

## Ian Shapiro of Taitem Engineering @ Sustainability Center

### Eliminating Energy Use: Easier than we think?

September 30, 2016

~30 people in attendance

Celebration of new book – saving energy in existing buildings

- Eliminating energy use in buildings may be easier than we think
- There is rapid change happening in the energy sector: in both technology and strategy

Need to move from research and development to scaling up.

**Goals** set at federal, state & local level are extremely important

- Drive results
- Almost direct correlation between goals and success
- We save as much in our buildings as we want to save
  - o E.g. 109 S. Albany: GOAL = 100% reduction, ACTUAL = 80% reduction

Go beyond **one-for-one** replacement

- Lighting: LEDs are great, but also need “right-lighting” and lighting controls
- Heating/cooling: reduce/eliminate distribution losses & thermal heat zone

These strategies take savings from 30-40% → 80-90%

Need a combination of improvements = solar + insulation + heating & cooling + ventilation + air sealing + hot water

→ Comprehensive strategy will get you to 100% savings.

### Installation costs

Initial small investment leads to high savings (sharp to start), then it starts to slow down

BUT, it doesn't go on forever – it is possible to get to 100% without rebuilding

*Replace equipment as it fails* – smaller added cost

If we scale up our approach → economies of scale

99% of energy efforts are happening at smallest investments (bottom left on graph)

When we scale up, cost comes down.

**GAY:** group purchase initiatives!

We need to be doing this now ... don't only do research and demonstrations

In order to scale up, we must stop imposing on ourselves artificial constraints.

Energy is great in long-term, poor in short-term.

- ➔ Finance in mortgages (like the Dutch example)
- ➔ 20-30 year loans rather than 5-10 year loans

PACE financing (through taxes)

Avoid treating energy as the best possible financial investment.

Incredible technology developments: LED, reliable motion sensors, VRF heat pumps, solar, best practices.

Cost control: plan for product replacement at end of useful life. Be ready for replacement before failure.

Common mistakes – over 50% of energy audits overestimate savings

**In summary: obstacles to overcome!**

- Set goals
- Comprehensive actions/strategies
- Go beyond 1-for-1 replacement (spaces are over lit 50-100%)
- Don't be wishful; be honest
- Budget for it
  - o \$50-60/SF now
  - o \$30-50/SF foreseeable
- Plan for it
- Long-term thinking!

Net-zero (new) building design work shop: October 31-Nov 1 @ Ecovillage

**GAY:** of constraints, what is most important for **developers**?

- Borrowing a little more \$
- Tenants see savings – so why should developers care? = Split-incentives
- Banks don't recognize energy cost savings like they do rent – less willing to finance
- Developers & architects often are not familiar with changes happening (still in infancy)

People don't understand utility

Utilities don't have a standard of presenting this savings info.

Fracking is making natural gas much cheaper ➔ **GAY:** carbon tax!

Cannot look at change in 5 year time frame

**ELIZABETH HARROD:** comfort and resilience benefits are instantaneous

**INSHIK:** Hard numbers is important to convince clients

**NICK:** plug for 2030 District – local initiative; provides service to help those who want to reduce energy

**GLYNN:** Utilities will have to make changes as technology changes...

NYSEG & other big utility companies beginning to look at ways to adapt