

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

**Dockets UE-170033 and UG-170034
Puget Sound Energy
2017 General Rate Case**

PUBLIC COUNSEL DATA REQUEST NO. 333

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Re: Direct Testimony of Dr. Roger Morin, Exhibit No. RAM-1T at n.13.

Please list: (1) the “countless” empirical studies that indicate that the risk-return trade-off is not as steeply sloped as predicted by the CAPM; (2) the studies in (1) that use adjusted betas such as those mentioned in footnote no, 14.

Response:

At the empirical level, there have been countless tests of the Capital Asset Pricing Model (“CAPM”) to determine to what extent security returns and betas are related in the manner predicted by the CAPM. The results of the tests support the idea that beta is related to security returns but that the risk-return tradeoff is not as steeply sloped as predicted by the CAPM. With few exceptions, the empirical studies agree that the implied intercept term exceeds the risk-free rate and the slope term is less than predicted by the CAPM. This is one of the most well-known results in finance. Brealey, Myers, and Allen (2006), among many others, provide recent empirical evidence confirming that relationship.

For a summary of the empirical evidence on this relationship, please see Jensen (1972) and Ross (1978). The major empirical tests of the CAPM were published by Friend and Blume (1975), Black, Jensen, and Scholes (1972), Miller and Scholes (1972), Blume and Friend (1973), Blume and Husic (1973), Fama and Macbeth (1972), Basu (1977), Reinganum (1981B), Litzenberger and Ramaswamy (1979), Banz (1981), Gibbons (1982), Stambaugh (1982), Shanken (1985), Black (1993), and Brealey, Myers, and Allen (2006). See also Friend, Westerfield, and Granito (1978) and Morin (1980). For the studies that use adjusted betas please see Morin (1989). Please see bibliography below for detailed references.

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