The Quite Transformation:  
*Sustainability and Careers of the Future*

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Laney College
Goals of Presentation

- Background on Laney College
- Background on Global Issues and Concerns
- Background on clean energy labor market context
- Laney’s clean energy workforce development strategies
Key Laney Project Goals

- Map career paths and skill requirements in building automation, energy efficiency, and renewable energy
- Develop new curricular pathways for technical workforce
- Collaborate with 4-year institutions to create program articulation and 4-year career paths
Laney College

- 30-year old community college located in Oakland, Calif.
- Comprehensive college offering: foundational skills, transfer education, and career-technical education
- Demographics: 31% Asian, 29% African American; 7% Latino; large ESL population
- Strong departments in Architecture, Engineering, Construction, Electrical Technology, Construction Management, & HVAC
Project Support

- U.S. National Science Foundation
- Pacific Gas and Electric
- City of Oakland
- U.S. Department of Energy
- Bechtel Foundation
- Lawrence Berkeley National Lab
- U.S. Department of Labor
- Chevron Energy Services
- Industry Partners
Progress Traps
If the environment deteriorates beyond some critical point, natural systems that are adapted to it will break down. This applies also to social organization. Beyond a certain level climate change becomes a profound challenge to the foundations of the global industrial civilization that is the mark of our species.

This whole thing is a interaction between human beings as a highly organized industrial civilization, and the world’s physics and chemistry and the consequences of things that we already have already done, and set in motion, before we were smart enough to recognize the patterns.

*Leon Fuerth*

*A Lead author, The Age of Consequences*

*Center for Strategic and International Studies*
Conceptions of Time

- Chaotic time
  - Primitive man. Change in the natural world is beyond our control and comprehension.

- Cyclical time
  - Traditional societies recognized patterns: lunar and solar cycles; seasons; cardinal directions; stages of life; generational cycles.

- Linear time
  - Time as a unidirectional drama. The Enlightenment conflated linear time and progress; indefinite scientific and economic progress were the givens. American exceptionalism. Disconnects society from past and future generations and from the rhythms of nature.
Where Are We Now

- In 2009, the U.S. and the global system entered a long cycle of crisis and transformation which may last up to 20 years.
- A new consensus will emerge around the necessity for and practice of sustainability.
- A new global future will be constructed.
- In the short term, new jobs and careers are opening up especially in energy management, energy efficiency, and renewable energy.
- In the long term, many new career opportunities will emerge as we transform our way of life.
Federal Stimulus Dramatically Changed Economic Environment

- Large increase in funding for residential energy auditing and weatherization
  - Current federal stimulus budget for weatherization nationally will exceed all federal spending on weatherization since the 1970s
- Large increase in funding for commercial building retro-commissioning
Clean Energy Career Pathways

- Energy management specialists, facilities managers, building systems technicians
- Renewable energy manufacturing and installation
- Residential energy auditor & weatherization specialists
Clean Energy Jobs in Efficiency

- Commercial Building Energy Efficiency
  - Most buildings are already built
  - Retro-commissioning is key
    - Engineers
    - Building automation and control systems technicians
    - Peak load and energy management specialists
    - Enhanced operations and maintenance technicians

- Residential Energy Efficiency
  - Weatherization Technician
  - Retrofit Specialist
  - Energy Auditor
  - Building Performance Analyst
  - Assessment, Education, Sales and Customer Service
Solar Energy Sector

- Renewable Energy
  - Solar Installation Commercial
    - Part of systematic energy management program which will also include energy conservation measures
      - 20-30 year payback period
    - Best clients are large public sector installations such as schools, colleges, other public buildings
    - Large contractors; union roofers and electricians
    - Complex financing arrangements
  - Solar Installation Residential
    - Sales and Marketing
      - Be able to explain rebates, payback periods, immediate savings potential
    - Installation
      - Basic electricity, knowledge of system design principles
Technician Education Implications across the Buildings Sector

- New energy efficiency standards and air quality goals
- System-level troubleshooting and diagnostics
- Data acquisition, trend analysis, computer modeling and cost-benefit analysis
- Ability to present alternatives to building owners
- Use of advanced technology to assess energy use and develop and implement energy conservation measures
Key Curricular Challenges for Clean Energy Programs

- Students must develop understanding of sustainability
- Require development of analytical skills, critical thinking skills, interpersonal skills
- Interdisciplinary
- Lab-intensive
- Problem-based learning
- Systems thinking
- Business and economics analysis
Laney’s Program for Solar Installer

- Introduction to Photovoltaic Systems
- Basic electricity
- Math for Electricians
- Earth Systems: Sustainability, Ecology, and Environmental Justice
- Green Construction Techniques & Materials
- Residential Energy Efficiency
Residential & Light Commercial Sector
Energy Auditing & Weatherization

- Home performance industry is gaining traction
- Combines performance diagnostics and weatherization
- Light commercial sector is growing; emphasis on lighting efficiency and lighting installation techniques
- Home performance skills include: Carpentry, residential HVAC, weatherization techniques, electrical, plumbing, gas appliance safety, building codes
- Residential performance testing requires use of scientific principles and sophisticated equipment
  - Blower door tester, duct blaster, infrared camera, balometer, energy meters
Laney’s Program for Residential Energy Efficiency

- 31 units of college instruction
- Introduction to physics, energy efficiency and sustainability
- Building Performance Systems, Testing, and Diagnostics
- Weatherization Techniques
- Customer Service
- Overview of renewable energy and water conservation
- Introduction to residential HVAC
- Architectural design principles and whole building analysis
Articulation and Collaboration

- Energy Management program articulation
- Building Science and Engineering program articulation
- Collaborative use of lab facilities
- Collaborative research projects
Contact Information

For more Information:
http://elaney.org/wp/green/

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