



The City of Huron, Ohio
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Huron, OH 44839
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City Council Utilities Committee
Wednesday, June 2, 2021 – 5:00 p.m.

MEETING AGENDA

- I. Call to Order**
- II. Old Business**
- III. New Business**
 - A. Huron Public Power Update**
- IV. Other Matters**
- V. Adjournment**

City of Huron Power Supply Update May 13, 2024

**Mike Migliore - VP Power
Supply Planning**



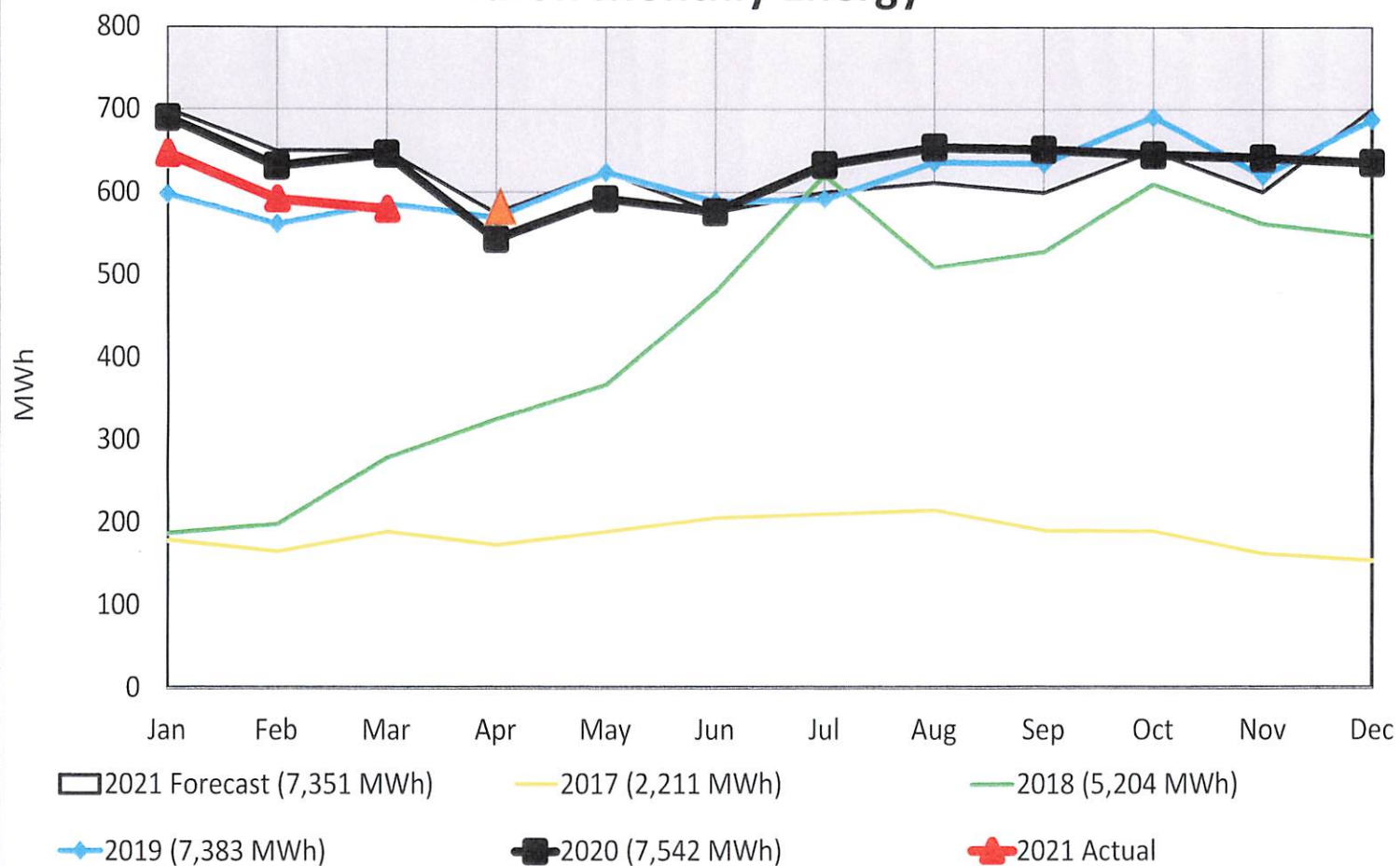
Energy

- Huron used 7,542 MWh in '20
- Huron used 7,383 MWh in '19
- Huron used 5,204 MWh in '18

- Huron forecasted to use 7,351 MWh in '21

- Future load growth = 1.3%

Huron Monthly Energy



Demand

Huron	2020	2019	2018	2017
Peak Demand (MW)	1.60	2.09	1.61	0.48
Month & Day	May 27	Jul 16	Oct 08	Jun 13
Hour Ending (EST)	13	11	13	11
Temp. During Peak	84°	88°	86°	92°

Akron Weather Data

- Hour Ending 17 Example = The hour lasting from 4:00 P.M. to 5:00 P.M.
- EST = Eastern Standard Time
- EDT = Eastern Daylight Time
- During summer months, EST equals EDT minus 1 hour
HE 16 EST = HE 17 EDT

Delivery of Power (3 types of charges)

- Energy
 - Kilowatt-hours consumed by customers and produced by generators
 - Variable cost (\$ / MWh, cents / kWh)

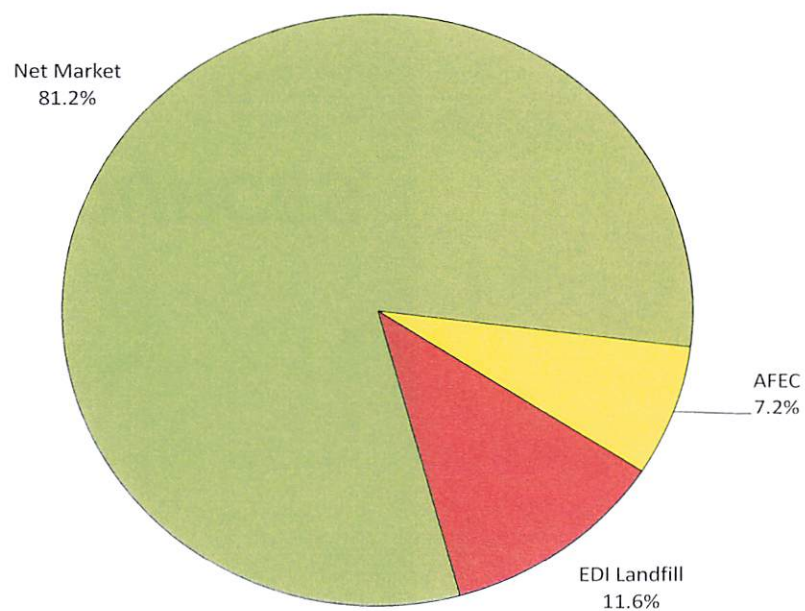
- Transmission
 - High Voltage (>69 kV) electric lines connecting generators to municipal system
 - Fixed cost (\$/ kW-mo)

- Installed Capacity
 - Ensuring that there is enough generation in place to supply customers during period of maximum usage
 - Fixed cost (\$/ kW-mo)

POWER SOURCES



Huron 2021 Energy Sources



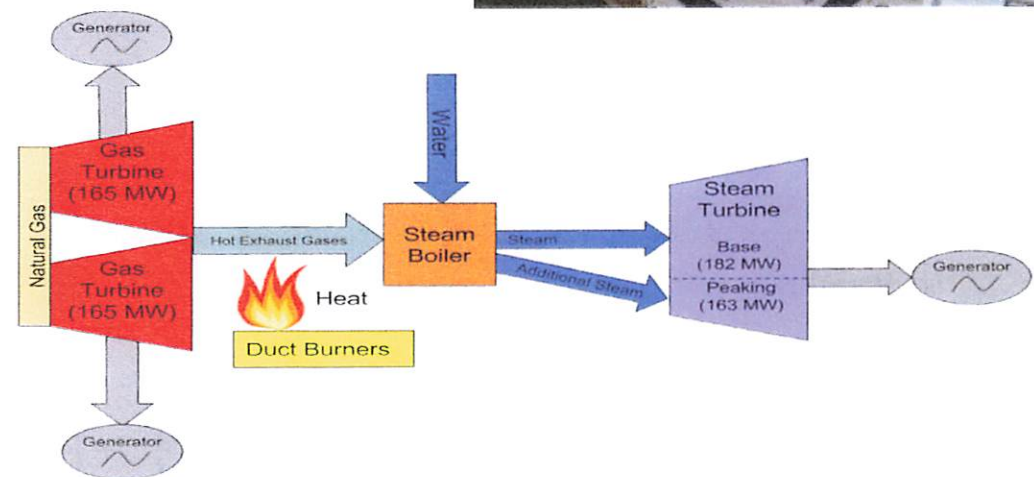
Fremont Energy Center (119 kW)



- Natural Gas Combined Cycle Unit (online in 2012)
- 512 MW of Intermediate Capacity (76%)
- 163 MW of Duct-Firing Capability for Peaking (24%)
- Interconnected to FirstEnergy in PJM
- GTOP (Gas Turbine Optimization Project) completed in Fall of 2020
- New plant Maximum of 730 MW
- Huron is 0.02% of Project
- Debt through 2043

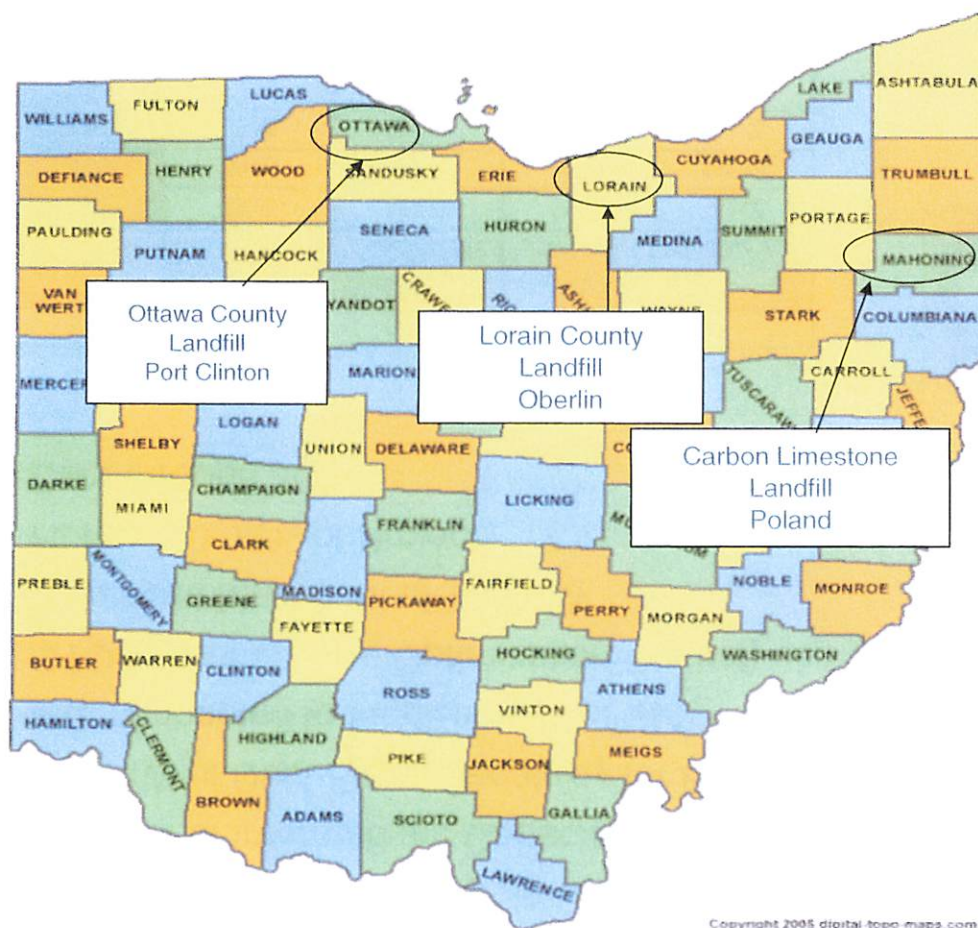


	Debt + Demand		Energy	
	Fixed \$/kW-Mo	Variable and Fuel \$/MWh	Project Load Factor	Effective Rate
2021	\$8.65	\$29.32	51.9%	\$52.08
2022	\$9.00	\$27.53	52.2%	\$51.14
2023	\$9.58	\$25.93	51.4%	\$51.45
2024	\$9.73	\$24.35	49.1%	\$51.49
2025	\$9.73	\$23.78	49.5%	\$50.61



- Participants also receive capacity benefits (~\$10 / MWh)

EDI Landfill Gas Project (100 kW)



- Power delivered from three landfills in FirstEnergy sold by Energy Development through December 2021

	Total Rate with Replacement
2021	\$59.16

EDI Landfill rates are seasonal and time of day

- Delivered at 100% capacity factor
- Project rate includes fixed price replacement power
- Participants receive Installed Capacity
- Approx. \$3 / MWh value
- Huron is 0.19% of Project

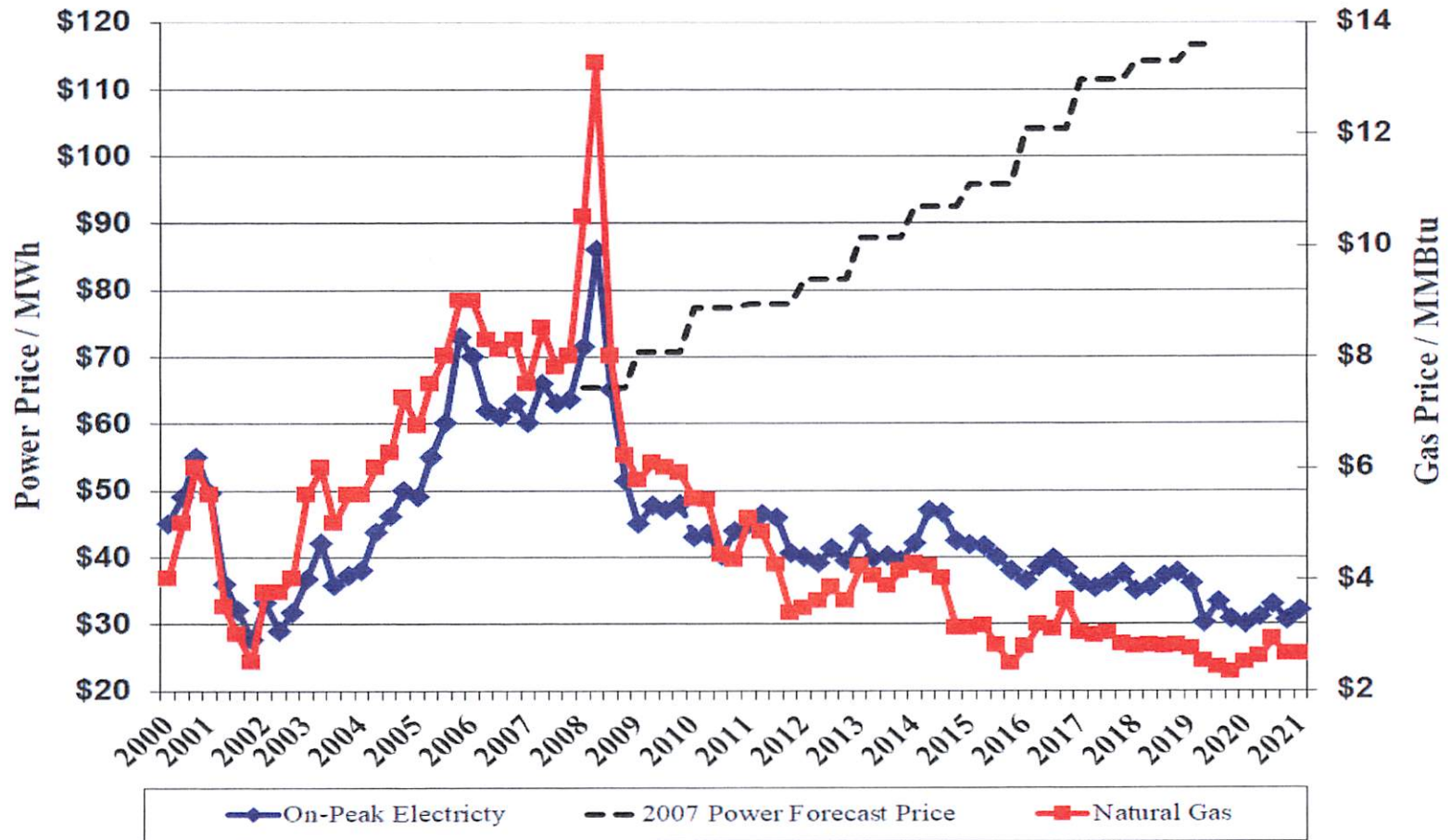
NORTHERN Pool

- AMP provides remaining requirements and project replacement supply through pool
- Allow Members in FirstEnergy to schedule and aggregate purchases on a group basis
 - Share changes in long term and daily load forecasts.
 - Purchase seasonal needs as a group
- Establish rules for allocation of PJM capacity, transmission and power costs incurred for the group

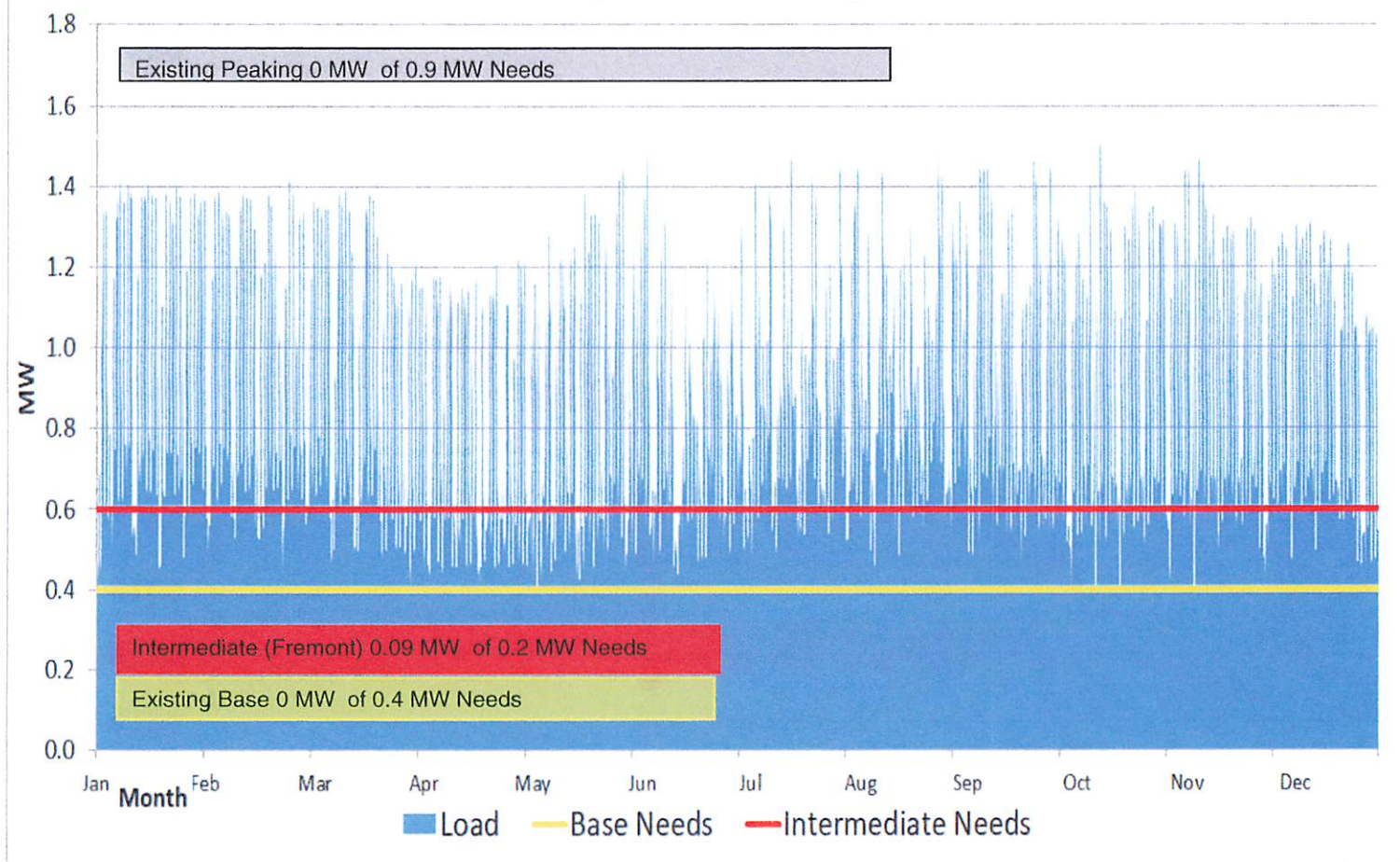
Energy Market

- Energy purchases do not include capacity
- Energy Market (as well as Capacity Market) is a marginal market
 - Cost for entire market is determined by the cost of the last (highest cost) unit needed, aka the marginal cost
 - Electric power prices are closely tied to natural gas prices due to the numerous natural gas generating units setting the market price

12 Month Price of Wholesale Energy Commodities



Huron 2020 Hourly Load and Long Term Resources



Recommended Sales/Purchases

- 0.2 MW Fries Hydro for 2022-2031
- 0.2 MW 7x24 for 2021-2024
- 0.1 MW 5x16 for 2021-2023
- 0.2 MW Solar PPA

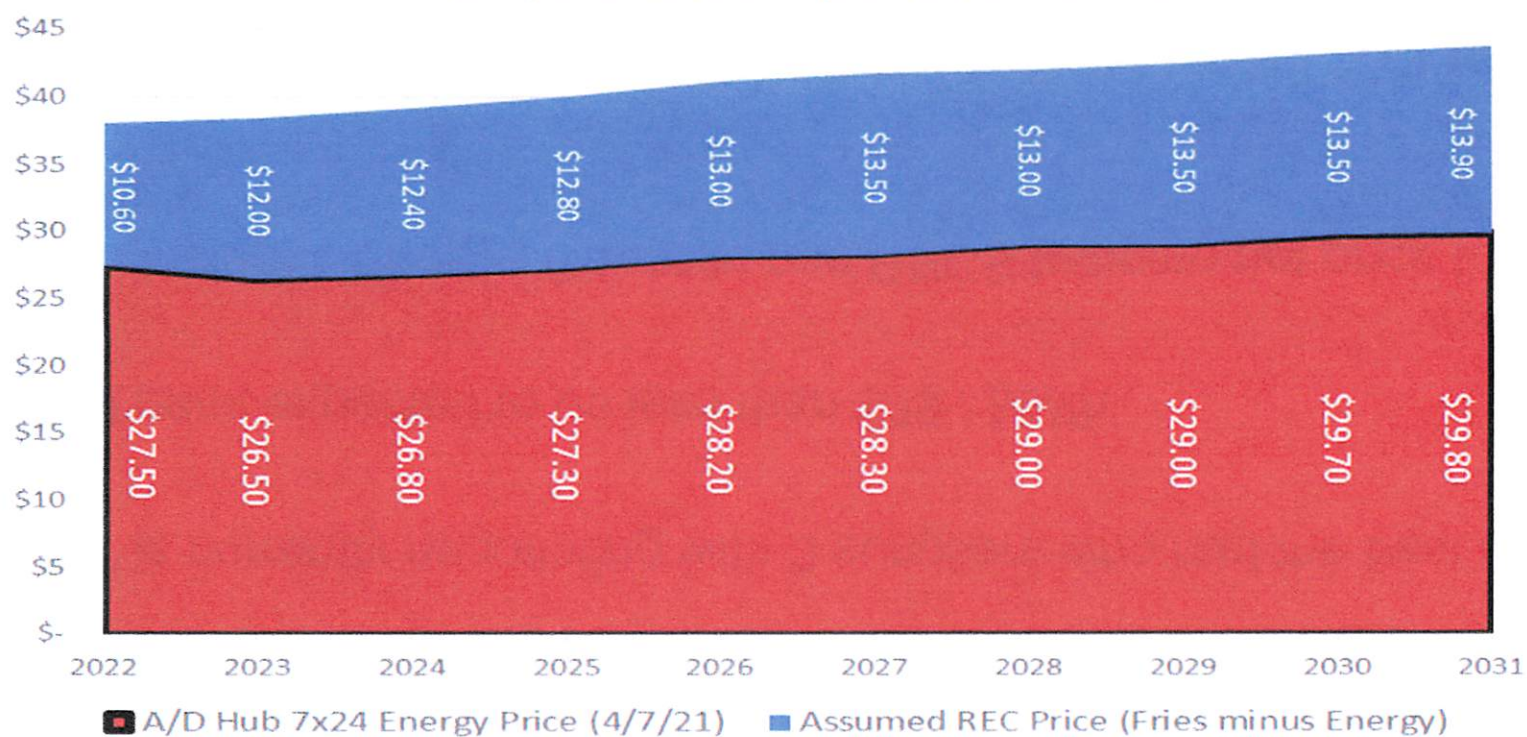
Fries Proposal

Seller:	Central Rivers Power, LLC
Facility:	Fries Hydro Electric Facility located in Grayson, VA
Products:	100% of All the products produced by the Facility – Energy, Capacity, Environmental Attributes/RECs on unit-contingent basis.
Expected Energy/REC Quantity:	About 26 GWh per year
PPA Type:	Unit Contingent “as generated” PPA
Term:	1/1/2022 + 12/31/2031 (10 years)

Year	PPA Rate (\$/MWh)	Capacity (\$ per MW-Day)
2022	38.10	100
2023	38.50	100
2024	39.20	100
2025	40.10	110
2026	41.20	130
2027	41.80	130
2028	42.00	130
2029	42.50	130
2030	43.20	130
2031	43.70	130

Net Energy Rate of Hydro Power

Fries Hydro Rate compared to Market



Solar RFP

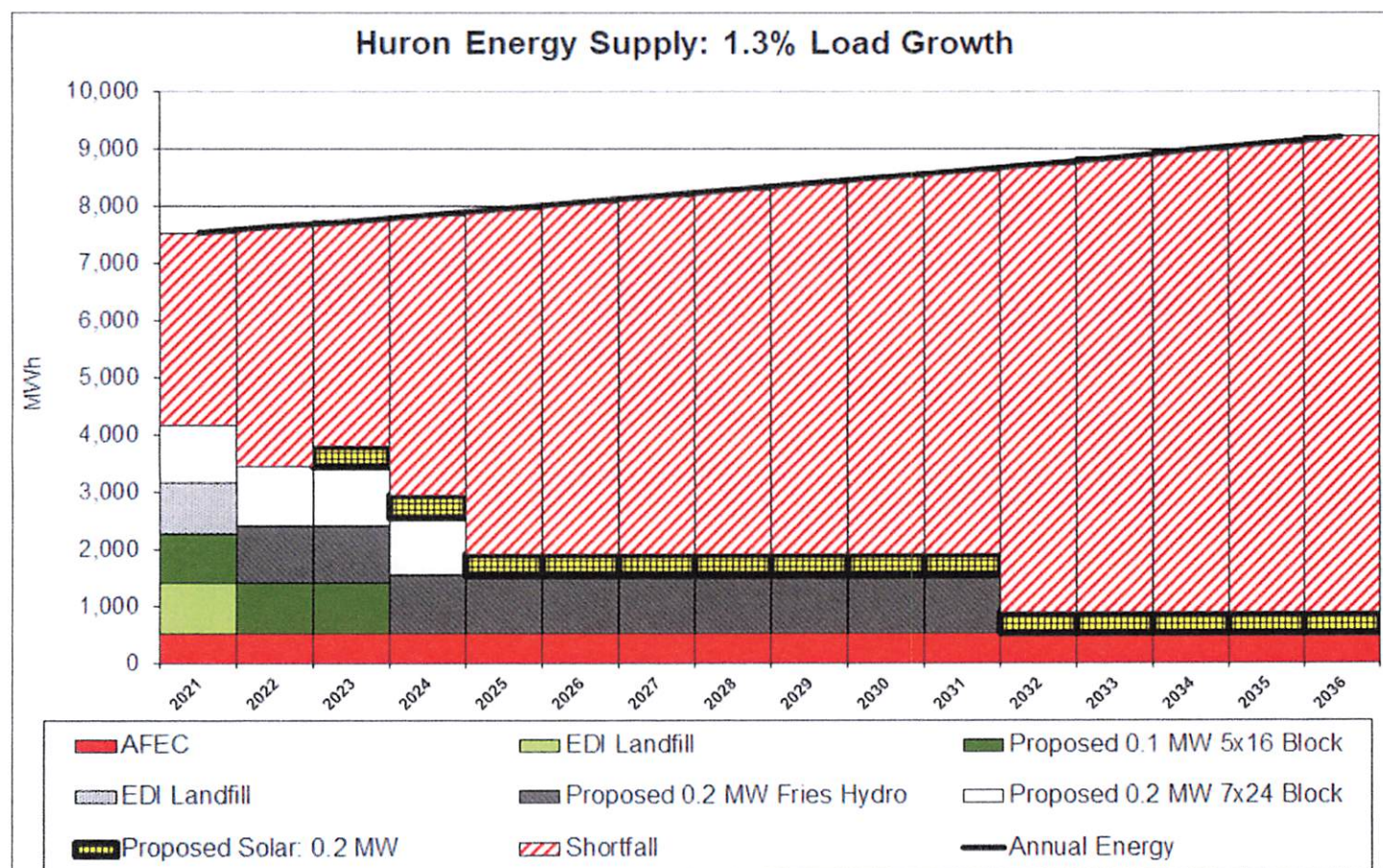


- On April 17, 2021, AMP received proposals from 33 projects for solar capacity and energy from large projects connected directly to PJM.
- AMP is currently negotiating with 3 suppliers who had the best and lowest prices.
- Final price expected to be less than \$39 / MWh
- Price includes Energy, Capacity and RECS bringing net price to less than \$20 / MWh.
- PPA similar to EDI Landfill. AMP will not own the facility. We will only pay supplier for energy produced.
- AMP Recommended up to 0.2 MW participation based on 5% of energy supply.

- Solar should total no more than 10% of portfolio, but Limit this PPA to 5% of projected 2021 energy (allow for future opportunities)

Huron Solar PPA Diversification Limit

A.	2025 Forecasted Load	7,536	MWh
B.	Max Solar	5%	
C. = (A x B)	Energy Limit	377	MWh
D.	Solar Load Factor	25%	
E. = C / (8,760 x D)	Huron Diversification Limit	0.200	MW

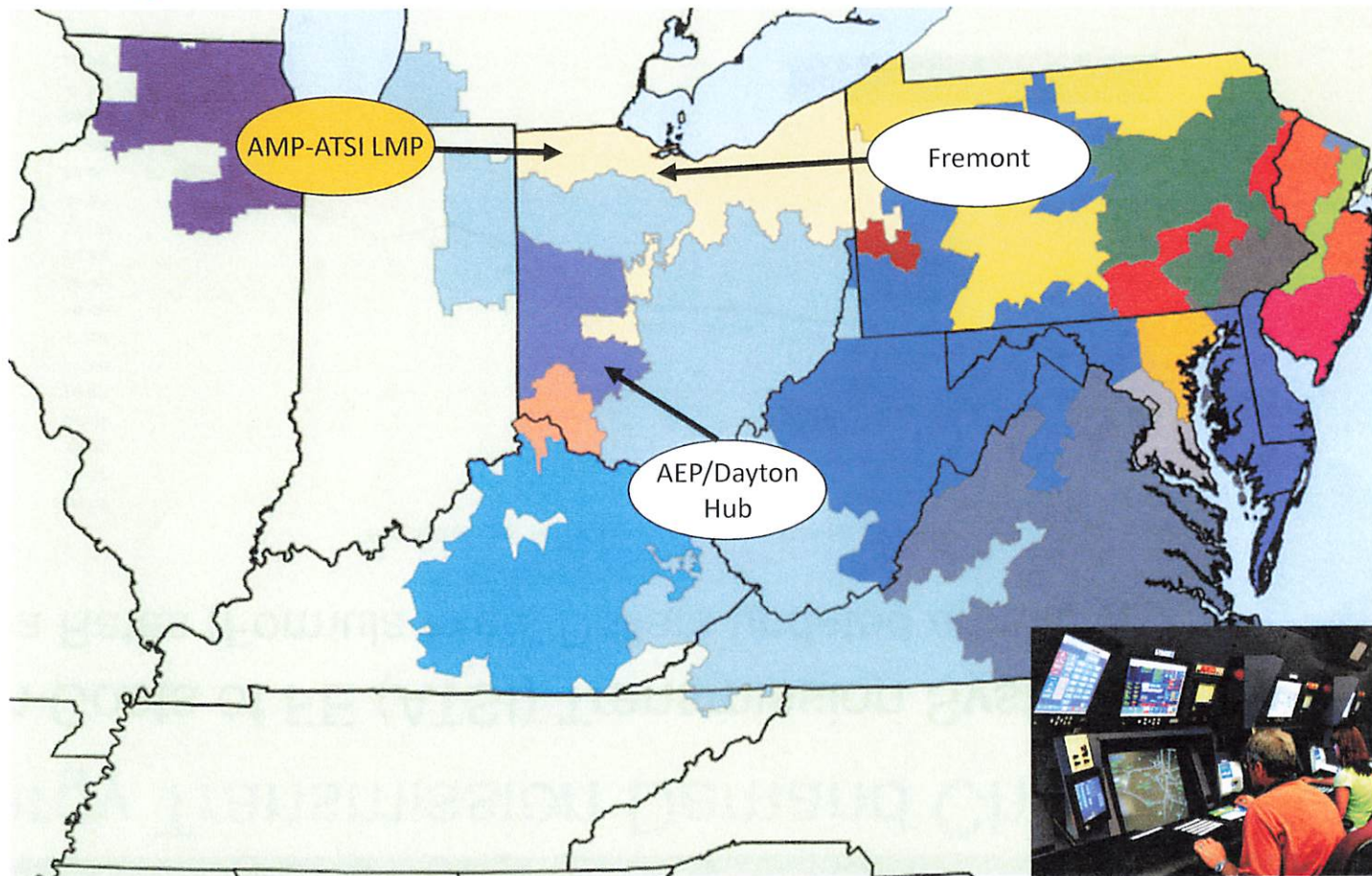


1. Block Purchases
2. Fries Hydro Purchase
3. Solar Purchase
4. Demand Response (Mucci or City)
5. Rate Levelization (Mucci)

***TRANSMISSION and
INSTALLED
CAPACITY***

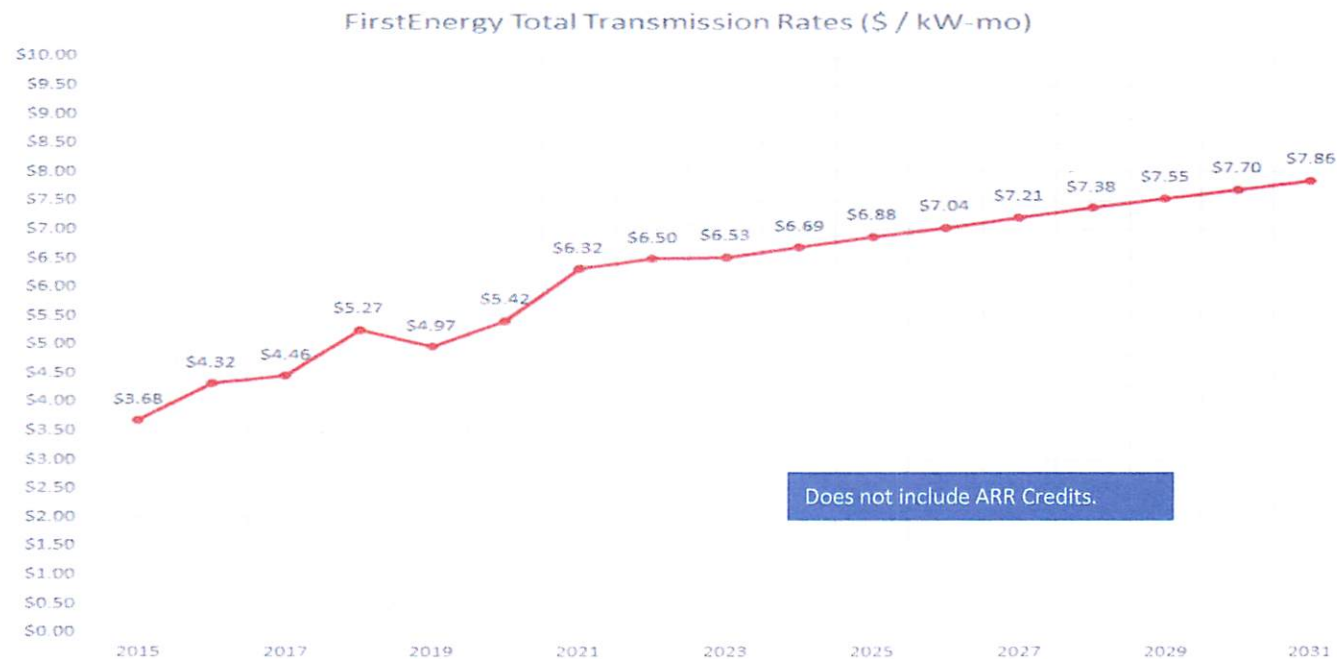


PJM Trading Hubs & Load Zones



FirstEnergy Transmission Demand Charge

- Based on Costs of FE (ATSI) Transmission System
 - Formula Rates (Formula fixed, Dollars updated annually)



FE Zone Coincident Peak

- 1 CP = Huron's load at time of FE Zone's peak hour for year
- 1CP based on previous calendar year's peak
 - Used for Transmission Billing on calendar year basis

2020 Transmission Billing	Zone	Time of Peak	1CP
Huron	ATSI	7/19/19 16	1.062

2021 Transmission Billing	Zone	Time of Peak	1CP
Huron	ATSI	7/9/20 17	0.951

2021 Transmission Billing	Zone	Time of Peak	1CP
Huron GH	ATSI	7/9/20 17	0.578

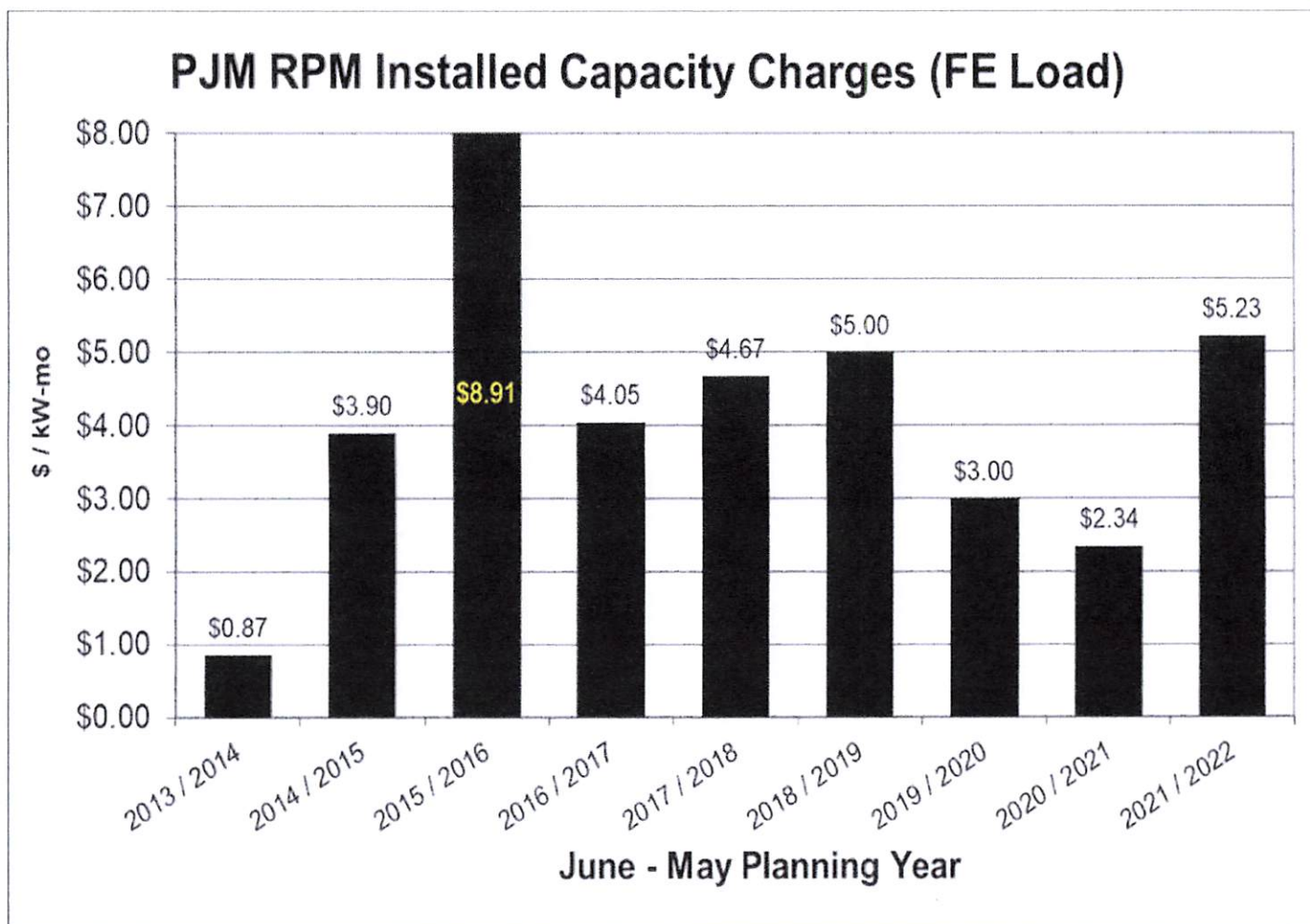
Transmission Charge Impact to Overall Rates: Huron



PJM and Installed Capacity

- PJM's job is to keep the lights on
 - Pay generators to be available for emergency performance
 - Costs billed to loads
 - Price set by annual auction
- Members receive capacity credit for:
 - Generation Resources (Ownership or Power Purchase)
 - Peak Shaving / Demand Response





PJM Coincident Peaks

- 5 CP = Huron's load at time of PJM's 5 highest hours from the previous year's summer
 - Used for Capacity Billing in PJM on Planning Year
- June 2020-May 2021 Capacity charges based on 2019 summer peaks

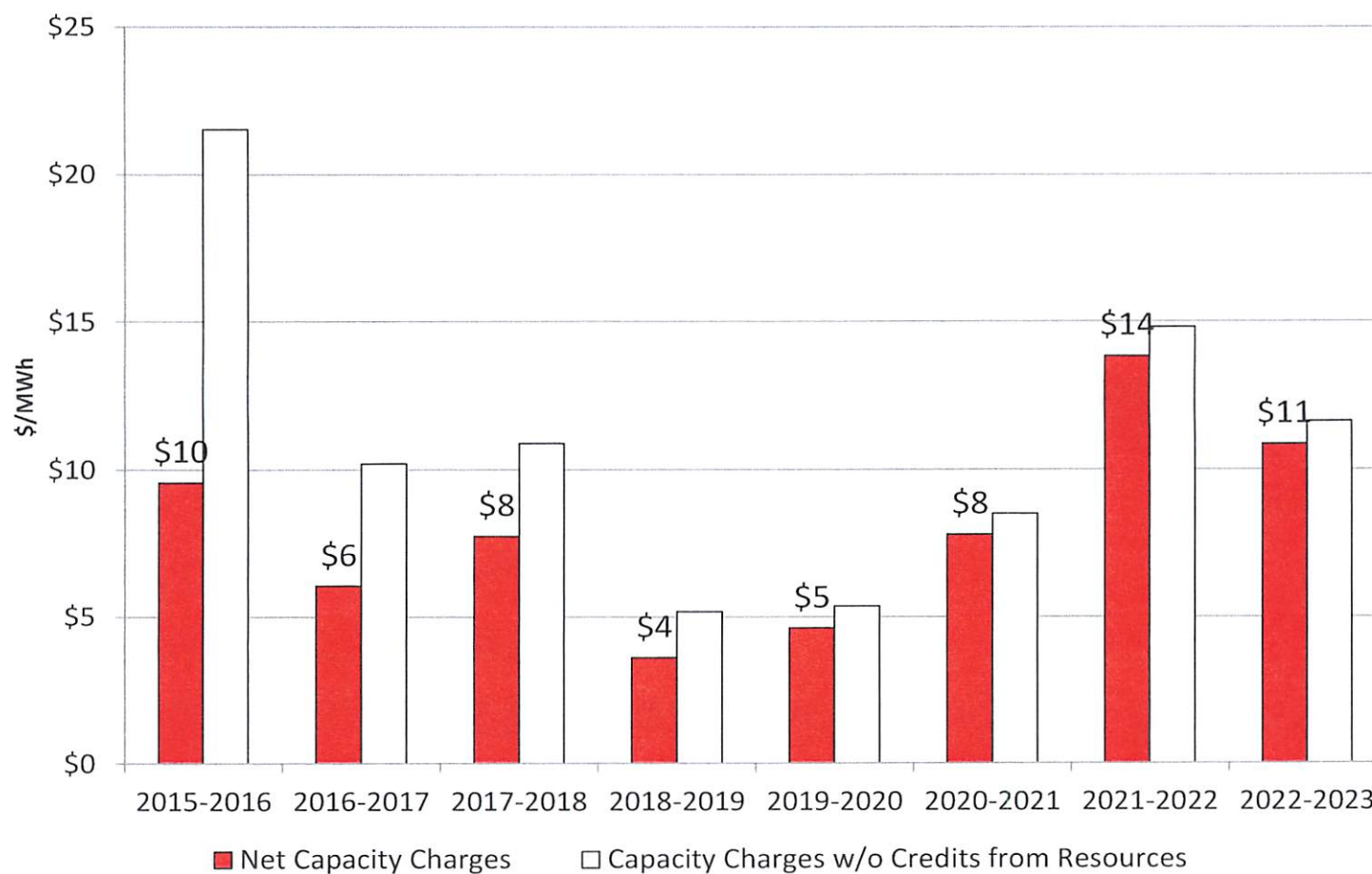
2020-2021 Planning Year	SCP	MW	7/19/2019 1800	7/17/2019 1700	8/19/2019 1700	7/10/2019 1800	7/29/2019 1700
Huron	1.675	MW	1.6	1.7	1.7	1.5	1.9

- June 2021-May 2022 Capacity charges based on 2020 summer peaks

2021-2022 Planning Year	SCP	MW	7/20/2020 1700	7/27/2020 1700	7/9/2020 1800	7/6/2020 1500	7/29/2020 1800
Huron	1.148	MW	1.0	1.4	1.1	1.0	1.4

2021-2022 Planning Year	SCP	MW	7/20/2020 1700	7/27/2020 1700	7/9/2020 1800	7/6/2020 1500	7/29/2020 1800
Huron GH	0.570	MW	0.602	0.570	0.554	0.577	0.545

Capacity Charge Impact to Overall Rates: Huron



Peak Shaving

- Peak Shaving:
 - AMP sends out notices via email notifying members of predicted 1CP and 5CPs, so that members or their customers can reduce load during the peak hours and reduce transmission and capacity costs.
- COMMUNITY ENERGY SAVINGS DAY TOOLKIT
 - Located on AMP's website:
 - <https://www.amppartners.org/members/member-extranet/focus-forward/cesd-toolkit>
 - #Alert: Community Energy Savings Day today: Help by using less energy between 1-6 p.m. @amppartners #saveenergy #communityenergysavingsday #publicpower

AMP Fees

Dispatch Center Charge

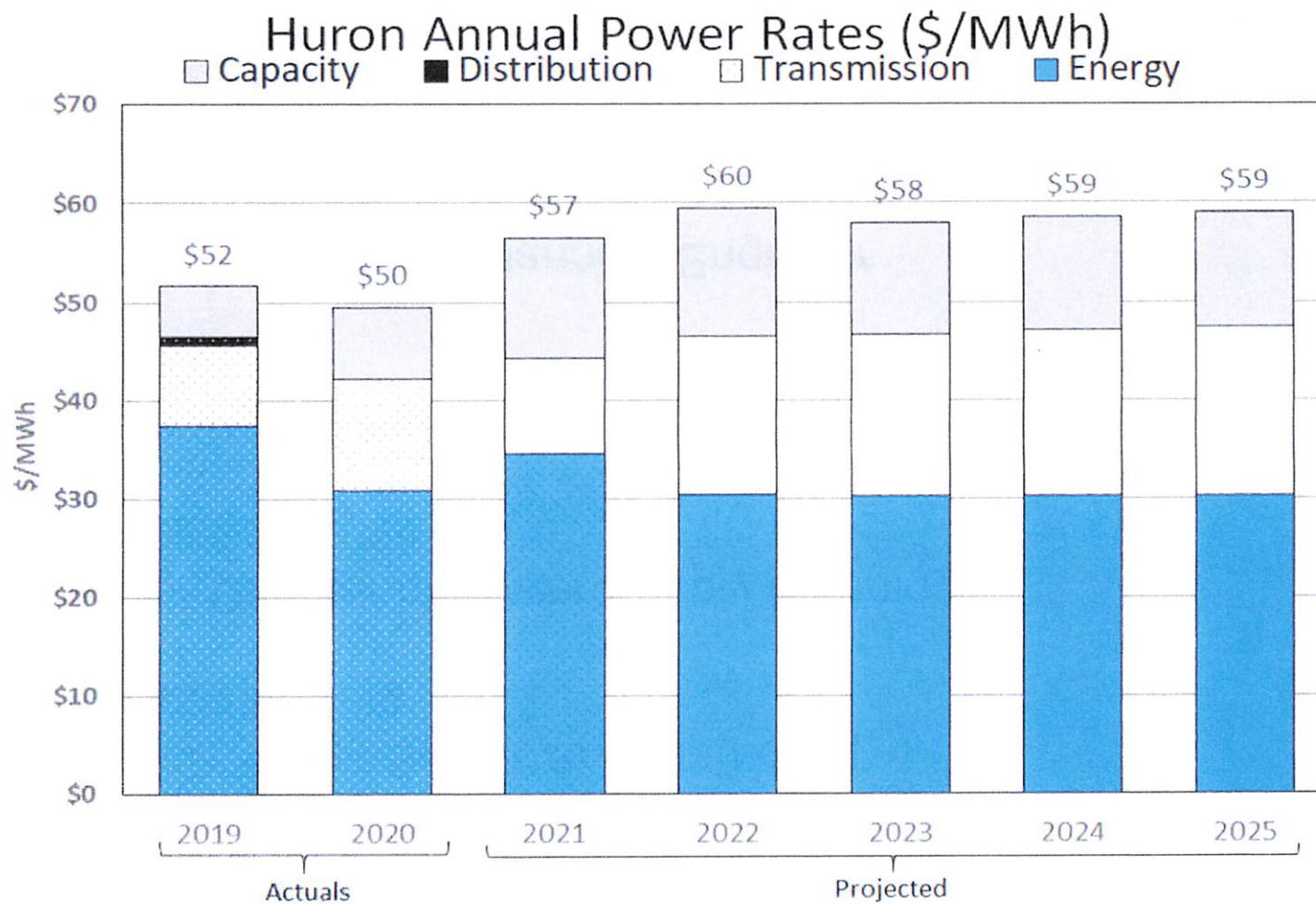
- Variable rate to pay for metering, satellite and dispatch center personnel and equipment

Service Fee “A”

- Based on annual retail sales of Member
- $\$0.229 / \text{MWh} \times \text{retail energy sales divided over 12 monthly payments}$

Service Fee “B”

- Based on wholesale purchases from AMP
- $\$0.58 / \text{MWh} \times \text{monthly wholesale energy purchases}$



Contacts

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uron ACTUAL COSTS

Annual 2020

Days 366

ACTUAL DEMAND = 1.60 MW

ACTUAL ENERGY = 7,542 MWH

05/11/2021

SOURCE	DEMAND MW	ENERGY MWH	LOAD FACTOR	DEMAND RATE \$/KW	ENERGY RATE \$/MWH	CONGESTION/L LOSSES \$/MWH	CAPACITY CREDIT RATE \$/KW	TOTAL CHARGES	EFFECTIVE RATE \$/MWH	% OF DOLLAR
(1)	(2)	(4)	(5)	(6)	(7)	(8)	(9)	(16)	(17)	(18)
AFEC	0.12	595	57%	\$9.65	\$23.63	\$0.52	-\$2.29	\$24,844	\$41.78	6.6%
Landfill	0.10	878	100%		\$57.22		-\$1.82	\$48,072	\$54.73	12.9%
NPP Pool Purchases	0.00	6,136	0%		\$24.29			\$149,058	\$24.29	39.9%
NPP Pool Sales	0.00	0	0%		\$18.20			-\$7	\$18.20	0.0%
POWER TOTAL	0.22	7,609	396%	\$13,740	\$213,359	\$311	-\$5,443	\$221,967	\$29.17	59.4%
Installed Capacity	1.68	0		\$3.37				\$54,917	\$7.28	14.7%
TRANSMISSION	1.06	7,609		\$6.33	\$0.73			\$86,263	\$11.44	23.1%
Distribution Charge	1.60	0		\$0.03				\$456	\$0.06	0.1%
Service Fee B		7,540			\$0.58			\$4,373	\$0.58	1.2%
Dispatch Charge		7,540			\$0.75			\$5,691	\$0.75	1.5%
OTHER TOTAL				\$136,087	\$15,613			\$151,699	\$20.11	40.6%
GRAND TOTAL PURCHASED		7,609						\$373,667		
Delivered to members	1.598	7,542						\$373,667	\$49.54	100.0%
	DEMAND	ENERGY	L.F.					TOTAL \$	\$/MWh	Avg Temp
2020 Forecast	2.08	7,784	43%					\$404,850	\$52.01	49.8
2019 Actual	2.33	7,825	38%					\$380,862	\$48.67	52.5
2018 Actual	1.61	5,204	37%					\$305,480	\$58.70	53.5
								2018 Temp		53.5

Huron		Capacity Plan										
Total	2021	FORECASTED DEMAND =				1.57	MW	17.7		MW-MOS	05/05/2021	
Avg # of Days	30.4	FORECASTED ENERGY =				7,536	MWH					
SOURCE		DEMAND MW	DEMAND MW-MO	ENERGY MWH	LOAD FACTOR	DEMAND RATE \$/KW	ENERGY RATE \$/MWH	CONGESTION /LOSSES \$/MWH	CAPACITY CREDIT RATE \$/KW	TRANSMISSION CREDIT RATE \$/KW	TOTAL CHARGES	EFFECTIVE RATE \$/MWH
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(16)	(17)
1	AFEC Base	0.10	1	464	59%	\$8.82	\$29.33	\$1.93	-\$3.94		\$19,776	\$42.63
2	AFEC Duct	0.03	0	77	31%	\$8.82	\$29.32	\$2.07	-\$3.98		\$4,088	\$52.96
3	EDI Landfill	0.10	1	876	100%		\$56.37		-\$0.73		\$48,510	\$55.38
4	Pool Purchases			6,120	81%		\$29.34				\$179,563	\$29.34
5	Pool Sales			-1	0%		\$22.87				-\$29	\$22.87
POWER TOTAL				7,536		\$12,558	\$244,786	\$1,053	-\$6,490	\$0	\$251,908	\$33.43
6	Capacity	1.78	21			\$4.32					\$92,073	\$12.22
7	Transmission/ANC	0.95	11	7,536	91%	\$6.08	\$0.58				\$73,265	\$9.72
9	Dispatch Fees		21	6,119			\$0.75				\$4,589	\$0.75
10	Service Fee B			7,536			\$0.58				\$4,371	\$0.58
OTHER TOTAL				7,536			\$1.77				\$174,299	\$23.13
GRAND TOTAL PURCHASED				7,536							\$426,207	
Delivered to members		1.57	18	7,536	58%						\$426,207	\$56.55
Other Charges												
Service Fee A											\$9,397	
Total Other Charges											\$9,397	

Huron		Capacity Plan										
Total	2022	FORECASTED DEMAND =		1.59	MW	17.9		MW-MOS	05/05/2021			
Avg # of Days	30.4	FORECASTED ENERGY =		7,638	MWH							
		DEMAND	DEMAND	ENERGY	LOAD	DEMAND	ENERGY	CONGESTION	CAPACITY	TRANSMISSION	EFFECTIVE	
SOURCE		MW	MW-MO	MWH	FACTOR	RATE	RATE	LOSSES	CREDIT RATE	CREDIT RATE	TOTAL	RATE
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(16)	(17)
1	AFEC Base	0.10	1	465	59%	\$9.00	\$27.61	\$1.93	-\$4.56		\$18,525	\$39.86
2	AFEC Duct	0.03	0	79	32%	\$9.00	\$27.40	\$2.06	-\$4.54		\$3,868	\$48.79
3	Pool Purchases			7,094	93%		\$28.18				\$199,915	\$28.18
4	Pool Sales			0	0%		\$25.78				-\$7	\$25.78
POWER TOTAL				7,638		\$12,814	\$214,911	\$1,062	-\$6,487	\$0	\$222,300	\$29.10
5	Capacity	1.81	22			\$4.60					\$98,942	\$12.95
6	Transmission/ANC	1.59	19	7,638	55%	\$6.26	\$0.58				\$123,773	\$16.21
8	Dispatch Fees		22	7,094			\$0.75				\$5,320	\$0.75
9	Service Fee B			7,638			\$0.58				\$4,430	\$0.58
OTHER TOTAL				7,638			\$1.85				\$232,466	\$30.44
GRAND TOTAL PURCHASED				7,638							\$454,766	
Delivered to members		1.59	18	7,638	58%						\$454,766	\$59.54
Other Charges												
Service Fee A											\$9,833	
Total Other Charges											\$9,833	

Huron		Capacity Plan										
Total	2023	FORECASTED DEMAND =				1.61	MW	18.1		MW-MOS	05/05/2021	
Avg # of Days	30.4	FORECASTED ENERGY =				7,741	MWH					
		DEMAND	DEMAND	ENERGY	LOAD	DEMAND	ENERGY	CONGESTION	CAPACITY	TRANSMISSION	EFFECTIVE	
SOURCE		MW	MW-MO	MWH	FACTOR	RATE	RATE	/LOSSES	CREDIT RATE	CREDIT RATE	TOTAL	RATE
(1)		(2)	(3)	(4)	(5)	\$/KW	\$/MWH	\$/MWH	\$/KW	\$/KW	CHARGES	\$/MWH
1	AFEC Base	0.10	1	457	58%	\$9.58	\$26.01	\$1.94	-\$4.01		\$18,773	\$41.12
2	AFEC Duct	0.03	0	79	32%	\$9.58	\$25.78	\$2.07	-\$4.01		\$4,121	\$52.02
3	Pool Purchases			7,206	93%		\$28.06				\$202,196	\$28.06
4	Pool Sales			0	0%		\$25.61				-\$7	\$25.61
POWER TOTAL				7,741		\$13,640	\$216,104	\$1,051	-\$5,711	\$0	\$225,084	\$29.08
5	Capacity	1.81	22			\$4.07					\$88,409	\$11.42
6	Transmission/ANC	1.61	19	7,741	55%	\$6.28	\$0.58				\$125,883	\$16.26
8	Dispatch Fees		22	7,205			\$0.75				\$5,404	\$0.75
9	Service Fee B			7,741			\$0.58				\$4,490	\$0.58
OTHER TOTAL				7,741			\$1.86				\$224,186	\$28.96
GRAND TOTAL PURCHASED				7,741							\$449,270	
Delivered to members		1.61	18	7,741	58%						\$449,270	\$58.04
Other Charges												
Service Fee A											\$9,878	
Total Other Charges											\$9,878	

Huron		Capacity Plan										
Total	2024	FORECASTED DEMAND =	1.64	MW				18.4	MW-MOS		05/05/2021	
Avg # of Days	30.4	FORECASTED ENERGY =	7,845	MWH								
		DEMAND	DEMAND	ENERGY	LOAD	DEMAND	ENERGY	CONGESTION	CAPACITY	TRANSMISSION	EFFECTIVE	
SOURCE		MW	MW-MO	MWH	FACTOR	RATE	RATE	/LOSSES	CREDIT RATE	CREDIT RATE	TOTAL	RATE
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(16)	(17)
1	AFEC Base	0.10	1	433	55%	\$9.73	\$24.44	\$1.95	-\$4.03		\$17,594	\$40.60
2	AFEC Duct	0.03	0	78	31%	\$9.73	\$24.18	\$2.07	-\$4.03		\$4,011	\$51.36
3	Pool Purchases			7,334	93%		\$28.12				\$206,255	\$28.12
4	Pool Sales			0	0%		\$25.78				-\$7	\$25.78
POWER TOTAL				7,845		\$13,854	\$218,728	\$1,005	-\$5,733	\$0	\$227,854	\$29.04
5	Capacity	1.83	22			\$4.09					\$89,935	\$11.46
6	Transmission/ANC	1.64	20	7,845	55%	\$6.45	\$0.58				\$131,463	\$16.76
8	Dispatch Fees		22	7,334			\$0.75				\$5,500	\$0.75
9	Service Fee B			7,845			\$0.58				\$4,550	\$0.58
OTHER TOTAL				7,845			\$1.86				\$231,449	\$29.50
GRAND TOTAL PURCHASED				7,845							\$459,303	
Delivered to members		1.64	18	7,845	58%						\$459,303	\$58.54
Other Charges												
Service Fee A											\$9,923	
Total Other Charges											\$9,923	

April 2021 Estimated Mucci Invoice



- Exelon Purchase:
 - $3,360 \text{ MWh} \times \$27.76 / \text{MWh} = \$93,273$
- Net Market:
 - $1,674 \text{ MWh} \times \$29 / \text{MWh} = \$48,546$
- Capacity:
 - $0.593 \text{ MW} \times \$2.873 / \text{kW-mo} = \$1,704$
- Transmission:
 - $0.578 \text{ MW} \times \$7.53 / \text{kW-mo} = \$4,352$
 - $5,034 \text{ MWh} \times \$0.58 / \text{MWh} = \$2,920$
- AMP Fees:
 - Dispatch: $5,034 \text{ MWh} \times \$0.50 / \text{MWh} = \$2,517$
 - A: $4,201 \text{ MWh} \times \$0.229 / \text{MWh} = \$962$
 - B: $5,034 \text{ MWh} \times \$0.58 / \text{MWh} = \$2,920$
- Total Power Costs = \$157,194
 - Over 5,034 MWh = \$31.22 / MWh

March 2021 Mucci Invoice



DETAIL INFORMATION OF POWER CHARGES: Huron Greenhouse				
FOR THE MONTH OF: March, 2021				
			Total Metered Load kWh:	6,561,544
			Transmission Losses kWh:	47,950
			Distribution Losses kWh:	-
			Total Energy Req. kWh:	6,609,494
			COINCIDENT PEAK kW:	25,384
			MUNICIPAL PEAK kWh:	25,515
			TRANSMISSION PEAK kW:	578
			PJM Capacity Requirement kW:	-
Huron Greenhouse Resources				
Northern Pool @ AMP-ATSI LMP				
Transmission Losses	\$0.023850	/ kWh *	47,950 kWh =	\$1,143.60
Subtotal		/ kWh *	47,950 kWh =	\$1,143.60
Exelon Requirements				
Energy Charge:	\$0.027760	/ kWh *	12,966,000 kWh =	\$359,936.16
Subtotal	#N/A	/ kWh *	12,966,000 kWh =	\$359,936.16
Northern Power Pool -				
On Peak Energy Charge (M-F HE 08-23 ED)	\$0.028711	/ kWh *	136,961 kWh =	\$3,932.26
Off Peak Energy Charge	\$0.024615	/ kWh *	170,624 kWh =	\$4,199.86
Sale of Excess Resources to PJM	\$0.022686	/ kWh *	-6,712,041 kWh =	\$152,269.38
Subtotal	\$0.022506	/ kWh *	-6,404,456 kWh =	-\$144,137.26
Total Demand Charges:				\$0.00
Total Energy Charges:				\$216,942.50
Total Power Charges:			6,609,493.75 kWh	\$216,942.50
TRANSMISSION / CAPACITY / ANCILLARY SERVICES -				
Demand Charge	\$7.530000	/ kW *	578 kW =	\$4,352.34
Energy Charge:	\$0.000968	/ kWh *	6,609,494 kWh =	\$6,398.33
TOTAL TRANSMISSION CHARGES:	#DIV/0!	/ kWh *	0 kWh =	\$10,750.67
OTHER CHARGES -				
Dispatch Center Charges	\$0.002103	/ kWh *	6,561,544 kWh =	\$13,795.80
Service Fee A:				
Based on Annual Usage	\$0.000229	/ kWh *	6,697,000 kWh =	\$0.00
Service Fee B:				
Energy Purchases	\$0.000580	/ kWh *	6,561,544 kWh =	\$3,805.70
TOTAL OTHER CHARGES:				\$17,601.50
MISCELLANEOUS CHARGES -				
Capacity charge				\$1,704.00
TOTAL MISCELLANEOUS CHARGES:				\$1,704.00
GRAND TOTAL POWER CHARGES:	\$0.037643	/ kWh *	6,561,544 kWh =	\$246,998.67