

Energy Management in Agriculture

Patsy Dugger – PG&E Energy Efficiency
 Rob Erlichman – Sunlight Electric
 Lisa Mortenson – Community Fuels

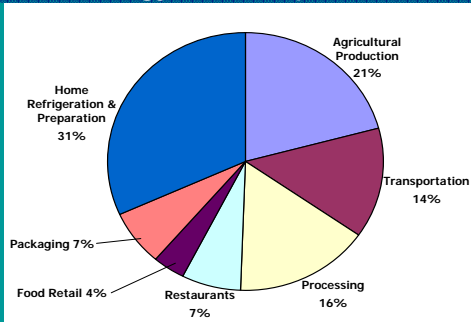
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Panel Agenda

- Introductions
- Energy use in agriculture
- Energy and Sustainability
- Opportunities for Sustainable Energy Use
 - Energy Efficiency – Patsy Dugger
 - Solar Power – Rob Erlichman
 - Biodiesel in Ag – Lisa Mortenson

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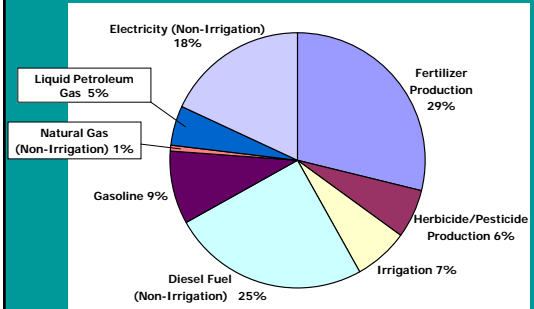
U.S. food system: 15-20% of all U.S. energy consumption



Source: Heller & Keoleian, 2000



U.S. agriculture: 1-3% of all U.S. energy consumption



Source: Heller & Keoleian, 2000

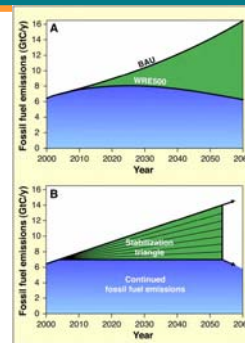


Energy and the Environment

- The Tipping Point for Energy?
 - Long term energy supply and demand equation
 - Air quality and global warming
 - Political Environment – Energy independence
- Supply is dwindling and alternatives will be increasingly important
- Air Quality – Electricity generation, diesel consumption, and farm transportation all contribute directly to GHG emissions and global warming
- Energy Efficiency, Self Generation, and Energy Alternatives => Energy Independence

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Stabilizing Fossil Fuel Emissions



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The PG&E Energy Pyramid



Conservation and Energy Efficiency

- **Specific programs developed for:**
 - Farms
 - Dairies
 - Greenhouses
 - Wineries and Vineyards
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Agricultural & Food Processing Services at PG&E

- Farms and Vineyards
- Subsidized Pump tests for >25 HP
 - Cash incentives for pump repairs, VFDs, Premium Efficiency Motors, New Wells
 - Education and training using mobile pumping lab, here today
 - Educational material:
 - Irrigation planning, pump test brochure, Energy Calculator Brochure, Water Wells brochure
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Agricultural & Food Processing Services at PG&E

- Wineries
- Facility walk-through audits
 - New construction and retrofit rebates and incentives
 - Workshops throughout the state in coordination with CSWA
 - Technical support for projects
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Self Generation Incentive Program

- Solar - California Solar Initiative
 - Biodigesters at dairies
 - Microturbines
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