Uncertainty Associated with the use of Global Insight Data Base.

One question that should be asked of any scientific analysis is, "How do we know that the results reported are correct and accurate?" Global Insight, Inc. data was critical in applying our revised method for calculating the import and export of emergy (Campbell et al. 2005) to and from a region. The commodity flow data form the U.S. Census Bureau met the data quality objectives for measuring total commodity movements for the studies of West Virginia and Minnesota (Campbell et al. 2005, Campbell and Ohrt 2009). In general, the estimated movements of individual commodities have higher uncertainties than the average. Global Insight Inc. used their proprietary program, TRANSEARCH, to estimate domestic freight flows by county, commodity, and mode of transportation. They used a variety of public data sources to derive these flows. To insure the accuracy of TRANSEARCH data, Global Insight Inc. benchmarks the flows against reported freight volume data using two primary sources: 1) private carrier information that they acquire as part of a data exchange program with railroads and truck carriers; and 2) truck count information released by the state Departments of Transportation. However, Global Insight Inc. does not perform any statistical quantification of this process to estimate the uncertainty inherent in the TRANSEARCH data. Even though no statistical estimates were made to ascertain the uncertainty associated with Global Insight Inc.'s method of obtaining freight movement data, we believe that it is reasonable to assume that their methods probably carry uncertainty comparable to that in the U.S. Census Bureau Commodity Flow Survey estimates, because both are based on similar sources and Global Insight Inc. states that they rigorously cross check their estimates with independent information including that available

form the Commodity Flow Survey. Despite the fact that the methods reported by Global Insight Inc. appear to be logical and deliberate, there is considerable uncertainty associated with some of their measurements. Principally, the export of “nonmetallic minerals, processed” appears to be grossly underestimated, based on conversations with officials of two perlite companies, Dicaperl and Harborlite, doing business in Antonito, CO, who stated that almost all of the material that arrives at Antonito is shipped out by rail. We have been unable to ascertain the reason for this apparent error at this time, but the point is moot since this commodity class passed through the SLB without much local use and therefore we did not include it in our system inflows or the import-export balance. In the course of an analysis, the investigator must determine that an input is actually used to produce order and organization within a system. The first order assumption is to say that all imports are used; however, this can lead to large errors, when materials are simply moving through a system, as shown by the natural gas pipeline passing through West Virginia (Campbell et al. 2005). Late in this analysis, we discovered that a similar situation exists in the SLB where Antonito, in Conejos County is a railhead and trans-shipment point for heavy materials, such as unexpanded perlite and scoria.