

Good, Green, Safe Jobs

University of California Los Angeles Labor
Occupational Safety and Health (LOSH) Program
and
Western Region Universities Consortium (WRUC)



This curriculum was developed under a grant from the National Institute of Environmental Health Sciences (NIEHS) Worker Education and Training Program (WETP).

Curriculum developed by:

- UCLA Labor Occupational Safety and Health Program
- University of Washington Northwest Center for Occupational Health and Safety

Icebreaker

Let's Play Star Search!

Let's Play Star Search!

- Take a handout with questions
- Walk around the room and introduce yourself to people
- Try to find someone who fits each of the descriptions in the squares
- Fill in as many squares as possible
- Make sure you have at least one complete row or column of squares filled in

Module One

Climate Change and the Big Picture



Module One Learning Objectives

By the end of this module, you will be able to:

- Understand why it's important to maintain sustainable usage of water, resources, and energy
- Understand climate change and how it affects low income and minority communities.
- Understand green buildings and green jobs and how they are one solution to the climate change crisis as well as the ongoing public health and economic crisis.
- Understand triple bottom line goals and key green policy.

Why do we care about the environment?

Human Survival Depends on Healthy Natural Ecosystems



Clean Air to breathe

Clean Food Sources
(grown in clean soil)

Clean Water
to drink, wash,
irrigate

Current Population:
Over 6.8 Billion

By 2050: Over 9 Billion

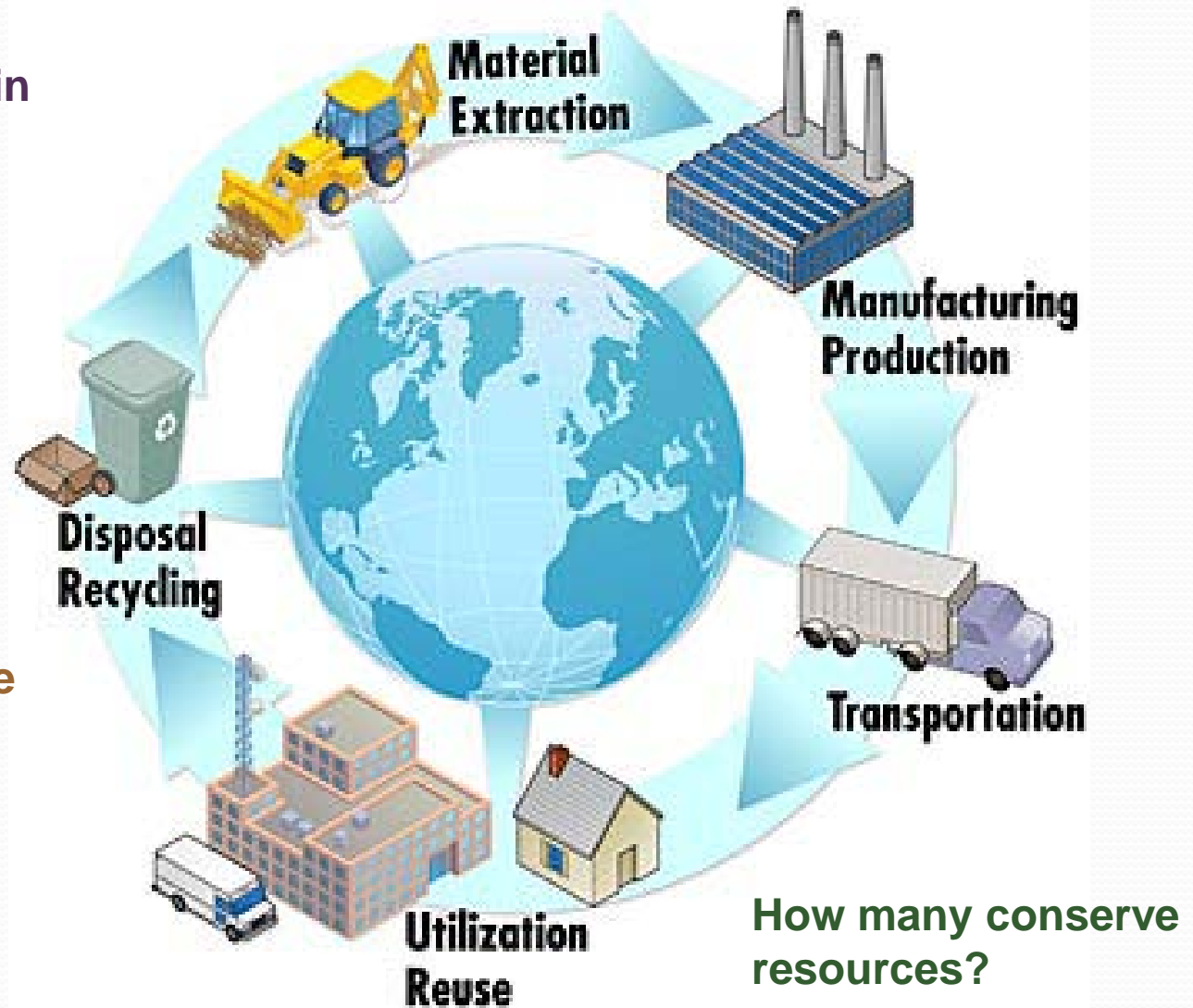
What will the world be like
then?

Manufacturing and Materials Production

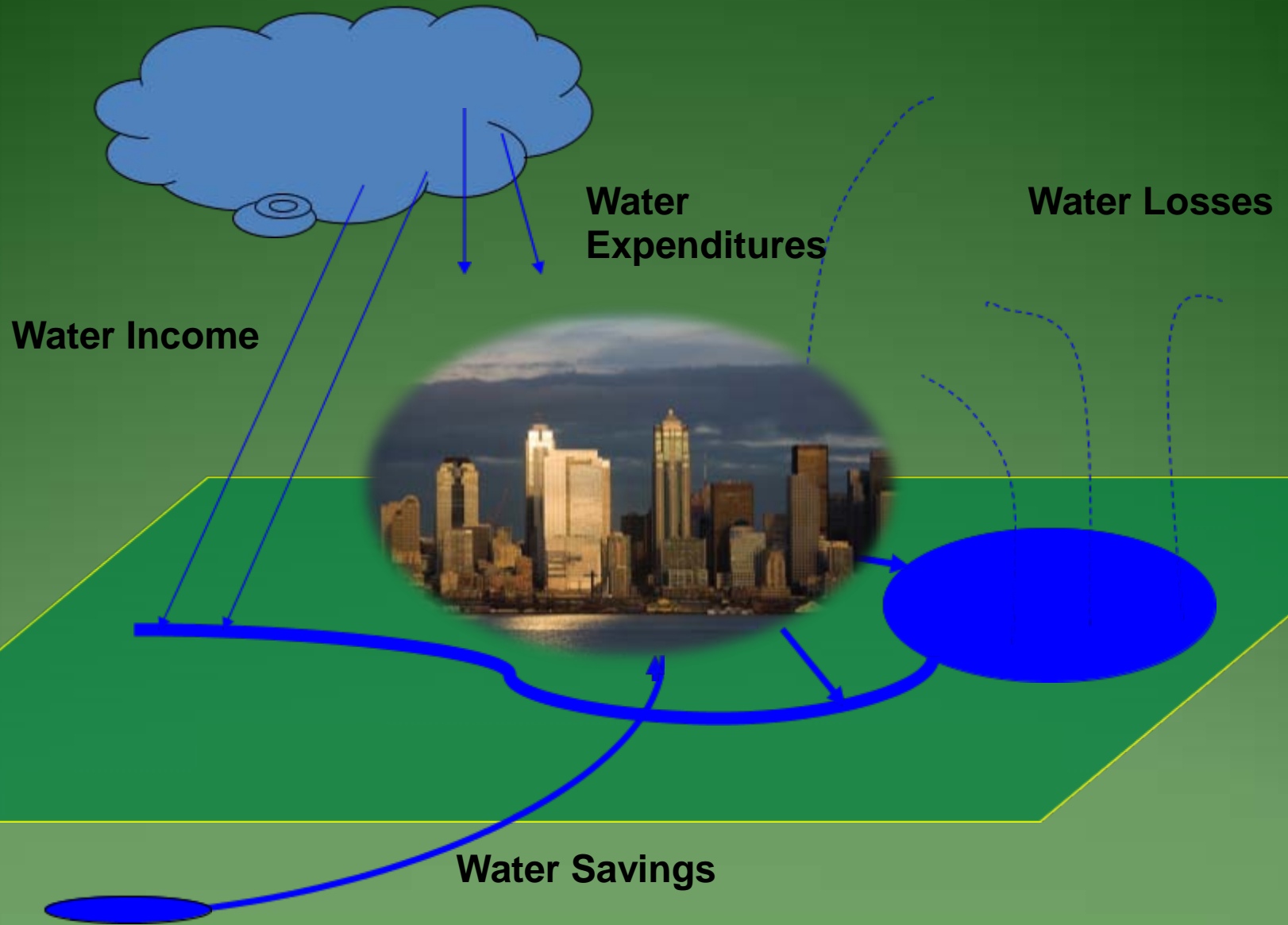
How many points in this cycle use:

Energy?
Water?
Resources?

How many generate pollution?



The Global Water Budget



Our Water Budget

- Since LA imports most of its water, we constantly operate in the red
- Our water is pumped hundreds of miles to get to our area where natural rainfall is limited
 - This consumes 19% of the total energy budget for the state!
- LA County residents use about 150 g/day
 - More in the summer, when natural reserves are lower

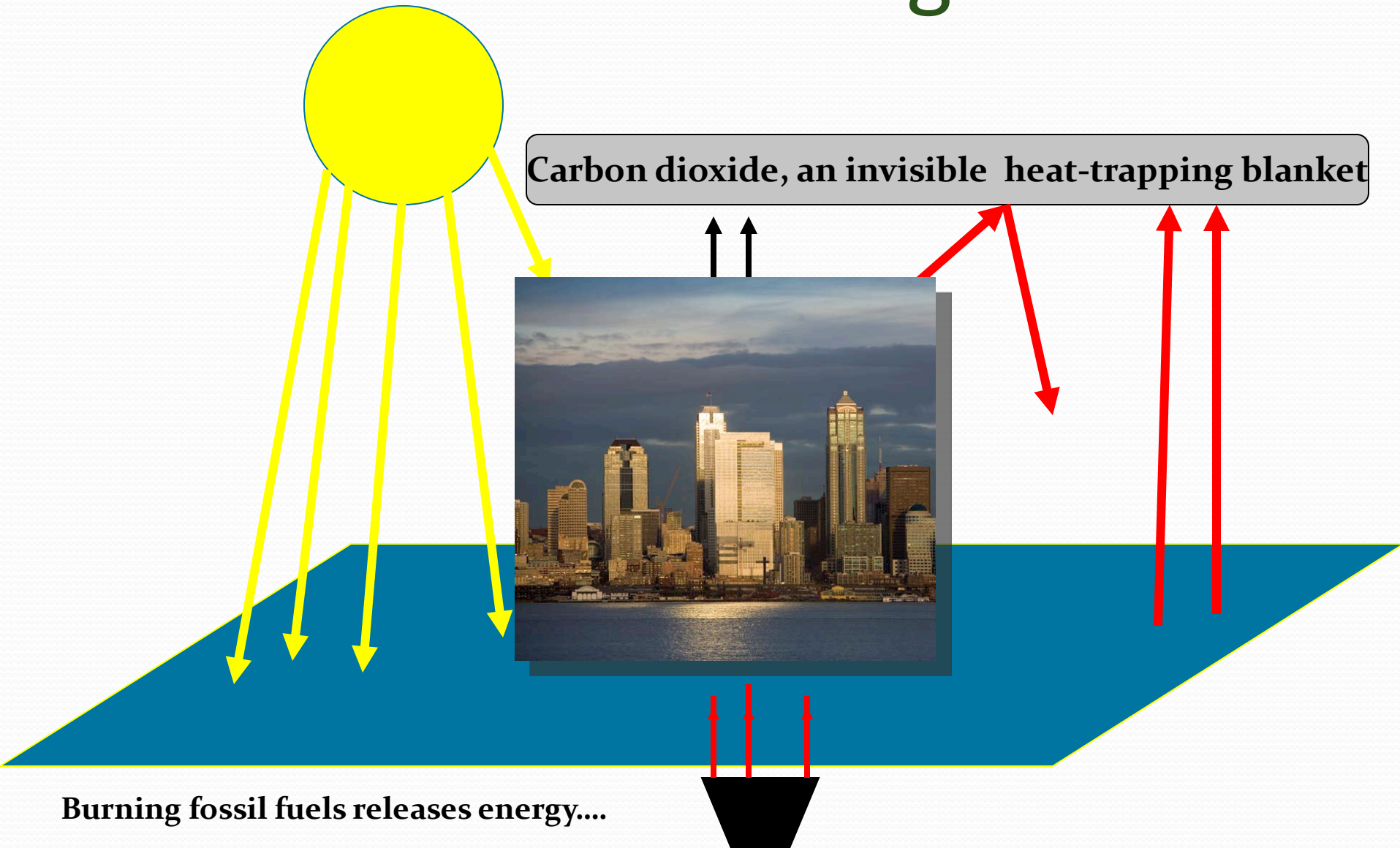
Our Energy Budget

- Right now we rely on our 'energy savings':
 - coal, oil, and natural gas
 - aka '**fossil fuels**'
- Fossil fuels are a limited resource that cannot be replaced
- Extracting, refining, and burning them creates pollution

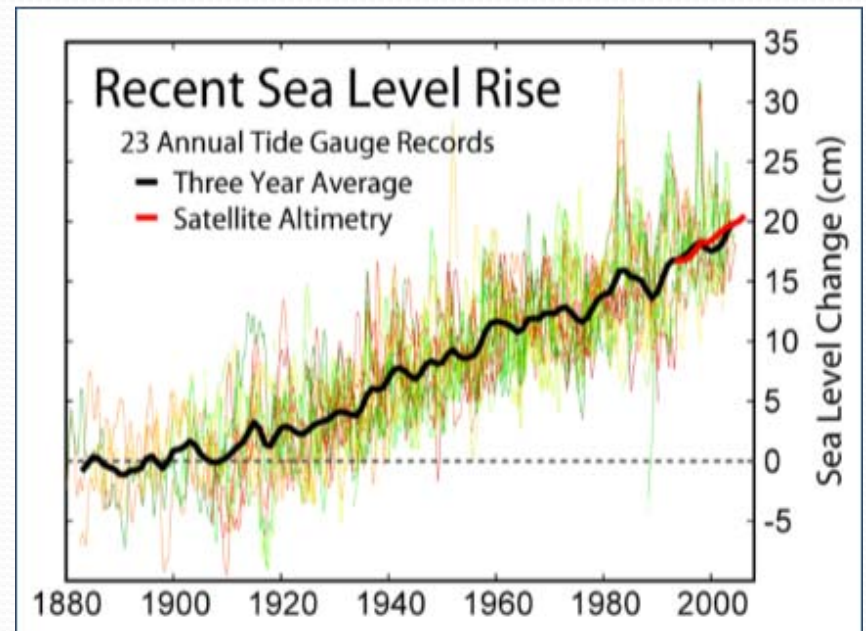
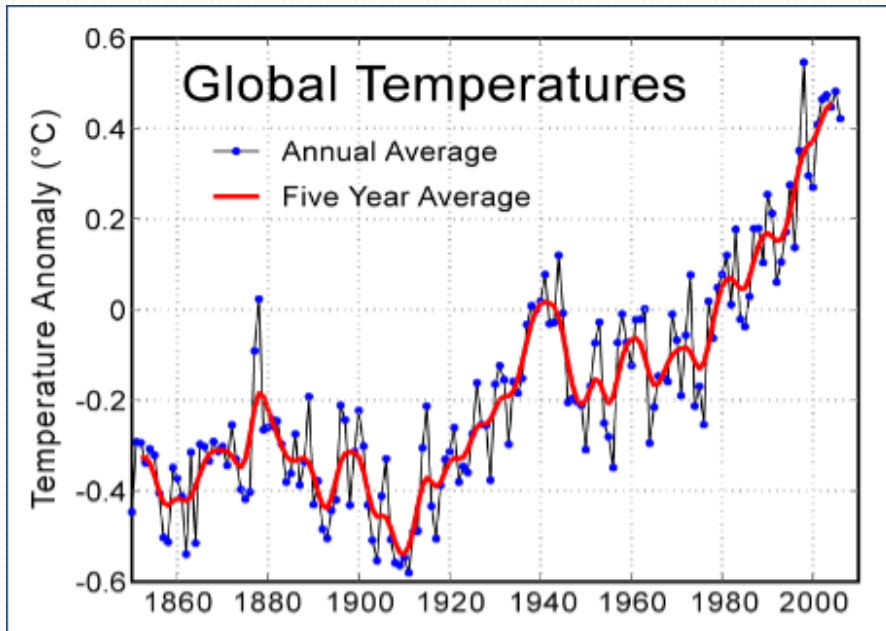


Is this sustainable?

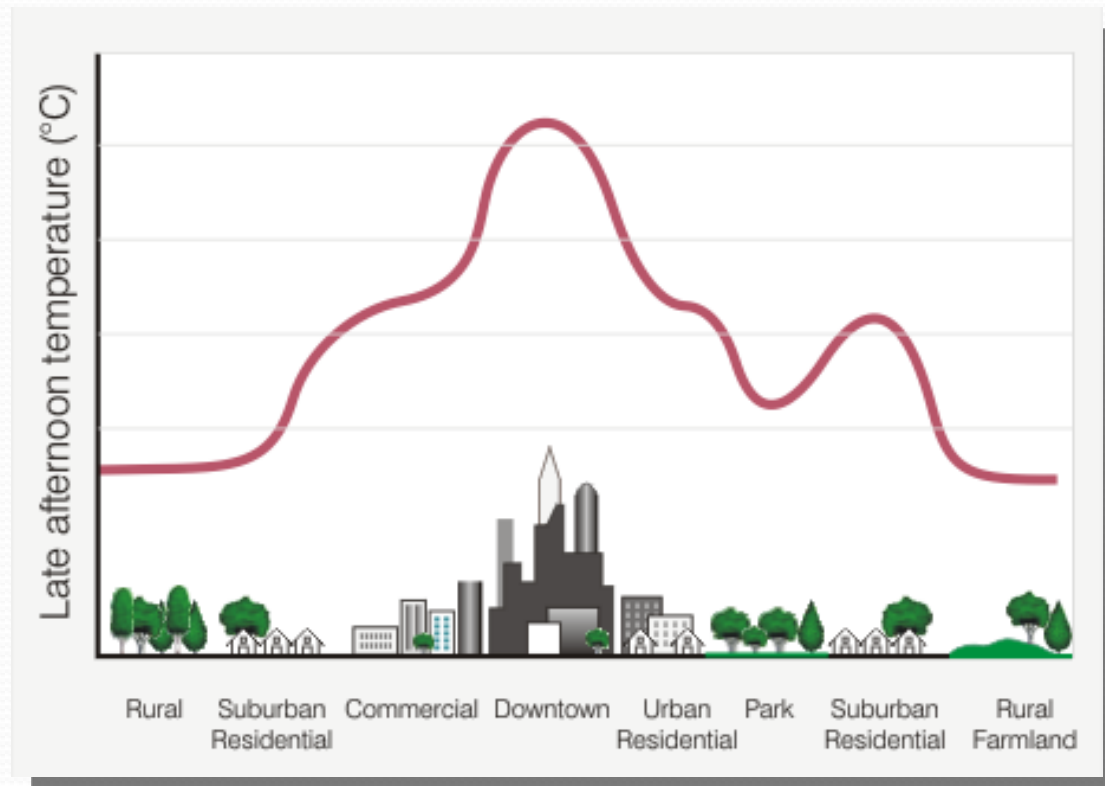
What is climate change?



Climate Change: Global Warming

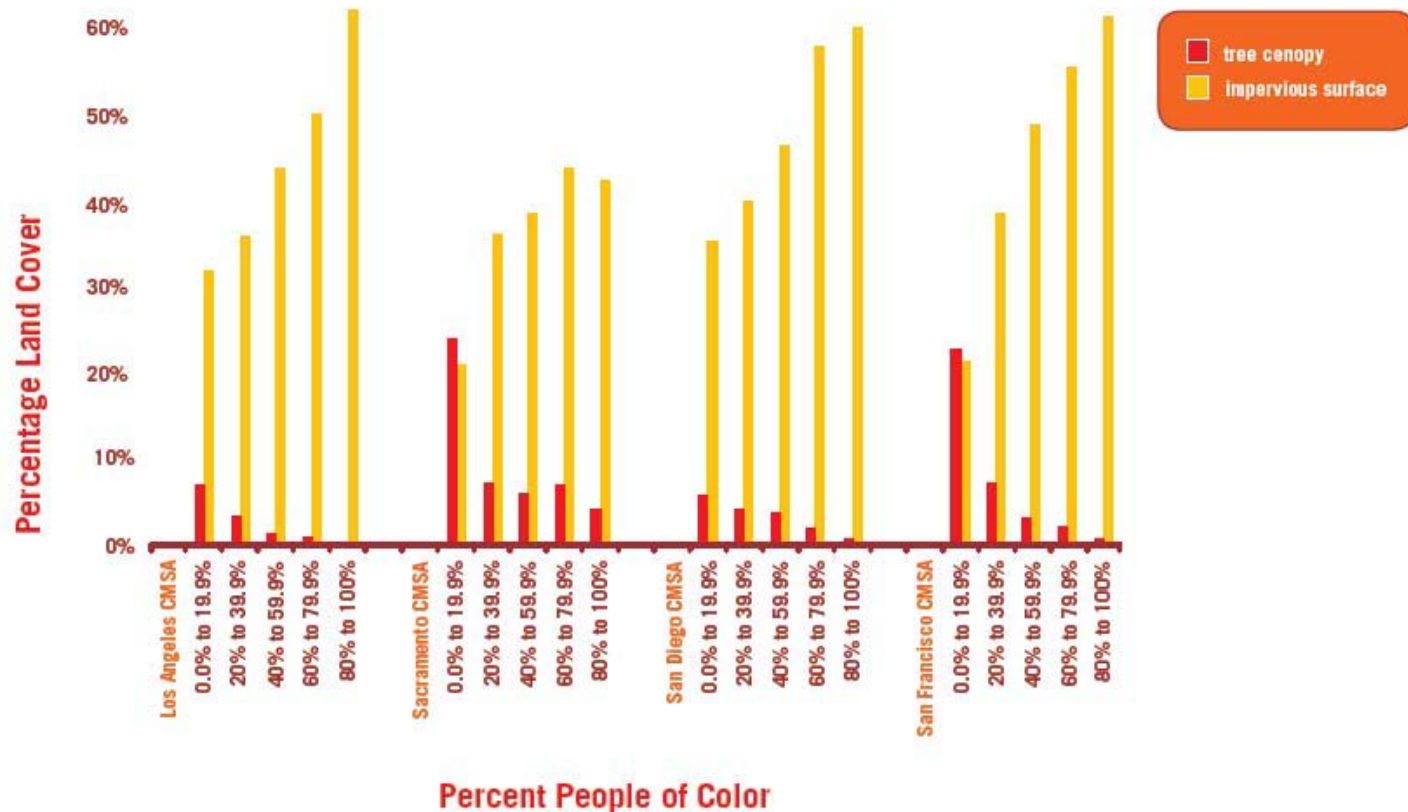


Urban Heat Islands



Heat Island Effects occur when warmer temperatures are experienced in urban landscapes compared to adjacent rural areas as a result of solar energy retention on constructed surfaces.

Disproportionate Impact on Communities of Color



So why should we care?

- Extreme heat
 - Rising cost of energy
- Smog
 - Asthma and Heart Disease
- Disproportionate impact on low-income and communities of color



What can we do?

Daily individual changes are good, but we need large scale solutions that:

**Improve the environment
while also putting people
from disadvantaged
communities back to work**



Green Jobs



What is a GREEN JOB?

- An environmentally and economically sustainable job.
- A job that cleans up pollution and improves public health.
- A job that can support a family and that lifts communities out of poverty.
- A job that provides training and useful skills and protects worker health.

• Examples:

- Green Building Construction Worker
- Solar Panel Installer
- Green Building Architect
- Organic Farmer
- Waste Recycler

Green Jobs for our Communities

How do we make sure that our communities are not left out of these green jobs?

Strategic Alliances

- Los Angeles Apollo Alliance
- Community, Labor, and Environmental Groups
- Project Labor Agreements (PLAs)



Los Angeles Green Retrofit and Workforce Program Ordinance

- Triple Bottom Line goals:
 - reduce emissions,
 - save money,
 - create jobs,
 - improve health and safety





Summary

- Climate change is a real problem that disproportionately impacts low income and minority communities.
- Green building and green jobs are one solution to the environmental and economic crises.
- Strategic alliances between labor, community, and environmental groups help ensure that underserved communities are not left out of the green movement or green jobs.

Module Two

Good Jobs, Green Jobs, Safe Jobs



Module Two Learning Objectives

By the end of this module, you will be able to:

- Describe what makes a job a good, green, safe job.
- Describe how green jobs provide career pathways.
- Think critically individually and as a team.

What is a GREEN JOB?

- A job that cleans up pollution and helps improve the environment.
- Are green jobs really new???



Examples of Green Jobs

- Green Construction:
 - Energy efficiency retrofits
 - Electricians – Solar Panels
 - Ironworkers – Wind Turbines
 - Laborers/Insulators – Environmental Remediation
- Green Building Architect
- LEED Consultant
- Home Performance Specialist
- Sustainable Landscaper
- Environmentally Certified Furniture Maker
- Green Manufacturing Jobs

Case Studies Activity

- Would you consider this a green job?
Why or why not?
- Would you consider this a good job?
Why or why not?
- Would you consider this a safe job?
Why or why not?

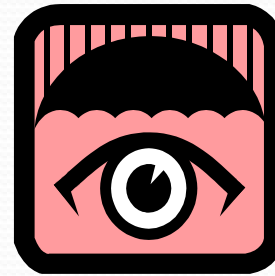


Case Studies Activity

- What makes a job Good? Safe?
- Are Green jobs automatically Good jobs? Safe jobs?

Good Jobs

- Benefits - Dental, Medical, Pension, Vision
- Paid Vacation and Sick Time
- Family Supporting Living Wage
- Steady Hours and Income
- Career Ladder
- Union Representation
 - Collective Bargaining
 - Apprenticeship training



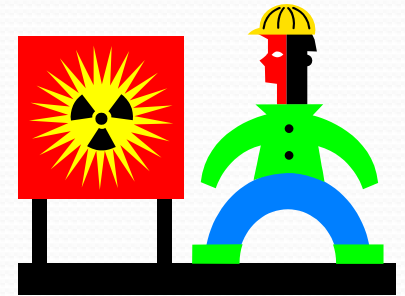
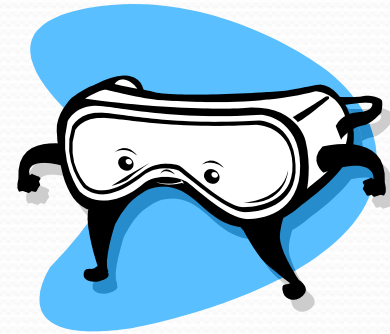
Green Jobs

- Environmental Remediation
- Green Building Construction and Retrofits
- Recycling
- Renewable Energy
- Solar Panels
- Sustainable Landscaping



Safe Jobs

- Control measures to protect workers from hazards
- Safety equipment
- Safety training for new employees *and* when job tasks change
- Worker input for improving processes and eliminating hazards



Pipelines

UNION APPRENTICESHIP PIPELINE – PATHWAY OUT OF POVERTY



NON-UNION BASIC TRAINING – BROKEN PIPELINE





Summary

- We argue that green jobs should also be good, safe jobs that protect worker health and provides pathways out of poverty for disadvantaged populations.
- Although you may have many different jobs in your life, it is important to recognize the difference between a career that will provide long-lasting, fulfilling employment and a dead-end job.

Module Three

Green Building and LEED



Module Three Learning Objectives

By the end of this module, you will be able to:

- Describe why buildings are an important focus for energy conservation efforts.
- Define key green building concepts such as LEED.
- Solve a problem as a team.

Why Buildings?

According to the US Green Building Council, buildings in the US account for:

- 72 % of electricity consumption
- 39% of energy use
- 38% of all carbon dioxide (CO₂) emissions
- 40% of raw materials use
- 30% of waste output (136 millions tons annually, the largest single source in the waste stream)

Defining Green Building



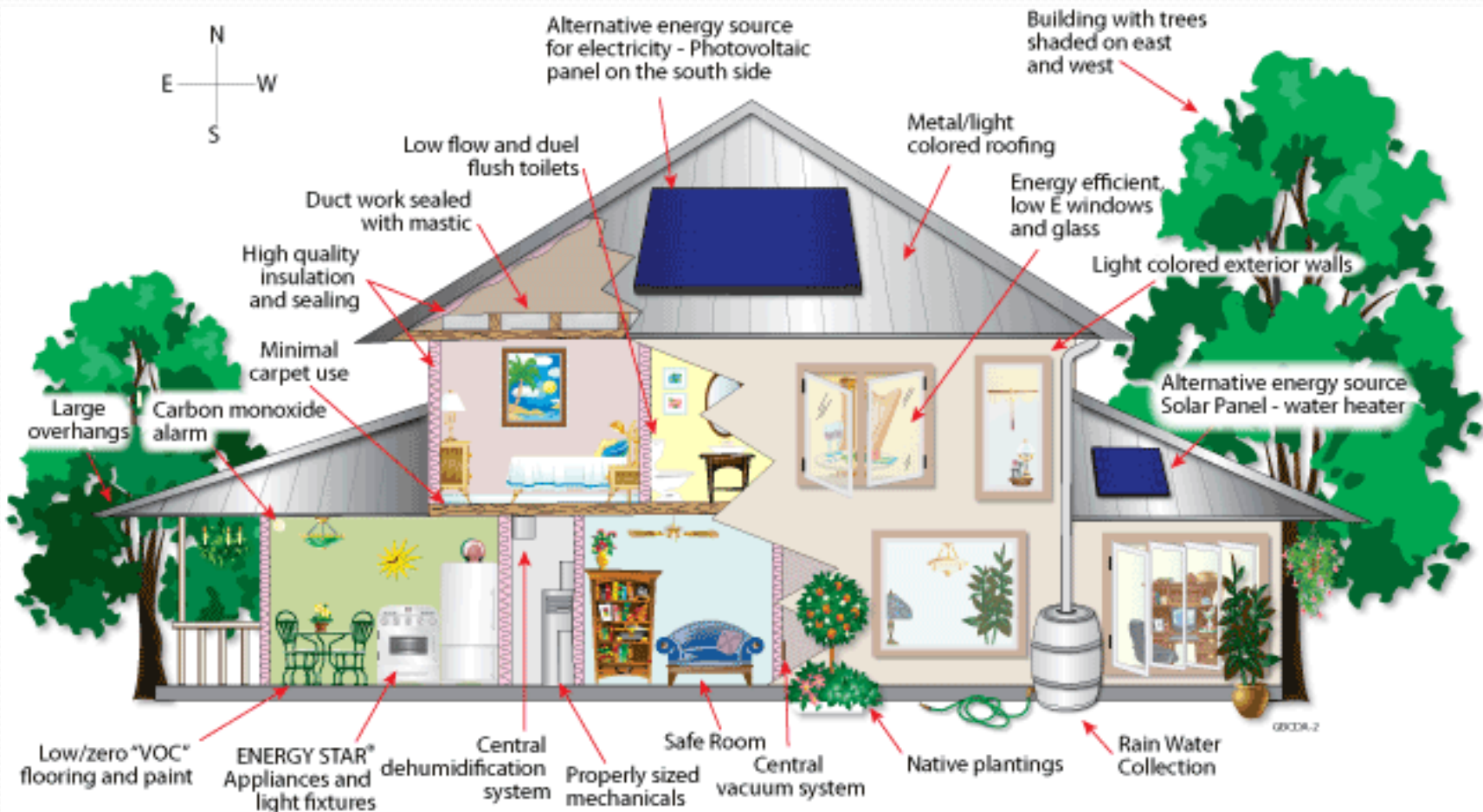
Green Building: A construction approach that focuses on reducing a building's impact on the environment by making it more energy efficient and conserving resources for the life-cycle of the building.

Green Building Game

Directions:

- Your team will get a flipchart paper and a set of markers.
- Your team will have 5-10 minutes to draw what you think a green building looks like.
- Your team will report back on your green building.
- Your team's building will be certified as silver, gold, or platinum based on the number of green features you can come up with and how creative you are

What's in a green building?



Green Building Rating System

LEADERSHIP in
ENERGY and
ENVIRONMENTAL
DESIGN



<i>Site</i>	planning that promotes sustainability
<i>Water</i>	conservation and efficiency
<i>Energy</i>	conservation and efficiency
<i>Materials</i>	conservation and “cradle-to-cradle”
<i>Indoor</i>	environmental <i>quality</i>

A Nationally Recognized system for designing, constructing, operating and certifying Green Building Projects

Measuring Green Buildings.....



LEED Checklist



LEED-NC

LEED-NC Version 2.2 - Average Responsibility Allocations

Project Name: Project name

Project Address

Yes	?	No				
			1		Sustainable Sites	14 Points
Y					Prereq 1	Required
					Credit 1	1
					Credit 2	1
					Credit 3	1
					Credit 4.1	1
					Credit 4.2	1
					Credit 4.3	1
					Credit 4.4	1
					Credit 5.1	1
					Credit 5.2	1
					Credit 6.1	1
					Credit 6.2	1
					Credit 7.1	1
					Credit 7.2	1
					Credit 8	1

Yes	?	No				
			3		Water Efficiency	5 Points
					Credit 1.1	1
					Credit 1.2	1
					Credit 2	1
					Credit 3.1	1
					Credit 3.2	1

Yes	?	No				
			8		Energy & Atmosphere	17 Points
Y					Prereq 1	Required
Y					Prereq 2	Required
Y					Prereq 3	Required
					Credit 1	1 to 10
					10.5% New Buildings or 3.5% Existing Building Renovations	1
					14% New Buildings or 7% Existing Building Renovations	2
					17.5% New Buildings or 10.5% Existing Building Renovations	3
					21% New Buildings or 14% Existing Building Renovations	4
					24.5% New Buildings or 17.5% Existing Building Renovations	5
					28% New Buildings or 21% Existing Building Renovations	6
					31.5% New Buildings or 24.5% Existing Building Renovations	7
					35% New Buildings or 28% Existing Building Renovations	8
					38.5% New Buildings or 31.5% Existing Building Renovations	9
					42% New Buildings or 35% Existing Building Renovations	10
					Credit 2	1 to 3
					On-Site Renewable Energy	
					2.5% Renewable Energy	1
					7.5% Renewable Energy	2
					12.5% Renewable Energy	3
					Credit 3	1
					Credit 4	1
					Credit 5	1
					Credit 6	1

15			Contractor Responsibility
	19		Design Build or Shared Responsibility
			Architect / Owner / Consultant Responsibility

Sellen

Yes	?	No				
			8		Materials & Resources	13 Points
Y					Prereq 1	Required
					Credit 1.1	1
					Credit 1.2	1
					Credit 1.3	1
					Credit 2.1	1
					Credit 2.2	1
					Credit 3.1	1
					Credit 3.2	1
					Credit 4.1	1
					Credit 4.2	1
					Credit 5.1	1
					Credit 5.2	1
					Credit 6	1
					Credit 7	1

Yes	?	No				
			6		Indoor Environmental Quality	15 Points
Y					Prereq 1	Required
Y					Prereq 2	Required
					Credit 1	1
					Credit 2	1
					Credit 3.1	1
					Credit 3.2	1
					Credit 4.1	1
					Credit 4.2	1
					Credit 4.3	1
					Credit 4.4	1
					Credit 5	1
					Credit 6.1	1
					Credit 6.2	1
					Credit 7.1	1
					Credit 7.2	1
					Credit 8.1	1
					Credit 8.2	1

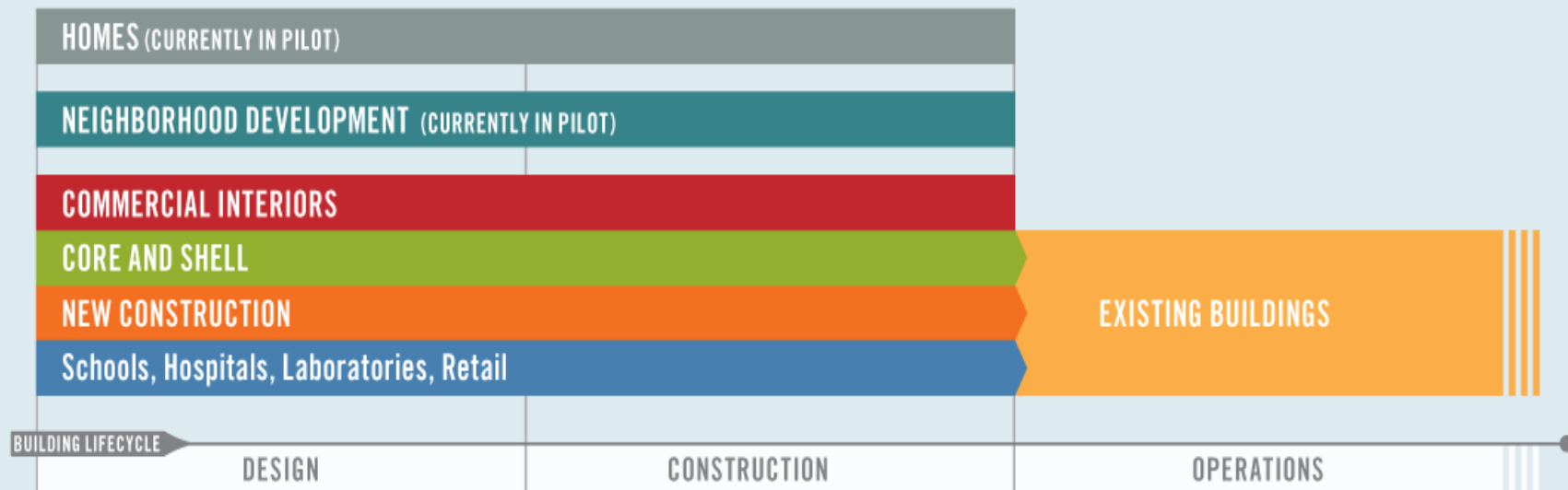
Yes	?	No				
			1		Innovation & Design Process	6 Points
					Credit 1.1	1
					Credit 1.2	1
					Credit 1.3	1
					Credit 1.4	1
					Credit 2	1

Yes	?	No				
					Totals	Possible Points 67

Certified: 26-32 points, Silver: 33-38 points, Gold: 39-51 points, Platinum: 52-69 points

LEED Certification Types

LEED addresses the complete lifecycle of commercial buildings.
Programs are in pilot for Homes and Neighborhoods.





Summary

- We learned why buildings are an important focus for energy efficiency efforts.
- LEED is a green building rating system that is an internationally recognized standard for measuring building sustainability.
- Green building retrofits improve the environment and help towards LEED certification.
- Retrofits aimed at making major building systems more energy efficient have the most potential to create good, green construction jobs.

Module Four

The Greening of Southie



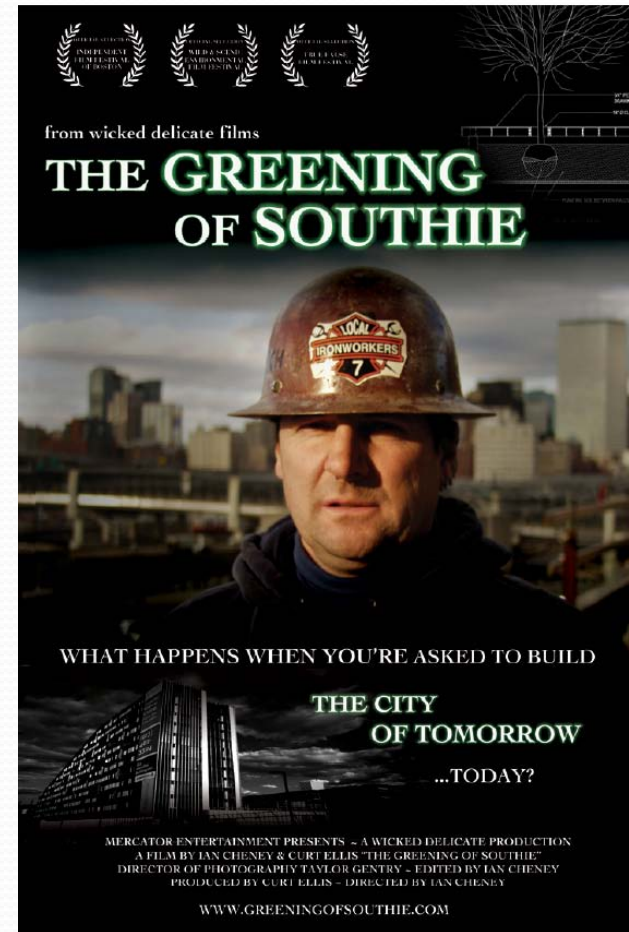
Module Four Learning Objectives

By the end of this module, you will be able to:

- Identify the economic and environmental benefits and drawbacks of green building.
- Describe the health benefits and hazards of green building.
- Analyze a film and look for themes.

The Greening of Southie

- Environment
- Economy
- Health and Safety



The Greening of Southie:

Good, Green, Safe Jobs Activity

- Take a look at the worksheet.
- The class will break into 3 teams.
 - Team 1 answers the ENVIRONMENT questions.
 - Team 2 answers the ECONOMY questions.
 - Team 3 answers the HEALTH and SAFETY questions.
- Takes notes on the questions as you watch the movie.
- Your team will have 15 minutes to share your ideas and discuss them.
- Pick one person from your group to report back to the class.



Summary

- While green buildings have clear benefits, the effects of green buildings on the environment, the economy, and worker and community health are often more complex in reality.
- We must take active roles in our workplaces, families, and communities to ensure that green buildings produce the desired benefits that can be enjoyed by all.

Module Five

Why do workplace injuries and illnesses occur?

How can we prevent them?



Module Five Learning Objectives

By the end of this module, you will be able to:

- Explain the impact of work-related injuries and illnesses on workers, employers and society.
- Describe the underlying factors that contribute to workplace injuries and illnesses.
- Identify the range of health and safety hazards that may be found in a workplace.
- Understand that, without the proper controls in place, green jobs can be just as hazardous as traditional jobs.



Impact of Workplace Injuries

How many workers in California are injured or killed from hazards related to the job each year?



Agree or Disagree?

“Most injuries and illnesses on the job happen because workers make mistakes or are careless.”

Accidents in the News

San Francisco Chronicle

**Unocal Says Error
Caused Blaze**

San Francisco Examiner

**PG&E punishing workers
for Dec. 8 blackout**

The New York Times

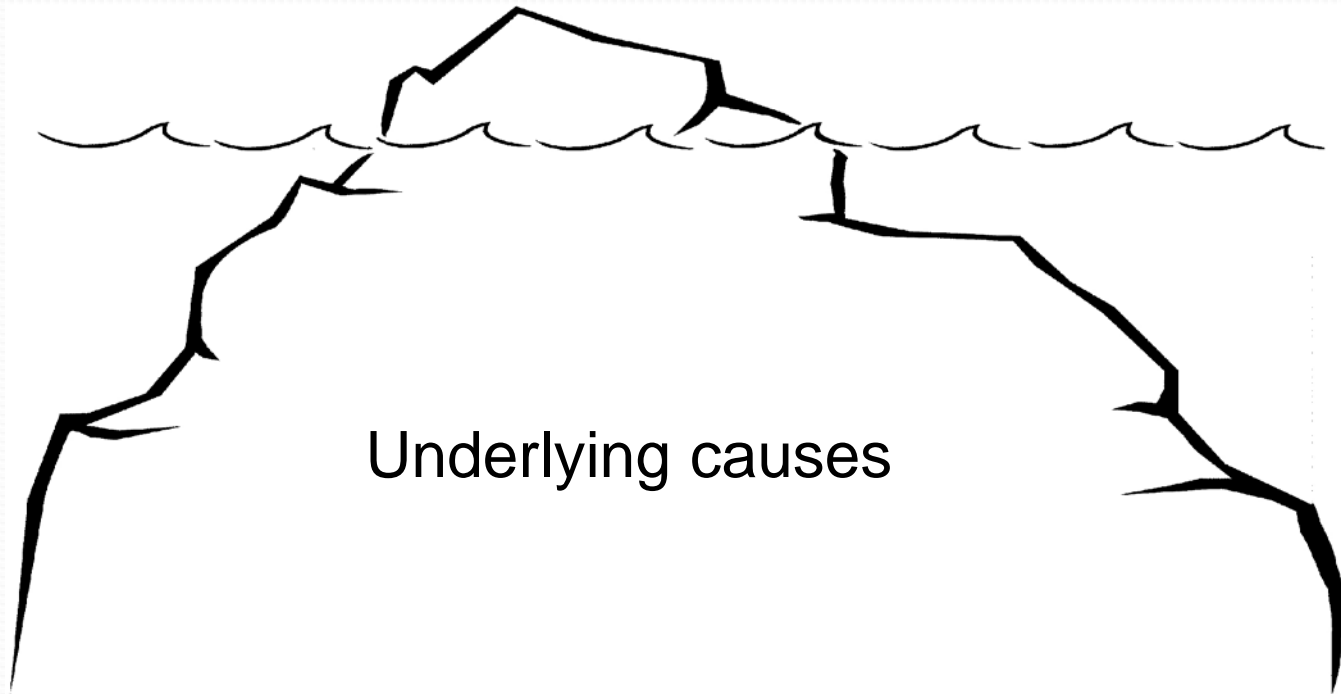
Disaster in Bhopal: Where Does Blame Lie?

Las Vegas City Center



Direct and Underlying Causes

Direct cause (unsafe act or technical failure)



Underlying Causes of Injuries and Illnesses

- Job tasks and procedures
- Work environment
- Management and organization
- Workforce factors

What is a job hazard?

- Something on the job that can harm you physically or mentally.
 - Example: Slippery floor
- What job hazards have you experienced?



Safety Hazards

- hot surfaces
- slippery floors
- unsafe ladders
- working at heights
- machines
- knives
- hot grease
- electricity
- lack of fire exits
- cluttered work areas
- violence
- poorly designed tools
- heavy lifting
- inadequate lighting
- vehicles (cars, tractors, forklifts, etc)
- unshored trenches
- confined spaces

Chemical/Biological Hazards

Chemical

- cleaning products
- pesticides
- solvents
- acids
- asbestos
- lead paint
- wood dust
- latex
- carbon monoxide

Biological

- infectious diseases
- molds
- HIV, Hepatitis, other viruses
- bacteria
- animals
- insects

Other Health Hazards

- noise
- radiation
- heat or cold extremes
- vibration
- ergonomic hazards:
 - repetitive motion
 - awkward posture
 - frequent lifting
- stressors such as:
 - violence
 - fast pace of work
 - harassment
 - workload
 - shift work
 - long hours
 - angry customers or clients
 - poor supervision

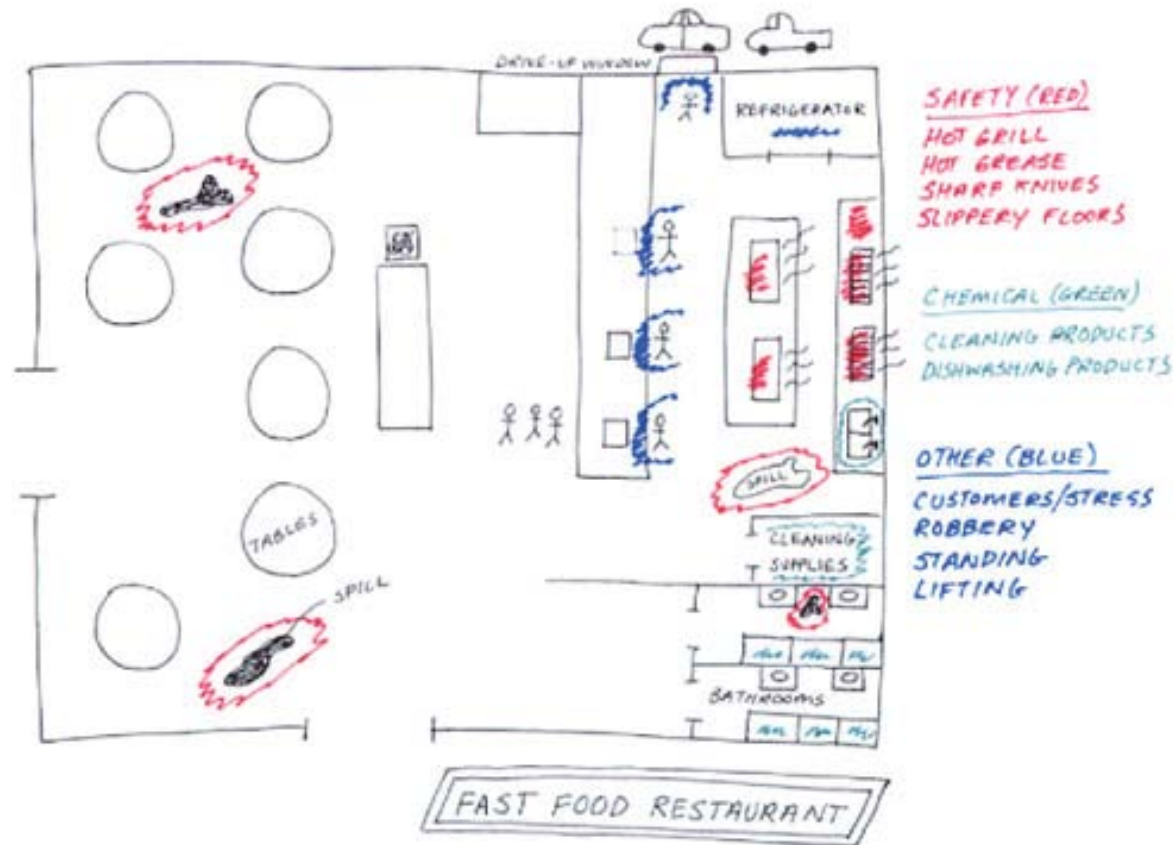
Sample Hazard Map

Students will draw maps in color:

Red = Safety Hazards

Green = Chemical Hazards

Blue = Other Health Hazards



Hierarchy of Controls



Summary

- Although some job hazards are obvious, others may be hidden or have effects that do not show up until later.
- There are many different tools that you can use to figure out what the job hazards are where you work.
- A green job may be as hazardous as a traditional job.
- Using the hierarchy of controls, we can implement the best solutions to control hazards on both regular and green jobs.

Module Six

Case Studies



Module Six Learning Objectives

By the end of this module, you should:

- Understand the hazards of green jobs using real life stories.
- Know what can be done to prevent green job hazards.

Solar Panel Installer Dies From Fall



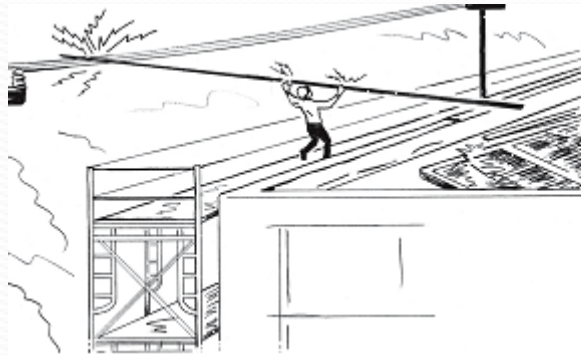
Weatherization Worker Gets Electrocuted



Wind Turbine Tower Collapses Crushing Worker



Solar Technician Electrocuted From Contact With Overhead Power Lines





Summary

- It is important to know what protections employers must provide and also what we as workers can do to keep ourselves safe on the job – whether it is green or otherwise.

Module Seven

Rights and Regulations

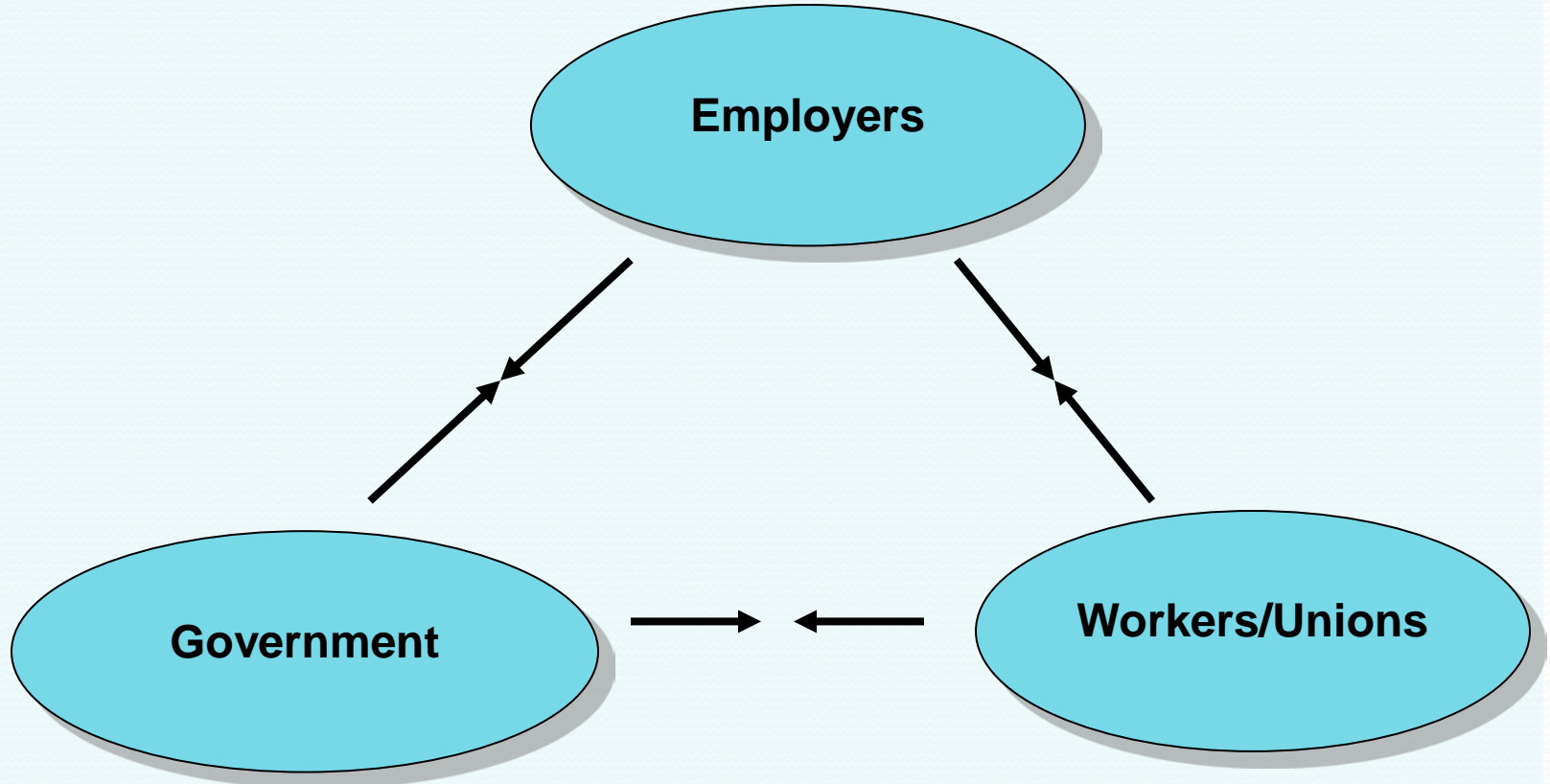


Module Seven Learning Objectives

By the end of this module, you will be able to:

- Explain the role of govt agencies in protecting worker health and the environment
- Describe Cal/OSHA and its main functions
- Explain the origins of key agencies and regulations
- Describe how worker health and environmental regulations relate to the green jobs movement today

Who is responsible for workplace safety?



“Alphabet Soup”

What do these acronyms mean??

- OSHA
- Cal/OSHA
- EPA
- Cal/EPA
- HAZWOPER

Overview of Cal/OSHA

- **California Occupational Safety and Health Standards Board** sets workplace health and safety standards.
- **Cal/OSHA Enforcement Unit** responds to complaints and accident reports, inspects workplaces, and issues citations and fines.
- **Cal/OSHA Consultation Service** offers assistance to employers and employees.
- **California Occupational Safety and Health Appeals Board** hears appeals of citations and fines.

Cal/OSHA Standards

General Cal/OSHA standards:

- Injury and Illness Prevention Program standard
- Hazard Communication standard (Aka “Right to Know”)
- Access to Employee Exposure and Medical Records standard
- Log of Work-Related Injuries and Illnesses (Cal/OSHA Form 300).

Specific Cal/OSHA standards:

- Provide protection against specific hazards.
- Set out detailed rules that must be followed or minimum levels of protection that must be achieved.
- Cover a wide range of hazards, from toxic substances to specific operations such as roofing.

Example: Las Vegas City Center



Overview of EPA

- Enact federal laws and regulations to protect the environment—examples include:
 - Clean Air Act
 - Clean Water Act
 - Toxic Substances Control Act
 - Superfund



How did we get here?



Valley of the Drums – Kentucky , 1967-77
Painting and coating industry waste, about 4,000 drums

Del Amo/Montrose Sites

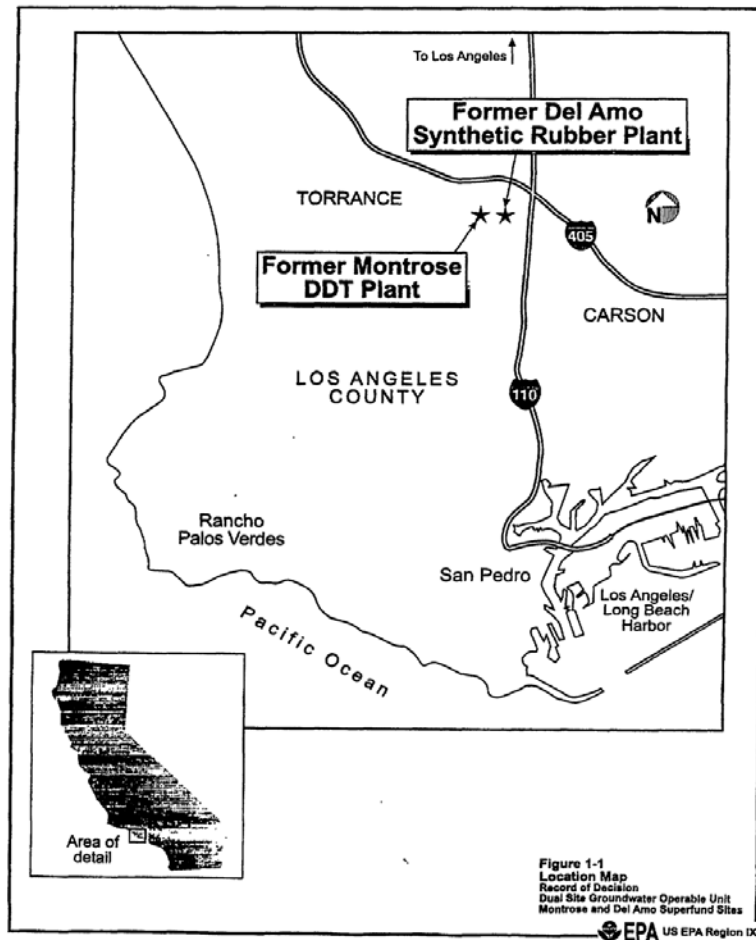
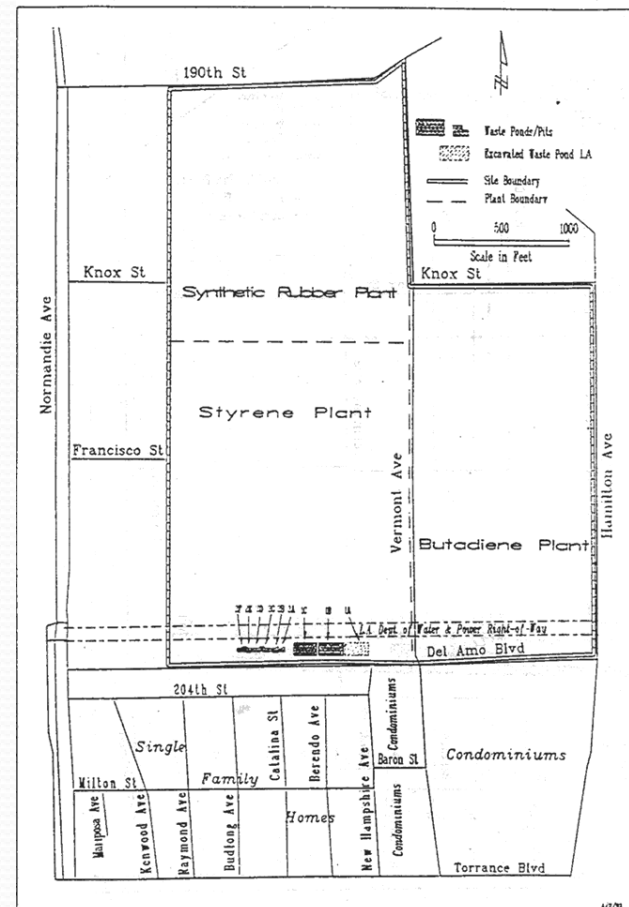


Figure 2: Former Rubber Manufacturing Facilities at the Del Amo Study Area.



HAZWOPER

- Hazardous Waste Operations and Emergency Response
- Who is covered under the standard?
 - Hazardous waste site workers:
 - At federal or state Superfund sites
 - At hazardous waste sites designated for cleanup by other govt agencies
 - At sites where the company or “responsible party” is voluntarily cleaning up a site recognized by a govt agency as an uncontrolled hazardous waste site
 - At solid waste disposal sites with areas in need of “corrective action”

Gulf Coast Clean-Up Efforts



Gulf Coast Clean-Up Efforts





Green Jobs: Environment, Health, Jobs

- **Environment Benefits**

- Clean up the mess
- Prevent climate change

- **Worker Health Protection**

- Training and protection required
- Employer, worker and govt involvement

- **Job Creation**

- Opportunities for workers with appropriate knowledge and skills

Conclusion and Evaluation

Summary of Training

- We have learned about green jobs and green buildings.
- We learned green terminology and what it means for a job to be a good, green, safe job with a career path.
- We also covered some of the health and safety issues of green construction jobs and how both workers and employers can minimize these hazards.
- Finally we talked about what it takes for you to get into a good, green construction job.

Are there any remaining questions or comments?



Evaluation

- Name one thing you liked about today's training.
- Name one thing you felt could have been better.



THANK YOU!

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