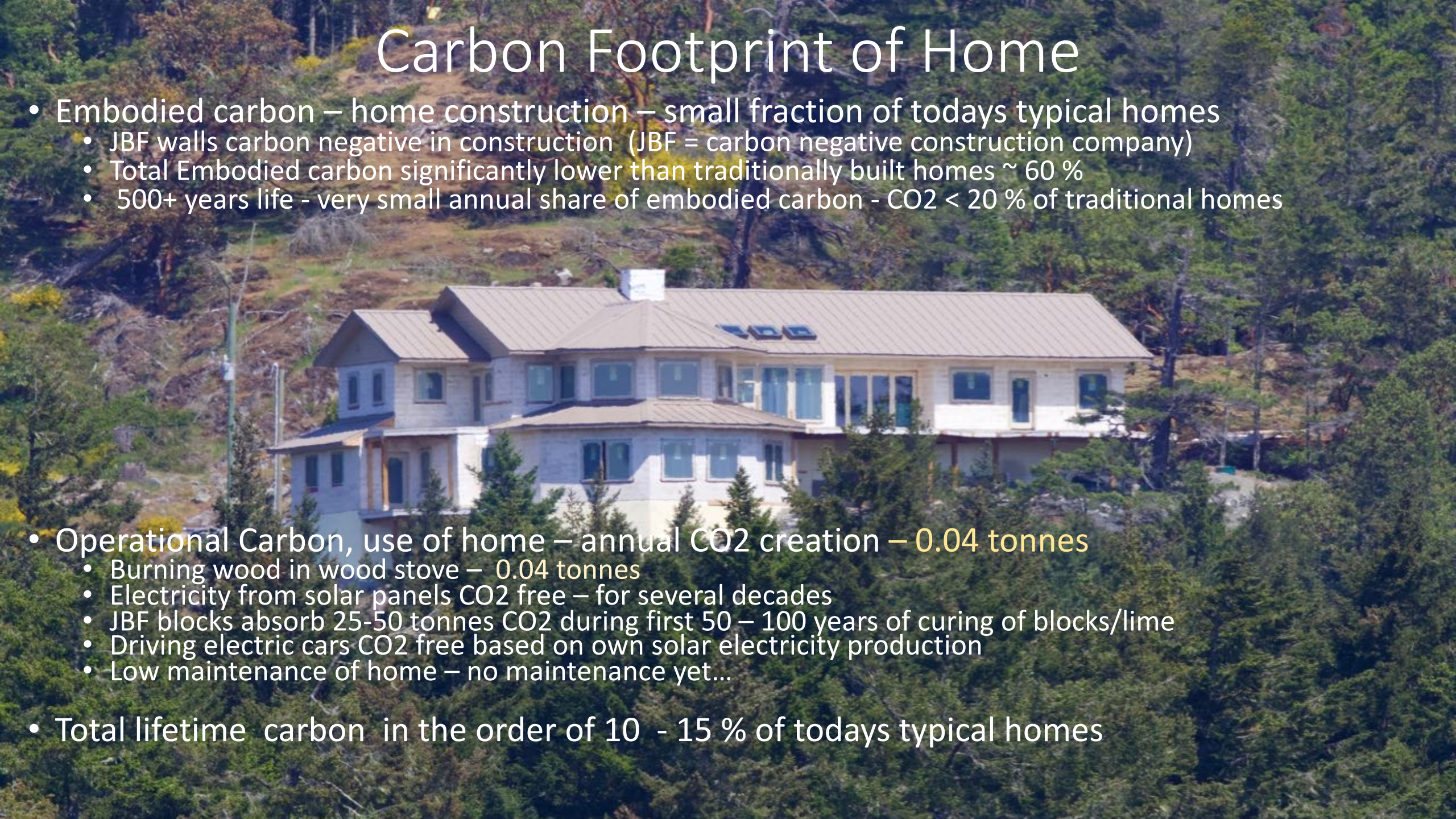
Construction Schedule

- Contract to build home March 12th 2017
- Building permit May 9th 2017
- JBF first block delivery July 29th 2017, installation Aug 1st
- Home completion December 3rd 2018

Carbon Footprint of Home

- Embodied carbon – home construction – small fraction of todays typical homes
  - JBF walls carbon negative in construction (JBF = carbon negative construction company)
  - Total Embodied carbon significantly lower than traditionally built homes ~ 60 %
  - 500+ years life - very small annual share of embodied carbon - CO2 < 20 % of traditional homes

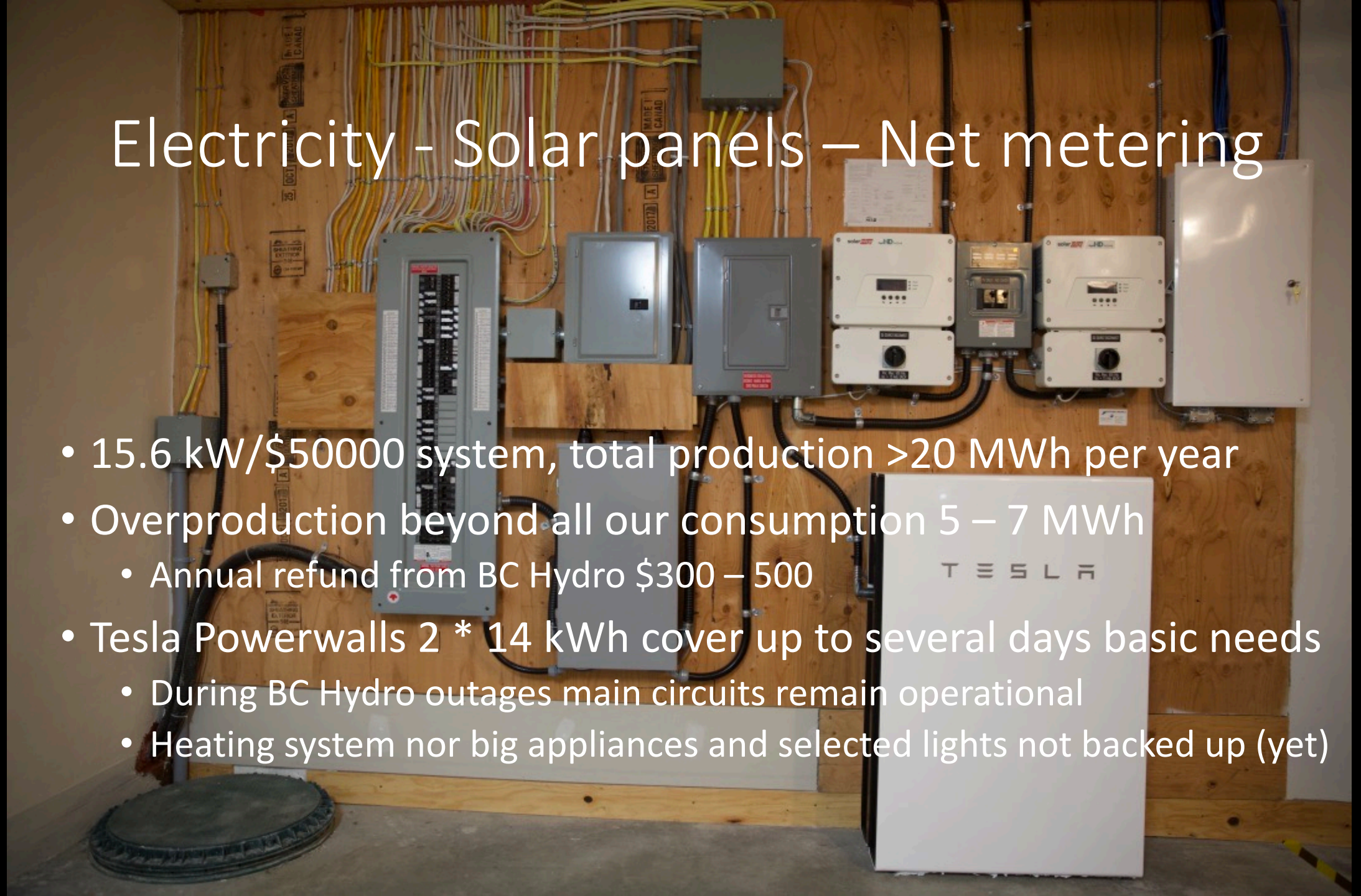


- Operational Carbon, use of home – annual CO2 creation – 0.04 tonnes
  - Burning wood in wood stove – 0.04 tonnes
  - Electricity from solar panels CO2 free – for several decades
  - JBF blocks absorb 25-50 tonnes CO2 during first 50 – 100 years of curing of blocks/lime
  - Driving electric cars CO2 free based on own solar electricity production
  - Low maintenance of home – no maintenance yet…
- Total lifetime carbon in the order of 10 - 15 % of todays typical homes

Energy Efficiency of Home

- Annual heating ~4 MWh/year (passive house ~ 5 MWh/year)
  - Keeping daytime temperature at 21 C and night time 19 C
  - Regular heat pump – air to air, uses electric preheater when outside temperature below +4 C.
- The rest of the home consumes 5 + MWh per year
  - Electric water heater (> 1MWh per year), septic pump (>1 MWh per year),
  - lights, 3 air purifiers, 2 refrigerators, 1 freezer, wireless, alarm cameras, pumps, various IT and electronic systems, etc… (~2 MWh/year)

Electricity - Solar panels – Net metering



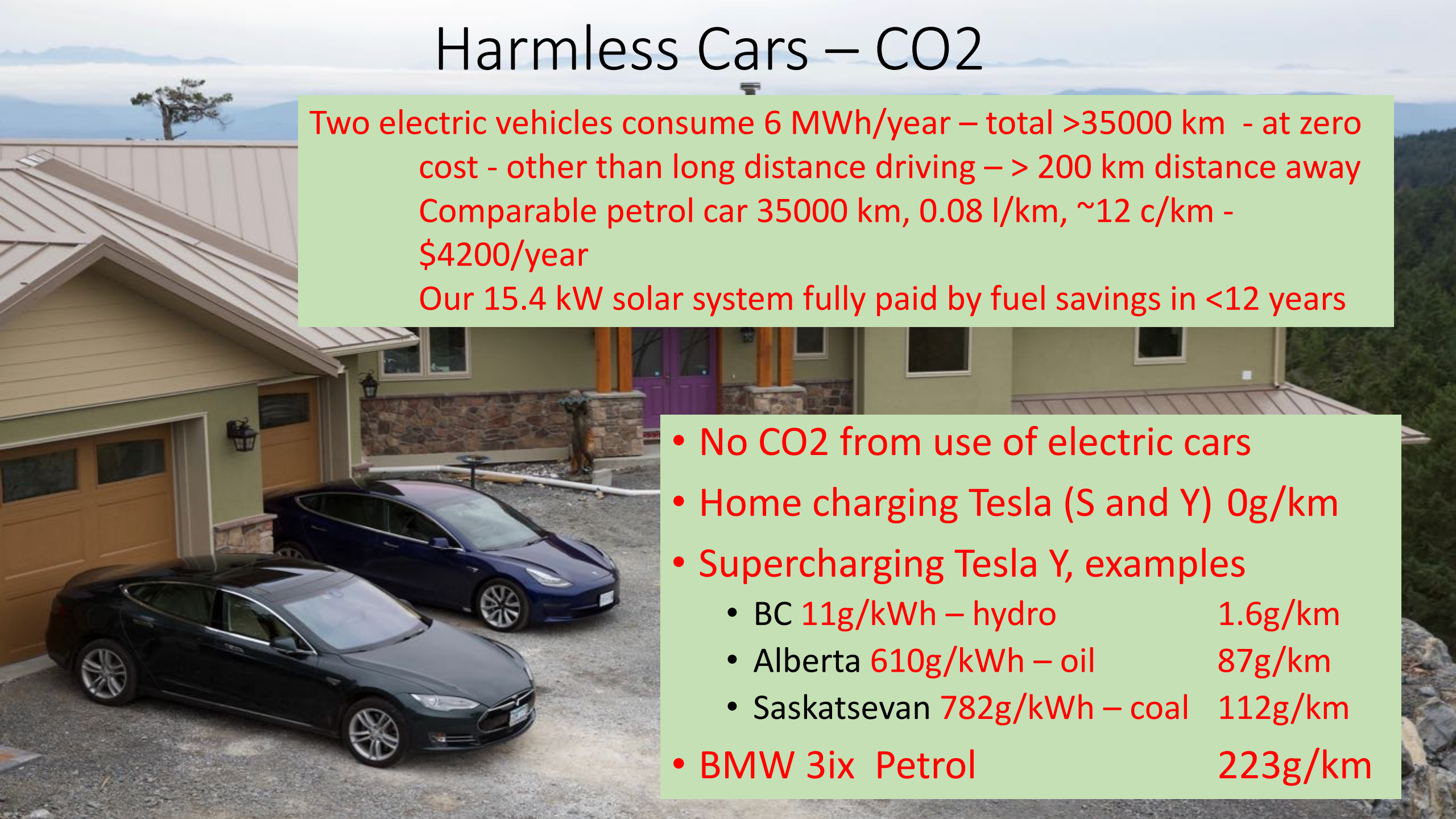
- 15.6 kW/$50000 system, total production >20 MWh per year
- Overproduction beyond all our consumption 5 – 7 MWh
  - Annual refund from BC Hydro $300 – 500
- Tesla Powerwalls 2 * 14 kWh cover up to several days basic needs
  - During BC Hydro outages main circuits remain operational
  - Heating system nor big appliances and selected lights not backed up (yet)

Water, Waste Systems

- Well water 2000 gallon tank, rain water 2 * 4000 gallon tanks
  - Untreated rain water for greenhouse room and outdoor taps
  - Filterer treated well/rain water for domestic use
  - Electric hot water tank
- Level 2 septic system – good for growing food
- Composting, Recycling, Garbage collection

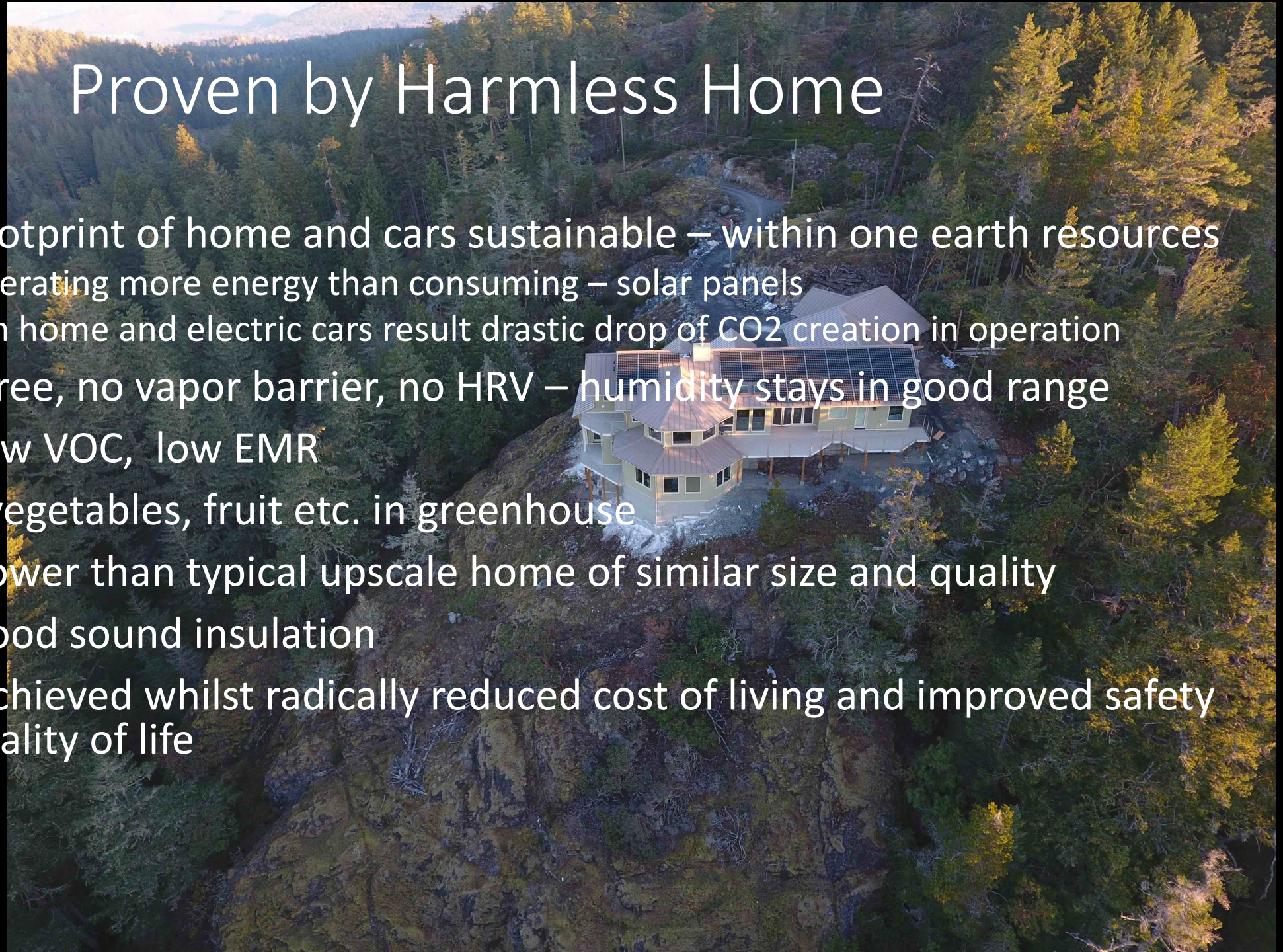
Harmless Cars – CO2

Two electric vehicles consume 6 MWh/year – total >35000 km - at zero cost - other than long distance driving – > 200 km distance away
Comparable petrol car 35000 km, 0.08 l/km, ~12 c/km - $4200/year
Our 15.4 kW solar system fully paid by fuel savings in <12 years



- No CO2 from use of electric cars
- Home charging Tesla (S and Y) 0g/km
- Supercharging Tesla Y, examples
  - BC 11g/kWh – hydro 1.6g/km
  - Alberta 610g/kWh – oil 87g/km
  - Saskatsevan 782g/kWh – coal 112g/km
- BMW 3ix Petrol 223g/km

Proven by Harmless Home



- CO_2 footprint of home and cars sustainable – within one earth resources
  - Generating more energy than consuming – solar panels
  - Both home and electric cars result drastic drop of CO_2 creation in operation
- Mold free, no vapor barrier, no HRV – humidity stays in good range
- Very low VOC, low EMR
- Grow vegetables, fruit etc. in greenhouse
- Price lower than typical upscale home of similar size and quality
- Very good sound insulation
- All is achieved whilst radically reduced cost of living and improved safety and quality of life

How close did we get?

- Inexpensive to build
  - **Still need to get product to building code & mass block production**
- Inexpensive to live in
  - **Fully Achieved**
- Self sustainable (energy, water, sewage, growing food…)
  - **Fully Achieved – except growing food first steps only**
- Saving natural resources (in construction and though its life)
  - **Fully Achieved – low waste and extremely long lifetime of home**
  - **We are not within one earth resources - due to large size of home (3500 sqft)**
- Safe: non toxic, mold proof, fireproof, earth quake proof, low EMR
  - **Non-toxic, mold proof, fireproof, earth quake proof achieved, low EMR partially only achieved**

Harmless Home - What Next

- Masters Thesis of eco footprint of home UVIC
- Full incorporation of JBF to building code (JBF company)
- Mass production of JBF blocks and building system components
  - Each region and country individually
  - Long transportation distance of blocks for construction increased embodied carbon unacceptably
- Eco footprint, building and operating costs so low that people demand it
  - Big builders must change to match – simply to survive…