

**National Capacity Development Training of Trainers Workshop  
on Developing and Implementing Mitigation and Preparedness  
Water Scarcity and Drought Management Plans  
Zaragoz-Midrid, Spain, May 6-9, 2014**

**Summary Notes**

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# Water scarcity and drought management:

## *Elements of Implementation Protocol*

*(The following information was presented mostly by country delegates and organized by Wu to provide a roadmap for implementation)*

### Organization

- High level steering committee
- Working committee
- TOT
- Roles and responsibilities
- Public participation
- Testing of initial plan

### Toolbox

- Drought recognition
  - Characterization
  - Risk analysis
  - Drought Index
- Drought preparedness
  - Initial phase of plan execution
  - Timely and effective notification
- Drought mitigation
  - Operational models (WEAP)
  - GIS tracking/monitoring
  - Damage reporting

# Water scarcity and drought management: *Elements of Implementation Protocol*

## Recovery

- Responsible parties
- Economic assessment
- Insurance

## Post drought audit

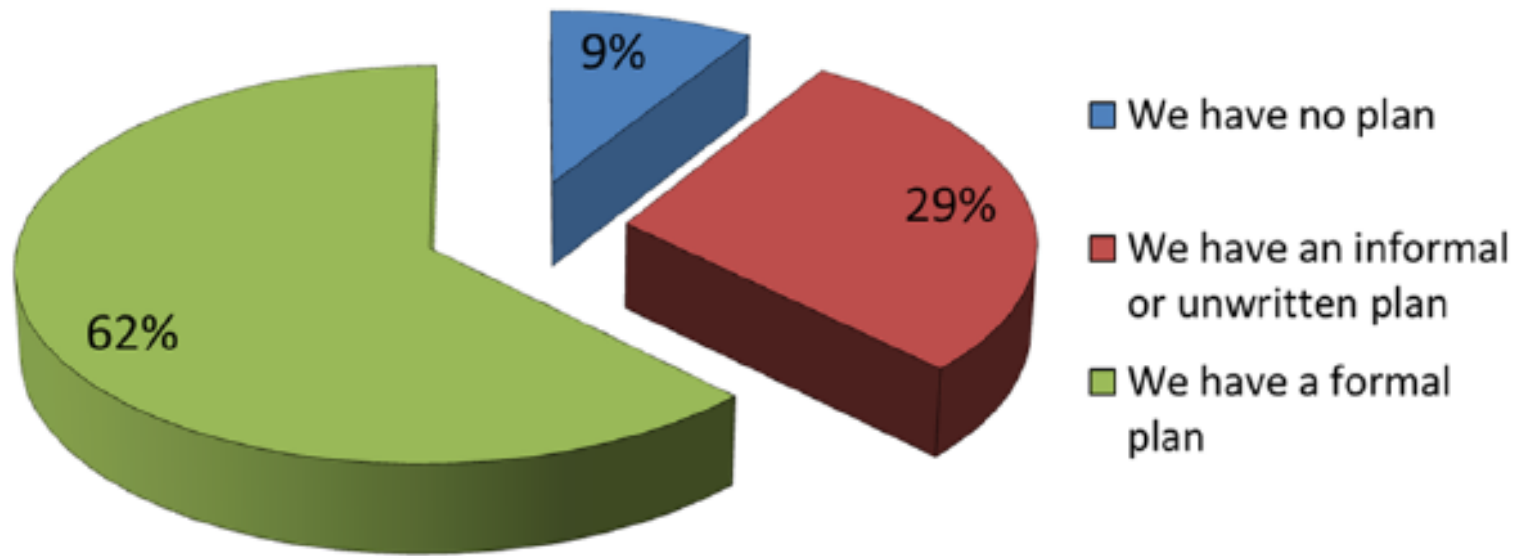
- Knowledge management
- Revisions
- Readiness for next drought including periodic review and testing

## Appendixes for the Management Plan

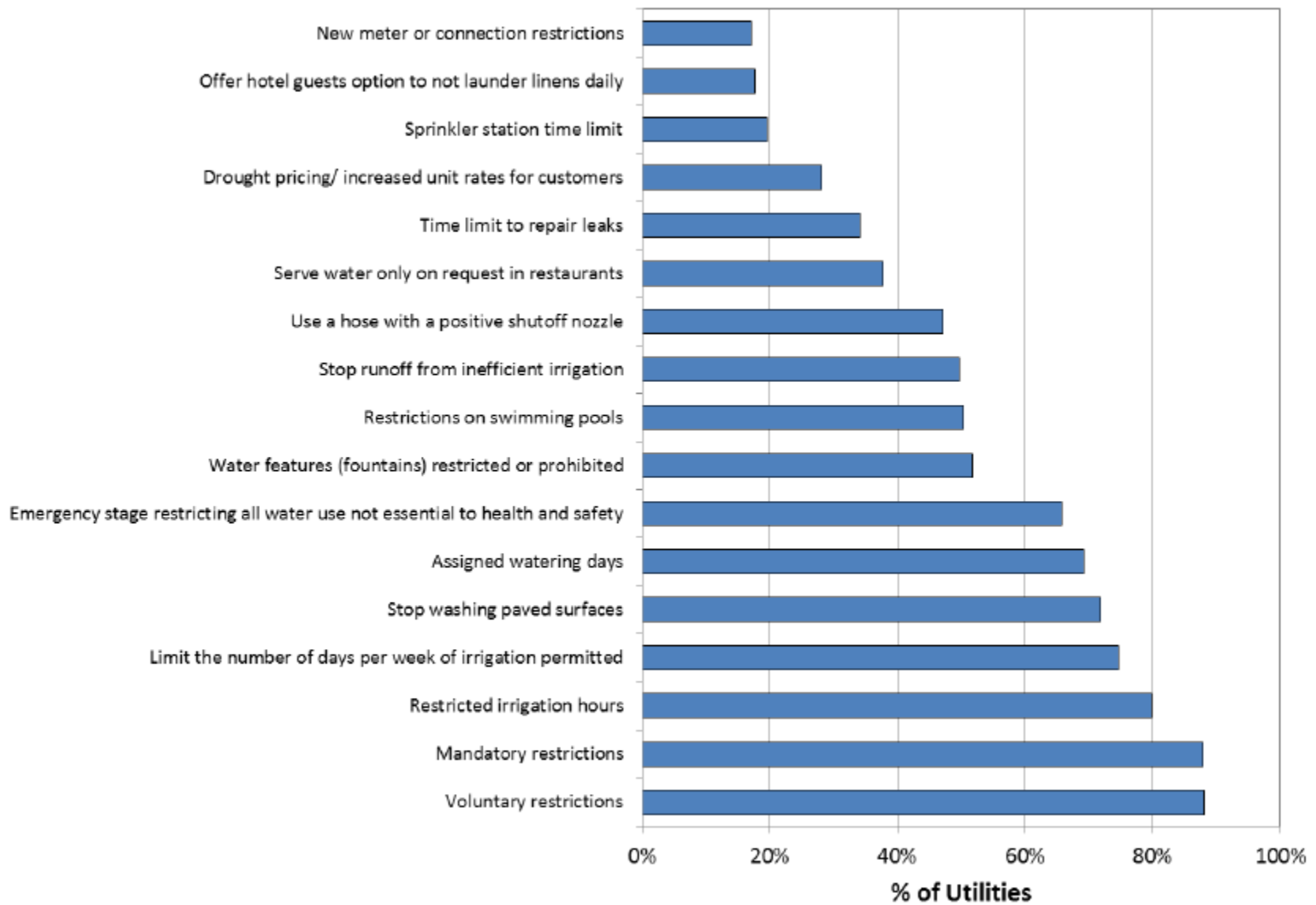
- Policies, regulations
- Prioritization – economic development, financing
- Non-conventional water resources
- Dry land farming , Agro-biotechnology
- Water availability (virtual water savings)
- Desertification, climate change, biodiversity
- Water reuse
- Contingent plan for concurrent firefighting during drought (**new**)
- Integrated water management

## Reference materials FYI

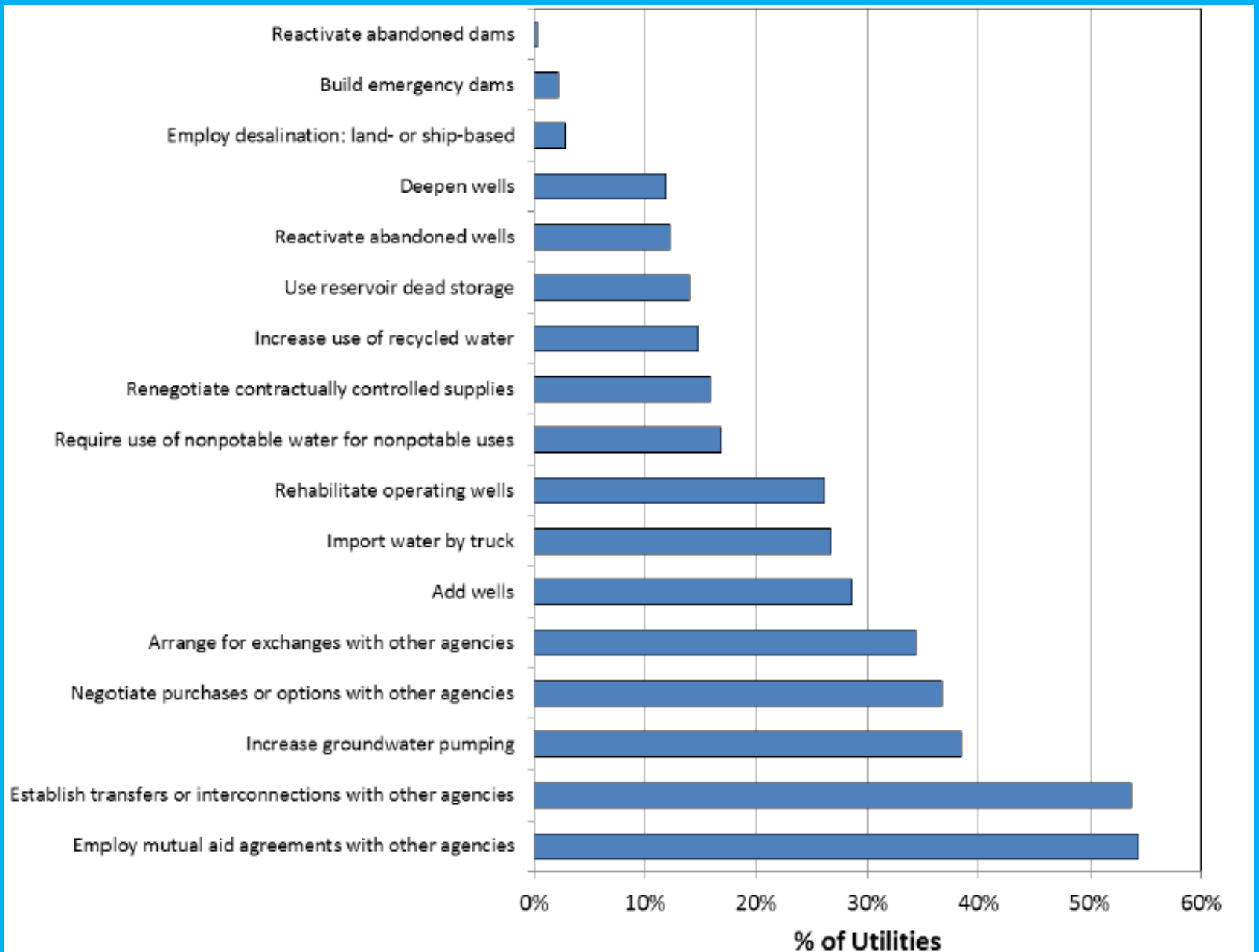
- The next few slides include information that may be of interest to workshop participants.
- The information was taken from the 2014 survey of Water Shortage Preparedness on US utilities. The survey was conducted by the American Water Works Association.
- Some of the tracking variables may be helpful.



Water shortage Contingency Plan Status (n = 483)

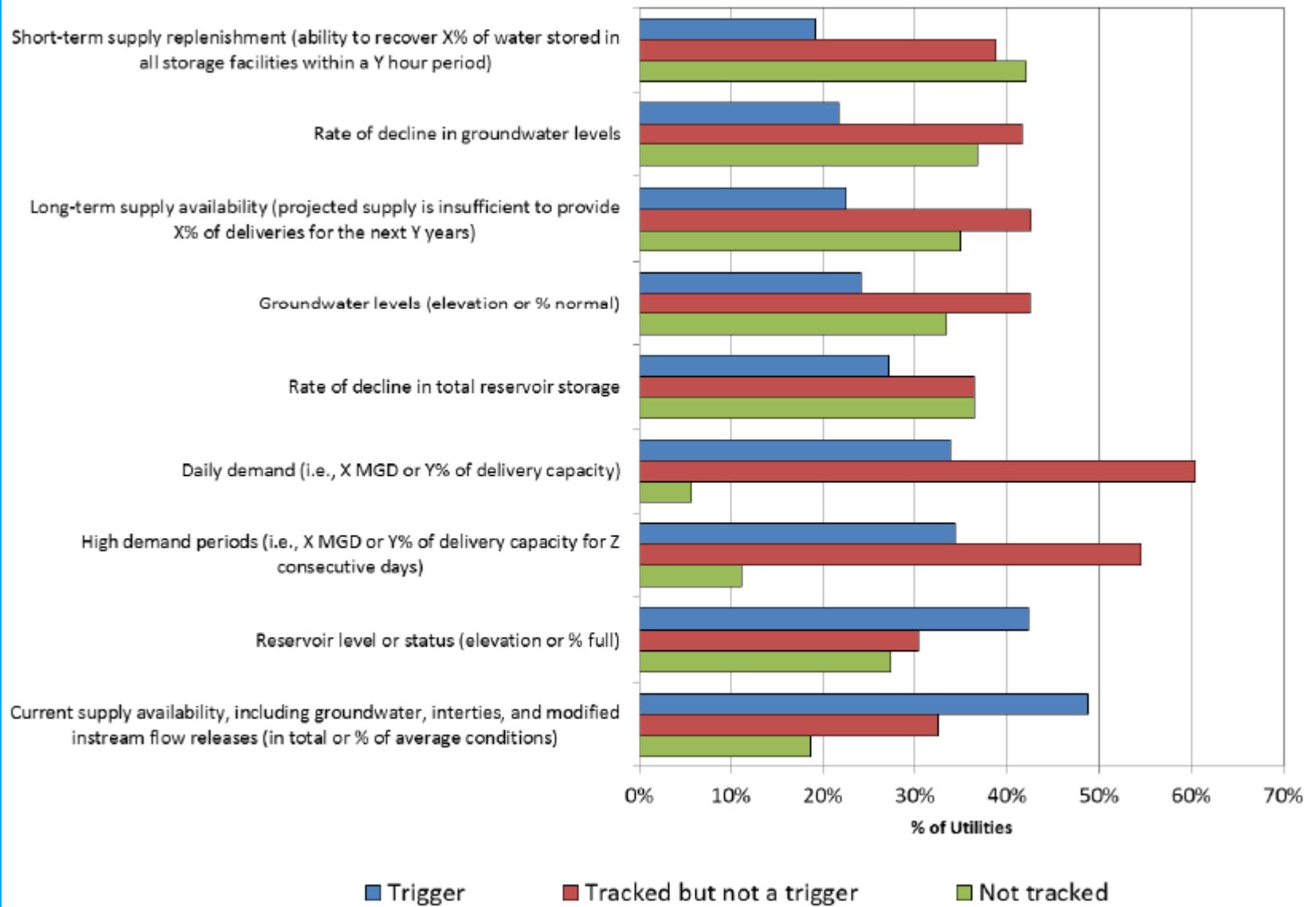


Water shortage contingency plan's demand-side components and their rate of implementation (n = 301 to 362)

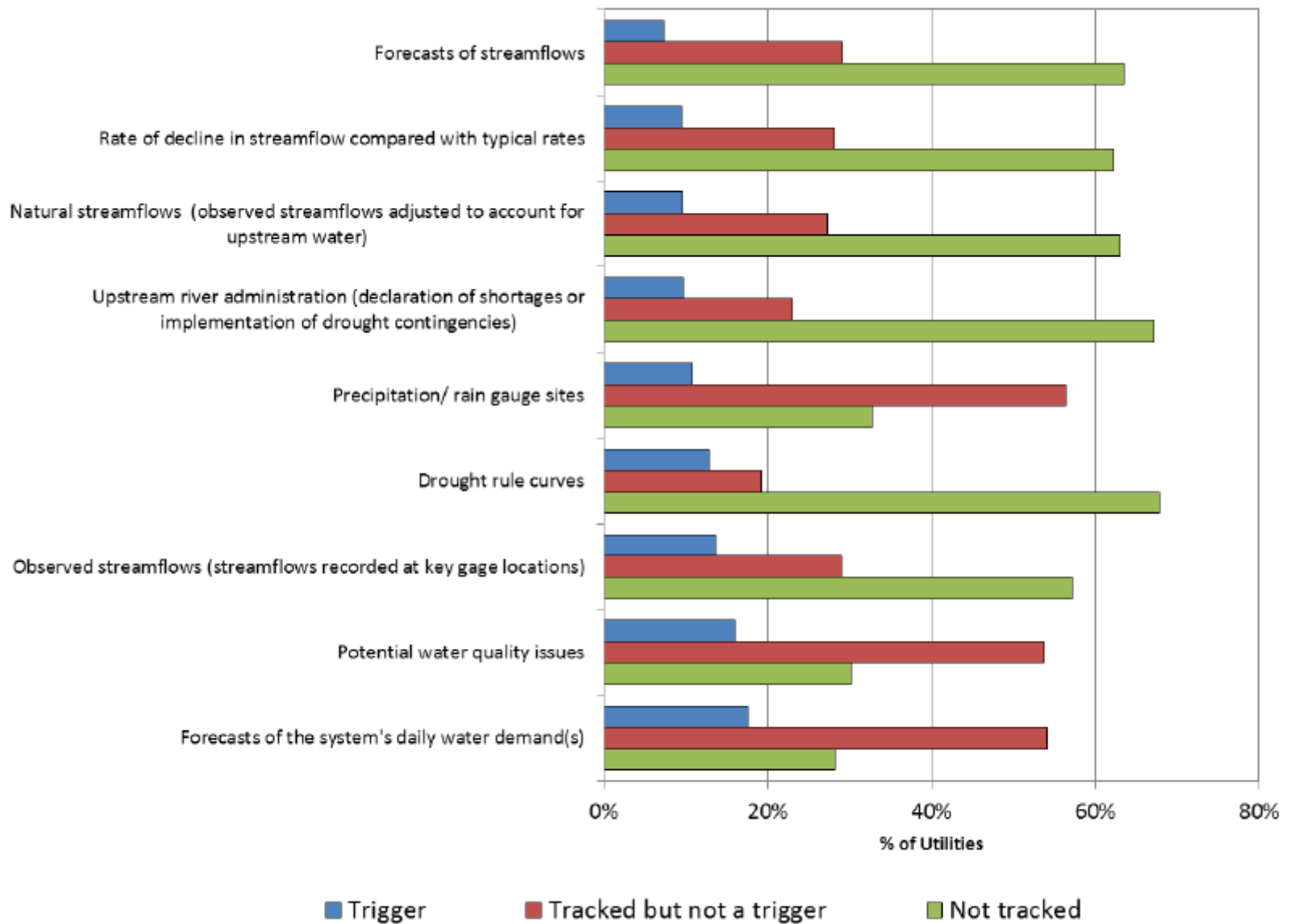


Water shortage contingency plan's supply-side components and their rate of implementation (n = 314 to 341)

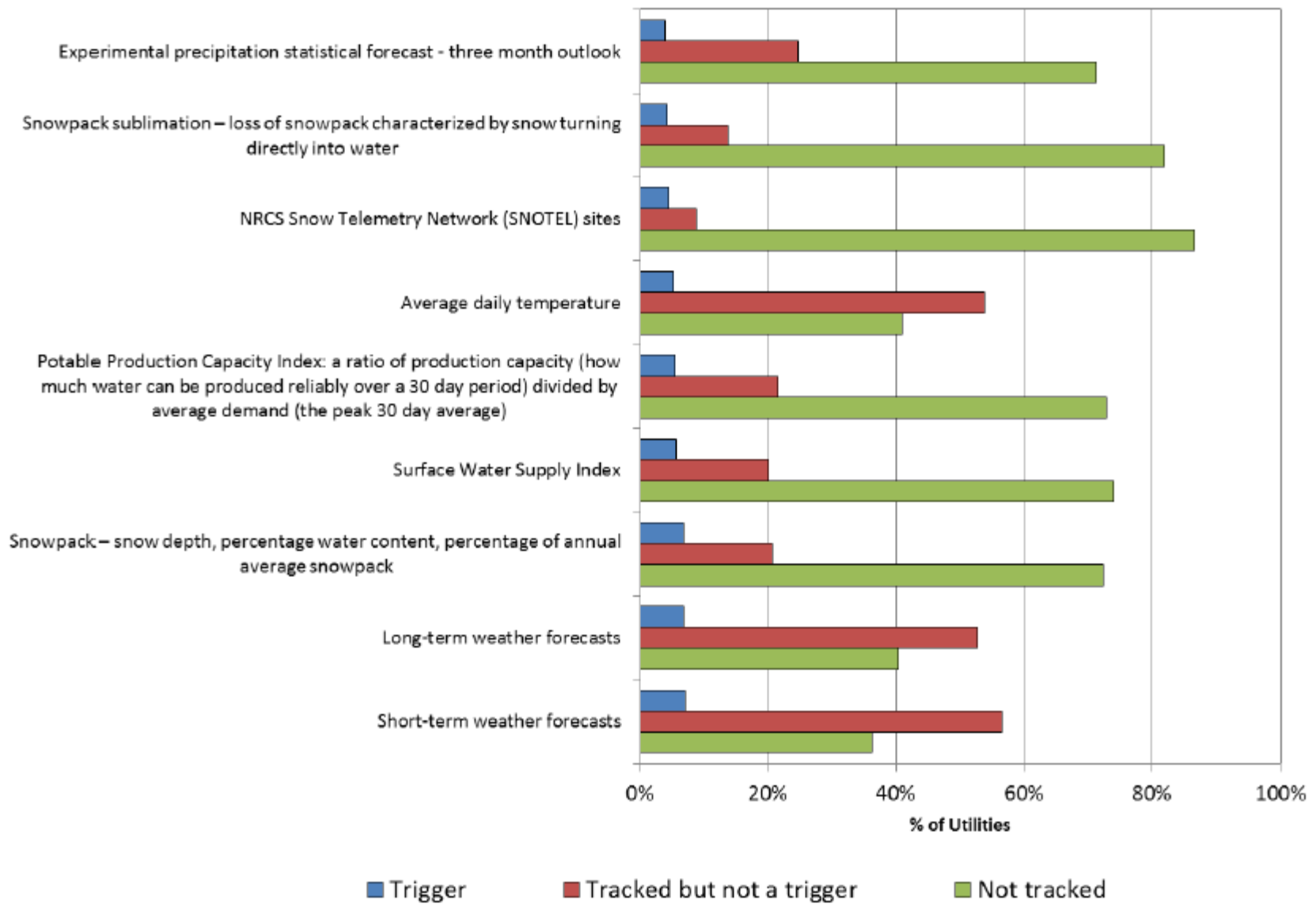




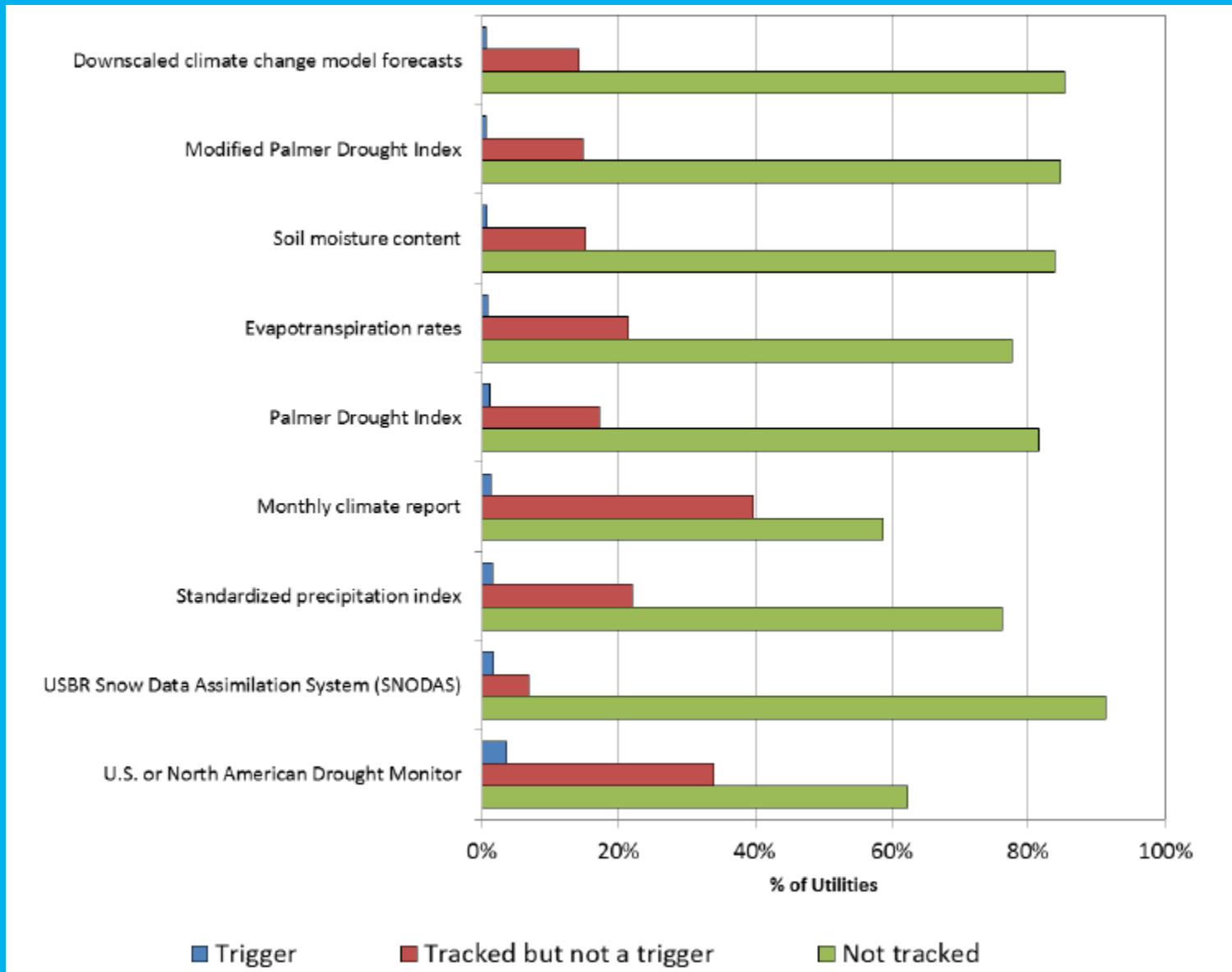
Variables tracked or used as a trigger for determining system water shortage status (n = 339 to 384) (1 of 4)



Variables tracked or used as a trigger for determining system water shortage status (n = 339 to 384) (2 of 4)



Variables tracked or used as a trigger for determining system water shortage status (n = 339 to 384) (3 of 4)



Variables tracked or used as a trigger for determining system water shortage status (n = 339 to 384) (4 of 4)

**Thank you for the opportunity to be involved. I am currently working on the following three manuscripts. You are welcome to contact me at [jwu@uncc.edu](mailto:jwu@uncc.edu).**

- Affordability of electric vehicles: environmental and economic considerations**
- Green energy from waste management facilities**
- The Energy-Water Nexus: Energy and Economic Considerations of Sustainable Integrated Water Management in Urban Areas**