

# SNAPSHOT OF FG

Kiersten Iwai

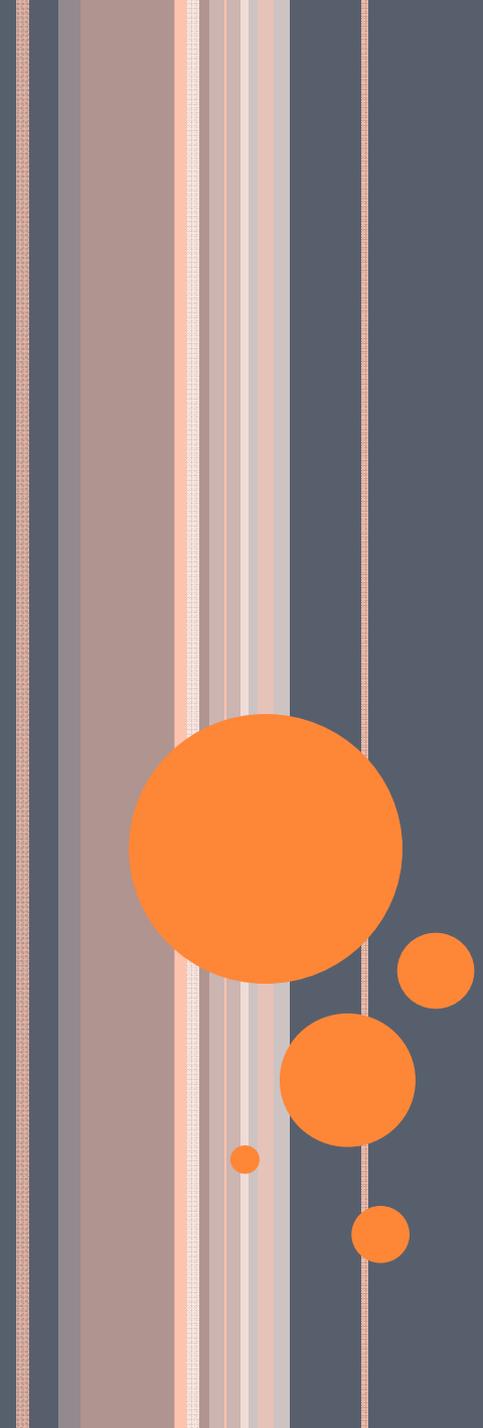
Sustainability Intern



# TOPICS COVERED

- Socio-Economic Assessment
- Water Assessment
- Electricity Assessment
- Community Greenhouse Gas Inventory

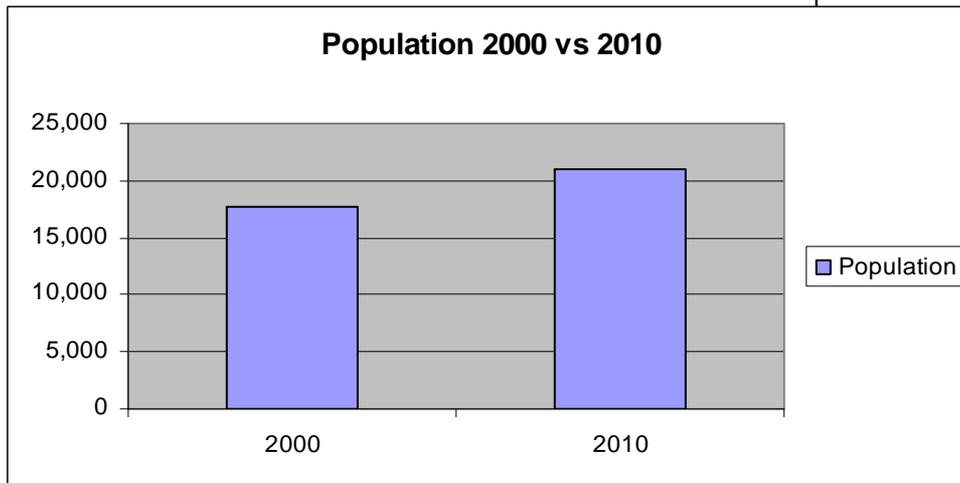
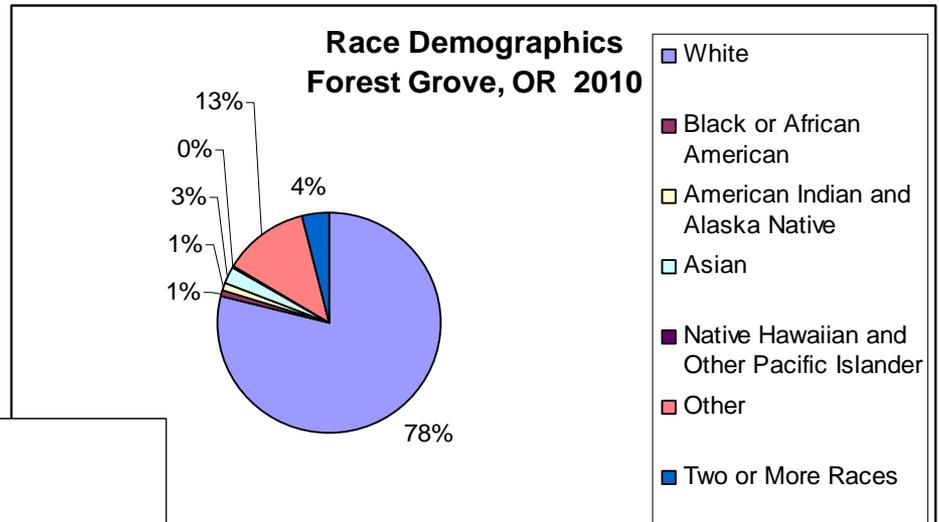




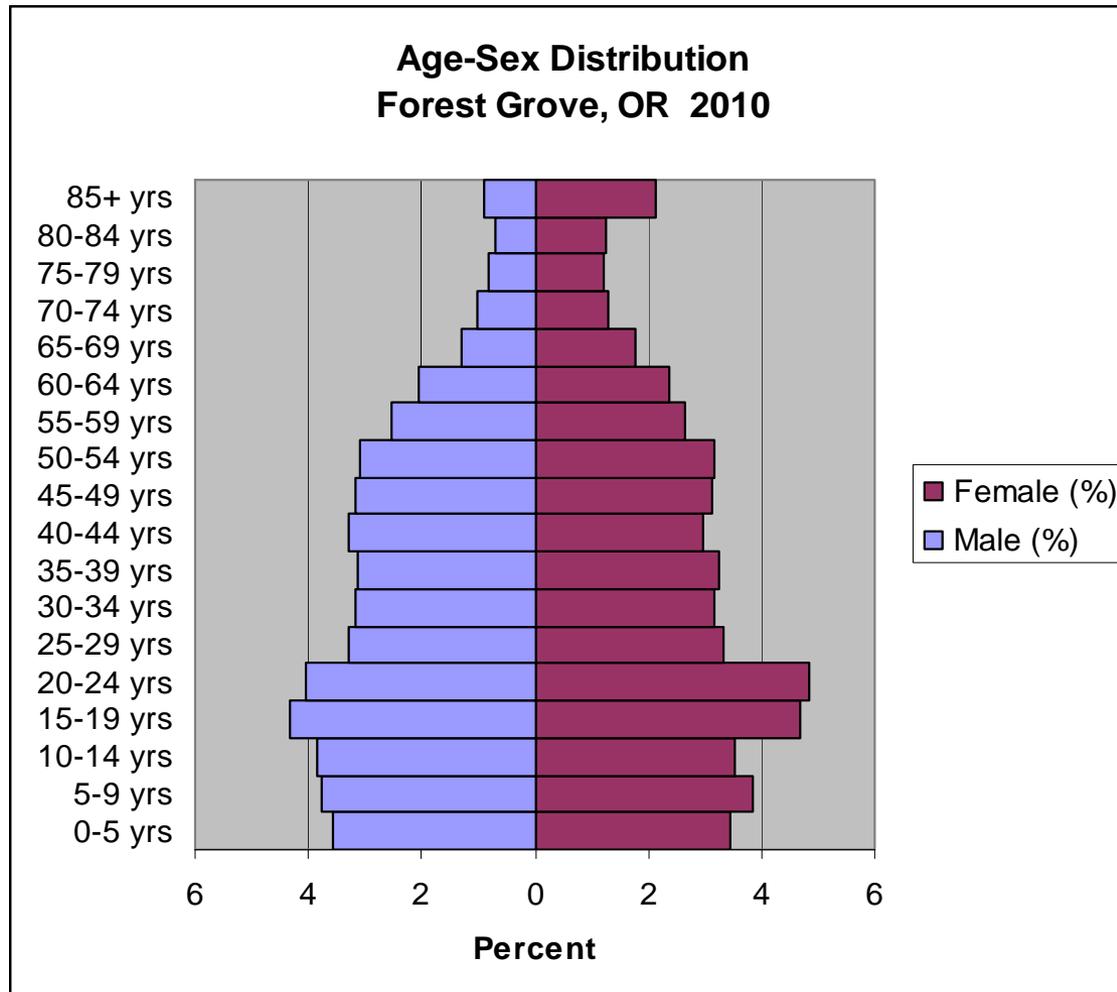
# **SOCIO-ECONOMIC ASSESSMENT**

**Based on the year 2010**

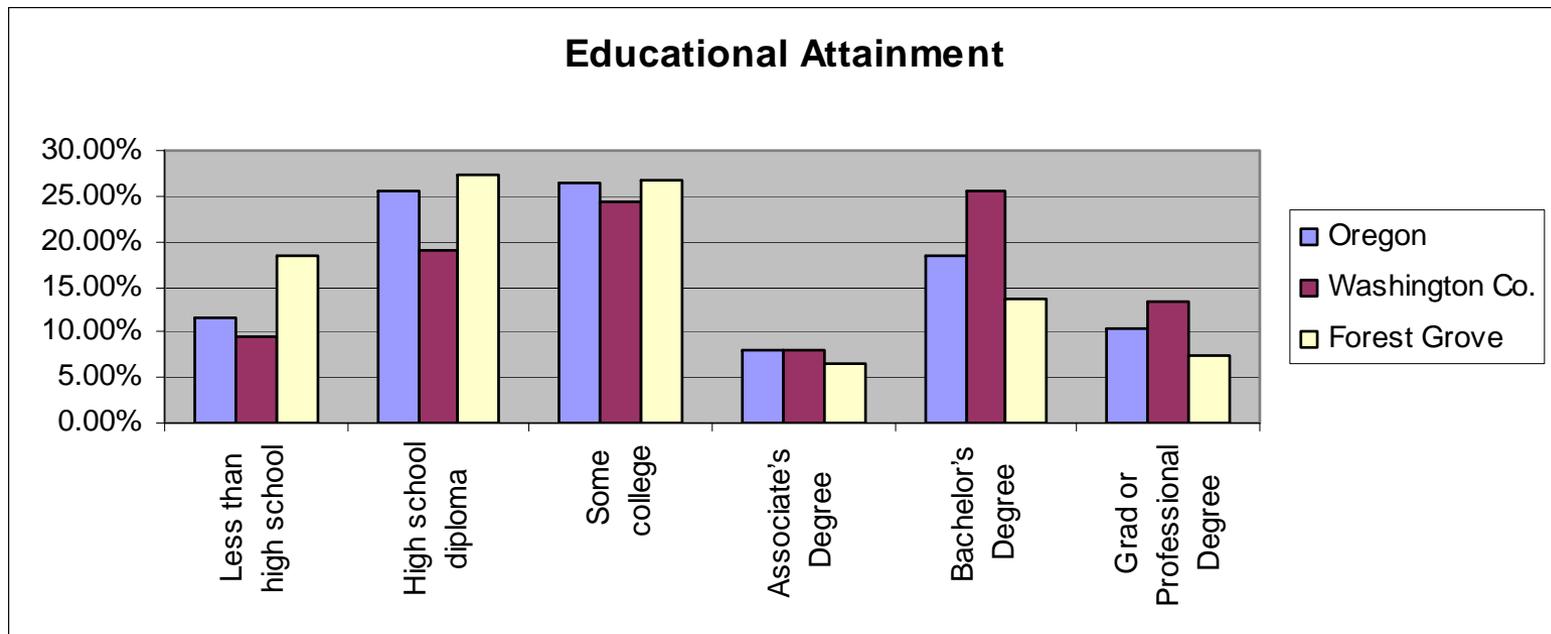
# BASIC DEMOGRAPHICS



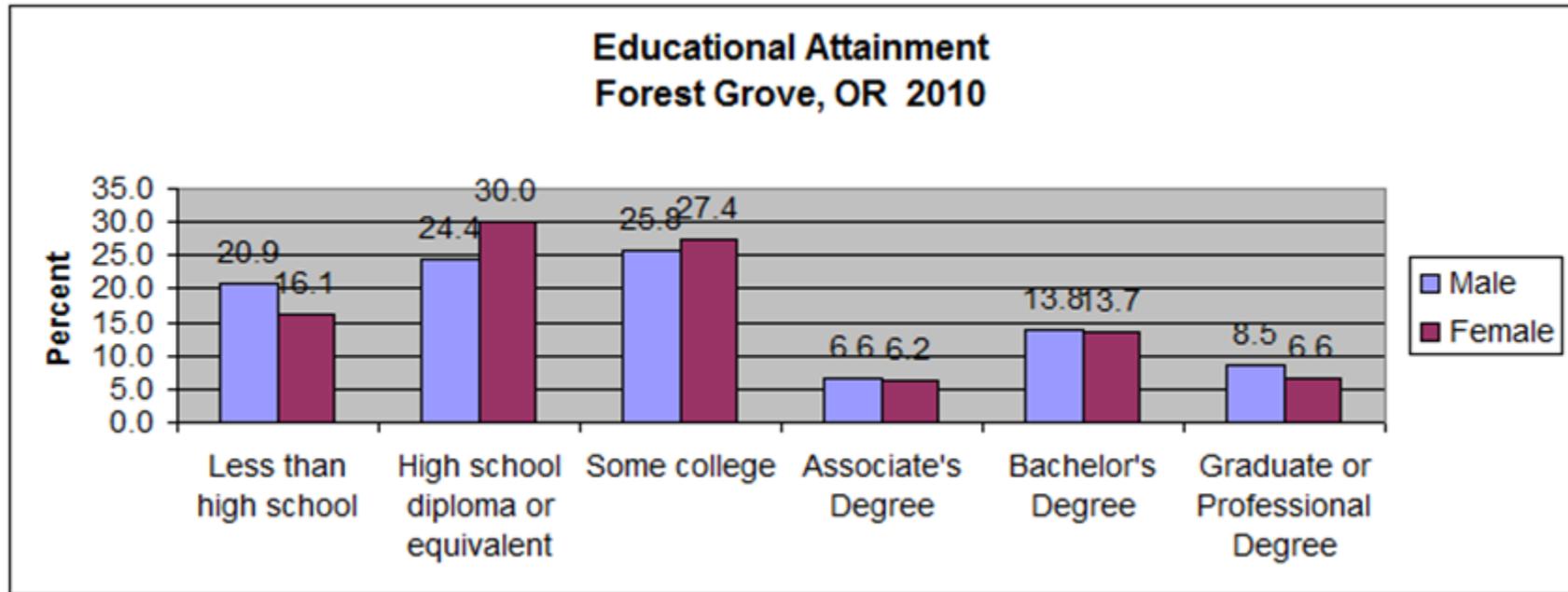
# AGE-SEX DISTRIBUTION



# EDUCATIONAL ATTAINMENT

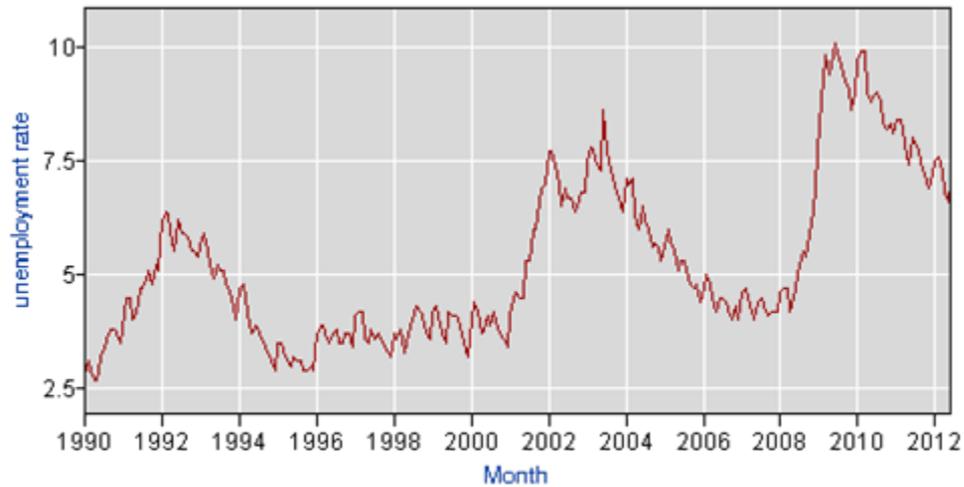


# EDUCATIONAL ATTAINMENT BY SEX

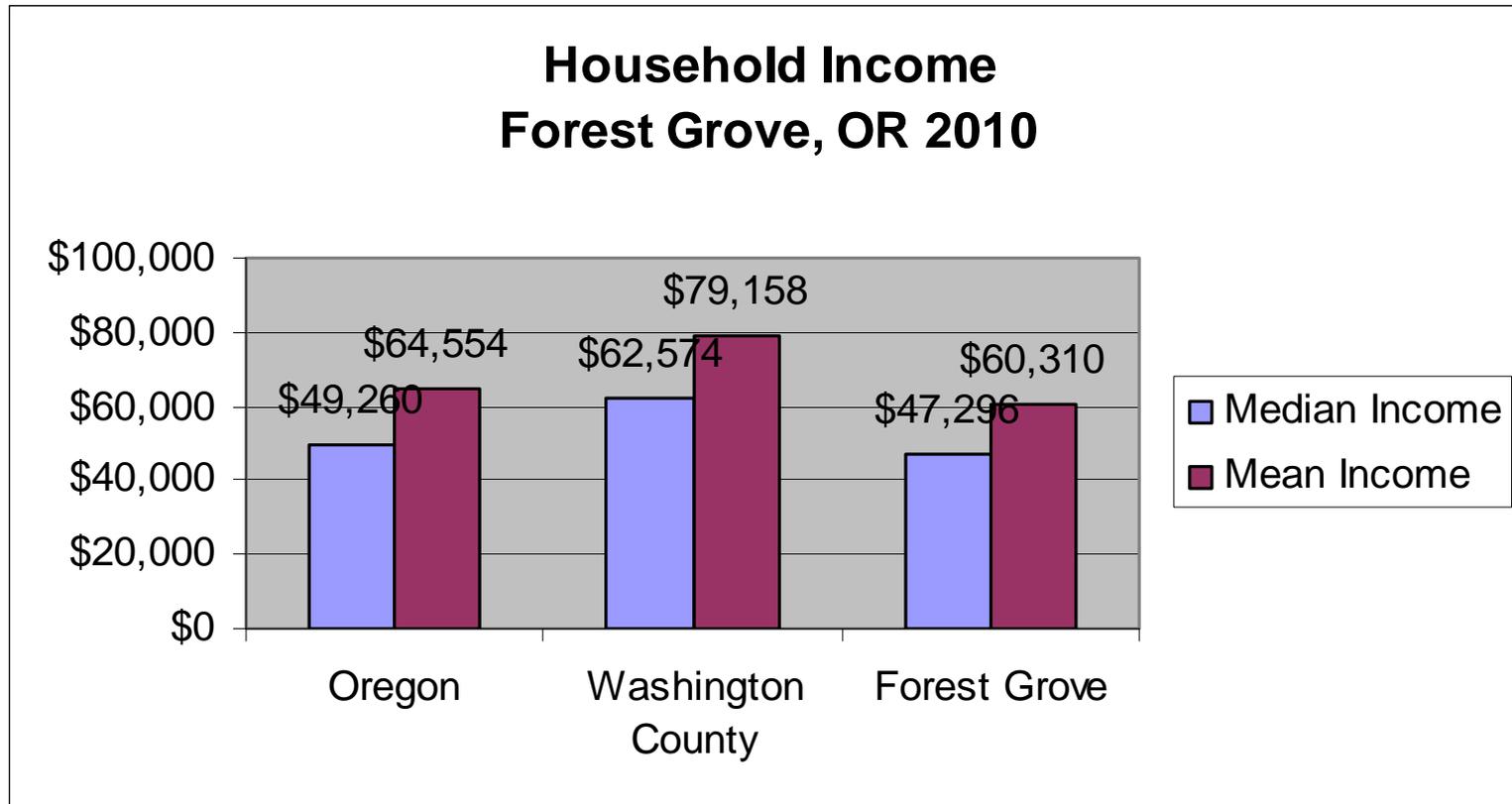


# UNEMPLOYMENT

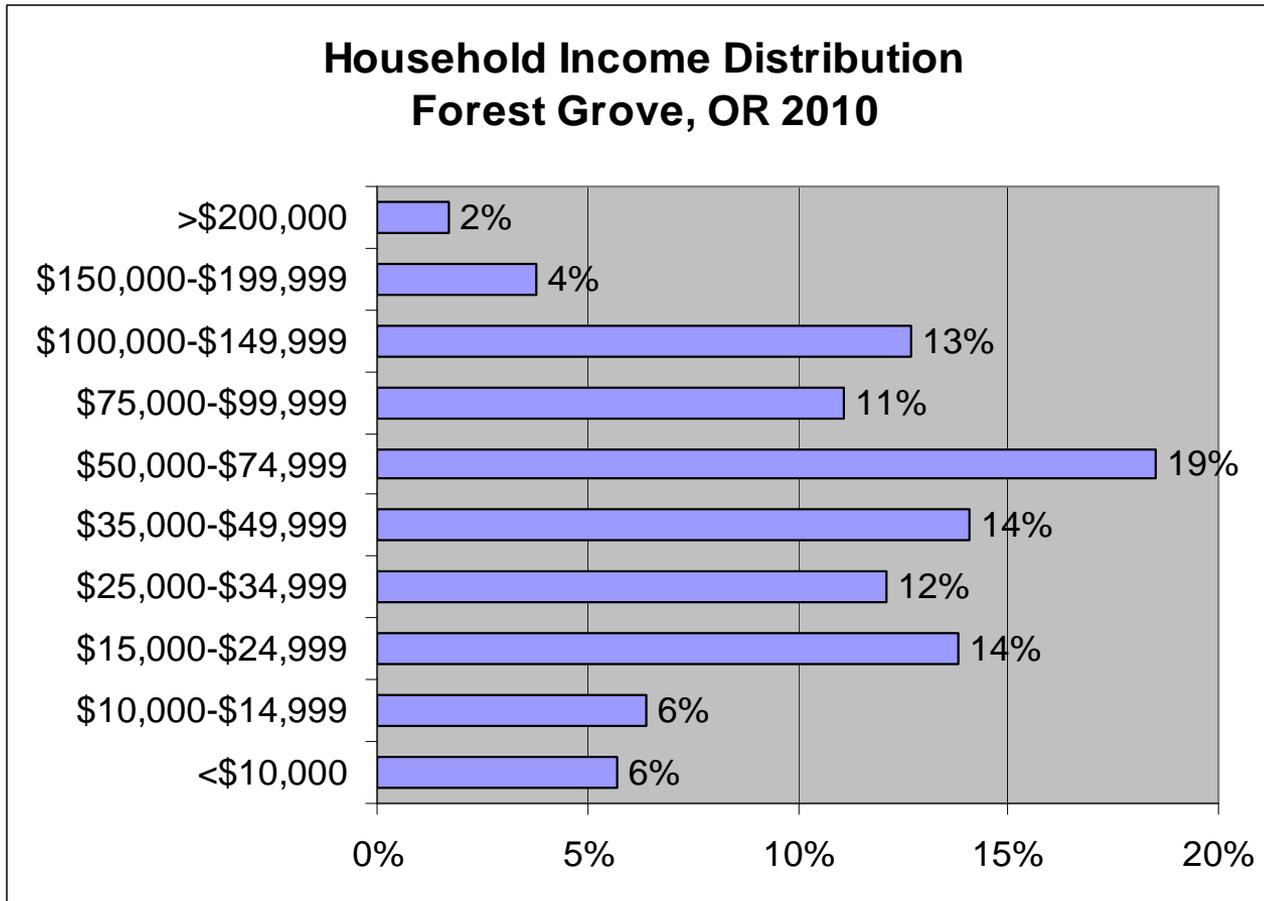
Washington  
Unemployment  
Rate from 1990 to  
2012



# INCOME COMPARISONS



# INCOME DISTRIBUTION



# POVERTY LEVELS

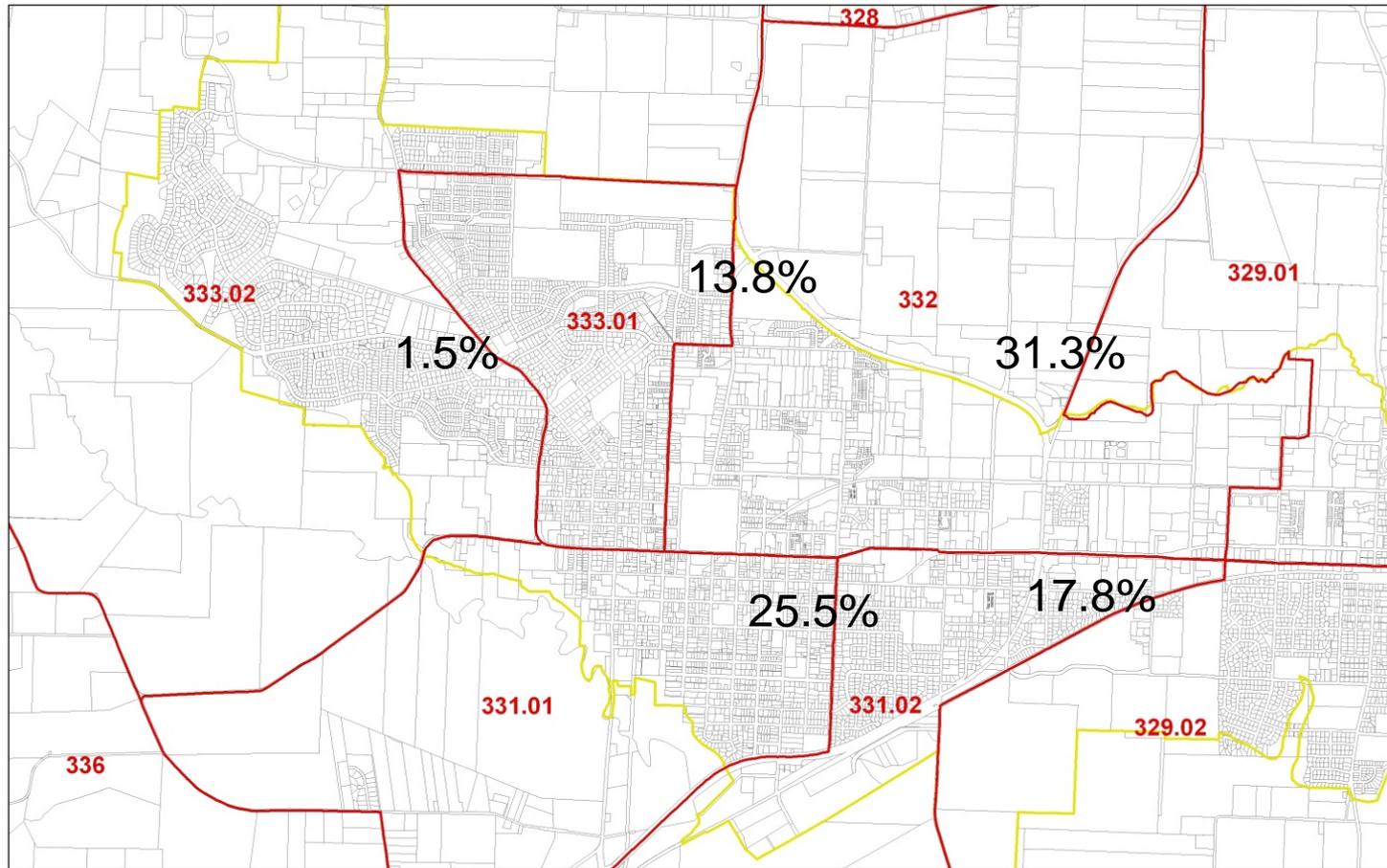
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Forest Grove	19.2% (+/-4.8%)
	1.6%
Washington County	9.5% (+/-0.5%)

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- This includes college students living off campus, NOT those living on campus
- The second percentage reflects the ENROLLED undergraduates who live off campus

# POVERTY LEVEL BY TRACT

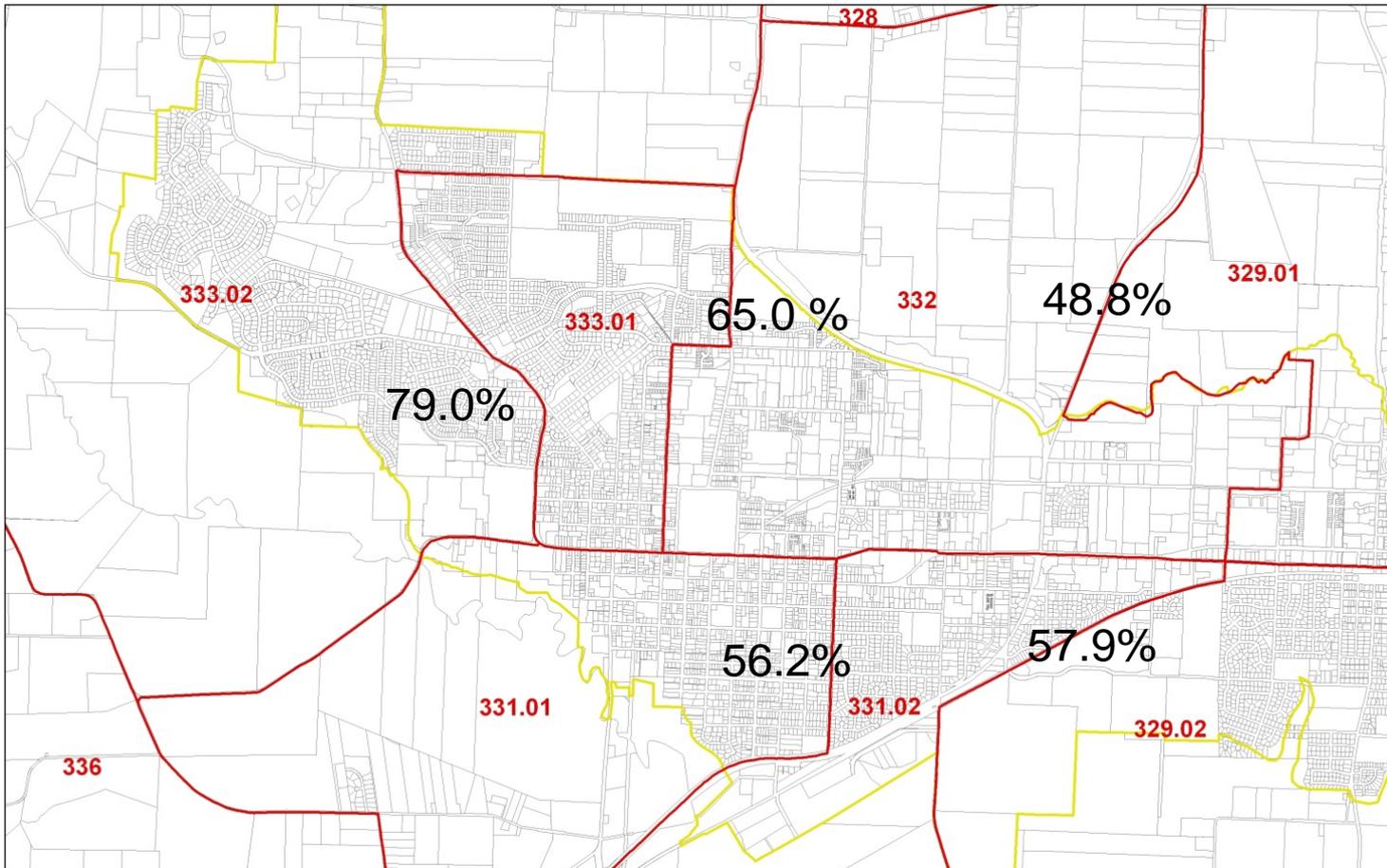


# HOUSING AFFORDABILITY

	Forest Grove	Washington Co.
Owner-occupied	69.7%	67.8%
Renter-occupied	46.7%	55.2%
Total	59.9%	63.1%

	1990	2000
Owner-occupied	89.10%	76.90%
Renter-occupied	55.80%	49.50%
Total	71.00%	63.40%

# HOUSING AFFORDABILITY BY TRACT



# HOMELESSNESS

- Those who...
  - Lost their home
  - Live in transition living (shelters, motels, etc)
  - Live in “unsheltered” areas (under a bridge)
  - Are in jail or a hospital and will return to the above conditions
- Forest Grove Severe Weather Shelter
  - Estimate around 50-60 chronically homeless
  - Past four years around 112 individuals
- Washington County point-in-time count (2011)
  - 1,356 people



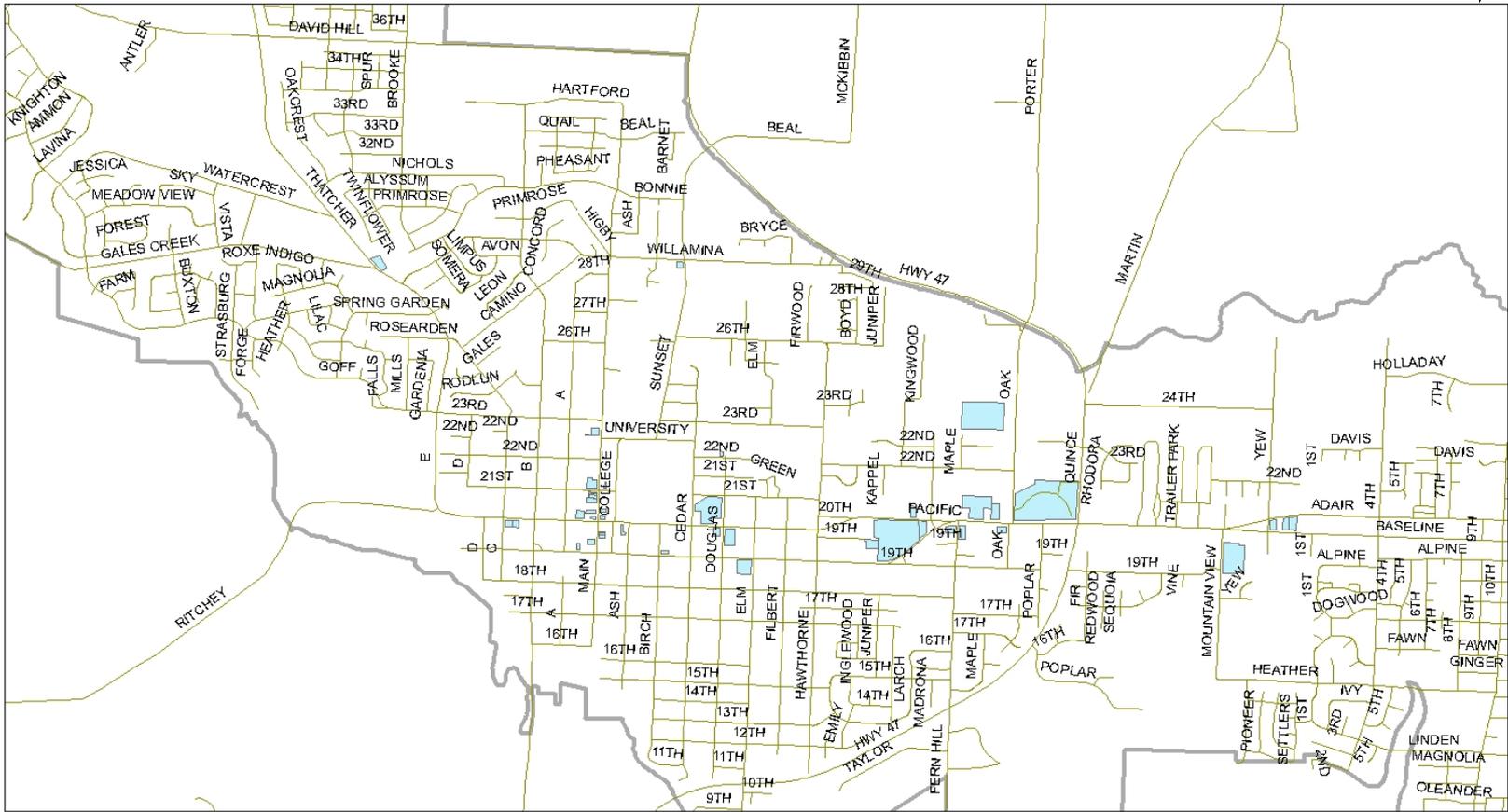
# STUDENT HOMELESSNESS

- Those who...
  - Fit the already mentioned criteria
  - Are in inadequate housing
  - Are unaccompanied
- 2006-07 School Year:
  - 75 homeless youth
- 2009-10 School Year:
  - 146 homeless youth
  - 95% increase





# Food Accessibility



Legend Restaurants, Drinking Establishments, Grocery Stores, Convenience Stores

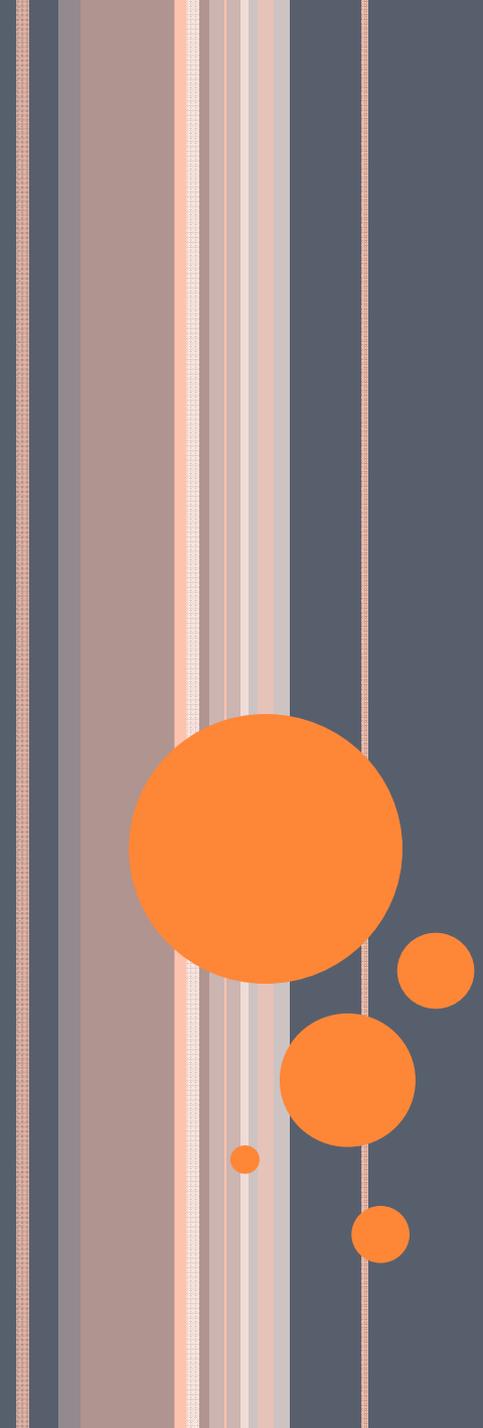
 Food



# LINKS

- Education strong predictor of poverty
  - 18% do not have a high school diploma
  - 19% live below the poverty line

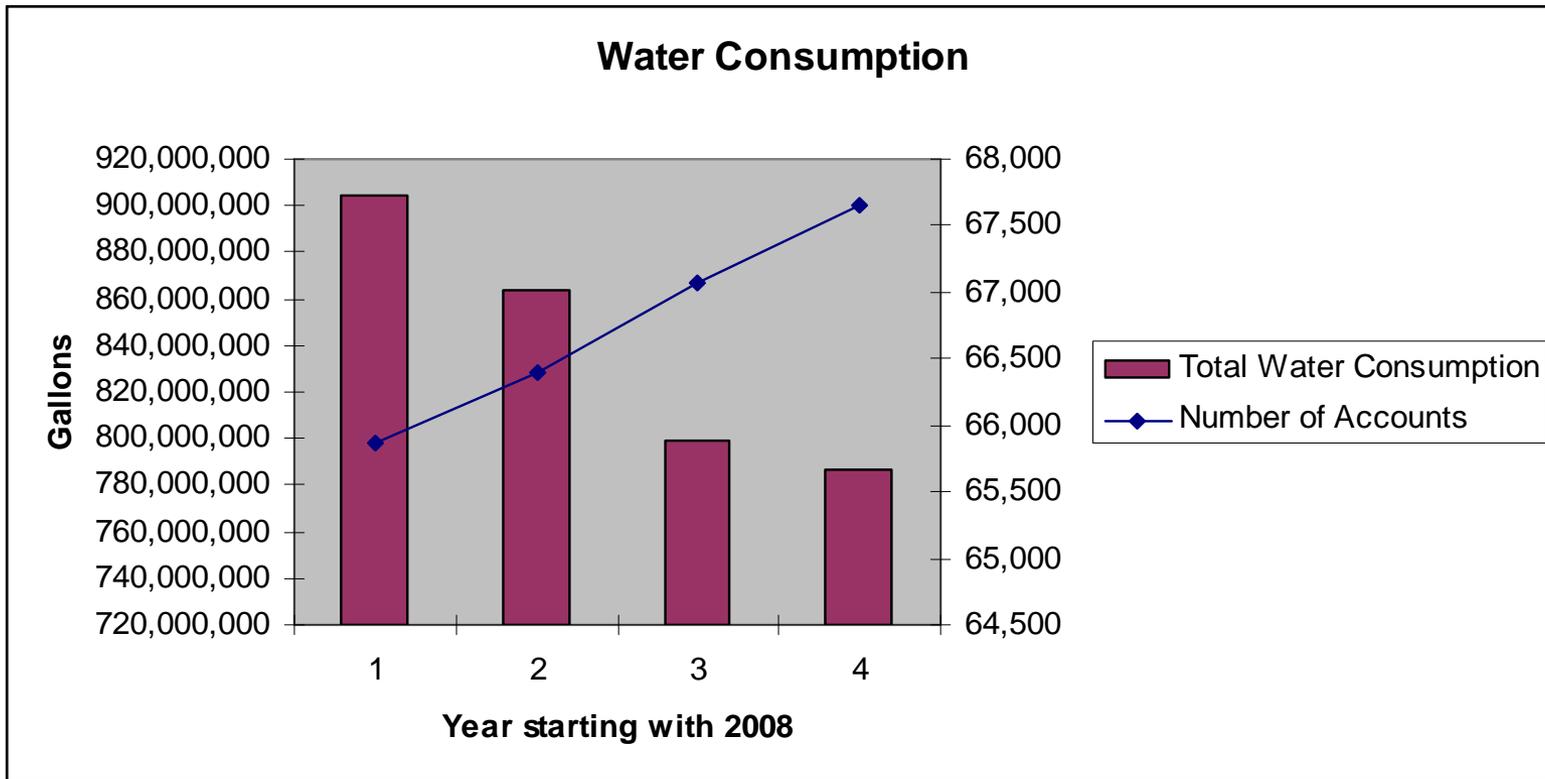




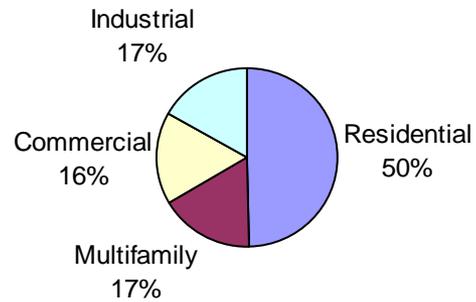
# WATER ASSESSMENT

A look at water consumption over the past few years

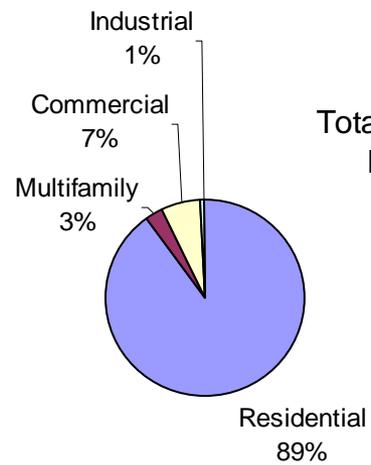
# WATER CONSUMPTION



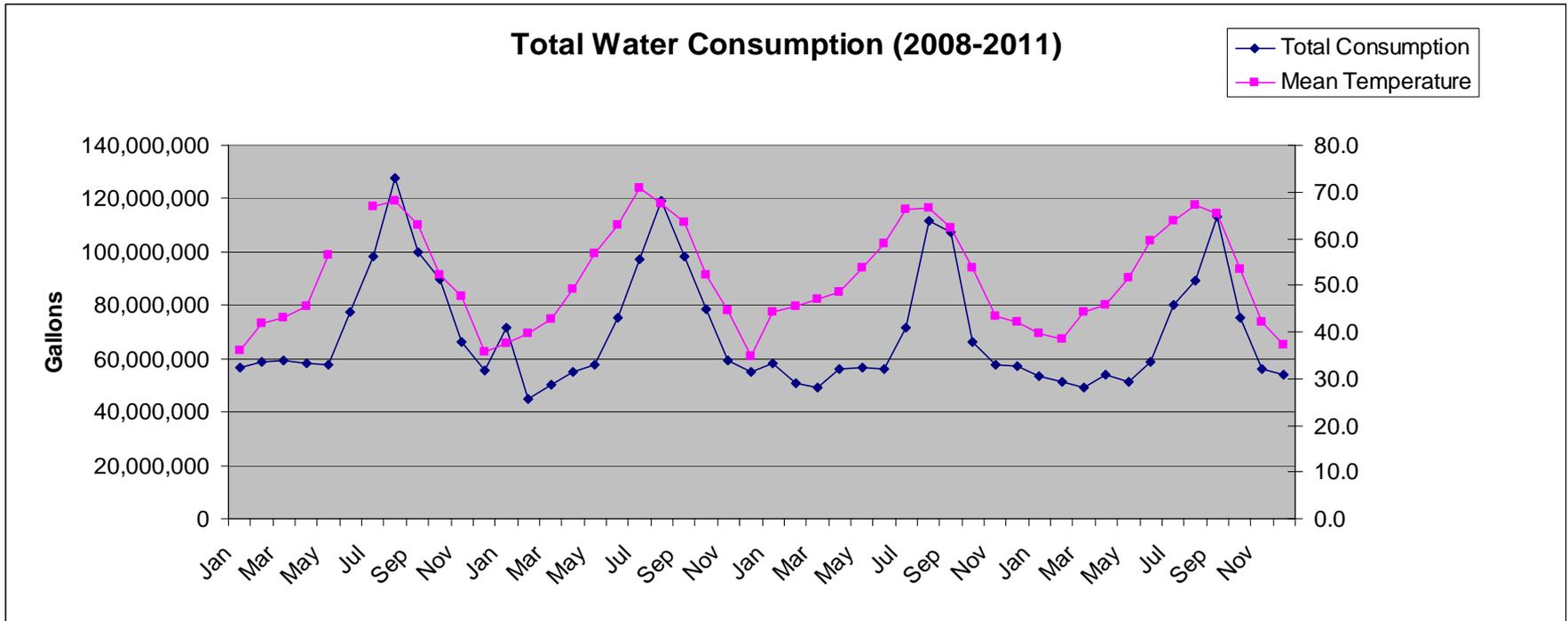
**Total Water Consumption by Sector  
Forest Grove, OR**



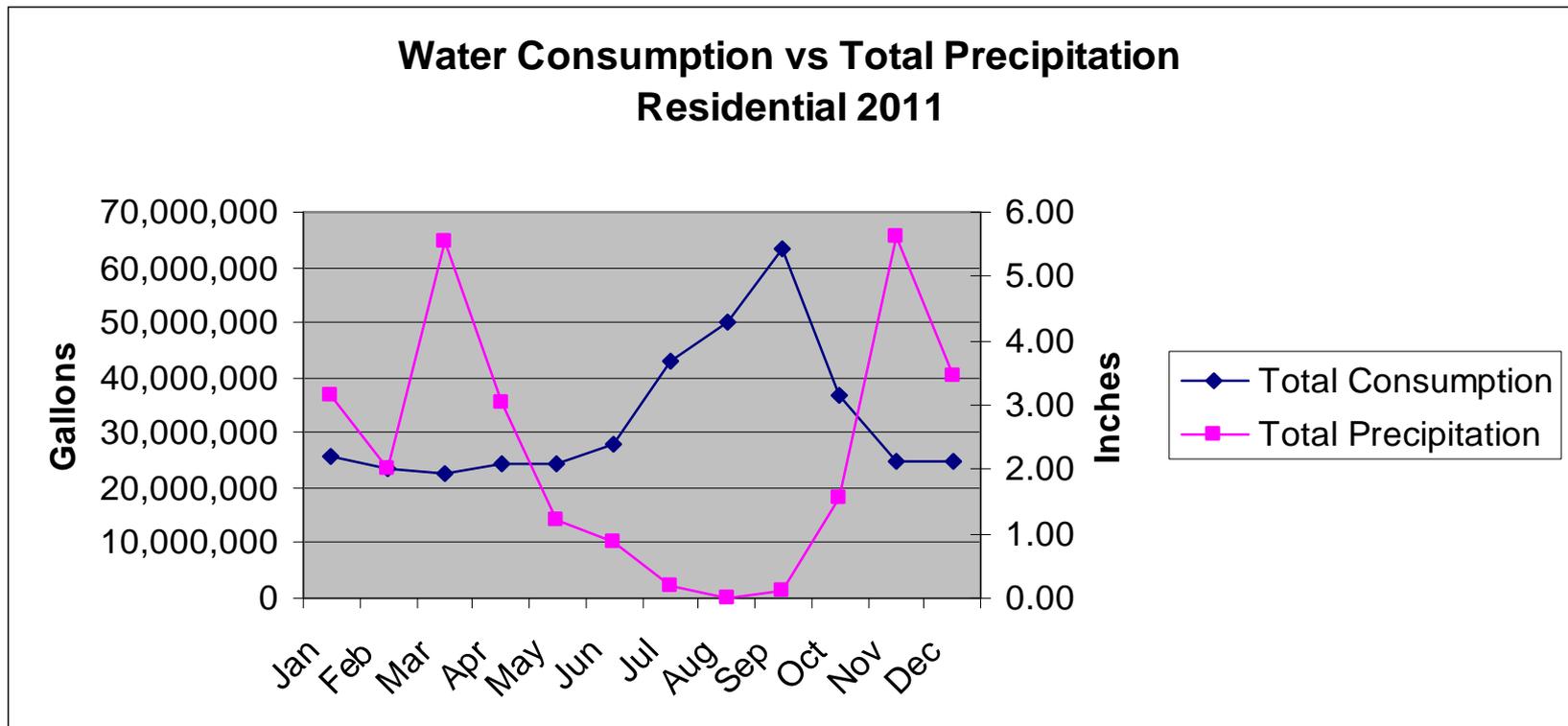
**Total Accounts by Sector  
Forest Grove, OR**

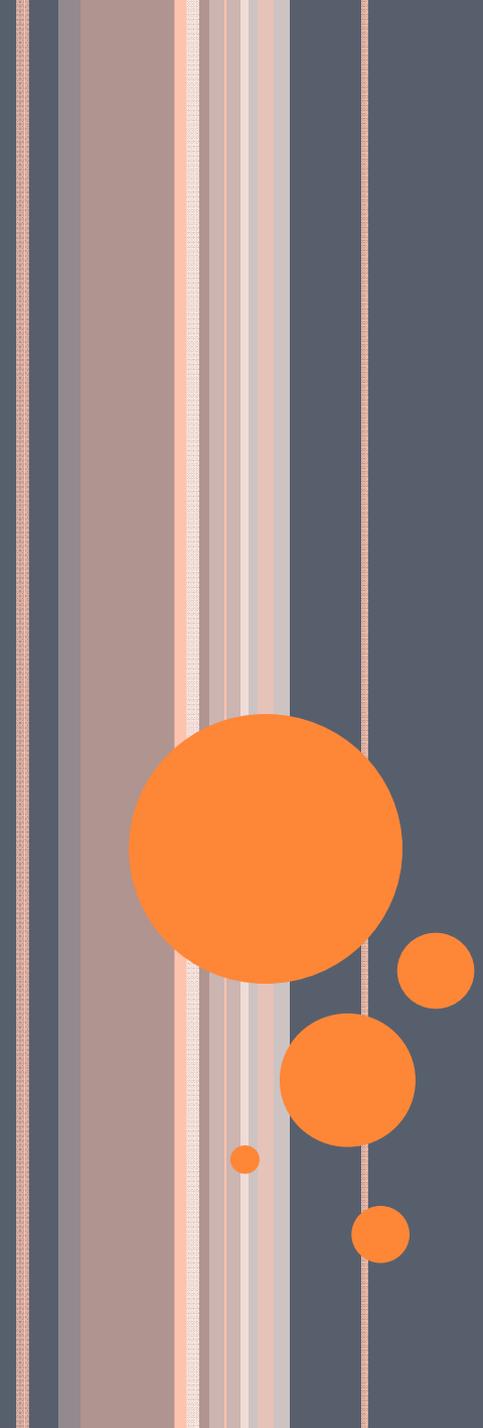


# CONSUMPTION VS. TEMPERATURE



# CONSUMPTION VS. PRECIPITATION

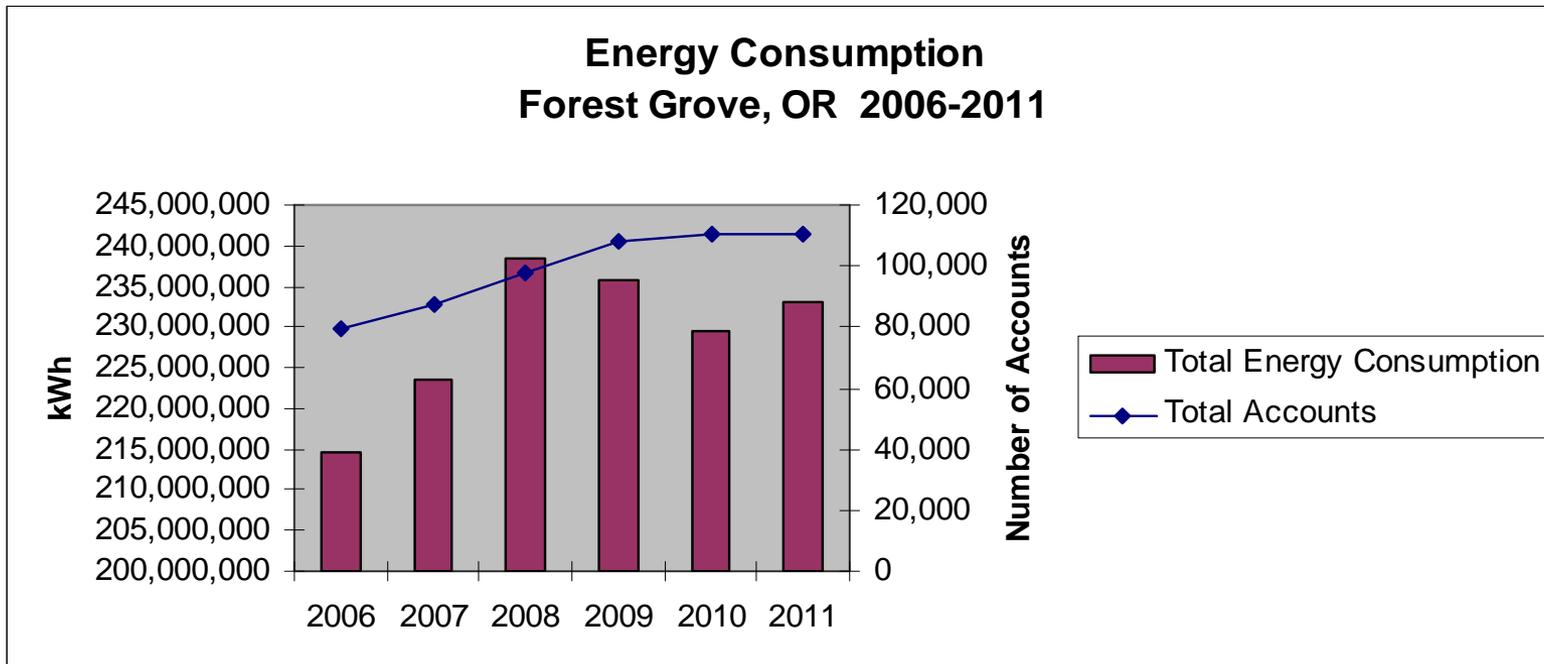


A decorative vertical bar on the left side of the slide, featuring a gradient from dark blue to light blue, with several orange circles of varying sizes and a thin white vertical line.

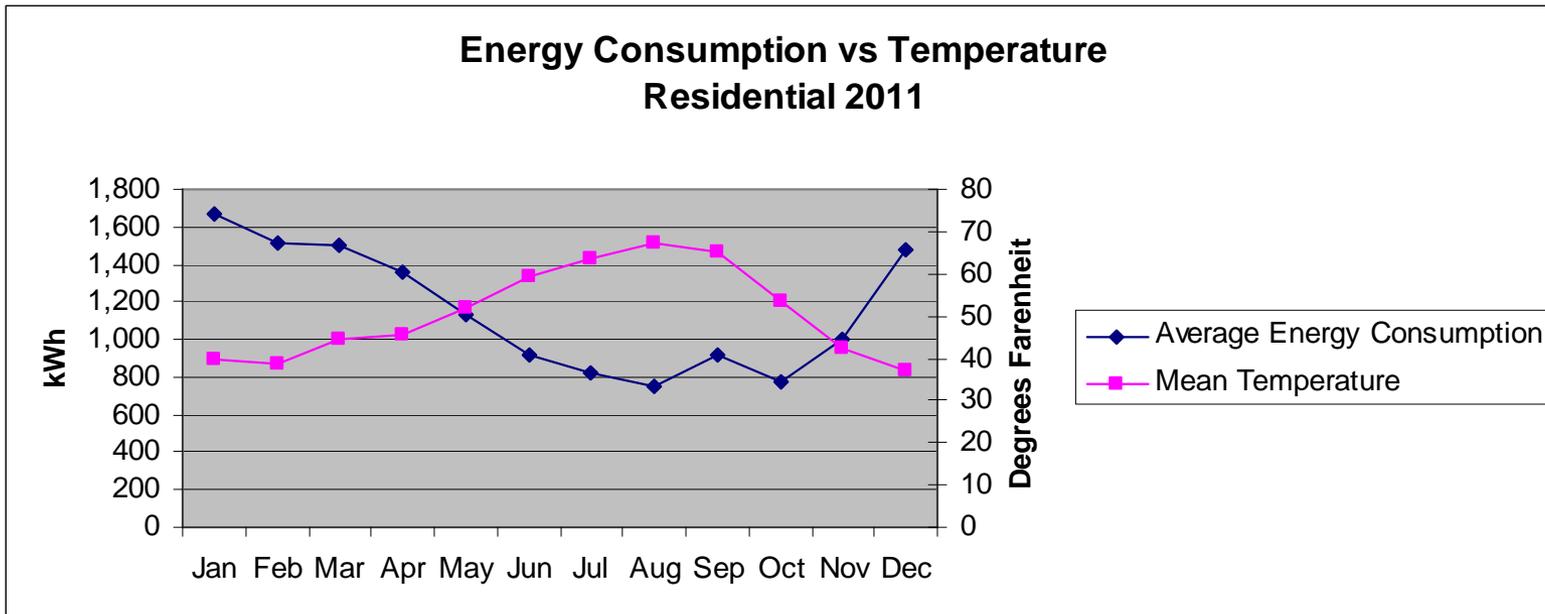
# ELECTRICITY USAGE

A look at electricity usage over the years

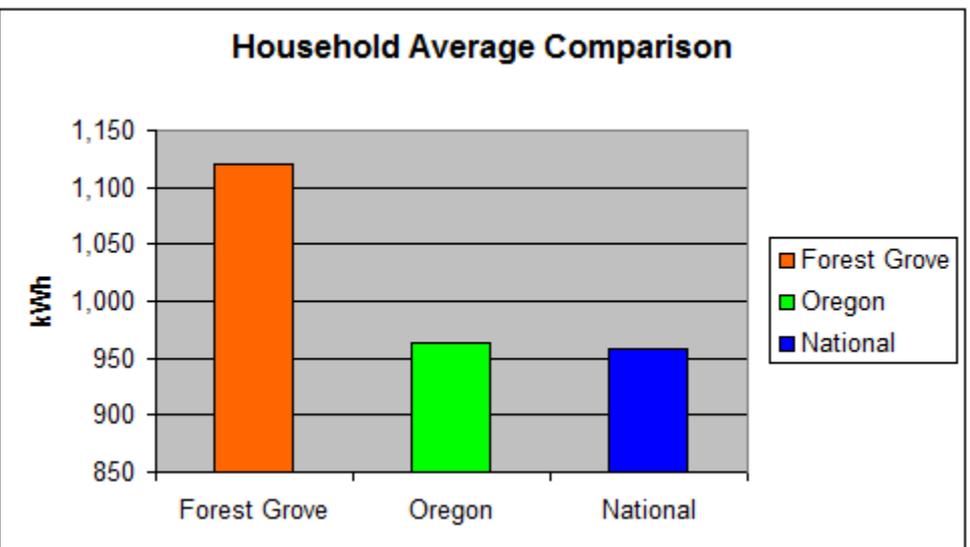
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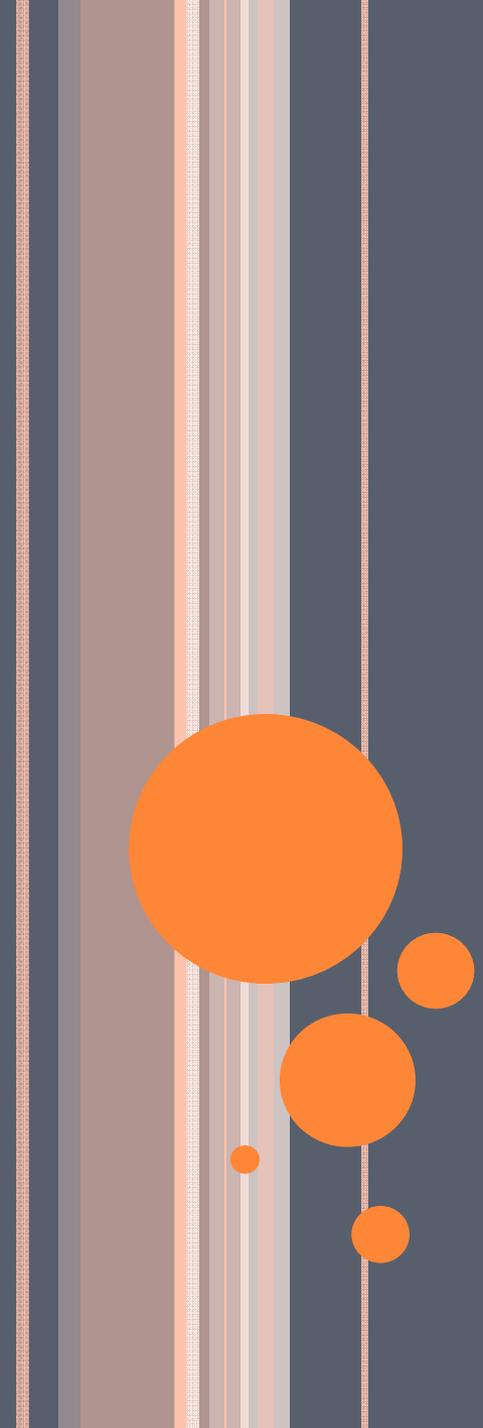


# USAGE VS. TEMPERATURE



# COMPARISON WITH THE STATE AND NATION





# COMMUNITY GREENHOUSE GAS INVENTORY

Calendar Year 2010

# KEY POINTS TO KEEP IN MIND

- Assumptions
- Estimations
- Averages



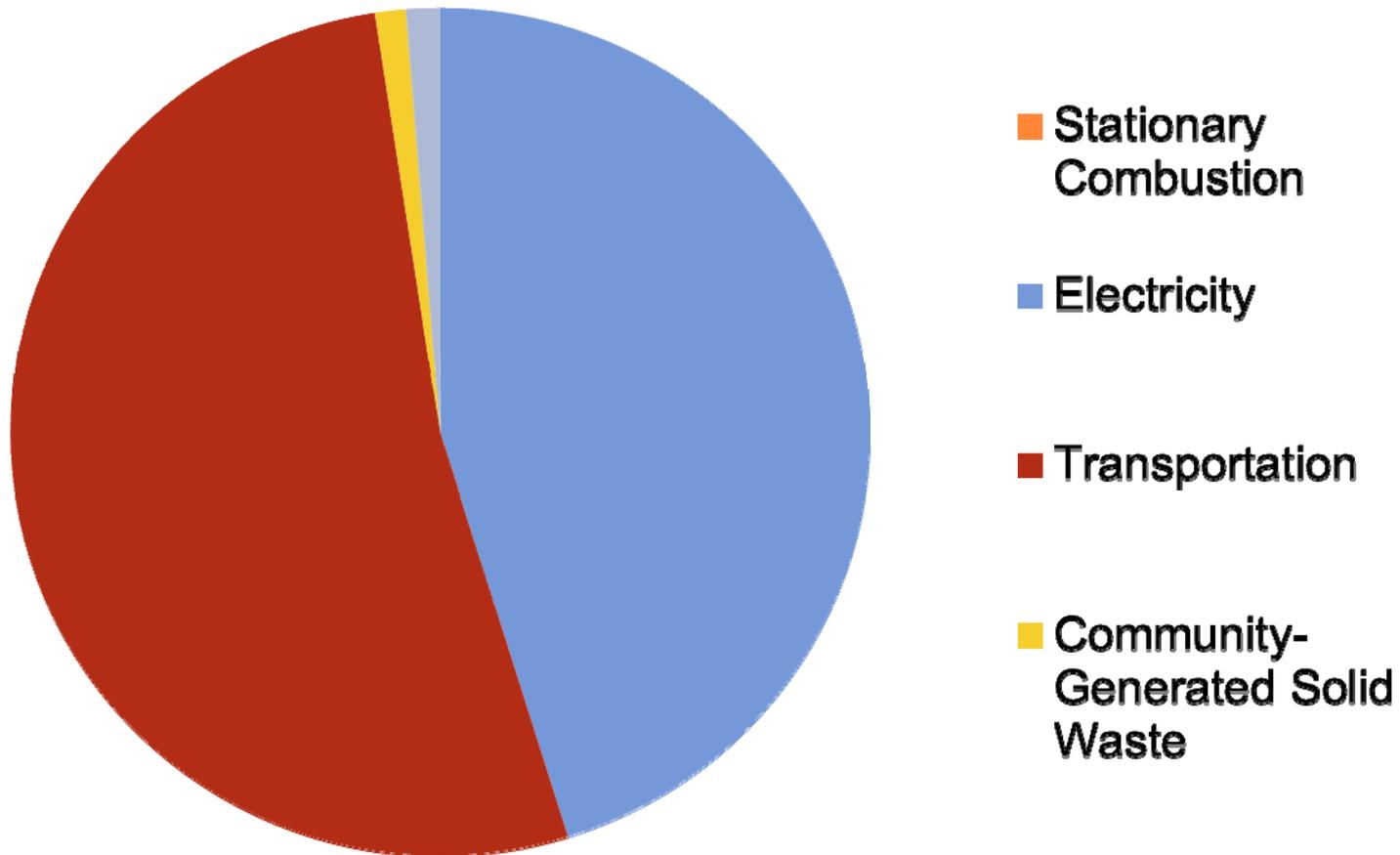
# ICLEI'S COMMUNITY PROTOCOL: FIVE REQUIRED EMISSIONS

- Use of Fuel in Residential and Commercial Stationary Combustion Equipment
- Use of Electricity by the Community
- On-Road Passenger and Freight Motor Vehicle Travel
- Use of Energy in Potable Water and Wastewater Treatment and Distribution
- Generation of Solid Waste by the Community



# FIVE REQUIRED EMISSIONS: FOREST GROVE 2010

## Carbon Emissions (mtCO<sub>2</sub>e)



# STATIONARY COMBUSTION

Fuel Type	mtCO <sub>2</sub> e
Propane/LPG	.0017
Fuel Oil	.0111
Natural Gas	2.945



# ELECTRICITY

Sector	Usage (kWh)	mtCO <sub>2</sub> e
Residential and Multifamily	108,601,622	40,652
Commercial	32,375,625	12,092
Industrial	68,465,512	25,571
School	15,677,817	5,856
City	4,340,715	1,621
<b>Total</b>	<b>229,461,291</b>	<b>85,702</b>



# EPA EGRID VS. FG LIGHT & POWER

## EPA eGRID NWPP

Source	Amount
Coal	29.83
Oil	0.34
Gas	15.15
Other Fossil	0.15
Biomass	1.09
Hydro	46.50
Nuclear	2.46
Wind	3.80
Geothermal	0.55
Other	0.12

## BPA

Source	Amount
Hydro	78.6
Nuclear	11.8
Other	9.6



# NATURAL GAS VS. ELECTRICITY IN FG

Natural Gas Per Capita	3 mtCO <sub>2</sub> e 678 mtCO <sub>2</sub> e
Electricity Per Capita	85,702 mtCO <sub>2</sub> e 2 mtCO <sub>2</sub> e



# TRANSPORTATION

- **99,345 mtCO<sub>2</sub>e**
- Measurement of estimated VMT and Daily Number of Trips in Forest Grove
- Assumes that all the motor vehicles are either light trucks/SUVs or passenger cars that run on diesel or gas



# ENERGY W/ WATER AND WASTEWATER

- Emissions associated with energy used in the treatment and delivery of potable water used in the community and the collection of and treatment of waste water used in the community



# EMISSIONS W/ WATER DELIVERY AND TREATMENT

## Water Supply and Conveyance

- Extracting water from the supplies such as groundwater or surface water
- **46 mtCO<sub>2</sub>e** (overestimation)

## Water Treatment

- Use of equipment to purify water
- **1,562 mtCO<sub>2</sub>e**

## Water Distribution

- Pumps that send water out
- **187 mtCO<sub>2</sub>e** (overestimation)



# EMISSIONS W/ WASTEWATER COLLECTION AND TREATMENT

## Wastewater Collection

- Pumps to move wastewater
- **95 mtCO<sub>2</sub>e**

## Wastewater Treatment

- Energy for treatment equipment
- **516 mtCO<sub>2</sub>e**

## Water Discharge

- Pumps to move treated wastewater back into rivers
- Very small; not calculated



# ATTRIBUTION OF WASTEWATER EMISSIONS

- Portion of CH<sub>4</sub> and N<sub>2</sub>O emissions from wastewater treatment plants
- Methane from microorganisms degrading the organic material under anaerobic conditions
- Nitrous oxide from organisms removing the excess nitrogen in wastewater
- Carbon emissions from fossil fuels vs. carbon emissions from biogenic sources
- **1,578 mtCO<sub>2</sub>e** (proportion taken from a Clean Water Services report)



# SOLID WASTE

- Estimated to be 1.9% of the country's greenhouse gas emissions
- **2,195 mtCO<sub>2</sub>e**
- Other problems- finding space for landfills and the leaching of toxic chemicals into our waterways
- **127 mtCO<sub>2</sub>e** from the basic operations at the landfill



# SUPPLY CHAIN VS. CONSUMPTION BASED

- Trans-boundary Community-wide Supply-chain: all users of the materials including industries; individual commodity basis
- Consumption-Based: households and governments; uses models to calculate emissions from materials and services



# SUPPLY-CHAIN: FOOD

Food	\$\$/yr	mtCO <sub>2</sub> e
Cereal and bakery products	\$502	2,762
Meats, poultry, fish and eggs	\$784	9,438
Dairy products	\$380	5,878
Fruits and vegetables	\$679	3,911
Other food	\$1,278	8,106
Total	\$3,623	30,095



# UPSTREAM/LIFE CYCLE EMISSIONS

Emissions Source	Carbon Emissions
Electric power transmission and distribution loss	7,036 mtCO <sub>2</sub> e
Upstream emissions from electricity	6,356 mtCO <sub>2</sub> e
Life cycle emissions from gasoline	122,545 mtCO <sub>2</sub> e
Life cycle emissions from diesel	2,610 mtCO <sub>2</sub> e

