



25

Northern Illinois  
University



**CIRCS**

Center for Interdisciplinary Research on Convective Storms

NSF Award #2413246



**WISCONSIN**  
UNIVERSITY OF WISCONSIN-MADISON



Meeting Code of Conduct



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SEARCHES



**Office of the President**

# NIU At a Glance



## Enrollment

Undergraduate:	11,358
Graduate:	3,908
Law:	314
<b>Total:</b>	<b>15,504</b>

## Seven Colleges

Business  
Education  
Engineering/Engineering Tech  
Health & Human Sciences  
Law  
Liberal Arts & Sciences  
Visual & Performing Arts

## International Students

1003 international students  
>77 different countries

## Underserved Undergraduates

- Racial/Ethnic Minority 56%
- First Generation 52%
- Pell Eligible 53%

## Carnegie Classifications

Doctoral Universities: High Research Activity (R2)  
Community Engagement

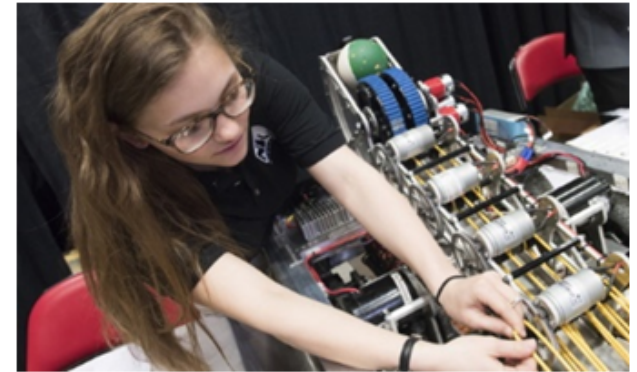


# Research Emphasis



## Preparing Northern Illinois and the nation for a century of change

- Responding to changing climate
- Preparing for changing demographics
- Leading the evolution of technology
- Interpreting our changing world



**NI'CCS**

NORTHERN ILLINOIS  
CENTER FOR COMMUNITY SUSTAINABILITY

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Creating a **Sustainable** Future

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*A partner of the Illinois Innovation Network*

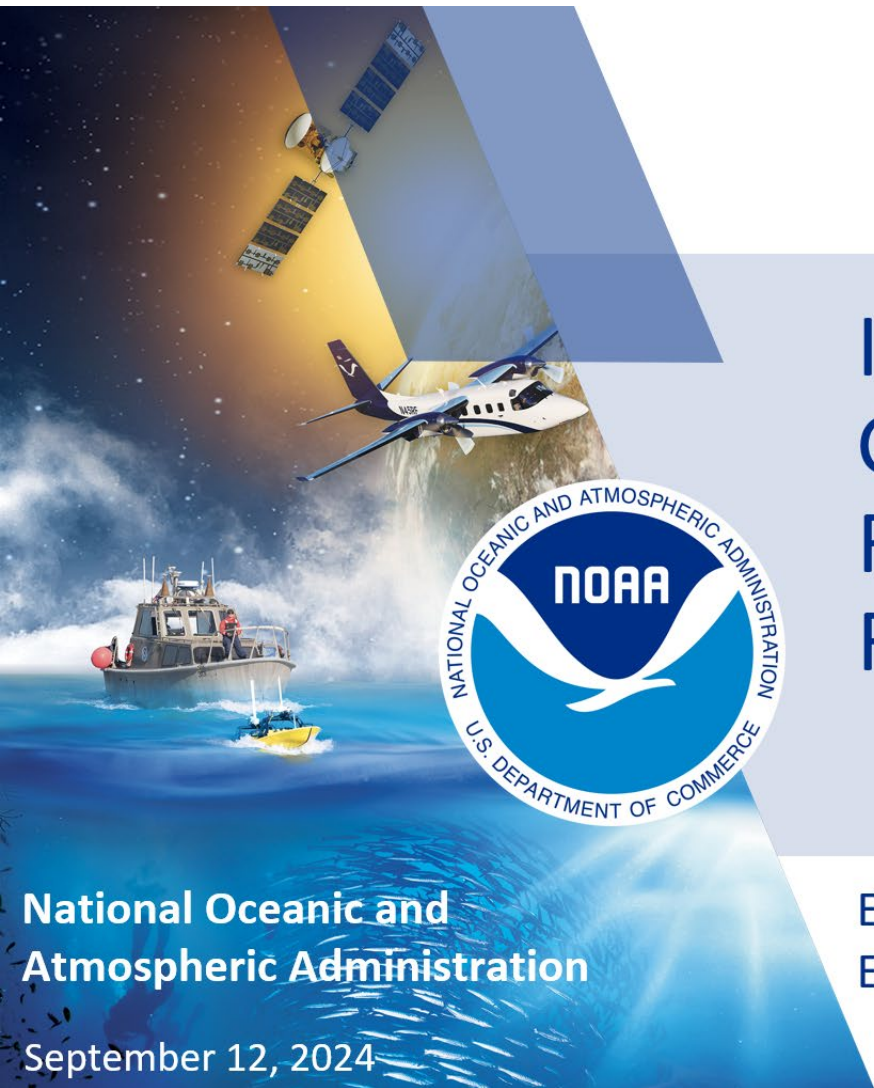
# Planning Meeting Sponsors



**Ellen L. Mecray**  
**Regional Climate Services Director, Eastern Region**  
*NOAA/NESDIS/National Centers for Environmental Information*



**Barbara Ransom, PhD**  
**GEO Innovation Hub Lead**  
*NSF Program Director*  
*Directorate of Geosciences (GEO)*  
*Division of Research, Innovation, Synergies and Education (RISE)*



# IRA Industry Proving Grounds: Focus on Insurance and Reinsurance Sector



**National Oceanic and Atmospheric Administration**

September 12, 2024

Ellen Mecray, Director, Regional Climate Services-East and Insurance Sector Co-Lead

# NOAA Who?

## SERVICE DELIVERY & DECISION SUPPORT TOOLS

Comprehensive service delivery and decision support tools are necessary to build a Climate Ready Nation to meet the needs of businesses, federal partners and communities most vulnerable to climate and weather hazards.

## MODELING, PREDICTION & PROJECTION

With state-of-the-science modeling, prediction and projection capabilities, NOAA leverages high-performance computing and the use of artificial intelligence.

## RESEARCH & DEVELOPMENT

6,000 NOAA scientists and engineers develop cutting-edge applied research and applications to address pressing climate and weather challenges.

## DATA & INFORMATION STEWARDSHIP

NOAA's world-class data and information stewardship is leveraging cloud infrastructure and working to store and to provide to the public more user friendly and authoritative data sets.

## OBSERVATIONAL INFRASTRUCTURE

From the ocean floor to on orbit, NOAA's robust next-generation observational infrastructure and data dissemination observes and collects data 24/7.



# RE/Insurance and NOAA

- RAA is partnering with NCEI to **design, build, and test** new NOAA products over the next several years to improve environmental data access in the re/insurance industry.
- Continuous engagement with end users allows timely, relevant, responsive, and strategic NOAA information and data to be used in crucial decision-making.
- **The IPG is NOAA's Service Delivery Model in action.** Continuous engagement with users helps ensure NOAA builds products that the industry wants and needs.





# Industry Proving Grounds Legacy



Data, Info,  
Products & Services  
new / improved @NOAA

*Maybe spark private  
sector opportunities*



Sector Literacy &  
Capacity  
tools, help,  
understanding

*Sectors more informed  
on the value of  
authoritative data and  
how to use it.*



Renewed  
Relationships  
sectors - NOAA - public

*Generate post IPG  
momentum for  
innovation, advocacy*



Equity Offshoots  
and Investments  
tools, info & practice

*Ensure the rest of us  
benefit from these  
investments*





# Origins of NOAA's Work with Re/Insurance Industry

- “Punch List” of Reinsurance Needs from RAA circa 2017
- Needs identified through 2019 NCEI User Conference
- Dec. 2021 NOAA-Reinsurance Listening Session Priorities
- Follow up conversations and webinars with RAA
- Participation in RAA CAT Modeling conferences last ~5 years
- 2024 NOAA IRA IPG Kickoff with Deputy Secretary Graves



# Readiness Levels

- Include user engagement as the impetus for the idea
- Ensure co-production with the user community through each phase:
- Does it do what you need it to do? Do you need different features? Can you work it, or can we offer training?
- Is it USEFUL?
- Is it USABLE?
- Will it be USED?

## MEASURE YOUR TECHNOLOGY READINESS LEVELS - TRL

How technology ready is your service/product?



Technology Readiness Levels as adapted by the CloudWATCH2 project



# Questions?



**Ellen L. Mecray**

NOAA National Centers for Environmental Information

*Regional Climate Services Director- Eastern Region*

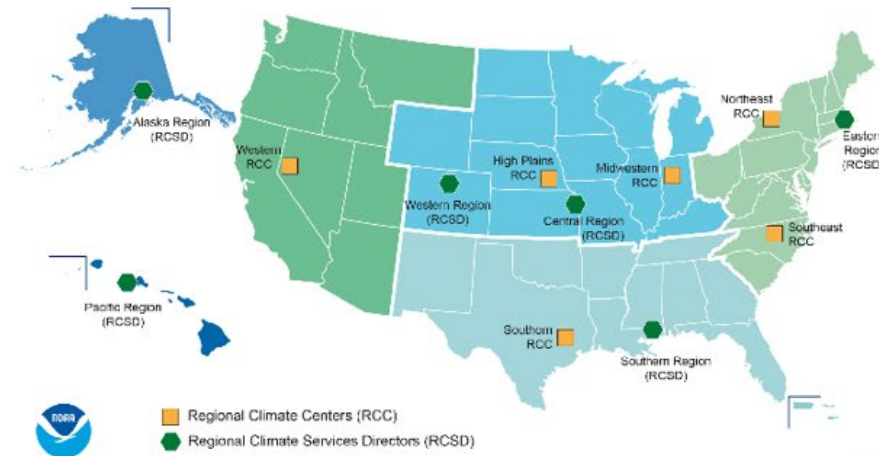
Ellen.L.Mecray@noaa.gov



**WEBINAR Series for Insurance/Reinsurance on NOAA Products and Services AND on NSF/IUCRC Partnership**



November 12, 2024  
IUCRC Planning Meetings





**National Science Foundation**



***INDUSTRY UNIVERSITY COOPERATIVE RESEARCH CENTER  
(IUCRC) PROGRAM***

**CENTER FOR INTERDISCIPLINARY RESEARCH ON  
CONVECTIVE STORMS (CIRCS)  
*PLANNING MEETING***

***Ellen Mecray***

***NOAA Insurance Climate Crisis IUCRC Sponsor***

***Barbara Ransom***

***NSF Program Director and IUCRC Co-Sponsor***

***Todd Abraham***

***IUCRC Evaluator***

# ***Barbara Ransom, PhD***

## ***NSF Program Officer/IUCRC Model Presenter***

### **Experience:**

- 20+ years at NSF, IUCRC expert and resource person.
- Lead of the Geoscience Innovation Hub and builder of the Geoscience IUCRC portfolio.

### **Role:**

- Ensures compliance with the IUCRC model.
- Oversees, GEO IUCRC portfolio.
- Liaison to the NSF Directorate Technology, Innovation, and Partnerships (TIP) and Geoscience Innovation Hub.

### **Goal:**

- Build a robust climate-related IUCRC ecosystem.
- Help IUCRCs become successful and self-sustaining.

*Ellen Mecray, PhD*

*NOAA Co-Sponsor and Representative*

## **Experience:**

- Director for the Eastern Region of NOAA Regional Climate Services.
- Co-oversight officer of successful NSF-NOAA IUCRC awards that align with NOAA needs..
- 25 years of federal service with expertise in climate science and societal risk management, strategic planning, and partnership development.
- Experienced research scientist, policy analyst, strategist, educator, and leader supporting cross-sector collaboration with key partners at all scales.

# Todd Abraham, PhD, MBA

## NSF Center Evaluator

### Experience:

- Experienced NSF IUCRC Evaluator and NSF proposal reviewer.
- Former Senior Vice President of Research and Nutrition – Mondelez.
- Led 500-person research team incorporating external collaborative research programs and internally developed technologies.
- Led International Advisory Board for the Monell Chemical Senses Institute. Treasurer/member of Board of Trustees for USP. Start-up fund mentor/advisor focusing on food and consumer products.
- Brown University Sc.B. Chemistry; University of Pennsylvania Ph.D Chemistry; Wharton School MBA



# *Desired Planning Meeting Outcome*

- Convergence between academia & industry on cutting edge research thrusts of high priority that directly address pain points of a targeted sector of the economy.
- **Strong industry interest in becoming a member of the Center, if IUCRC is awarded.**
- Collection of information and better understanding of industry needs enabling faculty to write a competitive IUCRC proposal to NSF resulting in the creation of a new IUCRC.





# *IUCRC Program Overview*

# IUCRC – A Collaborative Partnership



## Government

NSF catalyzes partnership; other agencies join as Members or co-fund the Center



## Universities

Provide research infrastructure, human capital, and technical expertise.



## Industry

Members provide funds for research and insight into needs of the economic sector.



# NSF IUCRCs – Portfolio Snapshot and Facts

**84**  
**Active**  
**Centers**

**400+**  
**Large**  
**Firms**

**300+**  
**Small Firms**

**110+**  
**Universities**

**20+**  
**Government**  
**Entities**



In 2021: **\$47M** in non-NSF funds generated to support Center research.

*~1/4 of graduating IUCRC-involved students hired by Center members.*

# Sampling of Participating IUCRC Members



# IUCRC: Value Proposition for Members

**IUCRC**  
**Member**  
**LOI:**  
Each member dollar leverages  
**~23**  
additional dollars



## Access to Talent

Able to scout and Mentor student talent with skills for work in Industry.



## Reduce R&D Risk

R&D risk for developing early-stage disruptive tech shared with others.



## Research Cost Avoidance

Low human capital cost.  
Access to facilities.  
Save on internal research money.



## R&D Leverage

High ROI due to joint project funding model



## Network Access

Collaborative venue for Interaction with other Members, competitors, regulators



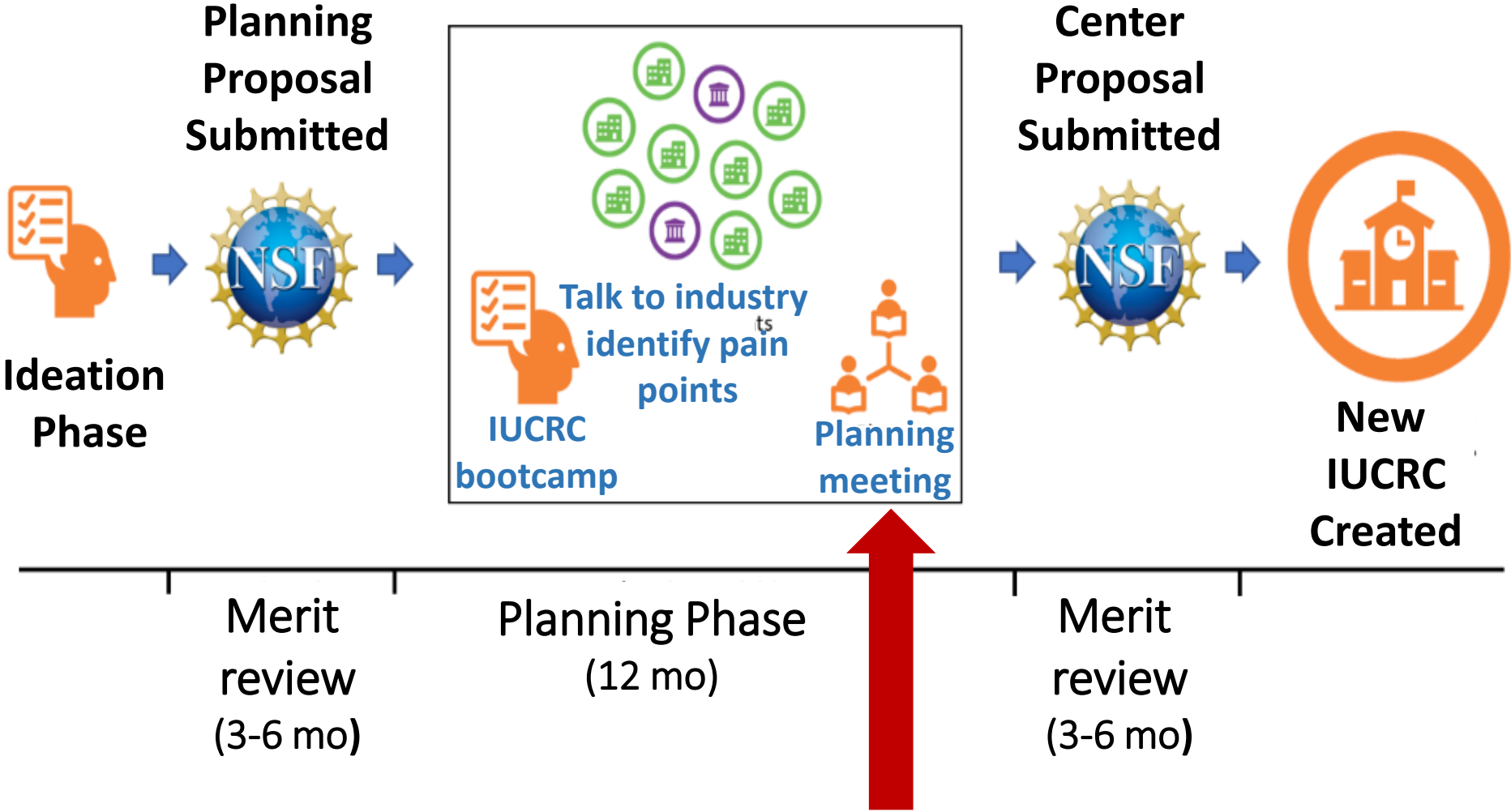
## Access to IP

Royalty-free, non-Exclusive licenses on IP produced in the Center.



# ***IUCRC Center Structure and Operations***

# IUCRC Center Creation Path & Timeline

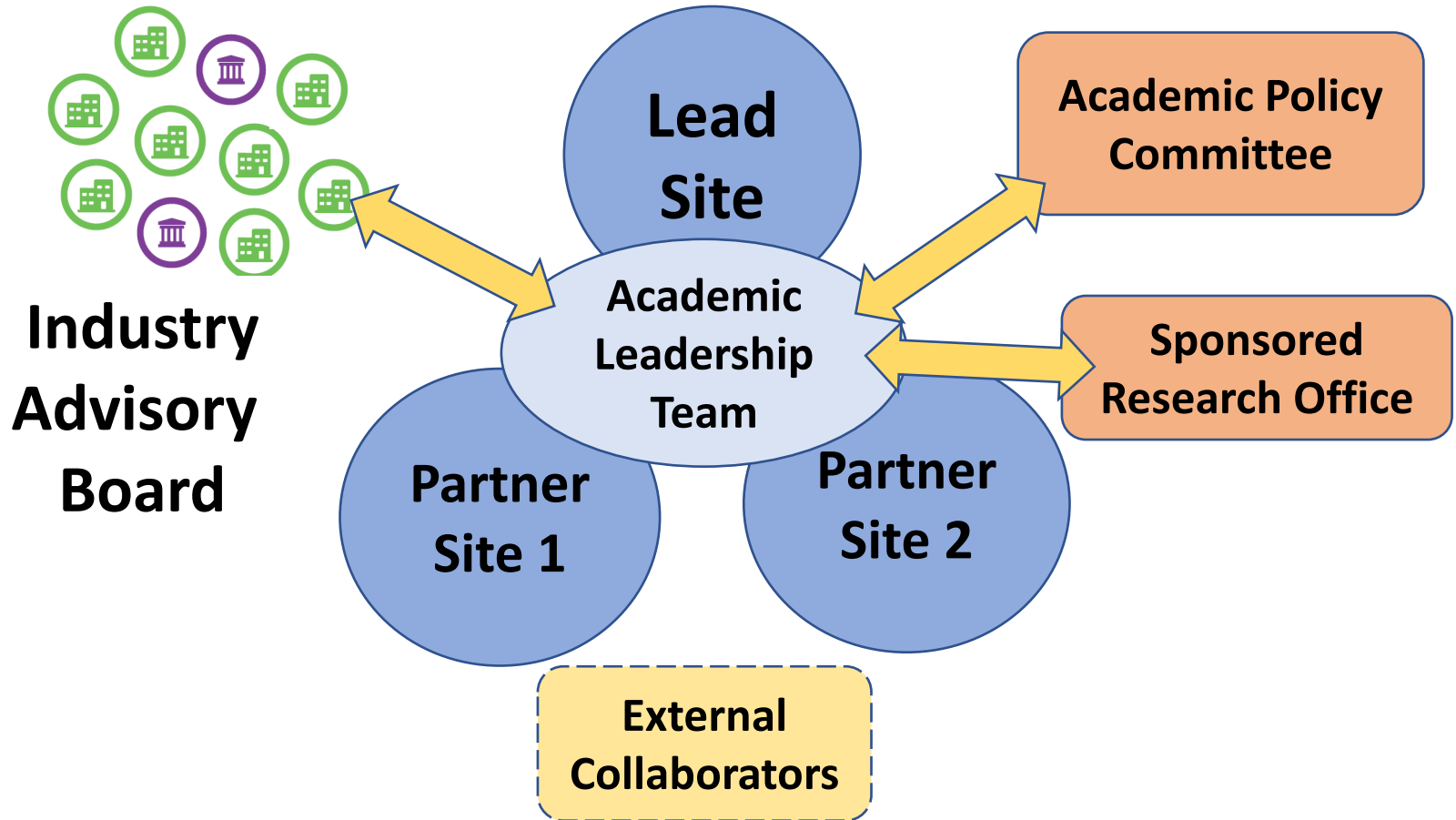




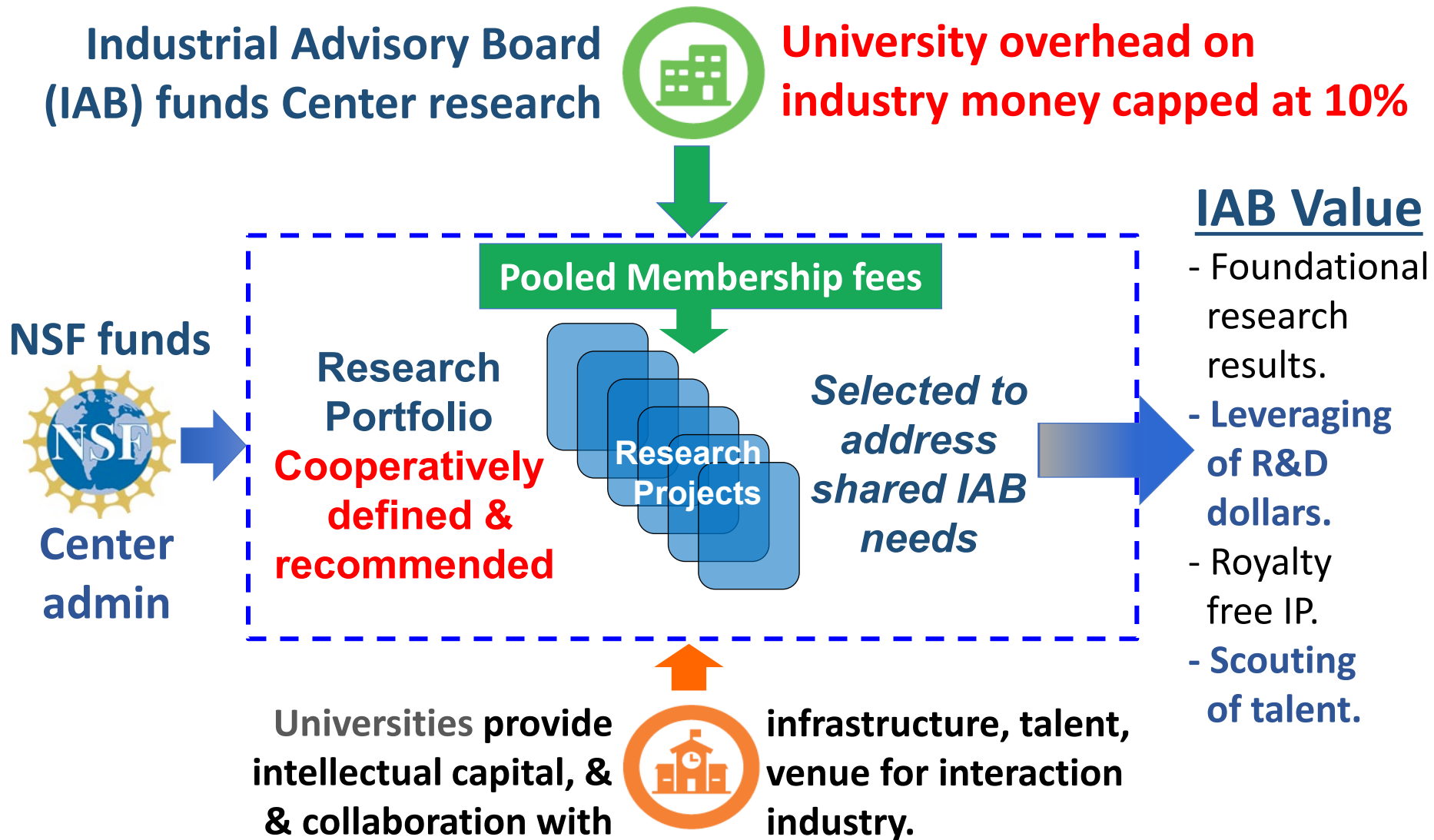
# IUCRC – Center Structure



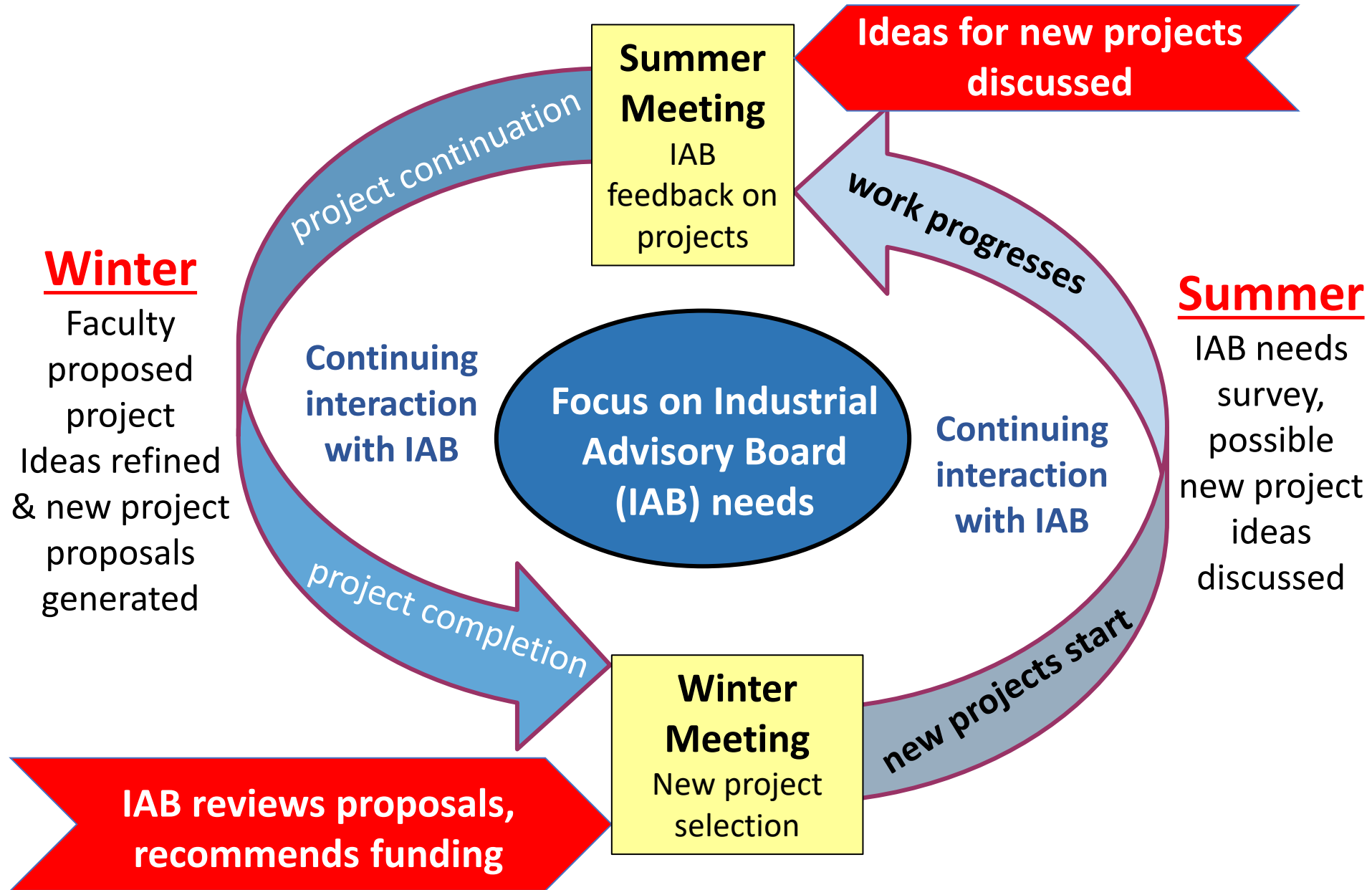
## IUCRC



# IUCRCs: Operations and Value



# IUCRC: Members and Project Selection



# *IUCRC Project Selection and Voting*

- All projects must be supported by multiple members.
- Each full member has one full vote count; each associate member has one-half that value.
- A member can have more than one membership, but no entity can have more than two votes.
- Priority ranking project selection:
  - Each Member ranks first 5 project choices in priority order.
    - **1** = most highest priority.
    - **5** = fifth highest priority.
  - Projects with highest scores reflect highest sector/collective interest.
  - Low scoring projects are returned to faculty for redirection and/or revision to align better with IAB priorities.



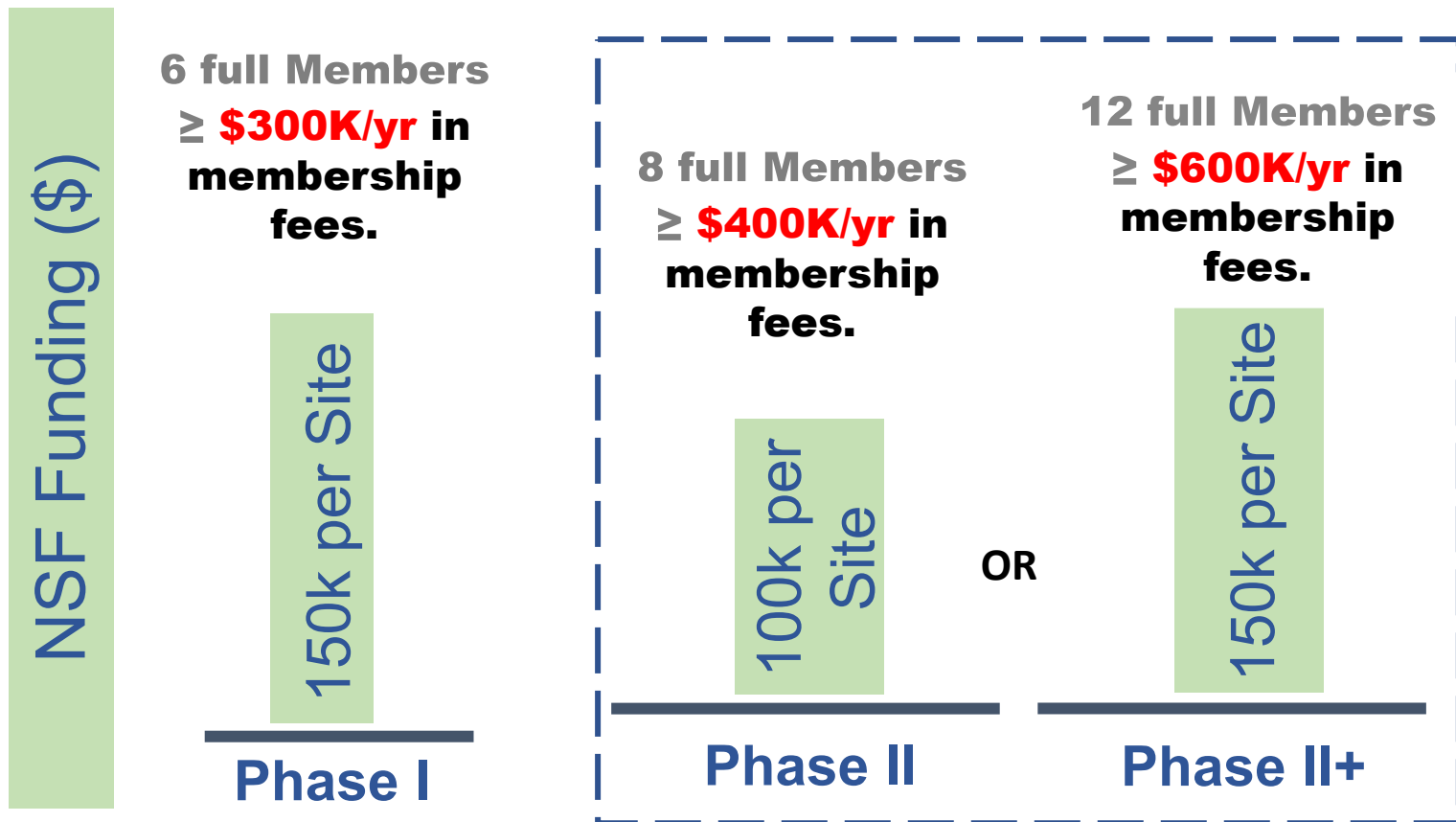
# *The IUCRC Model*

## Keys for a Successful Center

# Minimum Requirements for CIRCS Viability

## IUCRC Funding Model

### CIRCS: Two-Site Center



# Controlling Documents

- **Membership Agreement**

- Same for all.
- Must be signed prior to becoming a Center member.
- Identifies types of memberships and fee structure.
- Codifies rights for Center derived IP.
  - University owns IP.
  - All Members have royalty free licensing rights
  - Possibility of exclusive rights (if no other Member interested)

Signed by  
100's of  
firms  
involved in  
IUCRCs

- **Center Operating Procedures**

- Defines how Center will operate.
- Describes research project consideration and voting practices.
- Sets faculty/student Center research publication policies/delays.
- Written jointly by university and IAB, can be amended as needed.
- NSF approval required to ensure model adherence.



# *Recap*



# *What an IUCRC is and Is Not*

- IUCRCs are engines of pre-competitive research and innovation research to fill knowledge gaps and help industry overcome conceptual and technological hurdles holding it back from providing new and improved products and services. **IUCRCs are NOT contract organizations: no one-on-one or hand-in-hand projects allowed.**
- IUCRCs provide ground-breaking research results of mutual industry-university interest where faculty learn industry pain points and pitch projects that address them with Members recommending those of highest priority. **The IUCRC motivation is understanding and addressing the collective needs of the targeted economic sector.**
- The first word in IUCRC is “industry”. Center research focuses on boosting the national economy and generating a skilled workforce. **Government agencies and non-profits, however, are welcome.**

# *What an IUCRC Is and Is Not (cont.)*

- IUCRCs are not just research and innovation engines, they provide access to talent (student and faculty/researchers), state-of-the-art infrastructure, research capacity, and more that might be missing from your organization.
- Anyone who wants to join a Center, agrees to abide by its operating procedures, signs the membership agreement and pays the membership fee can become a Member. **IUCRCs are not "clubs" with membership controlled by the IAB or faculty.**
- IP from an IUCRC is owned by the university, but members get royalty free, non-exclusive rights. One-on-one/contract arrangements can be made with Center faculty - but, must be done outside the IUCRC construct at full institutional overhead.



# *Questions?*

Barbara Ransom: [bransom@nsf.gov](mailto:bransom@nsf.gov)