



DESIGNING AND PLANNING FOR NZ/NZR COMMUNITIES

Size Matters



Presented by:
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Strategic Initiatives**

Date: April 2026

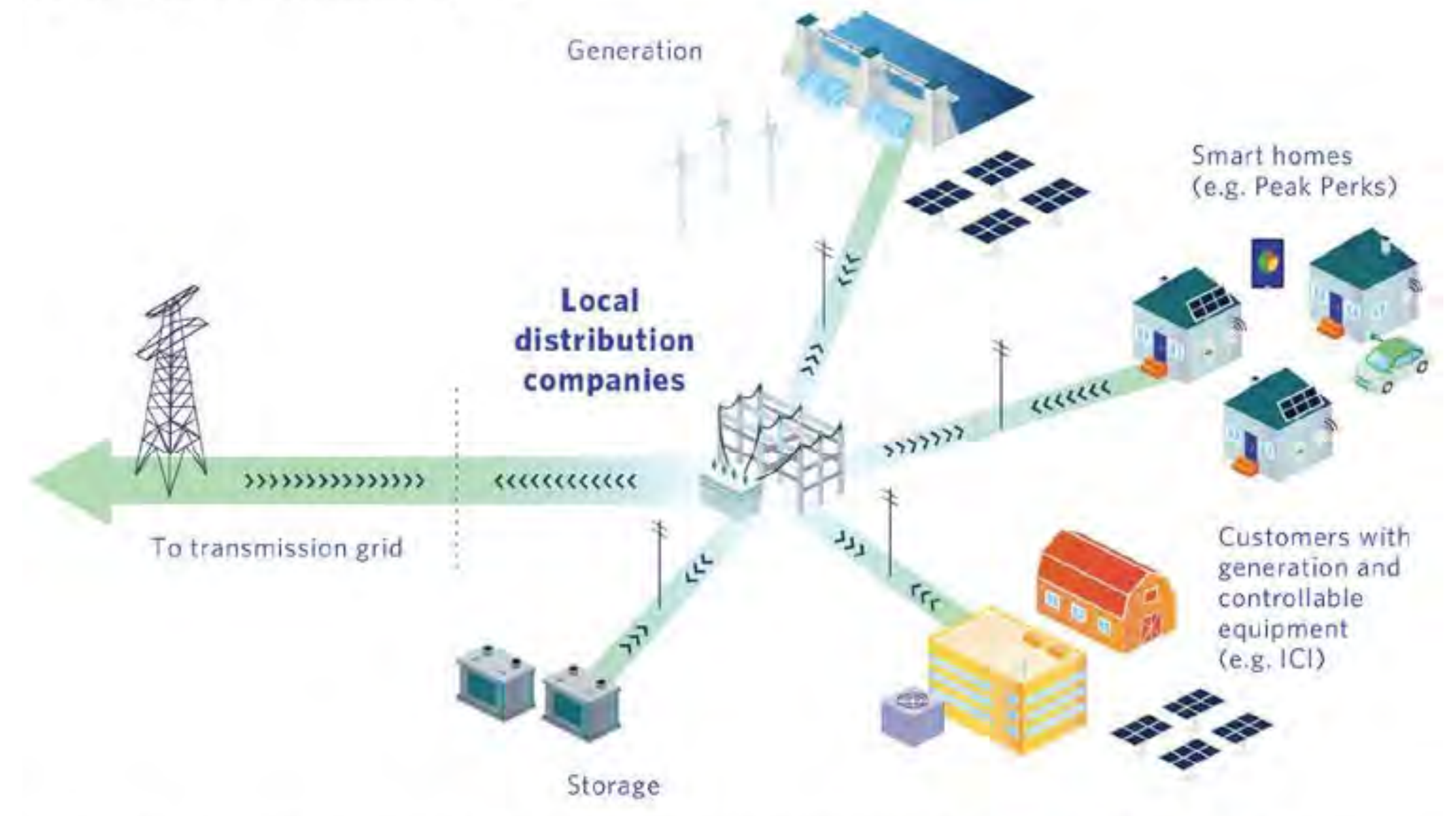


How do high performance communities affect infrastructure planning?

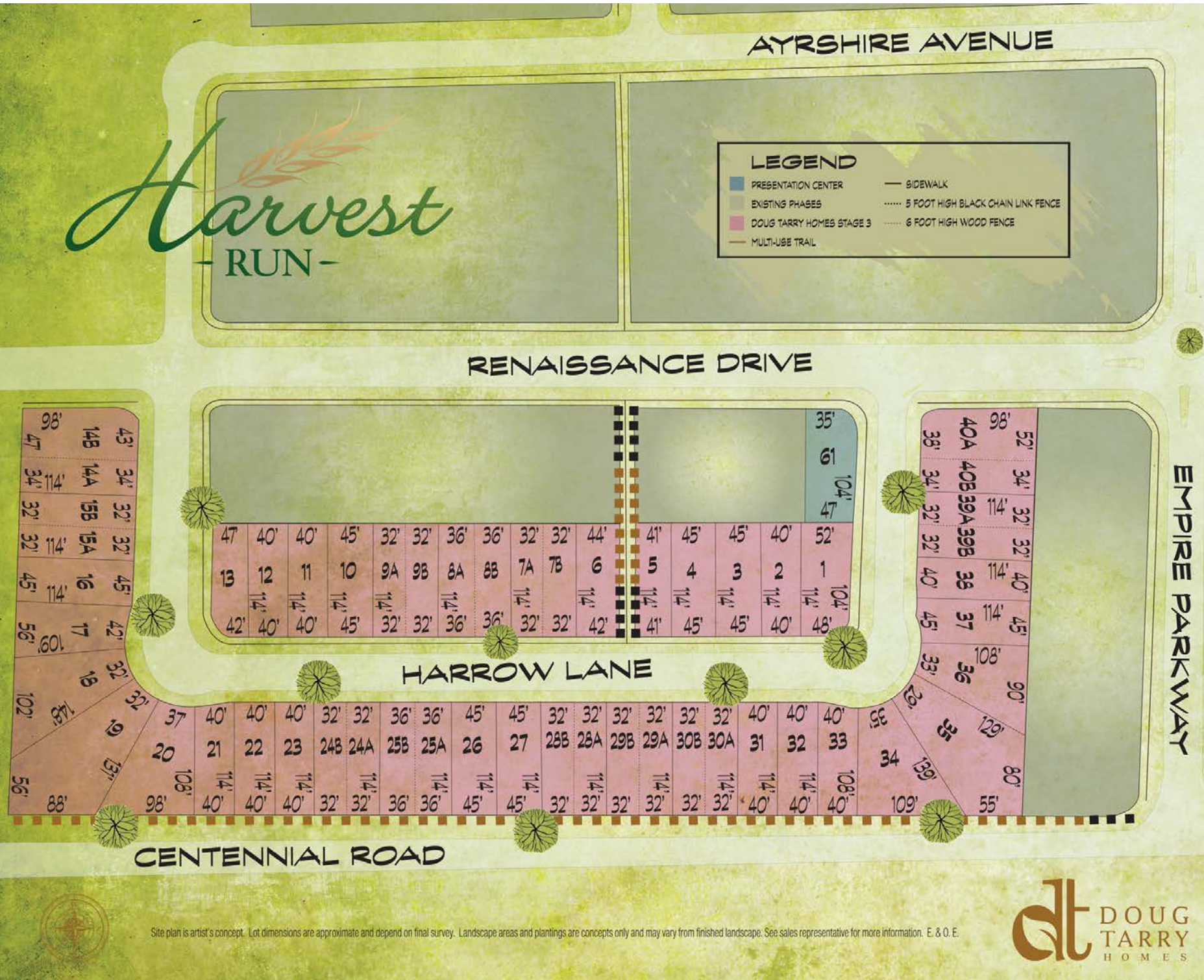
- Demand for new connections; electrification of vehicles
- More frequent severe weather events
- Cost burden

Taken from Energy for Generations: Ontario's Integrated Plan to Power the Strongest Economy in the G7

Figure 20: DER on the Distribution System



What do we (industry) experience?



<https://www.s2etech.com/capabilities/development/net-zero-condos/>

Reality = New technology and system design is challenging to push through for approvals (delays)

Reality = back and forth with utility led to 1+ year delay and decreased number of units per transformer

Reality = Requiring infrastructure without thinking about uptake of technology (EVs as an example), has resulted in builder/developers losing their load guarantee deposits (high cost burden)

Reality = there isn't capacity and you're stuck footing the bill

VALIDATION

The "moment of truth" where the theoretical energy model meets the physical reality of the construction site.

For utility providers and municipalities to trust lower infrastructure sizing, they **require empirical evidence** that the buildings will perform as promised.

“I’VE DONE COMPLICATED. IT’S COMPLICATED.”

Find out how Doug Tarry Jr over came this

dt DOUG TARRY HOMES

LifeARK

Sustainable Survivability Framework (2022)

Theoretical

- Thermal autonomy and passive design (NZE base)
- Adaptive (resilient) design measures
- Backup power and critical loads

WHY WE NEED LIFEARK™

Imagine the power goes out in your home. LifeARK™ is designed to provide

- Heating
- Cooling
- Electricity
- Fresh Air

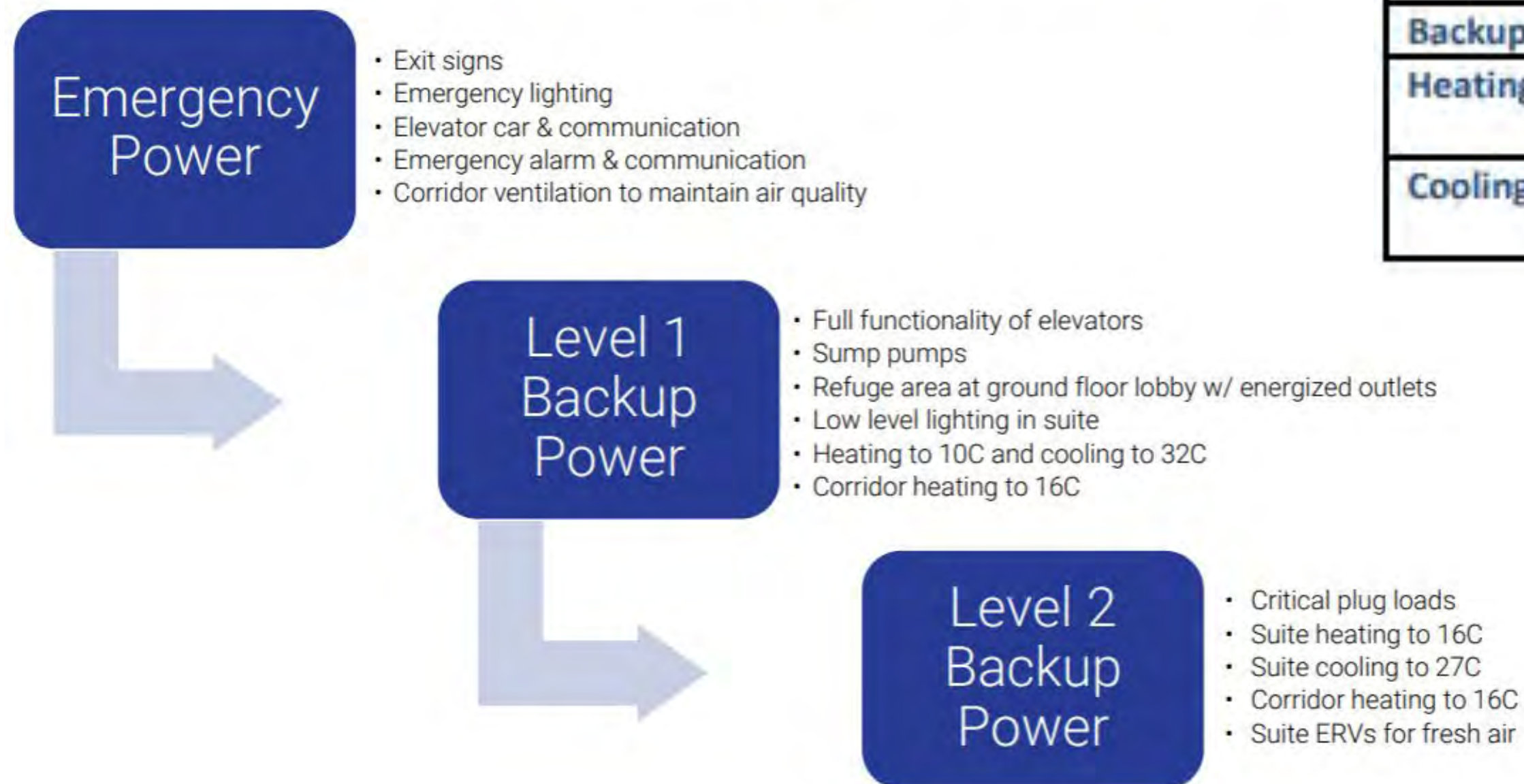
even when there's no power from the grid.

Sustainable survivability is *crucial* to our future.



96-Hour Power Outage Load Profiles (Analysis)

Emergency and Backup Power Loads

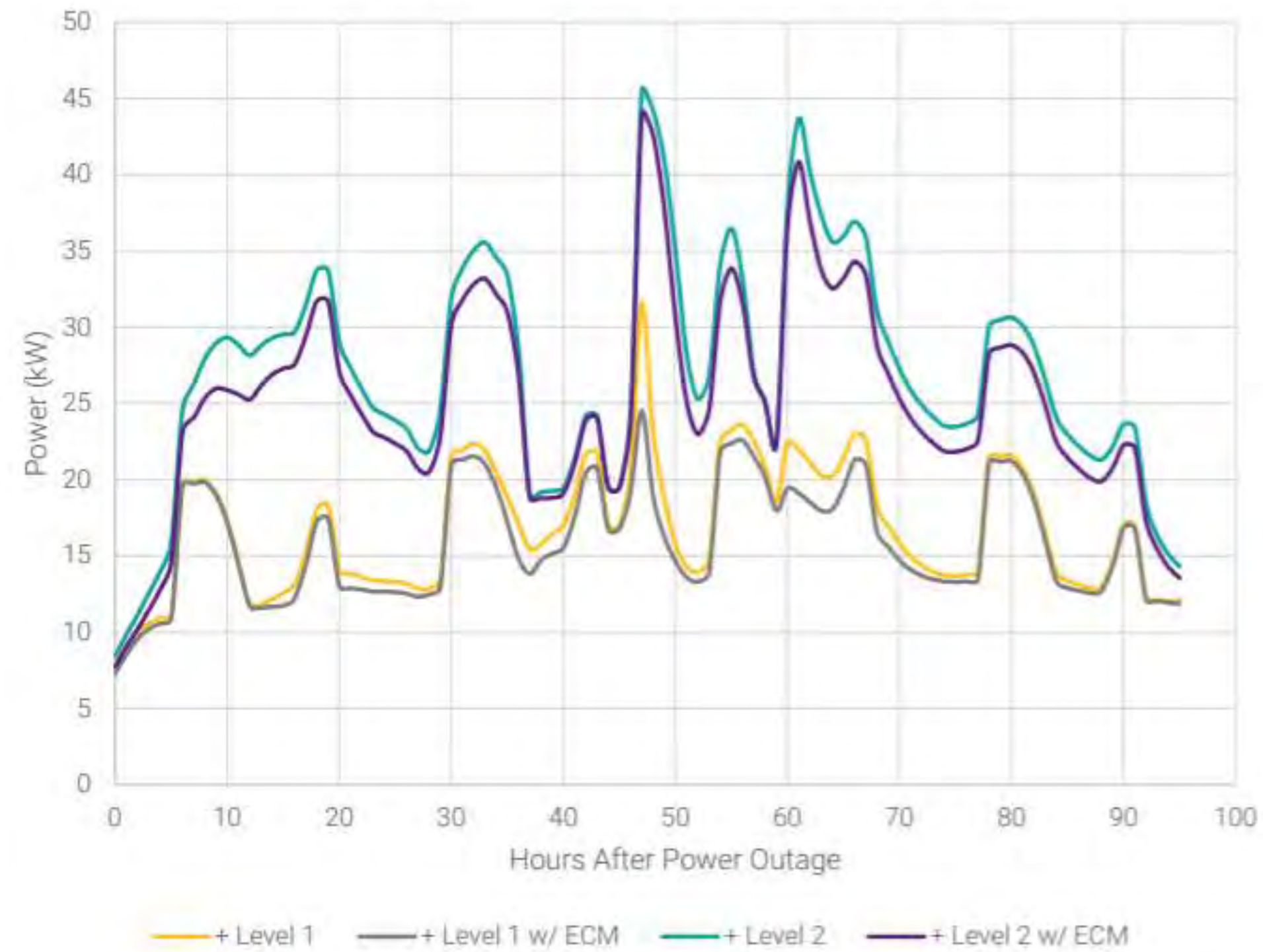


	City of Toronto/ TGS	USGBC – LEED & RELI	ASHRAE 55 Comfort
Description	TGS v4 has a mandatory refuge area & backup power requirement, which is what the below requirements are based on.	RELI is a complementary to LEED but standalone resiliency standard. Both LEED pilot resiliency credits and RELI hold similar principles.	This standard was used in passive survivability work to determine minimum comfort levels in a power outage.
Backup Power Length	72 hours (3 days)	96 hours (4 days)	N/A
Heating Setpoint	"minimum levels"	Basic – 10C Advanced – 16C	17C
Cooling Setpoint	"minimum levels"	Basic – 32C Advanced – 27C	26C

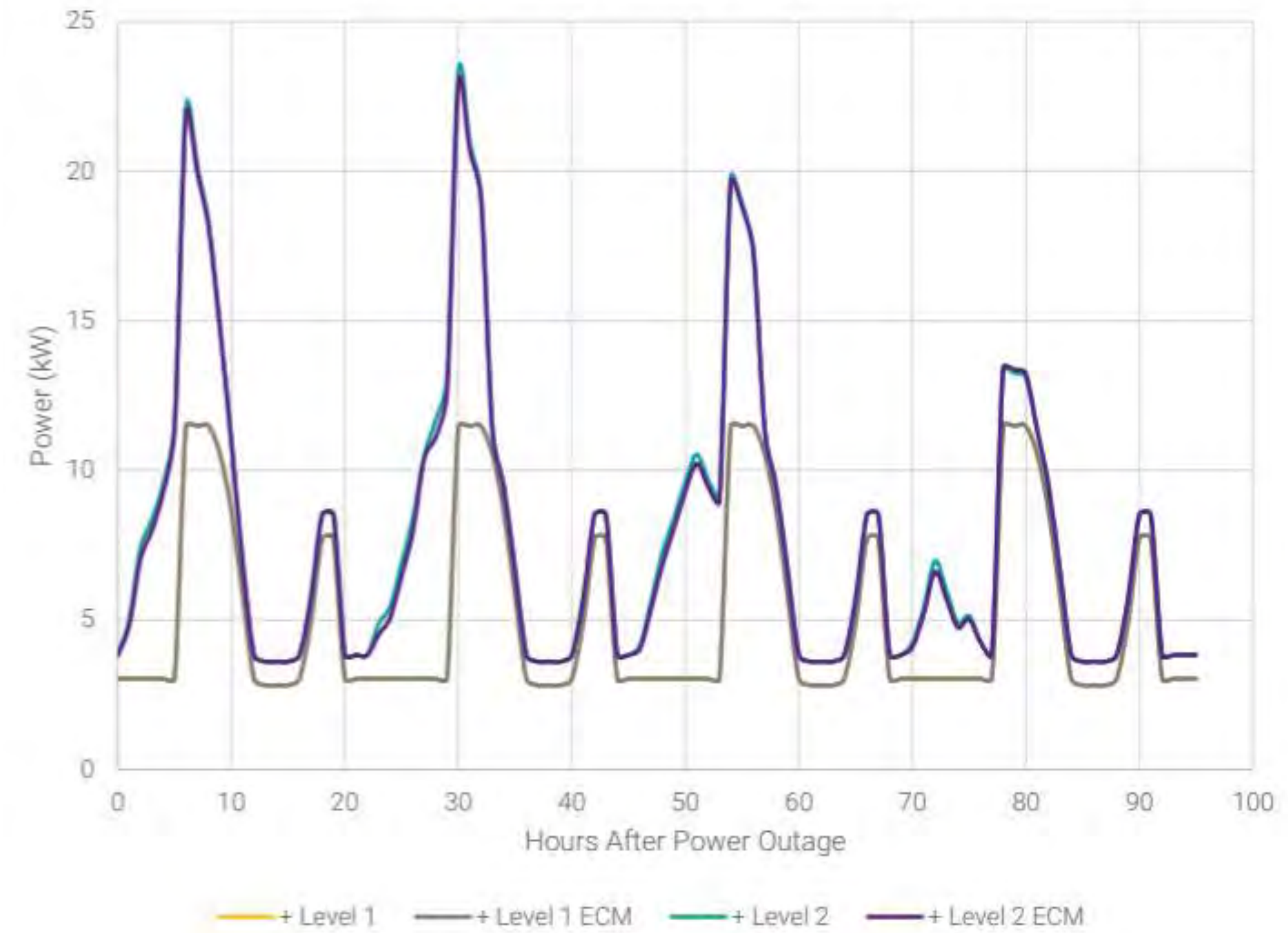
- Lack of guidance/standards around backup power (heating and cooling set points; justification for chosen duration)

96-Hour Power Outage Load Profiles

January 96-hr Power Outage Electricity Use



July 96-hr Power Outage Electricity Use

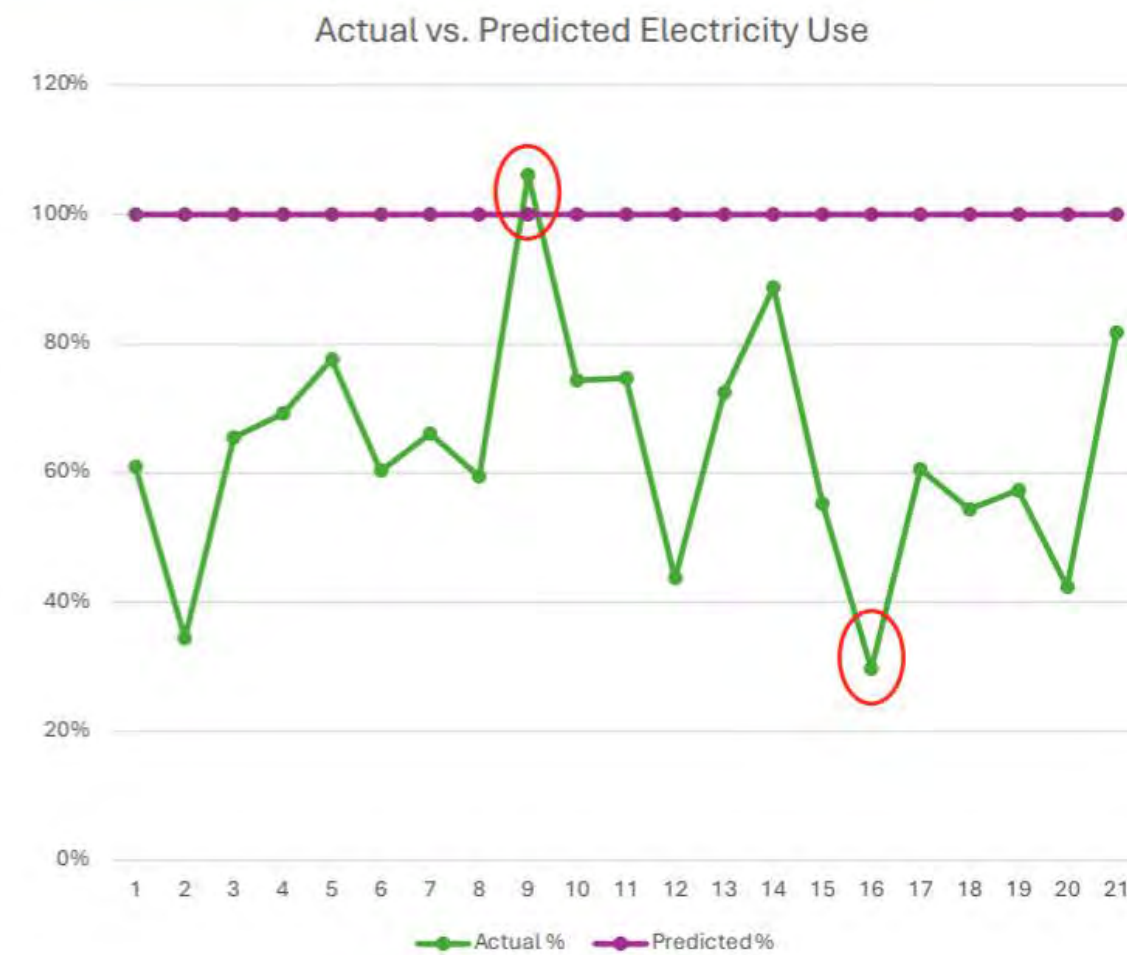


Phase 1 (2024-25)

Analysis: Electricity

1. 20/21 Homes used less electricity than predicted

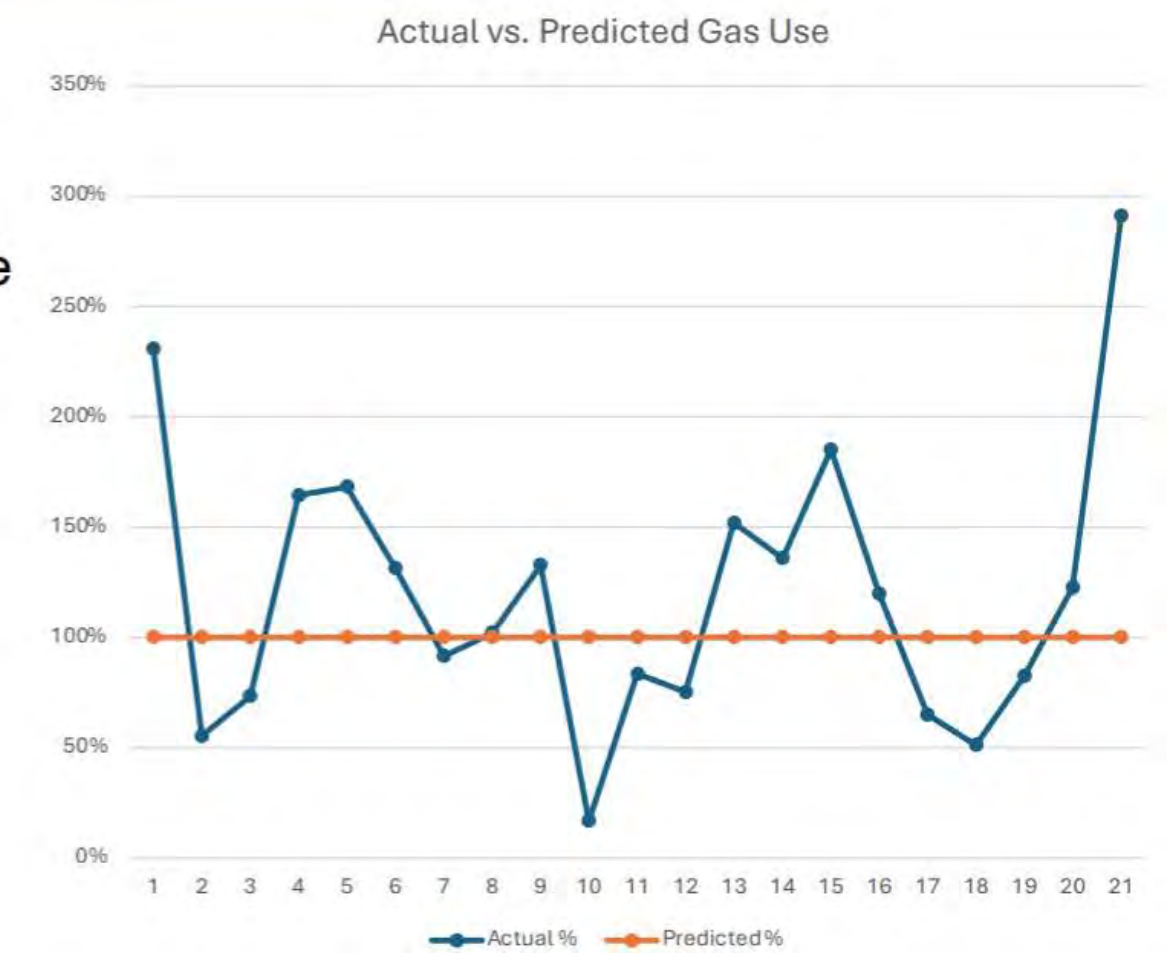
- Average of 36% less
- As much as 70% less
- High degree of variation



Analysis: Gas

1. Gas usage varied significantly vs. prediction

- Average of 20% more
- Ranges from 83% less to 191% more
- Very high degree of variation



- 21 NZr homes, dual fuel
- Utility data analyzed by Building Knowledge Canada
- Result: Need more data

Phase 2 (2025-Current)

Desired Outcomes:

1. Peak load electrical analysis
2. Analyze loads at circuit level
3. Define critical loads



Phase 3: using technology to load throttle in a pilot

Thank You



Ontario Home Builders' Association

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