pasSimulation parameters

General

g, acceleration due to gravity (m/s^2): 9.81 m/s2

rho, air density (kg/m^3): 1.2

Gearbox efficiency:

Gear ratio:

Cost of energy: 1 SEK/kWh

Maximum allowed velocity: 70 km/h

Cost of electric motor: 70 SEK/kWh

C-rate of charge at stations: 1.5C

Cost of charging station: 2000 SEK/kW

Passenger mass (kg): 80 kg

Tram:

Mass of the tram car (kg): 36800 kg (Wikipedia: M32 spårvagn)

Maximum number of passengers: 202 (wikipedia)

Drag coefficient: 1.8 (https://www.engineeringtoolbox.com/drag-coefficient-d\_627.html)

Frontal area: 3.32\*(1.435+0.4) (wikipedia + excession outside wheel base)

Rolling resistance: 0.001 (https://www.engineeringtoolbox.com/rolling-friction-resistance-d\_1303.html)

Wheel radius: 0.2 (no source)

Vehicle:

Used values from XC90: https://www.volvocars.com/se/bilar/modeller/xc90/specifikationer?gclid=CjwKCAjw3cPYBRB7EiwAsrc-uXi2RXLty7z73xsZWbaxWY-mfc309AqfyGBWKALqPSKbvGNwCLIjwRoCwoUQAvD\_BwE

Unladen mass of vehicle (kg): 2000 kg

Wheel radius (m): 0.37 (19” + 235 mm 55% AR tires)

Aerodynamic drag coefficient (Cd): 0.5 (https://www.engineeringtoolbox.com/drag-coefficient-d\_627.html)

Rolling resistance coefficient (Cr): 0.02 (https://www.engineeringtoolbox.com/rolling-friction-resistance-d\_1303.html)

Frontal cross-section (m^2): 1.78\*2.0 (XC90)

Energy density of battery (kWh/kg): 0.1

Cost of battery: 1000 SEK/kWh