

# Berkeley High School

Natatorium Health, Safety and Efficiency Project

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Facilities Subcommittee

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John Calise, Executive Director

# Natatorium Feasibility Study

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- Berkeley High School's swimming pool has suffered some health and safety concerns over the last couple of years. It is also a large energy user as it relates to BHS and the entire School District. The feasibility study focused on the evaluation of a thorough solution to both the Health, Safety, and Energy aspects of the building. Upon completion of the study, and an in depth review, the following actions are recommended;

# Project Scope

## High Level Overview

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- *Replace the Pool AHU with a modern unit designed to manage and treat the air*
- *Install PV (solar) on various roofs to offset the electric cost of the pool system, working towards a ZNE (zero net energy) pool*
- *Install a trichloromine exhaust system eliminate potential problems near the pool surface*
- *Install a pool monitoring dashboard that measures and monitors critical pool systems*
- *Install Electric Driven Pool Cover*
- *Improve water and air quality for maximum health and safety benefits*
- *Improve energy efficiency*

# Project Objectives

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- Optimal Indoor Air Quality
- Gas/Therm reduction
- Electricity/kWh reduction
- Zero Net Energy/Electricity Certification
- Targeted CO<sub>2</sub>/Humidity levels
- Optimal Air Distribution
- Significant Reduction in Water Loss to Evaporation

# Benefits of Award Using Government Code Section 4217 -

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- Award based on best value and experience
- Design-Build model creates ownership of design for constructability purposes
- Multiple measures within a project scope of work that require integration and complimentary results
- A variety of engineering and design disciplines being utilized including structural, mechanical, electrical, energy, accessibility and architecture.
- Fixed Firm Price – Single Point of Responsibility/Accountability
- Utilize existing grants, rebates and incentives...i.e. Conditional Approval from PG&E on e-meter 1006910943 for Equity SGIP rebate for Battery Storage.
- PR/Communications Campaign
- **Performance Guarantee**

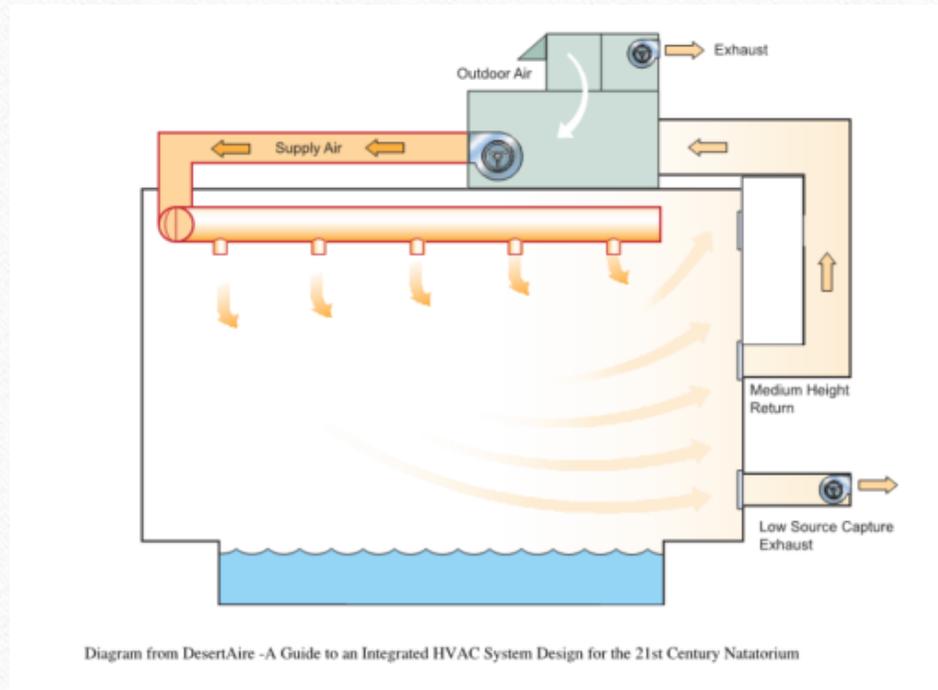
# Key Points of Redesign

## Air Handling Unit (AHU) and Exhaust System

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- The existing roof-mounted systems extract air near the roof line at an elevation over 30 feet above the water surface.
- This “high exhaust” system is more likely to draw air from the supply air discharge from structure mounted ductwork than from the surface of the pool and deck.
- Chloramines are off-gassed from the surface of the water and being heavier than air, hang in the air directly above the pool water level. High levels of chloramines will cause corrosion to surfaces and equipment in the pool area. More importantly, the trichloramines are especially irritating to the eyes, nose and lungs

# Improved Air Quality and Distribution



# Conceptual Solar Placement

- Potential Locations for New Solar PV Arrays
- Adjust pitch to maximize efficiency on existing PV panels
- Proper Design to Maximize Efficiency Through Location, Orientation and Pitch



# Process

- Natatorium Project – Design through Closeout Process using Gov. Code Section 4217

