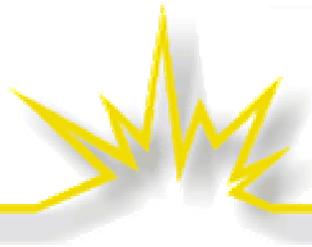


# Load-Side Cap-and-Trade for Power Sector Carbon Reduction

California PUC  
January 11, 2005  
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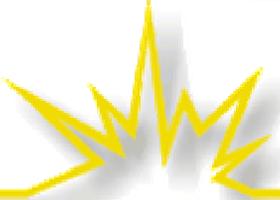


# What are we trying to achieve? key program goals

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- Lower cap, lower emissions
- Minimize power system costs
- A **real** cap: stop “leakage” due to uncapped coal-by-wire
- No discrimination against in-state resources
- Fluid carbon market, low transaction costs
- Support for expansion of the cap system

# To achieve these goals, CA needs



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- A “hard” cap, not an emissions rate
- Enhanced end-use efficiency to reduce power costs – and minimal generator windfalls
- Cap must cover imports
- Realistic number of regulated entities
- Tradable credits (“strong currency”);
- No extra benefits to sources to stay outside the system

*A cap-and-trade system focused on load-serving entities meets these needs.*



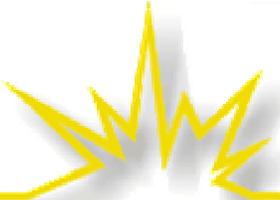
# Elements of a Load-Side System

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Basic rule: LSEs must have credits to cover the emissions associated with their sales to retail customers

Steps:

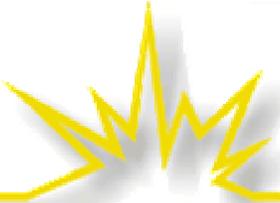
1. Measure historic emissions associated with electricity *serving the state* (or region) –
  - ❖ All sources, wherever located -- both in-state and imports
2. Set “hard” emissions caps to lower impact in stages
3. Distribute allowances (“carbon credits”) to LSEs
4. LSEs spend credits as needed to match their portfolio of sources
  - can sell excess credits resulting from RE & EE actions
5. Ongoing: tracking and enforcement systems



# Rationale for a load-side cap and trade system

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- Carbon is not like SO<sub>x</sub> and NO<sub>x</sub>
  - ❖ No “carbon scrubber”
  - ❖ The most effective solutions are efficiency and the portfolio decisions of power *buyers*
- Logical extension of CA’s portfolio management approach to power supply and risk management
- Meshes nicely with carbon risk adder in PM docket
- LSEs – small number, already regulated



# Rationale for a load-based system (con't)

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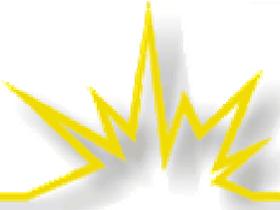
- Combats leakage: states (and groups of states) can regulate all LSE *purchases*, but not out-of-region generation per se
- Aligns responsibility and opportunity –
  - ❖ Low-cost carbon management requires enhanced energy efficiency – LSEs can do this
  - ❖ Direct connection to LSE allows PUC to return savings to ratepayers
  - ❖ Load-side C & T avoids debate over generator windfalls
- Regardless of what the East does, the West needs a load-side system
- Why give **added** incentives to coal states to stay out of the system?



# Allocating credits to LSEs: On what basis?

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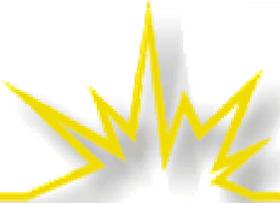
- (A) Historic ***emissions*** from sources serving load for each LSE
  - ❖ PRO: no LSE badly hurt
  - ❖ CON: rewards past pollution; weaker incentives to improve
- (B) Historic ***power sales*** of each LSE (imputing California's average tons per MWH)
  - ❖ PRO: rewards LSEs that have cleaner profiles
  - ❖ CON: creates bigger winners and losers
- (C) Compromise formulas are also possible



# Load-side system includes power imports

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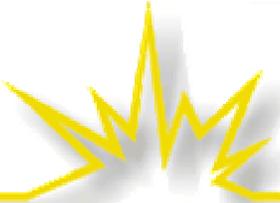
- Coal imports must be covered
  - ❖ Western geography, grid structure
  - ❖ Could easily swamp in-state reductions
  - ❖ Level playing field for power suppliers
  - ❖ Tends to bring other states into the system
- Legal authority? Yes
  - ❖ Neutral application -no discrimination against out-of-state power
  - ❖ Resource procurement precedents



# Dealing with imports (2)

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- How to **count** imports? Choices:
  - (1) Assign plant-specific emissions to each purchase
  - (2) To avoid “greenwashing” -- assign the average system emissions rate of the exporting system
  - (3) Mixed: default to system average or worse, except for specific cases CA wants to encourage, eg:
    - ◆ New renewables selling into the capped region
    - ◆ Long-term bilateral contracts
    - ◆ Long-standing hydro imports
- Can we track and tag imports? Yes
  - ❖ National experience with RPS and disclosure rules
  - ❖ Follow the money
  - ❖ WREGIS – like GIS, GATS in the East



# Effects on End-Use Efficiency

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- Theme: Generators don't do efficiency; LSEs have relationships with customers
- Economic theory: just raise the price of power
- DSM reality: **Programs** are needed to surmount market barriers to efficiency
- \$ spent through programs will deliver 5x the efficiency savings of \$ spent in higher prices
- Key point: A load-side system gives the full carbon value of reduced sales directly to the LSE (no fund-raising by a Carbon Trust is needed)

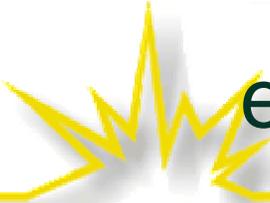


## Avoiding the “Generator Windfall” Problem

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Smokestack cap-and-trade raises a big debate:

- Generators argue that they should not have to pay for something they previously received for free.
- Consumer advocates see a big windfall to generators
  - ❖ Gen can charge consumers for using emission allowances, whether the allowances were received for free or at a cost.
  - ❖ Gen receives higher clearing prices
- *Load-side cap-and-trade resolves this debate by putting giving consumers the allowances*



# Is a load-side cap compatible with expansion of the C&T program? (Yes)

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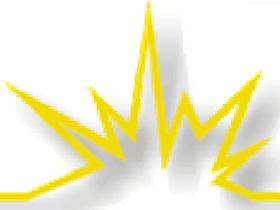
- Natural Gas – Load-based system for LDCs would also work well
- Other states: regional extension possible, even to a generation-based state system
- Trading with remote generation-based systems? (e.g., RGGI, EU)
  - ❖ Yes - Under a hard cap, “a ton is a ton.”
  - ❖ Such trades can be limited in scale
- What about other economic sectors:
  - ❖ Transaction costs for “downstream” caps would be greater in other sectors
  - ❖ BUT: Sector rules will be different anyway



# Legal Issues

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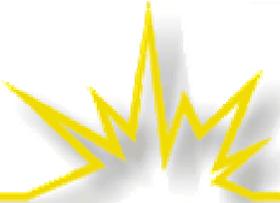
- Does CA have authority to regulate power imports? (yes)
  - ❖ Portfolio management precedents
  - ❖ No discrimination against out-of-state power
- Who should regulate LSE carbon content?
  - ❖ PUC role consistent with portfolio management practice, risk reduction policies
  - ❖ Coordination with environmental agencies needed?
- Should “choice” customers and public power be included?
  - ❖ In theory (Yes) – cap should apply to all power sales
  - ❖ For “choice” customers (Yes) - Load of *migrating* customers should be covered
  - ❖ For public power (Maybe) - So long as service territories are fixed, it’s still a hard cap even without public power



# Issues common to smokestack and load-side caps

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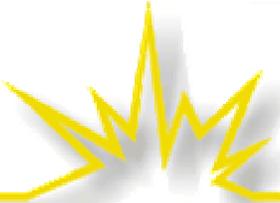
- **Safety valve carbon price** – triggers issuance of new allowances
  - ❖ Option: align with CA adopted carbon adder value?
- **Offsets & out-of-state trades**
  - ❖ Good news: EE and RE in CA generate “automatic offsets” for CA LSEs. Generation-based systems only give offsets for EE and RE located somewhere else (like Ohio or China).
  - ❖ CA could limit % permitted, (total or for any LSE)
  - ❖ Offsets raise many questions
- **Banking and Borrowing:** rules needed for LSEs, just as for generators



# What about updating?

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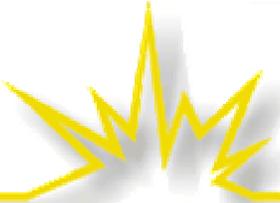
- “Updating”: amending the free allocation of credits to reflect more recent power purchases and sales data
- In a load-side, emissions-based allocation:
  - ❖ Updating lowers credits for LSEs that have lowered their **total emissions** & gives more to those who emit more
- In a load-side, MWH-based allocation:
  - ❖ Updating raises credits for LSEs that have improved their **average emission rates** (relative to other LSEs)
- SO: effects will vary with the system used



# What about “reverse leakage”?

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- “Reverse leakage”: export sale of new fossil generation from capped region to uncapped state
- Is this really a problem? (probably not)
  - ❖ CA is still capping all emissions serving CA load
  - ❖ Will CA site coal plants for export to AZ?
  - ❖ Compare average system mixes to see net effect
- One answer: C&T Rules could require export sellers to buy credits as a form of “reverse offset”



# For more information...

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*“Another Option for Power Sector Carbon Cap and Trade Systems – Allocating to Load”*

Richard Cowart, Regulatory Assistance Project  
May 2004 -- Concept Memo, Regional Greenhouse Gas Initiative (RGGI)

Posted at [www.raonline.org](http://www.raonline.org)

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