s2e technologies

Net Zero Community in London, ON

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The Company S2E

Everything we do is about a response to climate change

technology company that was focused on photovoltaics

*added a new division **7Gen** that uses technology to create Sustainable Livable Communities*

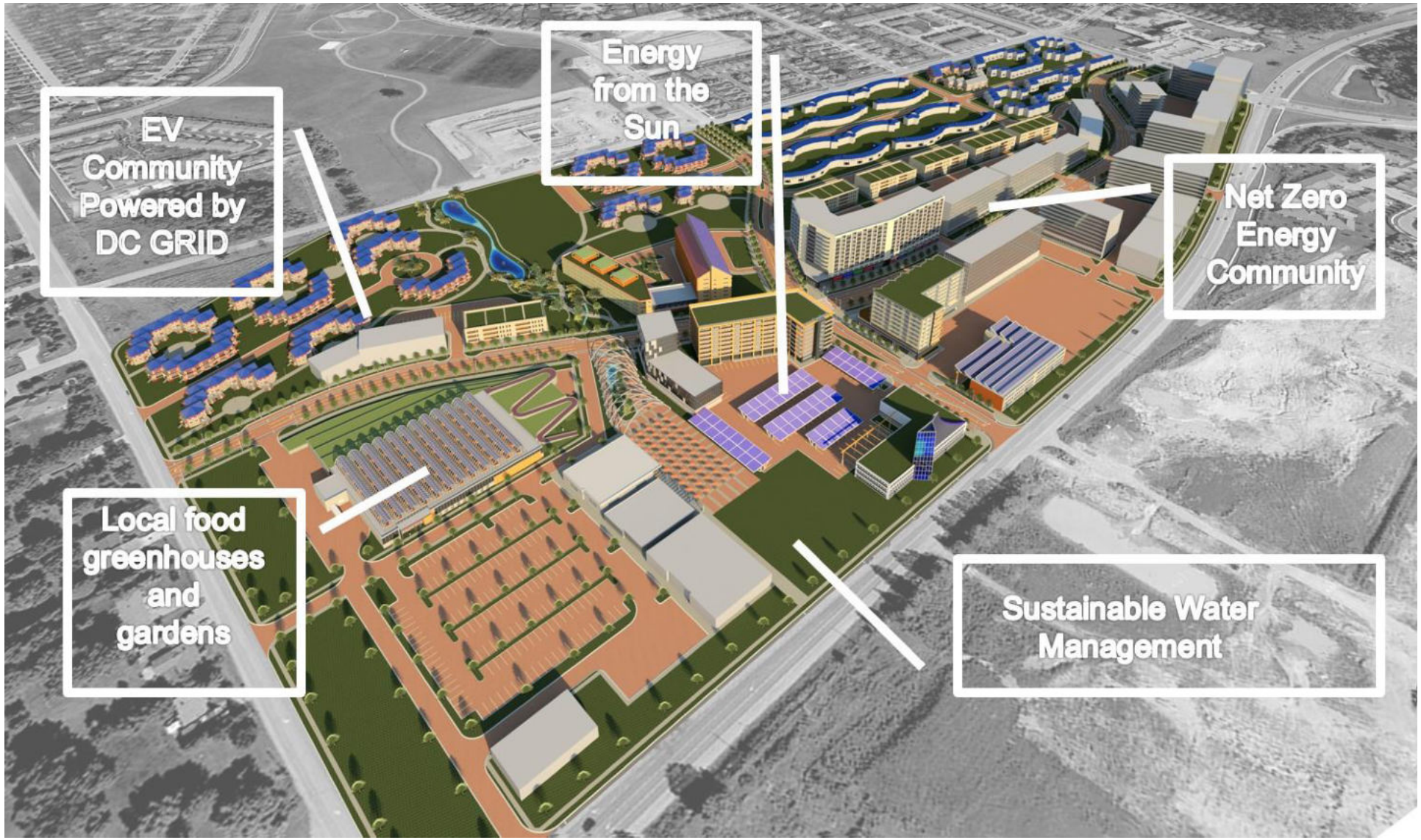
West 5 London, Ontario

At a Glance

- London, Ontario Canada
- 70 acres
- 2000 Living Units
- 500,000 sq ft Commercial/retail
- NET ZERO ENERGY Community
- All electric / air source heat pumps

~25% Complete

West 5 – Original Concept



Heilos – First NZE
11-story Multi-use
High rise

160 NZE Plus Townhomes

Riverstone – Near NZE
Retirement homes

NZE Office buildings


DECOR STUDIO
BACKROADS
WEST BLOOMS

Solar Parking Canopies

Blessing and Curse

EVE Park
London, Ontario

At a Glance

- Net Zero Energy Condominium Neighborhood
- 84 one, two, and three bedroom townhome condominiums
- All Electric / Air source Heat Pumps
- Community built for electric vehicles
- Under construction (Occupancy Summer 2023))

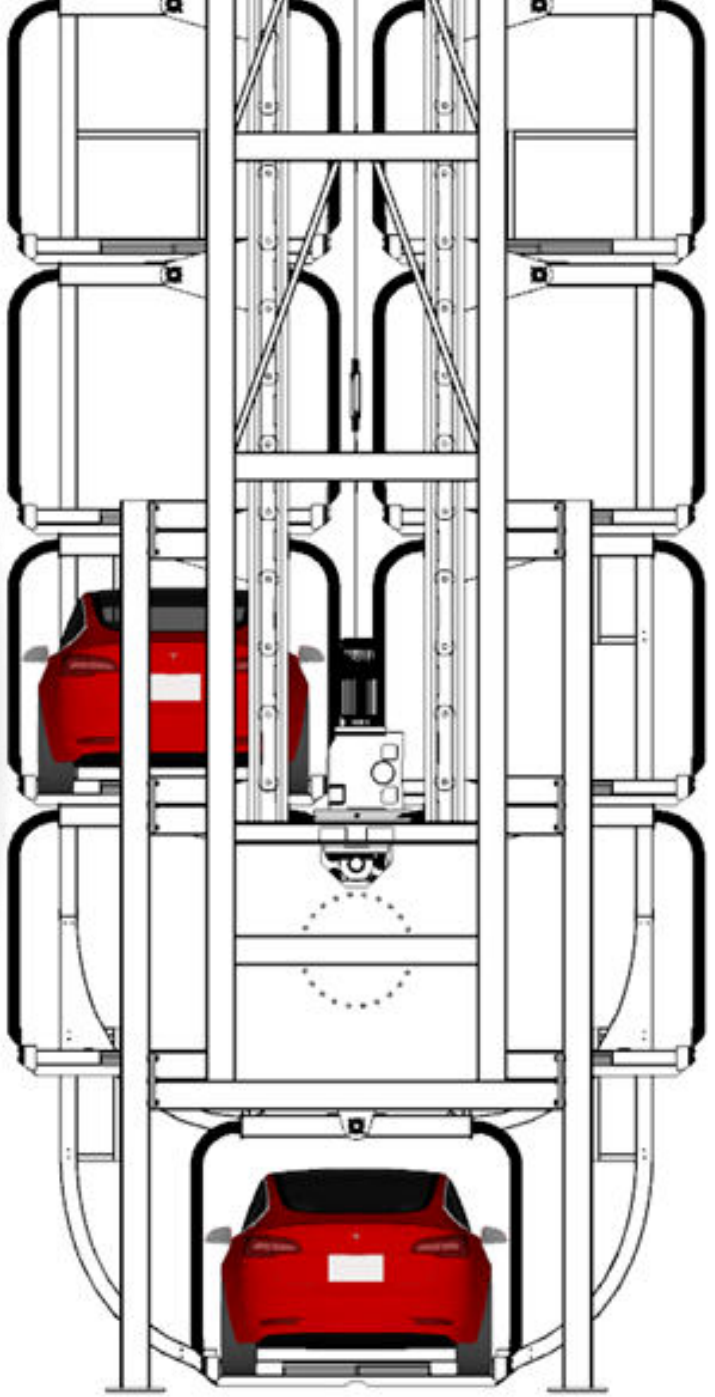
EVE Park

Electric Vehicle Enclave

- Ready for EV’s and Autonomous Vehicles
- EV Car and E Bike Community share
- Unique parking tower

Parking Tower with Smart EV Charging

- Parking ratios 1.1 instead of 1.5
- 16 cars on the space of 2 surface parkings
- 1 parking spot for free, second payable
- Parking tower construction in 7 days instead of 18 months
- Cost went up from 16,000 CAD to 40,000 CAD per space due to regulations for elevators



EVE Park – *Live in a Park not a Parking Lot*


ZIPsystem

Construction Process

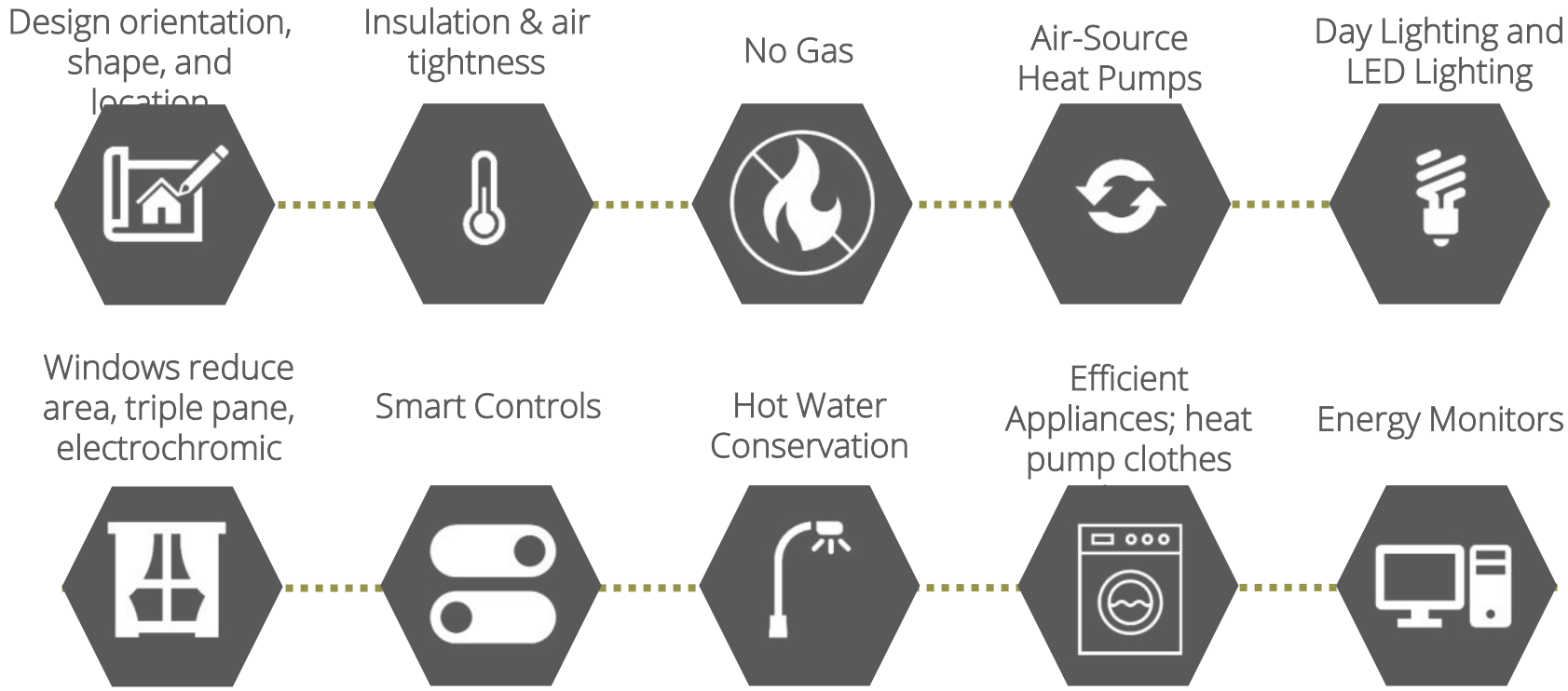
- **Panelization / Modular Construction**

- Reduce Waste
- Faster onsite Construction
- Reduce costs?

How to Design NZE Communities

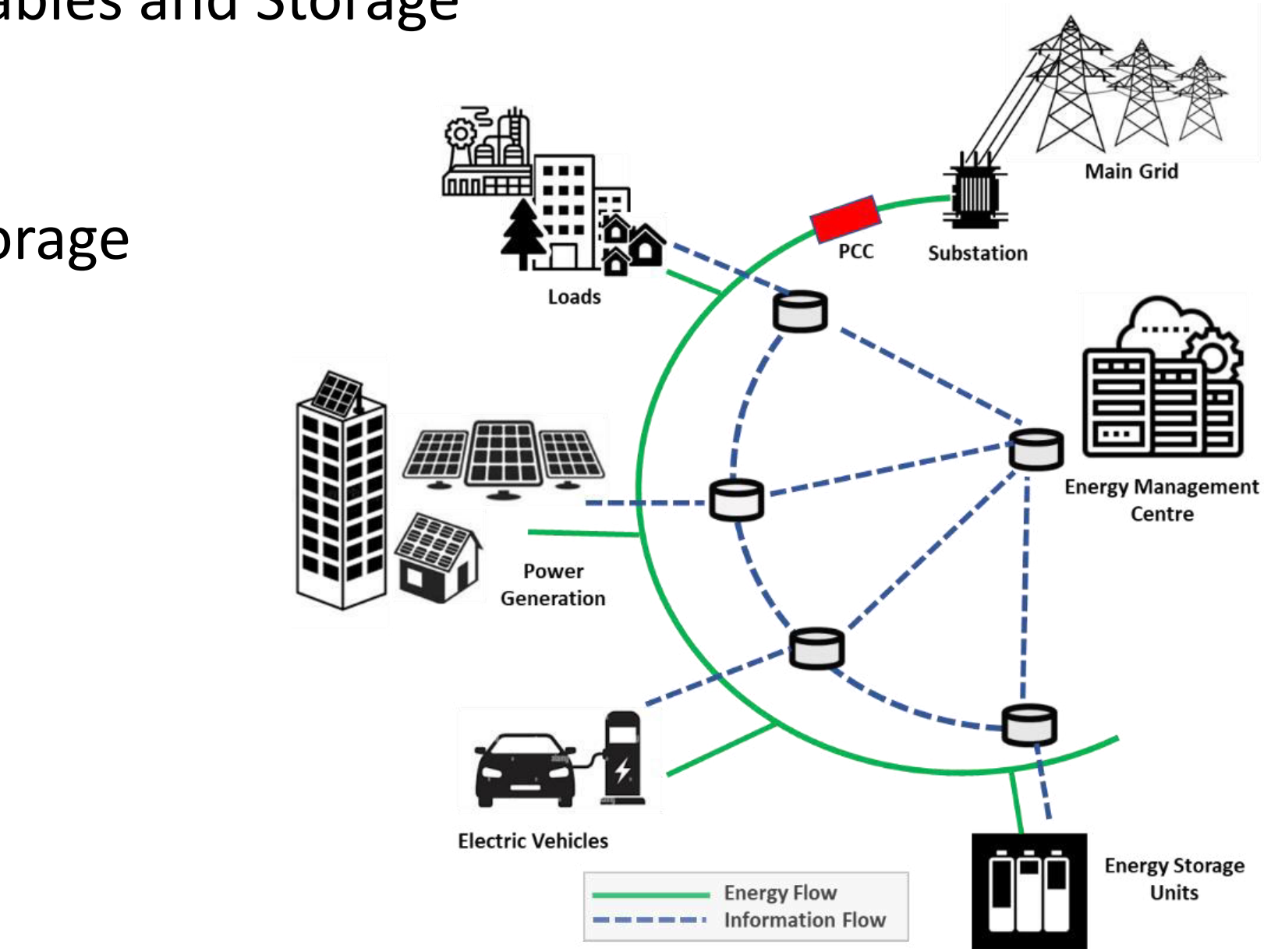
Menu ➔ Best Solutions

Technology – Efficiency First



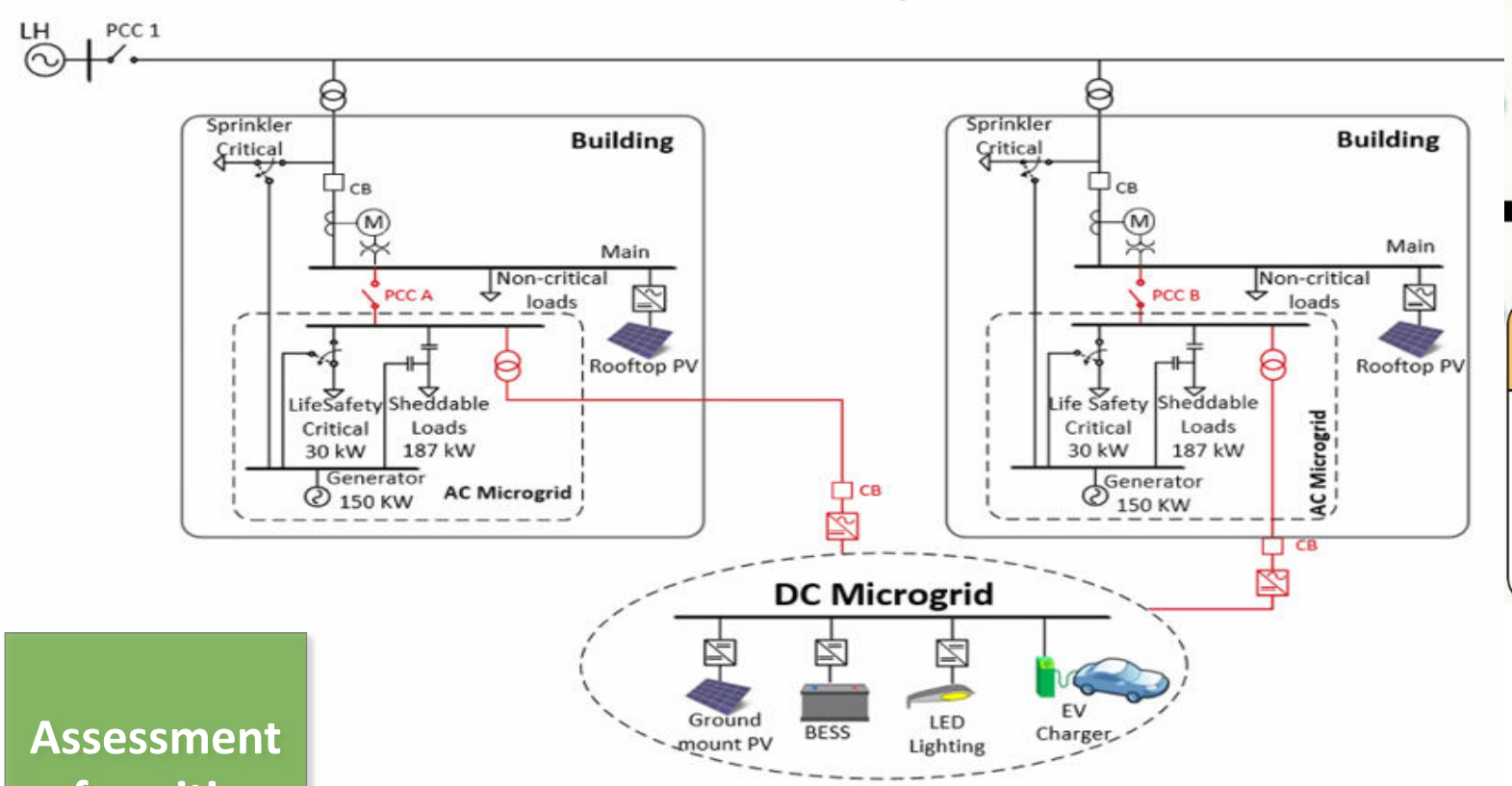
Technology – Renewables and Storage

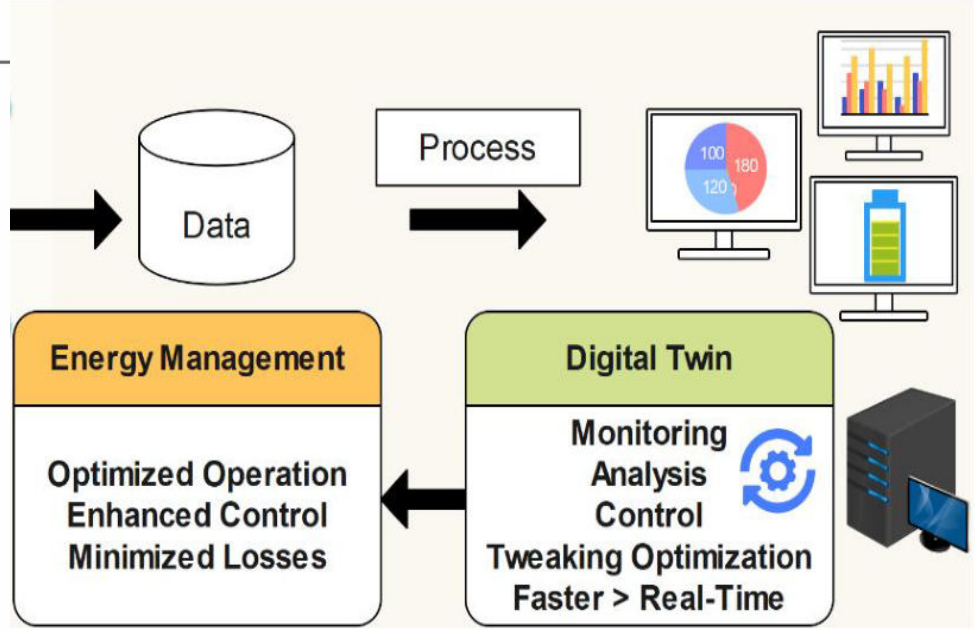
Add Renewables / Storage / and Dispatchable Demand in a Holistic design: Expandable Microgrid



Concordia Research: use digital twins for citizen engagement and site optimization

Research on microgrid simulation





Assessment of positive energy district

System can supply loads in future (10 year horizon)

Supply-Demand balance zero or positive: H, 0.5H, 5min Resilient for ext. climate events

TX-DS requirements/up grades in future

Provision of ancillary services

Microgrid Optimization

Objective functions:

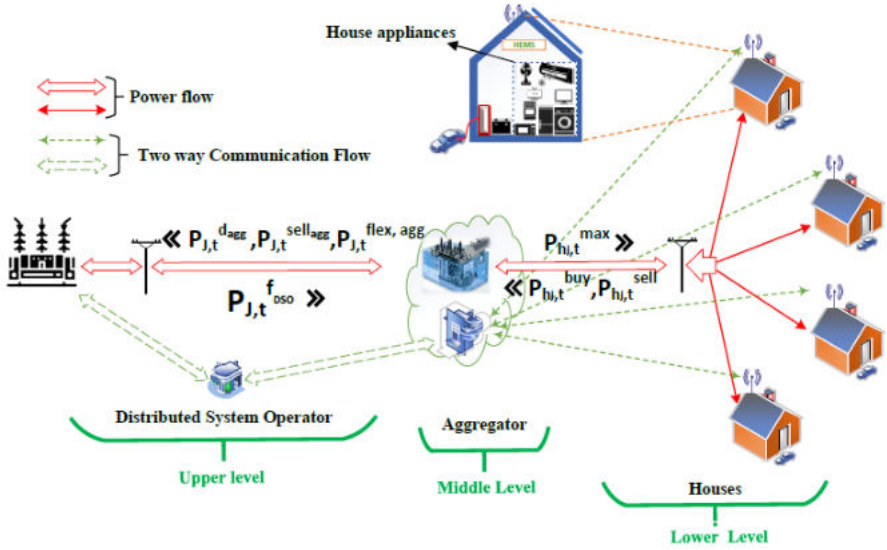
- ❑ Minimizing the total System losses
- ❑ Minimize household costs

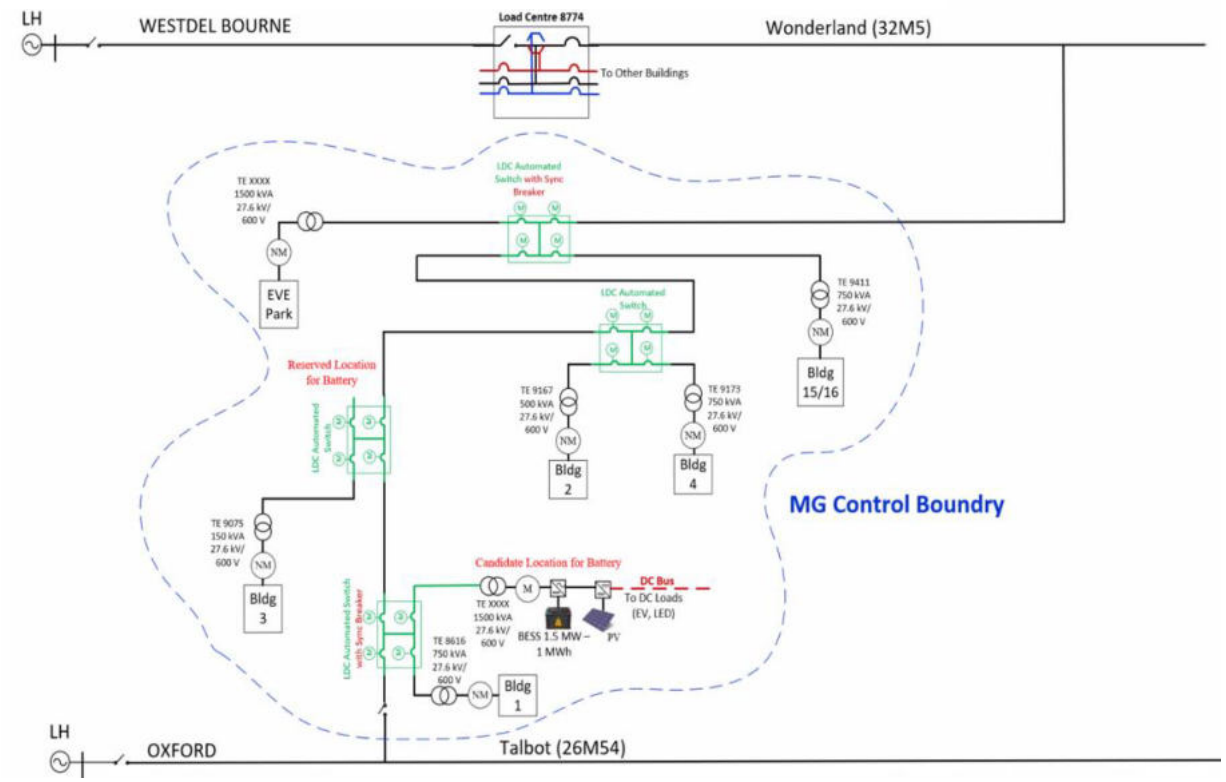
Operational Constraints:

- ❑ Active power Balance
- ❑ Reactive power Balance
- ❑ Voltage Limit
- ❑ Active power generation limit

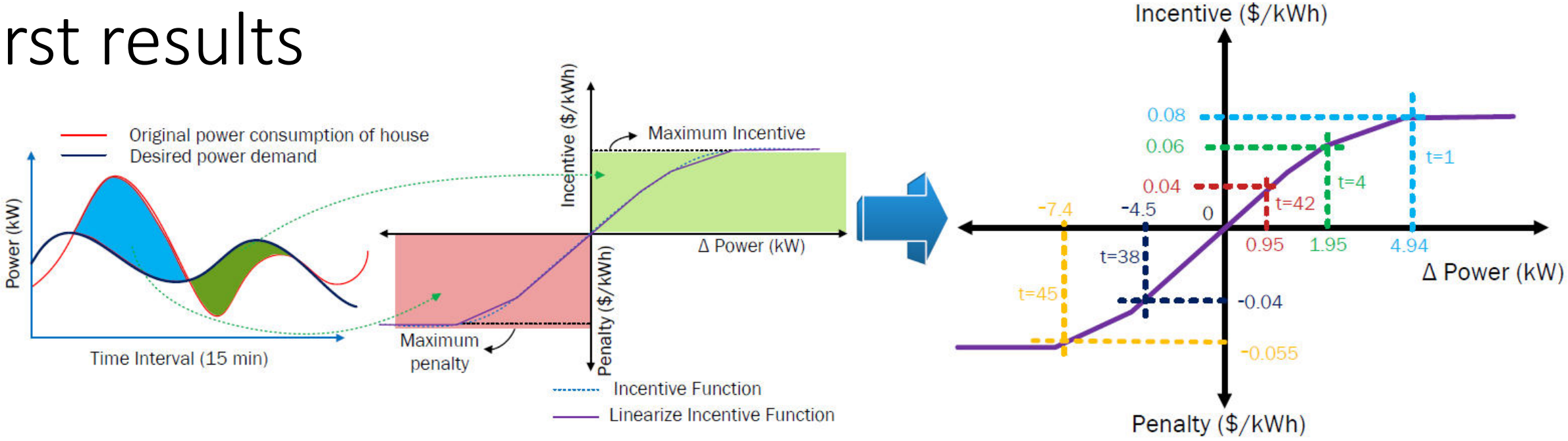
Optimization

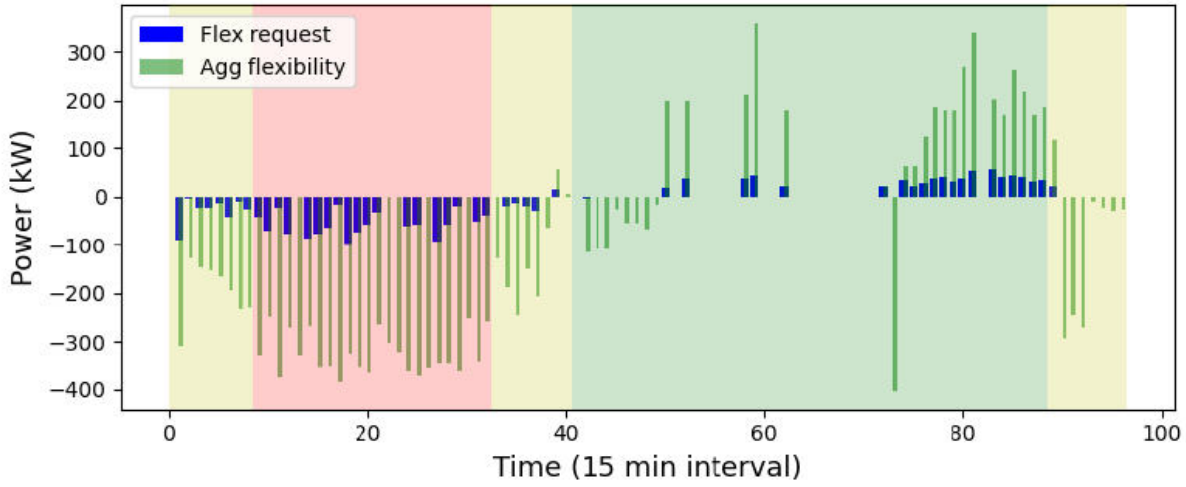
- ❑ Non-linear programing

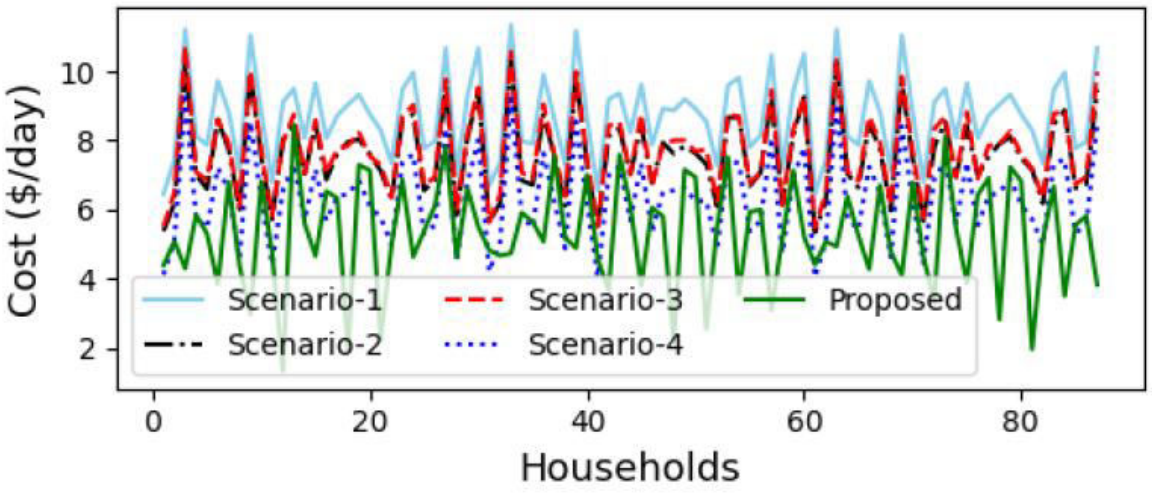




First results







Summary

- First large scale fully electrified zero/positive energy district in Canada
- Includes EV charging
- Case study for multi level energy management that minimizes system losses and cost
- Case study for detailed cost/benefit analysis
- Document barriers and solutions to implementation including cost

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