AES Alamitos Energy Center

Commissioning and Start-up Activities Frequently Asked Questions (FAQ)

Background

Alamitos Energy Center (AEC) is the modernization of the AES Alamitos electricity generating station located on Studebaker Road in Long Beach. The modernization project includes the construction of a new battery energy storage system (BESS) building and a new combined-cycle gas turbine generator (CCGT) to replace the existing 1950's era plant. Compared to the old steam generators, the new plant improves efficiency and reduces emission rates, increases operating flexibility enabling the integration of renewable energy, eliminates the use of ocean water for cooling, and significantly reduces the use of fresh water by approximately 70%.

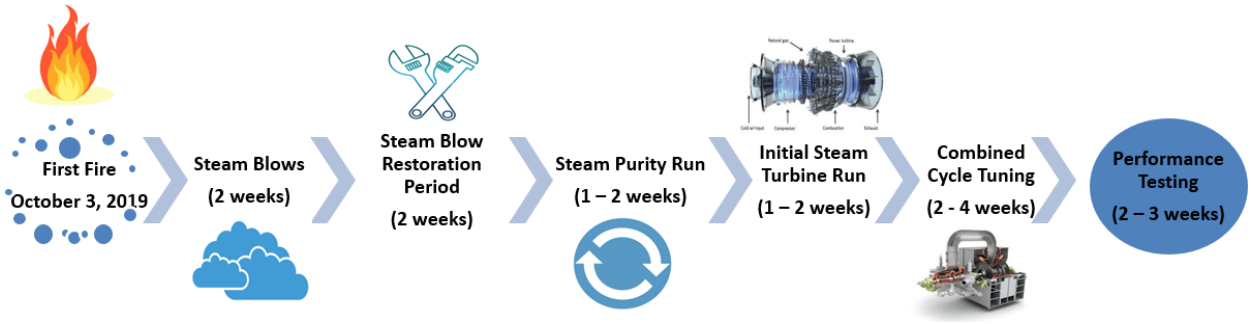
Where are we at in the construction schedule?

Construction of the AEC started with the CCGT in July 2017 and is now 95% complete. We are entering the commissioning phase of this part of the modernization project, the last phase as we transition towards operations. The BESS project broke ground in June and is currently in the earthwork phase.

What is commissioning?

In the CCGT commissioning phase all critical systems and components of the new plant, from high-voltage electrical systems to pumps, fans and compressors will be tested and 'commissioned' to insure they meet their design specifications and can operate safely and effectively. Cold commissioning, which has been going on since January, ensures that all equipment is fitted, connected and operating correctly within the AEC. Hot commissioning is the first start up and testing of the plant with fuel (natural gas). This will be the 'first fire' of the new CCGT, the first time that natural gas is combusted in the gas turbines and the first-time steam is produced to clean and test the entire steam system in the plant. Hot commissioning of the

AEC will include, first fire of the gas turbines, Steam Blows, Steam Purity Run, and the Initial Steam Turbine Run before the final performance testing of the entire plant.



What are Steam Blows?

Steam blows are a mechanical process where the heat from the combustion turbines is used to generate high pressure steam with the purpose of cleaning the main lines/pipes of the AEC.

Why are Steam Blows necessary?

Steam blows are an important part of the commissioning phase due to their effectiveness in removing construction debris from newly installed steam systems, ensuring proper system functioning, and extending the life of the equipment. The heat and steam pressure from this process will ensure that the steam pipes are clean and that no material will remain in the steam path that could otherwise damage the steam turbine once the steam lines are connected directly to the steam turbine.

When will Steam Blows begin?

Steam Blows are scheduled to begin shortly after first fire. *****

How long is the Steam Blow process?

There are several different steam flow paths that need to be cleaned at AEC. Each steam flow path requires enough run time to ensure that the steam pipes are perfectly clean, and no material remains in the steam path. We anticipate it will take one to two weeks to complete this process.

> **Steam plume:** During the Steam Blow process, steam is released from the steam tube system and vented to the atmosphere. This will create a **large steam plume** that will be visible for the duration of each Steam Blow.
>
> **Noise:** With sound mitigation measures employed, the high-pressure steam release will create a loud hissing sound similar to the sound of a high-pressure hose. The sound level of the Steam Blow will meet the City of Long Beach noise ordinance of 70 dB at the AES fence line and will only occur during the daytime. Open air steam blows will not be conducted at night.

What will AES do to minimize these impacts to the community?

The process is being designed to have minimal impacts on the community. Our License from the California Energy Commission requires that high pressure steam blows (open air steam blows) be restricted to normal daylight hours between 7 a.m. and 7 p.m., Monday through Friday, and 9 a.m. to 6 p.m. on

Saturday. The temporary Steam Blow piping is run from the blow point on the steam piping to an end point fitted with a silencer that functions to reduce the sound produced by the Steam Blow. Other noise control measures may include the placement of temporary noise barriers around the steam release point.

More information about Steam Blows

The steam plume from the initial Steam Blow may have a yellow or light orange appearance at first if rust has accumulated in the piping system. Should this occur, it will usually clear itself in a short time.

Implementing Steam Blows is common practice during commissioning of power plants but will not be a normal part of plant operations.

What's next?

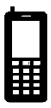
Following Steam Blows there will be a Steam Blow restoration period. During this period, the temporary Steam Blow piping will be removed and permanent connections will be made to the steam turbine to prepare for its commissioning. Following the restoration period, we will begin the Steam Purity runs and Initial Runs of the combustion turbine generator followed by Initial Runs of the steam turbine generator. During Steam Purity runs steam will be routed through the various components of the AEC via a closed-loop cycle to allow for the efficient operation of the steam turbine. This phase will run continuously, including overnight, for 2 to 4 weeks*. The closed-loop Steam Purity Runs should not sound much different from our current normal operation of the older units.

Are we there yet?

Not quite. After the initial Steam Turbine runs and all systems check out per the specifications there will be a 2 to 4-week* period where the units will be tuned and optimized. This phase will be similar to normal operations. Once tuning is complete, we will do performance testing which can take anywhere from 2 to 3 weeks*. This will complete the commissioning phase of the AEC.

Who can I speak with if I have questions?

Please do not hesitate to contact us anytime with questions or concerns. You can also sign up to receive e-mail updates by e-mailing us and typing "E-mail updates" on the Subject line.

 (888) 363-2226  talk@renewaesalamitos.com

Please note, this schedule may change due to unforeseen circumstances.

Simulation of the AES AEC

Aerial photo July 2019