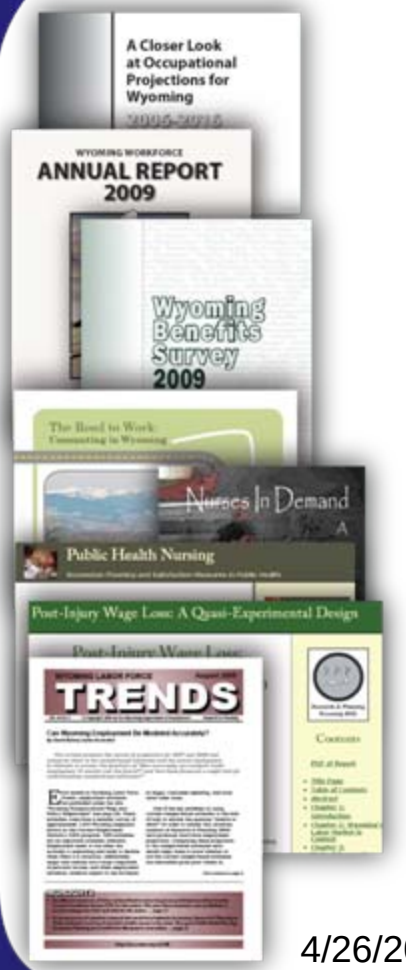
A Change in Course: The Regulatory Component



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Research & Planning
Wyoming Department of Employment

Researching the Green Economy Conference

Renaissance Des Moines
Des Moines, Iowa

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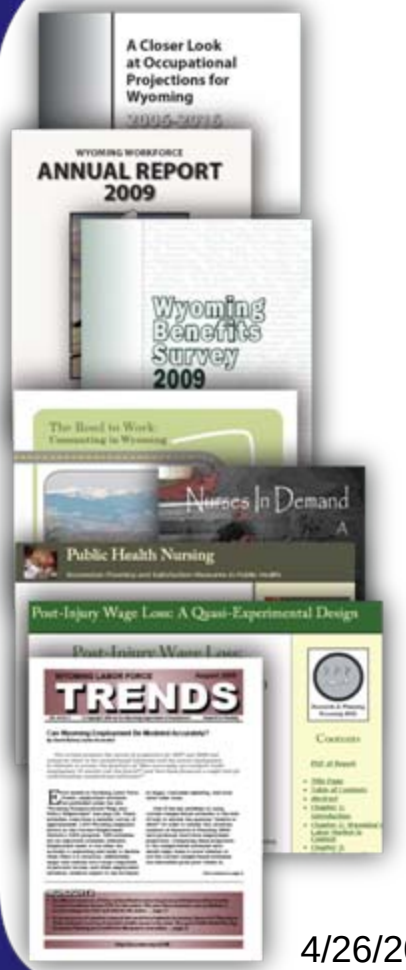
The Regulatory Component



I. Introduction
II. The Setting
III. Substantive Findings
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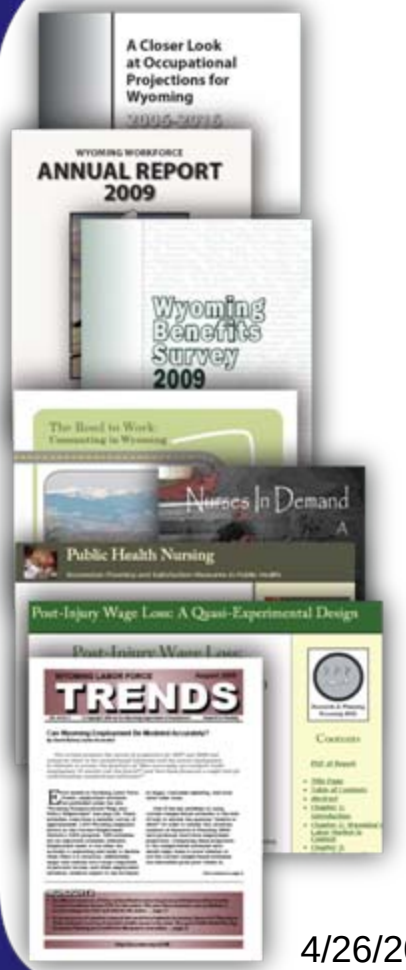
Introduction

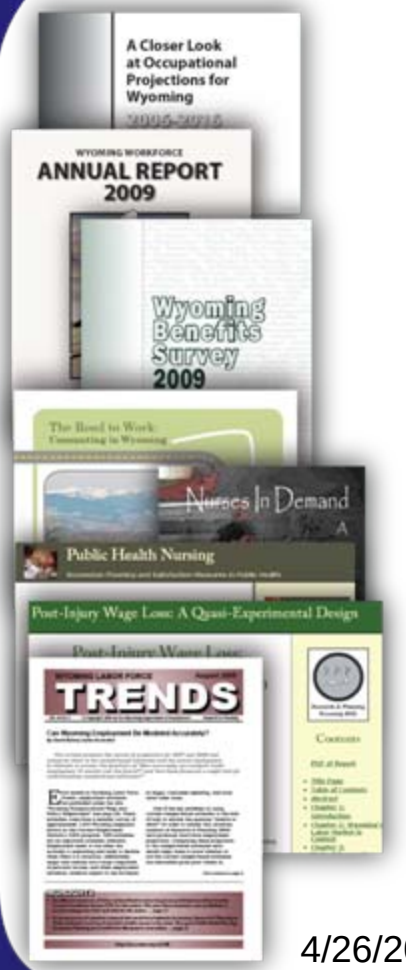


- All energy efficiency innovations need to be evaluated for their potential environmental impact

- Problem: Large scale investment technology changes the historic course of occupational projections

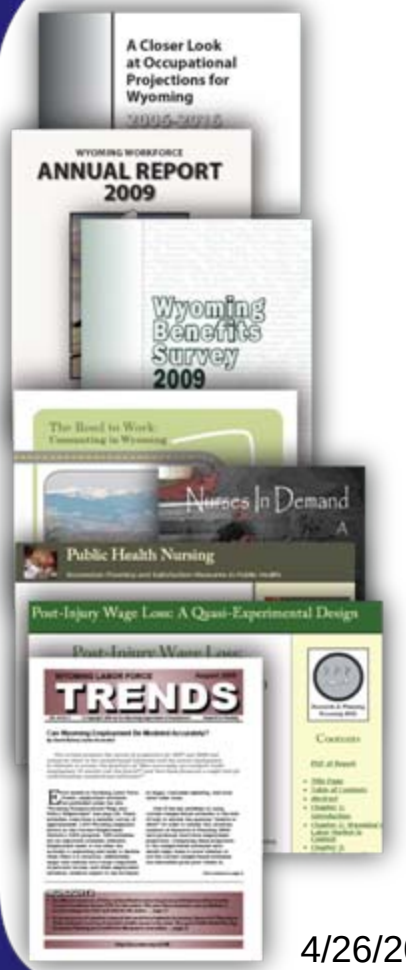
Introduction

Even technologies with the most benevolent appearance may have regulatory side effects



- Oil used in wind generator gear boxes
- Water returned from ground source heat pump systems

Introduction

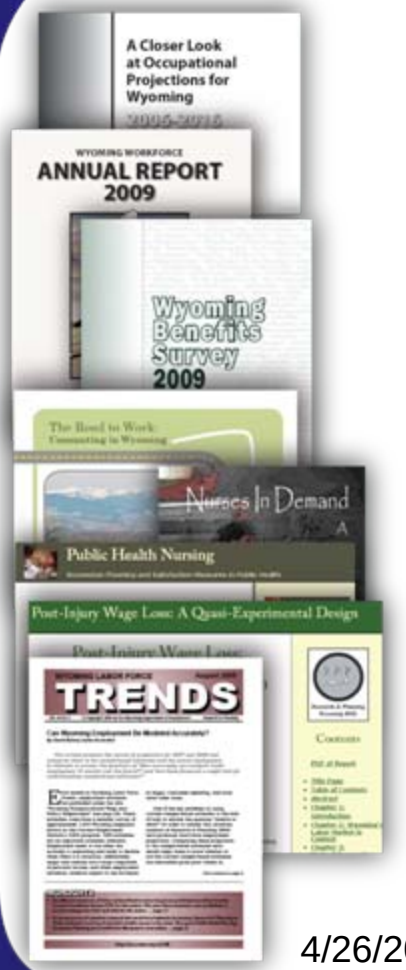


In April 2010, the Wyoming Oil and Gas Commission stopped field testing that used microbes to generate natural gas from coal because the state had no regulatory process that oversaw microbial conversion projects.

Source: Casper Star-Tribune, 2011

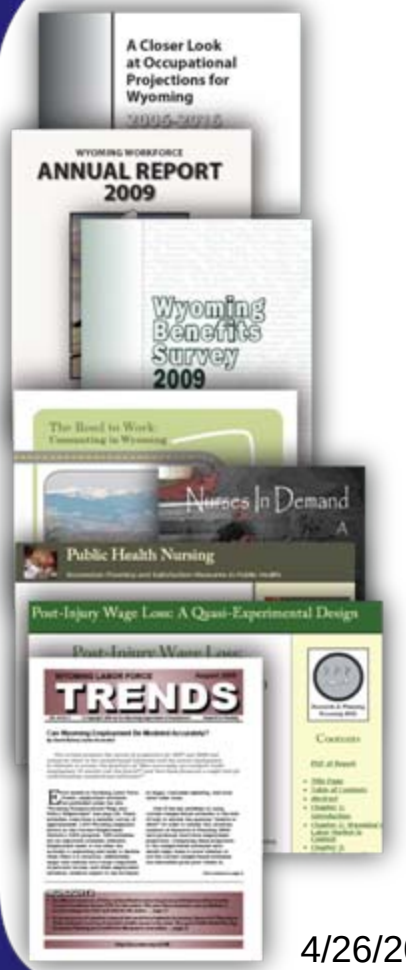
Introduction

Purpose of Researching
the Regulatory Component:



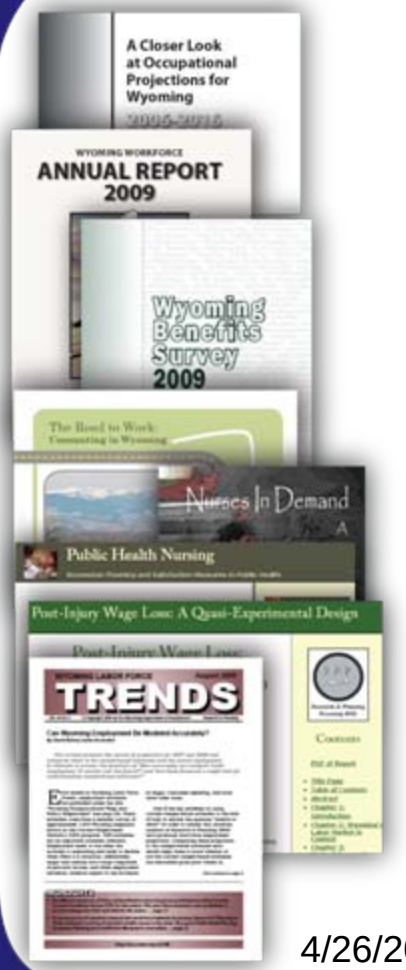
- Identify and quantify skill and competency requirements
- Anticipate industry growth
- Identify technological applications affecting labor requirements unique to the regulatory environment

Introduction – Theoretical Perspective



Regulation leads to more stable and less cyclic employment change by incorporating down stream, often diffuse costs, in the current point of purchase

The Setting



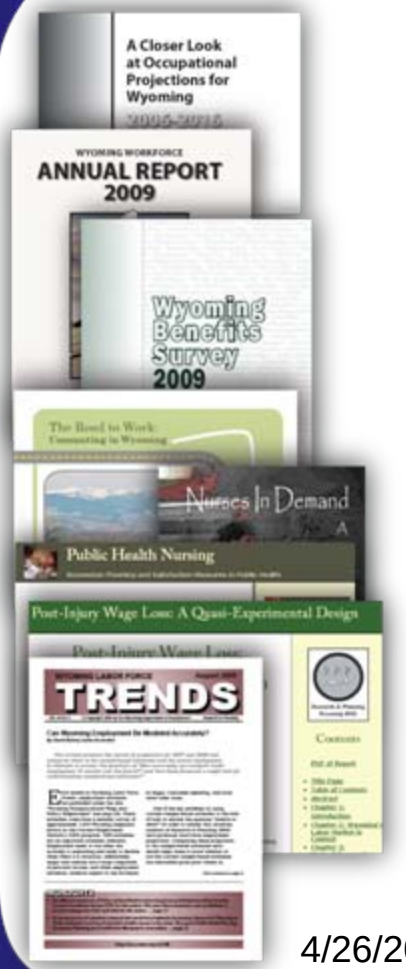
Wyoming:

- 97,814 square miles
- Semi-arid, dry and windy
- Population: 544,270 (2009)
  - 5.6 persons per square mile

Wyoming's Labor Market:

- 269,000 People Working (February 2011)
- 20,000 unemployed; 6.2% unemployment rate
- Mineral income makes up close to two-thirds of state revenue

The Setting



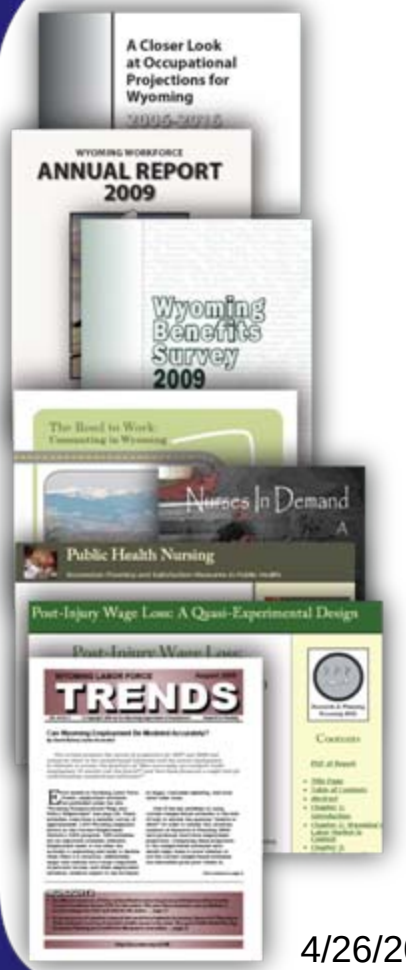
Wyoming Department of Environmental Quality (DEQ):

- 268 employees
- 27.2% exit rate, 2006-2009

Mission:

Contribute to quality of life: monitoring, inspection, enforcement, restoration/remediation

The Setting



Wyoming Department of Environmental Quality (DEQ)

6 Divisions:

Air Quality

Water Quality

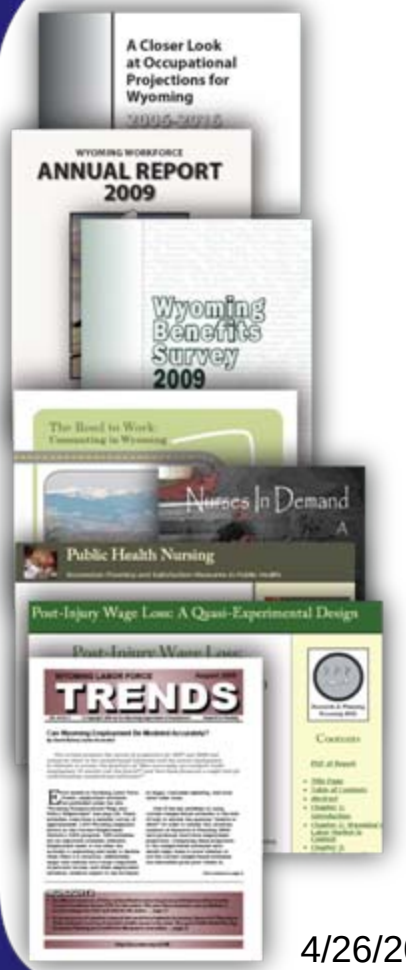
Land Quality

Solid Waste Management

Abandoned Mine Reclamation

Industrial Siting

The Setting – Selected Divisions and Functions

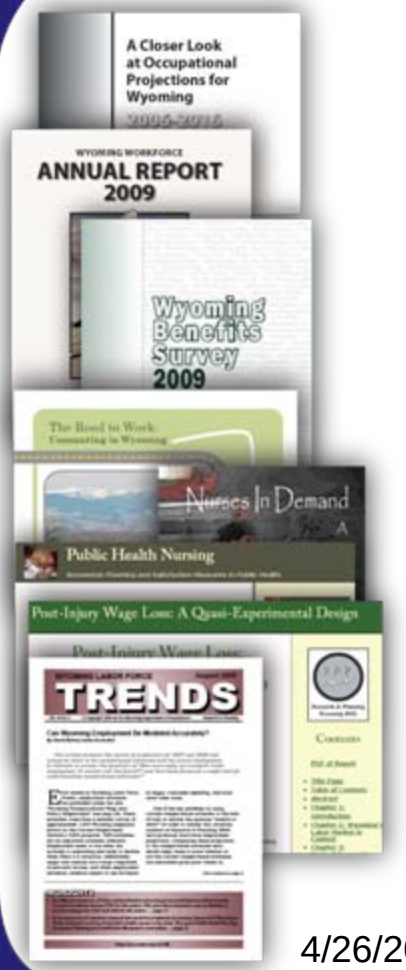


Water Quality

Administer Clean Water Act, Safe Drinking Water Act …

- Assures technical competence of operators of public water supply
- State began requiring oil & gas drillers to list the ingredients of hydraulic fracturing fluids
- State carbon sequestration legislation

The Setting – Selected Divisions and Functions



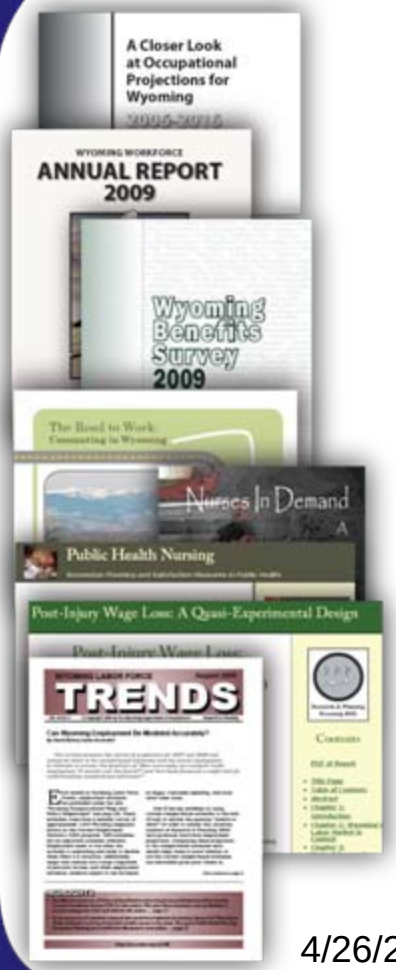
Land Quality

- Ensure exploration and mining solid minerals (uranium) conducted in a manner protecting the public environment

- Permits coal (strip) mining and reclamation

During rapid economic expansion, the state loses significant tax revenue due to slowness in the permitting process

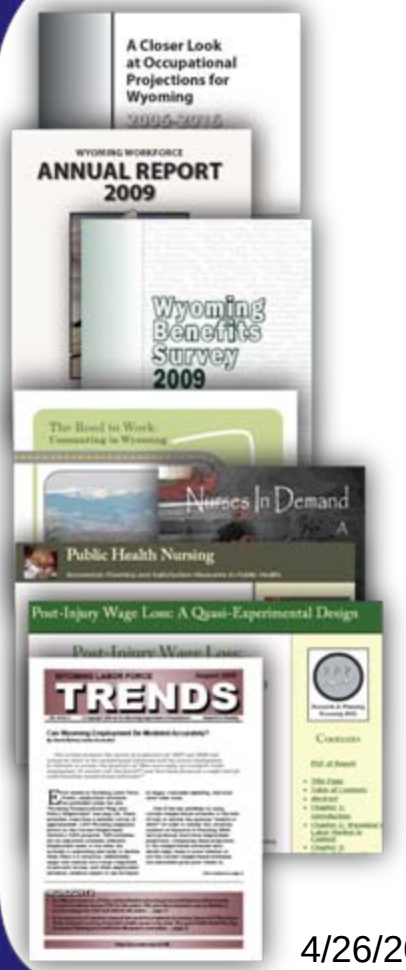
The Setting – Selected Divisions and Functions



Solid and Hazardous Waste

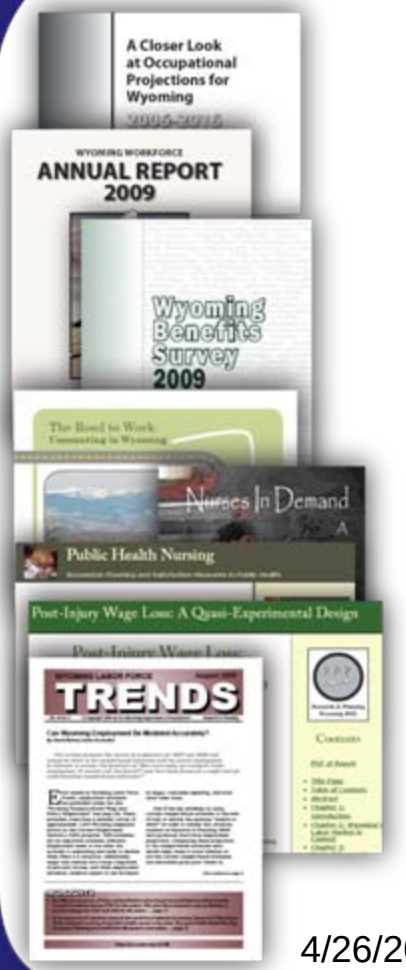
- Storage, treatment, and disposal of municipal, commercial, and industrial hazardous waste
- Landfill groundwater testing
  - In Wyoming, 96% show evidence of contamination
  - Cleanup could take over 20 years and $200 million
  - Regional landfills, DOT trucking HAZMAT certification with state and local fire marshals coordination and planning

Substantive Findings – Occupations



Occupations in the regulatory component most often require a 4-year degree or higher

Substantive Findings – Educational Attainment/Occupations



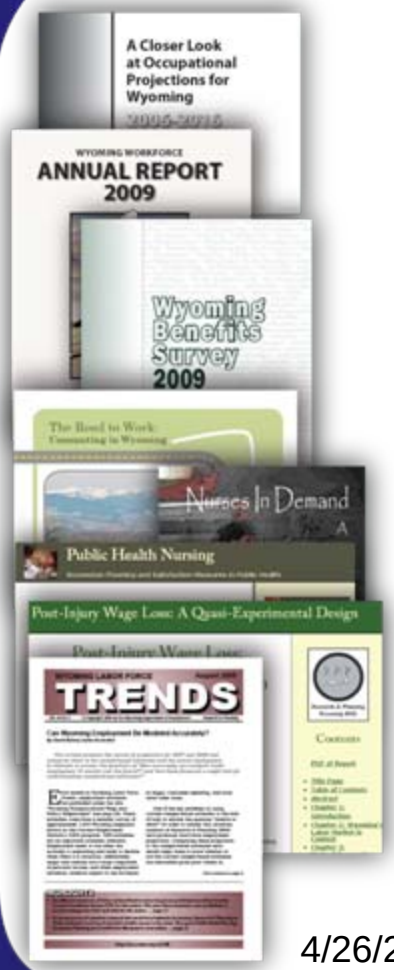
<u>Most often mentioned:</u>

- Engineering
- Geology

<u>Public and private employment requiring a master's degree or higher:</u>

- Groundwater Hydrologists & Modelers
- Hydro Chemists

Substantive Findings – Educational Attainment/Occupations



Natural Sciences:

- Biology
- Botany
- Chemistry
- Soil Science
- Wildlife Management
- Toxicology

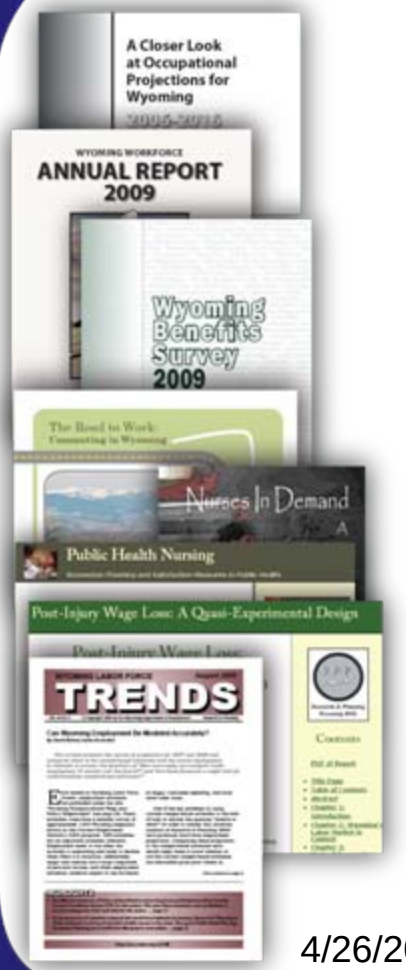
Social Science for Cultural Clearance:

- Archaeology
- Statistics

Other Occupations:

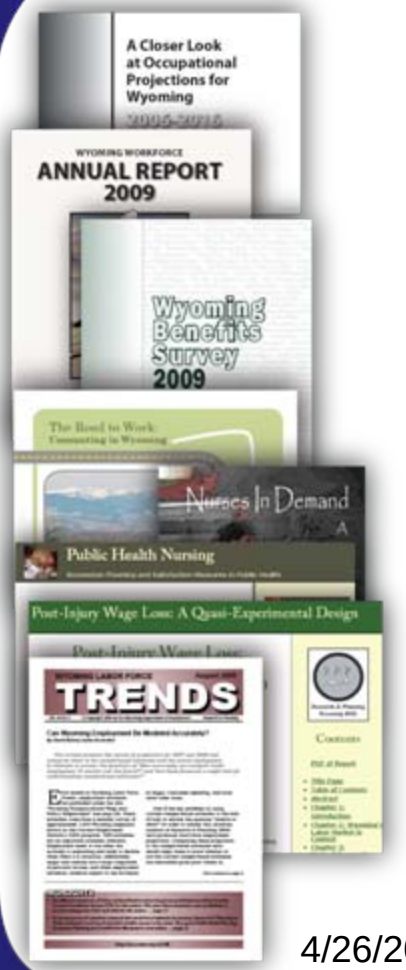
- Service Technician
- Wastewater Plant Operator
- Landfill Manager

Substantive Findings – Qualifiers



- DEQ: Finding educated applicants is not difficult. Finding educated applicants in industries regulated is far more challenging.
- Basic science understanding is vital; job-specific knowledge can be added.
- Industry: Tends to hire contractors with advanced degrees.

Substantive Findings – Skills

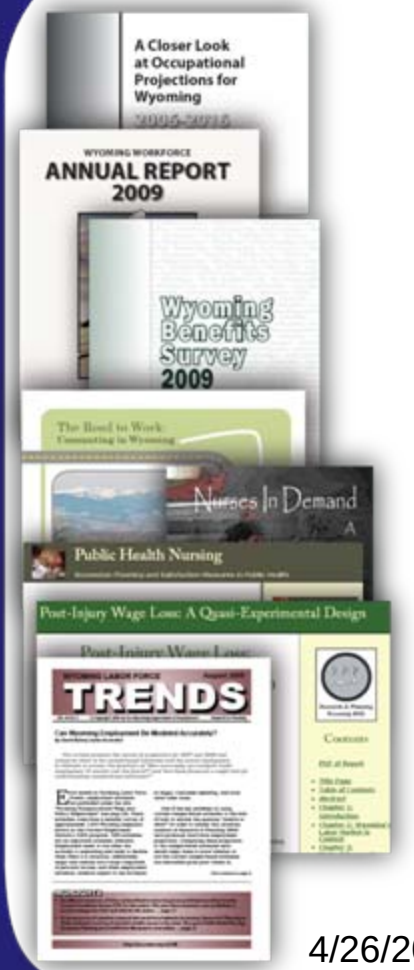


<u>The Usual Suspects</u>

- Technical
- Basic
- Domain Specific
- Resource Management Skills

"We have 'x' amount of dollars and 'y' number of projects. … We have to prioritize."

Substantive Findings – Skills Not Part of the Engineering Curriculum

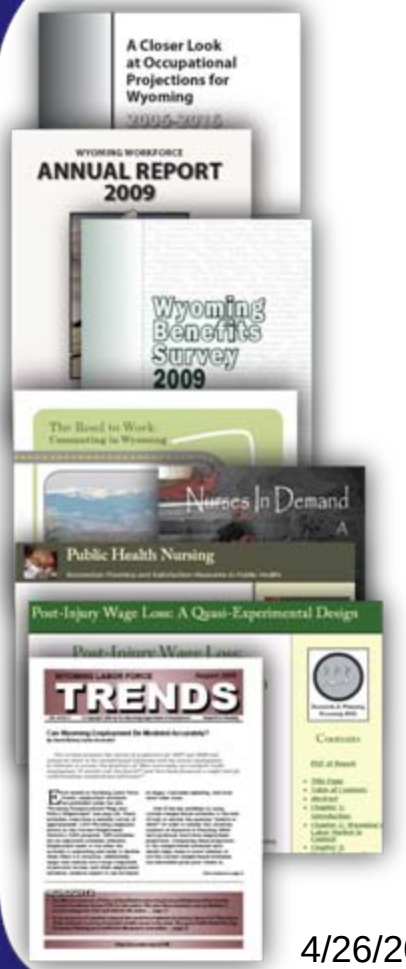


"The ability to tell people something they don't want to hear."

Social Skills

- Coordination
- Service Orientation
- Social Perceptiveness

Methodology

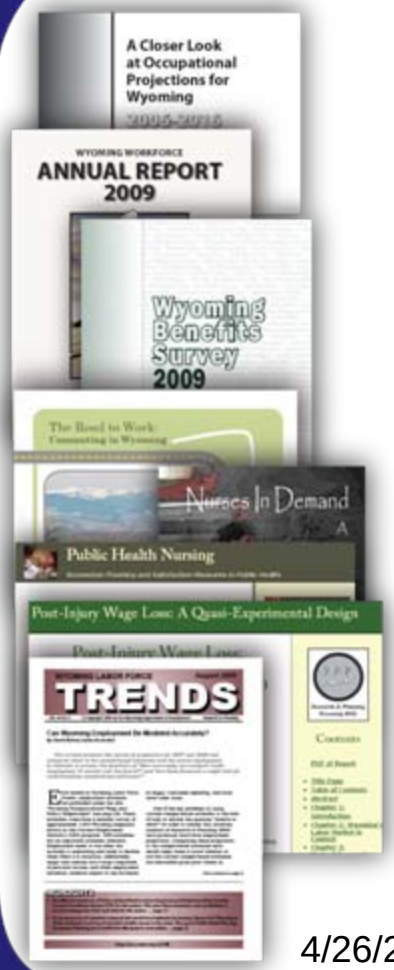


Impact of Energy-Efficient Technologies and Regulations on Labor Demand

- Understanding the methodology is important because it applies to all of the technologies discussed at this conference.

Methodology

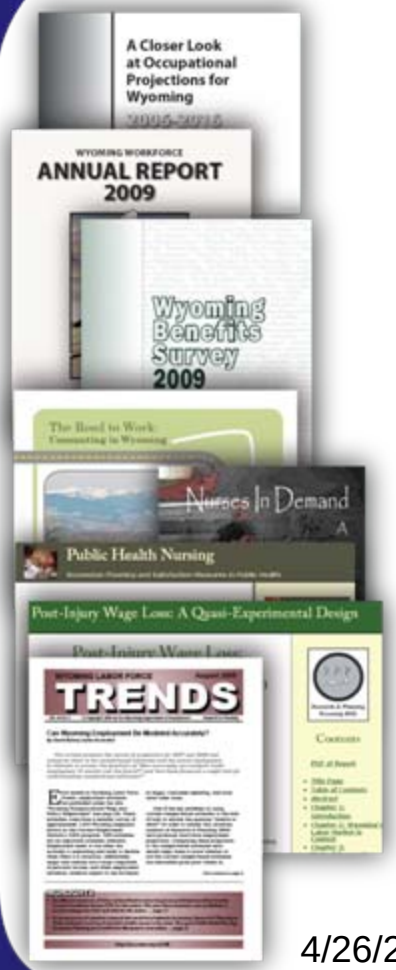
The Domains for Inference



- All Geography Standards
  - Federal statutes (e.g. Clean Water Act, Clean Air Act)
  - Implemented primarily by state agencies
- Non-Standard Iterations
  - State regulatory statutes
  - Differences in state administrative structures
  - Local regulatory administration of federal statutes
  - Local administration of municipal regulations

Methodology

The Domains for Inference (continued)



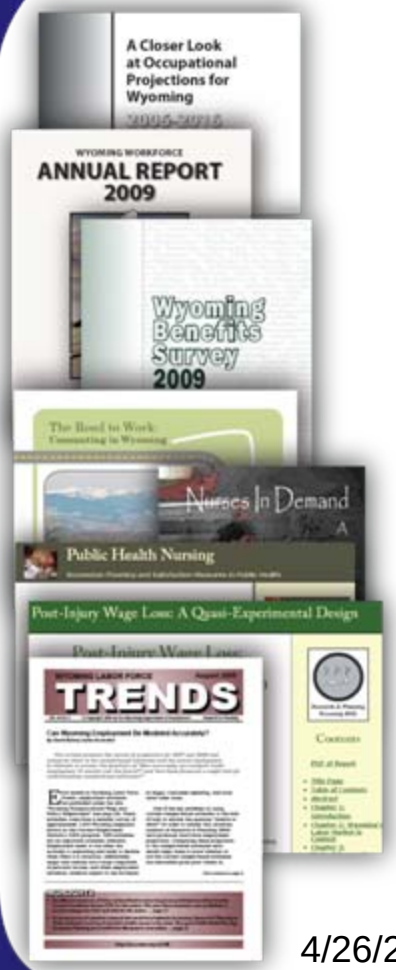
- Private Sector Exposure
  - Federal, state and local regulations
- Municipal Exposure
- Context
  - State unique geographic, climatic, population, transportation, economic development conditions (note DOT, DEQ, and MPO sport communities – air quality)

South Dakota represents Iowa and Nebraska

Wyoming represents Montana and, to some extent, Utah

Methodology

Steps in the Research Process

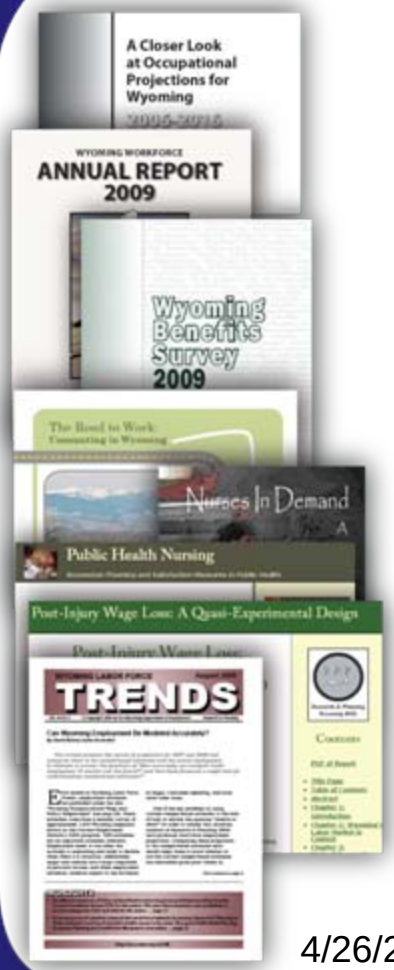


- Compared notes with South Dakota throughout the process

- Literature Review, July-August 2010
  - Media reports related to environmental issues (sequestration, fracking, landfills)
  - DEQ's FY 2011-12 budget request
  - Review DEQ's rules and legislative mandates, legislative study taskforces
  - Correlated QCEW with rules statutes

Methodology

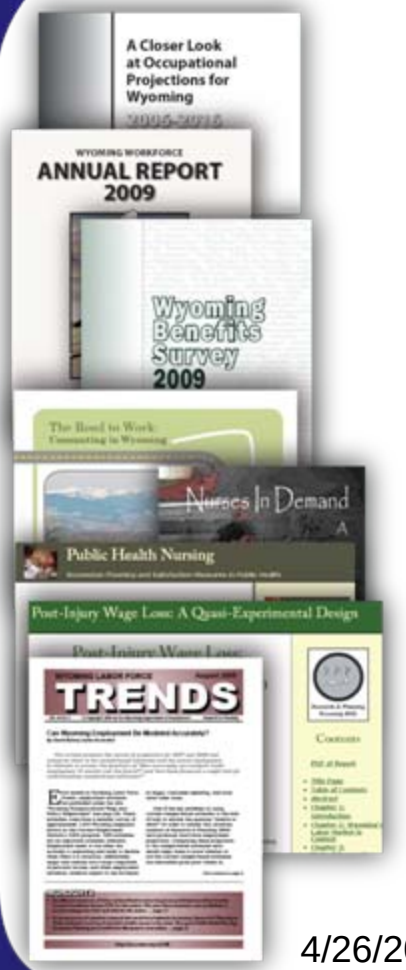
Steps in the Research Process (continued)



- Contacted administrator of DEQ
  - DEQ impacted by an influx of ARRA funds (see Wyoming section of the consortium IMPLAN analysis)
  - Determined from explaining the project that staff in regulatory agencies were not comfortable using standard LMI classification systems
    - Led to the decision to use an unstructured interview strategy comprised largely of open-ended questions and post-interview coding to SOC, O*NET, degrees, and certificates

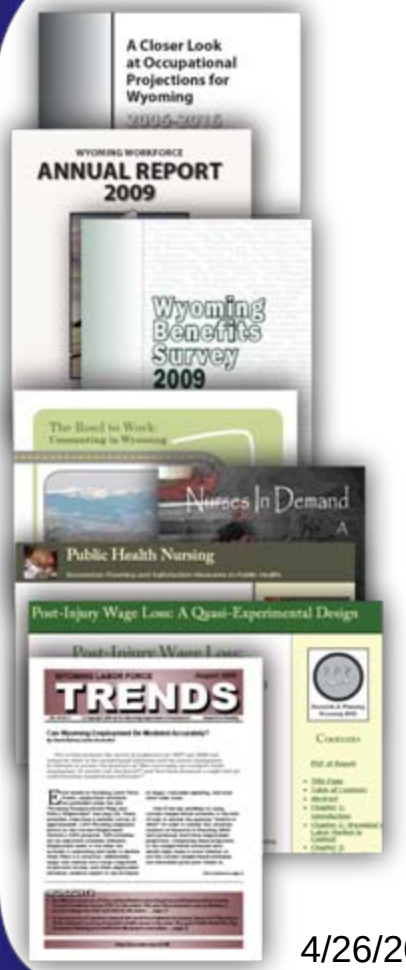
Methodology

Steps in the Research Process (continued)



- Contacted administrator of DEQ (continued)
  - Obtained permission to interview 12 division/assistant administrators, interviews conducted Sept. 6-Nov. 1, 2010, about 30 minutes each
  - Provided an assurance that no respondent would be identified in the final text
- Submitted draft for comment to DEQ administration (no comments received)

Methodology



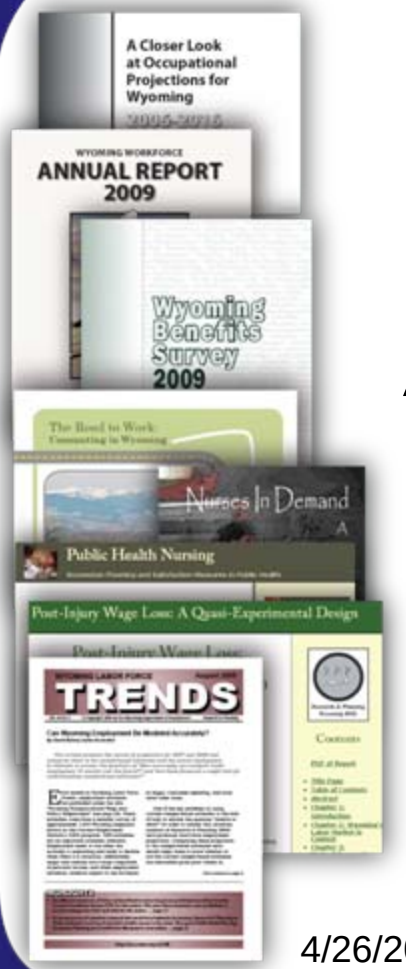
Engineers are born without the following genes:

- O*NET, NAICS, and SOC

"In many cases … respondents gave a great deal of information regarding skill requirement while answering other questions; however, when asked specifically about skill requirements, respondents could think of very few."

Our work with DEQ means that initially, the approach to adjusting occupational projections needs to be based on qualitative research strategies, preferably by staff qualified in qualitative research who also know LMI.

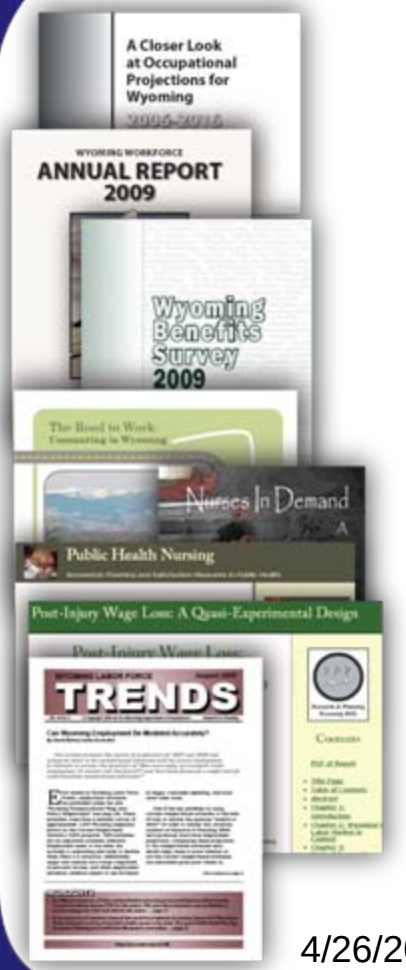
Bottom Line



New energy-efficient technologies (i.e. those in the MMEC presentations) will not be deployed without a corresponding regulatory structure.

At this point, there is no one charged with developing an understanding the impact of major investments in energy efficiency on the demand for labor.

Contact us



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