



A Snapshot of a...

Future-ready Data Center

Proposed Redevelopment, Moorestown, NJ

June 17, 2024

Different HOW & WHY???

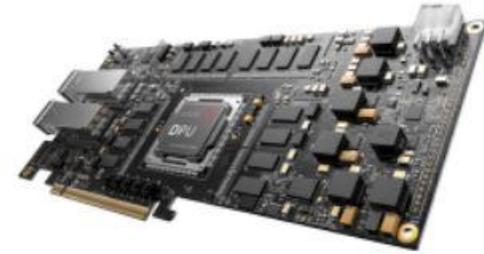
- Traditional Data Center Discussion
- Future-ready defined, Tech + Building Systems choices
- Rate of change and adoption, Tech VS Buildings
- Enable efficiency and sustainability
- Make some of the power we need
- Our relationship with the built environment has changed in both our homeplace and workplace



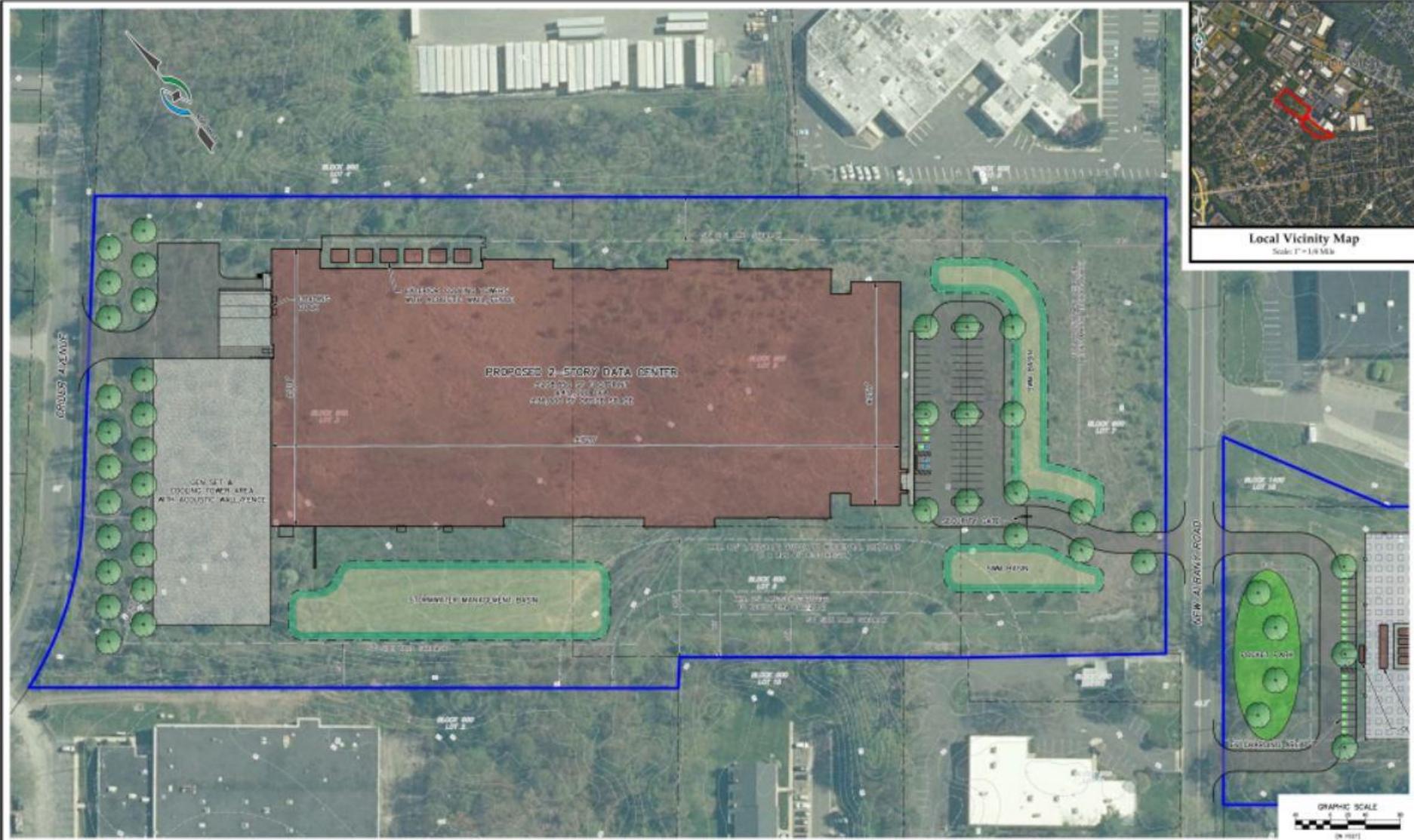
CPU



GPU



DPU



Local Vicinity Map
Scale: 1" = 10 Miles

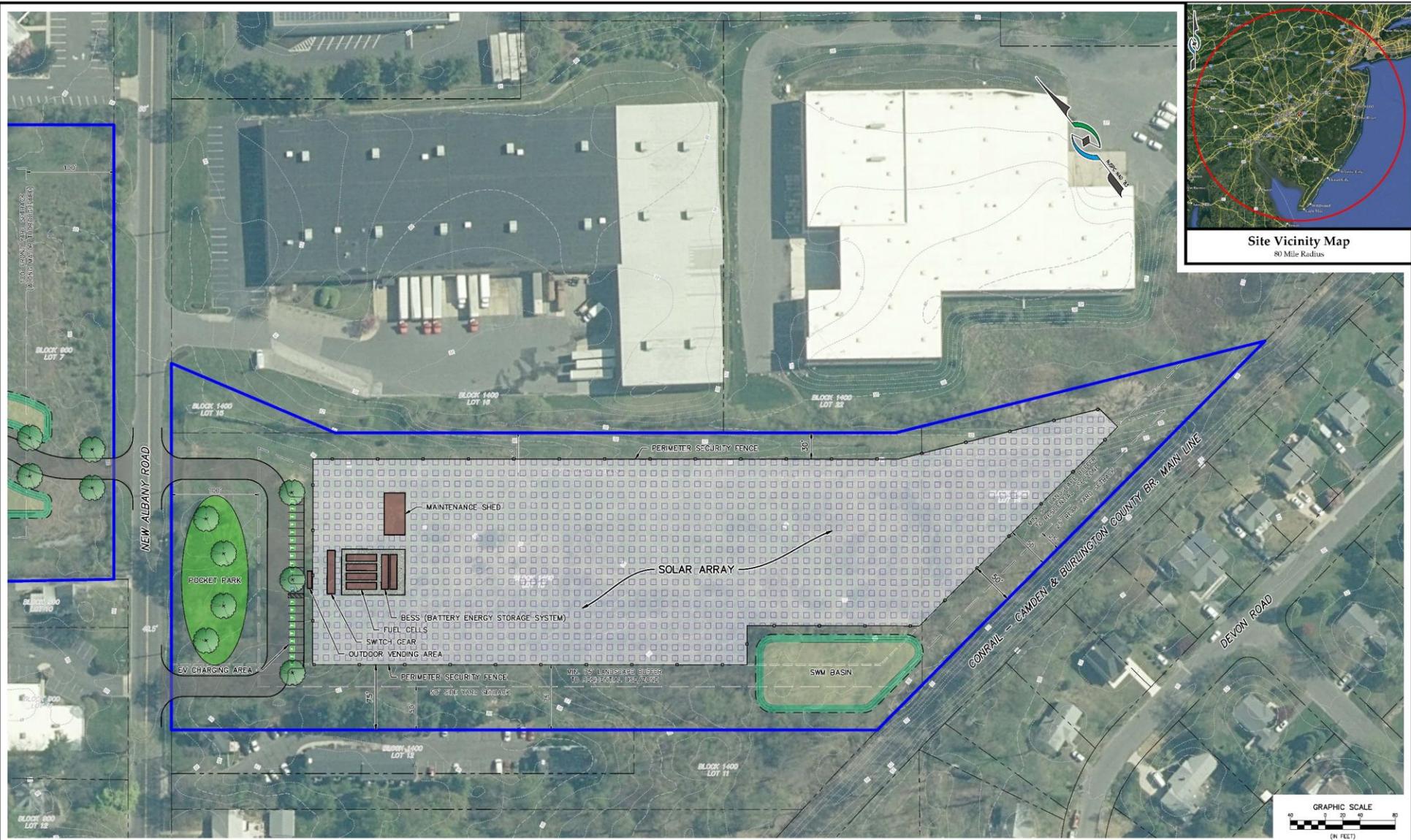


Township of Moorestown, Burlington County, New Jersey

CONCEPT PLAN

Drawing No. C2201

June 6, 2024



CONCEPT PLAN

Drawing No. C2202

June 6, 2024



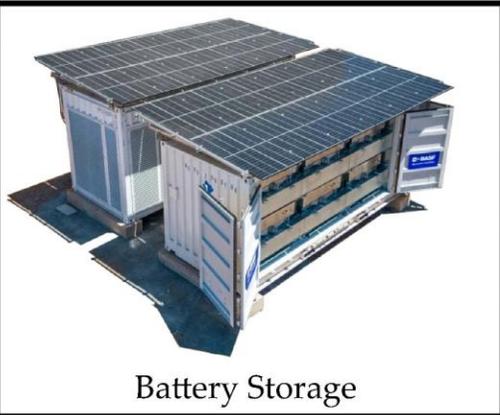
CPU



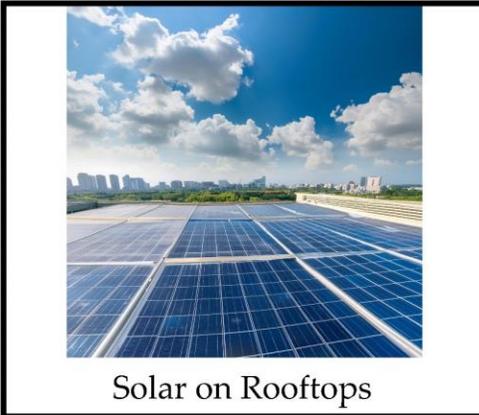
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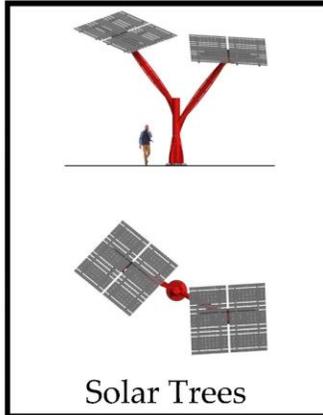
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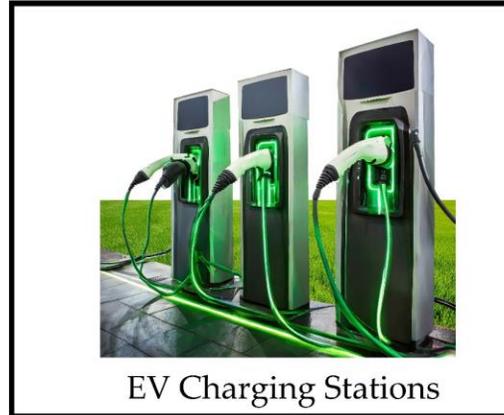
Battery Storage



Solar on Rooftops



Solar Trees



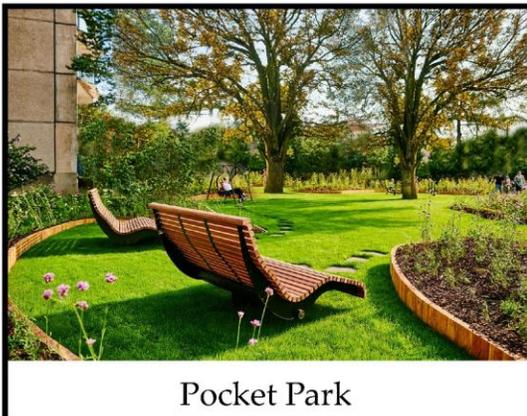
EV Charging Stations



Living Wall on a Data Center



Outdoor Vending



Pocket Park



Outdoor Workout Equipment



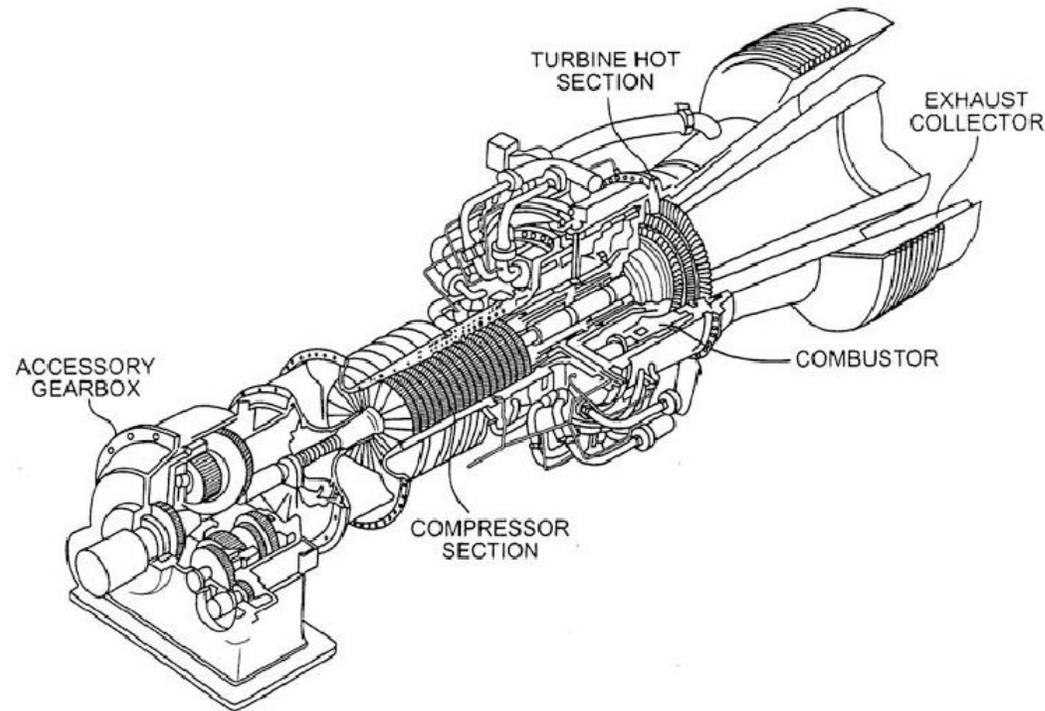
Township of Moorestown, Burlington County, New Jersey

SAMPLE ILLUSTRATIONS

Drawing No. C2203

June 6, 2024

How natural gas-fired turbines work PLUS make more energy from the heat it creates.

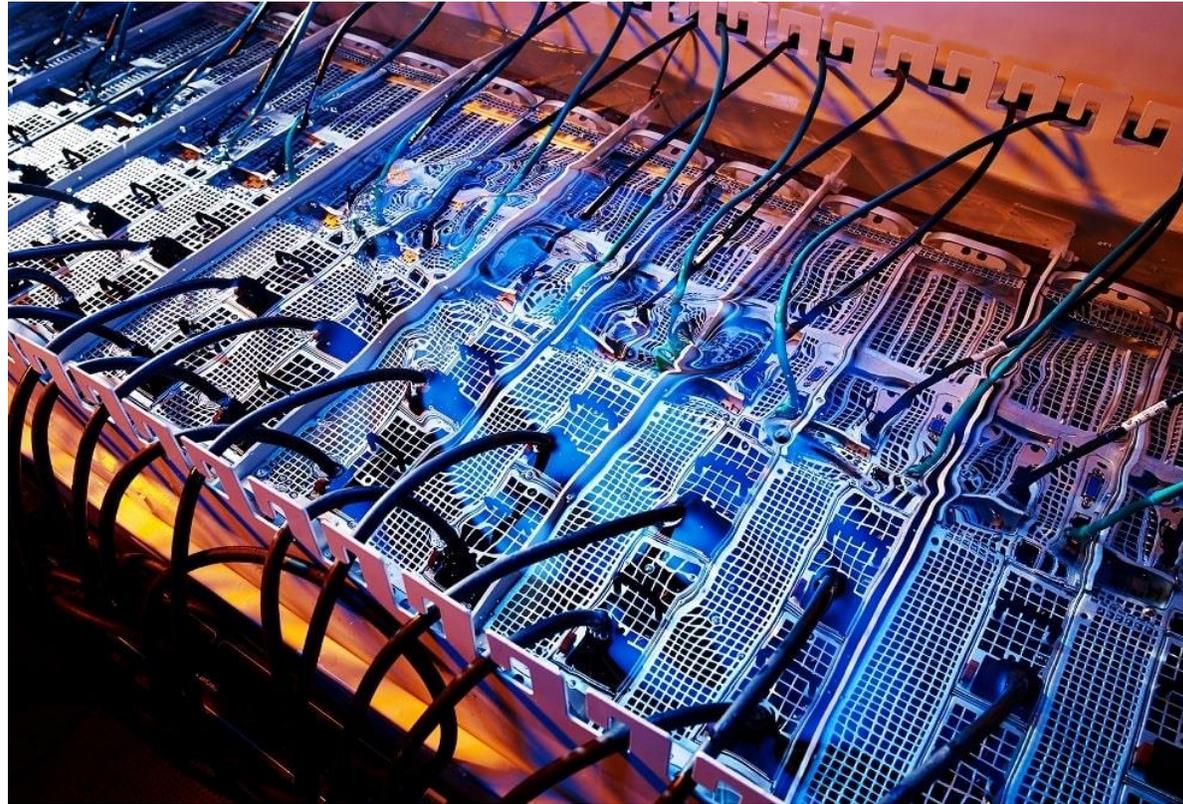


<https://youtu.be/zcWkEKNvqCA?si=dskZ3OCDGYopscBm>

Natural Gas Turbine Operation & Benefits

- Utilizes abundant natural gas
- Compressed air mixed with fuel makes power 10's-100's compared to rate "per HP" of an internal combustion motor
- Cleaner exhaust than other energy generator types
- Steam (residual energy) can be used to generate more power or for cooling water in an absorption chiller
- Super-efficient process

Immersion Cooling Explained



<https://vimeo.com/32499012>

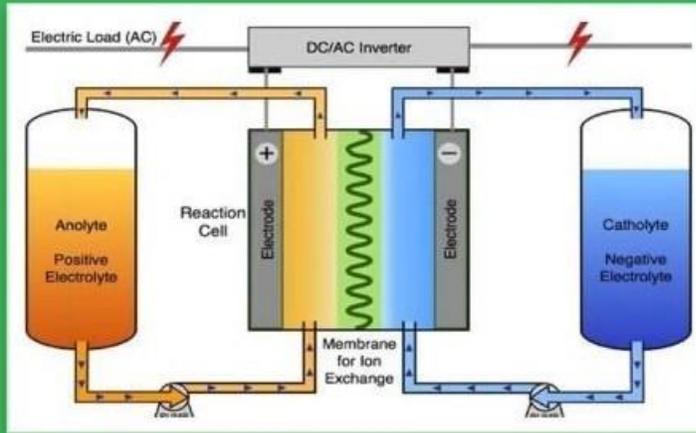
<https://vimeo.com/32771102>

Immersion Cooling Operation & Benefits

- Enables massive reduction in water use as compared to typical Data Center cooling
- Reduced power consumption by 20% (Fans & related equipment)
- Space saving (rack layout) by 60%
- Reduces cooling energy by 90%
- No fan noise from CPUs or noise from room AC (DX units)

Flow Battery Explained

What is a Flow Battery?



Long proven history of safe, resilient & certified zinc/iron flow batteries:

- 8 Years of USDOE & NASA research followed by
- 8 Years of ViZn commercialization
- ISO 9001-2008 certified manufacturing facilities
- Idaho National Lab customer specializing in vulnerability assessments & infrastructure resiliency for electric grid reliability, control systems, cybersecurity and physical security systems.



Flow Battery Operation & Benefits

- Batter cell Tech that is 50 years old
- Ability to discharge and recharge at the same time
- No harmful emissions & no noise pollution
- No risk of fire & low performance degradation
- Long life cycle and made with renewable materials

<https://www.blackridgeresearch.com/blog/top-flow-battery-companies-manufacturers>

Thank you!

For your time and attention.

jdavis@newurbanllc.com



How Loud Is Your Environment?



Data Center Staffing (SAMPLE)

Staff Title / Responsibility	Shift		
	A	B	C
Data Center Manager	1	-	-
Operations Manager	1	-	-
Shift Manager / Supervisor	2	2	2
Network Engineers	2	2	2
Systems Administrators	4	4	4
Data Center Technicians	6	6	6
Electrician & Mechanical Engineer	2	2	2
IT Support Staff	3	3	3
Physical Security Guards	6	6	6
Security Analyst	2	2	2
Facility Engineers	2	2	2
Maintenance Technicians	3	3	3
EHS Manager	1	1	-
Safety Officers	1	1	1
Logistics & Inventory Staff	2	2	2
Cleaning	3	3	4
Totals by Shift	41	39	39
Total Operating Staff, All Shifts			119