



Butte-Glenn Community College District

Green facilities



Mike Miller, Director of Facilities Planning & Management

Projects

Instructional Arts – “Arts”

- 72,000 ‘ sq.
 - Online - August 2009
 - *On going savings of \$56k/year*
- LEED GOLD

Student and General Services – “SGS”

- 56,000’ sq.
 - Move In - December 1st
 - Online - January 2010
 - *On going savings of \$45k/year*
- LEED GOLD

Solar Phase II-858 kw (dc)

- Start Construction - Fall 2008
- Completion - May 2009
- *Avoided costs of \$25 million over twenty years.*

Lessons Learned

- Sustainable actions make economic sense
- We must take the long term view
- Factor Life Cycle Cost *AND*
- Total Cost of Ownership

President's Climate Commitment

“Goal to Be Neutral By 2015”



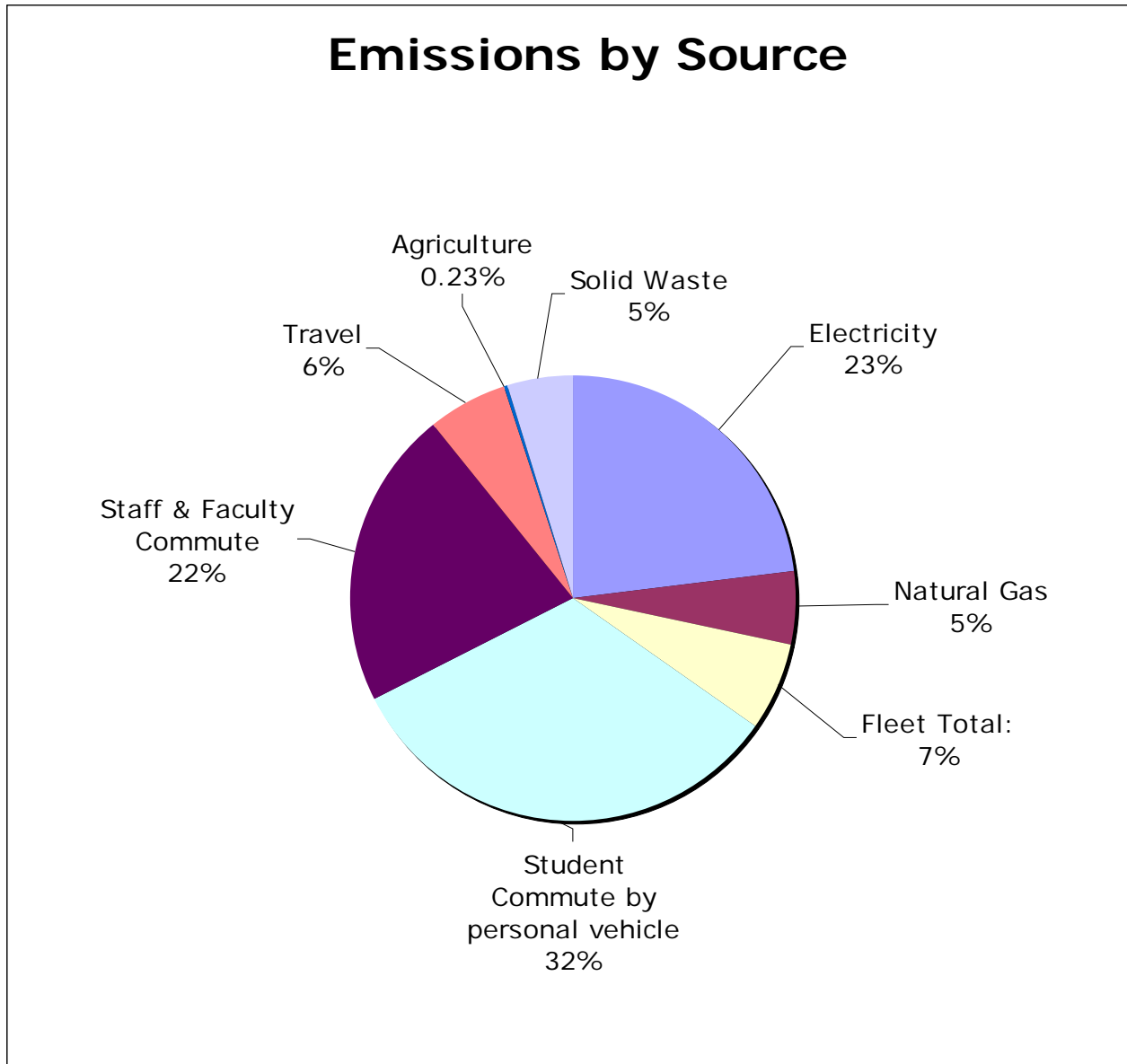
GHG Inventory Results for 2006

12,812.27



Metric Tonnes eCO₂

What makes up 12,812.27 Metric Tonnes?



Main Campus Climate Action Plan for Electricity-2008

YEAR	Project	MkWh of Solar Production annually	MkWh of Grid Useage annually	MkWh of Main Campus Useage	Solar percent overall
2007/08	Baseline campus useage	1.582	5.044	<u>6.626</u>	<u>23.9%</u>
2008/09	Scheduling and Setpoints - " 68/78 " *Estimated 15% reduction in overall usage	1.582	4.287	<u>5.869</u>	<u>27.0%</u>
2008/09	Solar Phase II - 958 kWdc *Estimated annual production - 1.341 MkWh	2.923	2.946	<u>5.869</u>	<u>49.8%</u>
2009/10	Instructional Arts and Student General Services Buildings completed and occupied. Adds 1.151 MkWh	2.923	4.097	<u>7.020</u>	<u>41.6%</u>
2009/10	Lighting I - C.E.C. proposal implementation *T12>T8, H.I.D. retrofit, reduction of .285 MkWh	2.923	3.812	<u>6.735</u>	<u>43.4%</u>
2009/10	MBCx - retro-commisioning project implementation *Estimated 10% annual energy savings	2.923	3.431	<u>6.354</u>	<u>46.0%</u>
2010	Renewable energy credit count - 11,595				
2010/11	Solar Phase III - 800 kWdc *Estimate 1.120 MkWh of production annually	4.043	2.311	<u>6.354</u>	<u>63.6%</u>
2010/11	Lighting II - L.E.D. conversion campus wide *Estimate a 20% reduction of campus lighting electricity usage utilizing fixtures currently being developed for market introduction in 2010. Major selling point for L.E.D. lighting will be reduced life cycle cost over flourescent	4.043	1.941	<u>5.984</u>	<u>67.6%</u>
2011/12	Proposed Auto Technology building complete, Adds .050 MkWh	4.043	1.991	<u>6.034</u>	<u>67.0%</u>
2013/14	Proposed Science building complete, Adds .4 MkWh	4.043	2.391	<u>6.434</u>	<u>62.8%</u>
2014	Renewable energy credit count - 28,327				
2014/15	Solar Phase IV - 1.70 MWdc *Estimate 2.391 MkWh of production annually	6.434		<u>6.434</u>	<u>100.0%</u>

AB 32-California Global Warming Solutions Act-2006
Executive Summary-California Air Resources Board

Cut green house gas (GHG) emissions by 30% less than BAU 2020 levels or 10% less than today.

Reduce to 1990 levels by 2020. Reduce from 14 tons CO₂ to 10 tons CO₂ per person by 2020.

Need to cut by 80% from today to stabilize GHG effects by 2050.

Includes cap and trade directives that will establish and certify Renewable Energy Credits (REC's).

PG&E (as of August 1, 2008)

Electrical rates have increased 6% per year since 2002.

Energy prices are increasing across the nation. Market experts are predicting continued upward pressure on natural gas prices across the nation, which can cause natural gas bills to increase, and can drive up the cost of electricity.

PG&E's electric rates are currently forecasted to increase by about 4.4% on October 1, 2008, and by about another 11% on January 1, 2009.*

Examples of utility markets proposed and enacted rate increases across the U.S.

Ø	Xcel	+25%
Ø	Appalachian Power	+25%
Ø	Potomac Edison	+29%
Ø	Public Service of Oklahoma	+25%
Ø	Con Edison	+18%
Ø	Dominion Virginia Power	+18%
Ø	Palo Alto	+14%*

PE Consulting, 2008 Forecast on Rate Escalation in California- May 19, 2008

Natural Gas increased 22% per year over the last twenty years.

Electrical costs increased 4.5% per year over the last twenty years.

Electrical costs will increase 3-4% faster per year for an 8% or higher annual cost increase for the foreseeable future.

Drivers to the increases in coming years are:

Population increases

AB 32 and Environmental Regulations in California

Global energy demand increases

Geo-politics

China/India Industrial revolution

AB 32 California 'Global Warming Solutions Act'-2006:

Utilities will reduce emissions to 25% below 1990 levels by 2015.

Utilities will reduce emissions to 80% below 1990 levels by 2050.

The Outlook for Energy-A View to 2030- ExxonMobile November 2007

Total world energy demand to grow by 40% by 2030.

Even with aggressive achievements in technology:

- Ten fold increase in solar each year,
- Double efficiency of vehicles,
- Start up of 120 nuclear plants,
- Cellulosic ethanol development,
- Bio-fuels production grows 8% each year,
- Reduction of coal by 40%,
- IGGC-Integrated Gasification Combined Cycle, in-ground CO₂ storage for coal,
- Decrease energy intensity by 1.6% per GDP each year (60% increase in efficiency),

Global Energy Demand Grows 1.2% each year.

MBDOE grows 1.3% each year through 2030.

Fossil fuel consumption increases 80% by 2030.

Oil and gas increases 60% by 2030.

Global CO₂ emissions double by 2030.

What's it all mean...

AB32 Reduce GHG To 1990 Levels by 2020
To 80% below 1990 by 2050

Exxon Mobile

80% increase in Fossil Fuel Consumption 2030
Double GHG by 2030

Earth Policy Institute

Plan B - 80% reduction by 2020
Energy Efficiency
Transportation
Industry
Appliance
Lighting
Buildings
Solar, Wind, Thermal

CO2 at 384 ppm. 400 ppm may be crisis point.

“Saving civilization is not a spectator sport.” – L.R. Brown

Summary

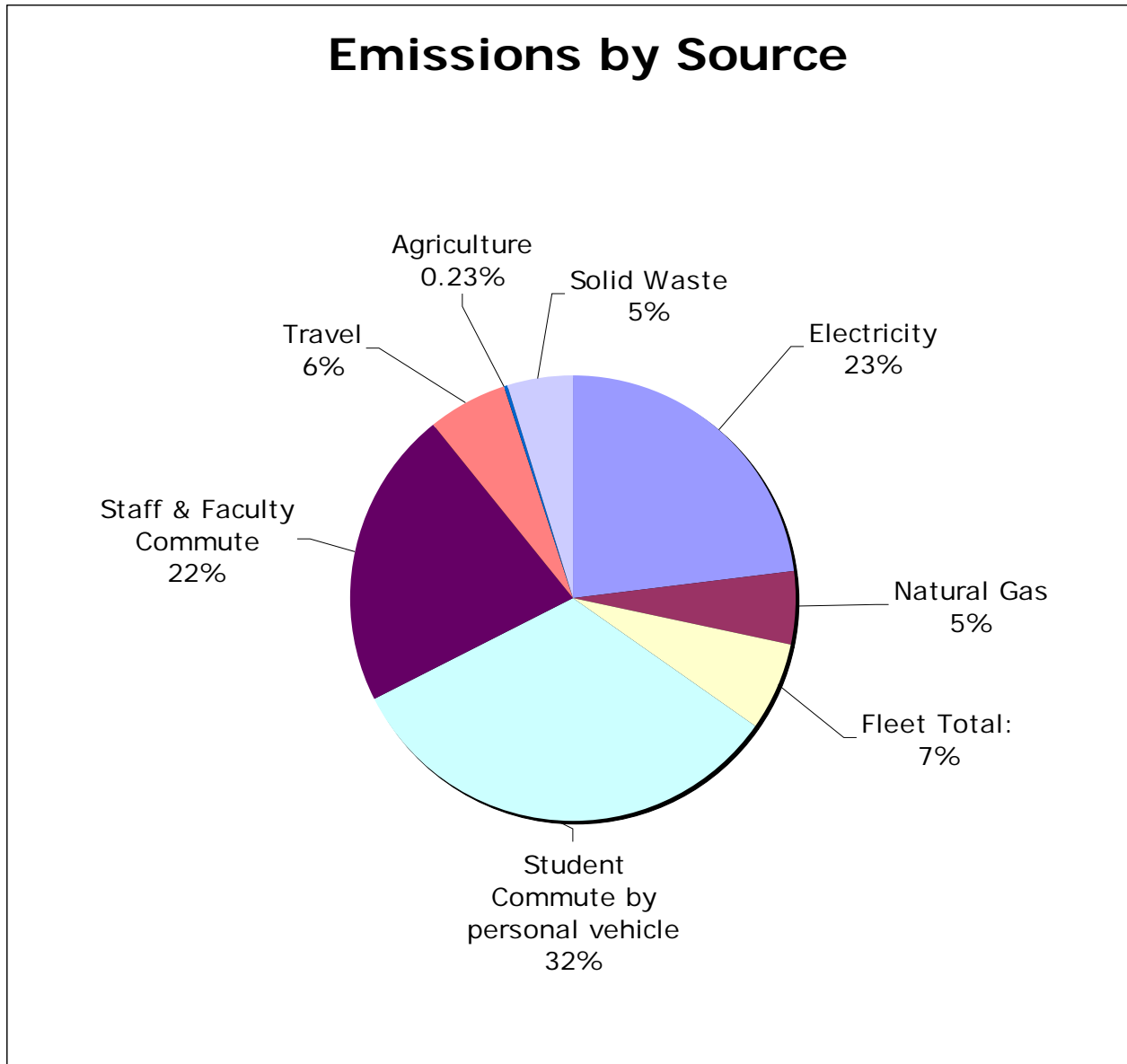
Energy Action Plan First:

- Bankable
- Cost effective
- Life cycle
- Total Cost of Ownership

Easy Stuff: Going off the grid-MBCx, 68° - 78°, Lighting, Solar

Sustainable actions are economically viable and ultimately financially positive.

What makes up 12,812.27 Metric Tonnes?



‘Do something now’

“Goal to Be Neutral By 2015”

