# Hydrogen Economy Costs Model Simulations. (HyTrans)

There is a need to develop interfaces between the already existing models and the global model of the hydrogen economy. Many transportation models have been developed using current oil fuels and future hydrogen fuel. However, these existing models and analytical tools are difficult to integrate and execute separately for analyzing efficiently and effectively the transition towards a hydrogen economy. Using the graphically oriented simulation software package FLOW and the process modeling scripting language Python various interfaces were developed to simulate different aspects of using hydrogen based on existing computerized transportation models (HyTrans developed at ORNL). FLOW simulated hydrogen economy scenarios by developing process flow sheets and analyzing capital, operating and unit production costs of these scenarios. Each scenario consisted of a selected production process, one delivery mechanism, and one type of retail. Several simulations were developed and run to compare the various alternatives and determine solutions beneficial to the U.S. Department of Energy Hydrogen Program. Results show that these simulations are accurate and consistent with the HyTrans model. This project is a small portion of a much larger project being pursued by the U.S. Department of Energy's Hydrogen Program to develop an efficient transition plan for a future use of hydrogen. In conclusion, the results suggest that this goal is achievable but current studies must be evaluated in order to accurately model an effective hydrogen economy.

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