METRO's Zero-Emissions Fleet

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Fleet

King County METRO

Agenda

- Background
- Where we are today
- Roadmap to the future
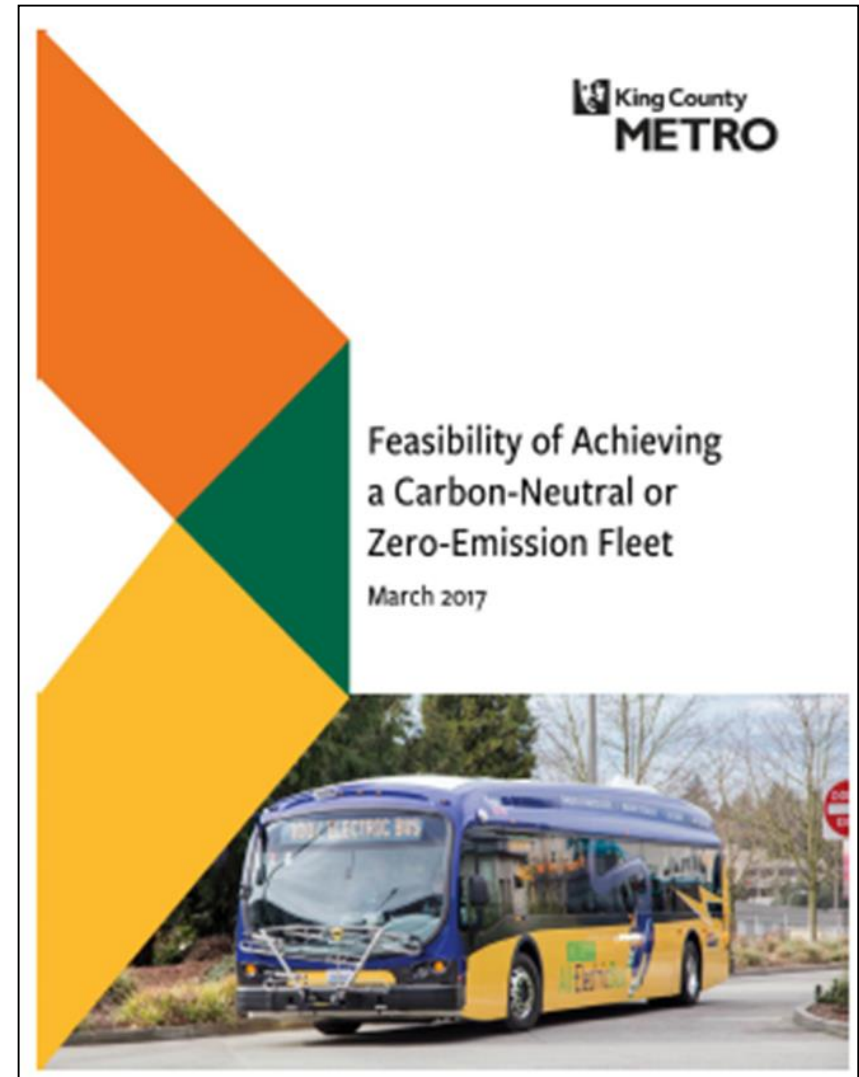
Recommendation:
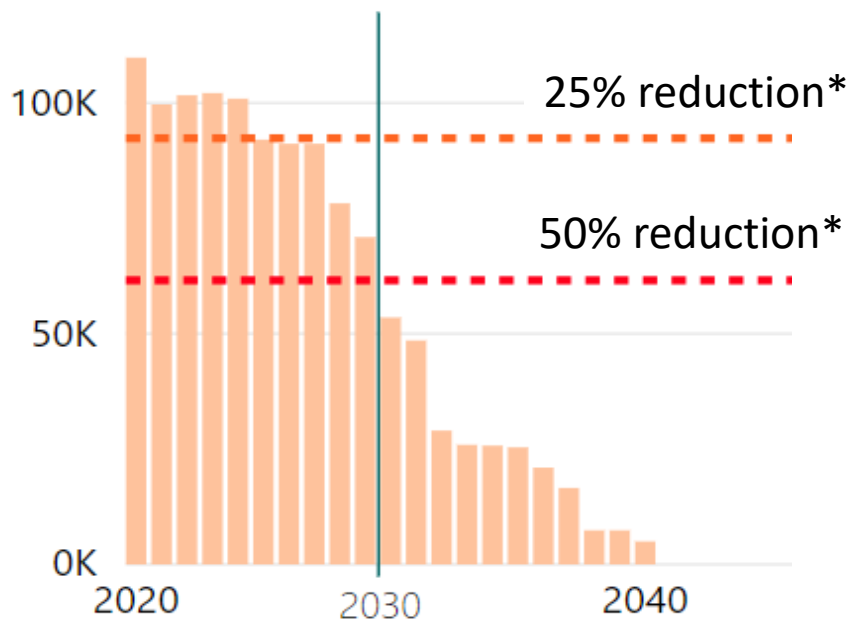Transition to a zero-emission fleet by 2040

- **Evaluation criteria**
  - Environment
  - Social equity
  - Service and fleet needs
  - Cost
  - Supporting systems

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Feasibility of Achieving a Carbon-Neutral or Zero-Emission Fleet
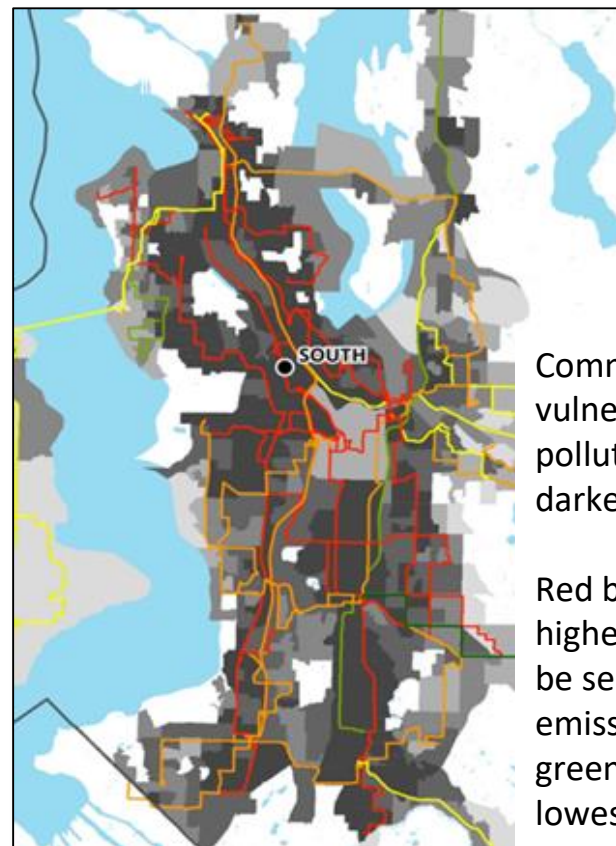
March 2017

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Advancing Climate and Equity goals

- Eliminate greenhouse gas emissions from fleet operations
- Eliminate tailpipe air pollution emissions
- Reduce noise to levels equivalent to a passenger car
- Prioritize initial deployment in low income and minority communities most vulnerable to air pollution

Greenhouse gas emissions

25% reduction*

50% reduction*

100K
50K
0K
2020   2030   2040

Communities most vulnerable to air pollution are darker shade.

Red bus routes are highest priority to be served by zero-emission buses, green routes the lowest.

*compared to 2007

- **Study:** Test, learn from others, observe

- *Deploy:* test, evaluate and plan to scale-up

  - Buses
  - Charging infrastructure
  - Base capacity

~1620 Buses Total

- **185 Zero-Emissions Buses** (12% of our fleet)

o 174 Electric Trolley Buses

o 11 Fast Charge 40' Battery Electric Buses

o 6 Extended-Range Battery Electric Buses (Test-2019)

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- 11 40' fast charge buses

- Charge in 10 minutes

- Range of 25 miles

- Serving 2 routes – 226 and 241
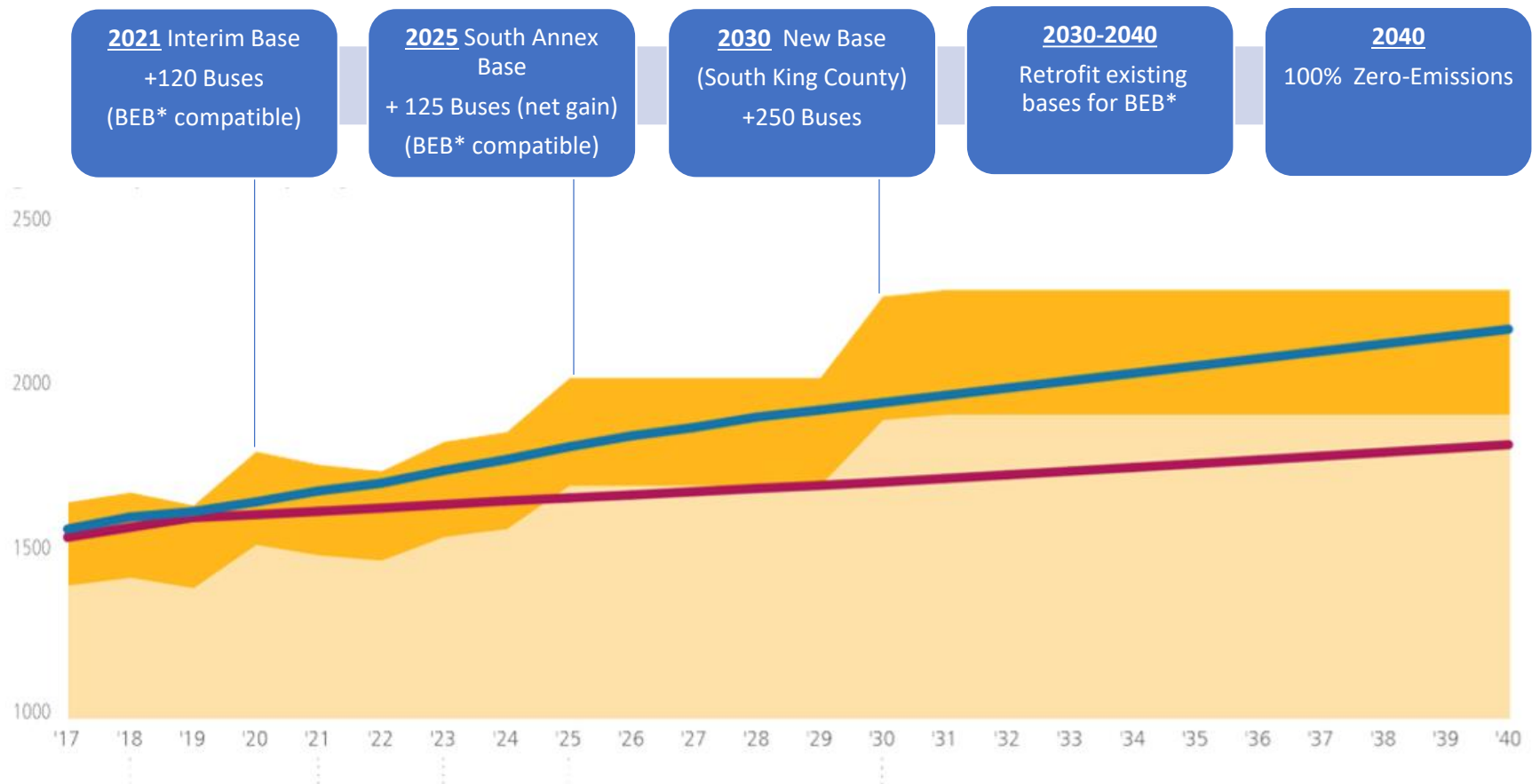
Evaluation

- 140 mile range

- Charge in 4 hours or less

- Performance on hills

- Heating and cooling impact on range

- 40' and 60' buses

- Passenger load impact on range

Adding base capacity

2021 Interim Base
+120 Buses
(BEB* compatible)

2025 South Annex Base
+ 125 Buses (net gain)
(BEB* compatible)

2030 New Base
(South King County)
+250 Buses

2030-2040
Retrofit existing bases for BEB*

2040
100% Zero-Emissions

Legend:
- Fleet growth as currently planned
- Fleet growth as proposed in METRO CONNECTS Plan
- State of Good Repair (SGR) affects capacity
- Available space for coaches, with bases filled to efficient operations
- Available space for coaches, with bases filled to constrained operations

NOTE: Capacity reflects SGR and electrification efforts at all bases

BEB = Battery electric bus

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Partners and Stakeholders

- Utility Partners
- Bus and Charger Manufacturers
- Transit Partners
- Industry & Technical Partners
- King County Departments
- Customers
- Transit operators

Key Considerations

Bus	• Passenger capacity • Range • Cost and availability
Battery	• Fast charge v slow charge • Size • Technology – life cycle, performance, cost, safety
Charging Infrastructure	• Fast charge v slow charge • Base or in-route; plug-in v overhead • Standardization • Smart Charging
Electricity - Utility	• Supply and source (renewable) • Infrastructure and readiness • Rate structure
Operations	• Route Design, Scheduling • Workforce training • Community Engagement • Fleet planning

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Thank you!

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