Visualizing Economic Activity at a Strategic Level

Jon Harrison, Project Manager
jharrison@esri.com
Local Government Solutions
ESRI, Inc.

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Sustainability Strategy

...balances the interplay of the 3 e’s through policy and practice
Visualizing Sustainability
GIS provides granularity consistent with scale

- Land Use
- Conservation
- Transportation
- Solar Energy Potential
- Service Providers
- Education Level
- Unemployment
- Workforce Characteristics

... Economy not well represented in past use of GIS for sustainability planning
Visualizing Sustainability
GIS provides granularity consistent with scale

- Economic Activity Cluster
- Consumer Behavior
- Business Sector Cluster
- Value Chains
- Land Use
- Service Providers
- Conservation
- Education Level
- Transportation
- Unemployment
- Solar Energy Potential
- Workforce Characteristics

...Including economy supports defensible sustainability strategic planning
Importance of Clusters

• Measure of business activity relative to larger geography
  – Backbone of region’s economy
  – Emerging economy based on innovation

• Coordinate economic growth and workforce investment
Tradional Cluster Map

Location Quotient
Values for Counties relative to nation

United States = 100
- More than 110 (53 counties)
- 100.1 to 110 (75 counties)
- 90.1 to 100 (229 counties)
- 80 to 90 (1,001 counties)
- Less than 80 (1,748 counties)
- Missing (5 counties)

Source: Purdue University

Location Quotient = Sector Employment / Total Employment
Sector Employment nation/ total employment nation

... Finer grain analysis needed to support local strategic planning
Case Study: Eastern San Bernardino Valley, California

Cities of:
San Bernardino
Highland
Yucaipa
Redlands
Loma Linda
Grand Terrace
Colton
Rialto

Population: 560,000
Potential Commuting Population

Commute Times
- under 15 mins: 1,320,273 people
- 15 - 30 mins: 1,296,304 people
- 30 - 45 mins: 1,844,252 people
- 45 - 60 mins: 3,692,697 people
Total: 8,153,526 people

...Customers & Potential Workforce
East Valley –
Existing Business Clusters and Jobs

East Valley Communities
- Colton
- Highland
- Redlands
- San Bernardino

Grand Terrace
Loma Linda
Rialto
Highland

5 largest sectors of East Valley economy
- Health Care
- Education
- Retail
- Public Administration
- Hospitality

Each sector has its own geographic signature

Sources: USGS, FAO, NPS, EPA, ESRI, Geoterra, IHS, other suppliers
Logistics Jobs - density per sq mile

Job Density sq/mi
- under 500
- 501 - 1,000
- 1,001 - 2,000
- 2,001 - 4,000
- 4,001 - 8,000
- 8,001 - 16,000
- 16,001 - 32,000
Opportunities for Green Economy & Innovation (Emerging clusters?)

6 broad opportunities in East Valley
- Renewable energy
- Green Building / Energy Efficiency
- Biofuels / Farming
- Transportation / Alternative Fuels
- Water, Wastewater, Waste Management
- Environmental Compliance & Sustainability Planning

Source: Centers For Excellence, California Community Colleges

Research Brief
The Green Economy
Industries & Jobs in San Bernardino County
June 2009

Opportunities will vary across Southern California and the nation.

Sources: USGS, FAO, NPS, EPA, ESRI, DeLorme, T&NA, other suppliers
Potential Green Economy - Composite

... Economic activity sheds don't respect city boundaries
Value Chain

Steps in a process from raw resource through consumption

Figure 4-2: Simplified Concentrating Solar Power Value Chain

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Steps correspond to businesses at known locations

... Value chains can be local or global

Source: Center on Globalization, Duke University
Solar PV Value Chain

Source: Collaborative Economics

Sources: USGS, FAO, NPS, EPA, ESRI, DeLorme, TANA, other suppliers
The Solar PV Value Chain in the East Valley

Solar Energy
- Wholesalers: 8 Businesses - 48 Jobs
- Manufacturing: 12 Businesses - 139 Jobs
- Installation: 114 Businesses - 732 Jobs
- Components: 0 Businesses - 0 Jobs
Other Factors for a Sustainable Region

- Workforce / employment
- Education
- Consumer Market
- Transportation
- Quality of Life

... must be included in modeling a sustainable growth strategy
Conclusion:

Visually combining economic, environmental and social equity can contribute to strategic sustainability planning.
Green Economy Cluster with current and planned transit, TOD and open space - Redlands
Green Economy Cluster with current and planned transit, TOD and open space – East Valley Region
Additional Reading

Publications:

- *The New Cluster Moment: How Regional Innovation Clusters Can Foster the Next Economy*, Mark Muro and Bruce Katz, Metropolitan Policy Program at Brookings, September 2010

Websites:

- Center on Globalization, Governance & Competitiveness, www.cggc.duke.edu
- Purdue Center for Regional Development, www.pcrd.purdue.edu
- Next 10, www.next10.org