ATTACHMENT F

Clarifications to the comments regarding fuel price forecast in the document "Final Resolution and Order on the First Integrated Resource Plan of the Puerto Rico Electric Power Authority"

Introduction

The following clarifications have been prepared based on data and results already available from the execution of the project for the preparation of the IRP. PREPA has prepared new tables and figures to illustrate the described concepts and has written arguments to suitable clarify aspects regarding the topic of fuel forecast, but always based on existing data and analysis.

The price forecast series for natural gas and fuel oil were independently developed using widely accepted econometric tools and procedures and consistent with good practices. The results of the forecasting process were compared to the different cases presented in the Annual Energy Outlook 2015 (AEO2015) prepared by the U.S. Energy Information Administration (EIA).

As described in next sections of this document, the results obtained are in general compatible with the forecast series presented in the AEO2015. Even though AEO2016 was not ready when the forecasts were developed; results are in line with those forecasts. Our natural gas forecast is well within the 2016 projections and as will be shown in this document our low fuel price forecast (called the Lower Bound) used in the Supplemental IRP, closely matches the 2016 "High Oil and Gas Resource Case" that shows the lowest prices.

Base Natural Gas Price Forecast

The Base IRP used a forecast that considered high fuel prices and we will refer to it as the Base Fuel Forecast (Base Forecast) as we consider it valid.

To project the natural gas price at Henry Hub, the first step taken was to validate that the forecast models utilized were correct. The models developed do not allow considering structural changes (for example, due to technology evolution), as this is something that cannot be extracted from historical data. If such structural elements were imbedded in the data, the models developed would have captured it.

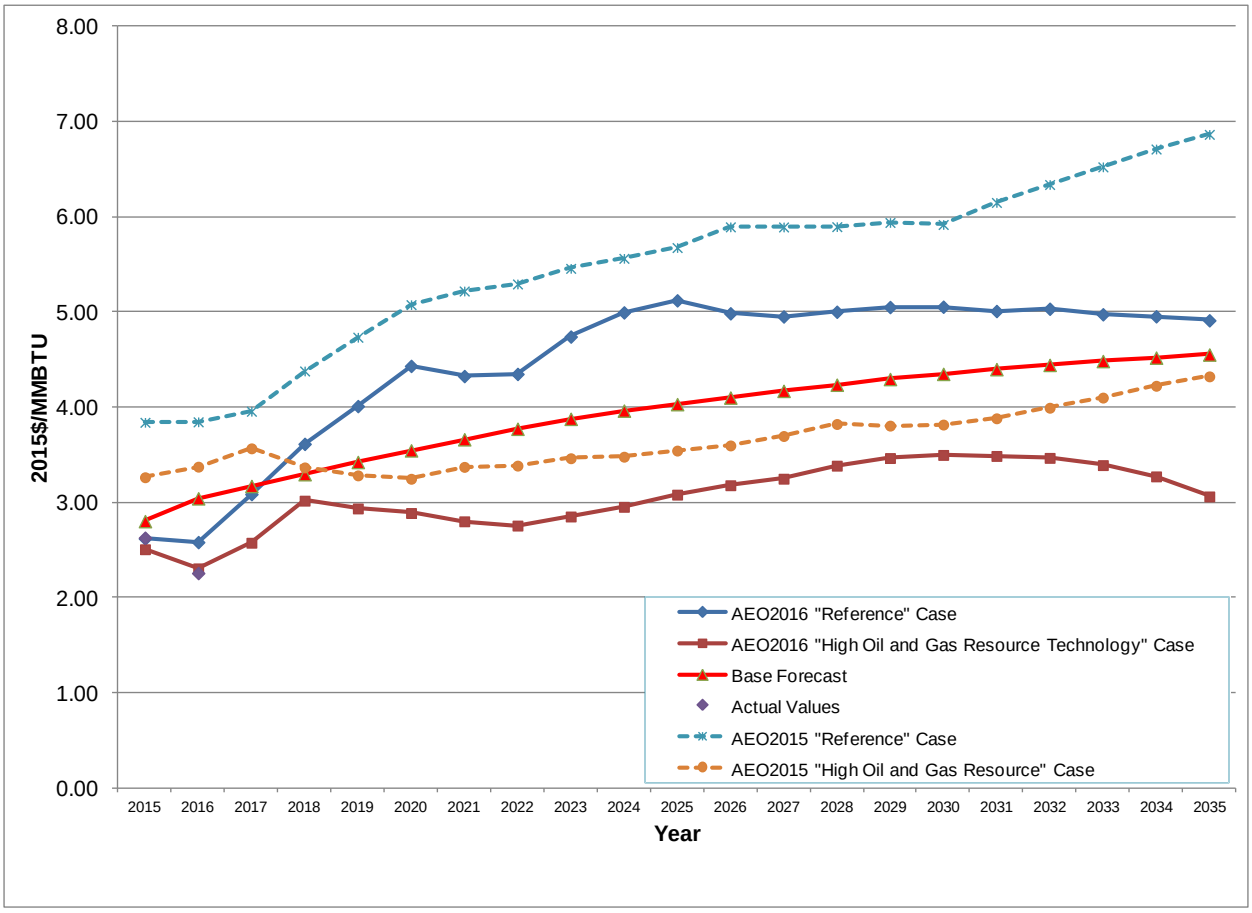
In the historical data considered there was no statistical evidence of higher natural gas prices in the future. Moreover, when the forecast models were developed, the existing conditions, crude oil and fuel supply exceeding demand, would be better represented by the "High Oil and Gas Resource and Technology" case in the AEO2015 than by the "Reference" case.

Figure below shows the natural gas price forecast corresponding to the "High Oil and Gas Resource Technology" and Reference Case for both the 2015 AEO available at the time of the forecast and the recently published 2016 AEO and forecast Henry Hub series presented in the Base IRP report, Volume III.

As can be observed, the natural gas price forecast series used in the IRP was close to the AEO 2015 "High Oil and Gas Resource and Technology" (slightly lower until 2018 and from 2019 forward a little higher). The AEO 2015 Reference Case was much higher than our forecast. Considering the 2016 update we see that the AEO lowered significantly its "Reference" Case as

well as its “High Oil and Gas Resource and Technology” case and our forecast falls neatly between them, moving closer to the “Reference” Case towards the end of the period.

Figure 1: Comparison of Natural Gas Price Forecast between the Base Forecast (Base IRP), the AEO 2015 Forecasts and the 2016 AEO 2016 Forecasts.



Moreover, the forecast developed by Siemens and presented in the IRP has been so far a better estimate of the actual natural gas prices at Henry Hub than any scenario presented in the AEO2015 (the actual annual values for 2015 and 2016 are $2.63/MMBTU and $2.26/MMBTU respectively)[1].

In summary the our gas price forecast made in 2015 was consistent with the “High Oil and Gas Resource and Technology” case of the AEO 2015 and has been further validated by the AEO 2016.

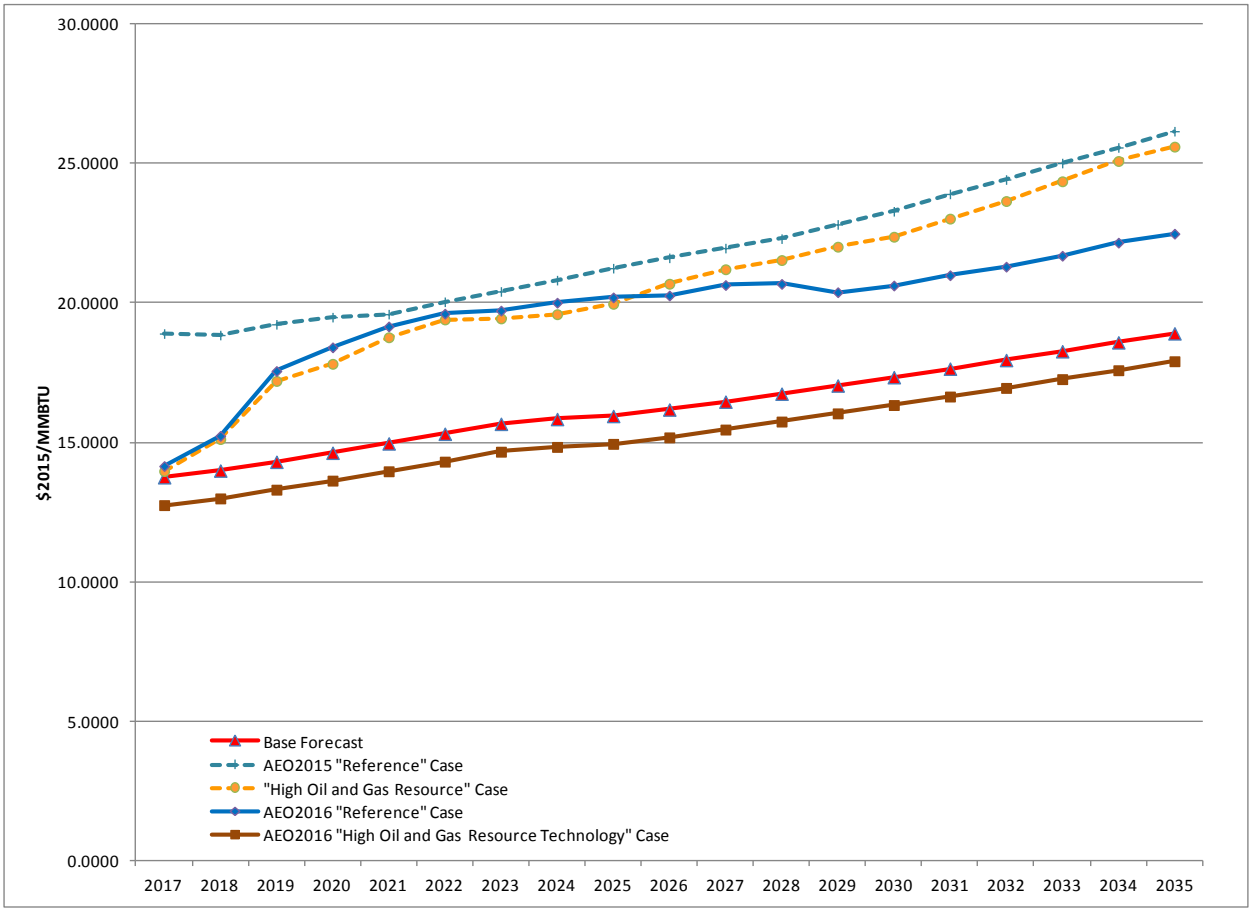
We address next the observation that the price gap between gas and fuel oil # 2 could have been **overstated** in our forecast.

[1] These values were calculated as the average of the monthly values presented in https://www.eia.gov/dnav/ng/hist/rngwhhdm.htm).

The figure below shows the price gap in $/MMBTU between the HH Natural gas[2] and the light fuel oil (LFO or FO #2) calculated using of Base Forecast, the EIA 2015 forecasts and the EIA 2017 forecasts.

As can be observed, and contrary to what was concluded in the Order, our forecast of price gap between the FO #2 and the natural gas prices is conservative and if anything understates the benefits of the AOGP.

Figure 2: Comparison of FO # 2 and Natural Gas Price Gap Forecasts between the Base Forecast (Base IRP), the AEO 2015 Forecasts and the 2016 AEO 2016 Forecasts.



The values presented in the figure above show that the price gap between liquid fuels and natural gas is expected to be very large, regardless the source of fuel price forecast (either AEO2015, AEO 2016 or the IRP), which would always favor natural gas utilization instead of FO #2.

Lower Bound Fuel Forecast

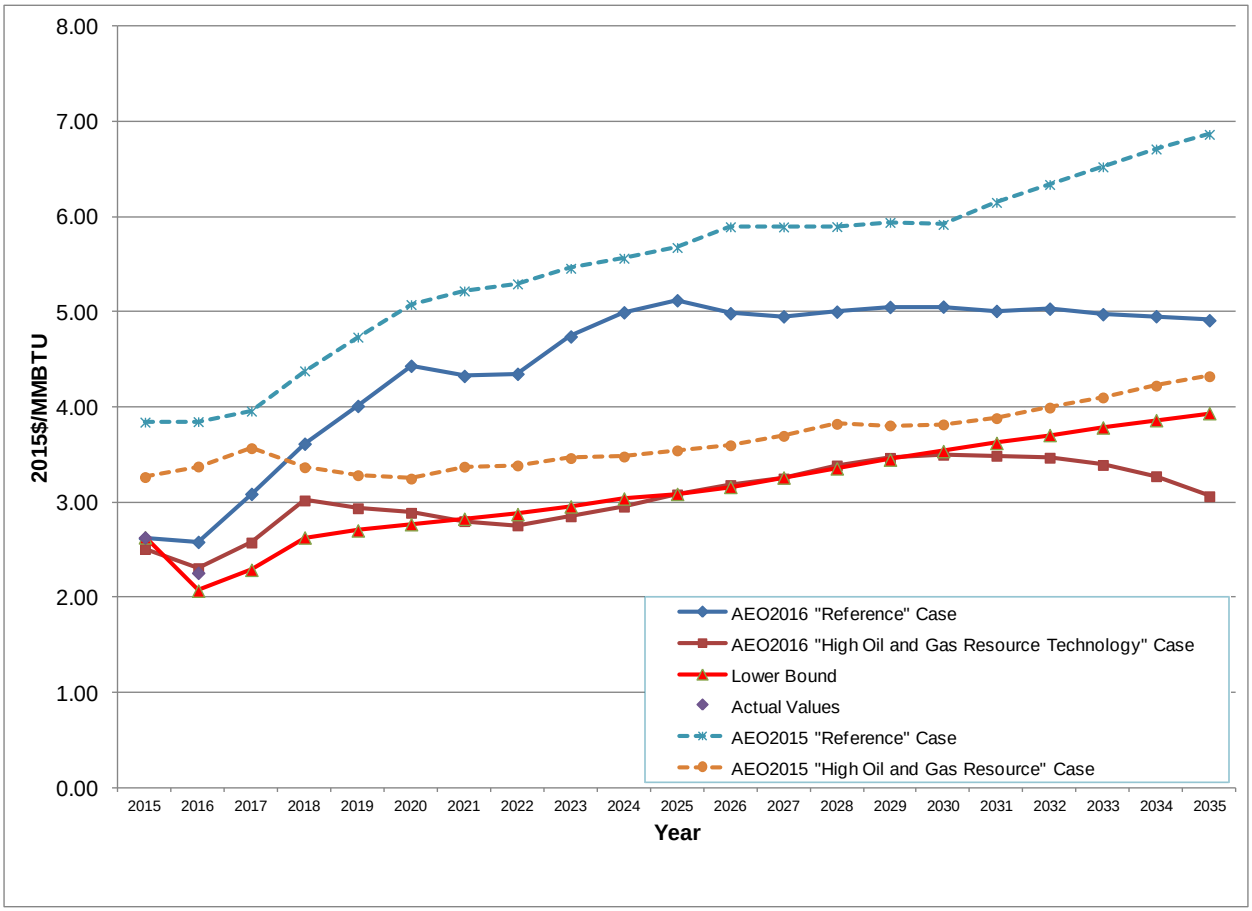
In the last quarter of 2015, PREPA thought it important for fuel price forecast to be reviewed because of the possibility of the current low prices extending well into the future. Even though it can be extremely difficult to make accurate predictions in the short term when the conditions are changing rapidly,.

[2] Adjusted for with US delivery to be compared with the FO#2 that is forecasted by the EIA as deleivered.

The first attempt for developing a new oil scenario was to use the much more conservative "Low Oil Price" case presented in the AEO2015 in an effort to remain within the context of such document prepared by the EIA, but the proposed forecast was still not satisfactorily predicting the prices in the short term. The explanation that we gave to this situation is that the current level of low prices cannot be explained by historical data relationships because of a different price structure. Thus, we developed a price forecast based on the concept of economics' super-cycles.

This exercise of oil and fuel price forecast intended to be a lower bound to any crude oil prices, especially in the short term. (i.e. the lowest possible prices). Thus, the forecast was not intended at the time to be comparable to any other AEO2015 forecast series. However as shown in the figure below for the Natural Gas our forecast resulted largely consistent with the 2016 "High Oil and Gas Resource Technology" Case.

Figure 3: Comparison of Natural Gas Price Forecast between the Lower Bound Forecast (Supplemental IRP), the AEO 2015 Forecasts and the 2016 AEO 2016 Forecasts.

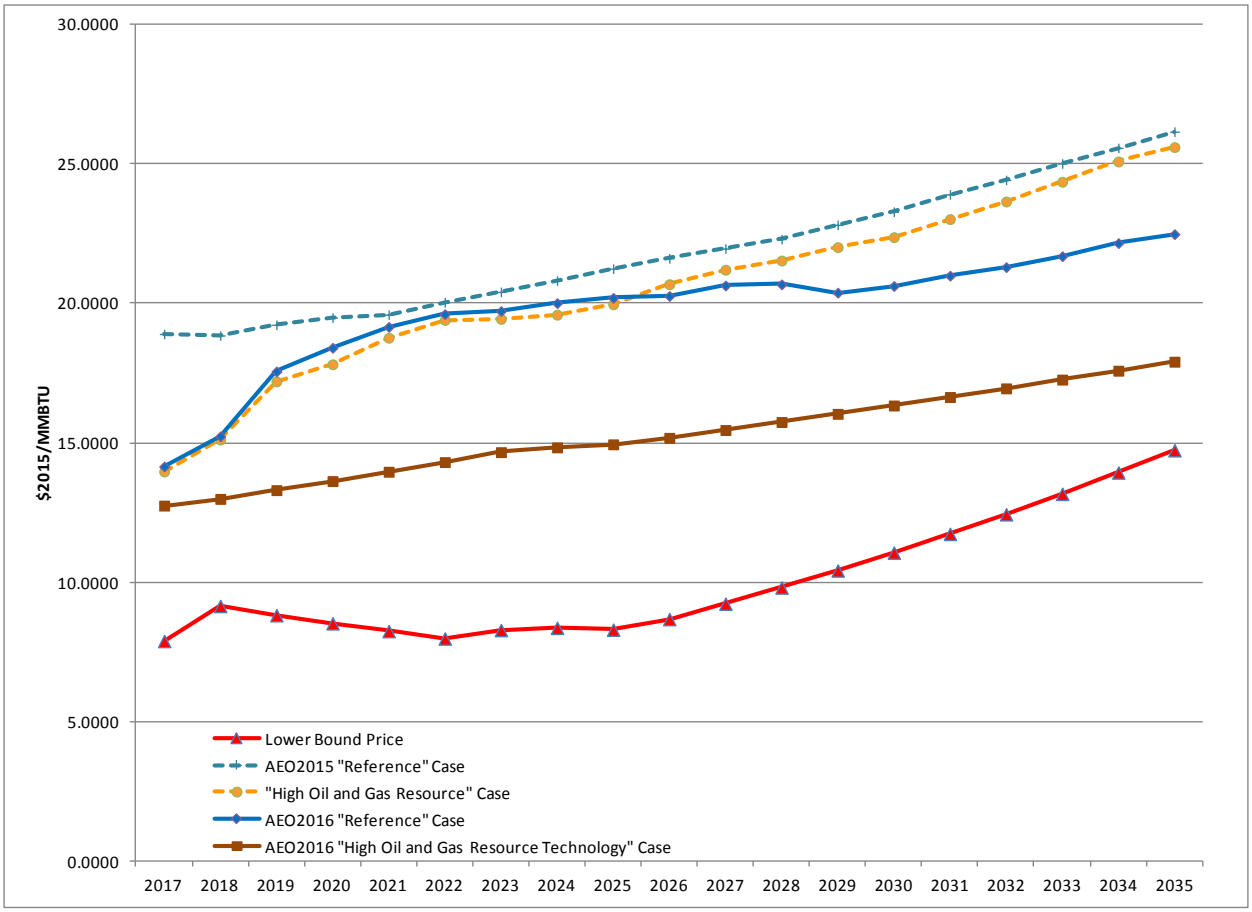


Because the price of all fuels decrease as part of this updated Lower Bound forecast and the reduction is more significant for other fuels than natural gas:

- It is expected that the calculated benefits of the IRP are the lowest possible, and future materialization will represent higher benefits,
- The price gap between other fuels, like #2, and natural gas decreases to a minimum, making these other fuels to look as much competitive versus natural gas, as possible.

The above can be clearly observed considering the gap between the FO # 2 and the Natural Gas shown in the figure below, where we appreciate the Lower Bound is truly pessimistic and well below other forecasts..

Figure 4: Comparison of FO # 2 and Natural Gas Price Gap Forecasts between the Lower Bound Forecast (Supplemental IRP), the AEO 2015 Forecasts and the 2016 AEO 2016 Forecasts.



In conclusion, the fact that the AOGP is still a better option under the Low Bound forecast should be taken as a clear indication that not building it implies very high (and possibly unacceptable) risks to the Puerto Rico economy and it should be approved.