

# GOING GREEN

## Community Colleges Building a Sustainable Future and Green Workforce

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# Agenda

- Purpose of Going Green Report
- What are Green Jobs?
- Fastest Growing Sectors in the Clean Energy Economy
- Examples of Community College Programs Educating and Preparing a Green Workforce
- Resources for Program and Curriculum Development
- Questions and Group Discussion

# Going Green: The Vital Role of Community Colleges in Building a Sustainable Future and Green Workforce

- Purpose of Going Green Publication
  - > Highlight innovative strategies and practices used by community colleges to address climate change solutions and green workforce development;
  - > Offer information on the fastest growing sectors and jobs in the green economy;
  - > Start the dialogue on the role of community colleges in creating a sustainable future; and
  - > Present useful web sites and resources.



# What are Green Jobs?



- Help to protect ecosystems and biodiversity
- Reduce energy, materials, and water consumption through high-efficiency strategies
- De-carbonize the economy
- Minimize or avoidance of the production of waste and pollution

# What are Green Jobs?



- Span several key economic sectors including renewable energy, buildings and construction, transportation, manufacturing, agriculture, and forestry
- Many jobs currently or predicted to be in demand are middle-skilled jobs requiring more than a high school diploma but less than a bachelor's degree
- Majority will be transformed from existing jobs, requiring a redefinition of skill sets, methods and occupational profiles

# What are Green Jobs?



- Many of the occupations in green industries have yet to be defined
  - > BLS has not yet developed CIP or SOC codes
- Most new program development is being driven by local and regional workforce and economic development partnerships

# **Fastest Growing Sectors in the Clean Energy Economy**

# Energy Efficiency

- Energy Efficiency – Buildings and Construction
  - > Sector encompasses activities such as:
    - > Green building design and construction
    - > Renovation of existing buildings
    - > Energy management
    - > Manufacture of renewable materials
  - > Jobs in Energy Efficiency:
    - > Systems Technician
    - > Green Designer and Architect
    - > Skilled Energy Efficient Construction Trade Worker





# Renewable Energy

- **Solar Energy**

- > Active Solar Technologies include photovoltaics (solar panels) and solar hot water
- > Passive solar includes orienting buildings to take advantage of sun for heating and cooling, interior lighting designs, and designing spaces to circulate air
- > Types of Jobs:
  - > Solar Panel Installer (Electricians)
  - > Solar Systems Installer
  - > Solar Engineer/Designer



# Renewable Energy

- **Wind Power**
  - > Fastest growing form of electricity generation in the world
  - > States with the greatest potential for wind power generation are: Texas, North and South Dakota, and Kansas
  - > Jobs in:
    - > Wind Turbine Installation
    - > Wind Farm Maintenance
    - > Wind Turbine Manufacturing



# Renewable Energy

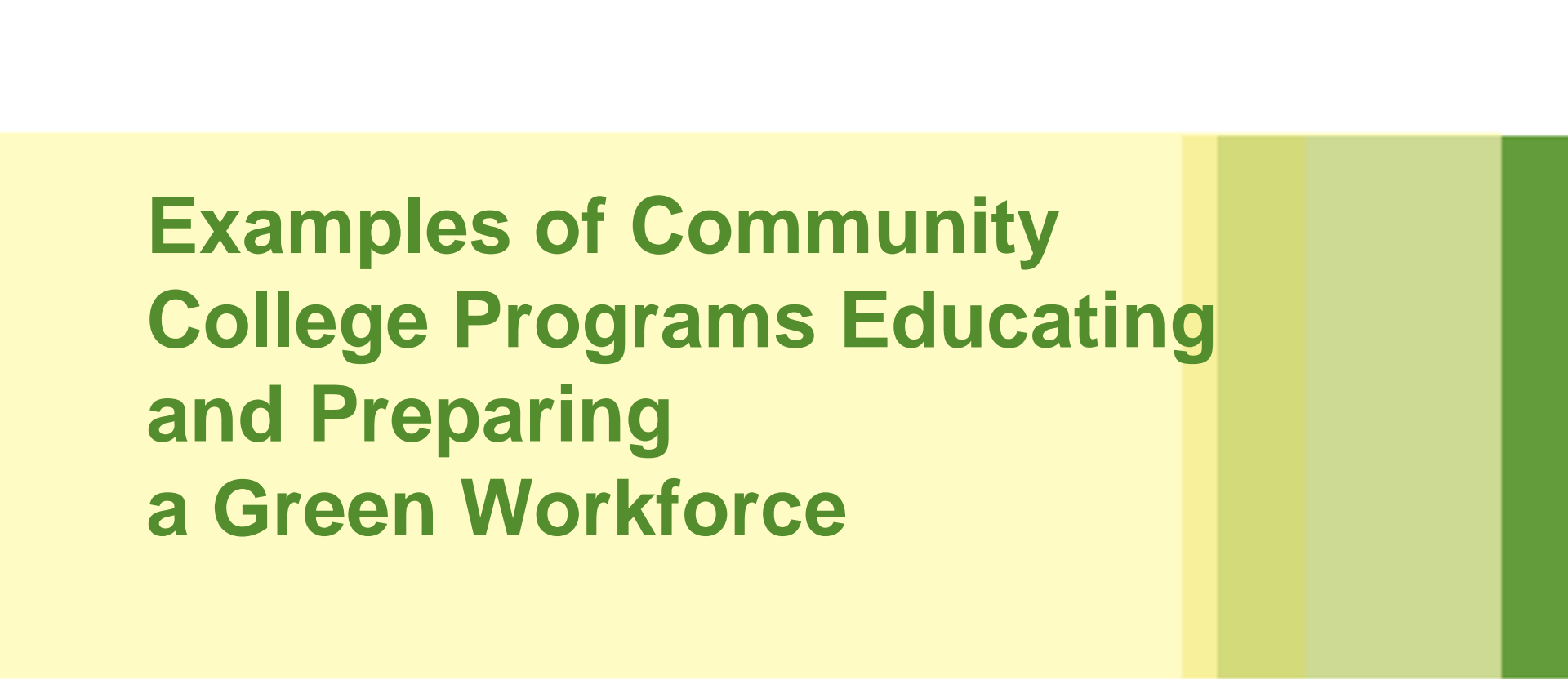
- **Geothermal Energy**
  - > Tapping underground reservoirs for steam and hot water
  - > Most geothermal reservoirs in AK and HI. Growing in popularity as heat source in the Northeast
  - > Jobs include:
    - > HVAC Technicians installing geothermal pumps
    - > Construction and Drilling Equipment Operators
    - > Surveyors



# Alternative Fuels

- **Biofuels**
  - > Using renewable plant- and animal-based materials to create liquid and solid fuels
  - > Most skill sets for biofuel refinery jobs are similar to those in traditional chemical manufacturing
  - > Biofuel Jobs include:
    - > Ethanol Plant Technician
    - > Chemical Plant Technician
    - > Biodiesel Laboratory Technician





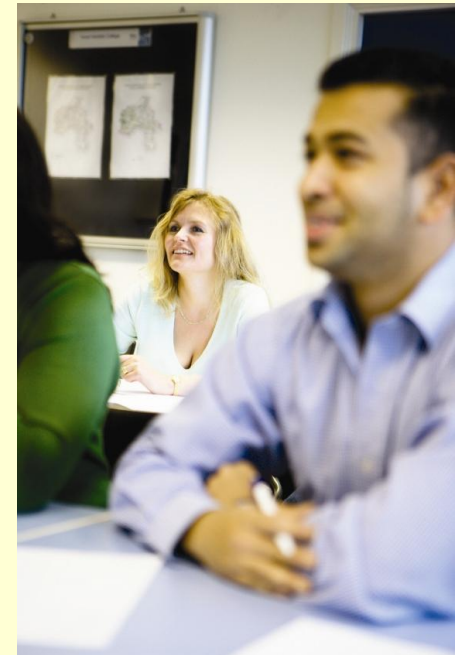
**Examples of Community  
College Programs Educating  
and Preparing  
a Green Workforce**

# Lansing CC, Lansing, MI

- USDOE \$1M Grant for Alternative Energy Initiative
  - > Incorporation of Alternative Energy into Existing Curricula and Campus Sustainability Efforts
  - > Courses in:
    - > Auto: Hybrid Vehicles
    - > Auto: Internal Combustion Engines By Fuel Cells
    - > HVAC and Building Construction: Energy Management Systems
    - > Geothermal, Solar, and Wind Energy
  - > A.A.S. degrees in alternative energy technology and energy specialist and Alternative Energy Engineering Technology (AEET) Certificate

# Red Rocks CC, Lakewood, CO

- AAS degree in Renewable Energy Technology combines existing elements of:
  - > HVAC
  - > Carpentry
  - > Construction Technology with
  - > Energy System Design and Audit
  - > Solar Panel Installation



# Santa Fe CC, Santa Fe, NM

- SFCC Sustainable Technology Center
  - > Credit and non-credit certificates
    - > Environmental Technologies
    - > Green Building Construction
    - > Solar Energy
  - > AAS degree in Environmental Technologies
    - > Water Conservation
    - > Solar Energy





# Great Basin College

## Elko, NV

- Distance Learning  
AAS degree in  
Industrial Energy  
Efficiency
  - > Combining courses from  
existing:
    - > HVAC
    - > Construction  
Technology
    - > Electrical Systems
    - > Millwright Technology



# Hudson Valley CC, Troy, NY

- Center for Energy Efficiency and Building Science
  - > Incorporating energy efficiency methods into building trades programs
  - > Introductory credit-free course on the fundamentals of photovoltaic system design and installation



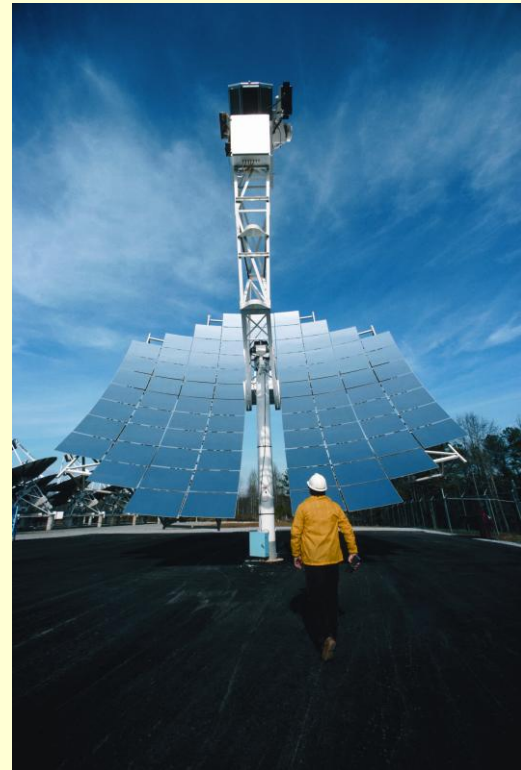
# Iowa Lakes CC, Estherville, IA

- AAS degree program in Wind Turbine Operation and Maintenance
  - > Owns and operates turbine at college and uses as educational laboratory
  - > Incorporating energy efficiency methods into building trades programs
  - > Summer Internship
  - > One-year diploma option



# Cape Cod CC, Barnstable, MA

- AAS degree in Environmental Technology with electives in:
  - > Solar and Wind Energy
  - > Energy Efficiency
  - > Energy Auditing



# Central Carolina CC Pittsboro, NC

- AAS degree in  
Alternative Energy  
Technology:
  - > Biofuels testing and  
production
  - > Constructing a pilot scale  
plant that will be able to  
produce both biofuel and  
ethanol



# Resources for Program and Curriculum Development

- Advanced Technology Environmental and Energy Center (ATEEC)
- Green for All
- U.S. Green Building Council
- National Wildlife Federation - Campus Ecology Program
- Federal Agency Websites
  - > U.S. Department of Energy – Office of Energy Efficiency and Renewable Energy
  - > Department of Labor, Employment and Training Administration

**Questions?**

# Discussion

- **What are the current resources and partnerships that CTE programs have to educate and prepare the future green workforce?**
- **What do CTE programs need to educate and prepare the future green workforce?**
  - > Curriculum Standards and Green Industry Certifications
  - > Green Education Pathways
  - > Best Practices
  - > Labor Market Information
  - > Strategic Partnerships with Green Employers