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.

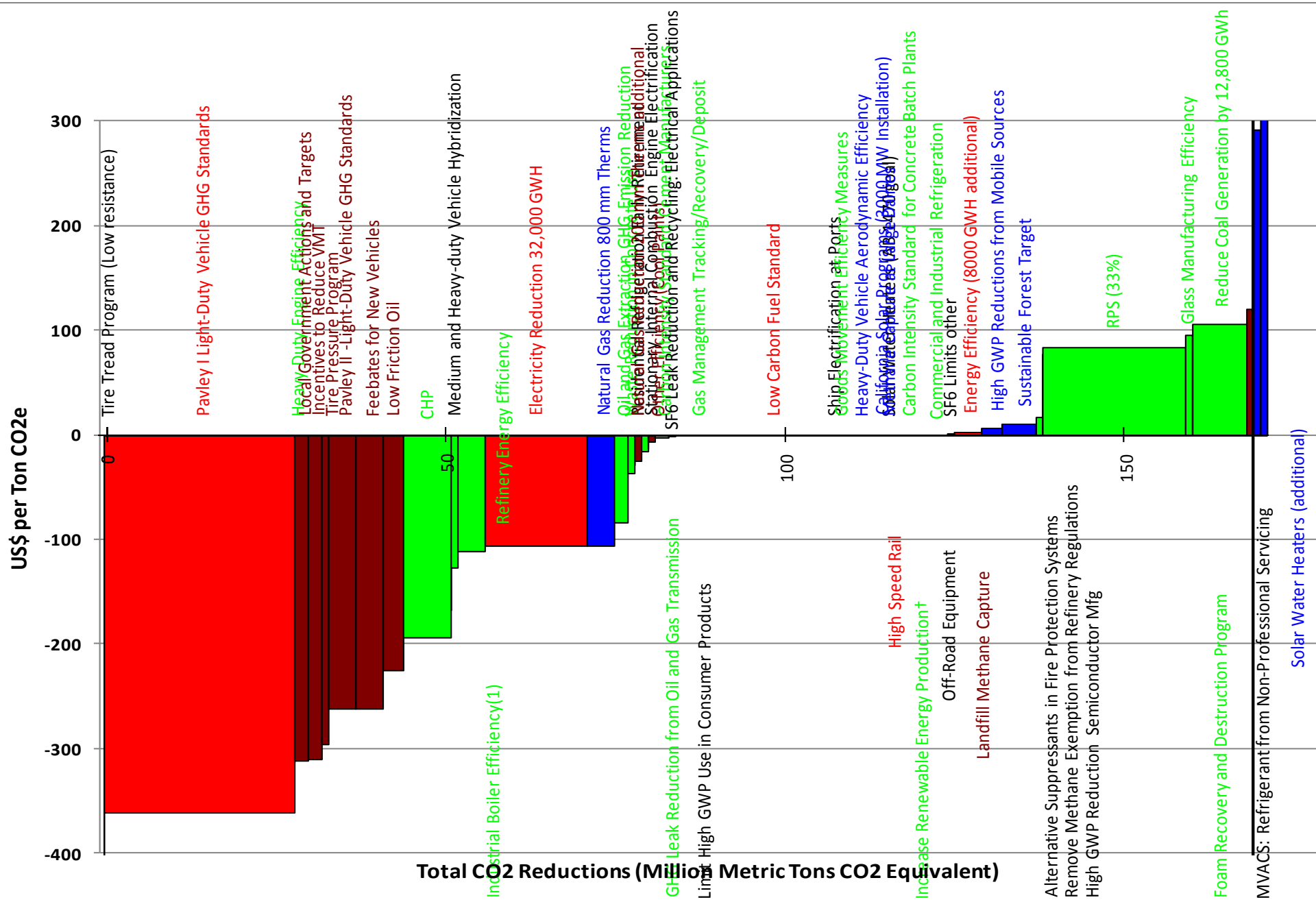
Impact of Specific Measures

- 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

CARB Scoping Plan CO_2 Marginal Abatement Cost Curve



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**