





## NRG EL SEGUNDO POWER PLANT, UNITS 1 & 2 | EL SEGUNDO, CA







NRG Energy's El Segundo Generating Station





Units 1 & 2 implosion sequence

-  Two 360 MW Generating Units  
Two 420-Foot Stacks
-  June 2010 – June 2011
-  \$16,000,000
-  NRG Energy

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-  Decommissioning & Demolition
-  Hazardous Material Abatement
-  Salvage & Asset Recovery
-  Equipment Dismantlement

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-  12 Engineers, 40 Laborers  
70% Women & Minorities
-  Zero OSHA Recordables

LVI conducted demolition and hazardous material abatement at NRG Energy's El Segundo Power Plant in preparation for a new, state-of-the-art combined cycle, rapid response, natural gas-fueled & air-cooled power plant with 30% greater efficiency.

LVI performed decommissioning of two 360 megawatt (MW) oil-fired steam generating units, the energy of which was produced by two hydrogen-cooled condensing units. Additionally, LVI removed supporting bulk storage terminals, transportation and distribution piping, turbines, generators, boilers, support and control buildings, mechanical shops, oil terminal, and below-grade structures. Also removed was above-ground fuel oil transport lines, circulating water structures.

### HAZARDOUS MATERIAL ABATEMENT

LVI conducted abatement of asbestos-containing materials, including TSI, galbestos and transite siding, and the removal of interior boiler refractory from the 1,000,000 pound per hour steam boilers and ancillary equipment and structures. LVI included regulatory agencies in the development of the decommissioning strategy and execution plans during the pre-engineering phases. The preparatory phase of the decommissioning required the demolition of two 420-foot lead- and asbestos-coated environmental stacks. Uniquely, the bases of these stacks were constructed at an



*I am extremely impressed with LVI Services' overall construction safety management and worker performance on the project. It was very apparent that every worker was expected to participate in the project safety program, that safety was everyone's job, and safety was #1.* -Debra Hilmerson, President & CEO, Hilmerson Safety Services, Inc.

elevation of 90 feet above elevation. Using proprietary high pressure water blasting and collection systems, LVI abated the coatings from the exterior of the stacks prior to demolition.

### CONTROLLED DEMOLITION APPROACH

LVI used its fleet of ultra high reach equipment to conduct demolition efforts. To break apart the generators LVI used an assortment of torches to separate the portions. Hydraulic excavators were maneuvered to complete the handling of the materials. Repetitive use of "controlled falls" enabled LVI to dismantle large structures at the ground level, eliminating the need for a large labor force on risky, elevated work areas.

### REMOTE-OPERATED EQUIPMENT

Due to the logistics of the construction of the stacks within the footprint of the plant and proximity to the Pacific Ocean, LVI developed a value-engineered stack demolition plan that utilized specialty robotic equipment equipped with water misters and a collection system. This method provided a safer working environment and fully complied with the California Air Emissions standards. By conducting stack abatement, LVI could process and recycle the concrete as approved future use material.

### IMPLOSIVE FELLING

The final demolition of the boiler and super-structures was undertaken through a controlled engineered implosive felling. Due to geographic site constraints, the method of implosion required the upper sections of the boilers first be felled within the vertical structure and then provide for a controlled directional felling of the entire boiler structure. LVI constructed pyramids of engineered structural fill to absorb the impact of the seismic event, mitigating the impact on adjacent operating units.

### STORAGE TANK DEMOLITION

LVI removed four storage tanks, three of which were utilized for water storage. The fourth tank was a large 220-foot-diameter-by-60-foot-tall decommissioned fuel oil tank, which LVI cleaned utilizing ultra high pressure water. The resulting rinsate was collected, profiled and disposed of at a local treatment facility. Contaminated or potentially contaminated water on this project was collected utilizing vacuum and tanker trucks.

The entire site was excavated to a depth of 10 feet below grade. In a few areas we were required to go to 12 feet below grade. These materials were stockpiled and utilized to rebuild the site

to an elevation of five feet below grade. The reconstruction process required placement of the materials in 1-foot lifts and compaction to 95% prior to the next lift being installed. LVI excavated at least 80,000 cubic yards of material and replaced and compacted approximately 40,000 cubic yards.

### SOIL REMEDIATION IN A POPULATED AREA

LVI excavated in excess of 25,000 tons of PCB-contaminated soils. LVI designed and implemented sound, dust and vibration mitigation and abatement procedures along with a comprehensive storm water management plan. Disposal containers were enclosed or covered to prevent potential contaminants from being introduced into the storm water.

### ASSET RECOVERY & RECYCLING

Prior to demolition, LVI extracted all high-grade metals from major and ancillary equipment. This process created an early positive cash flow back to the project through salvage sales and recycling credits. Concrete, asphalt and riprap were sent to an off-site crushing facility for reuse. On the below grade work, all non-contaminated concrete was crushed on site and reused as engineered fill during the backfill and compaction operation.

### PRODUCTIVITY WITHIN A RESTRICTED SCHEDULE

For the duration of the project, LVI employed up to 12 operating engineers and 40 laborers. Community restrictions required typical work hours. All of the labor force was union, with approximately 70 percent made up of minorities and women.

### AGENCY COORDINATION

LVI developed multiple site-specific health and safety plans, including a 1000-foot exclusion zone requiring coordination with 3 municipalities, 3 law enforcement agencies, the US Coast Guard, LA County Beaches & Harbors Department, and the FAA.

### HIGHEST RATING FOR HEALTH AND SAFETY

LVI completed this project ahead of schedule. In addition, when NRG Energy commissioned a third party consultant to conduct a health and safety audit for the site, LVI achieved the highest rating available for our commitment to health and safety.

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**Project Managed By** LVI Environmental Services Inc., a California-based subsidiary of LVI Services Inc. | **Client Contact** NRG Energy Thomas Oberg, 713-795-6133