

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

Electronic Application Of Kentucky Power Company)
For Approval of A Certificate of Public Convenience)
And Necessity For Environmental Project)
Construction At The Mitchell Generating Station, An)
Amended Environmental Compliance Plan, And)
Revised Environmental Surcharge Tariff Sheets)

Case No. 2021-00004

DIRECT TESTIMONY OF
CONNIE S. TRECAZZI
ON BEHALF OF KENTUCKY POWER COMPANY

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I. INTRODUCTION AND BACKGROUND

1 **Q. PLEASE STATE YOUR NAME, POSITION AND BUSINESS ADDRESS.**

2 A. My name is Connie Trecazzi. I am a Staff Economic Forecast Analyst, Fundamentals
3 Analysis, for American Electric Power Service Corporation (“AEPSC”). AEPSC supplies
4 engineering, financial, accounting, planning, and advisory services to the electric operating
5 companies of American Electric Power Company, Inc. (“AEP”), including Kentucky
6 Power Company (“Kentucky Power” or the “Company”). My business address is 1
7 Riverside Plaza, Columbus, Ohio 43215.

8 **Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND**
9 **BUSINESS EXPERIENCE.**

10 A. I received an MBA in Decision Sciences from the University of Central Oklahoma in 1991
11 and have over 30 years of energy industry experience, including pipeline system planning,
12 commodity market risk analysis and oversight, and commodity fundamentals analysis and
13 forecasting. I have provided analysis and insight across the energy spectrum, with
14 expertise in the power, gas, oil, and coal industries, including transportation. My
15 experience spans multiple major energy companies, including American Electric Power,
16 Tennessee Valley Authority, The Williams Company, and Wood Mackenzie.

17 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE ANY REGULATORY**
18 **AGENCIES?**

19 A. No.

II. PURPOSE OF TESTIMONY

1 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?**

2 A. The purpose of my testimony is to sponsor the North American Long-Term Energy Market
3 Forecast, which I will refer to herein as the U.S. Energy Information Administration
4 (“EIA”)-based Fundamentals Forecast, used by Company Witness Becker in his analyses
5 presented to the Company to evaluate the costs and benefits of making necessary
6 compliance expenditures at the Mitchell Generating Station (“Mitchell Plant”).
7 Specifically, I:

- Define the EIA-Based Fundamentals Forecast
- Describe all defined Scenarios in the EIA-Based Fundamentals Forecast
- Describe the impact of including a carbon dioxide (“CO₂”) burden on the EIA-Based Fundamentals Forecast
- Describe the model used to generate the EIA-Based Fundamentals Forecast

8 **Q. ARE YOU SPONSORING ANY EXHIBITS?**

9 A. No.

III. THE 2020 EIA-BASED FUNDAMENTALS FORECAST

10 **Q. WHAT DID YOU PROVIDE TO COMPANY WITNESS BECKER FOR HIS**
11 **ANALYSIS IN THIS CASE?**

12 A. I provided Company Witness Becker with AEP’s October 13, 2020 EIA-Based
13 Fundamentals Forecast.

1 **Q. WHAT IS AEP'S EIA-BASED FUNDAMENTALS FORECAST?**

2 A. The EIA-based Fundamentals Forecast is a long-term, weather-normalized commodity
3 market forecast principally based upon the assumptions contained in the EIA's Annual
4 Energy Outlook 2020 ("EIA AEO 2020").

5 **Q. WHAT INTERNALLY-GENERATED INFORMATION IS USED IN**
6 **CONNECTION WITH AEP'S EIA-BASED FUNDAMENTALS FORECAST?**

7 A. The Aurora energy market simulation model ("Aurora") was utilized, with the inputs
8 shown in Figure 1, to provide information not directly available from the EIA AEO 2020.
9 The Aurora model contains granular information not available in the EIA AEO 2020,
10 which was necessary for Kentucky Power's economic analyses in this case. Examples of
11 such granular information include PJM AEP Hub monthly and yearly electric energy
12 prices, PJM capacity prices, implied heat rates, and other information.

13 **Q. PLEASE DESCRIBE THE AURORA MODEL USED TO GENERATE AEP'S EIA-**
14 **BASED FUNDAMENTALS FORECAST.**

15 A. The Aurora model iteratively generates zonal, but not company-specific, long-term
16 capacity expansion plans, annual energy dispatch, fuel burns and emission totals from
17 inputs including fuel, load, emissions and capital costs, among others. Ultimately, Aurora
18 creates a weather-normalized, long-term forecast of the market in which a utility would be
19 operating.

20 The Aurora model is widely used by utilities for integrated resource and transmission
21 planning, power cost analysis, and detailed generator evaluation. The database includes
22 approximately 25,000 electric generating facilities in the contiguous United States,
23 Canada, and Baja Mexico. These generating facilities include wind, solar, biomass,

1 nuclear, coal, natural gas, and oil. A licensed online data provider, ABB Velocity Suite,
2 provides up-to-date information on markets, entities, and transactions along with the
3 operating characteristics of each generating facility, which are subsequently exported to
4 the Aurora model.

5 **Q. WHAT OTHER USES ARE MADE OF AEP'S EIA-BASED FUNDAMENTALS**
6 **FORECAST?**

7 A. The EIA-based Fundamentals Forecast is provided to Kentucky Power, AEPSC, and the
8 other AEP operating companies for resource planning, capital improvement analyses, fixed
9 asset impairment accounting, and other purposes.

10 **Q. WHAT IS THE GEOGRAPHIC SCOPE OF AEP'S EIA-BASED**
11 **FUNDAMENTALS FORECAST?**

12 A. The forecast includes the Eastern Interconnect, the Electric Reliability Council of Texas,
13 and the Western Electricity Coordinating Council.

14 **Q. WHAT IS INCLUDED IN AEP'S EIA-BASED FUNDAMENTALS FORECAST?**

15 A. The EIA-based Fundamentals Forecast includes: 1) hourly, monthly, and annual regional
16 power prices (in both nominal and real dollars); 2) prices for various qualities of coals; 3)
17 monthly and annual locational natural gas prices, including the benchmark Henry Hub; 4)
18 nuclear fuel prices; 5) sulfur dioxide ("SO₂"), nitrogen oxides ("NO_x"), and CO₂ burden
19 values; 6) locational implied heat rates; 7) electric generation capacity values; 8) renewable
20 energy subsidies; and 9) inflation factors, among others. Figure 1 below describes AEP's
21 EIA-based Fundamentals Forecast components, which were sourced directly from the
22 previously-described EIA AEO 2020, third-party energy consultancies, and internally-
23 generated information.

1

Figure 1: EIA-Based Fundamentals Forecast Components

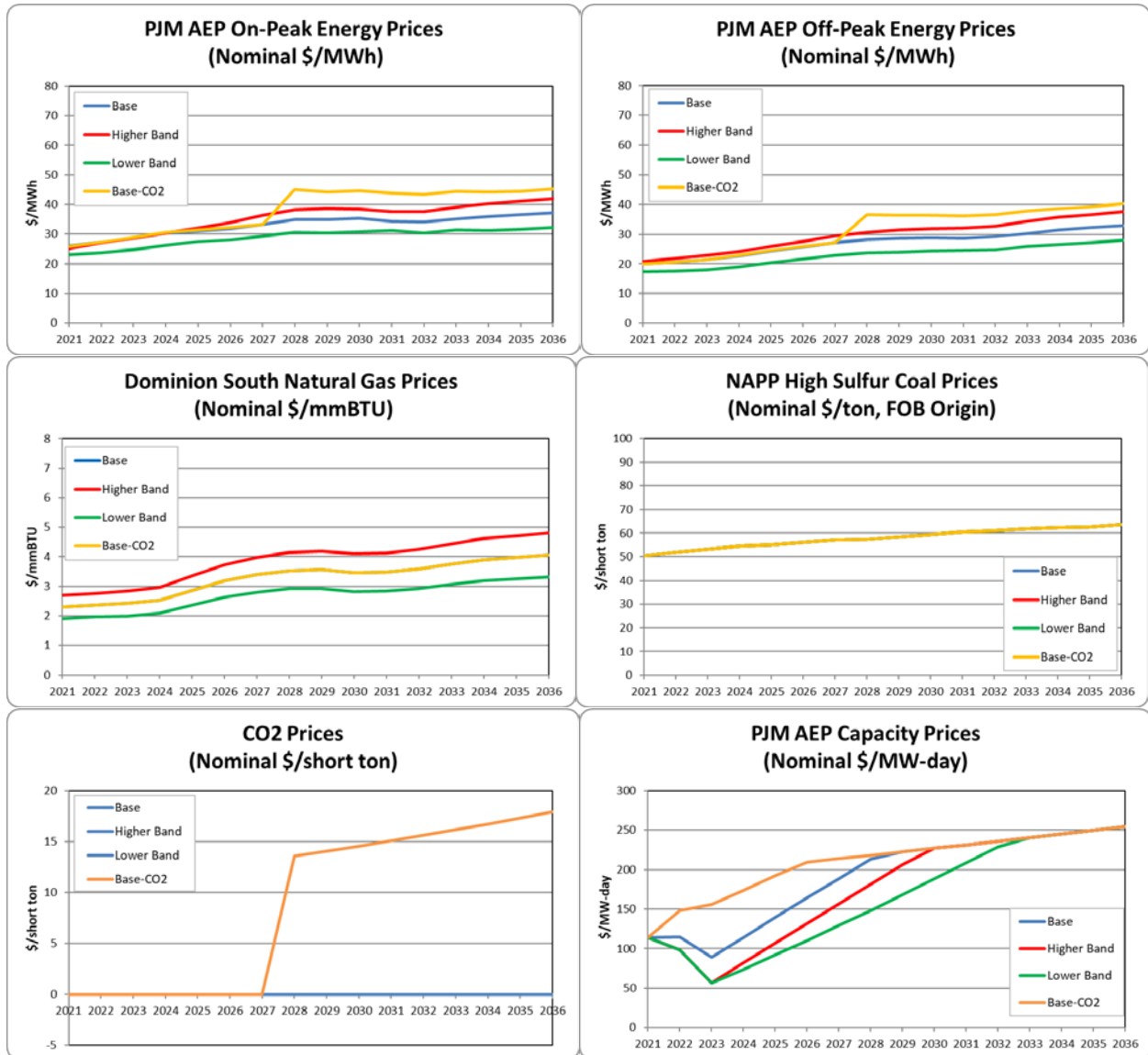
Forecast Components	EIA	Other	Source
Economy; Inflation/GDP deflators	✓		EIA Reference case
Generating Reserve Margins		✓	RTO Requirements
Electric Load		✓	AEP Load Forecasting
Electric Load shapes		✓	AEP Fundamentals
Solar/Wind production shapes by area		✓	NREL
Coal; Delivered price to EIA regions	✓	✓	EIA Reference case FOB prices + AEP Fundamentals
Natural gas price; Henry Hub	✓		EIA Reference case
Natural gas price; Locational values	✓	✓	EIA Reference case - Henry Hub + AEP Fundamentals
Natural gas supply; Lower 48 production	✓		EIA Reference case
Natural gas demand (incl. losses)	✓		EIA Reference case
Natural gas; net pipeline/LNG exports	✓		EIA Reference case
Oil price, WTI	✓		EIA Reference case
Fuel Oil price; locational values	✓	✓	EIA Reference case - WTI + AEP Fundamentals
Uranium prices		✓	AEP Fundamentals
Other Fuel(Biofuel, etc...)	✓		EIA Reference case
New gen unit options and capital costs	✓		EIA Reference case
Existing gen units	✓		EIA Reference case
Announced new gen units	✓		EIA Reference case
Aged-out retirements of existing gen units	✓		EIA Reference case
Gen unit maintenance schedule		✓	AEP Fundamentals
Gen unit outages		✓	AEP Fundamentals
Unit-level emission rates; CO ₂ , SO ₂ , NO _x		✓	US EPA CEMS data
Application of a CO ₂ burden *		✓	AEP Environmental
REC		✓	AEP Regulatory Forecast
PTC*	✓		EIA Reference case
ITC*	✓		EIA Reference case
State-mandated Renewable Portfolio Standards		✓	AEP Environmental
Reporting parameters; Peak/Off-Peak/NERC Holidays		✓	PJM/SPP/other RTO and/or internal guidelines
Transmission/links between Zones		✓	AEP Fundamentals

2

3 Figure 2 below contains charts of relevant fundamental inputs and resulting energy forecasts

4 found in EIA-based Fundamentals Forecast.

Figure 2: Fundamentals Forecasts



1 Q. WHAT ADDITIONAL SCENARIOS ARE INCLUDED IN THE
 2 FUNDAMENTALS FORECAST?

3 A. To complement the base EIA-based Fundamentals Forecast, three associated cases were
 4 also created: the Lower Band, Higher Band, and the Base with Carbon scenarios. The
 5 associated cases were designed to define a plausible range of outcomes surrounding the

1 base EIA-based Fundamentals Forecast. The Lower and Higher Band forecasts consider
2 lower and higher North American demand for electric generation and fuels and,
3 consequently, lower and higher fuels prices, respectively. In the Higher Band and Lower
4 Band scenarios, fossil fuel prices vary one standard deviation above and below base values,
5 respectively. The Base with Carbon scenario assumes there will be an additional cost
6 (burden) associated with CO₂ emissions commencing in 2028 and remaining in effect
7 throughout the remaining forecast period.

8 **Q. WHAT IS THE IMPACT OF A POTENTIAL CO₂ BURDEN ON THE EIA-BASED**
9 **FUNDAMENTALS FORECAST?**

10 A. The CO₂ emission burden, assumed only in the Base with Carbon scenario, adversely
11 affects the cost of electricity generated by fossil fuels. The carbon burden used in the
12 forecast was internally sourced. While EIA's AEO 2020 included carbon sensitivities,
13 beginning in 2021, that is not a feasible assumption for an actual implementation date. A
14 commencement date of 2028 is the earliest time that federal legislation regulating carbon
15 could become effective, assuming passage of a climate proposal between 2021 and 2023
16 and a five year implementation period (as seen in previous climate proposals). CO₂
17 regulations would also affect fuel markets. For example, an increase in natural gas
18 consumption (a less carbon intensive fossil fuel) would likely, all other things being equal,
19 result in increased natural gas prices. The direct effect of a \$15 per metric ton allowance
20 price for a coal plant is an approximate \$15 per MWh increase in plant operating costs.
21 Likewise, the impact of a \$15 per metric ton allowance price for a natural gas-fired
22 combined cycle plant is an approximate \$6 per MWh increase in plant operating costs.

1 Relative to fossil fuels, renewables-generated electric power becomes more valuable with
2 the implementation of a CO₂ emission burden.

3 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

4 A. Yes, it does.



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E-Signature Summary

E-Signature 1: Connie Trecazzi (CST)

February 05, 2021 09:42:46 -8:00 [DB859DA1B70F] [24.192.79.123]
cstrecazzi@aep.com (Principal) (Personally Known)

E-Signature Notary: S. Smithhisler (SRS)

February 05, 2021 09:42:46 -8:00 [9BC86FFF00F8] [167.239.221.82]
srsmithhisler@aep.com
I, S. Smithhisler, did witness the participants named above electronically sign this document.



VERIFICATION

The undersigned, Connie Trecazzi, being duly sworn, deposes and says she is a Staff Economic Forecast Analyst, Fundamentals Analysis for American Electric Power Service Corporation, that she has personal knowledge of the matters set forth in the forgoing testimony, and the information contained therein is true and correct to the best of her information, knowledge and belief after reasonable inquiry.

Connie Trecazzi
Signed on 2021/02/05 09:42:46 -8:00

Connie Trecazzi

STATE OF OHIO

)

) Case No. 2021-00004

COUNTY OF FRANKLIN

)

Subscribed and sworn to before me, a Notary Public in and before said County and State, by
5th
Connie Trecazzi, this _____ day of February 2021.



S. Smithhisler
Signed on 2021/02/05 09:42:46 -8:00

Notary Public

Notary ID Number: 2019-RE-775042

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