

# ACTUARIAL GUIDELINE 49

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# ILLUSTRATION REGULATION LEGISLATIVE HISTORY

“A REGULATOR SUGGESTED THAT A PROVISION BE ADDED TO REFER TO COMPARISONS BETWEEN POLICIES, RECOGNIZING THAT PEOPLE WILL COMPARE POLICIES WHETHER THE WORKING GROUP THINKS IT IS APPROPRIATE OR NOT. THE MAJORITY DECIDED THE NAIC SHOULD NOT GO ON RECORD IN ANY WAY ENCOURAGING WHAT THEY CONSIDERED AN INAPPROPRIATE USE OF ILLUSTRATIONS.”

# LIMRA GUIDE TO THE NAIC MODEL REGULATIONS FOR LIFE INSURANCE ILLUSTRATIONS

“THE NAIC MODEL REGULATION LEVELS THE PLAYING FIELD – THAT IS, ALL LIFE INSURANCE SALES ILLUSTRATIONS WILL MEET IN CERTAIN REQUIREMENTS AND DISPLAY INFORMATION IN A SIMILAR FASHION. THE ADVANTAGE TO CONSUMERS IS THAT THEY WILL FIND IT EASIER TO MAKE A FAIR COMPARISON OF POLICIES. THE ADVANTAGE TO YOU IS THAT THE REGULATION WILL PREVENT OTHER PRODUCERS FROM TAKING UNFAIR ADVANTAGE WITH THE SALES ILLUSTRATION TOOL.”

# INDEXED INTEREST CREDITING PARAMETERS

- FIXED CREDITING STRATEGIES:

$$\text{CREDITING RATE} = \text{EARNED INTEREST RATE} - \text{SPREAD}$$

- INDEXED CREDITING STRATEGIES:

$$\text{HEDGING BUDGET} = 1 - (1 + \text{SPREAD}) / (1 + \text{EARNED INTEREST RATE})$$

$$\text{HEDGING BUDGET} = \text{OPTION COST}$$

## OPTION COSTS FOR VARIOUS CAP RATES

Cap Rate	10%	11%	12%	13%	14%	15%
Option Cost	4.17%	4.44%	4.68%	4.84%	4.97%	5.09%
Minimum Interest Rate	4.35%	4.65%	4.91%	5.08%	5.23%	5.36%

The Moody's Corporate Bond Avg. Yield for May 2015 is 4.35%

Based on CBOE option prices on May 27, 2015.

# CURRENT CREDITING PARAMETERS

S&P 500, ANNUAL POINT TO POINT, 100% PARTICIPATION, 0% FLOOR

Cap Rate	8.0	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	Total
#	1	4	1	6	1	6	4	15	1	9	5	2	1	56
%	2%	7%	2%	11%	2%	11%	7%	27%	2%	16%	9%	4%	2%	100%

Cap Rate	#	%
<10%	6	11%
[10%,12%)	17	30%
≥12%	33	59%

Median Cap Rate: 12%

June 2015

# MAXIMUM ILLUSTRATED CREDITING RATE

S&P 500, ANNUAL POINT TO POINT, 100% PARTICIPATION, 0% FLOOR

Cap Rate	8.0	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	Total
Avg.	5.75	6.45	6.28	6.88	6.97	7.01	7.44	7.28	7.80	8.14	8.18	8.61	8.60	7.41
Min.	5.75	6.10	6.28	6.72	6.97	6.53	7.44	4.15	7.80	7.25	8.10	8.32	8.60	4.15
Max.	5.75	7.20	6.28	7.00	6.97	7.21	7.44	8.00	7.80	8.44	8.20	8.90	8.60	8.90

Cap Rate	Avg.	Min.	Max.
<10%	6.31	5.75	7.20
[10%,12%)	7.06	6.53	7.44
≥12%	7.79	4.15	8.90

Median Crediting Rate: 7.5%

Nearly 80% use a 20 to 30-year look back method.

June 2015

# MAXIMUM ILLUSTRATED CREDITING RATE

S&P 500, ANNUAL POINT TO POINT, 100% PARTICIPATION, 0% FLOOR

Crediting Rate	Count	Proportion
[4%,5%)	2	4%
[5%,6%)	1	2%
[6%,7%)	11	20%
[7%,8%)	23	41%
[8%,9%)	19	34%
Total	56	100%

75% have a maximum illustrated crediting rate greater than 7%.

June 2015



# ILLUSTRATION SPECIFICATIONS

- MALE, PREFERRED NON-TOBACCO, ISSUE AGE 45
- \$214,456 FACE AMOUNT (MINIMUM)
- DEATH BENEFIT OPTION B, SWITCH TO OPTION A AFTER 20 YEARS
- \$10,000 PREMIUM FOR 20 YEARS
- SOLVE FOR MAXIMUM ANNUAL INCOME BEGINNING AT AGE 65
- 8.44% ILLUSTRATED CREDITING RATE (BASED ON 13% CAP & 30 YEAR LOOK BACK)
- 4.00% LOAN RATE (VARIABLE LOAN IS CAPPED AT FIXED CREDITING RATE + 1%)

# ILLUSTRATED VALUES

## WITHDRAW TO BASIS FOLLOWED BY DIRECT RECOGNITION LOAN (FIXED RATE)

Year	Age	Cumulative			Cash Value		Death Benefit		
		Premium	Income	Income	Amount	IRR	Amount	IRR	
10	55	100,000	0	133,718	133,718	5.2%	348,174	21.9%	
20	65	200,000	0	463,559	463,559	7.5%	678,015	10.6%	
30	75	200,000	386,420	850,812	464,392	8.0%	511,558	8.2%	
40	85	200,000	772,840	1,242,576	469,736	8.2%	532,846	8.3%	
50	95	200,000	1,159,260	1,593,366	434,106	8.2%	455,002	8.2%	
60	105	200,000	1,545,680	1,919,506	373,826	8.2%	373,826	8.2%	
70	115	200,000	1,932,100	2,140,785	208,685	8.2%	208,685	8.2%	
76	121	200,000	2,163,952	2,166,258	2,306	8.2%	2,306	8.2%	
Annual Premium		10,000 (paid for 20 years)							
Annual Income		38,642 (beginning in year 21)							
Guaranteed Income		154,568 (based on 24 year coverage period)							

# ILLUSTRATED VALUES

## NON-DIRECT RECOGNITION LOAN (VARIABLE RATE)

Year	Age	Cumulative			Cash Value		Death Benefit		
		Premium	Income	Income	Amount	IRR	Amount	IRR	
10	55	100,000	0	133,718	133,718	5.2%	348,174	21.9%	
20	65	200,000	0	463,559	463,559	7.5%	678,015	10.6%	
30	75	200,000	737,920	907,170	169,250	9.3%	245,595	9.6%	
40	85	200,000	1,475,840	1,741,754	265,914	10.8%	393,473	10.9%	
50	95	200,000	2,213,760	3,799,581	1,585,821	11.4%	1,644,721	11.5%	
60	105	200,000	2,951,680	9,580,745	6,629,065	11.7%	6,629,065	11.7%	
70	115	200,000	3,689,600	24,875,907	21,186,307	11.7%	21,186,307	11.7%	
76	121	200,000	4,132,352	43,924,503	39,792,151	11.7%	39,792,151	11.7%	
Annual Premium		10,000 (paid for 20 years)							
Annual Income		74,166 (beginning in year 21)							
Guaranteed Income		148,332 (based on 22 year coverage period)							

# ORIGINAL ACLI PROPOSAL

- MAXIMUM ILLUSTRATED CREDITING RATE DETERMINED USING 25 YEAR LOOK BACK BASED ON ILLUSTRATED CREDITING PARAMETERS.
- ADDITIONAL GUIDANCE PROVIDED FOR CREDITING STRATEGIES WITH A MEASUREMENT PERIOD GREATER THAN ONE YEAR AND INDICES WITH FEWER THAN 25 YEARS OF HISTORICAL EXPERIENCE.
- DISCLOSURE REQUIREMENTS: TABLE OF SHOWING ACTUAL INDEX PERFORMANCE AND LOAN RATE FOR 20 YEAR PERIOD ENDING IN THE PREVIOUS CALENDAR YEAR.
- EFFECTIVELY CODIFIES CURRENT PRACTICE WITH A UNIFORM METHOD FOR APPLYING THE LOOK BACK.

# COALITION RESPONSE

(METROPOLITAN LIFE, NEW YORK LIFE, AND NORTHWESTERN MUTUAL LIFE)

- LOOK BACK IS NOT AN APPROPRIATE METHOD FOR DETERMINING THE ILLUSTRATED RATE
  - OTHER GENERAL ACCOUNT PRODUCTS CANNOT (AND SHOULD NOT) USE A 25 YEAR LOOK BACK
  - A LOOK BACK APPROACH ENCOURAGES PRODUCT DESIGNS THAT WOULD HAVE BEEN PROFITABLE IN THE PAST.
- A VERY HIGH RETURN ON OPTION POSITIONS MUST BE ACHIEVED IN ORDER FOR ILLUSTRATED CREDITING RATES TO BE ACHIEVED.
  - THE NOTION THAT OPTION BUYERS CAN EARN 50-100% RETURNS ANNUALLY ON A LONG-TERM BASIS DEFIES THE NOTION OF MARKET EFFICIENCY. BUYERS AND SELLERS OF DERIVATIVES ARE IN EQUILIBRIUM AND THE ASSUMED RETURN ON DERIVATIVES SHOULD BE 0%.
- STOCHASTIC ANALYSIS SHOWS THAT PROJECTED CREDITING RATES WOULD UNDERPERFORM MAXIMUM ILLUSTRATED RATES DETERMINED BASED ON A 25 YEAR LOOK BACK IN OVER 90% OF SCENARIOS.

# SIMULATION OF DELTA HEDGING

EUROPEAN CALL OPTION ON 100,000 SHARES OF A NON-DIVIDEND PAYING STOCK

Week	Stock Price	Delta	Shares Purchased	Total Shares	
0	50.000	0.56942	56,942	56,942	Option Assumptions: Stock Price = \$50 Strike Price = \$50 Risk Free Rate = 5% Volatility = 12% 7 Weeks to Maturity
1	48.125	0.21895	(35,047)	21,895	
2	47.375	0.09655	(12,240)	9,655	
3	50.250	0.61105	51,450	61,105	
4	51.750	0.90457	29,352	90,457	
5	53.125	0.99620	9,163	99,620	
6	53.000	0.99982	362	99,982	
7	51.875	1.00000	18	100,000	

# COMPROMISE CONSIDERATIONS

## STOCHASTIC DETERMINATION OF THE MAXIMUM ILLUSTRATED CREDITING RATE

AAA Scenario Generator (v 7.1.201406)

U.S. Diversified Large Cap Equities

25 Year Projection (Annual Time Step)

12% Cap Rate

Avg. Annual S&P 500 Return for all 25-Year Periods Ending in 2014: 7.4%

Dividend Adjustment	0.0%	0.3%	2.0%
Avg. Annual Equity Return	7.7%	7.4%	5.7%
Avg. Annual Index Credit	6.6%	6.6%	6.0%
Average Illustrated Rate (7.28%) Percentile	71st	74th	87th

# FINAL GUIDELINE

- EFFECTIVE FOR POLICIES SOLD ON OR AFTER SEPTEMBER 1, 2015:
  - LIMITATIONS ON ILLUSTRATED SCALE
  - LIMITATIONS ON DISCIPLINED CURRENT SCALE
- EFFECTIVE FOR POLICIES SOLD ON OR AFTER MARCH 1, 2016:
  - LIMITATIONS ON LOAN LEVERAGE
  - LEDGER FOR ALTERNATIVE SCALE
  - HISTORICAL PERFORMANCE DISCLOSURES



# LIMITATIONS TO ILLUSTRATED SCALE

- BENCHMARK INDEX ACCOUNT: S&P 500, ANNUAL POINT-TO-POINT, 100% PARTICIPATION RATE, 0% FLOOR, ACCOUNT CHARGES DO NOT EXCEED THOSE FOR ANY OTHER ACCOUNT.
- CALCULATE THE GEOMETRIC AVERAGE ANNUAL CREDITING RATE FOR THE BENCHMARK INDEX ACCOUNT FOR THE 25-YEAR PERIOD STARTING ON 12/31 OF THE YEAR THAT IS 66 YEARS PRIOR TO THE CURRENT CALENDAR YEAR AND FOR EACH 25-YEAR PERIOD STARTING ON EACH SUBSEQUENT TRADING DAY THEREAFTER, ENDING WITH THE 25-YEAR TRADING PERIOD THAT ENDS ON 12/31 OF THE PRIOR CALENDAR YEAR (~10,000).
- THE MAXIMUM CREDITING RATE FOR THE ILLUSTRATED SCALE IS THE ARITHMETIC MEAN OF THE GEOMETRIC AVERAGE ANNUAL CREDITING RATES DESCRIBED ABOVE (6.9% FOR A 12% CAP RATE).
- USE ACTUARIAL JUDGEMENT TO DETERMINE THE MAXIMUM CREDITING RATE FOR OTHER INDICES OR CREDITING STRATEGIES (MAY NOT BE GREATER THAN THE MAXIMUM CREDITING RATE DETERMINED FOR THE BENCHMARK INDEXED ACCOUNT).

# LIMITATIONS ON DISCIPLINED CURRENT SCALE

- IF THE COMPANY ENGAGES IN A HEDGING PROGRAM, THE ASSUMED INTEREST RATE SHALL NOT EXCEED 145% OF THE ANNUAL NET INVESTMENT EARNINGS RATE OF THE GENERAL ACCOUNT ASSETS SUPPORTING THE POLICY (EQUATES TO ~50% RETURN ON OPTIONS).
- IF THE COMPANY DOES NOT ENGAGE IN A HEDGING PROGRAM, THE ASSUMED INTEREST RATE SHALL NOT EXCEED THE ANNUAL NET INVESTMENT EARNINGS RATE OF THE GENERAL ACCOUNT ASSETS SUPPORTING THE POLICY.
- TESTS OF SELF-SUPPORT AND LAPSE-SUPPORT SHOULD ACCOUNT FOR ALL BENEFITS, INCLUDING ILLUSTRATED BONUSES.

# LIMITATIONS ON LOAN LEVERAGE

- THE ILLUSTRATED RATE CREDITED TO THE LOAN BALANCE MAY NOT EXCEED THE ILLUSTRATED LOAN RATE BY MORE THAN 100 BP.

# LEDGER FOR ALTERNATIVE SCALE

- ALL INDEXED ACCOUNTS ARE ILLUSTRATED AT THE CREDITING RATE FOR THE FIXED ACCOUNT.
- IF THE POLICY DOES NOT HAVE A FIXED ACCOUNT, THE AVERAGE OF THE CREDITING RATE FOR THE ILLUSTRATED SCALE AND THE GUARANTEED CREDITING RATE IS USED.
- THE ILLUSTRATED RATE CREDITED TO THE LOAN BALANCE DOES NOT EXCEED THE LOAN RATE.

# HISTORICAL PERFORMANCE DISCLOSURES

- A TABLE SHOWING THE MINIMUM AND MAXIMUM GEOMETRIC AVERAGE ANNUAL CREDITED RATES USED TO DETERMINE THE MAXIMUM CREDITING RATE FOR THE ILLUSTRATED SCALE (4.4% AND 8.9% FOR A 12% CAP RATE).
- A TABLE SHOWING ACTUAL HISTORICAL INDEX CHANGES AND CORRESPONDING HYPOTHETICAL INTEREST CREDITING RATES USING CURRENT INDEX CREDITING PARAMETERS OVER THE MOST RECENT 20-YEAR PERIOD FOR EACH INDEXED ACCOUNT.