Report created on **May 29, 2016, 4:41 a.m.**
by **Doanh Do**

Decision Name: Central vs. Distributed Hot Water System

Project: Use Cases

01. Decision Summary

Due Date	In Progress	Central Plant Heating Hot Water Sys...
Decision Status	**Selected Alternative**	

Objective

The goal is to choose whether to use a central or a distributed hot water system

Collaborators

Doanh Do

02. Alternatives

Central Plant Heating Hot Water System

Distributed Heating Hot Water

03. Factors & Criteria

Sq ft of mechanical space required
Want Criterion : the less the better

Access for maintenence
Must Criterion : must have access

Quantity of broiler and standby
Want Criterion : the less the better

Ability to do broiler stack heat recovery
Want Criterion : the more efficient the better

Pumping energy
Want Criterion : less energy the better

Construction schedule
Want Criterion : the shorter the better

04. Attributes

Sq ft of mechanical space required

Central Plant Heating Hot Water ...: 32000 sqft	*Met meet must criterion* ✓
Distributed Heating Hot Water: 51000 sqft	*Met meet must criterion* ✓

Access for maintenence

Must Criterion: must have access

Central Plant Heating Hot Water ...: outside secure perimeter	*Met meet must criterion* ✓
Distributed Heating Hot Water: inside secure perimeter	*Met meet must criterion* ✓

Quantity of broiler and standby

Central Plant Heating Hot Water ...: 3 duty + 1 standby	*Met meet must criterion* ✓
Distributed Heating Hot Water: 20 duty + 7 standby	*Met meet must criterion* ✓

Ability to do broiler stack heat recovery

Central Plant Heating Hot Water ...: 10% more efficiency	*Met meet must criterion* ✓
Distributed Heating Hot Water: Cannot stack	*Met meet must criterion* ✓

Pumping energy

Central Plant Heating Hot Water ...: 150000 kwH per year	*Met meet must criterion* ✓
Distributed Heating Hot Water: 100000 kwH per year	*Met meet must criterion* ✓

Construction schedule

Central Plant Heating Hot Water ...: 4 weeks	*Met meet must criterion* ✓
Distributed Heating Hot Water: 2 weeks	*Met meet must criterion* ✓

05. Advantages

Sq ft of mechanical space required
Want Criterion : the less the better

32000 sqft	Advantage: None	Least Preferred Attribute ✕
51000 sqft	Advantage: 19000 less sqft of space	Most Important Advantage ★

Access for maintenence

outside secure perimeter	Advantage: None	Least Preferred Attribute ✕
inside secure perimeter	Advantage: outside vs. inside access	Most Important Advantage ★

Quantity of broiler and standby
Want Criterion : the less the better

3 duty + 1 standby	Advantage: None	Least Preferred Attribute ✕
20 duty + 7 standby	Advantage: 17 less duty and 6 less standby	Most Important Advantage ★

Ability to do broiler stack heat recovery
Want Criterion : the more efficient the better

10% more efficiency	Advantage: None	Least Preferred Attribute ✕
Cannot stack	Advantage: 10% reduction in thermal energy	Most Important Advantage ★

Pumping energy
Want Criterion : less energy the better

150000 kwH per year	Advantage: 50000 kwH per year less energy	Most Important Advantage ★
100000 kwH per year	Advantage: None	Least Preferred Attribute ✕

Construction schedule
Want Criterion : the shorter the better

4 weeks	Advantage: 2 weeks less	Most Important Advantage ★

2 weeks	Advantage: None	Least Preferred Attribute ✕

06. Importance of Advantages

Sq ft of mechanical space required
Want Criteria : the less the better

Alternative	Attribute	Advantage	Weight of Advantage
Central Plant Heating Ho...	32000 sqft	None	
Distributed Heating Hot ...	51000 sqft	19000 less sqft of space	68

Access for maintenence
Must Criteria : must have access

Alternative	Attribute	Advantage	Weight of Advantage
Central Plant Heating Ho...	outside secure perimeter	None	
Distributed Heating Hot ...	inside secure perimeter	outside vs. inside access	51

Quantity of broiler and standby
Want Criteria : the less the better

Alternative	Attribute	Advantage	Weight of Advantage
Central Plant Heating Ho...	3 duty + 1 standby	None	
Distributed Heating Hot ...	20 duty + 7 standby	17 less duty and 6 less standby	47

Ability to do broiler stack heat recovery
Want Criteria : the more efficient the better

Alternative	Attribute	Advantage	Weight of Advantage
Central Plant Heating Ho...	10% more efficiency	None	
Distributed Heating Hot ...	Cannot stack	10% reduction in thermal energy	64

Pumping energy
Want Criteria : less energy the better

Alternative	Attribute	Advantage	Weight of Advantage
		50000 kwH per year less	

Central Plant Heating Ho...	150000 kwH per year	50000 kwH per year less energy	100*
Distributed Heating Hot ...	100000 kwH per year	None	

** Paramount Advantage*

Construction schedule
Want Criteria : the shorter the better

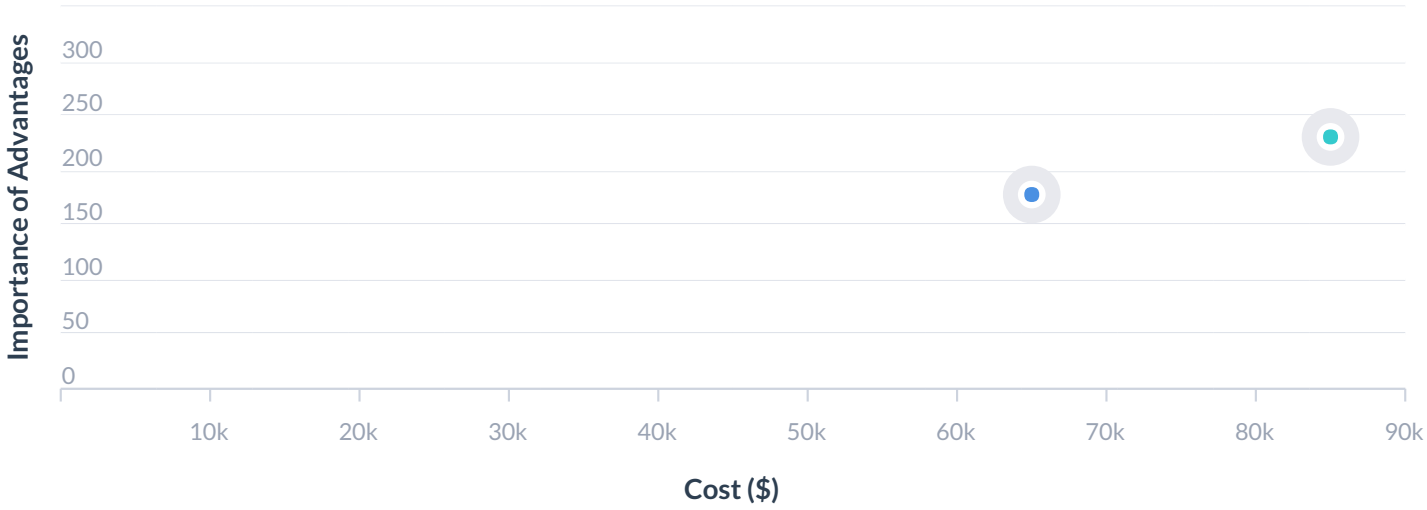
Alternative	Attribute	Advantage	Weight of Advantage
Central Plant Heating Ho...	4 weeks	2 weeks less	78
Distributed Heating Hot ...	2 weeks	None	

07. Costs

Alternative	Category 1	Category 2	Category 3	Category 4	Category 5	Total*
Central Plan...	$65,000.00	$0.00	$0.00	$0.00	$0.00	$65,000.00
Distributed ...	$85,000.00	$0.00	$0.00	$0.00	$0.00	$85,000.00

08. Decision

Importance of Advantages vs. Cost Graph



Alternative	Importance of Advantages	Cost
1 Central Plant Heating Hot Wa...	178	$65,000.00
2 Distributed Heating Hot Wat...	230	$85,000.00

Selected Alternative	Importance of Advantages	Life Cycle Cost
Central Plant Heating Hot Water Sys...	178	$65,000.00

Final Notes

Last Modified

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