



Sustainable Energy Development

UNIVERSITY OF MINNESOTA

AGENDA

- Mission
- Energy Economics
- Finance and Regulation



Architecture | Engineering | Planning

PROVEN LEADERSHIP

- 50% of Morris campus electricity is wind energy
- Biomass will meet 70% of thermal energy needs
- US-EPA recognition for Green Power leadership
- USDA/DOE demonstration grant

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VISION

- A world leader in promoting and demonstrating sustainability and energy efficiency.

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A faint, light gray line-art illustration of two wind turbines is positioned in the background on the right side of the slide. The turbines are stylized, showing their towers, nacelles, and three blades each. The lines are thin and delicate, creating a subtle watermark effect.

COMMITMENT

- Renewable energy is a key University wide priority



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STRATEGY

- Develop renewable energy resources in Minnesota for the benefit of the University's students.
- Develop the University of Minnesota's energy systems to maximize energy efficiency and economy.

GOALS

1. Reduce the amount of pollution associated with meeting the University's demand for energy.
2. Maximize the value of the 2005 Energy Act
3. Decrease Morris education costs
4. Reduce operating costs in the Twin Cities
5. Enrich the historical bonds between Morris and Indian communities.
6. Support research of renewable energy

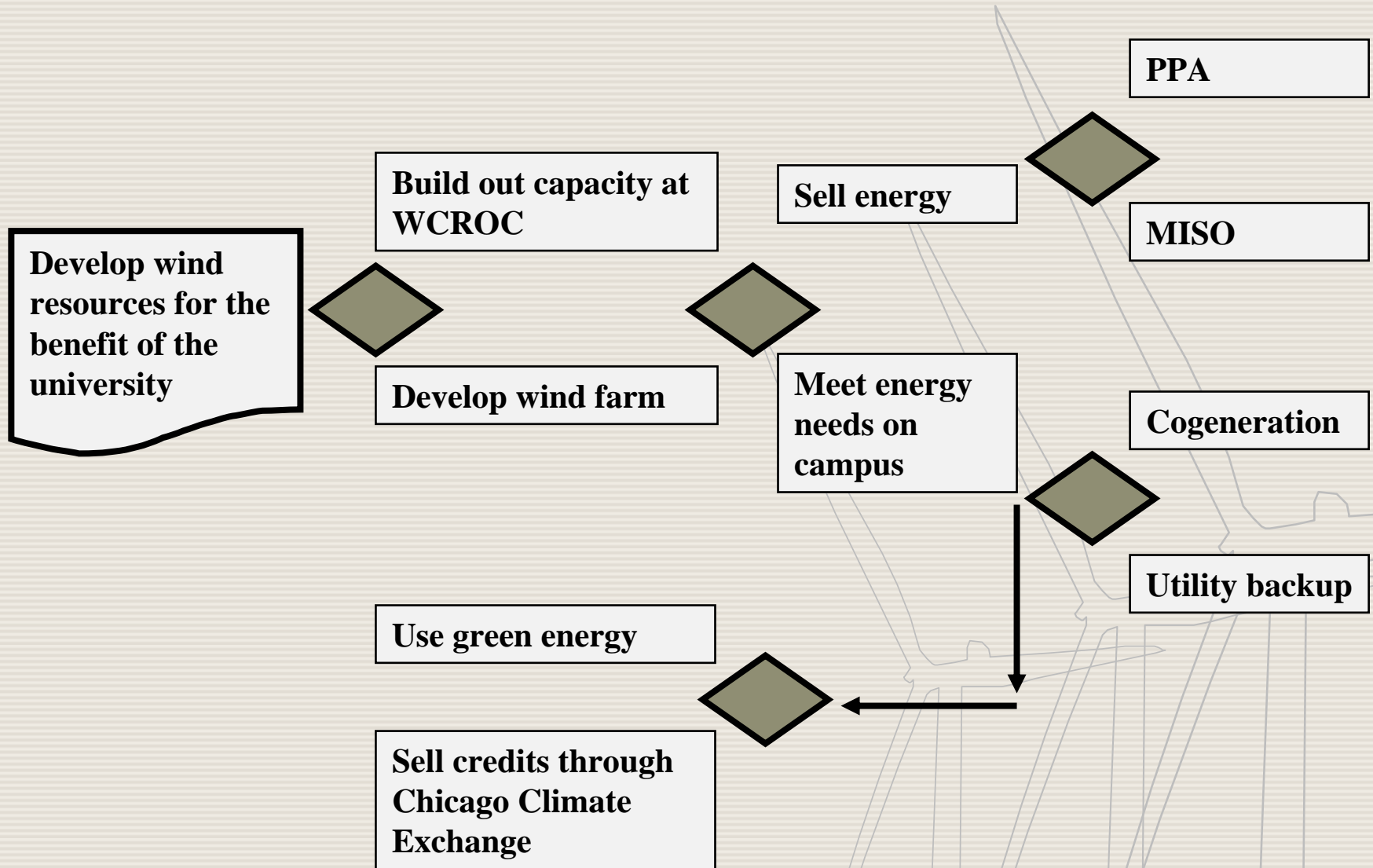
ORGANIZE ENERGY PRODUCTION TO MAXIMIZE EFFICIENCY.

- Maximize wind production at WCROC
 - Two additional turbines
 - 1.65 or 2.1 MW each
- Off-set retail purchase on Morris campus
- Sell excess energy through PPA or via MISO
- Maximize value of CREB Bonds
 - Ten additional turbines
 - 2.1 MW each
- Off-set retail purchase on Twin Cities campus
- Sell excess energy through PPA or via MISO

DECISIONS

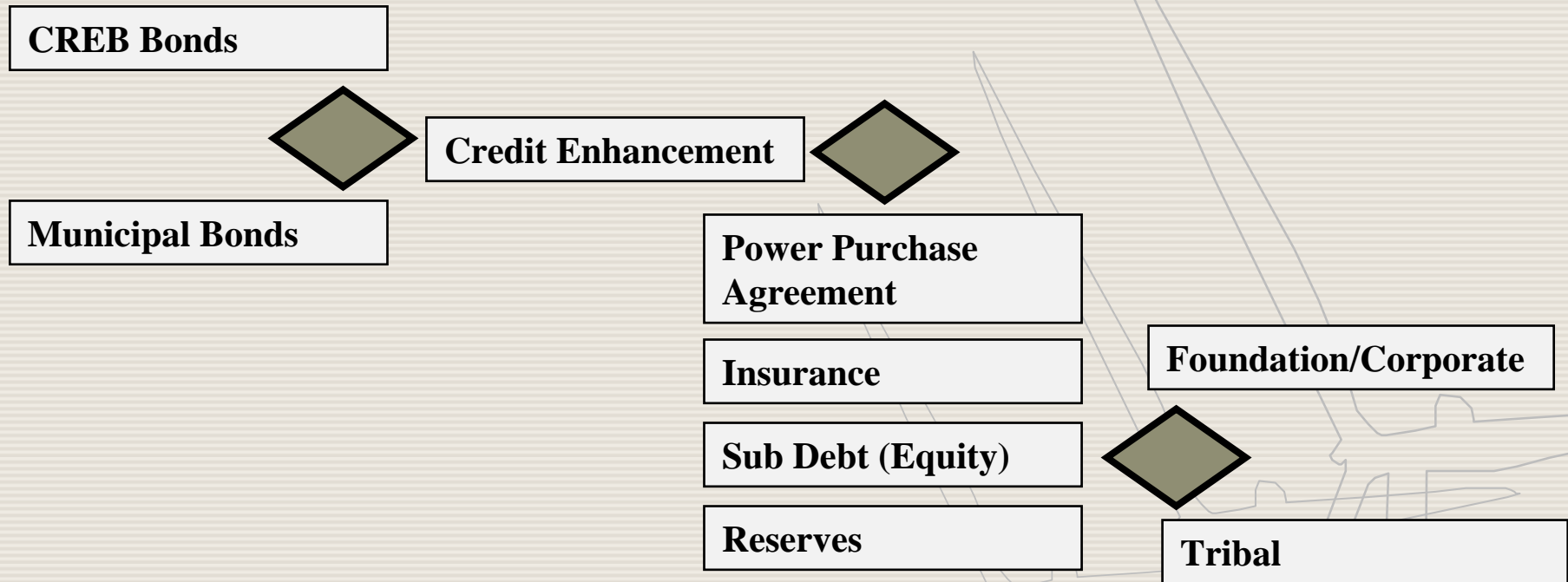
- Pursue CREB Bonds
- Seek rules to realize value of off-setting retail purchase
- Bid/Negotiate PPA vs. MISO market risk
- Source or sources of credit enhancement
- Green energy vs. cash

REVENUE DECISION TREE



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FINANCE DECISION TREE



DEVELOPMENT STEPS

- ➔ Survey existing conditions.
- ➔ Forecast market value of energy.
- ➔ Explore cooperative effort.
- ➔ Develop business plan
- ➔ Participate in rule making
- ➔ Establish technical program
- ➔ Develop design
- ➔ Build project