

A Space-Based Solution To Improve Roadway Safety And Efficiency In
Virginia: Real-Time Winter Weather Data For Navigation
(Technical Report)

Distrust of Nuclear Power in the U.S.:
An Inherited Constraint on Climate Policy
(STS Research Paper)

An Undergraduate Thesis Portfolio
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by

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Preface

Human needs may be served by diverse means that may range from no-tech to high-tech. Before the optimum approach can be selected, alternatives along the full range must be comparatively evaluated. Two high-tech approaches are considered: a space-spaced surveillance system for road traffic management, and nuclear power as a promising but controversial source of sustainable electric power.

The research team designed a 3-U CubeSat design with a multi-spectral imager intended to photograph roadways as it passes over them. The satellite would be deployed from the ISS and enter an orbit 400 kilometers above the ground. At this altitude, the craft will have an approximate period of 90 minutes and therefore will be over the place of interest for a very short period, approximately 2 minutes. This design is a proof of concept and will be further explored by following researchers.

In the United States, distrust of nuclear power has deterred its adoption since the 1970s. With climate change looming, it is crucial that CO₂ emissions are lowered rapidly. Nuclear power has the potential to fill in the gaps that renewables cannot grow fast enough to fill. Analysis of the development of public distrust and how it affects nuclear power regulations could be crucial to the further development of the nuclear energy sector.

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