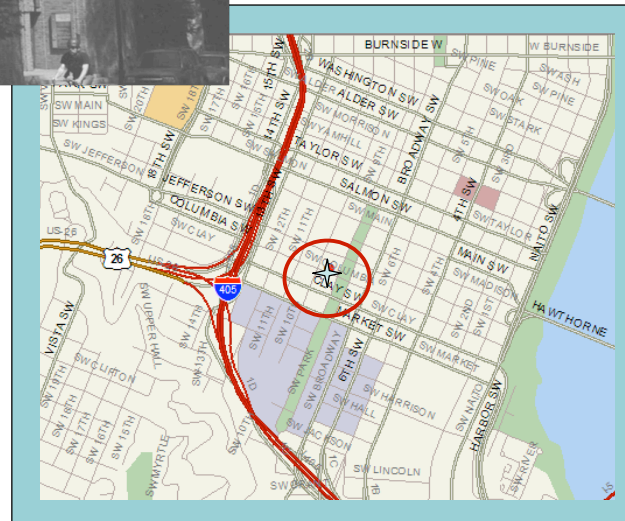




Three-quarter view of southeast corner



*Aerial view -
hipped western roof, central dome, eastern gabled roof*



*Located on the western side of the south park blocks
at the corner of Columbia and Park*



Footprint Size:

11,550 sq ft
(3 of 3 ½ city lots)

**Approximate Gross
Square Footage:**

27,124 sq ft

Sixth Church of Christ Scientist

1331 SW Park Ave, Portland, OR

Built: 1932, masonry construction

Architect: Morris Whitehouse & Associates

Style: Art Deco

Historic Status: NR eligible under criteria A and C



South East Façades

East Façade
Front Entrance



North Façade

Exterior Character Defining Features:

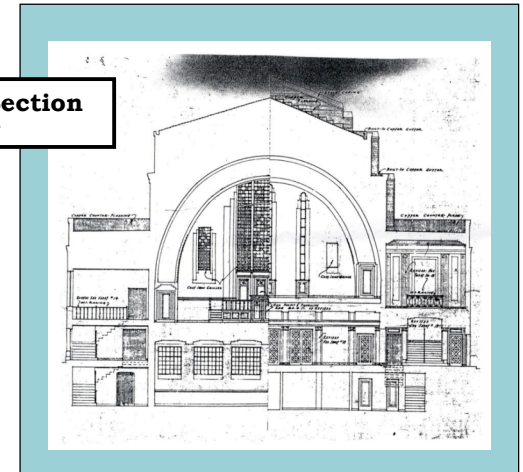
- ❖ Stepped “ziggurat” massing
- ❖ Intricate brickwork; orange and tan Roman brick
- ❖ Tall vertical, multi-pane windows (limited)
- ❖ Stone coping and defined belt courses
- ❖ Park-facing entrance



South Façade
Reading Room

Reading Room, built in the early 1960s.

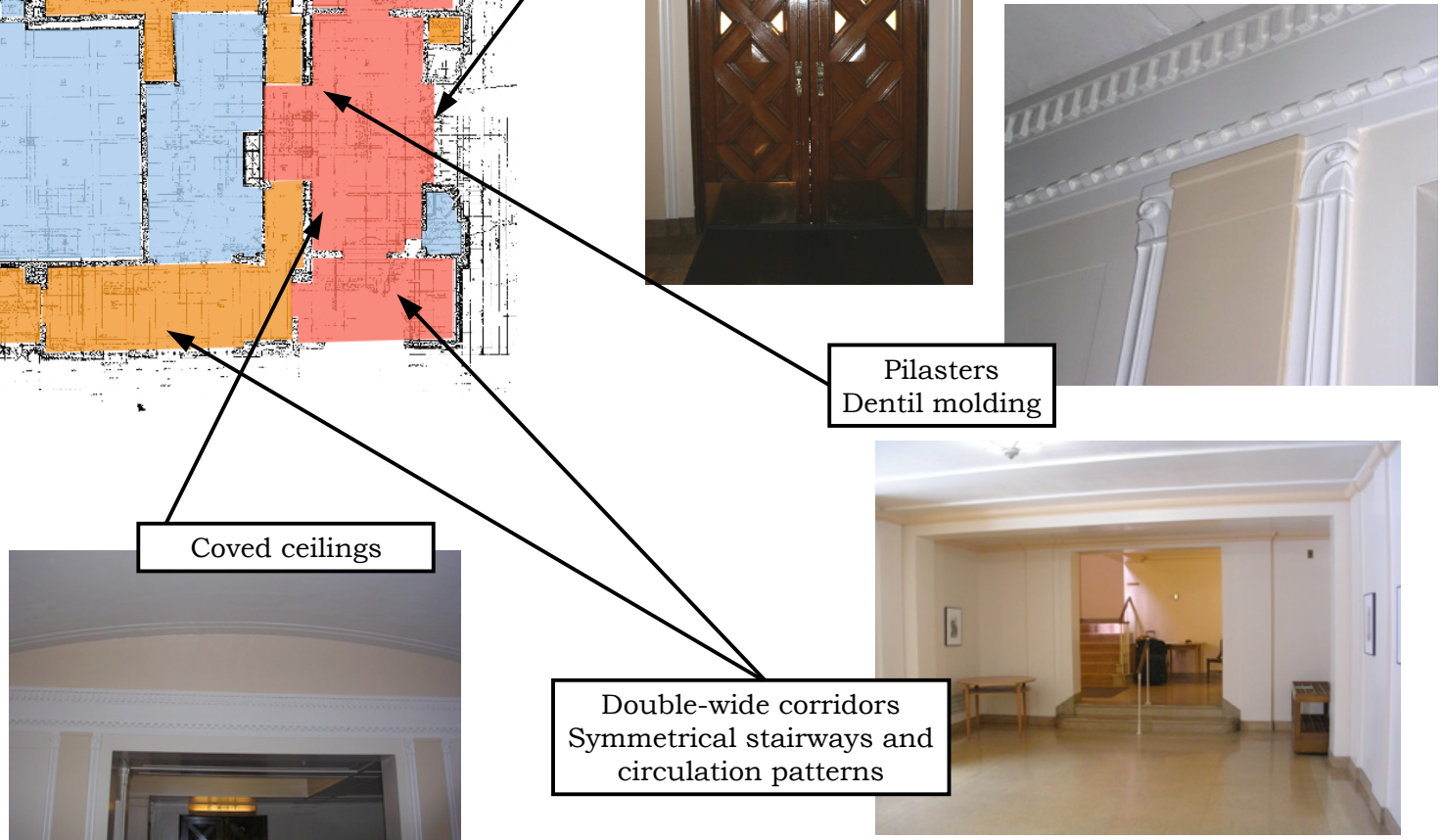
Dome Section
Sanctuary



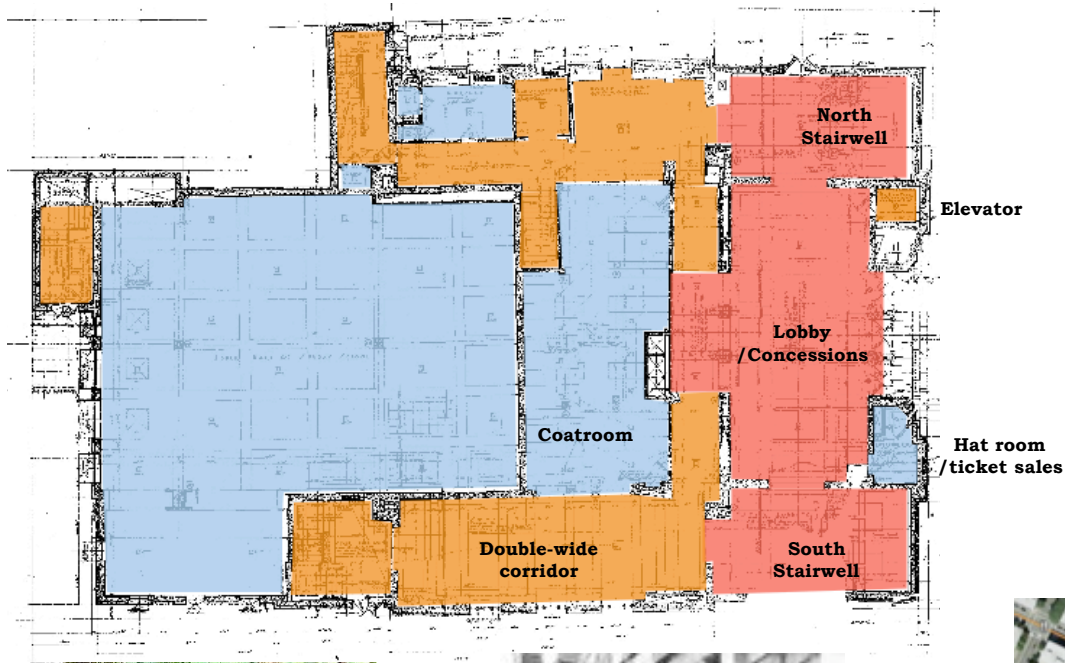
Exterior



■	Level 1 Preservation Zone
■	Level 2 Preservation Zone
■	Level 3 Rehabilitation Zone
■	Level 4 Free Zone



**Foyer
First Floor**



Sustainable Features:

- ❖ ***Building Reuse***
- ❖ ***Public Transportation***
- ❖ ***Open Space***
- ❖ ***Green Roof***
- ❖ ***Reduction of Light Pollution***
- ❖ ***Native Vegetation***
- ❖ ***Reduce Heat Island Effects***



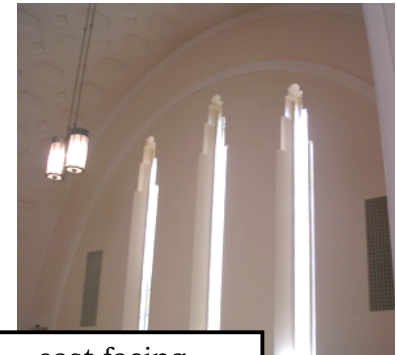
**First Floor
Program Layout**



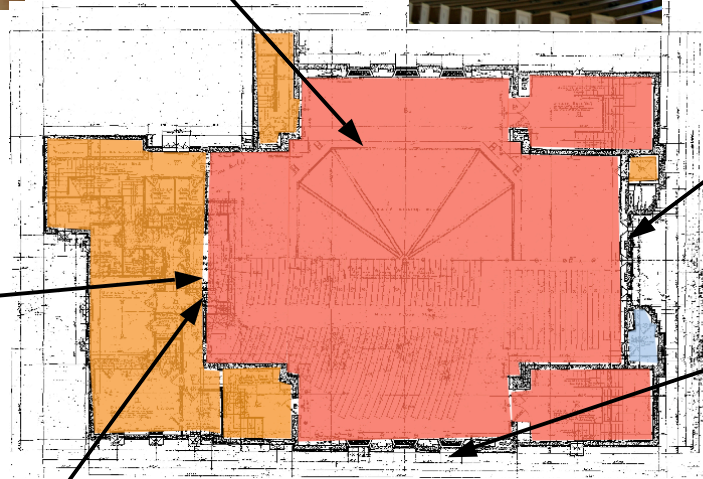
Central Dome
Ceiling coffers
Dentil crown molding



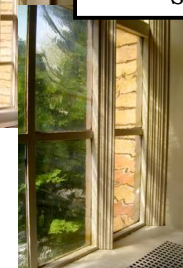
Greek cross plan
Barrel vaults



east facing
vertical windows



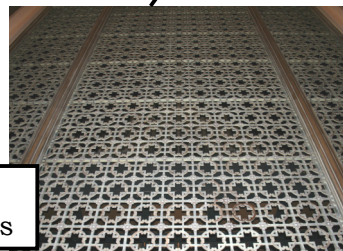
multi-pane vertical
windows on north and
south sides



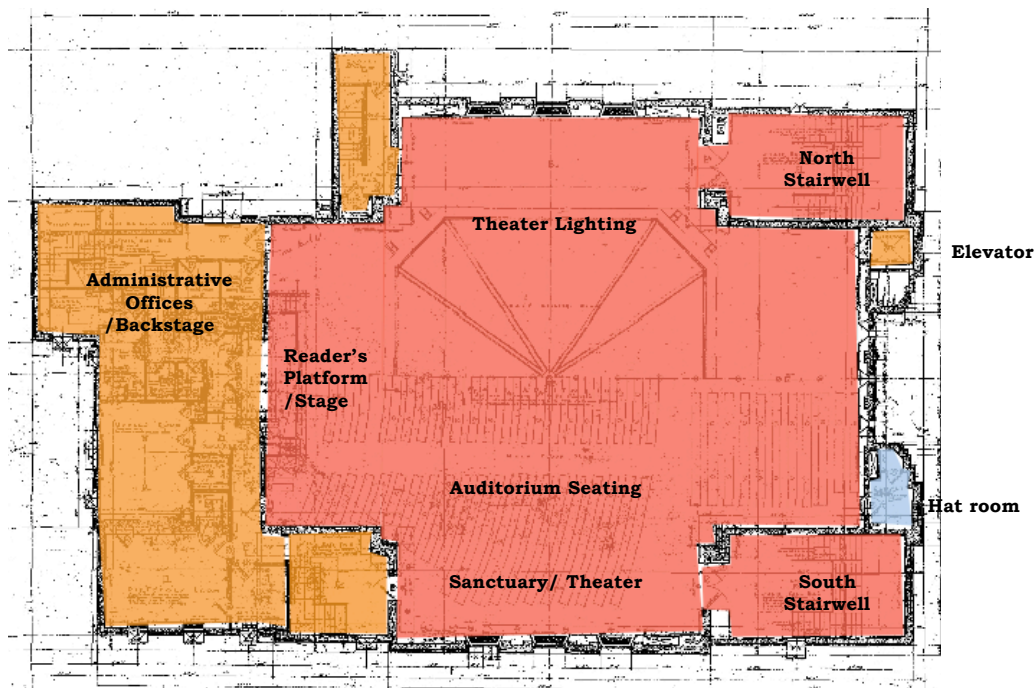
**Sanctuary
Second Floor**



"wheel-and-hub"
seating

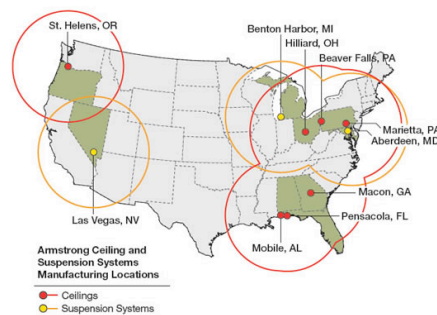


Cast iron
organ grilles



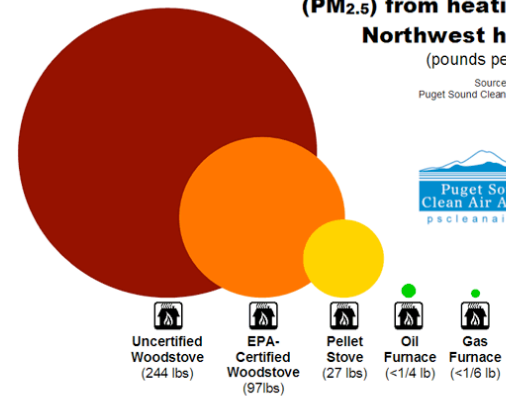
Sustainable Features:

- ❖ ***Recycled Content***
- ❖ ***Materials Reuse***
- ❖ ***Regional Materials***
- ❖ ***Renewable Materials***
- ❖ ***Certified Wood***
- ❖ ***Low-Emitting Materials***
- ❖ ***Controllability of Systems***
- ❖ ***Thermal Comfort***
- ❖ ***Daylight***

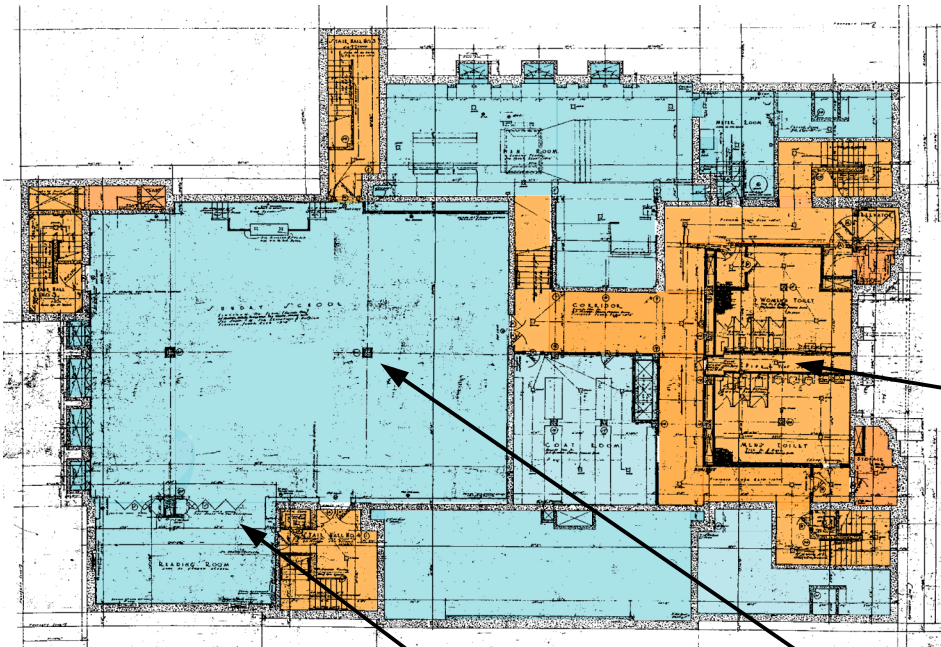


Annual Fine Particle Pollution (PM_{2.5}) from heating a Northwest home (pounds per year)

Source: US EPA & Puget Sound Clean Air Agency



Second Floor Program Layout

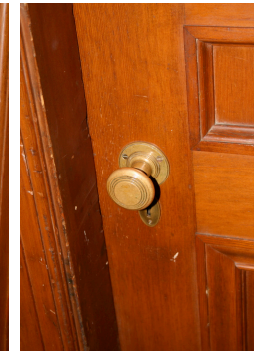


■	Level 1 Preservation Zone
■	Level 2 Preservation Zone
■	Level 3 Rehabilitation Zone
■	Level 4 Free Zone

Folding wood
panel doors



Etched metal and
cast brass hardware and
light fixtures



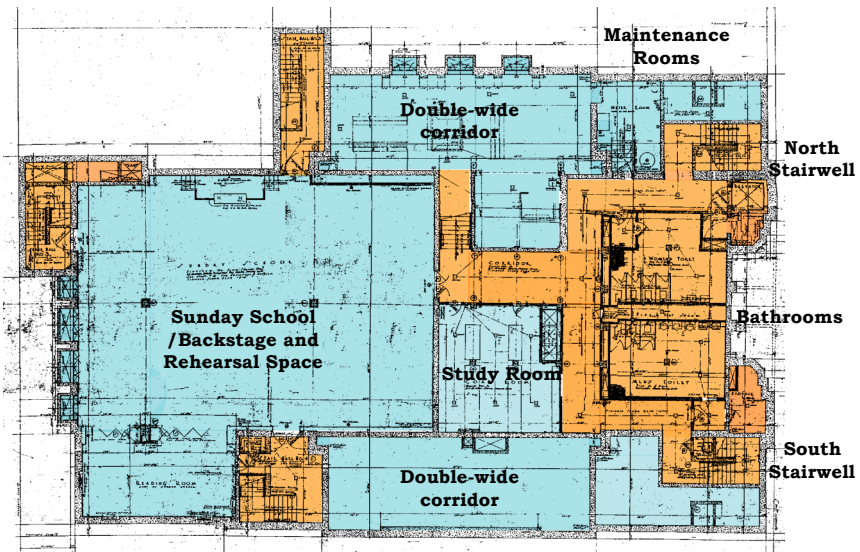
Spacious
original
bathrooms



Open floor plan



**Sunday School
Basement Floor
Preservation Zones**



Sustainable Features:

- ❖ ***Energy efficient boiler***
- ❖ ***Water efficient toilets and urinals***
- ❖ ***Enhanced Systems Commissioning***
- ❖ ***On-Site Renewable Energy (PV panels)***
- ❖ ***Green Power***



**Basement Floor
Program Layout**

LEED NC 2.2 Checklist:

Sustainable sites: 14 points possible

SS 1. **Site Selection:** 1 point

- 1.- Reuse of an existing building located in an urban area.

SS 2. **Development Density & Community Connectivity:** 1 point

- 1.- Construct or renovate building on a previously developed site and in a community with a minimum density of 60,000 square feet per acre net.
- 2.- Construct or renovate building on a previously developed site and within 1/2 a mile of a residential zone or neighborhood with an average density of 10 units per acre and within 1/2 mile of at least 10 basic services and with pedestrian access between them. (Both achieved)

SS 4.1. **Alternative Transportation:** Public Transportation Access: 1 point

- 1.- Project located within 1/2 a mile of an existing, or planned and funded, commuter rail and light rail; and 1/4 mile of one or more bus lines usable by building occupants. Max stop close and streetcar

SS 4.2. **Alternative Transportation:** Bicycle Storage & Changing Rooms: 1 point

- 1.- Bike racks and storage within 200 yards of building entrance for 5% of building users, shower and changing facilities in the building

SS 4.3 **Alternative Transportation:** Low Emitting & Fuel Efficient Vehicles :1 point

- 1.- Install alternative fuel refueling stations for 3% of the total vehicle parking capacity on the site (located outdoor in the parking area)

SS 4.4 **Alternative Transportation:** Parking Capacity: 1 point

- 1.- Provide no new parking
- 2.- Provide preferred parking or carpools or vanpools for 5% of total provided parking spaces.

SS 5.1: **Site Development:**1 point

- 1.- Provide a minimum of 50% of the site area excluding building footprint with native or adapted vegetation (including the roof garden.)

SS 5.2 **Maximize Open Space:** 1 point

- 1.- Provide vegetated open space equal to 20% of the project's site area. This includes green roofs and vegetation in parking area and hardscape adjacent to the building.

SS 6.1 **Stormwater Design:** Quantity control: 1 point

- 1.- Implement a Stormwater management plan that result in 25% decrease in the volume of stormwater runoff from the 2 year 24 hour design storm.

SS 7.1 **Heat Island Effect:** Non Roof: 1 point

- 1.- Place a minimum of 50% of parking spaces under cover (photovoltaic panels.)
- 2.- Paving Materials with a solar reflectance index of at least 29.

SS 7.2 **Heat Island Effect:** Roof: 1 point

- 1.- Install a vegetated roof on at least 50% of the roof area.

SS 8. **Light Pollution Reduction:** 1 point

- 1.-All non emergency interior lighting shall be automatically controlled during non-business hours. Provide manual override capability for after hours use. Design low exterior lighting (residential areas.)

TOTAL: 11 Points

WATER EFFICIENCY: 5 Points Possible

WE 1.1. **Water Efficient Landscaping:** Reduce by 50 %: 1 point

- 1.-Reduce potable water consumption for irrigation by 50% from a calculated mid-summer baseline case. Use of recycled wastewater, local and native plant species, capture rainwater for irrigation efficiency using high efficiency equipment.

WE 1.2. **Water Efficient Landscaping:** No Potable Water Use or No Irrigation: 1 point

- 1.- Install landscaping that does not require permanent irrigation systems. Use recycled wastewater and grey-water for irrigation purposes.

WE 2. **Innovative Wastewater Technologies:** 1 point

- 1.- Reduce potable water use for building sewage conveyance by 50% through the use of water conserving fixtures (toilets and urinals) or non potable water (captured rainwater, greywater). Treat 50% of wastewater on site for reuse.

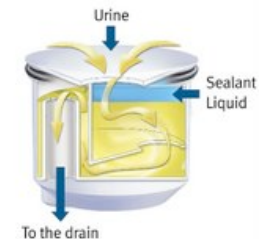
WE 3.1 **Water Use Reduction:** 20% Reduction 1 point

- 1.- Double flush toilet system, waterless urinals, motion-sensor lavatory faucets, low pressure showers and motion-sensor kitchen sinks. Reuse of grey-water and stormwater for non potable uses (toilets and urinals, mechanical systems and custodial uses.)

WE 3.2 **Water Use Reduction:** 30% Reduction 1point

- 1.- Double flush toilet system, waterless urinals, motion-sensor lavatory faucets, low pressure showers. Reuse of grey-water and stormwater for non potable uses.

TOTAL: 5 Points



**LEED NC 2.2
Page 1**

Energy & Atmosphere: 17 Points Possible

1. **Optimize Energy Performance:** 10 points
1.- 10.5 % Existing Building Renovations (3 points)
2. **On Site Renewable Energy**
2.3- 12.5% Renewable energy (3 points) - Solar Energy
3. **Enhanced Commissioning:** 1 point
1.- Begin the commissioning process early during the design phase and execute additional activities after systems performance verification is completed
4. **Enhanced Refrigerant Management:** 1 point
1.- Select refrigerants and HVAC &R that minimize or eliminate the emission of compounds that contribute to ozone depletion and global warming
5. **Measurement and Verification:** 1 point
1.- Provide or the ongoing accountability of building energy consumption over time.
6. **Green Power** 1 point
1.- Provide at least 35% of the buildings electricity from renewable sources by engaging in at least two year renewable energy contract (solar panels in parking lot)

TOTAL: 11 Points



MATERIALS & RESOURCES: 13 Points Possible

- 1.1 **Building Reuse:** Maintain 75% of Existing Walls, Floors, & Roof: 1 point
- 1.2 **Building Reuse:** Maintain 95% of Existing Walls, Floors & Roof: 1 point
- 1.3 **Building Reuse:** Maintain 50% of Interior Non-Structural Elements: 1 point
- 2.1 **Construction Waste Management:** Divert 50% from Disposal: 1 point
1.- Recycle 50% of non-hazardous construction and demolition materials used.
- 2.2 **Construction Waste Management:** Divert 75% from Disposal 1 point
1.- Recycle 75% of non-hazardous construction and demolition materials used.
- 3.1 **Materials Reuse:** 5%: 1 point
- 4.1 **Recycled Content** 1 point
1.- Use materials with recycled content (10% of post-consumer and 1/2 pre consumed)
- 4.2 **Recycled Content** 1 point
1.- Use materials with recycled content (20% of post-consumer and 1/2 pre consumed)
- 5.1 **Regional Materials:** 10%: 1 point
1.- Use building materials or products that have been extracted, harvested and recovered, as well as manufactured, within 500 miles of the project site for a minimum of 10 % of the total materials value.
- 5.2 **Regional Materials:** 20%: 1 point
1.- Use building materials or products that have been extracted, harvested and recovered, as well as manufactured, within 500 miles of the project site for an additional 10 % of the total materials value.
- 6 **Rapidly Renewable Materials:** 1 point
1.- Use rapidly renewable materials and products for 2.5 % of the total value of building materials and products used in the building, based on cost.
- 7 **Certified Wood:** 1 point
1.- Use a minimum of 50% of wood based materials and products, which are certified in accordance with the Forest Stewardship Council Principles and Criteria, for wood building components. Furniture may be included.

TOTAL: 11 Points

INDOOR ENVIRONMENTAL QUALITY: 15 Points Possible

IEQ 1. **Outdoor Air delivery Monitoring:** 1 point

- 1.- Install permanent monitoring systems that provide feedback on ventilation system performance to ensure that ventilation systems maintain design minimum ventilation requirements.
- 2.- Monitor carbon dioxide concentrations within all densely occupied spaces and naturally ventilated spaces.

IEQ 2. **Increased Ventilation:** 1 point

- 1.- Increase breathing zone outdoor air ventilation rates to all occupied spaces.
- 2.- Design Natural ventilation systems for occupied spaces to meet their recommendations set forth in the Carbon Trust "Good Practice Guide 237" and use diagrams and calculations to show that the design of the natural ventilation systems meets the recommendations set forth in the CIBSE Applications Manual for natural ventilation in non-domestic buildings.

IEQ 3.1 **Construction IAQ Management Plan:** During Construction: 1 Point

- 1.- Develop and implement an Indoor Air Quality Management plan for the construction and pre-occupancy phases of the building

IEQ 3.2 **Construction IAQ Management Plan:** Before Occupancy: 1 Point

- 1.- Flush out the building before its use, and conduct an Air Testing, after construction ends and before occupancy.

IEQ 4.1 **Low Emitting Materials:** Adhesives and sealants: 1 Point

- 1.- Reduce the quantity of indoor air contaminants that are odorous, irritating and harmful to the comfort and well being of installers and occupants.

IEQ 4.2 **Low Emitting Materials:** Paints and Coatings: 1 Point

- 1.- Reduce the quantity of indoor air contaminants that are odorous, irritating, and harmful (related to paints and coatings)

IEQ 4.3 **Low Emitting Materials:** Carpet Systems: 1 Point

- 1.- Reduce the quantity of indoor air contaminants that are odorous, irritating, and harmful (related to carpets and its sealants)

IEQ 4.4 **Low Emitting Materials:** Composite Wood & Agrifiber Products: 1 Point

- 1.- Reduce the quantity of indoor air contaminants that are odorous, irritating, and harmful (related to composite wood and agrifibers)

IEQ 5 **Indoor Chemical & Pollutant Source Control:** 1 Point

- 1.- Minimize exposure of building occupants to potentially hazardous particulates and chemical pollutants. Design to minimize and control pollutant entry into buildings and later cross-contamination of regularly occupied areas.

IEQ 6.1 **Controllability of Systems:** Lighting: 1 Point

- 1.- Provide individual lighting controls for 90% of the building occupants to enable adjustments to suit individual task needs and preferences.
- 2.- Provide lighting system controllability for all shared multi-occupant spaces to enable lighting adjustment that meets group needs and preferences.

IEQ 6.2 **Controllability of Systems:** Thermal Comfort: 1 Point

- 1.- Provide individual comfort controls for 50% of the building occupants to enable adjustments to suit individual task needs and preferences. Operable windows (which already exist) can be used.
- 2.- Provide comfort system controls for all shared multi-occupant spaces to enable adjustments to suit group needs and preferences.

INDOOR ENVIRONMENTAL AIR QUALITY (cont)

IEQ 7.1 **Thermal Comfort:** Design: 1 Point

- 1.- Design HVAC systems and the building envelope to meet the requirements of ASHRAE Standard Thermal Comfort Conditions for Human Occupancy. (applied new thermal insulation if required and new HVAC system)

IEQ 7.2 **Thermal Comfort:** Verification: 1 Point

- 1.- Thermal comfort survey of building occupants within a period of six to 18 months after occupancy. Develop a plan for corrective actions if more than 20% of occupants are dissatisfied with the thermal comfort in the building.

IEQ 8.1 **Daylight & Views:** Daylight 75% of Spaces

TOTAL: 14 Points

INNOVATIVE & DESIGN PROCESS: 5 Points Possible

1.1 **Innovation in Design:** 1 point

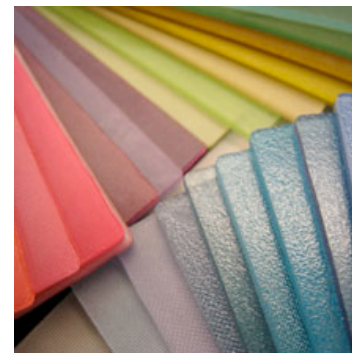
- 1.- Double use for the existing building (theater and church)

1.2 **Innovation in Design: Education:** 1 point

- Educational and informational program panels in the building describing both the historic and sustainable aspects of the project.

2 **LEED Accredited Professional:** 1 point

TOTAL: 3 Points



THE SIXTH CHURCH OF CHRIST, SCIENTIST

THE SYNERGIES OF SUSTAINABILITY AND HISTORIC PRESERVATION

- **Entire Building Reuse:** Retaining historic integrity, fabric, and feeling.
- **Future Opportunities:** Technological innovations and improvements.
- **Right Use for the Right Building:** Appropriate Adaptive Reuse from Church to Theater, retaining character-defining features while enhancing the existing passive heating and cooling systems.

THE CONFLICTS OF SUSTAINABILITY AND HISTORIC PRESERVATION

- **Design constraints:** Within an existing building
- **Secretary of Interior Standards Constraints:** Extensive historic fabric and character-defining features.
- **“Point Mongering:”** Attempting to achieve Platinum and ignoring intrinsic value of retaining a building intact.

**Sustainable Preservation
Convergence and Conflict**