KYMEA

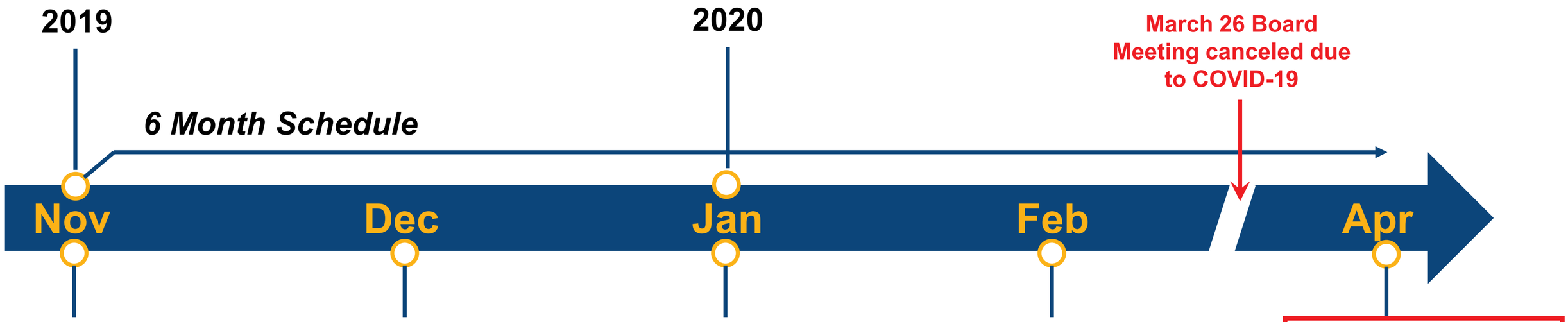
AR Project
FY2021 Rates

KYMEA COVID-19 Rate Relief Plan

April 23, 2020

Doug Buresh

FY2021 AR Rate Process



Staff

- Plan FY2021 Activities
- Prepare Preliminary Budget for Budget Committee

❑ A&G

❑ Capital

Budget Committee

- Staff Presents Preliminary Budget to Budget Committee (11/19/2019)

Staff

- Prepare Revised Budget for Budget Committee
- Prepare for Current Year Pro Forma for AR Workshop

Budget Committee

- Staff Presents Revised Budget for Approval (12/17/2019)

AR Rate Workshop

- Staff Presents Current Year Pro Forma for AR Workshop (12/18/2019)

Staff

- Prepare FY2021 AR Rate Design

AR Rate Workshop

- Staff Presents Preliminary AR Rate Design (1/22/2020)

Board

- Staff/Budget Committee Presents Budget (1/23/2020)

Staff

- Prepare Preliminary FY2021 AR Rates

AR Project Committee

- Staff Presents Preliminary AR Rate Rates (2/27/2020)

Board

- Budget Approval (2/27/2020)

Staff

- Prepare Final FY2021 AR Rates

AR Project Committee

- AR Rate Approval (4/23/2020)

Board

- AR Rate Approval (4/23/2020)

Agenda

FY2021 Financial Pro Forma and Rates

1. Executive Summary
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   - Power Supply Savings since FY2018
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5. Discussion/Actions

Executive Summary

All Requirements Rates

- **Power Supply Only: All Requirements (AR) Power Supply Rate decrease of 5.32% from FY2020 (Act/Bud).**
- **Transmission: Estimated NITS Rate increase of 11.4%. Transmission Members will pay actual rate when known.**
- **Overall: The Overall All Requirements (AR) Rate decreases 4.19% from FY2020 (Act/Bud). AR Member savings of $3.6 million.**

  - ***Billing Demand Rate: $14.044 per kW-MO***
  - ***Energy Rate: $0.024702 per kWh***
  - ***Reserve Fund Rate: $1.535 per kW-MO***

Projected Financial Metrics

- **Net Income: $1.327 million**
- **Days Cash on Hand: 62.652 Days**
- **Coverage of Full Fixed Obligations: 1.027**
- **Leverage: 7.516**

Working Capital and Stabilization Fund

Operations Cash Flow (Intra-Month Timing)

- **To account for timing differences between accounts receivable and accounts payable, the agency maintains $10 million in cash.**

Credit

- **The agency is required to maintain a cash collateral account balance held by MISO and PJM (≈ $3 million).**

Hedging

- **Energy: For a 50 MW annual strip, a dollar change in price equals $438,000.**
- **Financial Transmission Rights (FTR): Cash collateral required to participate in FTR auctions.**

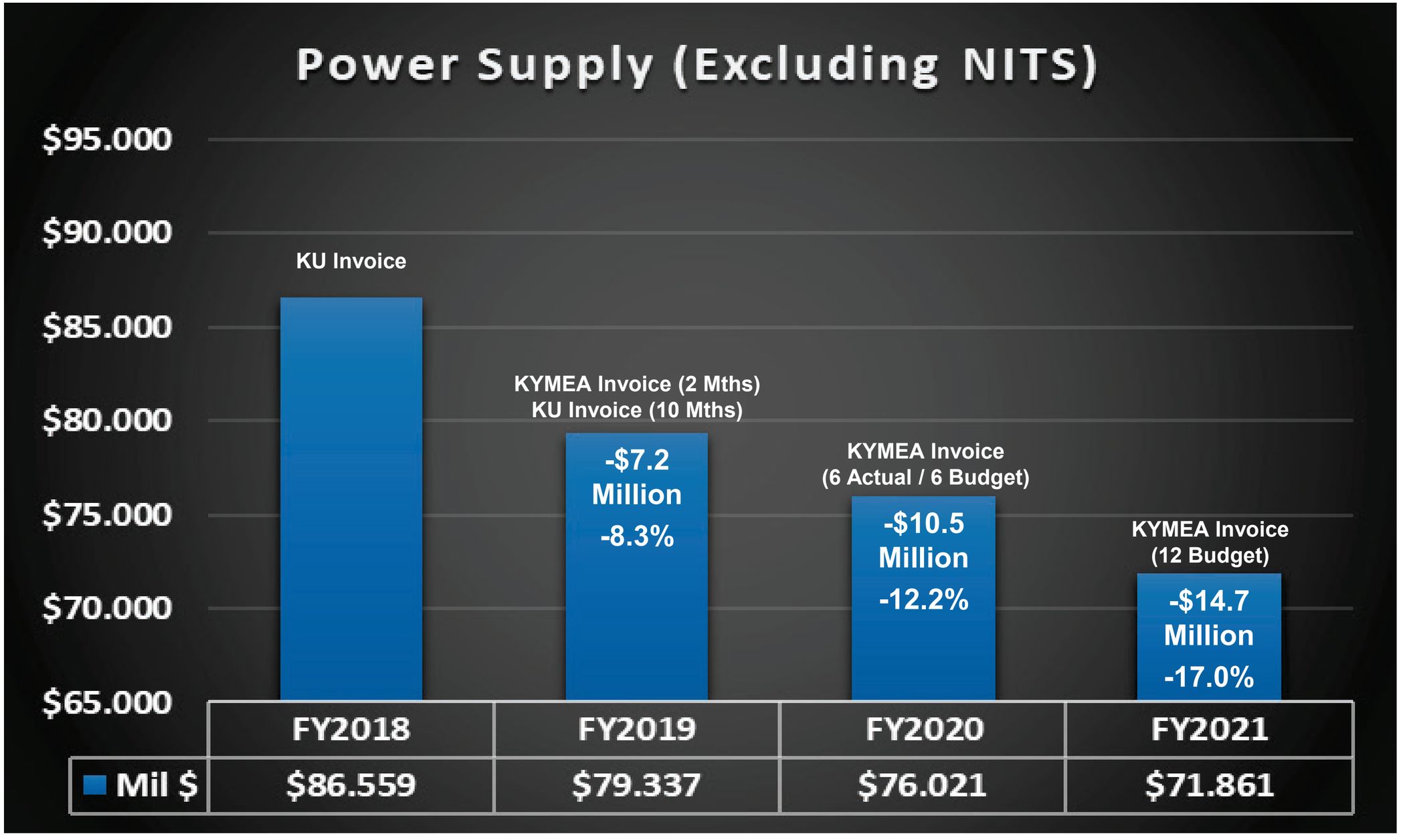
Stabilization Fund

- **Fund available for net income and future rate stabilization.**

FY2020 6 Actual / 6 Projected vs FY2021 Rates

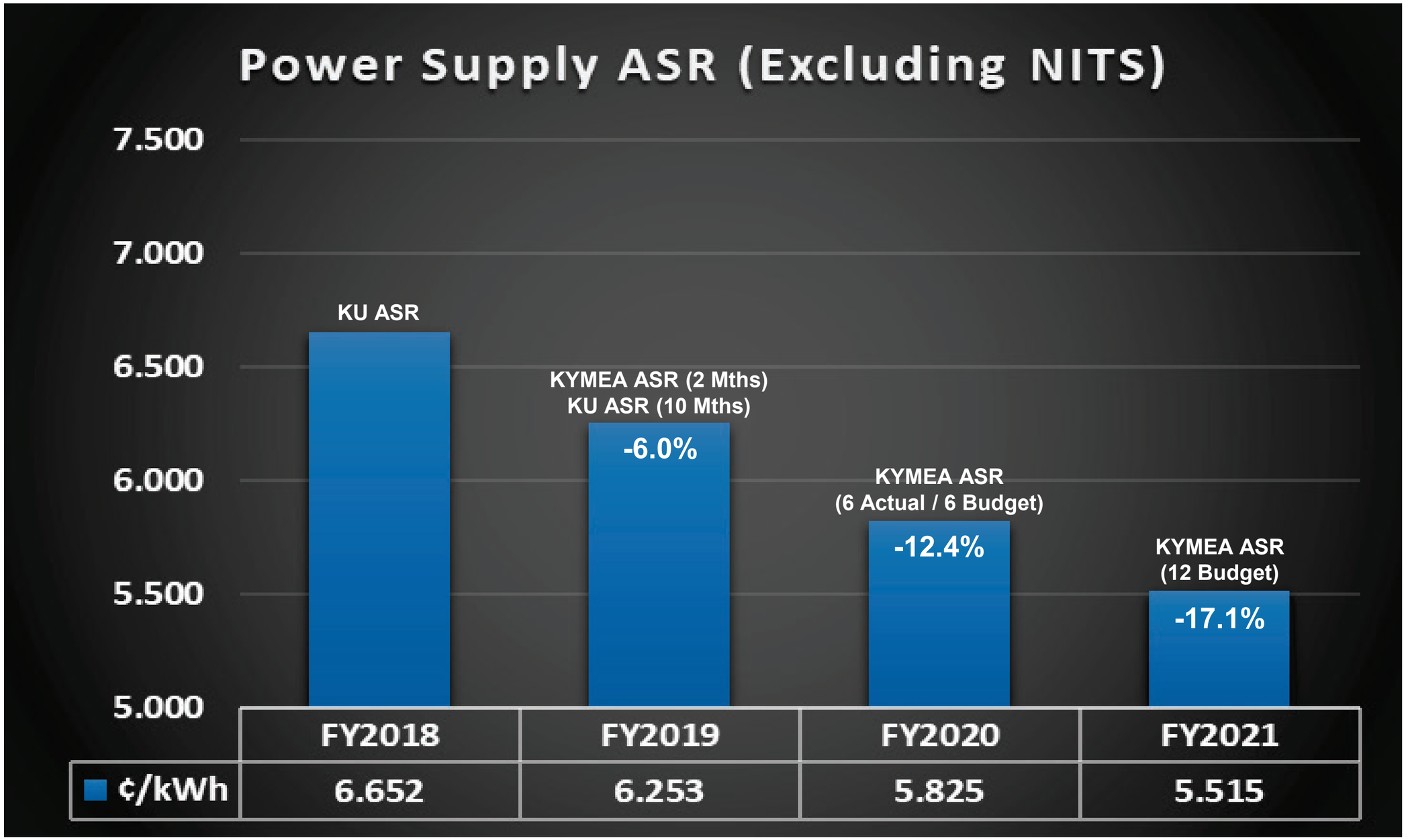
	FY2020 6 Month Actual/6 Month Budget			FY2021 (62 DCOH Driver) - Deterministic			Change
	$/kW-mo	kW	$	$/kW-mo	kW	$	$
Billing Demand	$13.207364	2,730,822	$36,066,956	$14.043800	2,641,566	$37,097,625	$1,030,669
	$/kWh	kWh	$	$/kWh	kWh	$	$
Energy	$0.024279	1,305,181,431	$31,688,500	$0.024702	1,303,112,487	$32,189,485	$500,985
ECA	$0.000000	1,305,181,431	$0	$0.000000	1,303,112,487	$0	$0
Transmission	$/kW-mo	kW	$	$/kW-mo	kW	$	$
KU Transmission 12-CP	$2.463300	2,601,733	$6,408,848	$2.773611	2,516,985	$6,981,137	$572,288
MISO Transmission NCP	$3.531000	2,731,273	$9,644,126	$1.534664	2,644,185	$4,057,936	-$5,586,191
PJM Transmission 1-CP	$2.520917	41,400	$104,366	$2.958179	38,400	$113,594	$9,228
KU Direct Assigned Facilities			$			$	$
Fixed Facility Charges			$213,839			$213,839	$0
SEPA Member Resource Credit	$/kW-mo	kW	$	$/kW-mo	kW	$	$
Capacity Payment	($3.850000)	412,454	-$1,587,949	($3.850000)	440,896	-$1,697,450	-$109,501
AR Project Member Invoice			$82,538,686			**$78,956,165**	-$3,582,522
			6.324 ¢			**6.059 ¢**	-0.265 ¢
Decrease from FY2020 6 Actual / 6 Budget						**-4.19%**	-4.19%
AR Project Member Power Supply (Without NITS)			$76,025,472			$71,861,434	-$4,164,038
			5.825 ¢			5.515 ¢	-0.310 ¢
Decrease from FY2020 Actual/Budget (Without NITS)						-5.33%	-5.33%
Net Income			$10,451,870			$1,327,475	-$9,124,394
Days Cash On Hand (FYE)			55.145			62.652	7.507
Coverage of Full Fixed Obligations (FYE)			1.230			1.027	-0.203
Leverage (Net Adjusted Debt / Adjusted FADS (x))			6.260			7.516	1.256

Member Power Supply Expense (FY2018 - FY2021)



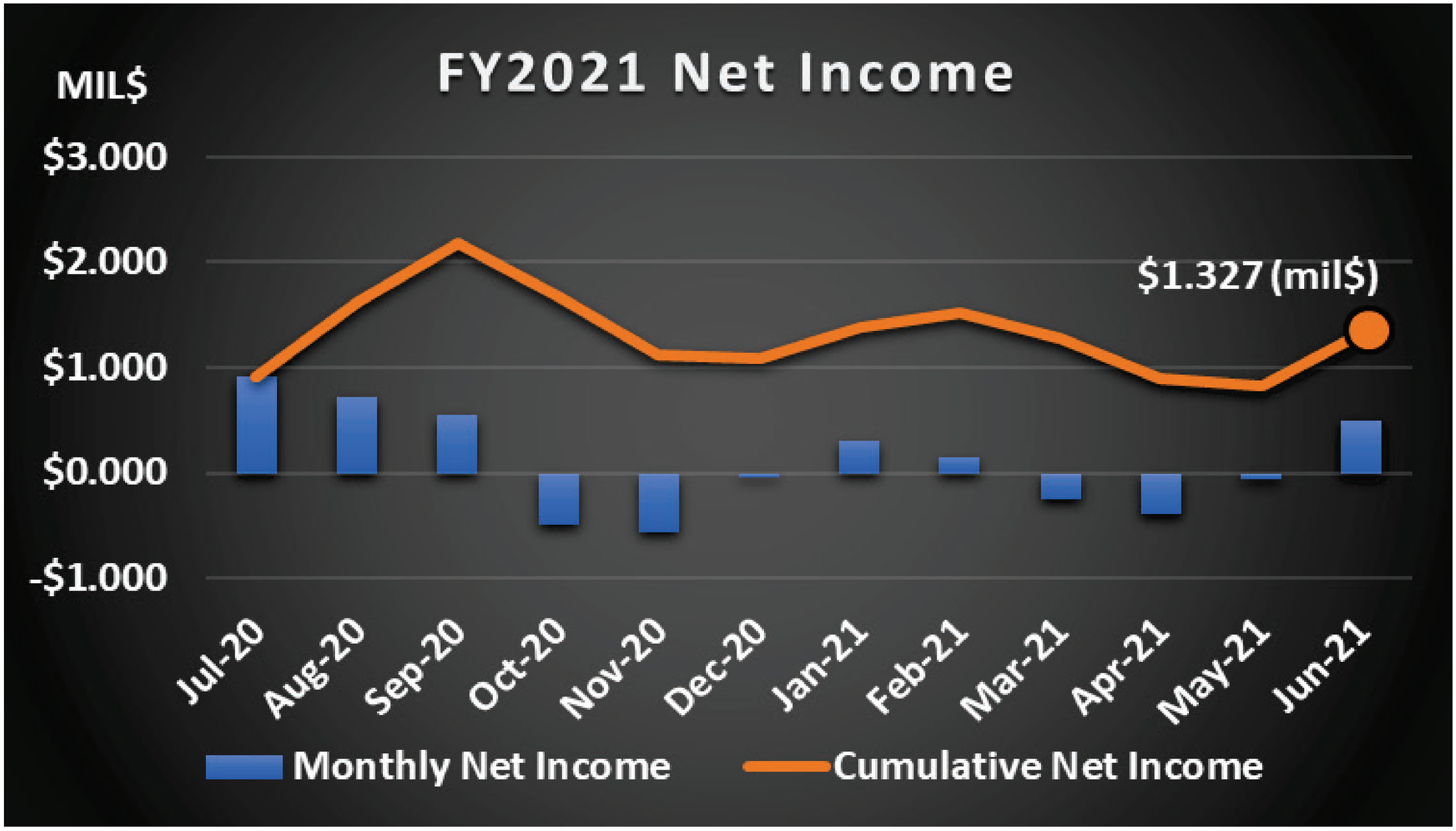
Note: Comparison based on actual and projected power bill invoices

Member Average System Rate (FY2018 - FY2021)



Note: Comparison based on actual and projected average system rate from power bill invoices

Net Income (FY2021)



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Rate Setting Methodology and Projected Financial Metrics

Rate Setting Methodology

1. Rates are set using cost-of-service recovery to meet the fiscal year-end Days Cash on Hand (DCOH) Minimum Target.
2. The AR Project chose a FY2021 Minimum Target of 62 DCOH

Rates

- Billing Demand Rate: $14.044 per kW-MO
- Energy Rate: $0.024702 per kWh
- Reserve Fund Rate: $1.535 per kW-MO

Projected Financial Metrics

- Net Income: $1.327 million
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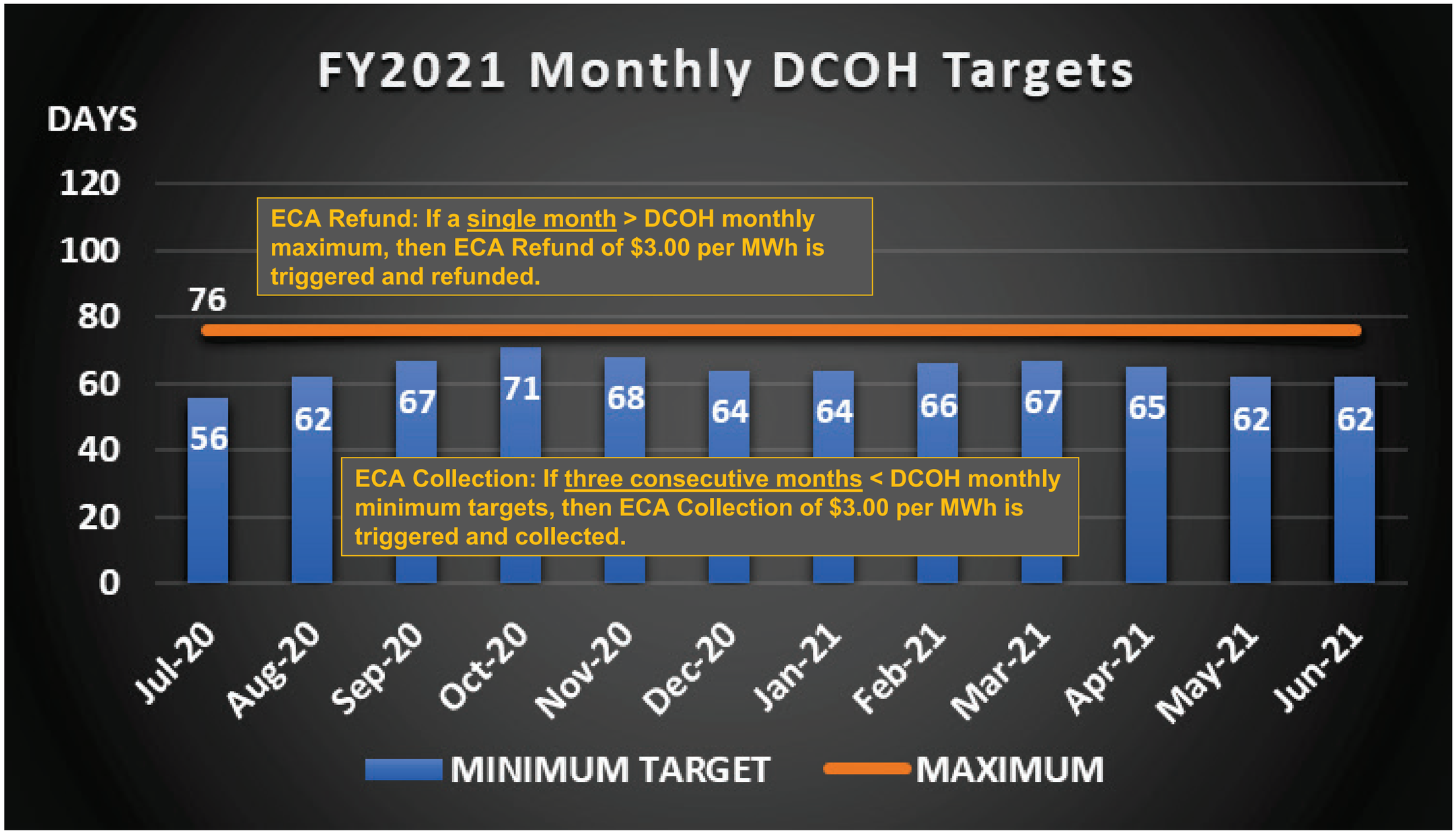
- Coverage of Full Fixed Obligations: 1.027
- Leverage: 7.516

Energy Cost Adjustment (ECA) Methodology

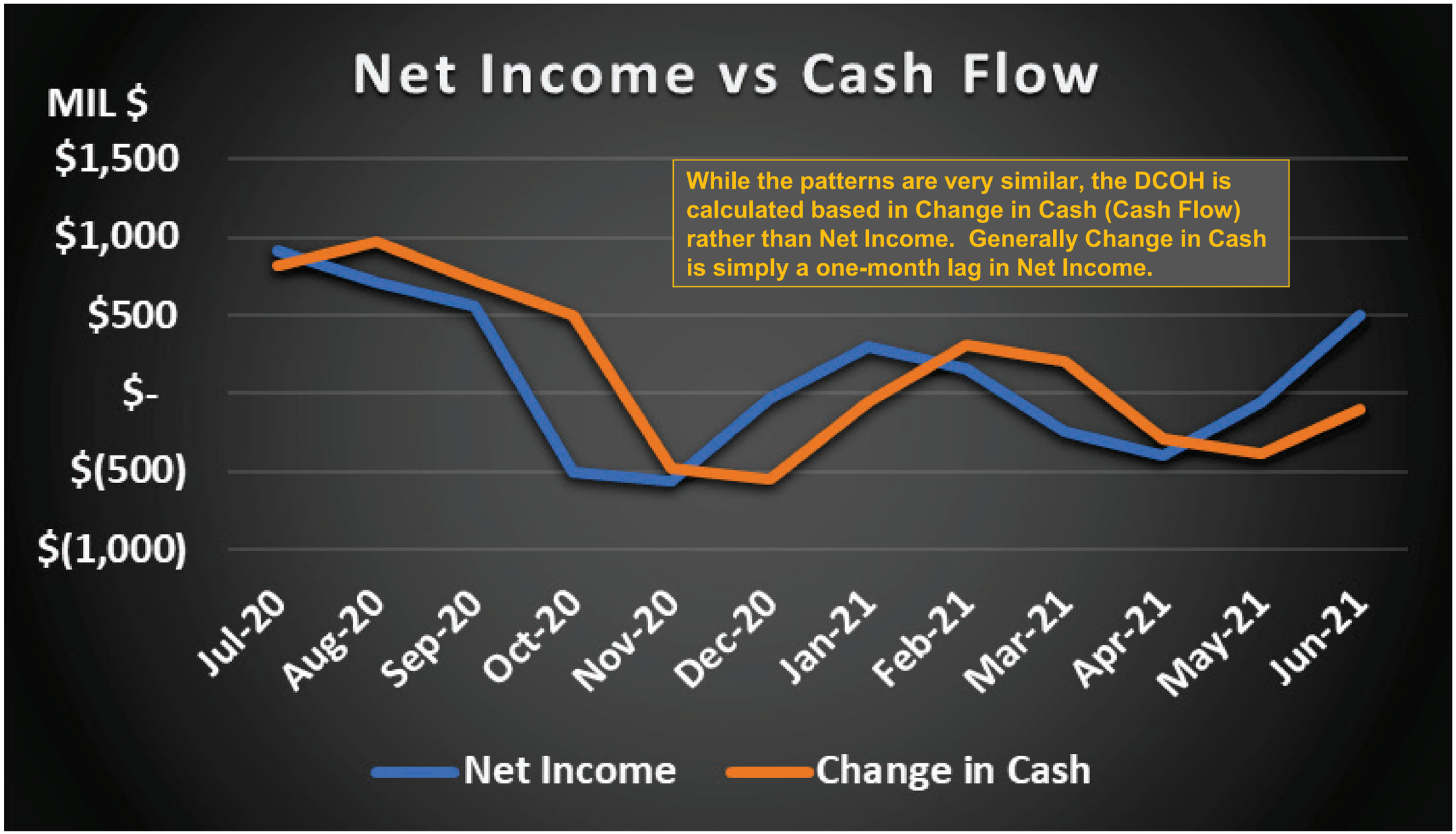
ECA Methodology

1. The Minimum Target DCOH varies monthly based on projected cash flows with a fiscal year-end target of 62 DCOH.
2. The monthly targets reflect the timing differences between accounts payable and accounts receivable.
3. The Maximum DCOH reflects the level at which the agency would begin refunding to the AR Members.
4. ECA Collection: If, for a period of three consecutive months, the computed average Days Cash On Hand for the three consecutive months < the average computed Minimum Target Days Cash On Hand for three consecutive months, then the ECA shall be computed and collected.
5. ECA Refund: If, for a single month, the Days Cash On Hand > the Maximum Days Cash On Hand, then the ECA shall be computed and refunded.

FY2021 Monthly DCOH Boundaries



Monthly Net Income vs Cash Flow



New Energy Cost Adjustment Methodology

1. **Replace Existing Energy Cost Adjustment 1 and Energy Cost Adjustment 2 with a new singular Energy Cost Adjustment.**

   <u>Revenue Requirements Driver:</u>

   - Meet the Agency's Annual Days Cash on Hand Target

   - Addresses PPA Energy (and non-PPA Energy) Cost Uncertainty

   - Addresses Demand Uncertainty

   - Incorporates the Benefits of Economy Purchases and Sales

   - Allows the Agency to automatically refund cash to the AR Project Members during particularly good years.

2. **Incorporates Discipline into the Cost-Of-Service Rate Making and Days Cash on Hand Target**

3. **The purpose of the Energy Cost Adjustment (ECA) is akin to course corrections when navigating a large ship. As the ship gets blown off course due to unforeseen circumstances, the course is adjusted to guide it back on the desired path.**

Rate Setting Methodology and Rates and Energy Cost Adjustment (ECA)

Rate Setting Methodology

1. Rates are set using cost-of-service recovery to meet the year-end Days Cash on Hand (DCOH) Target.
2. ECA Collection: If three consecutive months < DCOH monthly target, then ECA Collection of $3.00 per MWh is triggered and collected. The collection occurs on the next month's power invoice.
3. ECA Refund: If a single month > DCOH monthly maximum, then ECA Refund of $3.00 per MWh is triggered and refunded. The refund occurs on the next month's power invoice.

Rates

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Projected Financial Metrics

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   - **Net Income**
   - **Risk Profile**
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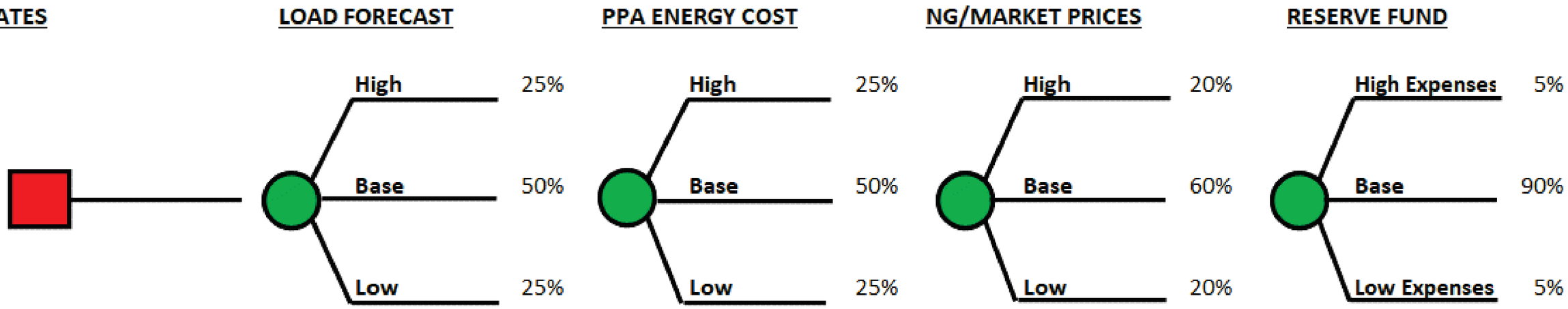
Risk Assessment



Decision Node
Revenue Requirements Driver:
- Cost-Of-Service Rate Recovery
- 62 DCOH Target

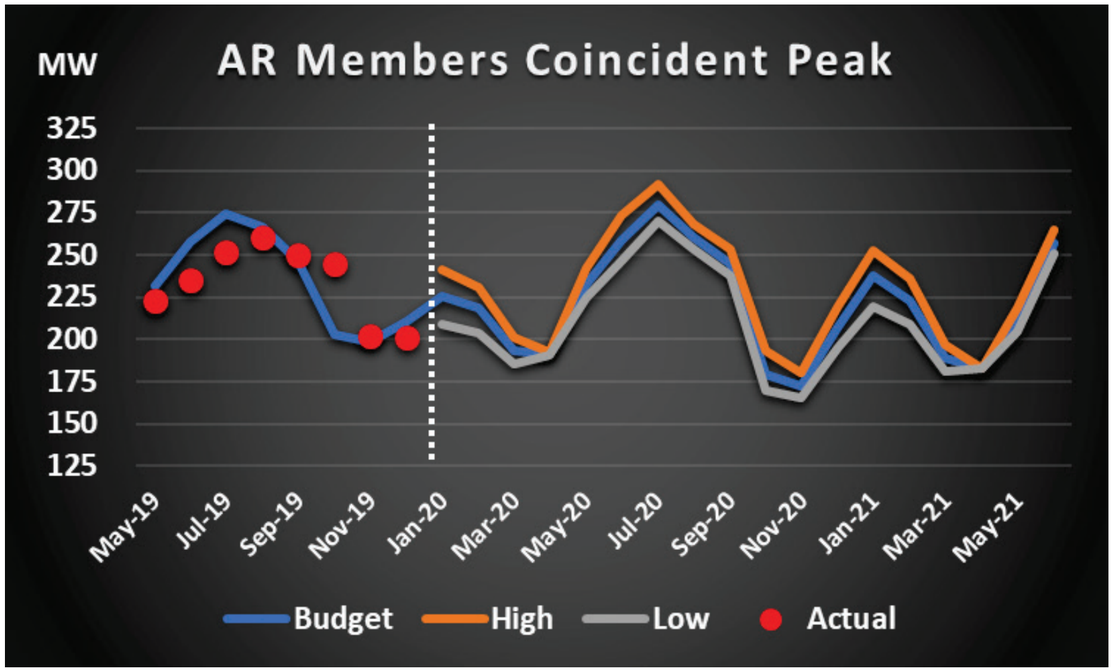
Base Case
- Load: Base
- PPA Energy: Base
- Market: Base
- Reserve Fund: Base

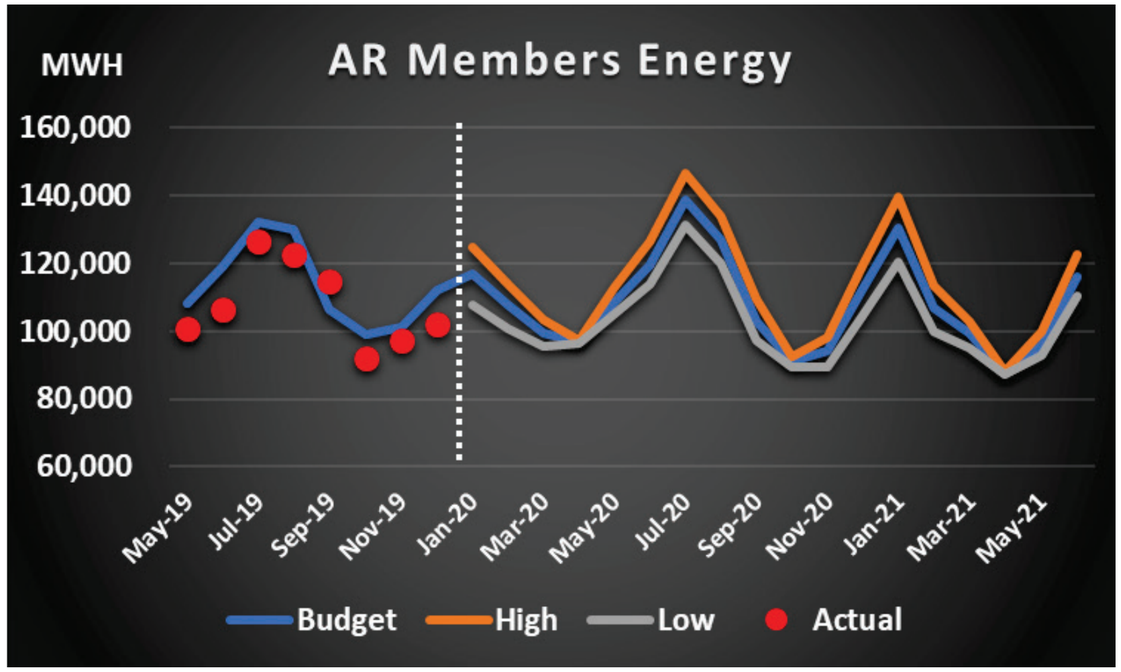
Uncertainties/Risks
- Load Forecast (Demand/Energy Sales Risk)
- PPA Coal (Heat Rate Call Option Strike Price Risk)
- NG/Market Prices (Market Price Risk)
- Reserve Fund (Uncertain Transmission Expenses)

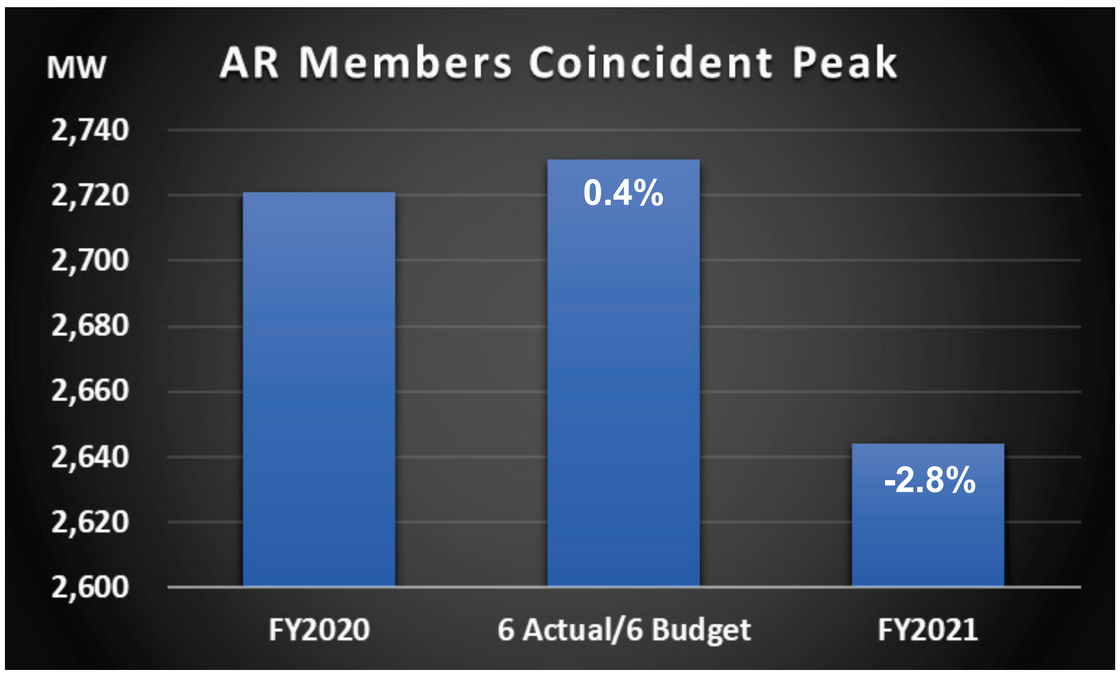
**** 81 Possible Outcomes *** (subjective probabilities)*

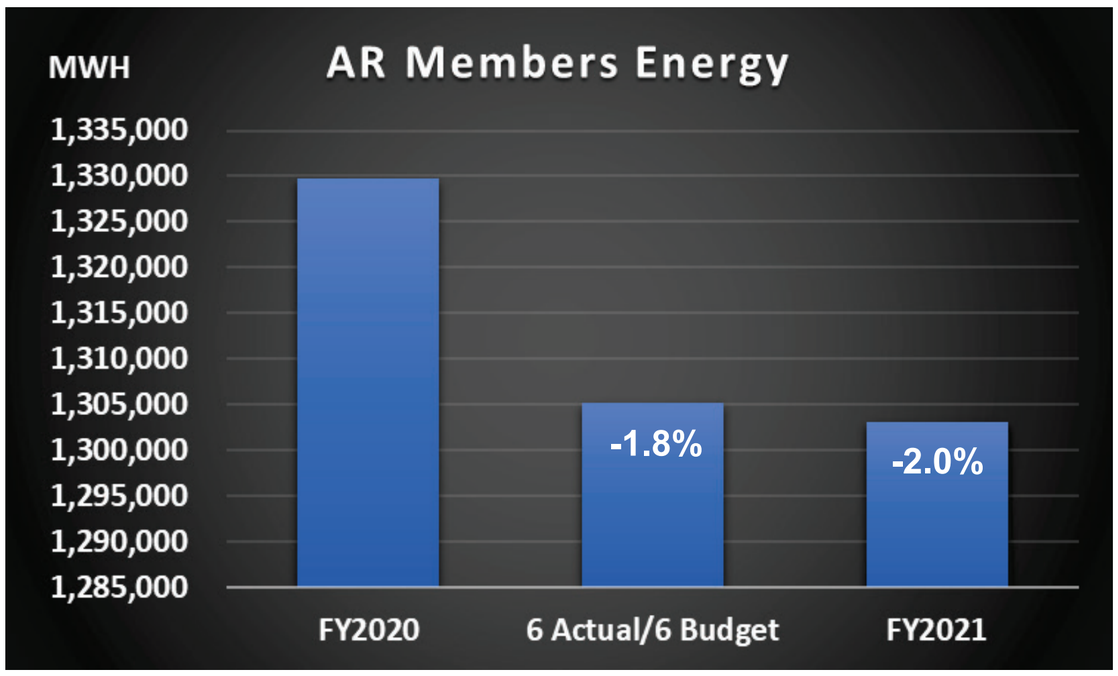
Financial Metrics
- Net Income
- Days Cash On Hand
- Coverage of Full Fixed Obligations
- Preferred Leverage

Load Forecast Uncertainty







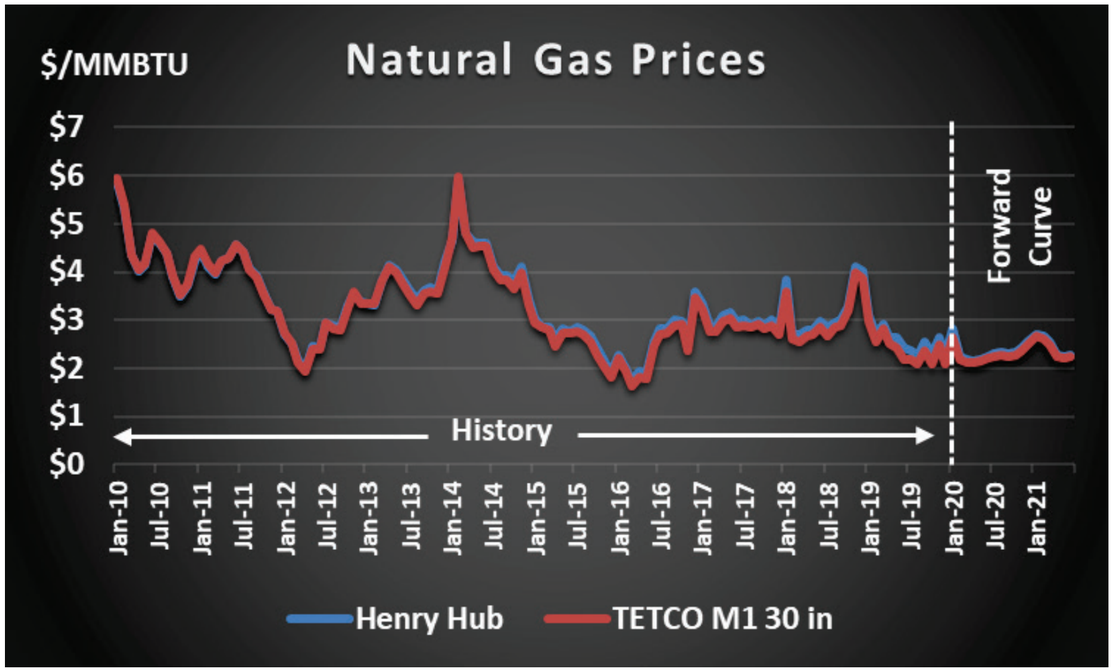


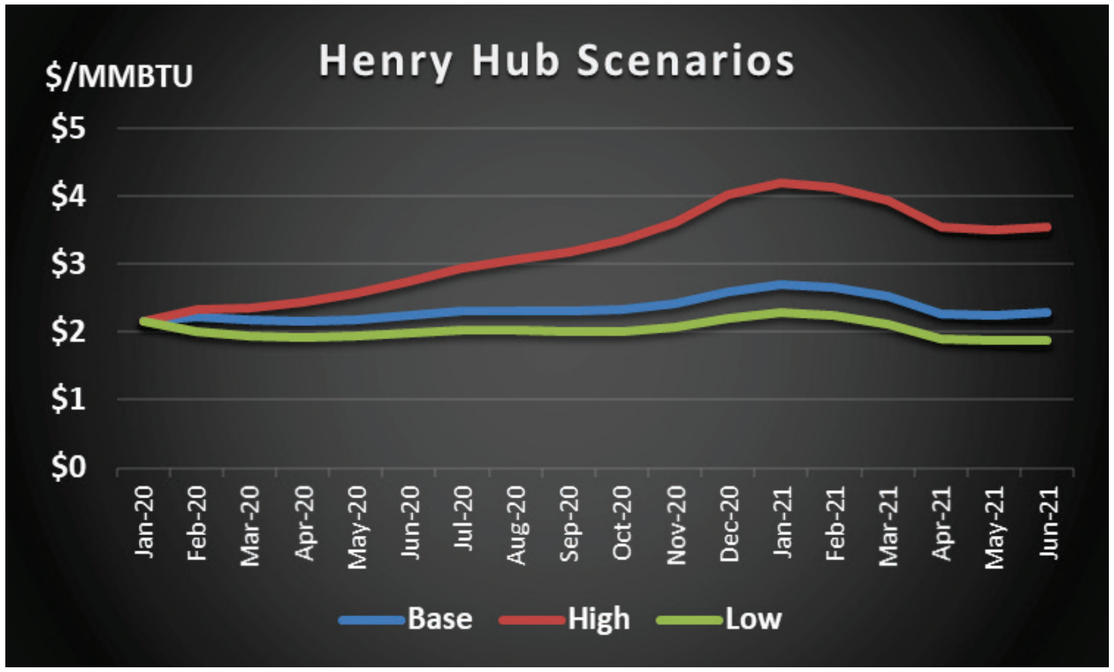
PPA Energy Price

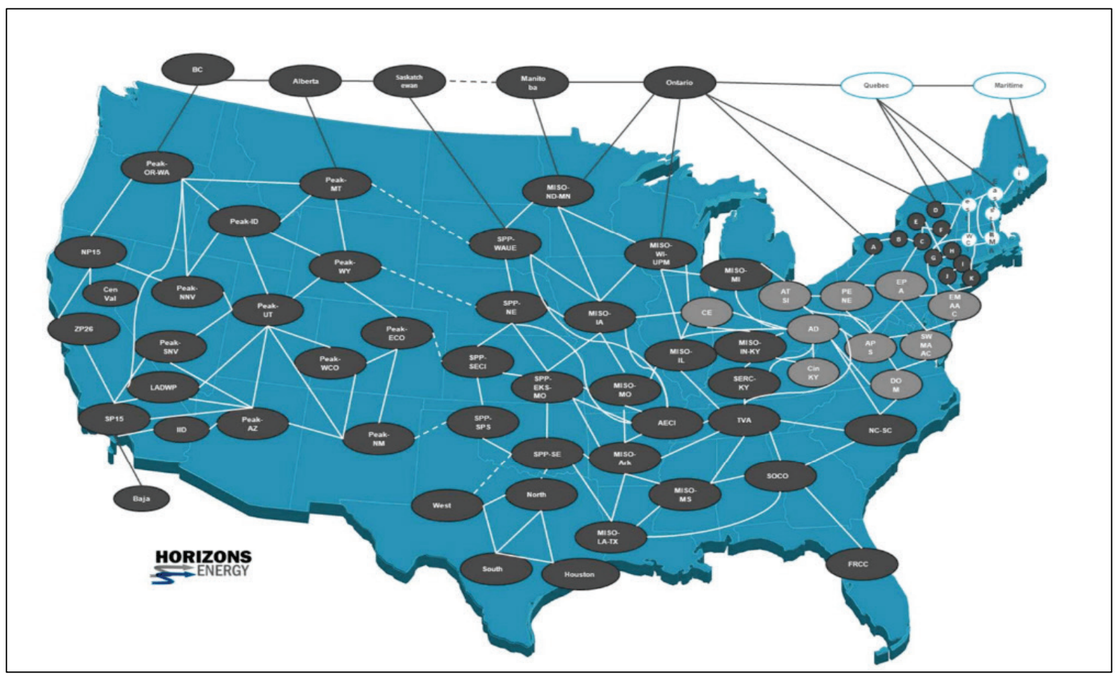
Factors Affecting Resource Energy Cost

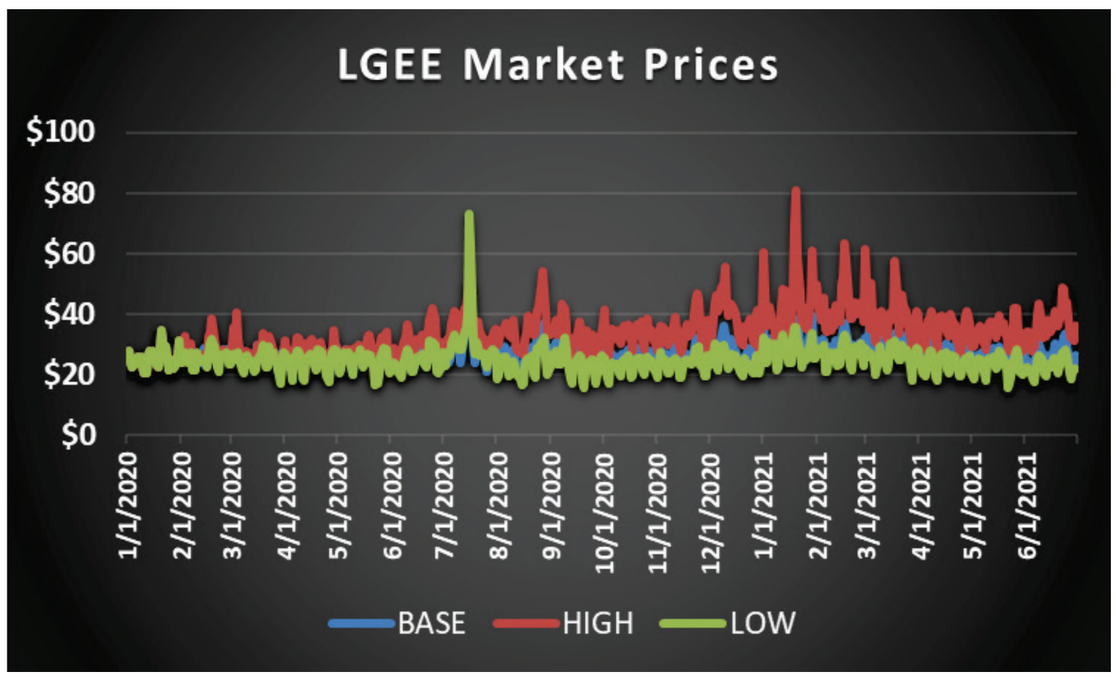
Resource	Fuel Price	Market Price	Variable O&M	Heat Rate	SOx/NOx Emission Market	CO2 Emission Market
D.B. Wilson	✓		✓	✓	✓	✓
JOPPA	✓			✓	✓	
Paducah Peakers	✓			✓		✓
SEPA		✓				
Paris Diesels	✓					

Natural Gas / Market Price Uncertainty

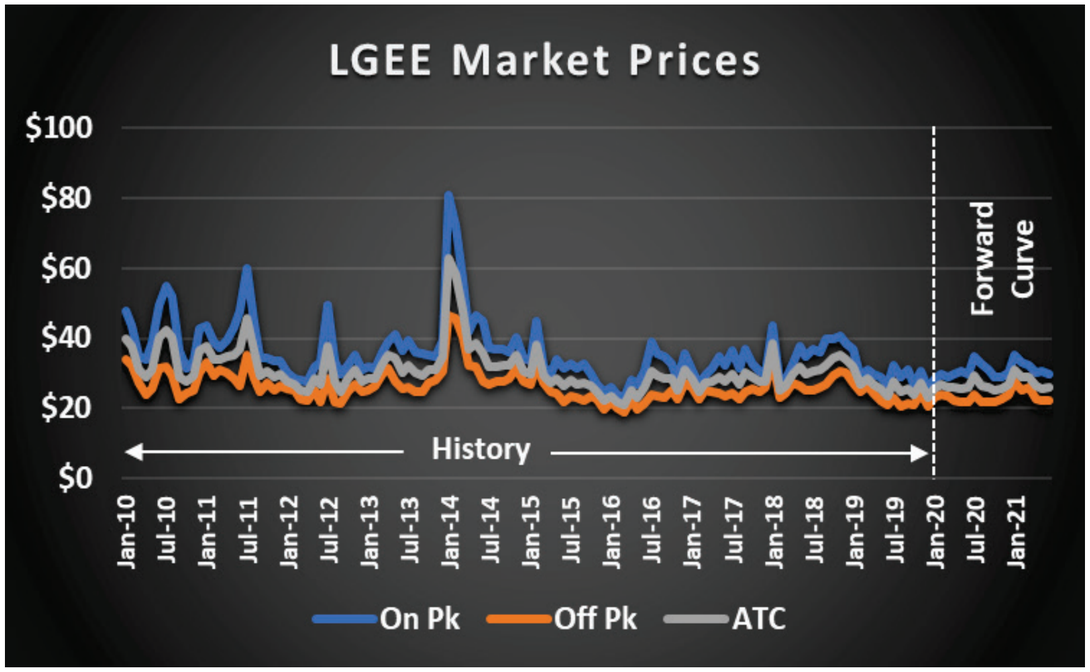


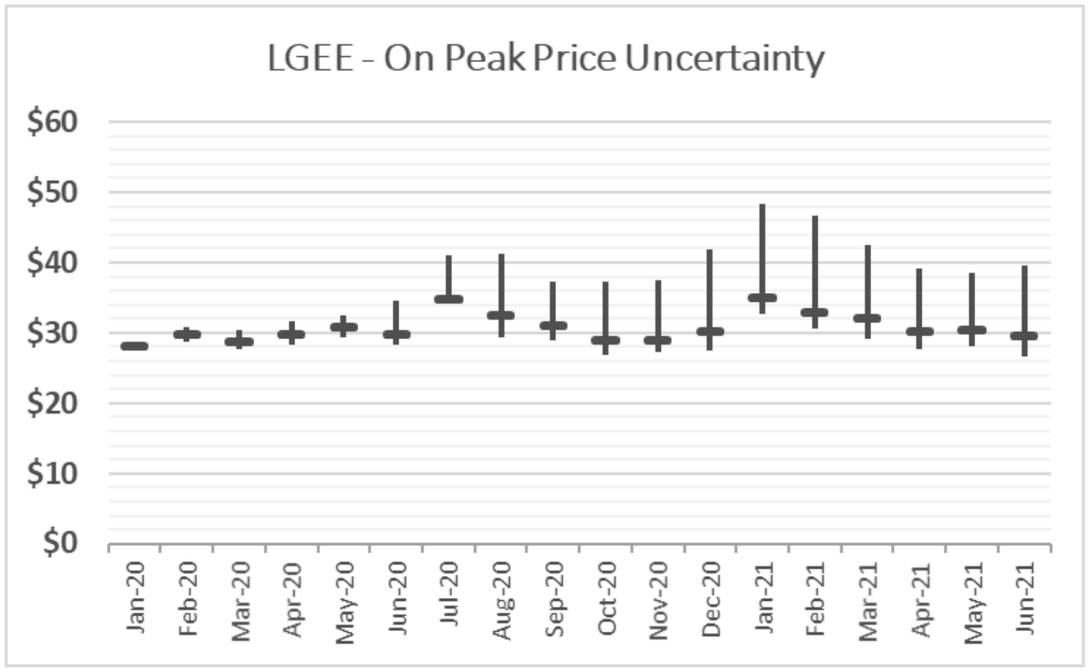


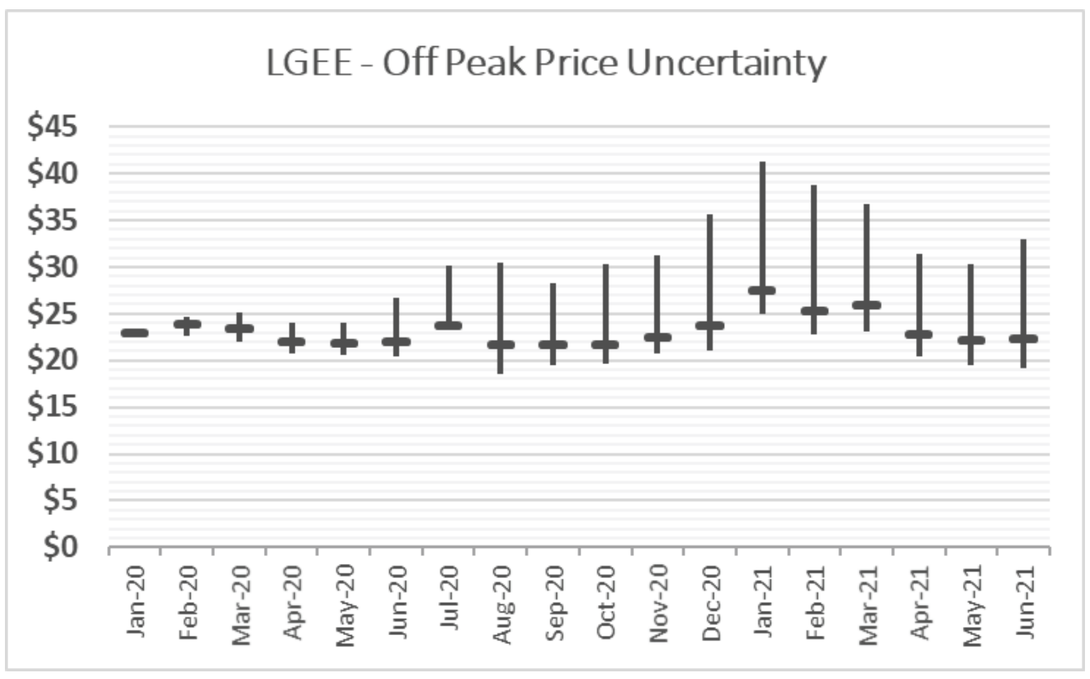


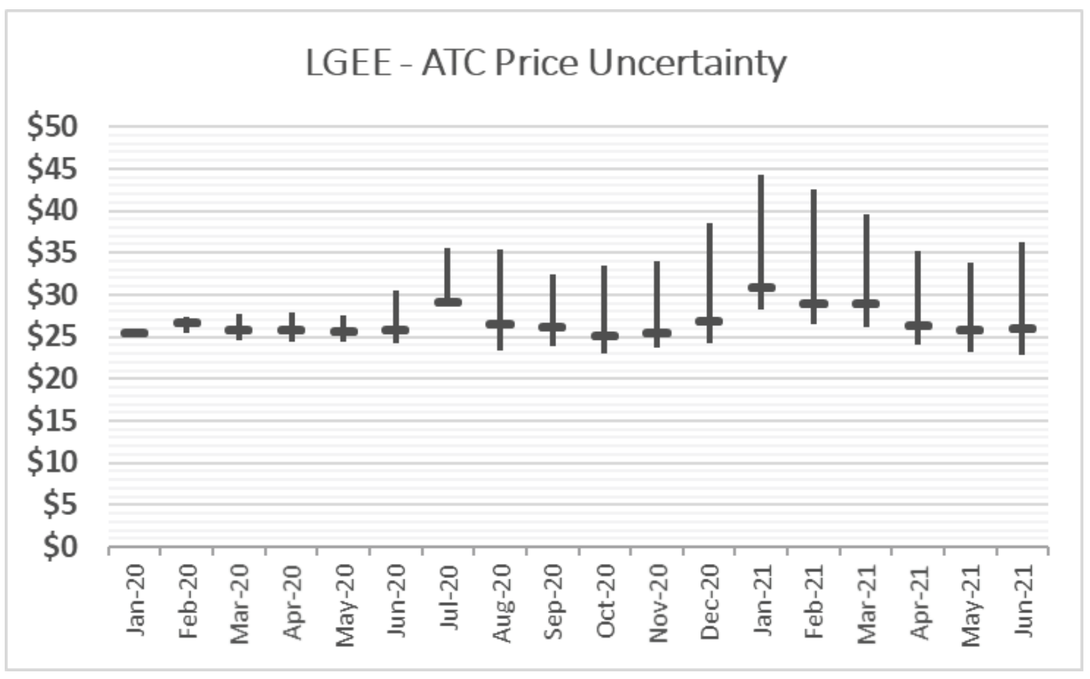


Market Price Uncertainty

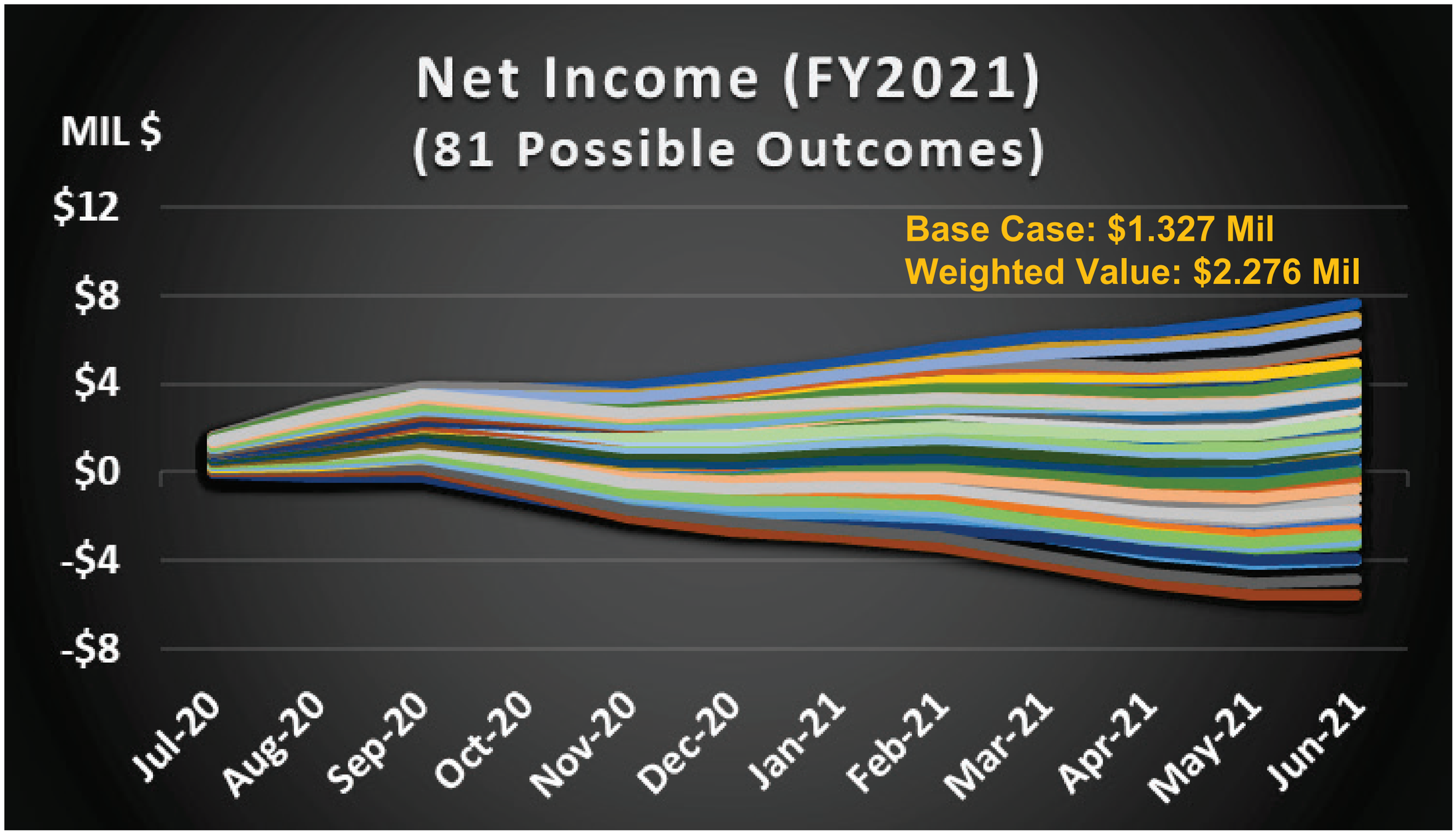








Net Income Uncertainty

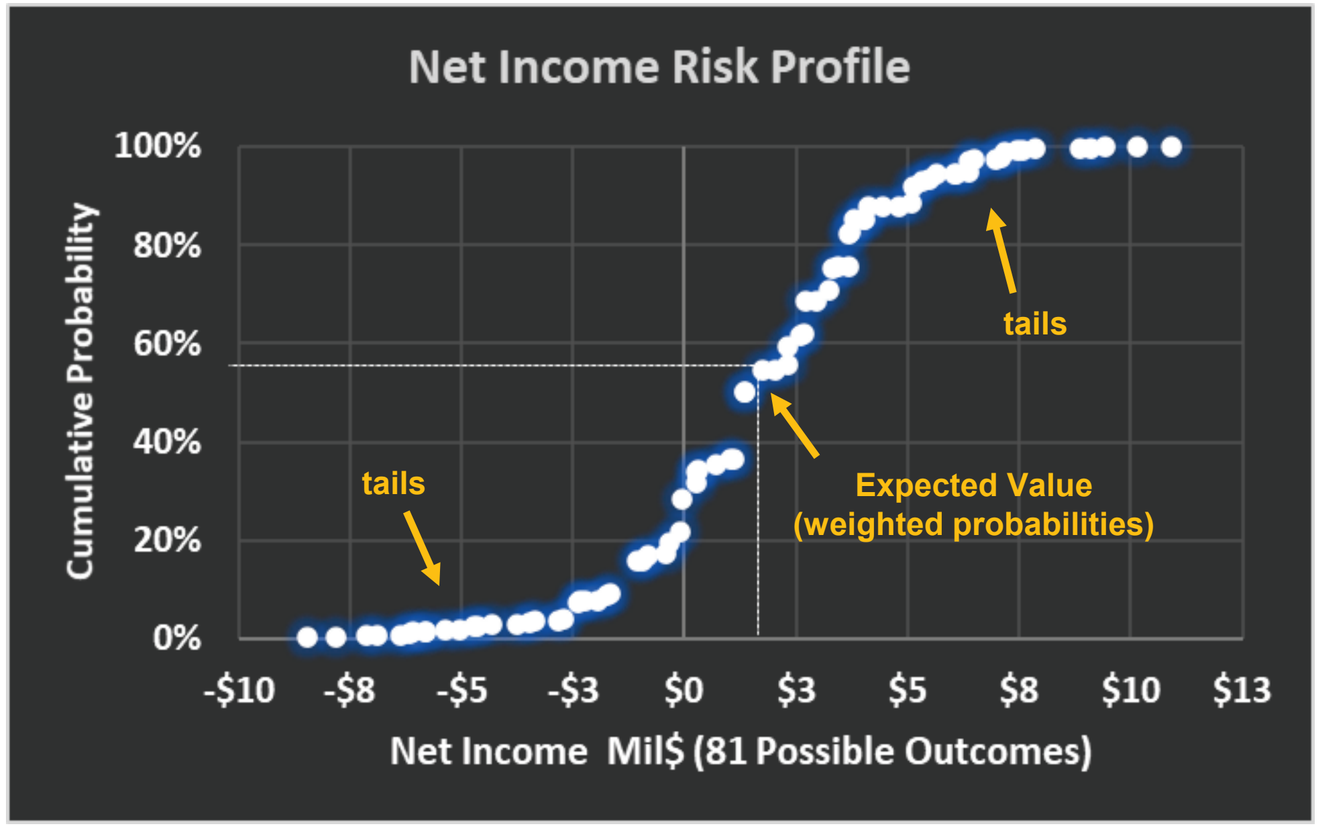


Risk Profile Explained

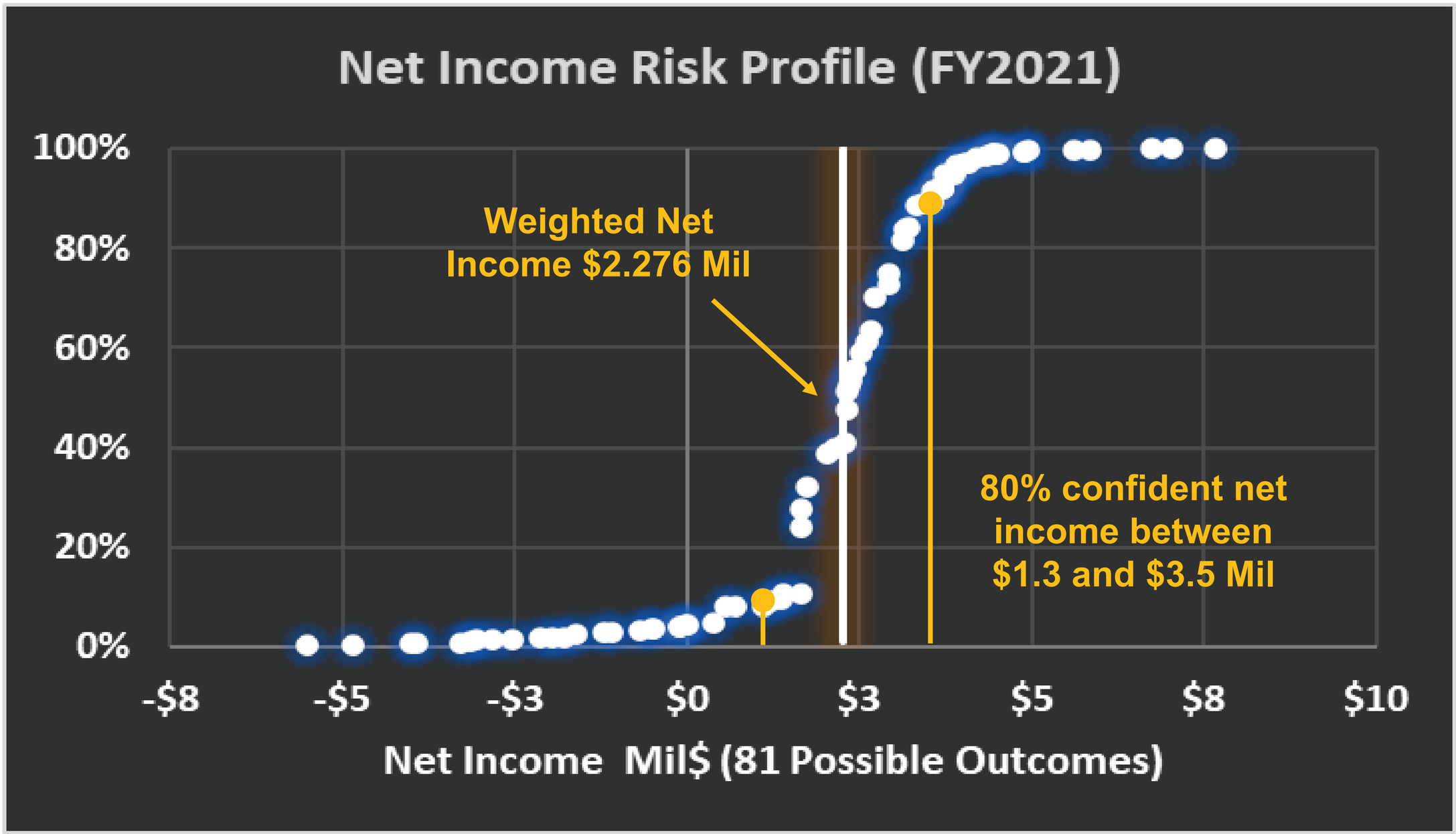
A risk profile provides valuable insight into the risk of a particular plan. The x-axis (Net Income) shows the range of possible outcomes, in this case KYMEA plots the Net Income of eighty-one (81) possible outcomes. The y-axis is the cumulative probability of occurrence of each outcome between 0% and 100%. For example, if the far-left point is -$8.465 million and the far-right point is $10.918 million, then there is 100% confidence that the Net Income will be between those two points. The more narrow the range, the less risk.

To manage risk, risk managers look for ways to minimize the "fat tails" of a risk profile often trading upside opportunity for downside risk. A risk averse profile would be a vertical line, but achieving a risk free vertical line likely moves the entire profile far to the right.

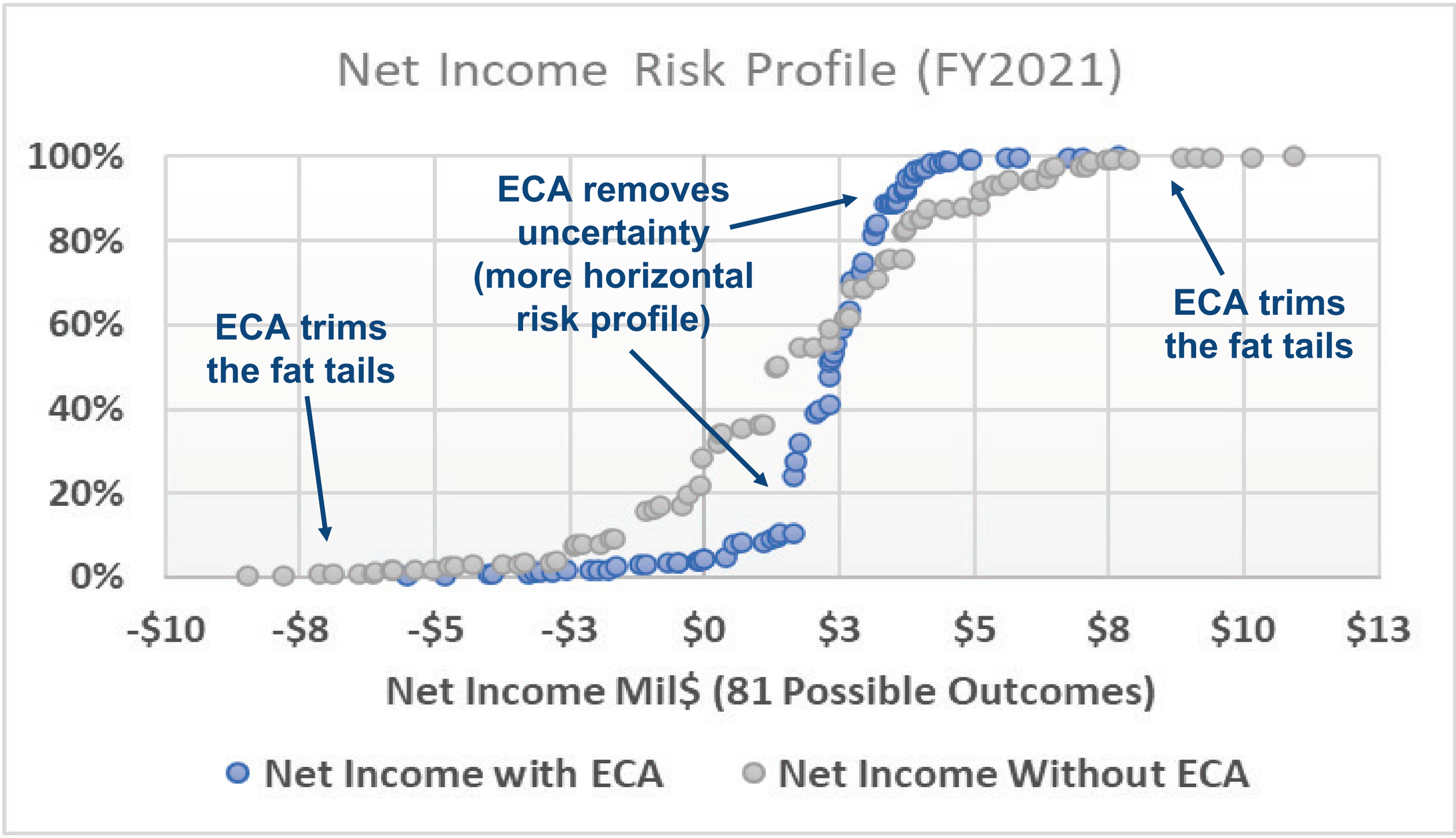
Think of it as buying far more insurance than is necessary and laying off the risk on the insurance company. KYMEA recognizes there is inherent risk in the electric utility business so a balance is drawn between risk and reward using tools such as a risk profile.



Net Income Risk Profile



Net Income Risk Profile

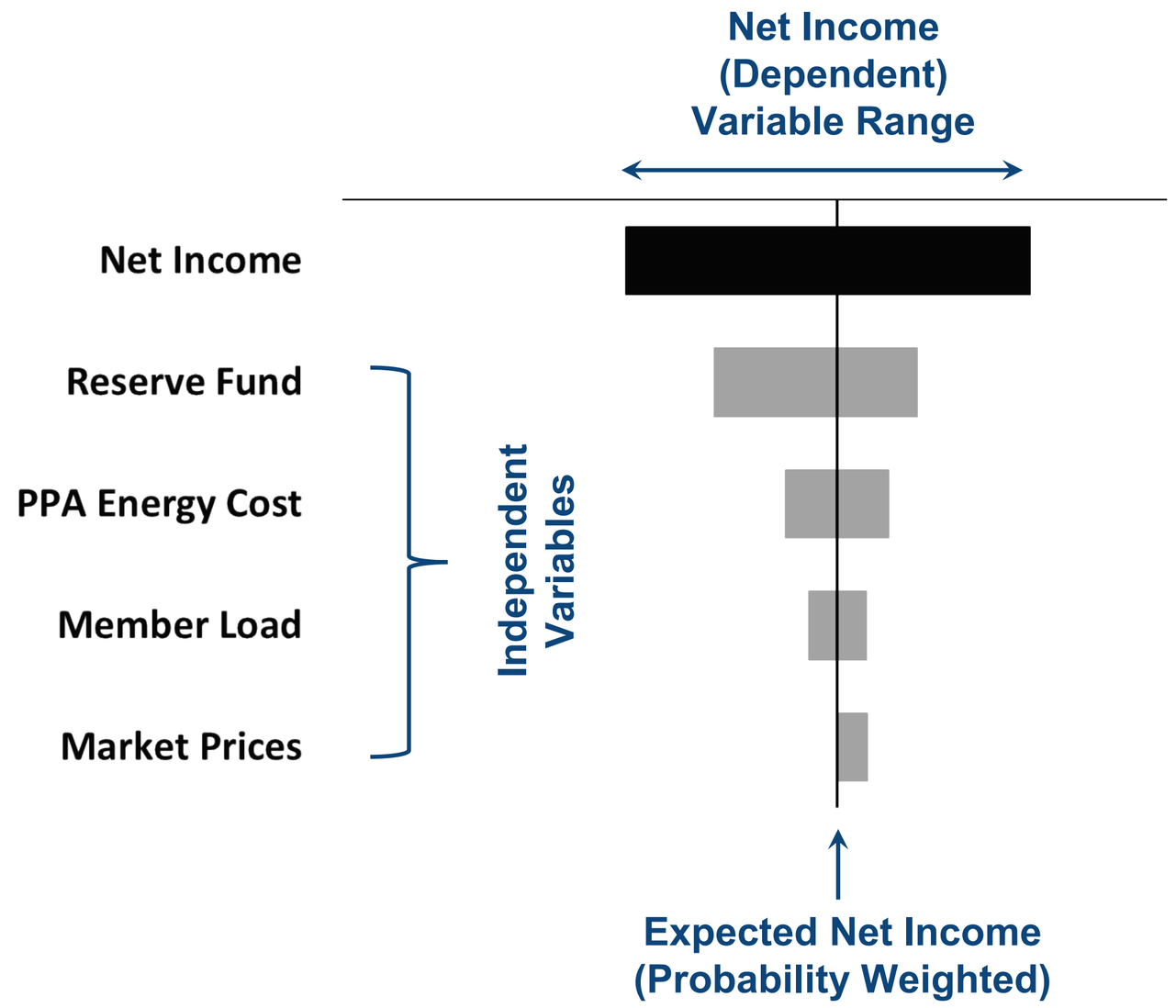


Tornado Chart Explained

To understand the risk of the drivers, KYMEA creates tornado charts to determine the sensitivity of the various fundamental drivers on Net Income. As shown in the figure below, Net Income (black bar) is the dependent variable and the remaining four (4) drivers are independent variables (gray bars).

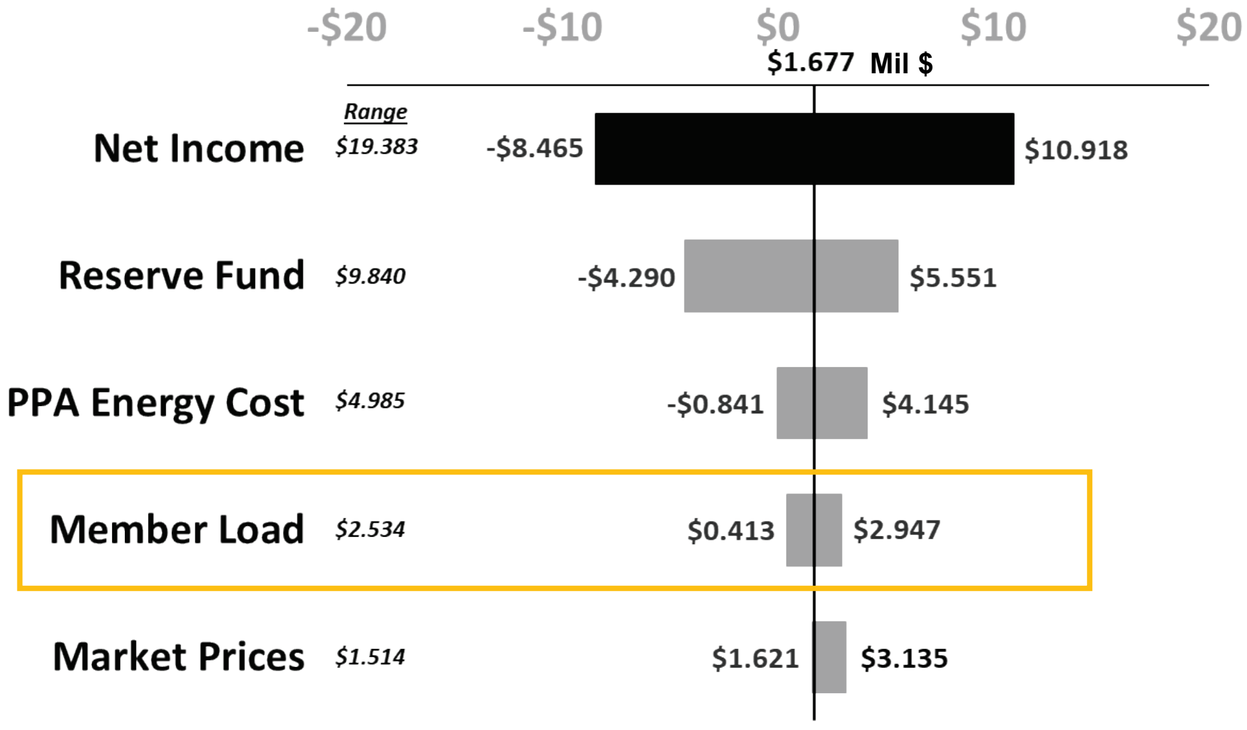
The length of the black bar is the uncertainty range of Net Income for a selected time frame. The lengths of the gray bars illustrate each independent variable's impact on Net Income; the longer the bar, the greater the impact. The expected value is signified by the vertical line.

When a gray bar is off-set to the left that means that independent variable puts downward pressure on Net Income (bad outcome). Conversely, if the gray bar is off-set to the right, then the independent variable puts upward pressure on net income (good outcome).

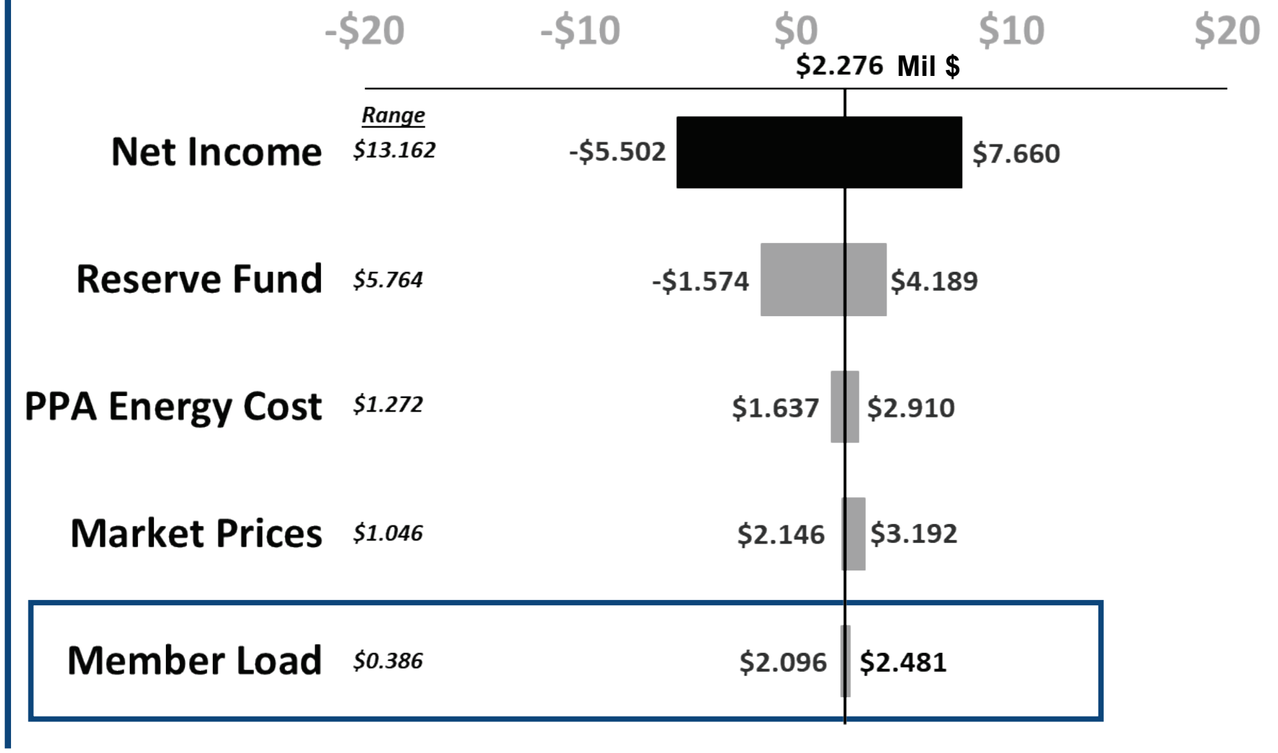


ECA Risk Mitigation Illustrated by Tornado Charts

Without ECA Collection/Refund



With ECA Collection/Refund



The Energy Cost Adjustment provides risk mitigation. For example, the graph on the left shows Net Income uncertainty without the ECA, while the graph on the right shows Net Income with the ECA. Focusing on Member Load, note how the range of uncertainty shrinks when the ECA is either collected or refunded.

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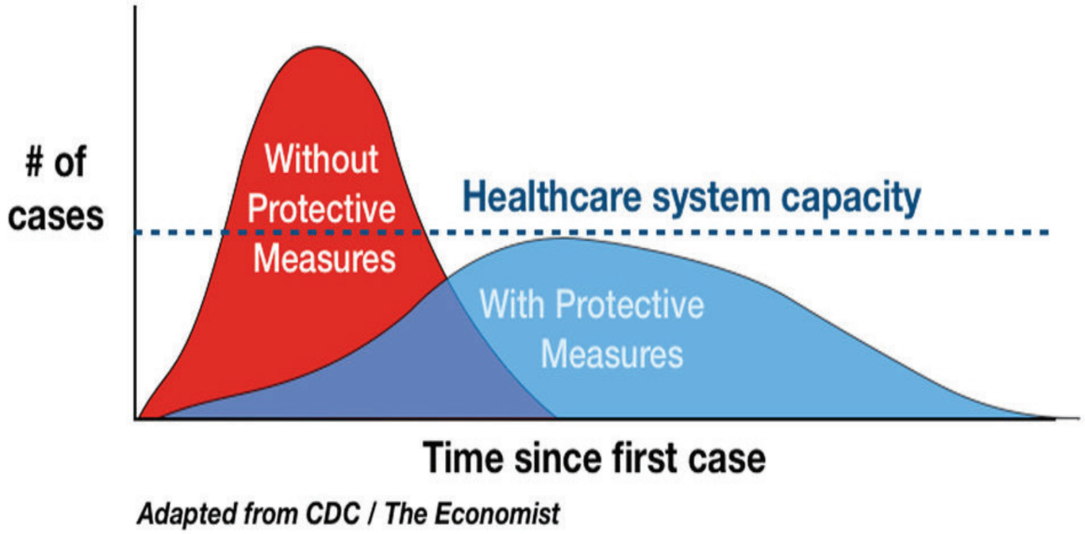
COVID-19: Health/Economic Overview

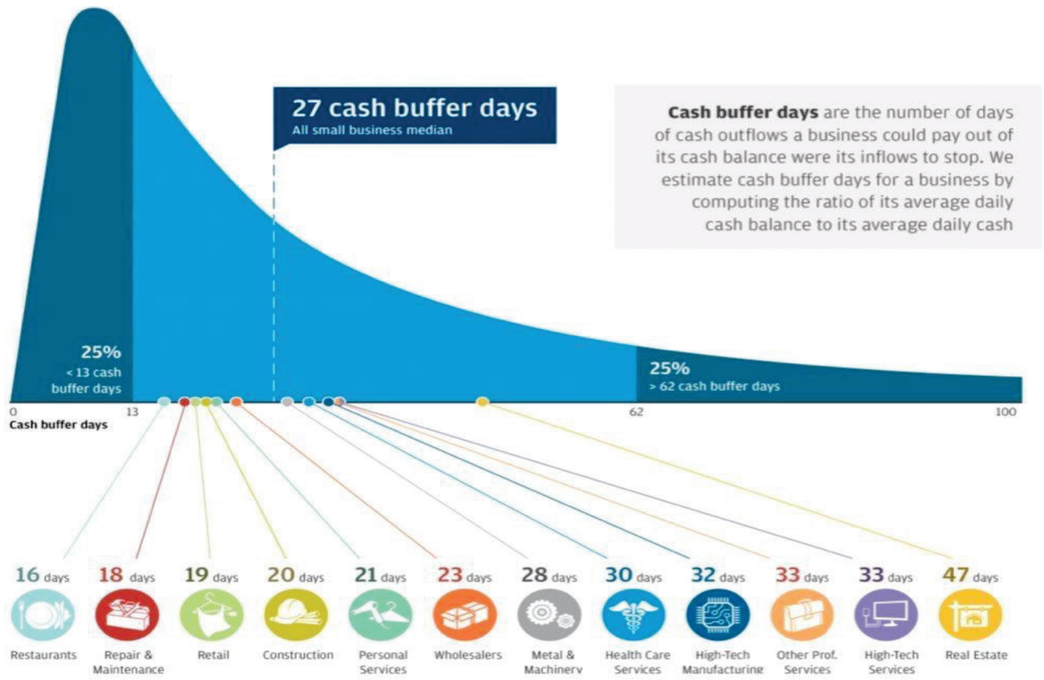
1. **The World, the U.S., and Kentucky, are at a minimum, practicing social distancing with some parts of the world in complete lockdown due to the COVID-19 pandemic.**
2. **The impact on the economy is devastating as many shelter-in-place with business (large and small) temporarily or even permanently closed.**
3. **The goal of the temporary closures is to minimize human contact in an attempt to flatten the # of cases curve. The goal is to not overwhelm the healthcare system.**
4. **Small businesses are burning through their cash buffer (days cash on hand).**



Adapted from CDC / The Economist

Half of all small businesses hold a cash buffer of less than one month.

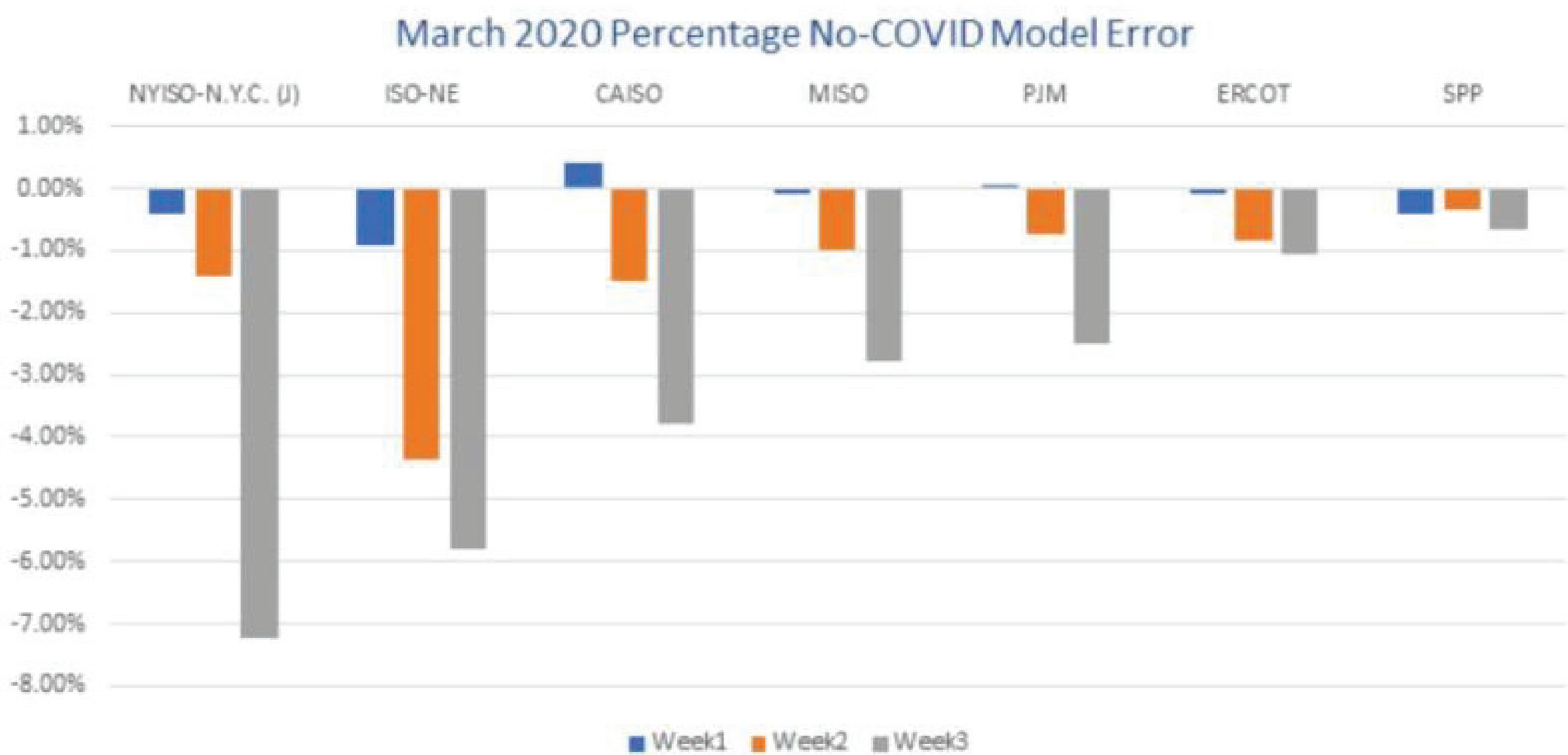
- Moreover, 25 percent of small businesses hold fewer than 13 cash buffer days in reserve.
- In contrast, 25 percent of small businesses hold over 62 cash buffer days in reserve.



COVID-19 Load Impact (early signal)

Short-Term Load Forecast Model Errors

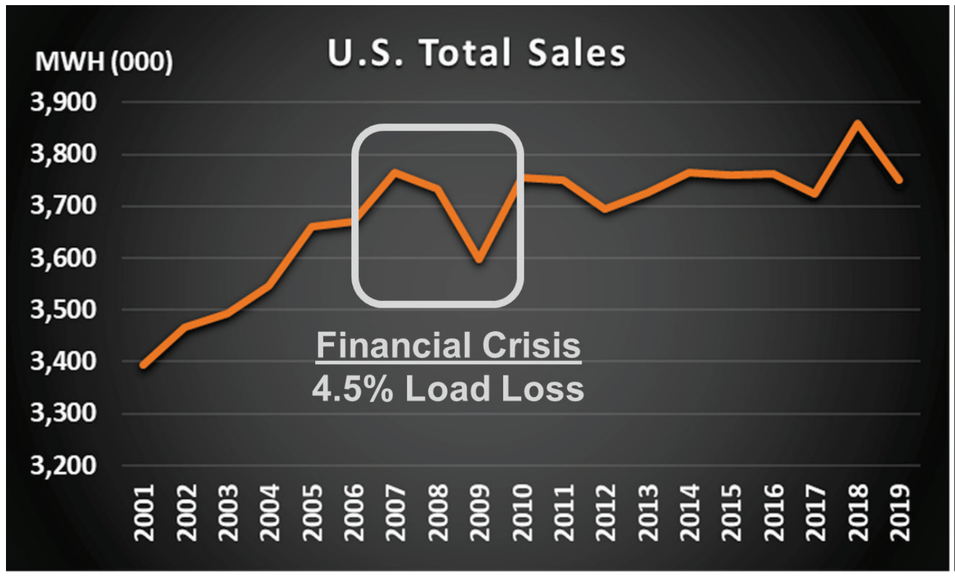
Short-term load forecast modeling use past weather and corresponding historical load information to predict next day hourly loads. The chart below illustrates the COVID-19 forecast error through March 21st. This is a leading indicator on the load impact. Not surprisingly, New York City, which is now the epicenter of the outbreak has the largest forecast error while the less dense SPP area has the lowest forecast error.

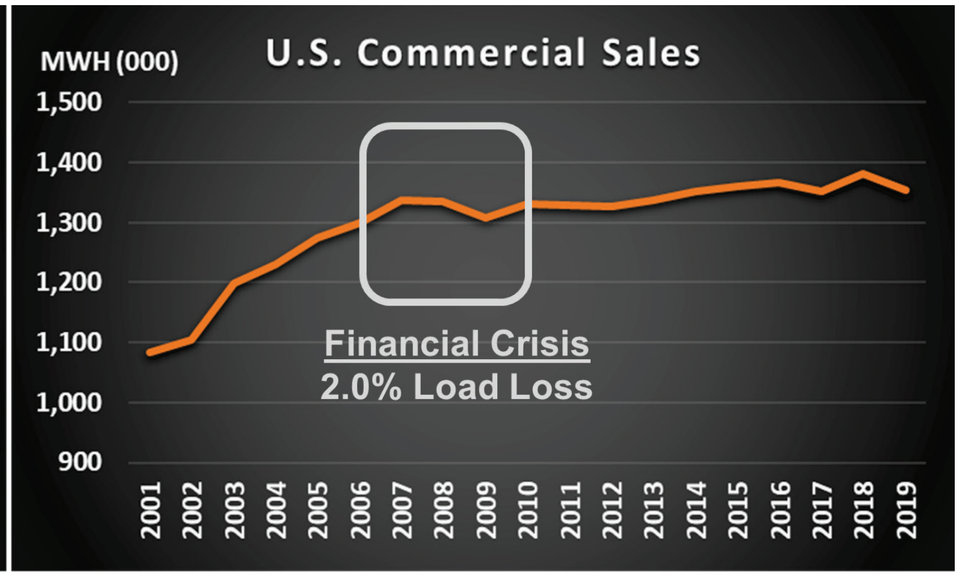


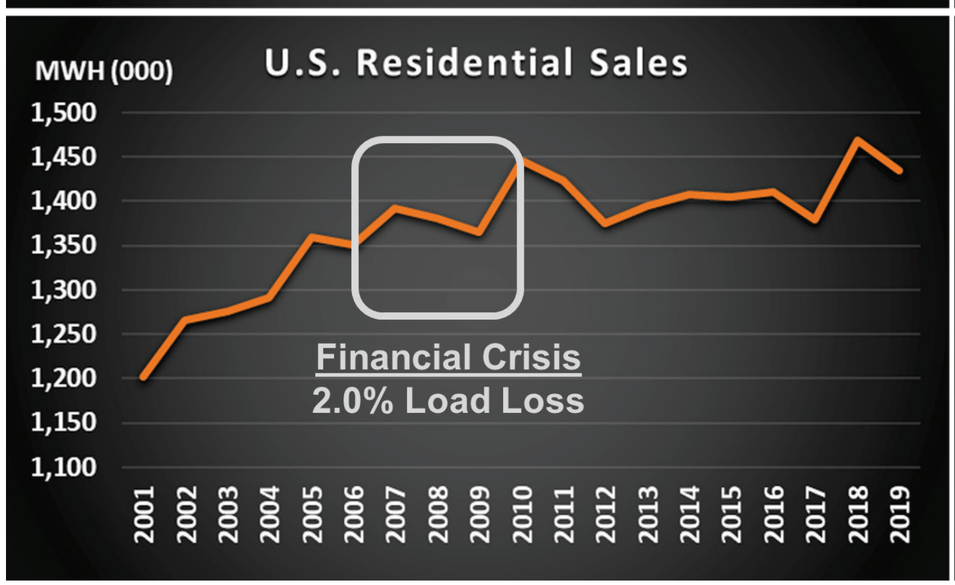
U.S. Financial Crisis Load Impact (2008-2009)

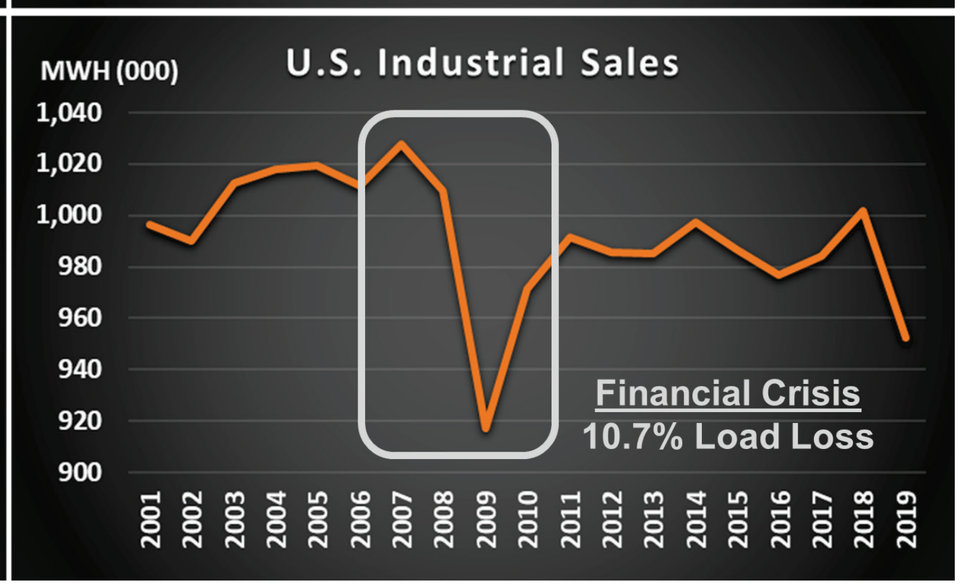
U.S. Load Impact

In 2008-2009, due to the Financial Crisis, the U.S. electricity usage abruptly dropped 4.5% and took several years to partially recover. The Financial Crisis may provide insight into the long-term loss of load KYMEA could experience due to the COVID-19 pandemic.





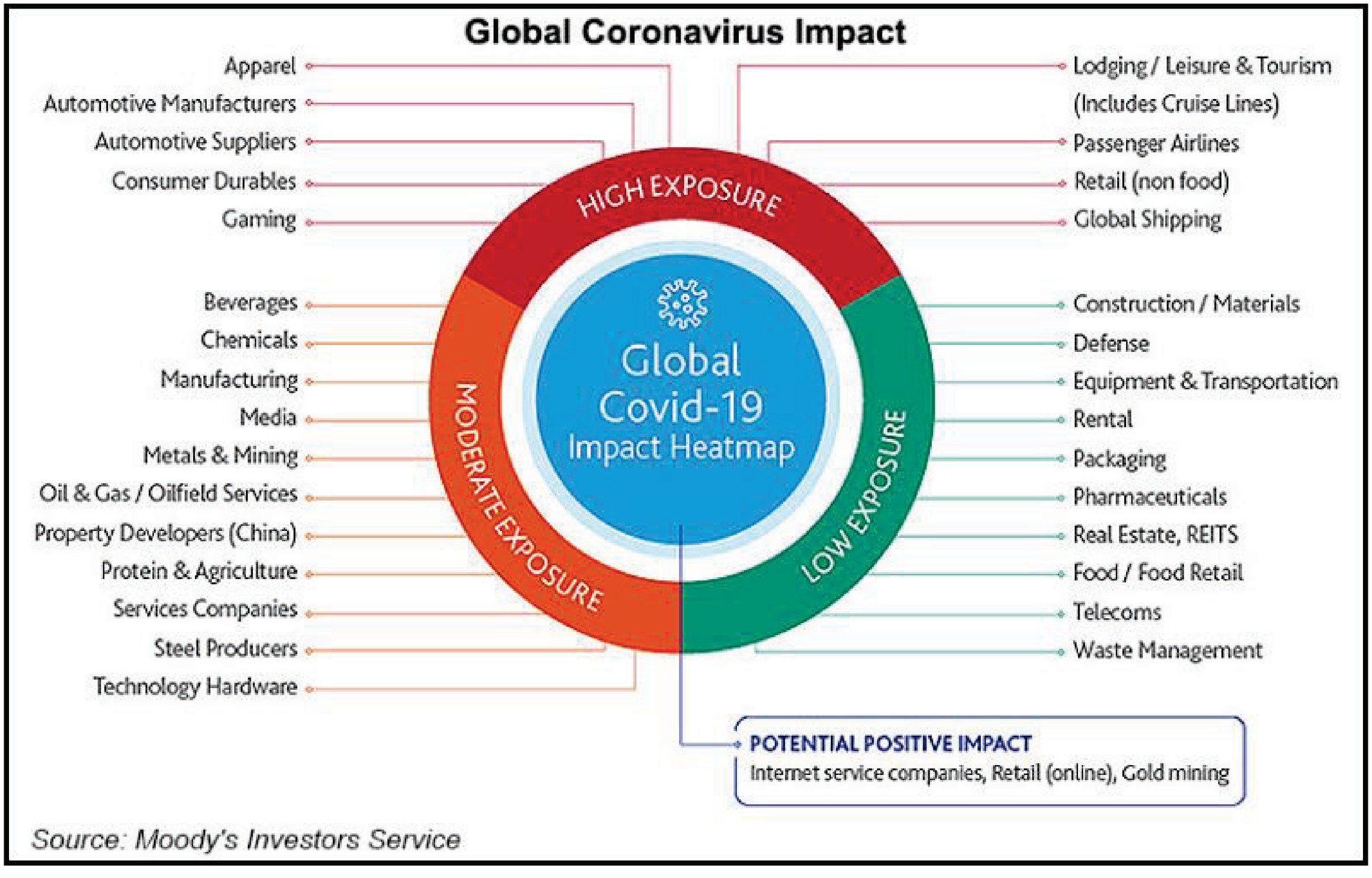




Global Coronavirus Impact by Sector

Coronavirus Business Sector Impact

The following chart illustrates the expected exposure by business sector to the Coronavirus.

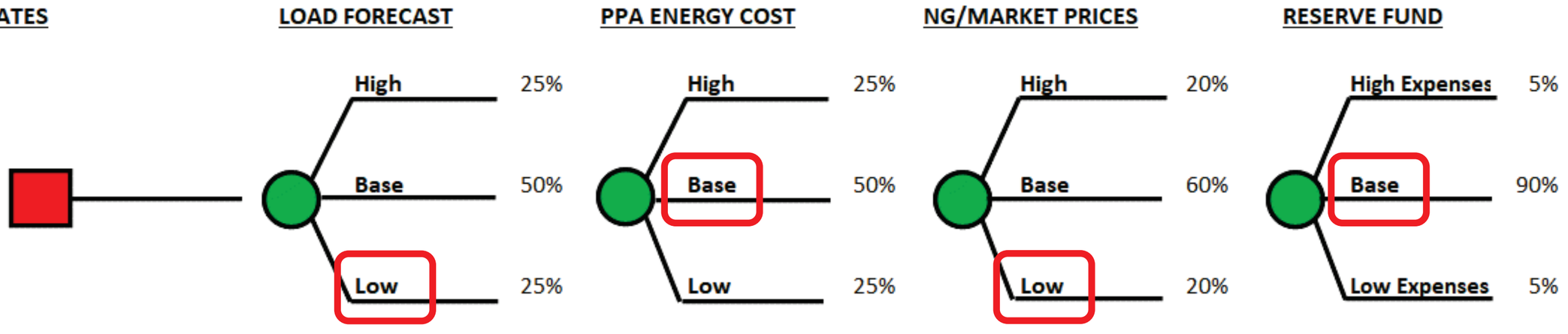


COVID-19: Possible KYMEA FY2021 Impact

- ❑ KYMEA presented its rate study to the KYMEA Board of Directors on February 27, 2020 with a recommendation of a 4.19% rate decrease (slide 4 of this presentation).
- ❑ Since the February Board meeting, the economy has been significantly impacted by the COVID-19 pandemic.

The following analysis addresses the possible impact on KYMEA and its members.

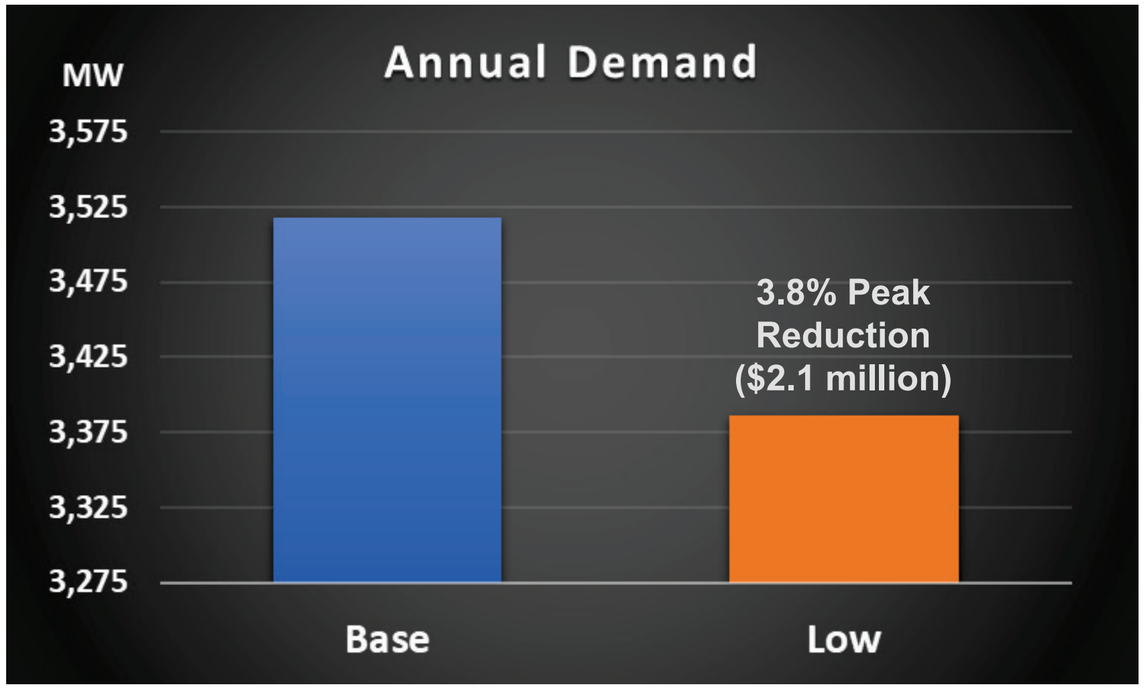
1. **The FY2021 rates were established following the Base-Base-Base-Base path (highest probability of occurrence) as shown in the decision tree below.**
2. **Due to the COVID-19 pandemic, a <u>more likely path</u> is the Low-Base-Low-Base (Low Load Forecast, Base PPA Energy Cost, Low NG/Market Prices, and Base Reserve Fund).**

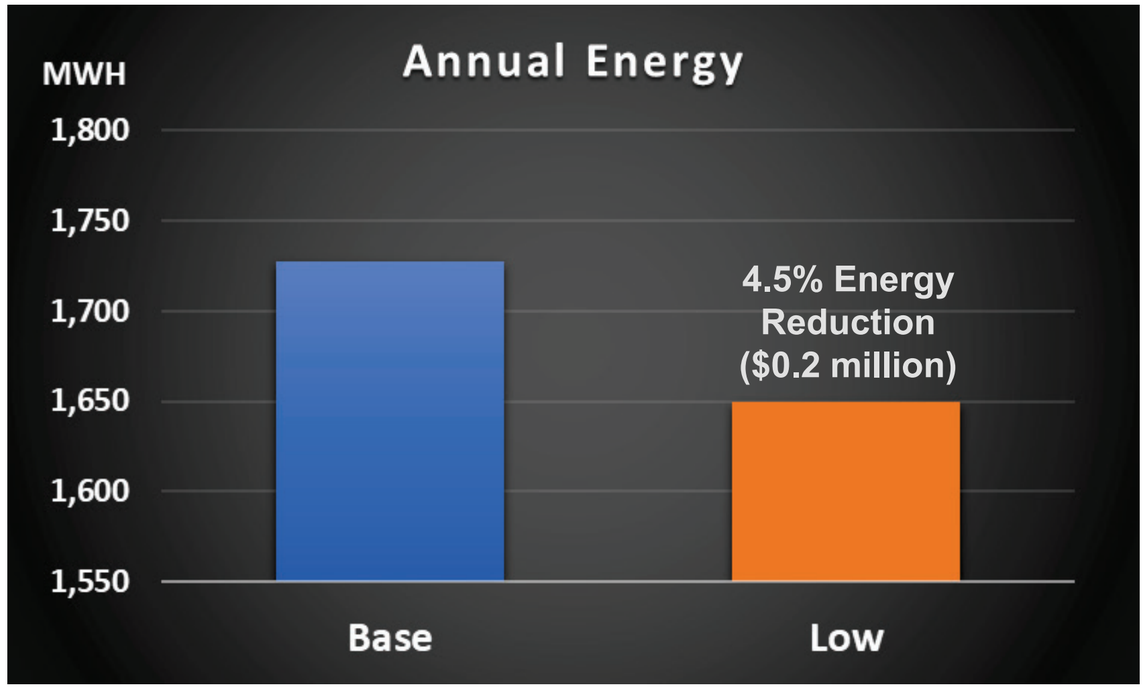


KYMEA Demand and Energy Impact

The KYMEA Demand and Energy comparing the Base Load and the Low Load Scenarios (March 2020 – June 2021) is shown below.

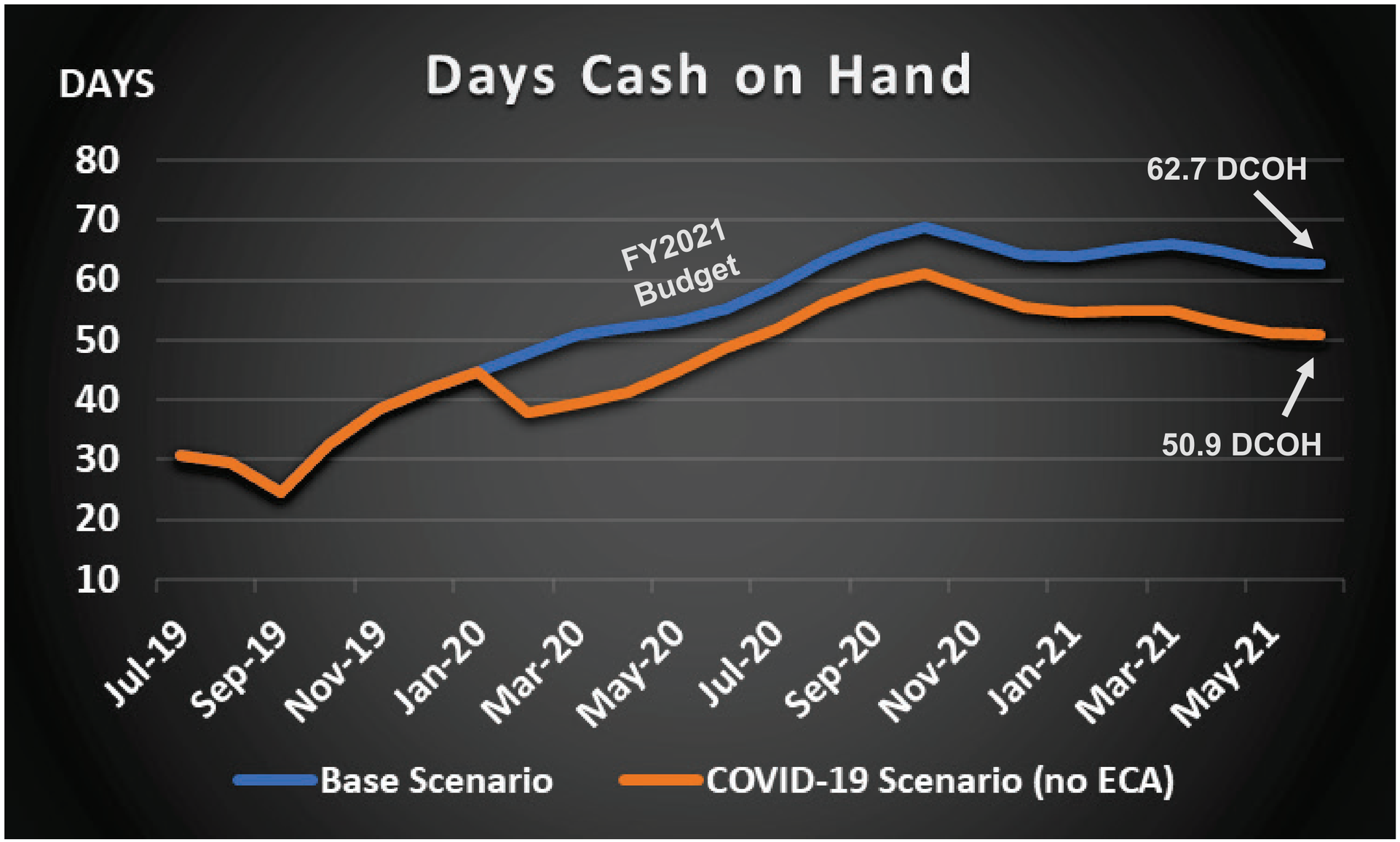
1. **Annual Demand: The Low Load Scenario is a 3.8% reduction (132.6 MW) over the next 16 Months. $2.1 million impact on Net Income.**
2. **Annual Energy: The Low Load Scenario is a 4.5% reduction (77.7 GWh) over the next 16 Months. $0.2 million impact on Net Income.**





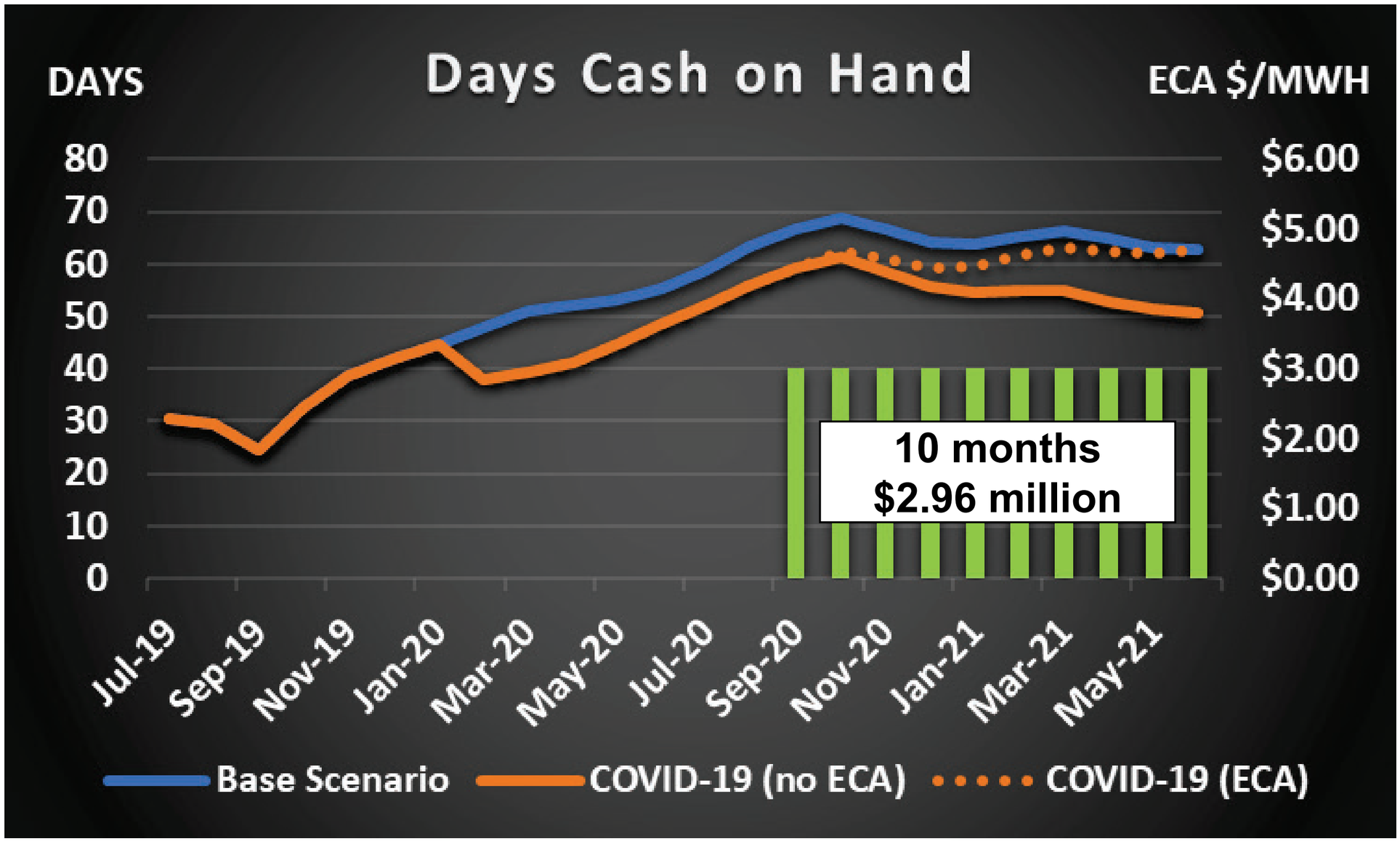
COVID-19 DCOH Impact Without ECA Collection

The FY2021 rates are set with a target Days Cash on Hand (DCOH) of 62 days by June 2021 as shown by the Blue Line. The Orange Line represents the DCOH shortfall due to the COVID-19 pandemic. This drop is the impact without ECA collection.



COVID-19 DCOH Impact With ECA Collection

As shown in the Chart below, to achieve the target DCOH of 62 days, the ECA of $3.00/MWh would begin to be collected in September 2020 and would continue through June 2021.



FY2021 COVID-19 Rate Impact With ECA Collection (62 DCOH Target)

	FY2021 (62 DCOH Driver) - Deterministic			FY2021 (62 DCOH Driver) - COVID-19 Case			Change
	$/kW-mo	kW	$	$/kW-mo	kW	$	$
Billing Demand	$14.043800	2,641,566	$37,097,625	$14.043800	2,537,741	$35,639,527	-$1,458,098
	$/kWh	kWh	$	$/kWh	kWh	$	$
Energy	$0.024702	1,303,112,487	$32,189,758	$0.024702	1,239,161,676	$30,610,031	-$1,579,726
ECA	$0.000000	-	$0	$0.002391	1,239,161,676	$2,962,954	$2,962,954
Transmission	$/kW-mo	kW	$	$/kW-mo	kW	$	$
KU Transmission 12-CP	$2.776615	2,516,985	$6,988,699	$2.776615	2,413,472	$6,701,283	-$287,416
MISO Transmission NCP	$1.534664	2,644,185	$4,057,936	$1.534664	2,537,741	$3,894,580	-$163,356
PJM Transmission 1-CP	$2.738177	38,400	$105,146	$2.738177	38,400	$105,146	$0
KU Direct Assigned Facilities			$			$	$
Fixed Facility Charges			$213,839			$213,839	$0
SEPA Member Resource Credit	$/kW-mo	kW	$	$/kW-mo	kW	$	$
Capacity Payment	($3.850000)	440,896	-$1,697,450	($3.850000)	440,896	-$1,697,450	$0
AR Project Member Invoice			$78,955,552			**$78,429,910**	-$525,642
			6.059 ¢			**6.329 ¢**	0.270 ¢
Decrease from FY2020 Actual/Budget			-4.20%			**0.08%**	4.28%
AR Project Member Power Supply (Without NITS)			$71,861,708			$71,623,481	-$238,226
			5.515 ¢			5.780 ¢	0.265 ¢
Decrease from FY2020 Actual/Budget (Without NITS)						4.81%	4.81%
Net Income			$1,327,475			**$3,231,645**	$1,904,170
Days Cash On Hand (June 2021)			62.652			**62.840**	0.188
Coverage of Full Fixed Obligations (June 2021)			1.027			**1.066**	0.039
Leverage (Net Adjusted Debt / Adjusted FADS (x))			7.531			7.237	-0.294

KYMEA COVID-19 Rate Relief Plan

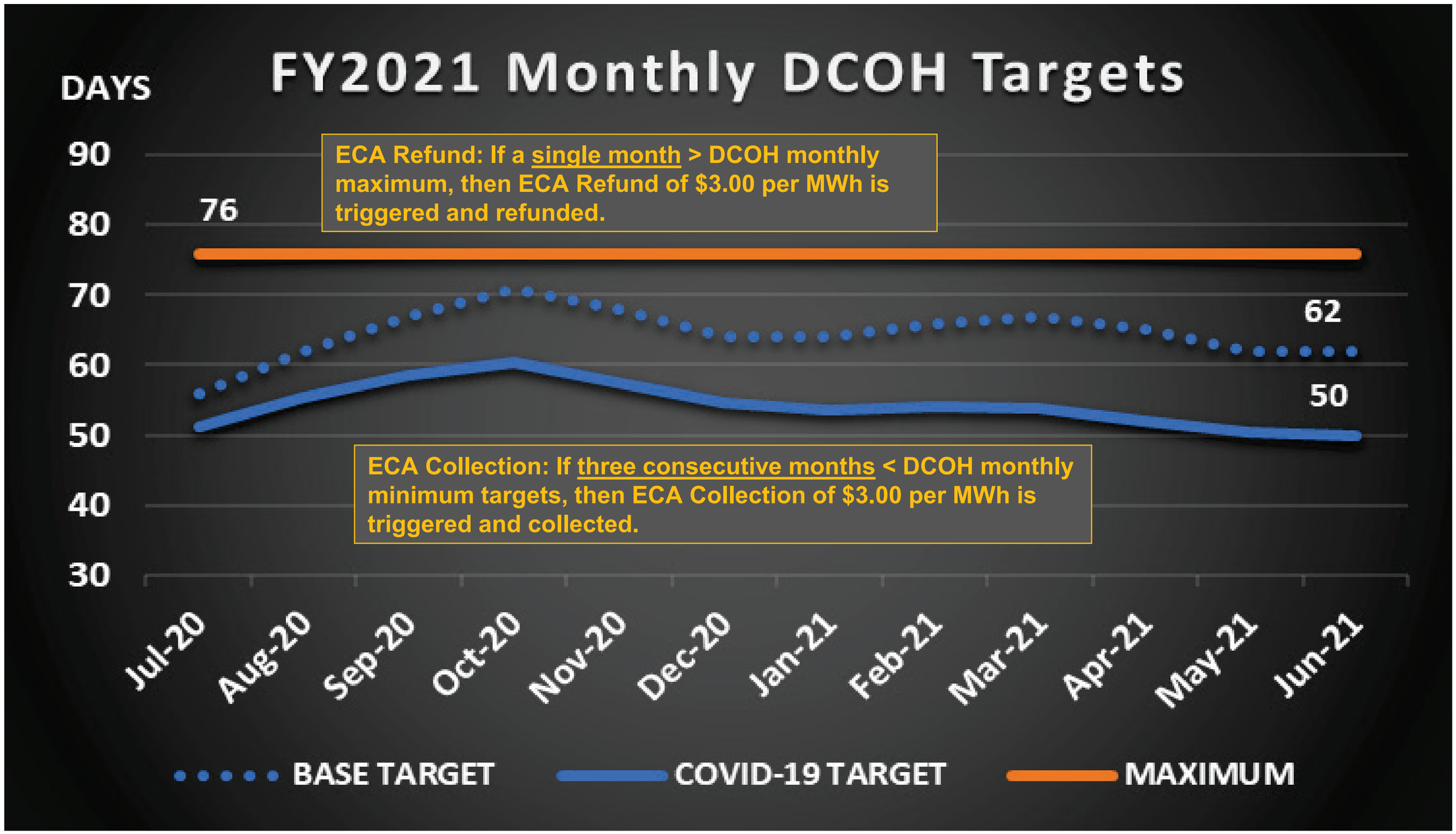
- **The KYMEA COVID-19 Rate Relief Plan ("Plan") is aimed at alleviating the economic impact to the KYMEA Members. KYMEA and its membership stands together to provide much needed relief to our customers.**

****** In short, the Plan lowers the FY2021 DCOH minimum target from 62 days to 50 days.***

Key Elements of the FY2021 KYMEA COVID-19 Rate Relief Plan

- **Billing Demand Rate: $14.044 per kW-MO**
- **Energy Rate: $0.024702 per kWh**
- **Reserve Fund Rate: $1.535 per kW-MO**
- **Net Income: $269,691**
- **Days Cash on Hand: 50.852 Days**
- **Coverage of Full Fixed Obligations: 1.006**
- **Leverage: 7.728**

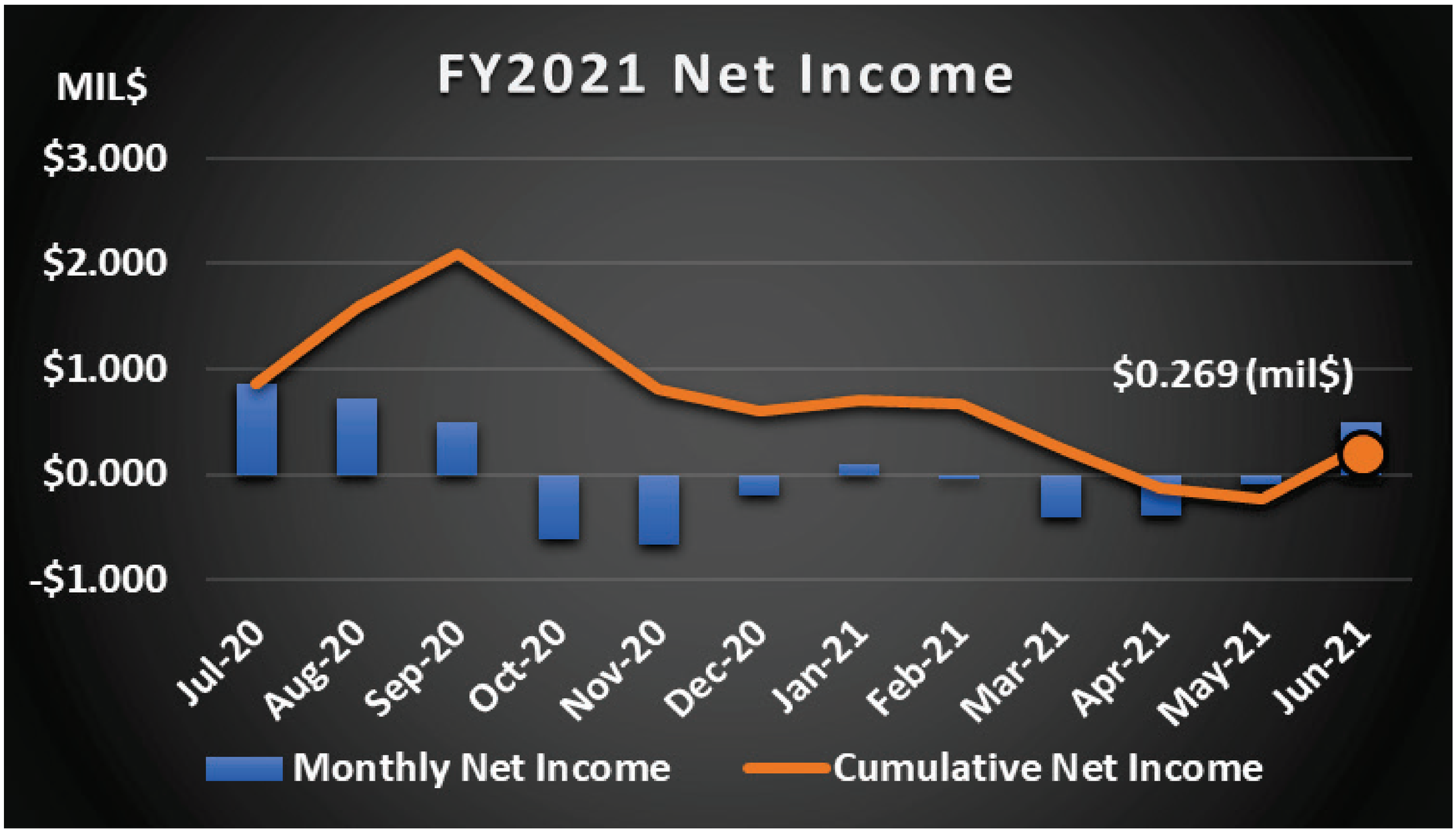
COVID-19 Rate Relief Plan Targets



FY2021 COVID-19 Rate Relief Plan With ECA Collection (50 DCOH Target)

	FY2021 (62 DCOH Driver) - Deterministic			FY2021 (50 DCOH Driver) - COVID-19 Case			Change
	$/kW-mo	kW	$	$/kW-mo	kW	$	$
Billing Demand	$14.043800	2,641,566	$37,097,625	$14.043800	2,537,741	$35,639,527	-$1,458,098
	$/kWh	kWh	$	$/kWh	kWh	$	$
Energy	$0.024702	1,303,112,487	$32,189,758	$0.024702	1,239,161,676	$30,610,031	-$1,579,726
ECA	$0.000000	-	$0	$0.000000	-	$0	$0
Transmission	$/kW-mo	kW	$	$/kW-mo	kW	$	$
KU Transmission 12-CP	$2.776615	2,516,985	$6,988,699	$2.776615	2,413,472	$6,701,283	-$287,416
MISO Transmission NCP	$1.534664	2,644,185	$4,057,936	$1.534664	2,537,741	$3,894,580	-$163,356
PJM Transmission 1-CP	$2.738177	38,400	$105,146	$2.738177	38,400	$105,146	$0
KU Direct Assigned Facilities			$			$	$
Fixed Facility Charges			$213,839			$213,839	$0
SEPA Member Resource Credit	$/kW-mo	kW	$	$/kW-mo	kW	$	$
Capacity Payment	($3.850000)	440,896	-$1,697,450	($3.850000)	440,896	-$1,697,450	$0
AR Project Member Invoice			$78,955,552			**$75,466,957**	-$3,488,596
			6.059 ¢			**6.090 ¢**	0.031 ¢
Decrease from FY2020 Actual/Budget			-4.20%			**-3.71%**	0.49%
AR Project Member Power Supply (Without NITS)			$71,861,708			$68,660,528	-$3,201,180
			5.515 ¢			5.541 ¢	0.026 ¢
Decrease from FY2020 Actual/Budget (Without NITS)						0.48%	0.48%
Net Income			$1,327,475			**$268,691**	-$1,058,784
Days Cash On Hand (June 2021)			62.652			**50.852**	-11.800
Coverage of Full Fixed Obligations (June 2021)			1.027			**1.006**	-0.022
Leverage (Net Adjusted Debt / Adjusted FADS (x))			7.531			7.728	0.198

KYMEA COVID-19 Rate Relief Plan Net Income (FY2021)



Agenda

FY2021 Financial Pro Forma and Rates

1. Executive Summary
   - FY2021 All Requirements Rates and Financial Metrics
   - Power Supply Savings since FY2018
   - Projected Net Income
2. AR Rates and ECA
   - AR Rate Making Methodology
   - ECA Collection/Refund Methodology
3. Risk Assessment
   - Uncertainties
   - Net Income
   - Risk Profile
   - Tornado Chart
4. KYMEA COVID-19 Rate Relief Plan
5. **Discussion/Actions**

Discussion/Actions

Discussion

Staff Recommends the AR Project and KYMEA Board approve the COVID-19 Rate Relief Plan (RRP) and the Late Payment Protection Plan (LPPP).

- **4.19% Rate Decrease**
- **Lower FY2021 Minimum DCOH Target to 50 Days**
- **Late Payment Interest Forgiveness**

Actions – Rate Schedule Exhibit A

1. **AR Project Approval**
2. **KYMEA Board Approval**