



## 7x24 Fall Conference

# Conversion of Outdated Manufacturing Facilities to Mega Data Centers

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## Power Pollution and the Internet

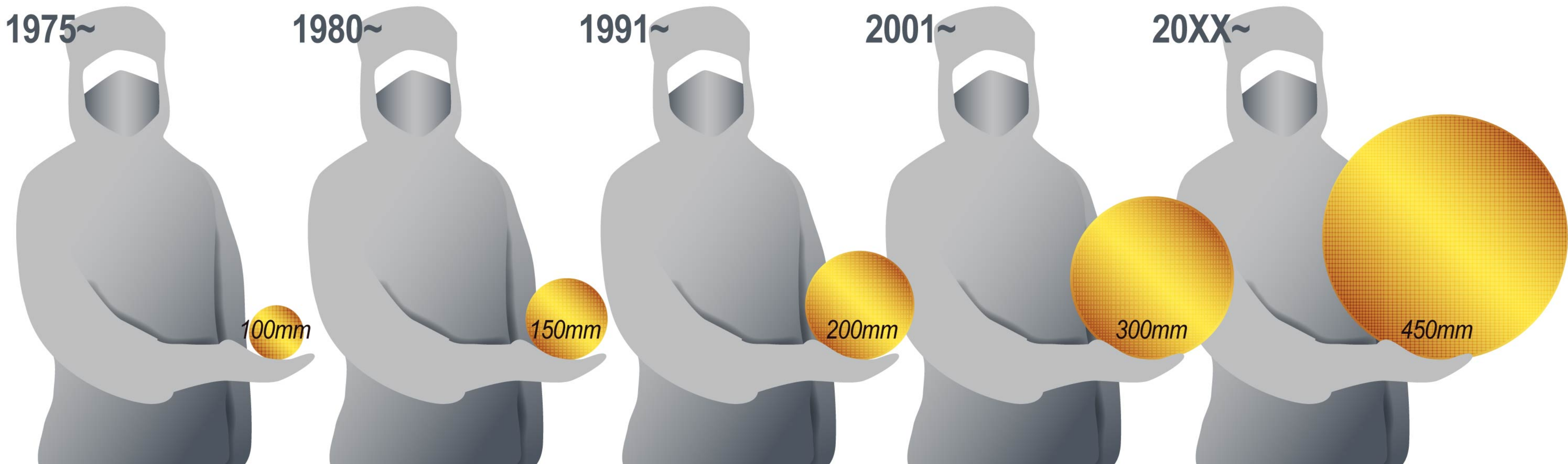
*The New York Times*, September 22, 2012

“...examination by The New York Times has revealed that this foundation of the information industry is sharply at odds with its image of sleek efficiency and environmental friendliness.”

The industry challenge is to be sustainable and green.



# Technologies Grow – Buildings Don't





# Site Characteristics

	Semiconductor	Data Center
Tax Abatement	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Power Cost and Quality	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Climate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Municipal Water	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Large Site Area	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Security	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Fiber Connectivity		<input checked="" type="checkbox"/>



# Building Characteristics

	Semiconductor	Data Center
Contiguous Floor Space	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Structural Capacity	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Building Volume	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Reliable Power Source	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Secure Campus	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Robust Infrastructure	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



# Manufacturing Facility Conversions



Fab 7 – Albuquerque, New Mexico

SC4 – Santa Clara, California

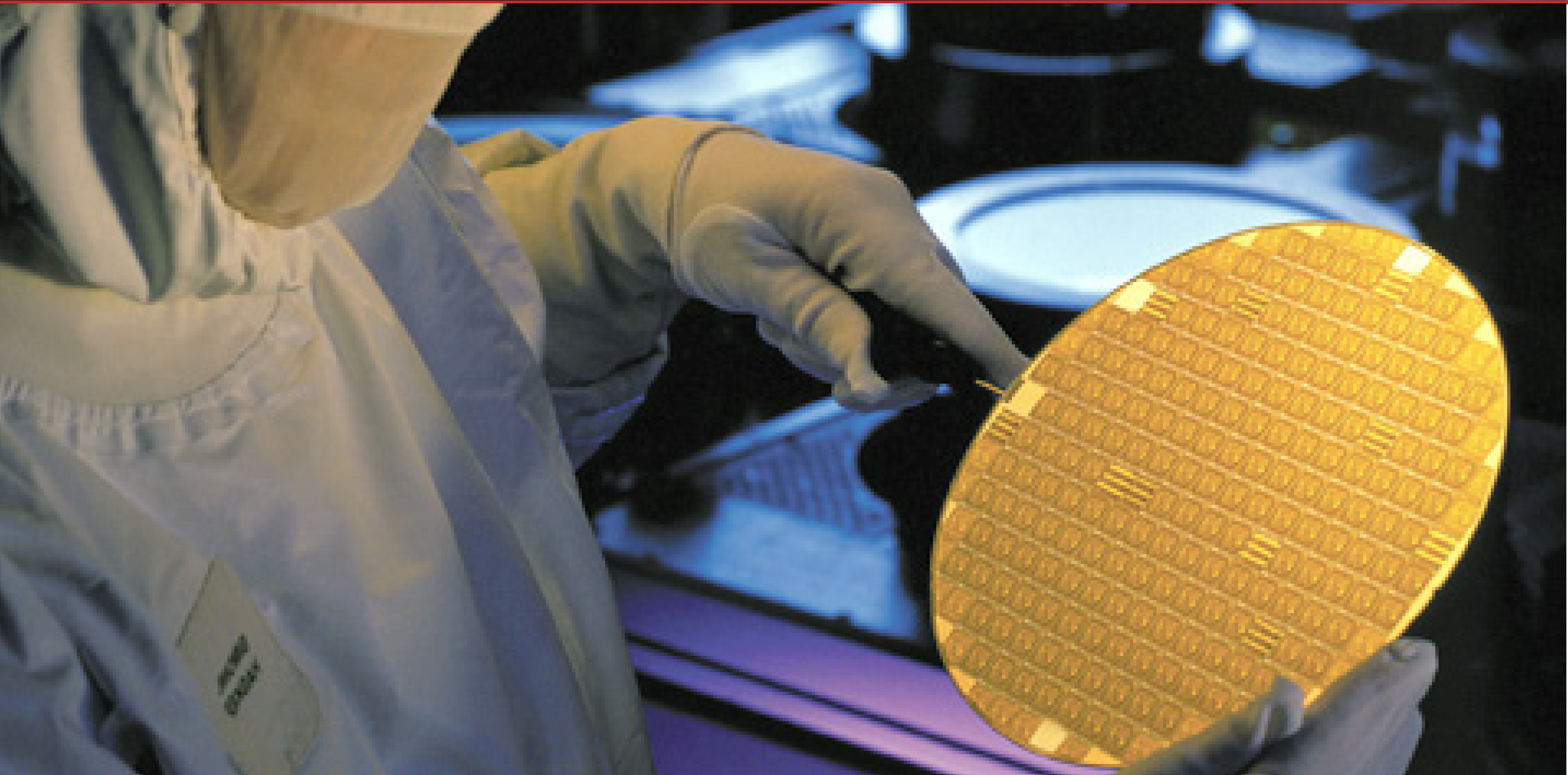
Hynix Semiconductor – Eugene, Oregon

Hynix Semiconductor – Santa Clara, California

White Oak Semiconductor – Sandston, Virginia



# Repurposing an Existing Campus: A Case Study



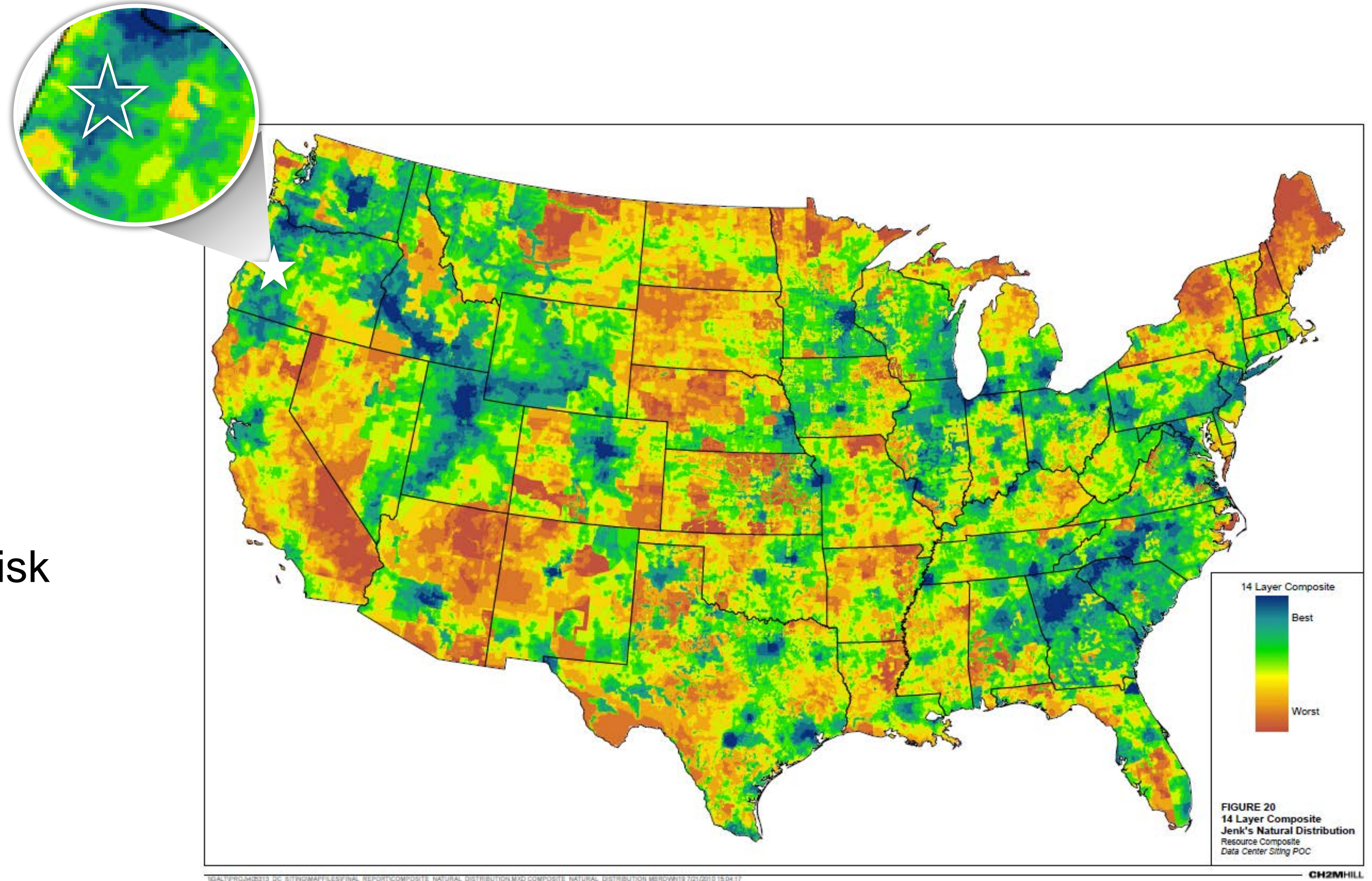


# Data Center Site Selection Variables

## Electric Power

- Access
- Rates
- Green Power

## Hazard and Disaster Risk Population Centers





# Hynix Semiconductor Facility: Site Overview





# Where is The Facility?

**Eugene, Oregon**

University of Oregon

Home of the Ducks

Historic Hayward Field

Location of “Animal House”



Image courtesy flickr user Dave Sizer



Image courtesy flickr user Schmuelick

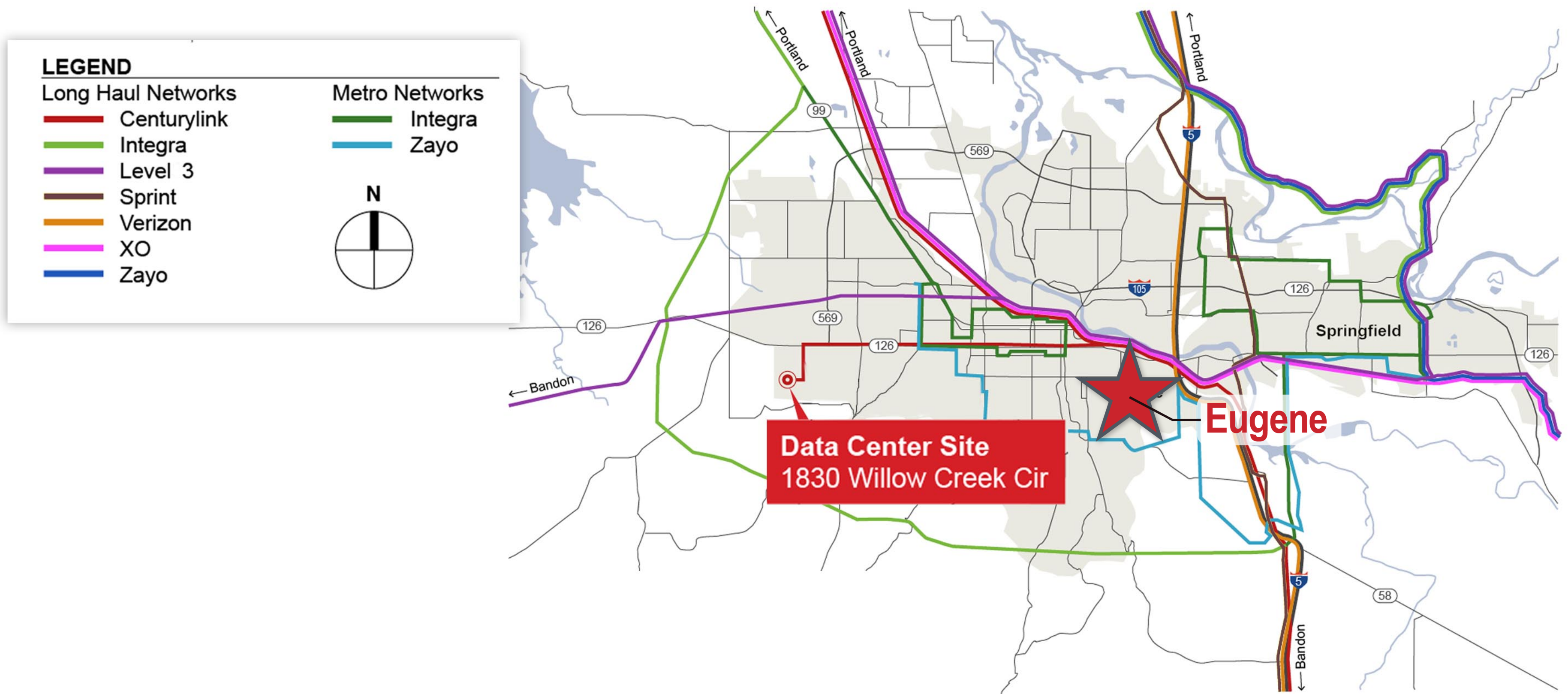


Image courtesy flickr user jenicaatpink





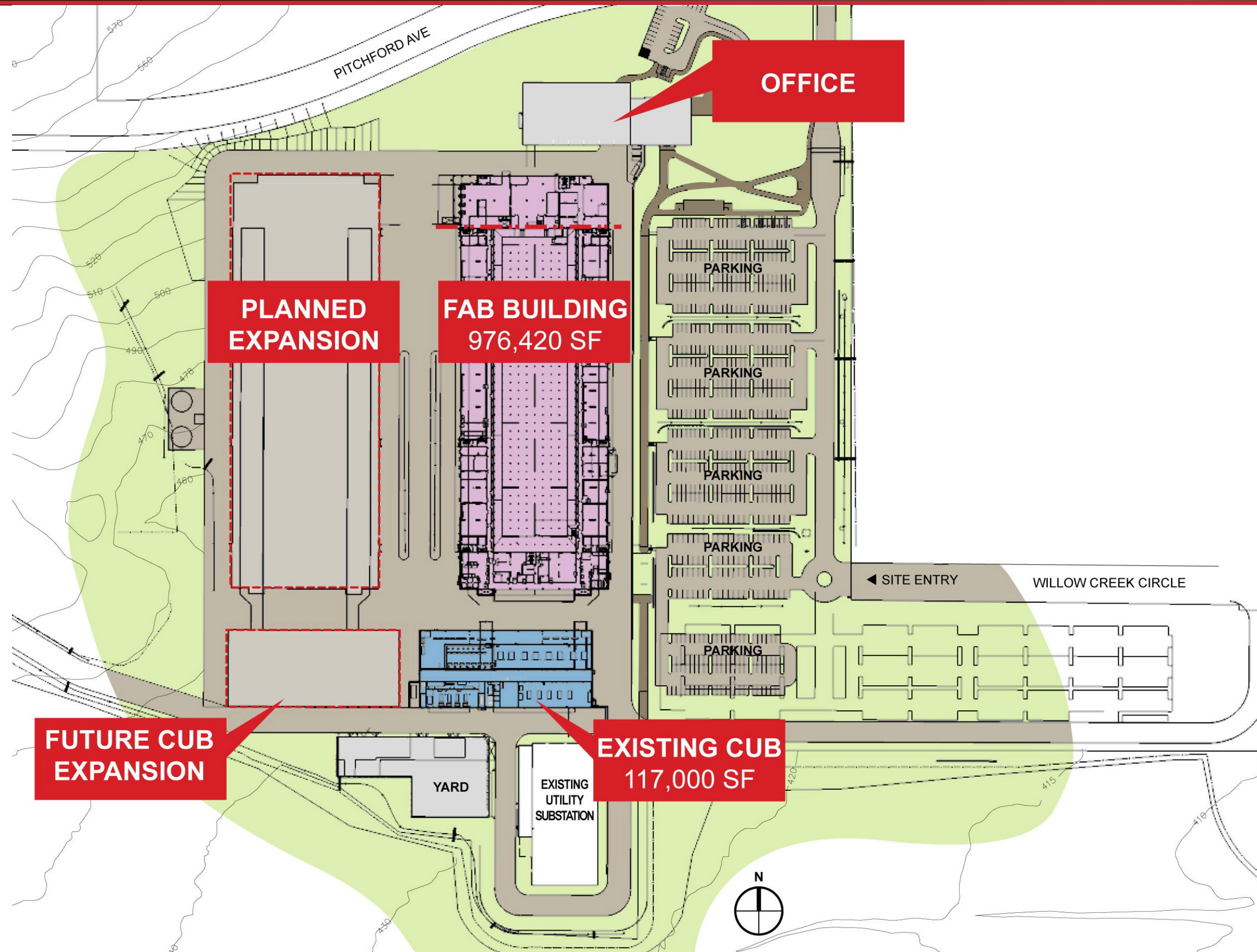
# Fiber Connectivity – The I-5 Corridor





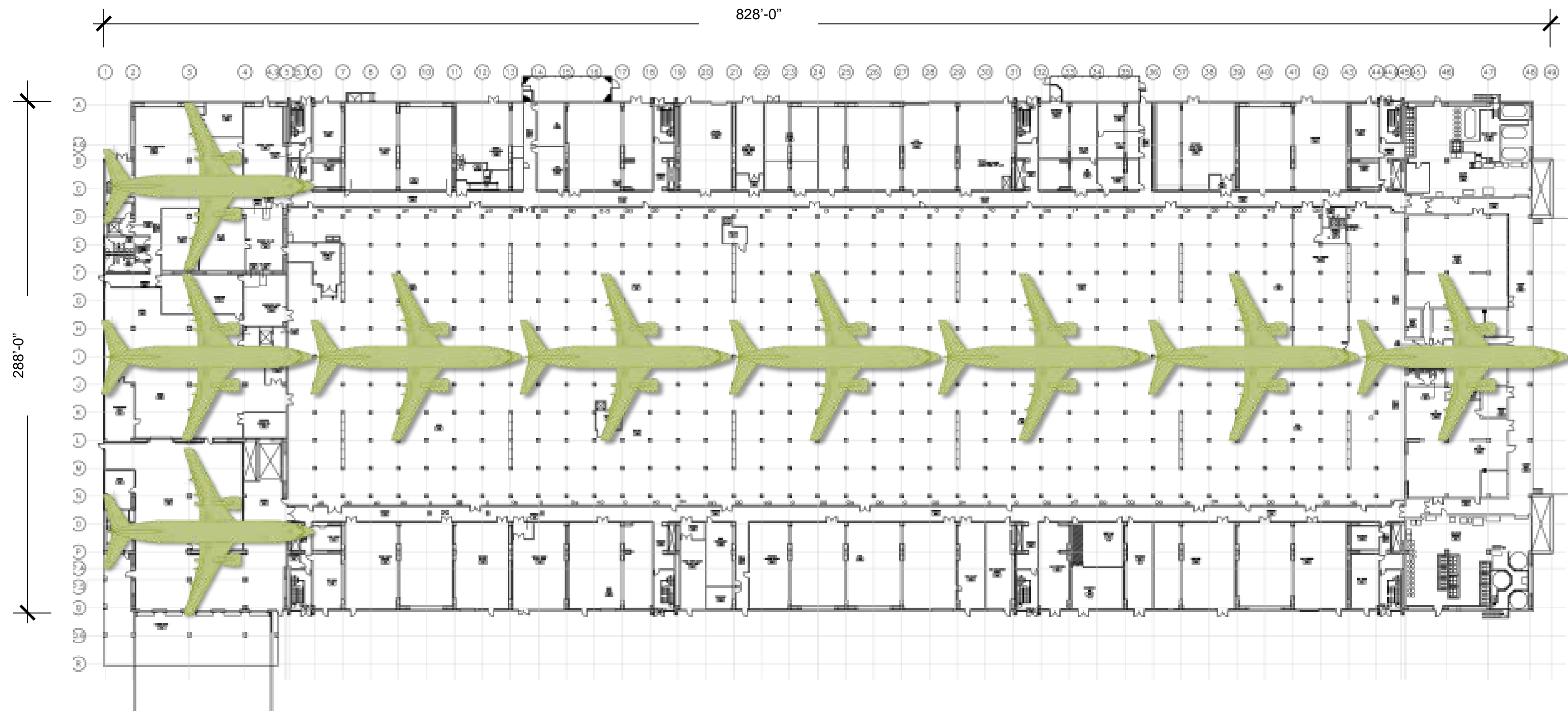
# Existing Campus

- 203 acre site
- 917,261 total square feet
- 12,950 tons chilled water plant capacity (N+1)
- Redundant 300 MVA substation feeders





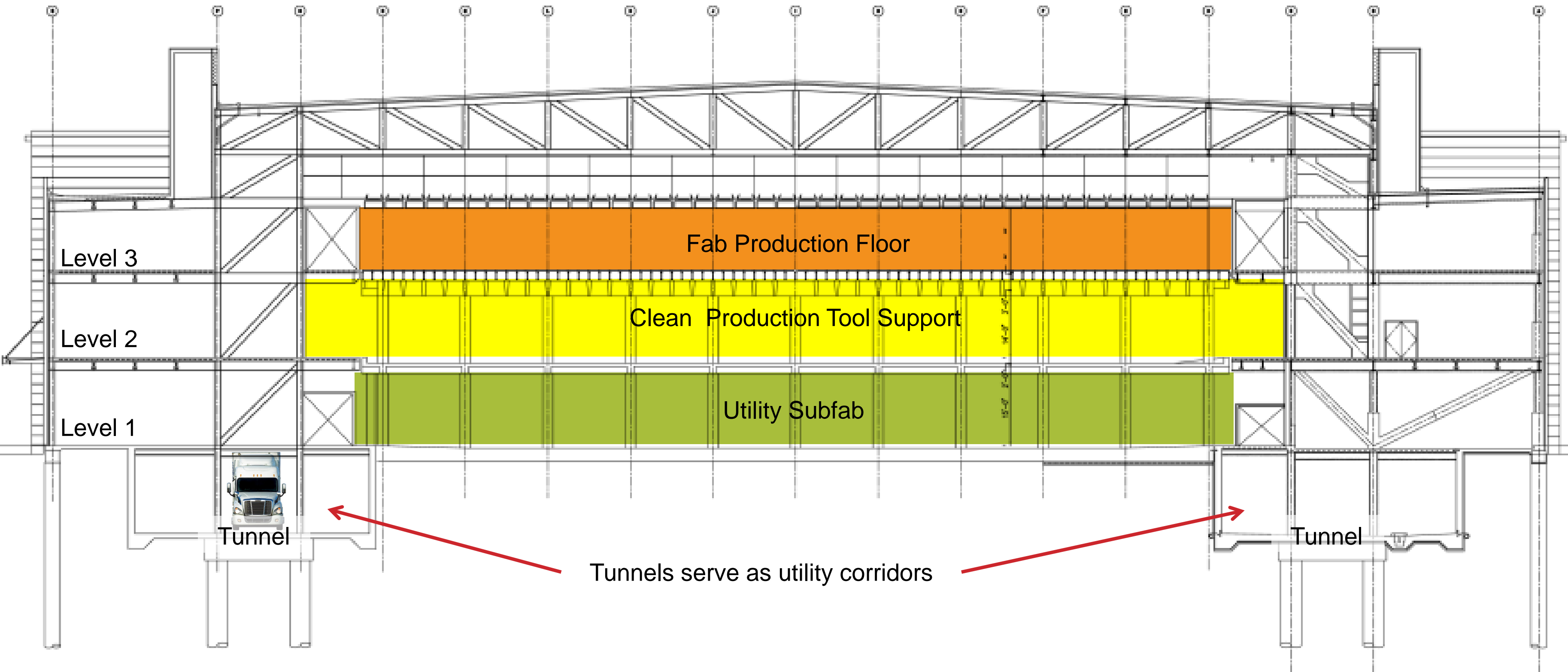
# Facility Scale



Relative scale: seven Boeing 737 airplanes long and three wide.



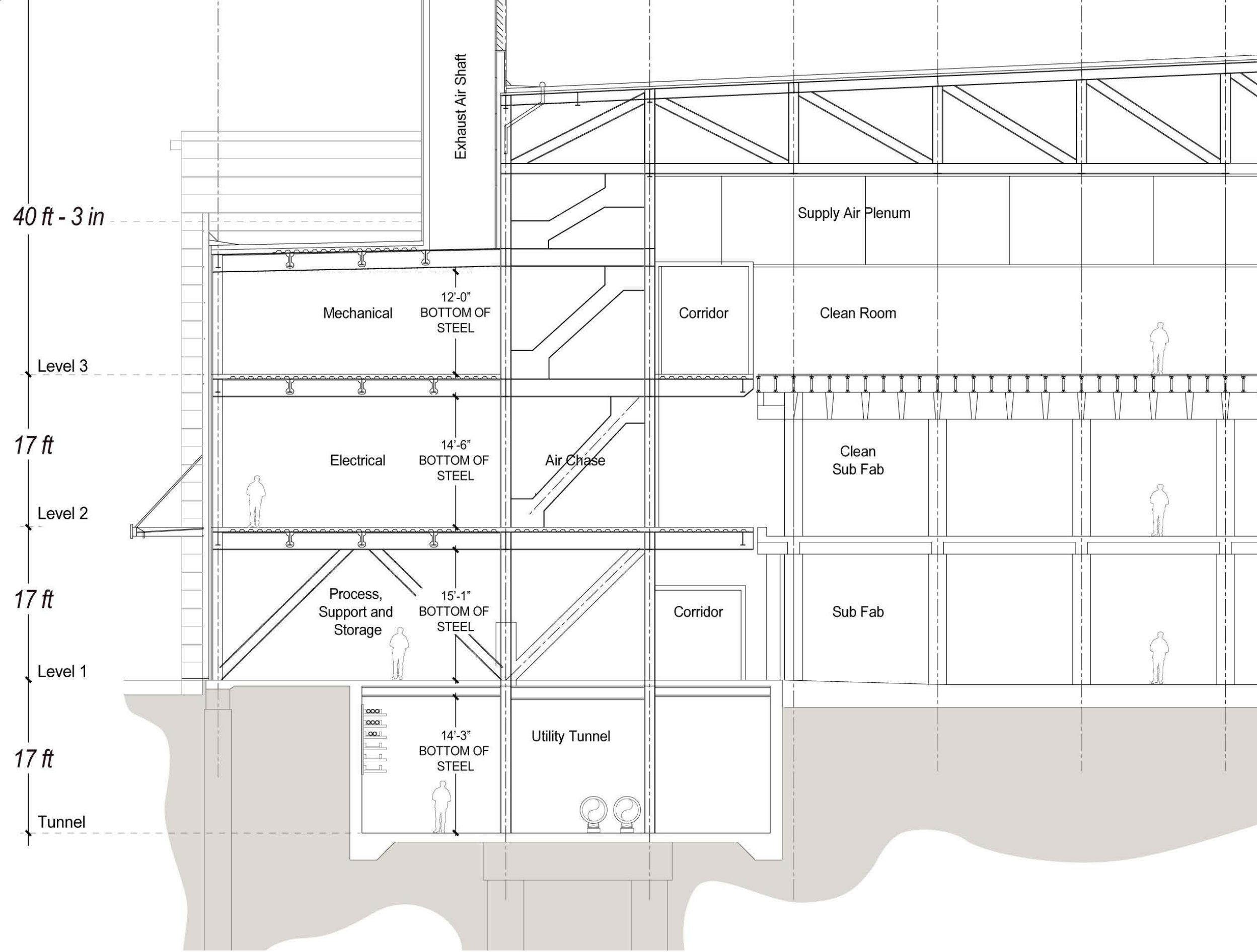
# Facility Overview: Building Section





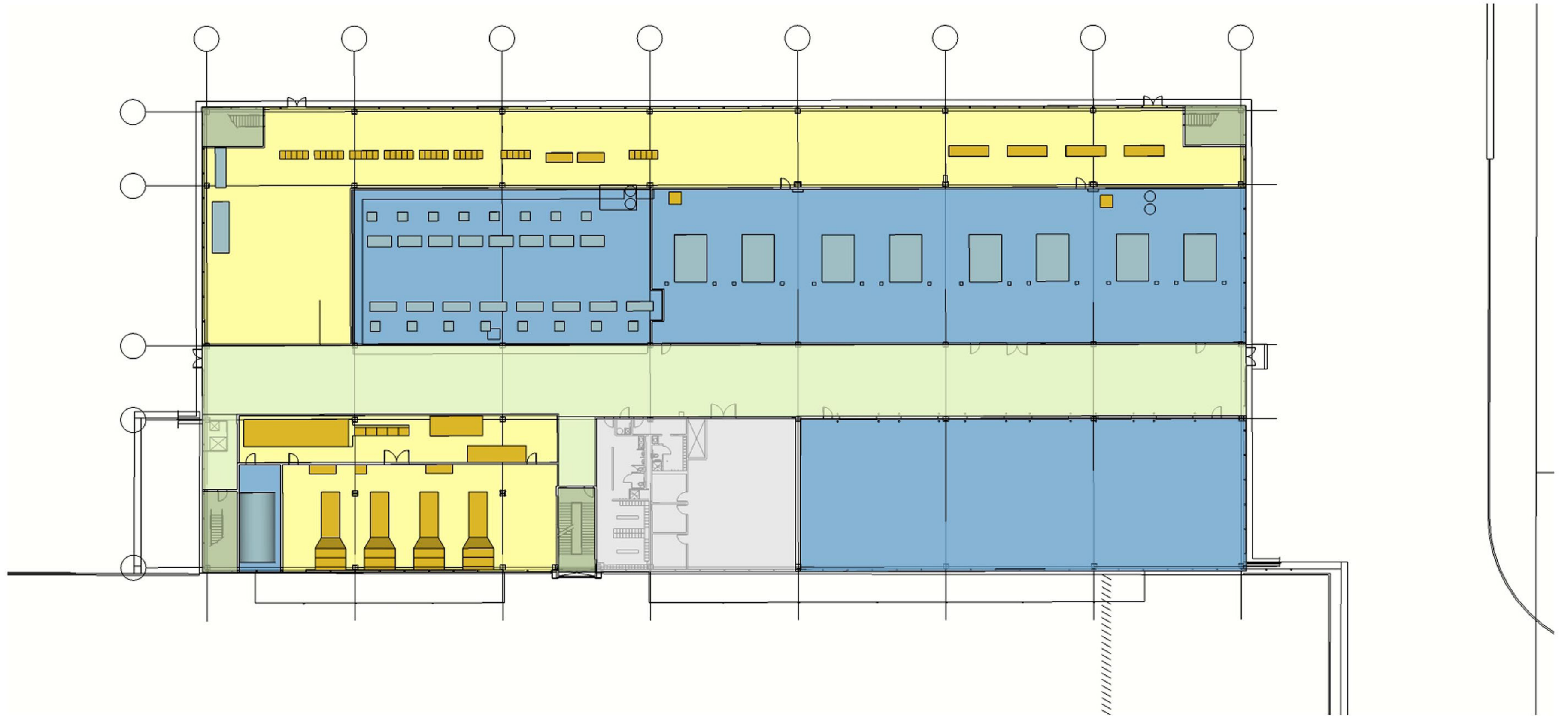
# Structure and Building Volume

Rigid — Low Vibration  
Seismic Integrity  
Loading Capacity  
Open Ballroom



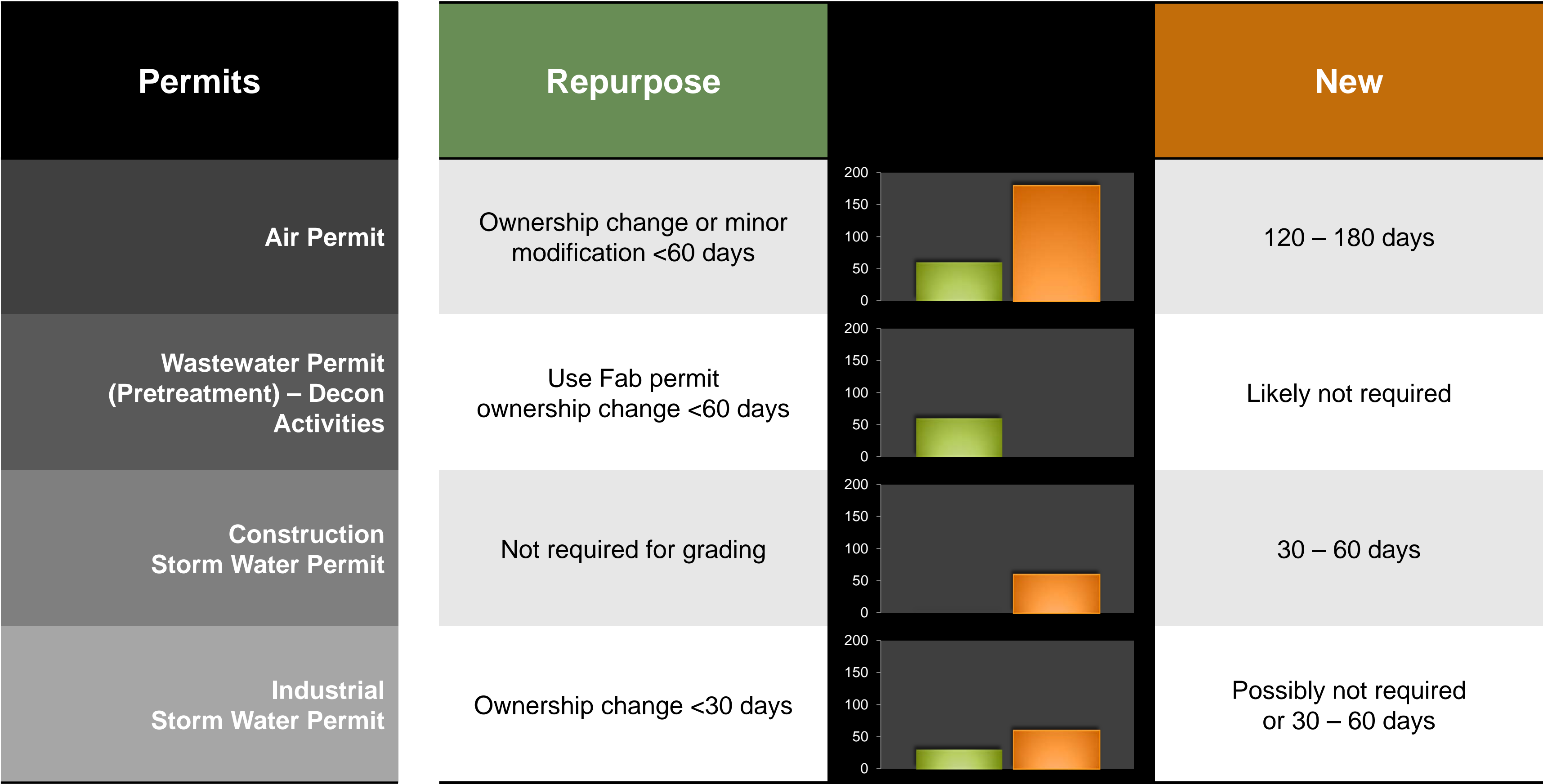


# Central Utility Building (CUB)





# Permitting Comparison: Repurpose vs. New



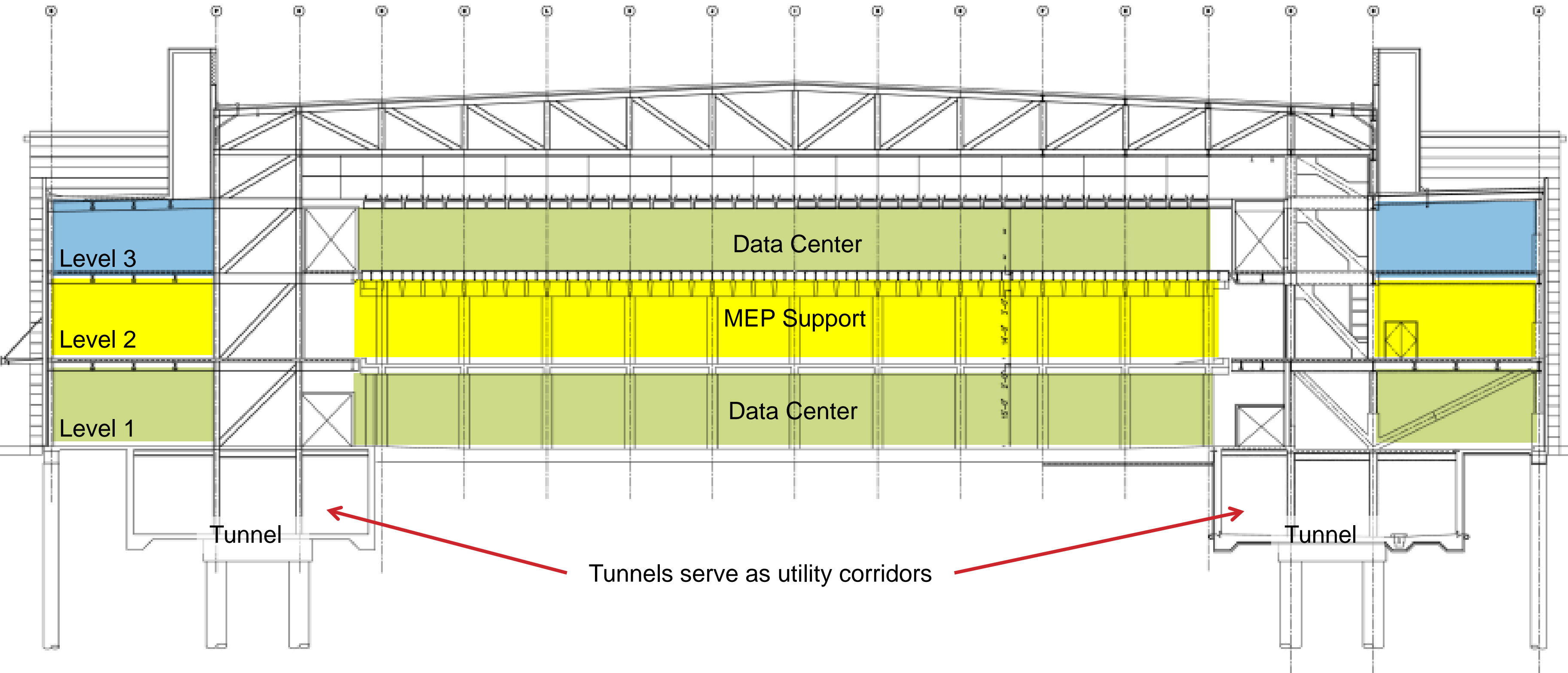


# Concept for Facility Conversion



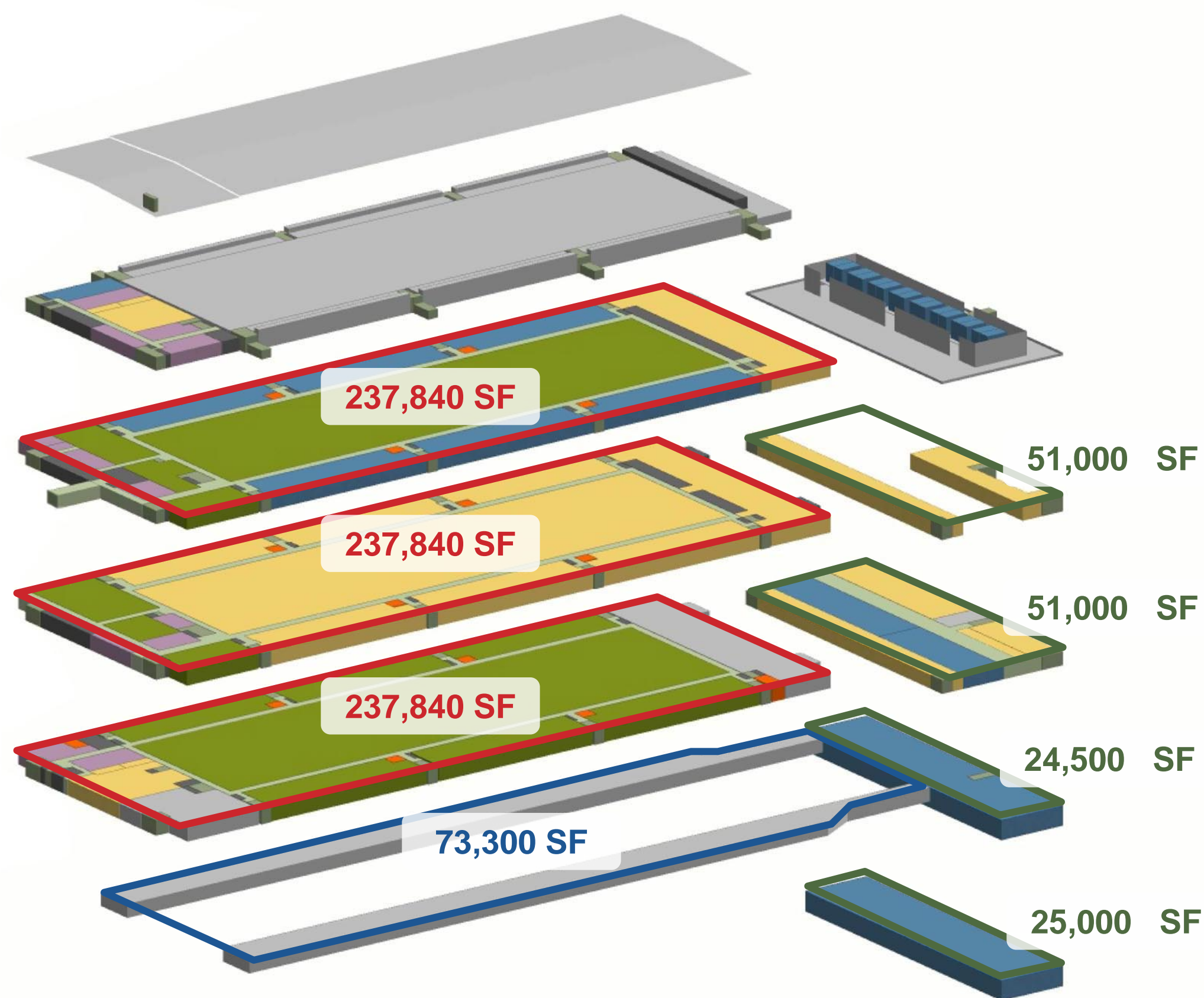


# Facility Overview: Building Section



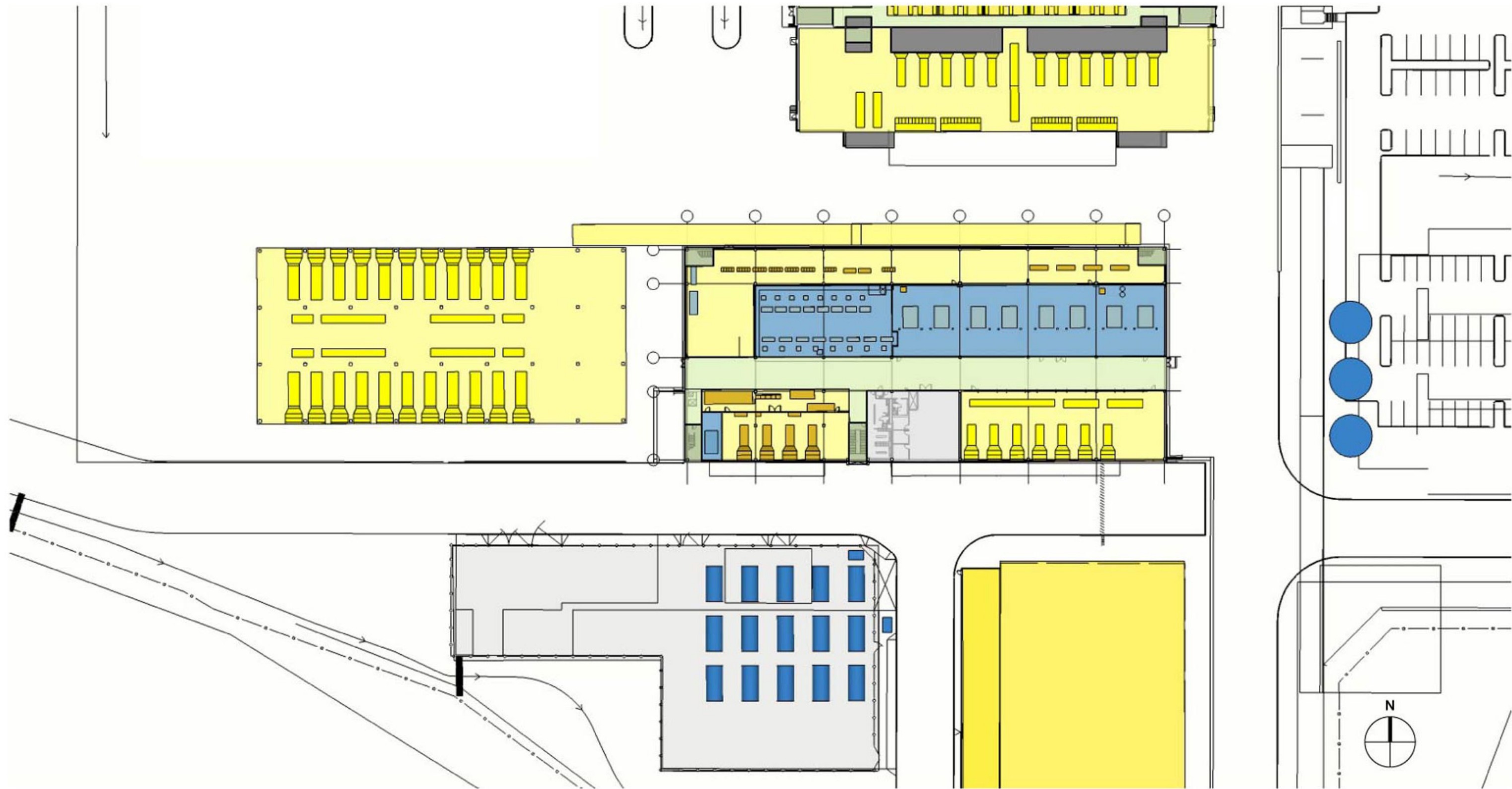


# Exploded View of Master Plan



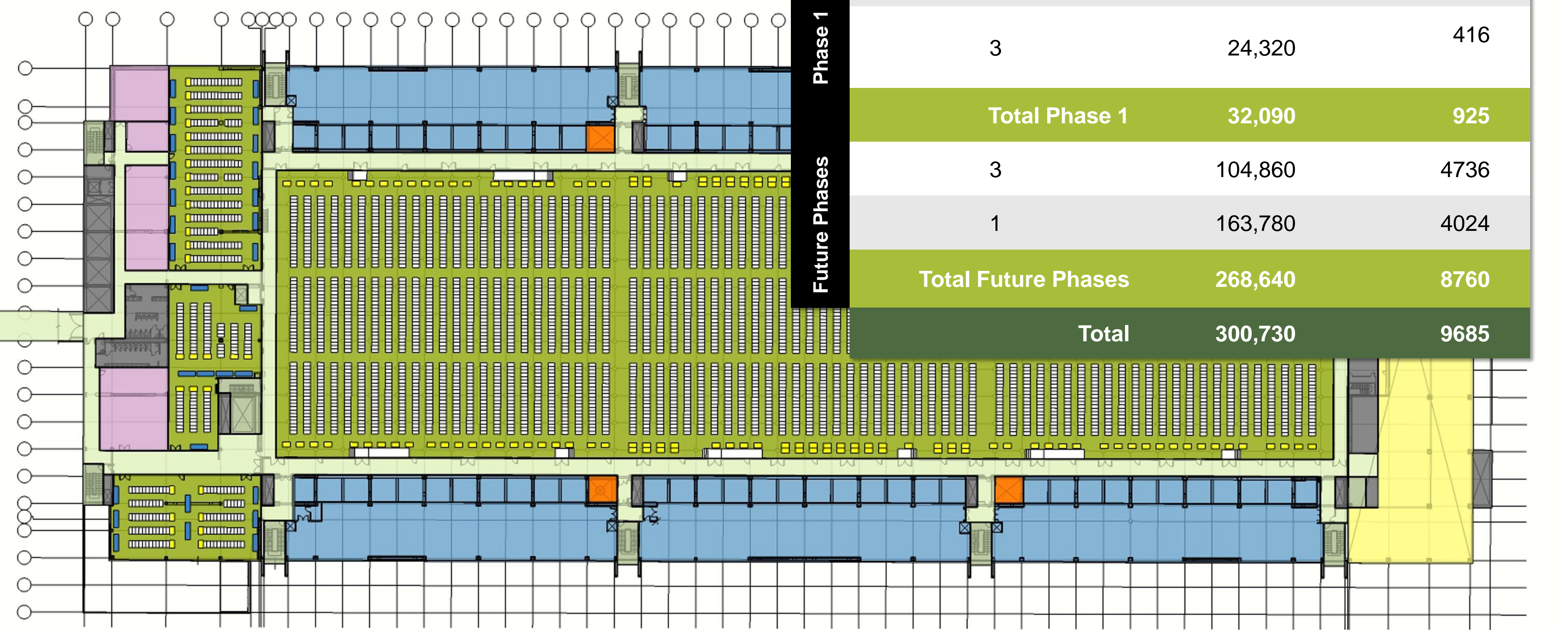


# CUB: Future





# Third Floor Ballroom Data Center



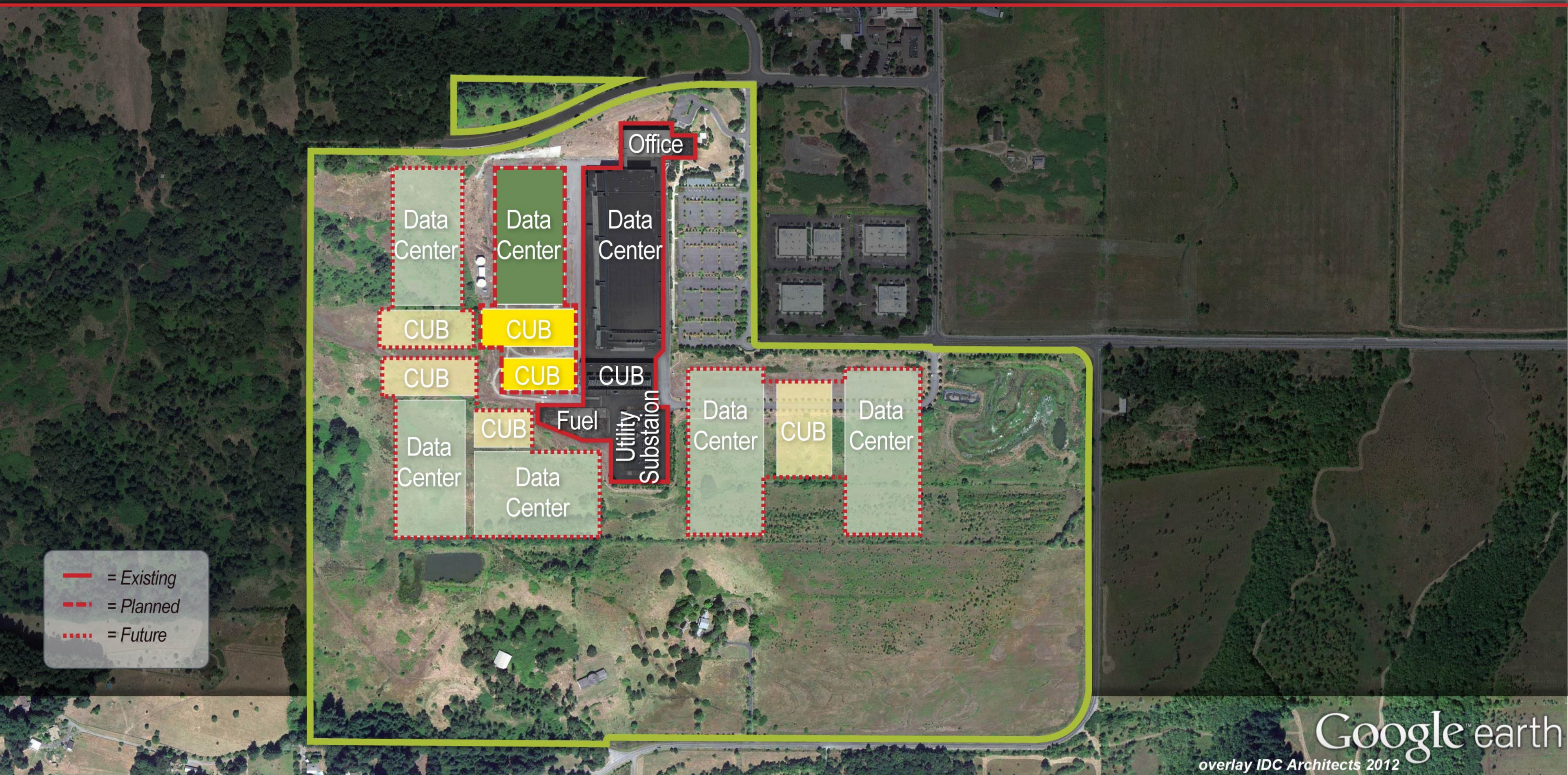
Phase 1

Future Phases

Level	Area (SF)	Number of Racks
2	7,770	509
3	24,320	416
Total Phase 1	32,090	925
3	104,860	4736
1	163,780	4024
Total Future Phases	268,640	8760
Total	300,730	9685



# Eugene Technology Center Potential Expansion





# Thank You



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