

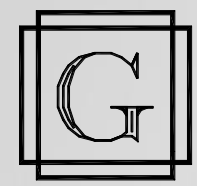
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Madison District Wide Air Conditioning Study



★ Designed by TownMapsUSA.com



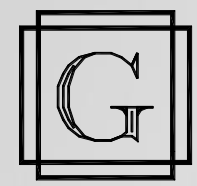
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Objective:

- Determine the feasibility of air conditioning all classrooms throughout the Madison School District.
- Survey all schools and quantify spaces currently with and without air conditioning.
- Compare different types of air conditioning
 - a) Window units
 - b) Ductless Split System
 - c) Unit Ventilator Conversion
 - d) Chiller Plant
 - e) Geothermal Water-fed units
- Evaluate existing electrical services to determine current power usage and calculate available power.



Window Units:

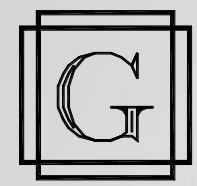


Pros:

- Lowest initial cost
- Easiest to install
- Easy to transfer from room to room

Cons:

- Limited tonnage per room without installing several units per room
- Units don't provide outside air
- Will not be tied into BMS (Building Management System)



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Ductless Split System:

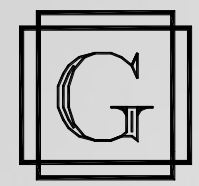


Pros:

- Relatively low initial cost

Cons:

- Units do not provide outside air
- Highest electrical usage
- Will not be tied into BMS (Building Management System)



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Unit Ventilator Conversion:

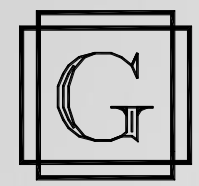


Pros:

- Provides higher tonnage per room
- Can be tied into BMS

Cons:

- Costly to install
- Major construction project to tie units into existing heating system



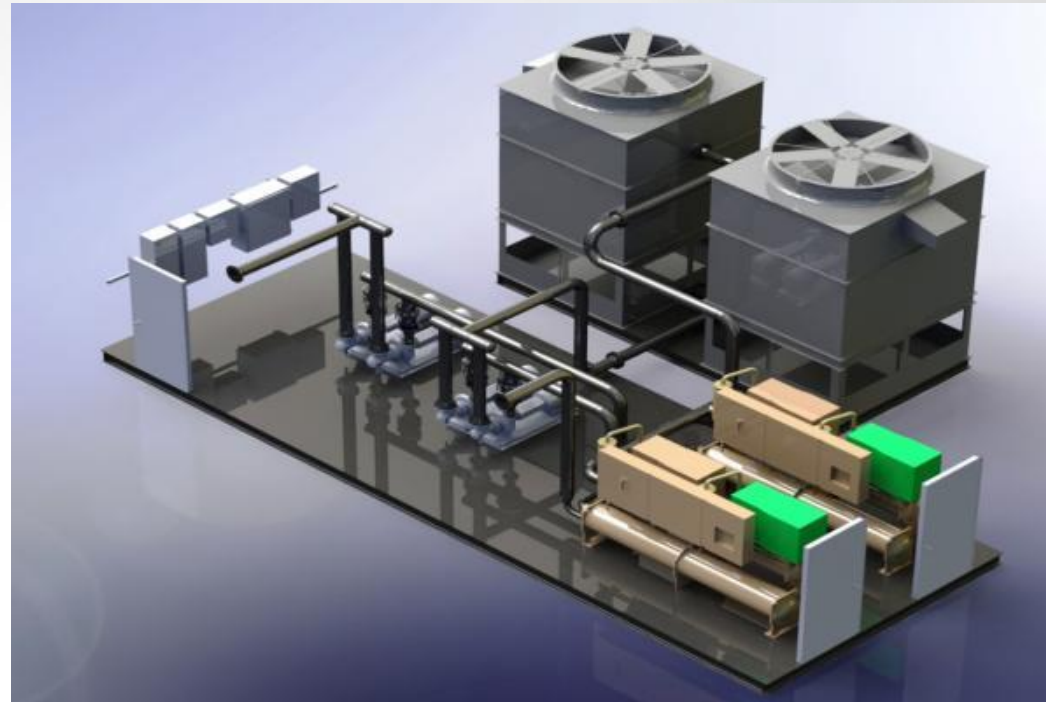
Chiller Plant:

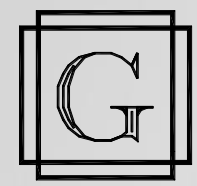
Pros:

- Centralized cooling plant

Cons:

- Extremely costly (multi-million dollar project – not feasible)
- Extensive reconstruction of HVAC system





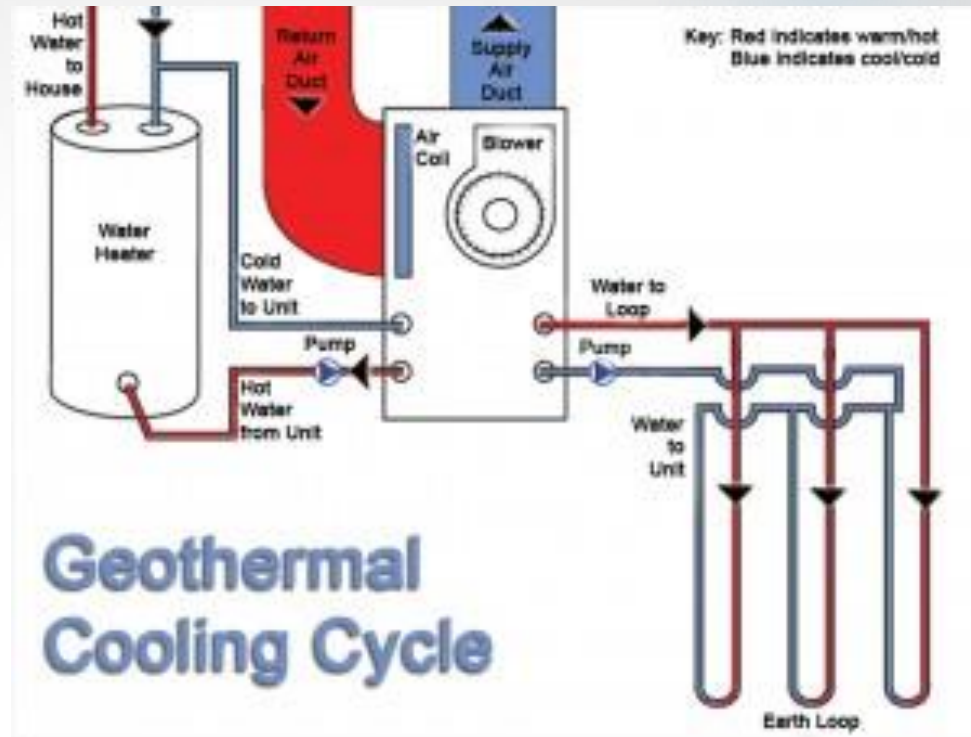
Geothermal:

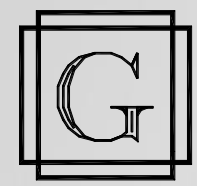
Pros:

- Most efficient system

Cons:

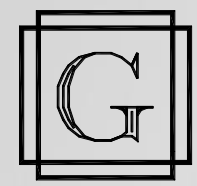
- Extremely costly (multi-million dollar project – not feasible)
- 200 feet per ton would require over 18,000 feet of wells or 500 feet per ton for horizontal installations would require 45,000 linear feet of piping
- Extensive reconstruction of HVAC system





Electrical Study:

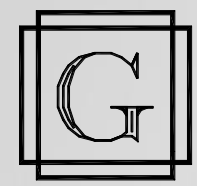
	Torey J. Sabatini	Kings Road	Central Avenue	Junior School	High School
Existing Service (Amps)	1000 (480V)	600	1200	2000	2000
Current Power Usage (Amps)	224	187	222	350	700
Total Building Power Req'd. with Window Units	398.8	551.8	632.4	806	1201.6
Total Building Power Req'd with Ductless Splits	603.5	979	1113	1340	1789
Total Building Power Req'd with Unit Vent. Conv.	477	715	860	1010	N/A



Cost for Systems:

Adequate Power	Torey J. Sabatini	Kings Road	Central Avenue	Junior School	High School
Window Units	Yes	No	Yes	Yes	Yes
Ductless Splits	Yes	No	No	Yes	No
Unit Vent. Conv.	Yes	No	Yes	Yes	N/A

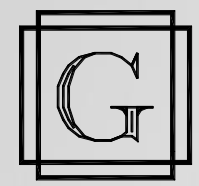
Cost for Installation	Torey J. Sabatini	Kings Road	Central Avenue	Junior School	High School	Total Cost
Window Units	\$41,400	\$193,200	\$48,600	\$54,000	\$59,400	\$396,600
Ductless Splits	\$276,000	\$438,000	\$474,000	\$360,000	\$645,500	\$2,193,500
Unit Vent. Conv.	\$575,000	\$750,000	\$675,000	\$750,000	N/A	\$2,750,000



Other Considerations:

- The scope of this study includes air conditioning classroom spaces, **not** corridors or common spaces

	Torey J. Sabatini	Kings Road	Central Avenue	Junior School	High School
Current Power Usage (Amps)	224	187	222	350	700
Total Building Power Req'd. with Window Units	398.8 (+78%)	551.8 (+195%)	632.4 (+185%)	806 (+130%)	1201.6 (+72%)
Total Building Power Req'd with Ductless Splits	603.5 (+169%)	979 (+424%)	1113 (+401%)	1340 (+283%)	1789 (+156%)
Total Building Power Req'd with Unit Vent. Conv.	477 (+113%)	715 (+282%)	860 (+287%)	1010 (+189%)	N/A



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Questions