COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION OF KENTUCKY

IN THE MATTER OF:	)	
	)	
ELECTRONIC TARIFF FILING OF KENTUCKY	)	
POWER COMPANY FOR APPROVAL OF A	)	
SPECIAL CONTRACT WITH EBON	)	**CASE NO. 2022-0387**
INTERNATIONAL, LLC	)	

POST-HEARING BRIEF OF THE ATTORNEY GENERAL AND KENTUCKY INDUSTRIAL UTILITY CUSTOMERS

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I. SUMMARY OF RECOMMENDATIONS

The Attorney General of the Commonwealth of Kentucky, through his Office of Rate Intervention ("Attorney General") and Kentucky Industrial Utility Customers, Inc. ("KIUC") (collectively "AG-KIUC") submit this Post-Hearing Brief.

AG-KIUC both strongly want economic development to occur in Eastern Kentucky. We all want additional job growth in an area that desperately needs it. But the Ebon Special Contract will harm the local economy more than it will help. After our corrections to the Company's marginal cost analysis, the results show that the cost to provide service to Ebon will greatly exceed the heavily discounted rates negotiated by Kentucky Power. The Ebon Special Contract will increase rates by at least $84.0 million (nominal) $61.4 million (present value) plus the cost of the confidential Incremental Discounts.[1] That amounts to at least $33 per year for ten years for each of Kentucky Power's 133,000 residential customers.[2] In Year Two alone, the rate

[1] Baron Direct Testimony at 7.
[2] Id.

increase to the average residential customer will be at least $54.[3] It is not in the public interest for 133,000 families to suffer in order to subsidize a foreign investor that will provide 25-50 jobs, most of which are at median wage levels.

Kentucky Power does not have the generating capacity to serve its existing customers, let alone this huge new 2 billion KWh (2 GWh) load at discounted rates, without undue reliance on PJM energy market purchases.[4] Kentucky Power's current native load energy requirement is approximately 5.4 billion KWh (5.4 GWh) per year.[5] The Ebon load will increase that by 37%.[6] This will greatly increase PJM energy market exposure for all customers and subject them to additional fuel adjustment clause ("FAC") rate increases.

The Company's proposal is particularly unreasonable given the Commission's recently opened Adequate Service Investigation in Case No. 2021-00370. In large part because of extraordinarily high purchase power costs incurred to serve the energy needs of the existing customer base, the Commission opened an investigation into whether Kentucky Power is providing adequate service. Buying an additional 2.0 GWh of energy from PJM to serve Ebon and socializing those purchase power costs among all ratepayers will make the current situation exponentially worse.

The Special Contract negotiated by Ebon is one-sided. It is a red flag, not a compliment, that Ebon searched the entire United States for the lowest power rate to support its cryptocurrency mining operations and ended up with Kentucky Power. We have no reason to question the motivation of Kentucky Power's management. But, with all due respect, they made

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[3] Id. Exhibit 4.
[4] KIUC Hearing Exhibit 1. page 3.
[5] KIUC hearing Exhibit 2, page 1.
[6] Baron Direct Testimony at 4.

a mistake. In its desperation to add any new economic development project, Kentucky Power has bet the future of the Company and its ratepayers on this single Contract. The Contract is not prudent or reasonable and should not be approved.

Importantly, the Commission should reiterate to Ebon and Kentucky Power that this economic development Special Contract is a "*rate*" under Kentucky law and is subject to modification in the future regardless of what the Contract provides. "*Furthermore, Kentucky law generally holds utility contracts are subject to rate changes ordered by the PSC, no matter what the contracts provide. Board of Education of Jefferson County v. William Dohrman, Inc., Ky.App., 620 S.W.2d 328 (1981). Also, a prior approval of a contract and rate does not estop the PSC from subsequently changing the rate. Fern Lake Co. v. Public Service Comm'n, supra."* National-Southwire v. Big Rivers Elec., 785 S.W. 2d 503, 517 (Ky. Ct. App. 1990). The Kentucky Court of Appeals recognizes that the Commission has an ongoing legal obligation to ensure that the rates in a Special Contract remain reasonable. All investment decisions should be made with that understanding.

II. BACKGROUND

On October 28, 2022, the Kentucky Power Company ("Kentucky Power" or "Company") filed for Commission approval of a ten-year economic development Special Contract with Ebon International LLC, a Delaware limited liability company ("Ebon" or "Customer"). The Contract was not filed pursuant to the Company's Tariff E.D.R (Economic Development Rider). Instead, the Contract is governed by KRS 278.030(1), 278.030(2) and 278.170, as well as the provisions of the Commission's Order in Administrative Case 327.[7]

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[7] Administrative Case No. 327, September 20, 1990 Order.

Ebon proposes to construct a blockchain data computing complex in Lawrence County, Kentucky. The facility will be located on a leased 55-acre site at the Company's Big Sandy power plant.[8] The Special Contract states that Ebon plans to invest a minimum of $50 million in the facility and plans to create at least 50-100 new permanent full-time jobs.[9] In Direct Testimony, Kentucky Power increased the expected capital investment to $250 million,[10] $165 million of which will be for computing equipment supplied by Ebang International Holdings Inc., Ebon's parent company.[11] The IMPLAN economic impact analysis supplied by the Company in Rebuttal Testimony increased the assumed level of job creation during Phase 1 and Phase 2 to 125.[12]

On July 24, 2023, the Company filed an Addendum adding two new provisions to the Contract. First, Section 7.10 was added which provides that Ebon will create and maintain at least 25 new full-time jobs during Phase 1 (80 MW) and at least 50 new full-time jobs during Phase 2 (250 MW). Second, Section 7.11 added a claw-back provision which provides that Ebon may discontinue service under the Contract only by reimbursing Kentucky Power for any and all Capacity Discounts and Incremental Discounts.

After Phase 1, Kentucky Power will provide service to Ebon at a transmission voltage to serve a load of 250 MW at an expected 90% load factor. This produces an annual energy requirement of almost 2 billion kWh (2 GWh).[13]

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[8] West Direct Testimony at 6.
[9] West Direct Testimony Exhibit 1, Ebon Special Contract page 2.
[10] West Direct Testimony at 6.
[11] KIUC Hearing Exhibit 3, page 6.
[12] Clark Rebuttal Testimony at 8.
[13] Baron Direct Testimony at 9. 250,000 Kw x 8,760 x 0.9 = 1,971,000,000 KWh.

The 250 MW Ebon load consists of 25 MW of firm load and 225 MW of interruptible load, pursuant to the provisions of the Company's standard interruptible tariff, Rider D.R.S.[14] Rider D.R.S. provides a monthly credit of $5.50/kW for each kW of interruptible demand.[15] Based on an expected 225 MW of interruptible load, Ebon will receive an annual interruptible credit of $14.85 million, the cost of which will be recovered from the Company's other customers in real time through Rider PPA.[16]

There is no penalty if Ebon curtails only 90% of its 225 MW interruptible load.[17] This means that Kentucky Power might be required to provide generation and transmission for an additional 22.5 MW (225 MW x 0.1), plus the firm demand of 25 MW. The Company's economic analysis did not include the possibility of providing for an additional 22.5 MW at no cost.[18]

The Special Contract provides for Ebon to receive demand charge discounts for the first five contract years (50%, 40%, 30%, 20% and 10%) based on the provisions of the Company's Economic Development Rate ("EDR"). The Special Contract also includes confidential Incremental Discounts tied to the number of jobs created.[19]

The Special Contract includes a confidential negotiated floor price to ensure a minimum payment by Ebon.[20]

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[14] Id.

[15] Id.

[16] Id. 225,000 Kw x $5.50/Kw x 12 = $14,850,000.

[17] West Direct testimony, Exhibit 1 Ebon Contract Section 4.3; Baron Direct Testimony at 30.

[18] Baron Direct Testimony at 30.

[19] Baron Direct Testimony at 9.

[20] West Direct Testimony at 11.

Ebon will be billed at the Company's standard IGS Tariff energy rate, plus all riders including the Fuel Adjustment Clause ("FAC").[21]

Ebon will construct a distribution substation that will permit interconnection of its load to the Company's transmission system. Ebon will pay for the substation and all required interconnection costs to tie the substation into the transmission system.[22]

Whether Kentucky Power will make or lose money on the Ebon Contract is one of the most important questions for the Commission. Kentucky Power's evidence on the marginal cost versus marginal revenue question has evolved considerably.

Exhibit 2 to Kentucky Power's Application is a single page marginal cost analysis for a single year of the ten-year Special Contract. That marginal cost analysis assumed that generation capacity would be provided to Ebon for its firm demand (25 MW) at zero cost.[23] Exhibit 2 also assumed Kentucky Power would incur no net cost from purchasing $76.6 million of energy from the PJM market to serve the 2 GWh Ebon load.[24] The no net PJM energy cost conclusion was reached by assuming that Ebon will be directly assigned the PJM energy cost incurred to meet its load. Exhibit 2 concluded that Kentucky Power will earn a single year positive margin of $18.8 million. The Company subsequently filed an ERRATA to BKW-Exhibit 2 that calculated a ten-year net benefit of $96 million (revenues exceed costs) on a nominal basis.

In response to Staff discovery 1-9, the Company re-ran its marginal cost study for ten years assuming a generation capacity cost for the 25 MW firm load (without reserves). This new marginal cost analysis maintained the assumption that there would be no net energy cost to serve

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[21] Baron Direct Testimony at 9.
[22] Id. at 9-10.
[23] West Direct Testimony, Exhibit 2.
[24] Id.

the Ebon load from PJM energy market purchases. The analysis assumed that the approximately 2.0 GWh of energy purchases from PJM at a cost of $43.05/MWh ($86.1 million annually[25]) to serve Ebon would be fully offset by energy and FAC rates assumed to be paid by Ebon.[26] The response to Staff 1-9, concluded that with 25 MW of generation costs over the full Contract term Kentucky Power would earn a positive margin of $76.8 million (nominal).[27]

Response to Staff 1-9 contained two admitted errors which were corrected in the Rebuttal Testimony of Company Witness Kahn, Exhibit 1. Those two errors were the failure to include the proper revenue in Year five and the failure to include the Incremental Discount. Kahn Rebuttal Exhibit 1 showed that over the first three years of the Special Contract Kentucky Power would lose $7.7 million, but that over the full ten-year term Kentucky Power would receive a net benefit of $62.6 million (nominal).[28]

III. ARGUMENT

A. The Special Contract Violates KRS 278.030(1), KRS 278.030(2) and KRS 278.170, And Does Not Comply With Administrative Order 327 Because Marginal Costs Will Exceed Marginal Revenue By At Least $84.0 Million (Nominal) $61.4 Million (Present Value) Plus The Cost of The Confidential Incremental Discounts.

Kentucky Power proposes to serve Ebon under a heavily discounted economic development Special Contract. In the first year of the contract, Ebon would receive a Rate IGS demand charge discount of over 80%.[29] In year two, the demand charge discount is more than 70%, and declines each year thereafter.[30] In determining if a heavily discounted Special Contract

[25] 2,000,000 MWh x $43.05/MWh = $86.1 million).
[26] Baron Direct Testimony at 19, 21; Kahn Rebuttal Testimony, Exhibit R1 Confidential.
[27] Kahn Rebuttal Testimony at 2.
[28] Kahn Rebuttal Testimony, Exhibit 1.
[29] KIUC Hearing Exhibit 4, Page 3 Confidential.
[30] Id.

is fair, just and reasonable and non-discriminatory, the central question is whether the incremental revenues are expected to exceed incremental costs.[31] This basic economic principle is true even if Administrative Order 327 did not exist. But Administrative Order 327 states it well: Economic Development Rates ("EDRs") "*should be implemented by special contracts negotiated between utilities and their large commercial and industrial customers…Upon submission of each EDR contract, a utility should demonstrate that the discounted rate exceeds the marginal cost associated with serving that customer. Marginal cost includes both the marginal cost of capacity as well as the marginal cost of energy…During rate proceedings, utilities with active EDR contracts should demonstrate through detailed cost-of-service analysis that nonparticipating ratepayers are not adversely affected by these EDR customers.*"

Energy is of particular importance in this marginal cost analysis. The Ebon Special Contract will increase Kentucky Power's energy requirements by 2 billion KWh (2 GWh) per year (about a 37% increase in native load energy sales). As recognized in the Commission's Adequate Service Investigation, the Company does not have sufficient generating capacity to serve the energy needs of its existing customers[32], let alone 2 GWh more. Therefore, all of this additional energy will have to be purchased from PJM. Because PJM energy purchases are socialized among all ratepayers, the Ebon Contract will greatly increase FAC costs and risks for all consumers.

AG-KIUC Witness Baron identified the following five errors or flaws in the Company's marginal cost analysis presented in response to Staff 1-9.

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[31] The economic analysis compares incremental costs to Ebon revenue under the contract. If the net amount (revenues minus costs) is positive, there is a net economic benefit. If the net amount is negative (costs exceed revenues), this means that there is a net economic harm from the contract.

[32] Case No. 2021-00370, June 23, 2023 Order at 7, "*It is clear to the Commission from the records of Case Nos. 2022-00283 and 2023-00145 that Kentucky Power does not have sufficient capacity available to serve customers' energy needs…*"

1. The Failure To Reflect The Correct Ebon Revenue In Year 5 Is An Admitted Error.

The Company originally assumed that Ebon revenues in Year 5 would be identical to the revenues in Years 6 through 10. However, based on the detailed calculation of annual revenues in the Company's Excel workbook model, the correct revenue for Year 5 is $5.3 million lower.[33]

In her Rebuttal Testimony, Company Witness Kahn agreed that this was an error and corrected it.[34] This reduced the forecasted Ebon revenue by $5.3 million nominal and $4.0 on a present value basis.

2. The Failure To Include The Incremental Discount Is An Admitted Error.

The Special Contract incorporates the Capacity Discounts (50%, 40%, 30%, 20% and 10%) consistent with Tariff E.D.R as well as confidential Incremental Discounts. The Company's original economic analysis failed to reflect the Incremental Discounts. The effect of failing to include the Incremental Discounts is an overstatement of revenues during each of the first five years. This results in an overstatement of the net economic benefit.[35]

In her Rebuttal Testimony, Company Witness Kahn agreed to this error and corrected it.[36] This reduced forecasted Ebon revenue by an additional $[redacted] million nominal and $[redacted] on a present value basis.

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[33] Baron Direct testimony at 15.

[34] Kahn Rebuttal Testimony at 2.

[35] Baron Direct Testimony at 15-16.

[36] Kahn Rebuttal Testimony at 2.

3. The Assumption That Transmission Costs In The AEP East Zone Will Increase By Only 5% Per Year Is Unreasonable Because The Rate Of Increase For 2017-2023 Averaged 12.1%.

In the calculation of the incremental transmission costs that will be incurred to serve the Ebon load there are two variables. First, the amount of MW. The Company assumed 25 MW of additional transmission for the firm load would be required based on the premise that 100% of the interruptible capacity would be curtailed when called upon. The 100% curtailment assumption is questionable because Ebon can curtail only 90% without penalty, which adds 22.5 MW of additional transmission cost. This issue is addressed later. The second variable is the cost of transmission. The Company assumed that the AEP East PJM Network Integrated Transmission Costs ("NITS") will increase by 5% per year for ten years.[37] There is no support for the 5% transmission cost escalation assumption in the Direct Testimony of Company Witness West. Nor is there any support for the 5% transmission cost escalation assumption in Exhibit 2 to the Application. Exhibit 2 is the single page marginal cost analysis for a single year of the ten-year Contract. As shown in Table 1 below, the AEP East transmission revenue requirement increased by 12.1% per year for the period 2017 to 2023.[38]

[37] Baron Direct Testimony at 23.

[38] Id. at 24.

Table 1
AEP Zone NITS Revenue Requirements (2017 - 2023)*

	OpCo PTRR	Transco PTRR	Schedule 12 Expense (RTEP)	Total Zonal PTRR	Percent Change
2017 PTRR	827,202,202	440,613,008	184,908,438	1,452,723,648	
2018 PTRR	882,030,590	594,166,885	200,688,696	1,676,886,170	15.4%
2019 PTRR	809,314,974	724,665,303	179,720,803	1,713,701,080	2.2%
2020 PTRR	856,434,690	918,994,737	175,155,813	1,950,585,241	13.8%
2021 PTRR	964,119,865	1,132,336,245	189,895,185	2,286,351,295	17.2%
2022 PTRR	1,060,007,136	1,324,725,753	191,147,425	2,575,880,314	12.7%
2023 PTRR	1,190,113,047	1,480,285,114	193,924,473	2,864,322,633	11.2%
			Average Annual Growth Rate		12.1%

* Source: Response to AG-KIUC 2-3.

Based on this history, Mr. Baron revised the Company's assumed 5% annual escalation to a conservative 10%. Assuming only 25 MW of firm load, this adjustment added $50.5 million in costs to the marginal cost study on a nominal basis, and $32.3 million present value.[39] If it is assumed that Ebon would add another 22.5 MW of firm load (which it can contractually do without penalty), then this adjustment would almost double.

As the Chairman correctly pointed out at the hearing, AEP's Investor Presentations forecast continued transmission rate base growth as a key to continued earnings growth.[40] The 5% assumption used here is at odds with AEP's actual future transmission investment plans. In its Rebuttal Testimony, the Company did not attempt to support its 5% transmission growth assumption with actual data.

[39] Baron Direct Testimony at 25, Table 4.
[40] 07/20/2023, 14:59:40 – 15:01:13

4. The Assumption That Kentucky Power Would Incur No Net PJM Energy Purchase Costs To Supply The Two Billion KWh Ebon Load Is Without Merit.

Kentucky Power's native load energy requirement over the last five years was approximately 5.4 billion kWh, or 5.4 GWh.[41] The Company only has the Mitchell and Big Sandy generation to serve its native load.

Over the last five years generation from Mitchell averaged 2.2 GWh and generation from Big Sandy averaged 0.7 GWh.[42] This leaves a shortfall of 2.5 GWh that has to be purchased from PJM. The addition of Ebon substantially increases this shortfall.

Ebon will add 2.0 GWh that has to be purchased from PJM. Ebon will increase the market rate exposure for all customers. Stated another way, Ebon will benefit from low-cost energy produced by Mitchell and Big Sandy that only existing ratepayers are benefiting from currently. Thus, a larger share of the energy used to serve existing customers will come from higher-priced market purchases. This is shown on the following Chart.

Existing Native Load	5.4 GWh	Mitchell Generation	2.2 GWh
Ebon	2.0 GWh	Big Sandy Generation	0.7 GWh
New Load With Ebon	7.4 GWh	Total Generation	2.9 GWh

Existing Native Load 5.4 GWh
2.9 GWh Cost-of-Service Generation + 2.5 GWh PJM Market Energy Purchases
46% PJM Market Purchases

New Load With Ebon 7.4 GWh
2.9 GWh Cost-of-Service Generation + 4.5 GWh PJM Market Energy Purchases
59% PJM Market Purchases[43]

[41] KIUC Hearing Exhibit 2.
[42] Id.
[43] KIUC Hearing Ex. 2. All information is 2018-2022 five-year average.

Kentucky Power incorrectly assumed in its marginal cost analysis that all PJM energy costs caused by Ebon will be paid by Ebon. At the hearing, Company Witness Kahn agreed that in reality Ebon energy costs will not equal Ebon energy revenue.[44] The PJM energy cost to serve Ebon will be recovered through base rates and the FAC and will be socialized among all customers. Ebon will only pay a proportional share of the increased PJM market purchases, not 100%.[45]

As the Commission is aware, volatile PJM energy purchases recovered in the FAC can cause severe customer hardship. Ebon exponentially increases this risk.

The energy portion of this Contract was not modeled correctly. In its marginal cost analysis, the Company simply assumed away the added risk and cost to native load from 2.0 GWh of additional PJM energy purchases. In Exhibit 2 to the Application, the Company assumed that $76.6 million of PJM energy purchases will be directly assigned to Ebon.[46] In Response to Staff 1-9, it was assumed that the PJM market purchase price of $43.05 MWh during each hour of the year over ten years to serve Ebon's 2.0 GWh load ($86.1 million annually) will be exactly equal to the energy and FAC rates charged to Ebon.[47] But there is no contractual basis for either assumption. Under the Contract, Ebon will pay the standard IGS Tariff energy charge the same as all other IGS customers, and it will pay the standard FAC rate the same as all ratepayers.[48]

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[44] 07/20/2023, 16:45:26–16:52:00.

[45] Id.

[46] This $76.6 million amount for energy was based on an assumed market price of $38.90/MWh in Mr. West's original testimony. In the Company's Errata Exhibit 2, this was replaced by a market price of $43.05/MWh for each hour of the year for ten years, which increased the annual energy purchase cost to serve Ebon to approximately $86.1 million.

[47] Baron Direct Testimony at 19, 21; Kahn Rebuttal Testimony, Exhibit R1 Confidential. 2,000,000 MWh x $43.05/MWh = $86.1 million.

[48] Baron Direct Testimony at 21.

Mr. Baron adjusted for this energy modeling error. This error has the largest dollar impact of any adjustment. Utilizing the Company's assumption that the market price of energy will be $43.05/MWh each hour for ten years, the cost of this error is $99.4 million nominal and $72.0 million on a present value basis.[49]

Mr. Baron also used an updated projection of market prices.[50] The change in market price assumptions has a very small impact on the analysis. This is true whether market prices are assumed to be higher or lower than the $43.05/MWh used by the Company. This occurs because the real harm results from spreading the benefits of below-market energy from Mitchell and Big Sandy to the Ebon load.[51] The impact of using this updated market energy price information is $5.5 million nominal and $4.2 million on a present value basis.[52]

If Kentucky Power owned no generation and served its native load entirely from market purchases, then adding more market purchases to serve Ebon would have little effect. However, ratepayer harm is caused because Ebon will take a significant portion of the below-market energy produced by Mitchell and Big Sandy that is currently benefiting existing ratepayers, but will not pay the full demand charge to pay for that generation. Ebon is getting the milk but not paying for the cow.

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[49] Baron Direct Testimony at 25 Table 4. Table 4 shows that the effect of the PJM energy cost adjustment reduces the nominal net benefit from $62.6 million to a net cost of $42.3 million, a swing of $104. 9 million. The $104.9 million swing is comprised of $99.4 million plus $5.5 million. The $5.5 million results from updating the Company's market price forecast of $43.05/MWh. The present value numbers on Table 4 to the Baron Direct Testimony are derived the same way.

[50] Baron Direct Testimony at 18-19.

[51] Baron Direct Testimony at 21-22, "*Another way of looking at this is that the net margins that KPCo receives from its sales of Mitchell and Big Sandy into the PJM energy market will now be spread over two billion additional kWh (the Ebon load). Ebon will benefit from its share of the generation revenue margins produced by Mitchell and Big Sandy.*"

[52] See explanation in footnote 48.

Kentucky Power's Application in this case is completely at odds with the Commission's recently opened Investigation in Case No. 2021-00370. That investigation was "*necessary in large part due to Kentucky Power's request to defer approximately $11.5 million*" of very expensive PJM energy purchases made during Winter Storm Elliott in December 2022.[53] Those purchases were necessary because "*Kentucky Power does not have sufficient capacity available to serve customers' energy needs.*"[54] The Commission's finding that Kentucky Power does not have sufficiency capacity to serve the energy needs of existing customers was true even before the addition of 2.0 GWh of Ebon load.

This Application should be denied. However, if the Contract is approved, then this increased exposure to market energy prices should be addressed. Our recommendation is that 1,752 buy-through hours (20% of the year) should be added as a condition to approval. At the hearing, Chairman Chandler made a detailed inquiry into the buy-through provisions of other utilities and how that might apply here.[55] During high market energy price periods, Kentucky Power should give Ebon the option to physically curtail or buy-through the interruption at market prices. A buy-through provision will shield existing customers from the market price risk caused by purchasing 2.0 GWh to serve the new load. A buy-through provision, which is common in Kentucky,[56] will result in the direct assignment of energy purchases to Ebon, just as the Company's studies assumed.

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[53] Case No. 2021-00370, June 23 ,2023 order at 3.

[54] Id. at 7.

[55] 7/20/2023, 14:41:19–14:43:20.

[56] Kentucky Utilities Company Curtailable Service Riders CSR-1 and CSR-2; Louisville Gas and Electric Curtailable Service Riders CSR-1 and CSR-2.

5. The Failure To Show The Marginal Cost Results On A Present Value Basis Is Improper.

A present value economic analysis is a fundamental requirement in a life of contract analysis to measure the net benefits or net costs. A dollar of benefits or costs that occurs in year ten is not the same as a dollar of benefit or cost in year one. The Company's analysis is presented on a nominal basis without recognizing the time value of money.[57] A nominal analysis is particularly inappropriate in a period of high inflation.

Mr. Baron presented the results of his marginal cost study on a present value basis using a discount rate of 5.9%, which is the after-tax weighted average cost of capital equivalent to the 6.29% used by the Company in its analysis.[58]

Table 2, below, shows the results of each of the AG-KIUC adjustments on both a nominal and present value basis.[59]

Table 2
Summary of Corrected Ebon 10-Year Economic Analysis Results

	Benefits/(Costs) $Millions Nominal	Benefits/(Costs) $Millions NPV
Company ERRATA BKW-Exhibit 2	**96.0**	**64.6**
<u>Incremental Impact of Corrections:</u>		
Correction to Include 25 MW of Generation Capacity Costs (Staff 1-9)	-19.2	-13.5
Correction to Fix Year 5 Revenue	-5.3	-4.0
Correction to Fix Incorrect Incremental EDR Discounts	[redacted]	[redacted]
Correction to Include 2.0 GWH of Market Energy Purchases for Ebon	-99.4	-72.0
Revision to Reflect PJM Market Energy Price Update	-5.6	-4.2
Revision to Reflect Correct Transmission Escalation Costs	<u>-50.5</u>	<u>-32.3</u>
Corrected Net Benefits/(Costs) Without Incremental Discounts	**-84.0**	**-61.4**

[57] Baron Direct Testimony at 16.

[58] Id. at 17.

[59] The original version of Table 2 to this Brief was presented as Table 1 and Table 4 to the Baron Direct Testimony.

The end result is that the cost to serve Ebon will exceed the revenue provided under this heavily discounted Special Contract by $84.0 million nominal and $61.4 million on a present value basis plus the cost of the confidential Incremental Discounts.

B. If Ebon Is Not Curtailed During The 18 Critical Peak Pricing Hours There Will Be Significantly More Generation And Transmission Costs.

Customers will face significant additional risks. These risks are associated with the Company's assumptions that it will be able to interrupt Ebon down to 25 MW: 1) during each of the PJM 5 CP hours used to determine Kentucky Power's generation capacity obligation as an FRR entity; 2) during the AEP East Zonal Network Service Peak Load hour (NSPL); and 3) during 5 of the 12 Kentucky Power monthly coincident peak hours (12 CP).[60] The Company's analysis assumes success in interrupting Ebon during 11 of the 18 critical hours each year, even though there are only 20 opportunities under the Contract for the Company to call for an interruption.[61]

The PJM 5 CP hours can occur any time across all of PJM during the four summer months. If Kentucky Power fails to interrupt Ebon during any of the PJM 5 CP hours, then the Company's PJM generation capacity obligation will increase. One missed hour results in a 20% generation capacity obligation increase (plus reserves) the following year. During Years 2-10, one missed hour will add 45 MW plus reserves to the Company's FRR capacity obligation.[62] Using the Company's incremental generation capacity cost assumptions, missing one PLC hour will increase

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[60] Baron Direct Testimony at 31-34.

[61] Baron Direct testimony at 5-6.

[62] KIUC Hearing Exhibit 5.

the ten-year Ebon incremental generation capacity costs by $35 million nominal and $24 million on a present value basis.[63]

The NSPL hour in the AEP East Zone is used to assign transmission costs among the AEP East Companies and to non-affiliate transmission customers in the AEP Zone. The NSPL hour can occur at any time during the year, winter or summer. The Company assumed that it would curtail Ebon each year during the NSPL hour.

Kentucky Power's 12 CP factor is used to allocate transmission costs among the AEP East Operating Companies. If Kentucky Power fails to interrupt Ebon during its monthly peak in only 4 of these 12 months, instead of the 5 months as the Company assumes, then the incremental transmission costs will increase by $33 million nominal and $23 million (present value).[64]

Hitting all of the PJM 5 CP hours, the single NSPL hour and 5 of the 12 CP hours with only 20 chances is overly optimistic and shifts too much risk to native load. None of this added risk was reflected in AG-KIUC Table 2 showing the marginal cost study results. Table 3 includes the net harm to customers from these two additional generation and transmission impacts.

[63] Baron Direct testimony at 29.
[64] Baron Direct Testimony at 34.

Table 3 Summary of Corrected Ebon 10-Year Economic Analysis Results		
	Benefits/(Costs) $Millions Nominal	Benefits/(Costs) $Millions NPV
Company ERRATA BKW-Exhibit 2	**96.0**	**64.6**
Incremental Impact of Corrections:		
Correction to Include 25 MW of Generation Capacity Costs (Staff 1-9)	-19.2	-13.5
Correction to Fix Year 5 Revenue	-5.3	-4.0
Correction to Fix Incorrect Incremental EDR Discounts	[redacted]	
Correction to Include 2.0 GWH of Market Energy Purchases for Ebon	-99.4	-72.0
Revision to Reflect PJM Market Energy Price Update	-5.6	-4.2
Revision to Reflect Correct Transmission Escalation Costs	-50.5	-32.3
Failure to Interrupt 1 of the PJM 5 CP hours	-35.0	-24.0
Interrupt only 4 of the 12 CP hours (instead of 5)	-33.0	-23.0
Corrected Net Benefits/(Costs) Without Incremental Discounts	**-152.0**	**-108.4**

If the Contract is approved, then this risk can be mitigated by giving Kentucky Power more interruptions to hit the 18 critical hours. The current 20 interruptions for three hours each (total of 60 hours) should be tripled to 60 interruptions for three hours each (total of 180 hours). The goal should be to interrupt during all of the 18 critical hours.

C. Ebon's Firm Demand Could Increase from 25 MW to 47.5 MW Without Penalty And This Was Not Recognized In The Company's Marginal Cost Analysis.

The Company's analysis assumed that Ebon would fully curtail the entirety of its contracted interruptible load during a Rider D.R.S. Discretionary Interruption event. In years 2 through 10 of the Contract, Kentucky Power assumed that 225 MW of Ebon's 250 MW load would be interrupted.

However, pursuant to Section 4.3 of the Contract, Ebon does not incur any penalty if it only reduces its interruptible load to 90% of its contractual level. This means that Ebon could operate at 47.5 MW (25 MW firm load and 10% of its 225 MW interruptible load) and still meet is contractual obligations without any penalty.[65] If Ebon only reduces its interruptible load by 90% of the agreed upon level, it will add an additional firm capacity obligation in years 2 through 10 of 22.5 MW.[66] This will cause additional generation and transmission costs.

Because Ebon's crypto mining operations will be more profitable if it only curtails 90% of its interruptible load, which it can do without penalty, this is a possible if not likely outcome.

By effectively managing its contract, Ebon will receive at no cost the benefits of 10% more firm load. That cost will be borne by other customers. None of this added cost and risk is reflected in AG-KIUC Table 2 or Table 3.

If the Contract is approved, then the Commission should condition its approval on the requirement that all additional generation or transmission costs will be assigned to Ebon whenever it fails to curtail down to its firm service level of 25 Mw.

D. The Claw-Back Addendum With An LLC Shell Company Is Not Enforceable.

The Special Contract does not contain a provision to claw-back economic development discounts in the event of early termination. This is in contrast to the E.D.R Tariff which contains a 100% claw-back provision. After the hearing, a Claw-Back Addendum was filed. The Claw-Back Addendum allows Ebon to discontinue service under the Contract only by reimbursing Kentucky Power for all Capacity Discounts and Incremental Discounts. The Capacity Discount alone could exceed $62 million.[67] This Claw-Back Addendum is illusory.

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[65] Section 4.3 of the contract states as follows: "*The Customer will be determined to have failed a Discretionary Interruption event and to be liable for the DRS Event Failure Charge if the Customer has not achieved at least ninety percent (90%) of their agreed upon Interruptible Capacity reservation during the duration of a Discretionary Interruption.*"

[66] Baron Direct Testimony at 30.

[67] KIUC Hearing Exhibit 4.

Kentucky Power's contractual counterparty is Ebon International LLC, a Delaware limited liability company. LLCs are commonly known as "*shell companies*" because in litigation they are judgment proof and can easily be bankrupted. No financial institution would ever lend $62 million to an LLC without a parental guarantee from a strong corporate owner, an irrevocable letter of credit or some other form of security. The rate discount Claw-Back Addendum with an LLC is worthless and cynical. With the Claw-Back Addendum, Kentucky Power now has a cause of action against the LLC in the event of a breach, but it could never recover. Suing a shell company for more than $62 million would be futile.

To give the Claw-Back Addendum any worth, the LLC should receive credit support. Ideally, the Commission should require an irrevocable letter of credit. At a minimum, the Commission should require a parent guarantee from Ebang International Holdings Inc.

If the Claw-Back Addendum is invoked in the future and an enforceable judgment is not satisfied, then Kentucky Power's current shareholders should be responsible--not the ratepayers.

E. The IMPLAN Economic Development Analysis Is Unreliable And Overstated.

The Company sponsored the Testimony of Witness Clark in Rebuttal to quantify the economic impact of the Ebon facility to the local economy. Witness Clark presented the results of an IMPLAN model run. IMPLAN is an input-output model that shows the indirect and induced effects on the local economy for different generic industries after direct assumptions are inputted. When an analyst inputs direct assumptions (such as expected jobs and capital expenditures) for a generic industry, the IMPLAN model then estimates the indirect and induced effects on the local economy.

The results of Witness Clark's IMPLAN presentation are unreliable and should not be used to approve a subsidized Special Contract of this magnitude. There are at least three errors in the IMPLAN presentation: 1) it did not consider the negative impact on the local economy of raising electric rates to subsidize Ebon; 2) the 125 assumed jobs greatly exceed the 25-50 jobs guaranteed by the July 24, 2023 Addendum; and 3) the assumed capital expenditures did not account for the fact that none of the mining computers or equipment containers will be manufactured locally.

The heavily discounted Special Contract will increase rates by at least $84.0 million (nominal) $61.4 million (present value) plus the cost of the Confidential Incremental Discounts. In Year Two alone, the rate increase will be at least $54 for each of the 133,000 residential ratepayers. Over ten years, the average residential rate increase is $33 per year.[68] This is money taken out of the pockets of consumers and will negatively affect the economy. The amount of job losses and reduced capital spending resulting from the Ebon rate increase was not considered in the IMPLAN model. This negative effect should be netted against any positive effect.

Witness Clark inputted 125 jobs in Phase 1. This is greatly in excess of the 25 jobs in Phase 1 and 50 jobs in Phase 2 guaranteed by the Addendum. The IMPLAN model assumed that all jobs would be in Kentucky, and none in West Virginia. That is questionable as Ashland and Huntington are both only 30 miles from the Big Sandy plant site in Louisa. The IMPLAN model produced an average employee compensation of $64,060, whereas the average salary estimated by Ebon was $46,131.[69] 79% of Ebon's promised jobs will pay $18 per hour or less.[70] In sum,

[68] Baron Direct Testimony at 7.
[69] KIUC Hearing Exhibit 6 at page 4.
[70] Id.

the input into IMPLAN and the output from IMPLAN produced more jobs at a much higher wage level than the evidence supports.

Ebon estimates that it will spend $250 million on the facility. $165 million of this is for mining computers supplied by Ebang International Holdings Inc., none of which will be produced locally.[71] The majority of the rest of the spending appears to be on 250 steel containers to house the computers. There is no evidence that any of the 250 containers will be produced locally. Witness Clark takes none of this into account. She simply inputted capital expenditures of $250 million for the generic data processing industry (not cryptocurrency mining) and presented the output results. The model output that $81,093,173 million[72] of the computers and equipment containers will be manufactured in Kentucky Power's service territory cannot be correct.

All else being equal, this project will have no greater impact on the local economy than a mid-sized warehouse that employs 25-50 people. But all else is not equal. The Ebon Special Contract will cause electric rates to increase by at least $84.0 million (nominal) $61.4 million (present value) plus the cost of the confidential Incremental Discounts. This Contract is a net economic development loser.

Even if the Special Contract was projected to have a net economic benefit, that benefit would have to be weighed against the risk to ratepayers. Substantial and guaranteed economic benefits would be required to justify the risk to other ratepayers for a capacity and energy short utility to serve a load of this magnitude.

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[71] KIUC Hearing Exhibit 6 at page 7.
[72] Clark Rebuttal Testimony at 9, Table 3.

The IMPLAN input-output economic model can be a useful initial screening tool for policy makers, but only when used properly. That is not the case here. The subsidized Ebon Contract will hurt the local economy more than it will help.

F. Because Kentucky Power Does Not Have Sufficient Capacity To Serve The Energy Needs Of Existing Customers, This Special Contract Does Not Comply With The Excess Capacity Requirement Of Administrative Order 327 And Is Directly Contrary To The Commission's Findings In Its Adequate Service Investigation.

The Ebon Special Contract violates the Order in Administrative Case 327 because Kentucky Power is not in a position of excess capacity. That Order provides: "*EDRs should be implemented by special contracts negotiated between the utilities and their large commercial and industrial customers.... EDRs should only be offered during periods of excess capacity*."

The Company was candid regarding its inability to meet this fundamental provision of Administrative Case 327. Witness West readily admitted that after the expiration of the Rockport Unit Power Agreement in December 2022, Kentucky Power will not have sufficient capacity to serve its existing customers and "*Kentucky Power projects that it will be required to acquire 152.4 MW of capacity for the 2022/2023 PJM Planning Year and 70.2 MW for the 2023/2024 PJM Planning Year.*"[73]

The generation shortfall gets worse when Mitchell capacity and energy is no longer available after 2028. The Table below is taken from Kentucky Power's March 20, 2023 IRP. It shows a capacity shortfall of 115 MW in 2026, growing to 713 MW after the Mitchell entitlement ends.[74] Under these circumstances, providing discounted rates to a 250 MW load is not prudent.

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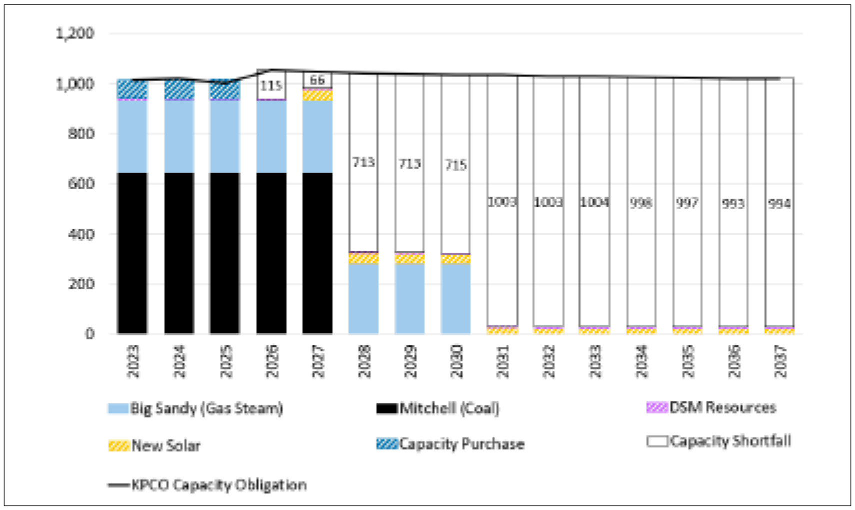
[73] West Direct Testimony at 7.

[74] KIUC Hearing Exhibit 1, page 3.

Even though only 25 MW is designated as firm, that amount will increase to 47.5 MW if Ebon exercises its Contractual right to interrupt only 90% of the 225 MW without penalty.



The excess capacity prerequisite of Administrative Order 327 was installed for a reason, and that reason is on full display here. Ebon will only make a bad situation worse by adding 2.0 GWh of PJM energy purchases to an already grossly undersupplied system.

Kentucky Power's proposal to offer heavily discounted generation in violation of Administrative Order 327 is particularly egregious given the Commission's recently opened Adequate Service Investigation in Case No. 2021-00370. This Investigation was caused in large part by extraordinarily high purchase power costs during Winter Storm Elliott due to a lack of sufficient generation to supply the energy needs of the existing customer base. The Commission recognized that since the termination of the Rockport Unit Power Agreement on December 8, 2022, Kentucky Power had an "*inadequate amount of available generation to produce energy to meet its peak native demands.*"[75] The Commission further recognized the importance of utility owned generation as a "*physical hedge to market energy prices, and without adequate*

[75] Case No. 2021-00370, June 23, 2023 Order at 5.

generation capacity, Kentucky Power and its customers are subject to higher prices from market purchases for at least the amount the utility is short of its native demand."[76]

The following language from the Commission's Show Cause Order finding that insufficient capacity currently exists to serve native load energy needs even before the 2.0 GWh Ebon load is most relevant here. "*It is clear to the Commission from the records of Case Nos. 2022-00283 and 2023-00145 that Kentucky Power does not have sufficient capacity available to serve customers' energy needs, has been aware of that shortcoming for a significant amount of time, understands the detriment that insufficiency can cause customers, has described the speed and ease by which it could fix that shortcoming, and yet has chosen to not address its inadequacy of service."*[77]

This heavily discounted rates provided by the Contract impair the ability of the Company to provide adequate service as required by KRS 278.030(2). This Contract moves Kentucky Power in the wrong direction by doubling down on PJM energy market purchases. It makes the system weaker, not stronger. The Commonwealth of Kentucky is not deregulated and excessive reliance on PJM for energy and capacity is no substitute for a prudently operated utility system.

G. Additional Conditions Should Be Imposed If the Special Contract Is Approved.

The Contract violates KRS 278.030(1), KRS 278.030(2) and KRS 278.170, fails to comply with Administrative Case 327 and is directly contrary to the Commission's Adequate Service Investigation. Therefore, the Special Contract should not be approved. However, if it is approved, then the following five conditions should be required.

[76] Id.
[77] Id. at 7.

First, to mitigate against additional transmission and generation demand costs caused by the 250 MW Ebon load, Kentucky Power should have more interruptible hours. Under the proposed Special Contract, Kentucky Power can only interrupt Ebon 20 times in three-hour increments for a total of 60 hours per year. This should be increased to 60 times for a total of 180 hours per year. Such an amendment will substantially increase the likelihood that Ebon's peak usage can be reduced during the 18 critical peak pricing hours (PJM 5 PLC, AEP Transmission Zonal NSPL and Kentucky Power 12 monthly CPs).

Second, interruption buy-through hours should be added to the Contract to mitigate against high-cost PJM energy purchases passed on to consumers through the FAC. We recommend at least 1,752 buy-through hours (twenty percent of total annual hours). During periods of high PJM market energy costs, Ebon should be given the option to either curtail its usage or buy-through the event at market prices. The 1,752 buy-through hours should be in addition to the 180 peak shave interruption hours. Interruption buy-through provisions are common in Kentucky.[78]

Third, the Company's analysis assumed that Ebon will interrupt all 225 MW each time called upon. However, there is no penalty if Ebon only curtails 90% of its interruptible load. This creates the very real possibility that Kentucky Power will need to provide generation and transmission for an additional 22.5 MW (225 MW x 0.1). If this occurs, then Ebon should be directly responsible for the added generation and transmission capacity costs caused by the additional 22.5 MW.

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[78] Kentucky Utilities Company Curtailable Service Riders CSR-1 and CSR-2; Louisville Gas and Electric Curtailable Service Riders CSR-1 and CSR-2.

Fourth, credit and security requirements should be added to the Capacity Discount and Incremental Discount Claw-Back Addendum. Kentucky Power's Contract is with an LLC. A Claw-Back Addendum with an LLC is worthless. LLCs are commonly known as "*shell companies*" because in litigation they are judgment proof and can easily be bankrupted. A parental guarantee from a strong corporate owner, an irrevocable letter of credit or some other form of security should be required. If the Claw-Back Addendum is invoked in the future but is not satisfied, then Kentucky Power's current shareholders should be responsible, not ratepayers.

Fifth, the job creation addendum should be strengthened. The job creation addendum requires Ebon to create and maintain at least 25 new permanent full-time jobs during Phase 1 (80 MW) and at least 50 new permanent full-time jobs during Phase 2 (250 MW). In addition, those employees should be required to reside in Kentucky Power (not West Virginia) and should be paid an annual wage of at least $60,500 per year.[79] Also, annual wages should increase with inflation. Finally, there should be a penalty for non-compliance with the job creation addendum. The penalty should at least equal the missed employment numbers. Any penalty should be used by Kentucky Power to fund its economic development budget.

IV. CONCLUSION

This proposed Special Contract should not be approved. Because Kentucky Power does not have adequate energy or capacity to serve the new load, approval of the Special Contract will impair the ability of the Company to provide adequate service to existing customers in violation of KRS 278.030(2). It will increase costs on existing customers by at least $84.0 million (nominal) $61.4 million (present value) plus the cost of the confidential Incremental Discounts

[79] The Rebuttal Testimony of Witness Clark at page 12 stated that Ebon's planned wages will range from $44,000 to $77,000. $60,500 is the mid-point.

and is thus not fair, just and reasonable as required by KRS 278.030(1). It will result in existing customers subsidizing Ebon and is thus unduly discriminatory under KRS 278. 170. The Special Contract does not meet the requirements of Administrative Case 327 because Kentucky Power does not have excess capacity and the marginal costs to provide service under the Contract greatly exceeds the marginal revenue. Finally, this proposed Special Contract is directly contrary to the Commission's findings in its recently opened Adequate Service Investigation and moves this utility dramatically in the wrong direction. For these reasons, the Special Contract should not be approved.

Respectfully submitted,

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