**Motivation and Problem**
- Current simulation models not fast enough for building design optimization and advanced controls
- Previously developed a methodology for generating reduced order building envelope models
- To make the tool useful for industry, interfacing it to popular commercial building-energy simulation tools is necessary.

**Objectives**
- Enhance the previously developed model order reduction strategy
- Develop a tool that automatically generates a reduced-order building envelope model from input files of EnergyPlus and TRNSYS for optimal design and control analysis.

**Approach:**
- Not data driven but physics based

**Summary of Previous Results for a 60 zone building**

Results comparisons with TRNSYS for a 60 zone building (one-year simulation)

<table>
<thead>
<tr>
<th>Time step [m]</th>
<th>TRNSYS [s]</th>
<th>ROM [s]</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>876.93</td>
<td>8.66</td>
</tr>
<tr>
<td>30</td>
<td>482.60</td>
<td>4.70</td>
</tr>
<tr>
<td>60</td>
<td>248.52</td>
<td>3.05</td>
</tr>
</tbody>
</table>

100 times faster!