

# Economic Impact of Policy and Technology Choices within the Department of Energy's Environmental Management Program

**The Social, Land Use, Demographic,  
Geographic and Economic Task Group**

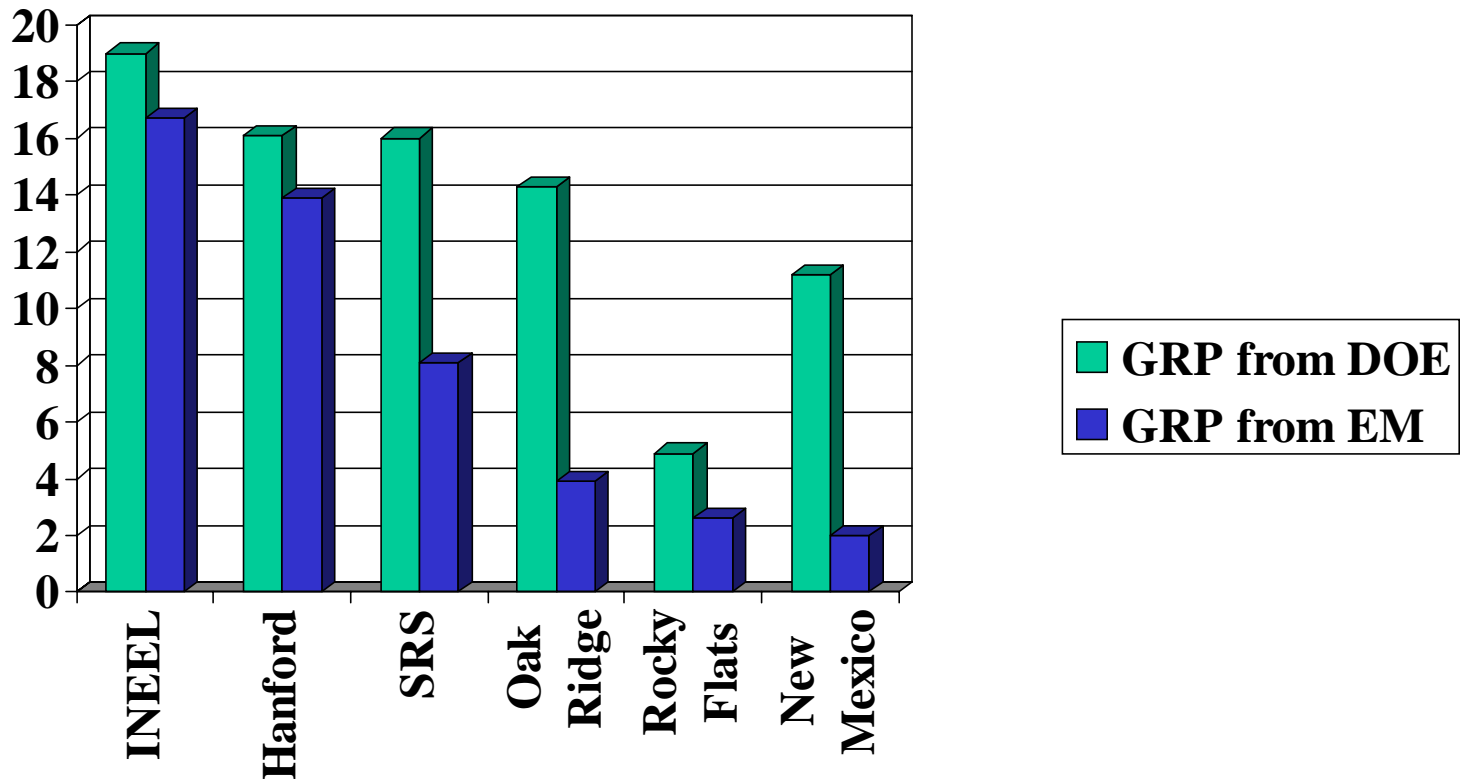
**CRESP**

**Michael Frisch**

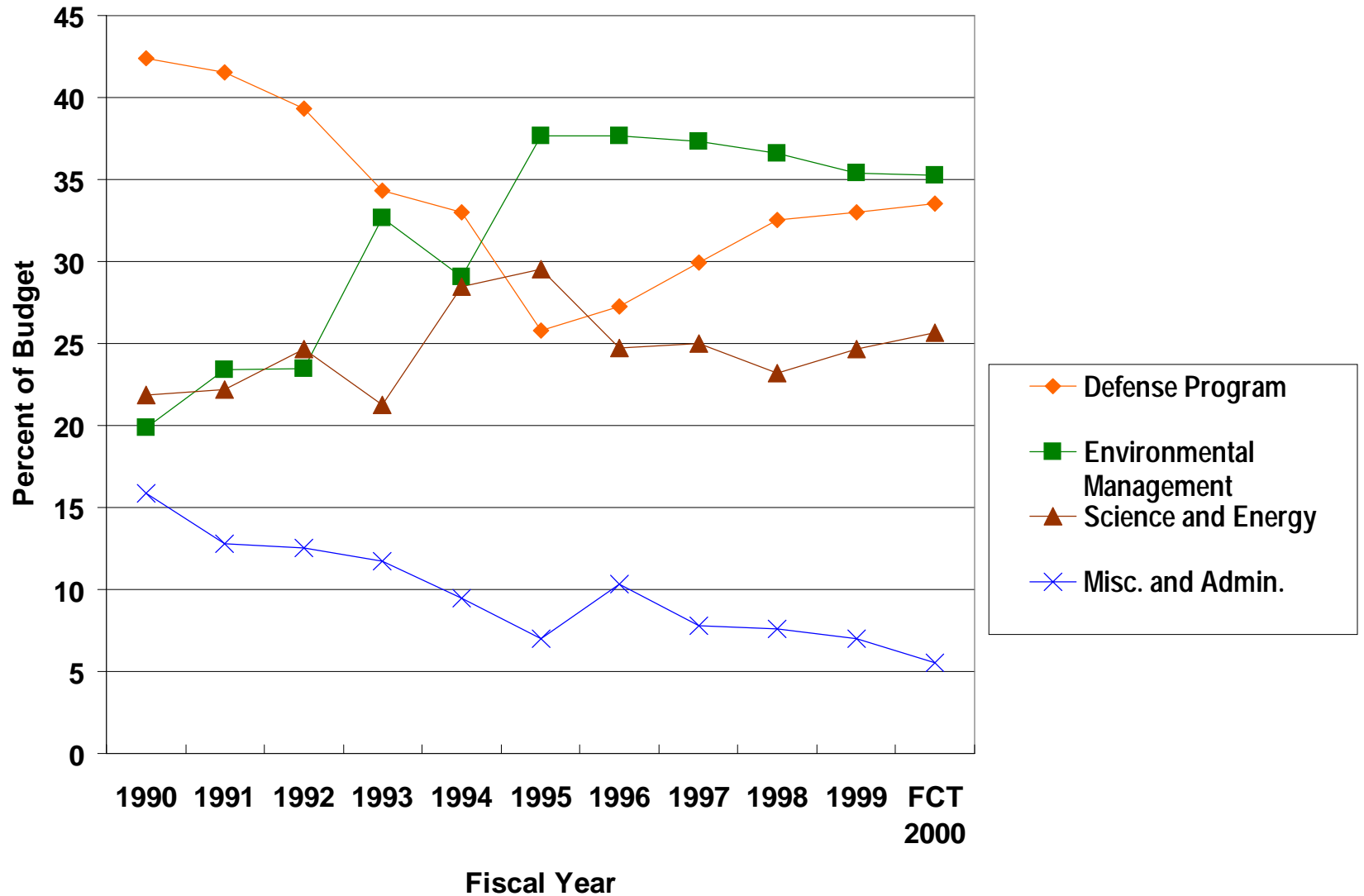
# Abstract

The regions surrounding DOE sites depend upon the Department to provide jobs and income. Changes in how the Department of Energy spends Environmental Management funds lead to changes in the local economies surrounding the sites. We identify three broad policy regimes of EM Spending. Using a large regional economic simulation model we show how changes in policy impact the local region. We illustrate these changes using an example of a proposed technology to manage high-level radioactive tank waste at the Savannah River Site. The differences in economic impact between the technologies may be outweighed by the economic impact of how the overall project will be funded. Possible implications of this work for EM management will be addressed.

Regions surrounding DOE sites depend upon EM spending to produce jobs and income:  
*1994 Percent of Gross Regional Product directly due to DOE spending*



# Post-Cold War DOE Spending



# DOE Policy Regimes

- **1977-1990 Cold War**
  - Defense Buildup and Nuclear Modernization
- **1991-1996 Environmental Management**
  - Reduced defense spending, increased EM, new openness with stakeholders about DOE activities
- **1997-2006 Accelerated Cleanup**
  - New defense missions, Stable EM budget, renewed emphasis on site security measures.
- **2007 - ? Stewardship**
  - Site closures, Maintenance of defense capabilities, Reduced EM budgets

# **EM Focuses on Production Sites While Defense Labs Become More Defense-Oriented Than They Were During the Cold War**

- EM program spending is focussed on the large-scale production sites including SRS, Hanford, INEEL, Rocky Flats, and Fernald. Constant EM funding may increase competition for project funding among sites.
- While defense missions were initially reduced at Los Alamos, Sandia and Livermore; these Labs are presently as defense-oriented as they were during the Cold War.
- Oak Ridge maintains a mixture of funding sources.

# Use of REMI Economic Simulation Model to Estimate Impacts

- Large scale economic forecasting model
- User-defined pre-set regional structure based on counties.
- Estimates regional economic forecasts based upon econometric estimation of local parameters under national constraints. Parameters include jobs, income, GRP, demand, wages and output.
- Captures the impact of trade and migration between regions.
- Estimates amount of indirect and induced economic activity in all regions due to changes in spending within one or many regions.

# What Happens With Changes in Spending Based Upon Actual Changes in Post-1990 Policy Regimes?

- Regions with smaller metropolitan economies (SRS, Pantex, Hanford) seem to lose the most when their DOE sites lose program funding.
- DOE science research funding creates large job impact in the Oak Ridge and New Mexico regions.
- Defense spending produces the smallest job multiplier followed by Environmental management and Science and Energy programs. Science and Energy spending multipliers are much higher than either EM or Defense multipliers.



# **Economic Impact of New Missions and Technologies at the SRS Site**

- Accelerator Production of Tritium
- Four options for managing high-level tank waste:
  - Small Tank Precipitation
  - Ion Exchange
  - Solvent Extraction
  - Direct Disposal in Grout

# Results of Analyses of Technologies

- APT produces low level of local jobs per million spent. Most indirect and induced jobs occur outside of the SRS region.
- Tank waste technologies similarly produce low level of local jobs. (We are still calculating the differences in impact depending on technology)
- Economic impact depends then on direct funding of mission at site. If new activity is funded out of existing budget then there will be little additional economic impact. Except at Oak Ridge and New Mexico, DOE activities have not led to industrial district development.

# Implications of research:

- Economic impact remains a large concern of local stakeholders including residents, fiscal officers and planners (see earlier SLUDGE Reports). As DOE accomplishes cleanup tasks and EM expenditures begin to fall at sites, more effort to buffer negative impacts will be necessary as part of Stewardship plans.
- **While choice of technology is important in terms of risk, it may not produce as big of an economic impact as changes in overall funding policies for DOE sites and programs.**
- Given the impact of funding policies as determined by Congress; more effort should be placed on activities that reduce the high regional impact. The Office of Community and Worker Transition performs these tasks now with comparable funding at levels less than military base closings.

**For more information contact:**

**Michael Frisch**

**SLUDGE Task Group -- CRESP**

**Department of Urban Studies and Community Health**

**Rutgers University**

**33 Livingston Av. 1st Floor**

**New Brunswick, NJ 08901**

**732-932-4101 x 583**

**[mfrisch@eden.rutgers.edu](mailto:mfrisch@eden.rutgers.edu)**