

From: [Phan, Johnny](#)
To: [Downtown West Project](#)
Subject: FW: Google - Diridon/DW- District Systems - Market & Precedent Overviews
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Attachments: [District Systems Market & Precedent Overview \(Final Copy\) 03.31.21-c.pdf](#)

From: Miller, Gregg <gmliller@coblentzlaw.com>
Sent: Wednesday, February 3, 2021 4:02 PM
To: Phan, Johnny <Johnny.Phan@sanjoseca.gov>
Subject: Google - Diridon/DW- District Systems - Market & Precedent Overviews

[External Email]

Johnny: please see attached.

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District Systems Market/Precedent

Downtown West Draft

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- CPRA Exempt; Confidential and Proprietary Business-Siting
Information; Pre-decision draft for review only



Version 1.0
January 2020

District Systems - Market & Precedent Overview

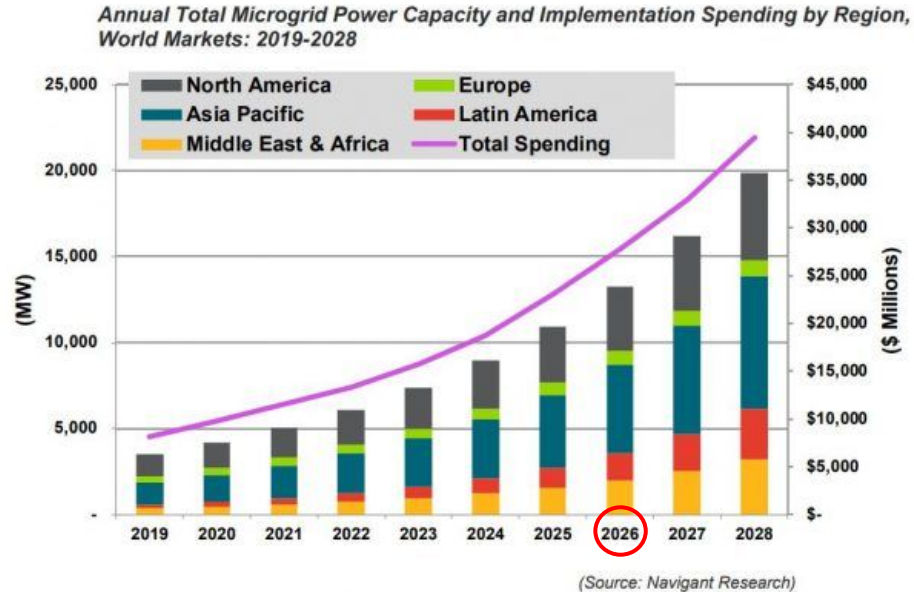
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Microgrid



Microgrid - Evolution and Growth of Established Market



Microgrids adoption is accelerating, with a doubling of the market up to 2026.

Growth underpinned by maturing regulatory, technology & market mechanisms.

The US will remain the top market for grid tied microgrids.

Significant market consolidation, a sign of a maturing market is occurring, with large corporations acquiring small innovators, and technology providers to offer turnkey solutions.

- In a separate study by GTM Research, Microgrid capacity in the US is forecasted to double from 3.2 GW in 2017 to 6.5 GW in 2022 (at a compound annual growth rate of 14.1%). Downtown West is anticipated to be 40 MW, or 1% of global microgrid capacity in 2019.
- Globally, microgrids are anticipated to grow at 19% per year between 2020 to 2025
- Federal/State funding has increased exponentially. Over 5-years from 2012, US states committed \$86M to microgrid technology innovation and \$189M to microgrid construction. In 2020, California approved a \$200M budget incentive program for complex multi-property microgrids.

Microgrid - Sectors and Locations, Legislative Reform

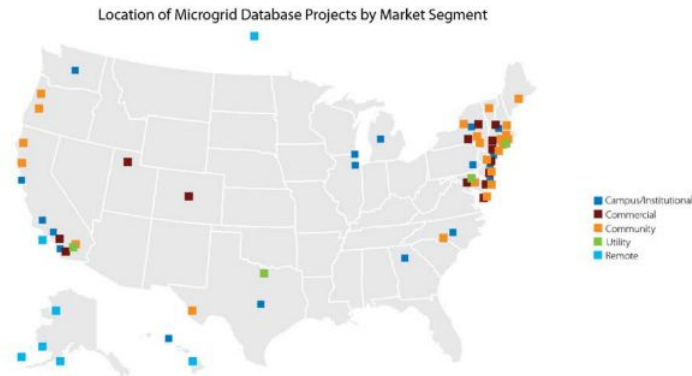
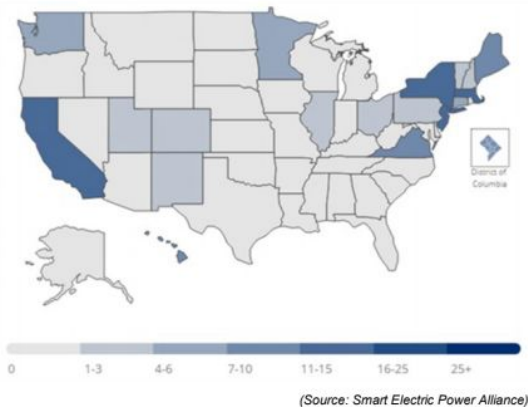


Figure 1. U.S. map of NREL microgrid project database locations per market segment

Microgrid Legislative Activity by US State: 2015-2020



The NREL's 2018 [microgrid cost study](#) outlined the location and sectoral breakdown of Microgrids in the US.

The scale and penetration of commercial microgrids is growing.

Advances in the institutional sector, both in terms of deployment and research is reducing cost and improving technology and controls.

In response to aging grid infrastructure and extreme weather events leading to increased frequency of power outages, growing numbers of US states have approved **microgrid support programs**.

112 bills have been proposed or enacted in 18 different states over the past 5 years - addressing Microgrids

Hudson Yards



Location: New York, New York

Installed: 2019

Utilities: Heating, Cooling, and Electricity

Owner: Hudson Yards Microgrid Company (HYMco) – Privately owned by two real estate companies

Operator: HYMco

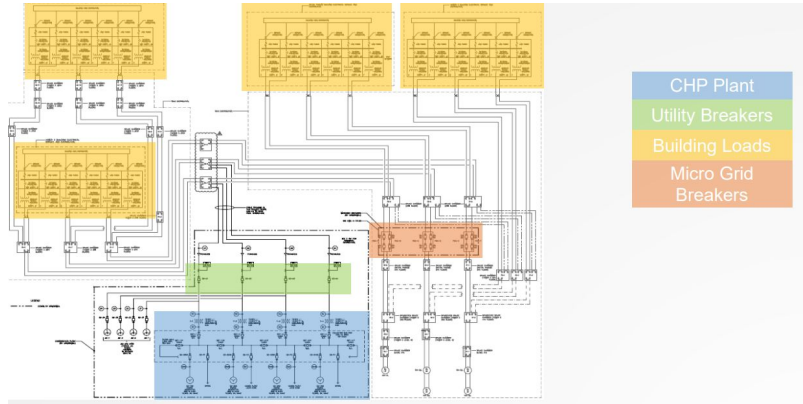
Area Served: 18 million square feet

Customer Types: Mixed-use including retail, hotel, schools, offices and residences

Key Details

- Grid tied Microgrid (Similar to DTW) including Two CHP/tri-gen plants (14.5MW capacity - serving circa 38MW peak demand) producing elect, cooling, & heating. ConEd provide primary grid connections.
- Infrastructure finance via special issue bonds through Hudson Yards Development Corporation to cover cost and offer return on investment.
- Electrical and thermal metering at each building managed by HYMco to bill tenants for heat, cooling, and electricity use based on published tariffs and submetering agreement.
- Cooling in pavement also used to cool trees and help offset heat of subterranean trains.

Hudson Yards Microgrid



Utility Connection: ConEd

Owner: Hudson Yard Microgrid Company (HYMco) – Privately owned by two real estate companies

Operator: HYMco

Primary Tariffs: ConEd Offset Tariff and New York State Standby Service Tariff

Key Details

- Power is delivered directly to ConEd and virtually offsets microgrid consumption in grid tied mode.
- Utility breakers open and isolate Hudson Yards during an outage, with operations managed by HYMco, including network, CHP & generators.
- ConEd's Offset Tariff allows customers with >2MW grid-connected generation to supply energy to multiple account on the customer's premises
- HYMco bills building tenants at rate equivalent to that otherwise found on market via master meter and submeter agreement (similar to approach via CPUC currently)
- NY REV program allowed for installation of upstream customer-owned breakers that allow the development to island the (6) 13 kV lines that power Hudson Yards and operate in island mode when desirable. ConEd owns the transformers, but HYMco owns the breakers.
- Accomplished through mutual agreement on system design with ConEd

[Additional Information, Source 2](#)

Hudson Yards District Systems - Development Overview

[Hudson Yards](#) is the largest private real estate development in the history of the United States and the largest development in New York City since Rockefeller Center.

The site will include more than 18 million square feet of commercial and residential space, more than 100 shops, a collection of restaurants, approximately 4,000 residences,

The Shed arts center, 14 acres of public open space, a 750-seat public school and a Hotel with more than 200 rooms.

District Systems are an integral part of Hudson Yards story, with a first of its kind microgrid and two cogeneration plants saving 24,000 MT of CO₂e greenhouse gases from being emitted annually by generating electricity.

A centralized hot and chilled water for the neighborhood with over twice the efficiency of conventional sources.

Organic waste collection systems and storm water collection.

District Systems Operational Structure - Highlights

The systems are owned and operated by the Hudson Yards Microgrid Company (HYMCo).

HYMCo operates the systems to deliver environmental & economic performance while increasing resilience - in response to concerns on flooding/extreme weather (Hurricane Sandy).

There is a private operating model which controls the relationship between the commercial owners, condos and HYMCo.

The contracts have prescribed provisions to enable future assignment. New operators/successors will be qualified in the management of the systems including CHP systems.

There are provisions to address the failure of the business or service (microgrid and thermal), with a range of remedies, including temp solutions & self help.

Multi-Customer & Corporate Microgrids

Privately Operated

Typically unique circumstances to overcome regulatory barriers

Hudson Yards Microgrid

Operational 2019

Unique utility Offset Tariff allowed distribution to neighboring loads on the same property

Burrstone Energy Center

Operational 2009

Cogen company owns and operates microgrid. Solicited approval from New York PUC to cross a public ROW

Apple Cupertino

Operational 2017

16 MW Solar 4MW biomass Fuel cell.

Private-Utility Coordination

Typically private entity owns/operates generation and exports via PPA to utility, while utility owns/operates microgrid

Redwood Coast Airport Renewable Energy Microgrid

Completion Nov 2021

CCA own and operates generation assets and sells wholesale to PG&E, which governs microgrid. Unique tariff structures for cost recovery.

Gonzalez Agricultural Industrial Business Park Microgrid

Completion 2022

Private power company owns and operates generation assets to sell to municipal-created utility for distribution.

Pena Station NEXT

Operational 2017

Utility Xcel funded most of project costs, with partial funding from two customers towards generation assets

Municipally Driven

Often community based, at times a municipal utility is created to govern a district/neighborhood

Bronzeville Community Microgrid

Operational 2019

Municipality solicited utility ComEd to own and operate the microgrid.

Philadelphia Navy Yard

Operational 2016

Abandoned unregulated shipyard grid acquired by a public company (PIDC) which sought approval from PUC as an unregulated utility.

Microgrid Investment and Operations

Private microgrid operators include a number of well-established companies, such as:

- Engie Development, LLC
- Ameresco
- Alphastruxture (Carlyle Group + Schneider Electric)
- Duke Energy
- Cogen Power Technologies
- Clearway Community Energy
- Demand Energy
- TimberRock Energy Solutions

Key microgrid equipment and controls providers include:

- Siemens
- Bloom Energy
- Box Power
- Saft
- Gridscape Solutions
- Eaton

Additionally, investors in new and existing microgrid systems include the DBFOM providers above as well as private equity firms including:

- Brookfield
- Antin Infrastructure Partners
- Axiom Infrastructure
- Barclays
- Bernhard Capital Partners
- FVB Energy
- Meridiam Infrastructure
- Blackstone Group
- Ullico Infrastructure
- Harrison Street Partners
- John Laing
- Puttman Infrastructure
- Related Companies
- Evergreen
- Oxford
- L+M Development Partners

Microgrid Policy Trends

Federal policies in recent years have acted as a catalyst while supporting state action and policies. Example below;

- FERC Order 2222 allows behind the meter batteries, PV, and demand response to compete in the energy, power, and ancillary services wholesale power markets, providing increased potential value for behind the meter microgrids. This followed on FERC Order 841 which allowed fair, equitable market access for energy storage.

In recent years, the state has released numerous policies in support of microgrids.

- In 2018, SB 1339 was passed which directed the CPUC, CAISO and CEC to develop a microgrid policy framework
- In 2019, the CPUC issued rulemaking R.19-09-009 to establish a proceeding for developing a microgrid policy framework with 3 tracks – track 1 (focused short-term improvements), track 2 (State's broader policy goals) and track 3 (long-term implementation of SB 1339)
- As of 2019, the CEC provided a total of \$84.5 million in funds to build 20 new microgrids across California under the EPIC program
- In 2020, the CPUC approved PG&E's Community Microgrid Enablement Program (CMEP), through which PG&E will partner with local communities to identify and build multi-customer microgrids.
- The CEC's Electric Program Investment Charge (EPIC) Program has funded demonstration single-customer microgrids and grid-interactive storage to advance the development, deployment, and market maturity of microgrid technologies.

In the last month (January 14th, 2021), the CPUC adopted 6 new strategies to facilitate commercialization of microgrids statewide;

- A revision of IOU rules to facilitate microgrid deployment
- Adoption of IOU renewable microgrid tariffs
- Approval of a \$200M microgrid incentive program aimed at supporting vulnerable communities impacted by grid outages and to test new technologies or regulatory approaches



Peña Station NEXT



Location: Denver, Colorado

Installed: 2017

Utilities: Xcel

Owner: Xcel, Panasonic

Operator: Xcel, Panasonic

Area Served: 382-Acre Development

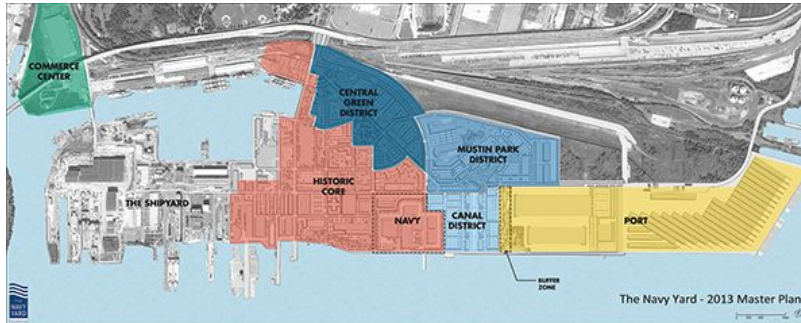
Customer Types: Mixed-use including an airport

Key Details

- Ownership and operation arrangement varies by microgrid assets (1.6 MW solar carport, 259 kW rooftop solar, 1 MW/2MWh Li-ion battery system)
- Primarily funded by Xcel (\$6.72M) with some upfront capital from Denver International Airport and Panasonic. Xcel will recover costs through microgrid community rates.

[Additional Information](#)

Philadelphia Navy Yard



Location: Philadelphia Navy Yard

Installed: 2016

Utilities: Philadelphia Industrial Development Corporation (PIDC)

Owner: PIDC

Operator: PAID

Area Served:

Customer Types: Commercial, industrial and academic (150+ businesses), with long-term plans to include ~1,500 residential units

Key Details

- Navy shipyard was abandoned 20 yrs ago. PIDC acquired the yard on behalf of the City to revitalize it into a commercial center.
- In turn, acquired uniquely independent and unregulated electrical grid allowing for minimal regulatory hurdles.
- Local utility PECO provides back-up power for microgrid, and most of annual usage (92%) is purchased externally through wholesale energy provider Constellation Energy and delivered by PECO.
- Diverse ownership/operation of microgrid assets: 8 MW NG peaker plant (built and operated by Ameresco), 600kW fuel cell plant (owned by Urban Outfitters and net metered by PIDC), 400 kW community solar among 5 customers (owned and operated by AEDG under a PPA with PIDC), 6.2 MW/14.8MWh BESS (owned and operated by NEC)

[Additional Information](#)

Microgrid + Thermal



UCSF Parnassus



Location: San Francisco, CA

Installed: 1986

Utilities: Steam Heating, Chilled Water, and Electricity

Owner: University of California, San Francisco

Operator: Worley Parsons

Tariffs: Set annually by Worley Parsons based on balance of costs, operations allowance, fixed profit, and volume of heat, cooling, and electricity sales to UCSF and UCSF Health. Pass through to retail food outlets at campus center

Area Served: 3 MSF

Customer Types: Laboratory, medical center, retail, office, classroom

Key Details

- 10 MW cogeneration plant for electricity and steam production, with absorption chillers for campus cooling production, backed by (3) PG&E feeds for redundancy
- Cogeneration and backup generators allow islanding in the event of a disruption, with small solar installations also providing power
- Electrical and thermal metering is provided by Worley Parsons and tariffs agreed with the University; costs for gas and electricity managed through master meter agreement for the campus with PG&E by Worley Parsons

[Additional Information](#)

Energy Center Harrisburg



Location: Harrisburg, PA

Installed: 1965

Utilities: Electricity, heating, and cooling

Owner: Energy Center Harrisburg, LLC, a subsidiary of Clearway Community Energy

Operator: Clearway Community Energy

Tariffs: Set by Energy Center Harrisburg for thermal and cooling service with review by the Pennsylvania Public Utilities Commission

Area Served: Over 100 customers

Customer Types: Industrial, commercial, municipal, health care, residential, hotels

Key Details

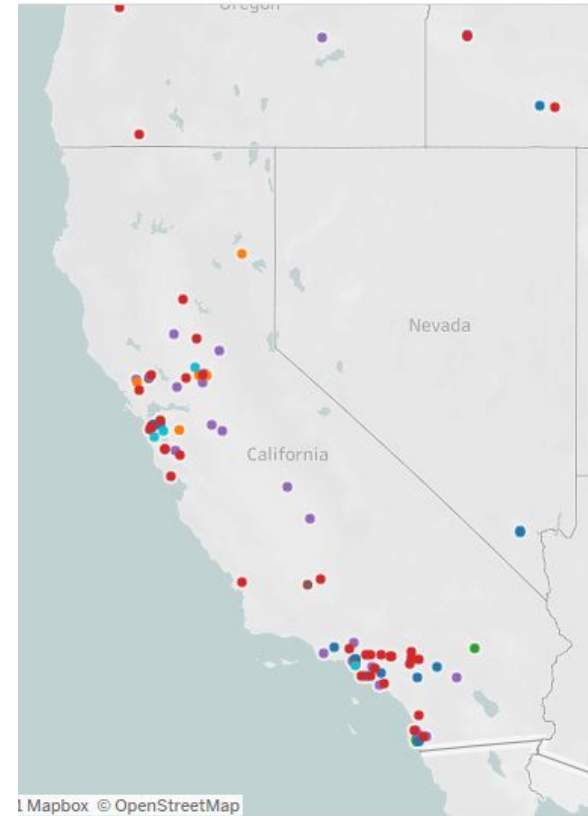
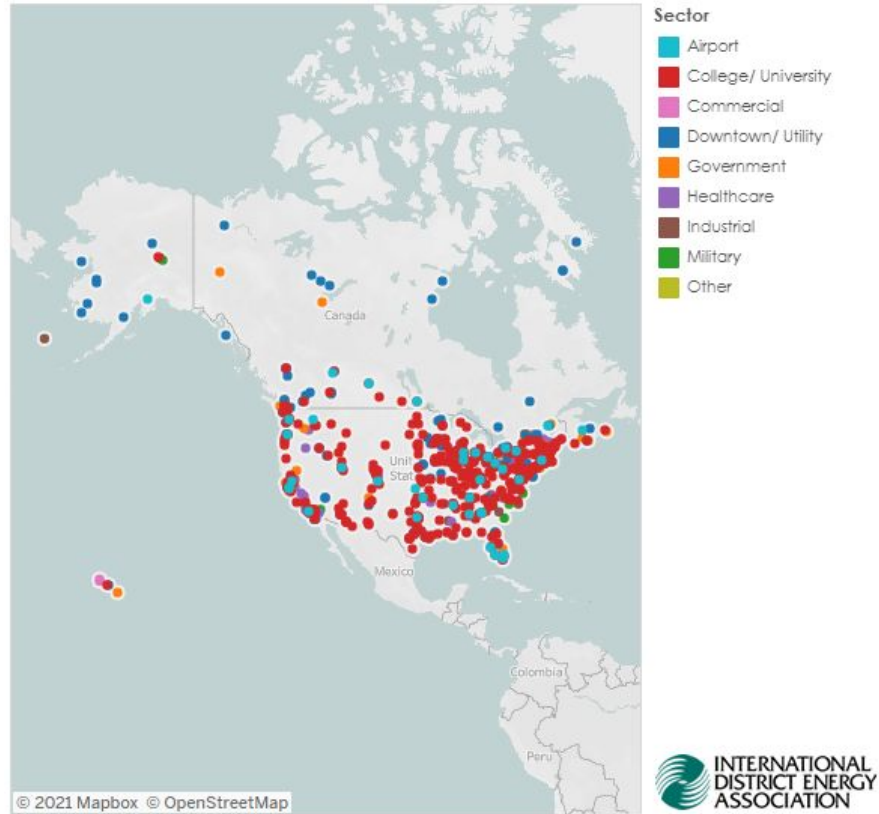
- 12 MW of power generation (cogen) feeds power to local buildings and directly into the PJM grid via a grid interconnection agreement for generation; PJM distributes to buildings within the electrical service territory and bills customers directly
- Thermal metering and billing is performed directly from Energy Center Harrisburg, LLC
- Company maintains steam transfer stations at customer sites as well as operating and maintaining the primary equipment

[Additional Information](#)

Thermal



Operating District Thermal Systems in North America and California



Downtown and Utility Scale Thermal Systems



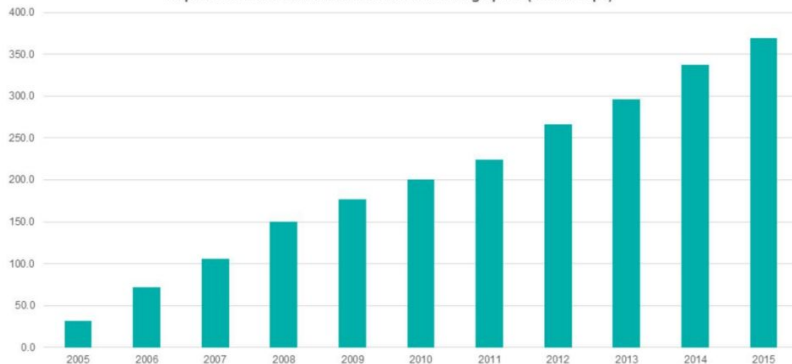
- Over 75 downtown and utility scale district thermal systems operate in the US, with more in Canada
- Combination of city-developed and private developed, with many formerly municipally owned and operated systems now owned and operated by private operators
- In California, city and community districts systems operate in San Francisco, Sacramento, Los Angeles, and San Diego
- Thermal systems successfully operate at a number of universities and military installations as well, with many supported by private investment and operating companies

And a Growing Opportunity

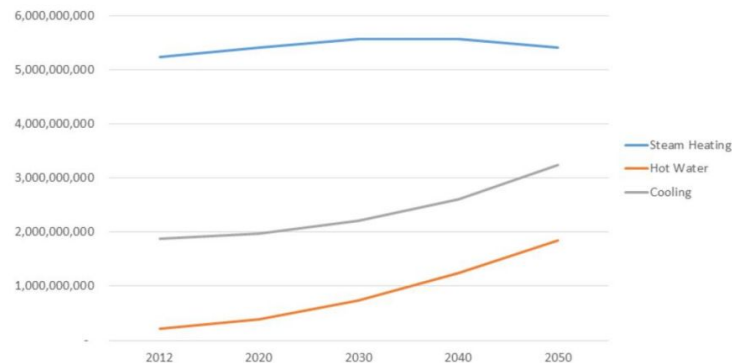
District Energy Building Space Growth in Last Decade

DISTRICT ENERGY SYSTEMS – CUMULATIVE GROWTH

Cumulative District Energy Industry Growth - USA (2005-2016)
 Reported annual additions of customer building space (million sq ft)



District Energy Market in 2050 by million square foot



- From 2005-2015, new space connecting to district energy in the US grew at **9% per year (37.2 MSF per year from 2012-2016)**.
- Capacity is expected to continue increasing, particularly for cooling and hot water systems, similar to those proposed for Downtown West
- Globally, district heating and cooling is projected to grow **6% per year** between 2020 and 2028
- In the US, future growth is supported by policies that encourage district heating and cooling. For instance, the City of Boston requires new master plans to evaluate district heating, cooling, and microgrids for any new development.

Sources: [US DOE and IDEA Market Report](#), [Global Market Research DHC](#)

A Mature Investment and Operations Market

Private DBFOM providers of district heating and cooling systems include a number of well-established companies, such as:

- Vicinity Energy (Formerly Veolia Energy North America)
- EnWave
- Corix Infrastructure US
- EverGreen Energy
- Clearway Energy
- Engie Development, LLC

For privately or publicly owned systems, partners focused on operations of district heating and cooling systems on contract to owners are prevalent in the market place as well, including:

- Worley Parsons
- Johnson Controls
- Noresco
- Acciona

Additionally, investors in new and existing district energy systems include the DBFOM providers above as well as private equity firms including:

- Brookfield
- Antin Infrastructure Partners
- Axiom Infrastructure
- Barclays
- Bernhard Capital Partners
- FVB Energy
- Meridiam Infrastructure
- Blackstone Group
- Ullico Infrastructure
- Harrison Street Partners
- John Laing
- Puttman Infrastructure

Mission Rock



Location: San Francisco, CA

Installed: In Development

Utilities: Chilled Water, Heating Hot Water

Owner: Ever-Green Energy

Operator: Ever-Green Energy

Tariffs: Tariff analysis conducted in development to determine viability of heating and cooling delivery at or below cost. Ever-Green is a nonprofit operator, supporting lower heating and cooling tariffs.

Area Served: 3.5 MSF, 11 buildings

Customer Types: Commercial and residential

Key Details

- Financing via public private partnership to support combination of private finance and bonds
- Competitive bid for selection of DBFOM partner (Ever-Green Energy) to ensure quality and reasonable tariffs
- Vertical development delivered in partnership with traditional developer; Ever-Green providing energy center and underground piping, including bay water heat exchange system

[Additional Information](#)

Brewery Blocks



Location: Portland, OR

Installed: 2008

Utilities: Chilled Water

Owner: Enwave Portland

Operator: Enwave

Tariffs: Set by Enwave, with cooling metered for each customer by Enwave and payments directly to Enwave for cooling.

Area Served: 1.7 MSF, Five blocks, with potential expansion to the Pearl District in Portland

Customer Types: Retail and commercial

Key Details

- Shared chillers located in a single building within the Brewery Blocks provides cooling to the remainder of the development
- Heat reclamation for domestic hot water preheat
- Originally developed by Portland Energy Solutions, a division of Enron, and later acquired by Veolia before transferring to Enwave. Completed with private finance without subsidies, and delivers cooling at rates below the equivalent for building operators

[Additional Information](#)

Downtown San Francisco Steam Network



FIG. 80.—Steam-distribution system of the Pacific Gas and Electric Co., in San Francisco

Location: San Francisco, CA

Installed: Early 1900s

Utilities: Steam

Owner: Energy Center San Francisco, LLC (Formerly owned by PG&E)

Operator: Clearway Energy

Tariffs: Tariffs set by Clearway Energy and subject to oversight by the CPUC

Area Served: 37 MSF from 2 plants; over 180 downtown SF customers

Customer Types: Retail, commercial, hotel, residential, municipal, convention center

Key Details

- Continuously operating steam system which transitioned to private ownership and operation to support improved maintenance and efficiency
- Preference from many downtown developers to join the steam network, leading to continued expansion, due to saved space in building for boilers and other associated equipment
- Oversight of steam tariffs part of CPUC's remit; CPUC filings for heating hot water and chilled water not typically required

[Additional Information](#)

Dockside Green



Location: Vancouver, BC, Canada

Installed: 2011

Utilities: Heating Hot Water

Owner: Corix

Operator: Corix

Area Served: 1.3 MSF, including 2,500 residents

Customer Types: Residential, retail, commercial

Description: Gasification of waste to produce heat and domestic hot water for residences and commercial buildings in a new, private development, including private financing for the district infrastructure.

[Additional Information](#)

False Creek



Location: Vancouver, BC, Canada

Installed: 2011

Utilities: Heating Hot Water

Owner: City of Vancouver

Operator: City of Vancouver

Tariffs: Tariffs set by the City, with a requirement for new buildings in the service area to connect to the plant

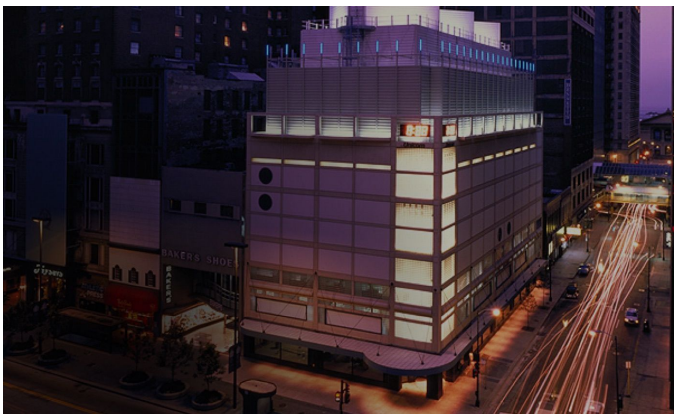
Area Served: 5.75 MSF currently, with expansion planned up to 22.6 MSF

Customer Types: Residential, retail, commercial

Description: Sewer heat recovery-based plant that serves the former Olympic village and new development within the False Creek area.

[Additional Information](#)

EnWave Chicago



Location: Chicago, IL

Installed: 1995

Utilities: Chilled Water

Owner: EnWave Chicago, LLC

Operator: EnWave

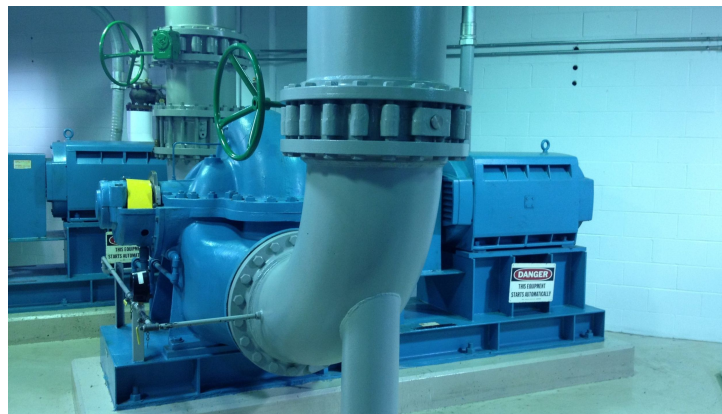
Area Served: 48 MSF over 120 customers

Customer Types: Commercial, hotels, residential, institutional, and data centers

Description: Combining five plants with thermal energy storage, the Chicago plants were originally developed by Exelon Energy and acquired by EnWave.

[Additional Information](#)

CoolCo



Location: Cincinnati, OH

Installed: 2011

Utilities: Chilled Water

Owner: Harrison St. Investments

Operator: Ever-Green Energy

Area Served: 5.9 MSF, 14 buildings

Customer Types: Retail and commercial

Description: Serving Cincinnati's Central Business District, CoolCo is owned by a private investment firm and operated by a nonprofit partner to provide cost-effective cooling.

[Additional Information](#)

Amazon HQ



Location: Seattle, WA

Installed: 2017

Utilities: Heating Hot Water

Owner: Amazon

Operator: McKinstry

Area Served: Up to 5 MSF

Customer Types: Office

Description: Heat exchange from a hotel system combined with boilers at the Amazon HQ campus provide central heating. The system was funded with private financing from infrastructure investment firm Craft3.

[Additional Information](#)

Energy Park



Location: St. Paul, MN

Installed: 1983

Utilities: Heating Hot Water and Chilled Water

Owner: Port Authority of St. Paul

Operator: Ever-Green Energy

Area Served: 3 MSF

Customer Types: Retail and commercial

Description: Affordable and market-rate housing combined with office development in a brownfield urban corridor redevelopment.

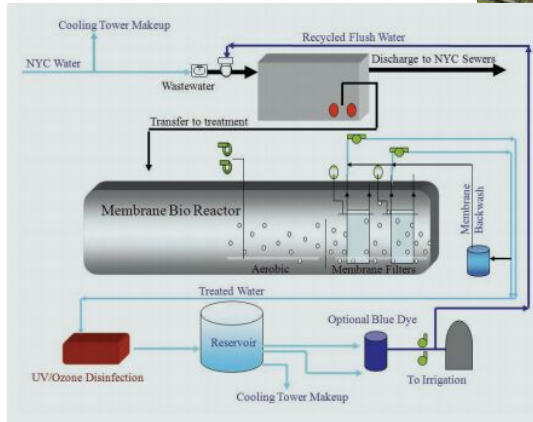
[Additional Information](#)

Water Reuse Facility



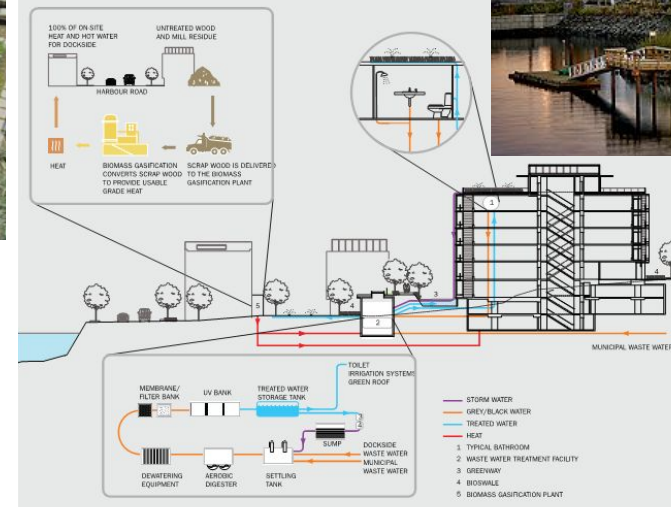
Precedents: Mixed Use District Scale

Battery Park (NYC)



- Six residential towers with amenities served
- Recycles 165,000 gallons of wastewater per day
- WC flushing, cooling tower, laundry, and garden irrigation
- 48% water consumption reduction
- 56% reduction in wastewater discharge

Dockside Green (Victoria, BC)



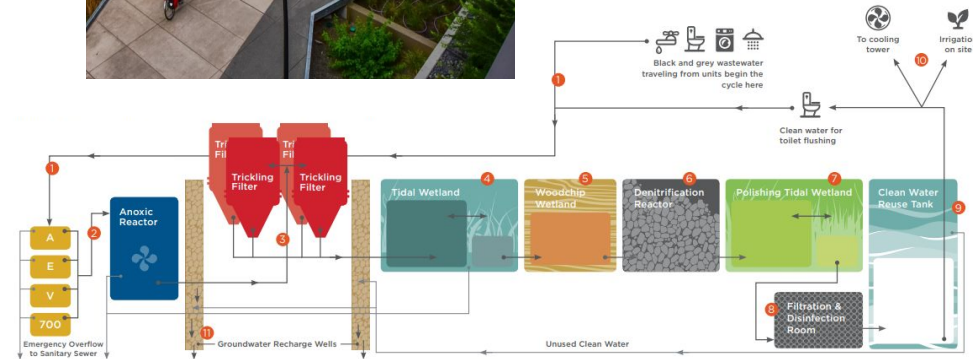
- Three neighborhoods and 1.3 MGSF
- Onsite wastewater treatment
- Heat and biosolids energy recovery
- Non-potable water
 - Toilet flushing, landscape irrigation, ponds, & nearby industrial users

Precedents: Mixed Use

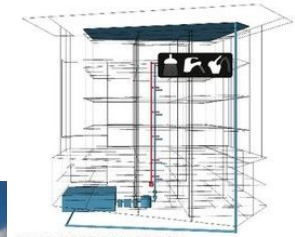
Hassalo on 8th (Portland)



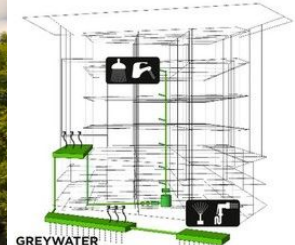
- Operated by third party DBO entity
- Residents receive sewer and recycled water bills directly from third party
- Treatment system integrated into public plaza



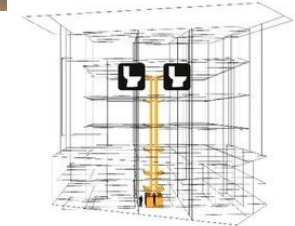
Bullitt Center (Seattle)



RAINWATER COLLECTION
 100% DEMAND MET ON SITE
 50,000 GALLON CISTERN



GREYWATER
 100% TREATMENT ON SITE
 EVAPOTRANSPIRATION & INFILTRATION

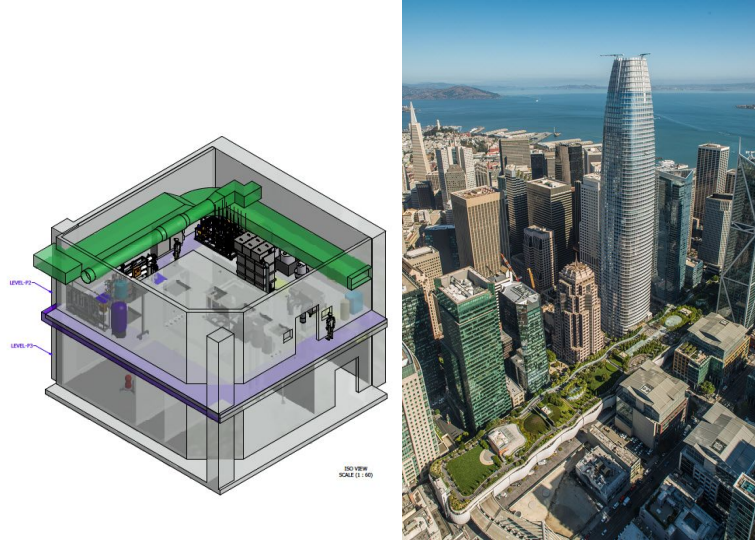


WASTE COMPOST
 100% TREATMENT ON SITE

- Living Building Challenge
- Composting Toilets
- Greywater Reuse
- Rainwater Catchment
- Collaboration with King County Env. Div.

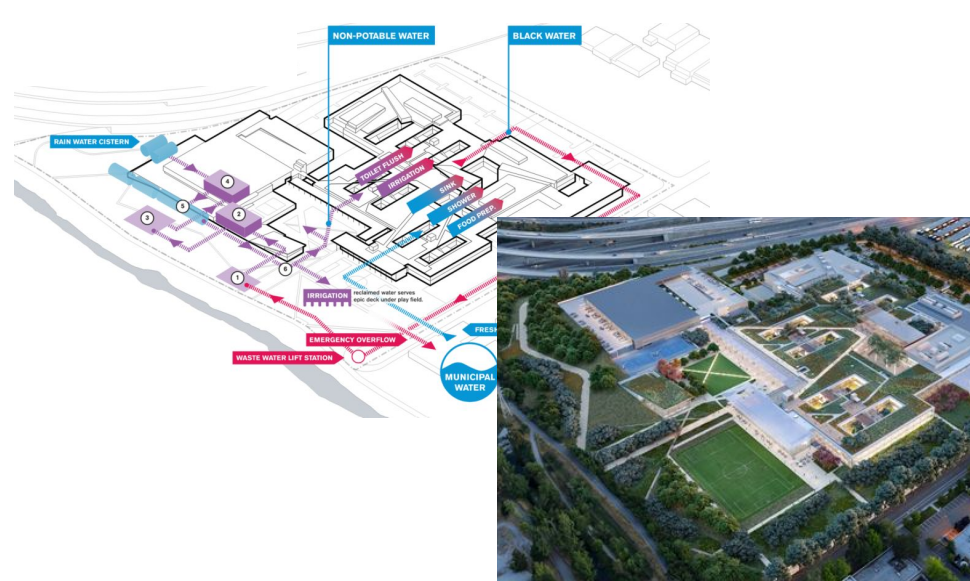
Precedents: Bay Area Onsite Reuse

Salesforce Tower (San Francisco)



- Offsetting 30,000 gallons of potable water a day
- Largest onsite recycled water system in commercial high rise in the US
- Recycled water serves non-potable uses inside the building such as toilet flushing and irrigation

Microsoft SV (Mountain View)



- Net Zero Water | Living Building Challenge Water Petal
- Office project servicing 2,000 employees
- Rain Harvesting
- Treating onsite wastewater

Who are the Contract Operators working in this space?

1. National

- *Design, permit, build, own via WSAs and operate water/wastewater facilities*
 - Natural Systems Utilities
 - Puttman Infrastructure
 - Sustainable Water
- *Facilities operation*
 - Chemsearch FE
 - Operation Services, Inc.
 - Woodard and Curran

2. California + Bay Area

- Aqua Operations, Inc.
- Aquality Water Management
- California Water Operators
- CHC Hydronics
- EPIC CleanTec
- Sylmar group
- System Operations Services

3. Global

- *Operate numerous public and private water/wastewater facilities*
 - Veolia
 - Multinational water engineering firms often have an operations group (e.g., Jacobs, Stantec)

CA Regulation Pushing Onsite Non potable Reuse

1. San Francisco - Article 12C (2015)

- In 2015, Article 12C became a mandatory requirement for new development projects of 250,000 square feet or more of gross floor area to install and operate an onsite water reuse system.

2. Menlo Park - Title 16, Section 16.43.140 (2018)

- This “green and sustainable building ordinance” requires all new buildings greater than 250,000 square feet to use an alternate water source for nonpotable applications.
- In the case that there is no recycled water purveyor available, the project will need to reduce potable demand by 30% compared to the City's water budget baseline.

Date Published: 09/28/2018 09:00 PM

Senate Bill No. 966

CHAPTER 890

An act to add Article 8 (commencing with Section 13558) to Chapter 7 of Division 7 of the Water Code, relating to water quality.

[Approved by Governor September 28, 2018. Filed with Secretary of State September 28, 2018.]

LEGISLATIVE COUNSEL'S DIGEST

SB 966, Wiener. Onsite treated nonpotable water systems.

Existing law requires the State Water Resources Control Board to establish uniform statewide recycling criteria for each varying type of use of recycled water where the use involves the protection of public health.

This bill would, on or before December 1, 2022, require the state board, in consultation with the California Building Standards Commission and the Department of Housing and Community Development, to adopt regulations for risk-based water quality standards for the onsite treatment and reuse of nonpotable water, as provided. The bill would authorize the state board to contract with public or private entities regarding the content of the standards. The bill would require a local jurisdiction, as defined, that elects to establish a program for onsite treated nonpotable water systems to, among other things, adopt, through ordinance, a local program that includes the risk-based water quality standards established by the state board. The bill would, on or before December 1, 2023, require the department, in consultation with the state board, to develop and propose for adoption any necessary corresponding building standards to support the risk-based water quality standards established by the state board. The bill would prohibit an onsite treated nonpotable water system from being installed except under a program established by a local jurisdiction in

3. SB966 - State Law (September 2018)

- Requires the State to publish guidelines for onsite nonpotable reuse systems by 12/1/2022.
- Requires local agencies to adopt guidelines and develop programs to permit onsite nonpotable reuse systems by 12/1/2023.