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Agricultural Outlook Forum

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ACCOUNTING SYSTEMS FOR ENVIRONMENTAL CREDIT TRADING

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ACCOUNTING SYSTEMS FOR ENVIRONMENTAL MARKETS

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Forum

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Environmental Market Basics

- Flexibility offered by market-based approaches offer opportunities to improve efficiency, spur innovation, and lower costs;
- There is no single market for environmental goods and services...
 - ...but rather a variety of distinct markets and potential markets
- Within regulated markets, the value of an action is not that it provides an environmental benefit...
 - ...But that it can provide an offset or allowance.



Types of Market Flexibility

- **“What” flexibility:** Equating the amount one pollutant to another so that decreases in one can offset increases of another.
- **“Where” flexibility:** Allowing one pollutant to be offset with benefits that occur elsewhere.
- **“Who” flexibility:** Allowing one entity to take actions that offset the actions of another.
- **“When” flexibility:** Allowing entities to bank reductions or offsets for future use; and allowing entities to borrow against future commitments or obligations.



Important considerations

- Is demand driven by a regulation?
- Who is the regulatory lead?
- Are markets local, regional, national, or global?
- Rules that define the “commodity”
- Is the “activity” under the cap or an offset?
- Status of implementation



Current and potential markets for environmental goods and services

- water quality
- air quality
- greenhouse gases
- wetlands
- endangered species



What are greenhouse gases?

- Carbon dioxide, Methane, Nitrous Oxide, synthetic chemicals (HFC, PFC, SF6)
- Agriculture is a source of methane and nitrous oxide emissions
- Agriculture and forestry can be either a source or a sink of carbon
- Attributes:
 - Well mixed in the atmosphere
 - Relative impacts can be compared (using a Global Warming Potential factor)



Underlying rule or regulation to address greenhouse gas emissions?

Greenhouse gas reductions in the U.S. are voluntary:

- Various systems are in operation or under development
 - **Federal:** Department of Energy 1605b Guidelines (under revision)
 - **State:** e.g. California Climate Registry
 - **Private:** e.g. Chicago Climate Exchange
- Industry can make voluntary commitments under federal climate programs
 - DOE Climate Vision
 - EPA Climate Leaders
- The Federal 1605b program will provide “registered reductions” to entities that meet reporting requirements



Drivers for voluntary environmental markets

- good corporate stewardship;
- public recognition;
- risk management;
- development of in-house experience and expertise in markets;
- efforts to demonstrate that regulation is not needed or could be delayed; and
- potential for early “credits” in advance of a potential regulation.



Features of the Revised DOE 1605(b) Voluntary Greenhouse Gas Reporting System

- Overall quality of reported information will improve
 - Consistent inventory methods. Inventory method rating system to determine eligibility for registration
 - Requirements in order to “register reductions”
- Large entities (emissions over 10,000 tons CO₂/yr) must report annual entity-wide inventories to be eligible to register reductions
- Small entities (emissions less than 10,000 tons CO₂/yr) can register reductions from specific activities
- Aggregators can report emissions and reductions of other entities



Mechanism to Quantify the Environmental Good/Service: DOE 1605(b) Guidelines

1605b will provide:

- Inventory methods for agriculture sources
 - Enteric fermentation
 - Animal waste
 - Rice cultivation
 - Crop residue burning
 - Nutrient and lime applications
- Inventory methods for agricultural soil carbon sequestration
 - COMET model – produces default sequestration rates
 - Protocols for periodic sampling
- Inventory methods for forest and wood products carbon stocks and fluxes
 - Default tables by region, species, management intensity, productivity class
 - Measurement and sampling protocols
 - Guidance on the use of models
 - COLE model – produces default forest carbon sequestration rates
- Methods for estimating reductions from carbon sequestration



Simple emission factor methods

CO₂ emissions from gasoline combustion

Emissions = **gallons** * 19.84 lbs CO₂ emissions/gallon

N₂O emissions from fertilizer

Direct:

- Emissions = **N applied** * fraction (d) * 0.02

Indirect:

- Volatilization = **N applied** * fraction (v) * 0.016
- Runoff/leach = **N applied** * fraction (r) * 0.04



Simple Modeling Tools: COMET – soil carbon

Inputs needed:

- **Location**
 - **State and County**
- **Parcel Information**
- **Soils Information**
 - **Soil Texture/Hydric Condition**
- **Management History (crop rotations, tillage systems or grazing systems)**
 - **Pre 1970's**
 - **1970's-1990's**
 - **Base: 1990's-Current**
 - **Reporting Period: Current + 10 years**

Output: Tons of carbon per acre



Status of Implementation of 1605b

March'
05

Release draft technical guidelines through FRN

Public review of proposed revised guidelines

--DOE public workshop

--USDA public workshop on agriculture and forestry guidelines

Response to public comments

Release of revised 1605(b) guidelines

New forms and instructions

June
06'



Concluding points

- Greenhouse gases have several attributes that favor the application of flexible markets.
- Demand for greenhouse gas reductions are driven by voluntary commitments.
- Current accounting systems for greenhouse gas reporting vary significantly in quality.
- Increasing standardization can improve confidence and reduce transaction costs.