Estimating the Economic Impacts of a Wind Farm in Michigan

A presentation to the

REMI Client Webinar

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About the Study

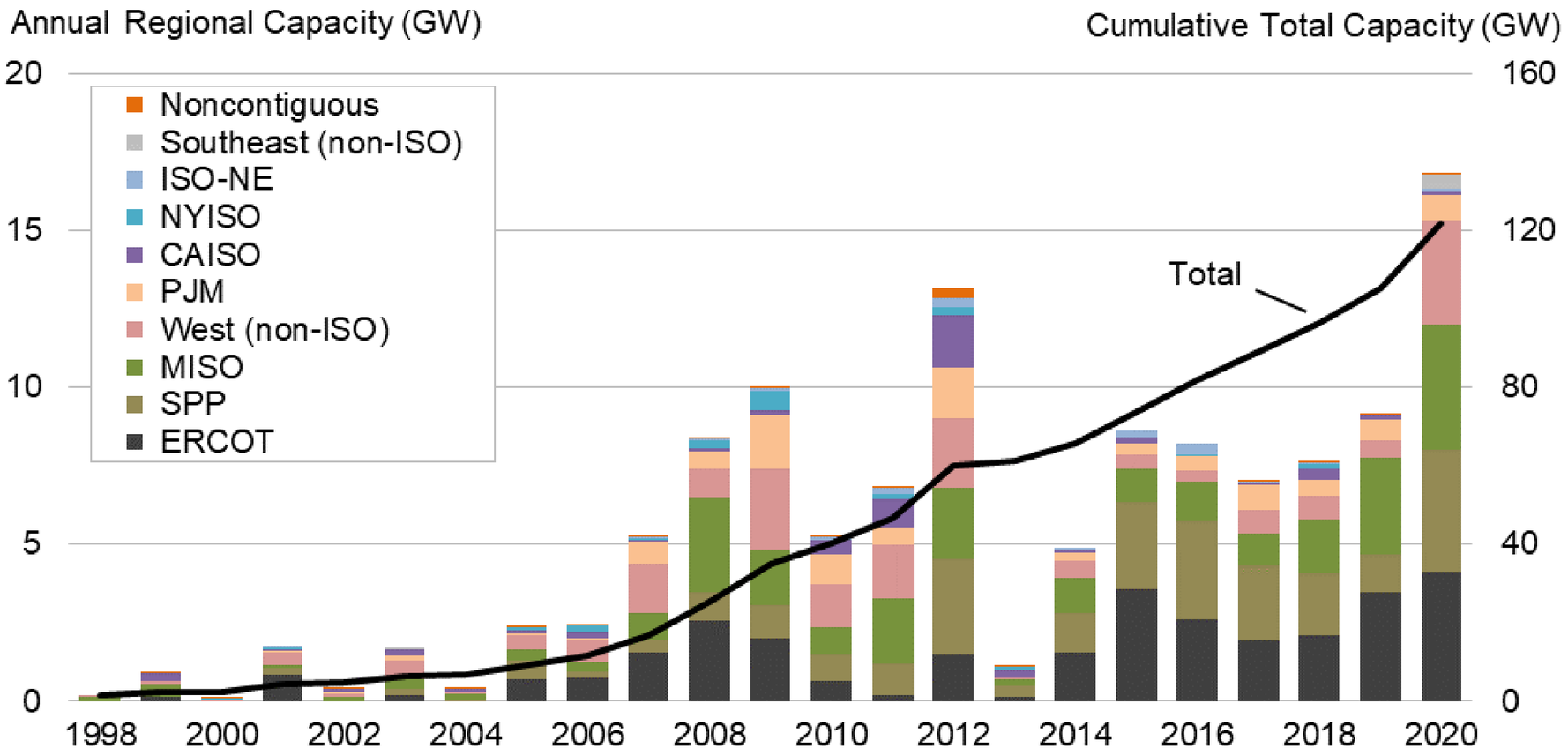
- Client is a county-based economic development organization
- Funding is from the developer through the EDO
- Data are supplied by the developer
- Assumptions of the study:
  - Build out in year 1
  - Other economic activities in years 2 through 31

Why REMI?

- National Renewable Energy Labs (NREL) offers a free model:
  - Jobs and Economic Development Impact (JEDI)
  - Based on Implan and is simplistic

- What REMI does better:
  - Custom configured multi-region model for this study
  - More current baseline data
    - REMI has updated the national and so the regional baselines throughout the pandemic using CBO and University of Michigan's RSQE forecasts
  - Dynamic modeling based on trade flows and economic geography concepts
  - Time series over the event horizon
  - Quality support and consulting included with the models

Why this Type of Study Matters



Sources: ACP and Department of Energy

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Components to the Analysis

- Four separate impacts were estimated and then added together:
  - Build out of the project
  - Operations and maintenance
  - Lease payments
  - Personal property tax collections
- Running these together provides interesting and not necessarily useful results

Component 1: Build Out

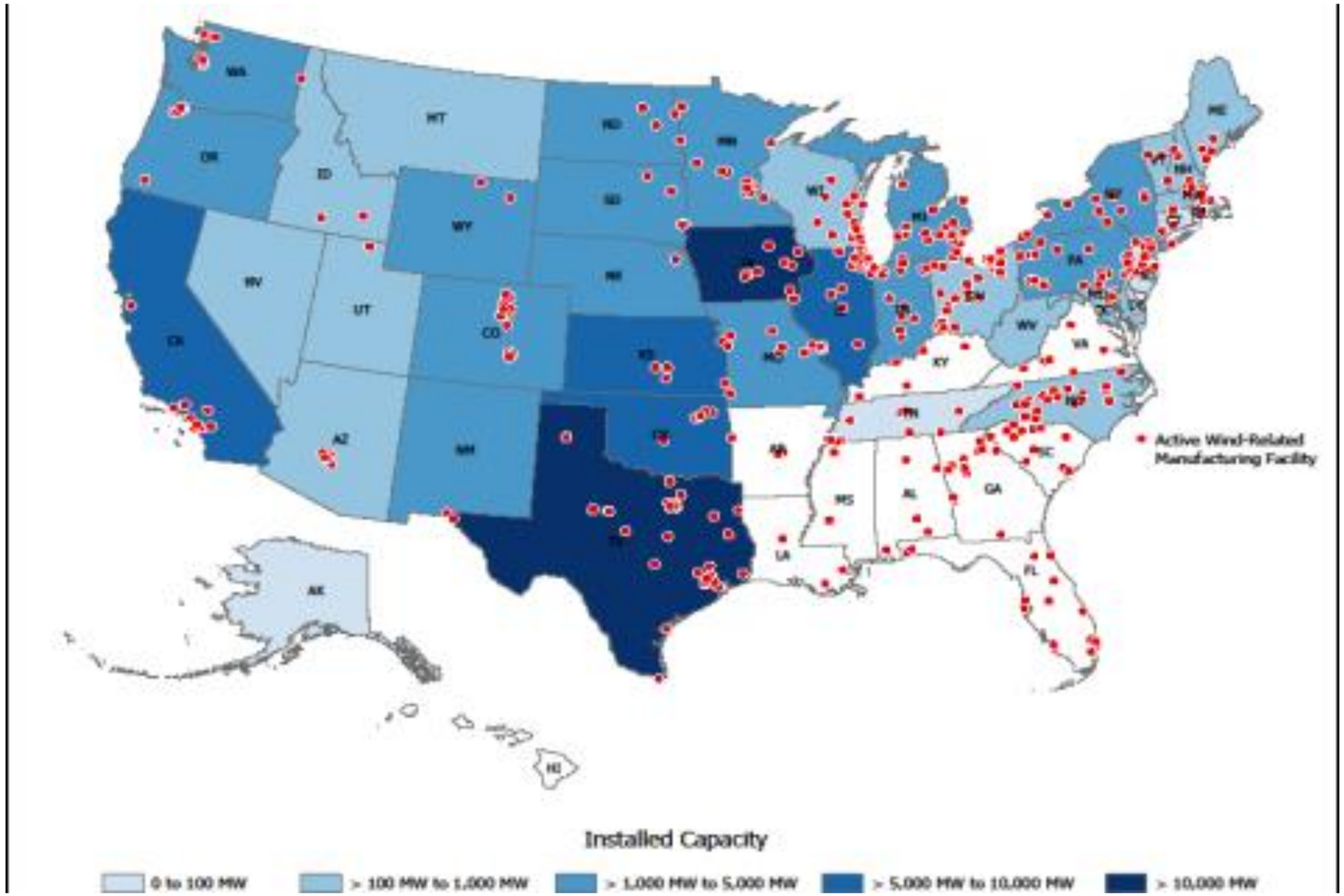
- Client had experience in the state, as well as across the country, in these type of projects
- Based on experience, the client could allocate spending for materials and labor to three REMI regions:
  - Target county
  - Rest of state (use spreader here for multi-region models)
  - Rest of the United States
- Condensed hard and soft costs of the project into a single-year event

Build Out: SWOT

- Strengths
  - The client had a solid pro forma based on experience in the state
  - Based on experience, they could better allocate spending to the three regions
  - Recent (2021) Department of Energy (DOE) report provided support of state-based and national supply chain
- One weakness is that the choice of materials is based on price and availability at time of construction

Domestic Sourcing

- Provides support for client pro forma allocations to:
  - Rest of state
  - Rest of United States



Sources: ACP and Department of Energy

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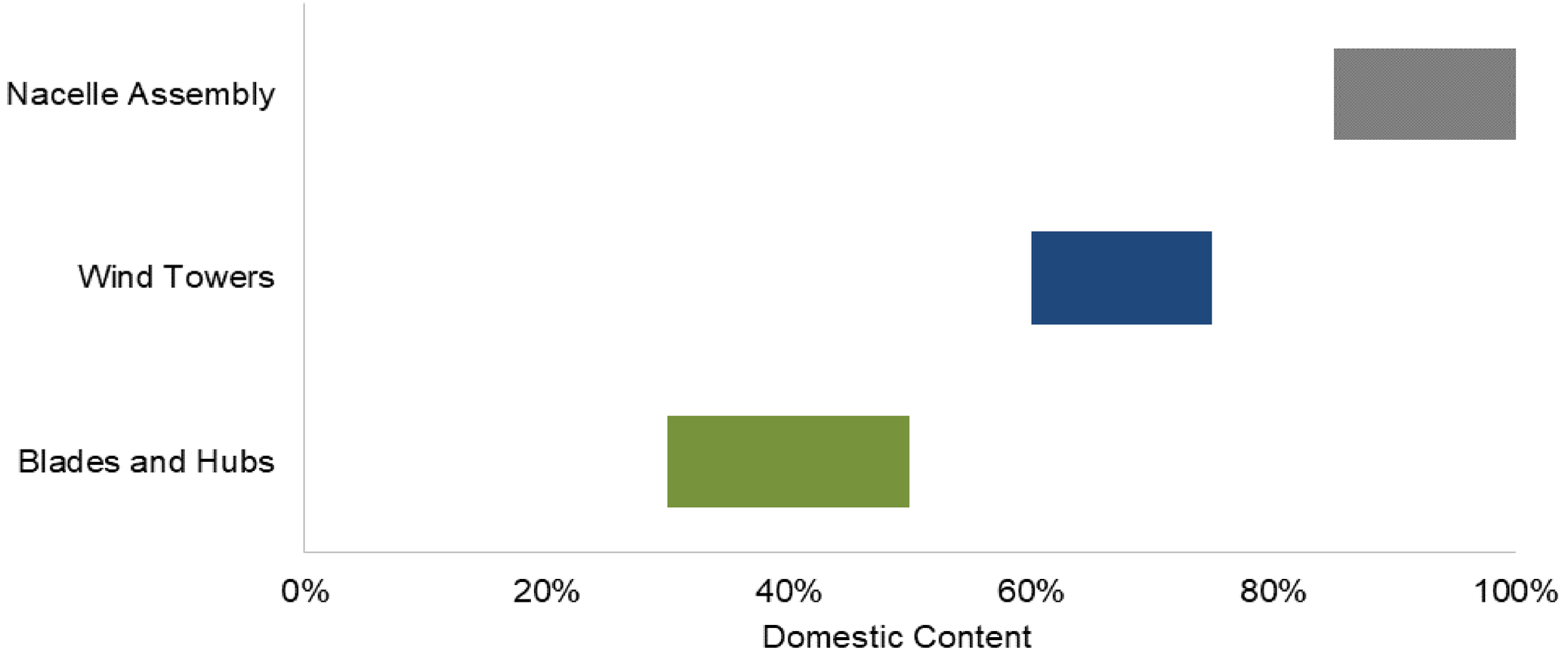
2020 Domestic Supply Chain



Sources: Berkeley Labs and Department of Energy

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Build Out: SWOT

- Weaknesses
  - Actual sourcing of materials is based on price points at the time of construction
  - REMI does not have an exact fit/plug and play for wind farms
  - Based on detailed inputs and regional allocations from the client:
    - Do a “best fit” of activities
    - Push supply chain (or indirects) into directs

Component 2: Operations and Maintenance

- Begins in year 2 and is estimated for a 30-year event horizon
- Working with client, developed an estimate pro forma of spending:
  - By product and labor allocation
  - Based on the idiosyncrasies of the initial build product
    - Each product base has a different set of costs and schedules for O&M
    - Costs and labor vary over time and by year

Component 3: Lease Payments

- Lease payments are made to:
  - Landowners
  - Others possibly impacted by activities
- Fixed set of payments for a 30-year event horizon (impact of nominals)
- Modeled as transfer payments from corporations
  - Thanks to Don Grimes (University of Michigan/RSQE) for the suggestion
  - Large number of families in distribution challenge “windfall” assumption

Component 4: Personal Property Taxes

- Tax structure for personal property tax is a moving target in Michigan
- Used client-supplied tax collections pro forma based on:
  - Current legislation
  - Project experience in other areas of the state
  - Current rates for each taxable entity
- Tax base is quite varied and collection entities supported include county, townships, school districts, community college district, and special districts
- One weakness is the unknowns over a 30-year event horizon
  - Changes in legislation
  - Changes in rates
  - Changes in tax structure and depreciation

Tricks to the Results

- Run and report each component separately
- Used summed rather than single run for combined reporting
  - The shock of the single-year build out reverberates in the out years negatively affecting the 30-year operations horizon
- Results are “bumpy”
  - O&M is cyclical
  - Lease payments interact with model PCEs
  - Personal property tax collections are based on current thinking

More on the Results

- Report, both individually and combined:
  - Jobs as an annual average over the 30 years—excluding build out
  - Output, value added, and personal income reported in table:
    - Build out
    - 30-year horizon
    - Combined

Still More on the Results

- Sourcing for build out assumes that all out-of-state spending is domestic
  - But isn't that what Regional Purchase Co-efficients (RPCs) are for?
- Lease payments yield an interesting result in that personal income is significantly larger than value added
- The actual distribution of payments to families is unknown, so how recipients will treat these dollars is unknown:
  - Normal income
  - Windfall (see Sarah Mills, PhD, at University of Michigan)
- Personal property taxes:
  - Treated as normal revenues in the model
  - May yield "windfall" spending

In the End

- Even with great developer-driven data, the outcomes and forecasts from REMI need to be treated as “estimates”
- A great deal of things can change in a 30-year event horizon
  - Local and state tax incidence
  - Depreciation schedules affecting value of personal property
  - Consumer behavior influenced by inflation
- This type of an event does meet the “but for” standard of economic development
- In 2021, the state of Michigan requires that 15% of energy be produced from renewables—so regulation and policy support the demand for this type of investment

Comments and Questions?

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