4.2.2   **Using UrbanSim for Residential Energy Demand Modeling in Chittenden County**

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UrbanSim is an agent-based land use model, used to forecast the development of a region over an extended period of time. Data processing and output analysis for this model requires extensive use of GIS.   Although land use, transportation and energy consumption are strongly related, there has been little use of UrbanSim for energy demand modeling. This presentation will give the framework and results of a residential energy indicator currently in development for the UVM Transportation Research Center's gridcell version of UrbanSim for Chittenden County. The indicator will estimate residential energy use in future years at the building level, as well as transportation energy use for non-commercial trips. The GIS techniques used to process data and analyze results will be emphasized through the presentation. In addition to being used to predict future patterns of urban growth and traffic, this indicator will enable us to use UrbanSim to predict future energy consumption for the county under different policy scenarios of urban form and transportation efficiency.