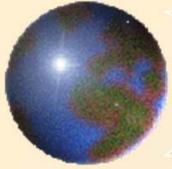




# Fort Collins Community Greenhouse Gas Emissions Inventory & Forecast

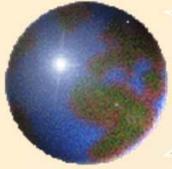
Citizen Advisory Committee  
July 23, 2014  
Bonnie Pierce



# Inventory Emissions

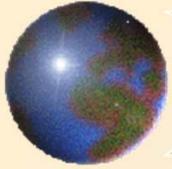
- ❊ What is a Greenhouse Gas Emissions Inventory?
  - ❑ An analysis that details the greenhouse gas (GHG) emissions associated with relevant operations
- ❊ What is a GHG Emissions Protocol?
  - ❑ A set of standards that dictate the types, quality, and sources of data needed to conduct a GHG emissions inventory





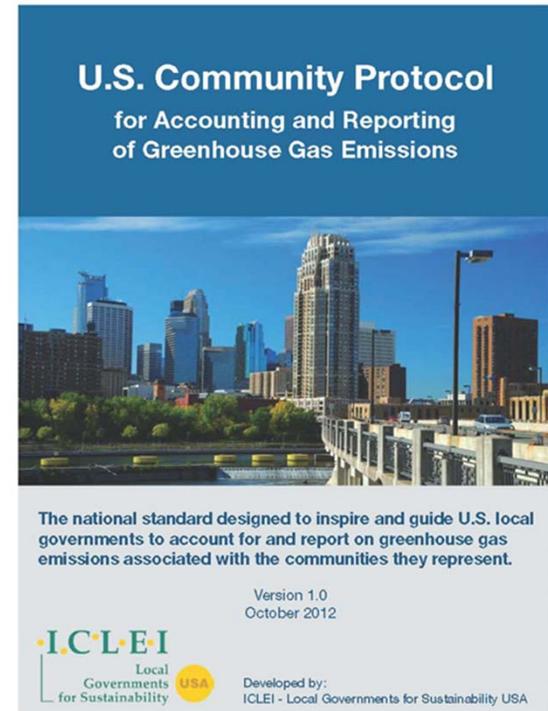
# Types of Inventories

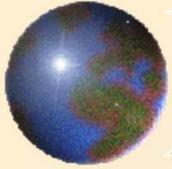
- ✦ Production/activity-based: includes GHG emissions associated with sources and activities taking place within a geographic boundary over which an entity has jurisdiction
- ✦ Consumption-based: estimates life-cycle emissions associated with residents' consumption of goods & services
- ✦ Life-Cycle: accounting on the full life-cycle emissions associated with materials extraction, manufacturing or processing, transportation, use, and end-of-life management of a good or service



# 2012 ICLEI Community Protocol

- ❖ Geographic boundaries:
  - ❑ Focus on emissions occurring within jurisdictional boundary
  - ❑ Certain trans-boundary emission sources associated with in-boundary community activities
- ❖ Emphasis is on local control
- ❖ Consistent accounting for comparability





# What does Fort Collins include?

Solid Waste



Energy Use



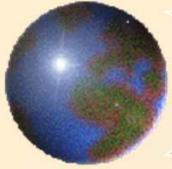
Transportation



Water & Wastewater

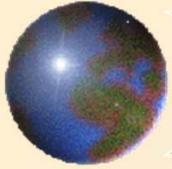


Includes Residential, Commercial, & Industrial Sectors



## Why include these emissions?

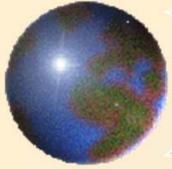
- ⊕ Requirements for compliance with the protocol
- ⊕ Data readily available, accurate, and complete
- ⊕ City has local control through plans, policies, & programs, etc.
- ⊕ Provides baseline for monitoring and evaluating progress



# What's currently not included?

*Difficult to access data/de minimis emissions*

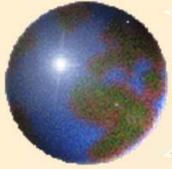
- ⊕ HFCs, PFCs, and SF6 emissions
- ⊕ Industrial process emissions
- ⊕ Composting by residents & businesses
- ⊕ Railroad system
- ⊕ Fertilizer application
- ⊕ Livestock
- ⊕ Propane



## Methods - Electricity

- ✦ Includes Fort Collins Utilities, Xcel Energy, transmission & distribution losses
- ✦ Does not include Renewable Energy Credits (RECs)
- ✦ Energy mix is reflected in the calculations via emissions factors



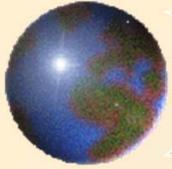


## Methods – Natural Gas

- ⊕ Data from Xcel Energy
- ⊕ Includes Residential, Commercial, & Industrial emissions

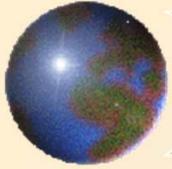
## Methods – Air Travel

- ⊕ Based on fuel consumption at DIA, enplanement data, % of passengers from Fort Collins, reduced by number of connecting flights through DIA



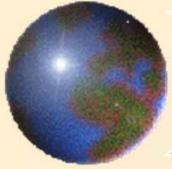
# Methods – Ground Transportation

- ⊕ Vehicle miles travelled (VMT) estimated by complex modeling by the North Front Range Metropolitan Planning Organization (NFRMPO)
- ⊕ Latest estimate based on 2009 base model updated in fall 2011 with local demographic data & local traffic counts/surveys
- ⊕ VMT distribution provided by CO Department of Public Health & Environment
- ⊕ Fuel economy by vehicle type from Federal Highway Administration



## Methods – Solid Waste

- ⊕ Accounts for the activity emissions that occur as a result of waste disposed by the community's population during the inventory year
- ⊕ Includes process emissions associated with landfilling and collection and transportation emissions

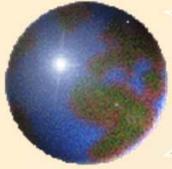


## Methods – Water

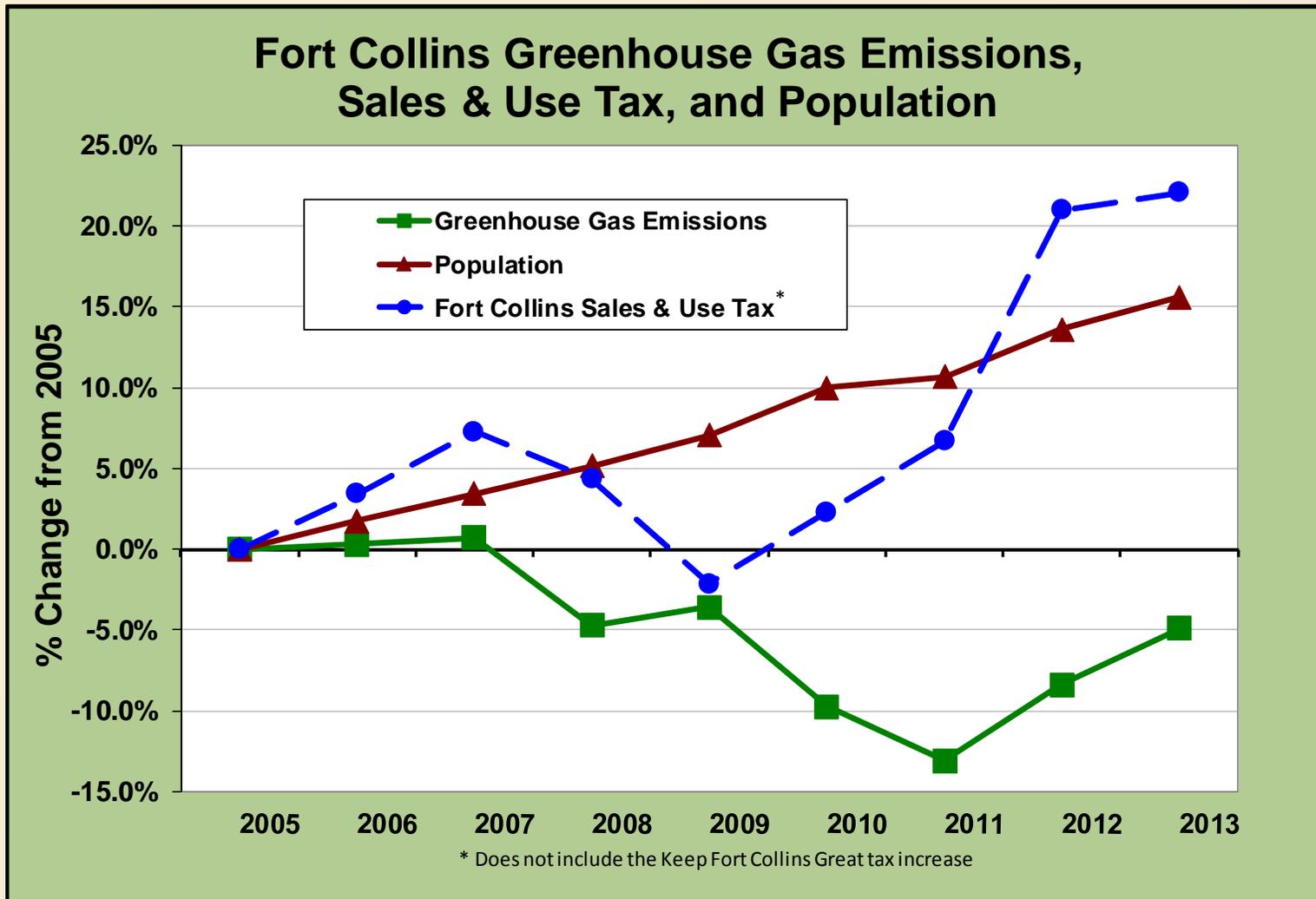
- ⊕ Includes emissions for water treatment processes, and conveyance & distribution of water

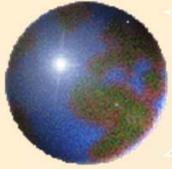
## Methods – Wastewater

- ⊕ Includes  $\text{CH}_4$  and  $\text{N}_2\text{O}$  emissions from combustion, treatment processes, and fugitive emissions from effluent discharge

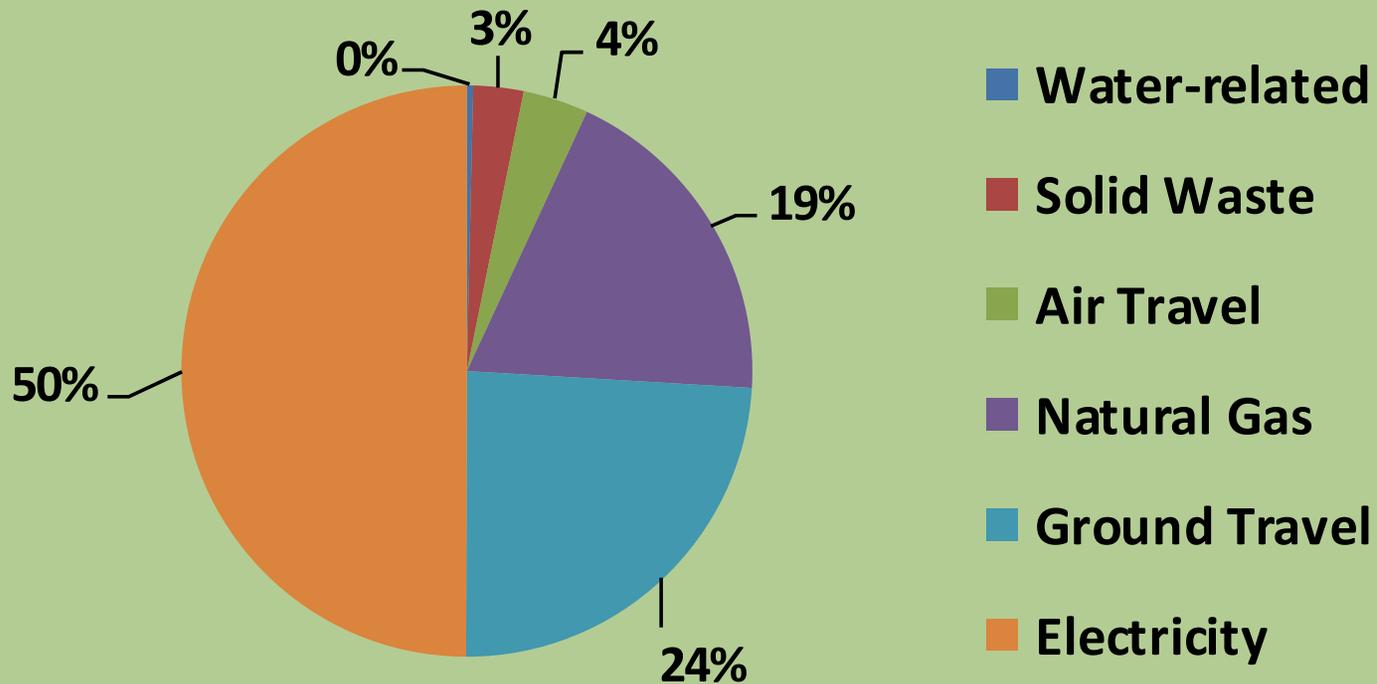


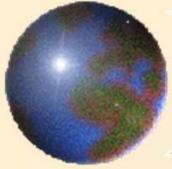
# Fort Collins Inventory Results



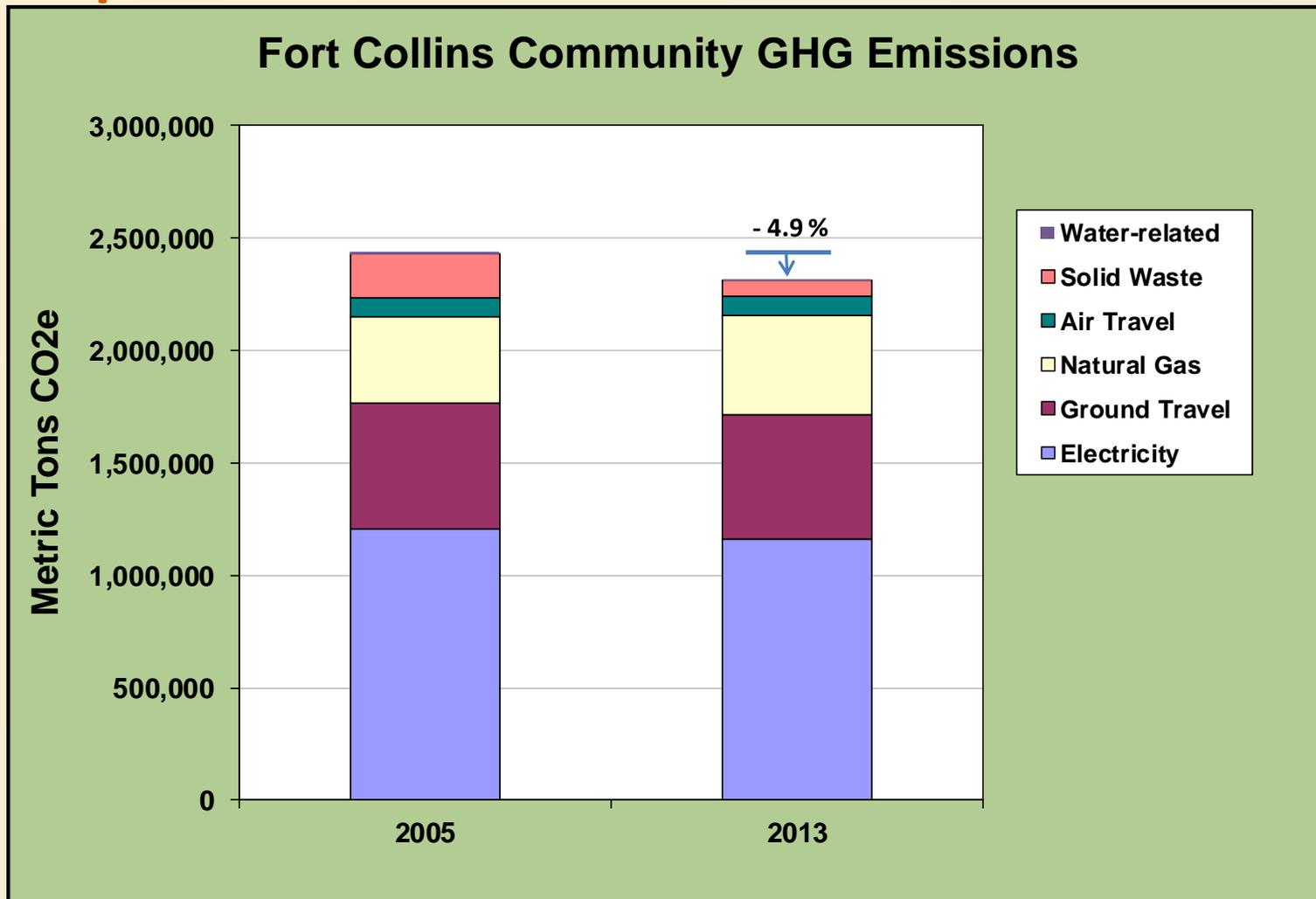


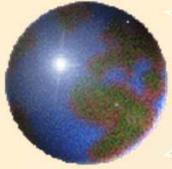
## 2013 Community GHG Inventory Percent Emissions per Source





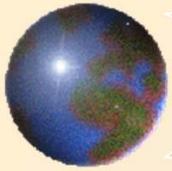
# Comparison to 2005 Baseline



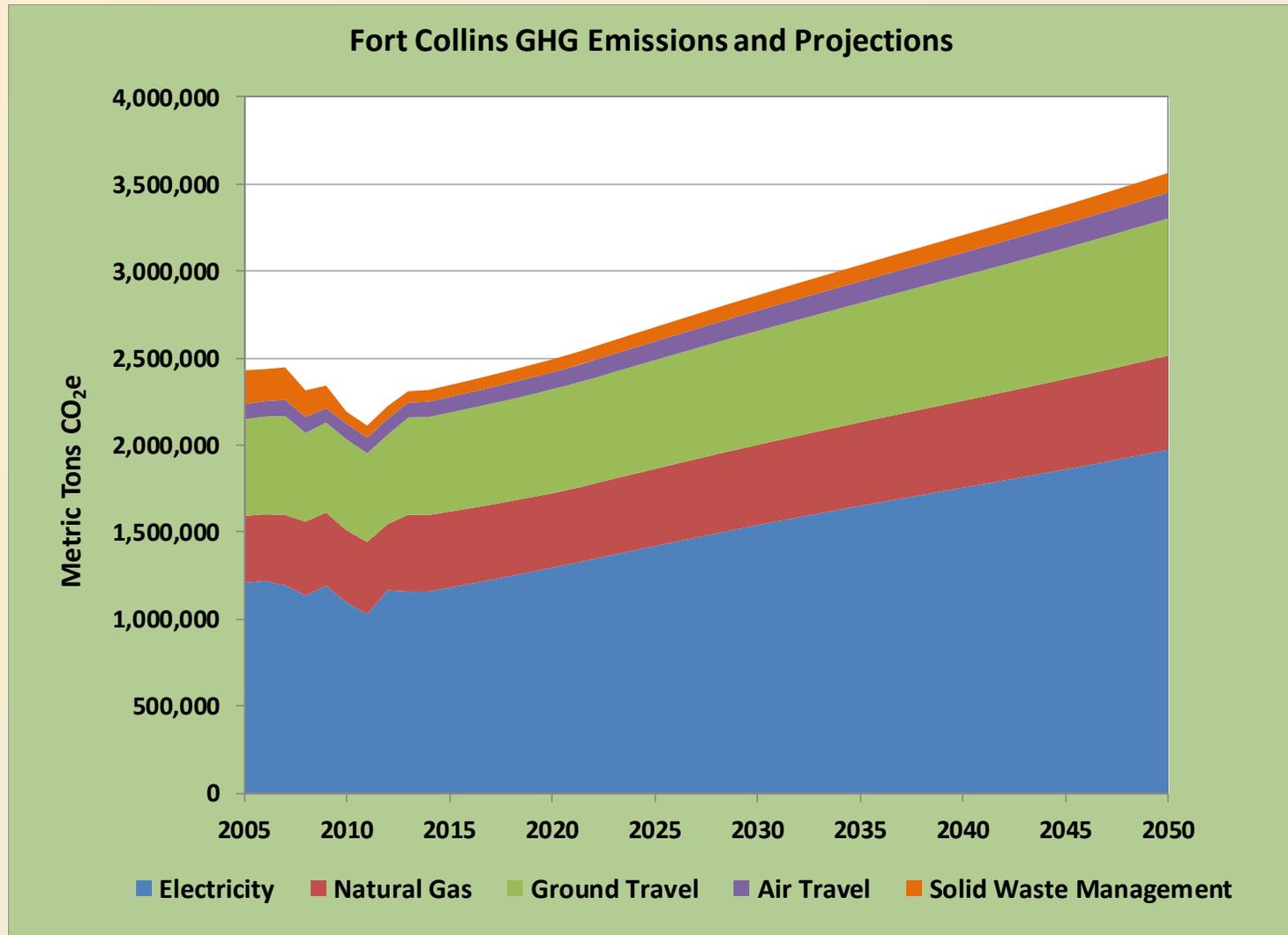


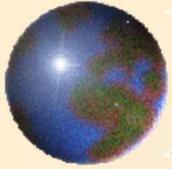
# Definition of Business-as-usual (BAU) Forecast

- ✦ The future GHG emissions inventory compiled using baseline trends in the absence of technical, political, or physical interventions to reduce GHG emissions (i.e., “existing” emissions rates) is referred to as the BAU forecast



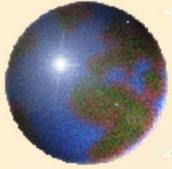
# BAU Forecast





# Major BAU Forecast assumptions

- ❖ DOLA Fort Collins/Loveland population forecast
- ❖ Fort Collins Utilities detailed electricity forecast
- ❖ Current Fort Collins per capita solid waste generation used to project emissions
- ❖ U.S. Energy Information Administration projections for natural gas consumption by sector and source for the Mountain Region
- ❖ Projections from NFRMPO modeling for VMT



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