

Mass Transit



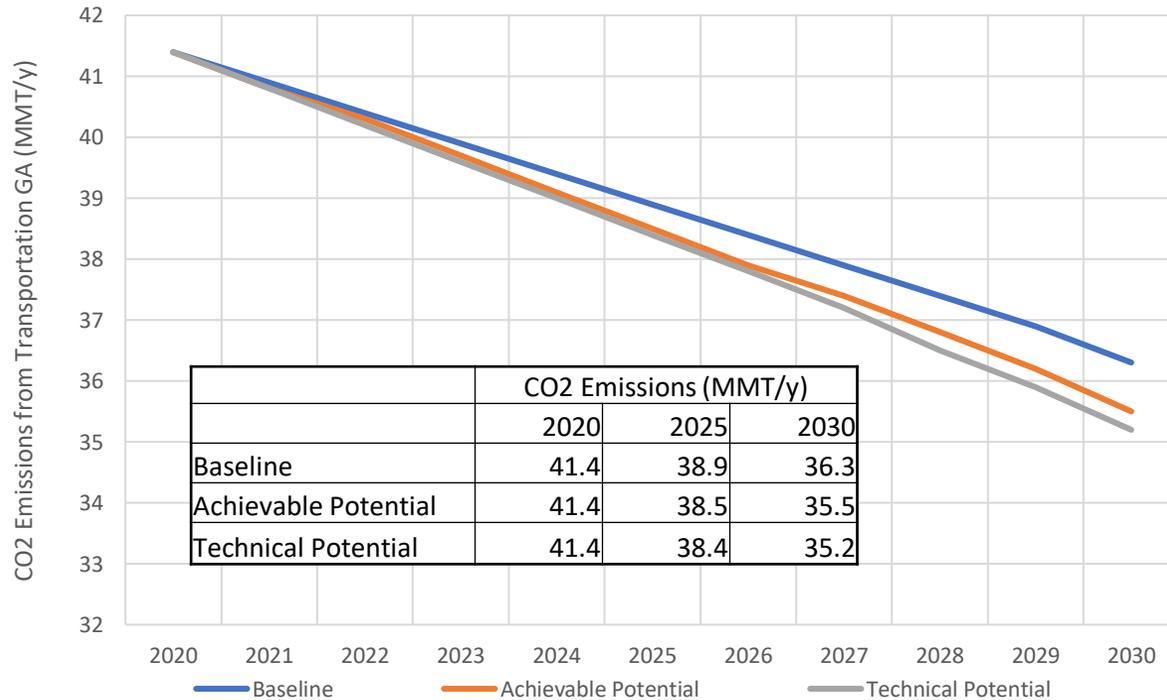
Public mass transit includes modes such as buses, trains and streetcars. When people rely on mass transit instead of cars, it reduces greenhouse gas emissions.

While some CO₂ reductions can be made in the electrification of transit buses, the real value of public transit is its ability to reduce the number of personal vehicle trips via strategic planning, primarily through the implementation of transit-oriented development (TOD).



Mass Transit

Transit and TOD can contribute additional CO2 reductions beyond a favorable baseline trend by 2030



Baseline = Assumes business as usual for fuel economy and CO2 reductions, driven by new vehicle technologies and Federal CAFÉ regulations. Assumes no new planning for TOD areas.

Achievable Potential = 288,000 additional households (~30% of new households in ATL by 2030) in TOD areas.

Technical Potential = 360,000 additional households (36% of new households in ATL by 2030) in TOD areas. Contributing 1.1Mt CO₂/yr reductions compared to baseline.

1 MtCO₂e solution in 2030 = 325,000 additional Georgia households living in transit-oriented development

- +Improved Air Quality
- +Reduced personal vehicle trips
- +Encourages alternate mobility solutions through TOD



Transit Oriented Development Costs and Benefits

Transit oriented development reduces anywhere from 2.5 to 3.7 tons of GHG emissions per household per year.

Though properties in TOD areas often fetch higher prices, the cost of living in these areas can be significantly lower due to decreased transportation costs. High-density urban growth encouraged by TOD can lower costs further.

However, a few significant unknowns remain:

- Costs (and thereby savings) vary by location
- Housing affordability initiatives in TOD areas
- Fuel prices and travel behavior

Household savings up to \$4,000 per year

Increased fare revenue for transit agencies

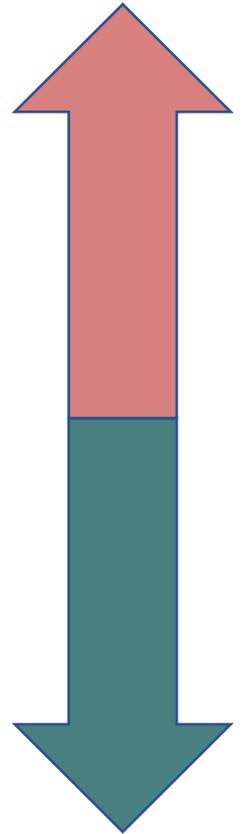
Decreased infrastructure management costs up to 25% compared to non-TOD areas

Increased tax revenue from urban revitalization and renewal

Reduced negative health impacts from emissions

High capital costs (can be lowered through public-private partnerships)

Less affordable for renters or low-moderate income households without coordinated policy or zoning





1.2 million new residents in Atlanta by 2030, or approximately 500,000 new households

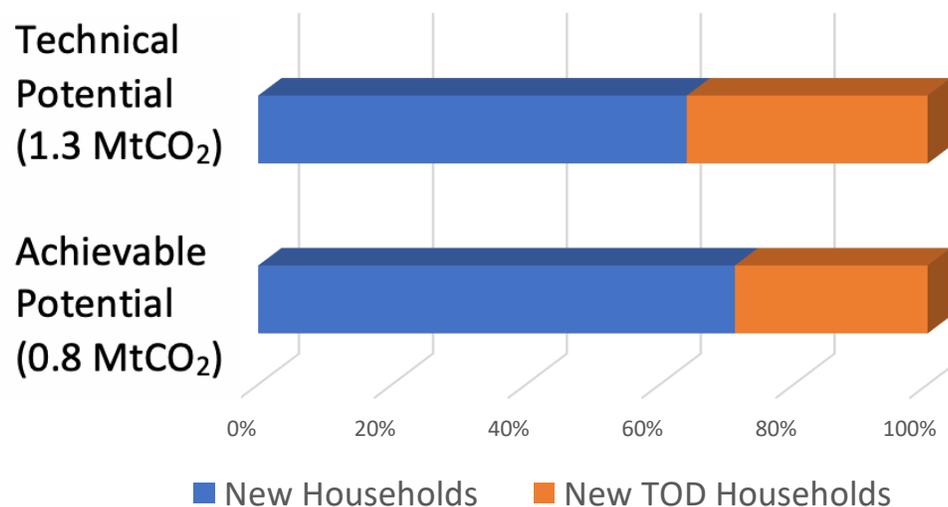
500,000 existing housing units over 50 years old will need to be rebuilt/replaced by 2030

TOD increases transit use by 20-40%

Encourages active mobility through bicycle lanes, wider sidewalks, and lower vehicular traffic

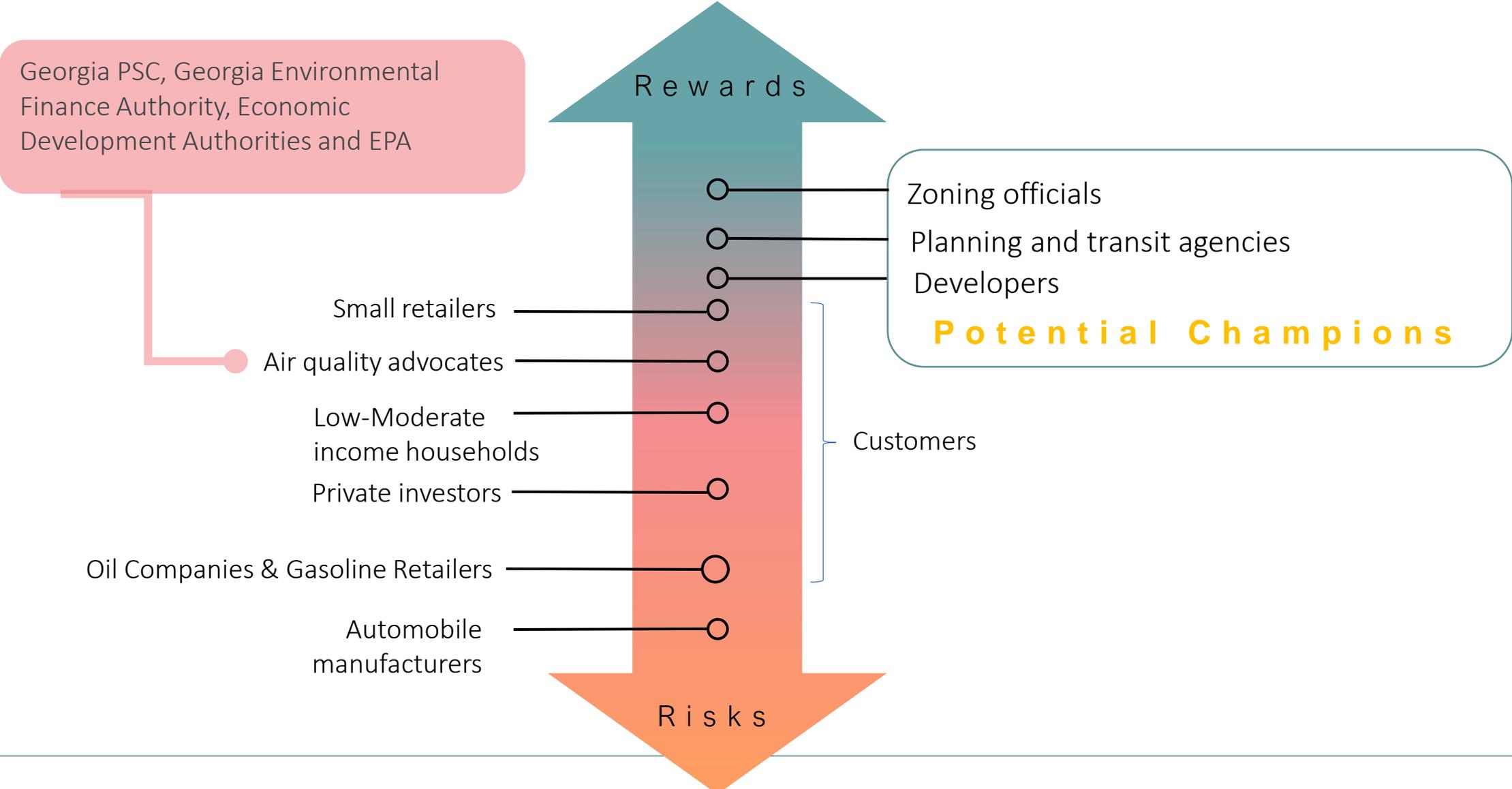
Street-level open store fronts encourage pedestrianism

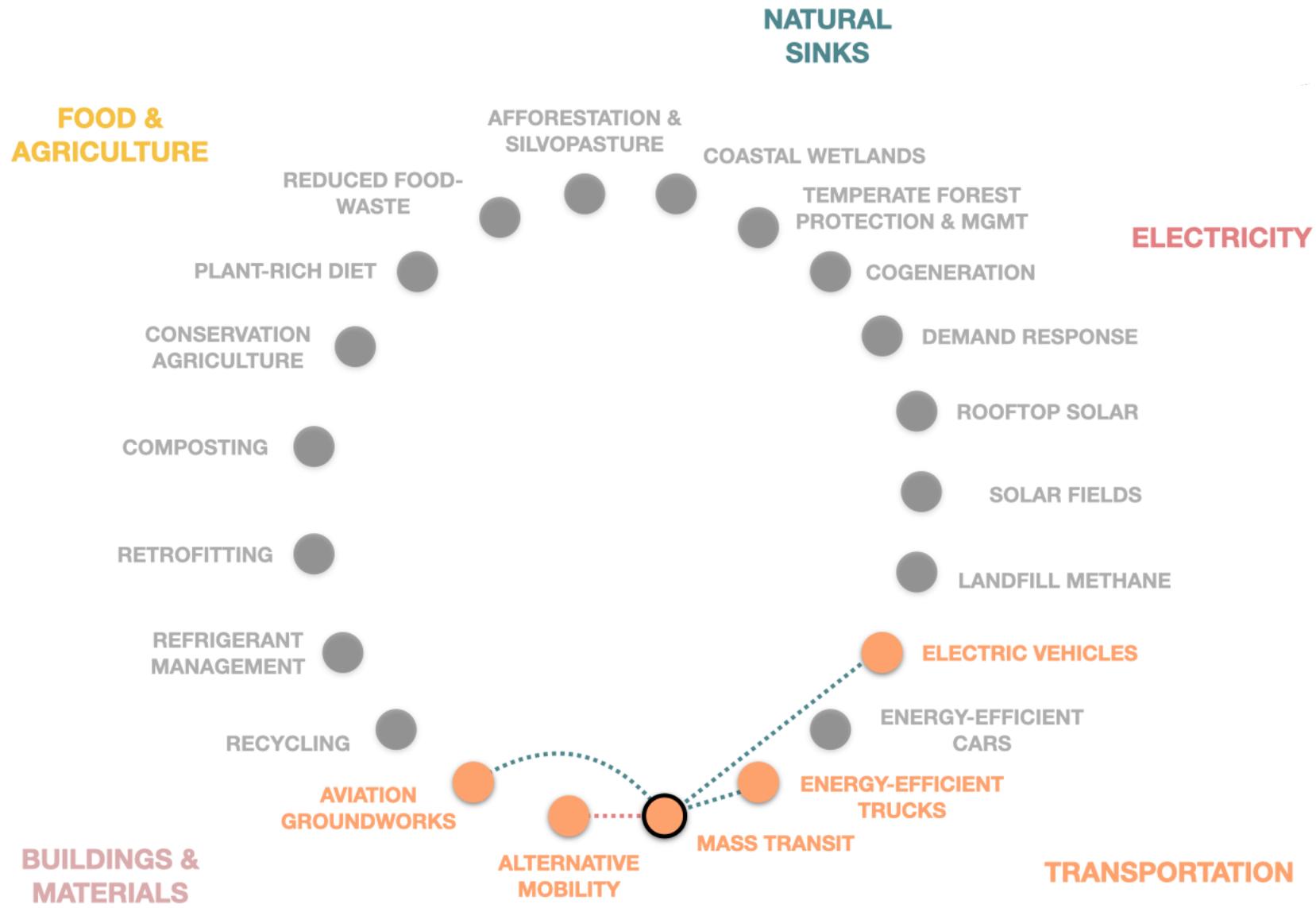
2030 Share of New Households in TOD Required by Scenario (ATL)



Out of 1,000,000 new Atlanta households, 36% must be in TOD areas for the technical potential scenario

Stakeholder Analysis of Mass Transit





LEGEND

- STRONGLY SYNERGISTIC**
- STRONGLY COMPETITIVE**
- WEAKLY SYNERGISTIC**
- WEAKLY COMPETITIVE**

Mass Transit

A solution for Georgia that:

- Reduces carbon emissions
- Results in air quality benefits
- Reduces personal vehicle trips
- Encourages economic development around transit stations





Corresponding authors:

Dr. Richard A. Simmons, PhD, PE
Senior Resmearch Engineer
Strategic Energy Institute
Georgia Institute of Technology

Dr. Michael Rodgers, PhD
Regents Researcher
Civil and Environmental Engineering
Georgia Institute of Technology

