

# Memorandum

To: EAAC Members  
From: Cal/EPA and ARB EAAC Policy Team  
RE: Indicators of Potential Impacts  
Date: November 10, 2009

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This memo summarizes indicators of potential industry impacts based on preliminary model results conducted by Air Resources Board (ARB) staff using ENERGY2020 and E-DRAM. The data are provided in Excel spreadsheets, which are described below.

## 1. Impact Spreadsheets

EAAC Sector Changes \$20 and \$60 Carbon Price 0% Recycle 11-5.xls

EAAC Sector Changes \$20 and \$60 Carbon Price 100% Recycle 11-5.xls

These spreadsheets summarize estimated impacts generated by the E-DRAM model for carbon prices of \$20 and \$60. The carbon price in E-DRAM is applied upstream on the oil refining sector (OILREF), the natural gas distribution sector (DSTGAS) and the Electric Power Generation, Transmission and Distribution (DISTEL) sector. Prices in these sectors are increased based on the carbon content of the sector's fossil fuel. Carbon price revenues are either recycled to households as income (100% Recycle) based on the household's endowment of labor or are assumed to disappear from the state (0% Recycle). No attempt was made in these model runs to incorporate complementary measures from the Scoping Plan, such as energy efficiency, 33 percent renewables, the Pavley vehicle standards, or the low carbon fuel standard.

While E-DRAM is best suited for characterizing economic impacts at the state level, it can be informative at the individual sector level with the understanding that some details that may be important in characterizing sector level impact may not be well reflected in the model. For example, we do not individually specify growth for each of the 119 sectors but instead growth rates are specified for groups of sectors and similar sectors share the same elasticity of substitution in their production function.

### Spreadsheet Tabs:

Tables	Summary tables for Value added, Domestic Supply, Employment, Prices, and Household Income. This tab is set up for printing.
Remaining tabs	Value Added, Domestic Supply, Employment, and Prices for all 119 producing Sectors. These tabs are not set up for printing.

Each table and detail tab presents the following:

2007 Base	Model results for the year 2007 with no carbon price
2020 Base	Model results for the year 2020 with no carbon price
2020 Carbon Price	Model results for the year 2020 with carbon price (\$20 or \$60)
2007-2020 Growth Base	Annual average growth with no carbon price
2007-2020 Growth Policy	Annual average growth with carbon price (\$20 and \$60)
2020 Carbon Price Change	Comparison of 2020 Base and Carbon Price case solutions (\$20 and \$60)

## **2. Fuel Use and Emissions Spreadsheet**

EAAC Fuel Use and Emissions 11-5.xls

This spreadsheet contains output from an Energy2020 Model run that included no carbon policies. These data could be useful for identifying which sectors might face competitiveness risks from a carbon price because of their current dependence on energy or their level of GHG emissions.

Spreadsheet Tabs:

Summary*	A ranking of the commercial and industrial sectors by their energy intensity or emissions intensity.
Energy Intensity	The ratio of fuel expenditures to gross output.
Emissions Intensity	The ratio of emissions to gross output.
Sector Fuel Use*	2006 Sector use of Natural Gas, Electrets, Gasoline, Diesel and Other Fuels.
Emissions	Emissions by sector broken out by combustion, and non-combustion and imported electricity.
Fuel Expenditures	Total dollars spent on all fuels by each sector.
Gross Output	Sector growth assumptions used the model.
Fuel Demand	Detailed sector fuel use.

\* Tabs are set up for printing