SUNY/PPAA & NYAPPA 2019 Summer Conference

The Lessons We Are Learning

STEPHEN D. CURRO, PE
MANAGING DIRECTOR, CONSTRUCTION
Agenda

- DASNY current affairs
- ZNE and our reference projects
- SUNY Poly (Utica)
- SUNY Oneonta Ford Hall
- Process and soft skills
- Technological challenges
- Iterative learning
- Key reflections
- How DASNY can help

"Do the best you can until you know better. Then when you know better, do better." - Maya Angelou
DASNY Current Affairs

✓ Thirty-four 2019 SUNY summer projects at $61 million
✓ Four 2019 capital projects at Albany, Alfred, Buffalo State, and Plattsburgh
✓ Three 2020 capital project starts in May 2019 at Oneonta, Plattsburgh, and SUNY Poly (Utica)
✓ Two 2020 capital project starts in December 2019 at Cortland and Oswego
✓ New SUNY projects report by campus
✓ Project management system implementation
DASNY Current Affairs

- DASNY Staffing Adjustments
- OneDASNY – CD Initiatives
- Construction Industry Observations (market conditions, bidding environment, project estimates, public versus private, labor market)
- 2019 – 20 Legislative Impacts to Delivery
- Completed SUNY Brockport DB Eagle Hall project, delivery method usage spreading: SUNY Poly (new build), Oneonta (rehab of Ford Hall)
- SUNY Chancellor’s January 2018 Directive taking shape
Chancellor’s Message – Jan. 22, 2018

“It is my pleasure to announce today that SUNY plans to source 100 percent of its electricity from zero-net-carbon sources, including renewables and energy storage, as soon as possible.”

“Furthermore, and starting immediately, all new SUNY buildings will be designed to achieve zero-net-carbon emissions. And in our existing buildings, which are on average, 47 years old, we intend to invest in deep-energy retrofits and energy efficiency while performing critical maintenance.”
The Chancellor’s message requires a transformational shift

- It is pushing us all to look past what we are currently capable of doing, to learn new skills and new ways of thinking
- It is encouraging us to focus on what we can achieve, together
What are we working toward?

**Zero Net Energy (ZNE)** – A highly-energy-efficient building that uses no more energy in a year than it produces on-site from renewable energy systems

**Zero Net Carbon (ZNC)** – A highly-energy-efficient building that eliminates the use of on-site, fossil fuel and purchases renewable energy from off-site to supply the needed electricity
What are we working toward?

What does is mean when you **add “ready” to Zero Net Energy and Zero Net Carbon?**

The project has set and achieved an ultra-low energy use intensity (EUI) target, but has not yet:

1. Installed the renewable-energy-production system(s) on-site (ZNE-ready); or
2. Contracted for the purchase of the necessary off-site renewable energy production (ZNC-ready)
Reference project
SUNY Polytechnic Institute
New residence hall

- $33.2 million
- 77,000 sf; 257 beds
- EUI goal of 27 kBTU/SF/year
- Design-build
Reference project
SUNY Oneonta
Ford Hall renovation and ZNC-retrofit

- $27 million
- 55,000 existing + 6,000 sf; 300 beds
- EUI goal of 32 kBTU/SF/year
- Design-build
What’s really different here?

• Owner team – Campus, DASNY, NYSERDA, SUNY
• ZNE and specific energy goals
• New terms – EUI, ZNE, ZNC, POE, M+V, BECx, energy modeling cycles
• New systems – VRFs (SP), geothermal (SP), separation from central steam, window operation connection to BMS (SP), potential panelized approach, non-traditional building materials (Ford Hall – waiting on proposals...)
• Design-build for renovation work
• Stretch of capabilities (both design and construction)
• A need to address user engagement
• Market-shift goals and replicability goals
• Project cost impact
Process and soft skills

- Integrative process
- Front-loading pre-SD and SD
- The language of ultra-low energy
- Working well within public procurement framework
- Managing change and perceived and actual risk
Make “building” a verb

• We need to **build our teams** to discover more about the project, earlier
• Then we can **create solutions that work** for all constraints (cost, schedule, existing building structure, use patterns, student culture, student health and learning needs, durability, zero fossil fuel use, etc.)
• "What we are learning” becomes a constant, iterative, open, informed, and **improving effort**
Design-build supports the requisite innovations

- Contractor knowledge / market information feeds design
- **Clear performance goals**, along with a process to assess the achievement and to capture lessons to inform future work
- Manage risk through a more rigorous bridging document process
  - Define the must-haves and the absolute no-go items
  - Develop the baseline energy model (plug load definitions, etc.) for all proposing teams to use in their submission
Technological challenges

- Setting the EUI / plug loads (users of our projects)
- What is the right energy system?
- How energy modeling must change
- Focus on the envelope
- Campus plans for energy / central plants
- Beware of what you think you already know
Iterative learning and our future work

- Post-occupancy evaluations (POE)
- Commissioning (Cx) and building envelope (BECx)
- Measurement and verification (M+V)
- White papers, webinars, and lessons learned and other’s experiences
Key reflections (so far...)

- One size doesn’t fit all and there is no magic bullet
- Consider the context (nested systems)
  - Each project is part of several nested systems
  - An improved project improves the capacity of the systems around it (e.g., the campus, DASNY, New York State, student learning, the resources and skills available in the market)
- Those systems, in turn, can then better support the project
- All players on the team are on a learning curve
- Goal setting / bridging docs
- Project financials
- **Teamwork over technology**
How DASNY can help

- **Delivery methods** – construction expertise brought forward
- **ESCO services** – to assist with existing buildings
- **Term consultants** – for energy master planning, EPC, JOCs, etc.
- **DASNY expertise / knowledge**
  - Your campuses / facilities
  - Decades of support of your campuses
  - ZNE and ZNC projects
  - Integrative process skills
  - Interagency efforts
Questions?
To be continued . . .