WATER RESOURCES MANAGEMENT IN THE SOUTHERN ONTARIO REGION, WATER MARKET SIMULATIONS UNDER SCARCITY CONDITIONS

Shane Pepin
Master of Applied Science, 2008
Environmental Applied Science and Management
Ryerson University, Toronto

ABSTRACT

Water resource scarcity is a increasingly important issue in many parts of the world. Population pressures, climatic changes, and general resource mismanagement are placing increasing strain on water supplies that provide for ecosystems and economies alike.

This thesis addresses the issues of water resource management with an investigation of free market principles to effectively manage end-use demand. A water market is designed for the Southern Ontario region, which consists of a large central population with extensive water use related to industrial, residential and agricultural users alike. The market is designed to allow the trading of water resources among users with price acting as a tool to manage demand under resource constrained conditions. A comparison to a traditional centralized utility model is used to measure market dynamics and overall efficacy.

The results indicate that a free market system produces economic advantages to a utility model while still demonstrating an ability to reduce demand. The model also suggests that the inclusion of certain end-use functions, such as agriculture, must be examined carefully for a free-market model implementation.