



“Sustainable Conservation – Heading for Harmony”

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Solar Roads: Are They Feasible?

In order to promote sustainable conservation, it is important to design our public infrastructure from a holistic point of view. To do this, novel outside of the box analysis is required. It is no longer sufficient to construct our buildings, generators, and roads to the same standards used decades or centuries ago because modern science has given us better solutions and more sustainable alternatives.

This is particularly true for our road infrastructure. While asphalt and concrete are proven performers, the methods used to make them sustainable are akin to Band-Aid solutions. It takes substantial energy to construct and maintain our roads, and what is not being tapped is the energy potential that our roads also provide.

Simply put, asphalt gets hot on sunny days. We know this from the urban heat islands that they contribute to and even from walking on them. This heat shows us that there is energy potential in our roads, specifically solar energy potential. Research has shown that asphalt can be used as a solar thermal collector, but why not generate electricity directly?

This presentation outlines work underway at the University of Waterloo’s Centre for Pavement and Transportation Technology (CPATT) to do just that, make a solar panel you can drive on. The state-of-the-art in solar road panel design is demonstrated, showing how CPATT’s work compliments the current practice with a focus on structural design and Canadian climate conditioning. Lastly, this presentation will show what CPATT could implement tomorrow based on what we know today.