

Cap and Trade Basics and National GHG Emissions Trading

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Oct. 7, 2009

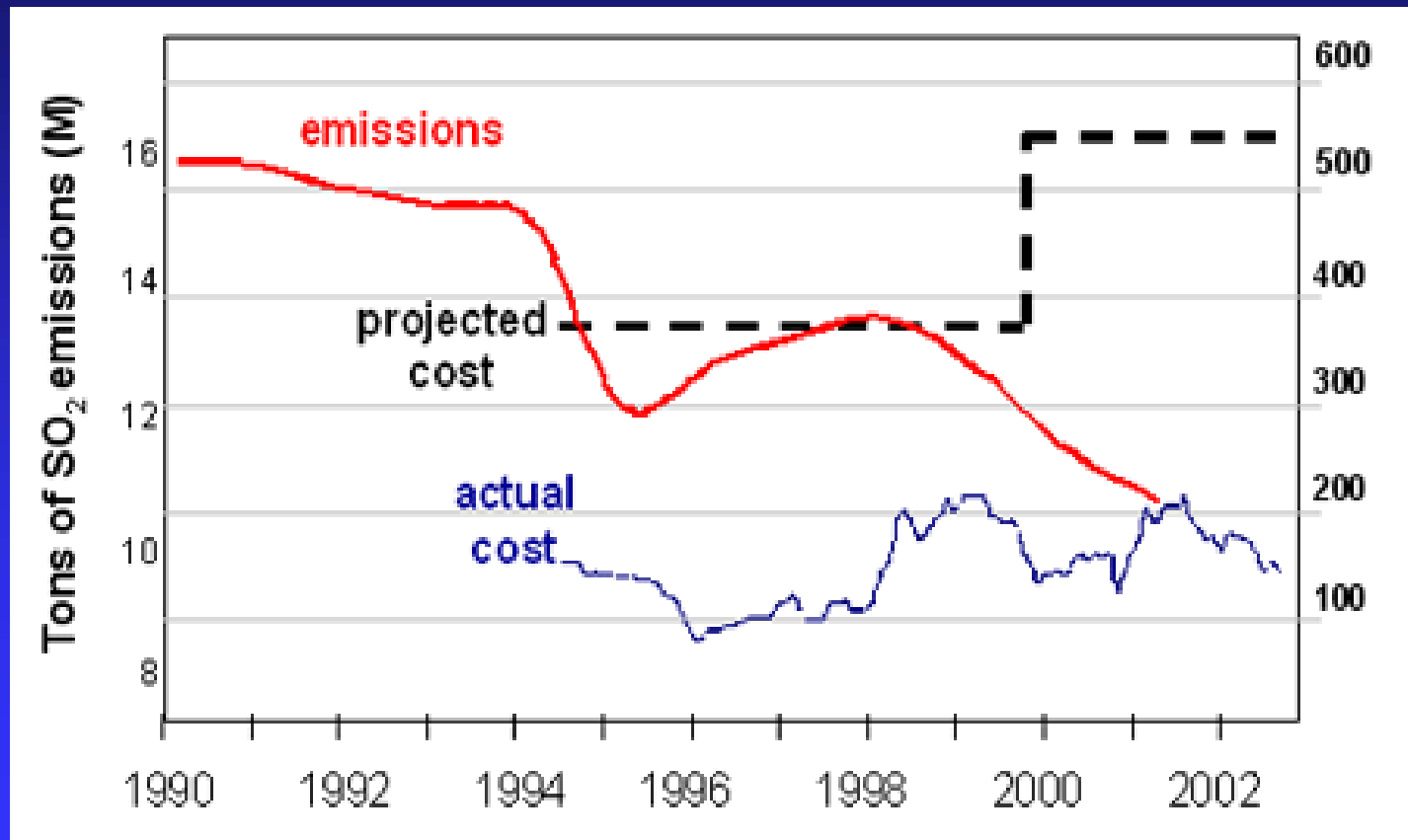


Outline of Presentation

- What is cap and trade
- Example: SO₂ trading program
- Key elements of cap and trade
- Offsets in cap & trade model
- How GHG trading might work
 - ◆ WCI
 - ◆ Waxman-Markey
- Cap & Trade vs. tax

- Admin. Jackson says it's "open legal question" if EPA has authority to establish cap and trade unless Congress provides new regulatory tool as it did for Acid Rain Program's SO₂ trading (1990 Clean Air Act Amendments)
 - ◆ Recent court rulings struck down EPA-administered Clean Air Interstate Rule (regional cap and trade program for SO₂ and NO_x)
 - ◆ Acid Rain Program's SO₂ trading system was authorized in 1990 CAAA

SO₂ Trading – EPA's Success Story



Cap and Trade: Simple Example

- **Current Total emissions = 100 tons**
 - ◆ Plant A emits 50 tons
 - ◆ Plant B emits 50 tons
- **New limit: Total emissions cannot exceed 50 tons**
 - ◆ Plant A limit = 25 tons → *allocated 25 allowances*
 - ◆ Plant B limit = 25 tons → *allocated 25 allowances*
- **Plant A is able to reduce more cheaply (\$10/ton) than Plant B (\$30/ton)**
- **Plant A reduces to 5 tons & sells 20 tons of its “extra” reduction to Plant B**
 - ◆ *Plant A sells 20 allowances to Plant B*

Cap and Trade Example: Results

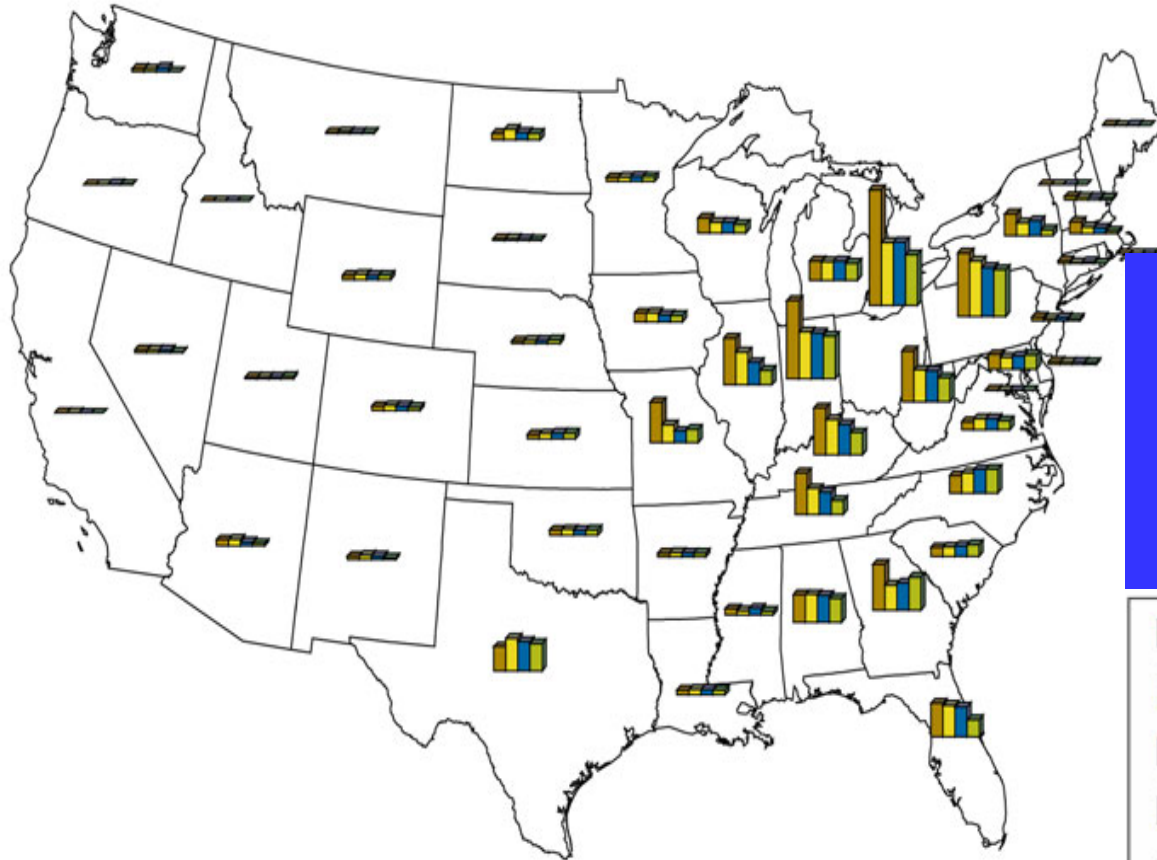
■ Total emissions reduced to 50 tons

- ◆ Plant A emits 5 tons (reduces 45 tons)
*uses 5 allowances to cover its emissions
(5 of the 25 allocated, sold remaining 20)*
- ◆ Plant B emits 45 tons (reduces 5 tons)
*uses 45 allowances to cover its emissions
(25 allocated + 20 purchased)*

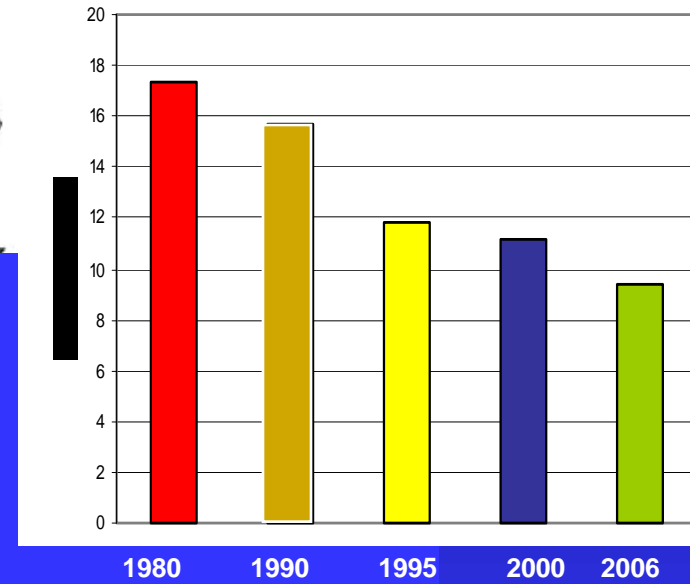
■ Economy is better off:

- ◆ Plant A makes $\$10/\text{ton} \times 20 \text{ tons} = \200
- ◆ Plant B saves $\$30 - \$10/\text{ton} \times 20 \text{ tons} = \400

Results: Reduced SO₂ Emissions



National Power Plant Emissions of SO₂



- SO₂ Emissions in 1990
- SO₂ Emissions in 1995
- SO₂ Emissions in 2000
- SO₂ Emissions in 2006

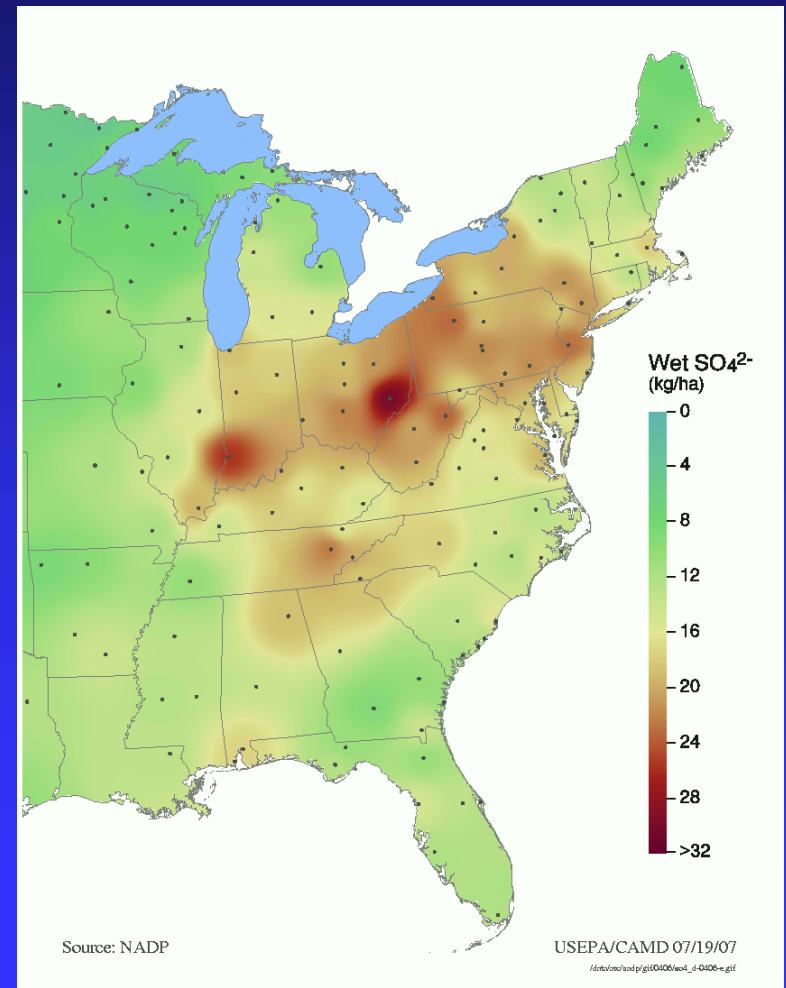
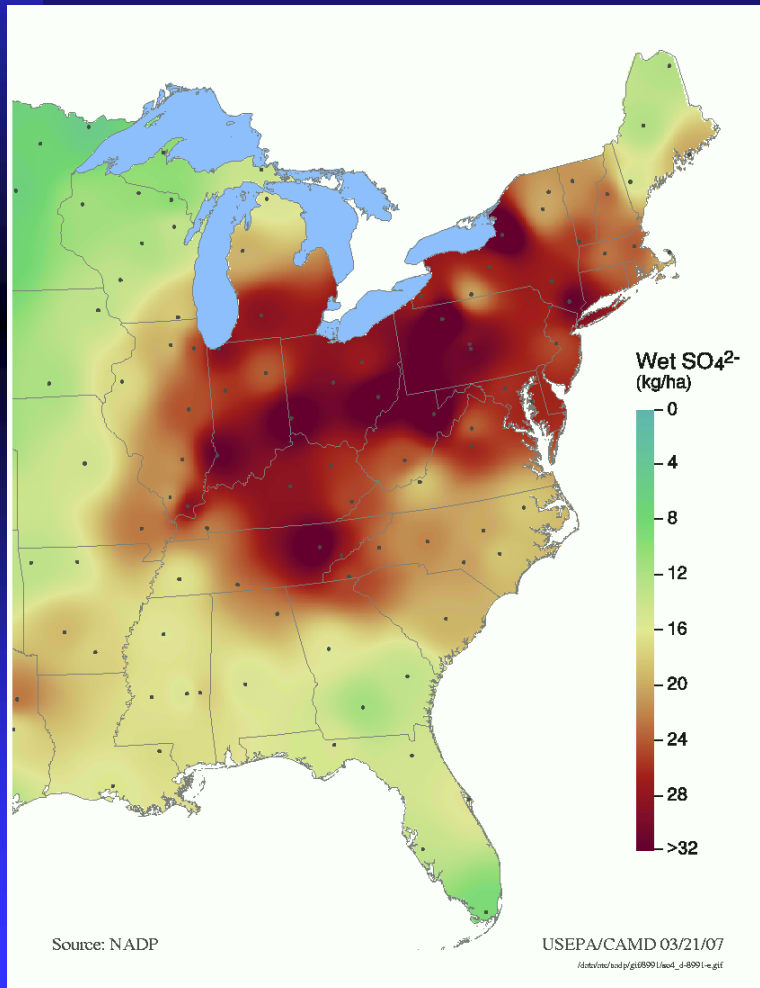
Scale: Largest bar equals
2.2 million tons of SO₂
emissions in Ohio, 1990

Results: Reduced Acid Rain Levels

Annual Mean Wet Sulfate Deposition

1989-1991

2004-2006



Acid Rain Program SO₂ Trading

– Key Features of “Cap and Trade” Approach

- All electric fossil-fuel fired utilities over 25 MW required to comply (in 48 states)
- Utilities existing before 1990 received allowance allocations; new utilities emitting SO₂ must buy allowances
- “Allowance” = authorization to emit one ton of sulfur dioxide in designated year or any year thereafter (“banking”)
- EPA allocated allowances to utilities based on desired performance rates, utilization levels

Acid Rain Program SO₂ Trading

— Key Features of “Cap and Trade” Approach

- Emissions limit automatically adjusts with each trade and not enforced until the end of the year
- Utilities continuously monitor emissions, report electronically to EPA
- At end of each year, utilities must hold enough allowances to cover emissions
- Steep automatic penalties for non-compliance reinforce using market to obtain allowances
- All utilities must also comply with health-based state or local limits for SO₂

What Makes Cap and Trade Successful

- Cap and trade is one of several regulatory approaches
 - ◆ Must be right tool for environmental problem
- Works best in situations where
 - ◆ Aggregate impact of emissions is principal concern
 - ◆ Costs differ across a range of options
 - ◆ Strong regulatory institutions and financial markets exist
- If properly designed and applied, cap and trade can
 - ◆ Be environmentally effective and administratively efficient
 - ◆ Reduce emissions quickly and cost-effectively
 - ◆ Promote innovation

What Makes Cap and Trade Successful

- Critical design features are:
 - ◆ Cap on emissions
 - ◆ sets environmental goal
 - ◆ Accountability
 - ◆ emissions monitoring, enforcement
 - ◆ Simplicity of design and operation
 - ◆ low transaction costs
 - ◆ low administrative costs
- Can work in concert with other regulatory approaches
 - ◆ Ambient air quality standards
 - ◆ Pollutant tax

Allowances in Cap & Trade Model

- Issued by government up-front as authorization to emit specified amount of pollutant (no one else can create an allowance).
- Government specifies which sectors and sources are covered by a cap.
- Allowances are only used by sources covered by the cap - must have enough allowances to cover emissions at end of compliance period.
- Total number of allowances equals quantity of pollutant set by the cap.
- Allowances can be traded any time - source does not need to reduce first.
- Allowance transactions do not need government scrutiny since cap is also enforced by emissions monitoring requirements.

Offsets in Cap & Trade Model

- “Offsets” are additional feature being considered in GHG cap & trade proposals
 - ◆ Congressional bills
 - ◆ Western Climate Initiative (regional trading program)
- Purpose of offsets is to offer cheaper reductions to sources under the cap
- Proposals cover GHG reductions or storing carbon (“sequestration”) from variety of sources:
 - Examples:*
 - ◆ new agriculture practices (“no-till”)
 - ◆ preserving forests and improving forest practices
 - ◆ capturing methane at small landfills.
- Geologic carbon sequestration is not an offset
 - ◆ A new carbon storage practice for coal-fired utilities still in development

What are Offsets?

- Only sources from specified sectors not under the cap can create offsets.
- Offsets are created on case-by-case basis - they do not exist until a source decides to reduce emissions and applies to the government for issuance of an offset (reduction credit).
- Once created & approved, offsets can then be sold to sources under the cap, and have same use as an allowance.
 - ◆ But cap program may limit number of offsets that can be used by sources under the cap.

How are Offsets Created?

- Amount of credit created is based on amount reduced from a baseline reading of emissions before the reduction.
 - ◆ **Baseline year and how baseline amount is measured or estimated are specified by the government in advance.**
- Reduction required to be above and beyond any regulatory requirement for that source (*“additionality”*)
- Ongoing monitoring required to verify reduction is still occurring
 - ◆ **Monitoring method should be specified by the government in advance.**
- Time and process for government review and approval are “transaction” costs - viewed as part of the cost of creating and selling an offset.

Brief Summary of Waxman-Markey

- **Title I: Clean Energy** - Establishes a combined efficiency and renewable electricity standard, promotes carbon sequestration, places performance standards on new coal-fired power plants
- **Title II: Energy Efficiency** - Supports state and local adoption of advanced building codes, supports state building retrofit programs, instructs states to submit goals for transportation-related GHG emissions reductions
- **Title III: Global Warming Pollution Reduction Program** - Establishes a cap-and-trade program covering multiple greenhouse gases (GHGs) and sectors, includes 2 billion tons of offsets.
- **Title IV: Transitioning to a Clean Energy Economy** – Provides rebates to eligible workers and facilities; establishes a National Climate Change Adaptation Strategy.
- **Title V: Agricultural and Forestry-Related Offsets** – Creates a separate offset program for domestic agricultural and forestry offsets, overseen by USDA.

Waxman-Markey Bill's Cap & Trade Provisions

- **Enforceable cap on 6 GHGs**, covering approx. 85 percent of US carbon emissions. HFCs have separate cap.
- **3 phases of reduction:**
 - ◆ 2012: 3% below 2005 levels for electric generating units and fuel refiners and importers; major industrial emitters in 2014, and natural gas local distribution companies in 2016.
 - ◆ 2020: 17 percent below 2005 levels.
 - ◆ 2030: 42 percent below 2005 levels
 - ◆ 2050: 80 percent below 2005 levels
- **Allowance Distribution:**
 - ◆ 85% of allowances given away to affected sources at outset, then decreasing over time
 - ◆ 15% sold at auction at outset, then more available for auction over time with revenue available for variety of sources, programs

Waxman-Markey Bill's Cap & Trade Provisions

■ Offsets:

- ◆ Allows offsets to cover up to 2 billion tons of total emission reductions each year under the cap
- ◆ Half of permitted offsets would be domestic, half international. If there are not enough offsets available on the U.S. market, then up to three-quarters could come from international sources
- ◆ EPA sets list of eligible offset projects based on input from new Offset Integrity Advisory Board; USDA would approve forestry and agriculture offset projects

■ Market Oversight:

- ◆ Federal Energy Regulatory Commission oversees cash market and Commodity Futures Trading Commission oversees any derivative markets.

⑩ Interaction with State & Regional trading programs

- ⑩ Puts them on hold 2012-2017 so that federal program can get started
- ⑩ Allowances distributed by California, RGGI, or WCI by 12/31/2011 can be exchanged for federally-issued allowances.

Proposed Senate Boxer-Kerry: Key Differences with House W-M

- Minor differences in emission reduction targets between Waxman Markey and the Senate Bill.
 - ◆ All the reduction targets are identical EXCEPT for year 2020. In Waxman Markey, the target level is 17% below 2005 level, weaker than the 20% in the Senate Bill.
- Use of offsets is limited to 2 billion tons annually in both bills, but Senate bill keeps international offsets to 1/4 of total unless not enough domestic offsets.
- How allowances will be distributed (auctioned or given to sources) not specified, unlike House bill.
- Both establish “Strategic Reserve” for allowances if price exceeds \$28/ton – differences are minor on when trigger price increases and by how much.

Proposed Senate Boxer-Kerry: Key Differences with House W-M

- The Senate Bill does not directly reference 'cap and trade', instead, labels the GHG trading provisions as a 'pollution reduction and investment' program.
- Market Oversight:
 - ◆ Design left to Senate Agriculture Committee, but FERC plays role in guarding against windfall profits from distribution of allowances (FERC & CFTC oversee markets in House bill)
 - ◆ New Office of Offsets Integrity will be housed in Dept. of Justice President establishes Offset Integrity Advisory Board (versus EPA in House bill)
- Unlike House bill (which exempts new GHG sources from New Source Review), Senate bill keeps EPA's New Source Review role.
- Contains language to create jobs for nuclear industry

Western Climate Initiative

- 7 U.S. States (CA, OR, WA, UT, AZ, NM, MT)
- 4 Canadian Provinces: BC, Manitoba, Ontario, Quebec
- Several observer states, provinces & Mexican states
- Goal: to reduce GHG emissions 15% by 2020 and additional reductions in future years
- Completed basic design recommendations Aug. 2008 – now working on setting caps for each partner to implement, offset credit recommendations, regional trading entity.
 - ◆ Ready to have states & provinces write rules to implement but in U.S. only CA has mandate from state Legislature

Western Climate Initiative

- Cap covers 6 GHGs and nearly 90% of emissions:
 - ◆ **First phase begins Jan. 1, 2012,**
 - ◆ Covers emissions from electricity, including imported electricity, industrial combustion at large sources, and industrial process emissions for which adequate measurement methods exist.
 - ◆ **Second phase begins in 2015,**
 - ◆ Adds transportation fuels (production & consumption) and residential, commercial and other industrial emissions
- Each State & Province receives share of overall cap, to allocate under own system
- Each Partner's Emission Reporting Rule should contain WCI's specified comment elements
 - ◆ Third-party verification required
 - ◆ Considering using The Climate Registry to manage emissions reporting data.

Cap & Trade Versus Pollutant Tax

Cap & Trade - Pro:

- **Certainty of achieving environmental goal (the cap)**
- Market provides price for reducing the pollutant = market incentive to provide reductions at lowest price
- Strong incentive for new technologies to reduce pollutant
- Incentive for sources to accurately measure emissions
- Low cost to administer once up & running

Cap & Trade - Con:

- Complex concept to understand, explain to others
- Negative connotation of “selling right to pollute”
- Potential for market manipulation

Tax - Pro:

- Certainty of price
- Easy concept to understand, explain to others
- Creates incentive to reduce emissions in variety of ways
- Lots of experience in administering and paying taxes
- No market needed to trade allowances

Tax - Con:

- **Difficult to set tax right the first time, with no certainty of achieving environmental goal**
- Difficult to adjust tax later
- Incentive to under-report emissions - stringent monitoring should be required
- Two agencies likely to be involved in administering tax - US Treasury and EPA