JERSEY WATER WORKS CONFERENCE 2022

DECEMBER 2, 2022 | THE WAR MEMORIAL, TRENTON

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Engage, Target, Act: An ETA for Building Resilient Water Infrastructure

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Principal Resilience Lead, Arcadis

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Director of Engineering, Bergen County Utilities Authority

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Deputy Climate Resilience Officer, New Jersey Department of Environmental Protection

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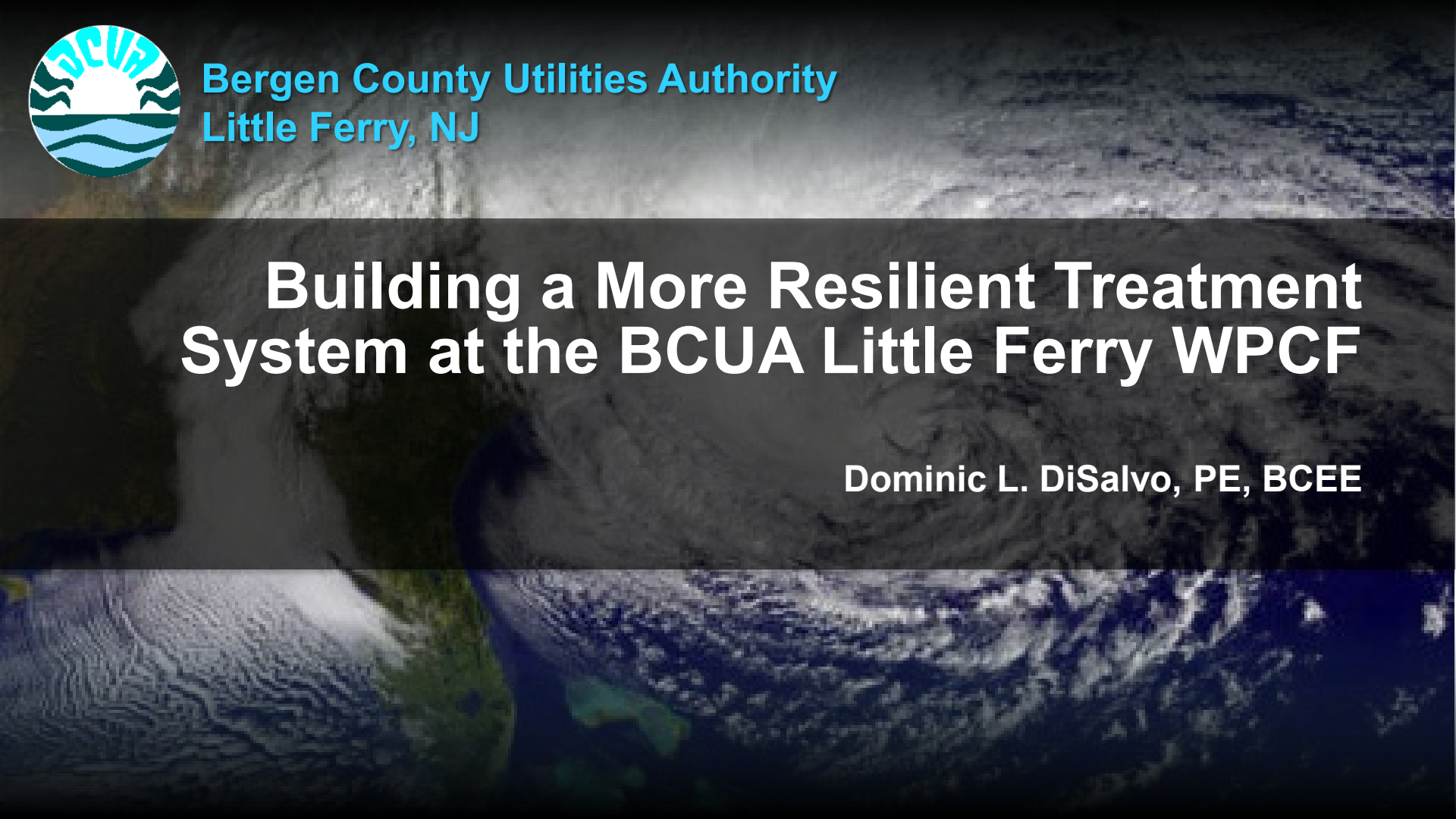
Civilian Manager of the Hazard Mitigation Unit, Recovery Bureau of the New Jersey State Police

Building a Water Sector Leadership Pipeline, Moving Money to Projects, Implementation, and Community Engagement



Bergen County Utilities Authority
Little Ferry, NJ

Building a More Resilient Treatment System at the BCUA Little Ferry WPCF

Dominic L. DiSalvo, PE, BCEE

Resiliency Questions

- What are my risks?
  - Floods
  - Power Interruptions/Bad Quality
- What are the impacts of loss of service
- What do I need to protect?
- What levels of protection are needed?
- How do I protect the assets/service?
- How will I fund the resiliency?
- What are funding source's requirements?

BCUA Resiliency

Plant Process Operations

- Protect assets from flood waters
- Maintain treatment/ plant operations

Power Supply

- Maintain power to plant and pump stations, including outage/fluctuations in the PSE&G electrical power grid

Tiered prioritization of “at risk” components

BCUA Service Area

Little Ferry WPCF

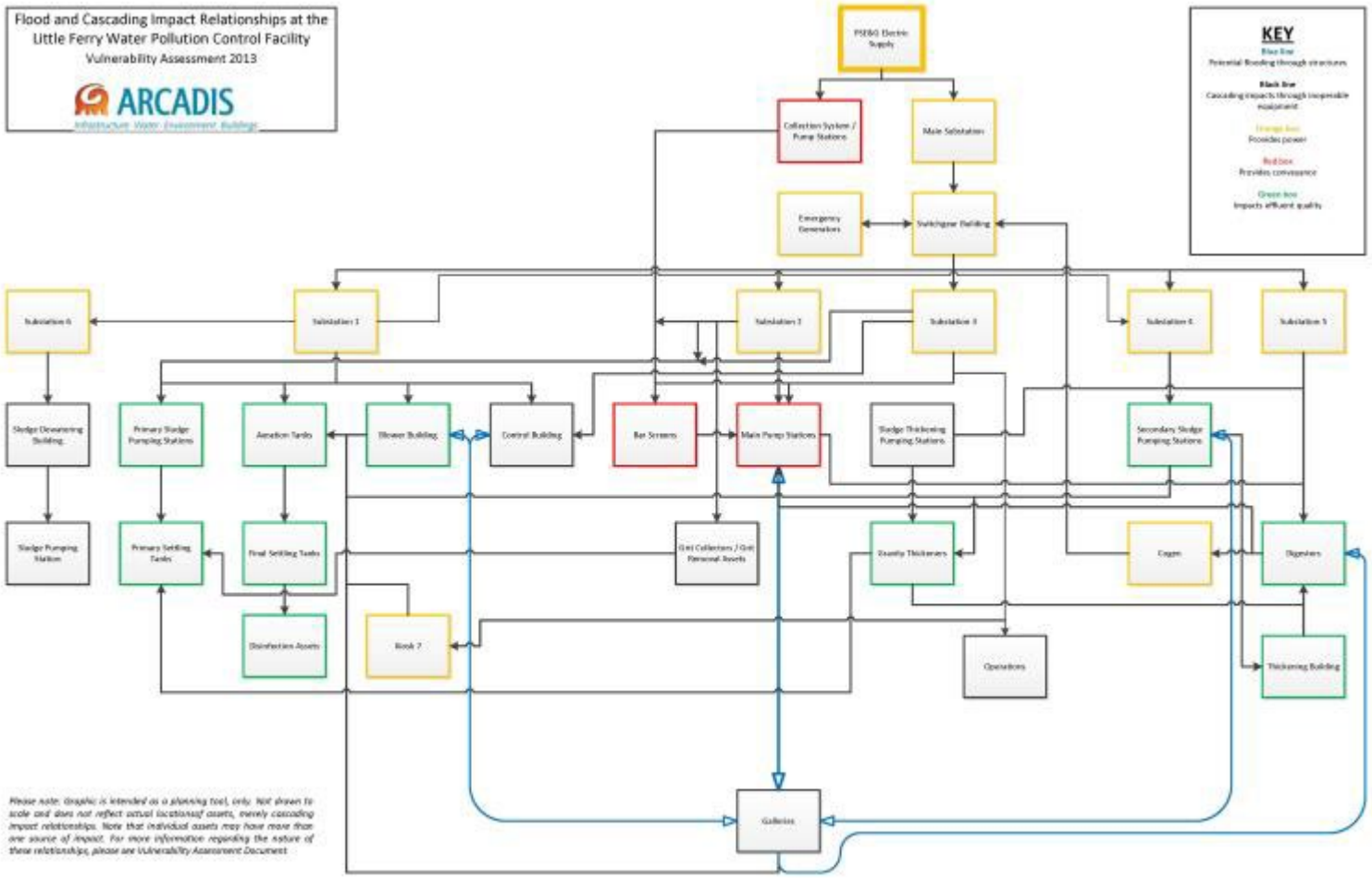
- Serves about 560,000 residents.
- 46 Municipalities
- Commercial/Industrial
  - METLIFE Stadium
  - Others

Impact of loss of Service = $1MM/hr min.

Mitigation Tiers

- Tier 1: Moving wastewater (WW) out of the collection system
- Tier 2: Conveyance through the plant and disinfection
- Tier 3: Primary and secondary treatment
- Tier 4: Operations
- Tier 5: Ancillary

Inter-dependancy of Systems



LAGOON
HACKENSACK RIVER

Flood Elevations (NAVD 88)

Superstorm Sandy and the Future

- Estimated Superstorm Sandy Elevation on site: 8.0 + feet
- Proposed 100-Year Storm Elevation for the Area: 8.0 feet
- Proposed 500-Year Storm Elevation: 11.0 feet
- Design Storm for Mitigation: 500-Year (11.0 feet) + 2.5-foot Sea Level Rise = 14.0 feet

Four Major BCUA Resiliency Projects

- Substations and Cables Restoration/ Mitigation

  (FEMA/I-Bank)
- Plant Wide Restoration/Mitigation

  (FEMA/I-Bank)
- Black Start for CoGen Units 1 & 2

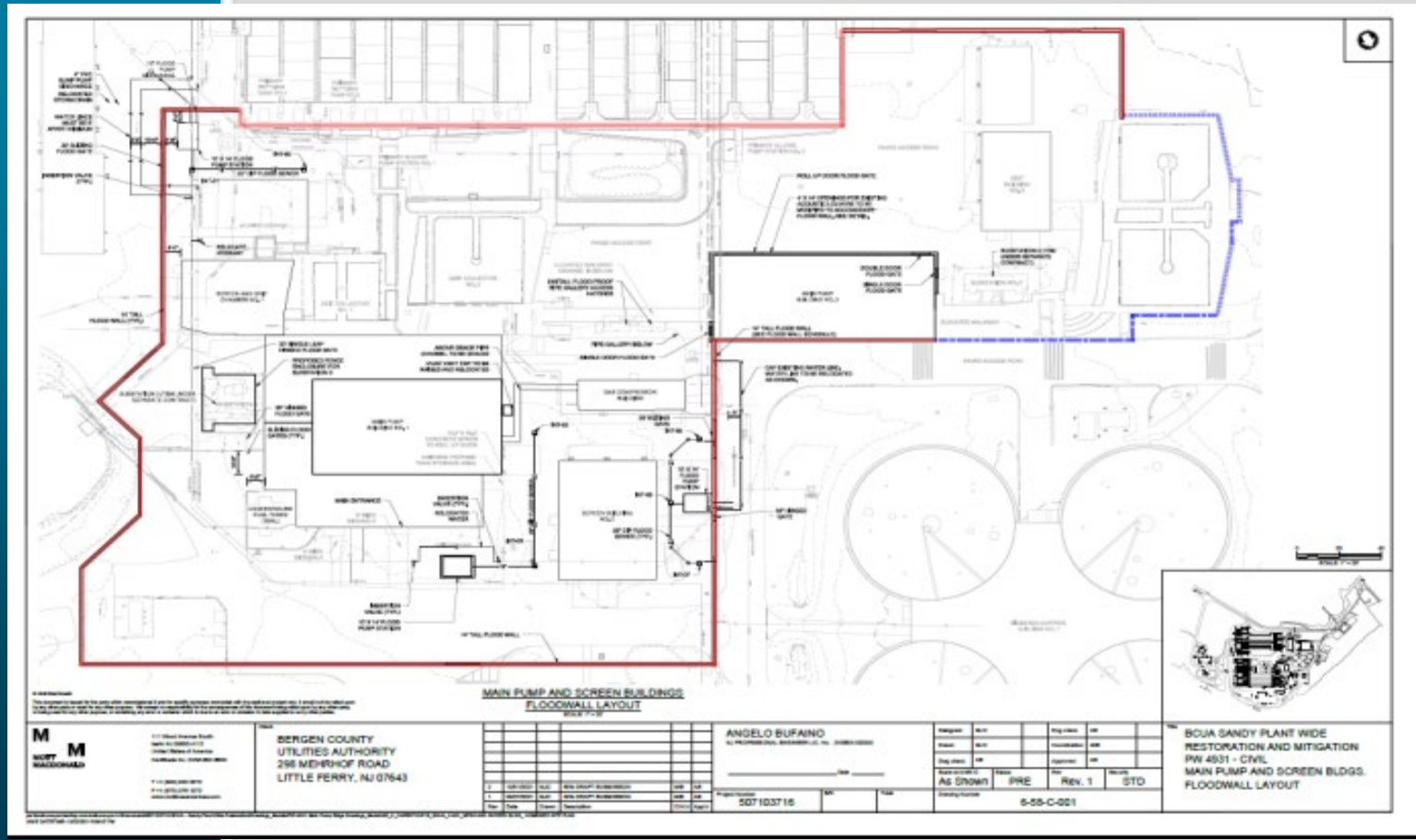
  (ERB)
- Digester System Improvements

  (ERB/I-Bank)

– FEMA Power Supply (PS&S)
– FEMA Plantwide (MM)

Tier	PW System	FEMA PW Mitigation Measure					
		Dry Flood Proofing	Flood Proof Openings	Submersible Assets	Submersible Cables	Raise Assets	Other
1	Bar Screen Buildings	x	x				
1	Switchgear Building	x	x		x	x	
1	Main Substation, Substn. No. 1, 2,3				x	x	
1	Collection System						
2	Primary Settling Tanks						
2	Aeration/ Final Settling						
2	Grit Chambers						
2	Disinfection	x	x				x
2	Substation No. 4				x	x	
3	Blowers	x	x				
3	Grit Removal	x	x	x	x	x	
3	Primary Sludge Rem.	x	x	x	x	x	
3	SSPS No. 1, 2, 3 4	x	x	x	x	x	
3	Substation No. 5 and 6				x	x	
3	Sludge Processing	x	x	x		x	
4	Control Building	x	x				
5	Admin Building	x	x				
5	Security						
5	Ops / Support	x	x				
5	Stormwater	x	x	x	x		

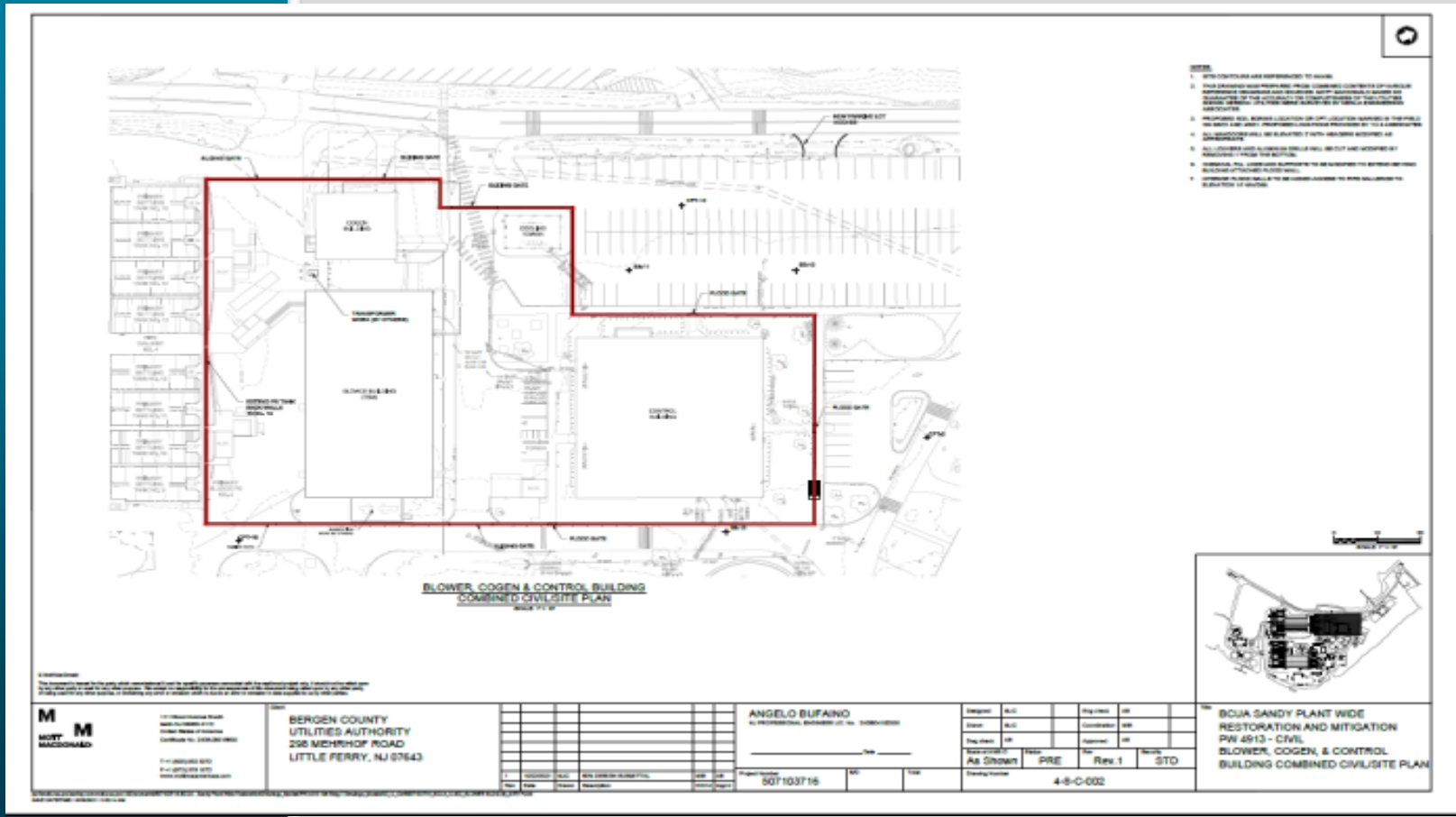
NEW FLOOD WALL MITIGATION APPROACH



Black Start for CoGen Engines 1 and 2

- CHP Engine No. 3 has Black Start (ability to operate without electricity)
- Black Start project will allow CHP no. 1 & 2 engines to Tier I and II systnme during a power outage.

FLOOD WALL PROTECTS COGEN



Digester Improvement Project

Cover of Digester #1

- Improve Digesters to produce and store more methane digester gas for use onsite
  - New Flares
  - New Membrane Digester Covers (12 hour storage)
  - New mixers, heat exchanges, pumps and appurtenances
  - New MCC

Contact Information

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Thank You!

Stay Involved!

Jersey Water Works

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