



# Net Zero Emerging Leaders Internship

---

DCI Engineers

Energy Trust of Oregon



# About: NZELI Intern

---

M.S. Structural Engineering and Mechanics | Stanford University

B.S. Architectural Engineering | University of Colorado, Boulder



**Stanford**

School of Engineering &  
Doerr School of Sustainability  
Civil & Environmental Engineering



Civil, Environmental and  
Architectural Engineering

UNIVERSITY OF COLORADO **BOULDER**



# Sustainability and Reporting at DCI Engineers

- Signatory firm for **SE 2050**
- **CLF** sponsors
- **Sustainability committee**
- Developed and actively expanding company-wide mandatory **sustainability education**
- Perform **LCAs**
- **Advocate for procurement & manufacturing of low carbon materials** via EPD/GWP spec requirements



*Bullitt Center: Seattle, WA*

# Typical Tools and Workflow

Define Goal & Scope, Relevant Initiatives, GBRs(s)



Revit

Project Drawings (pdf)  
Export Data



Excel + Bluebeam

Manual QTOs: Bluebeam  
Manual QTOs: Excel



OneClick LCA

Data Input

Perform LCA in Software (OneClick)

QCs

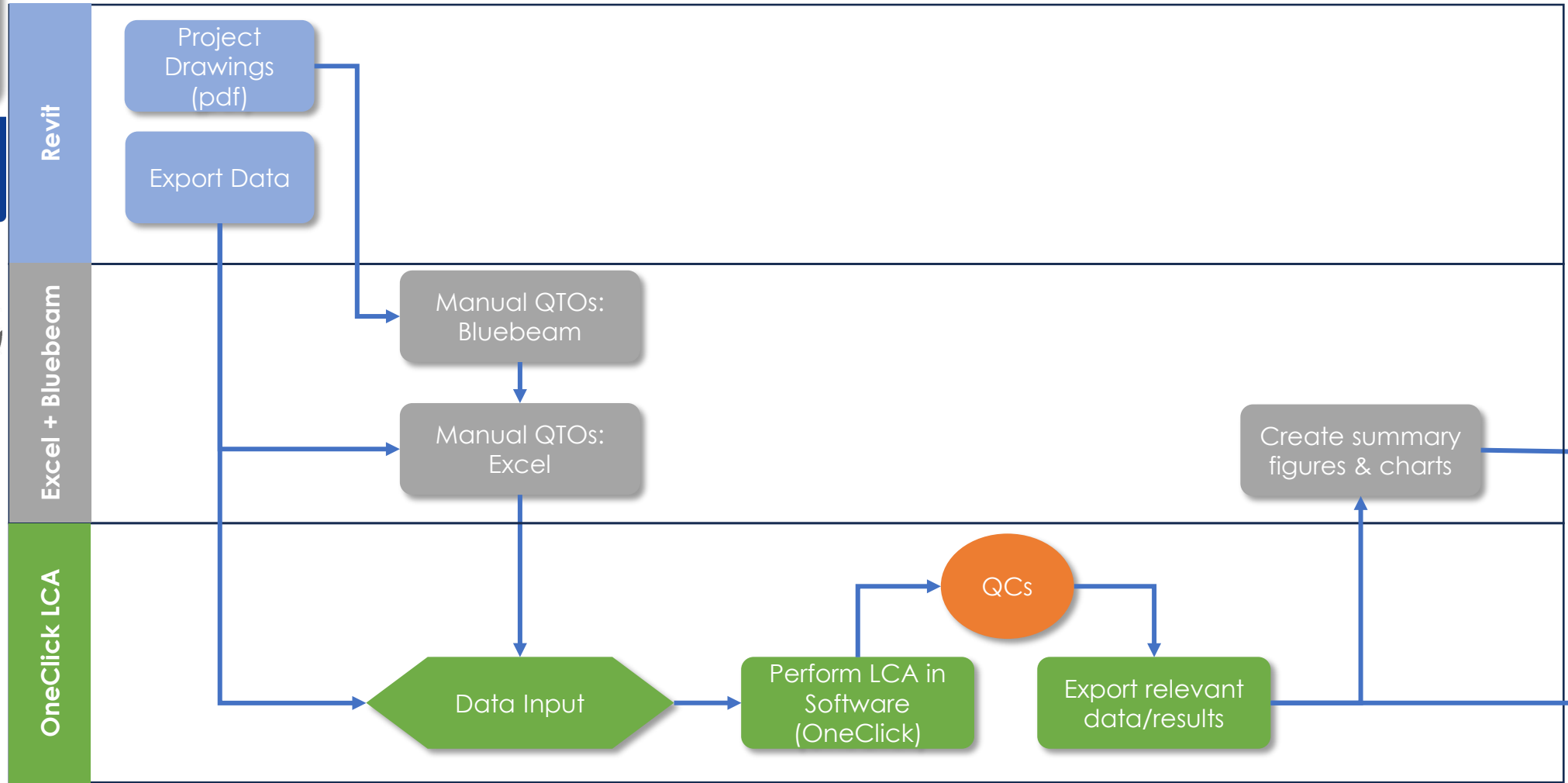
Export relevant data/results

Create summary figures & charts



Submit & Report

One Click



# Typical Tools and Workflow

Define Goal & Scope, Relevant Initiatives, GBR(s)



Revit

Project Drawings (pdf)  
Export Data



Excel + Bluebeam

Manual QTOs: Bluebeam  
Manual QTOs: Excel



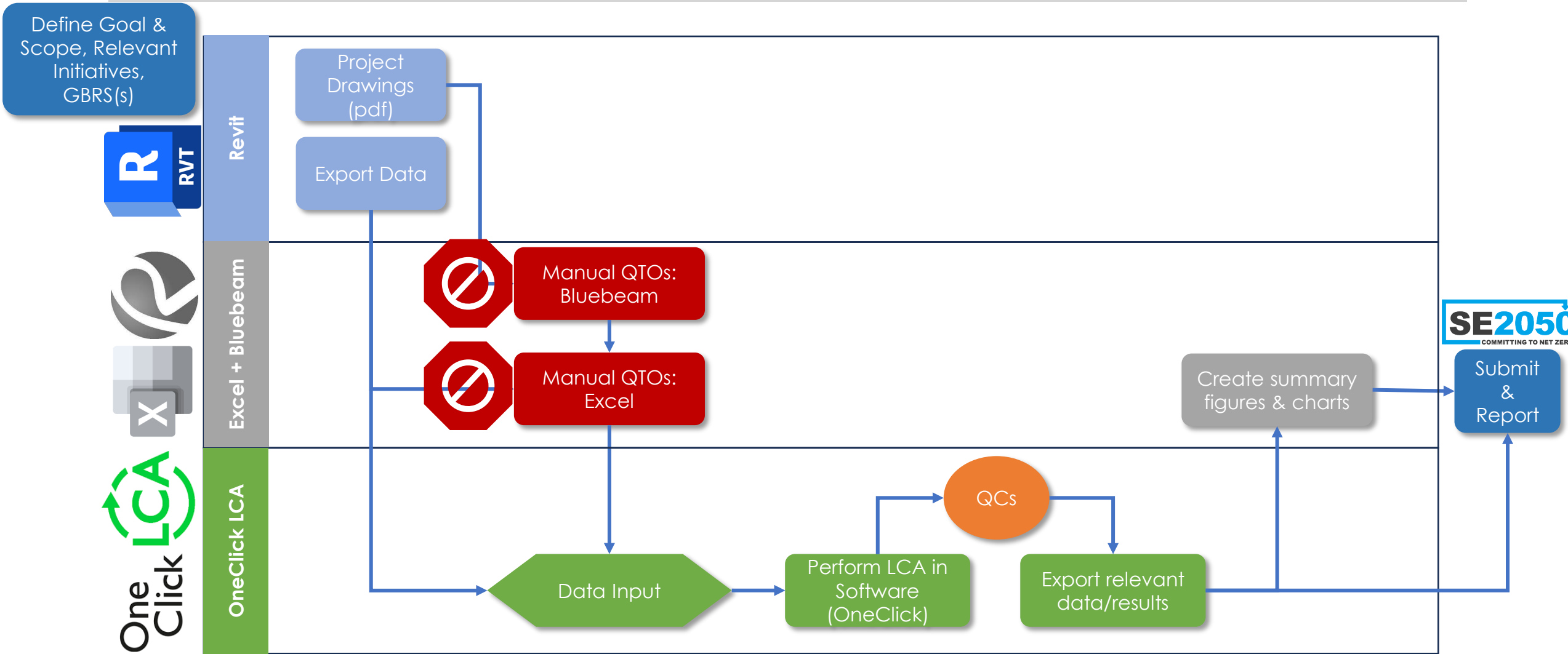
OneClick LCA

Data Input → Perform LCA in Software (OneClick) → QC's → Export relevant data/results

Create summary figures & charts → Submit & Report

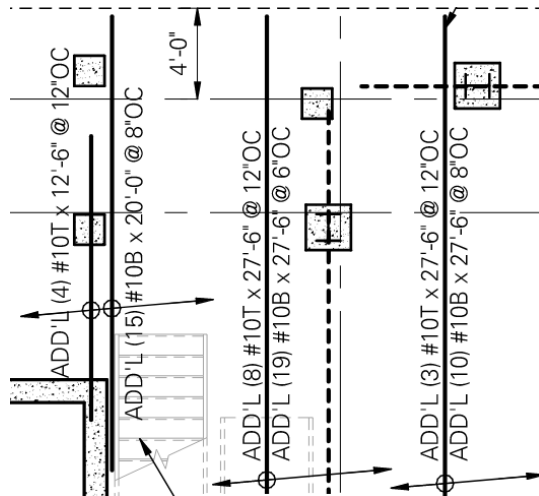


OneClick



# Case studies: Workflow and Roadblocks

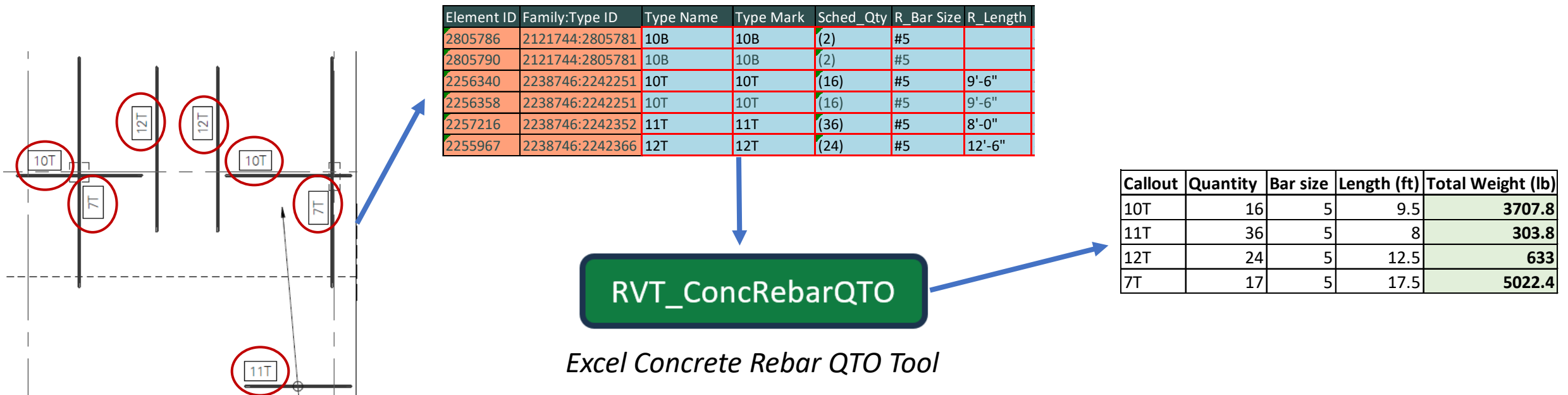
- AI-assisted **material mapping** with LCA tool
- BIM data did not fully capture quantities
  - ⊘ Detailed, **manual QTOs** necessary
    - Concrete rebar
    - Light-wood framing



Timberview: Portland, OR (via Access Architecture)

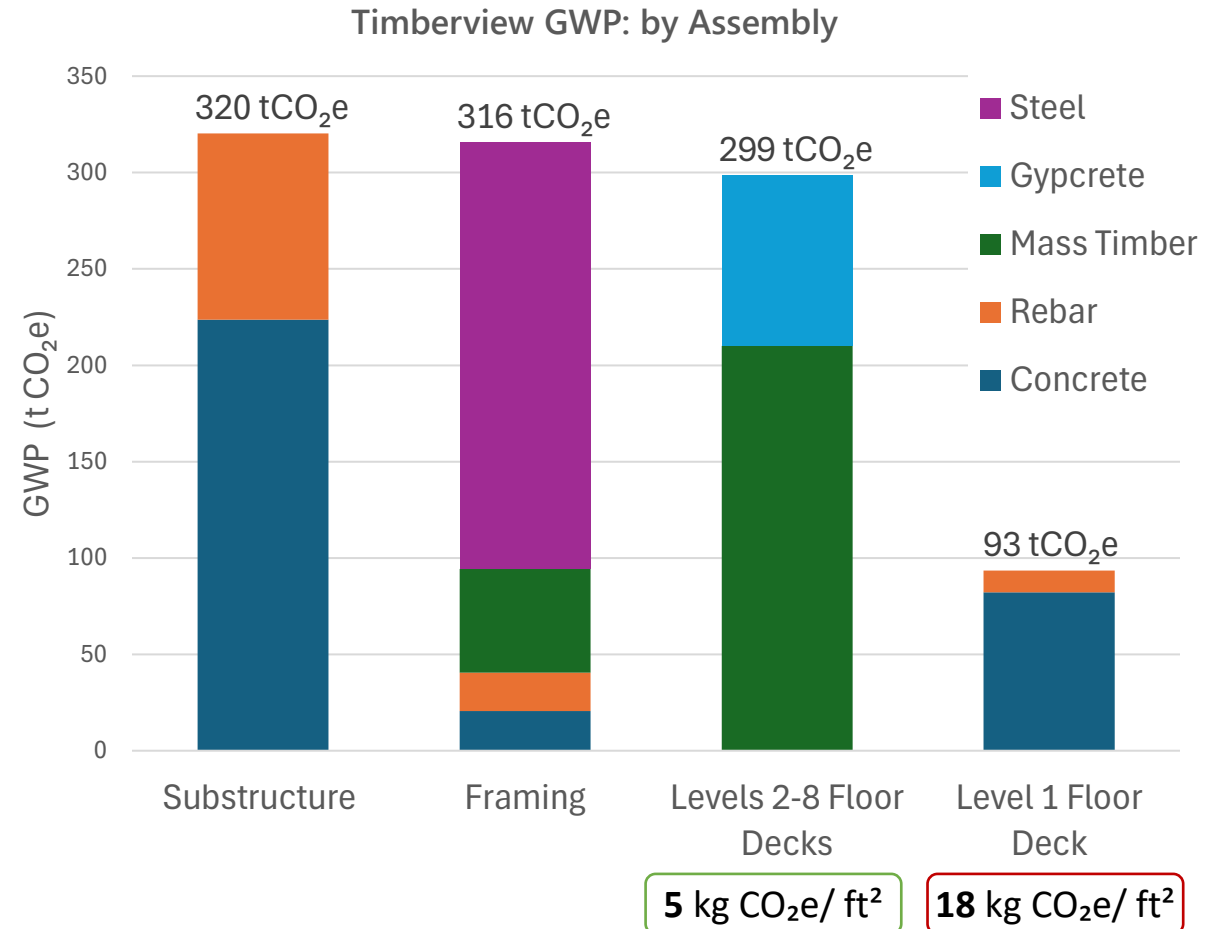
# Case studies: Tool Development

- Coordinated with BIM department to identify and export specific data/properties from Revit
- Developed Excel tools to process Revit export data and perform QTOs



# Case studies: Results

- Timber structural systems tend to minimize embodied carbon
  - CLT floor deck can have 3x less GWP than a similar concrete floor
  - Lighter structure
- Below-grade elements contribute significant GWP on timber projects
  - Concrete foundations







# Lessons Learned

---



Importance of careful/consistent data source selection (i.e. EPDs)



Efficient allocation of work: BIM vs LCA Practitioner



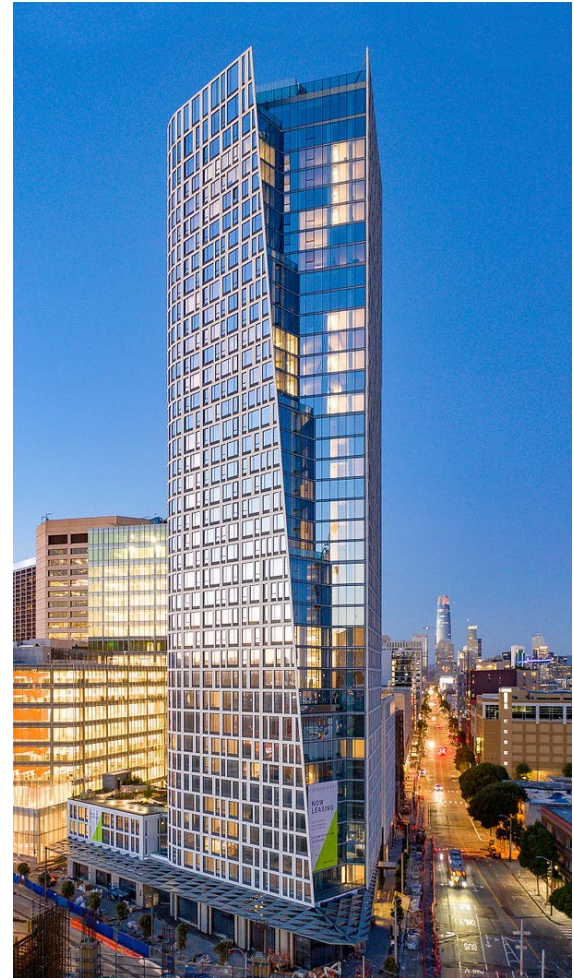
Granularity vs speed



Automation

# Takeaways + Best Practices

- Each project will have new, unique concerns and requirements
- Consider purpose of LCA when defining scope
  - E.g. Comparison or baseline: need consistent procedure
- Monitor developing technologies and regulations to continue to improve
- Early-stage integrative design maximizes carbon-reduction opportunities



*Fifteen Fifty: San Francisco, CA (via Jason O'Rear)*



Thank You

---