Carbon Caps and Efficiency Resources

Investing CO_2 Revenues to Lower Costs and Accelerate GHG Progress

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The Regulatory Assistance Project

RAP is a non-profit organization providing technical and policy assistance to government officials on energy and environmental issues. RAP is funded by several foundations, US DOE & EPA, and international agencies. We have worked in over 18 nations and more than 40 US states.

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He was Chair of the Vermont PSB , Chair of NARUC's Energy & Environment Committee, and of the National Council on Electricity Policy. Recent assignments include technical assistance to the UK's Dept of Energy and Climate Change, to the NARUC Task Force on Climate Policy, the Regional Greenhouse Gas Initiative, the New York ISO, the California PUC, and the US National Association of Clean Air Agencies.

Overview

- Carbon taxes/caps relying on price alone will be more expensive, less likely to succeed politically than a **portfolio-based policy menu (plus a cap);**
- **Carbon revenues are more powerful than carbon prices**. **Spending carbon revenue on efficiency** can accelerate cap/trade success & contain program costs;
- **Public policies** (EE, codes, portfolio mgt, RPS, etc.) are also crucial to success.
- **National governments and energy regulators should support those public policies**, as key elements in GHG designs.

Where will power sector reductions come from?

3 main possibilities:

- Reduce consumption
- Re-dispatch the existing fleet
- Lower the emission profile of new generation (including CCS and repowering)

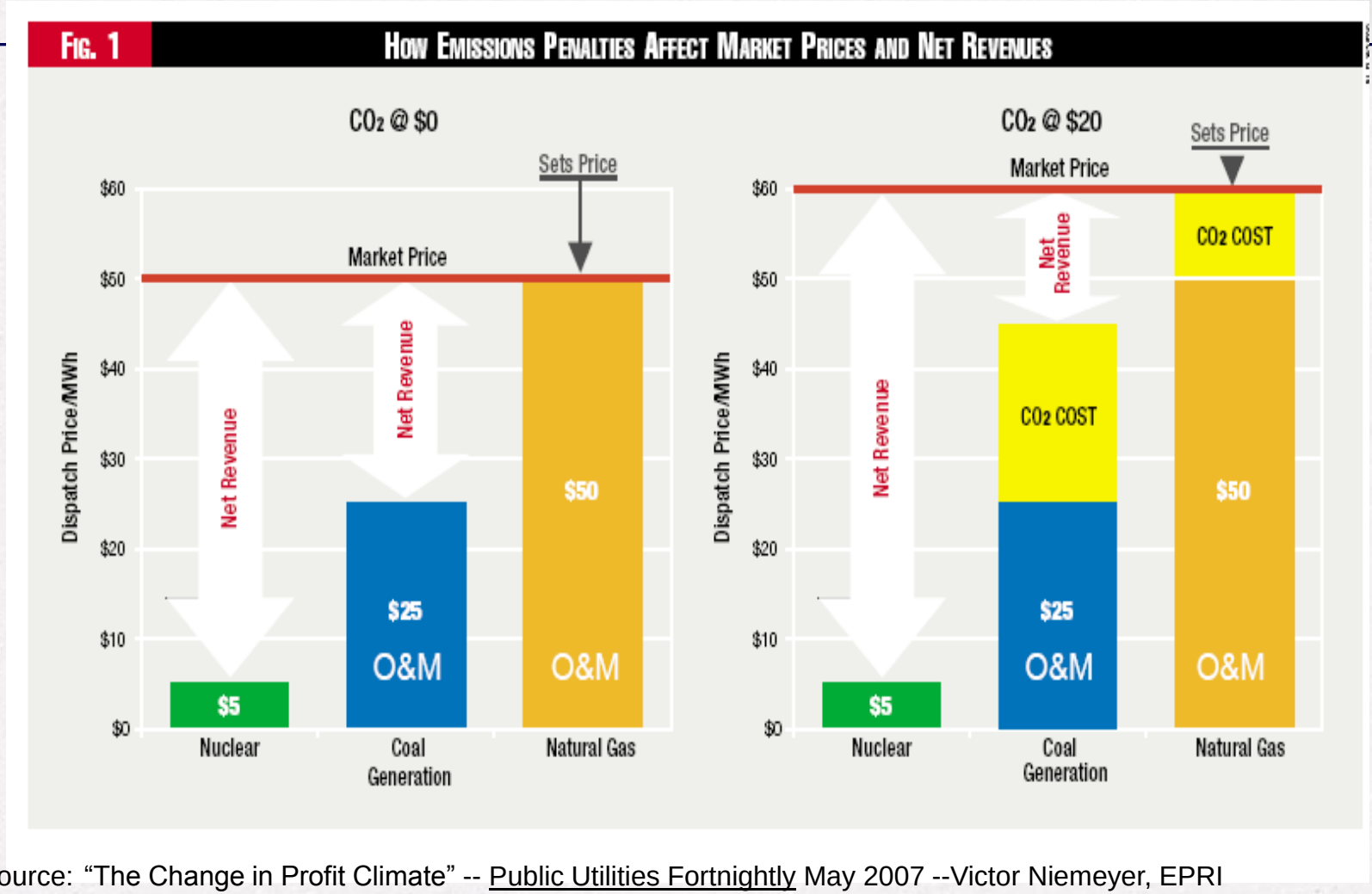
For each opportunity, ask:

1. **How many tons will it avoid?**
2. **How much will it cost consumers per ton ?**
3. **What tools – including what kind of carbon caps -- get the best results on #1 & #2 ?**

Why carbon taxes and auctions create “high cost tons”

- Carbon price must be quite high to save many tons (for gas to displace coal, etc.)
- Fossil units almost always set the clearing price, and thus long-term prices keyed to it.
- SO: Carbon penalty on fossil sellers raises wholesale power prices generally
- Inframarginal rent (a/k/a “windfall gains”) to generators is paid by consumers
- The actual **consumer cost per ton avoided** can be many times higher than the carbon price!

How Emission Charges Can Raise Prices Without Changing Dispatch or Emissions



Source: "The Change in Profit Climate" -- Public Utilities Fortnightly May 2007 --Victor Niemeyer, EPRI

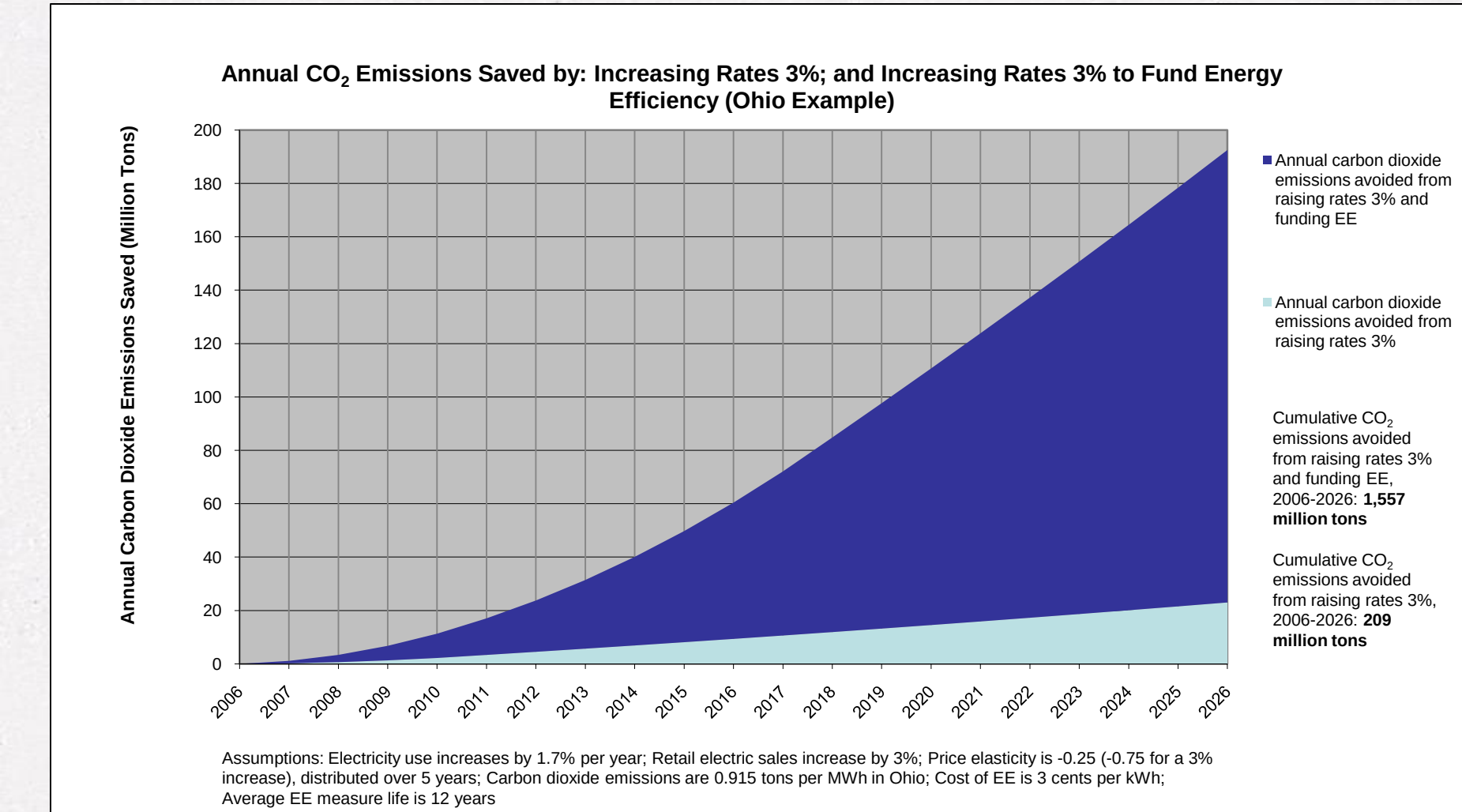
Will carbon prices alone drive new clean generation?

- How high must the carbon penalty be to drive replacement of coal/gas with wind/solar/CCS, on market prices alone?
  - Many analysts and project developers require sustained carbon prices over $50 -- for CCS $80 to $90/ton.
- Counter-example: With the RPS or FITs, consumers pay just for the incremental cost of new RE -- without also paying increased costs for the existing fleet of coal, gas, and nuclear.
- Conclusion: RPS/RO/FIT policies and direct support for CCS will remain needed, and will lower consumer costs, even with caps and trading.

Powerful cost-reduction idea -- Design GHG cap-and-trade for efficiency: The “Cap and Invest” strategy

- Allocate up to100% of initial credits to consumer trustees (eg, distribution utilities, housing retrofits and other EE programs). Generators need to purchase allowances, recycling much windfall revenue BACK to consumers
- Energy regulators/government supervise use of the money to benefit consumers
- **Best result: focus these $ on investments that lower carbon (EE, RE, and CCS)**
- Results: lower cost per ton avoided, lighter macro-economic impact >> quicker progress in reducing GHG emissions

Efficiency programs can save 7x more carbon per consumer $ than carbon taxes or prices



Assumptions: Electricity use increases by 1.7% per year; Retail electric sales increase by 3%; Price elasticity is -0.25 (-0.75 for a 3% increase), distributed over 5 years; Carbon dioxide emissions are 0.915 tons per MWh in Ohio; Cost of EE is 3 cents per kWh; Average EE measure life is 12 years

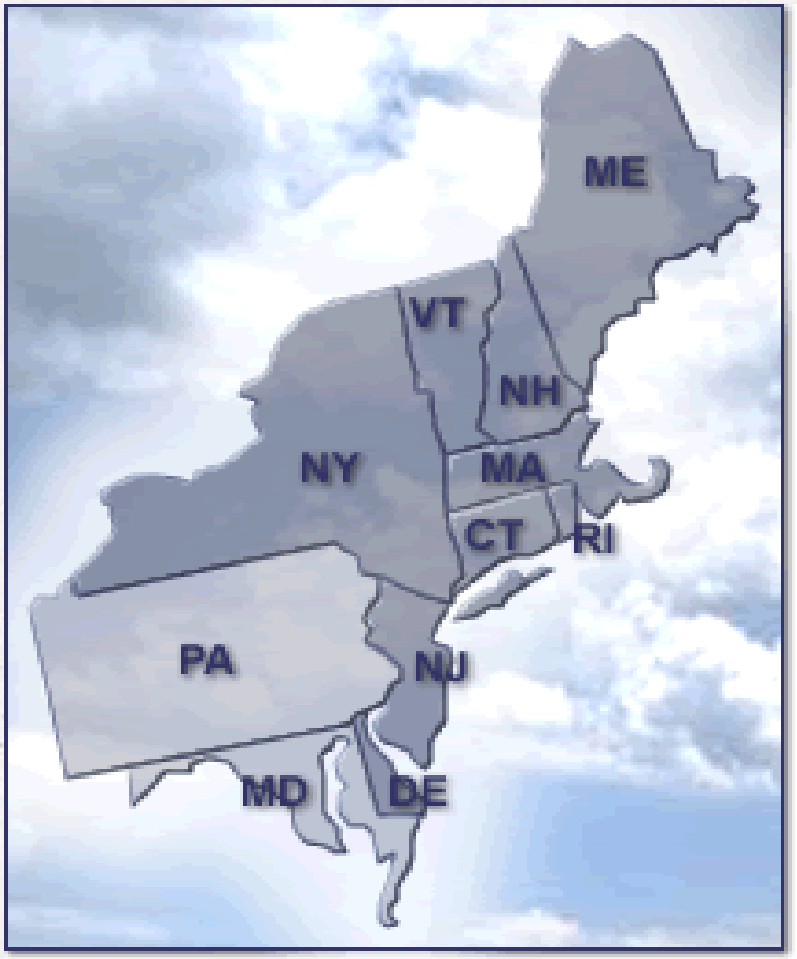
What happens if we double efficiency spending in RGGI?

Modeling* for RGGI found:

- Carbon credit prices drop 25%
- Need for new fossil capacity drops 33%
- Customer bills actually drop 5%(Industrial) to 12%(Residential)
- And – even greater EE investments (quite attainable) would yield greater savings

*IPM model runs by ICF Consulting using EE portfolios developed by ACEEE

Success Story on Revenue Recycling: The Regional Greenhouse Gas Initiative (RGGI)



- **Regional cap on power sector GHG emissions**
- **Cap, reduce GHGs by 10% by 2018**
- **RGGI: 10 Northeast states**
- **Population equal to Belgium, Sweden, Austria, Denmark, Switzerland, & Ireland**
- **State-by-state adoption of rules 2007+**
- **Launch 2009 – 5th auction held recently**

RGGI links cap-and-trade with end-use efficiency

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- **Cap and invest success in RGGI states**
  - All 10 RGGI states will auction allowances
  - 90% of allowances to be auctioned,
  - **~80% of proceeds will go for EE and clean energy resources = > 70% for efficiency**

**IPM model runs by ICF Consulting using EE portfolios developed by ACEEE*

Can We Create a Carbon Allocation for Efficiency in Europe ?

- **Goal:** Allocate a sizable pool of carbon allowances to utilities, LDCs, or efficiency agencies to promote end-use efficiency
- **US national proposal (in Waxman-Markey, similar ideas now pending in Senate)**
  - 10% of allowances to US states for public-run EE programs
  - 35% of allowances to LDCs for various purposes (EE permitted, not mandated)
  - ~10% of allowances to gas LDCs/ 1/3 must be spent on EE
- **CAN THIS BE DONE IN THE EU ?**
  - Could multiply effectiveness of carbon taxes and/or auctions
  - Requires action by individual Member States (as in RGGI)
  - Use utility system to avoid Treasury issues
  - What role should regulators play?

For more information…

- *"Carbon Caps and Efficiency Resources: How Climate Legislation Can Mobilize Efficiency and Lower the Cost of Greenhouse Gas Emission Reduction" (R Cowart, Vermont Law Review December 2008)*

- *"Who Slices the Pie in the Sky? What Role Should States Play in Allocating GHG Allowances and Distributing Carbon Auction Revenues?" (Issue brief for the National Association of Clean Air Agencies, January 2008)*

- *"Power System Carbon Caps: Portfolio-based Carbon Management" (NREL Carbon Analysis Forum November 2007)*

- *"Why Carbon Allocation Matters – Issues for Energy Regulators" (RGGI memo March 2005)*

All posted at www.raponline.org
Email questions to *rcowart@raponline.com*