Public Meeting

Cap Setting and Data Review: Establishing Surrender Obligation and Examining Historical GHG Data Trends

November 16, 2009

California Air Resources Board

Agenda

- Opening Remarks (15 minutes)
- Staff Presentation (45 minutes)
- Round-Table Discussion (2 hours)
- Other Issues (15 minutes)
- Adjourn

Timeframe for Cap-and-Trade Rulemaking

- **November 2009:** release preliminary draft regulation for public comment
- **Spring 2010:** release complete draft regulation for public comment
- **August 2010:** release staff report and draft regulation for formal 45 day review
- **October 2010:** Board consideration of regulation
- **Late 2011:** First auction of allowances
- **January 1, 2012:** Program formally launches

Today's Meeting

- Purpose:
  1. Discuss staff thinking on which emissions are covered in the cap-and-trade program
  2. Provide estimates of historical emissions for these covered sources
  3. Present example cap levels
- Stakeholders are asked to provide written comments on these topics to ARB by December 14th.
  (http://www.arb.ca.gov/cc/capandtrade/comments.htm)

Outline of Presentation

- Introduction and background
- Which emissions are covered by the cap?
- Examining emissions data trends
- What are appropriate California cap levels?
- Relationship between cap stringency offset limit
- What major outstanding factors might influence cap estimates?
- Current thinking on timeline for development of cap numbers

Important Definitions

- **Covered Entities** – Those that have a 'surrender obligation' for greenhouse gas emissions covered by the cap-and-trade program
- **Compliance Instruments** – Either an allowance or an offset credit
- **Surrender Obligation** – The quantity of compliance instruments a covered entity is responsible for submitting to match against a specified set of greenhouse gas emissions
- **Allowance budget** – Annual number of allowances associated with one year (when multiple budgets are summed across time referred to as 'the cap')
- **Cap** – The total amount of allowances to be issued in a given time period (sum of multiple budgets)

Covered Entities

- 2012-2014 (Narrow Scope)
  - In-State Electricity Generation Facilities and Imported Electricity
  - Large Stationary Sources
- 2015-2020 (Broad Scope)
  - Addition of 'upstream' treatment of fuel combustion where fuel enters into commerce covering:
    - Fuel use at small stationary sources (captures combustion at facilities < 25,000 MT CO_2e/year)
    - Residential and commercial fuel use
    - Transportation fuel use
- ARB is seeking additional comment on the possibility of accelerating the inclusion of upstream fuel deliverers to 2012

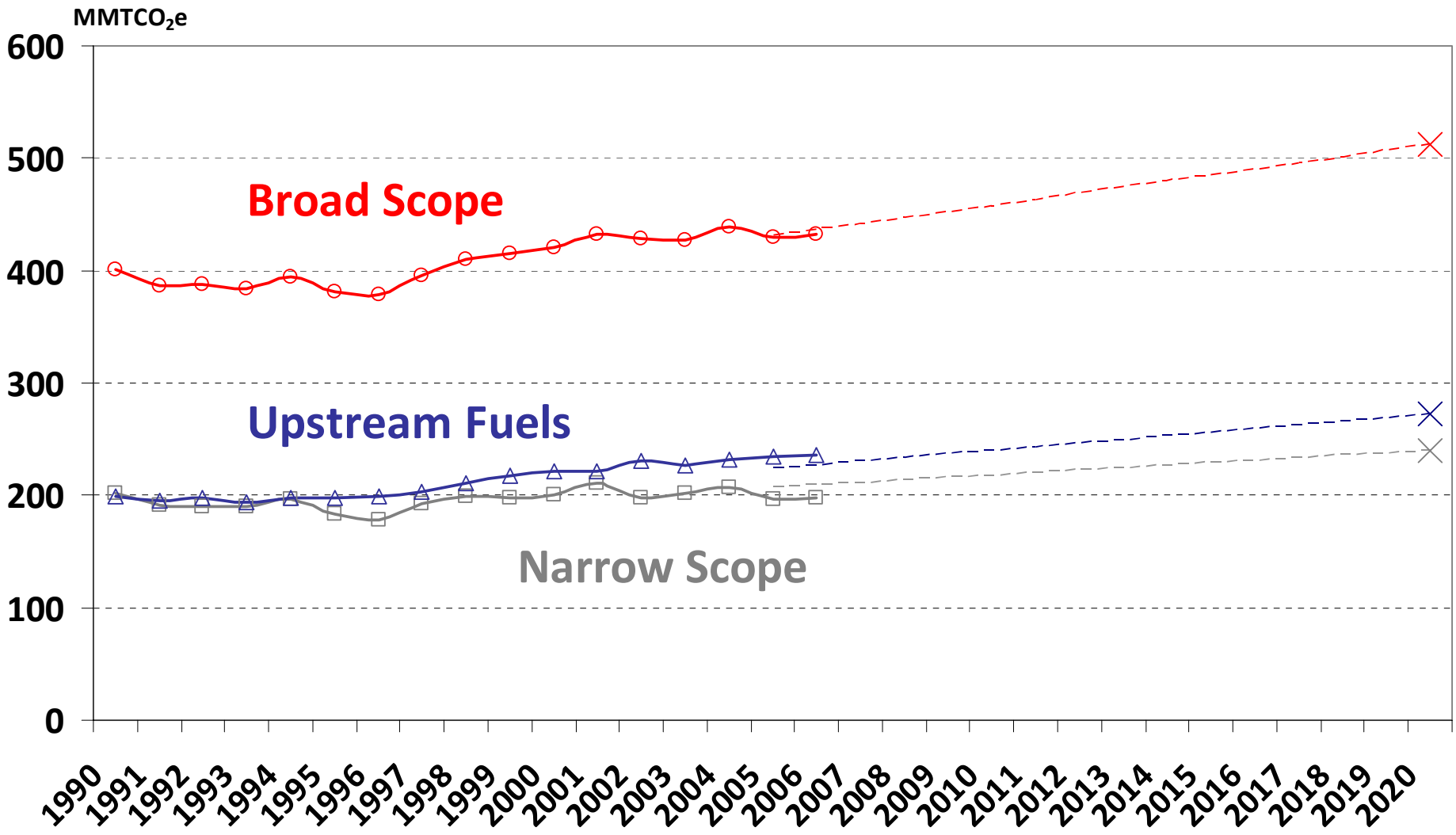
Establishing Surrender Obligation (1)

- What emissions count toward the surrender obligation for narrow-scope sources exceeding the threshold?
- Possible considerations:
  - Accuracy of specific reporting methodologies
  - Treatment of emissions from biomass combustion
  - Process emissions
  - Imported electricity
- Mandatory reporting regulations provide acceptable quantification methods:
  - Potentially add or exclude some quantification methods as part of C&T regulatory package
- Current staff thinking represented in ‘scope table’ handout

Establishing Surrender Obligation (2)

- What emissions count toward the surrender obligation for broad scope sources?
  - Still considering appropriate points of regulation for fuels
  - New reporting requirements will be developed for fuel deliverers as part of the C&T regulatory package
- Current status of staff thinking represented in ‘scope table’ handout
- Possible Considerations:
  - Approaches for calculating surrender obligation for transportation fuels
  - ‘Netting-out’ fuels sold by fuel deliverers to large point sources with direct surrender obligations

Historical GHG Emission Trends and Scoping Plan BAU Projections



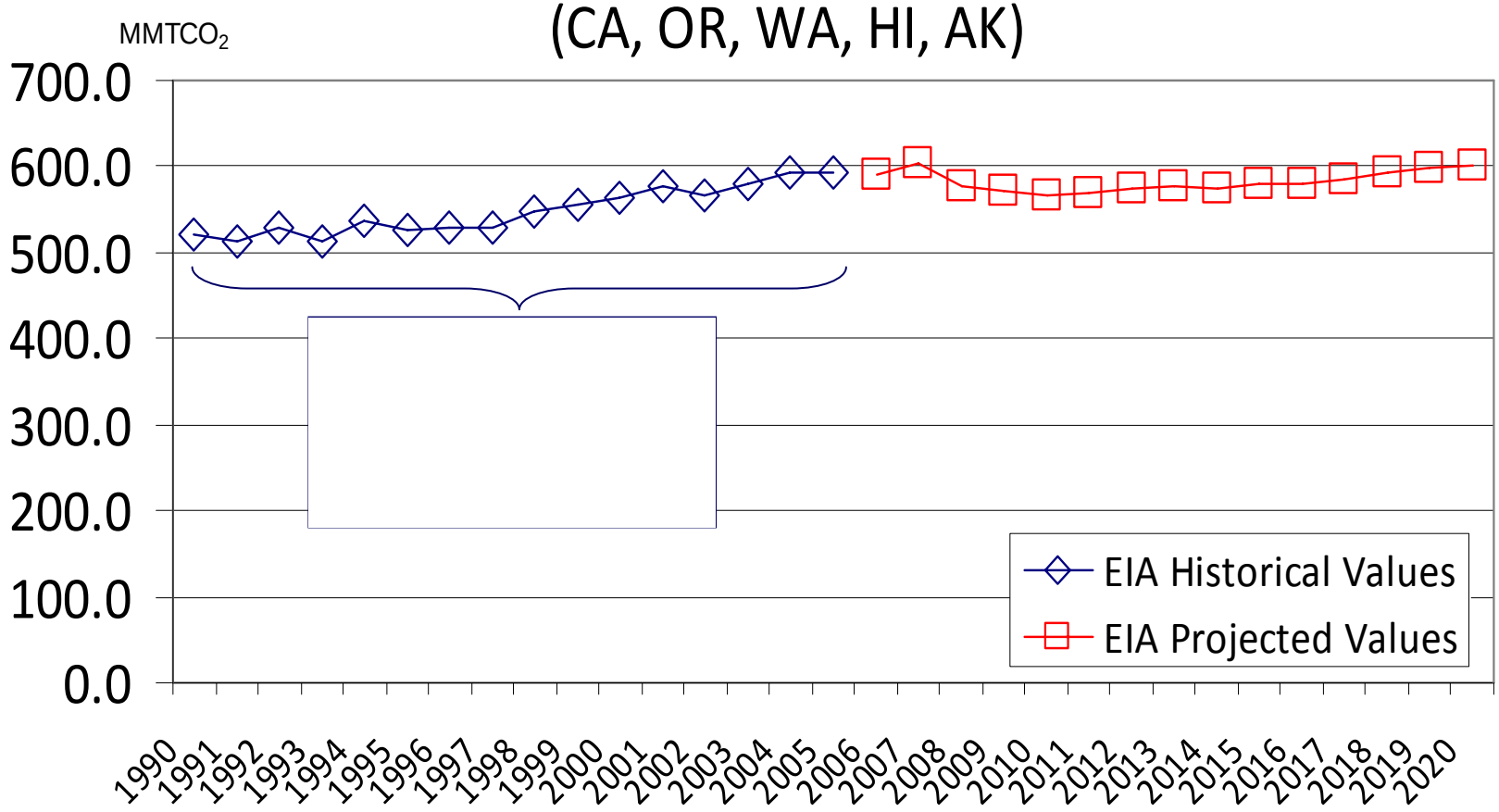
Sources: ARB Greenhouse Gas Inventory http://www.arb.ca.gov/cc/inventory/inventory.htm

ARB Scoping Plan (Appendix 1 pg. C-17) http://www.arb.ca.gov/cc/scopingplan/document/appendices_volume1.pdf

Revision of Emissions Projections

- Scoping Plan 'business-as-usual' emission estimates predated the current economic downturn
- ARB staff is revising projections in conjunction with WCI efforts
- Evaluating external sources of emission projections
  - For example, EIA projects GHG emissions for the Pacific region (see next slide)

Energy Information Administration Data on Total CO_2 Emissions for the Pacific Region (CA, OR, WA, HI, AK)



Sources: Energy Information Administration State Carbon Dioxide Emissions (October 2008)
http://www.eia.doe.gov/oiaf/1605/ggrpt/excel/tbl_statetotal.xls

Energy Information Administration Annual Energy Outlook 2009 (Updated Reference Case)

http://www.eia.doe.gov/oiaf/aeo/supplement/supref.html

Update on Western Climate Initiative Coordination

- WCI has contracted with Pechan to assist in projecting ‘best estimates’ of emissions for 2012 and 2015 for all jurisdictions.
  - Will be harmonized with ARB’s efforts
- ARB working as part of the WCI Cap Setting and Allowance Distribution Committee to develop more details of the cap-setting method.

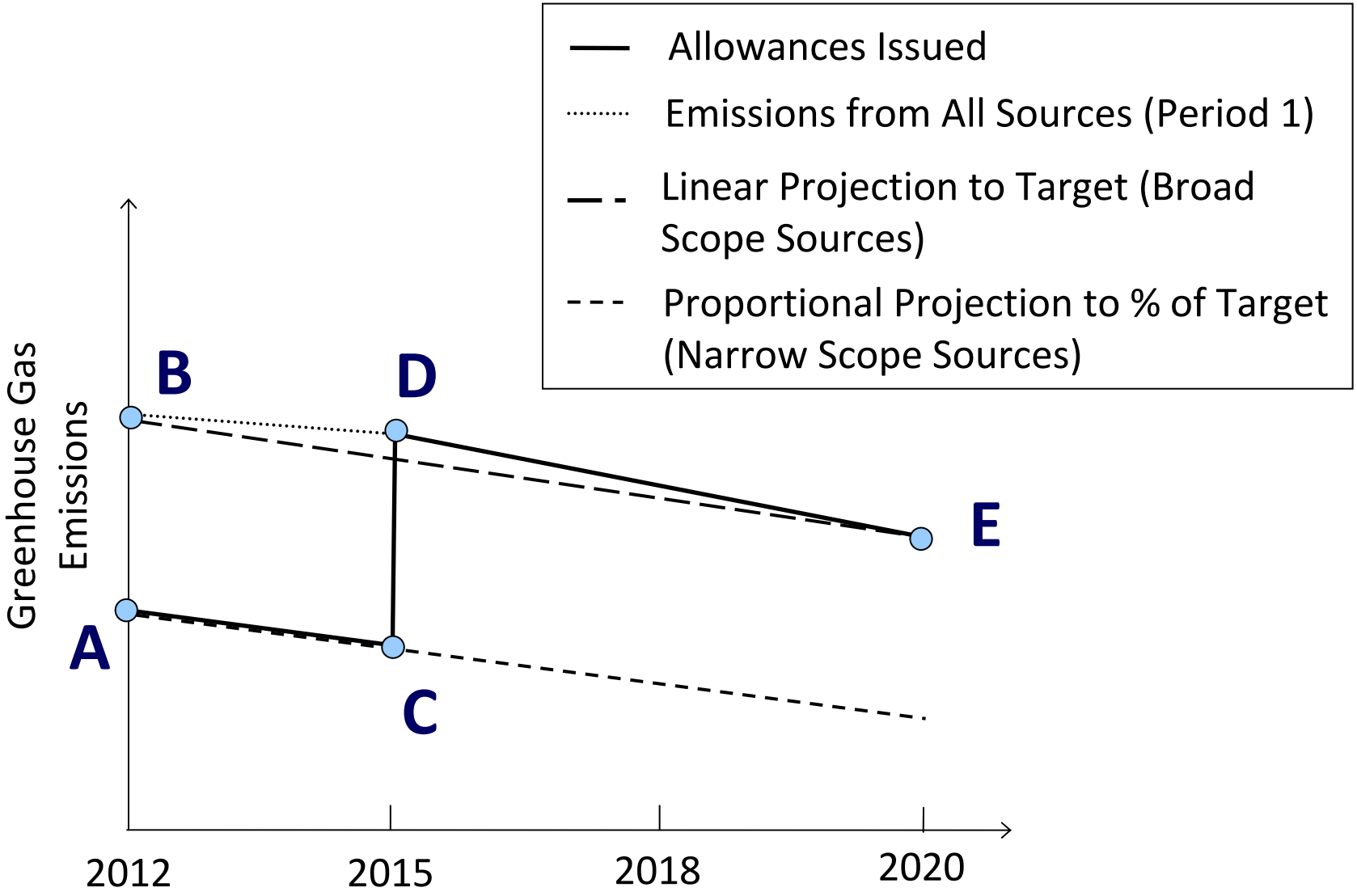
Process for Establishing California Allowance Numbers (1)

- 2012 allowance budget level (Point A on slide 16) will be established at ARB's best estimate of expected actual emissions in 2012 for narrow scope sources
- Method of setting rate of decline in first compliance period (sets Point C) still needs to be determined

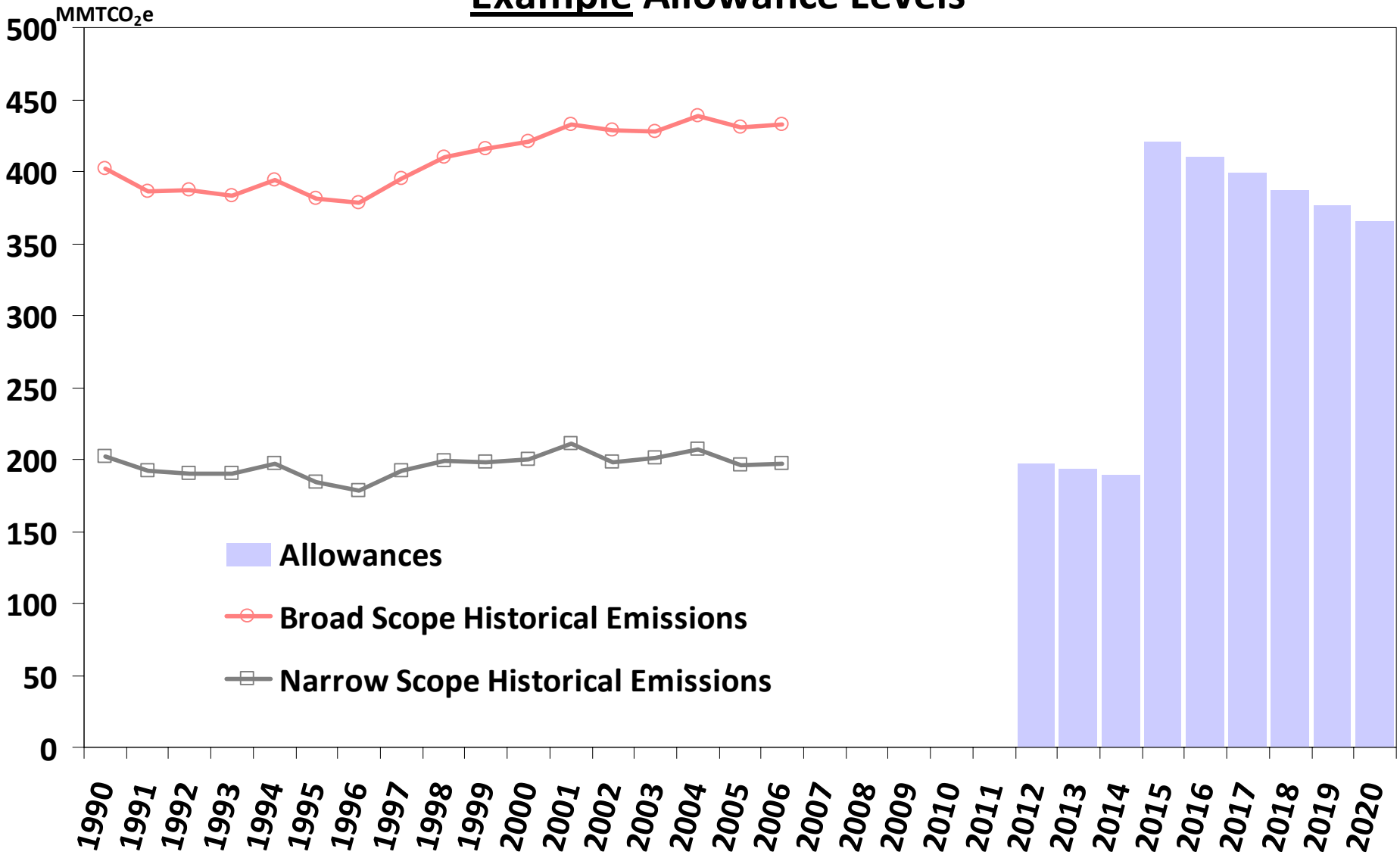
Process for Establishing California Allowance Numbers (2)

- 2015 allowance budget level (Point D) will be the sum of the expected actual emissions in 2015 for broad scope emissions and narrow scope budget level (Point C)
- Rate of decline through 2020 based on straight line from 2015 budget (Point D) to 2020 budget (Point E)

Figure Used in Derivation of Example CA Allowance Numbers



Historical Emission Trends Relative to Example Allowance Levels



Current Staff Thinking: Quantitative Offset Limit

- Implement limit as a ‘usage limit’ based on a percentage of an entity’s surrender obligation

- WCI is proposing:
  - Regionally harmonized percentage limit
  - Carry-over mechanism of ‘unused’ limit between compliance periods

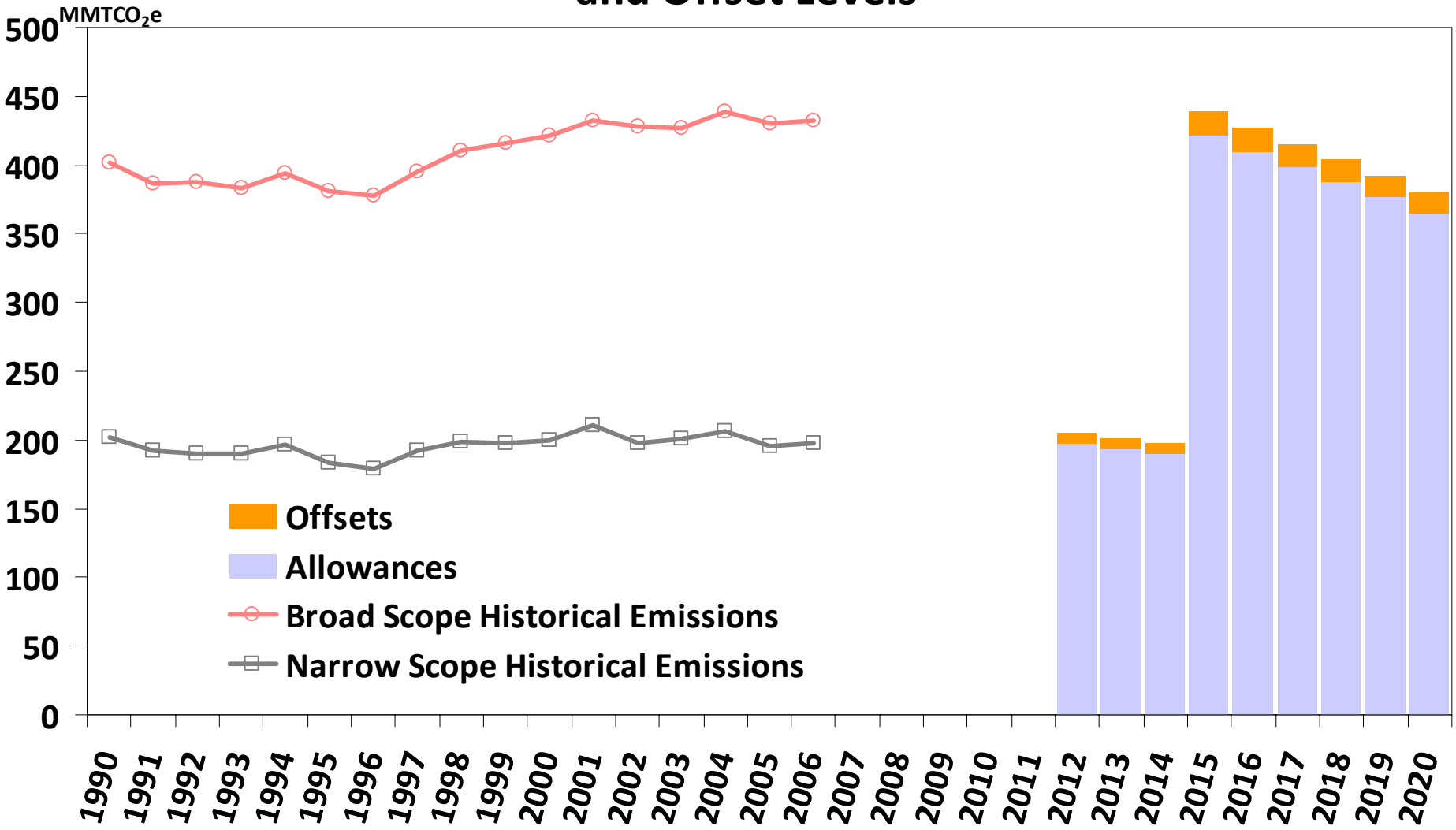
Source: WCI *Draft Offset Limit Recommendation White Paper* October 2009

http://www.westernclimateinitiative.org/component/remository/Cap-Setting--and--Allowance-Distribution-Committee-Documents/Draft-Offset-Limit-Recommendations-Paper/

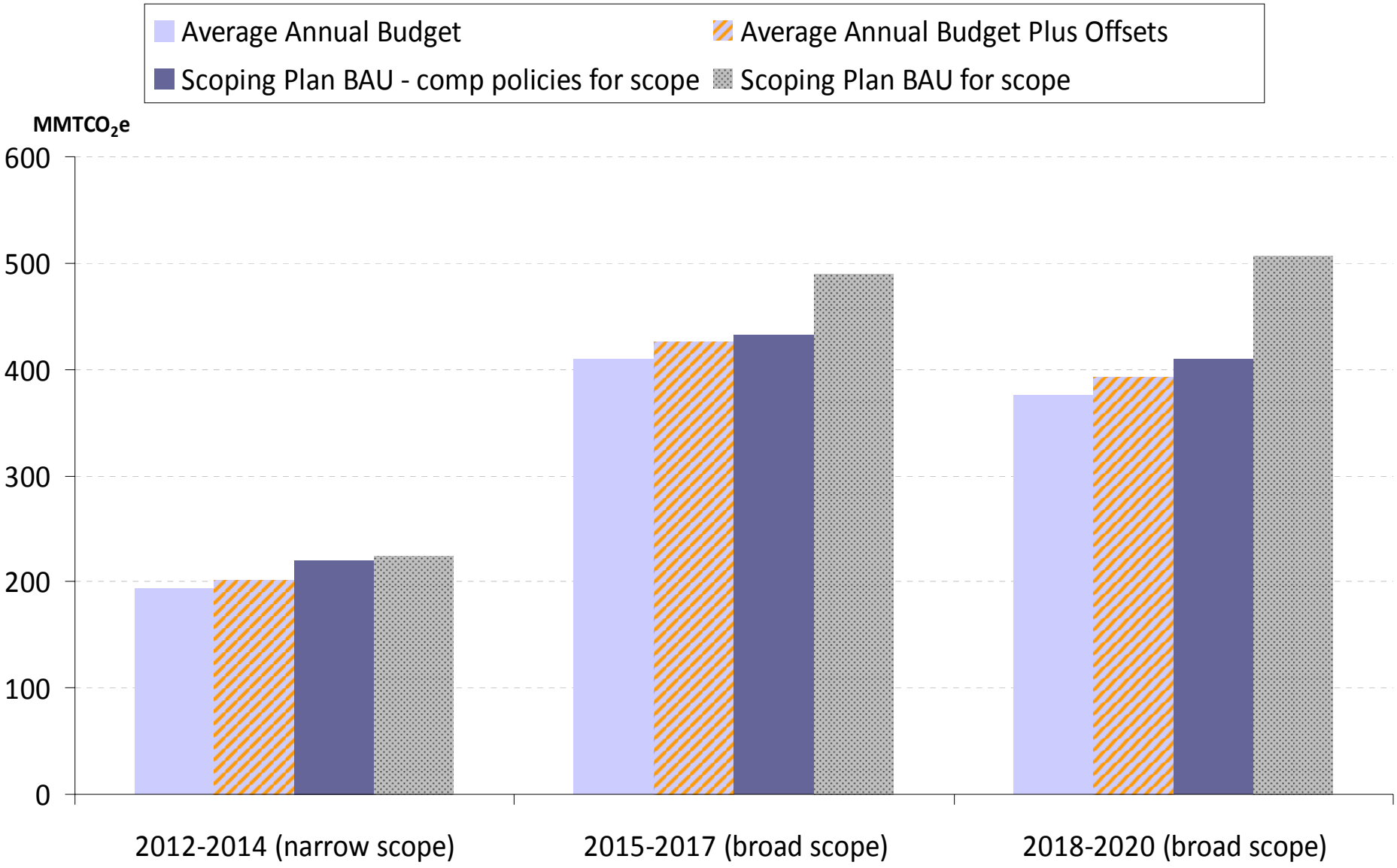
Assumptions Embedded in Example California Offset Numbers

- Offsets Allowed = 49% of cumulative reductions from initial cap levels
- Assume that the limit is implemented as a percentage use limit based on entity's surrender obligation
- Limit calculated is ~4% of total surrender obligation
- Max amount of offsets presented graphically on next slide
  - Distributed using the same percentage over all years (proportional to scope)

Historical Emission Trends Relative to Example Allowance and Offset Levels



Comparison of Example Cap Levels to Scoping Plan BAU and Expected Reductions from Complimentary Policies



What Outstanding Considerations Might Influence Cap Estimates?

Factor to Consider	Estimated Impact of Factor
Emissions Projections – 2012 and 2015 'Best Estimates'	**Small-Large Change**
Imported Electricity – Reflecting emissions covered in linked trading programs (WCI)	**Large Change** (0-12% decrease in broad scope emissions coverage)
Transportation Fuels – Possible obligation for lifecycle emissions	**Medium Change** (2-6% increase in broad scope emissions coverage)
Industrial Facilities – Additional process emissions not captured in inventory	**Small Change**
Imported Electricity – Changes due to choice of default emission factor for unspecified electricity	**Small Change** (0.5-1% change in broad scope emissions assuming no impact of linked programs)
Thresholds/Coverage – Other minor adjustments to scope for all sectors not captured in inventory	**Small Change**

Transportation Fuels Coverage in Cap-and-Trade Program

- Direct emissions from electricity generation will be covered by electricity deliverers
- Direct emissions from in-state production of hydrogen will be covered at the production facility
- Combustion emissions from CNG/LNG use in transportation will be covered at upstream fuel providers

- ARB is still considering how to calculate surrender obligation for remaining transportation fuels
  - Gasoline
  - Diesel
  - Liquid biofuels

Possible Approaches for Calculating Transportation Fuels' Obligation (1)

- Emissions factors based on the net "carbon content"
  - Gasoline and diesel factors based on direct combustion emissions
  - Liquid biofuel factors would be zero
  - Straightforward, but may over-incentivize those biofuels with high lifecycle emissions
- Emissions factors based on the tailpipe combustion factor
  - Gasoline, diesel, *and* biofuel factors based on direct combustion emissions
  - Straightforward, but may under-incentivize those biofuels with low lifecycle emissions

Possible Approaches for Calculating Transportation Fuels' Obligation (2)

- Emission factors based on net "carbon content" plus some portion of fuels' lifecycle emissions
  - *e.g.*, lifecycle portion could be direct and/or indirect land use emissions
  - Hybrid approach of incorporating some lifecycle price signals, but maintaining simplicity of set emissions factors
- Emission factors based on lifecycle carbon intensity factor (per LCFS)
  - Relative fuel-switching incentives more aligned with each fuel's total GHG footprint
  - Would need to harmonize with narrow scope sources by netting out portion of LCFS factor that is already capped (*e.g.* in-state refinery emissions)
  - Reporting process may rely on LCFS reporting—requires coordination among GHG Mandatory Reporting Tool, LCFS Reporting Tool, and market platform

Current Expected Timeline of CA and WCI Cap Number Development (1)

- Today
  - Example CA Cap (Example CA Allowance Budgets)
- November 2009
  - Example CA Cap in first draft of CA regulation text
- December 2009
  - Public release of Pechan report for WCI on projections
- February 2010
  - “Preliminary” WCI Allowance Budgets

Current Expected Timeline of CA and WCI Cap Number Development (2)

- June 2010
  - "Established" WCI Allowance Budgets Released for Public Comment
- October 2010
  - ARB Board Adopts "Established" CA Budgets as part of C&T Rulemaking
- November 2011
  - "Final Allowance Budgets"
- August 2014
  - "Revised Final Budgets"
- August 2017
  - "Revised Final Budgets"

Potential Adjustments After 2010 Board Adoption of Regulation?

Potential Topics for Future Meetings on Cap Setting

- Ongoing Improvements to Cap Numbers
  - In coordination with WCI, establish detailed method for projections of future expected emission levels (2012 and 2015)
- Developing compliance pathway scenarios analysis
  - Coordination with the Economic Analysis Subcommittee of the Economic and Allocation Advisory Committee (EAAC)

Key Questions for Stakeholders

- Comments on example allowance and offset levels?
- What flexibility should ARB have to adjust the number of allowances in the system?
  - Post-regulation adoption?
  - Before the beginning of a compliance period?
  - During compliance periods?
- What is the most appropriate approach for calculating the surrender obligation for fuels?
  - What is the relative importance of fuel-switching incentives, consistency across sectors and end uses, scalability to a broader program, and reporting and administrative complexity?