

# An Inside Look at Utilities' New Administration Building

April 7, 2016

## Integrated Design Assistance Program

- Design, Construction and Performance incentives for new construction and major renovation
- Buildings as systems
- Early application critical
- [www.fcgov.com/idap](http://www.fcgov.com/idap)
- Contact Gary Schroeder, [gschroeder@fcgov.com](mailto:gschroeder@fcgov.com), 970-221-6395



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Jason Kersley, [au]workshop

## Charrette Process | Diagrams



Diagram 1



Diagram 2



Diagram 3



Diagram 4

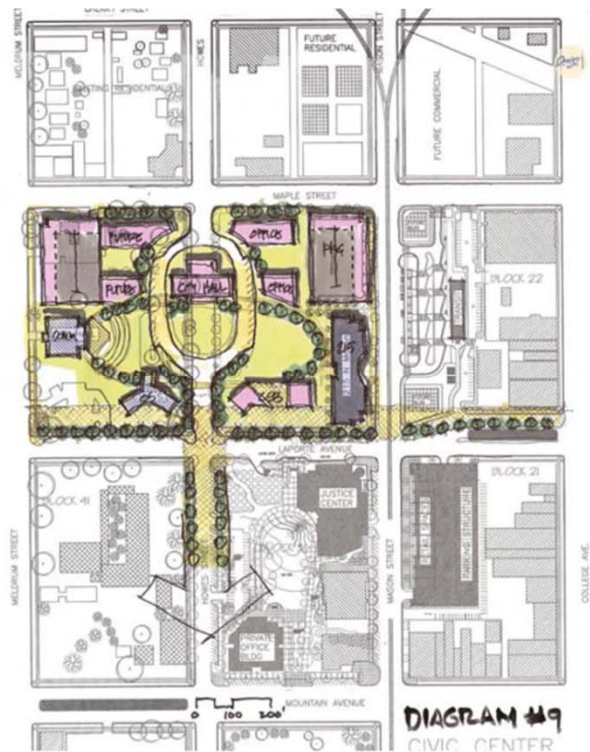


Diagram 5

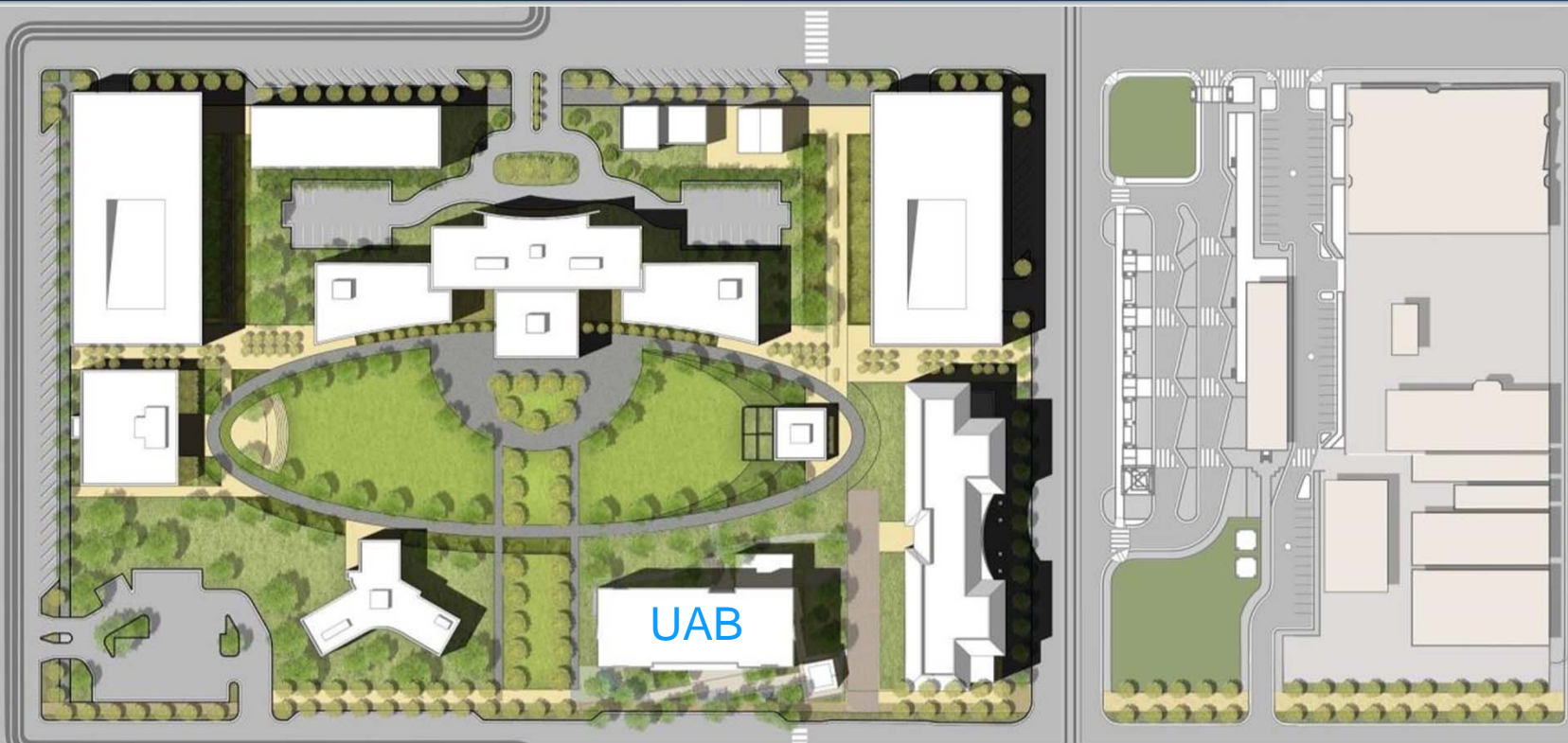


Diagram 6



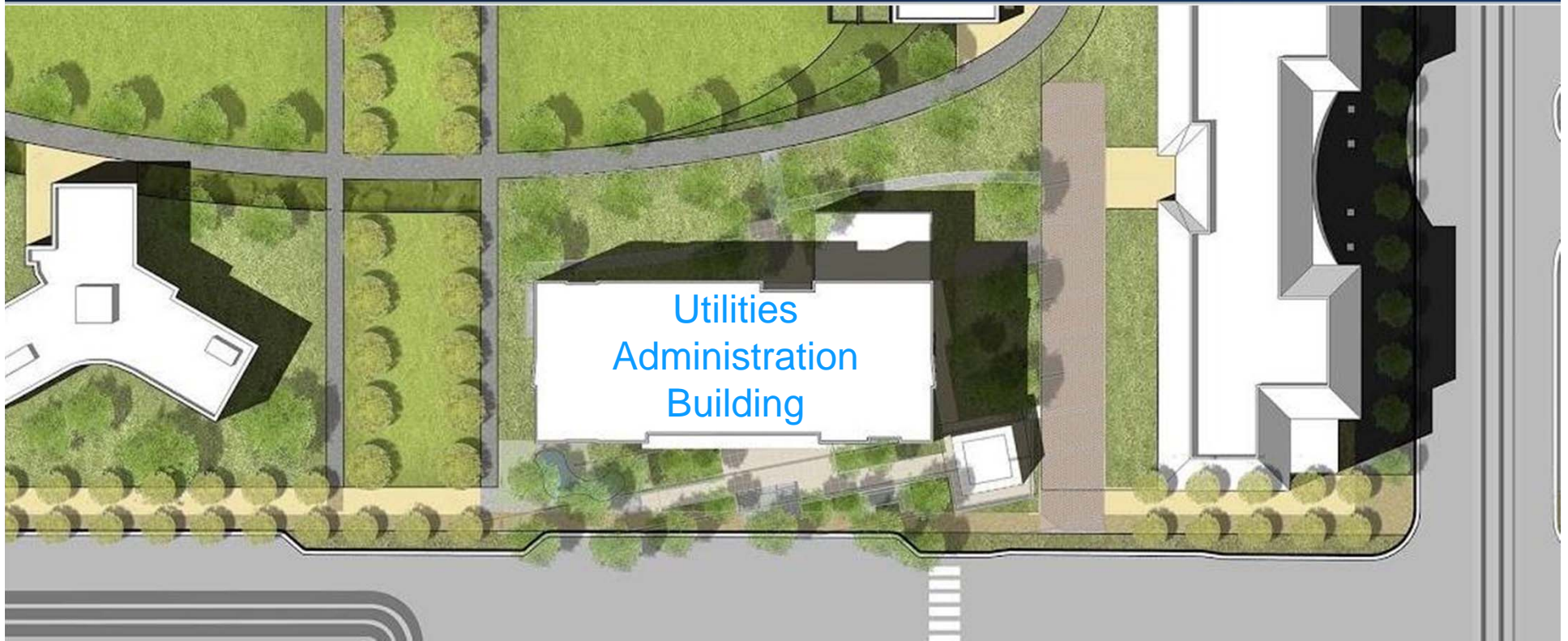


## Selected Master Plan



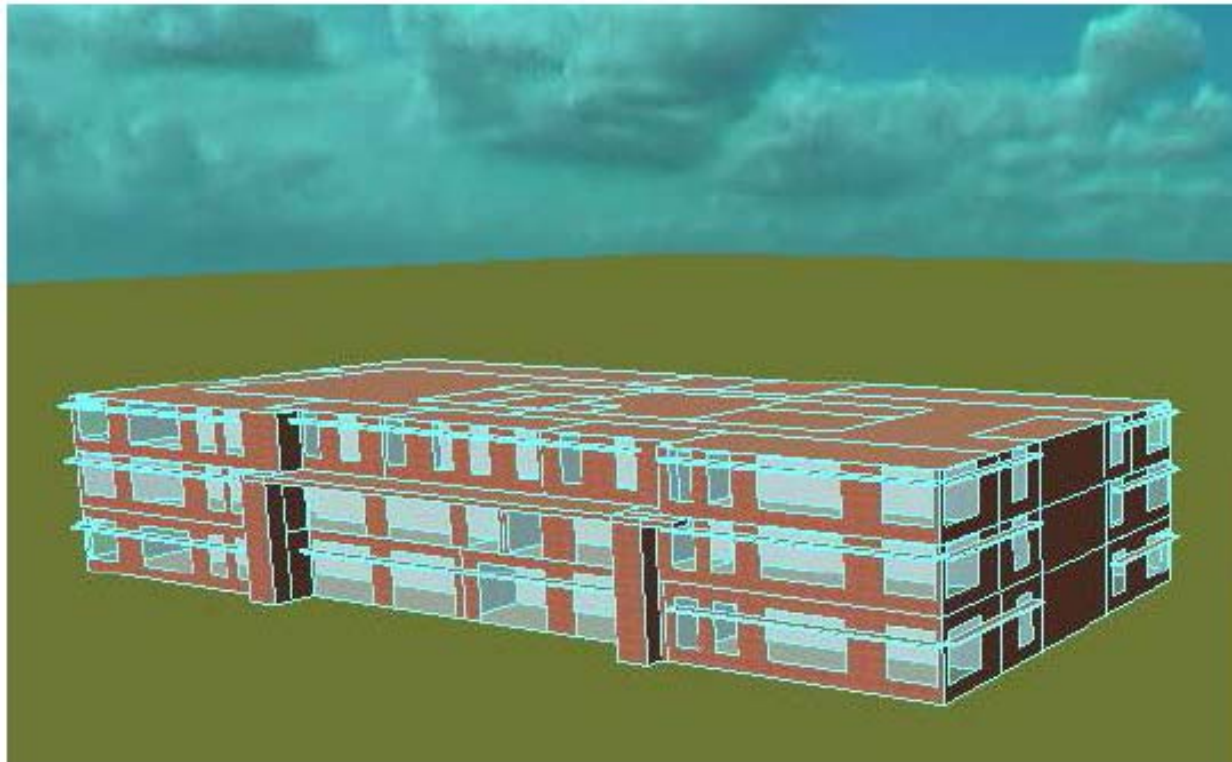


## Utilities Administration Building









## CITY OF FORT COLLINS IECC AMENDMENTS

FENESTRATION (FIXED) -  $U = 0.35$

AREA-WEIGHTED AVERAGE MAXIMUM FENESTRATION U-FACTOR -  $U = 0.40$   
(compared to  $U = 0.48$  for climate zone 5)

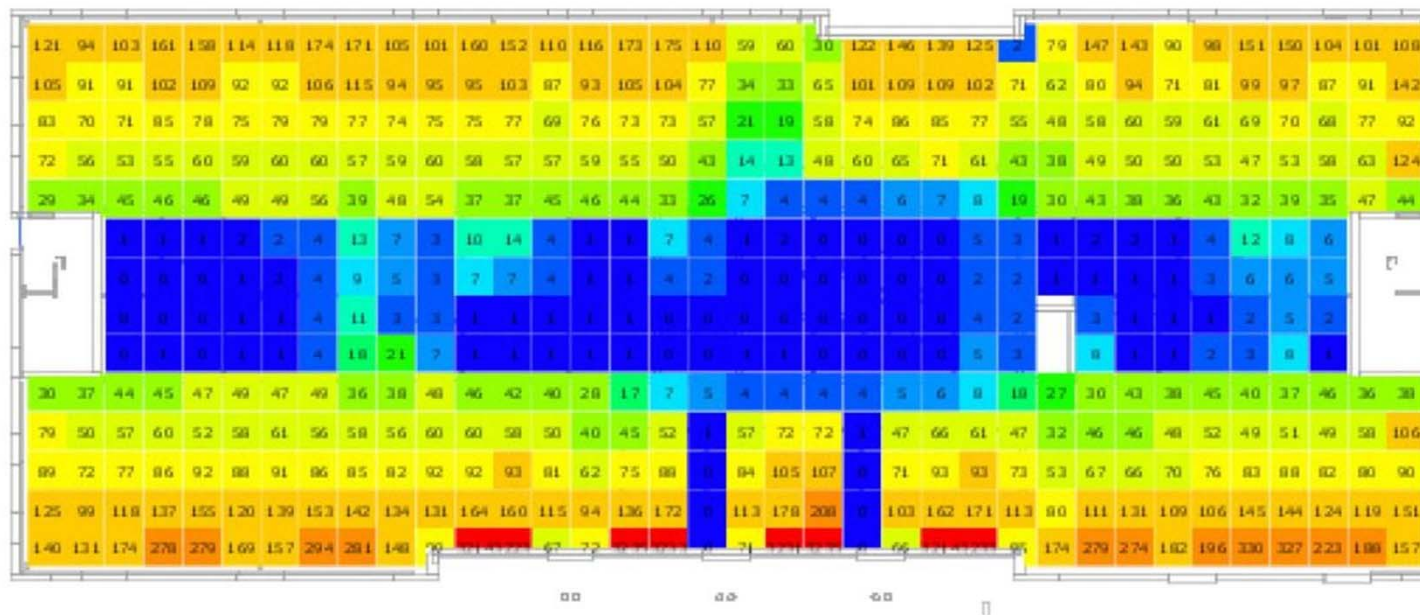
AIR BARRIER MUST BE CONTINUOUS AND MUST BE TESTED FOR A TOTAL  
BUILDING LEAKAGE RATE THAT DOES NOT EXCEED 0.25 CFM/SQFT @ 75  
PASCALS OF PRESSURE

ACCORDING TO IECC 402.4.1: “uncontrolled air movement through the building envelope (infiltration and exfiltration) can account for less than or equal to 50% of heating and a significant part of cooling loads, representing less than or equal to 30% of a building’s annual HVAC costs.”

AIR BARRIER SURFACE AREA	
Location	Area (SF)
North Elevation	7963
East Elevation	3073
South Elevation	7888
West Elevation	3054
Ground Floor	12995
Roof	12910
TOTAL AIR BARRIER SURFACE AREA 47883 SF	











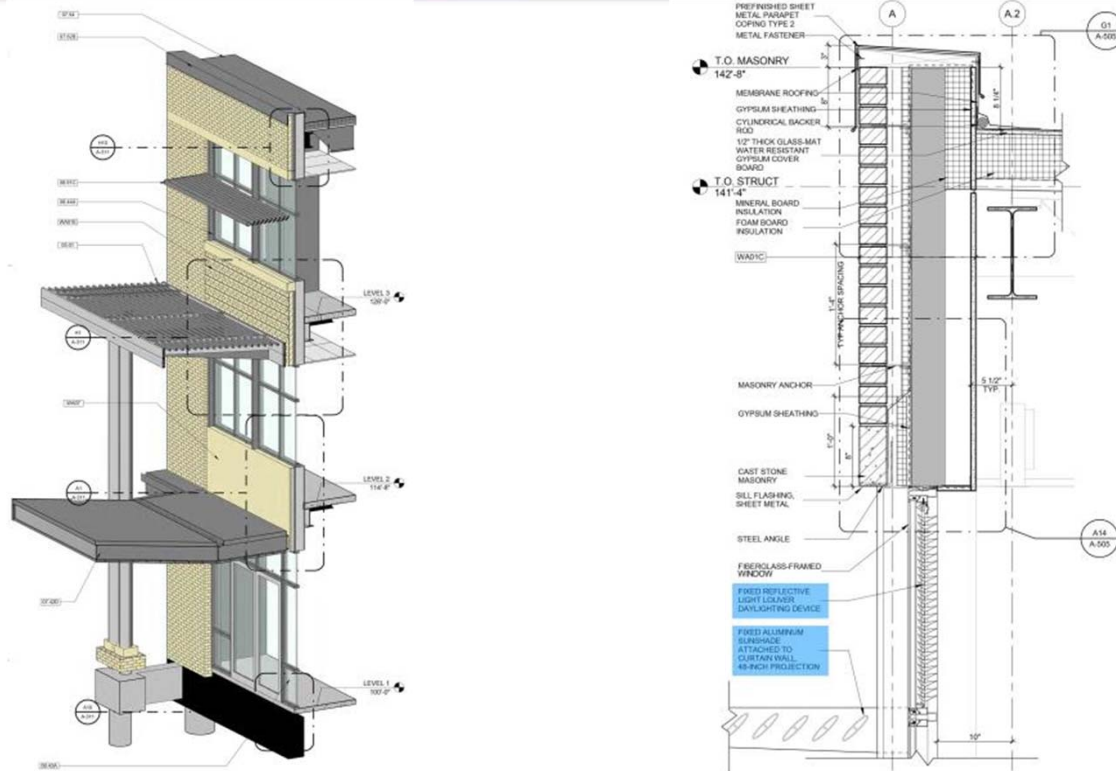


LEVEL 2 - JUNE 21- 12PM

# Daylighting Analysis

	LightStanza Area	Illumination at 9:00 a.m.	Illumination at 3:00 p.m.	Illumination at LEED Compliance at 9am and 3pm
Total				85.22% 1 Credit
✓ Floor1			83.30%	
✓ Floor2			87.79%	
✓ Floor3			84.10%	

# Daylighting Control







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John Phelan, Utilities Energy Services Manager

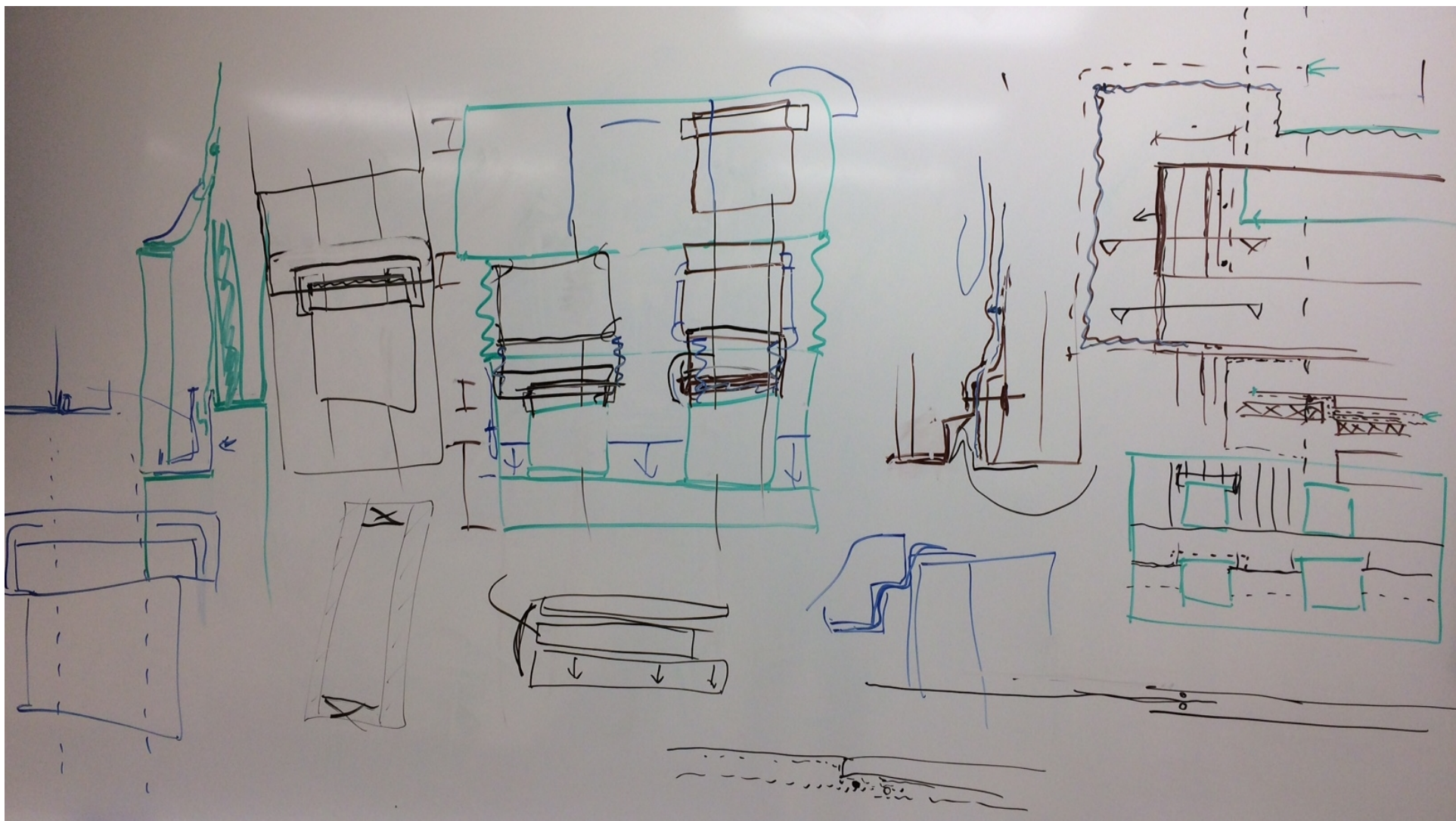


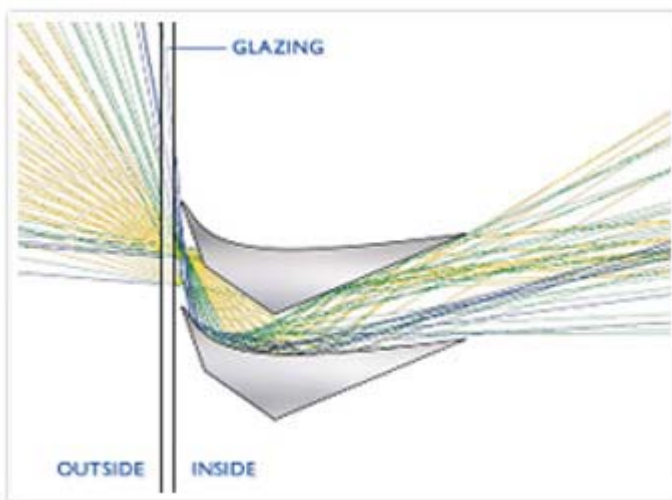
- Setting design targets
  - < 30 kBtu per square foot per year
  - Achieve **all** LEED energy points
- Use modeling as a design tool
  - Energy models
  - Daylighting models
- LEED submission model results  
**28 kBtu per square foot per year**



- Envelope
  - Syntheon panel system
  - + entire wall assembly
  - Fiberglass frame high performance windows (R 5.8)
  - Glazing tuned by orientation and purpose
  - Exterior shading
  - Air sealing details + envelope commissioning + leakage testing

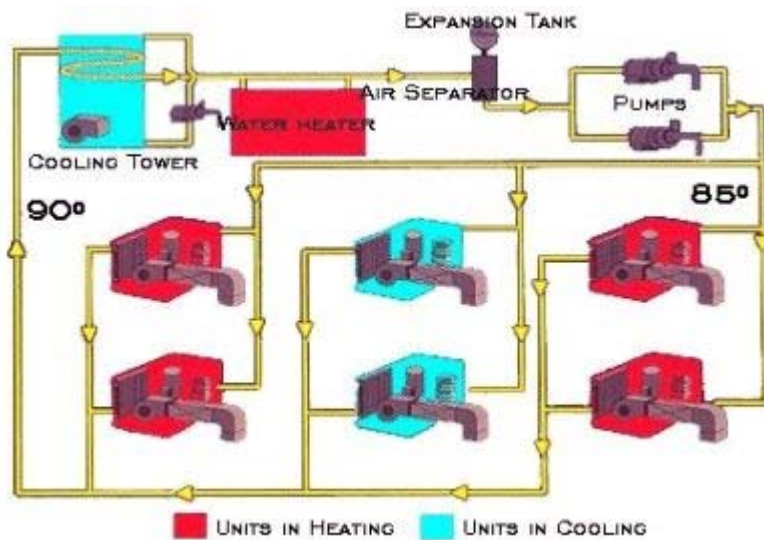






- Daylighting system
  - Building orientation
  - Vision and daylight glazing specs
  - LightLouver on south, east, west
  - LED fixtures with dimming



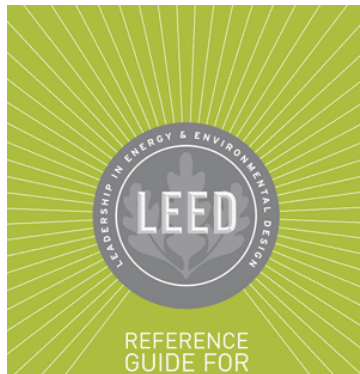


- Mechanical system
  - Water loop heat pumps
  - Dedicated outside air system with heat recovery
  - Future connection to shared ground source loop
  - Roof free of mechanical equipment





- Electrical system
  - All LED lighting
  - Task / ambient lighting design
  - Dimming ambient lighting with daylighting
  - Occupancy controls
  - Submetering of all lighting, plug and HVAC panels
  - 110 kilowatt rooftop solar



33	0	0	Energy and Atmosphere	33
Y			Prereq Fundamental Commissioning and Verification	Required
Y			Prereq Minimum Energy Performance	Required
Y			Prereq Building-Level Energy Metering	Required
Y			Prereq Fundamental Refrigerant Management	Required
6			Credit Enhanced Commissioning	6
18			Credit Optimize Energy Performance	18
1			Credit Advanced Energy Metering	1
2			Credit Demand Response	2
3			Credit Renewable Energy Production	3
1			Credit Enhanced Refrigerant Management	1
2			Credit Green Power and Carbon Offsets	2

- LEED Version 4!
  - First for City of Fort Collins, Institute for the Built Environment and Adolfson and Peterson
  - Just over the Platinum level right now
  - Challenges with information availability for materials specifications