Project Milestones
Project Precedents

Wayne State University
Integrative Bioscience Center (iBio)

Central Michigan University
Biological Sciences

University of Michigan
Biological Sciences Building

Michigan State University
STEM Teaching and Learning Facility
Sustainability Goals and Energy Targets
Ten Measures of Sustainable Design

1. Design for Integration
2. Design for Community
3. Design for Ecology
4. Design for Water
5. Design for Economy
6. Design for Energy
7. Design for Wellness
8. Design for Resources
9. Design for Change
10. Design for Discovery
# Energy Targets

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>pEUI (kBtu/sf/year)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPA average for Research Higher Ed Campuses</td>
<td>162</td>
<td></td>
</tr>
<tr>
<td>MTU campus average</td>
<td>152</td>
<td>Figured is brought down by non-research buildings on campus</td>
</tr>
<tr>
<td>MTU Research Building Average</td>
<td>212</td>
<td>Range of 200 to 225</td>
</tr>
<tr>
<td>Chem-Sci energy use FY2019</td>
<td>225</td>
<td></td>
</tr>
<tr>
<td>I2SL benchmarking tool (median)</td>
<td>296</td>
<td>Specific to climate zone 7</td>
</tr>
<tr>
<td>Michigan Energy Code (IECC 2015)</td>
<td>104</td>
<td>*This analyzed for addition only using 25,000 Lab and 61,400 sf higher education baseline data from AIA 2030</td>
</tr>
<tr>
<td>IECC 2018</td>
<td>98</td>
<td>*This analyzed for addition only using 25,000 Lab and 61,400 sf higher education baseline data from AIA 2030</td>
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<tr>
<td><strong>AIA 2030 Commitment Goal</strong></td>
<td><strong>58</strong></td>
<td>*This analyzed for addition only using 25,000 Lab and 61,400 sf higher education baseline data from AIA 2030</td>
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<tr>
<td><strong>Case Study Buildings:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flint Murchie</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>MSU STEM</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>WSU IBio</td>
<td>180</td>
<td></td>
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<tr>
<td>Central Michigan U Bio Sciences</td>
<td>?</td>
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</tbody>
</table>

*These numbers are from Larry H. at MTU.*
Planning Concepts
Open Lab: bench space
Specialized infrastructure

Lab Support:
Alcoves for a variety of functional spaces. Shared and/or PI designated space.

Shaded spaces are shared lab support.

Lab: Lab Support ratio
50-50 - most typical
60-40
70-30

Northwestern University
Flexible Multidisciplinary Labs
Site Analysis
CHEMICAL STORAGE (1 STORY)

SERVICE

CLIFF DRIVE

STEAM TUNNELS

HUSKY STATUE

FEATURE OAK & MAPLE TREES

CHEMICAL SCIENCES BUILDING (7 STORIES)

GREENHOUSE

PARKING (CONSIDER SECONDARY PUBLIC ENTRY TO NEW ADDITION OFF PARKING)

1 STORY DROP IN GRADE

CONSIDER ENCLOSED CONNECTION BETWEEN ADDITION & EERC

UNDERGROUND BUILDING

ELECTRICAL ENERGY RESOURCES CENTER

MECHANICAL ENGINEERING – ENGINEERING MECHANICS

MEMORIAL UNION BUILDING

LIBRARY

AUTO DROP OFF

SUN

PRIMARY CAMPUS PATHWAY

SITE ANALYSIS

GRAPHIC SCALE

1 inch = 30 ft
Conceptual Design
CONCEPT PLAN

ANIMAL CARE SPACE
(FUTURE / BELOW GRADE)

SUPPORT LAB
MIXING BOWL

LEARNING /
COLLABORATION /
SOCIAL HUB

THE NEW FACE OF STEM + HEALTH
COLLABORATION / HUB / TRANSPARENT /
ENGAGEMENT / MASS TIMBER / SOUTH SUN!

7 STORIES
OPEN FEATURE STAIR

EXISTING STAIR

SUPPORT LAB

LAB

GRAD. STUDENTS

SUPPORT FACULTY

GARDEN / COLLAB.

LAB

LOBBY

ELEV.

VEST.

VEST.

2 STORY HIGH SPACE

UP

ENCLOSED CONF. / TEAM ROOMS + DEPT OFFICES

ALTERNATE COLLABORATIVE / LEARNING 'BAR' STUDY

MORE OPEN COLLABORATION

1ST FLOOR
OPEN FEATURE STAIR

COLLAB. / CONF.

ELEV.

OPEN TO BELOW

EXISTING STAIR

LAB

SUPPORT

LAB

CLASSROOM

CLASSROOM

WALKWAY

OPEN FEATURE STAIR

OPEN TO BELOW

ENCLOSED CONF. / TEAM ROOMS
+ DEPT OFFICES + DISPLACED
CHEM. & CHEM. ENG OFFICES

MORE OPEN COLLABORATION

ALTERNATE COLLABORATIVE / LEARNING ‘BAR’ STUDY

2nd FLOOR
2ND FLOOR CLASSROOMS

ALTERNATE COLLABORATIVE / LEARNING ‘BAR’ STUDY
ALTERNATE COLLABORATIVE / LEARNING ‘BAR’ STUDY
Potential Additional Scope Items

- ANIMAL CARE SPACE
- 5TH AND 6TH FLOOR TEACHING LABS RENOVATED
- MECHANICAL UPDATES /‘FIXES’ TO EXISTING BUILDING
- PARTIALLY CONDITIONED WALKWAY CONNECTOR
- LOBBY AT WEST PARKING LOT
Thank You