Tracking State Government Greenhouse Gas Emissions:
The Good, the Bad, the Ugly

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GHG Tracking Discussion

- State Sustainability Program Context
- Setting Targets
- Why Track
- Establishing the Baseline
- Gathering Data
- Current Findings
- Barriers and pitfalls

The MA State Sustainability Program

- Executive Order Issued July 23, 2002
- Calls for **improved environmental performance** in state government operations
- Requires statewide **guidance**, annual **tracking** and **progress reports**
- Requires **agency sustainability plans**
- Establishes **Coordinating Council**
- Sets specific **environmental targets**

SSP Environmental Targets

1. Reduce **GHG emissions** by 25% by 2012
2. 50% **recycling** rate by 2010
3. Eliminate **mercury** 75% by 2010
4. Reduce **water** use 15% by 2010
5. Sustainable **design** and construction
6. Environmentally Preferable **Purchasing**
7. Remain in full **compliance**
8. Protect and preserve **open space** and **natural resources**

SSP Program Drivers

- Clean State regulatory Executive Order ended June 30, 2000
- New England Governors/Eastern Canadian Premier's Climate Action Plan 2001
- Massachusetts Climate Protection Plan 2004
- NEG Mercury Plan and Mass. Zero Mercury Strategy
- Commonwealth Solid Waste Master Plan
- Operational Costs – state gov't. spends some $100 million on energy annually
- Lead by example

Why Track Emissions?

- Provides additional rationale for getting good energy data
- Measure and report on progress toward emission reduction targets
- Can provide useful comparisons between facilities
- Helps to identify where energy reduction efforts should be focused
- Provide agencies with motivation to improve and positive (or negative) feedback

Establishing the Baseline

- First ask - what do you ***WANT*** to measure?
  - Vehicles? Buildings? Employee commutes?
  - Fossil Fuel Consumption? Waste generation? Construction impacts?
  - CO2? Methane? Nox?
  - Owned facilities? Leased facilities?
  - Executive branch? Higher education? Quasi-governmental authorities?

Establishing the Baseline

- Then ask - what ***CAN*** you actually measure?
  - Can you get utility data? Data for other fuels?
  - Can you get solid waste data? Recycling data?
  - Do you own your fleet or encourage employees to use their own vehicles?
  - Who pays utility bills – agencies? landlords?
  - Do agencies occupy buildings with other tenants?

Establishing the Baseline

The Massachusetts Inventory included information on what we could realistically gather on an annual basis that would incorporate the bulk of our true emissions footprint.

- Fossil fuel consumption for buildings
- Fossil fuel consumption for state vehicles
- CO2 emissions only
- Leased facilities where data was readily available

Established 2002 as our baseline since that's when we started tracking data.

Gathering the Data (1)

1st Step was to identify key fuels to track

For Buildings

- Electricity
- Fuel oils (#2, #4, #6)
- Coal
- Natural gas

For Vehicles

- Gasoline
- Diesel
- Compressed Natural Gas
- Ethanol
- Propane
- Gasahol

Gathering the Data (2)

2nd step was to identify the agencies to include in the inventory

Focus on:

- Executive Branch
  - Prisons, parks, health and human services, etc.
- Higher Education (29 state campuses)
- Key/Large Quasi-Public Authorities that provide direct services to public (MassPort, MWRA, Turnpike, MBTA)
- Target 45 largest state entities – account for >92% of emissions

Gathering the Data (3)

3rd step was to identify locations where data already existed

- Board of higher education for state and community colleges
- Statewide contracts for oil and gas consumption for executive agencies and
- State purchasing office electricity data for executive

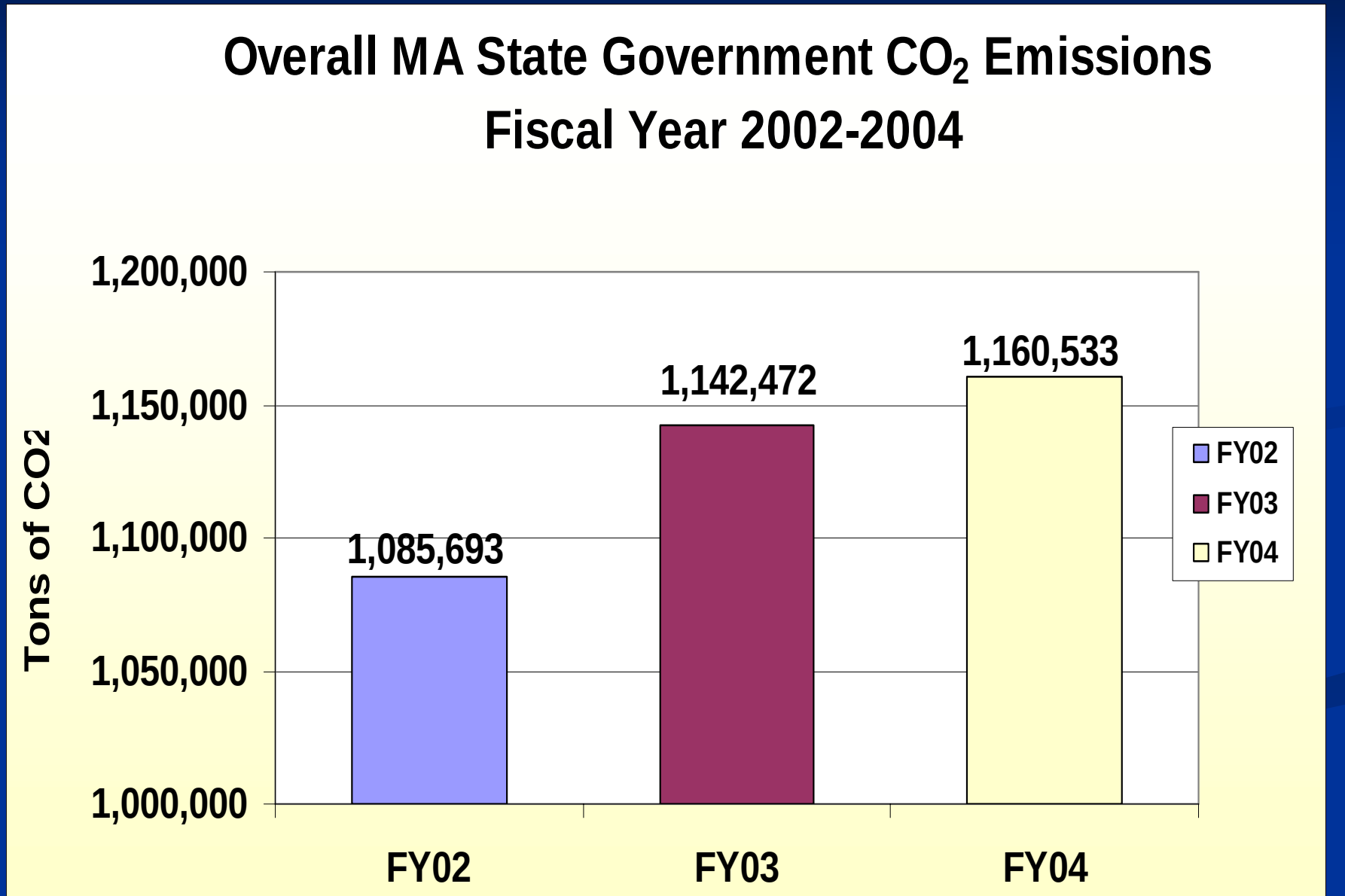
Gathering the Data (4)

4th step was to ask for data from individual agencies

- Developed tracking form that requested annual energy consumption data, along with waste, water and other information
- Follow-up with all entities to check accuracy of data

THE FINDINGS

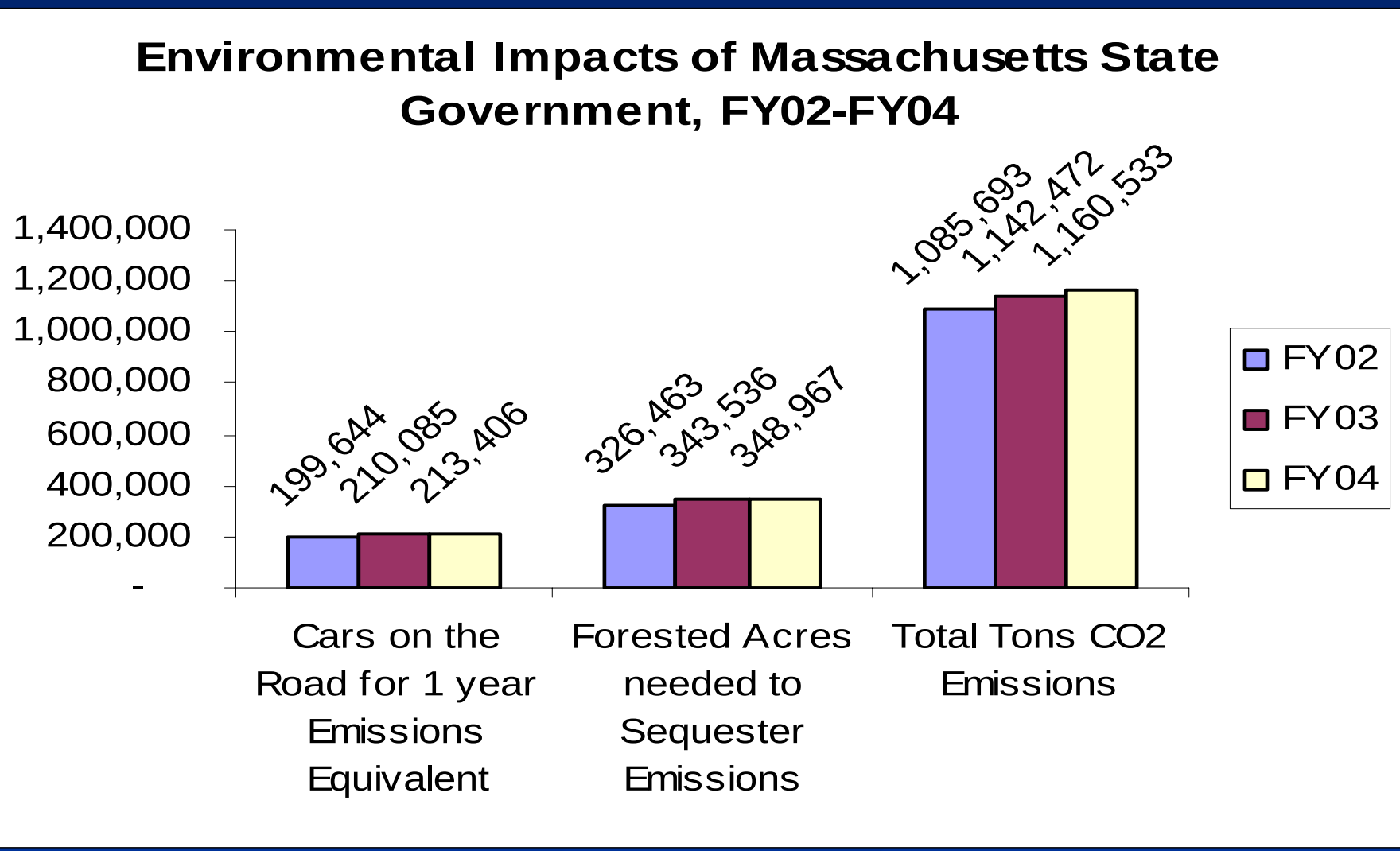
Annual CO2 Emissions 2002-2004



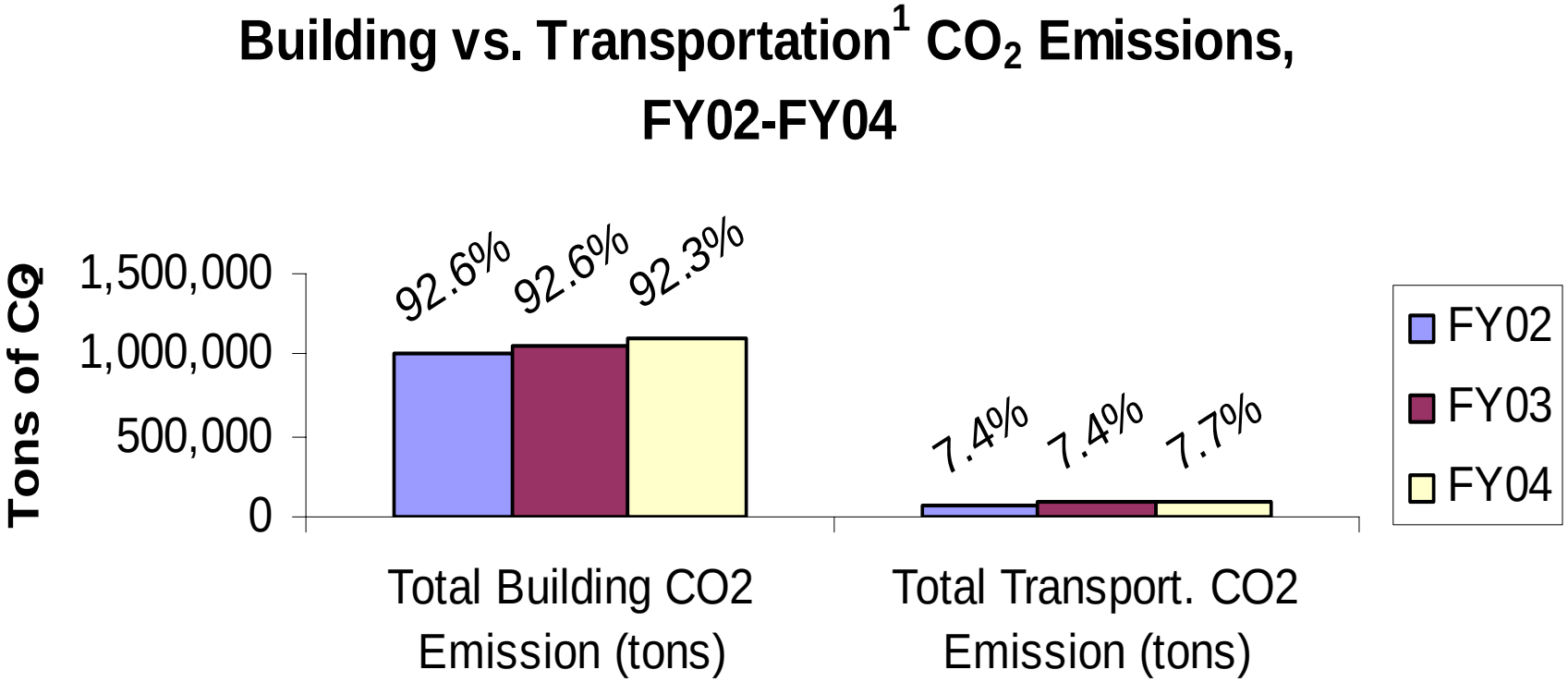
Annual Change – CO2 Emissions

	Total Tons CO2	annual % change (FY02 baseline)
FY02	1,085,693	-
FY03	1,142,472	5.23%
FY04	1,160,533	1.58%
Avg 02-04	1,129,566	6.89%

Enviro Impacts of Emissions

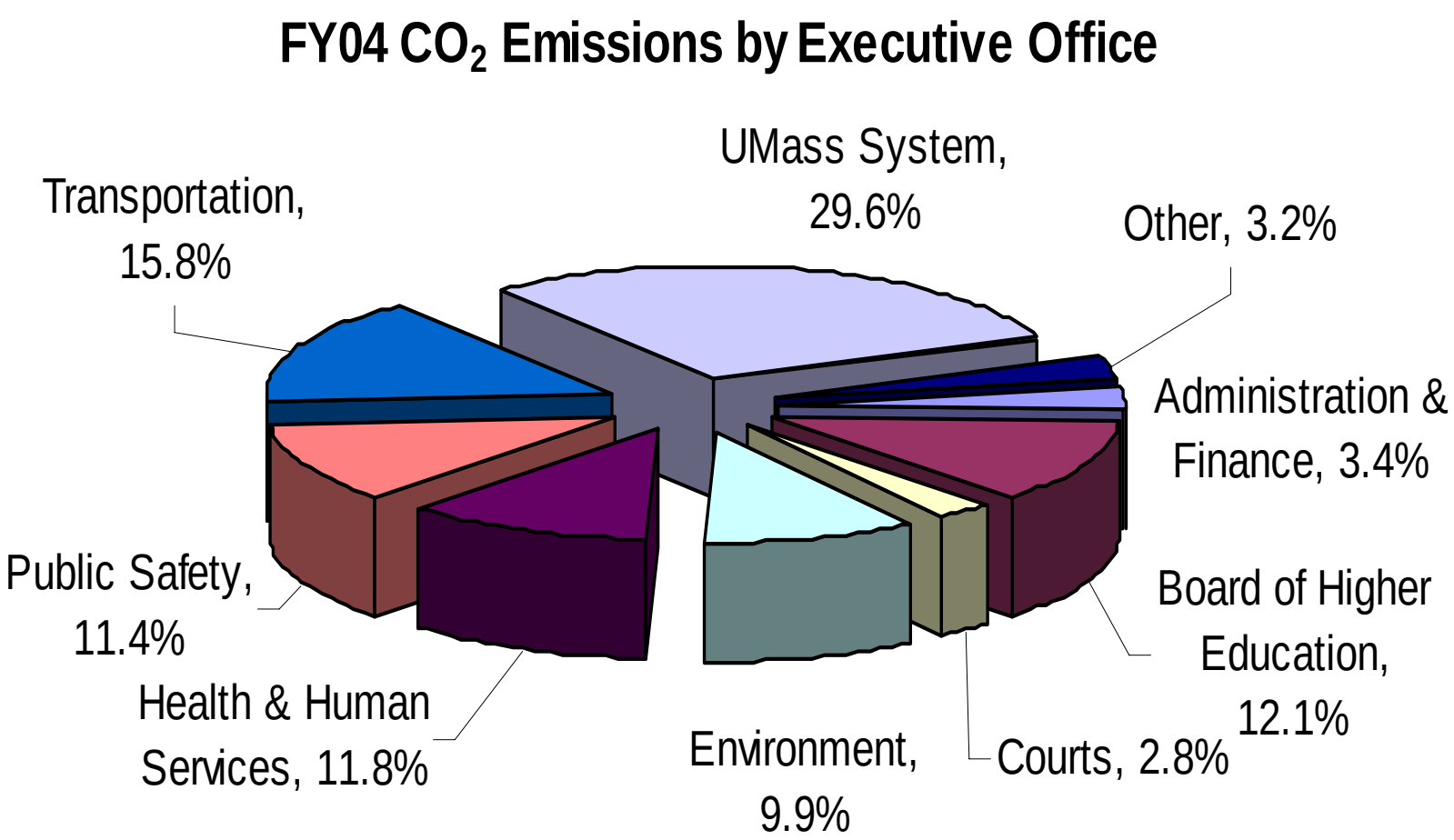


Emission Sources by Use

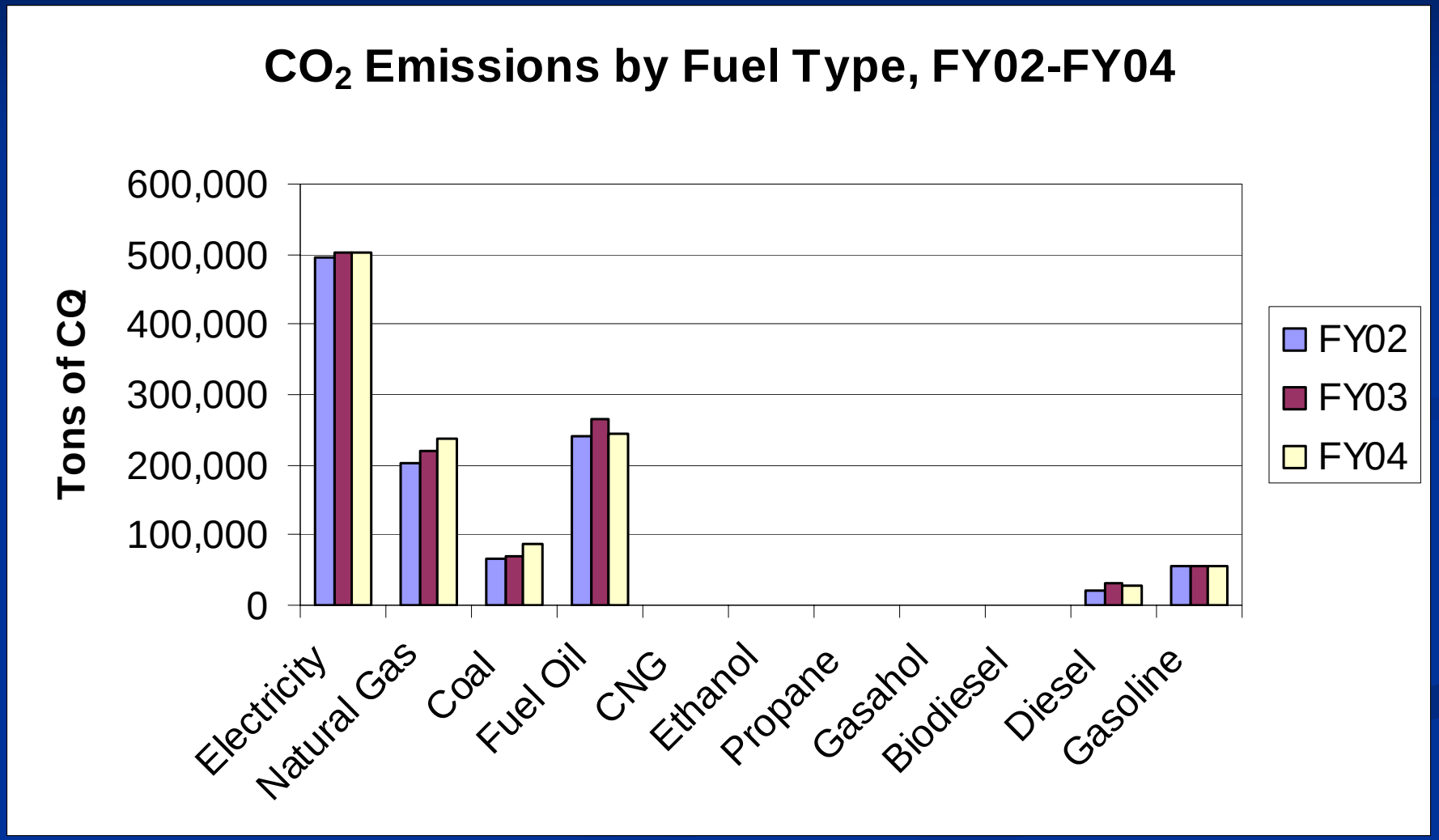


[1] Transportation fuel consumption does not include employee commuting or business travel in personal vehicles.

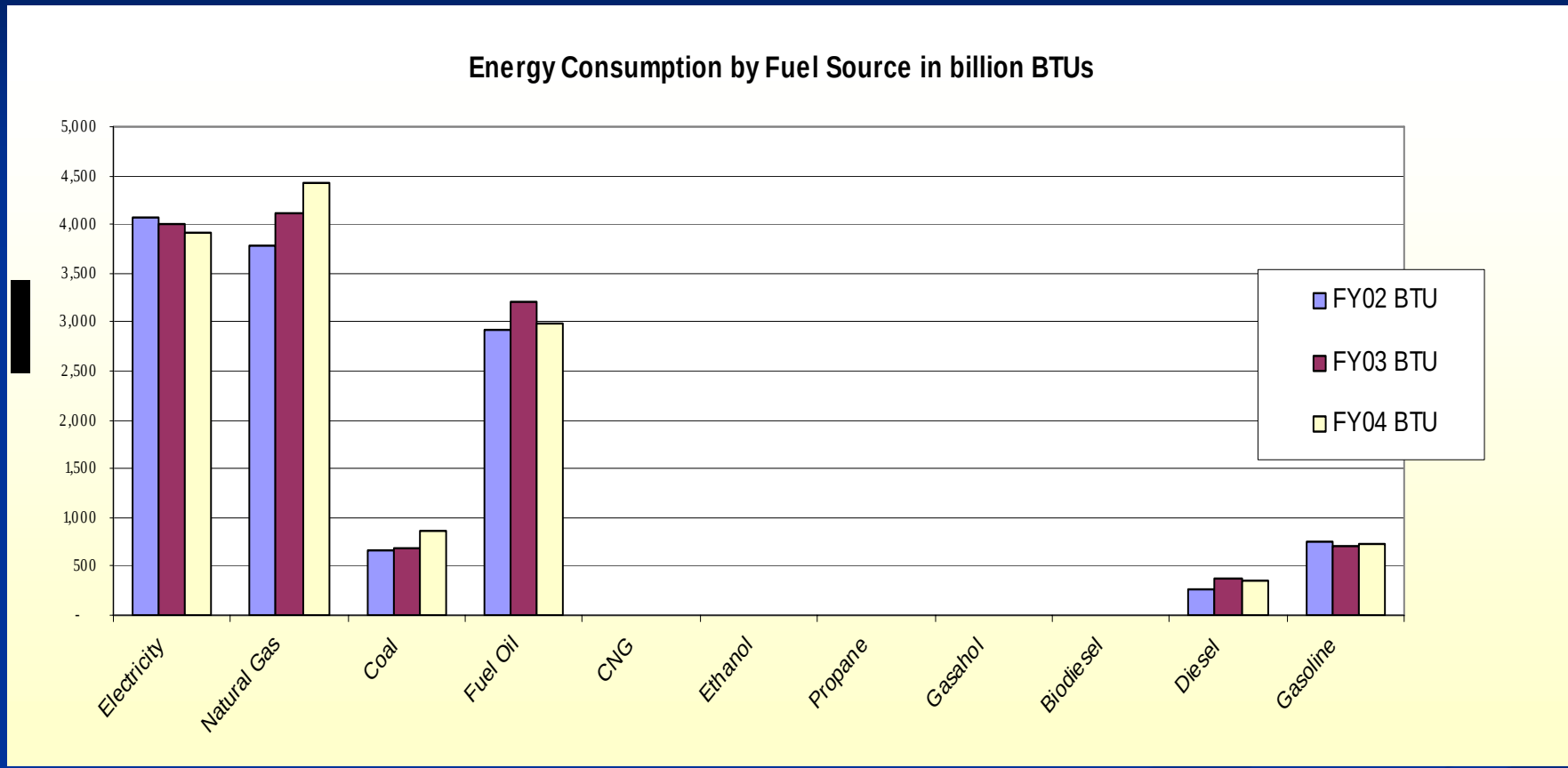
CO2 Emissions by Gov't. Sector



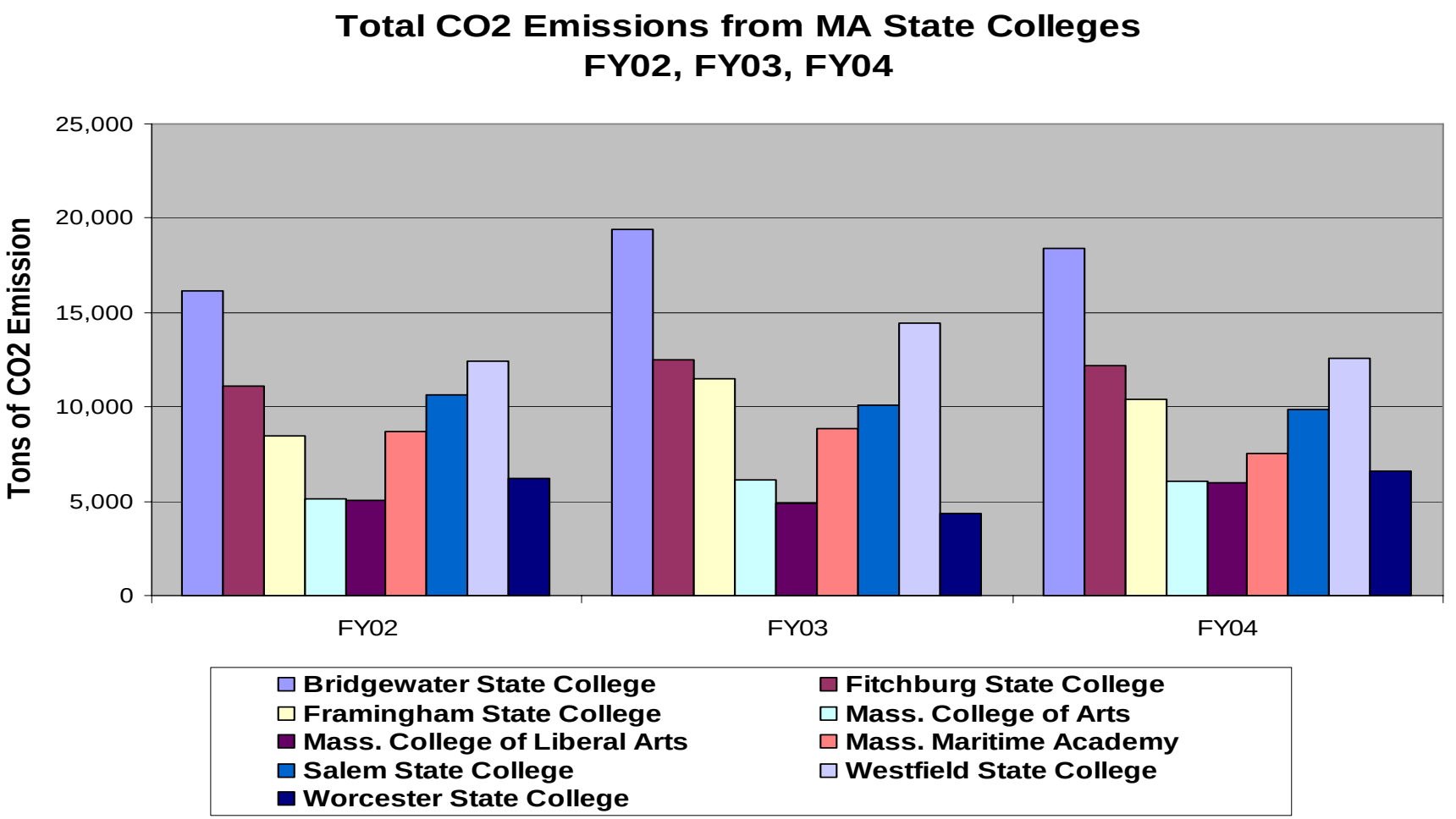
Fuel Consumption by CO2



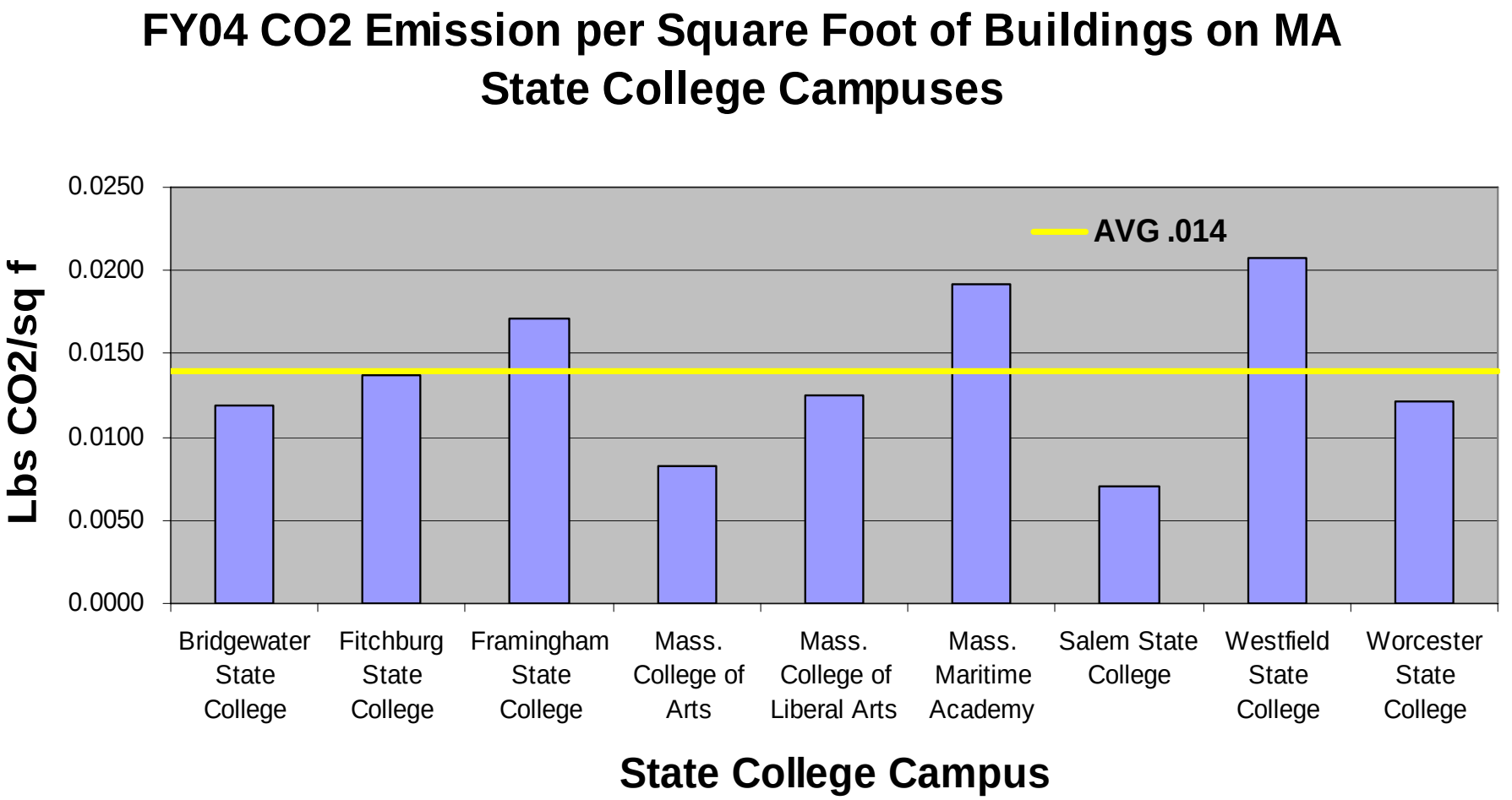
Fuel Consumption by BTU



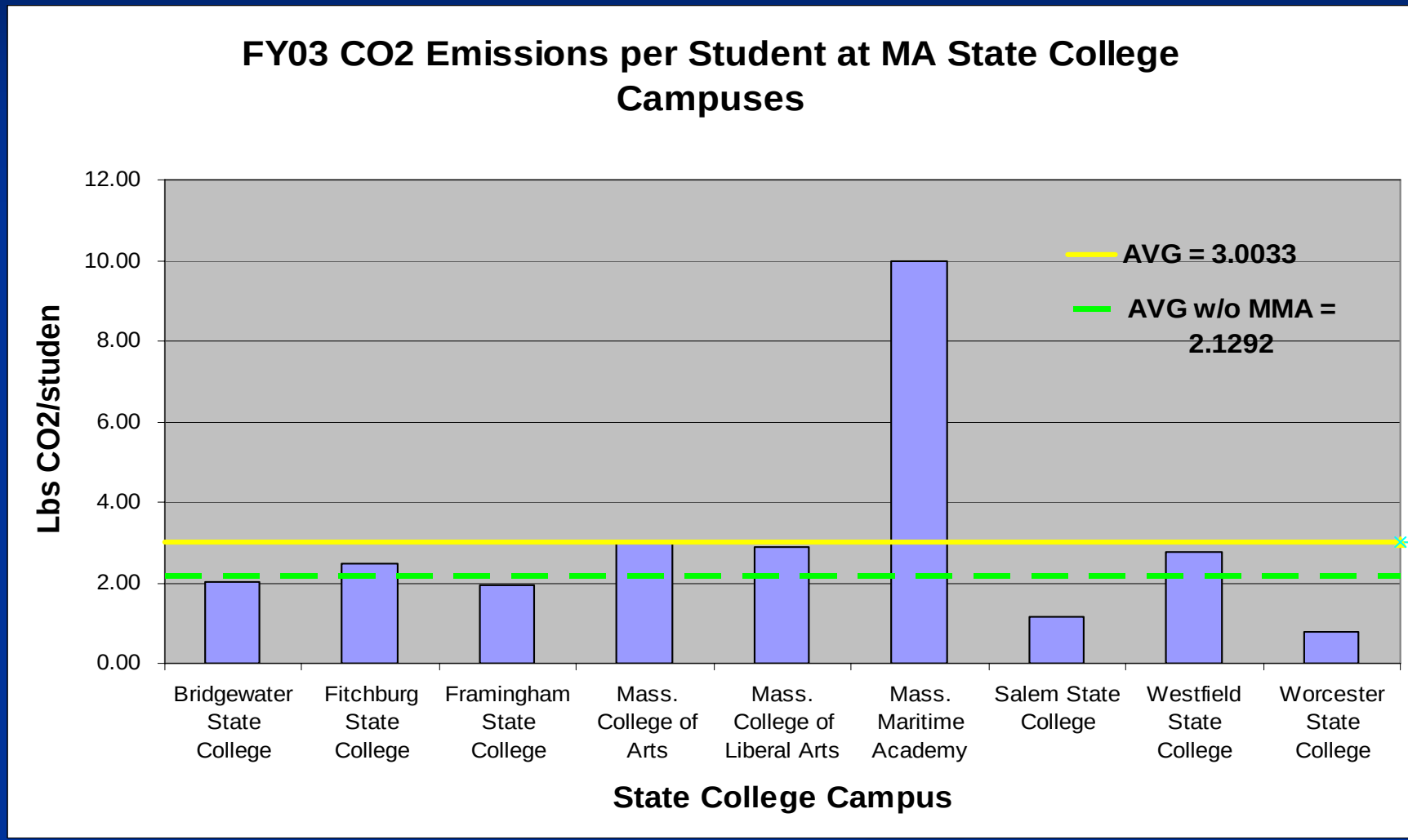
Campus by Campus Emissions



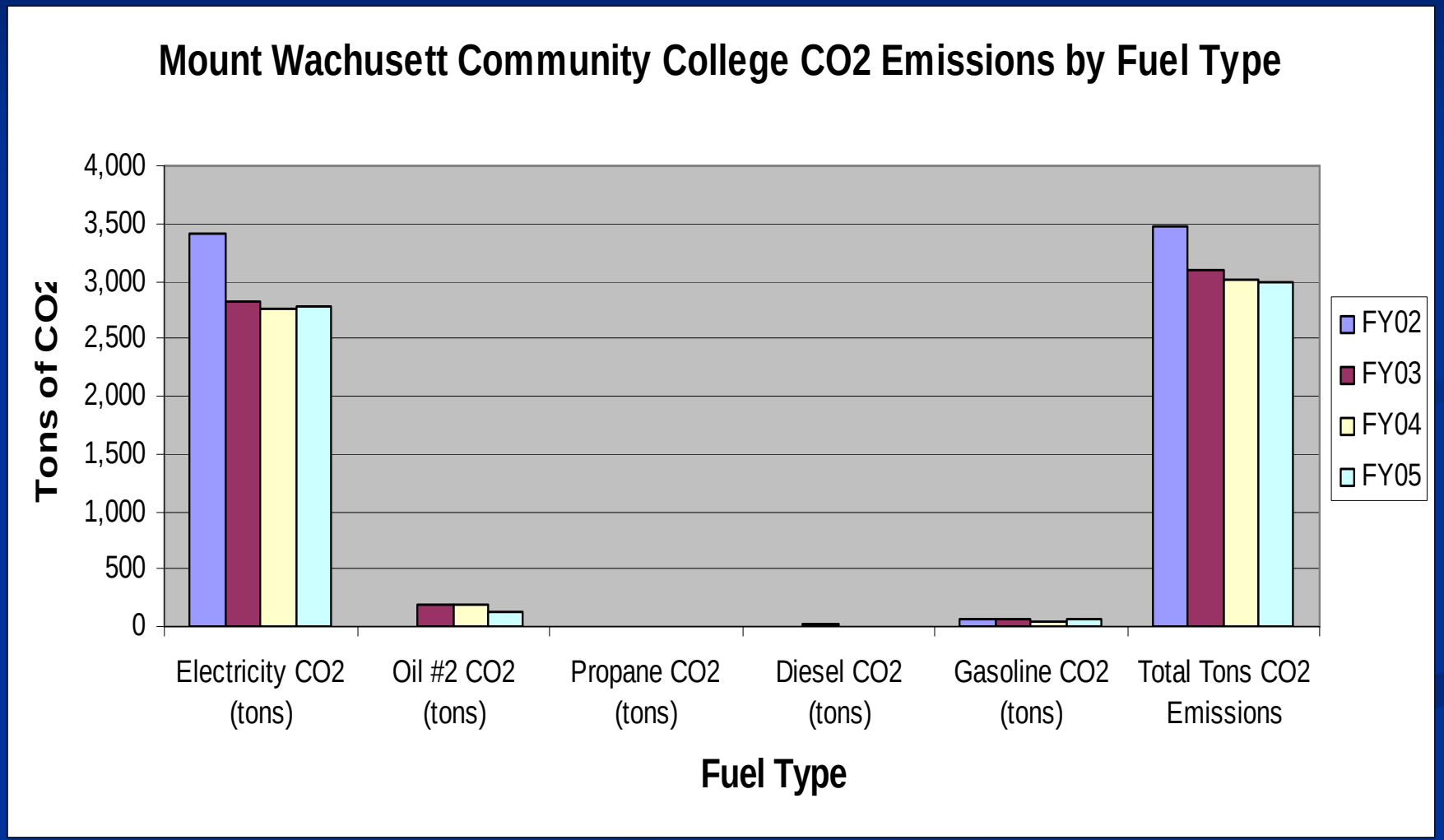
Campus Comparison by Sq. Ft.



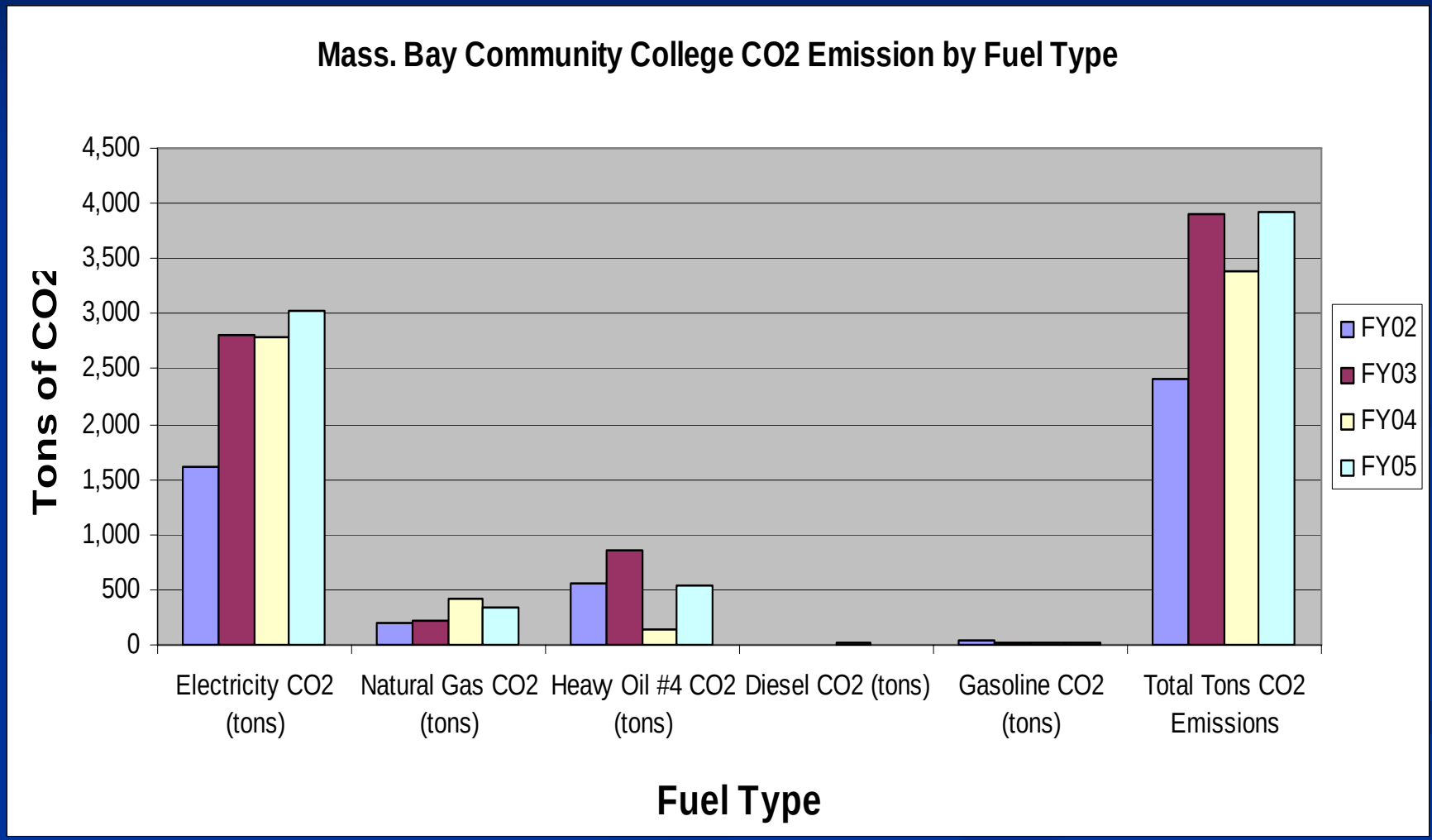
Campus Comparison by Student



Campus Good News Example



Campus Data Anomalies



Mass. Gov't. Energy Accomplishments

- Mass. Maritime Academy installing 660 KW wind turbine – 30% of campus electricity
- Biomass heating plant at Mt. Wachusett CC
- Dept. of Correction behavioral and technology efforts reduced energy consumption by 14%
- UMass Lowell purchasing renewable energy credits equal to 13% of electricity consumption
- Parks Dept. traffic light conversion to LED technology will save $500,000 per year with a <1 year payback

Barriers

- Data not collected at all by some agencies
- Data not collected centrally
- Available data not always accurate
- Thousands of accounts
- Agency disinterest - lack of understanding of data value
- No commitment from the top
- Changing or unavailable emission factors (e.g. electricity, steam)
- Lack of staff time and resources – at a

Solutions

- Start with biggest emissions sources
- Focus on what you can actually track – be clear about what's omitted
- Extrapolate where necessary (e.g. convert cost data to consumption data)
- Create central data collection system (utility data)
- User-friendly tracking/collection forms/systems
- Directives from Governors, commissioners, etc.
- Use as tool to measure energy use, not just emissions
- Return data to agencies in visually helpful format
- Create competition

SSP Contacts & Resources

- **MA State Sustainability Program**
  - www.mass.gov/envir/Sustainable
    - Sustainability planning/implementation guide
    - State government greenhouse gas inventory
    - Sustainability plan template
    - Agency/Campus Sustainability Plans
    - eric.friedman@state.ma.us / 617-626-1034
    - ian.finlayson@state.ma.us / 617-626-4910