Fleet Strategy

Board Briefing

December 13, 2017

Doug Kelsey

Chief Operating Officer

HB2017 – From Bill to Implementation

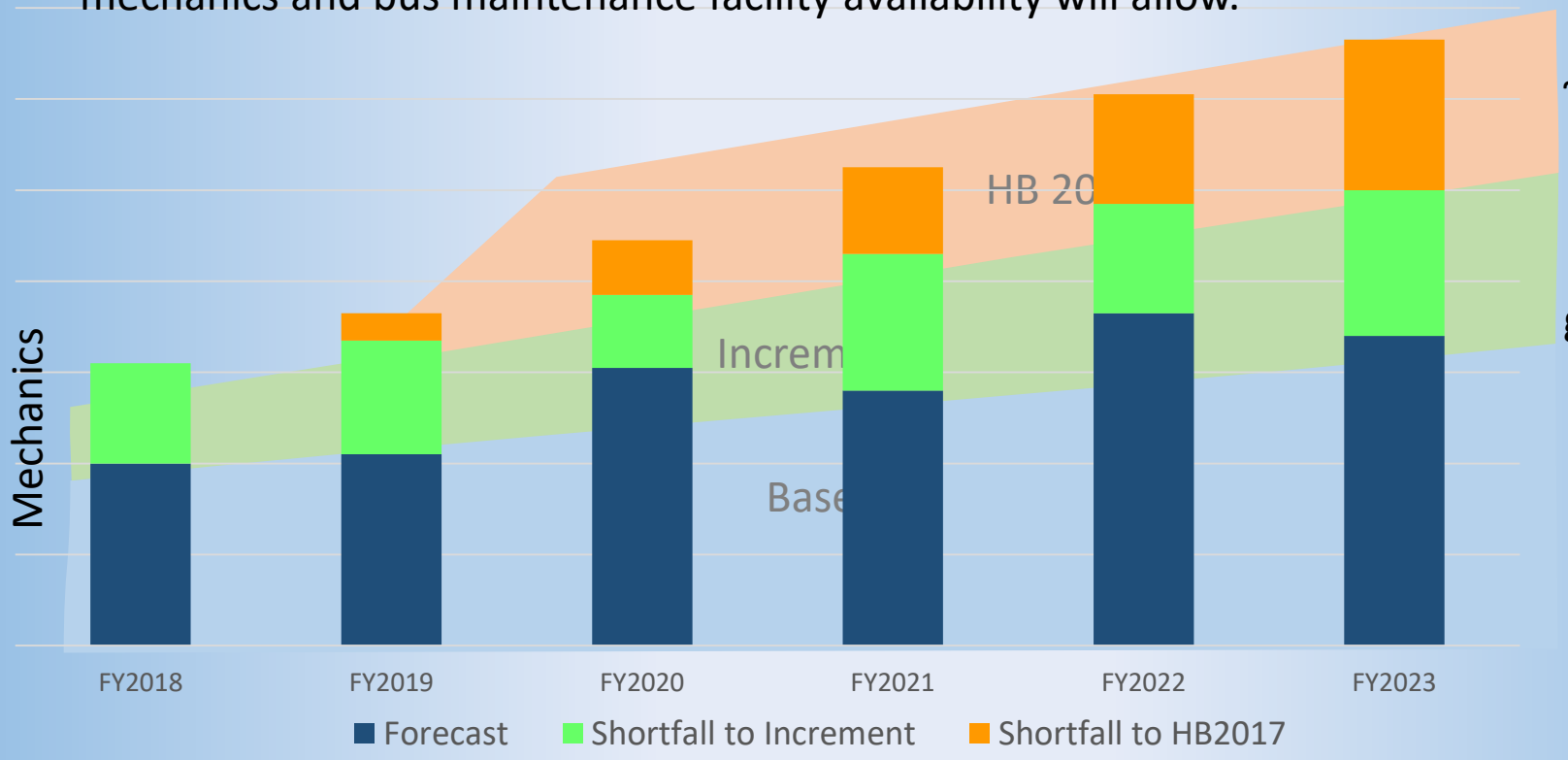
Key Fleet Considerations

- Appropriate mix of…
  - service and capital
  - service types
  - diesel and electric
  - traditional and articulated
- 4th operations center
- Enhanced Transit Concept (ETC) partnership investments

…Great opportunity with complex delivery

HB2017 “Ramp Up”

Five year ramp up of new service – fastest that supply of mechanics and bus maintenance facility availability will allow.



Additional ~$30M/ year for service

≥2.1% growth/year

…mechanics requirement of 50+ by FY2023

Key Service Impacts

FY2019 - FY2023 only:

- 11,500 additional weekly vehicle hours = +26%
- 135 additional buses = +21%
- 360 additional Bus Operators = +31%
- 52 additional Bus Mechanics = +37%

Scenario may vary with options for articulated and/or electric buses

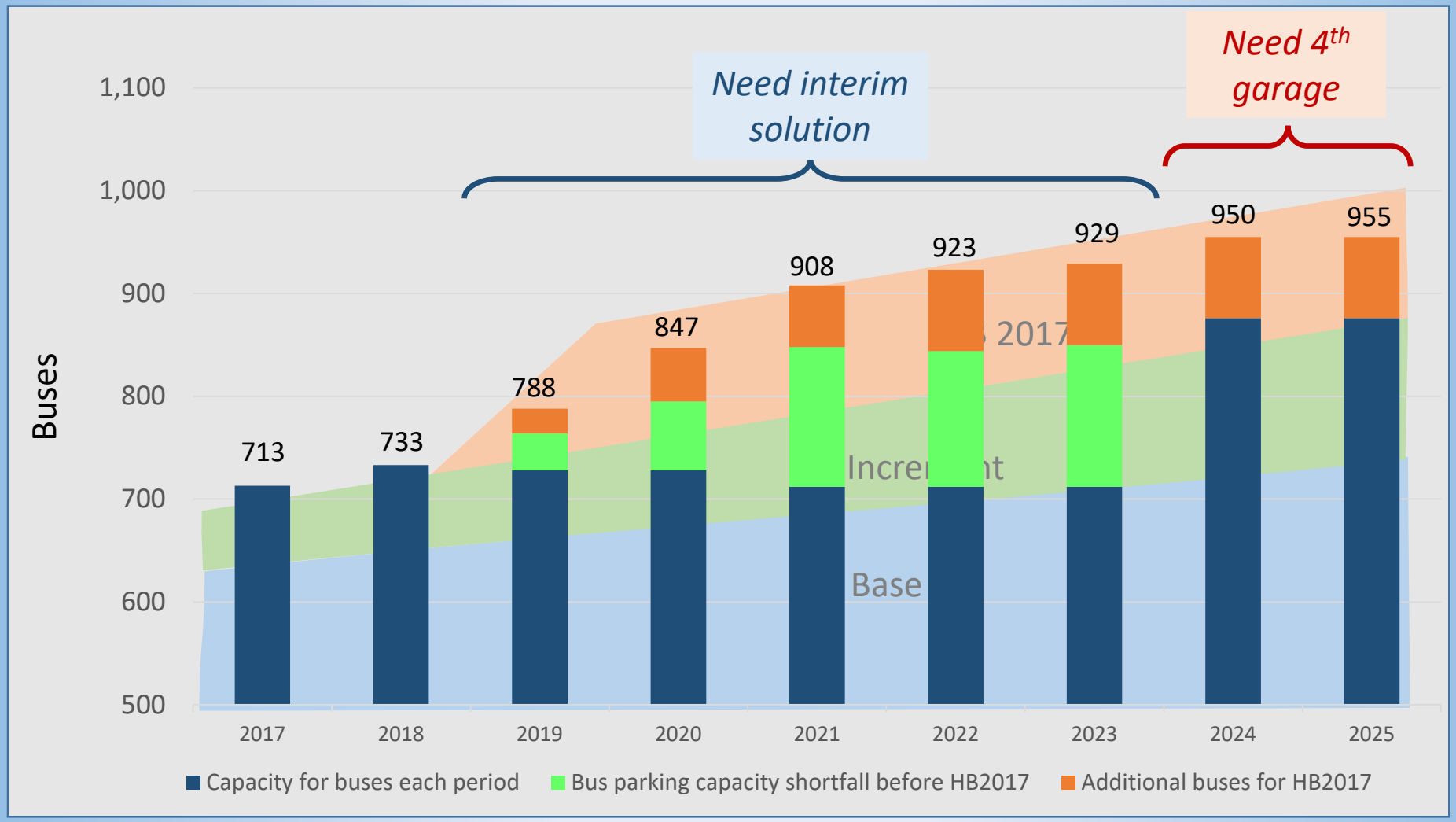
Current Bus Facility Capacity & Growth

	Current Maximum Yard Capacity	Yard Capacity During Powell Construction	Yard Capacity After Powell Construction Complete in 2024
Center St	290	290	290
Powell	240	180	328 (includes 60' articulated buses)
Merlo	270	270	270
Totals	**800**	**710**	**858**

… Powell expansion helps

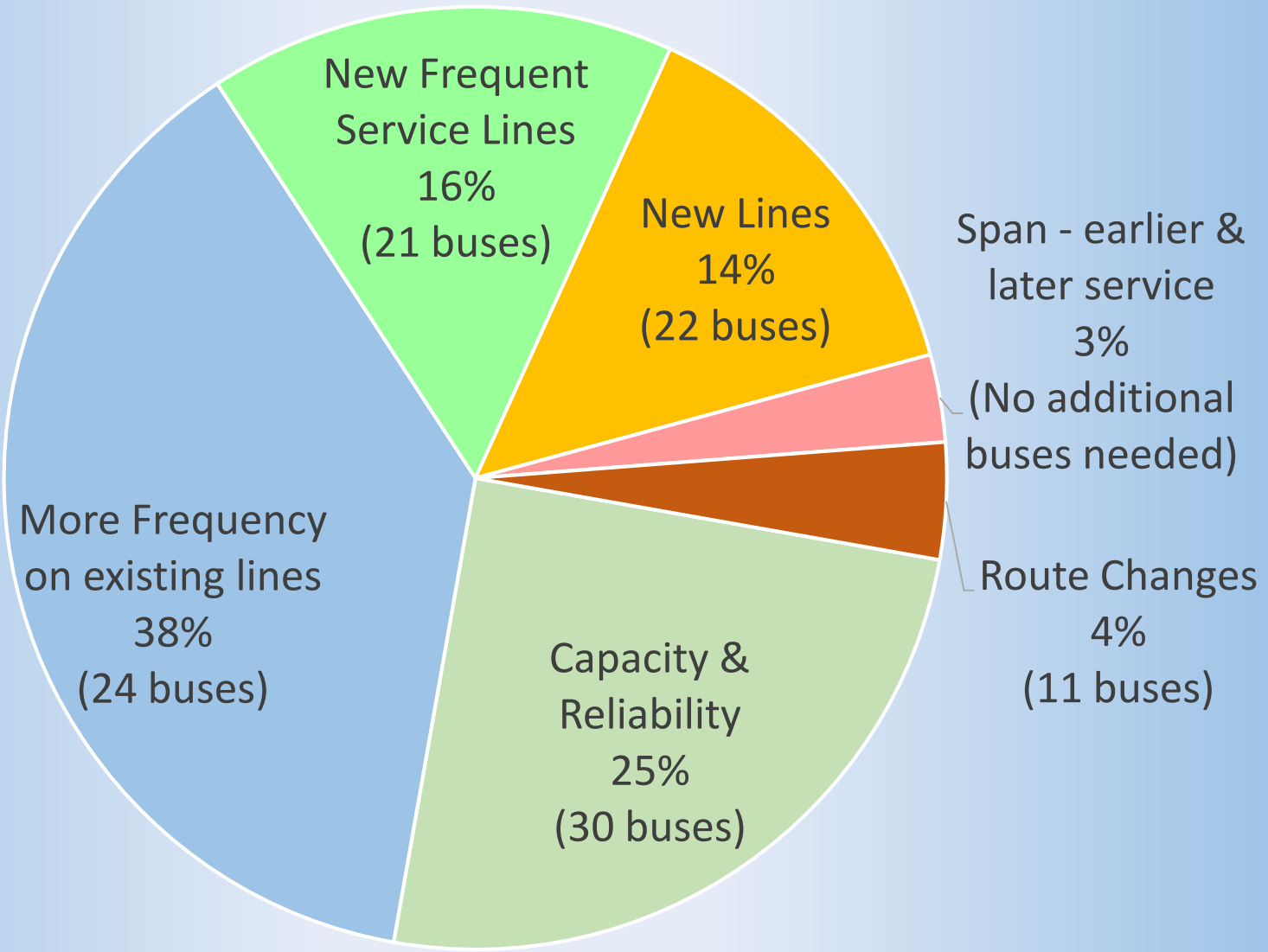
… Temporary and long-term facility space strategy underway

Buses and Facility Capacity
Base, Increment and HB 2017



Scenario projections for all-40' bus fleet

“Ramp up” Service Concept



Electric Buses

- TriMet electrification review in final stages
  - Range of economic scenarios
  - Range of fleet/operating scenarios
- Initial takeaways include:
  - Slow Charge cheaper for capital and net costs
    - Facility space implications will add cost
  - Costs vary significantly across key scenarios
  - Battery improvements expected to extend operating range and add flexibility

Bus Electrification

- Early Candidate lines:
  - Focusing on shorter, less frequent lines or express services that could be fully electrified with available technology (examples include Lines 16,62,73,87,99)
- Next Steps:
  - Review results in detail
  - Refine cost assumptions and operating scenarios
  - Develop preferred approach and integrate with overall Fleet Strategy (Q1/2 2018)

Articulated Buses – Why?

- Overloaded trips need more capacity to carry more passengers
- Avoiding customer pass-ups
- Provide more capacity with less risk of bus bunching
- Cost-effective per passenger with high-ridership trips
- Drive more ridership
- Improved customer experience

… planning to add articulated buses to fleet within 3-4 years

… procurement strategy to be developed

Candidate Lines

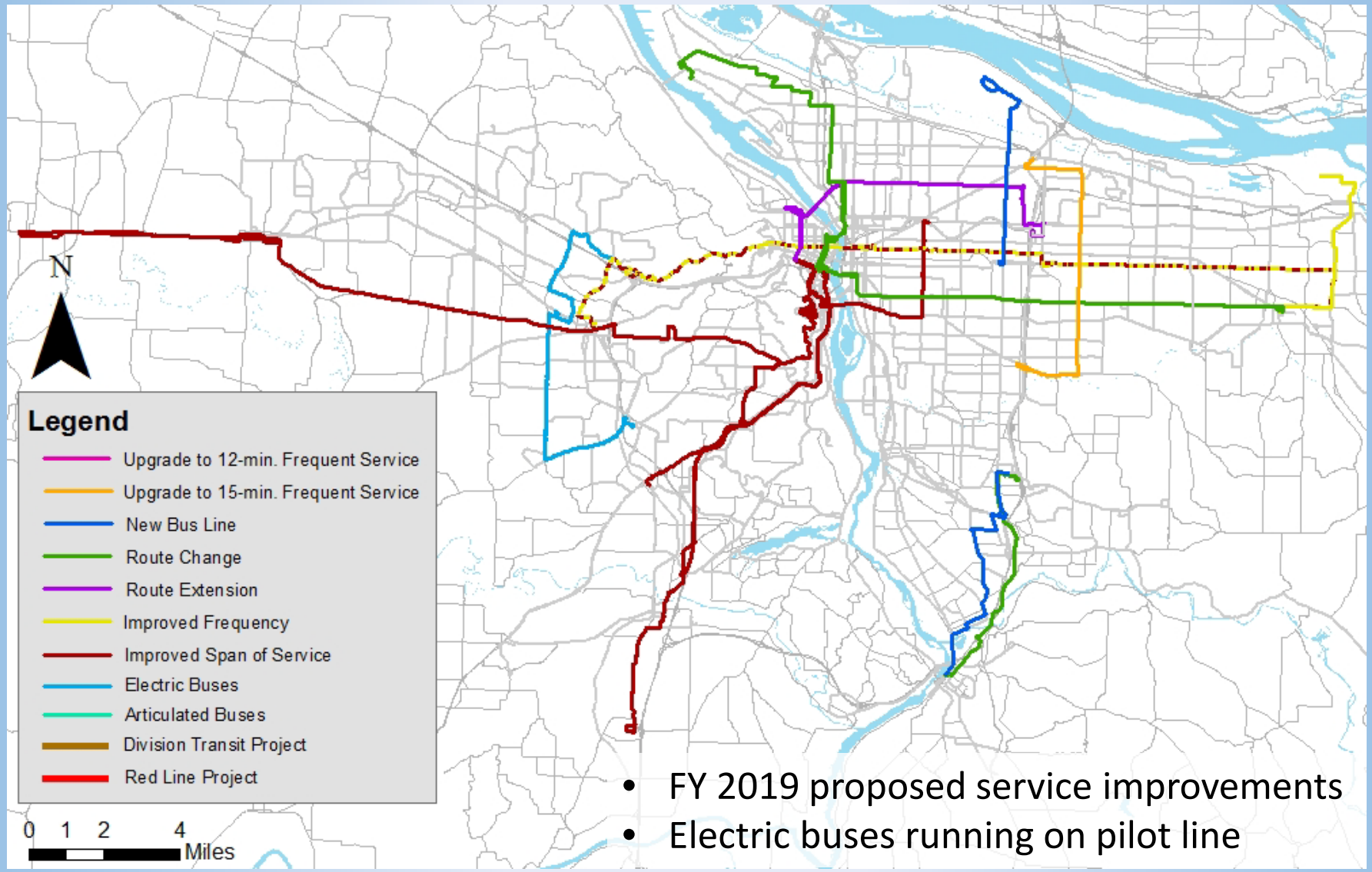
- Timing:
  - At least 2 years
  - Individual lines need work at bus stops for access, which will impact timing and implementation
- Top candidate lines:
  - 72 – Killingsworth/82nd Ave
  - 12 – Sandy/Barbur Blvd
  - 15 – Belmont/NW 23rd
  - 9 – Powell Blvd
  - 14 – Hawthorne (and Foster)
  - 94 – Pacific Hwy/Sherwood

- Fleet impact:
  - Up to 128 articulated buses between FY2022-FY2025
  - Facility implications (bay redesign, overall capacity)

Electric Articulated Buses?

- Electric buses
  - Battery-powered available from at least one manufacturer now and more are considering
  - Overhead-wire electric buses run in Seattle and San Francisco, but high capital cost
- Hydrogen has long-term potential, but still too early

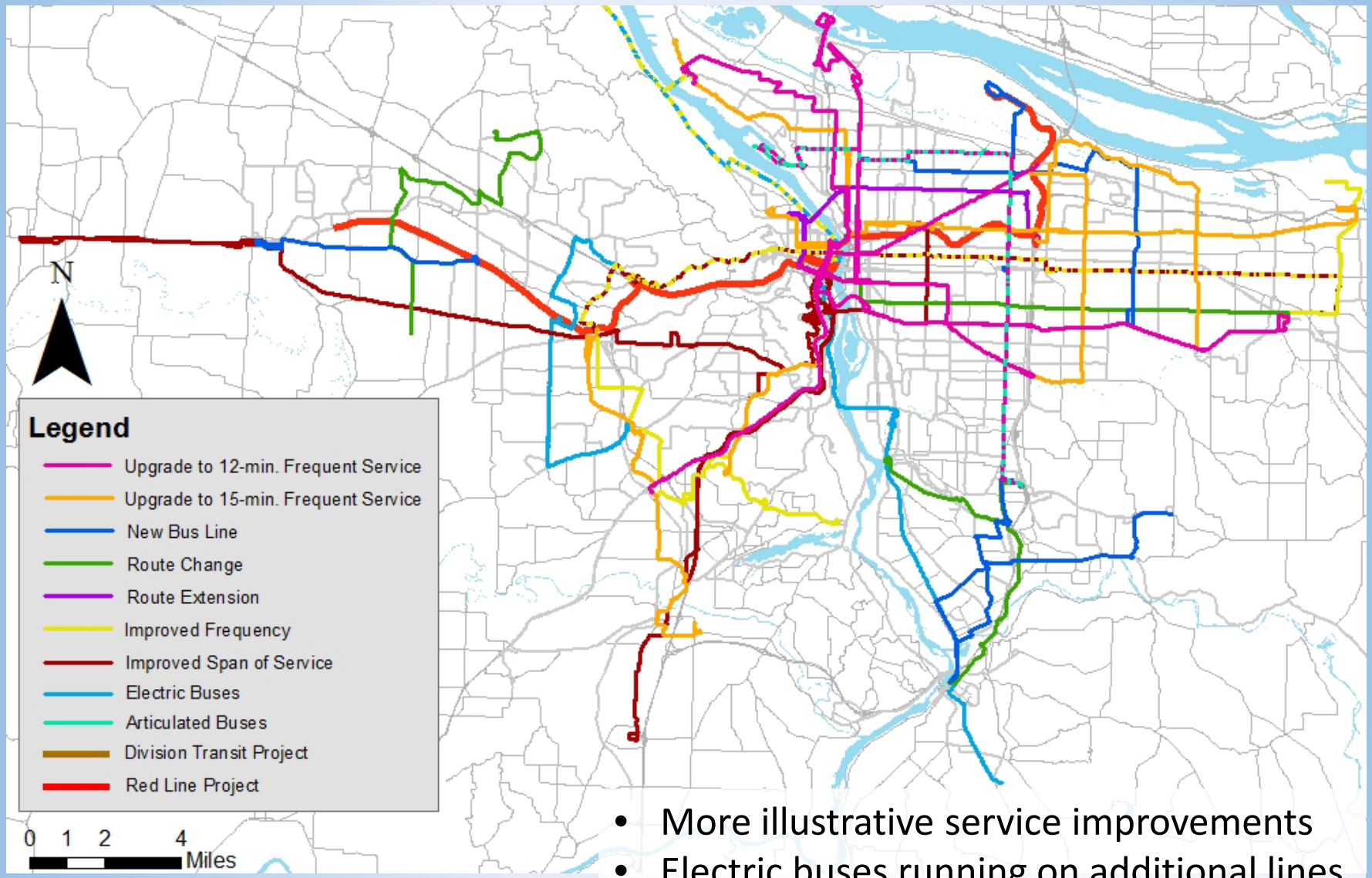
Potential Enhancements: Year 1



- FY 2019 proposed service improvements
- Electric buses running on pilot line

TRIMET

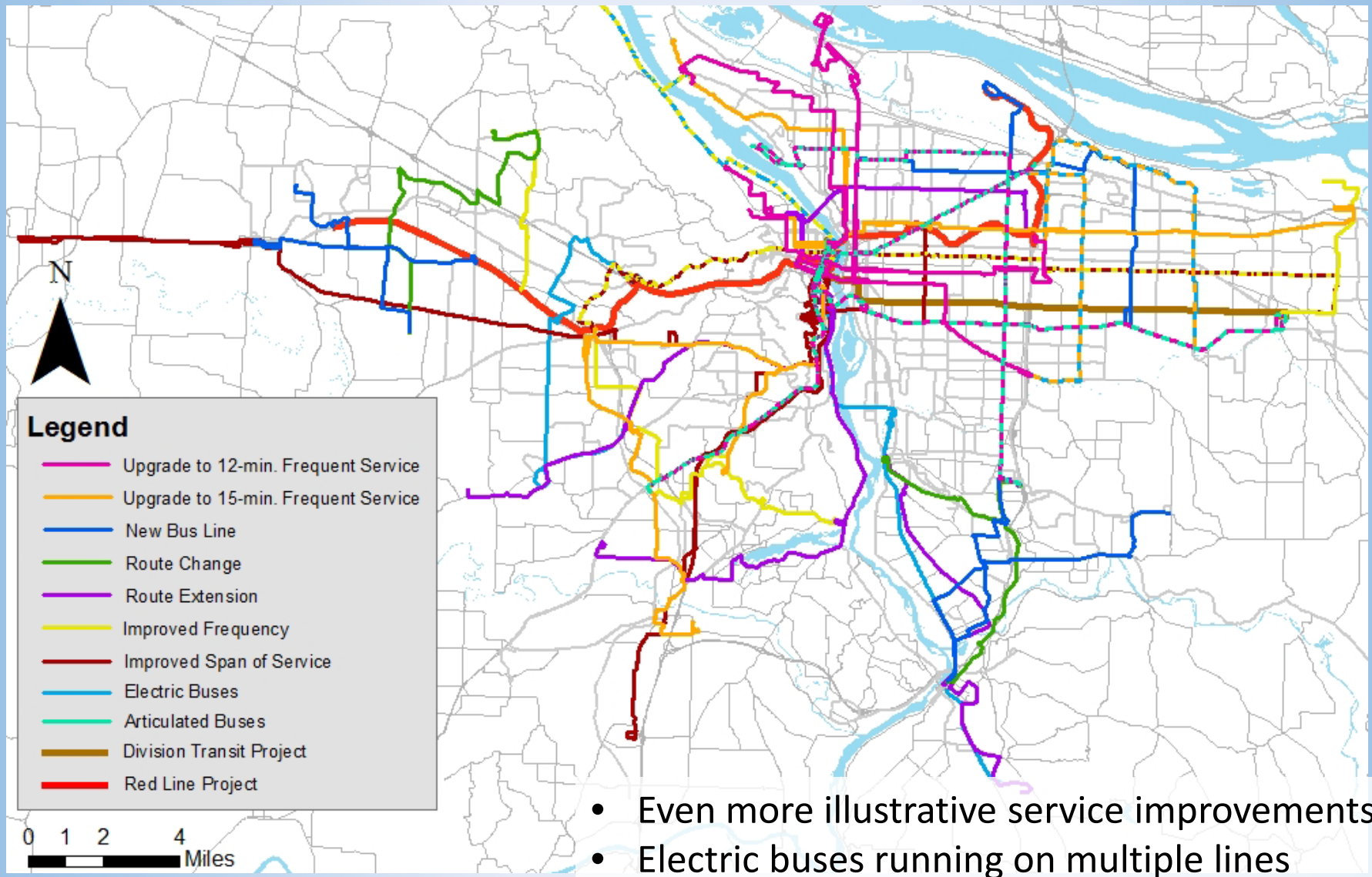
Potential Enhancements: Year 3



- More illustrative service improvements
- Electric buses running on additional lines
- Division Transit Project
- Articulated buses on one other line

TRIMET

Potential Enhancements: Year 5



- Even more illustrative service improvements
- Electric buses running on multiple lines
- Division Transit Project
- Articulated buses on more lines

TRIMET

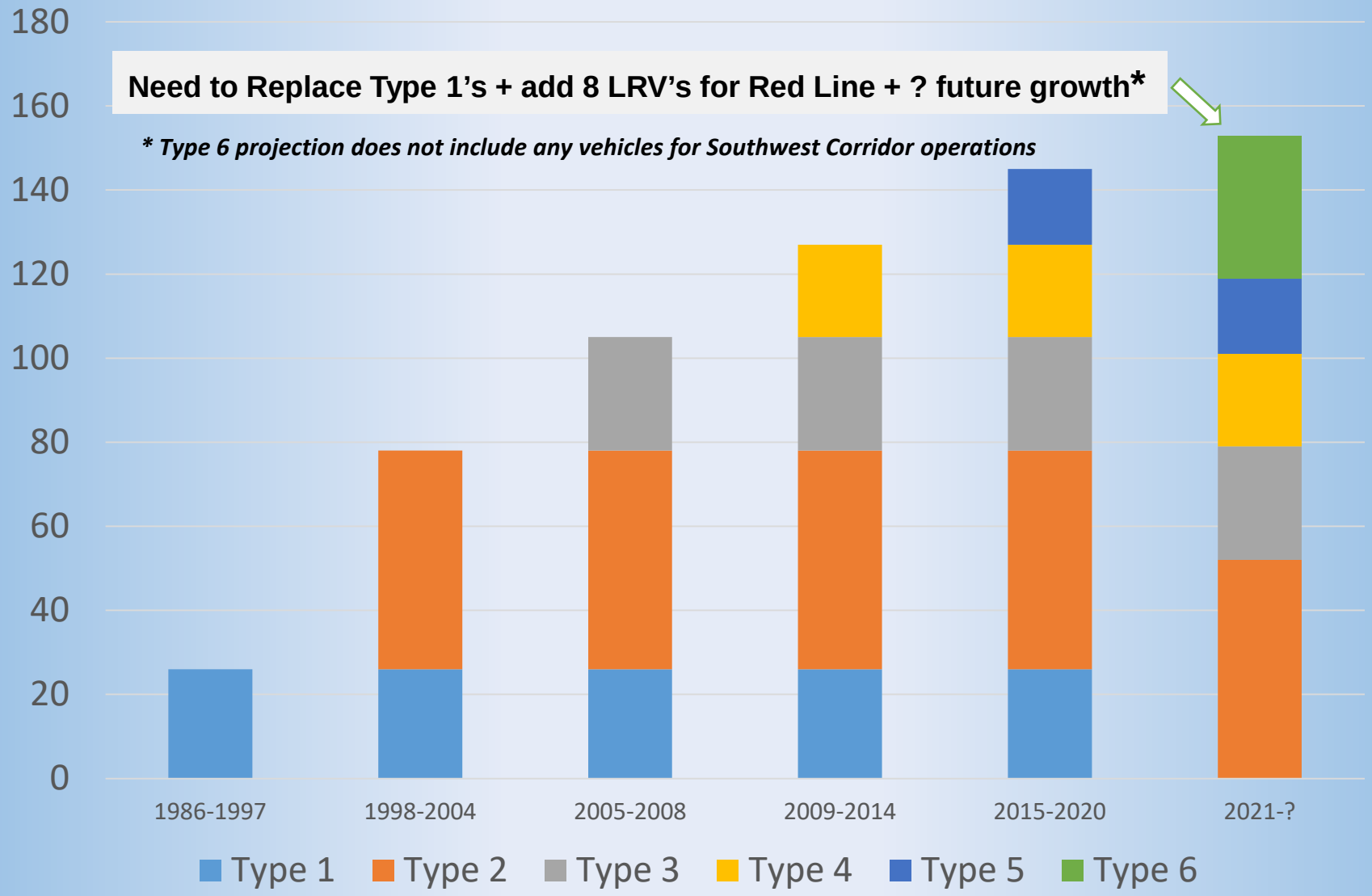
LIFT Fleet Strategy

- 268 LIFT cut-aways, with 5 more added this year
- Opportunities to tailor fleet to need?
- Facility implications
  - “Deadhead” increases as population moves
- Current review of future demands

Beyond HB2017

Light Rail and Commuter Rail Fleet Strategies

Number of Light Rail Vehicles Over Time

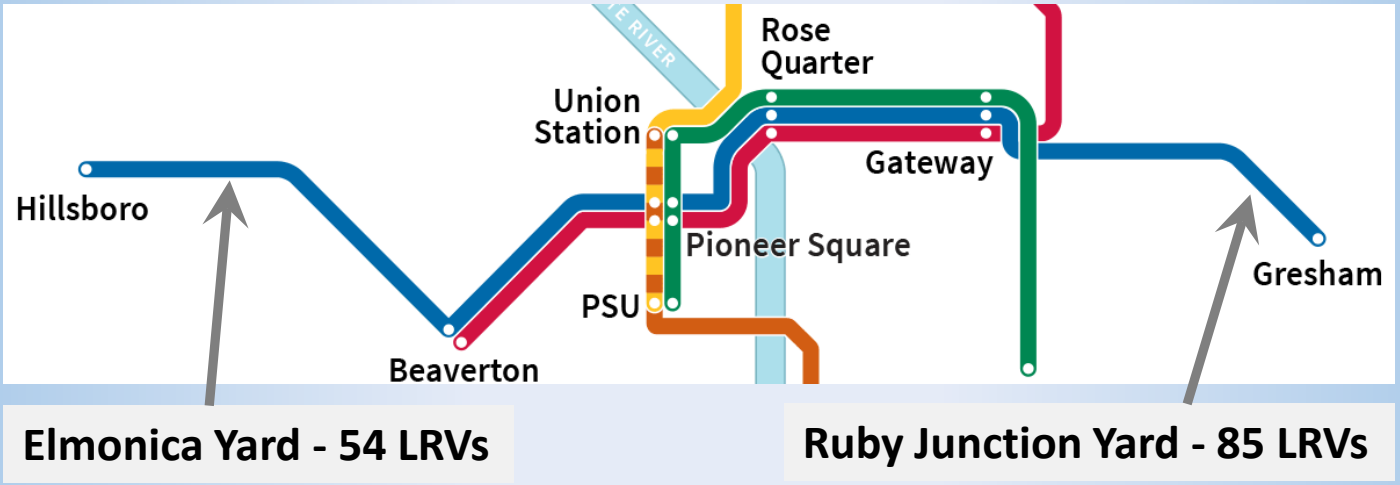


Type I Light Rail Vehicles

- Parts no longer available
- 26 high-floor cars with no ADA access, so have to be connected to another car to make an accessible train

…Time for replacement!

LRV Storage and Maintenance



- Ruby Junction has no storage track, but has space to make room for vehicles needed for another project after Red Line
- Elmonica has no space for expansion

WES Commuter Rail

- Current fleet:
  - 4 DMU's which began service in 2009
  - 2 retrofitted historic RDC's (originally built in 1953)
- Retrofitting 2 more RDC cars for spares
- No expansion anticipated

Diesel Multiple Unit (DMU)

Refurbished cars for spares

Future Needs and Next Steps

- **Bus garage** – Near-term need, plus long-term addition
- **LIFT** – Fleet mix and location needs deeper review
- **Light rail yard** – Growth in demand, plus new projects
- **WES** – Continue to maintain current fleet

Key Takeaway:

HB2017 requires significant organizational (and partner) attention in the near term

Thank You