

MAKING RESEARCH MATTER

democratizing science & other lofty goals

Michigan Tech Research Forum • October 13, 2016

Richelle Winkler, Associate Professor of Sociology & Demography, Dept of Social Sciences



Michigan Tech

AGENDA

1. Democratic science
2. My goals & approach to democratic science
3. Examples from projects
Some things that have worked for me
4. Issues in community engaged research-
Do you really want to do this?
5. Goals
 - share ideas/lessons learned
 - stimulate thinking
 - raise questions

WHAT IS DEMOCRATIC SCIENCE?

1. Science for the people

- Gives voice
- Answers peoples' questions/problems
- Engage with people
- Shared and accessible results

2. Science by the people

- People ask the questions
- Skills and collaboration- empowers people
- Shared knowledge

3. Collaborative science

- Interdisciplinary/Transdisciplinary
- Share data

MY LOFTY GOALS

1. Share data & findings with public and researchers

- Data repositories
- Websites
- Research briefs
- Press
- Infographics

2. Problem/people driven questions that help broad publics and/or less powerful groups

- Choosing the research question
- Work with people to answer the question

3. Scholarship that integrates teaching-research-service

- Service to community: Campus-community partnerships
- Involve students as partners

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About

Map

Change Map Variable: [Download map data](#) [Create JPG Map](#)

2000s Total Net Migration Rate

Zoom Tools:

Zoom to Full Extent --Zoom to a State--

Map Legend (Net Migrants per 100 Individuals)

-5 or less
-4 to -1
0 to 4
5 to 19
20 or more

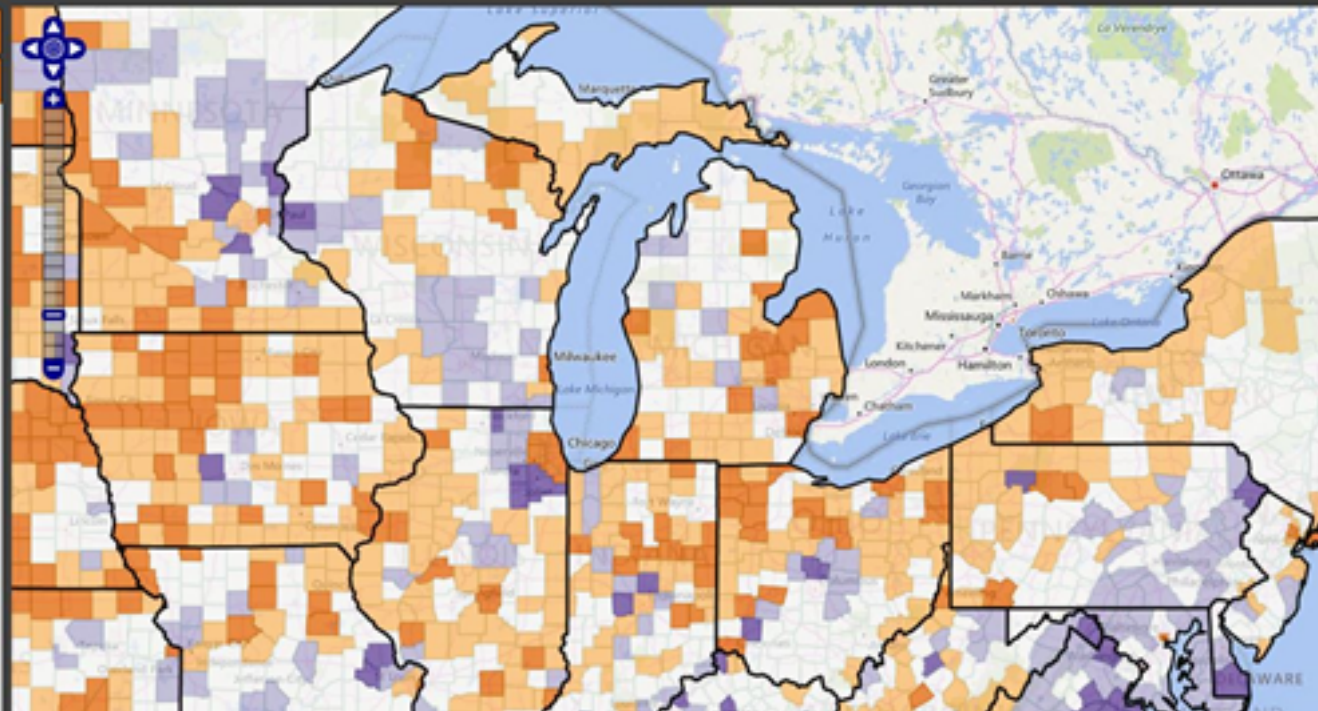
Selected Counties [Click map to select counties to chart](#)

Selection 1: none

Selection 2: none

Selection 3: none

[Create Chart](#) [Clear Selections](#)



1. Create & serve useful data- make it fun

www.netmigration.wisc.edu

- Funded by NIH- NICHD
- Over 185,000 maps created
- Over 5,000 data downloads

2. Data repositories- ICPSR- “sharing data to advance science”

- <http://www.icpsr.umich.edu/icpsrweb/>
- Help with metadata and archiving

Moving Toward Integration? Effects on Ethnoracial Segregation Across the Rural-Urban Continuum

Richelle L. Winkler¹ • Kenneth M. Johnson²



Population Trends in Post-Recession Focus
A Publication Series of the W3001 Research Project

[Previous](#)

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How Migration Impacts Rural America

Brief No. 03-16
September 2016
Miranda N. Smith, Richelle L. Winkler, and Kenneth M. Johnson

[Download as PDF](#)

Migration Shapes Rural Communities in Different Ways

A keynote story of rural America since the 1950s has been the saga of young people leaving rural America for education, excitement, and careers in cities. But, relentless youth outmigration is only one dimension of the rural migration story. Some rural places attract migrants while others lose them; and whom they attract and whom they lose varies. Some rural places attract retirees, others attract families, and some even attract young adults.

Rural migration patterns reflect the varying social, economic, and environmental conditions across rural America. And, these differential migration patterns have significant implications for population structure, service needs, and community and economic development potential of rural communities. Understanding distinct migration patterns can help community leaders to develop strategies to improve the well-being of their communities.

Here, we summarize migration patterns by age across rural (nonmetropolitan) America from 1950-2010. Focusing on the most recent decade, we identify five distinct types of counties according to their age-specific net migration patterns.

Center for Demography and Ecology
University of Wisconsin-Madison

County-Specific Net Migration by Five-Year Age Groups, Hispanic Origin, Race and Sex 2000-2010

Richelle L. Winkler
Kenneth M. Johnson
Cheng Cheng
Paul R. Voss
Katherine J. Curtis

CARSEY

ISSUE BRIEF NO. 62

SPRING 2013

I N S T I T U T E

Age and Lifecycle Patterns Driving U.S. Migration Shifts

KENNETH M. JOHNSON, RICHELLE WINKLER, LUKE T. ROGERS

Migration—people moving between locations—is now driving much of the demographic change occurring in the United States. Over time, the ebb and

Key Findings

SHARING FINDINGS/KNOWLEDGE

1. Publishing the peer reviewed article

- Open source?
- Demographic Research; Demography
- Researchgate- *connect the world of science and make research open to all*

2. Research Briefs

- http://w3001.apl.wisc.edu/bo3_16
- <http://scholars.unh.edu/carsey/192/> - 500+ downloads

3. Working Papers

- <http://www.ssc.wisc.edu/cde/cdewp/home.php>

4. The press and media

- Do press releases!
- UMC can help
- Self promotion or knowledge sharing?

5. Infographics

PRESS RELEASES MATTER!



BATTERY TECHNOLOGY, SOLAR POWER, UNIVERSITY RESEARCH, UTILITIES, WIND ENERGY

LEAVE THE GRID IN THE UP? MICHIGAN TECH TEAM FINDS IT FEASIBLE

🕒 JUNE 1, 2016 👤 ESDMATROUSH 💬 LEAVE A COMMENT

HOUGHTON — While Michigan's Upper Peninsula is not the sunniest place in the world, solar energy is viable in the region. With new technologies, some people might be inclined to leave the electrical grid. A team from Michigan Technological University looked into the economic viability of grid defection in the Upper Peninsula.

Known for snow rather than sun, the region could still support a significant network of solar photovoltaic energy systems. Solar

Americans live

From The Atlantic

CITYLAB

NAVIGATOR

CITYFIXER

MAPS

PHOTOS

COMMUTE WORK HOUSING WEATHER

Mapping 60 Years of White Flight, Brain Drain and American Migration

An interactive picture of Americans perpetually on the move.

EMILY BADGER | Nov 1, 2013 | 💬 22 Comments

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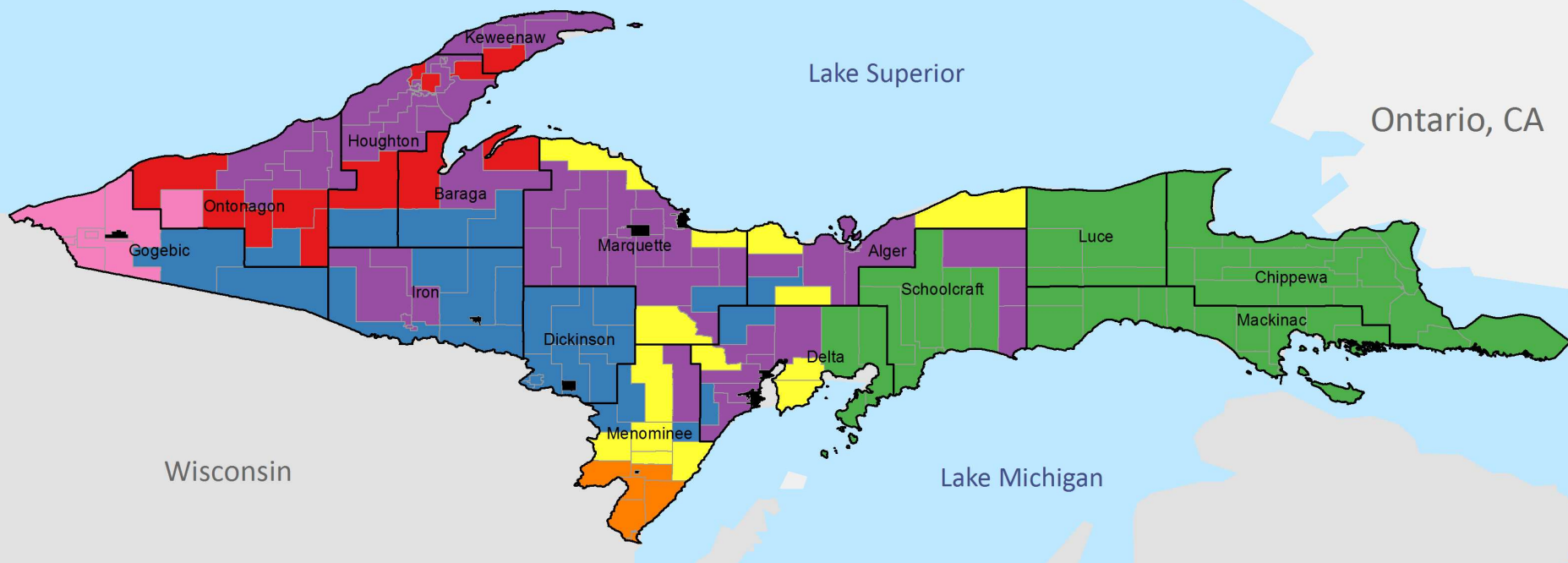
Email

Sign up

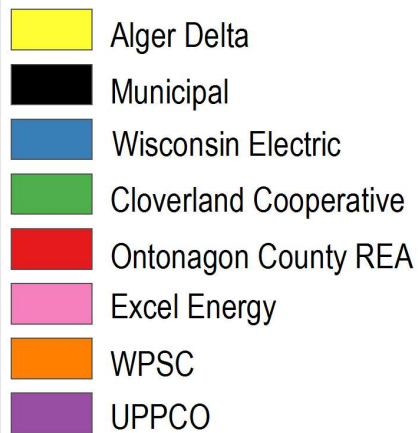
You can tell a lot about a place by who doesn't want to be there any more. Or, conversely, by who wants to move in.

A city that seeps population over time invariably has deeper problems driving its demographic change, like poor school districts that can't keep young families, or weak job prospects for its college grads. A county that attracts new residents, on the other hand -- maybe young people in particular, or retirees -- likely has the right amenities to lure them. Maybe a certain job sector. Or golf course communities.

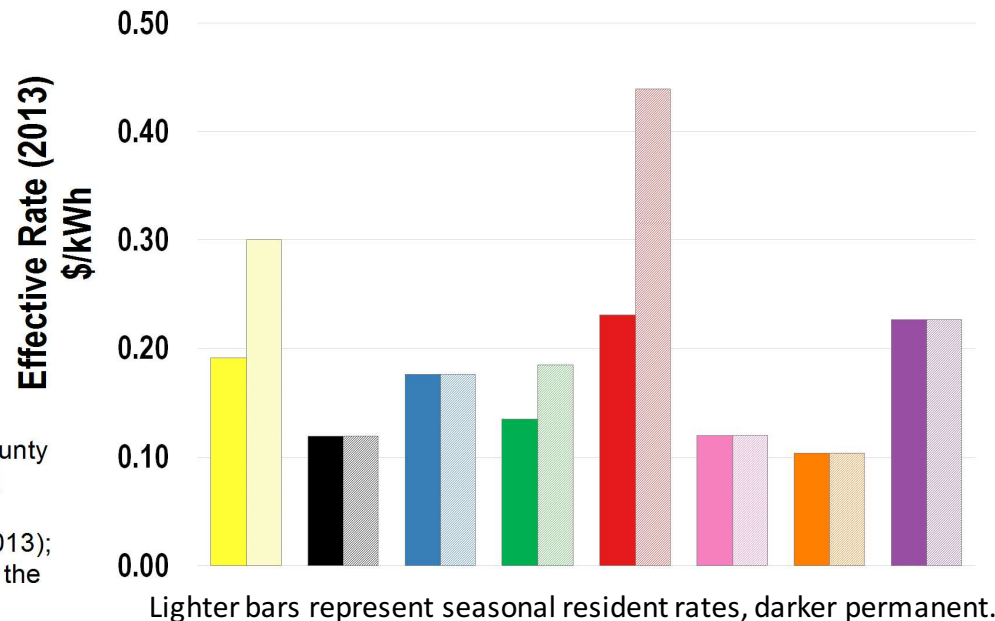
In this way, we can divine some of the fortunes of different corners of the country simply by watching how Americans move around over the years. Each year, about 10 million Americans relocate to a new county. Map all those moves from one Census to another, across decades, and by race and age demographics, and you can see the Great Migration of blacks from the South, white flight to northern suburbs, the hollowing out of Rust Belt cities and the rise of the Sun Belt.



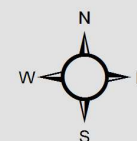
Electric Utility Service Areas



Data Sources: Author assignments of county subdivisions (US Census Bureau TIGER 2010) to dominant utility service areas (Michigan Public Service Commission 2013); Annual Reports of Utilities, 2013, filed to the Michigan Public Service Commission.



Michigan



0 15 30 60 Miles

WHY SHARE?

1. Informed people can make better decisions
2. Informed people can organize to speak truth to power with evidence to back them up
3. **If we don't engage with people, someone else will!**
 - Upper Peninsula energy crisis issue
 - Interest groups have big incentive
 - Who drives the discourse?

MY LOFTY GOALS

1. **Share data & findings with public and researchers**

- ICPSR
- Websites
- Research briefs
- Press
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3. **Scholarship that integrates teaching-research-service**

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MY COMMUNITY ENGAGED SCHOLARSHIP GOALS

1. **Combine research-teaching-service**
 - course-based
 - students get free entry
 - challenging to do a good job in one semester
2. **Build reciprocal & collaborative campus-community relationships**
 - MTU *cares*?
3. **Promote long-term empowerment. Give voice.**
4. **Provide students with real-world opportunities**
5. **Promote interdisciplinary collaborations and team science**
6. **Answer questions of interest to communities- provide direction for sustainable community development**
7. **Case studies – look out for generalizable findings**

SOME OUTCOMES

Waste and Recycling Programs

in
Hancock and Houghton, Michigan
and
Michigan Technological University

Review and Recommendations

- Curbside recycling
- Sustainability Director
- Houghton semifinalist in GUEP- reduced gas/electric consumption ~5%
- Journal article published in *Sustainability*
- EPA P3 Honorable mention award
- Most community engaged and likely to promote real sustainability
- KNHP exhibit on minewater geothermal
- *Community Guide to Minewater Geothermal* book in development
- MS thesis (Edward Louie)
- I got tenure doing this stuff!
- Growing interest
- Fun, motivating



Won the American Institute of Chemical Engineers' Youth Council on Sustainable Science and Technology Award for most interdisciplinary and community engaged project with potential to improve lives and sustainability.

Waste and Recycling Programs

in

Hancock and Houghton, Michigan

and

Michigan Technological University

Review and Recommendations



Sociology of the Environment Class
Graduate Program in Environmental and Energy Policy
Michigan Technological University

Fall 2015

1. Limited recycling & lack of choice or democratic decisions in waste management
2. Copper Country Recycling Initiative
 - Needed data! Were organized.
3. Hancock efforts-
 - Hugh Gorman & Susan Burack
4. "We've tried it before..."
5. Grad Class 2015
 - Data/cities/companies/cases
 - Pulling together information
 - It was the right time!
 - Report on web
 - Presentation @ library (press!)
 - Presentation to MTU senate



CALUMET SUSTAINABLE COMMUNITIES PROJECT



Michigan Tech

Picture Source:
Keweenaw National Historic Park



GENERAL METHODS

- Field trips. Coffee & Beer. Choose local options.
- Design research collaboratively
- Engage community in learning process
- Community meetings/advisory board
- Present in community
- Write accessible report
- Explore additional publication opportunities



Source: Amanda Kruze





PROJECTS

1. How does arts development in a small town?

- Promise
- Building social, cultural thinking, being, and environment

2. Could we and should we mine for geothermal energy?

3. Does it make sense to cooperate more or less?

- Ongoing project- presentation and Dec 12 @ CLK

Article

Boom, Bust and Beyond: Arts and Sustainability in Calumet, Michigan

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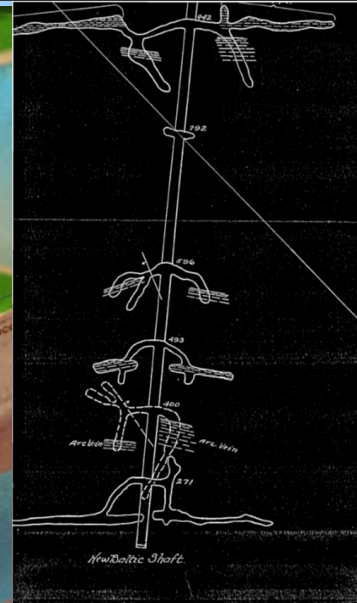
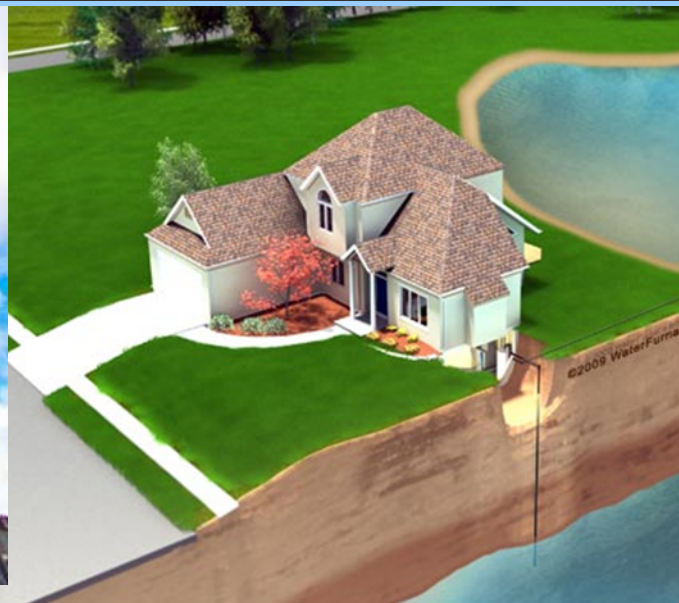
Academic Editor: Tan Yigitcanlar

Received: 4 January 2016; Accepted: 11 March 2016; Published: 21 March 2016

Abstract: Cycles of boom and bust plague mining communities around the globe, and decades after the bust the skeletons of shrunken cities remain. This article evaluates strategies for how former mining communities cope and strive for sustainability in the decades well beyond the bust, using a case study of Calumet, Michigan. In 1910, Calumet was at the center of the mining industry in the Upper Peninsula of Michigan, but in the century since its peak, mining employment steadily declined until the last mine closed in 1968, and the population declined by over 80%. This paper explores challenges, opportunities, and progress toward sustainability associated with arts-related development in this context. Methods are mixed, including observation, interviews, document review, a survey, and secondary data analysis. We follow Flora and Flora's Community Capitals Framework to analyze progress toward sustainability. Despite key challenges associated with the shrunken city context (degraded tax base, overbuilt and aging infrastructure, diminished human capital, and a rather limited set of volunteers and political actors), we find the shrunken city also offers advantages for arts development, including low rents, less risk of gentrification, access to space, and political incentive. In Calumet, we see evidence of a spiraling up pattern toward social sustainability resulting from arts development; however impacts on environmental and economic sustainability are limited.

Keywords: art; mining; boom and bust; community development; social capital; infrastructure; tax base; community identity

Could we and should we tap into water in abandoned mines for geothermal energy?





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Kayla Warsko, undergrad, chemical engineering

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TECHNICAL INFRASTRUCTURE

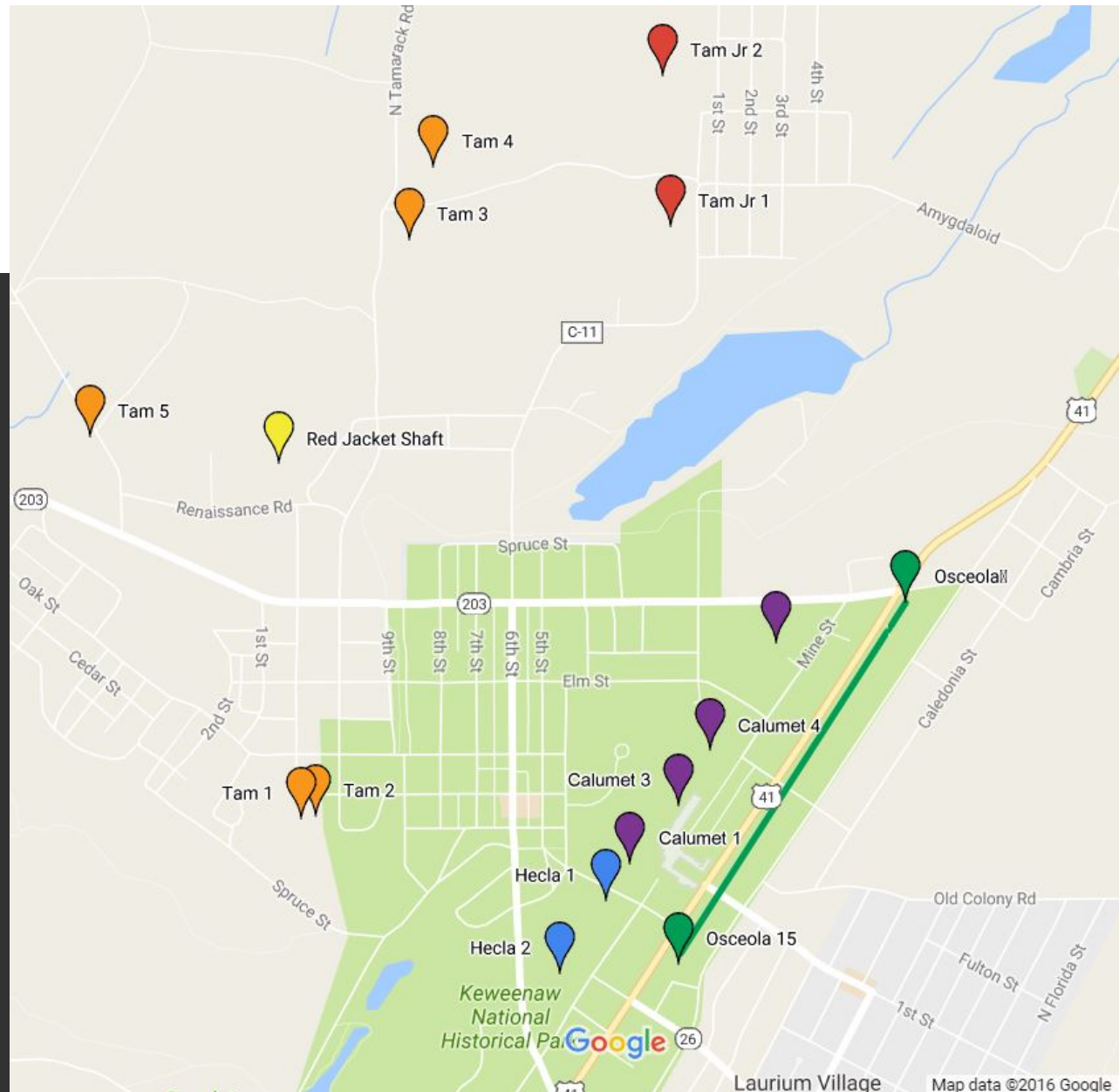
- 37 Shafts in and around Village of Calumet, mostly inclined shafts
- Some access issues
- Temperature ~ 55° F
- Billions of gallons of water
- Close proximity to downtown, residences, industrial park
- Heating demand is substantial, cooling a plus
- Everyday tools



Photo by Edward Louie, of Red Jacket Shaft

SHAFT LOCATIONS

- Google Map
- Publicly accessible
- Tools



Shaft	Building	Distance (FT)
Calumet 1	Township Office Building	106
	CLK Schools	210
	Mishawaubik Club	250
	National Park Warehouse	280
	Colloseum	330
	National Park Headquarters	400
	National Park Visitor Center	750
Calumet 3	CLK School	80
	Michigan House Cafe	1,530
Calumet 5	Golden Horizon Apartments	50
	GardenView Assisted Living	215
Hecla 1	National Park Library	30
	Calumet Electronics -Business center	95
	Barbara Kettle Gundlach Shelter	165
	National Park Warehouse	205
	National Park Visitor Center	1,000
Hecla 2	Calumet Fire Department	175
	Calumet Electronics-Roundhouse	310
Osceola 15	Aspirus Keweenaw Hospital	1,250
	Vertin Gallery	1,850
Red Jacket Shaft	REL Building	230

ECONOMICS

- Geothermal Heat Pumps usually save \$ (even vs low nat gas), better than electric heat or propane
- Air conditioning very cheap with a geothermal heat pump
- But....economics are not good for this in Copper Country now

COMMUNITY IMPACTS

- **Natural:** Renewable energy source, reduce dependence on fossil fuels and carbon dioxide emissions. Turns a negative into a positive.
- **Cultural:** Reinforces community identity and celebrates cultural connections to mining. People feel the community owns the water and the legacy. Much interest.
- **Human:** Some opportunity for training and cultivating interest and skills in renewable energy systems.
- **Political:** Would require political will and coordination between several political entities: Village, Township, NPS, School District, etc. Concerns about who benefits/who pays/who controls.
- **Social:** Could reinforce and build social relationships and connections b/t organizations.
- **Financial:** How to finance initial costs? Not currently favorable economically in comparison to natural gas.
- **Built:** New infrastructure that would need to be maintained; questions about who benefits and who pays.

RESULTS

Could we and should we tap into water in abandoned mines for geothermal energy?

Could we? Yes.

Should we?

Maybe someday. Now is not the best time economically, unless incentive structures change. Option for County Ice Arena.

Structural roadblocks make it difficult:

- “Cheap” natural gas
- No powerful champions – no BIG \$\$ to be made
- Not “normal”

THE GUIDEBOOK

A empowering tool to help communities to self-evaluate the possibility of minewater geothermal projects in their area

- What is minewater geothermal?
- Community Participatory Planning
- Gathering Data and Understanding Your Minewater
- Technical and Economic Feasibility Tool
- Environmental Considerations
- Deciding on a location
- Ownership structures
- Funding sources
- Legal Considerations
- Examples and Resources

KNHP Exhibit

Doing Community Engaged Scholarship @ MTU

WHY NOT DO CES?

- Extra work- transdisciplinary, organization & planning
- Chaotic and confusing for students
- Are you working with the right people? Who is “the community”?
- Can be difficult to find generalizable outcomes
- Political
- At the edge of expertise
- Burn out
- Publishing is slow
- We don't really know how...

WHY DO CES?

- It makes research matter! (relevance & impact)
- Community demand
- Experiential learning enriches students' learning & prepares for civic life
- Super rewarding
- Can drive other research questions
- Sometimes you really can facilitate positive change
- Makes MTU look good- brings value to the region
- Increase diversity/attract female and minority scholars
- Legitimizes the academy & broadens financial support
- University Learning Goal
- **If we don't do it, someone else (with interests) will!**

LESSONS & HINTS

- Set clear deadlines and organizational structure- grades
- Build trust
- Work with groups who are organized
- Stay close to comfort zone
- Ask for help – reach out
- Learn from others, but pave your own way
- Concentrate on team spirit and collaboration
- Don't try to do it all at once

HURDLES FOR DOING THIS @ MTU

- No reward/compensation system
- No resources/center for connecting parties
- Little to no organized support
- Administrative buy in?
- Funding comes from different places

RESOURCES

- **Campus Compact**
- **Engagement Scholarship Consortium**
<https://engagementscholarship.org/>
- **APLU (Assoc of Public & Land-Grant Universities)**
Task Force on New Engagement
- **Professional Associations- Public Science revolution**
- **Colleagues & Peers @ MTU**

Don Lafreniere & Sarah Scarlett- Keweenaw Time Traveler

Sarah Green- Skeptical Science website- <http://www.skepticalscience.com/>

Joshua Pearce- Open Sustainability Technology lab

Carol MacLennan & Noel Urban- Torch Lake projects

Lorelle Meadows & the Honors College crew

Susan Amato-Henderson- service learning

Higher education must move engagement from the margin to the mainstream by fully embedding engagement into the central core of the institution as a scholarly approach to teaching, research and service.

- APLU Council on Engagement and Outreach White Paper. August 2015.