

Kentucky Power Company
KPSC Case No. Administrative Code No. 387- 2022
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 2021 monthly peak native load demands for Kentucky Power Company. Kentucky Power Company had three customers with interruptible provisions in their contracts in 2021 for PJM initiated events and one customer with peak shaving provisions in its contract.

Combined, these customers had approximately 6.0 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 2020. The customer with the peak shaving provision has approximately 8.4 MW available for such an event.

Please refer to Page 2 of KPCO_R_KPSC_1_1_Attachment1 for actual 2021 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)
2021**

Kentucky Power Company				
Month	Peak	Peak Day	Peak Hour	Normalized Peak
January	1,019	1/29/2021	9	1,217
February	1,065	2/8/2021	8	1,093
March	980	3/8/2021	8	1,047
April	848	4/2/2021	8	736
May	839	5/25/2021	16	781
June	924	6/29/2021	16	918
July	916	7/28/2021	16	971
August	958	8/24/2021	16	934
September	862	9/14/2021	16	867
October	697	10/11/2021	16	609
November	948	11/23/2021	8	957
December	972	12/23/2021	9	1,101

**Kentucky Power Company
 Actual Peak System Demand (MW)
 2021**

Kentucky Power Company			
Month	Peak	Peak Day	Peak Hour
January	596	1/8/2021	20
February	1,394	2/19/2021	12
March	610	3/5/2021	11
April	643	4/6/2021	15
May	868	5/25/2021	18
June	1,520	6/13/2021	18
July	1,386	7/27/2021	14
August	1,384	8/11/2021	15
September	992	9/13/2021	15
October	768	10/5/2021	15
November	416	11/24/2021	8
December	844	11/23/2021	8

Kentucky Power Company
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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

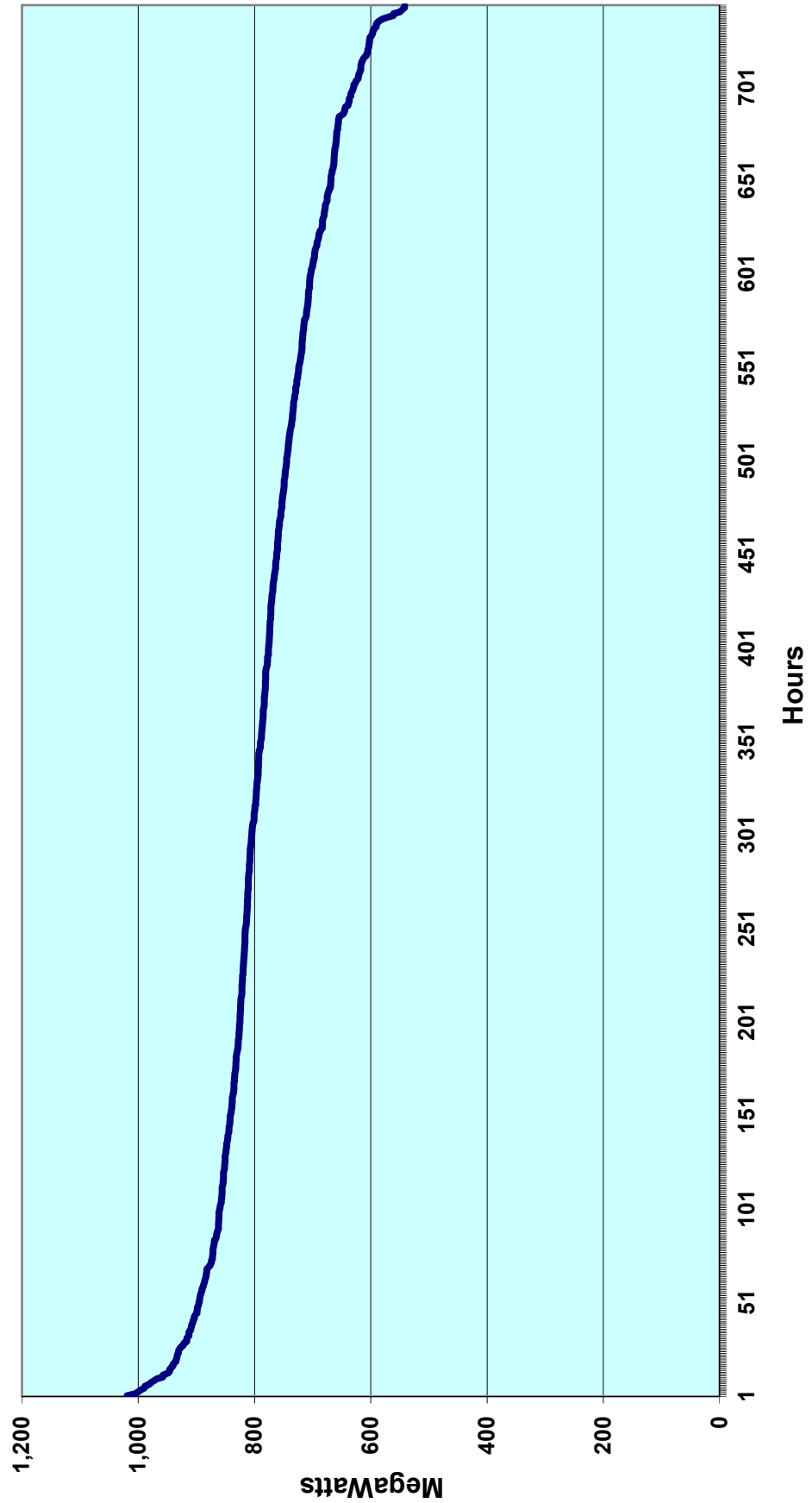
Please refer to Pages 1 through 12 of KPCO_R_KPSC_1_2_Attachment1 for 2021 monthly load duration curves for Kentucky Power Company's internal native load. Please refer to Pages 13 through 24 of KPCO_R_KPSC_1_2_Attachment1 for 2021 monthly load duration curves for Kentucky Power Company's system load. 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.

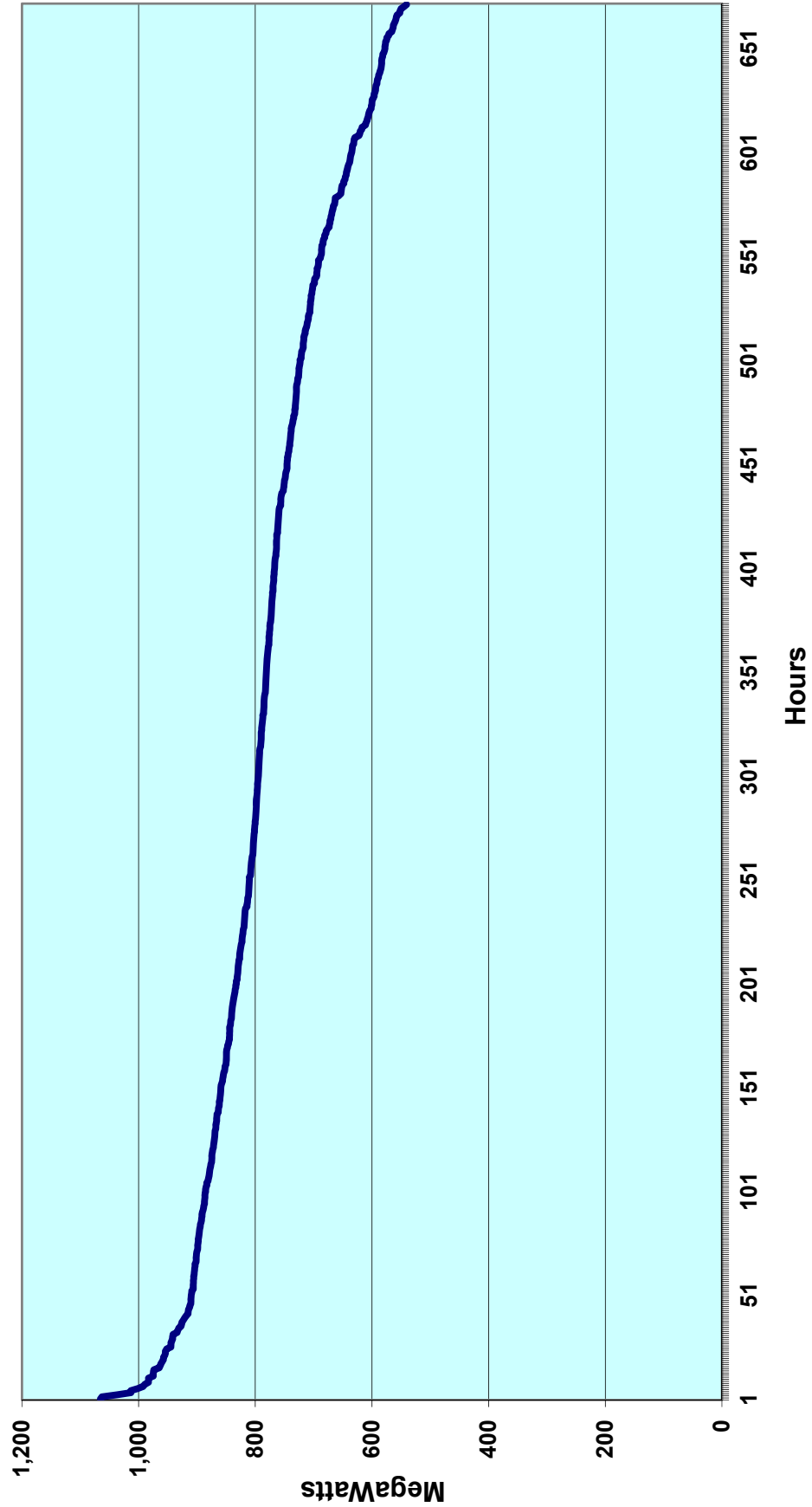
The AEP Interconnection Agreement terminated on January 1, 2014 and the AEP-East Power Pool no longer exists. As a result, the requested information regarding the AEP East Power Pool is no longer available.

Witness: Brian K. West

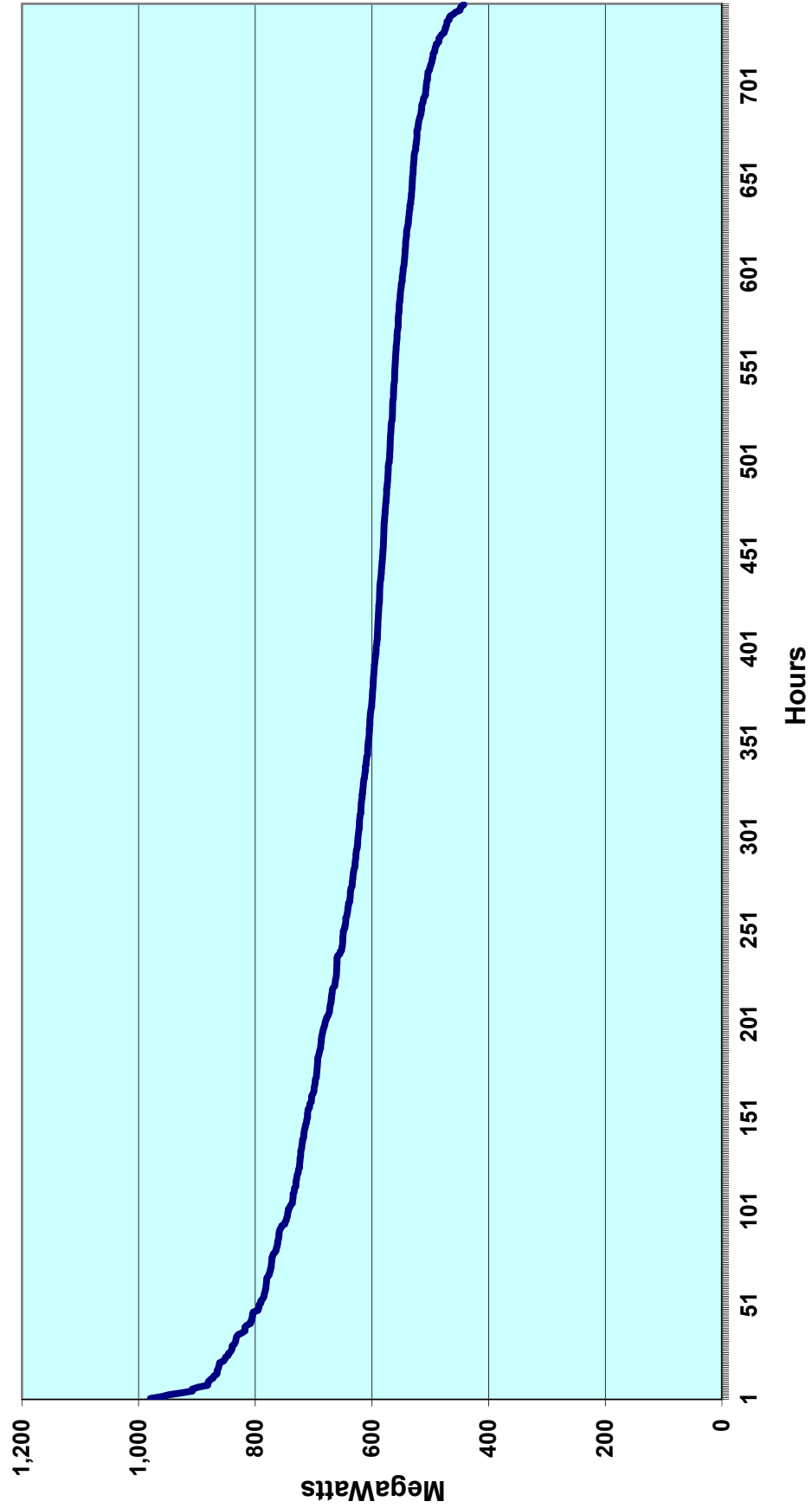
Kentucky Power Company January 2021 Load Duration Curve (Internal Load)



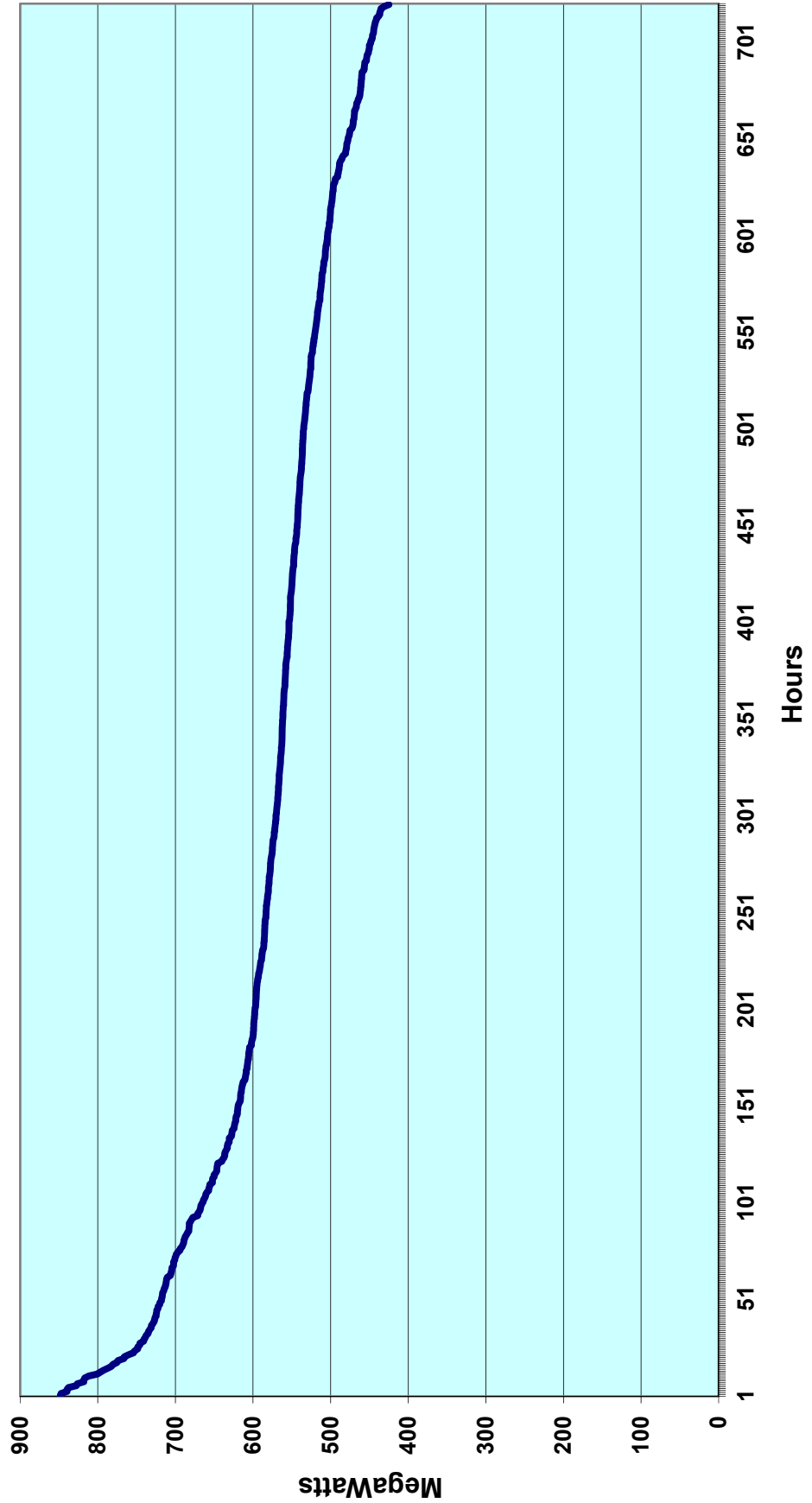
Kentucky Power Company February 2021 Load Duration Curve (Internal Load)



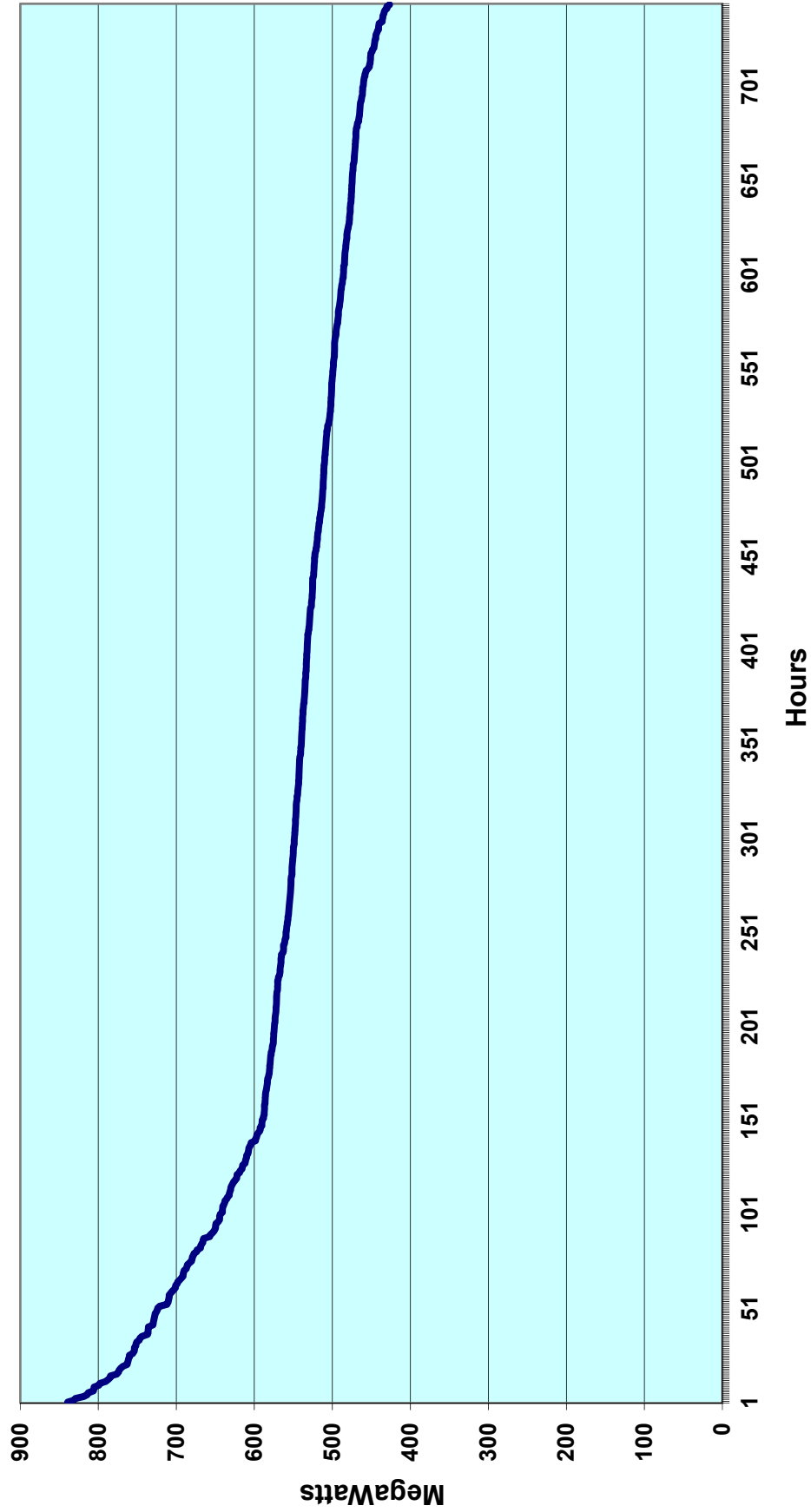
Kentucky Power Company March 2021 Load Duration Curve (Internal Load)



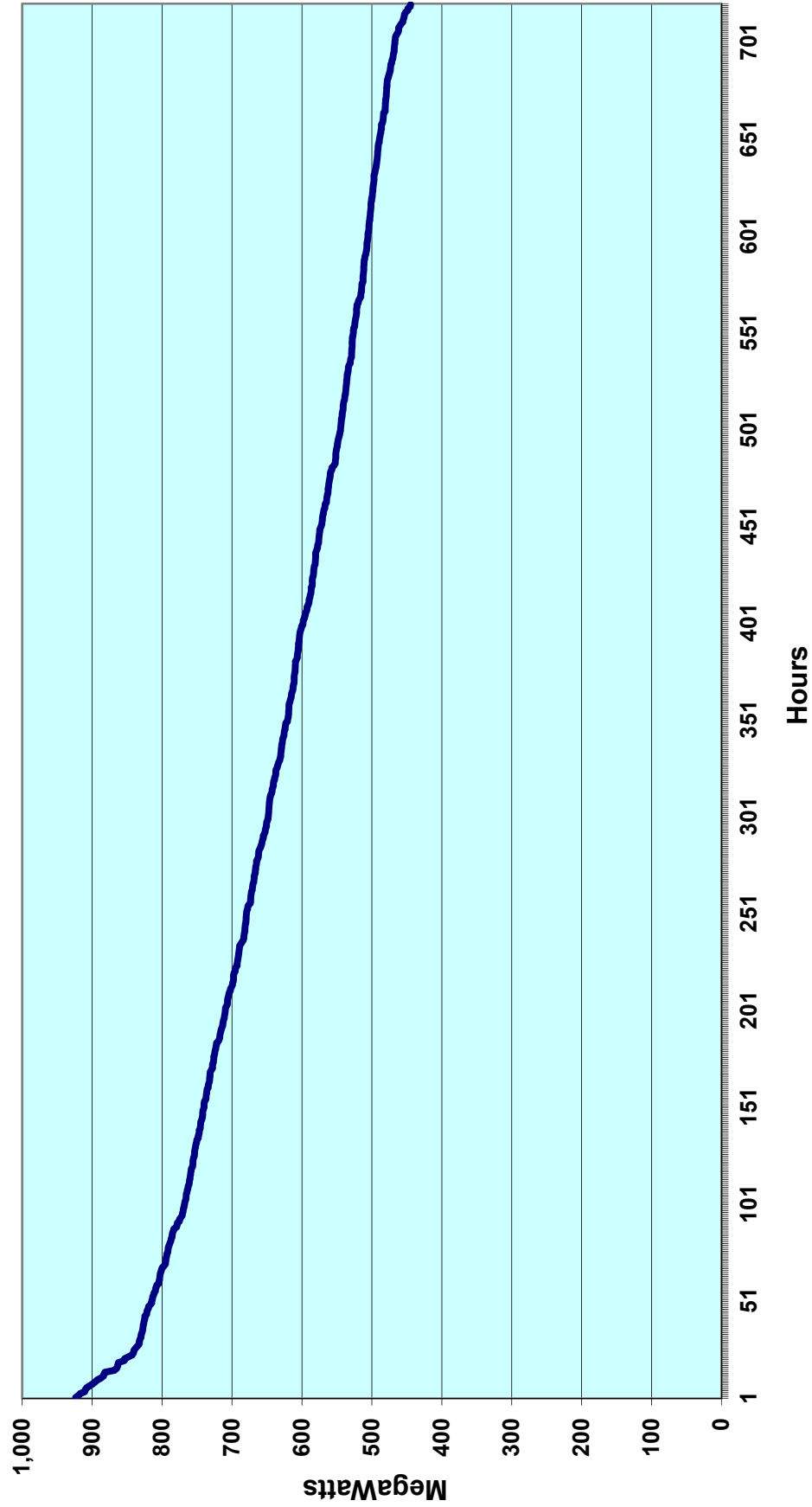
Kentucky Power Company April 2021 Load Duration Curve (Internal Load)



Kentucky Power Company May 2021 Load Duration Curve (Internal Load)



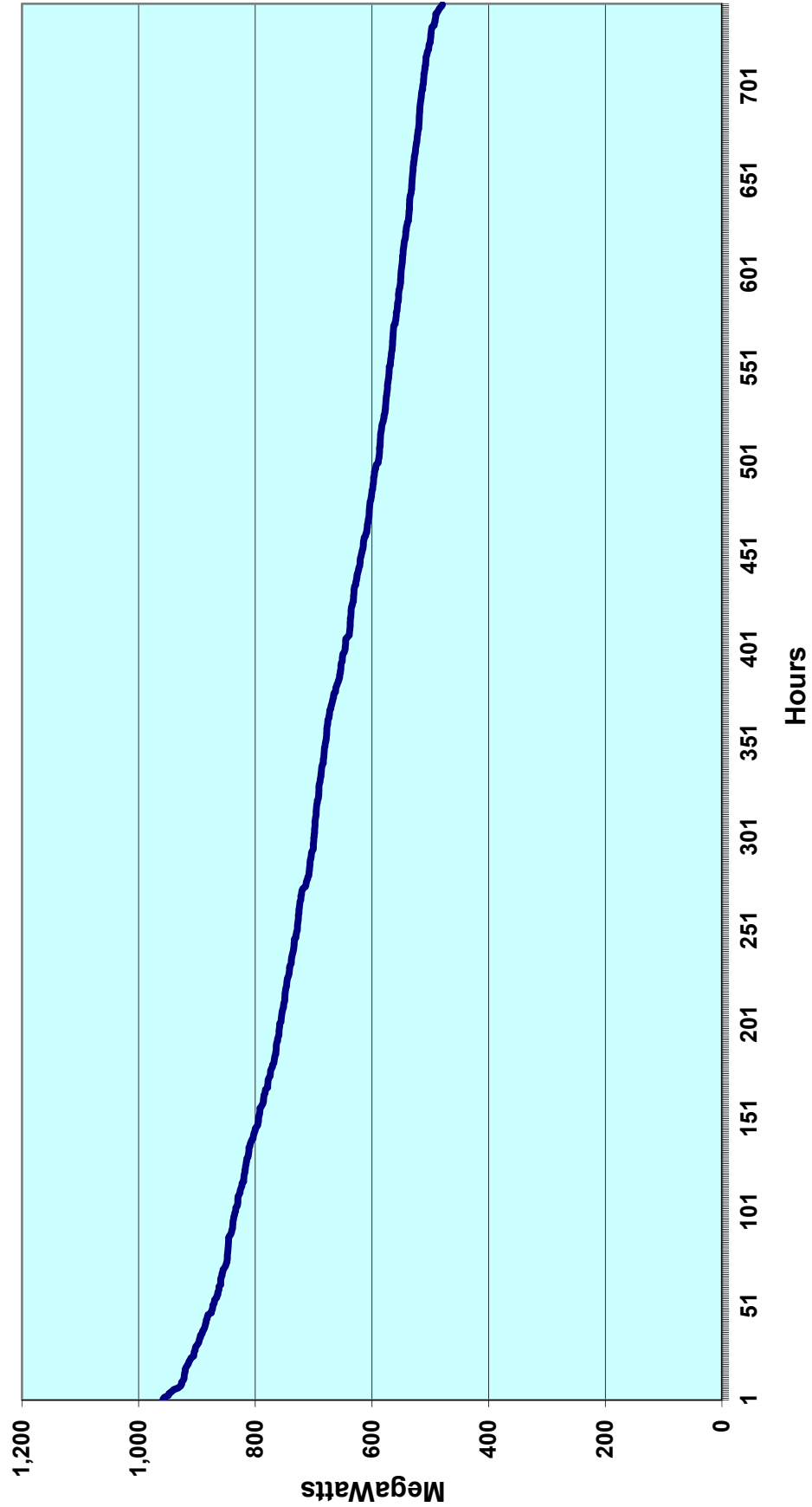
Kentucky Power Company June 2021 Load Duration Curve (Internal Load)



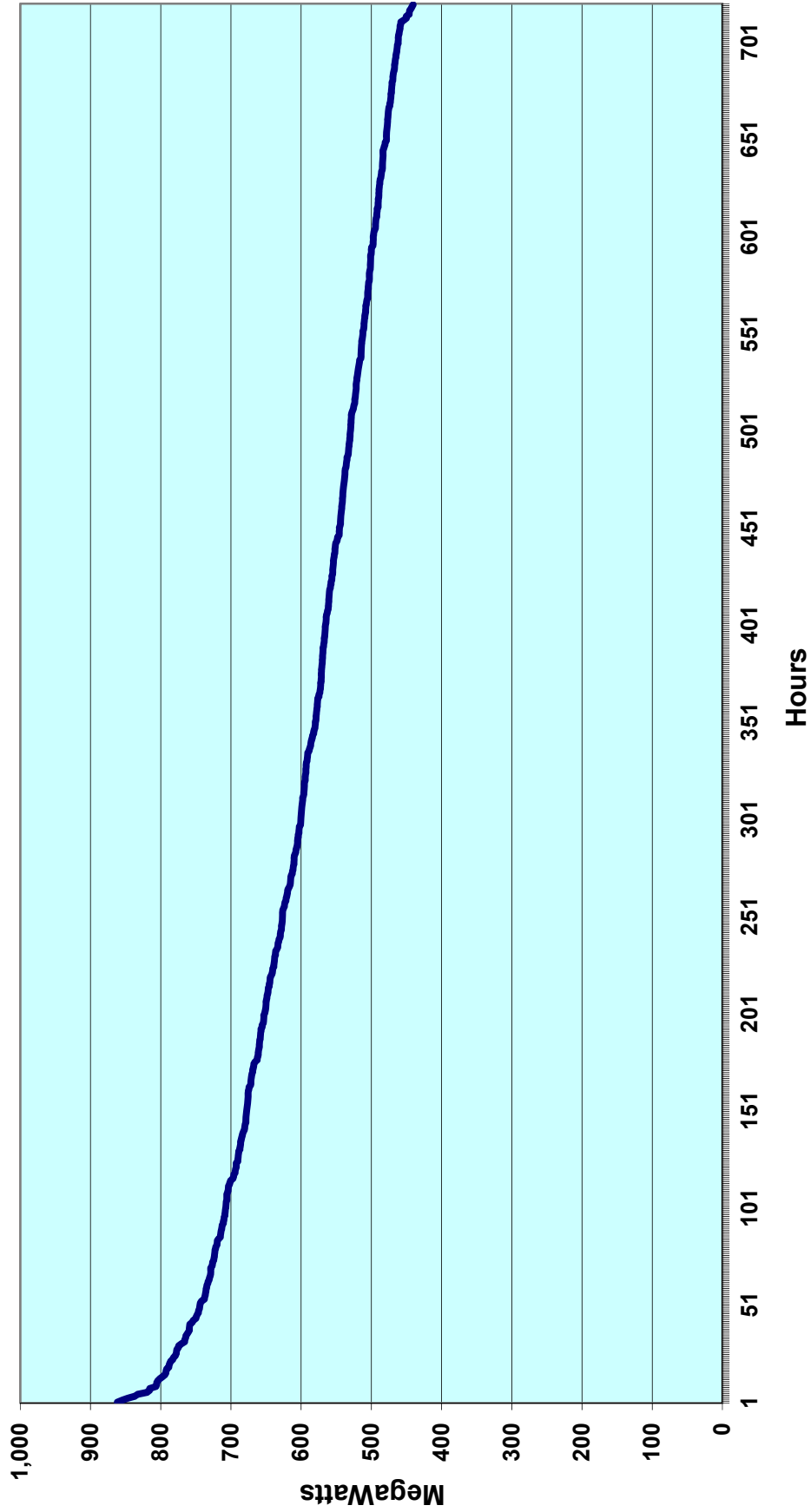
Kentucky Power Company July 2021 Load Duration Curve (Internal Load)



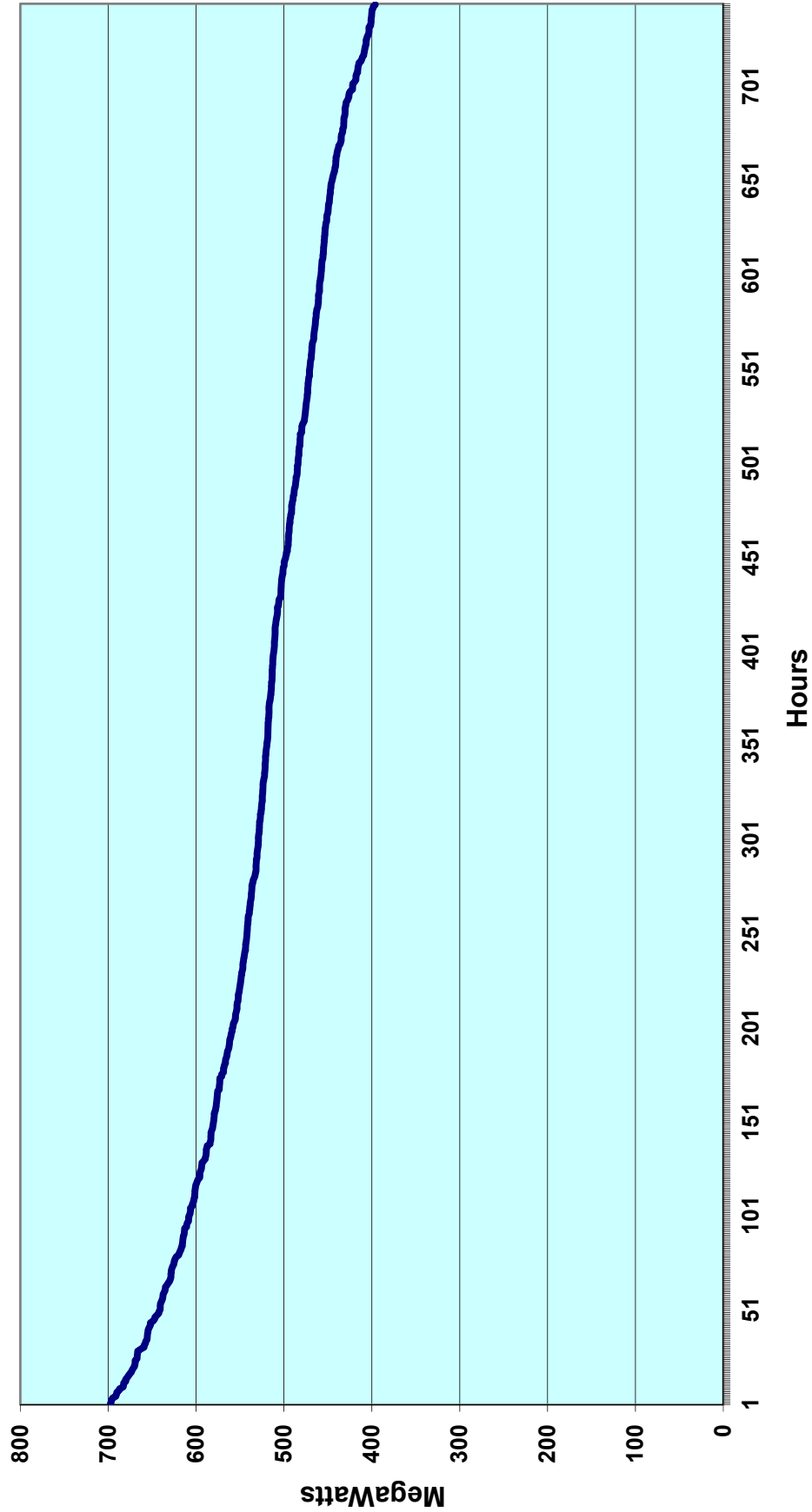
Kentucky Power Company August 2021 Load Duration Curve (Internal Load)



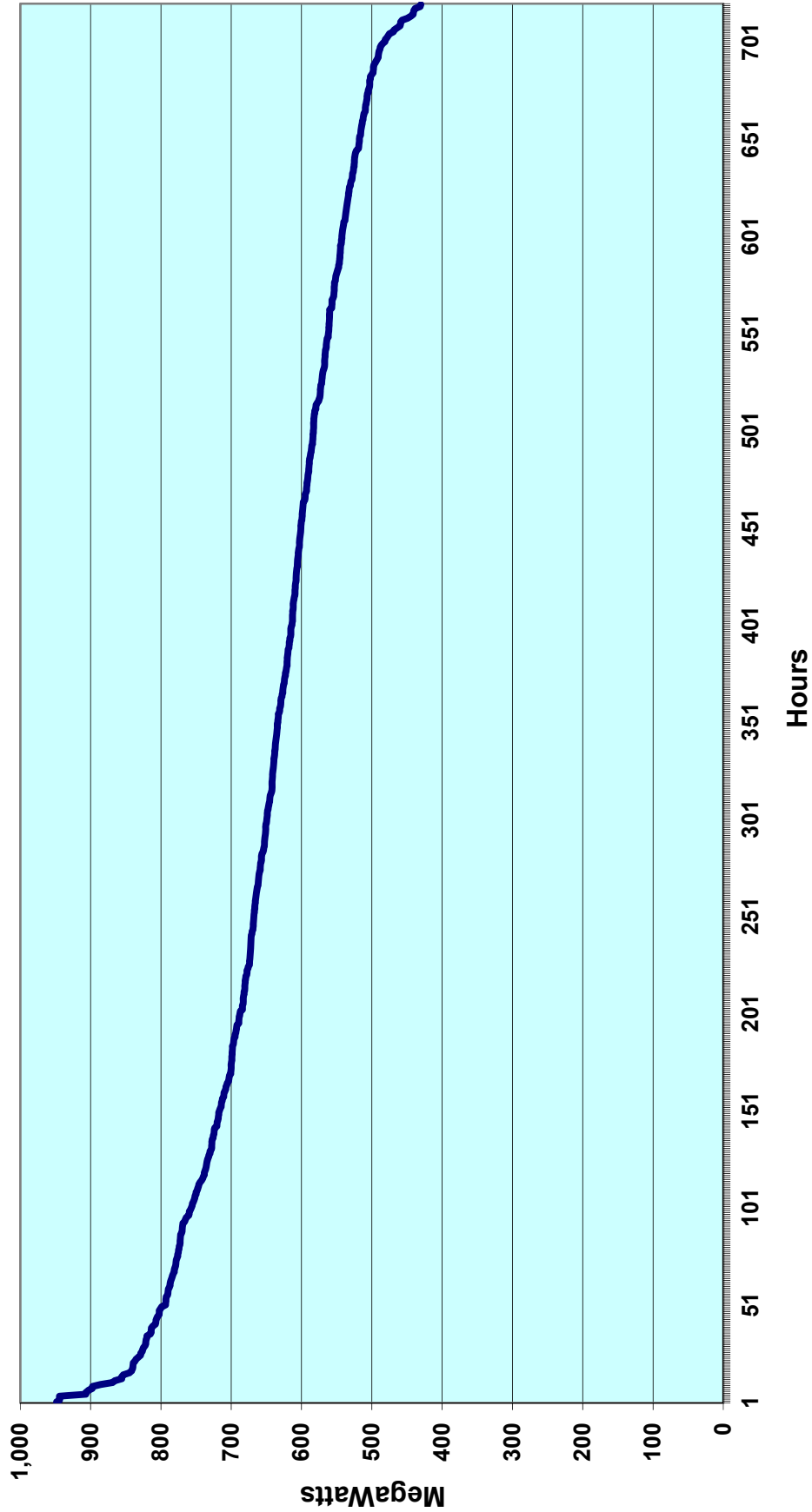
Kentucky Power Company September 2021 Load Duration Curve (Internal Load)



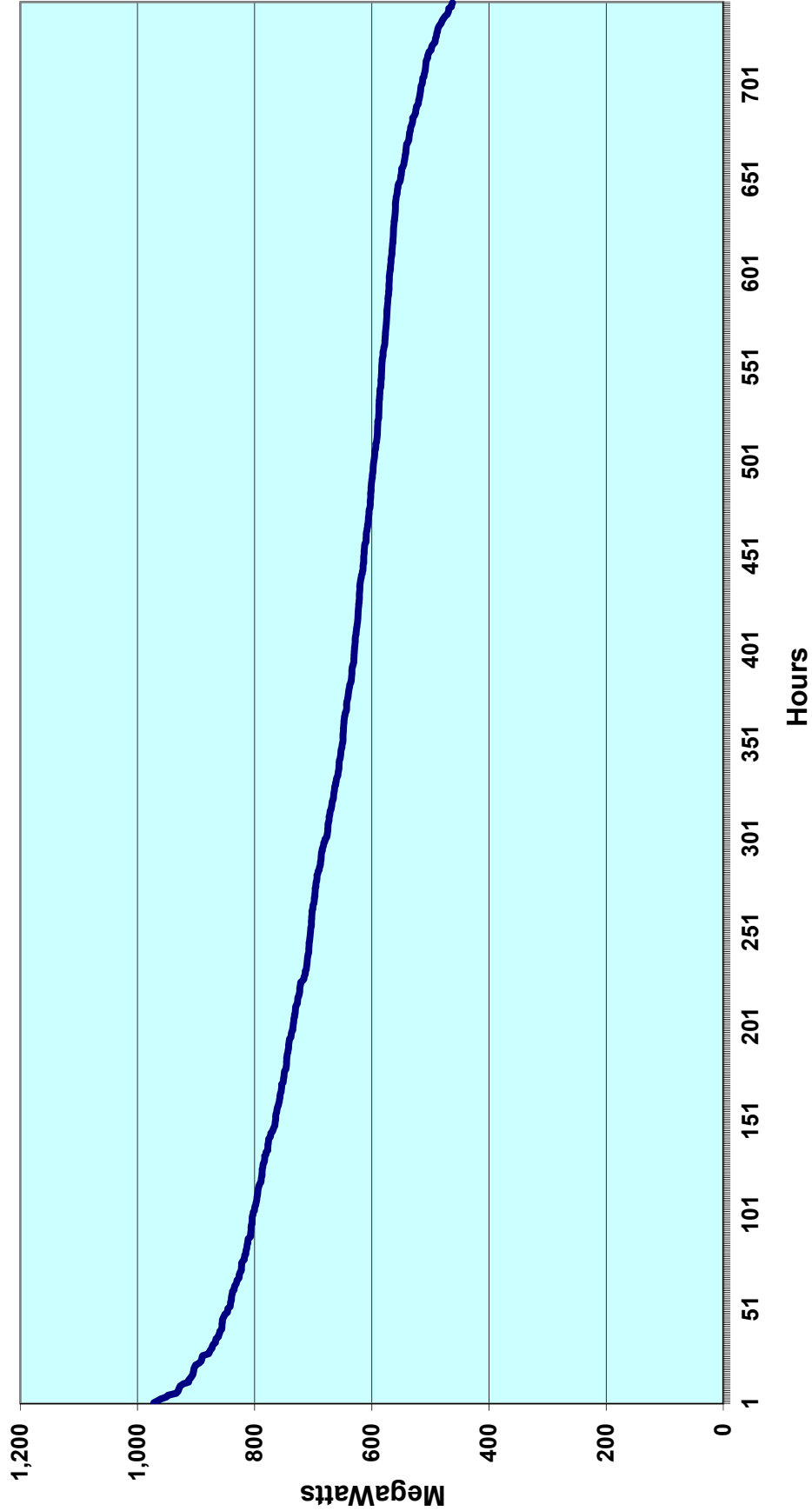
Kentucky Power Company October 2021 Load Duration Curve (Internal Load)



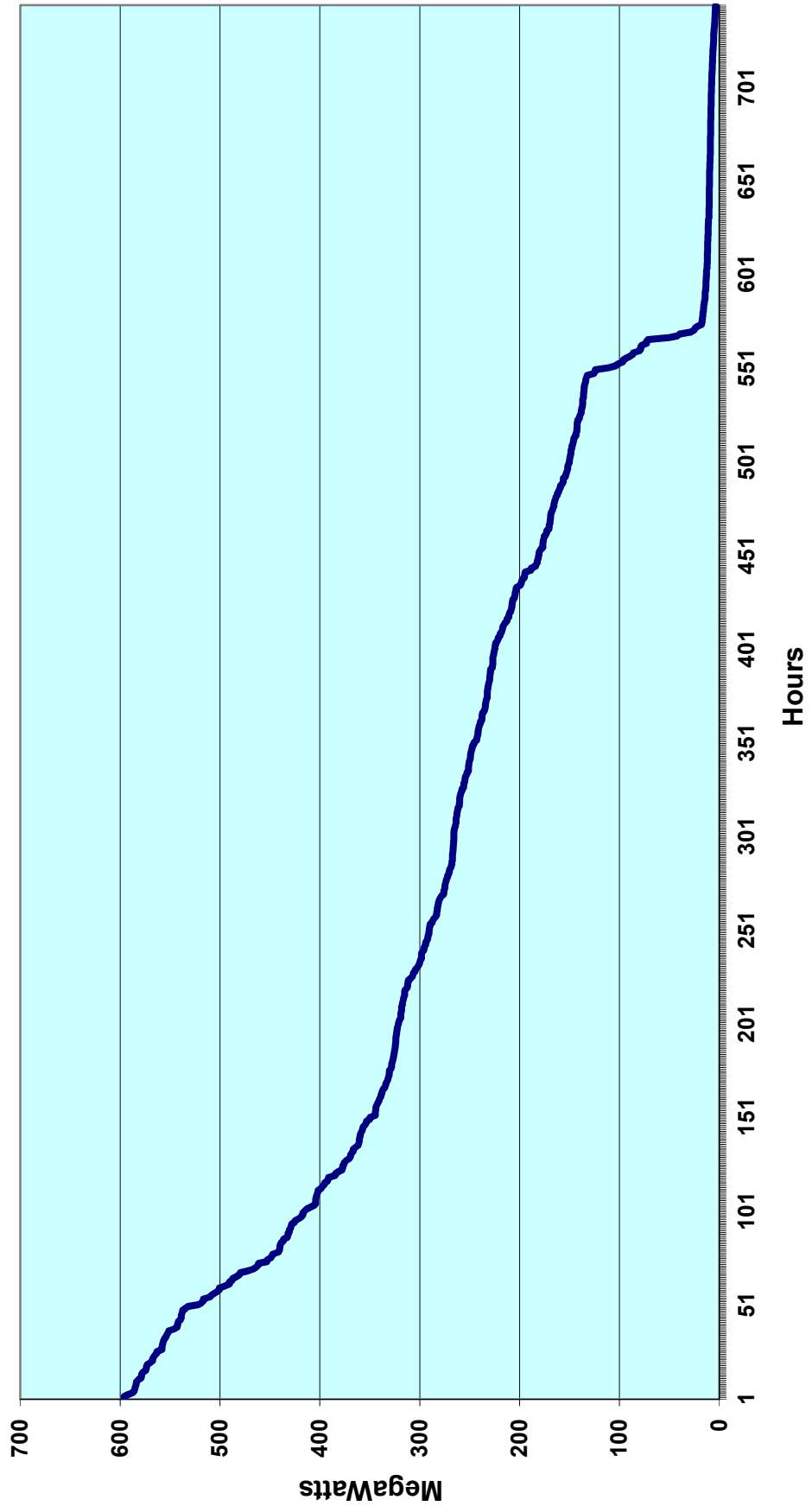
Kentucky Power Company November 2021 Load Duration Curve (Internal Load)



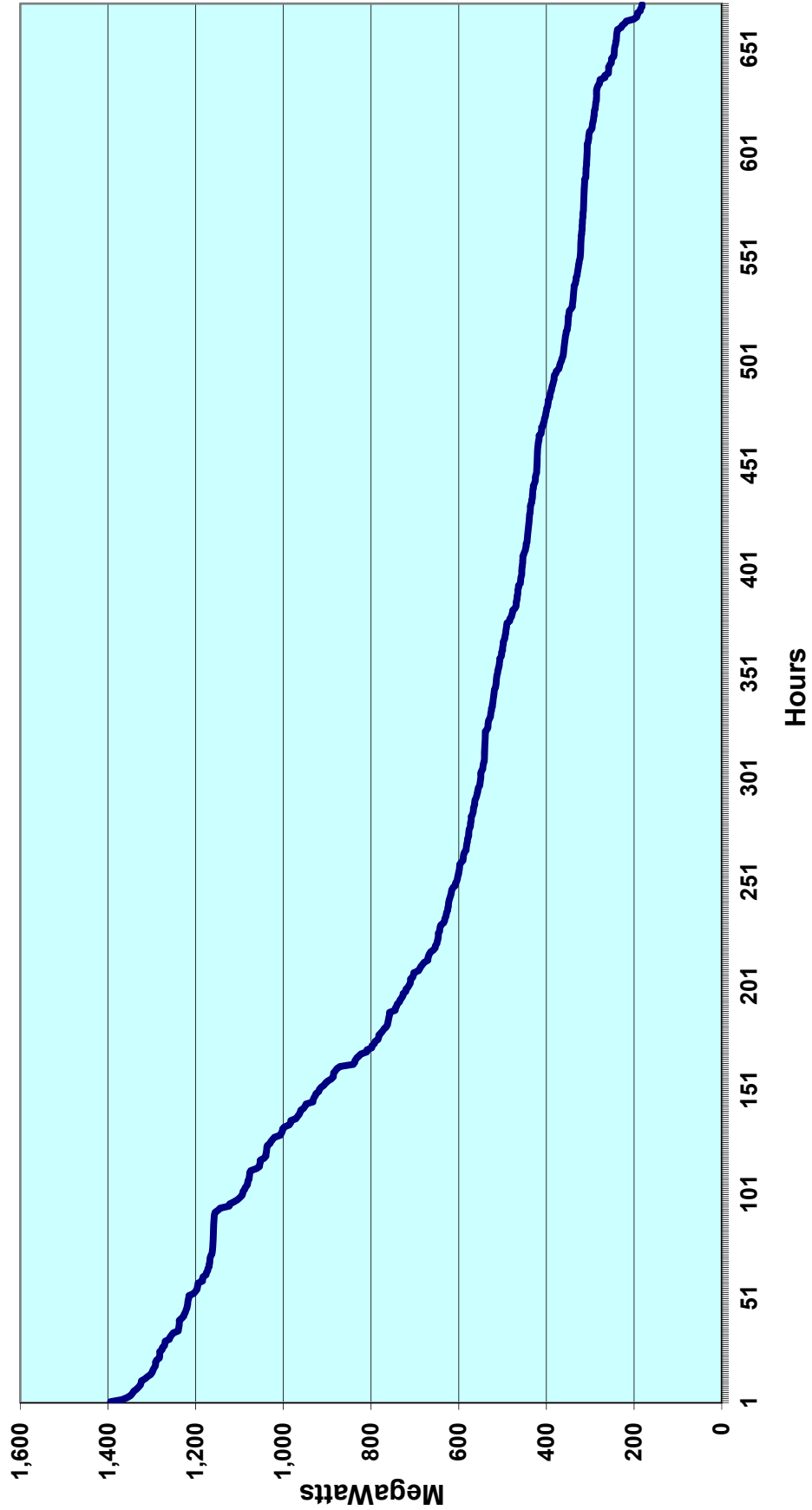
Kentucky Power Company December 2021 Load Duration Curve (Internal Load)



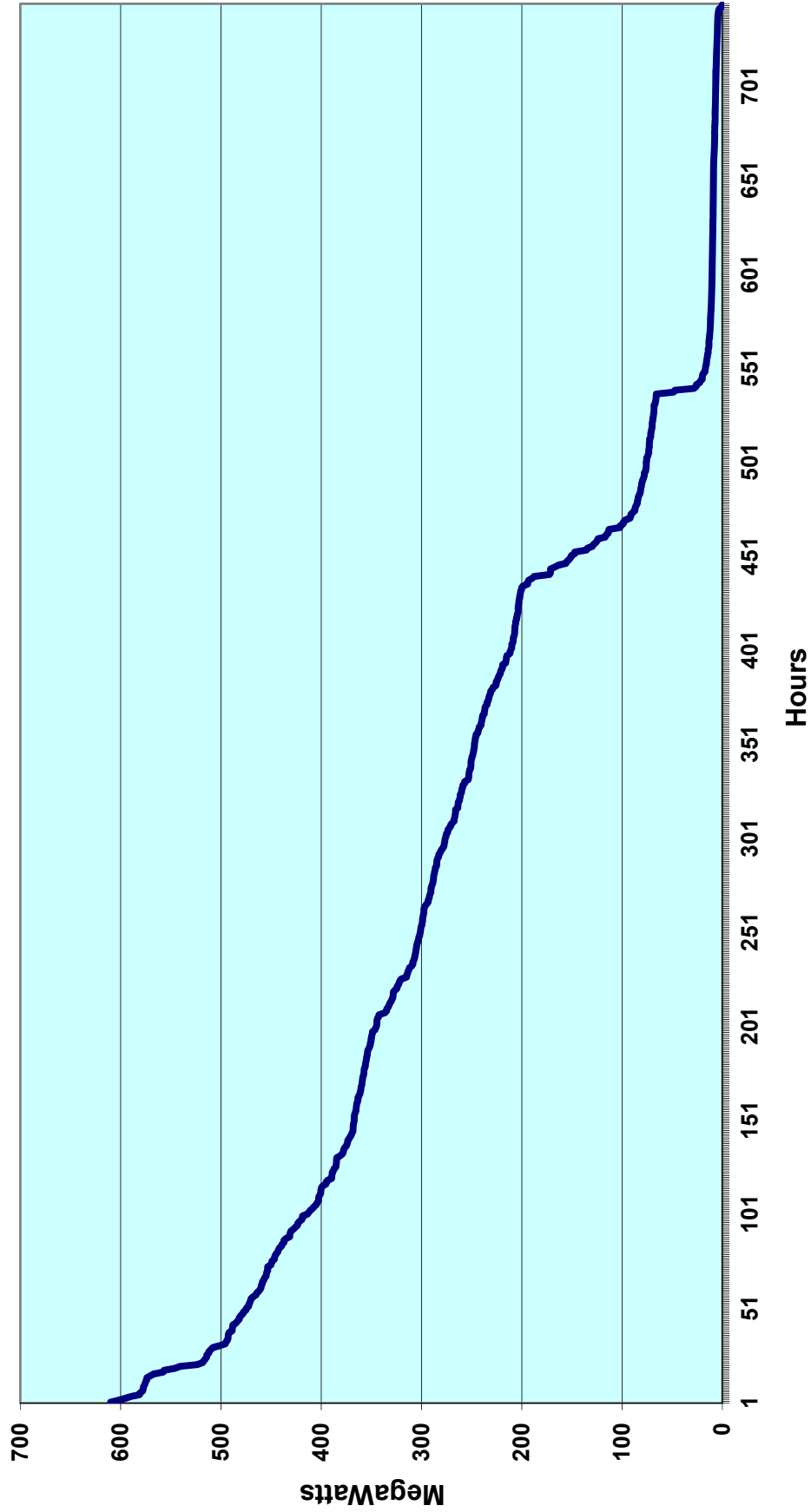
Kentucky Power Company January 2021 Load Duration Curve (System Load)



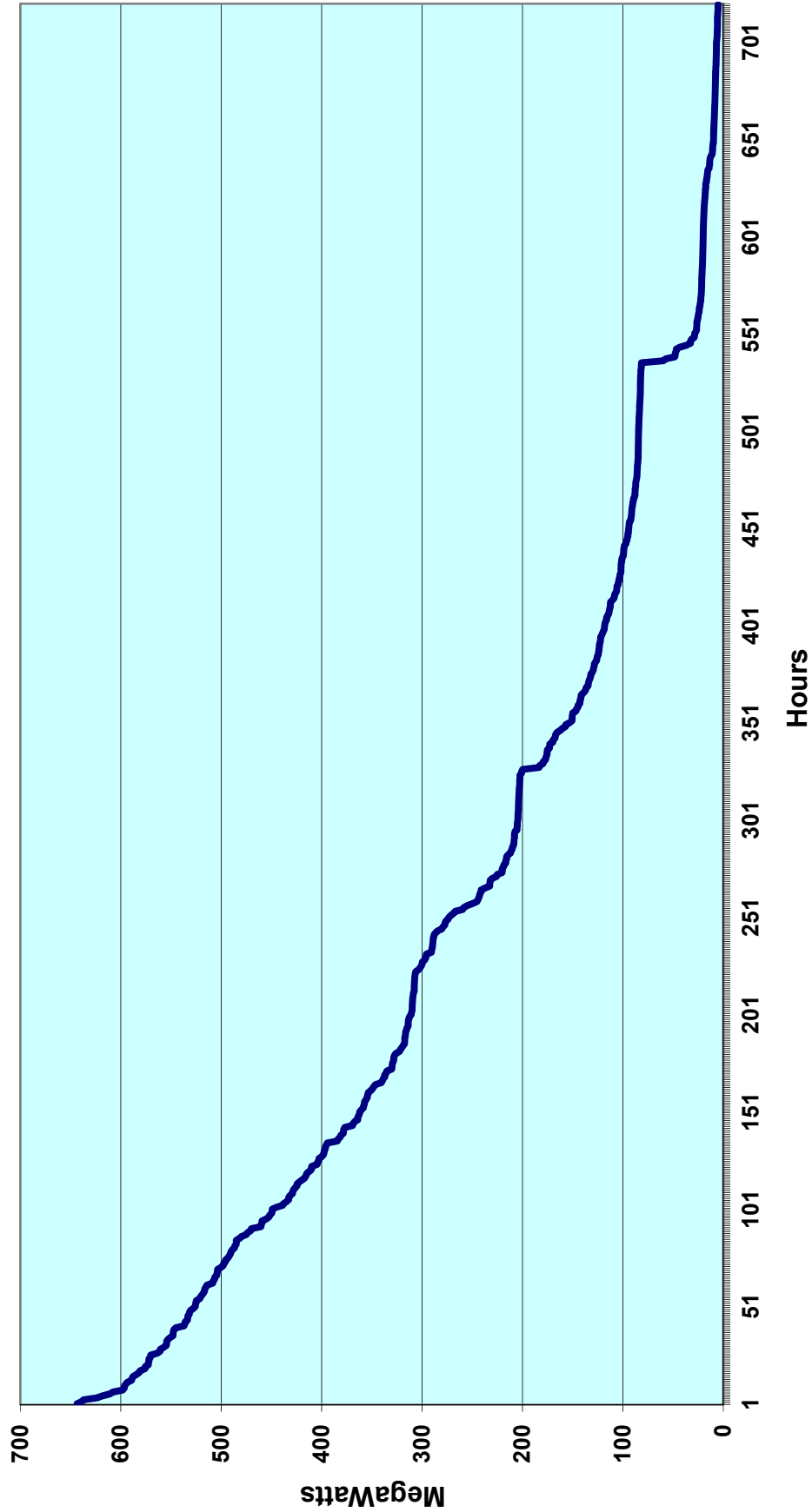
Kentucky Power Company February 2021 Load Duration Curve (System Load)



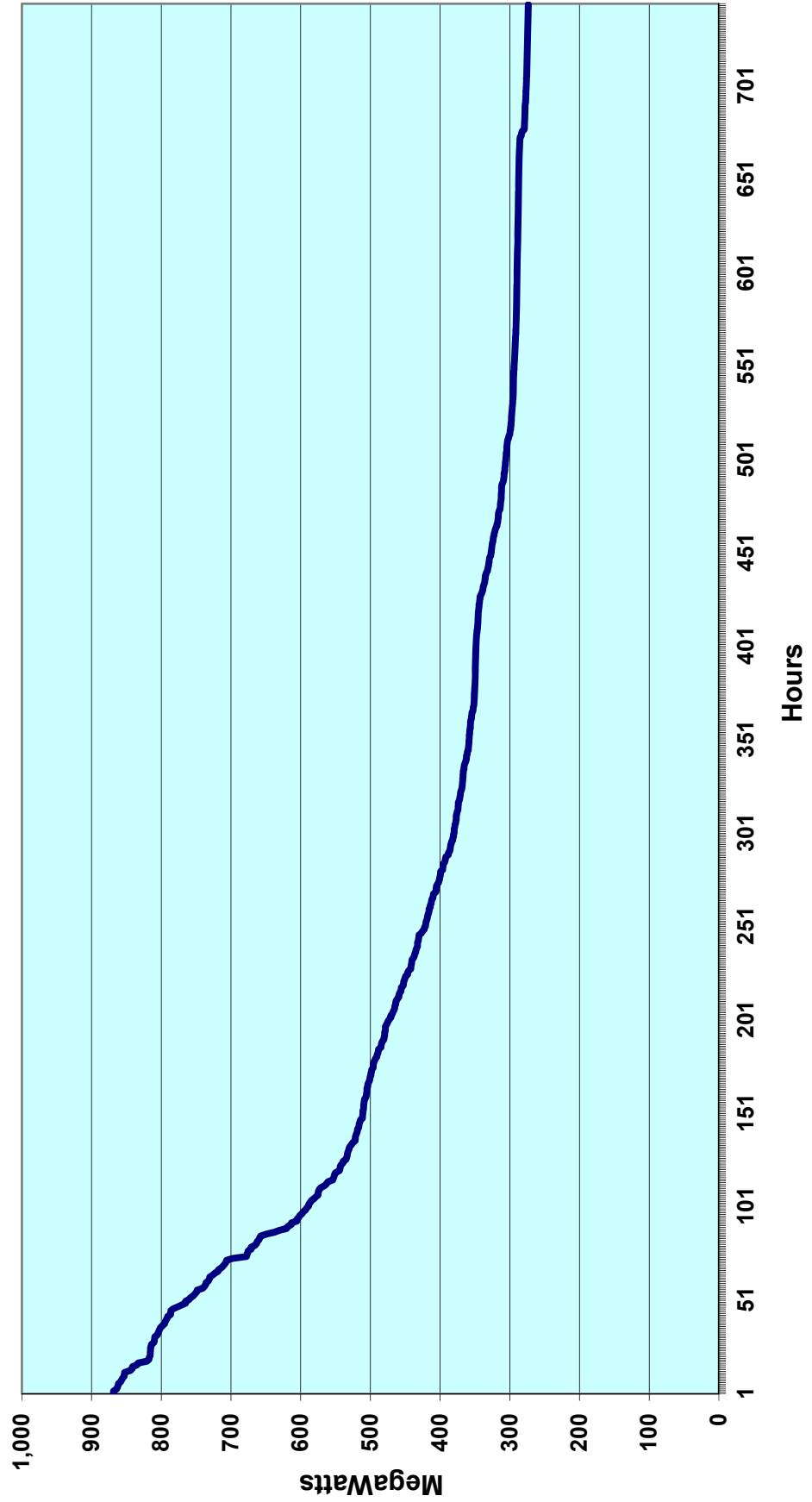
Kentucky Power Company March 2021 Load Duration Curve (System Load)



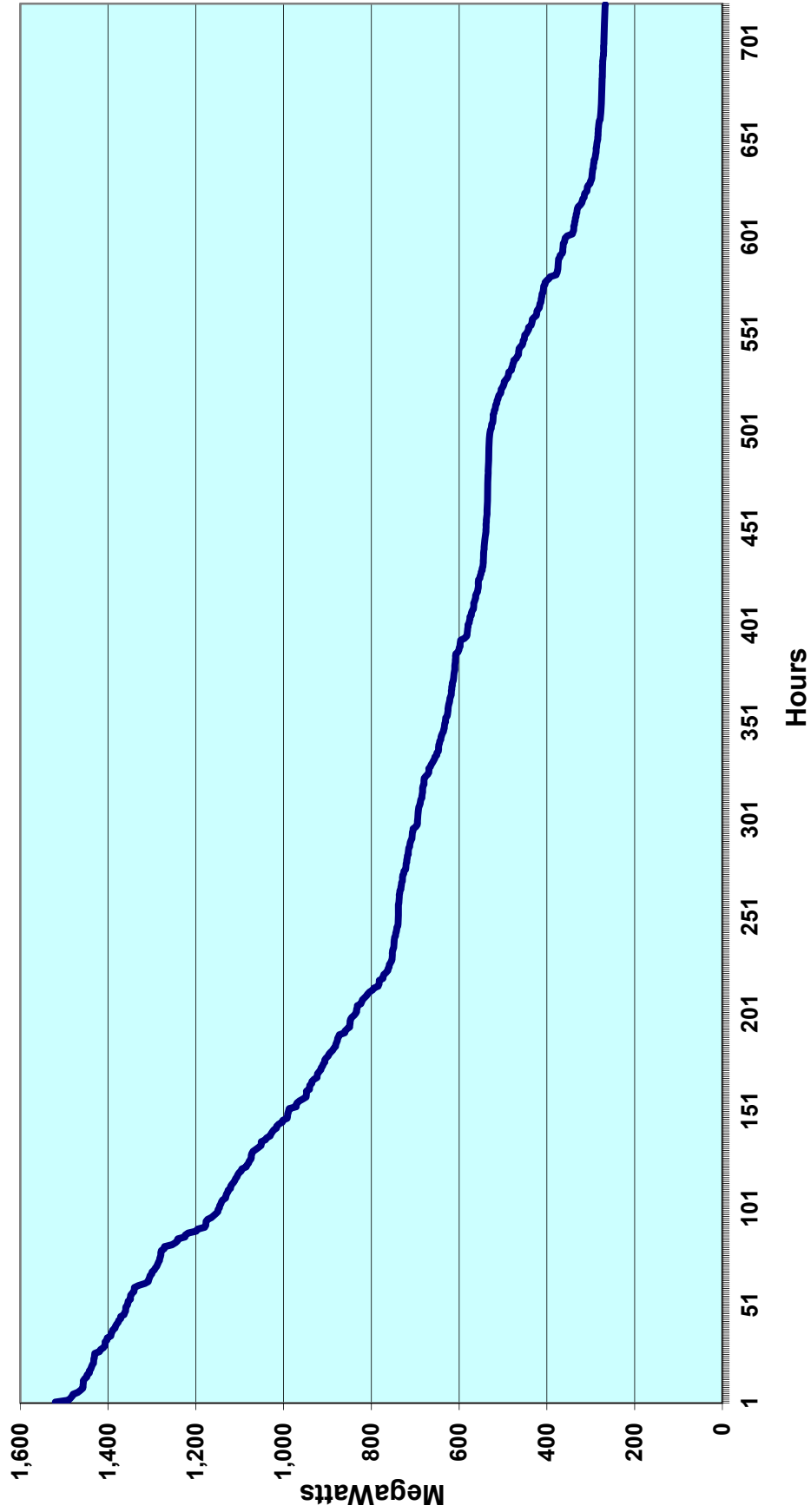
Kentucky Power Company April 2021 Load Duration Curve (System Load)



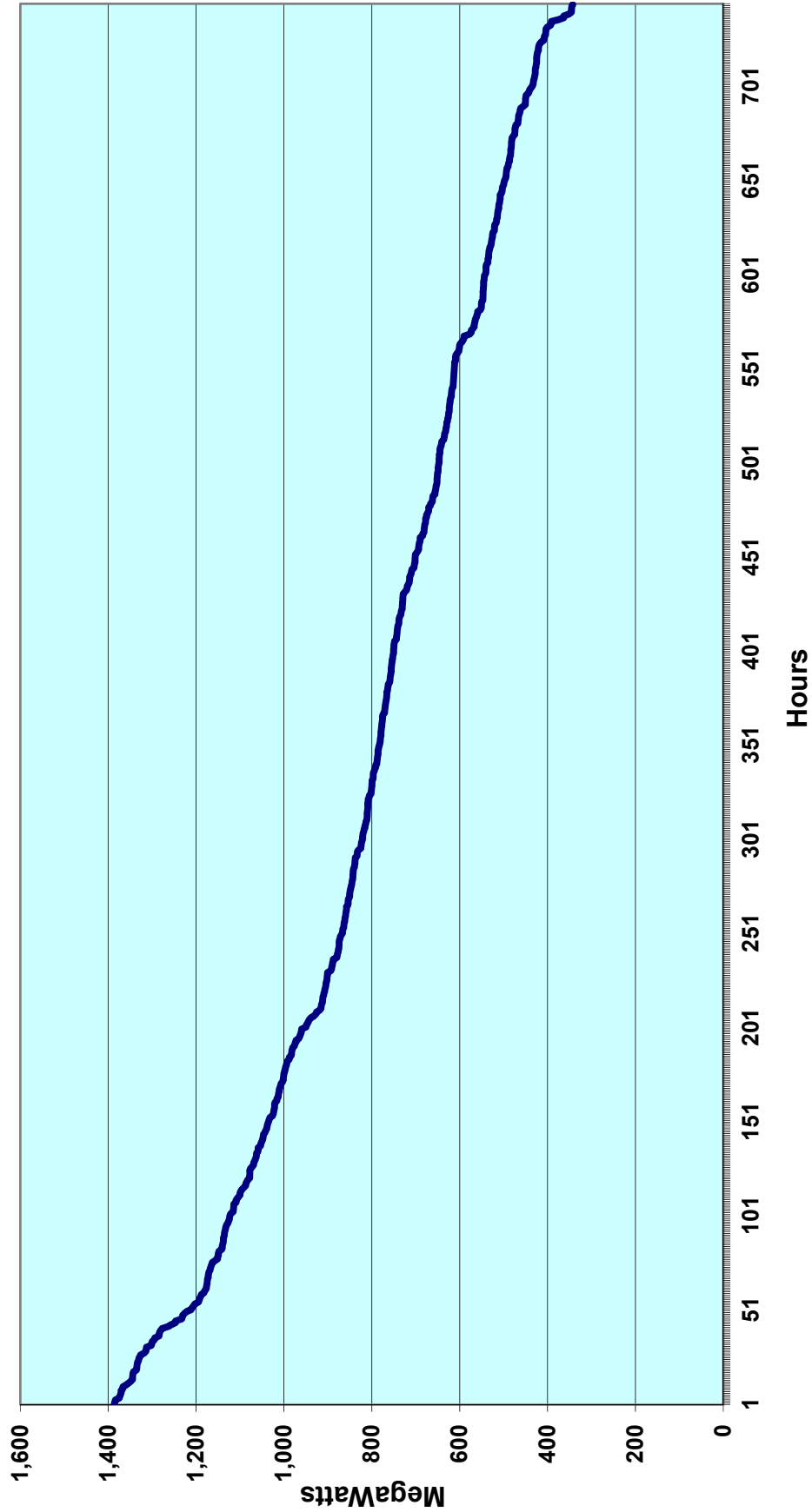
Kentucky Power Company May 2021 Load Duration Curve (System Load)



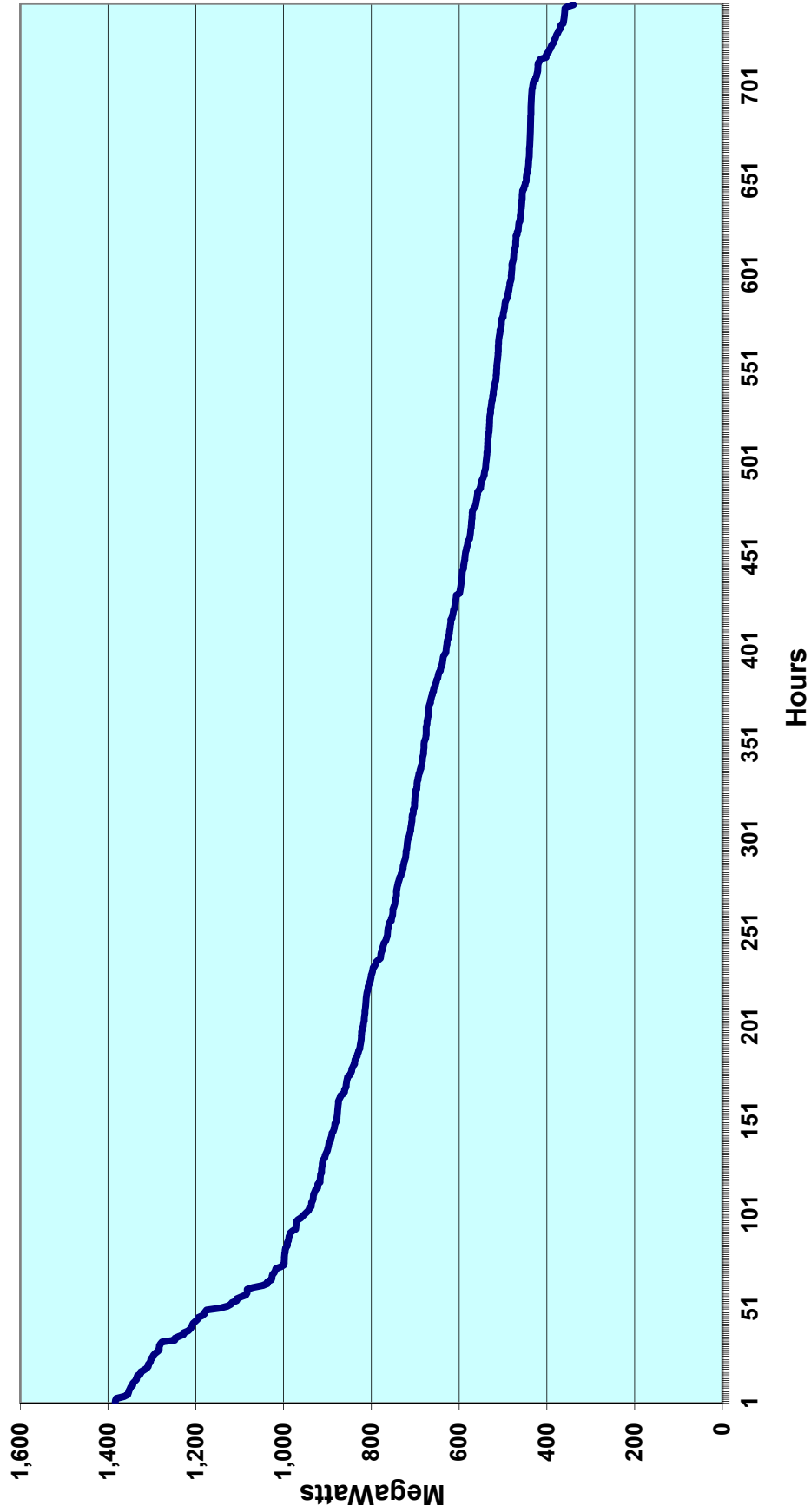
Kentucky Power Company June 2021 Load Duration Curve (System Load)



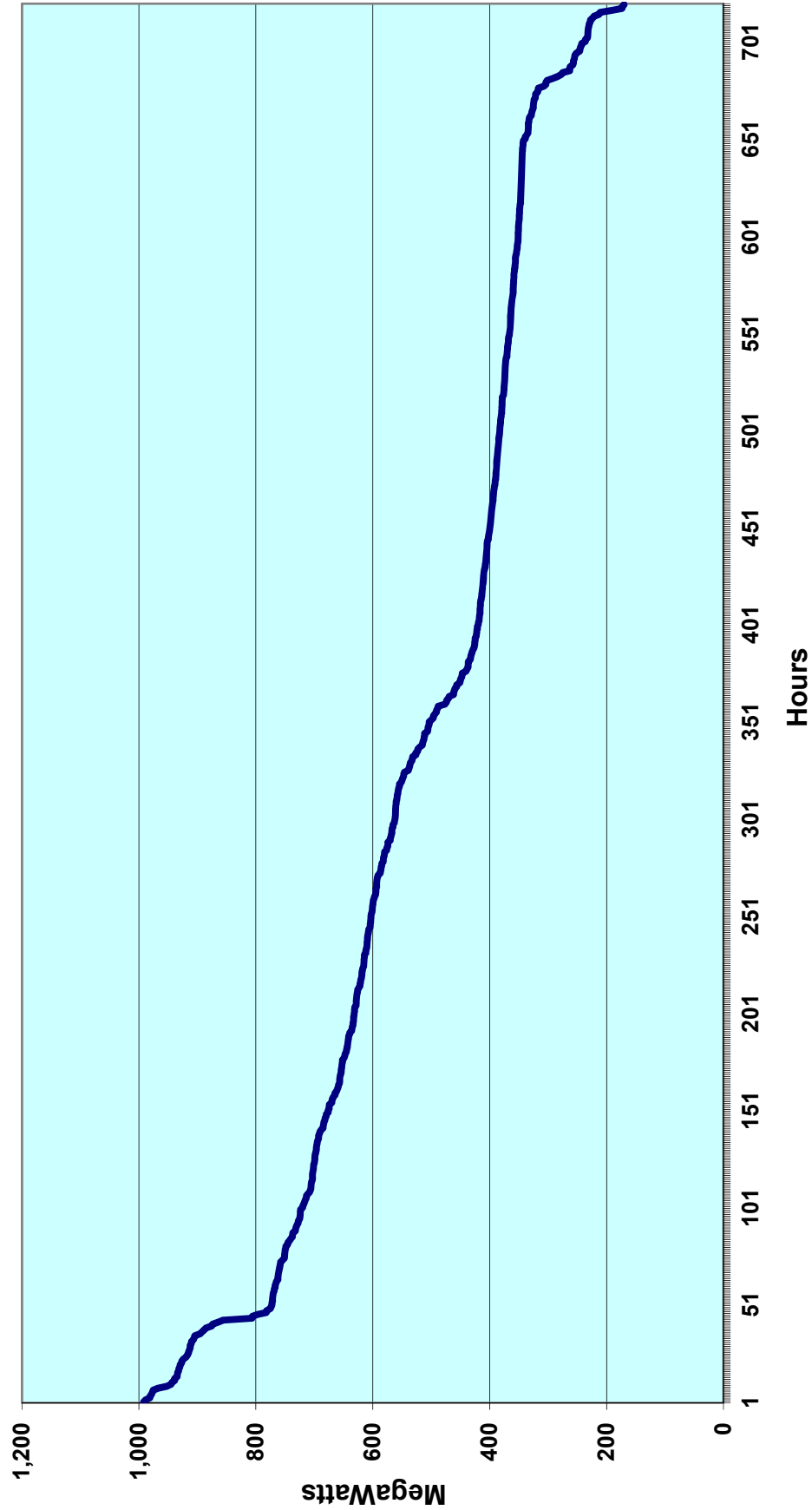
Kentucky Power Company July 2021 Load Duration Curve (System Load)



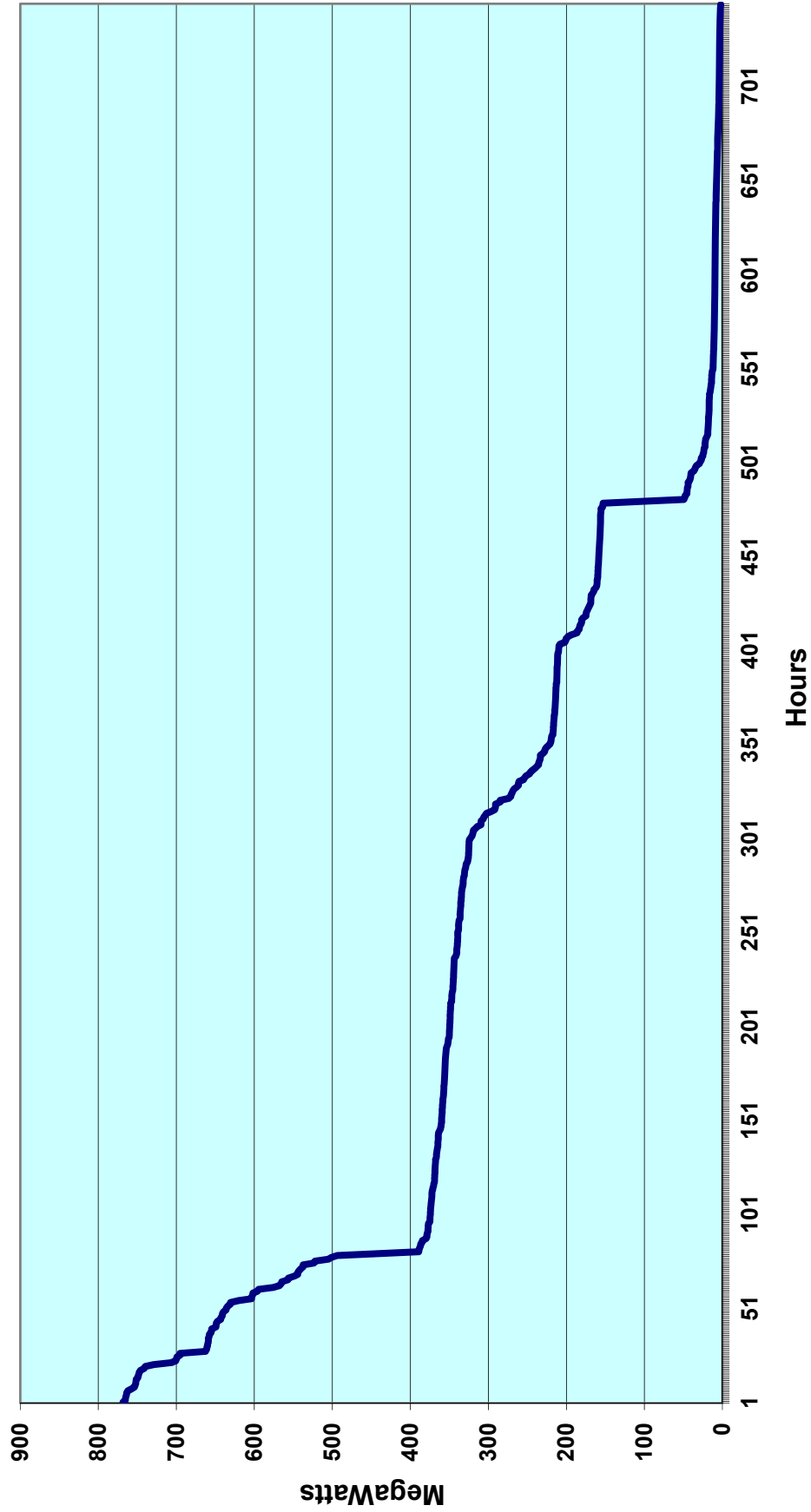
Kentucky Power Company August 2021 Load Duration Curve (System Load)



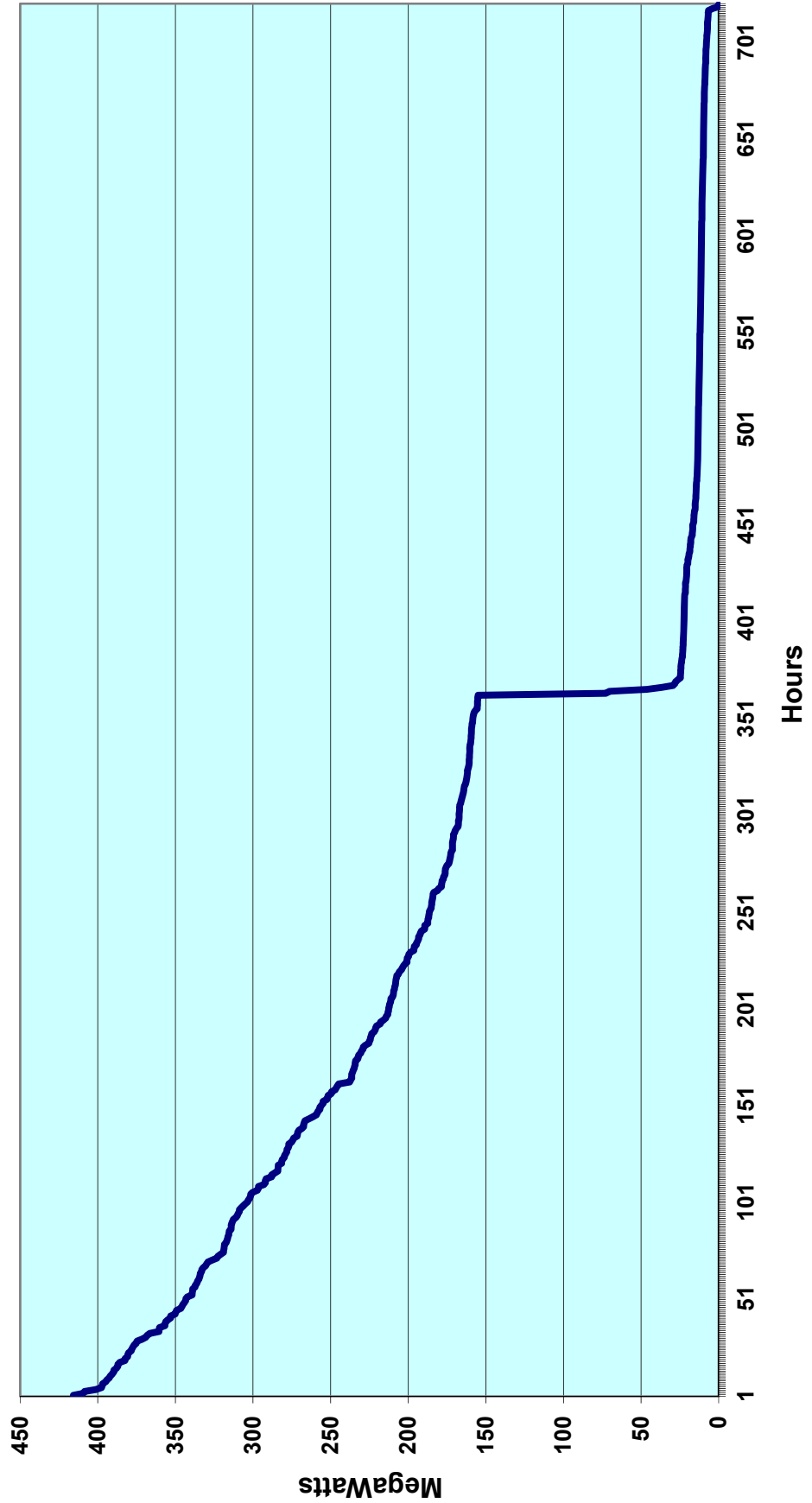
Kentucky Power Company September 2021 Load Duration Curve (System Load)



Kentucky Power Company October 2021 Load Duration Curve (System Load)



Kentucky Power Company November 2021 Load Duration Curve (System Load)



Kentucky Power Company December 2021 Load Duration Curve (System Load)



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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 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)
 2022 - 2026**

Year	Energy Sales		Summer Peak Demand		Preceding Winter Peak Demand	
	Base	High	Base	High	Base	High
2022	1,199	1,225	924	945	1,215	1,230
2023	1,182	1,220	916	946	1,218	1,240
2024	1,166	1,212	907	943	1,207	1,236
2025	1,160	1,212	904	944	1,192	1,223
2026	1,152	1,208	900	943	1,186	1,219

**Kentucky Power Company
Forecast Off-System Energy Sales (GWh)
2022 - 2026**

<u>Year</u>	KPCo Off-System Sales
2022	510
2023	249
2024	116
2025	392
2026	1,623

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 2022/23 through 2026/27, 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 Case No. Administrative Code No. 387- 2022
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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 2022/23 through 2026/27.

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 Case No. Administrative Code No. 387- 2022
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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 2022, all of which were Maintenance Outages.

See KPCO_R_KPSC_1_6_PublicAttachment2 for a list of Planned Outages for April 1, 2022, through December 31, 2026. 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 purchases 30% of AEG's 50% share of the output of the Rockport Plant (393 MW), expires in December 2022.

Witness: Brian K. West

Unit Name	Start Date	End Date	Event Description
Big Sandy 1	2/10/2022 0:25	2/18/2022 15:00	Boiler inspection and repair, Vibration Probe inspection and repair, Hotwell level control repair, Start-up Steam Attemperator Valve inspection and repair, Nash Vacuum Pump inspection and repair, #5 High Pressure Heater Feedwater Header leak repair.
Big Sandy 1	2/22/2022 0:58	2/27/2022 11:55	Boiler inspection, Drum door repairs, Boiler Feed Pump Turbine vibration probe repair, Clean cooling tower screens, Nash pump level float repair, Circulating water vent replacement.
Big Sandy 1	3/17/2022 0:00	3/27/2022 12:00	Boiler inspection and repair, State Drum inspection, Boiler Feed Pump Turbine (BFPT) vibration probe repair, BFPT Gasket replacement on Duplex Strainer, Boiler Penthouse inspection
Big Sandy 1	3/30/2022 1:27	4/5/2022 6:56	Boiler inspection
Mitchell 1	1/31/2022 1:06	2/11/2022 2:00	Inspect and repair #11 Induced Draft Fan.
Mitchell 1	3/9/2022 7:00	3/12/2022 0:29	Boiler inspection and repair, Upper Cooling Water Cooler inspection and repair, #12 Stator Water Pump inspection and repair.
Mitchell 2	2/20/2022 19:45	3/26/2022 5:00	Boiler inspection and repair, Hydro test, Precipitator inspection and repair, Roof Outlet Header SV-54 replacement, Deaerator leak repair, Drain FGD Absorber to replace 2H Agitator Seal, FGD Absorber Inlet Duct repairs, repair Reheat Attemperator Block Valves FMO-201 and 202 (Water Induction Protection Valves).

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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 currently does not have plans to add base load capacity but the need, if any, to add any base load capacity will be analyzed in the Company's next IRP filing which is scheduled to be filed in December 2022.

Kentucky Power's 2019 Integrated Resource Plan projected as part of its Preferred Plan the addition of 122 MW of peaking capacity and 675 MW of solar and wind resources (including 20 MW of solar assumed to be installed in 2022) during the 2022 through 2031 time period. 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 were 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 2021 and Forecast 2022-2026

Year	Summer Peak Demand (MW)	Preceding Winter Peak Demand (MW)
2021	958*	1,065*
2022	924	1,199
2023	916	1,182
2024	907	1,166
2025	904	1,160
2026	900	1,152

***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. The revised in-service date for this project is June 2021.

- **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/srtepw/20190423/20190423-reliability-analysis-update.ashx>
- **PJM Supplemental (S1412):** Please see pages 13-15
<https://www.pjm.com/-/media/committees-groups/committees/srtepw/20171218/20171218-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://pjm.com/-/media/committees-groups/committees/srtepw/postings/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 Wootton - 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 December 2027.

- **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://pjm.com/-/media/committees-groups/committees/srtepw/postings/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. Current projected in-service date for the transformer replacement is December 2021.

- **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/srtepw/20180327/20180327-reliability-analysis-update.ashx>

East Park 138 kV Transmission Line

This project will construct approximately 3 miles of 138 kV line to connect the existing Chadwick – Kentucky Electric Steel 138 kV line to the proposed Moore Hollow 138 kV substation located in the East Park Industrial Center. The project will serve as a transmission service delivery point to industrial customers at the East Park Industrial Center. This project is on hold and the current in service date is dependent on the customer.

- **East Park 138 kV transmission line**
Proposed Summer Emergency Conductor Capacity: 413 MVA
- **PJM Supplemental (S1687):** Please see pages 62-64
<https://www.pjm.com/-/media/committees-groups/committees/srtepw/20180831/20180831-reliability-analysis-update.ashx>

Boyd County Area Improvements

This project will construct approximately 3 miles of 138 kV line to connect the proposed Moore Hollow 138 kV substation located in the East Park Industrial Center to the proposed Ramey substation off the existing Bellefonte – Grangston 138 kV circuit. The project will serve as the second transmission source to industrial customers at the East Park Industrial Center. The project also addresses equipment material condition performance, and risk concerns associated with the Hoods Creek Station, while establishing a new distribution source to the area at Ramey. This project is on hold and the current in service date is dependent on the customer.

- **Moore Hollow - Ramey 138 kV transmission line**
Proposed Summer Emergency Conductor Capacity: 413 MVA
- **PJM Supplemental (S1687):** Please see pages 62-64
<https://www.pjm.com/-/media/committees-groups/committees/srrtep-w/20180831/20180831-reliability-analysis-update.ashx>

Chadwick Station Improvements and Leach Area Improvements

This project will Expand existing Chadwick station and install a second 138/69 kV transformer at a new 138 kV bus tied into the Bellefonte – Grangston 138 kV circuit. The 69 kV bus will be reconfigured into a ring bus arrangement to tie the new transformer into the existing 69 kV via installation of four 3000A 63 kA 69 kV circuit breakers. Remote end will be required at Grangston station. Remote end will be required at Bellefonte station. Relocate the Chadwick – Leach 69 kV circuit within Chadwick station. The Bellefonte – Grangston 138 kV circuit currently spans over top of Chadwick station, but does not terminate. Work will be AEP completed to bring the circuit into Chadwick station at the newly established 138 kV bus. The existing Chadwick – Tri-State #2 138 kV circuit will be reconfigured within the station to terminate into the newly established 138 kV bus #2 at Chadwick due to constructability aspects. Chadwick – Leach and Chadwick England Hill 69 kV circuits (share same structures for majority of circuits). Reconductor circuits with 795 ACSS conductor. A LiDAR survey and a sag study will need to be performed to confirm that the reconducted circuits would maintain acceptable clearances. Replace line risers towards Leach station. Replace 20 kA 69 kV circuit breaker ‘F’ with a new 3000A 40 kA 69 kV circuit breaker. Rebuild 336 ACSR portion of Leach - Miller S.S 69 kV line section (~0.3 miles). Replace line risers towards Chadwick station. The proposed project in-service date is November 2021

- **Chadwick Transformer #2**
Proposed Nameplate Capacity: 200 MVA
- **Chadwick – England Hill 69 kV transmission line**
Proposed Summer Emergency Conductor Capacity: 413 MVA
- **Chadwick – Leach 69kV transmission line**
Proposed Summer Emergency Conductor Capacity: 413 MVA
- **PJM Baseline (B3118):** Please see pages 8-10
<https://www.pjm.com/-/media/committees-groups/committees/srrtep-w/20190520/20190520-reliability-analysis-update.ashx>

Kenwood Looped Service

A green field line is to be constructed (Kenwood 69kV Extension) and to be operated at 46kV. The new extension will provide looped service into Kenwood substation. 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. Rebuild the existing ~1.77 mi Kenwood Tap line from Kenwood to Van Lear Tap Structure on the existing center line. The current projected in-service date for this project is November 2023.

- **Kenwood 69 kV transmission line**
Proposed Summer Emergency Conductor Capacity: 61 MVA
- **PJM Supplemental (S# TBD):** Please see pages 33-35
<https://pjm.com/-/media/committees-groups/committees/srtepw/2021/20210319/20210319-aep-supplemental-projects.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 September 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/srtepw/2020/20200420/20200420-reliability-analysis-update.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 sat 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 2024.

- **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>

Garrett Area Improvements (Approved on March 8, 2022 in Case No. 2021-00346)

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 October 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>

Inez Station Improvements

At Inez station, replace Breakers B, B2, C and C1. Install three new 138kV breakers and create third string in the existing breaker and half configuration. Replace 138/69kV Inez Transformer #1 with a 138/69kV/12kV 90 MVA autotransformer. Move the new Inez 139/69/12kV

Transformer #1 and Martiki 138kV feed to the new string. Install Breaker B1 towards Johns Creek to complete the string. Installation of Breaker B1 and the third string addresses dissimilar zones of protection between the #1 bus and 20+ mile Inez to Johns Creek 138 kV circuit and dissimilar zones of protection between the 138 kV bus #2, 138/69 kV transformer #1, and the 138 kV circuit to the Martiki coal service point. Replace Cap bank switchers CS-BB and CS-CC with 138kV circuit breakers. Replace obsolete relays at Inez substation. Retire 69kV Capacitor Bank and the circuit switcher AA. Projected in-service date for this project is November 2022.

- **Inez Transformer**
Existing 138/69kV Nameplate Capacity: 50 MVA
Proposed 138/69kV Nameplate Capacity: 90 MVA
- **PJM Baseline (B3283):** Please see pages 28-29
<https://www.pjm.com/-/media/committees-groups/committees/srstep-w/2021/20210217/20210217-reliability-analysis-update.ashx>
- **PJM Supplemental (S2281):** Please see pages 218-220
<https://www.pjm.com/-/media/committees-groups/committees/srstep-w/postings/aep-local-plan-submission-of-the-supplemental-projects-for-2020-rtep.ashx>

Fleming station rebuild

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 November 2022.

- **Fleming 138/69kV Transformer**
Existing 138/69kV Nameplate Capacity: 130 MVA
Proposed 138/69kV Nameplate Capacity: 130 MVA
- **PJM Baseline (B3307):** Pages 45-46
<https://www.pjm.com/-/media/committees-groups/committees/srstep-w/2021/20210115/20210115-reliability-analysis-update.ashx>
- **PJM Supplemental (S2219):** Please see pages 145-147
<https://www.pjm.com/-/media/committees-groups/committees/srstep-w/postings/aep-local-plan-submission-of-the-supplemental-projects-for-2020-rtep.ashx>

Allen station Improvement

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 November 2023.

- **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 Supplemental (S2405):** Please see pages 23-24
<https://www.pjm.com/-/media/committees-groups/committees/srrtep-w/postings/aep-local-plan-submission-of-the-supplemental-projects-for-2021-rtep.ashx>

New Camp Loop

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 2024.

- **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/srrtep-w/2021/20210115/20210115-reliability-analysis-update.ashx>
- **PJM Supplemental (S2446):** Please see pages 84-86
<https://www.pjm.com/-/media/committees-groups/committees/srrtep-w/postings/aep-local-plan-submission-of-the-supplemental-projects-for-2021-rtep.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 new structure to Cedar Creek-Henry Clay 46kV Line. The current projected in-service date for this project is December 2024.

- **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/aep-local-plan-submission-of-the-supplemental-projects-for-2021-rtep.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/aep-local-plan-submission-of-the-supplemental-projects-for-2021-rtep.ashx>

