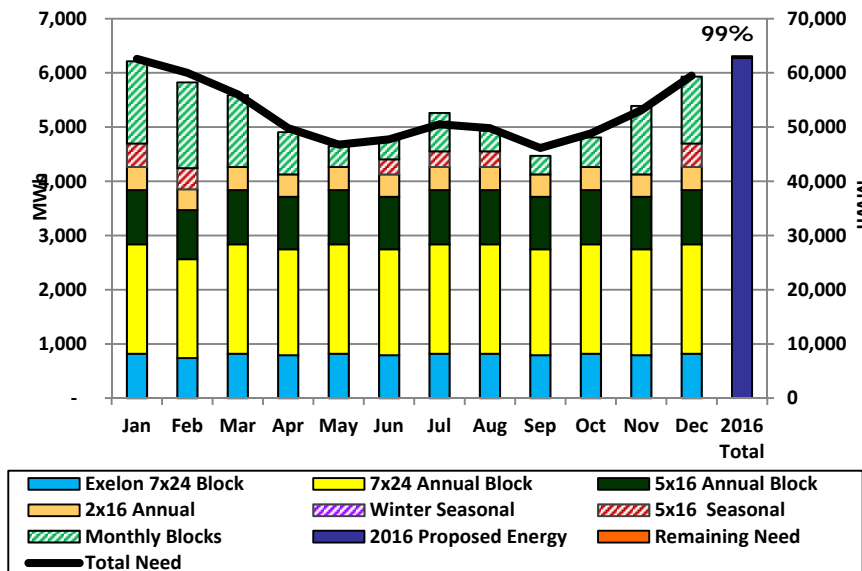
Annual, Seasonal, and Monthly Blocks



Comparison of Annual Block Purchases and Mixture of Annual and Monthly Block Purchases



- Annual Only Blocks**
- Less Granularity; “Blockier”
 - Lower Premium
 - Large number of market purchases and sales in an uncertain market



- Annual and Monthly Blocks**
- More Granularity; Fits load shape better
 - Higher Premium
 - Small number of market purchases and sales in an uncertain market

*Annual and monthly block purchases and market interactions based on 2016 PPL Zone market prices from PROMOD

Stage 3: Post-2017

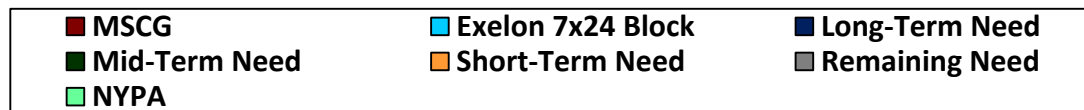
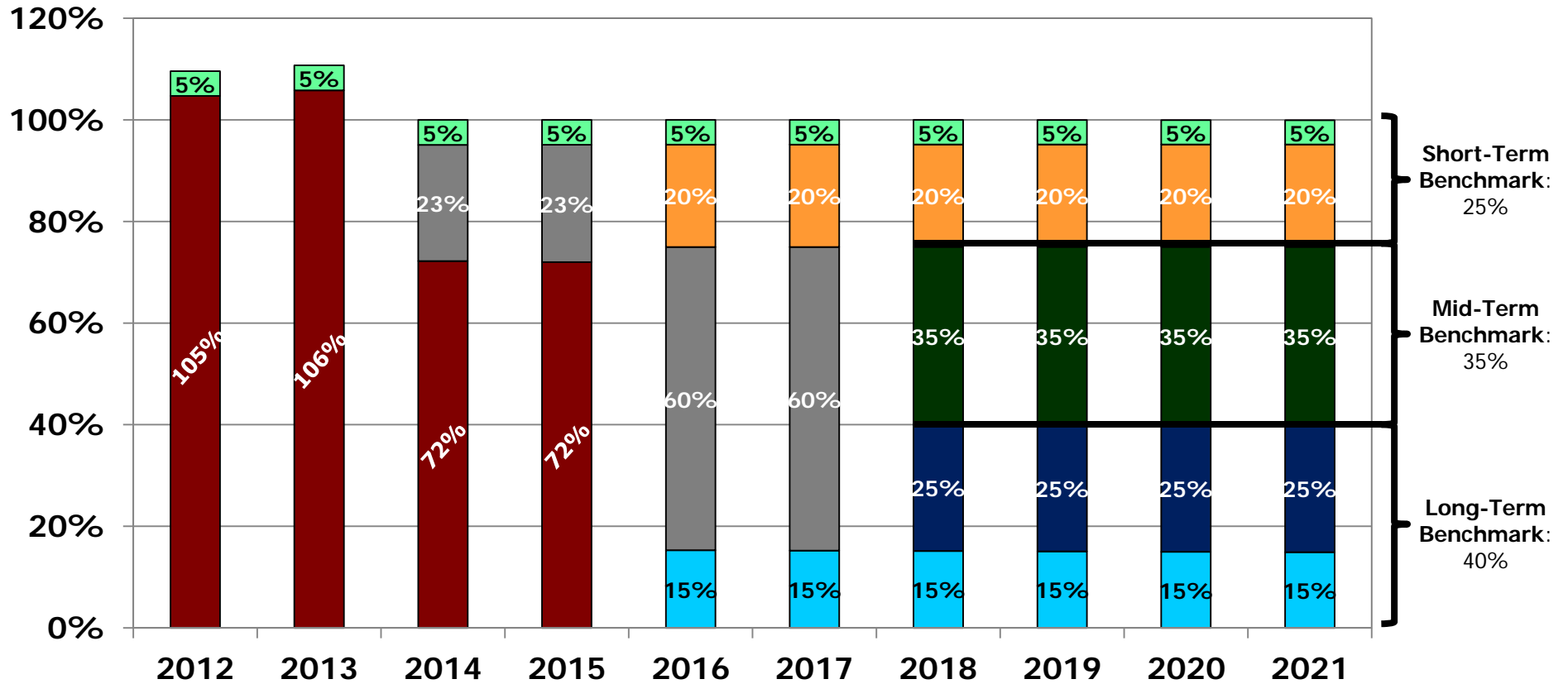
Guidelines for Purchasing Benchmarks

- Perkasio's total energy requirement can be broken into three benchmark sections:
 - **Long-Term Needs: 40% of total energy requirements**
 - Purchases completed more than 4 years prior to delivery year
 - Allows Perkasio to take advantage of new resources, long-term purchases during times of low market prices, and other opportunities that may arise
 - **Mid-Term Needs: 35% of total energy requirements**
 - Purchases completed 2-4 years prior to delivery year
 - Consists of annual and seasonal block purchases
 - **Short-Term Needs: 25% of total energy requirements**
 - Purchases completed 1-2 years prior to delivery year
 - Accounts for monthly block purchases, remaining seasonal block purchases, and replacement power purchases



Stage 3: Post-2017

Energy Supply Portfolio – Example



Stage 3: Post-2017

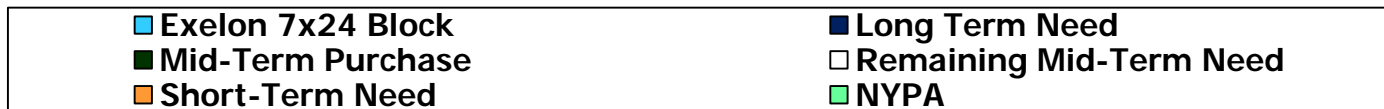
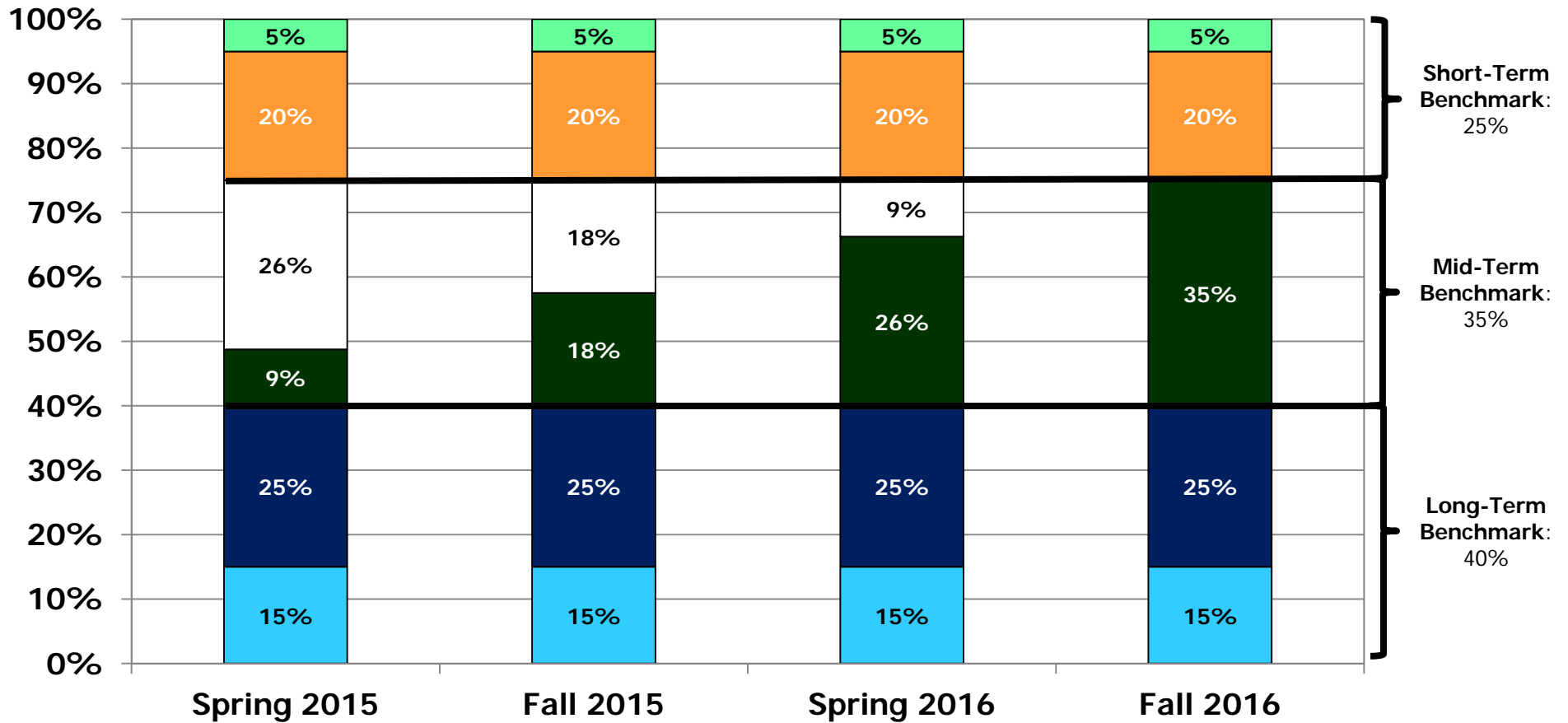
Purchase Guidelines - Time and Price Targets

- Time Targets: Review short-term position every 6 months at the latest (Spring/Fall) to fulfill mid-term incremental needs
 - Procurement during shoulder months typically offers less market volatility due to milder seasonal conditions (does not guarantee lower market prices)
 - Complete all short-term purchases 15 months ahead of supply period
 - Advantages of completing purchasing 15 months out:
 - Develops greater price assurance that can be included in the budgeting process
 - Allows ample time to communicate with Borough council
 - Allows ample time to review retail rate strategy and discuss key changes with Borough customers
 - Allows over a one year buffer to complete transactions
 - Rolling procurement strategy
 - Various purchases made for different calendar years at one time
 - Ex: 2019's first short-term incremental need purchased at the same time as 2018's third short-term incremental need



Stage 3: Post-2017

2018 Procurement Time Targets (3 years out)



Stage 3: Post-2017

Flexibility of Procurement Strategy

- Procurement strategies can be rigid or flexible depending upon Perkasio's preference
 - Strategy can be reevaluated when an alternative goal can be accomplished
 - Change purchasing quantities based on market opportunities
- Possible reasons for deviation from strategy
 - Anomalies in LMP market caused by current events
 - Outages at large plants due to weather
 - Impacts congestion, FTRs, etc.
 - Economic unrest in other countries
 - Political unrest in other countries
 - Opportunities made available to stabilize rates for multiple years or accomplish some other strategic objective deemed important



Stage 3: Post-2017

Block Power Procurement Strategy Conclusions

- Current Procurement Strategy includes 3 purchasing benchmarks:
 - Long-Term Needs: 40% of total energy requirements
 - Mid-Term Needs: 35% of total energy requirements
 - Short-Term Needs: 25% of total energy requirements
- Perkasio should start reviewing remaining monthly block purchases for 2014/2015
- Perkasio should start reviewing annual block purchase opportunities for 2016/2017
 - 7x24: 2.7 MW
 - 5x16: 2.8 MW
 - Potential to purchase 5-year long-term 5x16 block



Long-Term Portfolio Diversity



Long-Term Portfolio Diversity

- A diverse portfolio provides many opportunities to incorporate a variety of resources, fuel types, longevity, and renewables
- Resource Diversity
 - Perkasio is willing to participate in a variety of resources that fit the following criteria:
 - Economically feasible
 - Perkasio's main focus is cost reduction and stability
 - Fit into Perkasio's portfolio
 - Recently, Perkasio has purchased a 1.1 MW 7x24 block for 2016-2022
 - Perkasio prefers to purchase long-term needs in small amounts to reduce the size of any single resource commitment
 - Relatively low tolerance for congestion risk
 - Perkasio has not historically purchased outside the PPL Zone



Long-Term Portfolio Diversity

- Fuel Diversity
 - Participating in resources using different fuel sources (coal, gas, hydro) provides a hedge against volatile fuel prices
- Renewable Diversity
 - Pennsylvania currently has a Renewable Portfolio Standard (RPS) that does not apply to municipals
 - Perkasio is interested in renewable opportunities that are competitive in economic supply
- Contract Term Diversity
 - Varying contract terms and start/end points for portions of the power supply portfolio provides greater price stability over time
 - Different contract terms allow portions of a portfolio to roll-off at varying times leaving less of the power portfolio open to market volatility at one single point in time
 - If procuring long-term block power, Perkasio prefers a maximum term of 10 years



Block Power Procurement Strategy Conclusions

- Historically, Perkasio's portfolio diversification has leaned on market purchases as opposed to resource diversity
- Perkasio is willing to consider diverse resource opportunities that are economical and that are not locked into a contract for more than 10 years
- Contract term diversification offers another type of portfolio diversity and allows price stability in the long-term



Other Key Power Supply Planning Issues



Retail Rate Considerations

- System Retail Rates
 - Perform Cost of Service Study (COSS) to reallocate costs more appropriately to customer classes
 - Reevaluate revenue requirements and necessary rate levels in light of changing power costs in 2016
 - Realign Power Cost Adjustment (PCA) and base rates to more typical levels and ensure that PCA covers new risks that Perkasio contemplates in the market
 - PJM charges (RPM, NITS, Ancillaries, ARRs/FTRs, purchases/sales)
- Special Retail Rate Structures:
 - Develop competitive new and existing load pricing strategy
 - Industrial/Large loads, such as Vacu-Braze, receive or are interested in special rate structures



Next Steps



Next Steps

- Stage 1: 2014-2015
 - Review monthly purchases for remaining power needs
 - Review blend-and-extend option
- Stage 2: 2016-2017
 - Review annual 7x24 and 5x16 block purchases to be purchased this year
 - 7x24: 2.7 MW
 - 5x16: 2.8 MW
- Stage 3: Post-2017
 - Review time targets for block procurement strategy
 - Begin procurement 4 years from delivery year?
 - Begin procurement 5 years from delivery year?
 - Review long-term, mid-term, and short-term benchmarks

