Economic Impacts Sub-Committee Update

Sub-Committee Notes
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Topics Covered Since Last Meeting

- E-DRAM and Energy 2020 models: strengths and weaknesses
- Assessing relative impacts of some specific regulations
- Characterizing energy intensive and trade exposed industries
- Approach to modeling banking and its impact on the permit price forecast
- Price impacts on low income customers
- Choice of baseline for comparison
E-DRAM

- E-DRAM is the primary CGE model used by ARB for assessing economy-wide impacts
- Relatively minimal representation of energy sectors
- Energy 2020 added to provide more details about energy sector
- Modeling challenges of integrating E-DRAM with Energy 2020
Energy 2020

- Model with much energy detail
- No general equilibrium calculations
- Very dependant on assumptions about complementary actions
- To date, sub-committee has had relatively little discussion about Energy 2020.
  - Sub-committee has not seen much about Energy 2020 inputs or results.
  - CARB made some presentations at a public stakeholder meeting, but not sub-committee, yet.
  - However, we will see inputs and results soon.
Impact of Specific Measures

• Since model runs include all measures, hard to distinguish relative importance of each measure

• Approach will be to run simulations with “n-1” measures (all measures but one) and examine the impact of removing one measure
  – Interactions between measures may still not be distinguished, but first order effects will be apparent

• Sub-committee has not yet seen any of those simulations
Inputs for Modeling Specific Measures

- Some discussion by sub-committee with CARB
  - Low carbon fuel standards
  - Automobile fuel efficiency measures above federal standards (Pavley Plus)
  - Energy efficiency programs through utilities
- Sub-committee questions as to whether cost inputs of complementary measures are optimistic
- Basis for inputs to models about various complementary measures not yet transparent.
  - Scoping plan did make costs and impacts of complementary measures explicit. But current inputs are not yet transparent
Energy Intensive Trade Exposed Industries

• Characterize industries that may warrant focus to prevent leakage
  – Either through updated allocation of permits or border adjustments

• According to ARB - non-electric industry is about 35% of “phase 1” emissions.
  – Refining sector is 28% of total
    • Those emissions account for minority of gasoline emissions. $30 CO2 implies 3 to 6 cents/ gallon increase
  – Cement is 3.5% of total

• Identifying Trade Exposed is very difficult
Modeling Banking

• Issue: how will future long-term costs affect near term (e.g. 2020) permit prices?
• Since banking is allowed, high future prices would lead to shifting permits from early years to later, thereby raising “early” year prices
• But very hard to predict future prices and we are leary of picking a number that would drive all the results.
• Approach will likely be to assess total emissions allowed from 2012-2020 and calculate annual prices that lead to 8 year total emissions equal to cap.
  – Prices rising at a rate of interest during that period
Choice of Baseline for Comparison

• Some measures, with their costs and benefits, are considered in the “baseline” and therefore are not considered costs of AB 32
  – Federal CAFE standards
  – Utility-based energy efficiency incentives
  – 20% renewable portfolio standard

• Need to be consistent
  – Either include all such measures as impacts or as no such measures. Alternatively analyze overall impacts in two steps – impacts of these “baseline” measures and then incremental impacts of AB 32 measures

• Need to be transparent about what in baseline
Price Impacts on Low Income Customers

• Most models do not capture the nuances of CA ratemaking
  – Calculations based upon average energy costs likely overstate impacts on low income customers
  – Going forward price impacts will depend upon rate design decisions, some of which are constrained by law
  – Unlikely that models will include such nuances so that there must be supplementary analyses