### Description of challenge, problem, or opportunity:

- Unsolved worldwide social problems need to be addressed by science.
- In the US, shortage of scientists & people understanding science.
- Under-representation of women and minorities in science careers.
- Need a diverse pool of trained scientists to frame and solve problems & educate others.
- General population in the US (& worldwide) lacks basic understanding of science methods and content ("science literacy").

### What we invest:

- Federal, state and private funds
- 4-H Infrastructure
- Land Grant Univ. Support
- County Extension administrators and agents, program coordinators, and specialists
- Training
- Knowledge
- Collaborations with external researchers
- Collaborations with science industry leaders

### What we do:

- Select and develop 4-H Science curricula
- Select and train volunteers
- Market 4-H Science to increase interest, participation
- Conduct non-formal education (learning and teaching, facilitated inquiry and discovery)
- Facilitate question formation and problem solving through guided activities
- Provide or supplement math programming
- Teach youth about academic and career choices, requirement

### Who we reach (Participation):

- Extension administrators, LGU and Extension faculty and staff
- Youth (grades 3-5, 6-8, 9-12)
- Federal, state & private funders
- Partners
- Public

### What we produce:

- 4-H Science curricula
- New instructional methods
- Trained staff and volunteers
- Adult participants engaged
- Youth participants engaged
- Partners (Other Federal agencies, science museums, youth organizations, etc.) collaborating
- Marketing materials
- Evaluation materials

### Occurs when there is a change in behavior or the participants act upon what they’ve learned and:

- Youth apply science learning to contexts outside 4-H (e.g., school classes, science fairs, invention contests, etc.)
- Youth adopt and use new methods or improved technology
- Youth express interest/demonstrate aspirations towards science careers (career fairs, job shadowing, volunteer work or internships)
- Youth raise questions and identify problems to be addressed using science

### Conditions

- 4-H non-formal experientially based programming addresses science abilities, concepts and content under guidance of trained (scientifically able) 4-H learning facilitator.
- 4-H develops appropriate science abilities to emphasize in non-formal education.
- 4-H essential elements create optimal youth development context for learning.
- 4-H reaches diverse population.
- Increased awareness of science skills, content, and career possibilities increases engagement of youth in science careers.

### External factors:

- Youth experience in schools including [with] science & mathematics.
- No Child Left Behind (course content, testing, tutoring provided in school).
- Changing landscape of schools, community and family influence (e.g., religious teaching on Creationism).
- Population changes, immigration, global economy and competition in science education and science pursuits.

### Notes:

- 4-H Science encompasses science, engineering, technology and applied math.

Updated November 1, 2010