

CMTS SPEAKER SERIES

Department of Energy and Pacific Northwest National Laboratory
**“Vulnerability and Resiliency under Global Changes: Scaling to Regions and Down to Infrastructure” and
“Risk Reduction and Resource Assessment Model (3RAM) for Maritime Transportation Security”**

Presented by Bill Peterson and Jill Brandenberger of
Pacific Northwest National Laboratory

September 18, 2012

On Sept 18, 2012 the CMTS hosted two guests from the Pacific Northwest National Labs (PNNL), located in Richland, WA. Jill Brandenberger and Bill Peterson discussed three of the projects they are involved with at PNNL and took time to participate in a lively and informational discussion about their research and expertise.



Jill presented the Vulnerability-Resilience Indicators Model (VRIM) which identifies factors that assess the vulnerability of a society including: food security, water resources, human health, and economic capacity. The VRIM model uses a vulnerability index derived from two indicators: sensitivity; how systems could be negatively affected by climate change, and adaptive capacity; the capability of a society to maintain, minimize loss of, or maximize gains in welfare. Model projections are made using variations of different scenarios. These differences provide decision makers with insight about how various development strategies might contribute to resilience of a society

Jill also presented the integrated Regional Earth System Model (iRESM) which addresses the challenge of creating an integrated model framework that couples human and climate processes with energy infrastructure on regional scales.

Bill discussed his work with the Risk Reduction and Resource Allocation Model (3RAM). This model is novel in its approach to risk assessments for maritime transportation security in that it uses dynamic system risk, calculated over time. The 3RAM approach allows a user to compare a baseline risk with no

security measures for a given period of time with the potential reduction of risk resulting from the employment of security measures across the system. It is also possible to compare the relative risk reduction of using different security measures and provide recommendations to make the most of the security resources available.



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For full summaries on the presentations provided by our speakers, please see the following PDF files:

- [The Vulnerability-Resilience Indicators Model](#)
- [integrated Regional Earth System Model \(iRESM\) Initiative](#)
- [Risk Reduction and Resource Allocation Model](#)