

# Worcester Regional Transit Authority



## Key Performance Indicators Electric Bus Deployment Project

July 16, 2015



# Since our last meeting...

---

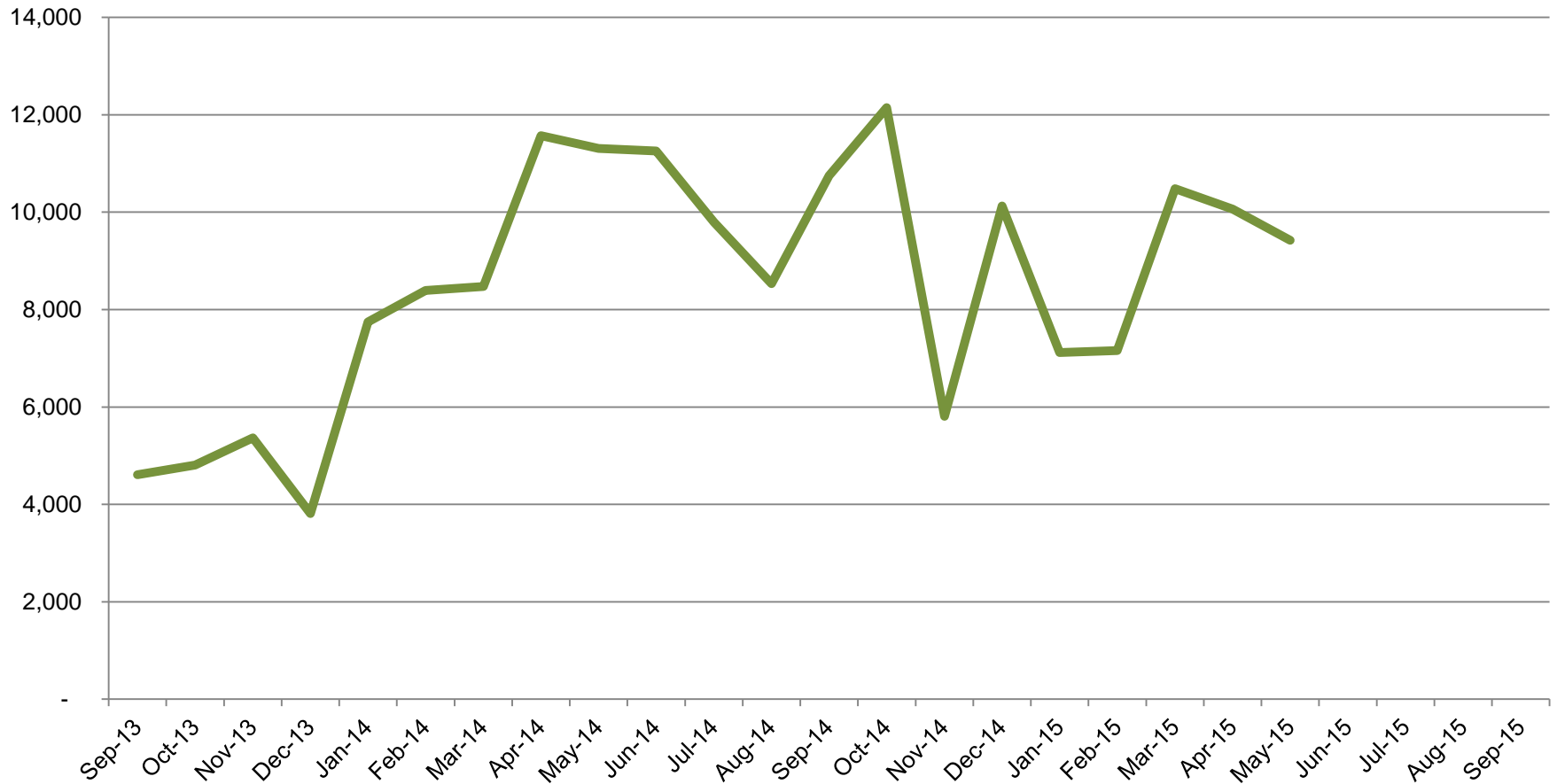
- Battery Electric Buses have been sent back to Proterra for Quality Assurance Remediation and System Upgrades

WRTA BEB	Start Date	End Date
E333	01/09/15	03/09/15
E334	03/16/15	04/27/15
E335	03/09/15	05/08/15
E336	04/28/15	07/17/15
E337	05/08/15	07/31/15
E338	07/17/15	08/04/15

- As a result, some KPIs are impacted due to a reduction of total electric mileage
  - i.e., demand charges spread over fewer miles, increasing cost/mile

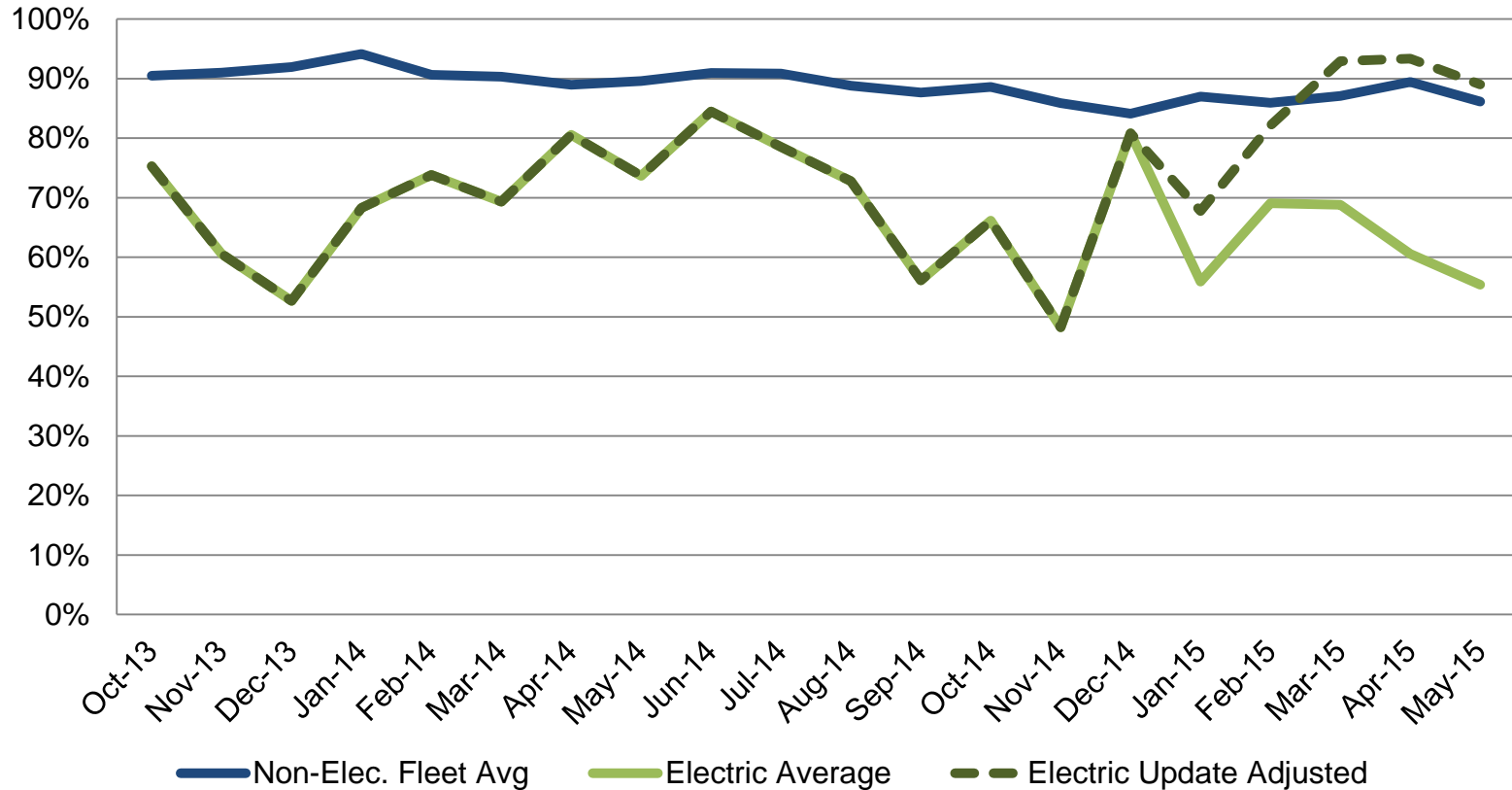
# KPI: Mileage

## Total Electric Miles by Month



# KPI: Availability

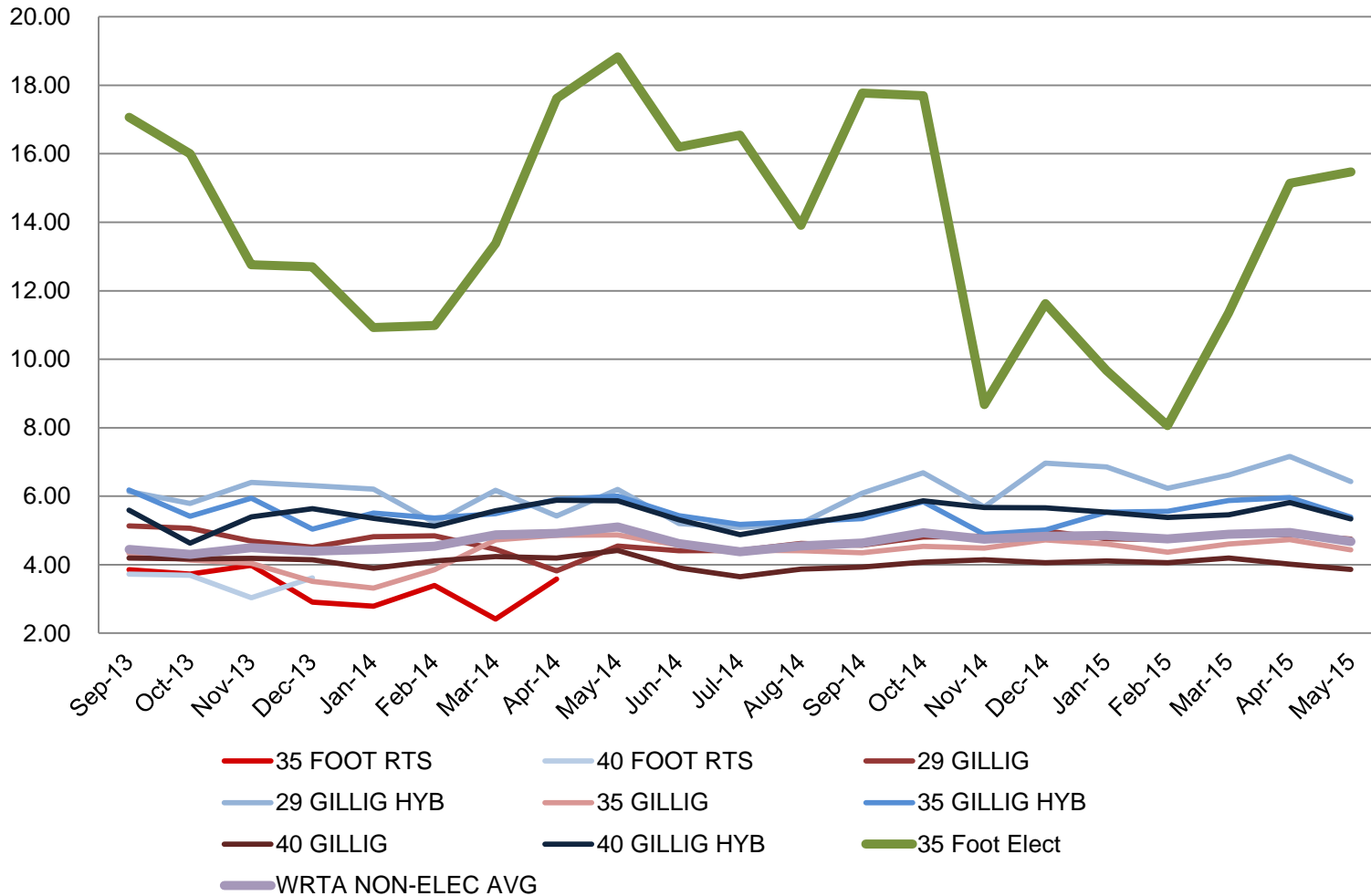
## % Available by Month



*Adjustment removes buses undergoing remediation from calculation*

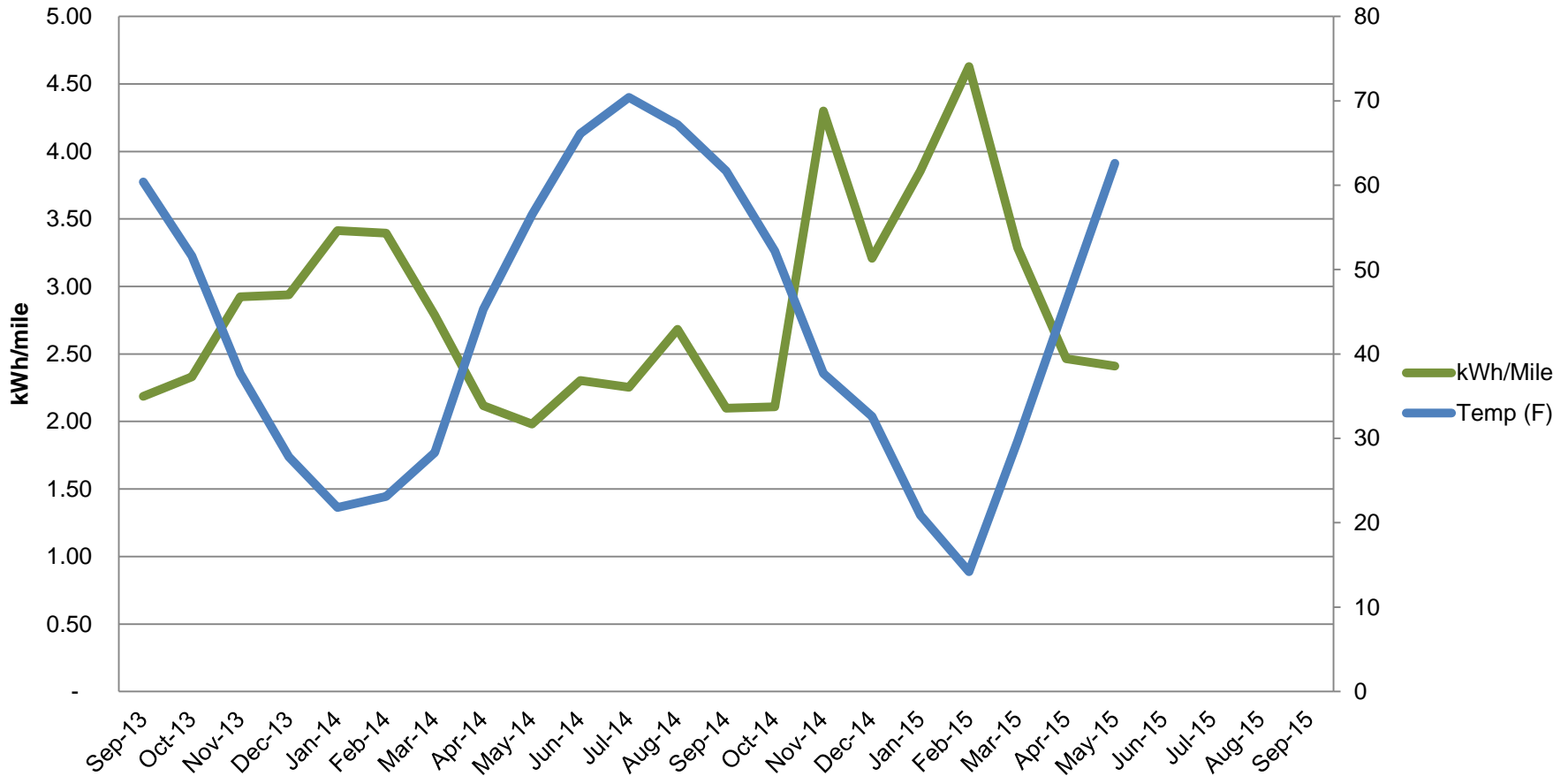
# KPI: Diesel Gallon Equivalent

## Monthly Miles/DG(E)



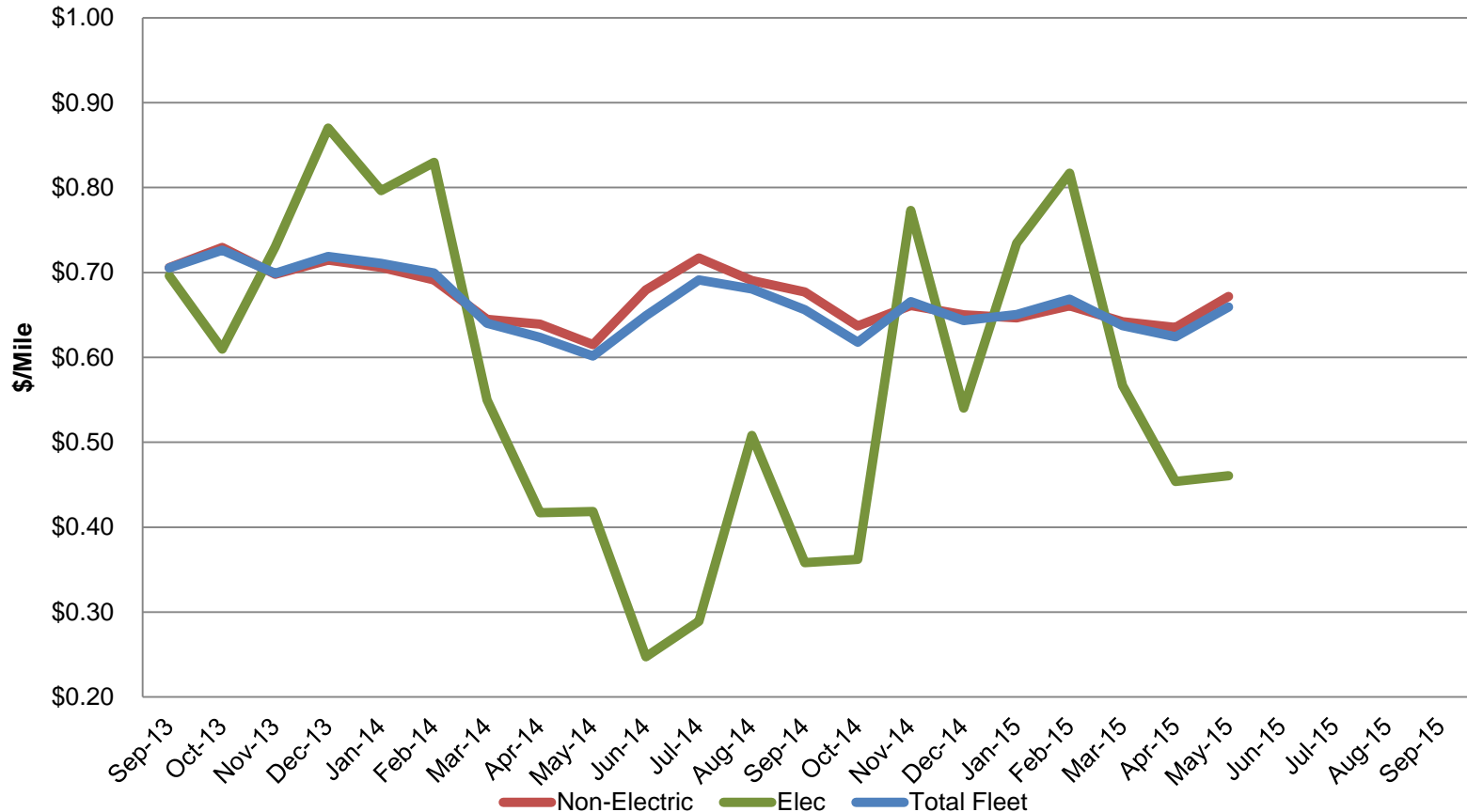
# KPI: Average Fuel Efficiency

## Electric Fleet kWh/Mile vs. Avg. Temp



# KPI: Fleet Average Fuel Cost per Mile

## Monthly Average Cost/Mile



*Contracted Diesel Fuel Cost: \$3.14/gal through April 2015*

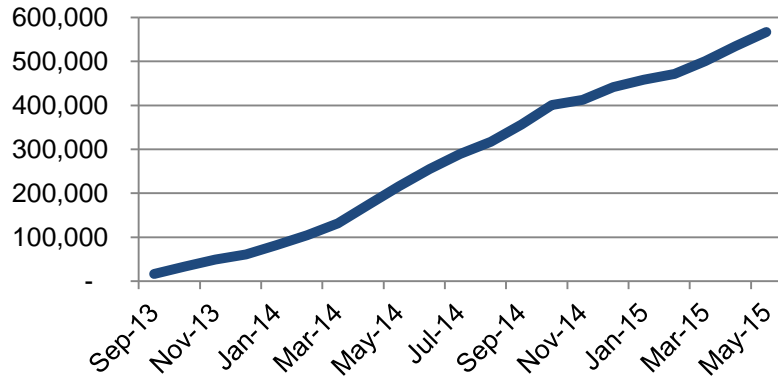
*Current Contracted Diesel Fuel Cost: \$2.7783*

*Average Electricity Costs: \$0.19/kWh*



# KPI: Emission Reduction

**Cumulative Net CO2  
Emissions Reduced (lbs.)**



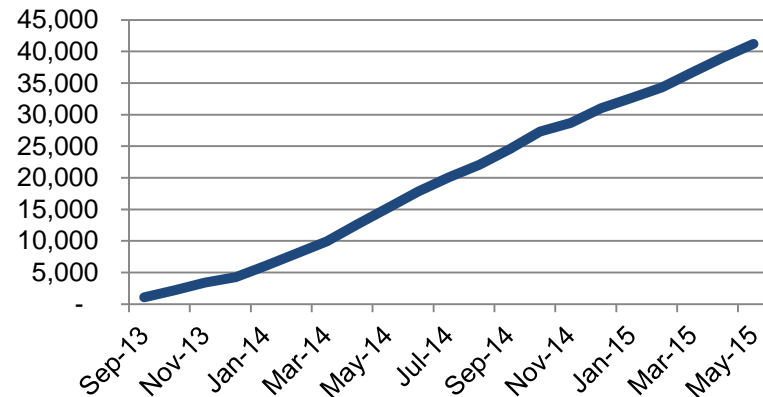
**Total CO<sub>2</sub>  
Reduction to  
Date:**

**283 Tons!**

**Total Diesel  
Reduction to Date:**

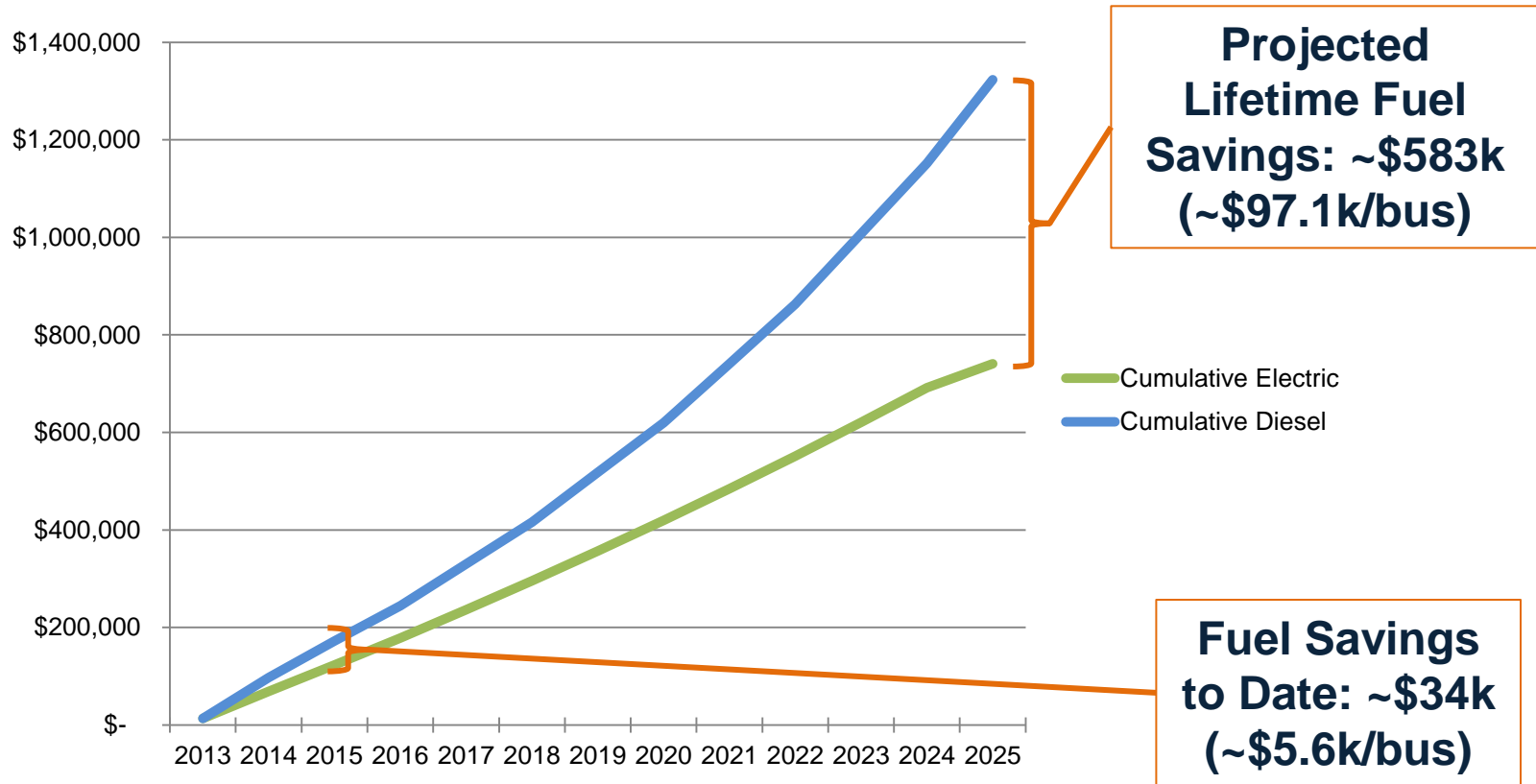
**41,000  
gallons!**

**Cumulative Diesel Gallons  
Reduced**





# Projected Lifetime Fuel Savings



- Projected costs based on fuel cost inflation estimates from U.S. Energy Information Office.
- Excludes benefit of maintenance savings, emissions reductions

# Conclusions

---

- Additional months of data required to assess impact of remediation and system upgrades and improvements to availability
- Greater utilization and the G-3 utility rate switch has lowered the electric cost per mile
- Cost per mile is seasonal
  - Expect higher cost/mile in the winter months
- Lifetime benefit depends on utilization of the BEB's and contracted cost of diesel

# Worcester Regional Transit Authority



*Questions?*

