



*Listening...*

*Learning...*

*Lasting*

# Annual Report FY2021

September 29, 2021

By: Kathryn Laskey, Lin Wells, and  
Tonya Thornton

College of Science  
School of Business  
College of Engineering and Computing  
College of Health and Human Services  
Schar School of Policy and Government  
Carter School of Peace and Conflict Resolution

# Agenda

- Vision and Approach
- Governance and Membership
- Goals and Accomplishments
- Challenges
- Budget Review
- FY22 Plans

# Vision

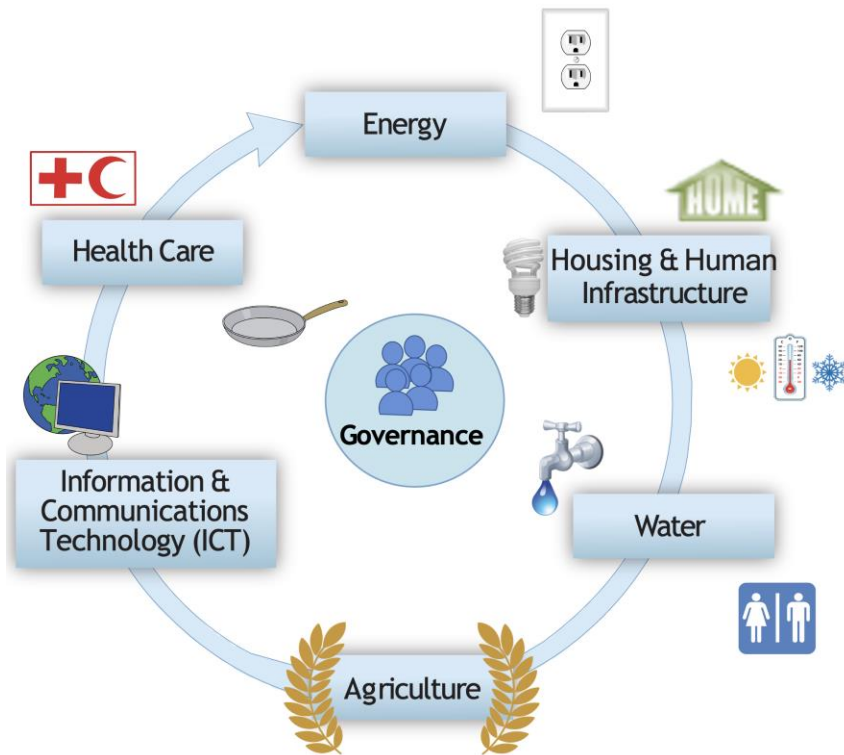
**Communities worldwide can create life-changing social and economic opportunities through locally led resilience and sustainability initiatives**



# Distinguishing Features

- Concentrating on bottom-up, community-led approaches
- Addressing resilience in comprehensive and measurable ways
- Integrating the impacts and policy implications of converging, accelerating technological changes
- Including practitioners with field experience

# Addressing 21<sup>st</sup> Century Resilience & Sustainability Challenges



Cross-cutting keys to success: narrative, systems thinking, shared knowledge, resources, education, logistics, digital enabling technologies

## • Challenges:

- Natural/Human-Induced hazards
- Political/Economic turbulence
- Accelerating technological, social, climate change, population growth, and poor policy choices

## • Addressing the Challenges:

- Community focused
- Knowledge-sharing networks
- Innovative economics
- Infrastructure integration
- Listening, Learning, Lasting

# Leadership



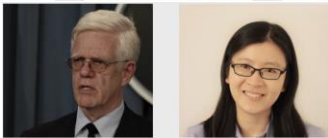
- Director: Kathy Laskey (CEC, SEOR – Decision science, AI)
- Assistant Director (Interim): Tonya Thornton (DPS – Emergency Management, Critical Infrastructure)
- Executive Advisor: Lin Wells (CEC, C4I – Public-Private Policy)
- Leadership Team:
  - Sara Cobb (Carter School – Narrative)
  - Paul Houser (COS, GGS – Energy, Water)
  - Rebecca Sutter (CHHS – Population Health, Social Services)
  - Richard Kauzlarich (Schar – Energy Policy, Grid Security)
  - Richard Klimoski (Business – Management and Psychology)
  - Elise Miller-Hooks (CEC, CEIE – Transportation, Infrastructure)



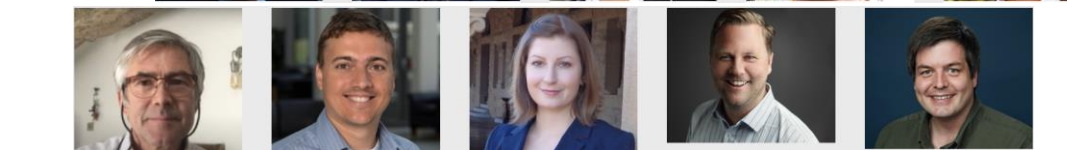
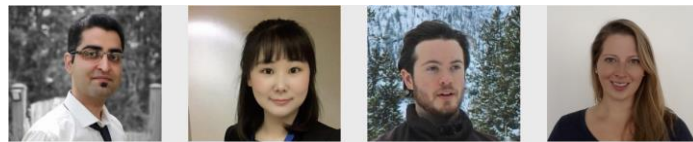


## Core Members

Representing 12 units at Mason and 6 outside organizations; 13 new since last report



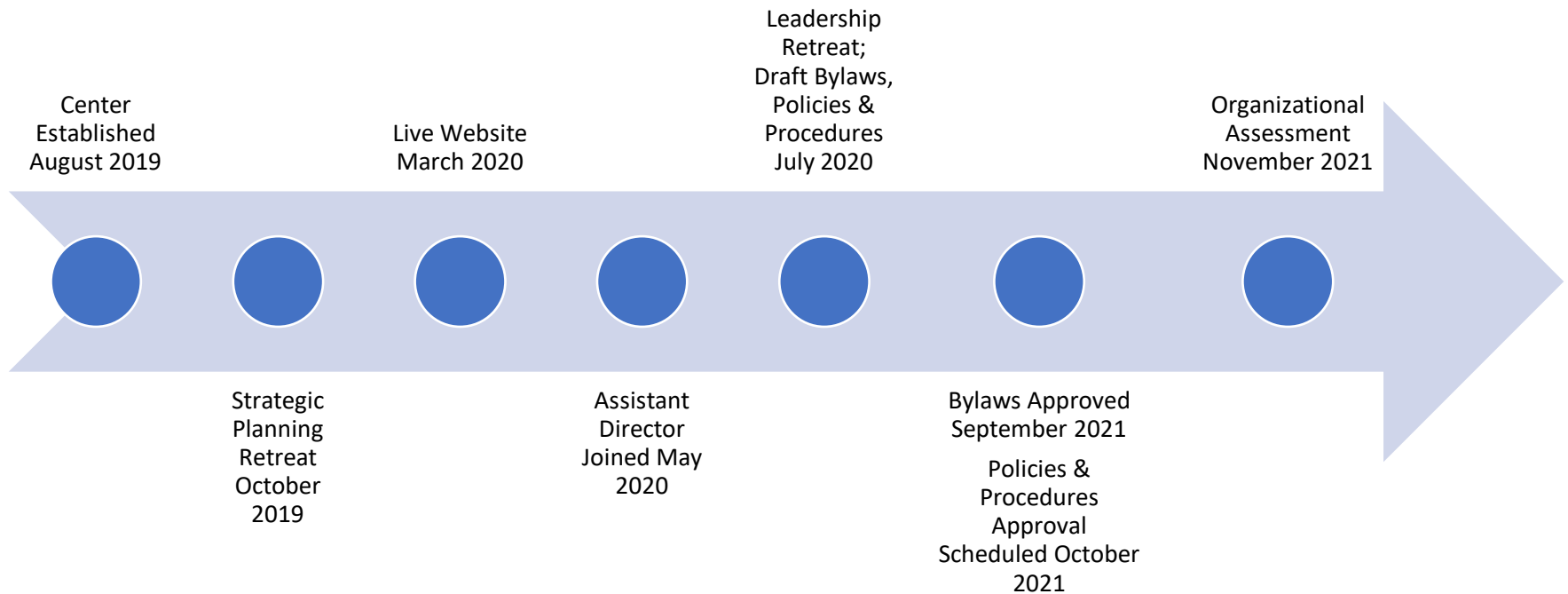
## Student Members (incomplete)



## Affiliate Members

# Organizational Timeline

Weekly Director and Assistant Director meetings / Weekly Student Worker meetings  
Monthly Leadership Team meetings / Annual leadership team retreats



Website: Continual updating and development  
Outreach: New members invited on an ongoing basis  
Underway: Advisory council and strategic partners discussion

# 5-Year Goals

- **Goal 1: Build Trans-disciplinary Research and Teaching Capacity**
  - Catalyze and grow committed trans-disciplinary research and teaching team to develop plans that make a difference for diverse communities, engage with stakeholders, and teach
  - Provide sustainable funding and effective facilities
  - Train a generation of trans-disciplinary, community-engaged researchers, teachers, and practitioners
  - Publish results
- **Goal 2: Develop Multiscale Research Framework**
  - Refine coordinating framework into a widely accepted standard model of community-led resilience initiatives in diverse environments
- **Goal 3: Support Plan Generation**
  - Help to develop plans for community-led, bottom-up, locally focused resilience solutions in diverse environments with specific, measurable, achievable, relevant and timely milestones
- **Goal 4: Support Solution Execution**
  - Provide evidence-based support to increase local capacity, develop local leadership, produce results, and build a trusted network of stakeholders to carry out further projects

# Outreach and Collaborations



- Within Mason
  - e.g., ISE, Office of Sustainability, Office of Emergency Management, B4BW
- Local, regional, and state government
  - e.g., City of Fairfax, County of Fairfax, VLGMA, NVRC, Governor's Broadband Office
- Nonprofits
  - e.g., People-Centered Internet, Global MapAid
- US and International Universities
  - e.g., UNM, UTSA, AMU, Keio, Ateneo
- Corporations
  - e.g., Widelity

# Proposal and Award Activity

- FY21
  - 11 active “flagged” awards approximating \$2.25M with \$508K in annual expenditures
    - Checking on others
  - 6 new awards approximating \$740K
    - Funding organizations included: NSF, NIH, NASA, DHHS, Army, DOC/Puerto Rico Science and Technology Research Trust, and People Centered Internet
  - 21 currently under review (\$15M), with 3 awarded but not under contract yet, and 9 rejected (\$6.7M)





# MASH-Pandemics

A Portal to Support Models for Assessing Strategies for Hospitals (MASH)  
Responding to COVID-19 and Other Pandemics

HOME

ABOUT

INSIGHTS FOR ACTION

TEAM

SWITCH POINTS

## HOW MASH-PANDEMICS CAN HELP HOSPITALS RESPOND TO COVID-19 CORONOVIRUS



This portal is designed to support hospitals and regional administrators in responding to the current COVID-19 pandemic and other disease outbreaks. Using mathematical modeling, we provide recommendations to help hospitals adapt and coordinate to meet demand surges.

### MASH-Pandemics can:

- > Recommend how to increase capacity by:
  - > providing alternative standards of care
  - > changing operations
  - > managing demand
- > Assess how hospitals can work together to build strong regional responses
- > Estimate and prioritize critical supply needs to mobilize supply chains and other external supports
- > Measure the evolving response capacity and capability of hospitals

Our prior research shows that hospitals only need to implement two or three strategies to maximize their capacity and provide acceptable services to their patients under surge situations. Repurposing hospital space and augmenting resources at the same time is key to success. We are actively working to publish results from the COVID-19 enhanced models to help in assessing various strategies and resource management approaches. Find results to date on the [INSIGHTS FOR ACTION](#) page.

### Switch points exist at which hospitals must introduce strategies for increasing capacity or fully dedicate to COVID-19 response to meet COVID-19 surge demand

Two key switch points can aid a hospital in coping with increasing COVID-19 patient demand, the first of which uses alternative standards of care (ASCs) (increased patient-to-staff ratios permitted and repurposing of nonmedical space) and the second designates nearly all medical space and staff for COVID-19 treatment.

# Embracing Change: Supporting Entrepreneurship in Puerto Rico



- “Teach the Teachers” course
  - Teaches support practitioners who mentor business owners & operators
  - Introduces enablers for resilient and adaptive business in changing environment
  - Develops learning materials and case studies tailored to business owners and operators

**ECHAR  
PA'LANTE**

**ENTERPRISING  
ISLAND**



Puerto Rico  
Science, Technology  
& Research Trust



**Center for Resilient and  
Sustainable Communities**

# School Security SIMEX™

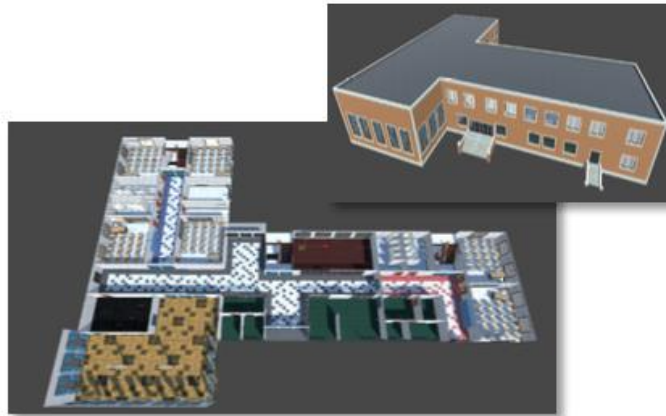


CYBERSECURITY  
& INFRASTRUCTURE  
SECURITY AGENCY



MITRE

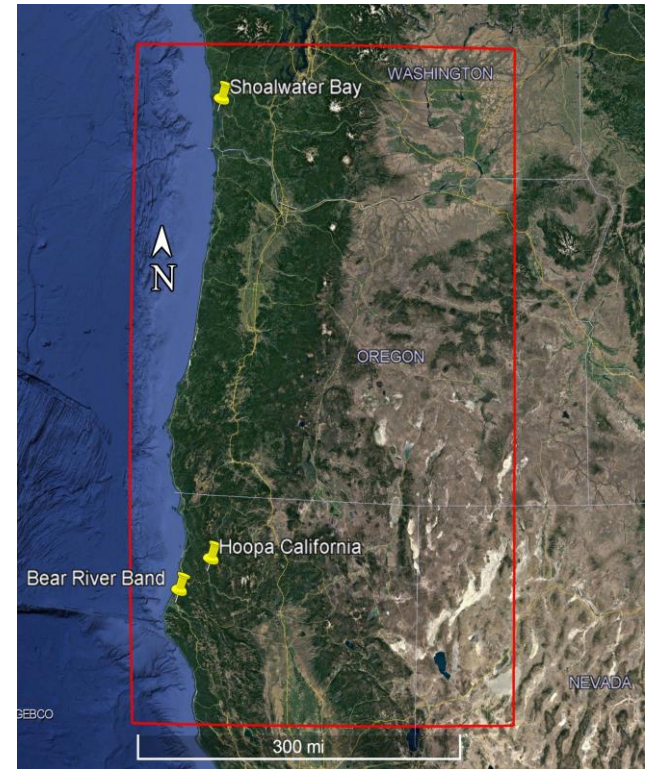
Mason CEC  
Mason CEHD



<https://www.cisa.gov/news/2020/12/11/cisa-identifies-data-driven-security-best-practices-k-12-schools-simulation>

# Creating Digital Opportunities in Native American Communities

- Support Tribal engagement to create digital opportunity
  - Form Tribal Resource Center
  - *Listen* first, technology later
  - Respect Tribal governance and levels of digital proficiency
- Build sustainability through mentoring and training
  - Develop tailored, replicable courses applying Design Thinking to creating digital opportunity
- Connect Tribes with funding opportunities
- Create and curate case studies



# Building Transdisciplinary Collegiality

- Seminar and brown bag series
- Virtual happy hours
- Student research interchange
- Research interest groups
- Brainstorming and team-building events focused on proposal opportunities



# C-RASC Research Investments

- Seed grant program
  - **An Adaptive Crop Forecast System for a Secure Food Supply in a Nonstationary World:** Yuan Xue (COS, GGS); Paul Houser (COS, GGS), Viviana Maggioni (CEC, CEIE), Tim Sauer (Math)
  - **Slow and steady wins the race: Storm sewer baseflows as an untapped opportunity to mitigate urban water pollution:** Kirin Emlet Furst (CED, CEC, CEIE); Celso Ferreira (CEC, CEIE), Greg Foster (COS, Chemistry & Biochemistry)
  - **Leveraging the Next NASA Mission to Improve the Monitoring and Forecasting of Coastal Hazards:** Viviana Maggioni (CEC, CEIE); Celso Ferreira (VSE, CEIE), Xinxuan Zhang (VSE, CEIE), Paul Houser (GGS) Tim Sauer (Math)
  - **Emergency Response Network for Critical Infrastructure Protection under Extreme Events: Data-Driven Network Approach:** Wenying Ji (VSE, CEIE); Fengxiu Zhang (Schar)
  - **Racial and Gender Disparities** in Pandemic Responses: Evidence from the Housing Market during COVID-19: Anh Pham (Schar); Jordan Neyland (Scalia Law School), Jin (Roc) Lv, Australia National University
- Graduate Research Fellows
  - **Babak Aslani**, SEOR, CEIE (Mentor - Shima Mohebbi, CEC; Edward Oughton, COS; Ran Ji, CEC) - Enhancing resilience against cyber and physical threats through novel framework for restoration and fortification of interdependent infrastructure networks
  - **Zhenlong Jiang**, CEC, CEIE (Mentors – Ran Ji, CEC; Wenying Ji, CEC; Fengxiu Zhang, Schar) - Improving resilience of coastal communities by monitoring and predicting/forecasting coastal hazards using satellite observations and advanced modeling techniques



# Challenges

Multiple simultaneous leadership transitions

COVID19 and Zoom fatigue – still a global shock

Currently no assigned physical space

Incentives for faculty with limited bandwidth to lead center activities

Widely dispersed team

Defining relationships with and interactions with other units (e.g., ISE)

Pressure to stay within disciplinary bounds

Administrative challenges with  
cross-unit funding  
proposal flagging

# Budget Review

- FY21 / Year 2 (Actual)
  - Awarded Amount : **\$226,000**
  - Carryover: **\$145,821**
  - Bonus Funding: **\$2,204**
  - Expenditures: **\$298,953**
  - Remaining Balance: **\$75,072**
    - Salaries + fringe: \$244,251
    - Seed grants: \$49,000
    - Other expenses: \$6,702
      - Travel, miscellaneous expenses
- FY22 / Year 3 (Projected)
  - Awarded Amount : **\$226,000**
  - Carryover: **\$75,072**
  - Bonus Funding: **\$2,000**
  - Projected Expenditures: **\$245,260**
    - Salaries + fringe: \$195,260
    - Seed grants: \$45,000
    - Other expenses: \$5,000
      - Travel, miscellaneous expenses

# FY22 Plans

## CROSSCUTTING ELEMENTS

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Community Focus

Knowledge Sharing

Innovative Economics

Infrastructure Integration

Research and Teaching

- Center development
  - Administration transition
  - Fiscal sustainability
  - Internal and external organizational engagement
  - Upcoming strategic planning retreat
- Research collaboration and proposal development
  - Brainstorming sessions and workshops
  - Mentoring program
  - STEM engagement
  - Proposal repurposing
- Educational and training initiatives
  - Minor in climate action
  - Graduate certificate in resilience
  - Webinars and symposia

# Upcoming Events

- October 2021 – Mason’s Institute for a Sustainable Earth’s 17 Rooms Initiative
- October 2021 – STAR-TIDES Annual Tech Demo (virtual)
- December 2021 – International Association of Emergency Managers Symposium Regions 3’s Annual Symposium
- March 2022 – American Society for Public Administration’s Annual Meeting
- April 2022 – Mason’s Center for Energy and Science Policy Annual Energy Forum

# STAR-TIDES 2021

## STAR-TIDES: Sharing To Accelerate Research – Transformative Innovation for Development and Emergency Support

- 15<sup>th</sup> Annual capabilities demo  
October 18-20, 2021
- Virtual event
- Theme: Building Sustainable Resilience in Support of SDGs
- Registration link:  
<https://c-rasc.gmu.edu/event/star-tides-demo-mason/>



# Year 3 Objectives

- Smooth leadership transition
- Increase proposal submissions
- Increase publications
- Form additional external partnerships
- Collaborate with other institutes and centers



# Thank You and Questions

