

**Exh. DCG-10**  
**Dockets UE-170033/UG-170034**  
**Witness: David C. Gomez**

**BEFORE THE WASHINGTON  
UTILITIES AND TRANSPORTATION COMMISSION**

**WASHINGTON UTILITIES AND  
TRANSPORTATION COMMISSION,**

**Complainant,**

**v.**

**PUGET SOUND ENERGY,**

**Respondent.**

**DOCKETS UE-170033 and  
UG-170034 (*Consolidated*)**

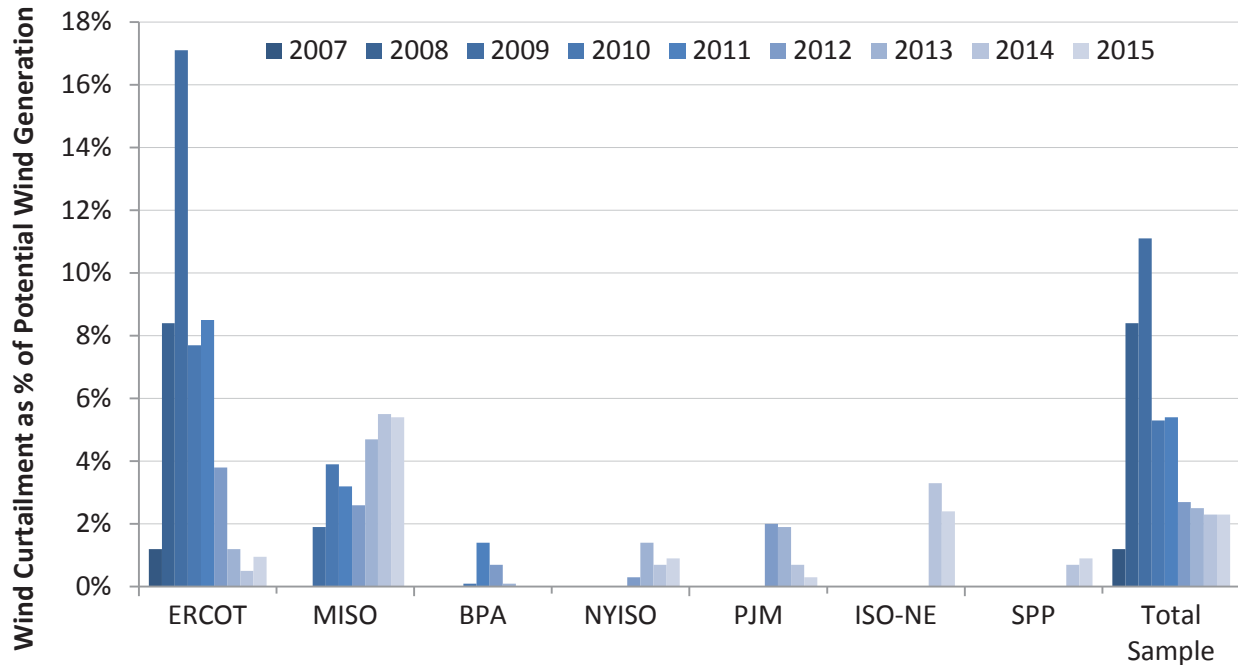
**EXHIBIT TO  
TESTIMONY OF**

**David C. Gomez**

**STAFF OF  
WASHINGTON UTILITIES AND  
TRANSPORTATION COMMISSION**

**2015 Wind Technologies Market Report, U.S. Department of Energy (August 2016), Inter-  
Year Wind Resource Variability, Page 41**

**June 30, 2017**



Note: BPA's 2014 and 2015 curtailment estimates were unavailable at the time of publication. A portion of BPA's curtailment from 2010-13 is estimated assuming that each curtailment event lasts for half of the maximum possible hour for each event. SPP's 2014 curtailment estimate is for March through December only. PJM's 2012 curtailment estimate is for June through December only. Except for BPA, which tracks only forced curtailment, all other percentages shown in the figure represent both forced and economic curtailment.

Source: ERCOT, MISO, BPA, NYISO, PJM, ISO-NE, SPP

**Figure 31. Estimated wind curtailment by region as a percentage of potential wind generation**

**Inter-Year Wind Resource Variability.** The strength of the wind resource varies from year to year, partly in response to significant persistent weather patterns such as El Niño/La Niña. A relatively strong El Niño had a significant impact in the first two quarters of 2015, contributing to wind speeds that were significantly below normal throughout much of the U.S. Although wind speeds recovered in the third and fourth quarters, annual average deviations of 6% or more for all of 2015 were common, particularly in the West and southern Great Plains states, where much of the wind capacity in the U.S. is located (AWS Truepower 2016).

The green line in Figure 30 also shows that 2015 was generally a bad wind year, at least in terms of the national average wind energy resource as measured by one large project sponsor.<sup>40</sup> It is also evident from the figure that movements in sample-wide capacity factor from year to year are influenced by the natural inter-year variability in the strength of the national wind resource.

<sup>40</sup> The green line in Figure 30 estimates changes in the strength of the average nationwide wind resource from year to year and is derived from data presented by NextEra Energy Resources in its quarterly earnings reports.