Program Evaluations and Studies Conducted by EEC: 1990 to March 2007			
Title	Initiator(s); Year Completed	Purpose	Use of Results
EEC Studies			
1. Engineering Research Centers Studies			
Industry Perceptions of ERC Graduates: An Examination of Employers of ERC Graduates. Evaluating outcomes in science education: A survey of employers of NSF center graduates PI: Craig Scott, University of Washington	ERC Program 1990	The purpose was to examine employers of ERC graduates of four ERCs. Employers reported that ERC graduates are generally better at demonstrating key skills than are non-ERC graduates from otherwise comparable institution and ERC graduates tend to demonstrate greater understandings of concepts that are important to industry than do non-ERC graduates from otherwise comparable institutions.	Results and recommendations were presented at the 1991 ERC meeting in Boulder, Colorado.
Job Performance of Graduate Engineers who Participated in the NSF ERC Program Results in Chapter 5 of http://www.nsf.gov/pubs/1998/nsf9840/nsf9840.htm Conducted by Abt Associates PI: Stephen Fitzsimmons	ERC Program 1996	Complementary study of former graduate students at the first 14 ERCs to evaluate the impact of the ERC research and education experience on the effectiveness of masters and doctoral graduates working in industry, academia, and other sectors relative to contemporaries.	Results presented at ERC Annual Meeting; initiated Student Leadership Councils at all ERCs to provide center identity and cohesion to students involved in ERCs; initiated Student Retreat day at the ERC Annual Meetings; provided each center with center-level results and study briefing materials to help ERCs enhance the impact on students of ERC involvement.
The Impact on Industry of Interaction with Engineering Research Centers http://www.sri.com/policy/stp/erc/ Conducted by SRI International PI: Cathie Ailes	ERC Program 1997	Identify the types of results and value to industry of interaction between ERCs and their industrial sponsors; determine which types of interaction are most useful to industry, estimate the frequency of occurrence of the most useful types in different settings, and examine the process by which firms make use of results of ERC research.	Results presented at ERC Annual meeting; Initiated training visits to Industrial Liaison Officers (ILOs) at new ERCs by experienced ERC ILOs to jumpstart development of strong industrial partnerships; Provided each center with center-specific results and study briefing materials to enhance impact of industry partnerships.
Documenting Center Graduation Paths Two annual reports in Word Conducted by SRI International PI: Cathie Ailes	ERC Program 1999, 2000	Evaluate the extent to which centers that graduate retain the characteristics that made them ERCs, e.g., engineering systems approach to research, interdisciplinarity, industrial collaboration, testbeds, team-based research, and involvement of graduate and undergraduate students in ERC activities.	Results presented at ERC Annual Meeting and provided to centers to use with their industrial partners; caused introduction of required graduation plan in 6th year renewal proposals; focused attention on importance of university support in retention of ERC education an outreach activities after graduation.

The Impact on Institutions of Hosting and ERC Report in Word Conducted by SRI International PI: Cathie Ailes	ERC Program 2001	Examine the extent to which the ERC awards were change agents in the awardee engineering schools, particularly through the emphasis on interdisciplinarity, undergraduate research, and long-term collaborations with industry.	The results pointed to the engineering education impacts as being often the most profound. This was important in light of results of the ERC Graduation studies that pointed to ERC education programs being the most vulnerable when centers moved to self-sufficiency. The centers have been made aware of the need to prepare for the education programs to be self-sufficient, not just the research.
An Analysis of Industry Support for the NSF's Engineering Research Centers Results in Doctoral Dissertation of Jonathon Tucker PI: Christopher Hill, George Mason University	ERC Program 2003	As follow-on to grant research funded by the Science and Technology Studies program in SBE, the project team examined the veracity of prevailing views among ERC personnel that industry funding was scarce and only available for short-term proprietary research.	The study identified important differences among ERCs and the technology sector and characteristics of firms that were most likely to be interested in supporting the centers. The most important distinction among ERCs was whether they were paradigmatic -- working in mature technical areas of interest to large, established firms -- and pre-paradigmatic -- centers working in new areas not relating to existing firms' product lines or established firms with a tradition of R&D suupport. Subsequent studies of the ERC Program have used this distinction in designing studies and analyzing results. This study's findings were also instrumental in explaining in a policy paper to the DRB the need for expecting differing levels of industrial support to ERCs based on the characteristics of each center and the firms that would be attracted to it.
The Economic Impact on Georgia of Georgia Tech's Packaging Research Center Report Available Conducted by SRI International PI: David Roessner	Georgia Research Alliance 2004	Evaluate the Direct and indirect economic impact of the investment in the NSF Packaging Research Center, an ERC, at Georgia Tech, on the state of Georgia.	Found a 6 to 1 direct economic impact on Georgia as a result of a $32.5 M investment in the PRC by the Gerogia Research Alliance. Direct impact from jobs created ,spin-oof and spin-in companies, jobs created, technical assistance to GA companies, cost savings to GA firms by hiring PRC grads, benefits to member firms
The Impact on Industry of Interaction with ERCs, Repeat Study Report in Word Conducted by SRI International PI: David Roessner	ERC Program 2005	Examine how member firms in mature second-generation ERCs benefit from ERC collaboration and underlying dynamics that affect if/how firms are positioned to take advantage of ERC research, students, emerging technology, engineered systems, etc.	A comparison of results from this study and the original study of first-generation ERCs is in progress. The results will be provided at the 2004 ERC annual meeting and the base study results were provided at the 2003 meeting at the invitation of the ERC Industrial Liaisons, who use them to assist in positioning their centers to attract more firms and to inform their Industrial Advisory Boards about program-level impacts on industry.
Undergraduate and Graduate Education Activities of Current Engineering Research Centers 2006 Report of the ERC Education Assessment and Dissemination Task Group	ERC Program 2006	To document the accomplishments and productivity of the ERCs in their education activities at the undergraduate and graduate levels, and to calibrate the relative education achievements in the research fields represented by technology clusters of centers.	The results are used by the ERC program in managing the centers such as setting new review and reporting guidelines for centers. The report also provides insight into the relative productivity of technology clusters, and the impact on productivity due to the number of collaborating partners in an ERC and funding duration.

ERC Strategic Planning Best Practices Report in draft PI: Steve Currall, Rice University	ERC Program underway	Grant to business school faculty member to determine how the ERC Program's 3-plane strategic planning construct is used in ERCs and to detemine lessons learned to strengthen ERCs and the ERC Program	**in progress**
ERC Economic Impact Conducted by by SRI International PI: David Roessner	ERC Program underway	Study of the state economic impacts of Georgia Tech's Packaging Center, commissioned by the state of Georgia, is being expanded by the ERC Program to examine the regional and national economic impact of three graduating and graduated ERCs.	**in progress**
International Study of Research Centers Programs Similar to the ERC Program Conducted by STPI/IDA PI: Bhavya Lal	ERC Program underway	To study the operating characteristics of centers established around the world in configurations similar to ERCs to determine best practices for the ERC Program	**in progress**
2. Education Programs Studies			
Progress of the Engineering Education Coalitions Program http://www.nsf.gov/pubsys/ods/getpub.cfm?nsf00116 Conduted by SRI International PI: Cathie Ailes	Engineering Education Program 2000	Examine the results of the program within the participating universities and more broadly after first five years of operation and identify areas in which improvements could be made.	Study took place after decision to make no more awards was made. Study results used to focus final years of the Coalition awards on identifying the best curricular products, evaluating them, implementing them beyond the originating institution, and dissemination of them beyond the originating Coalition.
CRCD Evaluation pilot test Hardcopy Report Conducted by Abt Associates PI: Stephen Fitzsimmons	EEC Education Program 2000	Examine how successful awards in the first three award years, FY 1992-94, had been in developing and implementing courses and curriculum that improve and make more relevant the content of engineering courses and serve as a means to engage and retain students in engineering degree programs.	Curricular materials developed by early awardees were provided for evaluation to an expert panel convened by the contractor. Not all awardees had materials to provide, so the project shifted to be a pilot test of the methodology, since there had been no previous study conducted in this fashion with EEC-funded engineering education curricular materials.
3. Human Resources Programs Studies			
Graduate Engineering Education (GEE) Traineeship Program Hardcopy report Conducted by Abt Associates PI: Ellen Schiffer	EEC Human Resources Program 2000	The goal was to learn what institutional collaborations brought about increased production of doctorates to women and underrepresented minorities.	This study was conducted after GEE was discontinued due to the creation of the NSF-wide IGERT program. However, the final report was very useful to program officers in EHR's HRD division who were beginning to fund similar collaborations to increase the production of doctorates to underrepresented groups and wanted understand what worked and what didn't work as well with collaborations funded by GEE in terms of achieving the goal of increasing doctorates to underrepresented groups.

Evaluation of the Research Experiences for Teachers (RET) Program: 2001-2003 Awards http://www.sri.com/policy/csted/reports/university/documents/reteval2005.pdf Conducted by SRI International PI: Susan Russell	EEC Human Resources Program 2005	Study the first three years of the RET Site and Supplement mechanisms to determine what the teachers did and circumstances that correlate with clear impact of the RET experience on the content and methods of teaching.	Results about duration of average RET experience, nature of activities, and extent of follow-on relationship during academic year led to changes in the RET program announcement and subsequent funded awards.
Evaluation of ENG's Research Experiences for Teachers (RET) Program, 2001-2005 http://www.sri.com/policy/csted/reports/university/documents/RET2%20FINAL%20REPORT%20June%2030%2006.pdf Conducted by SRI International PI: Susan Russell	EEC Human Resources Program 2006	Study covers awards in FY 2004-2005 to build trend data and to examine the results of changes to the RET program solicitation made as a result of the study of 2001-2003 awards. In addition, the study analyzes data from all four initial award years: 2001-2005.	Review criteria for proposals and subsequent program announcement updated.
Evaluation of the Research Experiences for Teachers (RET) Program: Second Follow-on Study Conducted by SRI International PI: Susan Russell	EEC Human Resources Program underway	The program director wanted to see whether changes to the annual program announcement and review criteria were bringing about the desired changes in what teachers did during and after RET and whether teachers and their RET PIs were building durable relationships between the teachers' schools and PIs' school or department for the benefit of the students.	**in progress**
Evaluation of the NSF-NIBIB Bioengineering and Bioinformatics Summer Institutes (BBSI) Program Conducted by SRI International PI: Jongwon Park	EEC Human Resources Program; NIH/NIBIB underway	Examine the activities of undergraduate and graduate students involved in the first group of three-year BBSI awards that provide intensive summer research and classroom education in the emerging areas of bioengineering and bioinformatics, the effect of the students' experiences on career decisions, and whether some aspects of the program's design were more successful than others.	**in progress**
Evaluation of the Research Experiences for Undergraduates (REU) Program in the Directorate Conducted by SRI International PI: Mary Hancock	EEC Human Resources Program; O/AD	Program directors wished to learn details about the undergraduate research experiences they were supporting across engineering and in a variety of academic research settings, e.g., similarities and differences across settings, institution size, students' home institution size and nature, recruitment patterns and student selection criteria.	**in progress**
Other ENG Studies			

The Role of NSF's Support of Engineering in Enabling Technological Innovation Report 1: MRI, Reaction Injection Molding, Summary report: http://www.nsf.gov/pubs/1997/nsf9756/nsf9756.htm; Full report: http://www.sri.com/policy/stp/techin/ Conducted by SRI International PI: David Roessner	O/AD 1997	Document NSF's involvement in bringing about the innovations; evaluate the significance of NSF's role in the broader context of the innovations' development to understand better the roles that ENG's activities and funding played in the emergence of specific engineering-based innovations in preparation for GPRA reporting. Innovations studied: *Magnetic resonance imaging, High-performance polymer matrix composites, the Internet.*	ENG, OLPA, and O/D have used the results from these two reports in a variety of ways, e.g., in speeches by NSF senior management, presentations to ENG AD COM, and numerous other NSF and non-NSF audiences, GPRA documents.
The Role of NSF's Support of Engineering in Enabling Technological Innovation Report 2: Summary second year report: http://www.nsf.gov/pubs/1999/nsf98154/nsf98154.htm Full report: http://www.sri.com/policy/stp/techin2/ Conducted by SRI International PI: David Roessner	O/AD 1998	Document NSF's involvement in bringing about the innovations and evaluate the significance of NSF's role in the innovations' development to understand better the roles that ENG's activities and funding played in the emergence of specific engineering-based innovations in preparation for GPRA reporting. Innovations studied: *Cellular Phone, CAD, and Optical Fibre*.	ENG, OLPA, and O/D have used the results from these two reports in a variety of ways, e.g., in speeches by NSF senior management, presentations to ENG AD COM, and numerous other NSF and non-NSF audiences, GPRA documents.
A Retrospective Assessment: NSF's Design and Manufacturing Research Programs Report in Word Conducted by Abt Associates PI: Bhavya Lal	O/D and DMII 1998	Funded by O/D as a GPRA pilot project testing the methodology for utility in GPRA reporting. This study examined award-level outcomes and impacts of DMII research programs' FY 1984-1986 after 10 years.	Initiated by one division director, Bruce Kramer, and completed for another, Louie Martin-Vega, study results were used in a variety of documents needing examples of results from individual research program awards, including COVs.
The National Science Foundation's Small Business Innovation Research (SBIR) Awards: Enabling Developments and Societal Impact Report in Word Conducted by Abt Associates PI: Bhavya Lal	SBIR Program 1999	Study the use of NSF-funded research in NSF SBIR awards and fundamental knowledge developed by NSF SBIR Phase II instrumentation-based awardees to respond to Congressional questions.	Unknown
History of NSF's Earthquake Hazards Mitigation Program http://www.sri.com/policy/csted/sandt/NSFearthquake.html Conducted by SRI International PI: David Cheney	CMS 1999	Examine the outcomes and impacts from ENG's long-term investment in the Earthquake Hazard Mitigation Program in the context of multi-agency National Earthquake Hazards Research Program, especially the outcomes and impacts of the investments.	This project was commissioned by one program officer, who rotated out and the replacement wanted to change the second phase of the project, but never did so. However, a request from OMB led to the NEES program director to initiate a different follow-on project to assemble a website with detailed technical world-wide information about instrumentation and facilities related to NEES. The website is a public document.

A Retrospective Assessment: NSF's Design and Manufacturing Research Programs Report in Word. Conducted by SRI International PI: Bhavya Lal	DMII 2000	Examine results after 10 years from the DMII research programs' FY 1989-1993 awards, comparing results from awards made in three DMII initiatives during those years with those not addressing the initiative topics. This was to have been the first of a formal sequence of studies of these programs' awards.	Louie Martin-Vega institutionalize the project so that new case studies for a sample of awards made 10 years previously to DMII research programs would be produced annually. His interest was the differential outcomes from initiative awards he had made as a program officer and unsolicited awards. Results showed that unsolicited were generally more productive. Kesh Naraynan became division director before the second year's case studies were completed and initiated preparation of a report summarizing across all case studies information for program management and improvement. Both reports were used for COVs.
Outcomes and Impacts of the State/Industry-University Cooperative Research Centers (S/IUCRC) http://www.nsf.gov/pubs/2001/nsf01110/nsf01110.html Conducted by SRI International PI: David Roessner	S/IUCRC Program 2001	Compares the S/IUCRC program's outcomes impacts with those of the I/UCRC program to determine whether the unique features of the S/IUCRC program brought about outcomes and impacts that differed from those produced by the I/UCRC program.	The study began after the S/IUCRC Program stopped making new awards. Results provided important information for any future joint program involving collaboration with state governments. Since the study included the I/UCRC Program,
The Emergence of Tissue Engineering as a Research Field http://www.nsf.gov/pubs/2004/nsf0450/start.htm Conducted by Abt Associates PI: Bhavya Lal	O/AD 2004	Learn from the history of the emergence of tissue engineering as a research field points at which NSF was involved, where there was no involvement but it would have been useful, and conclusions help ENG spot early and support emerging fields and technologies with substantial potential.	The interagency tissue engineering group and OMB found the report to be excellent, leading to rapid NSF clearance being received several weeks ago and the URL for the report is to be provided to the public in the near future.
Other Directorates			
Evaluation of NSF's Japan and Korean Fellowship Programs Report in Word. Conducted by Westat PI: Joy Frechtling	SBE/INT 2002	Study the nature of the international research experiences of US students and faculty fellows in Japan and Korea, other international experiences, and extent of impact of fellowships on subsequent career activities.	Soon after the study was completed, INT became OISE and introduced a new program that funded similar fellowships more broadly. The program director used the report to help her develop an evaluation plan at the beginning of the program and identify the kinds of information that she needed most in the first years of the program before a formal study could be performed.

Outcomes and Impacts of NSF's Program of Minority Postdoctoral Fellowships http://www.sri.com/policy/csted/reports/university/documents/FINALMPRFREPORT_BODY_6-17-05.pdf Conducted by SRI International PI: Jim McCullough	BIO and SBE 2004	Examine the extent to which this BIO and SBE program has met the program's objectives by documenting the career trajectories of awardees to date and determine the program's impact on their careers. The study was initiated by the program directors for their own use and for the BIO Advisory Committee.	BIO Advisory Committee received several presentations as the project was in progress. When the final report was presented to the Advisory Committee, members discussed the possibility of expanding the program based on the study results showing a distinct role of the program's fellowships in light of other funding opportunities for young minority researchers in the covered fields.