

**FINAL REPORT
OF
FY 2009 NSF COMMITTEE OF VISITORS (COV) ATE REVIEW
May 30, 2009**

Guidance to NSF Staff: This document includes the FY 2009 set of Core Questions and the COV Report Template for use by NSF staff when preparing and conducting COVs during FY 2009. Specific guidance for NSF staff describing the COV review process is described in Subchapter 300-Committee of Visitors Reviews (NSF Manual 1, Section VIII) that can be obtained at <www.inside.nsf.gov/od/oia/cov>.

NSF relies on the judgment of external experts to maintain high standards of program management, to provide advice for continuous improvement of NSF performance, and to ensure openness to the research and education community served by the Foundation. Committee of Visitor (COV) reviews provide NSF with external expert judgments in two areas: (1) assessments of the quality and integrity of program operations and program-level technical and managerial matters pertaining to proposal decisions; and (2) comments on how the results generated by awardees have contributed to the attainment of NSF's mission and strategic outcome goals.

Many of the Core Questions are derived from NSF performance goals and apply to the portfolio of activities represented in the program(s) under review. The program(s) under review may include several subactivities as well as NSF-wide activities. The directorate or division may instruct the COV to provide answers addressing a cluster or group of programs – a portfolio of activities integrated as a whole – or to provide answers specific to the subactivities of the program, with the latter requiring more time but providing more detailed information.

The Division or Directorate may choose to add questions relevant to the activities under review. NSF staff should work with the COV members in advance of the meeting to provide them with the report template, organized background materials, and to identify questions/goals that apply to the program(s) under review.

Suggested sources of information for COVs to consider are provided for each item. As indicated, a resource for NSF staff preparing data for COVs is the Enterprise Information System (EIS) –Web COV module, which can be accessed by NSF staff only at <http://budg-eis-01/eisportal/default.aspx>. In addition, NSF staff preparing for the COV should consider other sources of information, as appropriate for the programs under review.

Guidance to the COV: The COV report should provide a balanced assessment of NSF's performance in two primary areas: (A) the integrity and efficiency of the **processes** related to proposal review; and (B) the quality of the **results** of NSF's investments that appear over time. The COV also explores the relationships between award decisions and program/NSF-wide goals in order to determine the likelihood that the portfolio will lead to the desired results in the future. Discussions leading to answers for Part A of the Core Questions will require study of confidential material such as declined proposals and reviewer comments. *COV reports should not contain confidential material or specific information about declined proposals.* Discussions leading to answers for Part B of the Core Questions will involve study of non-confidential material such as results of NSF-funded projects. The reports generated by COVs are used in assessing agency progress in order to meet government-wide performance reporting requirements, and are made available to the public. Since material from COV reports is used in NSF performance reports, the COV report may be subject to an audit.

We encourage COV members to provide comments to NSF on how to improve in all areas, as well as suggestions for the COV process, format, and questions. For past COV reports please see <http://www.nsf.gov/od/oia/activities/cov/covs.jsp>.

NSF FY 2009 TABLE FOR ATE COMMITTEES OF VISITORS (COV)

The table below should be completed by program staff.

Date of COV: May 4-5, 2009
Program/Cluster/Section: Advanced Technological Education
Division: Division of Undergraduate Education
Directorate: Directorate of Education and Human Resources
Number of actions reviewed: 44 Awards: 24 Declinations: 20 Other: 0
Total number of actions within Program/Cluster/Division during period under review: Awards: 167 Declinations: 390 Other: 8
Manner in which reviewed actions were selected: <p>Committees of Visitors (COVs) review a random selection of Program awards and declines. To assure the randomness of the selection, NSF asked the COV Chair, Dr. York, for a one-digit number including zero; he chose three. Thus every new proposal funded in the ATE Program in FY 2006 – FY 2008 whose identification number ends in three was available for review. Due to the large number of proposals declined, selection included only every third unfunded proposal whose identification number ends in three. In addition to the randomly selected proposals, the ATE Program Officers also selected 8 exemplary awards. After reviewing 10 of the unfunded proposals, Dr. York requested the selection of an additional sample of 6 unfunded proposals. Dr. York chose the digit five which led to the selection of 6 unfunded proposals ending in the digit five; two proposals from each of the years FY2006 – FY2008. The additional 6 proposals raised to 20 the total number of unfunded proposals available for review. The COV requested the additional proposals in order to properly answer A.1 question 2 and question 5.</p>

PART A. INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES AND MANAGEMENT

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

A.1 Questions about the quality and effectiveness of the program's use of merit review process. Provide comments in the space below the question. Discuss areas of concern in the space provided.

<p>QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS</p>	<p>YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE¹</p>
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments:</p> <p>The COV examined 28 jackets and found that review methods were appropriate. Panel review occurred in all instances; site visits occurred for all Center awards. The process was fair and well-documented. No additional reviewing methods are necessary. It is the opinion of this COV that the Program responded appropriately to each of the five recommendations made by the previous COV relevant to this question.</p>	<p>YES</p>
<p>2. Are both merit review criteria addressed</p> <p>Comments:</p> <p>a) In individual reviews?</p> <p>Examination of 15 jackets showed that all individual reviewers addressed both merit review criteria.</p> <p>Although the ATE Program has been particularly adept at soliciting experienced reviewers, the committee occasionally found a review that assessed both criteria in a single, integrated narrative. Listing the strengths and weaknesses of the proposal separately under each</p>	<p>YES</p>

¹ If "Not Applicable" please explain why in the "Comments" section.

<p>criterion brings more clarity and efficiency to the decision process. We are aware that the Program Officers currently encourage panelists/reviewers to follow this model and recommend continuation of this practice.</p> <p>b) In panel summaries?</p> <p>All panel summaries address both review criteria and are more uniform in their presentation of strengths and concerns than the individual reviews, thus facilitating the review process.</p> <p>c) In Program Officer review analyses?</p> <p>The section of each jacket entitled “Program Officer Review Analysis” often contained some standard boilerplate text with a sentence inserted to indicate whether the proposal was or was not recommended for funding. The section of the jacket entitled “Program Officer Comments” always contained an assessment of the proposal in terms of both review criteria. Some Program Officers made a practice of <i>including</i> the Program officer comments in the Program Officer Review Analysis section as well.</p> <p>As the COV was unclear about NSF policy, we asked the ATE Program team and they informed us that “NSF-wide, the Program Officer Review Analysis is a 'privileged' document for internal use only and is not sent to the Principal Investigator. For low declines, Program Officers are encouraged to use the boiler plate for the Review Analysis to save time, particularly when the reviewers' comments are comprehensive. Many Program Officers supplement the Review Analysis with Program Officer (PO) Comments, which are sent to the Principal Investigator. It is more the case that Program Officers cut and paste some of the Review Analysis into the PO Comments than the reverse.”</p>	
<p>3. Do the individual reviewers provide substantive comments to explain their assessment of the proposals?</p> <p>Comments:</p> <p>Most reviewer comments were substantive and quite clearly explained their assessment of proposals. ATE reviews differ from traditional NSF reviews in several ways. Because of the community college focus of the ATE Program and the importance of the high school to community college articulation, high school teachers and community college faculty play important roles in the review process. Sometimes they exhibit inexperience with proposal evaluation in their comments; however, the panel process tends to mitigate the effects.</p>	<p>YES</p>
<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments:</p>	<p>YES</p>

<p>In the 26 proposals examined the panel summary almost always showed the rationale for consensus. These proposals fell into three categories: (1) highly competitive, (2) not competitive, and (3) borderline. The COV found that the panel summaries for categories (1) and (2) clearly indicated the panel consensus. In category (3) the committee found one proposal for which the rationale in the panel summary for declination was unclear given the reviewer ratings. However, the Program Officer's comments clearly indicated the reasons for not recommending the proposal for funding. The Program Officer did recommend that the PI revise and resubmit.</p>	
<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>(Note: Documentation in jacket usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.)</p> <p>Comments:</p> <p>Some rationales for award/decline decisions were more thorough than others. The variance may have been due partly to variability in Program Officer experience and training. The committee's preliminary review of declined proposals showed two different Program Officers (both rotators) who consistently used the "boilerplate" review analysis and less detailed "Program Officer comments." Dr. York requested a random sample of 6 additional declined proposals; the program officer's review analyses of these proposals fully provided the rationale for declination with sufficient detail in the Program Officer comments section.</p>	<p>YES</p>
<p>6. Does the documentation to PI provide the rationale for the award/decline decision?</p> <p>(Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written or telephoned with diary note in jacket) of the basis for a declination.)</p> <p>Comments:</p> <p>Taken in total the documentation to the PI clearly provides the rationale for the award/decline decision. Some variance appears in the level of detail provided to awards versus declines with the declines appearing to receive slightly less specific feedback. The COV encourages NSF and the ATE to ensure that all awards – accepted and declined -- receive detailed, consistent and constructive feedback that will serve as developmental opportunities for the PIs. The COV was apprised of NSF policy with respect to the Program Officer Review Analysis and Program Officer Comments as noted in section A.1.2(c).</p>	<p>YES</p>

<p>7. Is the time to decision appropriate?</p> <p>Note: Time to Decision --NSF Annual Performance Goal: For 70 percent of proposals, inform applicants about funding decisions within six months of proposal receipt or deadline or target date, whichever is later. The date of Division Director concurrence is used in determining the time to decision. Once the Division Director concurs, applicants may be informed that their proposals have been declined or recommended for funding. The NSF-wide goal of 70 percent recognizes that the time to decision is appropriately greater than six months for some programs or some individual proposals.</p> <p>Comments:</p> <p>The time to decision falls within the NSF targeted decision times. The NSF ATE program does a great job of responding to PIs. In fact the ATE program has exceeded the decision time performance of the rest of the foundation by a significant amount (In 2008 ATE 81.5% to NSF-wide 77.6%).</p>	<p>YES</p>
<p>8. Additional comments on the quality and effectiveness of the program's use of merit review process:</p> <p>The quality and effectiveness of the ATE Program's use of the merit review process was excellent in all facets. The committee had minor suggestions for improvement: (1) emphasize to reviewers the importance of listing strengths and weaknesses for both review criteria; and (2) provide more specific Program Officer comments in the case of borderline declines.</p>	

A.2 Questions concerning the selection of reviewers. Provide comments in the space below the question. Discuss areas of concern in the space provided.

SELECTION OF REVIEWERS	YES , NO, DATA NOT AVAILABLE, or NOT APPLICABLE²
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?</p> <p>The ATE Program made use of reviewers having appropriate expertise and</p>	<p>YES</p>

² If "Not Applicable" please explain why in the "Comments" section.

<p>qualifications.</p> <p>Comments:</p> <p>The reviewers have the appropriate credentials in specific academic areas. In all of the proposals examined, instructors from community colleges served as reviewers.</p> <p>The COV observed that many community college faculty lack experience in grant proposal writing and are unable to secure the resources to do effective proposal development without high-level administrator intervention. Hence, it might be useful to gather information on the level of authority and responsibility of community college faculty who perform as reviewers. This might inform the processes of the ATE Program's grant proposal development activities for new PIs.</p> <p>Although the ATE program has achieved good balance by involving reviewers from all components of the ATE ecosystem (i.e. community colleges, four-year institutions, high schools, and industry), it might be beneficial to make a greater effort to involve senior community college administrators and individuals with previous ATE experience when reviewing large Centers' proposals or proposals requiring institutional alignments across the high school, community college and four-year college spectrum.</p>	
<p>2. Did the program use reviewers balanced with respect to characteristics such as geography, type of institution, and underrepresented groups?</p> <p>The ATE Program achieved reasonable geographic balance; however, it failed to achieve balance across institution type (particularly with respect to industry) or across underrepresented groups.</p> <p>Comments:</p> <p>Note that demographic data is self reported, with only about 25% of reviewers reporting this information within the selected sample. Thus, it is quite difficult to draw strong conclusions concerning the overall populations. A computer analysis of the entire portfolio could determine the true distribution by institution type. However, with respect to underrepresented groups, the ATE Program and NSF are forced to rely on "self-reporting." Although uncomfortable with drawing a conclusion based on a 25% response within an already small random sample, the COV made the following recommendations based on the data provided.</p> <p>Based on the data provided, the proportion of female reviewers dropped in 2008. Very few reviewers over the last three years have been persons with a reported disability, and the proportions of underrepresented groups appear to be lower than their levels in the general population. Although some underrepresented groups are significant portions of the community college student populations, they may be severely underrepresented on the faculties of high schools, community colleges, and four-year institutions and, thus, not available to be selected as reviewers.</p>	<p>NO</p>

<p>The ATE Program must continually work to insure that the pool of reviewers reflects all segments of society. In addition to the criteria stated above, cultural diversity is an important consideration. Important cultural differences exist within the US with respect to the nature of work and technical education. The COV encourages the ATE program to work diligently to select reviewers who reflect these differences as well.</p> <p>Given the overall goals of ATE projects and centers, one would expect a higher proportion of reviewers from business and industry. A review of 10 accepted proposals and 5 declined proposals indicated that only 2 of the reviewers were from the private sector. These findings are surprising given the criteria of private sector involvement in the proposal. Perhaps there were more and they simply did not list this experience. The COV suggests that NSF ATE convene a group of private sector associations and seek out private sector input on a regular basis. It is also important that reviewers include individuals with administrative and project management expertise. Successful projects require not only technical expertise, but the ability to establish, promote and sustain efforts with strong public outreach and service components.</p>	
<p>3. Did the program recognize and resolve conflicts of interest when appropriate?</p> <p>The ATE Program has recognized and resolved conflicts in accordance with NSF policy and practice.</p> <p>Comments:</p> <p>The NSF takes conflicts of interest very seriously, instructing reviewers in proper procedures and assisting in resolving conflicts. Only a few proposal jackets reviewed by the committee indicated that a reviewer recused him/herself because of a self-reported conflict of interest. In all cases that identified a conflict of interest, the Program Officer took the appropriate action.</p>	<p>YES</p>
<p>4. Additional comments on reviewer selection:</p> <p>Question 2 of this section was one of the most difficult to answer. The COV discussed the fact that there are several factors influencing reviewer selection over which the ATE Program has no control. The low level of self-reporting of gender and ethnicity makes it difficult to get an accurate understanding of the levels of representation. In addition, the fact that underrepresented minorities and persons with disabilities are grossly underrepresented on the faculties of high schools, community colleges and four-year institutions severely limits the ATE Program's ability to enlist such individuals as reviewers. Thus, participation in the ATE review process may actually reflect representation of these underrepresented groups within the potential reviewer populations. However, it is not clear that women are grossly underrepresented on high school and community college faculties. Hence, the COV recommends that ATE continue all efforts to broaden its reviewer base with emphasis on increasing gender diversity and industrial participation in the short</p>	

term, while a better understanding of the composition of the potential reviewer population is being developed.

A.3 Questions concerning the resulting portfolio of awards under review. Provide comments in the space below the question. Discuss areas of concern in the space provided.

<p style="text-align: center;">RESULTING PORTFOLIO OF AWARDS</p>	<p style="text-align: center;">APPROPRIATE, NOT APPROPRIATE³, OR DATA NOT AVAILABLE</p>
<p>1. Overall quality of the research and/or education projects supported by the program.</p> <p>The overall quality of the research and/or education projects supported by the ATE program is high.</p> <p>Comments:</p> <p>Based on review of 28 proposals and budgets the COV observed the following: most center proposals involve multiple partnerships that vary in discipline, focus and purpose. Approximately 28% of the awards are for continuing Center work. All proposals have met with good to excellent reviews by multiple reviewers. The overall quality varies from good to excellent. The COV discussed the idea that some Centers may have lost focus on their mission or have a mission that is no longer central to the ATE program. When pressed to develop a set of criteria for discontinuing a Center, the COV was unable to produce any practical criteria beyond those currently being used by the ATE program. The sample of proposals provided to the COV included 16 awards chosen at random and 12 awards deemed exemplary by the ATE program. Since 4 of the 12 exemplary awards were among the 16 chosen at random, only 24 awards were included in the sample. The COV noted the high quality of these awards.</p>	<p style="text-align: center;">APPROPRIATE</p>
<p>2. Does the program portfolio promote the integration of research and education?</p> <p>The Program portfolio provides opportunity for the integration of research and education through the addition of the research in technological education projects component.</p> <p>Comments:</p>	<p style="text-align: center;">APPROPRIATE</p>

³ If “Not Appropriate” please explain why in the “Comments” section.

<p>The COV commends the ATE program for providing this research funding opportunity for community colleges. With the funding of research and evaluation projects in 2008 such as the Evaluation Resource Center at the Western Michigan University and targeted research at University of Colorado Boulder, greater collaboration among Centers and across community college campuses could result in more innovative projects and research. At this point it is too early to assess the impact of these research projects.</p> <p>Because of the strong emphasis on teaching, community college faculty typically have not had the time to engage in academic research, either in their specific STEM disciplines and technologies or in the field of community college education. As a result many community college faculties are inexperienced at academic research, its methodologies, and dissemination. The COV encourages the ATE Program to be proactive in ensuring research rigor among its research award recipients. This can be achieved in a number of different ways. For example, ATE might encourage all of its research award recipients to participate in the AACCC (American Association of Community Colleges) Council for the Study of Community Colleges annual meeting by giving research presentations and getting feedback on their work.</p> <p>The COV commends the ATE program on the addition of research in advanced technological education as a component of the program.</p>	
<p>3. Are awards appropriate in size and duration for the scope of the projects?</p> <p>The COV found the awards to be of appropriate size and duration..</p> <p>Comments:</p> <p>The COV reviewed 24 awards (the 16 randomly chosen and the additional 8 exemplary awards). All of the awards were of appropriate size and duration. Awards to projects accounted for the special needs of those projects and awards to Centers provided sufficient funding for Centers to achieve their goals. Site visit reports and year end data provide valuable information about the effectiveness of Centers. The ATE staff has used this information judiciously to recommend the renewal and elimination of Centers, while acknowledging the difficulties of starting up a Center.</p>	<p>APPROPRIATE</p>
<p>4. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> • Innovative/potentially transformative projects? <p>The ATE Program contains an appropriate proportion of innovative and potentially transformative awards.</p> <p>Comments:</p> <p>Of the 24 reviewed awards the committee observed the following: The awards reflect the nation's growing need for technological training in energy,</p>	<p>APPROPRIATE</p>

<p>computing and information technologies, and biotechnology areas. The reviewed projects covered the areas of energy/renewable energy; computer technology; nanotechnology; and biotechnology and complement projects in teacher training, multi-media, engineering technology, evaluation and manufacturing technology education. The ATE program is at the center of the advanced technological education ecosystem and as such its continued leadership is critical. ATE has encouraged community colleges to be responsive to local and national trends in technology and should continue to do so. The COV noted that the acceleration of the already rapid pace of technological change exacerbates this process, since community colleges are charged with “educating students for jobs that do not yet exist, using technologies that have not yet been invented.” To the extent that ATE can become proactive in identifying future trends and providing project categories to reflect these trends, ATE can provide leadership in encouraging community colleges to attack high risk, innovative projects.</p>	
<p>5. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> • Inter- and Multi- disciplinary projects? <p>The ATE Program contains an appropriate proportion of interdisciplinary and multidisciplinary awards.</p> <p>Comments:</p> <p>The COV found the sample from the ATE portfolio to contain a good balance of multidisciplinary projects. There were several examples of multidisciplinary partnerships, involving collaborations with industry. A prime example stands out. The Medical Devices Industry project (0602593) in which a specific needs analysis and training development proposal involved industry and community colleges.</p> <p>The COV recommends that ATE encourage more interdisciplinary proposals. With the rapid growth in social networking technologies and Cyberlearning platforms, interdisciplinary projects involving behavioral sciences/human social dynamics around technician/workforce/cultural issues is an area of strong potential.</p>	<p>APPROPRIATE</p>
<p>6. Does the program portfolio have an appropriate balance considering, for example, award size, single and multiple investigator awards, or other characteristics as appropriate for the program?</p> <p>The ATE Program portfolio contains an appropriate balance of awards in terms of award size, single and multiple investigator awards, and national and regional centers awards.</p> <p>Comments:</p> <p>After evaluating staff-compiled data of awards and reviewing 24 proposals the committee observed that overall balance and emphasis of the ATE</p>	<p>APPROPRIATE</p>

<p>program is appropriate. Investment in Centers has been quite productive, producing many best practices models to guide new projects. The resource centers are well-respected as drivers of evaluation, material and tool production, and delivery of technology training. The regional and resource centers are providing workforce leadership and have the potential through mentorship activities to bring new community colleges into the ATE Program. However, rapidly changing technology trends require that the ATE Program re-assess the need for and effectiveness of the current Centers and adjust appropriately over time.</p> <p>As regional and national foci shift to energy, climate change and environmental (water and land) technologies the COV expects that the ATE portfolio will re-balance to properly reflect these emphasis areas. The COV recommends that the ATE Program continue and expand its collaborations with other federal and state agencies, in particular, those activities and agencies involved in energy (DOE), education (DoED), and workforce (DOL). 70% of the approximately 1200 community colleges in the US have fewer than 5,000 students. A number of these are located in rural areas and lack the resources to avail themselves of opportunities under the ATE Program. The COV recommends that the ATE Program consider innovative ways to engage these kinds of institutions and the student populations that they serve.</p> <p>ATE discipline flexibility allows for programming that adapts to local, regional and national needs. The COV recommends that the ATE Program keep this project flexibility.</p>	
<p>7. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> • Awards to new investigators? <p>NOTE: A new investigator is an investigator who has not been a PI on a previously funded NSF grant.</p> <p>The committee found that the sample of the ATE Program portfolio did contain a sufficient proportion of awards to new investigators.</p> <p>Comments:</p> <p>Of the 24 awards that were reviewed, 13 were made to PIs who were previously funded by NSF and 10 awards were made to new PIs. The 20 proposals that had been declined were nearly evenly split between experienced and new PIs.</p> <p>The 2006 COV report indicated that the ATE program did well in this area.</p>	<p>APPROPRIATE</p>
<p>8. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> • Geographical distribution of Principal Investigators? <p>The committee found that the sample from the ATE Program portfolio did</p>	<p>APPROPRIATE</p>

<p>contain an appropriate geographical distribution of awards.</p> <p>Comments:</p> <p>In general, the distribution of Centers of Excellence tends to match the density of community colleges throughout the country. In 2006-2008, of 192 awards, California received 28, Massachusetts 17, and New York 11; however, 13 states received only 1 award, and 6 states received none. In fact, in the 15-year history of ATE, of the 892 awards given, 6 states received only 2 awards, while Rhode Island has only ever received 1 award. Over the 15 years of ATE, the more populated and in some cases wealthier states have received a majority of the awards, while states like West Virginia and Louisiana, whose economies might suggest a strong need for technician training have received relatively few, 2 and 3 awards respectively. Although the ATE program has different goals from those of the EPSCOR program, ATE might wish to consider the impact of unusual events (such as Hurricane Katrina, the collapse of the automobile industry, etc.) on state and local economies and the advanced technological education needs of those communities as it moves forward with its programs.</p>	
<p>9. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> • Institutional types? <p>The committee found that the ATE Program portfolio did contain an appropriate balance of institutional types.</p> <p>Comments:</p> <p>Of the 24 awards reviewed, 15 were made to community or technical colleges. Five awards went to universities and 4 awards to associations and similar broad-based umbrella entities. This outcome is consistent with the goals of the ATE Program. The ATE Program has responded well to the previous COV report, by achieving greater participation of rural and urban institutions.</p>	<p>APPROPRIATE</p>
<p>10. Does the program portfolio have an appropriate balance:</p> <ul style="list-style-type: none"> • Across disciplines and sub disciplines of the activity? <p>The committee found that the ATE Program portfolio did contain an appropriate balance across disciplines and sub disciplines of the activity.</p> <p>Comments:</p> <p>Included in the data provided by the ATE Program staff to the COV was a summary of the “Foci of Awards” from 1996 to 2008. This summary shows the program portfolio with 732 awards distributed across more than 17 different fields of technology – not including renewals or special projects. The largest area is “Computer/Information Systems/Cyber security/Telecommunications” with 155 awards or 18% of the total.</p>	<p>APPROPRIATE</p>

<p>Manufacturing makes up 12% and Biotechnology 8%. A category of miscellaneous Engineering Technology awards make up 9%. Eleven of the more specific categories are in the 2-5% range. These categories include traditional academic areas such as Math/Physics as well as technical areas such as GIS and Environmental Technology.</p> <p>A review of the years FY2006 – FY2008 showed continued balance across disciplines and sub disciplines with an appropriate shift in emphasis towards energy, nanotechnology, and manufacturing that reflects technology trends.</p>	
<p>11. Does the program portfolio have appropriate participation of underrepresented groups?</p> <p>The Program portfolio has significant participation by underrepresented groups in the populations served by the projects funded under ATE; however, substantial underrepresentation still exists among PIs and reviewers.</p> <p>Comments:</p> <p>In considering participation of underrepresented groups the committee looked at the composition of the “served populations” as well as the composition of the PI and reviewer populations. With respect to the served populations, the ATE Program has done remarkably well at reaching underrepresented groups. Participation by women increased from 24% in 2006 to 31% in 2007 and 37% in 2008. Participation by most underrepresented ethnic minority groups showed increased rates of participation, although not quite so dramatic as for women. For example, African American participation increased from 6% in 2006 to 15% in 2007 and 17% in 2008; however, still above representation in the general population. The ATE Program is to be commended for making such dramatic gains among women and for reaching parity for African Americans and Hispanics.</p> <p>Although the ATE Program Officers expressed clear concern about the appropriate participation of underrepresented groups, the data available for 2003-2005 indicated that 90% of the PIs were White; the 2006-2008 data indicate the same level, 90% of the PIs and 95% of the CO-PIs are White. Data show no evidence of significant improvement over the past 6 years in increasing the proportion of people of color as ATE PIs. In terms of gender representation, 2003-2005 PIs were 59% Male; in FY2006-FY2008 63% of the PIs and 67% of the CO-PIs were Male.</p> <p>The COV recommends putting additional effort on identifying, recruiting and supporting proposals from PIs from underrepresented groups. Since the student population of primary interest in coming decades will increasingly be students of color, projects designed by individuals who understand the cultural issues, educational values, and technical needs of this population will have a greater probability of success and contribution to society.</p> <p>Recruiting a diverse group of reviewers is very important, but it appears that</p>	<p>NOT APPROPRIATE</p>

<p>this strategy has not resulted to date in an increasingly diverse group of PIs. It would be informative to examine the submission/award/declination rates for proposals of researchers from underrepresented groups and better assess the “underrepresentation problem.” For example, it would be useful to know if the problem stems from the underrepresented PI pool being small or from a high declination rate within a sufficiently large underrepresented PI pool. Such information could guide the provision of support and mentoring for such populations in their preparation of subsequent proposals. Mentoring by successful researchers of color could also be used as a means to increase diversity. Success in this aspect of The ATE Program requires a more proactive approach to demonstrate support for the participation of a more diverse group of proposal writers.</p>	
<p>12. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>The ATE Program is relevant to national priorities, the NSF mission, the relevant disciplinary fields, and is responsive to the legislation that initially established the Program.</p> <p>Comments:</p> <p>Publications such as “A National Action Plan for Addressing the Critical Needs of the U.S. Science, Technology, Engineering, and Mathematics Education System”, “STEM Education Recommendations to the Obama Administration”, and “The National Science Board 2020 Vision for the National Science Foundation” from the National Science Board; “Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future” from the National Academies Press; and “The Grand Challenges for Engineering” as determined by a committee of the National Academy of Engineering identify high priority national needs and suggested actions that will enable our nation to maintain its competitive posture in STEM professions. Challenges such as energy independence, environmental issues, biotechnology, IT, new materials and other emerging technologies will need a workforce with diverse skills across educational and research strata.</p> <p>The ATE Program is a vital component of this national response and should be integrated into this new national educational and research strategy. The ATE program has had 16 years of success in the strengthening of advanced technological education and the empowerment of community college faculty. The need to step back and conduct strategic planning for the ATE program is even more vital today than it was in 2006 when a similar need was first articulated. The investment of time, effort and energy in this activity would ensure that the ATE program retains its premier role as a catalyst and change agent and strengthens its national role in setting the agenda for technician education and training to meet the emerging technological needs of the United States.</p>	<p>APPROPRIATE</p>

13. Additional comments on the quality of the projects or the balance of the portfolio:

As one of the older programs in the EHR Directorate, ATE's success in the development of technician programs at the community colleges is well documented. Evolving circumstances warrant a thorough review of the mission and strategic goals of this activity since the original leadership of the Program has retired or is near retirement. Moreover, with a new White House administration that supports the goals of the ATE Program, a unique opportunity exists to raise the visibility and expand the scope of the program.

A.4. Management of the program under review. Please comment on:

1. Management of the program.

The committee found the management of the ATE Program to be very effective; however, the program is facing a number of staffing challenges.

Comments:

Technician education has key dependencies on both the secondary and post-secondary educational infrastructure in America. Having ATE leadership and staff split between the DUE and DRL divisions brings breadth in the program officer backgrounds and in their connections with other NSF programs. Two of the five program officers currently working in this program have community college experience and the variety of experience provides the necessary knowledge to understand the complex technician articulation pathways between K-12, Community Colleges, and Universities.

A possible negative side effect of this management structure is the lack of a single program officer with primary responsibility for the ATE program. The sample of proposals reviewed included a significant number of proposals handled by rotators without the expertise of the current team. The COV suggests dedicating at least one program officer primarily to the ATE Program with little or no other program responsibilities. The number of proposals and awards is growing and reflects emerging trends in our education systems that are driven by workforce needs. As indicated in the ATE 2008 Annual Report "more financial resources are needed for travel and for technical staff assistance."

The leadership team for ATE consists of six people (Lewis, Salinger, McBride, Campbell, Fletcher and Chang) three of whom have two year college experience (Lewis, Fletcher and Chang). About twenty Program Officers in the two Divisions (DUE and DRL) process ATE proposals and monitor awards. Some are very experienced and others are new. Center awards are processed and monitored by permanent program officers. The Program has always had a management team with co-leads (Elizabeth Teles and Gerhard Salinger). David Campbell from DRL and a second-year rotator from DUE were also on the team. Nevertheless, with a program going to \$100M by 2013 full time ATE program officers are needed.

The Management Review shows a very mature organization that has grown in response to the complex needs articulated by community colleges; however, the COV considers the time to be right for the development of a broader strategic vision. At the time of establishment of the ATE Program in 1992, advanced technological education probably meant “vocational training” to Congress; however, the ATE Program has always taken a forward-looking view of technician education. The nation is now faced with severe economic and workforce development problems exacerbated by the rapid pace of technological change. The COV recommends that the ATE Program initiate a strategic planning process which involves all sectors of the ATE ecosystem (community colleges, industry, universities, other federal agencies ...) to develop a vision for advanced technological education in the first half of the twenty-first century. The development and implementation of this vision is critical to the nation’s global competitiveness and the ATE Program must play a central role.

2. Responsiveness of the program to emerging research and education opportunities.

The committee found the ATE Program very responsive to emerging research and education opportunities.

Comments:

ATE continues to provide leadership in technician education as indicated by its addition of special project focus areas in research and evaluation. Funding leading edge centers and projects in fields such as geospatial technology, nanotechnology and alternative energy are examples of the program’s responsiveness to emerging research and education opportunities.

The Resource Center concept is an example of how the ATE Program is building on prior investments and encouraging innovation by experienced PIs. The award to the “community of practice partnerships” at Springfield Technical College (DUE 0802418) is a representative example.

The previous COV indicated that perhaps the ATE could be more pro-active in anticipating emerging research and education needs. The Management Plans, Annual Reports and PI Conference Agendas all indicate the proactiveness of the ATE program in creating a framework to support emerging research and education opportunities. The COV found the ATE Program to be more than sufficiently proactive in anticipating emerging trends.

It is worth noting the counter-intuitive notion that technician education can be as or more challenging than traditional science, math and engineering education. This challenge occurs because the learning outcomes in technician education programs can change significantly from year to year as technologies, tools and their practical application change. The processes, methodologies and relationships with employers necessary to develop and maintain technician education programs constitute a core competency of Community Colleges and provide fertile ground for continuous improvement and innovation.

3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.

Comments:

The program planning and prioritization processes are well organized and balanced. The portfolio was found to be diverse and well-balanced as noted above. One concern for the COV was that one

of the program officer co-leads formerly responsible for the ATE Program had recently retired. Change in personnel often involves some loss of institutional history and working relationships with PIs. The COV recommends that an internal program planning and prioritization activity be undertaken in conjunction with the strategic planning activity recommended above.

The external processes put in place by the 1992 SATA act do not appear to have impeded portfolio development; however, with the current emphasis of the “American reinvestment and recovery act” and “America Competes”, it might be wise to anticipate additional external constraints and/or expectations for the ATE Program. Although the ATE Program has not received funds from the American Reinvestment and Recovery Act, additional STEM education initiatives may be imminent. The ATE Program should position itself to respond quickly to external stimuli.

4. Responsiveness of program to previous COV comments and recommendations.

The committee found the ATE Program to be very responsive to previous COV comments and recommendations.

Comments:

The ATE Program has continued to effectively utilize the support technologies provided by NSF. The Program’s decision to create disciplinary groups and to make available model panel reviews has made the panel review process more effective. The program solicitation has been revised with more guidance on the evaluation process. A better definition of high-risk and innovative proposals has been addressed in the definition of “transformative projects”. Although the Program enhanced efforts to increase industrial expertise on review panels, participation by industrial reviewers continues to be low. As noted above, this an area in need of improvement.

The distinctions between the national, regional and resource centers have evolved and matured. Criteria have been developed and refined for center scope, depth and breadth of industry relationships, as well as quantified evidence of impact on technological education and the workforce. The program solicitation has been expanded to reach out to smaller and rural institutions.

The previous COV as well as this COV identified that the prime delivery channel for technician education, community colleges, requires greater program officer support per project than other NSF programs. Potential PIs and meritorious proposals would benefit greatly from additional coaching and counseling from program officers, but the current limited staffing significantly constrains this option.

5. Additional comments on program management:

Comments:

The ATE Program leadership has shown the ability to creatively expand the program as necessary. The Preliminary Proposal process is an innovative solution to the low level of grant proposal sophistication typical of those institutions (particularly community colleges and high schools) served by the ATE program. A National Center evolving into a Resource Center; the establishment of an

Evaluation Center; and the inclusion of a research component are all good examples.

PART B. RESULTS OF NSF INVESTMENTS

The NSF mission is to:

- promote the progress of science;
- advance national health, prosperity, and welfare; and
- secure the national defense.

To fulfill this mission, NSF has identified four strategic outcome goals: Discovery, Learning, Research Infrastructure, and Stewardship. The COV should look carefully at and comment on (1) noteworthy achievements based on NSF awards; (2) ways in which funded projects have collectively affected progress toward NSF's mission and strategic outcome goals; and (3) expectations for future performance based on the current set of awards.

NSF investments produce results that appear over time. Consequently, the COV review may include consideration of significant impacts and advances that have developed since the previous COV review and are demonstrably linked to NSF investments, regardless of when the investments were made.

To assist the COV, NSF staff will provide award "highlights" as well as information about the program and its award portfolio as it relates to the three outcome goals of Discovery, Learning, and Research Infrastructure. The COV is not asked to review accomplishments under Stewardship, as that goal is represented by several annual performance goals and measures that are monitored by internal working groups that report to NSF senior management.

B. Please provide comments on the activity as it relates to NSF's Strategic Outcome Goals. Provide examples of outcomes ("highlights") as appropriate. Examples should reference the NSF award number, the Principal Investigator(s) names, and their institutions.

B.1 OUTCOME GOAL for Discovery: *"Foster research that will advance the frontier of knowledge, emphasizing areas of greatest opportunity and potential benefit and establishing the nation as a global leader in fundamental and transformational science and engineering."*

Comments:

The ATE Program provides the following information in its program synopsis: "With an emphasis on two-year colleges, the Advanced Technological Education (ATE) Program focuses on the education of technicians for the high-technology fields that drive our nation's economy. The program involves partnerships between academic institutions and employers to promote improvement in the education of science and engineering technicians at the undergraduate and secondary school levels. The ATE Program supports curriculum development; professional development of college faculty and secondary school teachers; career pathways to two-year colleges from secondary schools and from two-year colleges to four-year institutions; and other activities. A secondary goal is articulation between two-year and four-year programs for K-12 prospective teachers that focus on technological education. The program also invites proposals focusing on applied research relating to technician education."

According to the US Department of Labor's Bureau of Labor Statistics (BLS), "Engineering technicians use the principles and theories of science, engineering, and mathematics to solve technical problems in research and development, manufacturing, sales, construction, inspection,

and maintenance. Their work is more narrowly focused and application-oriented than that of scientists and engineers. Many engineering technicians assist engineers and scientists, especially in research and development. Others work in quality control, inspecting products and processes, conducting tests, or collecting data. In manufacturing, they may assist in product design, development, or production.” BLS goes on to indicate the following about the work of technicians: “Engineering technicians who work in research and development build or set up equipment; prepare and conduct experiments; collect data; calculate or record results; and help engineers or scientists in other ways, such as making prototype versions of newly designed equipment. They also assist in design work, often using computer-aided design and drafting (CADD) equipment.”

Most engineering technicians are specialists, who learn many of the same skills and work in the same disciplines as engineers.

This context drives the criteria for evaluating research activities. The COV evaluated 24 awards to formulate this response that may be clustered into technician education in various core areas (including manufacturing, bio-tech, nano-, electronics, energy, and IT) as well as projects with special foci (including evaluation, research on technician education, experiential education and innovative delivery of materials). The majority of these projects focus on technician education in response to a well-articulated need; however, there were a number of salient examples of research in technician education included in the selected sample.

DUE – 0832874 entitled “Enhancing Targeted Research in the Advanced Technological Education Program” was developed to conduct research leading to a deeper understanding of the context, challenges, and opportunities of technician education in America’s two- and four-year colleges. Specifically, the scope of work includes (1) research on program improvement activities, (2) research on curriculum and materials development activities, and (3) research on crosscutting issues in technological education.

DUE – 0802581 entitled “Math and Science Curriculum for the Digital Bridge Academy” seeks to increase diversity in technological education at the community college level across multiple disciplines by meeting the needs of students who are not fully prepared for college-level work. As indicated by the PI, the research lies in new understanding about how best to educate a growing population of under-prepared students. “We will not be able to increase minority participation in science, technology and engineering fields until we have a better understanding of the educational needs of these students and establish models that meet their needs effectively.”

DUE – 0802245 entitled “ATE Evaluation Resource Center (ERC)” seeks to assist ATE grantees to produce high-quality evaluations that ultimately advance the goals of ATE projects and centers and the overall ATE program. As indicated in their project summary, the ERC supports the following activities: (1) conduct ongoing program monitoring activities that are useful at program and project/center levels; (2) assess the evaluation needs and capacities of ATE grantees; (3) collect and develop evaluation resources keyed to the needs of ATE projects and centers; (4) engage in and support research on evaluation-related ATE issues; (5) build evaluation capacity among ATE grantees and evaluators; and (6) disseminate resources to ATE grantees to promote evaluation awareness, knowledge, skills, and utilization.

While these are good examples of research appropriate to the discipline, the COV recommends that the ATE program continue to develop and implement strategies for increasing the number of projects that focus on a broad range of research topics in technician education.

B.2 OUTCOME GOAL for Learning: “Cultivate a world-class, broadly inclusive science and engineering workforce, and expand the scientific literacy of all citizens.”

The ATE Program serves this outcome goal of the NSF very well, as workforce development is one of the primary goals of ATE.

Comments:

Nationally an average of 6 technicians is required to support every practicing scientist and engineer. The ATE Program has funded projects and Centers which contribute directly to the production of these technicians. In addition, the National and Resource Centers disseminate curricula broadly to community colleges, some of which are too small or ill-equipped to develop the required curricula locally.

Examples of projects that cultivate a broadly inclusive science and engineering workforce are:

Project 0702753 entitled “A New Systems View of Electronics for 2010”

This project presents a new synthesis of electronic technology programs which will be implemented in over 20 community colleges.

Project 0603313 entitled “Curricular and Professional Development Activities to Support Associate Degree in Biotechnology Operations”

This project develops bio-technology curriculum for utilization in Puerto Rican high schools.

Project 0602593 entitled “Medical Device Industry Education Consortium (MDIEC)”

This project calls for a national advisory board of companies who manufacture medical instruments and can advise a group of community colleges who are developing curriculum in this area.

Project 0802581 entitled “Math and Science Curriculum for the Digital Bridge Academy”

This project develops a math and science curriculum for a digital bridge academy for developmental students at risk at multiple levels.

Project 0802448 entitled “The Brooklyn Biotechnology Bridge”

This project has developed a new approach for transforming a bio-technology center into a broader Life Sciences center.

B.3 OUTCOME GOAL for Research Infrastructure: “Build the nation’s research capability through critical investments in advanced instrumentation, facilities, cyberinfrastructure and experimental tools.”

The ATE Program differs from NSF research programs in that ATE’s goal is to develop the workforce through advanced technological education and training, primarily at the community college level. Thus, ATE’s goal is almost exclusively in the area of human capital development, and the COV found that ATE has done an excellent job of building human capital through its critical investments. The answers to the questions concerning the populations served by the ATE Program clearly reflect this goal achievement. In addition, one COV member noted that, “The ATE Program has also empowered community college faculty, providing them with resources to address significant issues in advanced technological education.”

Comments:

Many of the ATE projects reflect well-developed curriculum, materials and tools that contribute to the nation's technological infrastructure. Representative examples are:

Project 0603143 "PHOTON PBL"

This project establishes a problem-based learning curriculum to be implemented at the Photonics Center in Massachusetts.

Project 0603221 "Advanced Aerospace Manufacturing Education Project"

This project introduced a gap method to develop skills for the manufacturing aerospace industry.

Project 0802253 "The Bio-Bench Project"

This project created a new method for development of skills for start-up company in biotechnology.

PART C. OTHER TOPICS

C.1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.

The COV found no program areas in need of improvement or gaps within program areas. As reported above the COV found the ATE Program portfolio to be well balanced along all dimensions and found the ATE Program to have done a good job of anticipating technology trends and areas of emphasis.

C.2. Please provide comments as appropriate on the program's performance in meeting program-specific goals and objectives that are not covered by the above questions.

ATE is a mature program that is currently going through a leadership transition. This change presents a good opportunity for a new strategic retreat to evaluate the past successes, build upon them and look toward the future. The 2006 COV called for such a process; yet it is unclear if the ATE undertook any action as a result. Again, given the rich history and activity of the program, it would be extremely useful to consider a formal workshop. During this process perhaps some partners from the AACC and other members of the ATE community might be engaged in this process

C.3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.

A small number of agency-wide issues surfaced during COV discussions. First, it became apparent to the COV that there was no aggregated data on Conflicts-of-Interests and their possible impacts on the award decision process. NSF staff growth has been stagnant for a number of years and ATE is one of the programs in need of additional staff. Over the years NSF has facilitated proposal processing through the use of advanced technologies and the COV would like to see that trend continued.

C.4. Please provide comments on any other issues the COV feels are relevant.

In this section we summarize our thoughts concerning the ATE Program – past, present and future.

Before beginning this summary we would like to point out some unique aspects of the ATE Program. First of all, it is probably the only program within NSF focused on community colleges. In some cases students who attend community college have completed a four-year degree and have returned to community college to receive technical training in order to secure employment. Regardless of their reasons for attending, a large fraction of community college students are interested in remaining in their community. They are typically not interested in moving to some distant community for work. This creates unique challenges for the ATE Program – challenges not faced by other programs within NSF. The ATE Program must fund projects that can be locally successful while fitting into a broader national plan. The Program must “read the tea leaves” in terms of balancing a portfolio of commitments in a climate of rapidly changing and emerging technologies. Finally, the Program must integrate across a broad set of stakeholders – businesses, community colleges, students of all levels, four-year institutions, etc. It is within this context that we characterize the successes of the past, the issues of the present, and the challenges of the future.

Past Successes

As one COV member noted, “If NSF is where discoveries begin, then ATE is where discoveries are applied.” This quote establishes ATE’s unique role within NSF in terms of the application of science and also signals the difficulty of ATE’s mission. Over the past 15 years the ATE Program has funded a number of exemplary models of advanced technological education. As the program has matured, it has wisely added new components – Regional Centers, Resource Centers, Research, and Evaluation. Through its Centers the ATE Program has been able to support the development and dissemination of best practices. A unique aspect of the National Centers is that they implement the “think nationally, mentor locally” paradigm. This has been an effective means of bringing along some of the smaller, more rural community colleges. This is only one of the community building activities that has empowered community college faculty across the country. The newly established research and evaluation components should show dividends within a few years.

The COV recommends that the ATE Program leverage the 15 years of exemplary models; continue to support the development and dissemination of best practices; further engage in building communities; and foster the “Think nationally, mentor locally” paradigm.

Present Issues

The ATE program leadership is in a period of transition with the retirement of one of the program officer co-leads. The COV would like to see dynamic internal leadership maintained and this is sometimes difficult under a matrix management model. The COV would like to see increased efforts to improve gender and ethnic diversity among reviewers and PIs; enhanced feedback and support to proposers; and stronger Center evaluation, particularly in terms of sustainability. In addition, the COV recommends that the ATE Program do the following: (1) clarify ATE’s role in technician education; (2) encourage more interdisciplinary proposals; (3) develop an explicit rationale for the ATE portfolio; and (4) continue to promote research in technician education. Of course, none of these items are free; additional staff is required.

Future Challenges

The COV strongly recommends that the ATE Program maintain and enhance its national leadership role in advanced technological education. In this regard we would like to see the ATE leadership strengthen and expand its collaborations with other federal agencies (particularly the Department of Labor, the Department of Education, the Department of Energy, and the National Institute of Standards and Technology). The federal agencies are just one dimension of the advanced technological education ecosphere and the others deserve attention as well, such as state and local agencies, businesses, and professional associations – e.g. AACC.

As community colleges reinvent themselves over the next decade, the ATE Program should provide leadership and insight. As more community colleges opt to provide 2+2+2 programs and other innovative programs, the ATE Program could be in a position to provide seed funding that catalyzes significant institutional transformations.

C.5. NSF would appreciate your comments on how to improve the COV review process, format and report template.

Note to the COV for further response. Comment on how this review meeting and process could be improved.

Pre-visit

The webinar is an effective tool. The lead program officer presented the history of the program and its goals as well as the task at hand. Other staff walked the COV through the prepared materials and instructed the COV on how to use e-jacket. This process was quite helpful and certainly made the COV more efficient during the visit. Some changes that might improve the process further would be (1) to provide the DVD of support materials immediately after the webinar; (2) to schedule the webinar at least 2 weeks prior to the visit, allowing COV members more time to digest the materials; and (3) to include the writer in the webinar. Including the writer in the webinar might help to clarify the roles of all the COV members and what is expected of them in terms of the content vs. the form of exposition.

During the meeting

It was very useful for the COV to meet with the relevant program officers near the end of the first day. The meeting facilitated correction of factual errors and uncovered non-apparent program features, collaborations and activities. The COV recommends retaining this feature.

Other

It was the opinion of the entire COV that this review was quite productive and that the productivity was directly related to the comprehensive preparations of the ATE Program staff as well as the diverse composition of the COV.

The COV found the diverse backgrounds of the COV members, in terms of range of expertise, geographic distribution, role within home institution, and previous experience with some aspect of the ATE program to provide both the breadth and depth needed for the task. The pace of the work was quite demanding and the COV could have productively used another half day. On the second day our report of findings to ATE program officers and other EHR staff helped keep the COV focused and gave us an opportunity to bring our thoughts and recommendations together in a cohesive presentation. This presentation requirement also allowed the COV to collectively draw from

one another's knowledge and create recommendations that would not have arisen as a result of individual work.

SIGNATURE BLOCK:

For the 2009 ATE COV
Dr. Bryant York
Chair