Achieving Freight Transport GHG Emissions Reductions Through Emerging Technologies: American Council for an Energy-Efficient Economy Working Paper

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The American Council for an Energy-Efficient Economy ("ACEEE") published a November 2021 working paper ("Paper") addressing freight greenhouse gas ("GHG") emissions.

The Paper addresses the potential use of what are described as "emerging technologies" that are stated to be commercially available to reduce freight GHG emissions.

The Paper's coauthors include:

- Avi Meersky

Senior Researcher – Transportation Program

ACEEE

- Therese Langer

Senior Fellow – Transportation Program

ACEEE

ACEEE describes itself as a nonprofit research organization that develops policies to reduce energy waste and combat climate change.

The Paper states that freight movement in the United States accounts for 31 percent of all transportation sector GHG emissions. This 2019 estimated share is projected to continue to grow. Consequently, the Paper contends that attempting to reduce freight movement GHG emissions is important.

The Paper addresses:

- Logistical improvements enabled by information and communications technology
- Vehicle electrification
- Vehicle automation and connectivity

The discussion includes an analysis of the potential emission reduction benefits of such technologies and how they may evolve (including relation to one another) over time.

The Paper concludes that information and communications technology-based operational improvements can provide the majority of potential GHG reductions. The time span assessed is the short and medium term. Further, such operational improvements are stated to include mode shift.

Specific estimates provided by the Paper include:

- By 2035 annual GHG emissions for intercity and regional truck freight can be cut by 41 percent
- Information and communications technology-enabled reductions are stated to represent 55 percent of the 41 percent

The Paper estimates that by 2050 the information and control technology share of annual emissions reductions could fall to 30 percent. Such reduction is assessed to be due to the dramatic growth of electrification.

Components of the Paper include:

- Technologies and Assumptions
- Information and control technology applications
- Electrification of trucks
- Connectivity and automation
- Results
- Next Steps

A copy of the Paper can be downloaded here.