Fuel for Next-Generation Garbage Trucks in Atlanta: Natural Gas or Electricity?

**Motivation**
- Over 1,000 garbage trucks in the Atlanta area:
  - Most of them run on diesel fuel
  - The least efficient & most polluting trucks on the road
- Alternatives are gaining momentum:
  - Natural gas (NG) is cheap and claimed to be a clean fuel
  - Landfill gas – turning garbage into fuel (natural gas)
  - Truck electrification can also be a promising alternative

**Finding Tomorrow’s Fuel**
- Diesel vs. Conventional NG vs. Landfill Gas (LFG) vs. Electricity

**Methods**
- We take an integrated modeling approach by including both internal (garbage collection company) and external (social) factors

**Results**
- **Total Cost of Ownership and Air Emissions Damage (in million dollars)**

**Implications**
- Fuel for next-generation garbage trucks in Atlanta:
  - Landfill gas is the best choice over the next 20 years
  - Electricity is a long-term solution – the best after 2030
  - There is no “one-size-fits-all” fuel
  - The requirement of new infrastructure for landfill gas trucks:
    - Not significant, contrary to conventional wisdom

**Applications & Future Work**
- Our study provides a decision-making support tool that can help local governments and garbage truck companies:
  - Select the most economic and/or environment-friendly truck
  - Design natural gas infrastructure development policies
- We are working on applying the framework and methods to other metropolitan areas in the U.S.

**References**
3. ImagineMade. ADVISOR® Advanced Vehicle Simulator.