

Energy Systems Decision



Energy Systems Question

“ How do we heat and cool the new courthouse? ”



And... should the New Courthouse be designed to serve only itself, or the entire campus (over what period of time)?



Decision Recommendation:

Commit to an expandable Central Utility Plant (CUP) as part of the new Courthouse to enable campus-wide decarbonization



Options Overview

- **Path 0** – “Baseline”: Stay on steam forever. Three buildings continue to operate independently utilizing district steam, with no plans for expansion. *(Not recommended for consideration)*
- **Path 1** – Decentralized: Stand-alone systems in each building. Avoid additional IJCC budget allocation now but face expensive retrofits later.
- **Path 2** – Expandable CUP: Design new courthouse basement for future campus-wide heating/cooling. Additional investment now, saves millions later. *(Recommended)*

Recommendation Criteria

- Upfront cost
- Annual cost
- Energy use
- Control

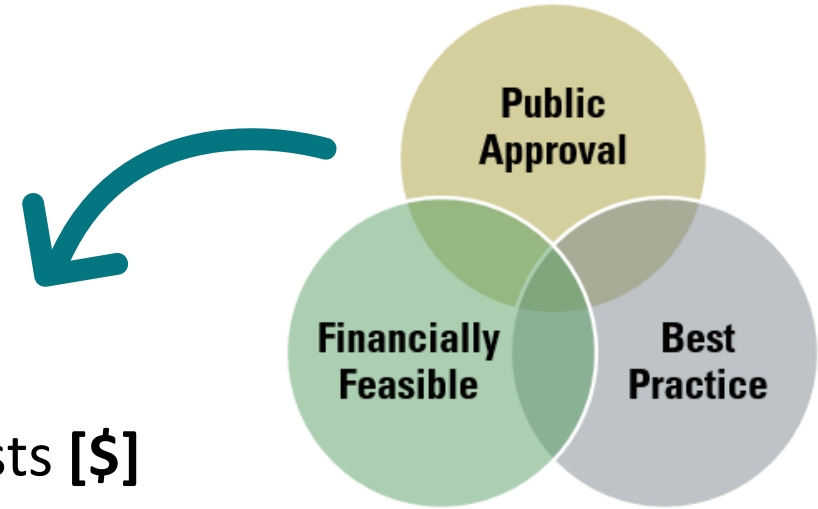
**Other earlier options were considered by the design team but ultimately ruled out.*



Why This Matters

WE HAVE AN OPPORTUNITY TO INFLUENCE...

- Lower Long-Term Operating & Maintenance Costs [\$]
- Lower Future Capital Costs & Less Equipment Needed [\$]
- Emissions Reduction Commitment That Must Be Met
- Risk Mitigation [price exposure] for District Steam Energy [\$]



Decision Matrix Summary

Best Practices

Centralized systems are the industry standard for a facility of this scale, improving efficiency, long-term performance and system flexibility.



Financial Feasibility

Higher upfront investment avoids major retrofit costs later, delivering stronger long-term financial value.



Public & Stakeholder Feedback

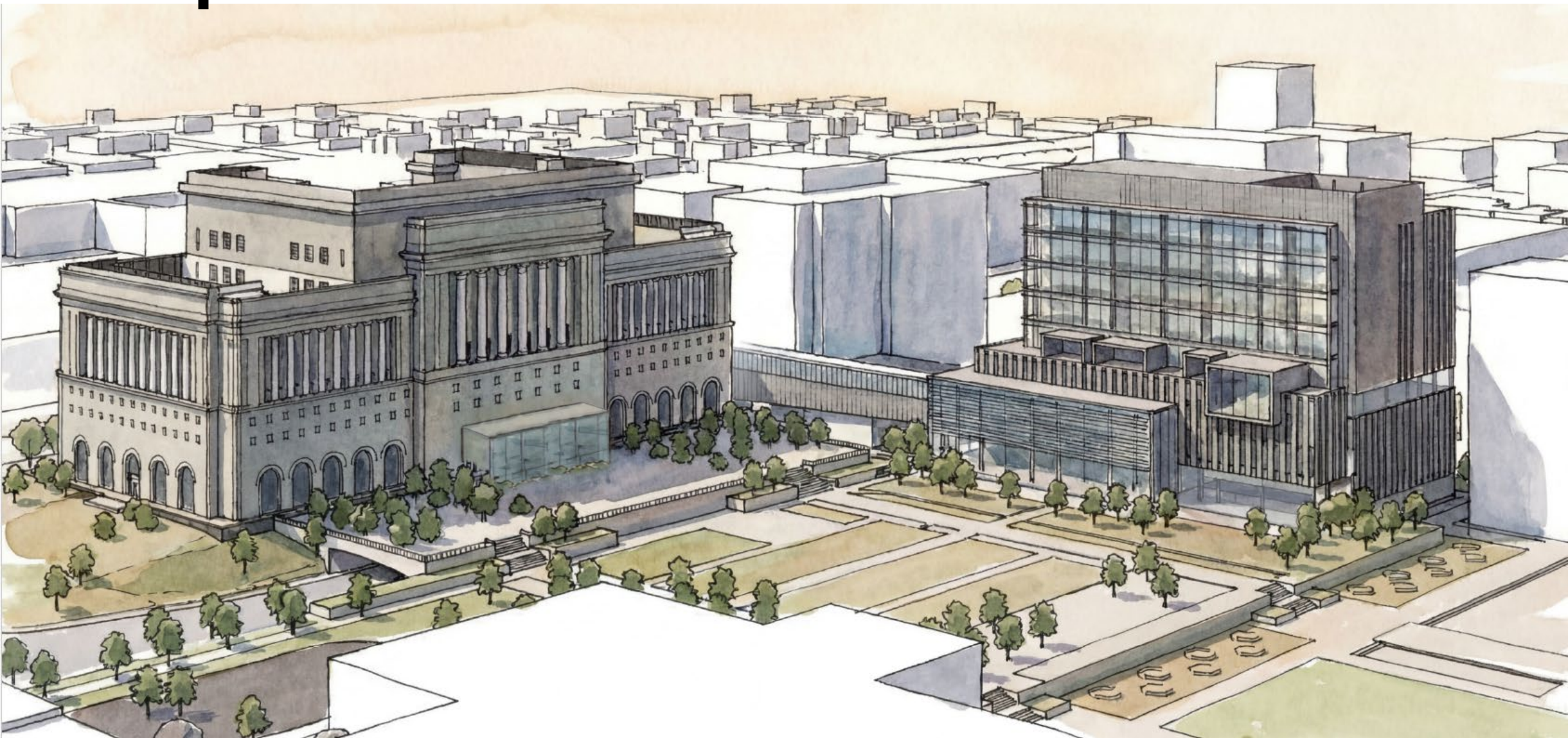
Stakeholders support a solution that balances fiscal responsibility with climate goals. The CUP meets both.



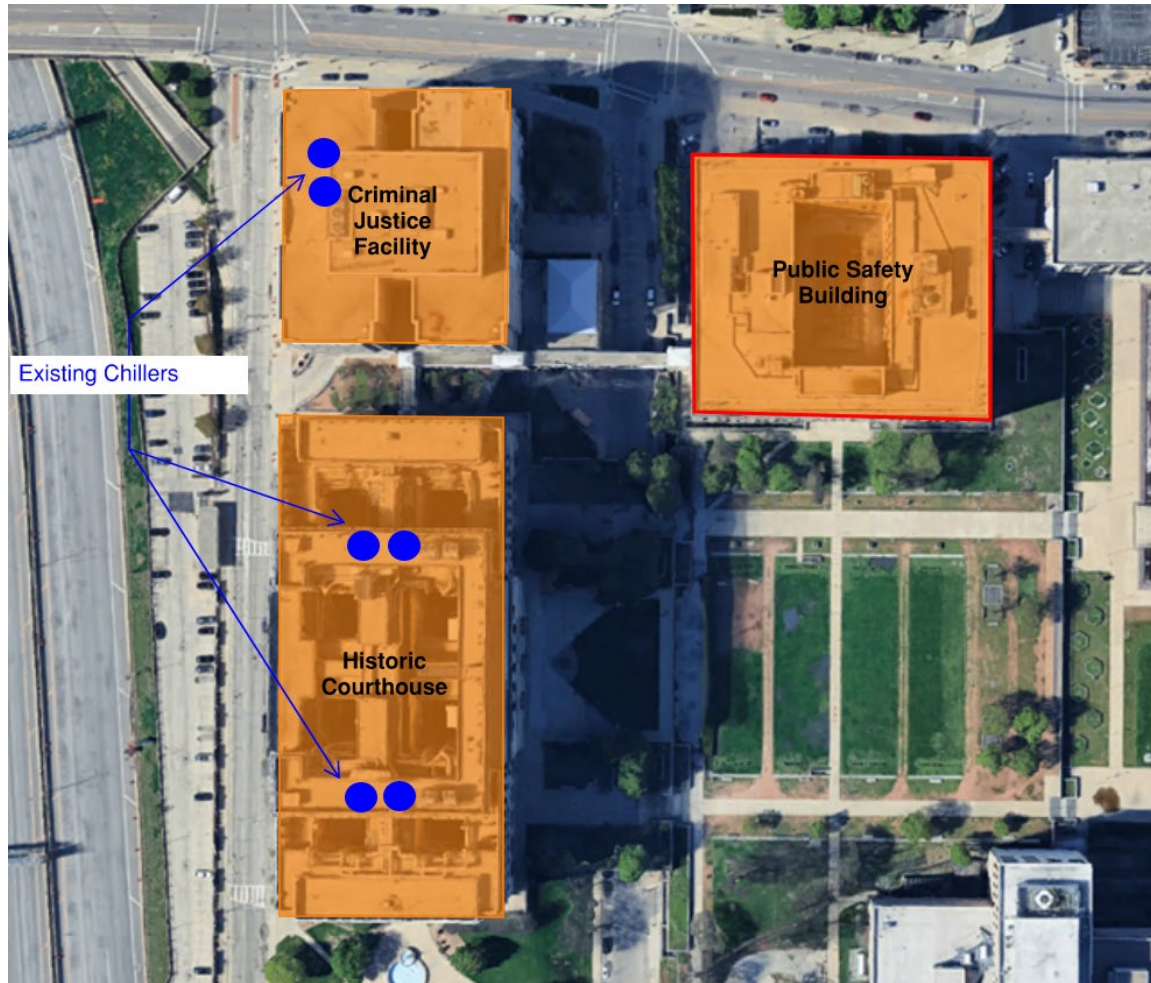
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Complex Interconnections

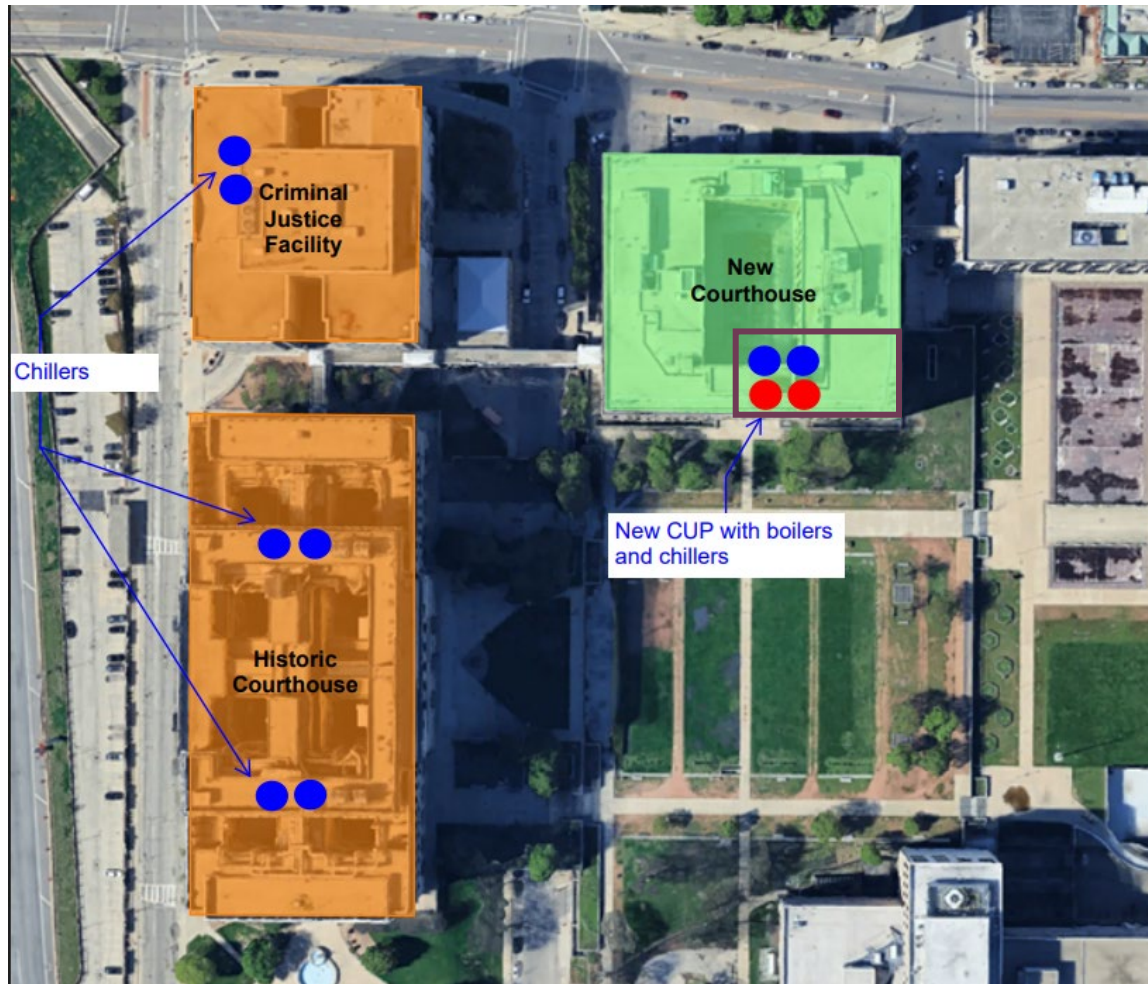


Complex Interconnections



Current Campus Conditions (2026)

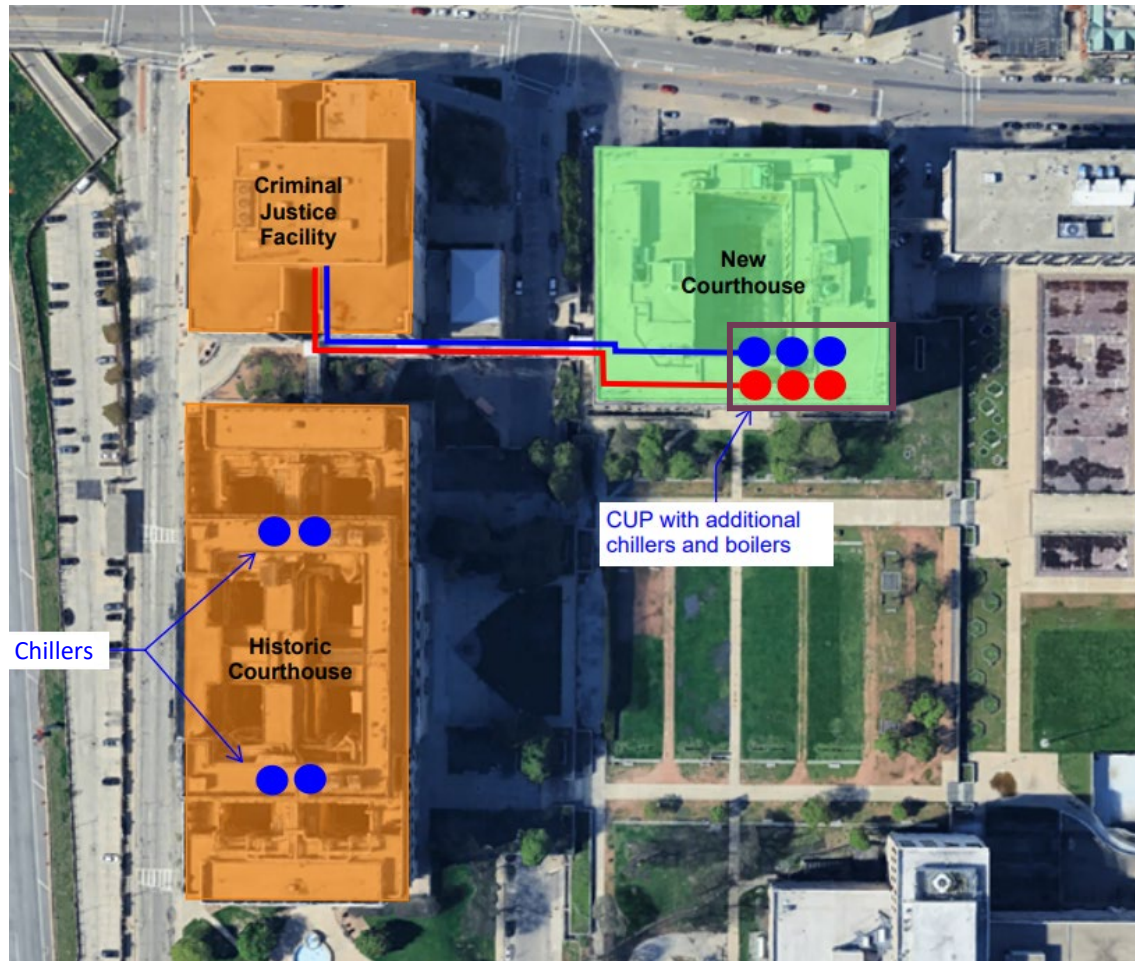
Complex Interconnections



New Courthouse: Occupancy: 2032

- Chillers remain individualized to each building
 - Steam Power: CJF & HCH
 - Natural Gas: New Courthouse
- Space exists for future expansion of Central Utility Plant (CUP) in the New Courthouse

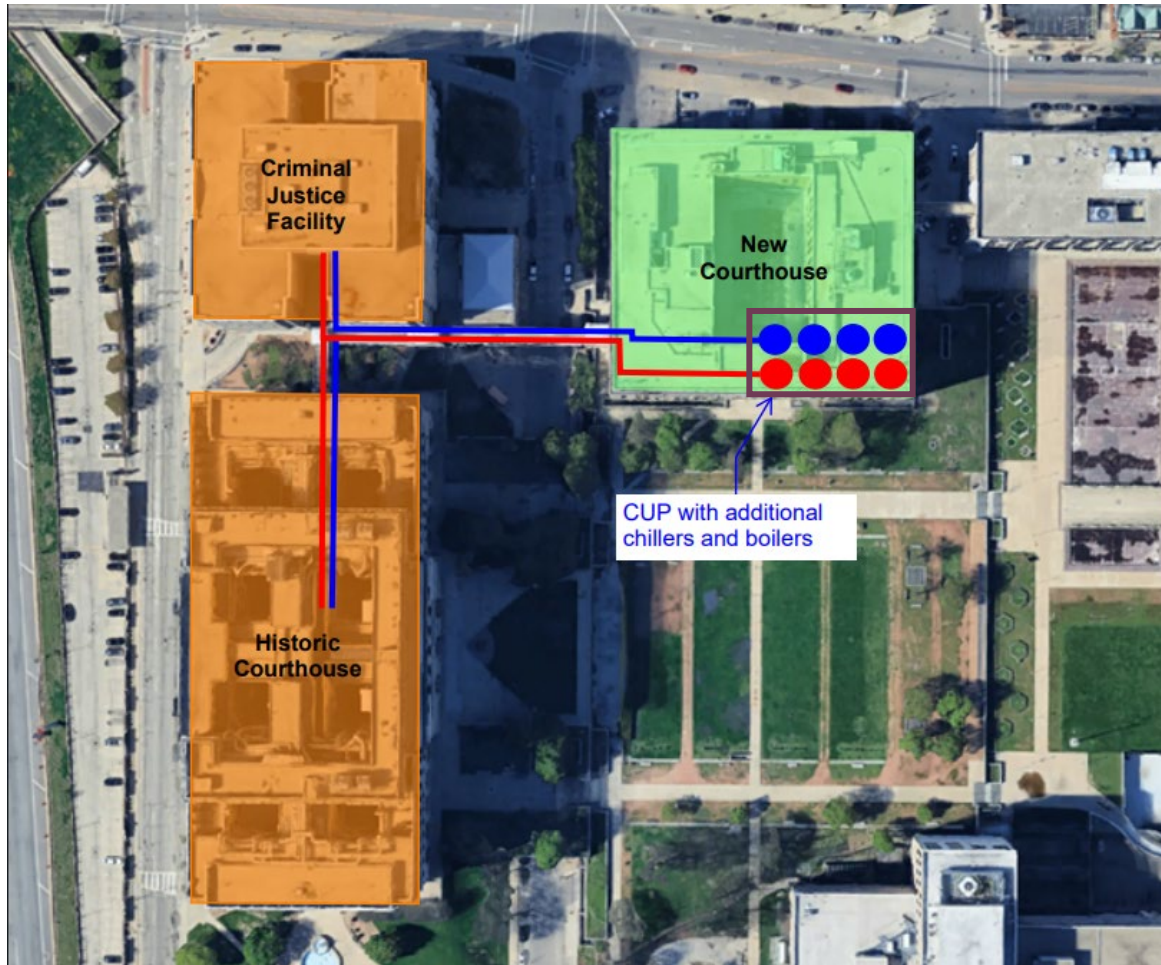
Complex Interconnections



Future Transition – Criminal Justice Facility Estimated: 2035

- CJP chillers eliminated at end of life
- Heating & cooling centralized at CUP in the New Courthouse
 - Steam: HCH
 - Natural Gas: CJF & New Courthouse

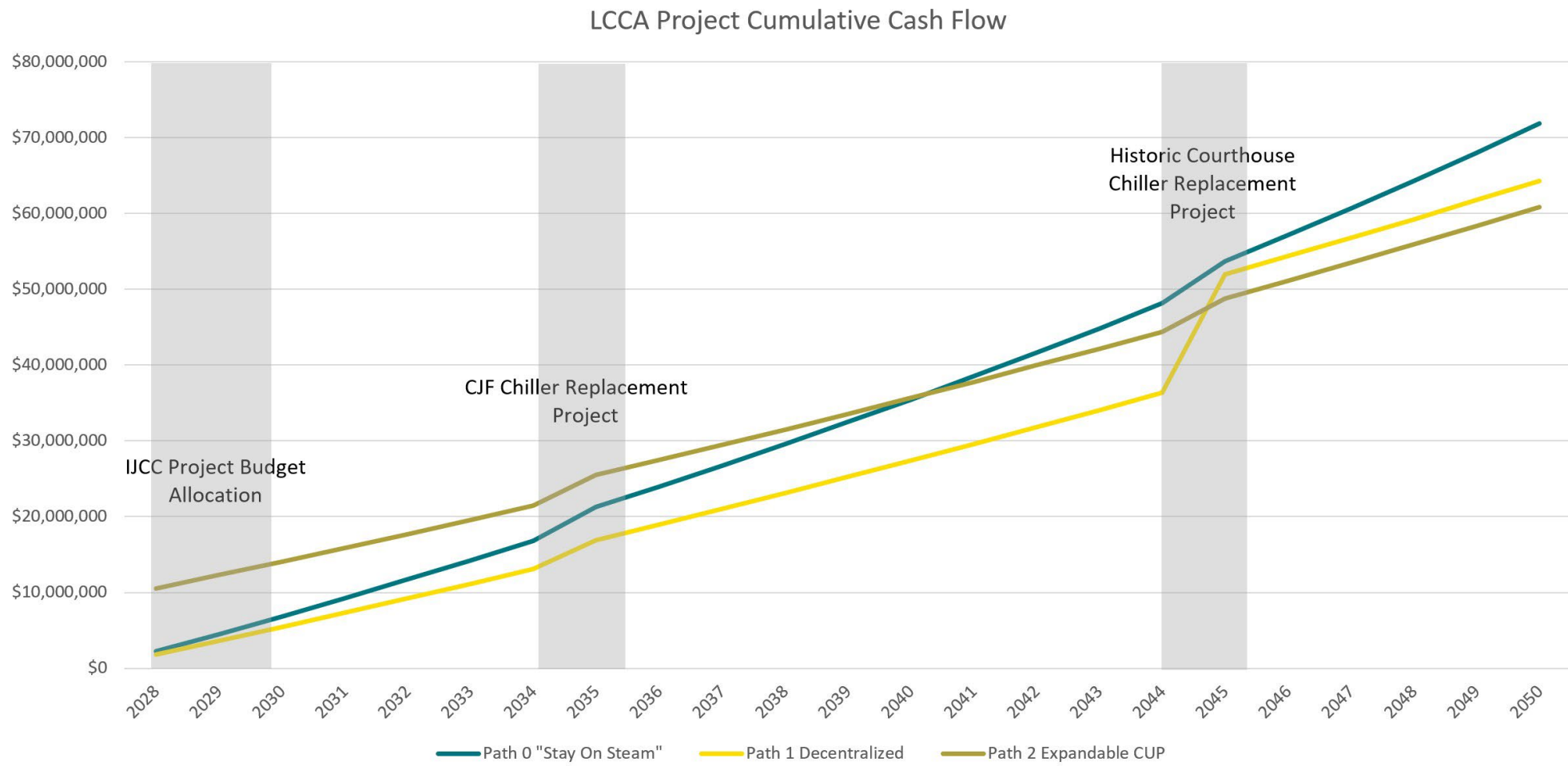
Complex Interconnections



Future Transition – Historic Courthouse Estimated: 2045

- HCH chillers eliminated at end of life
- Heating & cooling centralized at CUP in the New CC
 - Steam: Major reduction
 - Natural Gas: HCH, CJF & New Courthouse

Cost Comparison



- **Reduced Risk**
- **Flexibility**
- **Maintainability**
- **CA50**
- **Cost Effective**



CUP Option Cost Impacts

Day 1 Budget Premium:

- \$2-3 million : Build out CUP expandability
- \$2-7 million : Basement piping connections, distribution piping via the pipe bridge between buildings, and future connections to CJF/HCH.
- \$7 million (estimated) : Complete CJF hot water conversion to CUP*
- *\$17 million : Estimated CUP Investment*

**A portion of CJF cost will be needed regardless to address aging infrastructure (est. 2035)*

Long-Term Benefits

Option	Description	Rank	Costs			Maintenance	Sustainability		
			25 Year Differential Construction Costs	Annual Utility Costs	25 Year Life Cycle Costs		Rank	Site Energy Usage Intensity (EUI)	Life Cycle Carbon Emissions (MT CO2eq)
Path 0 Stay on Steam	Traditional NG Boilers and Water Cooled Chillers with Cooling Towers. No plans for expansion.	Lowest First Cost, utilize district steam.	\$4,000,000	\$4,020,000	\$79,780,000	N/A	N/A	71	241,832
Path 1 Decentralized	Traditional NG Boilers and Water Cooled Chillers with Cooling Towers. No plans for expansion.	Lowest First Cost, utilize natural gas.	\$15,200,000	\$2,850,000	\$69,540,000	2nd	2nd	100	237,829
Path 2 Expandable CUP	Traditional NG Boilers and Water-Cooled Chillers with Cooling Towers. All equipment at lower level.	Middle First Cost, utilize natural gas.	\$13,200,000	\$2,770,000	\$65,980,000	1st	1st	85	201,723

- Path 2 CUP option results in higher efficiency: 15% lower energy use compared to decentralized option
- Carbon Reduction: 15% fewer offsets needed for Path 2 CUP vs Path 1 Decentralized option
- Maintenance: Single location (Path 2 CUP) simplifies operations and can improve occupant comfort throughout the complex
- Milwaukee County gains control (flexibility) over energy sourcing for the complex: Less cost and carbon intensity risk



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“How do we heat and cool the new courthouse?”

Commit to an expandable Central Utility Plant (CUP) for the new Courthouse

- >>> Operational and Cost Efficiency
- >>> Commitment to Emissions Reduction
- >>> Risk Mitigation Effort
- >>> Control

