Announcing the Final Examination of Jessica Ross for the degree of Master of Science

Time & Location: February 16, 2011 at 2:00 PM in ENG2 211
Title: 2008 Emissions Inventory of Central Florida

An emissions inventory of VOCs, NOx, and CO2 was conducted for three central Florida counties - Orange, Seminole, and Osceola (OSO) - for calendar year 2008. The inventory utilized three programs: MOBILE6, NONROAD2005, and EDMS (Emissions and Dispersion Modeling System) to model on-road mobile, non-road mobile, and airport emissions, respectively. Remaining point and area source data was estimated from the Florida Department of Environmental Protection (FDEP) and the U.S. Environmental Protection Agency's (U.S. EPA) 2008 emissions inventory. The previous OSO emissions inventory was done in 2002 and in the six years between inventories, there have been changes in population, commerce, and pollution control technology and in central Florida which have affected the region's emissions.

It is important to model VOC and NOx emissions to determine from where the largest proportions are coming. VOCs and NOx are ozone precursors and in the presence of heat and sunlight, react to form ozone (O₃). Ozone is regulated by the U.S. Environmental Protection Agency through the FDEP. The current standard is 75 parts per billion (ppb) and Orange County's average is 71 ppb. A new standard (which will likely be about 65 ppb) is being developed and is scheduled to be announced by July 2011. If OSO goes into non-attainment, it will need to prepare a contingency plan for how to reduce emissions to submit to the FDEP for approval.

The 2008 inventory determined that approximately 78,140 tons of VOCs and 60,600 tons of NOx were emitted that year. The majority of VOCs came from on-road mobile sources (30%) and area sources (48%), while the majority of NOx came from on-road mobile sources (62%). Other major sources of VOCs included light duty gas vehicles (LDGVs - cars), consumer solvents, cooking, gasoline distribution (stage 1), and open burning of yard waste. With the numbers that could be determined, on-road mobile and point sources were responsible for 93% of the region's CO2. Almost all of the point source CO2 came from one large coal-fired power plant in Orange County.

Major: Environmental Engineering

Educational Career:
Bachelor's of Environmental Engineering, BS, 2009, University of Central Florida

Committee in Charge:
Dr. C. David Cooper, Chair, Civil, Environmental, and Construction Engineering
Dr. Steven Duranceau, Civil, Environmental, and Construction Engineering
Dr. Andrew Randall, Civil, Environmental, and Construction Engineering

Approved for distribution by Dr. C. David Cooper, Committee Chair, on January 18, 2011.

The public is welcome to attend.