

Fire Department Considerations

Energy Storage Systems Response Considerations

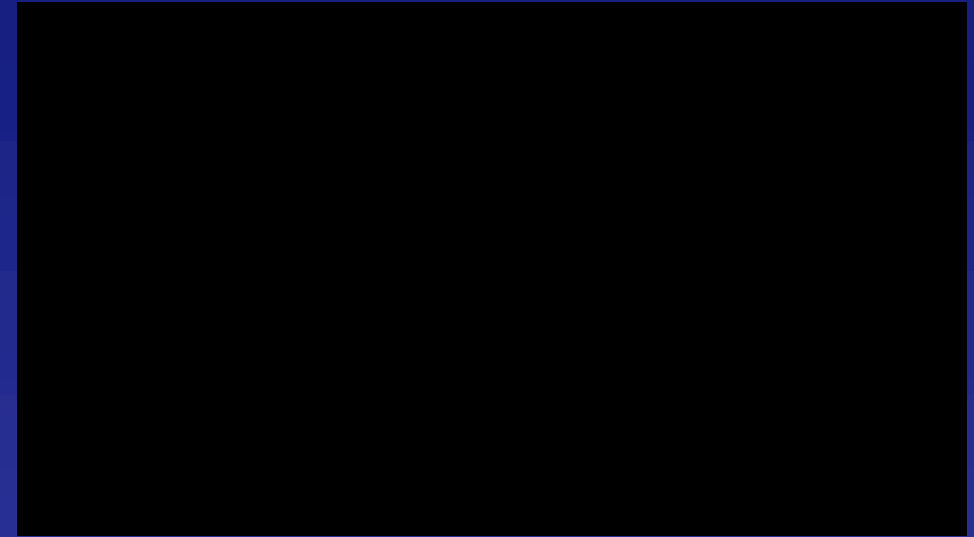
Sandia National Lab
February 22-24



NYSEDRDA \CON ED Fire Testing

Preliminary data

- Toxic\Corrosive gases liberated
- Flammable cocktail (explosion)
- Deep Seated Fire
- Re-ignition Concerns
- Delayed ignition
- Stored\Stranded Energy after burn



Fire Operations

- Lithium Ion (Fire Showing\Not Showing)
 - Water Copious
 - Electrical Leakage (?)
 - Arcing (Not Enough Water)
 - NO ADDITIVES (conductive\insufficient cooling)
 - Clean Agents (FM200, NOVEC 1230)
 - Incipient Fire only (no cooling)
 - Dry Chem/Purple K
 - Lead Acid
 - NOT LI ION



Ventilation

- Ventilation may be needed
 - Build up of Flammable Vapors
- Dedicated system
 - Controlled by I\C
 - Adverse Affects
- Dampers
 - Protection of the building



Fire Operation Continued

- Thermal Imaging Camera (TIC)
 - May not pick up deep seated heat
- Stored\Stranded Energy (still present)
- Battery Monitoring System (BMS)
- Shut Down
 - Fire > Yes
 - Non Fire > Maybe
 - UPS \Critical Infrastructure
- Safety Data Sheets (SDS)
- Haz Mat response
- White Hat Program (Con Ed)



Post Fire

- Limit Overhaul\responder interaction
- Stored\Stranded Energy
- Re-ignition\Incomplete (Li ION)
- Delayed ignition (LI ION)
- Need a responsible party
 - “White Hat” program
 - Manufacturers looking into this
 - Telephone number (reach back)



PV + Storage



- Integrated solution:
 - PV panels on the roof
- Outdoor-certified storage system



Storage Appliance



Renewable Power

12 MW Lithium Ion



Thank You
Paul Rogers
Rich Schlueck
FDNY\Haz Mat

