

NOVA | SYSTEMIC

Northern Virginia Community College
HI-TEC 2023

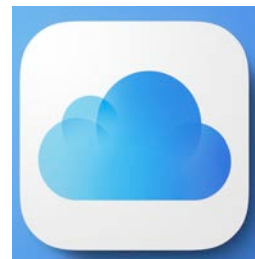
www.nvcc.edu/systemic

AGENDA



- **Overview:** Data & Data Centers
- **Markets:** Primary & Secondary
 - DCO Resources
- **DCO Skills & Curriculum**
- **NSF ATE Grant Awards**
- **Raising Community Awareness**
 - *Bridge Program*
 - Secondary Educator Externship
 - *Faculty PL Fellowship*

OVERVIEW: DATA



OVERVIEW: DATA

In 2018, as estimated 33 zettabytes of data was generated; copied or new data.

- *(2×10^{70} bytes) or 1 sextillion bytes.*

2023 is estimated to be 120 zettabytes of data.

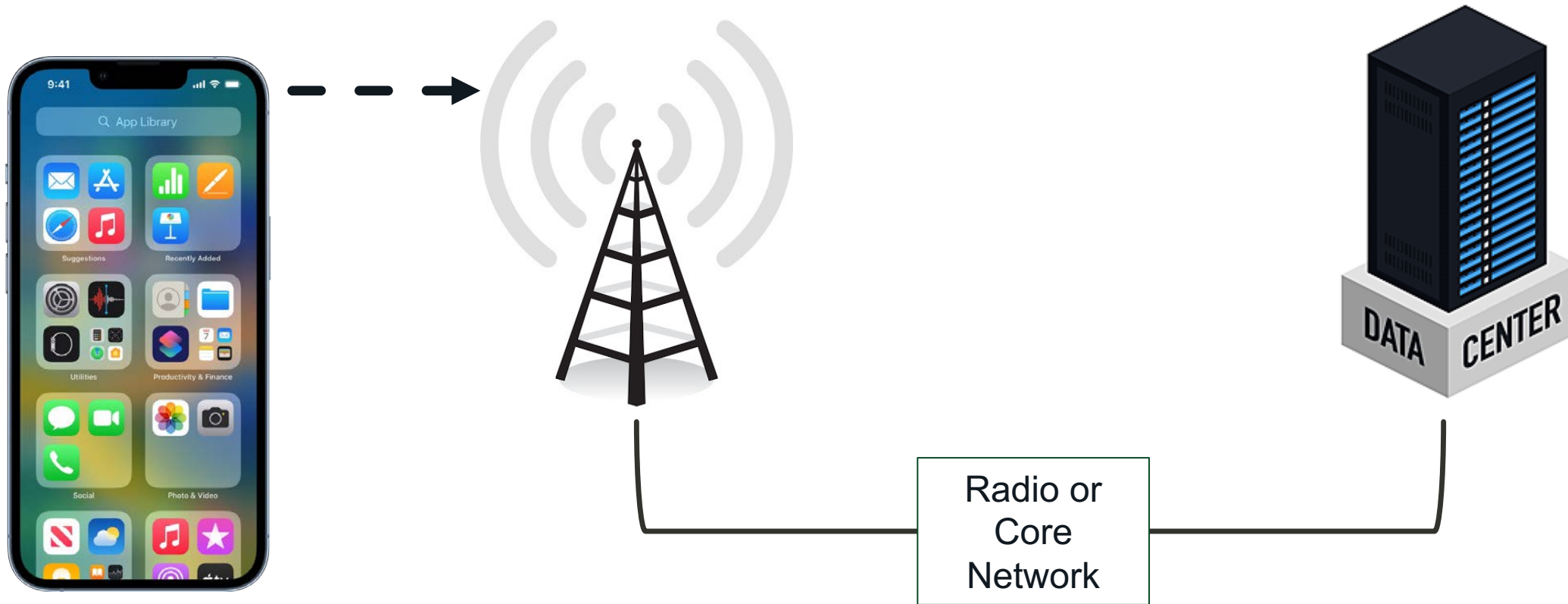
Source: [Statista 2023](#)

“Data is like garbage. You’d better know what you are going to do with it before you collect it.”

~ Mark Twain

OVERVIEW: DATA CENTERS

Phone Data: Photos, Videos, files, etc.



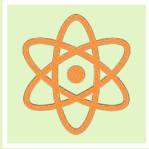
DATA CENTERS

Career or Employee Categories

- **Build:** Construction & Construction Management
- **Operate:** Technicians & Contractors
- **Connect:** Fiber Optics Technicians
- **Power:** Energy & Utility
- **Other:** Administration, legal, marketing, etc.



NEED FOR DCO EDUCATION



Problem: Need for qualified technicians for data centers both regionally and nationally with few educational opportunities.

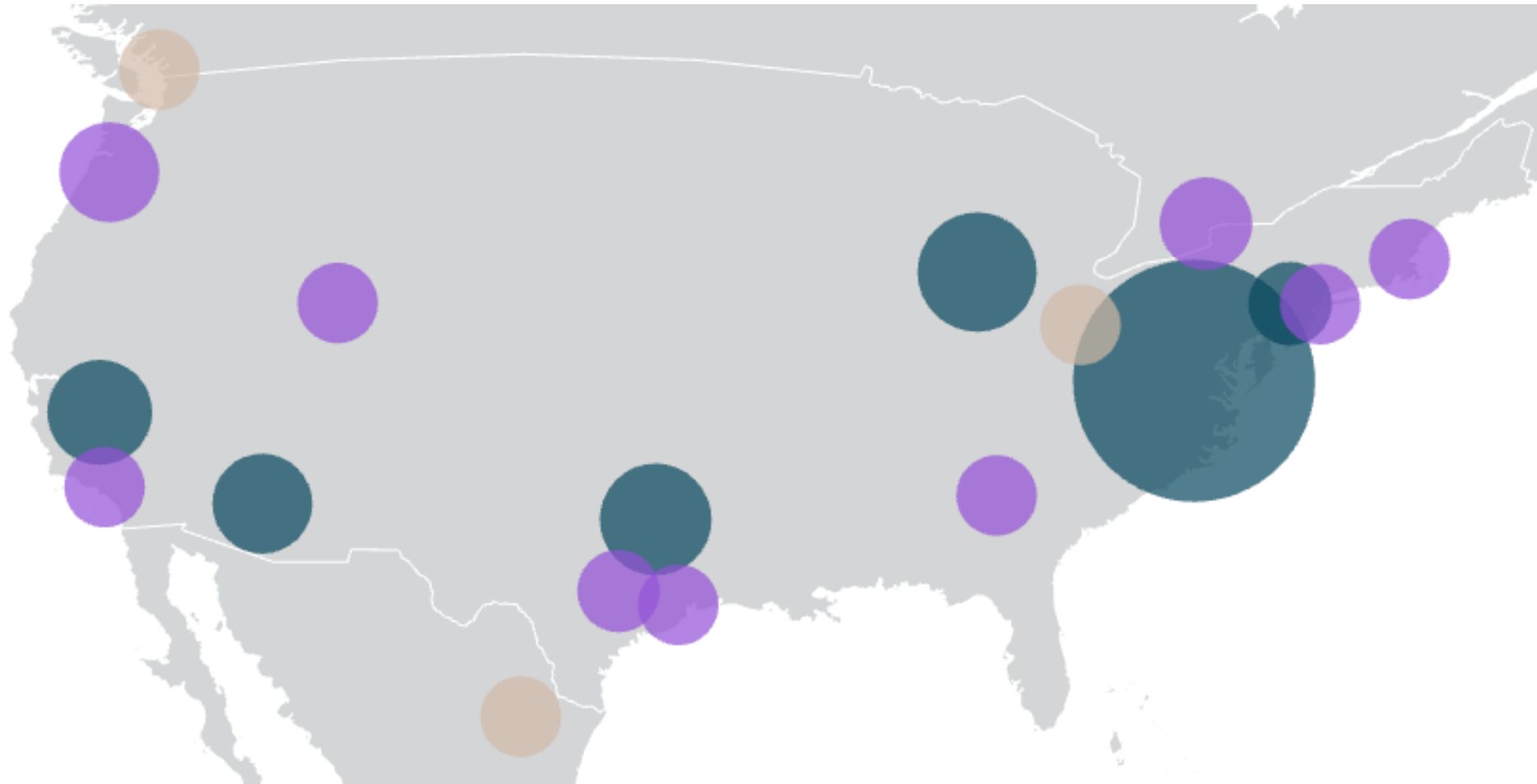


Solution: NOVA has 2 NSF ATE awards to improve pathways to these careers. DCO TECH (regional) & DCO PD (national)



Major Activities: Awareness Campaign, Summer Bridge Programs, Secondary Externship Program, and Faculty PL Series

PRIMARY & SECONDARY DATA CENTER MARKETS



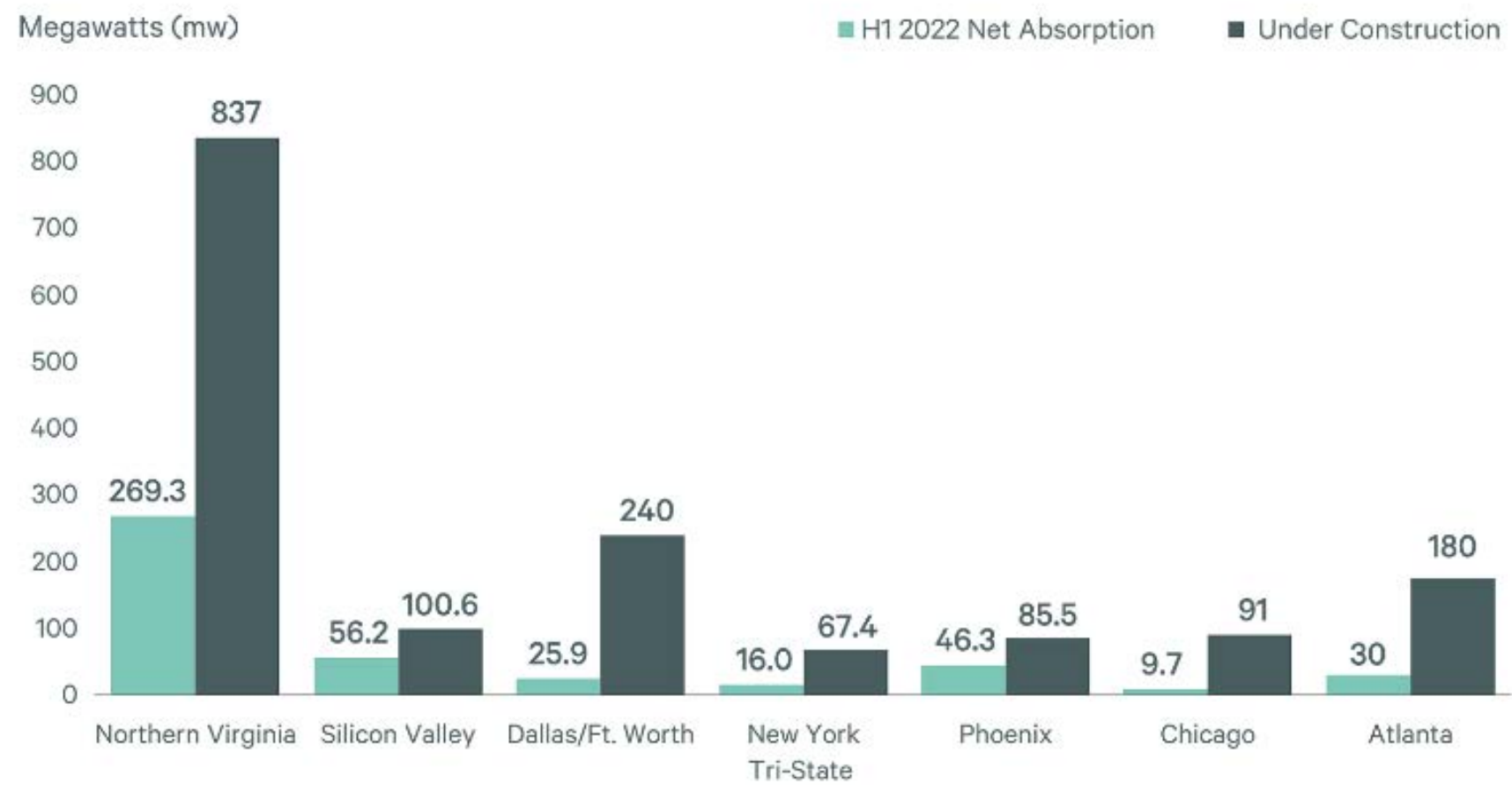
[l.com/en/trends-and-insights/research/data-center-outlook](https://www.systemic.com/en/trends-and-insights/research/data-center-outlook)

PRIMARY DATA CENTER MARKETS

Category	Market	Total Inventory (MW)	Under Construction (MW)	Inventory & Construction
Primary	Northern Virginia	3442	651	4093
Primary	Chicago	836	310	1146
Primary	Dallas-Ft.Worth	734	182	917
Primary	Northern California	647	517	1164
Primary	Phoenix	587	267	854
Primary	New Jersey	410	12	422

<https://www.us.jll.com/en/trends-and-insights/research/data-center-outlook>

NET ABSORPTION VS. UNDER CONSTRUCTION BY PRIMARY MARKET, H1 2022



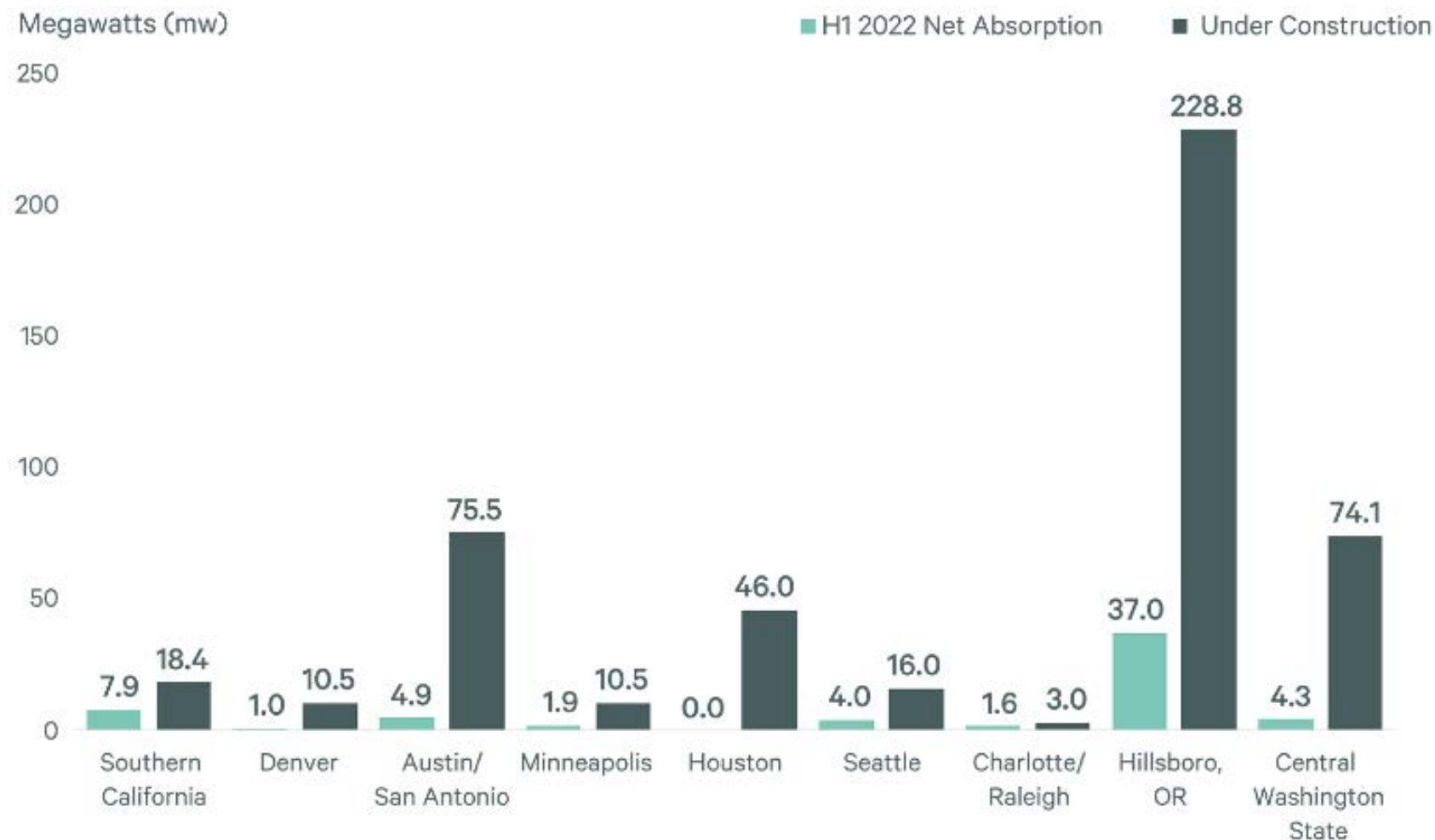
Source: CBRE Research, CBRE Data Center Solutions, H1 2022.

SECONDARY DATA CENTER MARKETS

Category	Market	Total Inventory (MW)	Under Construction (MW)	Inventory & Construction
Secondary	Pacific NW	588	201	788
Secondary	Austin/San Antonio	400	276	676
Secondary	Atlanta	350	172	522
Secondary	Los Angeles	265	33	298
Secondary	Salt Lake City	161	16	177
Secondary	Houston	128	2	129
Secondary	New York	152	2	154
Secondary	Boston	160	0	160
Emerging	Columbus, OH	76	0	76

<https://www.us.jll.com/en/trends-and-insights/research/data-center-outlook>

NET ABSORPTION VS. UNDER CONSTRUCTION BY SECONDARY MARKET, H1 2022



Source: CBRE Research, CBRE Data Center Solutions, H1 2022.

MARKET & INDUSTRY RESOURCES

- **Data Center Coalition**
 - <https://www.datacentercoalition.org/>
- **7x24 Exchange**
 - <https://www.7x24exchange.org/>
- **AFCOM**
 - AFCOM.com
- **Market Details**
 - CBRE & JLL
 - <https://www.cushmanwakefield.com/en/insights/americas-data-center-update>



Construction Update

OPERATOR	LOCATION	SIZE (SQ FT)	POWER (MW)	STAGE / EST. DELIVERY
Digital Realty	Atlanta	41,661	2	Under Construction / Q3 2022
	250 Williams	300,000	Unknown	In Planning
Switch	Atlanta 1 (new phase bldg 1)	500,000 (est)	50	Under Construction / Q4 2022
	Atlanta 3 Sector 1	450,000	15	Under Construction / Q1 2023
	Atlanta 1 (new phase bldg 2)	400,000 (est)	35	Under Construction / Q4 2023
Meta	Social Circle	1,500,000	100 (est)	Under Construction / Q4 2023
Flexential	Douglasville	150,000	22.5	Under Construction/Unknown
H5	Atlanta	20,000	3	Under Construction/Unknown
DataBank	ATL4	200,000	40	In Planning
Digital Realty	10 Forsyth	300,000	Unknown	In Planning
Verizon	10325 Turner Rd	50,800	Unknown	In Planning
QTS	Metro Atlanta	1,150,000	100 (est)	In Planning / 2024
	Project Excalibur	6,600,000 (est)	250 (est)	In Planning / 2032 (Full Build Out)
CyrusOne	Douglasville	440,000	50	In Planning
Stack Infrastructure	Lithia Springs	130,000	12	In Planning
Microsoft	Palmetto	250,000	25 (est)	In Planning
	Douglasville	980,000	100 (est)	In Planning
	East Point	250,000	25 (est)	In Planning
T5	Lithia Springs (bldg 1)	162,500	20	In Planning / Q2 2023

Recent Site Sales

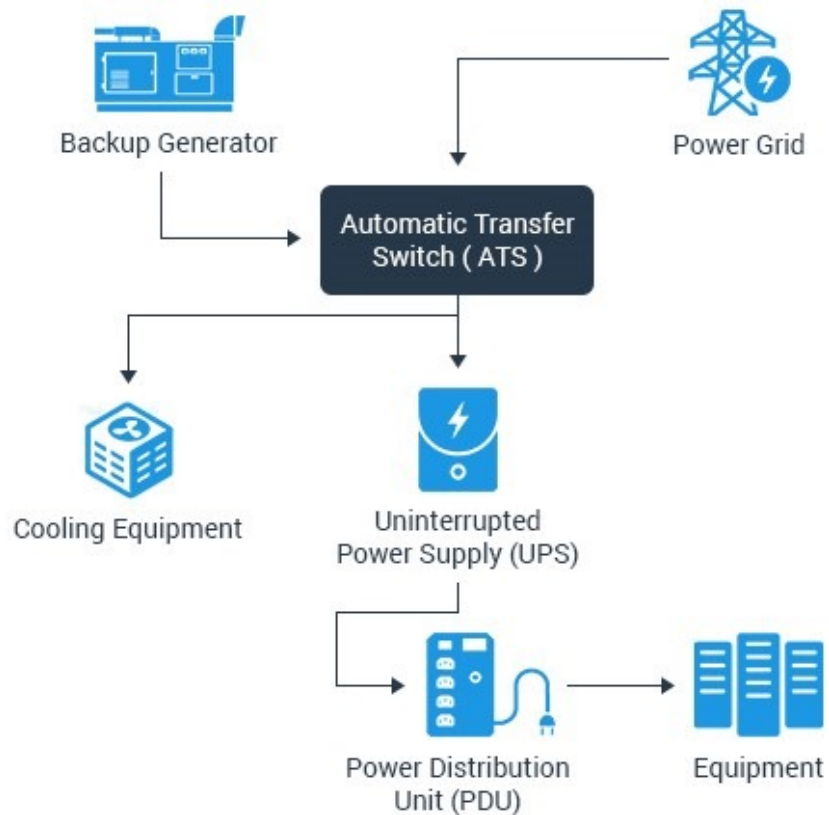
PROPERTY	SIZE (Acres)	SALE DATE	SALE PRICE	BUYER	SELLER
Farmland @ Hwy 54, Flat Creek Trl & Tyrone Rd	600	Jul-22	\$153,800,000	QTS	FCDA / multiple landowners
Fulton Industrial Blvd	7	Jan-22	\$1,100,000	Microsoft	Lit/Hodges Industrial Trust
Fulton Industrial Blvd	10	Jan-22	\$1,000,000	Microsoft	Macq LLC
200 Selig Dr	18	May-22	\$10,900,000	DataBank	Eckstein Properties

Recent Property Sales

PROPERTY	SIZE (SQ FT)	SALE DATE	SALE PRICE	BUYER	SELLER
ATL4	167,705	Feb-22	\$80,000,000	Strategic Capital	Legacy Investing
4905 North Point Pkwy	185,000	Jul-22	\$63,600,000	Lincoln Rackhouse / Principal Real Estate Investors	Ascent
200 Selig Dr	114,000	May-22	\$10,900,000	DataBank	Latham Time Corporation

OPERATE: TECHNICIAN SKILLS

Power Flow



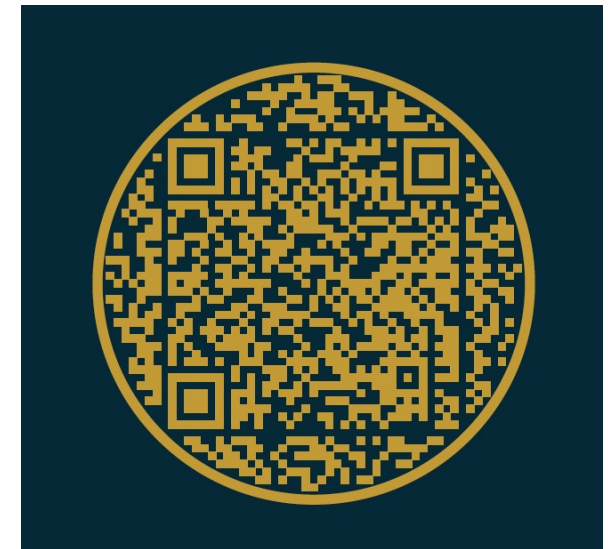
OPERATE: TECHNICIAN SKILLS & CURRICULUM

▶ **AAS – Data Center Operations, 2-year 60-61 credits**

- Preparation for an entry-level position in data centers or companies that support data center function as a technician, operator and/or technologist
- Earn BICSI Installer 1, Installer 2 (Copper) and Installer 2 (Fiber Optic) industry credentials, and OSHA 10 certification
- *A.C. & D.C Fundamentals, Basic Math, Electric Motor Control, PLC Systems, Intro to DCO, Building Automation and Management, Digital Systems, Power distribution systems, Data Cabling Communication, Fiber Optic Technology, Air Conditioning and Refrigeration, Critical Site Operations*

▶ **CSC –Data Center Operations, 1-year 26 credits**

- ▶ *Earn the BICSI Installer 2 (Fiber Optic) and OSHA 10 certifications*
- ▶ *One year program –focus on A.C. & D.C Fundamentals, Basic Math, Power Distribution Systems, Intro to Data Center Operations, Schematics & Diagrams.*



www.nvcc.edu/iet

NOVA'S NSF ATE PROJECTS FOR DATA CENTER OPERATIONS

DCO TECH: Expanding Regional Capacity for Training in Engineering Technology and Data Center Operations

- ▶ Local & Regional Development of Engineering Technology Pathways
 - ▶ *Includes Engineering Technologies DCO*
 - ▶ *3 Years, started July 2021*
 - ▶ *Summer Bridge Program*
 - ▶ *Externships for Educators/Industry*
 - ▶ *Career Prep for NOVA students*
 - ▶ *Veterans Outreach*



NSF Award #2055717

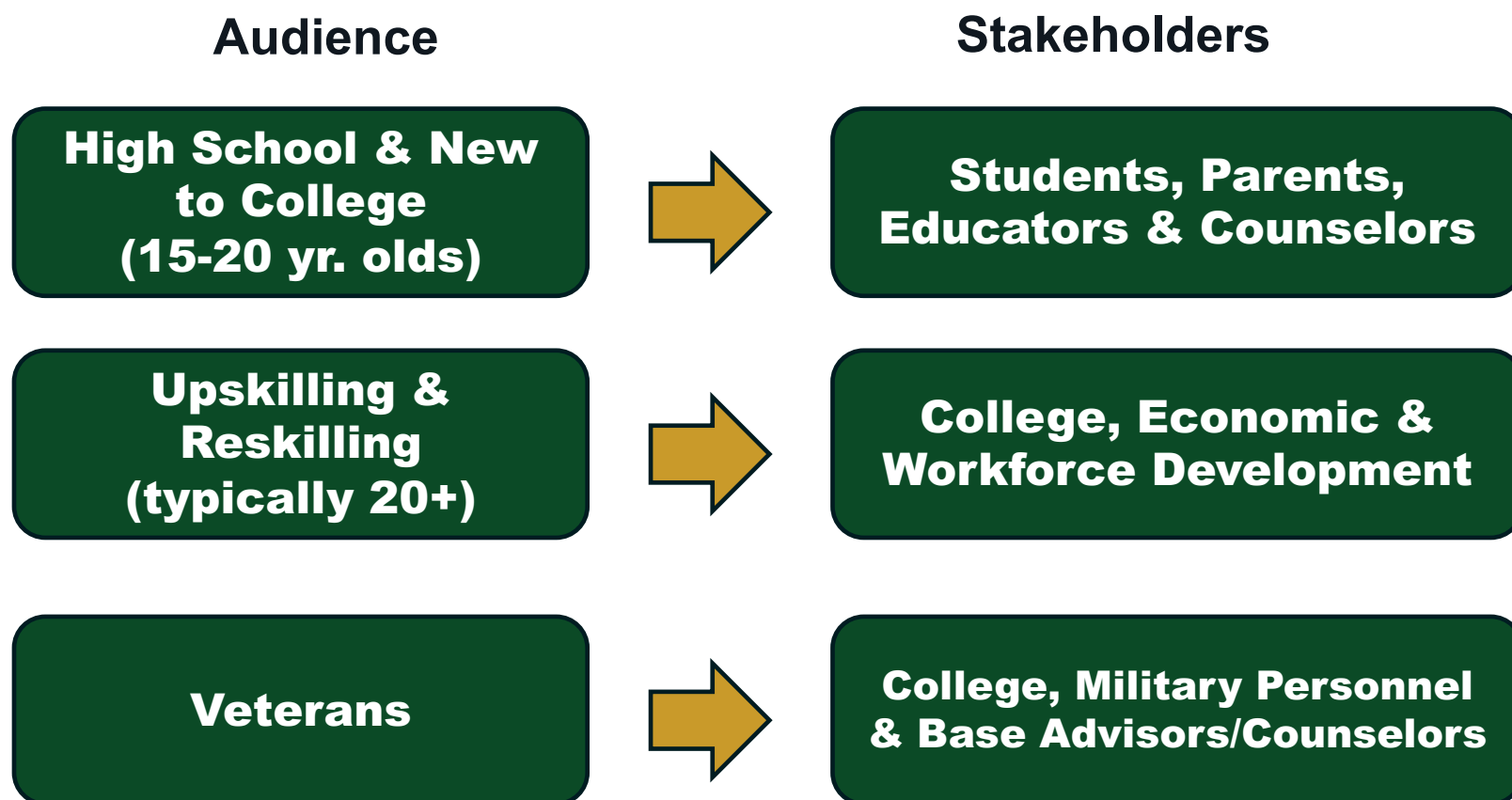
DCO PD: Data Center Operations Program Development: A National Approach to Improving Capacity for Data Center Education

- ▶ National Approach to DCO Education Development
 - ▶ *Focuses on Data Center Operations (DCO)*
 - ▶ *3 Years, started July 2023*
 - ▶ *DCO PL Series for educators*
 - ▶ **3-Days at NOVA & 5 Days in a data center**
 - ▶ *Awareness & Recruitment Campaign*
 - ▶ *Data Center Education Resource Hub*



NSF Award #2300978

RAISING COMMUNITY AWARENESS



RAISING COMMUNITY AWARENESS FOR DCO



Education Conferences

Summer Bridge Program

**Secondary Educator
Externship**

Faculty DCO Fellowship

SUMMER BRIDGE PROGRAM

- Bridge Programs: Support students transitioning between institutions. Includes institutional introduction. Some college credit and career exploration are common.
- 2-week program, 20 HS students per session.
 - *Recent Graduates & Rising seniors*
 - *Underserved or Underrepresented in STEM fields.*
- Bus transportation provided between campuses and to site visits.
- Hands-on ET and DCO skills labs
 - *Electronics, Pneumatics, & PLC Process Control Trainers*
- Earn OSHA 10 Certification & SDV credit
- Site Visits: Micron & Data Center Tours



VISITS TO MICRON & STACK INFRASTRUCTURE



“I really enjoyed building connections and understanding the different fields of STEM. I never understood data centers in depth. I’m very glad it’s in-person and we get to see NOVA campuses”

~ Student Participant

SECONDARY EDUCATOR EXTERNSHIP



Program for secondary educators, career counselors and advisors, and CTE administrators



Learn about NOVA's ET and DCO pathways and industry needs



Participate in industry tours to learn first-hand the careers and skills needed so can increase student awareness of career options

Finish: Develop a **Plan of Action** to apply learning to their professional practice!

SECONDARY EDUCATOR EXTERNSHIP

Participant Quotes

“Developing the plan of action helped me identify small steps to make a large impact in guiding students towards in demand careers.”

“We were given a clear picture of the type of student that would succeed in this industry, the skillsets needed, along with the curriculum. This along with actually touring the facility increase my awareness and as such, I feel more confident in sharing this with students, parents and teachers.”



FACULTY DCO FELLOWSHIP



Program for postsecondary & secondary educators. Especially faculty in fields adjacent to Data Center Operations



3-Day Learning at NOVA about the data center operations, hands-on skill development, and industry networking



1-week Data Center Externship in a data center near home institution to learn how skills are applied in industry.

Finish: Develop a DCO Education Action Plan

QUESTIONS, DISCUSSION & CONNECTING

Josh Labrie

Northern Virginia Community College

Director of NOVA SySTEMic

jlabrie@nvcc.edu

Chris Russell

Northern Virginia Community College

IET Project Manager

crussell@nvcc.edu

Connect with SySTEMic & NOVA IET

www.nvcc.edu/systemic

<https://www.nvcc.edu/academics/divisions/it/index.html>

IET Newsletter

<http://newsletter.novastem.us/Latest>

NOVASySTEMic: Facebook & Twitter

NOVA IET on LinkedIn

<https://www.linkedin.com/company/nova-iet/>