



Clean Transportation Manufacturing Opportunities

Making It Here Conference

Policy to Drive Advanced Transportation Panel

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Clean Manufacturing Opportunities

- **Clean energy manufacturing—OEMs and supply chains for renewable energy systems**
- **Clean energy transportation systems—OEMs and supply chains for:**
 - Advanced Fuel Vehicles (EVs, hybrids)
 - Public transit—rail and busses
 - Hybrid trucks
- **Energy efficiency—applications; OEMs & supply chains:**
 - Industrial energy efficiency (IEE)
 - Buildings—residential, commercial, public
 - Equipment manufacturers (CHP, motors, etc.)



Policy Drivers

- **Creating demand for clean energy systems**
 - Energy portfolio standards (RPS, EERS)
 - End-use product energy standards (equipment efficiency; fuel standards)
 - Direct public investments
 - Financial and tax incentives
- **Assuring domestic manufacturing capacity**
 - Financial and tax incentives
 - Technical assistance
 - Domestic content
 - Workforce development



TMAP Recommendations

- Invest \$30 billion in public transit, \$10 billion in intercity rail annually
- Expand competitive, mode-neutral financing approaches to leverage state, local, and private transportation investment
- Develop a national freight plan and upgrade freight vehicle fleet
- Help manufacturers retool and invest in production of transit systems, vehicles, clean trucks, and component parts
- Increase transparency and accountability of standards and provide domestic content incentives
- Encourage product standardization and improve procurement
- Invest in R&D for next generation transit, rail, and trucking technologies



Transportation Manufacturing Jobs

- Current public transit investments: >1.9 million jobs, i.e., vehicle operators and technicians, construction, manufacturing, others
- Nationwide, public transit bus, clean truck, passenger and transit rail sector support nearly 50,000 manufacturing jobs
- Transportation manufacturing supply chain spread across all 50 states, at more than 375 manufacturing facilities.
 - Largest manufacturing industries: *Railroad rolling stock, cement and concrete, motor vehicle parts, iron and steel mills, steel products, nonferrous metals, motor vehicle bodies and trailers, metalworking machinery, aluminum, engine turbine and power transmission*
- TMAP job impacts (*Economic Policy Institute*) total of 3.7 million direct and indirect jobs, over 600,000 in manufacturing over 6 years
 - Mostly middle class jobs created; over half workers with a high school education or less; wages in middle of wage distribution; high share of unionized jobs
 - Transit and rail investments create 69% more manufacturing jobs per dollar than traditional mix of federal transportation spending

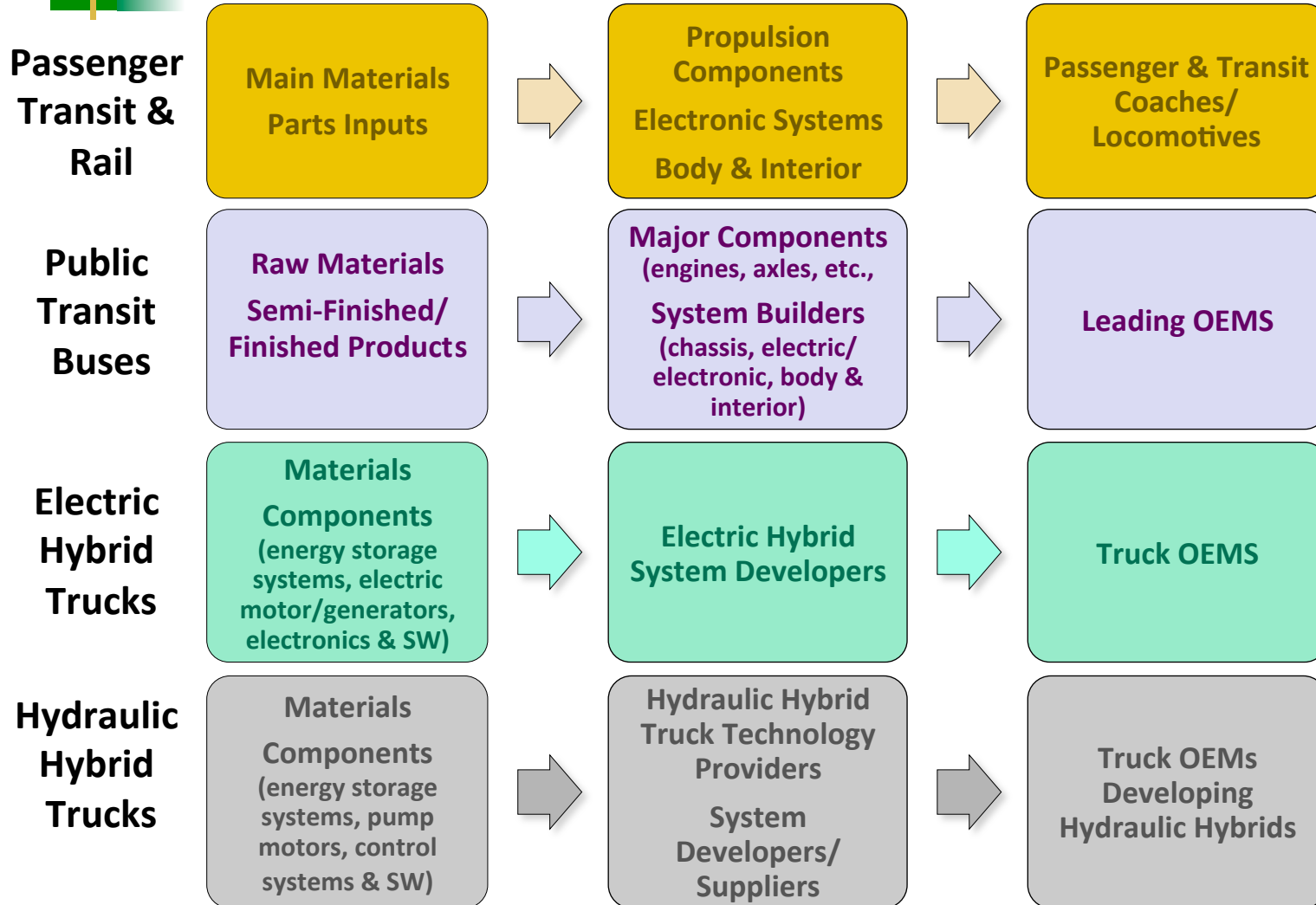
Clean Transportation Manufacturing— “Heartland” States

State	Current No. Manufacturing Facilities*	Potential No. Jobs Created: TMAP**
Ohio	35	33,385
Illinois	38	29,770
Pennsylvania	34	29,079
Michigan	33	25,969
Indiana	39	23,572
Wisconsin	16	22,236
Minnesota	13	15,126

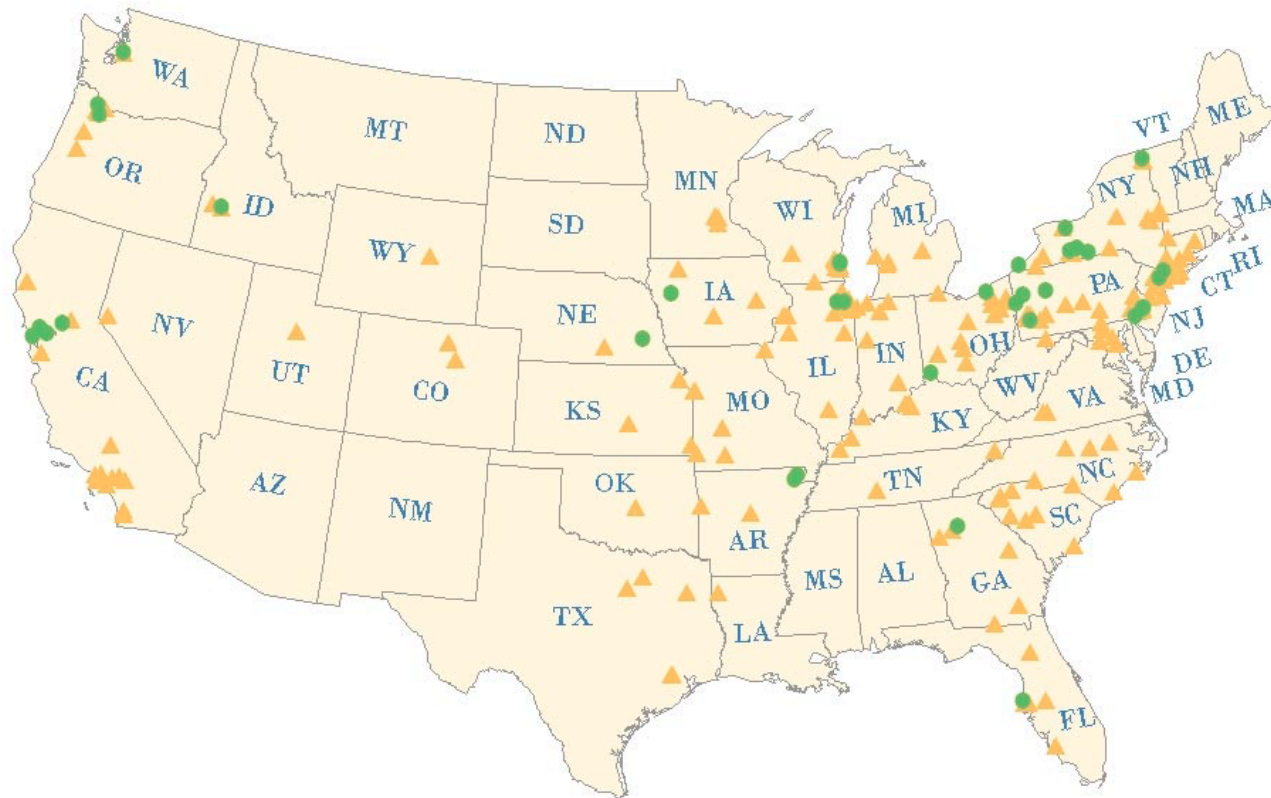
* Duke University/CGGC

** EPI

Manufacturing Value Chains



Passenger & Rail Transit Manufacturing Locations



- Railcar or locomotive OEM manufacturing/assembly (35 locations)
- ▲ Tier 2 manufacturing (214 locations)



Barriers / Opportunities

■ Rail/Bus Transit

- Unpredictable demand—government (federal, state, local) budgets uncertain
 - US invests more on highway and air transport than rail
- Foreign-owned OEMs/suppliers dominate U.S. value chain (Buy America does matter!)
- Foreign OEMs/suppliers with U.S. operations perform higher value-added activities in own countries

■ Hybrid Trucks (Medium to Heavy-Duty)

- US well-positioned to take leadership
 - At least 25 US-based truck makers, 14 US hybrid system developers
- Cost and technology issues (battery “pinch-point”)
 - Government R&D \$ important