RESILIENT NEW ORLEANS:
OPPORTUNITIES FOR SOLAR+STORAGE

Seth Mullendore - Clean Energy Group
Marriele Mango – Clean Energy Group
Etan Gumerman – The Greenlink Group
THE RESILIENT POWER PROJECT

• Increase public/private investment in clean, resilient power systems (solar+storage)
• Protect low-income and vulnerable communities, with a focus on affordable housing and critical public facilities
• Engage city, state and federal policy makers to develop supportive policies and programs
• Visit www.resilient-power.org for more information and resources
Boulder: Nonprofit transportation center serving elderly and disabled residents

Puerto Rico: Supporting the installation of solar+storage at multiple community medical clinics

Boston: Multiple housing properties representing 1,000+ units of senior and affordable housing

New Mexico: Added resilience for remote wildfire operations command center

DC: First solar+storage resilience center at affordable housing in DC

Puerto Rico: Supporting the installation of solar+storage at multiple community medical clinics

SUPPORTING 150+ PROJECTS ACROSS THE COUNTRY
Five Cities: Atlanta, Charleston, Miami, New Orleans, Wilmington

Four Building Types: Schools, nursing homes, multifamily housing, fire stations

Technologies: Solar PV, battery storage

Analytical analysis to determine economic viability

Review policy, market, and regulatory landscape

Recommendations for advancing resilient power in each city
ANALYSIS METHODOLOGY

- **Economic Scenario:** Most cost-effective system configuration based on electric bill savings opportunities and available incentives - maximize NPV

- **Resilient Scenario:** System capable of providing onsite backup power to keep critical services powered and operational for at least several hours during a grid outage

- **Avoided Outage Costs:** The value of losses that would be incurred if a facility were to experience a power outage without a backup source of energy
## Analysis Results

<table>
<thead>
<tr>
<th></th>
<th>Atlanta</th>
<th>Charleston</th>
<th>Miami</th>
<th>New Orleans</th>
<th>Wilmington</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Solar Alone</strong></td>
<td>![Icon]</td>
<td>![Icon]</td>
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<td>![Icon]</td>
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</tr>
<tr>
<td>without Battery Storage</td>
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<tr>
<td><strong>Solar</strong></td>
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<tr>
<td>paired with Battery Storage</td>
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<tr>
<td><strong>Solar</strong></td>
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<tr>
<td>paired with Battery Storage plus value of Avoided Outage Costs</td>
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</tbody>
</table>

### Key:
- **School**
- **Nursing Home**
- **Fire Station**
- **Multifamily Housing**
New Orleans Results: When the avoided cost of outages from avoiding the loss of power are considered, solar+storage makes economic sense for energy resilience for all building types.

Opportunities: City leadership, renewable portfolio standard, recent battery storage development

Barriers: Low potential for bill savings, lack of finance options
When modeled for resilience, solar+storage at a nursing home can provide up to **12 hours** of backup power to a portion of the nursing home providing medical care and emergency services to residents.

### Economic Scenario

Most economical system based on available savings and incentives

<table>
<thead>
<tr>
<th>Solar</th>
<th>Battery Storage</th>
<th>Backup Power</th>
<th>1st Year Savings</th>
<th>Net Lifetime Savings (25-year NPV)</th>
<th>Simple Payback (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 kW</td>
<td>0 kWh</td>
<td>0 hours</td>
<td>$0</td>
<td>$0</td>
<td>0</td>
</tr>
</tbody>
</table>

### Resilient Scenario

Solar paired with battery storage to deliver reliable onsite emergency power

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>30.9 kW</td>
<td>45.7 kWh</td>
<td>12 hours</td>
<td>$1,600</td>
<td>(-$65,500)</td>
<td>53.9</td>
</tr>
</tbody>
</table>

**With Avoided Outage Costs**

<table>
<thead>
<tr>
<th></th>
<th>$30,200</th>
<th>$800</th>
<th>10.4</th>
</tr>
</thead>
</table>
When modeled for resilience, solar+storage can provide up to **12 hours** of backup power to keep the station **fully operational** during an emergency.
Etan Gumerman,
Senior Energy Consultant,
Greenlink Analytics
SOUTHEASTERN EXAMPLES: ALUMA FARM

- Off-grid urban farm in Atlanta.
- Storage Shed, Velo Solar designed.
- 2.8 kW.
- Funded partially with GA Environmental Finance Authority grant.
SOUTHEASTERN EXAMPLES: ATLANTA

• Atlanta Smart Neighborhood
  • 46 townhomes.
  • Pulte Homes & GA Power.
  • All homes have panels and batteries.

• Fire stations in Atlanta were assessed for Solar + Storage grant program.
SOUTHEASTERN EXAMPLES: ORLANDO

• For Resiliency working with Duke Energy

• Largest electricity consumer in city is Wastewater Treatment facility.

• Proposed:
  • Solar and Storage 1-3 MWac
  • with 5-10 MW storage.
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CALCULATING THE VALUE OF ENERGY RESILIENCE: AVOIDED OUTAGE COSTS

Department of Energy’s Interruption Cost Estimate (ICE) Calculator: Bases outage valuation on two reliability indicators annually reported by utilities to the U.S. Energy Information Administration:

- System Average Interruption Duration Index (SAIDI)
  - How long was an outage?
- System Average Interruption Frequency Index (SAIFI)
  - How often did outages occur?
When modeled for resilience, solar+storage at a secondary school can provide up to 14 hours of backup power to a portion of the school that could serve as a temporary emergency shelter.
Multifamily Housing

When modeled for resilience, solar+storage can provide up to **12 hours** of backup power to **common area spaces**, giving residents access to basic services and electricity when sheltering in place during an emergency.

### Economic Scenario

Most economical system based on available savings and incentives

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<tbody>
<tr>
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</thead>
<tbody>
<tr>
<td>20.4 kW</td>
<td>9.8 kWh</td>
<td>12 hours</td>
<td>$1,600</td>
<td>($19,600)</td>
<td>26.4</td>
</tr>
</tbody>
</table>

**With Avoided Outage Costs**

| $4,000 | $3,600 | 10.5 |

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### Solar and Battery Storage Opportunity Landscape in the Southeast

<table>
<thead>
<tr>
<th>City</th>
<th>Solar Incentives</th>
<th>Net Energy Metering</th>
<th>Potential for Electric Bill Savings</th>
<th>Financing Options</th>
<th>Supportive Policies and Programs</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>State/Local</td>
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<tr>
<td>Atlanta</td>
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<tr>
<td>Charleston</td>
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</tbody>
</table>

○ = Not Favorable
● = Highly Favorable