

INDEX TO DIRECT TESTIMONY OF
KARL R. BLETACKER

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BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO
DIRECT TESTIMONY OF
KARL R. BLETZACKER
ON BEHALF OF
OHIO POWER COMPANY

1 **PERSONAL DATA**

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

3 A. My name is Karl R. Bletzacker. My position is Director, Fundamentals Analysis,
4 American Electric Power Service Corporation (AEPSC). AEPSC supplies engineering,
5 financial, accounting, planning and advisory services to the electric operating companies
6 of American Electric Power Company, Inc. (AEP), including Ohio Power Company
7 (“AEP Ohio” or the “Company”). My business address is 1 Riverside Plaza, Columbus,
8 Ohio 43215.

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

11 A. I received a BSMEng degree from The Ohio State University in 1980 and have over
12 thirty-five years of energy industry experience, which includes petroleum engineering
13 and managing the purchasing, interstate transmission, and distribution of natural gas and
14 power to both regulated and wholesale customers. I have implemented risk management
15 strategies using New York Mercantile Exchange (NYMEX) and over-the-counter natural
16 gas futures, swaps, and options since the NYMEX natural gas contract was created in
17 June of 1990. I have purchased short- and long-term natural gas supply from major and
18 independent producers and marketing companies and I have monetized arbitrage
19 opportunities using NYMEX futures contracts, local and contract storage, pipeline

1 imbalances and local distribution company banks. As Vice-President and Chief
2 Operating Officer of National Gas & Oil Company (a publicly traded Ohio natural gas
3 utility) and Licking Rural Electric Cooperative (an Ohio electric cooperative), I was
4 responsible for the natural gas pricing and risk management policies that ensured reliable
5 delivery and managed customers' exposure to volatile commodity prices. As the North
6 American Manager of Energy Procurement for Honda of America Mfg., Inc., I
7 implemented hedging strategies utilizing NYMEX natural gas futures contracts and
8 operated a natural gas supply pool for the benefit of Honda and its suppliers in North
9 America. I also utilized my energy markets expertise while serving as Vice-Chairman of
10 the Industrial Energy Users-Ohio, which is an organization of large Ohio energy
11 consumers that spend collectively over \$3 billion per year on electricity and natural gas
12 for their plants and facilities and whose members employ over 250,000. I joined AEP in
13 2005 to focus on the creation of long-term North American energy market forecasts
14 primarily to support the resource and strategic planning of its operating companies.

15 **Q. HAVE YOU PREVIOUSLY FILED TESTIMONY IN A REGULATORY**
16 **PROCEEDING?**

17 A. Yes. I have presented testimony on behalf of AEP operating companies and others in
18 Ohio, Arkansas, Indiana, Kentucky, Louisiana, Michigan, Oklahoma, Texas, Virginia,
19 and West Virginia.

20 **PURPOSE OF TESTIMONY**

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

22 A. I sponsor the Long-Term North American Energy Market Forecast ("Fundamentals
23 Forecast") utilized by Company witness Torpey as a basis for certain elements of the

1 analyses that he performed, which are described in his testimony. I describe how the
2 Fundamentals Forecast is derived and, in particular, the basis for the natural gas, electric
3 generation energy and capacity, and CO₂ allowance price forecasts included in the
4 Fundamentals Forecast.

5 **Q. WHAT DID YOU PROVIDE TO COMPANY WITNESS TORPEY FOR HIS**
6 **ANALYSES IN THIS CASE?**

7 A. I gave him AEPSC's Fundamentals Forecast, which was available to all AEP electric
8 operating companies via posting on the AEPSC intra-net site beginning August 1, 2018.

9 **Q. WERE ANY SUBSEQUENT FORECASTS AVAILABLE TO ANY OF THE AEP**
10 **ELECTRIC OPERATING COMPANIES AT THE TIME COMPANY MR.**
11 **TORPEY USED THE FUNDAMENTALS FORECAST?**

12 A. No. To date, no subsequent Fundamentals Forecast has been undertaken.

13 **FUNDAMENTALS FORECAST**

14 **Q. WHAT IS THE FUNDAMENTALS FORECAST?**

15 A. The Fundamentals Forecast is a long-term, weather-normalized commodity market
16 forecast. It is not created to meet a specific regulatory need in a particular jurisdiction;
17 rather, it is made available to all AEP operating companies after completion. It is often
18 referenced for purposes such as fixed asset impairment accounting, capital improvement
19 analyses, resource planning, and strategic planning. These projections cover the
20 electricity market within the Eastern Interconnect (which includes the Southwest Power
21 Pool), the Electric Reliability Council of Texas (ERCOT) and the Western Electricity
22 Coordinating Council (WECC). The Fundamentals Forecast includes: 1) monthly and
23 annual regional power prices (in both nominal and real dollars); 2) prices for various

1 qualities of Central Appalachian (CAPP), Northern Appalachian (NAPP), Illinois Basin
2 (ILB), Powder River Basin (PRB), and Colorado coals; 3) monthly and annual locational
3 natural gas prices, including the benchmark Henry Hub; 4) uranium fuel prices; 5) SO₂,
4 NO_x, and CO₂ values; 6) locational implied heat rates; 7) electric generation capacity
5 values; 8) renewable energy subsidies; and 9) inflation factors, among others.

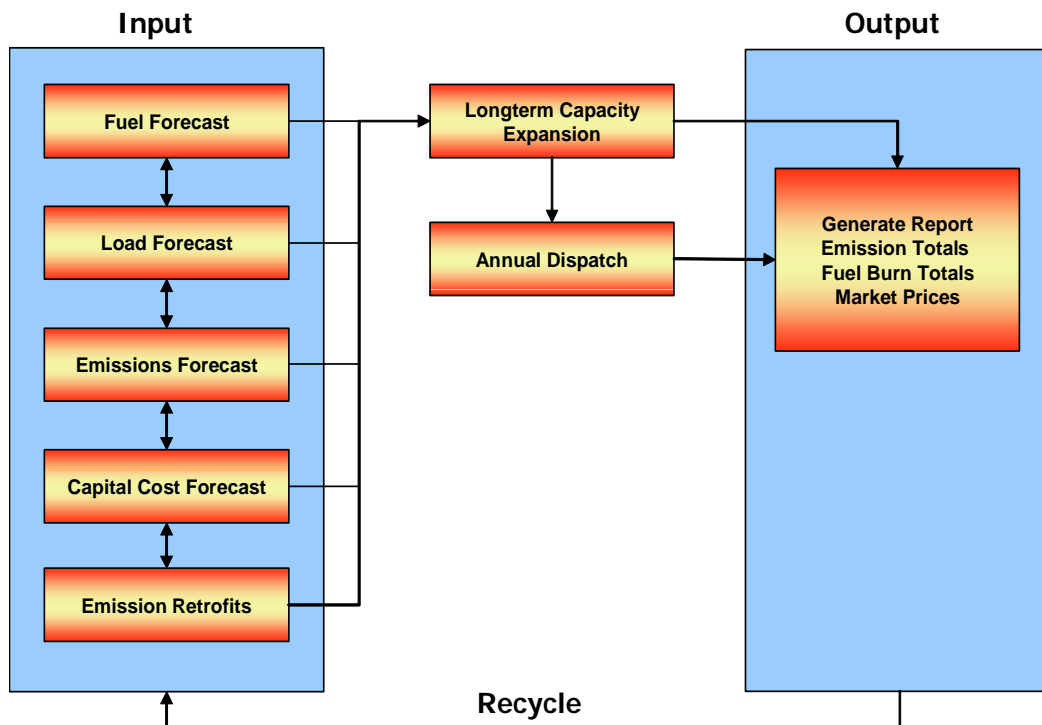
6 To complement the Base Case Fundamentals Forecast, three associated cases are also
7 created: the Lower Band, Upper Band, and Status Quo cases. The associated cases were
8 designed and generated to define a plausible range of outcomes surrounding the Base
9 Case Fundamentals Forecast. The Lower and Upper Band forecasts consider lower
10 and higher North American demand for electric generation and fuels and, consequently,
11 lower and higher fuels prices. Nominally, fossil fuel prices vary one standard deviation
12 above and below Base Case values. The Status Quo case assumes there will be no
13 regulations limiting CO₂ emissions throughout the entire forecast period.

14 **Q. WHAT TOOLS DID YOU USE TO DEVELOP THE FUNDAMENTALS**
15 **FORECAST?**

16 The primary tool used to develop the North American long-term energy market pricing
17 forecasts is the Aurora energy market simulation model. It iteratively generates zonal, but
18 not company-specific, long-term capacity expansion plans, annual energy dispatch, fuel
19 burns and emission totals from inputs including fuel, load, emissions and capital costs,
20 among others. Ultimately, Aurora creates a weather-normalized, long-term forecast of
21 the market in which a utility would be operating. AEPSC also has ample energy market
22 research information available for its reference, from sources including third-party
23 consultants, industry groups, governmental agencies, trade press, investment community,

1 AEP-internal expertise, various stakeholders, and others. Although no exact forecast
 2 inputs from these sources are utilized, an in-depth assessment of this research information
 3 can yield, among other things, an indication of the supply, demand, and price relationship
 4 (price elasticity) over a period of time. This price elasticity, when applied to the Aurora-
 5 derived natural gas fuel consumption, yields a corresponding change in natural gas prices
 6 – which is recycled through the Aurora model iteratively until the change in natural gas
 7 burn is de minimis. Figure 1 illustrates that the magnitude of that effect must be recycled
 8 through Aurora to determine a new merit order of dispatch. It is this new merit order of
 9 dispatch that takes into account the effect of operating conditions across North America
 10 and, in turn, determines zonal energy market prices.

Figure 1



11 **Q. WHY IS IT IMPORTANT TO RECOGNIZE THAT THE FUNDAMENTALS**
 12 **FORECAST IS WEATHER-NORMALIZED?**

1 A. It is important to recognize that the Fundamentals Forecast is a long-term, weather-
2 normalized energy market forecast. Although there is the credible modeling expectation
3 that each forecast-year experiences 30-year average heating and cooling degree days,
4 actual weather can deviate dramatically. The combination of both heating degree day
5 departure and above- or below-normal natural gas storage inventory levels are primary
6 factors affecting any nearby deviation from a weather-normalized forecast value. For
7 example, the last four winters in the lower 48 states were significantly warmer than
8 normal, resulting in reduced natural gas demand and materially depressed natural gas
9 prices. Understandably, the Polar Vortex winter of 2013-2014 had the opposite effects.
10 When comparing actual results to a weather normalized forecast, it is imperative to
11 account for these impacts.

12 **Q. WOULD YOU EXPAND ON OTHER DETAILS ABOUT THE FUNDAMENTALS**
13 **FORECAST?**

14 A. Yes. The Aurora energy market simulation model is widely used by utilities for
15 integrated resource and transmission planning, power cost analysis and detailed generator
16 evaluation. The database includes approximately 25,000 electric generating facilities in
17 the contiguous United States, Canada and Baja Mexico. These generating facilities
18 include wind, solar, biomass, nuclear, coal, natural gas, and oil. A licensed online data
19 provider, ABB Velocity Suite, provides up-to-date information on markets, entities and
20 transactions along with the operating characteristics of each generating facility which are
21 subsequently exported to the Aurora energy market simulation model.

1 **Q. WOULD IT BE REASONABLE TO RELY UPON NYMEX FUTURES**
2 **CONTRACT PRICING IN LIEU OF A FUNDAMENTALS FORECAST FOR**
3 **LONG-TERM CORPORATE PLANNING PURPOSES?**

4 A. No. NYMEX energy-complex futures contract prices are not a reliable forecast of future,
5 weather-normalized, long-term energy market fundamentals. Futures market participants
6 are either speculating or escaping the volatility of energy prices through risk management
7 activities (hedging). NYMEX futures represent the price point at which a buyer and a
8 seller can realize price certainty, but those commercial expectations do not represent the
9 economic principles of demand, supply, and the resulting price. For example, natural gas
10 consuming entities that have natural gas costs and manufacturing revenues that move
11 independently may need to protect margin through hedging activities and the NYMEX
12 futures market satisfies that need (by buying futures contracts). On the other side of that
13 trade, a natural gas producer that is concerned about covering future exploration and
14 production costs will also utilize futures market contracts (by selling futures contracts).
15 Both sides of the transaction are satisfied with their hedged position, but neither
16 participant is then concerned with the actual future price of natural gas.

17 **Q. WHY ARE NATURAL GAS PRICES IMPORTANT IN A FUNDAMENTALS**
18 **ANALYSIS?**

19 A. Natural gas prices are important because fuel prices are a key component in determining
20 the supply stack, or merit order, for the dispatch of generating units. Generating units
21 with the lowest variable operating cost are the first to dispatch and plants with
22 incrementally higher variable operating cost are called upon sequentially as electricity
23 demand increases. The latest vintage of gas generators have improved efficiencies but

1 volatile gas prices can quickly advantage or disadvantage them relative to other
2 generation options.

3 **Q. WHY ARE POTENTIAL CO₂ ALLOWANCE PRICES IMPORTANT IN A**
4 **FUNDAMENTALS FORECAST?**

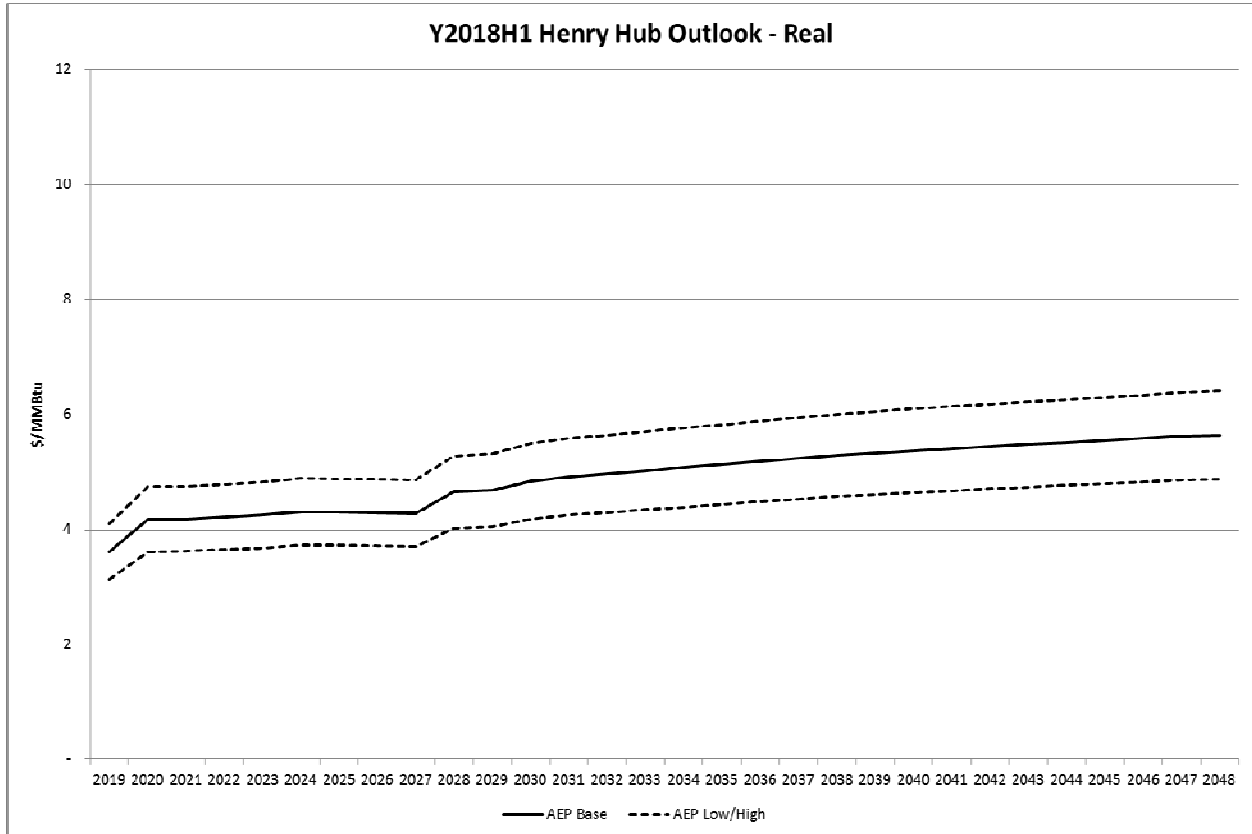
5 A. CO₂ emission costs would adversely affect the prices of electricity generated by fossil
6 fuels - along with emission rates and implementation timing. CO₂ regulations would also
7 affect fuel markets, e.g., an increase in natural gas consumption will result in increased
8 natural gas prices. The direct effect of a \$10 per metric ton allowance price for a coal
9 plant is an approximate \$10 per MWh increase in plant operating costs. And likewise, a
10 \$10 per metric ton allowance price for a natural gas-fired combined cycle plant is an
11 approximate \$4 per MWh increase in plant operating costs.

12 **Q. WHAT ARE THE SALIENT FEATURES OF YOUR MOST RECENT**
13 **FUNDAMENTALS FORECAST?**

14 A. Natural Gas. Figure 2 illustrates the most recent natural gas price forecast for the
15 Base, High, and Low scenarios at the benchmark Henry Hub. The Fundamentals
16 Forecast recognizes the balance between long-term increase in demand (the expanding
17 role of natural gas for electric generation, the prospect of liquefied natural gas exports,
18 natural gas for use as a transportation fuel, and others) and the likelihood of cost-effective
19 advances in shale-directed drilling and completion techniques (longer laterals, increased
20 fracturing stages, proppant delivery, and others). Abundant, relatively low-cost natural
21 gas reserves and productive capacity will continue to grow domestically and globally as
22 shale gas extraction technology becomes more widespread. Despite negative reaction in
23 some regions of the country, the long-term environmental impacts of shale gas

1 development ultimately will be manageable. Natural gas pipeline capacity is expected to
2 keep pace with the evolving locations of supply and consumption as the extensive
3 domestic natural gas transportation infrastructure is sufficiently robust to overcome
4 constraints through existing capacity expansions, flow reversals, and new construction.

Figure 2



5 B. CO₂ Mitigation. The 2018 Fundamentals Forecast employed a CO₂ dispatch
6 burden (allowance price) on all existing fossil fuel-fired generating units that escalates
7 5% per annum from \$15 per ton in 2028. This CO₂ dispatch burden is less stringent and
8 not intended to achieve the national mass-based emission targets similar to those in the
9 Clean Power Plan (CPP).

1 **Q. DO RECENT LOW NATURAL GAS PRICES INDICATE THAT PRICES WILL**
2 **BE LOW FOR A LONG TIME?**

3 A. No, not necessarily. Natural gas prices can deviate from gas's fundamental price for
4 extended periods due to a variety of reasons, including weather and force majeure
5 situations such as hurricanes Katrina and Rita. As discussed earlier, actual heating- and
6 cooling-season weather can deviate dramatically from normal. Warmer than normal
7 winters result in less gas demand and less storage refill demand in the following summer
8 with correspondingly discounted natural gas prices. This is exactly what the U.S.
9 experienced in the winters of 2011-2012, 2015-2016 and 2016-2017 (the first, third and
10 fourth warmest winters since 1895 respectively), which resulted in natural gas spot prices
11 that were significantly lower than weather-normal values.

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

13 A. Yes.

CERTIFICATE OF SERVICE

In accordance with Rule 4901-1-05, Ohio Administrative Code, the PUCO's e-filing system will electronically serve notice of the filing of this document upon the following parties. In addition, I hereby certify that a service copy of the foregoing *Direct Testimony of Karl R. Bletzacker* was sent by, or on behalf of, the undersigned counsel to the following parties of record this 19th day of September, 2018.

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