PhysTEC Request for Proposals

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APS Webinars
22 April 2014
Request for Proposals

- Comprehensive sites
  - Up to $300k over 3 years
  - All key components
  - Sustainability
- Recruiting grants
  - Up to $30k over 3 years
  - Focus on increasing teachers

www.phystec.org/solicitation
Need for High School Teachers

Relative Demand by Field: Highest Demand Fields

Considerable Shortage (5.00 - 4.21)

Physics 4.26

Some Shortage (4.20 - 3.41)

Spec. Ed. – Multi-categorical 4.15
Mathematics 4.13
Chemistry 4.12
Spec. Ed. 4.06
Spec. Ed. – Mild/Moderate Disabilities 4.04
Spec. Ed. – Learning Disability 4.03
Spec. Ed. – Mental Retardation 4.03

2010 AAEE (American Association of Employment in Education) Educator Supply and Demand in the United States Report
27,000 total physics teachers in the U.S.
1400 new teachers each year with at least one physics class
➢ 800 of these new teachers have no physics degree

Source: AIP Statistical Research Center
Physics Scores in China and US

Concept exam scores for incoming college freshmen

Graduates from physics education programs in physics departments

Source: Task Force on Teacher Education in Physics (T-TEP)
Report available at www.phystec.org/taskforce
PhysTEC Project Goals

• Transform physics departments to engage in preparing physics teachers
• Demonstrate successful models for increasing the number of highly-qualified physics teachers
• Spread best-practice ideas throughout the physics teacher preparation community
Supported Sites - Outcomes

Teachers Graduating from PhysTEC Legacy Sites

- Pre funding
- Y1-Y3
- Y4-Y6
- Post funding
- Post funding

<table>
<thead>
<tr>
<th>Site (funding period)</th>
<th>Number of Teachers (3 year totals)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona (2001-2007)</td>
<td>10</td>
</tr>
<tr>
<td>Arkansas (2001-2008)</td>
<td>15</td>
</tr>
<tr>
<td>W. Michigan (2001-2007)</td>
<td>20</td>
</tr>
<tr>
<td>Cal Poly (2003-2006)</td>
<td>15</td>
</tr>
<tr>
<td>Colorado (2004-2007)</td>
<td>20</td>
</tr>
<tr>
<td>Non-PhysTEC*</td>
<td>30</td>
</tr>
</tbody>
</table>

*Number of physics certifications averaged over 319 institutions in 15 states. Note that all PhysTEC teachers are more highly qualified than the minimum standard in most states.
Supported Sites - Outcomes

Teachers Graduating from Recently Funded PhysTEC Sites

- Cornell (2007-2011)
- FIU (2007-2010)
- Minnesota (2007-2010)
- UNC- Chapel Hill (2007-2011)
- SPU (2006-2009)

Number of Teachers (3 year totals)

- Pre funding
- Y1-Y3
- Post funding

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Teachers in Residence (TIR)

**TIR Roles**

• Recruiter
• Advisor
• Instructor
• LA/TA leader
• Mentor
• Course and curriculum developer
• Professional community leader
• Ambassador to School of Education
• Ambassador to School Districts
Key Components

- Key components (programs)
  - Recruiting
  - Pedagogical content knowledge
  - Early teaching experiences
  - Mentoring and induction
  - Teacher in Residence (TIR)
  - Learning Assistants (LA)

- Key components (leadership)
  - Champion
  - Collaboration (physics, education, schools)
  - Institutional commitment
  - Assessment
Sustainability of supported sites

- Nearly all sites sustained programs beyond PhysTEC funding
- At some sites PhysTEC funding leveraged substantial additional resources (awards and personnel)
- Sustainability study report will be published by July 2014
Dissemination and Advocacy

• Annual national conference
  19-20 May 2014  Theme: Building Leadership (Austin, TX)
  5-7 Feb 2015  Theme: Building Thriving Programs (Seattle, WA)

• Topical workshops
  Learning Assistants (CU-Boulder)
  Pedagogical Content Knowledge (Rutgers)

• Regional conferences
  CSU, UC systems (Ontario, CA)
  Northwest regional conference (Seattle, WA)

• Books and reports
  Task Force on Teacher Education in Physics
  Teacher Education in Physics
  Effective Practices in Physics Teacher Education (early 2015)
2014 request for proposals – emphasis on recruiting

• Marketing/raising awareness
  • Physics majors, other disciplines
  • Beyond university (career changers, high school students)

• Advising
  • Network of contacts to refer students
  • Guidance from knowledgeable person(s)

• Pathways – multiple entry points, flexible, streamlined

• Financial support – scholarships, TA, tuition waivers

• Early teaching experiences – college, pre-college
Comprehensive sites

- Up to 3 comprehensive sites, max $300k over 3 years
- Goal to substantially increase physics teachers
  - Typically at most 10-15% of majors go into teaching
  - Recruiting plan should address points in previous slide
- Address all key components, including TIR
- Potential for national model
- Project team/champion
- Sustainability
- Diversity (teachers, geographic, institution type)
Comprehensive sites – timeline

• Initial proposal due 12 May
  • 3 pages maximum
  • Select institutions invited to apply for full proposal

• Full proposal due 8 September
  • NSF style, 15 page narrative
  • Possible site visits to finalists

• Awards announced late fall 2014

• Funding begins 1 August 2015
  • Gap to allow for planning, hiring TIR
Recruiting grants

• Up to 10 recruiting grants, maximum $30k over 3 years
• Goal to increase number of physics teachers
• Option for part-time TIR
• Proposal
  • 5 page narrative
  • Focus on recruitment plans (what will be new?)
  • Dissemination of recruiting materials
  • Budget (no LA stipends, no scholarships)
• Email intent by 1 May to plisch@aps.org (not required)
• Proposal due 5 June, funding begins 1 September
### Request for Proposals

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  - All key components
  - Sustainability

- **Recruiting grants**
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<th><strong>Comprehensive sites</strong></th>
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<tr>
<td>Initial proposal - 12 May</td>
<td>Notify intent - 1 May</td>
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<tr>
<td>Final proposal - 8 Sept</td>
<td>Due - 5 June</td>
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<tr>
<td>Funding begins 1 Aug 2015</td>
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