

# An Overview of Biomass Power in Michigan

House Energy Policy Committee

April 20, 2021



*Home-grown, Michigan-made renewable energy*

# An Overview of Biomass Power in Michigan

1. Background
2. Fuel Resources
3. Renewable Portfolio Standards
4. Diverse Energy Resource



*Home-grown, Michigan-made renewable energy*

# Background

“It’s not the energy we make, but how we make it that matters”

- Renewable
- Beneficial reuse
- Enabling policy (*PURPA, 1978*)
- Baseload, renewable power generation
- Grid support, reliability
- Ancillary benefits
- \$200 M rural economics

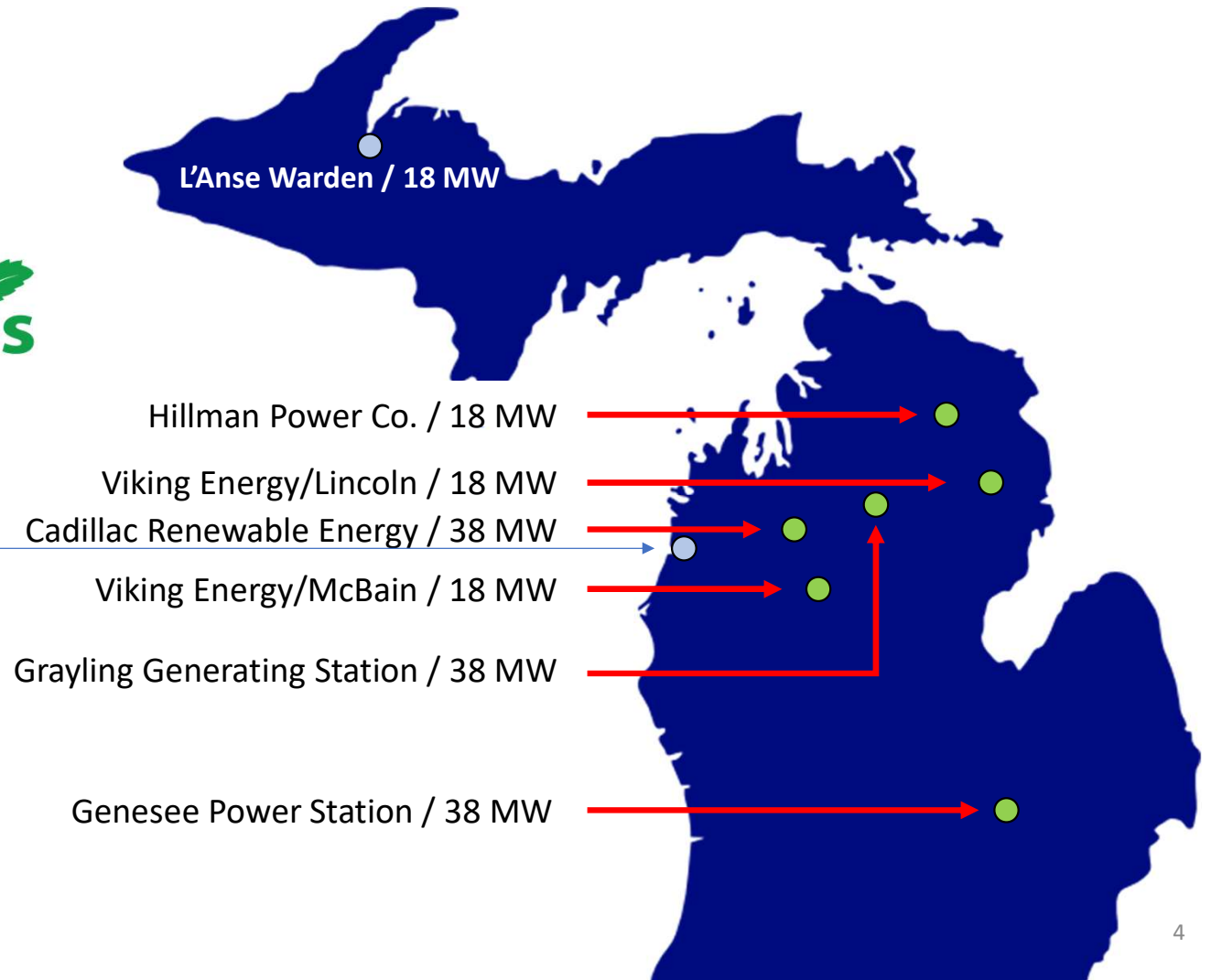


# Background

Michigan  
**Biomass**

196 MW

TES Filer City / 10 MW

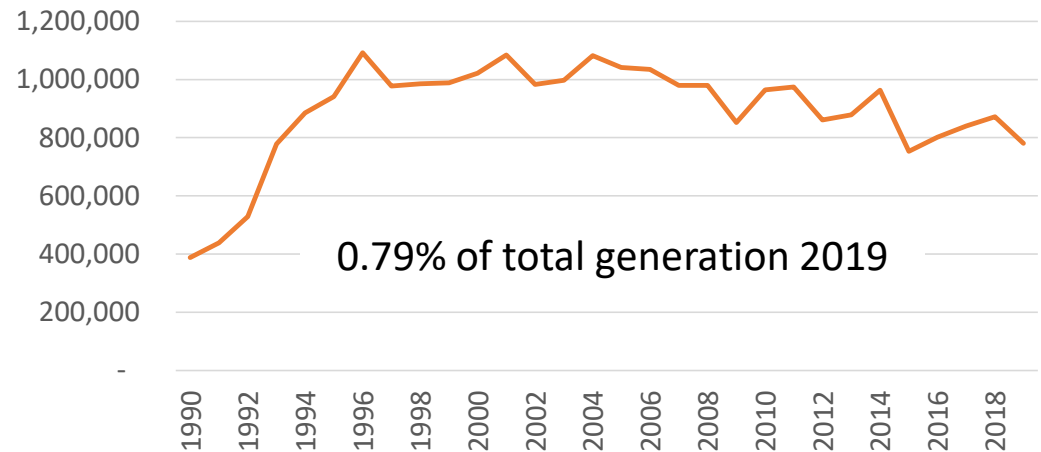


# Background: production

## 2019 Biomass Power Production

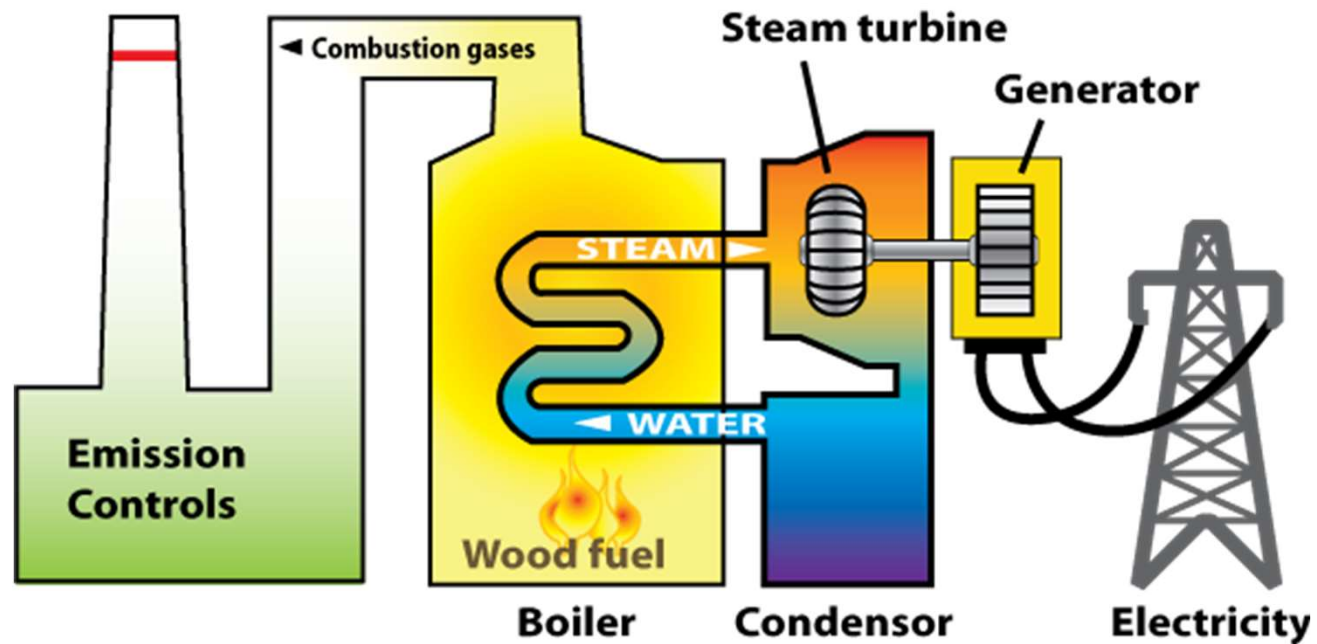
State	Total MWh	Nat'l. Rank
CA	1,667,021	1
NH	866,702	2
MI	781,240	3
GA	625,222	4
ME	601,170	5

## Historical Biomass Power Production



Source: [U.S. Energy Information Administration Net Generation 1990-2019 Final.xls](#)

# Background: production




# Background: regulation

## Michigan

PA 141 of 1994 (*NREPA*)

- Fuels
  - Part 115 (*scrap wood*)
  - Part 169 (*tire derived fuel*)
- Water — Part 31
- Air — Part 55
- Michigan RPS

## Federal

- Clean Air Act
- Clean Water Act
- Non-Hazardous Secondary Materials
- Renewable Fuel Standards
- Carbon neutral 

NOV 19 2014

OFFICE OF  
AIR AND RADIATION

### MEMORANDUM

**SUBJECT:** Addressing Biogenic Carbon Dioxide Emissions from Stationary Sources

**FROM:** Janet G. McCabe, <sup>JGM</sup> Acting Assistant Administrator  
Office of Air and Radiation

**TO:** Air Division Directors, Regions 1-10

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# Background: regulation

## Michigan

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ENVIRONMENTAL PROTECTION AGENCY **6/19/2019**

40 CFR Part 60

[EPA-HQ-OAR-2017-0355: FRL-XXXX-XX-XXX]

RIN 2060-AT67

*Repeal of the Clean Power Plan; Emission Guidelines for Greenhouse Gas Emissions from Existing Electric Utility Generating Units; Revisions to Emission Guidelines Implementing Regulations*

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Final Rules.



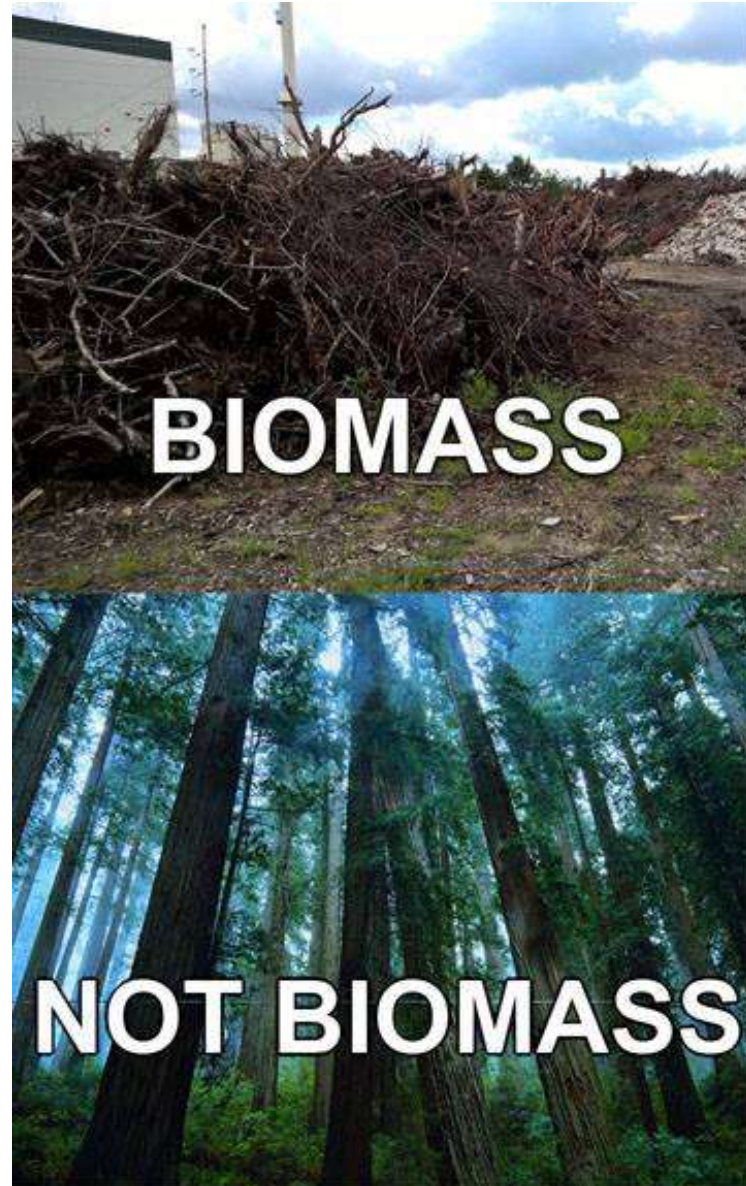
# Background: regulation



PSCR-R	Utility power supply cost recovery <i>(annually)</i>
U-17973	PURPA workgroup
U-17981	PURPA complaint
U-18090	Avoided costs <i>(Consumers Energy Co.)</i>
U-18131	Renewable Energy Plan <i>(REP)</i>
U-20165	Integrated Resource Plan <i>(IRP)</i>
U-20344	Interconnections rules, LEO workgroups
U-20464	Statewide Energy Assessment <i>(Polar vortex response)</i>
U-20757	MI Power Grid workgroups

# Fuel resources

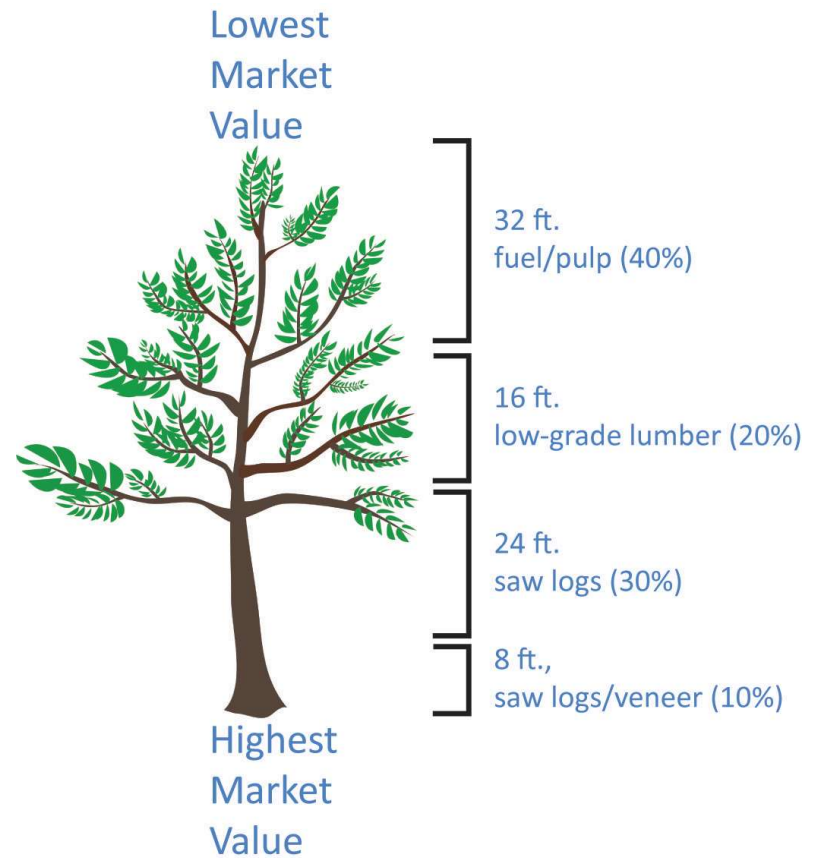
*We do not cut trees specifically  
for biomass power!*



# Fuel resources

## Wood fiber value chain

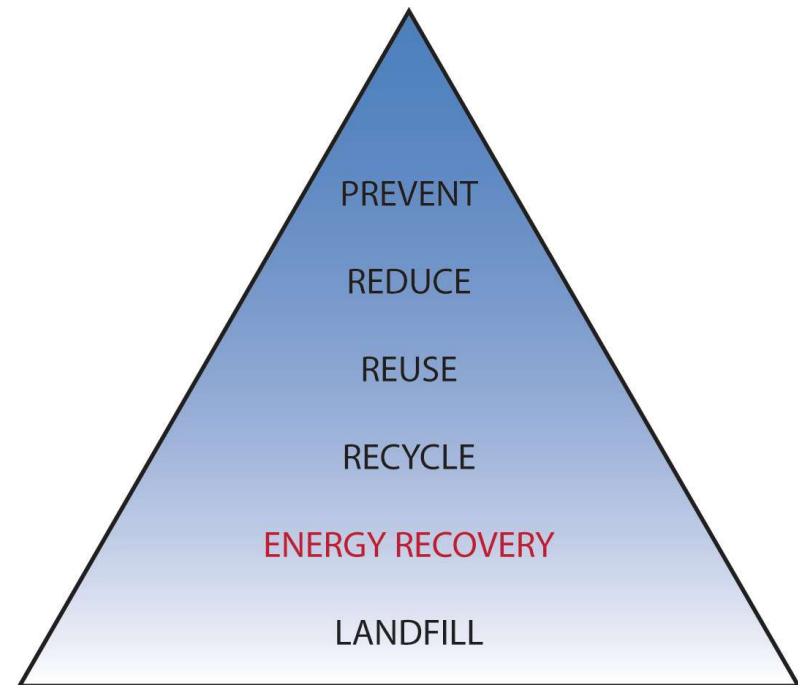
- 50% forest based
  - Integral to sustainable forest management
  - Habitat maintenance & development
  - Thinning
  - Timber harvest
  - Forest stewardship
    - Fuel load reduction
    - Salvage
    - Disease, infestation, sanitation



# Fuel resources

## Wood fiber value chain

- 50% secondary materials
  - Mills, manufacturing
  - Landfill diversions
  - Alternative fuels



# Fuel resources

- Sustainable
- Optimizes resource value
  - 2.5 M tons/yr.
  - “Cradle to grave” resource utilization



**2.5 M tons = 65,000 truckloads (600+ miles)**



# Fuel resources: urban

- Land clearing, development
- Landscaping debris
- Storm cleanup
- ROW maintenance
- Landfill diversions
- Clean, industrial wood



# Fuel resources: alternatives

## Tire derived fuel (TDF)

- Co-fire @<10% w/wood
  - Reduces emissions
  - Efficiencies
  - Economics
- Michigan Scrap Tire Management Program/MDEQ
  - 10 million tires per year
    - 3 million = biomass/TDF
- EGLE Scrap Tire Management Program
  - Funded via Part 169 / Vehicle title transfers
  - Enforcement
  - Clean up & market development grants

# Fuel resources: alternatives

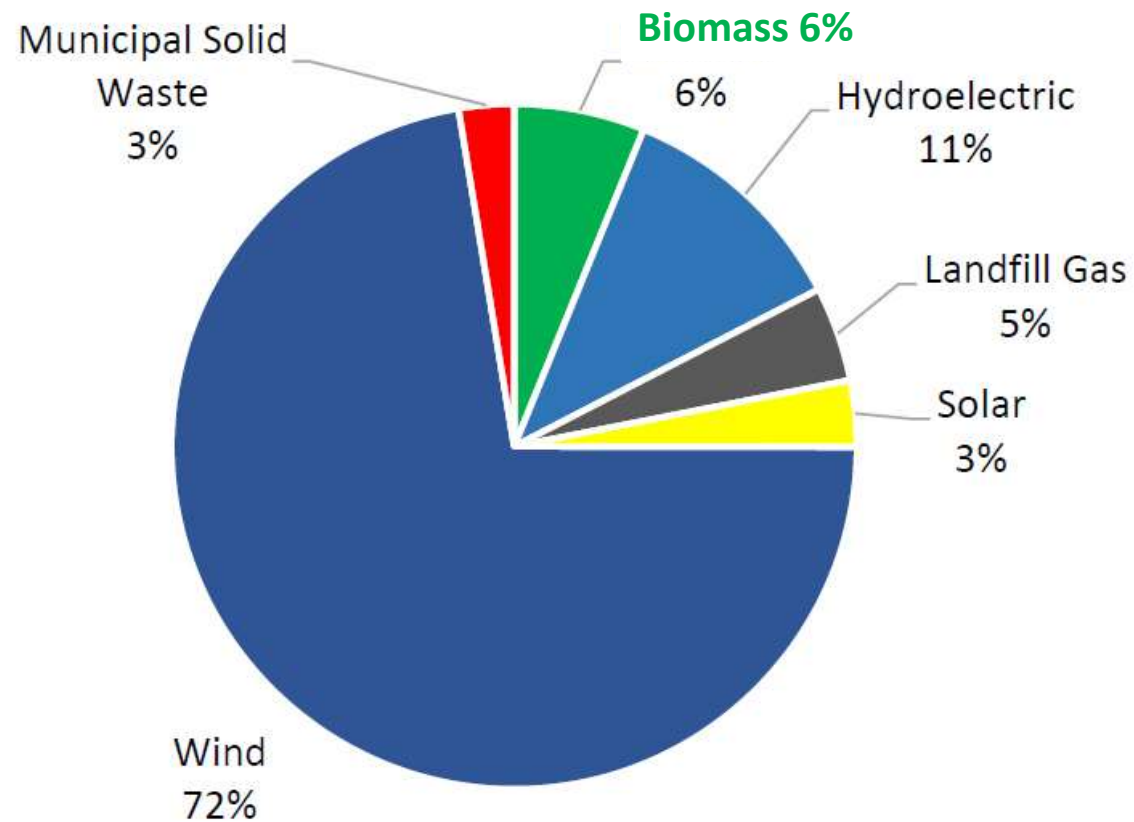
## Railroad ties

- 200,000 annually
  - Co-fired w/ “green” wood
    - Reduces emissions
    - Efficiencies
    - Economics
  - Preserves landfill space
  - U.S. EPA “legitimate fuel”
  - Beneficial reuse (Michigan statute)



# Renewable resource

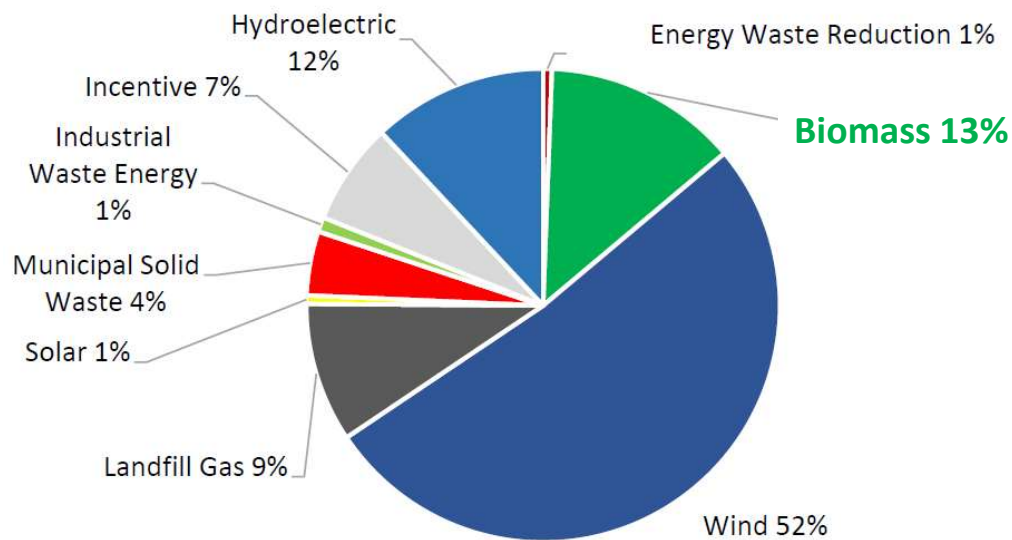
## Capacity



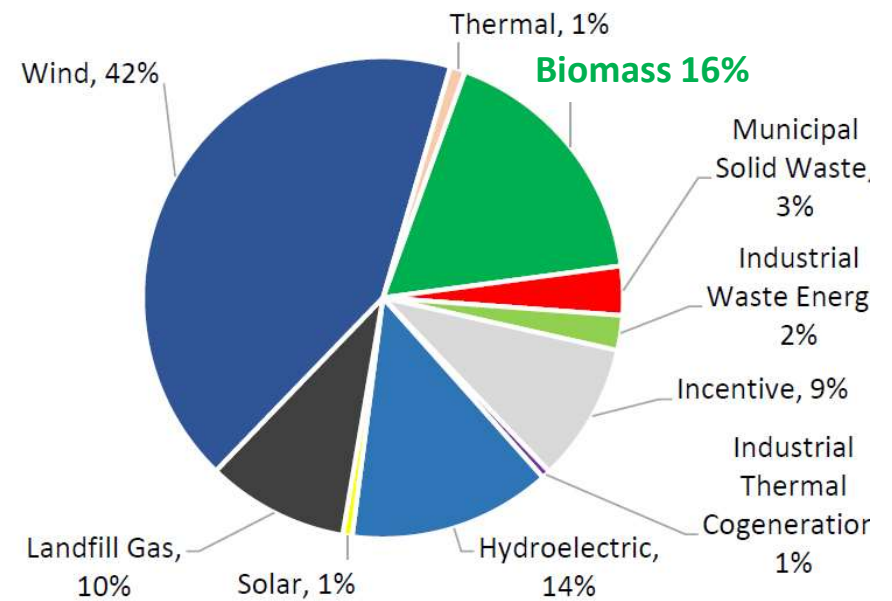
Source: [Report on the Implementation and Cost Effectiveness of the P.A. 295 Renewable Energy Standard](#), MPSC February 2021

# Renewable resource

## 2019 compliance RECs



## 2009-2020 REC inventory



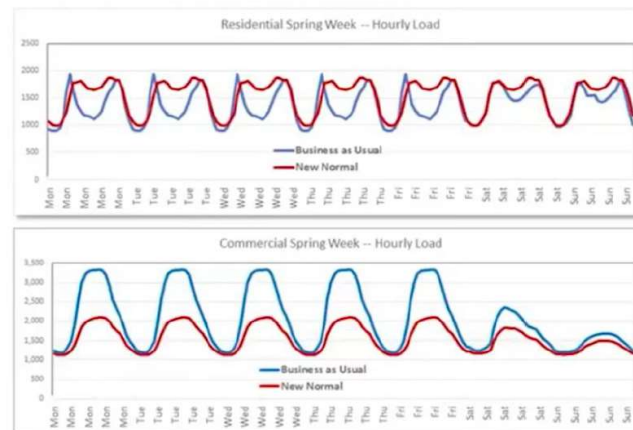
Source: [Report on the Implementation and Cost Effectiveness of the P.A. 295 Renewable Energy Standard](#), MPSC February 2021

# Energy diversity

## Baseload renewable capacity

- Voltage stabilization
- VARs
- Line loss mitigation
- Fuel diversity
- Dispatchability
- General system support
- Uncertainty & risk
- No “integration cost”

## COVID-19 Impacts on Load Shapes



Multiplier	Value
Weekday Impact	1.15
Saturday Impact	1.05
Sunday Impact	1.09
7 Day Impact	1.13

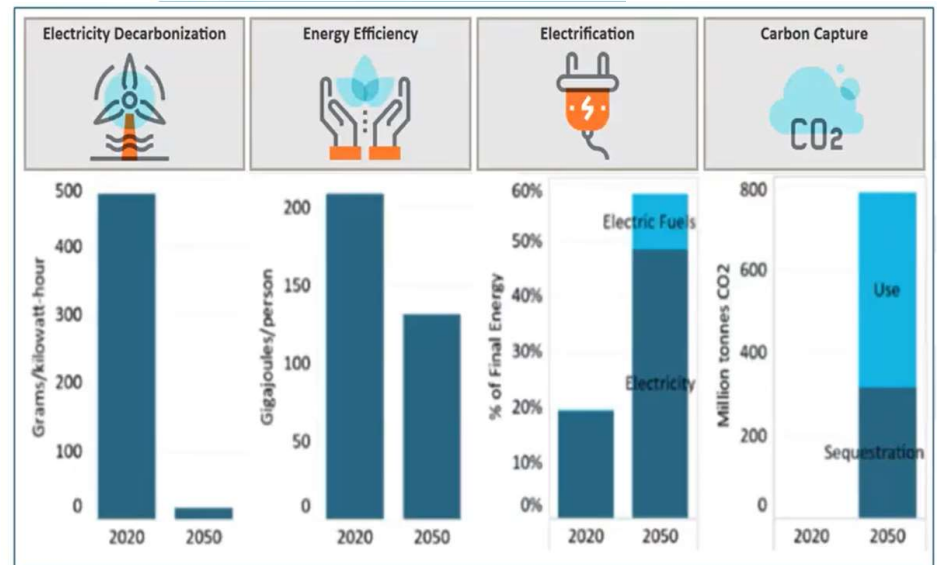
Multiplier	Value
Weekday Impact	0.72
Saturday Impact	0.84
Sunday Impact	0.91
7 Day Impact	0.75

# Energy diversity

Net-zero unachievable w/o baseload

- 100% intermittent = high cost, reduced reliability
- Random weather events
- Fills generation “gaps”
- No “integration costs”
  - Capacity overbuild
  - Distributed Energy
  - Dispatchable back up
    - Storage
  - Demand response
  - Transmission upgrades
  - Random weather events
  - Uncertainty & risk

## FOUR strategies to transform the U.S. energy system to zero-carbon



<https://www.unsdsn.org/carbon-neutral-pathways-for-the-united-states>

WORLD RESOURCES I

# Biomass diversity

## Environmental values

- Forest stewardship
  - Sustainable forestry
  - Salvage & sanitation
  - Reduced fuel load/fire risk
- Materials management
  - Fiber market byproducts
  - Landfill diversions
    - Crates, pallets
    - Scrap tires
- Offset fossil emissions
- Carbon management

## Economic values

### Energy

- Cost avoidance
  - Infrastructure
  - No integration costs
  - Offsets “behavioral risks”
- Reduced financial risk

### Resources

- Lowers cost of...
  - Forest products
  - Manufactured goods
  - Forest management
  - Habitat development & maint.

# Biomass diversity

## Social values

- 150 direct, 700 indirect jobs
- \$200 M rural economies
  - \$34 M labor
- Taxes & utility revenues
- Quality of life

## Fuel values

- Locally sourced
- Local transport
- Non-commodity fuel
- Geopolitically secure
- Price, supply hedge

*It's not the energy we make, but how we make energy that matters*

1. Energy diversity
2. Keeps energy dollars in rural Michigan
3. Baseload renewable
4. Supports the grid and makes it more reliable and resilient
5. Beneficial reuse of byproducts
6. Carbon neutral energy
7. Aids forest health, stewardship
8. Materials management services

Michigan  
**Biomass**



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