Market Zero

1 December 2016
CEC EPIC Symposium

Background

Goal: to ***convert an existing grocery store*** **to** ***scalable near-zero net energy*** – and for the project to serve as a model for stores throughout the state.

Funding: $3M CEC EPIC grant + $650k Whole Foods match

PROSPECT Silicon Valley

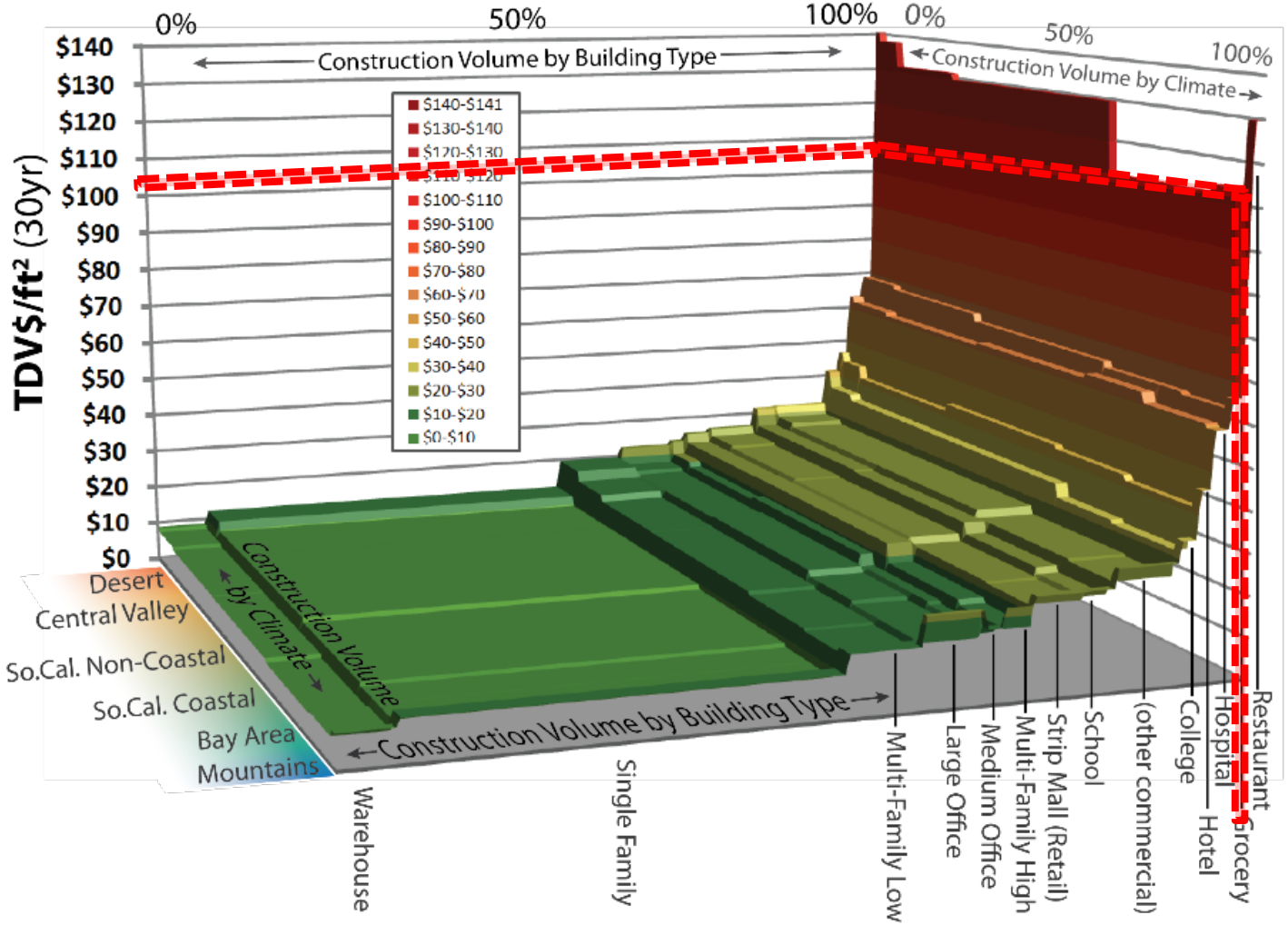
SF Environment

WHOLE FOODS MARKET

ARUP

BERKELEY LAB
Lawrence Berkeley National Laboratory

Why Grocery?



The Technical Feasibility of ZNE Buildings in CA

http://www.energydataweb.com/cpucfiles/pdadocs/904/california_zne_technical_feasibility_report_final.pdf

Whole Foods Market Noe Valley

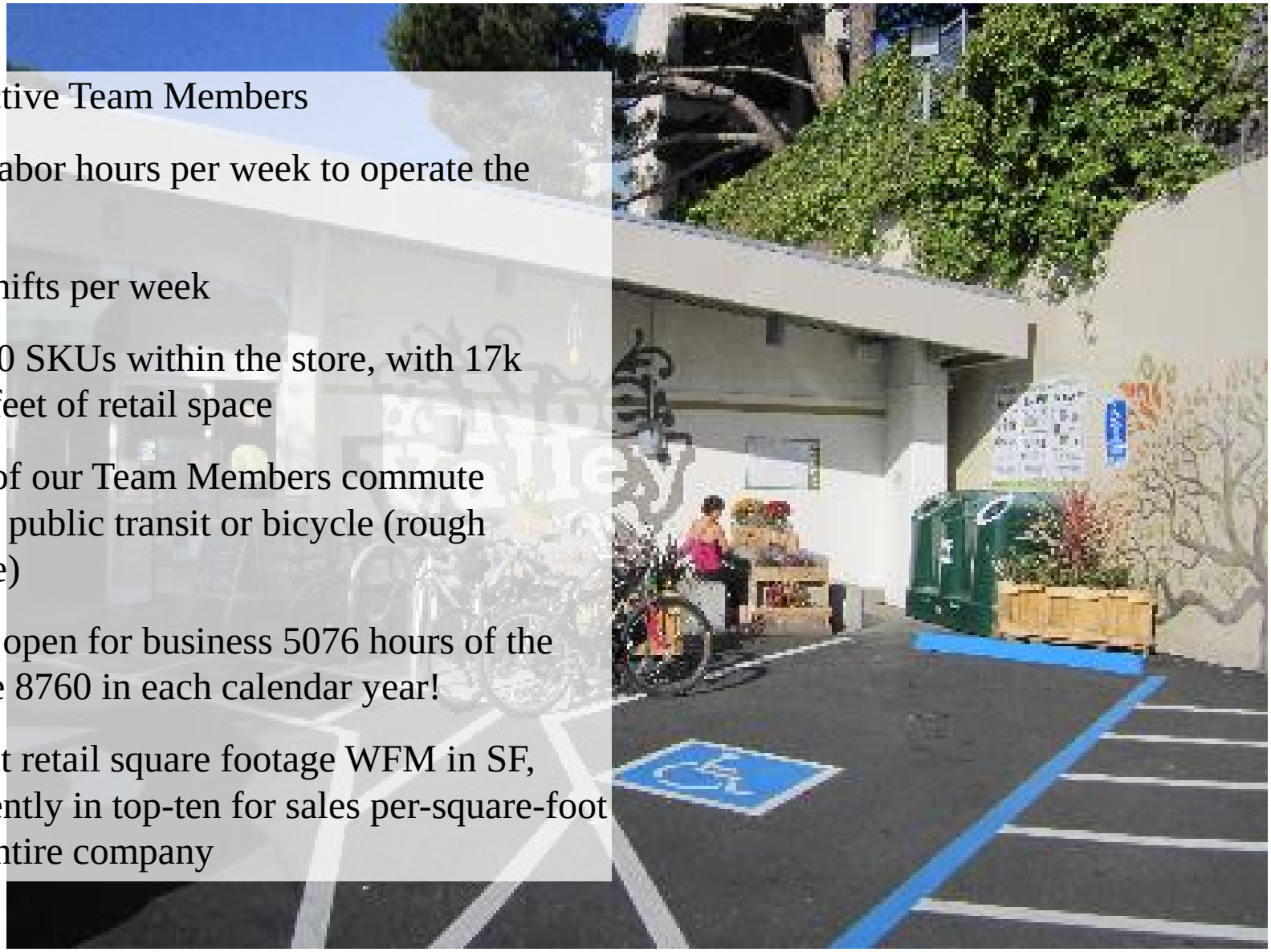
3950 24th Street San Francisco, CA 94114

Open 8am to 10pm 7 days a week

Gross Area: 25,187 SF (Sales Floor 11,820 SF)

Renovated & Opened 9/30/2009

Whole Foods Market Noe Valley



~175 active Team Members

~4700 labor hours per week to operate the store

~ 720 shifts per week

~ 30,000 SKUs within the store, with 17k square feet of retail space

~ 70% of our Team Members commute through public transit or bicycle (rough estimate)

NOE is open for business 5076 hours of the possible 8760 in each calendar year!

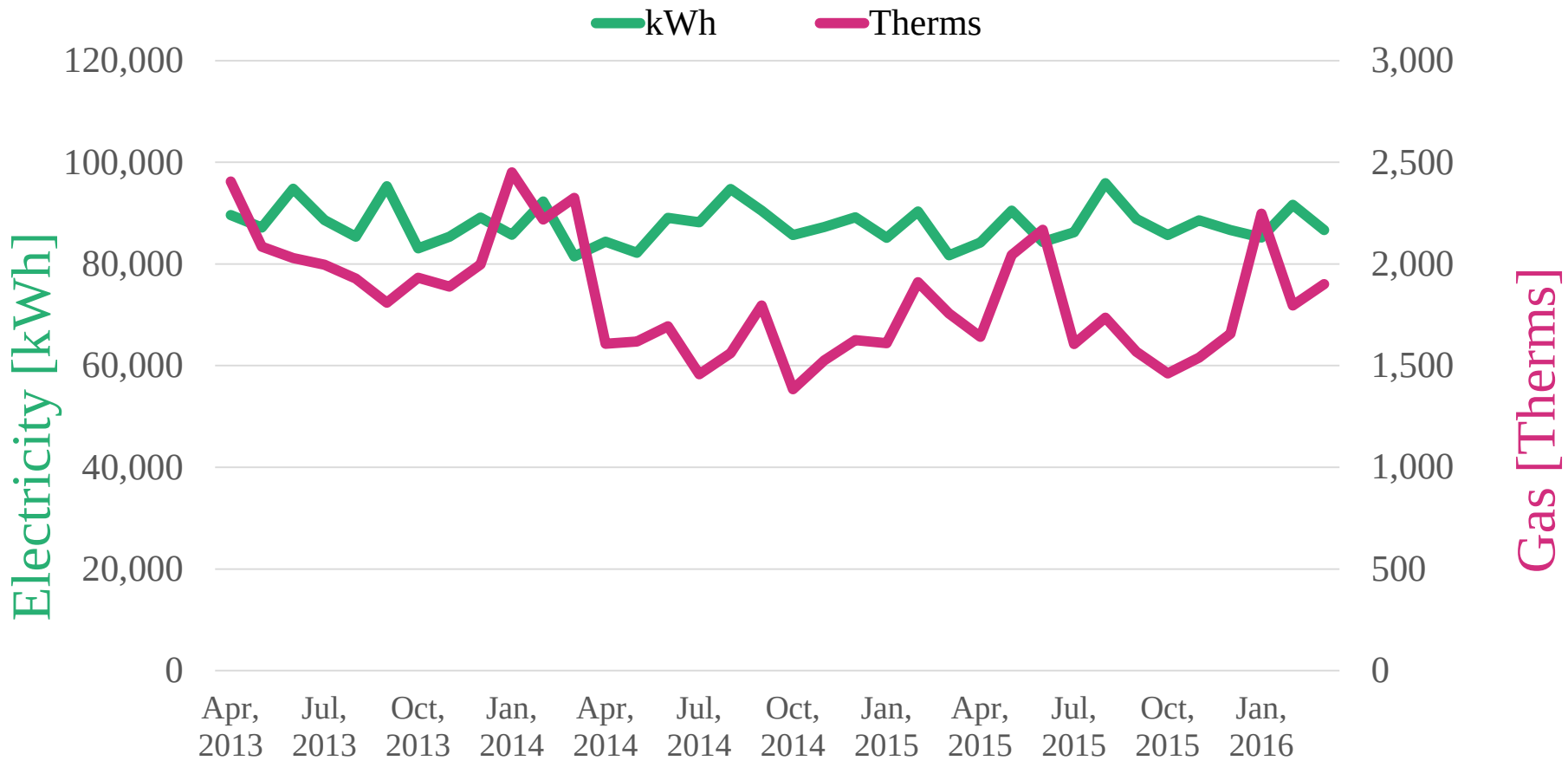
Smallest retail square footage WFM in SF, consistently in top-ten for sales per-square-foot in the entire company

Whole Foods Market Project Goals

- ‘Store of the Future’
  - Inform our store development roadmap
  - Pilot emerging technologies
  - Gain operational experience
  - Build win-win community relationships
  - Develop the best stores possible
  - Delight our customers
- Sustainability Leadership
  - Demonstrate technology innovation & potential
  - Encourage technology development
  - Reduce store emissions & impact
  - Build community partnerships
  - Support our local & global communities

Store Energy

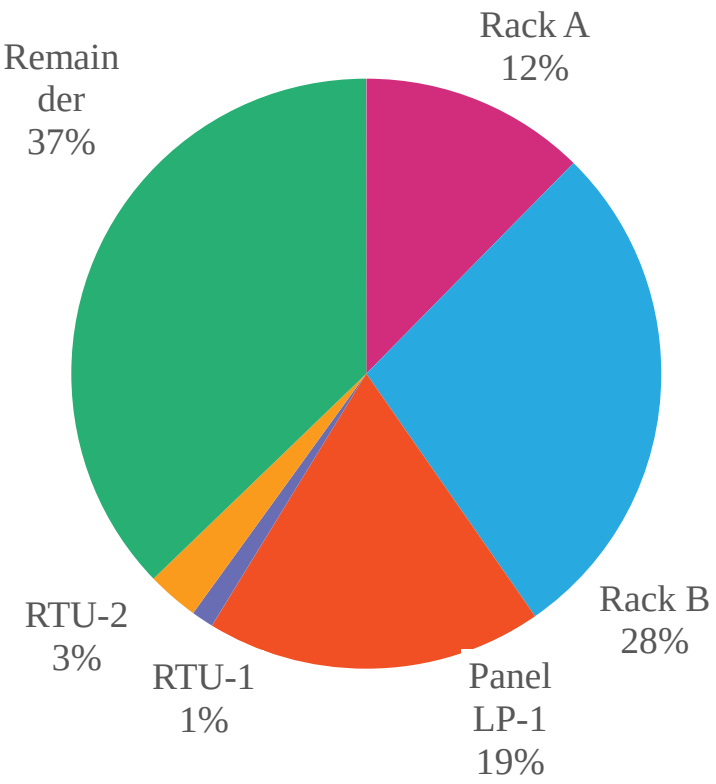
Site EUI 230 (Electric 150, Gas 80)



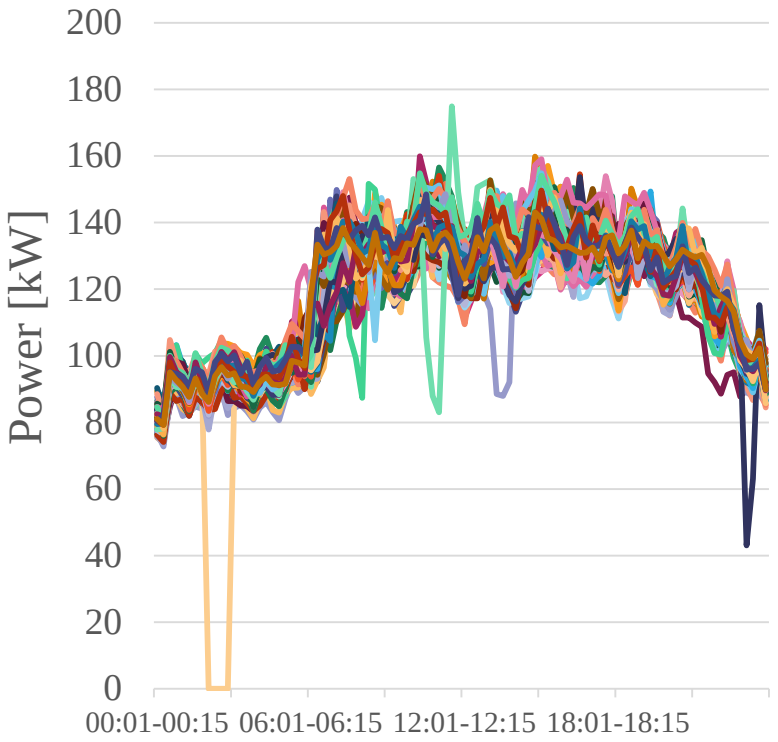
Efficiency goal: 40% to 60% EUI reduction

Store Electrical Energy

Electrical End-Use

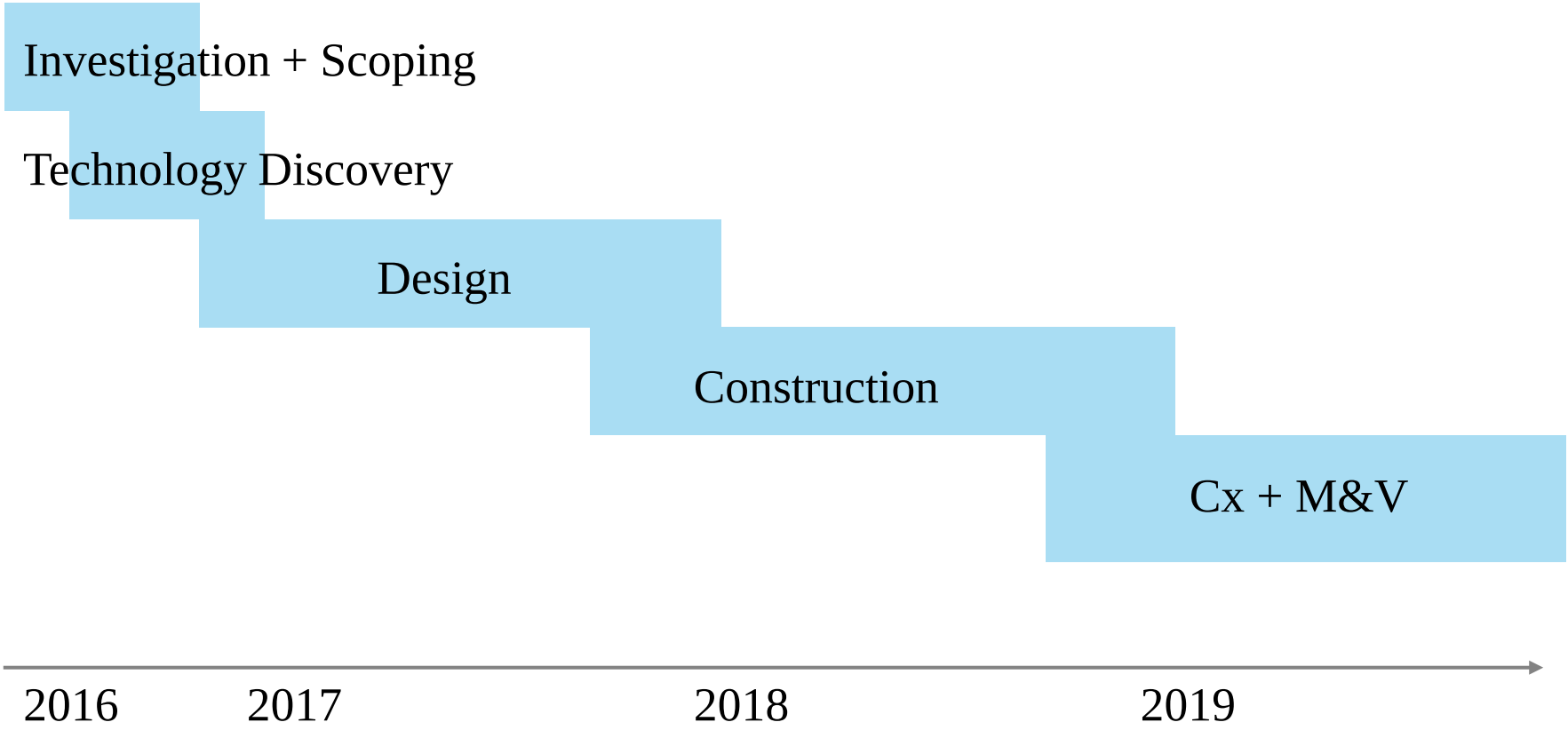


Typ. Daily Electrical Demand



Efficiency goal: 40% to 60% EUI reduction

Timeline


Investigation + Scoping
Technology Discovery
Design
Construction
Cx + M&V
2016
2017
2018
2019

Opportunities

High existing energy use

Lots of “low-hanging fruit”

Engaged staff

Engaged customers

Challenges

High existing energy use

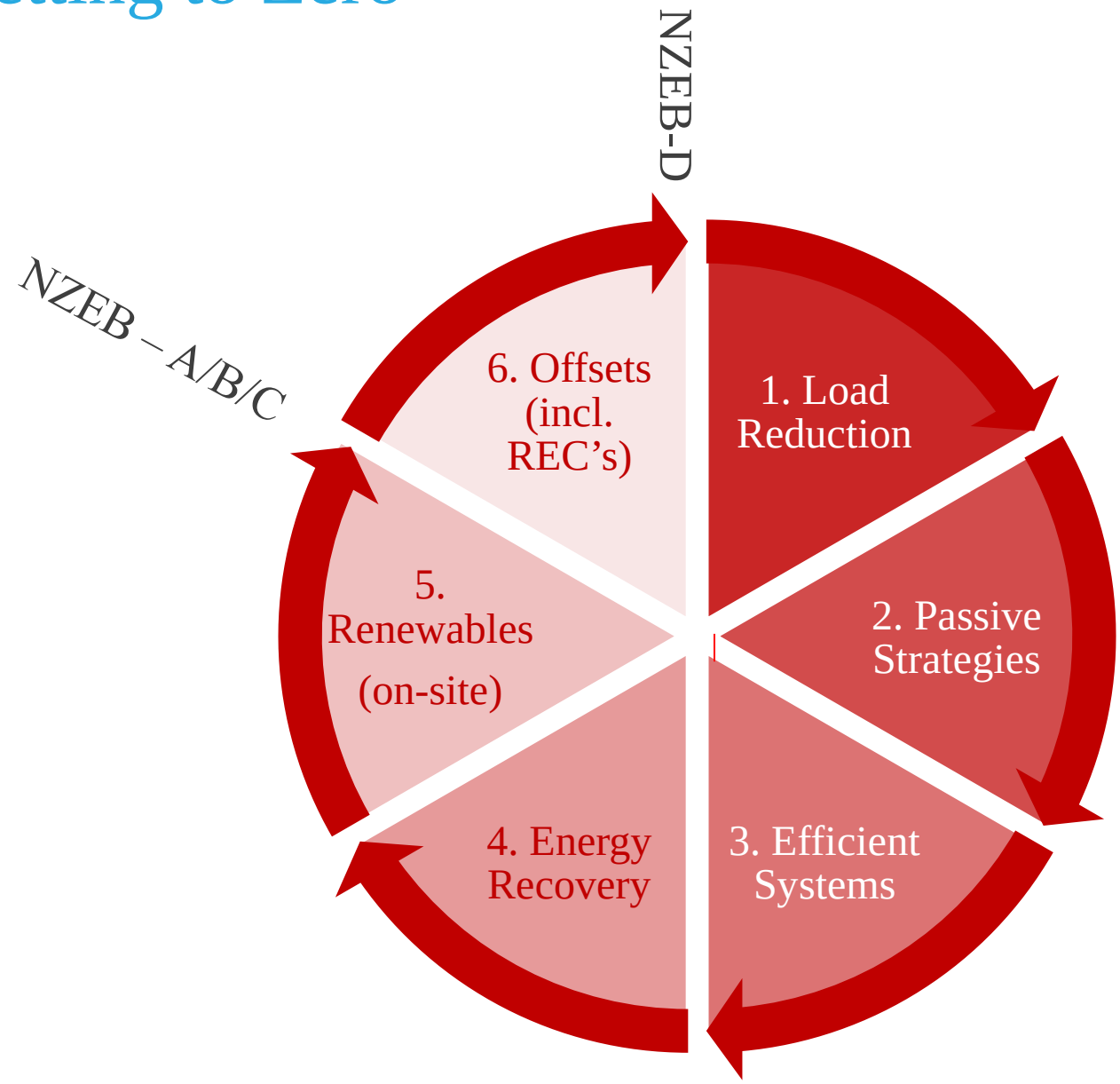
Constrained physical space

Small, shaded rooftop

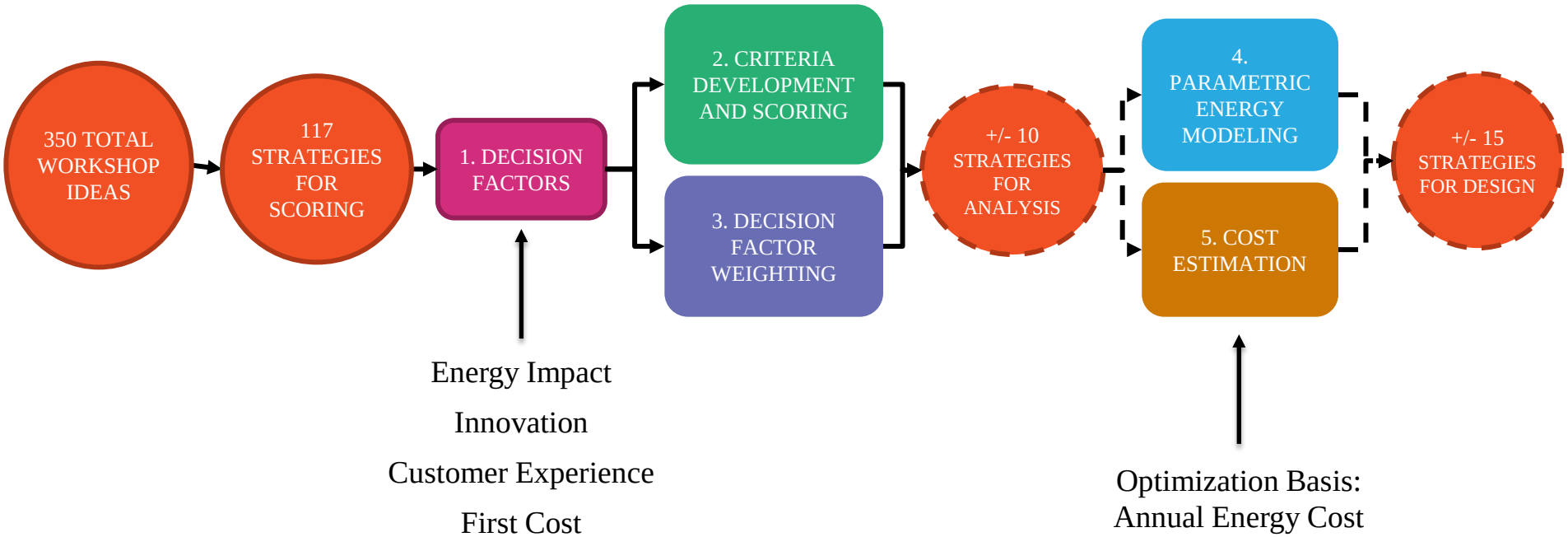
Aesthetic requirements

Operational requirements

Getting to Zero



Getting to Zero – Analysis Process



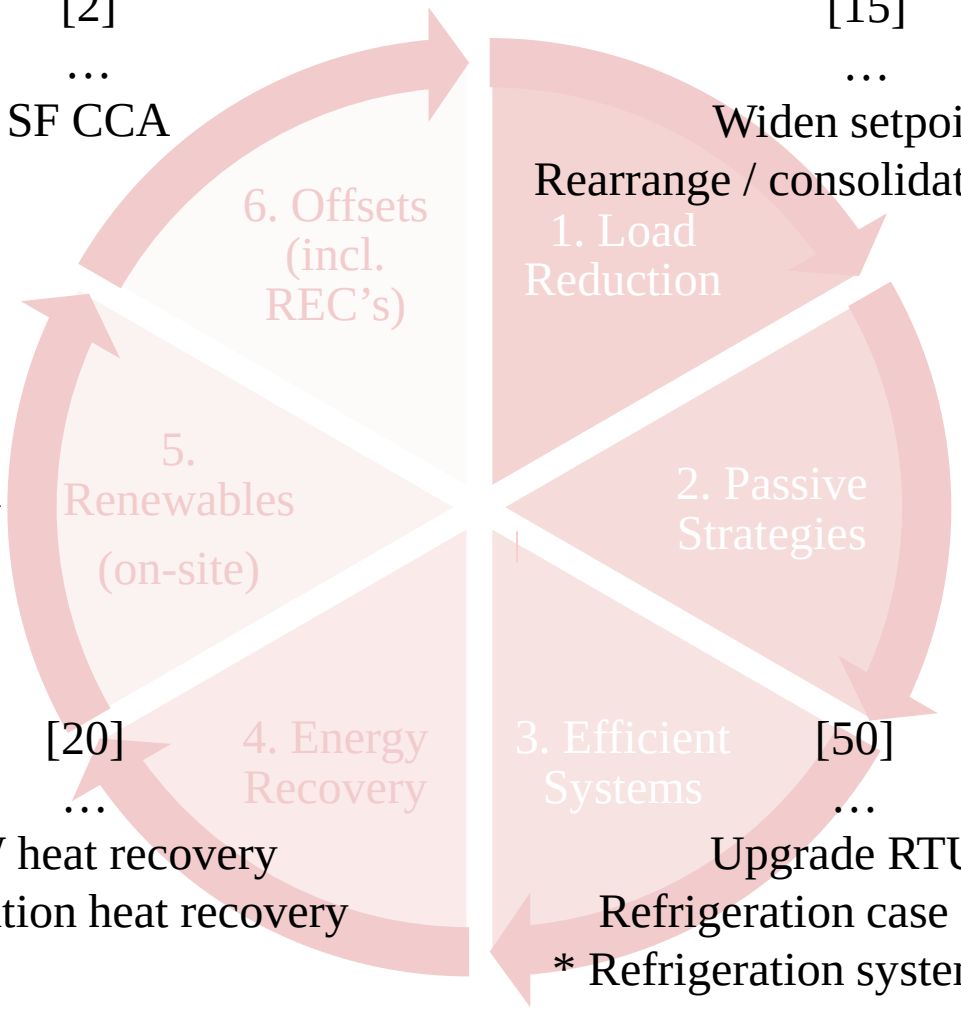
Getting to Zero – Tech Discovery

Call for Innovations – 40+ responses

	Site Applicability	**Technology Status**	**Company Maturity**	**Installation Complexity**	**O&M Complexity**
Sample Technology	Fair	Already Deploying	Well Capitalized, willing to put in additional funding	High	Unknown

Getting to Zero – Sample Technologies & Measures

117 measures in evaluation



[15]
…
Widen setpoints
Rearrange / consolidate operations

[20]
…
Roof insulation
Front façade shading
* Daylighting tech

[50]
…
Upgrade RTUs
Refrigeration case lighting
* Refrigeration system controls
* DC power

[20]
…
DHW heat recovery
Refrigeration heat recovery

[10]
…
* BIPV
Parking Lot PV
Roof SHW

[2]
…
SF CCA

Thank You

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