CITY OF MIAMI BEACH

FLEET ASSESSMENT

MIAMIBEACH
RISING
ABOVE

CITY FLEET

Compact cars are the most feasible to transition.

OBJECTIVES

- Improve efficiency of the City's fleet by identifying opportunities to **use our current fleet more efficiently** and creating **alternative options** for staff to make environmentally conscious decisions.

- **Reduce greenhouse gas emissions** to mitigate the effects of climate change.

METHODOLOGY

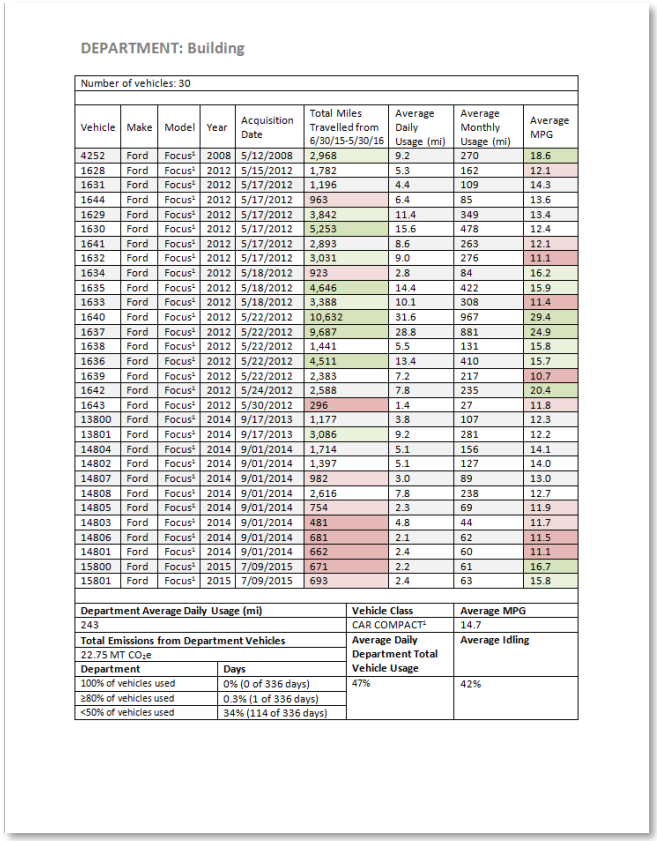
- ↓ Download Automatic Vehicle Location (AVL) data for each vehicle
- ↓ Group individual vehicle data into respective departments
- ↓ Compile and analyze AVL data for each department
- ↓ Analyze Fleet Management data of all active vehicles
- ↓ Research and analyze vehicle specifications
- ↓ Research alternative options and possible pilot programs
- ↓ Meet with each department to discuss data and opportunities

DATA ANALYSIS

- AVL data gathered included:
  - Daily miles travelled
  - Daily engine time on
  - Daily engine idle time
- Data gathered from Fleet Management:
  - Vehicle acquisition date
  - Vehicle make, model, year
  - Lifetime miles travelled
  - Lifetime fuel gallons
- Information gathered from each department:
  - Function for each type of vehicle
  - Vehicle needs and operations for normal operations and special events
- Additional data gathered:
  - g CH_4/mi for each specific vehicle
  - g N_2O/mi for each specific vehicle
  - g CO_2/mi for each specific vehicle
- Calculations and analysis:
  - Vehicle total miles travelled
  - Average daily miles travelled
  - Average monthly miles travelled
  - Vehicle lifetime fuel efficiency
  - Vehicle and department GHG emissions during analysis period
  - Average fuel efficiency for vehicle class in city fleet
  - Average daily department total vehicle usage
  - Average weekly department total vehicle usage
  - Vehicle and dept. average idling
  - GHG emissions equivalences

DATA OVERVIEW

- A short overview of the data analyzed was presented to each department in our interviews:
  - Range of miles travelled
  - Range of vehicle fuel efficiency
  - GHG emissions
  - Average idling
  - Average vehicle usage
- A graph of weekly average fleet usage in each department was also presented.
- All departments with Ford Focus vehicles in their fleet are included in this report.



DEPARTMENT: Building

Number of vehicles: 30

Vehicle	Make	Model	Year	Acquisition Date	Total Miles Travelled from 6/30/15-5/30/16	Average Daily Usage (mi)	Average Monthly Usage (mi)	Average MPG
4252	Ford	Focus[1]	2008	5/12/2008	2,968	9.2	270	18.6
1628	Ford	Focus[1]	2012	5/15/2012	1,782	5.3	162	12.1
1631	Ford	Focus[1]	2012	5/17/2012	1,196	4.4	109	14.3
1644	Ford	Focus[1]	2012	5/17/2012	963	6.4	85	13.6
1629	Ford	Focus[1]	2012	5/17/2012	3,842	11.4	349	13.4
1630	Ford	Focus[1]	2012	5/17/2012	5,253	15.6	478	12.4
1641	Ford	Focus[1]	2012	5/17/2012	2,893	8.6	263	12.1
1632	Ford	Focus[1]	2012	5/17/2012	3,031	9.0	276	11.1
1634	Ford	Focus[1]	2012	5/18/2012	923	2.8	84	16.2
1635	Ford	Focus[1]	2012	5/18/2012	4,646	14.4	422	15.9
1633	Ford	Focus[1]	2012	5/18/2012	3,388	10.1	308	11.4
1640	Ford	Focus[1]	2012	5/22/2012	10,632	31.6	967	29.4
1637	Ford	Focus[1]	2012	5/22/2012	9,687	28.8	881	24.9
1638	Ford	Focus[1]	2012	5/22/2012	1,441	5.5	131	15.8
1636	Ford	Focus[1]	2012	5/22/2012	4,511	13.4	410	15.7
1639	Ford	Focus[1]	2012	5/22/2012	2,383	7.2	217	10.7
1642	Ford	Focus[1]	2012	5/24/2012	2,588	7.8	235	20.4
1643	Ford	Focus[1]	2012	5/30/2012	296	1.4	27	11.8
13800	Ford	Focus[1]	2014	9/17/2013	1,177	3.8	107	12.3
13801	Ford	Focus[1]	2014	9/17/2013	3,086	9.2	281	12.2
14804	Ford	Focus[1]	2014	9/01/2014	1,714	5.1	156	14.1
14802	Ford	Focus[1]	2014	9/01/2014	1,397	5.1	127	14.0
14807	Ford	Focus[1]	2014	9/01/2014	982	3.0	89	13.0
14808	Ford	Focus[1]	2014	9/01/2014	2,616	7.8	238	12.7
14805	Ford	Focus[1]	2014	9/01/2014	754	2.3	69	11.9
14803	Ford	Focus[1]	2014	9/01/2014	481	4.8	44	11.7
14806	Ford	Focus[1]	2014	9/01/2014	681	2.1	62	11.5
14801	Ford	Focus[1]	2014	9/01/2014	662	2.4	60	11.1
15800	Ford	Focus[1]	2015	7/09/2015	671	2.2	61	16.7
15801	Ford	Focus[1]	2015	7/09/2015	693	2.4	63	15.8

Department Average Daily Usage (mi)		Vehicle Class	Average MPG
243		CAR COMPACT[1]	14.7
Total Emissions from Department Vehicles		**Average Daily Department Total Vehicle Usage**	**Average Idling**
22.75 MT CO_2e			
Department	**Days**	47%	42%
100% of vehicles used	0% (0 of 336 days)		
≥80% of vehicles used	0.3% (1 of 336 days)		
<50% of vehicles used	34% (114 of 336 days)		

Data overview that was presented to the Building Department along with the information in the following slides.

DATA OVERVIEW BY DEPARTMENT

Building Department
6/30/15 – 5/30/2016

- High range of miles travelled: 2,968 – 10,632 miles
- Low range of miles travelled: 481 – 1,714 miles

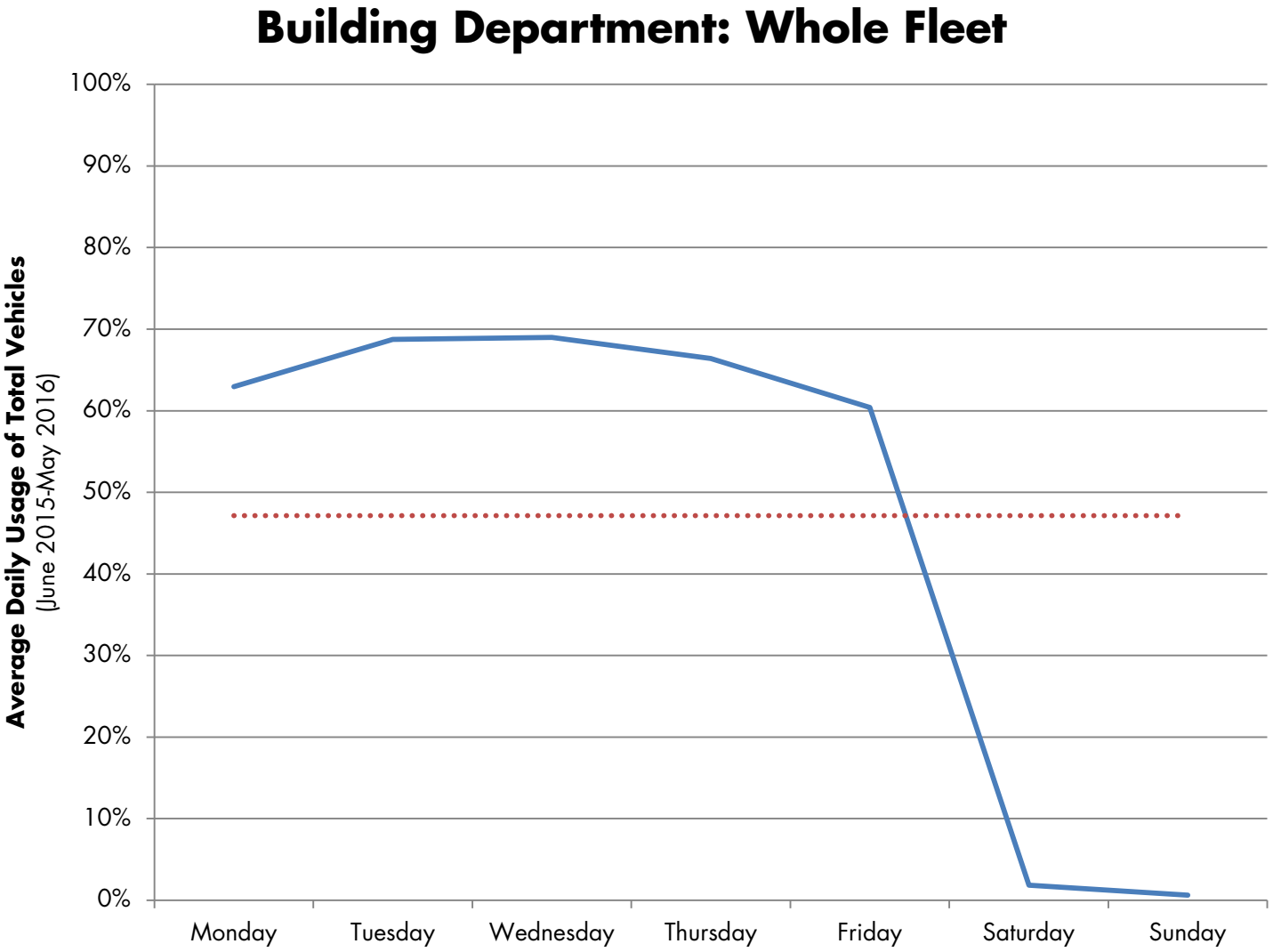
- High range of fuel efficiency: 15.7 – 29.4 MPG
- Low range of fuel efficiency: 10.7 – 12.1 MPG

- Total emissions from department: 22.75 MT CO2e
- Equivalent to: 583 tree seedlings grown for 10 years

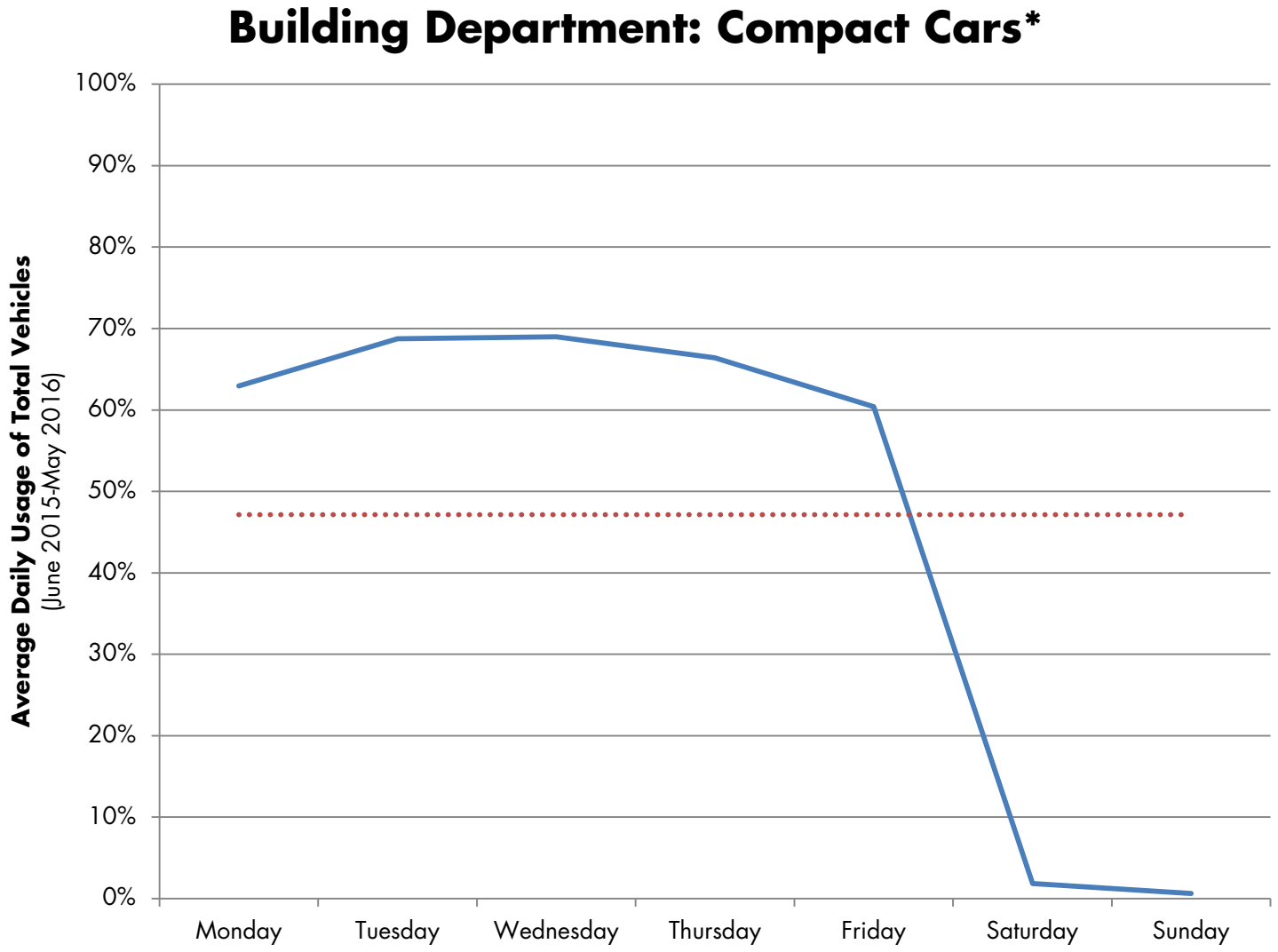
- Average idling duration: 42%

- Average daily usage of department fleet: 47%

AVERAGE DAILY USAGE OF FLEET



AVERAGE DAILY USAGE OF FLEET



*all vehicles in the Building Department fleet are compact cars.

DATA OVERVIEW BY DEPARTMENT

CIP Department
6/30/15 – 5/30/2016

- High range of miles travelled: 2,491 – 3,373 miles
- Low range of miles travelled: 521 – 695 miles

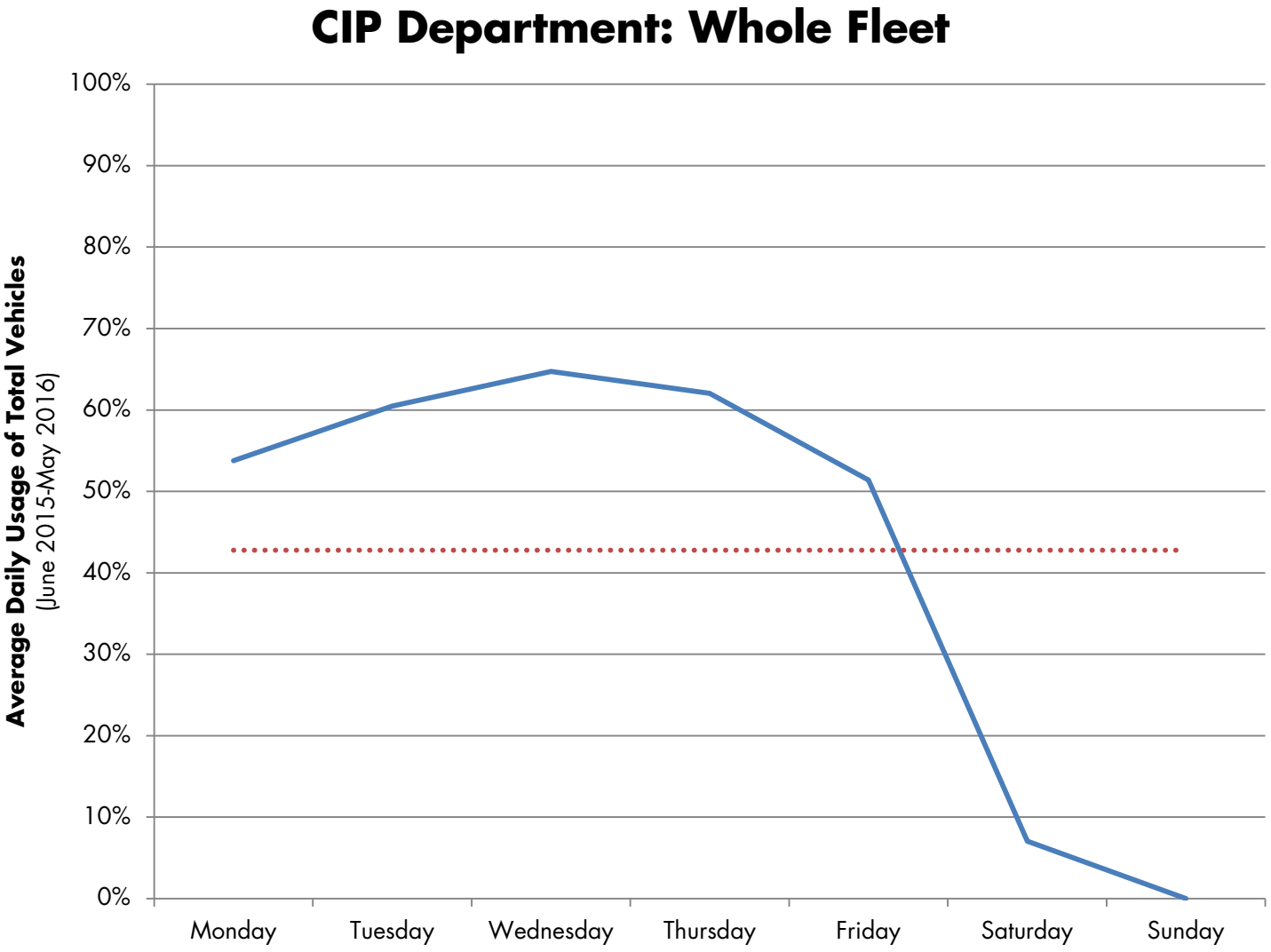
- High range of fuel efficiency: 14.7 – 15.0 MPG
- Low range of fuel efficiency: 6.8 – 9.2 MPG

- Total emissions from department: 4.7 MT CO2e
- Equivalent to: 121 tree seedlings grown for 10 years

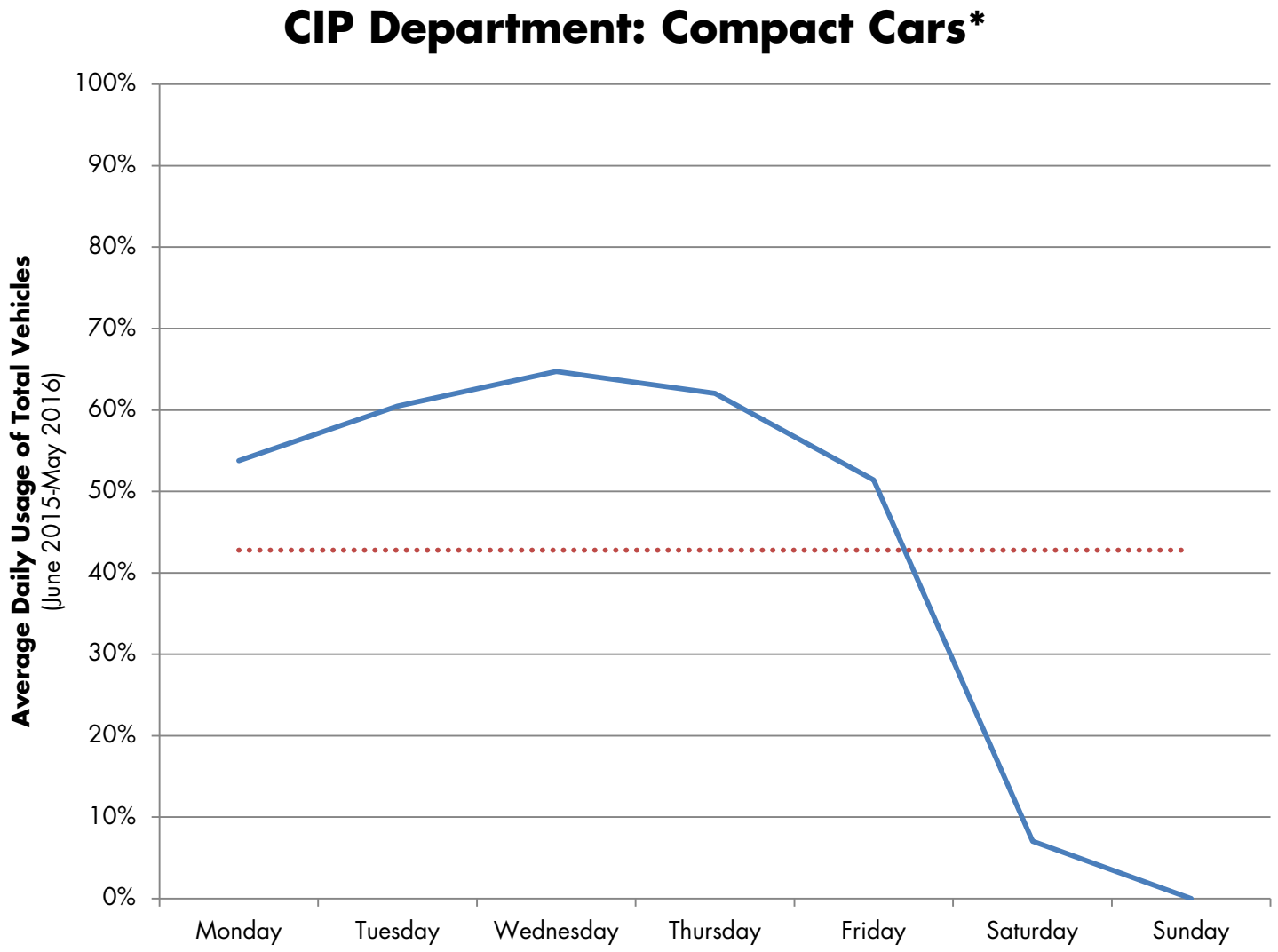
- Average idling duration: 43%

- Average daily usage of department fleet: 43%

AVERAGE DAILY USAGE OF FLEET



AVERAGE DAILY USAGE OF FLEET



*all vehicles in the CIP Department fleet are compact cars.

DATA OVERVIEW BY DEPARTMENT

Code Compliance Department
6/30/15 – 5/30/2016

- High range of miles travelled: 5,518 – 12,177 miles
- Low range of miles travelled: 505 – 1,490 miles

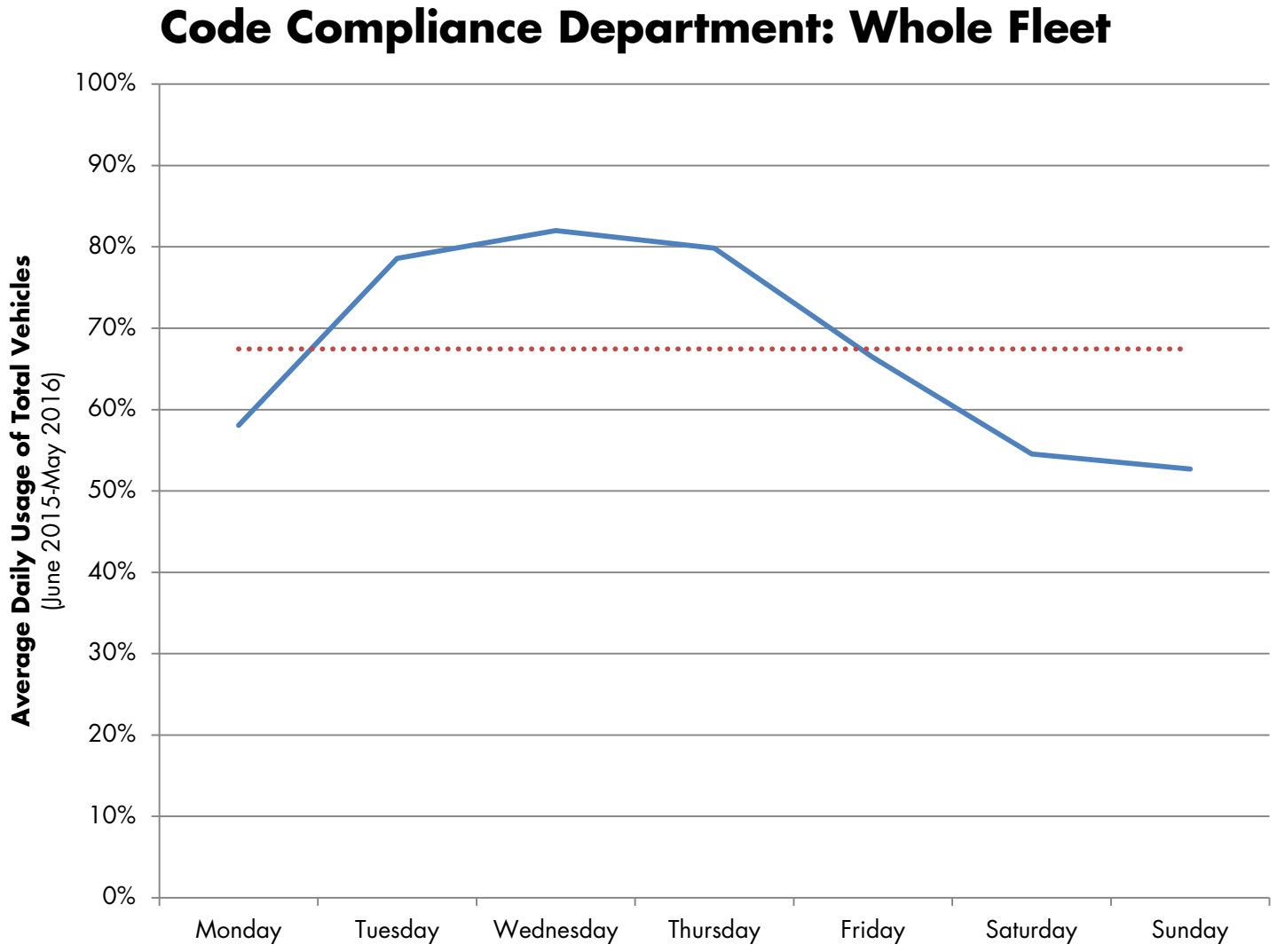
- High range of fuel efficiency: 12.2 – 17.7 MPG
- Low range of fuel efficiency: 7.6 – 8.3 MPG

- Total emissions from department: 27.5 MT CO2e
- Equivalent to: 705 tree seedlings grown for 10 years

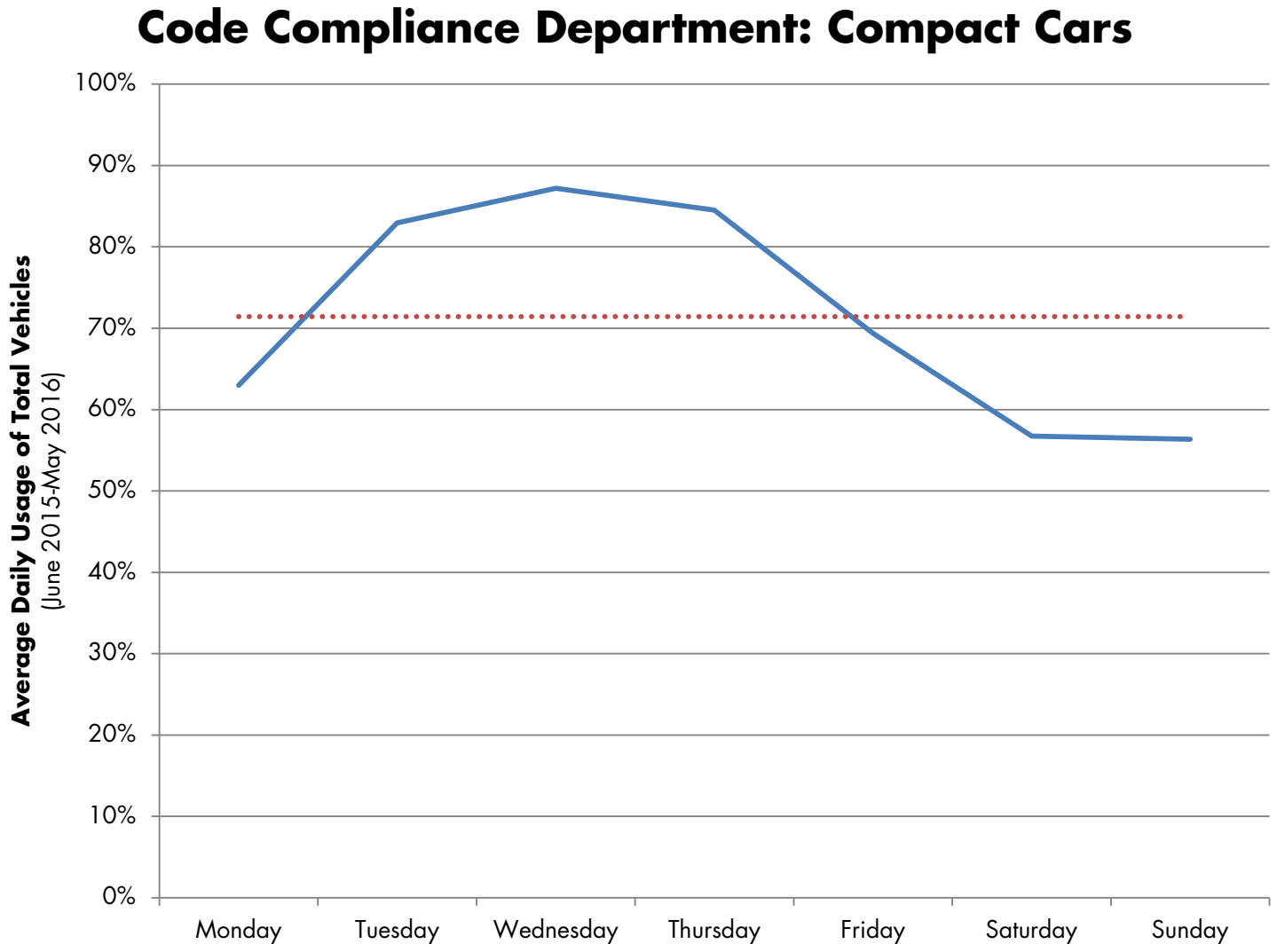
- Average idling duration: 52%

- Average daily usage of department fleet: 67%

AVERAGE DAILY USAGE OF FLEET



AVERAGE DAILY USAGE OF FLEET



DATA OVERVIEW BY DEPARTMENT

Fire Department
6/30/15 – 5/30/2016

- High range of miles travelled: 7,911 – 31,918 miles
- Low range of miles travelled: 13 – 2,808 miles

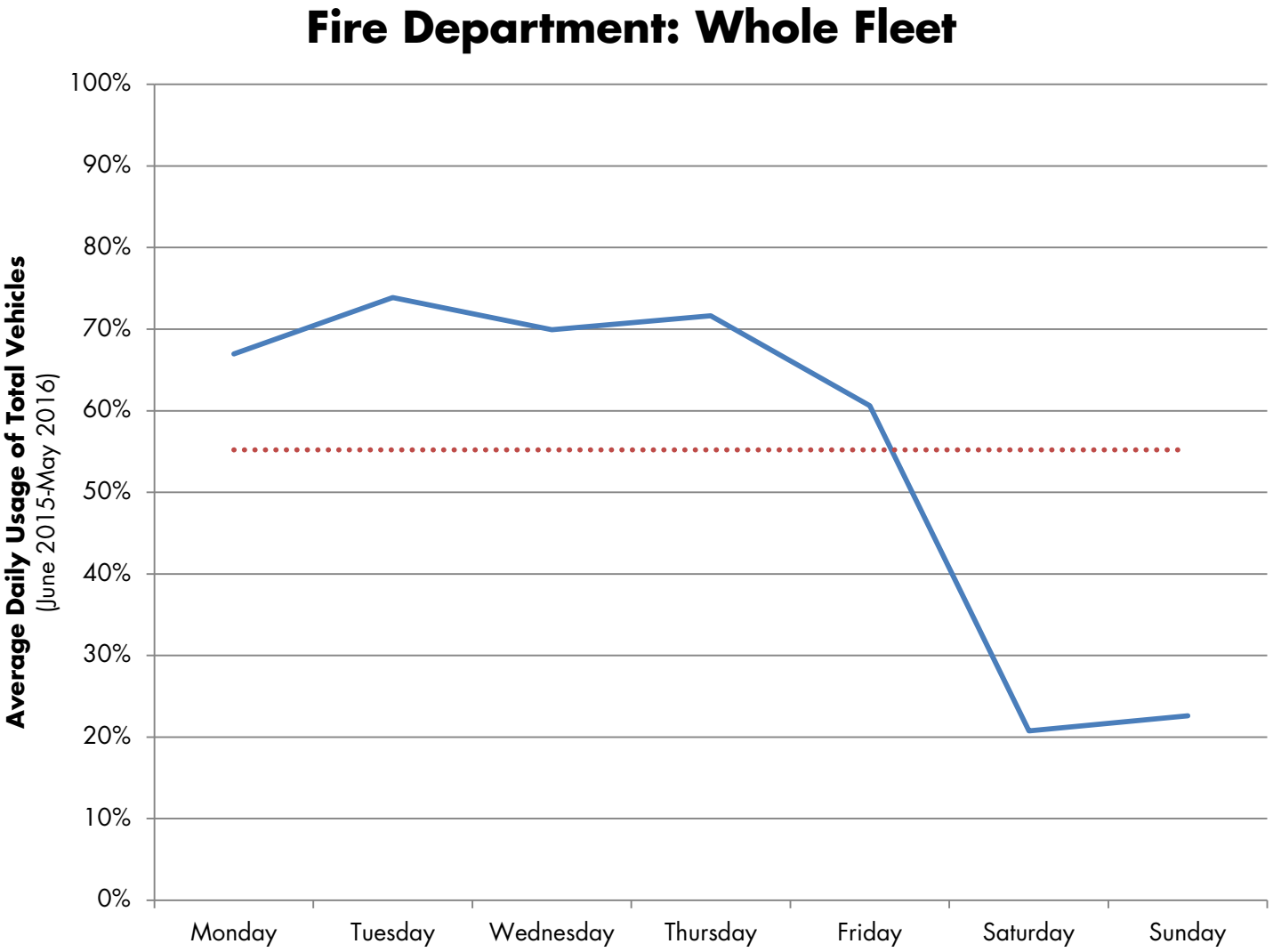
- High range of fuel efficiency: 18.9 – 31.3 MPG
- Low range of fuel efficiency: 6.4 – 13.1 MPG

- Total emissions from department: 84.85 MT CO2e*
- Equivalent to: 2,176 tree seedlings grown for 10 years

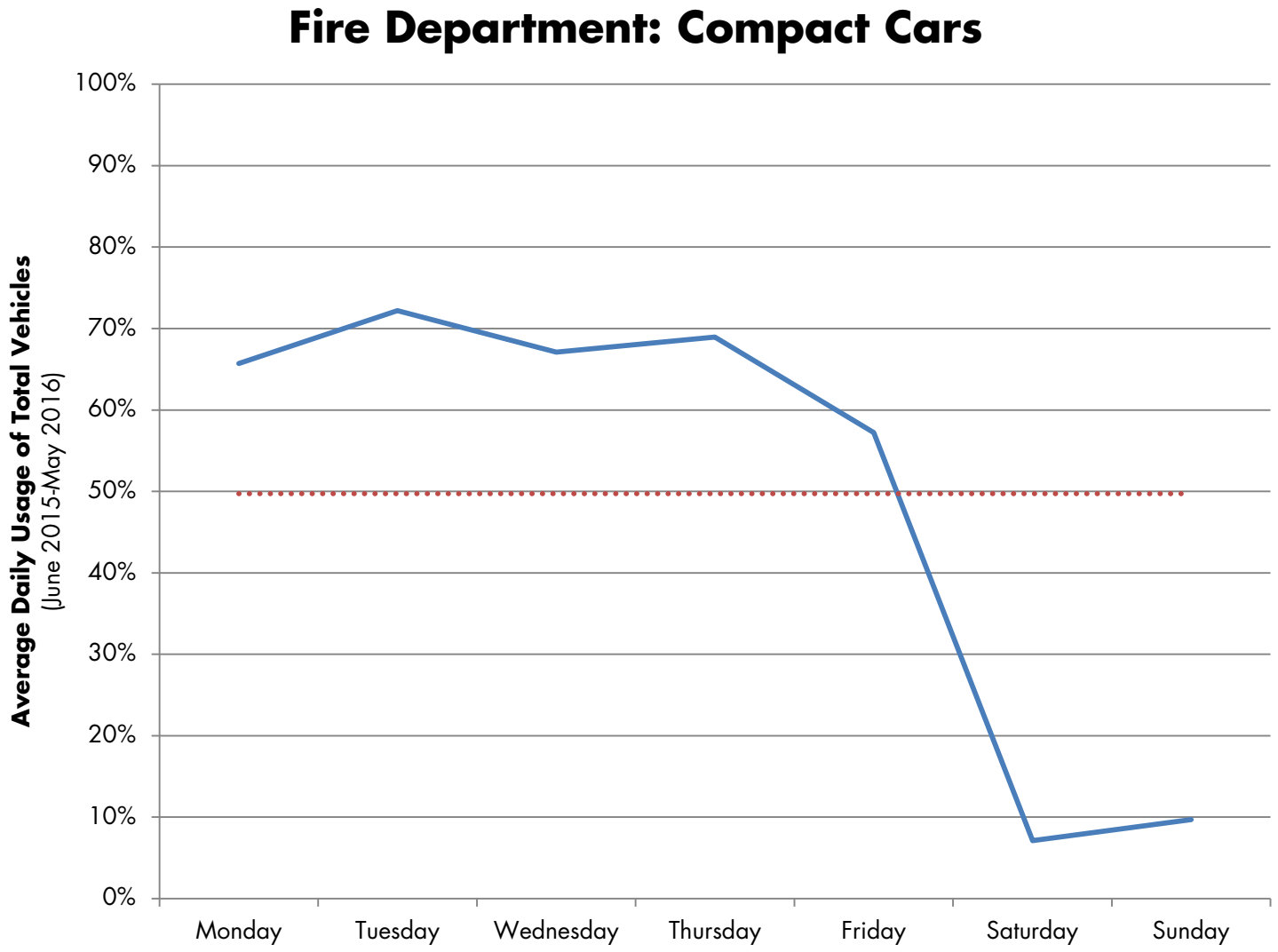
- Average idling duration: 23%

- Average daily usage of department fleet: 55%

AVERAGE DAILY USAGE OF FLEET



AVERAGE DAILY USAGE OF FLEET



DATA OVERVIEW BY DEPARTMENT

IT Department
6/30/15 – 5/30/2016

- High range of miles travelled: 935 – 1,396 miles
- Low range of miles travelled: 160 – 213 miles

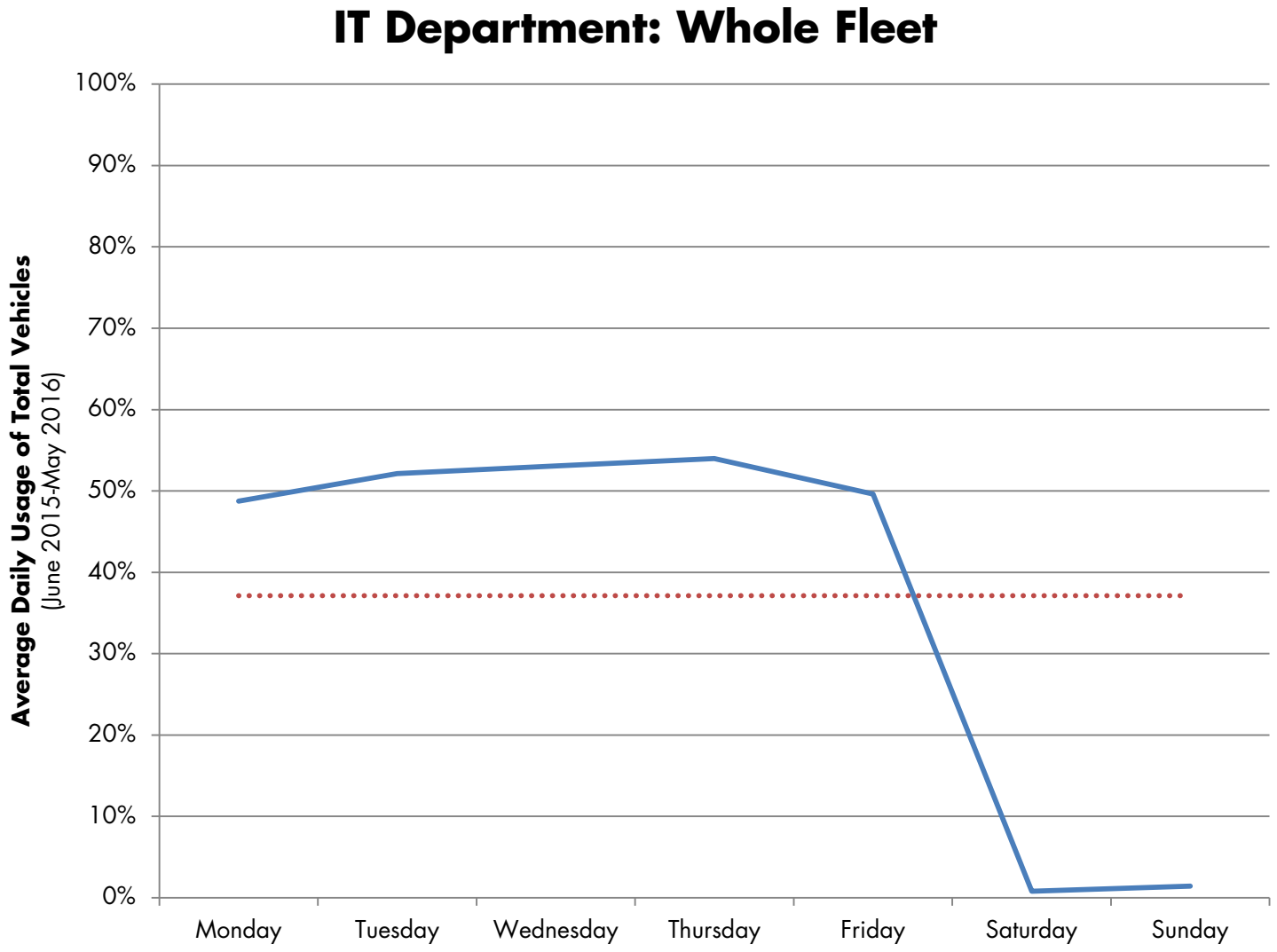
- High range of fuel efficiency: 14.1 – 23.3 MPG
- Low range of fuel efficiency: 10.5 – 11.4 MPG

- Total emissions from department: 2.59 MT CO2e
- Equivalent to: 66 tree seedlings grown for 10 years

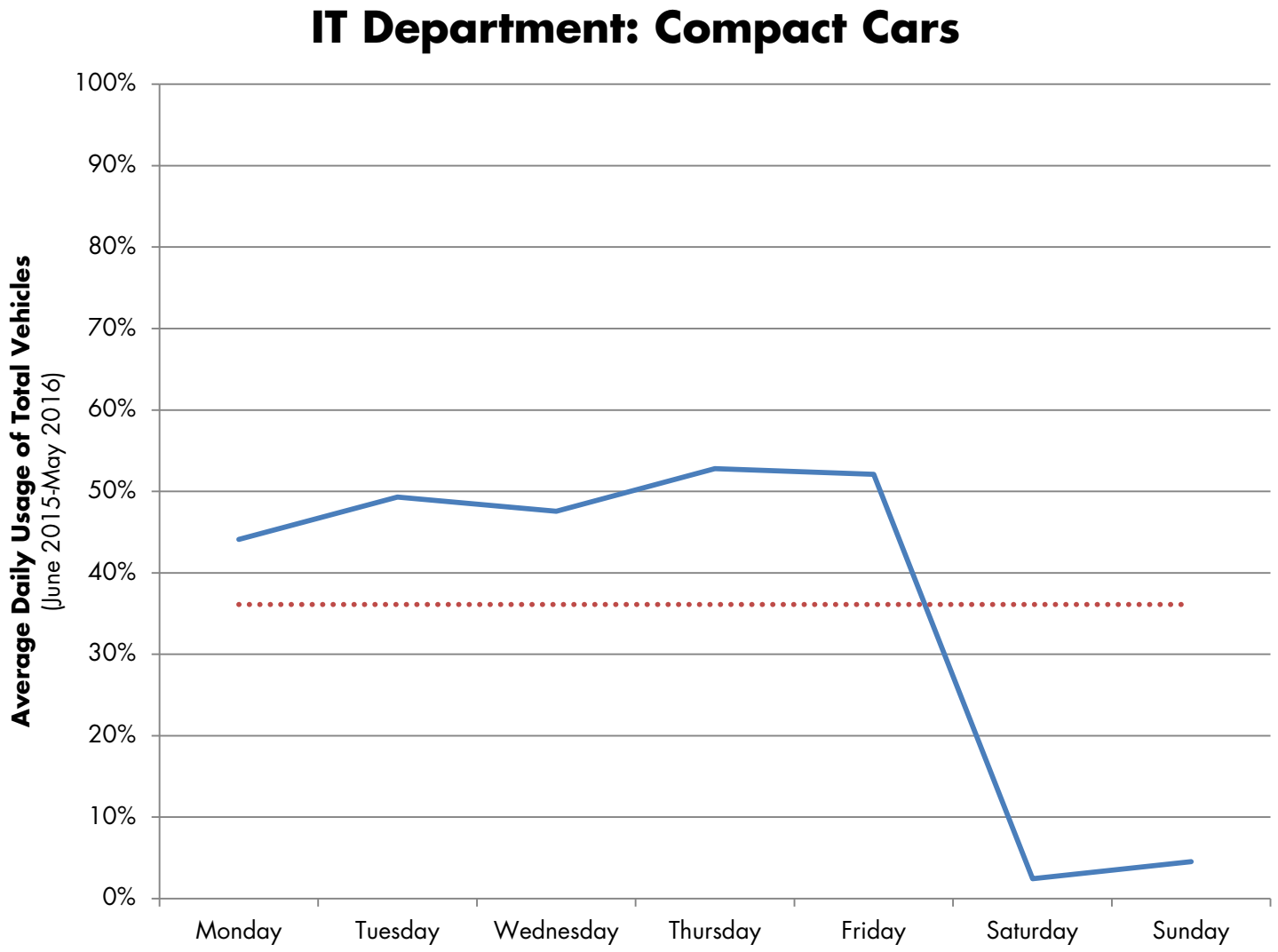
- Average idling duration: 29%

- Average daily usage of department fleet: 37%

AVERAGE DAILY USAGE OF FLEET



AVERAGE DAILY USAGE OF FLEET



DATA OVERVIEW BY DEPARTMENT

Parking Department
6/30/15 – 5/30/2016

- High range of miles travelled: 8,539 – 11,431 miles
- Low range of miles travelled: 302 – 3,201 miles

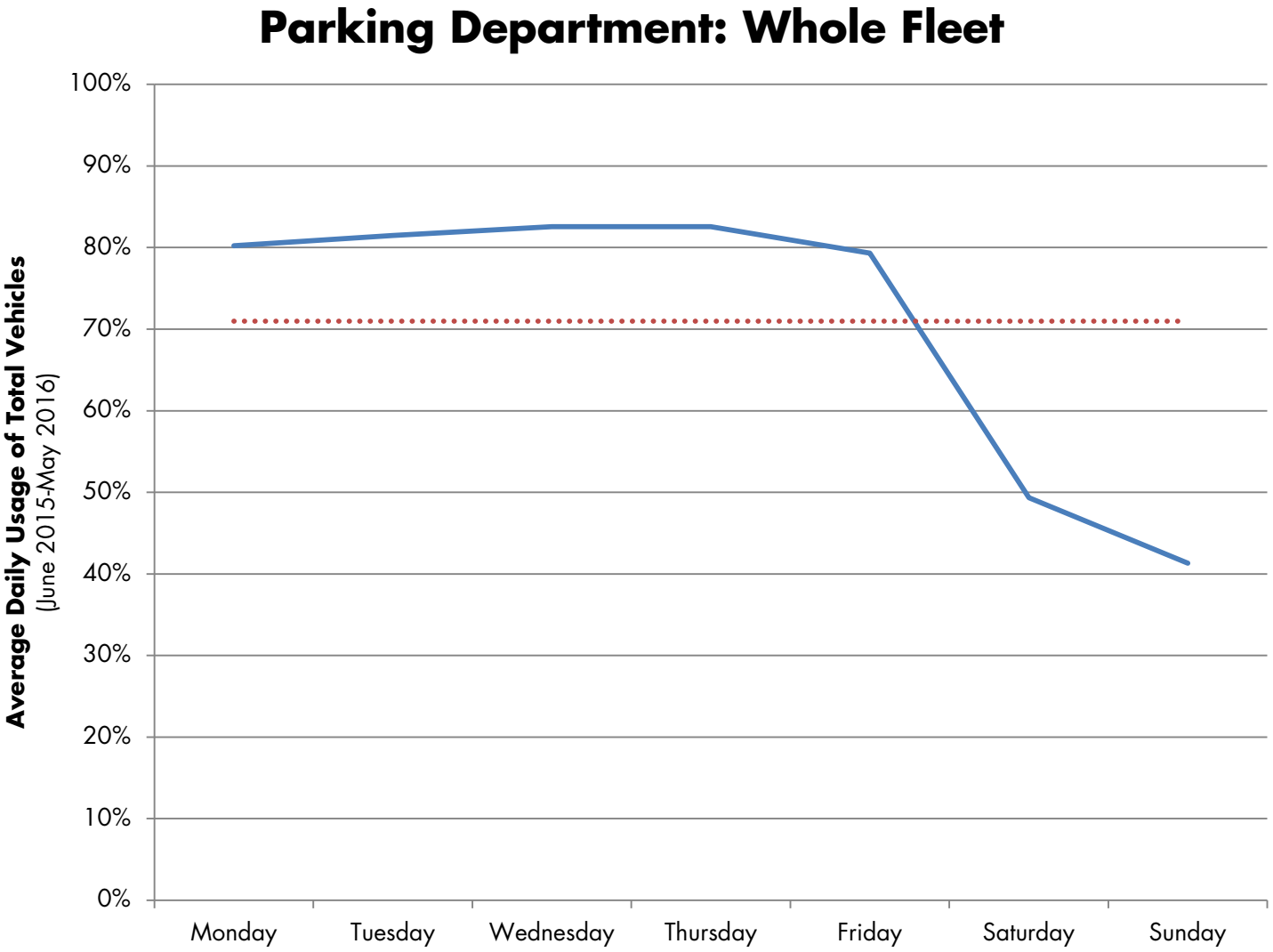
- High range of fuel efficiency: 11.2 – 20.4 MPG
- Low range of fuel efficiency: 3.6 – 8.6 MPG

- Total emissions from department: 108.32 MT CO2e*
- Equivalent to: 2,807 tree seedlings grown for 10 years

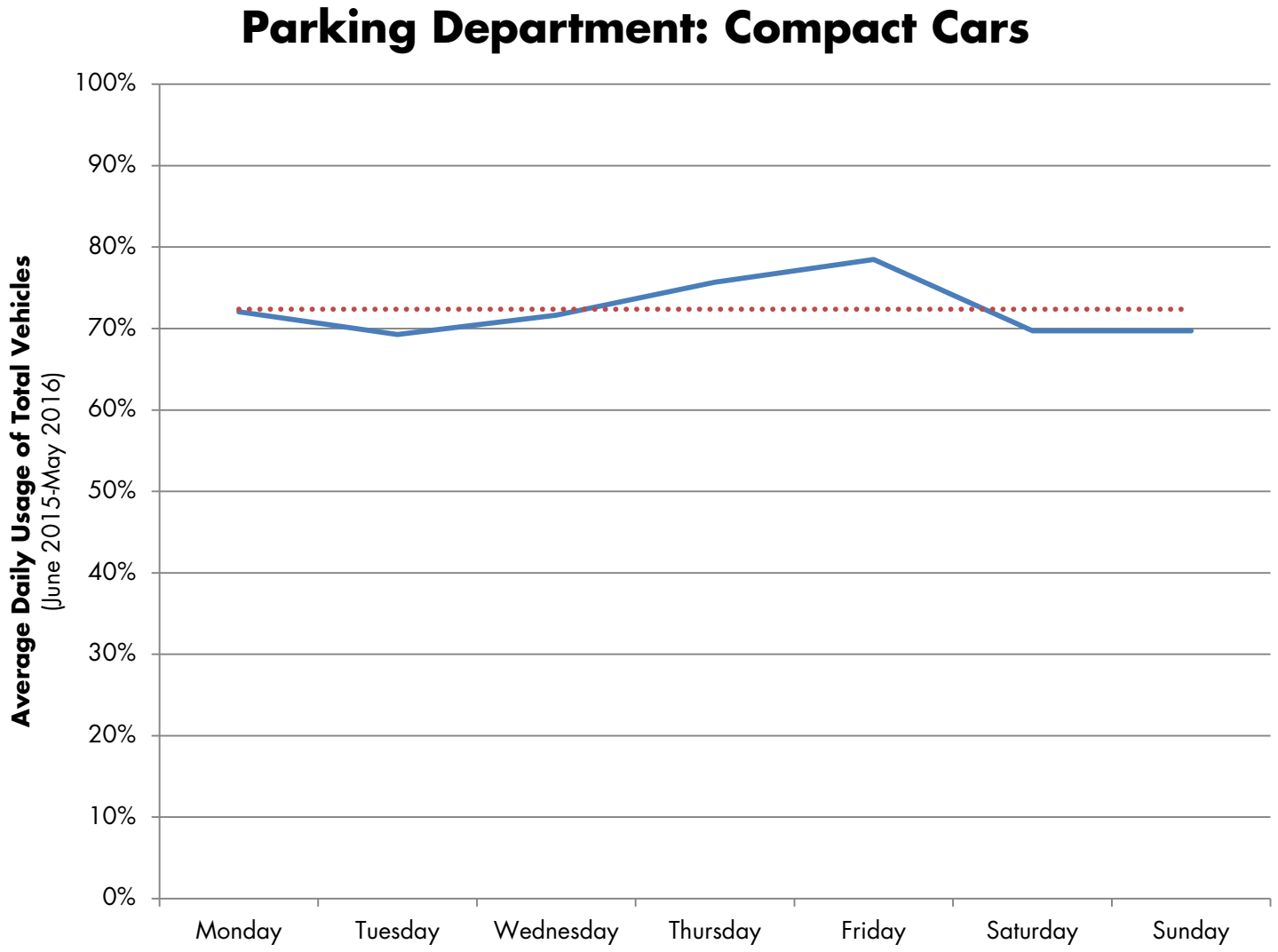
- Average idling duration: 41%

- Average daily usage of department fleet: 71%

AVERAGE DAILY USAGE OF FLEET



AVERAGE DAILY USAGE OF FLEET



DATA OVERVIEW BY DEPARTMENT

Parks and Recreation Department
6/30/15 – 5/30/2016

- High range of miles travelled: 3,877 – 8,331 miles
- Low range of miles travelled: 19 – 370 miles

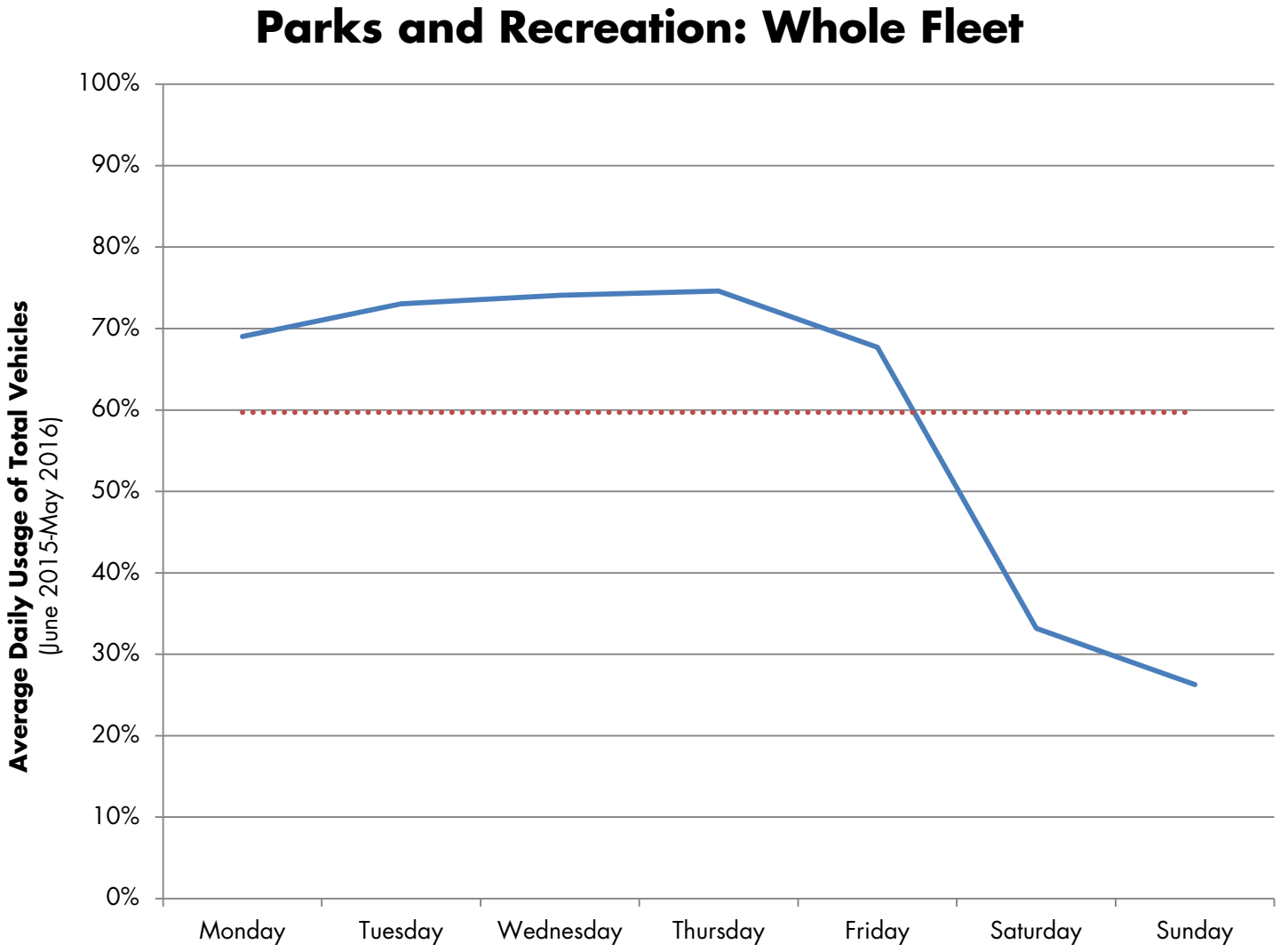
- High range of fuel efficiency: 15.5 – 32.7 MPG
- Low range of fuel efficiency: 2.3 – 4.3 MPG

- Total emissions from department: 71.14 MT CO2e
- Equivalent to: 1,824 tree seedlings grown for 10 years

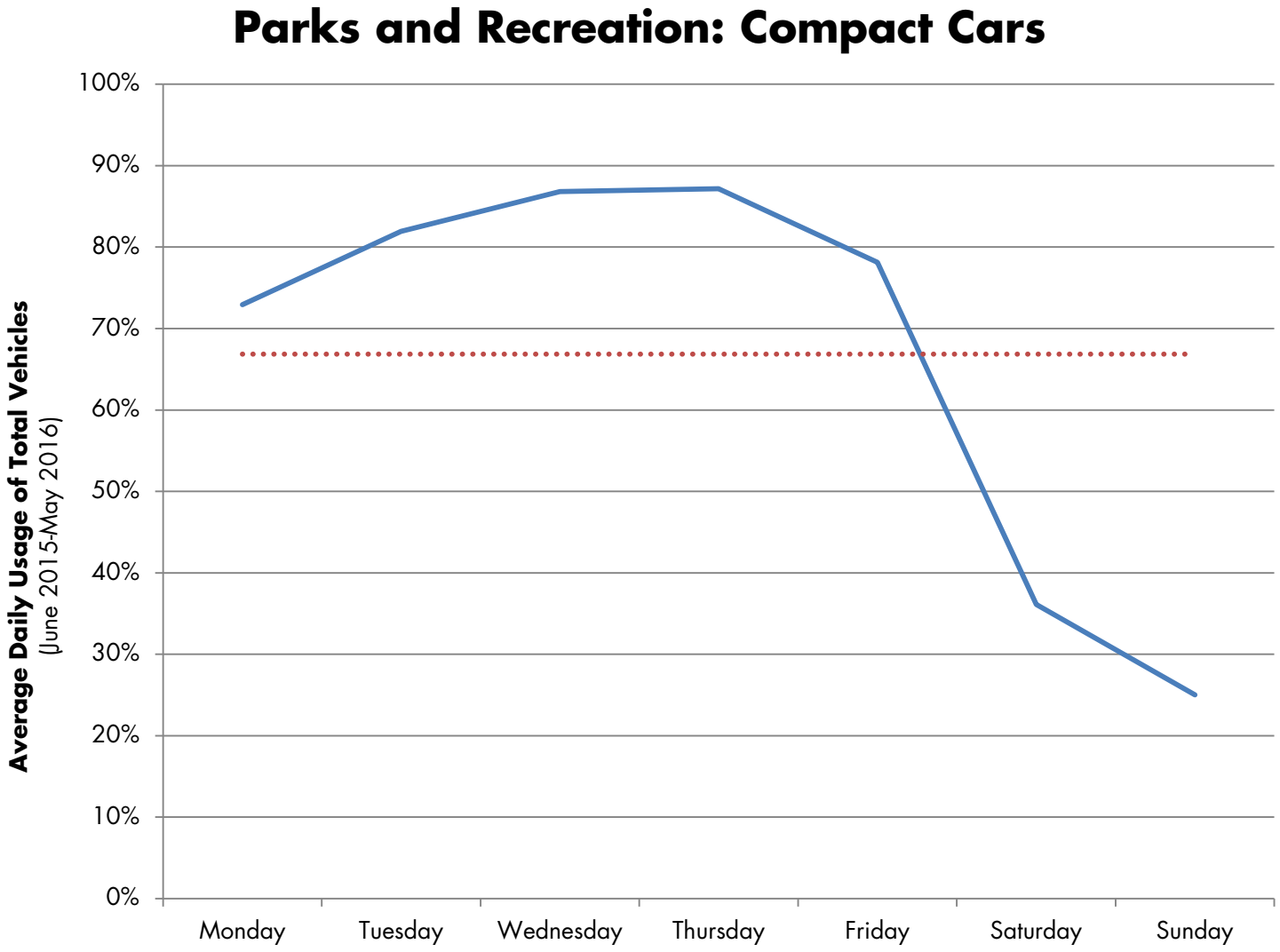
- Average idling duration: 43%

- Average daily usage of department fleet: 60%

AVERAGE DAILY USAGE OF FLEET



AVERAGE DAILY USAGE OF FLEET

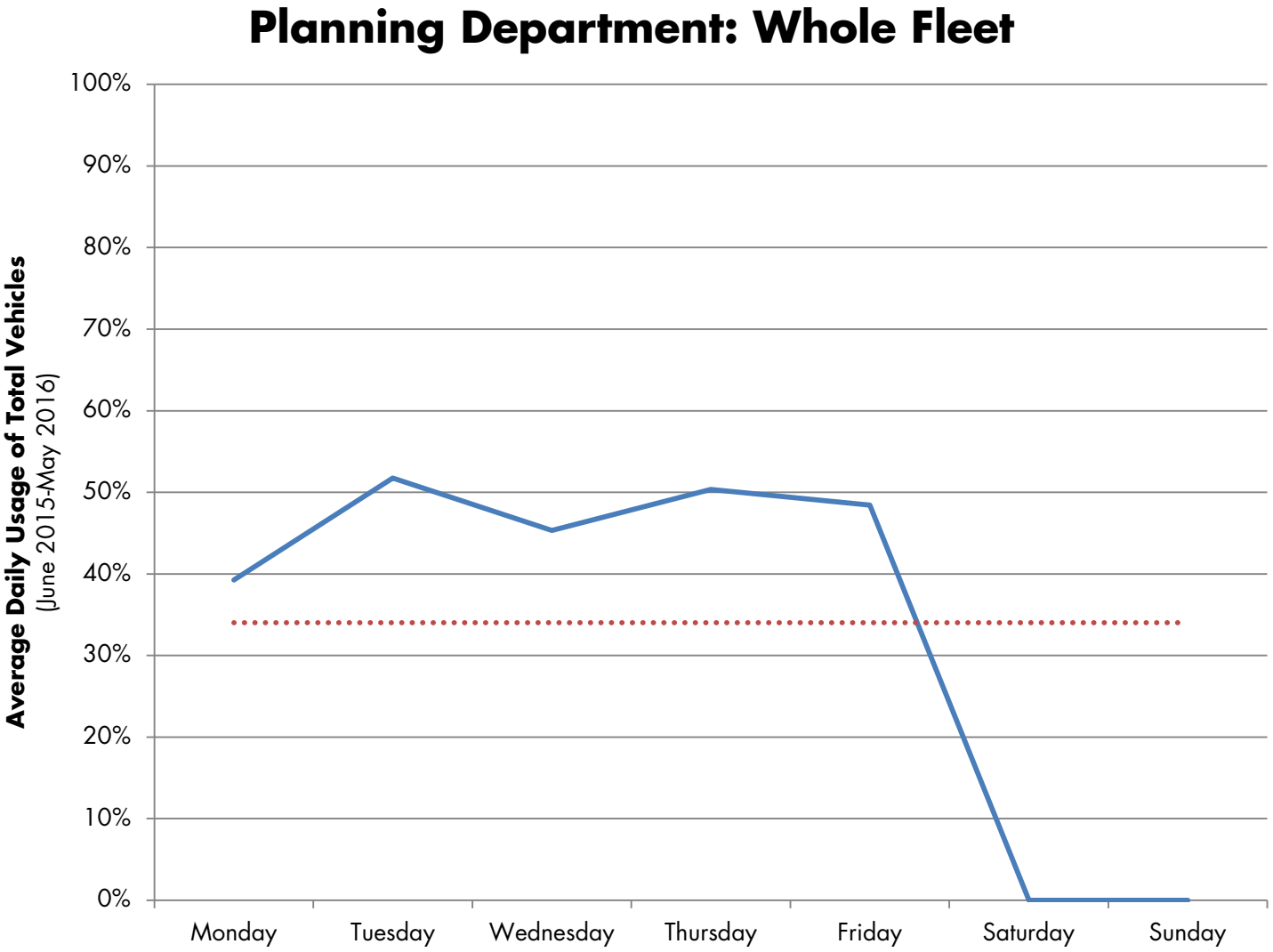


DATA OVERVIEW BY DEPARTMENT

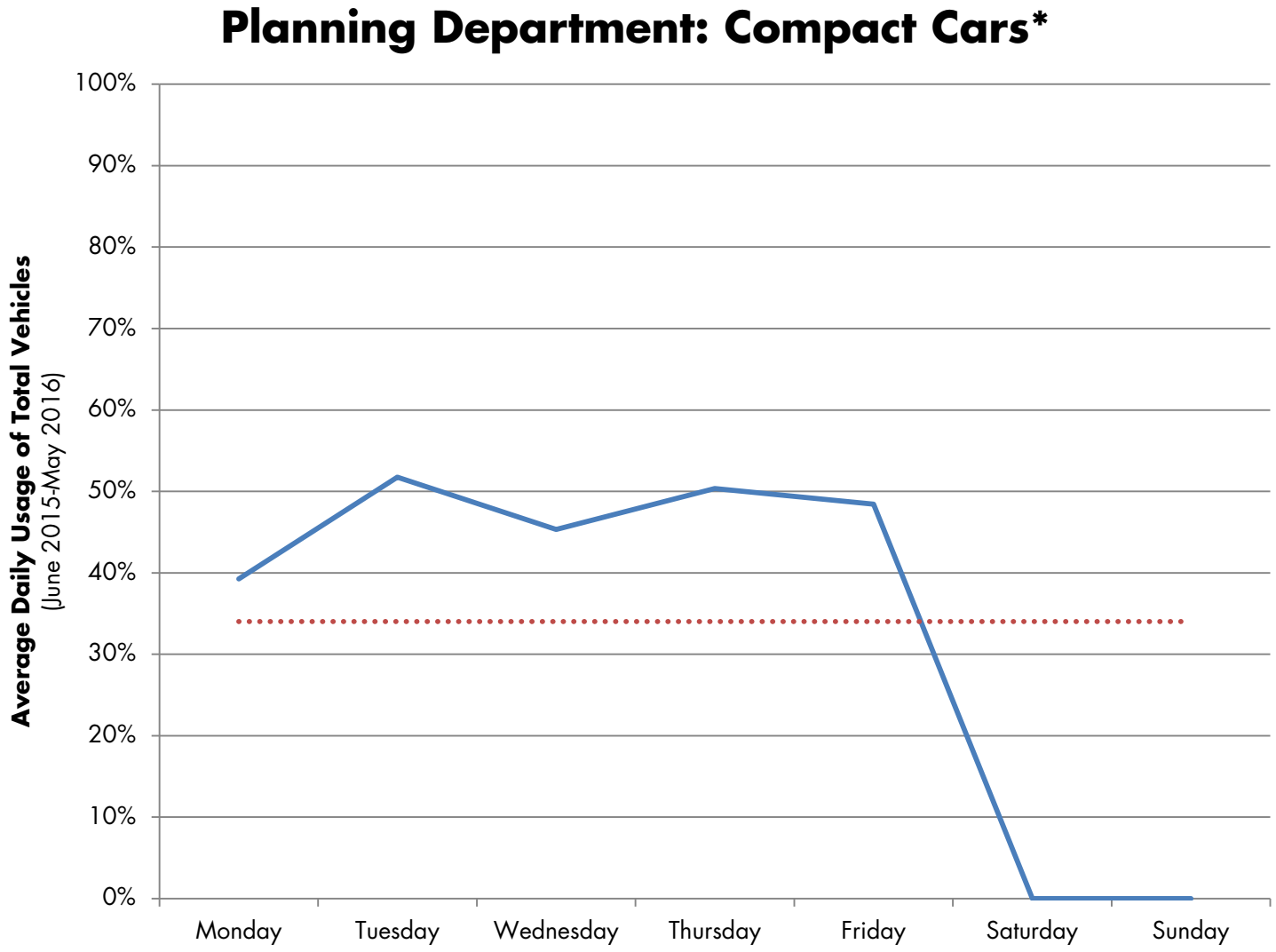
Planning Department
6/30/15 – 5/30/2016

- Range of miles travelled: 594 – 1,774 miles
- Range of fuel efficiency: 2.5 – 7.1 MPG
- Total emissions from department: 1.25 MT CO2e
- Equivalent to: 32 tree seedlings grown for 10 years
- Average idling duration: 31%
- Average daily usage of department fleet: 34%

AVERAGE DAILY USAGE OF FLEET



AVERAGE DAILY USAGE OF FLEET



*all vehicles in the Planning Department fleet are compact cars.

DATA OVERVIEW BY DEPARTMENT

Property Management
6/30/15 – 5/30/2016

- High range of miles travelled: 3,351 – 8,438 miles
- Low range of miles travelled: 37 – 709 miles

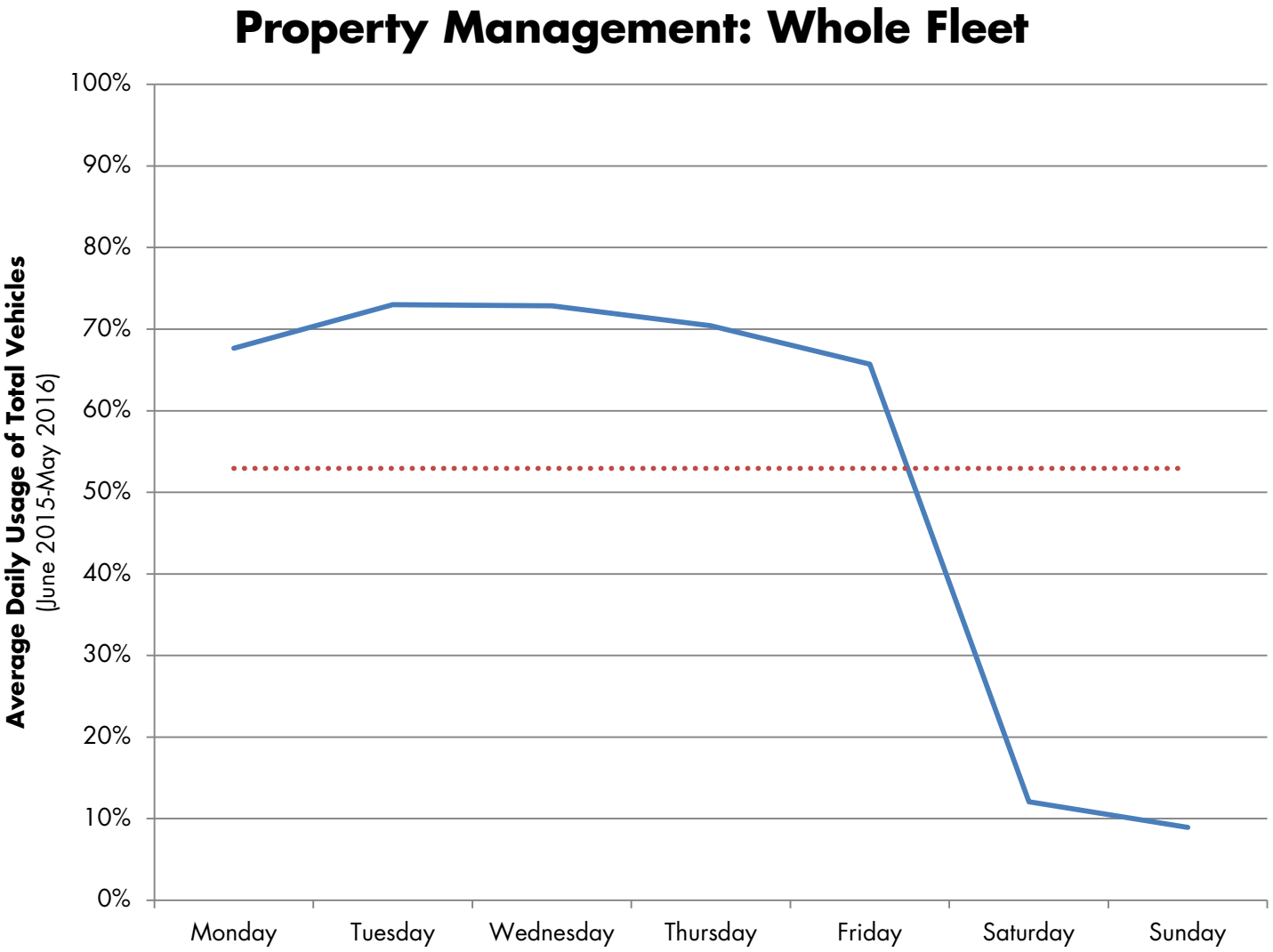
- High range of fuel efficiency: 11.0 – 22.4 MPG
- Low range of fuel efficiency: 2.7 – 5.5 MPG

- Total emissions from department: *38.64 MT CO2e
- Equivalent to: 1,001 tree seedlings grown for 10 years

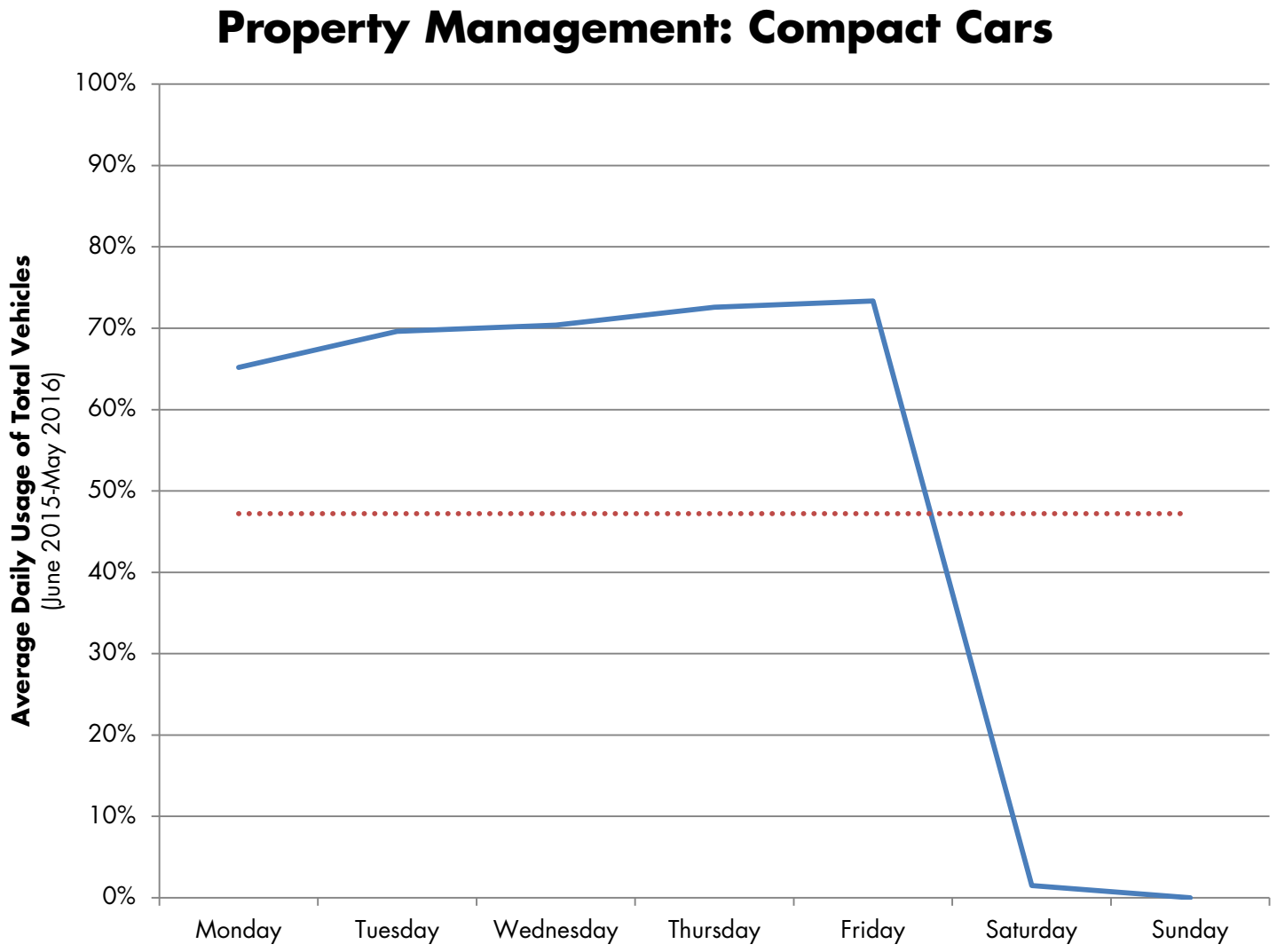
- Average idling duration: 42%

- Average daily usage of department fleet: 44%

AVERAGE DAILY USAGE OF FLEET



AVERAGE DAILY USAGE OF FLEET



DATA OVERVIEW BY DEPARTMENT

Public Works
6/30/15 – 5/30/2016

- High range of miles travelled: 4,063 – 13,861 miles
- Low range of miles travelled: 31 – 3,535 miles

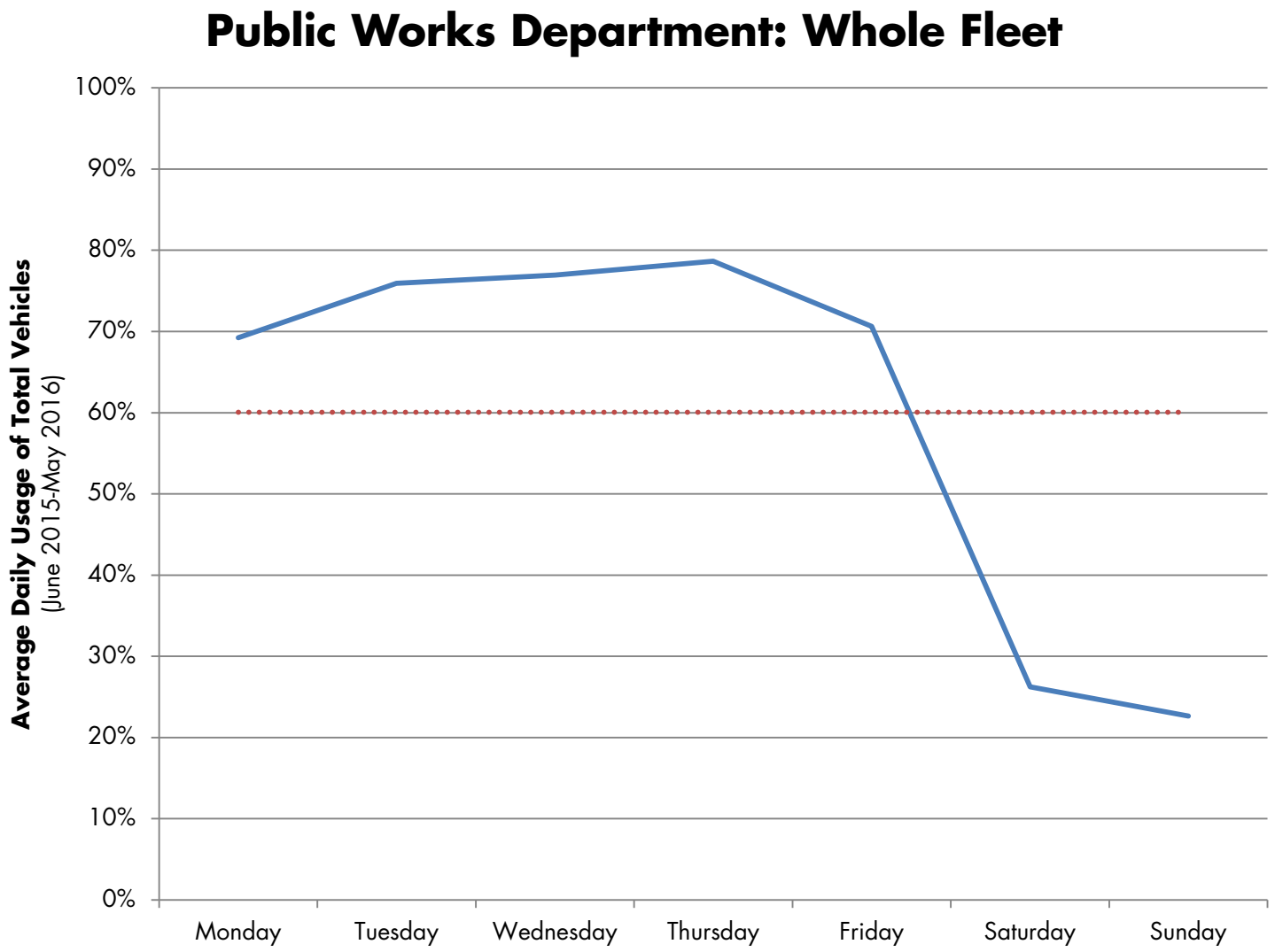
- High range of fuel efficiency: 23.5 – 12.3 MPG
- Low range of fuel efficiency: 2.0 – 5.0 MPG

- Total emissions from department: 202.95 MT CO2e*
- Equivalent to: 5,260 tree seedlings grown for 10 years

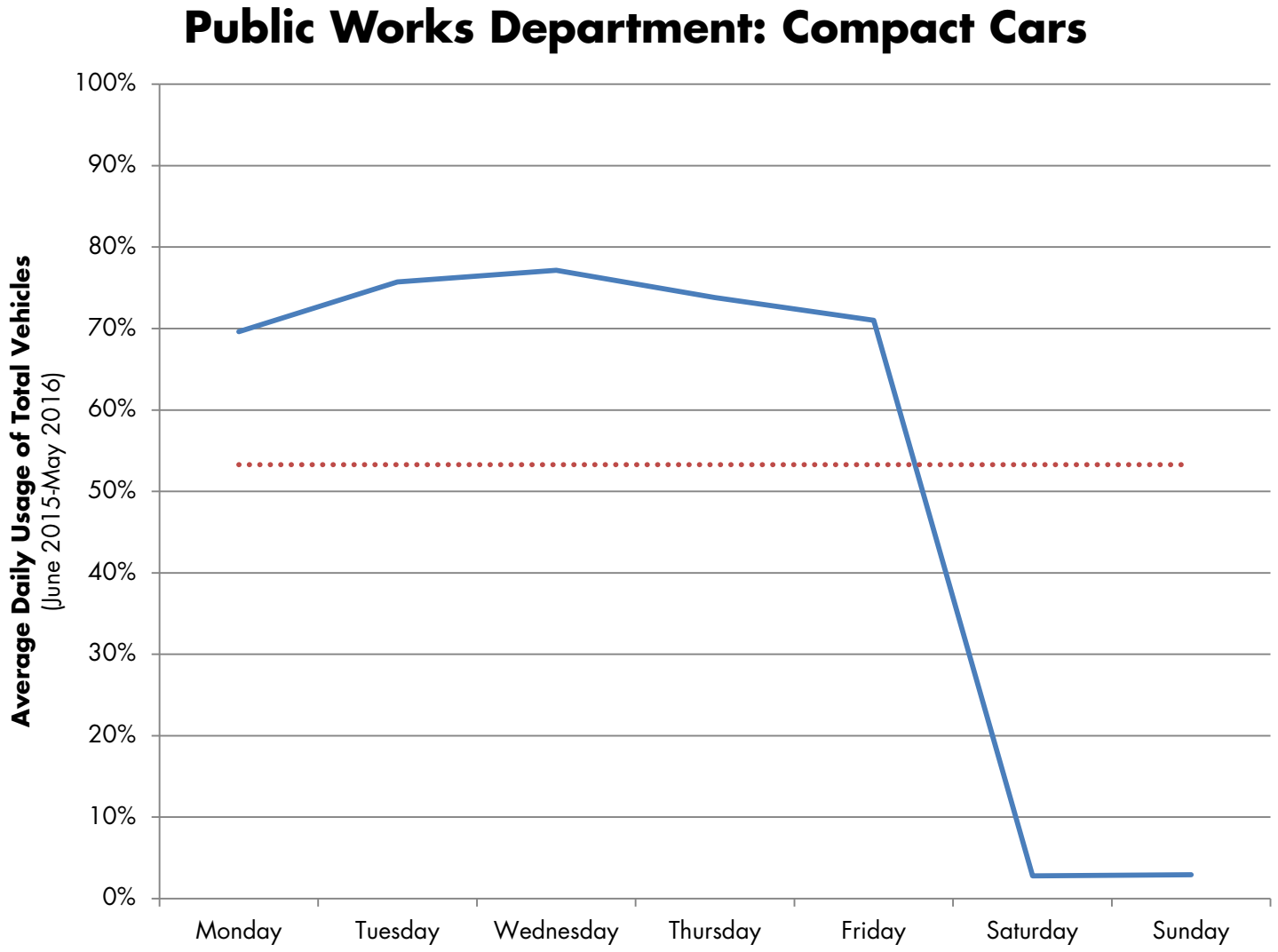
- Average idling duration: 53%

- Average daily usage of department fleet: 60%

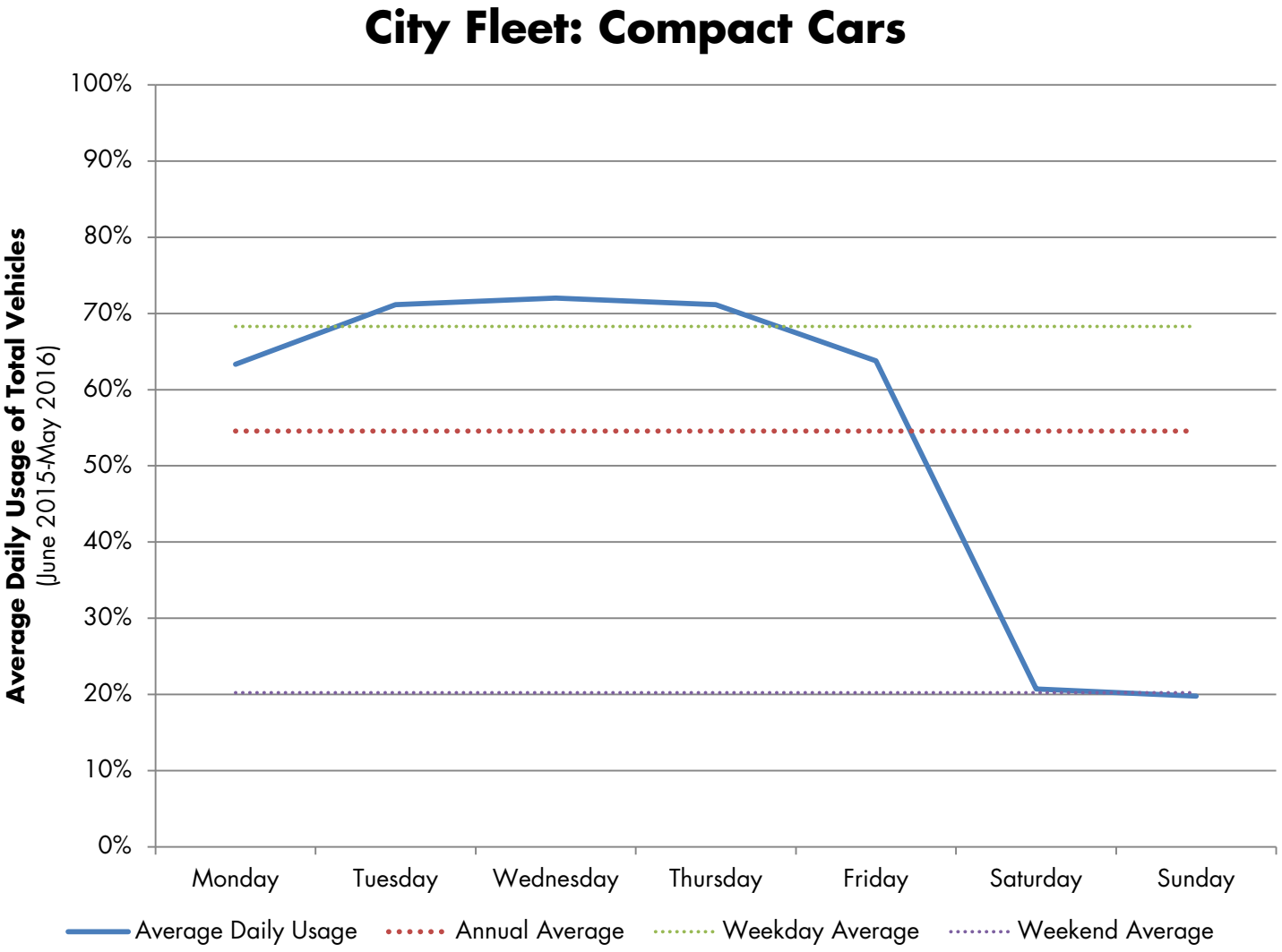
AVERAGE DAILY USAGE OF FLEET



AVERAGE DAILY USAGE OF FLEET



AVERAGE DAILY USAGE OF FLEET



ALTERNATIVES

- Possible alternatives that have been discussed with each department:
  - Uber/Lyft business account
  - Vehicle pool
  - Car share program
  - Bicycle program
  - Electric vehicles
  - Hybrids
  - Neighborhood/Ultra-compact electric vehicles

CONSIDERATIONS

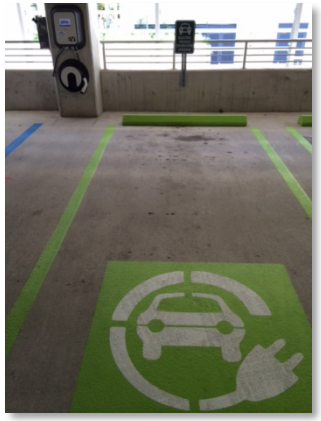
- Storm preparation and recovery:
  - Each department must outline their hurricane preparation procedures, including vehicles to be used
  - The types and amount of vehicles used for storm recovery depends on the extent and type of impact

- Flooding & construction:
  - Certain types of vehicles are not suitable to drive through flooded streets or constructions sites

- Evolving technology:
  - Technology will increase number and types of vehicles with alternative fuel available on the market over time
  - Many technological advances worldwide; some foreign vehicles have no domestic equivalent

CONSIDERATIONS

- Charging network:
  - Before purchasing an EV, must determine where/when they will be charged
    - EVs need about 4-6 hours to completely charge a deplete battery in Level 2 charging stations
  - There is **a charge** of $0.39/kWh (for Blink members) and $0.49/kWh (for non-members) when charging EVs **using the Blink (level 2) stations**
  - Currently 4 garages are equipped with 2 Blink (level 2) charging stations each and there a 3 upcoming installations for **public use**:
    - 12th Street Parking Garage
    - 13th Street Parking Garage
    - City Hall Parking Garage
    - 42nd Street Parking Garage



Parking sport reserved for EV charging in City Hall Garage.

Blink charging station in City Hall Parking Garage.

CONSIDERATIONS

- Car pool program:
  - Many vehicles hold special equipment
  - Although some vehicles are not always used, they are on standby for "emergency" calls
  - Vehicles that need repairs and/or maintenance are out of order for some time, limiting a department's fleet
  - Need a central location to store vehicles
  - Some departments are already sharing vehicles

- Uber/Lyft business account:
  - Ability to restrict access to certain staff and locations
  - Potentially reduce number of vehicles in fleet
  - Cost vs. benefits

- Bicycle program:
  - Only feasible for certain operations
  - Weather-dependent

HIGHLIGHTS

- In FY 17/18, the **Parking Department** purchased the **first EV** in the City's fleet

- **Bicycle pilot program** with **Building Department**.

- **Several departments** have already **transferred one or more** lower usage/surplus **vehicles** from their **fleet to another department** in need.

Building Department employee, Michael Schad, after completing bicycle training with PD.

FINDINGS

- More than **96% of staff vehicles** (excluding Police and Fire first responder units) are compact vehicles with **"Above Average" Green Score** according to the ACEEE GreenerCars Rating:
  - Including 21 hybrid vehicles
  - Compact vehicles are mainly Ford Focus

- High fleet **usage periods** during the week **differ between departments.**

- **Savings and reduction in emissions** from driving a hybrid compared to current compact car **increases the more a hybrid is driven.**

VEHICLE REPLACEMENT PROCESS

- Criteria:
  - Review the replacement cycle for the vehicle class
  - History of costs for maintenance and repair
  - Vehicle condition
  - Validation of the operational needs and vehicle specifications with the user department

- Fleet Management works with client department using replacement criteria and funding availability. Must prioritize which vehicles are going to be replaced.

- Vehicle and equipment quotes are received, reviewed, and approved by client department and Fleet Management.

- Vehicles are purchased.

RIDESHARING COST COMPARISON

# of Rides	Total Distance Travelled (miles)	Ridesharing App	City Vehicle
2	5	$13.90	$2.45
3		$20.32	$2.45
4		$26.34	$2.45
2	10	$20.07	$4.90
3		$25.82	$4.90
4		$28.53	$4.90
2	15	$26.80	$7.35
3		$31.42	$7.35
4		$38.05	$7.35
2	~20	$29.64	$23.02

Uncaptured benefits of ridesharing:

-- time savings

-- ability to work during the ride: answer emails, take calls…

-- reduced stress

The table shows an estimate of the cost of using a ridesharing app (Uber/Lyft) compared to driving a city compact car to travel a certain distance over varying number of trips.

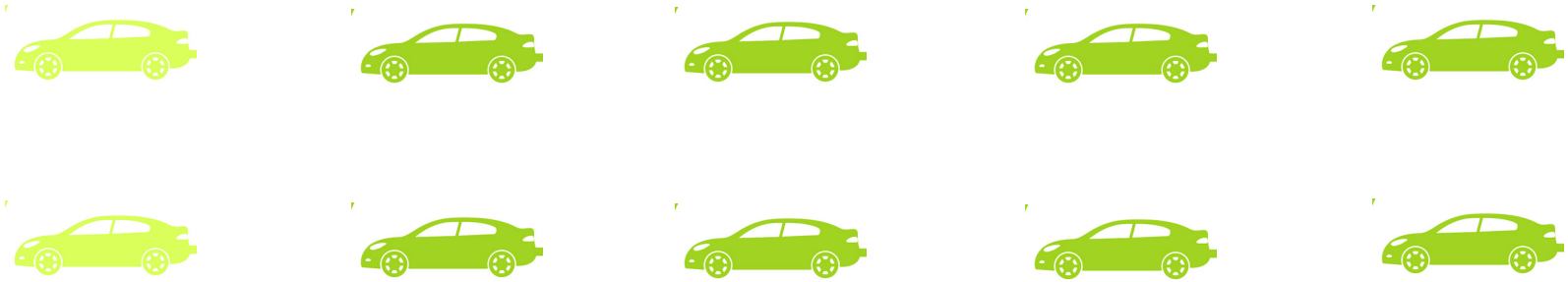
VEHICLE COSTS COMPARISON

VEHICLE MODEL	APPROXIMATE PRICE City Contract Pricing	FUEL EFFICIENCY EPA Rating
Ford Focus (compact)	$19,740	28 MPG
Ford C-Max Hybrid (compact)	$24,334	40 MPG
Ford Fusion Hybrid (midsize)	$25,999	42 MPG
Ford Focus Electric (compact)	$28,324	107 MPGe

POSSIBLE VEHICLE REPLACEMENT SCENARIO

- As departments replace their Ford Focus vehicles, it is recommended that they consider hybrids and/or EVs as possible replacements. Funding allocation for fleet will be essential for this transition.

- The following slides present an example of a transition of a 20 % replacement of their Ford Focus vehicles to hybrids or EVs and the potential reduction in GHG emissions.



BUILDING DEPARTMENT

Current Fleet
28 vehicles

1 Hybrid
Ford C-Max Hybrid

27 Compact Cars
Ford Focus

Potential Fleet
Hybrids Replace 20%

6 Hybrids
Ford C-Max Hybrid

22 Compact Cars
Ford Focus

Potential Fleet
EVs Replace 20%

5 EVs
Ford Focus Electric

1 Hybrid
Ford C-Max Hybrid

22 Compact Cars
Ford Focus

CO_2 tailpipe	2.94 MT CO2e	11.29 MT CO2e
=	3.5 acres of U.S. forests in one year	12,352 lbs of coal

CIP DEPARTMENT

Current Fleet
10 vehicles

10 Compact Cars
Ford Focus

Potential Fleet
Hybrids Replace 20%

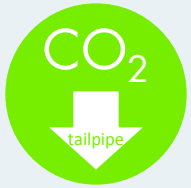
2 Hybrids
Ford Fusion Hybrid

8 Compact Cars
Ford Focus

Potential Fleet
EVs Replace 20%

2 EVs
Ford Focus Electric

8 Compact Cars
Ford Focus

	0.45 MT CO2e	1.73 MT CO2e
	0.53 acres of U.S. forests in one year	1,893 lbs of coal

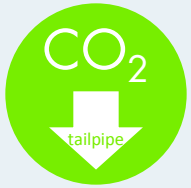
CODE COMPLIANCE DEPARTMENT

Current Fleet	Potential Fleet **Hybrids Replace 20%**	Potential Fleet **EVs Replace 20%**
43 vehicles		
2 Hybrids Ford Fusion Hybrid	6 Hybrids Ford Fusion Hybrid	4 EVs Ford Focus Electric
19 Compact Cars Ford Focus	15 Compact Cars Ford Focus	2 Hybrids Ford Fusion Hybrid
+SUVs, trucks, ATVs	+SUVs, trucks, ATVs	15 Compact Cars Ford Focus
		+SUVs, trucks, ATVs

CO_2 tailpipe	0.45 MT CO2e	1.73 MT CO2e
=	0.53 acres of U.S. forests in one year	1,893 lbs of coal

FIRE DEPARTMENT

Current Fleet	Potential Fleet **Hybrids Replace 20%**	Potential Fleet **EVs Replace 20%**
79 vehicles		
2 Hybrids Ford Fusion Hybrid	6 Hybrids Ford Fusion Hybrid	4 EVs Ford Focus Electric
20 Compact Cars Ford Focus	16 Compact Cars Ford Focus	2 Hybrids Ford Fusion Hybrid
+SUVs, trucks, boat…	+SUVs, trucks, boat…	16 Compact Cars Ford Focus
		+SUVs, trucks, boat…

	3.56 MT CO2e	13.5 MT CO2e
	4.2 acres of U.S. forests in one year	14,770 lbs of coal

IT DEPARTMENT

Current Fleet
11 vehicles

2 Compact Cars
Ford Focus

+SUV, vans

Potential Fleet
Hybrids Replace 50%

1 Hybrids
Ford C-Max Hybrid

1 Compact Cars
Ford Focus

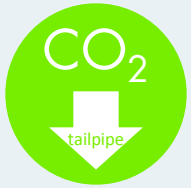
+SUV, vans

Potential Fleet
EVs Replace 50%

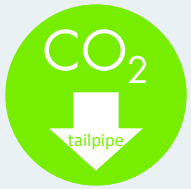
1 EV
Ford Focus Electric

1 Compact Cars
Ford Focus

+SUV, vans

	0.09 MT CO2e	0.34 MT CO2e
	0.11 acres of U.S. forests in one year	372 lbs of coal

PARKS AND RECREATION DEPARTMENT

Current Fleet	Potential Fleet **Hybrids Replace 20%**	Potential Fleet **EVs Replace 20%**
93 vehicles		
1 Hybrid Ford C-Max Hybrid	2 Hybrids Ford C-Max Hybrid	1 EV Ford Focus Electric
5 Compact Cars Ford Focus	4 Compact Cars Ford Focus	1 Hybrid Ford C-Max Hybrid
		4 Compact Cars Ford Focus
+trucks, busses, vans…	+trucks, busses, vans…	+trucks, busses, vans…
	0.31 MT CO2e	1.18 MT CO2e
	0.37 acres of U.S. forests in one year	1,291 lbs of coal

PLANNING DEPARTMENT

Current Fleet
4 vehicles

4 Compact Cars
Ford Focus

Potential Fleet
Hybrids Replace 25%

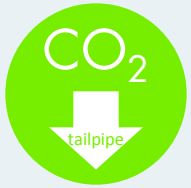
1 Hybrid
Ford C-Max Hybrid

3 Compact Cars
Ford Focus

Potential Fleet
EVs Replace 25%

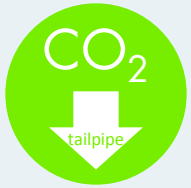
1 EV
Ford Focus Electric

3 Compact Cars
Ford Focus

	0.14 MT CO2e	0.52 MT CO2e
	0.17 acres of U.S. forests in one year	569 lbs of coal

PROPERTY MANAGEMENT DEPARTMENT

Current Fleet	Potential Fleet	Potential Fleet
47 vehicles	**Hybrids Replace 33%**	**EVs Replace 33%**
2 Hybrids Ford C-Max Hybrid	3 Hybrids Ford C-Max Hybrid	1 EV Ford Focus Electric
3 Compact Cars Ford Focus	2 Compact Cars Ford Focus	2 Hybrids Ford C-Max Hybrid
+trucks, vans, SUV…	+trucks, vans, SUV…	2 Compact Cars Ford Focus
		+trucks, vans, SUV…

	0.14 MT CO2e	0.59 MT CO2e
	0.17 acres of U.S. forests in one year	646 lbs of coal

PUBLIC WORKS DEPARTMENT

Current Fleet
237 vehicles

15 Compact Cars
Ford Focus

+trucks, SUVs…

Potential Fleet
Hybrids Replace 20%

3 Hybrids
Ford C-Max Hybrid

12 Compact Cars
Ford Focus

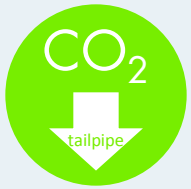
+trucks, SUVs…

Potential Fleet
EVs Replace 20%

3 EVs
Ford Focus Electric

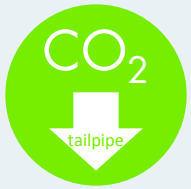
12 Compact Cars
Ford Focus

+trucks, SUVs…

	1.44 MT CO2e	5.64 MT CO2e
	1.7 acres of U.S. forests in one year	6,171 lbs of coal

PARKING DEPARTMENT

Current Fleet 87 vehicles	Potential Fleet **Hybrids Replace 20%**	Potential Fleet **EVs Replace 20%**
1 EV Ford Focus Electric	1 EV Ford Focus Electric	4 EVs Ford Focus Electric
1 Hybrid Ford C-Max Hybrid	4 Hybrids Ford C-Max Hybrid	1 Hybrid Ford C-Max Hybrid
14 Compact Cars Ford Focus	11 Compact Cars Ford Focus	11 Compact Cars Ford Focus
+SUVs, trucks, vans…	+SUVs, trucks, vans…	+SUVs, trucks, vans…

	1.72 MT CO2e	8.00 MT CO2e
	2 acres of U.S. forests in one year	8,753 lbs of coal

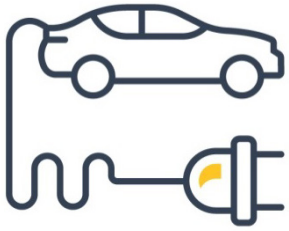
VEHICLE UTILIZATION STUDY

The City has commissioned a comprehensive vehicle utilization and rightsizing study by the Matrix Consulting Group. The goal of this study is to identify the optimal size of our fleet.

INCENTIVES FOR EMPLOYEES

- Many employees are interested in commuting to work through more environmentally conscious means.

- More efficient modes of transportation include:
  - Biking
  - Carpooling
  - Public Transit
  - Hybrid vehicles
  - EVs



RECOMMENDATIONS

- During the vehicle replacement process for Ford Focus vehicles, it is recommended that hybrid vehicles and EVs are considered as options, when suitable and when funding is available.

- It is recommended that a fleet-wide analysis be performed every 5 years to determine if any new opportunities are present to utilize current vehicles more efficiently. This analysis should consider the number and types of vehicles that are projected to be replaced.

- Further analysis is needed to identify a suitable scenario for transition to low-/no-emissions vehicles and policy direction. This analysis would require examination of: financial strategy/platform used to replace vehicles, funding availability, and lifecycle of current compact vehicles and their projected replacement timeline.

RECOMMENDATIONS

It is recommended that departments are provided the option of opening a Uber/Lyft business account.

It is recommended that employees are trained to participate in a bicycle program

It is recommended that the City implement an incentive program for employees that commute to work using more environmentally conscious modes of transportation.

GLOSSARY

Automatic Vehicle Location (AVL): a system that transmits vehicles' location and can gather additional data about the vehicles.

Electric Vehicle (EV): a type of vehicle that use electricity stored in a battery pack as power instead of gasoline or diesel. EVs do not emit any tailpipe emissions.

Greenhouse Gas (GHG): gases that trap heat in the atmosphere.

Hybrid: a type of vehicle that is powered by both an internal combustion engine and one or more electric motors that use electricity stored in a battery pack.

Internal Combustion Engine (ICE) vehicle: a type of vehicle powered by the burning of a fossil fuel in the engine which converts the chemical energy into mechanical energy.