

high-voltage apparatus, it would have been difficult for any system at this power level to survive the damage sustained.

- Between the time of initial aircraft impact and the collapse of WTC 2, some utility power remained within all of the WTC buildings.
- All power to the WTC complex was cut at 9:59 a.m., either from automatic circuit breakers tripping or from physical damage to the feeder lines caused by the collapse of WTC 2.
- Alternatives to Con Edison power were potentially available at the WTC complex. A significant amount of electricity for use in the event of an emergency was fed through the subway tunnel from New Jersey. There were emergency supply generators in the towers; however, no evidence was found that these units provided power to aid firefighting and rescue after 10 a.m.
- Even though utility power to the rest of WTC 7 was lost at 9:59 a.m., auxiliary utility power to the Con Edison substation itself was still available from the transmission switching station feeders, allowing internal operations to be maintained. There is also evidence that the emergency diesel generators that supplied base power to the rest of WTC 7 did operate after the collapse of WTC 2, but no information was found regarding the operation of these emergency generators following the collapse of WTC 1.
- At 4:33 p.m., the utility control center made a decision to isolate the WTC 7 Con Edison substation by opening the 138 kV circuit breakers feeding the WTC 7 substation. This decision was made by Con Edison management about two hours after the Fire Department of New York (FDNY) officers had the building and immediate surroundings evacuated.
- Con Edison employees observed no fires or significant physical damage to the substation prior to the time when the substation building was evacuated (between 10:20 a.m. and 10:25 a.m.). NIST found no evidence that significant physical damage to the Con Edison portion of WTC 7 occurred due to the collapse of WTC 1 at 10:28 a.m.
- Signals from the Con Edison substation continued to be monitored offsite throughout the day on the supervisory control and data acquisition (SCADA) logs. One fire detector within the Con Edison substation did go into alarm when WTC 1 collapsed, and stayed in the alarm mode until the substation was totally isolated from incoming feeders at 4:33 p.m. However, there were no other indications (e.g., no high temperature alarms from the transformers, no visible smoke emanating from the Con Edison building) that a significant fire occurred within the substations during that period of time. Possible sources of the fire detector alarm were the smoke and dust dispersed in the area of the substations from the collapse of WTC 1.
- Photographs of several Con Edison transformers uncovered during site clean-up showed clear evidence of thermal damage. NIST acquired no material from these transformers and did not determine whether this thermal damage occurred due to electrical overheating, due to a fire in the Con Edison substation, or due to burning within the rubble pile subsequent to the collapse of WTC 7.