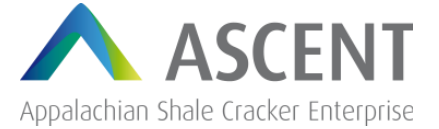


DOWNSTREAM CLUSTER DEVELOPMENT

Introduction



The Appalachian Shale Cracker Enterprise (ASCENT), a subsidiary of the Odebrecht Organization, is exploring the development of a new multi-billion dollar industrial complex in Wood County, W. Va.

This multi-billion dollar investment would include an ethane cracker, three polyethylene plants, and associated infrastructure.

ASCENT would be a catalyst for development of a new manufacturing cluster in the Appalachian region.

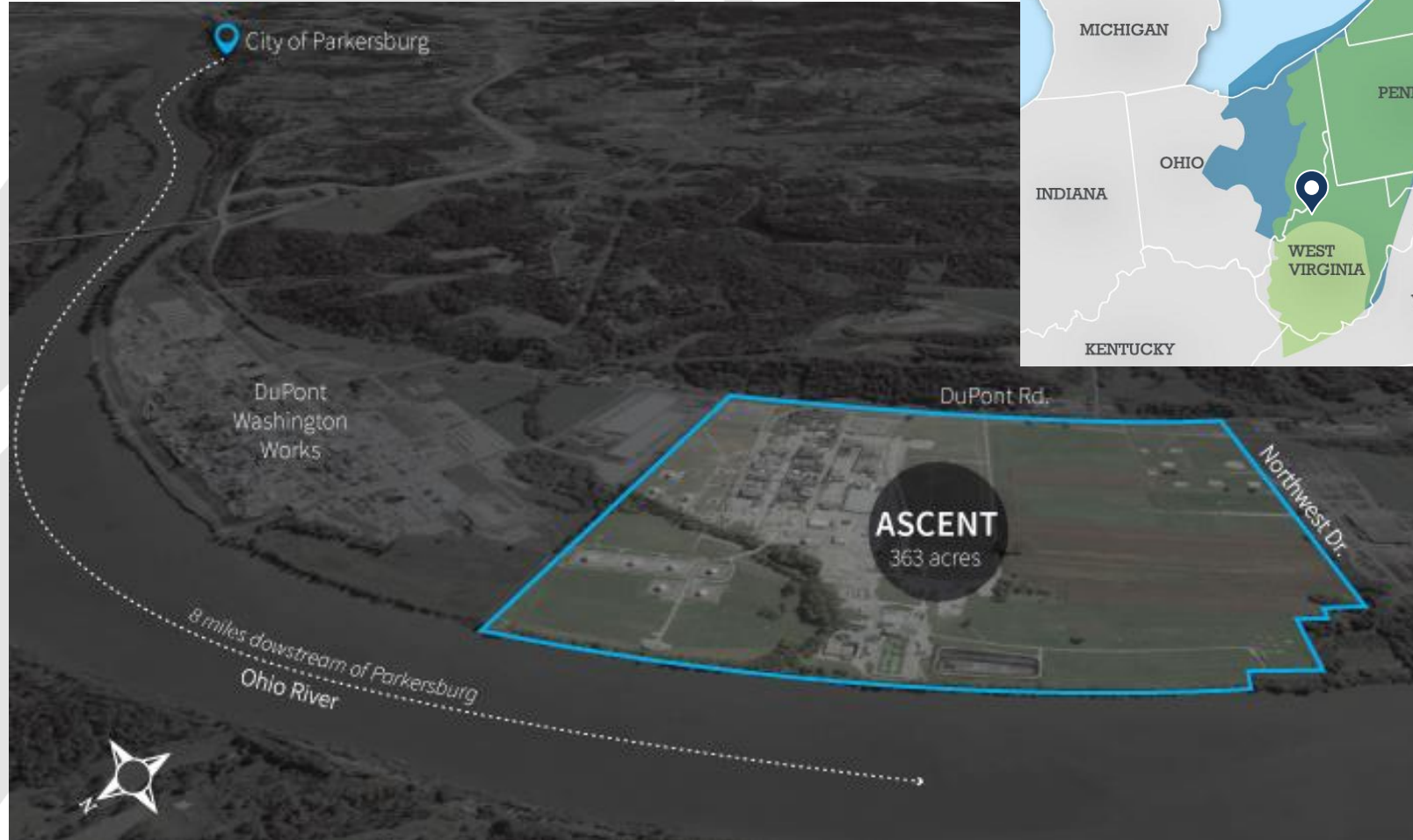


The Vision: Cluster Development

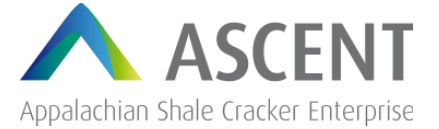
Scenario

- A significant amount of natural gas extracted from Marcellus and Utica shale formations in the Appalachian Basin contains valuable liquids, such as propane, butane and ethane.
- The liquids are separated from the natural gas at “fractionation” facilities in Pennsylvania, Ohio and West Virginia.
- While natural gas is placed into the distribution system for industrial, commercial and residential use, the separated liquids can be used in a number of high tech processes, including the conversion of ethane to ethylene at cracker facilities, such as the proposed ASCENT project.

ASCENT Site and Location



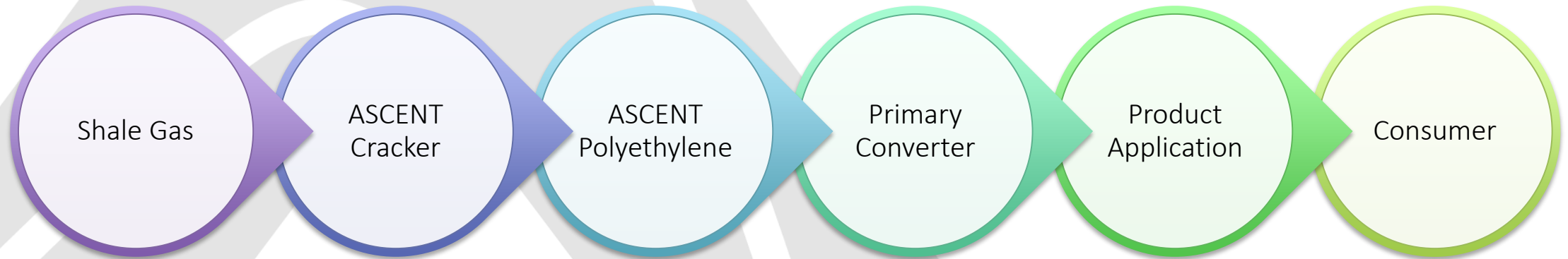
The Vision: Cluster Development



- ASCENT is just the first step in the manufacturing chain that can produce hundreds of products demanded by businesses and consumers that improve people's lives.
- Fostering the development and construction of these downstream manufacturing facilities, as well as expansion of existing facilities throughout the Appalachian Region is critical to achieve the promise of long-term economic growth from an ethane cracker.
- Proximity to businesses and consumers in the Northeast and Midwest provides a great opportunity to spark this new manufacturing cluster, realizing the full value of the Appalachian Basin's natural resources in the region.

Downstream Value Chain

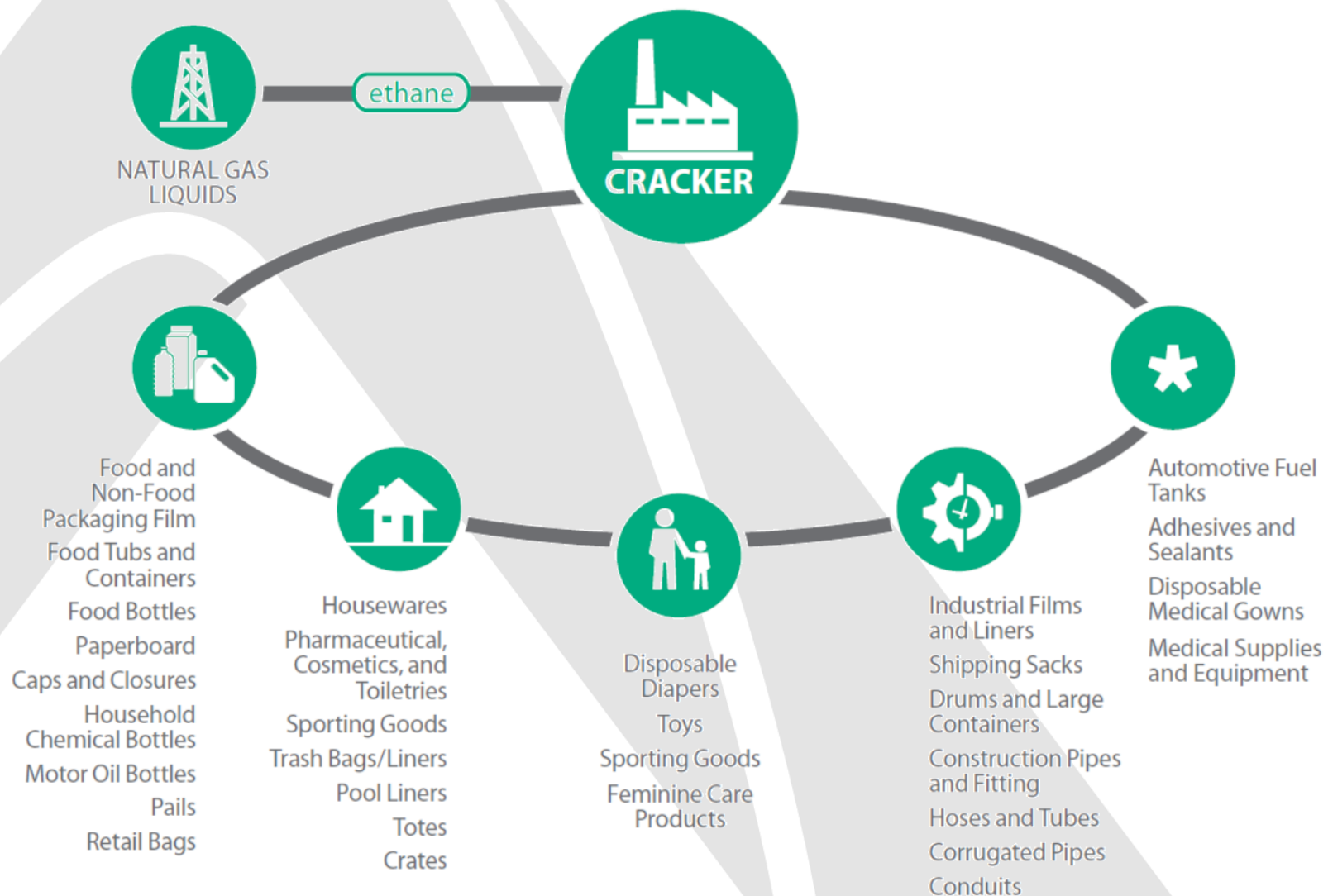
- Product manufacturers and service providers typically found within the Plastics value chain.



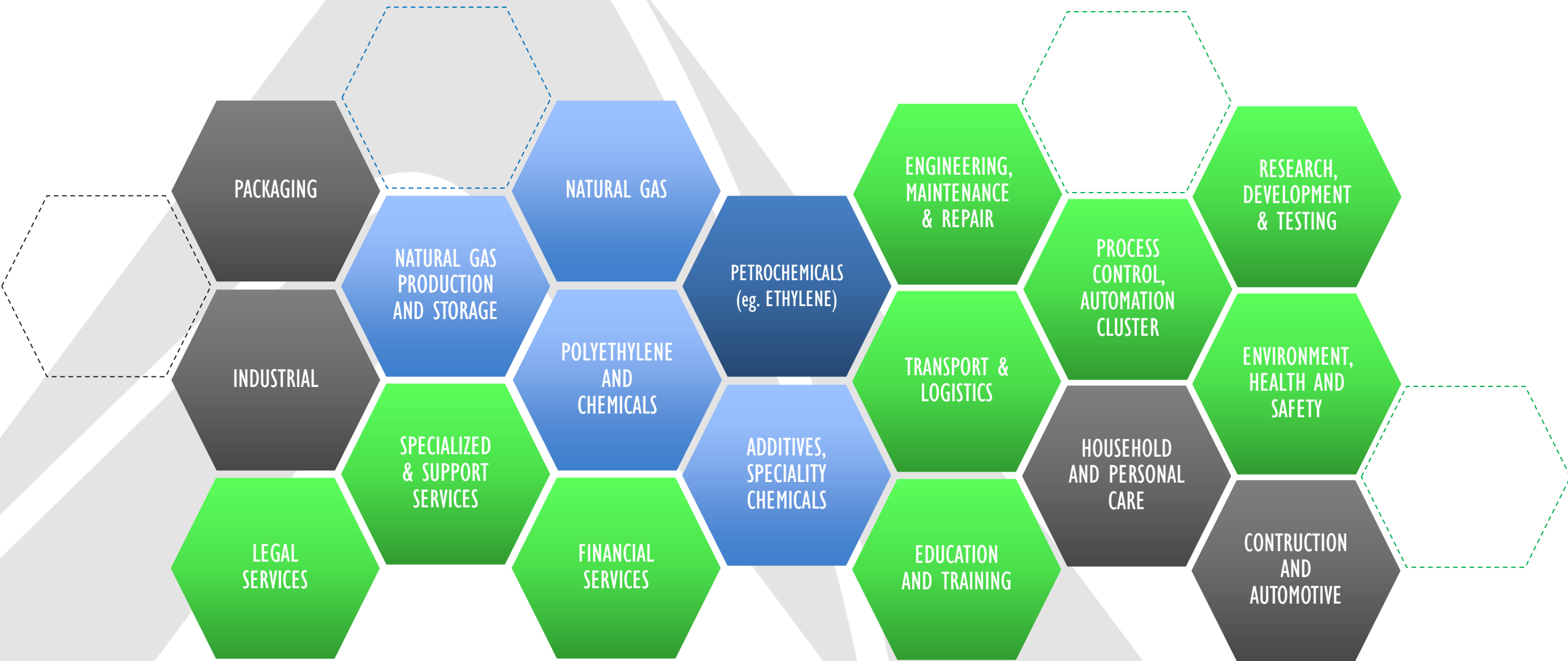
Business Services Support:

Human Resources; Payroll Administration; Accounting/Audit; Education; Legal; Public Relations

Downstream Value Chain: Markets



Stakeholders in the Chemical Mega Cluster



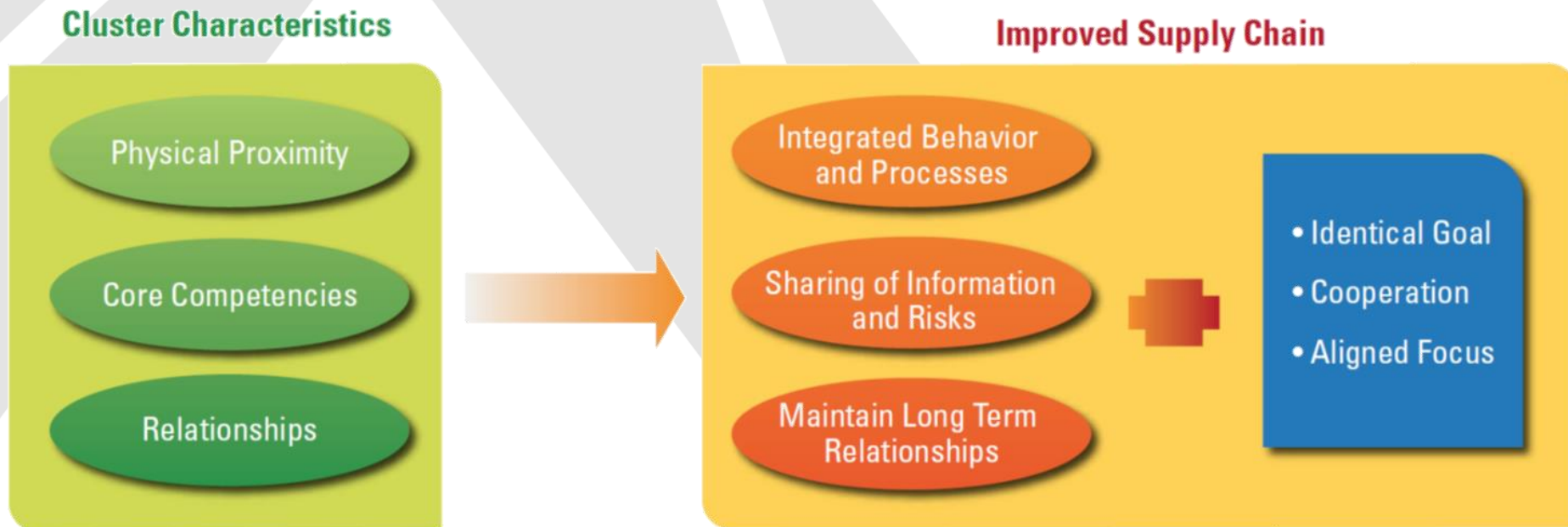


Cluster Development Strategy and Benefits

What are Clusters?

Business clusters are geographic concentrations of three or more companies directly involved in the upstream and downstream flows of products, services, finances and/or information from a source to a customer.

Clusters extend downstream to channels and customers, as well as laterally to manufacturers of complementary products. They also extend to companies in industries related by skills, technologies or common inputs.

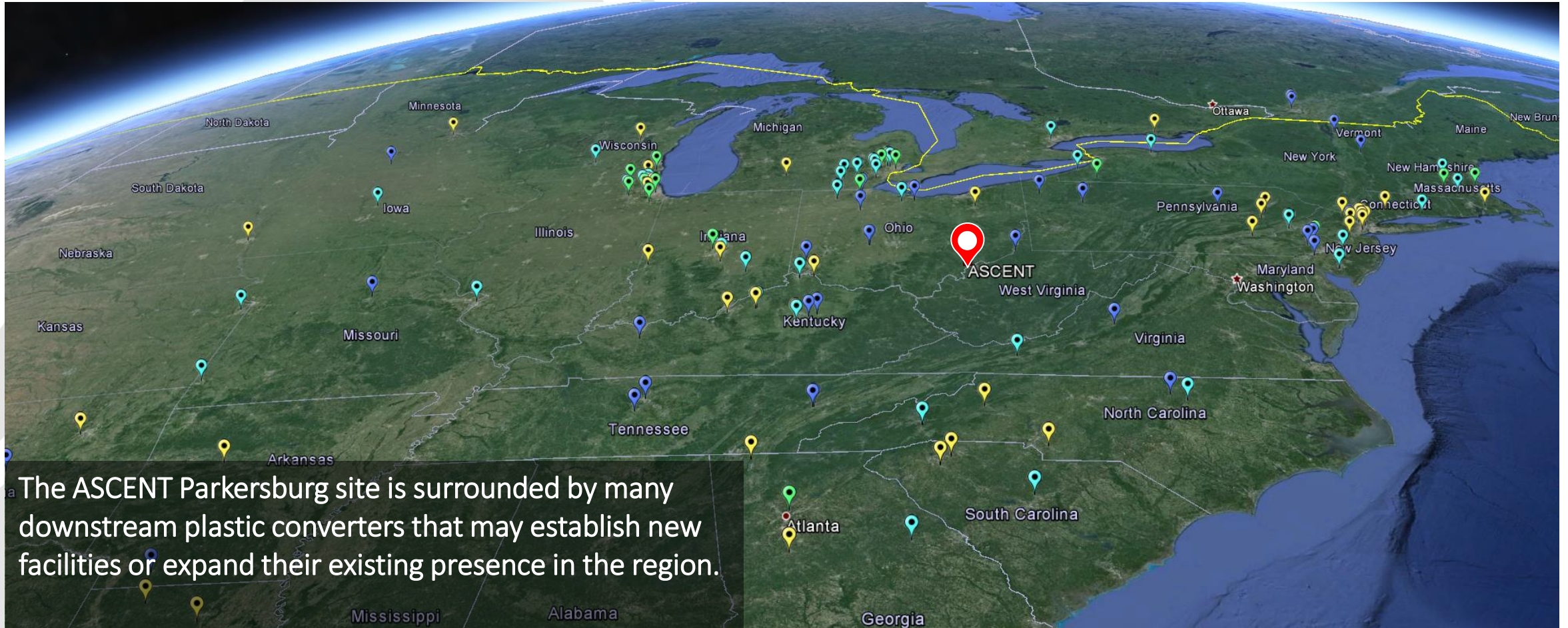


Benefits of a Plastics Manufacturing Cluster in Appalachia

The state governments in WV, OH and PA have embraced this concept as they see compelling social, development and economic value in a plastics manufacturing cluster

- Resources are concentrated and geographic proximity greatly reduces supply chain complexity, reducing costs.
- Flexibility and productivity are increased, through faster access to customers and suppliers, faster access to specialized information, and better network support for supply chains.
- Risk of failure is greatly reduced, due to focus and alignment of efforts of all the partners in the supply chain.
- Permanent, high-skilled employment opportunities and workforce development.
- Companies with similar types of occupations and worker skills can draw from a larger pool of potential employees.
- Downstream converters located within or close to the proposed cluster would benefit from lower polymer delivery costs


Leading Downstream Plastic Converters in the Region



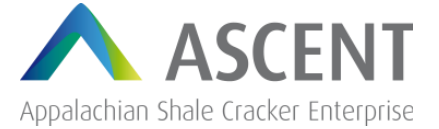
 Film/Sheet Producers

 Blow Molding Containers Producers

 Injection Molders

 Pipe, Conduit, Profile and Tubing Producers

Cluster Development Strategy



The development of an impactful cluster associated with ASCENT requires Public entity and Private industry stakeholder vision, leadership and commitment to ensure success.

- Develop the Downstream and Industrial cluster participants short list (proximity, size and ambition, relationship)
- Cultivate active relationships with local and state economic development agencies to refine and operationalize the concept, and develop a mutual consolidated vision
- Identify and reach out to stakeholders in the Public and Private Entities to develop understanding and interest:
 - Local, state and regional economic development entities
 - Downstream converter enterprises
 - Upstream and mid-stream businesses
 - Educational facilities
 - Maintenance and service providers

Chemical Cluster - Development Best Practices

- Clarity of Vision of the form, structure, and development steps amongst stakeholders
- Government participation and leadership helps in the overall growth of the cluster in a phased manner
 - Government plays a primary role
 - Public Private Partnership (PPP) model
 - Educational system is embraced as a foundation for capability developments
- Involving global industrial players early assists in achieving faster cluster growth & stronger integration
 - Influences more players to invest in the cluster
 - Contributes through being a part of cluster leadership team

Chemical Cluster - Development Best Practices (cont.)

- Investment by government/private sector in infrastructure, services, etc
 - Builds confidence/commitment amongst the existing players towards the cluster
 - Induces further investment by private players
- Better cluster integration together with greater product diversity helps
 - Promoting internal consumption within the cluster with efficient material flows
 - Consumption in local markets which further helps reduce supply chain costs
- Good infrastructure is common to all world class clusters
 - Good transport network (rail, road, sea, pipeline network) helps to increase cluster's critical mass through efficient delivery to the customer
 - Communal utilities help reduce costs and ensures better service

Chemical Cluster - Development Best Practices (cont.)

- Limited cluster scale can be compensated by a less diversified, yet fully integrated, product range
- Some clusters are successful even in the total absence of a local market
- Most clusters serve a large geographical area, shipping mostly final products rather than commodities or intermediates
- The establishment of a "cluster promotion body" can be a key success factor (stakeholder representation & strong leadership)
- Most successful clusters are purpose built
- All clusters have strengths and weaknesses, the key is to progressively and consistently focus on the promotion and development of strengths