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Guadalupe I Lozano* (guada@math.arizona.edu). *Sustainability in pre-calculus: leveraging biofuels data to write novel conceptual problems on function behavior and other concepts.*

One aspect of writing problems, or collections of problems, addressing the theme of sustainability in calculus courses, entails negotiating a balance between the data and the conceptual value of the problem(s) to be written, without compromising either one or the other. Say, for example, one sets out to mine biofuels data to illustrate exponential growth patterns in a pre-calculus course. Since examples of data exhibiting approximately exponential growth are rather sporadic and may actually not have predictive value (e.g. a nearly exponential growth in the number of alternative-fueled vehicles running on 85% Ethanol, E85, within the last decade) one is faced with the choice of writing problems that illustrate trends that depart from the existing data, or leveraging the actual growth patterns in the existing data in creative, yet conceptually valuable ways. In my talk I will show examples of how to do the latter, namely I will illustrate how one might leverage existing data on biofuels production/consumption to write conceptual problems that illuminate particular aspects of function behavior, including exponential growth patterns. (Received September 23, 2011)