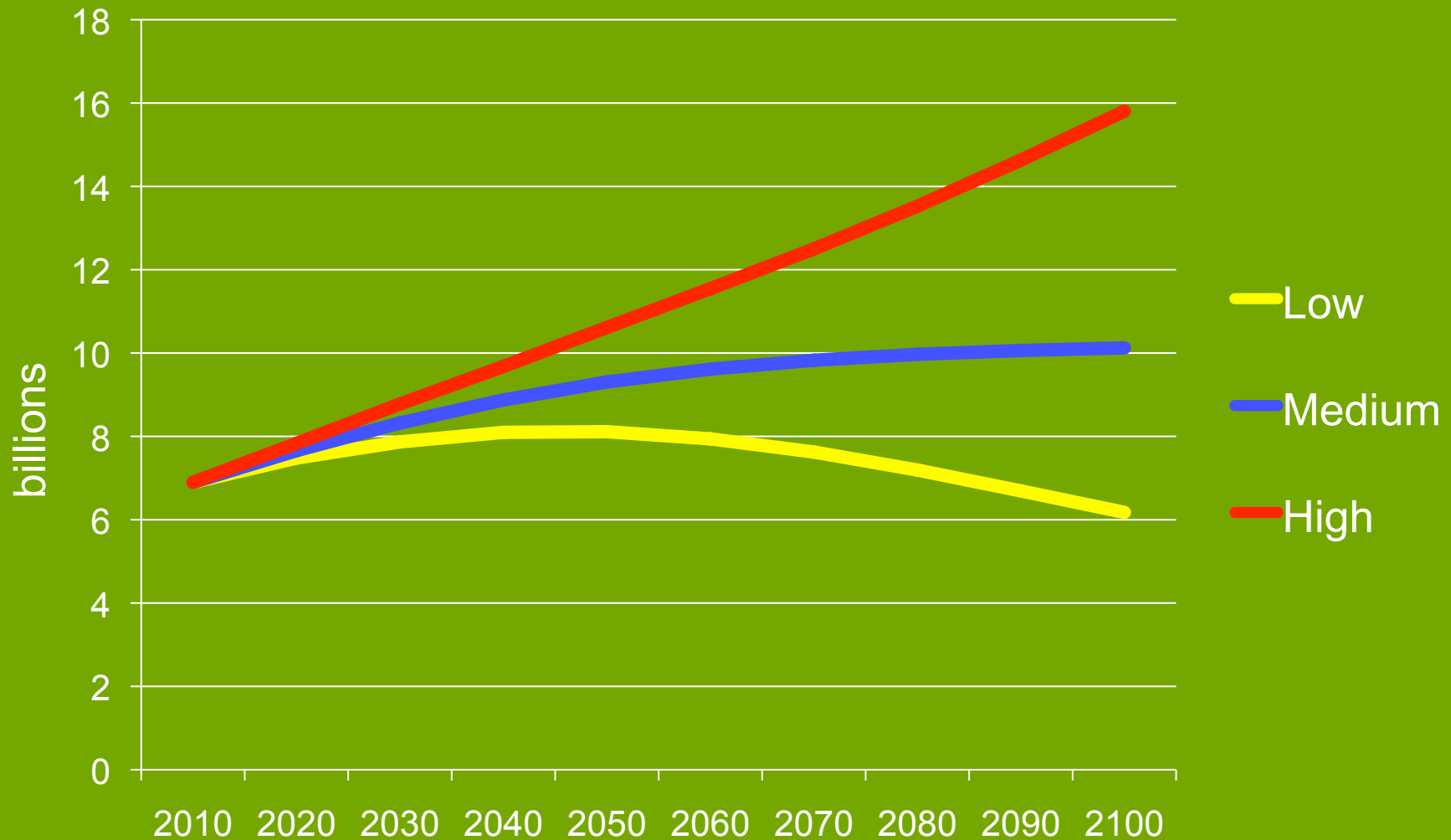




Redefining Green

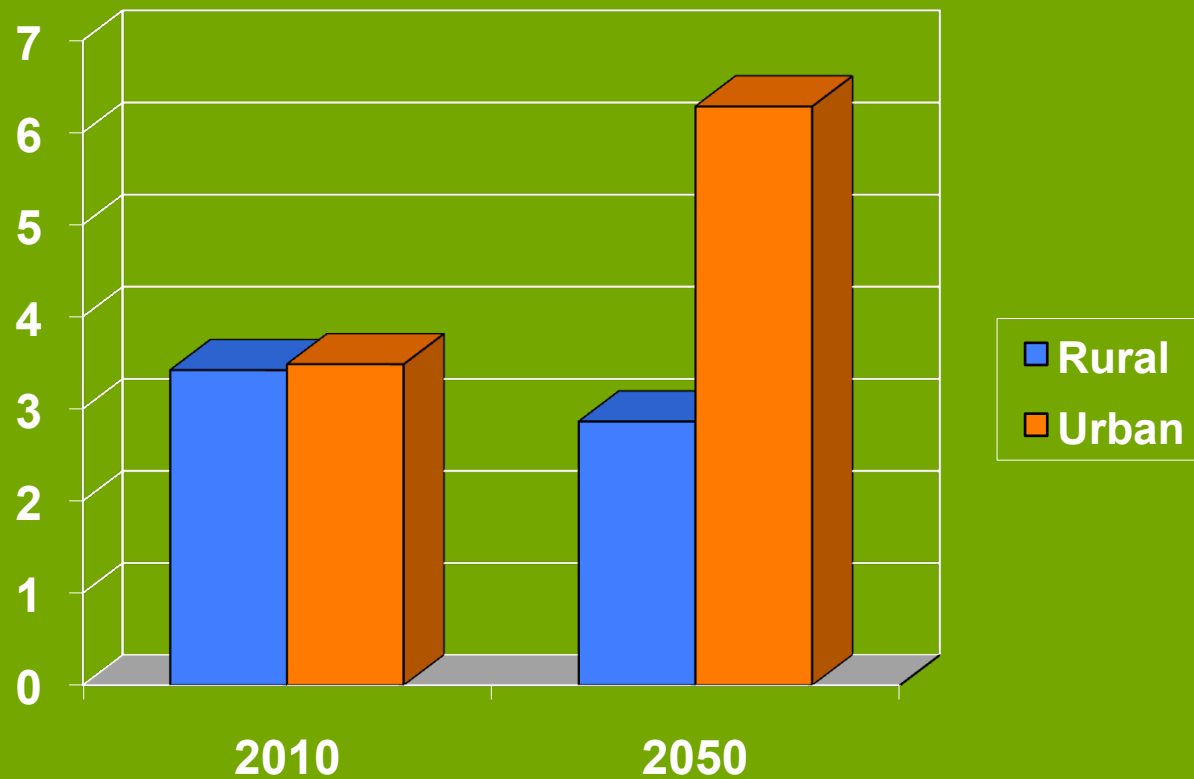
Presentation at Carleton
University Sustainable
Energy lecture series
John Robinson, USI, UBC
Sept 18, 2012

Global Population Projections 2010-2100



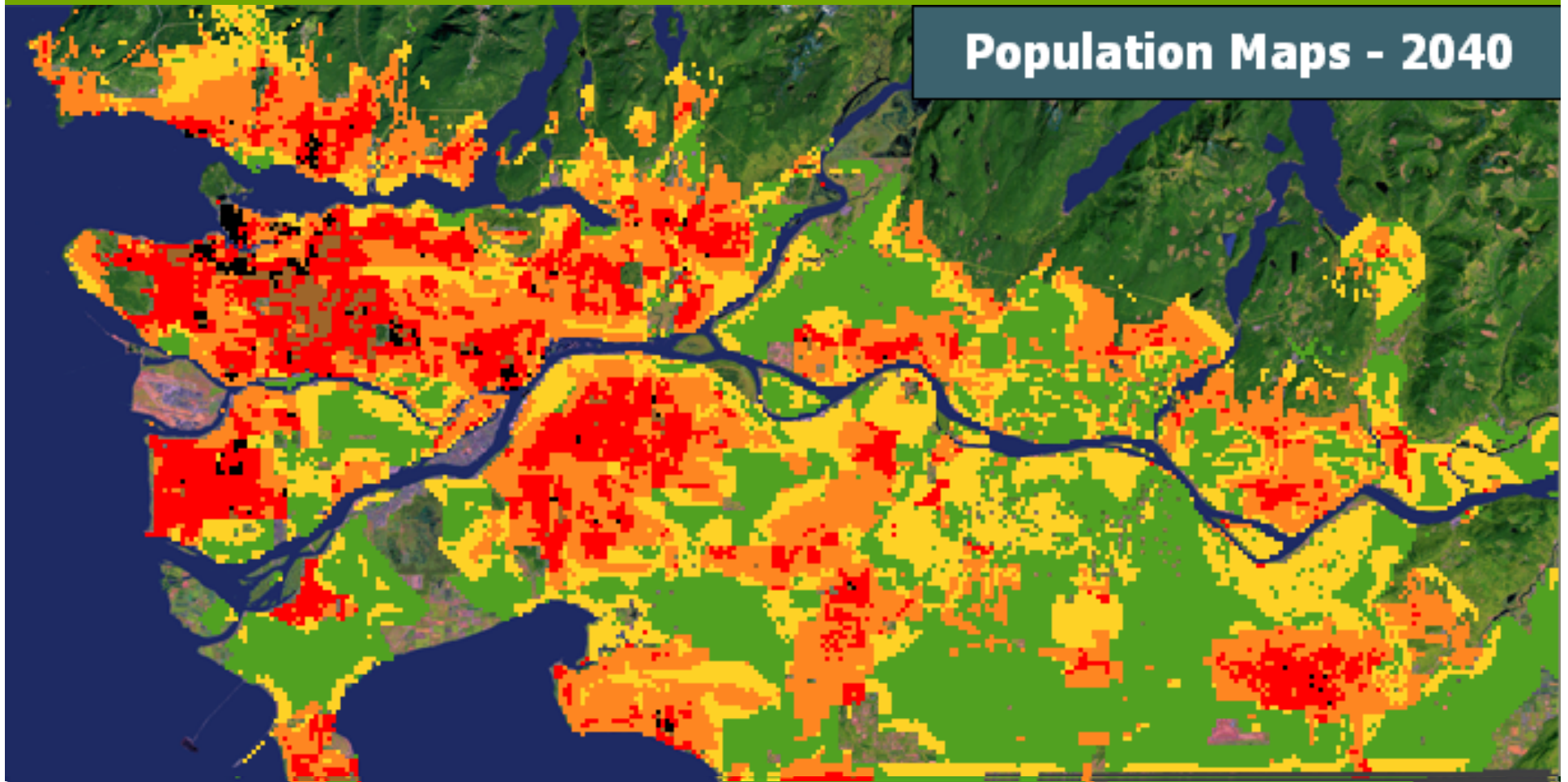
Source: UN, World Population Prospects: The 2010 Revision, April, 2011

Global Urbanization 2010-2050



Source: UN, World Urbanization Prospects: The 2009 Revision, 2010

The Urban Tsunami



The Urban Sustainability Imperative

10 challenges:

Clean air

Housing

Clean water

Livelihoods

Energy

Health care

Land use

Waste disposal

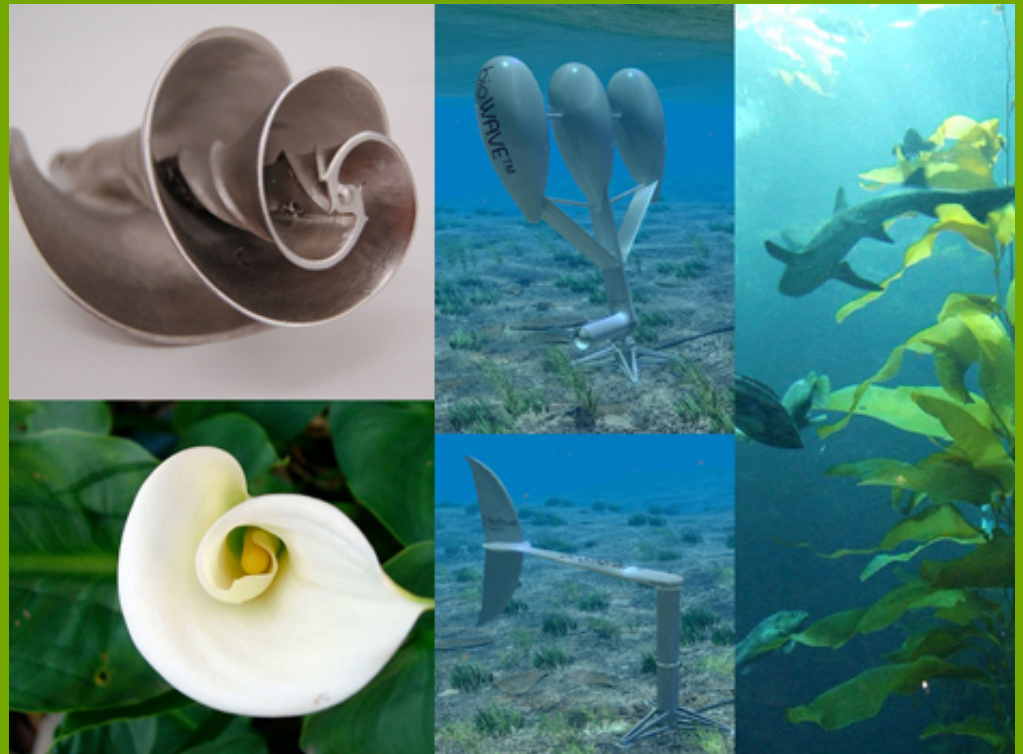
Transportation

Social justice



Regenerative Sustainability

- From less bad to more good
- From reducing damage to creating benefits
- From sacrifice to investment
- From net zero to net positive



www.treehugger.com



Jana Hanova

Building as research instrument



CIRS Vision

To be the most innovative and high performance building in North America and an internationally recognized leader in accelerating the adoption of sustainable building and urban development practices.

The CIRS Opportunity

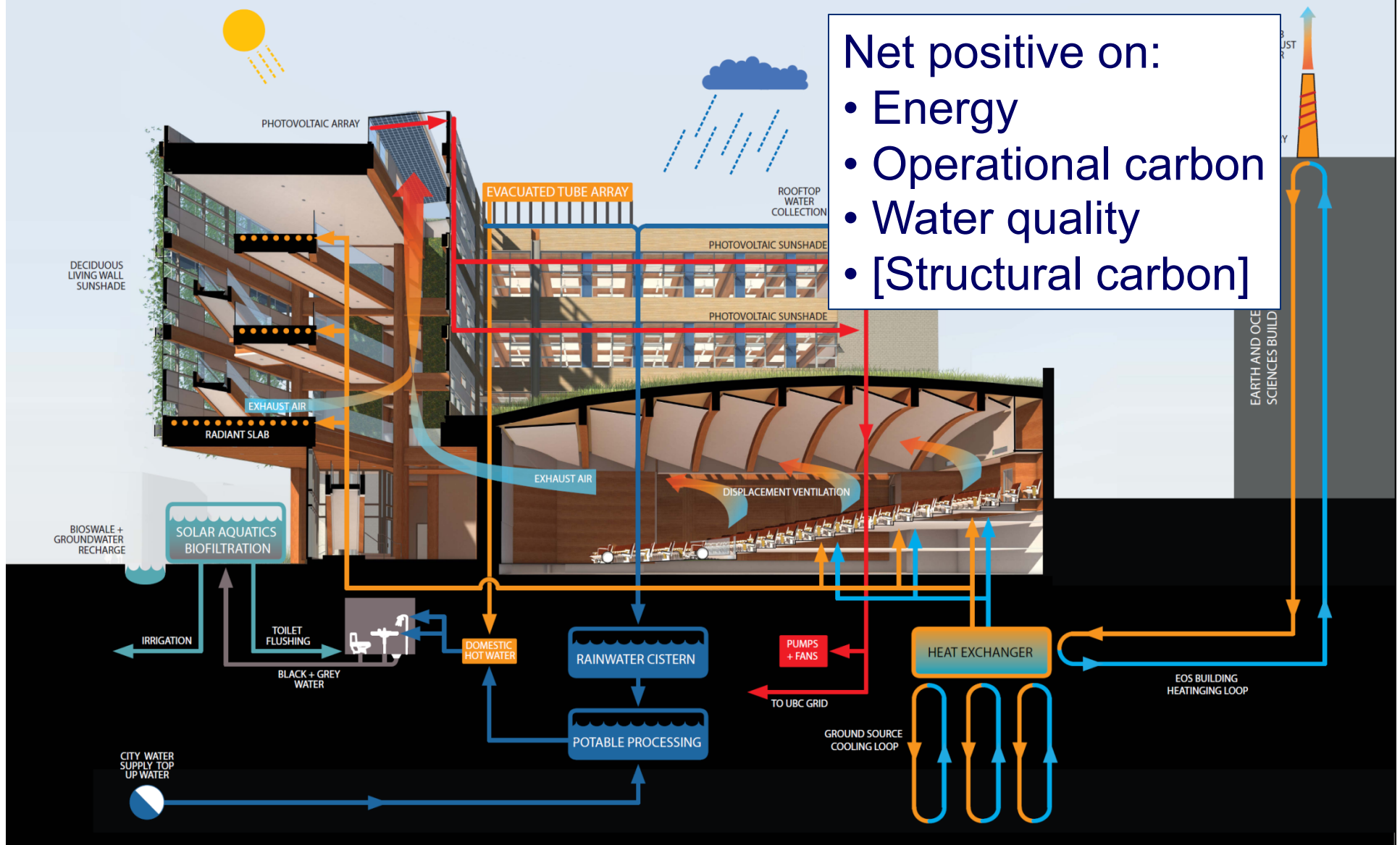
To help make Canada a world leader in three interconnected fields of applied sustainability:

Part 1 - building design and operations

Part 2 - visualization, simulation and community engagement

Part 3 - partnerships and strategies of regional implementation

Regenerative in Environmental Terms



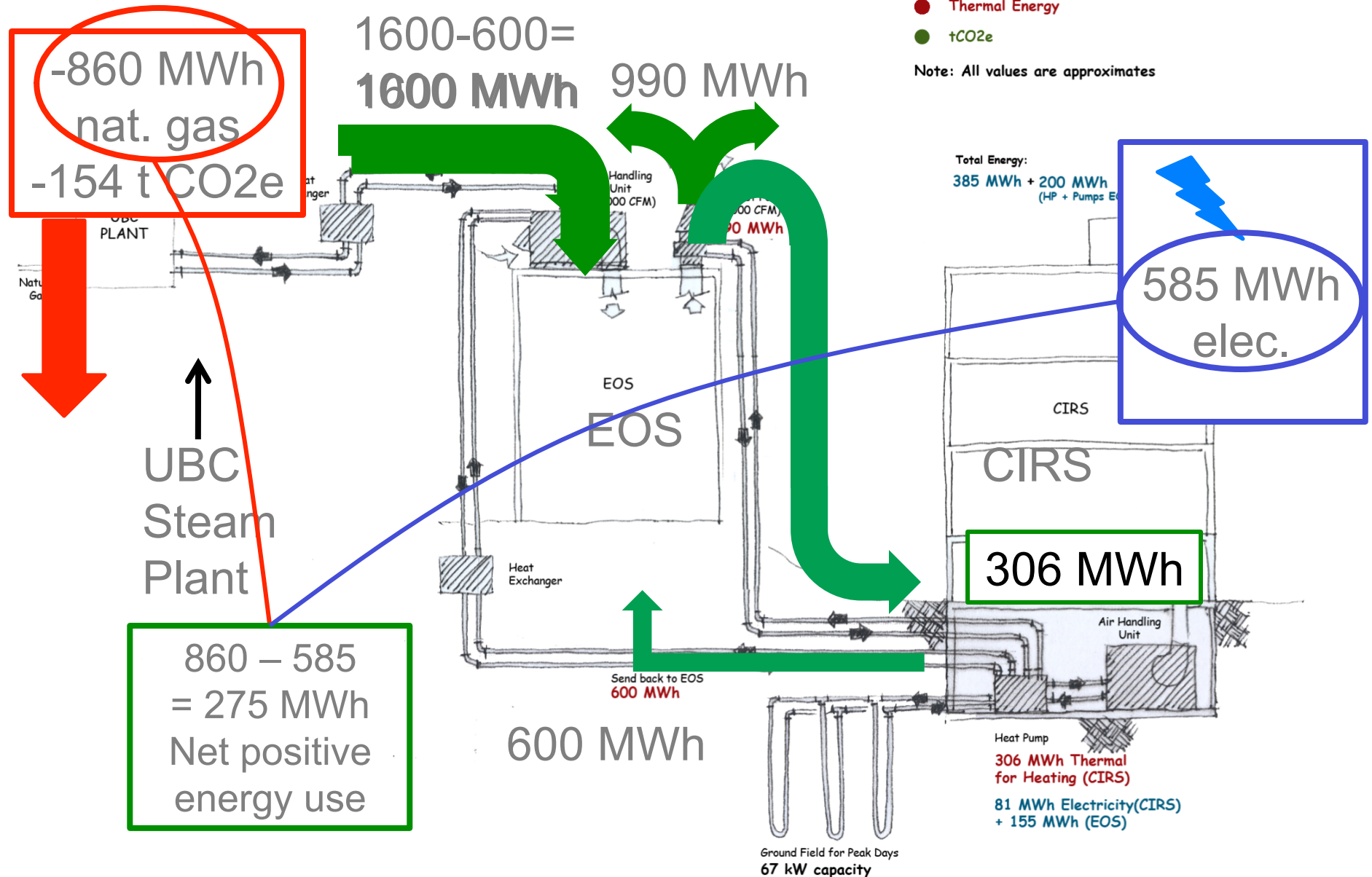
Energy Balance - Summary

● Electricity

● Thermal Energy

● tCO₂e

Note: All values are approximates



Market building has heat pump system with heat recovery at EUI of 157 KWh/m2/yr

Market Building

Bundle#1

Bundle#2

CIRS Base Bundle

CIRS plus EOS preheat

Bundle 1 = CIRS alone

Bundle 2 = CIRS + EOS

Savings

Lighting: -49%

Cooling and Fans: -57% (-39% incl. EOS)

Electric heating: -75% (-27 incl. EOS)

Electric hot water: -80%

Pumps: -14% (+3% incl. EOS)

Total: -54% (-32% incl. EOS)

Plug Loads assumed to be the same

7,000	27,700
1,100	124,500
800	55,100
0	0
900	7,900
900	585,500
900	585,500
-	
-	
900	27,700
900	27,700
165	
165	
200	\$24,600
000	\$11,600
\$0	\$0
000	\$11,600
70	106

Without lights and plug-loads: 41 kWh/m2/yr

EUI

kwh/m2/yr

157

70

106

Regenerative in Human Terms



Sustainability
Charter



Occupant
- passive
recipient of
building
systems

Benefits/ Opportunities

- Air quality
- Daylighting
- Ventilation
- Food & social spaces
- Feedback
- Control

Inhabitant
- engaged,
with a
sense of
place

Measures: productivity, health and happiness

Sustainability Charter Pledge

I acknowledge the CIRS goals to become a humane, green and smart building project.

In support of those goals, I pledge to be an active member of the CIRS community, in order to play my part in accelerating sustainability.

Signature

CIRS Inhabitant Benefits/Opportunities

1. High quality air and natural ventilation
2. High quality acoustic performance
3. Universal access to natural daylight when available
4. Control over operable windows
5. Control over intensity of artificial lighting through web-based lighting control system
6. Wood frame building & rooftop green-space
7. Sustainable food services & social meeting spaces
8. VDI environment
9. Real-time building performance data
10. Building wide information and discussion forums
11. Actively participate in building management strategies

BC Hydro Theatre

