

Nuclear Energy University Programs

NEUP FY2011 Process

Presentation to NEAC
December 9, 2010

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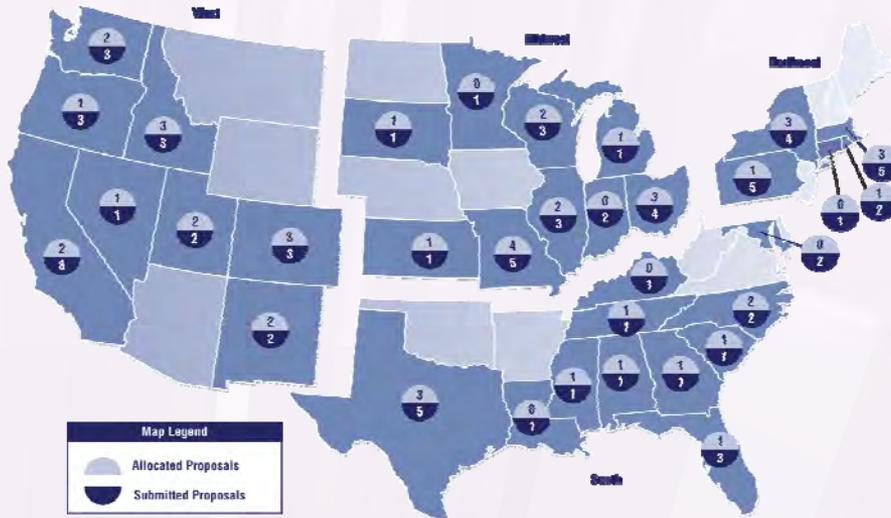
FUNDED R&D PROPOSALS BY STATE 2010



- Awards/Full Submissions - 42/128
- Awards to PIs for first time - 29
- Awards to junior faculty – 20
- Awards that are experimental - 30

- Awards in materials and waste - 30
- Awards to Nuclear Engineering Faculty – 18
- Number of universities receiving awards - 26
- Number of awards with lab partners - 20
- Number of universities receiving awards for first time - 8

2010 INFRASTRUCTURE

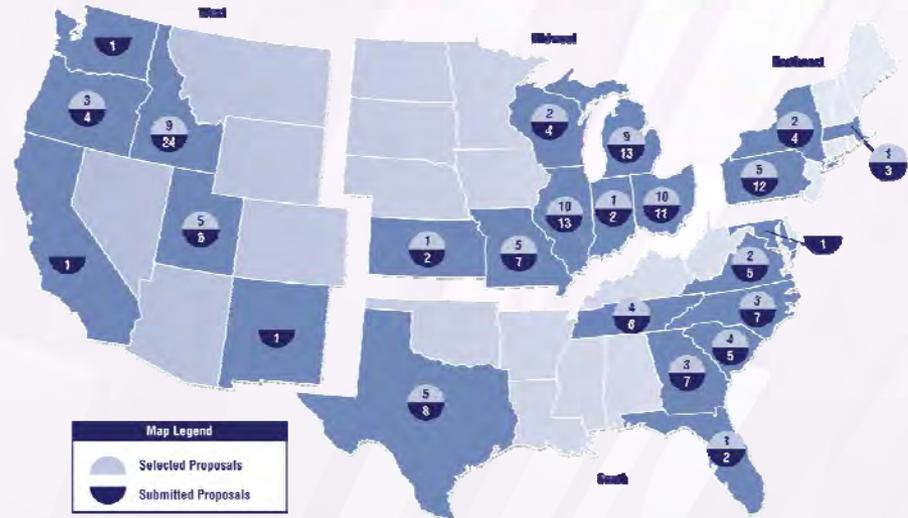


- Major Reactor: 4 awards for a total of \$3.75 M
- Minor Reactor: 12 awards for \$1.95 M
- General Scientific Infrastructure: 33 award for \$7.47 M

- Since 2009, \$ 19.438 M has been awarded in General Scientific Infrastructure (did not issue Major or Minor Reactor calls in 2009).

SCHOLARSHIP AND FELLOWSHIP

- Scholarships (Top) were awarded to 85 students for a total of \$425 K. Since 2009, 161 Scholarships awarded for \$800 K

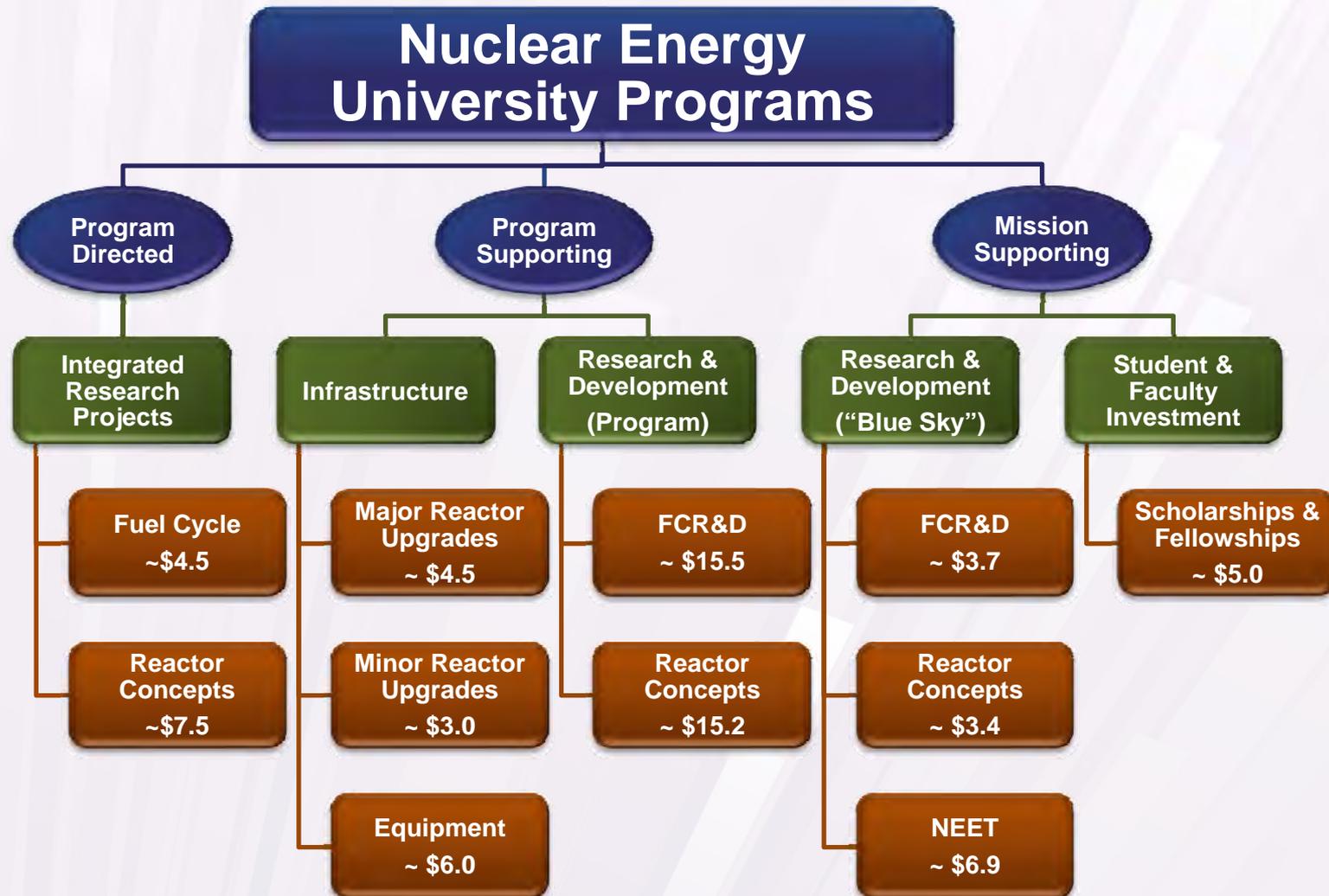


- Fellowships (Bottom) were awarded to 32 students for a total of \$ 4.6 M. Since 2009, 50 Fellowships have been awarded for \$7.3 M

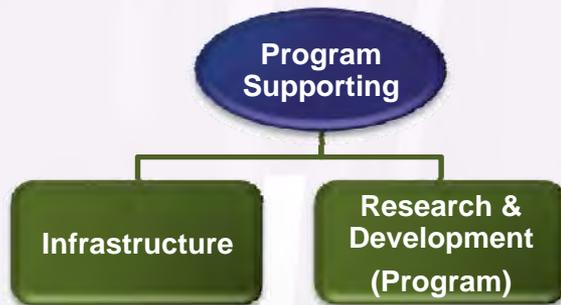




Anticipate ~ \$76M in 2011 Funding



Program-Supporting Component



- Approximately 50% of NEUP funding
- R&D Element:
 - Maximum of \$1.2M for three or four years (~\$400k/yr)
 - Managed using revised process with pre-proposals and proposals undergoing peer review and management review
- Review weighting is 35% relevance and 65% technical quality
 - Relevance based upon impact of achieving identified mid-term goals
- Includes Equipment Infrastructure Upgrades

Mission-Supporting Component



- Approximately 30% program
- R&D Component
 - Broadly targets all technical bin areas; replaces the “investigator initiated” component
 - Maximum of \$600k for three or four year projects (~\$200k/yr)
 - Managed using revised process with pre-proposals and proposals undergoing peer review and management review
- Review weighting is 20% relevance and 80% technical quality
 - Relevance is judged by how the project supports the overall objectives identified in the NE R&D Roadmap
- Includes investments in students and faculty



Mission Supporting “Blue Sky”

- Nuclear Energy mission relevant, creative, innovative, research.
 - Proposals should be relevant to NE's mission though may not fully align with the solicitations specific initiatives and programs.
- Examples include NS&E research in the fields or disciplines of
 - Nuclear Engineering
 - Nuclear Materials Science
 - Radiochemistry
 - Nuclear Physics
 - Health Physics
 - Nuclear Chemistry

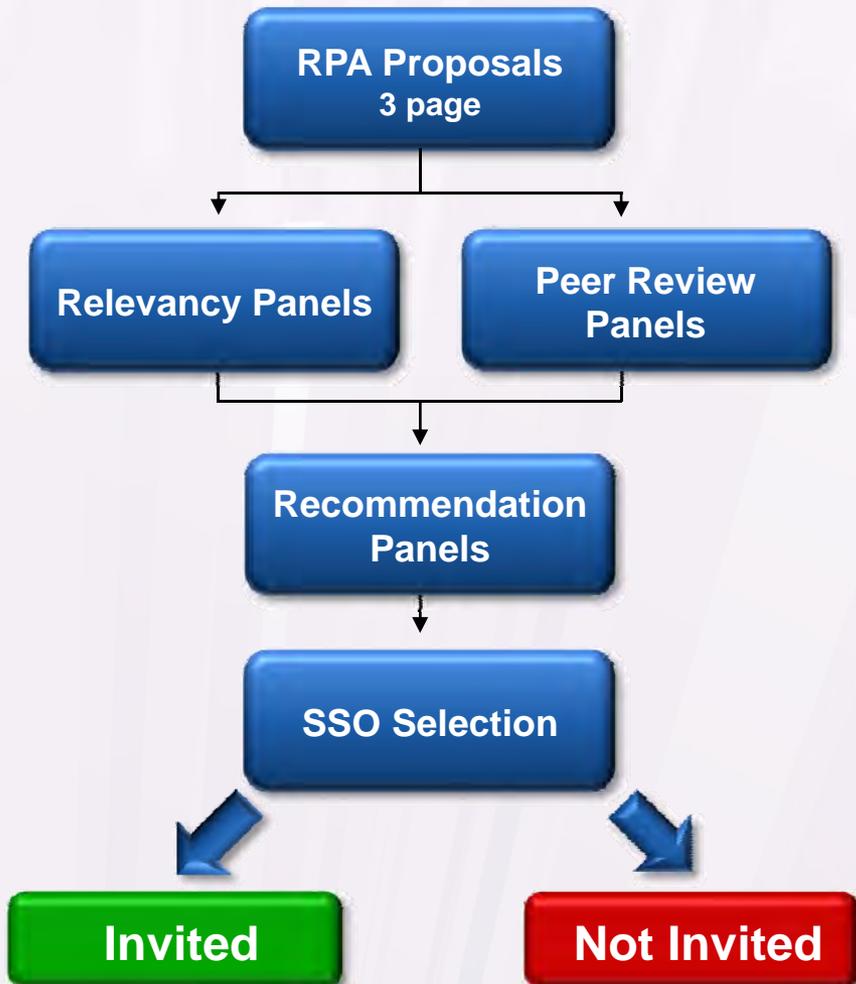


Summary of Improvements and New Programs 2011

- Expansion of “Blue Sky” for R&D
- Integrated Research Projects
- Expansion and improvement of Peer Review data base
- Enhancements to Fellowship and Scholarship Criteria
- Adopt NRC and NNSA Metrics as Appropriate to NEUP
- Peer Review at Pre Application stage for R&D



FY2011 NEUP Review Process



RPA 3 Pagers: Submission of three page proposals by university respondents

Relevancy Panels: Composed of two Federally selected reviewers representing technical areas

Peer Review Panels: Composed of Federally selected University or Laboratory technical peers

Recommendation Panels: Composed of Federal Directors and their selected advisors

SSO Selection: Presentation of recommendations by NEUP to the SSO

Invited: Proposals selected by the SSO to submit a full proposal

Not Invited: Proposals not selected by the SSO to submit a full proposal (may submit a full proposal, however, there is no guarantee that a full peer review will be performed)



FY2011 RPA Review Process

3 Page Pre-Proposals

Program “Bin” selected by submitting PI as part of the RPA process

FCR&D

Technical Areas: Separations and Waste Forms, Advanced Fuels, Transmutation R&D, MPACT, Used Nuclear Fuel Disposition, and Mission Supporting

RC

Technical Areas: Small Modular Reactors, NGNP, LWRS, Advanced Reactor Concepts, and Mission Supporting

NEAMS

Technical Areas: Advanced Modeling and Simulation

NEET



FY2011 RPA Review Process

3 Page Pre-Proposals

Program "Bin" set
as part of the RPA

FCR&D

Technical Areas:
Forms, Advanced
R&D, MPACT, and
Disposition, and

RC

Technical Areas:
Reactors, NGN
Reactor Concepts
Supporting

NEAMS

Technical Areas:
Simulation

NEET

Relevancy Panels

- Two panelists

Evaluation:

- (3) Highly Relevant
- (2) Relevant
- (1) Low Relevance
- (0) Not Relevant

Technical Panels

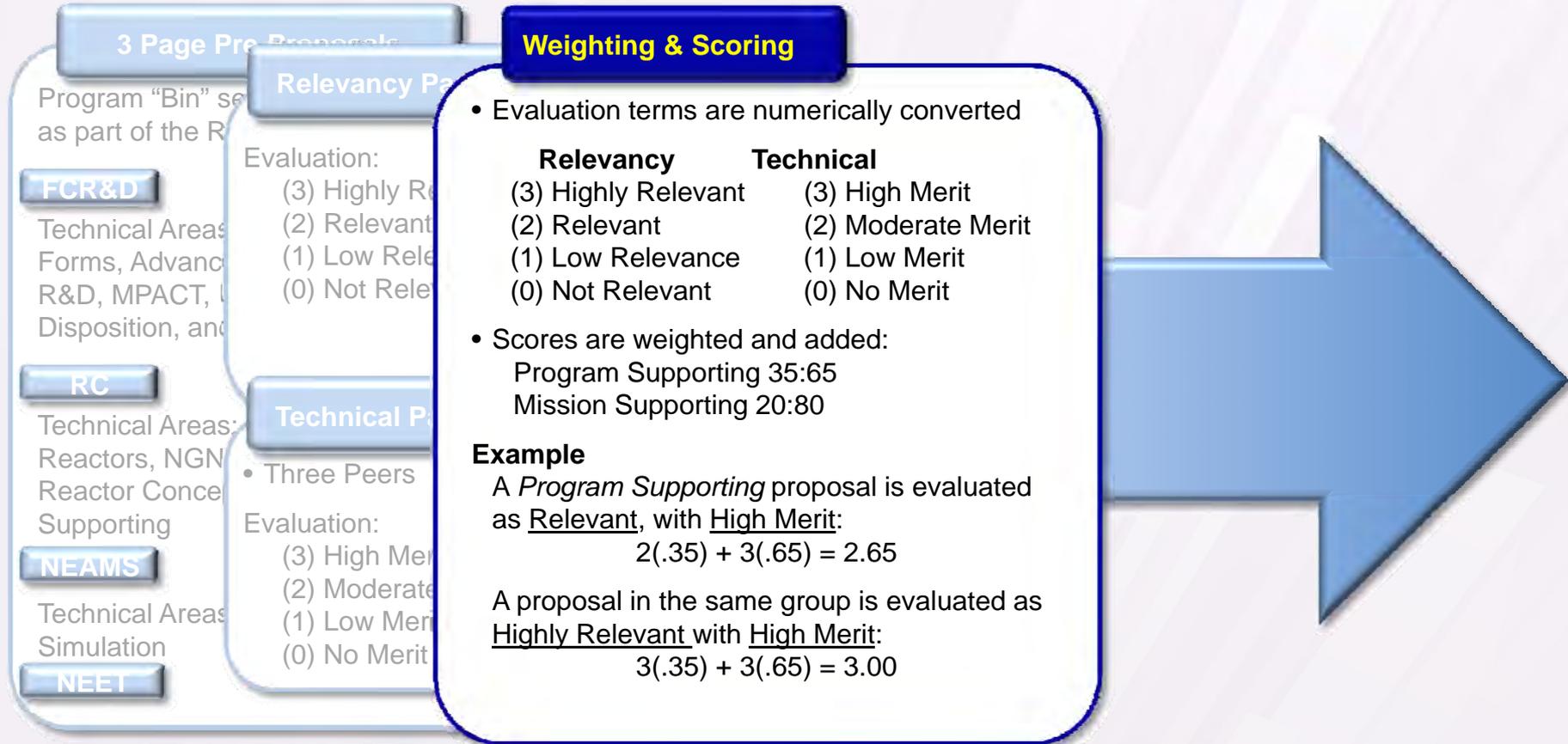
- Three Peers

Evaluation:

- (3) High Merit
- (2) Moderate Merit
- (1) Low Merit
- (0) No Merit



FY2011 RPA Review Process





Evaluation Criteria: Program vs Mission Supporting

Program Supporting

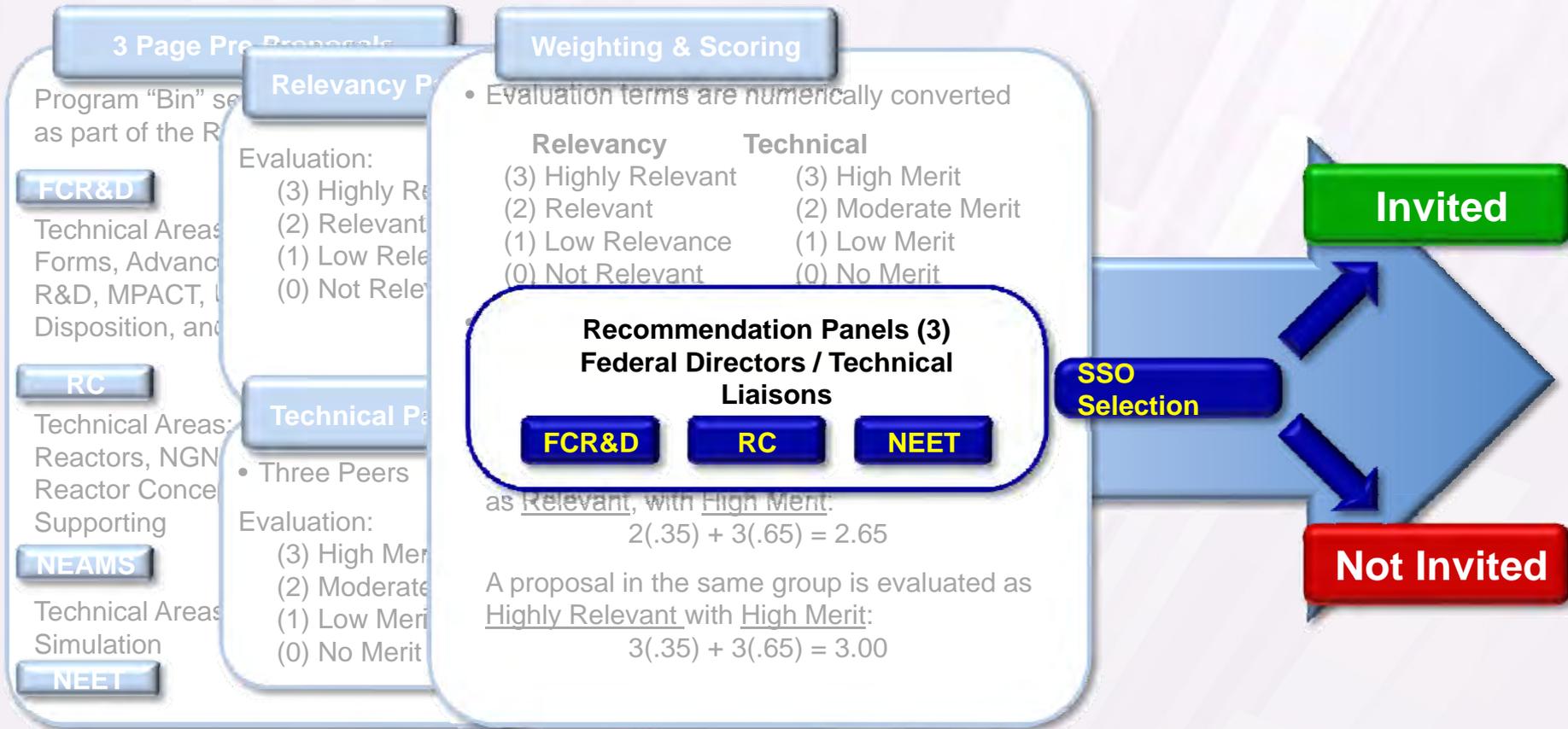
- Scientific/Technical Merit (65%)
 - ✓ Advances the state of knowledge in the selected program workscope
 - Practicality of scope with respect to the *program workscope*
 - Practicality of scope with respect to requested funding and period of performance
 - Logical path to work accomplishment; Ability of team to perform work
- Relevancy (35%)
 - ✓ Aligned with, and directly relevant to, program objectives.
 - Submission should define and describe the significance of the proposal to the needs described by program workscopes.

Mission Supporting

- Scientific/Technical Merit (80%)
 - ✓ Advances the state of knowledge in an area supporting the overall NE mission
 - Practicality of scope with respect to *NE's mission*
 - Practicality of scope with respect to requested funding and period of performance
 - Logical path to work accomplishment; Ability of team to perform work
- Relevancy (20%)
 - ✓ Aligned with, and directly relevant to, NE mission.
 - Submissions should sufficiently capture a clear and supportive connection to the NE mission.



FY2011 RPA Review Process



FY2011 RFP Review Process



Invited Relevancy Review: Relevancy review of all invited proposals by two federally selected relevancy reviewers

- All proposals are passed forward for full peer review

Not Invited Relevancy Review: Relevancy review of “not invited” proposals by federally selected relevancy reviewers will be performed

- Only those Program Supporting proposals that are “Highly Relevant” may be passed forward for full peer review
- Only those Mission Supporting proposals that are scored “Relevant” may be passed forward for full peer review

Peer Review: Full technical review by a 3 member panel of peers (“Not Invited” proposals as requested by NE program management)

Recommendation Panels: Composed of Federal Directors and their selected advisors

SSO Selection: Proposals selected by the SSO for funding



S&F: REVIEW METRICS

Reviewers addressed the following Merit Review criteria:

- How does the student's chosen course of study relate to the mission of the DOE's Office of Nuclear Energy?
- How well qualified is the student to complete the proposed course of study?

To address each criterion, panel members considered:

S F

- ✓ ✓ ▪ The strength of the academic record,
- ✓ ✓ ▪ Their career statement,
- ✓ ▪ Their identified research area of interest,
- ✓ ▪ The description of previous research experience,
- ✓ ✓ ▪ References,
- ✓ ▪ ACT / SAT scores
- ✓ ▪ GRE General and Subject Test scores, and
- ✓ ✓ ▪ The appropriateness of the choice of course of study relative to the proposed plan for graduate education and research.



SCHOLARSHIP: REVIEW PROCESS

Applications were scored by the following:

- Course of study related to mission of DOE-NE: Y/N*
- Strength of academic record: 1-20
- References: 1-10

Process:

- Applications were then ranked by average score, which was calculated based on the above scored areas

Review Panel Composition

- 2 University Professors
- Two DOE-NE Program Representatives
- *Of the 149 submitted viable applications, 33 were in majors not relevant to NE.



FELLOWSHIPS: REVIEW PROCESS

Applications were scored by the following:

- Academic record: 1-20
- Career statement: 1-10
- Research interest and experience: 1-10
- References: 1-10

Process:

- Applications were then ranked by combined score, which was calculated based on the above scored areas
- Each reviewer only ranked a portion of the applicants, therefore normalization of scores was required

Review Panel Composition

- 3 University Professors
- 2 DOE-NE Program Representatives



2011 Proposed Schedule

NEUP Program 2011	Proposed Schedule 2011	RPA/FOA	Pre Apps Due	Proposals Due	Awards Announced
	R&D (PS and Blue Sky)	Oct. '10	Dec.'10	Feb.'11	May '11
	Integrated Research Projects (PD)	Dec. '10		Jan '11	April '11
	Infrastructure Equipment Reactors	Jan. '11		Feb.'11	May '11
	Scholarships and Fellowships	Dec. '10		Feb. '11	April '11



Concluding Remarks

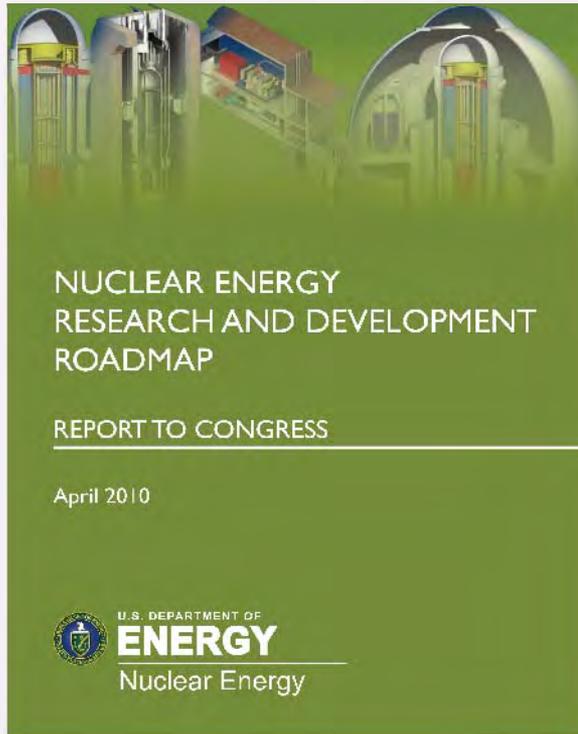
- NEUP engages universities to conduct program directed, program supporting, and mission supporting R&D, infrastructure improvements, and S&F
- Through NEUP, DOE-NE has competed \$110 Million of funding in 32 states at 66 universities since 2009
 - \$82.44 Million in research projects
- Several important changes for FY11 (review structure, reviewer database, IRP)
- A new solicitation to support program directed work (Integrated Research Projects) will issue in FY11



Background



NEUP Mission and Objectives



Mission:

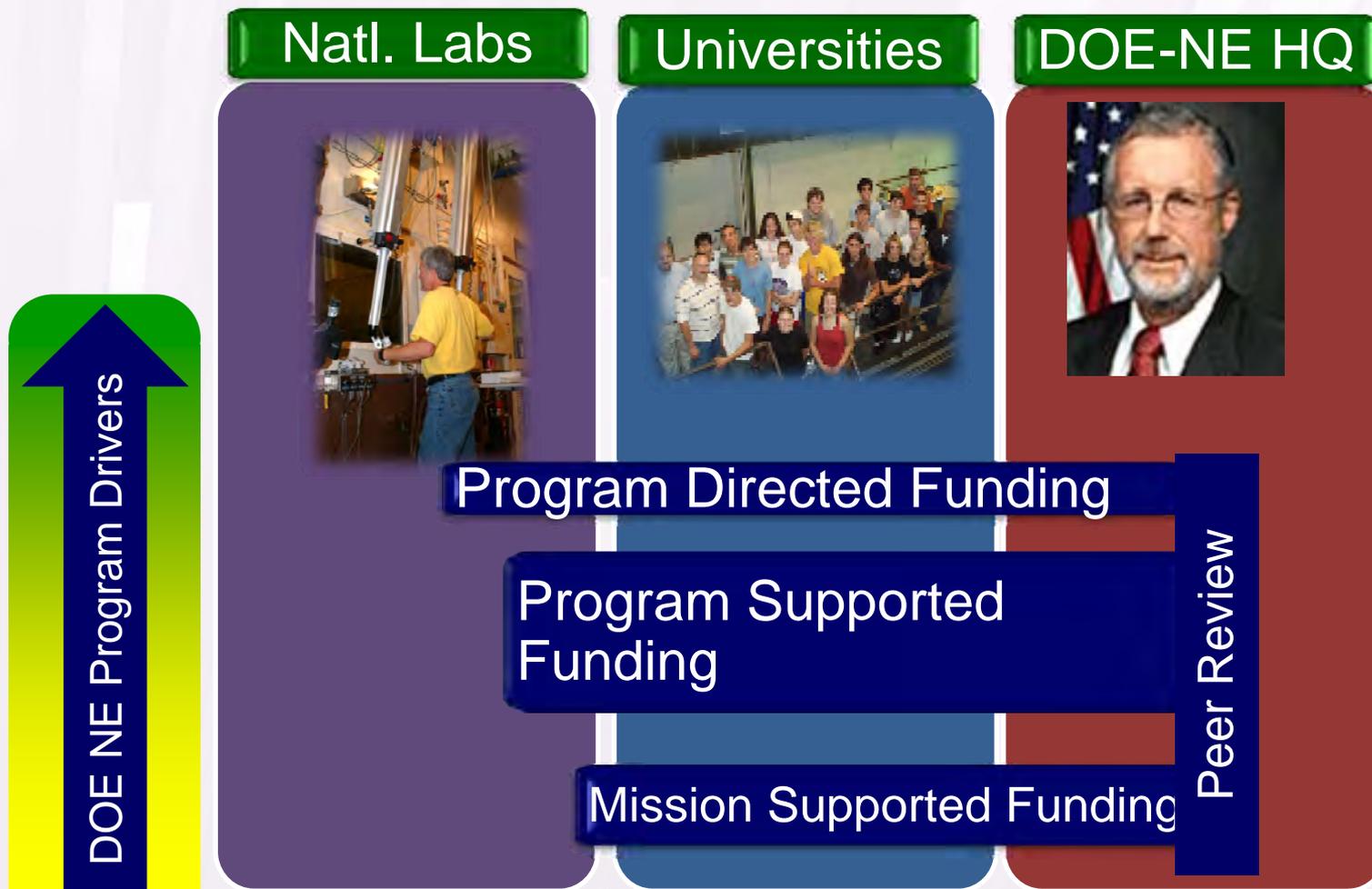
Engage the U.S. university community to conduct program directed, program supporting, and mission supporting research and development, related infrastructure improvements, and student fellowship and scholarship support to build world class nuclear energy and workforce capability as an integral component of the Office of Nuclear Energy.

Objectives:

Support the NE R&D Roadmap objectives while bolstering university R&D infrastructure, especially research reactors.



Funding is Program Driven





2010 Overall Competed Funding

Research & Development:	\$38,700,022
Infrastructure:	\$13,187,503
Scholarship & Fellowship:	\$ 5,000,000
Total competed funding:	<u>\$56,887,525</u>

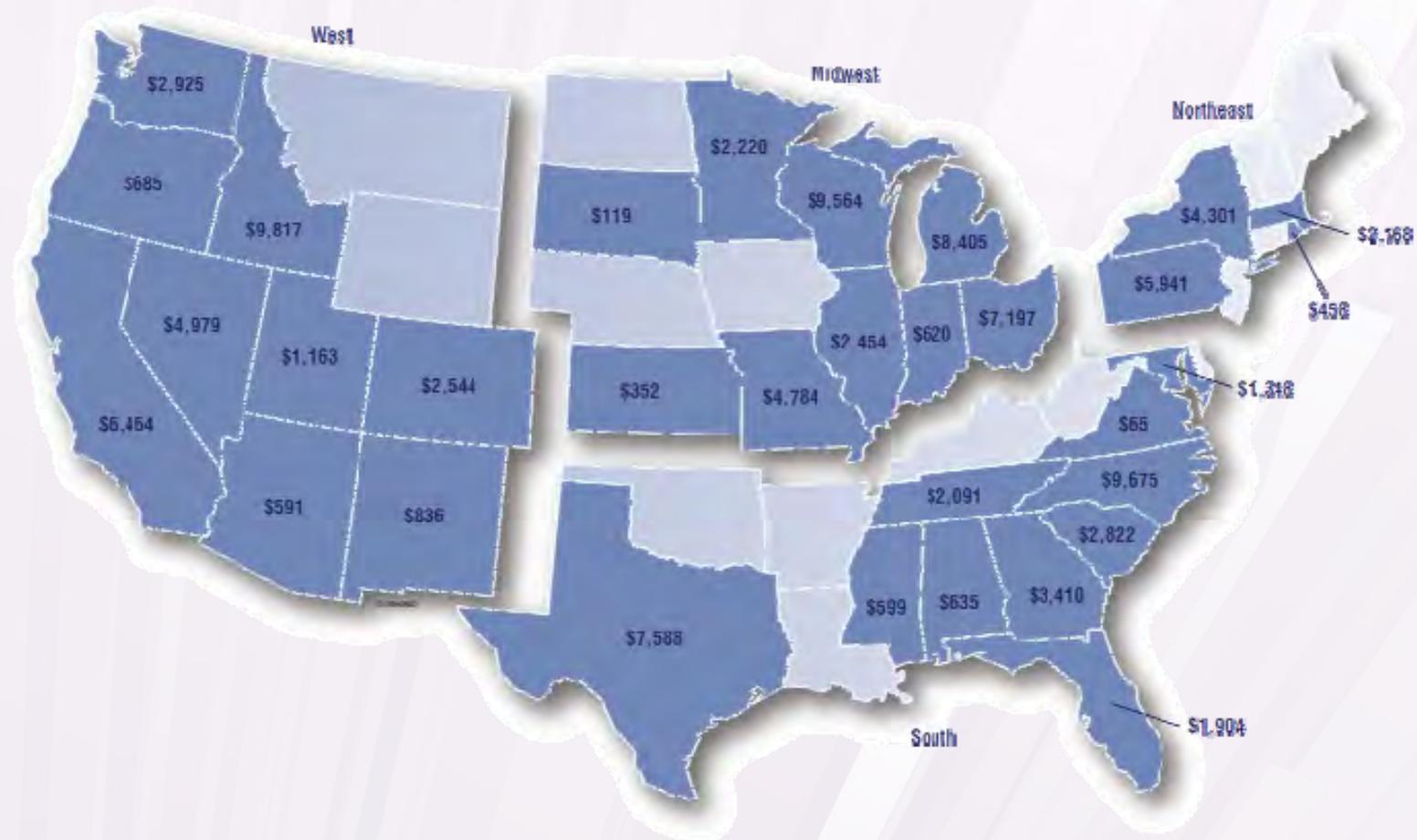


A Few Facts and Figures

- 609 pre-applications were submitted to the R&D solicitation, up from 433 in 2009.
- 82 proposals submitted to the infrastructure solicitation, 28 more than FY 2009.
- 132 students applied for NEUP graduate fellowships, (115 in FY 2009).
- 149 students applied for NEUP scholarships, (84 in FY 2009).
- Average GPA for fellowship recipients for FY 2009 and 2010 was 3.8.
- Average scholarship recipient GPA FY 2010 was 3.8. 3.7 In FY 2009.
- Since NEUP's inception, there have been 33 publications, 63 presentations, and 1 patent application.



Distribution of Funds (09/10)



- \$110 Million of funding in 32 states at 66 universities



Program-Directed Component



- New component of NEUP
- Approximately 20% of NEUP funding in this component (enough to support two fully-funded projects)
- Integrated Research Programs:
 - Larger projects, maximum of \$2.5M/year for three-years (can re-compete once)
 - Call for proposals will identify specific research challenges
 - Will require detailed full proposals with the most comprehensive relevance and peer review
- Weighting is 50% relevance and 50% technical quality (if technical quality is evaluated as “not recommended”, or if evaluated as “not relevant”, project will not be funded.)
 - Peer review team evaluates technical quality (highly recommended, recommended, not recommended)
 - Federal Program staff evaluates relevance (highly relevant, relevant, not relevant)
 - Relevance-impact based on achieving near-term program goals

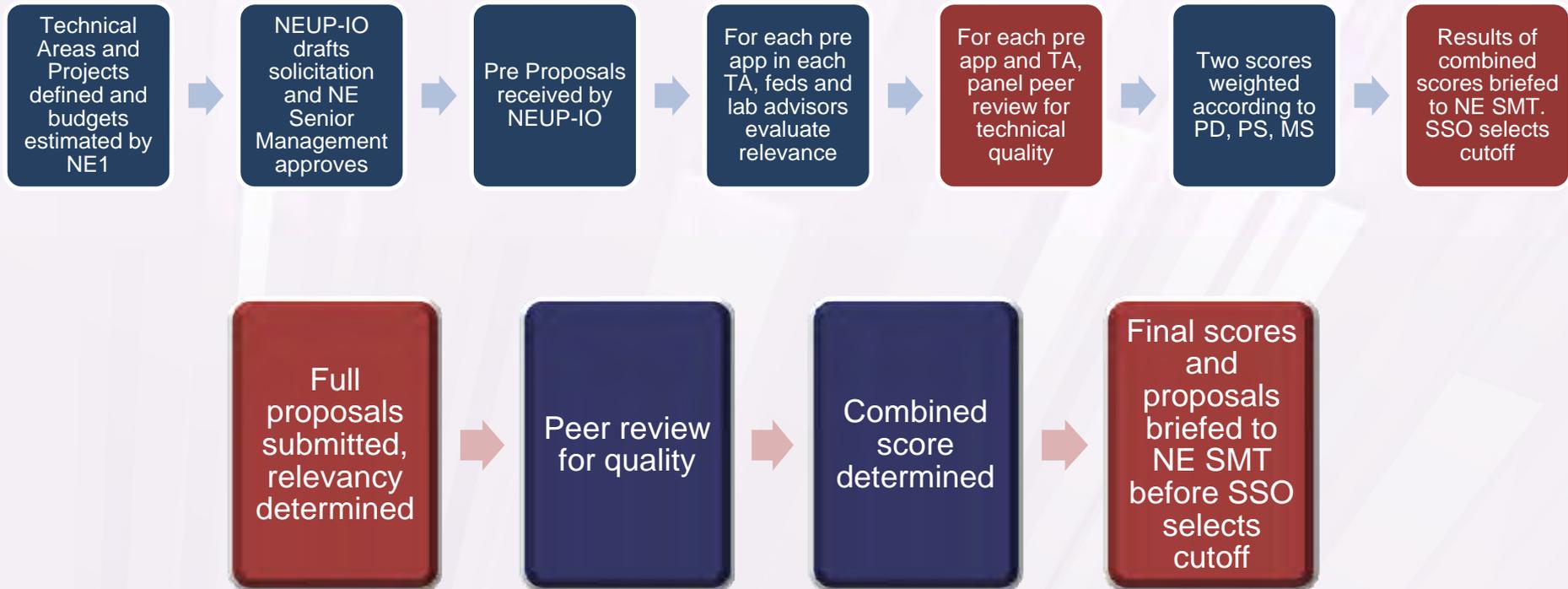


Integrated Research Programs

- NEUP anticipates accepting proposals for IRPs focused on development of advanced reactor technologies and supporting experimental testing capabilities
- Projects will be for 3 years
- Proposing teams *must* include:
 - Designated lead university and at least one other university
- Proposal teams are *encouraged* to include:
 - One or more industry partner (may receive funding)
 - One or more National Laboratory (may receive funding)



New Review Process for R&D Pre-applications and Full Proposals



Red color indicates new step



FY2011 RFP Review Process



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- Only those Program Supporting proposals that are “Highly Relevant” may be passed forward for full peer review
- Only those Mission Supporting proposals that are scored “Relevant” may be passed forward for full peer review

Peer Review: Full technical review by a 3 member panel of peers (“Not Invited” proposals as requested by NE program management)

Recommendation Panels: Composed of Federal Directors and their selected advisors

SSO Selection: Proposals selected by the SSO for funding



FY2011 RFP Review Process

Invited

- 10 page proposal submitted as invited by the SS0

Not Invited

- 10 page proposal submitted by individuals wanting to submit a proposal at their own risk (no guarantee of peer review)





FY2011 RFP Review Process

Technical Review of Invited Proposals

- Proposals are scored by individual reviewers:

Peer Review

S&T Merit

Research Plan

Capabilities

Team

Minority Bonus

Relevancy Review of Invited Proposals

- Proposals are scored by individual reviewers:

Relevancy

High Relevant

Relevant

Low Relevant

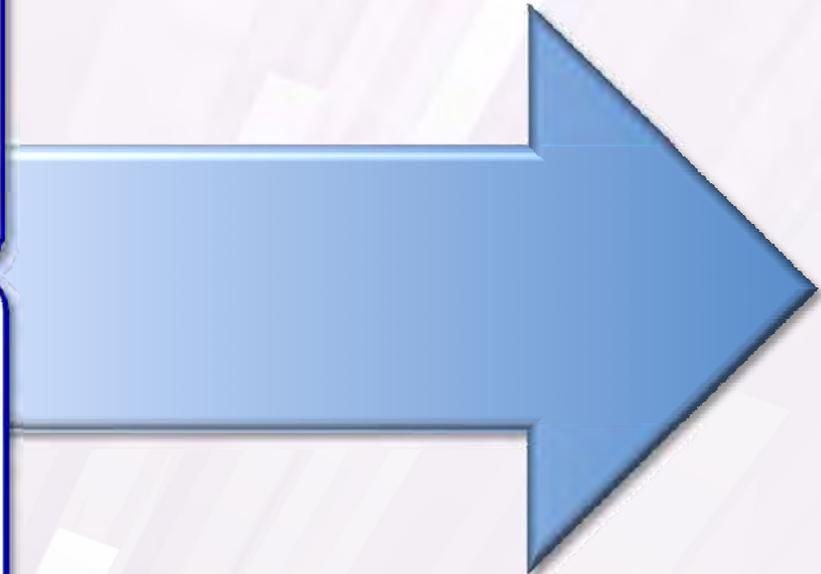
Not Relevant

Invited

- 10 page proposal as invited by

Not Invited

- 10 page proposal by individual submit a proposal though they are "encouraged"





FY2011 RFP Review Process

Technical Review of Invited Proposals

- Proposals are scored by individual reviewers:

Peer Review
S&T Merit
Research
Capability
Team
Minority

Invited

- 10 page proposal as invited by

Not Invited

- 10 page proposal by individual submit a proposal though they are "encouraged"

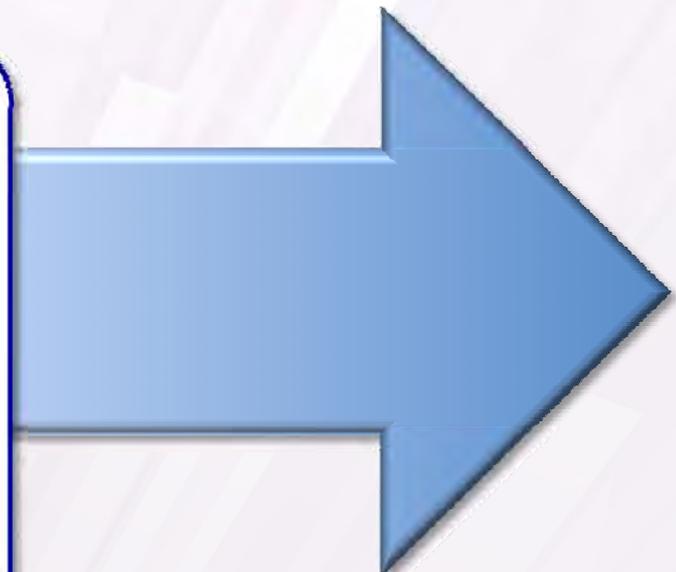
Relevancy Review of Not Invited Proposals

- Proposals are scored by individual reviewers:

Relevancy

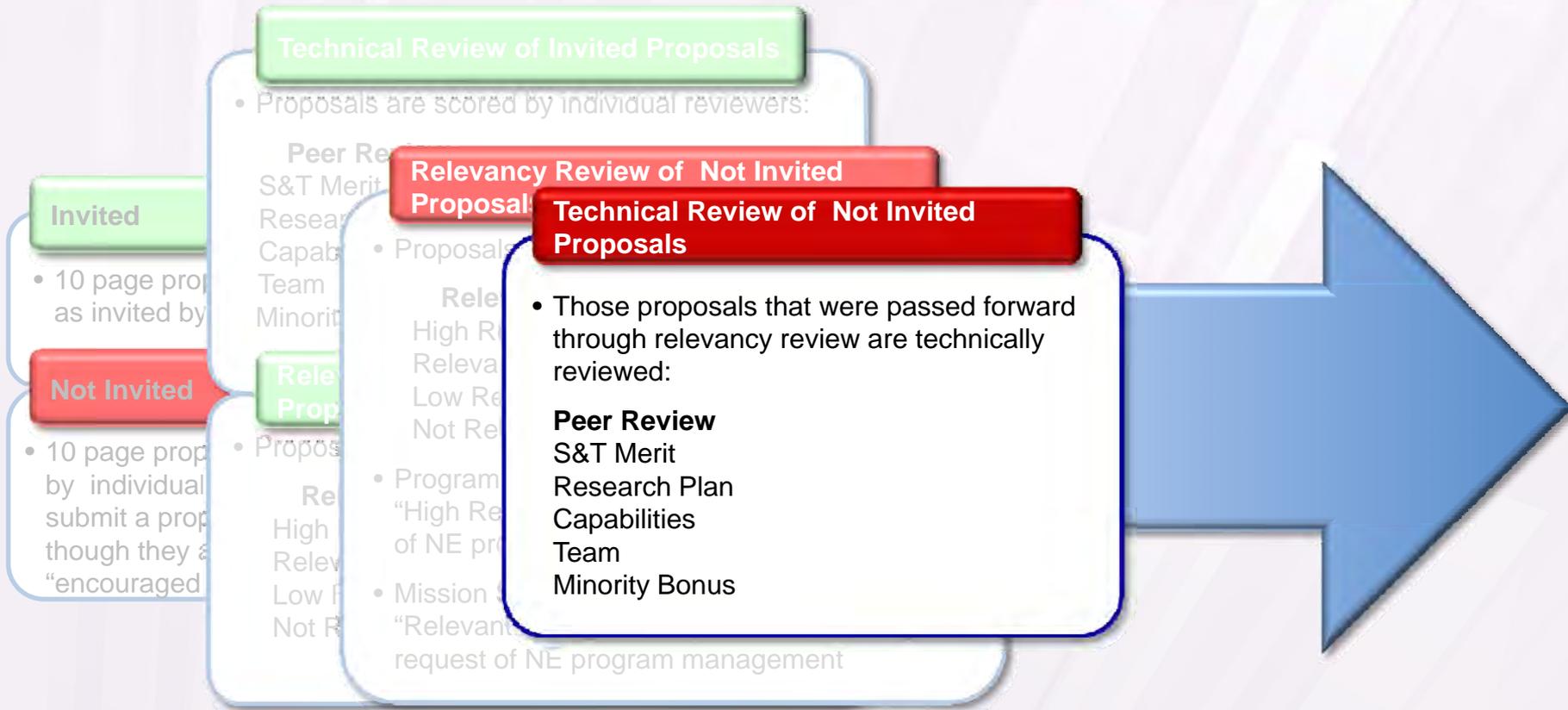
- High Relevant
- Relevant
- Low Relevant
- Not Relevant

- Program Supporting proposals evaluated as "High Relevant" are passed forward by request of NE program management
- Mission Supporting proposals evaluated as "Relevant" or higher are passed forward by request of NE program management





FY2011 RFP Review Process



Invited

- 10 page proposal as invited by

Not Invited

- 10 page proposal by individual submit a proposal though they are "encouraged"

Technical Review of Invited Proposals

- Proposals are scored by individual reviewers:

Peer Review
S&T Merit
Research Plan
Capabilities
Team
Minority Bonus

Relevancy Review of Not Invited Proposal

- Proposals

Relevancy
High Relevancy
Low Relevancy
Not Relevant

Relevant Proposals

- Proposals
- Relevancy
High Relevancy
Low Relevancy
Not Relevant

Technical Review of Not Invited Proposals

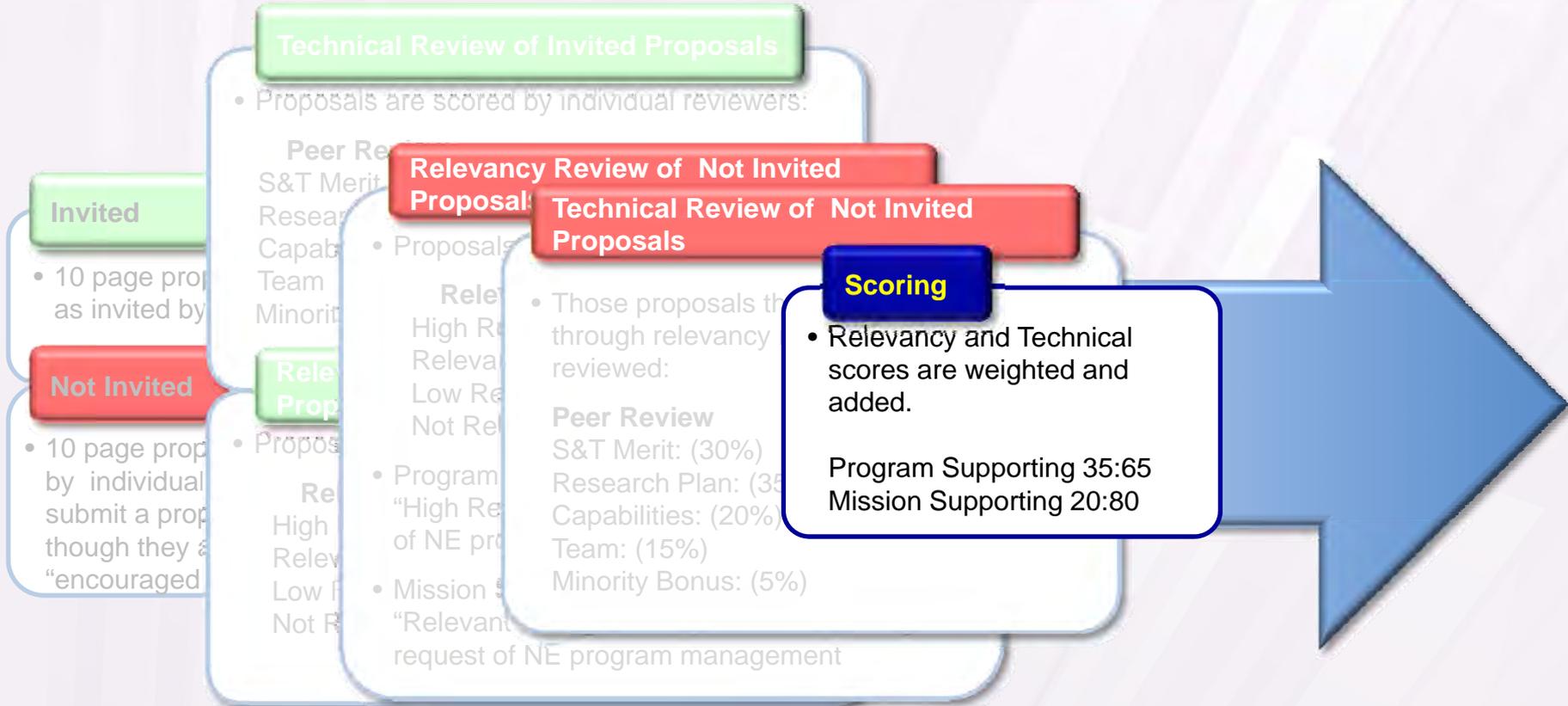
- Those proposals that were passed forward through relevancy review are technically reviewed:

Peer Review
S&T Merit
Research Plan
Capabilities
Team
Minority Bonus

- Program "High Relevancy" of NE program
- Mission "Relevant" request of NE program management

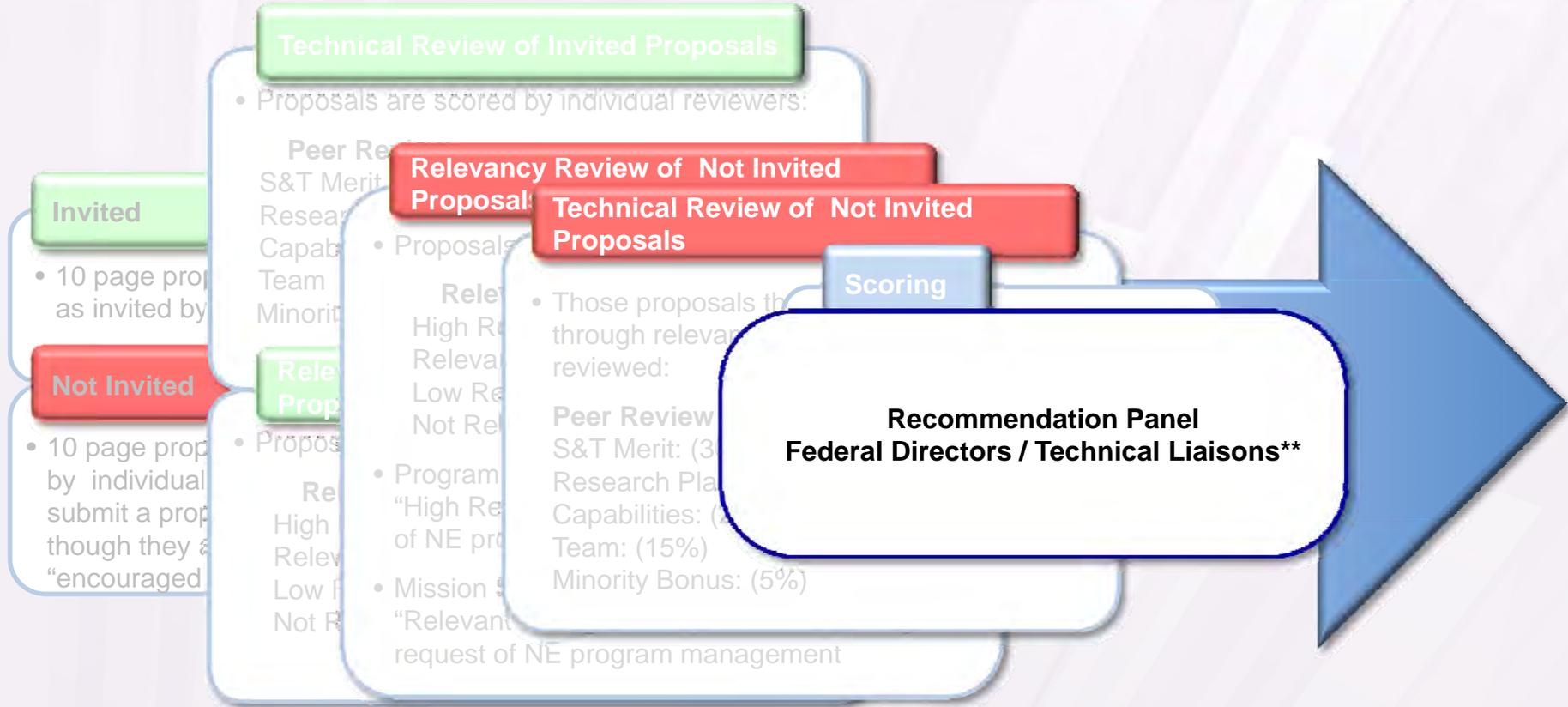


FY2011 RFP Review Process





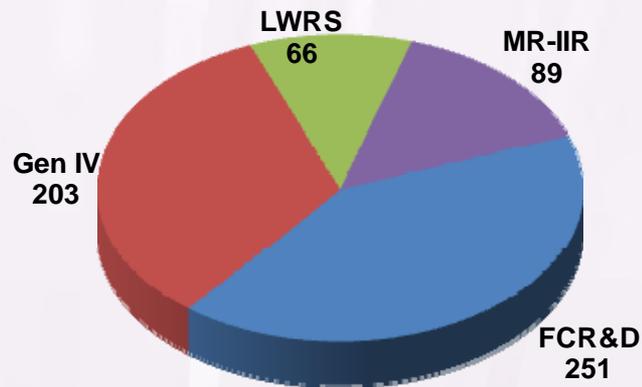
FY2011 RFP Review Process



**At this stage a review of all anomalies is conducted.

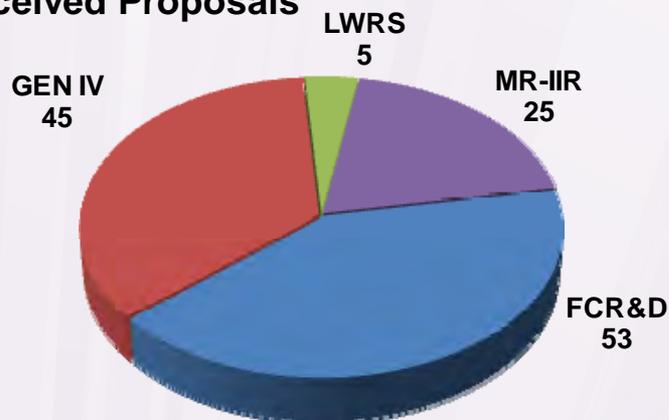
R&D Program Overview

Received Pre-Applications



- 609 pre-applications
- 131 requested full proposals
- 128 submitted proposals
- 42 funded proposals

Received Proposals



Funded Proposals

