



Committed to the future of rural communities

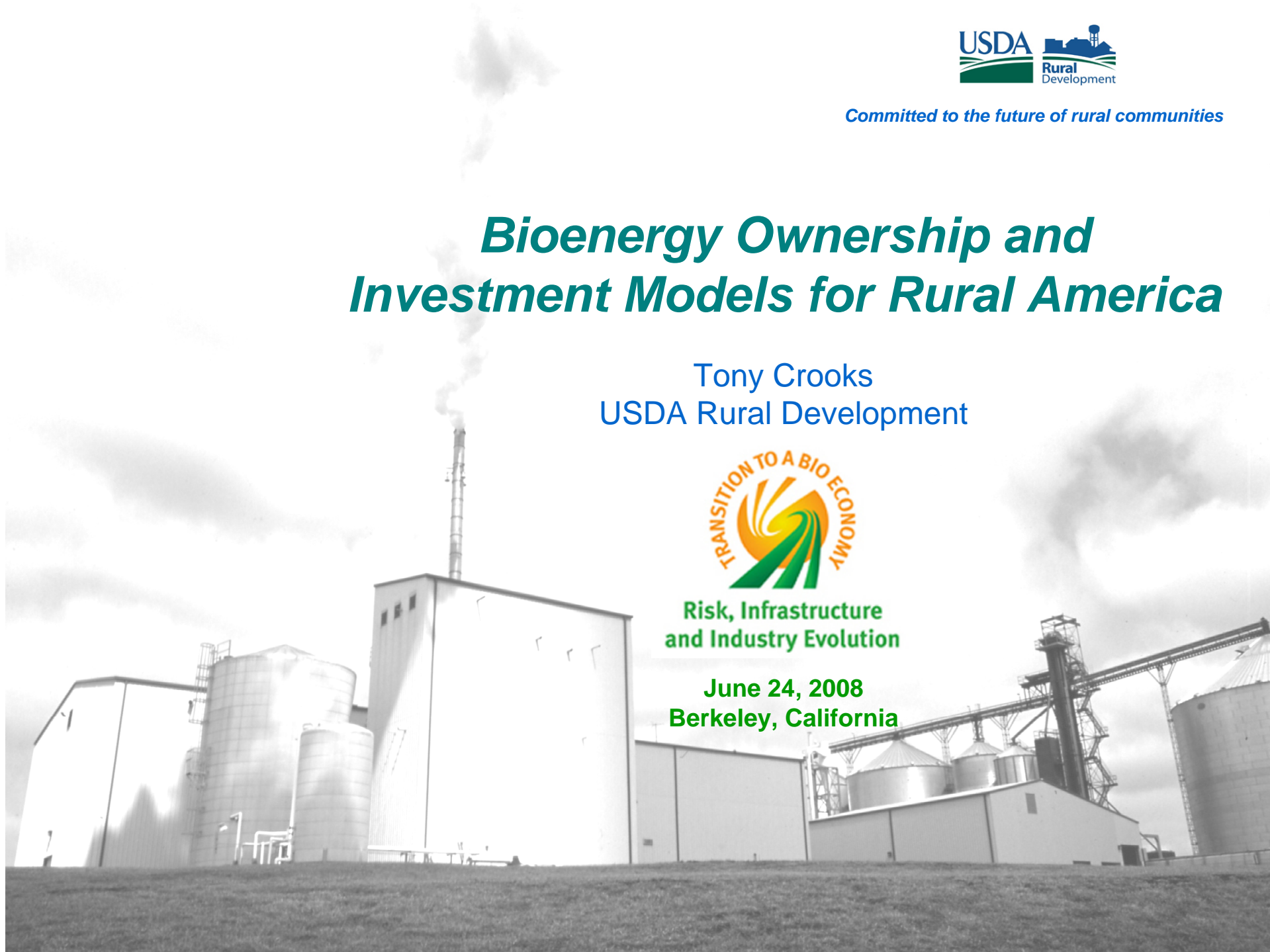
Bioenergy Ownership and Investment Models for Rural America

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USDA Rural Development



**Risk, Infrastructure
and Industry Evolution**

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“Bioenergy Ownership and Investment Models for Rural America,”

Anthony Crooks, James Baarda, and David Chesnick

- **Ownership models for biofuels**
 - **Cellulosic ethanol considerations**
- **Tapping farm equity; Key to greater local ownership**
 - **Farm equity investment in rural America**
- **Investment models to reverse the decline of local ownership**
- **Conclusions**



USDA Rural Development Special Project

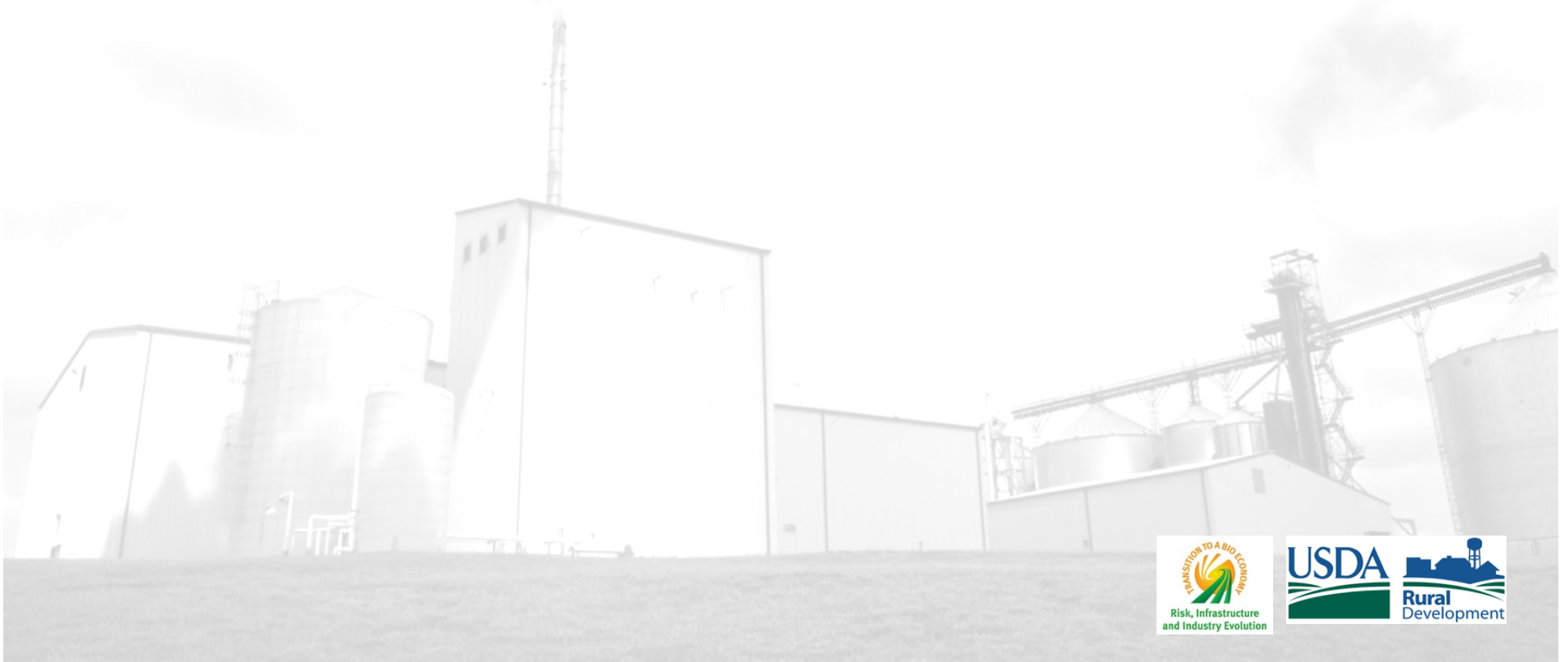
Informa Economics commissioned to:

- **Describe business models in biofuels industry**
- **Articulate advantages/disadvantages of each**
- **Assess public policy and Rural Development programs**
- **Assess the level of farm equity investment in rural America**
- **Develop investment models to reverse the decline of local ownership**



A **business model** is a concept to describe:

- The value a company offers to its customers
- The operational architecture (means) used to create, market, and deliver that value to generate profitable and sustainable revenue streams.



Ownership models for biofuels

A closer look at the industry by producer and capacity depicts four characteristic ownership structures:

- “Corporate” model
- “Farmer-owned” model
- “Engineer/builder-owned” model
- “Franchise” model



Corporate model

- **The renewable fuels producer is a corporation (typically a C corporation) or a subsidiary of a corporation**
- **Internal staff manages plant(s), grain procurement, fuels and co-product marketing**
- **Firm does not own or manage farm land**
- **May be integrated in grain processing, provision of marketing or transportation services**



Archer Daniels Midland

- Vertically integrated agribusiness conglomerate
- Largest biofuels producer in the world
 - > 1 billion gallons ethanol produced annually in US
- Extensive procurement and marketing staff
- Controls substantial transportation assets

“... uniquely positioned at the intersection of the world’s increasing demands for both food and fuel.” Patricia Woertz, CEO



Farmer-owned model

- Incorporated as cooperative, LLC, or other
- Farmer-members have a majority ownership
- Farmer-members may have delivery obligations to the facility, access to storage, grain elevator operations



Chippewa Valley Ethanol Company, LLC

Benson, Minnesota

- **Formed by over 650 shareholders**
 - **Producers, elevators, local investors**
- **Original capacity of 15 MGY**
 - **Expanded to 20- then 45- MGY**
 - **Building new 40- MGY plant**
- **Founded marketing/procurement company for several plants**
- **Shakers® Vodka distillery**



Engineer/builder owned model

- **Design/build firms own facilities outright or maintain a significant ownership interest**
- **Design/build firms maintain a controlling interest in management**
- **Multiple facilities**
- **Sufficient scale for internal staff to conduct key functions, including grain procurement and renewable fuels and co-product marketing**
- **Provide management services to unaffiliated plants.**

POET (formerly Broin Companies)

- 1983 - Family builds small on-farm plant, in MN
- 1987 - Purchase/refurbish a foreclosed plant, in SD
- 1990 - Broin & Associates provides engineering design and construction services
- 1994 - Broin Management provides management services
- 1995 - Dakota Gold Marketing™ to market distillers grains
- 1999 - Ethanol Products™ to market ethanol and CO₂
- 2006 - 23 operating ethanol plants; 9 plants under construction or development
- Mar 2007 – Broin is POET; Markets over 1 BGY
- Oct 2007 – DOE cooperative agreement for cellulosic ethanol production (corn stover)



Biorefinery franchise model

- Firm is not vertically integrated; depends on 3rd party service providers
- Plant is a “cookie-cutter” facility designed/built by engineering firms/consortiums
- Plant processes monitored remotely by the engineering company
- Dependent upon 3rd party providers for feedstock procurement and product marketing; plant management services
- Long-term agreements with service-providers often required by financiers
- Service providers may invest capital in the facility

ASAlliances Biofuels, LLC

- **Building 3 ethanol facilities of 100 mil gal capacity**
 - Albion, NE; Bloomingsburg, OH; Linden, IN
- **Combines top-tier service providers with financial partners**
- **Each facility:**
 - Built by Fagen, Inc.
 - Located adjacent to Cargill, Inc., grain elevator
 - Depends on Cargill, Inc. to provide procurement, marketing and transportation services
 - Depends on United Bio Energy Management, LLC, to provide operational and maintenance support
- **Purchased by VeraSun, (announced Nov '07)**



Cellulosic ethanol considerations

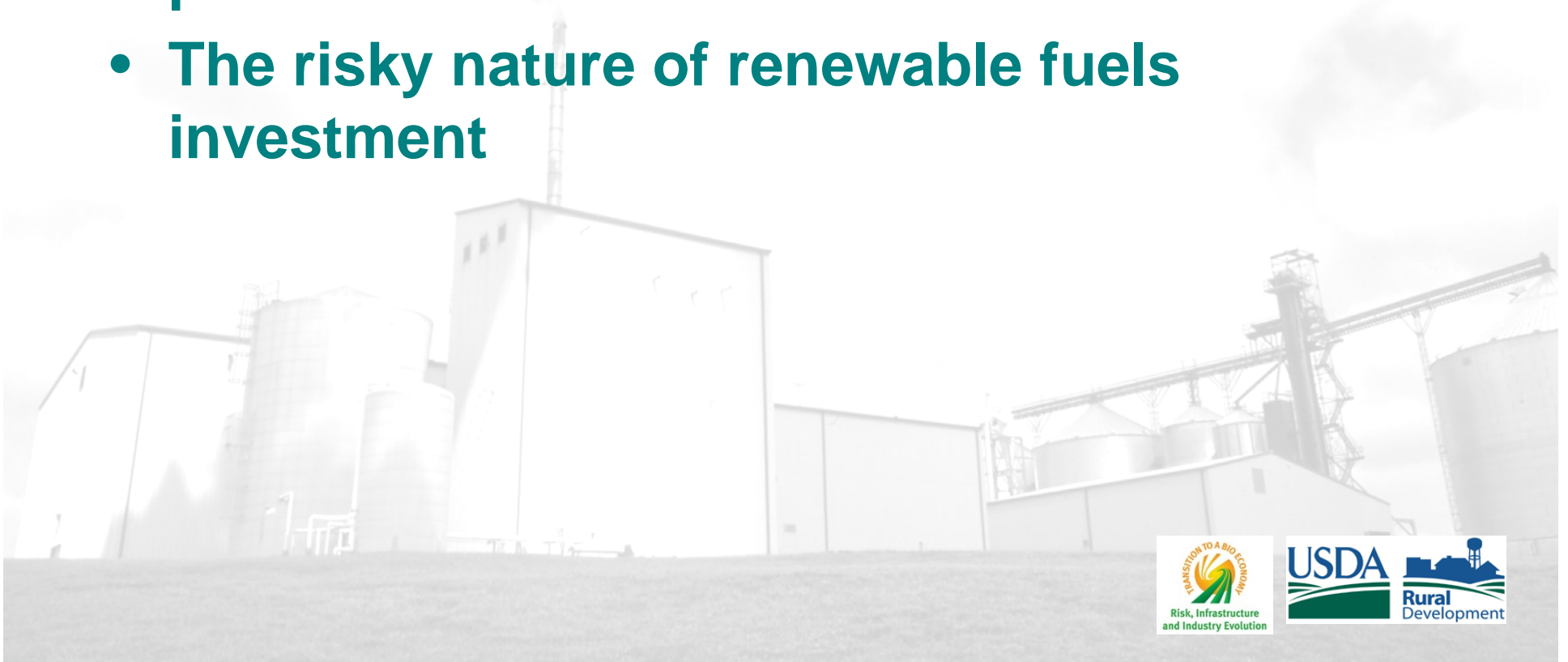
- Acute issues of cost, legal structures, management
- Capital expenditures/gallon ~ 3/5 times traditional plant
 - Maybe affordable only to corporations and equity funds, or in very small scale to rural communities
- Intellectual property rights of key importance
 - Maybe Design/Build firms will rise in prominence
 - Enzyme R&D instrumental to industry success
- Collection and storage systems yet to be established
 - Maybe opportunity for hybrid Design/Build - Farmer/Owned structures tying together capital, intellectual property, and feedstock
 - POET collaborative partnerships with farmers and investors

Cellulosic ethanol considerations (continued)

- **Variety of feedstocks are expected**
 - Producers less likely to be solely row crop farmers
 - “Farmer-owned” business model must expand to accommodate
- **Number and specialization of co-products to multiply**
 - Diverse and complicated mix of third party marketing firms
- **Extra expense of highly technical applications –**
 - Specialized marketing and service firms
 - Long-term off-take agreements

Barriers to investment in renewable fuels

- **High equity investment requirements**
- **Complexities of the project development process**
- **The risky nature of renewable fuels investment**



Federal and State Programs

- Variety of investment incentive programs available to farmers
- Most are modest -- offer \$50,000 - \$100,000
 - To help farmers through the “first phase” of a Bio-fuel project
 - Not very useful for the subsequent construction phase
- Plenty of **information** available on investment incentives
- No single comprehensive source to help farmer groups identify programs



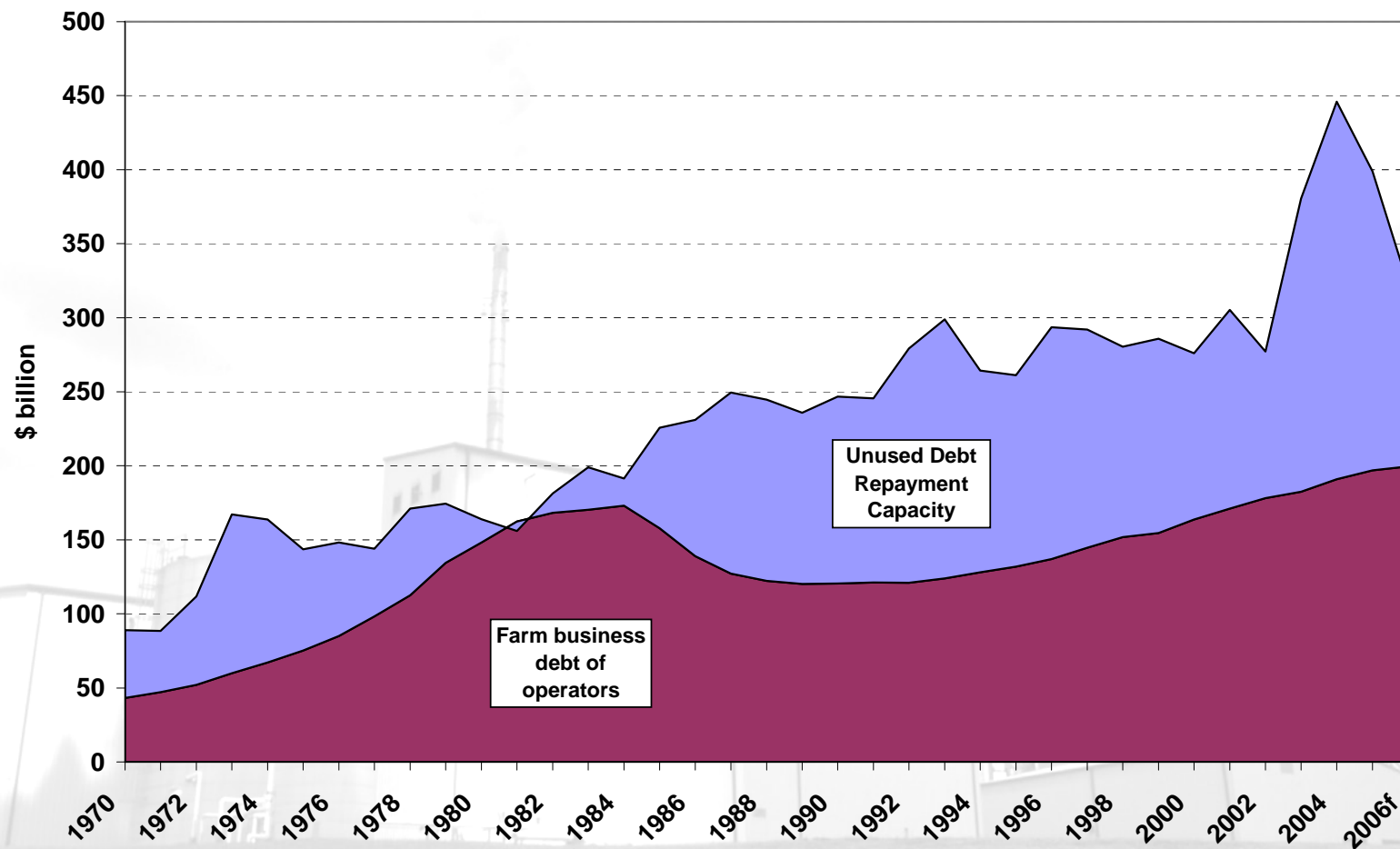
Tapping farm equity

Key to greater local ownership

- **Substantial equity already flows in/out of renewable fuel projects**
 - Number of publicly traded ethanol companies
 - Most of investment in biofuels corporation goes outside community
 - No rural ownership; No multiplier effect from returns
- **Growing stock of equity capital in farm real estate**
 - Projected for 2008:
 - US farm business assets \$2.51T
 - Farm real estate value \$2.2T; ~ 87% of assets
 - Farm sector equity \$2.29T
 - Debt-to-equity down from 17.4% in '02 to 10% in '08
 - Unused debt repayment capacity ~\$120B

Unused debt repayment capacity, 1970-2006

Figure 1--Debt Repayment Capacity



Investment models to reverse the decline of local ownership

- **Closed-Ended Renewable Energy Funds for Farmers and Other Rural Investors**
- **Debenture Guarantees**
- **New Markets Tax Credit**
- **Tax Credit for Projects with a Minimum share of Farmer/Rural Involvement**



Closed-ended renewable energy fund

- Limited to farmers and rural residents
- Large enough to invest across multiple facilities
- \$10 - \$50 K per qualified investor
 - > \$100K sales & \$1M Net Worth (~300,000 farms)
 - 300K farms @ \$10K per farm = \$3 B investment fund
 - 625 MGY, Cellulosic Ethanol capacity @ \$8/gal; 60/40 (equity/debt)
 - 3.5 BGY, corn ethanol @ \$2/gal; 40/60 (equity/debt)



Debenture guarantees

- Similar to SBA Rural Business Investment Companies (RBIC) of '02 Farm bill
- Issued by an RBIC, pooled with other issues and sold to outside investors
 - Backed by the federal government, carry lower premiums
- Modified to:
 - Relax the maximum \$6M net worth restriction to permit biorefinery investment
 - Relax dividend pre-payment requirements to generate cash flow
 - Lower leverage fees (significantly) to be competitive with market interest rates

HR 2419. Sec. 6027. Rural Business Investment Program authorization is \$50m.



New markets tax credit

- **Funded/managed by US Treasury - Community Development Financial Institutions program**
- **Taxpayers receive federal income tax credit for qualified equity investment in designated Community Development Entities (CDE)**
- **CDE modified for biofuels:**
 - **Required to invest in qualified biofuels/renewable energy portfolio**
 - **Leverages farmer equity**



Production tax credit

- **For projects with minimum share of rural involvement to outside investors, i.e., wind generated electricity**
- **Funded by future tax revenue**
- **Risk exposure shared by farmers and private (outside) investor(s)**
- **Federal government would have limited risk exposure.**



Conclusions

USDA Rural Development aspires to:

- **Stanch the trend of rural investors owning a smaller share of renewable fuel production capacity**
- **Keep (more) biorefinery returns circulating in rural communities**
- **Help farmers and rural residents to participate (more) fully in the cellulosic ethanol economy**

<http://www.rurdev.usda.gov/rbs/coops/csdir.htm>

**Scroll down to:
“USDA Rural Development Renewable Energy”**

