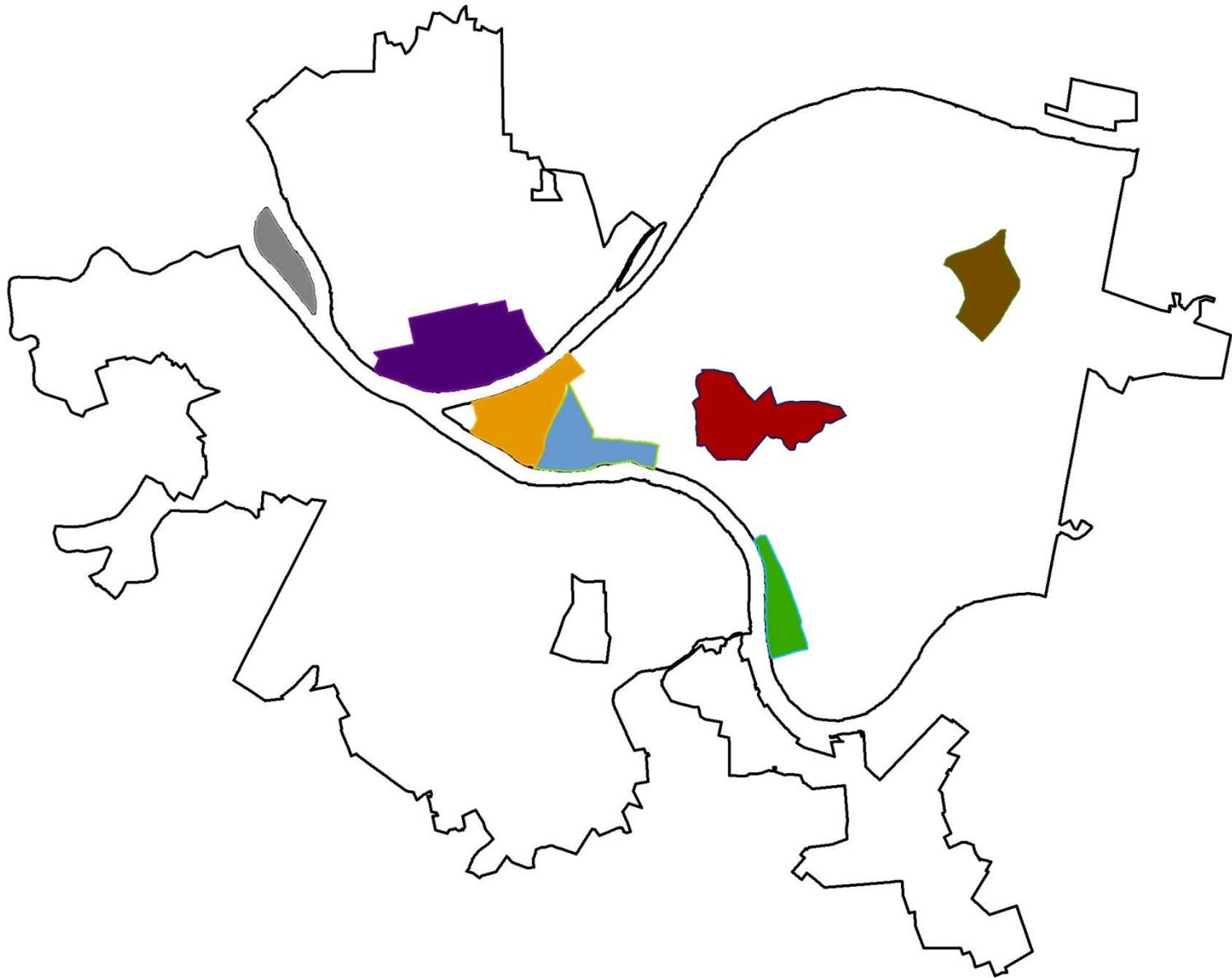
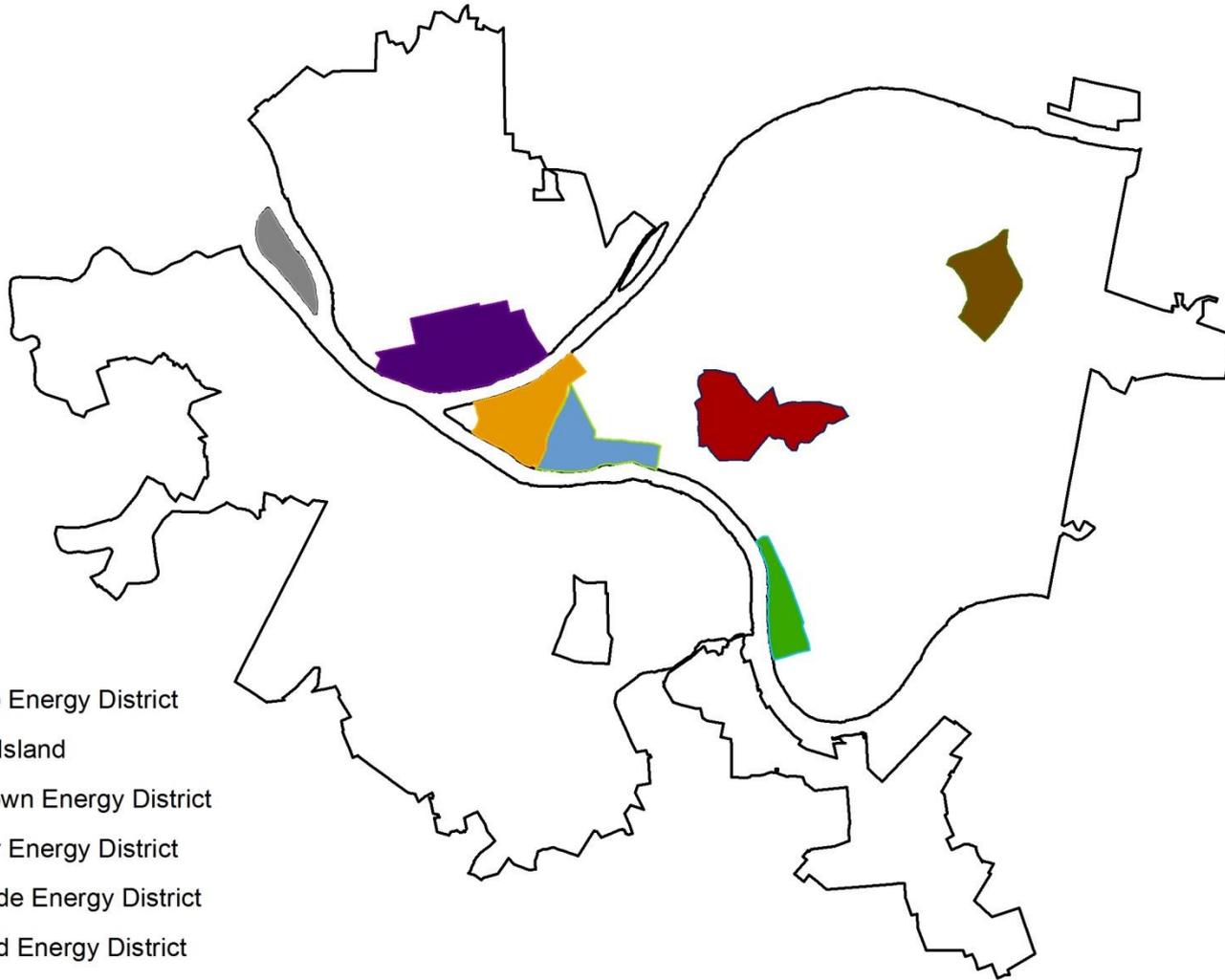


District Energy Pittsburgh

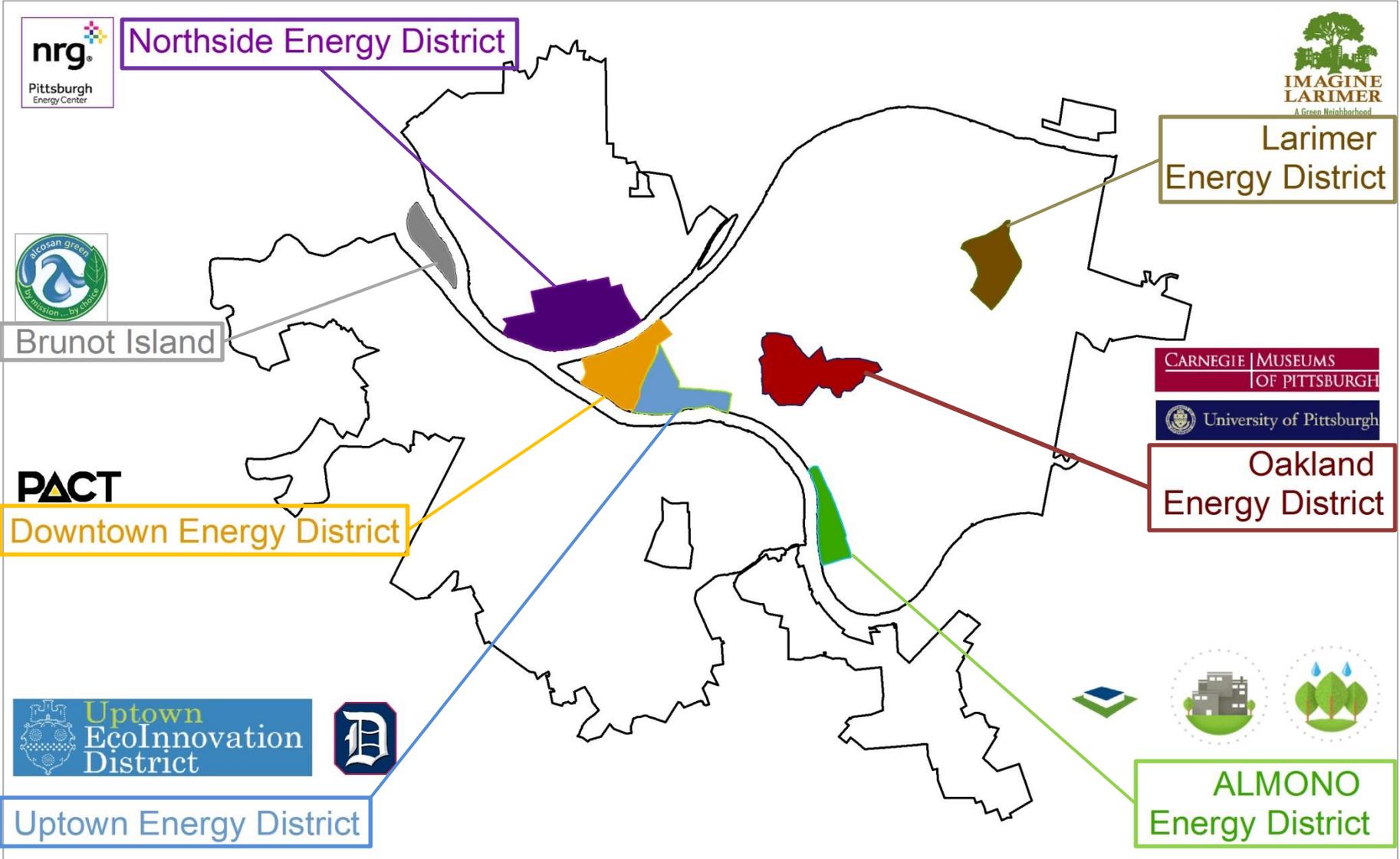


Legend

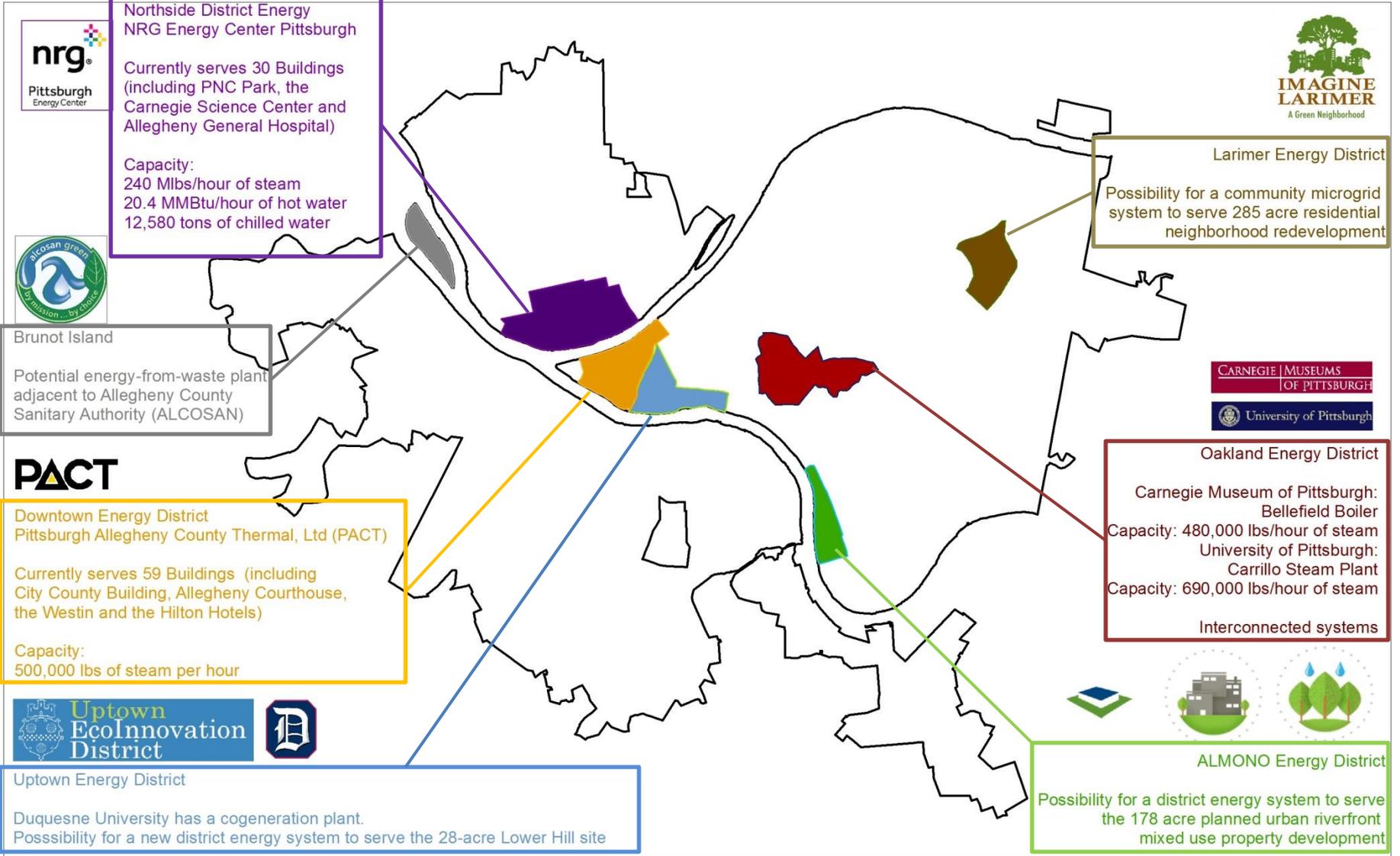
-  Almono Energy District
-  Brunot Island
-  Downtown Energy District
-  Larimer Energy District
-  Northside Energy District
-  Oakland Energy District
-  Uptown Energy District



District Energy in Pittsburgh, PA



District Energy in Pittsburgh, PA



Overview

- Two existing commercial district steam systems: NRG & PACT
- Three existing university/institutional systems: Carnegie Museums Bellefield Boiler; University of Pittsburgh Carrillo Steam Plant; Duquesne University Cogeneration Plant
- Four sites for potential new district energy, micro-grid, or energy-from-waste systems

Strategies

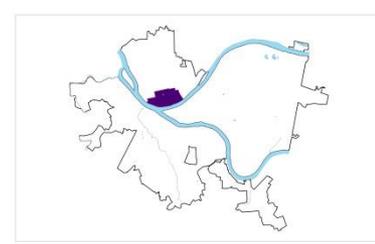
- Optimize existing systems with existing built infrastructure
- Support infill development to connect to existing systems
- Create new systems that support new development and redevelopment projects
- Integrate next generation grid and building performance technologies to optimize energy use



Pittsburgh
Energy Center

Northside District Energy

NRG Pittsburgh



- NRG began operations in 1999
- More than 30 buildings
- Over 6.3 million square feet
- Capacity
 - 240 Mlbs/hour of steam
 - 20.4 MMBtu/hour of hot water
 - 12,580 tons of chilled water
- Plans for electric generation

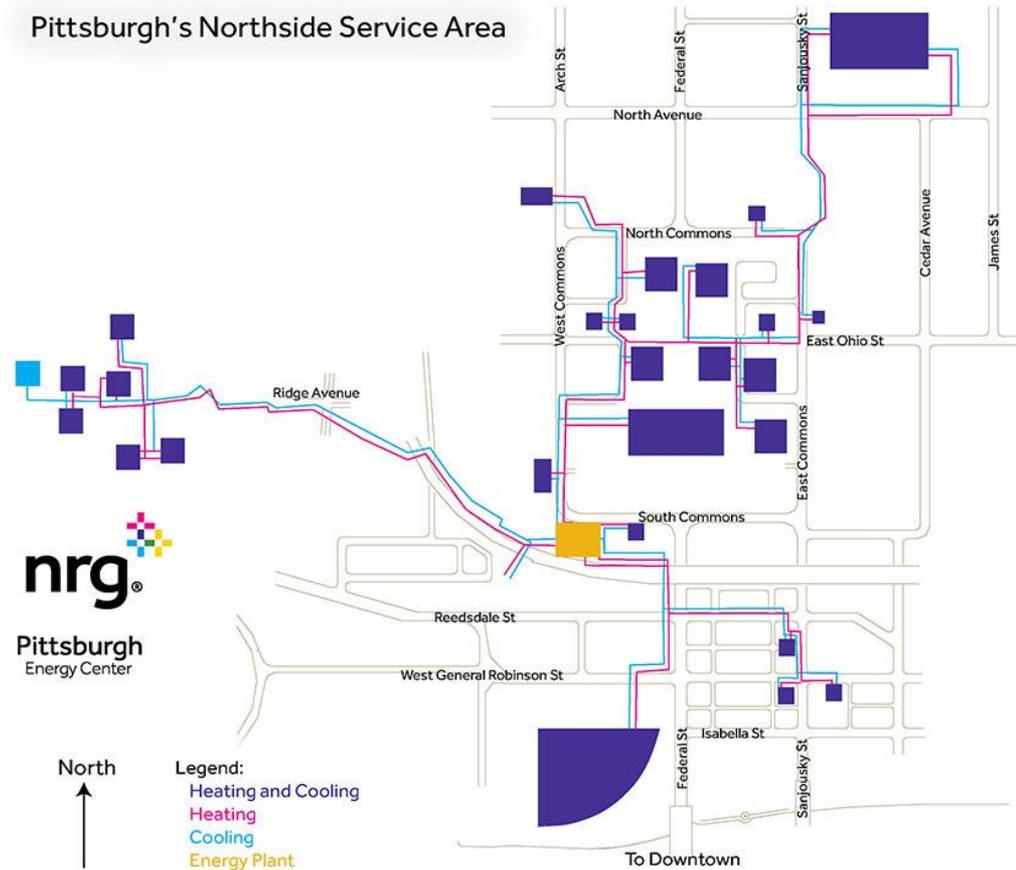
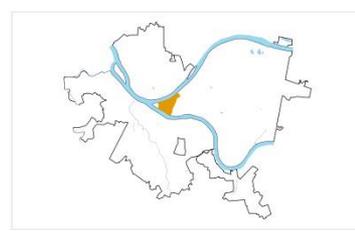


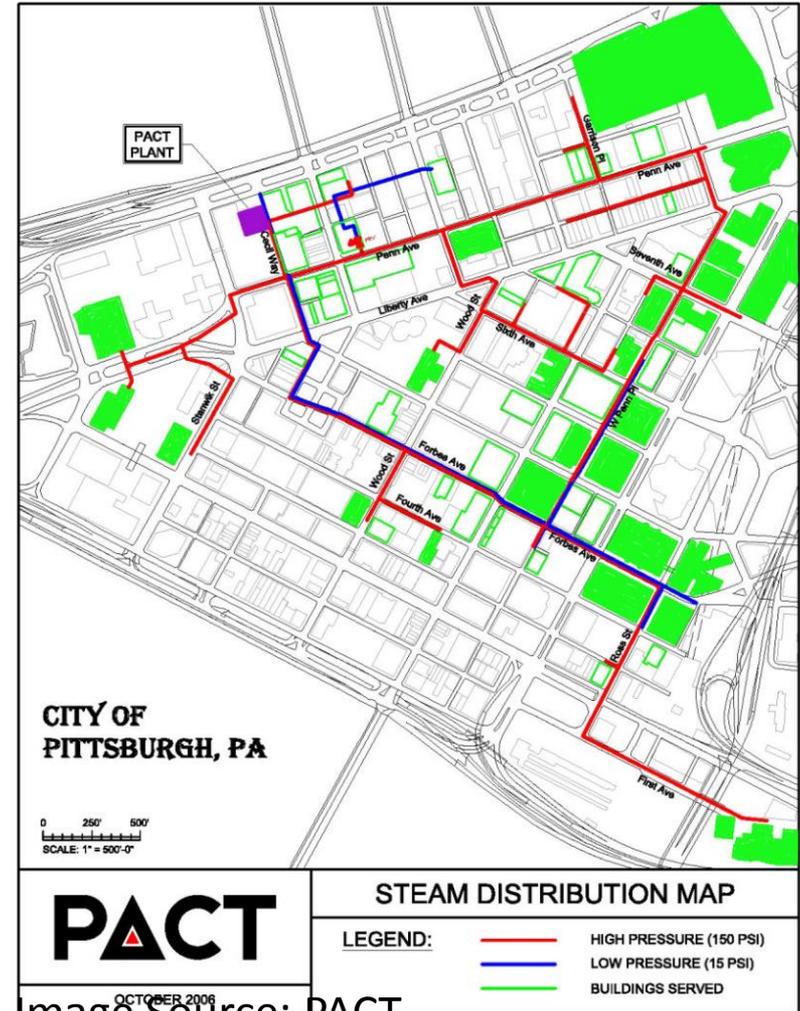
Image Source: NRG



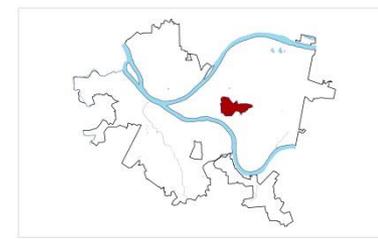
Pittsburgh Allegheny County Thermal Downtown District Energy



- Established in 1983
- 59 buildings currently on the system, including many local government buildings
- Customer owned
- Capacity
 - 500,000 lbs/hour of steam



Oakland District Energy Bellefield Boiler Plant

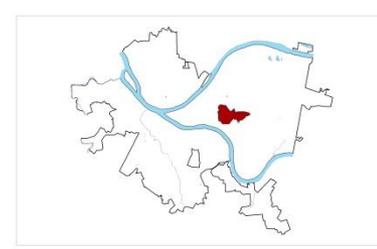


- Built in 1907
- Serves most of Oakland's major institutions
- Capacity
 - 460,000 lbs/hour of steam
- Interconnected with Carrillo steam distribution lines



Image Source: Margaret J. Kraus, 90.5 WESA

Oakland District Energy Carrillo Steam Plant



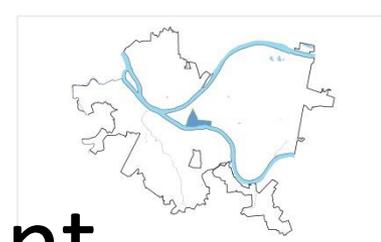
- Began operations in 2009
- Serves the University of Pittsburgh and UPMC
- Capacity
 - 600,000 lbs/hour of steam
- Interconnected with Bellefield Boiler distribution lines



Image Source: University of Pittsburgh



Uptown Energy District Duquesne Cogeneration Plant



- Began operations in 1997
- Produces 85% of the electricity used on 50-acre campus
- Produces heat for entire campus
- Paired with cooling system

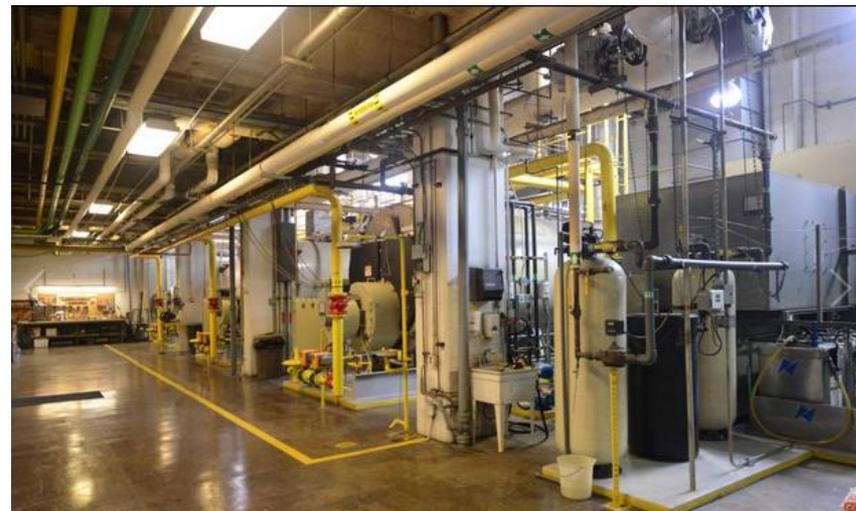
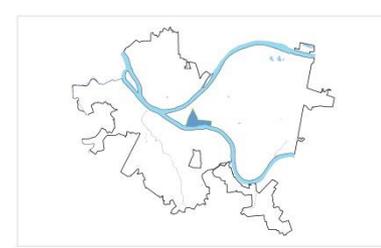


Image source: David Conti, Trib Total Media

Uptown Energy District EcoInnovation District



- 28 acre Lower Hill Redevelopment
- Proposed Users:
 - UPMC Mercy
 - Consol Energy Center
 - Chatham Center
 - US Steel
 - New Development...

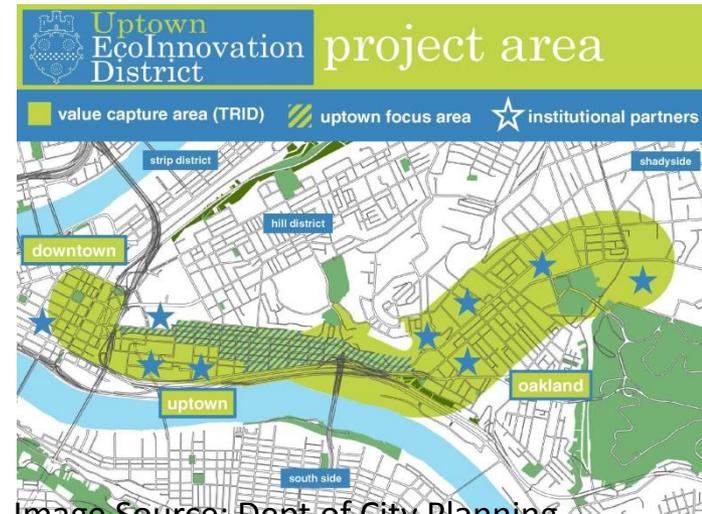


Image Source: Dept of City Planning

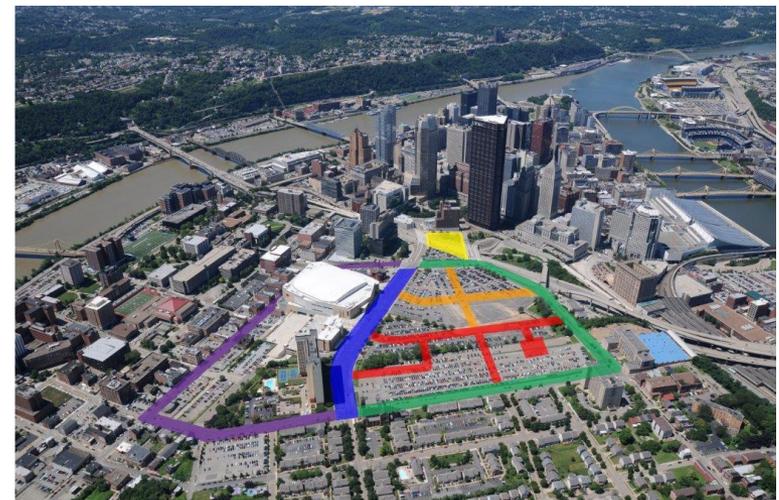
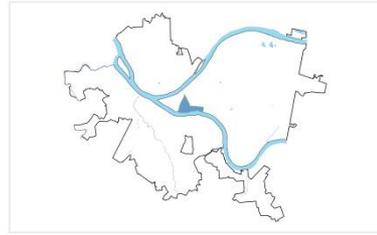


Image Source: Sports & Exhibition Authority



Almono Energy District



- 178 acre riverfront property
- Mixed Use Development
- Clean industry
- Applied research & innovation



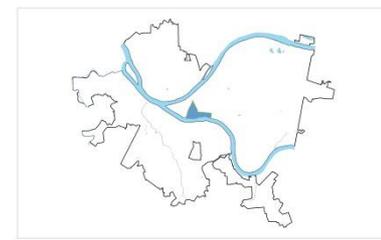
Image Source: ALMONO



Image Source: RIDC



Larimer Energy District



- 285 acre Choice Neighborhood
- Mixed Use Development
- 1,728 residents
- Micro-grid Applications

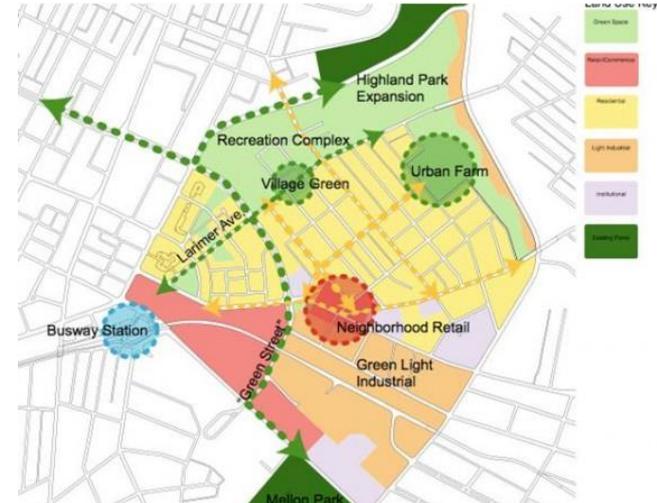


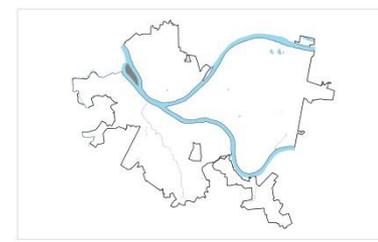
Image Source: Larimer Vision to Action Plan



Image Source: Google Maps



Brunot Island



- Current substation
- Close Proximity to ALCOSAN wastewater treatment center and commercial districts
- Possible site for biogas and waste-from-energy plant

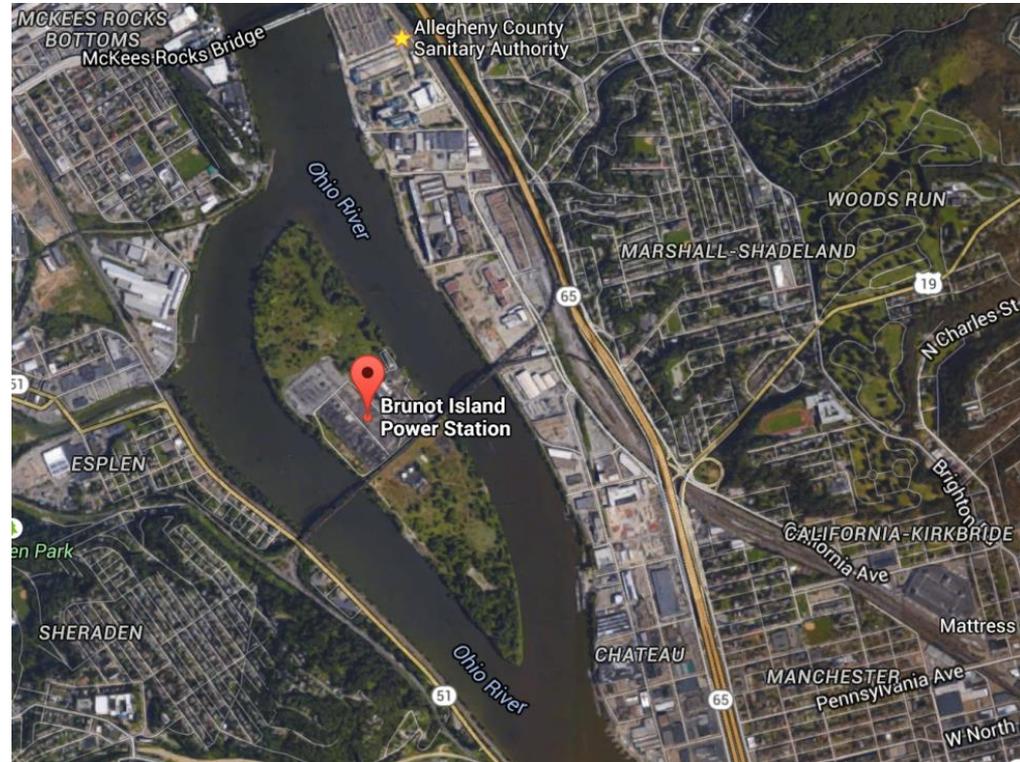
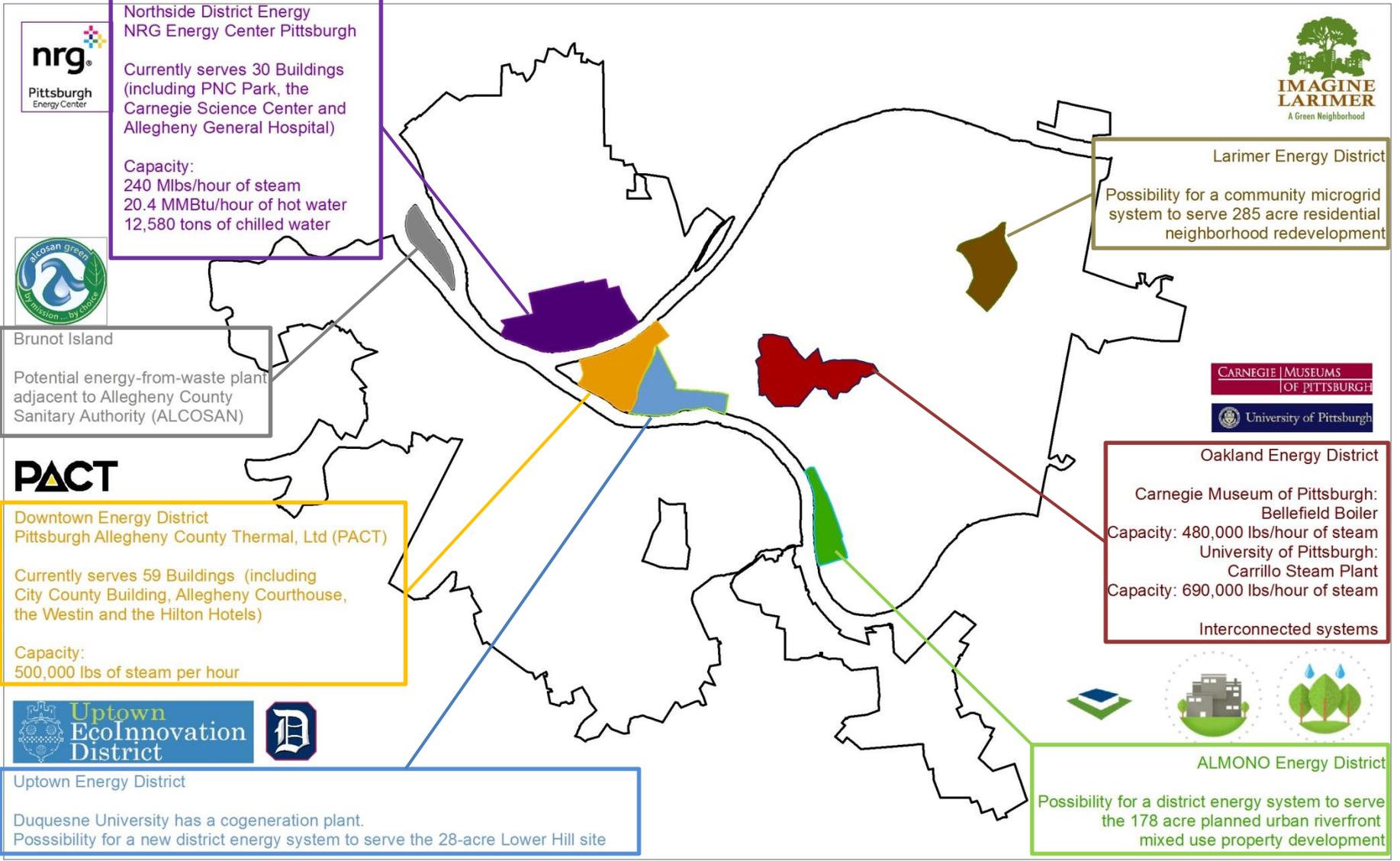


Image Source: Google Maps

District Energy in Pittsburgh, PA



Northside District Energy
 NRG Energy Center Pittsburgh

Currently serves 30 Buildings (including PNC Park, the Carnegie Science Center and Allegheny General Hospital)

Capacity:
 240 Mlbs/hour of steam
 20.4 MMBtu/hour of hot water
 12,580 tons of chilled water



Brunot Island

Potential energy-from-waste plant adjacent to Allegheny County Sanitary Authority (ALCOSAN)



Downtown Energy District
 Pittsburgh Allegheny County Thermal, Ltd (PACT)

Currently serves 59 Buildings (including City County Building, Allegheny Courthouse, the Westin and the Hilton Hotels)

Capacity:
 500,000 lbs of steam per hour



Uptown Energy District

Duquesne University has a cogeneration plant.
 Possibility for a new district energy system to serve the 28-acre Lower Hill site



Larimer Energy District

Possibility for a community microgrid system to serve 285 acre residential neighborhood redevelopment



Oakland Energy District

Carnegie Museum of Pittsburgh:
 Bellefield Boiler
 Capacity: 480,000 lbs/hour of steam
 University of Pittsburgh:
 Carrillo Steam Plant
 Capacity: 690,000 lbs/hour of steam

Interconnected systems



ALMONO Energy District

Possibility for a district energy system to serve the 178 acre planned urban riverfront mixed use property development