Enabling Resilient Solar Deployment: NYSolar Smart DG Hub

Tria Case
University Director of Sustainability
City University of New York
5 Million in NY & NJ lost Power- three months later 8,200 were still in the dark
Estimated untapped solar energy per day post Sandy:
6,500 kWh
Over 50 Utility, Agency, Industry, CBO & Research Partners
**ENGAGE MARKET STAKEHOLDERS**

- DG Hub Working Groups & Advisory Board
- Installer Workshop
- DG Hub Roundtable Event
- DG Hub Roundtable Listserv

**IDENTIFY MARKET NEEDS**

- Working Group Discussions
- Resilient PV Roadmap Framework
- Solar and Storage Survey
- DG Hub Roundtable Listserv

**CREATE RESOURCES**

- Hardware Fact Sheet
- Finance Fact Sheet
- Permitting Guide
- Technical Analysis
- Ideal locations for resilient PV
Resiliency Resources

- Guidance Memo for Including Storage in Community Solarize Programs
- Economic and Resiliency Impact of PV and Storage on NY Critical Infrastructure
- Solar+Storage Retrofit Guidelines
- Solar+Storage and Microgrid Communications Fact Sheet
- Economics and Finance of Solar+Storage Fact Sheet
- Resilient Solar PV Systems Hardware Fact Sheet
- Solar and Storage Cost Survey
- NYC Solar+Storage Glossary
Resilient PV Report

Evaluated Scenarios

1. PV + Storage (sized for economics)
2. PV + Storage (sized for outage)
3. Hybrid (sized for outage)
4. Generator (sized for outage)

All sites were analyzed with and without a resiliency value
**Finding:** PV+Storage is NPV positive for systems at each site

### School

<table>
<thead>
<tr>
<th>PV+Storage Sized for Economic Savings</th>
<th>Without Resiliency</th>
<th>With Resiliency</th>
</tr>
</thead>
<tbody>
<tr>
<td>PV Size (kW-DC)</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Battery Size (kWh)</td>
<td>74</td>
<td>74</td>
</tr>
<tr>
<td>Battery Size (kW)</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Net Present Value</td>
<td>$51,560</td>
<td>$58,650</td>
</tr>
</tbody>
</table>

### Fire Station

<table>
<thead>
<tr>
<th>PV+Storage Sized for Economic Savings</th>
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</tr>
</thead>
<tbody>
<tr>
<td>PV Size (kW-DC)</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Battery Size (kWh)</td>
<td>43</td>
<td>213</td>
</tr>
<tr>
<td>Battery Size (kW)</td>
<td>16</td>
<td>31</td>
</tr>
<tr>
<td>Net Present Value</td>
<td>$22,365</td>
<td>$324,250</td>
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</tbody>
</table>
**Finding**: Adding storage to PV improves economics and gives “free resiliency”
### Resilient PV Report

**Finding:** Hybrid and PV+Storage systems are better than stand alone generators.

#### Fire Station

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<tr>
<th></th>
<th>Short outage; without resiliency</th>
<th>Long outage; without resiliency</th>
<th>Short outage; with resiliency</th>
<th>Long outage; with resiliency</th>
</tr>
</thead>
<tbody>
<tr>
<td>PV+Storage NPV</td>
<td>-$12,070</td>
<td>-$256,158</td>
<td>$10,149</td>
<td>$93,118</td>
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<tr>
<td>Hybrid NPV</td>
<td>0</td>
<td>-$1,679</td>
<td>$25,384</td>
<td>$344,848</td>
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<tr>
<td>Generator Only NPV</td>
<td>-$51,713</td>
<td>-$51,713</td>
<td>-$19,964</td>
<td>$296,380</td>
</tr>
</tbody>
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NPV: Net Present Value