Science and Technology Committee
New Roadmap Concepts

GOALS:

- Create a modern, responsive, targeted, focused Roadmap
- The Roadmap should be succinct so people will understand and use
- The Roadmap should be cost effective in both print and electronic versions
- The Roadmap should be nimble, dynamic, easily updatable, synergistic and compatible with other ESS/ARD efforts

AUDIENCE:

- Elected officials (state and national), federal/state agencies, NGOs, professional societies, ESS/ARD leadership visits, DC groups, farm groups, private sector partners
- Directors and LGUs in general
- APLU, Cornerstone

DISTRIBUTION:

- Available on ESCOP website (http://www. escop.info) & directly print from website
- Fixed print run and distribute to directors
- NIFA
- CARET, APLU, Cornerstone

LAUNCH DATE:

- 2018 (late)

COST:

- Will depend on:
  - Color and based upon front and back per Challenge Area,
  - Number of challenge areas
  - Consultant writer/designer fees
  - Access to high-quality photos

REVIEW and APPROVAL PROCESS: (published ESCOP publication processes (http://escop.info/wp-content/uploads/2017/04/publications.pdf)

- TBD, but one suggestion:
  - Drafts written & reviewed by S&T committee members
  - Drafts recommended to regional EDs and ESS committee for first review
  - Directors given the opportunity to review & provide feedback
  - Final revisions made by S&T
  - Final versions recommended to ESS committee for review & final approval

ASSIGNMENTS:

- TBD

FORMAT:

- One or two pages each, color, succinct text, content boxes
- GRAND CHALLENGES IN AGRICULTURE
- EXPECTED OUTCOMES/IMPACTS
- KEY RESOURCES (why LGUs can do it)
- KEY GAPS (what is needed)
- SUCCESS STORIES (links to institutions and multistateimpacts site)
- ESCOP LOGO AND WEBSITE
- LINKS TO ANY KEY RESOURCES (e.g. prior Roadmaps)

POTENTIAL TOPICS (with each Challenge)

GENERAL - Use the 2010 Roadmap (bullets are key words to help define content) throughout, update and add new. Tie back to the multistate research impacts and allied databases, consider the Challenge of Change Report, may be integrate science communication here and/or within a header below. It may be that the Challenges 1-7 could be broken up further, yet I opted to keep it the same at this stage.

NOTE 1: I also scanned the 152 page The Challenge of Change APLU document that Alton Thompson referenced and tried to include some items from that too. Someone else should check it too, yet it is probably OK at this stage of our discussion. This document also recommends a 'whole of government approach' to combat food insecurity, something like a "One Health" approach. I also think that we should carefully look at the Water Security white paper and the Healthy Food System, Healthy People publication

NOTE 2: Items #1 and 2 could be separate or combined into one. Items #3 and beyond are to be their own front and back piece.

1) ESS across 1862s and 1890s – Overview of Who we are, What we do, Brief basis for it, How we do it, Why we do it (LGU maps), Who we do it for, Collaborations across/between disciplines, institutions and institution types.
2) Overview of Grand Challenges conceptual framework for ESS and how the topical ones fit/work individually and collectively. Define Grand Challenge with respect to research.
3) Sustainability, competiveness and profitability of U.S. food and agricultural systems
    - Water (capture, store rain/runoff, use impaired water for irrigation, incentives)
    - New crop varieties for WUE
    - Increased productivity in plant and animal systems
    - Improved livestock grazing systems
    - Organic and sustainable agriculture
    - IPM
4) Adapt to and mitigate the impacts of climate change on food, feed, fiber and fuel systems
    - New models across climate variability/adaptation/resilience
    - Economic assessments
    - Decision science use for strategies
    - New technologies, communication to audiences

- Policies

5) Support energy security and the development of the bioeconomy from renewable natural resources
    - Technologies to improve processing efficiencies
    - Systems that utilize inputs efficiently and create fewer waste products
    - Assessing environmental, social and economic impacts at scales
    - Expand on nan-arable land, algae, biofuel crop yield limitations, emissions
    - Restructure policy incentives
6) Play a leadership role in a safe, secure and abundant food supply
    - Food security, food safety, food quality, food loss and waste
    - Genetic potential of plants and animals
    - ID plant compounds to prevent chronic diseases
    - All aspect from prevention to control of potential food hazards across production, processing, distribution, service
    - Food supply and transportation systems
    - Decrease dependence upon chemicals with harmful effects on people/environment
7) Improve human health, nutrition and wellness
    - Nutritional genomics for personalized prevention
    - New and more effective delivery systems
    - Serving size and intake frequency for health benefits
    - Community-based participatory methods
    - Factors in stresses that impact chronic diseases and aging
    - Childhood obesity prevention and general obesity
8) Heighten environmental stewardship through the development of sustainable management practices (could be separate or integrated into #3)
    - Deliver ecosystem services
    - Reduce inputs and improving input efficiencies
    - Enhance internal ecosystem services
    - Ecologically-sound livestock and waste management systems
    - Policy and regulations
9) Strengthen individual, family and community development and resilience
    - Regional economic development, rural communities, community viability
    - Model poverty risks and outcomes based upon components
    - Local food systems
    - Role of broadband
    - Links across individual behavior, community institutions and economic, social and environmental conditions
10) Developing and implementing new technologies – gene editing, genotyping, geospatial tools, phenotyping to field-scale precision ag tools
11) Data science – ALL aspects of big data and data sciences across the spectrum of research programs; Information sciences (could be separate or combined into all)
12) Workforce development (undergraduate to graduate to post docs), STEM member (could be separate or integrated into #9)

13) Healthy systems – could we do one across biological systems? Forest, range, soils, etc
14) ONE Health - Animal health and well-being with extensions to the environment and maybe humans (could be separate or integrated above)
15) Drastic disruptors or Extreme Weather – wildfire, drought, invasive species, weather, vector-borne diseases (could be separate or integrated into #4)
16) Across systems (transdisciplinary work) – antimicrobial resistance, microbiome, food systems
17) Research across the globe (highlights of international efforts or not present)
18) Tactical Sciences (see NIFA findings from two summits)