

REPOWERING OUR SCHOOLS: Resilient Microgrid Hubs for NYC

Ariyan Azad | Civil and Electrical Engineering Focus **Target Audience:** NYC School Construction Authority & FEMA

The Crisis: Urban Flooding

- Over 1,500 public schools sit in NYC coastal flood zones.
- Saltwater ruins basement electrical and heating systems.
- Infrastructure failures force school closures and eliminate neighborhood emergency shelters.



The Solution: Decentralized Power

- **Elevate Utilities:** Move critical electrical switches and controls from basements to upper floors.
- **Solar-Plus-Storage:** Install rooftop solar panels paired with lithium-ion batteries.
- **Grid Isolation:** Use automatic switchgear to allow the building to run independently during a blackout.

Project Phase	Schedule	Major Deliverables	Estimated Cost
1. Flood Risk Assessment	Weeks 1–2	Site surveys and historical flood height analysis	\$45,000
2. Engineering Design	Weeks 3–4	Conduit routing specs and second-floor utility room design	Included
3. Civil & Solar Installation	Weeks 5–6	Modular perimeter flood gates and rooftop solar arrays	\$120,000 (Civil) / \$250,000 (Electrical)
4. Microgrid Integration	Weeks 7–8	Automatic switchgear setup and localized islanding connection	\$85,000 (Labor)
Total Investment	8 Weeks	Complete resilience retrofit per school facility	\$500,000

Key Funding Impact

- **Proven Model:** Case studies from Hurricane Maria prove microgrids successfully protect critical services.
- **Humanitarian Aid:** Keeps power online for neighborhood emergency shelter heating, communication, and medical cooling.
- **Cost Efficiency:** Proactive protection stops repeated disaster repair costs and cuts diesel fuel reliance.