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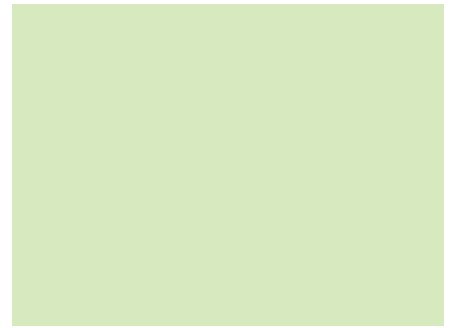
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## Enhancing Cooperative Leadership and Entrepreneurship: Finding Competitive Advantage in Interstate Carbon Credit Markets

Matthew Elliott and Michael Cook

South Dakota State University and University of Missouri-Columbia

# Problem Statement



- EPA Clean Power Plan
- **Public Good:** Reduced Greenhouse Gas Emissions 32% from Electric Power Generation by 2030. Glide path starting (2022-2024).
- **Federated Policy Choice:** States Decide How to Supply Public Good (Plans Due Sept 2016, Extensions to 2018)
- **Selective Incentive Approach:** Interstate Carbon Credit Market- *Recommended (Excludability of Public Good: Defining and Developing Homogenous/Tradable Carbon Allowances/Credits)*
- **Coercive Policy Approach:** “State measures” (e.g. More Stringent Building Codes, Mandating Renewable Power Generation, Energy Efficiency Appliance Rules, Mandating Emissions at Affected Energy Generation Units)

# “Ready Made Rules” for Interstate Trading



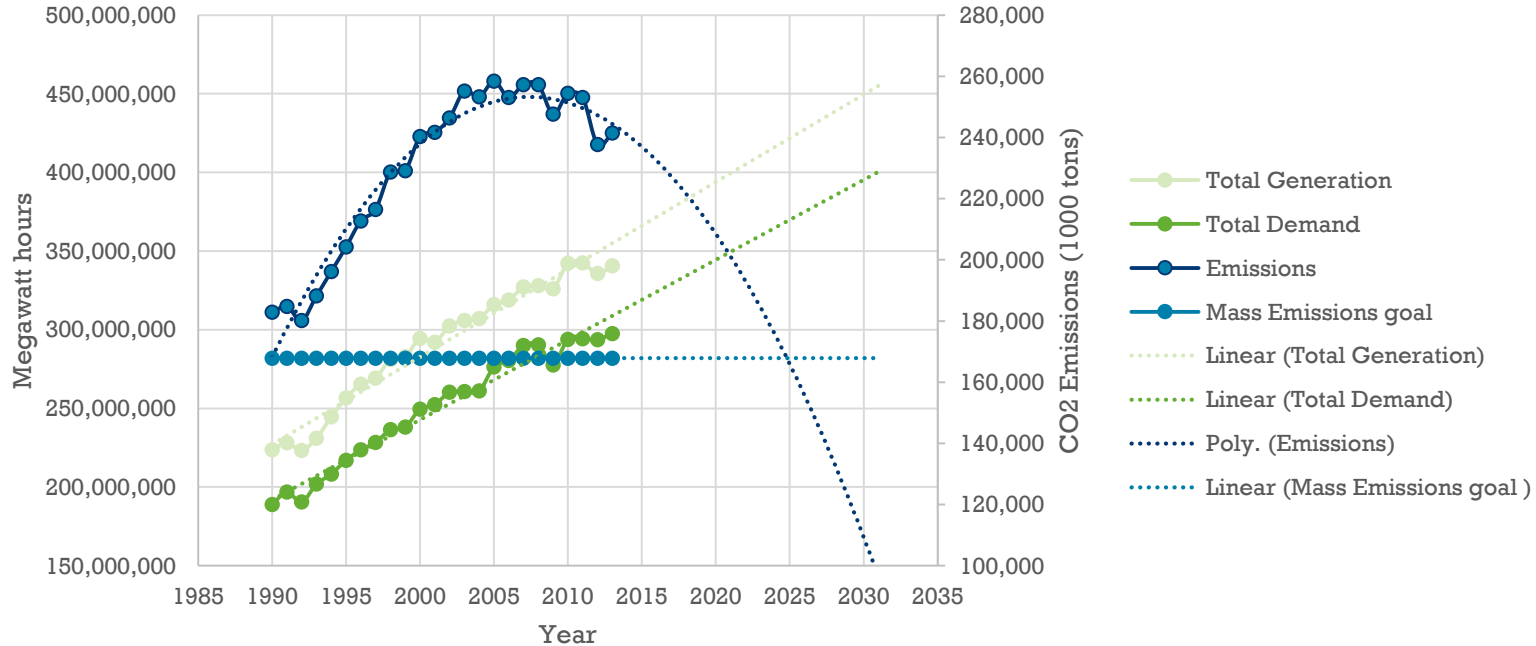
- **Rate Based (CO<sub>2</sub>/ MWh)**
- **Emission Rate Credits (ERC):** (1 MWh/ with 0 CO<sub>2</sub>)
  - Energy Reduction or Zero Carbon Energy Generation
  - ERCs administered by state regulatory body
    - EACH ERC adds 1MWh to denominator of state rate without adding any carbon emissions
- **Mass Based (CO<sub>2</sub> Tons Allowed)**
- Distribute **Allowances** to Affected Parties, or Auction Allowances
  - Allowances are tradable (Each unit allows 1 ton of CO<sub>2</sub> emission)
- Simple to Enforce and Easy to Define

# Rate and Mass Goals-- %Change from 2012

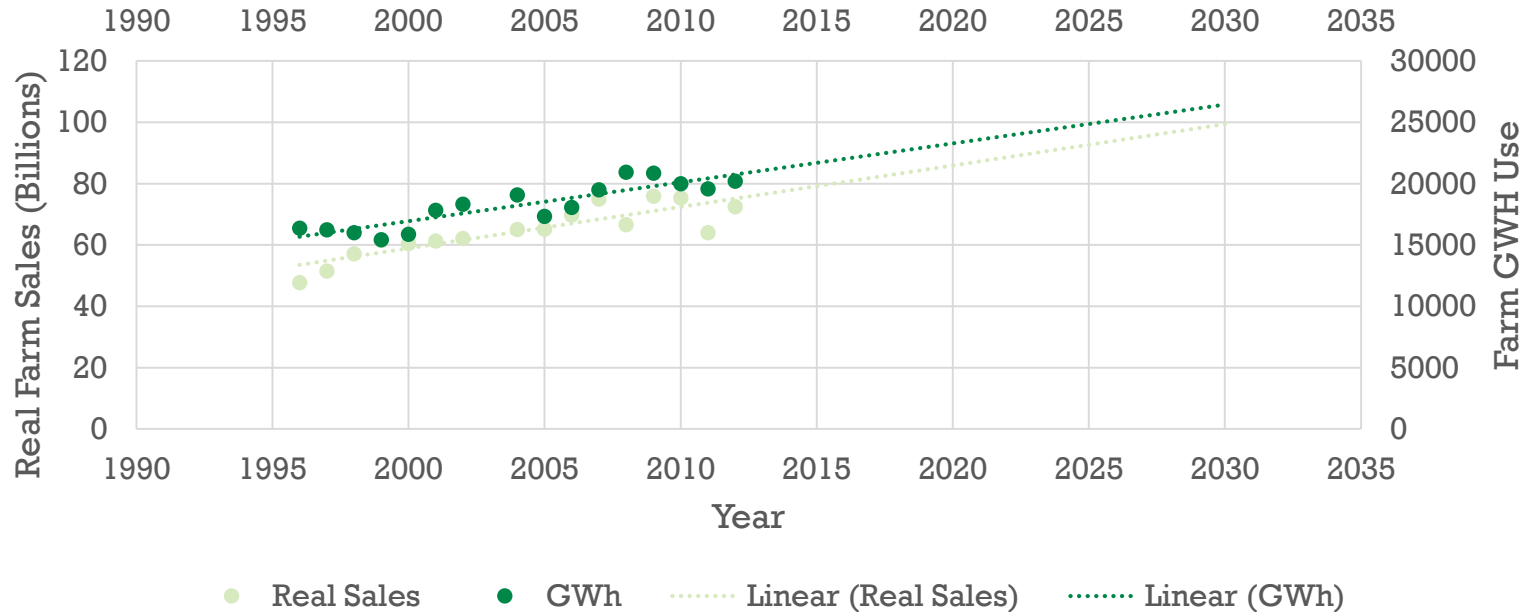
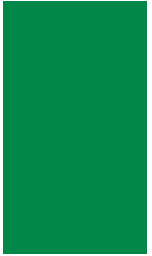


	Rate-2012	Rate-2024	Rate-2030	Rate Change	Mass-2012	Mass-2024	Mass-2030	Mass Change
South Dakota	2,229	1,400	1,167	-47.64%	3,184,962	4,045,000	3,539,481	11.13%
North Dakota	2,367	1,590	1,305	-44.87%	33,370,886	24,244,000	20,883,231	-37.42%
Minnesota	2,332	1,465	1,213	-47.98%	25,732,441	26,068,000	22,678,368	-11.87%
Wisconsin	2,515	1,413	1,176	-53.24%	37,938,966	32,025,000	27,986,988	-26.23%
Iowa	2,250	1,560	1,283	-42.98%	37,128,850	28,980,000	25,018,136	-32.62%
Missouri	2,388	1,545	1,272	-46.73%	75,879,841	64,169,000	55,462,884	-26.91%
Nebraska	2,353	1,579	1,296	-44.92%	26,894,699	21,194,000	18,272,738	-32.06%
Kansas	2,365	1,575	1,293	-45.33%	33,079,019	25,500,000	21,990,825	-33.52%

# Electricity Generation, Demand, Emissions, and Mass Emissions Goal (SD, ND, MN, NE, IA, MO, KS)



- Avg. Farm Electricity Use is 4 X Avg. Household
- Every \$2,700 in real farm income growth increases farm electricity consumption 1 MWh (SD, ND, MN, NE, IA, MO, KS, WI)



# State & Firm Managerial Dilemmas: Judgment in Best System of Emission Reduction



- Resistance and inaction- avoid compliance costs (EPA dictates)
- Coercion Policies, Selective Incentives
- **Incentivize Entrepreneurship for BSER**



## Smart Grid:

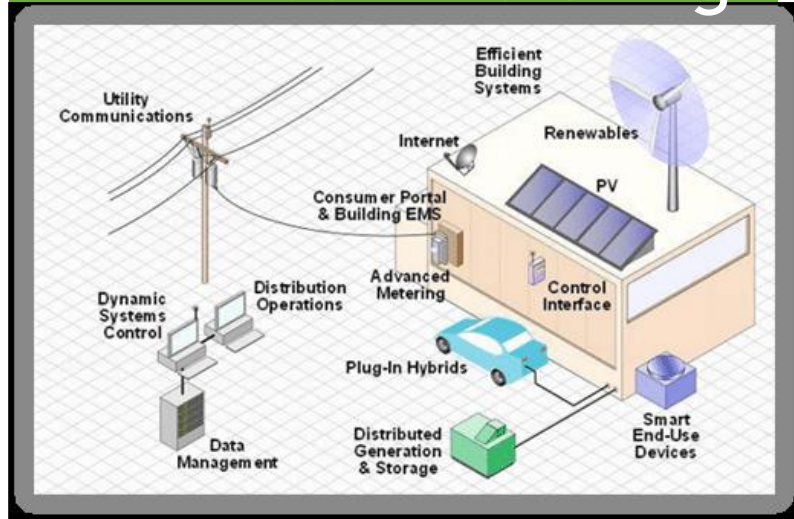
Electric Consumers **Passive** to **Active** Participants

**Centralized Generation** to more **Decentralized Generation**

Portable Biomass  
Generator (150kwh)



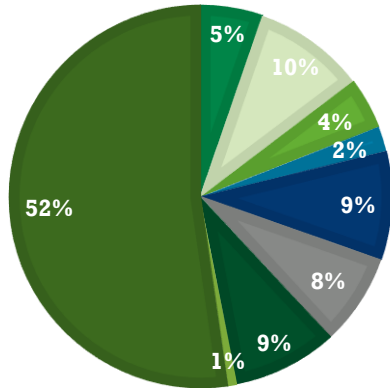
Smart Grid Concept  
Advanced Metering



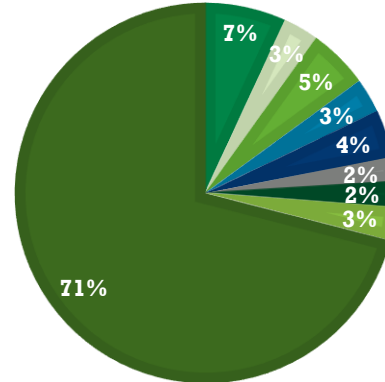
# U.S. Renewable Energy Technical Potential



## ONSHORE WIND (GWH)

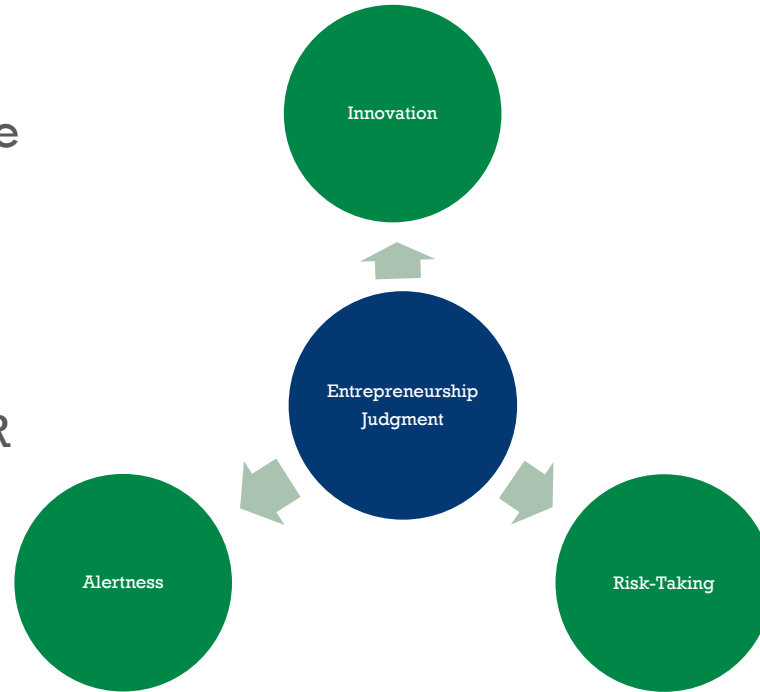


## BIOPOWER-SOLID (GWH)



# Entrepreneurship for BSER (Unknown Combination of Entrepreneurial Traits)

- **Innovation** (Schumpeter)
  - Value creation in Renewable Power Generation and Energy Efficiency
- **Alertness** (Kirzner)
  - Proactive to Capturing Selective Incentives to BSER
- **Risk-Taking** (Knight)
  - Uncertainty



# Competitive Advantage in Market for BSER

## ■ Sole, Corporate, or Collective Entrepreneurship?

	Sole	Corporate (intra-firm)	Collective (inter-firm)
<b>Innovation</b>	Strictly Dominated Disadvantage in Overcoming Transaction Costs to System Innovation	Weakly Dominated Constrained Network For System Innovation or Coordinated Technology Adoption Through New Organization	<b>Dominant Economize on Transaction Costs for System Innovation Through Markets: Social, Development, Political</b>
<b>Alertness</b>	<b>Dominant Acute Judgment and Efficiency in Being Proactive</b>	Weakly Dominated Managers/ CEO Proactive With Greater Control Through Fiat	Strictly Dominated Collective Decision-Making Costs/ Diversity in Judgments/ Dispersion of Control Rights to be Proactive/ Autonomy
<b>Risk- Taking</b>	Strictly Dominated: Bear all the risk	<b>Dominating when efficiency in risk-bearing is matched with loyal, motivated employees</b>	Weakly Dominated when there is Not Readily Transferrable or Excludable Risk-Bearing to Non-Entrepreneurial Members
<b>BSER</b>	Strictly Dominated	<b>Dominant</b>	Weakly Dominated

# The Cooperative Structures Changes to Enhance Collective Entrepreneurship

## Traditional Cooperatives Organizations is Not Entrepreneurial

- Lack innovation and new value creation
  - Supply existing, undersupplied good or service
- Risk-Bearing in Probable Environment (Knowledge of WTP)
- Alert to Market Failure from Monopoly/Monopsony, not innovative value creation

## New Generation Cooperatives can be Entrepreneurial

- Innovation and Value Creation from New Products or New Organizations that Coordinate Innovative Action
- Risk-Bearing In Uncertainty
- Alert to Opportunities, and Proactive to Capture Value

# Cooperative Leadership Changes to Enhance Collective Entrepreneurship



## Traditional Cooperatives Leaders are Not Entrepreneurial

- Governance and Management focus on cost savings, equity allocation/redemption, and expansion to provide known, undersupplied goods and services
- Risk Bearing- claims to allocated equity
- Alert to Market Failure from Monopoly/Monopsony

## New Cooperative Leaders can be Entrepreneurial

- Governance and Management Focus on Encouraging innovative products, organization, and future value streams
- Risk-Bearing of Firm Value and Future Rent Streams
- Alert to opportunities, and Proactive to Capture Value

# Research and Extension Efforts: Can Cooperative Action Sustain a Competitive Advantage for BSER?



1. Enhance Cooperative Entrepreneurship and Leadership To Sustain Competitive Advantage
  1. Changes Structurally
  2. Changes in Leadership (Alertness, Risk-Taking, and Innovation)
  3. Acute Judgment
2. Identify Collective Entrepreneurship Opportunities Because of a Changing Regulatory Environment
3. Provide Feasibility Research to Bring Greater Knowledge and Reduce Uncertainty