PROGRESS AND PROMISE:
TRENDS IN THE EMERGING GREEN ECONOMY

INNOVATING IN THE GREEN ECONOMY
CONFERENCE

Sponsored by the U.S. Economic Development Administration and the Center for Community Innovation at the UC-Berkeley Institute for Urban and Regional Development

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Tracey Grose
Vice President Research & Strategic Development
THE ECONOMY, CONSISTING OF A DIVERSE SET OF ACTORS, IS TRANSFORMING:

• Faced with volatile energy costs, California’s households and businesses are finding new ways to **save money and conserve resources**.
• As a result, our **innovative business community** is finding new opportunities in providing the products and services we need to accomplish these goals.
The Green Economy in Layers

Businesses providing products & services that:
- Conserve natural and energy resources
- Provide clean alternatives
- Reduce pollution and repurpose waste

Businesses founded on principles of sustainability

Businesses "greening" their products, production processes & supply chains
| 1. Energy Generation       | 8. Agriculture            |
| 3. Transportation         | 10. Business Services     |
| 5. Air & Environment      | 12. Advanced Materials    |
| 7. Water & Wastewater     | 14. Manufacturing &       |
|                           | Industrial               |
|                           | 15. Energy Infrastructure |
• **Diversity** - There is a wider range of green business activities than commonly appreciated by segment and across the supply chain

• **Specialization** - Each state has different specializations

• **Industry Adaptation & Differentiation** - Much of green activity builds on existing industry strengths and extends them into new markets

• **Green jobs are growing** at a faster rate than the whole economy

• **Green Innovation** is taking place in most states
SPECIALIZATION: TWO EXAMPLES

Employment Concentration by Green Segment
ARIZONA
Relative to U.S.

Change in Concentration 1995 - 2007

Data Source: Green Establishment Database
Analysis Collaborative Economics

Size of bubble represents 2007 employment
GROWTH IN GREEN ECONOMY OUTPACES ECONOMY AS A WHOLE

Growth Relative to 1995
Green Jobs and Total Jobs
USA Total

Data Source: Green Establishment Database
Analysis: Collaborative Economics
INNOVATION IS KEY

U.S. Green Waves of Innovation since the 1970s

Data Source: 1790 Analytics, Patents by Technology; USPTO Patent File
Analysis: Collaborative Economics
VENTURE CAPITAL INVESTMENT: HIT HARD BUT RETURNING

### Venture Capital Investment in Clean Technology
CALIFORNIA & U.S.
Billions of Dollars Invested

<table>
<thead>
<tr>
<th>Year</th>
<th>California</th>
<th>United States</th>
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<tbody>
<tr>
<td>2005</td>
<td>$1.20</td>
<td>$1.50</td>
</tr>
<tr>
<td>2006</td>
<td>$1.80</td>
<td>$2.00</td>
</tr>
<tr>
<td>2007</td>
<td>$2.50</td>
<td>$3.50</td>
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<td>2008</td>
<td>$3.20</td>
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</tr>
<tr>
<td>2009</td>
<td>$3.00</td>
<td>$3.00</td>
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</table>

**Data Source:** Cleantech Group™, LLC (www.cleantech.com)
**Analysis:** Collaborative Economics
California’s energy productivity (GDP relative to total energy consumption) is 70% higher than the rest of the U.S.

Growth in energy productivity = more $ of GDP per unit of energy consumed.

CALIFORNIA’S GREEN INNOVATION AND POTENTIAL FOR REAL GROWTH

California’s leadership in technology, business and public policy innovation has fueled the state’s green economy and will determine the sustained success.

As a result, California is at the forefront of a wide range of green technologies.

MARKET CERTAINTY and wide application of clean energy technology

NEW DOMESTIC MARKETS for California’s Green Technology
CALIFORNIA’S GREEN ECONOMY

- Diverse
- Located across the state
- Growing faster than total economy
- Offers broad occupational opportunities

While green jobs alone won’t solve the state’s unemployment challenges, over time these jobs could become a larger portion of total jobs.

This means that as markets grow for green products and services, Californians will benefit from new job opportunities and energy savings.
GREEN OUTPACING TOTAL ECONOMY

California Job Growth
Total Economy and Core Green Economy
Relative to 2007

Data Source: Green Establishment Database
Analysis: Collaborative Economics
CALIFORNIA’S CORE GREEN ECONOMY IS GROWING
CALIFORNIA’S CORE GREEN ECONOMY IS DIVERSE

Data Source: Green Establishment Database
Analysis: Collaborative Economics
DIVERSE BUSINESS BASE ACROSS THE VALUE CHAIN

Manufacturing Jobs:
21% of Green Economy
11% of Total Economy

This means:
- Wide-ranging job opportunities across the skills spectrum
- Strong potential for continued green business growth

Data Source: California Green Establishment Database
Analysis: Collaborative Economics
GROWING GREEN MARKETS & GREEN INDUSTRY BASE

BUILD MARKET FOR CLEAN AND GREEN PRODUCTS AND SERVICES

- Improve Building Efficiency
- Increase Community Resource Efficiency & Reuse
- Grow Renewable Energy Use
- Expand Cleaner Transportation Options
- Transform Business Products & Practices
- Provide a New Energy Infrastructure

- Set Standards
- Offer Incentives and Financing Options
- Streamline Permitting

ENCOURAGE GREEN INNOVATION
FACILITATE GREEN COMPANY EXPANSIONS
BUILD THE GREEN VALUE CHAIN
CREATE A PRO-GREEN REGULATORY CLIMATE
EDUCATE & TRAIN GREEN WORKFORCE
PROMOTE REGIONAL PRODUCTS & SERVICES

GROW BASE OF CLEAN AND GREEN INDUSTRIES
# Green Increased Demand Occupations

<table>
<thead>
<tr>
<th>Occupational Title</th>
<th>Annual Earnings</th>
<th>Education &amp; Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical &amp; Electronic Equipment Assemblers</td>
<td>$27,210</td>
<td>Short-Term On-The-Job Training</td>
</tr>
<tr>
<td>Computer-Controlled Machine Tool Operators, Metal &amp; Plastic</td>
<td>$31,030</td>
<td>Moderate-Term On-The-Job Training</td>
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<tr>
<td>Insulation Workers</td>
<td>$37,860</td>
<td>Moderate-Term On-The-Job Training</td>
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<tr>
<td>Electricians</td>
<td>$52,690</td>
<td>Long-Term On-The-Job Training</td>
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<tr>
<td>Structural Iron and Steel Workers</td>
<td>$55,190</td>
<td>Long-Term On-The-Job Training</td>
</tr>
<tr>
<td>Commercial &amp; Industrial Designers</td>
<td>$66,220</td>
<td>Bachelor’s Degree</td>
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<tr>
<td>Occupational Health &amp; Safety Specialists</td>
<td>$70,930</td>
<td>Bachelor’s Degree</td>
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<tr>
<td>Computer Software Engineers, Systems Software</td>
<td>$103,670</td>
<td>Bachelor’s Degree</td>
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# GREEN ENHANCED SKILLS OCCUPATIONS

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<td>Environmental Engineering Technicians</td>
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<td>Environmental Engineers</td>
<td>$83,090</td>
<td>Bachelor’s Degree</td>
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<td>Electrical Engineers</td>
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<td>Urban and Regional Planners</td>
<td>$70,470</td>
<td>Master’s Degree</td>
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### Examples of Other Occupations in Green Establishments

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