MAKING SUSTAINABILITY WORK

Bend Community Greenhouse Gas Inventory

Fiscal Year 2015-16

Presented by

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8/2/18

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Presentation Overview

- Greenhouse gas (GHG) inventory 101
- Sector-based emissions inventory results
  - *Building energy*
  - *Transportation*
  - *Emissions* forecast to 2040
- Emissions from household consumption
- Inventory results and climate action planning

What is being measured?

- GHG Inventory is measuring the weight of GHGs
- Convert all gases into metric tons of carbon dioxide equivalent (MT CO_2e) using GWP

Greenhouse Gases	Chemical Formula	Global Warming Potential (100 year)
Carbon dioxide	CO_2	1
Methane	CH_4	28
Nitrous oxide	N_2O	265
Hydrofluorocarbons	$C_xH_yF_z$	12 - 12,000

Source: IPCC 5th Assessment Report, 2014

What is 1 MT CO_2e?

One MT CO_2e is equal to any one of the following:

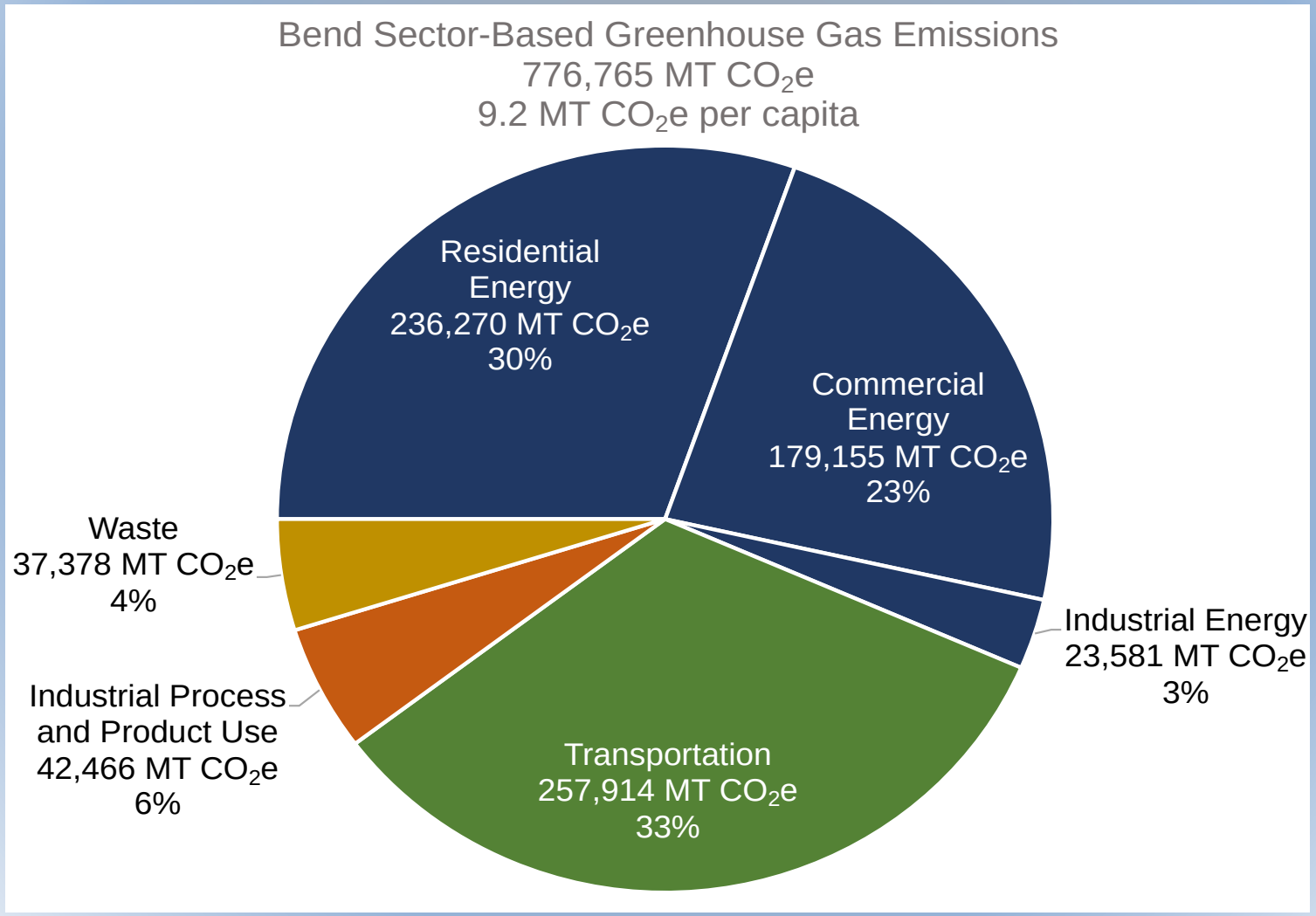
- one passenger vehicle driven 2,500 miles
- 10% of one home's energy use for a year
- 40 propane cylinders for home BBQs
- 1.2 acres of US forest sequestration for 1 year

Inventory Boundaries

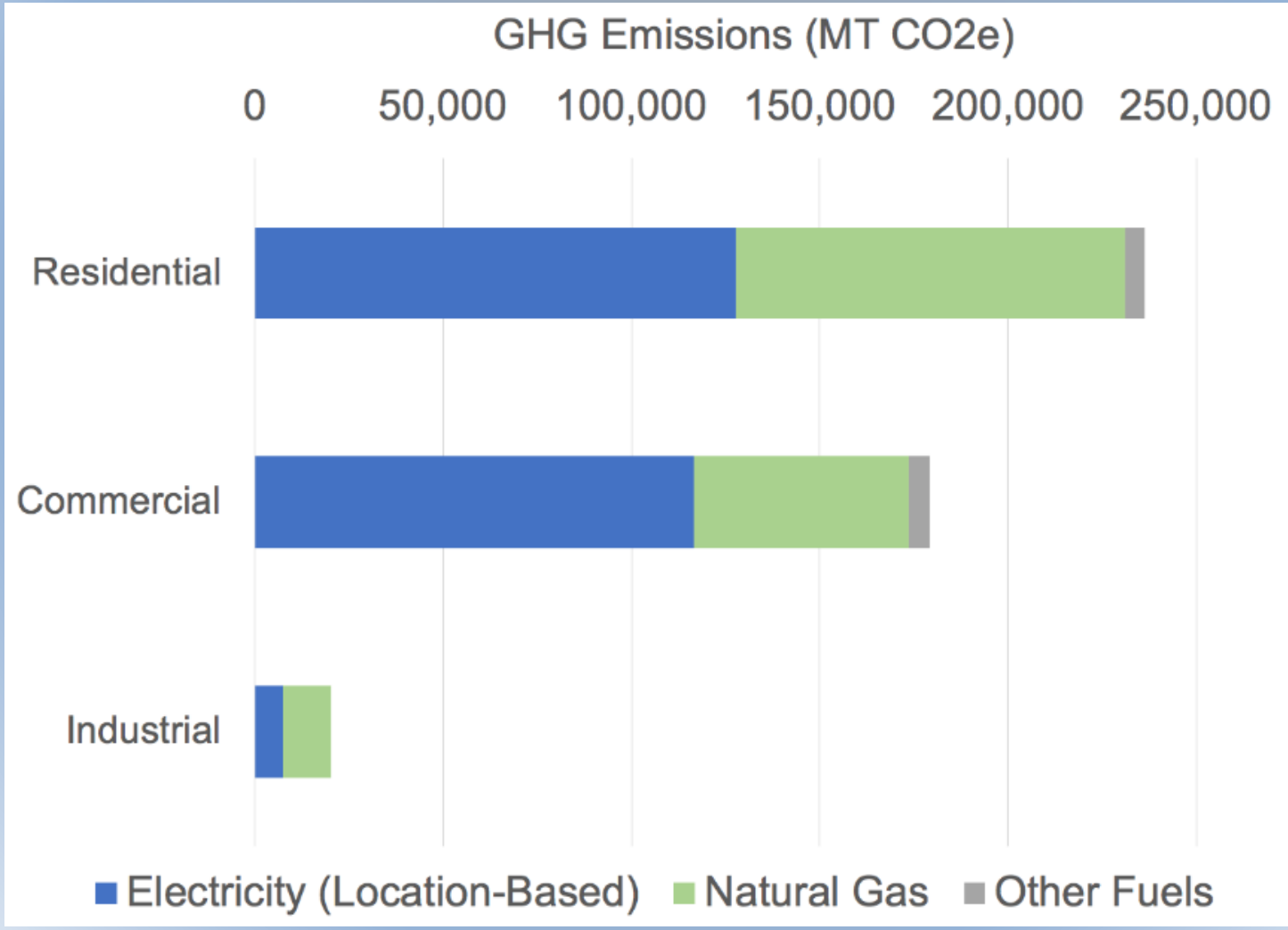
- **Geographic boundary:** City of Bend, Urban Growth Boundary
- **Time period:** Fiscal Year 2015-16
- **Emissions sources:**
  - *Stationary energy*
  - *Transportation*
  - *Waste*
  - *Refrigerant leakage*

  Sector-based emissions
  - *Household consumption of goods and food*
  - *Upstream energy production*

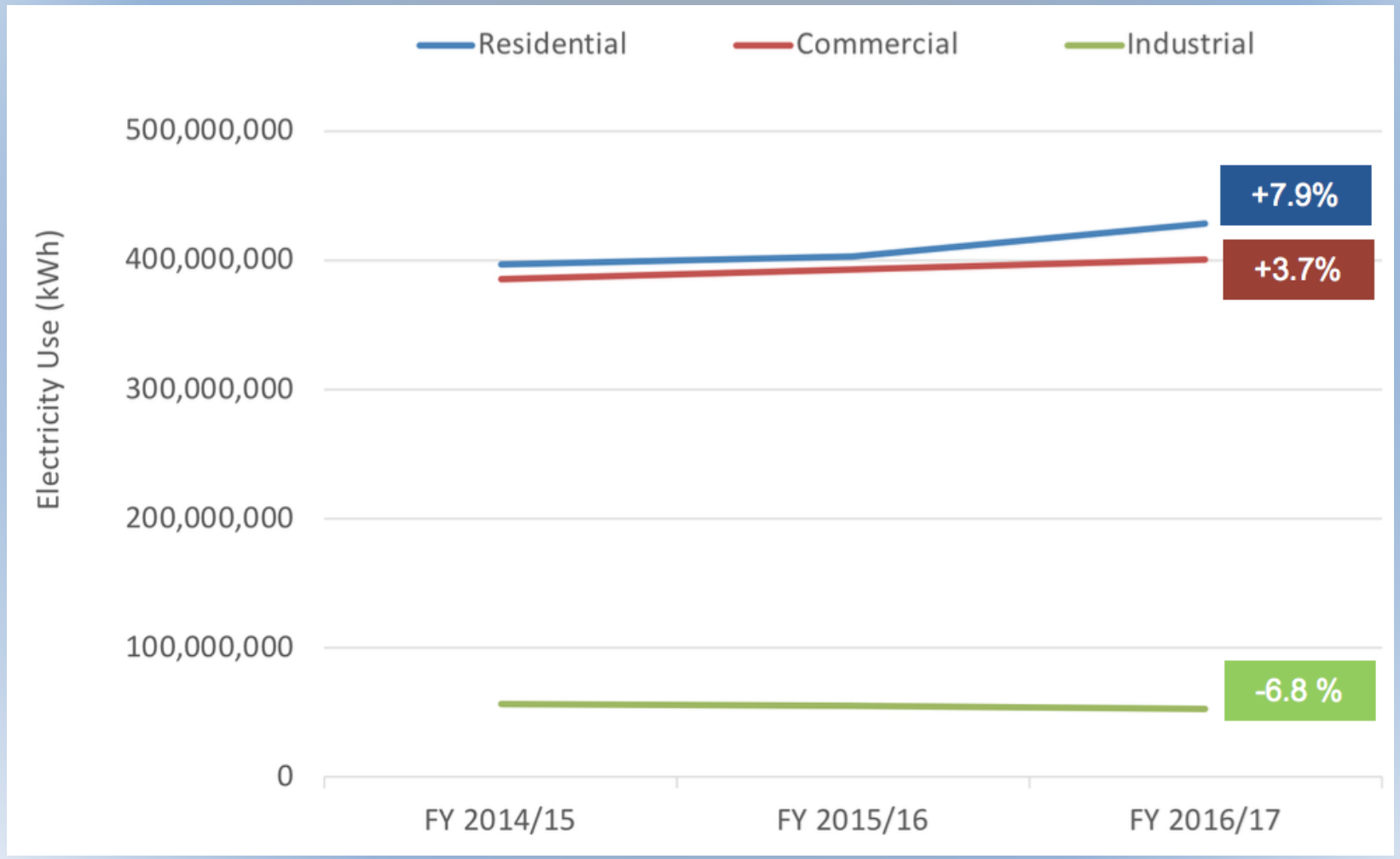
Sector-based Community GHG Emissions



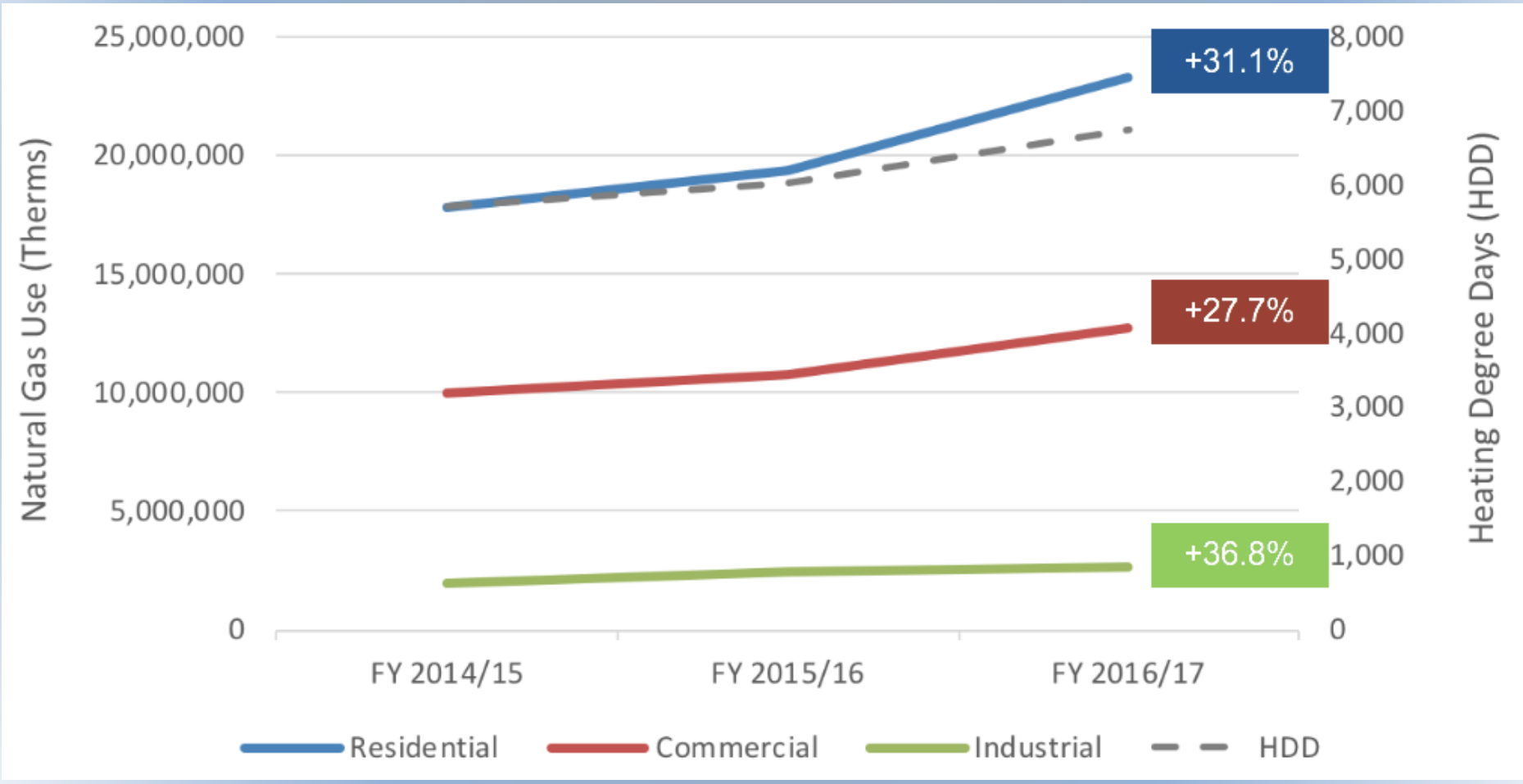
Building Energy = 56% of emissions



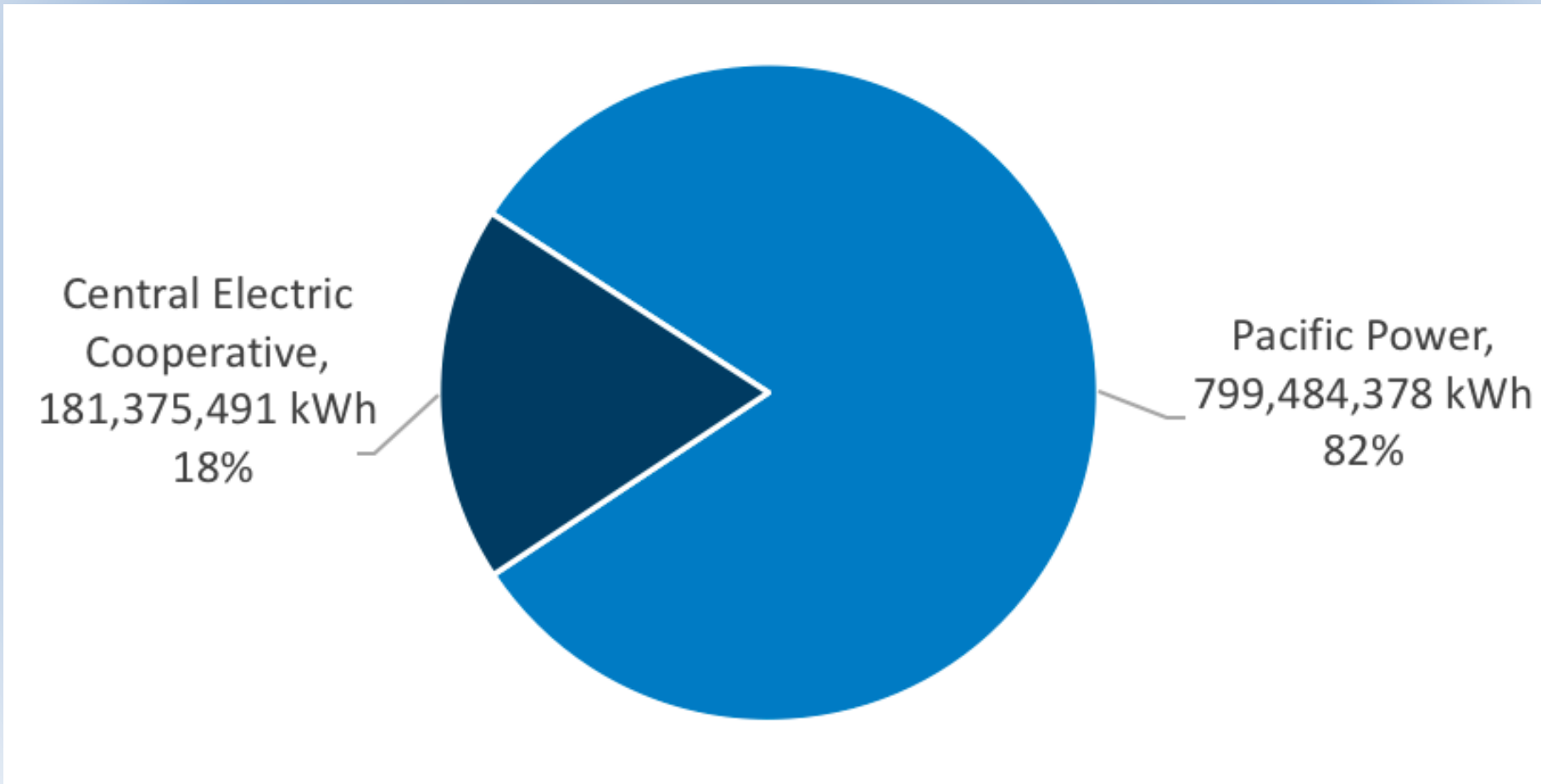
Electricity use up 5%, 2015 to 2017



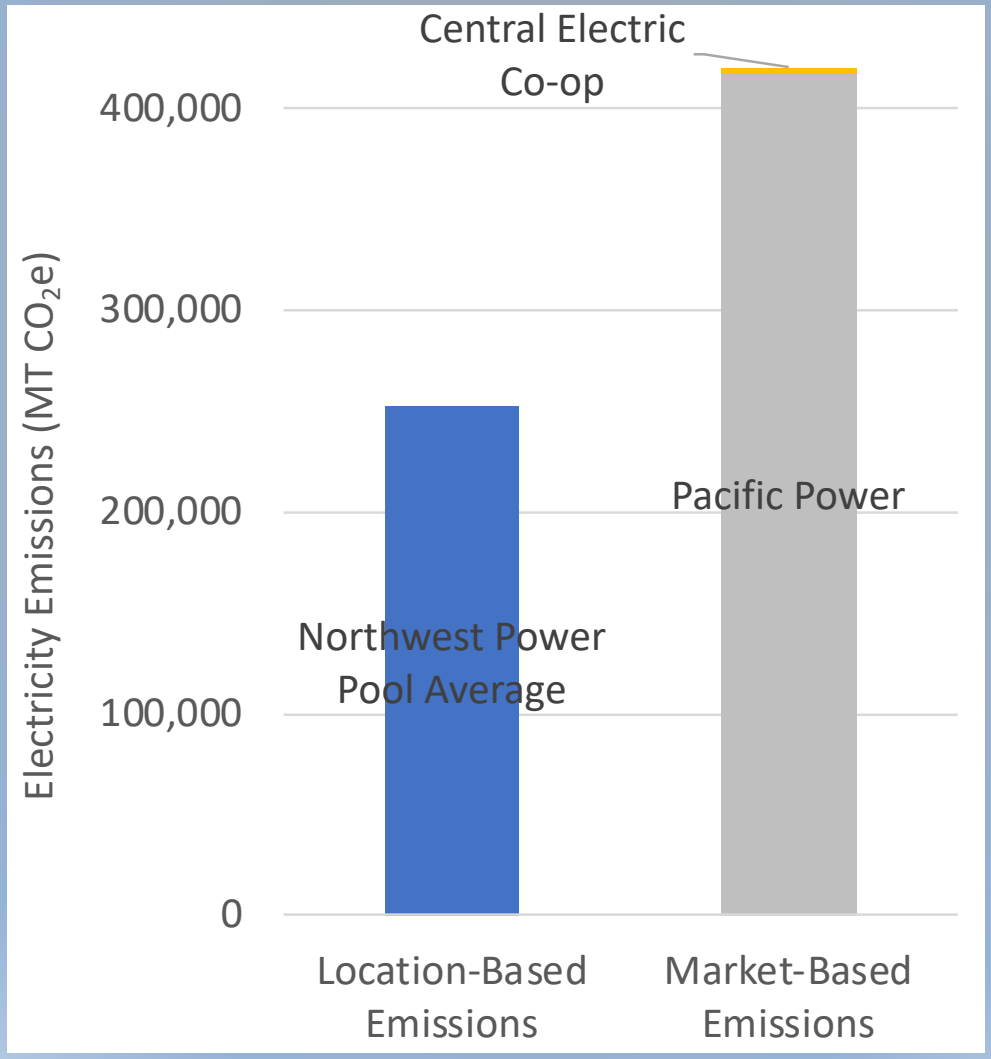
Natural gas use up 30%, 2015 to 2017



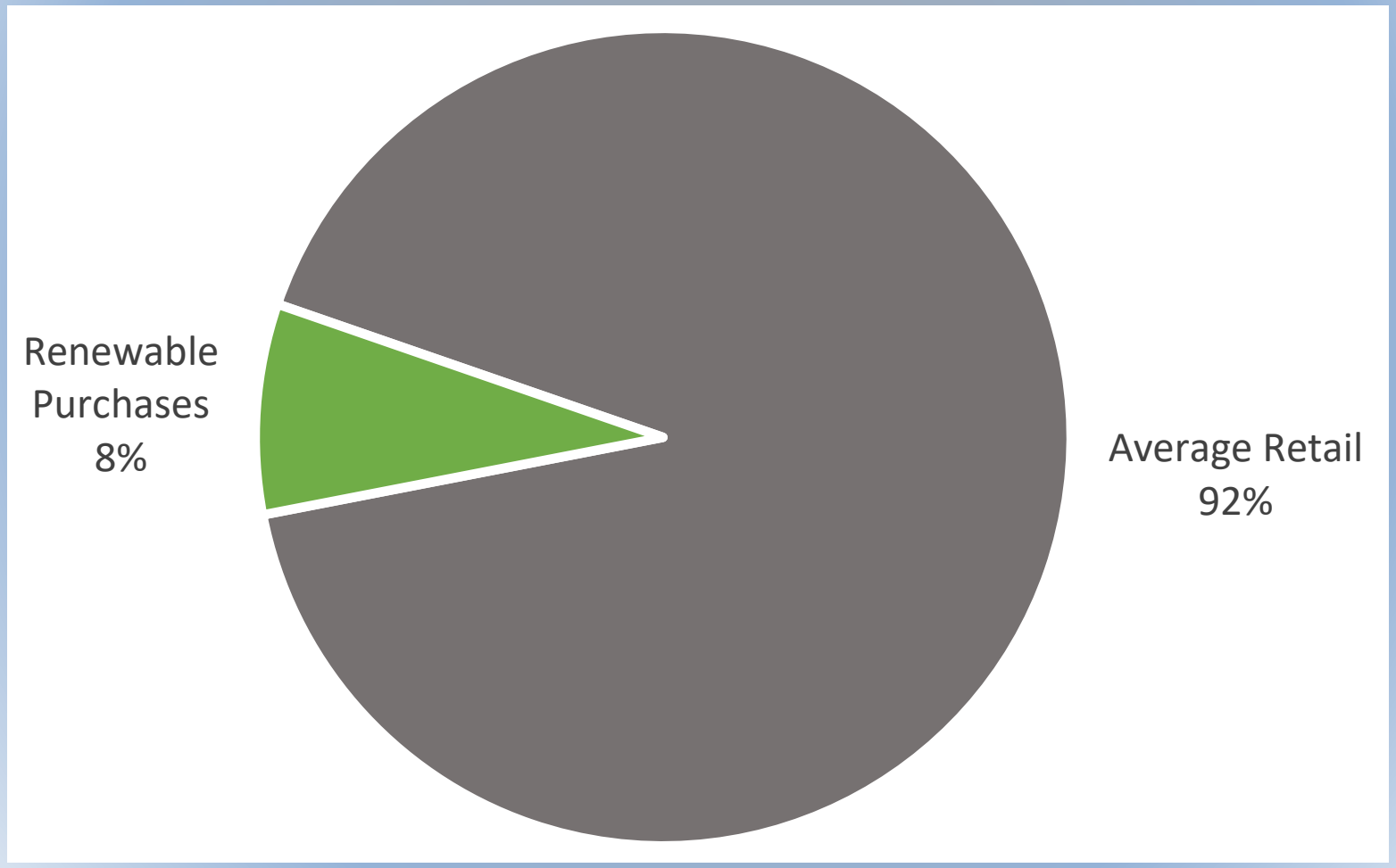
Electricity purchases by utility for FY16



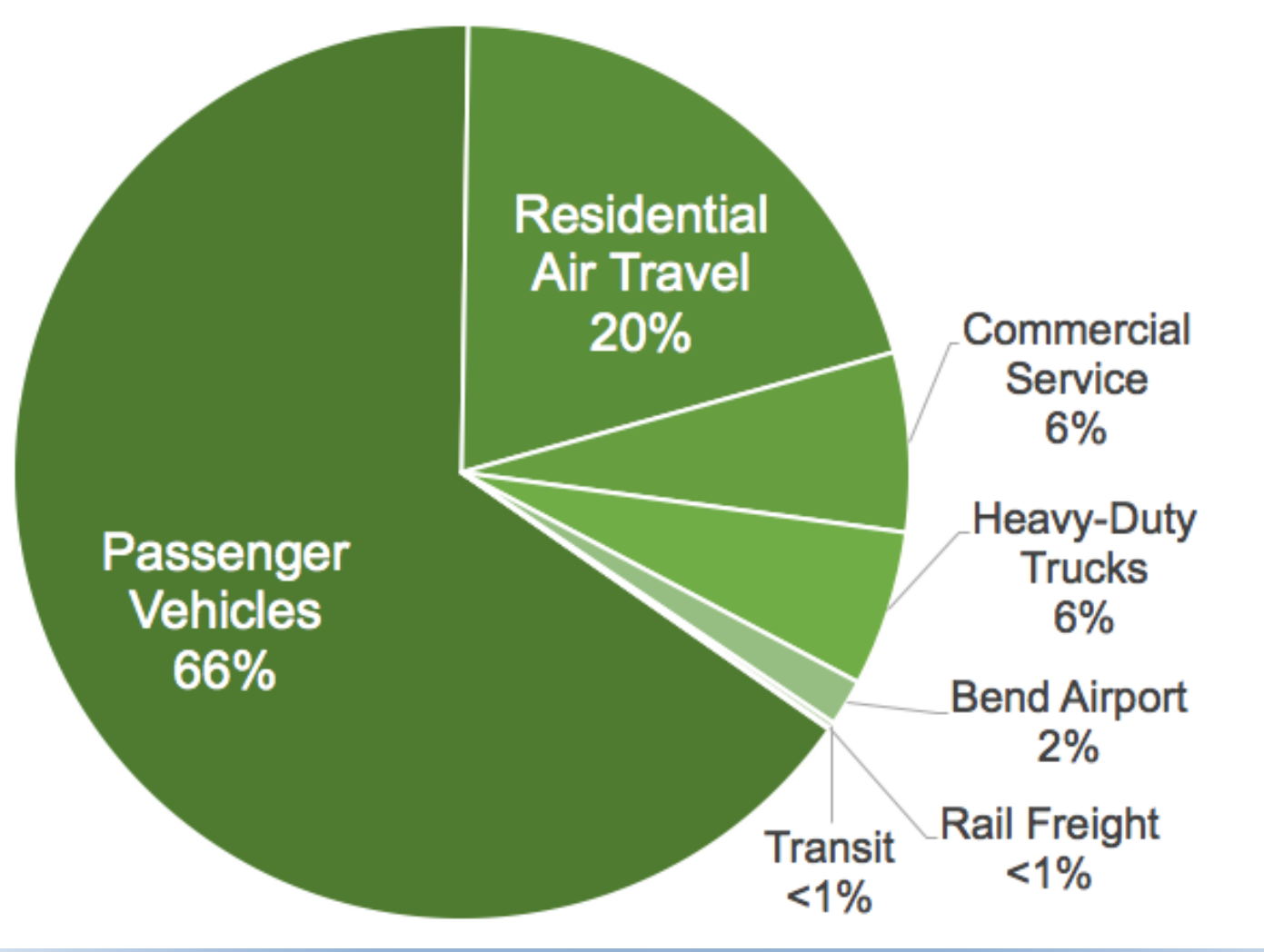
Two accounting methods for electricity



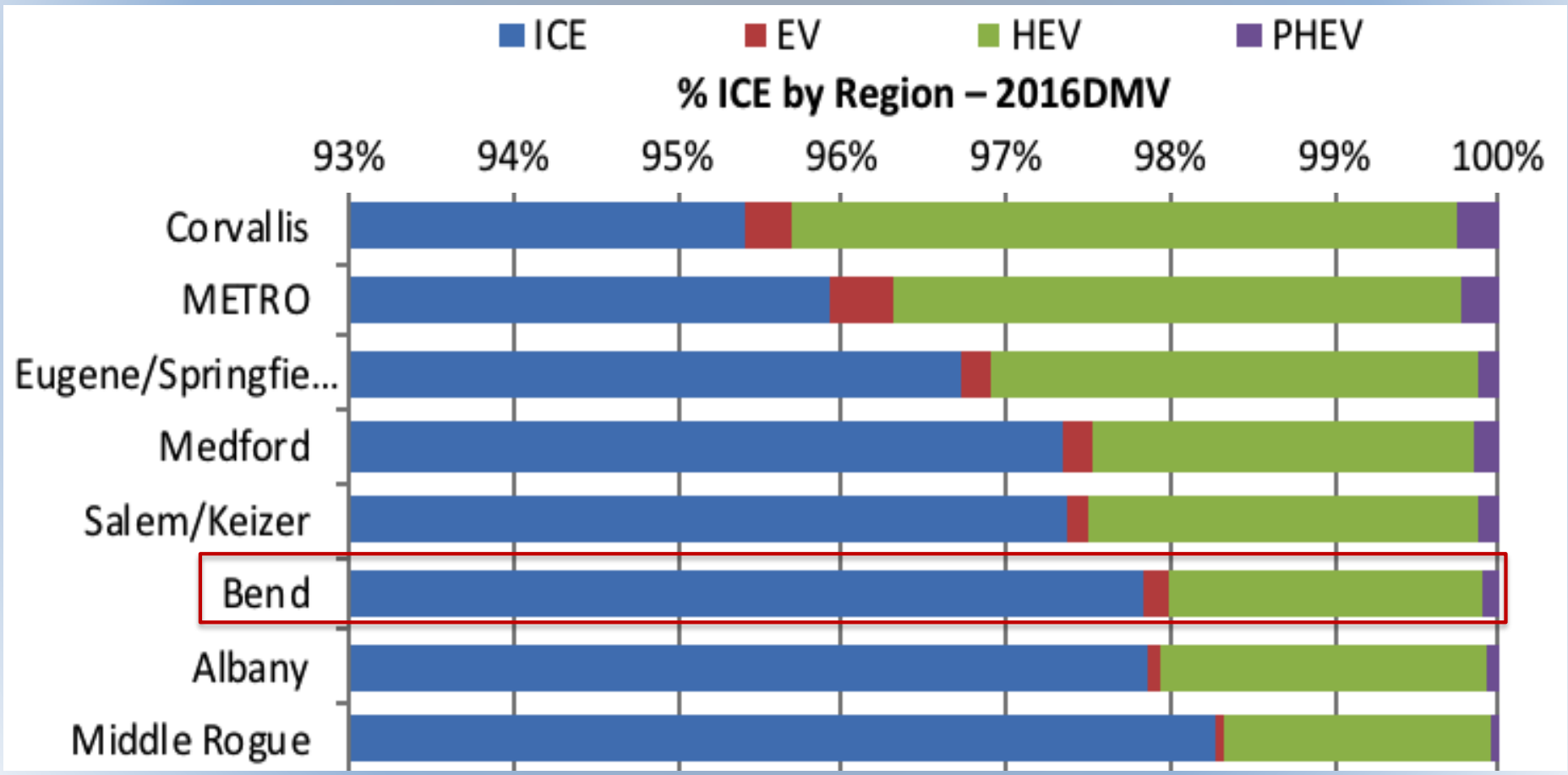
Community renewable energy purchases



Transportation emissions by source



Percentage of Bend fleet electrified



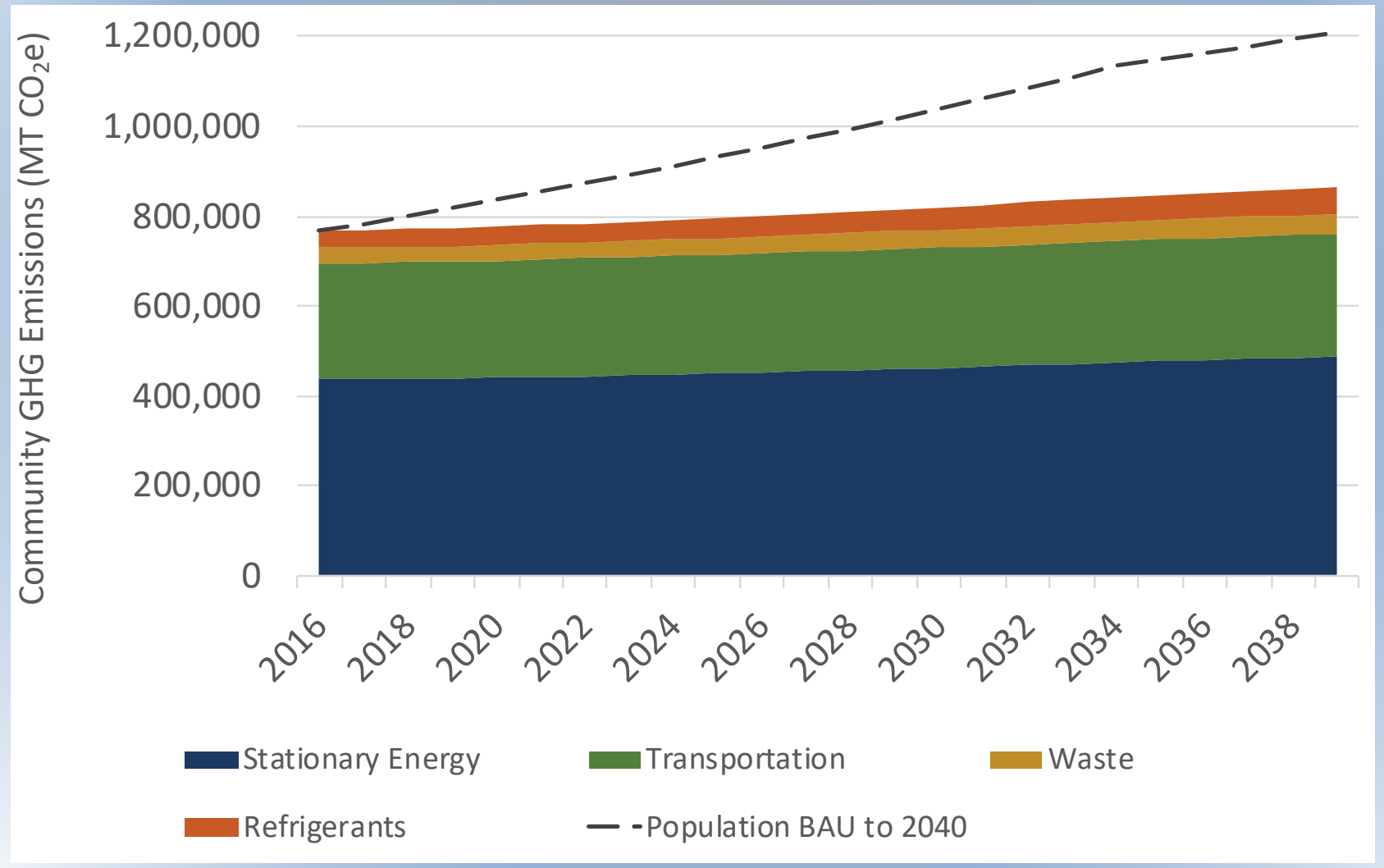
Per Capita and HH Equivalencies

- **2016 GHG Emissions = 945,000 MT CO_2e***
  - Per Capita = 11.3 MT CO_2e / person
  - Per Household = 27.8 MT CO_2e / household
- **Equivalencies Per Capita**
  - Carbon Offset Cost ($) = $170 / year**
  - Tree Seedlings Grown for 10 Years = 293 / year
- **Equivalencies Per Household**
  - Carbon Offset Cost ($) = $417 / year**
  - Tree Seedlings Grown for 10 Years = 720 / year

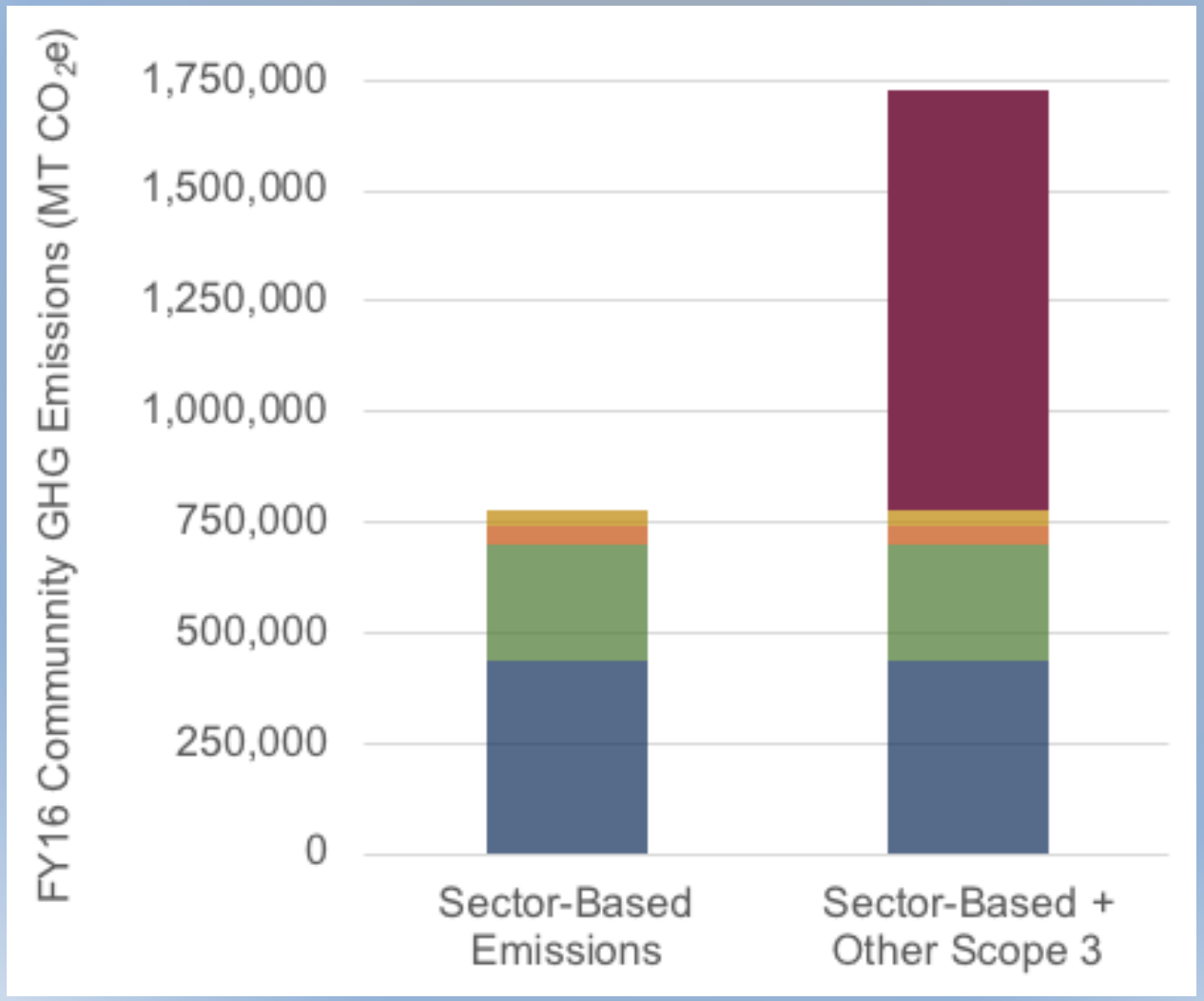
*Uses market-based electricity emissions

**Assumes a carbon offset cost of $15 / MT CO_2e

Bend's emissions forecast to 2040



Community Emissions with Consumption



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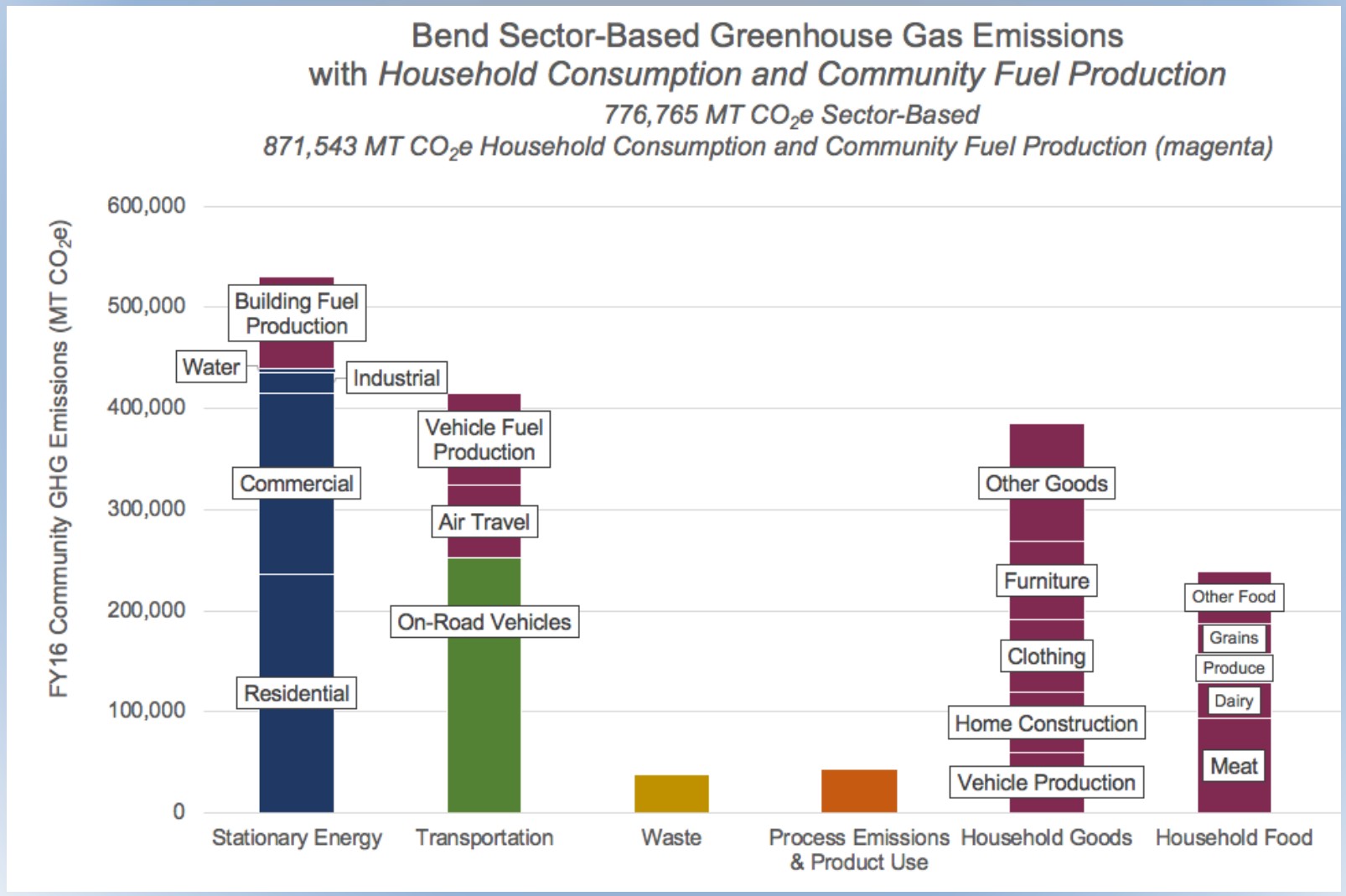
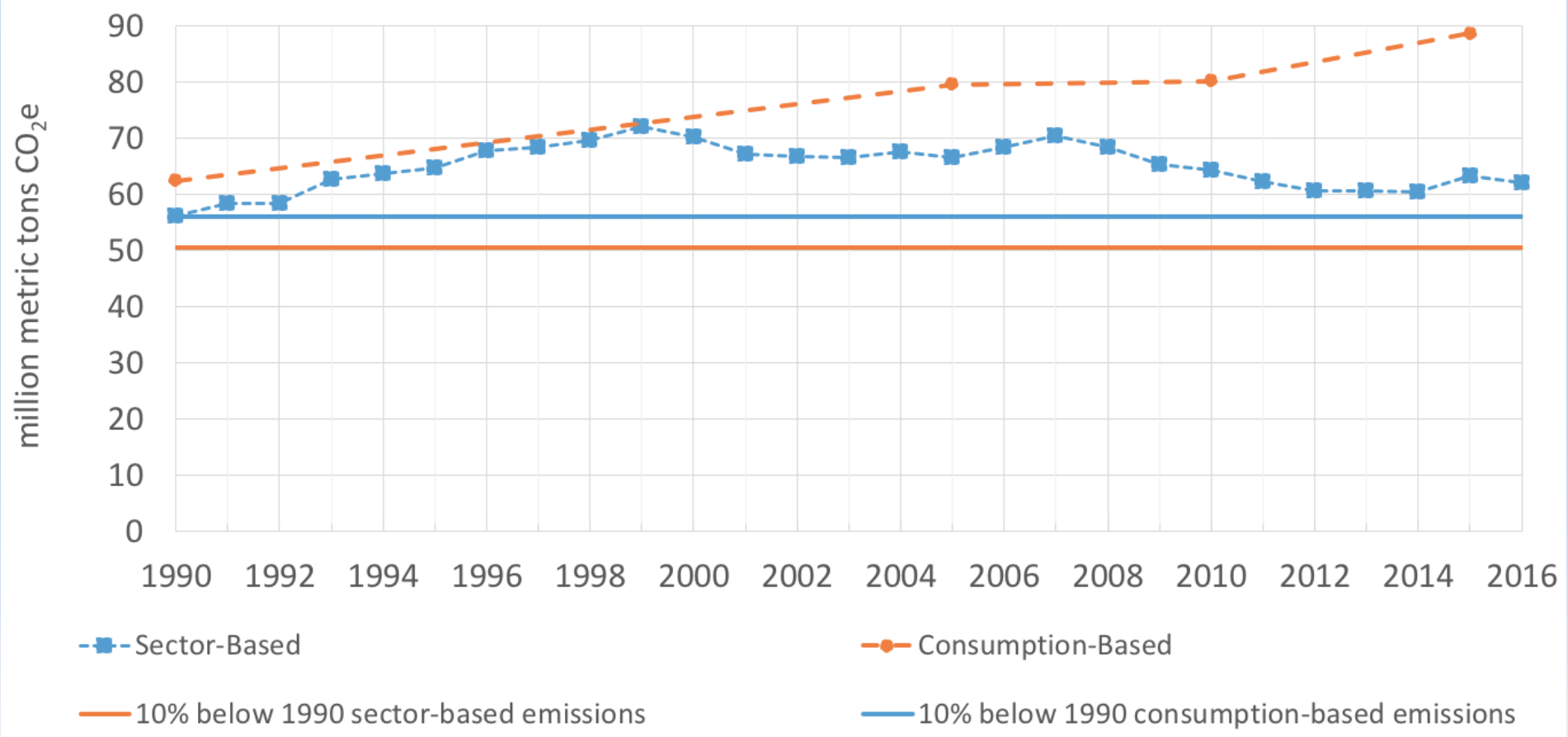


Oregon emissions trends with consumption



Source: ODEQ, Oregon's GHG Emissions through 2015 (May 2018)

Inventory results and climate action planning

- Bend's largest sources are similar to other communities and have known action opportunities
- Frequency of sector-based community inventories is typically every 2 – 5 years
- Work with partners – ODOT and ODEQ - to improve inventory data / modeling
- Consumption-based emissions are large, and therefore need to be addressed in CAP, but are currently difficult to track accurately over time
- Community GHG calculator (ClearPath) has useful climate action features - forecasts, planning scenarios, & monitoring and tracking

Thank you!

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