

Kentucky Power Company
KPSC Administrative Case No. 387-2023
Annual Responses

DATA REQUEST

- 1** Actual and weather-normalized monthly coincident peak demands for the just completed calendar year. Demands should be disaggregated into (a) native load demand (firm and non-firm) and (b) off-system demand (firm and non-firm). Please provide the information for both Kentucky Power Company individually and the AEP-East Power Pool (pursuant to the Commission's December 13, 2004 Order in the Rockport UPSA extension, Case No. 2004-00420).

RESPONSE

Please refer to Page 1 of KPCO_R_KPSC_1_1_Attachment1 for actual and weather normalized 2022 monthly peak native load demands for Kentucky Power Company. Kentucky Power Company had six customers with interruptible provisions in their contracts in 2022 for PJM initiated events and four customers with peak shaving provisions in their contracts.

Combined, these customers had approximately 6.1 MW of interruptible load available for use in PJM capacity auctions. The interruptible load available for PJM auctions reflects the average load for these customers, less contractually firm load, at the time of the PJM five coincident peaks in the summer of 2021. The four customers with the peak shaving provisions have approximately 46 MW available for such an event.

Please refer to Page 2 of KPCO_R_KPSC_1_1_Attachment1 for actual 2022 monthly system demands for Kentucky. The system demands include internal load and off-system sales. Weather-normalized monthly peak system demands for Kentucky Power Company have not been developed and are not available.

The AEP Interconnection Agreement terminated on January 1, 2014 and the AEP-East Power Pool no longer exists. As a result, the requested information regarding the AEP East Power Pool is no longer available.

Witness: Brian K. West

Kentucky Power Company
Actual and Weather Normalized Peak Internal Demand (MW)
2022

Kentucky Power Company				
Month	Peak	Peak Day	Peak Hour	Normalized Peak
January	1,187	1/27/2022	8	1,244
February	1,081	2/15/2022	8	1,132
March	1,049	3/13/2022	8	1,028
April	812	4/20/2022	7	745
May	897	5/31/2022	15	810
June	996	6/16/2022	15	955
July	939	7/12/2022	15	992
August	935	8/9/2022	14	956
September	880	9/21/2022	16	896
October	863	10/20/2022	8	663
November	1,037	11/21/2022	8	999
December	1,359	12/23/2022	21	1,126

**Kentucky Power Company
 Actual Peak System Demand (MW)
 2022**

Kentucky Power Company			
Month	Peak	Peak Day	Peak Hour
January	1,167	1/18/2022	11
February	736	2/19/2022	21
March	312	3/13/2022	3
April	1,034	4/26/2022	13
May	1,248	5/31/2022	17
June	1,239	6/14/2022	18
July	1,267	7/25/2022	18
August	1,297	8/2/2022	16
September	421	9/2/2022	16
October	35	10/18/2022	9
November	401	11/30/2022	22
December	756	12/24/2022	4

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DATA REQUEST

- 2 Load shape curves that show actual peak demands and weather-normalized peak demands (native load demand and total demand) on a monthly basis for the just completed calendar year. Please provide the information for both Kentucky Power Company individually and the AEP-East Power Pool (pursuant to the Commission's December 13, 2004 Order in the Rockport UPSA extension, Case No. 2004-00420).

RESPONSE

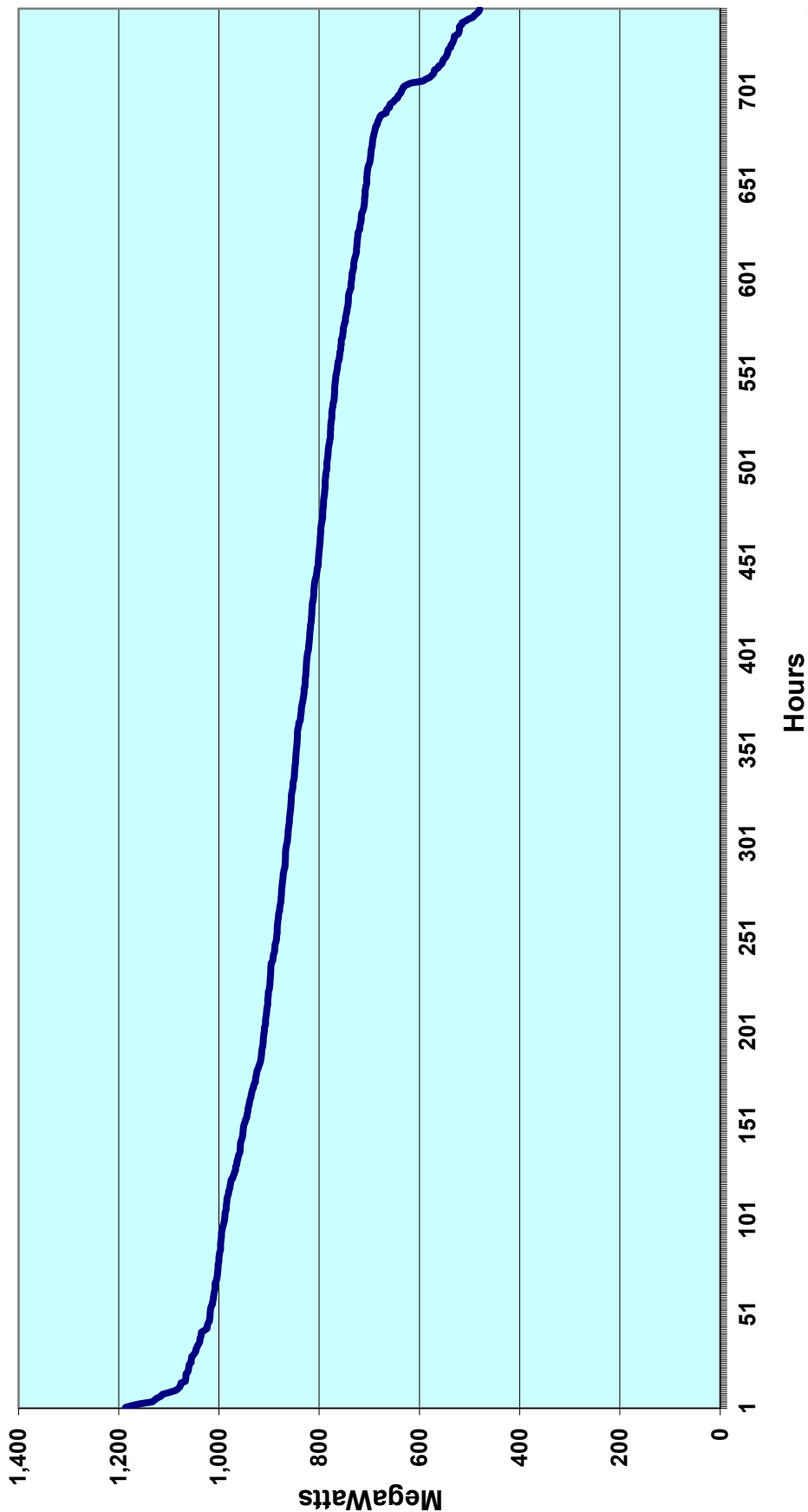
Please refer to Pages 1 through 12 of KPCO_R_KPSC_1_2_Attachment1 for 2022 monthly load duration curves for Kentucky Power Company's internal native load. Please refer to Pages 13 through 24 of KPCO_R_KPSC_1_2_Attachment1 for 2022 monthly load duration curves for Kentucky Power Company's system load. The system load, for Kentucky Power Company, includes internal load and off-system sales.

Weather-normalized monthly internal peaks for Kentucky Power Company are provided on Page 1 of KPCO_R_KPSC_1_1_Attachment1. Weather normalized system peaks have not been developed and are not available.

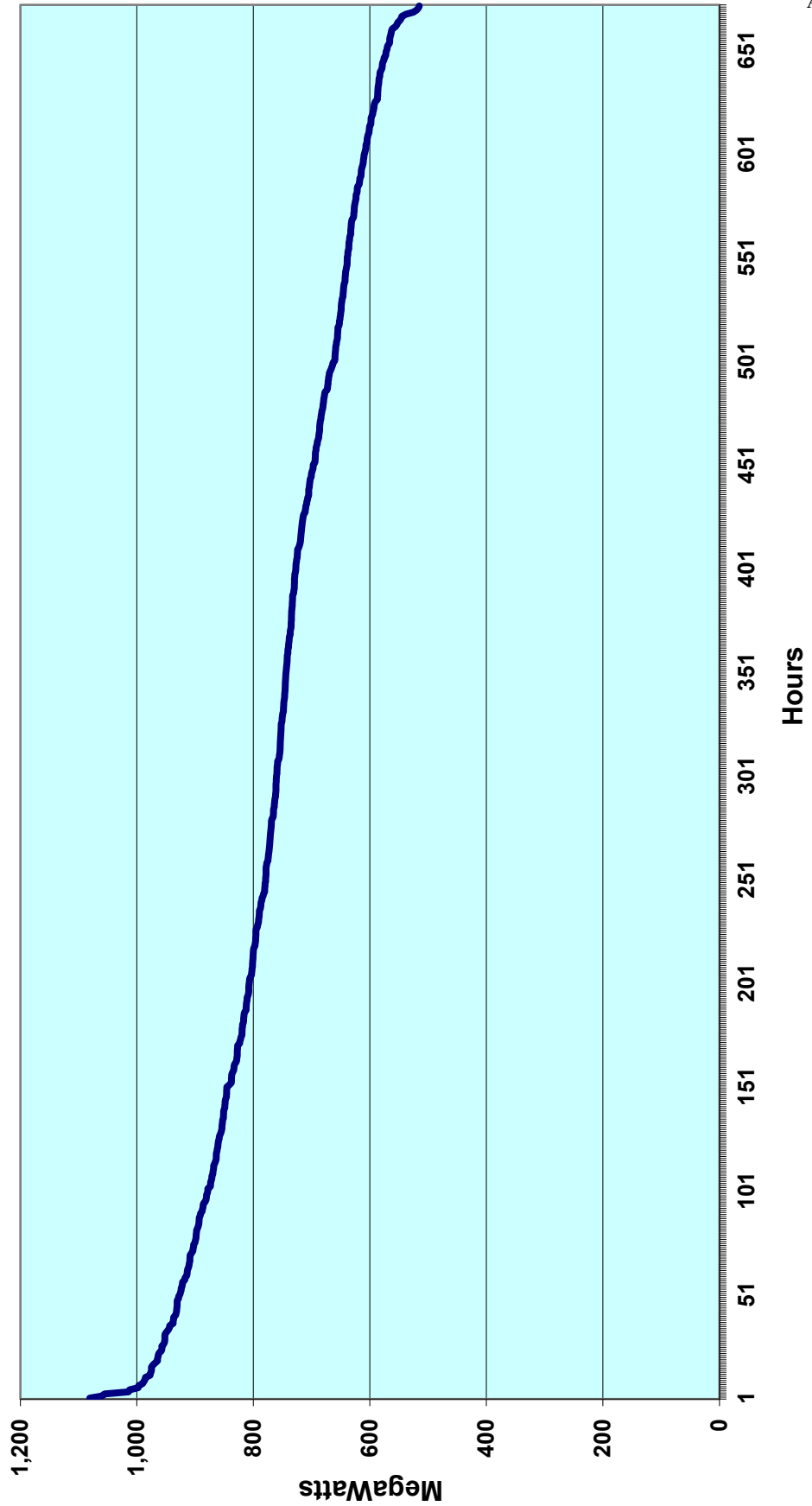
The AEP Interconnection Agreement terminated on January 1, 2014 and the AEP-East Power Pool no longer exists. As a result, the requested information regarding the AEP East Power Pool is no longer available.

Witness: Brian K. West

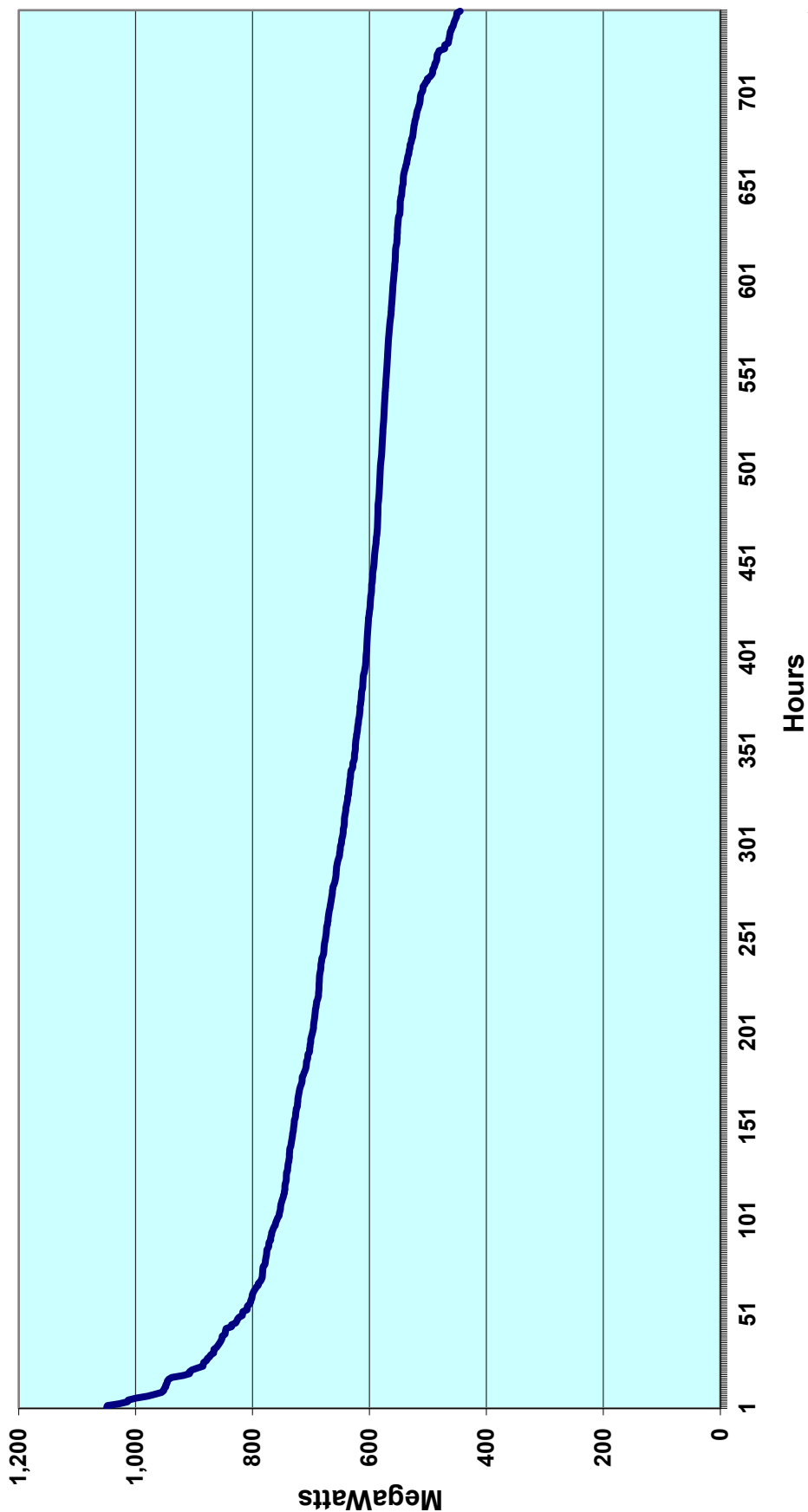
Kentucky Power Company January 2022 Load Duration Curve (Internal Load)



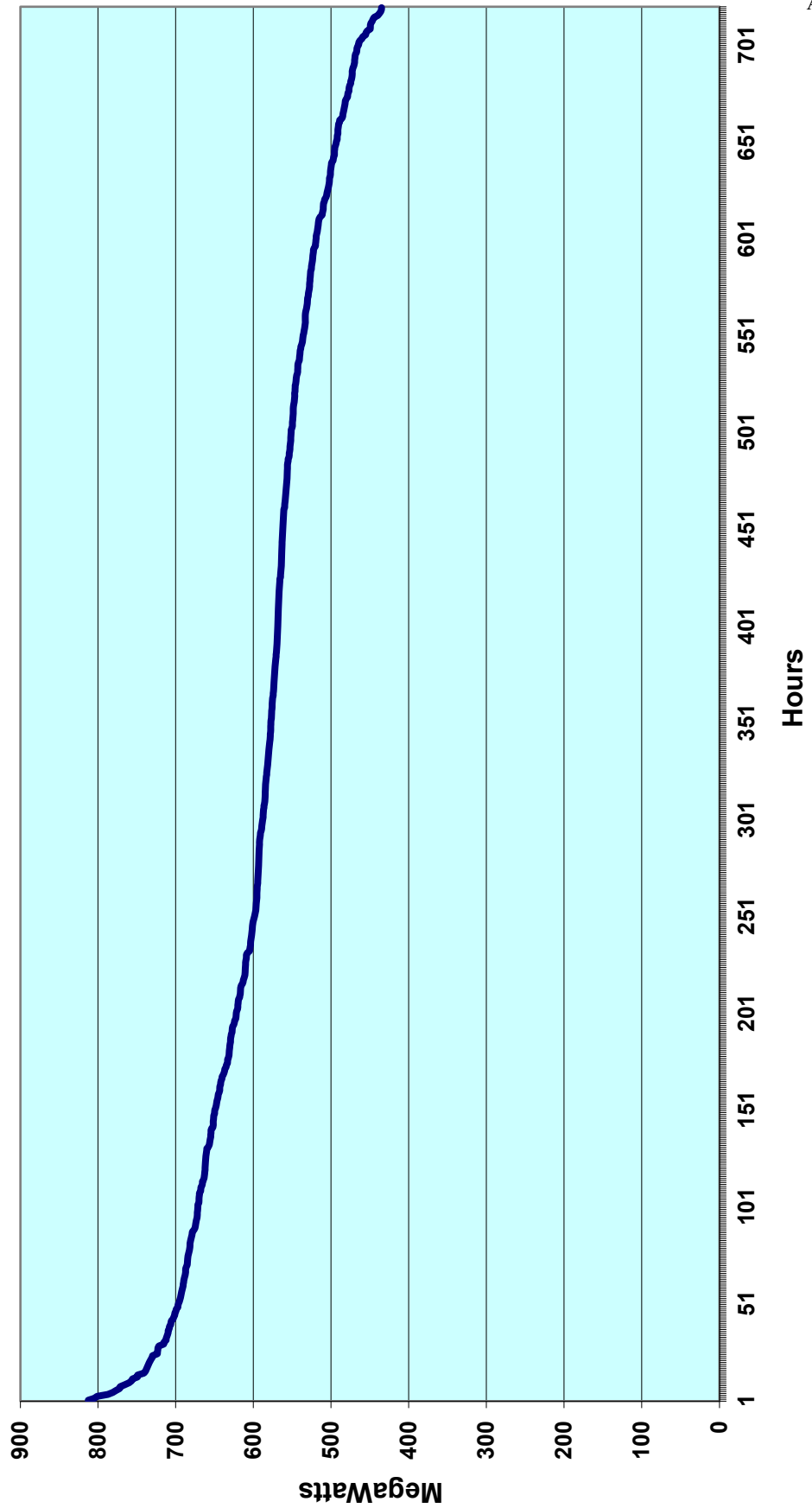
Kentucky Power Company February 2022 Load Duration Curve (Internal Load)



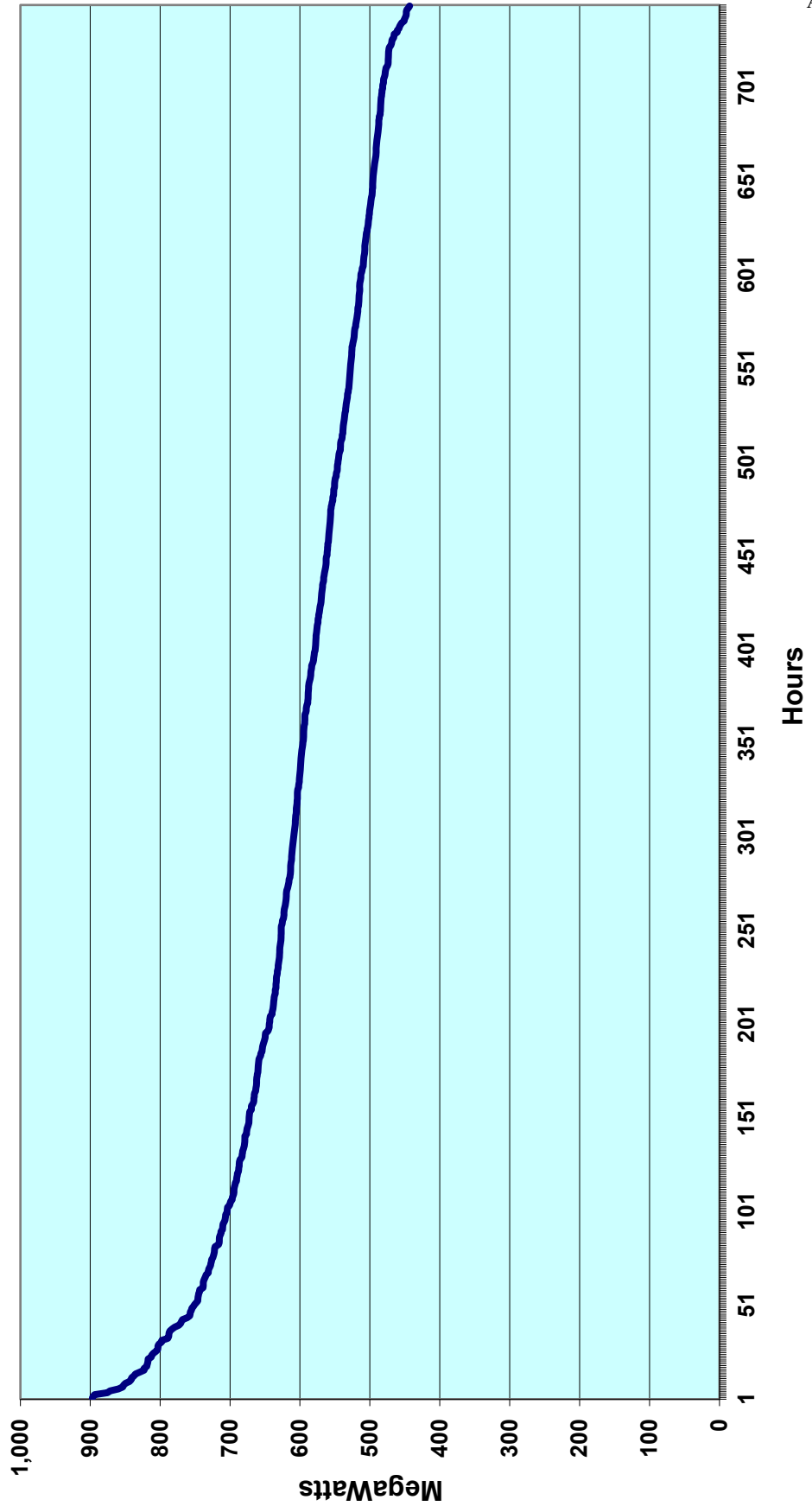
Kentucky Power Company March 2022 Load Duration Curve (Internal Load)



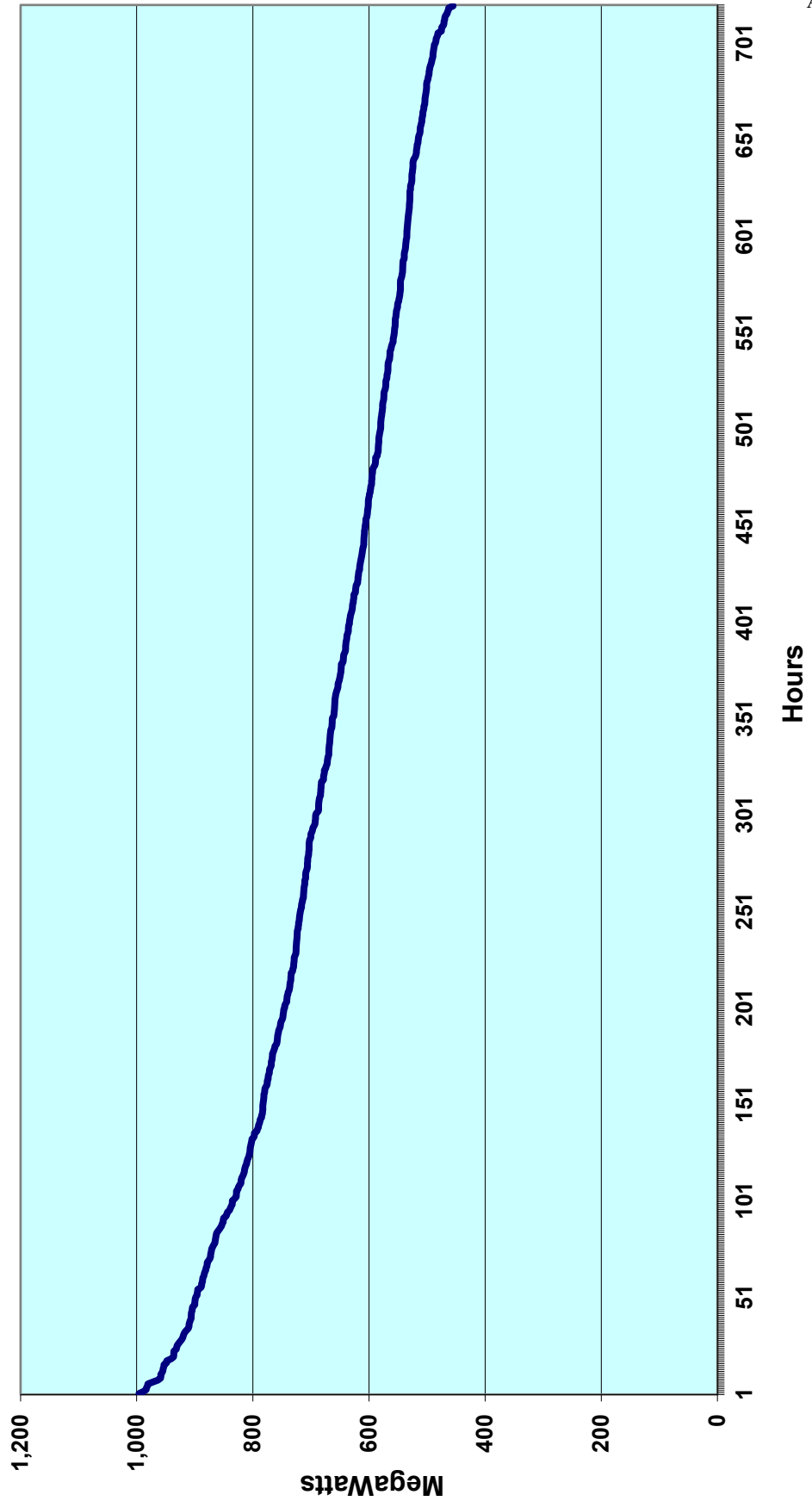
Kentucky Power Company April 2022 Load Duration Curve (Internal Load)



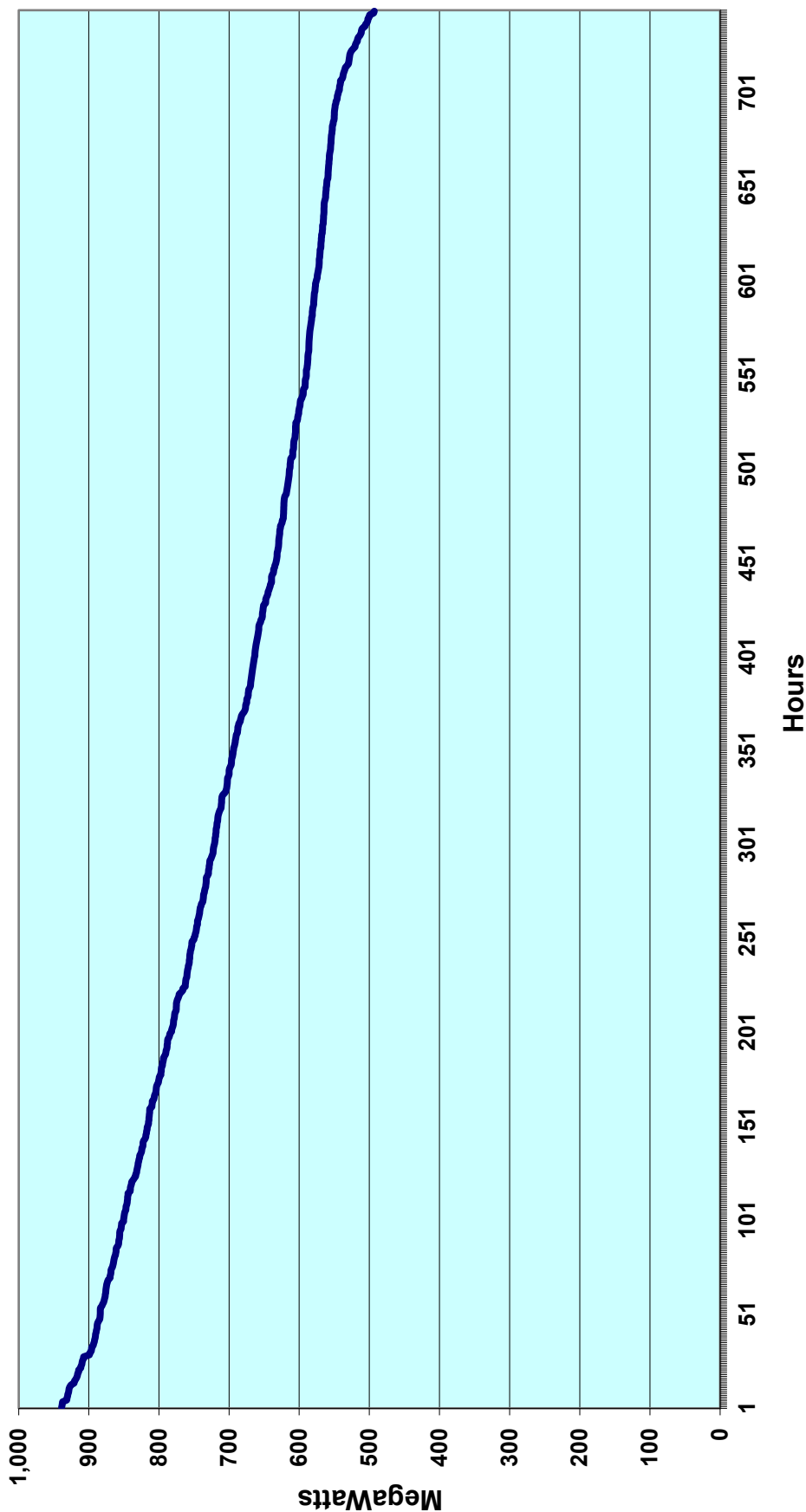
Kentucky Power Company May 2022 Load Duration Curve (Internal Load)



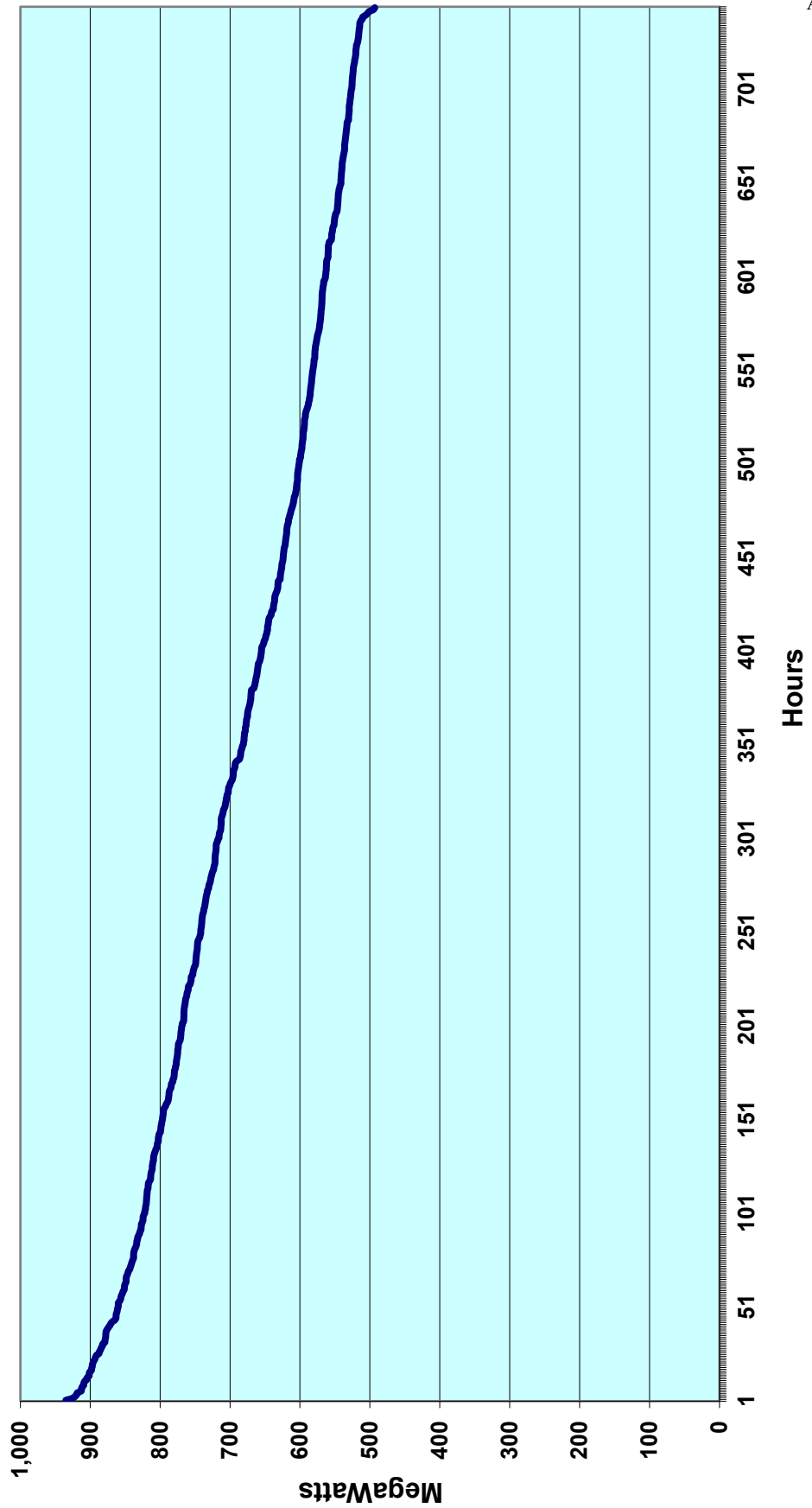
Kentucky Power Company June 2022 Load Duration Curve (Internal Load)



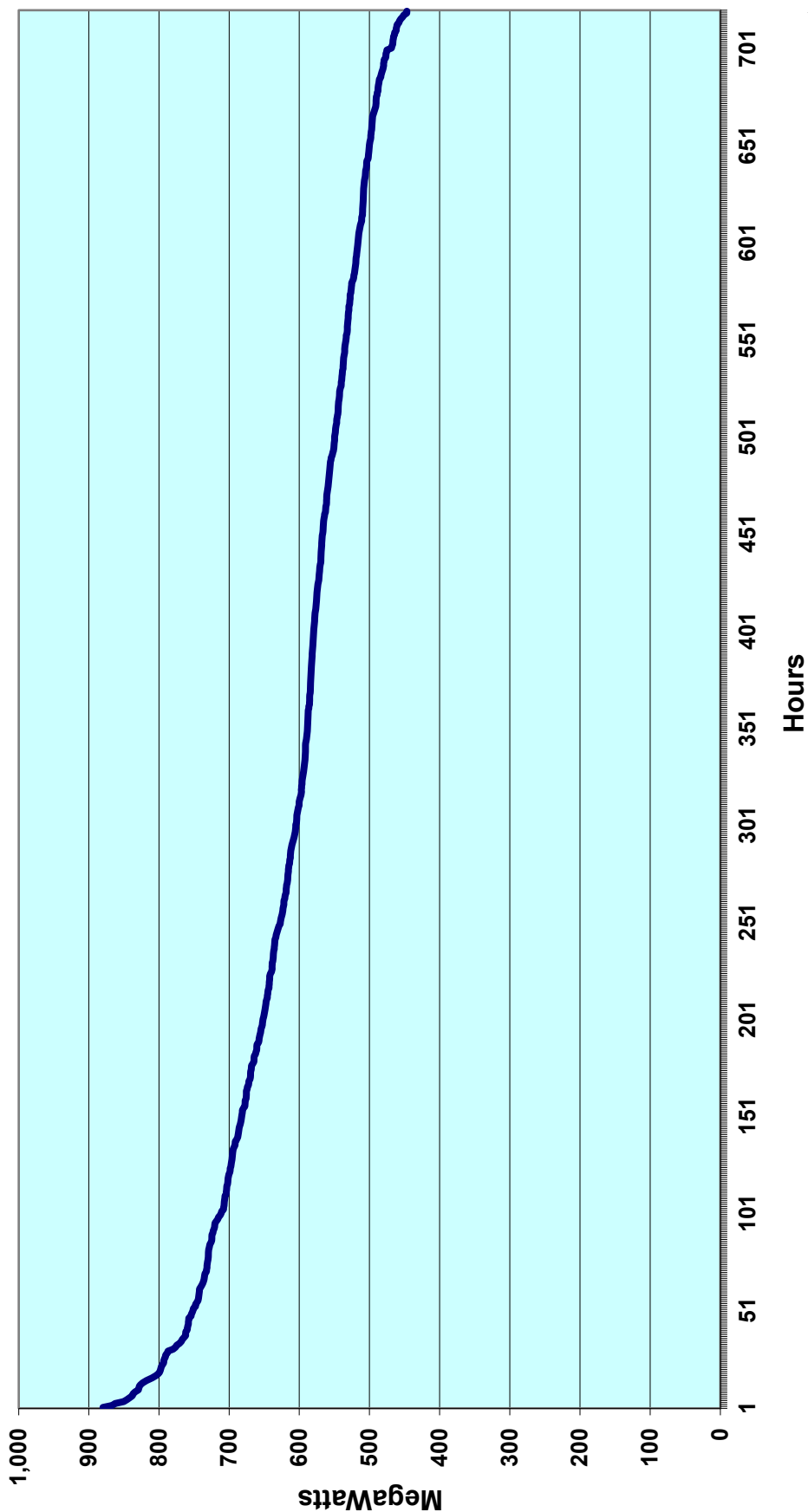
Kentucky Power Company July 2022 Load Duration Curve (Internal Load)



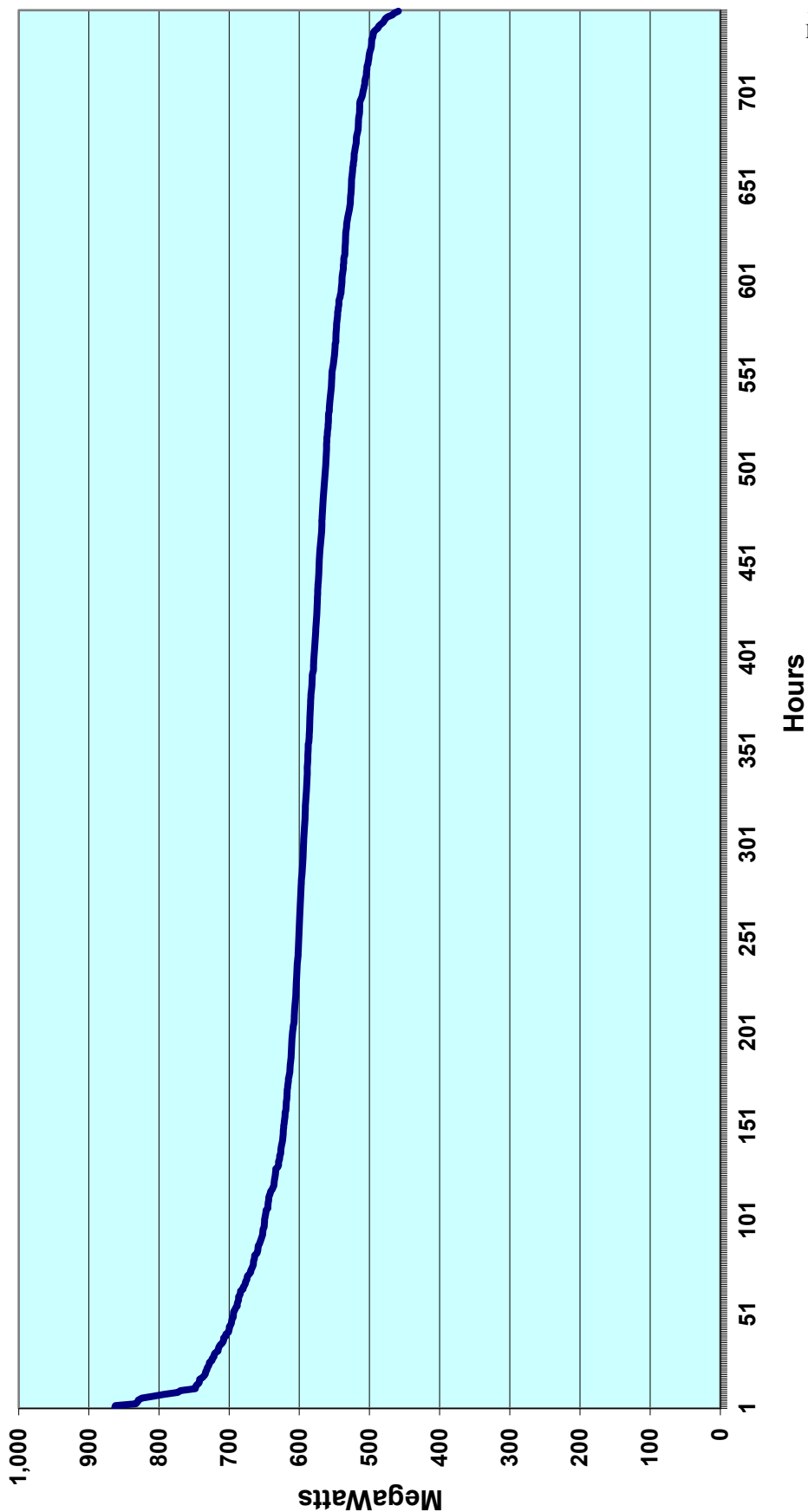
Kentucky Power Company August 2022 Load Duration Curve (Internal Load)



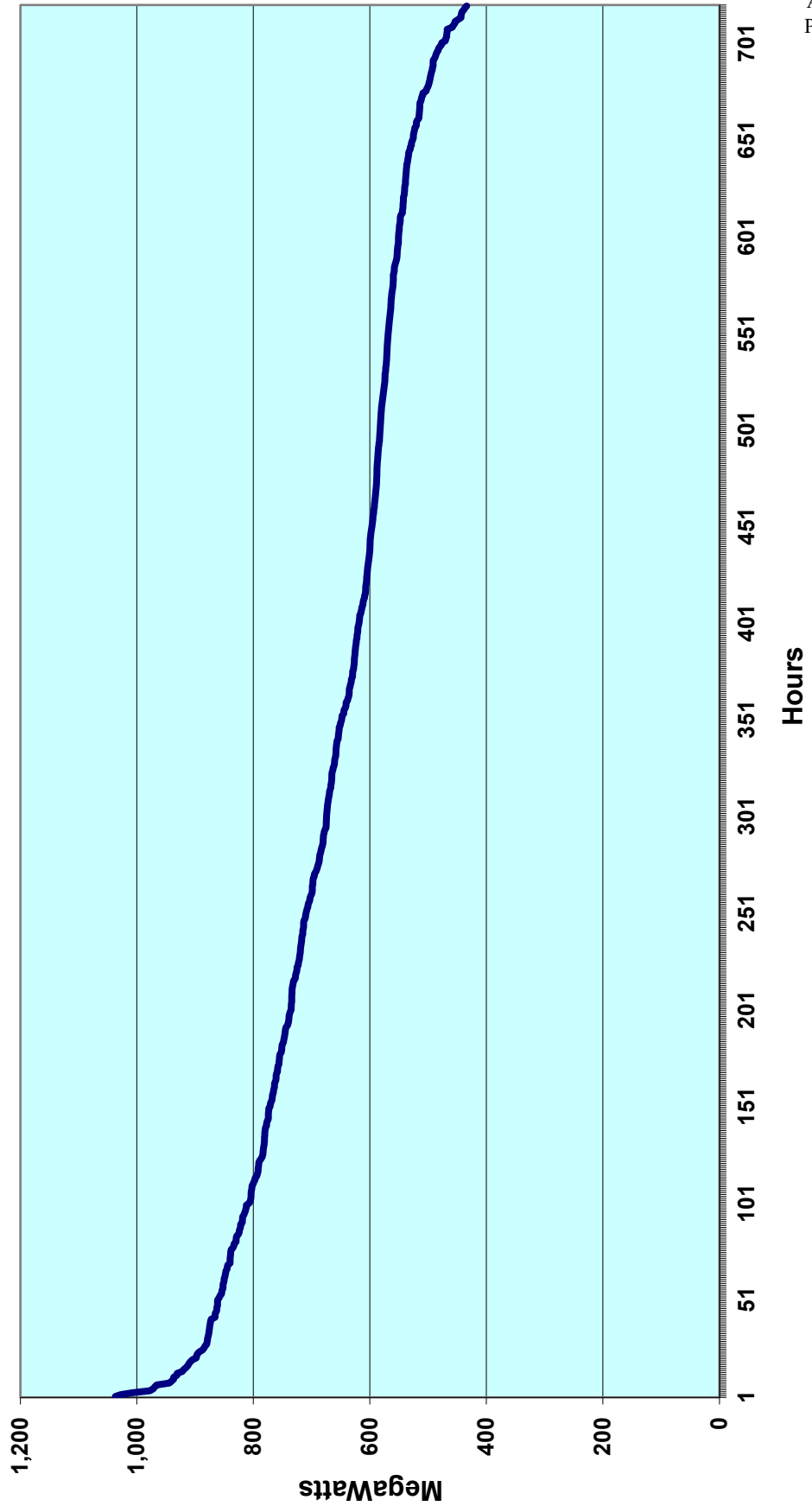
Kentucky Power Company September 2022 Load Duration Curve (Internal Load)



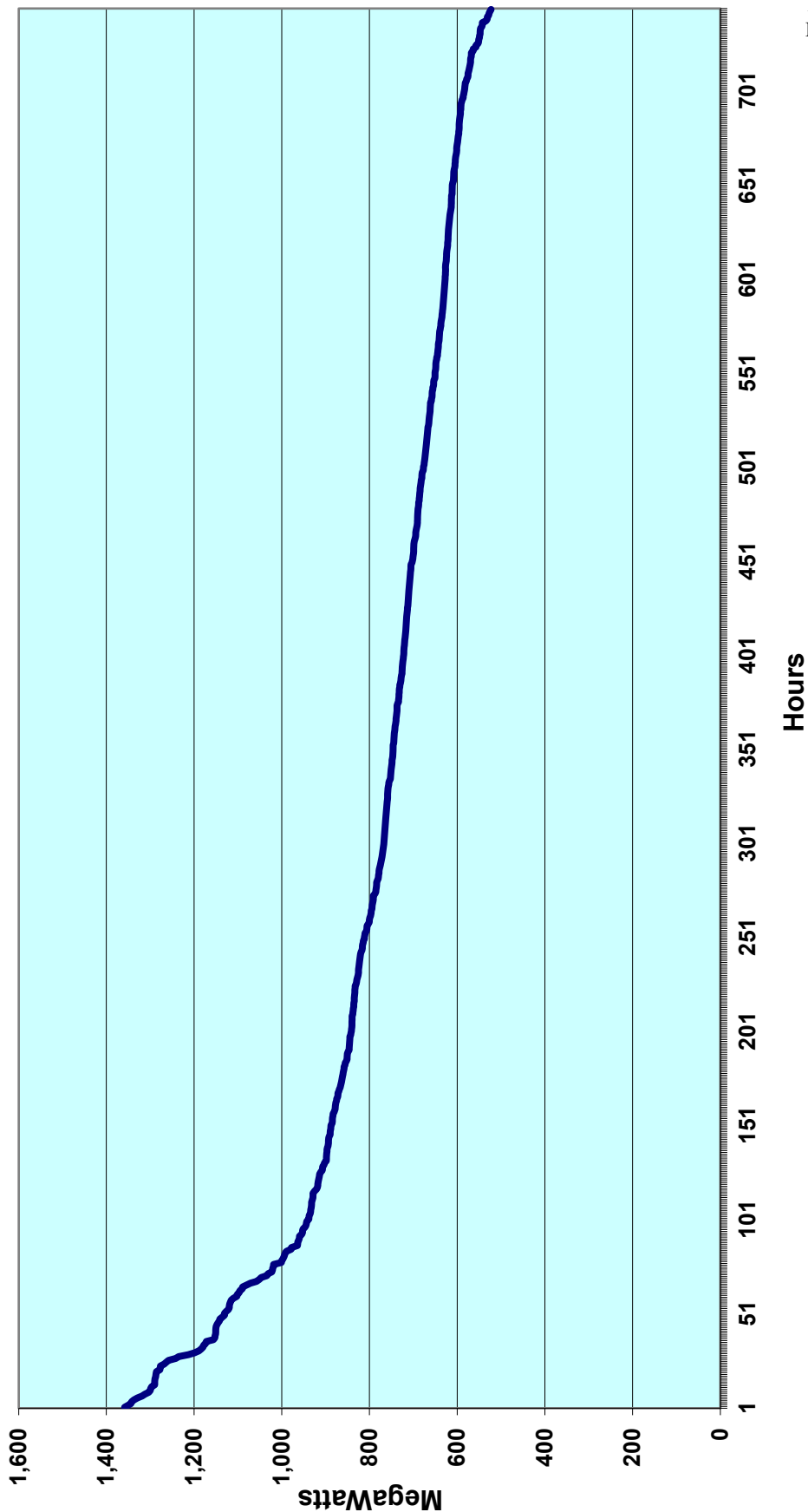
Kentucky Power Company October 2022 Load Duration Curve (Internal Load)



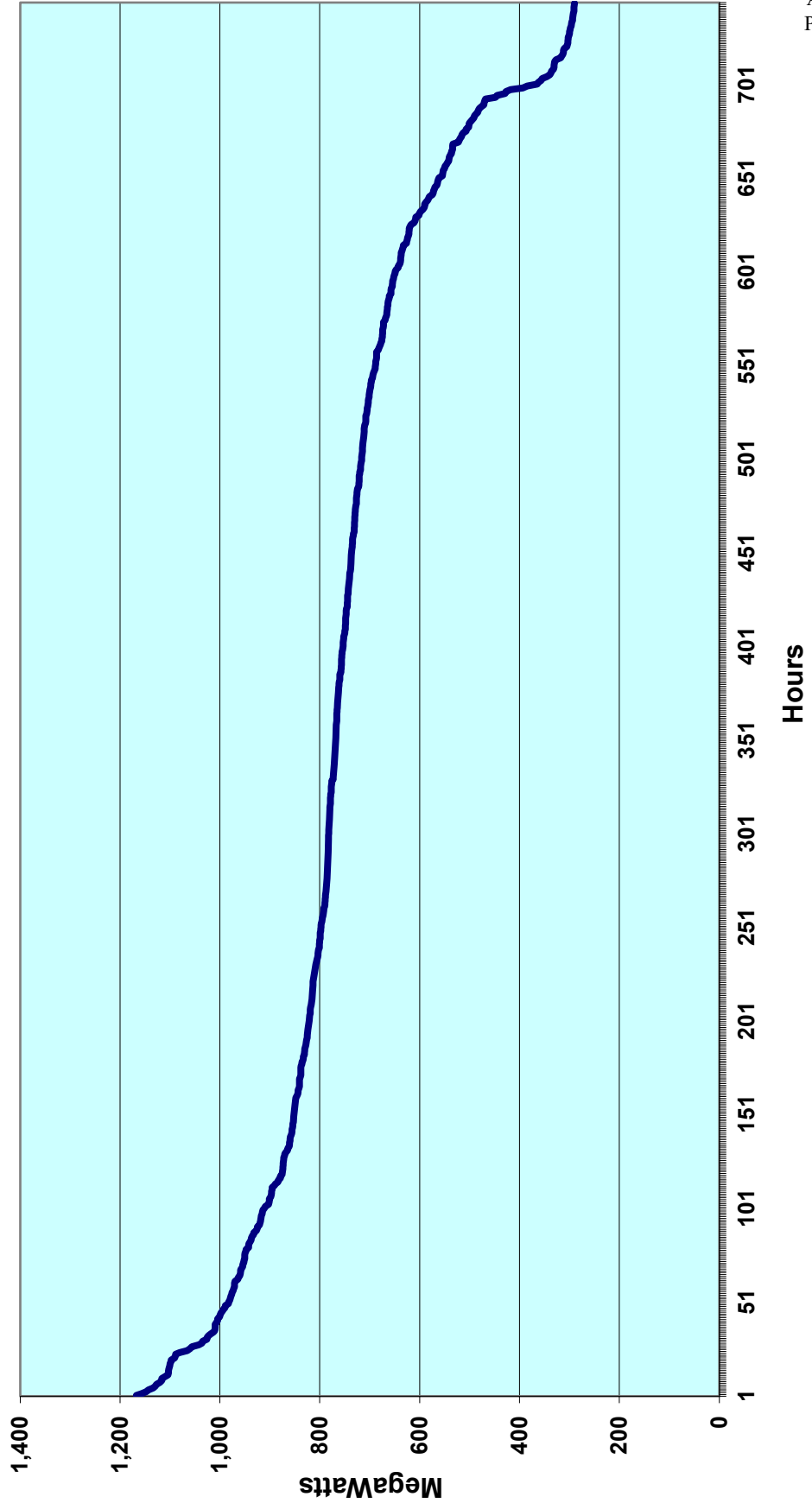
Kentucky Power Company November 2022 Load Duration Curve (Internal Load)



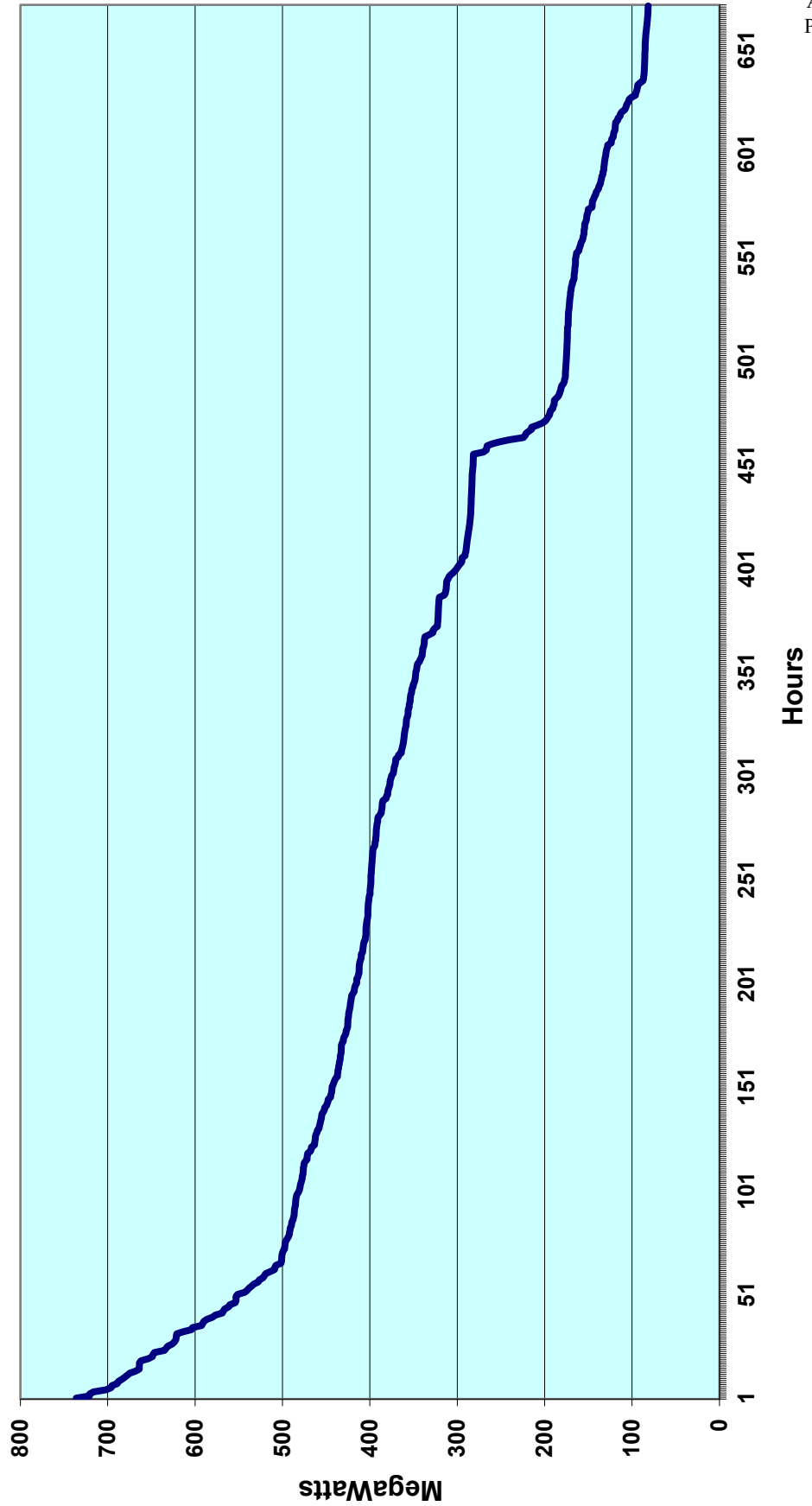
Kentucky Power Company December 2022 Load Duration Curve (Internal Load)



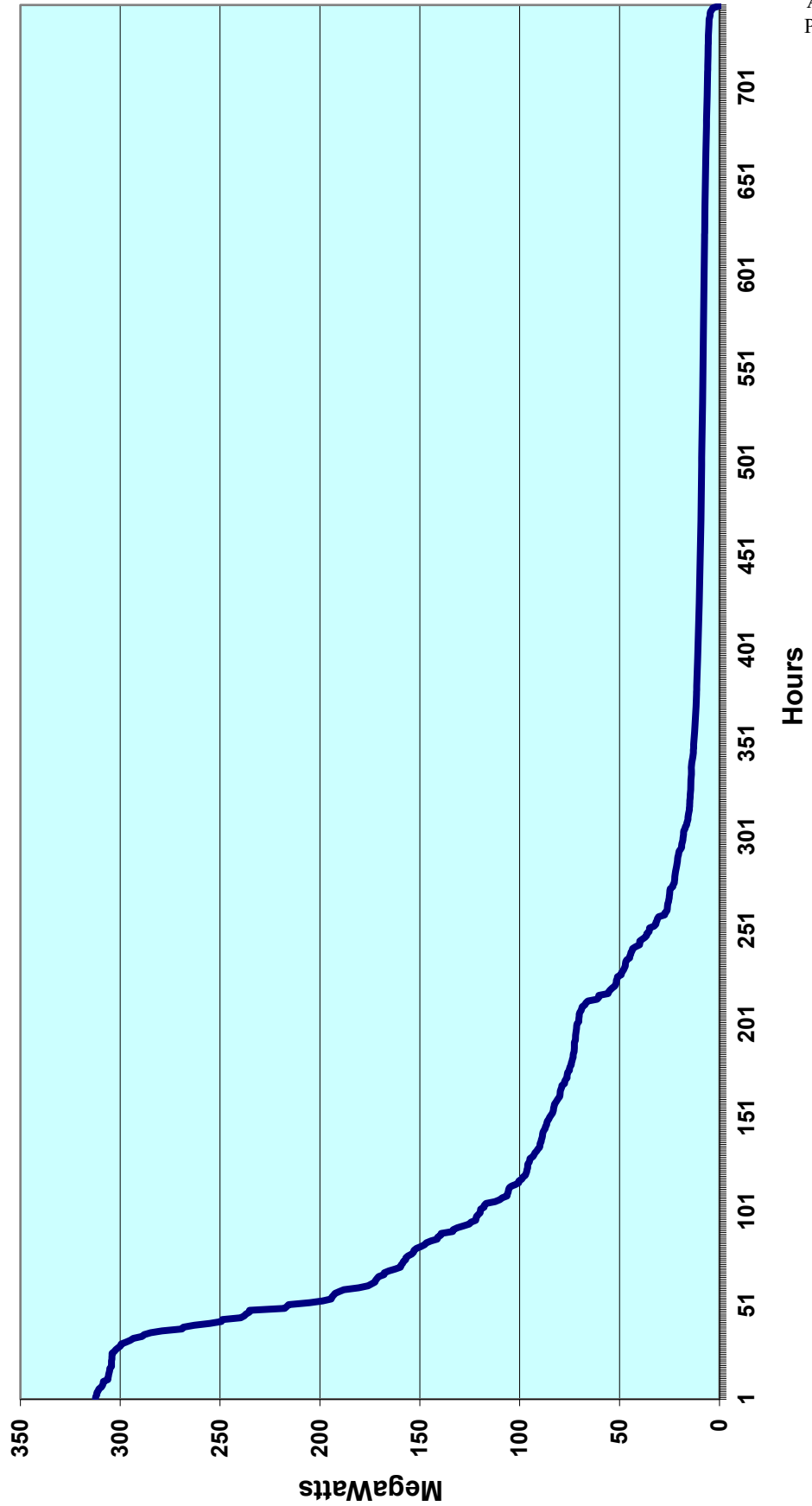
Kentucky Power Company January 2022 Load Duration Curve (System Load)



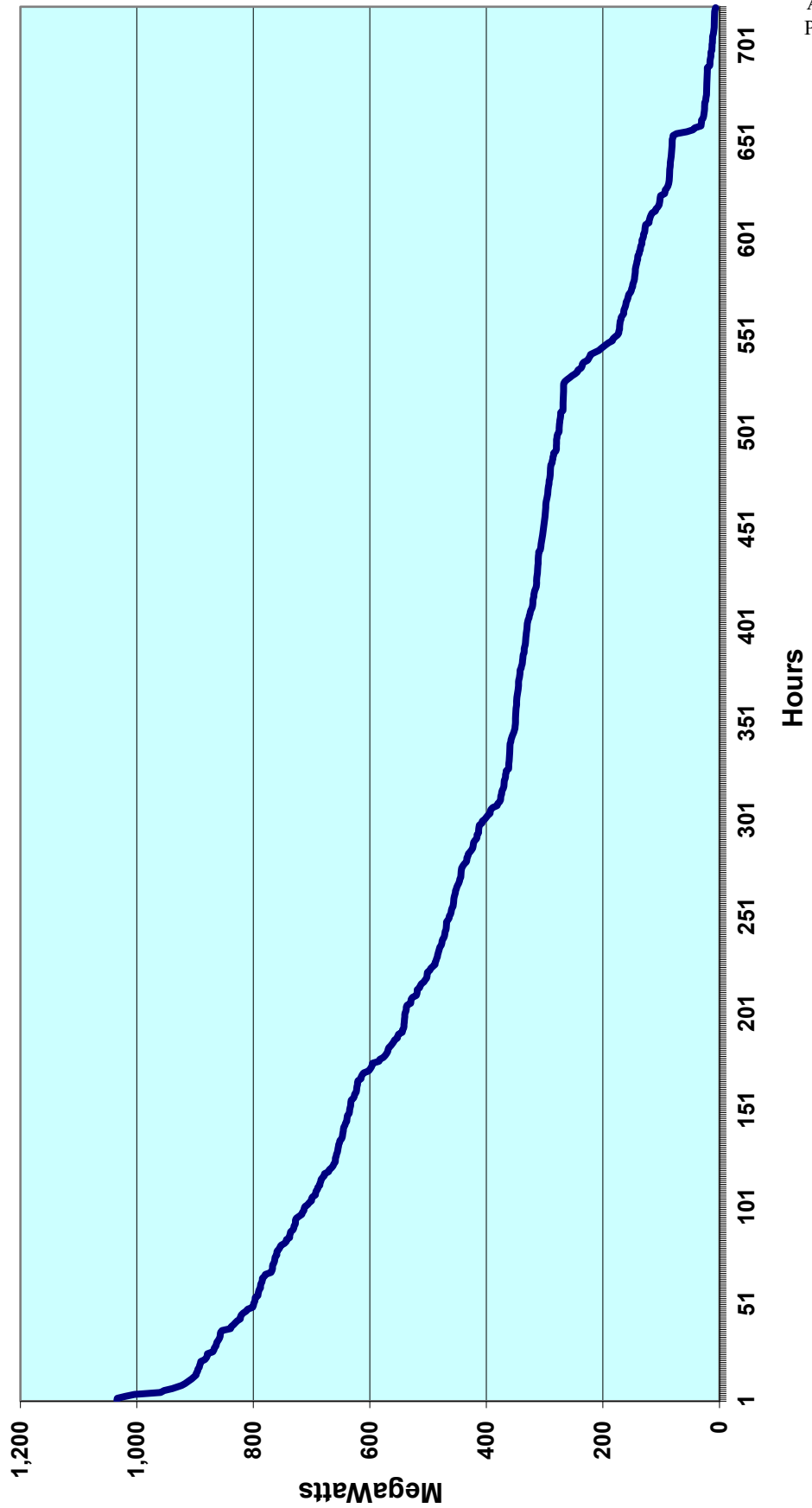
Kentucky Power Company February 2022 Load Duration Curve (System Load)



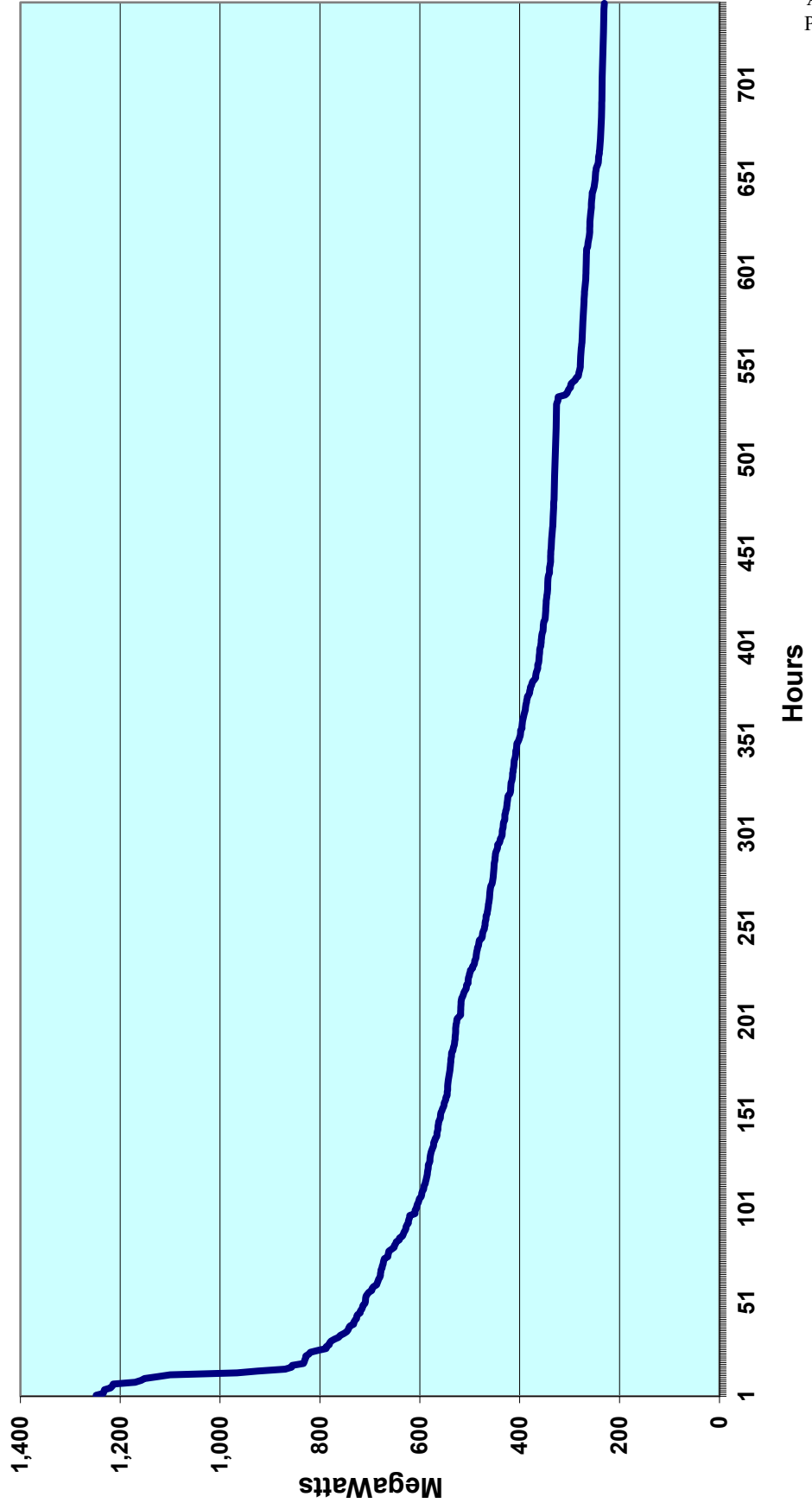
Kentucky Power Company March 2022 Load Duration Curve (System Load)



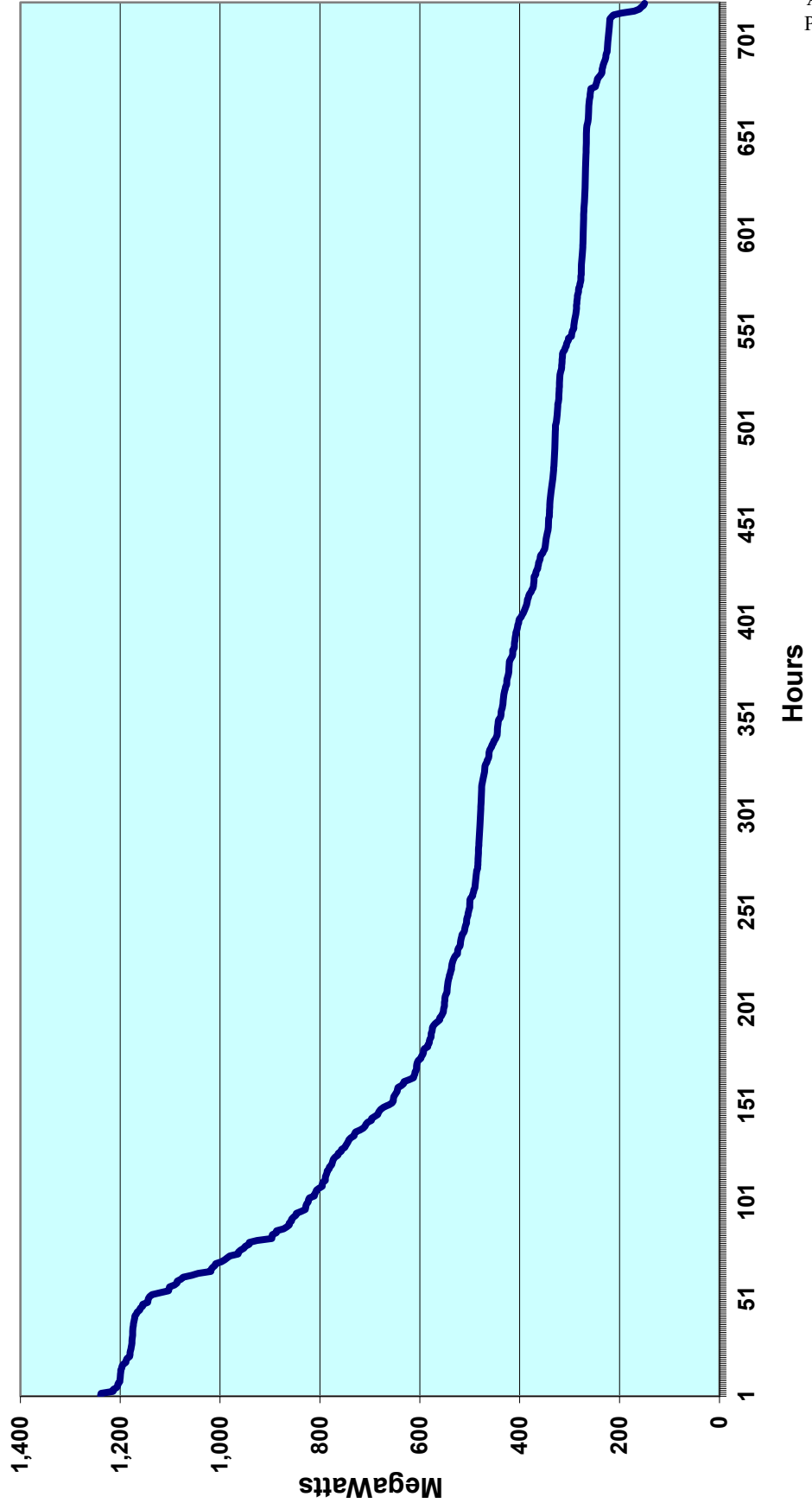
Kentucky Power Company April 2022 Load Duration Curve (System Load)



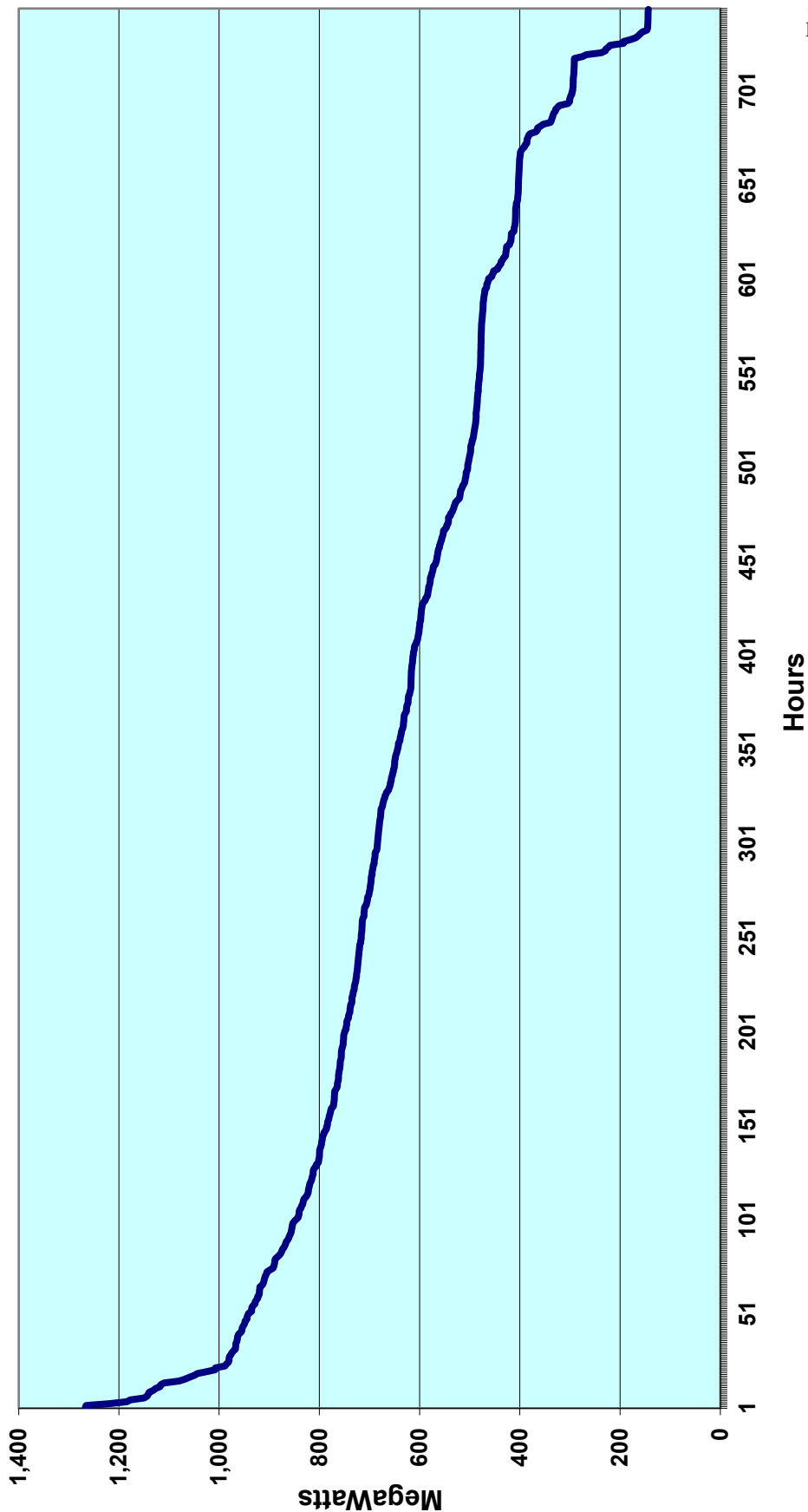
Kentucky Power Company May 2022 Load Duration Curve (System Load)



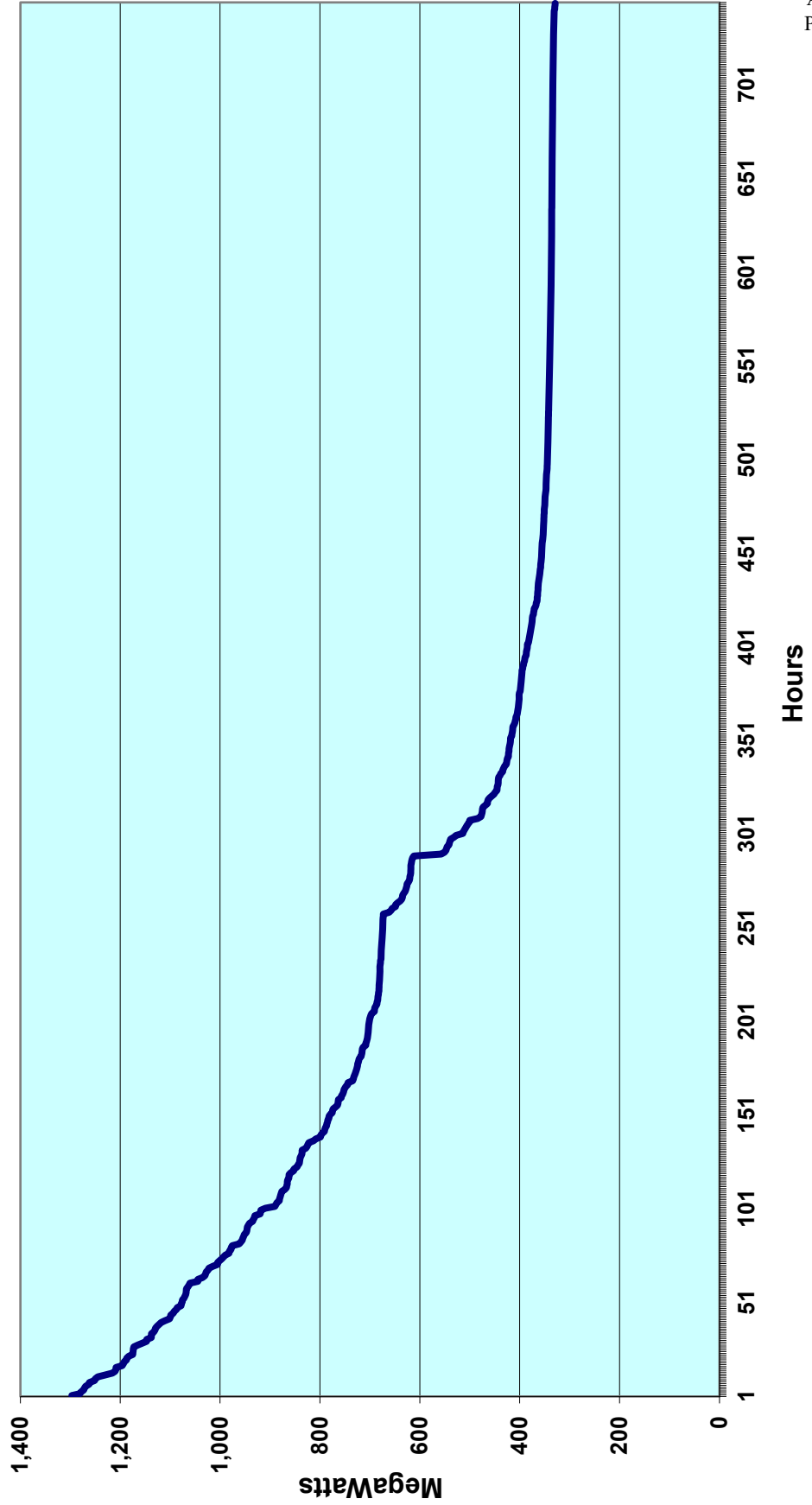
Kentucky Power Company June 2022 Load Duration Curve (System Load)



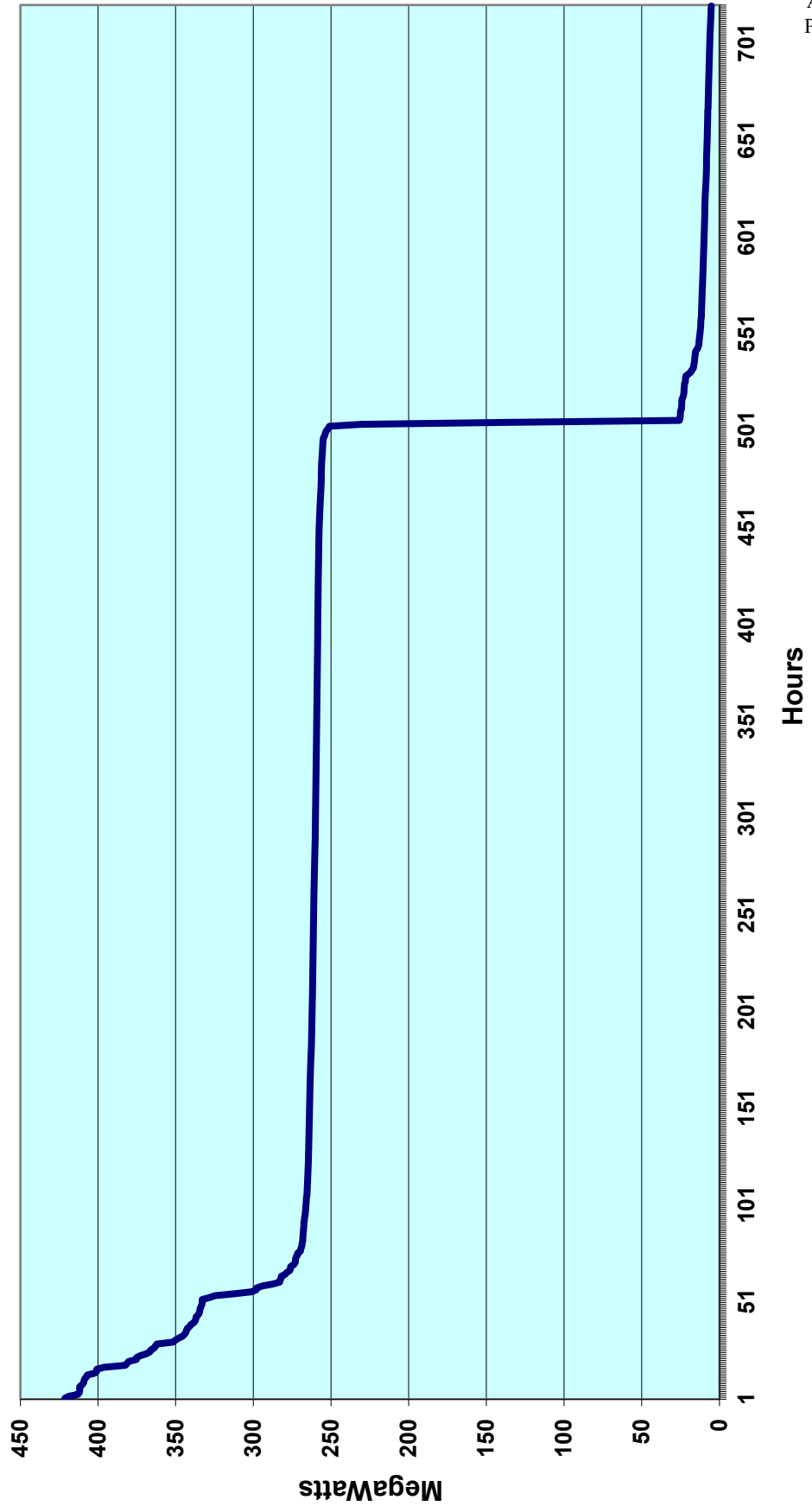
Kentucky Power Company July 2022 Load Duration Curve (System Load)



Kentucky Power Company August 2022 Load Duration Curve (System Load)



Kentucky Power Company September 2022 Load Duration Curve (System Load)



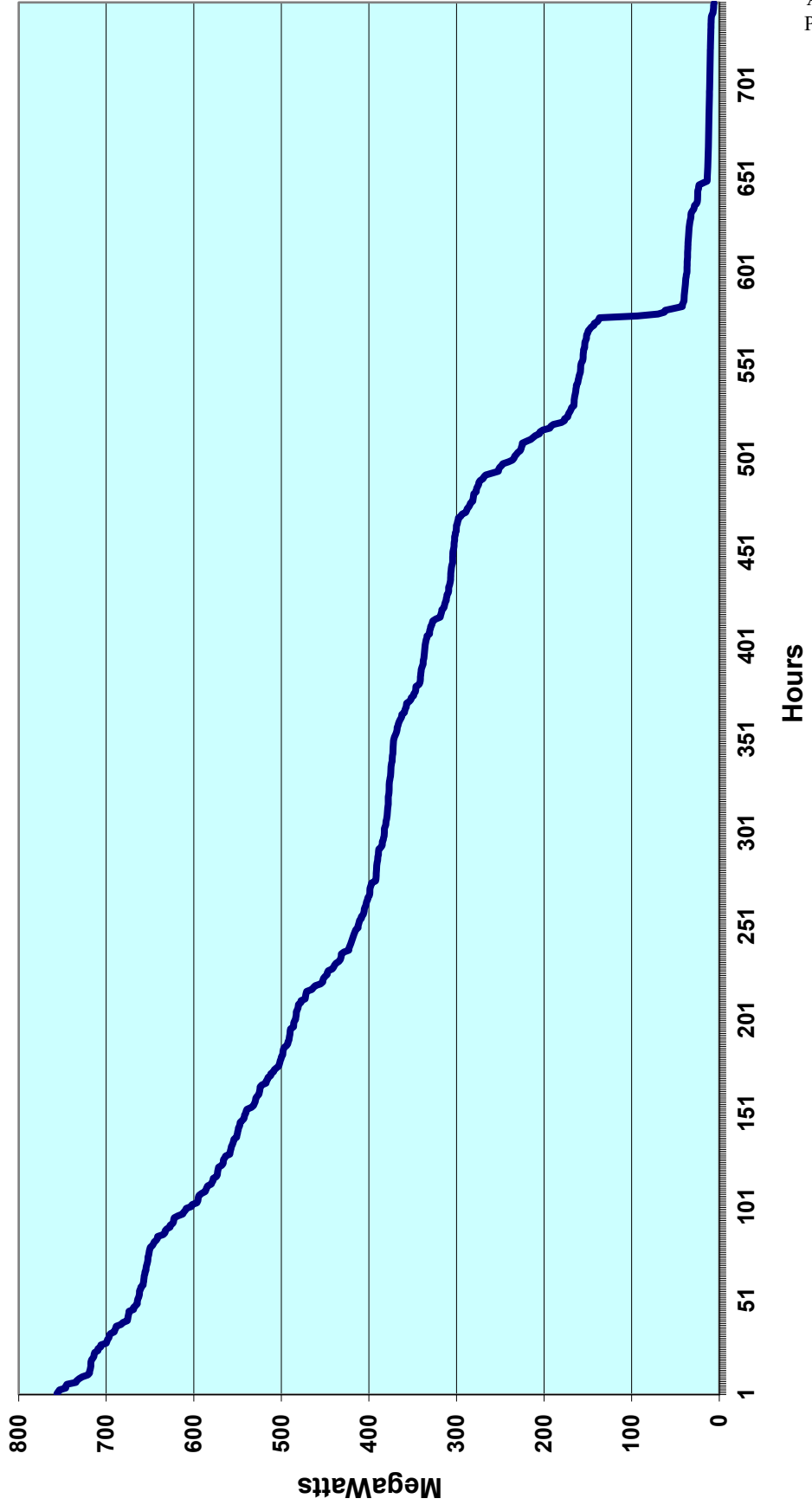
Kentucky Power Company October 2022 Load Duration Curve (System Load)



Kentucky Power Company November 2022 Load Duration Curve (System Load)



Kentucky Power Company December 2022 Load Duration Curve (System Load)



Kentucky Power Company
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DATA REQUEST

- 3** Based on the most recent demand forecast, the base case demand and energy forecasts and high case demand and energy forecasts for the current year and the following four years. The information should be disaggregated into (a) native load (firm and non-firm demand) and (b) off-system load (both firm and non-firm demand). Please provide the information for both Kentucky Power Company individually and the AEP-East Power Pool (pursuant to the Commission's December 13, 2004 Order in the Rockport UPSA extension, Case No. 2004-00420).

RESPONSE

Please refer to Page 1 of KPCO_R_KPSC_1_3_Attachment1 for Kentucky Power Company's forecasts of seasonal peak internal demands and annual internal energy requirements. In addition, the associated high forecast for seasonal peak internal demands and internal energy requirements are provided on Page 1.

The off-system energy sales forecasts for Kentucky Power Company are provided on Page 2 of KPCO_R_KPSC_1_3_Attachment1. Forecasts of off-system peak demand for Kentucky Power Company have not been developed and are not available. In addition, high case forecasts for off-system energy sales and peak demand have not been developed and are not available. The Company developed the off-system energy sales forecast for only 2023. Therefore, off-system energy sales for 2024 through 2027 are not currently available. However, the Company is in the process of developing a longer term forecast for off-system energy sales and the Company will provide those when they become available for release.

The AEP Interconnection Agreement terminated on January 1, 2014 and the AEP-East Power Pool no longer exists. As a result, the requested information regarding the AEP East Power Pool is no longer available.

Witness: Brian K. West

**Kentucky Power Company
 Base and High Forecast
 Energy Sales (GWH) and Seasonal Peak Demand (MW)
 2023 - 2027**

Year	Energy Sales		Summer Peak Demand		Preceding Winter Peak Demand	
	Base	High	Base	High	Base	High
2023	5,994	6,204	1,011	1,046	1,282	1,327
2024	6,448	6,718	1,092	1,137	1,342	1,398
2025	6,410	6,718	1,089	1,141	1,336	1,400
2026	6,298	6,635	1,069	1,126	1,309	1,379
2027	6,268	6,634	1,065	1,127	1,301	1,376

**Kentucky Power Company
Forecast Off-System Energy Sales (GWh)
2023 - 2027**

<u>Year</u>	KPCo Off-System Sales
2023	329
2024	N/A
2025	N/A
2026	N/A
2027	N/A

Kentucky Power Company
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DATA REQUEST

- 4 The target reserve margin currently used for planning purposes, stated as a percentage of demand. If changed from what was in use in 2001, include a detailed explanation for the change. Please provide the information for both Kentucky Power Company individually and the AEP-East Power Pool (pursuant to the Commission's December 13, 2004 Order in the Rockport UPSA extension, Case No. 2004-00420).

RESPONSE

The AEP-East operating companies are required to comply with the PJM mandated reserve margin following its October 1, 2004 integration of AEP's Eastern System into the PJM Interconnection.

The installed reserve margin requirement (IRM) is recalculated each year based on a five-year average of PJM generating units reliability, PJM load shape, and assistance available from neighboring regions. In addition, Kentucky Power's responsibility to PJM depends on its twelve-month history of generator reliability or Unforced Capacity value and its peak demand diversity in relation to the PJM total load.

As shown on KPCO_R_KPSC_1_5_Attachment1, for the delivery periods 2023/24 through 2027/28, PJM set the IRM at 14.9%, 14.8%, 14.7%, 14.7%, and 14.7%, respectively. Kentucky Power assumed the same IRM levels for PJM and other planning purposes.

The AEP Interconnection Agreement terminated on January 1, 2014, and the AEP-East Power Pool no longer exists. The requested information regarding the AEP-East Power Pool no longer exists.

Witness: Brian K. West

Kentucky Power Company
KPSC Administrative Case No. 387-2023
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DATA REQUEST

- 5** Projected reserve margins stated in megawatts and as a percentage of demand for the current year and the following 4 years. Identify projected deficits and current plans for addressing these. For each year identify the level of firm capacity purchases projected to meet native load demand. Please provide the information for both Kentucky Power Company individually and the AEP-East Power Pool (pursuant to the Commission's December 13, 2004 Order in the Rockport UPSA extension, Case No. 2004-00420).

RESPONSE

KPCO_R_KPSC_1_5_Attachment1 provides projected PJM peak demands, capabilities, and margins for Kentucky Power for PJM Planning Years 2023/24 through 2027/28.

The AEP Interconnection Agreement terminated on January 1, 2014, and the AEP-East Power Pool no longer exists. The requested information regarding the AEP-East Power Pool no longer exists.

Witness: Brian K. West

Kentucky Power Company
KPSC Administrative Case No. 387-2023
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DATA REQUEST

- 6** A list that identifies scheduled outages or retirements of generating capacity during the current year and the following four years.

RESPONSE

There are two types of generating unit outages that are considered "scheduled": Planned Outages and Maintenance Outages.

A Planned Outage is an outage lasting several weeks and is taken to permit the Company to perform work on major equipment groups that are not immediately required for the safe operation of the unit. Planned Outages are scheduled approximately a year in advance. The dates of the Planned Outages are approved by PJM.

Maintenance Outages also are approved by PJM. They require shorter lead time for notifying PJM and are taken to perform repair and maintenance work. Maintenance Outages may be initially scheduled for up to nine days, although they may be extended once underway.

See [KPCO_R_KPSC_1_6_Attachment1](#) for a list of scheduled outages that occurred in the first three months of 2023.

See [KPCO_R_KPSC_1_6_PublicAttachment2](#) for a list of Planned Outages for April 1, 2023, through December 31, 2027. Please note that the Company does not have a similar schedule for Maintenance Outages as the Company does not forecast Maintenance Outages.

The Rockport Unit Power Agreement with AEP Generating Company (AEG), under which the Company purchased 30% of AEG's 50% share of the output of the Rockport Plant (393 MW), expired in December 2022.

Witness: Brian K. West

Unit Name	Event Type	Start Date	End Date	Event Description
Big Sandy 1	PO	Sep 9, 2022 11:00:00 PM	Jan 14, 2023 11:47:00 AM	Boiler i/r, Generator Field Out inspection/possible rewedge, Turbine Valve i/r, Corrosion Fatigue i/r, Cooling Tower i/r, ReHeat Attemperator i/r, Gas valve i/r, FD Fan and Motor i/r, High Energy Piping (HEP) i/r, Flow Accelerated Corrosion (FAC) i/r, Core Loop testing.
Big Sandy 1	PO	Jan 14, 2023 11:47:00 AM	Jan 16, 2023 12:00:00 AM	Boiler i/r, Generator Field Out inspection/possible rewedge, Turbine Valve i/r, Corrosion Fatigue i/r, Cooling Tower i/r, ReHeat Attemperator i/r, Gas valve i/r, FD Fan and Motor i/r, High Energy Piping (HEP) i/r, Flow Accelerated Corrosion (FAC) i/r, Core Loop testing.
Big Sandy 1	MO	Feb 9, 2023 12:35:00 AM	Feb 9, 2023 2:17:00 PM	Request MO for ICE to troubleshoot/repair issue with BFPT Governor Valve controls
Mitchell 1	MO	Dec 30, 2022 12:00:00 AM	Jan 22, 2023 5:59:00 PM	Boiler i/r, Boiler Hydro, Duct repairs, Clinker Removal, IK Soot Blower Repairs, 12 ID Fan Stall margin probe i/r.
Mitchell 1	MO	Mar 16, 2023 12:28:00 AM	Mar 16, 2023 1:53:00 PM	Main Steam Lead greylock drain line leak
Mitchell 1	MO	Mar 16, 2023 1:53:00 PM	Mar 21, 2023 10:17:00 PM	Main Steam Line Above Seat Drain steam leak
Mitchell 2	MO	Jan 7, 2023 12:00:00 AM	Jan 29, 2023 7:04:00 PM	Precipitator i/r, Balance Shot on LP turbines., Boiler i/r, Duct Repairs.

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DATA REQUEST

- 7 Identify all planned base load or peaking capacity additions to meet native load requirements over the next 10 years. Show the expected in service date, size and site for all planned additions. Include additions planned by the utility, as well as those by affiliates, if constructed in Kentucky or intended to meet load in Kentucky. Please provide the information for both Kentucky Power Company individually and the AEP-East Power Pool (pursuant to the Commission's December 13, 2004 Order in the Rockport UPSA extension, Case No. 2004-00420).

RESPONSE

Kentucky Power does not currently have any approved resources planned for additional base load capacity to meet native load requirements over the next ten years.

Kentucky Power's 2022 Integrated Resource Plan projected as part of its Preferred Plan the addition of 480 MW of gas resources and 1,500 MW of solar and wind resources during the 2023 through 2032 time period, as well as extending the operation of Big Sandy Unit 1 (295 MW) through May 2041. The Preferred Plan is not a commitment by Kentucky Power to the identified specific resource additions.

The AEP Interconnection Agreement terminated on January 1, 2014, and the AEP-East Power Pool no longer exists. The requested information regarding the AEP-East Power Pool no longer exists.

Witness: Brian K. West

Kentucky Power Company
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DATA REQUEST

- 8 (a)&(b)** The following transmission energy data for the just completed calendar year and the forecast for the current year and the following four years:
- a. Total energy received from all interconnections and generation sources connected to the transmission system.
 - b. Total energy delivered to all interconnections on the transmission system.

RESPONSE

a.&b. Please see KPCO_R_KPSC_1_8a&b_Attachment1 for 2021 actual energy receipt and delivery data. The Company does not maintain forecast data by interconnection or generation source. Total-system energy forecasts are provided in KPCO_R_KPSC_1_3_Attachment1.

Witness: Brian K. West

Kentucky Power Company
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DATA REQUEST

- 8 (c)&(d)** The following transmission energy data for the just completed calendar year and the forecast for the current year and the following four years:
- c. Peak load capacity of the transmission system.
 - d. Peak demand for summer and winter seasons on the transmission system.

RESPONSE

c. The maximum amount of electric energy that can be transmitted through a transmission network is a function of the level of the load and generation connected to the transmission system as well as the level and direction of transmission service into, out of, and through the network. Therefore, the 'Peak Load Capacity' of the transmission system cannot be quantified as a single value.

The Kentucky Power transmission system capacity is designed to serve the existing and projected load. It is also designed to reliably serve the load for any single contingency outage of a line, transformer or generator. Based on information currently available, the existing transmission system, together with the transmission capacity additions described in KPCO_R_KPSC_1_9_Attachment1, will provide adequate capacity to serve the existing and projected loads provided in response to part d of this request.

d. Please refer to KPCO_R_KPSC_1_8d_Attachment1 for the requested information.

Witness: Brian K. West

Kentucky Power Company
Seasonal Peak Demand
Actual 2022 and Forecast 2023-2027

Year	Summer Peak Demand (MW)	Preceding Winter Peak Demand (MW)
2022	996*	1,187*
2023	1,011	1,282
2024	1,092	1,342
2025	1,089	1,336
2026	1,069	1,309
2027	1,065	1,301

***Based on Actual Data**

Kentucky Power Company
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DATA REQUEST

- 9 Identify all planned transmission capacity additions for the next 10 years. Include the expected in-service date, size and site for all planned additions and identify the transmission need each addition is intended to address.

RESPONSE

Please see KPCO_R_KPSC_1_9_Attachment1 for the requested information.

Witness: Brian K. West

***ALL CAPACITIES AND IN SERVICE DATES APPROXIMATE/SUBJECT TO CHANGE**

Hazard – Wooton 161 kV Project

This project addresses thermal violations, equipment material condition, performance, and risk concerns identified with the Hazard-Wooton 161 kV line and 161/138 kV transformer. Specifically, this project will rebuild approximately 6.6 miles of the Hazard - Wooton 161 kV line and replace three, single phase 161/138 kV transformers at Hazard with a single higher capacity three-phase transformer. Additionally, this project will replace the existing 138/69 kV transformers with new 138/69 kV 130 MVA transformers due to identified equipment material condition, performance, and risk concerns. Install a new 3000A 40 kA 138kV circuit breaker at Hazard station on the line exit towards Beckham station. Add a 138kV circuit switcher to the high side of transformer #4 at Hazard station. Replace 138kV capacitor bank and switcher BB with a new switcher and 43.2 MVAR capacitor bank at Hazard station. Replace 69 kV circuit breakers S, E, and F with 3000A 40 kA 69 kV circuit breakers and with a bus tie 3000A 69 kV circuit breaker being installed between the existing 69 kV box bays at Hazard station. Retire existing 69 kV capacitor bank and switcher CC. 69 kV capacitor bank and switcher AA will be retired. The revised in-service date for this project is November 2023.

- **Hazard – Wooton 161 kV Line**
Existing Summer Emergency Conductor Capacity: 215 MVA
Proposed Summer Emergency Conductor Capacity: 390 MVA
- **Hazard 161/138 kV Transformer**
Existing Nameplate Capacity: 135 MVA
Proposed Nameplate Capacity: 350 MVA
- **Hazard 138/69 kV Transformer #1**
Existing Nameplate Capacity: 50 MVA
Proposed Nameplate Capacity: 130 MVA
- **PJM Baseline (B2761):** Please see pages 3-4
<https://www.pjm.com/-/media/committees-groups/committees/srrtep-w/20190423/20190423-reliability-analysis-update.ashx>
- **PJM Supplemental (S1412):** Please see pages 13-15
<https://www.pjm.com/-/media/committees-groups/committees/srrtep-w/20171218/20171218-reliability-analysis-update.ashx>

Burton station replacement:

Construct a Greenfield 69/12 KV Osborne Station to replace Burton Station, including a high side 69KV Phase Over Phase switch, fiber connectivity, a circuit switcher, and one 69/12kV 12/16/20MVA transformer and associated distribution feeders. Construct a Greenfield 69/12 KV Osborne Station to replace Burton Station, including a high side 69KV Phase over Phase switch, fiber connectivity, a circuit switcher, and one 69/12kV 12/16/20MVA transformer and associated distribution feeders. Construct a new ~0.5 mi double circuit 69 kV line to the proposed Osborne substation. Reconfigure the existing Beaver Creek - Fleming 69kV line to facilitate the

construction of the new double circuit Osborne 69kV line to feed the proposed Osborne Substation. The current projected in-service date for this project is November 2023.

- **Beaver Creek - Osborne 69kV transmission line**
Proposed Summer Emergency Conductor Capacity: 75 MVA
- **Osborne – Weeksbury 69kV transmission line**
Proposed Summer Emergency Conductor Capacity: 75 MVA
- **PJM Supplemental (S2436):** Please see pages 66-69
<https://www.pjm.com/-/media/committees-groups/committees/srrtep-w/postings/2021/aep-local-plan-submission-of-the-supplemental-projects-for-2021-rtep.ashx>

Kewanee-Enterprise Park 138 kV Transmission Line Project

This project will address thermal and voltage violations identified on the Pikeville 46kV network by establishing a new substation (Kewanee) to the west (~1.5 mi.) of the existing Fords Branch Station, potentially in/near the new Kentucky Enterprise Industrial Park. This new station will consist of 4 -138 kV breaker ring bus and 2 step-down distribution voltage transformers and a 28.8 MVAR Cap Bank. The project will construct approximately 5 miles of new double circuit 138 kV line in order to loop the new substation into the existing Beaver Creek – Cedar Creek 138 kV circuit. Current projected in-service date is November 2023.

- **Beaver Creek – Kewanee 138kV transmission line**
Proposed Summer Emergency Conductor Capacity 378 MVA
- **Kewanee – Cedar Creek 138kV transmission line**
Proposed Summer Emergency Conductor Capacity 378 MVA
- **PJM Baseline (B3087):** Please see page 3
<https://www.pjm.com/-/media/committees-groups/committees/srrtep-w/2020/20200420/20200420-reliability-analysis-update.ashx>

Fleming station rebuild (Baseline)

Rebuild Fleming station in the clear; Replace 138/69kV Fleming Transformer #1 with 138/69 kV 130 MVA transformer with high side 138 kV CB; Install a 5 breaker 69 kV ring bus on the low side of the transformer, replace 69 kV circuit switcher AA, replace 69/12kV transformer #3 with 69/12 kV 30 MVA transformer, replace 12 kV CB A and D. Retire existing Fleming substation. The current project in-service date for this project is April 2024.

- **Fleming 138/69kV Transformer**
Existing 138/69kV Nameplate Capacity: 130 MVA
Proposed 138/69kV Nameplate Capacity: 130 MVA
- **PJM Baseline (B3307):** Please see Pages 45-46
<https://www.pjm.com/-/media/committees-groups/committees/srrtep-w/2021/20210115/20210115-reliability-analysis-update.ashx>

Allen station Improvement (Baseline):

Rebuild Allen Station in the clear. A 0.2-mile segment of the Allen-East Prestonburg 46 kV line will be relocated to the new station. The McKinney-Allen line extension will walk around the south and east sides of the existing Allen station to the new Allen Station being built in the clear. A short segment of new single circuit 69 kV line and a short segment of new double circuit 69 kV line (both operated at 46 kV) will be added to the line to tie into the new Allen Station bays. A segment of the Stanville-Allen line will have to be relocated to the new station. A 0.25-mile segment of the existing Allen-Prestonburg single circuit will be relocated. Remote end work will be required at Prestonburg, Stanville, and McKinney stations. The current projected in-service date for this project is May 2024.

- **Stanville - Allen 46kV transmission line**
Existing Summer Emergency Conductor Capacity: 47 MVA
Proposed Summer Emergency Conductor Capacity: 50 MVA
- **Allen – East Prestonsburg transmission line**
Existing Summer Emergency Conductor Capacity: 45 MVA
Proposed Summer Emergency Conductor Capacity: 53 MVA
- **PJM Baseline (B3353):** Please see pages 9-11
<https://www.pjm.com/-/media/committees-groups/committees/srtepw/2021/20211119/20211119-reliability-analysis-update.ashx>

Wooton - Stinnett 161 kV Project

The proposed project would rebuild the approximately 11-mile Wooton - Stinnett 161 kV line. The project would address equipment material conditions, performance, and risk concerns associated with the 1940's wood structure line. Current projected in-service date for the project November 2024.

- **Wooton – Stinnett 161 kV Line**
Existing Summer Emergency Conductor Capacity: 215 MVA
Proposed Summer Emergency Conductor Capacity: 390 MVA
- **PJM Supplemental (S2428):** Please see pages 81-83
<https://www.pjm.com/-/media/committees-groups/committees/srtepw/postings/2021/aep-local-plan-submission-of-the-supplemental-projects-for-2021-rtep.ashx>

Leslie Transformer Replacement

This project will replace the 161/69 kV transformer at Leslie station. The transformer is being replaced due to insulation and short circuit strength breakdown. A second 161/69 kV transformer will be purchased as a non-switchable spare on site. Replace Leslie 161 kV 3000 A 50 kA circuit breaker “K” with a new 3000 A 40 kA 161 kV circuit breaker. The projected in-service date for the transformer replacement is November 2024.

- **Leslie Transformer**

Existing Nameplate Capacity: 90 MVA
Proposed Nameplate Capacity: 130 MVA

- **PJM Supplemental (S1547):** Please see page 96
<https://www.pjm.com/-/media/committees-groups/committees/srrtep-w/20180327/20180327-reliability-analysis-update.ashx>

Garrett Area Improvements

This project will construct ~9.3 miles of single circuit 138kV from Soft Shell to Garrett picking up Salt Lick Co-op via Snag Fork along the way. The Project will also construct ~3.5 miles of single circuit 138kV from the Eastern station to Garrett station, a short extension from the new Eastern station to the existing Hays Branch metering point, a short extension to existing Morgan Fork – Hays Branch 138 kV circuit from Eastern station, and a double circuit cut into existing Hays Branch - Morgan Fork line to tie into new Hays Branch S.S PoP switch. The Project will also require installation of a new heavy double circuit dead-end tap structure on the existing Hays Branch – Morgan Fork 138kV Line (Due to unequal loading on the transmission line). In addition, the Garrett station will be expanded to install a 138kV three breaker ring bus (If space becomes a constraint, a straight bus arrangement with two 138 kV breakers and a circuit switcher on the high side of the transformer may be installed), and a 138/12kV 30 MVA transformer. A new 138 kV substation (Eastern) will be constructed south of the existing Hays Branch station and will include two 138kV breakers (3000A 40kA) on exits toward Morgan Fork and Garrett station. Finally, the Project will construct a new Snag Fork Switch Station and install a 3-way phase over phase motorized (automated) switching structure near Saltlick to serve the EKPC co-op. The current projected in-service date is November 2024.

- **Eastern - Garrett 138kV transmission line**
Existing Summer Emergency Conductor Capacity: 29-50 MVA
Proposed Summer Emergency Conductor Capacity 253 MVA
- **Garrett – Soft Shell 138kV transmission line**
Existing Summer Emergency Conductor Capacity: 29-50 MVA
Proposed Summer Emergency Conductor Capacity 253 MVA
- **PJM Supplemental (S2188):** Please see pages 115-118
<https://www.pjm.com/-/media/committees-groups/committees/srrtep-w/postings/aep-local-plan-submission-of-the-supplemental-projects-for-2020-rtep.ashx>

47th Street Station Upgrades (Baseline):

In 2026 RTEP Summer case, the Kenova-47th Street line section is overloaded for an N-1-1 contingency. The proposed baseline upgrades are planned to mitigate the baseline issue: Replace MOAB W, MOAB Y, line and bus side jumpers of both W and Y at 47th Street 69kV station. Upgrade the 69kV Strain bus between MOABs W and Y to 795 KCM AAC. Change the connectors on the tap to MOAB X1 to accommodate the larger 795 KCM AAC. The current projected in-service date for this project is November 2025.

- **47th street – Kenova 69kV Transmission line**
Existing 69kV Nameplate Capacity: 90 MVA
Proposed 69kV Nameplate Capacity: 102 MVA
- **47th street Substation Baseline (B3352):** Please see pages 7-8
<https://www.pjm.com/-/media/committees-groups/committees/srtepw/2021/20211119/20211119-reliability-analysis-update.ashx>

Hatfield Station Upgrades:

At Hatfield Substation, expand the substation yard. Relocate 138/69/46kV XF#1. Replace 138/69/46kV XF#1 Bushings, 138kV 3 phase Bus CCVTs, MOAB X1 and GND Switch Z1 with a new 138kV Circuit Switcher. Replace 138KV Sprigg Line metering, Line Switch "11" with a 138kV Circuit Breaker. Replace and relocate 69kV CB-B to standard Bay position. Replace 69KV CB-A and add 3 phase CCVTs to John's Creek 69kV line. Add 138kV Backup and 69kV Primary Station Service transformers and Station Service. Expand yard and install a 16' X 27' base DICM. Remove 111MVA 46/7.2KV Transformer #2 and associated equipment and 7.2KV 3-phase station service. Remove the control building. The current projected in-service date for this project is November 2025.

- **PJM Supplemental (S2815):** Please see pages 23-25
<https://www.pjm.com/-/media/committees-groups/committees/srtepw/postings/2023/aep-local-plan-submission-of-the-supplemental-projects-for-2023-rtep.ashx>

Dewey Station Upgrades (Baseline & Supplemental):

In the 2025 Winter RTEP case, there are voltage violations at Stanville and Hays Branch 138kV buses, Mayo Trail and West Paintsville 69kV buses and Kenwood, Prestonsburg, East Prestonsburg, Allen and Middle Creek 46KV in the event of an N-1-1 scenario. The proposed baseline upgrades are planned to mitigate the baseline issue: Install 138kV Circuit Switcher on the 138/69kV XF #1 and 138/34.5kV XF #2 at Dewey. Install 138kV 2000A breaker on Stanville line at Dewey 138kV substation. At Dewey substation: Replace 138kV CB B towards Thelma with new 138kV 40kA circuit breaker. Provide new DICM with new relays for all equipment at station so that existing control house can be removed. Upgrade station service. At Dewey substation: Provide Transition fiber via underground from the existing Control House to the new DICM at Dewey Station. Retire existing fiber.

At Thelma substation, Remote end relaying to replace line protection for Breaker A towards (Dewey) to match upgrade at Dewey Station. Provide MOS on existing 138kV HS of

transformer XF #1 & #3 to provide additional control to stability system. The current projected in-service date for this project is November 2025.

- **Dewey Substation Baseline (B3281):** Please see pages 24-25
<https://www.pjm.com/-/media/committees-groups/committees/srstep-w/2021/20210217/20210217-reliability-analysis-update.ashx>
- **Dewey Substation Supplemental (S2813):** Please see pages 13-14
<https://www.pjm.com/-/media/committees-groups/committees/srstep-w/postings/2023/aep-local-plan-submission-of-the-supplemental-projects-for-2023-rtep.ashx>

New Camp Loop (Baseline & Supplemental):

Construct ~ 2.75 mi Orinoco - Stone 69kV transmission line in the clear between Orinoco station and Stone station. Construct ~ 3.25 mi Orinoco – New Camp 69kV transmission line in the clear between Orinoco station and New Camp station. At Stone substation, Circuit breaker A to remain in place and be utilized as T1 low side breaker, Circuit Breaker B to remain in place and be utilized as new Hatfield (via Orinoco and New Camp) 69KV line breaker. Add new 69KV Circuit Breaker E for Coleman Line exit. Reconfigure the New Camp tap which includes access road improvements/installation, temporary wire, and permanent wire work along with dead end structures installation. At New Camp substation, rebuild the 69kV bus, add 69KV MOAB W and replace the 69KV Ground switch Z1 with a 69kV Circuit Switcher on the New Camp Transformer.

In conjunction with the baseline work identified under B3288 which would install new 69kV line between Stone and New Camp via Orinoco substation, the following is proposed under this solution to address the identified needs on the Sprigg – Stone 46kV line. Replace Belfry substation with Orinoco substation by installing a 69KV box bay and 12KV rural bay to be built in the clear southwest of existing Belfry station. Install 69/12kV 20 MVA transformer and two 12kV breakers. Retire Belfry 46kV substation. Retire 46kV equipment from Stone substation. At Hatfield substation, replace MOAB Y with a 69KV Circuit Breaker towards Stone 69kV line via New Camp and Orinoco. Retire the 46kV equipment at Sprigg station towards Stone (via Belfry). Retire Turkey Creek Tap. Retire the ~8.23 miles of the 46kV Sprigg – Stone 46 KV circuit. The current projected in-service date for this project is December 2025.

- **New Camp - Orinoco 69kV transmission line**
Proposed Summer Emergency Conductor Capacity: 142 MVA
- **Orinoco – Stone 69kV transmission line**
Proposed Summer Emergency Conductor Capacity: 142 MVA
- **PJM Baseline (B3288):** Please see pages 23-25
<https://www.pjm.com/-/media/committees-groups/committees/srstep-w/2021/20210115/20210115-reliability-analysis-update.ashx>

- **PJM Supplemental (S2446):** Please see pages 84-86
<https://www.pjm.com/-/media/committees-groups/committees/srtepw/postings/2021/aep-local-plan-submission-of-the-supplemental-projects-for-2021-rtep.ashx>

Bellefonte Station Upgrades (Baseline & Supplemental):

At Bellefonte substation, the N-1-1 loss of 138kV source from Kenova and loss of Bellefonte Transformer #2 causes an overload on the 69kV risers between 69kV Bus #2 and 69kV winding of TR#3. At Bellefonte substation, 69kV breakers JJ, C, I, AB, Z and G are overdutied. To mitigate the safety and baseline issue at Bellefonte substation following Upgrades are planned: Replacement of 69kV risers to Bus to mitigate identified overload on this section between TR#3 and 69kV Bus #2, Replacement of overdutied 69kV breakers C, G, I, Z, AB and JJ in place. The new 69kV breakers to be rated at 3000 A 40kA breakers. Remote end relaying at Point Pleasant, Coalton and South Point 69KV substations.

At Bellefonte, Replace XFR #2 with a 200 MVA Auto unit and retire XFR #1 & #5. The U/G feeder for XFR #3 69kV riser is getting reconducted under B3349. Reconductor sections of 138kV Bus #1 and 138kV Bus #2. Replace remaining oil PTs connected to Bus #1 and Bus #2. Upgrade Primary and back up station service. Replace 69kV bus tie breaker H. Replace the hook stick disconnects switches for the tie breaker H and 69kV tie breaker location will be relocated one bay south of the existing location and 69kV buses will be reconfigured. Replace the hook stick disconnects switches for Raceland breaker D. Relocate the Raceland feeder to bus #1 after extending the 69kV bus #1. The cap bank switcher/Moab Mark 5 combo unit will get replaced with 69kV breaker and set of breaker disconnects and relocated to bus #1. 69kV breaker is needed instead of circuit switcher due to the high fault current. Relocate the cap bank to bus #1 after extending the 69kV bus #1. 69kV Air Products line MOABs will be replaced with 2000A SW. Replace hook-stick switches for Oil CB – AB, JJ, I, G, Z, T and C. These Breakers are replaced as part of B3350. Install 16'x48' DICM for 69kV Yard and a 16'x48' DICM for the 138kV Yard. Replace cable trench, single phase AC system & cable work, entire fence replacement and ground grid extension for 100'X10' expansion toward the Northwest of the 69kV yard. Both 138kV and 69kV control house will be retired. Retire entire 34kV Yard, contingent on the timing of the customer being removed from service. The ISD for this project is June 2026.

- **Bellefonte Transformer #2**
Existing 138/69kV Nameplate Capacity: 175 MVA
Proposed 138/69kV Nameplate Capacity: 200 MVA
- **PJM Baseline (B3361):** Please see pages 3-4

<https://www.pjm.com/-/media/committees-groups/committees/srstep-w/2022/20220121/20220121-reliability-analysis-update.ashx>

- **PJM Baseline (B3349):** Please see pages 3-4
<https://www.pjm.com/-/media/committees-groups/committees/srstep-w/2021/20211119/20211119-reliability-analysis-update.ashx>
- **PJM Supplemental (S2814):** Please see pages 15-22
<https://www.pjm.com/-/media/committees-groups/committees/srstep-w/postings/2023/aep-local-plan-submission-of-the-supplemental-projects-for-2023-rtep.ashx>

Breaks – Dorton 69kV Conversion (Baseline):

In 2027 Winter RTEP case, Dorton, Pike 29, Rob Fork, Burdine, Henry Clay, Draffin 46KV buses (along the Cedar Creek - Elwood and Breaks - Dorton – Elwood 46KV circuits) experience voltage magnitude and drop violations under multiple N-1-1 contingency scenarios. Establish 69kV bus and new 69 kV line CB at Dorton substation. At Breaks substation, reuse 72kV breaker A as the new 69kV line breaker. Rebuild ~16.7 mi Dorton – Breaks 46kV line to 69kV. Retire ~17.2 mi Cedar Creek – Elwood 46kV circuit. Retire ~ 6.2 mi Henry Clay – Elwood 46kV line section. Retire Henry Clay 46 kV substation and replace with Poor Bottom 69 kV station. Install a new 0.7 mi double circuit extension to Poor Bottom 69kV. Retire Draffin substation and replace with a new substation. Install a new 0.25 mi double circuit extension to New Draffin substation. Remote End work at Jenkins substation. Provide Transition fiber to Dorton, Breaks, Poor Bottom, Jenkins and New Draffin substations. Henry Clay S.S Retirement. Cedar Creek substation work, At Breaks substation retire 46kV equipment. Retire Pike 29 SS and Rob Fork SS. Serve Pike 29 and Rob Fork customers from nearby 34kV Distribution sources. Henry Clay 46kV substation retirement. New Draffin 69kV substation install. Draffin 46kV substation retirement. The current projected in-service date for this project is November 2026.

- **Breaks Dorton Elwood 46kV Transmission line**
Existing 69kV Nameplate Capacity: 48-69 MVA
- **Breaks Dorton 69kV Transmission line**
Proposed 69kV Nameplate Capacity: 102 MVA
- **PJM Baseline (B3349):** Please see pages 26-28
<https://www.pjm.com/-/media/committees-groups/committees/srstep-w/2022/20221014/item-03--srstep-west-reliability-update.ashx>

Prestonsburg – Thelma 46kV Rebuild (Baseline) & Kenwood looped service:

In 2026 RTEP Winter case, voltage magnitude and voltage drop violations at McKinney, Salisbury, Allen, East Prestonsburg, Prestonsburg, Middle Creek, Kenwood 46kV buses are identified for multiple N-1-1 contingency pairs. Furthermore in 2026 RTEP Winter case, the 46kV winding of the Thelma TR#1 is overloaded for multiple N-1-1 contingency pairs. Prestonsburg – Thelma 46kV circuit 2013-2018 the Prestonsburg - Thelma 46 kV circuit (~ 16 miles) has experienced 22 momentary and permanent outages. The circuit has 34 category A open conditions associated with the structures that make up the line. These conditions include damaged/rotted poles and damaged guy wires, cross arms. The majority of this circuit utilizes 1960s wood structures and 336.4 ACSR conductor. Rebuilding the Prestonsburg – Thelma 46kV line, replacing the 46kV Thelma transformer and associated remote end relaying upgrades addresses the voltage and thermal violations as well as the identified needs.

In conjunction with Prestonsburg-Thelma 46 kV rebuild, a new extension will be constructed to Kenwood station to provide looped service. The line will be constructed at 69 kV and operated at 46 kV. It will be approximately 2.25 miles of single circuit construction through mountainous terrain in Floyd and Johnson Counties in Kentucky. The extension will tap the existing Prestonsburg-Thelma 46kV Line around structure K346- 50 and the existing ~1.77 mi Kenwood Tap line from Kenwood to Van Lear Tap Structure will be rebuilt on the existing center line. The projected ISD for this work is December 2026.

- **Kenwood 69 kV transmission line**
Proposed Summer Emergency Conductor Capacity: 61 MVA
- **Prestonsburg - Kenwood Tap 46kV transmission line**
Proposed Summer Emergency Conductor Capacity: 85 MVA
- **Kenwood – Thelma 46kV Tap transmission line**
Proposed Summer Emergency Conductor Capacity: 85 MVA
- **Thelma 138/69/46kV Transformer #1**
Existing 46kV Nameplate Capacity: 35.7 MVA
Proposed 46kV Nameplate Capacity: 90 MVA
- **PJM baseline (B3361):** Please see pages 17-18
<https://www.pjm.com/-/media/committees-groups/committees/srstep-w/2021/20211119/20211119-reliability-analysis-update.ashx>
- **PJM Supplemental (B3360):** Please see pages 15-16
<https://www.pjm.com/-/media/committees-groups/committees/srstep-w/2021/20211119/20211119-reliability-analysis-update.ashx>
- **PJM Supplemental (S2470):** Please see pages 33-35
<https://pjm.com/-/media/committees-groups/committees/srstep-w/2021/20210319/20210319-aep-supplemental-projects.ashx>

Elwood station replacement:

Construct a greenfield 138KV Myra Station to replace Elwood Station. Install 138KV double box bay with two 138kV circuit breakers and line exits to Fremont & Beaver Creek. Install 138/34.5 kV transformer with high-side circuit switcher and associated 34.5kV breakers. Install fiber connectivity for upgraded relaying. Construct a new ~2 mi double circuit 138 kV line to the proposed Myra substation. Reconfigure the existing Beaver Creek - Fremont 138kV circuit to facilitate the construction of the new double circuit Myra Extension 138kV Line to feed the proposed Myra Substation. Install two replacement structures in order to bypass Elwood station. Transfer wires from old structure to new structure. Tie the new structure to Cedar Creek-Henry Clay 46kV Line. The current projected in-service date for this project is November 2029.

- **Beaver Creek - Myra 138kV transmission line**
Proposed Summer Emergency Conductor Capacity: 310 MVA
- **Myra – Fremont 138kV transmission line**
Proposed Summer Emergency Conductor Capacity: 310 MVA
- **PJM Supplemental (S2436):** Please see pages 66-69
<https://www.pjm.com/-/media/committees-groups/committees/srrtep-w/postings/2021/aep-local-plan-submission-of-the-supplemental-projects-for-2021-rtep.ashx>

Stinnett - Pineville 161 kV Project

The proposed project would rebuild the approximately 30-mile Stinnett – Pineville 161 kV line. The project would address equipment material conditions, performance, and risk concerns associated with the 1940's wood structure line. Current projected in-service date for the project November 2030.

- **Stinnett - Pineville 161 kV Line**
Existing Summer Emergency Conductor Capacity: 215 MVA
Proposed Summer Emergency Conductor Capacity: 390 MVA
- **PJM Supplemental (S2428):** Please see pages 81-83
<https://www.pjm.com/-/media/committees-groups/committees/srrtep-w/postings/2021/aep-local-plan-submission-of-the-supplemental-projects-for-2021-rtep.ashx>

Middle Creek BESS and Middle Creek – Prestonsburg 46kV Rebuild

This project will address needs on ~23 miles of the Falcon – Prestonsburg 46kV circuit. Falcon – Prestonsburg 46kV line consists of 1940s wood structures. As part of the solution, A BESS (Battery Energy Storage Solution) will be installed at Middle Creek substation. The project will retire ~14.5 miles of 46kV lines between Falcon and Middle Creek substations. The project will rebuild ~8.5 miles of 46kV line between Prestonsburg and Middle Creek station. The current projected in-service date is Dec 2030.

- **Middle Creek BESS**

Proposed Nameplate Capacity: 2 MW

- **Middle Creek – Prestonsburg 46kV transmission line**
Existing Summer Emergency Conductor Capacity: 23 MVA
Proposed Summer Emergency Conductor Capacity 70 MVA
- **PJM Supplemental (S2200):** Please see pages 138-139
<https://www.pjm.com/-/media/committees-groups/committees/srrtep-w/postings/aep-local-plan-submission-of-the-supplemental-projects-for-2020-rtep.ashx>

