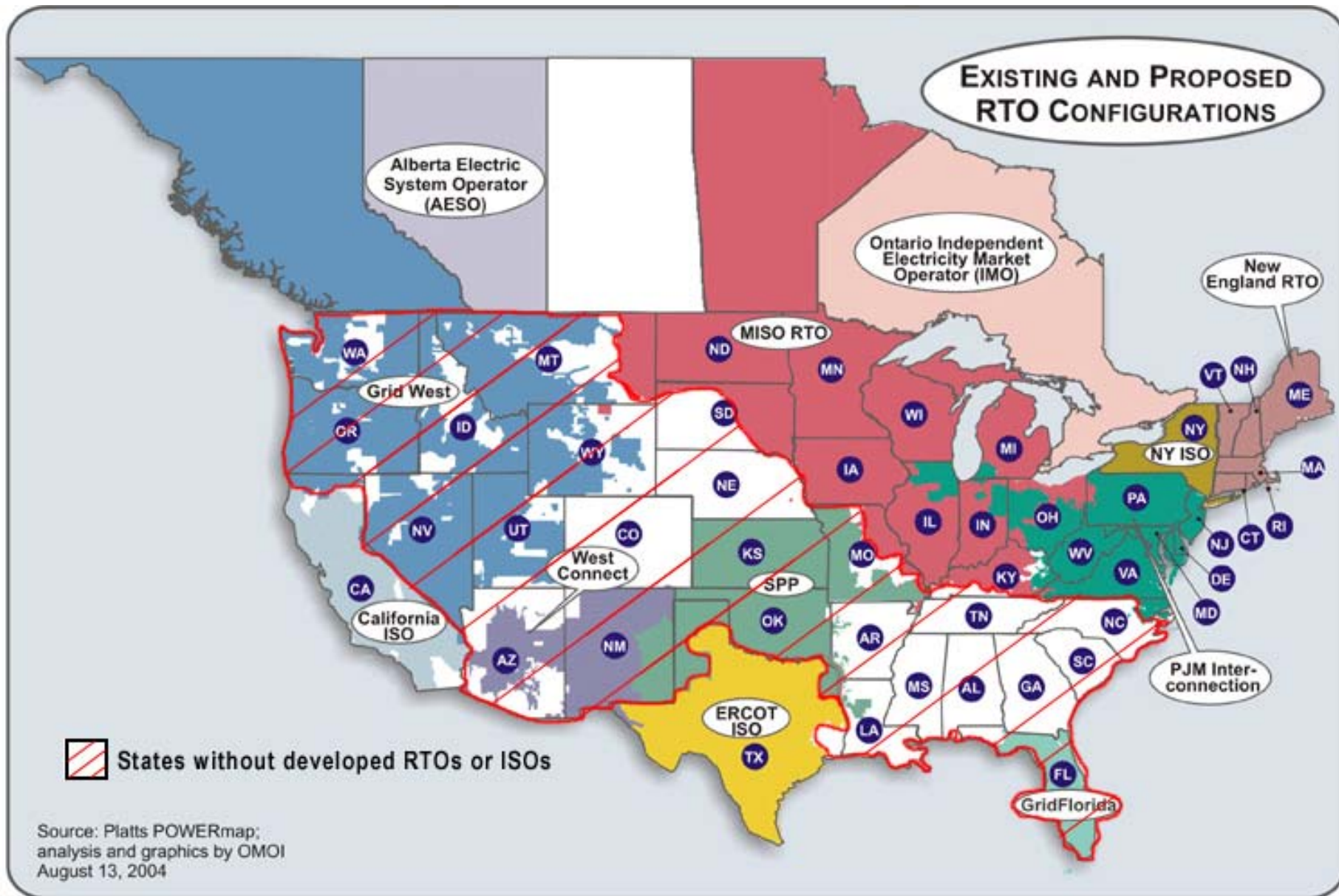




Comparative Analysis of RTO/ISO Operating Costs

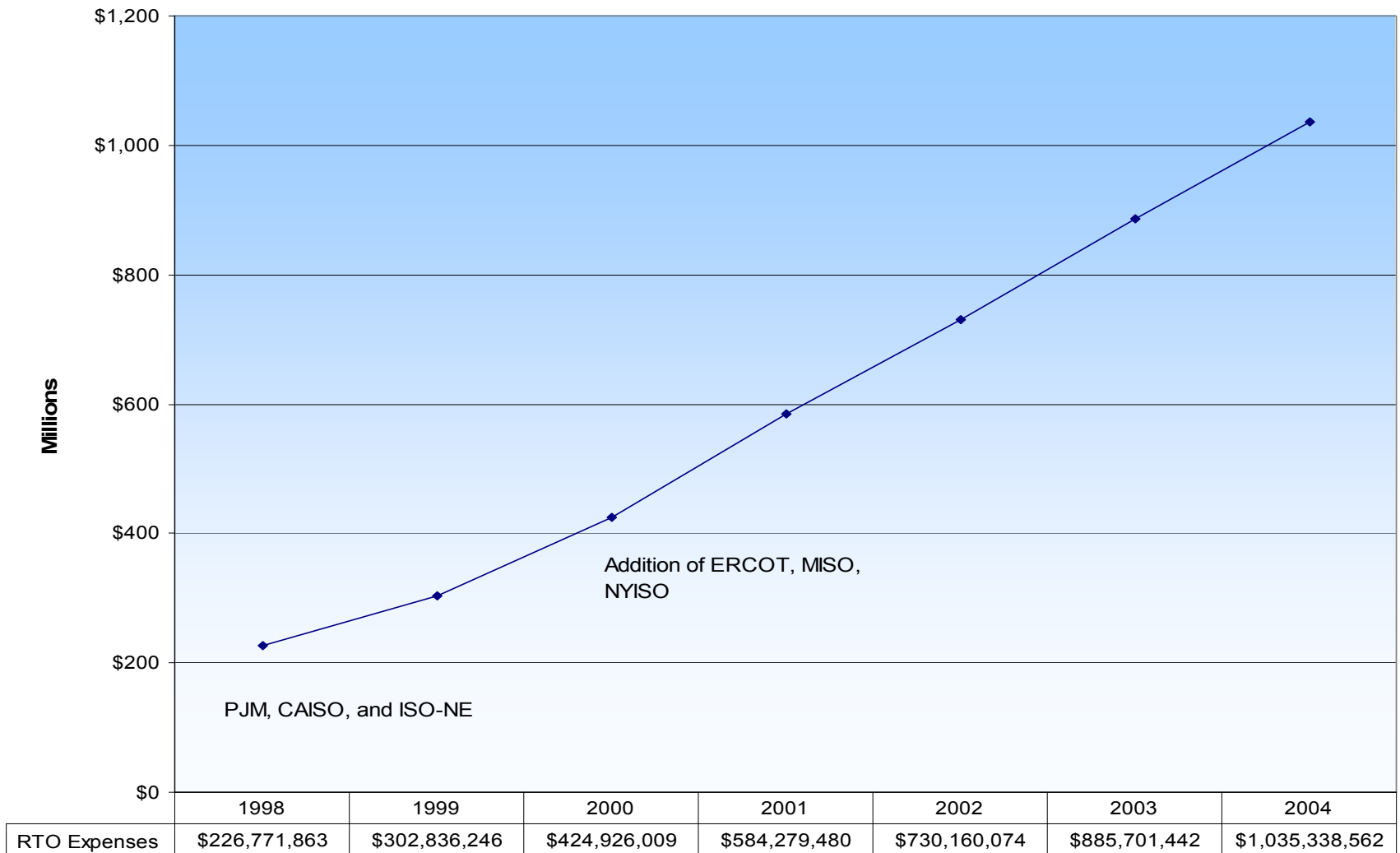
August 17, 2004

Margot Lutzenhiser
Associate Economist
Public Power Council

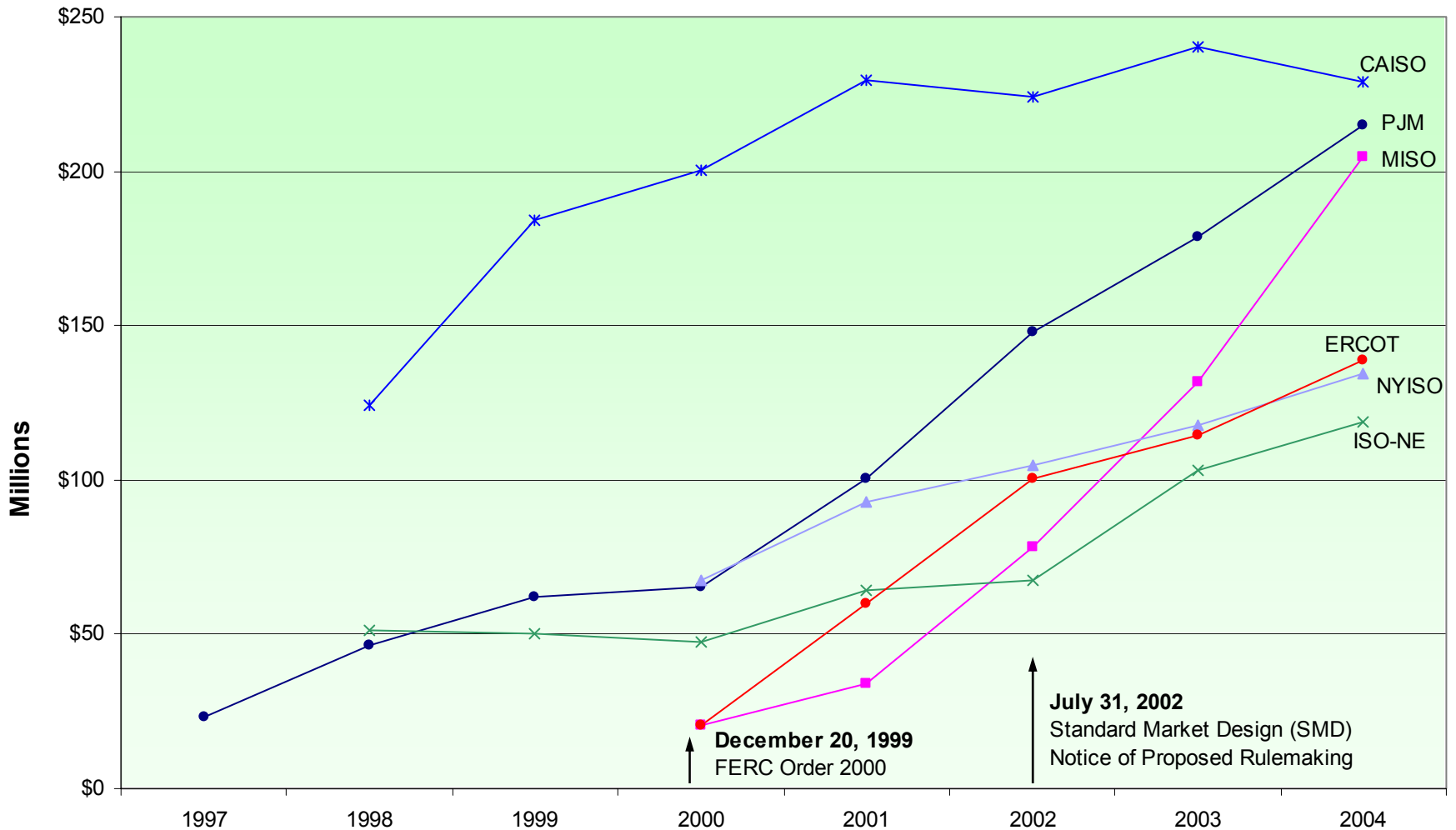


Source: <http://www.ferc.gov/industries/electric/indus-act/rto/rto-map.asp>

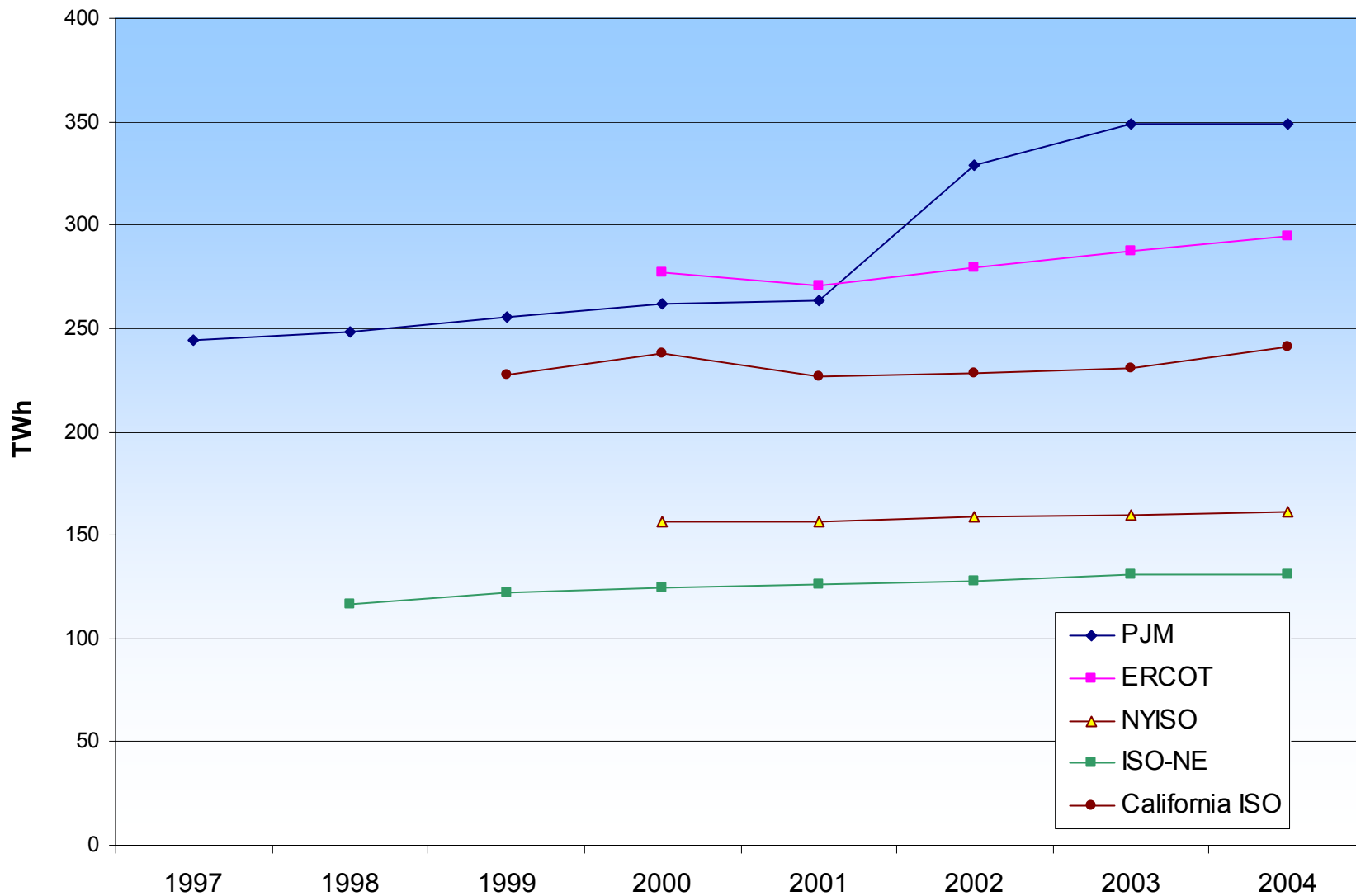
Annual U.S. RTO/ISO Operating Costs (2003 dollars)



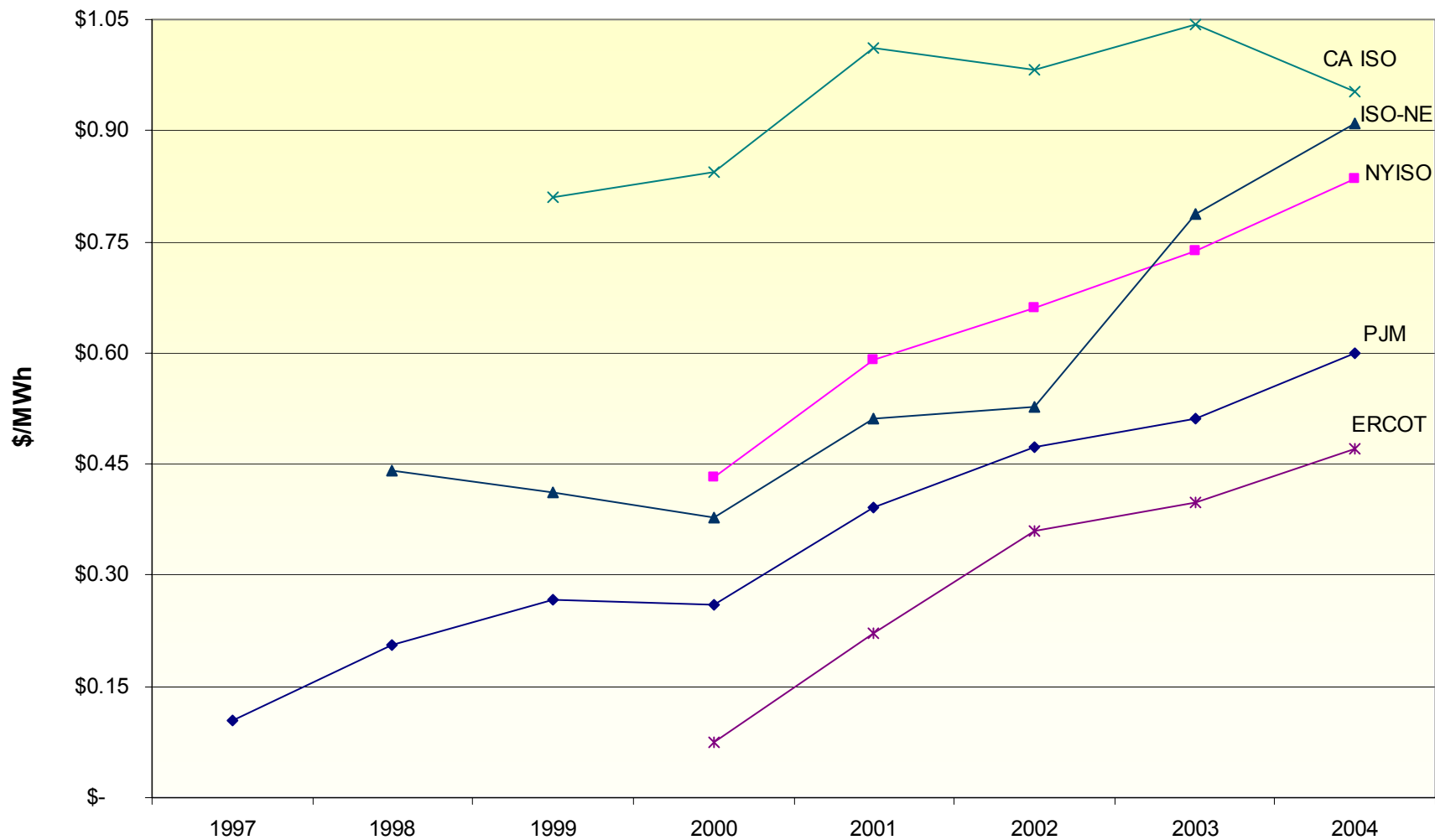
ISO/RTO Annual Operating Costs (Including Amortization, Depreciation and Interest Expenses in 2003 dollars)



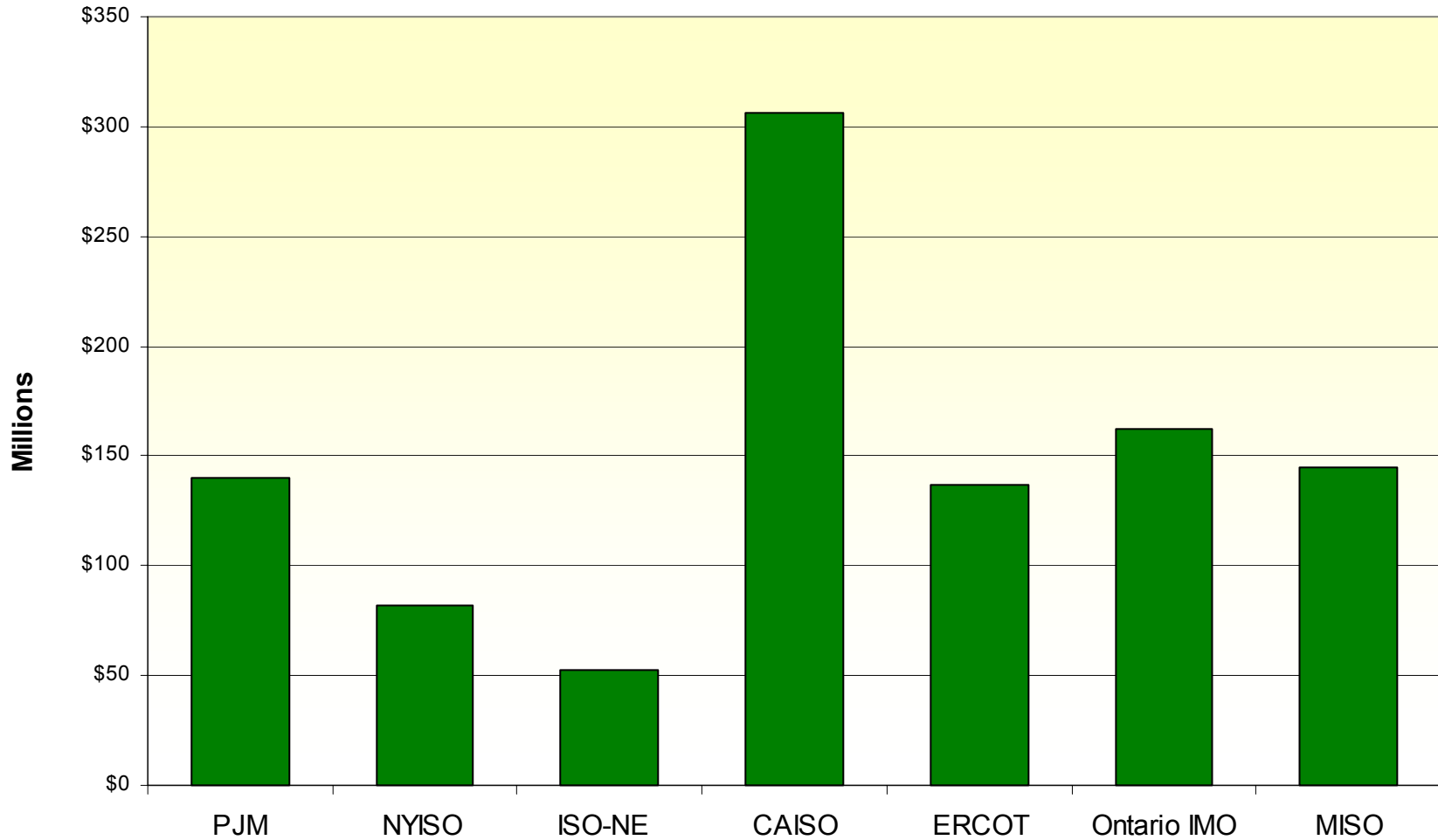
ISO/RTO Net Annual Energy Demand (Load)



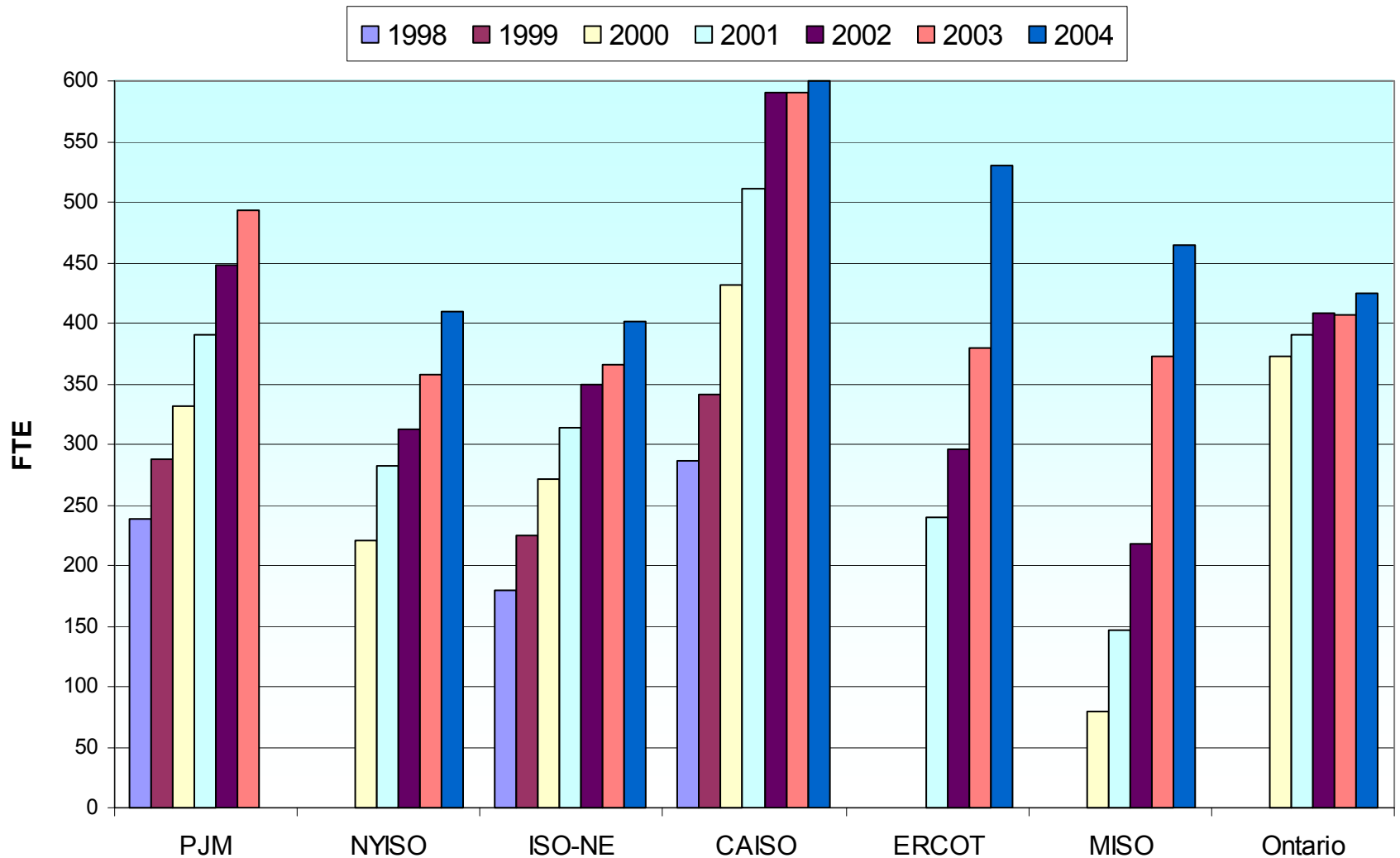
RTO/ISO \$/MWh Annual Operating Costs (2003 Dollars)



RTO/ISO Start-Up Costs

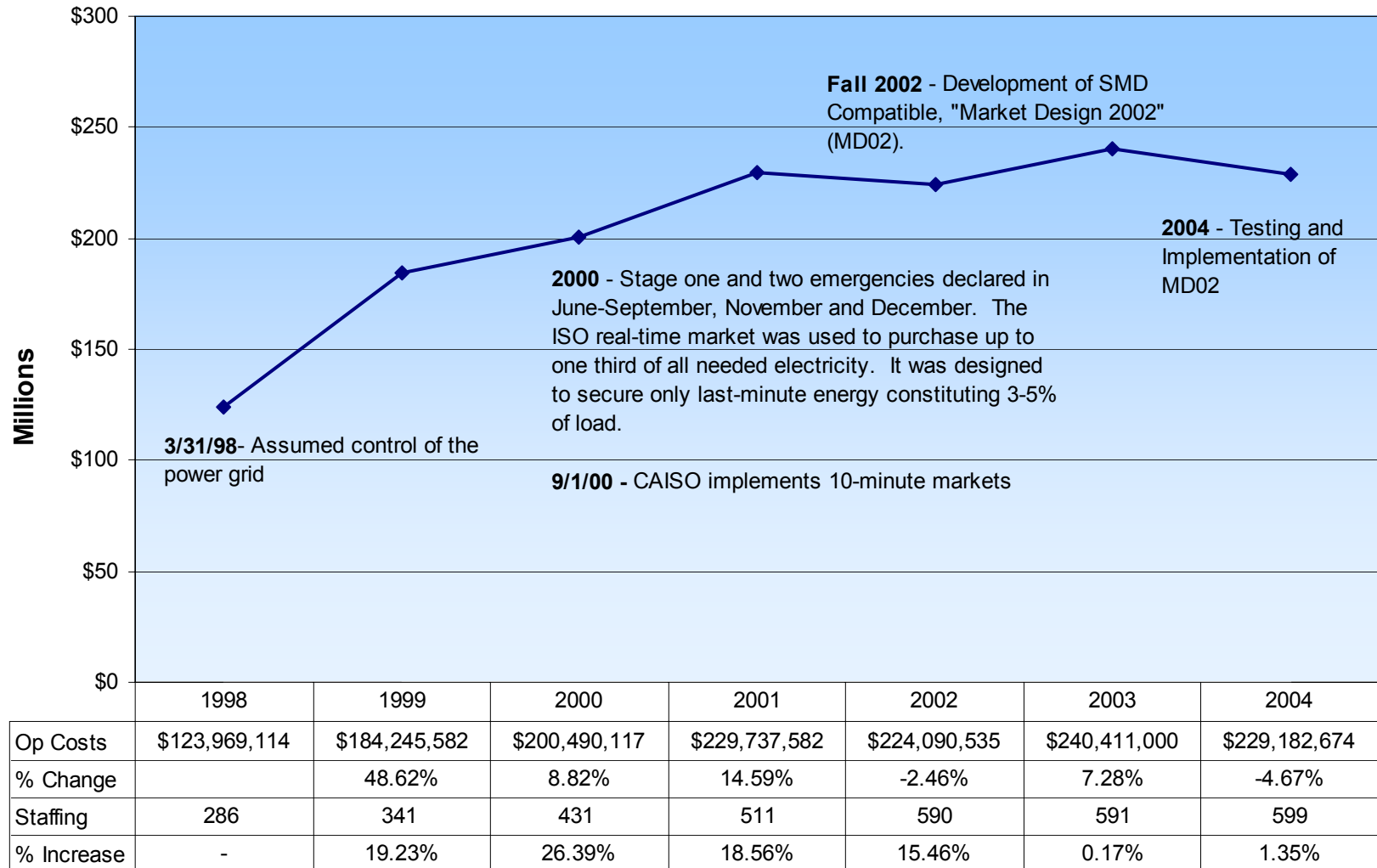


ISO/RTO Staffing Levels

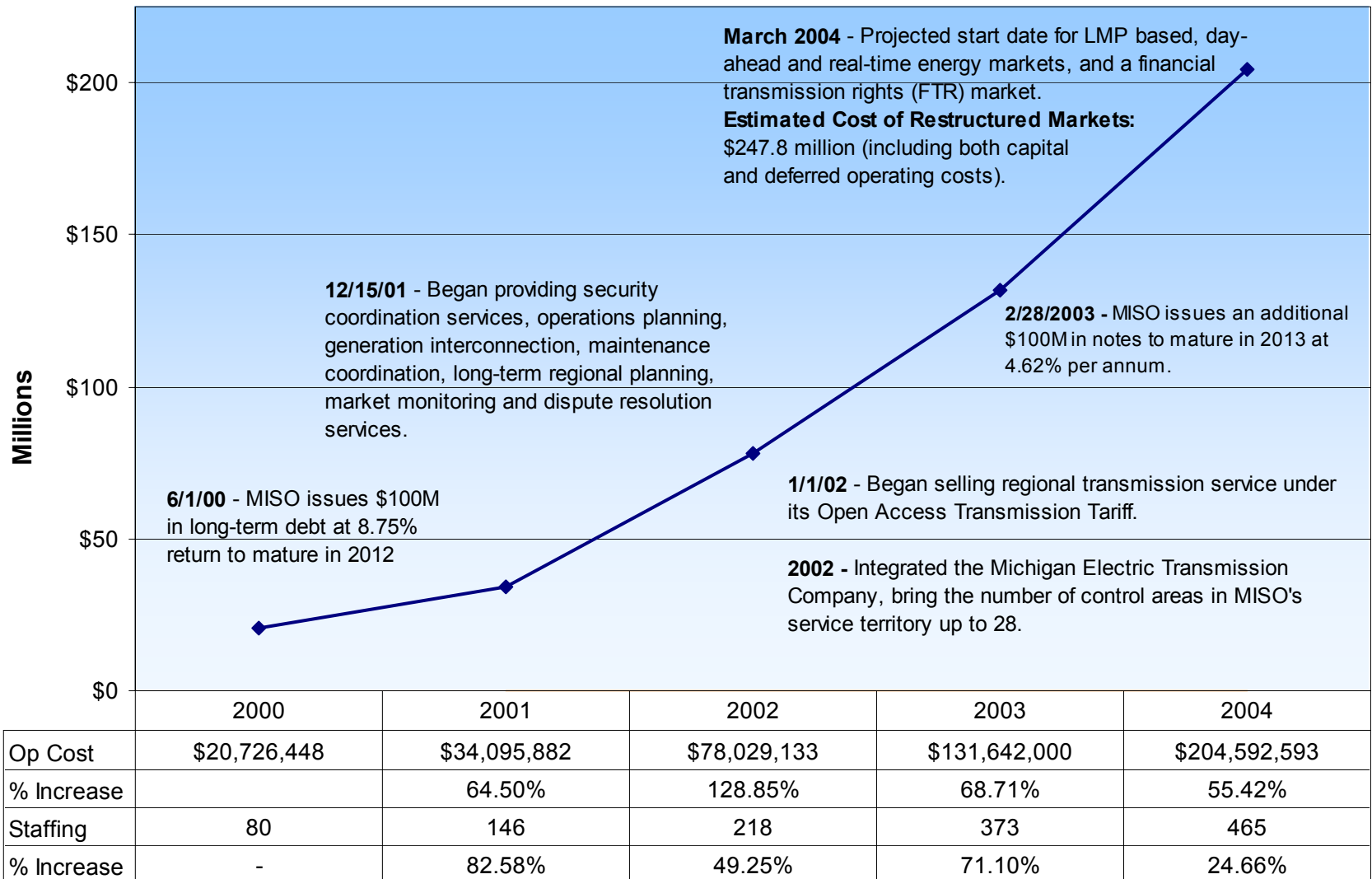


*It is unclear whether contractor are included in some data points. FERC Form 1 data does not include contractors. For consistency, contractors have been excluded whenever possible. (Sources provided on slides 16-18.)

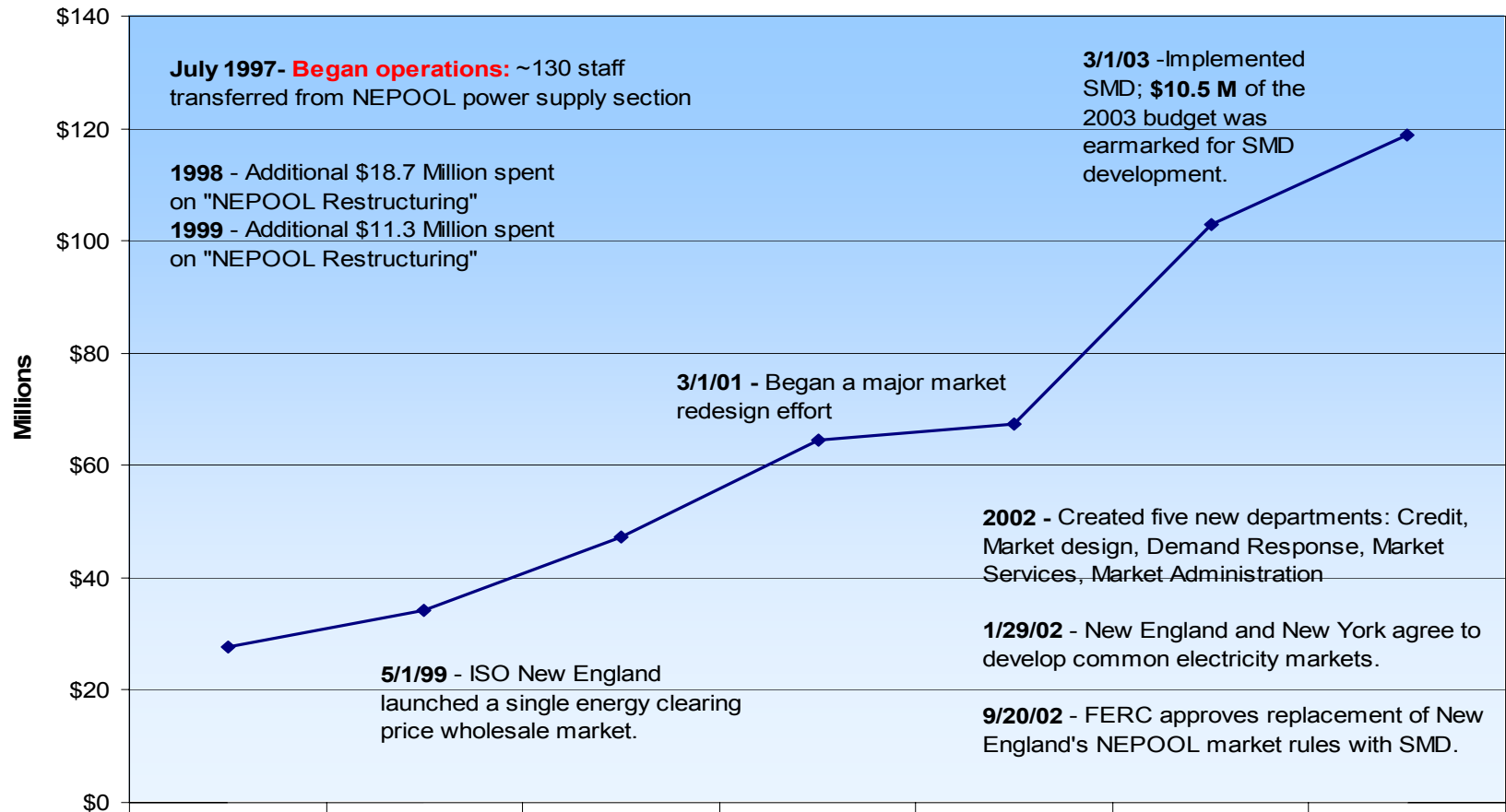
California ISO Annual Operational Costs (2003 dollars)



Midwest ISO Annual Operating Costs (2003 Dollars)

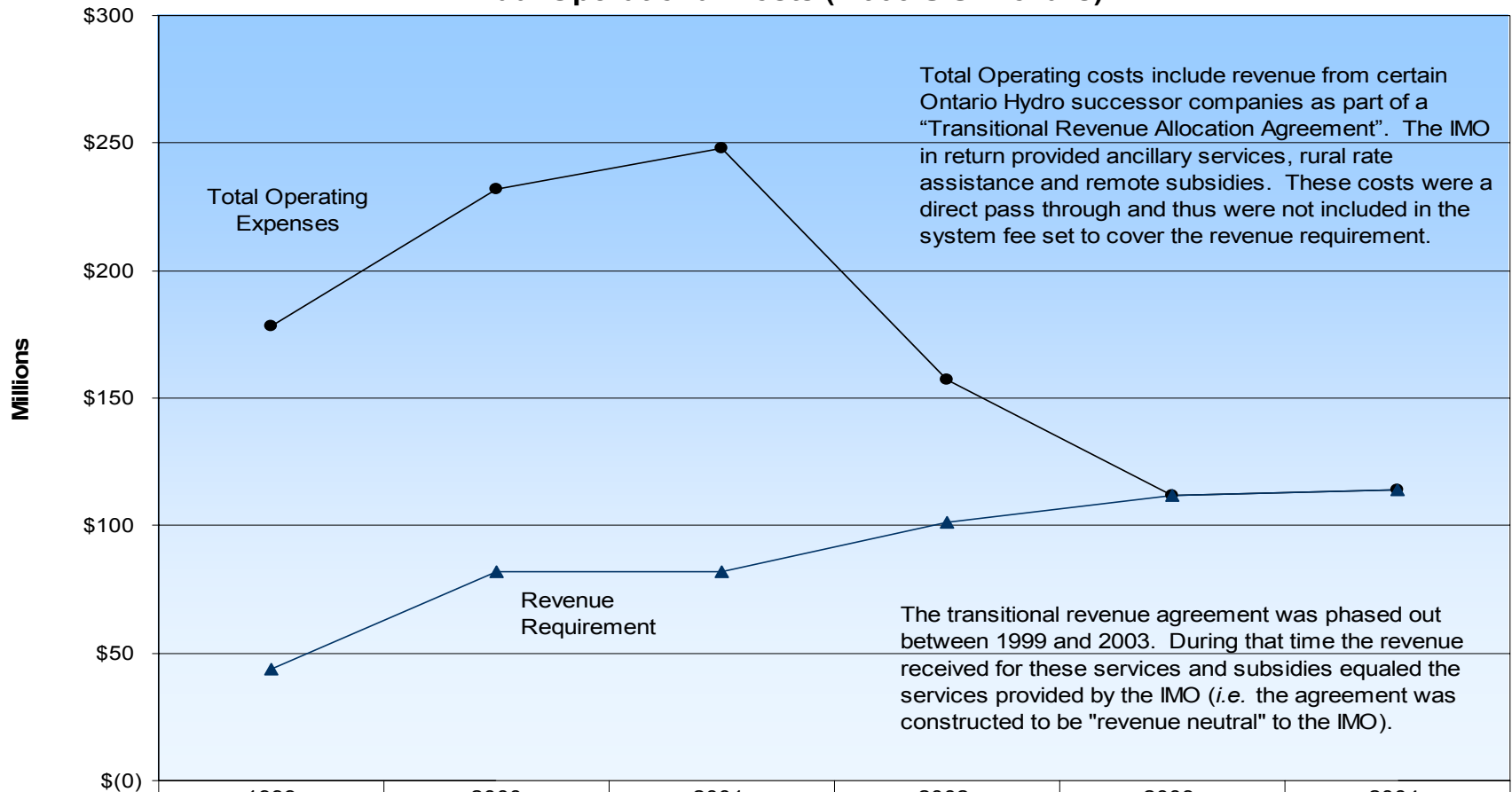


ISO New England Annual Operational Costs (2003 Dollars)



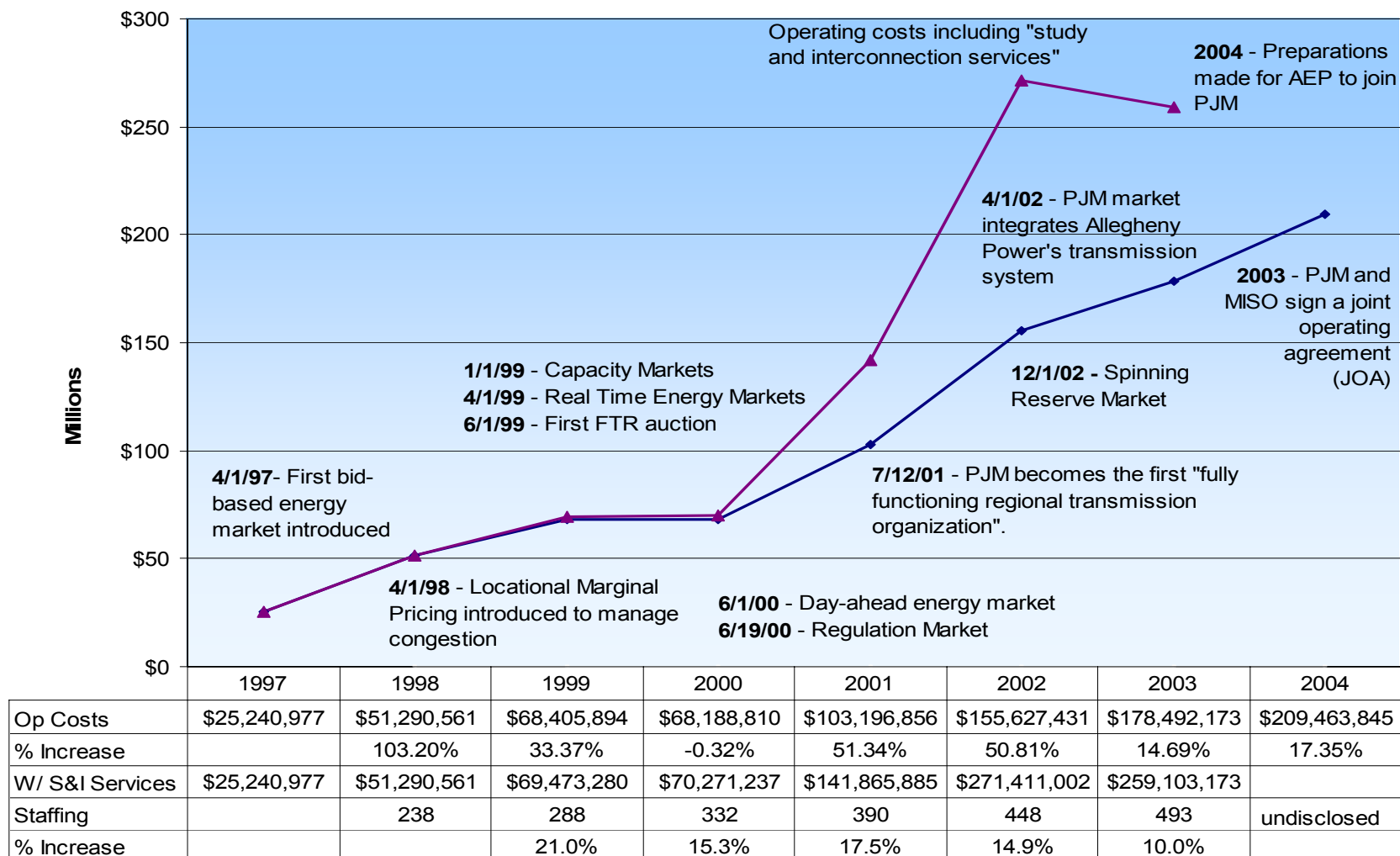
	1998	1999	2000	2001	2002	2003	2004
Op Costs:	\$27,685,000	\$34,295,000	\$47,324,487	\$64,451,126	\$67,280,297	\$102,924,000	\$118,965,624
% Change:		23.88%	28.45%	36.19%	4.39%	52.98%	15.59%
Staffing:	180	224	271	314	350	366	402
% Increase:	-	24.44%	20.98%	15.87%	11.46%	4.57%	9.70%

Ontario Independent Market Operator (IMO) Annual Operational Costs (2003 U.S. Dollars)

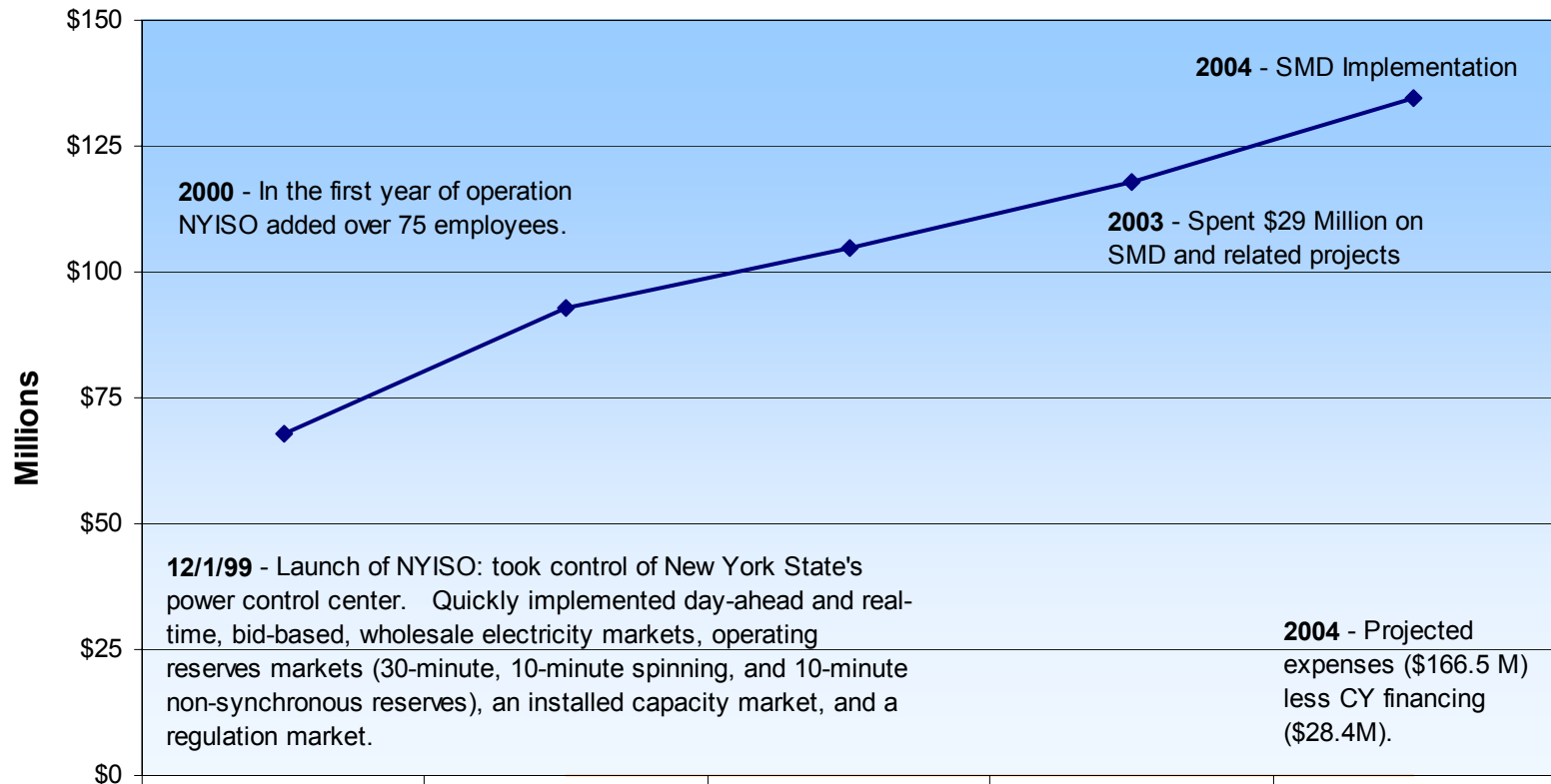


	1999	2000	2001	2002	2003	2004
Total Expense	\$178,083,278	\$231,935,946	\$248,209,497	\$157,304,028	\$111,597,840	\$114,060,370
Revenue Req.	\$43,847,951	\$81,666,325	\$81,943,185	\$101,321,760	\$111,597,840	\$114,060,370
Staffing		373	390	408	407	424
% Change		86.25%	0.34%	23.65%	10.14%	2.21%

PJM Annual Operating Costs (2003 Dollars)

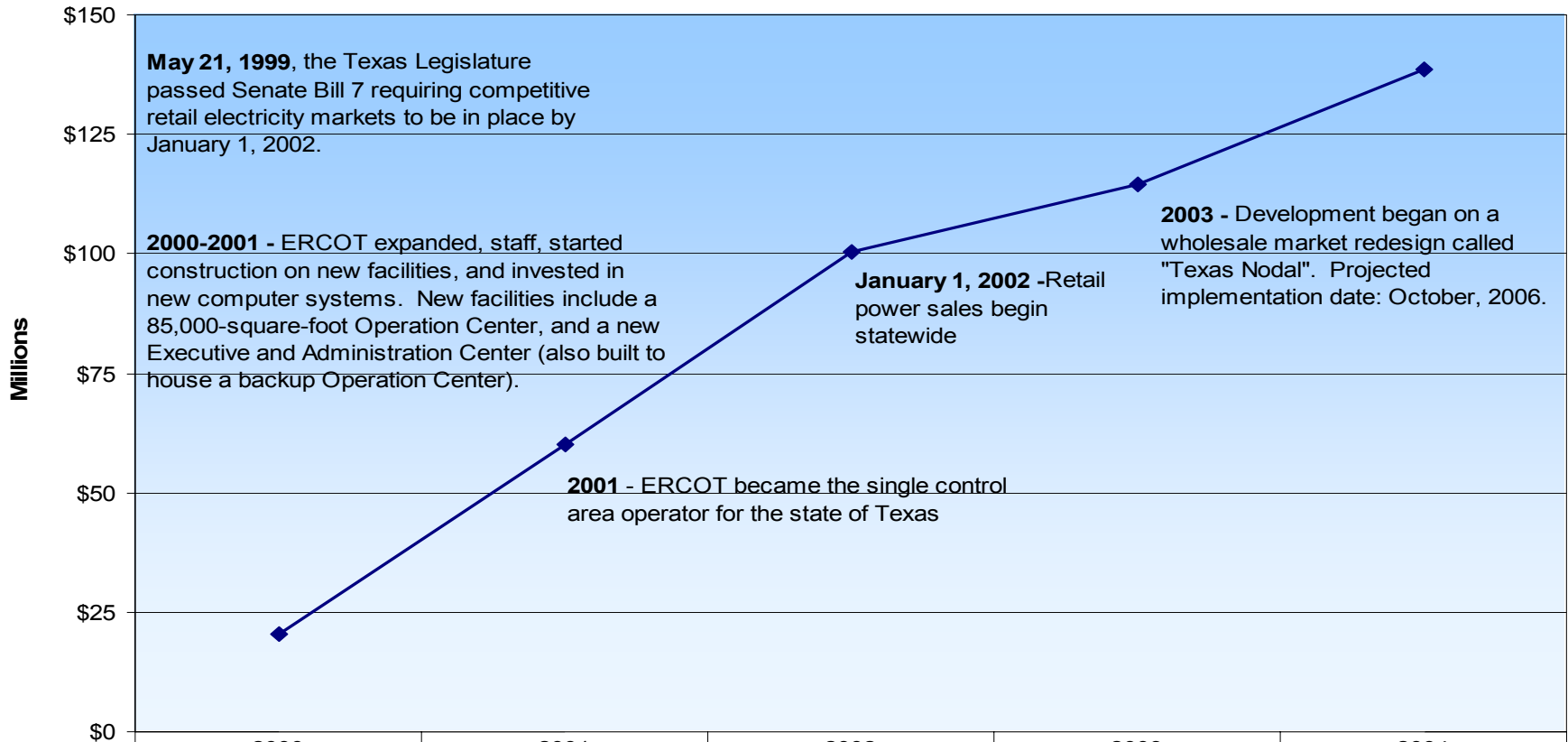


New York ISO Annual Operating Costs (2003 dollars)



	2000	2001	2002	2003	2004
Op Costs	\$67,669,514	\$92,660,733	\$104,718,914	\$117,819,269	\$134,543,986
% Change		36.93%	13.01%	12.51%	14.20%
Staffing	220	282	312	358	392
% Increase	52.8%	28.2%	10.6%	14.7%	9.5%

ERCOT Annual Operating Expense



	2000	2001	2002	2003	2004
O&M	\$20,526,635	\$60,137,302	\$100,413,764	\$114,413,000	\$138,589,841
% Increase		192.97%	66.97%	13.94%	21.13%
FTE	50	240	296	380	530
% Increase		380.00%	23.33%	28.38%	39.47%

Data Sources:

PJM:

O&M, Amortization, Depreciation, and Interest Expense: 1997-2003 (FERC Form 1 submissions); 2004 (*Approved 2004 Budget and Service Category Rates*, 10/28/2003).

Annual Energy: 1997-1999 (1999 *Annual Report on Operations*); 2000 (2000 *Annual Report on Operations*); 2001 (2001 *Annual Report on Operations*); 2002-2003 (Corresponding *Annual Reports*); 2004 (*Approved 2004 Budget and Service Category Rates*, 10/28/2003).

Staffing Levels: 1998-2001 (FERC Form 1 submissions); 2002 (448 employees as of 9/30/2002 noted in PJM's 2002 3rd Quarter Financial Statement); 2003 (*NYISO 2003 Budget Review for the Budget, Performance, and Standards Committee*, 9/30/2002).

Start-up Costs: PJM staffers indicated that they have not calculated their overall start-up costs. Estimate provided by the *Ontario IMO 2001-2003 Business Plan*, 11/13/2000, pg. 41.

New York ISO:

O&M, Amortization, Depreciation, and Interest Expense: 2000-2003 (FERC Form 1 submissions); 2004 (*NYISO 2004 Budget Report for the Budget, Standards and Performance Subcommittee*, 11/12/2003).

Annual Energy: 2000-2002 (*NYISO 2003 Gold Book - Load and Capacity Data*); 2003-2004 (Backed into using revenue requirements and \$/MWh rates in *NYISO 2004 Budget Report*, 11/12/2003).

Staffing Levels: 2000 (*Annual Report*); 2001 (*NYISO Budget vs. Actual Results*, February 2002); 2002 (2003 *Budget Review*, 9/30/2002); 2003-2004 (*2004 Budget Overview*, 9/26/2003).

Start-up Costs: *Tabors Caramanis RTO West Cost Benefit Study*, 3/11/2002.

ISO New England:

O&M, Amortization, Depreciation, and Interest Expense: 2000-2002 (Corresponding *Annual Reports*); 2003 (2003 *Final Audited Financial Statement*, 3/3/2004); 2004 (*ISO-NE March Forecast for End of Year 2004*, March 2004).

Annual Energy: 1998-2004 (1999-2004 *Annual Capacity, Energy, Loads, and Transmission (CELT) Reports*, Note: 2004 is a forecast).

ISO New England Cont.

Staffing Levels: 1998-2001 (FERC Form 1 Submissions); 2002 (*Annual Report*); 2003 (NYISO 2003 Budget Review, 9/30/2002); 2004 (*ISO-NE March Forecast for End of Year 2004*, March 2004, Note: Projected FTE).

Start-up Costs: FERC order "Accepting for Filing and Suspending Cost Recovery Proposal, Subject to Refund and Establishing Hearing", Docket No. ER99-4235-000, 10/13/1999.

California ISO:

O&M, Amortization, Depreciation, and Interest Expense: 1998-2002 (FERC Form 1 submissions); 2003 (*December Monthly Financial Report*, 12/31/2003 Note: Actual 2003 numbers - unaudited); 2004 (*Proposed FY2004 Operating & Maintenance Budget and Capital Budget*, 9/18/03).

Annual Energy: 1998 (*2000 Annual Report on Market Issues and Performance*, November 2001); 1999-2001 (*2002 Annual Report on Market Issues and Performance*, April 2003); 2002-2003 (*2003 Market Performance Review* from the Office of Market Analysis, April 2004); 2004 (*Proposed FY2004 Operating & Maintenance Budget and Capital Budget*, 9/18/03).

Staffing Levels: 2000-2001 (FERC Form 1 submissions); 2002 (*Proposed FY 2003 Budget*, 10/16/2002, Note: "revised and approved staffing" level); 2003 (*December Monthly Financial Report*, 12/31/2003); 2004 (*Proposed FY2004 Operating & Maintenance Budget and Capital Budget*, 9/18/2003 Note: projected FTE).

Start-up Costs: *Financing Plan Execution*, 4/23/1998.

ERCOT:

O&M, Amortization, Depreciation, and Interest Expense: 2000-2003 (*2003 Annual Report*); 2004 (2004 Texas PUC rate filing (Docket # 28832)).

Annual Energy: 2000-2004 (2004 Texas PUC rate filing - Docket # 28832, Note: 2001-2002 are actuals, 2003 is part actual and part budgeted and 2004 is budgeted).

Staffing Levels: 2000, 2001, 2003 (*2003 Annual Report*); 2002 (Estimate based on rate filing information); 2004 (2004 Texas PUC rate filing (Docket # 28832)).

Start-up costs: Start-up Costs: *Tabors Caramanis RTO West Cost Benefit Study*, March 11, 2002.

Midwest ISO:

O&M costs, Amortization, Depreciation, and Interest: 2000-2003 (*Corresponding Annual Reports*); 2004 (*Updated 2004 Budget Presentation*, 3/18/2004, Note: original budget from MISO *Budget Advisory Committee Presentation*, 12/10/03).

Annual Energy: MISO does not collect or compute annual energy demand at this time. Estimates of MISO annual demand calculated using FERC Form 1 submissions of MISO membership.

Staffing Levels: 2000 (*MISO Order 2000 Compliance Filing (RT01-87-000)*; 1/16/2001); 2001, 2002, 2004 (*2004 Budget Advisory Committee Presentation*, 12/10/2003.); 2003 (*2003 Annual Report*).

Start-up Costs: *MISO 2000 Annual Report*.

Ontario IMO:

O&M, Amortization, Depreciation, and Interest Expense: 1999-2002 (*Corresponding Annual Reports*); 2003 (*2003 Final Audited Financial Statement*, 1/12/04); 2004 (*IMO Business Plan 2004-2006 Financial Overview*, 9/30/2003).

Annual Energy: Demand Overview section of Ontario IMO's webpage:

http://www.theimo.com/imoweb/media/md_demand.asp

Staffing Levels: 2000, 2002 (*IMO Business Plan 2001-2003*, 11/13/2000); 2002 (*Annual Report*); 2003-2004 (*IMO Business Plan 2004-2006 Financial Overview*, 9/30/2003 Note: 2003 is projected, 2004 is budgeted).

Start-up Costs: *Ontario IMO 2001-2003 Business Plan*, 11/13/2000.