Net Zero is Smart, Cool and our Future

It's time!

EcoSmart

LEAN PROJECT DELIVERY

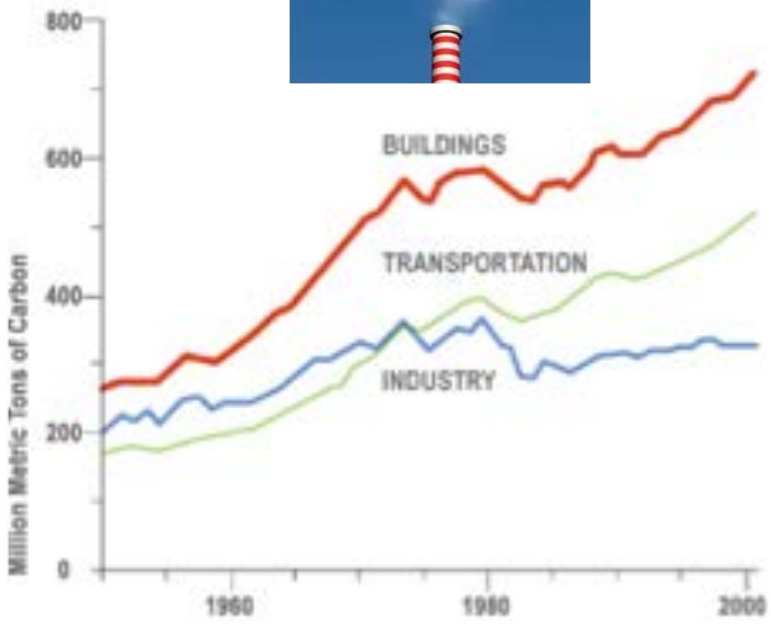
integrated DESIGNS


Hey Buddy
The planet needs
help!!!

Stop having so much FUN Windsurfing

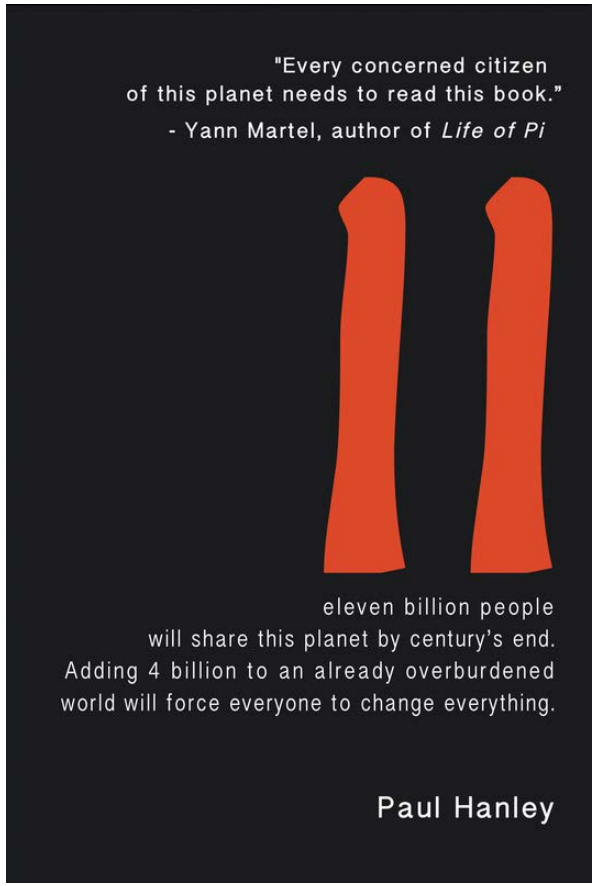
and DO SOMETHING about climate change!

- 1/3 of Canada's Energy Use
- 50% of extracted materials
- 25% of our landfill waste
- 10% of our airborne particulates
- **40% of greenhouse gases**
- Reference: A Business Case for Green Buildings in Canada



Factor 10 reductions for a FUTURE on this Planet

factor10



We need EVERYONE to GO BIG on GREEN

VP Sustainability Aspen Skiing Company

It Takes POWDER to be Successful

P People to give a SH!T &

O Open to Change that

W Want to protect the WOW on this Planet &

D Drive a new

E **Eco**nomy that

R Respects the Planet

Some really influential people THINK

What happens if we don’t figure it out soon?

Musk, as he will gladly tell you, has a vision: Colonize Mars and make humans a multi-planet civilization. He sees it as insurance against a global catastrophe that leads to human extinction. (Quartz)

I don't want to go to Mars!

Let's figure out how to deliver Cool, Smart Net 0 Homes of the Future

LEAN pays for GREEN

4 NET 0 projects that did it!

EcoSmart

LEAN PROJECT DELIVERY

integrated DESIGNS

For our project we wanted to demonstrate to that triple bottom line economics work for commercial real estate. We are on target to deliver the Mosaic Centre to the highest level of sustainability as defined by Living Building Challenge for approximately the same cost as a traditional build.

Our return on investment will be in the productivity of our people, recognition as good stewards of the planet and from the financial benefits of having higher occupancy and no energy bills.

Dennis Cuku

Mosaic Center for Community and Commerce

Canada's first private commercial Living Building Challenge project

Design for Sustainable Behavior

AMAZING reductions in Energy

INNOVATION PLACE

integrated DESIGNS

mosaic CENTRE

RATS Experiment

Responsible Adults Temperature Study

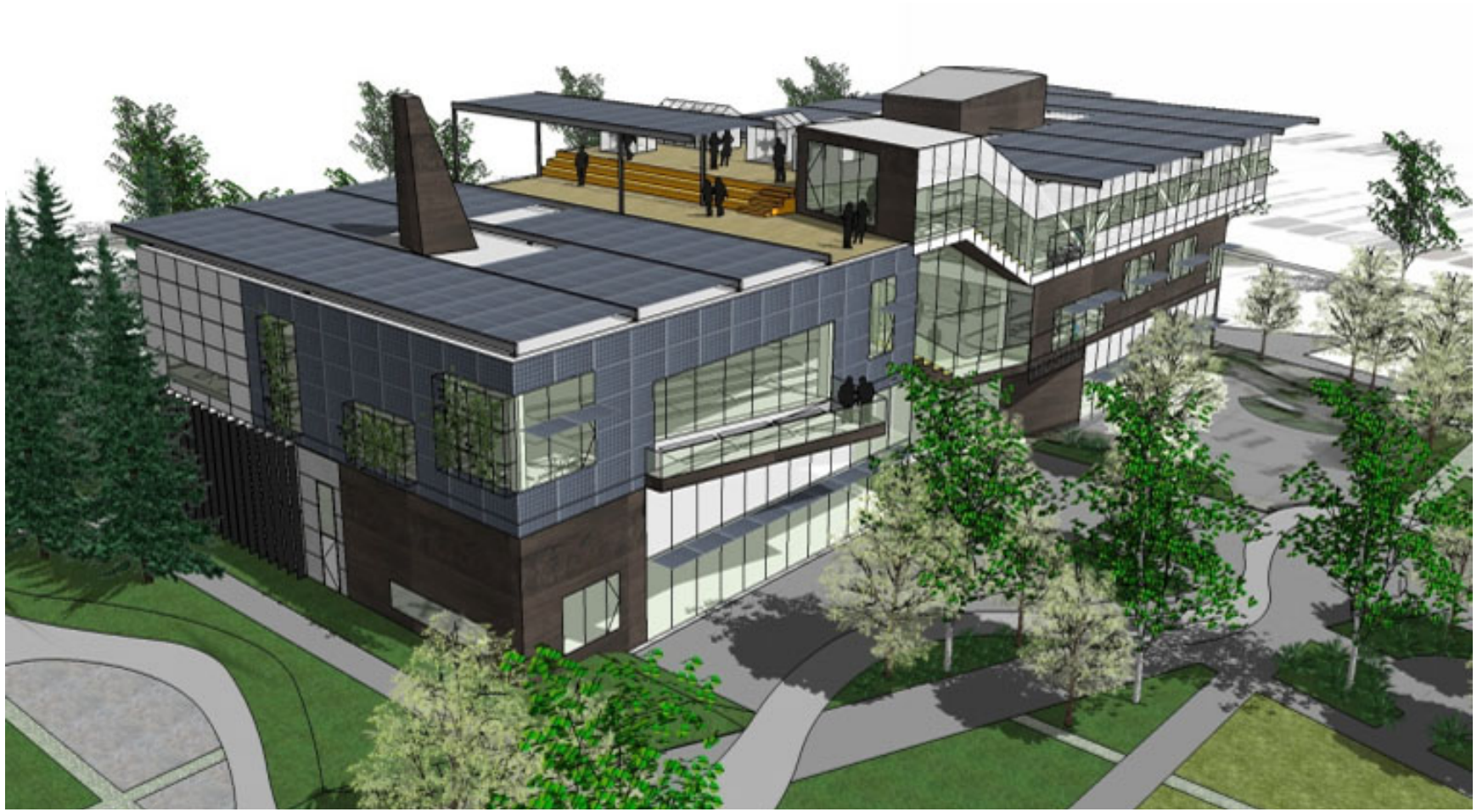
- Red Button Hot/Blue Button Cold
- Males 16 to 23 ºC
- Females 20 to 27 ºC

Retro-commissioning Pilot Project achieves 4% Saving with a 1 DGC change in cooling setpoint

Annual Cooling Energy Savings From a 1°C Increase in Cooling Temperature Setpoint	Percent Reduction in Cooling Energy	Cooling Energy Reduction (MJ)	Equivalent # of Sask Homes Powered With that Energy	GHG Reduction (kg CO2e)	Equivalent # of Cars Off the Road	Equivalent # of Trees Planted
	4.2%	126,071	4.2	7,195	1.5	184

Cooling Savings of $1000/yr/DGC for a 140,000 sq.ft building

How Net 0-0 PV Economics



Living Building /Net 0 Office

We wanted to demonstrate that triple bottom line economics work for commercial real estate and that our project achieves Net 0 energy at very little if any additional cost. (Dennis Cuku)

LEAN

- Sparked change in the Alberta market
- Target Cost Design
- Last Planner System
- Multi-Party Agreement
- Delivered to budget/Ahead of schedule

GREEN

- Living Building Challenge Certification
- Triple Bottom Line Economics
- Net 0 Energy at Net 0 Additional Cost
- Living Wall/Roof Top Gardens
- Sustainable Education

http://leanprojectdelivery.blogspot.ca/2015/11/mosaic-center-lean-to-be-green-wow.html

Going Net 0 on there 2nd Project

and "Getting Green Done"

As leaders in the community it is our duty to protect the planet and demonstrate that triple bottom line economics work. For our second Living Building Challenge project, we have adopted Lean Project Delivery to raise the bar even higher as we want Net 0 energy, Net 0 Water, beauty, sustainable materials, less cost, less time and to be fully commissioned at substantial completion.

Penticton Jim Pattison Centre
NET 0/Living Building Challenge Project #1

Kelowna Trades Centre
NET 0/Living Building Challenge Project #2

Living Building/Net 0 Trades Center

As leaders in the community it is our duty to protect the planet and demonstrate that triple bottom line economics work. For our second Living Building Challenge project we adopted Lean Project Delivery to demonstrate that we can deliver higher performance at less cost and in less time.

Kathleen Lausman

LEAN

- On track on an aggressive schedule
- Last Planner System
- Target Cost Design
- Collaborative Team (BIG ROOM)
- Building Culture (Study Action Team, CBA)

GREEN

- Second Living Building Challenge Project
- Sustainable Construction Program
- LeanCx: Early verification of Net 0
- Net 0 Energy at Net 0 Additional Cost
- Waste heat district sewage

http://leanprojectdelivery.blogspot.ca/2015/11/okanagan-college-committed-to-triple.html

Why not go **Net 0** for your next home?

For our #PREFAB #GREEN Net 0 duplex in Saskatoon, Saskatchewan the capital cost premium to achieve #Net Zero home was $50,000. The energy saving provide a 6% Return on investment.

" The economics work and it is the right thing to do"

EcoSmart
High Performance Green Home Building Company

integrated DESIGNS

Using Lean and Prefab Construction wanted to demonstrate

*We can deliver **PREFAB GREEN** homes that uses 60% less energy at no additional capital cost!*

*We can deliver **Net 0 PREFAB GREEN** home where the savings in energy more than cover the capital cost premium!*

PREFABRICATION reduces time, cost and improves quality

This Hybrid Timber home was completely enclosed in 2 weeks

Productivity and Team Commitment are key for Getting Work Done

60% Solution ECOnomics

On the 1602 Edward Avenue project our capital cost premium to achieve 60% less energy is approximately $25,000 for insulation, triple glazed windows and high performance equipment.

The energy saving provide a 7% on the high performance measures!

Prefab Green Net 0 Target

We wanted to demonstrate that PREFAB Net 0 homes provide a positive return on investment and we did. The success of this project has lead to participation on three other Passive House or Net 0 targeted homes in the Saskatoon area. Taylor Guy

LEAN

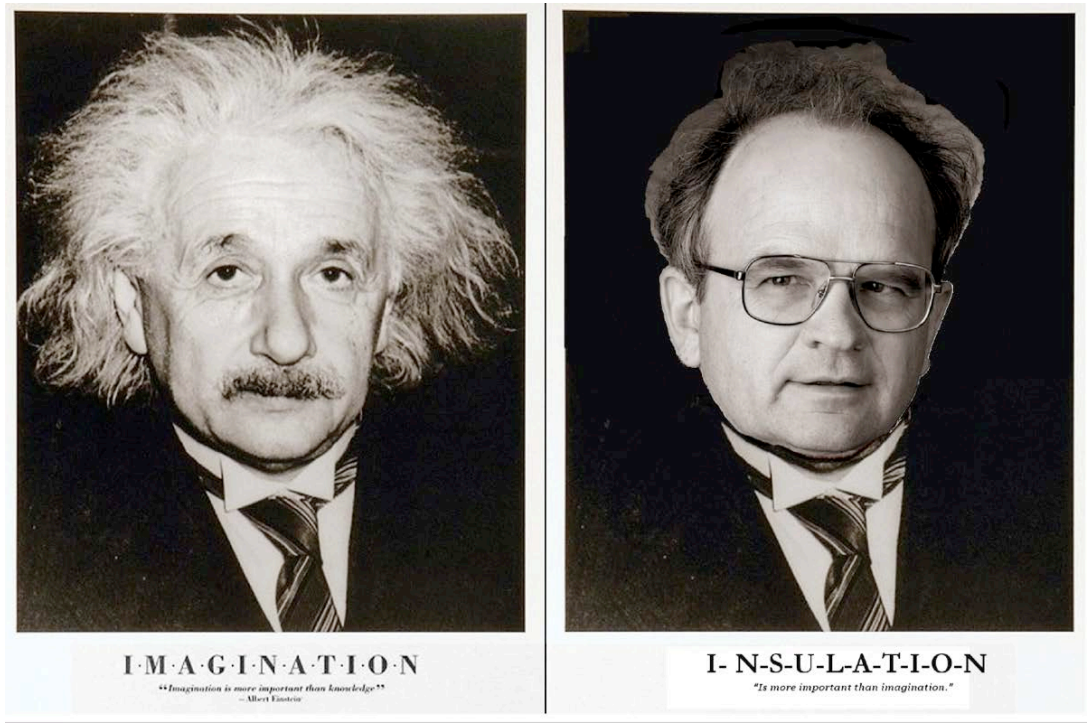
- Prefab Green Construction
- Early involvement of trade partners
- Collaborative & integrated team effort

GREEN

- Target is Net O Energy (6 kw)
- High Performance Design Recipe
- No cooling other than a Big Ass Fan
- Passive principles, 12 inch walls/triple glazed
- Technologies Nest/Erv/Heat Pump WH

http://leanprojectdelivery.blogspot.ca/2015/11/ecosmart-prefab-green-net-0-targeted.html

1. Start with a really good performance RECIPE



From a GREAT chef

Dr. Rob Dumont who developed one of the first passive houses.

Directives for High Performance Homes in a North Climate!

Share knowledge - make SMARTer decisions.

- Directives for High Performance Homes in a Northern Climate, Rob Dumont
http://www.i-designs.ca/blog/project-management/rob-dumont%E2%80%99s-recipe-for-high-performance-residential-design
- Passive House Fundamentals
http://www.passivehouse.ca/fundamentals
- Affordable Net 0 Homes
http://www.nrcan.gc.ca/energy/efficiency/housing/research/5133
- Solar Hot Water is Dead
http://www.renewableenergyworld.com/rea/news/article/2013/09/solar-hot-water-which-is-better-pv-or-thermal
- Goodbye Radiant Floor in Low Energy Homes
http://www.greenbuildingadvisor.com/blogs/dept/guest-blogs/goodbye-radiant-floor
- Hot water heaters as a Heating Source
http://www.civil.uwaterloo.ca/beg/archtech/hot_water_heater_furnace.pdf
- Get Ready for Heat Pump Hot Water Heaters
http://www.greenbuildingadvisor.com/blogs/dept/energy-solutions/get-ready-heat-pump-water-heaters
- Heat Pumps for a Northern Climate?
http://unexpectedcontr.hubpages.com/hub/air-source-heat-pumps-for-cold-weather
- HRV or ERV's
http://www.greenbuildingadvisor.com/blogs/dept/musings/hrv-or-erv
- Best SMART Home Devices of 2014
http://www.cnet.com/topics/smart-home/best-smart-home-devices/
- Be COOL with Realistic Comfort Expectations
http://www.i-designs.ca/blog/high-performance-design/be-cool-with-realistic-comfort-expectations!

Blue Herron Passive/Net 0 Target

Kent and Darcy Earle wanted to demonstrate that we can deliver economical simple beautiful unique Net 0 homes. Our team used Lean and integrated practices to deliver a double wall constructed affordable home!

LEAN

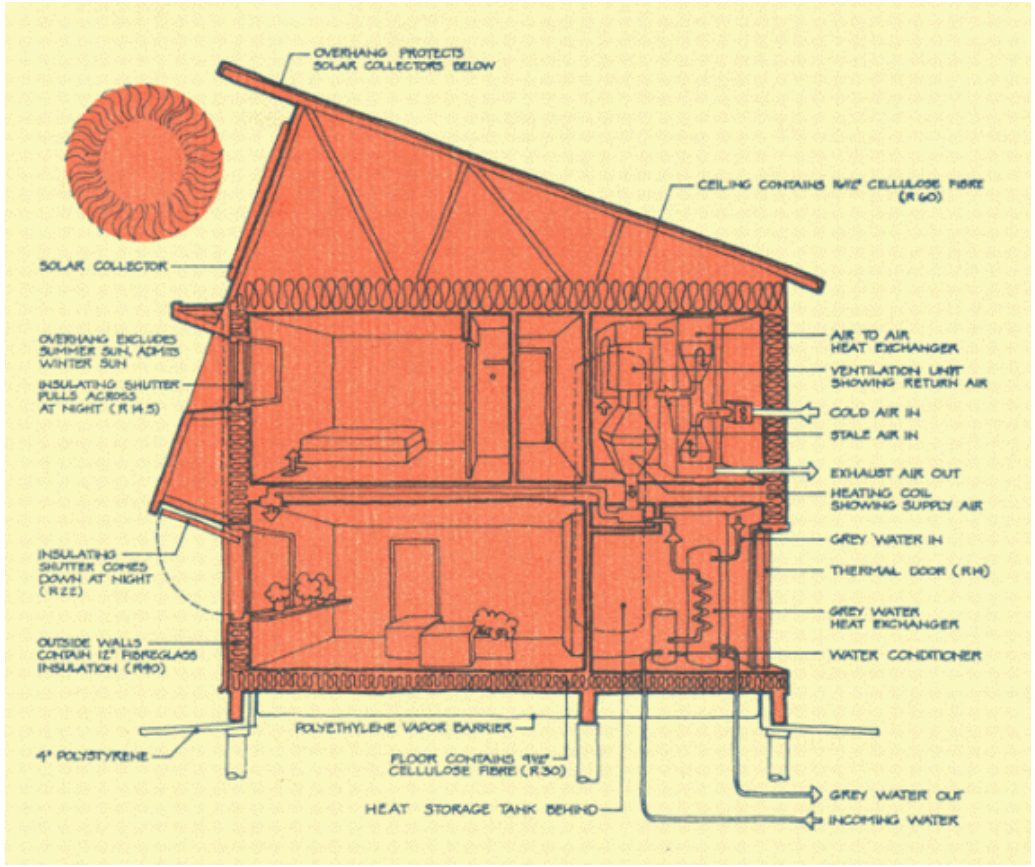
- Early engagement with the whole team
- Collaborative Target cost design process
- Pull Plan Schedule
- Double wall construction dirt to roof on and enclosed in 2 months
- Owner Involvement

GREEN

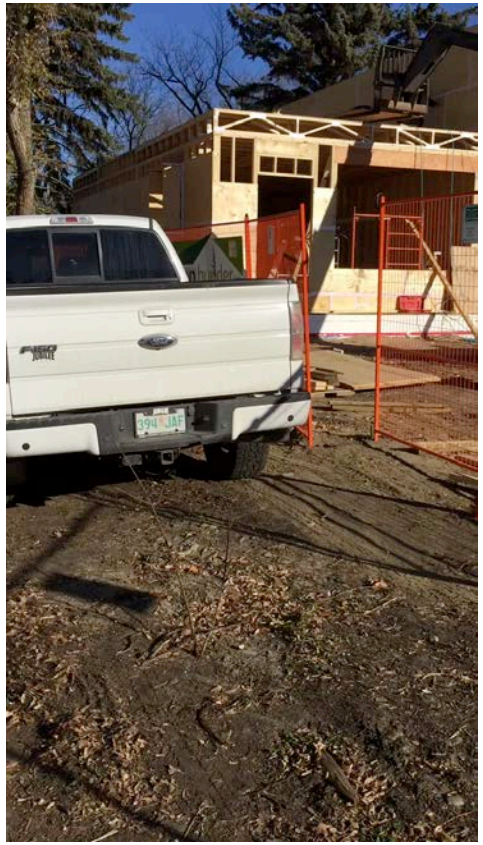
- Target is Net O Energy (6 kw)
- Double wall construction/Triple glazed
- Passive solar design (Not Certified)
- Simple finishes & systems
- Green education component

http://leanprojectdelivery.blogspot.ca/2015/11/blue-heron-haus-net-0-targeted-home.html

Anyone know of this project?



Passive House … Back in Saskatchewan



Passive Haus Certified Duplex

- Robin Adair Green Builder
- .1 acph
- 19 inch Thick Walls
- 12 inched of Insulation under Basement Slab
- No thermal breaks
- Electric heat in ERV as only heating system

- Video

EcoSmart

Building smart cool homes for the future

www.eco-smart.ca