

Equipment Replacement Solution

Case Study

2920 Prospect Park Dr. was equipped with HVAC equipment that was at the end of its useful life. Faced with high replacement costs, Sierra Asset Management was looking for a solution.

Challenge

The existing system used two rooftop “boxcar” type systems rated at 50 Tons cooling capacity each. Despite the fact that these machines used R-22 (a refrigerant with very good high temperature cooling performance), on hot days the existing units were unable to keep the tenants cool. Because of the phase-out of R-22, all replacement options used R-410a based equipment. Unfortunately, because R-410a has lower high-temperature cooling performance the nominal size of the replacement equipment would need to increase from 50 Tons to 60 Tons. Additionally, R-410a equipment is heavier than the R-22 equipment it replaces for any given cooling capacity.

The combination of increased nominal size and increased weight per unit meant that the replacement unit would have been roughly 50% heavier than the unit it replaced. Because of this, the project was looking at significant structural work to enable a standard replacement. This would result in the need to retain a structural engineer, the need to move top floor tenants to allow structural work to occur, and added the cost for installing additional structural bracing.



Built in 1984, 2920 Prospect Park Drive is a 44,500 FT², 2-story office building in Rancho Cordova, CA.

“When rooftop HVAC upgrades occur to an existing building and the new unit weights exceed the weight of the system being replaced by more than 10%, a structural evaluation will need to occur. The structural evaluation will require both gravity load path of the new HVAC units to be tracked to the foundation level and the lateral loads of the new HVAC units on the existing framing to be resisted and supported. Typically for an existing building a site visit by the structural engineer will be required, along with review of the existing building as-built drawings. They will need to perform gravity and lateral calculations to verify existing framing adequacy or determine if new additional framing blocking is required. For the building department submittal the structural engineer will need to develop framing plans and details for building department approval, which typically includes a calculation package and drawing set.”

Jon Martin, Structural Engineer”

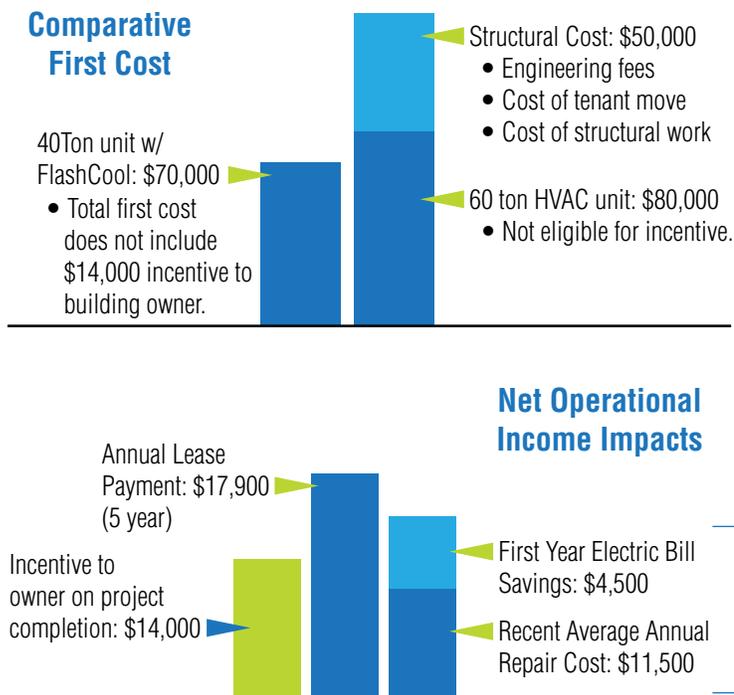
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Solution

Sierra Asset Management turned to Beutler Corporation to find the best solution. The clear choice was to reduce the nominal size of the equipment and utilize evaporative pre-coolers. By converting to R-410a, adding Pre-coolers, and downsizing to a 40 Ton unit, the on-peak cooling capacity of the HVAC system was increased compared to the original equipment. Additionally, the weight of the new system was within 200 lbs of the original equipment, eliminating almost all structural impacts. Further, reducing the size of the equipment reduced the first cost of the project. The new system was also far more energy efficient, qualifying for substantial utility incentives. Together, these items cut the first cost of the project roughly in half.

Results

The Annual savings from avoided repair and energy costs (~\$16,000) nearly equal the annual lease payments of \$17,900, even with the building owner taking the entire incentive as a cash payment. If the incentive had been applied to the principal, the project would have been zero dollars down and cash flow positive.



“Beutler took a large upcoming capital expense and made it go away. My tenants are happy, net operational income is unchanged, my owner doesn’t need to write a check, and he ends up getting money in his pocket at the completion of the project. For any building in a similar situation I think that this is an absolute no brainer.”

*Steve Hussey, Owner,
Sierra Asset Management*



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