CUMULUS
DATA

Converging Digital Infrastructure & Clean Power

Hyperscale data centers directly connected to zero-carbon, low-cost, reliable electricity

cumulusinfra.com |

The **Opportunity**

Direct connection to zero-carbon, ultra-reliable nuclear power results in one of the lowest all-in power costs in the U.S.

475 MW

zero-carbon, redundant power

- Dual, independent 475 MVA substations
- Direct connection to dual, > 1 GW nuclear units
- Power expected to be available in January 2023
- Ability to scale beyond 475 MW

1,200-acre campus

large-scale opportunity

- Master plan completed for Buildings 1 - 6
- Data Center 1 (48 MW) shell construction completed December 2022
- Designed with flexibility for fit-out

as low as **$0.039 / kWh**

energy rate

- Guaranteed long-term power pricing paired with competitive lease rates
- No transmission & distribution cost

Zero-carbon

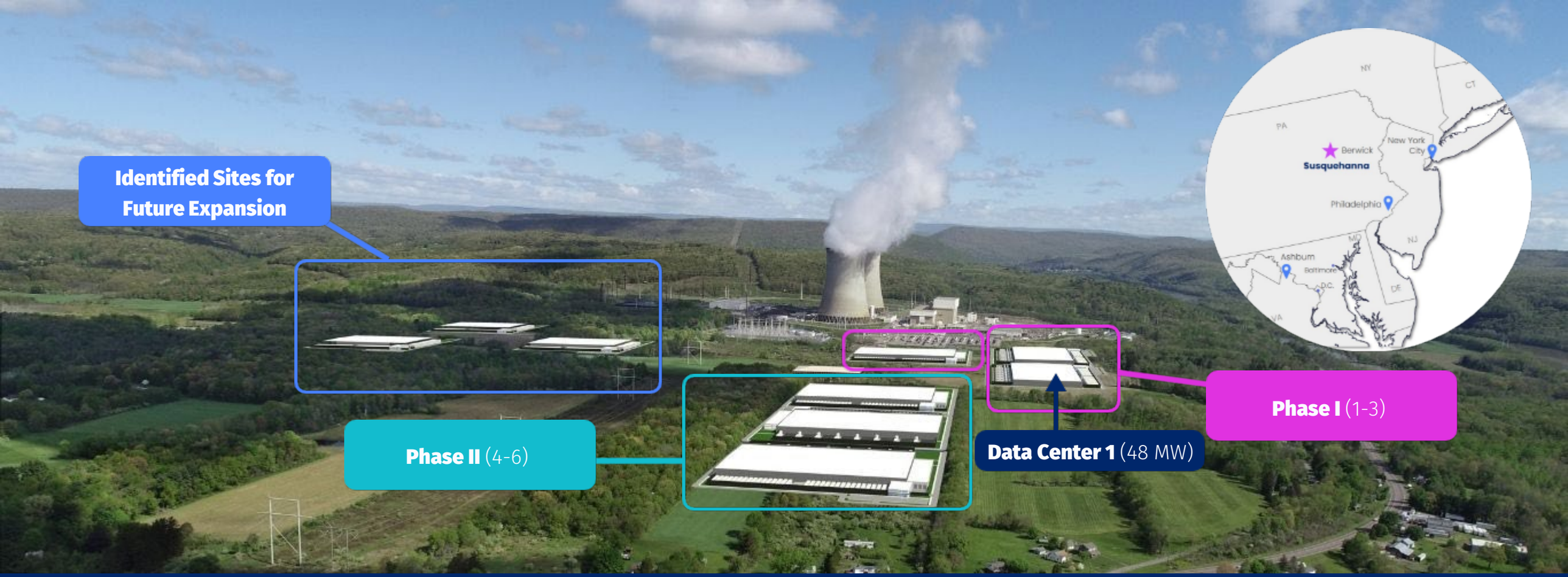
24 x 7 nuclear power

- Ultra-reliable, direct connection to source
- Option to supplement with > 400 MW solar via PPAs, RECs, or direct investment

Tax Savings

PA Sales & Use Tax Exemption

- New PA legislation exempts qualified data centers from Sales & Use Tax (6%)
- Cumulus has prequalified for exemption



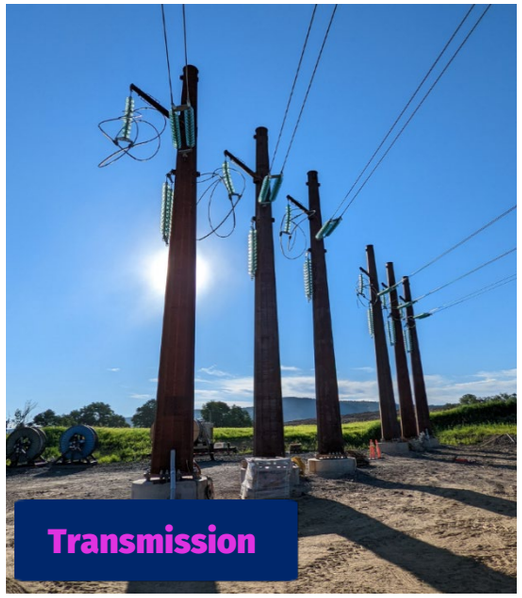
Cumulus Data **Campus**

Cumulus Data's flagship campus is directly connected to Talen Energy's 2.5 GW Susquehanna nuclear plant and is designed to help solve the energy trilemma at scale: **zero-carbon, low-cost, reliable electricity**.

Construction **Progress**

Construction of Data Center 1 (48 MW) shell was completed in December 2022. The campus is expected to be energized in January 2023.

- December 2020 | **Electrical infrastructure construction start**
- June 2021 | **Campus groundbreaking**
- November 2021 | **Data Center 1 construction start**
- September 2022 | **Dried in**
- December 2022 | **Data Center 1 shell completed**
- January 2023 | **Campus energization**

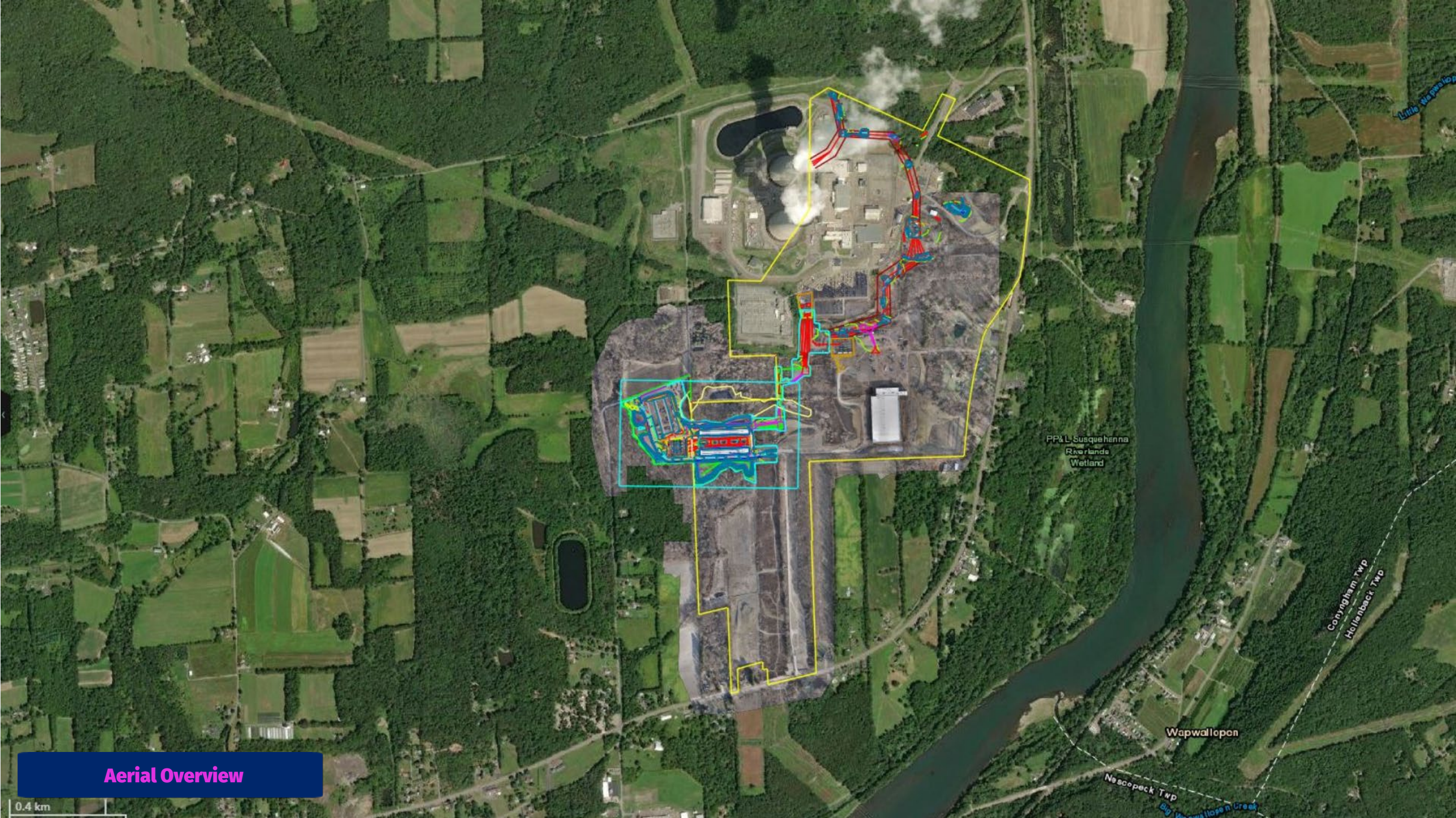

Transmission


Substation 4


Substation 1


Data Hall

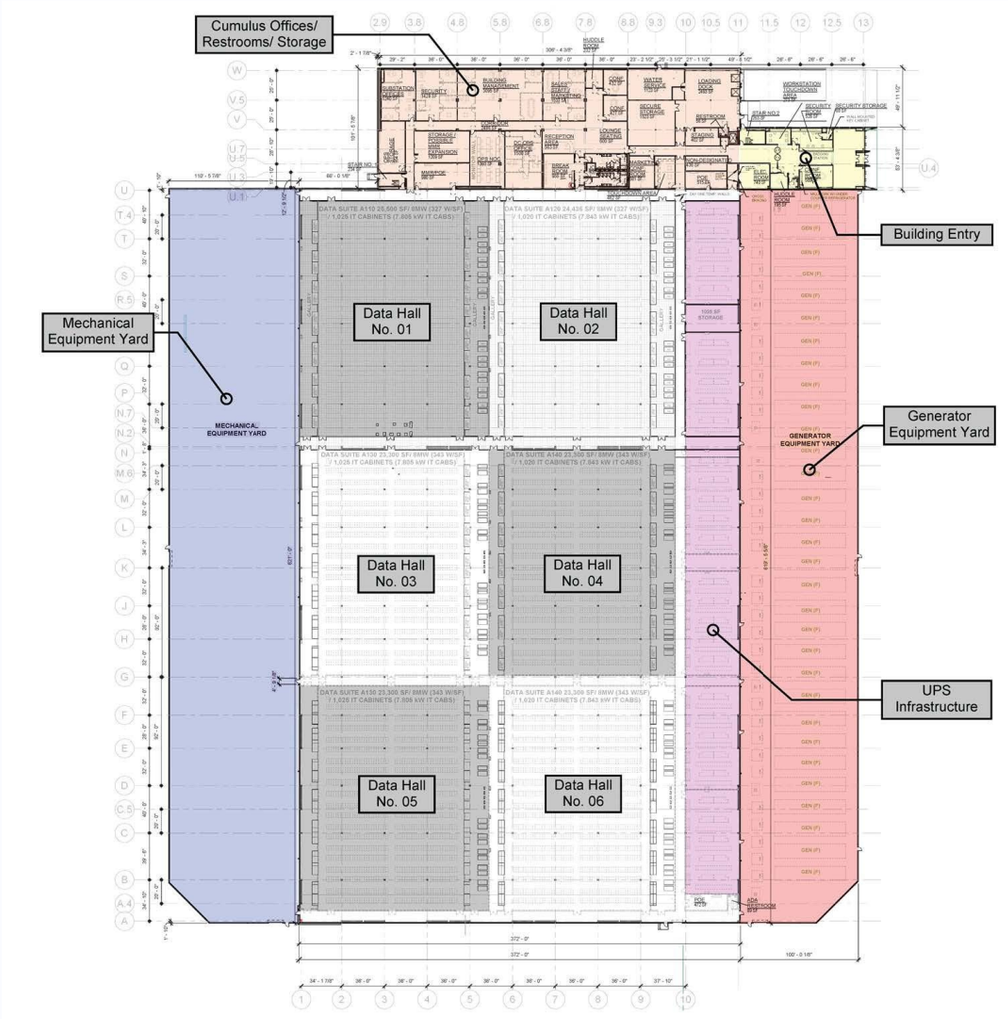

Data Center 1



Aerial Overview

Data Center 1 Example Design

Design for Data Center 1 is optimized for customers to have flexibility on deployments; construction of shell complete



Design Overview

Initial deployment
- 2 data halls with 8 MW capacity
- 4 data halls with 6-8 MW capacity

Total Capacity of Data Center 1: up to 48 MW

Data hall designed to be compatible with most hyperscale deployments

Closed loop chilled water system utilizing fan walls
- Able to support in row liquid cooling

Tier 3 design with N+1 redundancy

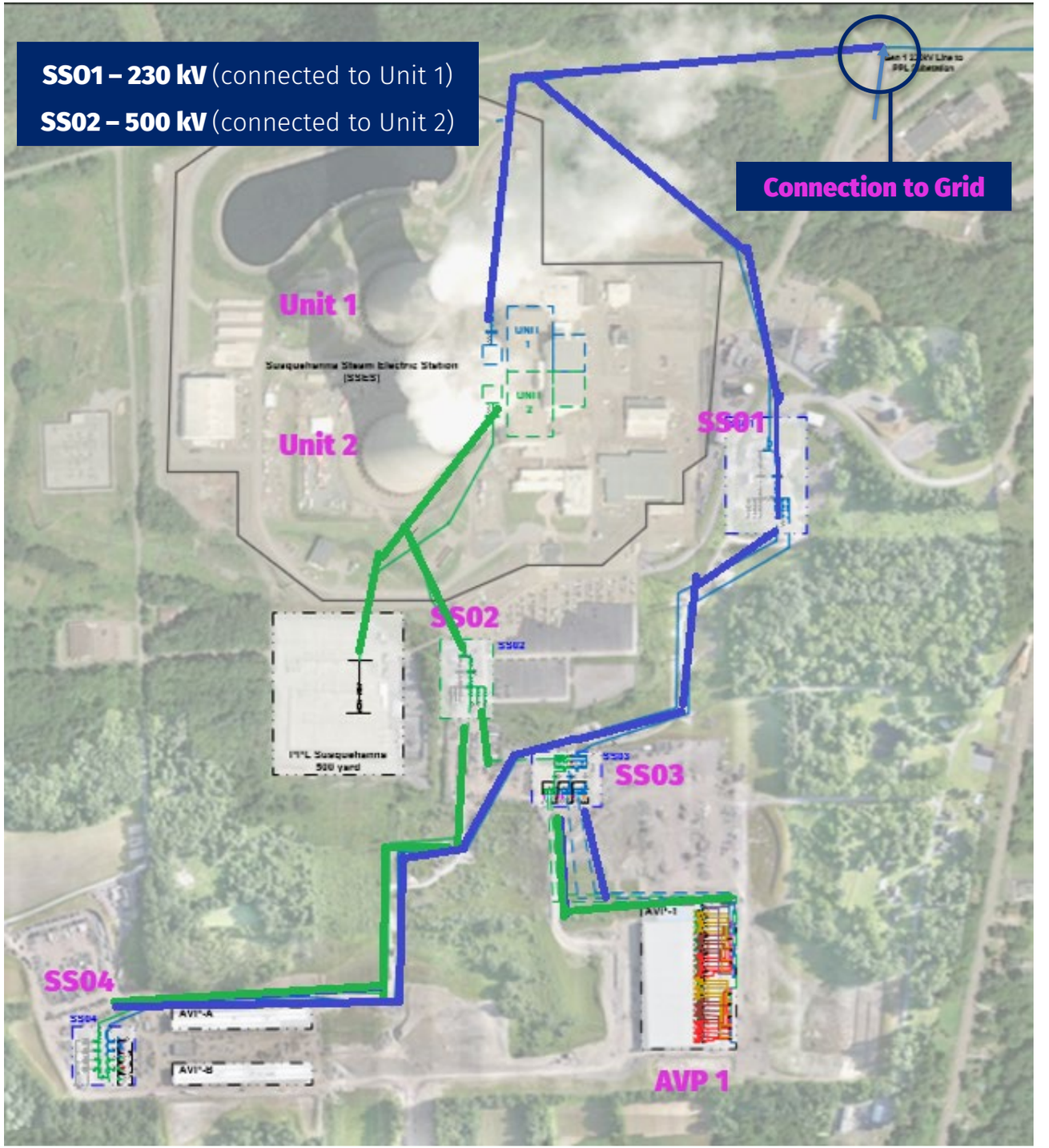
Key Statistics

303,931	134,400	48 MW	6-9 kW
Gross SF	White Space SF	Max Critical UPS Power	Cabinet Density

Campus Substations Design

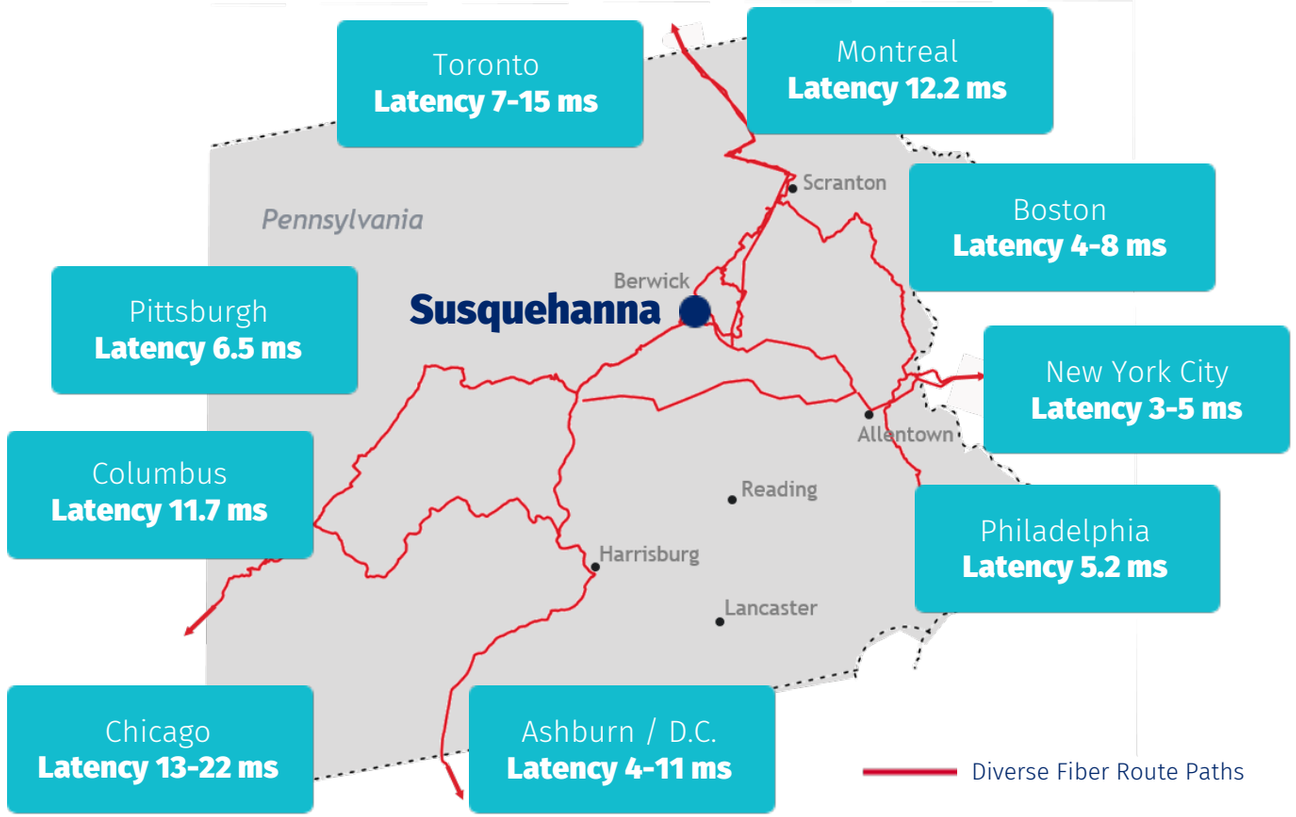
- Cumulus Digital Campus is fed by two independent substations
- SS01 & SS02 each hold one 478 MVA transformer, and are expandable to double their current size: total available power to 956MVA in each
- Substations step down to 6 feeders at 69 KV
- SS03 steps down from 69 KV to 34.5 KV

Substation 1



Network Connectivity: **Fiber Construction Commenced**

Diverse paths identified with nine major network carriers



- Cumulus Data prioritized securing strategic partnerships with major fiber providers to deliver diverse transport options with the ability to support high availability applications
- Comcast, FirstLight, and Lumen have started construction on their fiber builds; they are all expected to be on the campus by the ready for service date in Q1 '23
- Thoughtfully architected efficient routes to provide access to key data center markets and carrier hotels
- Inter-campus fiber ring / inter-building ducts are 100% owned and controlled by Cumulus, allowing for cross-connect opportunities on the campus

Available Network Carriers

ATLANTIC broadband (72 Strand Count)	CenturyLink LUMEN (288 Strand Count)	COMCAST (144 Strand Count)
CROWN CASTLE	FirstLight (144 Strand Count)	Frontier COMMUNICATIONS
TILSON (288 Strand Count)	Uniti Fiber	zayo

already on campus | build started | vetted solutions

Campus Fiber Map

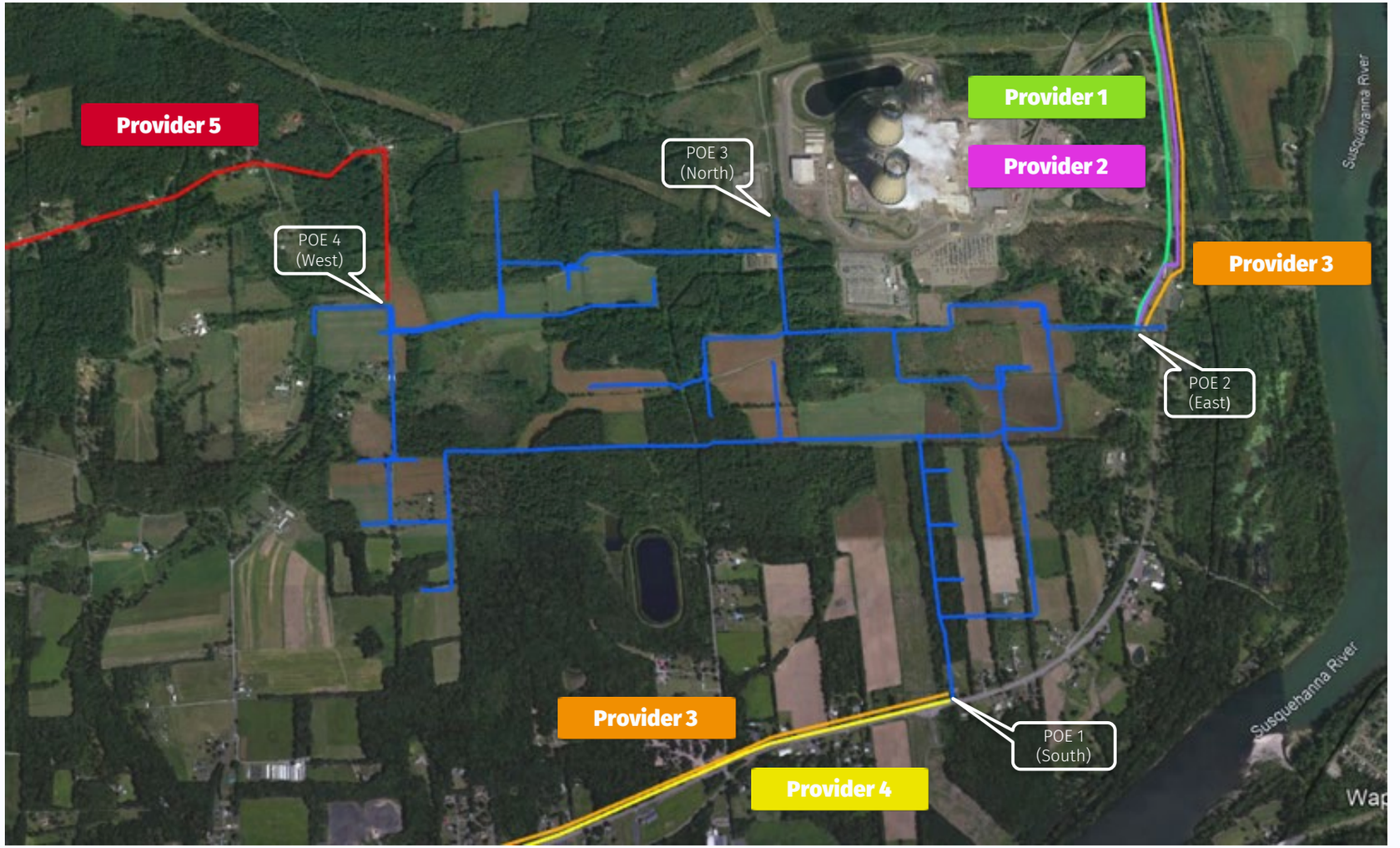
Provider 1
- Aerial Build | Delivery Q2 / 2022
- Single Route
- Strand Count: 144+
- ~6 Route Miles of New Build

Provider 2
- Aerial Build | Delivery Q3 / 2022
- Single Route
- Strand Count: 144
- ~14 Route Miles of New Build

Provider 3
- Underground Build | Delivery Q4 2022 & Q2 2023
- 2 Geographically Diverse Routes
- Strand Count: 144/Pathway
- ~20 Total Route Miles of New Build

Provider 4
- Aerial Build | Delivery Q1 2023
- Single Route
- Strand Count: TBD
- ~4 Route Miles of New Build

Provider 5
- Planned Underground Build | Delivery TBD
- Single Route
- Conduit Only
- ~25 Route Miles of New Build



PA Sales & Use Tax Exemption for Data Centers

Legislation signed into law on June 30, 2021, will further enhance economics for data center facilities on the Susquehanna campus **by avoiding the 6% sales and use tax.**

As of January 2022, **Data Center 1 has been certified** and will receive the exemption.

Pennsylvania Passes Digital Infrastructure Incentive Legislation

Data Center Definition	• A facility that will be predominantly used to house working servers or similar data storage systems and that may have uninterruptible energy supply or generator backup power or both, cooling systems, towers and other temperature control infrastructure; this definition would include the Cumulus Data campus
Facility	• A certified data center can be comprised of one or more buildings
Process	• A data center must first become certified; once certified the facility is eligible to request a tax exemption certification
Certification Requirements	• All certification requirements must be met within 4 years of applying for certification • Creation of 45 new jobs and $100M in new investment in construction and DC equipment • $1M in annual compensation within the first 4 years and thereafter
Eligible Purchases	• Purchases on or after January 1, 2022 of computer data center equipment for installation in a certified computer data center

Cumulus Data Impact

Eligible Purchases

All data center equipment on SHC campus including electrical gear, cooling equipment, water conservation systems, software, monitoring equipment and security systems, servers, etc.

Eligibility Date

All eligible purchases made after January 1, 2022 will be exempt from the Pennsylvania Sales & Use Tax (6%).

Significant Savings

The exemption will produce significant savings in the form of reduced spend on the data center build and IT equipment.

$23M+ hyperscaler savings on server equipment in DC1[1]

(1) This assumes the tenant of DC1 purchases 48MW of server equipment

Industry Leading **TCO**

with one of the lowest all-in power costs in the U.S.

Direct connection to zero-carbon generation source enables outstanding economics that surpass the best owned & operated facilities.

as low as **$0.039 / kWh**
energy cost

- Guaranteed long-term power rate enabled by best-in-class efficiency among 95+ U.S. nuclear units[1]
- No transmission & distribution cost (see next slide)
- No carbon offset required
- Collaborate with Cumulus Data parent company Talen Energy, a top independent power producer with 12.5 GW of generating capacity

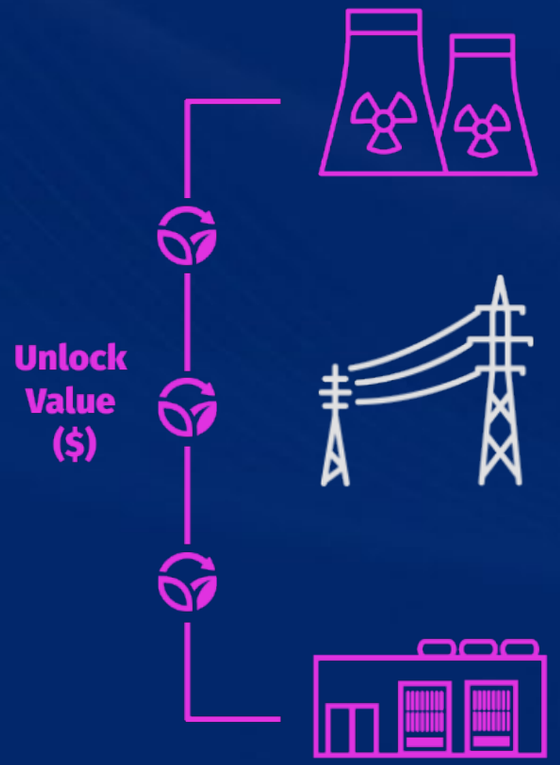
Superior TCO
>20%+ estimated savings

- Competitive $ / kW lease rates
- No personal property tax
- Legislation passed to exempt 6% Sales and Use Tax for large-scale data centers
- Significant economies of scale with campus build-out

1) Source: EUCG; vie for leading cost performance with 2 other plants; nuclear units currently licensed through 2042 and 2044 with further extension expected

No Transmission & Distribution Charges

Colocation next to zero-carbon generation removes significant costs from power bill

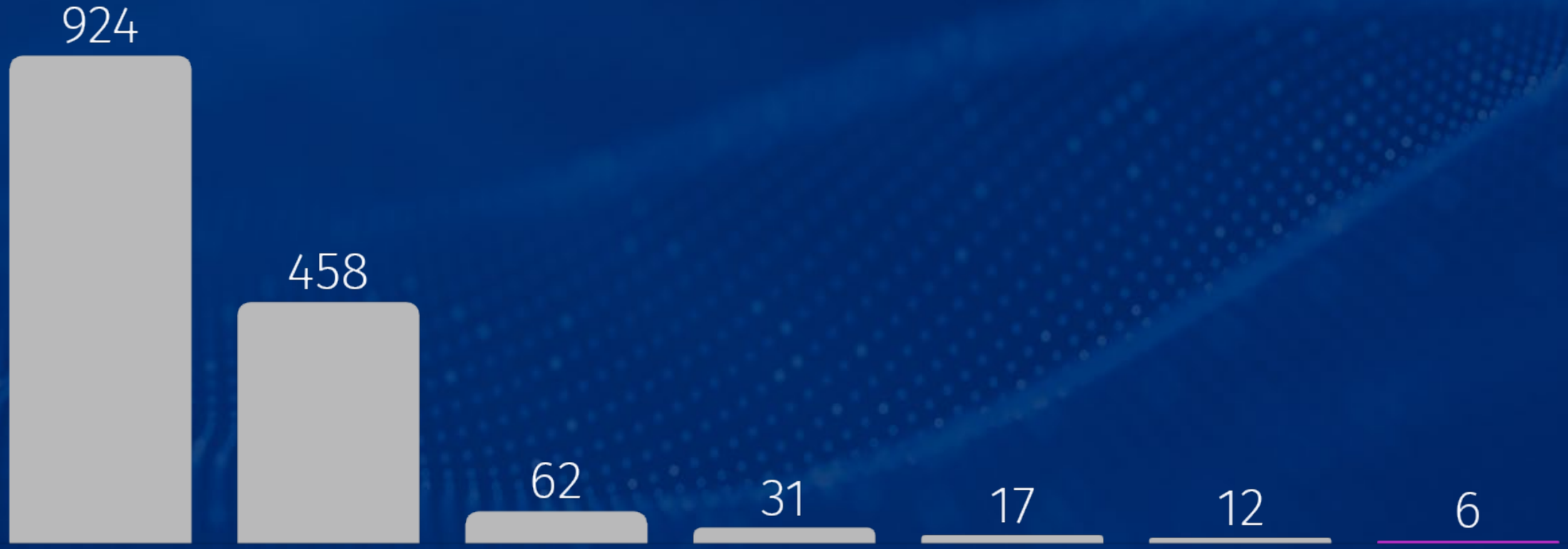


	Traditional Energy Bill	Cumulus Energy Cost
Grid Power Price	$0.05 - $0.07 kWh	Fixed or variable rate
Transmission & Distribution	20-30% of grid power price	No T&D
Renewable Energy Credits	$0.01 - $0.02 kWh	No RECs needed

SIGNIFICANTLY LOWER
power cost

Nuclear Lifecycle GHG Emissions Lower Than Wind or Solar

Grams of CO^2 eq. per kWh of electricity



Source: UN Economic Commission for Europe, 2021,
"Life Cycle Assessment of Electricity Generation Options"

ESG-

Friendly

In addition to the environmental benefits, the project is expected to create ~1,000 construction jobs and employ 50 permanent employees.

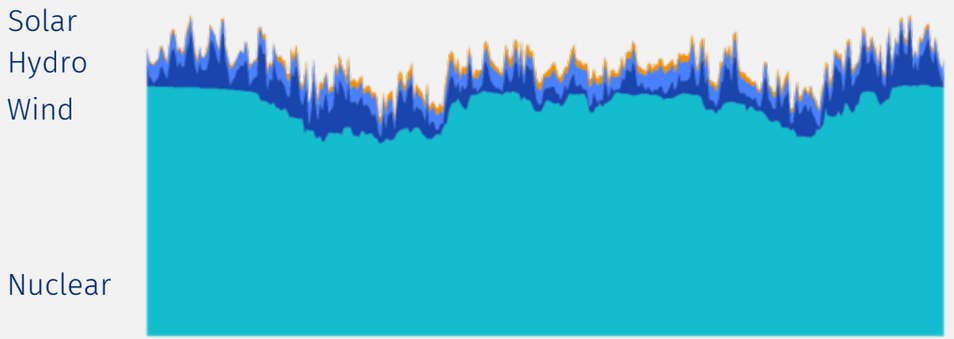
Zero-Carbon 24 x 7

redundant nuclear power

Direct connection to always-on, zero-carbon power meets sustainability goals with improved efficiency

Ultra-reliable with redundant onsite > 1 GW nuclear units, independent substations, and backup generators

Nuclear is the most abundant and stable zero-carbon energy source[1]. Its always-on power makes it the ideal zero-carbon solution to power the data center industry.



1) PJM daily power generation (MWh) from zero-carbon sources from 1/1/2021 - 12/31/2021

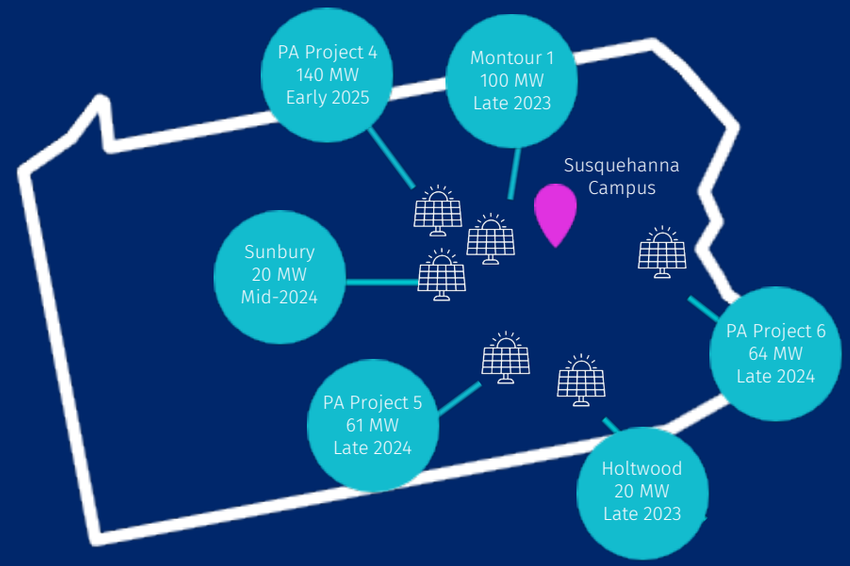
> 400 MW Solar

planned supplemental power

Multiple options to tap into Cumulus Renewables' PA solar plans: PPAs, virtual PPAs, RECs and direct investment

6 sites being developed to meet Cumulus Data customer's ESG goals; another 600 MW wind & solar planned across U.S.

Opportunity to contract directly for solar[2] < 50 miles from campus



2) PA Project 5 and PA Project 6 are wholly owned by Talen; all other projects ~50% owned

Proximity to Major Metro Areas

Major metro areas and multiple communities are in close proximity to the Cumulus Data campus, allowing for ease of travel and a variety of options for housing, education, work opportunities, and activities.

1-hour drive time radius from Berwick, PA

Driving Distance

The Cumulus Data campus and surrounding towns are close to many major metro areas, including New York, Philadelphia, and Washington D.C.

Distance from Cumulus Data campus to:
Allentown - 74 miles
Harrisburg - 98 miles
Philadelphia - 123 miles
New York City - 142 miles
Baltimore - 177 miles
Washington D.C. - 241 miles

Airport Information

The Wilkes-Barre/Scranton International Airport (AVP) has daily direct flights from New York, Chicago, and Charlotte and is a 40-minute drive to the Cumulus Data campus at Susquehanna.

AVP Direct Flights	Additional Airports
UA: New York (EWR)	Lehigh Valley (ABE)
UA: Chicago (ORD)	Harrisburg (MDT)
AA: Charlotte (CLT)	Philadelphia (PHL)
AA: Chicago (ORD)	Newark (EWR)

Population & Labor

The three areas surrounding the Cumulus Data campus have a total population of 764,314.

Area	Population[1]	Labor Force[2]
Bloomsburg / Berwick	82,959	41,900
Scranton / Wilkes-Barre / Hazelton	567,750	276,900
Williamsport	113,605	54,500
Total	**764,314**	**373,300**

[1]U.S. Census Bureau [2]U.S. Bureau of Labor Statistics

CUMULUS DATA

Overview of Nuclear Energy & Susquehanna Nuclear

Clean | Safe | Reliable | Affordable

cumulusinfra.com |

Nuclear energy is clean, safe, reliable & affordable

...and powers 1 in 5 U.S. homes and businesses

Clean

Nuclear energy generates more than **50% of the nation's zero-carbon electricity** and 20% of its total electricity.

Safe

There has **never been a radioactive release** associated with the U.S. nuclear fleet through 28 million hours of operation.

Reliable

Nuclear plants **operate 24/7/365** and can fulfill the demand of data center operations while being complemented by other intermittent zero-carbon sources like wind and solar.

Affordable

Cumulus Data offers an industry-leading TCO with one of the **lowest all-in power costs in the U.S.**

Source: Nuclear Energy Insitute (NEI)

Nuclear plants are among the safest and most well-run industrial facilities in the world

Defense-in-depth approach to safety
A defense-in-depth approach prevents accidents and releases of radiation through redundant layers of defense so that no single layer is exclusively relied upon.

Cybersecurity
U.S. nuclear facilities have stringent cybersecurity protections as part of their overall safety and security measures. This includes measures that prevent direct or indirect access to the internet helping to minimize the risk of a cyber intrusion.

Rigorous oversight
The U.S. Nuclear Regulatory Commission (NRC), an independent federal agency, provides rigorous oversight and evaluates each plant's performance - Susquehanna (SSES) has continually been rated within top-level performance characteristics.

Continuous improvement
The NRC and the industry routinely analyze events at nuclear plants throughout the world to identify improvements, leading to enhanced safety, including modifications that followed the accident at Fukushima, Japan.

Track record of excellence
In the history of U.S. commercial nuclear energy, there have been no radiation-related health effects linked to their operation.

Less radiation exposure than many everyday activities
Those who live near or work at a nuclear plant are exposed to less radiation than many everyday activities (see next page).

Source: Nuclear Energy Insitute (NEI)

Sources of radiation

Radiation is all around us and comes from many different sources - visible light, radio waves, x-rays, gamma rays, etc.

Individuals receive more radiation from common everyday activities, such as radon in the average U.S. home, than they do living near or working at a nuclear power plant.

Whole-body CT (single procedure) | 1,000 millirems

Radon in average U.S. home (annual) | 228 millirems

Cosmic radiation living in Denver (annual) | 80 millirems

U.S. coast-to-coast flight | 3.5 millirems

Living near or working at a nuclear plant (annual) | 0.009 millirems

Source: National Council on Radiation Protection & Measurements (NCRP)

1 uranium
fuel pellet

HAS AS MUCH ENERGY AS

17,000 cubic feet
of natural gas

149 gallons
of oil

1 ton
of coal

Source: Nuclear Energy Insitute (NEI)

Nuclear energy is highly efficient and the largest source of zero-carbon power

Zero-carbon

All 55 U.S. nuclear plants avoid more carbon emissions annually than the emissions produced by 100 million passenger vehicles.

Highly efficient

The energy density of uranium and the world-class operations of nuclear plants, make nuclear a highly efficient form of energy.

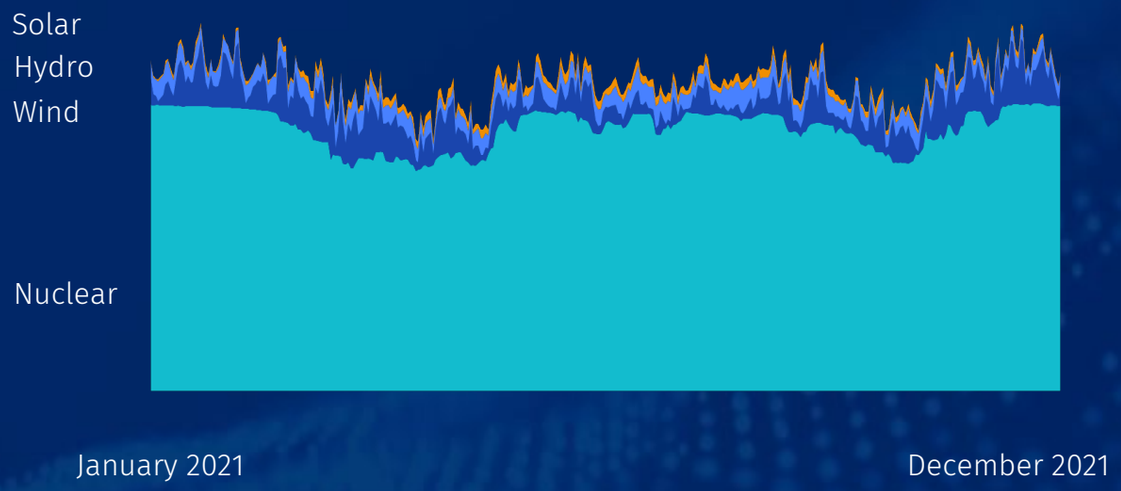
Small land footprint

Nuclear facilities have small footprints, requiring ~1.3 square miles per 1,000 MW of installed capacity; wind farms require up to 360x as much area to produce the same amount of electricity.

Minimal waste

All of the used fuel ever produced by the commercial nuclear industry since the late 1950s would only cover a football field to a height of fewer than 10 yards.

Nuclear is the most abundant and stable zero-carbon energy source[1]. **Nuclear's always-on power makes it the ideal zero-carbon solution to power the data center industry.**



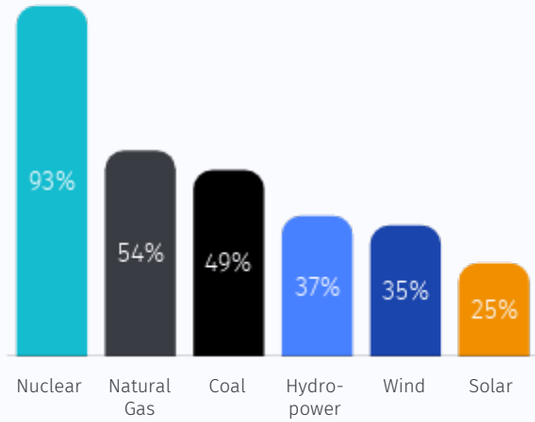
1) PJM daily power generation (MWh) from zero-carbon sources from 1/1/2021 - 12/31/2021

Source: Nuclear Energy Insitute (NEI) & EIA

Nuclear is the most reliable source of electricity

In 2021, U.S. nuclear power plants had an **average capacity factor of 93%**, making nuclear energy by far the most reliable source of energy on the grid. SSES surpasses this industry average each year.

Capacity Factor by Energy Source (2021)



SSES is one of the lowest cost and best operated nuclear plants in the nation

Susquehanna Steam Electric Station (SSES), located outside Berwick, PA on a 1200-acre campus, is a 2,500 MW nuclear plant that generates clean, reliable, safe, and affordable energy.

One of the largest nuclear plants in the U.S, its operational excellence helps Cumulus Data deliver an industry-leading TCO with **one of the lowest all-in power costs in the U.S.**

Industry-Leading Safety

SSES's five-year average incident rate (TRIR) of 0.08 is **92% better** than the DuPont industry standard, the leading methodology to measure industrial safety.

Operational Excellence

Using the operational and safety standards and metrics adopted by the nuclear industry, **SSES is among the best in the nation**.

Environmentally Friendly

SSES is capable of generating enough power to provide roughly **two (2) million homes with clean, reliable, safe electricity**.

Voices for Nuclear

Nuclear energy will play an essential role in our zero-carbon future

JENNIFER GRANHOLM - SECRETARY OF ENERGY

“Carbon-free nuclear power is an absolutely critical part of our decarbonization equation."

BILL GATES

"Nuclear is ideal for dealing with climate change, because it is the only carbon-free, scalable energy source that's available 24 hours a day."

REP. KEVIN MCCARTHY (R-CA)

“Republicans have plans to reduce those emissions while investing in clean energy technology that will lead to less emissions, lower costs, and produce as much or more power. Chief among them is advanced nuclear technology.”

KEN KIMMELL - PRESIDENT, UNION OF CONCERNED SCIENTISTS

“We found an important need to preserve the capacity of existing nuclear power plants ... we support across the board policies that would give new nuclear power plants the opportunity to compete in a marketplace against wind and solar and other forms of decarbonized energy.”

Source: Nuclear Energy Insitute (NEI)

Contact Us

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