

# BUSINESS CASE

FOR LIVING BUILDINGS

# LIVING BUILDING CHALLENGE<sup>SM</sup> 4.0

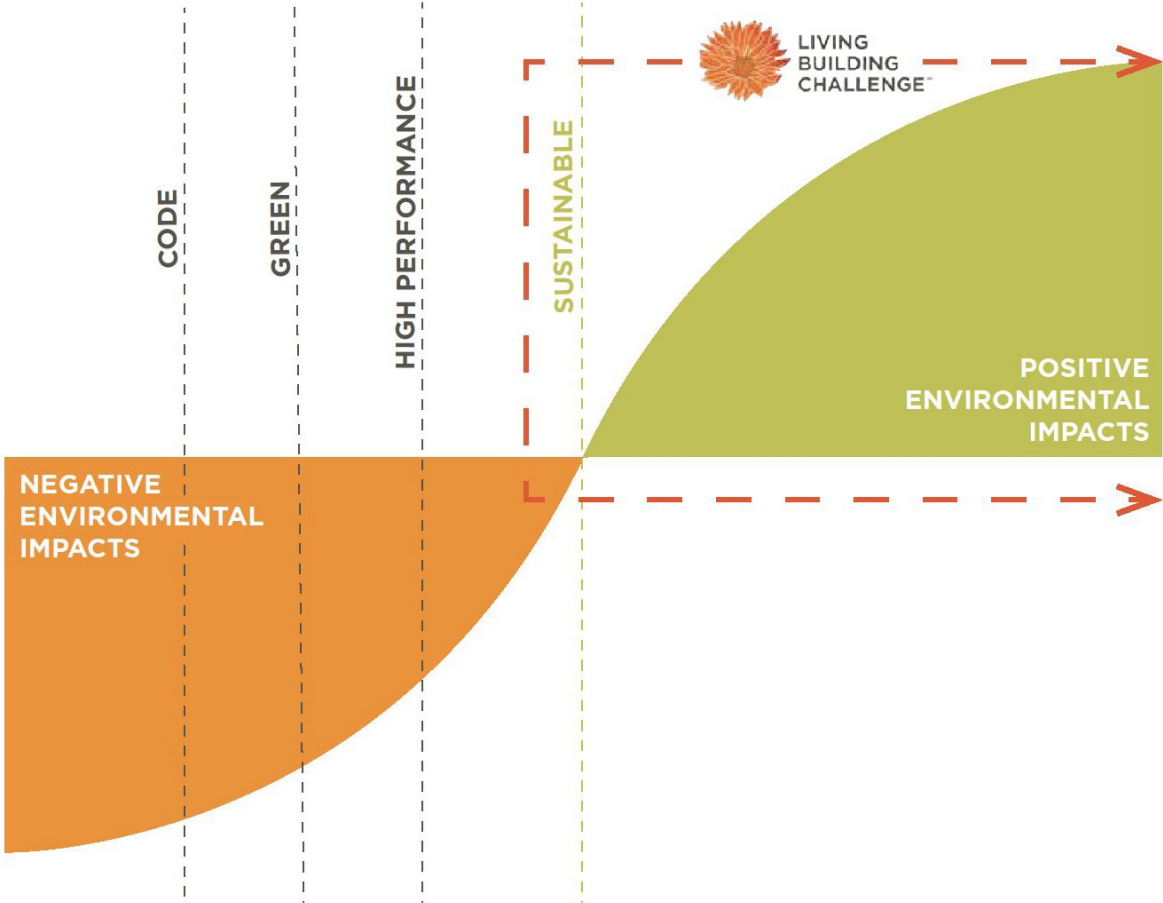
A Visionary Path to a Regenerative Future



# REGENERATIVE

Restoration of a system (such as a forest) after stress or injury as a **NORMAL** process.

THE LIVING BUILDING CHALLENGE IS A PHILOSOPHY, CERTIFICATION, AND ADVOCACY TOOL FOR PROJECTS TO MOVE BEYOND MERELY BEING LESS BAD AND TO BECOME TRULY REGENERATIVE.



# SELF-SUFFICIENT

Needing no outside help in satisfying basic needs.

# NET-POSITIVE

A way operating which generates more **CAPITAL** than is required.

# EIGHT FORMS OF CAPITAL

FINANCIAL

SOCIAL

INTELLECTUAL

SPIRITUAL



















MATERIAL

LIVING

CULTURAL

EXPERIENTIAL

The Living Building Challenge is composed of 20 Imperatives grouped into seven petals. Some Imperatives are not required for all Typologies.

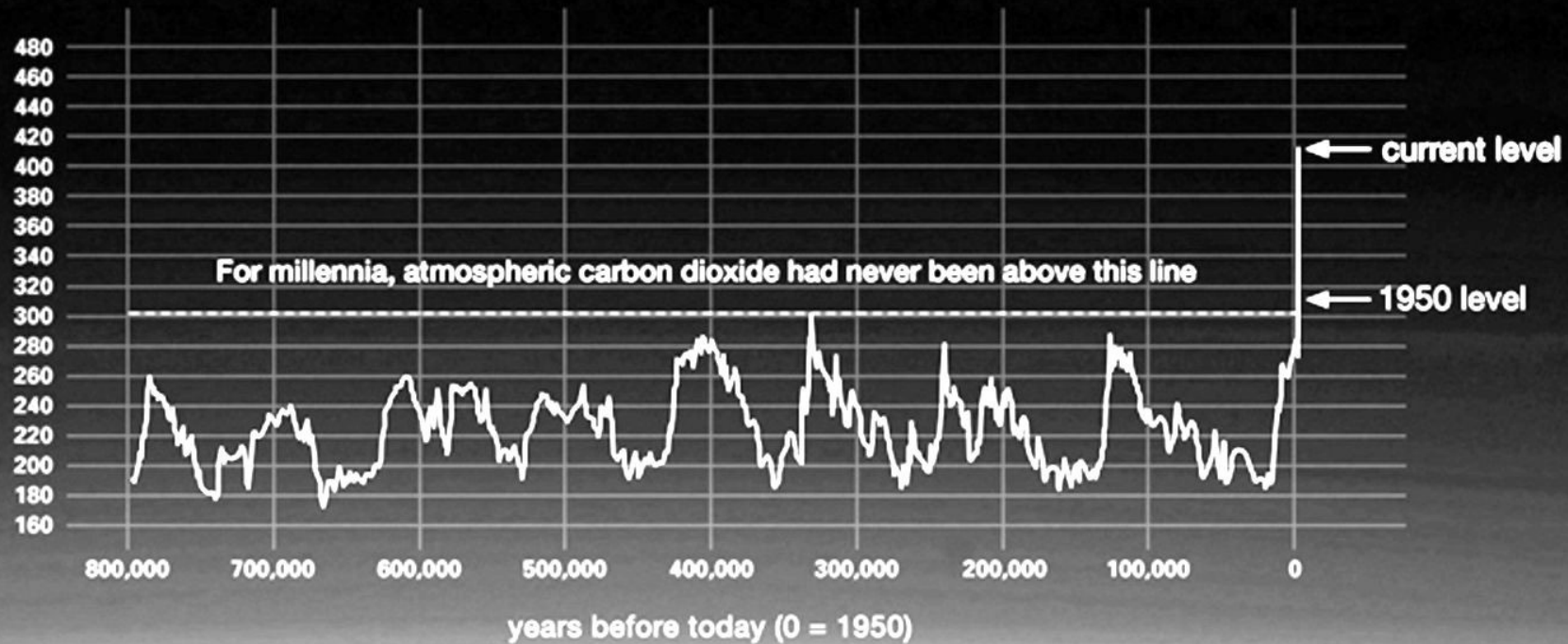
PETAL		IMPERATIVE	TYPOLOGY				
			New Building	Existing Building	Interior	Landscape + Infrastructure	
PLACE		1 Ecology of Place	Required	Requirement dependent on scope	Not required	Required	
		2 Urban Agriculture	Required	Required	Not required	Not required	
		3 Habitat Exchange	Required	Required	Required	Required	
			4 Human Scaled Living	Required	Requirement dependent on scope	Requirement dependent on scope	Not required
WATER				Required	Required	Required	Required
			6 Net Positive Water		Required	Not required	Required
ENERGY			7 Energy + Carbon Reduction	Required	Required	Required	Required
			8 Net Positive Energy	Required	Required	Required	Required
HEALTH + HAPPINESS		9 Healthy Interior Environment	Required	Required	Required	Not required	
		10 Healthy Interior Performance	Required	Required	Required	Not required	
		11 Access to Nature	Required	Required	Required	Not required	
MATERIALS		12 Responsible Materials	Required	Required	Required	Required	
		13 Red List	Required	Required	Required	Required	
		14 Responsible Sourcing	Required	Required	Required	Required	
		15 Living Economy Sourcing	Required	Required	Required	Required	
		16 Net Positive Waste	Required	Required	Required	Required	
EQUITY		17 Universal Access	Required	Requirement dependent on scope	Requirement dependent on scope	Requirement dependent on scope	
		18 Inclusion	Required	Required	Required	Required	
BEAUTY		19 Beauty + Biophilia	Required	Required	Required	Required	
		20 Education + Inspiration	Required	Required	Required	Required	

-  CORE IMPERATIVE
-  SCALE JUMPING ALLOWED
-  HANDPRINTING IMPERATIVE
-  IMPERATIVE REQUIRED FOR TYPOLOGY
-  REQUIREMENT DEPENDENT ON SCOPE
-  NOT REQUIRED FOR TYPOLOGY



# WHY LIVING BUILDINGS

carbon dioxide level (parts per million)



# STABILITY DIVERSITY HYPOTHESIS

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## COMMUNITY DIVERSITY

A combination of abundance **AND** equity found within a community.

# STABILITY DIVERSITY HYPOTHESIS

## COMMUNITY STABILITY

The ability of a community to rebound from change; resilience.

# STABILITY DIVERSITY HYPOTHESIS

The more diverse a community is, the more stable and productive the community is.

# LIVING BUILDING CHALLENGE<sup>SM</sup> 4.0

A Visionary Path to a ~~Regenerative~~ Future

**RESILIENT**



**A BIT OF CONTEXT**



2.9°

RISE IN TEMPERATURE IN MICHIGAN SINCE 1960  
(FAHRENHEIT)

**\$42M**

**ECONOMIC DRAIN FROM EXTREME HEAT PER YEAR**

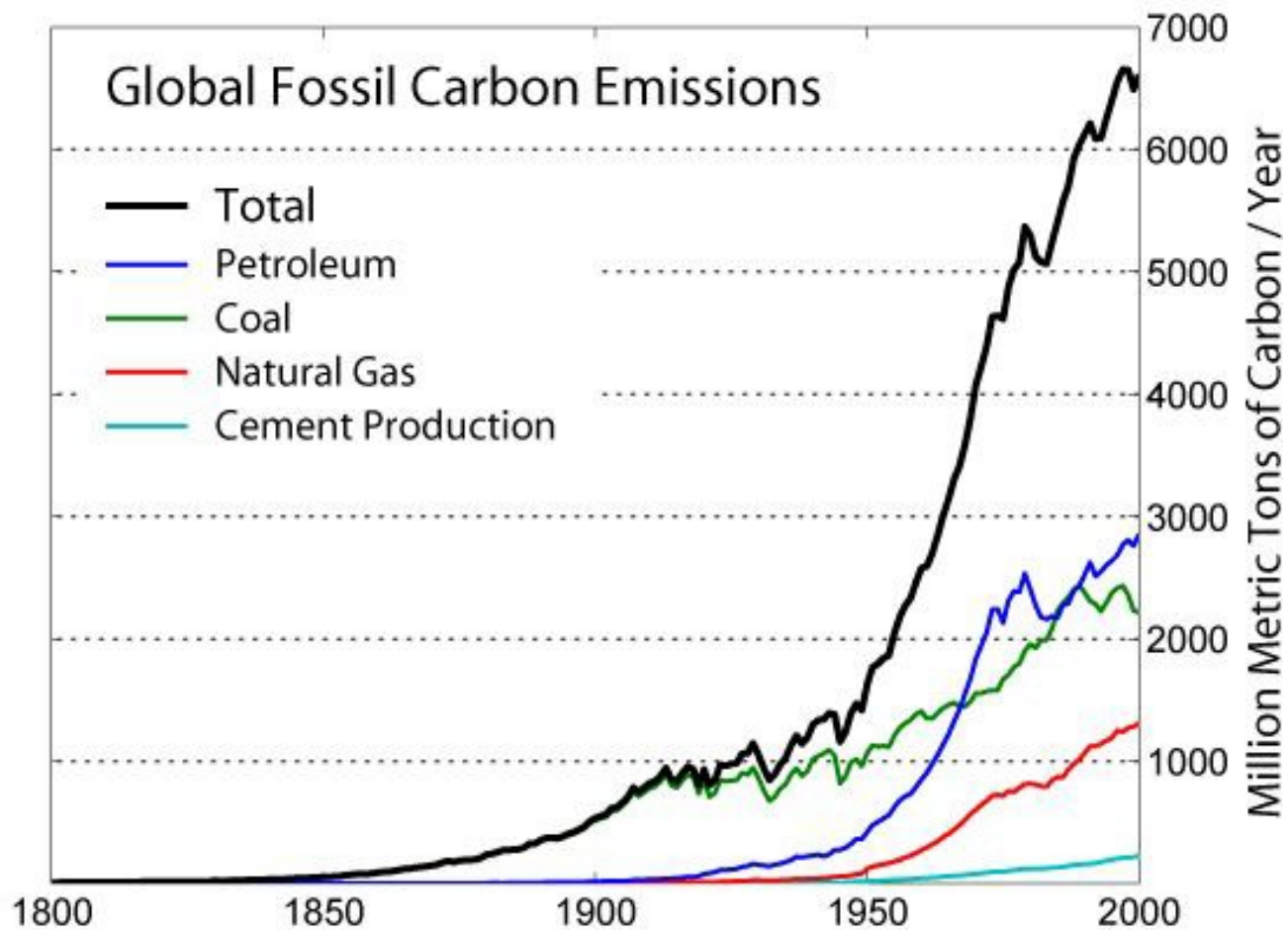
1.4 IN

ANNUAL RAINFALL INCREASE IN MICHIGAN  
(MOSTLY IN SPRING)

SOURCE: Third National Climate Assessment, Weighted averages of nClimDiv divisional data from 8 U.S. Great Lakes States.

**\$1.3B**

**DAMAGE TO MICHIGAN INFRASTRUCTURE  
FROM FLOODING SINCE 2013**



**\$2,514**

ECONOMIC DRAIN FROM ASTHMA PER INDIVIDUAL PER YEAR

**\$2.8B**

ECONOMIC DRAIN FROM ASTHMA IN MICHIGAN PER YEAR

13.2% OF KIDS (2.4M)

10.9% OF ADULTS (7.5M)

# **BUSINESS CASE**

OF CULTIVATING RESILIENCE



# RIGHT-SIZED INFRASTRUCTURE

Living Buildings are required to provide building- and/or community-scaled net-positive water and waste solutions.

**\$216.7M<sup>1</sup>** in MI water infrastructure damage per year since 2013.  
MI spends **\$4.5M<sup>2</sup>** a year to throw away trash.

1. Grand Rapids Climate Change Resiliency Report

2. <https://www.bridgemi.com/michigan-environment-watch/michigan-was-once-leader-recycling-today-its-pits>

# REGENERATIVE ENERGY

Living Buildings are required to produce 5%  
**MORE** energy than they consume.

Michigan spends **\$5.3B<sup>1</sup>** a year in commercial energy costs, 5% surplus is  
another **\$26.5M** in potential energy revenue.

1. [https://www.michigan.gov/documents/energy/michigan\\_energy\\_overview\\_605784\\_7.pdf](https://www.michigan.gov/documents/energy/michigan_energy_overview_605784_7.pdf)

# EMERGENCY POWER

Living Buildings are also required to provide adequate storage to support the building in the case of extreme events.

Power outages cost MI residents **\$42M<sup>1,2</sup>** per year.

1. <https://fas.org/sgp/crs/misc/R42696.pdf>

2. <https://www.ourenergypolicy.org/wp-content/uploads/2014/04/climate-central.pdf>

# LOCAL LIVING ECONOMY

Living Buildings are buffered against global supply chain disruptions.

Tariffs increased construction costs in MI by **\$176.5M<sup>1</sup>** in 2018

1. <https://www.hollandsentinel.com/news/20180819/farming-construction-feel-squeeze-of-retaliatory-tariffs>

# HUMAN POWERED LIVING

Living Buildings are required to improve access to non-motorized transportation, increasing mobility resilience within our communities.

People who bike for at least 30 minutes a day are 40% less likely to develop Type II Diabetes, saving Michigan residents **\$4.2B<sup>1</sup>** per year in direct and indirect medical expenses related to this disease alone.

1. <http://main.diabetes.org/dorg/PDFs/Advocacy/burden-of-diabetes/michigan.pdf>

# FOOD SYSTEMS

Living Buildings are required to dedicate a portion of their project to the production of healthy food.

Access to healthy foods could save **\$19.8M<sup>1</sup>** in health care costs in Michigan per year.

1. [https://www.canr.msu.edu/news/whats\\_a\\_food\\_desert](https://www.canr.msu.edu/news/whats_a_food_desert)









**\$2.2B**

Annual additional first cost of Living Buildings

(\$7.5B / year, assuming a 30% premium, which is conservative)



**\$2.2B**

Annual additional first cost of Living Buildings  
(\$7.5B / year, assuming a 30% premium, which is conservative)

**\$9.9B**

**x4.5**

Combined annual economic impact of Living Buildings