Public Meeting

Combined Heat and Power (CHP) and Cap-and-Trade

September 9, 2009
California Air Resources Board

Questions and Comments

- Questions/comments during the workshop can be sent to: ccworkshops@arb.ca.gov
- Written comments on concepts presented here are requested by October 2nd; please submit comments online:

  www.arb.ca.gov/cc/capandtrade/comments.htm

Cap-and-Trade and CHP

- Scoping Plan measure sets a target of an additional 4,000 MW of CHP capacity by 2020, resulting in an estimated 6.7 MMT in GHG emission reductions
- Scoping Plan projection of 2020 cap is 365 MMTCO_2e (29% reduction from 2020 business-as-usual emissions in capped sectors)
- CHP applications in various capped and un-capped sources

CHP Applications by Different Sectors

- **Industrial** - chemical, refining, pulp and paper, food processing, glass manufacturing
- **Institutional** - colleges and universities, hospitals, prisons, military bases
- **Commercial** - hotels, airports, large office buildings, nursing homes
- **Municipal** – wastewater treatment plants, K-12 schools, district energy systems
- **Residential** - multi-family housing, planned communities

Desired Outcomes for CHP in Cap-and-Trade Program Design

- Encourage new and replacement CHP to reduce statewide CO_2e emissions at facilities inside and outside the cap
- Establish criteria for cap compliance obligations for affected facilities
- Develop an allowance distribution methodology for affected facilities

How Cap-and-Trade Works

- State generates a limited number of allowances (permits to emit one metric ton of CO_2e) and monitors compliance
- Total number of allowances equal to the emissions limit for a particular compliance period (“cap”)
- Emissions cap declines over time

How Cap-and-Trade Works [2]

- Sources comply by holding enough allowances to cover their emissions
- Capped sources surrender allowances equal to their actual emissions at end of each compliance period
- Allowances can be
  - Freely allocated (technology benchmark or historical emissions) or auctioned (purchased)
  - Purchased, traded, or banked

How Cap-and-Trade Works [3]

- 2012-2014 (Narrow Scope)
  - In-State Electricity Generation Facilities (>25,000 MT CO_2e/year) and Imported Electricity
  - Large Stationary Source Facilities (>25,000 MT CO_2e/year)
- 2015-2020 (Broad Scope)
  - Adds ‘upstream’ treatment of fuel combustion where fuel enters into commerce covering
    - Small industrial and commercial fuel use (for facilities $\leq$ 25,000 MT CO_2e/year)
    - Residential and commercial fuel use
    - Transportation fuel use

ARB Mandatory Reporting Requirements for CHP

- ARB Mandatory Reporting Rule specifies methods to distribute emissions between thermal energy and electricity
  - Emissions associated with electricity generation use electricity sector requirements
  - Emissions associated with thermal energy production use industrial sector requirements
  - Include nameplate capacity, technology description, net electricity generation and useful thermal output

CHP in the Context of Cap-and-Trade

CHP could be in the cap as:

- A part of a larger facility that uses CHP for on-site industrial processes and electricity demand
- A separate facility that generates electricity and sells excess heat (e.g., for industrial processes)
- A separate facility that uses heat for industrial processes and sells excess power to the grid

What Might Constitute a Compliance Obligation for Facilities with CHP?

Option 1: Capped Facility with a CHP Unit

- Compliance obligation begins in 2012 for any facility that exceeds 25,000 $MTCO_2e$
- Facility reports its emissions per existing mandatory reporting regulation
- Facility holds allowances based on total emissions covered under the cap

Considerations

- “First deliverer” requirements may apply for electricity sold to the grid
- If a “first deliverer” approach applies, facility could pass along embedded allowance cost to the retail provider (“carbon adder”)

Considerations [2]

- Depending on distribution method, allowances for on-site stationary source electricity generation could be calculated differently from electricity sector allowances
  - Free allowances to electricity generation could be based on fuel type and generation; allowances to stationary source facility could be based on actual emissions, not necessarily the fact that CHP is displacing electricity from power plant
  - Benchmarking approaches may level the playing field

Considerations [3]

- CHP could reduce overall compliance obligation for a stationary source facility
  - More efficient production reduces demand for electricity from the grid

Option 2: Capped Facility with a CHP Unit

- Facility could be divided: utility owns CHP and delivers electricity to the grid; industrial facility uses waste heat for industrial process
- Facility is treated as two separate facilities
  - The CHP "facility" (that generates electricity) has compliance obligation as a "first deliverer"
  - Industrial "facility" has compliance obligation for industrial and process emissions (not emissions from the CHP unit)

Considerations

- Distribution of allowances could shift between electricity and industrial sectors
- May need to address many cases of multiple ownership within one facility
  - Rule could allow owners to decide who has compliance obligation
  - NAICs code (industrial classification system) might be used to “define” the electricity generator and the industrial facility type

Option 3: "But For" Facility

- Facility exceeds 25,000 $MTCO_2e$ only because it operates a CHP unit ("but for" facility)
  - Facility reports its emissions based on reporting requirements
  - Facility does not hold allowances
  - Natural gas provider is capped upstream and passes along allowance costs beginning in the 2nd compliance period

Considerations

- Eligible sources would be exempt from compliance obligation, but not from mandatory reporting
- Utilities would need to balance other portfolio investments
- Alternative approach could be to not exempt “but for” facilities, but consider set-asides or free allowances to cover CHP emissions

Possible Options for Allowance Distribution

- Mandatory Reporting methodologies for facilities with benchmarking
  - Separate electricity and thermal reference cases
  - Performance Standards for efficient CHP
- "Two Facility" Approach for dual thermal/electricity applications
- Set-asides for small and non-industrial applications
- Exemptions for small and non-industrial applications ("but for" facilities)

Questions for Today's Discussion

Discussion Topics [1]

- Should staff establish a “but for” CHP category for small industrial and commercial sources that would otherwise not exceed the threshold for capped sources?
- Who should hold allowances for facilities with multiple ownership?

Discussion Topics [2]

- What methods should ARB consider to distribute allowances for CHP emissions within a facility?
- What additional options should staff consider to incentivize the use of CHP by capped facilities?

-DISCUSSION SESSION-
Ideas/Suggestions/Comments

Webcast viewers can email comments or questions during this session to:

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Written Comments

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For More Information…

- ARB's Cap-and-Trade Web Site
  - http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm
- Submit/View comments on Cap-and-Trade Web Site
  - http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm
- To stay informed, sign up for the Cap-and-Trade listserv:
  - http://www.arb.ca.gov/listserv/listserv_ind.php?listname=captrade-ej
- Mandatory Reporting Web Page
  - http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-rep.htm
- Western Climate Initiative
  - http://www.westernclimateinitiative.org