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U.S Department of Agriculture
Agricultural Outlook Forum 2004
February 19 & 20, 2004

WE ENERGIES
GENERATING COMMERCIAL ELECTRICITY FROM ANIMAL
WASTE

Patrick Keily
Office of Energy Options
We Energies

USDA Agricultural Outlook Forum 2004
Renewable Energy Opportunities for American Farmers

We Energies

**GENERATING COMMERCIAL
ELECTRICITY FROM ANIMAL WASTE**

Patrick Keily
Office of Energy Options
We Energies
February 20, 2004



Company Profile

■ We Energies

- Formerly Wisconsin Electric - Wisconsin Gas
- Largest electric and gas utility in Wisconsin
- Over 2 million electric + gas customer accounts
- Headquartered in Milwaukee, WI, 5800 employees

■ Electric System

- 6000 MW of generation (approx. 140 MW renewable energy)
- Transmission fully divested as of 2001
- Few fuel sources from within state

■ Strategy: **Power The Future** www.powerthefuture.net



Background

■ We Energies & Renewable Energy

- Long-standing and ongoing commitment to innovative environmental and renewable energy leadership
- Operates or purchases over 140 MW from a variety of sources
- Experience with hydro, biomass, wind, and solar

■ Environmental Excellence

- Multi-Emission Cooperative Agreement
- EPA Climate Leader
- 2002 “Performance Report” www.wec-performancereport.com/
- Innovative Stewardship Programs



Definition of Renewable Energy

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■ What IS Renewable Energy

- Wind
- Solar
- Biomass
- Hydroelectric
- Geothermal
- Tidal / Ocean Energy

■ What is NOT Renewable Energy

- Fuel cell (unless powered by a fuel source listed above)
- Microturbines (unless powered by a fuel source listed above)
- Compressed Air (unless powered by a fuel source listed above)
- Energy Efficiency / Conservation
- Nuclear Power



Drivers of Renewable Energy Demand

- State or Federal Renewable Portfolio Standard (RPS)
 - RPS requires electric providers to supply renewable energy to customers
 - 13 States have an RPS
 - Wisconsin has an RPS
- Renewable Energy Pricing Programs
 - Some customers are willing to pay a premium to support renewable energy
 - Over 300 IOUs, Munis and Coops in 30 states have GPP
 - Competitive suppliers also offer Renewable Energy



Renewable Energy Sells

- Renewable Energy is Popular
 - Between 1% and 5% of electric customers will pay extra for renewable energy
- Margins are thin
 - Price of Electricity has 3 components - Generation, Transmission and Distribution
 - Average Residential rate in US is about 8.5 cents / kWh
 - What is the cost of generation?
- What do Customers think Renewable Energy Is
 - Wind
 - Solar



Animal Waste Electricity Generation

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- Technologies - Waste Treatment
 - Aerobic - (no Methane)
 - Anaerobic - (Methane)
- Drivers of animal waste treatment
 - Ground water contamination
 - Runoff control
 - Odor control
 - Regulatory compliance
 - Use of waste heat
 - Solids can be used for bedding
 - Income from electricity sales



Anaerobic Digestion

- What drives you to do this? - Remember margins are thin.
- Develop a business plan
- What type of operation do you have?
 - Livestock type
 - Confined
 - Expanding
 - Building new operations buildings



Anaerobic Digestion

- Be friendly with your banker
- Do your homework
- Work closely with your local electricity provider
- Remember even very large animal operations will be small electric generators
- Investigate consolidation of animal waste



What is We Energies Doing

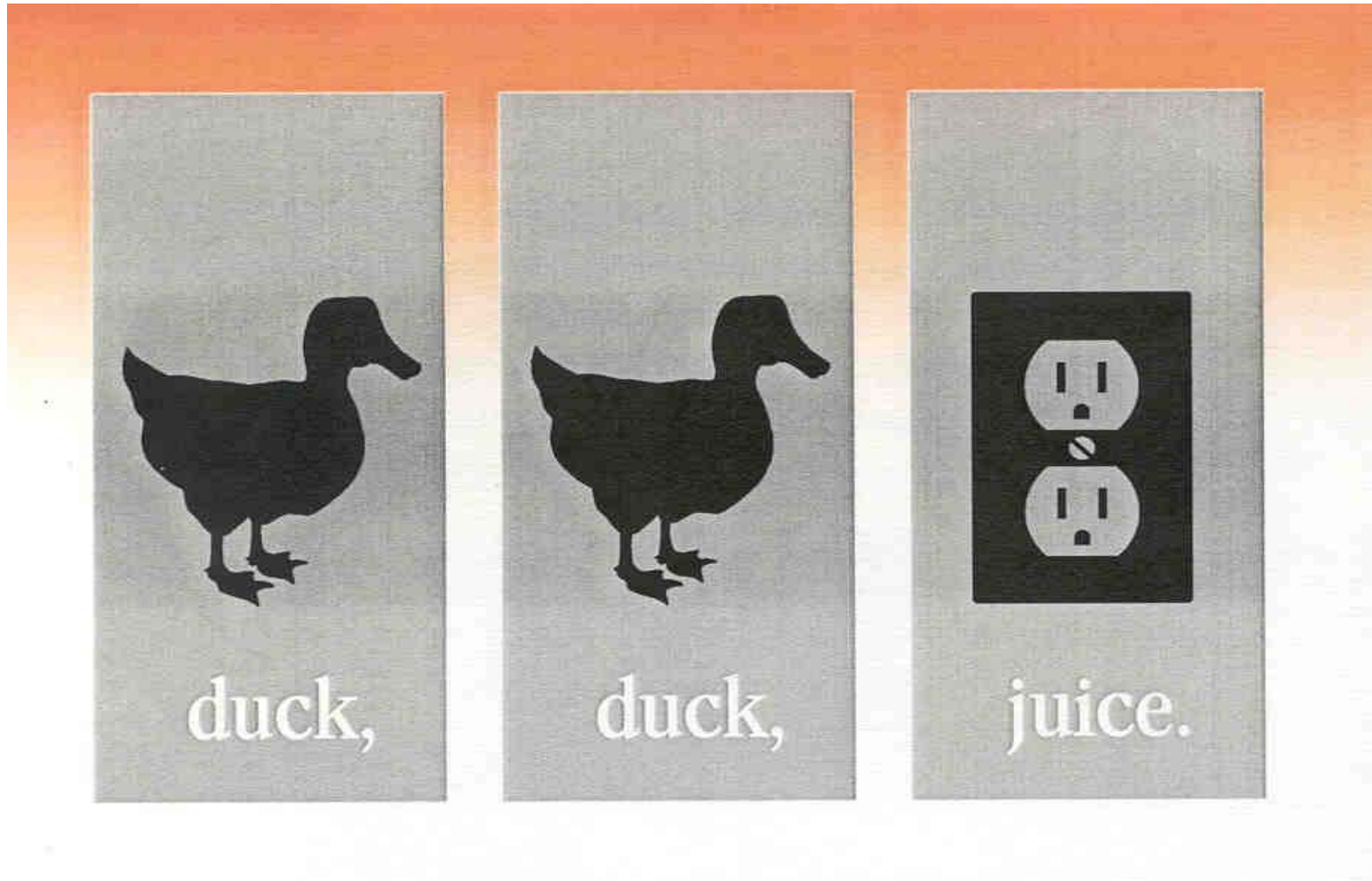
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- We Energies 5% Target for Renewable Energy
 - We have committed to target at least 5% of our Wisconsin retail electric sales to come from renewable energy sources by 2011 and, subject to PSCW approval, spend an additional \$60 million (Wisconsin jurisdiction) by 2011 to reach this target.
 - What counts (eligible resources vs. RPS)
 - Current projection would require over 1,400,000 megawatt-hours generated or procured in 2011



Biomass - 200 kW Duck Farm

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We Energies Animal Waste Electricity Generation

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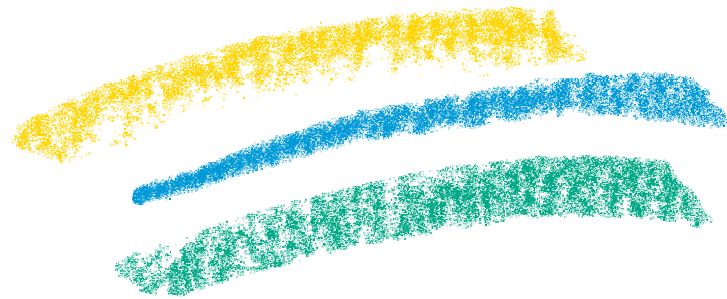
- Maple Leaf Duck Farm
- Tinedale Farms
- Biomass Request for Proposal
 - Requested up to 25 MW of generation
 - Favor anaerobic digestion
 - Evaluating responses
 - Responses for anaerobic digestion



we energies
today, tomorrow, together.



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energy for tomorrow®
renewable energy program