

University of Vermont
212 Aiken Center
Burlington, Vermont 05405

March 6, 2014

To Whom It May Concern:

I am writing this letter of affirmation to provide justification for why the University of Vermont's Eco-Machine qualifies as an innovation credit for STARS. As a lecturer, research specialist and consultant, I have a breadth of experience in ecological design and living technologies. I am confident in my assessment that the University of Vermont's Eco-Machine is a truly novel and creative program fostering sustainability at UVM and in the community.

An Eco-Machine is a designed and assembled ecosystem that is directed toward a human use. The Aiken Eco-Machine is designed to purify and recycle the building's wastewater for flushing toilettes. Nature is excellent at cycling energy and nutrients in a manner adaptive to change and disturbance. We can partner with nature and redesign our infrastructure to work in harmony with complimentary natural and hybrid ecosystems. This type of design literally integrates elements of the wild into the built environment to provide targeted ecosystem services like water and air purification. Not only do these systems perform work for humans and create aesthetically pleasing spaces, they also provide novel habitat for a full suite of organisms and can create entirely new ecosystem types that are adapted to the modern human landscape. Ecological design has the potential to build a more sustainable and resource-efficient society through deliberate cooperation with biological systems rather than their subjugation.

The UVM Eco-Machine, located in the newly renovated Aiken center, mimics the natural purification processes found in wetland, groundwater, stream, and pond ecosystems. The Eco-Machine is home to communities of aquatic micro-organisms, invertebrates, and wetland plants working in concert to degrade pollutants and to transform the nutrients and energy in our sewage into a profusion of life. The building's wastewater is treated in the system and reused in our own Aiken building for non-potable use, reducing water consumption. The Eco-Machine was designed over a five-year period by myself along with noted ecological designer, John Todd, and local engineer, David Whitney. More information about the Eco-Machine can be found at <http://www.youtube.com/watch?v=hX91TZfOVSU>

Throughout the course of the year, students are involved with lab work and research on the Eco-Machine as part of courses and independent studies at UVM. These teaching and research goals were built into the original design of the Eco-Machine. The installation is unique in that three separate systems operate in parallel to one another, allowing researchers to conduct meaningful experiments. The University of Vermont's Eco-Machine is charting new territory in ecological design and is a great example of sustainability innovation on campus.

Sincerely,

Matt Beam
Lecturer and Research Specialist
University of Vermont

