



FMPA BOARD OF DIRECTORS AGENDA PACKAGE

**August 20, 2020
9:00 a.m. [NOTE TIME]
Dial-in Info 877-668-4493 or 650-479-3208
Meeting Number 855 270 349#
PASSWORD – 8553#**

Board of Directors

Barbara Quiñones, Homestead –Chair
Lynne Tejeda, Key West – Vice Chair
Larry Mattern, Kissimmee – Secretary
Allen Putnam, Jacksonville Beach – Treasurer
Rodolfo Valladares, Alachua
Bradley Hiers, Bartow
Vacant, Blountstown
Jody Young, Bushnell
Robert Presnell, Chattahoochee
Lynne Mila, Clewiston
Jan Bagnall, Fort Meade
John Tompeck, Fort Pierce
Tom Brown, Gainesville
Robert Page, Green Cove Springs
Howard McKinnon, Havana
Ed Liberty, Lake Worth Beach

Michael Beckham, Lakeland
Brad Chase, Leesburg
Vacant, Moore Haven
Steve Langley, Mount Dora
Bill Conrad, Newberry
Joe Bunch, New Smyrna Beach
Sandra Wilson, Ocala
Claston Sunanon, Orlando
Vacant, Quincy
Bill Sturgeon, St. Cloud
John Holman, Starke
Rob McGarrah, Tallahassee
James Braddock, Wauchula
Vacant, Williston
Dan D'Alessandro, Winter Park

Meeting Location

**Florida Municipal Power Agency
8553 Commodity Circle
Orlando, FL 32819
(407) 355-7767**

MEMORANDUM

TO: FMPA Board of Directors
FROM: Jacob A. Williams, General Manager and CEO
DATE: August 11, 2020
RE: **FMPA Board of Directors Meeting – 9:00 a.m., August 20, 2020**
[NOTE TIME]
PLACE: Florida Municipal Power Agency
8553 Commodity Circle, Orlando, FL 32819
DIAL-IN: **DIAL-IN INFO 877-668-4493 or 650-479-3208**
Meeting Number 855 270 349# – PASSWORD – 8553#
(If you have trouble connecting via phone or internet, call 407-355-7767)

AGENDA

Chairperson Barbara Quiñones, Presiding

1. **Call to Order, Roll Call, Declaration of Quorum** 4
2. **Recognition of Guests**..... 5
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4. **Set Agenda (by vote)** 7
5. **Report from the General Manager (Jacob Williams)** 9
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 - b. Approval of the Projects' Preliminary Financials as of June 30, 2020 25
 - c. Approval of the Treasury Reports as of June 30, 2020 27

8. Action Items

- a. Approval of FMPA's Compensation Policy Update (Sharon Adams) 31

9. Information Items

- a. Energy Storage Market Update (Navid Nowakhtar) 38
- b. DEED Project Results: Achieving Reliability Improvements Using Single-Phase Reclosers (Cairo Vanegas) 70
- c. FMPA/Origis Letter Agreement Regarding Waiver of Interest on Performance Assurance * (Susan Schumann) 80
- d. Review of Finance Committee Items * (Linda S. Howard) 89

10. Member Comments 93

11. Adjournment 94

***Also on the Executive Committee agenda.**

JW/su

NOTE: One or more participants in the above referenced public meeting may participate by telephone. At the above location there will be a speaker telephone so that any interested person can attend this public meeting and be fully informed of the discussions taking place either in person or by telephone communication. If anyone chooses to appeal any decision that may be made at this public meeting, such person will need a record of the proceedings and should accordingly ensure that a verbatim record of the proceedings is made, which includes the oral statements and evidence upon which such appeal is based. This public meeting may be continued to a date and time certain, which will be announced at the meeting. Any person requiring a special accommodation to participate in this public meeting because of a disability, should contact FMPA at (407) 355-7767 or (888) 774-7606, at least two (2) business days in advance to make appropriate arrangements.

**AGENDA ITEM 1 - CALL TO ORDER,
ROLL CALL, DECLARATION OF
QUORUM**

**Board of Directors Meeting
August 20, 2020**

**AGENDA ITEM 2 – RECOGNITION OF
GUESTS**

**Board of Directors Meeting
August 20, 2020**

**AGENDA ITEM 3 – PUBLIC
COMMENTS (Individual Public
Comments Limited to 3 Minutes)**

**Board of Directors Meeting
August 20, 2020**

**AGENDA ITEM 4 – SET AGENDA (By
Vote)**

**Board of Directors Meeting
August 20, 2020**

**AGENDA ITEM 5 – REPORT FROM
THE GENERAL MANAGER**

**Board of Directors Meeting
August 20, 2020**

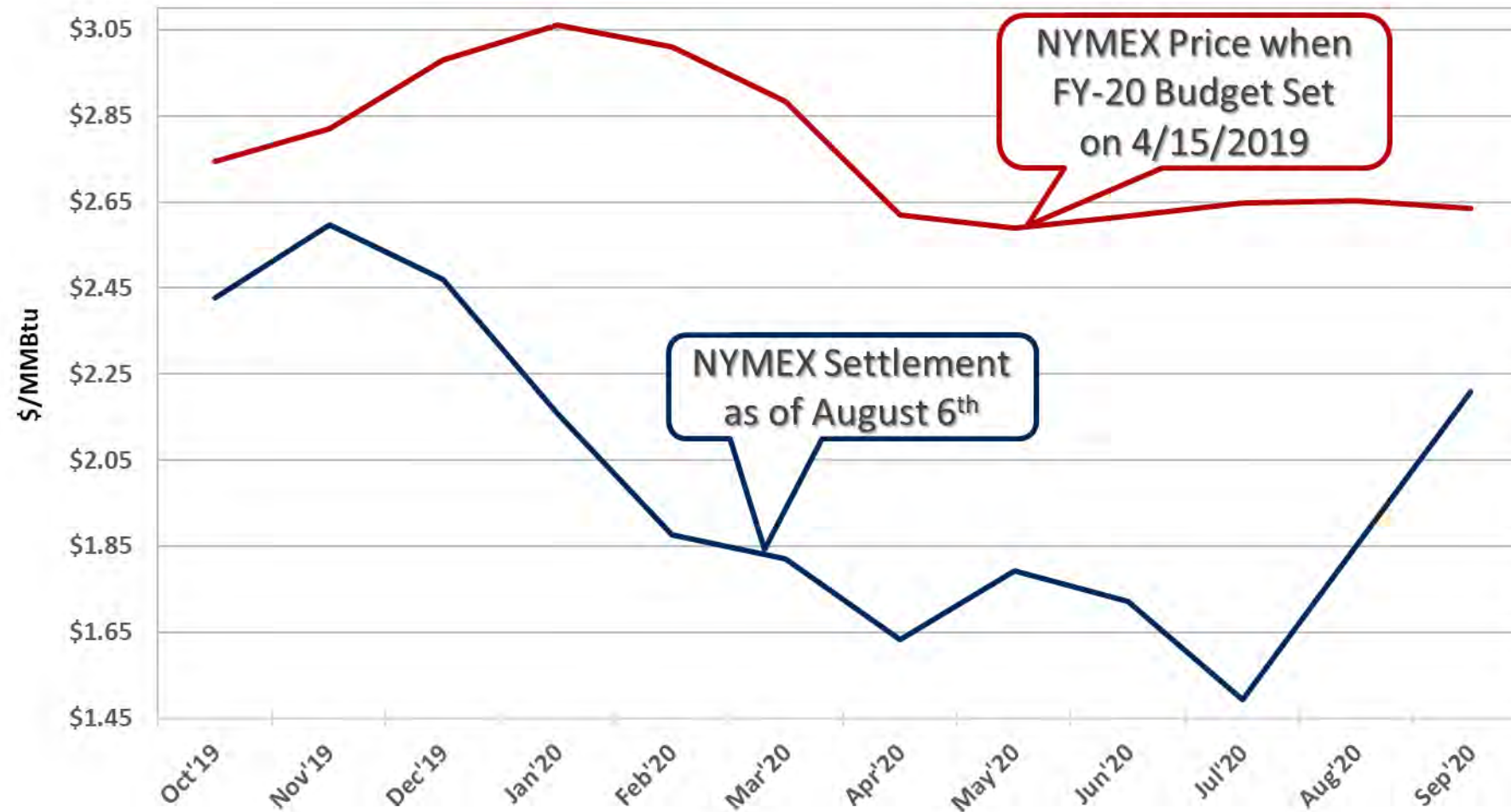
Fiscal 2020 Management Goals Scorecard, as of July 31, 2020



Goal		Status	Actual	YTD Actual	YTD Target	FY'20 Target	Comment
1. Safety (no lost-time accidents for employees/agents)			0	0	0	0	Zero lost time accidents.
2. Compliance (no violations that are not self-reported)	Environ.		0	0	0	0	Zero compliance violations.
	Financial		0	0	0	0	
	Regulatory		0	0	0	0	
3. Cyber Security (zero cyber breaches: Corp IT & Plant Ops)			0	0	0	0	Zero cyber security breaches.
Members APPA Scorecard			0	5	10	12	
Phishing Testing			2.7%	5.3%	5% or <	5% or <	Campaign Subject: "Notice to Appear - Past Due." Two people opened the attachment.
4. Low Costs (\$/MWh)	Non-Fuel		\$44.29	\$51.17	\$53.86	\$48.55	July 2020 will be updated for the meeting. June 2020 YTD MWh sales 0.7% below target. Main drivers of all-in costs ~11% (\$7.31/MWh) below target include: Gas Costs (30%), O&M Expenses (11%), Assigned Project Costs (~10%) below targeted levels, but TXMS Expenses (~17%) above target.
	Fuels		\$13.93	\$17.62	\$24.05	\$24.09	
	All-in		\$58.22	\$68.79	\$77.91	\$72.64	
5. Reliability	CC EAF		100%	92.5%	88%	88%	100% reliability for all base load units in July.
	KWS Blk Start						None
	SAIDI Reduction		5	n/a	n/a	7	Beaches, Keys, Bushnell, Havana, Newberry

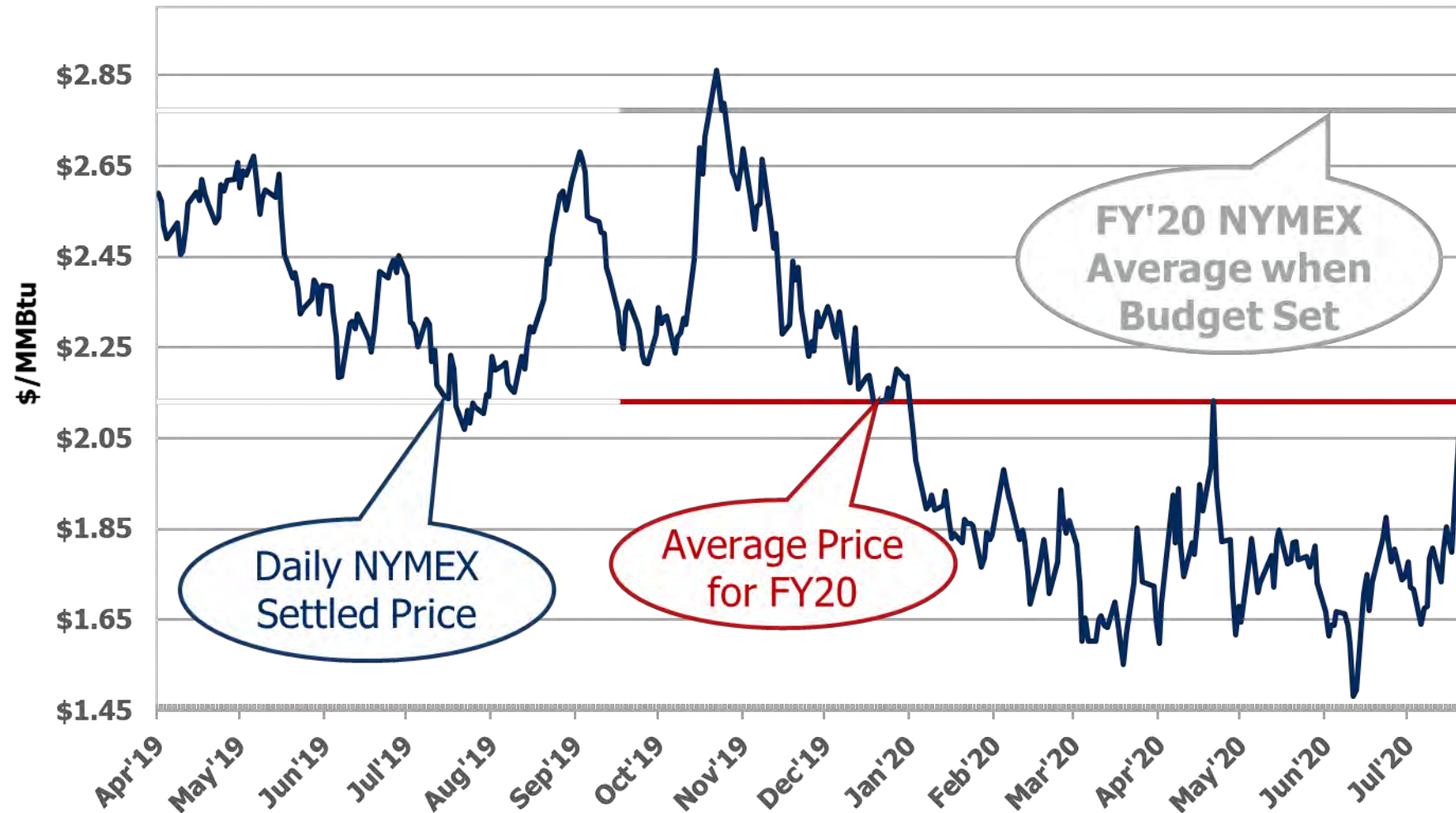
FY 2020 NYMEX Contract \$0.77/MMBtu Below Budget

NYMEX Natural Gas Settlement (as of 8/6/20)



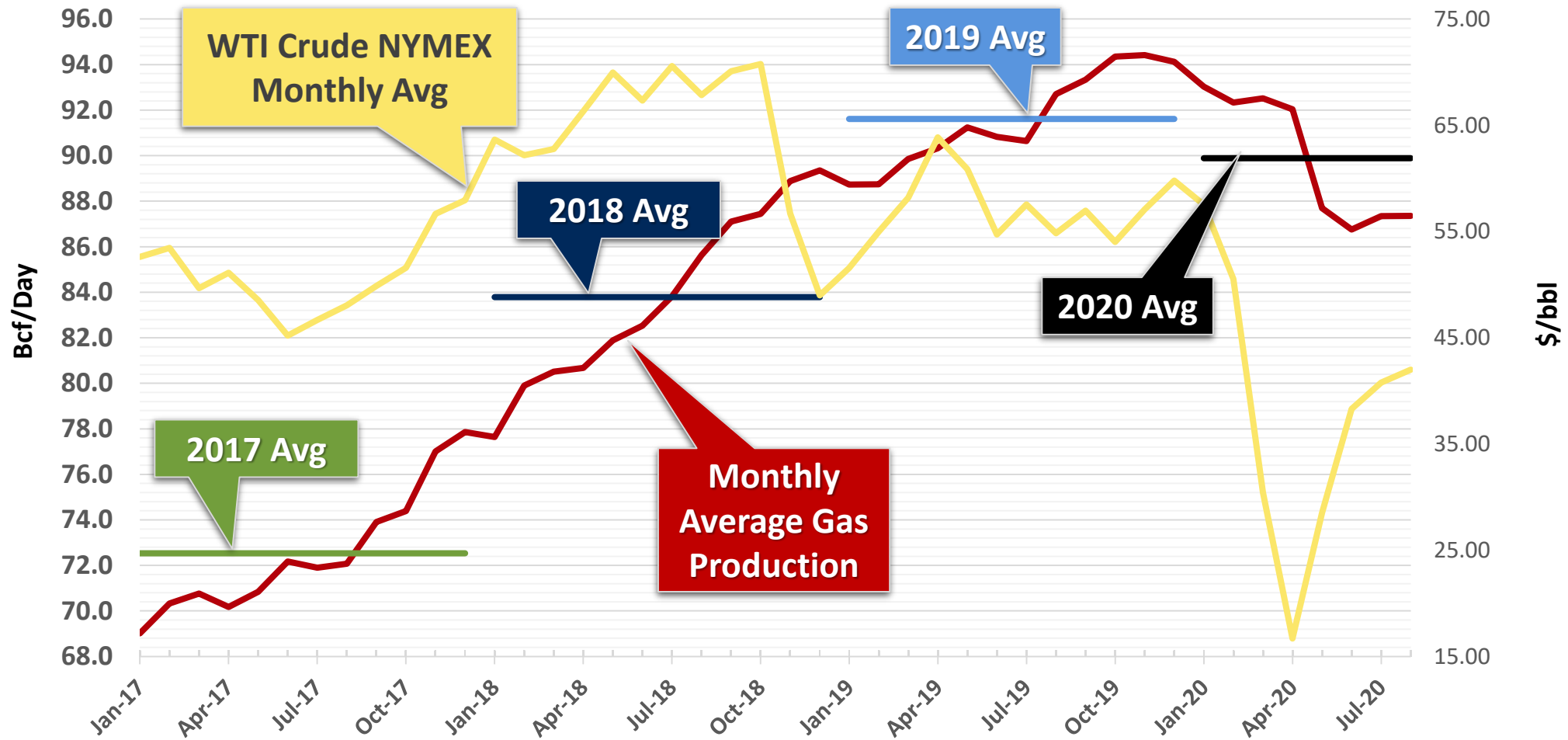
Daily NYMEX Strip Action for since FY 2020 Budget Set

Daily Settled Price \$0.64 Below Budget as of Aug 6th Settlement



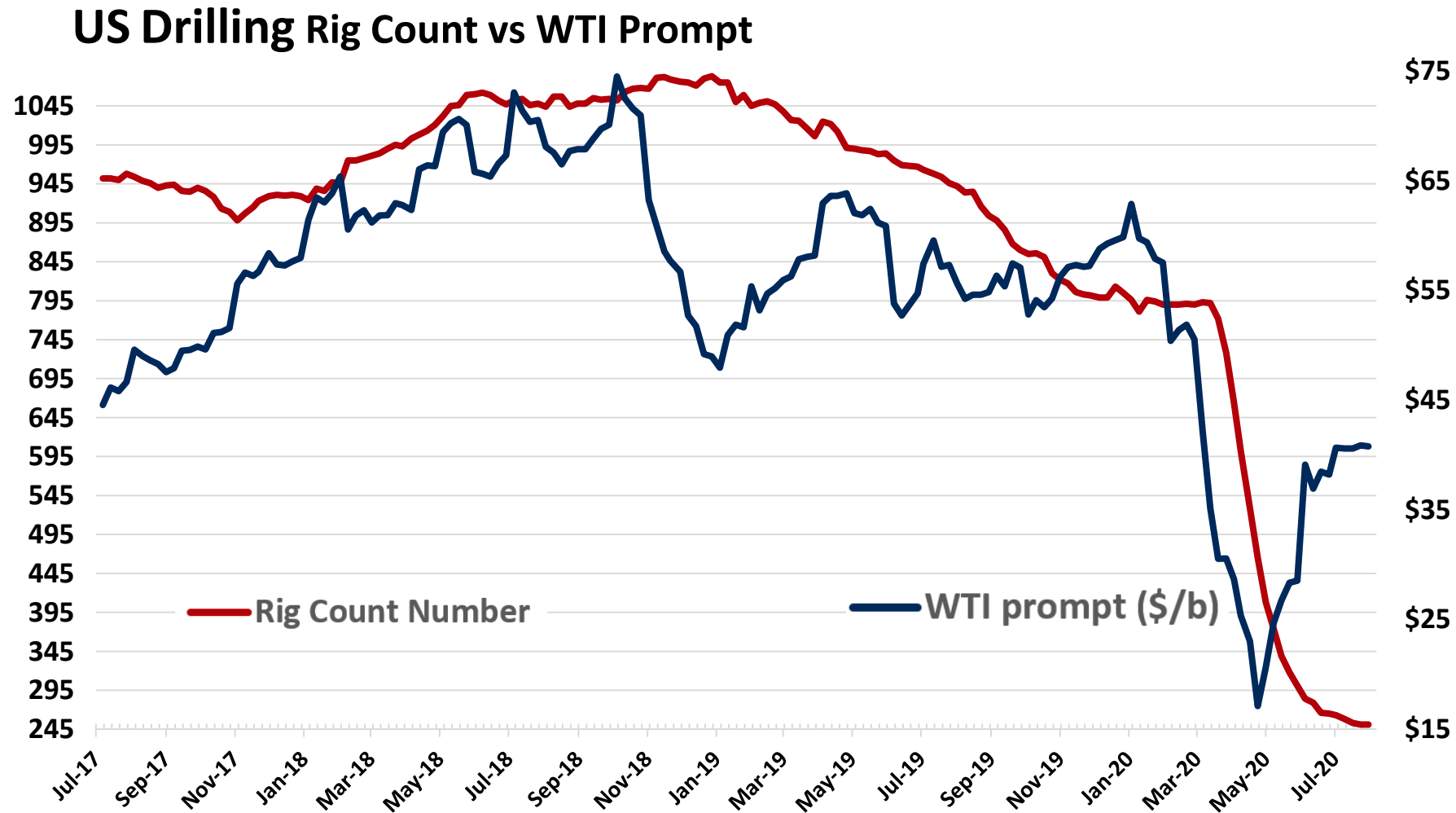
Natural Gas Production Following Changes in Oil Prices

Average Monthly Change Since 2017 to Date (8/7/20)



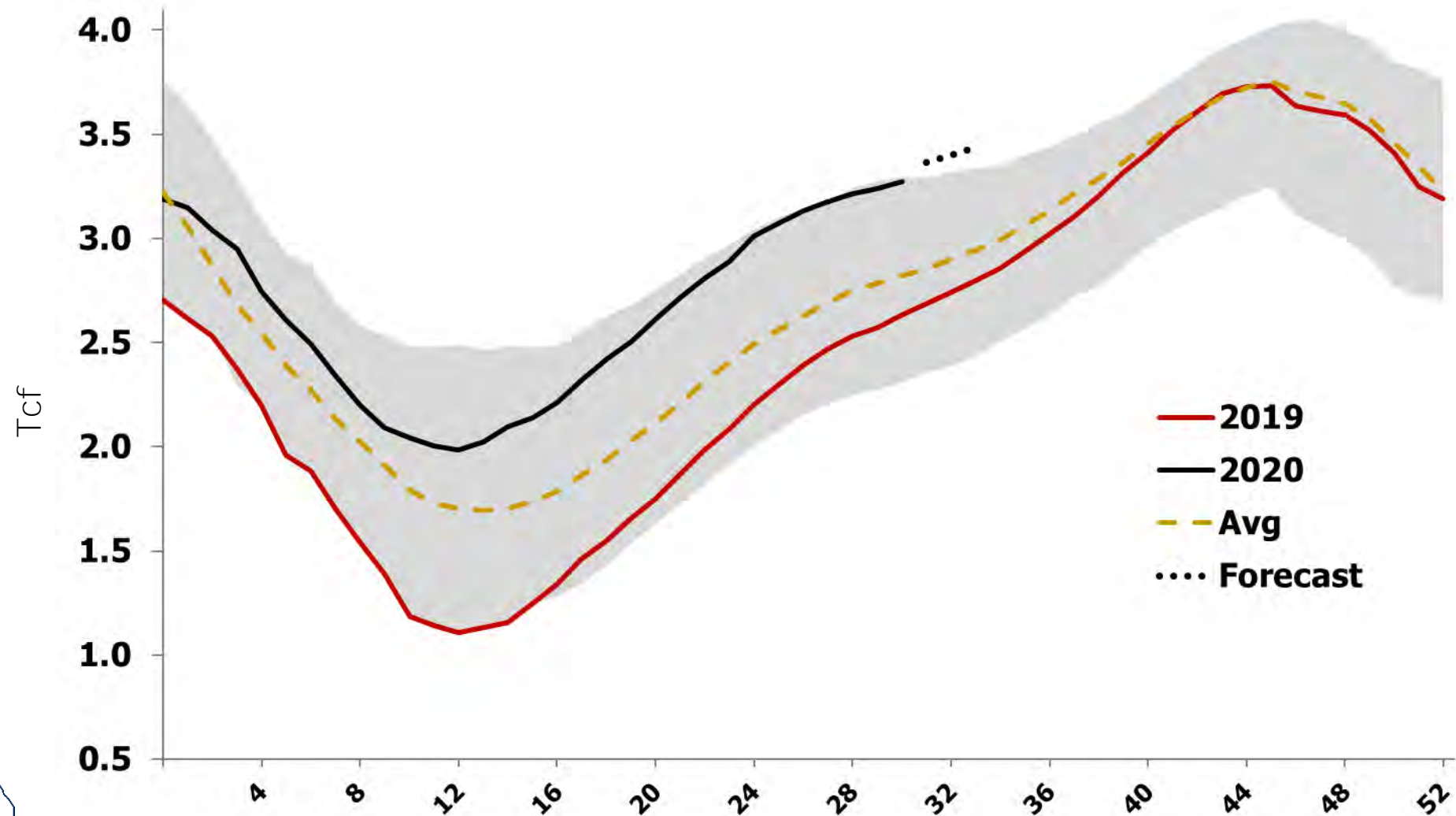
Drilling Rig Count Declines as Oil Prices Move Lower

Drilling Rig Expansion resumes decline as WTI Price falls (as of July 31st)



Gas Storage Inventory as of Week Ending July 31st

2020 Injection Season projected to surpass high inventory level of the last 5 years



Roughly 29% of FMPA Annual Natural Gas Burn Secured \$(0.185) / MMBtu below budget

Value vs. Budget

- No new purchases since last month's report
- Locked in ~29% of annual burn at a weighted average cost of gas of \$2.55/Mmbtu
- The fixed price purchases are roughly \$(0.185)/MMBtu lower than budget
- The extended fixed price value is roughly \$2.05 million below budget
- FGU continues to look for opportunities to secure pricing well below budget up to the 50% maximum fixed pricing directive.

Value vs. Market

Month	Purchase WACOG (\$/MMBtu)	FGT Zn3 Market Pricing as of 8/6/20 (\$/MMBtu)	\$ Value or (lost opportunity) vs. Current Market (\$/MMBtu)	Extended Value or (lost opportunity) vs. Current Market
Oct-20	\$1.81	\$2.47	\$0.66	\$662,286
Nov-20	\$2.24	\$2.62	\$0.38	\$485,124
Dec-20	\$2.72	\$2.97	\$0.25	\$330,821
Jan-21	\$2.88	\$3.08	\$0.20	\$268,384
Feb-21	\$2.83	\$3.05	\$0.21	\$254,591
Mar-21	\$2.73	\$2.92	\$0.19	\$255,071
Apr-21	\$2.49	\$2.62	\$0.13	\$78,108
May-21	\$2.44	\$2.62	\$0.17	\$106,975
Jun-21	\$2.49	\$2.71	\$0.21	\$127,908
Jul-21	\$2.57	\$2.69	\$0.12	\$76,657
Aug-21	\$2.59	\$2.73	\$0.13	\$81,505
Sep-21	\$2.57	\$2.69	\$0.12	\$72,384

Total Extended Value vs. Current Market	\$2,799,814
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(Continued) Management Goals Scorecard, as of July 31, 2020

Goal	Status	Comment
6. Energy/Capacity Sales - Execute wholesale agrmts. with projected margin value \$3.5M for FY2020-2024	\$6.5M	Signed an off-peak energy call option agreement with TEA which will allow for more effective use of efficient combined cycle energy overnight.
7. Enhance Pool – for future significant solar resources - Hire new Exec. Dir. - Devel. practices for extra reserves and fast start needs - Devel. mkt. compensation products to manage new solar resources		New Executive Director is actively engaged in Pool issues, including the reserves policy discussions and evaluating the impacts of new solar resources and the related market compensation products.
8. Member Services Visits by Leadership Team (75 visits)		7 visits in July. YTD is 63.
Member Services 15 project oversight		22 YTD; added Ocala transmission projects this month
Assist solar subscription service - 6		<ul style="list-style-type: none"> KUA and Ocala finalizing programs and marketing to customers FPUA and KEYS developing programs Mount Dora and New Smyrna Beach considering programs for Phase II

(Continued) Management Goals Scorecard, as of July 31, 2020

Goal	Status	Comment
9. Promoting Value of Utilities Update Member Reports – 16 Public Presentations by Members or FMPA - 10		<ul style="list-style-type: none"> 16 Reports Completed and Shared: Alachua, Bartow, Bushnell, Clewiston, Fort Meade, Fort Pierce, Green Cove Springs, Havana, Lake Worth Beach, Leesburg, Moore Haven, Mount Dora, Newberry, Ocala, Starke, Wauchula Information shared with Lake Worth Beach City Commission and Ocala City Council Public Presentations planned for Leesburg and Newberry FMPA worked with several members during COVID-19 to assist in telling their stories publicly
10. Solar Project - Execute Phase 2 Solar Agreements - Assist Members marketing Phase 1 groundbreaking & energize Phase 1		<ul style="list-style-type: none"> Phase II Agreements fully executed Solar promotional "toolkit" available to members Successful nationwide positive publicity for FMSP Groundbreaking and Commercial Operation Harmony and Taylor Creek facilities completed on schedule June 30, 2020 FMPA investigating development of real-time solar energy graphic website for FMSP participants
11. ARP Restructuring - Reach agreement on desired path of Members		Info item for August agenda package. Action item for September agenda package.
12. People - Development opportunities/cross training/Back-Up – at least 8		Development of 7 opportunities in Member Services, Public Relations, Accounts Payable, Financial and Rates Analyst, SCADA, Facilities and Human Resources.
- FMPA Fleet Team Sharing – 80 days		Total of 97 days FYTD. FMPA to Stock Island for 7 days.

VERBAL REPORT

AGENDA ITEM 6 – SUNSHINE LAW UPDATE

**Board of Directors Meeting
August 20, 2020**

**AGENDA ITEM 7 – CONSENT
AGENDA**

- a. Approval of the Minutes for the
Meeting Held July 29, 2020**

**Board of Directors Meeting
August 20, 2020**

MINUTES
FMPA BOARD OF DIRECTORS MEETING
FLORIDA MUNICIPAL POWER AGENCY
8553 COMMODITY CIRCLE
ORLANDO, FL 32819
WEDNESDAY, JULY 29, 2020
9:00 A.M.

MEMBERS Jody Young, Bushnell (via telephone)
PRESENT Lynne Mila, Clewiston (via telephone)
Jan Bagnall, Fort Meade (via telephone)
John Tompeck, Fort Pierce (via telephone)
Bob Page, Green Cove Springs * (via telephone)
Howard McKinnon, Havana (via telephone)
Barbara Quinones, Homestead (via telephone)
Allen Putnam, Jacksonville Beach
Lynne Tejeda, Key West (via telephone)
Larry Mattern, Kissimmee
Ed Liberty, Lake Worth Beach * (via telephone)
Steve Langle, Mount Dora (via telephone)
Dallas Lee, Newberry * (via telephone)
Joe Bunch, New Smyrna Beach (via telephone)
Eric Weaver, Ocala
Claston Sunanon, Orlando * (via telephone)
John Holman, Starke
Rob McGarrah, Tallahassee (via telephone)
James Braddock, Wauchula

*joined after roll call.

OTHERS Rafael Couret, Power Engineers
PRESENT Paul Jakubczak, Fort Pierce (via telephone)

STAFF Jacob Williams, General Manager and CEO
PRESENT Jody Finklea, General Counsel and CLO
Ken Rutter, Chief Operating Officer
Linda S. Howard, Chief Financial Officer (via telephone)
Carol Chinn, Chief Security Officer
Mark McCain, Vice President, Member Services
and Public Relations
Dan O'Hagan, Assistant General Counsel and Regulatory
Compliance Counsel
Rich Popp, Treasurer and Risk Director
Sue Utley, Executive Asst. /Asst. Secy. to the Board
Mike McCleary, Manager of Member Services Development

Sharon Adams, Vice President, Human Resources and Shared Services
Chris Gowder, Business Development and Planning Manager
Isabel Montoya, Information Technology Intern
Susan Schumann, Public Affairs and External Affairs Manager
David Schumann, Power Generation Fleet Director

ITEM 1 - CALL TO ORDER, ROLL CALL AND DECLARATION OF QUORUM

Chair Barbara Quiñones, Homestead, called the Board of Directors meeting to order at 9:00 a.m. on Wednesday, July 29, 2020, via telephone and in the Frederick M. Bryant Board Room at Florida Municipal Power Agency, 8553 Commodity Circle, Orlando, Florida. The roll was taken and a quorum was declared with 15 members present representing 26 votes out of a possible 47.5. Bob Page, Green Cove Springs, Ed Liberty, Lake Worth Beach, Dallas Lee, Newberry and Claston Sunanon, Orlando joined after roll call bringing the total members present to 19 representing 33 votes out of a possible 47.5.

ITEM 2 – Recognition of Guests

Chair Barbara Quiñones welcomed Rafael Couret of Power Engineers.

ITEM 3 – PUBLIC COMMENTS (Individual Public Comments Limited to 3 Minutes)

None

ITEM 4 – SET AGENDA (by vote)

MOTION: Allen Putnam, Jacksonville Beach, moved approval of the agenda as presented. Larry Mattern, Kissimmee, seconded the motion. Motion carried 33 – 0.

ITEM 5 – REPORT FROM THE GENERAL MANAGER

Jacob Williams reported on the following items:

1. Goals Scorecard
2. Overlap of Employees due to retirements and staff leaving
3. State of the Agency dinner – August 19
4. The Distribution Reliability Roundtable scheduled for August 13 at 9am.
5. Member Services –Table Top Exercises and Long Term Planning for members – contact Mike or Cairo if you are interested in help in these areas.

ITEM 6 – SUNSHINE LAW UPDATE

Dan O'Hagan reported that on July 29, Governor Ron DeSantis issued Executive Order 20-179 – Emergency Management – COVID 19 – Local Government Public Meetings. Of significance to FMPA members, Order 20-179 extends the Governor's previous executive order regarding virtual public meetings and virtual quorum (EO 20-69) until September 1, 2020.

ITEM 7 – CONSENT AGENDA

- a. Approval of Minutes – Meeting Held June 18, 2020
- b. Approval of the Projects' Preliminary Financials as of May 31, 2020
- c. Approval of the Treasury Reports as of May 31, 2020

MOTION: Allen Putnam, Jacksonville Beach, moved approval of the Consent Agenda as presented. John Holman, Starke, seconded the motion. Motion carried 33 – 0.

ITEM 8 – ACTION ITEMS

- a. **Nomination and Election of Board of Directors Officers for 2020-2021**

MOTION: Howard McKinnon, Havana, moved approval of the Nominating Committee recommendation of Barbara Quiñones, Homestead, as Chair, Lynne Tejeda, Key West, as Vice Chair, Larry Mattern, Kissimmee, as Secretary and Allen Putnam, Jacksonville Beach, as Treasurer. John Holman, Starke, seconded the motion. Motion carried 33 – 0.

ITEM 9 – INFORMATION ITEMS

- a. Update on Transmission Rate Cases

Ken Rutter reported on the transmission rate cases FMPA has with Florida Power & Light and Duke Energy Florida.

- b. Notice of Annual Continuing Disclosure Report for the Fiscal Year Ended September 30, 2019

Ed Nunez reported on the filing of the Annual Continuing Disclosure Report for the Fiscal Year Ended September 30, 2019.

- c. FMPA's Compensation Policy

Sharon Adams reported on changes to FMPA's Compensation Policy.

- d. Pricing Update on the 2020 Stanton II Pooled Loan

Rich Popp reported on the Stanton II Pooled Loan.

- e. Update on Solar Projects

Susan Schumann reported on the Florida Municipal Solar Project and Solar Phase II Project.

ITEM 10 – MEMBER COMMENTS

Bob Page, Green Cove Springs, requested a presentation be put on the agenda for energy storage.

Allen Putnam, Jacksonville Beach, thanked Navid Nowakhtar, Mike McCleary and Mark McCain for help with Beaches Energy Services Strategic Plan.

Larry Mattern, Kissimmee, said the biggest takeaway from this Board meeting is what is going on with the Lake Worth Beach utility where a Commissioner is looking into selling the utility. All the members should be aware of this type of effort in their communities. He said the FMPA staff did a great job with the presentation to the City of Kissimmee on the value of their municipal utility.

Barbara Quiñones, Homestead, said a number of cities are going through this same thing.

James Braddock, Wauchula, thanked FMPA for their help with Wauchula's substation rebuild project and thanked Mark McCain, Cairo Vanegas and Carl Turner for helping to find out Wauchula's capabilities are.

ITEM 11 – ADJOURNMENT

There being no further business, the meeting was adjourned at 10:51 a.m.

Barbara Quiñones
Chairperson, Board of Directors

Larry Mattern
Secretary

Approved: _____

Seal

BQ/LM/su

**AGENDA ITEM 7 – CONSENT
AGENDA**

- b. Approval of the Projects’
Preliminary Financials as of
June 30, 2020**

**Board of Directors Meeting
August 20, 2020**



Linda S. Howard, CPA, CTP
Chief Financial Officer

AGENDA PACKAGE MEMORANDUM

TO: FMPA Board of Directors
FROM: Linda Howard
DATE: August 11, 2020
ITEM: 7b – Approval of Projects’ Financials as of June 30, 2020

Discussion: The summary financial statements and detailed financial statements of the Projects for the period ended June 30, 2020 are posted on the Document Portal section of FMPA’s website.

Recommended: Move approval of the Projects’ Financial Reports for the month ended June 30, 2020.

LH/GF

**AGENDA ITEM 7 – CONSENT
AGENDA**

- c. Approval of the Treasury Reports
as of June 30, 2020**

**Board of Directors Meeting
August 20, 2020**

AGENDA PACKAGE MEMORANDUM

TO: FMPA Board of Directors
FROM: Gloria Reyes
DATE: August 20, 2020
ITEM: BOD 7(c) – Approval of Treasury Reports as of June 30, 2020

Introduction This agenda item is a quick summary update of the Treasury Department's functions.

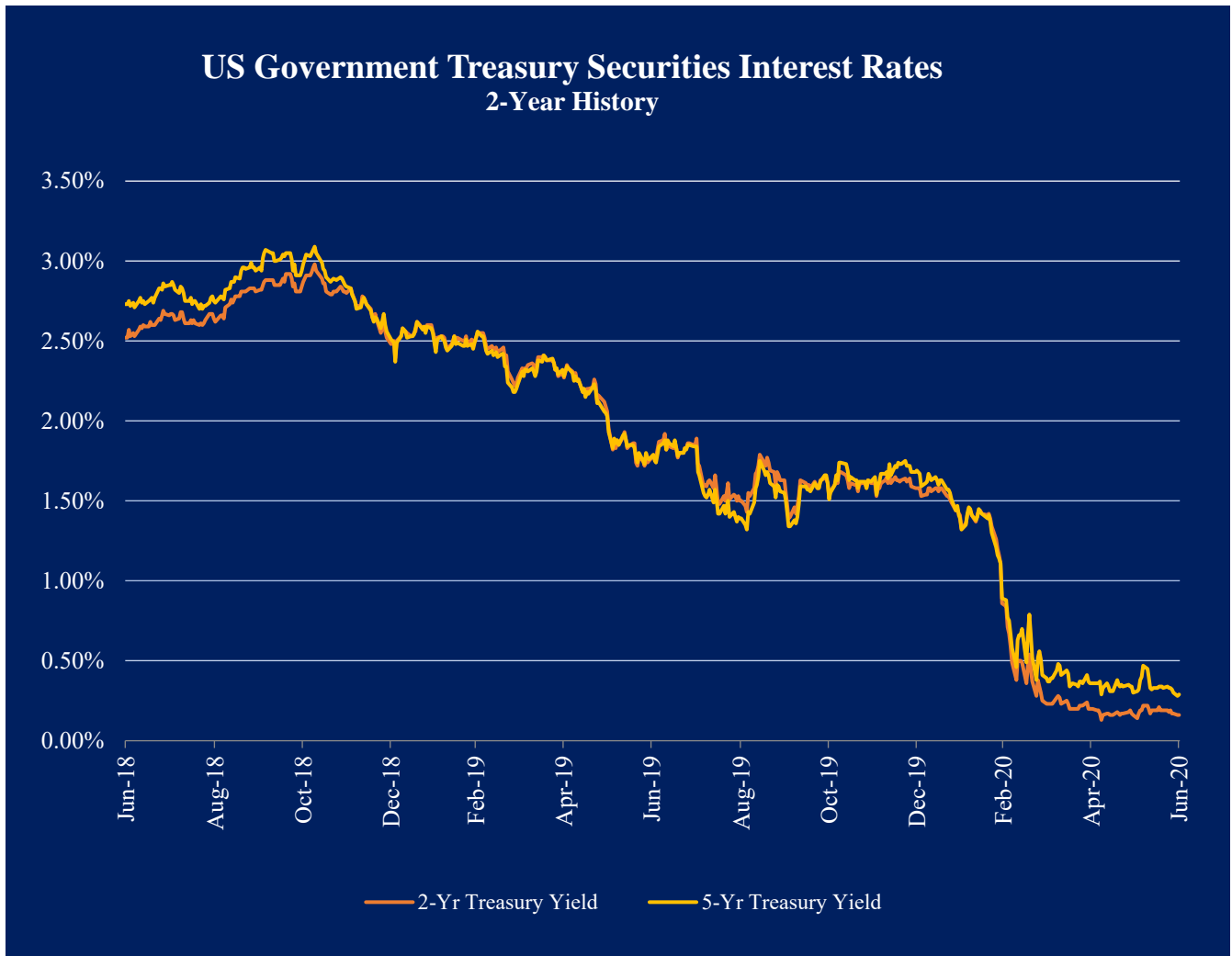
The Treasury Department reports for June are posted in the member portal section of FMPA's website.

Debt Discussion Below is a summary of the total debt outstanding and the percentage of debt that was fixed, variable or synthetically fixed with interest rate swaps as of June 30, 2020.

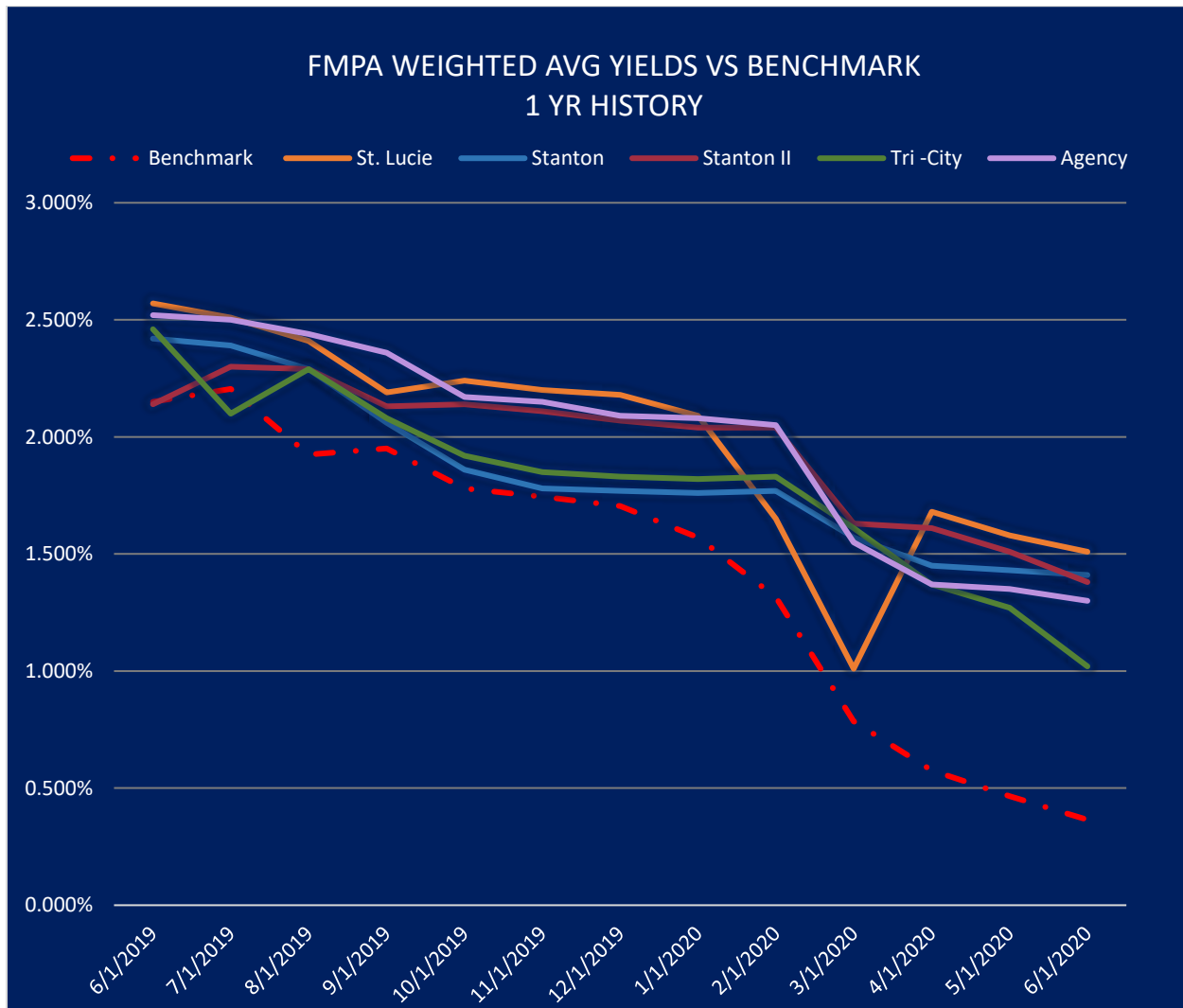
	Total debt Outstanding	Fixed Rate	Variable Rate	Synthetically Fixed
Agency	0.00	0%	0%	0%
St Lucie	117,135,000	100%	0%	0%
Stanton	0.00	0%	0%	0%
Stanton II	107,814,000	100%	0%	0%
Tri City	0.00	0%	0%	0%

Investment Discussion The investments in the Projects are comprised of debt from the government-sponsored enterprises such as the Federal Farm Credit Bank, Federal Home Loan Bank, Federal Home Loan Mortgage Corporation (Freddie Mac), and Federal National Mortgage Association (Fannie Mae), as well as investments in U.S. Treasuries, Certificates of Deposits, Commercial Paper, Municipal Bonds, Corporate Notes, Local Government Investment Pools and Money Market Mutual Funds.

Below is a graph of US Treasury yields for the past 2 years. The orange line is the 2-year Treasury which closed the month of June at .16%. The yellow line is the 5-year Treasury which was .29%.



The weighted average yields on investments earned as of June 30, 2020 in the Projects, along with their benchmark (Average of Florida Prime Fund and 2-year treasury), are as follows:



Recommended
Motion

Move approval of the Treasury Reports for June 30, 2020.

AGENDA ITEM 8 – ACTION ITEMS

- a. Approval of FMPA's
Compensation Policy Update**

**Board of Directors Meeting
August 20, 2020**



8a – FMIPA's Compensation Policy Update

FMIPA Board of Directors

August 20, 2020

March 2019 Board Approved Human Resource Policy

Approval of Human Resources Policy that allows the Board of Directors to set high-level HR-related policies and authorizes staff to implement those policies, within budgetary guidelines, to recruit and retain top talent within the industry to carry out the Agency's mission to provide competitively priced, reliable power and value-added services for municipal electric utilities through joint action.

Current HR Policies

Board-Level Policies

Personnel Management (EEO)

Safety

Compensation Plan

Health and Wellness

Paid Time Off

Deferred Compensation

Retiree Benefits (employees hired prior to 10/01/04)

Training and Development

Work-Life Integration

Public Purpose

Per Diem and Travel Expense Policy

Currently Approved Compensation Policy

- The General Manager and CEO (and the General Counsel for his employees) is limited to total compensation of employees within the annual approved budget.
- During the budget process, the amount designated for merits, bonuses, promotions, new hires and retention will be approved by the Governing Boards.
- These payroll dollars cannot be used for other expenses nor can other budgeted expenses be used for payroll.

Additions to the Compensation Policy

- Merit Pay Increases which are tied to achievement of Annual Goals and Strategic Plan
- Increases for promotions
- Market adjustments
- Merit bonuses
- Bonuses for completed high level projects
- Retention bonuses
- Spot bonuses for taking on responsibilities outside of their normal scope of work
- This does not include compensation for the General Manager & CEO or the General Counsel & CLO.

Motion to Approve Changes to the Compensation Policy

FMPA supports a pay for performance merit system. The General Manager and CEO (** and the General Counsel for his or her employees) has authority to pay employees within their job descriptions salary range. The General Manager and CEO** is limited to total compensation of employees within the annual approved budget. During the budget process, the amount designated for merits, bonuses, promotions, new hires and retention will be approved by the Governing Boards. This would include pay for performance compensation (merit) increases, which is tied directly to the strategic initiatives of the Agency, promotional increases, market adjustments, merit bonuses (for those at the top of their range) and variable pay incentives such as: project bonuses, retention bonuses, spot bonuses and other discretionary pay for all positions except that of the General Manager & CEO and the General Counsel & CLO. These payroll dollars cannot be used for other expenses nor can other budgeted expenses be used for payroll. The HR Department is responsible for the consistent application of the Compensation Policy across the Agency.

**AGENDA ITEM 9 – INFORMATION
ITEMS**

**a. Energy Storage Market
Update**

**Board of Directors Meeting
August 20, 2020**



BOD 9a – Energy Storage Market Update

August 2020

Storage Economics Improving, But...

More Cost Declines Needed to Be Economic at Utility-Scale

- Cost for 4-hour discharge battery has declined ~30% in over 2 years to ~\$900/kW*, which compares to a diesel peaking unit cost of as low as ~\$500/kW*
- Storage requires multiple value streams of energy arbitrage, capacity, regulation, transmission, etc.
 - Low gas prices hinder energy arbitrage value
- Battery additions influenced by higher price areas, storage mandates, pilot projects or niche opportunities
- FMPA Storage opportunity likely replacement of older peaking turbine that also supports transmission
 - Could replace older existing turbine with in-kind 4 hour solution with ~20% cost reduction
- R&D for larger duration storage remains active with testing on as much as 150-hour durations
- Lithium ion tech advances or better alternatives required for utility-scale competitive value
- Lithium world production will need expansion as demand for raw materials grows



*Sources: *Lazard's levelized cost of storage version 50* (storage) and *A Comparison of Fuel Choice for Backup Generators* (NREL) for diesel cost.

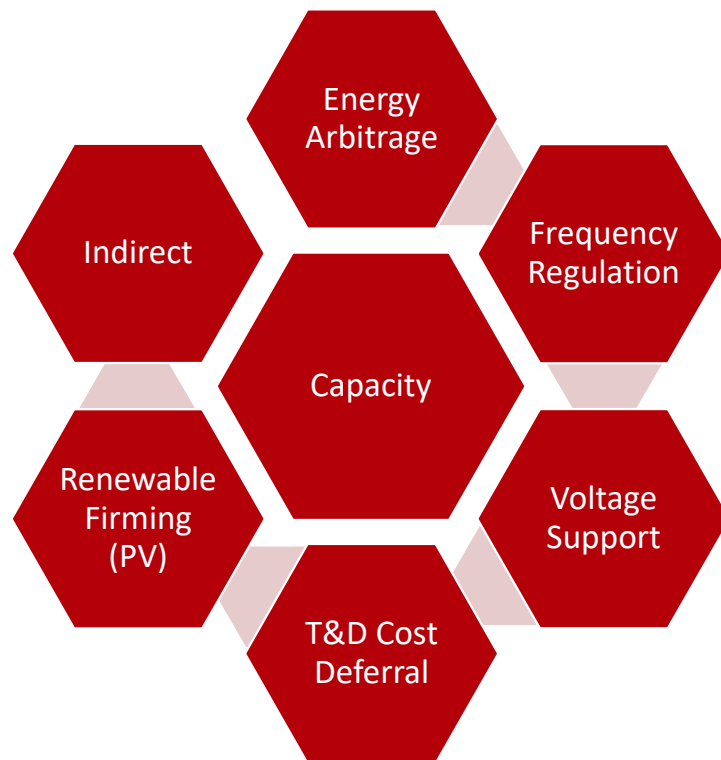


Market Overview



Storage Value Streams Diversified

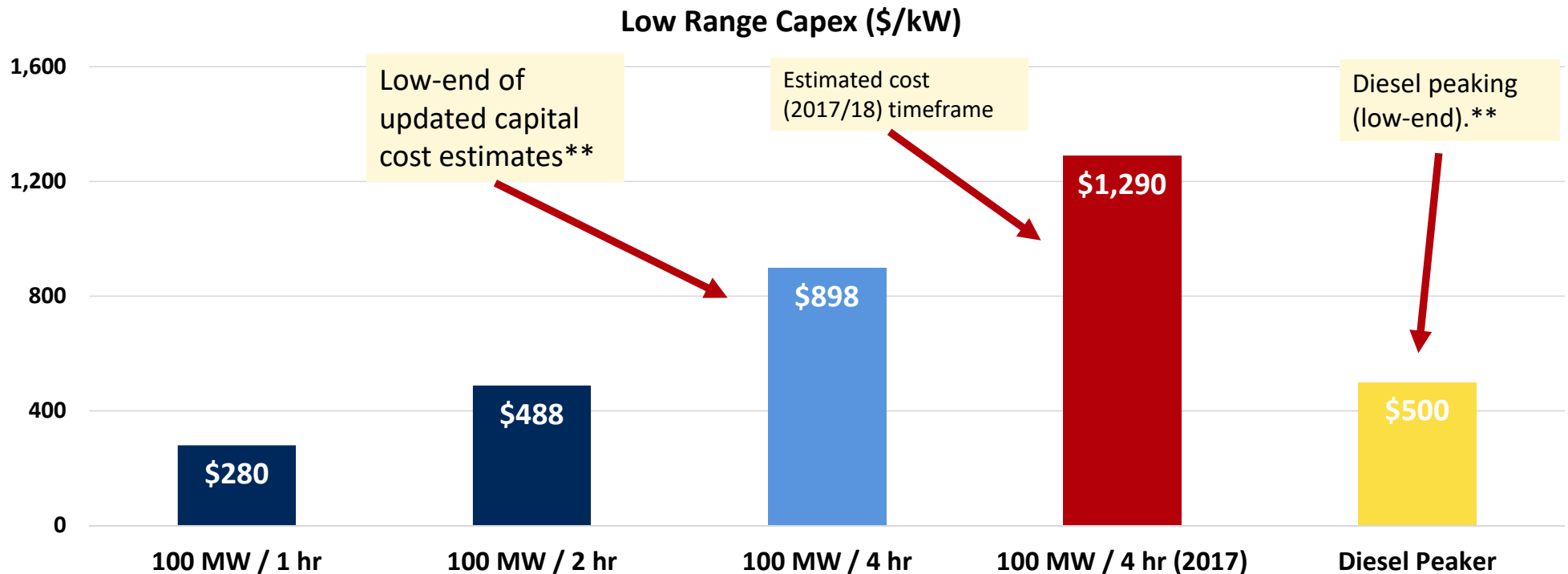
Need Different Storage Solutions for Different Use Cases



- Some value is derived from “short-duration” storage, while other value requires “long-duration”
- Key opportunities
 - Replacement of infrequently used generation
 - Reducing emissions
 - Balancing out PV fluctuations
- Key Challenges
 - Duration of Energy
 - Initial Capex

Storage Costs Coming Down, Still Costlier Than Peaker

4 Hour Discharge Cost Down ~30% Over Last 2 Years



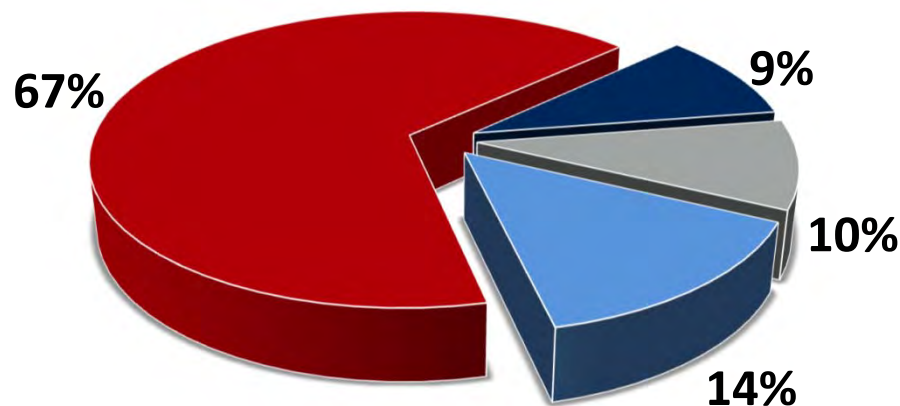
*Energy storage system designed to be paired with large solar PV facilities to better align timing

**Source: *Lazard's levelized cost of storage version 50 (storage) and NREL (diesel)*.

Battery Itself is About 2/3rds of Total Package Cost

*Other Costs Have Room for Further Declines**

Estimated Contribution to Capital Cost - Typical Storage System

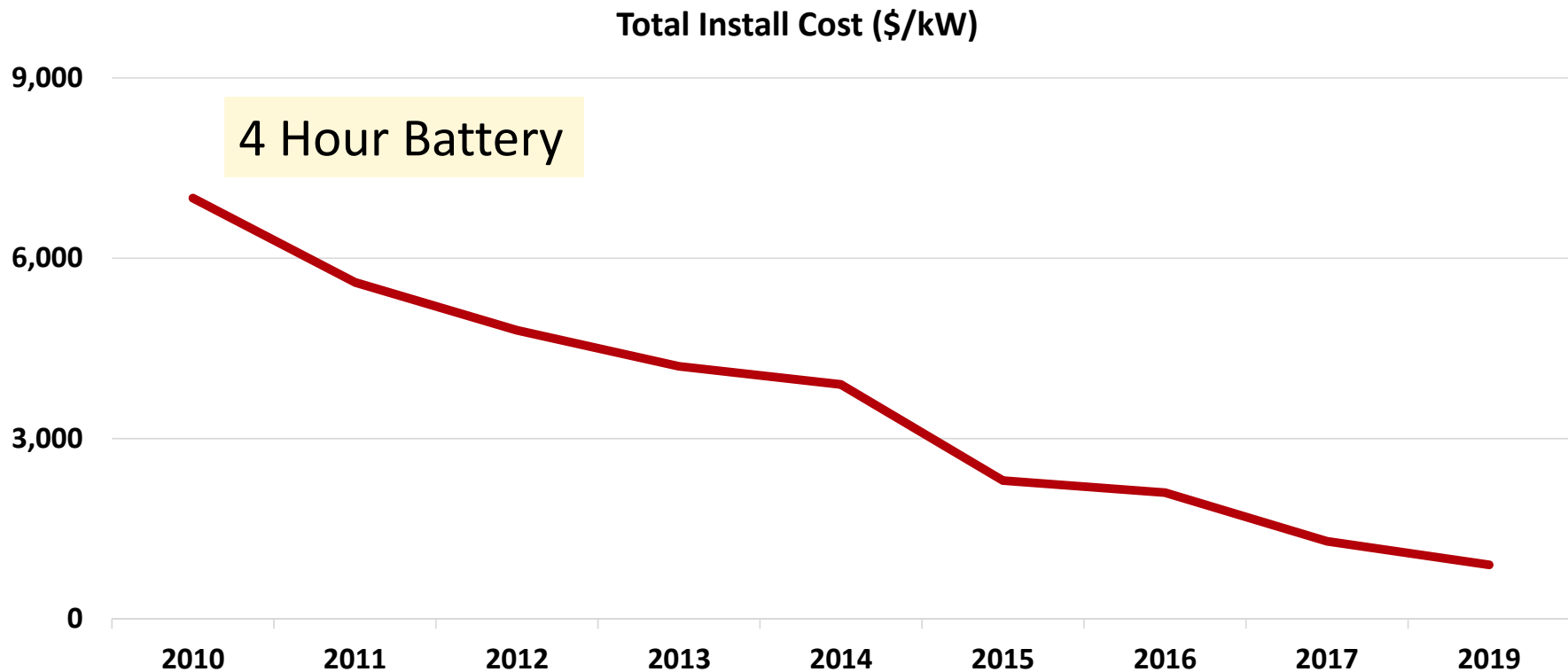


■ Batteries ■ Integrator
■ Power Conversion System (PCS) ■ Balance of System (BOS)

- Balance of System
 - Civil/EPC
- Power Conversion System
 - Inverters & Transformers
- Integrator
 - Software, building/containers
- Batteries
 - Racking & Management System
 - Cost declines needed to enhance competitiveness

Battery Install Cost Trending Down

*Costs Declined ~20% Per Year Since 2010 for Like Durations**

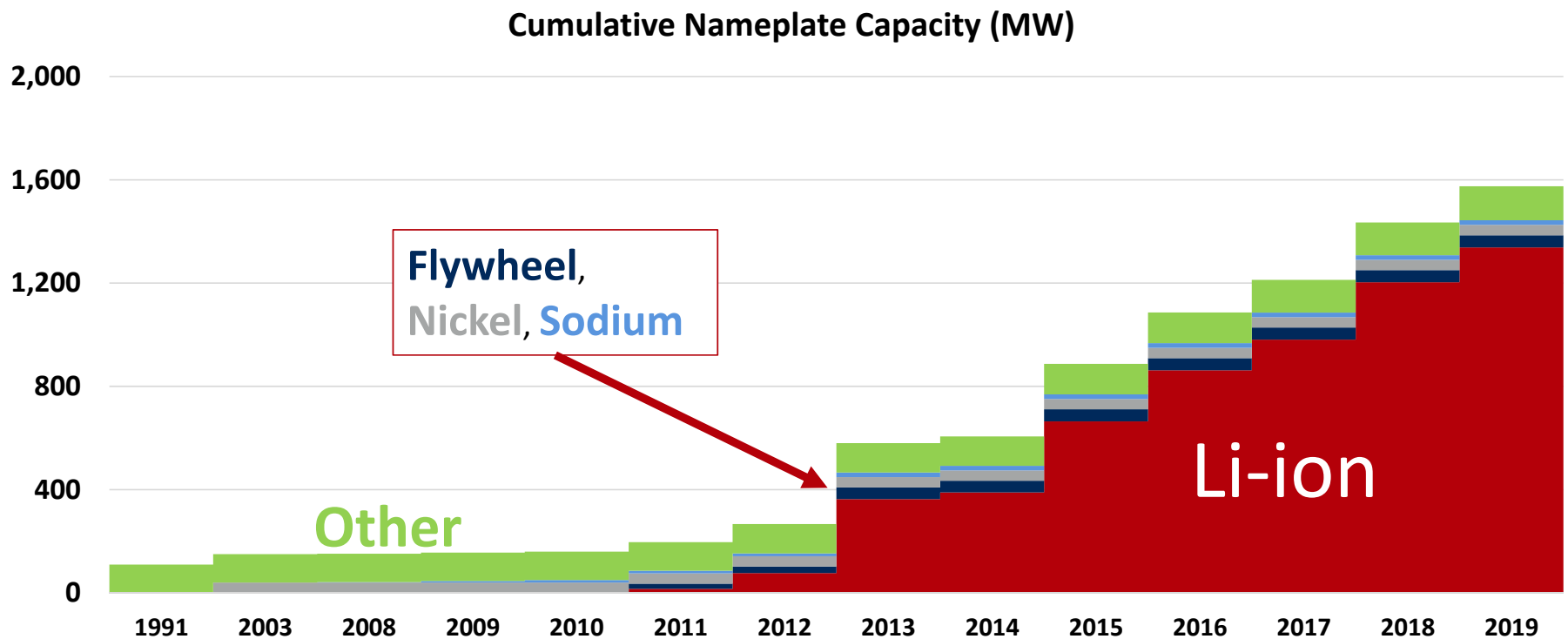


*Source1: Burns McDonnell Battery Energy Storage May 8 2018

Source2: *Lazard's levelized cost of storage version 50*

Storage Capacity (MW) Nationally Taking Shape*

2012/2013 Timeframe Saw Lithium Ion Ramp-Up



*Source: 2019 Form EIA-860 Data - Schedule 3, 'Energy Storage Data' (Operable Units Only)
Final numbers will be released later in 2020.



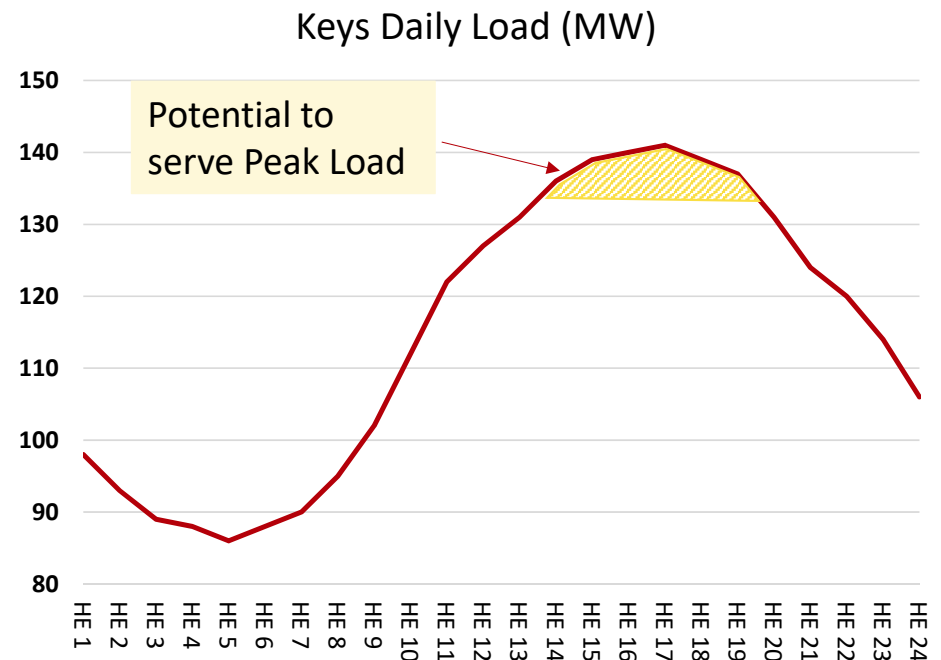
Storage Value Streams



Benefit #1 – Peak Shaving/Capacity

Peak Shaving to Avoid Peaking and Reduce Fuel Reliance

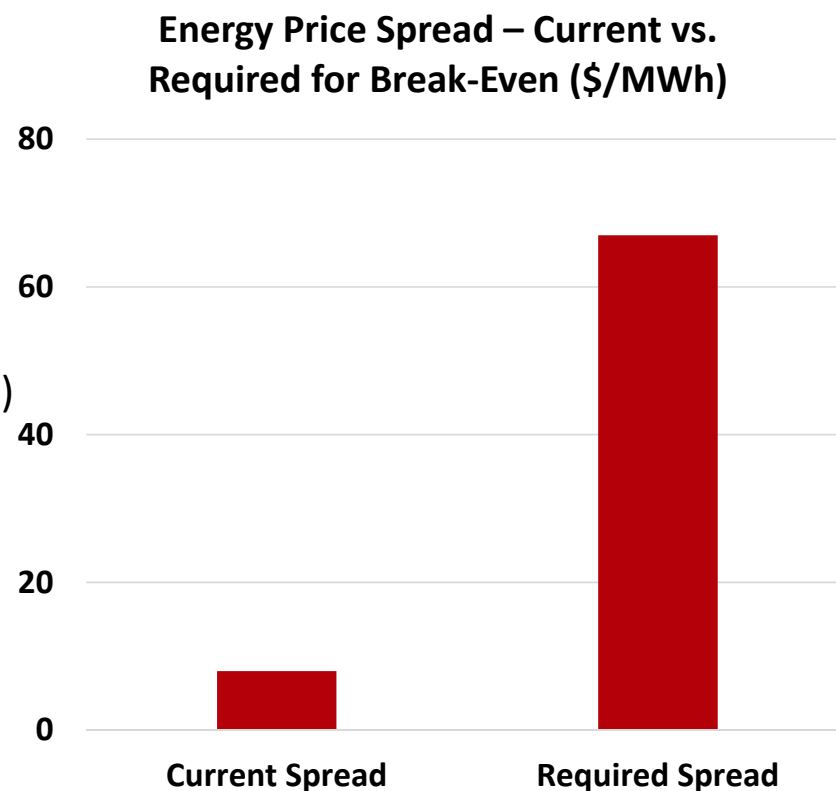
- Market is still long capacity
 - Peaker energy dispatchable
- Opportunities
 - Peaker newbuild alternative
 - Avoid capacity shortfalls
 - Replace low-utilization asset
- Challenges
 - Storage costs and duration limits a challenge
 - Operational routines (charging, load forecasting) within the balancing area to ensure strategic discharge



Benefit #2 – Energy Arbitrage

Low Gas Prices Limit Value of Daily Energy Arbitrage

- Allows consumers to use stored energy during peak hours
- Recharge during cheap non-peak hours
- Still too expensive
 - Storage cost high (would need ~80% decline)
 - Gas prices low (need much greater price spread)
- Not enough spread between peak and non-peak heat rates to drive energy prices
- Current typical retail rates don't differentiate on-peak consumption vs. off-peak consumption (time of use incentives)



Benefits #3 and #4 – Key Ancillary Services

Frequency Regulation and Voltage Response

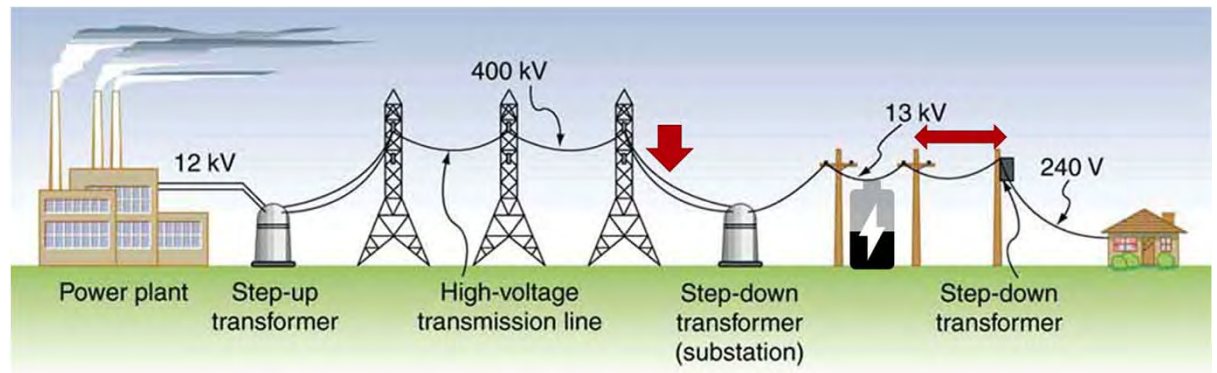
- Battery Storage system can act as shock absorber
- Balances short term fluctuations (differences between generation and load)
- ARP members have resources that act in this capacity
- Ancillary Service providers are still cheaper than storage
- Requires more thorough definition of ancillary service value through settlement



Benefit #5 – Deferred Investment on T&D

Transmission & Distribution Cost Deferral

- Placing storage behind the transmission meter on the distribution side
- Change/minimize loading on distribution system with strategic placement of storage
- Network service costs not impacted; transmission deferral highly unlikely
- Massive storage required to defer distribution upgrades
- Case by case analysis required

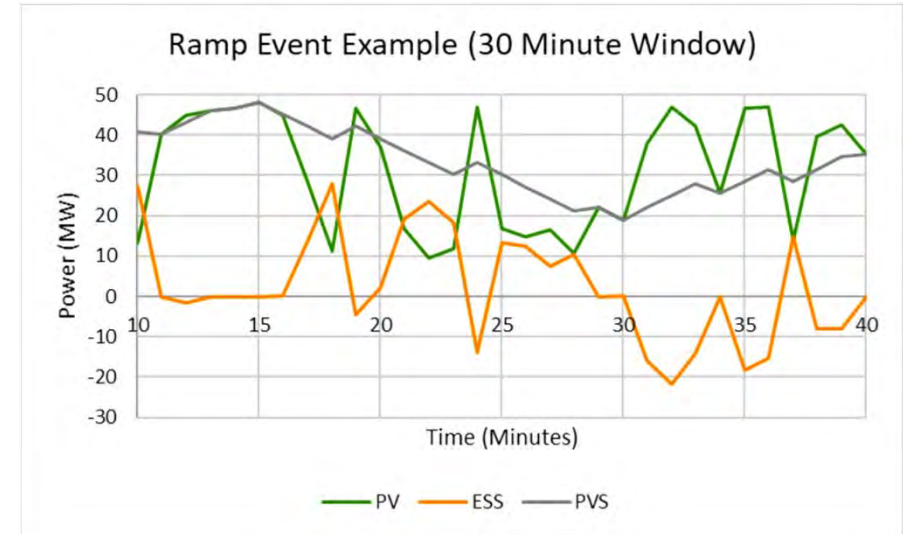


[This Photo](#) by Unknown Author is licensed under [CC BY-SA](#)

Benefit #6 PV Firming for Ups and Downs

Limit PV Ramping to Support Reliability within Balancing Area

- Solar fluctuation is managed either by external BA or by FMPP
- Future growth of solar in BA could require more ramping capability intra-hour than is currently available
- Imbalance via external BA also an option
- As storage costs decrease, short-burst storage solutions that “even out” PV fluctuations (upside and downside) increasingly viable for pilot purposes



Other Indirect Benefits Must Be Considered

Learning Effects and Settlement Design Support Key

- Operational experience with new technology
- Reduced peaking generation even at small scale reduces emissions
- Piloting for customer relations and demonstration of future storage expansion potential
- Ability to bundle learning as we go with ancillary service settlement design and associated issues – how does storage actually perform?
 - Impacts not directly linear, but every bit of knowledge helps



Storage Opportunity for FMIPA



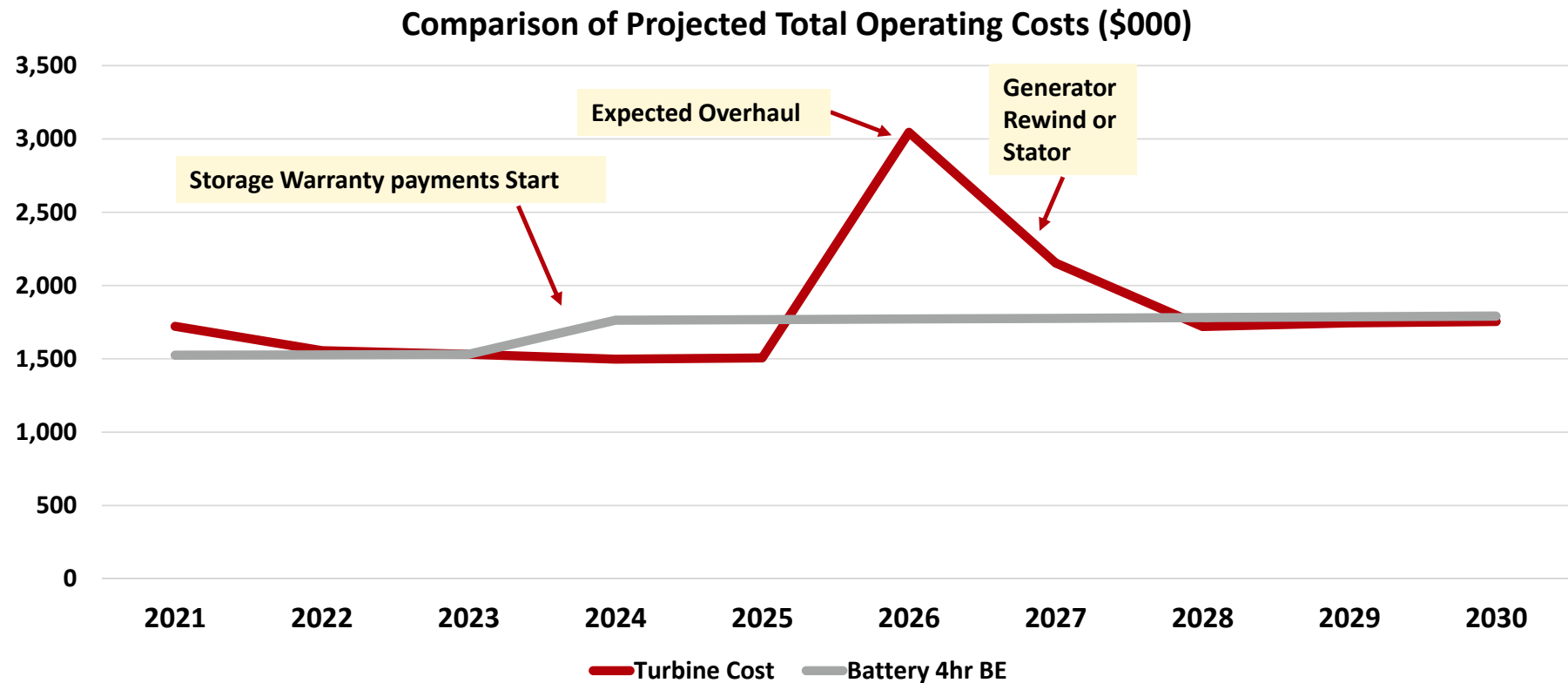
Transmission Limit, Unit Age Generate Opportunity

Storage May Aid in Avoiding Transfer Limit Increase and Capex

- Keys' system subject to a transmission limitation relative to power flow to the area
- Growth could reduce potential for additional transmission availability, which could result in transfer limit increase capital expenditures
- Certain resources within Keys' asset base are older (1960s vintage) and are expected to require significant capital expenditures to remain reliable
- Certain storage solutions could help avoid transfer limit increases and capital expenditures if costs and space requirements improve
 - Can partially offset on-island generation for resolving loss of tie line

Keys Combustion Turbine Replacement Analysis

Storage “Break Even”* Only Provides 4-Hour Solution



Storage Acreage Need Significant

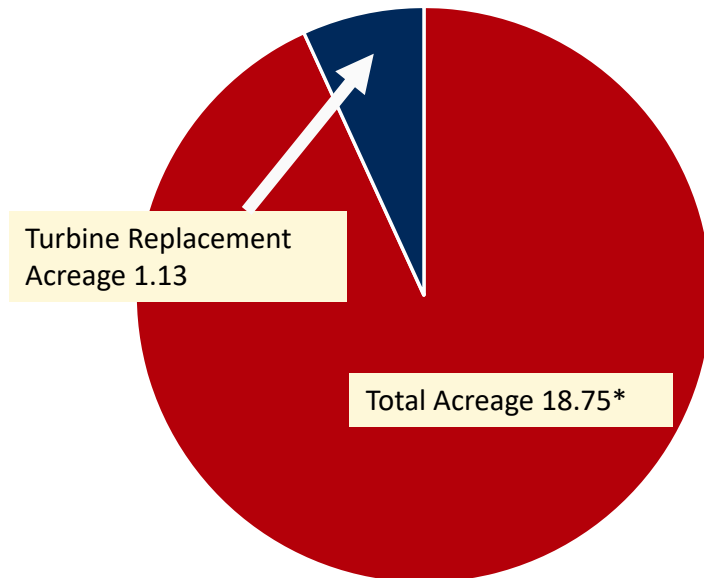
*Containerized Solutions Need ~0.02 Acres/MWh**

- Storage costs have come down materially for 4-hour discharge duration
- For full capacity equivalence, storage would require a 6x overbuild or an assurance that discharge would be equal to or less than the duration of the product
- For current storage solutions, approximately 0.02 – 0.04 acres/MWh are needed
 - Reflects space needed for 1 MW and a 1-hour discharge
- **For 14 MW at 4hrs, $\sim 0.02 * 14 * 4 = 1.13$ Acres required**

Land Usage for Storage at Stock Island

Current Site Size Only Allows Limited Storage

Stock Island Land For Storage



- Storm hardening would have to take place for:
 - Wind
 - Storm surge
 - Salt conditions
- Likely non standard footprint
- Alternative sites also available within Keys territory



Recent Pilots and Technological Developments

Lithium Ion Dominates Current Market

Liquid Air Alternative Similar to Compressed Air Has Potential

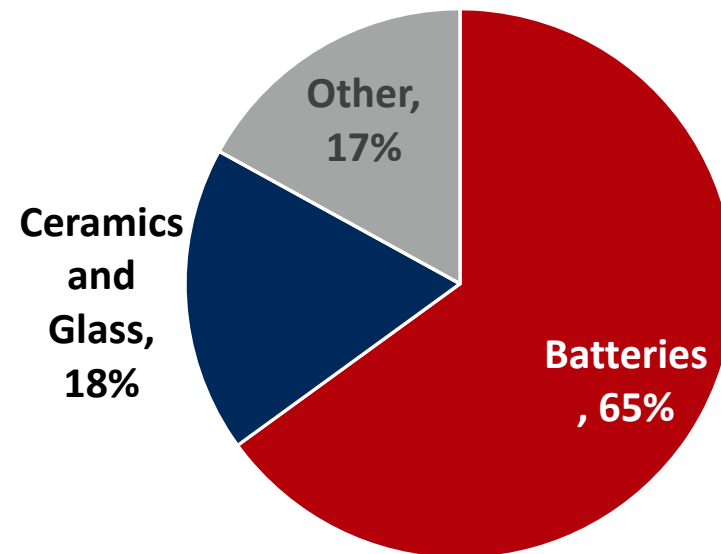
- Current uptake in utility-scale storage suggests lithium-ion is prevailing technology
 - Generally due to balance between cost, round-trip efficiency, and useful life
- Raw materials for production, most notably lithium supply, will require ramp-up as demand for raw materials increases
- Lithium ion prices and tech advances expected to continue
- Many different type of alternatives to lithium ion storage exist
- Difficult to project further “breakthroughs” or which technology will prevail longer term, but liquid air storage (much like compressed air) may have some potential relative to longer discharge durations

Current Lithium Reserves at 80 Million Metric Tons

Sufficient for Today's Usage But Production Will Need Ramp

- Global Reserves of Lithium are estimated at 80 million metric tons*
 - Mostly in South America, Australia and China
- Mine production is mostly in Australia and Chile at 42,000 and 18,000 metric tons annually, respectively
- Production decreased 19% in 2019 as EV incentives were reduced around the world
- Based on simple ramp-up from small scale battery estimates**, total energy of FL would require ~147,000 metric tons of lithium for its peak day (typical year)
- Would require material ramp-up in annual production compared to status quo

Current Uses of Lithium



*Source: <https://pubs.usgs.gov/periodicals/mcs2020/mcs2020-lithium.pdf>

**Source: <https://www.greentechmedia.com/articles/read/Is-There-Enough-Lithium-to-Maintain-the-Growth-of-the-Lithium-Ion-Battery-M>. Lithium amounts required may differ for larger scale batteries.

Storage Technology Options Abound

Lithium Ion Currently Has Certain Key Advantages

System Attributes	Lead Acid	Li-Ion	Sodium	Flow Batteries	Flywheel	Compress Air	Pumped Hydro	Liquid Air
Round Trip Energy Efficiency (DC-DC)	70-85%	85-95%	70-80%	60-75%	60-80%	50-65%	70-80%	~50%
Range of Discharge Distribution	2-6 hours	.25-4+ hours	6-8 hours	4-12 hours	.25-4 hours	4-10 hours	6-20 hours	5+ hours
Development and Construction Period	0.5 - 1 yr	0.5 – 1 yr	0.5 – 1.5 yrs.	0.5 – 1.5 yrs.	1 – 2 yrs.	3 – 10 yrs.	5 – 15 yrs.	~2 yrs.
Operating Cost	High	Low	Moderate	Moderate	Low	Moderate	Low	Low
Estimated Space Required	Large	Small	Moderate	Moderate	Small	Moderate	Large	Small
Cycle life: # of discharges of stored energy	500-2,000	2,000-6,000+	3,000-5,000	5,000-8,000+	100,000	10,000+	10,000+	10,000+
Maturity of Tech.	Mature	Commercial	Commercial	Early-Moderate	Early-Moderate	Moderate	Mature	Early-Moderate



Source1: Burns McDonnell Recip. Engines & Battery Discussion August 2018

Source2: Highview Liquid Air Energy Storage Brief

Source3: KTH Royal Institute of Technology, Evaluation of Liquid Air as an Energy Storage Alternative 2018

Developing Technology Much Like Compressed Air

Liquid Air Energy Storage Has Market Potential

- Energy stored in liquefied air, pumped and heated to expand through a turbine
- Long duration storage solution
- Modular Design
- No pollutants or emissions
- <2 yrs. from Commitment to operation
- Life cycle 30-40 yrs.
- All above ground
- Current cost still too high, scale required is too large
- Could be the replacement of Li-Ion in storage

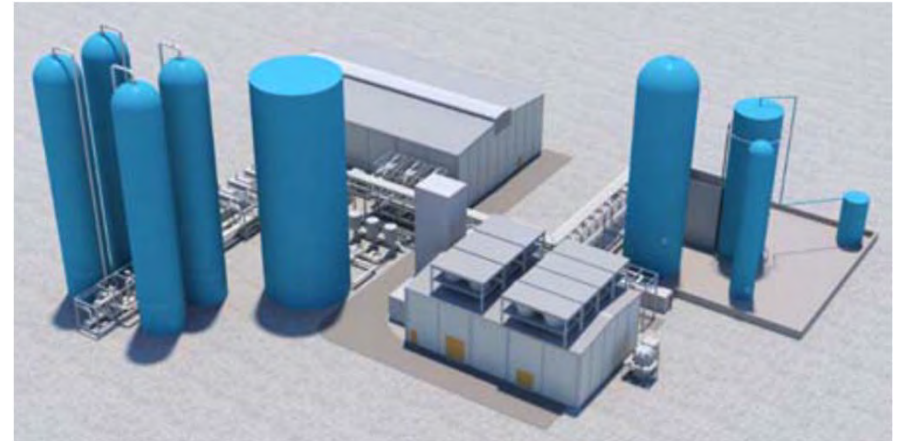
Future Liquid Air vs. Current Li-Ion

Features	Units	Liquid Air	Li-Ion
Capacity	MW	>50	>0
Duration	Hours	>5hrs - days	4
Capex	\$/kW	<1,000	898-1,874

1 MW / 150 MWh Aqueous Air Storage Project

Great River Energy Co-op to Test Revolutionary Battery

- Form Energy Aqueous Air Technology
- Estimated completion by 2023
- Goals:
 - In MN, multiple day long polar vortex
 - Peaking energy costs of 160 \$/MWh
 - 50% renewable by 2030
- System should be fraction of cost for comparable Li-Ion Battery
- Estimated footprint is ~ 1 acre



Recent Li-Ion Storage Projects

Different Layouts, Same Footprint

- Hornsdale Power Reserve (2017) – South Australia

- Design Goals
 - Stabilize the grid
 - Integration of renewable energy / Prevent load shed
- 100MW / 129MWh Li-Ion (1.29 hour battery)
- 2.5 Acres*



- IPL – Harding Street Station Storage (2016) – Indiana

- Design Goal
 - Primary Frequency Response to the grid
- 20MW / 20MWh Li-Ion (1 hour battery)
- 0.4 Acres (*google maps*)



*Source1: HDR 2019-Energy-Storage-Technology-Assessment.pdf (for Platte River Power Authority)

Pic1: <https://steelguru.com/power/neoen-and-tesla-to-deliver-battery-for-hornsdale-power-reserve-in-south-australia/552812#>

Pic2: https://www.iplpower.com/About_IPL/Power_Generation/Energy_Storage/

**AGENDA ITEM 9 – INFORMATION
ITEMS**

- b. DEEP Project Results: Achieving
Reliability Improvements Using
Single-Phase Reclosers**

**Board of Directors Meeting
August 20, 2020**



9b – DEED Project Results: Achieving Reliability Improvements Using Single-Phase Reclosers

Board of Directors

August 20, 2020

FMPA Was Awarded a Grant from APPA's DEED Program

Helped Fund a Test of Single-Phase Reclosers Called TripSavers

- FMPA applied for a DEED grant in August 2018
 - Demonstration project to achieve cost-effective reliability improvements using single-phase reclosers
- Project goal was to deploy new technology to improve reliability by
 - Reducing outages on laterals
 - Reducing number of momentary interruptions
 - Minimal engineering support
- Havana, Tallahassee and Keys Energy participated

39 Reclosers Installed in 3 FMPA Cities for a Year

Grant Covered More Than Half the Equipment Costs

- Project cost estimated at \$132,000
 - TripSaver costs was \$109,000 for 39 reclosers
- Funding sources
 - S&C: \$20,960 - 5 reclosers, training, review of report
 - FMPA: \$22,190 – 5 reclosers, engineering support, final report
 - Participating Member: \$8,170 – 2 reclosers, plus installation costs
 - DEED grant: \$64,400 – 23 reclosers

Recloser Cost and Installation Costs Varied by City

Labor Required for Installation Was Relatively Low

- Cost of TripSavers at Tallahassee and Keys Energy was more due to higher insulation level
- Installation costs higher than estimated and varied due to crew size and some additional work performed beyond recloser installation

Member	Labor, Vehicle & Overhead	Cost of TripSavers	Total Installation Cost	Installed Cost per TripSaver
Havana	\$ 4,095	\$ 37,560	\$ 41,655	\$ 3,204
Keys Energy	\$ 22,586	\$ 47,080	\$ 69,666	\$ 5,359
Tallahassee	\$ 21,783	\$ 47,080	\$ 68,863	\$ 5,297

Varied Results Helps Identify a Deployment Strategy

Multiple Faults on 2 Laterals Show Benefit of Targeted Installs

- Installation May/June 2019
- In 12-month period:
 - 24 fault events
 - 20 interruptions avoided (83% success)
 - 14 required a single reclose operation
 - 6 required two reclose operations

Member	TripSaver No.	Customers Affected
Havana	8	56
Havana	11	41
Havana	11	41
Havana	11	41
Keys Energy	2	72
Keys Energy	13	16
Tallahassee	119C	120
Tallahassee	120C	49
Tallahassee	117B	94
Tallahassee	121B	113
Tallahassee	121B	113
Tallahassee	121B	113
Tallahassee	121B	113
Tallahassee	121B	113
Tallahassee	121B	113
Tallahassee	121B	113
Tallahassee	113C	71
Tallahassee	121B	113
Tallahassee	121B	113
Tallahassee	121B	113
Tallahassee	121B	113
Sum of Customers Affected		1,731

Reliability Improvements Are Key Measure of Success

Even Small Deployment of Reclosers Can Have a Big Impact

- Tallahassee had greatest impact in terms of avoided customer interruptions (CI) and customer minutes interrupted (CMI)
- Havana had greatest impact in terms of SAIFI and SAIDI improvement

Member	Outages Avoided	CI Avoided	CMI Avoided	SAIFI Avoided	SAIDI Avoided
Havana	4	179	17,184	0.123	11.8
Keys Energy	2	88	6,512	0.003	0.2
Tallahassee	14	1,464	112,728	0.012	0.9

Cost Per Interruption Avoided Shows Variability

Depended on Whether Selected Laterals Experienced Faults

- A circuit selection criteria targeting only lateral outage reduction would yield more favorable results

Member	Cost to Avoid a Single Customer Interruption	TripSavers Needed to Achieve 0.1 SAIFI Reduction	Investment Needed to Achieve 0.1 SAIFI Reduction
Havana	\$ 233	11	\$ 35,246
Keys Energy	\$ 792	457	\$ 2,449,027
Tallahassee	\$ 47	110	\$ 582,686
Combined	\$ 104	352	\$ 1,626,276

Conclusion: Target Laterals with Most Interruptions

Excellent Results Can Be Achieved by Utilities of Any Size

- Lateral selection methodology aimed at reducing both momentary and sustained outages proved to be suboptimal
 - Maximum benefits will be obtained by targeting laterals contributing to the most customer interruptions
 - Reduction on momentary materializes as a side benefit
- Good training plan necessary to ensure project success
 - Crews need to understand the new technology
 - Prevents complacency – TripSavers are not just an enhanced fuse switch



/FloridaMunicipalPowerAgency



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**AGENDA ITEM 9 – INFORMATION
ITEMS**

- c. FMPA/Origis Letter Agreement
Regarding Waiver of Interest on
Performance Assurance**

**Board of Directors Meeting
August 20, 2020**



BOD 9c EC 9c – Approval of FMIPA/Origis Letter Agreement Regarding Waiver of Interest on Performance Assurance

Board of Directors
Executive Committee
August 20, 2020

Solar II Power Purchase Agreements

Origis has paid Performance Assurance to FMMPA

- Pursuant to Section 9.3(a), Origis (Seller) has paid to FMMPA Performance Assurance of \$3,745,000 in the form of cash as required by the PPAs. Section 9.3.(a) reads as follows:
 - 9.3(a) Seller's Performance Assurance. Seller agrees to deliver to Buyer and thereafter maintain in full force and effect for the remainder of the Term, Performance Assurance in the amount of twenty-five thousand dollars per MW (\$25,000/MW) of Buyer's Share of the Expected Project Capacity or Installed Capacity, as applicable, within thirty (30) Days following the Effective Date.

PPA Provision to Pay Interest at Prime Rate

Unintended financial loss for Solar II Participants

- Section 9.3(d) currently requires FMPA (Buyer) to pay interest on cash held at Prime Rate, which is higher than interest actually earned. Section 9.3(d) reads as follows:
 - 9.3(d) A PA Beneficiary shall pay interest on cash held as Performance Assurance at the Prime Rate

FMPA holds the Performance Assurance for the solar participants in an interest bearing account; ***however, those accounts earn less than the Prime Rate.*** If un-waived, **Section 9.3(d) would result in a net loss** to the Solar II Participants when the Performance Assurance cash is to be returned to Origis.

Mutual Waiver of Section 9.3(d) Is Proposed

Agreement retroactive to include funds already provided

- Letter Agreement:
 - Each Party waives Section 9.3(d) requirement
 - Each Party shall pay ***only the interest actually earned***
- ***Waiver*** of provision
 - Not amendment or revised interpretation of PPA
 - Resulting provision is reciprocal, fair, and equal to both parties
- Approval of all 12 Solar II Participants required

Florida Municipal Solar Project

Phase II Participants

Solar II Project	Total Power Share (MW)	Percentage Share
Homestead	5	9.337
Lake Worth Beach	26.55	49.580
Mount Dora	2	3.735
New Smyrna Beach	10	18.674
Winter Park	10	18.674
TOTAL	53.55 MW	100%

ARP Solar II Participants	Total Power Share (MW)	Percentage Share
Beaches Energy (Jacksonville Beach)	15	15.584
Fort Pierce Utilities Authority	15	15.584
Havana	0.25	0.260
Keys Energy (Key West)	25	25.974
Kissimmee Utility Authority	20	20.779
Newberry	1	1.039
Ocala	20	20.779
TOTAL	96.25 MW	100%

Proposed Motion for September

No action required for August

- Move approval of execution of FMPA-Origis Letter Agreement:
 - (1) waiving Section 9.3(d) PPA provision that interest on Performance Assurance funds shall be paid at Prime Rate; and
 - (2) agreeing that each Party shall pay only the interest actually earned.

[date]

Johan Vanhee
Chief Commercial Officer & Chief Procurement Officer
Origis Energy
800 Brickell Avenue
Suite 1100
Miami, FL 33131

Dear Johan,

The purpose of this letter is to memorialize the understanding among the Florida Municipal Power Agency (“FMPA”) – All-Requirements Power Supply Project, the FMPA Solar Project, and Origis Energy (on behalf of Sellers) regarding the interest rate on Performance Assurance payable under the Solar Power Purchase Agreements (listed below) among the Parties. Capitalized terms used in this letter agreement have the meaning ascribed in the Solar Power Purchase Agreements unless otherwise stated.

The parties have previously entered into the following agreements:

- The Solar Power Purchase Agreement between Florida Municipal Power Agency [ARP] as Buyer and FL Solar 7, LLC as Seller, dated as of December 12, 2019;
- The Solar Power Purchase Agreement between Florida Municipal Power Agency [Solar Project] as Buyer and FL Solar 7, LLC as Seller, dated as of December 12, 2019;
- The Solar Power Purchase Agreement between Florida Municipal Power Agency [ARP] as Buyer and FL Solar 8, LLC as Seller, dated as of December 12, 2019; and
- The Solar Power Purchase Agreement between Florida Municipal Power Agency [Solar Project] as Buyer and FL Solar 8, LLC as Seller, dated as of December 12, 2019.

Pursuant to Section 9.3(a) of each of the above Solar Power Purchase Agreements, Seller has paid FMPA Performance Assurance in the form of cash in an amount required by the Agreements.

Pursuant to Section 9.3(d) of each Solar Power Purchase Agreement, FMPA is required to pay interest on cash held at the Prime Rate.

The parties recognize the FMPA does not earn the Prime Rate on the Performance Assurance cash. Therefore, as evidenced by the signatures below, each Party hereby waives its respective right under Section 9.3(d) of each Solar Power Purchase Agreement to receive the Prime Rate on any cash Performance Assurance it has provided or may hereafter provide to the other Party, and the Parties agree that, notwithstanding Section 9.3(d) of the Solar Power Purchase Agreements, each Party shall be required to pay the other Party only the interest actually earned by the recipient Party on its investment of the cash Performance Assurance. This obligation shall be retroactive to the date FMPA received the Performance Assurance cash from Origis. If requested by a Party, the Party holding cash Performance Assurance shall provide evidence to demonstrate such interest actually earned.

Except as expressly set forth in this letter agreement, the Solar Power Purchase Agreements, and the Parties' obligations thereunder, are not amended or affected in any way. Pursuant to Section 19.4 of the Solar Power Purchase Agreements, the mutual waiver of Section 9.3(d) of such agreements hereunder shall not be deemed a waiver with respect to any other matter.

[Signature page follows]

By signing below, the parties agree to the foregoing effective as of the date last executed below.

**FLORIDA MUNICIPAL POWER AGENCY
ALL-REQUIREMENTS POWER SUPPLY PROJECT &
SOLAR PROJECT**

_____ Date: _____
Jacob Williams
General Manager & CEO

ORIGIS ENERGY

_____ Date: _____
Johan Vanhee
Chief Commercial Officer & Chief Procurement Officer

**AGENDA ITEM 9 – INFORMATION
ITEMS**

**d. Review of Finance Committee
Items**

**Board of Directors Meeting
August 20, 2020**



BOD 9d – EC 9e – Review of Finance Committee Items

Board of Directors and Executive Committee

August 11, 2020

Finance Committee Items

Possible Action Items for Next Meeting

Review and Approval of Agency budget amendment (OPEB adjustment)

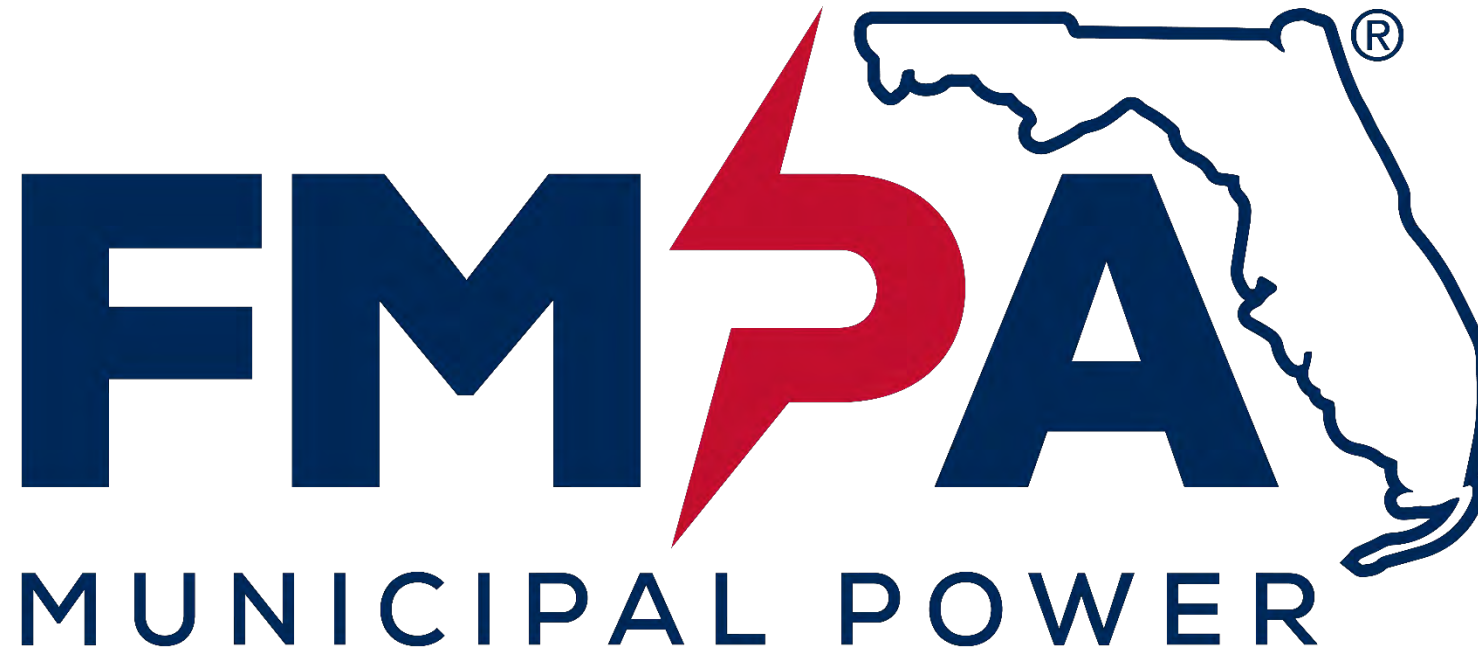
Review and Approval of Small Project Budget amendments (Stanton, Tri-City, St. Lucie)

Approve Risk Management Policies and Compliance Reports

Approval of Wells Fargo Line of Credit extension (EC)

Recommended Action

- Information only. No action required



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**AGENDA ITEM 10 – MEMBER
COMMENTS**

**Board of Directors Meeting
August 20, 2020**

AGENDA ITEM 11 – ADJOURNMENT

**Board of Directors Meeting
August 20, 2020**