• Energy Use Intensity (EUI)
• Renewable Energy
• Eliminate Fossil Fuels
• Minimize Carbon Emissions
• Whole Building Life Cycle Analysis
**EUI Goal**

Based on email correspondence from the Jones Library, the current site EUI of the existing library building is 73.2 kBtu/sf/year. This is consistent with data collected by the 2012 Commercial Building Energy Consumption Survey (CBECS) which lists the Median site EUI for library buildings in the United States as 71.6 kBtu/sf/year. An analysis of the proposed design based off the schematic energy model (Attachment A) indicates a predicted Energy Use Intensity (pEUI) of 34.4, showing a 52% decrease in energy performance over the median site EUI for library buildings. The pEUI does not assume the use of any on site renewable energy sources which could further decrease the EUI. The design team has

<table>
<thead>
<tr>
<th>ECM #</th>
<th>Measure</th>
<th>Electric Savings kWh</th>
<th>Total Cost Savings</th>
<th>EUI Reduction</th>
<th>Initial Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECM#7</td>
<td>Lighting Controls</td>
<td>20,159</td>
<td>$4,032</td>
<td>-1.06</td>
<td>$25,768</td>
</tr>
<tr>
<td>ECM#9</td>
<td>HVAC Occupancy Controls</td>
<td>1,246</td>
<td>$249</td>
<td>-0.07</td>
<td>$73,648</td>
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<tr>
<td>ECM#10</td>
<td>HVAC Demand Ventilation Controls</td>
<td>60,414</td>
<td>$12,083</td>
<td>-3.16</td>
<td>$84,426</td>
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<tr>
<td>ECM#11</td>
<td>Plug Load Controls</td>
<td>6,650</td>
<td>$1,330</td>
<td>-0.35</td>
<td>$56,134</td>
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<tr>
<td>ECM#12</td>
<td>Photovoltaics</td>
<td>12,238</td>
<td>$2,448</td>
<td>-0.64</td>
<td>$50,674</td>
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<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$290,650</td>
</tr>
</tbody>
</table>

EUI for the expanded and renovated building would be reduced from 34.4 to 29.12 meeting the goal of 25-30.

| ECM#4  | Triple Pane Window Glazing * 17,153 | $3,430 | -0.90 | $1,346,796 |
| ECM#6  | Window Overhang ** 3,084           | $617   | -0.16 | $216,400   |
| Total Savings with ECM#4 191,038 | $38,207 | -1.06 | $1,563,198 |

*Limit to north facing windows. Cost to be included as a line item during design and development.
** Review during design development to determine cost/benefit analysis.
A Net Zero Energy Building =
A building that is efficient
enough for renewable energy
to offset its annual energy consumption
Eliminate Fossil Fuels

Already Done!
Low Embodied Carbon Materials
Whole Building Life Cycle Analysis

Carbon emissions of demolition, construction and operating the new building are less than the existing operational use.
New Design Considerations

- Circulation
  - paths of travel
  - multiple entry points
- Space Planning + Furnishings
  - flexible furnishings
  - more storage space
- Building Systems
  - air quality
  - air treatment

**Circulation**
- One-way paths of travel to maintain the required minimum distances.
- Multiple entry points are an option, entry points can be kept separate.
- Current planned design has entry points at the front and rear of the building.
- Ensure multiple entry points may cause security concerns, otherwise, this can be reconsidered.
- Smoke evacuation is a possibility for the entire building.

**Vertical Circulation**
- With multiple users using stairwells, it is possible to keep each stairwell separate.
- Implement mirrors in stairwells as visual cues for people to see themselves approaching.
- Explore space central core potentially maintain two-way travel.

**Meeting Rooms**
- How will this space be used moving forward?
- Separate entry and exit points with one-way circulation within the room.
- Space for waiting - Cost minimally located where people should be able to maintain one-way circulation to and from the meeting.
- Distance between the rooms.
- Paths of travel shall be maintained.

**Space Planning + Furnishings**
- Space planning and furnishings shall require safe and sufficient amount of storage space.
- Storage and furniture to be located to maintain one-way paths and maximize storage.
- Break spaces should have sufficient space at the side.
- One person per side at a time.
- Waiting space for persons to enter the side.
- Distance between the spaces.
- Any waiting, lounge or otherwise, should not be in the path of circulation.
- Break spaces shall not be in the path of entry.

**Administrative Spaces**
- Circulation within administrative spaces shall need to be reviewed.
- Can staff be separated?

**Signage**
- In addition to typical building signage, will need to have important factors to maintain the desired circulation patterns and adherence to guiding rules.

**Thermal Technology**
- Crawls and eaves.
- Touchless signs in procedures/lobbies.
- Bathrooms:
  - Other hours/week.
  - Automatic furnishings.
  - Enclosed bathrooms stalls.
  - Automatic closing lids.
  - Automatic bathroom doors or foot push.
  - Automatic paper towel dispensers.
  - Automatic soap dispensers.

**Sanitation stations**
- Air Quality:
  - Disposal demand controlled ventilation.
  - Extend hours of operation and consider peak occupancy.
  - Cure for ventilation.
  - Provide CO2 sensors in densely occupied spaces.
  - Increase supply quantity per changes per hour.

**Infiltration/mich fission**
- Air Quality:
  - Disposal demand controlled ventilation.
  - Extend hours of operation and consider peak occupancy.
  - Cure for ventilation.
  - Provide CO2 sensors in densely occupied spaces.
  - Increase supply quantity per changes per hour.
Timeline

MBLC Approval

Town Council Meeting/Vote
March 2021

Design Development Phase Begins
April - July 2021

Construction Documents Phase Begins
July - December 2021

Bidding Phase Begins
January 2022

Construction Begins
March 2022 - September 2023