

The Economic Impact of Fermilab

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$$V_0 \quad P_1 \quad P_N \quad (P_N + P_N) = (m_2 + m_N) \quad \frac{da}{dt}$$



The Economic Impact of Fermilab - Introduction -

Fermilab:

- * “A place” – 6,800 acres of mostly open land.
- * A federally funded research facility.
- * To our auditors, ...”that part of the U.S. Department of Energy that is managed and operated by Fermi Research Alliance, LLC.”
- * A vital part of the Kane and DuPage County communities and of the growing northeastern Illinois economy.
- * Employs ~ 1,960 people + n*100’s of subcontractors.
- * Provides research facilities for ~ 2,300 particle physicists and their students.
- * Hosts thousands of visitors each year, who take advantage of educational, recreational and cultural opportunities.



The Economic Impact of Fermilab - Long-Term vs. Near-Term -

Long-term (many generations):

- * “Knowledge is the foundation of future technology,” and “Technology is the driving engine of economic growth,” or ...
- * Fundamental Research → Innovation → Growth and Prosperity
- * Although the LT impact is not my emphasis tonight, note that our federal government has decided that particle physics research offers the opportunities for transformative discoveries and contributes to the health of our national scientific structure.
- * “History teaches us that big jumps in human innovation come about mainly as a basic result of pure curiosity.” (Robert Aymar)
- * Examples:
 - * Faraday’s experiments on electricity → electric light
 - * High Energy Physics communication need → World Wide Web
 - * Superconducting wire.



The Economic Impact of Fermilab - Long-Term vs. Near-Term -

Long-term (many generations), continued:

- * Long-term costs and benefits of public policy investment decisions can be notoriously difficult to model.
- * Economic impact models often focus on the direct or apparent benefits (and perhaps, costs) of a particular societal choice, sometimes extrapolate from there, and rarely are able to recognize the “opportunity cost” of not doing something different.
- * What else could be here? Six flags over Fermiland? Scott’s Lawn Products leaf recycling facility? Manufacturing? Strip malls? (ex: DuPage National Technology Park vs. racetrack vs. rail yard)
- * Is there a need for federal effort?

Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future (The National Academies Committee on Science, Engineering and Public Policy, National Academies Press, 2005).



The Economic Impact of Fermilab - Long-Term vs. Near-Term -

Near-term (~ our lifetimes):

- * Employment
- * Procurement
- * Technology Transfer, Knowledge Transfer



The Economic Impact of Fermilab - Employment -

FY 2006 Statistics:

- * Employment \cong 1,960 employees, not including subcontractors
- * Payroll \$146M + \$49M fringe = \$195M
- * IL income tax \$3.8M withheld (CY 2006)

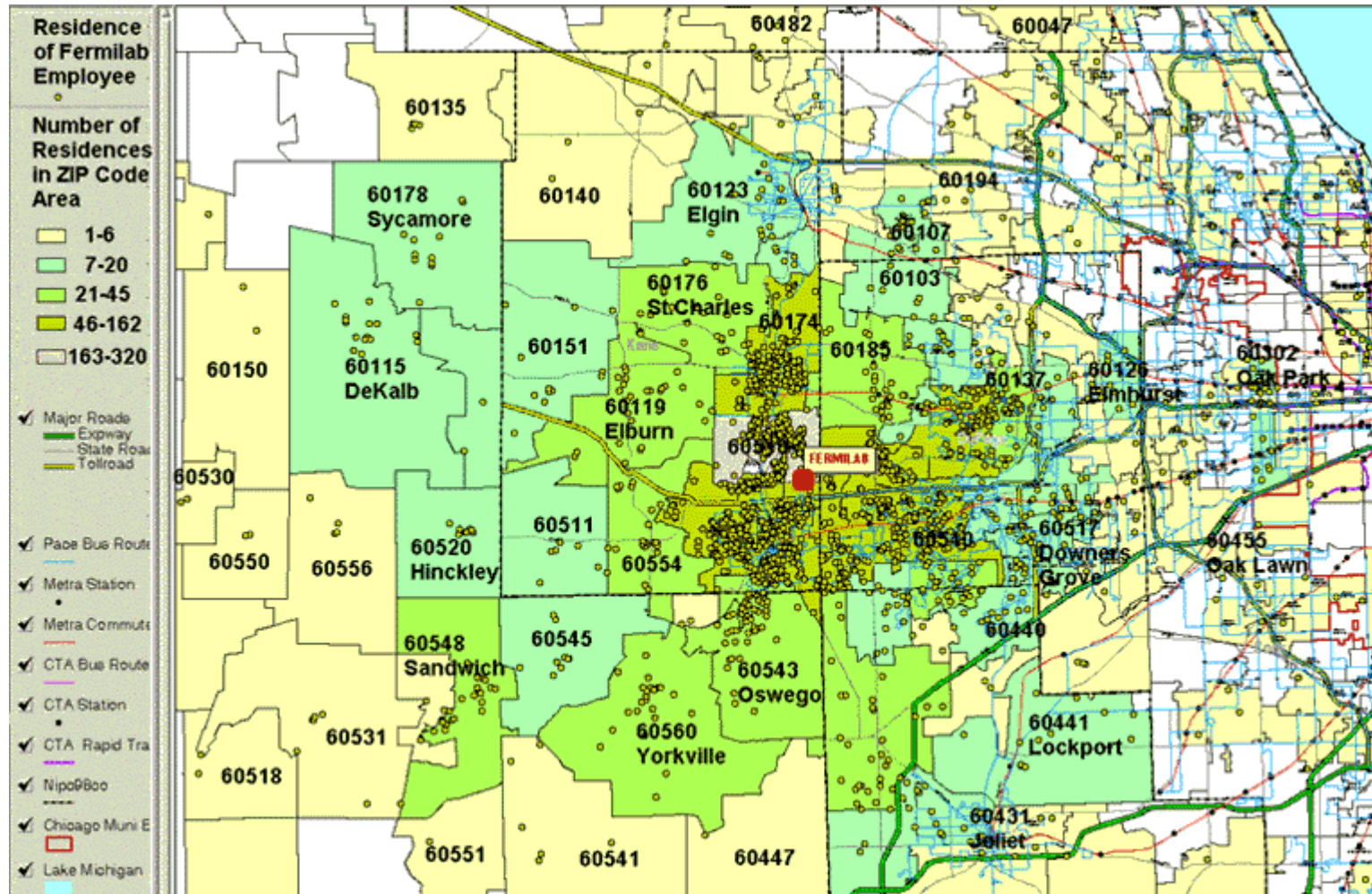
- * Approximate employment mix by job categories:

Administrative & Clerical	280
Computer Professionals	280
Engineers, Engineering Physicists	300
Scientists	380
Technicians, Technical Specialists	530
Drafters, Service Workers, Skilled Trades	<u>190</u>
Total	1,960

(463 employees with Ph.D's)



The Economic Impact of Fermilab - Where Employees Live - (2003)





The Economic Impact of Fermilab - Procurement -

PROCUREMENT CATEGORY	FY 2005	FY 2006
A) Total dollars to small and large business	\$77,424,000	\$91,856,000
B) Total dollars to educational institutions	\$16,668,000	\$13,058,000
C) Total dollars to federal/state institutions	\$6,552,000	\$6,625,000
D) Total dollars to non-profit entities	\$5,301,000	\$6,952,000
E) Total dollars to firms outside U.S.	\$4,268,000	\$3,671,000
F) Total A through E	\$110,213,000	\$122,162,000
G) Total \$\$ to small business (as part of A)	\$48,759,000	\$57,056,000
H) Total \$\$ to small, disadvantaged business (as part of A)	\$12,117,000	\$8,245,000
I) Total \$\$ to woman-owned business (as part of A)	\$13,471,000	\$10,272,000
J) Total competitive dollars (as part of A)	\$47,759,000	\$61,925,000
K) Total dollars committed to Illinois firms (as part of F)	\$60,179,000	\$70,340,000
L) Total actions	7,180	7,081
M) Average action price	\$15,353	\$17,252
N) Procard dollars	\$7,074,284	\$8,868,969
O) Procard actions	21,050	23,632



The Economic Impact of Fermilab - Procurement -

PROCUREMENT DOLLARS TO ILLINOIS BUSINESS				
Year		Amount		% of U.S.\$
FY 2006		\$70,340,000		59
FY 2005		60,179,000		55
FY 2004		51,015,000		50
FY 2003		62,448,166		57
FY 2002		70,102,411		55
FY 2001		72,890,475		59
FY 2000		95,954,000		66
FY 1999		61,714,000		49
FY 1998		71,382,000		55
FY 1997		n/a		n/a
FY 1996		74,124,228		60
FY 1995		78,641,483		63
FY 1994		70,022,139		70



The Economic Impact of Fermilab - Knowledge Transfer -

FY 2006 Statistics:

* Total number of users	2,300
* Number of Illinois users:	
Academic	456
Industrial	3
* Total number of students involved in:	
Activities at Fermilab	17,567
Outreach activities (classroom visits)	13,611



The Economic Impact of Fermilab - Conclusion -

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- ★ Fermilab has been, is, and can continue to be a significant economic force in the region:
 - by virtue of its physical presence,
 - in terms of its large employment base,
 - by means of its substantial procurements of goods & services in the local region and in the state,
 - by means of its educational outreach efforts.
 - ★ This leads us back to the next exciting subject, the International Linear Collider.