



## The Dumpster Project RFP Manor Velocity Capstone 2015

### Dumpster Clean Up! Design Clean Water and Clean Energy Technologies for the Dumpster Project Home

#### Background

**The Dumpster Project** ([dumpsterproject.org](http://dumpsterproject.org)) is transforming a used trash dumpster into a tiny sustainable house as an innovative tool to teach, talk, and learn about sustainability, design, and what makes a healthy, happy home. We use our living experiment – the dumpster-as-home – to inspire and challenge learners of all ages. The Project includes the design, testing, and building of the dumpster home itself as well as an integrated set of formal and informal education experiences that energize STEM learning and engage people in sustainability awareness.

The project is based at Huston-Tillotson University (HT), a historically black university in Austin, Texas. The goal is to create a high-tech, net-zero energy dumpster microhome that consumes only 1% of the energy, water, and space and generates only 1% of the waste of the standard American home. To get there, the project team is working with an advisory panel of faculty and community experts to collect data and design solutions. For the first year of the project, Huston-Tillotson University Dean Jeff Wilson lived in the dumpster as it was being converted now, as the project moves into its second year, educators, artists, and creators of all types are taking on dumpster “residency” periods to bring the lessons of sustainable living home to their students.

#### Project Description

We are seeking proposals that address our needs for **cleaning our wastewater** and providing the dumpster with **clean (carbon-neutral or carbon zero) energy sources**. Both projects relate to the total energy/water use profile of the Dumpster home and represent critical resource management for the Dumpster.

(1) The Dumpster home has a small battery-based portable power supply that is currently recharged from a standard outlet. We would like to replace the standard electrical grid recharge capability with a clean energy source – solar or wind preferable.

(2) We would also like a transportable natural water filter (a wetland in a box) that can be transported with the dumpster to treat grey water on site and divert it into irrigation, aquaponics, or food production.

### **General Tasks**

Research - water cycle, water standards, wetland plants, irrigation, aquaponics, photovoltaics, turbines, electrical systems, energy monitoring, electrical installation, energy alternatives.

Planning/Design - Assessment of challenges and limitations, including feasibility, cost, maintenance, portability, integration into current structure, plans for eventual expansion.

Construction/Testing – including prototypes, models, and testing scheme.

### **Project Limitations**

Project prototype budget is of \$800. Please include a timeframe for ROI (return on investment) once the Dumpster goes net zero energy for your final solution. Please see attached list for available supplies and current equipment. The Dumpster Project will assist if you seek in-kind donations from partners.

### **Deliverables**

Plans for the portable natural water filter/wetland, including budget

Proposed model of Dumpster water system

Water quality testing plan

Portable natural water filter/wetland

Plans for alternative energy supply for the Dumpster, including budget

Energy management plan

Data on energy model, including calculations

### **Considerations**

Major considerations are portability, cost, integration into current system, and maintenance.

## Resources

### Client:

[www.dumpsterproject.org](http://www.dumpsterproject.org)

### General Energy Issues/Management:

[www.kilowattours.org](http://www.kilowattours.org)

<http://energy.gov/energysaver/energy-saver>

<http://energy.gov/oe/services/technology-development/smart-grid>

<http://energyteachers.org/Links.php>

### Solar and Wind Basics:

<http://energy.gov/eere/energybasics/articles/solar-energy-technology-basics>

<http://energy.gov/eere/energybasics/articles/wind-energy-technology-basics>

<http://ed.ted.com/lessons/why-aren-t-we-only-using-solar-power-alexandros-george-charalambides>

### Water Systems:

<http://www.uwex.edu/erc/eypaw/picktopics.cfm>

<http://www.greywater.com/>

<http://water.org/news/resources/>

[http://www.ted.com/talks/sonaar\\_luthra\\_meet\\_the\\_water\\_canary?language=en](http://www.ted.com/talks/sonaar_luthra_meet_the_water_canary?language=en)

[http://www.ted.com/talks/anupam\\_mishra\\_the\\_ancient\\_ingenuity\\_of\\_water\\_harvesting](http://www.ted.com/talks/anupam_mishra_the_ancient_ingenuity_of_water_harvesting)

### Local Connections:

<http://www.pecanstreet.org/>

<http://www.cmpbs.org/>

<http://www.solaraustin.org/>

<http://www.austineconetwork.com/>

<http://www.austintexas.gov/department/grow-green>

<http://www.austintexas.gov/department/hydrofiles>