

# Operationalizing Resilience in Water Utilities

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# Agenda

- 1 Background and Challenges
- 2 Framework for Operationalizing
- 3 RUC Vision
- 4 MD-WASD's Path to Resiliency





# Introduction and Background



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## Increasing number of challenges

Climate Change

Aging Infrastructure

Regulatory Compliance

Workforce Development

Limited Funding

Resource Depletion

Reliable Data

Accelerated Growth

\$13B+ CIP

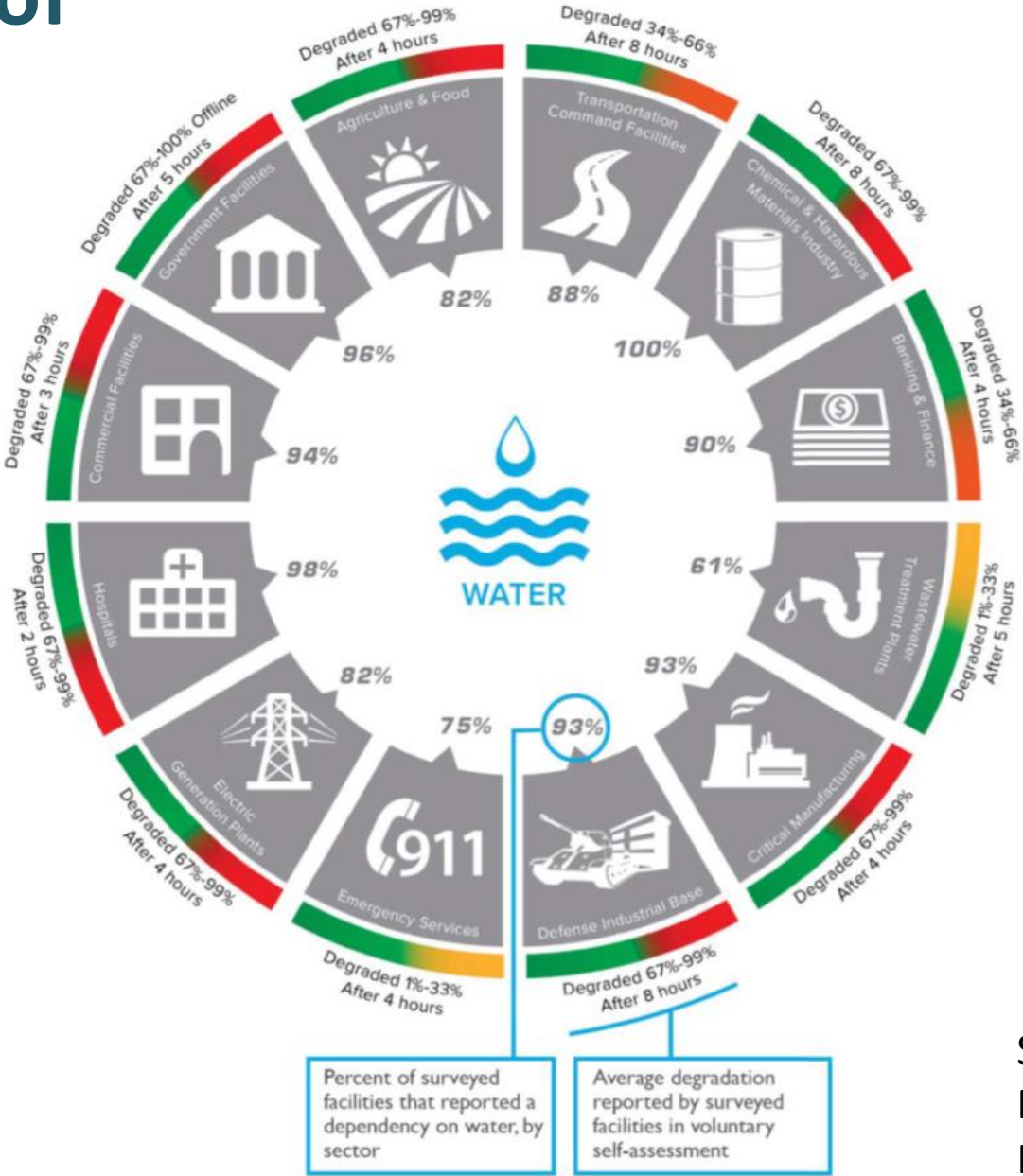
Operation Optimization





# Degradation of Services

Why resilience is a requisite ?



Source: NIAC Water Sector Resilience Final Report and Recommendation:  
Draft/Pre-Decisional

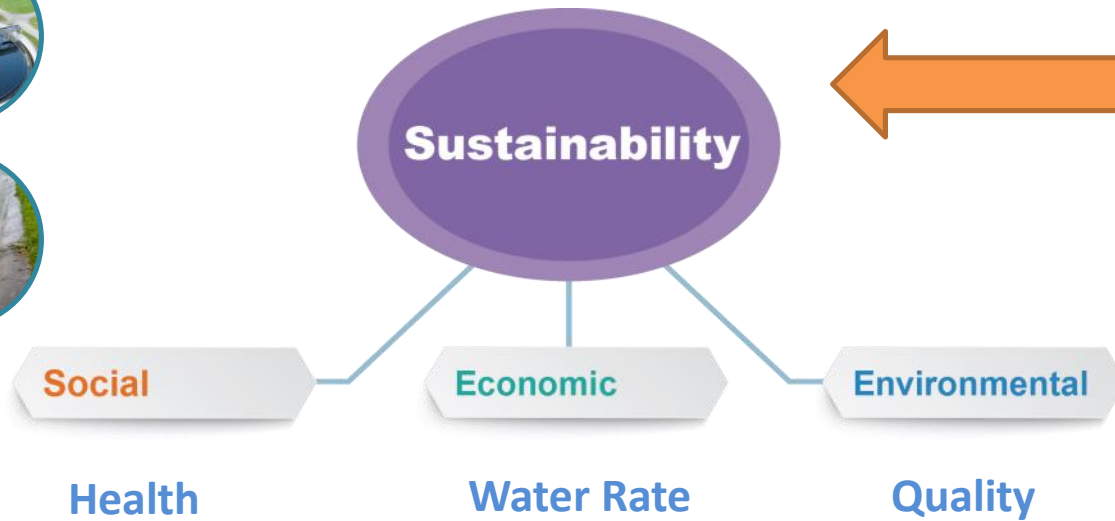


# Customers Expectations





# Customers Expectations



## Resiliency

Resilience is the ability of an asset or system to withstand an attack or natural hazard without interruption of performing the asset or system's function or if the function is interrupted, to restore the function rapidly

**Identify:**





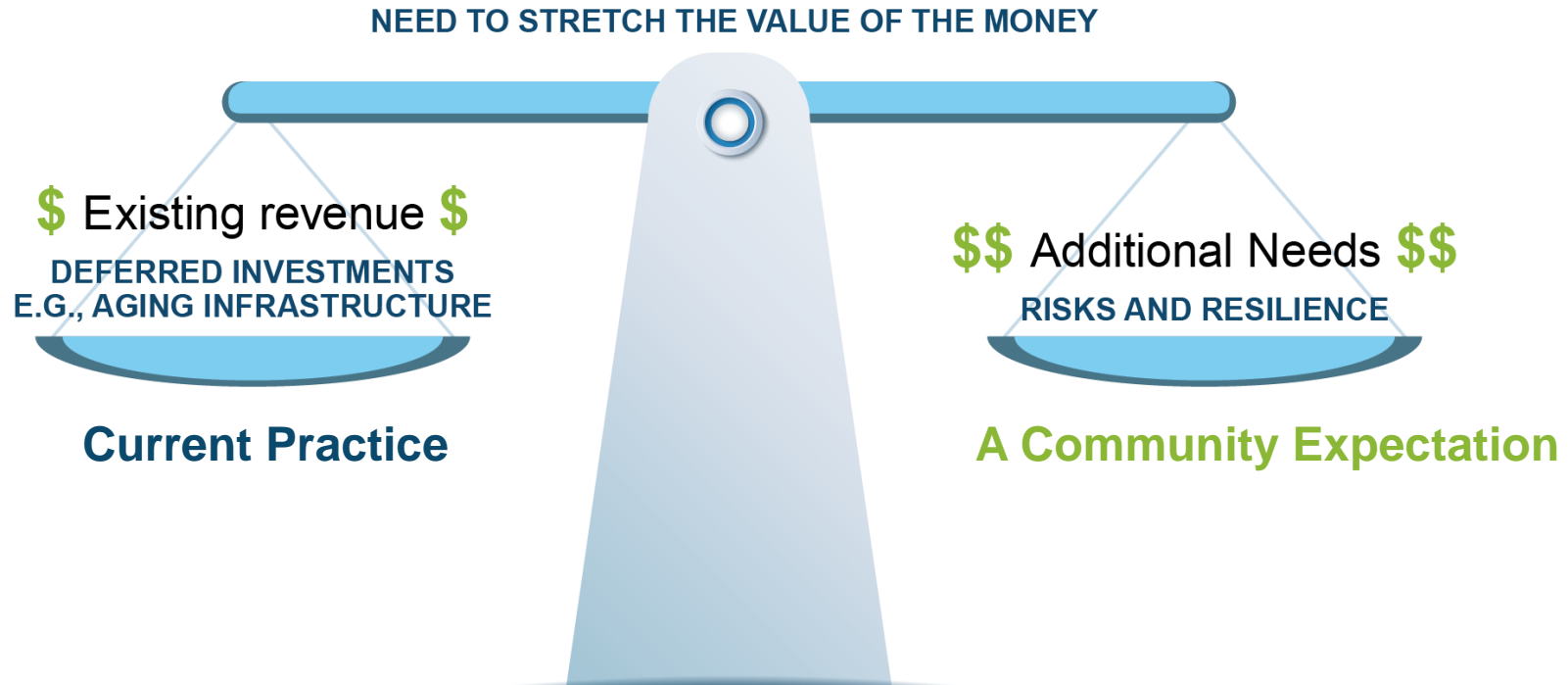


# Limited Funding – Stretching the Dollar Balance CAPEX and OPEX

## Added Expectations

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# RUC Vision

- How do we operationalize?
- How do we reduce & mitigate risks & enhance resilience



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# RUC Partners and Roles



## Academia

Innovation, research and development

- Dealing with public health. Trial and error is not feasible
- Opportunity to collaboratively engage in lab-scale studies, pilots, pursue research grants

## Professional Organizations

- Best management practices and industry standards
- Training and education of workforce
- Advocacy and policy development
- Networking and engagement

## Water Industry

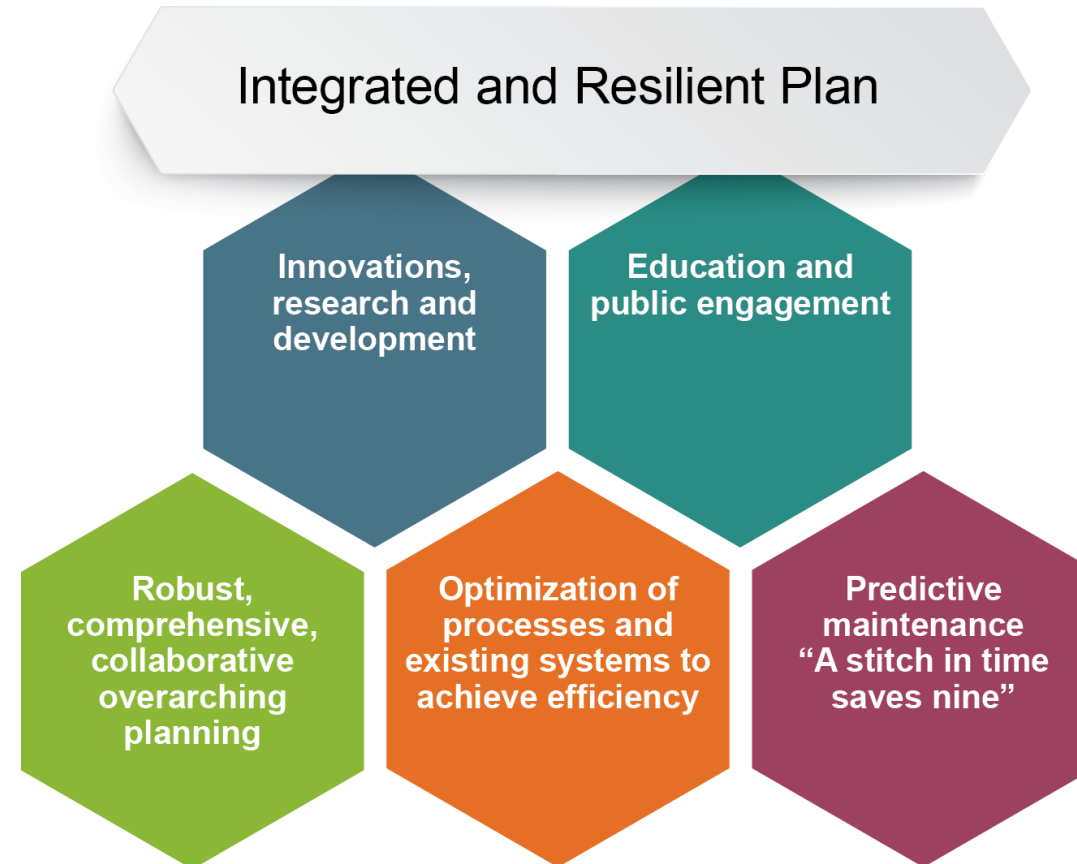
- Innovative & comprehensive solutions
- Holistic approach to incorporate resiliency from planning to operations
- Tech talks

## Utilities

- Regional scorecard
- Quarterly roundtable meetings
- Exchange of resources and materials
- Preparedness Drills
- Share best practices and lessons learnt
- Interlocal Agreements

# Resilient Utility - How will we get it done?

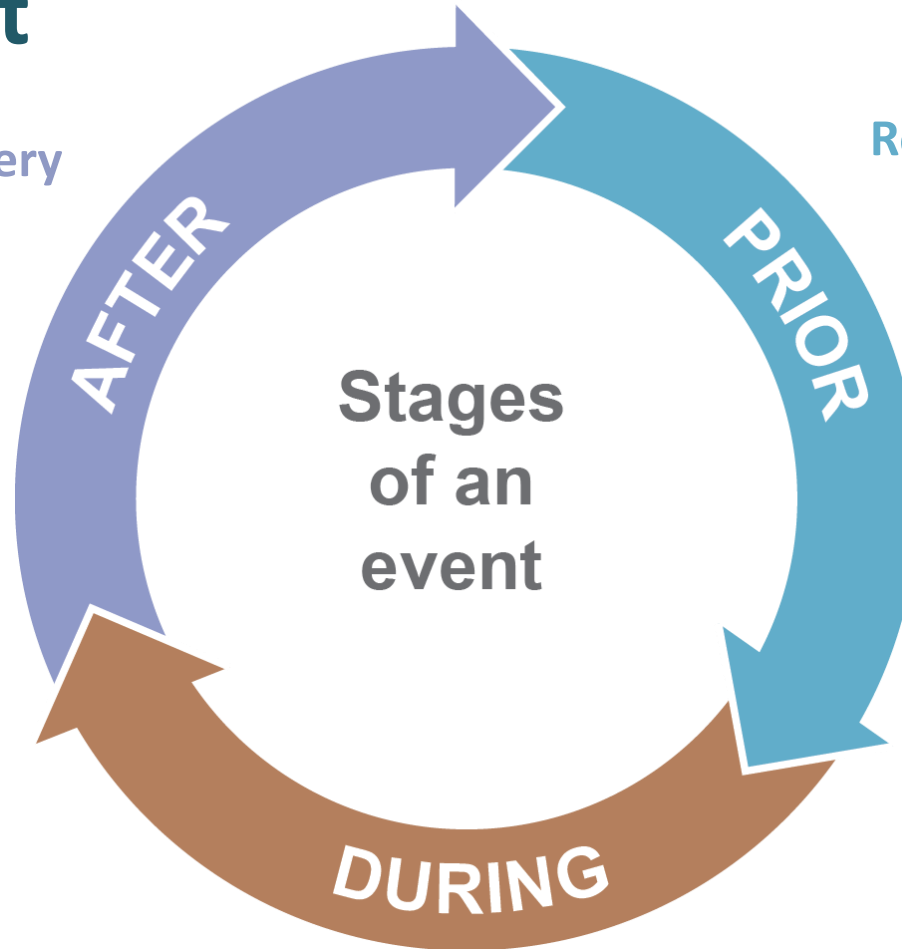
RUC mission is to provide a platform that will serve as an incubator for:





# Becoming Resilient – Requires Continued Attention After the Event

**Rapid Recovery**  
Ability to adapt and learn from an event. Better preparedness.



**Robust & Flexible**  
Able to rebound back from small, daily disruptors. This is part of the operational stability. Ability to keep absorbing shocks and keep responding.

**Resourceful & Actionable**  
Ability to manage an event as it unfolds. Sound action plans / alternatives to put in action.



# How is Miami-Dade Water & Sewer getting it done? Through Collaboration & Partnerships

## Department of Energy

H<sub>2</sub>O Energy Nexus



U.S. DEPARTMENT OF ENERGY  
CHP Deployment Program

## US Environmental Protection Agency

Climate ready utility

Effective utility  
management

10 Attributes

## Industry Standards

J100 AWWA Standard for  
risk and resilience  
management of H<sub>2</sub>O and  
WW systems

ISO certifications

Utility of the future

Envision

## Regional Scorecard

Develop Common:  
Terminology, metrics,  
consistent methodology  
to support decision  
making in allocating public  
and private resources to  
reduce risk and critical  
infrastructure

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# Becoming a resilient utility

## Resiliency Plan



Provide a compliant, reliable, resilient, & flexible system to **respond to catastrophic events**

## Energy Efficiency



Integrate “Green & Grey” infrastructure for **energy optimization**

## Effectively Managed Utility



Achieve **economic and environmental sustainability**

Maintain **ratepayer affordability**

## Engineering Design Standards



Develop **engineering design standards** to adapt to climate change

## Aware Engaged Workforce



Improve **processes and procedures** to standardize systems across the utility

## Quality Certifications



Implement a **Business Process Management Tool** to incorporate project quality controls



# Effective Utility Management

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Product quality



Customer satisfaction



Employee / leadership  
development



Operational optimization



Financial viability



Infrastructure stability



Operational resiliency



Community stability

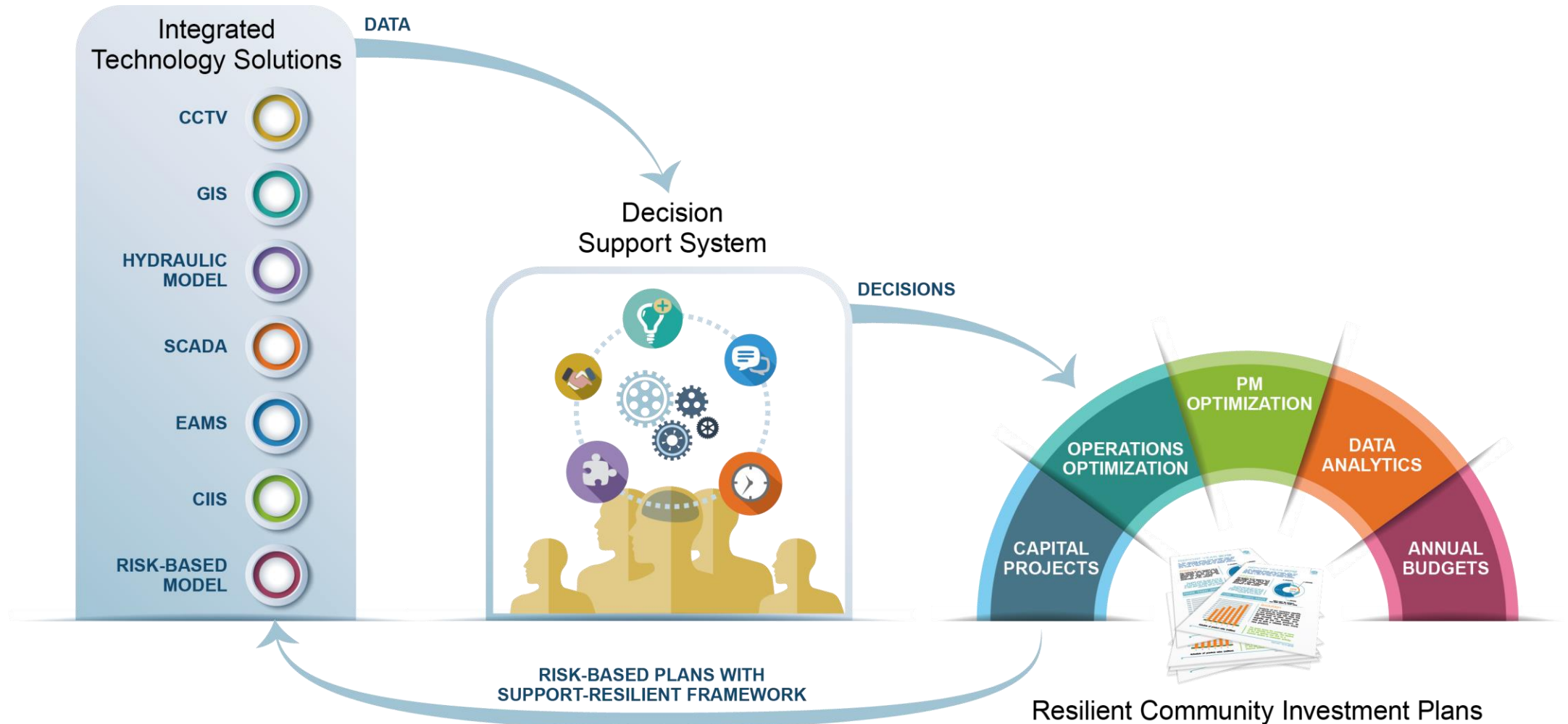


Water resource  
adequacy



Stakeholder understanding  
and support

# Embracing Technology & Integrating Reliable Data







# Utility of the Future – A Smart Utility Using Big Data Analytics

## Applying Intelligence to Data

**Descriptive**

What actually happened?

**Diagnostic**

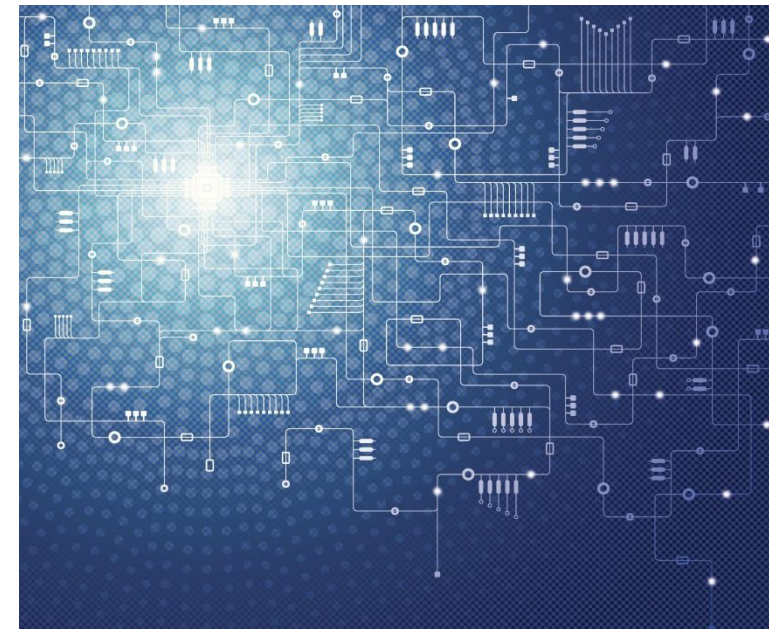
Why did it happen & Where?

**Predictive**

When can it happen again?

**Prescriptive**

Who is going to make it happen and how? (Adapting & Learning)

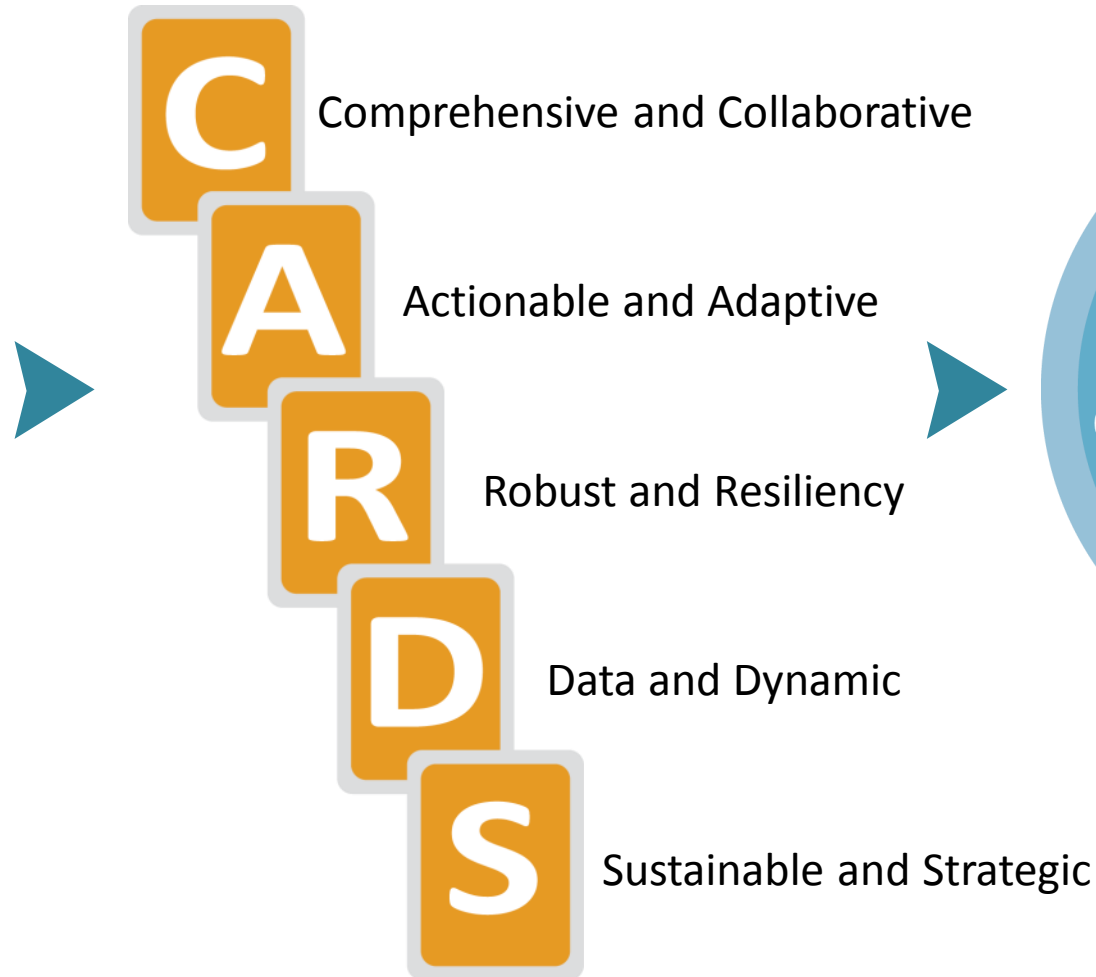






# From Static Master Plans to Dynamic Master Plans

## Playing our CARDS right!

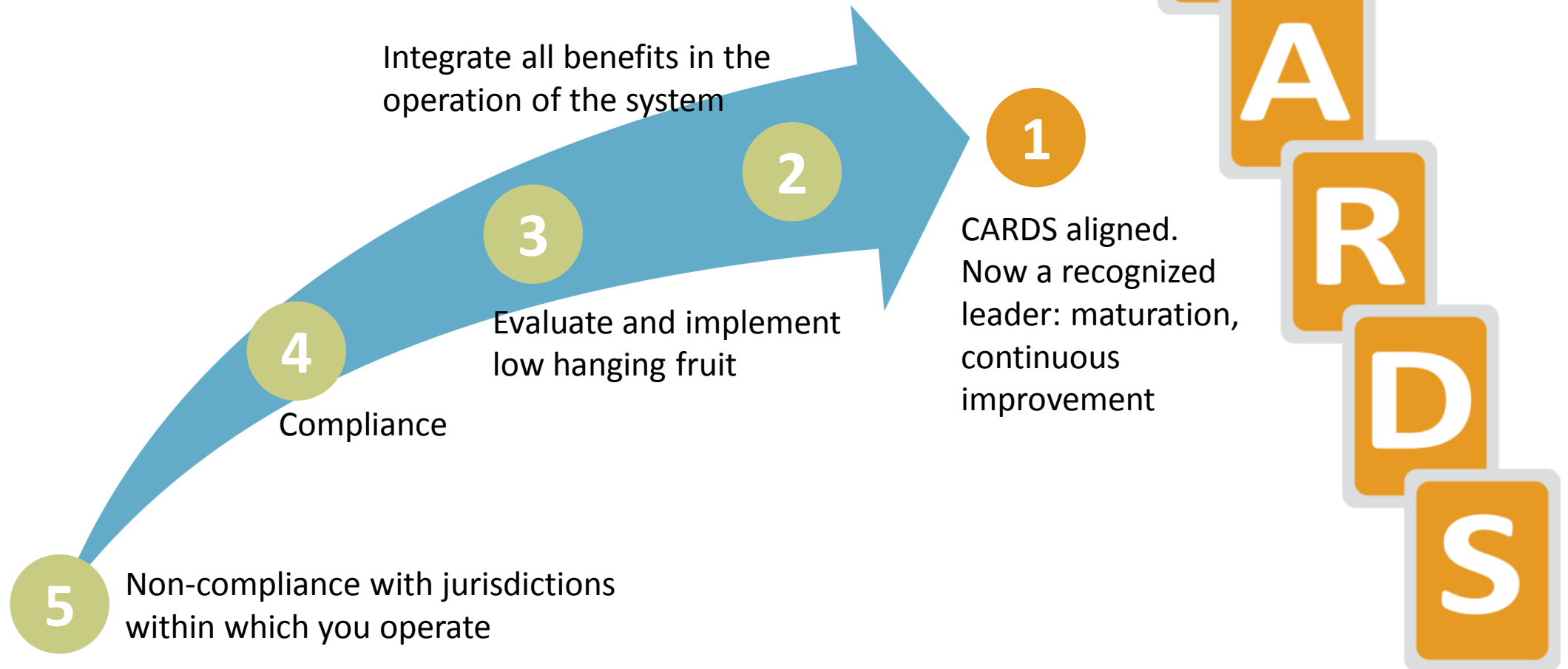


Changing  
the organizational  
culture  
Overarching planning  
that aligns the  
CARDS



# The Resiliency Journey

Where are you on this path?





## Contact

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