NON-NSF FUNDING AT NCAR IN FY 2000
Report to the University Relations Committee
February 20, 2001

Introduction
This report summarizes NCAR's expenditures of non-NSF funding in FY 2000 and the preceding four years. In FY 2000, total NCAR spending for science and facilities amounted to $104.9 million; NSF funds amounted to $69.6 million or 66.3% of the total while non-NSF sources, almost exclusively other federal agencies, accounted for the remaining $35.3 million or 33.7%. That portion of NCAR expenditures supported by non-NSF funds is described below in the three project categories used in past reports: "major," "facilities," and "scientific." The definitions of these categories can be found on page 5.

Criteria for Approval of Non-NSF Funding
Beginning in mid-FY 1993, UCAR began using a more specific and extensive set of criteria for assessing proposals seeking additional non-NSF funding for the National Center. These criteria are intended to ensure that non-NSF funded activities are appropriate to the mission of NCAR, and that such funding is not obtained through unfair competition with universities.

The criteria have been incorporated into internal policies and procedures for the development of NCAR proposals. These policies, procedures, and guidelines regarding NCAR proposals for non-ATM funding reflect requirements of the NSF/UCAR Cooperative Agreement, improvements recommended by the University Relations Committee (URC), and internal refinements. The final criteria, approved by all reviewers, including NSF-ATM and the URC, are listed below.

Criteria for Proposals for Non-NSF Funded Activities

The first two criteria must be met in all cases.

1. Explain why the proposed activity is appropriate for the National Center and supports the mission of NCAR. This means that it must support the research, facilities, education and/or leadership objectives of NCAR and be supportive of and complementary to the university atmospheric and related scientific community.

2. Explain why the activity does not compete unfairly with the universities. An example of unfair competition would be a proposal that takes advantage of NCAR's facilities in a way that is not available, at NCAR or elsewhere, to the typical university investigator.

At least one of the next two criteria must be met in all cases.

3. Explain how the proposed activity would involve significant and meaningful collaboration involving NCAR and university colleagues, and/or provides direct support for students, visitors, education-related activities, or community workshops. (If the proposed activity does not involve collaboration with universities, explain why not.)
4. Explain how the activity would contribute to the development or support of community facilities, community models, or other community projects such as field programs, and as such would have demonstrable benefit to the community.

The next criterion must be met and described to justify proposed cosponsorship.

5. Explain how the activity would support and enhance the regular NSF-sponsored NCAR program, thereby leveraging regular NSF resources. (Be specific about cosponsorship of facilities and describe whether the amount of cosponsorship has already been allocated for the purpose described in the proposal. Incremental facility use, specific to the proposal, will be charged to the funding agency, unless the proposed activity directly supports an ATM area of interest and ATM approves full or partial cosponsorship.)

The recent review panel for UCAR found these criteria to be an excellent means for evaluating non-NSF projects.

**URC Review of Non-Base Funded Proposals**

Beginning in FY 1993, a URC subcommittee was appointed to conduct a bi-annual review of documentation for all NCAR proposals submitted within the previous six months. This review process has continued and provides a method by which the URC verifies NCAR’s compliance with the criteria. To date, various concerns have been voiced, but generally almost all proposals have been found to be compliant with the criteria.

**Trends in Non-NSF Funding at NCAR**

Table 1 and Figures 1 and 2 demonstrate the trends in NSF and non-NSF funding at NCAR from FY 1996 through FY 2000. (Figures starting from FY 1978 are available upon request.) The decrease in FY 1997 of total Non-NSF funding flow-through funding is primarily due to the transfer of the High Resolution Dynamics Limb Sounder (HIRDLS) hardware program to the University of Colorado. Although NCAR received a $4 million NSF budget increase in FY 1999, actual 1999 expenditures were down by a net of $4.3 million or 6.7%. The primary reason for this reduction is the purchase of a $6.3 million IBM supercomputer delivered in 1999 but not accepted for payment until after the end of the fiscal year. This $6.3 million commitment was carried over into FY 2000 instead, influencing the ratio of NSF to non-NSF expenditures for FY 1999.
**Actual Non-NSF Funds as Percent of Total NSF Funding**  
**FY 1995 - FY 2000**  
($000)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Non-NSF Funding/1</th>
<th>Non-NSF Flow-Thru/2</th>
<th>Less Non-NSF Flow-Thru</th>
<th>Total NSF Funding/3</th>
<th>Percent Non-NSF to NSF/4</th>
<th>Percent Non-NSF to NCAR Total/4</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 1996</td>
<td>34,556.8</td>
<td>3,151.2</td>
<td>31,405.6</td>
<td>63,305.5</td>
<td>49.6</td>
<td>33.2</td>
</tr>
<tr>
<td>FY 1997</td>
<td>31,907.0</td>
<td>2,765.0</td>
<td>29,142.0</td>
<td>63,963.8</td>
<td>45.6</td>
<td>31.3</td>
</tr>
<tr>
<td>FY 1998</td>
<td>30,162.9</td>
<td>1,079.0</td>
<td>29,083.9</td>
<td>64,076.8</td>
<td>45.4</td>
<td>31.2</td>
</tr>
<tr>
<td>FY 1999</td>
<td>33,174.8</td>
<td>1,161.7</td>
<td>32,013.1</td>
<td>59,778.2</td>
<td>53.6</td>
<td>34.9</td>
</tr>
<tr>
<td>FY 2000</td>
<td>37,452.0</td>
<td>4,943.6/5</td>
<td>32,508.4</td>
<td>69,558.0</td>
<td>46.7</td>
<td>31.9</td>
</tr>
</tbody>
</table>

1. Total Non-NSF Funds = Total Non-NSF Expenditures  
2. "Flow-thru" funds includes payments to NCAR subcontractors including universities.  
3. Includes both NSF Regular Funds and NSF Special Expenditures from NSF for NCAR. Excludes NSF Special Funds for UCAR projects.  
4. Percentages are computed excluding Non-NSF flow-through.  
5. In FY 2000, NCAR began a new system of tracking contracts to University subrecipients that is much more accurate than the previous system.
Classification of NCAR Non-NSF Funds

Table 2 and Figures 3 and 4 show trends in non-NSF funding based on the three classifications of "major," "facilities," and "scientific" projects. This classification permits more direct comparison
with university programs and consideration of issues concerning support of the community or competition.

In FY 2000, 54% of non-NSF expenditures were for major projects. These projects involve large field efforts or the development of major hardware such as satellite instrumentation or other large group efforts. Projects in this category in FY 2000 involve annual expenditures ranging from $10K for a program that may be winding down to over $6M for the FAA Program. Expenditures increased from last year by almost 9%, from $18.1M to $19.7M. This change is primarily due to NCAR’s participation in the Indian Ocean Experiment (INDOEX), supported by NASA.

In FY 2000, 19 programs were classified as major. These include:

- Participation in the Indian Ocean Experiment (INDOEX)-NASA
- PEM Tropics Mission - NASA
- Earth Observing System (EOS) - NASA
- Measurements of Pollution in the Troposphere (MOPITT) - NASA
- High Resolution Dynamics Limb Sounder (HIRDLS) - NASA
- Upper Atmosphere Research Satellite (UARS/SOLSTICE) - NASA
- Terminal Area Surveillance (TASS)/Aviation Weather Development Program (AWDP) - FAA
- Forecast Systems Laboratory (FSL) Cooperative Agreement - NOAA
- Solar Maximum Mission (SMM) - NASA
- SOHO Spacecraft - NASA
- TIMED Mission - NASA
- Evaluation of TECOM - Army/DOD
- Science Coordination in Support of the U.S. Weather Research Program (USWRP)
- A Consortium of the Application of Climate Impact Assessments (ACACIA)
- NASA’s Aviation Safety Program
- Advance Operation Aviation Weather System (AOAWS)--Taiwan

In FY 2000, 5% of non-NSF expenditures were for facility projects. These are projects directed toward the development, acquisition, or deployment of community facilities - either observational or computational. Efforts in this category in FY 2000 involve annual expenditures ranging from $3K to $398K. Total expenditures decreased from $3.8M in FY 1999 to $2.9M in FY 2000, primarily due to an Air Force project to fabricate a multi-channel GPS dropsonde data system in ATD.

In FY 2000, 38% of non-NSF expenditures were for scientific projects. These projects typically involve smaller efforts, often directed toward specific scientific questions or approaches. These projects usually involve smaller amounts of funding, ranging from $25K for a workshop to $239K for MMM’s Mesoscale Model 5 (MM5) Model Improvement Support Project. The projects typically augment the Base Program of NCAR and NSF through support staff, visitors, and equipment and support the community through instrumentation development, participation in community field programs and community model development and validation.
Table 2.

Analysis of FY 2000 Increase over FY 1999

($000)

<table>
<thead>
<tr>
<th>Item</th>
<th>FY 1999</th>
<th>FY 2000</th>
<th>Change</th>
<th>% Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-NSF Expenditures</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major</td>
<td>19,740</td>
<td>19,016</td>
<td>-724</td>
<td>-3.7%</td>
</tr>
<tr>
<td>Facility</td>
<td>3,784</td>
<td>2,910</td>
<td>-874</td>
<td>-23.1%</td>
</tr>
<tr>
<td>Science</td>
<td>9,651</td>
<td>13,433</td>
<td>3,782</td>
<td>39.2%</td>
</tr>
<tr>
<td>Subtotal</td>
<td>33,175</td>
<td>35,359</td>
<td>2,184</td>
<td>6.6%</td>
</tr>
<tr>
<td>Less Flow-Through</td>
<td>-1,162</td>
<td>-4,944</td>
<td>-3,782</td>
<td>325.5%</td>
</tr>
<tr>
<td>Net Total</td>
<td>32,013</td>
<td>30,415</td>
<td>-1,598</td>
<td>-5.0%</td>
</tr>
<tr>
<td>NSF Funds</td>
<td>59,775</td>
<td>69,558</td>
<td>9,783</td>
<td>16.4%</td>
</tr>
<tr>
<td>% Net/NSF Funds</td>
<td>53.6%</td>
<td>43.7%</td>
<td>-9.8%</td>
<td></td>
</tr>
</tbody>
</table>

1. In FY 2000 NCAR began tracking university subawards in a much more comprehensive way.

2. The reason for the apparent large increase in NSF funding between FY 1999 and FY 2000 is the delay in acceptance of a major ($6 million) piece of supercomputing equipment. While it was delivered and paid for with FY 1999 funds, it was not accepted until FY 2000, technically making the expenditure date FY 2000.
Proposals Submitted in FY 2000

Table 3 examines the benefits provided to universities and the community in the 123 proposals submitted in FY 2000. One primary benefit was counted per proposal and additional benefits were counted as secondary. Benefit categories were numbered 1 through 6. If the proposal indicated
there was a university co-investigator in an NCAR proposal (category 1), it was counted as primary in line 1 and all additional benefits were listed as secondary. However, if the first category was not mentioned, but the second category was, it was counted as primary on line 2, and any additional benefits were listed as secondary. If the first and second categories were not listed, but the third was, it was counted as primary on the third line and so on. The secondary benefits of a single proposal may be counted in more than one area. Of the 123 proposals, 102 included either a university co-investigator, direct university collaboration or were for NCAR participation in a university-led program.

Table 3.  
Benefit to Universities and the Community  
Proposals Submitted in FY 2000

<table>
<thead>
<tr>
<th>Primary Benefit</th>
<th>University Co-Investigator on an NCAR Proposal</th>
<th>Direct University Collaboration on an NCAR Proposal</th>
<th>NCAR Participation in a Non-NCAR Proposal</th>
<th>Community Availability of Model, Data Set, Instr. Dev., etc.</th>
<th>Support of Visitor, Post Doc, Grad Student</th>
<th>Workshop with University Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. University Co-Investigator on an NCAR Proposal</td>
<td>30</td>
<td>20</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Direct University Collaboration on an NCAR Proposal</td>
<td>34</td>
<td>3</td>
<td>25</td>
<td>3</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>3. NCAR Participation as a Co-I on a Non-NCAR Proposal</td>
<td>38</td>
<td>27</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Community Availability of Model, Data Set, Instr. Dev., etc.</td>
<td>21</td>
<td>7</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TOTAL = 123

*Proposals for Non-NSF funding greater than $50,000.

Table 4 presents a five-year history of NCAR proposal submissions by category. The science category includes proposals that benefit the community through participation in and support of community field programs and as members of science teams. This category also includes projects that support community model development and validation, such as the MM5, CCM3, CSM and
TIME-GCM, and Earth System Modeling as well as projects that support instrumentation development.

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Table 4.

NCAR Proposal Submission Distribution

<table>
<thead>
<tr>
<th>Facility Use</th>
<th>Facility Major</th>
<th>Facility Develop.</th>
<th>Science</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FY 2000</td>
<td>97</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>FY 1999</td>
<td>74</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>FY 1998</td>
<td>102</td>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>FY 1997</td>
<td>94</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>FY 1996</td>
<td>61</td>
<td>10</td>
<td>0</td>
</tr>
</tbody>
</table>

Based on Advance Notices Received and Submitted FY00
Does not include proposals for NSF special funds or proposals under $25K for FY1996-1999/$50K for FY2000.

Use of NCAR Non-NSF Funds

Non-NSF supported programs provide funds to augment NCAR's research programs and, in some cases, also provide direct support of a university research program. Within NCAR, non-NSF funds support research staff, equipment or facility purchases, travel and indirect costs.

Many of the non-NSF funded programs at NCAR within the "science" category support NCAR-university research collaborations, as indicated earlier in Table 3. Development of the NCAR Community Climate Model, the MM5, and the TIME-GCM has been supported with outside funds. Facility development and acquisition have been possible with the use of non-NSF funds in the Atmospheric Technology Division and the Scientific Computing Division; in FY 2000, $2.7M was expended for this purpose.
Competition with Universities

The criteria described earlier are intended to provide assurances that non-NSF funded activities at NCAR are appropriate and do not compete unfairly with universities. It is intended by the NCAR Director and UCAR policy that proposals be evaluated and proposed co-sponsorship be justified very early in proposal development. This evaluation begins with the investigators and the respective divisions. If the division director considers a prospective program appropriate, a completed Advance Notice form that indicates how the criteria are met is submitted to the NCAR Director's Office for review and approval. The proposal process continues to include evaluation by peers, approval by the respective NCAR division director, and careful evaluation of the program by the NCAR Director, Associate Director, and the Budget and Planning Office. Finally, when determined to be consistent with the criteria, the proposal is submitted and simultaneously reported by the NCAR Director to the NSF/ATM Program Official for review and approval.