

## **1.0 Executive Summary**

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This is a proposal for the redesign of the VIMS Seawater research Laboratory's mechanical systems. This proposal used the information about the existing mechanical system, which was presented in the previous technical reports as a basis for the redesign.

The proposed use of hydrogen generation to power and heat the VIMS Seawater Research Laboratory reduces the cost of the energy consumed with out redesigning a mechanical system or process that could affect the laboratory processes that occur within the building. Also the use of hydrogen generation reduces the emissions that are created by the consumption of energy to almost nothing.

This proposal does not imply that there are flaws and errors in the current building and building systems design. This proposal merely suggests improvements to better the building and its surroundings.

The process that is proposed is a prototype of how a building is powered and operated, and if proven functional and feasible it would soon become part of the DOE's Hydrogen Program's goal of a hydrogen economy. This redesign is involving new technologies that are currently being developed to eliminate the U.S. dependency on oil. Also, this redesign will add great educational value and allow me to increase my knowledge and understanding of mechanical systems and the new equipment that is being developed for these systems.