

Conversion of Municipal Solid Waste to Energy  
(Technical Report)

The Climate Change Countermovement  
(STS Research Paper)

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by

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## **Preface**

In a sustainability economy, one generation meets its needs without compromising future generations' capacity to meet theirs. Achieving such an economy will require both technical and social innovation.

In the United States, deficient waste recovery and recycling generate unsustainable volumes of waste. Landfills contribute to pollution, carbon emissions, and other environmental hazards. To address this problem, the research team developed and modeled a hypothetical design for a process that would repurpose municipal solid waste (MSW) for electric power generation via the production of hydrocarbon fuels and syngas . This modeled process uses data from the MSW of Boulder County, Colorado. As modeled, the process would be consistent with the county's zero waste goal while supplying valuable energy. A gasification unit and solid oxide fuel cell rankine cycle were modeled to break down MSW to syngas and capture energy, respectively. This model is found to produce 7.29 MW of electricity and will help Boulder reduce MSW sent to landfills by 83%.

Recent climate change is due in part to human activity. Such anthropogenic global warming (AGW) is due to emissions of heat-trapping greenhouse gases, primarily from the combustion of fossil fuels. Remedial action in the United States has been insufficient, largely because of the effects of political ideologies and the influence of interest groups on media coverage. Think tanks and contrarian scientists, some funded by fossil fuel interest groups, have promoted skepticism about AGW. Although most Americans are now aware of AGW, the countermovement has confused the public and deterred action.