Virtual Workshop: Enhancing Community Energy Resilience through FEMA BRIC

August 24-26, 2021
12:30-5:30 PM ET

Hosted by the National Association of State Energy Officials (NASEO), National Emergency Management Association (NEMA), and Business Council for Sustainable Energy (BCSE)

Day 1: Lessons Learned from the Inaugural Year of BRIC

Tuesday, August 24th, 2021

12:30-5:00 PM ET

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Virtual Meeting 101

- Please keep yourself muted during all presentations
- For any tech questions, message Shemika Spencer or email sspencer@naseo.org
- For the Keynote:
  - Please hold all questions until the end of the speech
- For the BRIC presentations:
  - There will be Q&A breakouts per presentation following all of the BRIC presentations.
  - You may type any questions in the chat box during presentations; all questions will be relayed during the breakout Q&A sessions

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Day 1 Agenda

Session Times	Session Description
12:30-1:00 PM ET	Welcome, Opening Remarks, and Keynote
1:00-2:30 PM ET • 1:00-1:30 PM ET • 1:30-2:00 PM ET • 2:00-2:30 PM ET	FY'20 BRIC Year in Review • Nevada Governor's Office of Energy • Kentucky Office of Energy Policy • James Madison University
2:30-3:15 PM ET	Q&A: Breakouts
3:15-3:30 PM ET	Break
3:30-5:00 PM ET	Lessons Learned and Opportunities Presented by the Benefit Cost Analysis (BCA)
5:00 PM	Closing Remarks and Day Two Preview

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The Business Council for Sustainable Energy®

Welcome and Opening Remarks

Speakers:

David Terry, Executive Director, NASEO

Lisa Jacobson, President, BCSE

Matt Cowles, Deputy Director, NEMA

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Keynote Speech

Speakers:

Moderator - **David Terry,** Executive Director, NASEO

Puesh Kumar, Principal Deputy Assistant Secretary, Office of Cybersecurity, Energy Security, and Emergency Response, U.S. Department of Energy

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FY'20 BRIC Year in Review Panels

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State Allocation– Nevada's Governor's Office of Energy

Speakers:

Moderator - **Jennifer Taylor**, Deputy Director, Nevada Governor's Office of Energy

Janell Woodward, State Hazard Mitigation Officer, Nevada Division of Emergency Management

Carissa Rey, Academic & External Affairs Officer, University Medical Center of Southern Nevada

Suzanne Groneman, Sustainability Program Manager, City of Reno

Jodi Bechtel, Assistant Director, Clark County, Nevada Department of Environment and Sustainability

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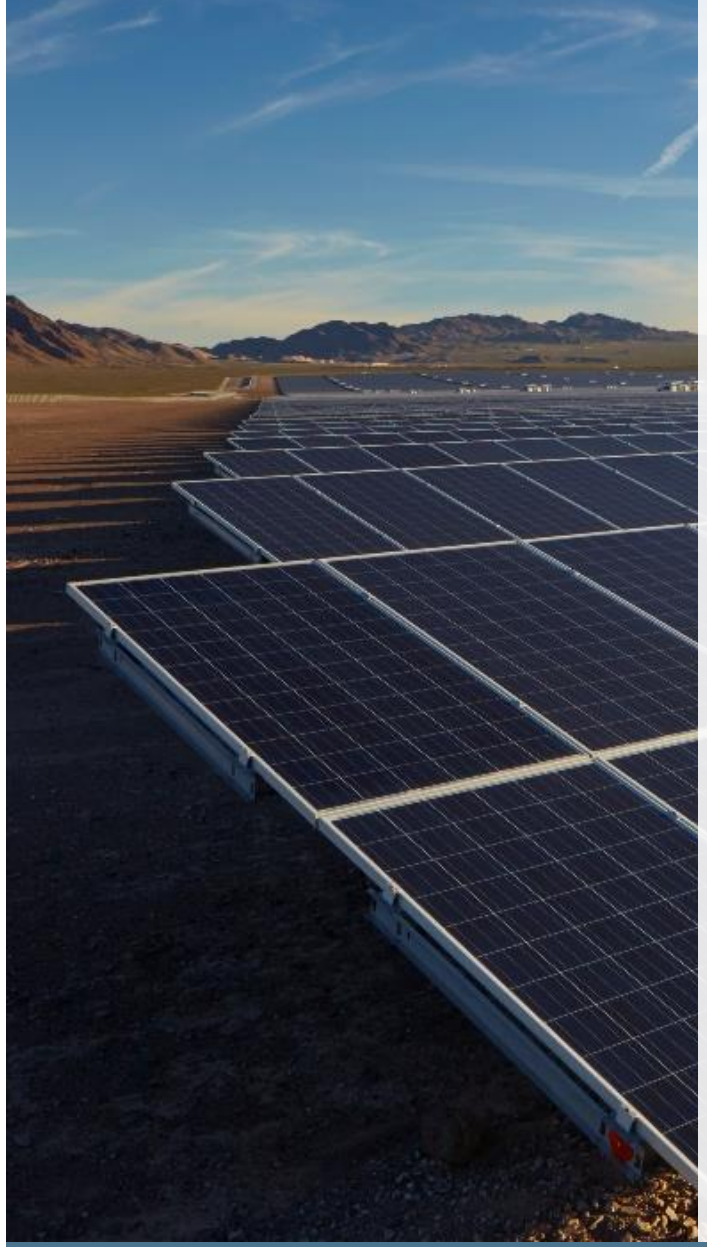


Governor's Office of Energy

NEVADA BRIC PLANNING & PROPOSALS

Presented to
NASEO Virtual Workshop:
Enhancing Community Energy Resilience
though FEMA BRIC

August 24, 2021

Jennifer Taylor, Esq., GOE
Janell Woodward, DEM
Suzanne Groneman, City of Reno

Jodi Bechtel, Clark County
Carissa Rey, UMCSN

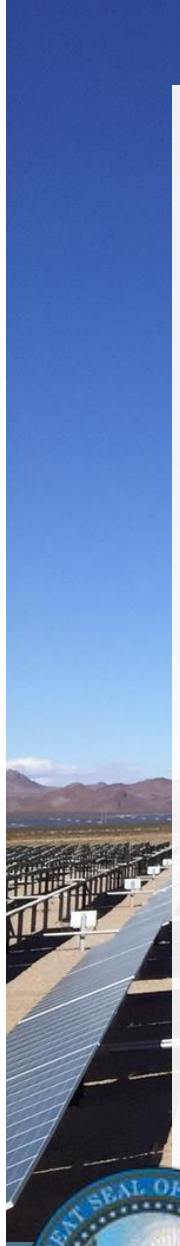
DEPARTMENT OVERVIEW

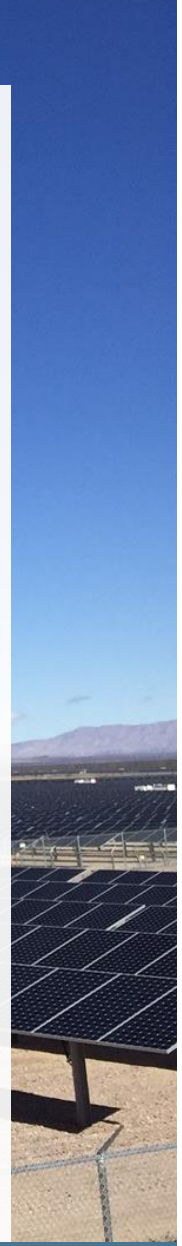
Mission

- to ensure the wise development of Nevada's energy resources in harmony with local economic needs and to position Nevada to lead the nation in:
  - renewable energy production
  - energy conservation
  - export of energy
  - transportation electrification

Authority

- Under NRS 701 and 701A, the office:
  - manages energy-related programs
  - facilitates cooperation between stakeholders
  - advises the Governor on energy policy
  - *collaborates with local, regional and federal partners to ensure a reliable and sustainable energy system*





Governor's Office of Energy

NEVADA BRIC PARTNERS

UMC UNIVERSITY MEDICAL CENTER

RENO RESILIENCE

BIGGEST LITTLE CITY IN THE WORLD CITY OF RENO

ALL-IN CLARK COUNTY BOLD ACTION FOR A SUSTAINABLE FUTURE

CLARK COUNTY NEVADA

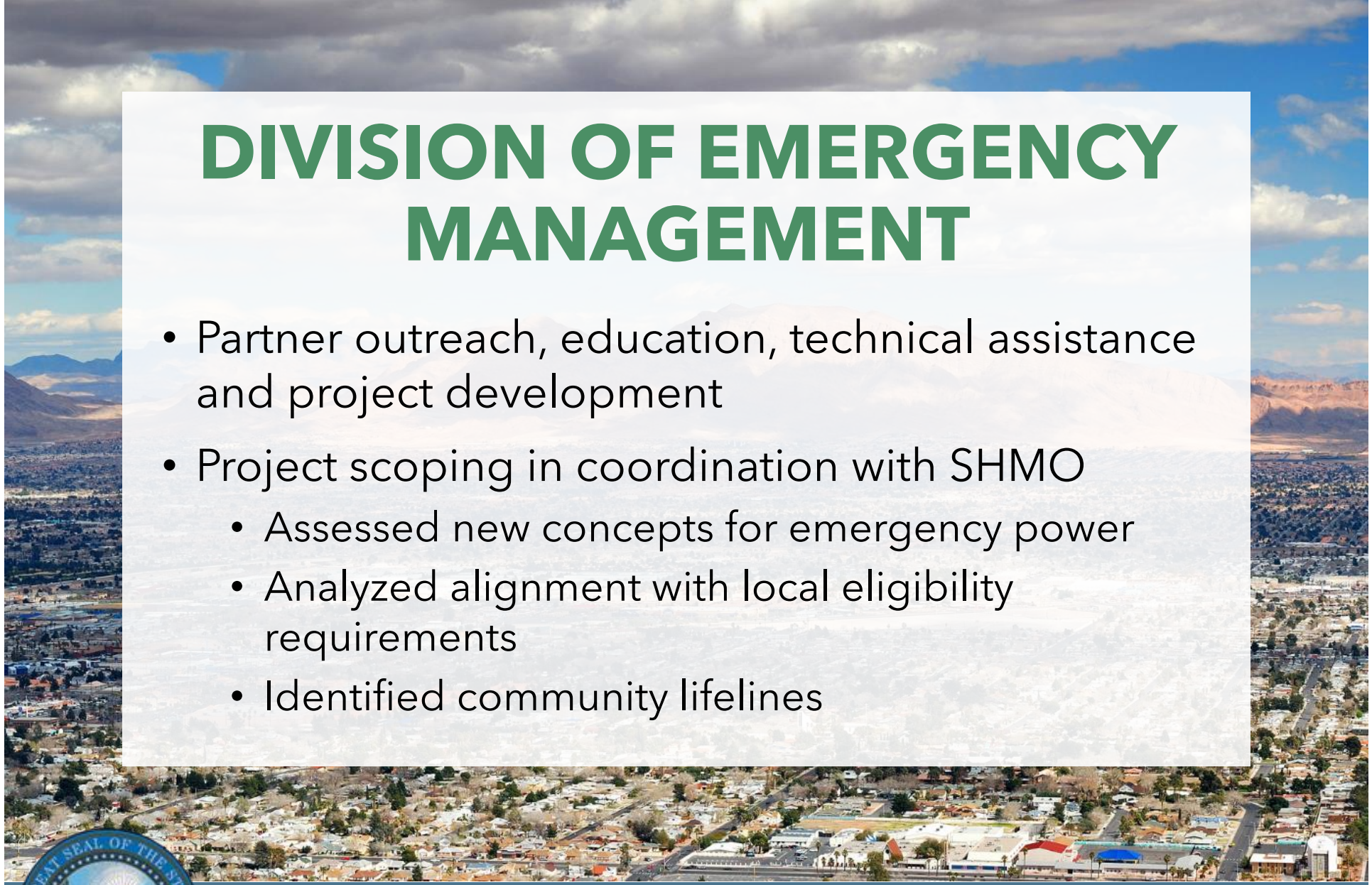
University of Nevada, Reno

PREVENT • PROTECT • MITIGATE • RESPOND • RECOVER DEM EMERGENCY MANAGEMENT NEVADA DIVISION OF EMERGENCY MANAGEMENT / HOMELAND SECURITY

THE GREAT SEAL OF THE STATE OF NEVADA ALL FOR OUR COUNTRY

THE GREAT SEAL OF THE STATE OF NEVADA ALL FOR OUR COUNTRY

Governor's Office of Energy



DIVISION OF EMERGENCY MANAGEMENT

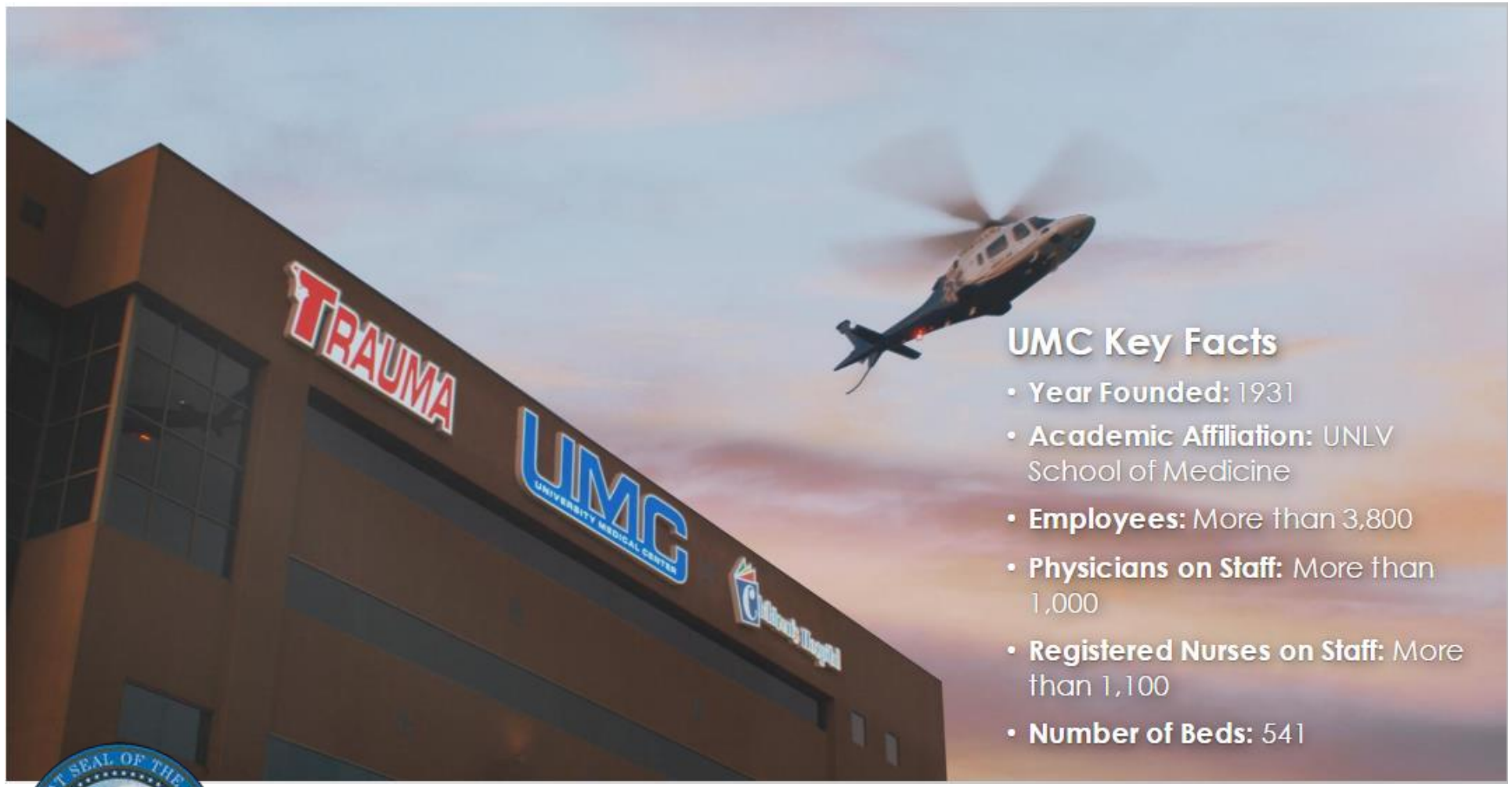
- Partner outreach, education, technical assistance and project development
- Project scoping in coordination with SHMO
  - Assessed new concepts for emergency power
  - Analyzed alignment with local eligibility requirements
  - Identified community lifelines

PROJECT OVERVIEW

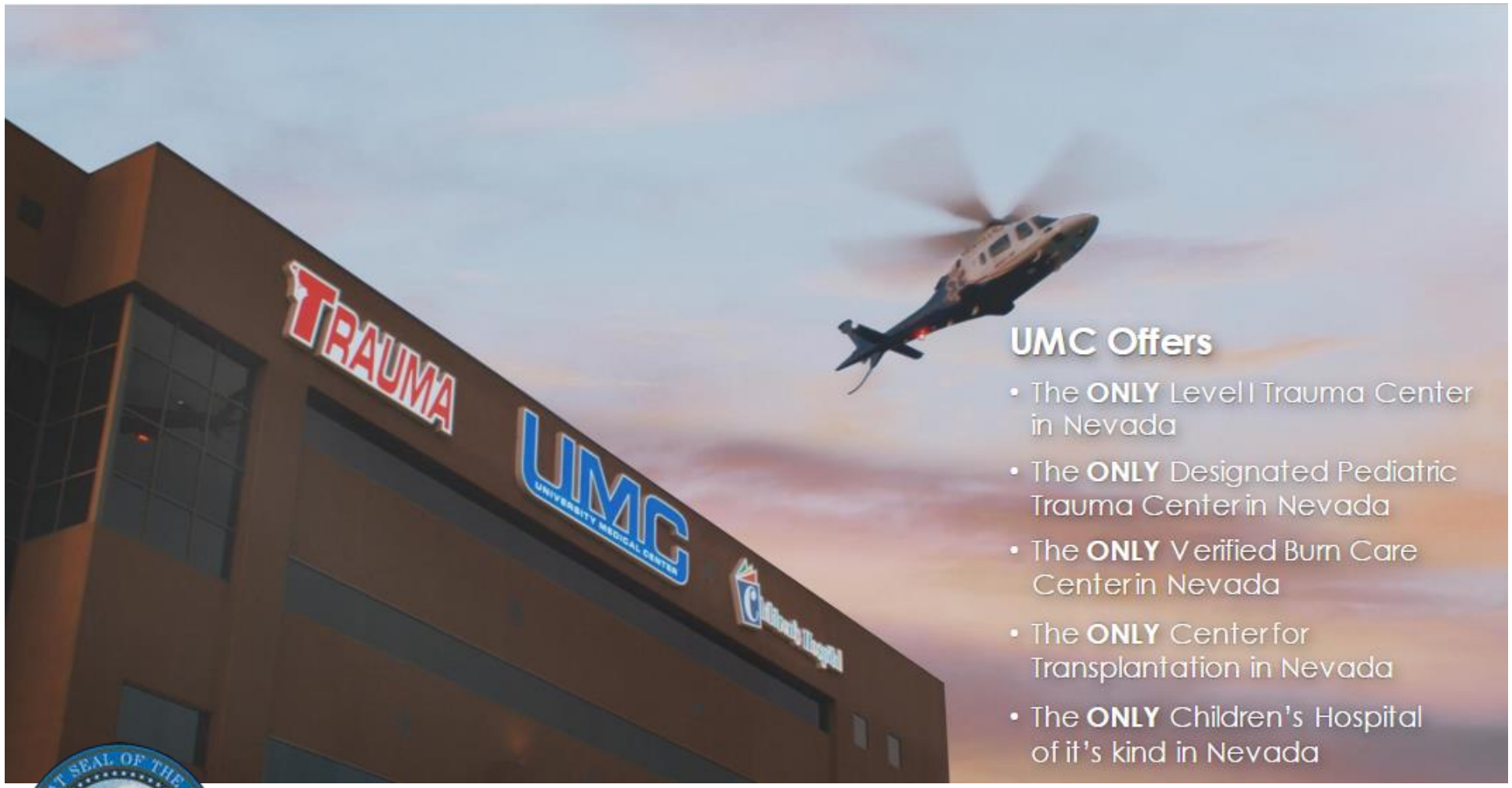
Clark County "All-In"

- Clark County provides extensive regional services to more than 2.3 million citizens and more than 45.6 million visitors a year
- *All-in Clark County* is our initiative to address climate change and create a more sustainable future for all
  - Reduce Clark County's contribution to climate change
  - Prepare residents and businesses for climate change impacts
  - Collaborate with regional and state partners to get the most benefit for the county

PROJECT OVERVIEW



PROJECT OVERVIEW



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PROJECT OVERVIEW

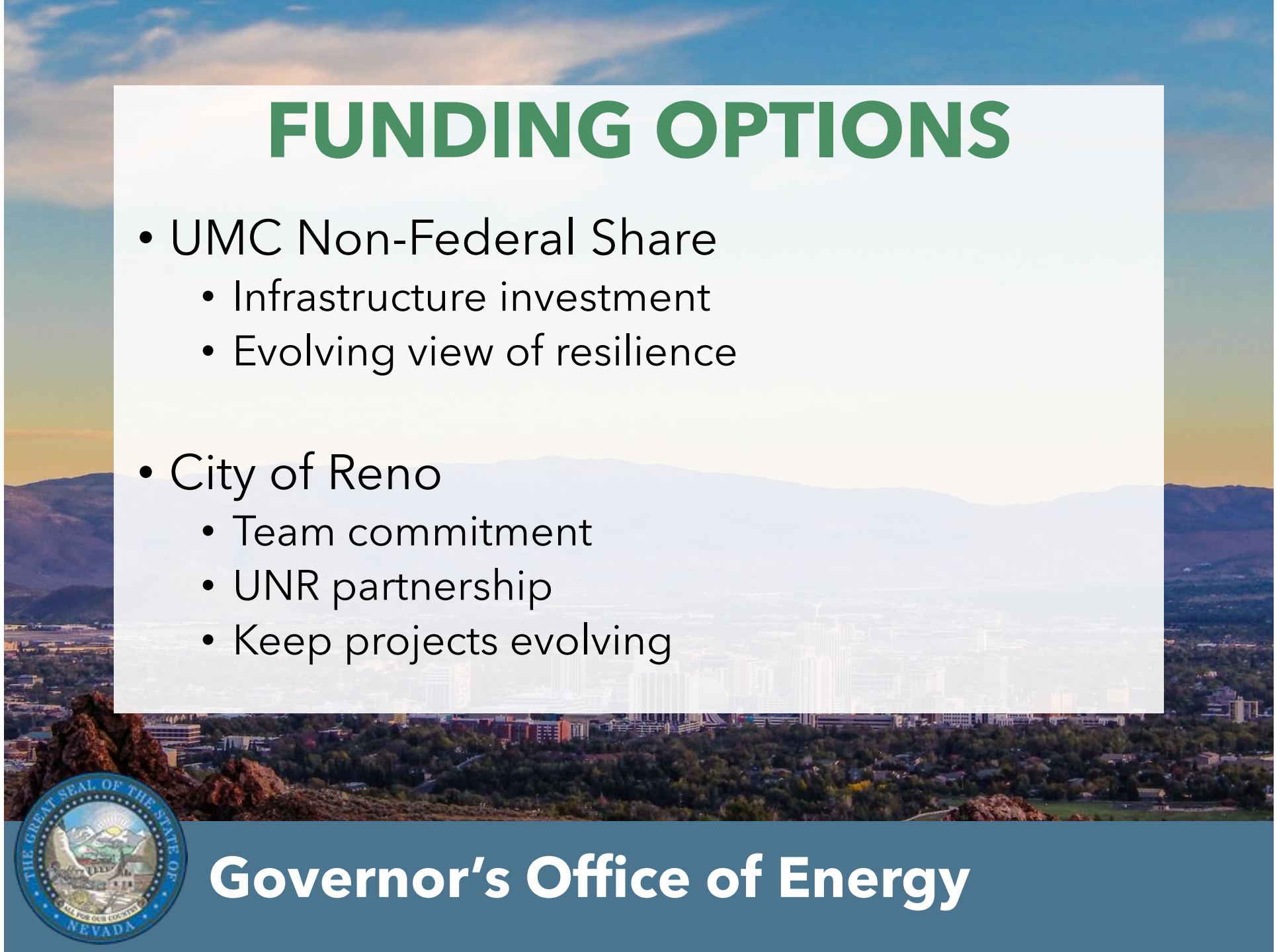
City of Reno

- Reno's sustainability goals
  - Real-time operational emissions tracking
- Solar energy innovation network (phase 2)
  - FEMA BRIC grant

Governor's Office of Energy

PROJECT ELIGIBILITY

- Clark County 2018 multi-jurisdictional hazard mitigation plan:
  - "Provide additional **emergency power**, such as generator equipment for new and existing critical facilities to operate continuously but is not possible for long durations of power outage."
- Washoe County 2016 hazard mitigation plan:
  - "Install back-up generators for critical infrastructure and facilities along with other measures."
  - "Increase communication, coordination, and collaboration between wildland/urban interface property owners, local and county planners, and fire prevention crews and officials to address risks, existing mitigation measures , and federal assistance programs."



FUNDING OPTIONS

- UMC Non-Federal Share
  - Infrastructure investment
  - Evolving view of resilience
- City of Reno
  - Team commitment
  - UNR partnership
  - Keep projects evolving

STAKEHOLDERS

- Engage with partners at all levels and look at leveraging opportunities long term
  - Clark County
    - UMC
    - County, city and state elected officials
  - City of Reno
    - University of Nevada, Reno
  - DEM
  - GOE

OVERCOMING OBSTACLES

- Be aware of lengthy processes
  - Government timelines and requirements
- Be nimble in the project development
  - Look to partner priorities

LESSONS LEARNED

- Create foundations for good partnerships and shelf-ready projects
  - Know your community and its needs
- Know possible non-federal share funding sources in advance
  - Look for utility incentives, private partnerships and local funding
- Get involved with local mitigation community
  - Know who the potential partners are, and stay in regular communication
  - Keep a running list of project ideas

NEXT STEPS & WRAP UP

- Finalizing scoping grants and looking to the future.
  - Responding to requests for information
  - Looking to technical and qualitative criteria of current notices of funding opportunities for post-scoping project submissions
  - Hazard Mitigation Grant Program (HMGP) scoping for City of Las Vegas
  - 2021 NOFO and potential projects for submission

CONTACT US

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Governor's Office of Energy

State Allocation– Kentucky Office of Energy Policy

Speakers:

Moderator – **Kenya Stump**, Director, Office of Energy Policy, Kentucky Energy and Environment Cabinet

Amanda LeMaster, Energy Assurance and Efficiency Coordinator, Office of Energy Policy, Kentucky Energy and Environment Cabinet

Nick Grinstead, Planning Grants Manager & Program Coordinator, Hazard Mitigation Grant Program, University of Kentucky Martin School of Public Policy and Administration

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State Allocation, Small Impoverished Community– James Madison University

Speakers:

Moderator – **Ken Jurman**, Renewable Energy Program Manager, Virginia Department of Mines, Minerals, and Energy

Dr. Jonathan Miles, Professor, James Madison University

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State Allocation, Small Impoverished Community

Tangier Island, Virginia

An opportunity to enhance energy resilience in a remote island community

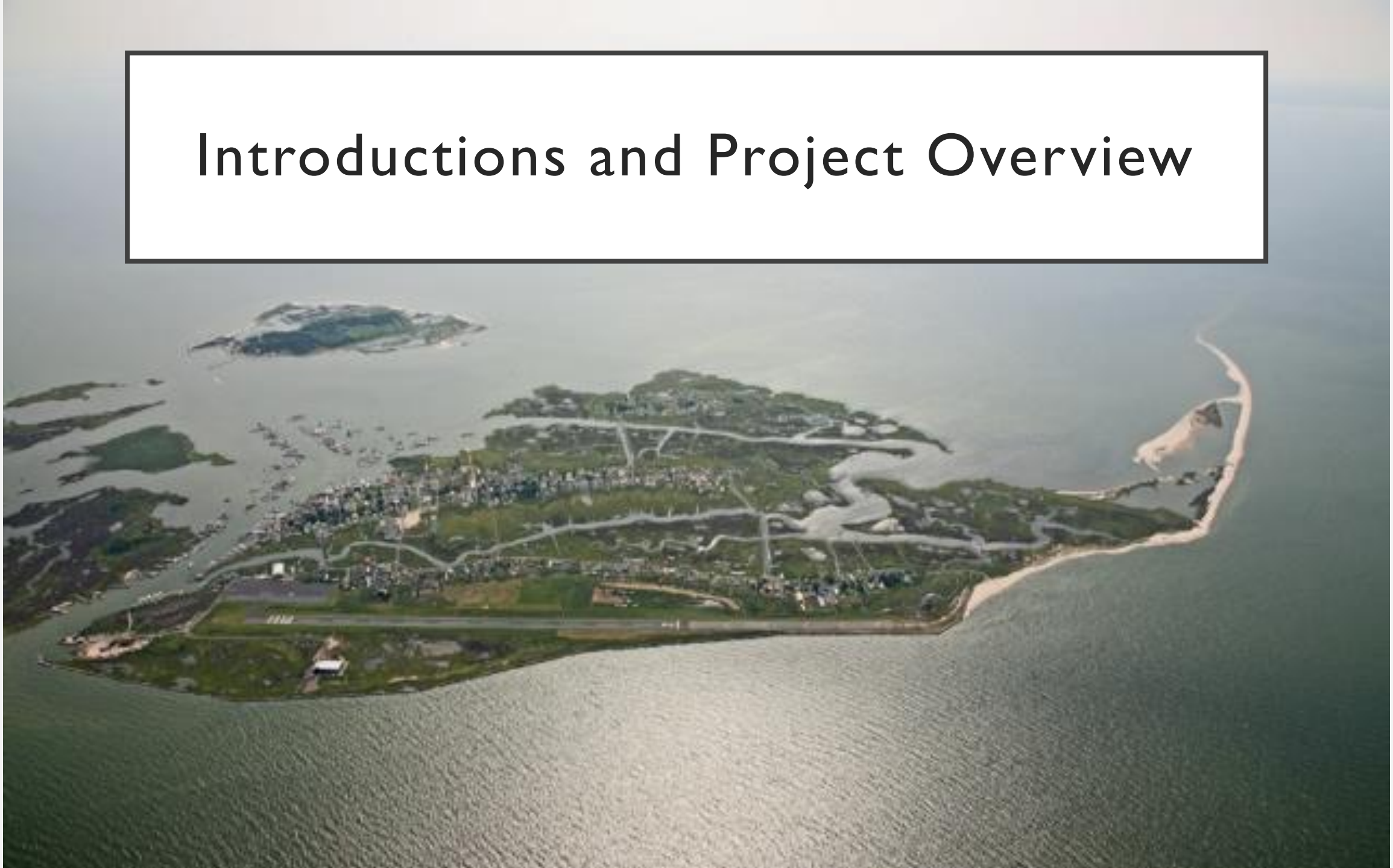
Ken Jurman, Virginia Department of Mines Minerals and Energy

Jonathan Miles, James Madison University

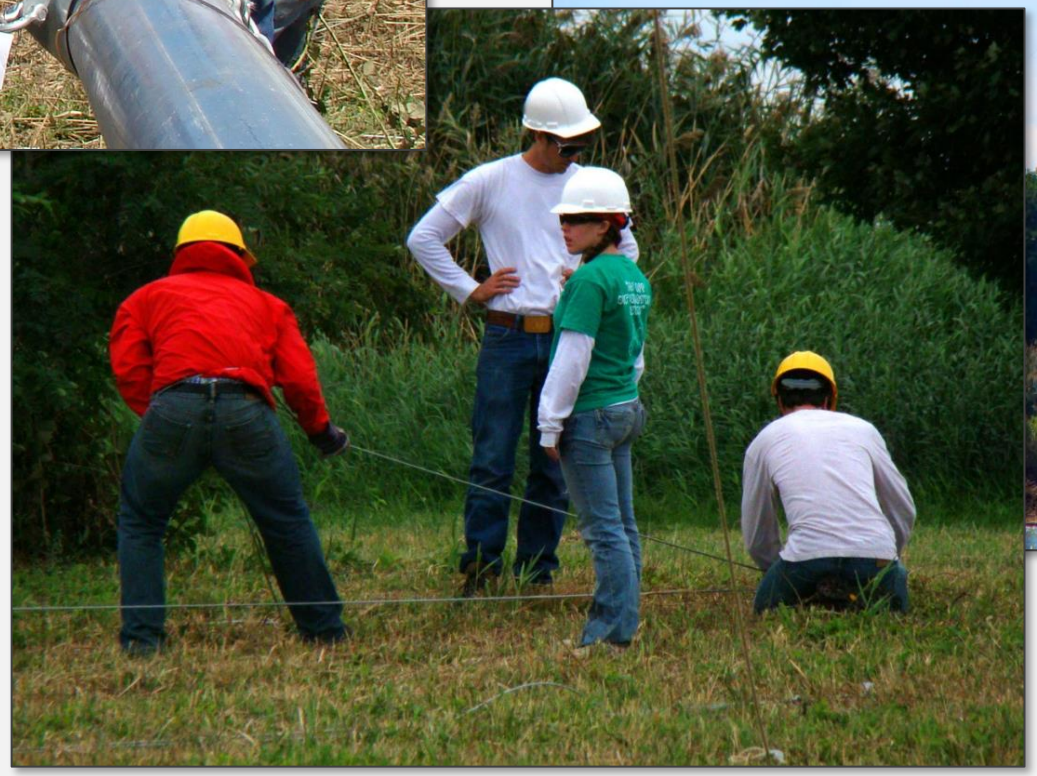
24th August 2021

Getting oriented . . .

Introductions and Project Overview



September 2009



Extended Summary Report: Tangier Island / Port Isobel - 50m MET Tower

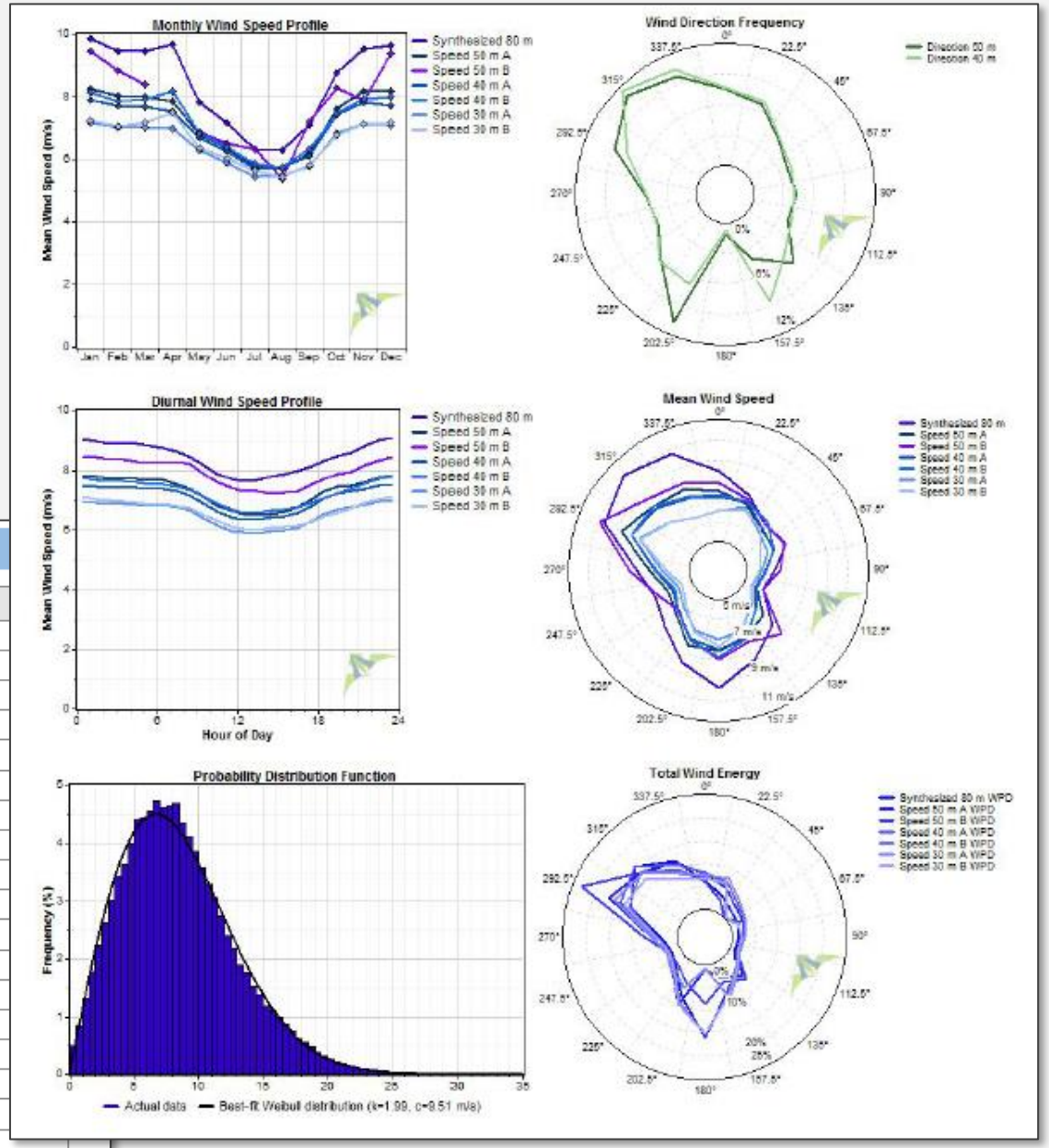
Data Set Properties

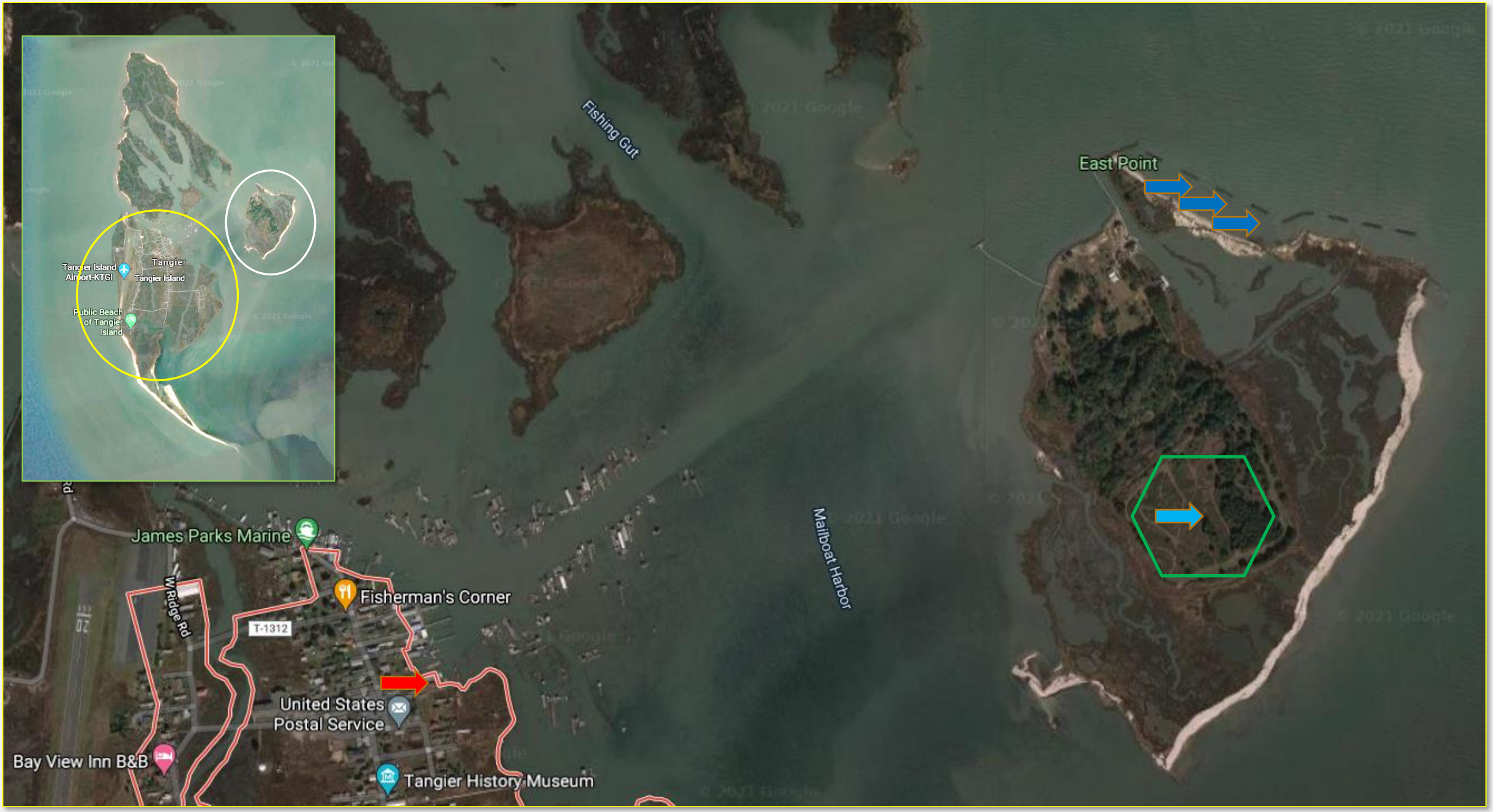
Report Created: 9/1/2014 15:31 using Windographer 3.3.3
Filter Settings: <Unflagged data>, Synthesized

Variable	Value
Latitude	N 37° 49' 46.920"
Longitude	W 75° 58' 41.100"
Elevation	4 m
Start date	9/13/2009 00:00
End date	3/17/2014 14:00
Duration	4.5 years
Length of time step	10 minutes
Calm threshold	0.5 m/s
Mean temperature	15.1 °C

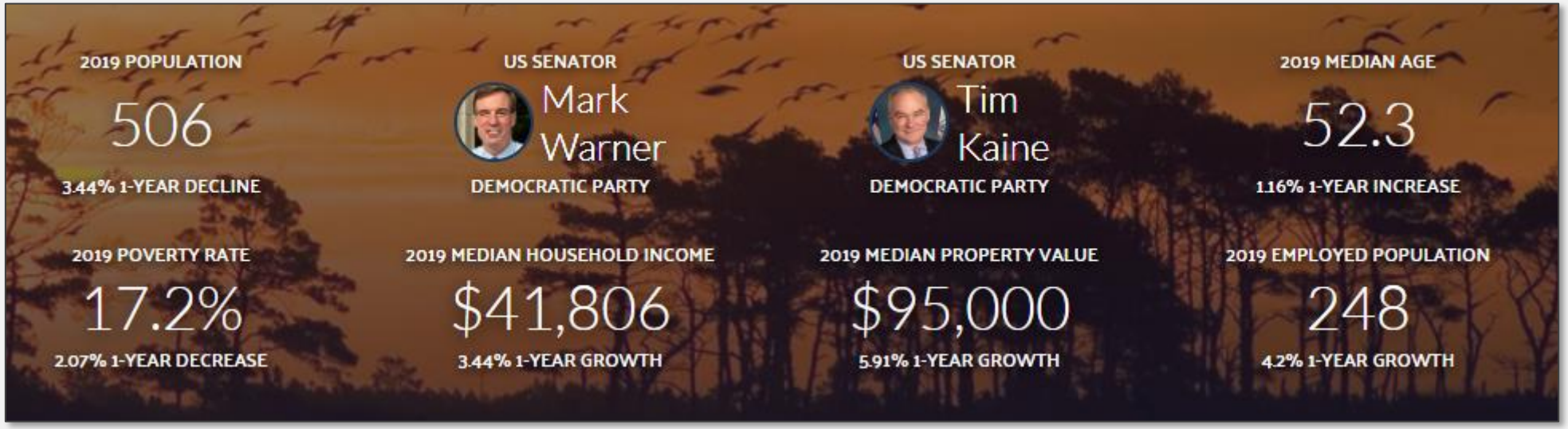
Wind Speed Sensor Summary

Variable	Synthesized 80 m	Speed 50 m A	Speed 50 m B	Speed 40 m A	Speed 40 m B
Measurement height (m)	80	50	50	40	40
Mean wind speed (m/s)	8.431	7.297	7.912	7.059	7.230
MoMM wind speed (m/s)	8.414	7.244	7.793	7.015	7.217
Median wind speed (m/s)	7.921	6.900	7.500	6.700	6.900
Min wind speed (m/s)	0.335	0.300	0.400	0.400	0.400
Max wind speed (m/s)	32.250	73.500	30.000	29.200	27.900
Weibull k	1.992	2.023	2.136	2.065	2.137
Weibull c (m/s)	9.506	8.220	8.921	7.958	8.151
Mean power density (W/m²)	712	454	551	405	418
MoMM power density (W/m²)	708	444	533	396	415
Mean energy content (kWh/m²/yr)	6,236	3,981	4,823	3,549	3,662
MoMM energy content (kWh/m²/yr)	6,205	3,887	4,671	3,468	3,632
Energy pattern factor	1.918	1.882	1.784	1.855	1.787
Frequency of calms (%)	0.49	0.95	0.69	0.81	0.66
Possible data points	237,108	237,108	237,108	237,108	237,108
Valid data points	215,104	180,642	56,215	179,442	203,672
Missing data points	22,004	56,466	180,893	57,666	33,436
Data recovery rate (%)	90.72	76.19	23.71	75.68	85.90




Fishing Gut
East Point
Mailboat Harbor
James Parks Marine
W Ridge Rd
Fisherman's Corner
T-1312
United States
Postal Service
Bay View Inn B&B
Tangier History Museum
Tangier Island
Airport-KTGI
Tangier
Tangier Island
Public Beach
of Tangier
Island

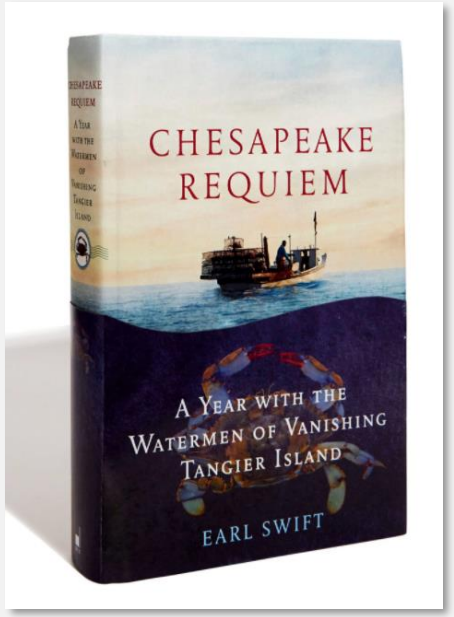
Background, Context, and History of Town of Tangier



Tangier, Virginia

(Edited from Wikipedia)

- **Tangier** is a town in Accomack County, Virginia, United States, on Tangier Island in Chesapeake Bay.
- The people who came to settle the island permanently arrived in the 1770s and were farmers. In the late 19th century, the islanders began to become more dependent on harvesting crabs and oysters from the Chesapeake Bay. As the waterman livelihood became more important and more lucrative, there were often conflicts among the oyster dredgers and oyster tongers in the bay, and between those living in Maryland and those living in Virginia.
- Many people who live on Tangier speak a distinctive dialect of American English. Scholars have disputed how much of the dialect is derived from British English lexicon and phonetics. Linguist David Shores has argued that, while it may sound like a British variety of English, the dialect is a distinct creation of its own time and place off the eastern shore of Virginia. The persistence of this dialectal variety is often attributed to the geographic isolation of the population from the mainland. Tangier Island is listed on the National Register of Historic Places.



BRIC Sub-Application Project Details

Description of the problem

- The island communities of Tangier, Virginia and neighboring Smith Island, Maryland are supplied electric power by A&N Electric Cooperative by way of a submarine cable originating in Onancock, Virginia and terminating at the power station on Tangier Island, a remote and impoverished island community in the Chesapeake Bay. The power cable is nearing end of life, and should the cable fail then both communities would need to rely upon old, diesel-powered generators that are inefficient, noisy, expensive to operate, and emit greenhouse gases and other pollutants. It is anticipated that replacement of the submarine cable will be expensive.
- These highly exposed populations are prime candidates for an alternative power source that leverage the generous indigenous clean energy resources that are available on Tangier Island, delivers energy independence and resilience to these island communities, and provides a national example for how modern technology can improve the standards of living in rural and remote areas.

Description of the proposed project

- The Tangier, Virginia and Smith Island, Maryland communities present an appropriate and exceptional opportunity for the deployment of a microgrid electric power infrastructure that integrates on-site wind and solar power systems with state-of-the-art energy storage, sophisticated monitoring and controls, with existing diesel generators to provide backup generation.
- A 12-month effort was proposed that comprises a Feasibility Analysis and Preliminary Design of a clean microgrid power system on Tangier Island that will also serve neighboring Smith Island. The tasks that comprise this effort include, in approximately chronological order, *Community Engagement and Education*; *Energy Resource Analysis*; *Environmental Screening Analysis and Limited NEPA*; *Micro-Siting Analysis and Mapping*; *Permitting Matrix*; *Energy Load and Preliminary Interconnection Study*; *Preliminary Wildlife Analysis*; *Conceptual Design of Microgrid System*; *System and Economic Performance Modeling and Optimization*; *Preliminary Component Selection and Cost Estimation*; *Final Reporting and Presentation to Sponsors and Stakeholders*.

Who will the mitigation activity benefit/impact?

- The Feasibility Analysis and Preliminary Design proposed will demonstrate the economic benefit and increased resilience associated with the deployment of a microgrid electric power infrastructure that integrates on-site wind and solar power systems with state-of-the-art energy storage, sophisticated monitoring and controls.
- The final report will provide the template for full design, engineering, and construction of the microgrid electric power infrastructure and all associated components.
- All residents and services associated with the communities of Tangier (Virginia) and Smith Island (Maryland) will be impacted and will benefit from such deployment. These communities will become 100% self-sufficient in terms of power generation and will reduce to 0% their contribution of carbon to the atmosphere that is attributable to power generation.

Thank you for your interest

Breakout Q&A

- Please select which state allocation panel you would like to join for a Q&A and additional discussion in a breakout room

Nevada, Kentucky, or James Madison University

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BREAK

3:15-3:30 PM ET

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Lessons Learned and Opportunities Presented by the Benefit Cost Analysis (BCA)

Speakers:

Moderator – **Ben Bolton**, Tennessee Department of Environment and Conservation

Robyn Fennig, Hazard Mitigation Section Supervisor, Wisconsin Emergency Management

Annie Vest, Planning and Grants Department Manager, Meshek & Associates

Dr. Nichole Hanus, Project Scientist, Electricity Markets and Policy Department, Lawrence Berkeley National Laboratory

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BCA 101

- BCA Basics: What are the FEMA requirements for documenting cost effectiveness?
- Why is the BCA required?
- Current BCA Software and Guidance
- Technical Review Process (Sub-Applicant, Applicant, FEMA)
- Takeaways from FY21 BRIC and FMA National Technical Review (NTR)
- Documenting Cost Effectiveness
- Data Requirements
- Building the Benefit Holistically
- Training and Technical Assistance
- Project Scoping

FEMA BCA Resources

FEMA BCA Helpline

- bchelpline@fema.dhs.gov or toll-free at 1-855-540-6744
- Can answer questions about the BCA Toolkit (including troubleshooting help), specific questions about BCA methodologies or approaches, or help you with your BCA if you're not sure where to start
- Cannot perform, review, or adjudicate BCAs; or replace training

FEMA BCA training

- To request a BCA training course, contact your Region
- The course materials are posted at https://www.fema.gov/grants/guidance -tools/benefit-cost-analysis for those who may want to learn informally

NHMA
Natural Hazard Mitigation Association

Tips for Expanding BRIC BCAs

Enhancing Community Energy Resilience through Federal Management Agency (FEMA) Building Resilience Infrastructure and Communities (BRIC) Program

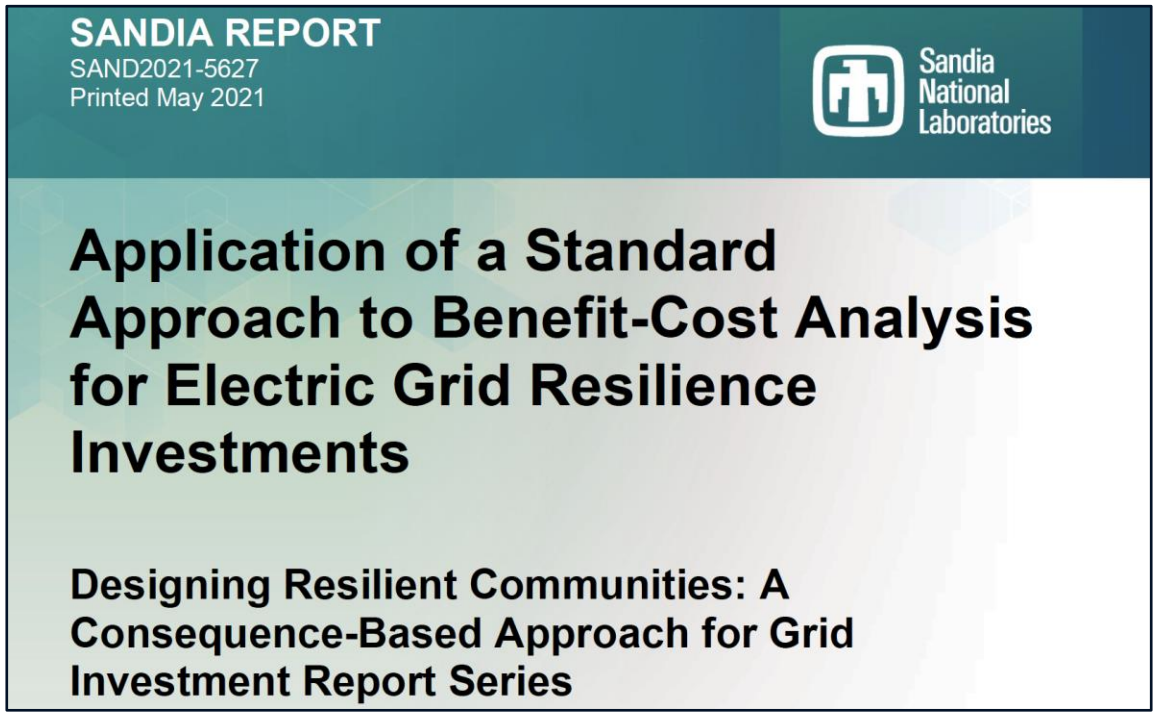
Nichole Hanus

August 24, 2021

National Standard Practice Manual

For Benefit-Cost Analysis of Distributed Energy Resources

AUGUST 2020



Overview of Different Perspectives

Perspective	Definition	Relevant Cost Test(s)
Utility System	• All elements of the electricity or gas system necessary to deliver services to the utility's customers • Generation, transmission, distribution, and utility operations	• Utility Cost Test
Host Customer	• Owner or occupant of the site at which the resilience investments are installed and/or operated • Critical resident, commercial (including municipal government facilities), or industrial	• Participant Cost Test (how will the utility investment affect just the host customer) • Total Resource Cost Test (how a utility investment will affect the host customer and the utility system combined)
Community	• Owner or occupant of the site at which the resilience investments are installed and/or operated • Critical resident, commercial (including municipal government facilities), or industrial	• Participant Cost Test (if the community is deciding on the investment) • Societal Cost Test (if the utility is making an investment and prioritizes community resilience)
Society	• Impacts that extend beyond the utility system, host customer, and community	• Societal Cost Test

Overview of Costs

Impact	Utility System	Host Customer	Community	Society
Installation, Operation, and Maintenance	X	X	X	
Transaction	X	X	X	
Interconnection	X	X	X	
Financial Incentives	X			X
Program Administration	X			
Utility Performance Incentives	X			

Overview of Benefits

Type	Impact	Utility System	Host Customer	Community	Society
Generation, Transmission & Distribution: Energy and Capacity	Reducing Emergency Staff Deployment Costs	X			
	Avoiding Energy Infrastructure Damages	X			
Non-Energy: Economic	Avoiding Damages to Goods and Infrastructure		X	X	X
	Avoiding Lower Revenues from Lower Production and Fewer Sales of Goods and Services		X		X
	Reducing Emergency Staff Deployment Costs		X	X	
	Avoiding Departure of Customers Important to the Community			X	
	Avoiding Lost Economic Development, Education, and Recreation Opportunities			X	X
Non-Energy: Public Health, Safety, and Security	Reducing Medical and Insurance Costs	X	X	X	X
	Avoiding Loss of Quality of Life	X	X	X	X

References

- National Energy Screening Project. (2020). National Standard Practice Manual: For Benefit-Cost Analysis of Distributed Energy Resources. Found at: https://www.nationalenergyscreeningproject.org/national-standard-practice-manual/
- Synapse Energy Economics, Sandia National Laboratories, and Bosque Advisors. (2021). Application of a Standard Approach to Benefit-Cost Analysis for Electric Grid Resilience Investments. Found at: https://www.synapse-energy.com/sites/default/files/Standard_Approach_to_Benefit-Cost_Analysis_for__Electric_Grid_Resilience_Investments_19-007.pdf

Closing Remarks

Campbell Delahoyde, Senior Program Manager, NASEO

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Day 2 Preview

Key Relationships for Accessing BRIC Funds for Local Energy Resilience

Session Times	Session Description
12:30-1:00 PM ET	Keynote and Opening Remarks for Day 2
1:00-1:30 PM ET	Electric Cooperative Perspectives on Hazard Mitigation and Resilience
1:30-2:30 PM ET	Key Relationships: Local Engagement and Strategic Prioritization
2:30-3:15 PM ET	BRIC, BCA, ESPC, SHMO, CHP, CTP, DER, SAIDI—Oh my! Overcoming Language and Organizational Barriers within the Energy-Emergency Management Nexus
3:15-3:30 PM ET	Break
3:30-4:30 PM ET	Equitable Energy Risk Assessment and Management
4:30-5:30 PM ET	Addressing the State and Local Cost Share: Public-Private Partnership Opportunities with Eligible Funding

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End of Day 1

Thank you!

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