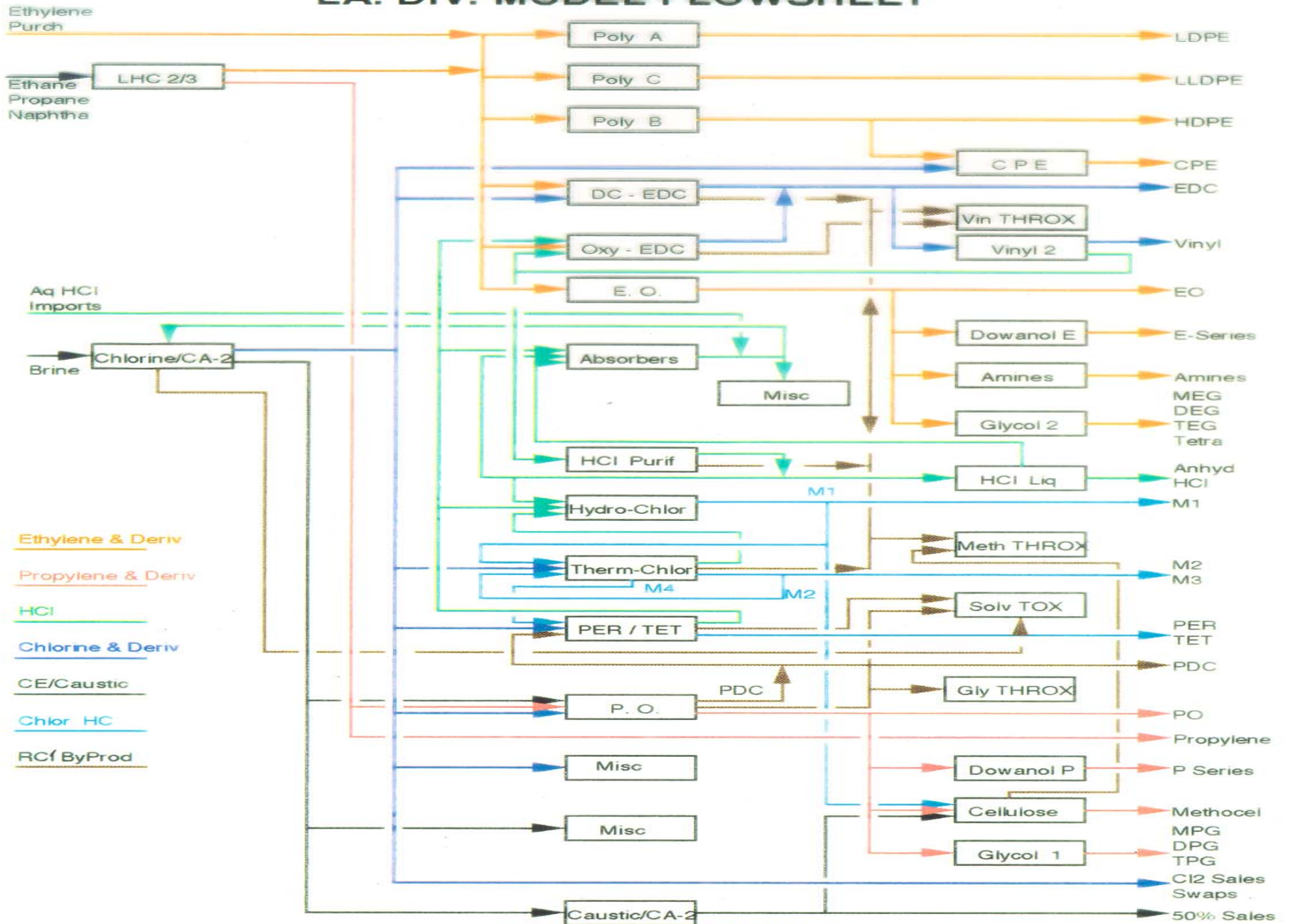




# **Impact of the Natural Gas Crisis on Dow Chemical**

**Earl Shipp**  
**October 27, 2003**

# LA. DIV. MODEL FLOWSHEET



**\*\* DOW CONFIDENTIAL \*\***

## Dow gets a double hit

### Fuel costs impact raw material & feedstocks

- Ethane (raw material) costs are tied to natural gas. This hits us twice.
- This “double hit” cascades throughout the value chain, with enormous economic effects.
- Dow’s costs in the first half of 2003 were \$1.9 billion higher than 2002. More than 20% of that increase hit our operations in Louisiana.

**Dow’s increase cost over the past year, just in Louisiana, could light all the homes in Washington D.C. for 2 years and all the homes in New Orleans for 2 ½ years.**

# Dow hasn't sat idly by But there is only so much we can do

## The Obvious Actions

- Cost controls and wage / salary freezes across the board. **In Louisiana, this has helped us protect jobs. BUT WE CAN'T DO THIS FOREVER.**
- A public commitment to reduce energy used per pound of product by 20 percent from 1994 through 2005 – **this is in addition to a 20 percent reduction accomplished between 1990 and 1994.**

## Less Obvious Actions

Dow has shifted production of some products to other parts of the world where energy prices are lower.

# Impact of Natural Gas Crisis on Dow

## Permanently Closed 4 Major US Plants

- ◆ Ft. Saskatchewan Chlor Alkali
- ◆ Texas City, TX Ethylene plant
- ◆ Plaquemine, LA Chlor Alkali
- ◆ Seadrift, TX Ethylene plant

## Jobs Lost and Replacement Plants Overseas

- ◆ 200 Direct jobs
- ◆ 300 Maintenance and Equipment jobs
- ◆ 10,000 man years of jobs to replace

*\* These jobs did not leave America in search of cheaper labor - American labor is more than competitive in these products. These jobs left because of extreme U.S. natural gas prices.*

## Dow's Future Outlook

- **Dow will grow and survive globally.**
- **Dow's growth in the U.S will depend on access to a globally competitive supply of natural gas and the natural gas liquids.**
- **Some Dow products cannot be globally competitive in a high energy cost environment.**
- **Growth impacts jobs and economic development.**



# The BIG Picture

# World Natural Gas Costs

\$U.S./MMbtu

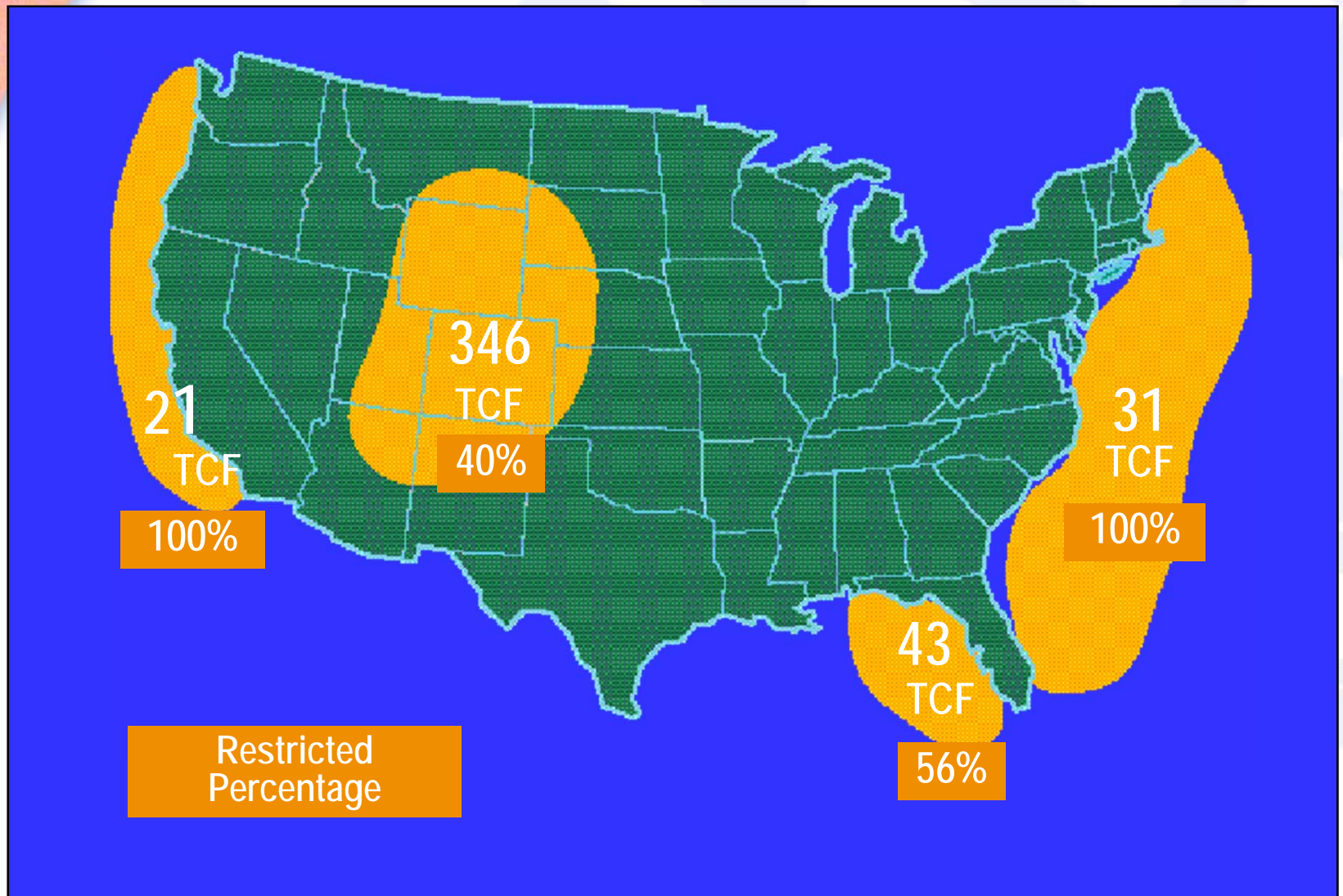
Where will manufacturing go?

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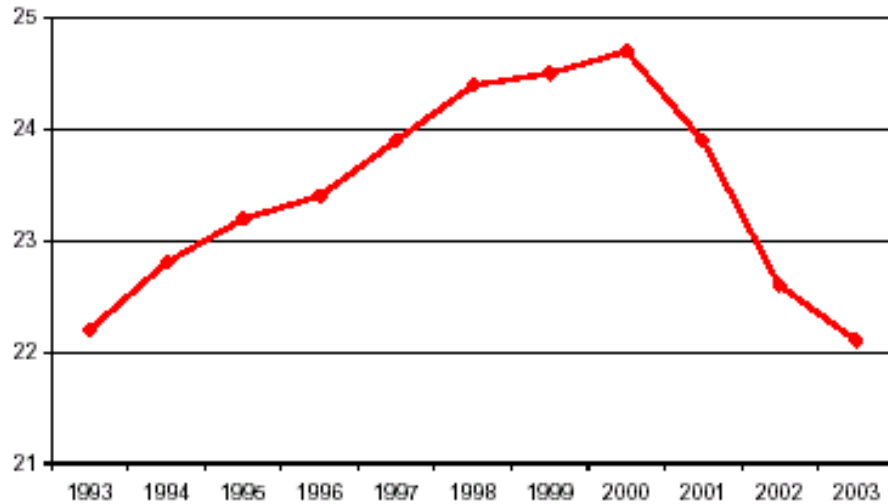




# Resource Estimates - Restricted Areas Estimated Percentage Restricted



**U.S. GOODS-PRODUCING EMPLOYMENT**  
(MILLIONS OF EMPLOYEES)



Source: U.S. Bureau of Labor Statistics, Establishment Survey

**MANUFACTURING EMPLOYMENT INDEX**  
(INDEX, 50 = NEUTRAL)



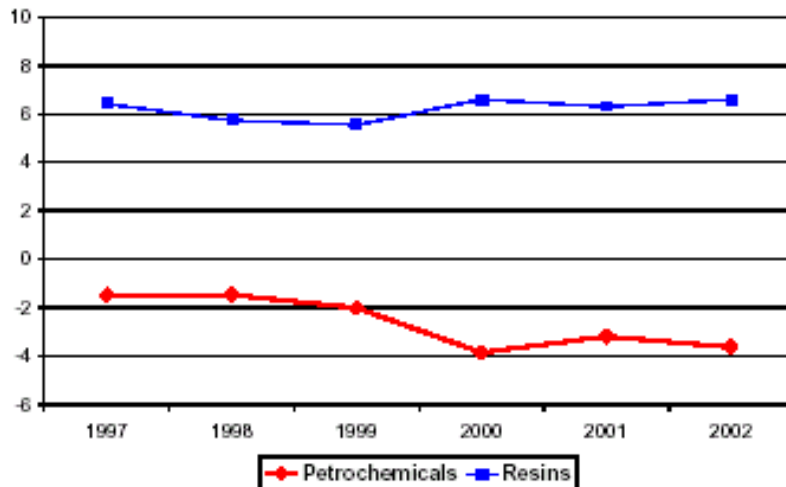
Source: Institute of Supply Management

- Manufacturing jobs have declined consistently since the mid-1960's.
- Goods producing jobs create demand for petrochemicals and plastic resins.
- As productivity increases (technology, computerization, outsourcing...) job loss is the inevitable result.

**The 1990's were a unique time period for Manufacturing job growth.**

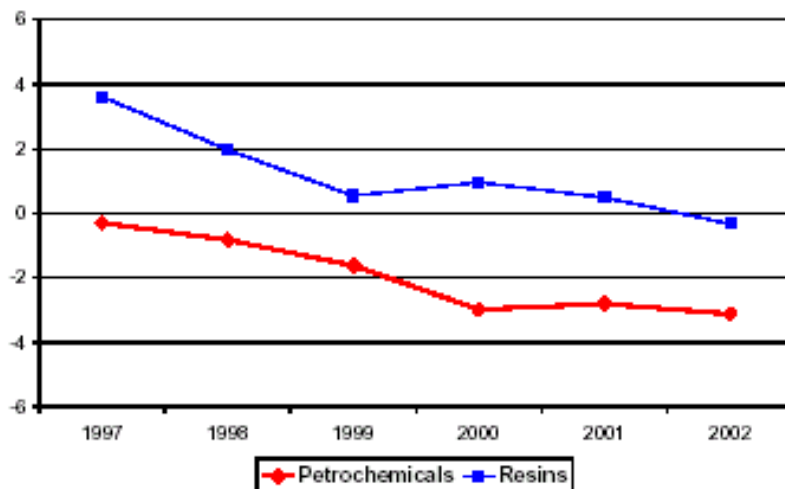
- No one can yet say what will replace the lost manufacturing jobs (equal pay & benefits ?)

U.S. NET EXPORTS PER SE\*  
(BILLIONS OF DOLLARS)



\*"Per se" means trade in pure petrochemicals and resin,  
not including products made from petrochemicals and resin.

U.S. NET EXPORTS COMBINED\*  
(BILLIONS OF DOLLARS)



- Petrochemical Exports still retain a surplus.
- Plastic Resins have run at deficit levels since 1999.

**On balance, this is good news.**

**And now for the REST of the Story...**

- Petrochemical and Plastic Resin Exports in finished products have been falling since 1999.
- Manufacture of products made in the USA that use chemicals is decreasing.

**Conclusion**

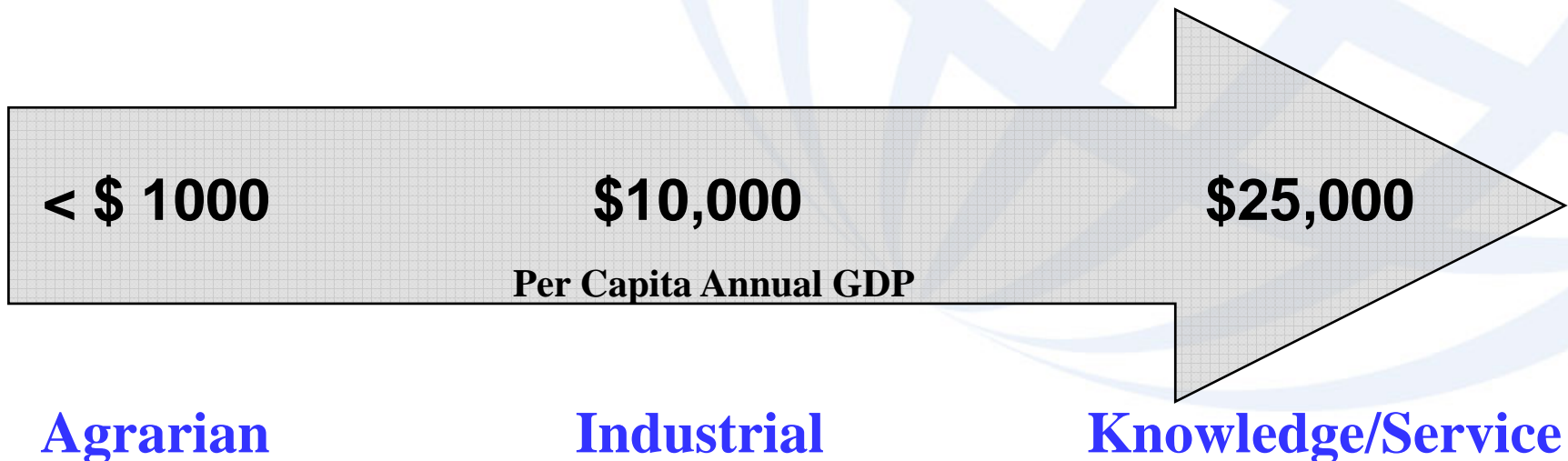
**Our Customers are leaving.**

## Migration of Industry Activity

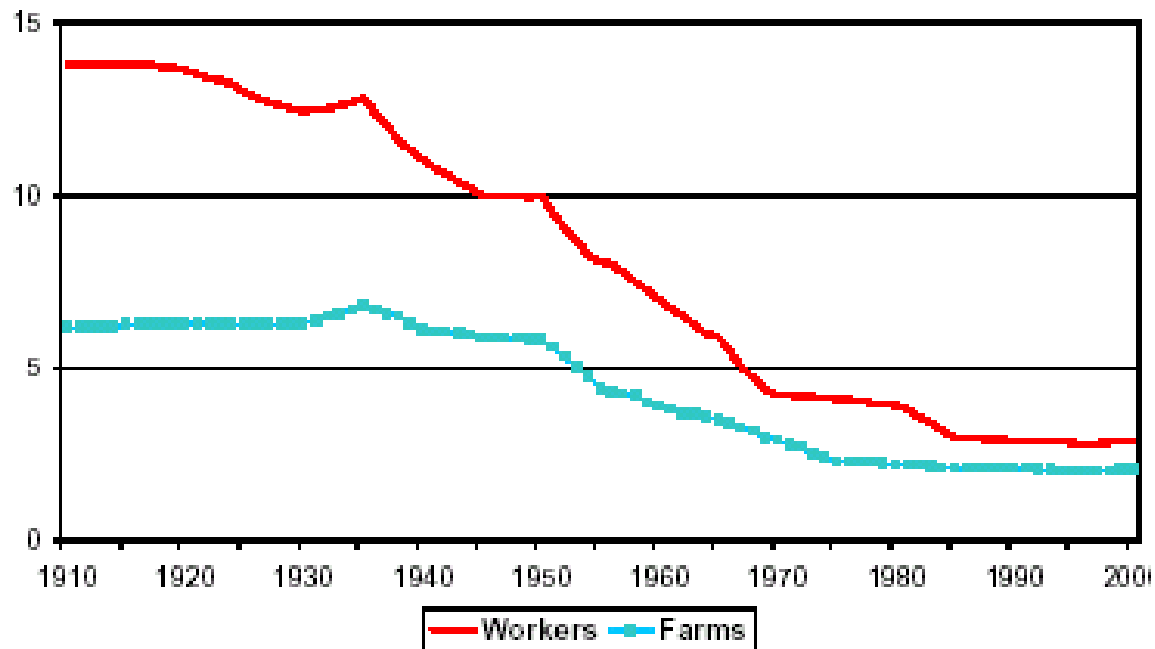
- **Low skills**
- **Scarce technical labor**
- **Undeveloped raw material resource**
- **Undeveloped market for products**

- **Affordable and abundant technical labor pool**
- **Developed & cheap raw materials**
- **Developed market for products**

- **Expensive labor – competing with higher value occupations**
- **Raw material resource depletion and / or eco-sensitivity**
- **Consumer market for products**



## U.S. FARMS (MILLIONS OF EMPLOYEES)

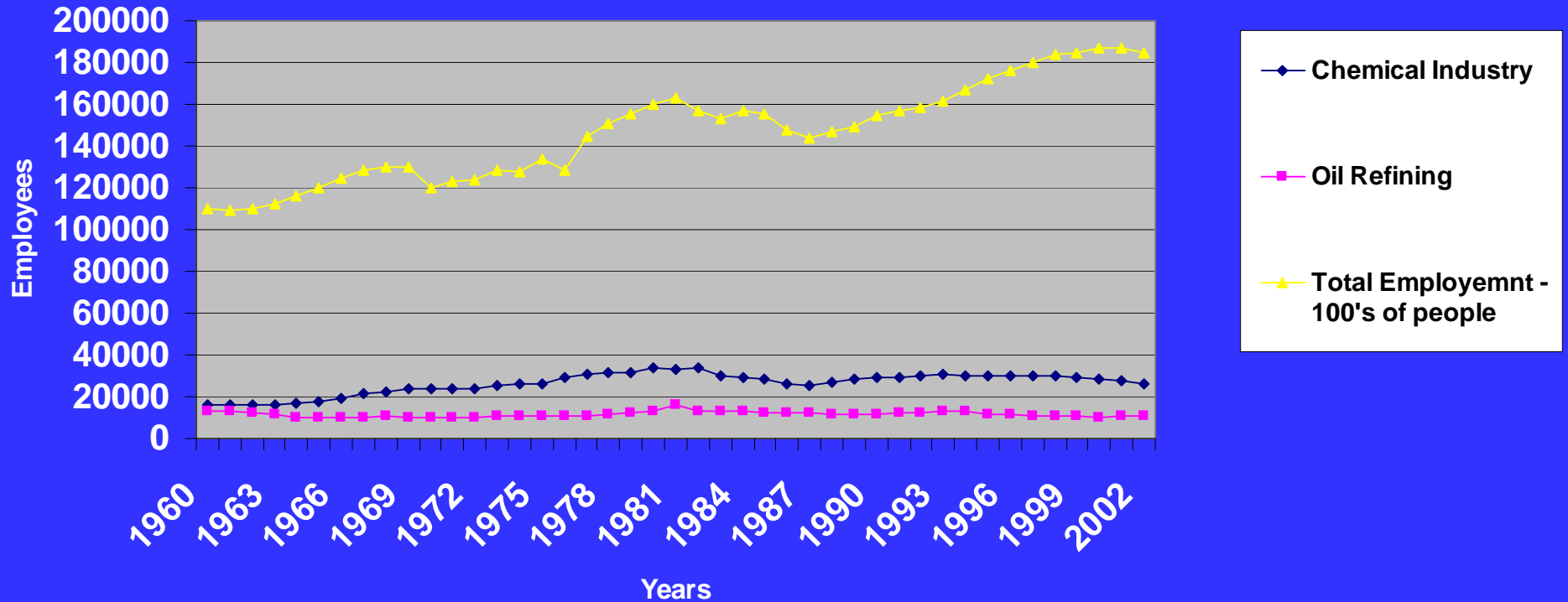


Source: U.S. Department of Agriculture

- Farm jobs decreased as new farm technology (crop science, equipment, techniques, and bio-tech) increased productivity.
- Farms today produce more than at any time in the past.

**Without this change, the manufacturing revolution of the 20th century could not have occurred.**

# Chemical & Oil Refining Employment



## So What Does All This Mean ?

- The downward trend in US MFG is continuing after and brief up-tick in the 1990's.
- Other countries can exploit advantages (raw materials costs, labor costs & training, and government policies) that more favor manufacturing.
- The next change in the economy isn't obvious and new jobs tend to be lower pay and benefits (i.e. lower std. of living).



# Solutions Space



## **We applaud efforts to create a comprehensive National Energy Policy**

- **The natural gas situation has worsened since the House passed its bill.**
- **The situation will not be resolved through the normal process of supply and demand. Congress MUST take accelerated action.**
- **As an energy consumer we welcome the action by the Senate to move quickly to get an energy bill to conference with the House. However, we are disappointed that the Senate was only able to pass last year's version of the bill.**
- **This situation calls for more aggressive measures to promote energy efficiency, greater fuel diversity and bringing on new natural gas supply.**

**Congressman Tauzin's efforts on the Public Utilities Regulatory Policy Act (PURPA) are very important.**

# What Can Be Done ?

## Consumer & Public Education

Short-term: focus on conservation, fuel-switching and market transparency

## Public Policy and Regulation

- Comprehensive Energy Policy needed to replace the failed policy of over-reliance on natural gas. New NPC Study 'Balanced Future' case is right direction.
- Facilitate access to areas where known gas reserves exist. This can be done in an environmentally sustainable manner.

# What Can Be Done ?

## Research & Development Funding

- Maintain support for conservation efforts and alternative fuels research
- Focus on improving fuel efficiency of vehicles and appliances

## Balance Supply with Demand

- Medium-term: Diversify the fuel mix - cleaner coal and nuclear added to power mix; bring on new domestic gas supply, i.e. the Rockies
- Longer-term: Arctic gas, some renewable raw materials, more efficiency and recognize the US must use coal and nuclear
- More LNG (Impact : no US jobs created, \$2B/mo more \$ outflow gas)