# America's Next Generation of Green Energy: Biodigesters

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Biodigesters are America’s next generation of green energy. The purpose of this project was to test how much energy is produced from different biogases created from different biomasses. The first hypothesis was that grease, fats, and coffee grounds, along with rabbit and chicken manure, will produce the most methane; while fruits, and cow manure, will not produce as much; and the vegetables will produce the least amount of methane. The second hypothesis was whether scrubbed biogas provided more energy than unscrubbed biogas. The procedure began with filling 24 mason jars individually with assorted materials and effluent from a biodigester plant to see how much methane each individual ingredient would produce. Also, 2 Solar Cities biodigesters were filled with either rabbit and chicken manure or cow manure. In addition, 2 ARTI style biodigesters were filled with cow manure, of which one contained suspended grids for bacterial colonization. All biodigesters were stored in a large, insulated box kept at a constant temperature of 100°F. The methane was captured by a Mylar balloon or plastic storage bag with a hose barb attachment on the biodigester. The results for the first hypothesis are inconclusive, and more testing is being done to determine which biomass can produce the most energy. The biogas is also going to be tested for what gases are present and compressed to run through a motor. The results for the second hypothesis showed biogas that was not scrubbed through Sodium Hydroxide produced more energy than biogas that was scrubbed.

**Awards Won:**
Arizona State University: Arizona State University Intel ISEF Scholarship