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**FILE**

# Economic Development and Wealth Generation

Role of the University of Alaska

Presented to Senate Finance Committee

March 10, 2004

Thomas R. Case, Dean  
College of Business and Public Policy

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## Economic Development and Wealth Generation

- Our Strategy:
- **Growing business opportunities for Alaska through excellence in business education.**

## Strategies for Wealth Generation

*Making Alaska attractive for investment*

1. Increase productivity
2. Add value through technology applications
3. Build international connections
4. Expand local business capability

## Wealth Generation

### 1. Increase Productivity

- Example: Supply chain research for productivity improvements in Alaska business environment
- 10 -15% improvement in productivity can result from supply chain management optimization
- Current collaborators Mat Maid, Horizon and TOTTE
- 10% improvement in material movement within Alaska would be significant for the economy

## Wealth Generation

### 2. Add value through technology applications

Data security and information management requirements since 9-11 increased cost of business by billions nationwide.

Business privacy and data security concerns from Sarbanes-Oxley Act and National Security Administration cost \$ billions

What we teach can save money in Alaska

## Wealth Generation

### 2. Add value through technology applications

- Master of Computer and Information Security- proposed for Spring 2005- one of first in the US to address this issue for Information Security Professional training

- Results directly from CIS Department research \$1,692,650 on cyber-terrorism, internet data security systems, and wireless security

Example:

Chenega/UAA "DoD Data Management Enterprise Systems" Project

## Wealth Generation

### 3. Build international connections

- Value of Alaska exports (2001): \$2.45B
- Chief trading partners: Japan, Korea, Canada, Germany, China, Mexico, Belgium, Russia
- International trade 10% of Alaska's GSP(2001)
- International R&D investment in UAA:
  - \$17M Federal (American Russian Center)
  - 49,000 SME owners & business leaders trained
  - 160 trained in oil/gas project/logistics

## Wealth Generation

### 4. Build Local Business Capability

- SBI&C helped 10,500 clients statewide in 2003
- Generated Small Business Innovative Research awards valued at \$ 768,465 in 2003, and
- a total of \$4,265,734 in federal research and development funds to Alaska businesses
- Average 12 interns in businesses per semester

## Strategies for Economic Development

1. Build Alaska's skilled labor pool
2. Meet business and community needs
3. Business applications of research
4. Create Alaska's economic opportunities

## Economic Development

1. Build Alaska's skilled labor pool
  - 60% of CBPP graduates are employed in Alaska, 75% remain in Alaska
  - 71.5% of CBPP alumni are residents of Alaska
  - CBPP graduates earned a total of \$42.0 million in 2002

## **Economic Development**

### **2. Meet Business and Community Needs**

- Accounting research on IRS tax violation problems in rural Alaska led to Volunteer Tax and Loan Program-
- Garnered \$2,838,318 in refunds for 5,574 people in villages throughout Alaska

## **Economic Development**

### **2. Meet Business and Community Needs**

- RFID Tag applications for Alaska business to tap into a rapidly growing \$ billion industry
- Marketing research regarding e-commerce, customer satisfaction and internet marketing

## Economic Development

### 3. Business applications of research

- Experimental Economics Laboratory through Rasmuson Foundation and corporate support for empirical economic research
- Nobel laureate Vernon L. Smith working with faculty and industry to address problems of interest in resource management and property valuation

## Economic Development

### 3. Business applications of research

- Business Enterprise Institute partners with businesses to commercialize technology and meet business training and research needs.
- Provided opportunities for student research and spin-off business development

## Economic Development & Wealth Generation

Leveraging University-Based partnerships in  
economic development works!

- Research fuels innovation
- Applied research and business application  
fuels jobs

# Research at the University of Alaska

**Role in the State**

**Revenue**

**Organization**

**Priorities**

**Plans**

*Craig, Vice President, Research*

## Some Perspective

Nationally, Industry conducts 74% of R&D, Universities conduct 14%

In Alaska, UA conducts 57% of R&D and Industries 7%

Average State investment in R&D = 2.5% GSP; Alaska Invests 0.5%

## UA total research revenue FY03: \$133M

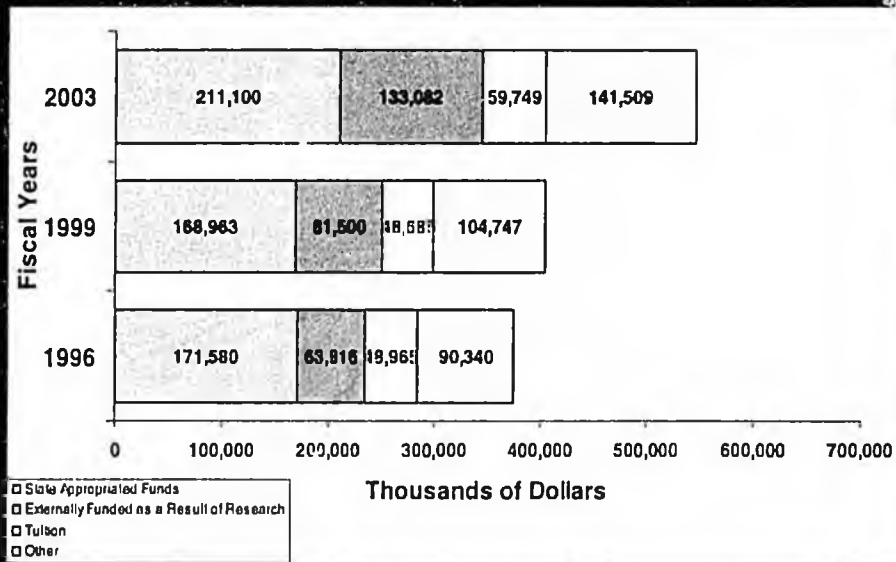
### Good growth pattern:

- FY98: \$77M
- FY99: \$81M
- FY00: \$91M
- FY01: \$109M
- FY02: \$120M

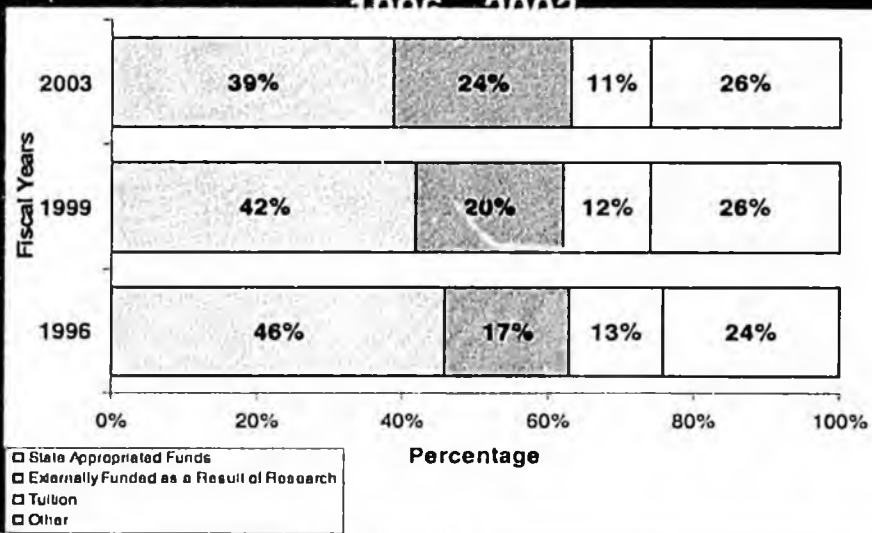
Most \$ currently at UAF – growing at all MAUs

Traditionally “academic” – becoming more applied

## UA Revenue by Different Sources 1996 - 2003



## UA Revenue by Different Sources 1996 - 2003



## UAF Funding Sources (03 Research Expenditures - \$m)

<b>Direct Federal</b>		<b>72.8</b>
DOD	5.9	
NIH	5.6	
Interior	3.9	
Ag	5.1	
Commerce	9.1	
NASA	14.6	
NSF	18.9	
<b>State Agencies</b>		<b>2.2</b>
Direct	1.4	
From Federal	.8	
<b>Private (Univ, Corp, Found'n)</b>		<b>22.1</b>
Direct	7.6	
Federal Indirect	14.4	
<b>General Fund</b>		<b>14.3</b>

(UAA: 3.9, 1.9, 2.8, 2.2)

## Large sums from small pieces : Diversity

• **864 Active Research Grants and  
Contracts**

**340 New awards annually - 120% increase  
over FY99**

**Legislative Performance Measures:**

**215 Awards in Specified Areas**

**222 Graduate Students Funded**

**267 Active Applied Research Projects**

## Organized Research Units

### Independent:

- Geophysical Institute
- Institute of Arctic Biology
- International Arctic Research Center
- Arctic Region Supercomputing Center
- UAF Museum

### Within Schools and Colleges (examples)

- Business Enterprise Institute
- Institute for Social and Economic Research
- Environmental and Natural Resources Institute
- Institute for Circumpolar Health Studies
- Institute of Northern Engineering
- Institute of Marine Science
- Arctic Energy Technology Development Lab
- Alaska Native Language Center
- Mineral Industries Research Lab
- Center for Nanosensor Technology
- Agriculture and Forestry Experiment Station

## BOR Strategic Plan Areas of Statewide Leadership

### ANCHORAGE

- Social, Economic Policy
- Health delivery
- Logistics
- Community Engagement
- Complexity
- Finance, Business

### FAIRBANKS

- Biomedical Science
- Engineering
- Fisheries, Marine Science
- Geophysics
- Remote Sensing
- Climate
- Natural Resources
- Native Languages, Culture
- Arctic Research
- Wildlife Biology
- Energy Technology
- Computational Science
- Cold Regions Infrastructure

### SOUTHEAST

- Government
- Education
- Marine Biology
- Environmental Technology

## SJR 44 (2<sup>nd</sup> Session, 22<sup>nd</sup> Legislature) Draft State R&D Plan (2/03)

**Lead Participants:** UA, NPRB, Arctic Research Commission, IARPC, ASTF

**Objectives:**

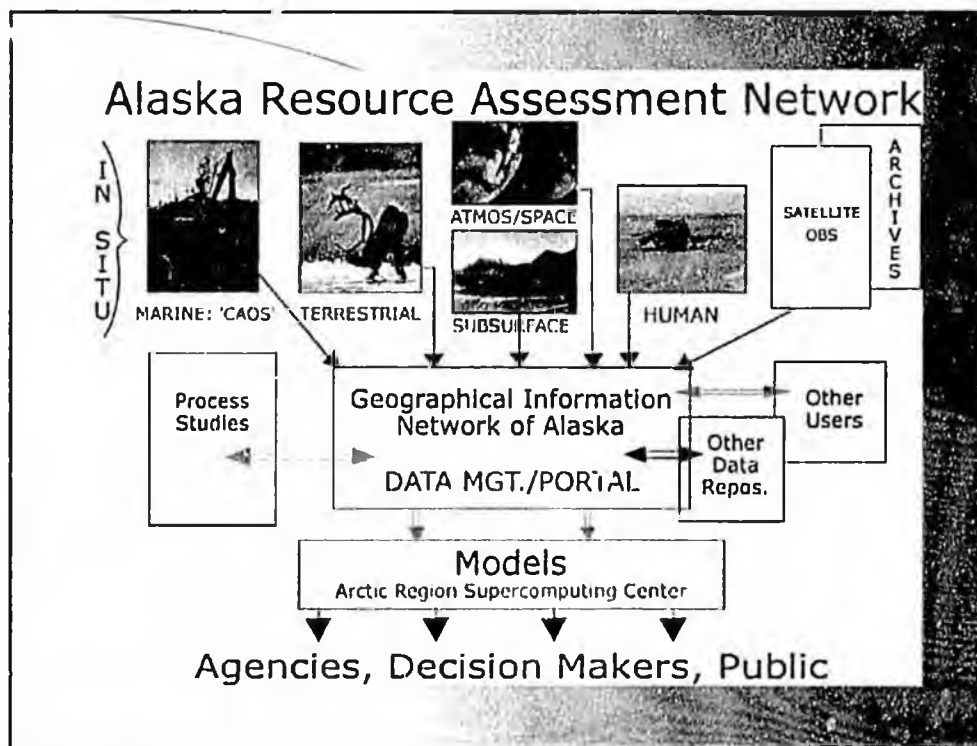
- Expand and Diversify Alaska's Economy
- Protect Health of Alaskans and Alaska's Environment
- Strengthen State Research Institutions
- Identify ways for Federal and State Governments to work together

**Conclusions and Recommendations:**

- Valuable in its own right: strategic tool for economic development
- \* Establish mechanism for planning and Agency accountability
- Maintain excellence and build competitive capacity
- Establish monitoring networks coupled to analytical capacity
- Improve flow of information to decision makers, public

**Key Organizing Principle:**

**Alaska Resource Assessment Network**



## **UA SJR 44 Follow-on**

### **Areas for building capacity at UA:**

- Marine Science and Fisheries, Land Resource Management, Cold Regions Engineering and Infrastructure (esp. energy technologies), Health and Biomedicine, Education, Coupled Human and Natural Ecosystems
- Improve Competitiveness, Facilities
- Cross- MAU Transportation Research Center, Engineering Reorganization, BEI and Logistics Center, CNT PDDC, NIH Roadmap projects, Computational strategy, AOOS

**Enhance attention to State needs; applied research**

**Focus business, social, economic researchers on strategies for wealth generation and economic development (UAA CBPP Dean Tom Case will address)**

**Establish mechanism for continued R&D Planning:**

**From EPSCoR to SCoR**

# The Economic Importance of University Research

Scott Goldsmith

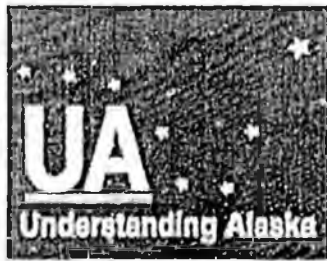
*Institute of Social and Economic Research*

*University of Alaska Anchorage*

Alaska Senate Finance Committee

March 10, 2004

Juneau, Alaska

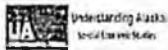
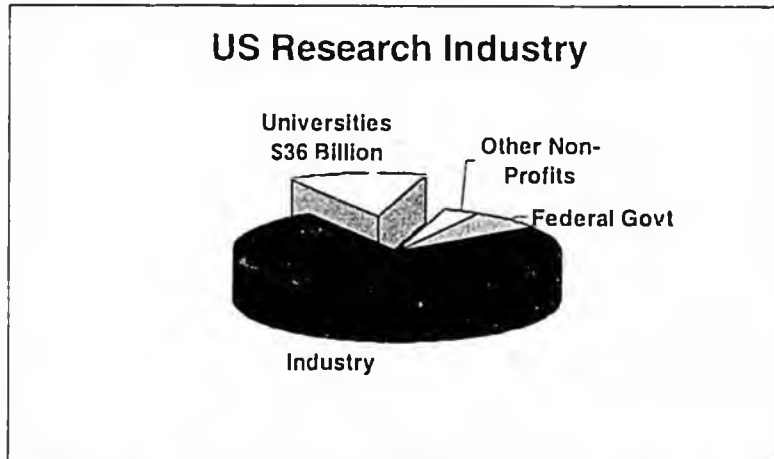


Understanding Alaska:

Special Economic Studies



## Research is a \$264 Billion Industry



Economic Importance of University Research

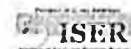


## Top Research States

State Rank in 1999			
		Amount	Share of GSP
		(Billion \$)	(Percent)
1	California	\$48.0	New Mexico 6.40%
2	Michigan	\$18.8	Michigan 6.10%
3	New York	\$14.1	Rhode Is 5.10%
4	Texas	\$12.4	Mass 4.60%
5	Mass	\$12.2	Maryland 4.60%



Economic Importance of University Research

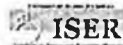


## Research in Alaska: How We Compare

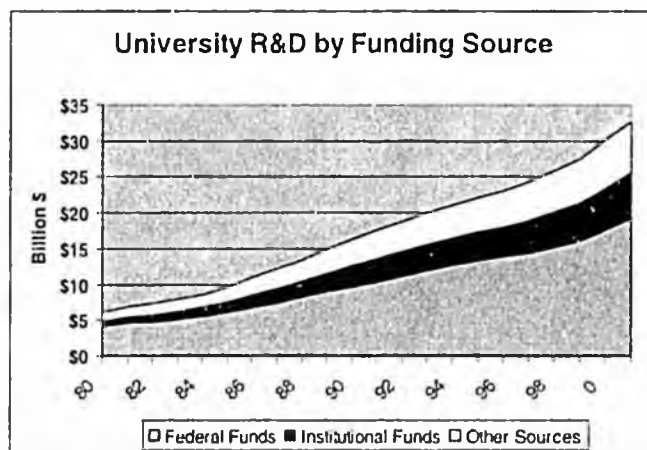
Alaska R&D Profile	rank	amt	% us avg	data
Total R&D (mill \$)	47	\$196		2000
Industry R&D (mill \$)	50	\$9		2000
Academic R&D (mill \$)	42	\$116		2001
Population (% US)	48	0.22%		2002
Total R&D (\$ per capita)	32	\$467	49%	2001
R&D Intensity (R&D/GSP)	41	1.04%	38%	2001
Federal R&D (\$ per capita)	13	\$335	116%	2001
Fed R&D / Total Fed \$	22	3.30%	72%	2001



Economic Importance of University Research



## Funding for University Research is Growing 8% per Year



Economic Importance of University Research



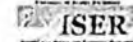
## Top Research Universities

University R&D Spending: 2002		
Rank	Institution	Budget (Million \$)
1	Johns Hopkins	\$999
2	UCLA	\$693
3	U of Wisc	\$604
4	U of Mich	\$601
5	U of Wash	\$590
95	UAF	\$110



Understanding Alaska  
Special Economic Studies

Economic Importance of University Research



## University Research in Alaska: How We Compare

UAF R&D Profile In 2001	Rank	Amount (Million \$)	US Avg
Total R&D	95	\$110.0	
Math and Computer Science	12	\$16.3	
Atmospheric, Earth, Oceanography	16	\$30.5	
Physical	54	\$13.6	
Life Science	150	\$16.6	
Federal Funding	105	\$55.3	
Institutional Funding	na	\$23.6	
Total / Institutional Funding	na	4.58	4.99
Total R&D -- All UA Campuses	68	\$115.0	



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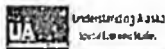
## University Research as an Enterprise— New Money into the Economy

- **Import Substitution**

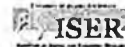
- Arctic Basic Research
- Applied Research on Alaska Problems

- **Adding to the Export Base**

- Footloose Research



Economic Importance of University Research



## University Research as an Enterprise: Direct Economic Impact 2003 (Million \$)

**\$121.6 TOTAL UA Research\***

\$45.2	Wages
\$17.5	Benefits
\$33.6	Contracted Services
\$ 8.4	Capital Equipment
\$ 8.1	Commodities
\$ 5.7	Travel
\$ 2.0	Student Aid
\$ 1.0	Miscellaneous

**\$ ??? Visiting Scientists**



Economic Importance of University Research



## University Research as an Enterprise: Total Economic Impact

### • Jobs

- 2,310 Total
- 1,228 University—full and part time
- 1,082 Private

### • Payroll

- \$80.3 Million--Total
- \$45.2 Million-- University
- \$35.0 Million-- Private

### • Private Business Sales

- \$106.8 Million--Total
- \$42 Million—Direct Procurement
- \$64.8 Million—Indirect

- Economic Importance of University Research



## University Research as an Enterprise: Characteristics of Jobs & Industry

- Labor Intensive
- High Wage
- Year Round Jobs (not Seasonal)
- Diverse Job Mix
- High Resident Share
- Stable Industry
- Footloose
- Environmentally Benign
- Low Burden on Government Services
- Tax Base
- Backward Linkages
- Forward Linkages
- "Value Added" Spinoffs

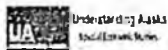


Economic Importance of University Research



## University Research as an Enterprise: Comparison to Metal Mining

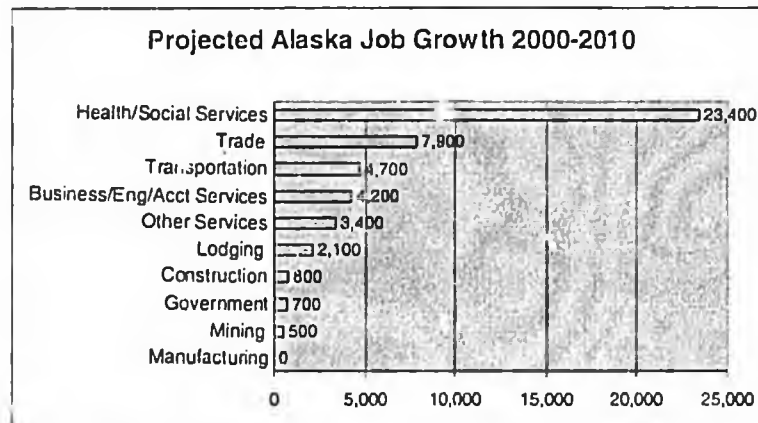
- Operating Size
  - \$823 Million in Production Value in 2002
  - \$77 Million in Payroll
  - 1,153 Average Annual Employment
  - \$67,000 Average Annual Wage
  - Local Procurement
- Characteristics
  - Capital Intensive
  - Resource Dependent
  - Resident Share
  - Stability
  - Environmental Impact
- Characteristics (Cont.)
  - Competition with other Activities
  - Cost Burden on Government
  - Tax Base
  - Enclave
- Benefit / Cost
  - Jobs
  - Income
  - Tax Base
  - "Value Added" Spinoffs



Economic Importance of University Research



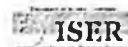
## University Research as an Enterprise: A Role in Future Growth of Alaska



Source: Alaska Department of Labor



Economic Importance of University Research



## University Research as an Enterprise: Industries for Alaska's Future

- Oil and Gas
- Tourism
- Seafood
- Mining
- Air Cargo
- Timber
- University Research



Economic Importance of University Research



## University Research as an Enterprise: Growth Potential

- **Import Substitution**
  - Increase Share of Nationally Funded Research About Alaska
  - Increase Share Locally Funded Research
- **Export Growth**
  - Maintain Overall Share of Growing Market for Federal Research
  - Increase Share of Nationally Funded Arctic Research
  - Increase Presence in Under Represented Fields



Economic Importance of University Research



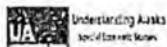
## University Research as an Enterprise: Benefit / Cost Analysis

### •Cost

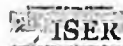
- General Fund Appropriation (FY 03)= \$16.6 Million

### •Benefits

- Economic Impact Return per \$1 Million of GF
  - Jobs = 139
  - Payroll = \$4.8 Million
- "Value Added" Spinoff Returns for Alaska



Economic Importance of University Research



## University Research as a Tool for Economic Development

- New Business Creation -- ABR Inc.
- Business Innovation --- Geoducks
- Information for Business Decisions -- Ice Roads
- Public Infrastructure Efficiency --- Telemedicine
- Maximize Value of Public Assets --- Fisheries Management
- Professional Workforce Development --- Engineers
- Resident Expertise Creation --- Fisheries



Economic Importance of University Research



# The Economic Importance of University Research

For additional information on this and other topics related to Alaska's economy:



Understanding Alaska:  
Special Economic  
Studies



[www.alaskaneconomy.uaa.alaska.edu/](http://www.alaskaneconomy.uaa.alaska.edu/)



[www.iser.uaa.alaska.edu/](http://www.iser.uaa.alaska.edu/)