# The Elks Lodge, Palo Alto, CA

## Introduction

The Elks Lodge in Palo Alto CA decided to retrofit their 1000+ panel 362kW Canopy PV array with 120 SunDrum® Solar SDM100-300 collectors (78kWth) to heat their 3300 $ft^2$ pool. The system goal was to eliminate natural gas consumption except for 8 weeks in the winter. The system is meeting this goal only requiring some natural gas back up on the most inclement days. The system is on track to save over 13,000 therms (400,000kWhth) and offset nearly 160,000lbs CO2 annually.

## Retrofit Existing Array

Freedom Solar retrofitted 120 SDM100-300 collectors onto the back of the existing PV panels converting them to hybrid modules or (PV-T). The collectors have a surface area of 1560 ft2 or roughly half of the pool surface area. To allow this small area to heat the pool year round, the HarvestHP™ system uses some of the arrays electrical energy to power a heat pump and convert thermal energy to useable temperatures similar to how an electrical inverter will take 35Vdc energy and convert it to 120Vac.

Collectors visible underneath the carport.

Overhead view of Lodge and pool

## System Information

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| **Location:** | Palo Alto, CA, USA |
| **Application:** | Pool & Domestic Hot Water |
| **Rated Power Output:** | 78kWth |
| **Yearly Energy Output:** | 400,000 kWh |
| **Yearly CO2 Reduction:** | 160,000 lbs |
| **Solar Collectors:** | 120 SDM100-300 650Wth |
| **System Format:** | Indirect closed loop |
| **Storage Capacity:** | 3300 $ft^2$ Pool |
| **Backup Heating:** | Natural Gas |

## Contact Information

SunDrum Solar | www.sundrumsolar.com
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