POUDRE SCHOOL DISTRICT
AIR CONDITIONING STUDY
PHASE II

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GOALS

The goals of the Phase II study are as follows:

- Follow up on the concepts established in Phase I and provide an Opinion of Probable Cost for the work required to add air conditioning to all schools that currently do not have air conditioning.
- Establish an Opinion of Probable Costs for the items identified in Phase I as needing to be replaced either due to being beyond their useful service life or inadequate comfort performance.
- Establish Opinion of Probable Costs for the items identified in Phase I as feasible alternative options to air conditioning that could improve the comfort in the warmer times of the school year – but not incur the cost and energy use increase that industry standard air conditioning would require.

APPROACH

The scope to provide air conditioning, replace equipment beyond its useful service life or provide tempering has been defined in broad chunks; primarily consisting of demolition, new airside equipment, new central plant equipment and building controls. Areas such as administration areas, cafeterias, kitchens and gymnasiums

The cost to address life cycle needs or comfort issue concerns (i.e. 2012/2013 DOAS installations)

equipment and supporting systems must be taken through a construction document process. What is presented here is only a conceptual representation to establish potential costs for PSD to consider in its planning process.

MECHANICAL

Systems analysis per school can be further understood by review of the Phase I report and the Scope Definition Drawings. In general terms, the following concepts were evaluated.

- Air delivery systems were chosen to be either VUVs or VAV RTUs with the exception of the small schools where furnace type systems are already in place.
- Air cooled chillers were the primary option for almost all schools except small schools such as the mountain schools, Mountain View, and Fullana.
- Packaged VAV RTUs was an additional option explored in schools where the primary air delivery system was to be via VAV RTUs in lieu of VUVs.
- Providing cooling tower tempering in lieu of a traditional mechanical cooling system was evaluated for all schools where an air cooled chiller was evaluated.

ARCHITECTUR AL

- Architectural building effects were evaluated based on the mechanical system concepts impact to the existing walls, roofs and ceilings.
- Costs based on size of wall opening, size of roof patching, amount of ceiling removal, and floor patching were established on a square foot basis.
- A cost has been added to most projects to account for the likelihood that some asbestos abatement will be required should extensive HVAC retrofits be installed. Althopre

from 1947

- Beattie, Irish and Riffenburgh. These schools received a cooling tower tempering system in 2014. The original construction dates range from 1967 to 1971. The life cycle cost needs and the cost to add air conditioning are almost identical. This is due to the old equipment and duct from the late 1960s/early 1970s that had to be left in place due to budgetary constraints in 2014. It does not make sense to install air conditioning equipment in these schools when you already h yar yt(r)10 scn/r17/201hTt [illegible]

- Fullana. This school is primarily air conditioned via residential furnaces and condensing units. The duct systems are 40 years old and should be replaced. An entire mechanical replacement is appropriate for this building.
- Wellington Middle School. This school was mostly air conditioned in 1992 and has received some additions and renovations so that most of the school is air conditioned now. Some parts of the original construction have life cycle needs and is why the life cycle needs are approximately half of the air conditioning budget. This school will be reaching its life cycle in 2022 and complete replacement to a more energy efficient VAV based system should be installed.
- Rocky Mountain High School. This school is a mix between 1971, 1994, and 2012 installations. 1971 has no AC, 1994 has AC and 2012 is DOAS tempering. All 1994 and 1971 equipment should be removed. 1971 pipe and duct should be removed. All new RTUs and VAVs should be installed throughout these areas. The 2012 DOAS RTUs should have cooling coils installed to provide air conditioning. The life cycle needs are much less than the air conditioning budget needs, however still amount to almost $2 million due to the gym and locker room spaces still being served by 1971 equipment.

CONSTRUCTION SCHEDULING

The extensive work required to install air conditioning and/or the life cycle needs at most schools is beyond what can be accomplished in a typical summer break.

- Elementary school construction schedule should allow 4 months.
- Middle School construction schedule should allow 8-9 months.
- High School construction schedule