

# ACTUARIAL FUNDING CASE STUDY

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# Recurring Themes

- Maintain the budget
- Conservative measures
  - Assumptions
  - Assets
  - Funding schedule

# Quabbin Retirement System

Fiscal Year		Actual Appropriation
1993	Cost of Benefits	290
1994	Cost of Benefits	300
1995	Cost of Benefits/Split Schedule	330
1996		285 ↓
1997		295
1998	Pension Obligation Bonds Considered	310
1999	COLA Change	270 ↓
2000		250 ↓
2001		275
2002	Investment Losses First Recognized	315 ↑
2003	Early Retirement Incentive	330
2004	Asset Smoothing	350
2005		380
2006		420
2007	Investment Return Assumption	460
2008		500

# Quabbin Retirement System

Fiscal Year		Actual Appropriation	Appropriation if Budget Maintained After COB
1993	Cost of Benefits (COB)	290	290
1994	Cost of Benefits	300	300
1995	Cost of Benefits/Split Schedule	330	330
1996		285	285
1997		295	295
1998	Pension Obligation Bonds Considered	310	310
1999	COLA Change	270	325
2000		250	340
2001		275	355
2002	Investment Losses First Recognized	315	375
2003	Early Retirement Incentive	330	395
2004	Asset Smoothing	350	415
2005		380	435
2006		420	455
2007	Investment Return Assumption	460	475
2008		500	500

# Quabbin Retirement System

<b>Fiscal Year</b>	<b>Actual Appropriation</b>	<b>Appropriation if Budget Maintained After COB</b>
2006	420	455
2007 Investment Return Assumption	460	475
2008	500	500
<b>Projected</b> 2009	540	525
2010	580	550
2011	620	575

# Quabbin Retirement System

Fiscal Year		Additional Appropriation If Budget Maintained	Cumulative
1993	Cost of Benefits	0	0
1994	Cost of Benefits	0	0
1995	Cost of Benefits/Split Schedule	0	0
1996		0	0
1997		0	0
1998	Pension Obligation Bonds Considered	0	0
1999	COLA Change	55	55
2000		90	145
2001		80	225
2002	Investment Losses First Recognized	60	285
2003	Early Retirement Incentive	65	350
2004	Asset Smoothing	65	415
2005		55	470
2006		35	505
2007	Investment Return Assumption	15	520
2008		0	520

# Estimated Valuation Results

Cumulative additional appropriation	\$520
Cumulative additional appropriation with earnings	\$900

**January 1, 2008**

	<b>Actual</b>	<b>If Budget Maintained</b>
Unfunded Liability	5,000	4,100
Funded Ratio	61%	68%

# Cost of Benefits Minimum

Initial schedule effective FY90

Cost of Benefits (COB) effective through FY95 (6 years)

## Original schedule

	Schedule	COB
FY95	230	330
FY96	245	NA
FY97	255	NA

# Cost of Benefits Minimum

Increase from original schedule reflects removal of last year of COB

Revised schedule effective FY95

	Schedule	COB
FY95	<b>270</b>	<b>N/A (was 330)</b>
FY96	<b>285</b>	NA
FY97	<b>295</b>	NA

# Cost of Benefits Minimum

Totals are about the same, **but** actually, the board is in a better funded position

	Prior	Actual
FY95	330	270
FY96	245	285
FY97	<u>255</u>	<u>295</u>
	830	850

# Split Schedule Adopted in 1995

Aggressive funding

Retirees paid off in FY09

Actives paid off in FY 28

<b>Fiscal Year</b>	<b>Schedule Appropriation</b>
2009	550
2010	320

# Split Schedule Adopted in 1995

- Many systems once had split schedules
- Budget issue - decreasing appropriation
  - Similar to approaching fully funded status
- Abandoned split schedule in 1999

# Pension Obligation Bonds (POB)

- Considered in 1998/1999
- Unfunded liability = 3,000

# POB Considerations

- City/town decision
- Not a panacea
- Market timing = significant short-term risk

# POB Calculations

1/1/99	No POB	POB
Actuarial Liability	7,000	7,000
Assets	4,000	7,000
Unfunded Liability	3,000	0
Funded Ratio	57.1%	100%

# POB “Worst Case” Projection

## 5 Year Investment Return Projection

Assume:

- -10% return in three years
- 0% return in one year
- 10% return in one year
- Average return: -4.3%

# POB “Worst Case” Projection

**As of 1/1/04**

	No POB	POB
Actuarial Liability	9,500	9,500
Assets	<u>3,000</u>	<u>5,100</u>
Unfunded Liability	6,500	4,400
Funded Ratio	31.6%	53.7%

Board decided **not** to adopt after due diligence

# COLA Change

- Chapter 17 of the Acts of 1997
- COLAs to be paid by local systems
- Increase COLA base to \$12,000

# Impact of COLA Change

## 1/1/98 Results

	Before	After	% Increase
Actuarial Liability	6,200	6,750	8.8%
Assets	3,700	3,700	
Unfunded Liability	2,500	3,050	22.0%
Funded Ratio	59.7%	54.8%	

# Impact of COLA Change

- Increase in unfunded liability 550
- FY99 Amortization:
  - 15-year level 64
  - 4.5% increasing to 2028 30

# Impact of COLA Change

<b>Fiscal Year</b>		<b>Actual Appropriation</b>
1998	Pension Obligation Bonds Considered	<b>310</b>
1999	COLA Change	<b>270</b>

# Impact of COLA Change

- Actual cost increased 30-64
- Actual appropriation decreased 40
- "Net" decrease in appropriation 70-104

# Impact of COLA Change

How can the appropriation decrease if the cost increases?

Year	Investment Return
1995	24%
1996	14%
1997	17%

Removed split schedule

Adopted minimum schedule

# Why Approved?

PERAC approved with caveats:

- "the assumptions are aggressive"
- "a step backward"
- "this decision could significantly increase future costs if actuarial losses occur"
- "more prudent to continue [existing schedule]"

# Why Approved?

The arithmetic worked.

- "...accepting the schedule because it meets the minimum requirements."
- "...we do not endorse..."

# Board's Viewpoint

What actuarial losses?

- "We are going to earn 15% every year."

# Lessons Learned

- Approval with caveats did not work
- About 5 such approvals were granted
- Within 2 years, appropriations increased in **all** cases

Would PERAC approve today?      **NO**

# Early Retirement Incentive - 2003

- 20 members accepted
- Payroll decreased by 800,000
- Increase in accrued liability: 1,200,000
- Increase in appropriation: 140,000  
(15-year level)

# Early Retirement Incentive

Were there any savings?

- ERIs **increase** pension costs
- Any savings are **outside** the plan (salary)

How many positions are rehired?

- All = cost increase
- None = cost savings

# Board Adopts Asset Smoothing - 2004

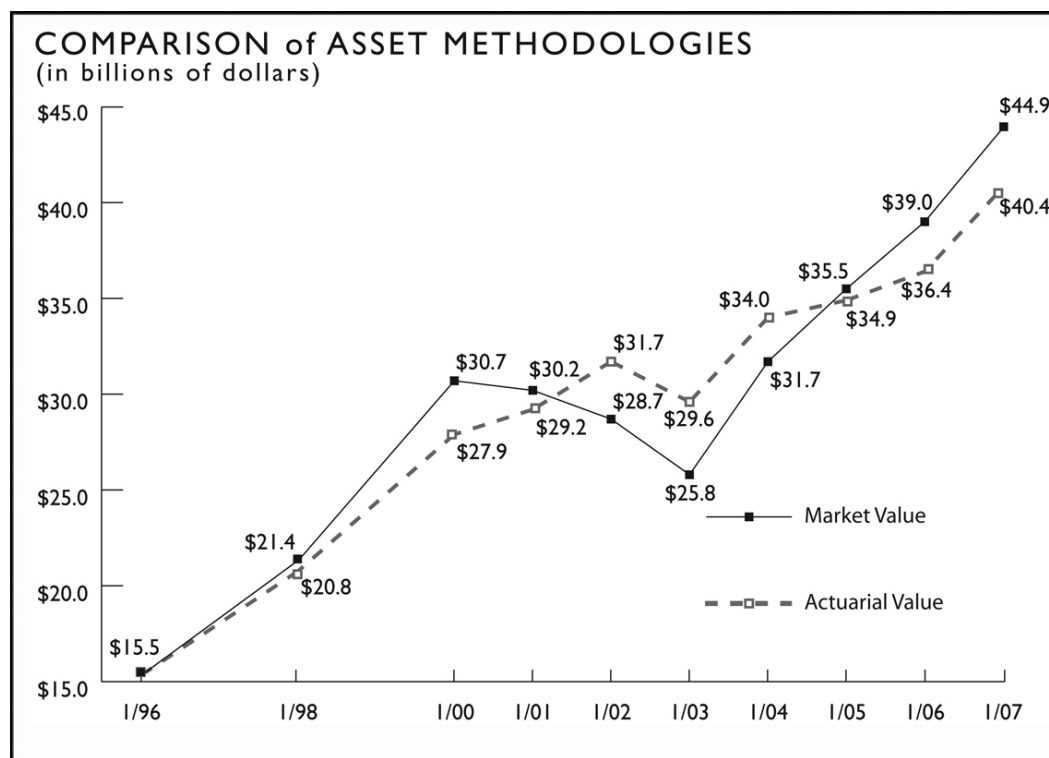
- Recommended by PERAC since 1997
- What took Quabbin so long?

# Actuarial Value of Assets (Smoothing)

Prior to 1998	2 systems
1998	4 systems, including State and Teachers
By 2001	18 systems
By 2005	65 systems
Currently	80 systems

# Actuarial Value of Assets (Smoothing)

Why adopt? To reduce volatility



# Actuarial Value of Assets (Smoothing)

**As of 1/1/04**

<b>Values</b>	<b>Market</b>	<b>Actuarial</b>
Actuarial Liability	9,500	9,500
Assets	<u>4,850</u>	<u>5,200</u> (107% of market)
Unfunded Liability	4,650	4,300
Funded Ratio	51.0%	54.7%

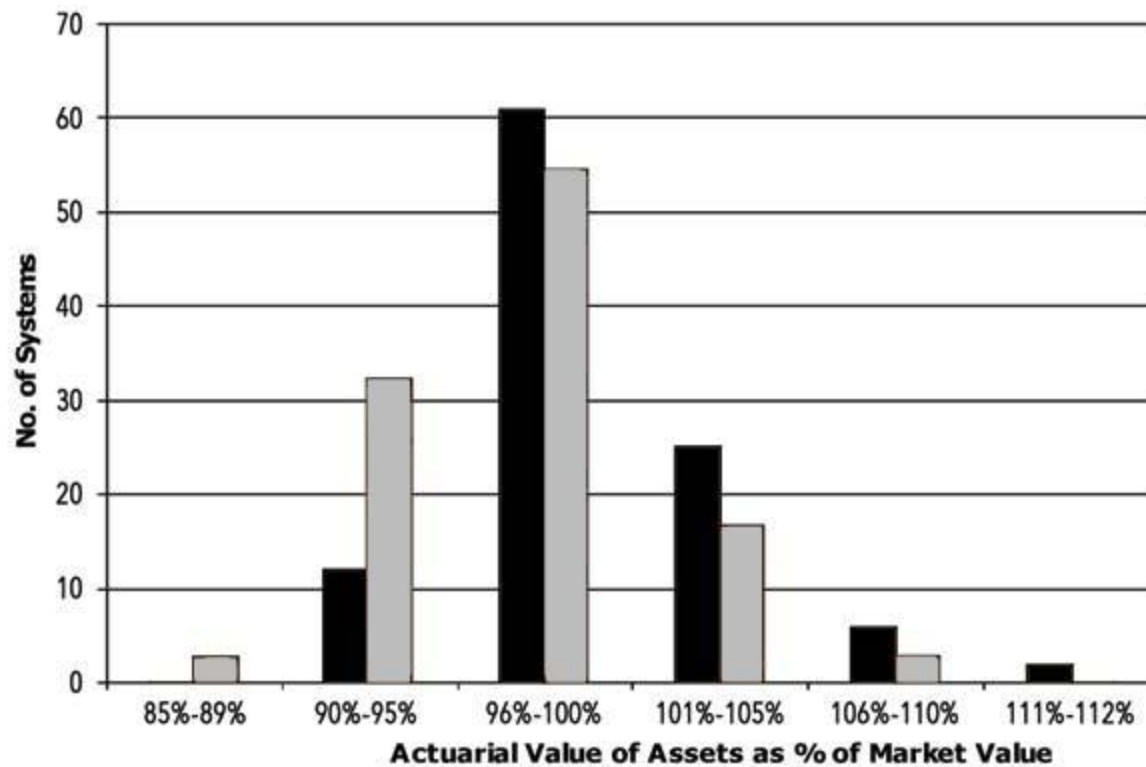
# Actuarial Value of Assets (Smoothing)

- Adopted to mitigate 2000-2002 losses
- Approach used by many systems
- Not conservative in 2004
- Watch out for deferred losses!

# Actuarial Value of Assets (Smoothing)

- Continue to use methodology
  - Conservative over longer term
- Most systems currently have deferred gains

# Actuarial Value as a % of Market Value



Based on latest  
Actuarial valuation  
reports

■ 2007  
■ 2008

All Systems

# Investment Return Assumption 2007

- Quabbin has used an 8.5% assumption in all schedules
- PERAC has tried convince Quabbin to reduce
  - See “You Make the Call – Issue One”
- Quabbin compromises and selects an 8.25% assumption

# Investment Return Assumption

**As of 1/1/07**

	<b>8.25%</b>	<b>8.5%</b>
Actuarial Liability	12,000	11,700
Assets	<u>6,700</u>	<u>6,700</u>
Unfunded Liability	5,300	5,000
Funded Ratio	55.8%	57.3%

# Investment Return Assumption

- No increase in appropriation
- Use gains to “pay” for increased cost