ACRONYMS USED TODAY:

AN = Annual Salary
AY = Academic Salary
CGA = Contract & Grant Administration (Post-Award)
Co-I = Co-Investigator (NIH term)
Co-PD = Co-Project Directors
Co-PI = Co-Principal Investigator (NSF term)
DOD = Department of Defense
F&A = Facilities & Administrative Fees
FAR = Federal Acquisition Regulation
FOA = Funding Opportunity Announcement
GPG = Grant Proposal Guide (NSF)
GPS = Grants Policy Statement (NIH)
HPY = Hours Per Year
IDC = Indirect Costs
MTDC = Modified Total Direct Costs
NCURA = National Council of University Research Administrators
NIH = National Institutes of Health
NSF = National Science Foundation
OH = Overhead
OMB = Office of Management & Budget
OSP = Office of Sponsored Programs (Pre-Award)
PI = Principal Investigator
RA = Research Associates
RFA = Request for Application
RFP = Request for Proposal
RTSF = Research Technology Support Facility
SI = Specific Identification Fringes
SPA = Sponsored Programs Administration
SRA = Society of Research Administrators
SU = Summer Salary
TDC = Total Direct Costs
UG = Uniform Guidance
Facilities & Administrative (F&A), Indirect Costs (IDC), or Overhead (OH) Rates

<table>
<thead>
<tr>
<th>RATE APPLIES TO:</th>
<th>Current Rates</th>
<th>Future Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/1/11 - 6/30/16</td>
<td>7/1/16-6/30/19</td>
<td></td>
</tr>
<tr>
<td>Research (MTDC)</td>
<td>53.5%</td>
<td>55%</td>
</tr>
<tr>
<td>Other Sponsored Activities</td>
<td>36%</td>
<td>36%</td>
</tr>
<tr>
<td>(MTDC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Off-Campus (MTDC)</td>
<td>26%</td>
<td>26%</td>
</tr>
<tr>
<td>Fee-for-Services (TDC)</td>
<td>26%</td>
<td>26%</td>
</tr>
</tbody>
</table>

Details on what is included in F&A Rate determination

**F&A rate components for the on-campus research rate**

**Administrative Component**
- General Administration 7.9%
- Department Administration 12.6%
- Sponsored Projects Administration 5.5%

**Total Administrative Cost Pools** 26.0%

**Facilities Component**
- Building Depreciation 3.9%
- Equipment Depreciation 3.3%
- Interest 2.7%
- Operations & Maintenance (heat, lights, etc.) 18.1%
- Library 1.0%

**Total Facilities Cost Pools** 29.0%

**Total F&A Rate** 55.0%

**Modified Total Direct Costs** = Total Direct Cost minus Equipment minus Tuition minus Participant Support Costs minus all but the first $25,000 of each subcontract.
From the Federal IDC Letter for MSU the Base is described as:

**Base:**
Modified total direct costs, consisting of all direct salaries and wages, applicable fringe benefits, materials and supplies, services, travel and up to the first $25,000 of each subaward (regardless of the period of performance of the subawards under the award). Modified total direct costs shall exclude equipment, capital expenditures, charges for patient care, rental costs, tuition remission, scholarships and fellowships, participant support costs and the portion of each subaward in excess of $25,000. Other items may only be excluded when necessary to avoid a serious inequity in the distribution of indirect costs, and with the approval of the cognizant agency for indirect costs.

The PDF of the F&A agreement:
### Graduate Assistant Fringe - Tuition & Health Components

**Office of Sponsored Programs/Contract & Grant Administration**

**Estimated for the Period of 8/16/2015 through 8/15/2021***

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall</td>
<td>$1,410</td>
<td>$1,523</td>
<td>$1,645</td>
<td>$1,777</td>
<td>$1,919</td>
<td>$2,073</td>
</tr>
<tr>
<td>Spring</td>
<td>$1,410</td>
<td>$1,523</td>
<td>$1,645</td>
<td>$1,777</td>
<td>$1,919</td>
<td>$2,073</td>
</tr>
<tr>
<td>Summer</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
</tr>
<tr>
<td><strong>Health Total</strong></td>
<td>$2,820</td>
<td>$3,046</td>
<td>$3,290</td>
<td>$3,554</td>
<td>$3,838</td>
<td>$4,146</td>
</tr>
<tr>
<td><strong>Tuition &amp; Fees:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall</td>
<td>$4,518</td>
<td>$4,699</td>
<td>$4,887</td>
<td>$5,082</td>
<td>$5,285</td>
<td>$5,496</td>
</tr>
<tr>
<td>Spring</td>
<td>$4,518</td>
<td>$4,699</td>
<td>$4,887</td>
<td>$5,082</td>
<td>$5,285</td>
<td>$5,496</td>
</tr>
<tr>
<td>Summer</td>
<td>$2,241</td>
<td>$2,331</td>
<td>$2,424</td>
<td>$2,521</td>
<td>$2,622</td>
<td>$2,727</td>
</tr>
<tr>
<td><strong>Tuition &amp; Fees Total</strong></td>
<td>$11,277</td>
<td>$11,729</td>
<td>$12,198</td>
<td>$12,685</td>
<td>$13,192</td>
<td>$13,719</td>
</tr>
<tr>
<td><strong>9 Month Total Costs</strong></td>
<td>$11,856</td>
<td>$12,444</td>
<td>$13,064</td>
<td>$13,718</td>
<td>$14,088</td>
<td>$15,138</td>
</tr>
<tr>
<td><strong>12 Month Total Costs</strong></td>
<td>$14,097</td>
<td>$14,775</td>
<td>$15,488</td>
<td>$16,239</td>
<td>$17,030</td>
<td>$17,865</td>
</tr>
</tbody>
</table>

The Tuition and Health benefits will be charged on a bi-weekly basis. Tuition and Fees will be charged to object code 6230 and Health will be charged to object code 6516. The above amounts will be applied to all Grads regardless of percent employment (1/4, 1/2 or 3/4). Awards using MSU's negotiated F&A rates will not be charged F&A on the tuition portion.

* Assumes increases of 8.0% per year for health and 4.0% per year for graduate tuition.

**FICA Note** - Graduate Assistant's enrolled for less than 5 credits for Master's level or 3 credits for Doctoral level will be assessed 7.65% FICA/Medicare in addition to the above charges.

**ACA Note** - Graduate Assistants who have a 3/4 time appointment and are enrolled in the Consumer Driven Health Plan (CDHP) insurance which is offered due to ACA requirements (in addition to the student health insurance) will need an additional $417/month budgeted. This cost should be included in the "other" category of your budget.
Budget Justification

SENIOR PERSONNEL

Principal Investigator, Dr. Angie Calabrese-Barton, will oversee the research and development work related to InvestigAction for the College of Education. Throughout the 4 years of the project, each year she will devote 12.5% of academic year time (1.125 months) and 0.5 summer months to the project.

Dr. Scott Calabrese-Barton, Senior Investigator, will oversee the research and development work related to the energy systems content for the College of Engineering. He will devote 0.5 summer months each year to the project.

Mr. Robert Geier, Research Assistant, will provide expert guidance in the development work for these studies in years 1 and 2 and will oversee the classroom studies in years 3 and 4. He will coordinate the statistical analysis of the classroom studies. He will devote 1.2 calendar months effort in years 1 and 2, and 2.4 calendar months in years 3 and 4.

OTHER PERSONNEL

Two annual half time doctoral students (one from the College of Education and one from the College of Engineering) will be hired to work on this project and will help with teaching tools development work, and with data collection and analysis.

Hourly student assistant: An undergraduate student will also help out with transcribing video and audio, and with data entry during all 4 years.

All salaries are expected to increase at 2% per year.

FRINGE BENEFITS

Michigan State University utilizes a specific identification fringe benefit system for faculty and staff. For graduate assistants, Michigan State University charges a flat rate based upon the cost of health care. Graduate student health rates are anticipated to increase at 8% per year. The summer salary for faculty and hourly student pay are assessed a 7.65% rate for FICA.

DOMESTIC TRAVEL

Travel funds for both PIs are included for the annual PI meeting in Washington, DC. Additionally, both PIs and the graduate students will travel to NSTA and local teacher conferences each year to present project findings. Travel is based on the rates found in large cities like Washington, DC, San Francisco, CA, and New Orleans, LA, where these meetings are typically held (Round trip airfare - $500, hotel - $250/night for 3 nights, per diem - $71, and ground transportation and parking – $37).
PARTICIPANT SUPPORT COSTS
Participant support cost stipends for 5 trainees @ $1000 per trainee are included in years 1 and 3. Trainee laboratory supplies are included in years 1 and 3 for $100/trainee.

OTHER DIRECT COSTS

Materials and Supplies:
Funds are requested for investigation materials to be used with teachers and cameras to record the classroom interactions in year 3-5 during professional development.

Cameras
- Year 1: 2 high resolution cameras and microphone to record enactment cycles: each camera and microphone (total – $2,250)
- Year 3: 2 additional high resolution cameras and microphone to record school enactments (total – $2,250)

Curriculum Materials Supplies
Year 1: Materials to conduct investigation on portable energy systems for Phase 1 (two enactments): $2,500
Year 3: Materials to conduct investigation on portable energy systems for Phase 1 (12 classrooms): $6,000

An enhanced digital recorder (~$4,500) will be utilized by the project team for the duration of the project.

3. Consultants:
The three person expert advisory board will meet to conduct evaluation activities. Each member will receive $3000/year for 5 days of work includes travel and stipend ($12k/board member over the life of the project).

5. Subaward:
There will be one subaward to the University of North Carolina at Greensboro. Subaward PI, Dr. Edna Tan will oversee the North Carolina local design and implementation team. She will coordinate data collection and analysis for the North Carolina sites.

6. Other
Graduate student tuition benefits are calculated in accordance with MSU policy. Increases of 4.0% per year are assumed for graduate tuition and fees.

FACILITIES AND ADMINISTRATIVE COSTS (F&A)

The negotiated F&A rate at Michigan State University is 55% with a Modified Total Direct Cost base. Using this base, F&A is not charged on the graduate student tuition costs, participant support costs and the subcontract portion over $25k of each subcontract.