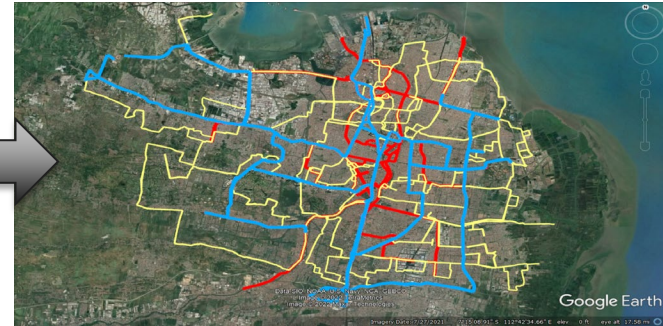
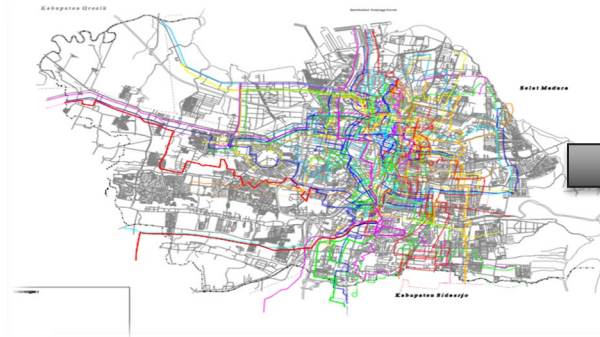


TRANSMISSION IMPLEMENTATION OF ELECTRIC BUSES IN SURABAYA CITY



Transportation Department Innovation

DEVELOPMENT AND ARRANGEMENT OF PUBLIC TRANSPORT

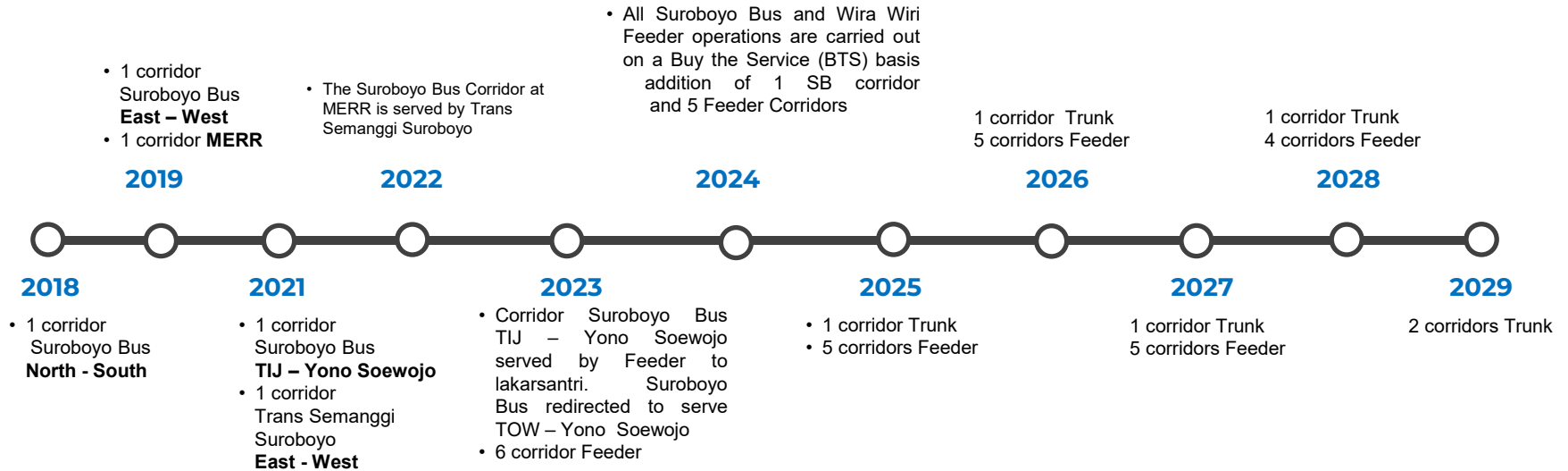


DESC.	EXISTING	PLAN
ROUTES	MICROBUS: 58 routes BUSES: 22 routes	FEEDER : 30 routes TRUNK : 11 routes
NUMBER OF VEHICLES	MICROBUS: 827 vehicles BUSES: 270 vehicles	FEEDER : 235 vehicles TRUNK : 178 vehicles
SERVICES	Suburban areas are underserved	Almost all cities are served by public transportation according to the attraction and generation areas

JMLAH TRUNK & FEEDER

Vehicles	Existing
Feeder	56 unit
Trunk	45 unit

Service Milestone Surabaya Public Transportation



Term. Benowo – Tunjungan
PNR Mayjend – Balai Kota
TIJ – Gunung Anyar
Puspa Raya – HR Muhammad
TIJ – Lakarsantri
Term. Bratang – St. Pasar Turi



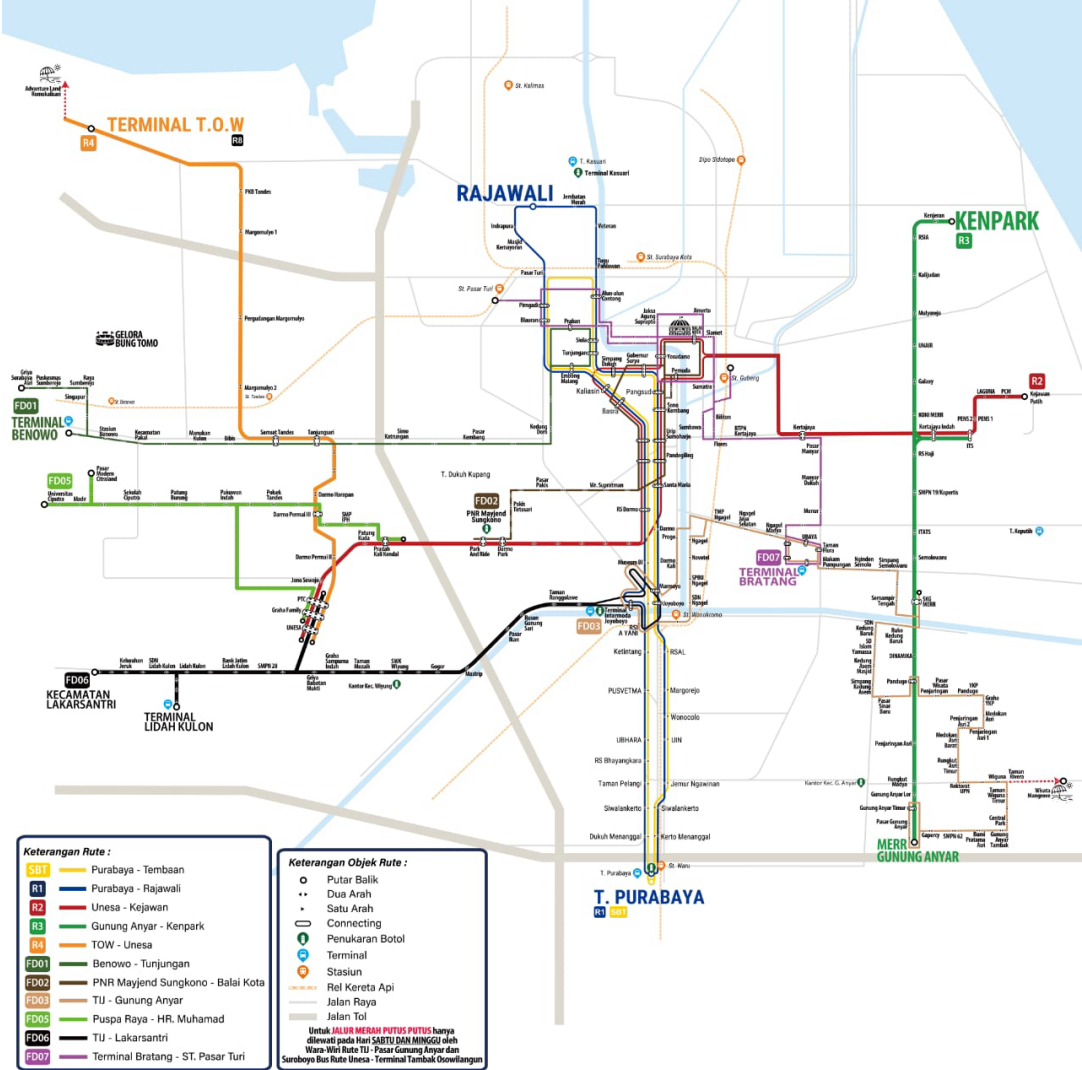
Realization of Public Transport Arrangements in Surabaya City

4 Routes Trunk :

1. SB Terminal Purabaya – Rajawali
2. SB Terminal Tambak Osowilangon – UNESA
3. TSS Lidah Wetan – Kejawan Putih Tambak
4. TSS Gunung Anyar – Kenpark

6 Feeder Routes :

1. Terminal Benowo – Tunjungan
2. Park and Ride Mayjend Sungkono – Balai Kota
3. Terminal Intermoda Joyoboyo – Gunung Anyar
4. Puspa Raya – HR Muhammad
5. Terminal Intermoda Joyoboyo – Lakarsantri
6. Terminal Bratang – Stasiun Pasar Turi



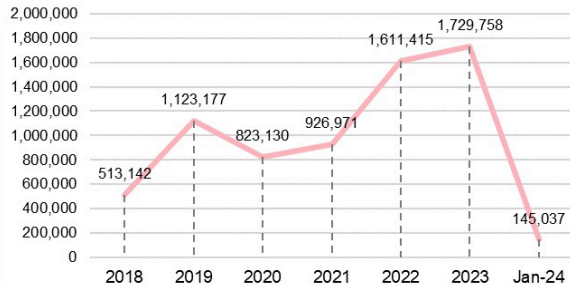
TOTAL PASSENGERS

SUROBOYO BUS

Number of Passengers Jumlah Penumpang SB

No	Tahun	Jumlah PNP
1	2018	513,142
2	2019	1,123,177
3	2020	823,130
4	2021	926,971
5	2022	1,611,415
6	2023	1,729,758
7	Jan-24	145,037

Grafik Jumlah PNP SB

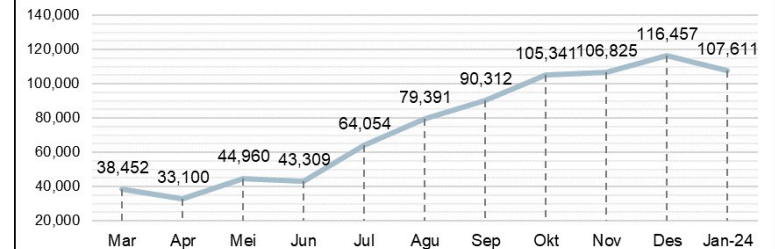


WIRA-WIRI

Number of Passengers Jumlah Penumpang WW

No	Bulan	Jumlah PNP
1	Mar-23	38,452
2	Apr-23	33,100
3	Mei-23	44,960
4	Jun-23	43,309
5	Jul-23	64,054
6	Agu-23	79,391
7	Sep-23	90,312
8	Okt-23	105,341
9	Nov-23	106,825
10	Des-23	116,457
11	Jan-24	107,611


Grafik Jumlah PNP WW



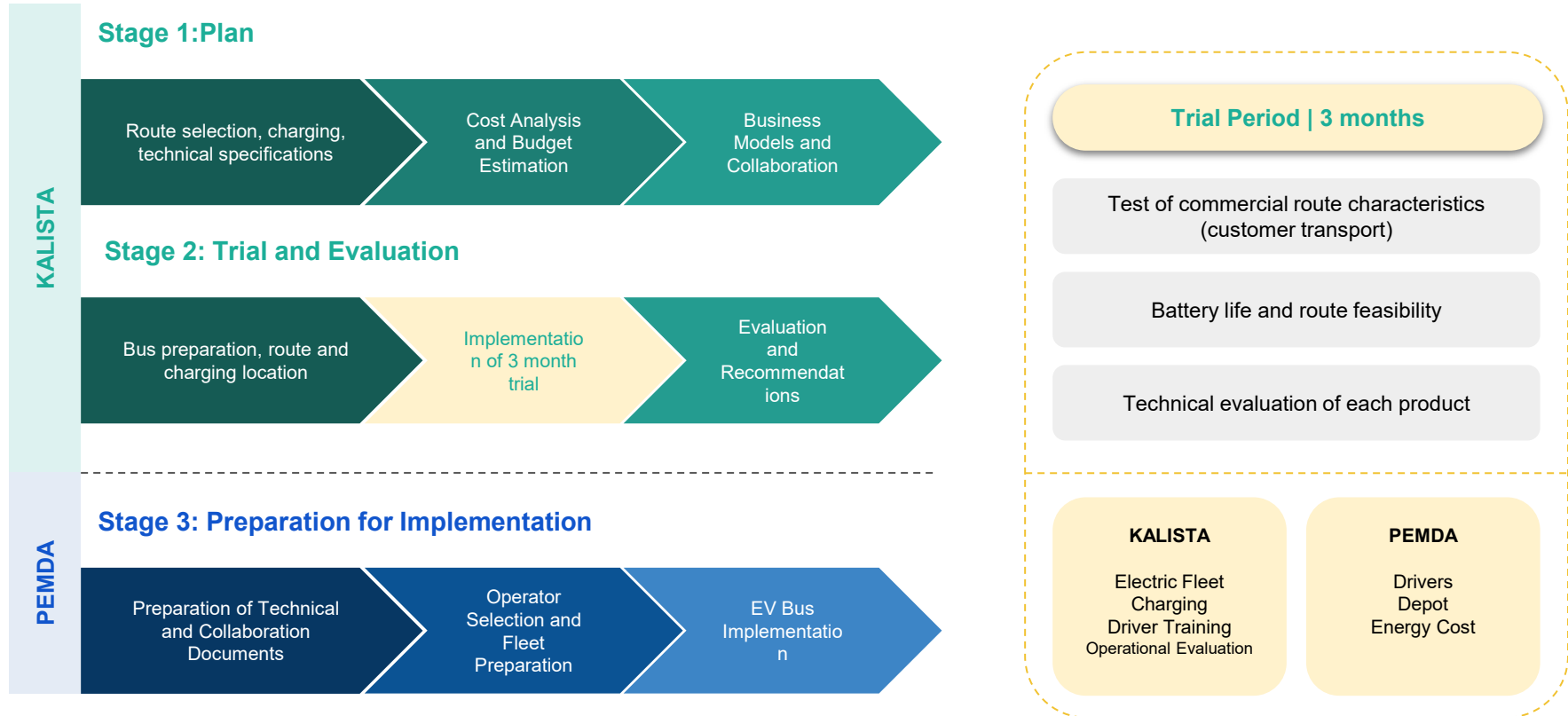


PUBLIC TRANSPORT FINANCING YEAR TO YEAR

Year	2018	2019	2020	2021	2022	2023	2024
Budget	43.825.822.718	21.335.559.364	46.965.121.444	25.057.592.517	68.272.280.962	59.431.494.491	108.398.972.760



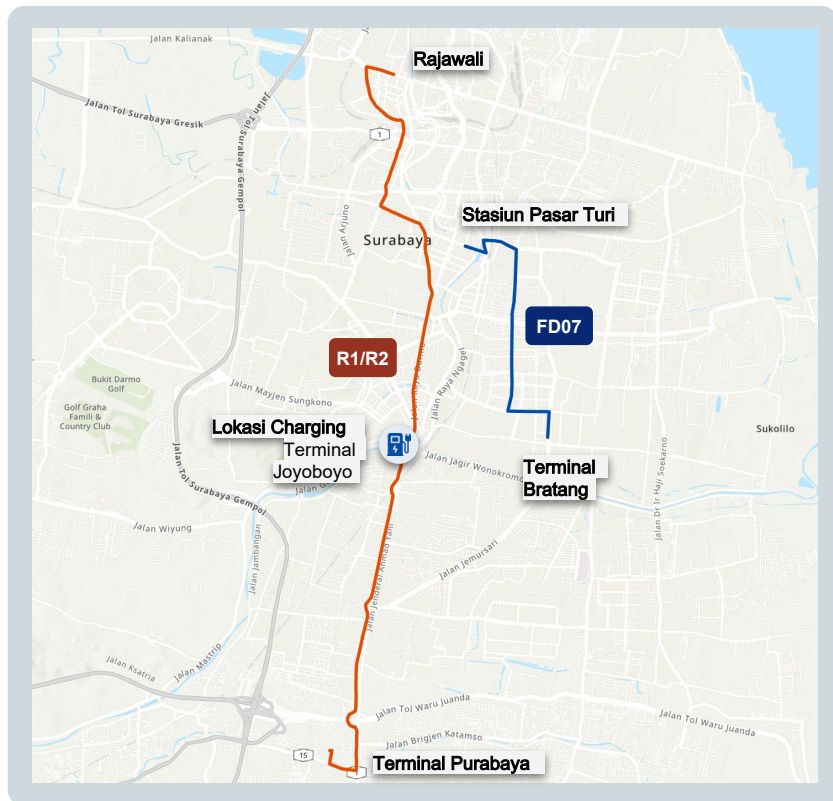
Surabaya City Electric Bus Trial Program



Risks of Projects Without a Trial and Benefits of a Trial

Project Risks Without Trial	Benefits of Implementing a Trial Project
There is no comprehensive planning before contracting with an operator;	The results of the trial will be used as consideration for planning and evaluating existing operational and financing designs;
The technology used is inappropriate;	The existence of trial activities helps the process of selecting products that suit field needs and conditions;
Ineffective service, such as lack of understanding of charging strategy.	Testing activities help identify the efficiency of battery use and operating patterns;
	The trial activity helped the Surabaya City Government and Operators in identifying public interest in the EV implementation plan in the City of Surabaya

Surabaya City Electric Bus Trial



Trials have been carried out in Surabaya City for the Suroboyo Bus (R1/R2) and Wirawiri (FD07) routes, with a total of seven (7) electric bus units.

Trial duration	: 97 days
Total passengers	: 24.342 passangers
Daily passengers	: 89 passangers
Operating time	: 05.00 - 22.00
Daily mileage	: 180 - 200 km
Total operating distance	: 52.550 km
Daily kWh	: 200 – 400 kWh
Total Energy Consumption	: 32.441 kWh

Month 1

Big Bus : TIJ - Rajawali - Purabaya
Middle Bus : TIJ - Rajawali
Small Bus : FD07 Terminal Bratang – Stasiun Pasar Turi

Month 2

Big Bus: TIJ - Rajawali
Middle Bus : TIJ - Rajawali - Purabaya
Small Bus : FD07 Terminal Bratang – Stasiun Pasar Turi

Month 3

Big Bus : TIJ - Rajawali - Purabaya
Middle Bus : TIJ - Rajawali - Purabaya
Small Bus : FD07 Terminal Bratang – Stasiun Pasar Turi

Periode

Nov 7, 2023 - Feb 20, 2024

Operation Day

97

Total Passangers

24,342

Daily Passangers

89

ENERGY RATIO
(kWh/km)

DAILY MILEAGE
(km)

DAILY ENERGY CONSUMPTION
(kWh)

CHARGING SPEED
(kWh/menit)

AVERAGE CHARGING DURATION

Bus Besar
LARGE-SIZE BUSES

1.07

km/kWh
0.95

190

Total KM Operasi
19,173

200

Total Konsumsi Energi
20,250

1.46

opportunity
66

overnight
127

Bus Sedang
MID-SIZE BUSES

0.51

km/kWh
2.07

202

Total KM Operasi
17,340

98

Total Konsumsi Energi
8,461

1.20

opportunity
45

overnight
44

Bus Kecil
SMALL-SIZE BUSES

0.23

km/kWh
4.31

184

Total KM Operasi
16,037

43

Total Konsumsi Energi
3,731

0.42

opportunity
56

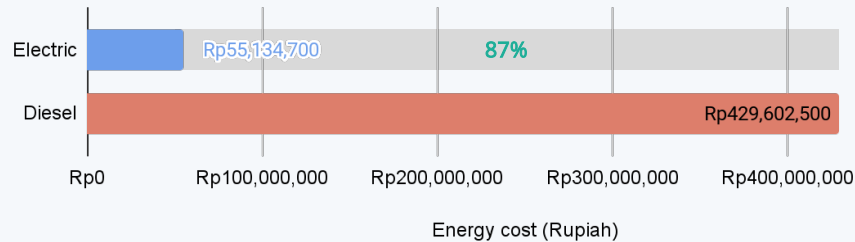
overnight
53

Total KM Operasi
52,550

Total Konsumsi Energi
32,441

Diesel vs. Electric Energy Costs - Surabaya City Electricity Trial

Energy cost



During the trial period (3 months), operating electric buses (compared to the same number of diesel buses) reduced electric bus emissions by **33%**, and reduced energy costs by **87%**.

* Electricity Cost (IDR/kWh): Rp1,699
Dexlite Gas Cost (IDR/L): Rp16,350

Comparison of the Use of Fossil Fuels and Electricity

1	Suroboyo Bus	Dexlite	200	1 : 2	14.550	100	liter	1.455.000			
2		Bio Solar	200	1 : 2	6.800	100	liter	680.000			
3	Electric Buses	Big	Electric	200	1 : 1.07	1.699	214	kWh	363.586	25%	53%
4		Middle	Electric	200	1 : 0.51	1.699	102	kWh	173.298	12%	25%
5		Small	Electric	200	1 : 0.23	1.699	46	kWh	78.154	5%	11%

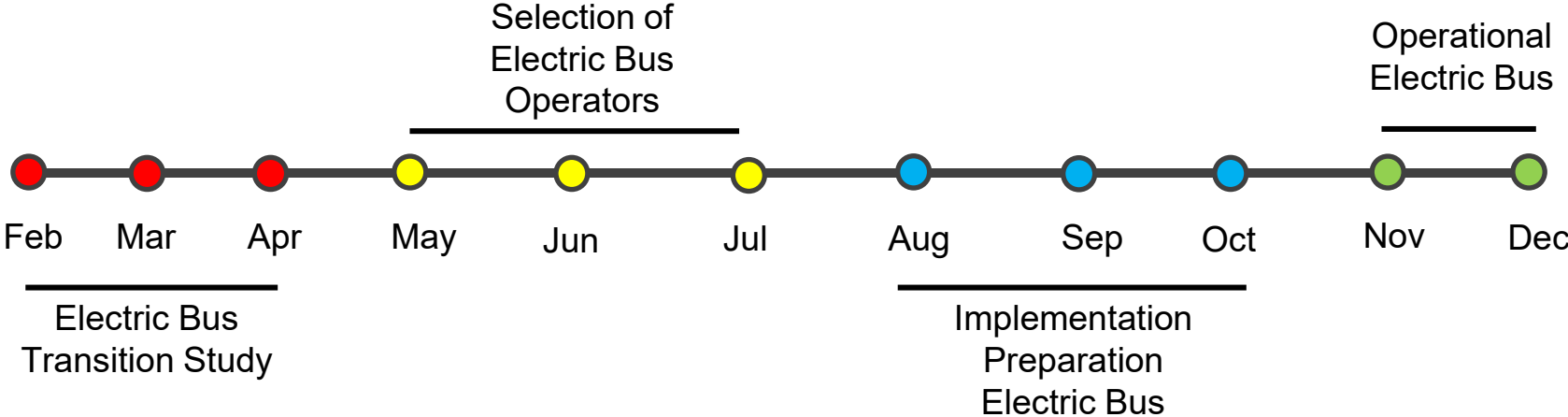
Comparison of the energy use of electric buses with large diesel buses

- 1, The fuel budget requirement for electric buses is 25% of the fuel budget for dexlite-fueled diesel vehicles
- 2, The fuel budget requirement for electric buses is 53% of the fuel budget for diesel vehicles fueled by biodiesel

Government Policy towards the Development of Electric Vehicles in the City of Surabaya

1. Based on Presidential Instruction Number 7 of 2022, regarding the acceleration of the implementation of the program for using Battery Electric Motorized Vehicles (Battery Electric Vehicles) as Operational Service Vehicles and/or Individual Service Vehicles for Central Government and Regional Government Agencies;
2. In accordance with the Circular Letter of the Regional Secretary of the Surabaya City Government Number: 000.2.4/24167/436.8.2/2023 dated 17 October 2023 regarding the Proposal for the Sale of 2 (two) Wheeled Vehicles and Following up on the Mayor's disposition regarding letter Number: 000.1.4/21313/436.8 .2/2023 Dated 01 October 2013 Regarding Report on Plans to Replace 2 (two) Wheeled Vehicles by using battery-based electric motorized vehicles and plans to sell 2 (two) wheeled service vehicles that use petrol fuel.

Transition to Implementation of Electric Buses in the City of Surabaya in 2024



Thank
you!