Living Lightly on the Land

The NetZero Journey - Hope and Elation

Wildsight Kimberley February 19

The Site: Rocky Ridge Royal Oak NW Calgary Local Amenities

Wetland areas in the spring and autumn

Unique ‘knob and kettle’ geophysical area

Aspen stands and pristine prairie

Neighbour

Development Patterns

Site Plan

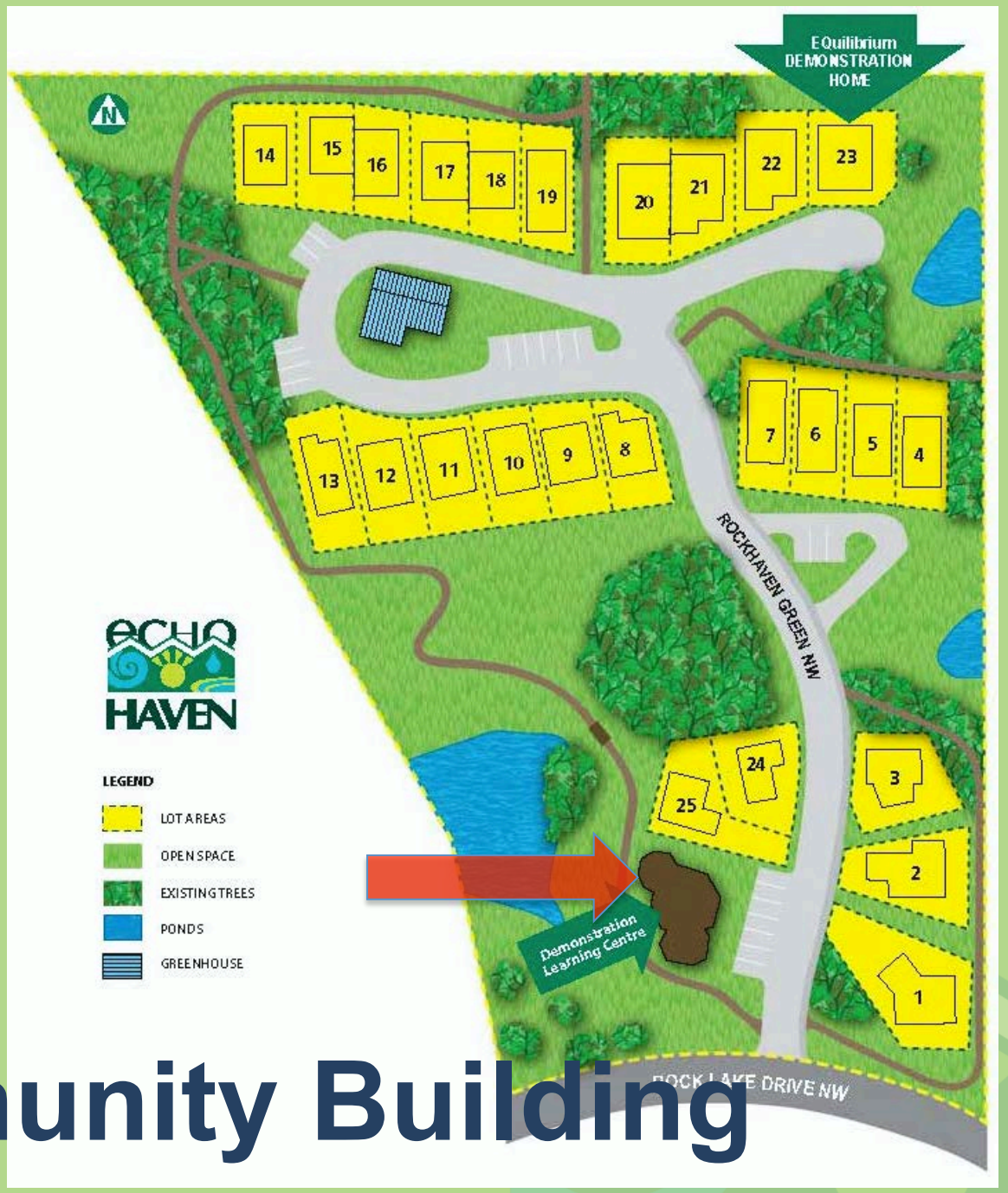
- innovative green neighborhood for 25 homes and related amenities
- 6.4 acres knob and kettle terrain
- 60% of natural features to be preserved
- small lots RS-2
- maximum density for area structure plan

Environmental Site Initiatives

- 100% storm water retention on-site
- grey water treatment and surface dispersion system
- balanced water management strategy
- common shared renewable energy generation on-site
- greenhouse, permanent demonstration centre and guest suites in the community building
- reduced utility and development costs for all homeowners
- zero greenhouse gas emissions
- construction management requirements
- preservation of native plants

Project Features - continued

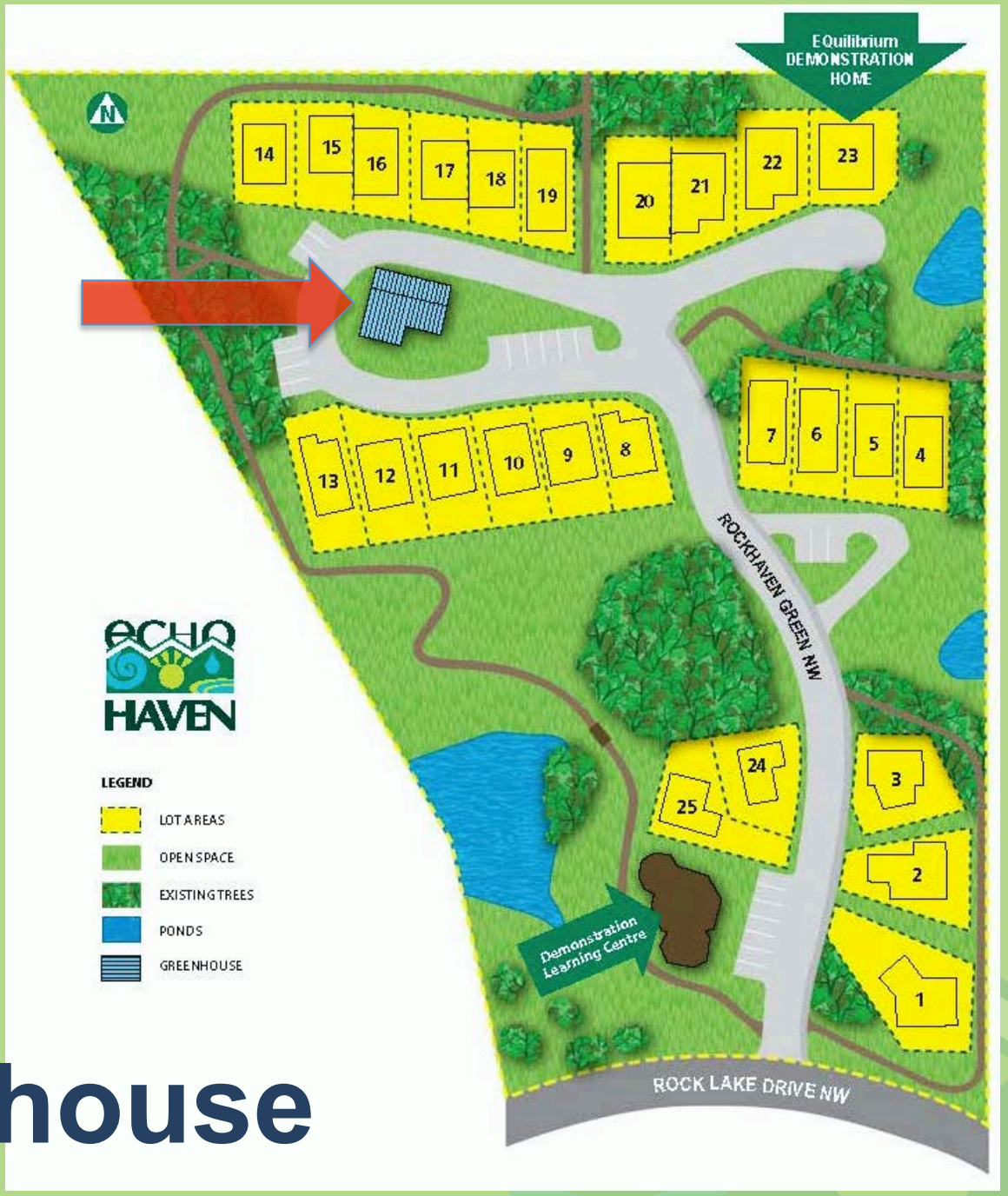
- solar access and site-friendly orientation for all home sites
- site close to LRT station
- shared transportation
- opportunities for community-based employment
- community composting and recycling
- variety of housing choices
- public access through site and transit shelter at the access road



Community Building

Community Building

Community Building


EQuilibrium
DEMONSTRATION
HOME
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ROCKHAVEN GREEN NW
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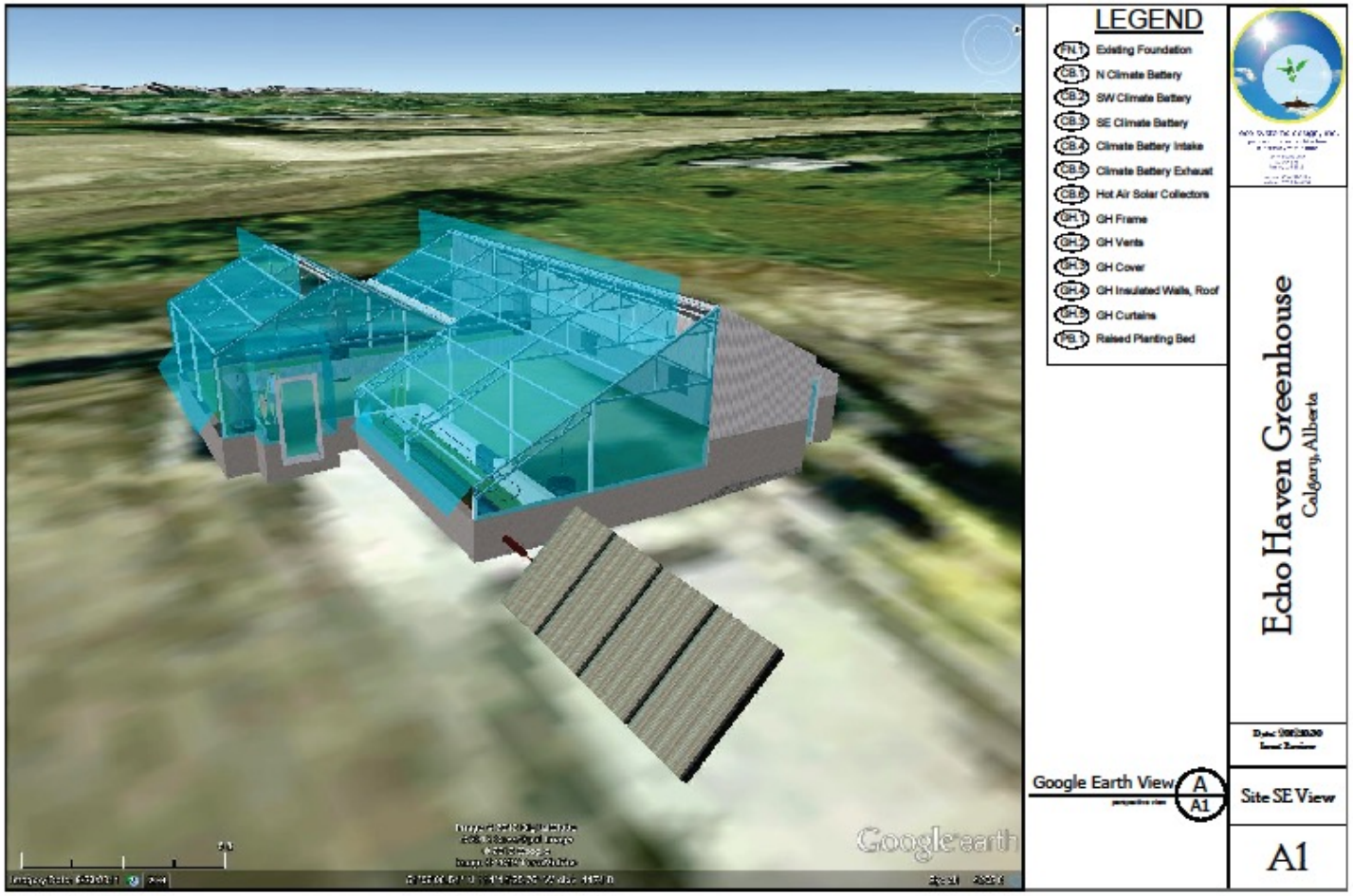
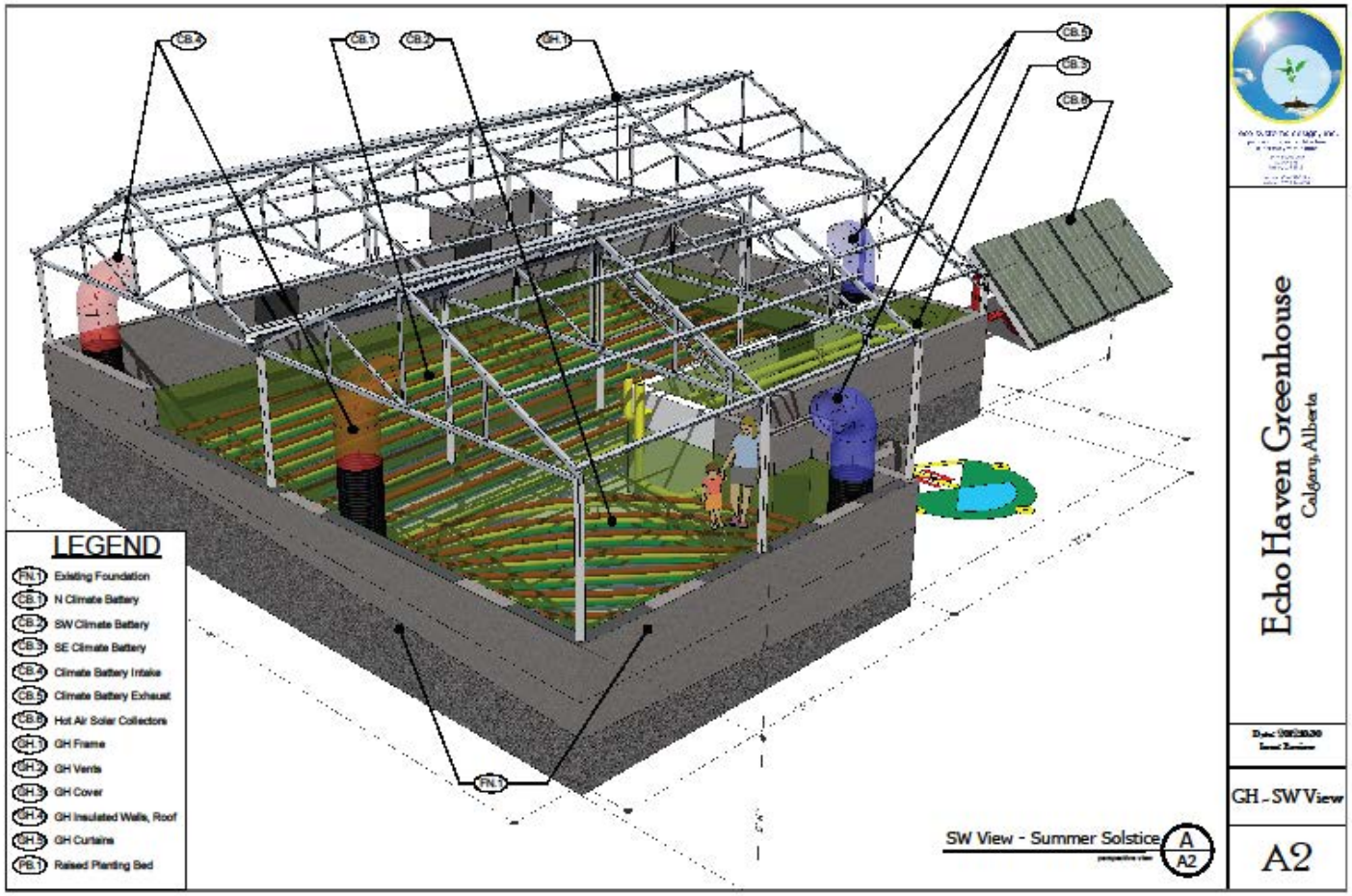
Demonstration
Learning Centre
ROCK LAKE DRIVE NW
ECHO
HAVEN
LEGEND
LOT AREAS
OPEN SPACE
EXISTING TREES
PONDS
GREENHOUSE

Greenhouse

Greenhouse


LEGEND
FN.1 Existing Foundation
CB.1 N Climate Battery
CB.2 SW Climate Battery
CB.3 SE Climate Battery
CB.4 Climate Battery Intake
CB.5 Climate Battery Exhaust
CB.6 Hot Air Solar Collectors
GH.1 GH Frame
GH.2 GH Vents
GH.3 GH Cover
GH.4 GH Insulated Walls, Roof
GH.5 GH Curtains
PB.1 Raised Planting Bed
Echo Haven Greenhouse
Calgary, Alberta
Google Earth View
A
A1
Site SE View
A1
Google earth

Greenhouse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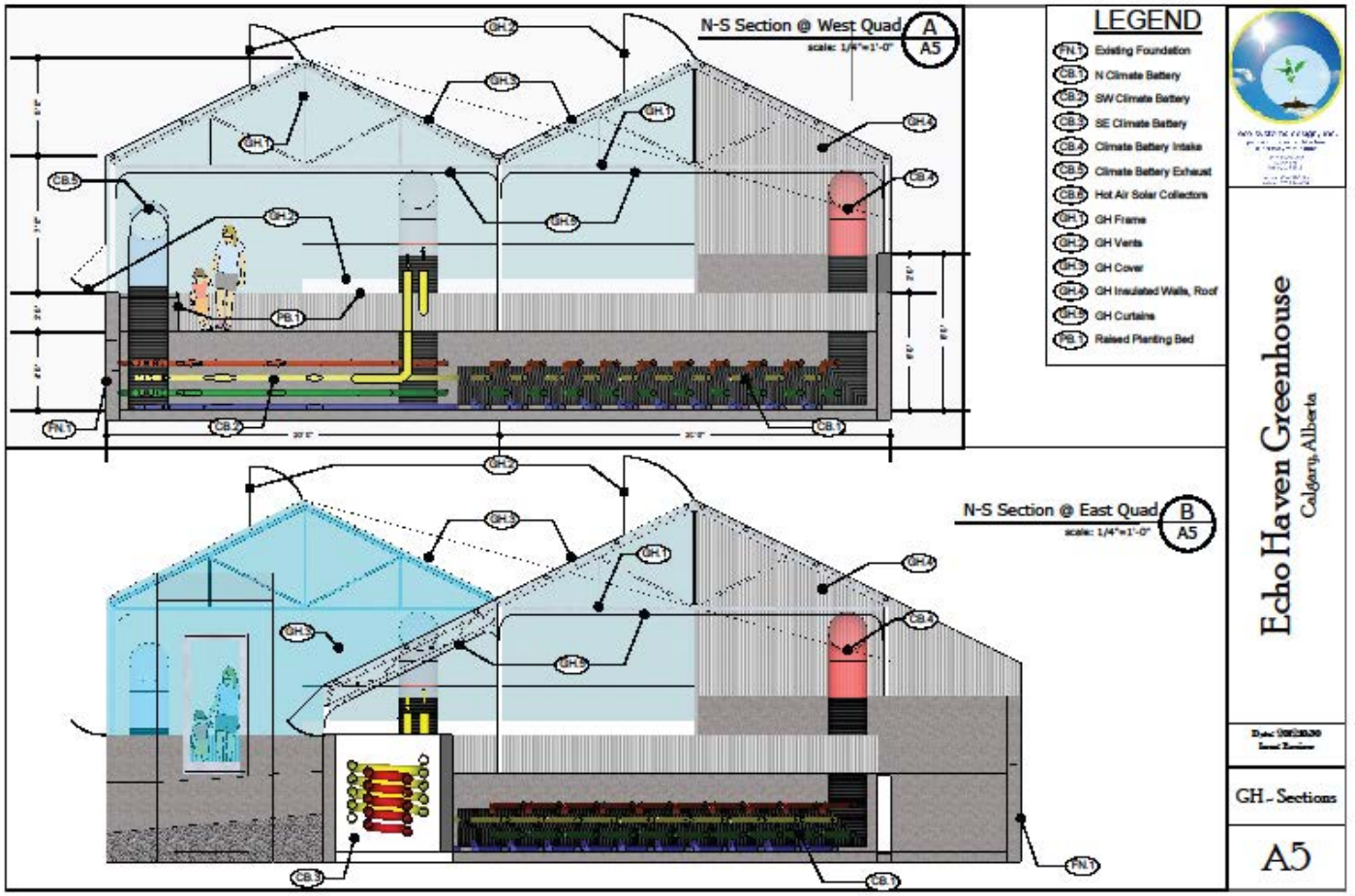
GH.4 GH Insulated Walls, Roof
GH.5 GH Curtains
PB.1 Raised Planting Bed
SW View - Summer Solstice
A
A2
Echo Haven Greenhouse
Calgary, Alberta
GH - SW View
A2

Greenhouse


N-S Section @ West Quad
A
A5
N-S Section @ East Quad
B
A5
LEGEND
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GH.5 GH Curtains
PB.1 Raised Planting Bed
Echo Haven Greenhouse
Calgary, Alberta
GH - Sections
A5

Greenhouse

Mandatory Home Requirements

- Energuide certified 84 minimum
- rainwater harvesting and re-use
- grade–adaptive site design
- no invasive landscape species, drought tolerant landscape
- architecturally integrated renewables
- solar passive/active heating (no gas to property)

APPENDIX
ECHOHAVEN
CONSTRUCTION MANAGEMENT GUIDELINES

Table of Contents

Waste Management

4.7.5 Debris and Trash Removal – Recycling

Debris and trash removal for a Project shall be undertaken by the Contractor, who shall clean up all trash and debris on the construction site at the end of each day. Trash and debris shall be removed from each site frequently and shall not be permitted to accumulate. The Contractor shall provide trash containers suitable for the quantity and type of refuse generated by the construction activities being undertaken on the Site at all stages of construction. Lightweight materials, packaging, and other items shall be covered or weighted down to prevent being blown off the construction site.

The Contractor is encouraged to recycle materials, such as wood, drywall, cardboard, glass, paper and tin.

Contractors are prohibited from dumping or burying any materials anywhere within Echo Haven.

During the construction period, each site shall be kept neat and clean, and shall be properly policed to prevent it from becoming a public eyesore or affecting other sites or any other area of Echo Haven.

Echo Haven will participate in a Construction Waste Recycling program to which all Builders and Associated Contractors must adhere.

Storm Water

Site Plan

Stewardship

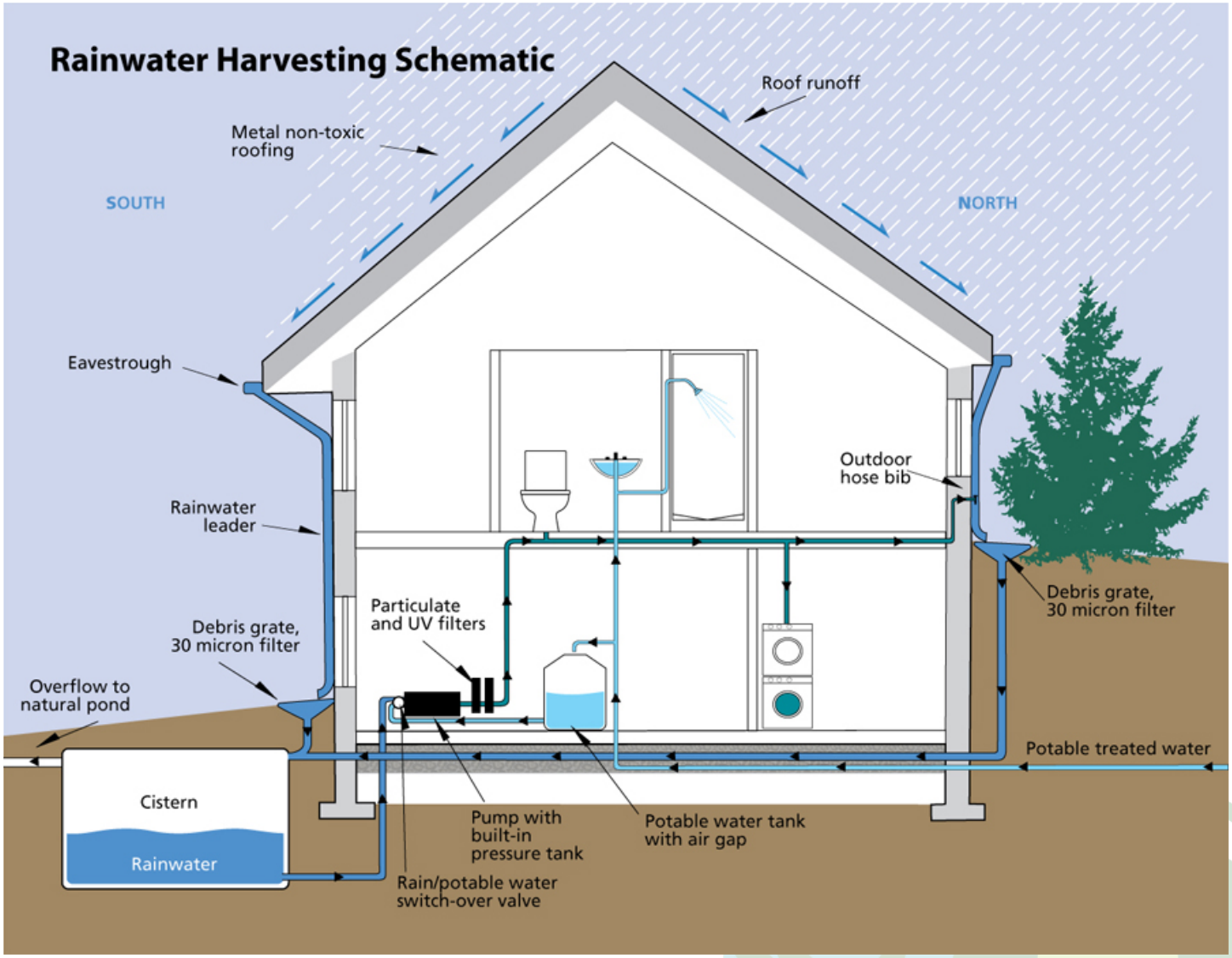
- Water Management Strategy requires Rainwater Harvesting to achieve zero discharge from site
- Infiltration and ground water recharge

Nutrients/contaminants

Streets contribute higher pollutant loads than any other source area

Rain Water Harvesting

Rainwater Schematic



Rainwater Harvesting


Filter basin


Cistern under driveway

Rainwater Harvesting
Mechanical

Practical Results?

Uncertain – Rules keep changing

Currently – No clothes washing both hot and cold

No hose bibbs as of 2015

Rain Water Harvesting

Drought resistant landscape

30 Native Species

ECHO HAVEN

The Net Zero House

OVERVIEW

CMHC EQuilibrium Program

THEMES:

CMHC EQuilibrium Program

THEMES:

Energy

CMHC EQuilibrium Program

THEMES:

Energy

Health/Comfort

CMHC EQuilibrium Program

THEMES:

Energy
Health/Comfort
Resources

CMHC EQuilibrium Program

THEMES:

Energy
Health/Comfort
Resources
Environment

CMHC EQuilibrium Program

THEMES:

Energy
Health/Comfort
Resources
Environment
Affordability

Phase 1 - Charrette Process

The Net Zero House

ENERGY OVERVIEW

Energy Model

Calculated requirements

Space heating: 6,494 MJ / yr. (1803.7 kWh / yr)

Whole house energy: 27,627 MJ/ yr. (7674 kWh / yr)
Includes all energy requirements: hot water, lights, appliances,……

Quick Facts

Energy Model

Energy requirements by floor area:

Space heating:
1804 kWh / 231 sq.m. = 7.8 kWh / square meter

Whole house:
7674 kwh / 231 sq.m. = 33.2 kWh / square meter

Total Energy requirement: = 41 kWh / square meter

Energy Model

Heat Load @ -30°C to maintain 21°C indoor temperature

3000 Watts =

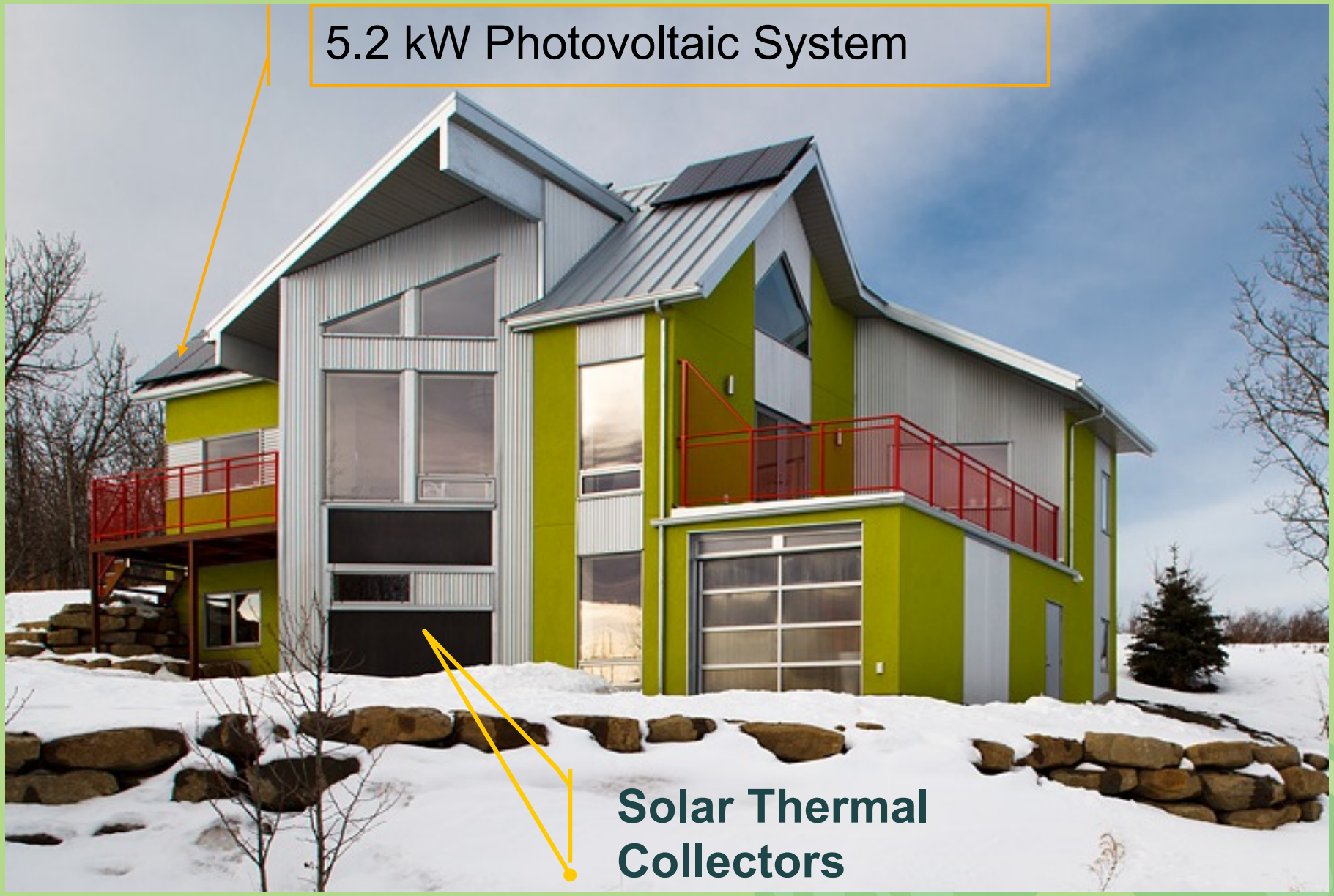
Quick Facts

Energy Model

Passive Solar Gain

Provides 60% of heating requirements

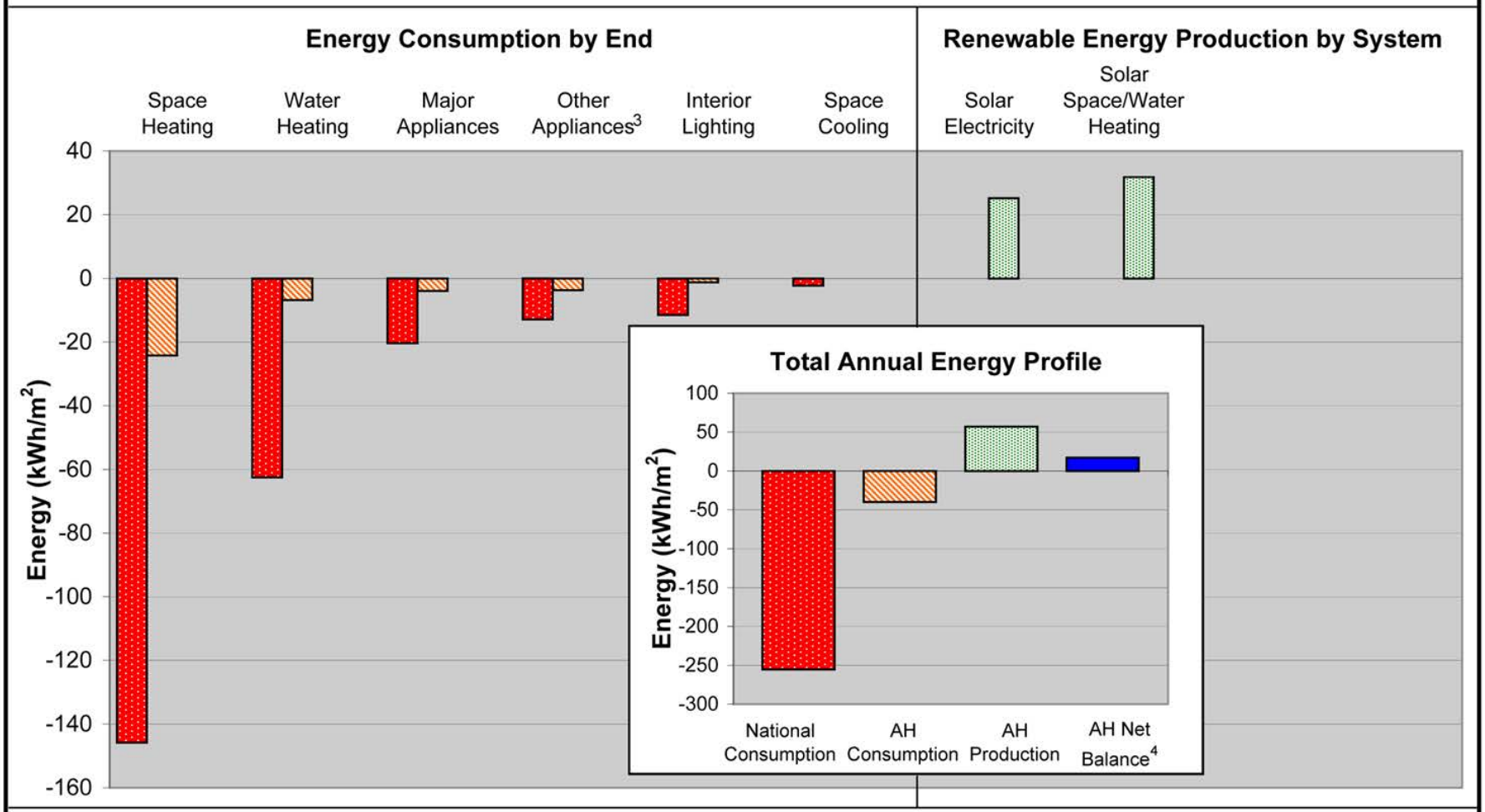
Quick Facts



Renewable Energy

CMHC EQuilibrium Housing Initiative

Comparison of Canadian National Average[1] and Echo Haven[2] (EH) Annual Residential Energy Profile



- National Energy Consumption
- Echo Haven Energy Consumption
- Echo Haven Renewable Energy Production
- Echo Haven Net Balance

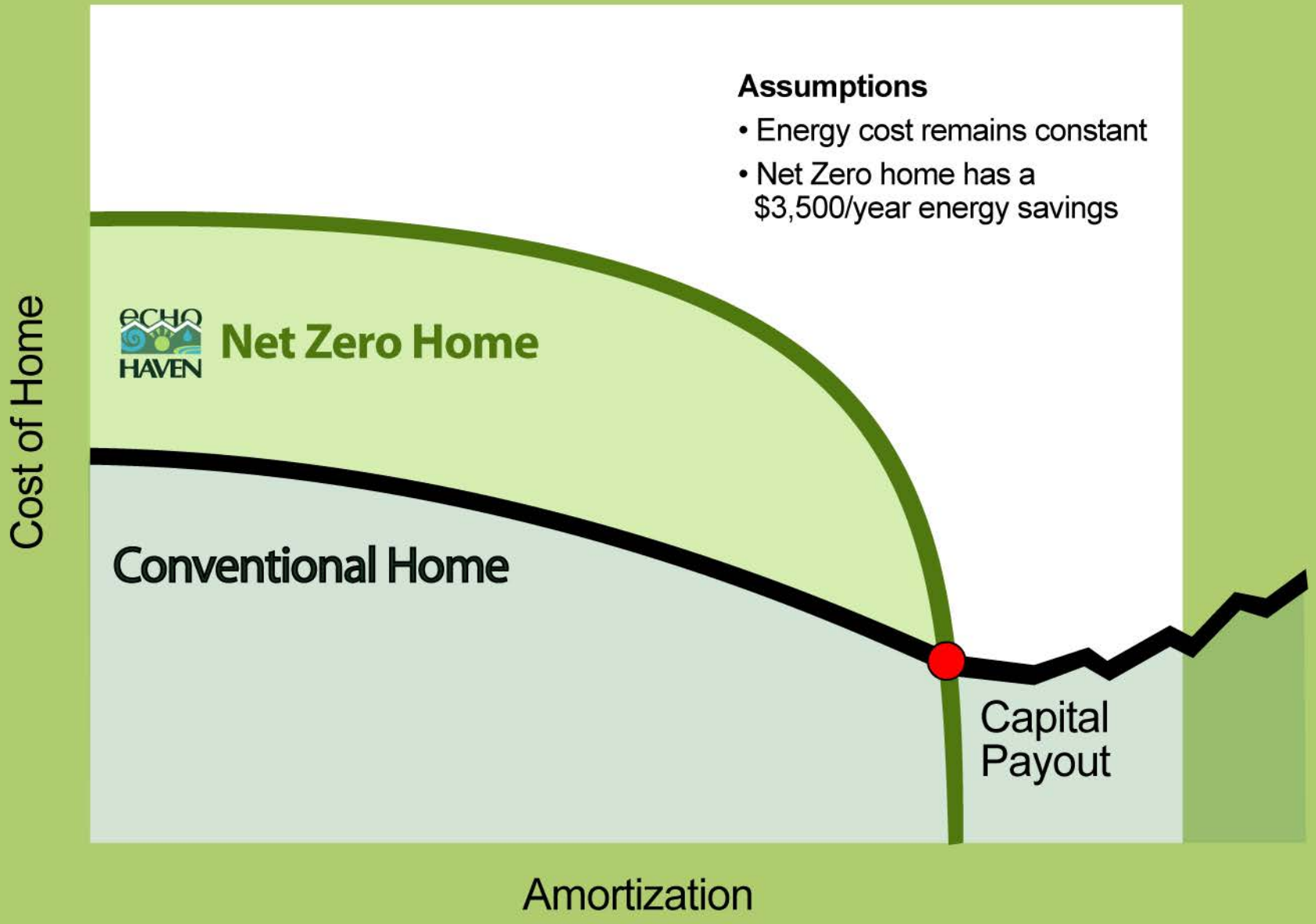
[1] Source for Canadian Residential Sector Energy Data: Residential Secondary Energy by End Use, 2004; *Energy Use Handbook Data: 1990 and 1998 to 2004*, Natural Resources Canada, 2006.

[2] Values are predicted based on Hot2000 modelling - TG

[3] "Other Appliances" includes small appliances such as televisions, video cassette recorders, digital video disc players, radios, computers and toasters.

[4] Net Balance = Energy Consumption + Renewable Energy Production

Home as an Investment



How do I sell a high performance home?
What motivates buyers?

Why are we here???

- Saving money

Why are we here???

- Saving money
- Concerned about climate change

Why are we here???

- Saving money
- Concerned about climate change
- Reducing my environmental footprint

Why are we here???

- Saving money
- Concerned about climate change
- Reducing my environmental footprint
- Healthier family

Why are we here???

- Saving money
- Concerned about climate change
- Reducing my environmental footprint
- Healthier family
- Because I can

Why are we here???

“If we reach the +3 degree global temperature increase, 432 million homes will be underwater in less than 10 years”

Intergovernmental Panel on Climate Change Report, October 2015

Why are we here???

In Canada the 2013 floods cost $3 Billion – as time goes on the damage will get more expensive. Can we wait for the next catastrophe?

Why are we here???

In November 2015 a researcher looked at 10 years of researcher predictions on the effects of climate change and compared them to what actually happened – turns out the effects were UNDER-estimated

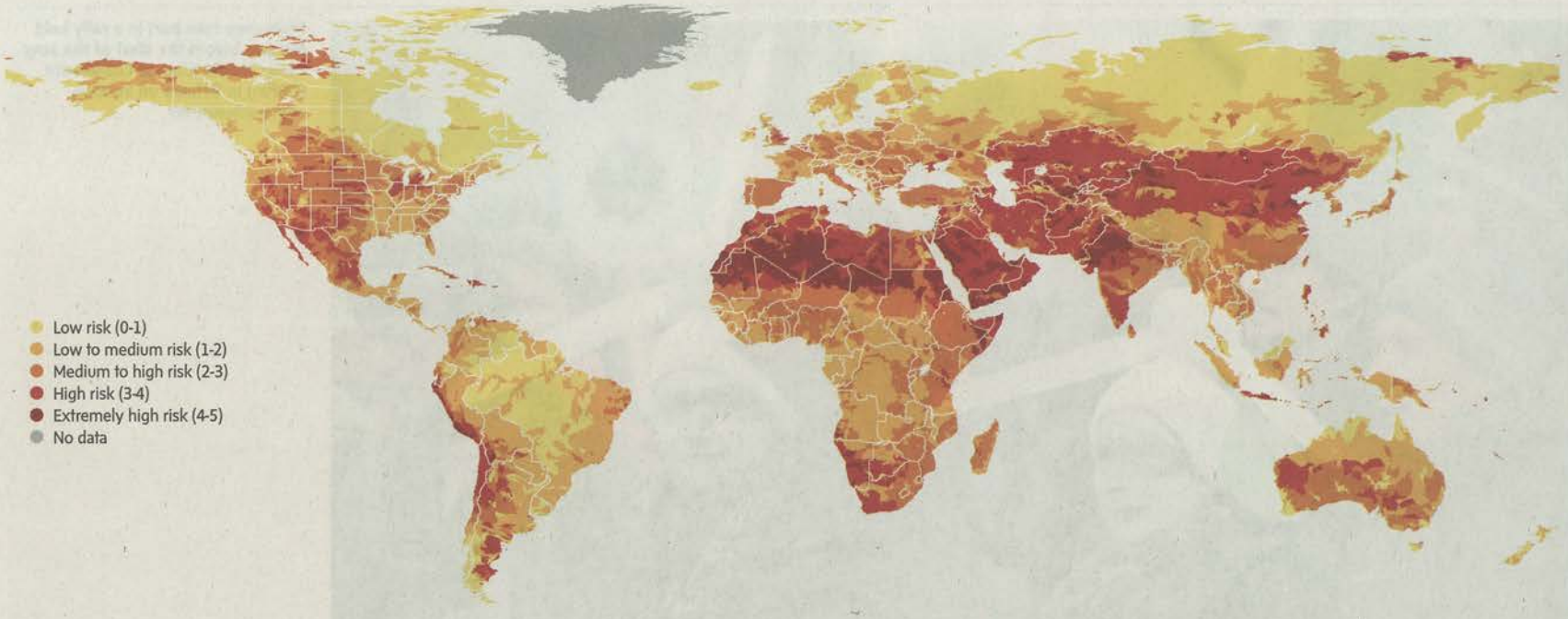
Why are we here???

The North American residential sector still uses 23% to 35% (depending on the source) of our total energy production.

Why are we here???

World overall water risk

Overall water risk identifies areas with higher exposure to water-related risks and is an aggregated measure of all selected indicators from the Physical Quantity, Quality and Regulatory & Reputational Risk categories.



THE GLOBE AND MAIL) SOURCE: WORLD RESOURCES INSTITUTE

ENVIRONMENT

Water scarcity a catalyst for other concerns

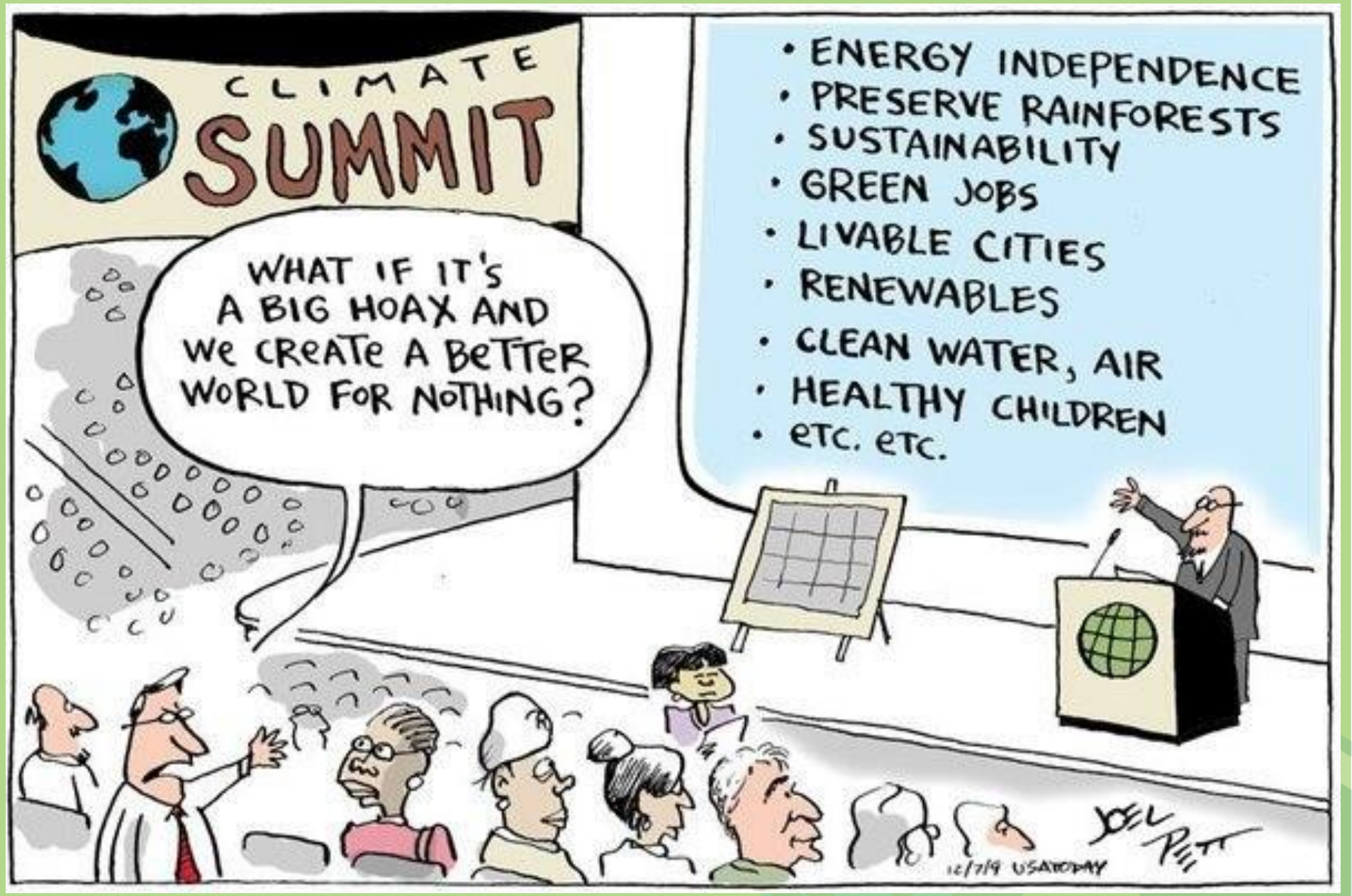
For many leaders gathering for the climate-change summit in Paris on Monday, global warming is a 'clear and present danger'

Why are we here???

The Bucket:

an analogy by Katherine Hayhoe

Why are we here???


CLIMATE
SUMMIT
WHAT IF IT'S A BIG HOAX AND WE CREATE A BETTER WORLD FOR NOTHING?
• ENERGY INDEPENDENCE
• PRESERVE RAINFORESTS
• SUSTAINABILITY
• GREEN JOBS
• LIVABLE CITIES
• RENEWABLES
• CLEAN WATER, AIR
• HEALTHY CHILDREN
• ETC. ETC.
12/7/19 USATODAY
JOEL PETT

AVERAGE SUNSHINE

Cranbrook: Latitude 49.530

	% Sun	Hours	Days
Jan	24	64	20
Feb	38	107	24
Mar	44	163	28
Apr	52	215	29
May	54	257	30
June	55	268	29
Jul	64	315	30
Aug	68	303	30
Sept	58	218	29
Oct	48	159	29
Nov	25	70	20
Dec	20	52	17
Annual	**46**	**2191**	**315**

Calgary: Latitude 51.039

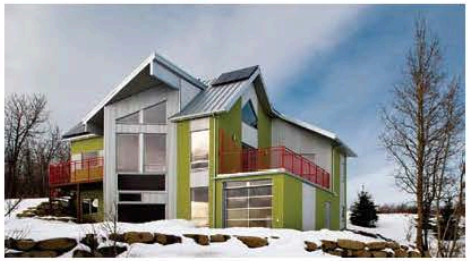
% Sun	Hours	Days
46	120	27
51	145	26
48	177	27
53	220	28
52	249	29
55	270	28
63	314	31
63	284	30
54	207	27
53	175	29
45	121	25
46	114	27
52	**2396**	**333**

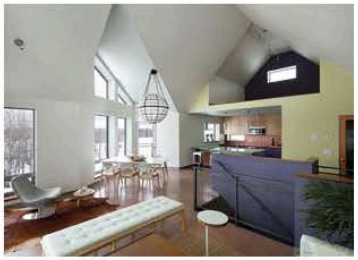
Good News


EQuilibrium
Sustainable Housing Projet de démonstration
Demonstration Projects de logement durable
www.cmhc.ca www.schl.ca
EchoHaven An EQuilibrium Home in a low impact community
Sponsors
EVOLVE
WALLTITE ECO
SkyFire
Canada


CANADA MORTGAGE AND HOUSING CORPORATION
SOCIÉTÉ CANADIENNE D'HYPOTHÈQUES ET DE LOGEMENT
EQuilibrium™
HEALTHY HOUSING FOR A HEALTHY ENVIRONMENT
MAISON SAINE POUR UN ENVIRONNEMENT SAIN
Sustainable Housing Demonstration Project
Projet de démonstration de logement durable
CMHC's EQuilibrium™ Initiative
L'initiative EQuilibrium MC de la SCHL
www.cmhc.ca www.schl.ca
SkyFire
DUXTON
EVOLVE
SUNERGY
WALLTITE ECO
Canada
CMHC SCHL


PCHA
HAVEN





Living naturally

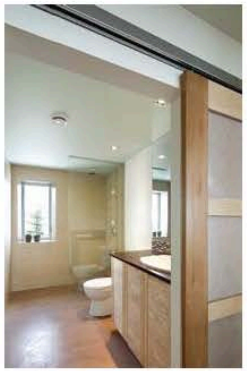
EchoHaven presents a community in harmony with the environment

■ By Pepper Rodriguez

As Seen in New Home Living Magazine

SUSTAINABILITY IN EVERY way, environmental thinking in every acre; Echo Haven puts the logic in ecologic when it comes to building a community that leaves the smallest environmental footprint in the province.

This picturesque parcel of land (just under three hectares) of 25 home lots set in the rolling hills of the northwest community of Rocky Ridge promises to be not only ecologically-sustainable, but as luxurious and comfortable as any modern community can be.



"By employing practical design ideas that maximize both the natural terrain and energy-saving technology, we can deliver a better performing home," says Dave Spencer, one of the partners of Echo-Logic Land Corp., the company developing the area.

"Large, north-facing windows are not practical with the kind of weather we have in Alberta," he says. "At EchoHaven, we 'echo' the proven successful designs from the past 20 years and update them using today's technologies."

One thing of note, Echo Haven sits on the highest natural elevation site in all of Calgary, and its ambitions are set just as high. "I've owned several homes in Calgary, and nothing ever really suited me, I was looking for more functionality and sustainability," Spencer says.

He has built his own 2,700-square-foot home in Echo-Haven — its first occupant — and it served for a time as the show home to give interested buyers a glimpse of what new earth-friendly technology and a little imagination can come up with. "It is a true Net Zero home where we produce as much energy as we use which is achieved using a combination of passive and active solar technologies and other strategies, including a ventilation design that maintains a comfortable temperature inside, no matter the weather outside," he says.

His vision for EchoHaven is a collection of homeowners who want the quality of life that a high-performance home in harmony with nature can provide. "These will all be custom-designed homes that have at minimum Energuide rating of 86," he says.

Unlike most move-up communities, garages won't be taking up most of the home's frontage, and there will be few north facing windows, as each home will be designed to make the most of solar access. "I see homes as a big investment, and your home has to pay you back. Saving energy is one way to do it," he says.

Homes here will reduce reliance on grid power by 80 per cent compared to the average home, will have zero greenhouse gas emissions and employ rainwater harvesting to reduce treated water consumption by 72 per cent.

IT CONNECTS RESIDENTS TO NATURE IN MORE THAN ONE WAY.

Homes here will be energy producers by maximizing the use of solar energy. They will also have a balanced water management strategy — relying on rainfall and snowmelt to reduce consumption of city-supplied water. Each home will have cisterns to store and re-use collected rainwater.

Lots range from 31 to 37-foot frontages. Homes including the lot start at $650,000. Jigsaw Homes and Jan star Homes are two of the homebuilders at Echo Haven. Spencer says "There are only 17 lots left and there is interest, mainly from young professionals who want a better quality of life and expect more from their homes."

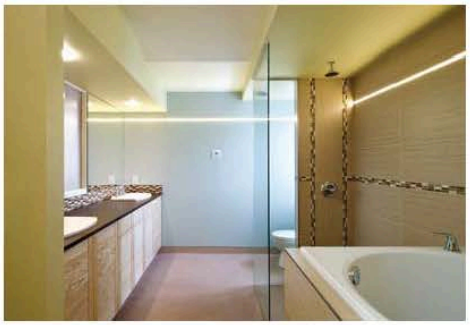
EchoHaven has preserved over 60 per cent of the existing natural landscape, preserving the thick, natural stands of aspen trees throughout the community. It has natural ponds within the community to add to its idyllic nature and will have an amenities building that will feature two guest suites and a communal greenhouse where residents could grow their own produce.

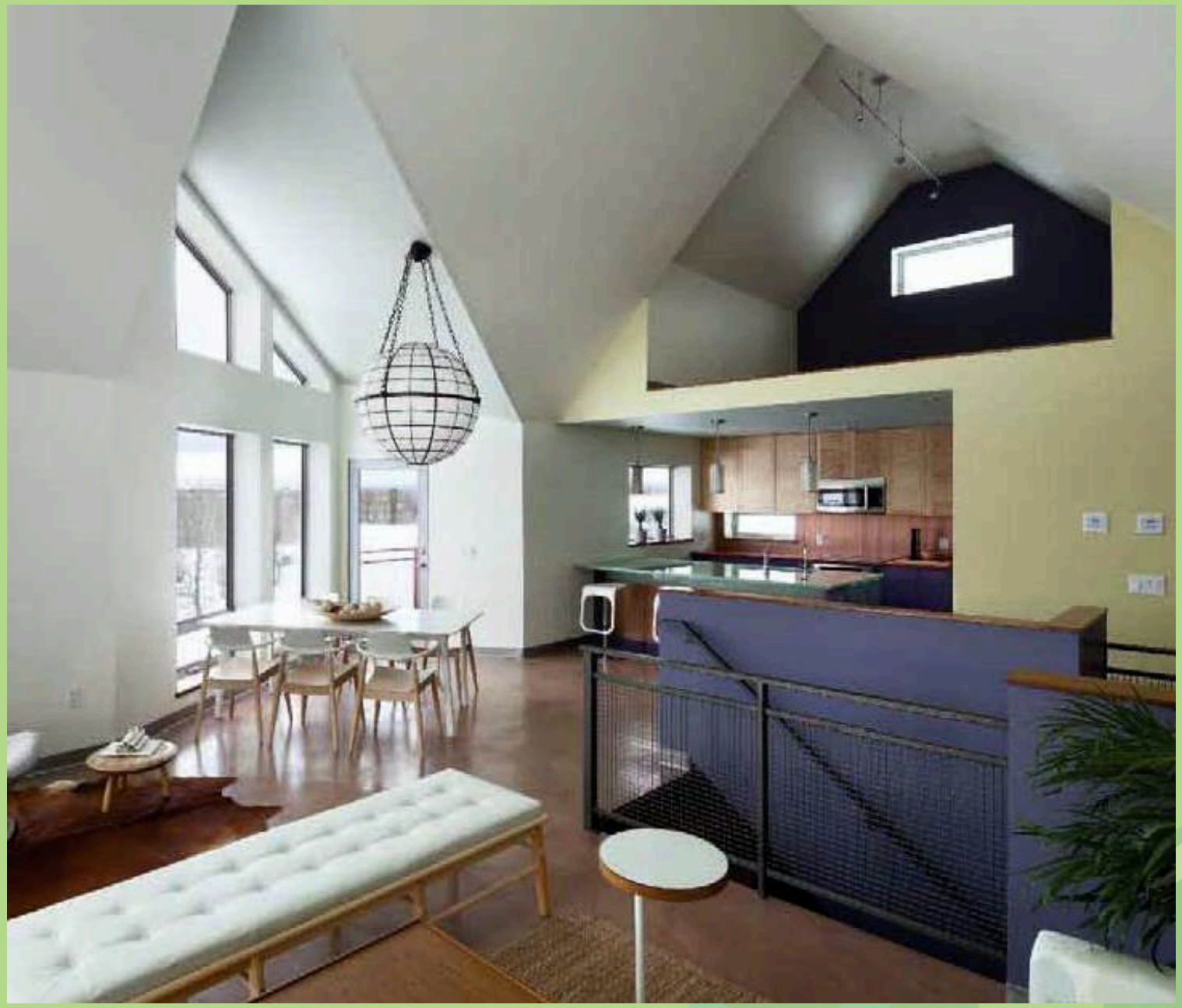
It connects residents to nature in more than one way, as the natural vistas of the community attract an assortment of wildlife in the community, including deer, moose and a wide variety of birds. "You also get terrific mountain views from our vantage point," Spencer adds.

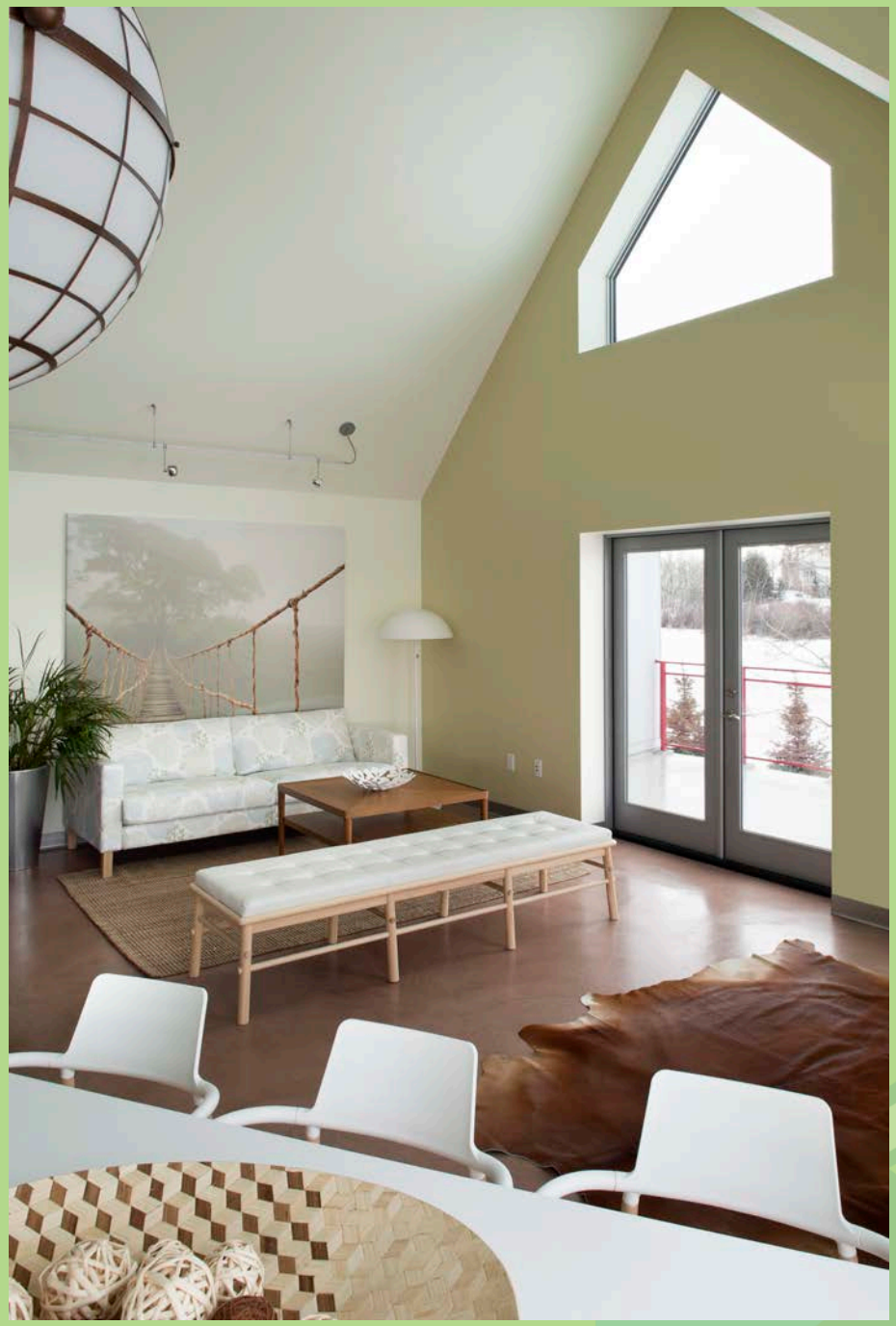
"EchoHaven is meant for people looking for a high quality of life that gives back to nature without giving up comfort or convenience," he says. NL

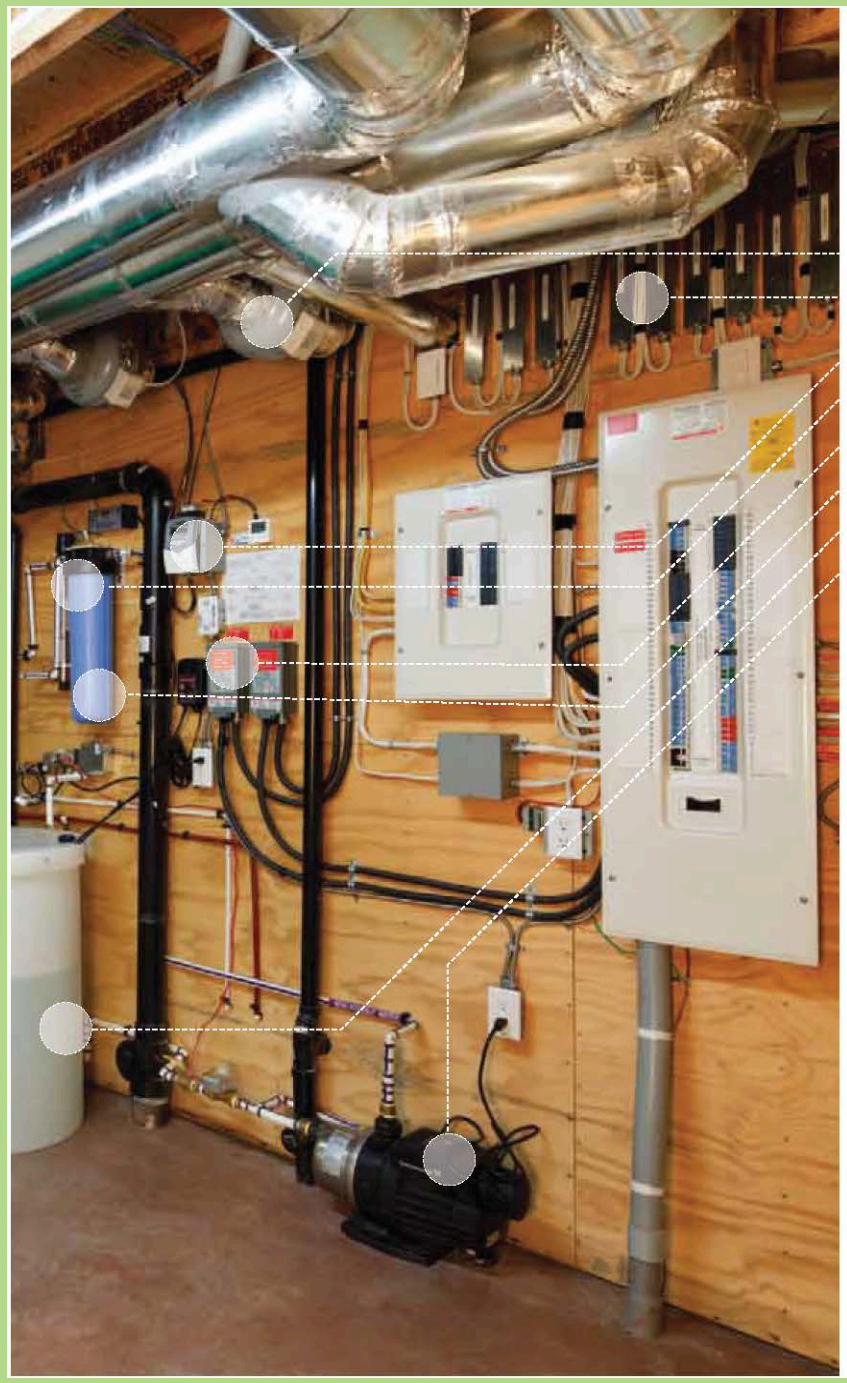
ECHOHAVEN COMMUNITY

DEVELOPER:	United Communities
STYLE:	Custom-built single-family or semi-detached homes stressing high performance features
SIZE:	Lots range in size from 31- to 37-foot frontages
PRICE:	Homes start at $650,000
ADDRESS:	42 Rocky Ridge Crescent N.W.
DIRECTIONS:	From Country Hills Boulevard, turn left on Rocky Ridge Road, turn right on Rockyridge Crescent and follow the signs
WEBSITE:	www.echohaven.ca









Booster fan

Drivers for LED lighting

Solar thermal controller

UV filter

PV junction boxes

Particulate filter

Rainwater holding tank

Pump for rainwater

Keep it simple


Tyvek
DensGlass


For Sale
Judy Wagner
403-350-3436


Tyvek
Tyvek
Tyvek
Tyvek

Questions and Discussion

www.echohaven.ca

Living Lightly on the Land

A Sustainable Community by Echo-Logic Land Corporation

dave.spencer@stantec.com