Evaluation-Related Recommendations in STPI EPSCoR Study

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Two Recommendations in STPI EPSCoR Study Related to Evaluation

- Recommendation 2.4: The EPSCoR Section should focus future program-level evaluation efforts on the research competitiveness goal and not on improvements in the S&E research base within EPSCoR jurisdictions.

- Recommendation 2.5: Small, focused studies analyzing the difference between EPSCoR and non-EPSCoR jurisdictions in particular aspects of research competitiveness or S&E research base quality may be appropriate to guide future EPSCoR efforts.

*EPSCoR Section asked STPI to expand on these recommendations to stimulate discussion regarding future evaluation efforts*
Recommendation 2.4: Future Program-Level Evaluation

• NSF (e.g., through BFA) should repeat on regular ongoing basis calculations made in STPI study:
  – Average award size
  – Number of proposals per academic STEM investigator
  – Proposal success rate for academic investigators

• NSF should also consider calculating:
  – Proposal success rates by investigators and class of institution (e.g., based on Carnegie rankings)
  – Success rates for centers proposals
  – Success in winning MRI and REU awards
  – Success with “prestigious people” awards (e.g., GRFP, NRT, CAREER)

• Goal is to assess whether on a per-investigator basis EPSCoR jurisdictions are approaching non-EPSCoR jurisdictions with respect to competitiveness for research funding, and to understand remaining differentials
Recommendation 2.4:
Difficult to Assess EPSCoR Impacts on Building S&E Research Base

• STPI study placed great deal of effort on EPSCoR activities related to building the S&E research base in jurisdictions
  – Cataloging E/O/D and innovation-promoting activities
  – Analyzing changes in institutional policies and procedures that promote research
  – Analyzing activities and influence of State Committees
• Because of the diversity of activities undertaken and outcomes intended, result of these analyses were primarily descriptive
  – Identified advances, but could not necessarily attribute causality to EPSCoR itself
• If EPSCoR program-level evaluation is focused on research competitiveness, project-level evaluation could focus on RII awards’ efforts to build the S&E research base in their jurisdictions
Recommendation 2.4: Consider Tracking Quantifiable Indicators of S&E Research Base

May be value to EPSCoR Section to track other quantifiable information to compare EPSCoR and non-EPSCoR jurisdictions with respect to varying aspects of S&E research base, including:

- **STEM education indicators**
  - NAEP scores (4th and 8th grade, math & science)
  - Ratio of associate’s degrees, bachelor’s degrees, and graduate students in STEM fields to population
  - Percentage of undergraduate (or graduate degrees) awarded in STEM fields at public institutions by race/gender/ethnicity

- **State-level support for R&D indicators**
  - State R&D funding per unit of GDP
  - Laboratory space at public universities
  - Carnegie Foundation rankings of public universities

- **Innovation indicators**
  - Patent rates
  - SBIR/STTR awards
  - Venture capital funding
  - Percentage of workforce in S&E occupations

- **Research quality indicators**
  - Article output per 1,000 S&E degree holders in academia
  - Field-normalized citation rates of articles with at least one author from jurisdiction
Recommendation 2.5: Focused Studies

1. Lessons learned from jurisdictions that are recently exited/soon to exit EPSCoR designation

2. Comparison of jurisdictions just above and below current NSF EPSCoR eligibility criterion (0.75% of NSF funding) to identify potential areas for improvement or activities that might be undertaken in EPSCoR jurisdictions
### Example of Potential Focused Analysis: Kansas vs. Iowa

#### Kansas (0.58% of NSF, FY15 EPSCoR Eligibility Table)
- 2.9M total population, 2013
- 1 Carnegie RU/VH institution (University of Kansas)
- 2 RU/H institutions (Kansas State, Wichita State)
- 2,500 S&E degree holders in academia in 2010
- Universities had 2.2M square feet of research space in 2011
- Universities received $166M in Federal R&D (2012)
  - $99M HHS, $38M NSF, $6M DOD, $6M DOE
  - Additional $66M in Federal R&D in 2012

#### Iowa (0.83% of NSF, FY 15 EPSCoR Eligibility Table)
- 3.1M total population, 2013
- 2 Carnegie RU/VH institutions (University of Iowa, Iowa State)
- No RU/H or Doctoral institutions
- 3,900 S&E degree holders in academia in 2010
- Universities had 2.3M square feet of research space in 2011
- Universities received $288M in Federal R&D (2012)
  - $197M HHS, $42M NSF, $13M DOD, $6M DOE
  - Additional $325M in Federal R&D in 2012

Sources:
Example of Potential Focused Analysis: Kansas vs. Iowa (cont.)

### Analysis 1: Proposal Rates

<table>
<thead>
<tr>
<th>University</th>
<th>Proposals</th>
<th>Awards</th>
<th>Success Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>U. Kansas</td>
<td>187</td>
<td>30</td>
<td>16%</td>
</tr>
<tr>
<td>K. State</td>
<td>142</td>
<td>27</td>
<td>19%</td>
</tr>
<tr>
<td>U. Iowa</td>
<td>164</td>
<td>37</td>
<td>23%</td>
</tr>
<tr>
<td>IA. State</td>
<td>347</td>
<td>52</td>
<td>17%</td>
</tr>
</tbody>
</table>

### Analysis 2: Non-University Federal R&D

<table>
<thead>
<tr>
<th>Category of non-university Federal R&amp;D</th>
<th>Kansas</th>
<th>Iowa</th>
</tr>
</thead>
<tbody>
<tr>
<td>By: Industry</td>
<td>$35.5M</td>
<td>$211.1M</td>
</tr>
<tr>
<td>By: GOGO + GOCO</td>
<td>$24.4M</td>
<td>$103.1M</td>
</tr>
<tr>
<td>From: DOE</td>
<td>$2.1M</td>
<td>$30.7M</td>
</tr>
<tr>
<td>From: DOD</td>
<td>$33.6M</td>
<td>$210.9M</td>
</tr>
<tr>
<td>From: NASA</td>
<td>$1.1M</td>
<td>$2.2M</td>
</tr>
</tbody>
</table>

Question: Why are proposal rates so much higher at Iowa State U. than at Kansas universities?

Question: Does the broader innovation ecosystem in Iowa contribute to universities’ success in winning NSF funds?