<table>
<thead>
<tr>
<th>Outcome Objectives</th>
<th>Performance Measures</th>
<th>Responsible Parties</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Fully develop the WPI Plan for all students around an &quot;honors college&quot; metaphor at all levels.</td>
<td>Faculty size; number National Merit Scholars; ranking of undergraduate program; impact of first year; curriculum improvements; graduation rate; practice graduate program statistics; IQP quality; learning outcomes; number large (&gt;35) classes.</td>
<td>Provost's Office; Admissions Office; Faculty Governance.</td>
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<tr>
<td>1.2 Develop aligned incentives for faculty and staff to promote action plans.</td>
<td>Faculty diversity; faculty and staff salaries compared to benchmarks; employee satisfaction; effectiveness of reward system.</td>
<td>Provost; Director of Human Resources; Assistant VP Student Affairs; Multicultural Awareness Staff Member; Faculty Governance.</td>
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<tr>
<td>1.3 Provide increasing opportunities for student involvement in research.</td>
<td>Number students in summer research; impact of graduate fellowships.</td>
<td>Associate Provost.</td>
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<tr>
<td>1.4 Maintain contemporary teaching laboratories.</td>
<td>Adequacy of funding for equipment and instrumentation maintenance and renewal; average age statistics.</td>
<td>Property Administrator; Provost's Office; Dean, Division of Continuing Studies.</td>
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**Objective 1.1**  
*Fully develop the WPI Plan for all students around an "honors college" metaphor at all levels.*

**Performance:**  
- *Faculty size* The number of ECE tenure track positions was enlarged by one in the recent past. Hopefully in the near future the combination of budget issues and faculty candidate...
availability will allow us to reach the full complement of faculty.

- **Impact of first year** ECE has taught two important and popular ECE courses in the first year for some time (EE 2011 and 2022). We believe these courses are a very positive component of our students' first-year experience. Also, several ECE faculty are Insight advisors.

- **Curriculum improvements** A major recent curriculum improvement has been the introduction of the new undergraduate major in Electrical and Computer Engineering. Another significant innovation was the addition of a course in the process of ECE design, team-taught by faculty from several ECE sub-disciplines. Also, two new courses in state of the art areas (electro-optics and real-time digital signal processing) have been added. At the graduate level, the major recent enhancements have been in our cryptography and information security offerings, and a certificate program offered via distance learning (ADLN) has been added.

- **IQP quality** ECE faculty play major roles as director or advisor in several off-campus project centers, including Venice, Denmark, London, Boston, Bangkok, and Worcester.

- **Learning outcomes** Under the direction of Prof. Denise Nicoletti, ECE has implemented a fairly extensive program which relates student accomplishments in courses and other activities to our stated program outcomes. The biennial MQP review also provides valuable data on a broad range of our program outcomes.

- **Number of large (>35) classes.** A significant number of our classes have more than 35 students. For 2000-01, 19 of ECE's undergraduate classes (approximately 35%) contained more than 35 students. Eight of these offerings had more than 80 students, and three had more than 100 students. These large lecture sizes are partially offset by the fact that many of our courses include laboratories, and some faculty are VERY generous with their time in laboratory, as well as in help sessions. A large class would have at least 16 scheduled contact hours (lecture and lab) per week, and faculty cannot be expected to regularly be present for all of that.
Objective 1.2  Develop aligned incentives for faculty and staff to promote action plans.

Performance:  
- **Faculty diversity** With only one female and one minority faculty, much progress is still needed.
- **Faculty and staff salaries compared to benchmarks** Significant increases over the past several years are appreciated, but have only slightly improved the relative standing of our faculty compensation with respect to peer institutions. While equity issues are important for all faculty, the salary issue is particularly significant in hiring new faculty. Peer institutions and those to whom we aspire to compare ourselves with are raising faculty salaries rather rapidly. Faculty start-up support is as important as salary, and in some situations, it is more important.
- **Employee satisfaction** This broad category is important, and difficult to measure. I believe that faculty satisfaction is generally quite good. Among the staff, there is no question that there is some continuing level of dissatisfaction with the compensation and merit reward system.
- **Effectiveness of reward system** The merit reward system is reasonably effective for faculty, but essentially nonexistent for staff.

Objective 1.3  Provide increasing opportunities for student involvement in research.

Performance:  
- **Number of students in summer research** This presumably refers to undergraduate students, and we have few so involved.
- **Impact of graduate fellowships** Graduate fellowships are very valuable, and we make use of both Institute fellowships and specific corporate fellowships. We believe the effectiveness of Institute fellowships could be improved, possibly by making clear that they are intended to operate more as research assistantships, and connecting the fellowship award process to the faculty with whom research will be conducted.

Objective 1.4  Maintain contemporary teaching laboratories.

Performance:  
- **Adequacy of funding for equipment** and instrumentation
maintenance and renewal At a basic level, this is adequate. Our ECE teaching laboratories are equipped with reasonably modern, reasonably high quality equipment. However, it is important to note what is missing. We currently have no teaching laboratories in important areas such as communications, optical communications, photonics, robotics, or solid state device characterization. All of these laboratories would require quite expensive equipment.

- **Average equipment age statistics** These data are being developed.

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<th>Table 2-5. Goal 2: Further WPI's Position as a National University</th>
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<tr>
<td><strong>Outcome Objectives</strong></td>
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<tr>
<td>2.1 Improve the quality and diversity of the student body.</td>
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<tr>
<td>2.2 Support the faculty's efforts in research and scholarship.</td>
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<tr>
<td>2.3 Develop creative partnerships with industry, organizations, and</td>
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</tbody>
</table>
Objective 2.1  Improve the quality and diversity of the student body.

Performance:  None.

Objective 2.2  Support the faculty's efforts in research and scholarship.

Performance:  

- *Impact of thrust areas on faculty and graduate student recruiting* There has not been a noticeable impact here.

- *Annual research expenditures* Totals for research expenditures are not readily available to me. Data on new grants are much more accessible. For 2000-01, new grants received through the research office totaled $723,000. When graduate fellowships and other forms of support received through the development office are added, the total external support for 2000-01 was $1,901,000. The departmental goal is to raise awards received through the research office to $2M per year. See further comments below.

- *Number of proposals and awards* The ECE faculty understand

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| 2.4 | Continue to develop a comprehensive base of programs through aligned resource allocations. | Student participation in humanities and arts programs; status of academic programs; alumni satisfaction with preparation; percentage and average gift value of alumni participation in Annual Fund; endowment per student; payroll per student credit hour delivered. | Provost's Office; Faculty Governance; VP University Relations. |
| 2.5 | Expand opportunities for synchronous and asynchronous networked learning. | Number students involved in distance learning; number courses offered; number companies participating. | Dean, Division of Continuing Studies; Provost's Office; VP Information Technology. |
| 2.6 | Conduct a comprehensive image-building and marketing effort. | Uniformity of publications; name recognition; changes in number of applications; geographic base of applicant pool. | University Relations; Dean, Division of Continuing Studies. |
that the number of research proposals and the amount of awards have been low over the recent past. There has been a commitment to increasing the number of proposals and results to date for this year are encouraging. Through March, 2002 ECE has submitted 20 proposals worth $6.4M, vs. 16 proposals worth $2.7M at the same point in 2001. Awards are also ahead of last year, although modestly: $590,875 vs. $470,190.

• Number of publications Complete data are only available for the past academic year. For 2000-01, ECE faculty published 19 journal papers, 4 books or book chapters, and 51 conference papers. Also, two patents were issued and five are pending.

• Faculty and graduate student support levels Substantially more RA support is needed; this must come primarily from increased grant income.

• Minimum and mean GRE scores Few ECE applicants (particularly few US citizens) submit GRE scores, unfortunately.

• Annual number Ph.D. graduates For the past five years (1997-2001) the numbers of PhD graduates have been: 1, 6, 3, 3, 3, respectively. ECE desires to double these numbers to about 6 or 7 per year. A major factor in accomplishing this will be the need to substantially increase research support, as well as to address student recruitment difficulties.

• Number full time graduate students The most recent number that I have is 42 full-time and part-time, degree seeking ECE graduate students.

• Annual research expenditures per faculty member If only expenditures of funds received through the research office are counted, this value ranges from is approximately $40,000 per faculty member.

• Amount of Indirect Costs recovered. I do not have this data.

Objective 2.3 Develop creative partnerships with industry, organizations, and other universities.

Performance: • Number of partnerships In the broad sense industrial
partnerships include: centers such as NECAMSID and CWINS, research support (currently including Raytheon, Allegro, Reticon, Nokia, Analog Devices, Texas Instruments, General Dynamics, Teradyne, Perkin-Elmer, Pirus Networks) and project support. Project support has been difficult in the current economy, particularly regarding the securing of significant financial support from corporations for projects. Industrial partnerships can be valuable, but I believe that we need to be more careful and realistic in considering these relationships

- **Value added** The cost-benefit ratio for industrial partnerships must be carefully considered.
- **Statistics associated with Silicon Valley center and other new ventures** ECE advised three of the Silicon Valley projects in 2002.

**Objective 2.4** *Continue to develop a comprehensive base of programs through aligned resource allocations.*

**Performance:**
- **Status of academic programs:** While both our undergraduate and graduate programs are of good (or excellent) quality, the external reputations may not match the program quality.
- **Alumni satisfaction with preparation** Alumni survey results have demonstrated high satisfaction with the ECE education, although returns have been very low.

**Objective 2.5** *Expand opportunities for synchronous and asynchronous networked learning.*

**Performance:** None.

**Objective 2.6** *Conduct a comprehensive image-building and marketing effort.*

**Performance:** None.

**Table 2.6. Goal 3: Establish WPI as a Leader in Global Technological Education**

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<thead>
<tr>
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<tbody>
<tr>
<td>3.1 Expand participation by students and faculty in the Global Perspective</td>
<td>Dollar value of scholarship fund; faculty involvement; number projects conducted at global sites; number faculty and students</td>
<td>VP University Relations; Provost's Office; Faculty Governance, Dean,</td>
</tr>
</tbody>
</table>
Program. involved with sister institutions. IGSD.

3.2 Make the transition from multinational sites to a global system. Number teams involving remote sites; degree of integration of global sites. Dean, IGSD.

Objective 3.1 Expand participation by students and faculty in the Global Perspective Program.

Performance: • Faculty involvement ECE faculty are extensively involved in the global program. Profs. Brown, Looft, McNeill, Orr, Pedersen, and Vaz have all advised and/or directed global (outside the continental US) projects in the recent past, or will be so engaged in 2002-03.

• Number of projects conducted at global sites In 2001-2002 ECE faculty have advised 15 projects with 43 students located at 3 global sites (Denmark, Ireland, Puerto Rico). In addition, ECE faculty have advised 16 more off-campus projects with 42 students at 3 U.S. sites (Worcester, Silicon Valley, NASA).

• Number of faculty and students involved with sister institutions ECE students participate in exchange programs with ETH in Switzerland, the University of Darmstadt, and other schools.

Objective 3.2 Make the transition from multinational sites to a global system.

Performance: • Number of teams involving remote sites • Degree of integration of global sites

Table 2 7. Goal 4: Improve WPI’s Campus Culture and Community Presence

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>4.1 Construct and renovate facilities to accommodate social and academic activities and solve the parking problem.</td>
<td>Funds available; adherence to construction timetable.</td>
<td>VP University Relations; VP Student Affairs; Assistant VP Student Affairs; VP Administration; Director, Plant Services.</td>
</tr>
<tr>
<td>Objective 4.1</td>
<td>Construct and renovate facilities to accommodate social and academic activities and solve the parking problem.</td>
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<tr>
<td>4.2 Improve ethnic and gender diversity in our community.</td>
<td>Quality of life on campus; role and value of support groups.</td>
<td>VP Student Affairs; Assistant VP Student Affairs; Multicultural Awareness Staff Member.</td>
</tr>
<tr>
<td>4.3 Provide a safe environment for our community that fosters learning and development with appropriate alternatives to alcohol and drug abuse.</td>
<td>Safety statistics; number violations of alcohol and drug policies; results of CORE Alcohol and Other Drug National Survey; results from Higher Education Research Institute National Survey.</td>
<td>Director Public Safety; Campus Safety Officer; Assistant VP Student Affairs; Healthy Alternatives Office.</td>
</tr>
<tr>
<td>4.4 Expand efforts to meet the needs of adult learners.</td>
<td>Net revenue; numbers of faculty and students involved.</td>
<td>Dean, Division of Continuing Studies; Director, ADLN; Academic Department Heads.</td>
</tr>
<tr>
<td>4.5 Enhance the Career Development Center.</td>
<td>Number students and employers involved; placement rates; number of alumni participating.</td>
<td>Director, Career Development Center; VP Student Affairs; VP University Relations.</td>
</tr>
<tr>
<td>4.6 Maintain facilities and surrounding peripheral properties according to master plan.</td>
<td>Progress against maintenance plan; deferred maintenance balance; state of grounds and facilities; neighborhood relations.</td>
<td>Director, Physical Plant.</td>
</tr>
<tr>
<td>4.7 Enhance support for K-12 system and the local community.</td>
<td>Number programs; number participants; summer program net revenue; number students in teacher certification program.</td>
<td>Provost's Office; Dean, Division of Continuing Studies; Assistant VP Student Affairs; Director Minority Affairs; VP University Relations.</td>
</tr>
</tbody>
</table>
Objective 4.2  Improve ethnic and gender diversity in our community.
Performance: None.

Objective 4.3  Provide a safe environment for our community that fosters learning and development with appropriate alternatives to alcohol and drug abuse.
Performance: None.

Objective 4.4  Expand efforts to meet the needs of adult learners.
Performance: • Net revenue ECE does not have access to this information
• Numbers of faculty and students involved ECE is very much involved (perhaps too involved) with various forms of adult learning: part-time graduate courses at Waltham, Metro-West and Worcester, the SIM Power Systems Management MS program, the Wireless Certificate via ADLN, non-credit short courses, and custom in-house courses (the Lucent information technology program). Some effort would be required to determine numbers of students. Approximately half of our regular graduate course registrations are by part-time students. Currently, 16 students are registered in the ADLN Wireless program and approximately 10 students are studying in the SIM Power Systems program.

Objective 4.5  Enhance the Career Development Center.
Performance: None.

Objective 4.6  Maintain facilities and surrounding peripheral properties according to master plan.
Performance: None.

Objective 4.7  Enhance support for K-12 system and the local community.
Performance: None.

Table 2.8. Goal 5: Expand WPI’s Educational Resources
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</thead>
<tbody>
<tr>
<td>5.1 Improve library resources, services, and facilities</td>
<td>Relocation of Mass Academy; library budget constraints; number projects involving digital library; off-campus usage statistics.</td>
<td>Associate Provost; Director, Gordon Library; VP University Relations; Director, Plant Services; Faculty Governance; VP Information Technology.</td>
</tr>
<tr>
<td>5.2 Establish state-of-the-art computing resources and network performance</td>
<td>Network capacity; internet usage statistics; modes of off-campus access; state of computer laboratories and central servers.</td>
<td>VP Information Technology; VP University Relations; Provost's Office.</td>
</tr>
<tr>
<td>5.3 Create and maintain sufficient electronic classrooms to support on- and off-campus programs.</td>
<td>Usage rate of IT in classes; state of electronic classrooms; notebook computer usage rates.</td>
<td>Director Plant Services; Director, Instructional Media Center; Provost's Office; Director, CEDTA.</td>
</tr>
</tbody>
</table>

**Objective 5.1**  
**Improve library resources, services, and facilities.**

**Performance:** None.

**Objective 5.2**  
**Establish state-of-the-art computing resources and network performance.**

**Performance:** None.

**Objective 5.3**  
**Create and maintain sufficient electronic classrooms to support on- and off-campus programs.**

**Performance:** None.