



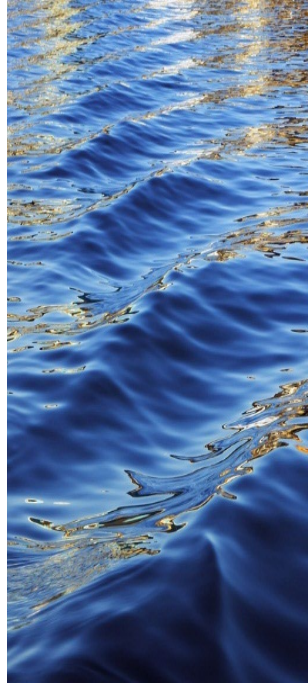
OKLAHOMA
EPSCOR S³OK STATE CONFERENCE

Socially Sustainable Solutions for Water, Carbon & Infrastructure Resilience in Oklahoma
NSF Award No. OIA-1946093



**The Mayo Hotel
Downtown Tulsa, OK**

April 28-29, 2022



OKLAHOMA NSF EPSCoR S³OK EWFD

Outreach, Education & Workforce Development (EWFD)

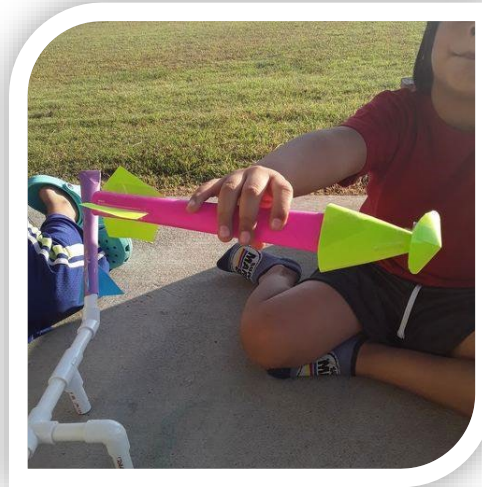
Presenter:

Gina Miller, Outreach Coordinator
Oklahoma NSF EPSCoR

S³OK OUTREACH, EDUCATION & WORKFORCE DEVELOPMENT (EWFD)

Program Target Areas

- K-12 Student Outreach & Education
- K-12 Teacher Enrichment and Training
- Non-Traditional STEM Educator Training
- Postsecondary Student Development
- Faculty Development
- Citizen Scientists
- Communication and Public Outreach



S³OK EWFD: PROGRAM PARTNERS



S³OK EWFD: PROGRAM PARTNERS

Responding to the Pandemic: Lessons in Adaptability

Program Modifications

- Relocate events to outdoor locations
- Segment large events into multiple smaller events
- Utilize virtual platforms to facilitate interactive conferences
- Develop and post STEM video demonstrations on social media
- Host hybrid in-person and virtual events
- Rescheduling

- Programs successfully adapted to new COVID circumstances
- Only one initiative was cancelled due to the pandemic



Pictured: Tinkerfest in the Parks

S³OK EWFD: GOALS & OBJECTIVES

Goal: Address the state's workforce skills deficit and broaden participation in STEM by underrepresented groups (URGs)

Objectives

- 1. Provide STEM curriculum and training for K-12 teachers**
 - ✓ 224 teachers reached
- 2. Enhance non-traditional STEM educator training**
 - ✓ 245 new non-traditional STEM educators trained
- 3. Provide impactful K-12 student STEM education**
 - ✓ 30,791 students served
- 4. Grow Oklahoma's citizen science network**
 - ✓ 500 Oklahomans invited to participate; 37 have actively submitted photos to date
- 5. Support higher education faculty and students in STEM**
 - ✓ 69% from PUI & minority-serving institutions (3,797 total individuals served)



Pictured: SW Alliance for Girls STEAM Camp (78 Participants Y2: 100% female, 32% URM, 86% from rural schools, 35% first-gen college)

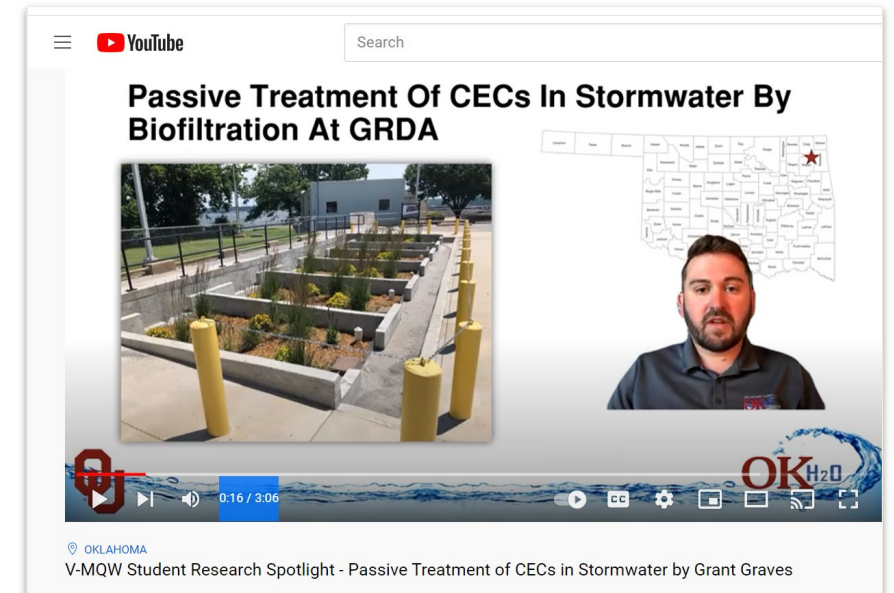
S³OK EWFD: HIGHER-EDUCATION PROGRAMS

Higher Education Faculty Programs

- Oklahoma Research Day
- OK NSF EPSCoR Annual Conference & Research Retreats
- Quarterly Research Team Prof. Development Series

Post-Secondary Student Programs

- College of the Muscogee Nation Math & Science Instructors
- Entrepreneurial Workshops
- Incorporating EPSCoR Research into Instructional Curriculum
- Intense Research Experiences and Mentorship for Undergrads
- Oklahoma Research Day
- OK NSF EPSCoR Annual Conference & Research Retreats
- Oklahoma Research Day
- Research Day at the Capitol
- Research Team Prof. Development Series
- Summer Research Experience for Undergrads
- URM Student Travel to Prof. Meetings



Pictured: Student team members' research was spotlighted at the State Conference via more than 25 videos presentations, which are available via our website and YouTube channel.

S³OK EWFD: K-12 PROGRAMS

K-12 Programs

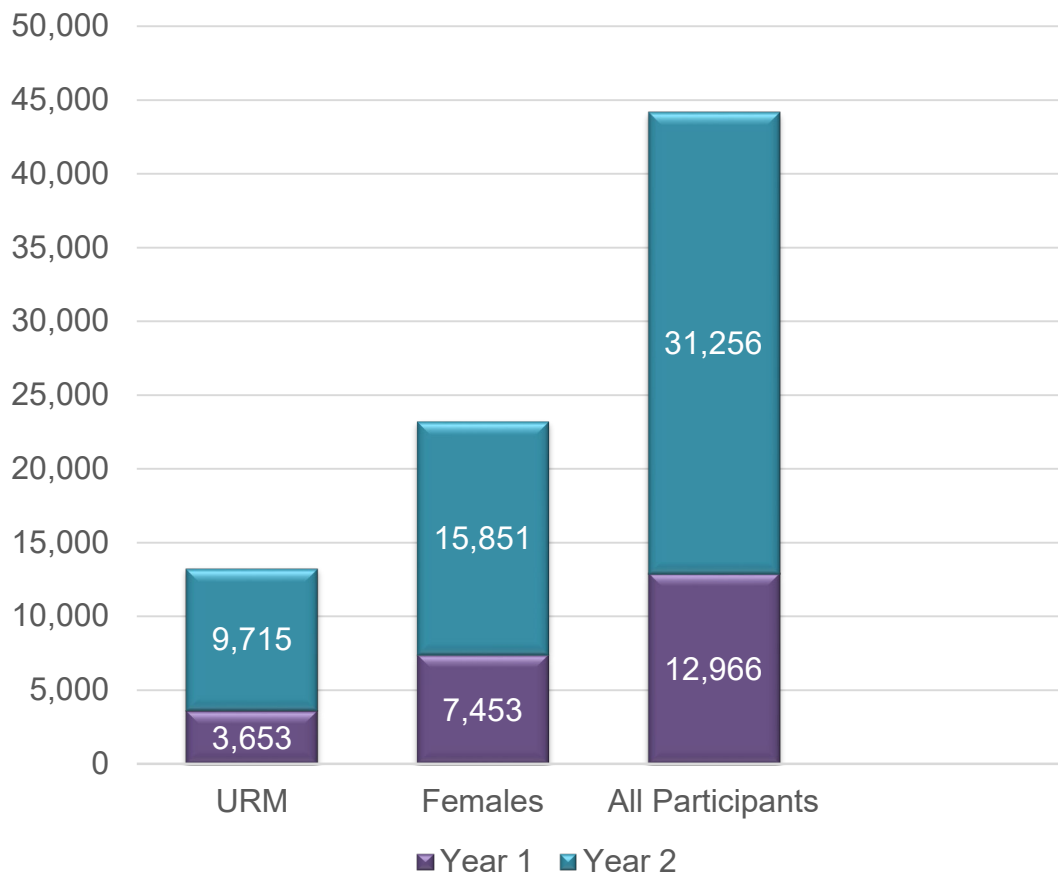
- CU Engineering and Applied Math Summer Academy
- 4-H & Beyond: Youth Development and Educator Training
- Mobile Maker Space
- Native American STEM Competition & Teacher Conference
- OK Museum Network (OMN) Library Affiliate Program
- OMN/OK 4-H Leader Training Collaboration
- OU Computing in Modern Biology
- Pontotoc Tech Center: Environmental Biotech STEM Program
- SW Alliance for Girls' Enrichment in STEAM
- Tinkerfest
- Women in Science Conference



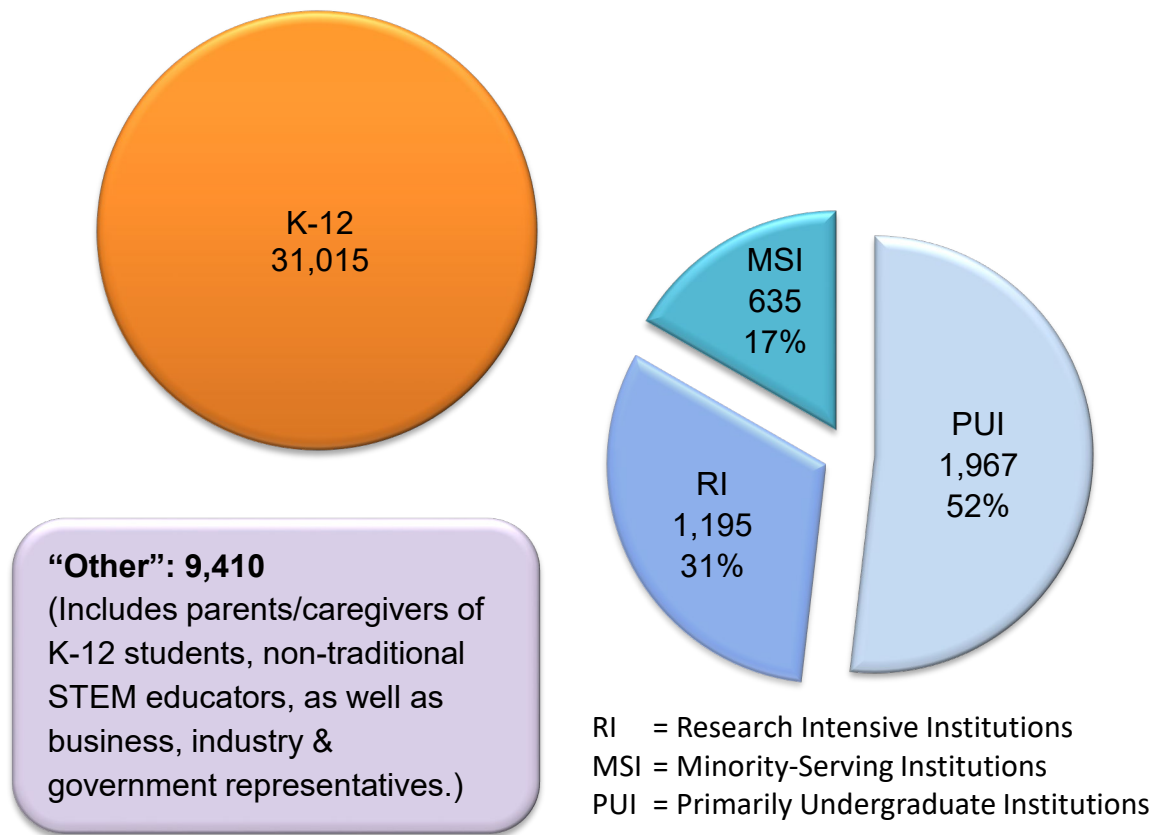
*Pictured: Pontotoc Technology Center
Environmental Biotech STEM Program
(63% female, 38% URM – Y2)*

S³OK EWFD: PARTICIPANTS

By Demographics



By Institution Type



S³OK EWFD PROGRAMS: INTERDEPENDENCIES

PROGRAM NAME	ADDRESSES S ³ OK RESEARCH THEME
CU Engineering & Applied Math Summer Academy	✓
Citizen Science Project	✓
College of the Muscogee Nation Math & Science Instructors	
Entrepreneurial Workshops	
4-H & Beyond: Youth Development and Educator Training	✓
Incorporating EPSCoR Research into Instructional Curriculum	✓
Intense Research Experiences and Mentorship for Undergrads	✓
Mobile Maker Space	✓
Native American STEM Competition & Teacher Conference	✓
Oklahoma Museum Network (OMN) Library Affiliate Program	✓
OK NSF EPSCoR State Conference & Research Retreats	✓
Oklahoma Research Day	✓
OMN/4-H Leader Training Collaboration	✓
OU Computing in Modern Biology	✓
Pontotoc Tech Center: Environmental Biotech STEM Program	✓
Research Day at the Capitol	✓
Research Team Quarterly Professional Development Series	✓
Summer Research Experiences for Undergraduates	✓
SW Alliance for Girls' Enrichment in STEAM	✓
Tinkerfest	✓
URM Student Travel to Professional Meetings	
Women in Science Conference	✓



S³OK EWFD PROGRAMS: INTERDEPENDENCIES



S³OK EWFD PROGRAMS: RESEARCHER PARTICIPATION

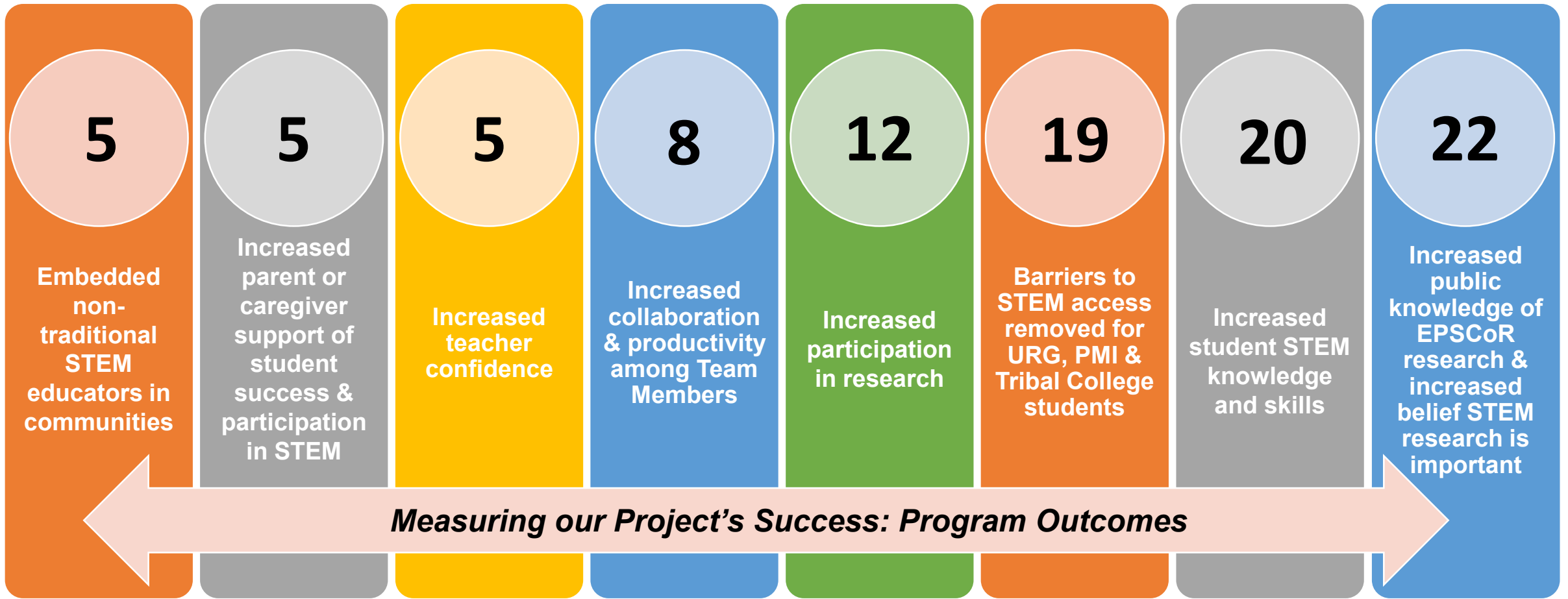
PROGRAM NAME	# RESEARCHERS	PARTICIPATION TYPE / OUTPUT
Incorporating EPSCoR Research into Instructional Curriculum	16	29 college courses taught (SWOSU, LU, OSU, OU)
OMN Library Affiliate Program	1	2 STEM activity videos developed for 8 libraries in rural, low-income counties
SW Alliance for Girls' Enrichment in STEAM Camp	1	S ³ OK hands-on activities taught to 78 girls
Women in Science Conference	7	"Hall of Researchers" videos highlight career fields & provide guided STEM activities

**TOTAL #
S³OK RESEARCHERS PARTICIPATING
IN OUTREACH: 25**

Pictured right: S³OK Researcher Dr. Tim Hubin's training session, "Synthesis of a Macrocycle," for 78 middle school girls at the SW Alliance for Girls' Enrichment in STEAM Camp

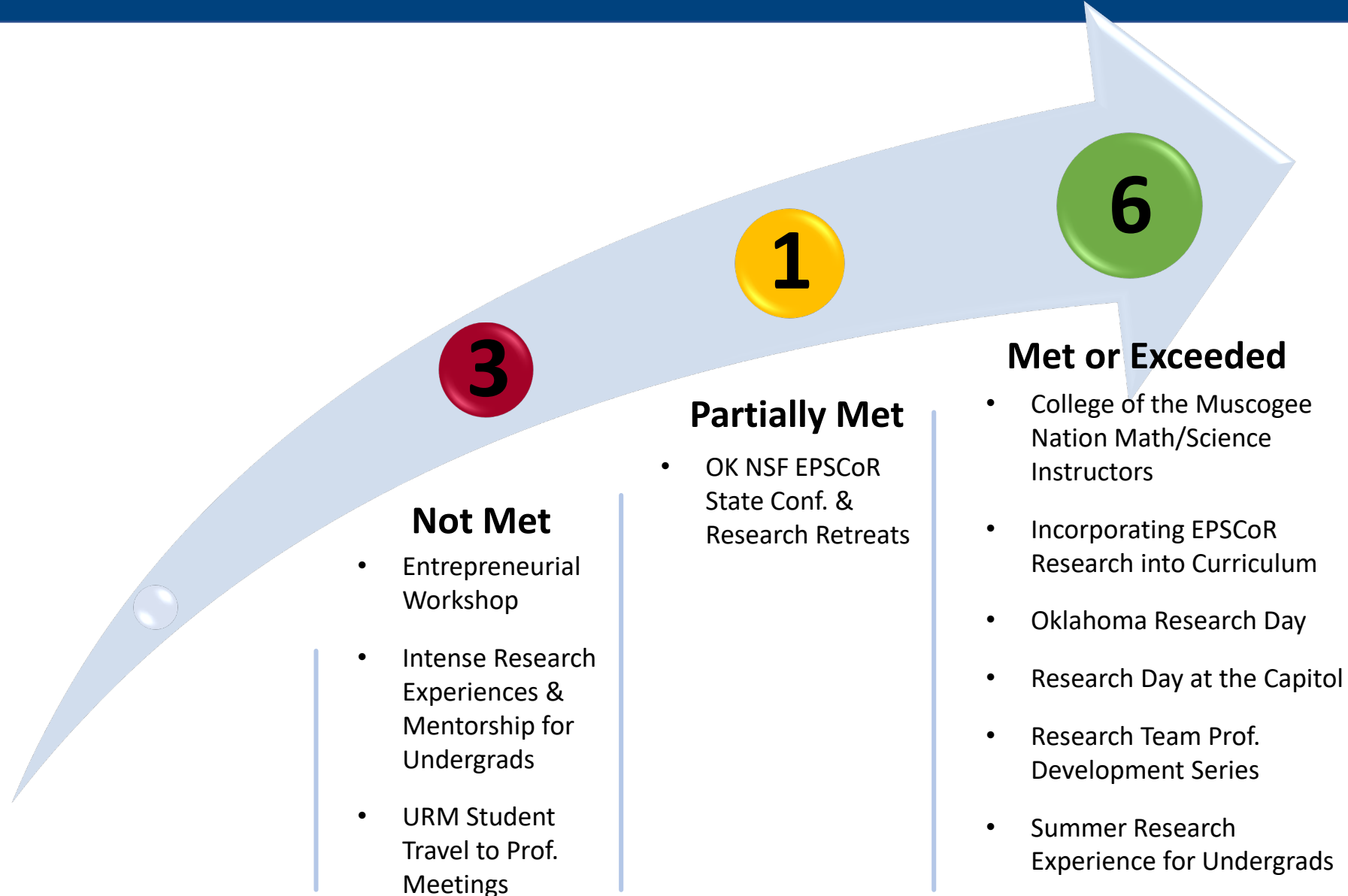


S³OK EWFD: OUTCOMES

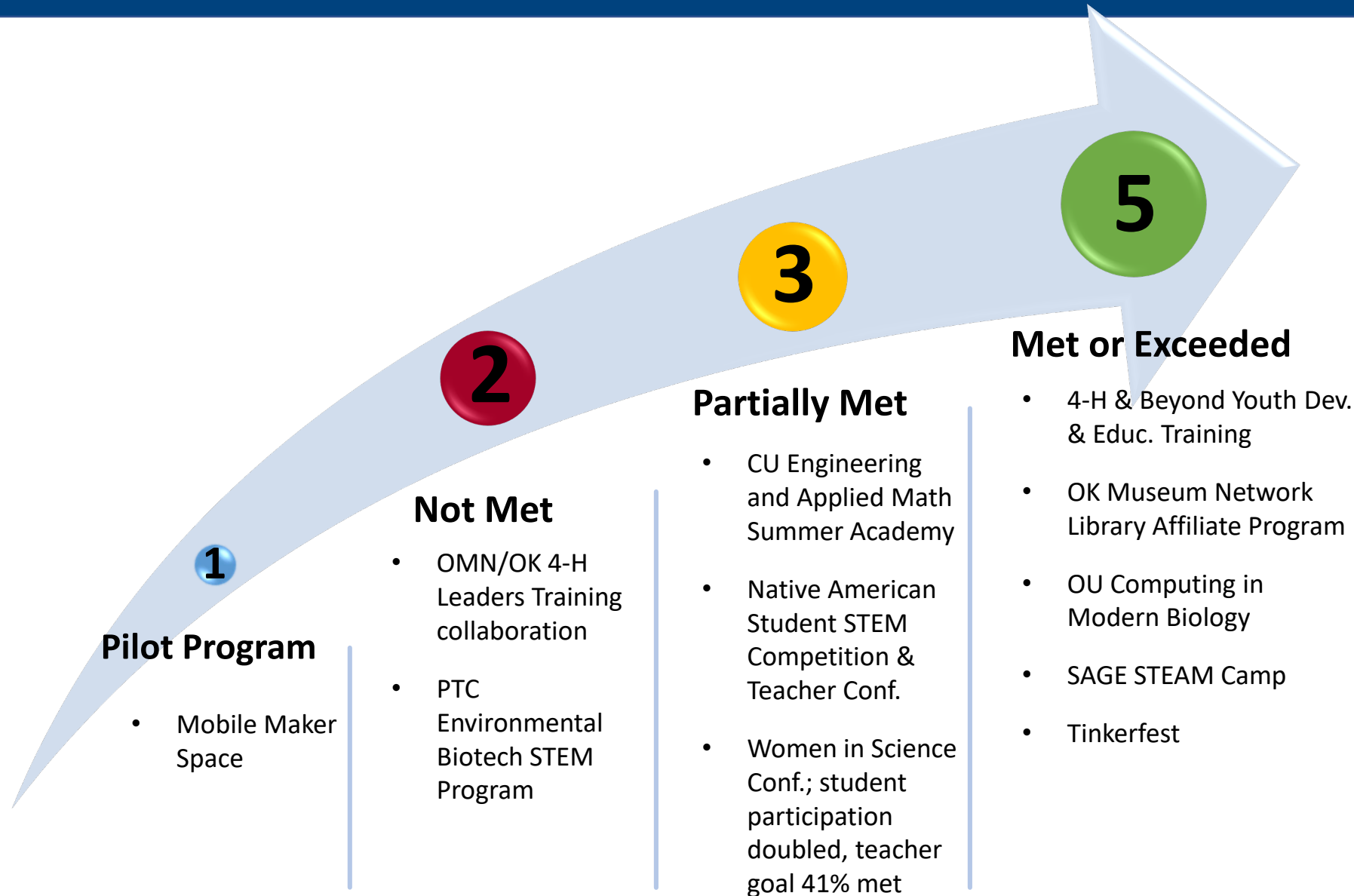


Measuring our Project's Success: Program Outcomes

STRATEGIC PLANNING MILESTONES: HIGHER EDUCATION



STRATEGIC PLANNING MILESTONES: K-12



S³OK EWFD: OMN LIBRARY AFFILIATE PROGRAM

Oklahoma Museum Network (OMN) Library Affiliate Program

- Builds rural libraries' capacity to deliver educational hands-on STEM content
- 10 libraries served in disadvantaged rural counties (24% mean poverty rate)
- 8 ready-to-use STEM kits, 195 activities and book tie-ins
- 89 kits (46%) address S³OK research theme

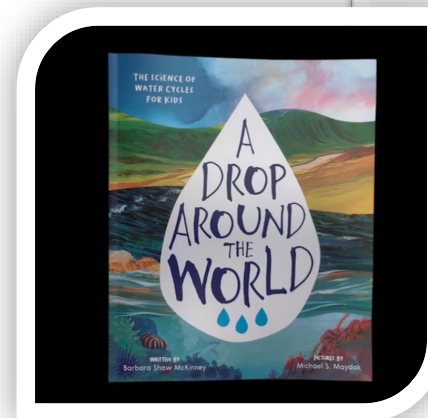


Pictured above: Students learn STEM through OMN Library Affiliate take-home kits

S³OK EWFD: OMN LIBRARY AFFILIATE PROGRAM

Oklahoma Museum Network (OMN) Library Affiliate Program

- Originally developed as facilitated in-person library programming (Over 80 in-person programs presented)
- Modified to serve as discovery-based, grab-and-go, take-home activities with a virtual option (5,495 take-home kits distributed; 8,946 online instructional videos views)
- 13,900 K-12 students (53% female, 28% URM); 3,900 caregivers/parents (89% female, 34% URM); 25 teachers; plus ~10 schools, daycare/headstart, and after-school programs



Pictured: S³OK Researcher Dr. Kristin Olofsson presents, “A Drop Around the World,” an OMN Library Affiliate online literature and take-home STEM kit activity

S³OK EWFD: OMN LIBRARY AFFILIATE PROGRAM

Oklahoma Museum Network (OMN) Library Affiliate Program

- Bridging the digital divide: Chromebooks and remote hotspots available for library check-out
- 24 library staff trained as non-traditional STEM educators and embedded in rural communities

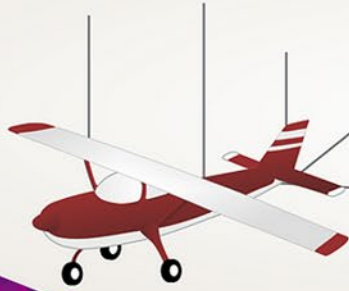
100% of library staff surveyed indicated they are more confident sharing STEM due to their OMN training and they are utilizing resources provided through the award.



Pictured above: Rural librarian records interactive instructional video for grab-and-go STEM kit.



Welcome to the
Women in Science Conference!



KEY
NOTE

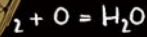
TEACHER
LOUNGE

RECRUITMENT
FAIR

PANEL
DISCUSSION



$$E=MC^2$$



BREAKOUT
SESSION

ACTIVITY ROOM

SCIENCE LIVE

PLANETARIUM

HELP

S³OK EWFD: WOMEN IN SCIENCE CONFERENCE

Responding to the Pandemic: Finding Positive, Unanticipated Outcomes

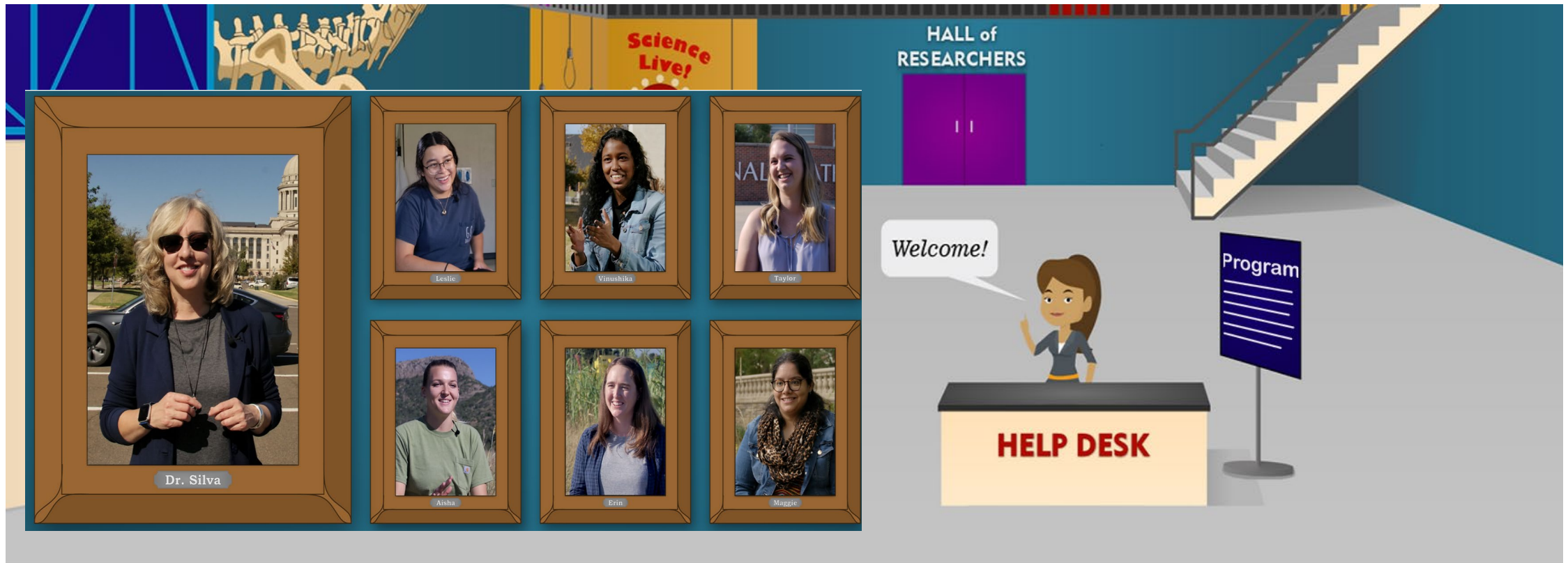
Women in Science Conference

- Annual, highly popular event designed for 1,500 6-12th grade students and teachers/yr.
- Goal: to encourage pursuit of STEM fields
- 2021 & 2022 events were hybrid virtual/in-person in response to COVID
 - More than 3,000 students and 50 teachers participated each year (68% female, 35% URM)
 - 3,000 individual STEM kits delivered to 100 schools
 - All of the original conference sessions were transferred to the new format, plus more!
 - Hands-on Science & Recruitment Fair, Women in STEM Fields Panel, Hands-on Science Sessions, Teachers' Lounge, Planetarium Show, and Science LIVE Show
 - S³OK research themes: Oklahoma Dust Bowl, DIY Barometer, EPSCoR researchers' degree/career focus and hands-on STEM activities, Citizen Science, and more
 - Teachers' Lounge sessions: 5 new STEM activities for the classroom each year, update from OSDE, and mental health guidance to address virtual teaching challenges

- Doubled original participation goal; students reached in 11 U.S. States, Canada & overseas
- Virtual conference will continue to be accessible worldwide throughout the award

S³OK EWFD: WOMEN IN SCIENCE CONFERENCE

Hall of Researchers: Spotlighting Our S³OK Student Team Members!



WOMEN IN SCIENCE
CONFERENCE

<https://www.omnwomeninscience.com/copy-of-landing-page-3>



OKLAHOMA
MUSEUM
NETWORK

S³OK EWFD: COMMUNICATIONS

Intuitive and Interactive Website

www.okepsc.org: 16,600 users; 2,085 return visitors



- Detailed research information
- Education and Outreach
- Funding opportunities
- Videos
- Presentations
- Publications
- Data Repository
- Decision-Support Tools
- News
- Conference and program info.
- Event registration
- Climate variability curriculum
- Helpful links and resources
- Archived EPSCoR projects

S³OK EWFD: COMMUNICATIONS

Comprehensive Communication Strategy

- Intuitive Website with 16,600 users (2,085 were return visitors)
- YouTube videos (56) viewed 535 times
- Website videos (>25)
- Web-based environmental science curriculum
- Facebook & Twitter (760 followers)
- News Stories, including “EPSCoR updates” (49)
- Quarterly Professional Development Seminars (3)
- Slack Channel Student/Post-Doc Engagement (31 members)
- Slack Channel Opinion Leader (OLAN) Engagement (65 members)
- Researcher listserv



- TV News Press (9)
- Radio show interview streamed live
- Team meetings
- Research retreats and State Conferences
- Research brochures
- Oral, poster presentations

S³OK EWFD: STATEWIDE REACH

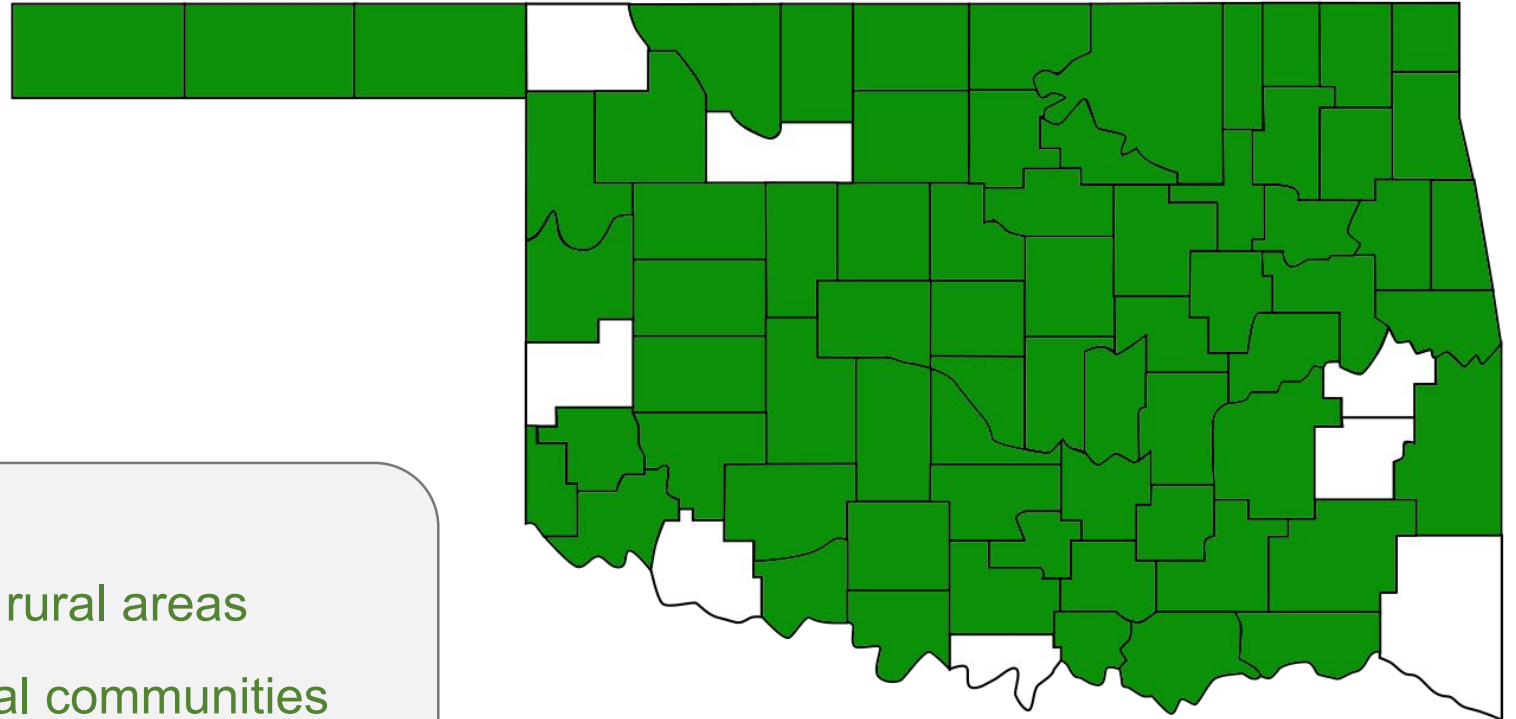
Over 44,000 Oklahomans Served in 69 of the State's 77 Counties

College Degrees in OK:



- ✓ 19.9% of Rural Oklahomans
- ✓ 28.4% of Urban Oklahomans

Reaching Rural Oklahoma:

- 33% of the State's population lives in rural areas
- 52% of OK's public schools serve rural communities
- 58% of rural students are economically disadvantaged



Legend

-  Counties Impacted by EWFD Programs
-  Counties Not Yet Reached