

# Electromobility Cascavel – PR





Cascavel is a city in the interior of Paraná, located approximately 500 km from the capital Curitiba.

It has a land area of 2,100 km<sup>2</sup> and an estimated population of over 368,000 inhabitants.

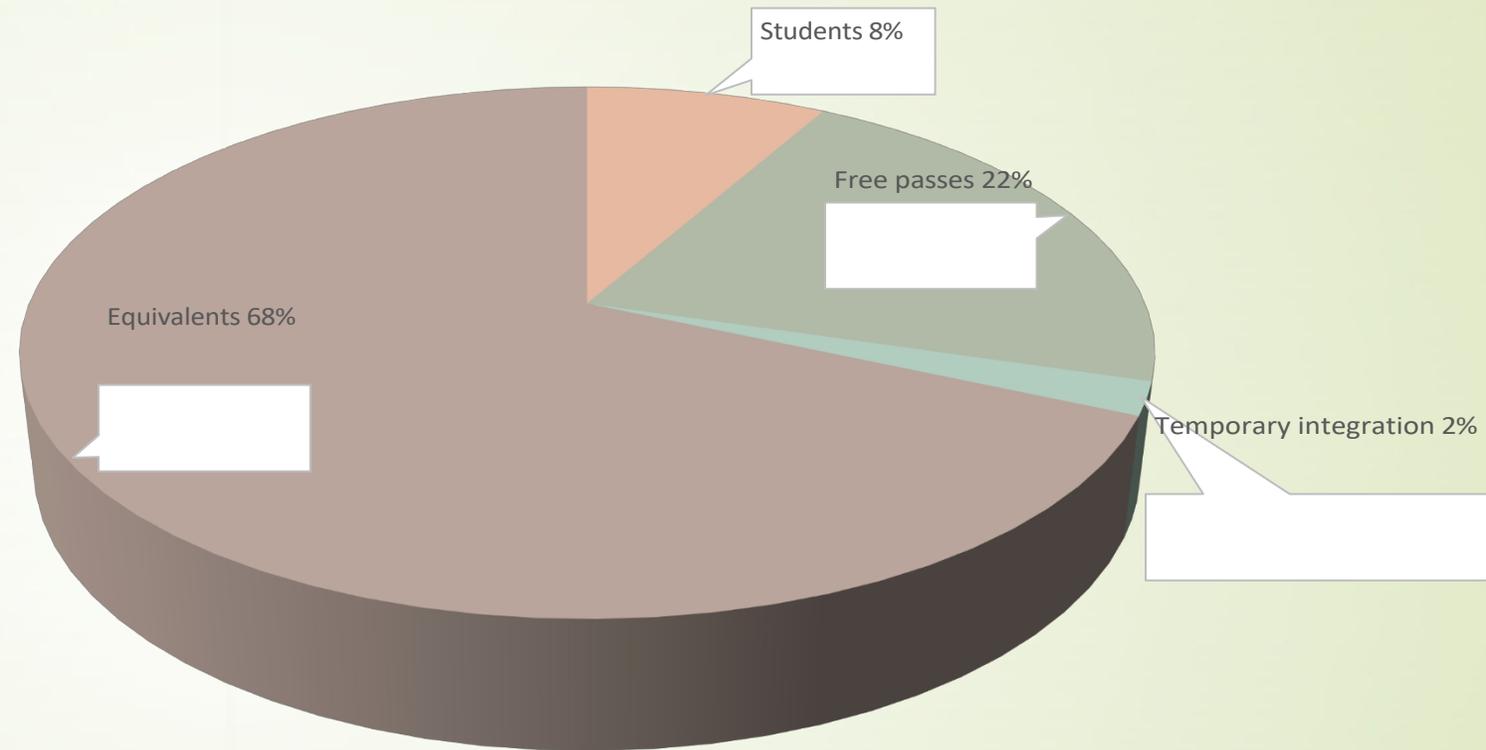
# Sistema de Transporte Coletivo



- ❖ Trunk-fed
- ❖ 61 lines
- ❖ 27 km of exclusive lanes
- ❖ 149 buses
  - ❖ 134 Combustion (89.9%)
  - ❖ 15 Electric (10.1%)
- ❖ 8.7 million kilometers traveled/year
- ❖ 17,327,277 validations/year
- ❖ Fare R\$ 4.65



# Validation profile



- Equivalents: 12,351,376
- Students: 1,480,513
- Free tuition: 3,873,801
- Temporal Integrations: 361,844

# Electromobility

- ▶ Proximity of closing of contracts of concession prompted the Municipality to seek for solutions for requalification the service for public
- ▶ One of the premises was the use of more comfortable, accessible, and environmentally sustainable vehicles
- ▶ Consulting contracted for support in structuring the process process, indicated the feasibility of using electric buses due to the reduction in CAPEX
- ▶ In 2021, the Electromobility Project was conceived
- ▶ To foster decarbonization decarbonization the fleet, Municipality proposed the incorporation of electric buses into the concept of "private operation of public fleet"
- ▶ Taking into account economic and environmental reasons, it was decided that it would be convenient that the system recharge recharge used sources non-polluting used polluting, preferably solar
- ▶ Capex of over R\$ 60 million

# Electric Fleet

- ▶ CAPEX of R\$ 43.2 million
- ▶ Source of Financing: Loan from BRDE
- ▶ Start of operations in August 2024
- ▶ 2 articulated buses
- ▶ 13 standard buses
- ▶ Range of up to 270 km
- ▶ *Low floor*
- ▶ Air conditioning ❄️
- ▶ Estimated service life of 15 years
- ▶ 10% of the system's fleet





## Photovoltaic power plant

- ▶ CAPEX of R\$ 16 million
- ▶ Source of financing:
  - ▶ R\$ 3 million – Itaipu Binacional
  - ▶ R\$ 16 million – Loan from BRDE
- ▶ Installed at the landfill in an area of 50,000 m<sup>2</sup>
- ▶ 5,000 solar panels, each with a capacity of 660 watts
- ▶ 3.3 megawatts of power
- ▶ 10 inverters of 250 kW
- ▶ 5 transformers of 500 kVA
- ▶ Estimated useful life of 20 years, with up to 80% generation capacity during this period
- ▶ Generated approximately 321,000 kWh per month



## Charging Infrastructure

- ▶ CAPEX of R\$ 7.5 million
- ▶ Source of Financing: Loan from BRDE
- ▶ Public electric terminal with 7 *dual* chargers
  - ▶ 1 360 kW charger
  - ▶ 6 chargers 180 kW
- ▶ 02 charging points
  - ▶ East Terminal – 1 240 kW charger
  - ▶ South Terminal – 1 240 kW charger



# Performance

## ► Overall

► Distance traveled (2025): 1,118.432 km (12.94%)

► Monthly average of 6,213 per vehicle

► Total energy consumption: 1,380,581.68 kW

► Average range:

► 0.81 km/kW

► 1.23 kW/km

► Average value kW/km: **R\$ 1.36**



# Performance

- ▶ **Articulated (capacity 131 people)**
  - ▶ Distance traveled (2025): 122,529 km
  - ▶ Monthly average of 5,105.38 per vehicle
  - ▶ Total energy consumption: 204,009.44 kW
  - ▶ Average range:
    - ▶ 0.60 km/kW
    - ▶ 1.66 kW/km
  - ▶ Average value kW/km: **R\$ 1.83**



# Performance

- ▶ **Standard (capacity 76 people)**

- ▶ Distance traveled (2025): 995,903 km

- ▶ Monthly average of 6,383.99 per vehicle

- ▶ Total energy consumption: 1,176,572.23 kW

- ▶ Average range:

- ▶ **0.85 km/kW**

- ▶ **1.18 kW/km**

- ▶ Average value kW/km: **R\$ 1.30**



## Comparative Performance

Vehicle type	Km/kW	kW/km	Miles/liter*	l/km*
Articulated	0.60	1.66	1.54	0.65
Standard	0.85	1.18	2.00	0.50

\* According to parameters established in concession contracts



## Resultado

Vehicle type	Cost kW/km	Cost l/km	Savings per Km
Overall	R\$ 1.36	R\$ 2.47	45.09
Articulated	R\$ 1.83	R\$ 3.11	R\$ 41.16
Standard	R\$ 1.30	R\$ 2.39	45.72

- ✓ Savings in fuel supply of almost R\$ 1.1 million in one year
- ✓ Avoided consumption of more than ½ million liters of diesel fuel
- ✓ Estimated reduction in CO2 emissions of more than 2,000 tons/year

Thank you

