KENAN HATIPOGLU, Dept of Electrical Engineering, West Virginia University Institute of Technology, Beckley, WV, 25801, YOGENDRA PANTA, Dept of Mechanical Engineering, West Virginia University Institute of Technology, Beckley, WV, 25801, and GREGORY BOTTENFIELD, Dept of Electrical Engineering, West Virginia University Institute of Technology, Beckley, WV, 25801.
Feasibility Analysis of Advanced Rail Energy Generation and Storage Technology Implementation for State of West Virginia

Advanced Rail Energy Generation and Storage Technology is an alternative concept for utility companies to generate and store energy by using the idea of regenerative braking of the motors used to drive the shuttle-trains. It has the main concept of transporting a continuous flow of masses uphill to create an energy storage and transporting a continuous flow of masses downhill to generate electricity.

This technology provides a deployable solution for grid-scale energy storage. This enables the electric grid to integrate clean and renewable energy while maintaining the reliable and secure electric service necessary. It also provides an energy storage solution that does not rely on water.

The objective of this study is to investigate the ways to implement this technology at West Virginia which has perfect landscape conditions including abandoned coal mines and other possible locations. Software modelling of this technology employing field data obtained from coal mining-related companies, societies and organizations is the main method used in this study for feasibility studies. By using this method, identification of the suitable site(s) / mine(s) for the technology implementation is possible. Another objective of this study is to attract and engage undergraduate students to conduct research on alternative energy resources to find possible solutions on current energy related problems.

This study is a semester long project to be completed at the end of the spring of 2018. Currently, two undergraduate students are working with two faculty advisors as undergraduate researchers.