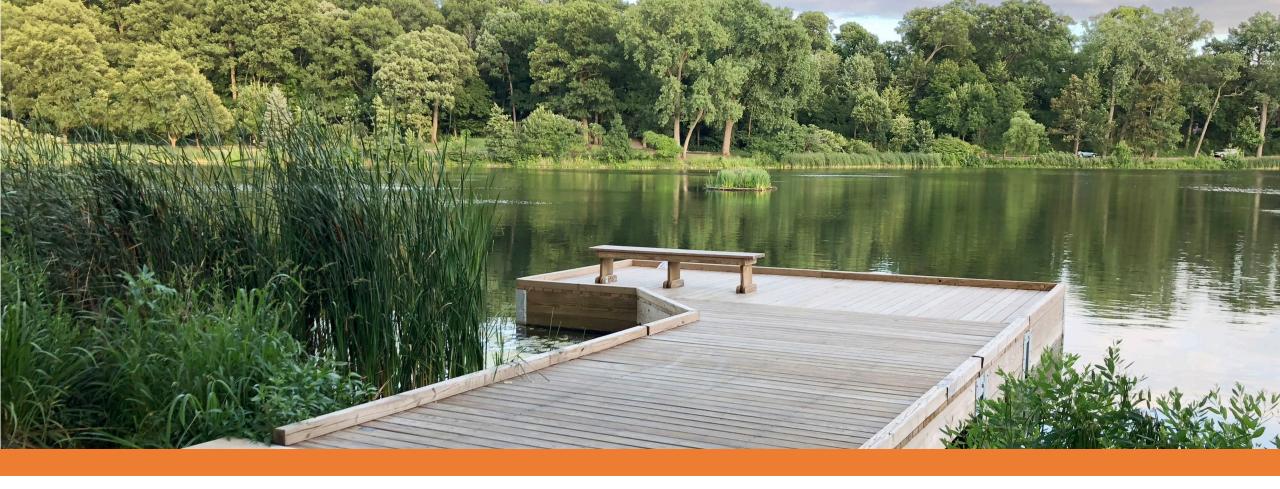


Prosperity by nature.



## > CARBON, CLIMATE, AND ENERGY: THE CHALLENGE AND OPPORTUNITY FOR THE GREAT LAKES REGION

Sanjiv K. Sinha, Ph.D., P.E., Chief Sustainability Officer

August 2021



### RISC Solutions: A Team Focused on Alternative Delivery/Financing Frameworks For Climate Adaptation





### www.risc.solutions

(LinkedIn: <a href="https://www.linkedin.com/company/risc-solutions/">https://www.linkedin.com/company/risc-solutions/</a>









AMERICAN SOCIETY OF ADAPTATION PROFESSIONALS

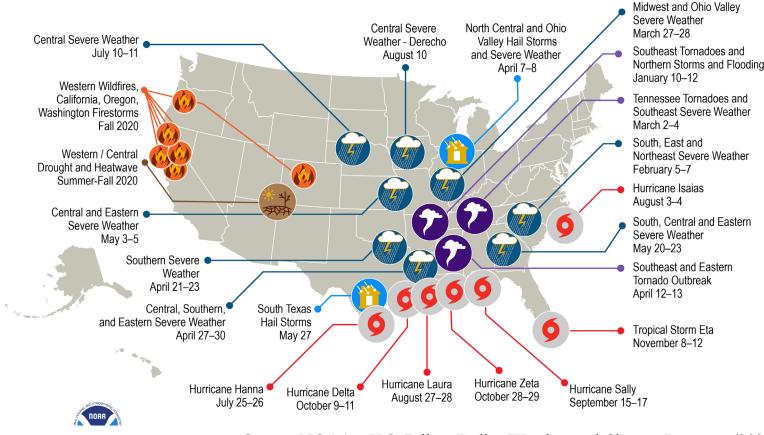




### U.S. 2020 Billion-Dollar Weather and Climate Disasters

2020 set a new annual record of 22 - \$billion+ disaster events – shattering the previous annual record of 16 events that occurred in 2011 and 2017.

#### U.S. 2020 Billion-Dollar Weather and Climate Disasters



Source: NOAA – U.S. Billion Dollar Weather and Climate Disasters (2021)



### >

#### **Global Risks Across the Planet**



Source: "Global Risks Report 2021" by World Economic Forum

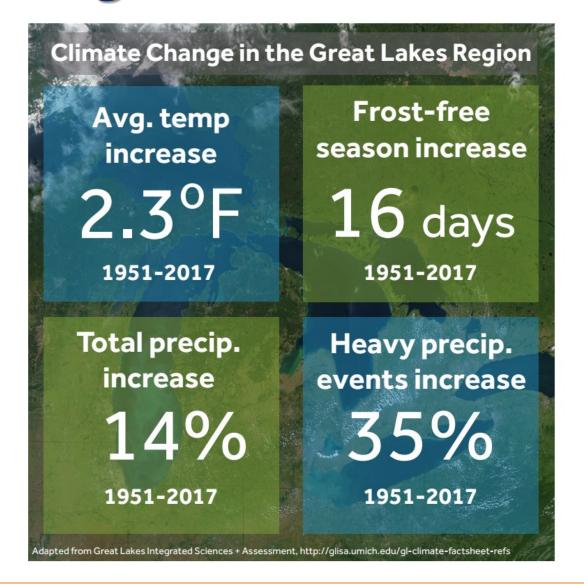


### > IPCC 2021 Report

- U.N. Chief: "Code red for humanity"
- Last five years have been the five hottest years since 1850
- Recent rate of sea level rise has tripled when compared to 1901-1971
- Global surface temperatures are 1.1 C higher in 2011-2020 than 1850-1900 => Almost certain to hit 1.5 C by 2050.
  - More intense heat waves
  - Shorter, more intense rainfall
  - Economic inequality => varied impacts on population



### Climate Change in the Great Lakes





## Clear Need for Investment in Resilient Water Infrastructure

\$472.6

billion

20-year capital need for drinking water

EPA's 2015 Drinking Water Infrastructure Needs Survey and Assessment (2015\$) \$271.0

billion

20-year capital need for wastewater

EPA's 2012 Clean Watersheds Needs Survey (2012\$) \$448-\$994 billion

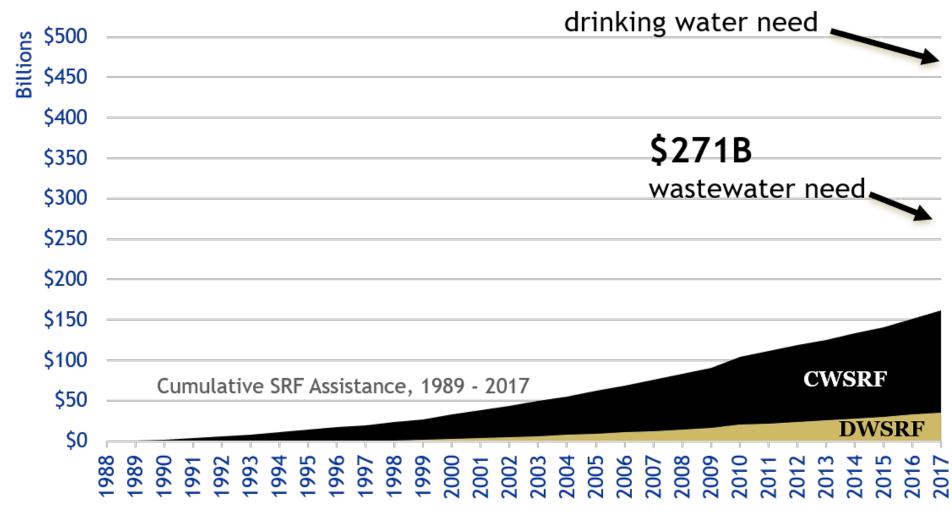
needed to prepare water infrastructure for the impacts of climate change

2009 estimate from the National Association of Clean Water Agencies (NACWA) and the Association of the Metropolitan Water Agencies (AMWA)



### **Cumulative SRF Assistance Agreements**

\$473B





# How Large is the Federal Contribution to Water Infrastructure Financing Need?

Roughly \$2-3 Billion a year to meet \$25-50 Billion a year need....

We need to get creative:

- a) drive down delivery costs
  - b) leverage what we have
  - c) find new sources of money
    - d) focus on social equity





# Climate Risks & Opportunities Across the Great Lakes: Report @ <u>www.risc.solutions</u>

- 653 counties in the Great Lakes states, over 200 in the Great Lakes basin
- Key question: What locations can most benefit from interventions related to a combination of
  - Climate risk
  - Social vulnerability
  - Workforce agility, and
  - Financial flexibility



### Climate Risks & Opportunities Across the Great Lakes

#### Focus on:

- Water infrastructure in general, green stormwater infrastructure in particular
- New delivery & finance frameworks
- A network to engage experts and leaders
- Solutions that are mindful of social/economic inequalities





### Stormwater Community-Based Partnerships: Over \$600 Million Since 2016

#### Prince George's County Clean Water Partnership

\$500M+ in green infrastructure retrofits for water quality and pollution reduction targets surrounding the worlds largest estuary, Chesapeake Bay.



#### Stormwater Authority of the City of Chester

\$93M in pollution reduction and greening of both the separate water and combined sewer areas.



#### Los Angeles Sanitation Green Streets

\$65M+ green streets retrofits for public safety, water conservation, and infiltration objectives.



### Milwaukee (MMSD) Community Based Green Infrastructure

\$20M+ in green infrastructure retrofits to achieve 9M+ gallons of runoff, pollution and flooding reduction targets.



#### City of Salinas Community-Based Partnership

\$50M+ in new green infrastructure assets to mitigate stormwater runoff and pollution control in the Salinas River & Monterey Bay.





### Milwaukee Community-based Partnership (CBP): One of the First Three in the Country...

- Led by Milwaukee Metropolitan Sewerage District
- \$20 Mil capital costs in green stormwater infrastructure (GSI) to capture 8.45 MG
  - > \$50 Mil to be added in Phase II

#### Community co-benefits:

- > > 25% S/W/MBE
- Local workforce development programs
- Mentorship of emerging businesses
- Equitable investment in the service area
- MMSD does NOT pay anything until GSI has been constructed



### Buffalo Environmental Impact Bond (EIB): The Largest Such Issuance in the Country

- Led by Buffalo Sewer Authority (BSA)
- \$54 Mil
- Newer sources of funding
- 1.87 times oversubscribed among ESG-centered buyers
- Multiple times in wider market
- Equitable investment in the BSA service area
- Cost of private finance can be offset by savings from aggregated volume related savings



### Summary

- Climate change is a huge challenge for all of us
  - Solutions should be visionary and BOLD...
- Green stormwater infrastructure, at large-scale, has emerged as a worthy climate adaptation measure
- Newer sources of funding, not just government, must be leveraged
- Newer delivery models work and must be adopted
- Great Lakes has emerged as an incubator of many of the ideas presented above



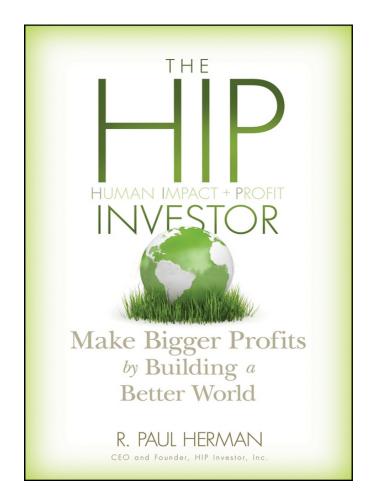


### Carbon, Climate, Energy: Challenges and **Opportunities for the Great Lakes Region**





### **HIP Books on Investing for Impact**



**NEWLY RELEASED. 2021** →

6 parts, 30 chapters Foreword by **Justin Rockefeller** 50 global authors, co-edited by HIP CEO Published globally 2021 by John Wiley & Sons Available in print and e-book on Wiley.com, Amazon

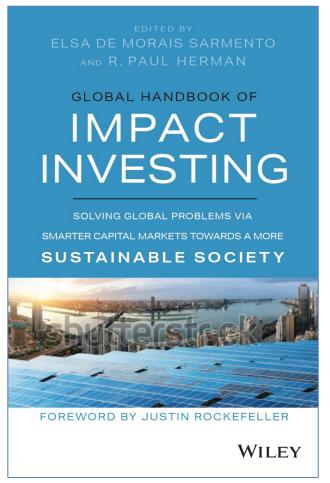
#### 11-YEAR Anniversary, Earth Day 2021

Top 20 Business Book Bestseller List Taught in 28 University, MBA, MPA Curricula

Named "Impact Investing" in 2010 Pre-dated "**ESG**" with 5 HIP Pillars Based on Maslow hierarchy of needs

Available at 146 Global Libraries In 20 Countries on 5 Continents In 2 Languages (English and Polish)

Published 2010 by John Wiley & Sons Available at Amazon and Wiley.com, in print, e-book, audiobook



Inc. 800ceoread



### **HIP Investor: 15 Years of Action**

#### **131,000 HIP RATINGS**

10,000 global corporates 120,000 US muni entities 1,000 ETF and mutual funds

#### **6 HIP STRATEGIES**

Great Workplaces; Climate Action; Sustainable Real Estate

#### **5 HIP PORTFOLIOS**

Fossil-Fuel-Free, including 401(k)s and 403(b)s

#### **RATE ISSUERS**

Seeking Capital for ESG, SDGs, Climate Action

#### HIP CLIENTS

#### **Fund Managers**

5 of top 10 Bond and Equity Managers, totaling \$ 7 trillion in assets managed

#### Indexes

Peter Drucker's Management 250 (WSJ)

Advisor Platforms + RIAs

College Endowments

Families and Family Offices

**Foundations** 

401(k)s and 403(b)s

Cities and Counties

#### HIP IN THE MEDIA

BARRON'S 2019, 2020, 2021

**CNBC** 2018, 2019, 2020

The New Hork Times 2011, 2014, 2017

FAST COMPANY 2006-07-08-09-2010-2018

FT Agenda 2016, 2017, 2018, 2019, 2020, 2021

Reuters 2020, 2021

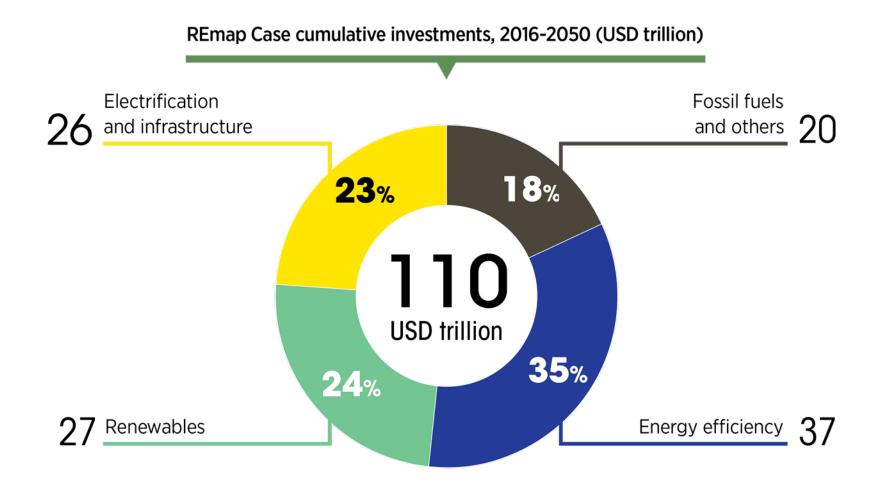
#### HIP ANALYTICS FEATURES

Newsweek GREEN RANKINGS

2015, 2016, 2017



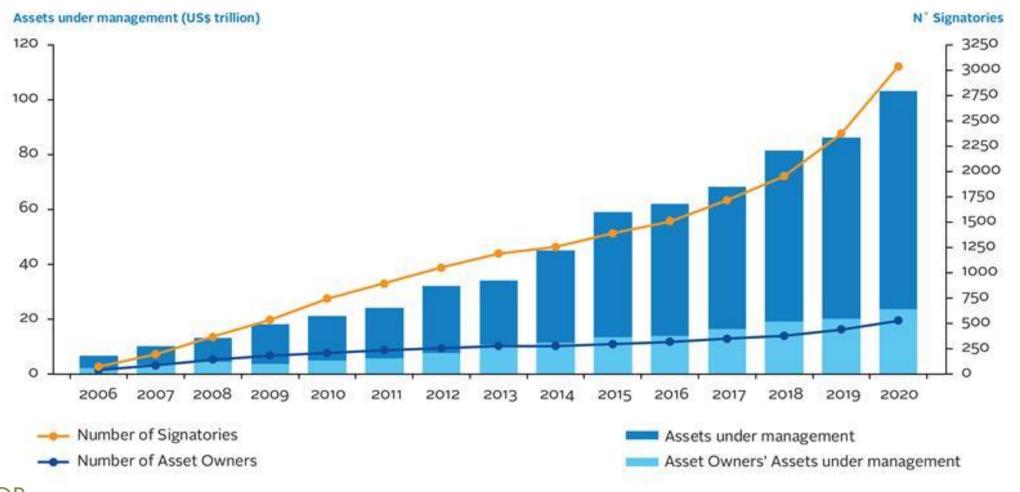
### \$110 Trillion Needed for Climate Action





Source: IRENA.org

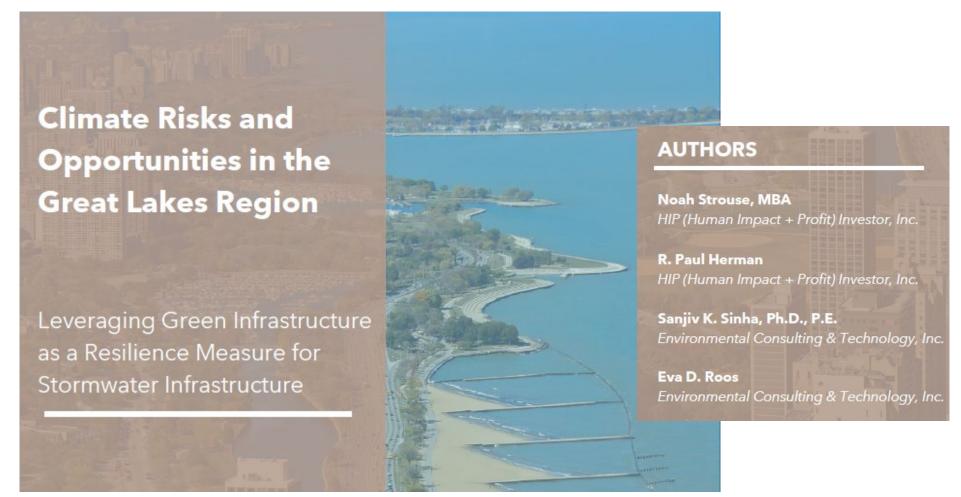
### \$100 Trillion Is "Committed" to Responsible Investing





Source: UNPRI.org

### Climate Action in the Great Lakes = Many Opportunities





\*\*\*\*\*\*\*\*\*\*





### **To Find the Optimal Readiness** for Climate-Action Opportunities, We Analyzed Metrics in 4 Categories

#### READINESS RATING FOR GSI INFRASTRUCTURE PROJECTS

Pillar	Metric	Weight
Climate	Impervious Ground Cover	10%
Climate	NFIP Claims \$ per Population Heavy Rain and Flood Damage Events per	10%
Climate	Population	10%
Social	Vulnerability Index	10%
Social	Population in Poor or Fair Health	10%
Social	GINI Coefficient	10%
Workforce	Unemployment Rate	10%
Workforce	Bachelors Degree Rate	10%
Workforce	High School Graduation Rate	10%
Financing	Debt Outstanding per Capita	10%
	Total	100%

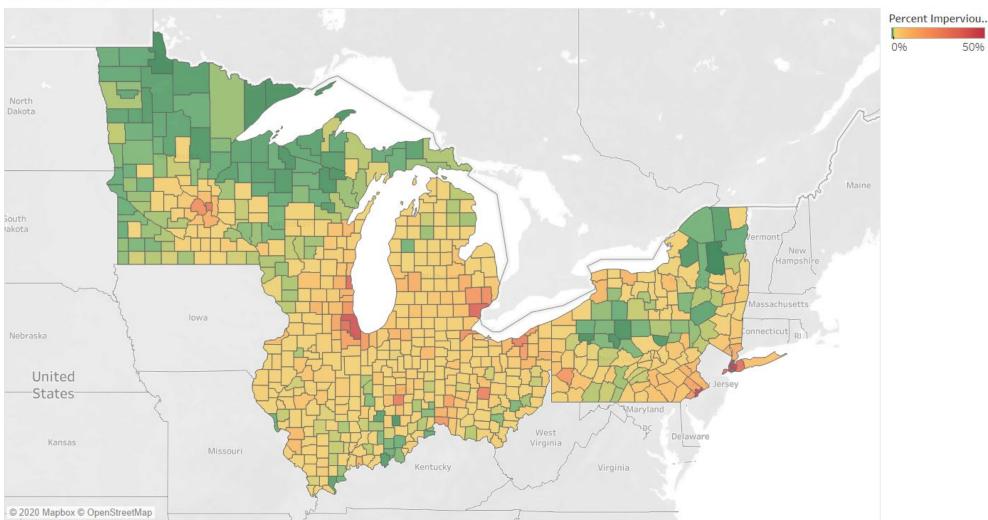
#### **Vulnerability Index Weighting**

Metric	Weight
Diabetes Rate	12.5%
High School Graduation Rate	12.5%
Poverty Rate	12.5%
People of Color Rate	12.5%
65yrs + Rate	12.5%
Living Alone Rate	12.5%
65+ and Living Alone Rate	12.5%
Land Area without Vegetation Rate	12.5%
Total	100%



#### 1. CLIMATE: Urban Areas Typically Have the **Most Impervious Surfaces, Worsening Risks**

Percent Impervious Ground Cover

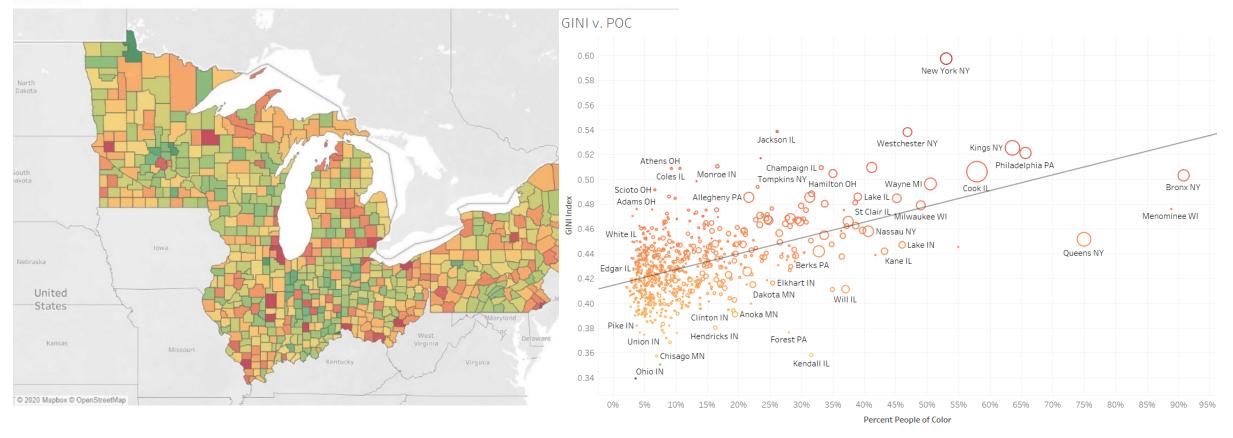




50%

# 2. SOCIAL: Racially-Diverse Counties Face Greater Economic Inequality (GINI Index)

#### GINI Index





## Communities of Color Are Very Ready to Implement Green Infrastructure

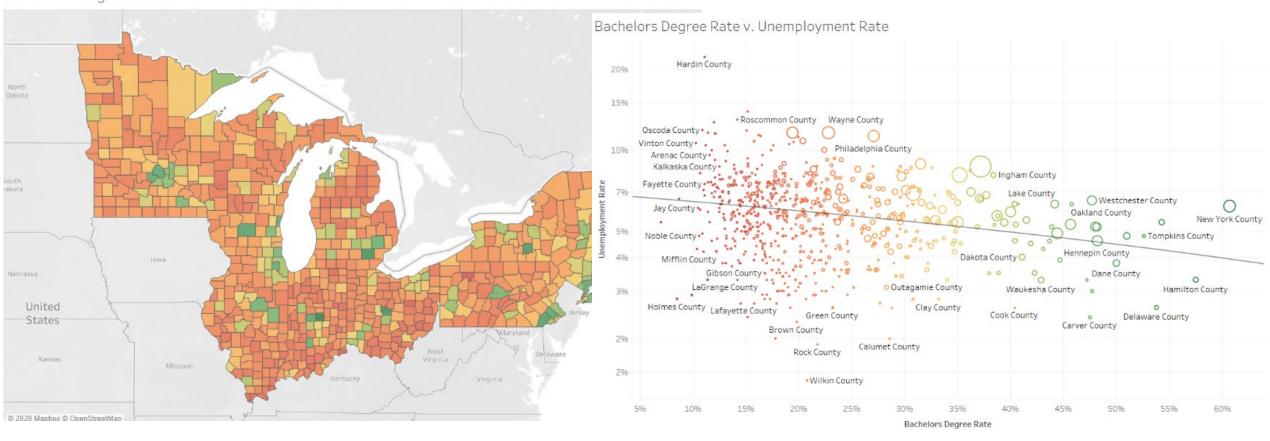
Figure 2: Final Composite Scores versus Population Percent of People of Color





### 3. WORKFORCE: Readiness & Availability **Provide Opportunities to Employ Local Citizens**

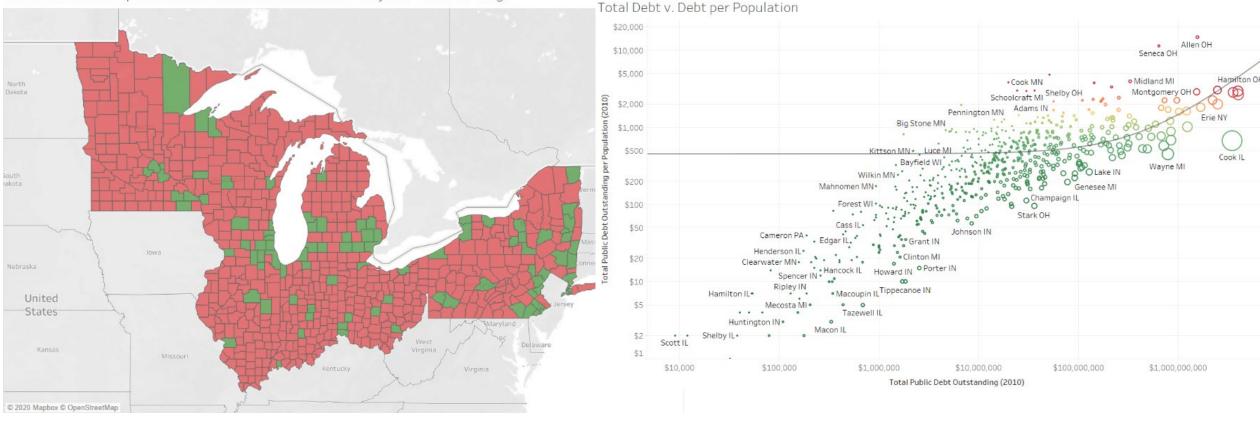
Bachelor's Degree Rate All





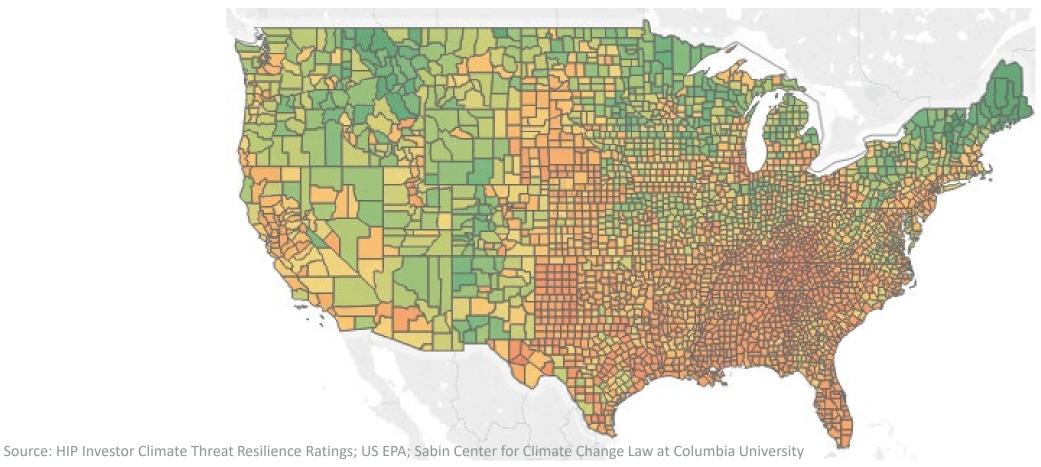
### 4. FINANCING: Lesser Debt-Per-Capita Counties, With Climate Action Plans, Yield Higher Readiness

Counties or Municipalities with Climate Action Plan or Mayoral Climate Pledge



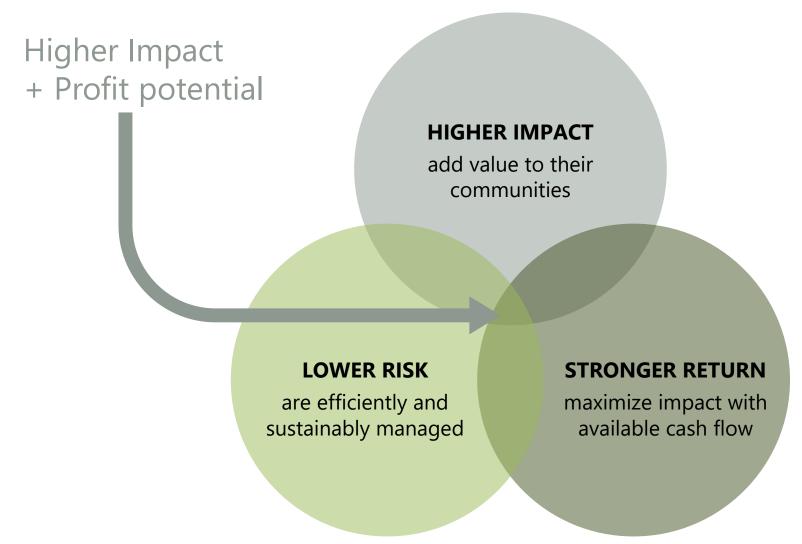


### HIP Climate Threat Resilience Ratings for 3,100+ Counties: **Great Lakes Positioned to Benefit from Climate Migration**





### What Impact Investors Are Seeking





### 17 UN SDGs Guide Impact Investors



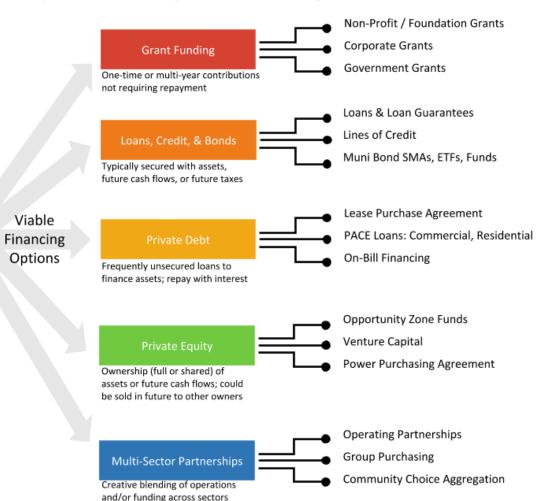


#### **FUNDING and FINANCING Climate Action via Grants, Credit, Debt, Equity, & Partnerships**

City + Community Climate Action Plan Strategies and Potential Pathways For Funding and Financing

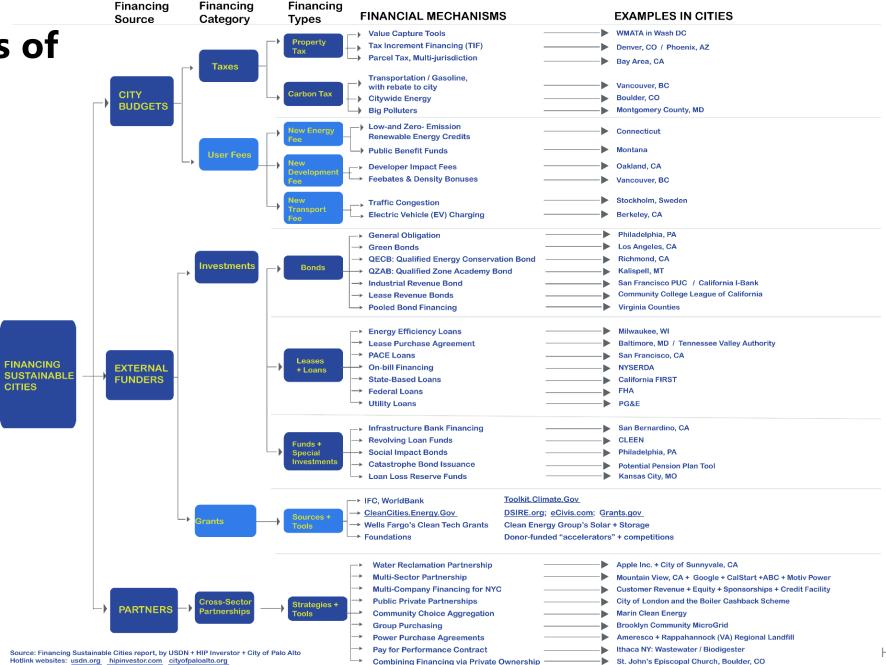
#### **6 Key Climate Action Strategies**

- 1. Fossil-Free Energy: Solar, Wind, Hydro, Energy Storage
- Resource Efficient Buildings: Sensors, Retrofits, HVAC improvements
- Low-Carbon Transportation: Electric Vehicle EV charging, EV Fleet Replacement, Micro-Mobility
- 4. Zero Waste to Landfill: Biodigesters, Recycling, Waste Reduction
- Clean Natural Resources: Urban Forestry, Wetlands Restoration
- Resilience and Adaptation: Sea Walls, Education Programs, Resiliency HUBs; Health and Wellness Programs



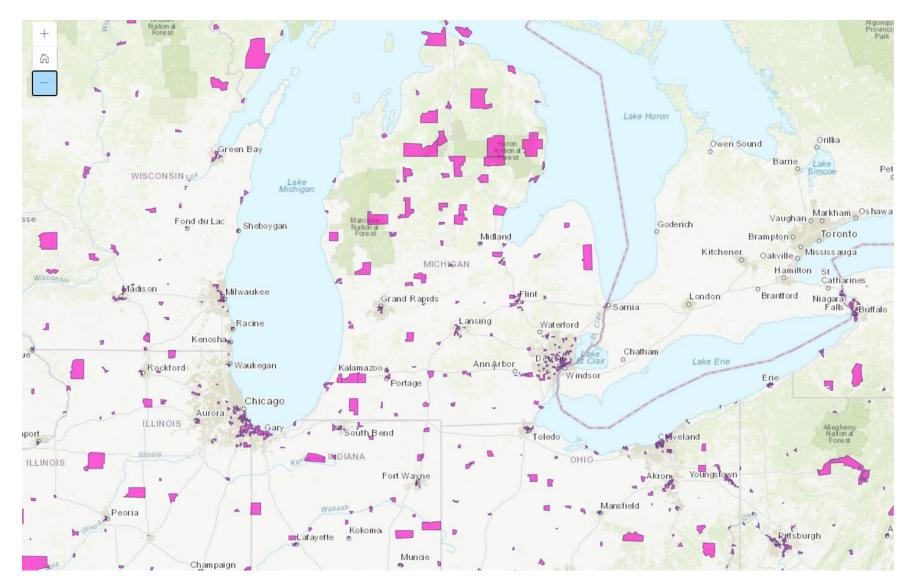


### **Real Examples of Innovative Financing**





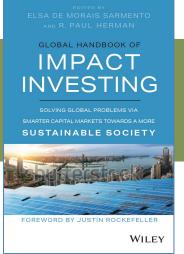
## Lower-Income "Opportunity Zone" Tax Benefits for Real-Estate and Business-Venture Investments

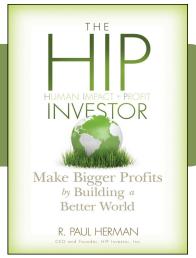




# D INVESTOR Human Impact + Profit

#### Contact Us: BeMoreHIP@HIPinvestor.com





**Selected Leaders** of the HIP Team

R. Paul Herman **Onindo Khan Nick Gower Adam Mason Lucia Pohlman** 

CEO + Founder Corporate Ratings SVP Muni Ratings SVP Muni Ratings + Portal VP **Issuer Ratings** 

Paul@HIPinvestor.com Onindo@HIPinvestor.com Nick@HIPinvestor.com Adam@HIPinvestor.com Lucia@HIPinvestor.com



### **Climate Action Investing Opportunities**

Impact + ESG + SDGs + Climate + Covid19 + Opportunity Zones

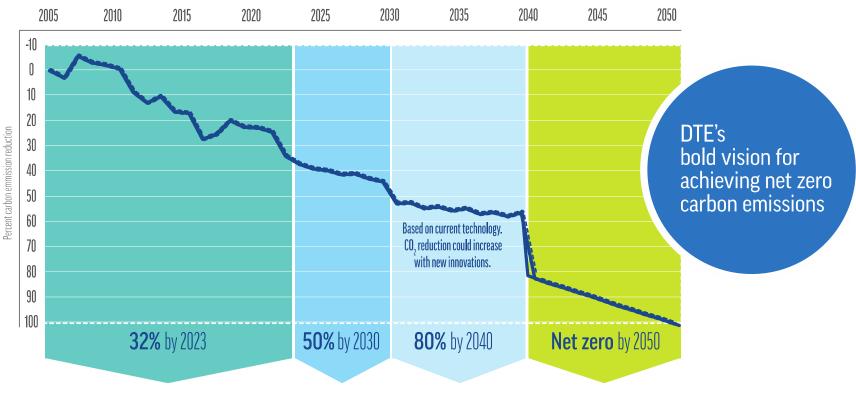


**Great Lakes Governors and Premiers** 

August 13, 2021



#### Powering toward a net zero carbon future



Total CO<sub>2</sub> percent reduction

Our goal builds on the commitments we've already made to reduce carbon emissions 50% by 2030 and 80% by 2040. All while providing our customers with power that is safe, reliable and affordable.

#### The pathway to net zero carbon emissions



Retiring coal-fired power plants



Adding thousands of megawatts of wind and solar power



Incorporating natural gas to balance more renewables



Investing in carbon capture, large-scale storage, and modular nuclear facilities



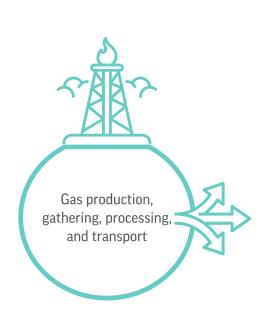
Expanding our voluntary renewable energy programs like MIGreenPower

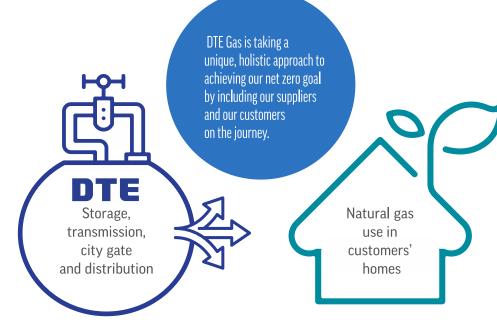


Advocating for constructive public policy



#### Powering toward a net zero carbon future





#### **Supplier emissions NET ZERO**

- · Net zero greenhouse gases by 2050.
- By 2050, we will be removing ~1.3 million metric tons of GHGs per year through practices to procure cleaner gas from suppliers.

#### **DTE Gas emissions NET ZERO**

- Net zero greenhouse gases by 2050.
- By 2050, we will be removing ~1.4 million metric tons of GHGs per year through infrastructure upgrades, operational improvements and carbon offsets.

#### Helping our customers reduce their carbon footprint

- Reduce GHGs 35% by 2050 (from 2005).
- By 2050, we will be removing ~3.5 million metric tons of GHGs per year through energy efficiency programs, an enhanced voluntary emissions offset program and advanced technologies.

DTE Gas will be reducing emissions by 6 million metric tons of greenhouse gases each year by 2050. This equates to removing

2020





2030





550,000

2050





1,000,000





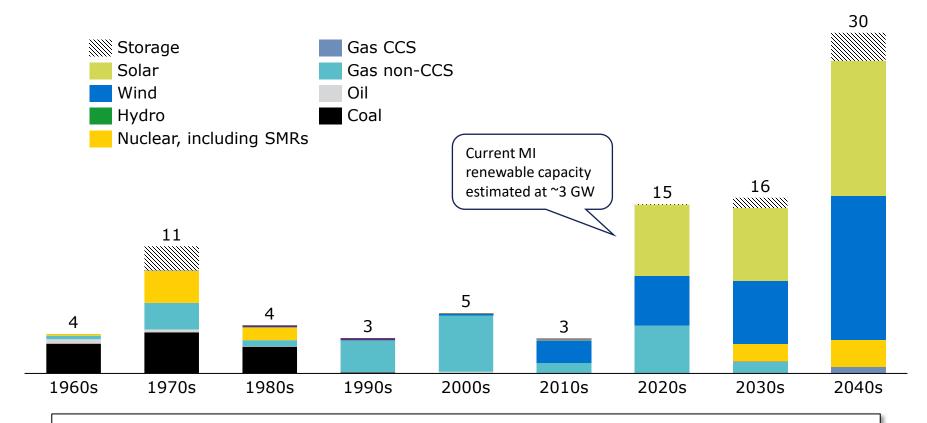




#### High Renewables Case: A \$90B+ investment for the state of Michigan

#### MI capacity additions by decade with projections through 2050

(GW of capacity; High Renewables case)



Build out of power generation alone will **require \$90B+ of investment** between 2020 and 2050



#### Green financing for green projects

- To date, DTE Electric has issued ~\$2.2 billion of green bonds (~\$2.15 billion net proceeds)
- Approx. \$1.4 billion used to fund 5 wind parks and
   1 solar park (~885 MW generation capacity)
- Approx. \$400m used to fund energy efficiency programs
- Approx. \$350m used to fund power purchase agreement payments for wind energy





#### Helping ensure a just transition to clean energy

DTE is employing a **Retire With Pride** strategy as we move away from coal to help ensure our employees and communities aren't left behind. This involves:

- Retiring our coal plants in a manner that doesn't result in job losses.
- Working with communities to help determine a beneficial reuse for our properties.
- Fostering development, investment and volunteer projects within impacted communities.







Prosperity by nature.