Environmental and Water Resources Engineering Seminar Series Presents:

Thursday, November 21st 2024, 3:30-4:30pm, ECJ 1.308

Learning the D&C language to communicate about energy use, carbon emissions, and climate change.

Dr. Bruce E. Logan

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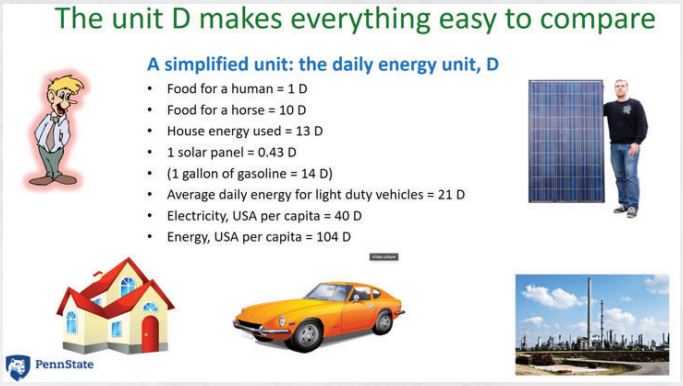
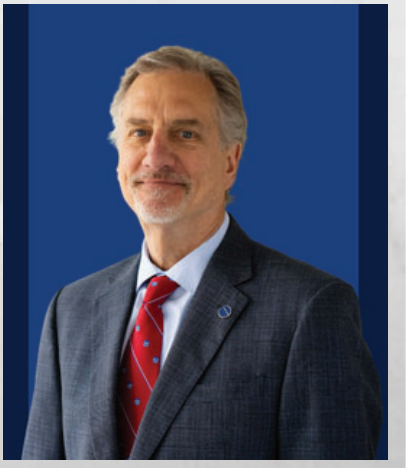
Abstract

Addressing climate change may be the greatest environmental challenge of the century but most of us have only a limited understanding of how our activities translate into energy consumption or CO2 emissions. Part of the challenge is that energy is expressed in so many different units. For example, food is reported in kilocalories or megajoules, gasoline based on volume (gallons or liters), and electric bills in kilowatt hours. How much energy do you use? Where can you make the most significant changes in energy use or carbon emissions if you cannot directly compare energy uses or figure out how they are tied to carbon emissions? In this talk I introduce the concept of 1 daily energy unit D, based on the food that you eat every day (2000 kcal), and the unit C that is normalized by the kilograms of carbon we emit from eating that food. Using D and C we can relate our daily CO2 emitted from using gasoline for our car, electricity for our home, and energy or carbon emissions from our food supply chain. Similarly, we can examine how much infrastructure changes will address these carbon emissions. Taking (or teaching!) a course based on these fundamental concepts will help you learn how to control of greenhouse gas emissions based on choices you can make, so that collectively we can substantially contribute to solutions for climate change.



Background

Dr. Bruce E. Logan is Director of the Institute of Energy and the Environment, an Evan Pugh University Professor in Engineering, and the Stan and Flora Kappe Professor of Environmental Engineering in the Department of Civil and Environmental Engineering at Penn State University. His current research efforts are in bioelectrochemical systems, renewable energy production, the development of an energy sustainable water infrastructure, and education on energy, carbon emissions, and climate. Dr. Logan is the author or co-author of several books and over 560 refereed publications (>120,000 citations, h-index=168; Google scholar). He is a member of the US National Academy of Engineering (NAE), an international member of the Chinese Academy of Engineering (CAE), and a fellow several organizations including of the American Association for the Advancement of Science (AAAS), the International Water Association (IWA), and the Association of Environmental Engineering & Science Professors (AEESP). He received his Ph.D. in 1986 from the University of California, Berkeley and was on the faculty of the University of Arizona before joining Penn State in 1997.



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