

BEFORE THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Joint Application of)
Amazon Data Services, Inc. and Ohio) Case No. 23-0858-EL-AEC
Power Company for Approval of a)
Reasonable Arrangement)

**JOINT APPLICATION OF AMAZON DATA SERVICES, INC.
AND OHIO POWER COMPANY FOR APPROVAL OF A
REASONABLE ARRANGEMENT**

I. INTRODUCTION

Amazon Data Services, Inc. (“ADS”) and Ohio Power Company (“AEP Ohio”) seek approval from the Public Utilities Commission of Ohio (“Commission”) for a reasonable arrangement under Ohio Adm. Code 4901:1-38-05.

In 2018, the Commission approved an economic development arrangement, under the previous version of Ohio Adm. Code 4901:1-38-03, to support the development of data centers in the greater Columbus region by ADS, formerly known as Vadata, Inc. *See* Opinion and Order, Case No. 17-1827-EL-AEC. As part of that application, made jointly with AEP Ohio, ADS pledged to make significant investments in Ohio, to create jobs, and drive substantial economic impact throughout the state for years.

ADS has delivered on its economic development promises, which have brought tremendous economic and job creation benefits to Ohio. Currently, ADS operates [REDACTED] data centers in AEP Ohio’s territory across [REDACTED] data center campuses in Hilliard, Dublin, and New Albany, Ohio.¹ ADS’s significant investments in building and operating those campuses have

¹ In this application, and elsewhere, ADS refers to “data centers” and “data center campuses.” Each data center campus can support multiple data centers. The [REDACTED] new data center campuses, as contemplated in this application, could support the development of up to [REDACTED] data center buildings. The following [REDACTED] new data campuses will be covered by the proposed reasonable arrangement (the full contract capacity

brought billions of dollars in economic benefits to Ohio² and raised Ohio's profile in the global technological markets as a desirable location for energy-intensive businesses to establish facilities and grow due to favorable market conditions and transparent utility rates. In this way, the prior economic development arrangement incentivized ADS's investments in Ohio as intended by the Ohio legislature and the Commission.³

ADS now aims to significantly increase its investments in Ohio by further expanding its substantial data center footprint in the greater Columbus region. ADS plans to develop, build, and operate [REDACTED] more data center campuses in the greater Columbus region, which combined with the investment from the previous reasonable arrangement will make a total of [REDACTED] data center campuses and up to [REDACTED] individual data center buildings in AEP Ohio's service territory. In addition, the proposed reasonable arrangement would facilitate ADS's installation of state-of-the-art, utility-scale, commercial battery storage systems at its new Ohio data center campuses. These large battery storage systems will have the ability to power a significant portion of ADS's data-center load for short durations, which will provide ADS with operational flexibility particularly during times of elevated usage on the grid. These utility-scale battery storage systems will be the first of their kind across Amazon's entire global data center footprint.

Together with AEP Ohio, ADS seeks a reasonable arrangement that will allow ADS to make these significant investments in Ohio. Specifically, the proposed reasonable arrangement is a two-phased approach. During the first phase ("Phase I"), for each new energized data center

after a load ramp period is listed in parenthesis): [REDACTED]

² Ex. A, AWS Investment and Economic Impact Study in Ohio (December 2022) ("EIS"), filed under seal, at 4-5.

³ With the existing data center campuses fully built out, ADS voluntarily elected to exit this prior reasonable rate arrangement effective May 31, 2023. *See* Five-Year Status Report, filed April 28, 2023, PUCO Case No. 17-1827-EL-AEC.

campus that reaches and maintains a monthly peak load of at least ■ MW, a billing determinant discount equal to ■ percent on the kW value used to calculate Basic Transmission Cost Rider (“BTCR”) charges for the campuses would be applied to bills issued for that campus, subject to the otherwise-applicable minimum monthly billing demand ratchet from AEP Ohio’s tariffs. This ■ percent billing determinant discount would increase as ADS energizes additional data center campuses. During Phase I, no other discounts or billing determinant reductions will apply for these data center campuses, and ADS will otherwise pay all charges and riders as tariffed.

The second phase (“Phase II”) of the proposed reasonable arrangement will commence after the first utility-scale battery storage system goes into service at one of ADS’s data center campuses. Under Phase II, Amazon’s transmission charges will be calculated using one-coincident peak (“1CP”) values, also known as the customer’s Network Service Peak Load (“NSPL”) value, assigned to the account for that campus, similar to the way BTCR charges are calculated under AEP Ohio’s current Interim BTCR Pilot 1CP program established in Case No. 16-1852-EL-SSO. The Phase II transmission charge methodology will be effective on the first billing cycle of April of the calendar year after the battery storage system is energized. Effective at the same time that a data center campus triggers the Phase II transmission charge methodology, this data center campus hosting an energized battery storage system will no longer be eligible for the kW billing determinant discount from Phase I, and the kW billing determinant discount applied to the other energized data center campuses without a battery storage system will decrease by ■ percent. The other energized data center campuses without an energized battery storage system would continue to operate under the kW billing determinant discount structure during the term of Phase I. Further, AEP Ohio’s sixty percent contract capacity demand (kW) floor from AEP Ohio’s tariffs will continue to apply to BTCR charges.

The reasonable arrangement also supports further economic expansion, supports the technological advancements in Ohio via the deployment by ADS of utility-scale battery storage systems, and incentivizes ADS to continue making significant investments in Ohio.

Accordingly, as discussed below, the applicants respectfully submit that this application is reasonable and in the public interest, advances state policy, and should be approved as a reasonable arrangement under Ohio Adm. Code 4901:1-38-05.

II. FACTUAL STATEMENTS IN SUPPORT OF APPLICATION

A. ADS is a world-leading data center provider and large contributor to Ohio's 21st century economy.

ADS is an affiliate of Amazon Web Services, Inc. ("AWS"), which is a wholly-owned subsidiary of Amazon.com, Inc. Launched in 2006, AWS provides state-of-the-art cloud computing infrastructure and services. Cloud computing is the on-demand delivery of computing resources and applications via the internet. A key benefit of cloud computing is replacing up-front capital infrastructure expenses with low variable costs that scale with enterprises of all sizes. Customers using the AWS cloud have reliable, scalable, flexible, and low-cost access to secure infrastructure services via pay-as-you-go pricing. The AWS cloud provides secure and affordable computing capacity to more than one million customers across the world. The AWS cloud operates from data centers operated by ADS in thirty regions globally; six of which are in the United States, including Ohio. Businesses, governments, and universities across the world rely on the cloud computing services provided by the ADS data centers located in Ohio.

AWS has become the world's most comprehensive, widely adopted cloud computing service. AWS is growing and is poised to expand its growth in the United States, including in

Ohio, specifically the greater Columbus region. But ADS's ability to expand in Ohio will depend in part on the economics of data center operations. Many of the data center capital and operating costs are similar across U.S. regions, but one key cost differentiator across regions is the cost of electric power and its delivery. Data center servers demand a large, consistent supply of power. At full capacity, ADS estimates that each new data center campus will have an average load of [REDACTED] MW. As ADS expands, it is critical to consider innovative ways to address ADS's increasing utility charges in ways that advance state policies.

Ensuring attractive power costs through this proposed reasonable arrangement will allow Ohio to remain competitive from an operating cost perspective, position Ohio for additional investment and facilitate Ohio's effectiveness in the new knowledge economy. ADS's prior economic development arrangement approved by the Commission in Case No. 17-1827-EL-AEC was a key differentiator that incentivized ADS to continue to make investments in its data centers in the greater Columbus region. This new proposed arrangement would further build on those ADS investments for many years to come, with substantial benefits for Ohio's economy.

B. The new ADS data center campuses will contribute significantly to Ohio's economy, including new high-paying jobs and substantial direct investments.

ADS is planning [REDACTED] data center campuses in the greater Columbus region in AEP Ohio service territory, in addition to the [REDACTED] campuses already operating in the region in AEP Ohio's service territory. Since 2015, ADS has invested more than \$[REDACTED] in the construction and operation of the [REDACTED] existing data center campuses in Ohio, including over \$[REDACTED] invested in Ohio businesses.⁴ Based on ADS's experience, its investment in Ohio has annually supported over [REDACTED] FTE (full-time equivalent) jobs.⁵

⁴ Ex. A, EIS at 4-5.

⁵ *Id.* at 8.

Over the next five years, ADS plans to substantially increase its investment in Ohio by expanding existing data center campuses, adding new data center campuses, operating and maintaining existing data centers, and installing utility-scale battery storage systems at its current and future data center campuses.⁶ The [REDACTED] new Ohio data center campuses that ADS plans to develop represent a substantial investment, which it expects to total approximately \$ [REDACTED] from 2022 through 2026.⁷ This includes an anticipated \$ [REDACTED] spent in the local economy of Ohio.⁸ Based on ADS's experience in the greater Columbus region, ADS anticipates that its investments will support at least [REDACTED] FTE jobs annually over that five-year period and potentially significantly more.⁹ Many jobs are in design, engineering, telecommunications, and technology, with an average hourly base wage higher than [REDACTED] percent of the federal minimum wage.

The installation of utility-scale battery storage systems at ADS's new data center campuses will also contribute to Ohio's economy and boost its profile as a burgeoning technology hub. If made possible through the approval of this reasonable arrangement, ADS's Ohio data centers will be the first recipients of these utility-scale battery storage systems in Amazon's entire global data center footprint, cementing Ohio's status as a magnet for technological innovation and investments. In terms of the economic impact of the battery storage systems, ADS anticipates capital expenditures of between \$ [REDACTED] and \$ [REDACTED] for each battery storage system, with an approximate estimate of [REDACTED] for construction and between [REDACTED] workers engaged in construction-related activities at any given time.

⁶ See <https://www.dispatch.com/story/business/economy/2023/06/26/where-will-amazon-spend-7-8-billion-in-central-ohio/70356215007/> (last checked June 28, 2023).

⁷ Ex. A at 10.

⁸ *Id.* at 11.

⁹ *Id.* at 13-14.

In addition to creating significant direct employment in Ohio, ADS's investments will have substantial spillover effects in the Ohio economy that will create additional jobs and economic development.¹⁰ Increases in employment, earnings, income, and regional GDP will also bolster state and local tax revenues. Plus, as additional Ohio data centers are developed, they will generate a pool of highly skilled employees for the region. The skilled employees needed for data centers will feed a talent pipeline for other fast-growing and high-wage industries such as architecture, engineering, computer science, and energy and technical consulting.

The [REDACTED] new Ohio data center campuses will also support energy savings and efficiency. ADS is committed to running its businesses in the most energy-efficient, environmentally friendly way possible.¹¹ Indeed, ADS's data center designs are optimized for operational efficiency. Moreover, a significant cloud computing benefit is an increase in energy efficiency due, in large part, to movement from localized customer on-premises data centers to ADS's large-scale data centers. Overall, ADS's data centers are 3.6 times more energy efficient than typical data center enterprises.¹²

Finally, ADS partners with universities and learning institutions to help jobseekers find high-paying jobs, including internships, work-based learning programs, and other efforts to cultivate local talent. Taken together, ADS's construction of the [REDACTED] new data center campuses in AEP Ohio's service territory will contribute substantially to Ohio's economy, create high-quality jobs, and ensure that the benefits of the proposed reasonable arrangement are commensurate with the incentives proposed in this application.

¹⁰ See Ex. A at 10-14

¹¹ See <https://sustainability.aboutamazon.com/2021-sustainability-report.pdf>.

¹² Amazon is also on a path to reach 100 percent renewable energy across all operations by 2025 and aims to reach net-zero carbon across all operations by 2040. See *id.* at 35-36.

C. The installation of utility-scale battery storage systems at ADS's Ohio data center campuses will be a significant step toward grid modernization.

On August 29, 2018, the Commission published its roadmap for grid modernization. This report, entitled “PowerForward,” was the product of stakeholders and experts and was intended to “set forth certain policy positions, outline principles and objectives, and express a vision to allow the state to pursue grid modernization responsibly.”¹³

The PowerForward Report notes energy storage is “a possible solution to many challenges and opportunities at the distribution level.”¹⁴ Energy storage allows customers to “engage in arbitrage through avoidance of higher cost electricity prices, minimizing demand charges, and in certain contexts, maintaining service during a blackout.”¹⁵ Further, energy storage can provide buffering capabilities that may ultimately be considered a standard, necessary tool in addressing operational issues in the distribution grid.”¹⁶ Other leading grid modernization reports agree. For instance, the National Conference of State Legislatures concluded that energy storage “can improve resilience and reliability, while offering utilities a lower-cost alternative to traditional transmission and distribution solutions.”¹⁷

The proposed reasonable arrangement will further these goals. ADS specifically selected its Ohio data center campuses for its first utility-scale battery storage systems in Amazon's entire global data center footprint. Each battery storage system will be housed in a structure

¹³ Public Utilities Commission of Ohio, PowerForward: A Roadmap to Ohio's Electricity Future, at 4, available at https://puco.ohio.gov/wps/wcm/connect/gov/38550a6d-78f5-4a9d-96e4-d2693f0920de/PUCO+Roadmap.pdf?MOD=AJPERES&CONVERT_TO=url&CACHEID=ROOTWORKSPACE.Z18_M1HGGIK0N0JO00QO9DDDDM3000-38550a6d-78f5-4a9d-96e4-d2693f0920de-nLBoZhy (last checked June 29, 2023).

¹⁴ *Id.* at 21.

¹⁵ *Id.* at 22.

¹⁶ *Id.*

¹⁷ National Conference of State Legislatures, Modernizing the Electric Grid: State Role and Policy Options, available at <https://www.ncsl.org/energy/modernizing-the-electric-grid> (last checked June 29, 2023).

resembling a shipping container at the data center campus and will occupy an approximately half-acre area enclosed by fences, on concrete pads and with state-of-the-art monitoring and fire suppression systems. Each utility-scale battery storage system will be connected on the customer side or “behind” the meter to the 34.5 kV transformer currently used to serve the AEP Ohio account associated with the campus. Energy from the grid will charge the battery storage system on demand. The battery storage system will discharge energy to the data center campus based on energy, capacity, transmission, and supply signals, with operations remotely monitored and managed via a third party’s management platform. The battery storage system will respond to demand response signals to alleviate constraints and reduce data center contributions to peak load events. The battery storage systems will be able to power a significant portion of the data center campuses for up to [REDACTED] with each discharge. No power will be injected into the grid from the battery storage system at any time.¹⁸

D. Installing utility-scale battery storage systems at ADS’s new Ohio data center campuses will be a major evolution for Ohio’s energy efficiency and management efforts.

The installation of utility-scale battery storage systems at ADS’s new Ohio data center campuses will be a significant step toward grid modernization for the State of Ohio. In particular, these utility-scale battery storage systems have the potential to transform how ADS powers its data center campuses across the globe, with Ohio chosen as Amazon’s first location across its entire global data center footprint to deploy this state-of-the-art technology at this scale. While ADS will install one battery storage system at a time, it will gradually expand these systems and, with appropriate incentives, will seek to place a battery storage system at other data center campuses in central Ohio. Currently, ADS plans to install a utility-scale battery storage

¹⁸ These system specifications reflect current technology. As technology evolves, the capacity and other specifications of the systems may change.

system behind the meter at ■■■ of the ■■■ new data center campuses in AEP Ohio's territory, with a nameplate capacity of ■■■ MW for each battery storage system.

This potential investment is a major and high-profile step for ADS. These utility-scale battery storage systems have the potential to set the standard for similar facilities within ADS and in the data center industry more generally. However, this significant and unique investment in battery storage systems is only economically practical with the transmission billing method requested through this reasonable arrangement, namely using NSPL values to calculate AEP Ohio's kW-based BTCR charges. The approval of this proposed reasonable arrangement will position Ohio as a leader in energy efficiency and storage projects, establish Ohio as a leader in promoting power management technologies and grid modernization and burnish its reputation as a forward-looking, business-friendly jurisdiction.

III. PHASE I AND PHASE II OF THE PROPOSED REASONABLE ARRANGEMENT

A. Phase I of the proposed reasonable arrangement will provide reasonable reductions in charges that reflect ADS's planned contributions to Ohio's economy and the unique load characteristics of its data centers.

ADS's and AEP Ohio's proposed reasonable arrangement has two phases. Due to ADS's significant anticipated load, combined load profile, and economic development potential associated with its new data centers in the Columbus region, during Phase I AEP Ohio will apply a kW billing determinant discount on BTCR charges of ■■■ percent for each energized data center campus that maintains a monthly peak load of ■■■ MW, up to a maximum of ■■■ percent for ADS's ■■■ new data center campuses. For example, if ADS energizes ■■■ new data center campuses, AEP Ohio will reduce the kW billing determinant by ■■■ percent to calculate BTCR charges for each data center campus. Further, to qualify for the kW billing determinant discount subject to the tariff minimum monthly billing demand ratchet, a data center campus must reach

and maintain a monthly peak load of at least [REDACTED] MW. ADS will continue to pay all charges and riders for its electricity usage under AEP Ohio's tariffs, with no other discounts or credits.

The following is a summary of the proposed terms for the first phase of this reasonable arrangement:

(a) The term for Phase I of the arrangement will not exceed 120 months following the Commission's approval of this application;

(b) AEP Ohio will apply a billing determinant discount on the kW value used to calculate the monthly BPCR for the data center campuses equal to [REDACTED] percent for each new energized ADS data center campus in AEP Ohio territory that reaches and maintains a monthly peak load of at least [REDACTED] MW, up to a discount of [REDACTED] percent if ADS energizes its [REDACTED] new data center campuses; subject to the application of the demand ratchet throughout the term of Phase I of at least 60 percent of the applicable contract capacity for that year as determined by the buildup clause addendum to each electric service agreement, for each energized data center campus that reaches and maintains a monthly peak load of at least [REDACTED] MW; and

(c) AEP Ohio's PUCO-approved tariffs will otherwise apply without variance, including any applicable minimum monthly billing demand ratchet, and no other discounts, credits or reductions will apply.

In this way, Phase I of the reasonable arrangement provides a billing structure that will incentivize economic development by ADS in the form of additional Ohio data center campuses, while providing a rate structure that takes into account the significant load ADS has and will add to AEP Ohio's service territory.

This billing structure, with increasing discounts to the kW billing determinant as ADS adds additional data center campuses in AEP Ohio's territory, will induce ADS to continue to make significant investments in Ohio for years to come in the form of additional data center campuses, with the attendant economic development benefits for Ohio and its residents. As discussed above, ADS's [REDACTED] new Ohio data center campuses will involve investments totaling approximately \$ [REDACTED] from 2022 through 2026, including an anticipated \$ [REDACTED] spent in

Ohio's local economy.¹⁹ ADS anticipates that its data center campus investments will support at least [REDACTED] FTE jobs annually over that five-year period and potentially significantly more for years to come.²⁰ In light of this significant economic development, the proposed arrangement is reasonable.

B. Phase II of the proposed reasonable arrangement will support the installation of utility-scale battery storage systems at the data centers.

Utility-scale battery storage systems are the future of energy efficiency and management. However, under AEP Ohio's current transmission rate structure, the installation of large battery storage systems is not economically practicable due to the usage of monthly billing demand to calculate the BTCR transmission charges. Without the proposed reasonable arrangement, cost challenges would economically preclude ADS's decision to install the battery storage systems in Ohio.

Phase II of the proposed reasonable arrangement will provide economic support for the installation of utility-scale battery storage systems at ADS's data center campuses. This proposed reasonable arrangement is necessary given how transmission charges are calculated by AEP Ohio under the current BTCR tariff, and the difference between the methodology and how transmission charges are allocated by PJM Interconnection ("PJM"). Transmission charges in Ohio originate from PJM, which is the Regional Transmission Operator ("RTO") for Ohio, all or parts of twelve other states, and the District of Columbia. PJM bills the AEP corporate group that includes AEP Ohio ("AEP East Companies") for transmission charges based on the one-coincident peak ("1CP") method, meaning the measured consumption attributable to customers

¹⁹ See Ex. A at 10-11.

²⁰ *Id.* at 13-14.

of those utilities coincident with the annual system peak.²¹ Because the transmission infrastructure required for a region depends on that region's peak load, the 1CP method is designed to recover the costs of that infrastructure by charging each customer based on that customer's annual peak load contribution.²²

AEP East Companies, however, do not use the 1CP method to allocate transmission costs to member utilities, including AEP Ohio. Instead, under a FERC-approved methodology, AEP East Companies allocate PJM's charges to member utilities (including AEP Ohio) via the 12-month average coincident peak ("12CP"), which allocates transmission costs to AEP Ohio based on an average of AEP Ohio's load during the peak hours in each of the preceding twelve months, rather than the load during the single system-wide peak.²³ AEP Ohio then bills its distribution customers according to the Commission's approved BPCR rider, using a different monthly peak demand measurement based on the customer's single highest 30-minute integrated on-peak load in that billing month.

Given that battery storage systems can only be discharged for relatively short durations between charges, combined with a typically high load factor for data centers, it is virtually impossible to consistently lower ADS's monthly peak load on a recurring basis. If the BPCR charge is assessed on ADS's demand during the single zonal transmission peak using the 1CP method, however, ADS could discharge its battery storage systems during that annual peak event to reduce both ADS's BPCR charge and the AEP East Companies' peak load contribution in

²¹ See PJM Open Access Transmission Tariff Accounting, PJM Manual 27, Revision 93, PJM Interconnection LLC, 24-25 (Aug. 31, 2020) (charges based on "the Network Customer's daily network service peak load contribution (including losses), coincident with the zonal peak for the 12 months ending October 31 of the preceding year for each zone in which load is served.").

²² See Ross Baldick, Incentive Properties of Coincident Peak Pricing, J. Reg. Econ., 1 (Sept. 22, 2018).

²³ *Id.*

PJM, thereby reducing the AEP East Companies' overall transmission costs and making the installation of the battery storage systems more economical.

To incentivize the development and deployment by ADS of utility-scale battery storage systems at its data center campuses, this application seeks to change the method of calculating transmission charges to a 1CP method for those campuses that have a battery storage system installed. Calculating transmission charges on the 1CP method, in a manner similar to how charges are calculated under AEP Ohio's current Interim Pilot 1CP program established in Case No. 16-1852-EL-SSO, will allow ADS a reasonable opportunity to manage its transmission costs, which in turn makes the significant capital investment associated with the battery system financially feasible. The 1CP billing method for BTCR charges will enable ADS to make the investments required to install utility-scale battery storage systems at its data centers in Ohio.

The following is a summary of the proposed terms for the second phase of this reasonable arrangement:

- (a) If ADS installs a behind-the-meter battery storage system at a new data center campus in AEP Ohio territory, the monthly \$/kW transmission charge (under the BTCR or any successor rate mechanism) for the AEP Ohio account for that campus will be the GS Demand Metered Transmission 1CP rate based on that account's NSPL demand during the single zonal transmission peak (1CP). The NSPL demand will change each January based on the account's contribution to the single zonal transmission peak during the previous year;
- (b) The transition from billing the \$/kW BTCR charge based on monthly demand to the account's 1CP will become effective on the first billing cycle of April of the calendar year after the battery storage system is energized;²⁴
- (c) Effective when an eligible account transitions to the 1CP billing method for BTCR charges, the account will no longer receive a kW billing determinant discount under Phase I of the reasonable arrangement, and that data center campus will no longer be

²⁴ At the end of each calendar year after the account switches to 1 CP billing, PJM makes NSPL determinations for the 12-month period ending October 31, and the new NSPL values go into effect on January 1. Phase II of the reasonable arrangement tracks this schedule. The 1CP billing methodology in Phase II will be effective on first billing cycle in April following the first time that the battery system is energized.

considered when calculating the kW billing determinant discount applied to the accounts for the other campuses; and

- (d) Phase II of the reasonable arrangement will remain effective until the earlier of (1) 120 months from the month the battery storage system for that data center campus is energized, or (2) December 31, 2035. If the term of Phase II extends beyond the term of Phase I, the discount structure of Phase II will remain in place for eligible accounts after the discount structure expires for the Phase I data center accounts.
- (e) AEP Ohio's 60 percent contract capacity demand (kW) floor minimum will continue to apply to BTCR demand charges and will be calculated according to the load ramp specified in the buildup clause addendum in each electric service agreement.

In this way, each data center campus that hosts a battery storage system will be removed from the Phase I kW billing determinant discount structure, effective as soon as the data center campus transitions to the 1CP billing methodology for BTCR charges. For example, assume all [REDACTED] data center campuses have been energized and have each reached and maintained a monthly peak load of at least [REDACTED] MW. If there is [REDACTED] data center campus with a battery storage system and [REDACTED] energized data center campuses without a battery storage system, the kW billing determinant discount applied to the bills issued for the [REDACTED] data center campuses without a battery will be [REDACTED] percent off the kW billing determinant. The [REDACTED] energized data center campus with the battery will no longer be eligible for a kW billing determinant discount, effective when the data center campus transitions to the Phase II transmission charges methodology.

As noted above, using 1CP values to calculate BTCR charges will provide ADS with the operational flexibility necessary to discharge the battery storage system during hours of anticipated peak load in the PJM system. That will help both ADS reduce its BTCR charges from AEP Ohio and help the AEP East Companies reduce their transmission charges from PJM. In this way, the proposed reasonable arrangement will make it economically feasible to deploy utility-scale battery storage systems at ADS's Ohio data center campuses.

C. ADS’s continued Ohio investments will provide a reasonable contribution to AEP Ohio revenues under the proposed arrangement.

Despite the energy-intensive nature of ADS’s data centers, AEP Ohio will incur little distribution capital investment or ongoing distribution expense because ADS will pay to build substations to receive electricity from AEP Ohio at transmission voltages at each data center campus. ADS’s data center campuses thus represent a highly efficient revenue source for AEP Ohio with little additional distribution capital or expenses for the utility. This further reinforces that ADS’s investments are beneficial to AEP Ohio’s other ratepayers, Ohio’s power grid, and the broader economy.

IV. LEGAL STANDARD

Under Ohio Adm. Code 4901:1-38-05(A), an electric utility “may file an application pursuant to section 4905.31 of the Revised Code for commission approval of a reasonable arrangement with one or more of its non-mercantile customers, consumers, or employees.” When submitting such application, the mercantile customer of an electric utility must show “at a minimum the arrangement is in the public interest.” *Id.* 4901:1-38-05(B)(1). The mercantile customer bears the burden of showing the arrangement is reasonable and does not violate R.C. 4905.33 or R.C. 4905.35, which prohibit rebates and discrimination, respectively. *Id.* 4901:1-38-05(B)(2).²⁵ In addition, the application must describe how the reasonable arrangement will further “the policy of the state of Ohio embodied in section 4928.02 of the Revised Code. *Id.* (C). Finally, the applicant must submit an affidavit from a company official verifying the information provided in the application. *Id.*; see Exhibit D, Affidavit of Travis Metcalfe.

²⁵ ADS is a “mercantile customer” under R.C. 4928.01(A)(19). It is a “commercial ... customer” whose electricity consumption is “for nonresidential use,” and it consumes more than seven hundred thousand kilowatt hours per year. See Ex. B.

On November 16, 2022, the Commission adopted amendments to Ohio Adm. Code 4901:1-38 which went into effect on June 20, 2023. PUCO Case No. 22-867-EL-ORD, Entry (June 8, 2023). Despite these amendments, the Finding and Order states that there “will be no change in the way that the Commission substantively reviews these applications and may still consider economic impact or development facts, as well as other policy considerations, when evaluating applications submitted pursuant to R.C. 4905:31.” PUCO Case No. 22-867-EL-ORD, Finding and Order (Nov. 16, 2022), p. 4.

V. LAW AND ARGUMENT

A. The arrangement proposed by ADS and AEP Ohio is reasonable and in the public interest as required by Ohio Adm. Code 4901:1-38-05.

The amendments made by the Commission to Ohio Adm. Code 4901:1-38 include the rescission of Ohio Adm. Code 4901:1-38-03, which removed the various factors used by the Commission to evaluate reasonable arrangement applications. Although the Commission no longer requires a reasonable arrangement application to provide the previous factors, these factors provide good guidance for the Commission to consider when evaluating whether the arrangement is reasonable and in the public interest, and therefore the factors have been included in this application. As shown below, the proposed arrangement is reasonable and in the public interest because it supports further economic expansion, supports technological advancement via the utility-scale battery storage systems, and incentivizes ADS to continue significant investments in Ohio and its economy.

1. ADS and AEP Ohio have estimated the annual electric billings without incentives for the term of the incentives and the annual estimated delta revenues for the term of the incentives.

ADS and AEP Ohio have provided the Commission with “estimated annual electric billings without incentives for the term of the incentives, and annual estimated delta revenues for

the term of the incentives.”²⁶ Assuming an average load of [REDACTED] MW per data center campus and using current rates, billings for transmission services will be about \$ [REDACTED] per year for each new data center campus. Assuming the same load and applying the rates under the Applicant Schedule in Exhibit B, billings for transmission services would be approximately \$ [REDACTED] per year for each new data center campus when the [REDACTED] new data center campuses are complete. The total transmission revenues from ADS under the rates in Exhibit B for [REDACTED] new campuses would be approximately \$ [REDACTED] million per year, compared to approximately \$ [REDACTED] million if ADS were to complete [REDACTED] data center campuses without the incentive-based rate design in this Application. These estimates assume no battery storage projects have been energized because once they are energized, the data center campus is no longer eligible for the kW demand discount. Because the Applicant Schedule does not provide a discount off total bill charges and ensures ADS will make a reasonable contribution toward all riders, AEP Ohio is not requesting a separate rate mechanism to recover delta revenue.

2. ADS’s business is energy intensive and has a distinct energy profile.

ADS’s business is acutely energy-intensive; electricity is one of the highest operating costs of a data center. *See* Opinion and Order, Case No. 17-1827-EL-AEC, ¶ 20. Each proposed data center campus will be [REDACTED] acres, and its servers will demand a significant kWh monthly load to support ADS’s business as the world’s most comprehensive, widely adopted cloud computing service provider. Once fully built, ADS’s current estimate is that each data center campus will have a designed average load of approximately [REDACTED] MW. Further, once ADS installs the utility-scale battery storage systems at ADS’s data center campuses, each system will have a nameplate capacity of [REDACTED] MW.

²⁶ *See* Ex. B.

In addition to the significant monthly load, ADS's business is distinct in that each data center campus requires constant power availability. The ADS data centers support on-demand cloud services that are relied upon by its customers, including hospitals, enterprises, non-profits, governments, and universities, across the world. The data centers must support this robust technology infrastructure and the network-connected hardware at all times for customers to access the AWS cloud.

3. ADS has made a commitment to investing in Ohio either in a new investment or in support of a new industry.

ADS has already made significant investments related to the multiple data centers in AEP Ohio territories in Hilliard, Dublin, and New Albany, Ohio. In 2018, the Commission approved an economic development arrangement related to these data center campuses. *See* Opinion and Order, Case No. 17-1827-EL-AEC. Under that arrangement, ADS pledged and fulfilled its commitment to make significant investments in Ohio, create jobs, and drive substantial economic impact throughout the state. ADS has invested over \$ [REDACTED] in the construction and operation of its [REDACTED] existing data center campuses in Ohio and this reasonable arrangement will enable ADS to invest even more in Ohio, and specifically the Columbus region.²⁷ More than \$ [REDACTED] of ADS's investment in Ohio was purchases from in-state business.²⁸ Between 2015 and 2021, local expenditures on employee-related expenses alone totaled over \$ [REDACTED].²⁹

Adding to its already significant investments, ADS plans to greatly increase its data center operations in Ohio. This plan includes an expected \$ [REDACTED] investment in the local economy, of which approximately \$ [REDACTED] is expected to be procured from Ohio vendors.³⁰

²⁷ Ex. A at 4.

²⁸ *Id.* at 5.

²⁹ *Id.*

³⁰ *Id.* at 10-11.

Installing the utility-scale battery storage systems at ADS's data center campuses will also be a major investment that will establish Ohio as a leader in promoting power management technologies and grid modernization. While the battery storage systems are only one aspect of the data center campuses, they could set the standard for similar facilities within ADS and in the data center industry more generally. This will burnish Ohio's reputation as a forward-looking, business-friendly jurisdiction that will in turn attract more investments in Ohio.

4. ADS's project is not for retail purposes.

AWS's cloud computing services are distinct from Amazon's retail business, Amazon.com. ADS's data centers provide cloud computing services and not retail services.

5. The economic impact of ADS's project is significant.

ADS anticipates, based on past experience with its prior Ohio investments, that the proposed data center campuses will create and retain substantial numbers of new FTE jobs, paying at least [REDACTED] percent of the federal minimum wage. As specified above, ADS expects that its planned investment will support at least [REDACTED] FTE jobs annually and possibly significantly more at third-party vendors in the state via direct, indirect, and induced effects during 2022-2026.³¹ This is in addition to the estimated over [REDACTED] FTE jobs that the construction activity related to the existing data center campuses has already supported during 2015-2021.³²

6. Other opportunities for both non-energy and energy-related operational savings.

ADS has already explored or taken advantage of other opportunities for energy and non-energy-related savings, including shopping for electricity and energy efficiency. ADS has at times utilized a CRES provider at its existing data center campuses and anticipates doing so at

³¹ *Id.* at 13-14.

³² *Id.* at 8.

the [REDACTED] new data center campuses. By utilizing AWS's power-efficient, design-optimized data centers, ADS customers can experience an 80 to 93 percent reduction in the amount of power required as compared to on-premises infrastructure.³³

7. ADS will make a reasonable contribution to AEP Ohio's incremental costs of service and contribute to the payment of fixed costs.

Under Phase I of the proposed reasonable arrangement, ADS's kW billing determinant per AEP Ohio account for the BTCR would be subject to a discount of [REDACTED] percent on the kW value per energized data center that reaches and maintains a monthly peak load of at least [REDACTED] MW, subject to the application of any minimum monthly billing demand in AEP Ohio's tariffs. The data center campuses must each reach and maintain a monthly peak load of at least [REDACTED] MW to trigger the initial discount or an increase in the discount percentage.

No other discounts or billing determinant reductions will apply, and ADS will continue to pay all transmission and distribution riders, including the portion of the Basic Transmission Cost Rider that is assessed on a kWh basis at the GS Demand Metered Transmission rate.

Under Phase II of the reasonable arrangement, for each data center campus that has an energized battery storage system, that campus will be removed from the kW billing determinant discount structure and will no longer be eligible for the discount. BTCR charges for each campus that is hosting a battery storage system will be calculated in a manner similar to how charges are calculated under AEP Ohio's current Interim Pilot 1CP program established in Case No. 16-1852-EL-SSO with the additional condition of being subject to AEP Ohio's 60 percent contract capacity demand (kW) floor minimum.

³³ See https://sustainability.aboutamazon.com/carbon_reduction_aws.pdf.

8. The community benefits from the project outweigh any costs imposed on other retail customers.

ADS's proposed data center campuses will provide AEP Ohio with a significant source of future revenue while requiring minimal infrastructure or maintenance costs by AEP Ohio, ultimately benefitting all of AEP Ohio's ratepayers. The reasonable arrangement will not result in any delta revenues collected from other customers. Even if the proposed reasonable arrangement would impose costs on other retail customers, which is not expected, the community benefits of the proposed reasonable arrangement would outweigh any potential costs to other customers, primarily because of the immense economic benefits conferred by ADS's continued investments in Ohio. ADS has invested over \$[REDACTED] in Ohio's economy, and anticipates spending an additional \$[REDACTED] in Ohio, and expects this investment to support an average of at least [REDACTED] FTE jobs in the next five years.³⁴

ADS's partnerships with Ohio institutions, such as universities, also benefit the community by providing pathways to higher-paying jobs and improved technology for Ohio industries by providing faster AWS online and web-based applications.

9. The reasonable arrangement is for a variable term with a defined end date.

Phase I will not exceed 120 months following the Commission's approval of the proposed reasonable arrangement. Phase II, in turn, will remain in place until the earlier of (1) 120 months from the month the battery storage system for that campus is energized, or (2) December 31, 2035. While the term of the reasonable arrangement overall will remain in place for a period extending beyond 120 months in order to accommodate the flexible term of Phase II, the Phase I discount structure itself will expire after 120 months.

³⁴ Ex. A at 4, 10-11.

10. ADS's financial viability.

ADS's financial viability is not in question. ADS has operated its data centers in thirty geographic regions around the world, including Ohio, since 2016. ADS has made significant investments in Ohio and plans to expand its Ohio investments.

11. Local, state, or federal incentives.

ADS will receive some incentives from state and local authorities for the [REDACTED] new data center campuses in this application. In particular, ADS will receive variable local withholding tax rebates, as well as a sales tax exemption on goods and materials used in the data centers pursuant to a statutory program available to qualified applicants. ADS will also receive tax credits available by statute through the Ohio Job Creation Program and local real property tax abatements through the Ohio Community Reinvestment Area Program ("CRA Program"). ADS's Ohio investments are also supported by several grants, including a grant tied to payroll growth at one data center campus, grants from JobsOhio for economic development and job training, and grants from the State for roadwork development in local communities.³⁵

12. Potential secondary and tertiary benefits from Amazon's project.

ADS identified the secondary and tertiary economic benefits stemming from the new proposed data centers and this reasonable arrangement. ADS calculates that its investment in the [REDACTED] new data center campuses, and the spillover effect of its continued investments in Ohio, will support an annual average of at least [REDACTED] FTE jobs and contribute billions to Ohio's GDP.³⁶ The increases in GDP resulting from ADS's new Ohio data centers will increase state and local tax revenues and continue to provide a pool of highly skilled employees in Central Ohio, in

³⁵ The state and local incentives supporting ADS's new data center campuses are detailed in Exhibit C.

³⁶ Ex. A at 12-13.

addition to benefitting other areas with a talent pipeline for other fast-growing and high-wage industries.

13. ADS will maintain operations at the project site for the incentive term.

The fixed nature of ADS's data centers, ADS's battery storage systems, and the long-term nature of ADS's Ohio investments, ensures that it will maintain operations in Ohio for the set terms outlined in the two-phased approach of the reasonable arrangement.

B. The proposed reasonable arrangement advances state policy.

The proposed reasonable arrangement—like the prior economic development arrangement approved by the Commission for ADS's other Ohio data center campuses—will advance state policy, as identified in R.C. 4928.02. ADS's record of investment and economic impact in Ohio is by now well-established, and the Commission should continue to incentivize ADS's efforts. *See* Opinion and Order, Case No. 17-1827-EL-AEC, ¶ 36.

R.C. 4928.02(N) states Ohio's policy is to “[f]acilitate the state's effectiveness in the global economy.” The development and operation of data center campuses and the installation of utility-scale battery storage systems are an important part of Ohio's emerging economy and, as outlined above, are significant investments by ADS. As companies like ADS look to grow, innovate, and spread their investments, they must consider regulatory frameworks and the impact that existing rules will have on their business. Policies that do not fully recognize the benefits of investments, like the ones ADS is contemplating making here, can create disincentives and may place Ohio at a competitive disadvantage. By granting this application, Ohio can use its regulatory framework to promote further investments, thus advancing the state policy per R.C. 4928.02(N).

Moreover, R.C. 4928.02(G) provides that it is Ohio's policy to "[re]cognize the continuing emergence of competitive electricity markets through the development and implementation of flexible regulatory treatment." Ensuring that entities like ADS can combine the cost savings of competitive generation service from CRES providers with reasonable utility delivery charges that account for unique features of their energy usage will demonstrate that Ohio is an attractive market for businesses. It will also reinforce Ohio's reputation for flexible regulatory treatment that fosters economic development and investment.

C. The proposed reasonable arrangement does not violate R.C. 4905.33 or R.C. 4905.35.

In addition to establishing that the proposed reasonable arrangement is reasonable and furthers state policies in R.C. 4928.02, the proposed reasonable arrangement does not violate R.C. 4905.33 or R.C. 4905.35. "When utility services are rendered under different circumstances or conditions, differences in prices are not proscribed by R.C. 4905.33." *Ohio Consumers' Counsel v. Pub. Util. Comm.*, 2006-Ohio-2110, 109 Ohio St. 3d 328, 337, ¶ 25. The proposed reasonable arrangement establishes that ADS procures utility services under different circumstances and conditions based on ADS's substantial power usage, the unique load profile, and immense contributions to Ohio's economy.

Similarly, the proposed reasonable arrangement does not violate R.C. 4905.35. Because the features of this proposed reasonable arrangement are rooted in ADS's contributions to the Ohio economy and its unique load characteristics, the proposed reasonable arrangement does not grant any undue or unreasonable preference or advantage. On the contrary, the reasonable arrangement ensures ADS is properly incentivized, while still making a reasonable contribution toward applicable riders.

This result is bolstered by the Commission's prior holding that the economic development arrangement approved under Case No. 17-1827-EL-AEC did not violate R.C. 4905.33 or R.C. 4905.35. *See* Opinion and Order, Case No. 17-1827-EL-AEC, ¶ 46; *see also* Finding and Order, Case No. 22-932-EL-AEC (the Commission approving an economic development arrangement between Nestle Purina Petcare Company and Duke Energy Ohio, Inc.).

VI. CONCLUSION

For the reasons above, the Commission should approve the reasonable arrangement under Ohio Adm. Code 4901:1-38-05.

Dated November 14, 2023

Respectfully submitted,

/s/ Steven T. Nourse (by email consent)

Steven T. Nourse (0046705)
Counsel of Record
American Electric Power Service Corporation
1 Riverside Plaza, 29th Floor
Columbus, Ohio 43215
Telephone: (614) 716-1608
Email: stnourse@aep.com

Counsel for Ohio Power Company

/s/ David F. Proaño

David F. Proaño (0078838)
Counsel of Record
dproano@bakerlaw.com
Kendall C. Kash (0093717)
kkash@bakerlaw.com
BAKER & HOSTETTLER LLP
Key Tower, 127 Public Square, Suite 2000
Cleveland, Ohio 44114
Telephone: 216-621-0200
Facsimile: 216-696-0740

Rand L. McClellan (0079266)
rmcclellan@bakerlaw.com
Kayla M. Prieto (0092090)
kprieto@bakerlaw.com
BAKER & HOSTETTLER LLP
200 Civic Center Drive, Suite 1200
Columbus, Ohio 43215
Telephone: 614-228-1541
Facsimile: 614-462-2616

Willing to Accept Service Via Email
Counsel for Amazon Data Services, Inc.

Exhibit A

AWS Investment and Economic Impact Study in Ohio

CONFIDENTIAL DOCUMENT FILED
UNDER SEAL

Exhibit B

Applicant Schedule

Applicant Schedule (23-0858-EL-AEC)		
Amazon Data Services, Inc. ("ADS")		
NonBypassable Riders	Use	Rates (11/1/23)
Universal Service Fund (first 833,000 kWh)	kWh	\$0.0062781
Universal Service Fund (in excess of 833,000 kWh)	kWh	\$0.000176
kWh Tax (first 2000 kWh)	kWh	\$0.00465
kWh Tax (next 13,000 kWh)	kWh	\$0.00419
kWh Tax (in excess of 15,000 kWh)	kWh	\$0.00363
Bad Debt Rider	Base (Dist)	0.00000%
Legacy Generation Resource Rider	kWh	\$0.0003030
Basic Transmission Cost Rider	kWh	\$0.0004658
Basic Transmission Cost Rider	kW	\$8.64
Energy Efficiency and Peak Demand Reduction Cost Recovery	kWh	\$0.0000000
Energy Efficiency and Peak Demand Reduction Cost Recovery	kW	\$0.00
Economic Development Cost Recovery	Base (Dist)	2.25159%
Enhanced Service Reliability	Base (Dist)	6.69857%
gridSMART Phase 2 Rider	Month	\$16.41
Distribution Investment Rider	Base (Dist)	13.00494%
Smart City Rider	Month	\$0.00
Storm Damage Recovery Rider	Month	\$5.83
Tax Savings Credit Rider	kWh	(\$0.0006200)
Solar Generation Fund Rider (first 833,000 kWh)	kWh	\$0.0002850
Solar Generation Fund Rider (in excess of 833,000 kWh)	kWh	\$0.0000000
SSO Credit Rider	kWh	\$0.0000000
Power Forward Rider	Month	\$0.00
Pilot Demand Response Rider	Placeholder	

Phase I

The term for Phase I of the arrangement will not exceed 120 months following the Commission's approval of the application in Case No. 23-0858-EL-AEC. AEP Ohio will apply a billing determinant discount on the kW value used to calculate the monthly BTCR for the data center campuses equal to ■■■ percent for each new energized ADS data center campus in AEP Ohio territory that reaches and maintains a monthly peak load of at least ■■ MW, up to a discount of ■■ percent if ADS energizes its ■■ new data center campuses, subject to the application of the demand ratchet throughout the term of Phase I of at least 60 percent of the applicable contract capacity for that year as determined by the buildup clause addendum to each electric service agreement, for each energized data center campus that reaches and maintains a monthly peak load of at least ■■ MW. AEP Ohio's PUCO-approved tariffs will otherwise apply without variance, including any applicable minimum monthly billing demand ratchet, and no other discounts, credits or reductions will apply.

Phase II

If ADS installs a behind-the-meter battery storage system at a new data center campus in AEP Ohio territory, the monthly \$/kW transmission charge (under the BTCR or any successor rate mechanism) for the AEP Ohio account for that campus will be the GS Demand Metered Transmission 1CP rate based on that account's NSPL demand during the single zonal transmission peak (1CP). The NSPL demand will change each January based on the account's contribution to the single zonal transmission peak during the previous year. The transition from billing the \$/kW BTCR charge based on monthly demand to the account's 1CP will become effective on the first billing cycle of April of the calendar year after the battery storage system is energized. At the end of each calendar year after the account switches to 1 CP billing, PJM makes NSPL determinations for the 12-month period ending October 31, and the new NSPL values go into effect on January 1. Phase II of the reasonable arrangement tracks this schedule. The 1CP billing methodology in Phase II will be effective on first billing cycle in April following the first time that the battery system is energized. Effective when an eligible account transitions to the 1CP billing method for BTCR charges, the account will no longer receive a kW billing determinant discount under Phase I of the reasonable arrangement, and that data center campus will no longer be considered when calculating the kW billing determinant discount applied to the accounts for the other campuses. Phase II of the reasonable arrangement will remain effective until the earlier of (1) 120 months from the month the battery storage system for that data center campus is energized, or (2) December 31, 2035. If the term of Phase II extends beyond the term of Phase I, the discount structure of Phase II will remain in place for eligible accounts after the discount structure expires for the Phase I data center accounts. AEP Ohio's 60 percent contract capacity demand (kW) floor minimum will continue to apply to BTCR demand charges and will be calculated according to the load ramp specified in the buildup clause addendum in each electric service agreement.

Applicant Schedule (continued) (23-0858-EL-AEC)**Tiered Rate Discount**

# of Energized Data Center Campuses ¹	KW Billing Determinant Discount for BTCR Charges
[REDACTED]	[REDACTED]

Notwithstanding the proposed rate structure as set forth in this schedule, and for avoidance of doubt, ADS shall: (i) have the right but not the obligation to self-assess the kWh tax; and (ii) have the right but not the obligation to opt-out of the Energy Efficiency & Peak Demand Reduction Cost Recovery Rider.

¹ The campuses must each meet a minimum load requirement of [REDACTED] MW in order to be considered for the discount.

Exhibit C

CMH Incentive Summary

**CONFIDENTIAL DOCUMENT FILED
UNDER SEAL**

Exhibit D

Affidavit of Travis Metcalfe

BEFORE THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Joint Application of)
Amazon Data Services, Inc., and Ohio) Case No. 23-0858-EL-AEC
Power Company for Approval of a)
Reasonable Arrangement)

AFFIDAVIT OF TRAVIS METCALFE

[illegible]

I, Travis Metcalfe, being first duly cautioned and sworn, state as follows:

1. My name is Travis Metcalfe. I am above the age of eighteen (18) years old and competent to make this affidavit.

2. I am an Energy Projects Manager at Amazon Web Services, the parent company of Amazon Data Services, Inc. (“ADS”). My job responsibilities include developing and executing energy strategies that reduce long-term energy costs. I am authorized by ADS to make the statements in this Affidavit, which is based on personal knowledge.

3. This affidavit is provided in support of the Joint Application for Approval of a Reasonable Arrangement (the “Joint Application”) filed by ADS in this matter.

4. As an Energy Projects Manager, it is part of my duties and responsibilities to perform economic analysis reviews or economic impact reviews for ADS's business, and I am familiar with ADS record keeping systems and proprietary models on which the reviews are based.

5. The information in the Joint Application and Exhibits A, B, and C are true and accurate to the best of my knowledge and belief.

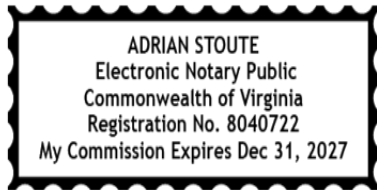
[SIGNATURE ON THE NEXT PAGE]

Executed this 9th day of November 2023.

Travis Metcalfe

Travis Metcalfe

SUBSCRIBED AND SWORN to before me by Travis Metcalfe
on this 9th day of November 2023.



[Signature]
Notary Public

My Commission expires: December 31, 2027



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Case No(s). 23-0858-EL-AEC

Summary: Application PUBLIC VERSION - Joint Application of Amazon Data Services, Inc. and Ohio Power Company for Approval of a Reasonable Arrangement electronically filed by Mr. David F. Proano on behalf of Amazon Data Services, Inc..