

**National Science Foundation
Engineering Research Centers Program**

**Guidelines for ERCWeb Data Entry for the
Engineering Research Centers
FY 2021**

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by



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1. INTRODUCTION

The Engineering Research Centers (ERC) Program began collecting annual activity and performance data from each Center soon after the first class of ERCs was awarded in 1985. The repository of data is known as ERCWeb. These data inform the ERCs and National Science Foundation (NSF) about the resources used by and financial management, outcomes, and impacts of each class of ERCs. These data are used by the ERC Program and NSF to monitor the ERCs' performance and report to NSF, the Office of Management and Budget (OMB), and Congress.

The ERCWeb templates for data submission have been developed by the ERC Program's database contractor, CBS Inc. CBS staff maintain the data entry site and underlying database and develop analytical reports for NSF using the submitted data. These reports are used to respond to questions about the program, for budget justifications, and to study trends across Centers over time.

This document has been developed to guide the Centers in the reporting of activity and performance data to NSF. It explains the data to be collected, the input tables for reporting the data, and the output tables that are required for the Centers' annual reports. It should be considered a companion to the Annual Reporting Guidelines document as the Centers prepare their annual reports.

1.1. GETTING STARTED

The login page for ERCWeb is at <http://www.erc-reports.org/>. ERCWeb is currently managed by CBS, Inc. The CBS team consists of a project director, a project manager, Web designers, programmers, and analysts who are familiar with all aspects of the database, how to collect specific types of data, and how to handle entering unusual data. A toll-free phone number, (800) 981-2852, and an e-mail address, support@erc-reports.org, have been set up exclusively for ERCWeb assistance and technical support. New Centers should contact CBS via phone or e-mail to receive access to the ERCWeb system.

The ERCWeb site includes the ERC Library, which consists of a broad range of documents related to reporting, annual and renewal site visits, performance expectations, and reports from studies of the ERC Program. A link to the ERC Association Web site is also provided on the ERC Library page.

It is recommended that new Centers begin by reviewing the online tutorials developed by CBS staff to assist in learning how to navigate ERCWeb, both operationally and in terms of data entry. The tutorials and Guidelines can be found by selecting the ERC Library, Glossary, and Tutorials links from any page of the ERCWeb system and a login ID or password is not required for accessing the ERC Library, and Glossary sections.

Important Dates and Establishing Reporting Periods

A Center must keep track of several periods of time simultaneously in order to properly prepare an Annual Report. Reporting period definitions are provided below, along with examples, and the

definitions are repeated in the [glossary](#) section in ERCWeb. The required tables in the Annual Report are completed using data from various time periods.

1.1.1. Reporting Periods

The Federal Government operates on the Federal fiscal year. The Federal fiscal year begins on October 1 and ends on September 30.

An ERC's Award Year begins on the date that the ERC first receives NSF funding and continues for the following 12 months. These start and end dates remain the same throughout the life of the Center and are noted in the NSF Cooperative Agreement.

The ERC Current Award Year is the Award Year during which a given Annual Report is submitted to NSF. The Current Award Year is the period used in reporting required financial information in ERCWeb and the Annual Report. The ERC Proposed Award Year is the Award Year following the Current Award Year.

The ERC Reporting Year is a 12-month period established by the ERC Program Officer and the Center Director when the NSF Cooperative Agreement is awarded.

1.1.2. Reporting Budget and Financial Data

In the case of tables with columns for Current Year budget data, the amount the Center plans to spend during the Current Award Year should be reported based on the amount of support that has already been received within the Current Award Year, plus the amount brought over from the preceding year (residual), plus all amounts for which the Center has documentation that the support will be received before the end of the Current Award Year.

ERCWeb-produced tables (*Sources of Support, Annual Expenditures and Budgets, and Modes of Support, by Industry and other Practitioner Organizations*) show multiple years of data. The Current Award Year data are based on expected income and expenditures. ERCWeb automatically moves current-year data from a Center's last report to the prior-year column in the new report. On the data entry screens for these tables, there is a column for prior-year actual data that must be updated once the Award Year is finished to reflect the actual values received and spent. These completed data are considered actual data—they are based on actual dollar amounts expended or membership renewals received within that Award Year. Once prior-year data have been entered in ERCWeb, the system produces tables and conducts analyses with the full-year data exclusively. The partial-year data are archived but never used again.

The *Estimated Budgets by Research Thrust* and *Annual Expenditures and Budgets* Tables contain a column for the proposed budget, which summarizes the Center's spending plan for the Proposed Budget: Next Award Year—the year for which the Center is requesting ERC Program support in the Annual Report. This column identifies the Center's plans for spending all expected cash, not just the ERC Program core support. (In the *Estimated Budgets by Research Thrust* Table, the

project budgets for the Current Year and the thrust Estimated Next Year Budget should include only direct research costs [e.g., salary, benefits, equipment, travel] and not overhead charges.)

1.2. SUBMITTING THE DATA

Once all data have been collected and entered, the Center must submit these data officially through ERCWeb using the Final Submit button on the home page. Until this is done, the Center has not fulfilled its data entry requirements. ERCWeb staff will notify Centers nearing their Annual Report deadlines of the need to complete data entry and submit the data to ERCWeb. If necessary, corrections of erroneous data or otherwise incomplete data due to unusual circumstances may be arranged with the ERCWeb technical support team with the approval of the NSF Program Director.

Before data are final submitted, the Center should request map figures. Maps can be requested as soon as the Institutions and Personnel sections are completed, but we suggest that you request your maps no later than 2 weeks prior to the Annual Report due date.

ERCWeb automatically compares data entered across different data entry sections for consistency and compliance with NSF validation rules. Error messages are displayed at the top of the data entry pages when inconsistencies are found. The Final Submit button on the home page is disabled until all the error messages are cleared.

Once the data have been submitted, the Center should download all the required ERCWeb-produced tables and charts to insert into the Annual Report. The ERCWeb-produced tables should be inserted exactly as produced; it is not acceptable to delete data rows or columns from standard tables, even if the entries are zeros. Also, the tables and charts must be presented at a scale that is easily readable.

2. ERCWEB TABLE DESCRIPTIONS

Participant Tables—

Table: Academic Institutions—This table includes data related to center’s Academic Institutions, including each institution’s type (Lead/Domestic Partner/Foreign Partner), city, state, and location.

Table: Leadership Team—This table includes data related to center’s Leadership Team (Director, Administrative Director, Research Thrust Leader, Research Thrust Management and Strategic Planning (Gen-3 Only), Innovation Ecosystem Program Leader, Engineering Workforce Development Program Leader, Student Leader, Diversity and Culture of Inclusion Program Leader and other Leadership Staff).

Table: Research Thrust Participants—This table includes data related to center’s Research Thrust Participants, by thrust. Personnel type, name, department, and academic institution are included.

Table: ERC Partners—This table includes data detailing ERC Partner names, type (Pre-College Partner, Collaborating Institution, Pre-college Partner, Non-ERC Institution Providing ERC Students, Innovation Partner, Foreign Partner, Funder of Associated Projects, Industrial/Practitioner Member, Core Partner and Contributing Organization), Country, City, and State.

Table: Advisory Boards—This table includes information related to center’s Advisory Board members, including member Name, Position Title, Department/Division, and Organization/Firm.

Strategic Plan—

Table: Quantifiable Outputs—This table includes data on the research, technology transfer, and educational outputs of the Center from its inception through the Current Reporting Year. Data are presented individually for each of the most recent 5 Reporting Years. The All Years column contains totals for everything submitted, and the Early Cumulative Total column shows totals for the years prior to the most recent individual Reporting Years shown.

Table: Average Metrics Benchmarked Against All Active ERCs and the Center’s Tech Sector—This table includes values from all input tabs in order to create totals for the current Federal fiscal year. These metrics are then benchmarked against all active ERCs, the Center’s specific sector, and the Center’s specific class for previous Federal fiscal years.

Figure: Research Project Investigators, by Discipline—This figure is a pie chart that presents the percentage of investigators by discipline.

Management and Organization—

Table: Institutions Executing the ERC’s Research, Technology Transfer, and Education Programs—The names and types of institutions executing the ERC’s research, technology transfer, and education programs are listed here, as well as total numbers of students, teachers, faculty, postdocs, and Young Scholars involved in ERC activities.

Figure: Location of Lead, Core Partner(s), and all Domestic Collaborating Institutions — This figure shows a map detailing the U.S. locations of the lead institution, core Partner institutions, collaborating institutions, community colleges, institutions that provide REU participants, and pre-colleges that provide RET participants. Please note that this map must be created by CBS. Find the **Request Maps** button in the upper right corner of the Home page.

Figure: Location of Foreign Collaborating Institutions and/or Foreign Partner Institutions—This figure shows a map detailing the locations of foreign participating institutions. Please note that this map must be created by CBS. Find the **Request Maps** button in the upper right corner of the Home page.

Figure: Country of Citizenship of ERC Foreign Personnel—This figure shows a map detailing the countries of citizenship of ERC Foreign Personnel. Please note that this map must be created by CBS. Find the **Request Maps** button in the upper right corner of the Home page.

Convergent Research—

Table: Estimated Budgets by Research Thrust—The information presented in this table represents the scope of the research program supported by direct and indirect support to the ERC performed at the lead, core partner, collaborating institutions, or diversity partners, including Alliances with NSF Diversity Awardees.

Engineering Work Force Development—

Table: Educational Impact—This table further specifies information about certain outputs reported in the *Quantifiable Outputs* table. The outputs are:

- New courses currently offered
- Currently offered, ongoing courses with ERC content
- Workshops, short courses, and webinars
- New textbooks based on ERC research

The outputs are categorized as follows:

- With engineered systems focus
- With multidisciplinary content
- Team taught by faculty from more than one department
- Undergraduate level
- Graduate level
- Used at more than one ERC institution

Table: Ratio of Graduates to Undergraduates—This table presents values of graduate students, undergraduate students, REU students, and Young Scholars benchmarked against all

active ERCs, each specific sector, and each specific class in the first three rows of the table. ERC-specific totals are presented in the last two rows.

Diversity and Culture of Inclusion—

Table: Diversity Statistics for ERC Faculty and Students—This table shows diversity statistics for women, underrepresented racial minorities, Hispanics/Latinos, and individuals with disabilities for leadership team members, faculty, doctoral students, master’s students, and undergraduate students at the Center level as compared to the latest American Society for Engineering Education (ASEE) diversity data. This information is broken out by citizenship and is displayed separately for U.S. citizens and permanent residents and for foreign individuals.

Figure: Women in the ERC—This figure shows statistics for female members of the leadership team, faculty, postdoctorates, doctoral students, master’s students, and undergraduate students at the Center level as compared to the latest ASEE diversity data.

Figure: Underrepresented Racial Minorities in the ERC—This figure shows statistics for underrepresented racial minorities at the Center level as compared to the latest ASEE diversity data. Categories include leadership team members, faculty, postdoctorates, doctoral students, master’s students, and undergraduate students.

Figure: Hispanics/Latinos in the ERC—This figure shows statistics for Hispanic/Latino leadership team members, faculty, postdoctorates, doctoral students, master’s students, and undergraduate students at the Center Level as compared to the latest ASEE diversity data. These data are broken out by citizenship and are displayed separately for U.S. citizens and permanent residents and for foreign individuals.

Figure: Persons with Disabilities in the ERC—This figure shows statistics for individuals with disabilities at the Center level as compared to the latest data on disability from the National Center for Science and Engineering Statistics (NCSES) at the National Science Foundation. Categories include leadership team members, faculty, postdoctorates, doctoral students, master’s students, and undergraduate students.

Table: Center Diversity, by Institution—This table shows the numbers and percentages of women, underrepresented racial minorities, and Hispanics/Latinos by institution.

Innovation Ecosystem—

Table: Industrial/Practitioner Members, Innovation Partners, Funders of Sponsored Projects, Funders of Associated Projects, and Contributing Organizations—Included in this table is information about all the different types of supporting organizations involved with the Center. The information includes the name of the organization, the organization sector, the product focus (industry only), the type of involvement, whether the firm is domestic or foreign, the size (industry only), the number of sponsored projects, and whether the organization is new.

Table: Organization Involvement in Innovation and Entrepreneurship Activities—This table displays the types of activities and involvement by the Center’s supporting organizations, including:

- Innovation/Entrepreneurship Training Activities
- Incubation Facilities
- Technology Screening Activities
- Connections to Sources of Commercialization Funding
- Other Activity

Table: Innovation Ecosystem Partners and Support, by Year—This table provides numbers of Industrial/Practitioner members, Innovation Partners, Funders of Sponsored Projects, Funders of Associated Projects, and Contributing Organizations, listed by Reporting Year. Detailed information on dollar amounts for sponsored projects and the total dollar amount of industrial/practitioner member support provided to the Center are also provided.

Table: Technology Transfer Activities—This table indicates the types of technology transfer activities supported by the Center’s Industrial/Practitioner members, including:

- Faculty Onsite at Organization
- Faculty Instruction to Organization
- Individual from Organization on Lead Institution Campus
- Licensed Software
- Licensed Technology (other than software)
- Graduate Hired by Organization
- Student Onsite at Organization
- Participation in Testbed
- Other Activities

Figure: Lifetime Industrial/Practitioner Membership History—This figure displays all industrial/practitioner members throughout the life of the Center by Award Years of membership graphically.

Figure: Total Number of Industrial/Practitioner Members—This figure displays data for four Award Years of industrial/practitioner memberships are presented graphically.

Figure: Industrial/Practitioner Member Support, by Year—This figure displays data for the dollar amount and type (membership fees, sponsored projects, associated projects, and in-kind support) of industrial/practitioner support for the past 4 award years graphically.

Table: Intellectual Property—This table displays center Intellectual Property records.

Table: Technology Transfer—This table displays center Technology Transfer records.

Table: Start-up Firms—This table displays center Start-Up Firms.

Resources and Institutional Commitment—

Table: Current Award Year Functional Budget—This table represents the functional budget allocations for direct support and associated projects to the Center. Totals for each research thrust are included, as well as totals for the educational program, general shared equipment, new facilities/new construction, leadership/administration/management, industrial collaboration/innovation programs, Center-related travel, indirect costs, multi-year support reserved for future years, and residual funds remaining.

This table includes only cash and will equal the current-year total column in the *Sources of Support* table and the current-year budget column in the *Annual Expenditures and Budgets* table. The sum of the Current Year projects in each thrust in the *Estimated Budgets by Research Thrust* table should be the same as the subtotal for that thrust in the *Current Award Year Functional Budget* table.

Figure: Functional Budget as a Percentage of Direct Support—This figure is a pie chart of the Direct Support portion of the functional budget.

Figure: Functional Budget as a Percentage of Associated Project Support—This figure is a pie chart of the Associated Project Support portion of the functional budget.

Table: Current Award Year Education Functional Budget—This table represents the functional budget allocations for direct support and associated projects to the Center. Totals are included for Pre-College Activities; University Education; Student Leadership Council; Young Scholars; REU; RET; Assessment; and Community College Activities.

Table: Sources of Support—This table provides a detailed breakdown and totals for unrestricted cash, restricted cash, associated project, residual funds, and in-kind sources of support for the Award Year reported here. Multiple years of data are shown.

Table: Annual Expenditures and Budgets—This table displays actual expenditures, current-year budgets, and proposed budgets. Information on residual funds remaining is also reported here. Multiple years of data are shown.

Table: Modes of Support, by Industry and Other Practitioner Organizations—This table lists cash and in-kind support from current members, funders of sponsored projects, funders of associated projects, and contributing organizations; listed by organization and Award Year for both Received and Promised support.

The summary section includes the Current Year Budget and Estimated Next Year Budget for each Thrust. The Current Year Budget section shows how the budget is allocated between Core Projects, Sponsored Projects, and Associated Projects and includes a Projects Total column.

Appendix III—

Table: ERC Personnel—This table includes demographic data for all Center personnel from lead, core partner, and collaborating institutions. All demographic data are provided to the Center voluntarily by each individual. In accordance with the Federal Privacy Act, missing information cannot be added by ERC personnel when not provided by individual participants.

Final Report Tables—

For centers entering data for their 10th and final year or during a no-cost extension period, ERCWeb provides tables to be included in the center’s final report. Please refer to the Final Report Guidelines located in the ERC Library for further details.

3. OFFLINE DATA ENTRY TEMPLATES

3.1. OVERVIEW

The following eleven Microsoft Excel templates are available for your Center to edit or add data outside of the ERCWeb system:

- Organizations
- Institutions
- Personnel
- Thrusts
- Projects
- Project Organizations
- Project Personnel
- Advisory Boards
- Intellectual Property
- Technology Transfer
- Start-Up Firms

3.2. INSTRUCTIONS

The templates can be downloaded with the current data from the system (recommended) or with column headings only and no data. A link to the Offline Data Entry Templates page is available from the Home page and from the Import links found on the Supporting Organizations, Academic Institutions, Personnel, Thrusts and Projects pages of the ERCWeb system.

Your Center is not required to use all eleven templates; however, any templates used should be uploaded following the Upload Order Rules:

- Upload **Institutions**, then **Personnel**
- Upload **Thrusts** then **Projects**
- Upload **Organizations** and **Projects**, then **Project Organizations**
- Upload **Personnel** and **Projects**, then **Project Personnel**
- These may be uploaded in any order: **Advisory Boards**, **Intellectual Property**, **Technology Transfer**, and **Start-Up Firms**

For more complete instructions, please review the Data Upload Spreadsheets Tutorial found on the Tutorials page within the ERC Library, Glossary and Tutorials section of ERCWeb.

4. SUPPORT

4.1. OVERVIEW

Each year, Centers receive financial or in-kind support from many sources. The Support data entry section of the ERCWeb system is where Centers should report all sources of support. Once entered, the amount of support from all of the various sources is available for planning the functional budget and annual expenditures budget.

There are five data entry subsections available under the ERCWeb Support Section: NSF Support, Supporting Organizations, University Support, Other Sources of Support, and Residual Funds Brought Forward. The following concepts are common to most or all of the support data entry pages.

- **Prior Award Year Actual:** The prior award year column is used to reconcile the differences between the values anticipated during the previous year and actual amounts received. The sum of the amount of support received and promised from the previous year is displayed next to the data entry fields as a reference. Prior award year columns do not appear for new Centers or for new supporting organizations.
- **Prior Award Year Estimate:** An estimate will be shown in a read-only column for all sources of support. The Estimate column is the sum of the data entered for “Received by End of Reporting Year” and “Promised by End of Reporting Year” in the ERCWeb system last year. Because these calculations are only system-generated estimates, please enter the actual amount.
- **Received by End of Reporting or Award Year:** Centers should enter the amount of support received by the end of the reporting or award year.
- **Promised by End of Award Year:** When the award year ends after the reporting year, promised support may be entered for the anticipated amount expected by the end of the award year, if applicable.
- **Unrestricted Cash:** Support that a Center receives that is not designated to be used for a specific project but may be used for any purpose. This may include membership fees and other cash support.
- **Restricted Cash:** Support that a Center receives that is designated for use on a specific (sponsored) project. Enter restricted cash donations under non-translational or translation research (see [glossary](#) section in ERCWeb).
- **Associated Project Support:** Support given to the home department of ERC faculty member rather than directly to the Center. Enter associated project support under non-translational or translational research (see [glossary](#) section in ERCWeb).

- **In-Kind Support:** Centers should document the monetary value of in-kind donations. The types of in-kind support are:
 - Equipment
 - New Construction
 - New Facilities in Existing Buildings
 - Other Assets
 - Visiting Personnel

Information specific to the five support subsections (NSF, Supporting Organizations, Universities, Other Sources of Support, and Residual Funds) are described below.

4.2. INSTRUCTIONS

4.2.1. NSF Support

Centers are required to complete the NSF Support data entry page yearly.

Data provided in this section produce:

- Table: Average Metrics Benchmarked Against All Active ERCs and the Center’s Tech Sector
- Table: Sources of Support
- Table: Annual Expenditures and Budgets

4.2.2. Supporting Organizations

The organizations that work with or support the work of the ERC are reported here.

The organizations are listed under three tabs: **Active**, **Inactive**, and **Archived** organizations.

Active organizations are organizations for which support and involvement activities will be reported for the current award year. Inactive organizations were active during the previous award year. Archived organizations were inactive during the previous award year but active at some point prior to that.

Data provided in this section produce:

- Table: Quantifiable Outputs
- Table: Average Metrics Benchmarked Against All Active ERCs and the Center’s Tech Sector
- Table: Industrial/Practitioner Members, Innovation Partners, Funders of Sponsored Projects, Funders of Associated Projects, and Contributing Organizations
- Table: Organization Involvement in Innovation and Entrepreneurship Activities
- Table: Innovation Ecosystem Partners and Support, by Year

- Table: Technology Transfer Activities
- Figure: Lifetime Industrial/Practitioner Membership History
- Figure: Total Number of Industrial/Practitioner Members
- Figure: Industrial/Practitioner Member Support, by Year
- Table: Sources of Support
- Table: Modes of Support, by Industry and Other Practitioner Organizations

Add New Organization

The Add New Organization feature allows you to add to the current year’s list of organizations that worked with or supported the work of the Center. After selecting the Add New Organization link on the Supporting Organizations data entry page, the Organization Information tab will appear.

4.2.2.1. Support Organizations – Organization Information Tab

Supporting Organizations are categorized by the highest level of financial commitment. They include the following types:

- Industrial/Practitioner Members
- Innovation Partners
- Funders of Sponsored Projects
- Funders of Associated Projects
- Contributing Organizations

For example, a firm provides an equipment donation to the ERC and also provides direct support to an ERC faculty member for a project within the scope of the ERC’s strategic plan. This firm is classified as a Funder of Associated Projects rather than contributing organization. Organizations must be actively involved in executing the Center’s vision in conjunction with Center staff to be included here.

Industrial/Practitioner members must sign a membership agreement (and satisfy all requirements for membership according to the Center’s membership agreements and cooperative agreement) and must provide a sufficient level of financial support (membership fees or in-kind), according to the Center’s membership agreement, during the Reporting Year. For returning industrial/practitioner members - in cases where current year funding has been received in a previous year and there is no additional support to report, there is an option in the system to indicate this.

For all other organization types, appropriate documentation includes signed contracts, agreements, MOUs, etc. Centers may define different levels of membership. One exception is that a signed membership agreement is not required for members in a government sector. Please review the definitions in the [glossary](#) section in ERCWeb for all the types of organizations listed above.

Organization Name (If the organization has been renamed, acquired, or merged, then modify the existing entry by typing the new name for the organization and marking the checkbox beneath it.)

Support Relationship to Center—Choose the appropriate organization type

Sector—Select the Sector, and Industry Size and Industry Product Focus if the relationship is industrial/practitioner member. If you select “Other” for sector, you must enter a short description.

Base Location or Headquarters—Click on the corresponding radio button to indicate whether the organization’s main headquarters is located in the United States (domestic) or outside the United States (foreign). If domestic, city and state will be required. If foreign, city and country of location will be required.

Award Year Documentation—Indicate whether the Center has received the necessary documentation to establish another year of committed support.

After you have entered this information, click on **Save**.

Delete New Organizations—This feature allows you to delete a new organization. Click **Delete Organization**. A warning screen will appear that will give you the opportunity to either cancel the operation or delete the organization. Organizations from previous years may not be deleted but may be marked as inactive on the Organization Information page.

4.2.2.2. **Supporting Organizations – Support Tab**

Enter amounts of unrestricted cash, restricted cash, associated project funds or in-kind contributions for the each supporting organization, for the three time periods indicated.

NOTE: If the Center received all current year funding in a previous year, select the checkbox indicating this at the bottom of the organization support screen.

There may be non-Industrial/Practitioner member organizations (for example, Federal or State agencies) that can promise grants. In such cases the Center should have the necessary documentation to show that the funds are promised in order to enter the amount in the Promised by End of Award Year category. In addition, in order to enter promised money, the organization providing the money must be “active” in the current or previous year. An active organization must have some type of involvement with the Center (see below for the categories of involvement). Promised money from a new or inactive organization whose participation or support is anticipated, but not yet materialized by the end of the reporting year cannot be reported in the system. However, the anticipation of this support can be discussed in the written Annual Report and in the presentations at the site visit.

For associated projects whose funding is part of a larger award that includes faculty outside the Center, include only the funding percentage that is directly in support of the Center’s strategic plan or vision, and only the percentage budgeted for the current award year (direct costs only).

Multi-Year Support - Optional

If an organization provides direct support and explicitly states that the support should be used over multiple years (e.g., \$500,000 lump sum award to be used over 3 years), enter the full amount of

support under the appropriate category for unrestricted or restricted cash. Then, enter the amount that will not be used in the first year, but will be reserved for future years.

The amount reserved for future years, will appear the following year as multi-year support received.

However, when associated project awards are made in a lump sum and cover multiple years, this amount must be pro-rated over each of the years, and in proportion to the amount of the associated project work that is directly related to the Center's strategic plan.

4.2.2.3. **Support Organizations – Involvement Tab**

Types of Involvement:

- Member of Center's **Industrial Advisory Board**
- Participation in **science/engineering research** projects
- Participation in **education/outreach** activities
- Participation in **translational research**

Innovation/Entrepreneurship Activities

Participation in **innovation/entrepreneurship activities** (research or education):

If checked, at least one innovation/entrepreneurship activity must be selected.

- Innovation/entrepreneurship training activities
- Provides incubation facilities
- Provides technology screening activities
- Provides connections to sources of commercialization funding
- Other (please specify)

Technology Transfer

If checked, at least one technology transfer activity must be selected.

- Faculty onsite at organization's location
- Faculty provides instruction to organization
- Individuals from organization involved in research projects onsite at the lead or core partner institutions
- Licensed software
- Licensed technology (other than software)
- Graduate hired by organization
- Student onsite at organization
- Participation in Testbed
- Other technology transfer activities (please specify)
- Other Participation (Please specify)

After you have entered this information, click on **Save**.

4.2.3. University Support

U.S. and Foreign Universities should be reported separately.

If no support was received from universities mark the “No support was received from U.S. Universities” or “No support was received from Foreign Universities” checkbox at the bottom of each page.

NOTE: If associated project support is received from an academic institution that has only provided funding for **associated** projects and is not involved in any other center-related activities (research or otherwise), the funds should be reported under U.S Universities or Foreign Universities.” Because the relationship with this institution does not fit into any of the existing Academic Institution or Organization types, please do not report the institution under the Academic Institutions or Organizations section.

Data provided in this section produce:

- Table: Average Metrics Benchmarked Against All Active ERCs and the Center’s Tech Sector
- Table: Sources of Support

4.2.4. Other Sources of Support

Appropriate other sources of support include leveraged assets or anonymous donors. Support from specific nonprofit organizations should be entered under Supporting Organizations. Support from universities should be entered in the Academic Institutions section.

Describe the source in the text field for each type of support.

Data provided in this section produce:

- Table: Average Metrics Benchmarked Against All Active ERCs and the Center’s Tech Sector
- Table: Sources of Support

4.2.5. Residual Funds Brought Forward

Residual funds remaining from previous years and brought forward into the current year must be entered as support in the ERCWeb system. This allows the residual funds brought forward to be used when planning the functional budget and annual expenditures and budgets. Centers are not required to report residual funds at the organizational level, instead the following sectors are used:

- NSF

- Government Sources
 - Other U.S. Government (not NSF)
 - State Government
 - Local Government
 - Foreign Government
 - Quasi-Government Research Organization
- Universities
 - U.S. Universities
 - Foreign Universities
- Industry Sources
 - U.S. Industry
 - Foreign Industry
 - Industrial Associations
- Other Sources

4.2.6. Support Summary

This table displays all incoming support received from the previous 5 sections – NSF, supporting organizations, universities, other sources, and residual funds brought forward. The total support column is the sum of direct support and associated project support. The supporting organization totals are shown by default, but can be hidden by clicking on Hide (next to Supporting Organizations).

The purpose of the support summary is to show a breakdown of the total support amounts that appear on the ‘functional budget’ and ‘annual expenditures and budgets’ data entry pages. These include:

- Total prior award year actual amounts appear in the annual expenditures budget.
- Total direct support appears in the functional budget and the annual expenditures budget.
- Total associated project support appears in the functional budget.

5. ACADEMIC INSTITUTIONS

5.1. OVERVIEW

The academic institutions executing the ERC's Research, Technology Transfer, and Education Programs are reported here.

Data provided in this section produce:

- Table: Institutions Executing the ERC's Research, Technology Transfer, and Education Programs
- Figure: Location of Lead, Core Partner, and all Domestic Collaborating Institutions
- Figure: Location of Foreign Collaborating Institutions and/or Foreign Partner Institutions
- Table: ERC Personnel
- Table: Center Diversity, by Institution

5.2. INSTRUCTIONS

5.2.1. Add/Edit Current Year Institution Data

Click on **Add a new Academic Institution for this Award Year** and provide the following information:

Institution Type – Select one of the following:

- Lead Institution
- Core Partner
- Collaborating Institution
- Foreign Partner
- Non-ERC Institution Providing REU Students
- Community College
- Pre-college Partner (include number of Young Scholars)
- Diversity Alliance (i.e., ADVANCE, AGEP, CREST, HBCU-UP, LSAMP, LSAMP-BD, RDE, TCUP and other NSF diversity programs)

For AGEP, CREST, LSAMP, or TCUP programs, to add a new alliance, select **diversity alliance**. In the next field, select the type of diversity alliance. If diversity alliance is not one of the types previously mentioned, select **other diversity alliance**, and enter the name of the alliance in the text box. Then, indicate whether this alliance has personnel data to report. Select all other details that apply to the alliance, as well as the primary location of the alliance and then click on **Save**. In a case where the lead or partner university is also the diversity alliance, the alliance may only be listed if there is a student from the alliance participating in ERC activities in that reporting year.

Institution Name

For returning institutions, you will need to click on **Save** to update the record's status to Complete.

NOTE: Do not enter an institution in this section unless a documented formal relationship is in place with a Diversity Alliance. Ideally, there will be students from the institution in addition to a formal relationship, but the system allows an entry for the institution without a student.

Diversity Alliances, along with lead institutions, core partners, non-ERC institutions providing REU students, and other NSF Diversity Program awardee institutions, will be listed in the *ERC Personnel* table in the Demographics section so that personnel details can be reported for each institution.

Demographic Data

Indicate whether personnel will be reported. In ERCWeb, each institution entered in the "Academic Institutions" section is assumed to have associated personnel that need to be reported under Personnel\Demographic and Occupational Data. Your Center may partner with institutions that do not have associated personnel, such as a high school or school district. When editing the record for one of these institutions, select the radio button labeled "Formal relationship exists but **no personnel** will be reported for this year." ERCWeb will not require personnel or demographic data to be entered for institutions with this option selected.

NOTE: Personnel connected with institutions are entered in the Personnel or Research section.

Number of Young Scholars

For pre-college partners – indicate the number of Young Scholars associated with the institution. If there are no Young Scholars to report, the system will allow you to enter "0."

Other Details (check all that apply)

The U.S. Department of Education maintains lists of Postsecondary Institutions Enrolling Populations with Significant Percentages of Minority Students, available at <http://www2.ed.gov/about/offices/list/ocr/edlite-minorityinst.html>. This list includes the following classifications:

- [Alaska Native-Serving Institutions](#)
- [American Indian Tribally Controlled Colleges and Universities](#)
- [Asian American and Native American Pacific Islander-Serving Institutions \(AANAPISIs\)](#)
- [High Hispanic Enrollment](#)
- [Hispanic-Serving Institutions \(HSIs\)](#)
- [Historically Black Colleges and Universities \(HBCUs\)](#)
- [Minority Institutions](#)
- [Native American-Serving, Nontribal Institutions](#)
- [Native Hawaiian-Serving Institutions](#)
- [Predominantly Black Institutions \(PBIs\)](#)

In addition, the ERC program includes the following classifications:

- Has predominantly female students
- Has a large number of underrepresented minority students in engineering (LNURM)

Also provide the country, city, and state of the academic institution.

After you have entered this information, click on **Save**.

5.2.2. Delete Institution Data

To delete an institution, from the Academic Institutions screen click on Delete in the row for that institution. A warning screen appears, giving you the opportunity to either cancel the operation or delete the institution and the personnel record associated with that institution.

6. PERSONNEL

6.1. OVERVIEW

Report on individuals who are directly involved in executing activities funded by the Center. They may be engaged in leadership/administration, research, or curriculum development and outreach, or they may be REU students or industry researchers. Also included are those personnel that:

- Carry out the Center's mission through involvement in projects that contribute directly to the Center by fulfilling its strategic plan
- Work on research projects reported on the Research tab
- Work on Center-related activities other than the research program
- Are paid, or unpaid

Data provided in this section produce:

- Table: Average Metrics Benchmarked Against All Active ERCs and the Center's Tech Sector
- Table: Ratio of Graduates to Undergraduates
- Table: Institutions Executing the ERC's Research, Technology Transfer, and Education Programs
- Figure: Country of Citizenship of ERC Foreign Personnel
- Table: ERC Personnel
- Table: Diversity Statistics for ERC Faculty and Students
- Figure: Women in the ERC
- Figure: Underrepresented Racial Minorities in the ERC
- Figure: Hispanics/Latinos in the ERC
- Figure: Persons with Disabilities in the ERC
- Table: Center Diversity, by Institution

REMINDER: Once the Institutions and Personnel sections are complete, please request your maps (i.e., *Location of Lead, Core Partner, and all Domestic Collaborating Institutions, Location of Foreign Collaborating Institutions and/or Foreign Partner Institutions, and Country of Citizenship for ERC Foreign Personnel* figures). From the Home page click on **Request Maps** in the upper right corner. Maps require up to seven business days of processing time; it is recommended that you request them at least 2 weeks before your annual report is due.

6.2. INSTRUCTIONS

6.2.1. Personnel Data Entry

There are two categories for data entry available in the Personnel section: By Institution and By Person. **Enter institution records for your Center before entering personnel records.** All demographic data must be provided to the Center voluntarily by each individual and in accordance with the Federal Privacy Act; missing information cannot be added by ERC personnel.

Demographic information can be reported to NSF only if it has been collected for the express purpose of the Annual Report. The Center may have other uses for these data beyond reporting to NSF, but individuals providing data must be informed about the intended uses when the data are collected.

Indicate an NSF personnel type for each relevant classification. NOTE: Multiple personnel types are allowed, but only one type is allowed within each classification. For example, personnel can be reported as both “Research Thrust Leader” within the Leadership/Administration classification and as “Senior Faculty” within the Research Under Strategic Plan classification.

Students participating in the Center as NSF Diversity Alliance awardees should be reported in conjunction with the NSF Diversity Alliance award’s lead institution. REU students and K–12 teachers should be reported according to the institution in which they are enrolled or at which they work.

Add the following information for each individual:

- Institution
- Name
- Citizenship (If citizenship is foreign, specify the country of citizenship.)
- Gender
- Disability status
- Ethnicity
- Race
- Academic Discipline(s)
- Title and department within institution

NOTE: When personnel are associated with a research project, they are required to enter a Title and Department. If an individual is not associated with a research project, a Title and Department are not required, and ‘None’ can be entered in the data entry field.

NSF Classification and Personnel Type – see 6.2.3

- Research Involvement for this person including:
 - Project Name
 - Project Role (optional)
 - Project Leader (select if applicable)
 - Project Investigator (select if applicable)

Project leaders and project investigators are listed by name in the *Estimated Budgets by Research Thrust* table. Additional project personnel are included in the total count of personnel per thrust. By definition, project leaders are project investigators.

Personnel can be affiliated with more than one research project. For each research project, add a new row on this data entry screen.

NOTE: Personnel may be associated with research projects through the Personnel data entry page or the Project Personnel data entry page in the Research section. Projects must be entered through the Research section prior to associating Personnel with Projects in the Personnel section.

6.2.2. Assign a Personnel Record to Multiple Institutions

Some personnel may be involved in Center activity at more than one institution. In ERCWeb the person needs to be associated with each institution so that the NSF classifications and personnel types specific to each institution can be reported.

First, create or update the person's record for a single institution. To add the person to an additional institution, select Personnel By Institution, and then select the link **Add a new person**. In the textbox labeled "Add a person from another institution to [institution name], type the name of the person until it appears in the auto search list. Select the name and then click on **Add this person**.

The following information previously entered for the person will be copied to this new record:

- Demographic information
- Any disciplines entered
- Any involvement in research projects or thrusts

Enter the information specific to the new institution to complete the personnel record. Select the appropriate personnel types for the NSF classifications at the institution. Click on **Save** to update the personnel record's status to "Complete."

NOTE: Changes to the demographic information and disciplines for a person associated with multiple institutions will be reflected in every record for that person.

For more detailed instructions, please refer to the ERCWeb tutorials for Personnel data entry.

6.2.3. NSF Classifications and Personnel Types

Leadership/Administration:

- Directors
- Research Thrust Leader
- Research Thrust Management and Strategic Planning (**Gen-3 Only**)
- Innovation Ecosystem Program Leader
- Engineering Workforce Development Program Leader
- Diversity and Culture of Inclusion Program Leader
- Student Leader
- Administrative Director
- Staff

Research Under Strategic Research Plan (Gen-3 Only):

- Senior Faculty
- Junior Faculty
- Research Staff
- Visiting Faculty
- Industry Researcher
- Postdoc
- Doctoral Student
- Master's Student
- Undergraduate Student
- Other Visiting College Student

NOTE: Industry researchers should be reported according to the institution with which they are predominantly collaborating.

Curriculum Under Strategic Curriculum Plan (Gen-3 Only):

- Senior Faculty
- Junior Faculty
- Research Staff
- Visiting Faculty
- Industry Researcher
- Postdocs
- Doctoral Student
- Master's Student
- Undergraduate Student
- Other Visiting College Student

Programmatic Personnel (Gen-4 Only):

- Senior Faculty
- Junior Faculty
- Research Staff
- Visiting Faculty
- Industry Researcher
- Postdocs
- Doctoral Student
- Master's Student
- Undergraduate Student
- Other Visiting College Student

ERC REU Student (funding source):

- Center Funding
- NSF REU Site Award
- Other NSF Supplemental Funding

Pre-College (K–12):

- Teachers (RET)
- Teachers (non-RET)

Research Experience for Teachers (RET):

- Participant in RET Program
- None

NOTE: RET and Non-RET teachers must be reported by the pre-college partner with whom they are associated.

6.2.4. Delete a Personnel Record

To delete a person in ERCWeb, click on **Delete** in the row for that person.

A confirmation screen will appear where you can verify that this person should be deleted from the system. If the person being deleted is the leader of a thrust or project, this information will be displayed on the confirmation screen. You can delete the person's record; however, the records for the associated thrust or project will have a status of "In progress" until a new leader is assigned.

Deletion of a personnel record is specific to an institution. If you delete a person associated with more than one institution, each institution will be listed on the confirmation screen.

Only the record for the designated institution will be deleted. The person will remain connected to the other institutions. To completely remove the person from the system, delete the personnel record for each institution.

For more detailed instructions, please refer to the ERCWeb tutorials for Personnel data entry.

7. ADVISORY BOARDS

7.1. OVERVIEW

The information reported in this section represents the ERC Advisory Boards and associated members. All center advisory boards and members should be reported in this section.

Data provided in this section produce:

- Table: Advisory Boards

7.2. INSTRUCTIONS

Data are entered for both Advisory Boards and their Members. Centers must enter Advisory Boards prior to adding Board Members. From the Advisory Boards drop down click **Boards**. Add all center boards by clicking **Add a new advisory board** and enter a Board Name.

Members can be added by clicking **Add a new member**, and then entering all of the requisite information for each member.

Gen-3 Centers may Opt-Out of entering these data into ERCWeb if the center wishes to generate their own Advisory Board Table. Select the **Data Entry Opt-Out: advisory board data will be provided in center reporting** box if center elects to generate their own Advisory Board tables.

Gen-4 Centers may elect to not enter Advisory Board data if no there are no data to report. If no Advisory Board data are available, select the **No advisory board data to report in 20XX** box.

8. RESEARCH

8.1. OVERVIEW

The information reported in this section represents the entire ERC research effort, including all projects in the ERC (regardless of source of funds). Projects are reported in thrusts of research in the ERC. Education thrusts or projects are not included here and are described in the Education section of the Annual Report. All projects listed here that receive direct funding, require a project summary write-up in the Annual Report/Renewal Proposal. Project abstracts are required for associated projects. All projects should also be represented during poster sessions at annual ERC site reviews.

Data provided in this section produce:

- Table: Estimated Budgets by Research Thrust
- Figure: Research Project Investigators by Discipline
- Table: Current Award Year Functional Budget
- Figure: Functional Budget as a Percentage of Direct Support
- Figure: Functional Budget as a Percentage of Associated Project Support
- Table: Sources of Support
- Reference: Project Personnel Data

8.2. INSTRUCTIONS

Data are entered here about the ERC research effort. ERCWeb collects your center's report research programs by thrusts and projects (see section 8.2.1 for more details).

See [glossary](#) section in ERCWeb for definitions of thrusts and projects.

8.2.1. Report Research by Thrusts and Projects

Reporting begins with thrusts and ends with projects. From the **Thrusts** screen, click on **Add a new thrust for this award year**. Enter the thrust name, and then begin typing the thrust leader's name to select it from the auto search dropdown list. If the thrust leader does not yet have a personnel record in the system, click on **quick-add a personnel record** to add it. Also, you are required to enter an estimated next year budget allocation for the thrust on this screen. Save the thrust by clicking on **Save** at the bottom of the screen. ERCWeb will prompt you to assign projects to this thrust. Click **please enter projects for this thrust** or go to the **Projects** screen under **Research** to assign one or more projects to this thrust. Then, click **Add a new project for this award year**.

On the Project Information tab, the system will require the following information:

- Project Name
- Project Type

- Translational Research (Yes/No)
- NSF Funding (Directly/Indirectly/N/A)
- Organizational Sponsors
- Thrust List
- Project Current Year Budget Allocation per Thrust

Save the project information by clicking **Save** at the bottom of the screen. A new row will appear to allow you to select an additional thrust if the project belongs to more than one thrust.

To complete a project, both the Project Information tab and the Project Personnel tab must be completed. At least one project investigator must be entered for each project and each project must have one project lead. The Project Role field is optional. If project role is specified, it will appear in the Project Personnel Data output.

To add an additional investigator to the list, provide data on the last row on the data entry screen. Begin typing the name of the personnel. The text field has an auto search feature that will display personnel matching the name you are typing. If the person's name is missing from the search results, click **quick-add a personnel record**. Once you finish adding personnel for this project, click **Save**.

When all thrusts and projects have been entered, the table on the main Thrusts screen will show cumulative totals for current-year and estimated next-year budgets.

Clicking on a thrust name will open the Edit Thrust screen, allowing you to change the thrust name, thrust leader, and Estimated Next Year Budget Allocation. You will also be able to click on a link to each project assigned to that thrust.

8.2.2. Enter Project Personnel

To complete a project, both the Project Information tab and the Project Personnel tab must be completed. Each research thrust leader, project investigator, and project personnel member must have a personnel record entered in ERCWeb. If you have already entered project personnel in the Personnel tab, begin typing the name of the personnel. The text field has an auto search feature that will display personnel matching the name you are typing.

If the person does not yet have a personnel record in the system, select the link to **quick-add a personnel record**. You will be prompted to choose an existing institution for the new person. Select the institution, enter the person's name, and click **Add Person**. You will be returned to the previous project personnel tab. You can now select the person from any of the fields for research thrust leaders, project investigators, and project personnel.

This feature allows you to quickly add partial information for project personnel so that you can complete the Research tab, however, these personnel records are not considered complete. After completing your research data entry, you will be required to return to the Personnel tab of ERCWeb to add more demographics and NSF classifications for people that were "quick added"

while you were completing the research data entry component. You can view these personnel in the Personnel tab by name or by institution.

8.2.3. Delete a Thrust or Project

8.2.3.1. Deleting a Project Record

Project records can be deleted at any time. Delete a project by clicking on **Delete** for that project on the main Projects screen.

A confirmation screen will appear where you can verify that this project should be deleted from the system. Any personnel associated with the project will still remain in the system.

8.2.3.2. Deleting a Thrust Record

Delete a thrust by clicking on Delete at the bottom of the thrust record.

A confirmation screen will appear where you can verify that this thrust should be deleted from the system. Any projects assigned to the thrust being removed will still remain in the system. Any orphaned projects should be reassigned to other thrusts.

9. BUDGETS

9.1. OVERVIEW

The data collected in this section are prior-year expenditures and detailed functional current-year budgets.

Data provided in this section produce:

- Table: Current Award Year Functional Budget
- Figure: Functional Budget as a Percentage of Direct Support
- Figure: Functional Budget as a Percentage of Associated Project Support
- Table: Current Award Year Education Functional Budget
- Table: Annual Expenditures and Budget

NOTE: Do not include any future-year projections in this table or amounts of support that the Center estimates it will receive later in the current year but cannot document.

9.1.1. Annual Expenditures and Budgets

The categories in this section match the standard NSF form 1030 Summary Proposal Budget. Enter the actual expenditures for the prior Award Year and budget amounts for the Current Award Year. Also enter the proposed budget for the next Award Year. Funds from all sources that are managed by the Center are included here. No associated project funding is reported here.

The Current Award Year Budget column includes the amount that the Center plans to spend during the Current Award Year and should be reported based on the amount of support that has already been received during the Current Award Year, plus the amount brought over from the preceding year (residual), plus all amounts for which the Center has documentation that the support will be received before the end of the Current Award Year, such as an REU supplement award where funding is provided over a 3-year period based on performance.

These data are required for Table: *Annual Expenditures and Budgets* of the Annual Report.

The *Annual Expenditures and Budgets* Table shows multiple years of data. The Current Award Year data are based on expected income and expenditures. ERCWeb automatically moves current-year data from a Center's last report to the prior Award Year expenditures column for the new report. On the data entry screens for these tables there is a column for prior-year actual that must be updated once the Award Year is finished in order to reflect the actual values received and spent. These completed data are considered actual data—they are based on actual dollar amounts expended or membership renewals received within that Award Year. Once prior-year data have been entered in ERCWeb, the database produces tables and conducts analyses with the full-year data exclusively. The partial-year data are archived but never used again. Data for ERCWeb-produced *Industrial/Practitioner Members*, *Innovation Partners*, *Funders of Sponsored Projects*, *Funders of Associated Projects*, and *Contributing Organizations* table and the *Modes of Support, by Industry and Other Practitioner Organizations* table, and are handled in a similar manner.

The Proposed Budget—Next Award Year column summarizes the Center’s spending plan for the Proposed Award Year (the year for which the Center is requesting ERC Program support in the Annual Report). This column identifies the Center’s plans for spending all expected funds, not just the ERC Program core support.

NOTE:

The actual amount reported for residual funds for the prior award year should be equal to the total ‘Residual Funds Brought Forward’ for the Current Award Year. Generally, the remaining residual funds at the end of an award year should be the same residual funds amount at the start of the next award year.

Expenditures Categories:

- Salaries - Senior Personnel: PI/PD, Co-PIs, Faculty, and Other Senior Associates
- Salaries - Other Personnel:
 - Postdoctoral Associates
 - Other Professionals
 - Graduate Students
 - Undergraduate Students
 - Secretary-Clerical
 - Other
- Fringe Benefits
- Equipment (for items exceeding \$5,000)
- Travel
- Participant Support
- Other Direct Costs:
 - Materials and Supplies
 - Publications/Documentation/Dissemination
 - Consultant Services
 - Computer Services
 - Other
- Direct Cost Total are calculated
- Indirect Costs

9.1.2. Functional and Educational Budget

Read-only summary of Thrust/Testbed Budgets is compiled from data previously entered and is displayed at the top of this screen.

Budget Functions

Enter the current award year functional budget for Education Programs and for Other Functions as listed below. List the Direct Support and the Associated Project funding for each function.

- Education Programs

- Pre-College Activities
- University Education
- Student Leadership Council
- Young Scholars
- REU
- RET
- Assessment
- Community College Activities
- Other (explain in narrative)

Other Functions

- General and Shared Equipment
- New Facilities/New Construction
- Leadership/Administration/Management
- Industrial Collaboration/Innovation Program
- Center-Related Travel
- Residual Funds Remaining
- Indirect Cost

The Functional and Educational Budget totals must match the total reported sources of support. See the Support Summary for a breakdown of reported incoming support. Total reported sources of support include residual funds, but do not include in-kind contributions. **You will not be able to mark this section as complete until the Functional and Educational Budget totals match the total reported sources of support.**

9.1.2.1. Totals and Residuals Summary

This shows the total support (incoming money) and total expenditures and budget, multi-year support reserved for future years, and residual funds remaining. The balance must equal \$0 for the budgets section to be shown as complete. Once the functional and educational budget total, multi-year support, and residual funds are subtracted from the total support, the total budget balance will appear in the last line. If there is a final balance, that balance should be moved to the residual funds row in order to achieve a balance of \$0.

An explanation of the residual funding should be entered in the text box (optional).

10. OUTPUTS AND IMPACT

10.1 OVERVIEW

Outputs and Impacts include ERC data related to research, educational impacts, intellectual property, technology transfers and start-up firms from Center inception through the Current Reporting Year. Data provided here produce:

- Table: Quantifiable Outputs
- Table: Average Metrics Benchmarked Against All Active ERCs and the Center's Tech Sector and Class
- Table: Educational Impact
- Table: Intellectual Property
- Table: Technology Transfer
- Table: Start-Up Firms

10.2 INSTRUCTIONS

All counts are per Reporting Year. Please check [glossary](#) section in ERCWeb for definitions.

10.2.1 Quantifiable Outputs

Publications resulting from Center support

Indicate the number of full-length papers that were published as a result of **Center support**. Choose one category only for each paper published during the reporting year.

- In peer-reviewed technical journals
- In peer-reviewed conference proceedings
- In trade journals

Indicate the multiple author status for each paper published during the reporting year. Choose every category that applies for each paper. If a trade journal article does not appropriately acknowledge NSF, it cannot be counted as a trade publication in *Quantifiable Outputs* Table.

- Multiple authors
- Multiple authors: co-authored with ERC students
- Multiple authors: co-authored with industry
- Multiple authors: with authors from multiple engineering disciplines
- Multiple authors: with authors from both engineering and non-engineering fields
- Multiple authors: with authors from multiple institutions

Publications resulting from associated projects

Indicate the number of publications resulting from **Associated Projects** mentioned in the strategic plan. Choose one category only for each paper published during the reporting year.

- In peer-reviewed technical journals

- In peer-reviewed conference proceedings

Publications resulting from sponsored projects

Indicate the number of publications resulting from **Sponsored Projects** mentioned in the strategic plan. Choose one category only for each paper published during the reporting year.

- In peer-reviewed technical journals
- In peer-reviewed conference proceedings

NOTE: Papers should be reported either as Center supported, associated, or sponsored. The total of all three should equal all papers published. Within each of the sections, papers could potentially be double counted (for example, if a paper had multiple authors, multiple authors with industry, in a trade journal, and in a conference proceeding.)

Inventions, Patents, and Spin-off Companies

Indicate numbers:

- Inventions disclosed (submitted to agencies by researchers or technology transfer office)
- Provisional patent applications filed
- Full patent applications filed
- Patents awarded
- Licenses issued
- Spin-off companies started
- Estimated spin-off company employees
- Building codes impacts
- Technology standards impacts
- New surgical and other medical procedures adopted

Degrees and Jobs

Provide information on the number of degrees granted to ERC students:

NOTE: Count degrees, not number of students.

- Bachelor's degrees
- Master's degrees
- Doctoral degrees

Indicate the job sector of ERC graduates noted above for the following categories:

- Industry
 - ERC member firms
 - Other U.S. industry
 - Other foreign industry
- Government
- Academic institutions
- Other
- Undecided/still looking/unknown

ERC's influence on curriculum

Provide numbers of:

NOTE: New degree programs, minors, or certificate programs should be reported only in the first year in which the sequence of courses 1) is offered in its entirety and 2) has obtained official university clearance to be offered for credit.

- New courses based on ERC research that have been approved by the curriculum committee and are currently offered
- Currently offered, ongoing courses with ERC content
- New textbooks based on ERC research
- New textbook chapters based on ERC research
- Free-standing course modules or instructional CDs based on ERC research
- New full-degree programs based on ERC research
- New degree minors or minor emphases based on ERC research
- New certificate programs based on ERC research

For full-degree programs:

- Number of students enrolled in any full-degree programs based on ERC research during this reporting period
- Number of students graduated from any full-degree programs based on ERC research during this reporting period

For certificate programs:

- Number of students enrolled in certificate programs based on ERC research during this reporting period
- Number of students graduated from certificate programs based on ERC research during

Information Dissemination/Educational Outreach

Indicate numbers of:

- Workshops, short courses, and webinars
 - Number of participants that attended activity
- Innovation-focused workshops, short courses, webinars, and seminars: These should only be counted as “innovation-focused” if the primary focus is innovation and should not be counted in the Workshops, Short Courses, and Webinars section if it is counted in this field.
 - Number of participants that attended the activity
- Seminars, colloquia, invited talks, etc.
- ERC-sponsored educational outreach events for K–12 students:
 - Number of students that attended event
 - Number of teachers/faculty that attended event

- ERC-sponsored educational outreach events for Community College students:
 - Number of Community College students that attended event
 - Number of community college faculty that attended event

- ERC-sponsored educational outreach events for non-ERC Undergraduate students:
 - Number of students who attended activity
 - Number of teachers/faculty who attended activity

Educational outreach activities may result from activities initiated as part of the ERC Engineering Workforce Development, Diversity and Culture of Inclusion, and Innovation Ecosystem programs

Personnel exchanges

Indicate numbers of:

- Student internships in industry
- Faculty working at member firm
- Member-firm personnel working at ERC

10.2.2 Educational Impact

Additional breakdowns of the data provided on the number of new courses currently offered; currently offered ongoing courses with ERC content; workshops, short courses, or webinars; and new textbooks based on ERC research are requested. For each of these four output types you are asked to provide a breakdown to show how these items fit into the following categories:

- With an engineered systems focus
- With multidisciplinary content
- Team taught by faculty from more than one department
- Undergraduate level
- Graduate level
- Used at more than one ERC institution

For example, you are required to categorize the count of new courses based on ERC research that are currently offered to show how many of these courses had an engineered system focus, multidisciplinary content, and other characteristics. Please note that a single course may fall under several categories.

Educational impacts activities may result from activities initiated as part of the ERC Engineering Workforce Development, Diversity and Culture of Inclusion, and Innovation Ecosystem programs

10.2.3 Intellectual Property

All patents and licenses derived from the ERC's research over the lifetime of the center, including titles and numbers should be entered in this section.

Use the **Add new intellectual property** link to add license/patent information.

IP License Number – Enter License Number

License Title or Name – Enter License Title

Category – Select the category of license from the drop-down menu

- Full Patent (FP)
- Provisional Patent (PP)
- Copywrite (C)
- Trademark (T)

Brief Description of Technology – Enter a description of the Intellectual Property

Owner of IP – Enter the owner of the Intellectual Property

Year Awarded – Select the year the Intellectual Property was awarded from the drop-down menu

Gen-3 Centers may Opt-Out of entering these data into ERCWeb if the center wishes to generate their own Intellectual Property Table. Select the **Data Entry Opt-Out: intellectual property data will be provided in center reporting** box if center elects to generate their own Intellectual Property tables.

Gen-4 Centers may elect to not enter intellectual property data if no there are no data to report. If no intellectual property data are available, select the **No intellectual property data to report in 20XX** box.

10.2.4 Technology Transfer

List all technologies transferred from the center to industry and other users over the reporting year and their impacts. This includes technology used by both established firms and start-up firms and impacts such as cost savings, productivity gains, and financial and other market impacts.

Use **Add new technology transfer** to add all instances of new technology transfer.

Adopting Company – Enter Adopting Company

Technology – Enter Technology description

Impact – Enter Impact description (including cost savings, productivity gain, financial and other market impact)

Industrial Application

Year Transferred – Select the year the Industrial Application was transferred from the drop-down menu

Use in Company – Enter a description of the technology’s use in the adopting company

Gen-3 Centers may Opt-Out of entering these data into ERCWeb if the center wishes to generate their own Technology Transfer Table. Select the **Data Entry Opt-Out: technology transfer data will be provided in center reporting** box if center elects to generate their own technology transfer tables.

Gen-4 Centers may elect to not enter technology transfer data if no there are no data to report. Select the **No technology transfer data to report in 20XX** box.

10.2.5 Start-Up Firms

List all start-up firms that have spun-off based on ERC research.

Use **Add a new start-up firm** to add a new start-up firm and its information.

Name of Firm – Enter name of start-up firm

Year Established – Enter year start-up firm was established

Contact Information - Enter all contact information for Principal at start-up firm

Principal Information - Enter all contact information for main Point of Contact at start-up firm

Relationship to ERC – Enter description of principal’s relationship to ERC

Additional Information

Funding status – Enter status of start-up firm’s funding

Technology – provide a description of the technological focus of the start-up firm

Market Impact or Societal Benefit – provide a description of the value that the start-up firm generates

Gen-3 Centers may Opt-Out of entering these data into ERCWeb if the center wishes to generate their own Start-Up Firm Table. Select the **Data Entry Opt-Out: start-up firm data will be provided in center reporting** box if center elects to generate their own start-up firm tables.

Gen-4 Centers may elect to not enter start-up firm data if no there are no data to report. If no start-up firm data are available, select the **No start-up firm data to report in 20XX** box.