



### LANE TRANSIT DISTRICT BOARD OF DIRECTORS WORK SESSION

Monday, September 16, 2019  
4:00 – 5:00 p.m.

**LTD Board Room**  
3500 E. 17th Avenue, Eugene  
(Off Glenwood Blvd. in Glenwood)

*No public testimony will be heard at this meeting.*

### AGENDA

<u>Time</u>	<u>ITEM</u>	<u>Page</u>
4:00 p.m.	I. CALL TO ORDER	
4:01 p.m.	II. ROLL CALL  <input type="checkbox"/> Carl Yeh (President) <input type="checkbox"/> Kate Reid (Vice President) <input type="checkbox"/> Joshua Skov (Secretary) <input type="checkbox"/> Don Nordin (Treasurer) <input type="checkbox"/> Caitlin Vargas <input type="checkbox"/> Steven Yett <input type="checkbox"/> Emily Secord	
4:02 p.m.	III. COMMENTS FROM BOARD PRESIDENT  <i>This agenda item provides an opportunity for the Board president to formally communicate with the Board on any current topics or items that may need consideration.</i>	
4:03 p.m.	IV. COMMENTS FROM THE GENERAL MANAGER  <i>This agenda item provides an opportunity for the general manager to formally communicate with the Board on any current topics or items that may need consideration.</i>	
4:04 p.m.	V. ANNOUNCEMENTS AND ADDITIONS TO AGENDA  <i>This agenda item provides a formal opportunity for the Board president to announce additions to the agenda, and also for Board members to make announcements.</i>	
	VI. ITEMS FOR INFORMATION	
4:05 p.m.	A. GREENHOUSE GAS INVENTORY RESULTS : <i>Materials Included</i> [Kelly Hoell]  <b>Action Needed:</b> None. Information Only  <i>Staff will review the results of the District's first Greenhouse Gas Inventory.</i>	2
4:40 p.m.	B. GENERAL MANAGER FISCAL YEAR 2019-2020 ANNUAL PERFORMANCE GOALS: <i>Materials Provided as a Handout</i> [David Collier]  <b>Action Needed:</b> Discussion  <i>The Board of Directors will review and discuss the general manager's fiscal year 2019-2020 annual performance goals.</i>	30
5:00 p.m.	VII. ADJOURNMENT  <b>The facility used for this meeting is wheelchair accessible. To request a reasonable accommodation or interpreter, including alternative formats of printed materials, please contact LTD's Administration office no later than 48 hours prior to the meeting at 541-682-5555 (voice) or 7-1-1 (TTY through Oregon Relay).</b>	



## AGENDA ITEM SUMMARY

**DATE OF MEETING:** September 16, 2019

**ITEM TITLE:** GREENHOUSE GAS INVENTORY RESULTS

**PRESENTER:** Kelly Hoell, Sustainability Program Manager

**DIRECTOR:** Tom Schwetz, Director of Planning and Development

**ACTION REQUESTED:** Information and Discussion

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**PURPOSE:** The Board will review the results of LTD's first greenhouse gas (GHG) inventory.

**ROLE OF THE BOARD:** The Board's role in this instance is to obtain information for a future decision.

**HISTORY:**

- In 2007, the LTD Board passed Resolution 2007-027 Lane Transit District Sustainability Policy, committing the District to advancing the social, economic, and environmental sustainability of the Eugene/Springfield metropolitan area in the following four areas: Providing quality transit service, using environmentally-friendly vehicles, constructing earth-friendly projects, implementing sustainable operating practices.
- In June 2015, as a result of several bills passed by the Oregon legislature, LCOG published the Central Lane Scenario Planning Final Report which outlined the most effective ways for the Central Lane MPO to reduce transportation-related GHG emissions. The effort was focused on planning ways for the state to reach its 2050 goal of reducing GHG emissions 75% below 1990 levels. Active transportation and transit were named as key components of the preferred scenario.
- In 2016, the Eugene City Council updated its Climate Recovery Ordinance (CRO) with four goals:
  - Reduce community fossil fuel use by 50% of 2010 levels by 2030.
  - Reduce total community GHG emissions by an amount that is no more than the City of Eugene's average share of a global atmospheric GHG level of 350 parts per million (ppm) by 2100, which was estimated to require an annual average emissions reduction level of 7.6%.
  - All City of Eugene owned facilities and operations shall be carbon neutral by 2020.
  - Reduce the City of Eugene's use of fossil fuels by 50% compared to 2010 usage.
- In 2018, LTD began partnering with the City of Eugene as a Large-Lever Shareholder in its Climate Action Plan 2.0 process to quantify how far along the community was in achieving the goals of the CRO and identify gaps and opportunities.
- In August 2018, LTD created a part-time paid position of Sustainability Program Manager to direct the District's sustainability initiatives.
- In fall 2018, LTD received MPO grant funding to conduct an in-depth study to understand the triple-bottom line implications of different investments in technologies and fuels to inform its long-term fleet plan. That work is expected to begin in calendar year 2020.
- In Feb 2019, and in May 2019, LTD put its first and second all-electric buses respectively into revenue service as part of its extensive testing program to ensure the electric vehicles meet LTD's required specifications and will meet the long-term expectations and needs of the District.
- In April 2019, Sustainability Program Manager Kelly Hoell presented to both the SPC and the Board of Directors with information outlining the scope, activities, and timeline of the District's Sustainability Program.

**CONSIDERATIONS:** The analysis covers both emissions from transit operations and the emissions benefits of public transit at a community scale. The analysis covers a 7-year period from FY 2012 - 2018. The boundaries of the report look at all emission sources related to LTD's operations from owned and leased facilities and assets, and all mission-critical activities. The analysis conforms to the best practices of leading GHG reporting protocols.

For some emission sources (fleet, natural gas used in owned buildings for heating, refrigerants from bus air conditioning systems, electricity from buildings and equipment) precise data was available and emissions calculations include very little uncertainty. Within the Fleet category, the report includes emissions from owned Fixed Route buses, owned EmX buses, owned RideSource vehicles, owned vehicles used for rural connections service (Diamond Express in Oakridge, Rhody Express in Florence, and the Yachats-Florence connector service), owned non-revenue vehicles used by LTD staff, and leased vanpool vehicles. It does not include emissions from vehicles LTD owns that are used for transit operations in the City of Cottage Grove as part of South Lane Wheels because LTD does not report on fuel consumption for those vehicles to the National Transit Database. Additionally, as LTD does not own or lease the taxis and other vehicles used for NEMT (non-emergency medical transportation) trips, this category of emissions has been excluded from the inventory.

For other sources (business travel, solid waste, employee commute, emissions from upstream fuel production, emissions from production of goods and services within LTD's supply chain) data and calculation methodologies were less precise and were estimated using best practices to provide a sense of scale for these emissions sources. LTD does not have full control over these estimated emissions sources and shares responsibility for these sources with other entities. By understanding the sense of scale of its full emissions profile, including shared emissions sources, LTD is well positioned to identify all opportunities to directly manage or indirectly influence its GHG emissions.

The Board will be able to use this information to:

- update its sustainability policy (adopted in 2007),
- understand how both LTD's emissions from its operations and the broader community benefits from transit fit into the state, regional, and City of Eugene GHG reduction goals,
- set initial greenhouse gas reduction goals, and
- understand the implications of operational decisions on energy and emissions performance.

**ALTERNATIVES:** N/A

**NEXT STEPS:** A full report outlining the GHG inventory results discussed today will be published in October 2019. Later this fall, LTD is planning to purchase electric buses from the Washington State Contract and staff will return to discuss this with the Board once a contract is issued. Also this fall, staff will begin a procurement process to hire a consulting team to assist with a triple bottom line analysis of available fleet technologies and fuels to inform a long-term fleet plan. This analysis will begin in early 2020 and will provide modeling of the financial, social, and environmental impacts (including GHG implications) of investments in various fleet technologies / fuels.

**SUPPORTING DOCUMENTATION:**

- 1) Presentation of GHG inventory and energy consumption baseline results

**PROPOSED MOTION:** N/A

# LTD's Greenhouse Gas Inventory Results FY12-18

Board of Directors Work Session - September 16, 2019



# OVERVIEW

- Purpose of the study
- Historical context
- Results 1: GHG impacts from Transit
- Results 2: GHG benefits of Transit
- Next Steps
- Q&A



# PURPOSE

- Understand how LTD's emissions fit into regional, state, local goals
- Understand implications for operational decisions
- Update 2007 sustainability policy (Resolution No. 2007-027)
- Set GHG reduction goals



# HISTORICAL CONTEXT

- 2007 - LTD Sustainability Policy, State GHG reduction goals set
- 2014 – LTD APTA Sustainability Commitment - Silver
- 2015 - Central Lane Scenario Planning
- 2016 - Eugene CRO – 4 goals set
- 2018 – LTD Sustainability Program Manager position; Fleet Plan grant
- 2019 - Electric bus testing, MOD pilots



# GHG BENEFITS AND IMPACTS FROM TRANSIT

Net Greenhouse Gas Impacts of Transit  
Emissions Produced – Emissions Displaced

## Emissions Produced by Transit

### Transit Operations

- Fleet vehicles fuel use
- Electricity & natural gas from buildings and stations
- Refrigerants used in vehicle air conditioning
- All other emissions sources

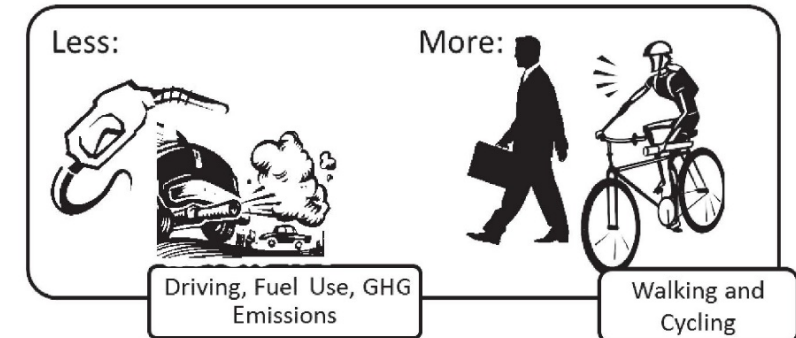
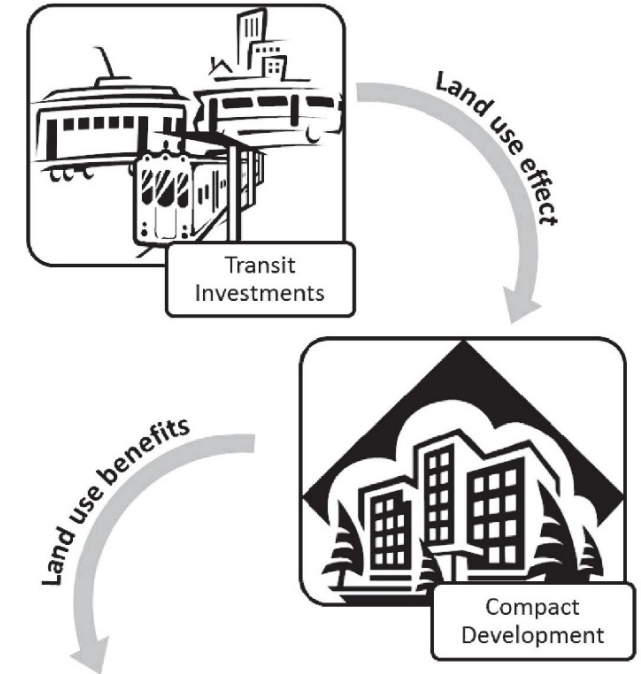
## Emissions Benefits of Transit

### Ridership Benefit

- Reduced VMT from taking the bus instead of a private auto

### Land Use Benefit

- Compact development around transit facilities reduces VMT for all
- Shorter trips makes biking/walking more attractive

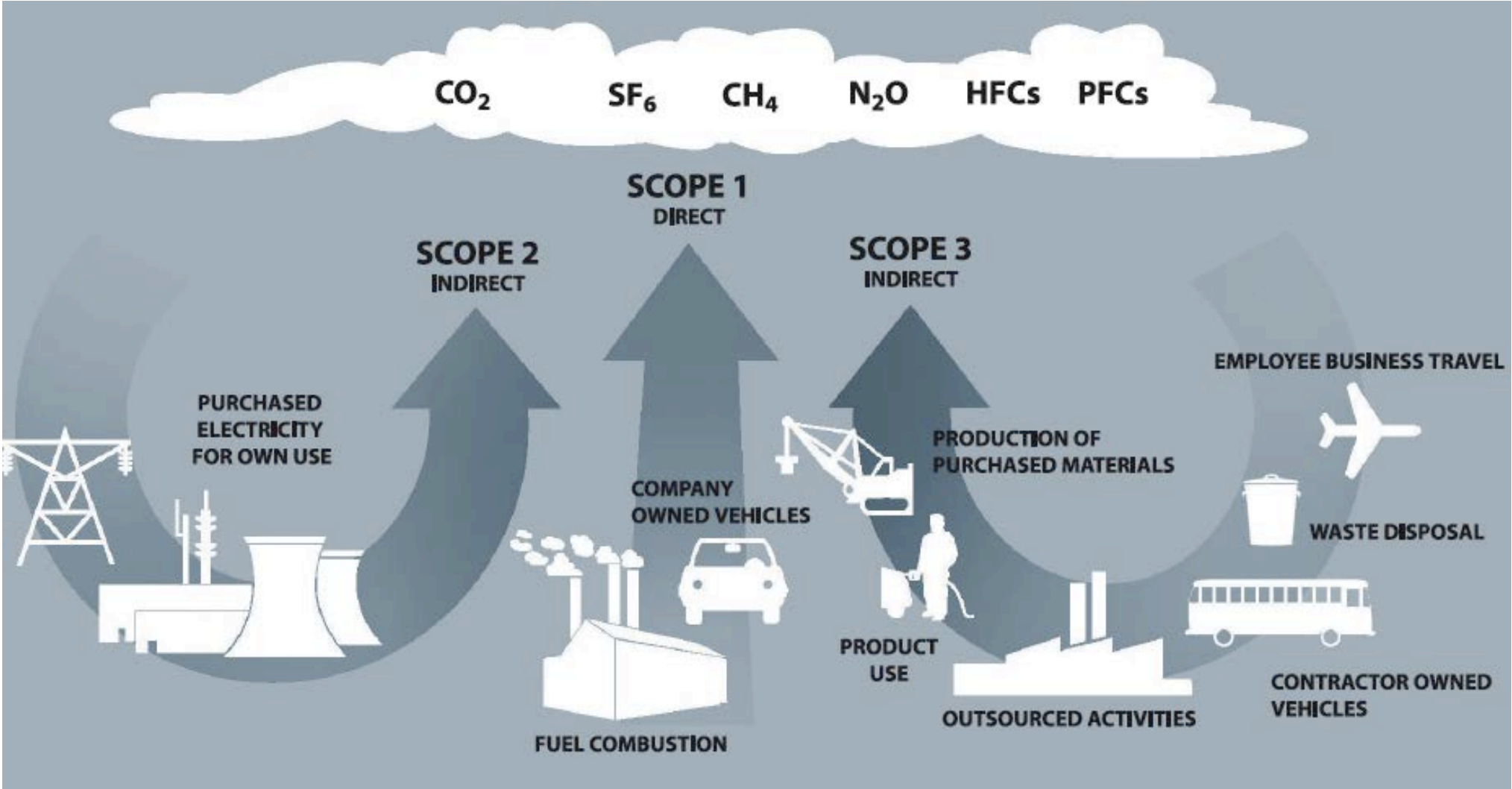


Graphic Adapted from *Quantifying Greenhouse Gas Emissions from Transit*, APTA, 2009.

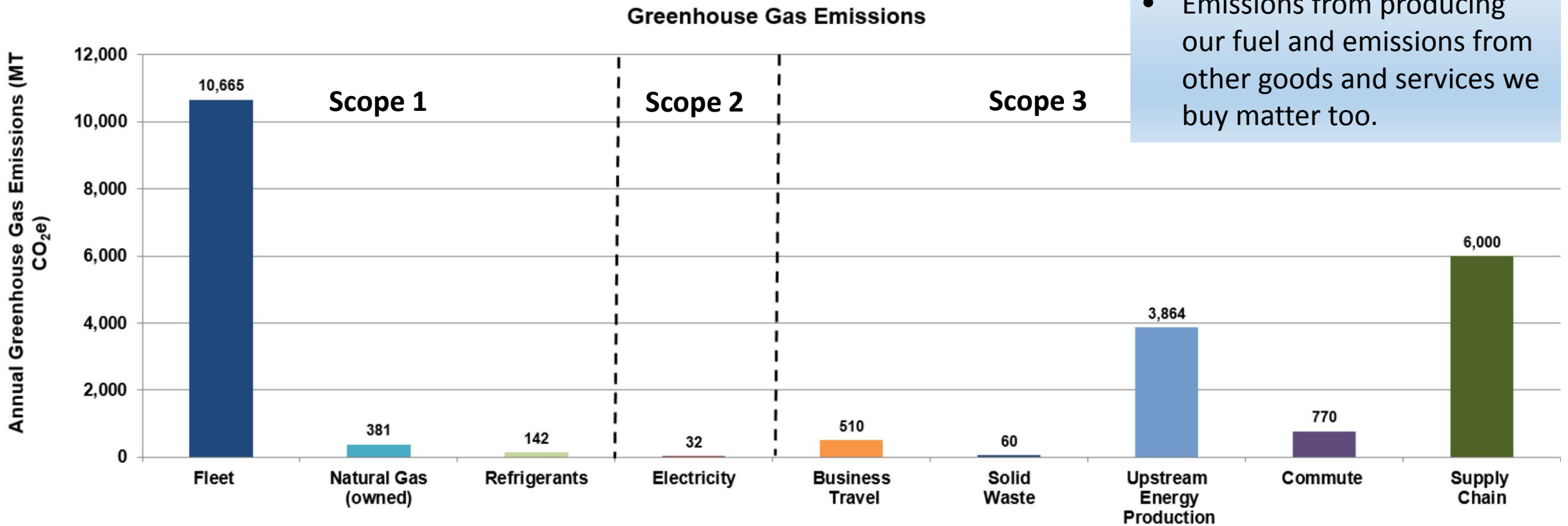
Graphic from TCRP 176 *GHG Benefits from Transit User guide*, 2015.



# GHG ACCOUNTING – 3 SCOPES



# GHG EMISSIONS FROM TRANSIT FY 2018

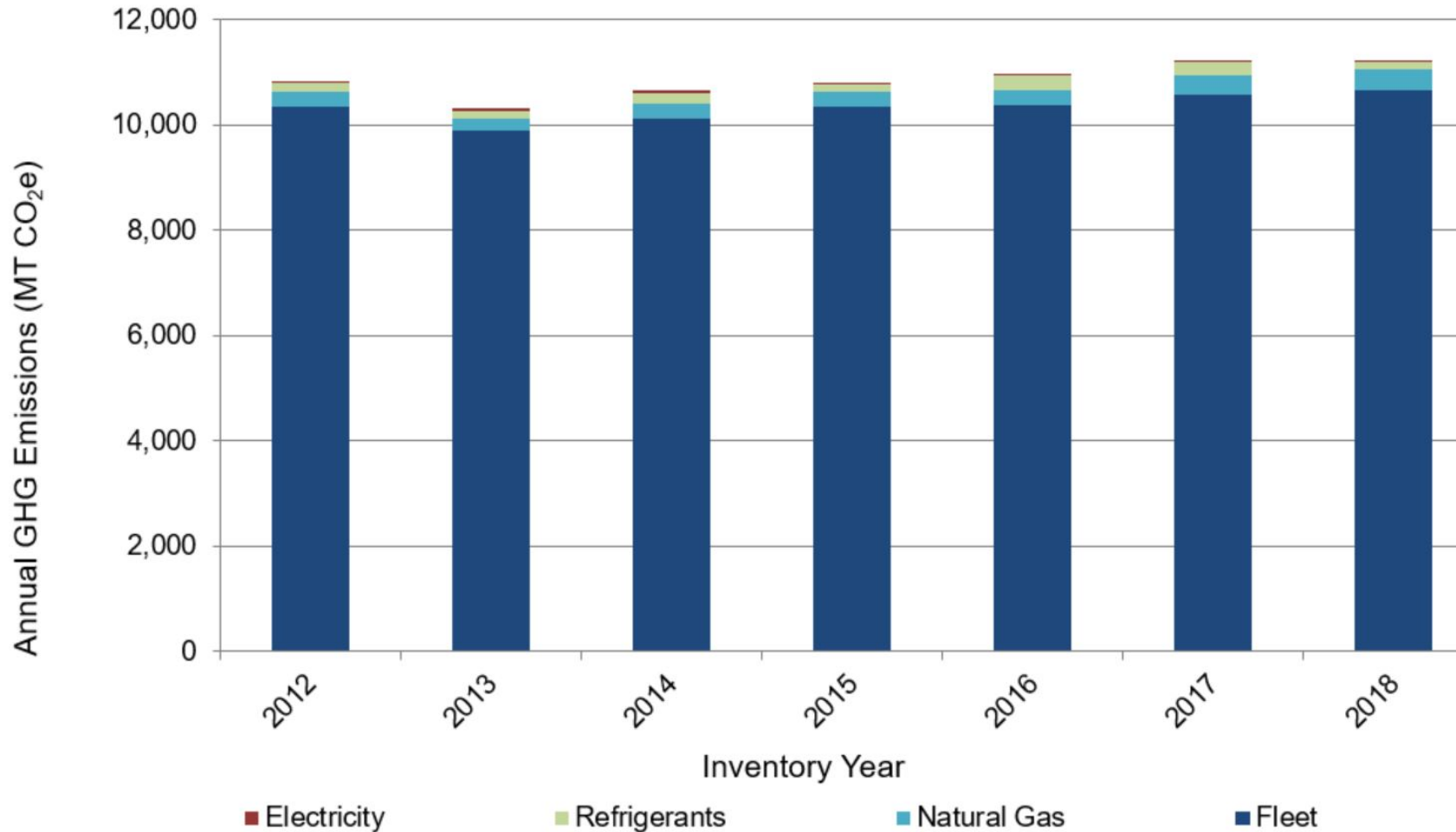


## KEY LESSONS:

- Fleet matters most!
- Emissions from producing our fuel and emissions from other goods and services we buy matter too.

# SCOPE 1 & 2 EMISSIONS - FY12-18

Greenhouse Gas Emissions by Inventory Year

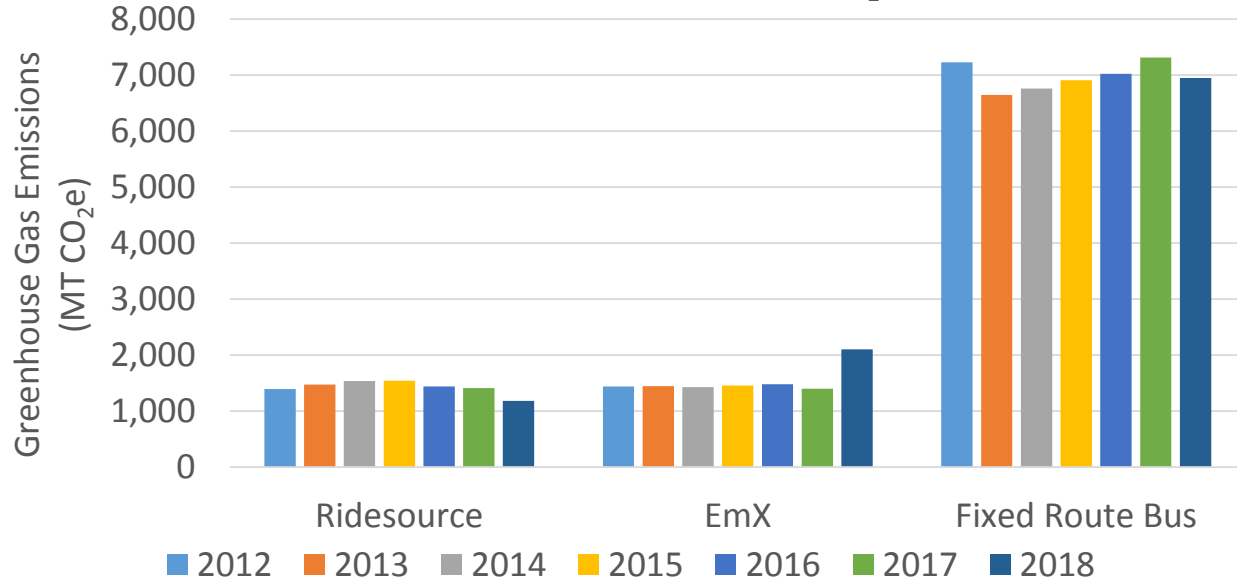


## KEY LESSONS:

- Aggregate Fleet emissions have been fairly consistent over time.
- Fleet emissions represent 94%+ of emissions LTD has full control over.

# FLEET EMISSIONS BY SERVICE TYPE

Greenhouse Gas Emissions (MT CO<sub>2</sub>e)



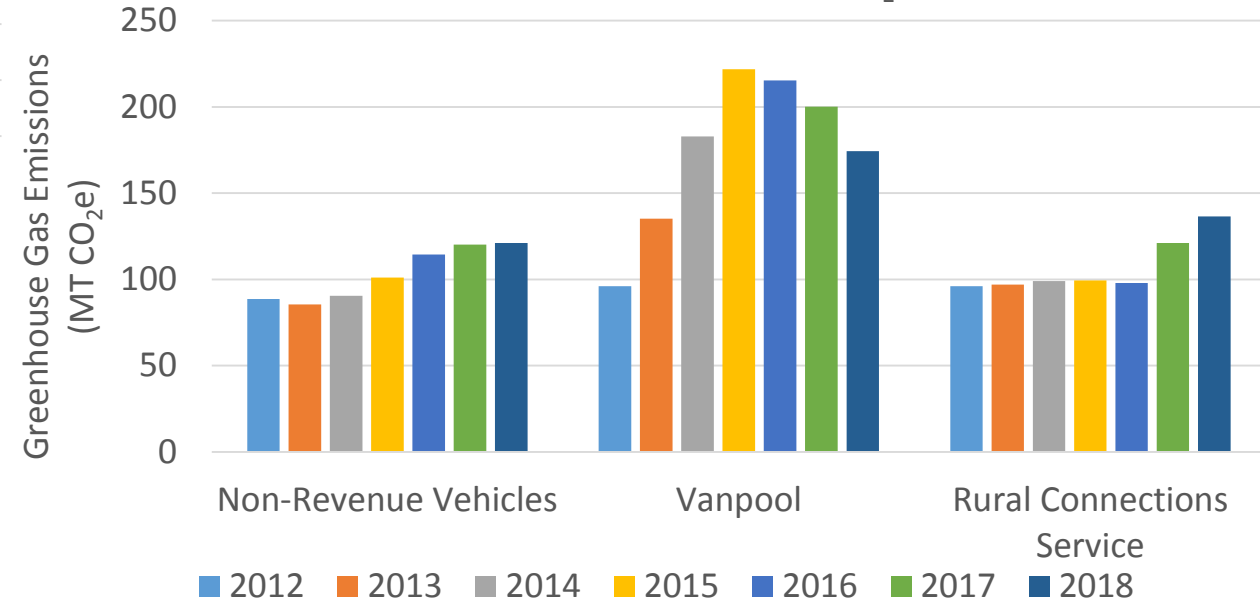
## KEY LESSONS:

- Fixed route is largest share of total emissions
- EmX and Ridesource emissions are similar in scale
- 2018 EmX increase from EmX West opening
- Fixed Route efficiency gains between '12-'13; reduced vehicle miles and minor efficiency gains in '18.

## KEY LESSONS:

- Note difference in scale between two charts
- Non-Revenue vehicle increase from increased staff/miles
- Vanpool changes due to demand
- Rural Connections: added Rhody Express and Florence-Yachats reporting to this category in '18.

Greenhouse Gas Emissions (MT CO<sub>2</sub>e)

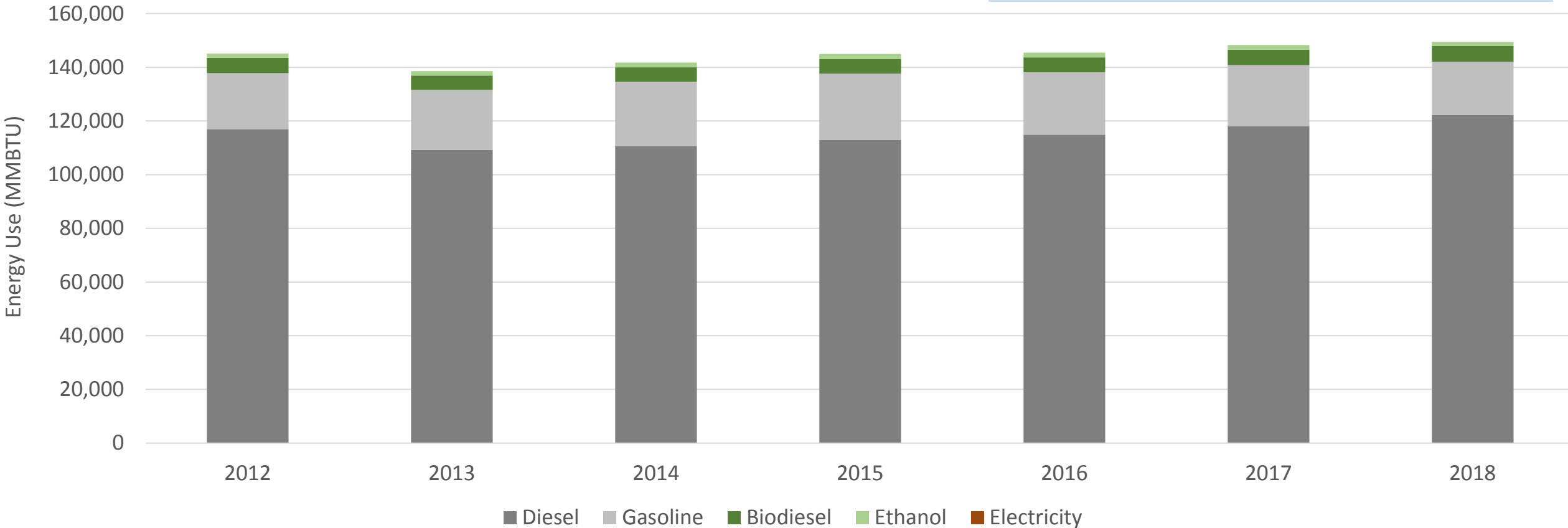


# FLEET ENERGY CONSUMPTION BY FUEL TYPE

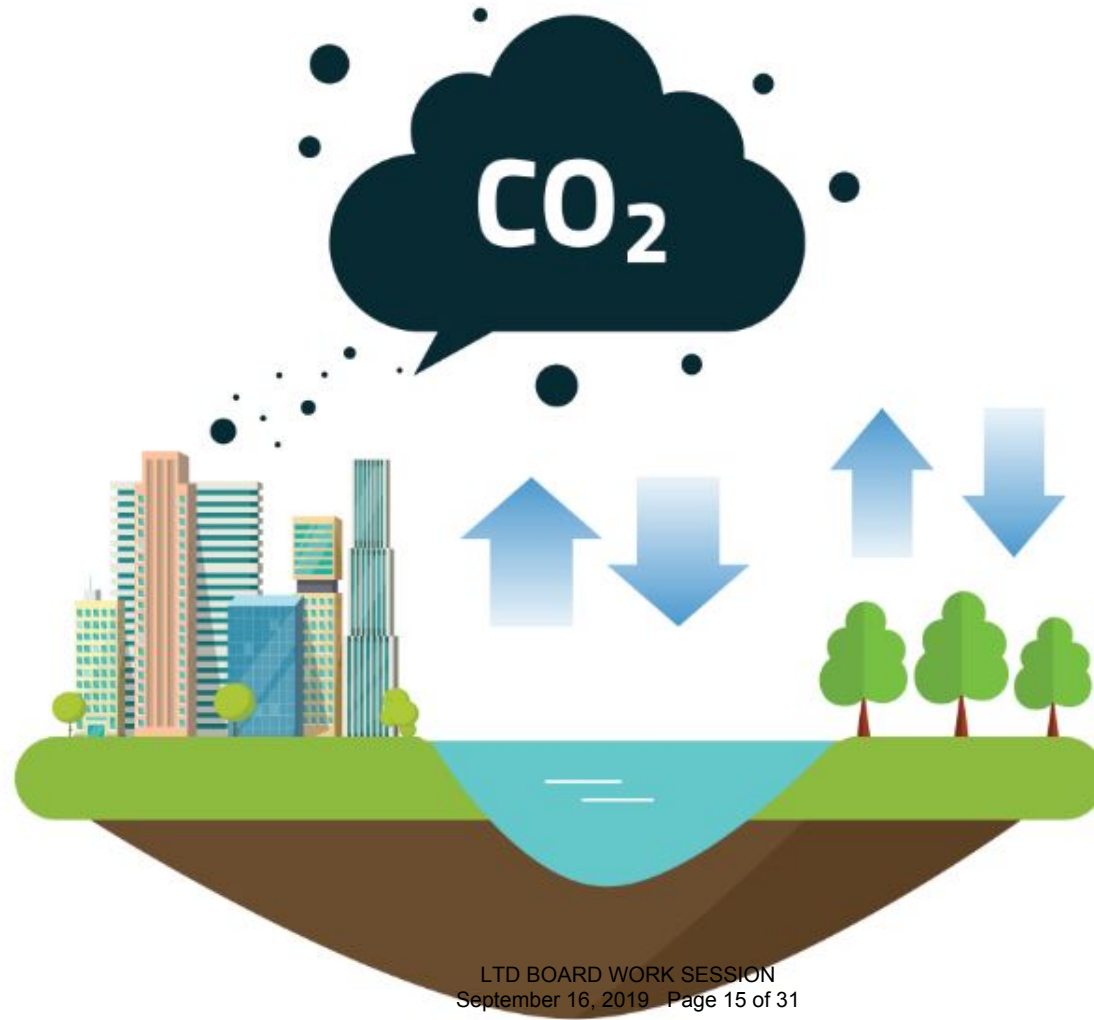
## KEY LESSON:

- 5% of LTD fleet fuel consumption is from renewables (B5 diesel, E10 gasoline).

Energy Use by Fuel Type

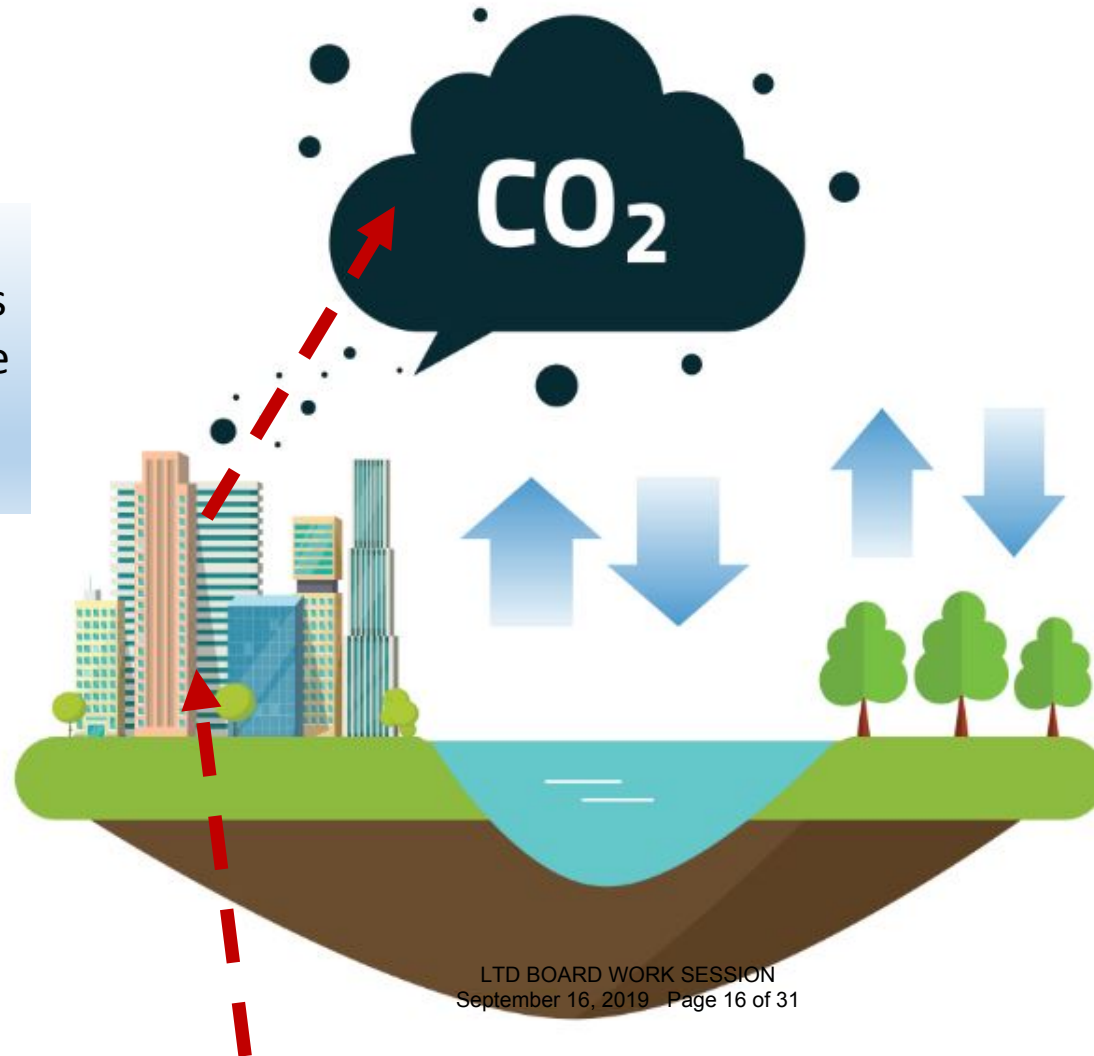


# THE CARBON CYCLE



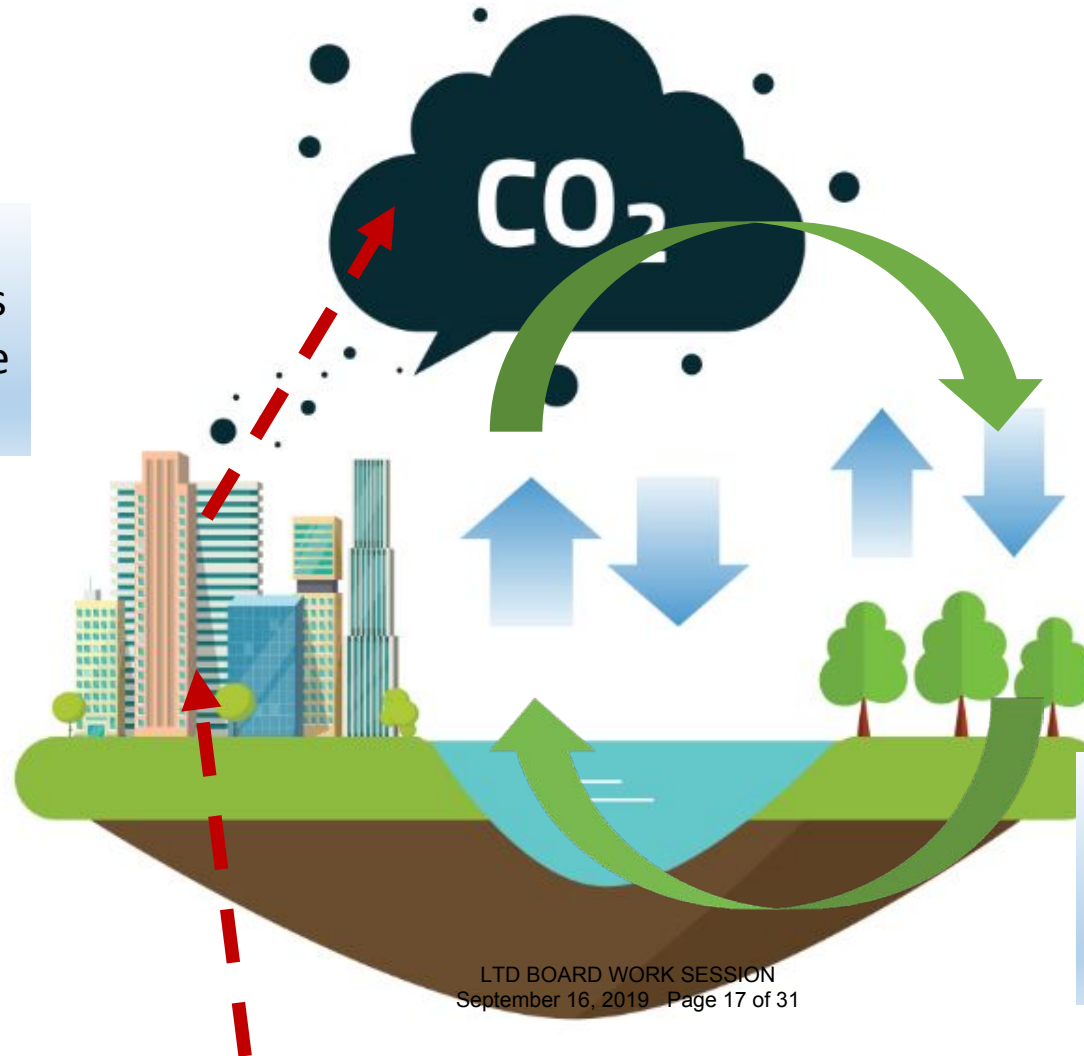
# ANTHROPOGENIC EMISSIONS

**Anthropogenic emissions:** come from mining fossil fuels previously sequestered in the Earth's crust or significant land use changes.



# ANTHROPOGENIC vs. BIOGENIC EMISSIONS

**Anthropogenic emissions:**  
come from mining fossil fuels  
previously sequestered in the  
Earth's crust.



**Biogenic emissions:**  
considered part of the  
natural carbon cycle.

## KEY LESSON:

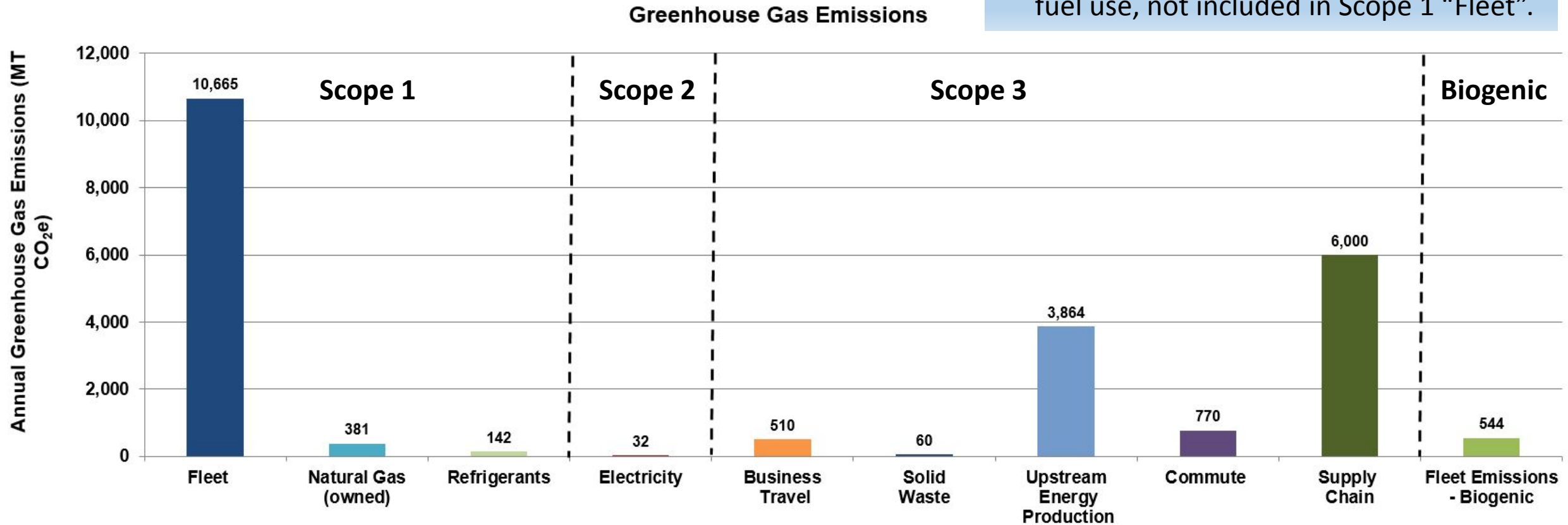
- Not all emissions are created equal.
- Anthropogenic ≠ biogenic
- Fossil fuels ≠ renewable fuels



# FY 2018 EMISSIONS, INCLUDING BIOGENIC

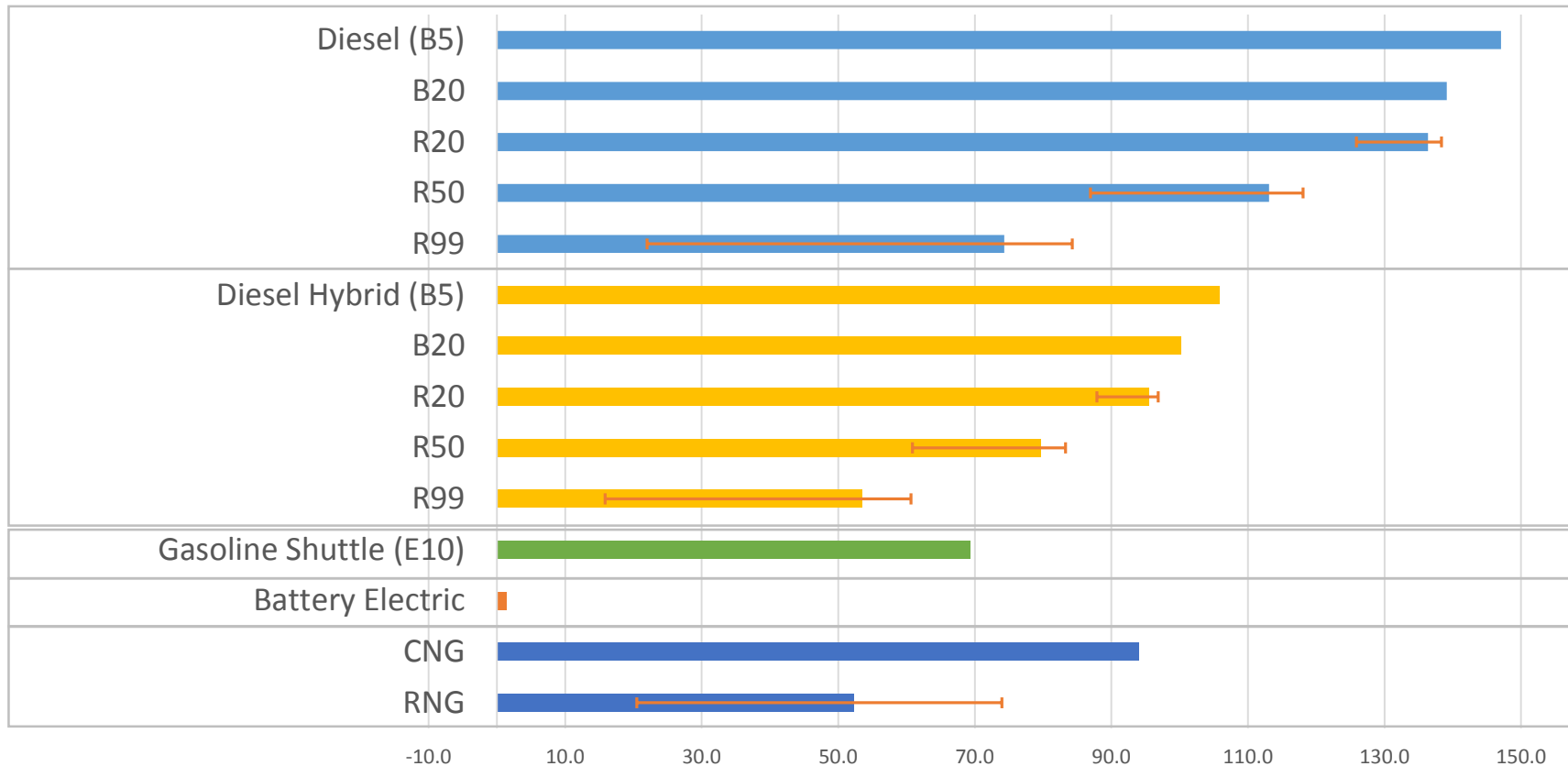
## KEY LESSON:

- LTD's Biogenic emissions from renewable fuel use, not included in Scope 1 "Fleet".



# LIFECYCLE EMISSIONS BY FUEL TYPES

GHGs by Fuel Type for 40,000 miles of travel  
(with error bars for range of carbon scores)



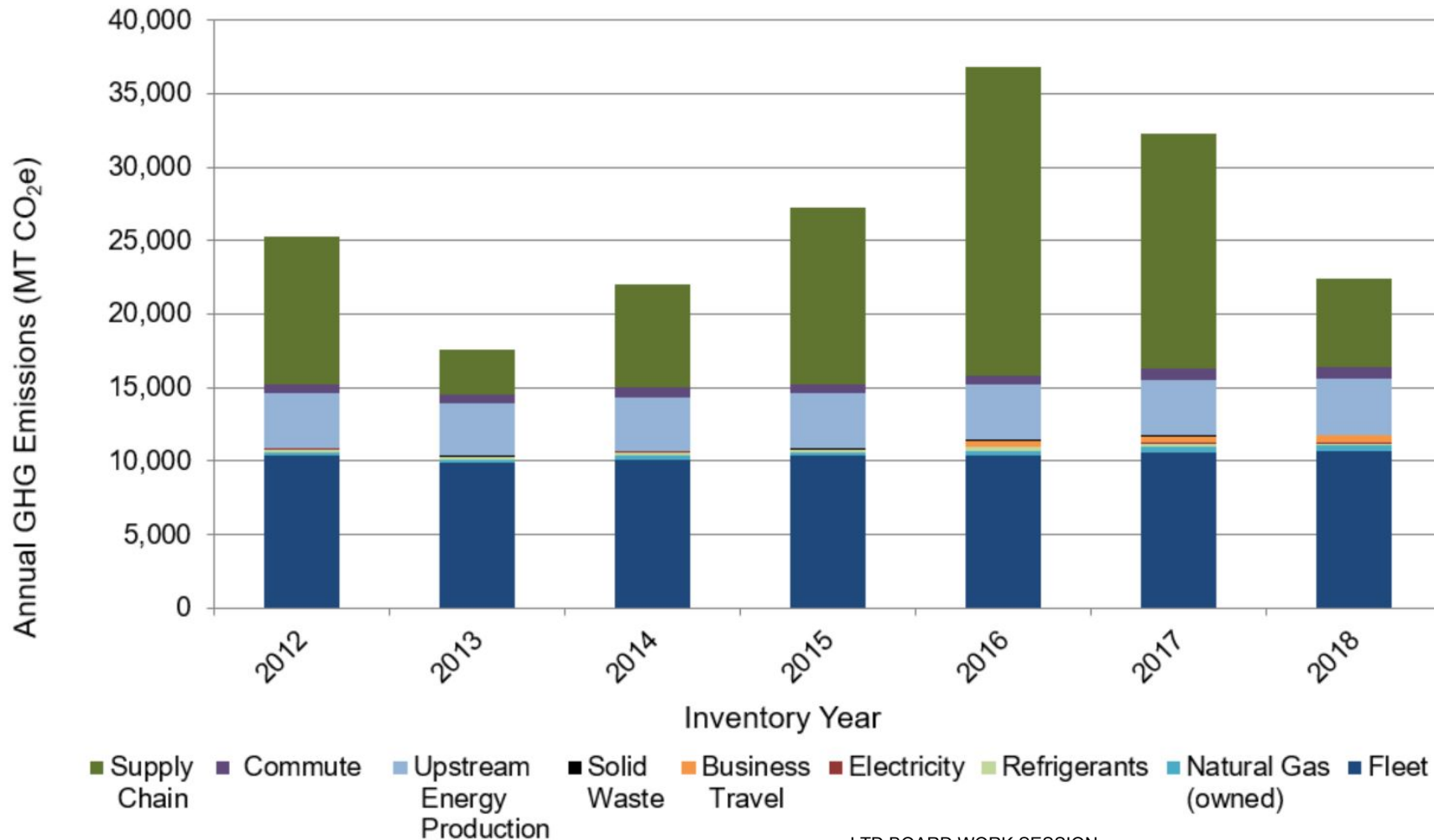
## KEY LESSONS:

- Opportunity abounds to reduce fleet emissions.
- LTD will study the opportunities in detail in 2020 for long-term fleet plan.

Greenhouse Gas Emissions (MTCO<sub>2</sub>e) / 40,000 vehicle miles

# ADDING IN SCOPE 3 EMISSIONS - FY12-18

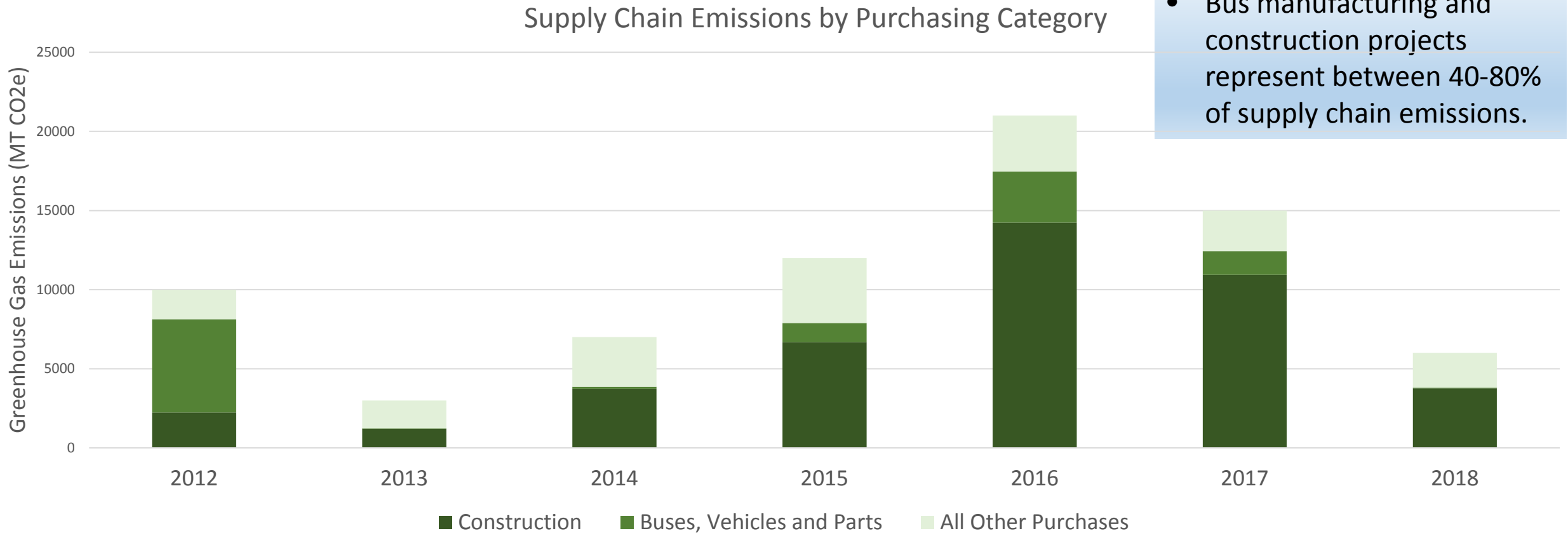
Greenhouse Gas Emissions by Inventory Year



**KEY LESSON:**

- Supply chain emissions vary with expenditure on major projects.

# SUPPLY CHAIN EMISSIONS DETAIL - FY12-18



# GHG BENEFITS AND IMPACTS FROM TRANSIT

Net Greenhouse Gas Impacts of Transit  
Emissions Produced – Emissions Displaced

## Emissions Produced by Transit

### Transit Operations

- Fleet vehicles fuel use
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- Refrigerants used in vehicle air conditioning
- All other emissions sources

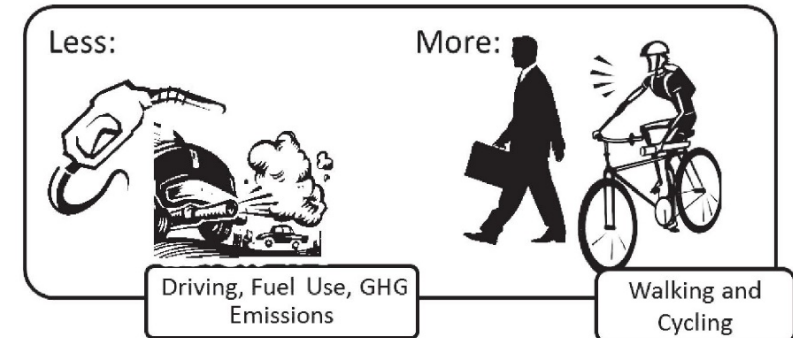
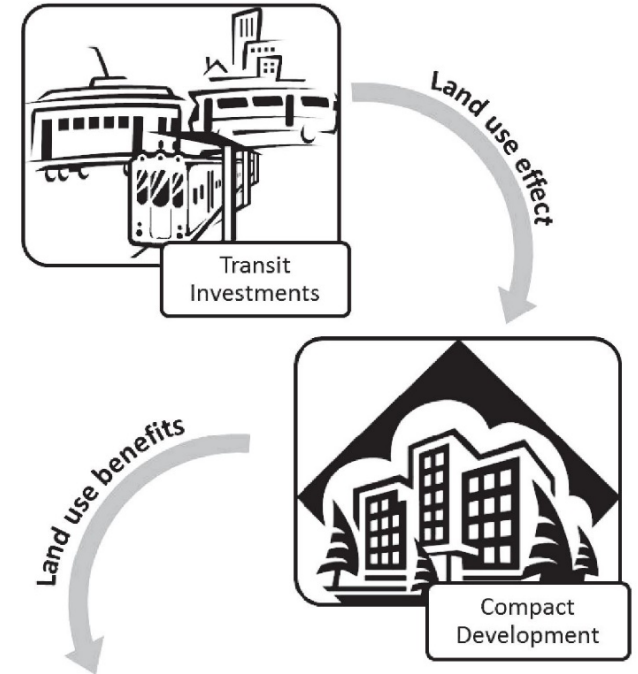
## Emissions Benefits of Transit

### Ridership Benefit

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### Land Use Benefit

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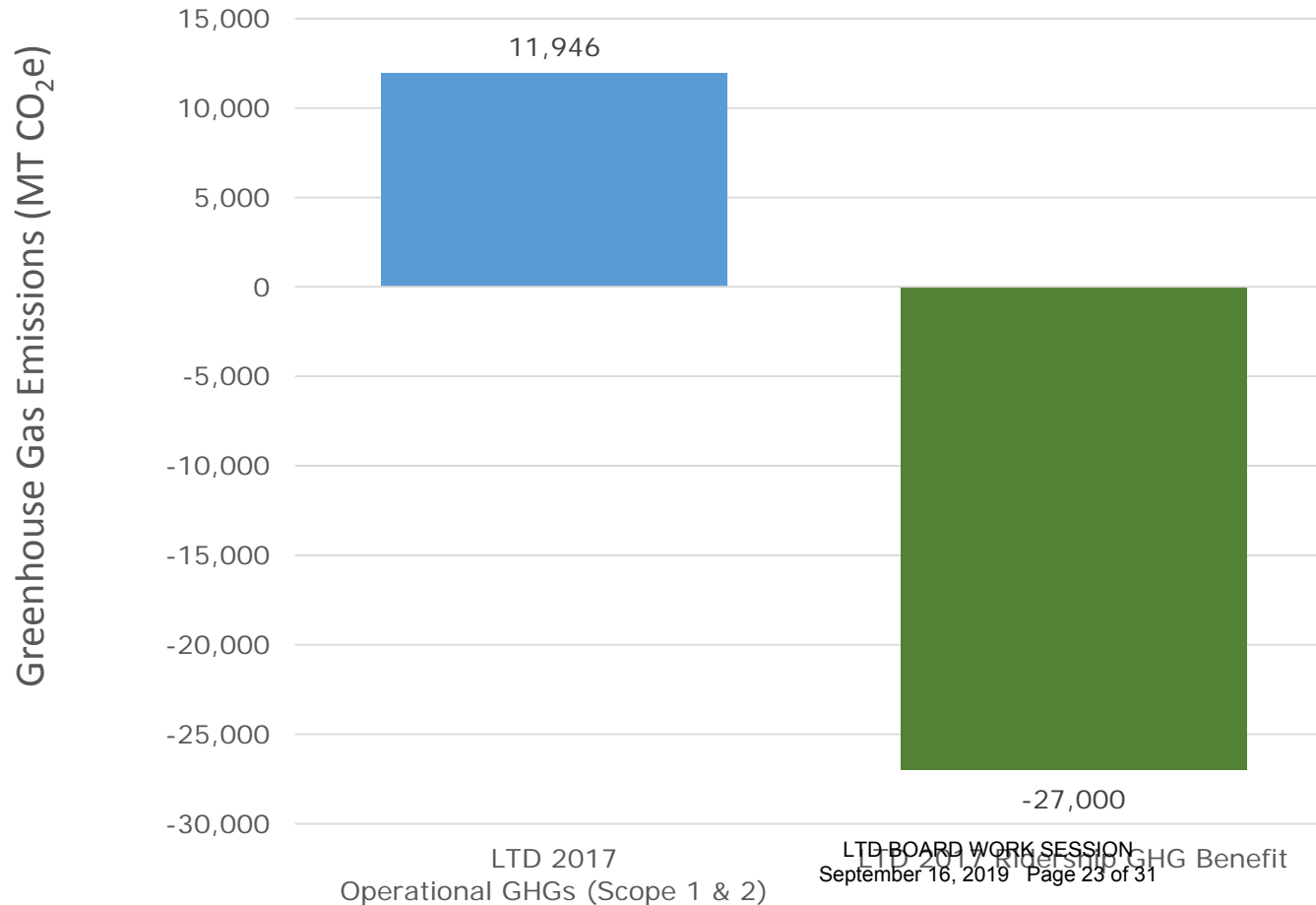


Graphic Adapted from *Quantifying Greenhouse Gas Emissions from Transit*, APTA, 2009.

Graphic from TCRP 176 *GHG Benefits from Transit User guide*, 2015.

# GHG BENEFITS OF RIDERSHIP

LTD Operational Emissions vs. Ridership Benefit

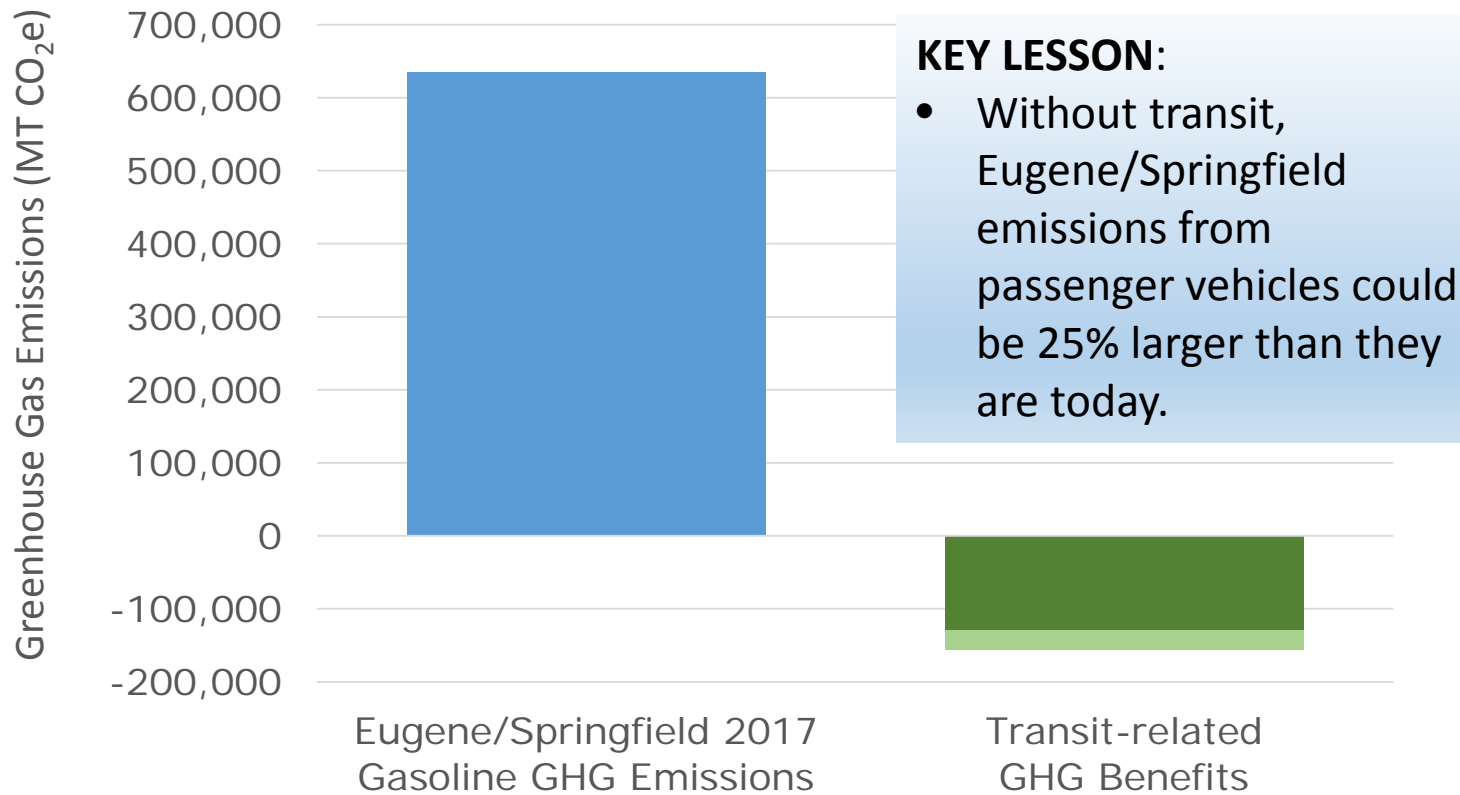


## KEY LESSONS:

- **Ridership benefits from transit are more than 2x the emissions from transit operations.**
- **Public transit is an important strategy to reduce community emissions.**

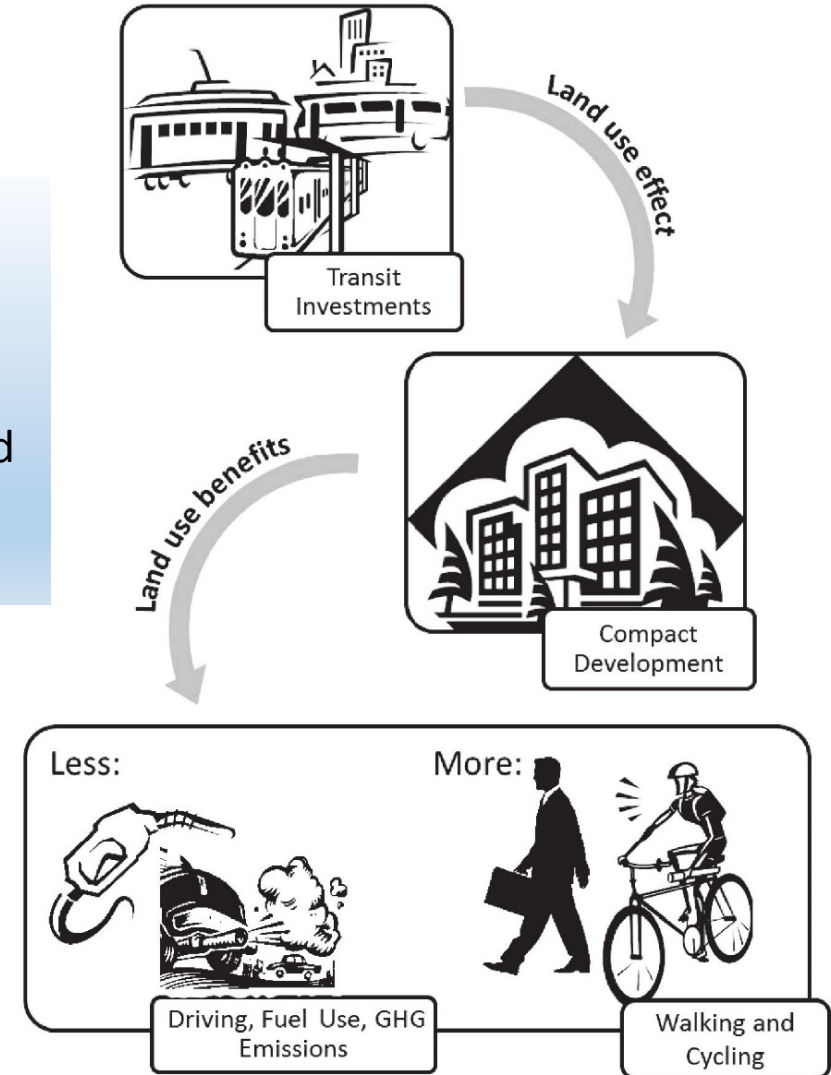
# GHG BENEFITS OF LAND USE EFFECT

Community Emissions vs. Transit-related GHG Benefits



**KEY LESSON:**

- Without transit, Eugene/Springfield emissions from passenger vehicles could be 25% larger than they are today.



■ Ridership Benefit of Transit

■ Land Use Benefit of Transit

# NEXT STEPS

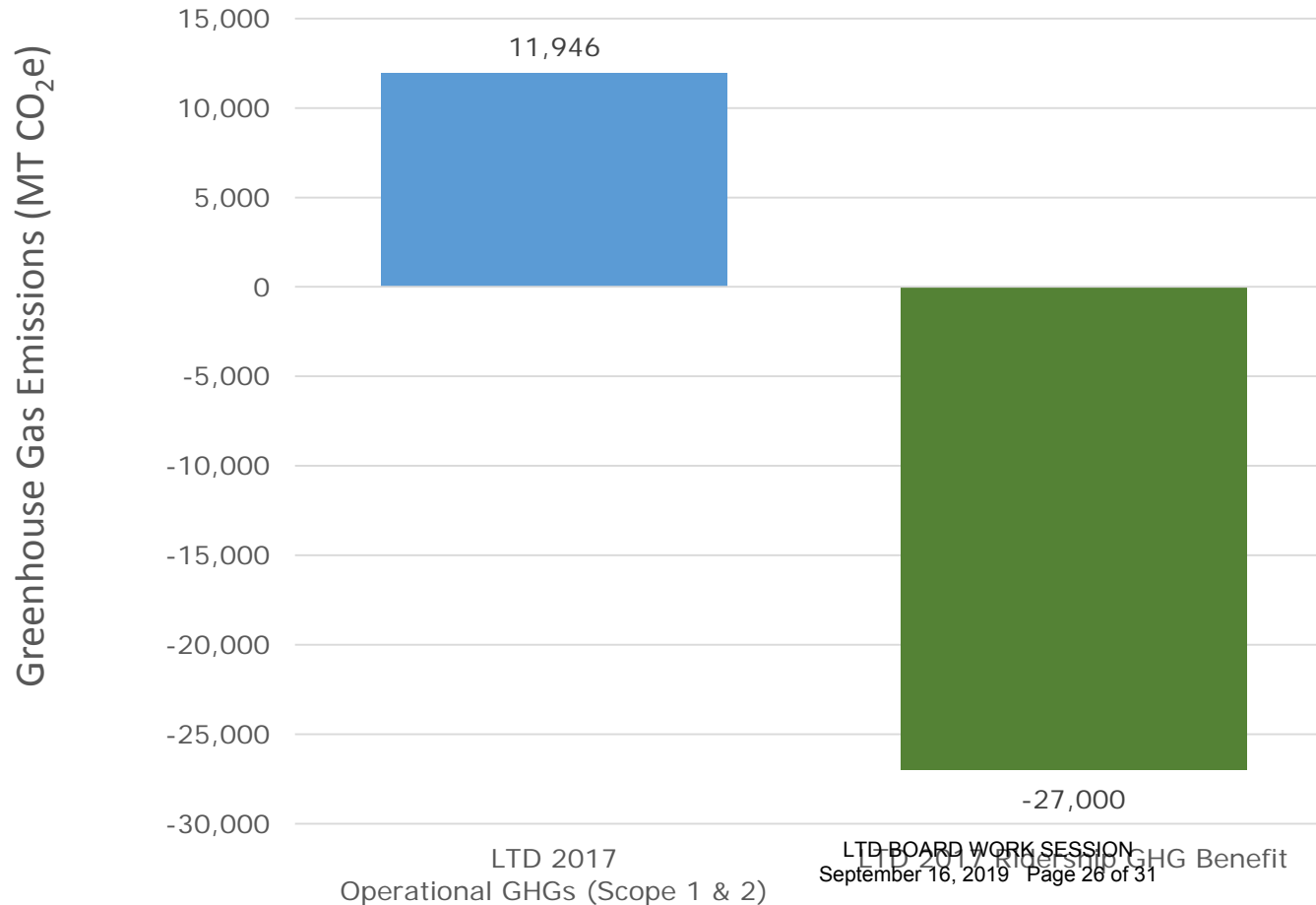
- Electric bus procurement, WA State Contract
- Technology / Fuel analysis for Fleet Plan
- GHG reduction modeling for goal setting
- Sustainability policy update





# 1. GET PEOPLE ON THE BUS

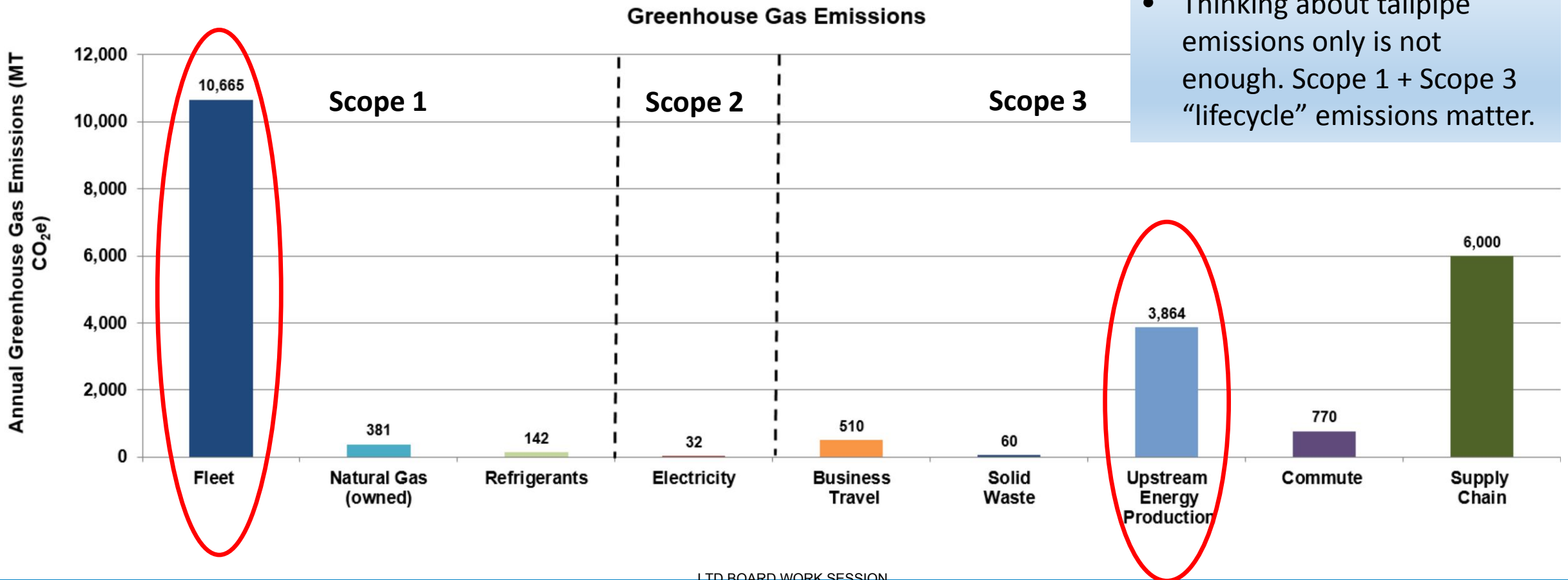
LTD Operational Emissions vs. Ridership Benefit



## KEY LESSONS:

- **Ridership benefits from transit are more than 2x the emissions from transit operations.**
- **Public transit is an important strategy to reduce community emissions.**

## 2. FOCUS ON FLEET; THINK LIFECYCLE...

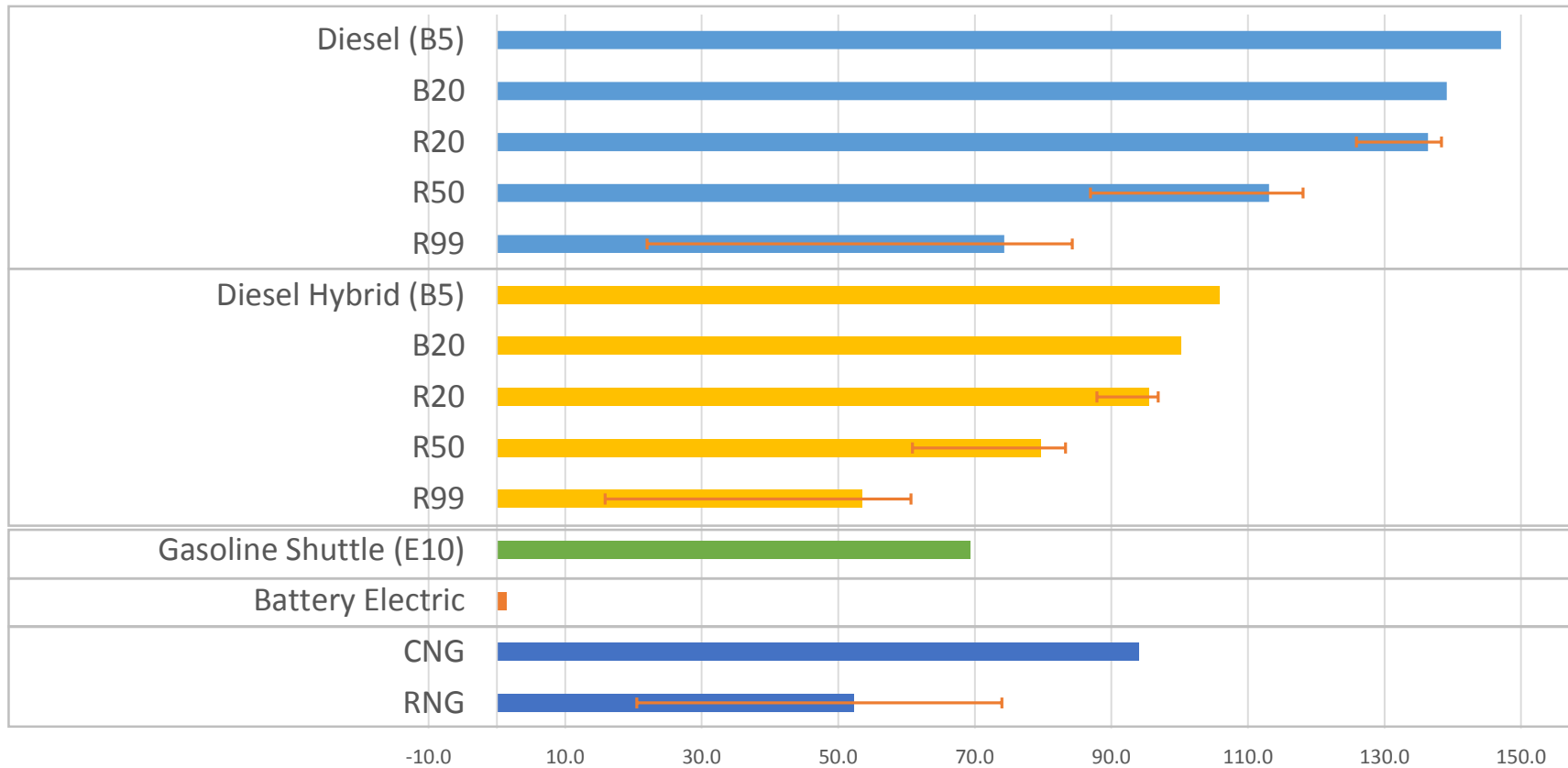


### KEY LESSONS:

- Fleet matters most!
- Thinking about tailpipe emissions only is not enough. Scope 1 + Scope 3 “lifecycle” emissions matter.

# 3. EMISSIONS REDUCTIONS ARE POSSIBLE

Lifecycle GHGs by Fuel Type for 40,000 miles of travel  
(with error bars for range of carbon scores)

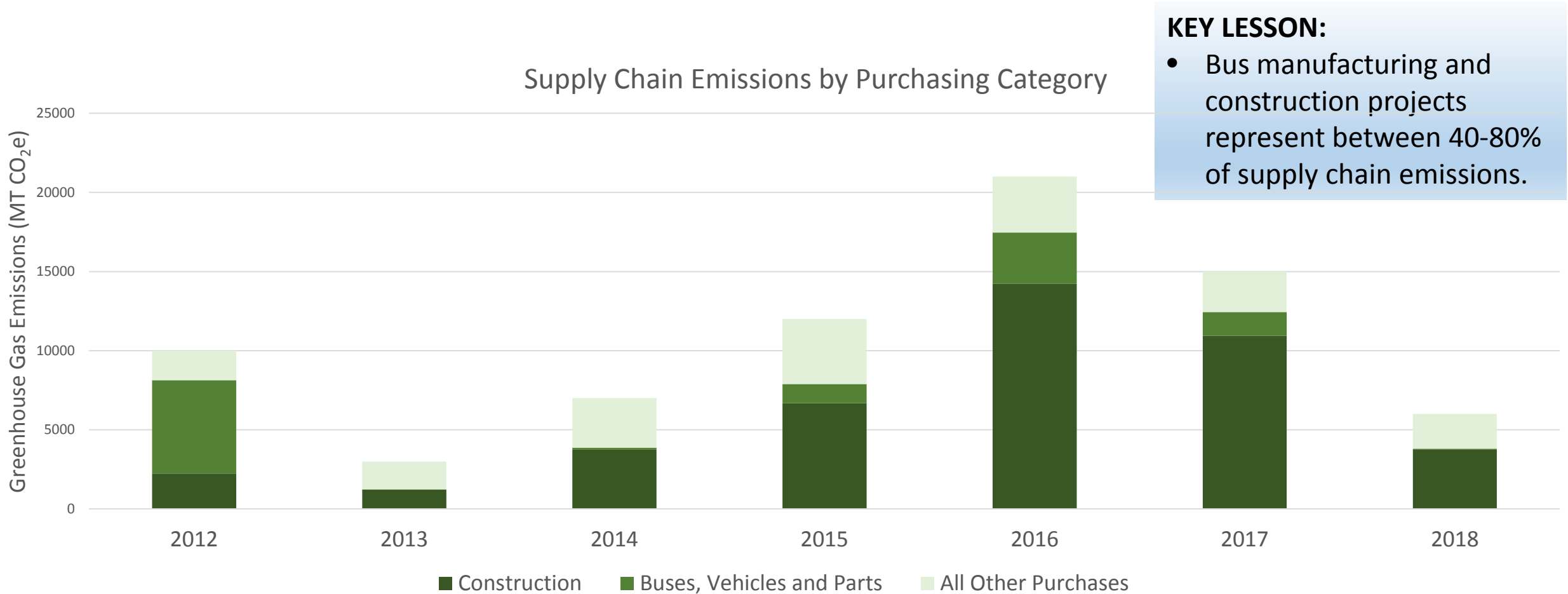


## KEY LESSONS:

- Opportunity abounds to reduce fleet emissions.
- LTD will study the opportunities in detail in 2020 for long-term fleet plan.

Greenhouse Gas Emissions (MTCO<sub>2</sub>e) / 40,000 vehicle miles

# 4. SEEK LOW CO<sub>2</sub> CONSTRUCTION MATERIALS



# Q&A? Thank you!



Kelly Hoell  
Sustainability Program Manager  
541-682-6146  
Kelly.hoell@ltd.org



## AGENDA ITEM SUMMARY

**DATE OF MEETING:** September 16, 2019

**ITEM TITLE:** GENERAL MANAGER FISCAL YEAR 2019-2020 ANNUAL PERFORMANCE GOALS

**PRESENTER:** David Collier, Director of Human Resources and Risk Management

**DIRECTOR:** Mark Johnson, Assistant General Manager

**ACTION REQUESTED:** Adoption

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**PURPOSE:** To establish the general manager's annual performance goals for fiscal year 2019-2020.

**ROLE OF THE BOARD:** The Board's role in this instance is to set the performance goals of the general manager.

**HISTORY:** It is the role of the Board of Directors to perform the annual review and set the annual performance goals of the general manager. Previously the Board had delegated a portion of this responsibility to its Human Resources (HR) Subcommittee.

At its August 21, 2019, regular Board meeting, the Board voted to dissolve the HR Subcommittee. The Board also established that the full Board will perform the annual review and goal setting of the general manager beginning with the fiscal year 2019-2020 annual performance goals.

**CONSIDERATIONS:** N/A

**ALTERNATIVES:** N/A

**NEXT STEPS:** The Board must conduct the annual review of the general manager per her contract in July 2020, or as soon thereafter as is reasonably possible.

**SUPPORTING DOCUMENTATION:**

- 1) Proposed Fiscal Year 2019-2020 Annual Performance Goals - Handout

**PROPOSED MOTION:** N/A



## MEMORANDUM

**DATE:** September 16, 2019  
**TO:** LTD Board of Directors  
**FROM:** Aurora Jackson, General Manager  
**SUBJECT: Fiscal Year 2020 Performance Goals**

As requested, this memorandum provides my recommendation for the development of fiscal year 2019-2020 goals. I look forward to further discussing these goals with the Board of Directors either individually or as the collective governing body.

### **GOAL #1 - Communication**

*The General Manager will develop a plan for implementing the recommendations contained in the Board-adopted communications analysis report. The plan should include an explanation of the overall implementation strategy, description of solutions for each category of findings (branding, digital, media, and organizational management), timeline, and financial impacts.*

#### Measurements:

*The Board will rate Goal #1 based on timely submittal of an implementation plan that will be due within 90 days after adoption of this goal. The Board will also rate this goal based on the overall performance based on adherence to the submitted implementation plan.*

### **GOAL #2 – Project Management of Specific Deliverables**

*The General Manager will ensure projects are managed in a cost effective manner while delivering quality results to the community. The “Specific deliverables,” are defined as agency priorities, already agreed to by the Board, and approved within the budget.*

#### Measurements

*The Board will rate Goal #2 as follows:*

- A. *TouchPass implementation – Ensure the successful implementation of TouchPass, which will include the following usage for this rating period;*

<b>Product</b>	<b>Usage Goal</b>	<b>Deadline</b>
Monthly Passes	100%	March 30, 2020
Low Income Passes	100%	March 30, 2020
Student Pass Program	75%	June 30, 2020
Daily Fares	75%	June 30, 2020



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Group Pass Programs (non-UO)	50%	June 30, 2020
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- B. Mobility-on-Demand Pilots – Ensure the effective oversight of the Cottage Grove and EmGo pilots and provide next steps recommendations to the Board no later than the June 2020 Board of Directors’ Meeting.*
- C. Transit Tomorrow – Ensure the effective oversight of the communications, community outreach and management of Transit Tomorrow.*
- D. MovingAhead – Ensure the effective oversight of the communications, community outreach and management of MovingAhead.*
- E. Main Street Transit Study – Ensure the effective oversight of the communications and management of the Main Street Transit Study.*
- F. Santa Clara Transit Station – Ensure the effective oversight (on-time, within budget and appropriately messaged) of the Santa Clara Transit Station to include beginning construction no later than May 2020 with a scheduled completion date of February 2021.*
- G. The General Manager will submit a written quarterly report for the specific deliverables to the Board of Directors no later than December 31, 2019, March 30, 2020, and June 30, 2020.*

**GOAL #3 – District’s Internal Climate**

*The General Manager will ensure the workplace environment is safe, productive and inclusive. A high level of importance should be placed on ensuring employees’ compensation is competitive; working conditions are safe and clean; and there is a good balance between accountability and recognition.*

Measurements

*The Board will rate Goal #3 based on an evaluation of employees’ compensation, working conditions, employees’ recognition programs and any related activities that impact the internal climate of the District. The General Manager will ensure a quality of employment survey is performed no later than April 30, 2020. The General Manager will be rated only on whether the report was completed. The content of the survey will not be utilized to gauge the General Manager’s performance. The Board may also request verbal updates regarding employee turnover within this rating period. The General Manager will provide written reports to the Board as may be necessary to conduct a proper evaluation.*





### **CONCLUSION**

In closing, I look forward to receiving clear and cohesive direction regarding the Board of Directors' expectations for fiscal year 2019-2020.

Copy to: LTD Human Resource Department  
LTD Legal Counsel, Kristin Denmark

# LTD's Greenhouse Gas Inventory Results FY12-18

Board of Directors Work Session - September 16, 2019



# OVERVIEW

- Purpose of the study
- Historical context
- Results 1: GHG impacts from Transit
- Results 2: GHG benefits of Transit
- Next Steps
- Q&A



# PURPOSE

- Understand how LTD's emissions fit into regional, state, local goals
- Understand implications for operational decisions
- Update 2007 sustainability policy (Resolution No. 2007-027)
- Set GHG reduction goals



# HISTORICAL CONTEXT

- 2007 - LTD Sustainability Policy, State GHG reduction goals set
- 2014 – LTD APTA Sustainability Commitment - Silver
- 2015 - Central Lane Scenario Planning
- 2016 - Eugene CRO – 4 goals set
- 2018 – LTD Sustainability Program Manager position; Fleet Plan grant
- 2019 - Electric bus testing, MOD pilots



# GHG BENEFITS AND IMPACTS FROM TRANSIT

Net Greenhouse Gas Impacts of Transit  
Emissions Produced – Emissions Displaced

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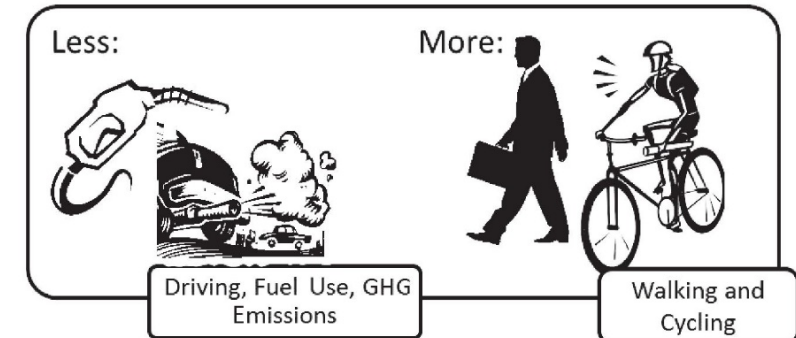
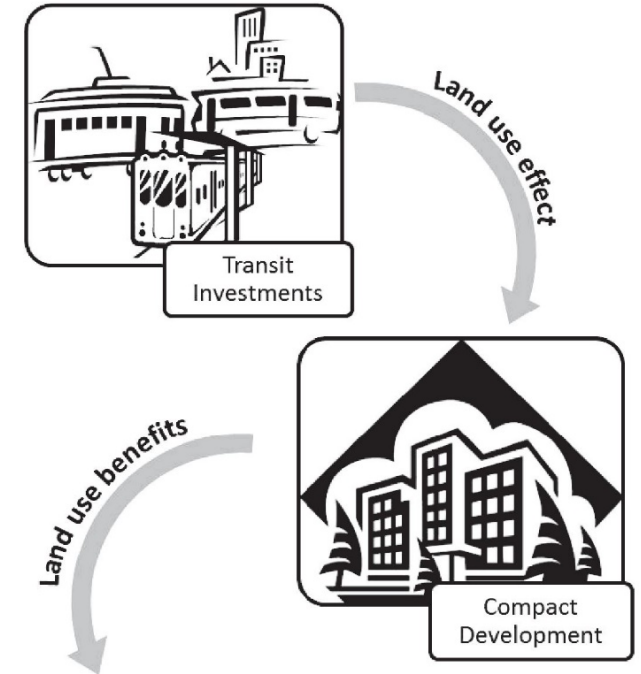
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### Land Use Benefit

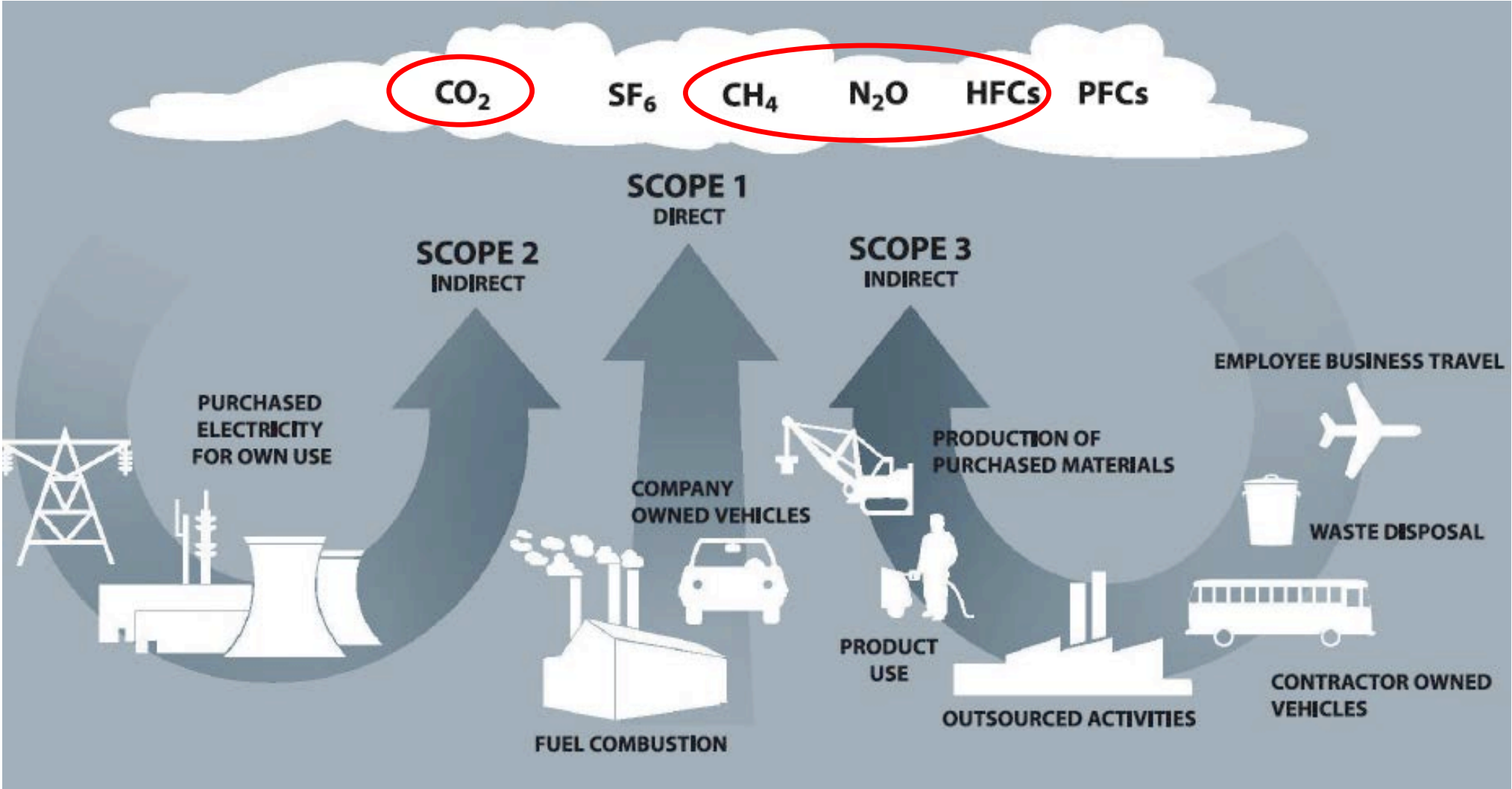
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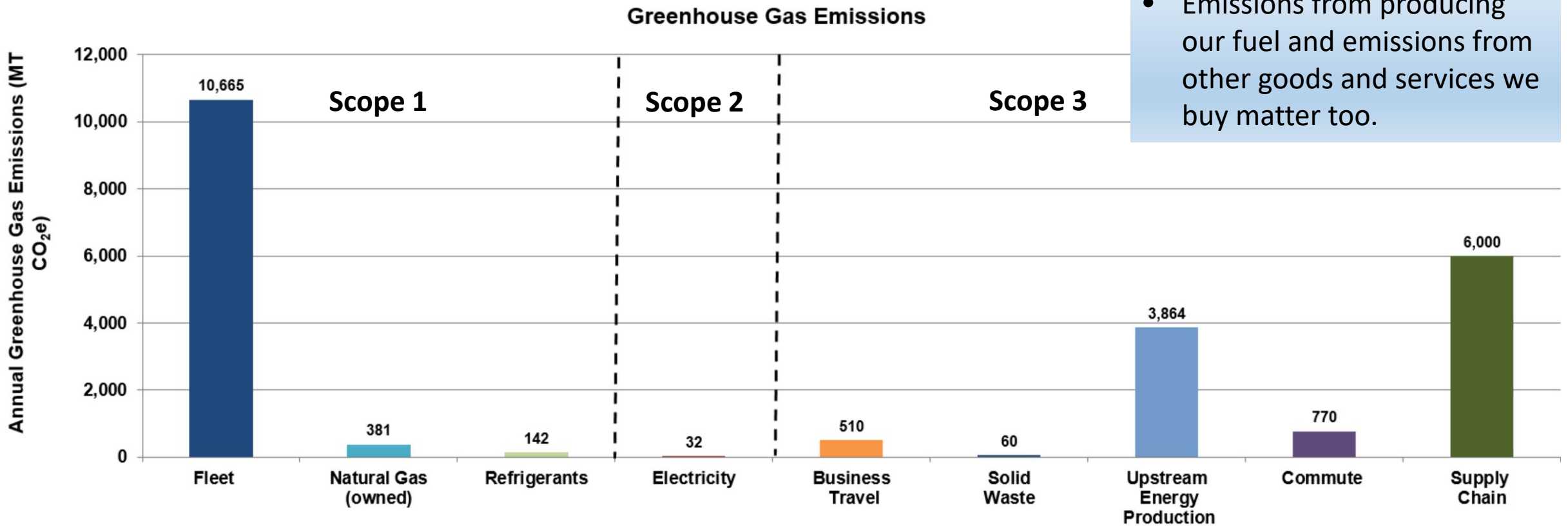
Graphic Adapted from *Quantifying Greenhouse Gas Emissions from Transit*, APTA, 2009.

Graphic from TCRP 176 *GHG Benefits from Transit User guide*, 2015.

# GHG ACCOUNTING – 3 SCOPES



# GHG EMISSIONS FROM TRANSIT FY 2018



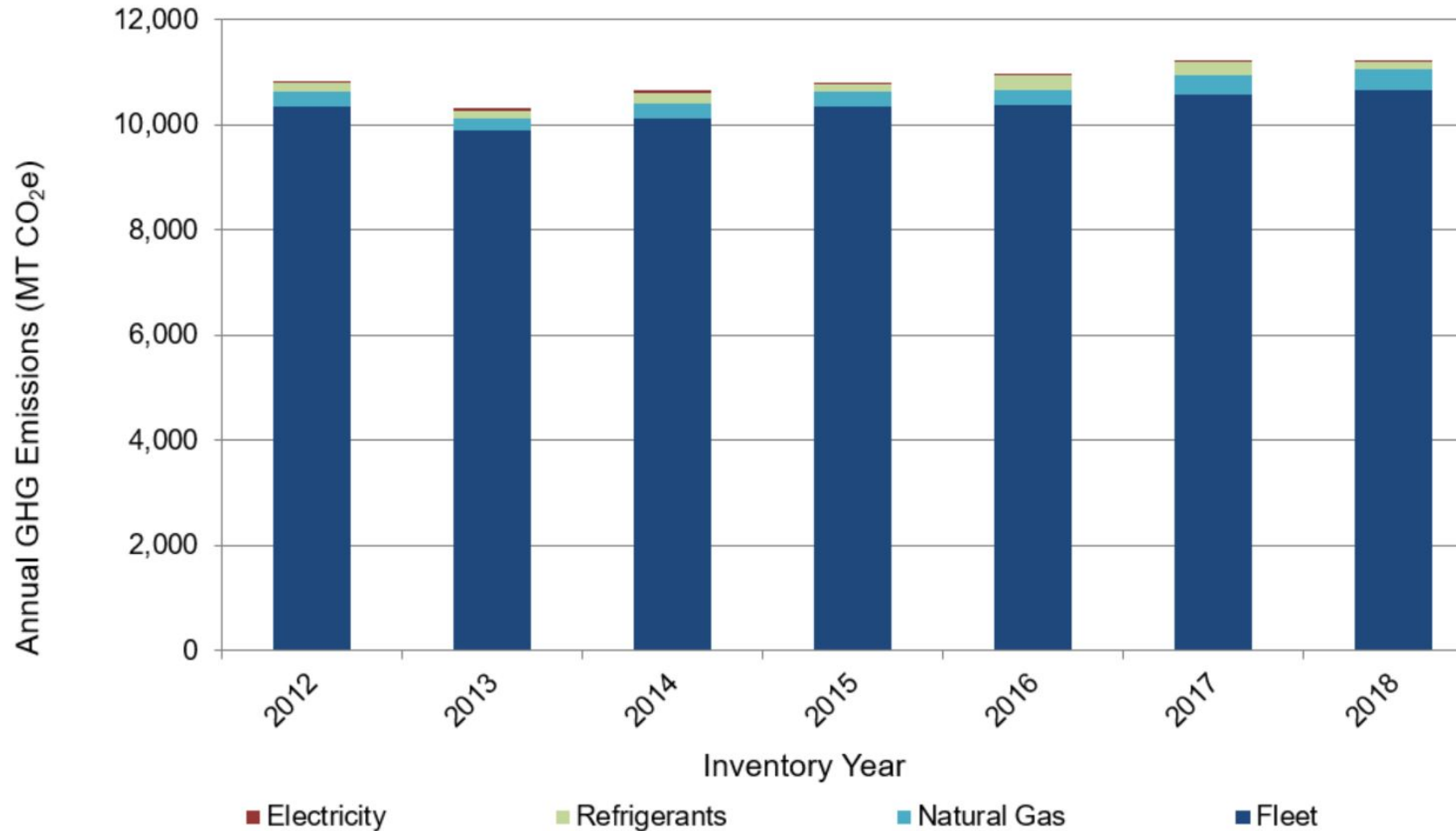
## KEY LESSONS:

- Fleet matters most!
- Emissions from producing our fuel and emissions from other goods and services we buy matter too.



# SCOPE 1 & 2 EMISSIONS - FY12-18

Greenhouse Gas Emissions by Inventory Year

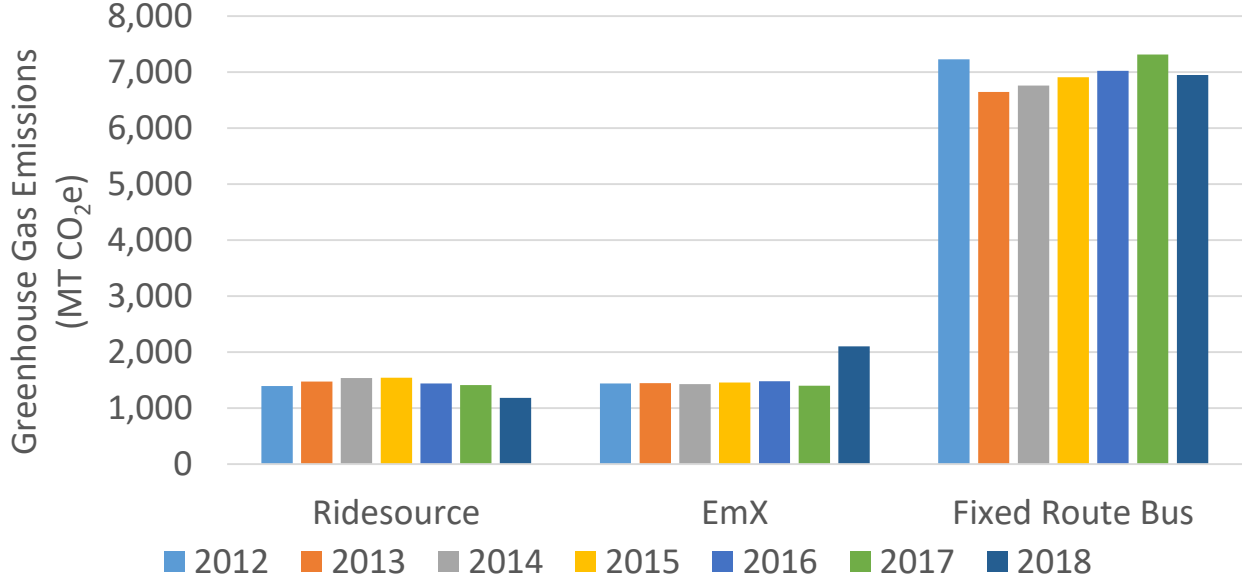


## KEY LESSONS:

- Aggregate Fleet emissions have been fairly consistent over time.
- Fleet emissions represent 94%+ of emissions LTD has full control over.

# FLEET EMISSIONS BY SERVICE TYPE

Greenhouse Gas Emissions (MT CO<sub>2</sub>e)



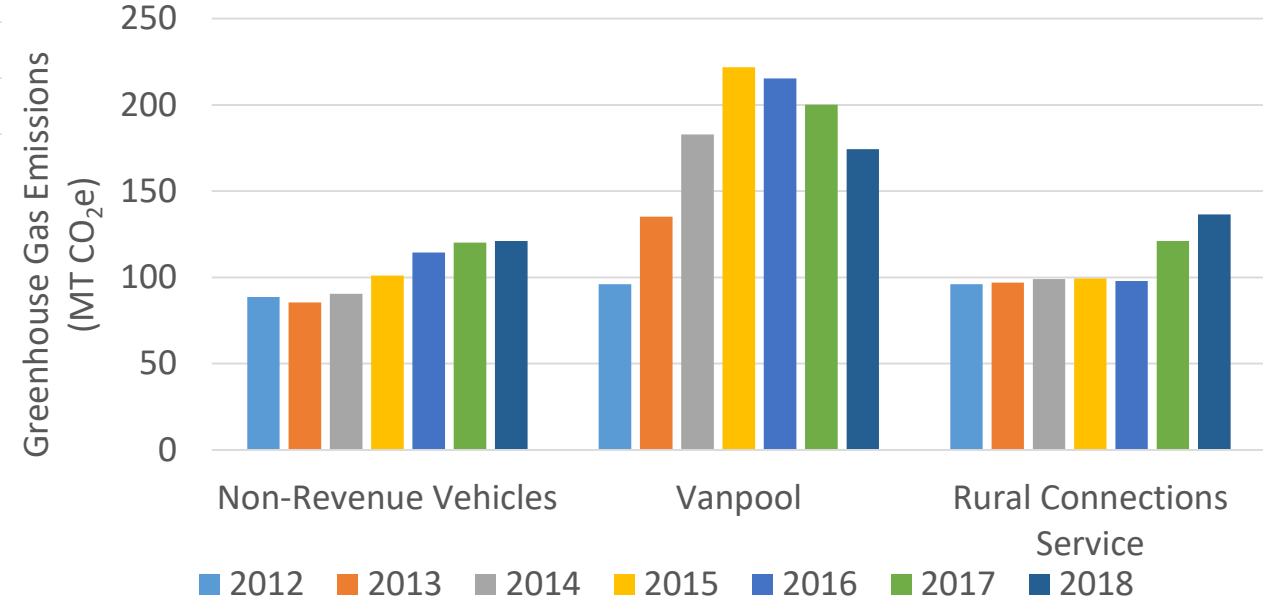
## KEY LESSONS:

- Fixed route is largest share of total emissions
- EmX and RideSource emissions are similar in scale
- 2018 EmX increase from EmX West opening
- Fixed Route efficiency gains between '12-'13; reduced vehicle miles and minor efficiency gains in '18.

## KEY LESSONS:

- Note difference in scale between two charts
- Non-Revenue vehicle increase from increased staff/miles
- Vanpool changes due to demand
- Rural Connections: added Rhody Express and Florence-Yachats reporting to this category in '18.

Greenhouse Gas Emissions (MT CO<sub>2</sub>e)

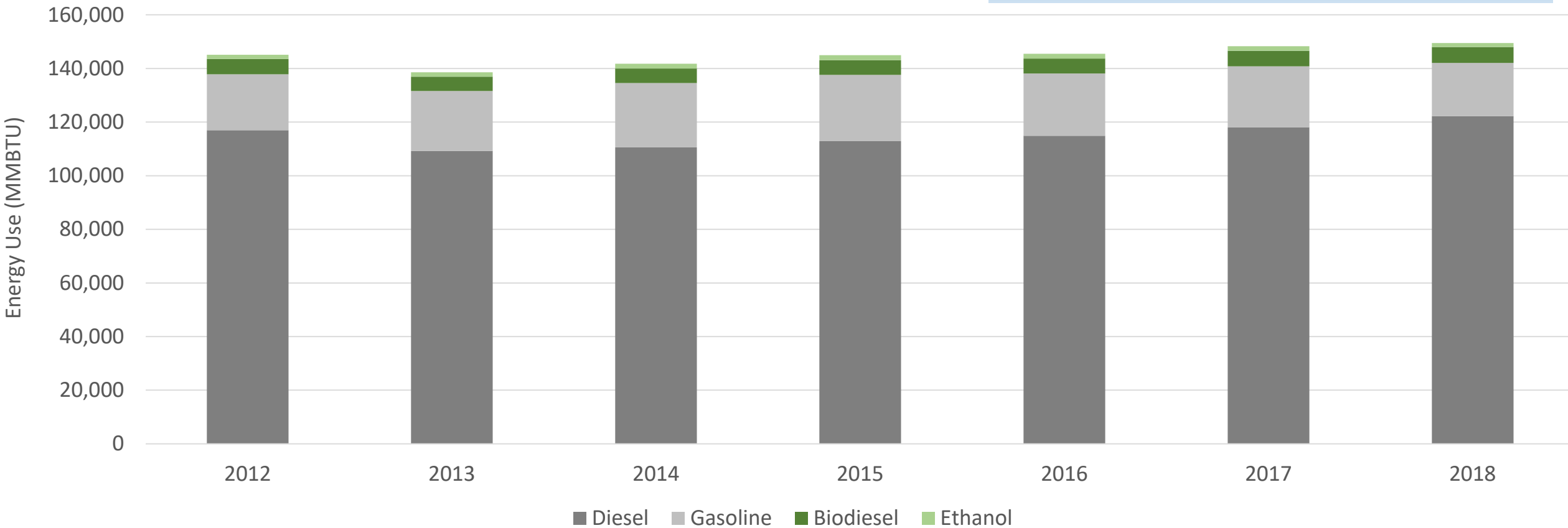


# FLEET ENERGY CONSUMPTION BY FUEL TYPE

## KEY LESSON:

- 5% of LTD fleet fuel consumption is from renewables (B5 diesel, E10 gasoline).

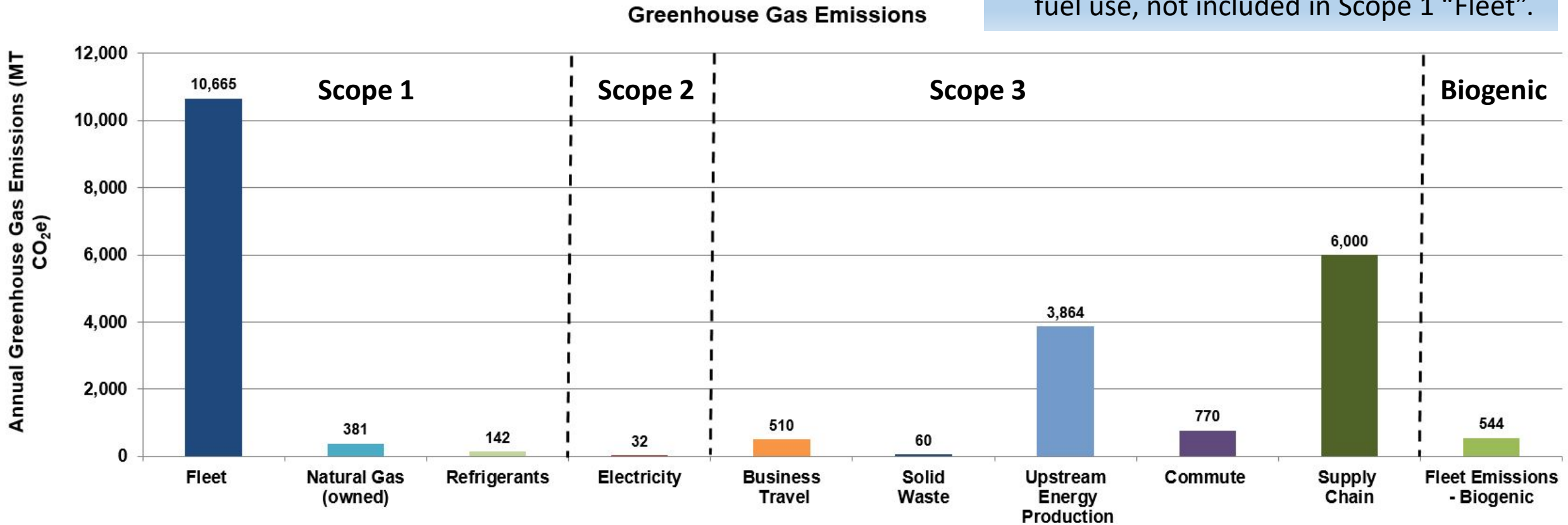
Energy Use by Fuel Type



# FY 2018 EMISSIONS, INCLUDING BIOGENIC

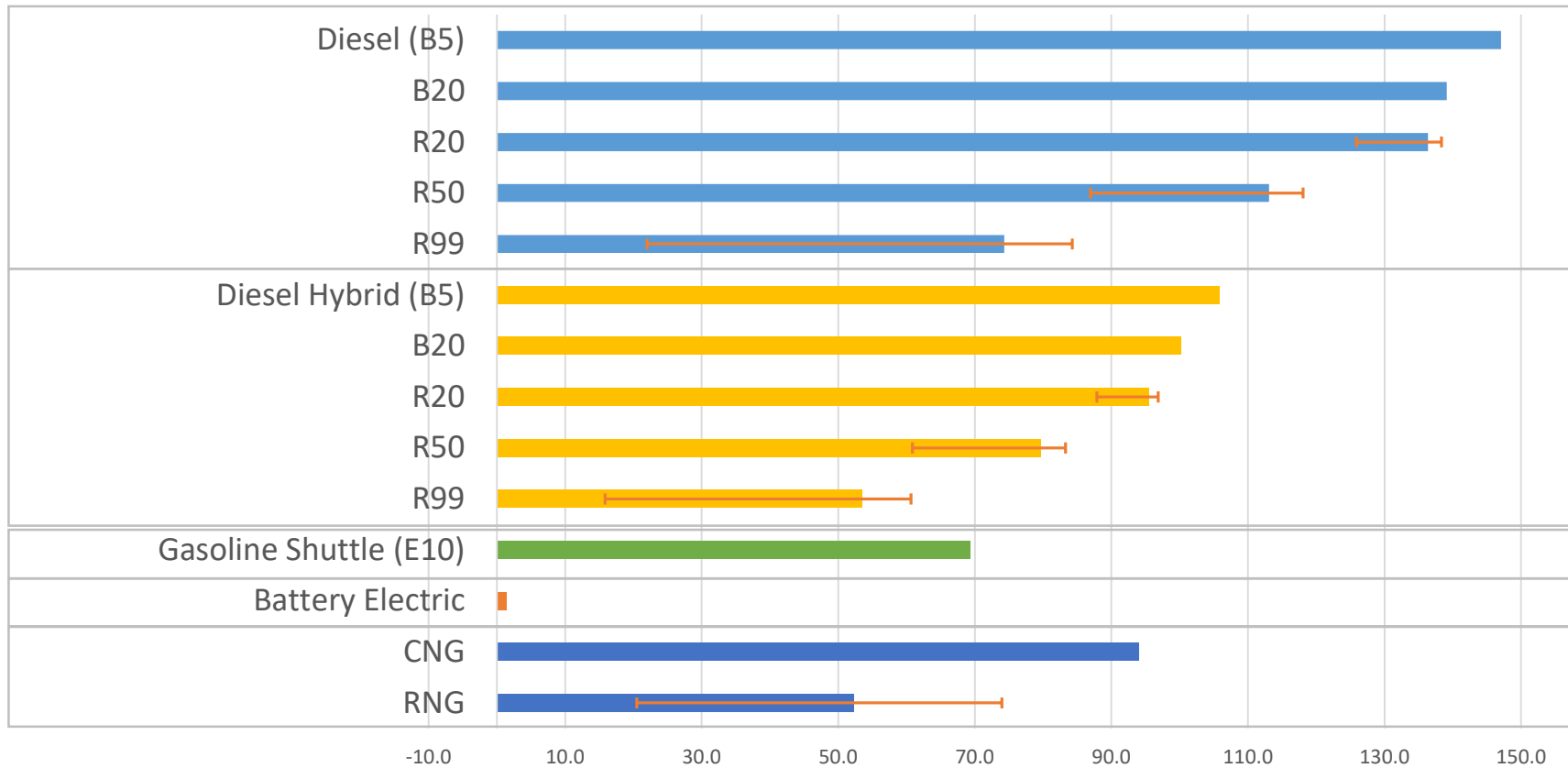
## KEY LESSON:

- LTD's Biogenic emissions from renewable fuel use, not included in Scope 1 "Fleet".



# LIFECYCLE EMISSIONS BY FUEL TYPES

GHGs by Fuel Type for 40,000 miles of travel  
(with error bars for range of carbon scores)



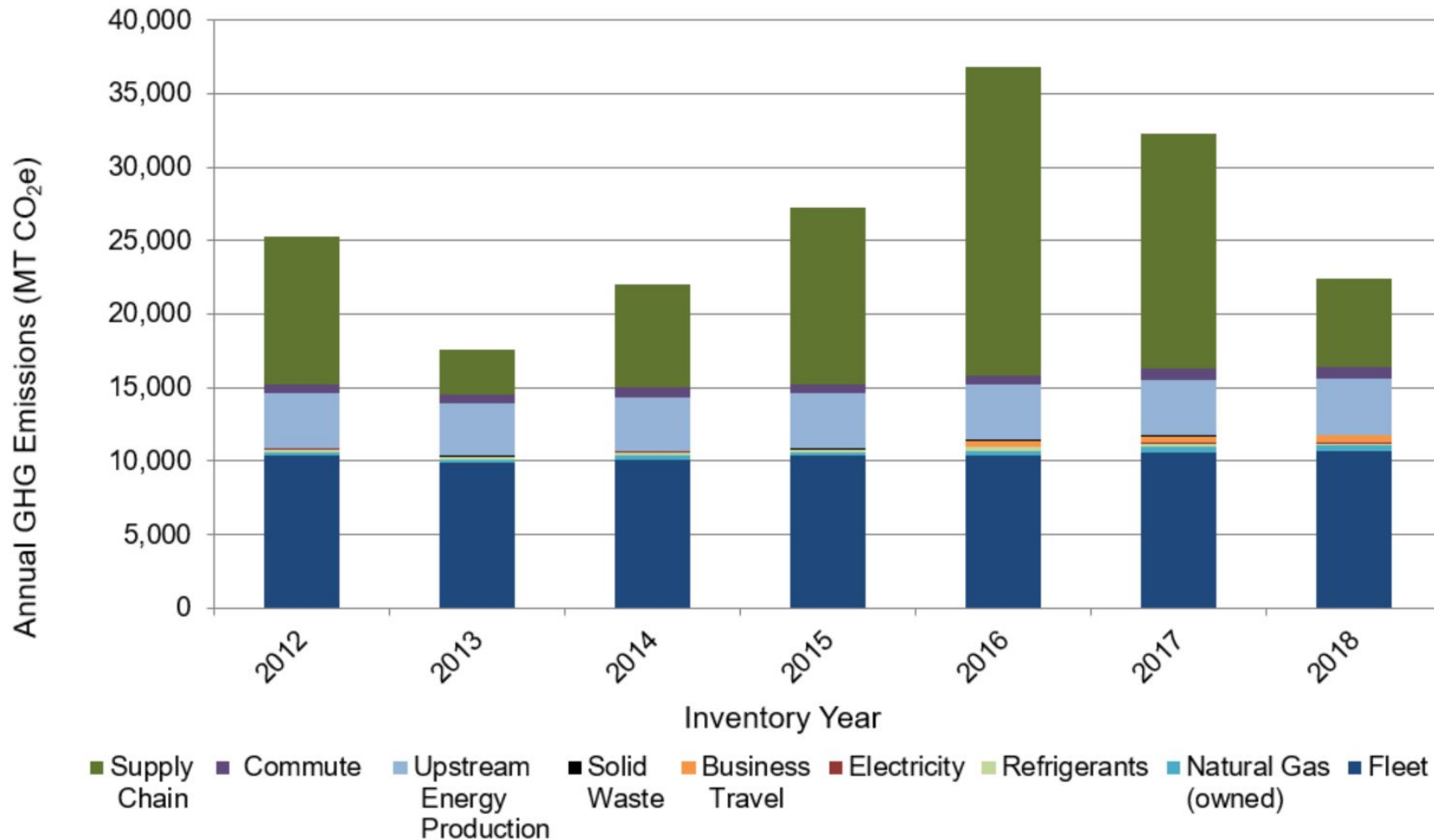
Greenhouse Gas Emissions (MTCO<sub>2</sub>e) / 40,000 vehicle miles

## KEY LESSONS:

- Opportunity abounds to reduce fleet emissions.
- LTD will study the opportunities in detail in 2020 for long-term fleet plan.

# ADDING IN SCOPE 3 EMISSIONS - FY12-18

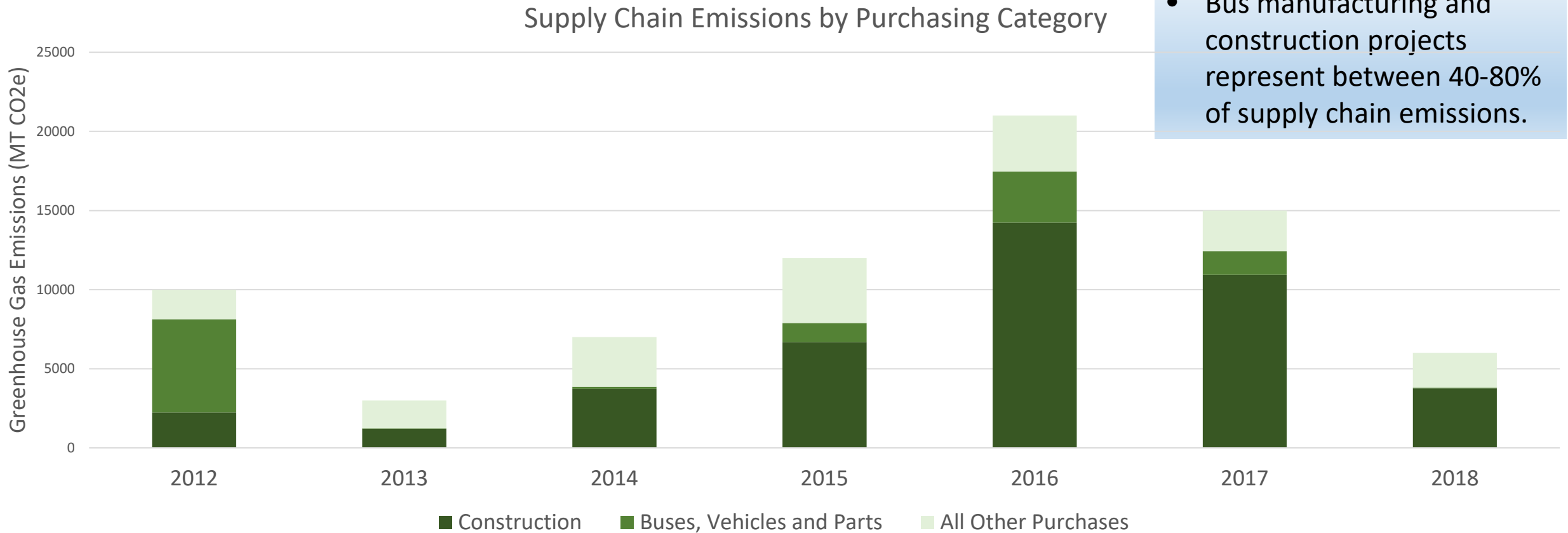
Greenhouse Gas Emissions by Inventory Year



## KEY LESSON:

- Supply chain emissions vary with expenditure on major projects.

# SUPPLY CHAIN EMISSIONS DETAIL - FY12-18



## KEY LESSON:

- Bus manufacturing and construction projects represent between 40-80% of supply chain emissions.

# GHG BENEFITS AND IMPACTS FROM TRANSIT

Net Greenhouse Gas Impacts of Transit  
Emissions Produced – Emissions Displaced

## Emissions Produced by Transit

### Transit Operations

- Fleet vehicles fuel use
- Electricity & natural gas from buildings and stations
- Refrigerants used in vehicle air conditioning
- All other emissions sources

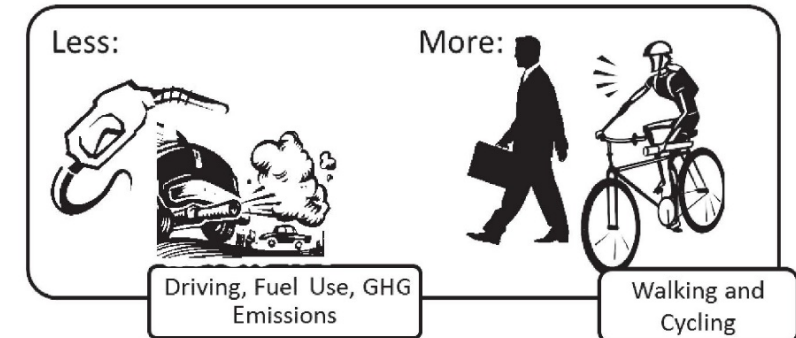
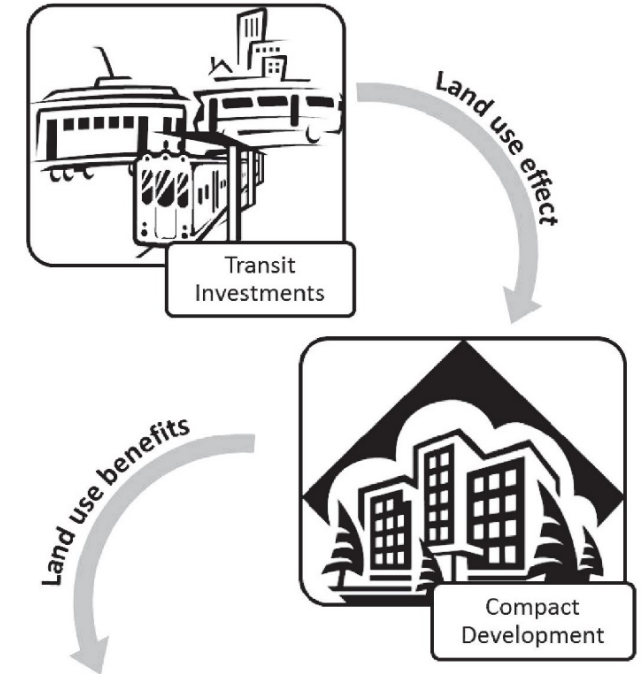
## Emissions Benefits of Transit

### Ridership Benefit

- Reduced VMT from taking the bus instead of a private auto

### Land Use Benefit

- Compact development around transit facilities reduces VMT for all
- Shorter trips makes biking/walking more attractive



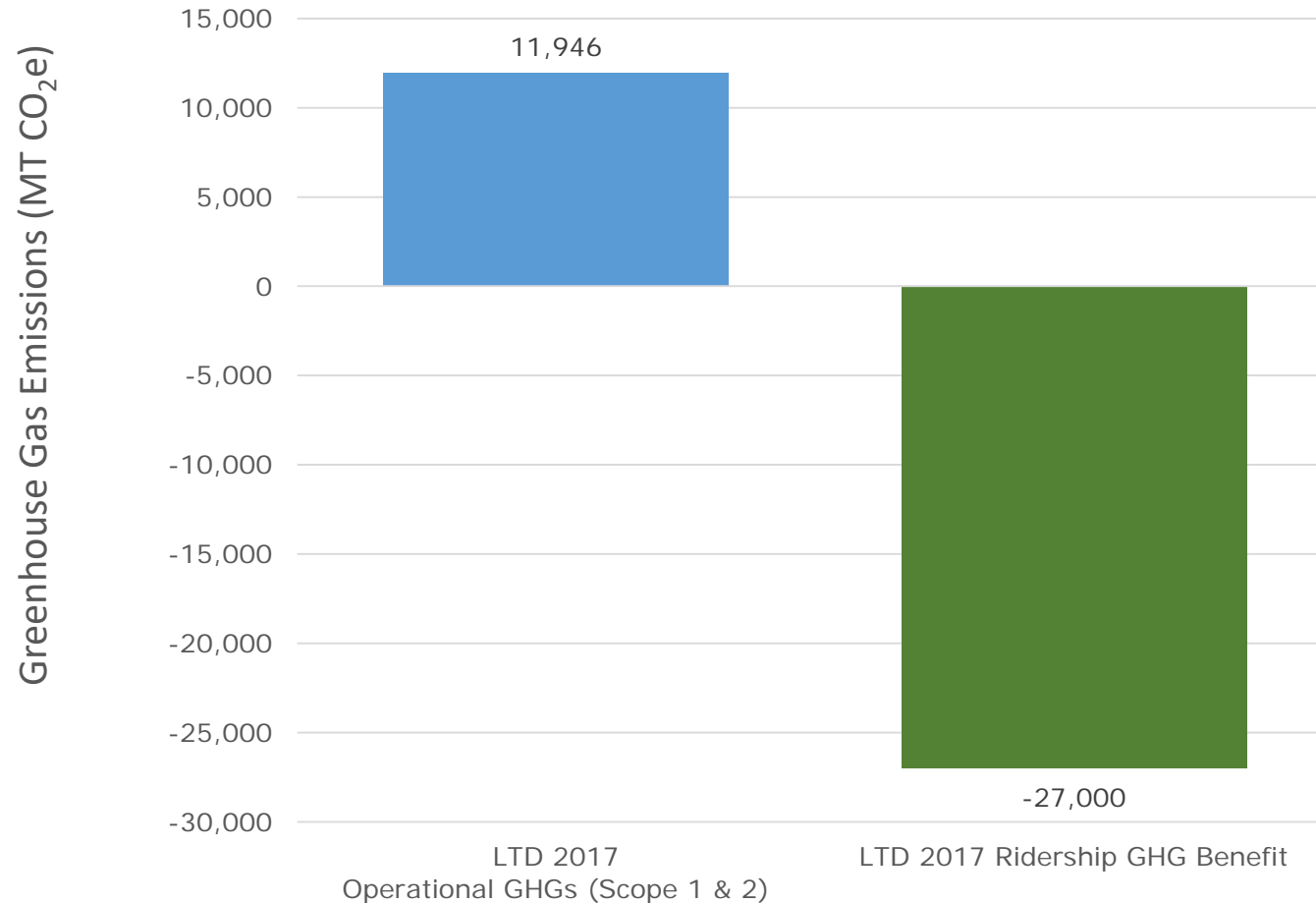
Graphic Adapted from *Quantifying Greenhouse Gas Emissions from Transit*, APTA, 2009.

Graphic from TCRP 176 *GHG Benefits from Transit User guide*, 2015.



# GHG BENEFITS OF RIDERSHIP

LTD Operational Emissions vs. Ridership Benefit

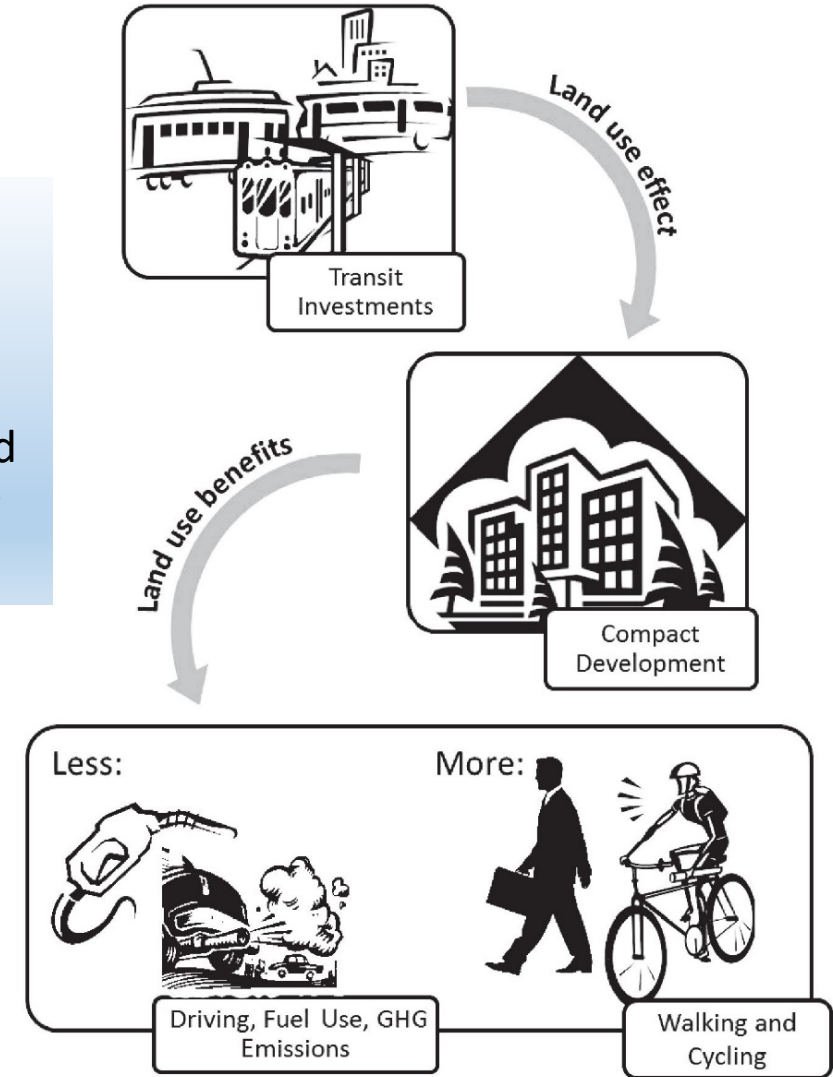
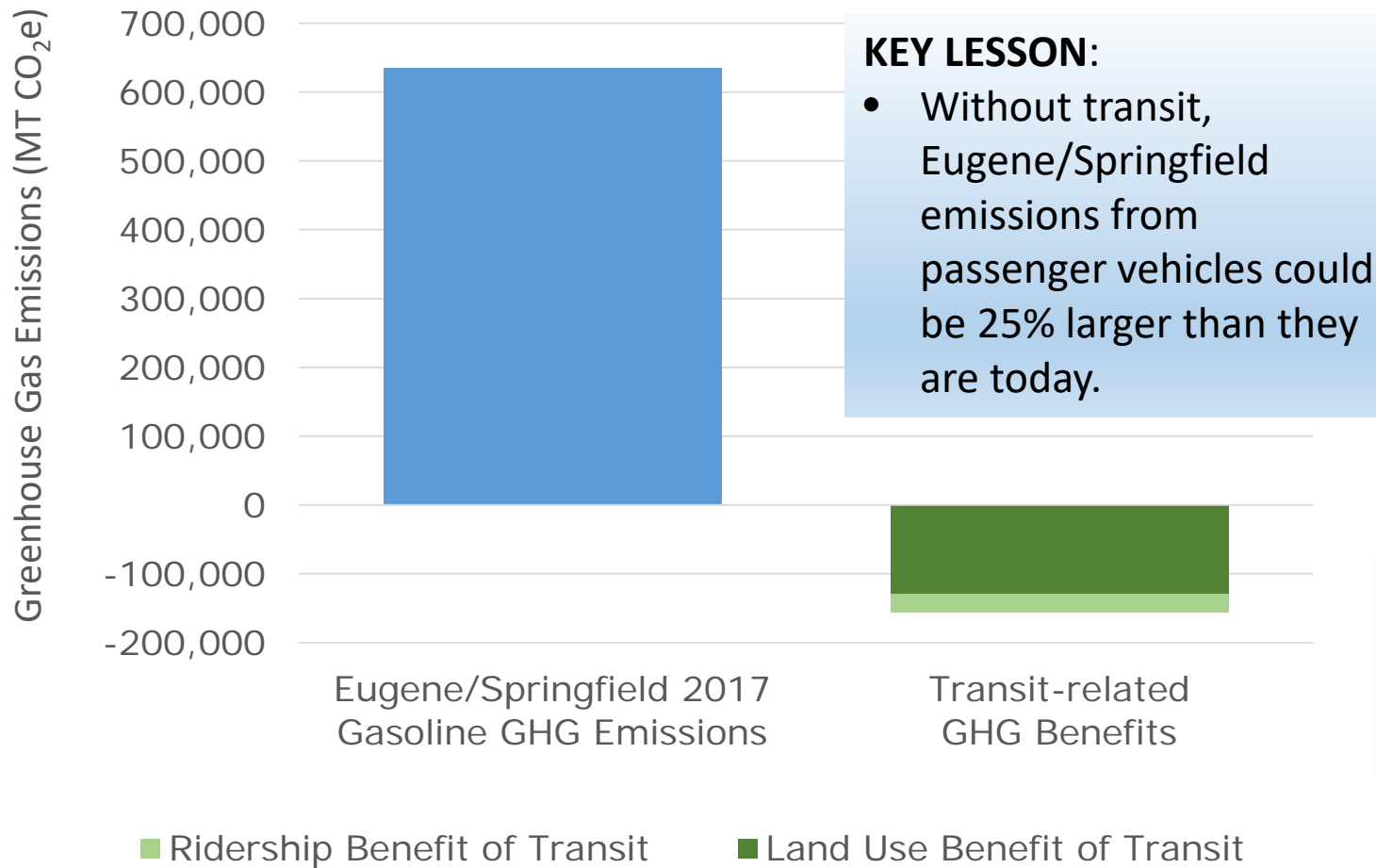


## KEY LESSONS:

- Ridership benefits from transit are more than 2x the emissions from transit operations.
- Public transit is an important strategy to reduce community emissions.

# GHG BENEFITS OF LAND USE EFFECT

Community Emissions vs. Transit-related GHG Benefits



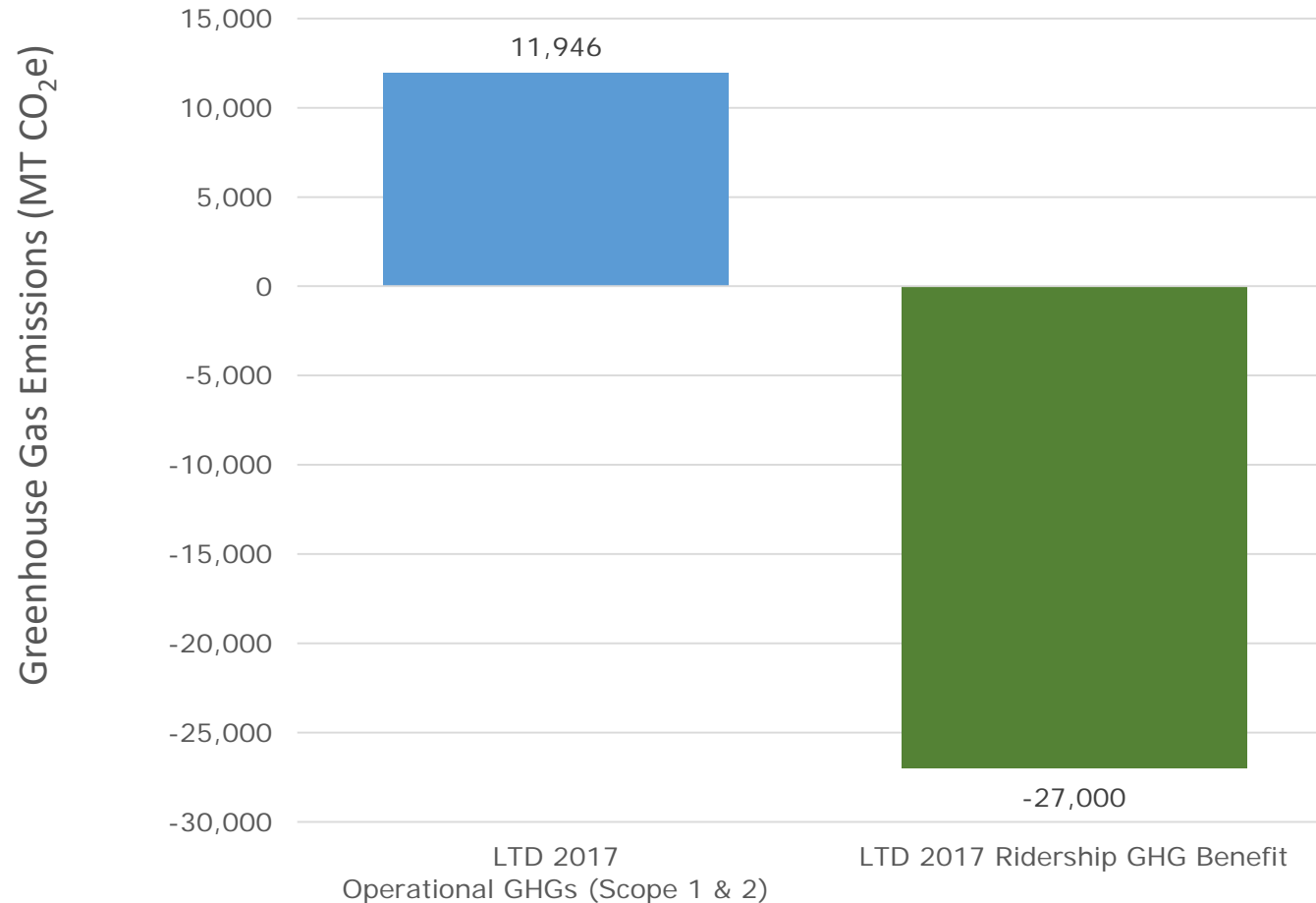
# NEXT STEPS

- Electric bus procurement, WA State Contract
- Technology / Fuel analysis for Fleet Plan
- GHG reduction modeling for goal setting
- Sustainability policy update



# 1. GET PEOPLE ON THE BUS

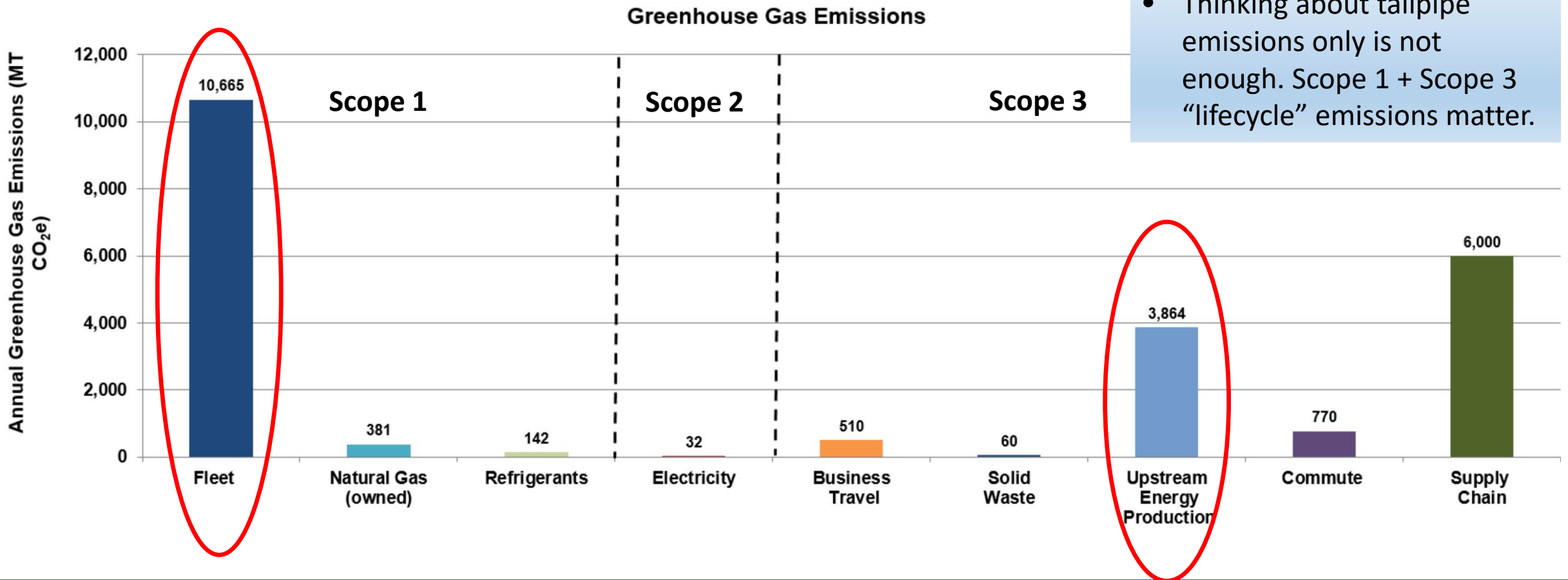
LTD Operational Emissions vs. Ridership Benefit



## KEY LESSONS:

- Ridership benefits from transit are more than 2x the emissions from transit operations.
- Public transit is an important strategy to reduce community emissions.

## 2. FOCUS ON FLEET; THINK LIFECYCLE...

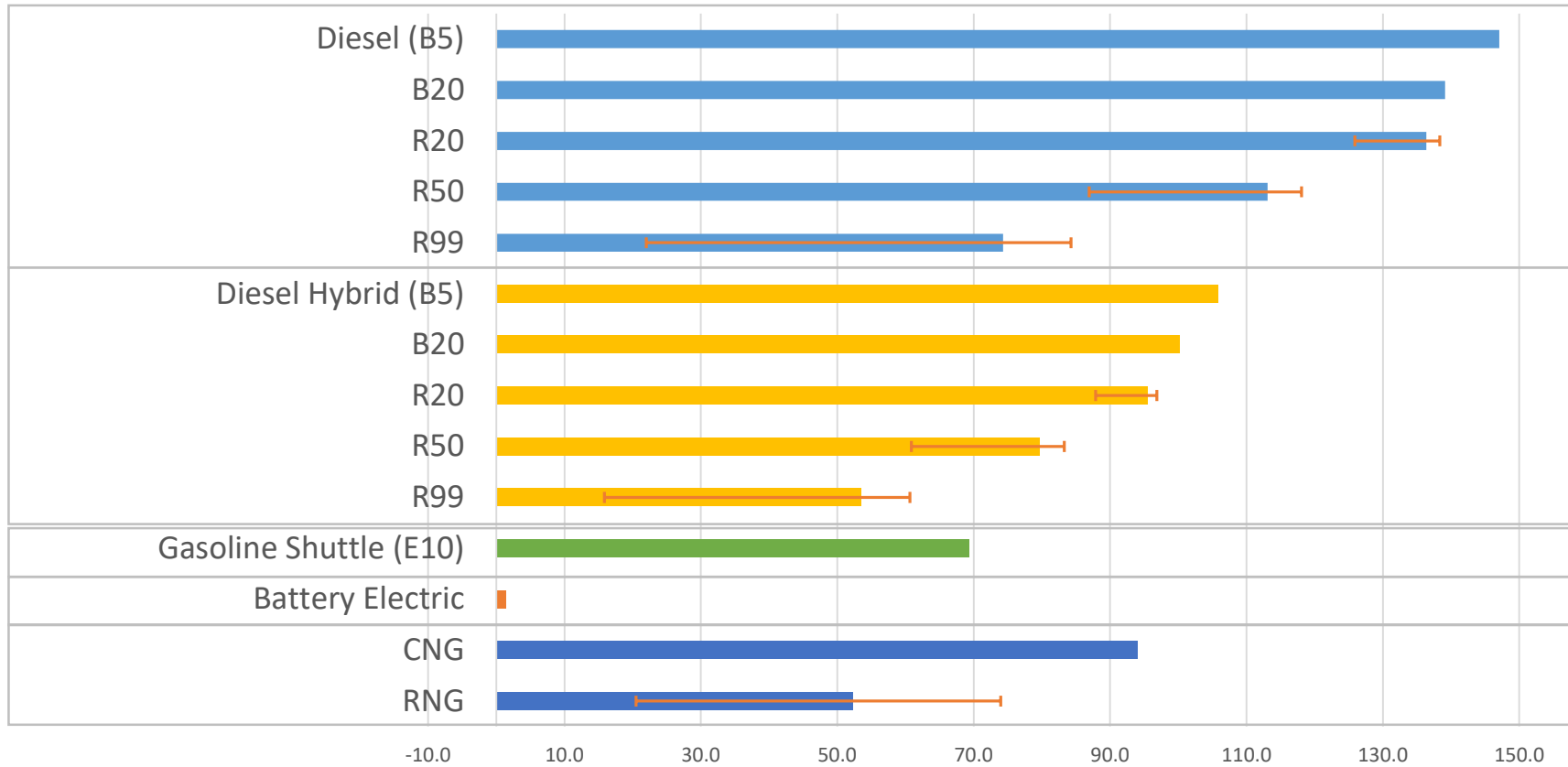


### KEY LESSONS:

- Fleet matters most!
- Thinking about tailpipe emissions only is not enough. Scope 1 + Scope 3 “lifecycle” emissions matter.

# 3. EMISSIONS REDUCTIONS ARE POSSIBLE

Lifecycle GHGs by Fuel Type for 40,000 miles of travel  
(with error bars for range of carbon scores)

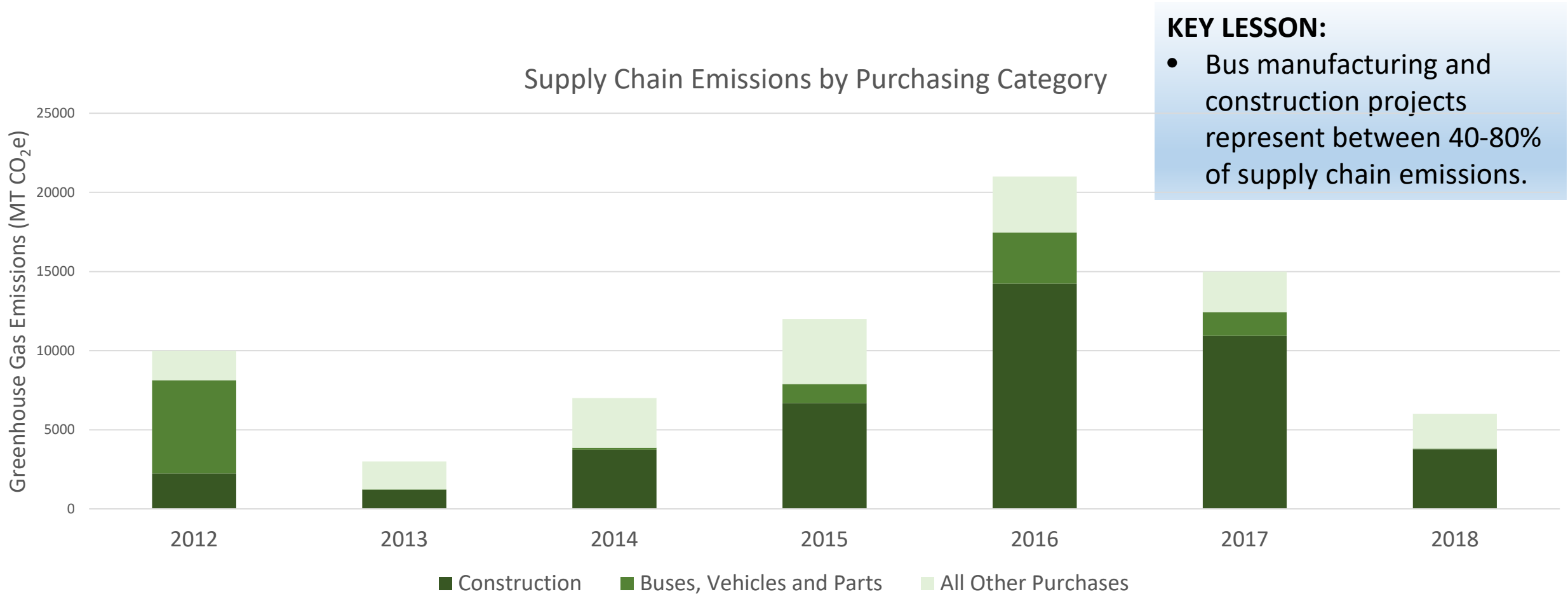


Greenhouse Gas Emissions (MTCO<sub>2</sub>e) / 40,000 vehicle miles

## KEY LESSONS:

- Opportunity abounds to reduce fleet emissions.
- LTD will study the opportunities in detail in 2020 for long-term fleet plan.

# 4. SEEK LOW CO<sub>2</sub> CONSTRUCTION MATERIALS



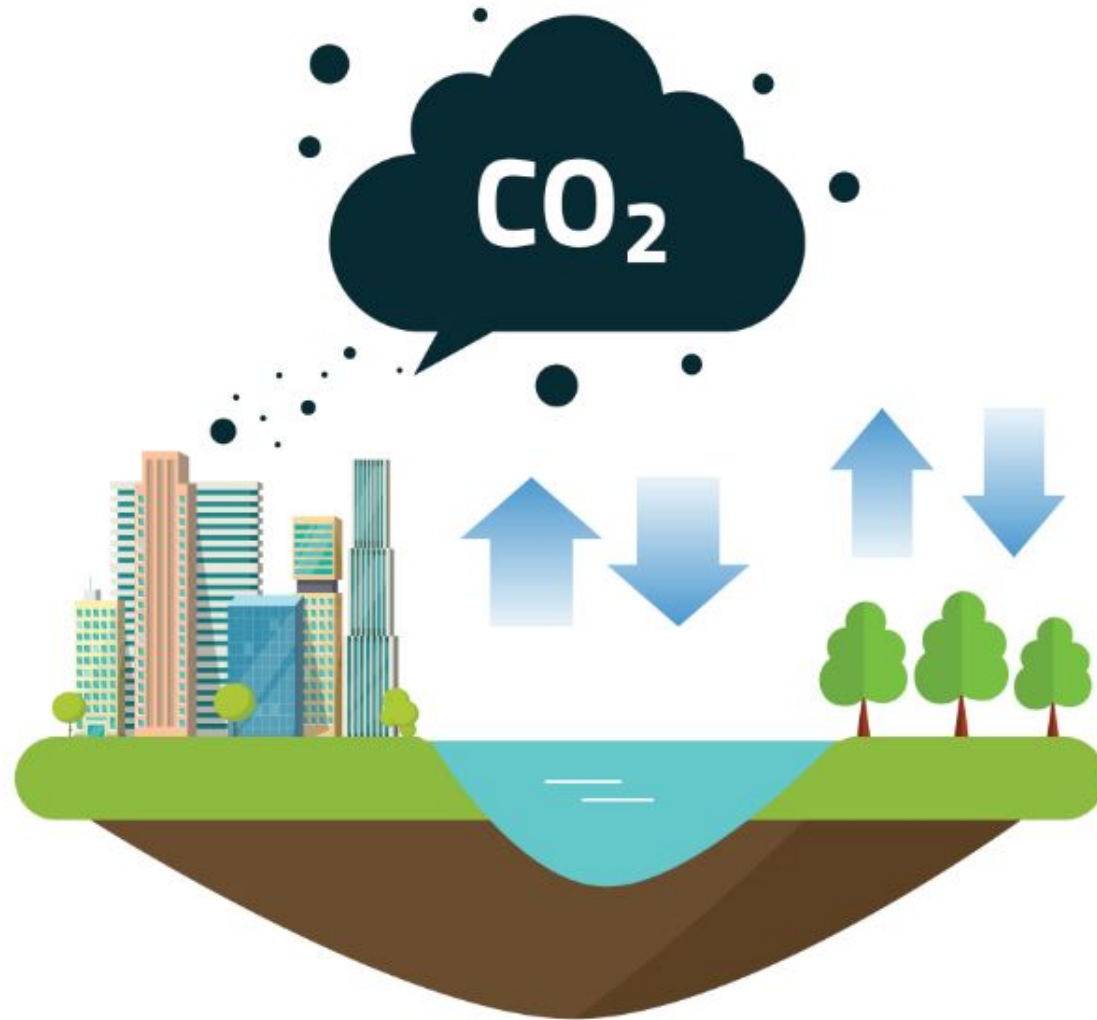
# Q&A? Thank you!



Kelly Hoell  
Sustainability Program Manager  
541-682-6146  
Kelly.hoell@ltd.org

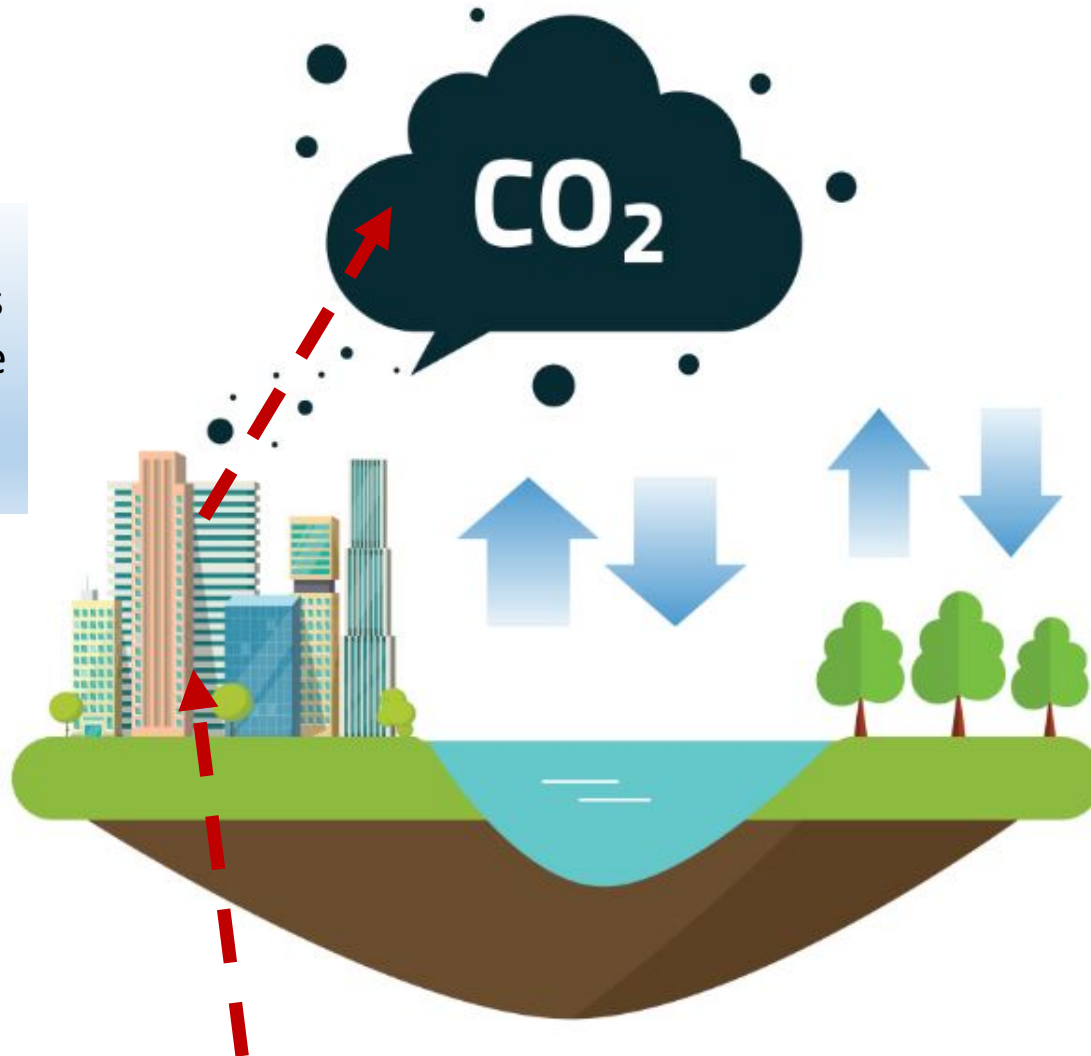


# THE CARBON CYCLE



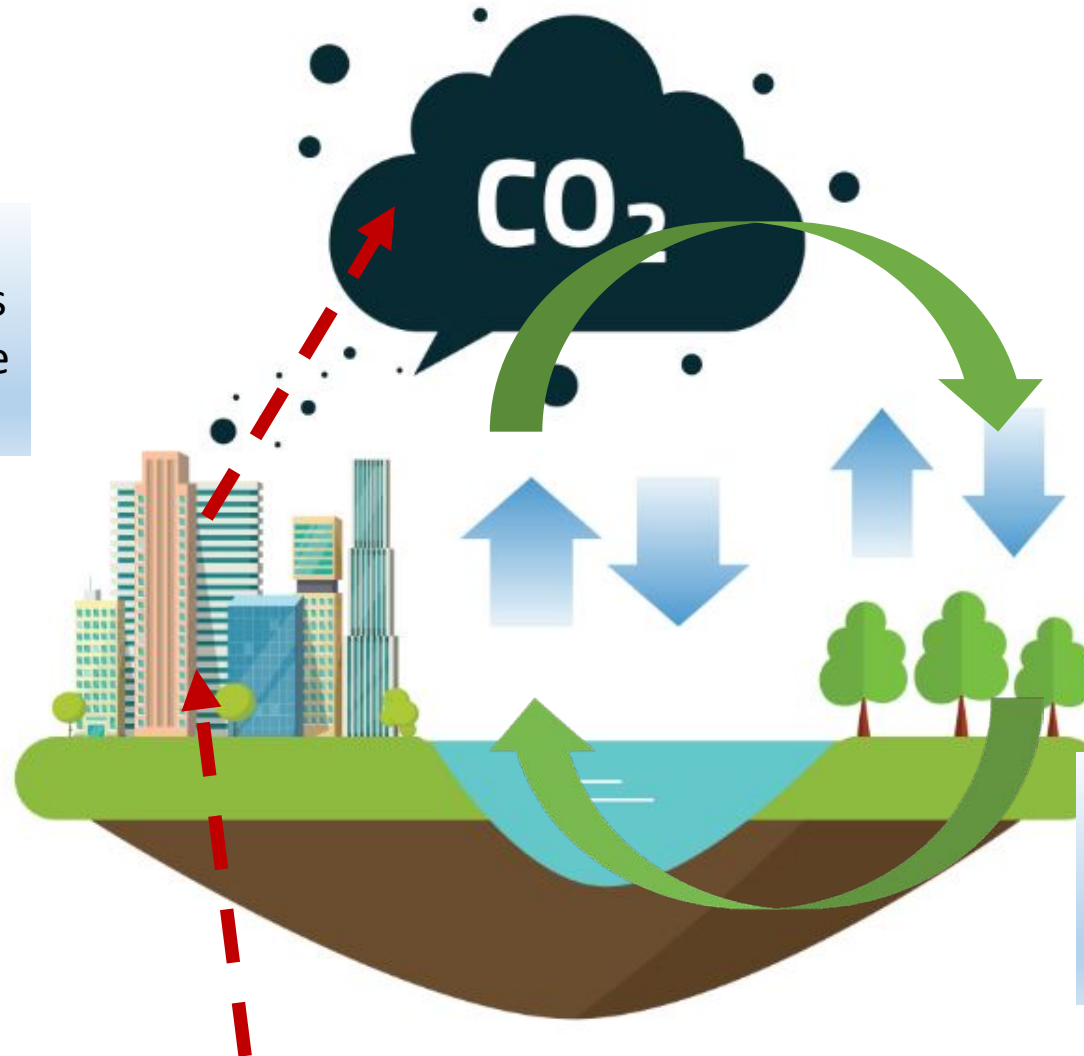
# ANTHROPOGENIC EMISSIONS

**Anthropogenic emissions:** come from mining fossil fuels previously sequestered in the Earth's crust or significant land use changes.



# ANTHROPOGENIC vs. BIOGENIC EMISSIONS

**Anthropogenic emissions:**  
come from mining fossil fuels  
previously sequestered in the  
Earth's crust.



**Biogenic emissions:**  
considered part of the  
natural carbon cycle.

## KEY LESSON:

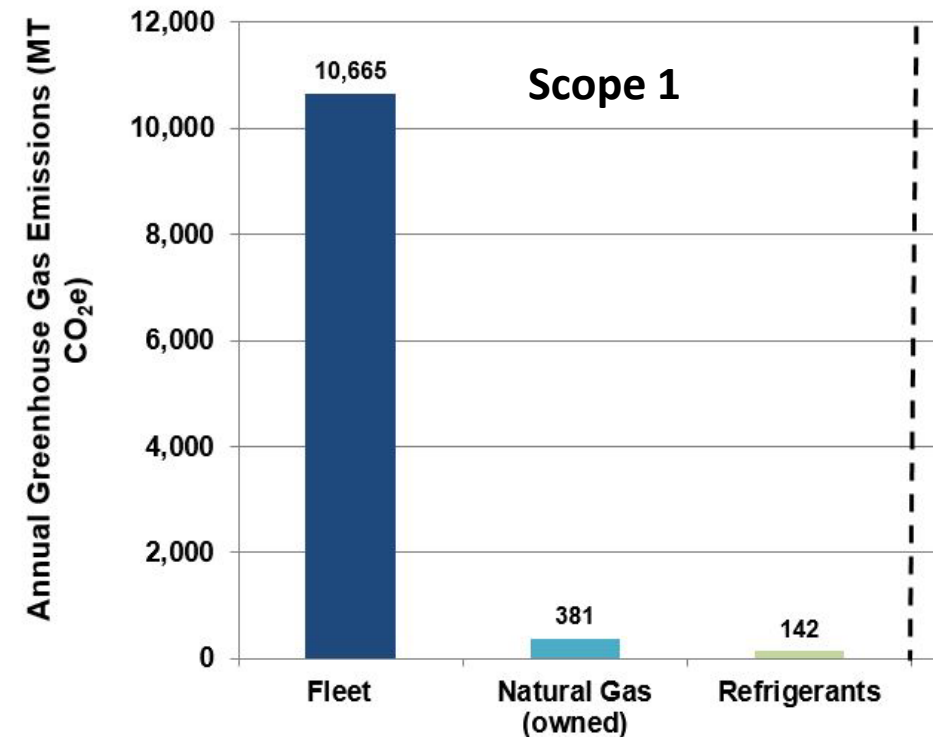
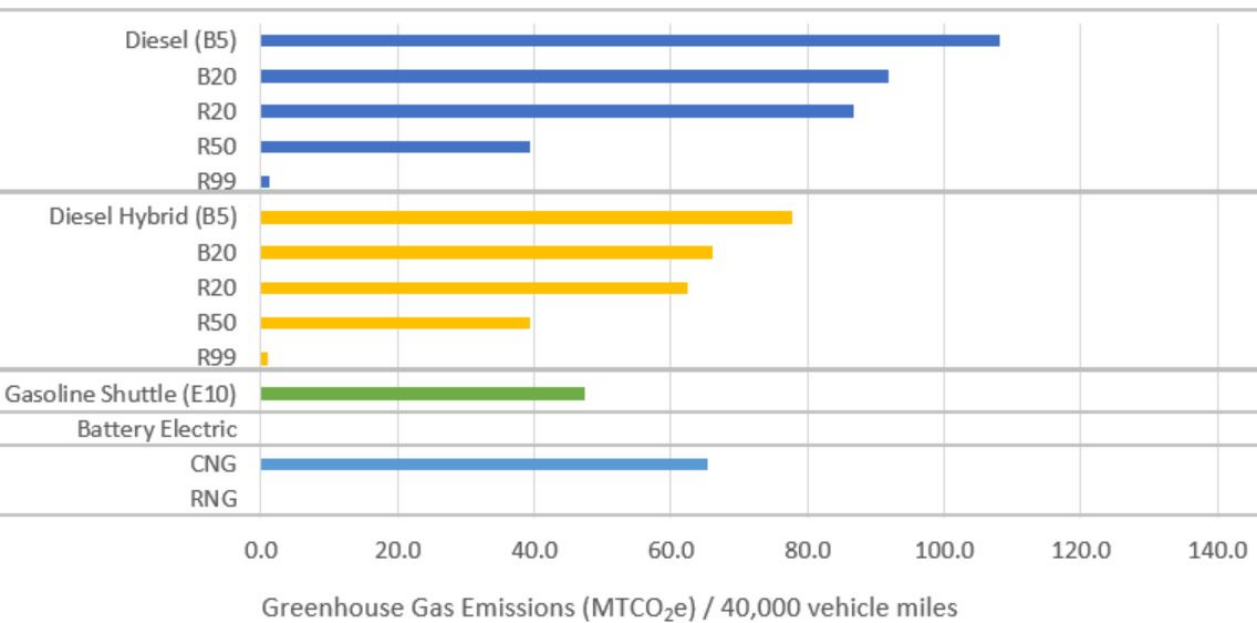
- Not all emissions are created equal.
- Anthropogenic ≠ biogenic
- Fossil fuels ≠ renewable fuels

# TAILPIPE EMISSIONS BY FUELS

## KEY LESSONS:

- Opportunity abounds to reduce fleet emissions.
- Tailpipe emissions could be reduced dramatically with fuels on the market today.

Tank-to-Wheels "Tailpipe" GHGs by Fuel Type for 40,000 miles of travel

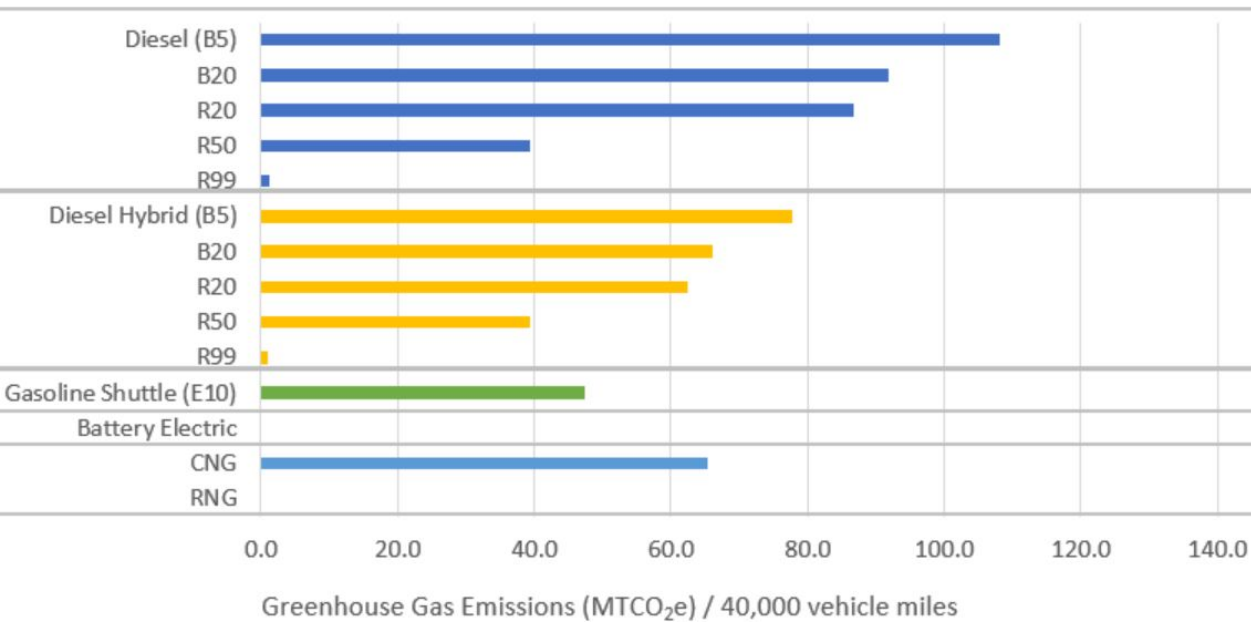


# TAILPIPE & LIFECYCLE EMISSIONS BY FUELS

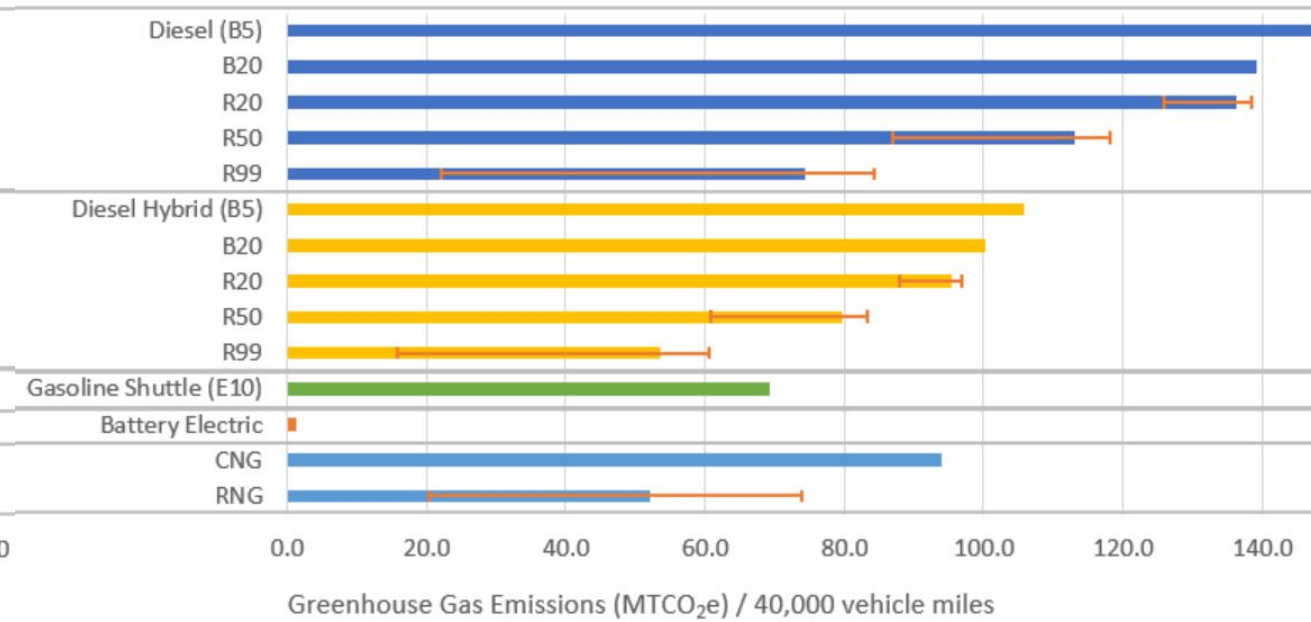
## KEY LESSONS:

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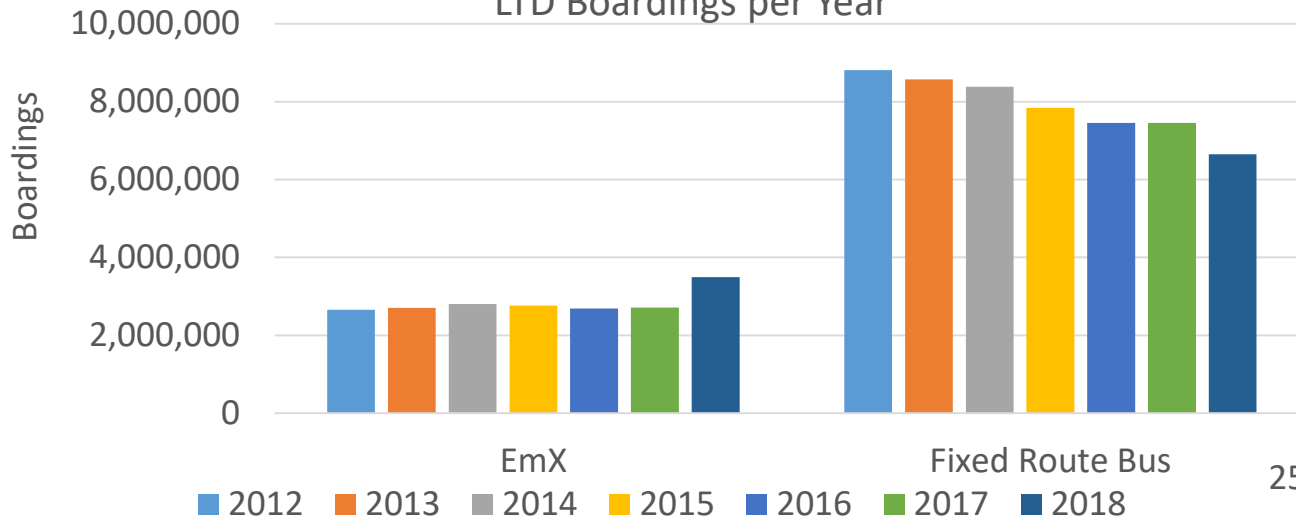


Well-to-Wheel "lifecycle" GHGs by Fuel Type for 40,000 miles of travel (with error bars for range of carbon scores)



# FLEET – BOARDINGS BY SERVICE TYPE

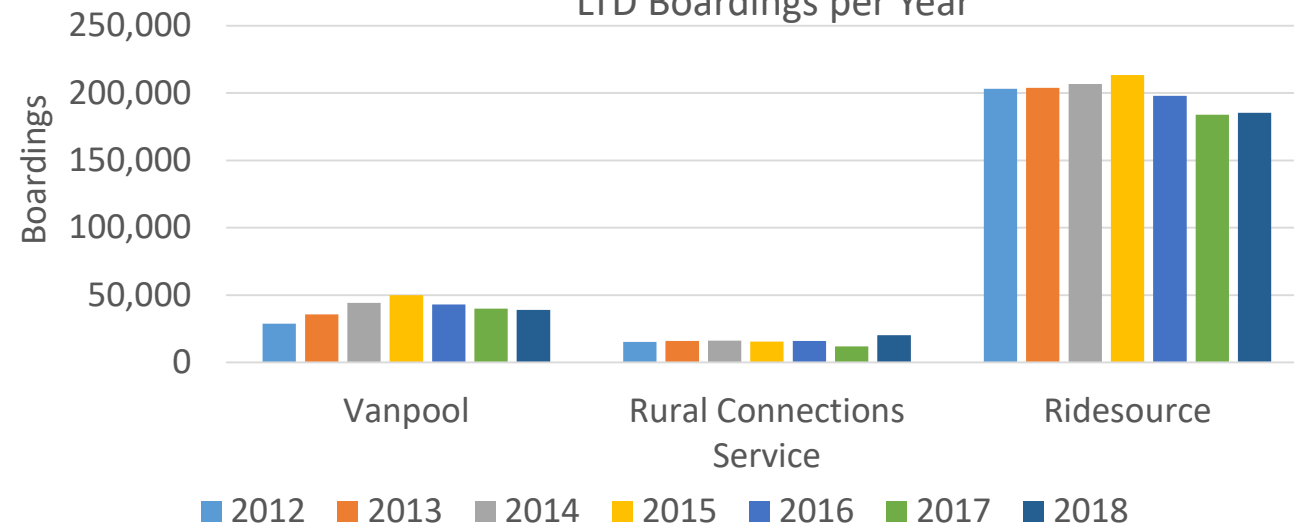
LTD Boardings per Year



## KEY LESSONS:

- EmX boardings have been steady over all years with an increase in 2018 due to EmX West.
- Fixed route boardings are declining in a trend seen nationally.

LTD Boardings per Year



# FLEET EMISSIONS BY SERVICE TYPE

**KEY LESSON:**

- Fixed Route, EmX and Ridesource emissions represent 96%+ of total fleet emissions

