

Pittsburgh District Energy Past, Present & Future

Vision and Aspiration meet Reality

June 26, 2019

Downtown Pittsburgh – District Energy Legacy



North Shore

- 50 year CW/Steam/Hot Water System

Uptown

- UPMC (anchor customer)
- Greenfield system
- One year old system
- Hot water growth opportunity

Duquesne University

- CHP/Steam Chilled Water
- Interconnect to Uptown
- Utilize excess capacity
- Operational Efficiencies

PACT Downtown Co-op

- 100 yr. steam system
- Modernization transition in progress
- Opportunity to interconnect to neighboring Uptown
- Significant improved energy efficiency opportunity
- Steam/hot water hybrid potential

Various ages, sizes and types of District Energy Systems each with their own history and future

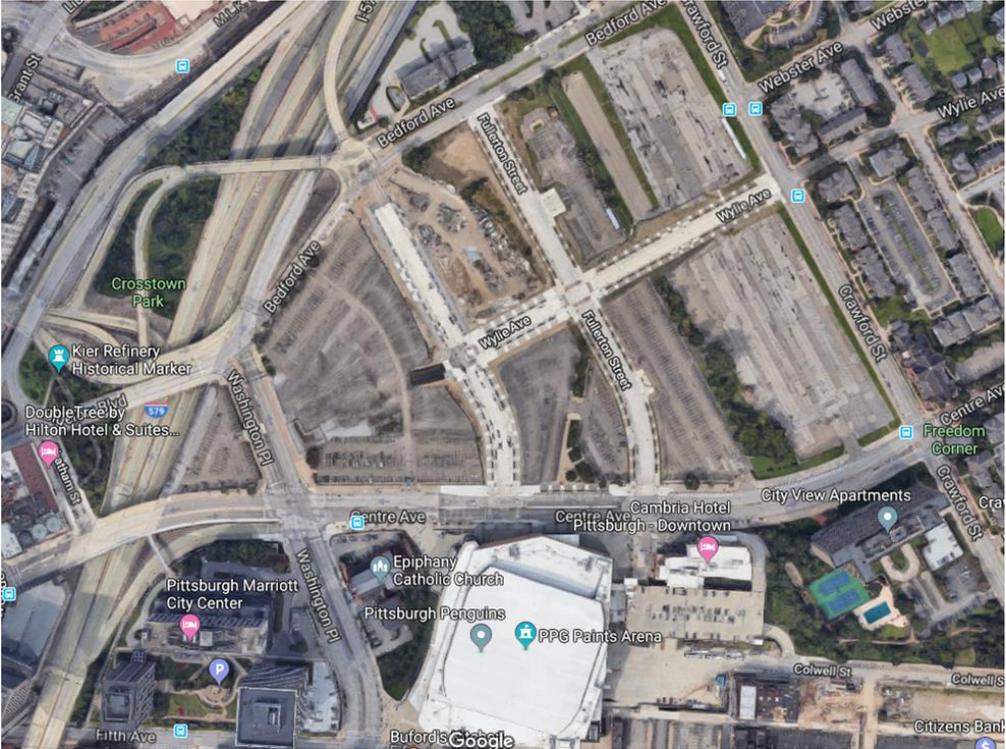
Downtown Pittsburgh – Adjacent District Energy Systems



Interconnecting systems provides opportunity of synergies, resiliency and efficiency

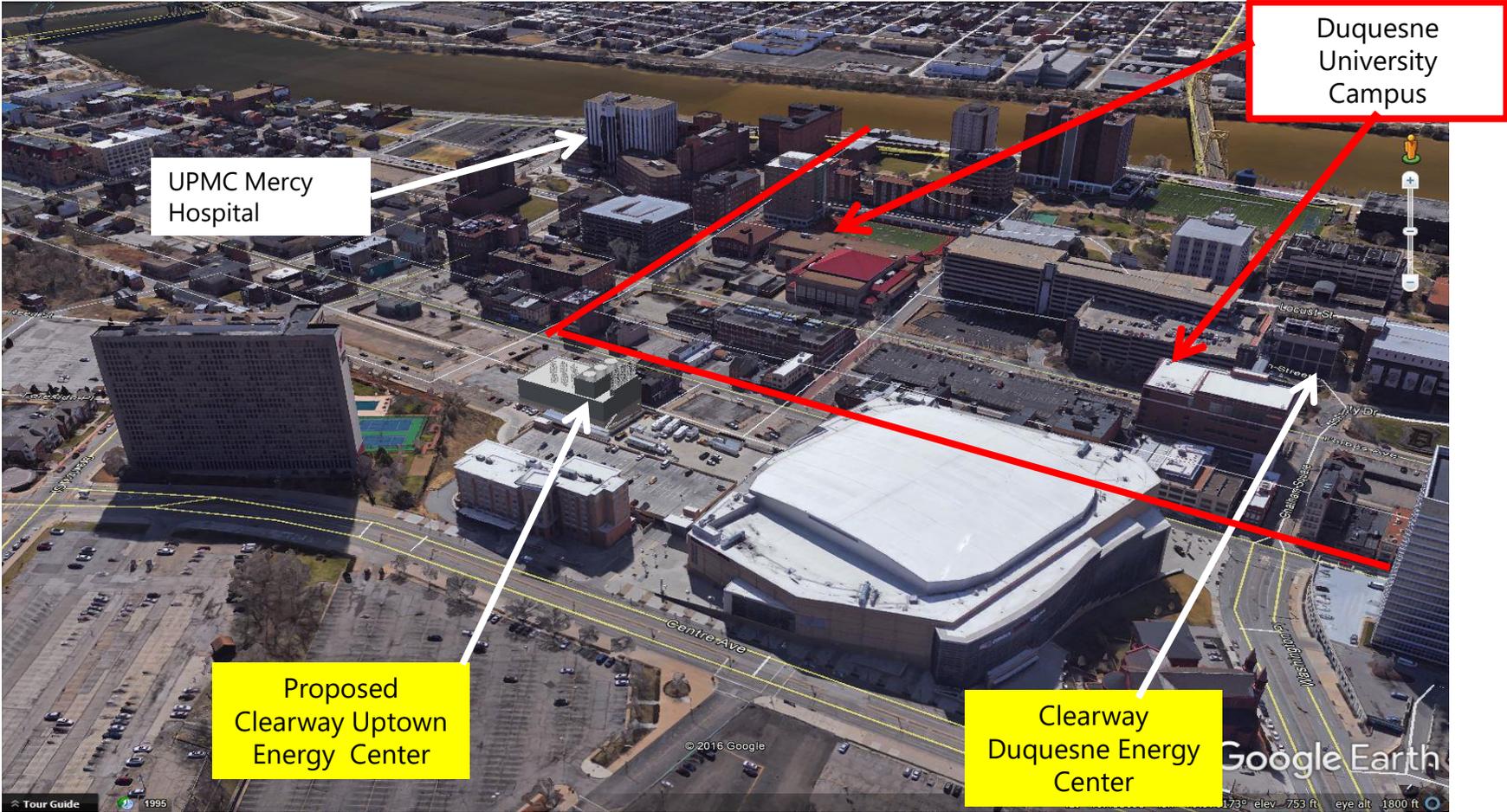
Key Milestones of Community Support for Development of District Energy

Year	Critical Milestones
2011	IDEA performs a preliminary district energy assessment on the Pittsburgh Penguins' Lower Hill development site
July 2015	City of Pittsburgh signs an MOU with the Department of Energy to develop a clean energy plan focused on district energy systems



Catalyst to District Energy growth – Pittsburgh Penguins development site

Planned Uptown District Energy System



Uptown stakeholder's evaluate District Energy

Key Milestones of Community Support for Development of District Energy



Year	Critical Milestones
April 2016	Clearway Energy, Inc. applies to the Urban Redevelopment Authority to purchase land adjacent to the Pittsburgh Penguins' PPG Paints Arena for the future Uptown district energy plant
August 2016	UPMC Mercy hospital commits to Clearway Energy as a future anchor customer of the new Uptown district energy system
November 2016	Clearway Energy completes a district energy system modernization master plan study for transforming the PACT 100-plus-year-old legacy downtown system
March 2017	Clearway breaks ground for the new Uptown district energy system
March 2018	Clearway Energy's Uptown district energy system begins providing steam to UPMC Mercy. Chilled water and backup electric power service start in June 2018

City of Pittsburgh leadership and stakeholder collaboration and commitment

Uptown District Energy Plant (2018)



Key Milestones of Community Support for Development of District Energy



Year	Critical Milestones
March 2018	The city of Pittsburgh, University of Pittsburgh and Danish government announce an agreement to collaborate on energy planning and research including district heating planning and microgrid feasibility assessments.
March 2019	Clearway Energy acquires Duquesne District Energy Facility. Plans interconnection to Uptown System



Duquesne University's commitment to Uptown/downtown District Energy

Key Milestones of Community Support for Development of District Energy

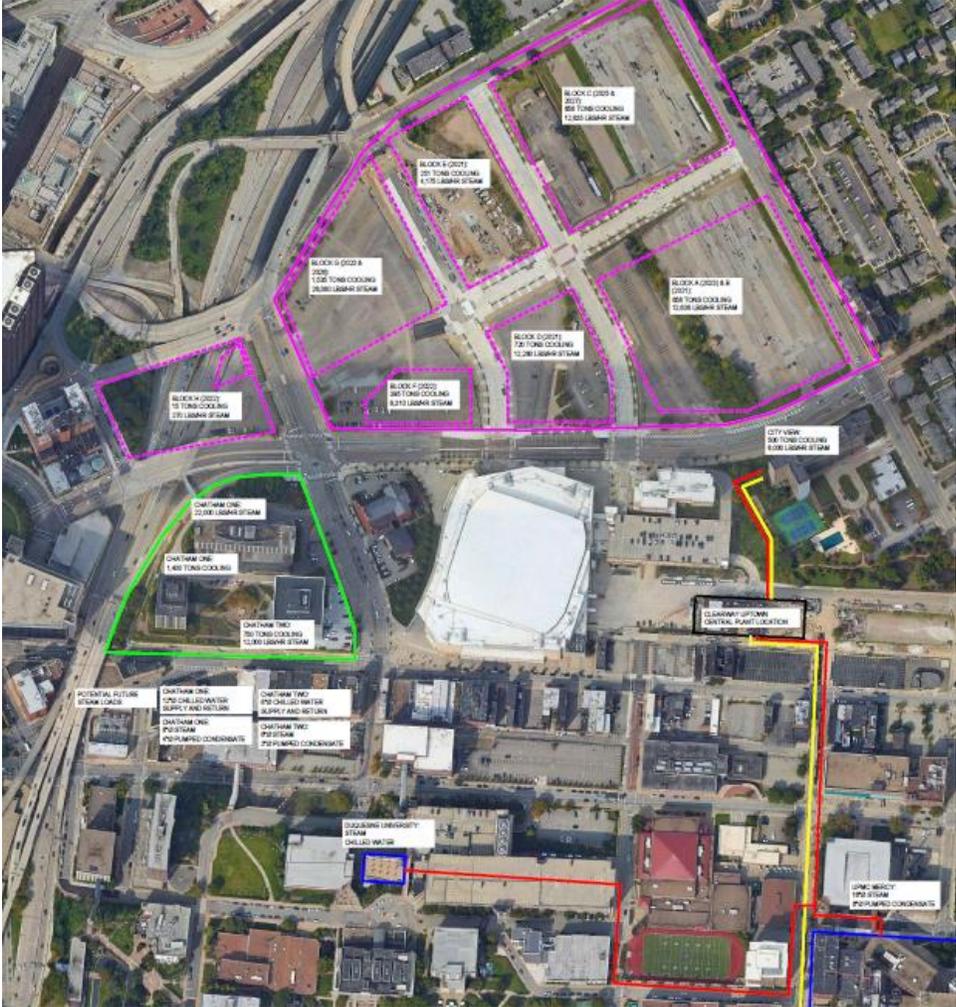


Year	Critical Milestones
March 2019	The Pittsburgh Penguins announce development plans for the Lower Hill site next to the Uptown district energy system – a system expansion opportunity



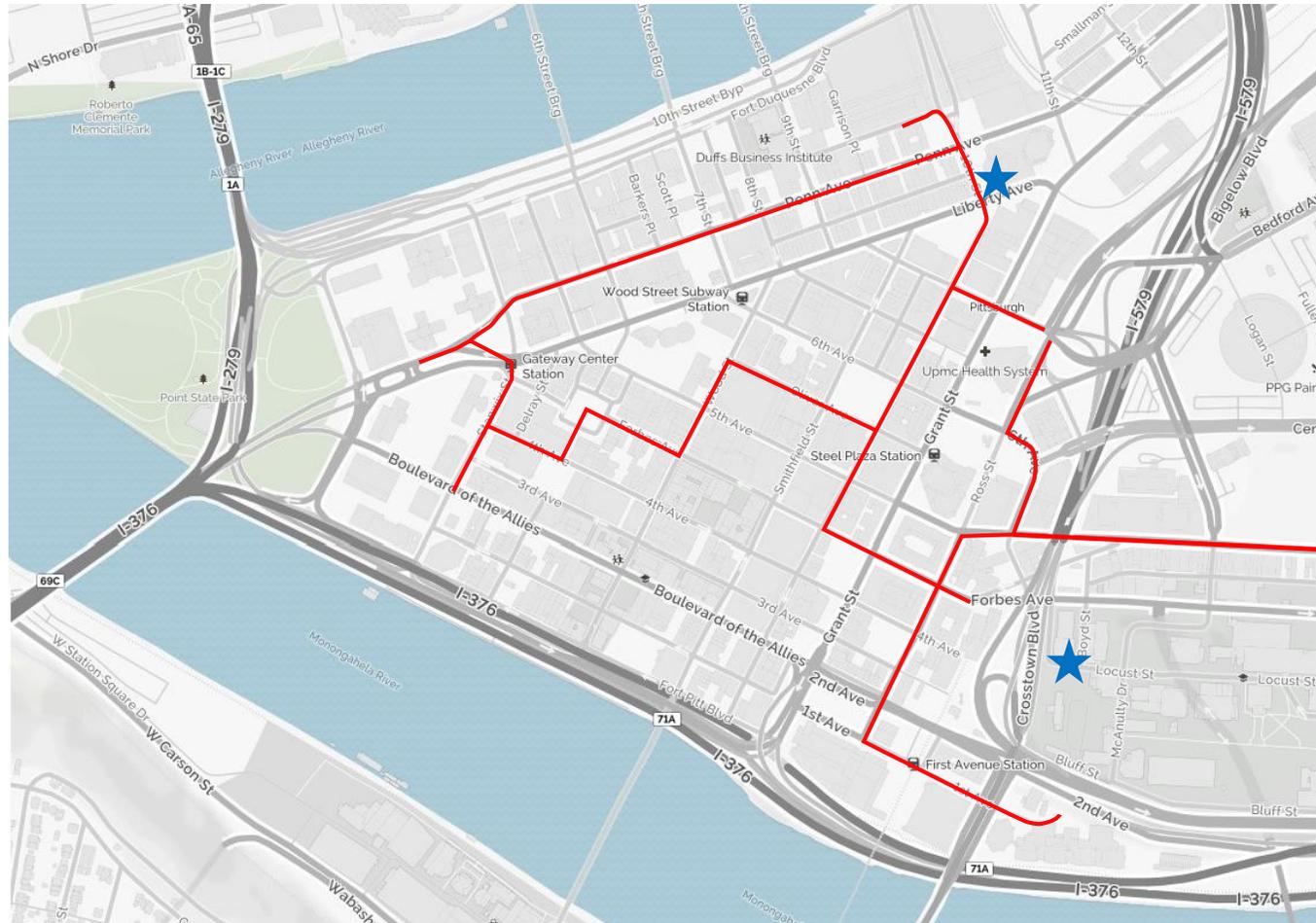
Penguins facilitate stakeholder engagement - Clearway, City of Pittsburgh and City's Partners assess district energy benefits and hot water design

Uptown System Interconnected w/ Duquesne University



Interconnection provides additional system capacity, operating synergies, efficiencies and resiliency

Downtown System Modernization



Uptown to
Downtown

★ Potential Plant Sites
— Distribution Piping

* Potential piping shown is long-term distribution plan; actual piping may vary as system develops

Opportunity to leverage adjacent Uptown System to extend distribution from Uptown to Downtown

Downtown Pittsburgh Interconnected Systems Potential



Future opportunity to modernize and optimize district energy City-wide in downtown