does not expect the proposed modification of the oxygen cap to result in significant increases in ethanol consumption overall, it is not expected that any large increase in total corn output would result from this action. To the extent that small increases in ethanol production do occur as a result of today's proposal, the impact on corn production is likely to be small as well. Thus, the non-air quality impacts associated with the proposed modification to the oxygen cap would be negligible. The Agency requests comments on these assumptions, and on other non-air quality impacts that could result under today's proposal.

F. Energy Impacts

In addition to potential environmental impacts, EPA has examined the potential energy impacts of today's proposal. While the production of much of the ethanol in the country generates (on the margin) more energy and uses less petroleum than went into its production, a study by the Department of Energy submitted with comments to the renewable oxygenate requirement proposal indicated that the margin virtually disappears when ethanol is used to make VOC-controlled reformulated gasoline (see the final Regulatory Impact Analysis for the renewable oxygenate requirement, June 29, 1994). The energy loss and additional petroleum consumption necessary to reduce the volatility of the blend (to offset the volatility increase caused by the ethanol) causes the petroleum balance to go negative when compared to MTBE-blended reformulated gasoline, while the overall balance of fossil energy consumption remains slightly positive. Since, however, today's proposed action is not expected to significantly increase the total volume of ethanol produced in this country over the next two years (through 1997), the energy impacts of the reformulated gasoline program are expected to remain essentially unchanged as a result of this proposal.

VII. Other Alternatives

As an alternative to the proposal described above, EPA also requests comment on two alternatives. The first alternative would remove the oxygen cap entirely, allowing up to the maximum oxygen content permitted under section 211(f), (includes up to 10 vol% ethanol—roughly 3.5-4.0 wt% oxygen—or 15 vol% MTBE, roughly 2.7-3.2 wt% oxygen), yearround for both VOC and non-VOC controlled reformulated gasoline. Under this option, the regulations would not limit the oxygen content of reformulated

gasoline even if a state notifies EPA of environmental reasons for such a limit. EPA believes that this option is less desirable because it eliminates a state's ability to control the oxygen content of both VOC-controlled and non-VOC controlled reformulated gasoline, regardless of the environmental implications for their state. Given some uncertainty over the in-use emissions implications of the use of reformulated gasoline with a higher oxygen content, as discussed above in section VI.A, it is reasonable to allow states to evaluate the environmental implications of increasing the oxygen content for their specific situation and based upon their unique concerns. The Agency requests comments on the potential benefits and detriments of electing to remove the oxygen cap entirely.

The second alternative would maintain the cap (at 2.7 wt%) in the summertime, but allow states to request a higher maximum oxygen content (up to the maximum allowed under section 211(f)). Currently, states may request a higher cap, but must show that no ozone exceedances had occurred in a covered area during the previous three years. This alternative would remove the "no ozone exceedances" requirement, reducing the burden on the states and allowing them to quickly and easily have reformulated gasoline with the higher oxygen content. EPA believes that this alternative option in effect presumes that increased oxygen might cause an increase in NO_X emissions from RFG, and is therefore inconsistent with EPA's view that increased oxygen does not adversely affect NO_X emissions for RFG. Today's proposal would establish the higher maximum oxygen content, unless a state requests that it be lowered, based upon EPA's view that a higher oxygen content does not increase NO_x emissions in 1990 technology vehicles. EPA requests comments on the appropriateness of this alternative option, and in particular a comparison of the relative benefits of the option being proposed today compared to this alternative option, as well as a comparison of the relative benefits of the second and third options.

VIII. Effect of Base Gasoline Density on Oxygen Content and Related Proposal

As stated earlier, section 80.41(g) of the final rule specifies a maximum oxygen content of 2.7 wt% (and in limited cases 3.5 wt%) for VOCcontrolled Simple Model reformulated gasoline and 3.5 wt% (unless a state requests that it be 2.7 wt% for environmental reasons), for non-VOCcontrolled Simple Model reformulated gasoline. These maximums (or caps) are consistent with the Simple Model valid range upper limit for oxygen content.

In a later rulemaking (59 FR 36944, July 20, 1994), however, EPA changed the upper limit of the valid range for oxygen content from 3.5 wt% to 4.0 wt% (for both the Simple and Complex Models) to accommodate compositional (i.e., specific gravity or, equivalently, density) differences in the base gasoline to which the ethanol is added. Variations in the base gasoline specific gravity can cause the oxygen content of the final oxygenated blend to vary for the same volume of oxygenate. For example, for a 10 vol% ethanol blend, the oxygen content could vary, roughly, from 3.4 to 4.0 wt%. For all oxygenates, variations in the base gasoline density can cause the resulting oxygen content to vary for the same volume of an oxygenate.

Ălthough EPA changed the valid range of the models, the Agency did not at that time address changing the maximum oxygen content allowed in reformulated gasoline under section 80.41(g). Subsequent to this, EPA stated in guidance that

"* * * [it] believes that the maximum oxygen content provisions for reformulated gasoline should accommodate blended oxygenates that meet the applicable Clean Air Act section 211(f) 'substantially similar' and waiver provisions. In consequence, EPA believes the oxygen maximums specified in 80.41(g) should be adjusted to reflect the expected maximum oxygen content when (RBOB) is blended with 10 vol% ethanol in the case of non-VOC-controlled RFG and 7.7 vol% ethanol in the case of VOC-controlled reformulated gasoline.2'

RBOB is the acronym for "reformulated gasoline blendstock for oxygenate blending" which is a base gasoline blendstock which requires only the addition of an oxygenate to become reformulated gasoline. The guidance stated that the adjusted oxygen maximum for VOC-controlled reformulated gasoline would be 3.2 wt% (the maximum expected for MTBE at 15 vol% or ethanol at 7.8 vol% considering density variations in the base gasoline), and for non-VOC-reformulated gasoline, 4.0 wt% (the maximum expected for ethanol at 10.0 vol% considering density variations in the base gasoline). The guidance further stated that EPA would make these changes in a future rulemaking but allow parties to use the adjusted maximums in the meantime. The maximum 3.2 wt% is 0.5 wt%

² U.S. Environmental Protection Agency, "RFG/ Anti-Dumping Questions and Answers," Question 1 of the "Standards" section, April 18, 1995. A copy of this document has been placed in the public docket for today's action and may be found on the TTNBBS (see "Supplementary Information" section of this notice).