

Biogas – Town Meeting Results & Perspectives

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Outline

- Group Meeting
- Val's perspective

1. Issues

- Lack of data –
- Environmental benefits not captured
- Arduous permitting process (regulatory bottle neck)
- Life cycle analysis
- Cost is high (capital, O&M)
- Lack of R&D breakthroughs

2. Opportunities

- Reduce costs
- RD&D of advanced energy technologies
- Internalize & monetize environmental benefits
- Remove barriers to market place
- Incentives
- Consolidate/streamline permitting process

3. What is needed to expand opportunities?

- Rational bioenergy policy
- Success stories documenting performance of biogas technologies in CA
- Carbon taxes – levelize the plain field with fossil fuels
- Simplify permitting process

Why Develop Biogas?

- Helps Meet California's RPS Goals, Governor's Executive Order S-06-06 –biomass & biofuels & Bioenergy Action Plan
 - Biogas resources could supply as much as 4500 GWhrs/yr
- Represents a Lower Cost Biomass Resource
 - Utilize existing infrastructure (e.g., gas collection, waste processing) already in place
 - Captive "fuel" supplies (i.e., zero or very low cost)
- Addresses Environmental Issues
 - Typically air quality benefits
 - Methane gas capture at dairies

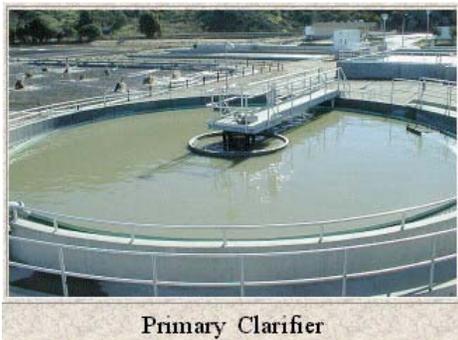
Other Biogas Resources



*From
landfills*



*From
livestock
operations*



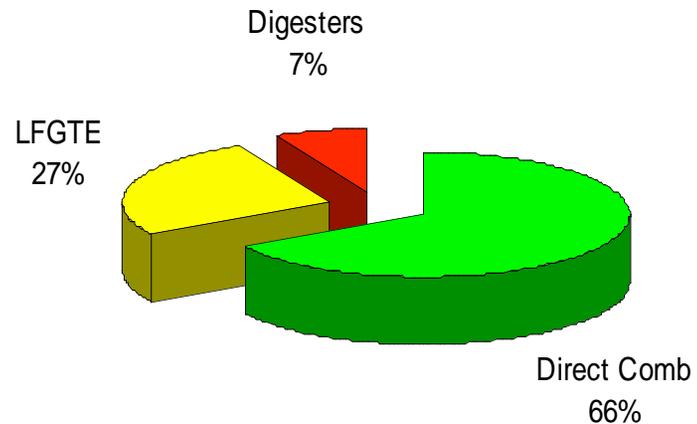
Primary Clarifier

*From
wastewater
treatment
plants*

*From food & other
organic wastes*

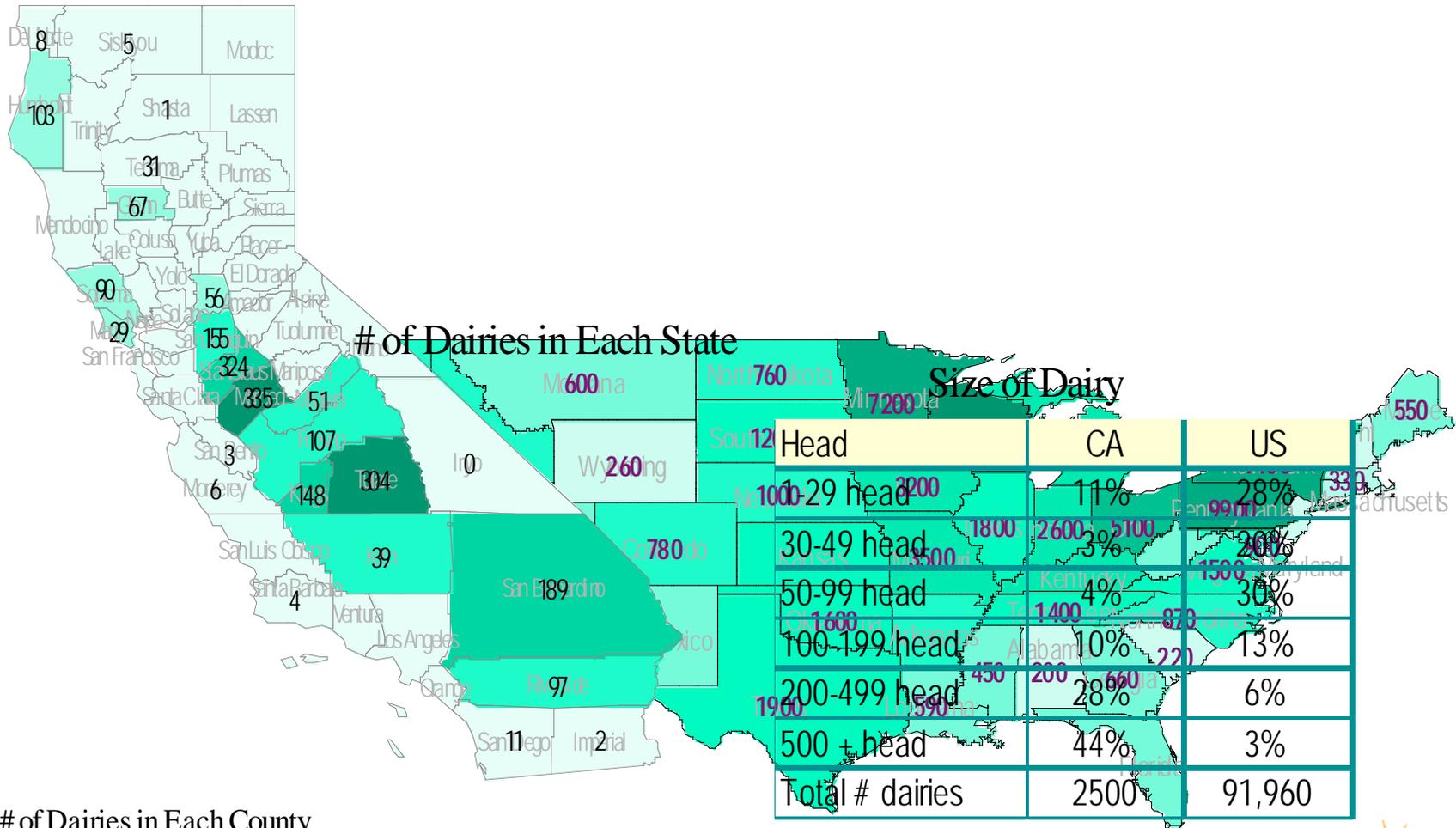
California Bioenergy Today

- Biomass Energy Facilities Provide ~1000 MW of Electricity Capacity through
 - Direct Combustion of Forestry, Ag and Urban Biomass
 - Landfill Gas to Energy (LFGTE) Facilities Convert Methane Rich Landfill Gas
 - Wastewater and Dairy Biogas Systems Process Biogas Into Useful Energy
- Biofuels - California consumers over 900 million gallons per year of ethanol and over 11 million gallons of biodiesel fuel.



Dairy Sizes

Awarded projects cover dairy sizes from 175 -7200 milking cows



Source: Agricultural Statistics, 2004



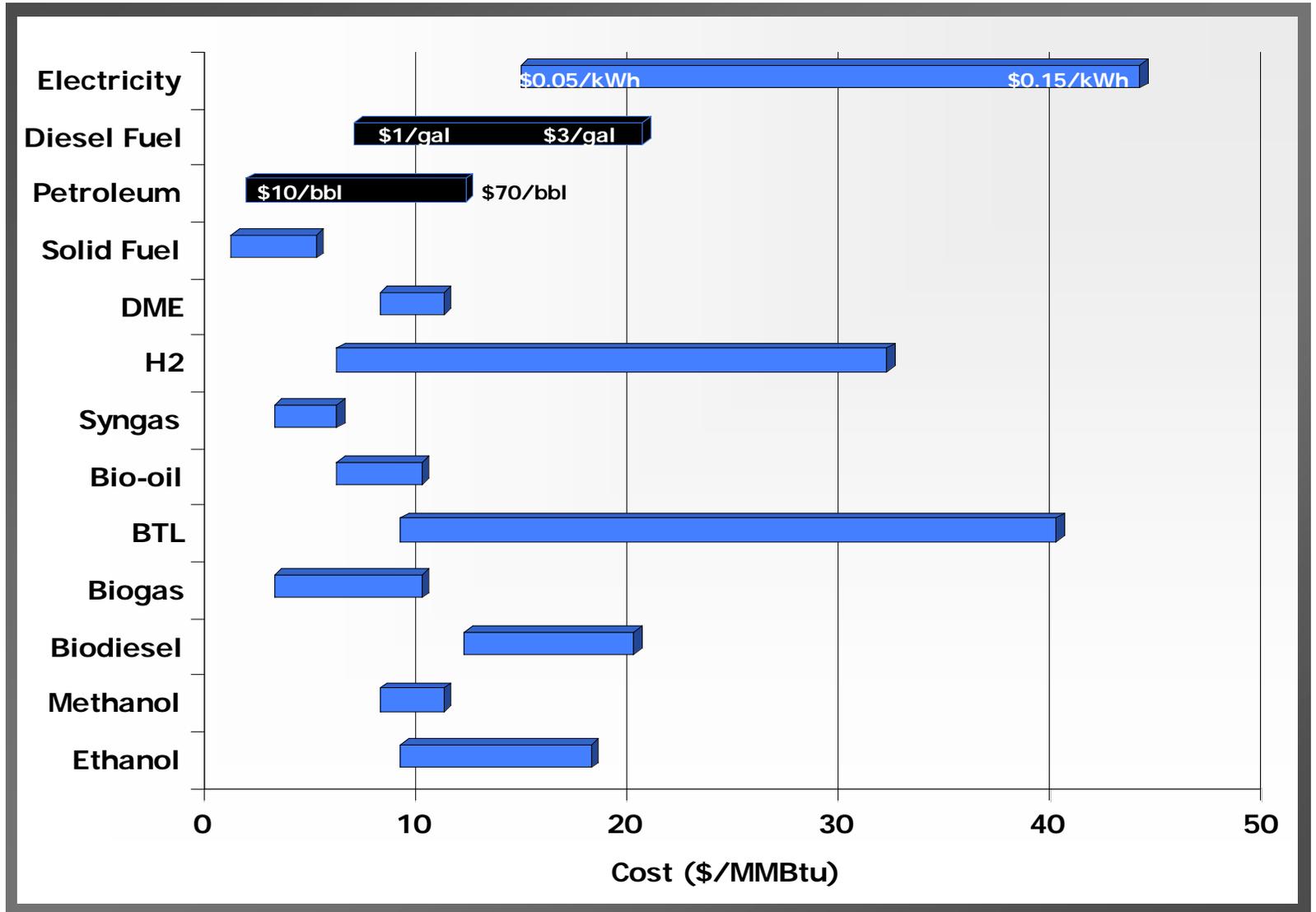
Why Isn't Development Occurring Much?

- Economics
 - High Capital costs (~\$5,000/kW)
- Technical
 - Lack of technical and environmental performance data
 - Lack of well monitored demonstration projects
 - Lack of understanding of life cycle benefits and impacts of biogas in CA
- Environmental
 - Remaining issues with air quality (NO_x) and water quality
- Institutional
 - Difficulties in obtaining permits and interconnection to the grid

Bioenergy Production Costs

Source: Jenkins (2006), California Biomass Collaborative

Compare: {



Opportunities

- California can greatly benefit from accelerating development of biogas systems
 - Potential for over 4500 GWhrs/yr of biogas derived electricity
 - Lower cost biomass resources (captive resources)
 - Clear environmental benefits

Opportunities

- The PIER Program (CEC) and the Bioenergy Interagency Working Group and its member agencies are focused on making CA biomass resources part of the State's energy future
 - Planning and implementation of policy drivers
 - Resolving potential barriers to biogas development
 - Developing the next generation of biomass to energy conversion systems that will help make California's electricity and transportation fuels more cost competitive, reliable, safer and cleaner
 - Working closely and cooperatively with key stakeholders to meet California's special needs and take advantage of unique opportunities

Major Actions

- Carbon Policy
- Standards & best Practices for sustainability
- Permitting
- Financing & contracting
- RD&D
- Outreach

Thank You

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Additional information can be found at:

The Energy Commission's web site has extensive information on the ongoing bioenergy work in California at:

http://www.energy.ca.gov/bioenergy_action_plan

http://www.energy.ca.gov/2005_energypolicy/