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Project Teaming and Research Opportunities with George Mason University

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Bottom Line Up Front

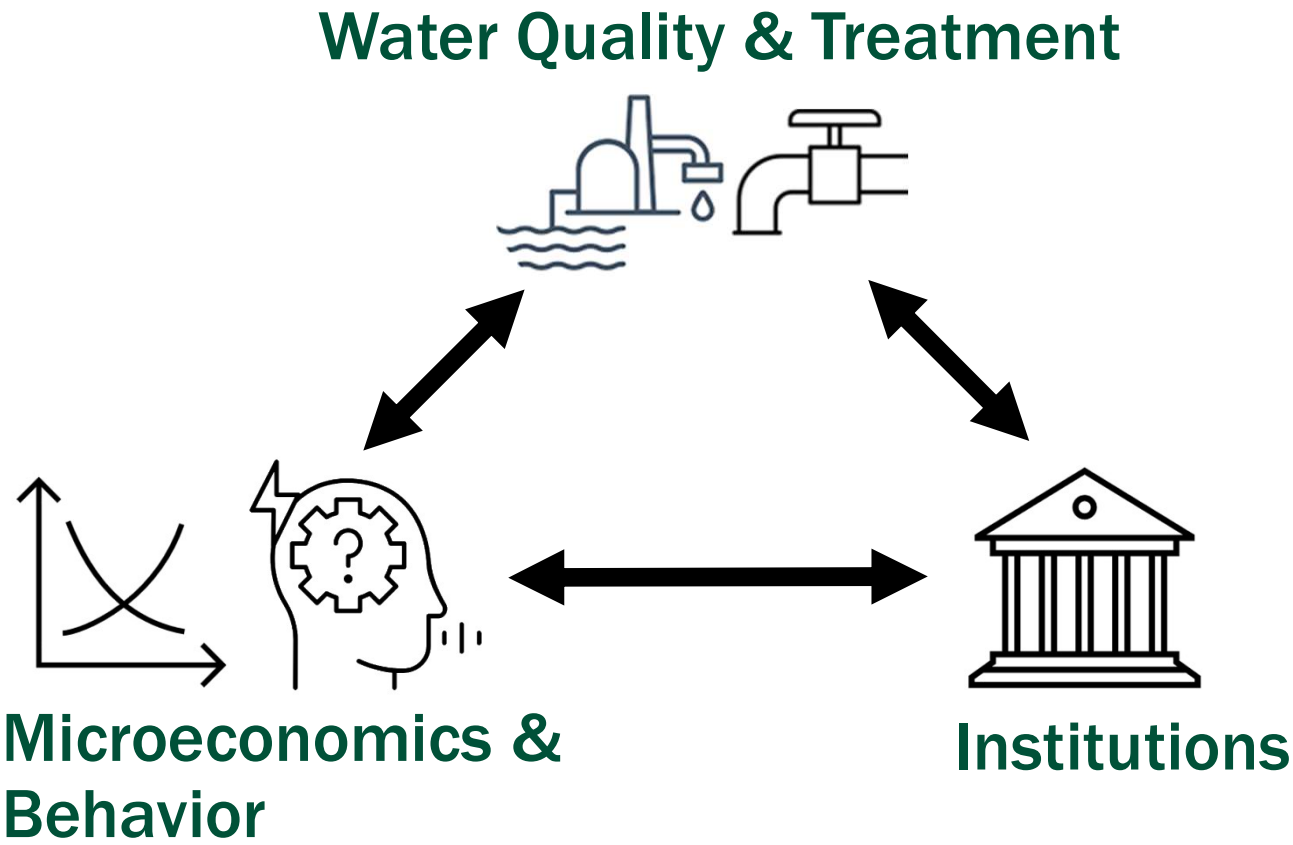
Yes!

We’d love to partner with you for basic and applied research

Outline

1. Who am I? Why am I talking to you today?
2. Example teaming in my research
3. Examples across CEIE
4. Ways to partner – the spectrum
5. How to team
6. Wrap up and questions

Research & Teaching Framework
Global-Local Water Lab (GLoW)

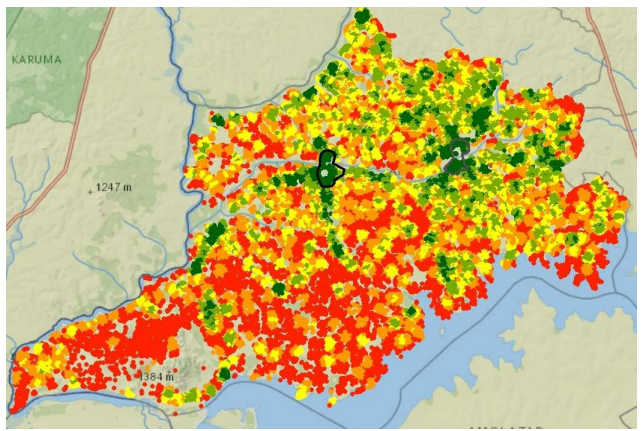


Approach

Field experiments

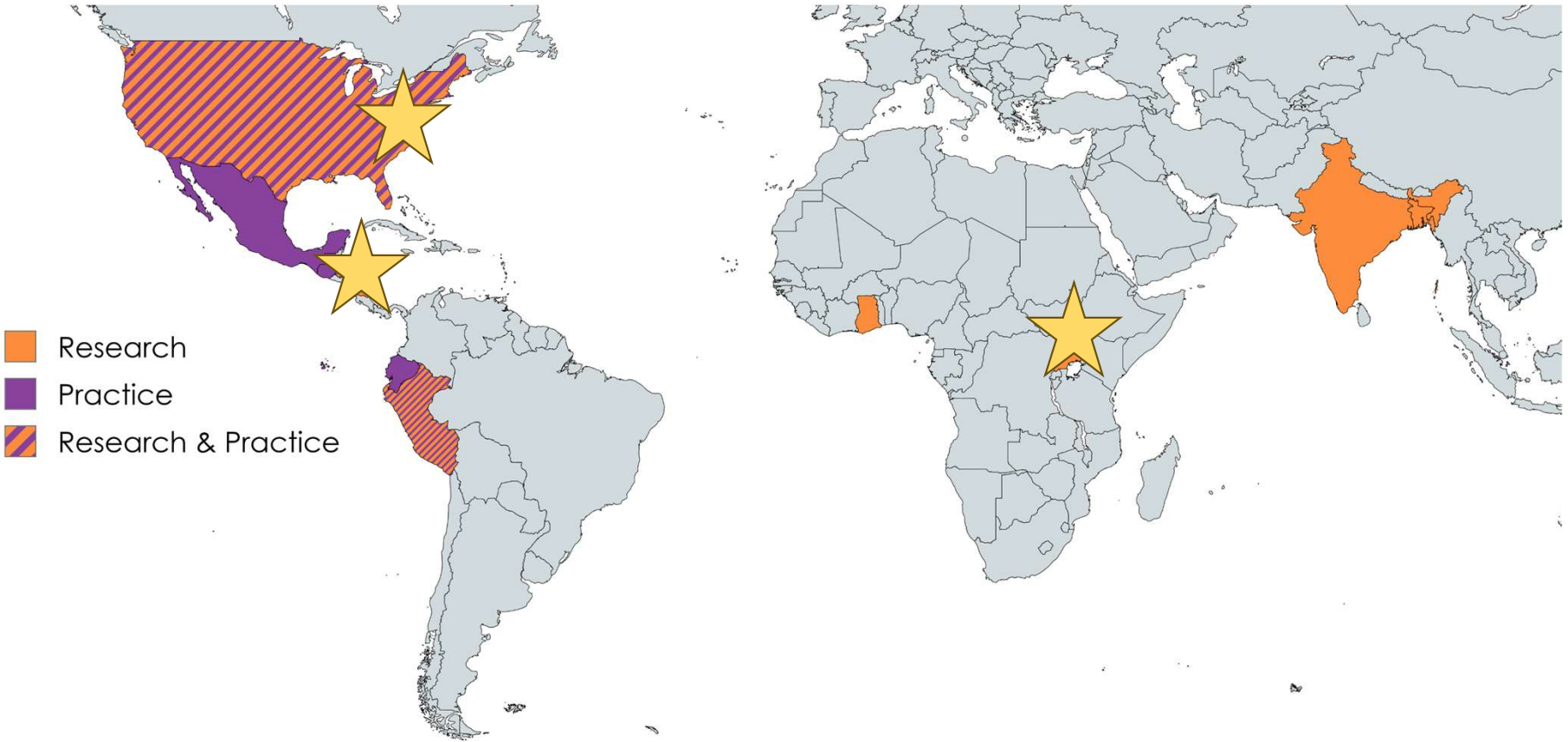
- Local partners
- Multidisciplinary teams

Stochastic & geospatial modeling



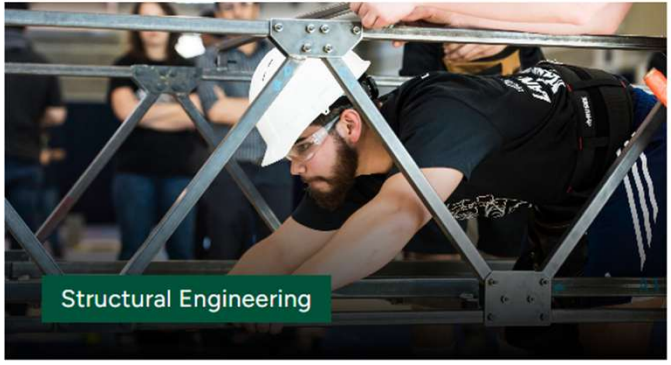
Water quality analysis

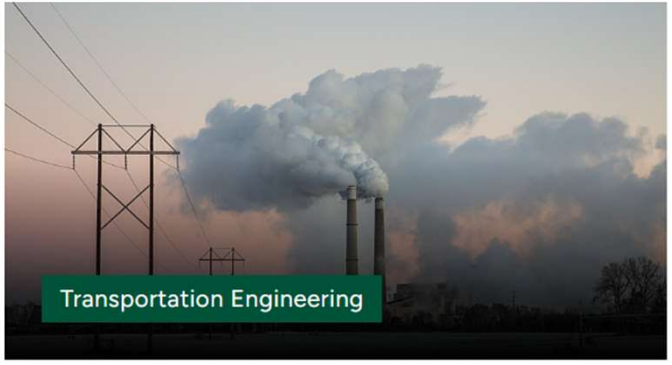
US & Global Experience



Research areas and labs

College of Engineering and Computing
SID AND REVA DEWBERRY DEPARTMENT OF CIVIL, ENVIRONMENTAL, AND INFRASTRUCTURE ENGINEERING
George Mason University®





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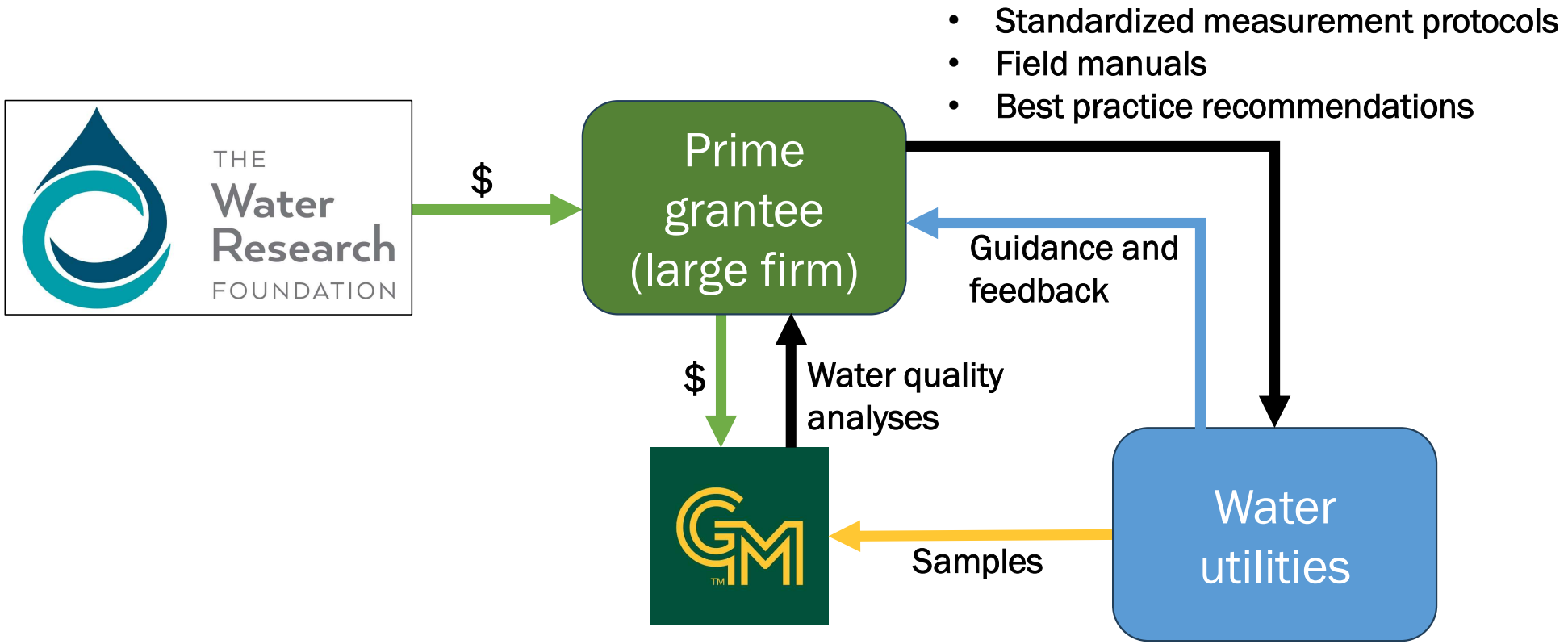
Project examples
Global-Local Water Lab (GLoW)

Maintaining a minimum disinfectant residual in distribution systems – The Water Research Foundation (in review)

Objective: To evaluate disinfectant measurement methods and disinfection byproduct formation risk for water utility regulatory compliance

- Funder: WRF via a large engineering firm
- Partner institutions:
  - 1 large engineering firm (prime)
  - 1 small engineering firm
  - 15+ water utilities
  - GMU CEIE is sub-awardee
- GMU collaborators
  - 1 CEIE faculty
  - 1 graduate student

Resource and information flows



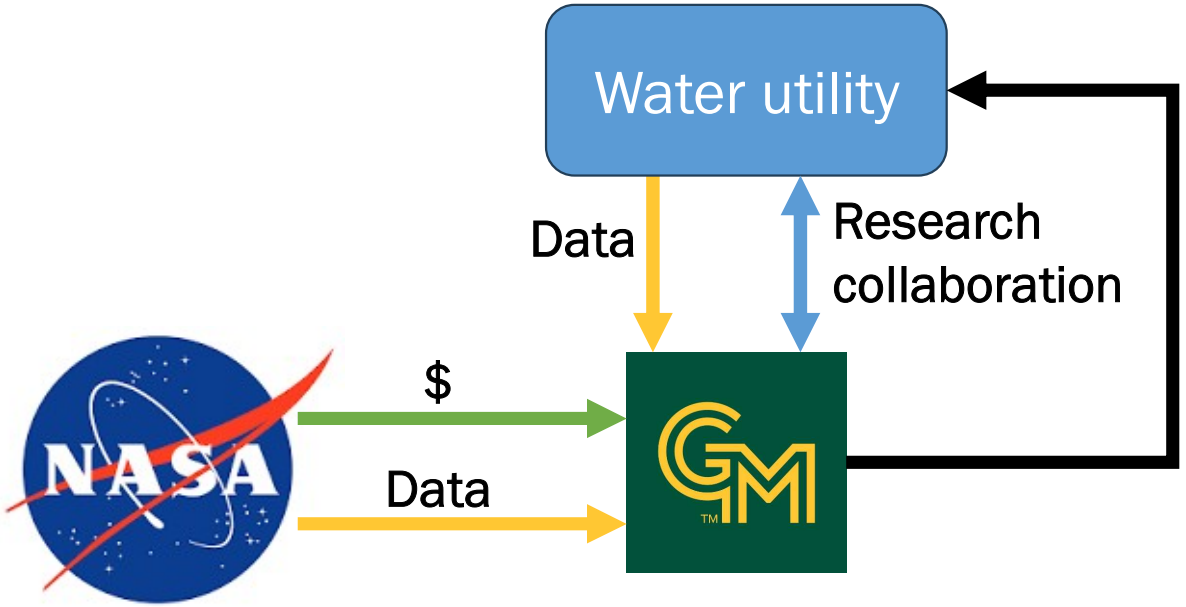
Cloudy with a change of algae – NASA (in review)

Objective: Leverage NASA data to enhance probabilistic forecasting of Harmful Algal Bloom risk and decision-making for water utilities

- Funder (prospective): NASA
- Partner institution: Water utility
- GMU collaborators
  - 2 CEIE faculty (water treatment, probabilistic modeling)
  - 1 College of Science / PEREC faculty (algal taxonomy)
  - 2 graduate students

Image: Potomac Conservancy

Resource and information flows

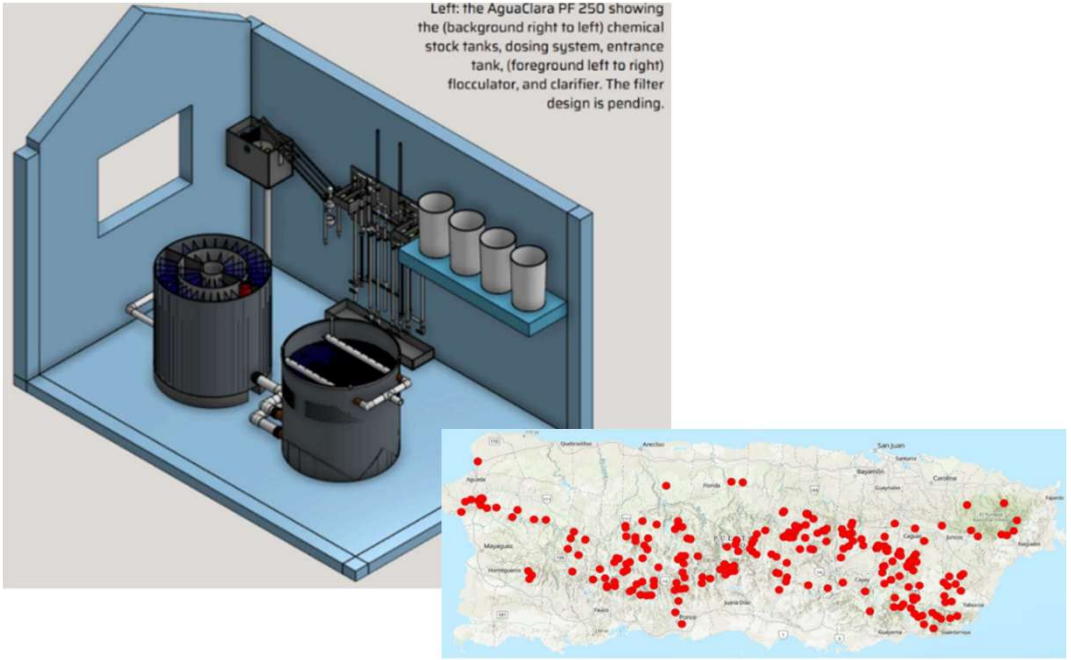


- Co-developed algae bloom predictive model to inform operational and CapEx decisions
- Reduce algae-related risk

Improving drinking water treatment in Puerto Rico – NSF ART

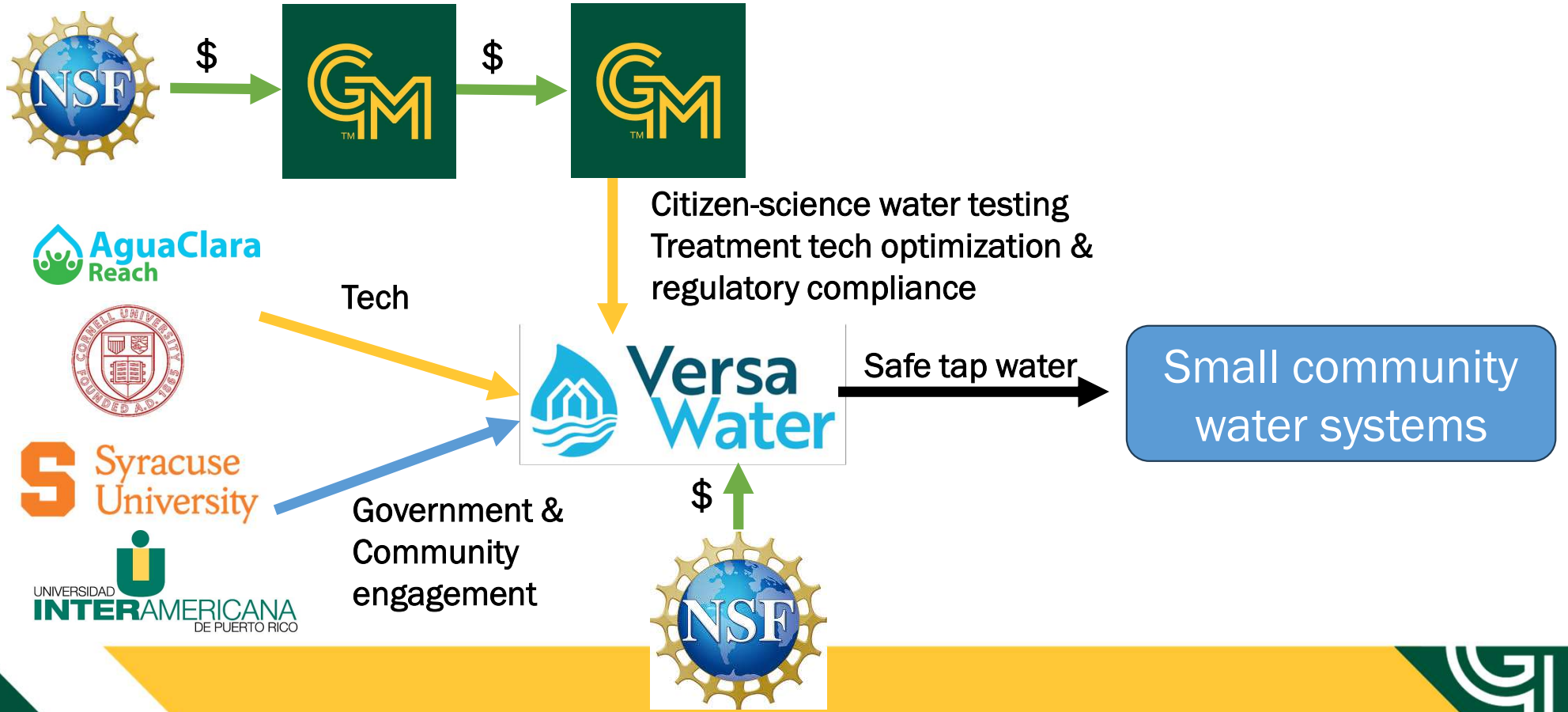
Objective: To identify the market for a new, low-cost water treatment plant technology and optimize performance with community operators

- Funder: GMU with NSF Accelerating Research Translation CoAg
- Partner institution: VersaWater
  - AguaClara Reach (501c3)
  - Cornell University
  - Syracuse University
  - Inter-American University of Puerto Rico
- GMU collaborators
  - 1 CEIE faculty
  - 1 graduate student



Left: the AguaClara PF 250 showing the (background right to left) chemical stock tanks, dosing system, entrance tank, (foreground left to right) flocculator, and clarifier. The filter design is pending.

Resource and information flows



Exploring the validity and reliability of field testing for residual chlorine in drinking water in Kenya, Uganda, and Malawi

Objective: To evaluate the effects instrumentation, source water quality, and staff training levels on chlorine measurements under field conditions

- Funder: None
- Partner institution:
  - 501c3 nonprofit in DC area
- GMU collaborators
  - 1 CEIE faculty
  - 1 graduate student

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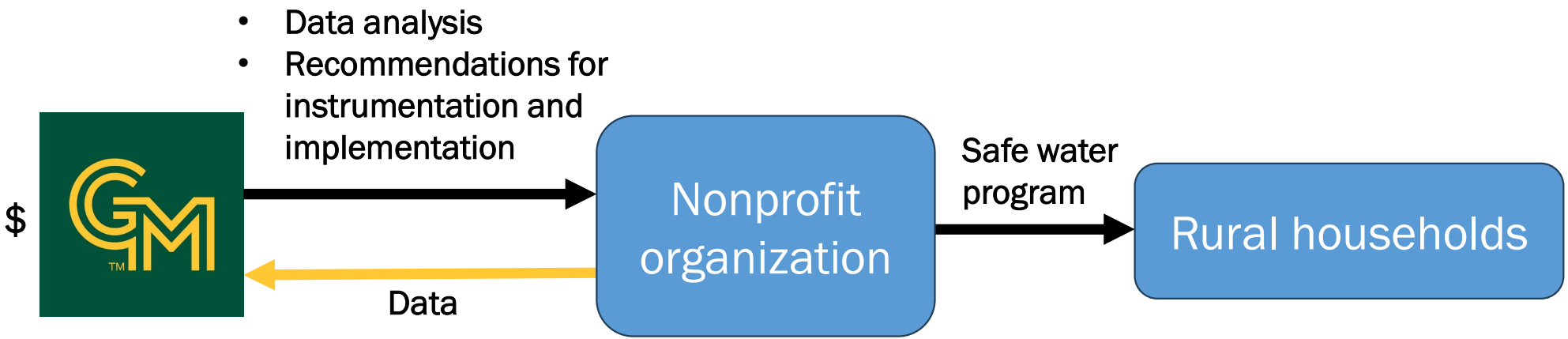
Resource and information flows



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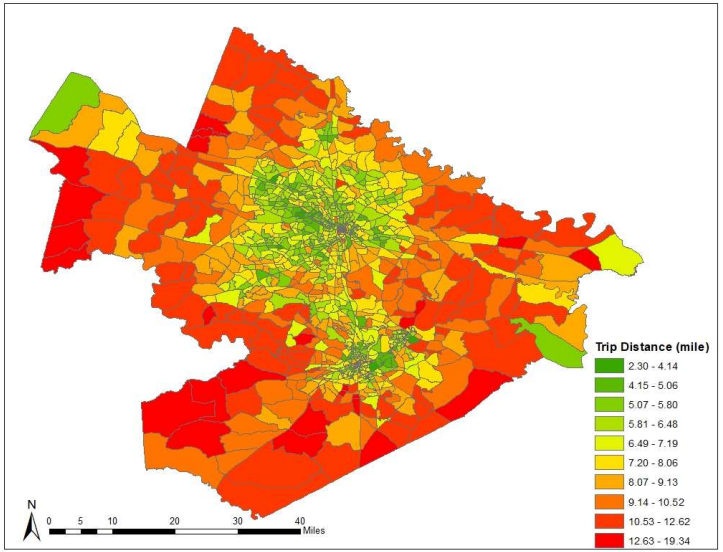
Project examples
Other CEIE Labs

Leveraging Connected Vehicle Data in Richmond, VA to Improve Travel Demand Modeling
Prof. Shanjiang Zhu – Transportation Planning & Engineering

Objective: To evaluate the potential for calibrating travel demand models in the Richmond metropolitan area using data from VDOT

- Funder: Virginia Transportation Research Council (VTRC) (VDOT)
- Partner institutions:
  - VDOT
  - Villanova University
- GMU collaborators
  - 1 CEIE faculty
  - 1 Department of Statistics Faculty
  - 1 graduate student



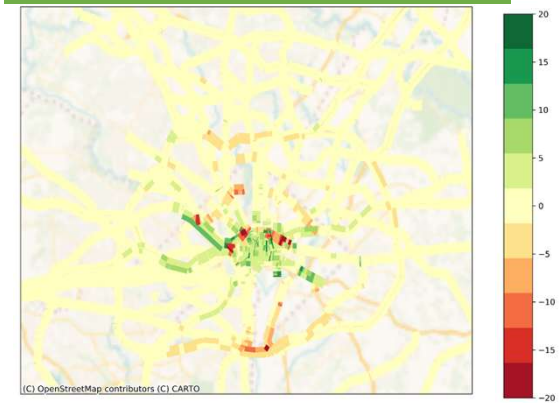
Average Workday Trip Distance by Traffic Analysis Zone

A Community-Centered Study of Road Pricing in Washington, DC
Prof. Lucas Henneman - Health and Air Quality (HAQ) Lab

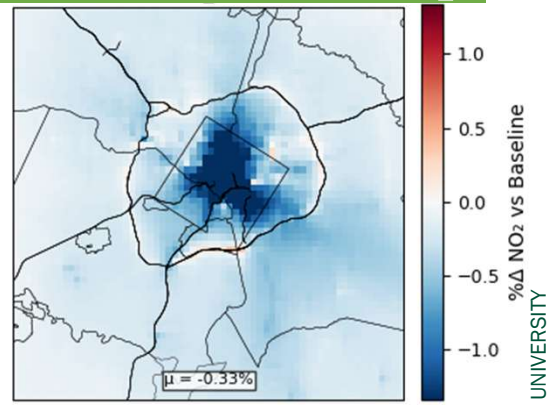
Objective: To quantify the health implications associated with road pricing schemes under consideration in Washington, D.C.

- Funder: NIH REACH Center
- GMU collaborators
  - Hoda Hallaji (PhD Student, CEIE)
  - Jenna Krall (College of Public Health)
  - Daniel Tong (College of Science)

Traffic Speed Changes



Air Quality Changes (NO_2)



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GW

Environmental Defense Fund


Prof. Burak Tanyu & Kuo Tian

Sustainable Geotransportation/Geoenvironmental Infrastructure (SGI) Research Group

- Has worked with 12+ private firms
- Field and lab projects include:
  - Testing materials and products (e.g., geotextiles and geosynthetics)
  - Sustainable highway systems and materials
  - Waste management (e.g., salt and combustion waste ponds)
  - Reuse of quarry and other geotech materials

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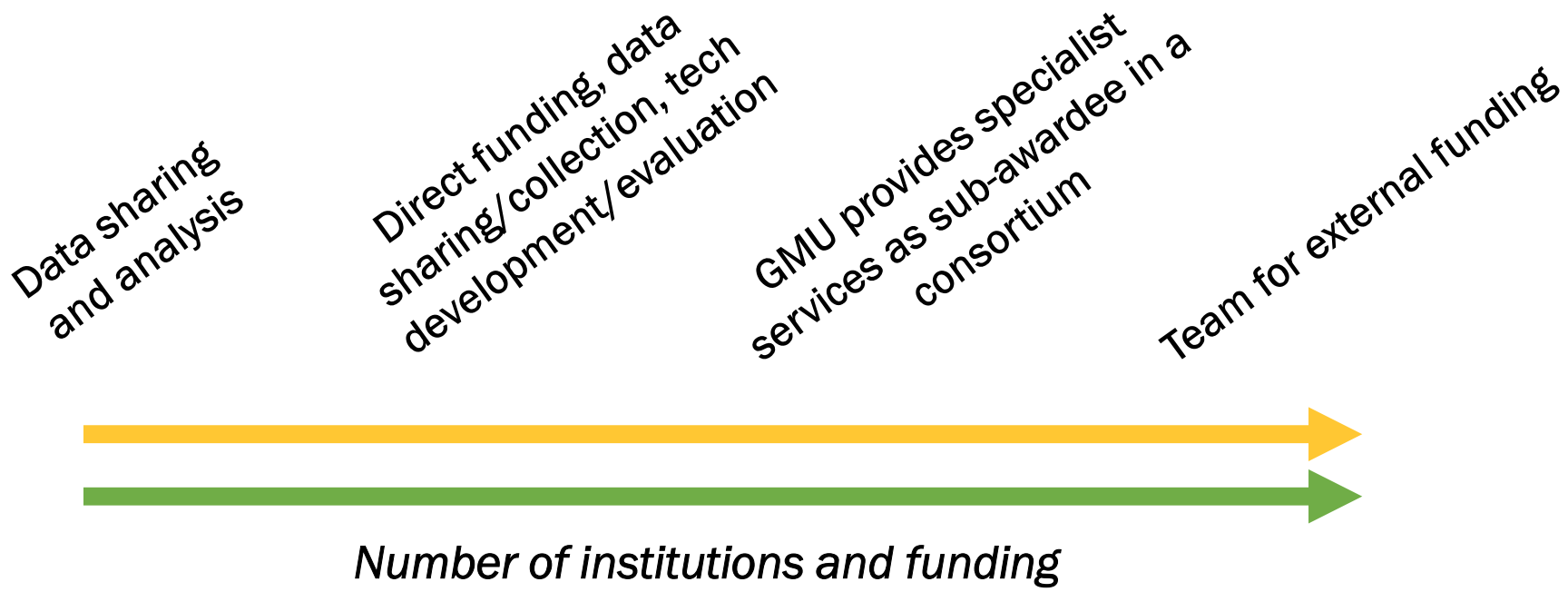
How to team

Project Teaming and Research Opportunities Spectrum



How to Team

- Let's start a conversation – get ideas going and opportunities emerge
- 2 ways GMU can receive funds:
  - Grant or contract – contractual, standard overhead (59.2%)
  - Foundation – structured as a gift, lower overhead (~6%, negotiable), no expressed expectation of work/deliverables
- GMU (and any university) have-to-haves:
  - Include students
  - Publish
- Consulting available on individual basis with GMU faculty

Conclusion

Yes! Let's team up

- CEIE breadth of capabilities and labs
- Teaming examples from Prof. Dan Smith and other CEIE faculty
- Spectrum of ways to team – if we can think of it, we can do it at CEIE and GMU
- Let's start a conversation
- Key steps to teaming

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Questions? Thanks!

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Extra slides

Disinfection byproduct formation mechanisms at the solid-liquid interface with chlorocyanurate tablets – 4VA@Mason (in review)

Objective: To identify the mechanisms by which DBPs are formed during water disinfection with solid chlorocyanurates and how to mitigate them

- Funder: 4VA@Mason
- Partner institutions:
  - Virginia Tech
  - Small water systems in Virginia
- GMU collaborators
  - 1 CEIE faculty
  - 1 graduate student

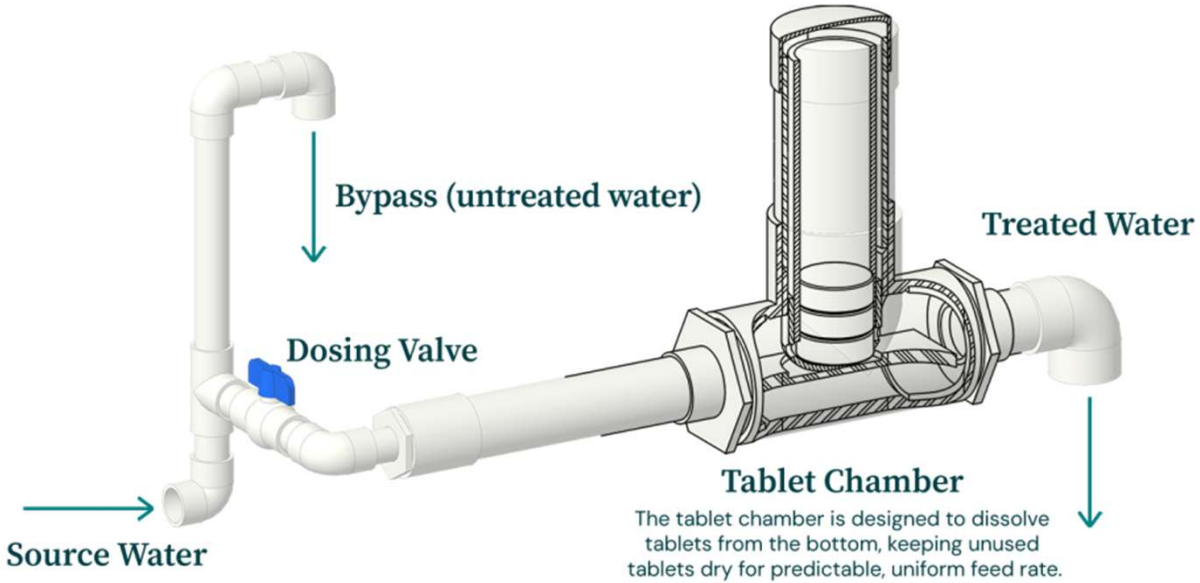

Image: Cova

Resource and information flows