

## Governing Energy

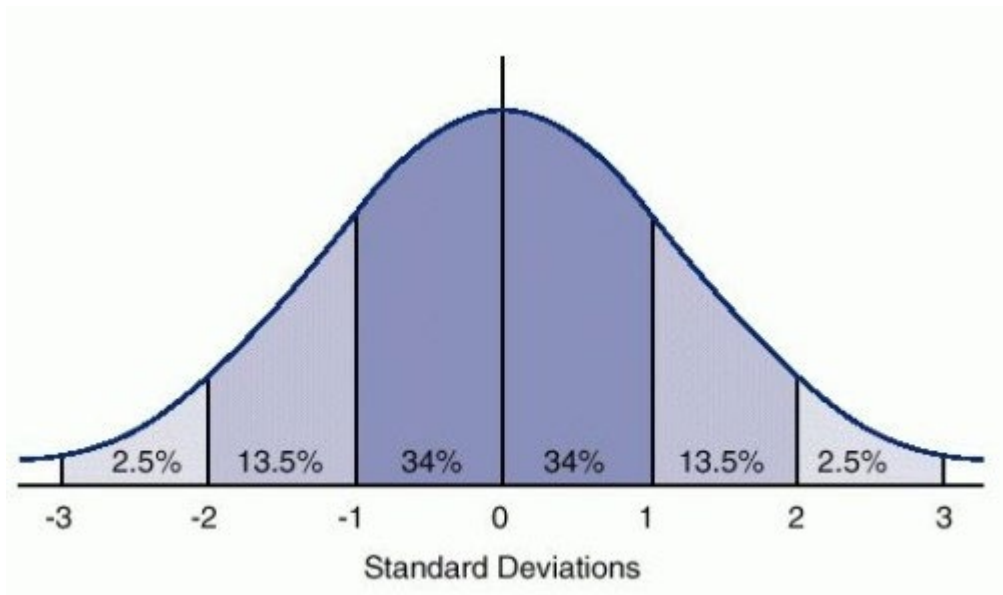
### Fat Tail

Volume 4 Number 11—June 8, 2015

Alan Greenspan, the former chairman of the Federal Reserve Board famously once quipped about “irrational exuberance” in the equity markets of the dot.com era.<sup>i</sup> Turns out, he was right!

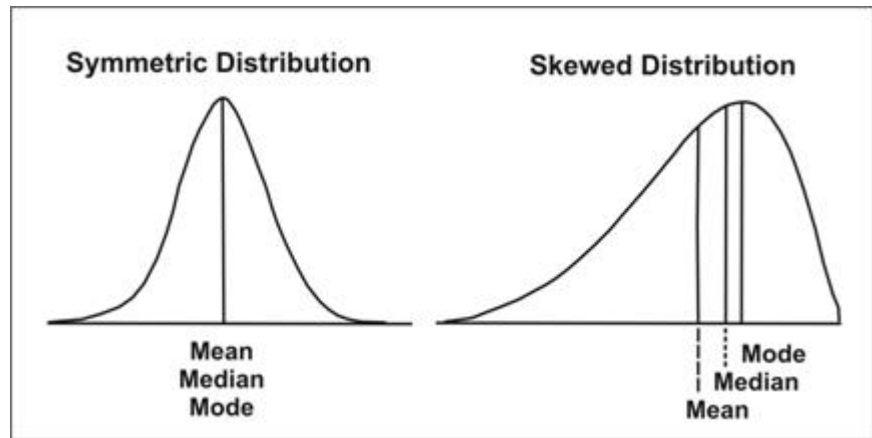
In his recent book, he develops an interesting perspective regarding the risk management techniques that the finance industry used in the lead up to the 2008 financial collapse; arguably even more destructive than the Great Depression of 1929.<sup>ii</sup> One risk mitigation model challenged is the *high consequence—low probability* model often used to describe Macondo like incidents.

If one looks at a statistical normal distribution, there is a symmetrical shape to the so called “Bell curve” with the tails, or likelihood of an event occurring under that area of the curve relatively small or virtually nil. The following graphic depicts this probability distribution.



However, what if the probability of an incident is not statistically normal? If the likelihood of an incident fits another distribution curve, the probability of a *high consequence—low probability* incident may not be as infrequent as believed.

The so-called “Fat Tail” suggests that the probability of an incident or event can move beyond 3 Standard Deviations.<sup>iv</sup> This is graphically depicted below.



Chairman Greenspan challenged the conventional wisdom of the financial markets, expressing concern that Black Swan events may not be as rare as believed. Perhaps, the energy sector should challenge its conventional bell curve based risk models as well.

If risk mitigation strategies are designed to address probability distributions that are unlikely representations of real world situations, they may not be providing adequate assurances that organizational strategies are well founded. High Reliability Management suggests that vigilance regarding possible failure scenarios is fundamental to Organizational Health.<sup>vi</sup>

Part of that vigilance may include reconsidering the size of probability distribution tails. Changes in strategy and operations may be required to better address the likelihood and impact on *high consequence* incidents whose probability may not be as *low* as many believe.

### **How does your organization update its Risk Management process?**

#### **About the Author**

Dr. [Scott M. Shemwell](#) has over 30 years technical and executive management experience primarily in the energy sector. He is the author of five books and has written extensively about the field of operations management. Shemwell is the Managing Director of The Rapid Response Institute, a firm that focuses on providing its customers with solutions enabling operations excellence and regulatory compliance management. He has studied cultural interactions for more than 30 years--his dissertation; *Cross Cultural Negotiations Between Japanese and American Businessmen: A Systems Analysis (Exploratory Study)* is an early peer reviewed manuscript addressing the systemic structure of social relationships.

## End Notes

---

<sup>i</sup> [http://en.wikipedia.org/wiki/Irrational\\_exuberance](http://en.wikipedia.org/wiki/Irrational_exuberance)

<sup>ii</sup> Greenspan, Alan. (2013). The Map and the Territory: Risk, Human Nature, and the Future of Forecasting. Penguin: New York.

<sup>iii</sup> <http://nationalpainreport.com/wp-content/uploads/2013/10/joy-selak-chart-500x297.jpg>

<sup>iv</sup> <http://www.investopedia.com/terms/t/tailrisk.asp>

<sup>v</sup> <http://www.cdc.gov/ophss/csels/dsepd/ss1978/lesson2/images/figure2.10.jpg>

<sup>vi</sup> Holland, Winford “Dutch” E. and Shemwell, Scott M. (2014). Implementing a Culture of Safety: A Roadmap to Performance-Based Compliance. (p. 47). New York: Xlibris.