PURPOSE/INTENT

Gresham, Oregon's New City Hall will act as a catalyst for the urban renewal of downtown Gresham and will contribute to Gresham's emerging identity.

LOCATION
We propose to locate the new city hall on the south west corner of site 3 along Hood Ave. and 5th St.

IDENTITY
We propose to locate the prominent entry facade for the new City Hall at the south along 5th street to create a civic presence within the city context.

PROGRAM CONTENTS - SITE 3

1. PURPOSE/INTENT

2. DESIGN CONSIDERATIONS FOR THE SITE
- Current development located on the site
- Images, maps, and pictures
- Zoning and Planning information
- Site access/circulation

3. SITE CONTEXT
- Site history
- How will the development impact neighbors/community?
- Site plan

4. BUILDING DESIGN CONSIDERATIONS
- Floor plan diagrams
- Building massing diagrams

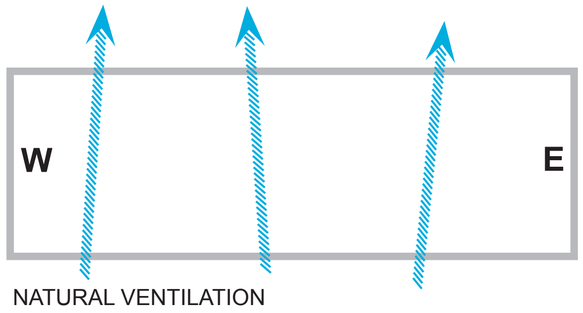
5. PROJECT REQUIREMENTS
- Space organization chart
- Schematic floor plans
- 3d digital model
- Energy conservation analysis

Andrew Harmon, Kris Celtnieks, Elisabeta Curea, Jon DeLeonardo

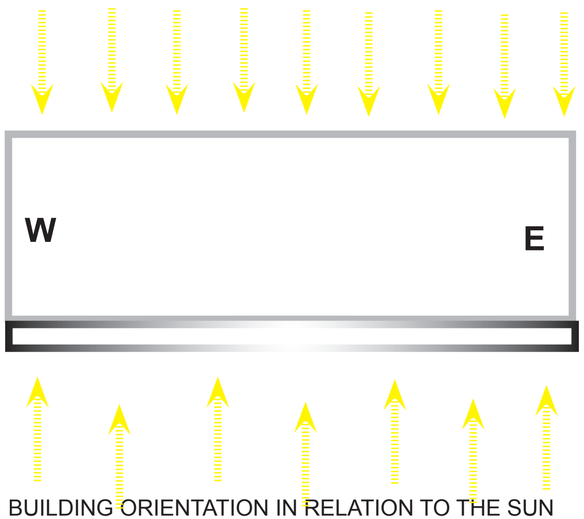
DESIGN PRINCIPLES

2. ENVIRONMENTAL CONSIDERATIONS - PROGRAM AROUND DAYLIGHT

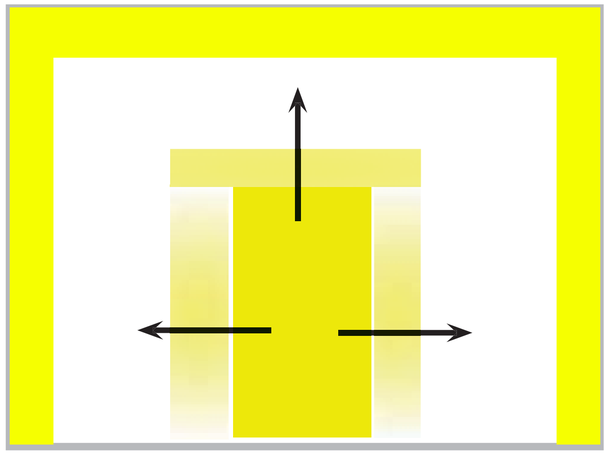
IN A TYPICAL BUILDING, LIGHTING ACCOUNTS FOR 20-40 PERCENT OF ENERGY CONSUMPTION. LIGHTING LOADS CAN BE REDUCED BY ALLOWING MORE NATURAL LIGHT TO PENETRATE THE INTERIOR OF THE BUILDING. THE FINANCIAL SAVINGS COULD BE CONSIDERABLE AND THE HEALT BENEFITS TREMENDOUS.



NATURAL VENTILATION



BUILDING ORIENTATION IN RELATION TO THE SUN

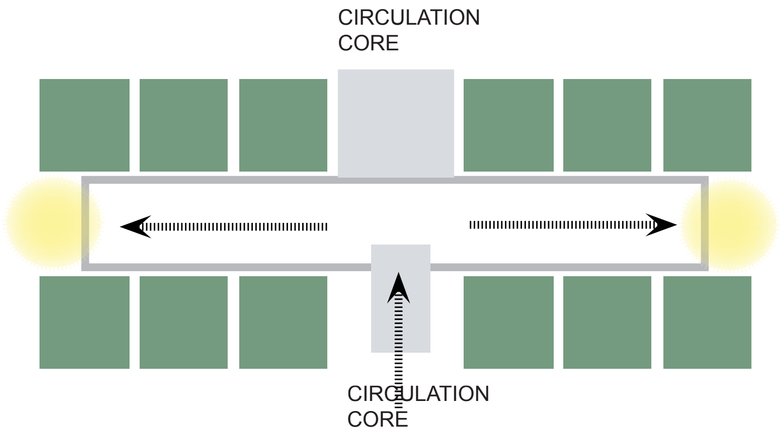


WHILE THE OFFICES ARE ORGANIZED AROUND THE OUTSIDE PERIMETER OF THE BUILDING TO, DAYLIGHT CAN ALSO BE BROUGHT INTO THE HEART OF THE BUILDING THRU THE USE OF ATRIUMS AND SKYLIGHTS

DESIGN PRINCIPLES

3. INSPIRATIONAL INTERIORS

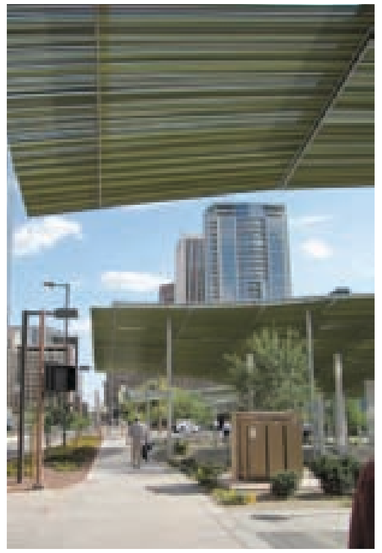
UTILIZE SHORT CORRIDORS THAT ARE BROKEN DOWN BY CIRCULATION AND COMMON SPACES. USE COLOR AND TEXTURE TO CREATE INTERESTING EDGES AS WELL AS “DESTINATION” POINTS. INFILTRATE NATURAL LIGHT INTO CORRIDORS WHENEVER POSSIBLE.

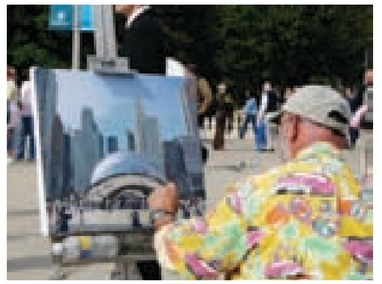


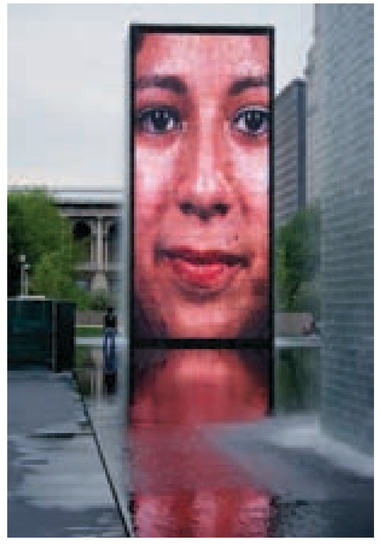
DESIGN PRINCIPLES

4. DISTINCT URBAN SPACES

UTILIZE ART TO ACTIVELY ENGAGE THE EXTERIOR SPACES OF THE BUILDING. FORM EXTERIOR URBAN SPACES FOR BUILDING OCCUPANTS AND PEOPLE WHO MAY BE SIMPLY PASSING BY.







DESIGN CONSIDERATIONS FOR THE SITE

CURRENT BUILDING LOCATED AT THE SITE:

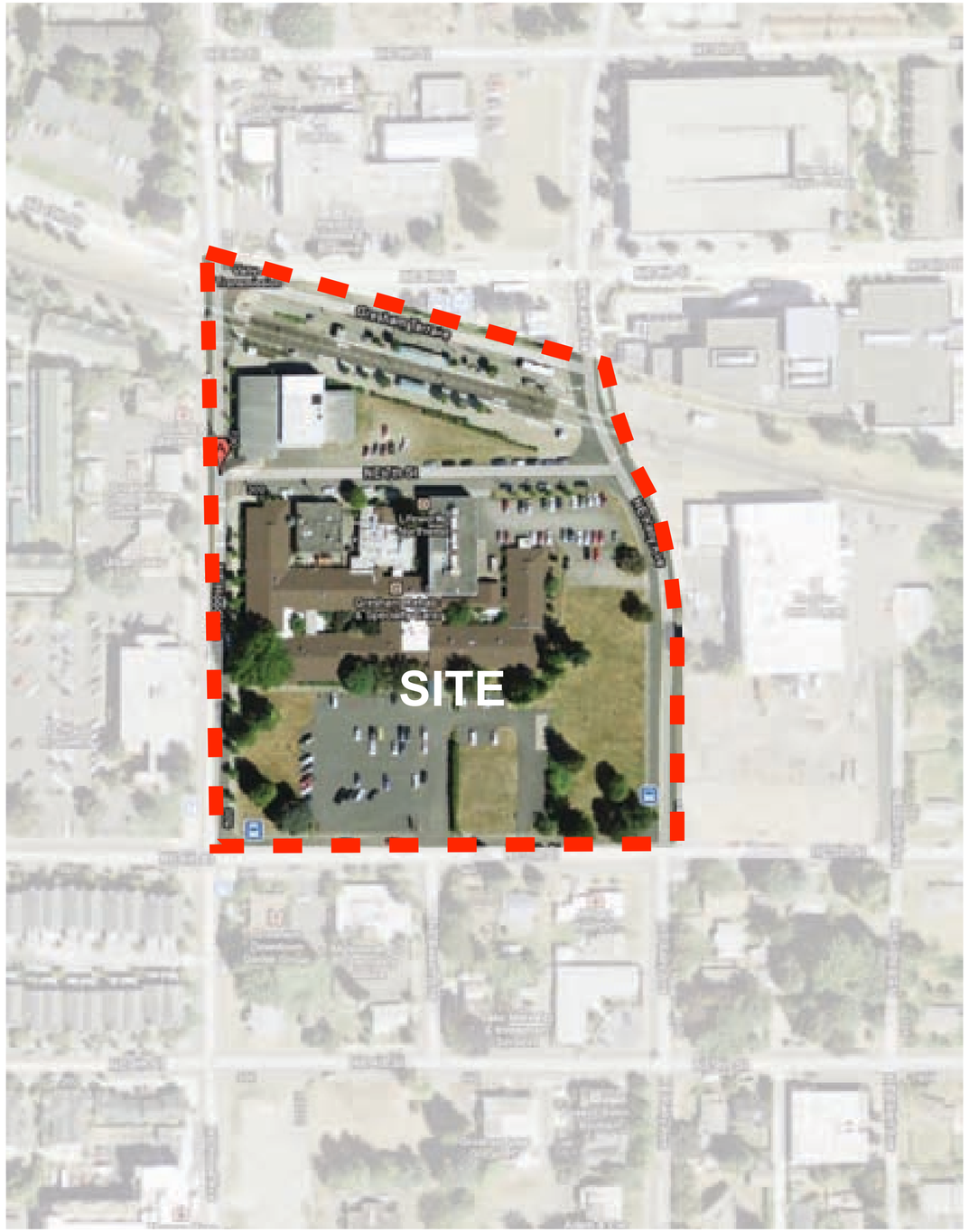
OUR SITE IS CURRENTLY OCCUPIED BY GRESHAM REHAB AND SPECIALTY CARE. THEY ARE A FOR PROFIT CORPORATION WHICH PROVIDES TREATMENT FOR DRUG AND ALCOHOL ADDICTIONS. THEY ARE ALSO A CORPORATE FRANCHISE FORM OF TREATMENT CENTER. INHABITANTS ARE GENERALLY PLACED INTO THE PROGRAM BY DOCTORS AND THE DURATION OF STAY RANGES FROM 6 MONTHS TO ONE YEAR.

BUILDING/SITE CONTAINS:

TREATMENT/HOSPITAL PROGRAM
88 BEDS
56 RESIDENTS
24 FTE'S

BUILDING DETAILS:

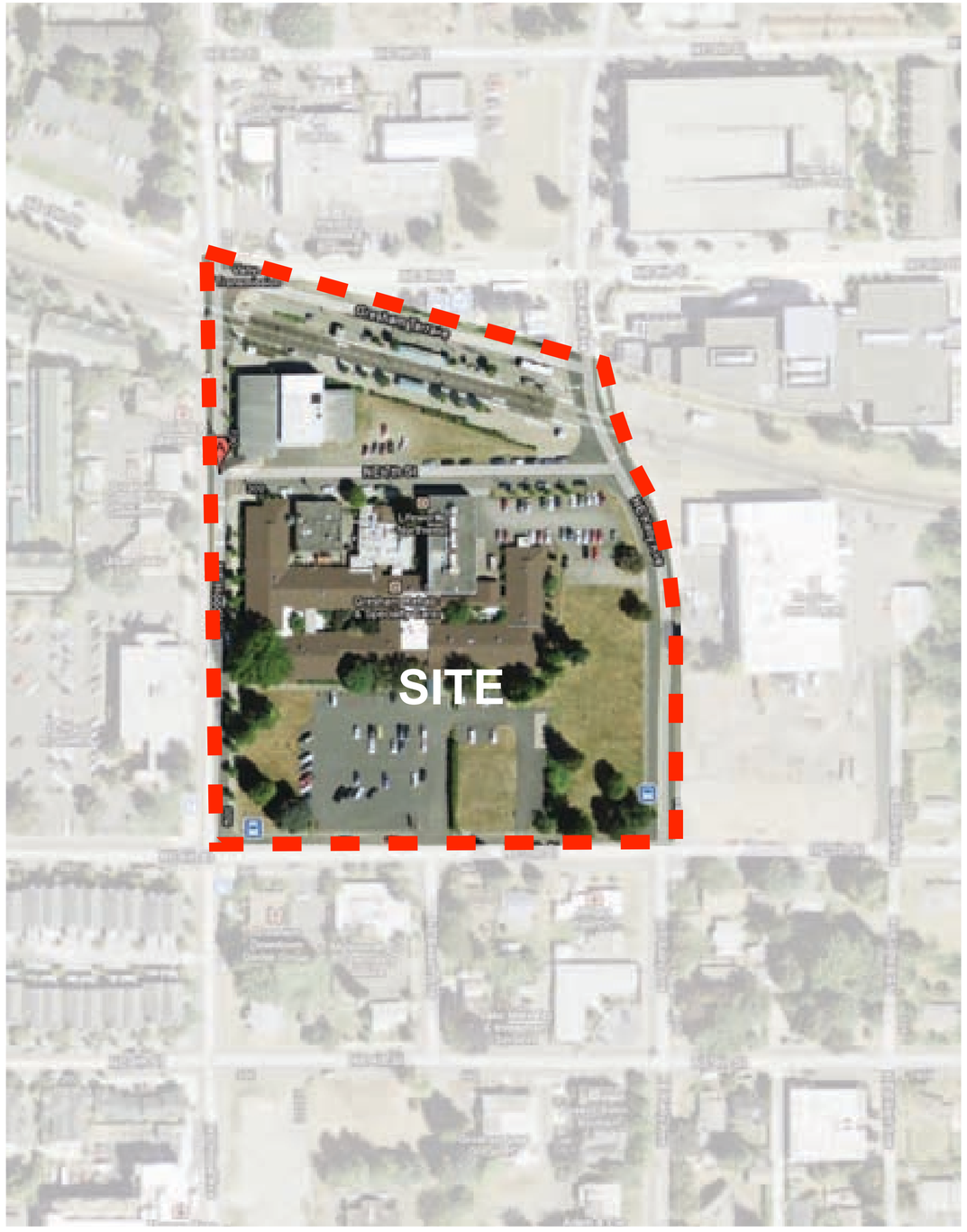
TYPICAL TYPE V CONSTRUCTION TYPICAL OF THIS AREA
BUILT AND CERTIFIED AS A CARE FACILITY IN 1989
SLAB ON GRADE
100 SURFACE PARKING SPACES (ROUGHLY)



DESIGN CONSIDERATIONS FOR THE SITE

SITE LOCATION:

OUR SITE IS LOCATED ALONG A MAX TRANSIT PLATFORM EAST OF THE CURRENT CITY HALL.
ITS BOUNDED BY KELLY AVE., HOOD AVE., 5TH ST, AND 7TH ST.



DESIGN CONSIDERATIONS FOR THE SITE

ZONING AND PLANNING:

MAX HEIGHT: 85 FEET

85’

DCC - DOWNTOWN COMMERCIAL CORE:

THE DCC IS THE CITY’S LONG-STANDING CENTER AND FEATURES UNIQUE LOCAL BUSINESSES, SMALL-SCALE STOREFRONTS, AND INTIMATE SIDEWALKS.

MAX HEIGHT: 50 FEET

50’

DRL-2: DOWNTOWN RESIDENTIAL LOW-RISE:

THIS MIXED-USE SUB DISTRICT WILL ALLOW A GRADUAL TRANSFORMATION INTO MORE VARIED AND FULL-SERVICE RESIDENTIAL NEIGHBORHOODS THAT CAN TAKE ADVANTAGE OF THEIR PROXIMITY TO TRANSIT AND NEARBY SHOPPING AND JOB CENTERS.

MAX HEIGHT: 85 FEET

85’

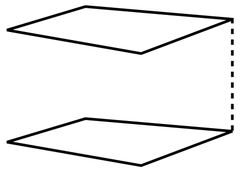
DTM: DOWNTOWN TRANSIT MID-RISE:

IT SUPPORTS THE CREATION OF EMPLOYMENT USES WITHIN DOWNTOWN SO THOSE WHO LIVE OUTSIDE HAVE OPPORTUNITIES AND EASY ACCESS TO WORK DOWNTOWN.

DESIGN CONSIDERATIONS FOR THE SITE

ZONING AND PLANNING:

MAX HEIGHT: 85 FEET



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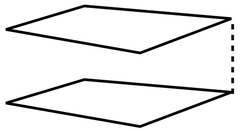

50’

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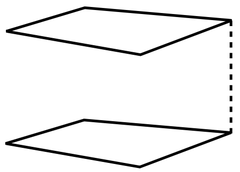

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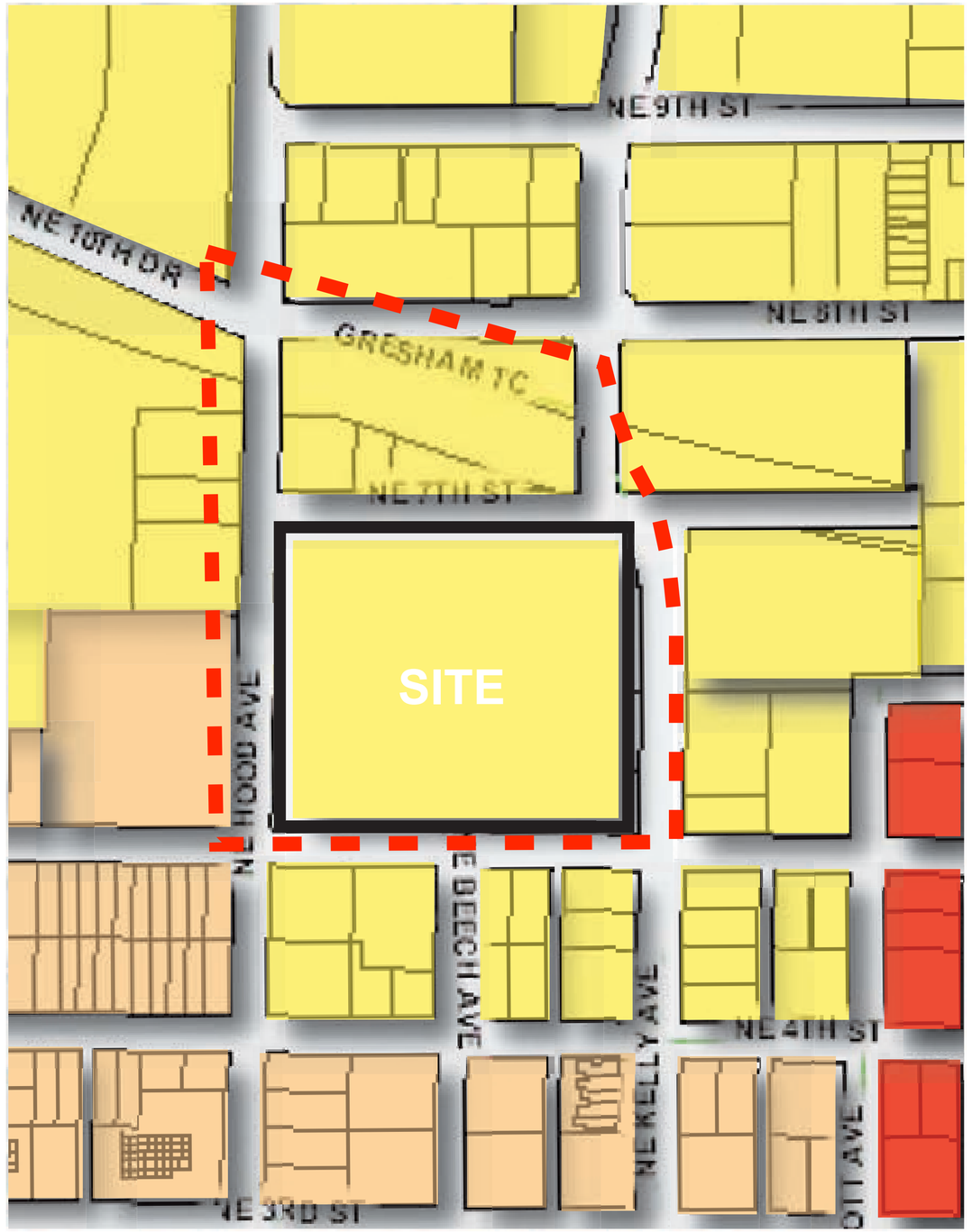


DESIGN CONSIDERATIONS FOR THE SITE

SITE LOCATION:

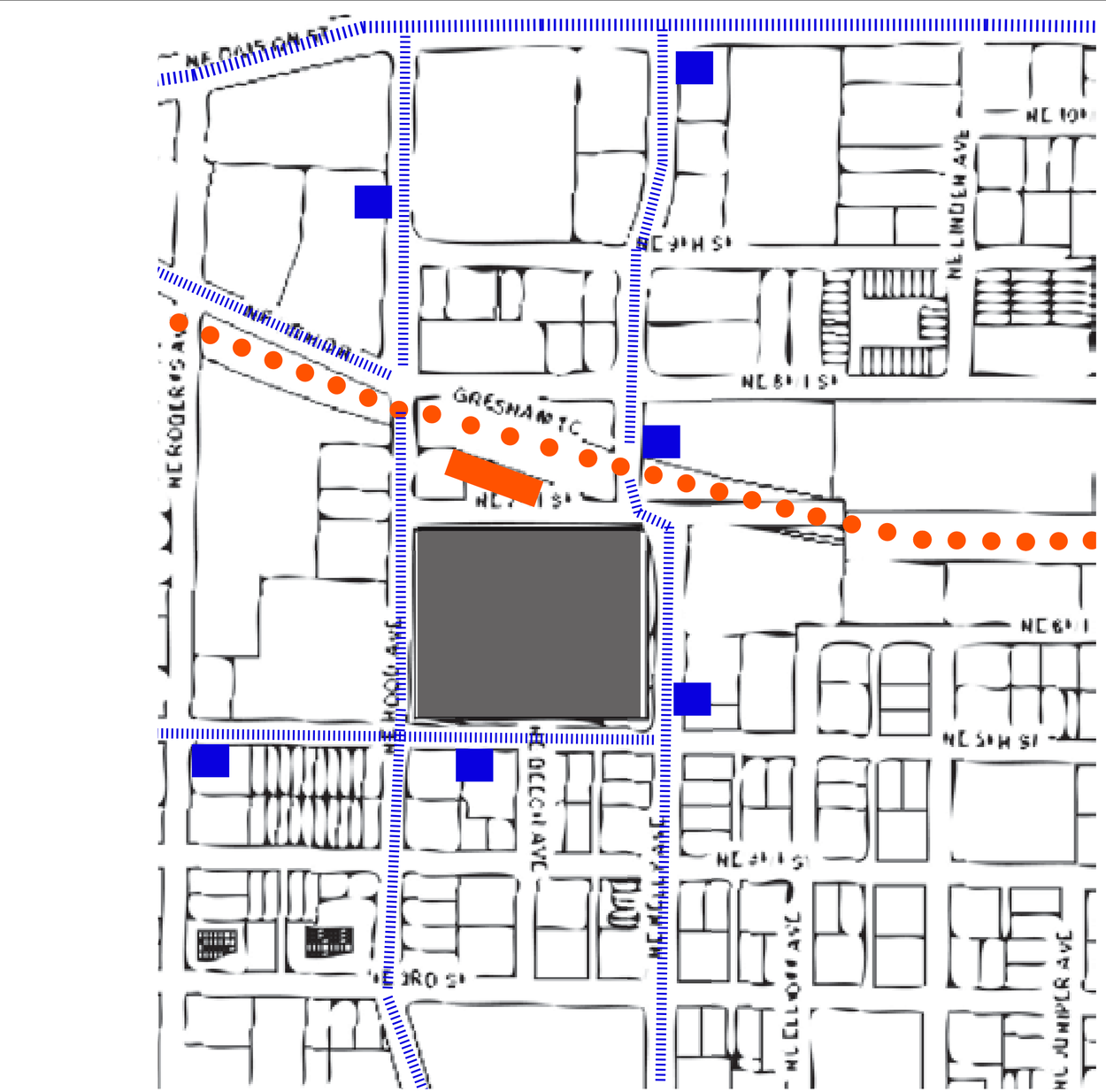
INFRASTRUCTURE AND CONNECTIONS ENCLOSE OUR SITE ON ALL FOUR SIDES.

MAIN ELEMENTS:

CENTRAL BUS LINES

A MAX PLATFORM (SIMILAR TO THE EXISTING SITE)

MANY BUS STOPS IN THE AREA



DESIGN CONSIDERATIONS FOR THE SITE

SINGLE FAMILY HOMES:

THESE STRUCTURE ARE LOCATED MOSTLY TO THE SOUTH OF OUR SITE. THEY PROVIDE A DISTINCT SCALE IN COMPARISON TO THE LARGER STRUCTURES, SURFACE PARKING, AND MULTIFAMILY DEVELOPMENT NEARBY.

VACANT COMMERCIAL:

VACANT COMMERCIAL BUILDINGS ARE SCATTERED AROUND THE SITE TO THE EAST AND WEST. IN SOME CASES THESE STRUCTURES CREATE AREAS OF INACTIVITY AND AWKWARD DEAD END STREETS AND BUSINESS PARKS.

TOWNHOUSES:

NEWER TOWNHOUSES ARE LOCATED AT THE NORTH END OF THE SITE. THEY ARE TYPICALLY COMPOSED OF 2-3 FLOORS, ON STREET PARKING, AND SIMPLE WOOD FRAME CONSTRUCTION. MANY APPEAR TO BE NEWER CONSTRUCTION AND MEET THE BARE MINIMUM REQUIREMENTS FOR CONSTRUCTION, HOUSING, AND CODE.

STRIP RETAIL:

STRIP RETAIL COMPOSES THE GROUND FLOOR OF NEARLY ALL ADJACENT FACADES WITH THE EXCEPTION OF THE SINGLE FAMILY HOUSING STOCK LOCATED NEAR BY. THIS RETAIL IS GENERALLY COMBINED WITH SURFACE PARKING AN A MANER SUITABLE FOR LOW DENSITY RETAIL SITUATIONS.

NEWER CONDO DEVELOPMENT:

SOME NEWER STRUCTURES OCCUPY THE NORTH END OF THE SITE THAT ARE MORE SOPHISTICATED IN TERMS OF CONSTRUCTION, DESIGN, AND URBAN RESPONSE. THESE STRUCTURES ARE TYPICALLY COMPRISED OF A TYPE 2B BASE OR PLINTH FOLLOWED BY 5 FLOORS OF TYPE 5 WOOD CONSTRUCTION. THIS DEVELOPMENT IS TYPICALLY REFERRED TO AS 5 OVER 1.

typical single family homes

vacant commercial

newer condo developments

SOV centric townhouse

strip facades and surface parking

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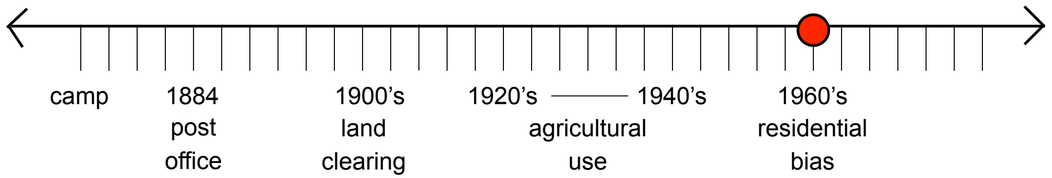
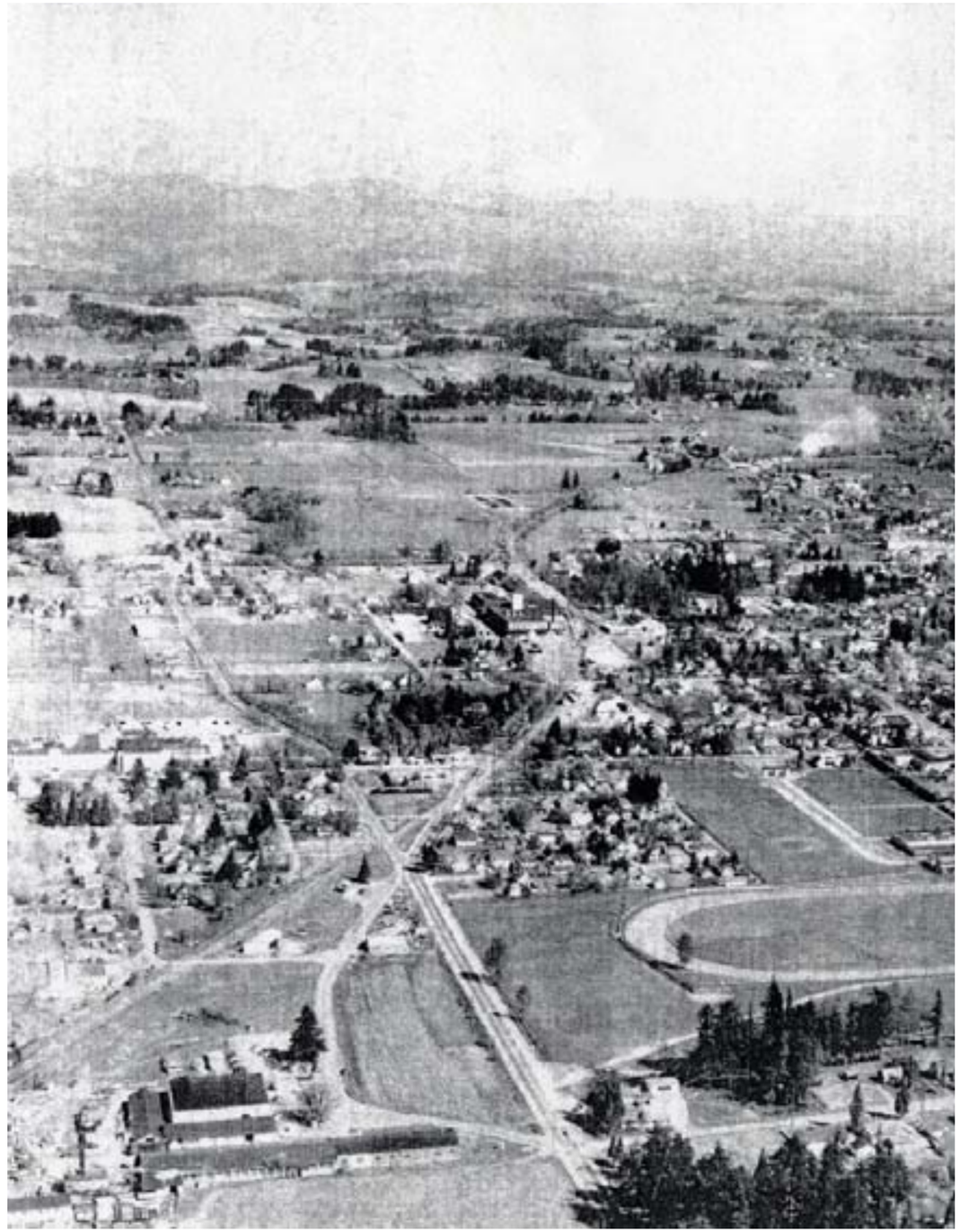
SITE CONTEXT

GRESHAM HISTORY:

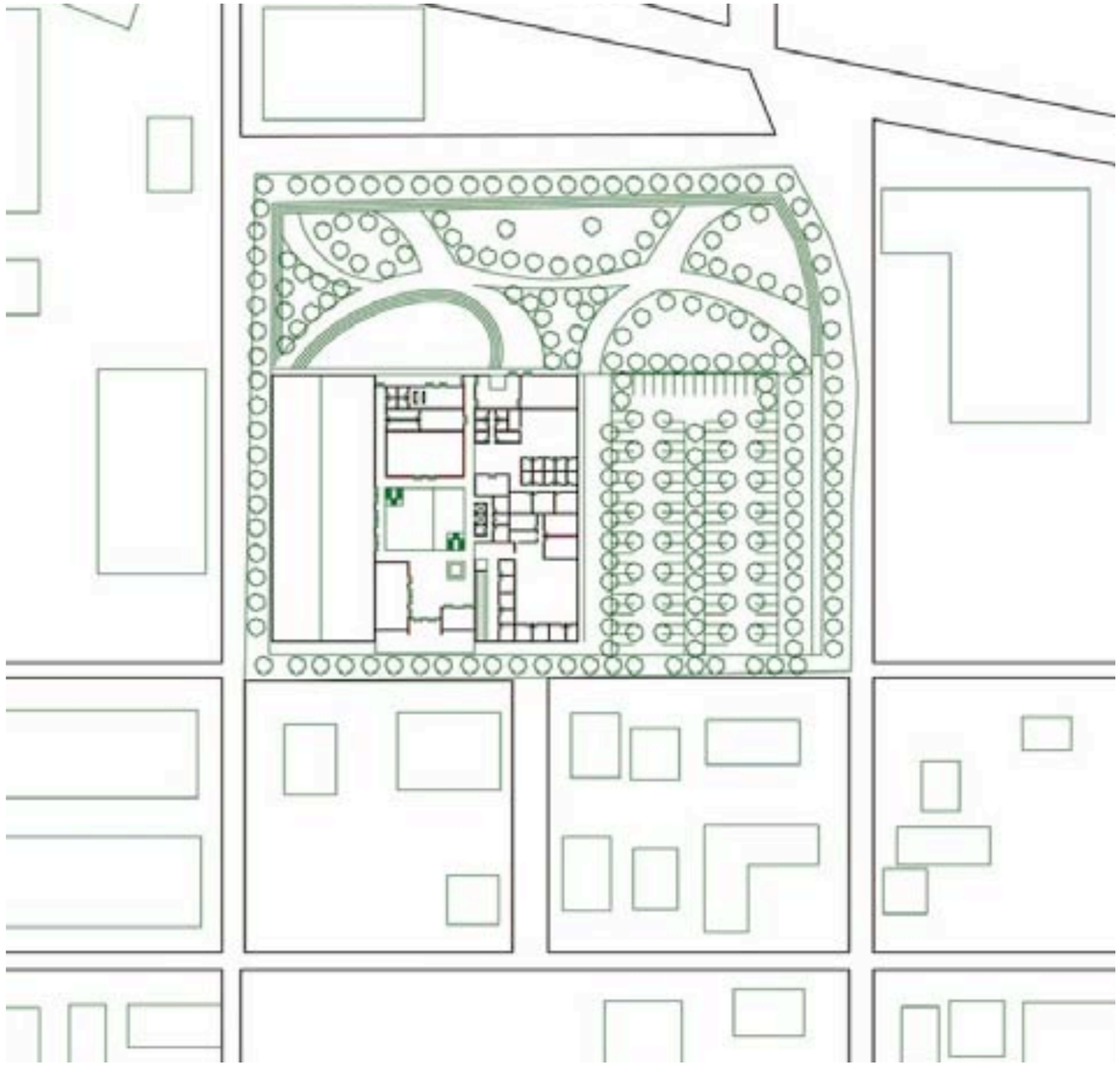
THE TOWN GRESHAM WAS NAMED FOR A FAMOUS CIVIL WAR GENERAL NAMED WALTER QUINTON GRESHAM. A POST OFFICE WAS ESTABLISHED IN 1884 AND THE STORE OWNER CHOSE THIS NAME. BEFORE 1884 IT WAS A HEAVILY WOODED AREA THAT SERVED AS A CAMPGROUND OF SORTS FOR PEOPLE TO STOP AND COMPOSE THEMSELVES BEFORE GOING TO PORTLAND. THROUGHOUT THE EARLY TO MID 1900'S MUCH OF THE LANDSCAPE WAS CLEARED AND CONVERTED TO AGRICULTURAL FARM LAND. IN RECENT TIME THESE FARMLANDS HAVE BEEN INCREASINGLY DEVELOPED INTO LOW DENSITY HOUSING

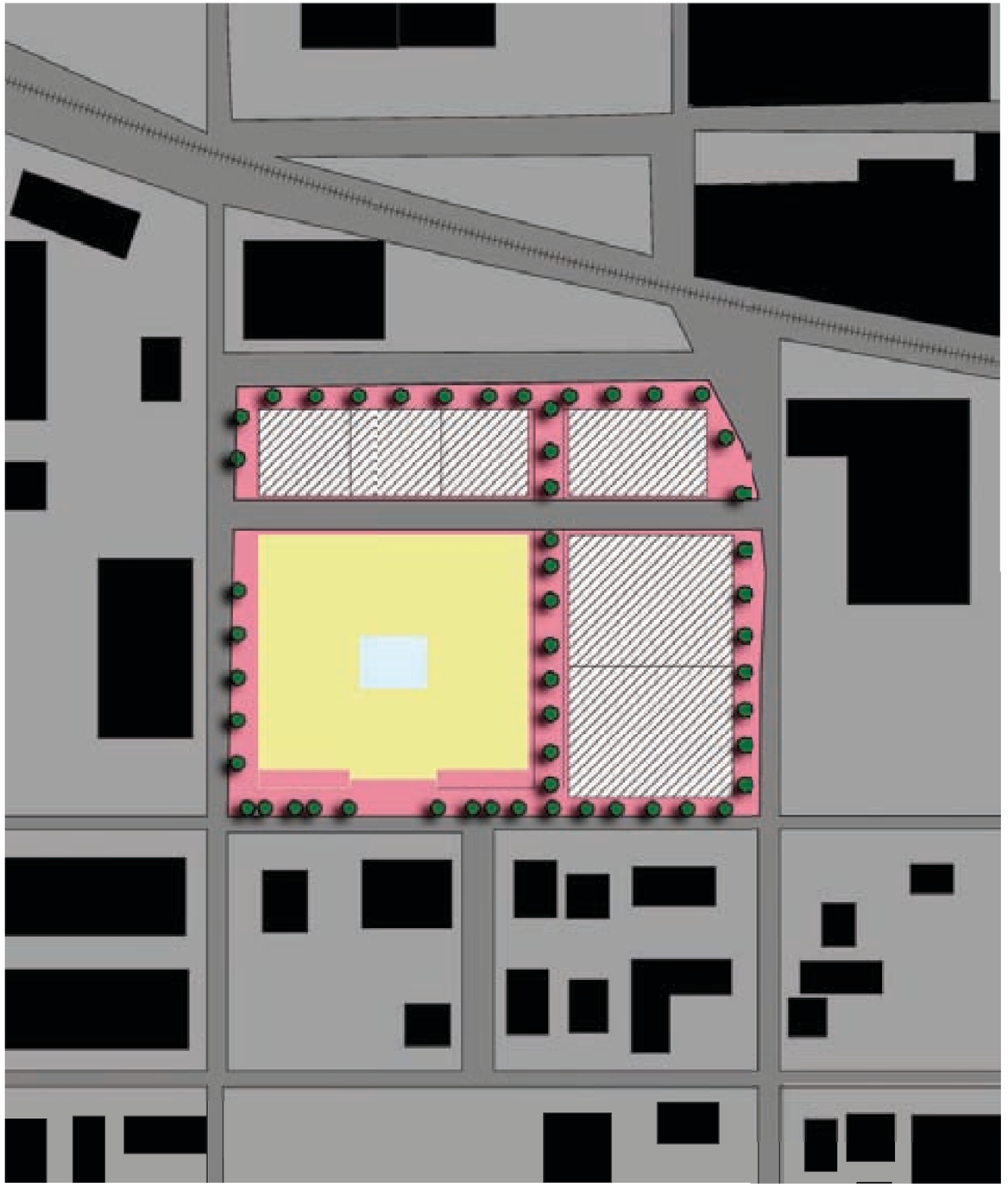




SITE PLAN

PHASED SITE PLAN:

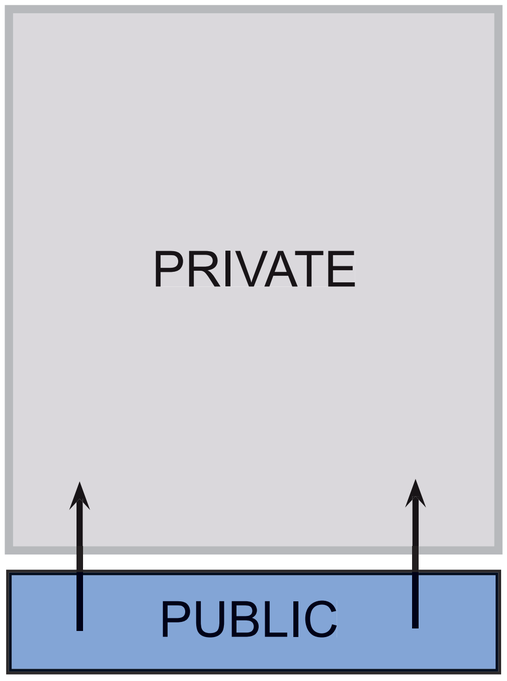




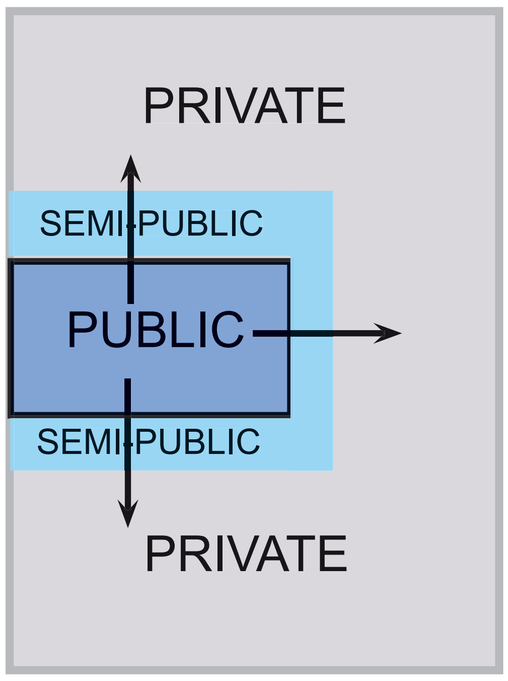
BUILDING DESIGN CONSIDERATIONS

PLAN DIAGRAMS:

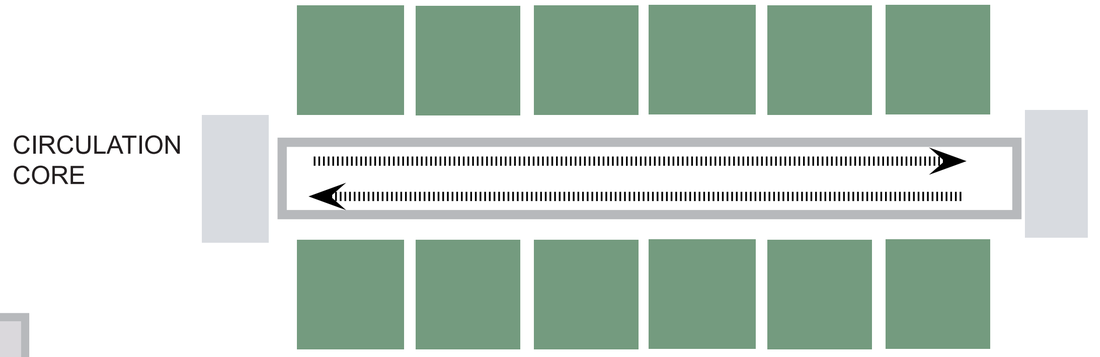
UTILIZE SHORT CORRIDORS THAT ARE BROKEN DOWN BY CIRCULATION AND COMMON SPACES. USE COLOR AND TEXTURE TO CREATE INTERESTING EDGES AS WELL AS “DESTINATION” POINTS. INFILTRATE NATURAL LIGHT INTO CORRIDORS WHENEVER POSSIBLE.

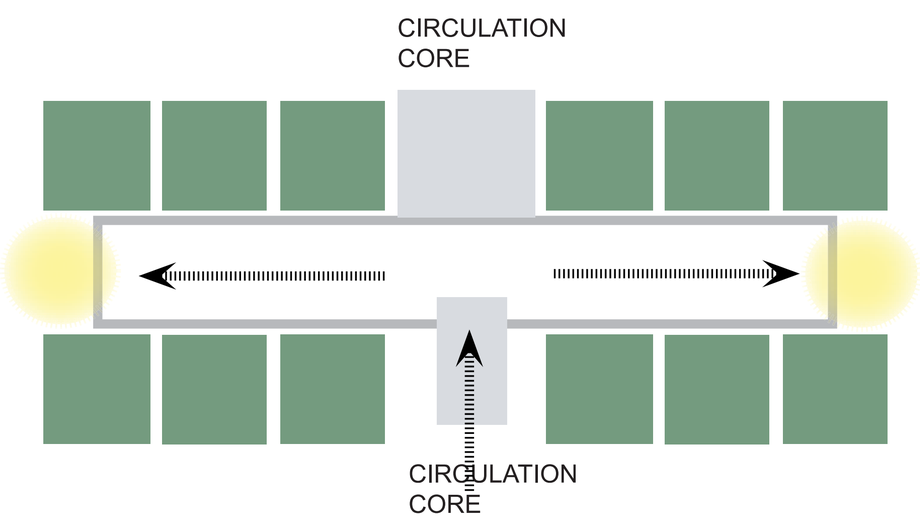


EXISTING



PROPOSED

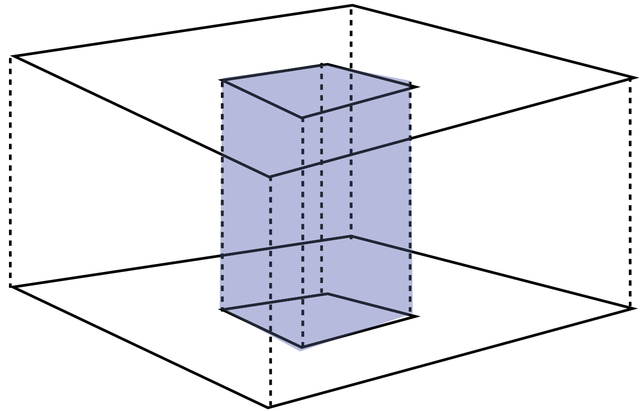




BUILDING DESIGN CONSIDERATIONS

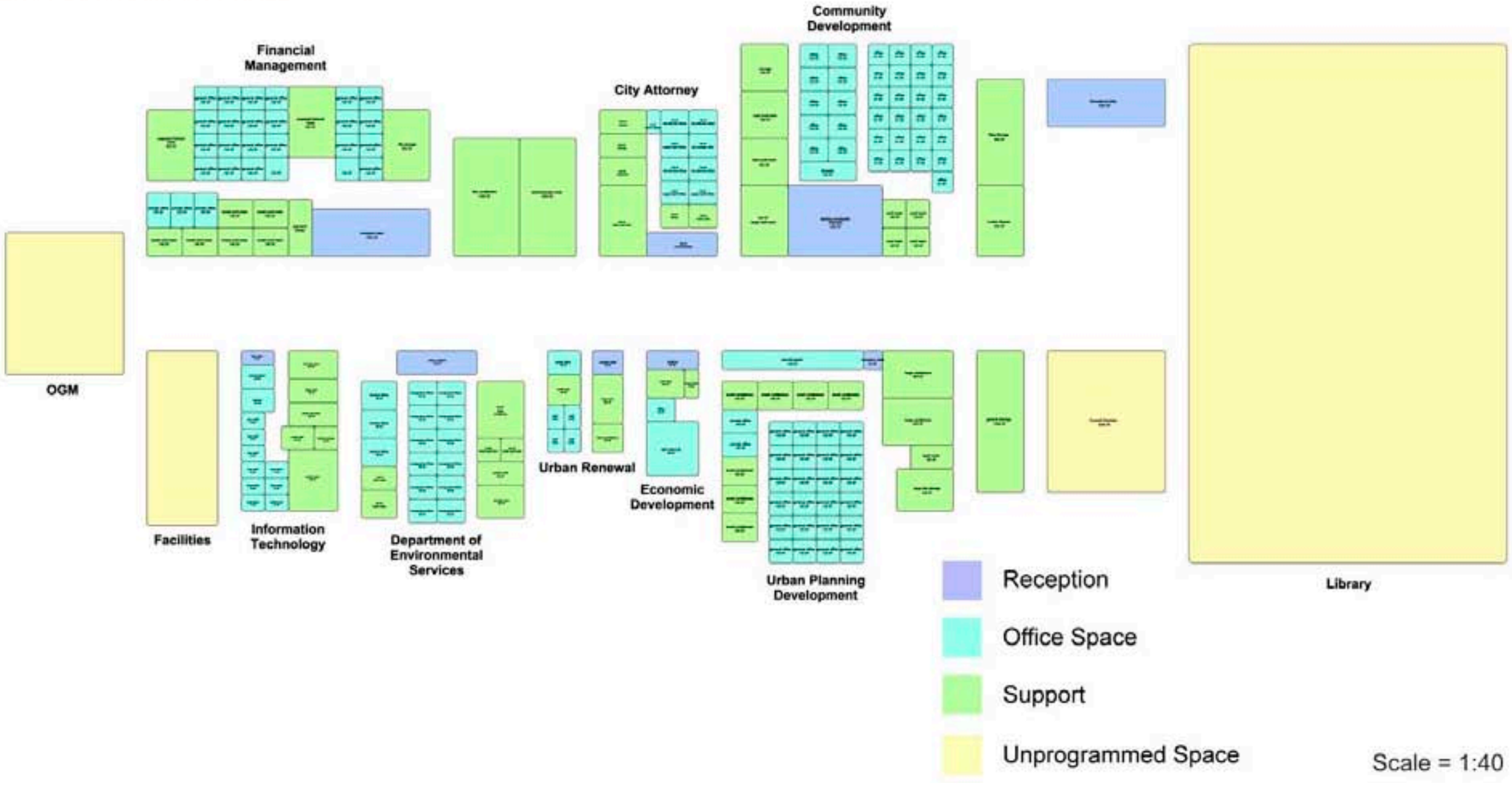
MASSING DIAGRAM:

INCORPORATE A CENTRAL ATRIUM INTO THE BUILDINGS CORE AND ARRANGE FUNCTIONAL PROGRAMS AND DEPARTMENTS AROUND IT.



PROJECT REQUIREMENTS

ADJACENCY DIAGRAM: CITY HALL

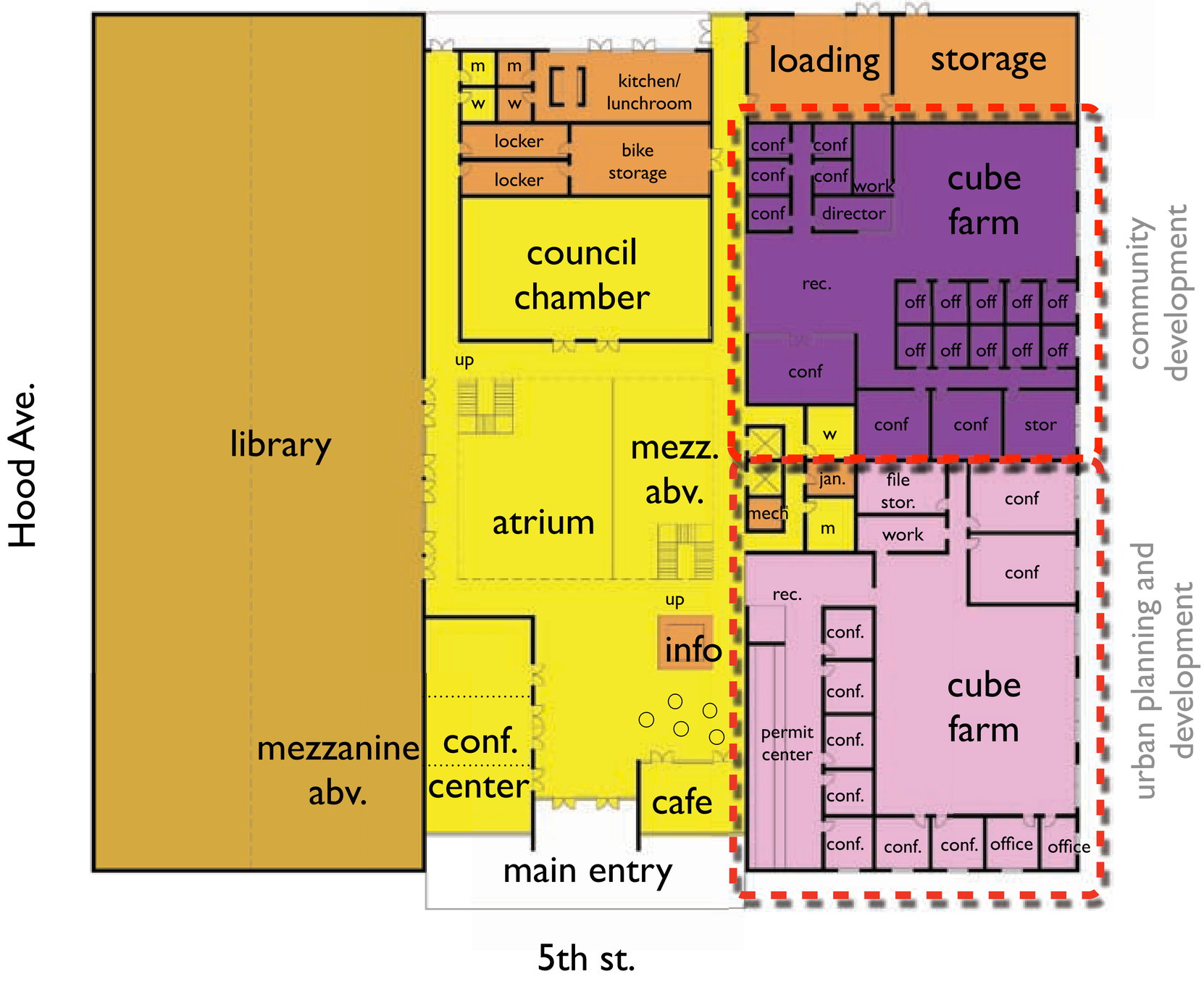


PROJECT REQUIREMENTS

FLOOR PLAN LEVEL 1

Department (R/G/B)

- Information Technology (258/198/68)
- Finance and Management (242/252/68)
- Community Development (146/6/173)
- Environmental Services (5/16/49)
- Economic Development/Urban Renewal (77/224/66)
- Office of Governance and Management (160/108/77)
- Urban Planning (252/180/241)
- City Attorney (68/252/242)
- Fire Department (253/58/49)
- Police Department (110/137/182)



first floor plan 0′ 5′ 15′ 30′

PROJECT REQUIREMENTS

FLOOR PLAN LEVEL 2

Department (R/G/B)

- Information Technology (258/198/68)
- Finance and Management (242/252/68)
- Community Development (146/6/173)
- Environmental Services (5/16/49)
- Economic Development/Urban Renewal (77/224/66)
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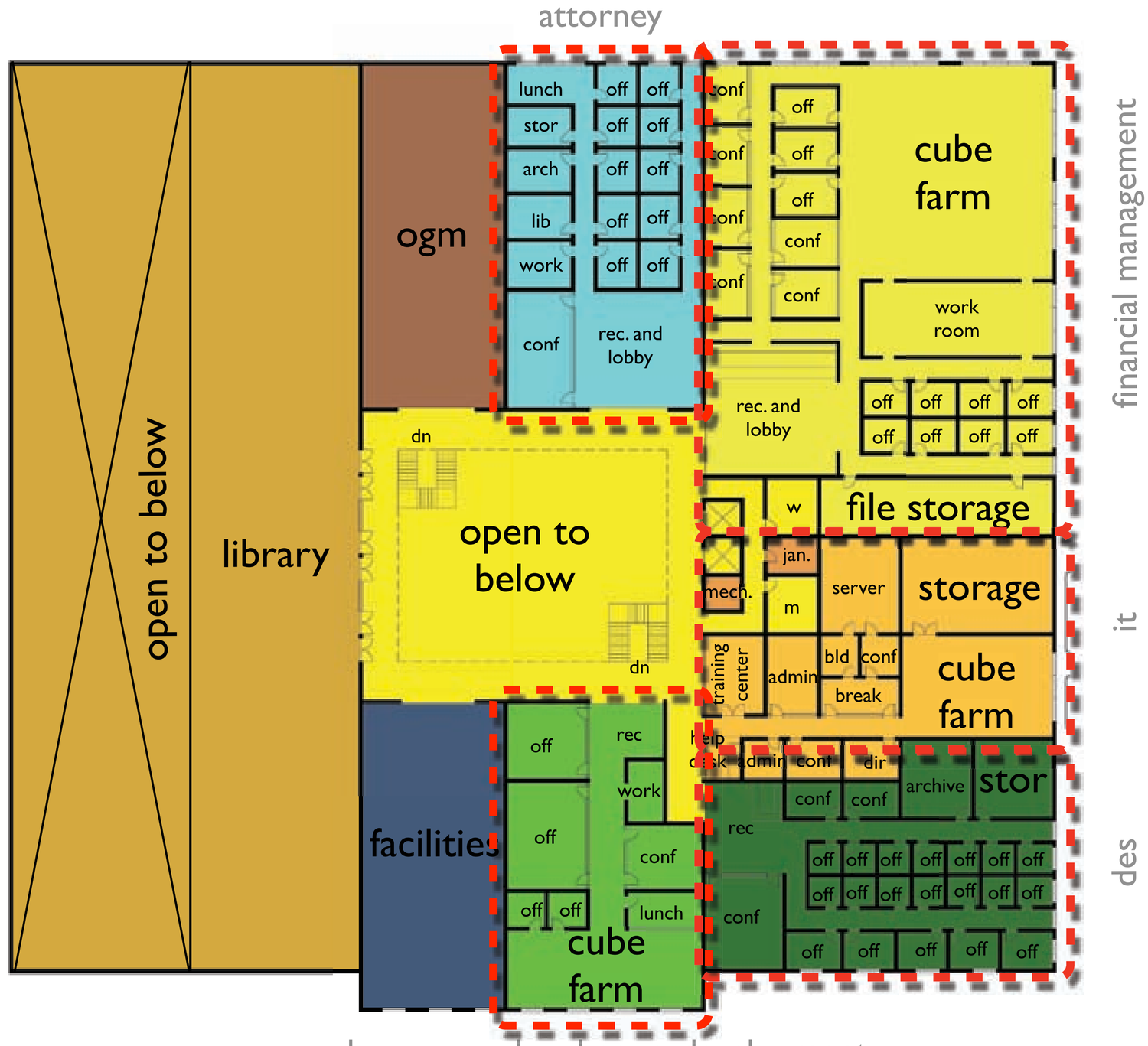
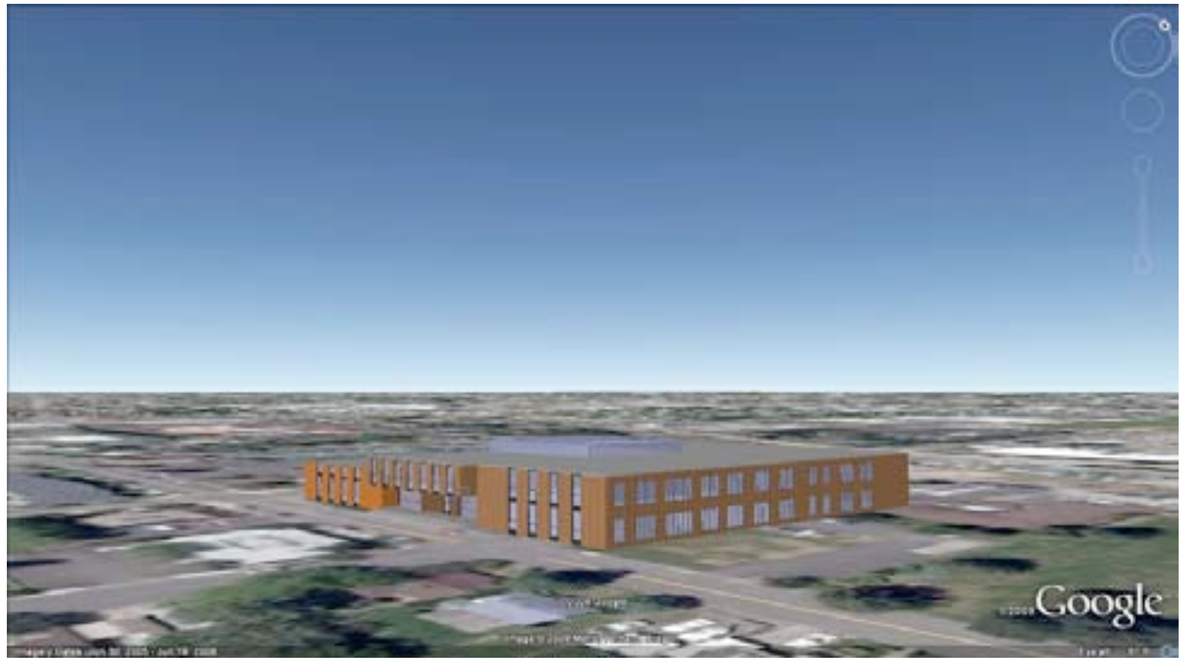


second floor plan 0′ 5′ 15′ 30′

PROJECT REQUIREMENTS

3D DIGITAL MODEL:

AXONS AND SITE CONTEXT.



building in context

front door

back door

PROJECT REQUIREMENTS

3D DIGITAL MODEL:

BUILDING ELEVATION

PROJECT REQUIREMENTS

3D DIGITAL MODEL:

ENTRY PERSPECTIVES.

PROJECT REQUIREMENTS

3D DIGITAL MODEL:

ENTRY PERSPECTIVES.

“IF A BUILDING DESIGN IS OPTIMIZED TO TAKE ADVANTAGE OF IT’S INTERACTION WITH THE CLIMATE AND USE PATTERNS, BOTH IT’S TOTAL AND PEAK ENERGY USE CAN BE SUBSTANTIALLY DECREASED, REDUCING FIRST COST AND OPERATING COSTS”

G.Z.BROWN

GRESHAM CITY HALL PROGRAMMING PRESENTATION

ENERGY PROGRAMMING

BY KRISTOPHER CELTNIEKS, BETA CUREA,
JON DELEONARDO, & ANDREW HARMON

DECEMBER 10 2009

ENERGY CONSERVATION STRATEGIES THROUGH ARCHITECTURE

Day Lighting

-45% Window-to-wall ratio provides for maximum lighting and minimal heat loss
-Deep window punches to block direct light during cooling seasons
-Atrium Courtyard
    -Allows for major circulation spaces to be lit naturally throughout the day
    -Areas around the atrium also receive natural light

Passive Heating & Cooling

-High thermal mass in walls, ceilings, & floors
-Operable windows for ventilation & cooling
-Operable atrium for stack ventilation

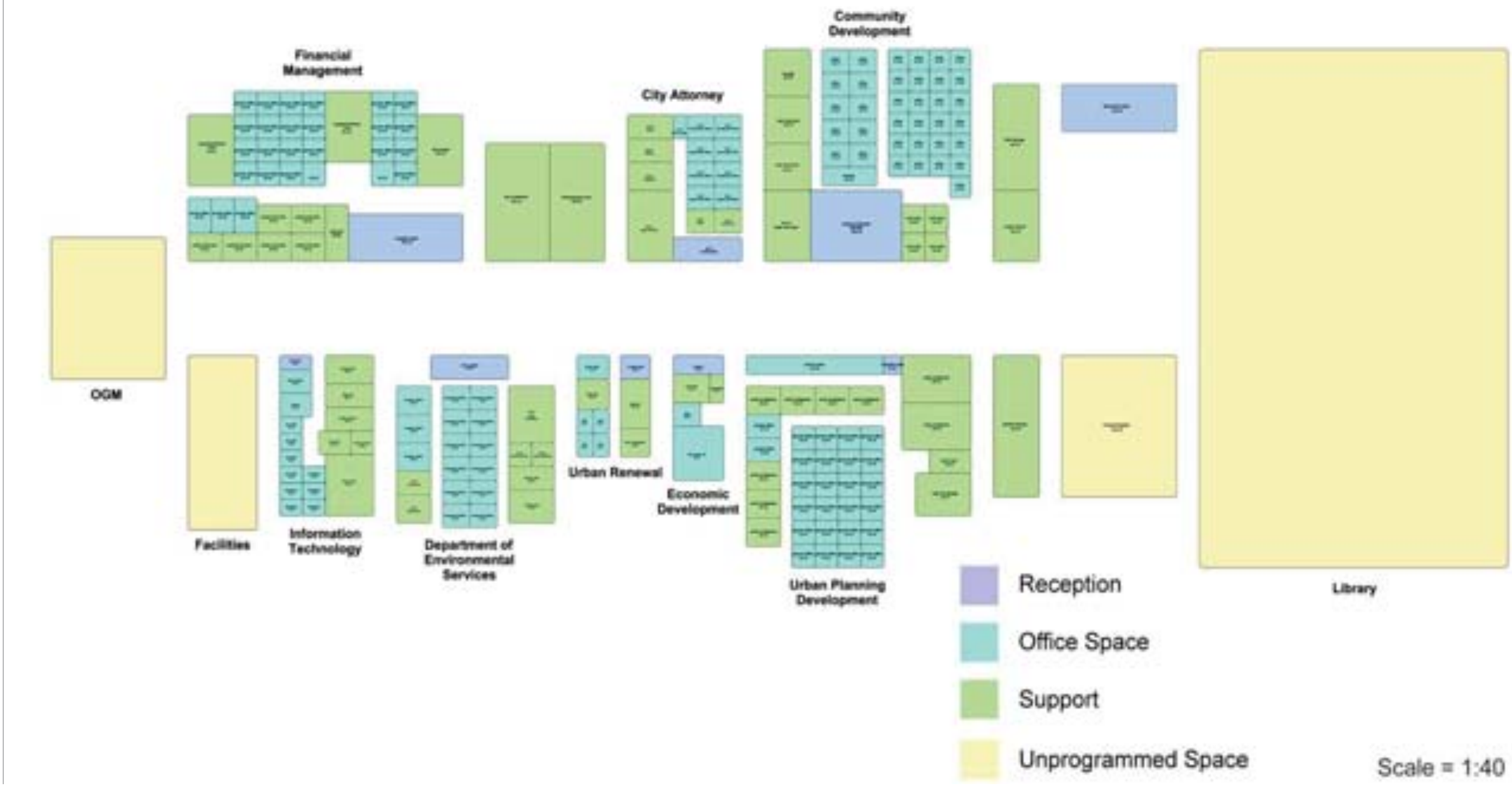
Site Planning

-Location on southwest corner of site
-Allows for maximum southern exposure
-Small footprint used to maximize density on the site

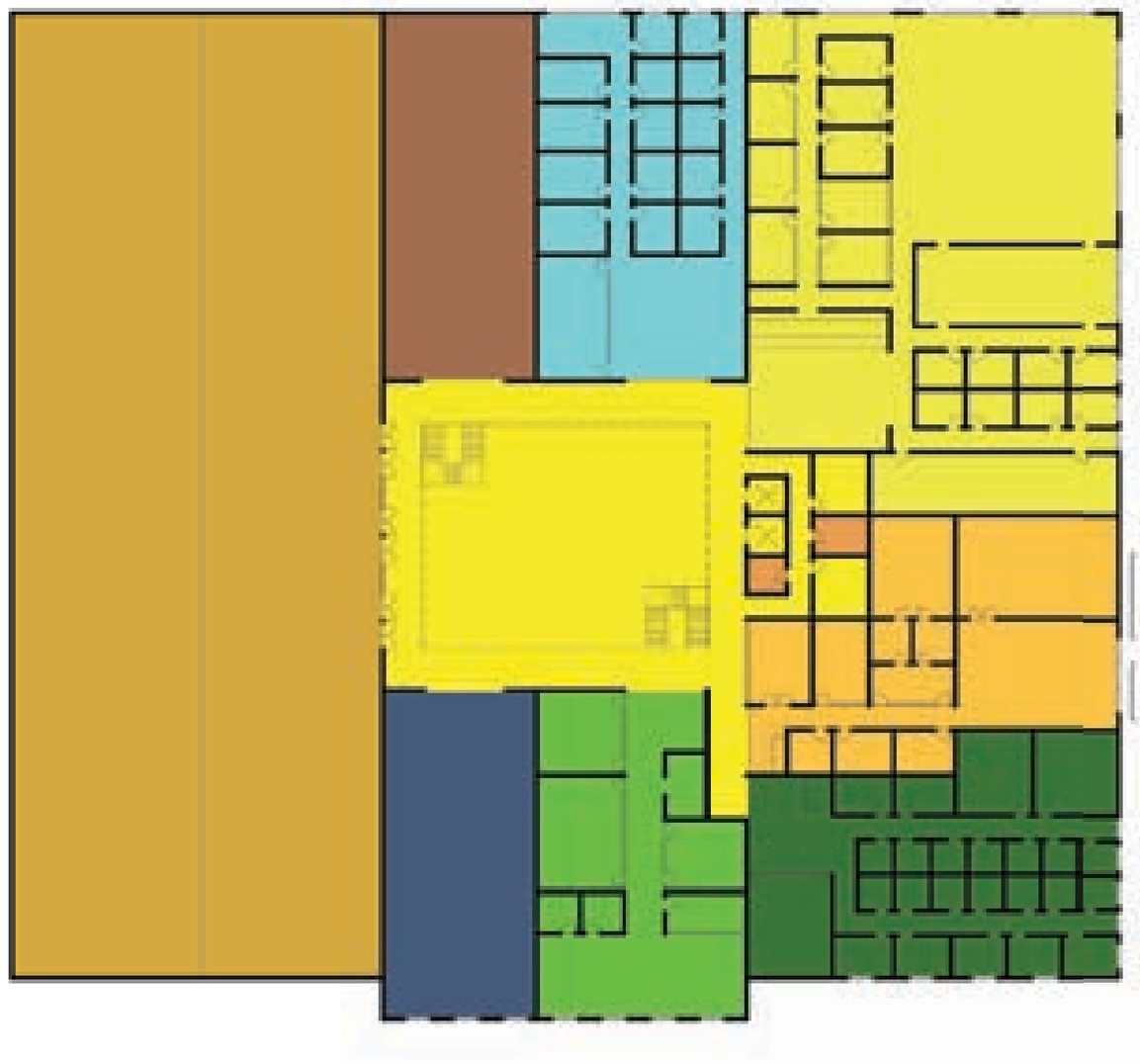
SPACE DEFINING NEEDS BY DEPARTMENT

DEPARTMENT	ACTIVITIES IN SPACE	OCCUPANTS	AREA	HEIGHT	LIGHTING REQUIREMENTS	SCHEDULE	TEMPERATURE NEEDS
URBAN RENEWAL	LIGHT TO MEDIUM OFFICE WORK	6	1200 SF	12’	TASK LIGHTING	8AM-5PM	68-78 F
ECONOMIC DEVELOPMENT	LIGHT TO MEDIUM OFFICE WORK	6	1000 SF	12’	TASK LIGHTING	8AM-5PM	68-78 F
CITY ATTORNEY	LIGHT TO MEDIUM OFFICE WORK	10	2800 SF	12’	TASK LIGHTING	8AM-5PM	68-78 F
DEPARTMENT OF ENVIRONMENTAL SERVICES	LIGHT TO MEDIUM OFFICE WORK	17	2000 SF	12’	TASK LIGHTING	8AM-5PM	68-78 F
FACILITIES	LIGHT TO MEDIUM OFFICE WORK	12	2000 SF	12’	TASK LIGHTING	24 HR ON CALL	68-78 F
FINANCIAL MANAGEMENT	LIGHT TO MEDIUM OFFICE WORK	30	10,530 SF	12’	TASK LIGHTING	8AM-5PM	68-78 F
URBAN PLANNING	LIGHT TO MEDIUM OFFICE WORK	35	5700 SF	12’	TASK LIGHTING	8AM-5PM	68-78 F
COMMUNITY DEVELOPMENT	LIGHT TO MEDIUM OFFICE WORK	40	12,500 SF	12’	TASK LIGHTING	8AM-5PM	68-78 F
INFORMATION TECHNOLOGIES	LIGHT TO MEDIUM OFFICE WORK	12	4000 SF	12’	TASK LIGHTING	24 HR ON CALL	INDEPENDENT CONTROL NEEDED

ADJACENCY DIAGRAMS BY THEIR FUNCIONAL NEEDS



DEPARTMENT LOCATIONS BY THEIR FUNCTIONAL NEEDS



INFORMATION TECHNOLOGY

ECONOMIC DEVELOPMENT URBAN RENEWAL

COMMUNITY DEVELOPMENT

URBAN PLANNING

FINANCE AND MANAGEMENT

OFFICE OF GOVERNANCE AND MANAGEMENT

ENVIRONMENTAL SCIENCES

CITY ATTORNEY

ENERGY ZONES

ZONE 1
CONTAINS MAJOR SPACES OF OCCUPANCY THROUGHOUT THE DAY

ZONE 2
CONTAINS THE MAIN CIRCULATION AND ATRIUM AREA

ZONE 3
LIBRARY

ZONE 4
PUBLIC SPACES

ZONE 5
STORAGE AND LOCKER ROOM AREAS

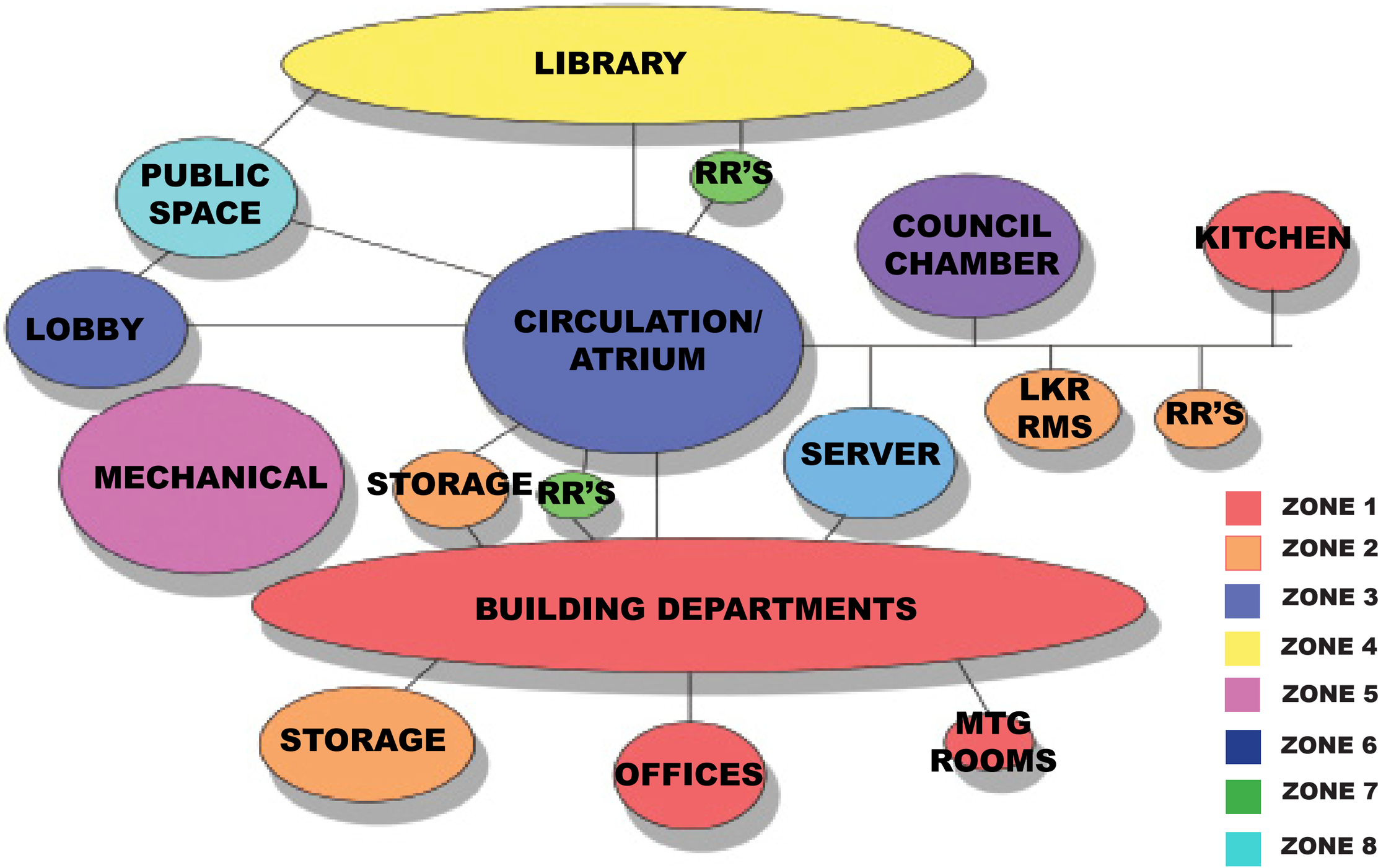
ZONE 6
MECHANCIAL AREAS

ZONE 7
COUNCIL CHAMBER AND MEETING SPACES

ZONE 8
REST ROOMS

ZONE 9
SERVER ROOM

ENERGY ZONE ADJANCINCIES



ENERGY ZONE PLAN ADJACINCIES AND STACKING

SECOND FLOOR

GROUND FLOOR

ZONE 1

ZONE 2

ZONE 3

ZONE 4

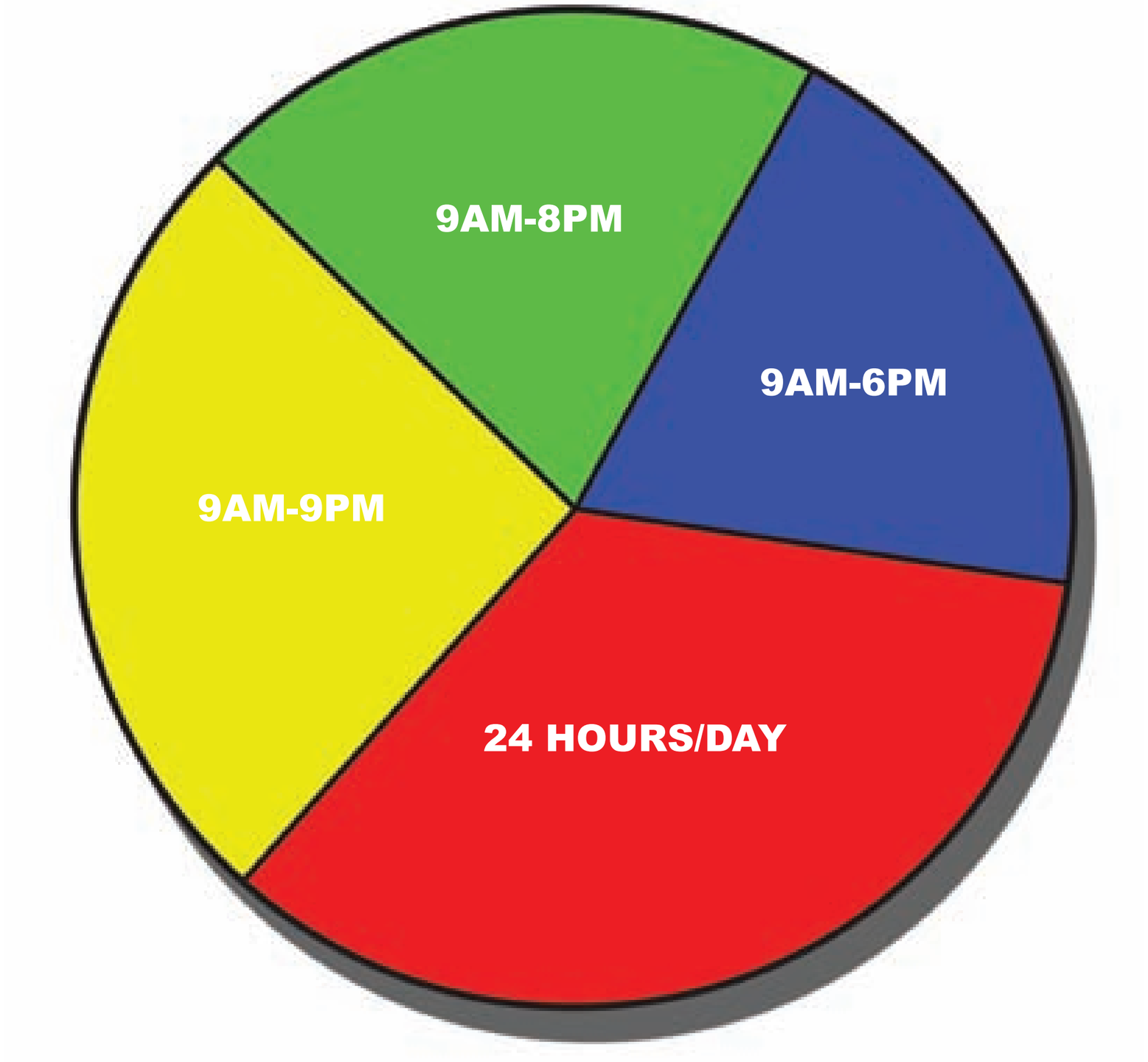
ZONE 5

ZONE 6

ZONE 7

ZONE 8

SCHEDULING NEEDS BY DEPARTMENT USE



FACILITIES & I.T.

LIBRARY

PUBLIC SPACE

URBAN PLANNING
COMMUNITY DEVELOPMENT
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ENERGY STAR BUILDING CALCULATIONS

CURRENT BUILDING ESTIMATES

Target Energy Performance Results (estimated)			
Energy	**Design**	**Target**	**Average Building**
Energy Performance Rating (1-100)	59	50	50
Energy Reduction (%)	10	0	0
Source Energy Use Intensity (kBtu/Sq. Ft./yr)	197	218	218
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Total Annual Energy Cost ($)	$ 133,000	$ 147,002	$ 147,002
Pollution Emissions			
CO2-eq Emissions (metric tons/year)	1,095	1,210	1,210
CO2-eq Emissions Reduction (%)	10%	0%	0%

Facility Information Edit

Gresham City Hall
Gresham, OR 97030
United States

Facility Characteristics Edit	
Space Type	**Gross Floor Area (Sq. Ft.)**
Office	154,022
Total Gross Floor Area	154,022

Estimated Design Energy Edit			
Energy Source	**Units**	**Estimated Total Annual Energy Use**	**Energy Rate ($/Unit)**
Electricity - Grid Purchase	kWh	2,660,000	$ 0.050/kWh

Source: Data adapted from DOE-EIA: See EPA Technical Description.

* The Average Building is equivalent to an EPA Energy Performance Rating of 50.

WHILE THE CURRENT BUILDING IS HIGHER THEN THE AVERAGE BUILDING IT IS FAR FROM THE TARGET OF 100 SET BY THE 2030 CHALLENGE

NEW BUILDING ESTIMATES

Target Energy Performance Results (estimated)			
Energy	**Design**	**Target**	**Average Building**
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Energy Reduction (%)	97	70	0
Source Energy Use Intensity (kBtu/Sq. Ft./yr)	5	56	187
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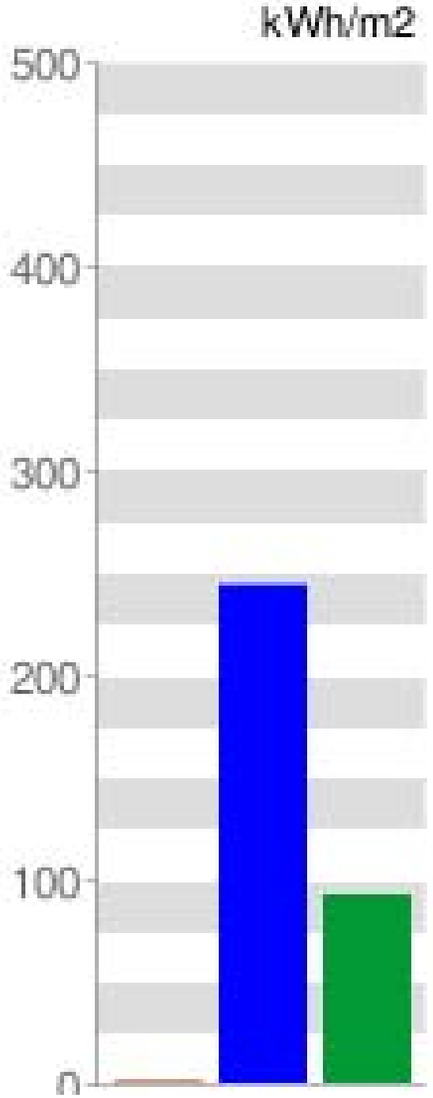
MIT DESIGN ADVISOR TEST RESULTS

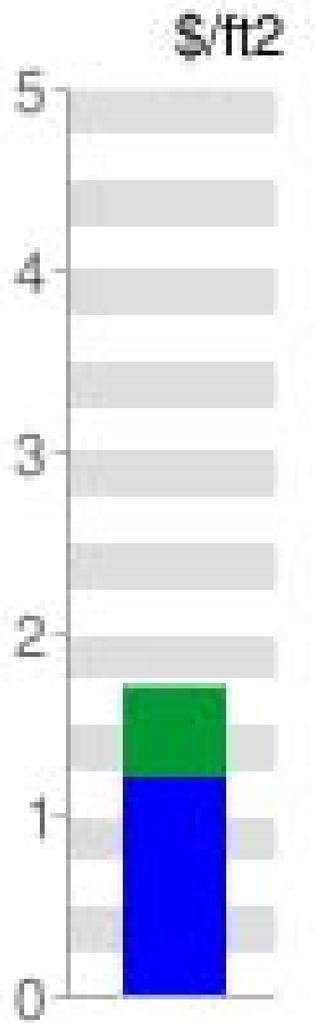
SCENARIO ONE BASED OFF OF CURRENT BUILDING DESIGN

ENERGY USE PER SQUARE METER



HEATING
COOLING
LIGHTING

1ST YEAR ENERGY COST/SQUARE FOOT



HEATING
COOLING
LIGHTING

-50% W-W RATIO

-R-17 WALLS

-R-17 ROOF

-DOUBLE GLAZED GREEN WINDOWS

-LOW MASS WALLS

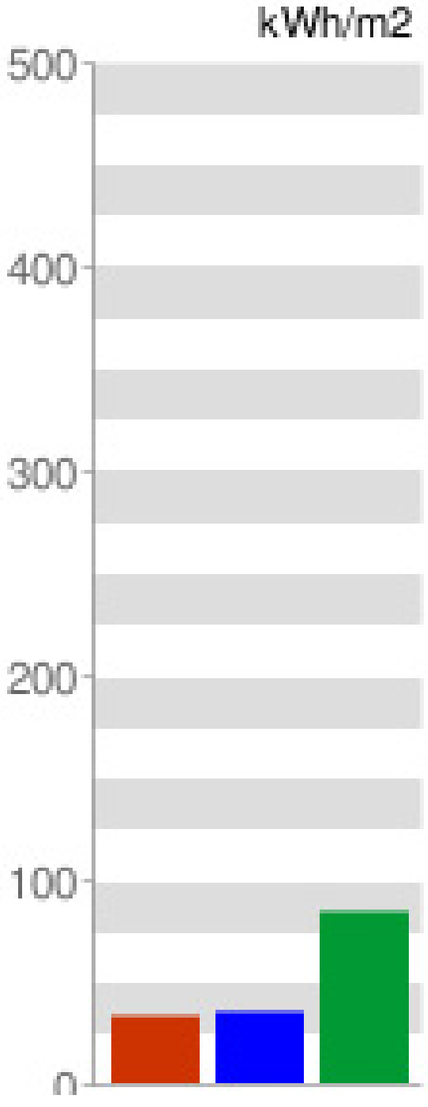
-NO WINDOW SHADES

-LIGHTS DIM TOGETHER

-MECHANICAL HEATING AND COOLING

SCENARIO TWO

ENERGY USE PER SQUARE METER



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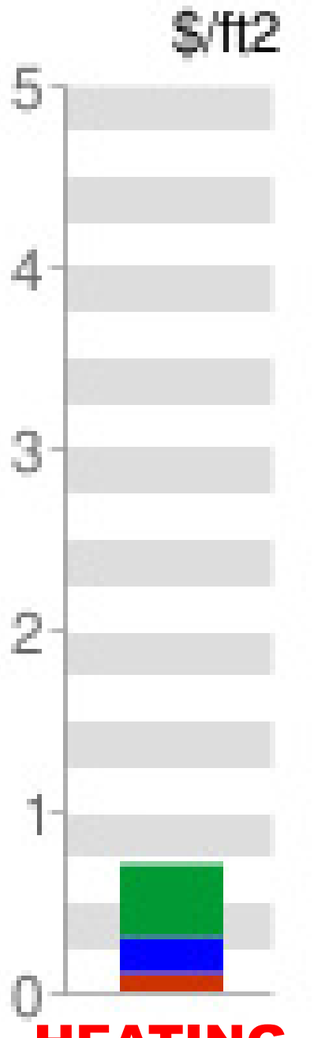


HEATING
COOLING
LIGHTING

-50% W-W RATIO

-R-28 WALLS

-R-28 ROOF

-TRIPLE GLAZED HIGH PERFORMANCE WINDOWS

-HIGH MASS WALLS

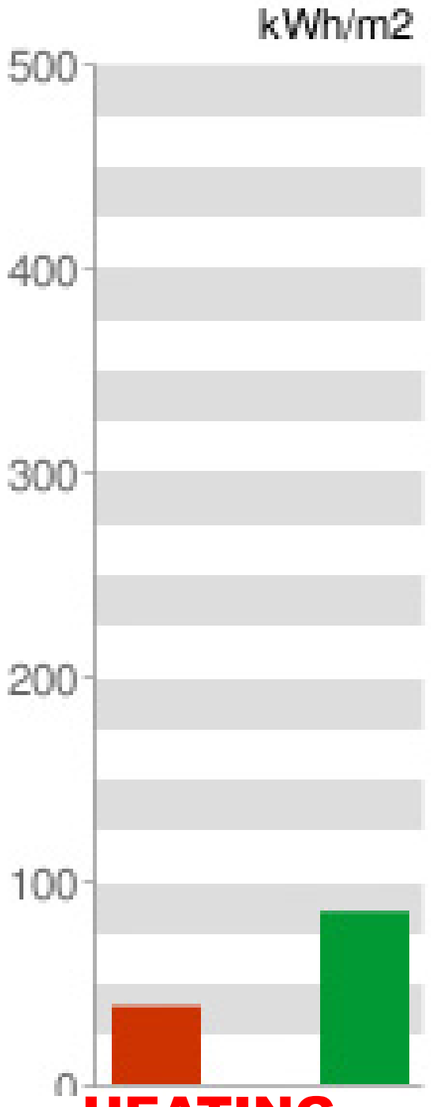
-1’ WINDOW PUNCHES

-LIGHTS DIM SEPERATELY

-JOINT MECHANICAL AND NATURAL VENTILATION

SCENARIO THREE

ENERGY USE PER SQUARE METER



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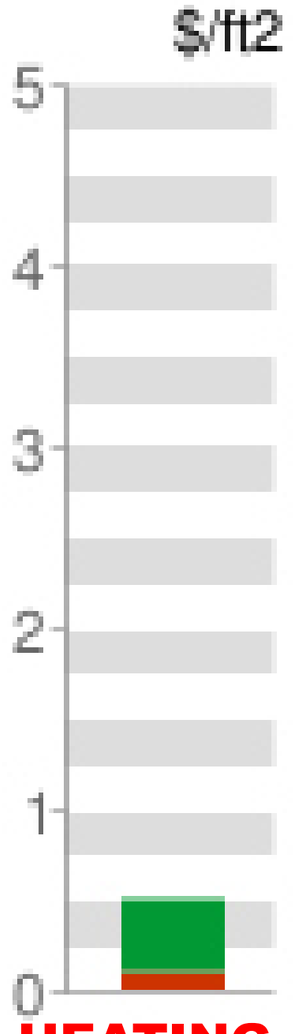


-50% W-W RATIO

-R-60 WALLS

-R-60 ROOF

-TRIPLE GLAZED HIGH PERFORMANCE WINDOWS

-HIGH MASS WALLS

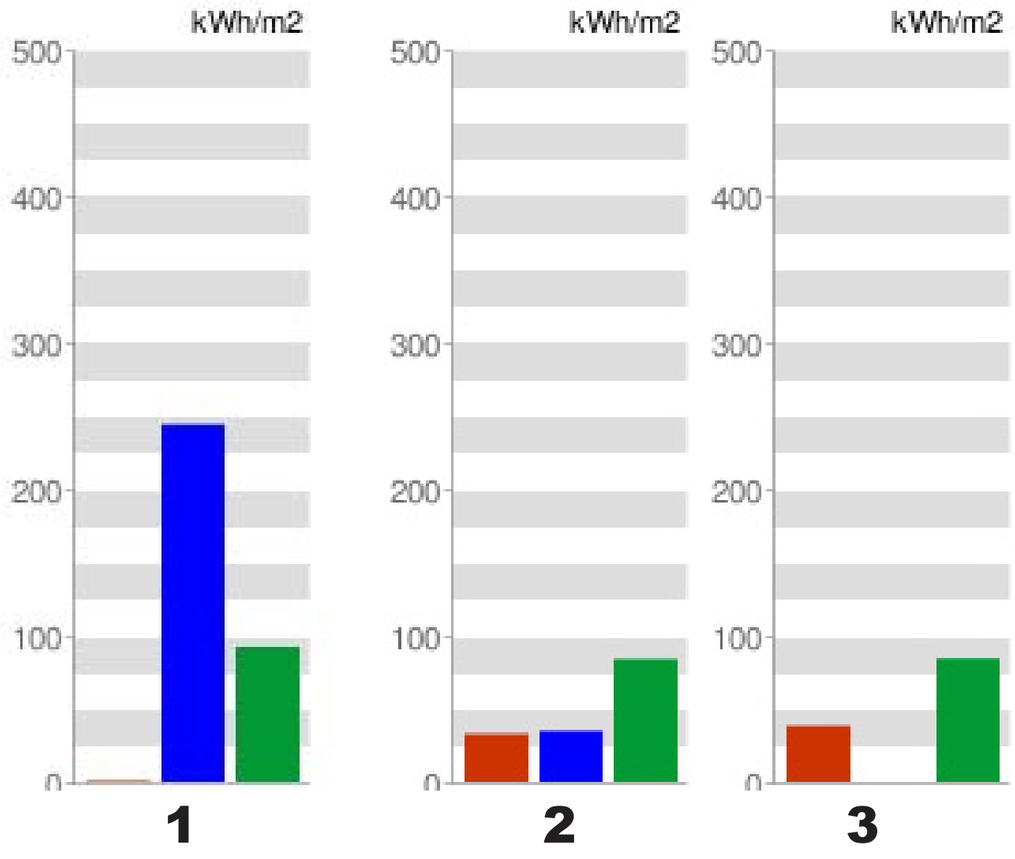
-3’ WINDOW SHADES

-LIGHTS DIM SEPERATELY

-NATURAL COOLING AND MECHANICAL HEATING

RESULTS COMPARED

ENERGY USE PER SQUARE METER



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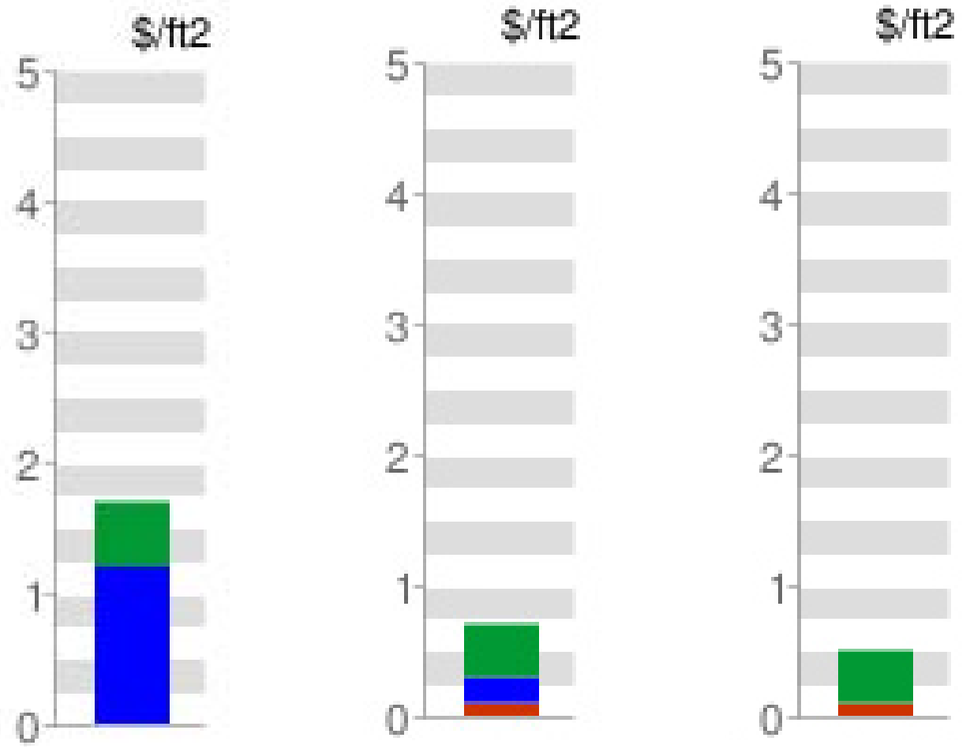
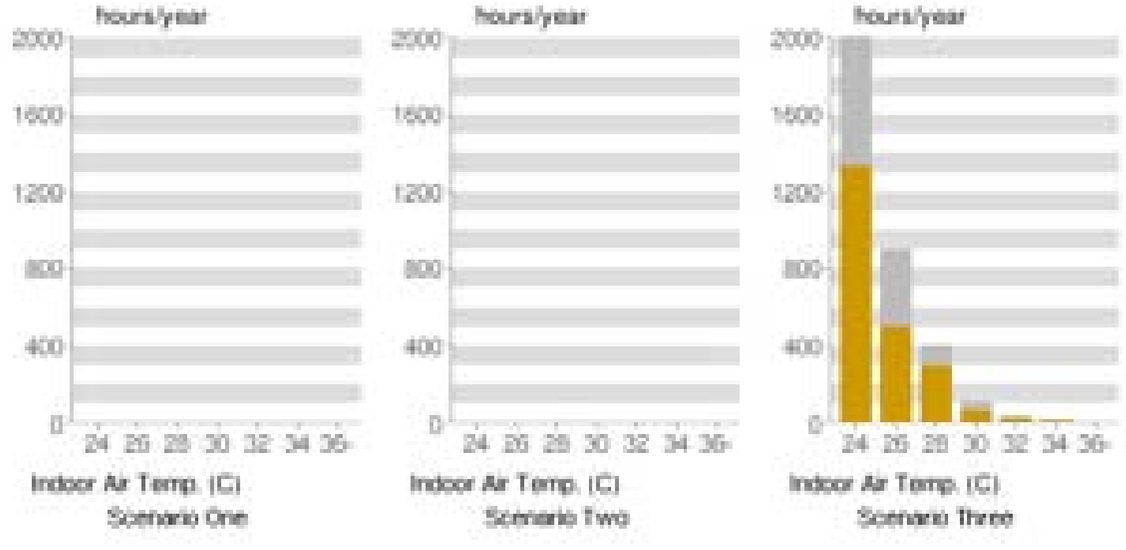
1ST YEAR ENERGY COST/SQUARE FOOT





INDOOR AIR TEMPERATURE FROM NATURAL VENTILATION

IES VE-WARE 2030 CHALLENGE RESULTS

09/Dec/2009
Contents:
Energy & Carbon results
Architecture 2030 Challenge
Climate Energy Index

Energy and Carbon Results
Proposed building energy use 6,160.71 MBtu/yr

Proposed building carbon emissions 744.7 tons CO2/yr

Energy breakdown:

Heating	18%
Cooling	0%
Lights	32%
Equipment	50%

AIA 2030 Challenge - summary

Current design meets 2030 Challenge Target for: Current!

Design Building Energy Use Intensity:

39 kBTU/ft2
(Design EUI = Energy / Building Area)

Average Building Energy Use Intensity:

82 kBTU/ft2
(Used to generate 2030 Challenge Targets)

Building Type:

Administrative/Professional and Government Office

Analysis Details:

The Climate Energy Index is simple global unitary measure of energy required to maintain air at ASHRAE 55: 1981 comfort conditions. The Index is solely dependant on the climate data.
Building simulation results can be compared with the Index to provide a simple measure of performance in the context of global climate

Location:
Portland, Oregon

(45.58N, 122.58W)

Climate File: PortlandTM2.fwt

Calculated: 09/Dec/2009 at 16:22

Calculation period: 01/Jan - 31/Dec

The AIA 2030 Challenge provides a roadmap of targets for US building projects culminating in being carbon neutral by 2030
Implementation of the Challenge requires the use of targets by building type derived from current building stock benchmarks

Challenge targets for selected building type:

Year	**%reduction**	**kBTU/ft2**
Current	50	42
2010	60	34
2015	70	29
2020	80	25
2025	90	25
2030	100	0

For certain building types targets are calculated using Energy Star methodology where energy consumption is not direct % reduction against average

Climate Energy Metric

24 hour use	2,996.1Btu/yr
Proposed hours of use	1,004.7 Btu/yr
Using the local fuel mix	0.1lbCO2/yr

“IF A BUILDING DESIGN IS OPTIMIZED TO TAKE ADVANTAGE OF IT’S INTERACTION WITH THE CLIMATE AND USE PATTERNS, BOTH IT’S TOTAL AND PEAK ENERGY USE CAN BE SUBSTANTIALLY DECREASED, REDUCING FIRST COST AND OPERATING COSTS”

G.Z.BROWN

The new Gresham City Hall will act as an urban catalyst for the Gresham Downtown area. A civic building needs to be a precedent in the area for energy conservation. Energy conservation was a major focus for the entire programming process.

Conservation led us to help make many of our programmatic decisions in the building, especially when locating all of the different inhabitants of the building. Locating the different users in the correct areas of the building will help the building to use the least amount of energy.

The orientation of the building on the site was an important concern. The building is located on the southwest corner of our site to take advantage of the sunlight during the peak work hours of the day. Because of this orientation the building is also orientated to take advantage of passive heating during the cooler winter months to minimize heat loss. This building will be one of the taller buildings in the direct vicinity so there will be no hazards of other buildings blocking the sun and wind at its location.

The circulation system used provides a major source of the energy conservation in the building. The main circulation area for the building is located around a large atrium space. This atrium receives ample amounts of daylight throughout the entire day, lighting all areas at different times of the day. By focusing our major areas of circulation around this atrium there is a decreased need for artificial lighting in the major circulation areas. Not only does this cut down on the lighting of this area, but the spaces adjacent to the atrium area will also receive most of the lighting needs from this central atrium space. Because of this, it also decreases the distance between the windows on the exterior side to the atrium side, so the entire building can be lit naturally instead of artificially.

Cross ventilation will be easily accomplished by slimming the building down with a single loaded corridor along the atrium and utilizing operable windows. Using operable windows will also take advantage of night time cooling during the hot summer months as well. Not only does the orientation and planned spaces take advantage of passive lighting, heating, and cooling strategies, but the materials used for the building will as well.

By cladding our building in brick and using a thick masonry wall we have increased the thermal mass of the building. Doing this has helped us cool the building in the summer by soaking up the heat in the daytime and cooling it at night, and doing the opposite in the winter time to help heat the building.

ENERGY CONSERVATION STRATEGIES THROUGH ARCHITECTURE

Day Lighting

-45% Window-to-wall ratio provides for maximum lighting and minimal heat loss
-Deep window punches to block direct light during cooling seasons
-Atrium Courtyard
    -Allows for major circulation spaces to be lit naturally throughout the day
    -Areas around the atrium also receive natural light

Passive Heating & Cooling

-High thermal mass in walls, ceilings, & floors
-Operable windows for ventilation & cooling
-Operable atrium for stack ventilation

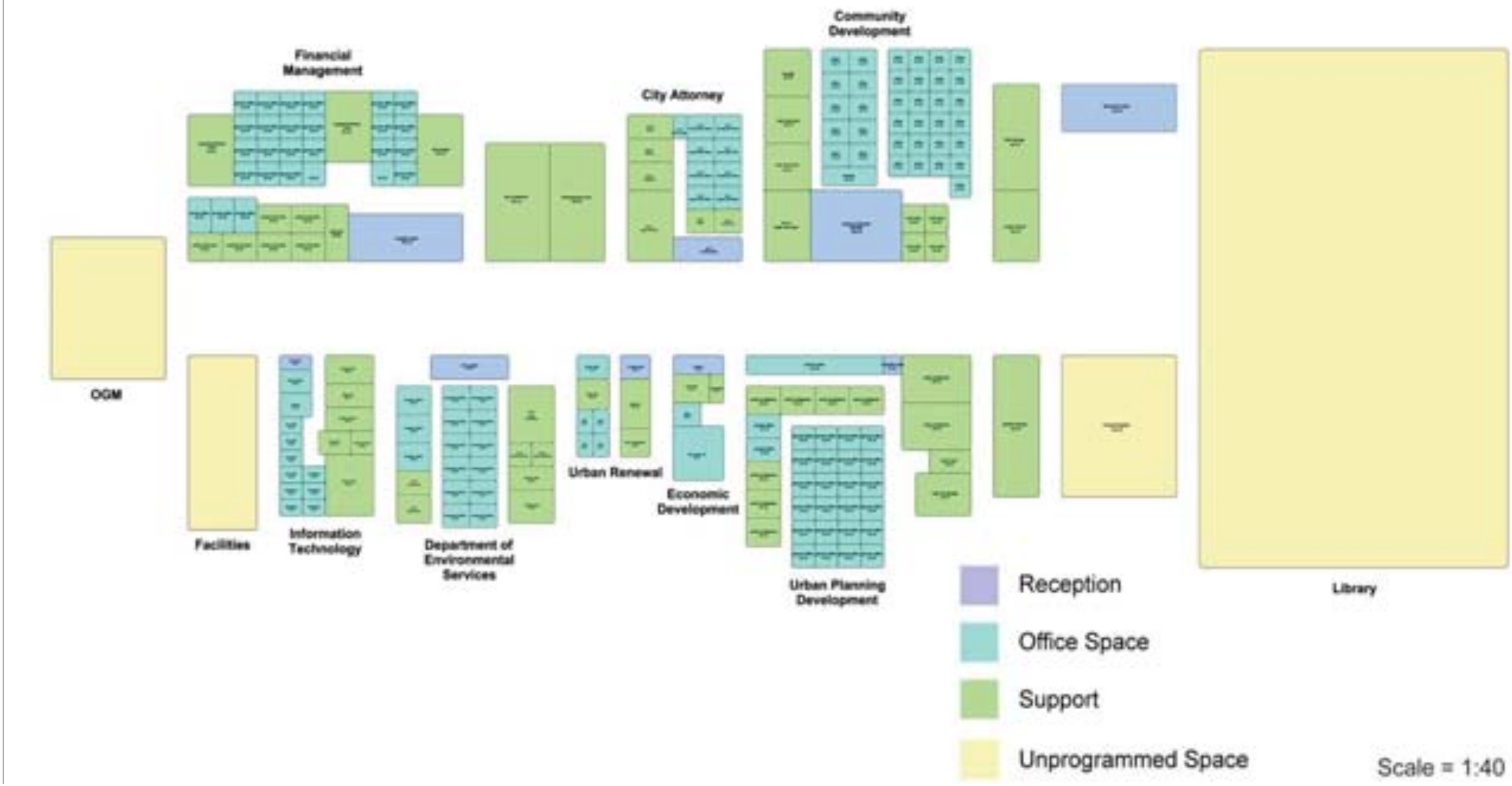
Site Planning

-Location on southwest corner of site
-Allows for maximum southern exposure
-Small footprint used to maximize density on the site

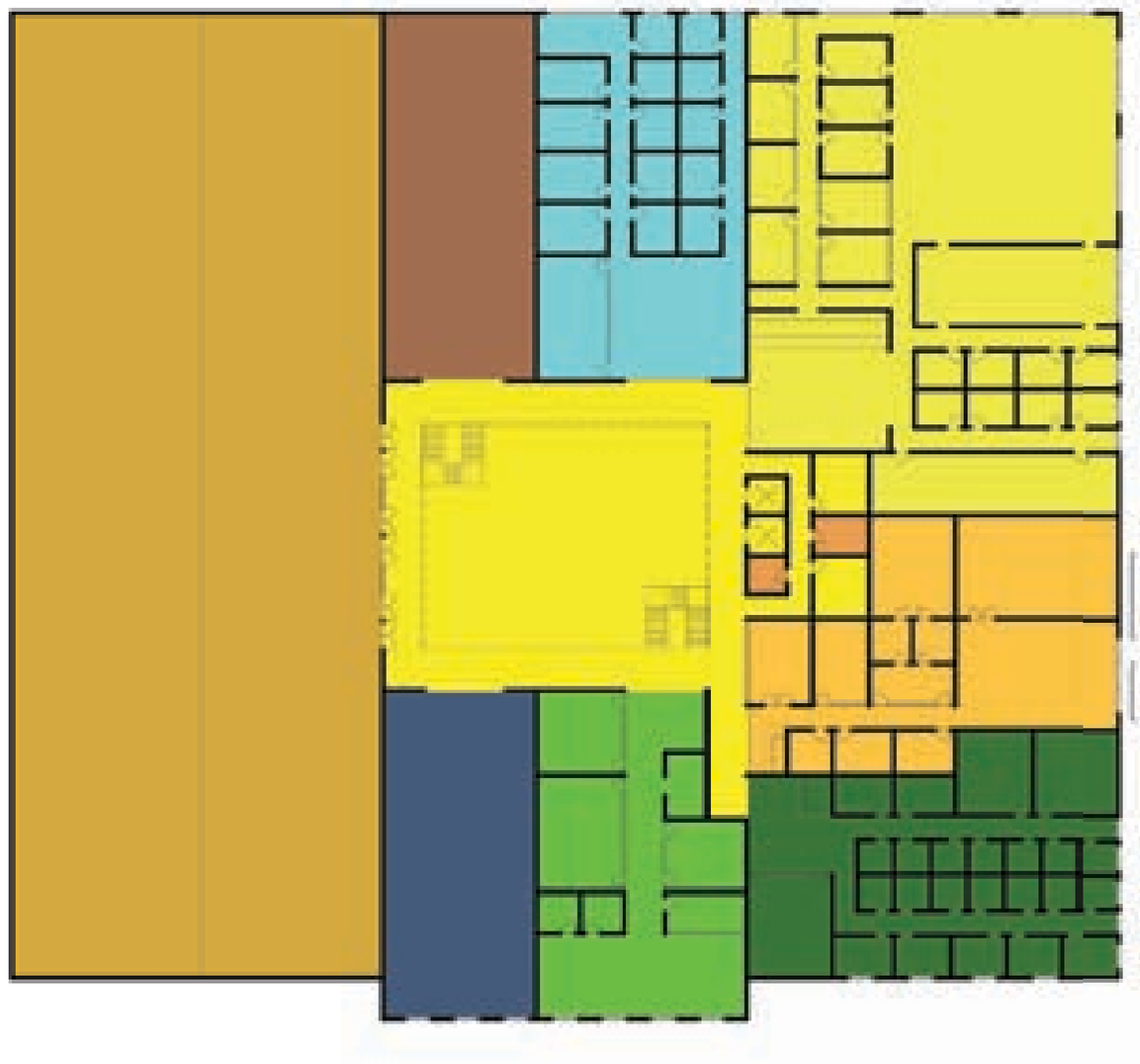
SPACE DEFINING NEEDS BY DEPARTMENT

DEPARTMENT	ACTIVITIES IN SPACE	OCCUPANTS	AREA	HEIGHT	LIGHTING REQUIREMENTS	SCHEDULE	TEMPERATURE NEEDS
URBAN RENEWAL	LIGHT TO MEDIUM OFFICE WORK	6	1200 SF	12’	TASK LIGHTING	8AM-5PM	68-78 F
ECONOMIC DEVELOPMENT	LIGHT TO MEDIUM OFFICE WORK	6	1000 SF	12’	TASK LIGHTING	8AM-5PM	68-78 F
CITY ATTORNEY	LIGHT TO MEDIUM OFFICE WORK	10	2800 SF	12’	TASK LIGHTING	8AM-5PM	68-78 F
DEPARTMENT OF ENVIRONMENTAL SERVICES	LIGHT TO MEDIUM OFFICE WORK	17	2000 SF	12’	TASK LIGHTING	8AM-5PM	68-78 F
FACILITIES	LIGHT TO MEDIUM OFFICE WORK	12	2000 SF	12’	TASK LIGHTING	24 HR ON CALL	68-78 F
FINANCIAL MANAGEMENT	LIGHT TO MEDIUM OFFICE WORK	30	10,530 SF	12’	TASK LIGHTING	8AM-5PM	68-78 F
URBAN PLANNING	LIGHT TO MEDIUM OFFICE WORK	35	5700 SF	12’	TASK LIGHTING	8AM-5PM	68-78 F
COMMUNITY DEVELOPMENT	LIGHT TO MEDIUM OFFICE WORK	40	12,500 SF	12’	TASK LIGHTING	8AM-5PM	68-78 F
INFORMATION TECHNOLOGIES	LIGHT TO MEDIUM OFFICE WORK	12	4000 SF	12’	TASK LIGHTING	24 HR ON CALL	INDEPENDENT CONTROL NEEDED

ADJACENCY DIAGRAMS BY THEIR FUNCIONAL NEEDS



DEPARTMENT LOCATIONS BY THEIR FUNCTIONAL NEEDS



INFORMATION TECHNOLOGY

ECONOMIC DEVELOPMENT URBAN RENEWAL

COMMUNITY DEVELOPMENT

URBAN PLANNING

FINANCE AND MANAGEMENT

OFFICE OF GOVERNANCE AND MANAGEMENT

ENVIRONMENTAL SCIENCES

CITY ATTORNEY

ENERGY ZONES

ZONE 1
CONTAINS MAJOR SPACES OF OCCUPANCY THROUGHOUT THE DAY

ZONE 2
CONTAINS THE MAIN CIRCULATION AND ATRIUM AREA

ZONE 3
LIBRARY

ZONE 4
PUBLIC SPACES

ZONE 5
STORAGE AND LOCKER ROOM AREAS

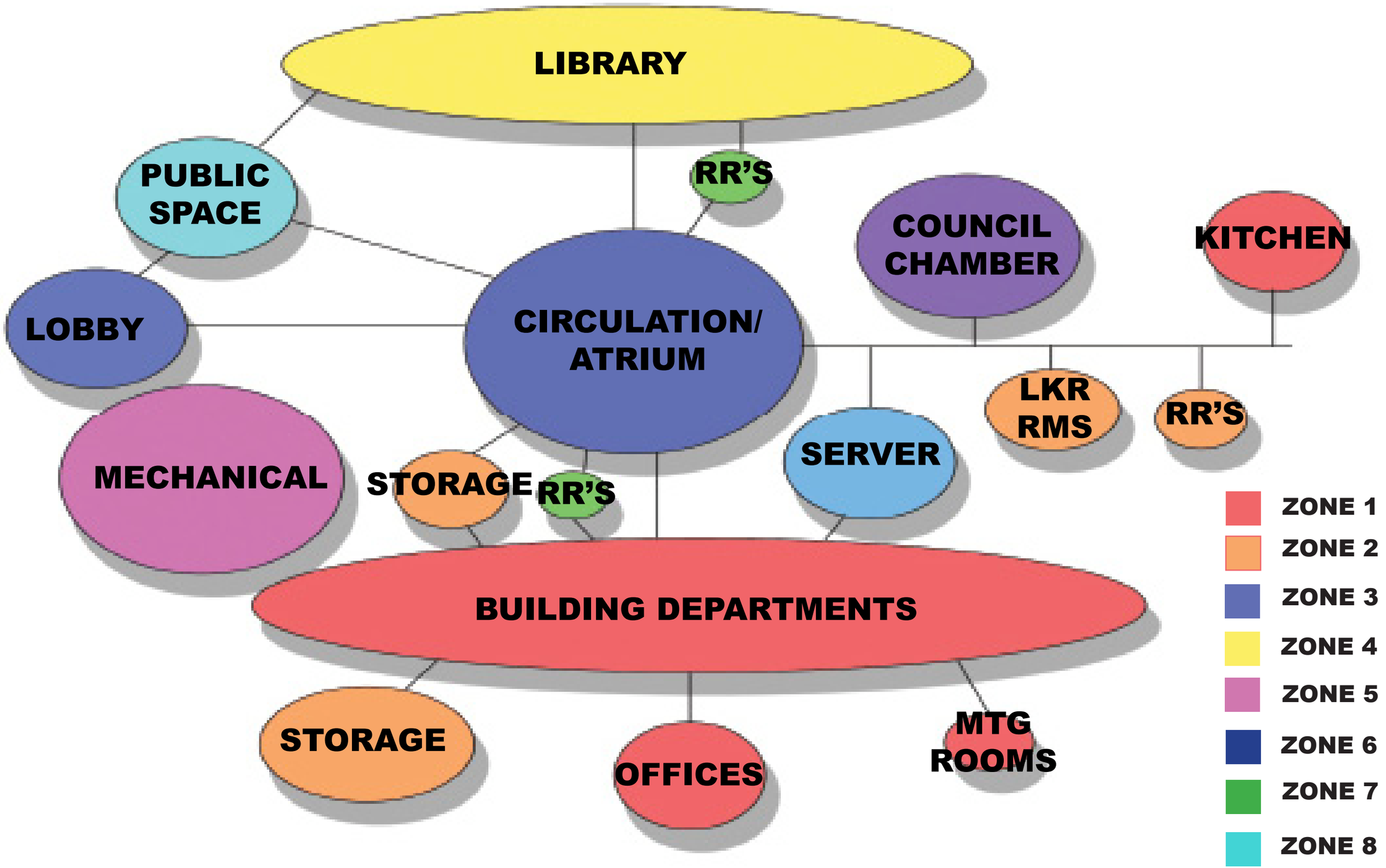
ZONE 6
MECHANCIAL AREAS

ZONE 7
COUNCIL CHAMBER AND MEETING SPACES

ZONE 8
REST ROOMS

ZONE 9
SERVER ROOM

ENERGY ZONE ADJANCINCIES



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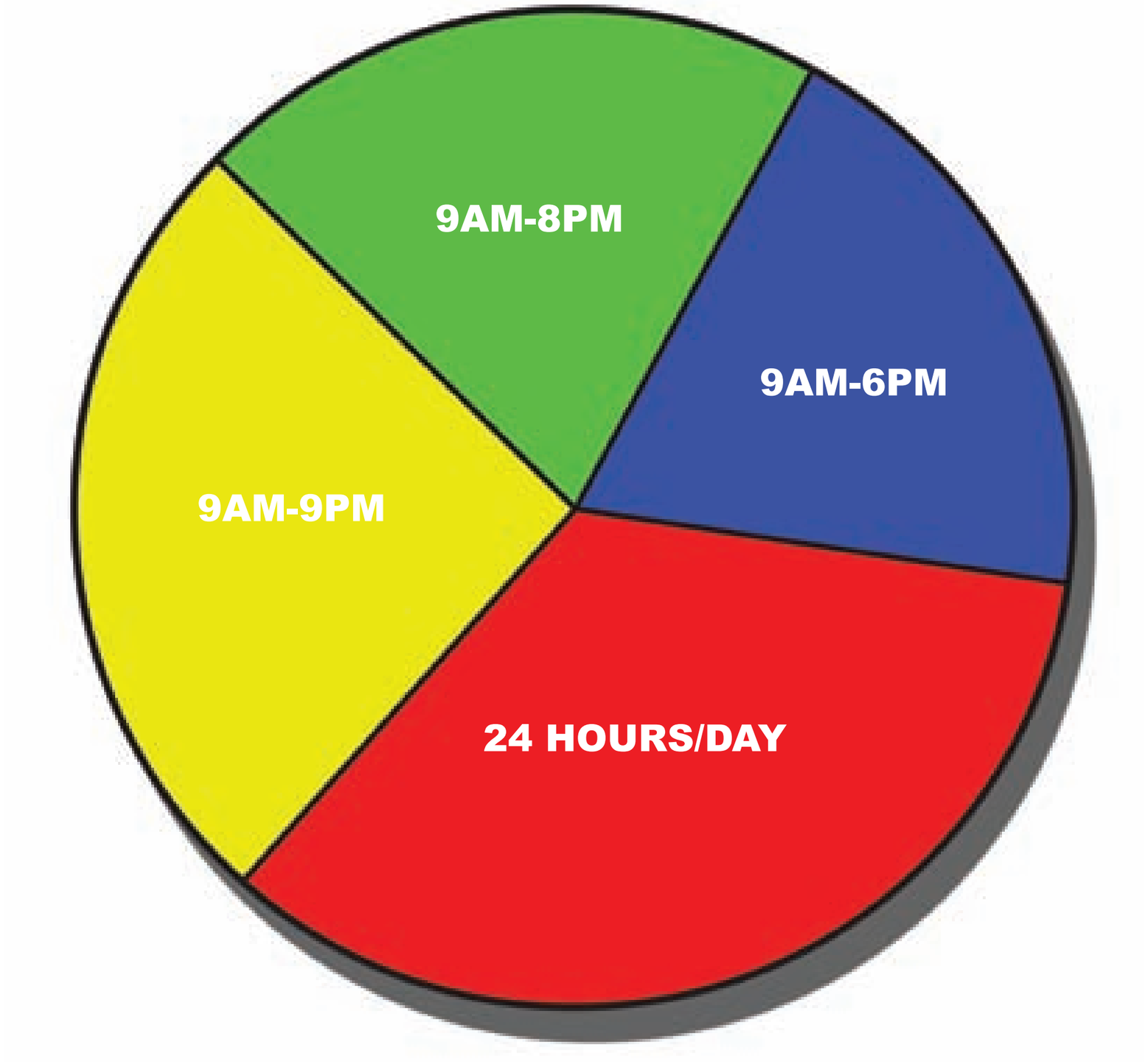

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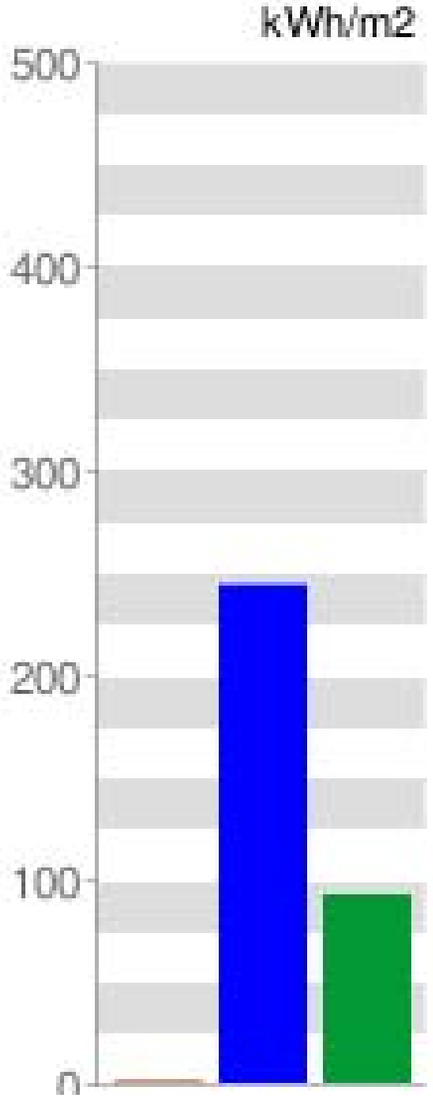

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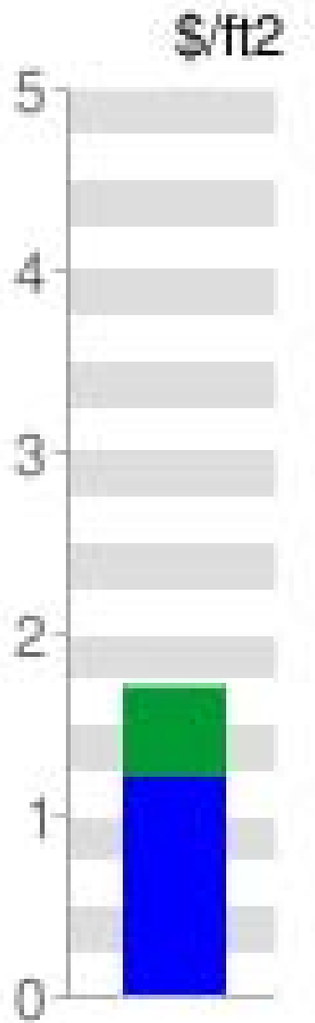
1ST YEAR ENERGY COST/SQUARE FOOT



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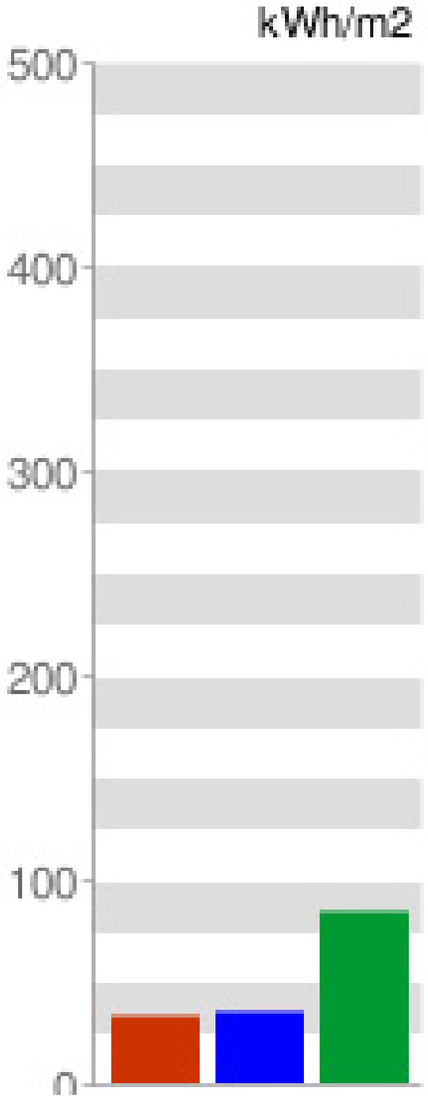
SCENARIO TWO

ENERGY USE PER SQUARE METER



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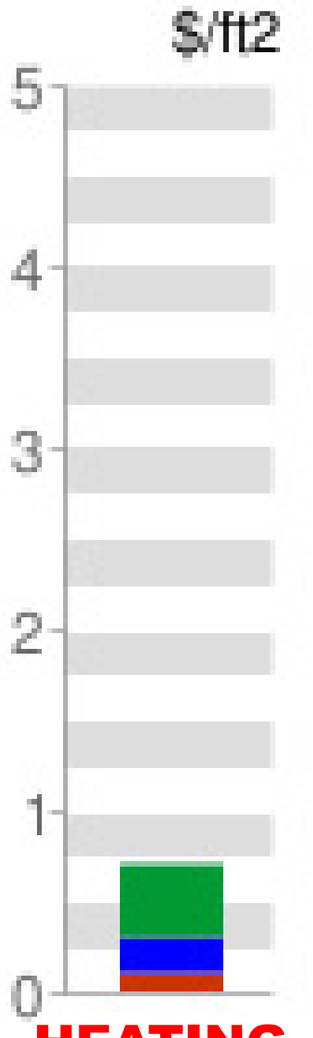

HEATING
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-R-28 WALLS

-R-28 ROOF

-TRIPLE GLAZED HIGH PERFORMANCE WINDOWS

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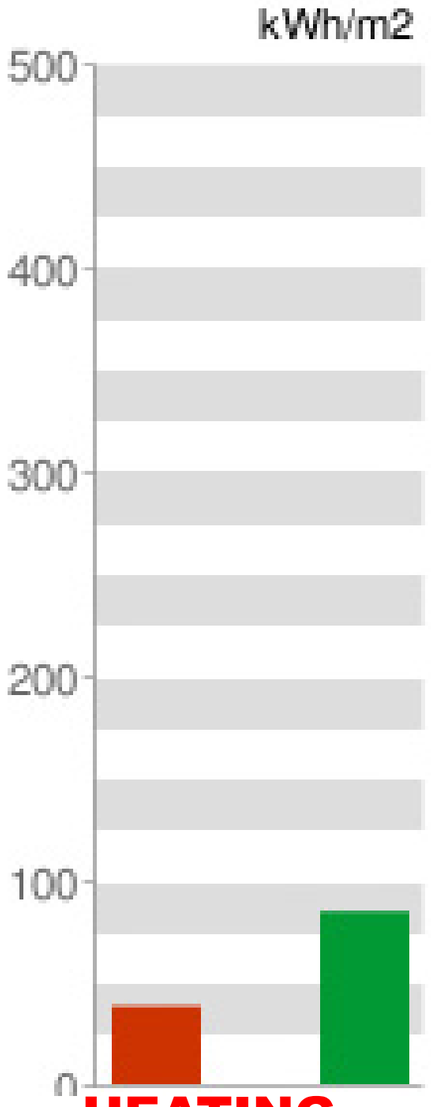
-JOINT MECHANICAL AND NATURAL VENTILATION

SCENARIO THREE

ENERGY USE PER SQUARE METER



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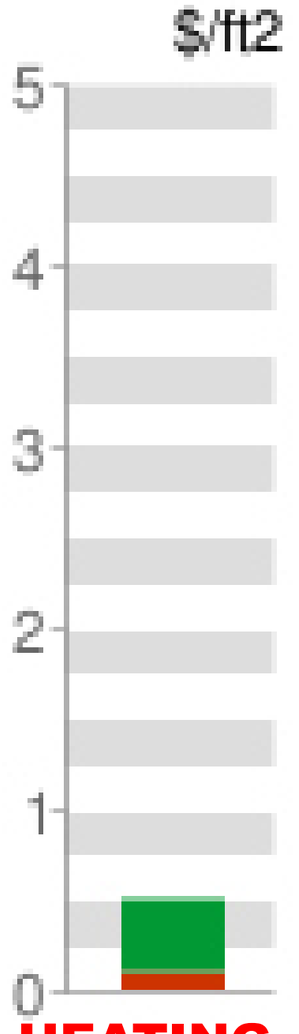


-50% W-W RATIO

-R-60 WALLS

-R-60 ROOF

-TRIPLE GLAZED HIGH PERFORMANCE WINDOWS

-HIGH MASS WALLS

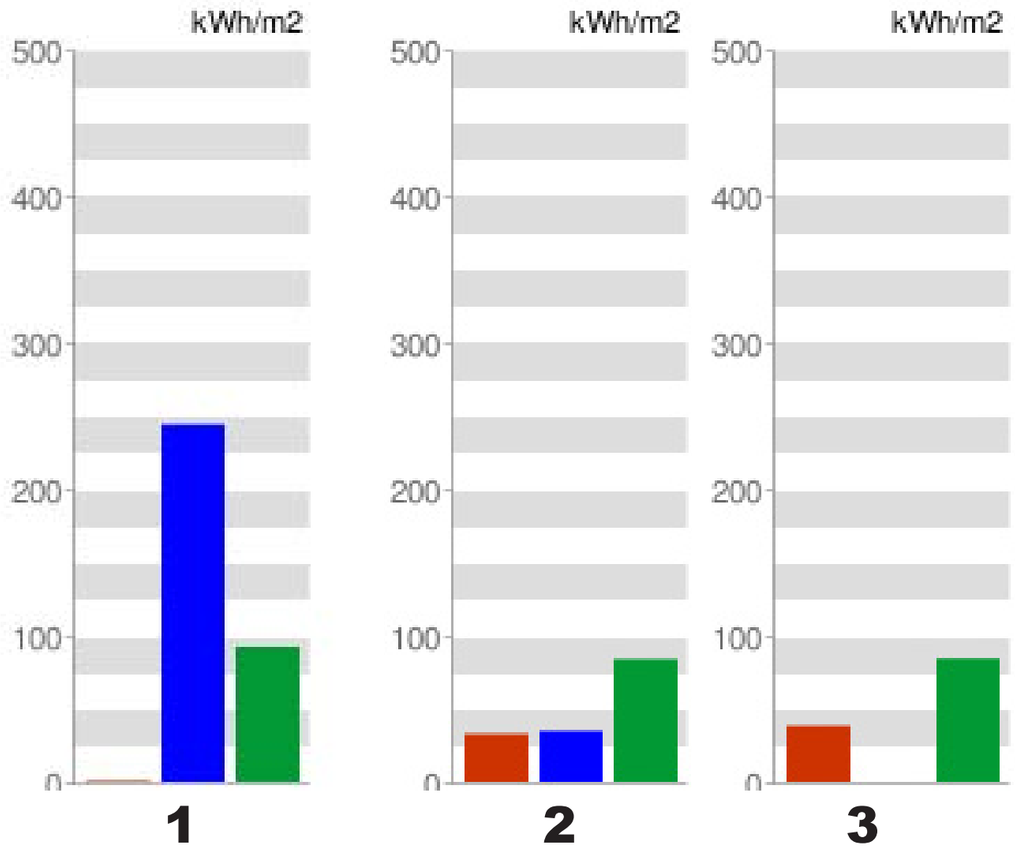
-3’ WINDOW SHADES

-LIGHTS DIM SEPERATELY

-NATURAL COOLING AND MECHANICAL HEATING

RESULTS COMPARED

ENERGY USE PER SQUARE METER



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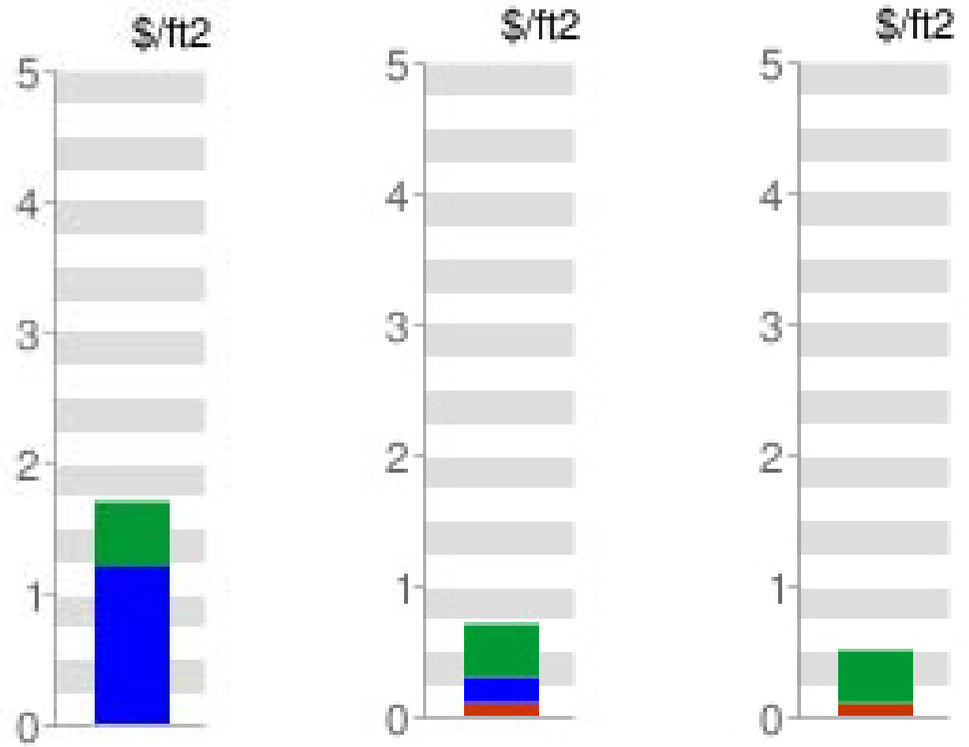
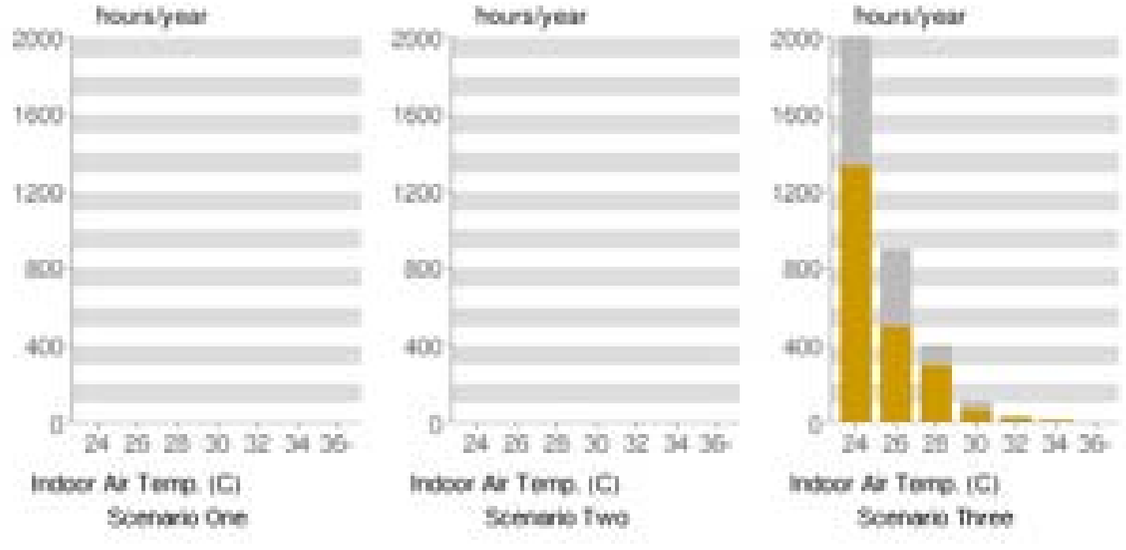
1ST YEAR ENERGY COST/SQUARE FOOT





INDOOR AIR TEMPERATURE FROM NATURAL VENTILATION

IES VE-WARE 2030 CHALLENGE RESULTS

09/Dec/2009
Contents:
Energy & Carbon results
Architecture 2030 Challenge
Climate Energy Index

Energy and Carbon Results
Proposed building energy use 6,160.71 MBtu/yr

Proposed building carbon emissions 744.7 tons CO2/yr

Energy breakdown:

Heating	18%
Cooling	0%
Lights	32%
Equipment	50%

AIA 2030 Challenge - summary

Current design meets 2030 Challenge Target for: Current!

Design Building Energy Use Intensity:

39 kBTU/ft2
(Design EUI = Energy / Building Area)

Average Building Energy Use Intensity:

82 kBTU/ft2
(Used to generate 2030 Challenge Targets)

Building Type:

Administrative/Professional and Government Office

Analysis Details:

The Climate Energy Index is simple global unitary measure of energy required to maintain air at ASHRAE 55: 1981 comfort conditions. The Index is solely dependant on the climate data.
Building simulation results can be compared with the Index to provide a simple measure of performance in the context of global climate

Location:
Portland, Oregon

(45.58N, 122.58W)

Climate File: PortlandTM2.fwt

Calculated: 09/Dec/2009 at 16:22

Calculation period: 01/Jan - 31/Dec

The AIA 2030 Challenge provides a roadmap of targets for US building projects culminating in being carbon neutral by 2030
Implementation of the Challenge requires the use of targets by building type derived from current building stock benchmarks

Challenge targets for selected building type:

Year	**%reduction**	**kBTU/ft2**
Current	50	42
2010	60	34
2015	70	29
2020	80	25
2025	90	25
2030	100	0

For certain building types targets are calculated using Energy Star methodology where energy consumption is not direct % reduction against average

Climate Energy Metric

24 hour use	2,996.1Btu/yr
Proposed hours of use	1,004.7 Btu/yr
Using the local fuel mix	0.1lbCO2/yr