I have reviewed the white paper "Transforming Undergraduate Education in Science, Mathematics, Engineering, and Technology" and find it to be an extremely important document. The six visions it proposes are bold, challenging, and certainly to be controversial. However they are quite consistent with the charge, well-argued, and well-supported both by the accompanying recommendations for academic administrators and faculty and by the documentation.

Clearly, the Committee has done extensive research and consultation in arriving at their conclusions and recommendations. These relate well to an array of earlier and ongoing efforts in K-12 and undergraduate SMET education.

The target audience has been chosen appropriately. The report's challenging and, to many, controversial vision statements can only be addressed through a combination of top-down and bottom-up efforts, involving not only senior university executive officers but as well rank-and-file faculty.

In summary, I believe the report to be well-written, responsive, and well-documented.

On a minor note, I am sending along several observations that occurred to me while reading the report. These are not intended as criticism but rather as ideas that might be considered at a later point:

1. While the chief academic officers are an important target audience, we don't want to let presidents off the hook. In fact, it will be important to bring the major presidential organizations (AAU, NASULGC, ACE) onboard to get substantive change. I also think it would be useful to target university governing boards, through an organization such as the Association of Governing Boards.

2. Although the report dealt with the importance of recognizing and using new forms of pedadogy, these might be even more signficant than conveyed by the report. Over the next decade we are likely to see sophisticated distributed virtual reality environments for learning, largely independent of the usual space and time constraints. Students will become active learners; teachers will become designers, managers, and motivators of active learning experiences. In fact, some believe that the standard classroom form of pedagogy may disappear, replaced by highly interactive learning communities. These pedagogical changes will be quite challenging to the university (although both driven and embraced by the emerging "plug and play" generation of students), they may provide an unusual opportunity for SMET education.

3. The resources requirements of the vision statements will be considerable, particularly those for faculty. In this regard, it is important to recognize that in most comprehensive universities, the largest faculty cadre is associated with professional schools–engineering, law, business, medicine, etc. Athough the report makes clear the importance of engaging engineering faculty in

broader teaching activities, I believe it is important to involve faculty from other professional schools as well. Related to this will be the challenge of overcoming the resistance of liberal arts faculty to the participation of professional school faculty in teaching undergraduates.