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# An Introduction to Markets for Ecosystem Services

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# An Introduction to Markets for Ecosystem Services

*(Carbon Offsets)*

Jack Schieffer

# Recent Policy Actions

Markets for ecosystem services (carbon markets, in particular) weigh heavily in policy debates.

- Food, Conservation, and Energy Act of 2008 (Farm Bill)
- Currently proposed American Clean Energy and Security Act (Waxman-Markey bill; H.R. 2454)
- Upcoming UN Climate Change Conference in Copenhagen, December 2009

# Carbon Markets in the Farm Bill

## Section 2709:

- *The Secretary shall establish technical guidelines that outline science-based methods to measure the environmental services benefits from conservation and land management activities in order to facilitate the participation of farmers, ranchers, and forest landowners in emerging environmental services markets. The Secretary shall give priority to the establishment of guidelines related to farmer, rancher, and forest landowner participation in carbon markets.*

# Impacts on Agriculture

Ecosystem service markets will likely affect agricultural producers in a significant way.

- Provide incentives for conservation practices
- Offer new sources of revenue from land ownership
- Similar in some respects to other voluntary programs, such as CRP

# What Are Ecosystem Services?

Ecosystem services are benefits that nature provides to people “for free.”

- Wildlife habitat
- Carbon sequestration
- Many others



Warning! Econo-jargon ahead!

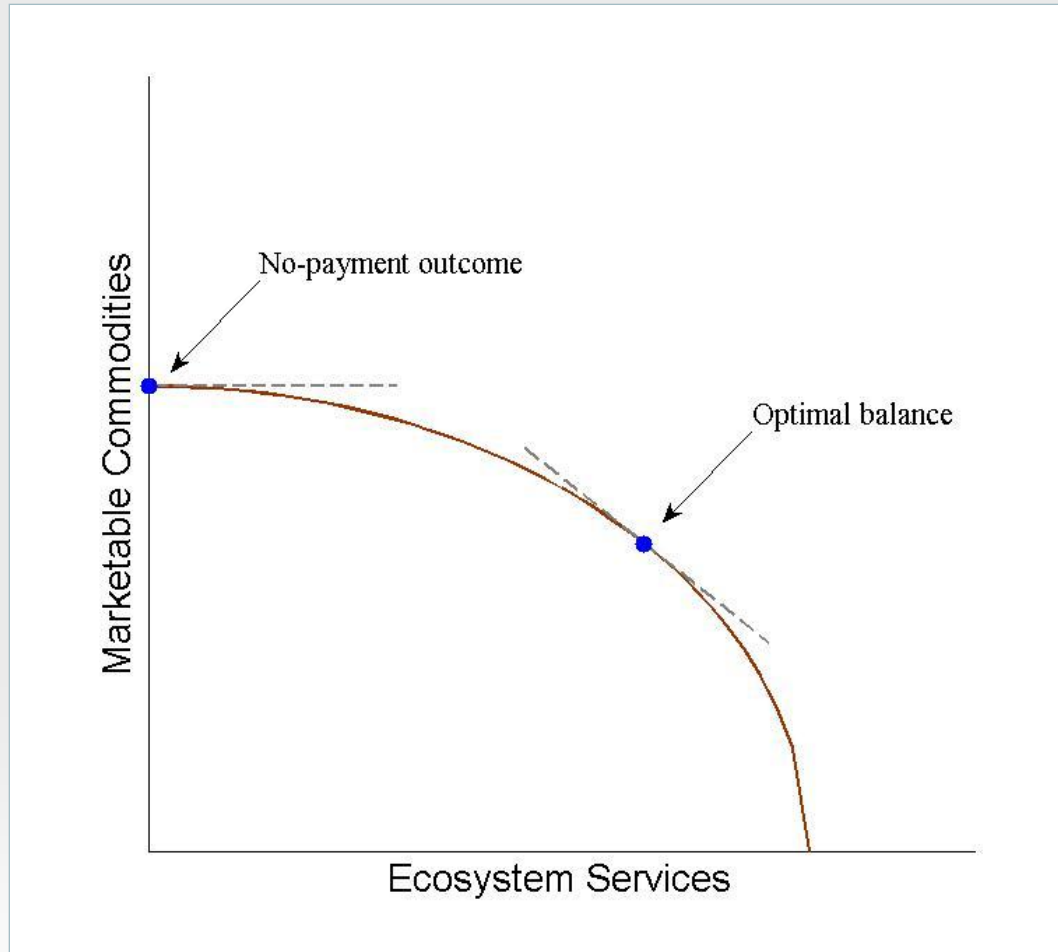
# Public Goods

Ecosystem services fall into a category known as *public goods*.

- Non-excludable
- Free-riding problem
- In the hands of private producers, public goods are generally under-provided



# Tradeoffs Among Land Uses



# How Do These Markets Work?

Markets for ecosystem services require two elements.

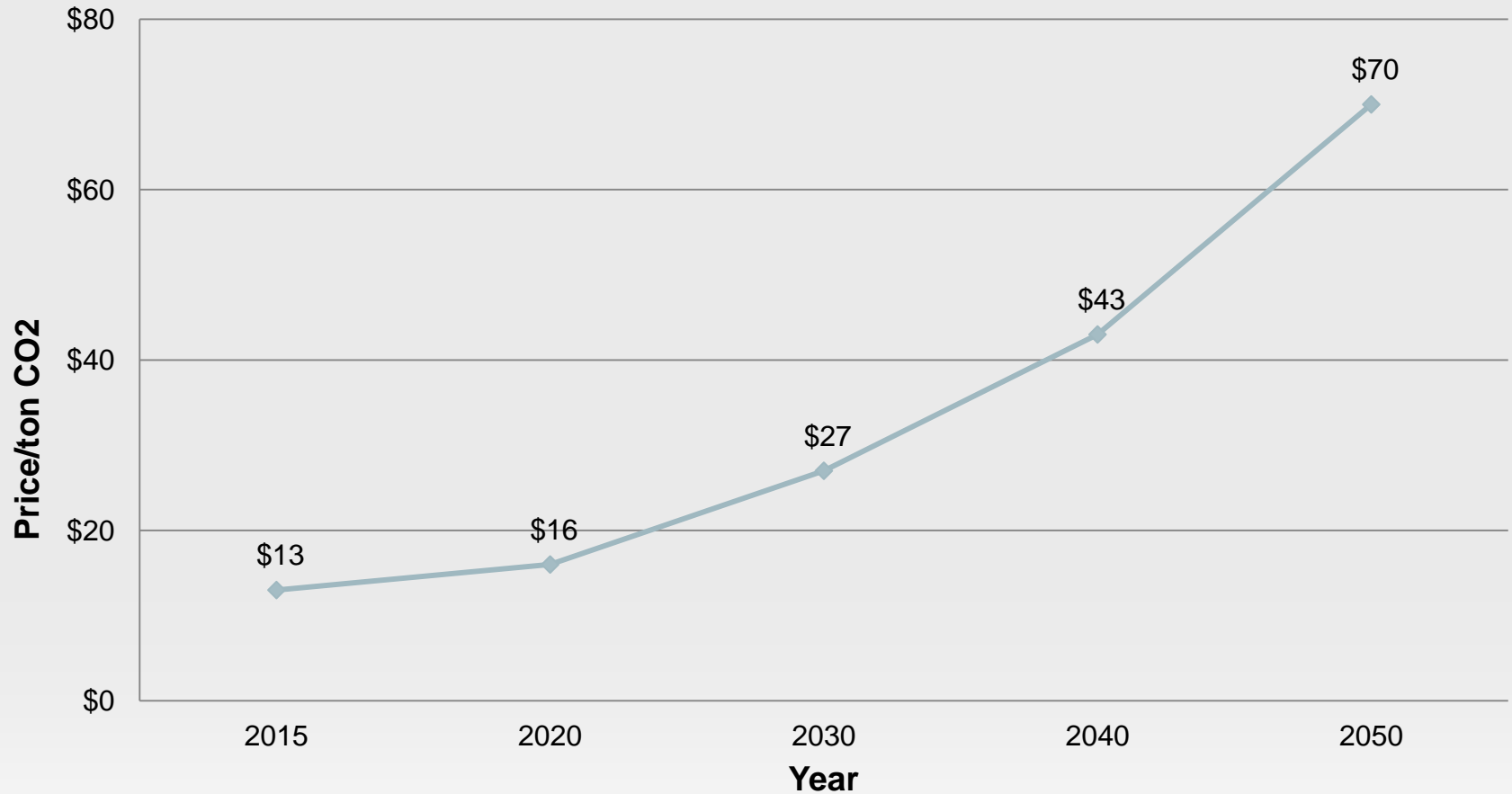
- A demand for the services
- A mechanism to enforce payment

# Carbon Sequestration Demand

A cap-and-trade program (e.g. Waxman-Markey bill) creates a demand for carbon sequestration in agriculture.

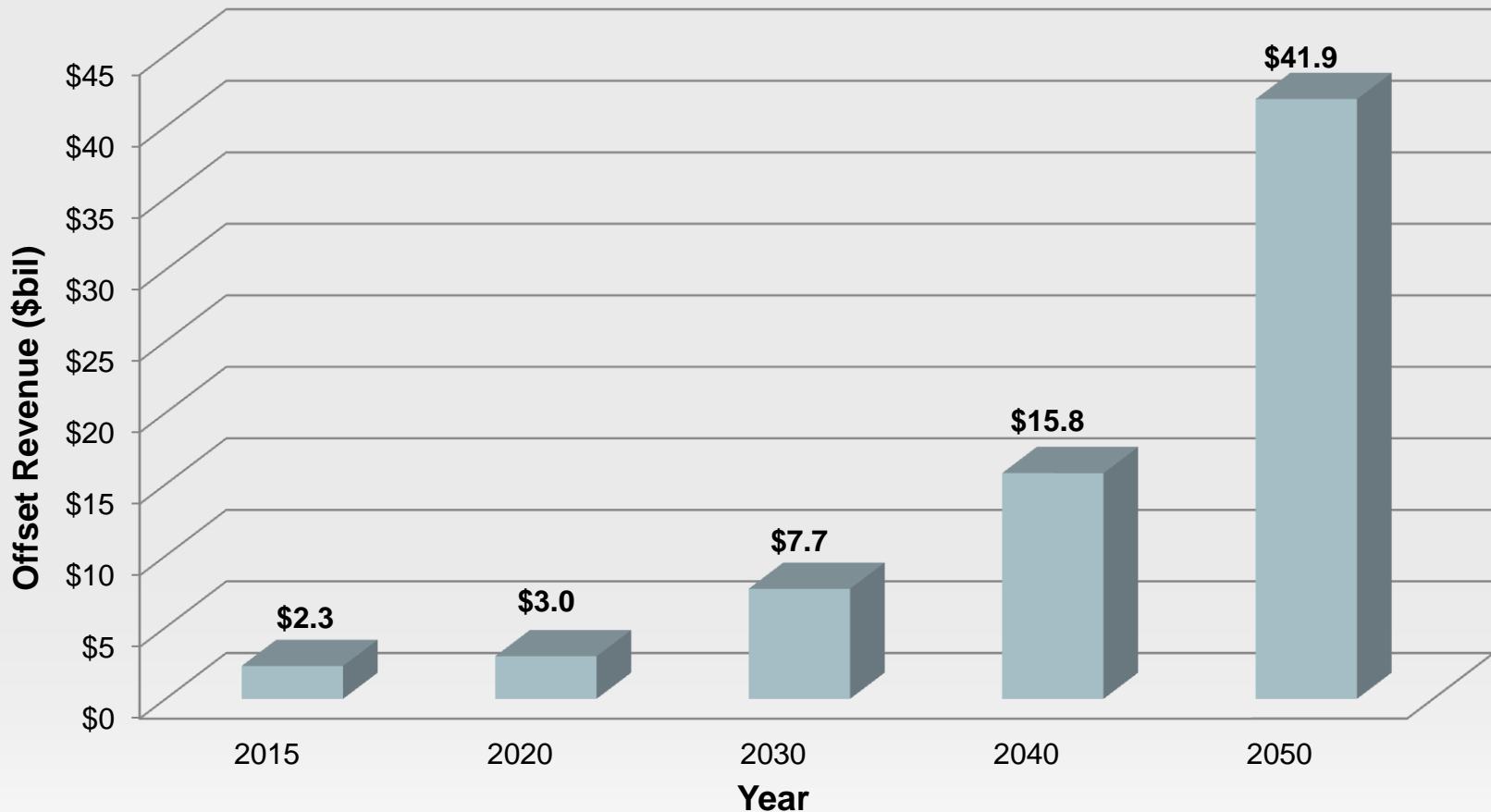
- Capped firms (i.e. industry) require permits to emit carbon
- Uncapped firms (i.e. agriculture) can implement measures and receive offsets (permits) to sell to the capped firms

# Projected Allowance Prices



Source: US EPA, June 2009, *EPA Analysis of the American Clean Energy and Security Act of 2009 HR 2454 in the 111th Congress.*

# Domestic Offset Market



Source: US EPA, June 2009, *EPA Analysis of the American Clean Energy and Security Act of 2009 HR 2454 in the 111th Congress.*

# Potential for Carbon Sequestration

Type of Project	Sequestration/Reduction Potential (Tons per year)
No-till soil management	0.5 - 0.75 per acre
Conservation/riparian buffer strips	1.5 - 6.5 per acre
Afforestation	0.25 - 0.75 per acre
Livestock methane reduction	5 per cow

Source: US EPA, 2006, *Representative Carbon Sequestration Rates and Saturation Periods for Key Agricultural and Forestry Practices*.

Thank You!