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MEMORANDUM

September 30, 2021

To: The Ohio Manufacturers' Association

From: John Seryak, PE and Peter Worley

While HB 6's Remaining Provisions Are Debated, Subsidies to Ohio Utilities Double to $150M Annually for Two Aged Coal Plants

Summary

Current law mandates that Ohio's manufacturers and citizens subsidize electric utilities for operating old coal plants, which sells power at nearly twice its market value. These expensive coal plants provide no corresponding benefit to Ohioans. The subsidy does, however, benefit electric utilities -- AEP Ohio, Duke Energy Ohio, and AES Ohio -- at ratepayer expense, compensating the utilities for their contractual commitments to the plants (i.e., entering a bad contract). These expensive aged coal-fired power plants are partially owned by the utilities via their shared ownership of the Ohio Valley Electric Corporation (OVEC).

The subsidy also benefits FirstEnergy's Toledo Edison and Ohio Edison, which are still shareholders in OVEC,[1] and thus have a material interest in its profitability. FirstEnergy has admitted to bribing the former speaker of the Ohio House and former chairperson of the Public Utilities Commission of Ohio for its financial benefit.[2]

The subsidized power purchases are inseparably joined to the bribery-plagued House Bill 6 (HB 6). The OVEC provision of HB 6 has not been repealed.

Although there has been some interest in reconsidering the subsidy, the subsidy continues to surge, doubling to $150 million per year. At this rate, the law would require Ohio's manufacturers, other businesses, and citizens to pay Ohio's electric utilities an estimated additional $1.4 billion in unearned and unneeded subsidies through 2030. This is on top of about $400 million that Ohio electric customers have already paid.

Key Points

- Annual OVEC coal plant subsidies have surged to $150 million per year.
- Ohio's customers are on target to subsidize $1.8 billion in total by 2030.
- OVEC plants will not close if the subsidy is repealed, thus there is no jobs or system reliability benefit from the subsidies.
- AEP Ohio and other utilities charge Ohio customers for above-market costs associated with operating the aged coal plants.
- Subsidies benefit the Ohio coal-plant shareholders, including FirstEnergy.

[1] "Ohio Valley Electric Corporation Annual Report - 2020", https://www.ovec.com/FinancialStatements/AnnualReport - 2020 - Signed.pdf, see page 1.

[2] Deferred Prosecution Agreement, Case No. 1:21-cr-86, https://www.scribd.com/document/516865597/FirstEnergy-Deferred-Prosecution-Agreement#from_embed

Meanwhile, rationale for the utility subsidy is crumbling due to factors such as the following:

- Proponents of the subsidy profess that it supports Ohio jobs. Yet the OVEC coal plant affirmed the plants will not close if Ohio legislators repeal the subsidies.[3] Thus, the subsidies do not preserve jobs.
- The subsidy was part of a purported "clean air" bill[4]. Yet, the subsidy pays for extra pollution, funneling hundreds of millions of dollars to OVEC, two 1950s-era coal plants with heavy emissions.
- The electric utilities claim the subsidy is a hedge to protect customers from spikes in the electricity market.[5] Yet the subsidy has never yielded a credit to customers.

Key Information

- OVEC coal plants are uneconomic.
- OVEC coal plants are not needed for reliability.
- Total subsidies to OVEC are uncapped.

- The subsidy remains on the law books, purportedly because it was not beneficial to FirstEnergy. Yet, two FirstEnergy subsidiaries are shareholders in OVEC and have a material interest in its profitability.
- Proponents of the subsidy suggest the OVEC plants are needed for reliability. However, the regional electric grid already compensates power plants for reliability, procurring 21% more power for peak times than is needed[6]. If OVEC is needed for reliability, it is already paid by PJM.
- Remarkably, the utilities testified to the legislature in person that the subsidies don't directly benefit the coal plants.[7]

The utilities' testimony demonstrates that the subsidy is designed to cover the losses of the electric utilities' contractual commitments, thus padding their profits, and has strayed from the original proponent arguments of HB 6: to support clean air and Ohio jobs. As a result, manufacturers are paying for two aged coal plants with no corresponding benefits.

The Meter is Running: Ohioans on Target to Subsidize $1.8 Billion by 2030

The OVEC plants are uneconomic. And Ohioans do not need to subsidize OVEC to maintain reliable power supply. Ohio is part of a regional wholesale electric market, PJM. In this market, power generators compete to sell needed electricity to electrical load at any given hour based on price. If a power plant cannot compete on price, then it means there are plentiful electricity generators already meeting the

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[3] 6-15-2021 Ohio Senate Energy and Public Utilities Hearing; Time 44:10; https://ohiochannel.org/collections/ohio-senate-energy-and-public-utilities-committee.

[4] The short title of the act is "Creates Ohio Clean Air Program", https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA133-HB-6

[5] 6-15-2021 Ohio Senate Energy and Public Utilities Hearing; Time 34:50 and 39:03; https://ohiochannel.org/collections/ohio-senate-energy-and-public-utilities-committee.

[6] 2022/2023 RPM Base Residual Auction Results, https://www2.pjm.com/-/media/markets-ops/rpm/rpm-auction-info/2022-2023/2022-2023-base-residual-auction-report.ashx

[7] 6-15-2021 Ohio Senate Energy and Public Utilities Hearing; Time 14:10 and 17:40 and 54:20; https://ohiochannel.org/collections/ohio-senate-energy-and-public-utilities-committee.

system needs, at a lower price. Thus, if OVEC cannot compete in markets based on its price alone, it is inherently not needed at those times.

Each year since 2012 OVEC's power prices have been greater than the market value of its power. As owners and sponsors of an inter-company power agreement with OVEC, Ohio's utilities stand to lose billions unless they make different business decisions regarding whether or how to operate OVEC. However, rather than change business practices, Ohio's electric utilities have sought government mandates that require customers to cover their losses. The PUCO first created this mandate in 2017 and granted subsidies until 2023 to 2025, depending on the utility. Rather than protect customers and repeal the PUCO mandates, HB 6 continued and expanded the subsidy through 2030 and reworked its rate design. Also, HB 6 failed to cap total subsidies to OVEC. While some customers' charges were capped, costs were shifted to other customers and any uncollected monies are scheduled to be collected by the utilities after 2030.

Since HB 6 affirmed and expanded the mandate, the cost of the OVEC subsidies has increased, sometimes dramatically, as shown in Figure 1 and Table 1.

Figure 1: Annual OVEC Subsidy Collection

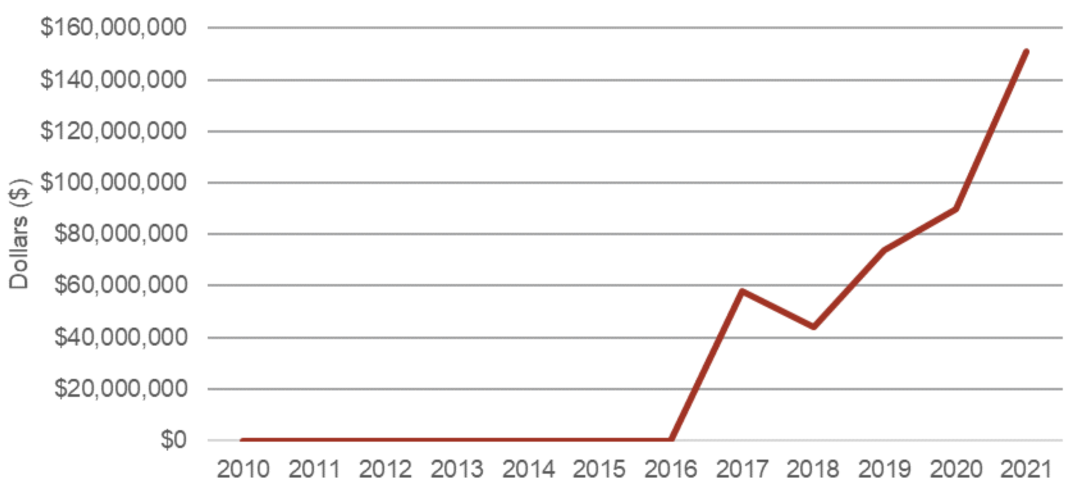


Table 1: Annual OVEC Subsidy Collection

Year	Subsidies to OVEC ($)	Subsidy Granted By
2017	$42,868,858	PUCO
2018	$27,447,386	PUCO
2019	$85,136,721	PUCO
2020	$89,571,982	HB6
2021	$150,705,129	HB6
Total	**$395,730,076**	

Utilities have already collected about $400 million in subsidies for OVEC from 2017 through 2021.[8] Because HB 6 has mandated that Ohioans continue to subsidize OVEC through 2030, at current rates, Ohioans will likely subsidize OVEC an additional $1.4 billion by the end of this period.[9] All together at these rates, the OVEC bill would reach about $1.8 billion.

Prior to 2019, the PUCO authorized AEP Ohio, Duke, and DP&L to add charges to customers' bills to subsidize the OVEC plants.[10] The PUCO authorized DP&L to charge customers through 2023, AEP Ohio through 2024, and Duke through 2025 -- all under different rider names.

HB 6 created a new subsidy that supplanted the previously approved PUCO subsidies. HB 6 continued and expanded the OVEC subsidy by requiring all customers in the state to pay the subsidy and by extending the subsidy to at least 2030. This is known as the "Legacy Generation Rider."

The level of the OVEC subsidy fluctuates yearly based on its operational costs and the wholesale electric market prices. In a study, the Institute for Energy Economics and Financial Analysis (IEEFA) forecasted that OVEC's operational costs would continue to rise, while market prices would remain low, resulting in $110 million per year in subsidies or $1.1 billion over the decade.[11] This estimate was prescient -- OVEC's costs to customers have ballooned to $150 million in 2021.

From 2012 to 2020, OVEC's average weighted price of electricity of approximately $59/MWh[12] was approximately 40% more expensive than the market price of $41/MWh.[13] At these prices, OVEC is a market loser -- to the tune of $1.8 billion. Ohio's electric utilities own about 39% of OVEC and are

[8] 2017-2019 subsidy amounts come from:

AEP Ohio - "Power Purchase Agreement (PPA) Rider" - PUCO Cases 14-1693-EL-RDR, 18-1759-EL-RDR, 18-1004-EL-RDR
2017 - PUCO Case 14-1693-EL-RDR; Entries 6/1/2017, 8/30/2017, 12/1/2017, and 2/28/2018
For example of April 2017 - June 2017 subsidies, see 8/30/2017 Entry, Page 5 of PDF, Column PPA Revenue; Rows 11-13
http://dis.puc.state.oh.us/TiffToPDf/A1001001A17H30B64838A00726.pdf
2018 & 2019 - Cases 14-1693-EL-RDR and 18-1759-EL-RDR; See Figure 16, Column B in London Economic International's audit of the rider.
http://dis.puc.state.oh.us/TiffToPDf/A1001001A20I17B31207C02236.pdf (page 36 of PDF)

DP&L - "Reconciliation Rider" - PUCO Cases 18-1379-EL-RDR, 19-1776-EL-RDR, 20-0165-EL-RDR
November 2017 through 2019 - PUCO Case 19-1776-EL-RDR; Entry 9/16/2019; Page 5 of PDF; Column D
http://dis.puc.state.oh.us/TiffToPDf/A1001001A19I16B63359E02116.pdf

Duke Energy Ohio - "Price Stabilization Rider (Rider PSR)" - PUCO Cases 19-447-EL-RDR and 20-0167-EL-RDR
2019 - PUCO Case 20-0167-EL-RDR; Entry 10/21/2020; Page 27 of PDF; Column I

2020-21 subsidy amounts come from: Correspondence with PUCO Staff

[9] $150 million/year x 9 years = $1,350 million

[10] They were authorized in utility Electric Security Plans (ESP). The corresponding PUCO cases were for AEP Ohio 16-1652-EL-SSO; for DP&L 16-395-EL-SSO; for Duke 17-1263-EL-SSO

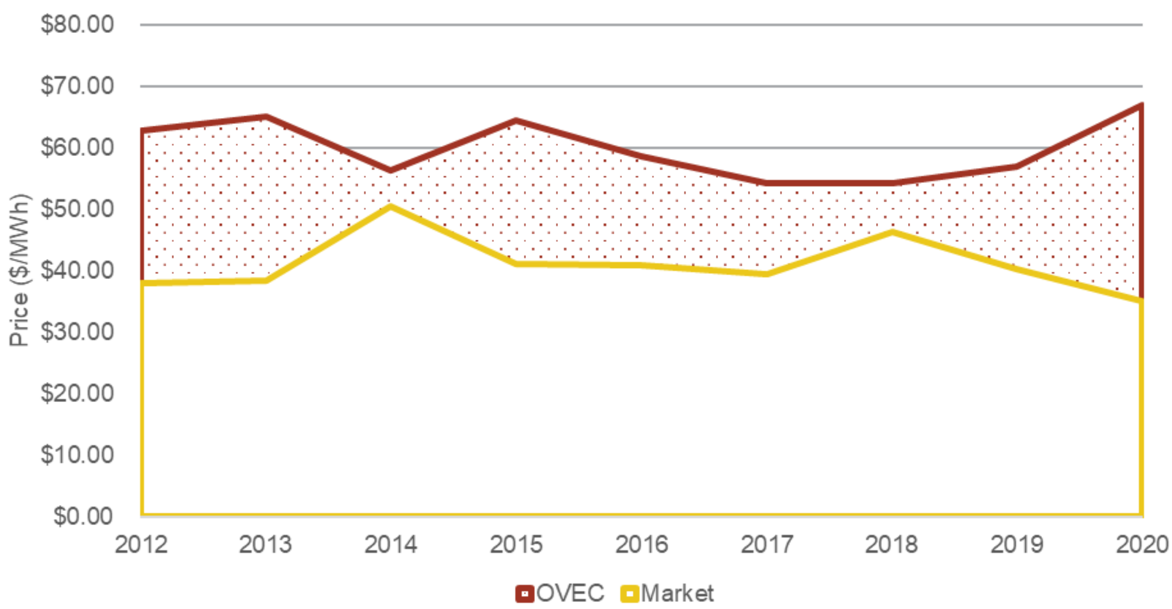
[11] IEEFA 2017 Report
https://ieefa.org/wp-content/uploads/2017/06/Dont-Bail-Out-Retire-OVEC-Coal-Plants.pdf (page 11 of PDF)

[12] Production weighted average. OVEC Annual Report Documents under Section "Power Costs." For example, 2020 Annual Report:
https://www.ovec.com/FinancialStatements/AnnualReport-2020-Signed.pdf

[13] The OVEC and PJM prices include Energy and Capacity. Energy price is the PJM Day-Ahead AEP Zone load-weighted LMP price. Capacity price is the PJM Final Zonal Net Load Capacity Price for the AEP Zone. We assume OVEC had all of its 2,350 MW clear the capacity auction. Prices do not include Ancillary Services because OVEC does not attempt to sell them into PJM currently.

responsible for 34% of the losses.[14] Thus, the utilities' share of those market losses is about $600 million over this period.[15] However, Ohio's electric utilities have successfully asked the PUCO and General Assembly to force Ohioans to cover their losses, rather than make prudent business decisions. As a result, Ohio customers have covered approximately $270 million of those losses through 2020.[16]

Figure 2: OVEC Price Compared to Market



[14] Ownership: Dayton Power and Light Co. (DP&L) owns 4.9%, Duke Energy Ohio (Duke) owns 9%, Toledo Edison owns 4.00%, Ohio Edison owns 0.85%, and Ohio Power Co. (AEP Ohio) owns 19.93%.
Responsible for Losses (a.k.a Sponsoring Companies, a.k.a Power Participation Benefits and Requirements): Dayton Power and Light Co. (DP&L) 4.9%, Duke Energy Ohio (Duke) 9%, Ohio Power Co. (AEP Ohio) owns 19.93%. Note, Energy Harbor is responsible for 4.85% of losses, which is Toledo Edison and Ohio Edison's ownership share. However, Energy Harbor is not a distribution utility and thus its OVEC losses are not directly being recovered through customers.
https://www.ovec.com/FinancialStatements/AnnualReport-2020-Signed.pdf

[15] Each year the difference in OVEC price and market price was multiplied by OVEC's production and by 34%.

[16] $113.8 million through AEP Ohio's Rider PPA from 2017-2019; $16.4 million through DP&L's Reconciliation Rider from 2017-2019; $28.3 million through Duke's Rider PSR.

Table 2: OVEC Price Compared to Market

Year	OVEC Price ($/MWh)	PJM Wholesale Market Price ($/MWh)	OVEC Price Premium ($/MWh)	OVEC Cost Premium ($)	Ohio IOU EDU Share of Cost Premium ($)
2012	$62.87	$37.92	$24.95	$265,000,000	$90,000,000
2013	$65.18	$38.35	$26.83	$288,000,000	$97,000,000
2014	$56.38	$50.45	$5.93	$69,000,000	$23,000,000
2015	$64.40	$41.06	$23.34	$208,000,000	$70,000,000
2016	$58.66	$40.97	$17.69	$176,000,000	$60,000,000
2017	$54.27	$39.44	$14.83	$177,000,000	$60,000,000
2018	$54.29	$46.33	$7.96	$97,000,000	$33,000,000
2019	$57.04	$40.30	$16.74	$188,000,000	$64,000,000
2020	$67.00	$35.12	$31.88	$288,000,000	$97,000,000
9-yr weighted average	**$59.61**	**$41.35**	**$18.26**		
Total				**$1,756,000,000**	**$594,000,000**

The combined production of the two OVEC plants has decreased 38% over the past decade from 14,600,000 MWh in 2010 to 9,000,000 MWh in 2020.[17]

Figure 3: OVEC Electricity Production

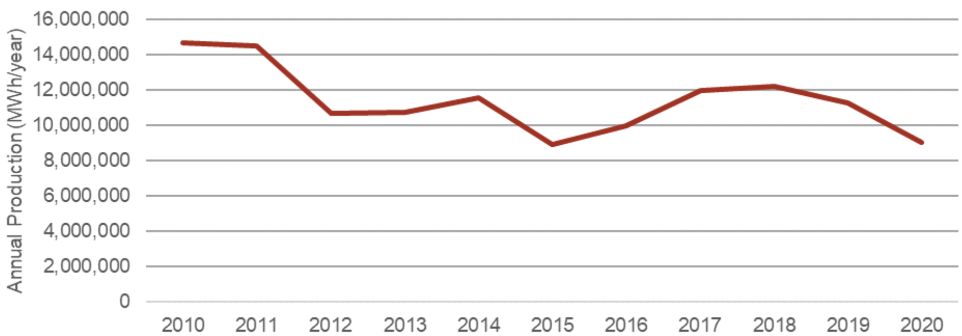


Table 3: OVEC Electricity Production

	Annual Production (MWh/year)		
Year	Clifty Creek	Kyger Creek	OVEC Production
2010	7,898,624	6,740,162	14,638,786
2011	7,948,267	6,514,656	14,462,923
2012	5,945,617	4,688,606	10,634,223
2013	5,610,367	5,129,185	10,739,552
2014	6,062,463	5,493,736	11,556,199
2015	5,225,154	3,681,044	8,906,198
2016	5,030,848	4,934,172	9,965,020
2017	6,037,635	5,899,969	11,937,604
2018	6,369,305	5,801,085	12,170,390
2019	5,722,979	5,515,010	11,237,989
2020	4,375,314	4,651,760	9,027,074

[17] Form EIA-923: https://www.eia.gov/electricity/data/eia923/

Table 4 shows our calculation of OVEC market losses -- and thus the expected subsidy amount -- versus the utilities reported annual OVEC losses, and the amount of subsidy the utilities collected.

Table 4: OVEC Market Losses Compared to Subsidy Amount

Year	OVEC Losses Runnerstone Estimate ($)	OVEC Losses Utilities' Submissions ($)	Subsidies Collected by Ohio Utilities ($)
2017	$36,720,373	$40,323,642	$42,868,858
2018	$32,787,043	$43,052,047	$27,447,386
2019	$63,632,124	$86,385,207	$85,136,721
2020	$97,347,138	$89,571,982	$89,571,982
2017-2020 Total	**$230,486,678**	**$259,332,878**	**$245,024,947**
2021	TBD	TBD	$150,705,129

In some years, the actual subsidy collected is significantly different than our estimate. One possible reason is that utilities under-or over-collect the authorized revenue associated with the subsidy in one year and true up these costs in later years. The utilities must forecast expected losses in advance and then will carry over balances to another year. Another reason for the difference could be due to the utilities incorporating other costs. Unfortunately, the electric utilities determine their own subsidy cost, the calculation of which is confidential, hidden from public view. The utilities collectively requested $150 million in subsidies for 2021.

OVEC's Inter-Company Power Agreement and Outstanding Debt Through 2040 Poses Additional Bailout Risks

HB 6 is silent on OVEC's future after 2030. Still, AEP Ohio, AES Ohio, and Duke Energy Ohio have agreed to contractual commitments to maintain and operate the plants through 2040 via the inter-company power agreement. The agreement has enabled the coal plants to sell energy at a price lower than its costs because the utilities will cover the losses, as highlighted by an audit of the OVEC subsidies performed by London Economic International.[18] If the trend in Ohio policy to cover the costs of OVEC's uncompetitive business continues, and Ohio's electric utilities continue to lose $150 million per year on OVEC in the 2031-2040 timeframe, that is an additional $1.5 billion that Ohio's customers will likely be asked to subsidize. That is $420 million for 2017-2021, $1.4 billion for 2022-2030, and $1.5 billion for 2031-2040.

If Ohio's electric utilities change course and look to cut future losses by closing the OVEC plants, there is still a risk they will seek a subsidy from Ohioans due to outstanding debt.

[18] "[OVEC should] carefully consider when and whether the must-run offer strategy is optimal, as it appears that in some months, it may result in negative energy earnings for the plants."[18] London Economic International's audit of the AEP Ohio PPA Rider., Case No. 18-1759-EL-RDR, Page 53 of PDF.

The PUCO Has Yet To Act on OVEC Audit Findings, Allowing Customers To Be Charged Amidst Clear Signs of Imprudent Costs

In an audit of the AEP Ohio PPA Rider, London Economics International identified several business decisions by OVEC that were questionable and could be deemed imprudent. This intelligence collected from the audit appears to be ineffectual thus far. The PUCO has not reduced payments to AEP Ohio or any other Ohio electric utility for possible imprudent decisions regarding the OVEC operations, has not compelled OVEC to operate differently, and indeed OVEC has not changed important business practices that could lower costs to customers. Amidst clear signs of imprudence by OVEC and its owners, the PUCO has allowed Ohio customers to be charged for their financial losses, nonetheless.

To be clear, OVEC's average price based on its costs to operate is nearly twice that of market rates in 2020. OVEC also creates environmental costs compared to competing generating assets and has no corresponding electric capacity or reliability benefit compared to competing generating assets.

With steep financial losses and no benefit, there is no clear justification for charging Ohio customers to continue to operate the uneconomic OVEC coal plants at a loss; it is not in customers' best interest.