

Chuck Shulock,
California Air Resources Board
1001 "I" Street
Sacramento, CA 95812

Dear Chuck,

I know it is pretty late in the game for sending in suggestions to ARB for early action items, but I have been doing a lot of research over the past month and recently came up with some three ideas that may or may not be on your soon to be released early action item list.

1) Require California refineries to either undergo energy efficiency audits or prove they have already undergone energy efficiency audits. Also, mandate that these energy efficiency audits be performed and approved prior to any new construction or modification.

Reason: Refineries are the most energy intensive businesses in the US, and California refineries are the most energy intensive in the country, consuming over 7 billion worth in 2001. Since most of the energy is consumed in the form of gas (natural gas) and electricity, decreasing gas use and electricity would lead to decreased overall emissions in producing electricity. Also, since emissions reductions may not be available from refineries via other methods, energy efficiency may be a simple way to target them.

Potential areas in refineries to examine in-depth:

a) Hydrogen conservation and leakage prevention (Hydrogen pinch analysis)

Reason: Since refineries produce hydrogen by combusting natural gas, less hydrogen leakage means less hydrogen production, and thus less natural gas consumed. The Lawrence Berkeley National Lab Report profiling the petroleum refining industry in California (March 2004) stated that BP and Exxon had performed such analysis for selected refineries, but did not state that it was industry standard to do so. In fact, the report stated that:

“Further development and application of the analysis method at Californian refineries, especially as the need for hydrogen is increasing due to reduced future sulfur content of diesel and other fuels, may result in reduced energy needs at all refineries with hydrogen needs (all, except San Joaquin Refining in Bakersfield) (Khorram and Swaty, 2002).

b) Heat and steam transfer efficiency analysis through process integration

Reason: Continuous changes in product mix, mass flows and applied processes can provide new or improved opportunities for energy and resource efficiency. Requiring assessment of process integration at each refinery may find additional areas for improvement, especially in facilities that have not received as much monetary attention from corporate headquarters or are yet to have undergone major refinery modernization projects.

c) Water conservation, recovery and efficiency (Water pinch analysis)

Reason: Water used to be seen as a low-cost resource to the refinery, and was used inefficiently. New designs in water movement and treatment equipment are more energy efficient and mandating that refineries undertake a new look can lead to energy use reductions, thus leading to less emissions. Water pinch analysis, although used mostly in the food processing industry, may be applicable to refineries and be used to develop targets for minimal water use by reusing water in an efficient manner. And, if new optimization software has been developed since the last refinery modernization projects, this tool will allow projects in the future to already be thinking about water efficiency.

2) Require each of the 11 cement plants with kilns in California to undertake energy efficiency audits and develop energy efficiency policies which examine in depth:

- a) Heat conservation and re-piping of exhaust air for use in pre-heaters
- b) Electricity conservation

Reason: Cement plants are very energy intensive, and more energy use equates to increased emissions from electricity generation off-site or natural gas combustion on site. In the case study for the cement industry performed by the Lawrence Berkeley National Lab in 2005, it was stated that electricity accounts for over 10% of overall production costs and natural gas accounts for 1 to 5% of production costs.

In the same report, it was stated:

“Key limitations to increased energy efficiency for these customers are time and money. They have limited staff and limited capital, and most believe they are doing the best job they can with resources at hand. They all seem willing to do more to improve their plant’s energy efficiency if they had more resources. The smaller energy-efficiency items at these facilities can amount to fairly large savings but don’t get addressed because they are considered a hassle.”

I understand that CARB may not have authority to undertake all of these energy efficiency actions, but I think an alternative could be to provide recommendations to the CEC to undertake such programs.

3) Ban the state from entering into contracts with maintenance crews that use gas powered lawn and yard equipment.

Reason: Although CARB may not have the political authority to ban outright operation of such equipment, I believe it would be a great gesture and message to the people of California if the state took action to not contract with maintenance crews who use fossil fuel powered equipment. We know that these pieces of equipment are less efficient and burning fossil fuels emits GHG. Although the measure itself may be more of a gesture than a substantial pollutant reduction, CARB could begin to gain momentum for local cities and municipalities to do the same, thus leading to a larger overall impact.

In the alternative, if CARB did not want to ban outright use of such equipment, commissioning a study to determine the impact of such a measure would be a nice measure for early action.

Once again, thank you for your time. Please feel free to contact me if you have any questions

Sincerely,

Tim O'Connor
Environmental Defense