The Potential Impact of Michigan’s 25x25 Proposal on Jobs and Investment

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Project Overview

• As with any policy change, there is a need to understand the potential economic impacts, the scale of those impacts and the investment required.

• The authors of the report were contracted by the Michigan Environmental Council to assist in assessing the impacts based on their previous research in the economics of renewable energy, cluster analysis and energy resource quantification.

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Investment

• As with any electricity generation project in Michigan, the investment funding comes from the utilities, private developers and private capital, and is ultimately paid for over time by the ratepayers.
• Capital investment and project costs are the basis for projecting the job year creation in the study’s model framework.
• Based on the results presented in the report, the capital investment needed to meet the 25% by 2025 standard is $10.3 billion or 5,157 megawatts of plate capacity.
Understanding the Results

• Although “jobs” are the standard output of economic impact analyses, there are factors like duration that are generally not discussed.
  • Job year - Full employment for one person for 2,080 hours in a 12 month span.

• All results are modeled on the additional generation capacity that would be needed under the proposed policy.
  • 2016 through the year 2030.
  • The period spanning 2026 to 2030 is modeled to capture additional capacity needed due to load growth after 2025.

• All operations and maintenance jobs are calculated for industry standard life of plant.
  • ie.- Wind operations and maintenance jobs are calculated for 20 years, landfill gas for 30 years.
Impacts

• *Commercial Wind Impacts*: During the construction period, 22,450 job years would be created.
  • During operational years, the single job year total would be 1,133
  • Total 20 year O&M = 22,660 job years

• *Small Wind Impacts*: The impact from this sector would be 694 job years.

• *Solar Photovoltaic Impacts*: For construction of all segments of this sector 5,261 job years would be generated.
  • During operational years, the single year O&M total would be 29 job years
  • The 20-year total for O&M would be 576 job years.
Impacts

• *Anaerobic Digestion Impacts*: This type of construction and O&M over a 20-year horizon would generate 1,000 job years for municipal waste and 240 for farm waste.

• *Landfill Gas Impacts*: These plants would create 2,808 job years for construction and 6,755 for O&M.

• *Biomass Impacts*: Biomass generation would create 12,052 job years for O&M.
Potential for Manufacturing

• There is potential to capture manufacturing job creation; however, the magnitude of that gain is dependent on the success of Michigan manufacturers’ ability to capture market share in the renewable energy market.
  • *Utility-Scale Wind*: Ranges from 3,935 job years at 10% market capture to 39,350 at 100% market penetration.
  • *Small Wind*: Ranges from 83 job years at 10% to 829 at 100% market capture.
  • Solar Photovoltaic: Ranges from 172 job years at 25% market capture to 1,835 at 100%.
Summary

• The $10.3 billion investment in renewable energy in Michigan that would be required by the proposed 25% by 2025 policy could create 74,495 job years in Michigan
  • 31,513 job years from construction.
  • 42,982 job years from operations and maintenance.
• This includes employment created during construction, jobs created for ongoing operations and maintenance, and jobs created through the expansion of income due to lease payments for wind energy development.
• Additionally, there is potential to capture manufacturing job creation; however, the magnitude of that gain is dependent on the success of Michigan manufacturers’ ability to capture market share in the renewable energy market.
Potential Wind Turbine Manufacturing

- Gearbox and drivetrain
- Generator Systems
- Nacelle and Machinery
- Rotors
- Tower and Foundation

Existing Renewable Energy Jobs in Michigan

- In Michigan alone, there are over 240 firms involved in solar and wind technology, providing approximately 10,000 jobs (Environmental Law and Policy Center, 2011)
Potential Export Markets
Increasing Demand

• 80% increase in electricity demand by 2040
• Renewable electricity generation is expected to triple from 2009 to 2035 (International Energy Agency)
Why aren’t there more RE Jobs in Michigan?

• Lack of exports to foreign markets.
• Market penetration of U.S. companies is low in the developing world due to factors such as:
  • lack of familiarity,
  • the lack of ability on the part of U.S. companies to penetrate markets effectively, and
  • a lack of export experience and know-how in the U.S. cleantech sector.
Competition

• More than 380,000 people in Germany were employed in the renewable energy sector in 2012
• In China it is estimated that more that 600,000 people are employed in the solar industry alone
What does a target export market look like?

- Per capita income is growing,
- the middle class is expanding,
- energy efficiency and renewable energy policies are being put in place,
- local alternatives are either economically or environmentally unsustainable and
- where local partners can be found.

Achieving the significant economic gains in green industries envisioned by policymakers, federal agencies, and investors will be greatly enhanced by exports into markets where the need is greater and the alternatives in place are expensive.
Michigan Industry Pain Points

• While budding clean industries in Michigan have considerable R & D and manufacturing capacity, the lack of focused connections to:
  • trade assistance,
  • global market analysis, and
  • introductions to opportunities in Africa, Asia and South America.
Tools to Access New Markets

• In depth research and market assessment
• Analysis of market penetration pathways and developing strategic plans for penetration.
• Find local partners
• Work in developing world markets to assess technology readiness, technology fit, and provide a feedback loop to the industry on what refinements and improvements would enhance competitiveness.
• Accelerate technology commercialization and exports by assisting entrepreneurs and existing companies, encouraging new venture formation and sparking job creation.
Developing World Needs

- Clean, Safe Water
- Reliable Electricity
- Efficient Technologies
- Cooling Technologies

Developing World Renewable Energy, Energy Efficiency, and Cleantech Market

Cleantech Collaborative

- Economic Development
- Stable Demand
- Market Research
- Market Penetration Paths
- Technology Assessment

Industry Needs in the U.S.
Questions and Contact

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