



ACCELERATING CLEAN ENERGY GROWTH IN MICHIGAN AND OHIO

**NASEO Annual Meeting**  
**September 11, 2014 - Savannah, GA**

**Roger Doherty**  
**Michigan Energy Office**





# Project Partners



# Vision For Success

## Goals

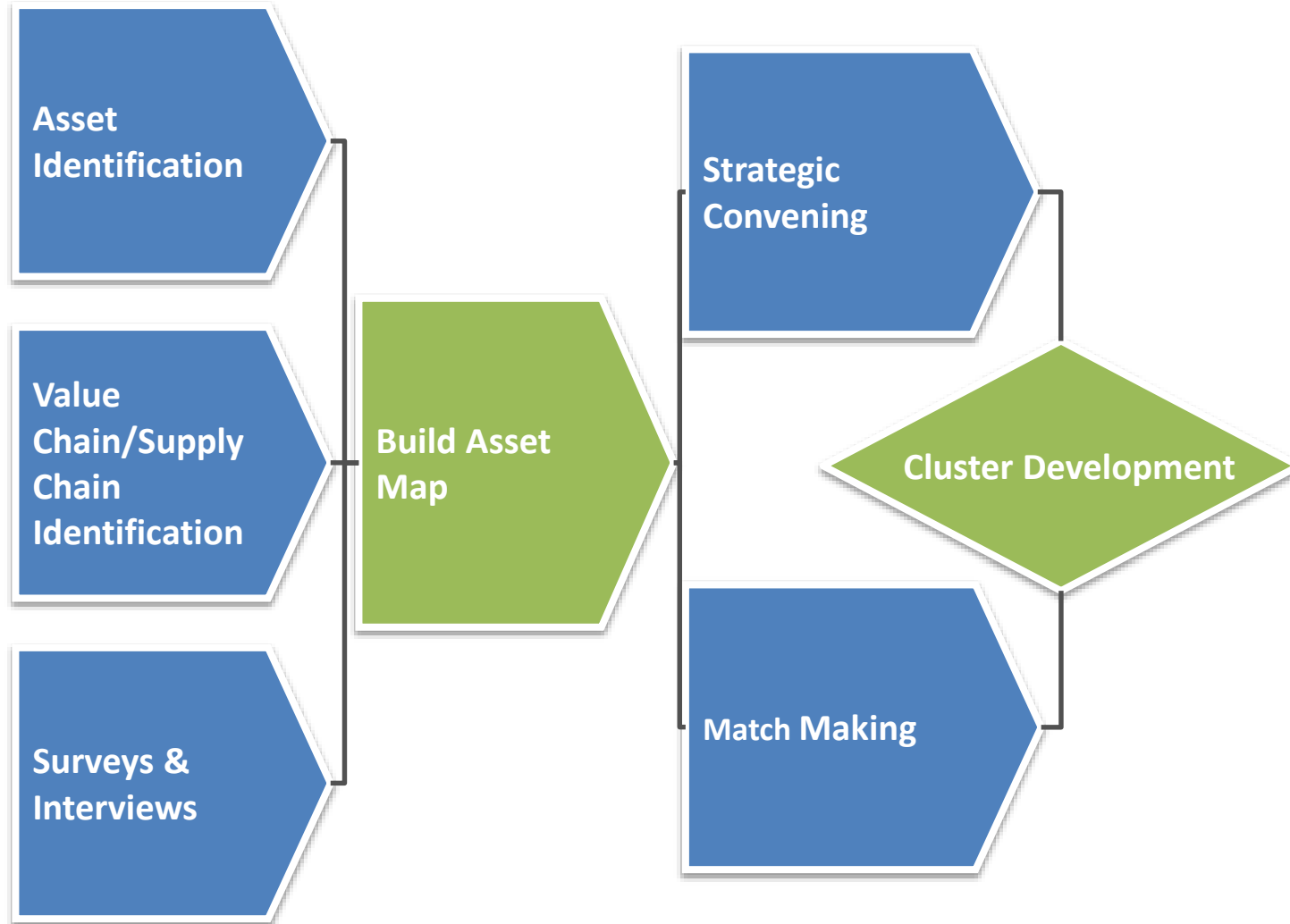
- Improve **global competitiveness** of clean energy manufacturing
- Increase regional **economic development**

## Focus

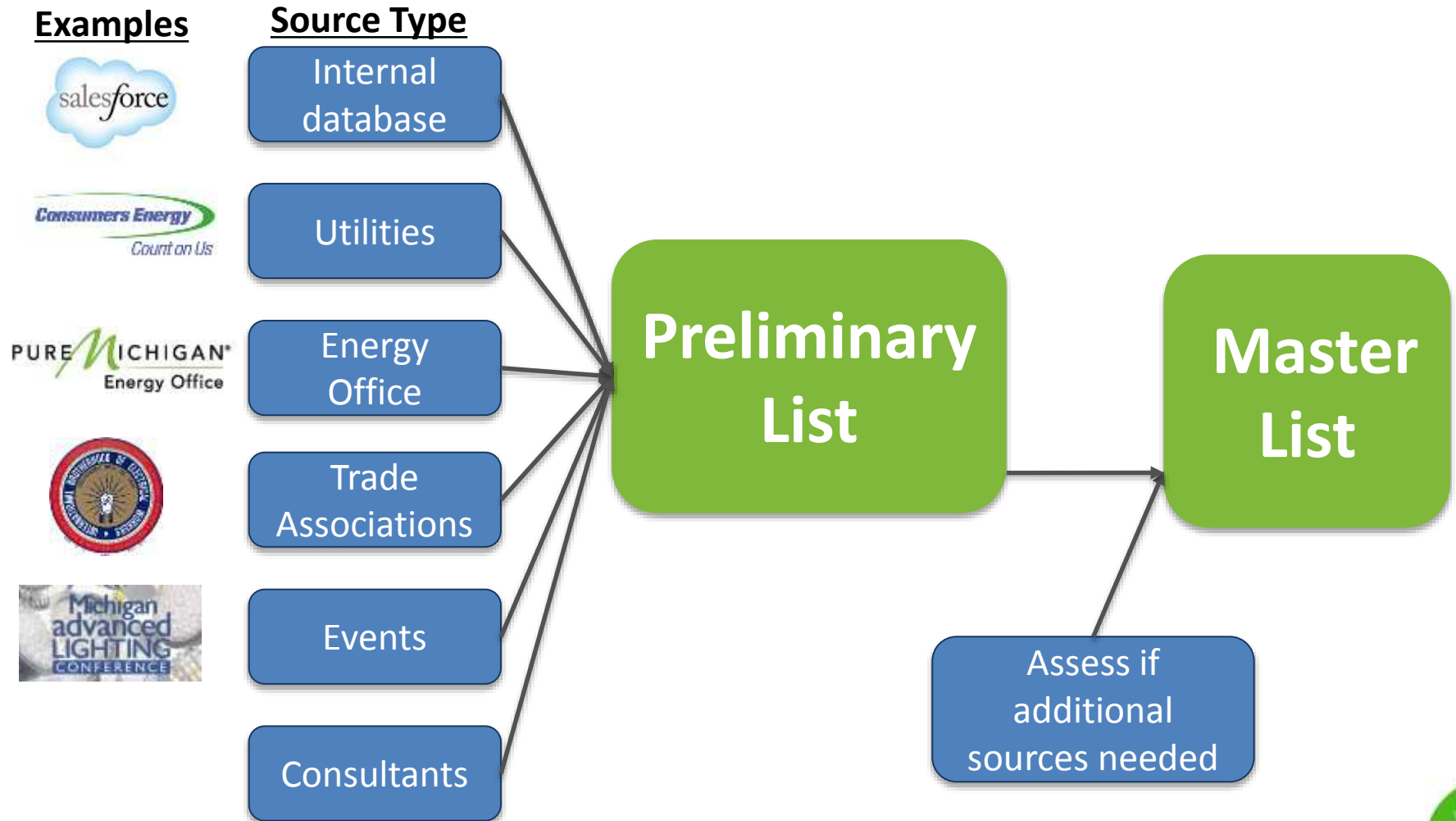
- Advance **energy efficient building technologies** cluster
- Reduce energy intensive processes in **clean energy manufacturing**



# EEBT Cluster Development



# Identifying the Assets



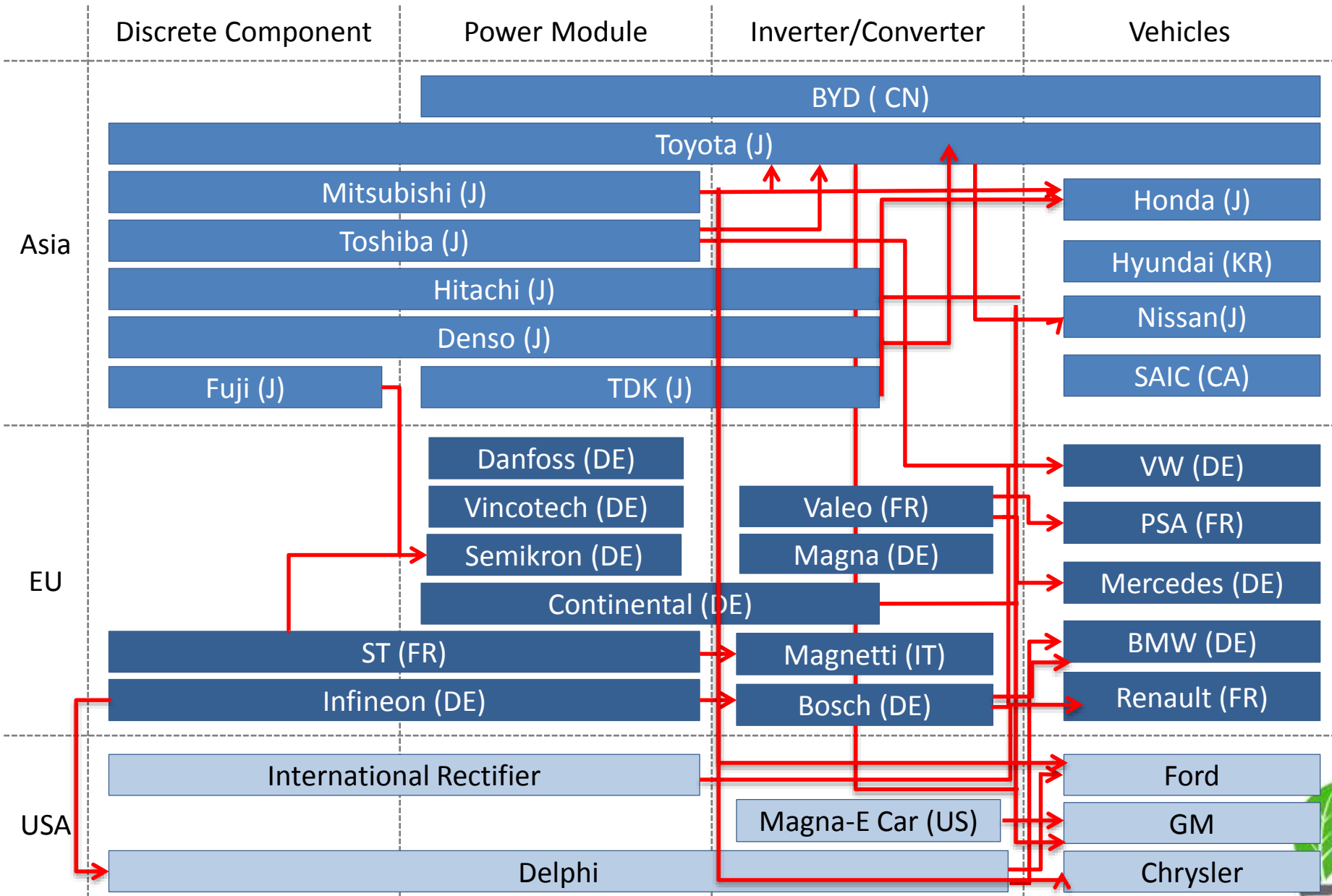
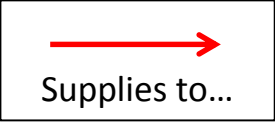
# Value Chain Identification

## EE Building Technologies Value Chain Example

	RESIDENTIAL	COMMERCIAL	INDUSTRY
PRODUCTS	<ul style="list-style-type: none"> <li>• Appliances</li> <li>• Sealants &amp; adhesives</li> <li>• Energy Star Appliances</li> <li>• Plug-load devices</li> <li>• Energy management systems</li> <li>• Efficient Fluorescent Tubes</li> <li>• Lighting Occupancy Sensors</li> <li>• Holiday Lighting</li> <li>• Specialty CFL Lighting</li> <li>• Specialty LED Lighting</li> <li>• Whole House Fans</li> <li>• Ductless Mini-Split Systems</li> </ul>	<ul style="list-style-type: none"> <li>• Lighting systems</li> <li>• Energy Star Appliances</li> <li>• Windows</li> <li>• Energy Star Office equipment</li> <li>• Sealants &amp; adhesives</li> <li>• Efficient Fluorescent Tubes</li> <li>• Lighting Controls &amp; Design</li> <li>• Refrigeration Fans &amp; Controls</li> <li>• Refrigeration Door Modifications</li> <li>• Controlled Ventilation Optimization, Enthalpy Economizer, and Duct Sealing</li> <li>• Electronically-commutated Permanent Magnet Motors for Ventilation</li> <li>• Demand-controlled Ventilation</li> </ul>	<ul style="list-style-type: none"> <li>• Refrigeration</li> <li>• Motor System Optimization</li> <li>• Pump System Efficiency Improvements</li> <li>• Compressed Air System Management</li> <li>• Electric Supply System Improvements</li> <li>• Fan System Improvements</li> <li>• Machine Drive Sensors &amp; Controls</li> <li>• Advanced Efficient Motors</li> <li>• Energy Information System and Motor Management</li> <li>• Advanced Lubricants</li> <li>• Enthalpy Economizers</li> <li>• Duct Sealing</li> <li>• De-stratification Fans</li> <li>• Replacements for Fluorescent T12 Fixtures and Lamps</li> </ul>
SERVICES	<ul style="list-style-type: none"> <li>• Utilities</li> <li>• Auditors</li> <li>• Contractors</li> <li>• Architects</li> <li>• Energy management providers</li> <li>• Weatherization programs</li> <li>• Financing</li> </ul>	<ul style="list-style-type: none"> <li>• Utilities</li> <li>• Auditors (Pro Energy)</li> <li>• Contractors</li> <li>• Architects</li> <li>• Engineers</li> <li>• ESCOs</li> <li>• Hardware vendors / distributors</li> <li>• Software application vendors</li> <li>• procurement</li> </ul>	<ul style="list-style-type: none"> <li>• Utilities</li> <li>• Auditors</li> <li>• Contractors</li> <li>• Architects</li> <li>• Engineers</li> <li>• ESCOs</li> <li>• Hardware vendors / distributors</li> <li>• Software application vendors</li> </ul>
MISC	<ul style="list-style-type: none"> <li>• University / Academic</li> <li>• Utility companies</li> <li>• MPSC</li> <li>• Tax credits / incentives</li> <li>• EO Program design</li> </ul>	<ul style="list-style-type: none"> <li>• University / Academic</li> <li>• Utility companies</li> <li>• MPSC</li> <li>• Tax credits / incentives</li> <li>• EO Program design</li> </ul>	<ul style="list-style-type: none"> <li>• University / Academic</li> <li>• Utility companies</li> <li>• MPSC</li> <li>• Tax credits / incentives</li> <li>• EO Program design</li> </ul>



# EV/HEV Power Electronics Supply Chain Relationships



Source: Yole Development, NextEnergy

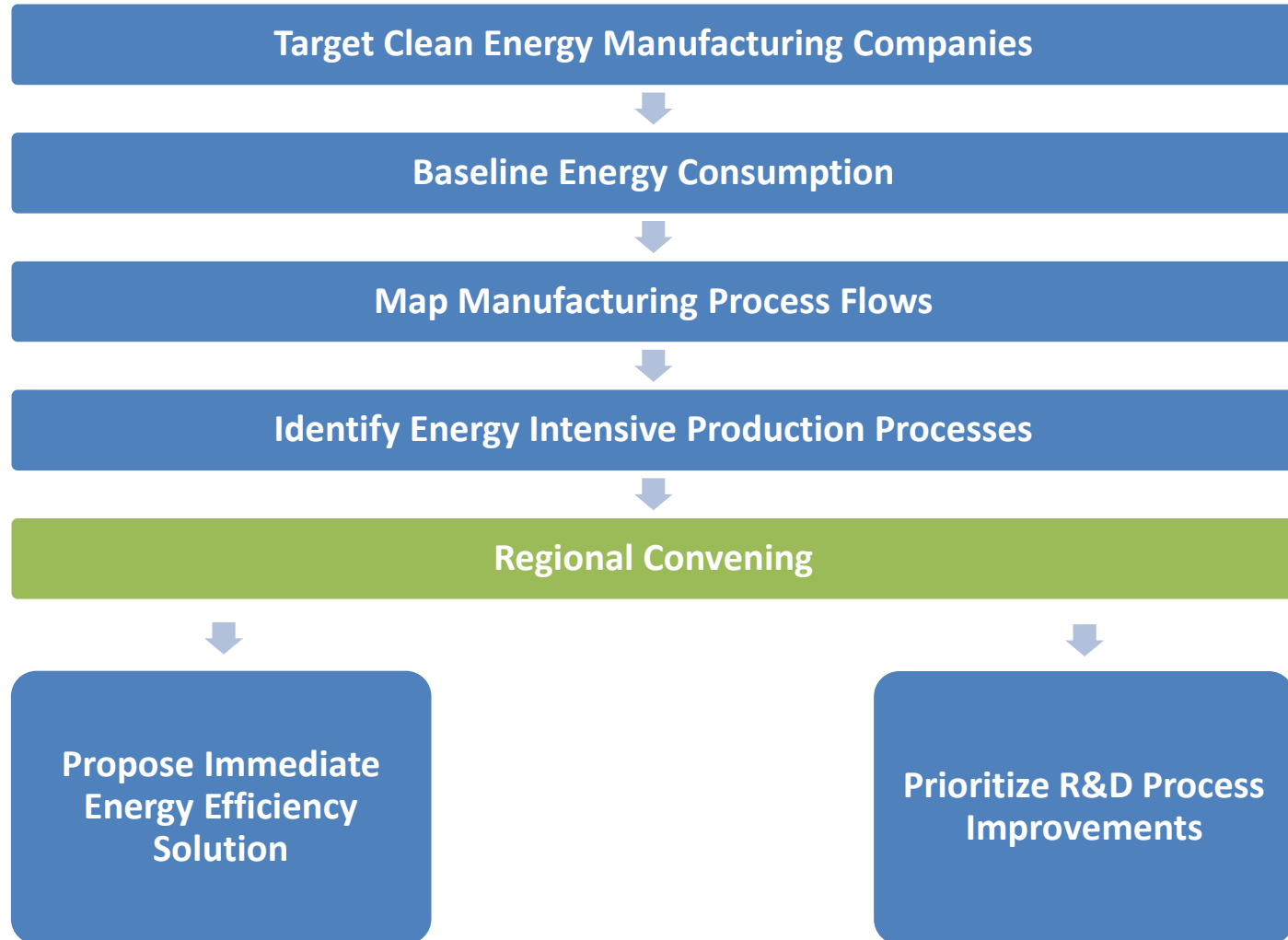


# Asset Map – NorTech





# Clean Energy Manufacturing Process Improvement

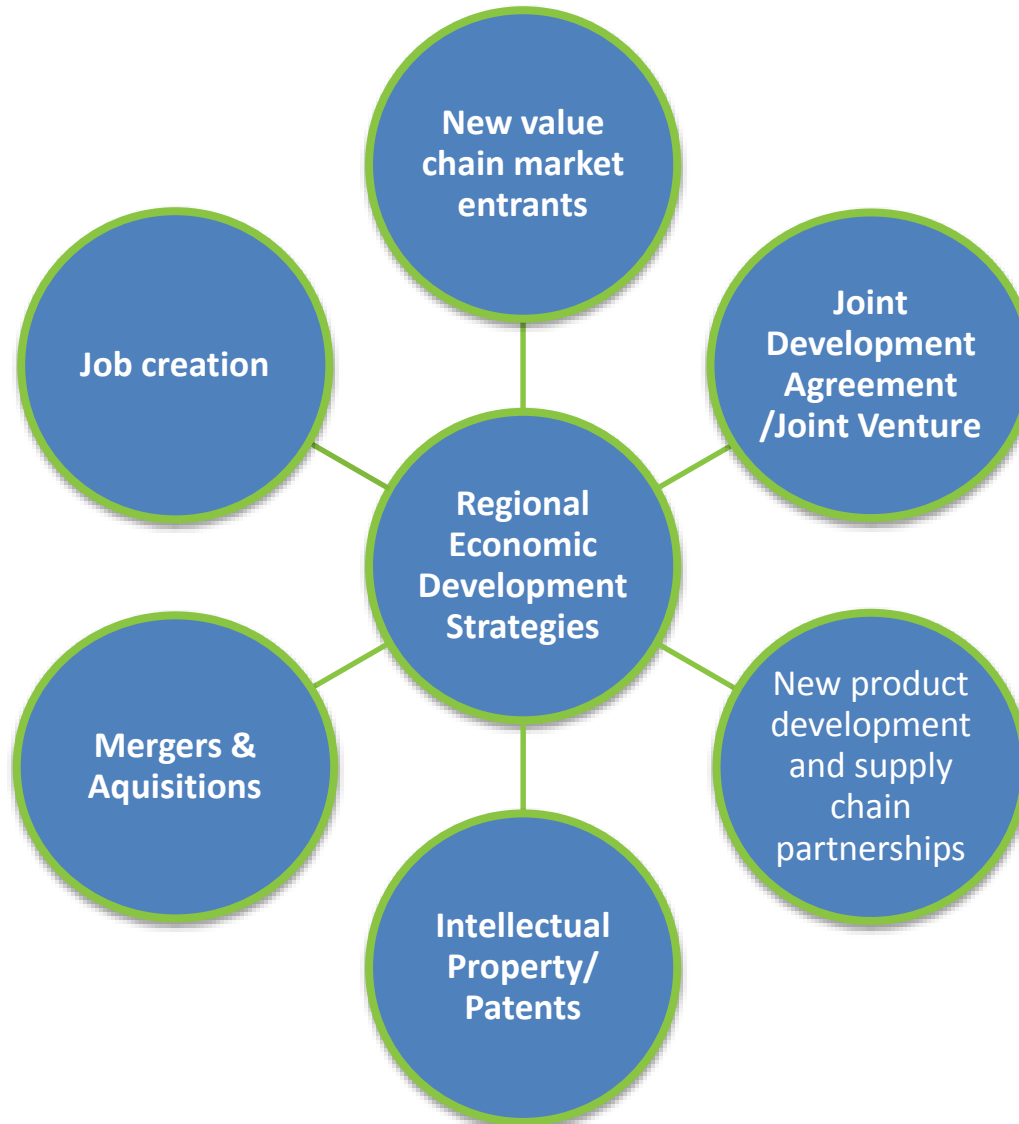


# Project Timeline

Tasks	Milestones & Deliverables	Year 1				Year 2			
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Energy Efficiency Building Technology Roadmap	<u>Deliverables:</u> Two separate, yet interconnected, Economic Development Strategies for the Energy Efficiency Building Technology Sector. <u>Milestones:</u> Complete Asset Inventory by Q3; Complete Supply and Value Chain Mapping by Q5; Complete Regional Economic Development Strategy by Q7								
Task 1: Asset Inventory		■	■	■					
Task 2: Supply and Value Chain Analysis				■	■	■			
Task 3: Technology Roadmap						■	■	■	
Task 4: Regional Economic Development Strategy								■	
Clean Energy Manufacturing Processes Roadmap	<u>Deliverables:</u> A roadmap for improving the energy efficiency of clean-energy manufacturing processes. <u>Milestones:</u> Complete Asset Inventory by Q3; Complete analysis of manufacturing process by Q5; complete roadmap for improving energy efficiency by Q7	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Task 5: Asset Inventory		■	■	■					
Task 6: Analysis of Clean-Energy Manufacturing Processes				■	■	■			
Task 7: Roadmap for Creating More Energy Efficient Processes						■	■	■	
Regional Convening Events	<u>Deliverables:</u> Two regional events that convene stakeholders in the Clean-Energy Sector in Michigan and Northeastern Ohio. <u>Milestones:</u> One event completed in Q4 and Q8	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Task 8: Year 1 & Year 2 Convening Events		■	■	■	■	■	■	■	■
Implementation Model	<u>Deliverables:</u> Implementation model highlighting goals, barriers, solutions and outcomes of the project. <u>Milestones:</u> Submit Implementation Model to DOE.	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Task 9: Develop Implementation Model						■	■	■	■



# Potential Outcomes





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