Nuclear Energy University Program (NEUP): Progress, 2010 Status and a Look towards the Future

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ANS Winter Meeting
Las Vegas, NV
Engage the U.S. university community to conduct program directed, program supporting, and mission supporting research and development, related infrastructure improvements, and student fellowship and scholarship support to build world class nuclear energy workforce capability as an integral component of the Office of Nuclear Energy.
The Nuclear Renaissance is Apparent to Students
Funding Opportunities in 2010

Research & Development

• Competitive R&D subcontract solicitation through INL’s NEUP Integration Office

Capabilities, Infrastructure & Equipment

• Competitive grants in conjunction with DOE-ID

Scholarships & Fellowships

• Competitive grants in conjunction with DOE-ID
**R&D Program Overview 2010**

- **Received Pre-Applications**
  - GEN IV: 203
  - LWRS: 66
  - MR-IIR: 89
  - FCR&D: 251

- **Received Proposals**
  - GEN IV: 45
  - LWRS: 5
  - MR-IIR: 25
  - FCR&D: 53

- **Funded Proposals**
  - GEN IV: 20
  - LWRS: 2
  - MR-IIR: 7
  - FCR&D: 13

- 609 pre-applications
- 131 requested full proposals
- 128 submitted proposals
- 42 funded proposals
R&D Awards (2010)

- Overall – Awards/Full Submissions – 42/128
- Awards to PIs for first time – 29
- Awards to junior faculty – 20
- Awards to Nuclear Engineering Faculty – 18
- Awards in materials and waste – 30
- Awards that are experimental – 30
- Number of universities receiving awards – 26
- Number of awards with lab partners - 20
- Number of universities receiving awards for first time – 8
Major Reactor Upgrade
- 12 proposals (11 states) submitted for $15,078,389
- 4 proposals funded for $3,752,415

Minor Reactor Upgrade
- 19 proposals (15 states) submitted for $2,994,970
- 12 proposals funded for $1,982,185

General Scientific Infrastructure Support
- 51 proposals (31 states) submitted for $12,728,567
- 33 proposals funded for $7,452,904
Scholarships & Fellowships

Scholarships
- 149 viable applications*
- 85 recommended for award, representing 20 states
- 3.8 average undergraduate GPA of recommended students

Fellowships
- 132 viable applications
- 32 Fellowships were funded, representing 18 states (with alternates: 37 recommended in states)

*Of the 149 submitted viable applications, 33 were in majors not NE relevant.
FY 2010 Scholarship Recipients - $5K each

Map Legend
- Selected Proposals
- Submitted Proposals

Office of Nuclear Energy
## Nuclear Energy University Program Awards 2009, 2010 – Funding Increases

<table>
<thead>
<tr>
<th>FY 2009 NE University Programs Awards</th>
<th>FY 2010 NE University Programs Awards</th>
</tr>
</thead>
</table>
| **University Research & Development (R&D) Awards**  
(from ~20% of the NE R&D budget) | ~$44 million.  
71 awards to 31 schools in 20 states. |
| **University R&D Awards**  
(from ~20% of the NE R&D budget) | ~$38 million.  
42 awards to 23 schools in 17 states. |
| **University Infrastructure Awards**  
(from ~20% of the NE R&D Budget) | ~$6 million  
29 schools in 23 states for scientific equipment |
| **University Infrastructure Awards**  
(from ~20% of the NE R&D Budget) | $13.2 million  
39 schools in 27 states for research reactor upgrades and scientific equipment |
| **University Student Fellowship and Scholarship Awards** | $2.9 million  
70 scholarships and 16 fellowships |
| **University Student Fellowship and Scholarship Awards** | $5.0 million  
85 scholarships and 32 fellowships |
| **Total** | ~$53,000,000 |
| **Total** | ~$56,200,000 |
NEUP Program Awards 2009 - 2010
$110 Million of funding in 32 states at 66 universities
New Programs in 2011 $80M Budget

Nuclear Energy University Programs $80M

Program Directed 20%
- Integrated Research Projects ~$13M

Program Supporting 50%
- Infrastructure $10-15M
- Research & Development ~$30M (~30 projects @~$1M)
- General Scientific Equipment $7M
- Reactor Upgrades (Major & Minor) $5M

Mission Supporting 30%
- Research & Development $14M (~23 projects @~$600K)
- Student & Faculty Investment $5-10M
- Scholarships & Fellowships $5M
- Faculty Investments

New Programs in Red
# 2011 NEUP Proposed Schedule

<table>
<thead>
<tr>
<th>Proposed Schedule 2011</th>
<th>RPA/FOA</th>
<th>Pre Apps Due</th>
<th>Proposals Due</th>
<th>Awards Announced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated Research Partnerships(PD) - proposed</td>
<td>Dec. ‘10</td>
<td></td>
<td>Feb. ‘11</td>
<td>April ‘11</td>
</tr>
<tr>
<td>Infrastructure Equipment Reactors</td>
<td>Dec. ’10</td>
<td></td>
<td>Feb.’11</td>
<td>May ‘11</td>
</tr>
<tr>
<td>Scholarships and Fellowships</td>
<td>Nov. ‘10</td>
<td></td>
<td>Jan. ‘11</td>
<td>April ‘11</td>
</tr>
</tbody>
</table>
Summary of 2011 Changes

♦ Peer Review at Pre Application stage for R&D

♦ Expansion of “Blue Sky” for R&D

♦ Possible Integrated Research Projects

♦ Expansion and improvement of Peer Review data base

♦ Improved selection board process
Over 187 Students Participating on NEUP R&D Projects (2009 projects)

♦ 48 Fellowship students (‘09 and ‘10)
♦ 85 Scholarship students (‘10)
<table>
<thead>
<tr>
<th>R&amp;D Field of Study</th>
<th>No. Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerospace</td>
<td>1</td>
</tr>
<tr>
<td>Biological Engineering</td>
<td>1</td>
</tr>
<tr>
<td>Ceramic Engineering</td>
<td>2</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td>4</td>
</tr>
<tr>
<td>Chemistry/Radiochemistry</td>
<td>10</td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>3</td>
</tr>
<tr>
<td>Engineering Science and Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>Material Science &amp; Engineering</td>
<td>25</td>
</tr>
<tr>
<td>Materials Physics and Chemistry</td>
<td>1</td>
</tr>
<tr>
<td>Mathematics/Applied Mathematics</td>
<td>5</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>29</td>
</tr>
<tr>
<td>Nuclear Engineering (Inclusive)</td>
<td>74</td>
</tr>
<tr>
<td>Physics/Applied Physics/Engineering Physics</td>
<td>23</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>181</strong></td>
</tr>
<tr>
<td>Field of Study</td>
<td>Fellowships</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Nuclear Engineering</td>
<td>21</td>
</tr>
<tr>
<td>Other Engineering</td>
<td>6</td>
</tr>
<tr>
<td>Radiochemistry/Chemical Engineering</td>
<td>4</td>
</tr>
<tr>
<td>Health Physics</td>
<td>1</td>
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<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>32</strong></td>
</tr>
</tbody>
</table>
Challenges for Review and a bit of advice

♦ Major Challenge: Sheer numbers of proposals and students versus the community available to perform reviews

♦ Some Advice:
  • When you apply to a program, make sure your application is specific to the program and answers all criteria
    - (This is one place that recycling probably isn’t the best way to go!)
  • Don’t wait until the last minute to sign on to the system or submit your proposal