

Regional Opportunities for Renewables

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Welcome

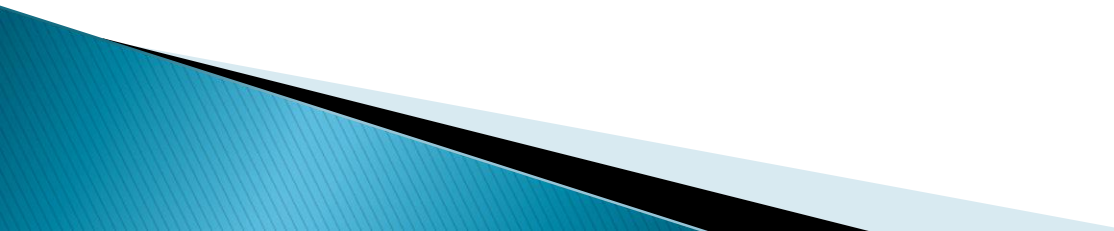
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Bachelors of Science: Appalachian State University
Industrial Technology – Appropriate Technology

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Public Administration



Questions

- ▶ Is renewable energy really viable in Michigan?
 - ▶ Why should we do it?
 - ▶ Barriers?
 - ▶ Solutions?
- 

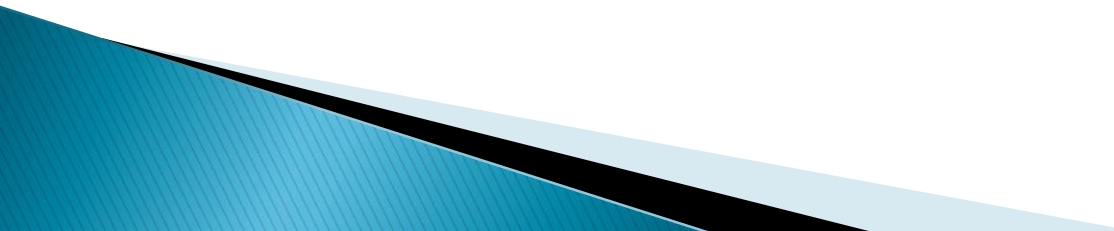
Part 1: Viability

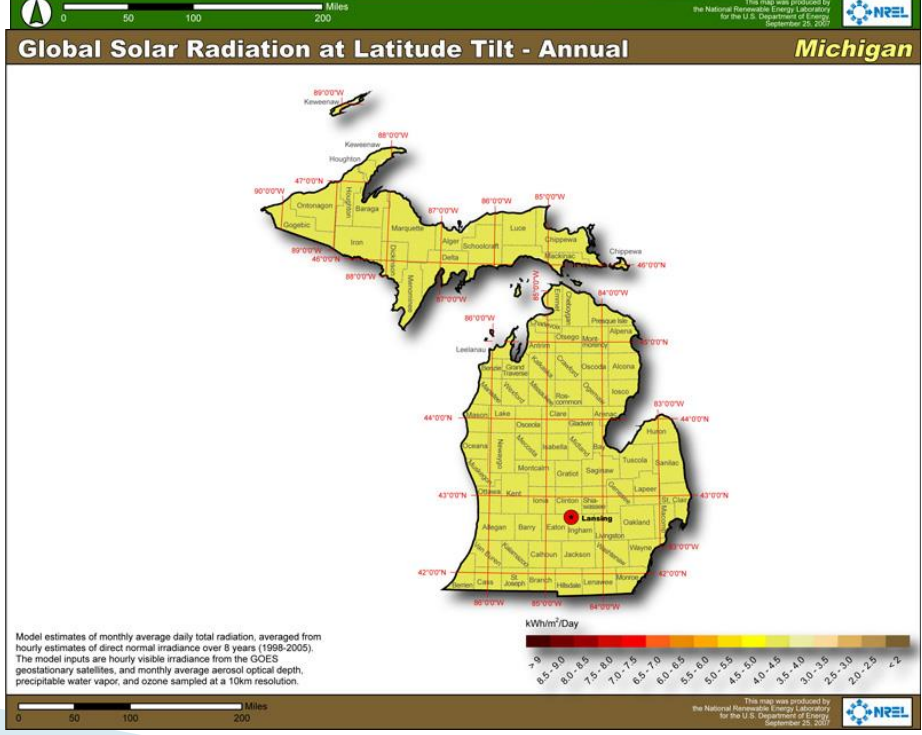
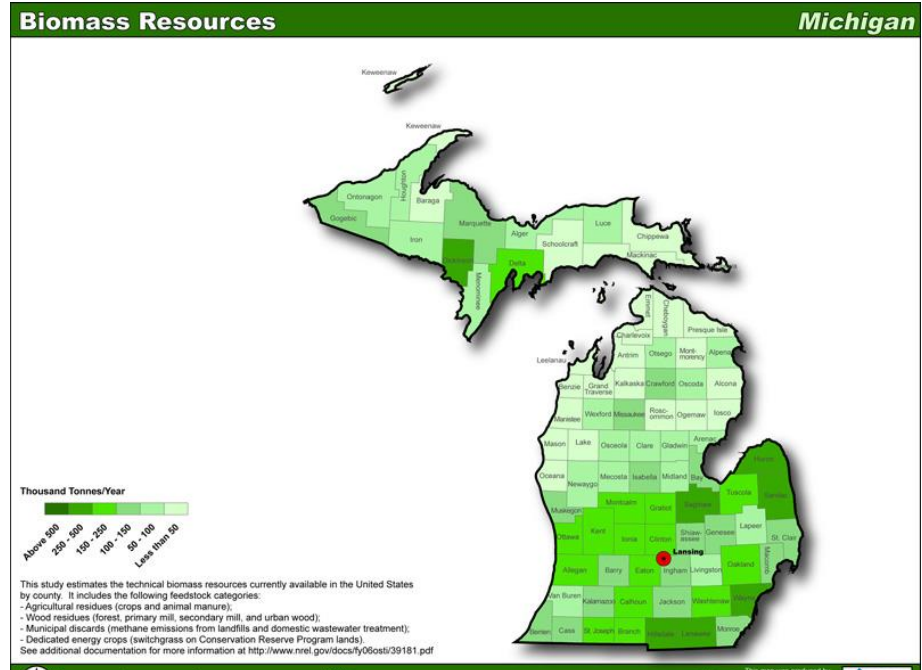
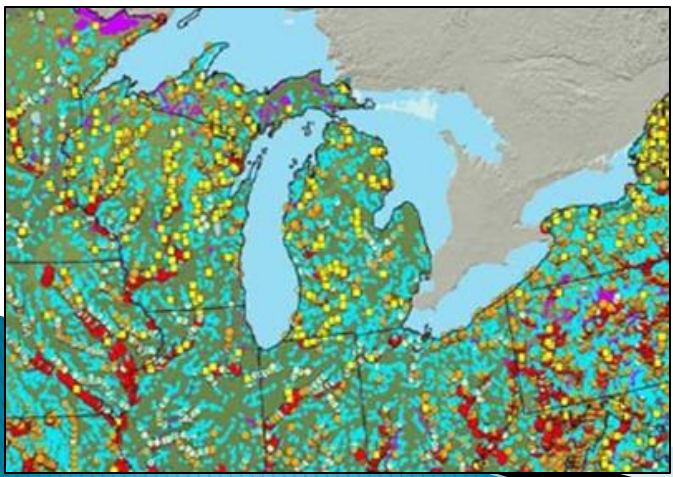
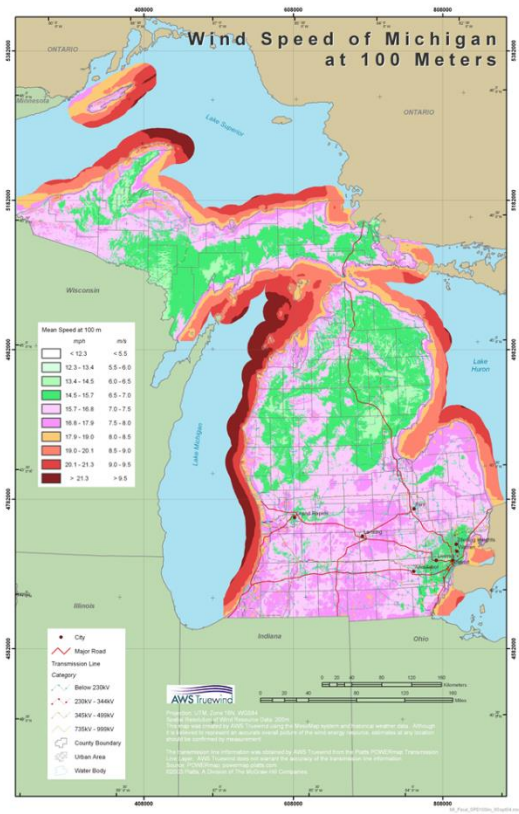


What is Renewable Energy?

Renewable energy is energy generated from natural resources—such as sunlight, wind, rain, tides and geothermal heat—which are renewable (naturally replenished) *in a human lifespan or less and cause the least harm.*

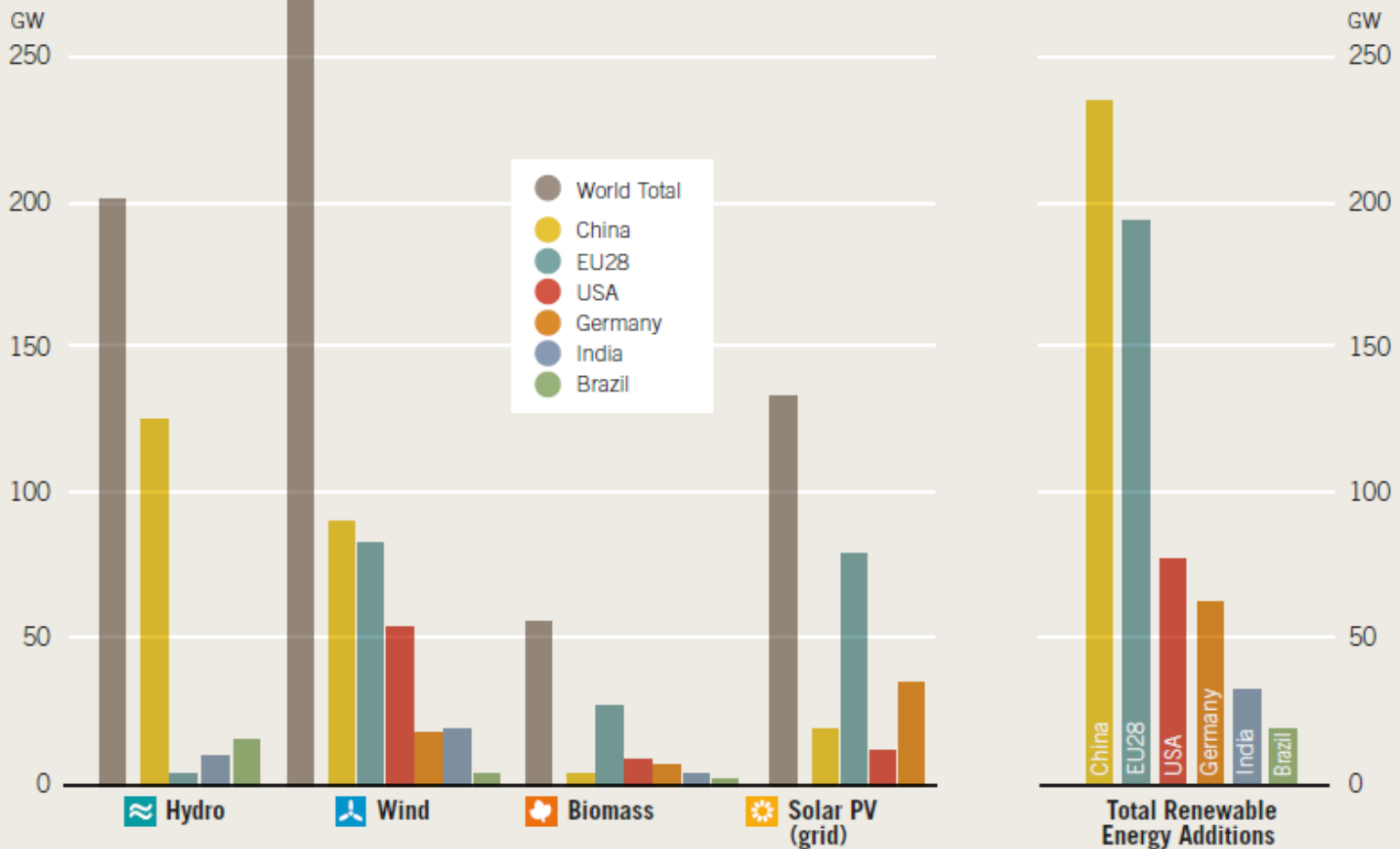
Renewable energy technologies range from solar power, wind power, hydroelectricity/micro hydro, biomass and biofuels for transportation.





Leaders in RE in the World

Figure 1: Renewable Power Capacity Additions by Region, 2004 – 2013



Note: Geothermal and CSP are not presented here as their amounts are statistically very small in comparison to the other technologies presented. Geothermal and CSP numbers have been included in the Total Renewable Energy Additions.

Cities in US Leading in PV

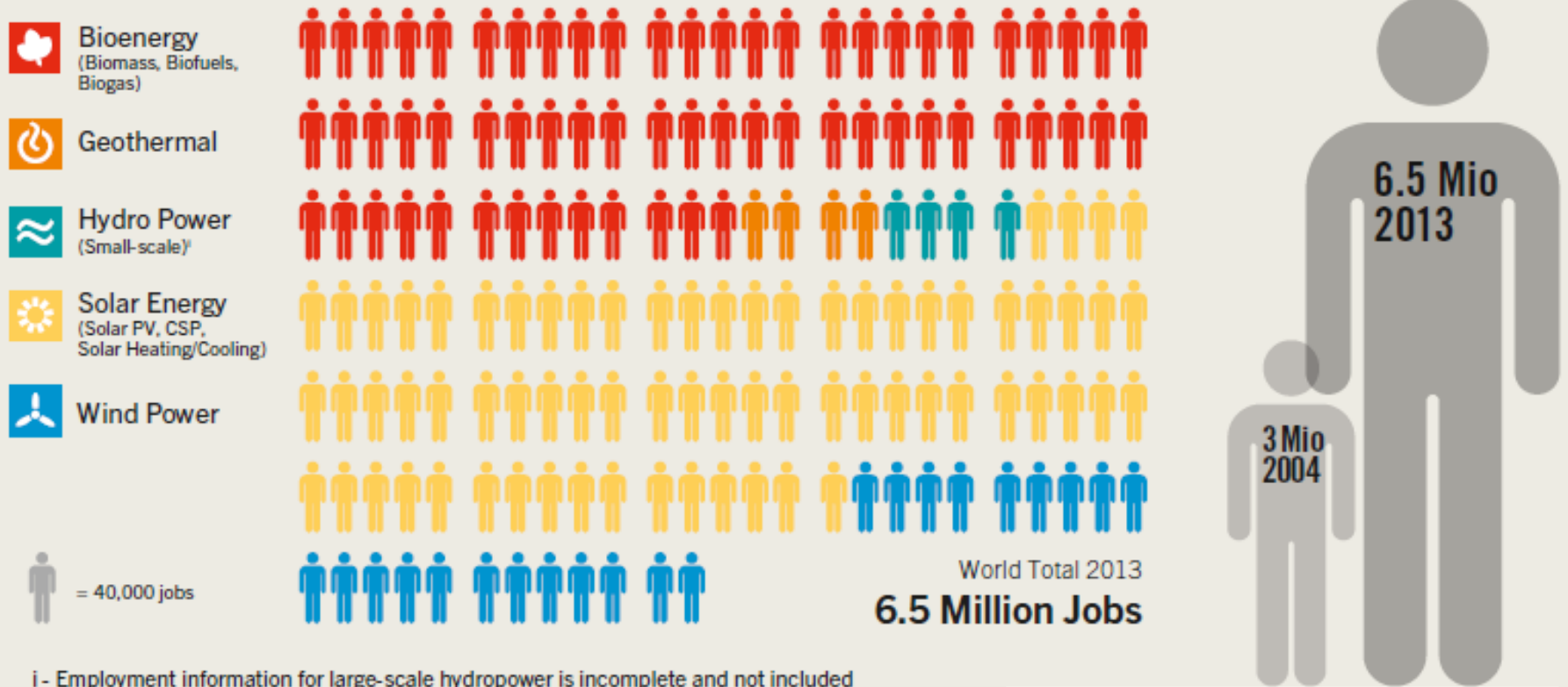
City	State	Total Solar PV Installed (MW-DC)	Total Solar PV Rank	Per Capita Solar PV Installed (Watts-DC/Person)	Per Capita Rank
Los Angeles	CA	170	1	44	15
San Diego	CA	149	2	110	4
Phoenix	AZ	115	3	76	9
Indianapolis	IN	107	4	127	2
San Jose	CA	105	5	110	3
Honolulu	HI	96	6	276	1
San Antonio	TX	88	7	63	10
Denver	CO	58	8	89	7
New York	NY	41	9	5	44
New Orleans	LA	36	10	94	6
San Francisco	CA	30	11	36	19
Albuquerque	NM	28	12	50	14
Raleigh	NC	27	13	62	11
Sacramento	CA	25	14	53	12
Las Vegas	NV	24	15	40	16
Newark	NJ	22	16	78	8
Austin	TX	21	17	24	23
Portland	OR	21	18	34	21
Jacksonville	FL	14	19	17	27
Boston	MA	13	20	20	24

Part 2: Why do it?



Adds Jobs

Figure 8: Renewable Energy Jobs Doubled in the Past Decade



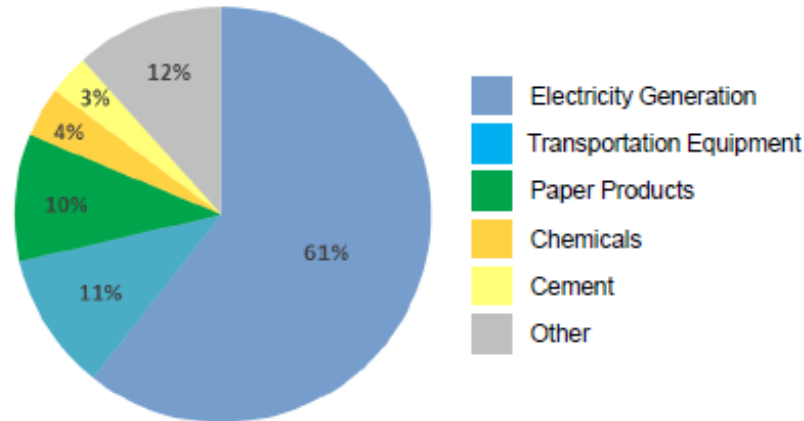
(REN21 REPORTS: <http://www.ren21.net/>)

Health

Toxic Industrial Air Pollution in Michigan



2010 Toxic Air Pollution by Sector



Sector	Toxic Air Pollution (lb)	% of Total Toxic Air Pollution
Electricity Generation	15,543,430	61%
Transportation Equipment	2,755,630	11%
Paper Products	2,531,882	10%
Chemicals	1,003,555	4%
Cement	806,449	3%
Other	2,994,569	12%
Total ^a	25,635,516	100%

^a Numbers may not sum due to rounding.

- ▶ Michigan ranks seventh on a list of states with the most toxic air pollution from power plants, but those emissions dropped by nearly a third, according to an analysis released Thursday from the Natural Resources Defense Council.
- ▶ The state emitted 15.5 million pounds of toxic chemicals in 2010, accounting for 5 percent of toxic pollution from all U.S. power plants, the NRDC reported.

Sources: U.S. EPA Toxic Release Inventory (2010 data), accessed May 2012; U.S. EPA National Electric Energy Data System Database v.4.10 (2010);

Climate Change



National Aeronautics and Space Administration

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GLOBAL CLIMATE CHANGE

Vital Signs of the Planet



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EVIDENCE

Climate change: How do we know?



CO₂ parts per million

YEARS before today (0 = 1950)

current level

1950

For 650,000 years, atmospheric CO₂ has never been above this line ... until now

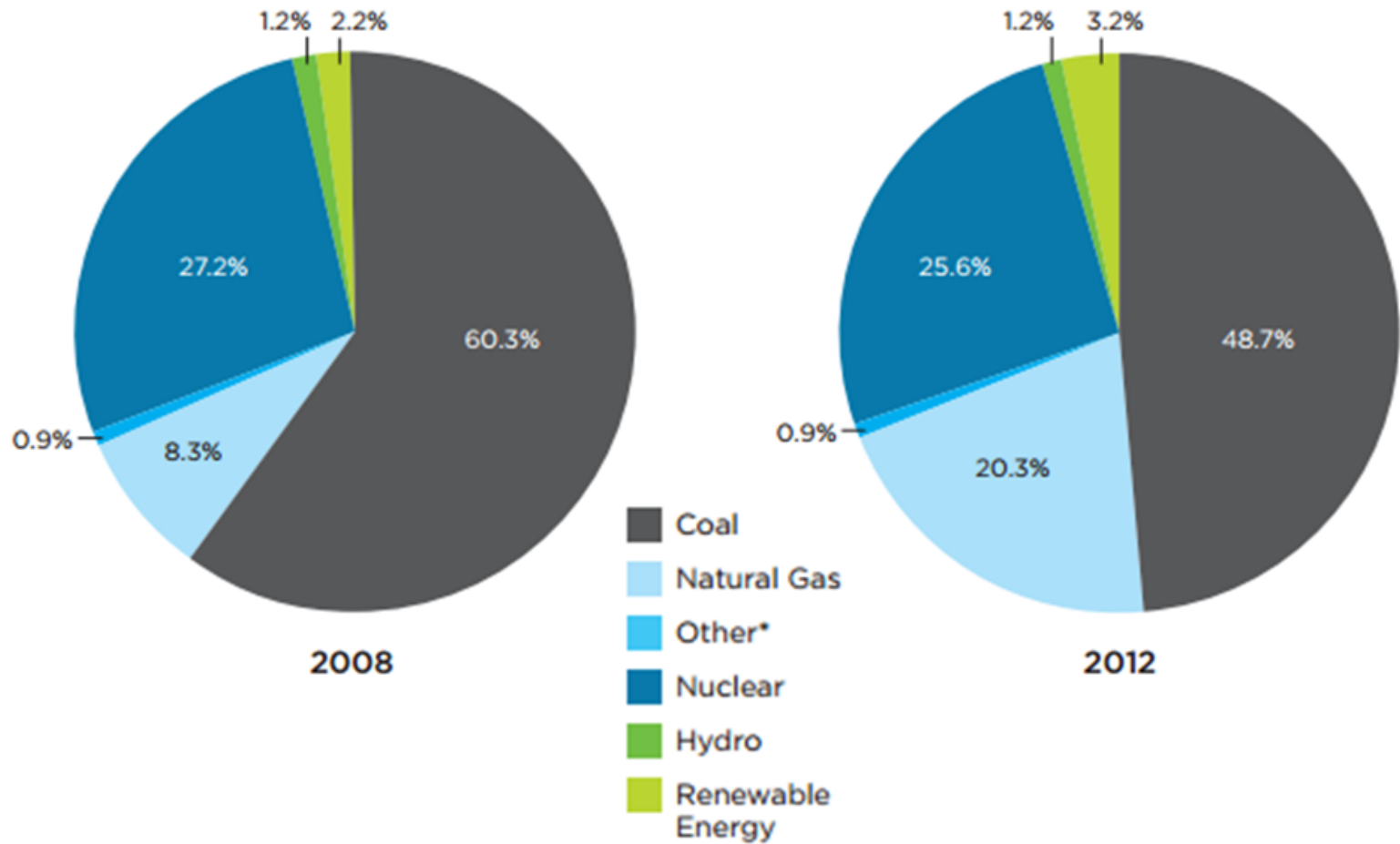
Years before today	CO ₂ parts per million
400,000	280
350,000	200
300,000	240
250,000	180
200,000	240
150,000	180
100,000	240
50,000	200
0 (1950)	310
Present	390

Grid Diversity and Resilience



- Michigan also took an important step to tap into its tremendous energy efficiency potential in 2008. By ramping up annual savings of 1% by 2012. And by requiring 10% RE by 2015.
- Electric utilities' exceeded their annual targets and achieved lifecycle savings of at least \$936 million in energy costs.
- A savings of 4 to 1 for every dollar invested (MI PSC 2013b)

FIGURE 1. Michigan's Electricity Generation Mix, 2008 vs. 2012



(from the Union of Concerned Scientists' *Charting Michigan's Renewable Energy Future*)

- A recent report from the Governor's office found that Michigan could cost effectively achieve at least 30% renewable energy with in-state resources while maintaining reliability (Quakenbush and Bakal 2013).
- Increasing the Renewable Energy Standard to this level would place Michigan among the national leaders and build on the 1.8 billion that has already been invested in local renewable energy projects through 2012 (MI PSC 2013a).



Part 3: Barriers

- ▶ New model for electric utilities
 - Distributed resources may include generation, storage, energy efficiency and energy management, all of which lead to fewer electrons purchased from utilities. As utilities sell less electricity, revenues dwindle, yet they still have the fixed cost of maintaining the grid.
 - Net-metering customers are not covering the cost of having the grid to serve them; the same grid that allows them to sell their excess energy,” says Irene Dimitry, vice president of marketing and renewables at DTE Energy . “Quite frankly, people who have distributed renewable resources are using the grid more than the average customer, because they’re using it when they buy utility power and when they’re selling power. We feel everybody should pay their fair share of keeping the grid up and running and reliable.”
 - There has been a nation wide push back from the coal, oil and other large resource providers.



- ▶ Fossil fuel and utility interests, concerned about the rise of cheap clean energy, are financing attacks on pro-clean energy policies in an effort to delay the growth of their competition in the marketplace.
- ▶ The Koch Brothers and their allies want to continue selling as much coal, oil, and gas as possible – and in their effort to rollback clean energy policies, are spreading falsehoods about the energy market.

(By Gabe Elsner, Founder & Executive Director of Energy & Policy Institute)

Part 4: Solutions

▶ Contact your State Representatives

- Michigan Republicans announced this week that they do not support higher renewable energy targets and that they will seek to eliminate energy efficiency standards from state law.
- Nesbitt also takes a different approach to PA 295 by amending what could be defined as renewable energy. Under his plan, that would include municipal solid waste like scrap tires and any kind of trees and wood for biomass, not just those “derived from sustainably managed forests or procurement systems,” as is specified in the current law.
- Democrats this week pitched their own plan that doubles the RPS to 20 percent over the next seven years, the same amount of time it took Michigan to reach its 10 percent goal this year under a 2008 renewable energy law.

Thank you

Questions??

