

RESIDENCE





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Key Contacts

Name	Company	Role	Email
		Client	
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Paul Demchuk	Think Bright Homes	Building Science and Daily Ops	
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Mark Bernhardt	Bernhardt Contracting	IDP Coordinator	mark@bernhardtcontracting.com



Project Background (Discovery)

Information Gathering Phase

The Client

This property exhibits elevated energy requirements, presenting substantial opportunities for improving efficiency and reducing overall consumption. It is a very small house. There is mudroom currently being added and tied into the envelope. There was a floor in the basement and now the toilet line freezes. The electrical panel currently has 31.25amp available.

Key Goals.

(goals that must be met, or the project will not move forward)

1. Budget – The project must stick to client budget.
2. Ventilation – 1 pair of Lunos HRV, replace bath fan
3. Heating – Eliminate in-wall electric heaters and some/all baseboards on main floor. Ductless heat pump with 1 head, baseboards in basement
4. Door – Replace entry door
5. Insulation – Mech room needs insulation and air sealing, upgrade wall insulation, possibly insulate the floor
6. Solar – Electrical service and panel upgrade to handle necessary disconnect and solar load, 8kW potential
7. Homeowner – installing exterior insulation and reclad walls

Secondary goals:

(goals that can have some flexibility, could be described as preferences rather than must haves)

1. Carbon Reductions – Mechanical system upgrades have largely accomplished this already.
2. Resiliency- setup for battery backup in future
3. Long term improvements and energy bill reduction – lower bills as home improves over time.



Charrette #1 Agenda

Date: 2025-05-08

Objectives: To understand the opportunities, challenges, and red flags for each LEEP10 home to attain 50% and Net Zero energy reduction targets

1. Is there enough power at each home to electrify?
 - 1.1. If not, is there a solution to avoid electrical system upgrades?
2. What are the recommended/possible Energy Conservation Measures for each home to attain 50% and NZ energy savings? Why and IDP
 - 2.1. HVAC
 - 2.2. Building Enclosure
3. What solar opportunity exists for the home to support 50% and NZ energy savings? Project Brief, design overview and status update

Meeting Notes:

- Substantive change happening - adding a mud room to the house and tying to building envelope
- Intending to re-clad
- Had discussion with contractor to get better quality door and address some of minor things that could have detracted from DER



Charrette #2 Agenda

Date: 2025-06-11

Meeting Notes:

Meredith / Paul / Nate / Oriol

To get to 50%

- Already relatively good - 50% is really just solar
- Have decent heat pump
- Going full net zero isn't 50%
- Solution is to add solar panels - doing upgrades won't get you there
- Solar Panels
- Add heat pump in basement
- Do want exterior insulation (no including roof)
- Attic insulation
- (Windows pretty new)
- Add HRV 1 lunos pair to main house
- Practical net zero easy but actual net zero a challenge
- Can get close
- Concern that may have tenant in basement using heat and upstairs using cooling - which need to prevent with ASHP equipment
- F280 and EA model useless until addition finished
- Needs a post
- Floor by floor F280 to be completed by Nate

Net Zero Practicality:

- Foundation to R30



Charrette #3 Agenda

Date: 2025-05-26

Objectives: To understand the opportunities, challenges, and red flags for each LEEP10 home to attain 50% and Net Zero energy reduction targets

1. Starting with the Problem Homes First & see how far we get:
 - 1.1. [REDACTED]
 - 1.2. [REDACTED]
 - 1.3. [REDACTED]
 - 1.4. [REDACTED]
 - 1.5. [REDACTED]
2. Didn't Discuss:
 - 2.1. [REDACTED]
 - 2.2. [REDACTED]
 - 2.3. [REDACTED]
 - 2.4. [REDACTED]
3. Action List:
 - 3.1. Nate Dehart Revision
 - 3.2. Mark and Tom - Finalise F280's and ECMs - aim for 2nd/3rd next week
 - 3.3. The report will be a written history of the project
 - 3.4. Mark can include pricing if get costs from Paul & Meredith
 - 3.5. Mark can include pricing if get costs from Paul & Meredith
 - 3.6. Paul & Meredith - costings done by end of July
 - 3.7. Need Balance Point Calculations - so need F280's tabled out from Tom
 - 3.8. F280's
 - 3.9. ECMs
4. Next Steps Plan:
 - 4.1. Nates Revisions
 - 4.2. Revised F280's – Tom
 - 4.3. HVAC - *to electrical, to balance points, & everything goes back to Meredith for costing*
 - 4.4. Costing
 - 4.5. IDP Report

Meeting Notes:

- Need solar to get to 50%
- HRV Lunos - 1 pair down / 1 pair up
- Can we run off the existing HP outside
- Can get to net zero practical on this house
- Offsetting with solar
- In the basement - putting 1 heat pump head in the LR area - should reduce the BB
- Reduce all BBs to minimum
- Currently walls 11.92
- Need to go to R25 in walls to get to net zero
- OR R30 into the foundation
- R55 in the attic
- Can get insulation below about a foot below the basement
- Lapping insulation inside to outside
- Not doing any windows - north facing picture window R2 is being
- PRACTICAL NET ZERO makes most sense
- Wall assembly will end up being R24
- Add R60 to the attic
- Add 3" wood fibre to the walls

Appendix A

HEET Directed Assembly and Mechanical Upgrades

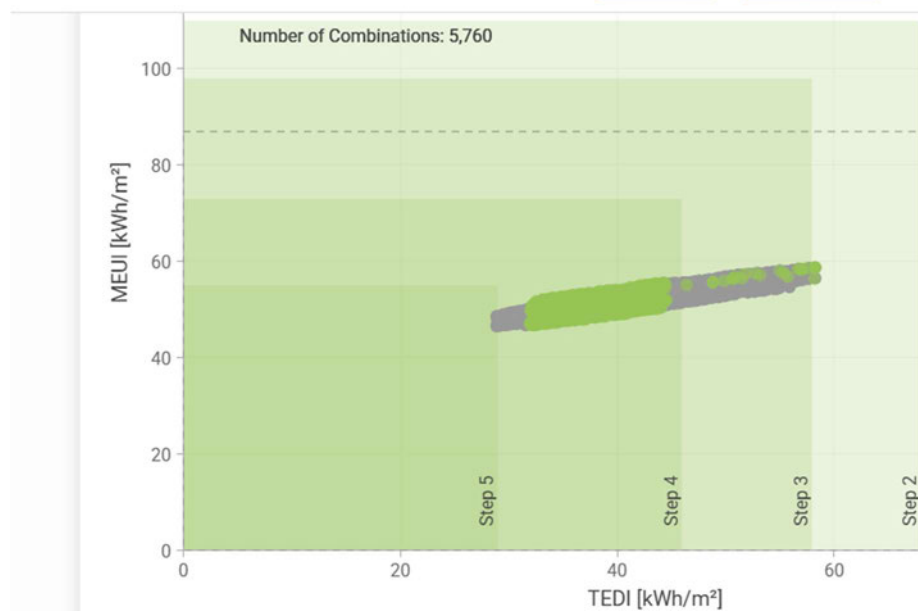


Options Modeled

1417 17A St-NetZeroMins

House Info

Simulation Info





Selected Upgrades

Target	Energy Conservation Measures					
	Current	50% Reduction	Net Zero Mins Requirements	Net Zero Required Upgrades		
				Option 1	Option 2	
Air Leakage	3.2		1.5			
Attic Ceilings	R24.76	R51	R55.02			
Cathedral/Vault						
Walls	R12	2x4 @ 16" OC, R12 + R12 Ext Instl	R18.3		R25	
Exp Floor						
Foundation Wall	R2.41		R18.99	R30		
Slabs	R0		R0 (not required on Retrofit)			
Windows	U 2.97		U 1.5 Double Pane		U 0.91 Triple Pane	
Ventelation	None	65%HRV	55%HRV			
Heating/cooling	ASHP HSPF 15 Cold Climate	ASHP HSPF 10 Cold Climate	ASHP HSPF 15 Cold Climate			
Generation (kWh)	0	20119	15906			
Other						
% Heat Loss Reduction	-34	-17	3	25	25	
MEUI (kWh)	93	72	59	47.2	48.6	
Based on first H2K model sent to us, does not include addition						



Appendix B

Solar Pannel Design and Layouts