Project Summary

The *overall objective* of this IT Start proposal is to gather information that will enable us to devise a comprehensive plan to support and empower the growing number of female STEM faculty at California Polytechnic State University, San Luis Obispo. Our goal is to develop an effective plan for institutional transformation that is data-driven, institution specific, and broadly sustainable.

Cal Poly is a predominantly undergraduate, comprehensive institution with an enrollment of approximately 18,700 students, the vast majority of whom are in technical fields. Nationally, Cal Poly plays a major role in STEM education, graduating the largest cohort of engineering degrees of any non-PhD granting institution in the country last year (974 BS degrees); many Cal Poly STEM department and programs are nationally ranked. Yet despite a reputation for excellence, the university does not successfully retain a diverse student body, especially in engineering; while the national average for undergraduate women in engineering is 17.2%, Cal Poly only enrolls 14% women.

As part of its mission to prepare the scientific and technical leaders of the twenty-first century, Cal Poly is committed to increasing the diversity of STEM faculty. A diverse faculty will create a more welcoming climate and transform the experiences of Cal Poly students who study in STEM areas. And, given the prominence of Cal Poly in many technical fields, effectively supporting our female STEM faculty will have *broad impact* on diversity within the STEM disciplines nationwide, as well.

The absence of significant diversity among STEM faculty has been an ongoing challenge for Cal Poly. However, the institution has lacked the resources needed to systemically address those concerns. Over the last decade there have been sporadic and uncoordinated efforts to recruit and retain diverse faculty, but the results (like the efforts themselves) have been both uneven and difficult to assess. However, several factors make this the ideal time to assess our institution and design a plan for sustainable change. Our new Provost and our new Dean of the College of Engineering, both in their second year of appointment, are dedicated to comprehensive transformation and have each committed resources to support this assessment project. Additionally, current university-wide preparations for reaccreditation are strongly focused on campus diversity and will provide opportunities for institutional self-study. Moreover, waves of faculty retirements are in progress and will continue: 46% of the tenured faculty are over 55 years of age. It is urgent that we understand how to support the retention and leadership development of the many new female STEM faculty that recently have been (and will be) hired.

This is the right moment to design and implement institutional changes that will transform Cal Poly into a polytechnic university that attracts and retains diverse faculty and students. Our current plan has *merit* because it identifies and utilizes the expertise of key faculty, engages the institution at every level, and is supported by executive administrators, college leaders, and the leaders of faculty-lead initiatives, both in principle and by allocation of resources. *We have three central goals:*

1) **Develop and refine an institutional infrastructure that will administer our assessment efforts and coordinate existing climate-related initiatives.**

2) **Assess the current status of women STEM faculty at Cal Poly.**

3) **Establish “institutional mentoring” relationships with existing ADVANCE institutions. It is anticipated this will lead to a coordinated Partnership for Adaptation, Implementation and Dissemination (PAID) effort or IT Award proposal.**
Project Description

Significance of Cal Poly to the STEM Pipeline

California Polytechnic State University, San Luis Obispo, is a predominantly undergraduate, comprehensive institution with an enrollment of approximately 18,700 students, the majority of whom are in technical fields. Cal Poly's educational philosophy is “Learn by Doing” and the university is fundamentally polytechnic in character. As our mission statement illustrates, Cal Poly recognizes co-curricular learning and civic engagement as critical elements of the educational experience while maintaining its historical emphasis on applied and STEM fields:

Cal Poly fosters teaching, scholarship, and service in a learn-by-doing environment where students and faculty are partners in discovery. As a polytechnic university, Cal Poly promotes the application of theory to practice. As a comprehensive institution, Cal Poly provides a balanced education in the arts, sciences, and technology, while encouraging cross-disciplinary and co-curricular experiences. As an academic community, Cal Poly values free inquiry, cultural and intellectual diversity, mutual respect, civic engagement, and social and environmental responsibility.

http://www.president.calpoly.edu/mission.asp

Nationally, Cal Poly has a significant impact on STEM education. In 2004-2005, the university granted approximately 1033 Bachelors degrees and 99 Masters degrees in science, math and engineering. The Cal Poly College of Engineering currently has the 8th largest undergraduate engineering enrollment of all colleges and universities in the nation. Nationally, Cal Poly ranks 1st among all non-R1 institutions in number of engineering degrees awarded and 10th among all college and universities. Cal Poly is a large institution that graduates a very significant number of students with STEM degrees. Accordingly, the institution strongly impacts the future leadership in STEM fields.

Cal Poly is distinguished not only by its strong technical focus and size but also by the high quality of its programs and its national reputation. For the 15th year in a row, Cal Poly has been rated the best public-master’s university in the West by U.S. News & World Report (2008). This year, the College of Engineering was ranked as the number one public engineering program in the nation in U.S. News & World Report’s listing of Best Undergraduate Engineering Programs (non-R1 universities). Several specific Cal Poly College of Engineering programs are also highly ranked: the computer, electrical, industrial/ manufacturing, and mechanical engineering programs all placed as the top (non-R1) program in their categories. Civil and aerospace engineering rank second in their categories.

Given its high national rankings, particularly in engineering fields, Cal Poly's admissions process is extremely competitive. Fall 2006 was the twelfth straight year the university experienced a record applicant pool: over 31,000 applications for 4,500 available spaces. First year students enrolled for the Fall 2006 term had an average high school GPA of 3.70, an average ACT score of 26, and an average SAT score of 1195.

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1 Data regarding demographic trends at Cal Poly reported throughout this proposal were gathered from various institutional resources, including Cal Poly’s Office of Institutional Planning & Analysis and the Consortium for Student Retention Data Exchange, as well as data published by the American Society for Engineering Education, 2007.
With a strong focus on technical programs, a national reputation for excellence in the STEM disciplines, and a sizable and highly qualified student body, Cal Poly prides itself as “The Best in the West.” But when it comes to attracting and retaining women students and faculty in STEM areas, how does “The Best in the West” measure up?

**The Status of Women at Cal Poly: “Average” Isn’t Good Enough**

Cal Poly’s institutional history reflects trends that have typically affected many aspects of STEM education. Opened in 1901 as The California Polytechnic School, Cal Poly was founded on co-educational principles, explicitly aspiring to “furnish to young people of both sexes mental and manual training.” Over time, however, this vision changed and by 1930 women had been summarily banned from the school. Except for a brief period in the 1940s in which women were allowed to attend wartime job training programs, Cal Poly was closed to women from 1930 until 1957.

Given its restrictive past, it is heartening to see that Cal Poly is now largely in line with national averages (NSF 2007) when it comes to educating women in STEM areas. In terms of retention, Cal Poly does well overall: of the 23 campuses in the California State University system, Cal Poly has the highest 6 year graduation rate for women STEM students, retaining and graduating 47% of female students seeking a STEM degree (Consortium for Student Retention Data Exchange, 2007).

In the College of Science and Math female student enrollments are high: the majority (55%) of students in the College of Science and Math are women. The student situation in the College of Engineering is different. While the national average for female student enrollment in engineering is 17.2%, Cal Poly enrolls only 14% women. The national average for Hispanic and African Americans in undergraduate engineering is 16%; at Cal Poly this percentage is 13.2%. And, while the average percentage of engineering degrees awarded to women is 20.5% nationally, last year only 16.8% of Cal Poly undergraduate engineering degrees went to women (164 out of 974 degrees awarded). In enrollments of women, Hispanics and African-Americans, as well as the number of engineering degrees awarded to women, Cal Poly lags behind national trends.

In terms of faculty, women at Cal Poly are significantly underrepresented in numerous scientific and technical fields. Like female Cal Poly students, female faculty in the College of Science and Math fare relatively well. The College of Engineering, while not as strong, also does well in comparison to national trends for female faculty. Table 1, below, illustrates current female STEM faculty populations (by department and by rank) in the Cal Poly College of Science and Math and College of Engineering, and places them in the context of national trends:

**Table 1. Cal Poly Female STEM Faculty Populations by Department and Rank, 2007**

<table>
<thead>
<tr>
<th></th>
<th>Tenured+Tenure-Track</th>
<th>Tenured</th>
<th>Tenure-Track</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All</td>
<td>Women</td>
<td>%Women</td>
</tr>
<tr>
<td>College of Science &amp; Math Total</td>
<td>127</td>
<td>40</td>
<td>31.5% (Nat'l average 23%)</td>
</tr>
<tr>
<td>Biology</td>
<td>24</td>
<td>9</td>
<td>37.5%</td>
</tr>
<tr>
<td>Chemistry</td>
<td>25</td>
<td>10</td>
<td>40%</td>
</tr>
<tr>
<td>Statistics</td>
<td>14</td>
<td>3</td>
<td>21.4%</td>
</tr>
</tbody>
</table>

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2 All national trends reported in this proposal, including those in Table 1, were gathered from NSF publication 2007, Women, Minorities and Persons with Disabilities in science and Engineering.
While Cal Poly does well in the larger national context, national statistics for women faculty and faculty of color in STEM should not be considered benchmarks of success. Rather, what national numbers most clearly reveal is the extent of the pressing need for better representation of women and other historically underrepresented groups in the ranks of STEM faculty. As is well documented, the number of women faculty in STEM fields nationally—at every level and in most disciplines—is simply too low (NAS, 2006; NSF, 2007). That general pattern is clearly reflected at Cal Poly. And, because Cal Poly’s primary goal is educating the STEM leaders, researchers, academics, and workforce professionals of the twenty-first century, the underrepresentation of women and other historically underrepresented groups in STEM areas at Cal Poly comes with extraordinarily high costs.

Additionally, even to the extent that Cal Poly does slightly better than the “undesirable averages,” we still do not know why we have done better than average, or why we have done better in some areas and not others. At this point in time, we can only suspect what is behind increased numbers in some areas: is it due to the college leadership? departmental leadership? specific resource commitments? policy changes? college or departmental cultures? particular localized initiatives? The specific patterns of Cal Poly bear careful investigation, because positive trends suggest that it is possible that there are some successful practices and policies that have improved the hiring and retention of female STEM faculty, especially within the College of Science and Math. Without more information, however, we can only guess at the sources, significance and robustness of the trends we (think we) see.

Cal Poly is poised to make a substantive difference in terms of the participation of women in STEM fields and cannot afford to remain ignorant of variables that drive trends in female STEM faculty numbers and affect hiring and retention rates.

### Institutional Readiness: A Window of Opportunity

Up until now, improving the situation of Cal Poly female faculty in STEM areas has been a matter of localized commitment rather than coordinated institutional effort. But now Cal Poly...
is facing an exceptionally opportune period and it is this auspicious moment that we wish to seize.

**Faculty Retirements and Demographic Shifts**

This is a time of profound change for Cal Poly. Over the last four years, a wave of retirements has opened possibilities for fundamental demographic shifts. There has recently been a tremendous influx of new faculty and many more retirements are in the future (46% of current tenured faculty are over 55 years of age). This demographic shift can already be observed in some STEM fields, where a significant number of new female hires have recently been made—and where additional hires of female STEM faculty could be made in the near future.

Hiring women STEM faculty is not always easy—and it is never an adequate goal. It is equally crucial to effectively enable the successful retention, tenure, and promotion of women faculty, and to empower them to assume meaningful leadership positions within the university (Stewart, Malley, & La Vaque-Manty, 2007; West & Curtis, 2006). In order to accomplish this, it is imperative that we acquire more comprehensive institutional knowledge about the situation of female STEM faculty through a broad and thorough assessment of the current situation (including campus climate, university RPT procedures, and numerous work-family related institutional policies). Cal Poly needs to see the “big picture”—not only to keep hiring female faculty in STEM but also to successfully retain a truly diverse faculty and empower them to reach leadership levels.

Two additional institutional factors currently shape the opportunities (and responsibilities) that come with a significant number of new hires in STEM fields. These factors increase the urgency of proper assessment of campus climate and the subsequent formulation of an effective plan to support women faculty in STEM. These additional factors are 1) current university-wide preparations for reaccreditation by the Western Association of Schools and Colleges (WASC) and 2) numerous faculty-led, “bottom up” institutional groups that are working to support female STEM faculty across Cal Poly.

**WASC Reaccreditation**

Cal Poly is currently in the preparatory phase of a self-study for reaccreditation by WASC in 2010. In the most recent Cal Poly WASC review (2000) lack of attentiveness to student and faculty diversity—including STEM diversity and the “leaky pipeline” in most STEM fields—was one of three institutional areas cited as in most urgent need of attention and improvement. Because of the WASC 2000 assessment, diversity issues will hold the spotlight throughout preparations for the current WASC review, a long-range process that will continue for the next three years and structure a great deal of campus wide discussion. Effectively addressing faculty representation in STEM fields is now of pressing importance as the university prepares for this review and the administrative leadership is deeply invested in work that effectively moves STEM faculty issues forward.

The assessment plan detailed in this proposal takes the reaccreditation process into account and will feed into the WASC process. A member of our proposed Leadership Team has already participated in WASC-related focus groups and, once our assessment project is formally established, one Leadership Team member will be appointed to the WASC Institutional Steering Committee (see letter of support from Academic Affairs and WASC Officers).

Additionally, Cal Poly has also participated in the recent Collaborative on Academic Careers in Higher Education (COACHE; 2007) Survey, which studies tenure-track faculty members’ satisfaction with their institutions as a place of work, determines factors important to the
success and job satisfaction of tenure-track faculty, and measures this data against national results. Questions include personal issues such as work-family balance and climate relative to childcare, as well as questions concerning workload and service expectations. Although the Cal Poly data has not yet been disaggregated at the departmental level, once department-level data is available it will be a useful tool for determining institutional strengths and weaknesses relative to STEM-related faculty issues. Like WASC reaccreditation, current interest in COACHE Survey results is high. Department-specific results will yield a valuable means of assessing the situation of female STEM faculty.

“Grassroots” Organized Support for Female STEM Faculty:

As Cal Poly’s demographics have begun to shift, the need for institutional support for women faculty in STEM has become more apparent. As a result, several innovative projects have recently sprung up around issues of women faculty in STEM fields. The proliferation of these projects reflects a growing institution-wide momentum towards addressing the professional success and leadership development of female faculty.

The initiatives listed below focus on different aspects of the experience of women STEM faculty, are located across a broad range of institutional sites, and represent the spectrum of STEM areas (including the Women’s Studies Program and the Student Affairs Division, as well as individual STEM departments and programs):

- **The STEM Think Tank**
  The STEM Think Tank is an interdisciplinary faculty group whose members are affiliated with STEM areas and/or have an interest in promoting equity and diversity within a polytechnic environment. The primary goals of the STEM Think Tank are to 1) promote progressive and inclusive research and teaching in and about STEM areas 2) to positively impact campus climate by creating institutional spaces that empower faculty to work on curricular and climate reform efforts addressing gender, diversity, and equity issues.
  **Institutional Location:** College of Liberal Arts
  **Contact:** Professor Mary A. Armstrong, Women's Studies, Director

- **The Women Faculty Mentoring Program**
  The Women Faculty Mentoring Program (WFMP) was initiated by the Status of Women Committee in response to the low retention rate for female faculty, especially in STEM disciplines. The WFMP was approved and funded by the provost in 2006; the faculty coordinator is supported by release time. The program pairs female tenure-track faculty with tenured female faculty members in the same college but different departments. The program sponsors social events and workshops; lunches in collaboration with the Women Studies Program, a parents’ resource web page and group mentoring are planned.
  **Institutional Location:** Office of the Provost/Status of Women Committee
  **Contact:** Professor Nilgun Sungar, College of Science and Math, Faculty Coordinator

- **The University Committee on the Status of Women**
  The Status of Women Committee addresses issues that concern women students, faculty, and staff on campus, including: employment and educational equity, campus safety, and climate. It assists in the review of the University's Sexual Assault, Discrimination and Harassment Policies and Programs. The committee chair meets annually with the Academic Deans' Council and the Student Affairs directors to discuss issues related to the campus climate for women, including STEM faculty.
  **Institutional Location:** Office of the President
  **Contact:** Dr. Barbara Gilbert, Director of the University Counseling Center, Chair
• The Women’s Leadership Council
  The Women’s Leadership Council is a student group focused on creating opportunities and enhancing the self-confidence of all women on campus, with particular attentiveness to issues in STEM areas. The Council promotes awareness, leadership, and education while providing support for the professional and personal development of women. The Council collaborates with the diverse factions in the community and across colleges and with faculty who have expertise in issues faced by women in a polytechnic environment.
  **Institutional Location:** Student Affairs
  **Contact:** Devon Hodgson, Women’s Programs and Services, Director

• The Center for Excellence in Science and Mathematics Education (CESaME)
  The Center for Excellence in Science and Mathematics Education (CESaME) sees science and math education as a pathway to recruit more students into polytechnic fields. As a university-wide endeavor, CESaME fosters collaborations with students and faculty from areas such as science, mathematics, engineering, and teacher education. CESaME engages with K-12 teachers, community college faculty, and business/government partners.
  **Institutional Location:** President’s Office, Colleges of Science and Math and Education
  **Contact:** Professor Susan Elrod, College of Science and Math, Director

• SWE: Society of Women Engineers
  The Society of Women Engineers provides a voice for student women and encourages them to achieve their full potential as engineers and as leaders. Their mission is to create engineering opportunities, provide career and scholastic resources, and demonstrate the value of teamwork. An exceptionally well-organized and active chapter, Cal Poly’s SWE has received first place as Outstanding Collegiate Section in the Nation for five consecutive years (2002-2006).
  **Institutional Location:** College of Engineering
  **Contact:** Professor Karen Bangs, College of Engineering, Faculty Advisor

• EdGE: Educating Global Engineers
  The mission of the Educating Global Engineers Initiative (EdGE) is to enable Cal Poly to lead the development and implementation of educational methods, teaching and learning strategies that result in a diverse body of engineering professionals who are globally aware, systems thinkers and socially responsible. The EdGE Initiative’s home is in Cal Poly’s College of Engineering but faculty partners from all disciplines and other institutions are welcome.
  **Institutional Location:** College of Engineering
  **Contact:** Professor Linda Vanasupa, College of Engineering, Director

• A Pilot Investigation of Undergraduate Women in Engineering at Cal Poly
  The purpose of this short-term longitudinal study is to examine particular factors that lead to the recruitment and retention of undergraduate women in engineering majors at Cal Poly. Such information will be used to inform Cal Poly of the types of programs that may be needed to increase the number of undergraduate women who graduate with degrees in engineering.
  **Institutional Location:** College of Liberal Arts
  **Contact:** Jasna Jovanovic, Department of Psychology & Child Development, Faculty Director

There is emergent excitement across campus as the number of people interested in and addressing these issues reaches critical mass for change. Importantly, six out of the eight groups
listed have come into being within the last five years. Most have been developed from the “bottom up,” with leadership provided by regular faculty. The near-simultaneous cropping up of so many similarly oriented initiatives reveals a broad based institutional readiness for actively addressing the needs of female STEM faculty.

This faculty-led momentum is augmented by university administrative leadership, as well. Our Provost (an engineer) and our Dean of the College of Engineering are both in their second year at Cal Poly and fully committed to climate transformation. Demonstrating Cal Poly’s institutional support for this project, the Office of the Provost and the Deans of the involved colleges are contributing up to 40 units of assigned time with a value of approximately $125,000 for salary and benefits. Last year Cal Poly also hired a new Associate Provost for Academic Programs, Dr. Cheryl Ney, a female chemist with significant scholarly training in issues of gender and science. Additionally, the university’s commitment to broad climate transformation is reflected in two events that have taken place this year. These are, the university’s first tenure-track hire of a Ph.D. in Science and Technology Studies, Dr. Jane Lehr (appointed jointly to Women’s Studies and the Ethnic Studies Department) and the planned conversion of the Women’s Studies Program to the Women’s and Gender Studies Department.

Despite this new energy, however, these multiple new initiatives and leaders are not yet unified by a clear, common goal and remain disparate pieces of an as-yet-undetermined “big picture.” It is becoming increasingly important to avoid confusion, redundancy and unintentional competition for resources, and to develop a systematically informed vision for change. The campus has a pressing need for an organizational center that can provide the data, detailed policy information, and communication structures that will help these groups fill their different functions—and can also take the lead in formulating a critical missing element: an institution-specific, data-driven, and comprehensive vision for broad and truly transformational change at Cal Poly. Seizing this rare and relatively fleeting transitional moment in an informed manner is critical. If we do so, we can positively influence the direction of STEM education and the situation of female STEM faculty at Cal Poly, and even nationally, for the foreseeable future.

Goals and Proposed Work Plan

The overall objective of the proposed planning grant is to gather information that will enable us to formulate a comprehensive plan to support and empower the growing women faculty in STEM departments at Cal Poly. This study will also allow us to investigate the particular issues impacting women of color, LGBT and non-native women. Although we propose to learn from the “best practices” (Frehill, Jeser-Cannavale, & Malley, 2007) of existing ADVANCE institutions as part of this planning grant effort, it is equally important that we identify any additional or unique factors specific to a “comprehensive institution” (Wright et al., 2004) like Cal Poly. Within the framework of this overall objective, this planning grant targets three specific goals:

1) to develop and refine an institutional infrastructure that will administer our assessment efforts and coordinate existing climate-related initiatives, 2) to assess the current status of women STEM faculty at Cal Poly, and 3) to establish “institutional mentoring” relationships with existing ADVANCE institutions. It is anticipated that this will lead to a coordinated Partnership for Adaptation, Implementation and Dissemination (PAID) effort or IT Award proposal.

Goal 1. Develop and refine an institutional infrastructure that will administer our assessment efforts and coordinate existing climate-related initiatives
Large shifts in faculty demographics, active “bottom up” cross-institutional groups, and “top down” institution-wide interests all combine to create a window of opportunity for comprehensive assessment and institutional transformation at Cal Poly. It is within this specific framework that we propose the formation of the Initiative for Diversity in STEM (ID-STEM). ID-STEM will operate as the structural key to our efforts at assessing the situation of female STEM faculty and readying Cal Poly for systemic change.

The Cal Poly “Window of Opportunity”:

ID-STEM will be housed within the Office of the Provost, placing it at the center of the institution (see Provost’s letter of support). The ID-STEM Leadership Team (the PI and CO-PIs of this proposal) will take the lead in executing the proposed assessment plans and will coordinate existing climate-related initiatives. In order to ensure cooperation and buy-in at all levels of the institution, the Provost will oversee ID-STEM and appoint working committees (described in detail below) as well as an Advisory Council that includes important campus stakeholders.

The administrative structure of ID-Stem will include appointed College and Department Liaisons who will coordinate with the ID-STEM Leadership Team to disseminate information on assessment initiatives and gather relevant department and college data. Additionally, ID-STEM includes an Assessment Resource Group comprised of critical campus personnel who either coordinate existing institutional assessment efforts (e.g., William Bailey, Director of Employment Equity & Faculty Recruitment, who conducts faculty exit interviews) and/or have expertise in quantitative/qualitative analyses (such as the Statistics Consulting Group). The Assessment Resource Group will work closely with the ID-STEM Leadership Team to effectively design and execute specific proposed assessment activities. Figure 1 provides an overview of the administrative structure of ID-STEM.
Coordination Strategies: Efforts are already underway to develop a web site that synthesizes current initiatives on campus that support STEM women. This site will be further developed to coordinate the activities and initiatives of ID-STEM and to enable communication with relevant constituents. The Cal Poly Blackboard system will be used to enable chat groups and online discussions, as appropriate. The Leadership Team will meet weekly to discuss project progress.

Goal 2: Assess the current status of women faculty at Cal Poly.

The main focus of ID-Stem’s activities during the proposed funding period is a self study of the current professional standing of women in STEM departments at Cal Poly. Our proposed assessment plan involves gathering information in three areas: 1) institutional trends, 2) current policies and practices, and 3) the academic climate.

Assessment of Institutional Trends. In an effort to gather baseline indicators regarding gender-related trends in STEM departments at Cal Poly we considered the four key questions outlined by Frehill et. al. (2007): a) What is the current distribution of science and engineering faculty by gender, rank and department at Cal Poly?; b) What are the outcomes of institutional processes of recruitment and advancement for men and women at Cal Poly over the last 5 years?; c) What is the current gender distribution of science and engineering faculty in leadership positions at Cal Poly?; and d) What is the current allocation of resources for science and engineering faculty by gender at Cal Poly? To date, as seen in Table 1 above, we have been able to
document the current distribution of tenured and tenure-track faculty in STEM departments. To answer the remaining questions, we will gather information addressing the remaining ten of the twelve NSF indicators provided by Frehill et al. (2007). Currently, Cal Poly does not have a central clearinghouse for these kinds of data. Therefore, the Leadership Team will be working closely with both the College/Department Liaisons and the Assessment Resource Group. The collection of data relative to the NSF indicators will form a central activity of the proposed planning grant.

Assessment of Policies and Practices. In addition to gathering data on institutional trends, we intend to review the current institutional policies and practices that directly or indirectly impact women faculty (especially faculty from historically underrepresented groups) at Cal Poly. To accomplish this task, the Provost has agreed to establish three university-wide working committees that will examine policies and practices in three areas: a) hiring, b) promotion and tenure, and c) work-family life. Committee members will be appointed by the Provost and will represent faculty administrators, and both senior and junior faculty. The ID-STEM Leadership Team will coordinate the gathering of information from these committees.

Assessment of the Academic Climate. Current perceptions of the academic climate at Cal Poly (including particular issues involving gender, race/ethnicity, sexual orientation and national origin) will be assessed by way of an on-line climate survey, focus groups, and town hall meetings. Additionally, information gathering mechanisms will be dovetailed with other university-wide data gathering streams, including current WASC review activities and the very recent COACHE survey results, which remain to be disaggregated (see letter of support from Academic Affairs and WASC Officers).

Climate Survey. Faculty and faculty administrators across campus (both in both STEM and non-STEM departments) will be invited by the Provost to complete an anonymous survey assessing perceptions of Cal Poly’s academic climate. Our goal is to reach all 1250 faculty at Cal Poly. We propose using existing climate measures employed by established ADVANCE institutions. We have in hand the climate surveys utilized by the University of Michigan, University of Alabama, University of Illinois-Chicago, University of Texas-El Paso, University of Wisconsin, and Virginia Tech. Many of the items on these surveys overlap, and our climate survey will employ those items that repeat consistently across multiple institutions, augmented by items specific to Cal Poly and the surrounding community of San Luis Obispo. Our climate survey will be administrated via the California State University (CSU) Chancellor’s Office, which has a service function to enable on-line surveys. Our survey effort will be coordinated locally with assistance from Cal Poly’s Office of Information Technology Services (ITS). The ITS can ensure that the on-line survey is secure and confidential.

Focus Groups. We will hold a series of focus group discussions that will center mainly on those issues that the climate survey identifies as particularly critical. We anticipate that the discussion themes will likely include issues involving the challenges of the teacher-scholar model, work-family balance, and levels of administrative support and faculty development resources. For each identified theme, our focus groups will be comprised of the following: a) faculty from STEM departments with the worst faculty gender ratio and b) faculty from STEM departments with the best gender faculty ratio. These two groups of faculty will further be divided into groups comprised of: female-only tenure track faculty; female-only tenured faculty; male-only tenure track faculty; male-only tenured faculty. Additional focus groups targeting STEM department chairs and administrators will also be included. We anticipate holding in total approximately 10 focus groups to cover these groupings adequately. The focus groups will be facilitated by members of the ID-STEM Leadership Team.

Town Hall Meetings. We propose to hold two town hall-type meetings, both facilitated by two ID-STEM Leadership Team members. Like the focus group discussions, themes for the
town hall meetings will be generated through climate survey findings. Unlike the focus groups, which will specifically target STEM faculty, the town hall meetings will be open to all faculty and administrators on campus. Their purpose is to better understand the overall issues that are identified as facilitating or impeding faculty success at Cal Poly.

Analyses of data: One of the Co-PI’s, Jasna Jovanovic, associate professor of Psychology and Child Development, will take the lead in coordinating the analyses of both the quantitative and qualitative data. Analyses will be conducted in collaboration with the Statistics Consulting Group, which is directed through Cal Poly’s Statistic Department. Additionally, Assessment Resource Group members Dr. Roxy Peck and Dr. Lizabeth Schlemer bring their expertise to all activities related to the collection and assessment of quantitative data.

Goal 3: Establish “institutional mentoring” relationships with existing ADVANCE institutions. It is anticipated this will lead to a coordinated Partnership for Adaptation, Implementation and Dissemination (PAID) effort or IT Award proposal.

An important component of our planning grant is to learn the best practices of established ADVANCE institutions. In putting together this planning grant proposal, considerable time and effort has been taken to investigate the materials produced by current ADVANCE institutions. We have targeted the University of Michigan and Virginia Polytechnic as institutional mentors. Both the University of Michigan and Virginia Polytechnic have long-running and successful ADVANCE programs. The University of Michigan is nationally recognized (Handelsman et. al., 2005) for successfully meeting its goals for female STEM faculty; Virginia Polytechnic (which has a “polytechnic mission” similar to Cal Poly’s) has impressively targeted climate change. To date, the ADVANCE Directors of both University of Michigan and Virginia Polytechnic have agreed that their programs will serve as institutional mentors (see U of Michigan and Virginia Polytechnic support letters). As part of this mentoring relationship, we have planned site visits to both institutions at the beginning of our proposed plan (see Timeline below) and we will attend the STRIDE Workshop on faculty recruitment at University of Michigan in October 2008. The following spring, our institutional mentors will visit the Cal Poly campus in order to help us develop our institutional plan for targeting change initiatives.

We have also identified Cal Poly Pomona as an important collaborator. Cal Poly Pomona recently received an ADVANCE grant and, like Cal Poly, San Luis Obispo, Cal Poly Pomona is a member of the California State University (CSU) system. As part of Cal Poly Pomona’s ADVANCE mission, they are establishing best practices that they hope can be disseminated to other CSU campuses. To date, we have made a site visit to Pomona and have already begun discussions concerning potential future collaborations. At this point in time, it remains unclear whether the initiatives planned by Pomona will be relevant to our institution. Because they are at the beginning stages of their program, we anticipate that at the end of our proposed work plan they will be in a better position for partnership. Therefore, we have included in our plan a “comparative summit” with Pomona towards the end of our timeline. At that point we will be prepared to discuss our findings and explore the possibility of partnership (see support letter from Cal Poly, Pomona).

Plan for timeline

The proposed project is designed to take place over 15 months. We have charted our proposed schedule of activities below. We have planned our activities so that we begin by gathering a wide breadth of information from our on-line survey. These data will then be used to structure the focus group discussions and town hall meetings. Throughout this initiative, we will be working on gathering data on institutional trends. Additionally, at the start of the grant, 2 or 3 ID-STEM Leadership Team members will make site visits to the University of Michigan and
Virginia Polytechnic. The following spring, representatives from these institutions will visit our campus to consult with us on our findings. Finally, we have planned for a comparative summit meeting with Cal Poly, Pomona, to share information and explore the possibility of a partnership which would lead to a NSF PAID proposal.

Results From Prior NSF Support

STEREOTYPE THREAT IN THE SCIENCE CLASSROOM: A PILOT INVESTIGATION
NSF Grant No. BCS 01-31181, $32,338 June 2002-May 2003, Jasna Jovanovic, PI

One of the co-PIs on the current IT-Start proposal has done extensive research on factors that account for declines in young girls’ confidence in math and science. The purpose of this NSF-funded pilot investigation was to understand whether young girls are vulnerable to gender stereotypes (i.e., stereotype threat) in the classroom. Specifically we wanted to determine if young girls’ awareness of their minority status in science impacts their ability perceptions and task value perceptions in science. To do this, we carried out our pilot study on a sample of 180 students (53% female, 72% ethnic majority in science) in 12 science classrooms representing two 6th-grade teachers and two 8th-grade teachers in a semi-urban middle-class community. During a science classroom unit on a physics-related topic participants were exposed to either a short video documentary about male physicists/engineers (threat condition) or a video documentary involving both male and female physicists/engineers (nonthreat condition). Pre- and post-test assessments of student’ science ability perceptions and task value perceptions were gathered. Results demonstrated that only those girls who watched the video featuring male scientists (threat condition) showed a significant decrease in their ability perceptions and task value perceptions suggesting that girls as early as 6th grade are vulnerable to stereotype threat in the science classroom.