

# Data Center Ridge

1-Gigawatt Data Center and Clean  
Energy Generation Strategy in  
Southwest Virginia's Coalfields

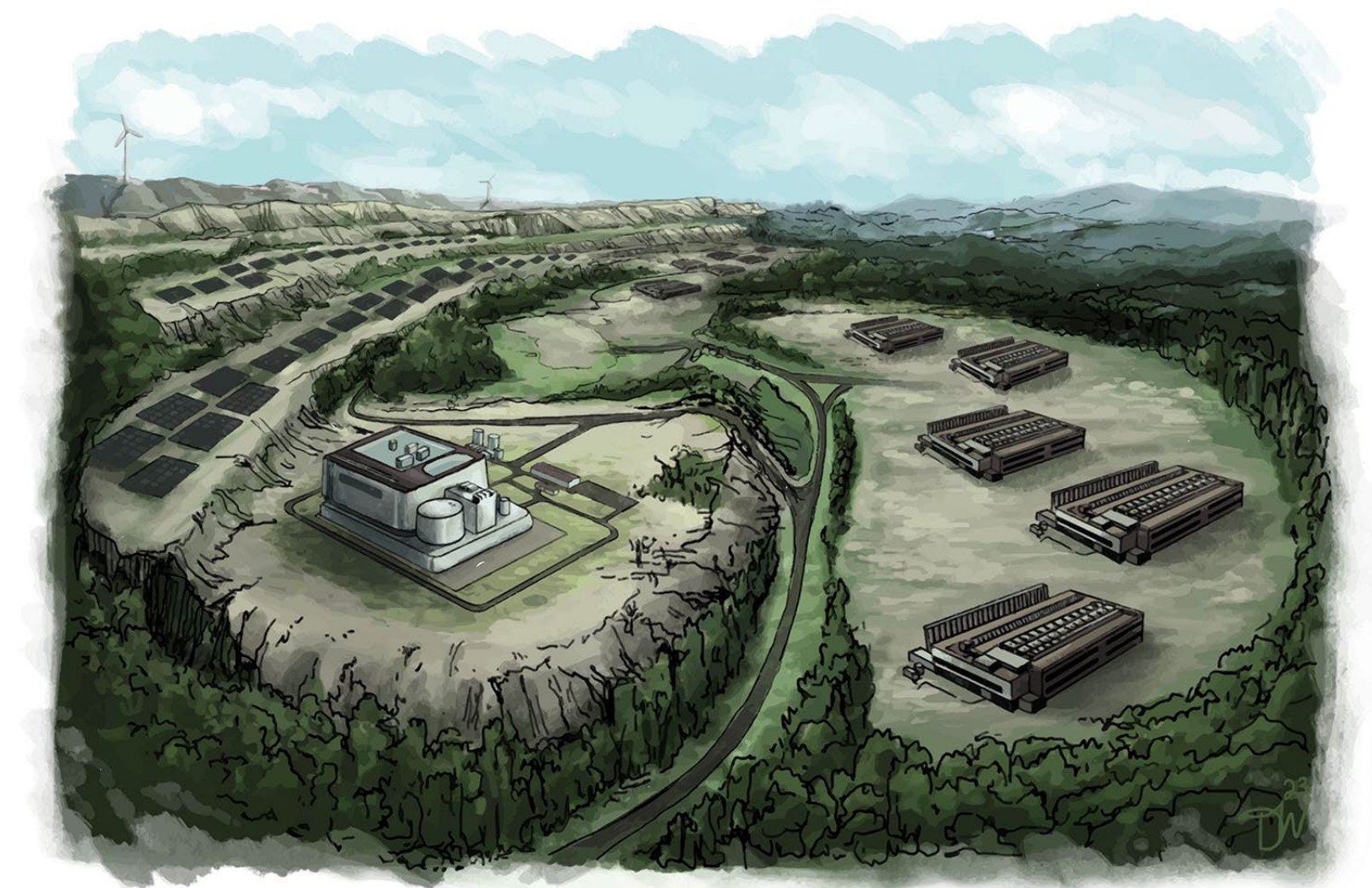


**ENERGY  
DELTA LAB**

Capacity Building for Energy Assets  
U.S. Department of Energy  
Office of Fossil Energy and Carbon Management

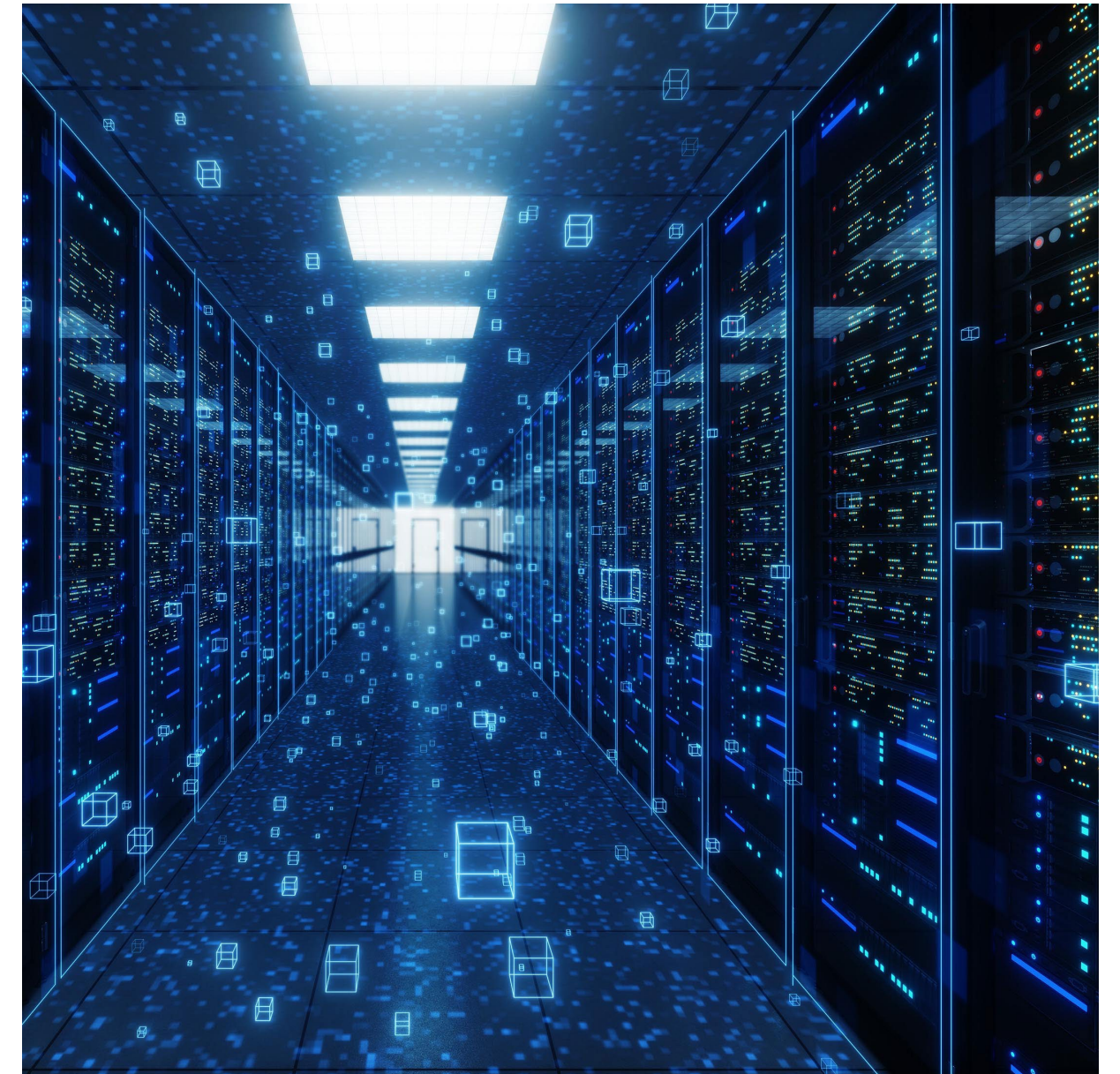
November 14, 2024

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# Data Center Opportunity

- Virginia is home to the largest concentration of data centers in the world, primarily in Northern Virginia due to Department of Defense needs and access to transatlantic subsea fiber lines.
- Virginia officials are determined to maintain this world-leading industry. However, opposition from Northern Virginia residents is growing and land values are skyrocketing. In addition, power availability timelines are delayed up to 7 years according to Dominion Energy, both due to generation and transmission backlogs.
- These problems create the opportunity for alternative sites like Data Center Ridge in Wise County, VA, which features an initial 450-acres with adjacent sites for future expansion.
- Energy DELTA Lab secured \$3 million from federal Abandoned Mine Land Economic Revitalization (AMLER) Program for site infrastructure and \$1.5 million earmark to prove its Oasis cooling technology.



An aerial photograph showing a vast, flat, brownish landscape that appears to be a former mining site. The ground is covered with sparse, dry vegetation and patches of dark soil. A dirt road winds through the area. In the background, there are rolling hills and a few industrial structures, including two large white cylindrical tanks. The sky is clear and blue.

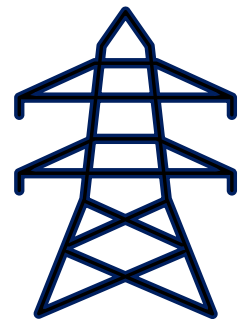
Challenge: Transform  
Former Mined Lands

# Generation + Demand Strategy

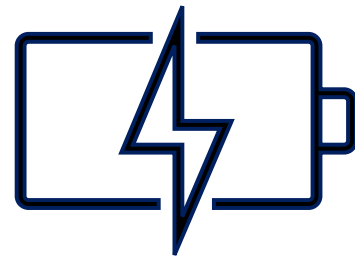
Challenge: Think big with a 10-year staged strategy including incremental generation milestones to serve data center power load, eventually building over 1 gigawatt of generation assets



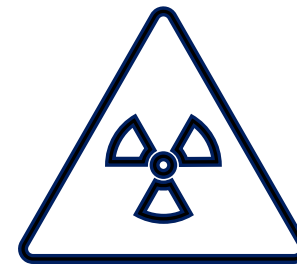
Data Centers



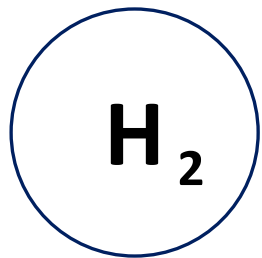
Transmission



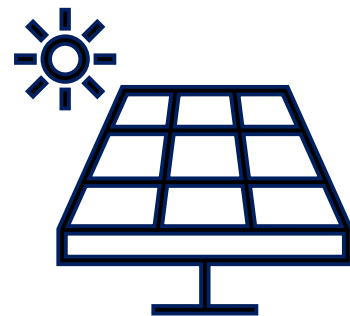
Pumped  
Storage Hydro



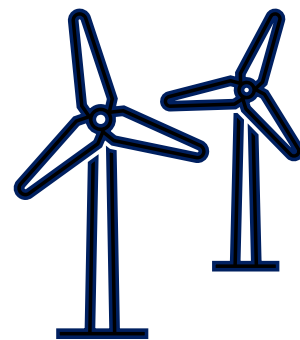
Small Modular  
Reactors



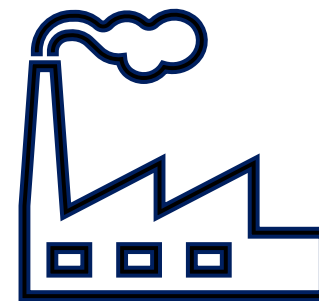
Hydrogen



Solar



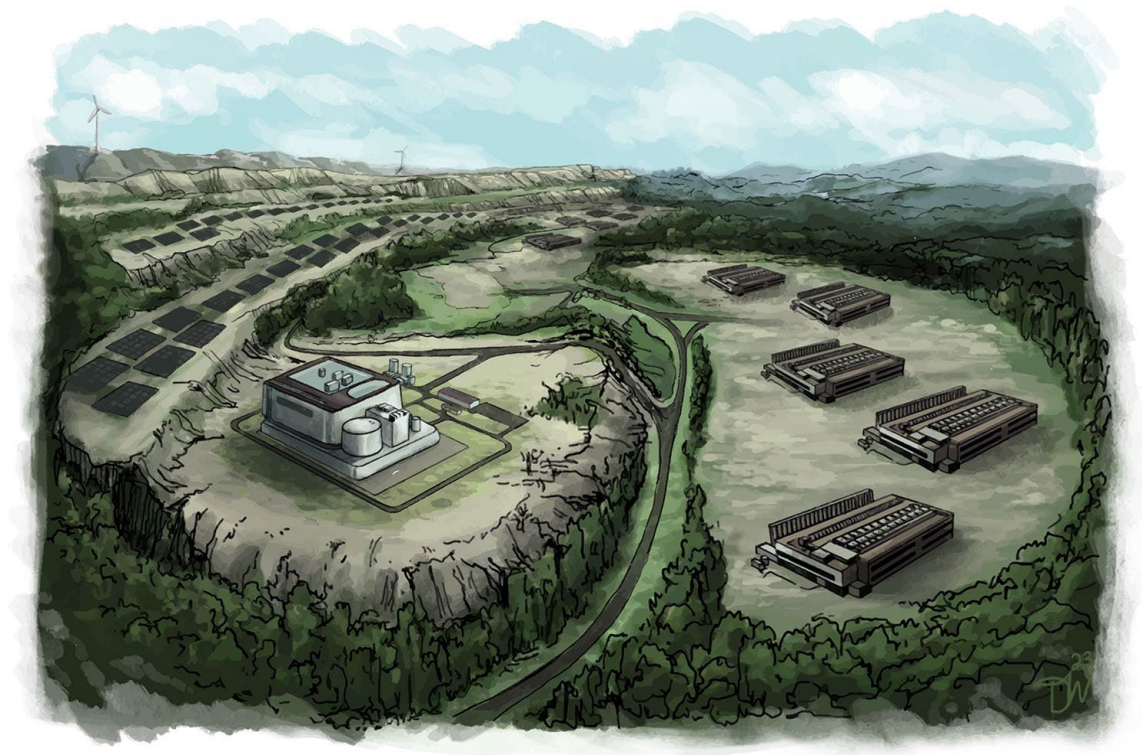
Wind



Manufacturing

# Data Center Execution Strategy

- Energy DELTA Lab team has initiated discussions with several data center developers and operators, which have stated the minimum day-one supply of grid power is 200 megawatts with line of sight to 1 gigawatt.
- Transmission planning is underway to determine available grid power and incorporate the DELTA Lab's planned portfolio of over 1 gigawatt of clean energy generation.



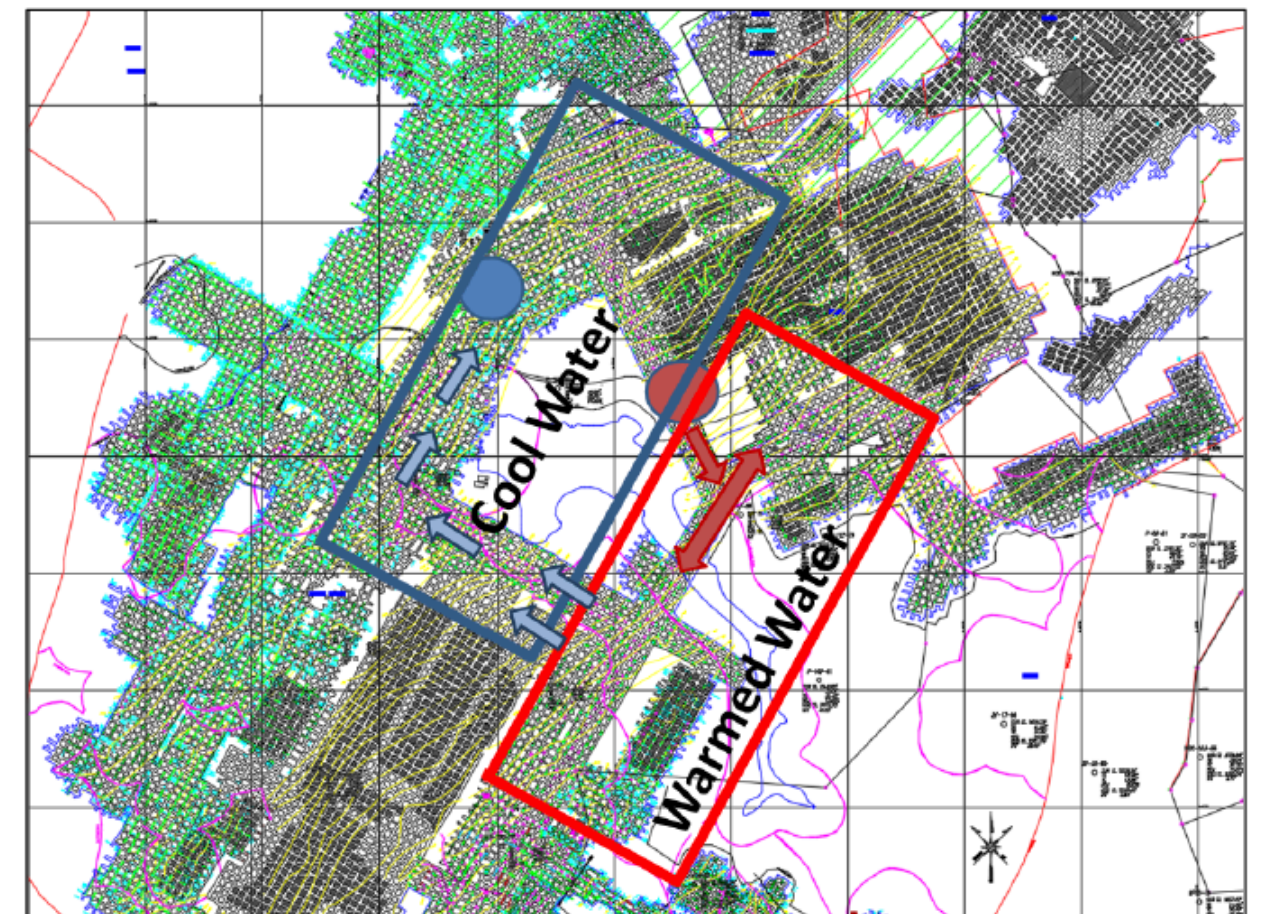
Lesson: Invest in transmission studies. It's all about the power.



# Oasis Mine-Water Based Cooling

- Energy DELTA Lab team developed ‘Oasis Closed-Loop Mine-Based Water Cooling System’ with mining and geothermal industry engineers that will create operational efficiencies.
- Mine cavities are complicated storage vessels for clean, naturally-replenishing 55-degree Fahrenheit water, which requires intimate understanding of underground mining conditions for each individual cavity.
- Over 5 years of analysis and engineering are resulting in implementation of proof-of-concept deployment of demonstration system, that kicked off in August 2024, with help of \$1.5 million Congressional earmark.
- DELTA Lab team’s analysis shows Oasis system will reduce electric and water costs by over \$1 million annually for a 36-megawatt data center. Data Center Ridge’s anticipated capacity is nearly 30x that figure.

Lesson: Seek differentiation. Make a compelling business case for investment.





# ENERGY DELTA LAB

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